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START

Title: OFFICIAL GAZETTE OF THE UNITED STATES
PATENT AND TRADEMARK OFFICE. PATENTS.

Volume: 1164 Issues: 1-4
PATENT NO: 5,325,537-5,333,320

Date: JULY 5-26, 1994

UMI No: 10426.00 REEL NO: 8

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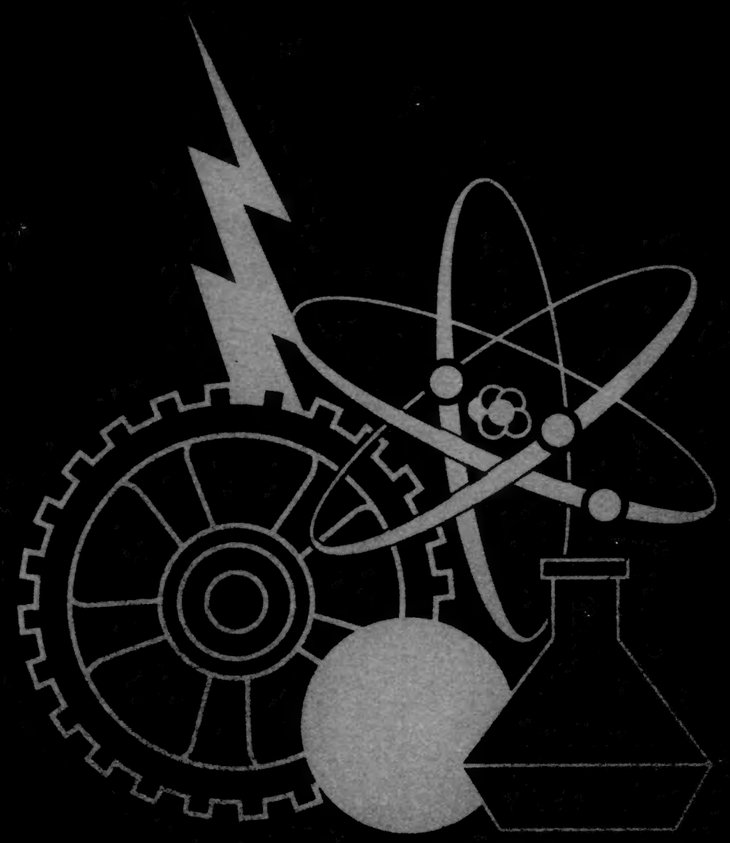
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 5, 1994



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
July 5, 1994 Volume 1164 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 2, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,027,437 through 5,029,340
Reissue Patents based on the above identified patents.

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Attention is drawn to the patents which were issued on June 30, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,675,912 through 4,677,693
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on June 28, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,389,733 through 4,390,994
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED July 5, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,974	07/108,768	07/04/89
(4,583,978)	(06/571,192)	(04/22/86)
Re. 33,445	07/334,762	11/20/90
(4,584,033)	(06/749,782)	(04/22/86)
Re. 33,725	07/179,609	10/22/91
(4,584,493)	(06/658,000)	(04/22/86)
4,326,306	06/216,787	04/27/82
4,326,520	06/218,497	04/27/82
4,326,576	06/245,184	04/27/82
4,326,597	06/256,174	04/27/82
4,326,599	06/268,897	04/27/82
4,326,672	06/234,085	04/27/82
4,326,759	06/249,074	04/27/82
4,326,791	06/215,690	04/27/82
4,326,928	06/228,430	04/27/82
4,326,971	06/259,728	04/27/82
4,326,973	06/224,728	04/27/82
4,327,026	06/283,711	04/27/82
4,327,071	06/861,429	04/27/82
4,327,080	06/282,359	04/27/82
4,327,086	06/245,971	04/27/82
4,327,096	06/232,533	04/27/82
4,327,119	06/231,127	04/27/82
4,327,150	06/218,585	04/27/82
4,327,157	06/236,348	04/27/82
4,327,170	06/220,089	04/27/82
4,327,172	06/217,058	04/27/82
4,327,178	06/249,645	04/27/82
4,327,197	06/290,137	04/27/82
4,327,203	06/238,522	04/27/82
4,327,220	06/220,392	04/27/82
4,327,229	06/226,271	04/27/82
4,327,232	06/235,883	04/27/82
4,327,296	06/223,283	04/27/82
4,327,345	06/238,777	04/27/82
4,583,248	06/714,962	04/22/86
4,583,250	06/772,326	04/22/86
4,583,251	06/551,877	04/22/86
4,583,256	06/627,803	04/22/86
4,583,265	06/619,039	04/22/86
4,583,268	06/762,025	04/22/86
4,583,274	06/652,759	04/22/86
4,583,277	06/685,730	04/22/86
4,583,285	06/700,166	04/22/86
4,583,288	06/750,649	04/22/86
4,583,291	06/616,142	04/22/86
4,583,293	06/605,307	04/22/86
4,583,298	06/587,084	04/22/86
4,583,304	06/787,703	04/22/86
4,583,308	06/567,817	04/22/86
4,583,314	06/652,112	04/22/86
4,583,316	06/533,288	04/22/86
4,583,317	06/725,647	04/22/86
4,583,319	06/749,430	04/22/86
4,583,322	06/681,813	04/22/86
4,583,323	06/685,059	04/22/86
4,583,324	06/627,661	04/22/86
4,583,330	06/287,438	04/22/86
4,583,336	06/666,179	04/22/86
4,583,340	06/606,531	04/22/86
4,583,344	06/617,705	04/22/86
4,583,350	06/568,205	04/22/86
4,583,353	06/650,779	04/22/86
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4,583,362	06/725,150	04/22/86
4,583,367	06/670,937	04/22/86
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4,583,377	06/613,831	04/22/86
4,583,386	06/527,544	04/22/86
4,583,390	06/713,414	04/22/86
4,583,393	06/591,110	04/22/86
4,583,395	06/737,844	04/22/86
4,583,397	06/741,773	04/22/86
4,583,399	06/712,210	04/22/86
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4,583,412	06/626,212	04/22/86
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4,583,442	06/670,305	04/22/86
4,583,448	06/725,552	04/22/86
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4,583,708	06/572,484	04/22/86
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4,583,762	06/658,805	04/22/86
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4,583,809	06/595,879	04/22/86
4,583,810	06/610,070	04/22/86
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4,583,926	06/657,744	04/22/86
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4,919,432	07/201,450	04/24/90
4,919,435	07/209,987	04/24/90
4,919,438	07/204,876	04/24/90
4,919,446	07/245,331	04/24/90
4,919,449	07/275,875	04/24/90
4,919,452	07/299,320	04/24/90
4,919,454	07/311,084	04/24/90
4,919,461	07/076,280	04/24/90
4,919,466	07/301,722	04/24/90
4,919,468	07/387,784	04/24/90
4,919,469	07/204,390	04/24/90
4,919,470	07/278,653	04/24/90
4,919,479	07/233,817	04/24/90
4,919,481	07/292,997	04/24/90
4,919,485	07/208,750	04/24/90
4,919,492	06/500,720	04/24/90
4,919,493	07/196,843	04/24/90
4,919,497	07/227,398	04/24/90
4,919,501	07/300,250	04/24/90
4,919,515	07/242,948	04/24/90
4,919,516	07/220,172	04/24/90
4,919,523	07/339,083	04/24/90
4,919,527	07/163,976	04/24/90
4,919,528	07/225,939	04/24/90
4,919,529	07/314,774	04/24/90
4,919,531	07/277,948	04/24/90
4,919,533	07/275,146	04/24/90
4,919,543	07/208,612	04/24/90
4,919,550	07/260,405	04/24/90
4,919,552	07/211,979	04/24/90
4,919,556	07/252,567	04/24/90
4,919,558	07/293,016	04/24/90
4,919,569	07/269,575	04/24/90
4,919,581	06/889,837	04/24/90
4,919,585	07/402,753	04/24/90
4,919,591	07/360,463	04/24/90
4,919,594	07/320,744	04/24/90
4,919,616	07/398,524	04/24/90
4,919,617	07/334,364	04/24/90
4,919,627	07/272,668	04/24/90
4,919,632	07/297,932	04/24/90
4,919,636	07/306,935	04/24/90
4,919,638	07/367,762	04/24/90
4,919,641	07/255,108	04/24/90
4,919,647	07/257,489	04/24/90
4,919,650	07/174,770	04/24/90
4,919,651	07/296,360	04/24/90
4,919,653	07/219,219	04/24/90
4,919,656	07/179,947	04/24/90
4,919,663	07/258,028	04/24/90
4,919,664	07/016,224	04/24/90
4,919,668	07/229,243	04/24/90
4,919,681	07/156,391	04/24/90
4,919,687	07/353,132	04/24/90
4,919,693	07/330,066	04/24/90
4,919,722	07/139,308	04/24/90
4,919,725	07/225,608	04/24/90
4,919,732	07/223,624	04/24/90
4,919,739	07/157,836	04/24/90
4,919,758	07/102,699	04/24/90
4,919,760	07/218,833	04/24/90
4,919,761	07/411,407	04/24/90
4,919,765	07/222,727	04/24/90
4,919,776	07/356,207	04/24/90
4,919,777	07/066,770	04/24/90
4,919,780	07/333,386	04/24/90
4,919,784	07/394,554	04/24/90
4,919,791	06/785,686	04/24/90

Patent Number	Serial Number	Issue Date
4,919,792	07/206,238	04/24/90
4,919,793	07/232,761	04/24/90
4,919,794	07/258,341	04/24/90
4,919,798	07/308,279	04/24/90
4,919,804	07/346,286	04/24/90
4,919,805	07/202,149	04/24/90
4,919,811	07/144,312	04/24/90
4,919,812	07/250,441	04/24/90
4,919,840	07/311,487	04/24/90
4,919,844	06/641,819	04/24/90
4,919,845	07/378,447	04/24/90
4,919,858	07/276,842	04/24/90
4,919,859	07/239,266	04/24/90
4,919,860	07/218,280	04/24/90
4,919,861	07/357,803	04/24/90
4,919,862	07/304,192	04/24/90
4,919,863	07/317,837	04/24/90
4,919,868	07/175,905	04/24/90
4,919,871	07/293,403	04/24/90
4,919,876	07/257,590	04/24/90
4,919,878	07/081,043	04/24/90
4,919,881	07/215,116	04/24/90
4,919,882	06/544,193	04/24/90
4,919,884	07/210,443	04/24/90
4,919,885	07/252,006	04/24/90
4,919,888	07/240,820	04/24/90
4,919,893	07/201,132	04/24/90
4,919,894	07/197,619	04/24/90
4,919,900	07/274,052	04/24/90
4,919,909	07/145,631	04/24/90
4,919,911	07/285,031	04/24/90
4,919,912	06/788,818	04/24/90
4,919,913	07/375,281	04/24/90
4,919,916	07/273,777	04/24/90
4,919,919	07/244,487	04/24/90
4,919,932	07/056,712	04/24/90
4,919,938	07/418,821	04/24/90
4,919,941	07/198,138	04/24/90
4,919,957	07/190,369	04/24/90
4,919,965	07/273,980	04/24/90
4,919,967	07/213,351	04/24/90
4,919,969	07/030,888	04/24/90
4,919,970	06/907,265	04/24/90
4,919,980	07/245,678	04/24/90
4,919,981	07/383,855	04/24/90
4,919,983	07/177,144	04/24/90
4,919,989	07/335,808	04/24/90
4,919,990	07/224,807	04/24/90
4,919,993	07/317,159	04/24/90
4,920,002	07/210,835	04/24/90
4,920,012	07/363,833	04/24/90
4,920,015	07/250,940	04/24/90
4,920,017	07/275,219	04/24/90
4,920,019	07/328,550	04/24/90
4,920,020	07/293,445	04/24/90
4,920,033	07/150,208	04/24/90
4,920,037	07/406,180	04/24/90
4,920,044	07/268,809	04/24/90
4,920,047	07/196,718	04/24/90
4,920,054	06/889,204	04/24/90
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4,920,076	07/181,899	04/24/90
4,920,080	07/233,707	04/24/90
4,920,086	07/180,342	04/24/90
4,920,090	07/280,400	04/24/90
4,920,106	07/388,716	04/24/90
4,920,108	07/149,111	04/24/90
4,920,109	07/182,615	04/24/90
4,920,111	07/182,605	04/24/90
4,920,112	07/182,536	04/24/90
4,920,113	07/182,616	04/24/90
4,920,117	07/364,420	04/24/90
4,920,119	07/124,750	04/24/90
4,920,128	07/196,598	04/24/90
4,920,134	07/227,550	04/24/90
4,920,145	07/161,881	04/24/90
4,920,151	07/157,068	04/24/90
4,920,152	06/862,750	04/24/90
4,920,157	07/168,464	04/24/90
4,920,164	07/221,914	04/24/90
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4,920,173	07/244,348	04/24/90
4,920,174	07/063,057	04/24/90
4,920,181	07/133,551	04/24/90
4,920,186	07/296,091	04/24/90
4,920,192	07/304,325	04/24/90
4,920,193	07/221,434	04/24/90
4,920,194	07/110,013	04/24/90
4,920,211	07/140,625	04/24/90
4,920,213	06/888,250	04/24/90
4,920,216	07/055,139	04/24/90
4,920,218	07/403,794	04/24/90
4,920,225	06/945,760	04/24/90
4,920,244	07/233,994	04/24/90
4,920,247	07/270,559	04/24/90
4,920,249	07/351,000	04/24/90
4,920,251	07/317,013	04/24/90
4,920,269	07/268,172	04/24/90
4,920,274	07/331,765	04/24/90
4,920,287	07/265,660	04/24/90
4,920,293	07/282,267	04/24/90
4,920,294	07/361,787	04/24/90
4,920,295	07/230,534	04/24/90
4,920,301	07/271,500	04/24/90
4,920,302	07/177,798	04/24/90
4,920,304	07/362,523	04/24/90
4,920,313	06/700,871	04/24/90
4,920,316	07/331,424	04/24/90
4,920,331	07/259,282	04/24/90
4,920,340	06/854,312	04/24/90
4,920,349	06/634,582	04/24/90
4,920,350	07/224,186	04/24/90
4,920,365	07/336,775	04/24/90
4,920,366	07/359,190	04/24/90
4,920,370	07/029,755	04/24/90
4,920,376	07/213,350	04/24/90
4,920,389	07/320,232	04/24/90
4,920,395	07/235,803	04/24/90
4,920,412	07/288,549	04/24/90
4,920,422	07/324,607	04/24/90
4,920,432	07/143,575	04/24/90
4,920,438	07/334,788	04/24/90
4,920,443	07/427,212	04/24/90
4,920,449	07/145,048	04/24/90
4,920,455	07/286,631	04/24/90
4,920,457	07/278,349	04/24/90
4,920,458	07/375,141	04/24/90
4,920,464	07/390,977	04/24/90
4,920,465	07/271,735	04/24/90
4,920,470	07/352,860	04/24/90
4,920,472	07/359,356	04/24/90
4,920,473	07/310,728	04/24/90
4,920,487	07/283,106	04/24/90
4,920,489	07/085,879	04/24/90
4,920,496	07/176,766	04/24/90
4,920,497	07/114,290	04/24/90
4,920,509	07/167,787	04/24/90
4,920,522	07/041,216	04/24/90
4,920,524	07/234,537	04/24/90
4,920,525	07/267,236	04/24/90
4,920,537	07/215,394	04/24/90
4,920,549	07/153,260	04/24/90
4,920,556	07/309,497	04/24/90
4,920,570	07/134,829	04/24/90

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NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,399,947	06/312,093	08/23/83	10/16/81	04/20/94
4,405,159	06/274,069	09/20/83	06/16/81	04/13/94
4,420,318	06/315,858	12/13/83	10/28/81	04/20/94
4,484,038	06/445,694	11/20/84	12/01/82	04/15/94
4,497,688	06/477,155	02/05/85	03/21/83	04/21/94
4,522,504	06/559,254	06/11/85	12/08/83	03/29/94
4,527,096	06/578,236	07/02/85	02/08/84	03/29/94
4,530,947	06/603,396	07/23/85	04/24/84	04/28/94
4,536,135	06/424,206	08/20/85	09/27/82	04/08/94
4,536,142	06/549,896	08/20/85	11/09/83	04/11/94
4,539,856	06/535,380	09/10/85	09/23/83	04/06/94
4,540,573	06/514,375	09/10/85	07/14/83	12/17/93
4,542,256	06/604,786	09/17/85	04/27/84	04/11/94
4,542,766	06/599,399	09/24/85	04/12/84	12/17/93
4,551,388	06/508,298	11/05/85	06/27/83	04/15/94
4,553,710	06/523,434	11/19/85	08/16/83	03/29/94
4,559,223	06/677,905	12/17/85	12/06/84	04/21/94
4,566,655	06/670,022	01/28/86	11/09/84	05/06/94
4,664,924	06/765,702	05/12/87	08/13/85	04/11/94
4,700,286	06/924,933	10/13/87	10/16/86	03/03/94
4,731,775	06/803,722	03/15/88	12/02/85	04/15/94
4,738,328	07/000,592	04/19/88	01/06/87	05/05/94
4,745,657	06/917,890	05/24/88	10/14/86	04/22/94
4,752,717	06/866,905	06/21/88	05/27/86	05/04/94
4,756,524	07/073,706	07/12/88	07/15/87	04/20/94
4,777,931	07/070,376	10/18/88	07/07/87	03/29/94
4,795,204	07/029,046	01/03/89	03/23/87	04/07/94
4,821,358	07/140,752	04/18/89	01/04/88	04/15/94
4,839,174	07/105,549	06/13/89	10/05/87	05/05/94
4,846,525	07/150,911	07/11/89	01/11/88	03/28/94
4,861,010	07/179,053	08/29/89	04/08/88	04/21/94
4,871,483	07/039,306	10/03/89	04/16/87	04/15/94
4,873,480	07/227,698	10/10/89	08/03/88	04/11/94
4,883,719	07/272,495	11/28/89	11/17/88	04/21/94
4,885,241	07/257,073	12/05/89	10/13/88	05/05/94
4,886,984	07/172,750	12/12/89	03/28/88	04/13/94
4,894,660	07/256,681	01/16/90	10/12/88	03/28/94
4,898,282	07/223,101	02/06/90	07/22/88	04/21/94
4,898,620	07/352,726	02/06/90	05/16/89	05/06/94
4,899,599	07/129,472	02/13/90	12/07/87	04/15/94
4,902,378	07/187,028	02/20/90	04/27/88	04/15/94
4,903,347	07/052,720	02/27/90	05/20/87	05/03/94

Reissue Applications

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b))

4,455,628, Re. S.N. 08/142,931, Oct. 29, 1993, Cl. 365/226, SUBSTRATE BIAS GENERATING CIRCUIT, Hideyuki Ozaki, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Gregory J. Maier, Ex. Gp.: 2511

5,067,171, Re. S.N. 08/154,250, Nov. 18, 1993, Cl. 455/033, METHOD AND APPARATUS FOR HAND-OFF OF CALL IN PROGRESS, Minori Kawano, Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Francis E. Morris, Ex. Gp.: 2611

5,114,155, Re. S.N. 08/239,682, May 9, 1994, Cl. 273/371, SYSTEM FOR AUTOMATIC COLLECTION AND DISTRIBUTION OF PLAYER STATISTICS FOR ELECTRONIC DART GAMES, Michael L. Tillery, et. al., Owner of Record: *Arachnid, Inc., Rockford, Ill.*, Attorney or Agent: Jean Dudek Kuelper, Ex. Gp.: 3304

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a))

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,393,203, Reexam. No. 90/003,353, Mar. 8, 1994, Cl. 536/124, PROCESS OF PREPARING ALKYL-POLYSACCHARIDES, Mark H. K. Mao, et. al., Owner of Record: *Procter & Gamble Co., Cincinnati, Ohio*, Attorney or Agent: George W. Allen, The Procter & Gamble Co., Cincinnati, Ohio, Ex. Gp.: 1803, Requester: Laura A. Bauer, New York, N.Y.

5,040,408, Reexam. No. 90/003,354, Mar. 10, 1994, Cl. 073/40.5R, SECONDARY CONTAINMENT SYSTEM USING FLEXIBLE PIPING, Michael C. Webb, Owner of Record: *Total Containment, Inc., Exton, Pa.*, Attorney or Agent: George A. Arkwright, Schlesinger, Arkwright & Garvey, Arlington, Va., Ex. Gp.: 2605, Requester: Environ Prod., Inc., Attn.: Michael S. Gurnicz, Lionville, Pa.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

Reg. No.	Serial No.	Reg. Date
40,916	70/040,916	08/11/1903
92,949	71/070,052	08/12/1913
305,161	71/335,750	08/08/1933
305,188	71/336,267	08/08/1933
305,189	71/336,264	08/08/1933
305,226	71/326,860	08/08/1933
305,232	71/331,271	08/08/1933
305,238	71/334,425	08/08/1933
305,239	71/334,363	08/08/1933
305,247	71/333,381	08/08/1933
558,999	71/598,675	05/20/1952
571,642	71/623,068	03/10/1953
578,389	71/542,460	08/11/1953
578,390	71/557,430	08/11/1953
578,391	71/557,871	08/11/1953
578,399	71/564,406	08/11/1953
578,401	71/568,618	08/11/1953
578,412	71/588,522	08/11/1953
578,413	71/588,544	08/11/1953
578,421	71/593,617	08/11/1953
578,425	71/599,740	08/11/1953
578,438	71/610,420	08/11/1953
578,440	71/613,214	08/11/1953
578,442	71/613,454	08/11/1953
578,443	71/613,458	08/11/1953
578,444	71/613,459	08/11/1953
578,445	71/613,460	08/11/1953
578,451	71/616,805	08/11/1953
578,453	71/618,079	08/11/1953
578,459	71/619,549	08/11/1953
578,473	71/622,550	08/11/1953
578,475	71/622,841	08/11/1953
578,476	71/623,630	08/11/1953
578,481	71/624,723	08/11/1953
578,490	71/625,496	08/11/1953
578,495	71/626,262	08/11/1953
578,497	71/626,297	08/11/1953
578,508	71/627,551	08/11/1953
578,518	71/628,608	08/11/1953
578,519	71/628,771	08/11/1953
578,521	71/630,057	08/11/1953
578,522	71/630,087	08/11/1953
578,526	71/630,740	08/11/1953
578,531	71/631,010	08/11/1953
578,535	71/632,016	08/11/1953
578,543	71/633,048	08/11/1953
578,552	71/634,216	08/11/1953
578,553	71/634,329	08/11/1953
578,554	71/634,502	08/11/1953
578,560	71/635,561	08/11/1953
578,566	71/635,838	08/11/1953
578,568	71/635,942	08/11/1953
578,572	71/636,156	08/11/1953
578,574	71/636,221	08/11/1953
578,582	71/636,875	08/11/1953
578,584	71/637,061	08/11/1953
578,585	71/637,063	08/11/1953
578,587	71/637,364	08/11/1953
578,598	71/637,968	08/11/1953
578,600	71/638,290	08/11/1953
578,601	71/638,322	08/11/1953
578,605	71/638,504	08/11/1953
578,606	71/638,536	08/11/1953
578,607	71/638,537	08/11/1953
578,614	71/638,727	08/11/1953
578,619	71/639,164	08/11/1953
578,625	71/639,730	08/11/1953
578,626	71/639,750	08/11/1953
578,627	71/639,753	08/11/1953
578,636	71/640,552	08/11/1953
578,637	71/640,553	08/11/1953
578,640	71/642,150	08/11/1953
578,641	71/642,466	08/11/1953
578,646	71/618,107	08/11/1953
578,650	71/637,100	08/11/1953
578,665	71/605,416	08/11/1953
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953,924	72/412,454	02/27/1973
955,899	72/413,586	03/20/1973
961,633	72/422,431	06/19/1973
962,477	72/419,707	07/03/1973
963,117	72/415,708	07/03/1973
965,336	72/383,380	08/07/1973
965,337	72/405,467	08/07/1973
965,340	72/392,913	08/07/1973
965,346	72/360,442	08/07/1973
965,347	72/339,694	08/07/1973
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965,364	72/406,518	08/07/1973
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965,366	72/421,894	08/07/1973
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965,378	72/404,746	08/07/1973
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965,383	72/403,704	08/07/1973
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965,389	72/407,526	08/07/1973
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965,434	72/412,864	08/07/1973
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965,456	72/425,090	08/07/1973
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965,472	72/412,657	08/07/1973
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Reg. No.	Serial No.	Reg. Date
965,503	72/405,289	08/07/1973
965,504	72/405,987	08/07/1973
965,507	72/242,820	08/07/1973
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965,517	72/415,260	08/07/1973
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965,560	72/433,336	08/07/1973
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965,589	72/432,334	08/07/1973
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965,594	72/410,796	08/07/1973
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965,598	72/418,825	08/07/1973
965,602	72/426,151	08/07/1973
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965,612	72/403,438	08/07/1973
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965,660	72/432,683	08/07/1973
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965,690	72/419,767	08/07/1973
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965,692	72/423,918	08/07/1973
965,699	72/426,728	08/07/1973
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965,743	72/398,155	08/07/1973
965,746	72/409,578	08/07/1973
965,747	72/417,199	08/07/1973
965,750	72/426,665	08/07/1973
965,751	72/428,125	08/07/1973
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965,756	72/438,436	08/07/1973
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965,758	72/439,242	08/07/1973
965,759	72/392,804	08/07/1973
965,760	72/395,524	08/07/1973
965,761	72/397,634	08/07/1973
965,769	72/427,004	08/07/1973
965,771	72/428,734	08/07/1973
965,774	72/317,102	08/07/1973
965,775	72/375,763	08/07/1973
965,777	72/418,911	08/07/1973
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965,782	72/424,752	08/07/1973
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965,801	72/415,263	08/07/1973
965,802	72/415,264	08/07/1973
965,804	72/418,144	08/07/1973
965,810	72/421,391	08/07/1973
965,815	72/371,532	08/07/1973
965,825	72/423,380	08/07/1973
965,827	72/415,692	08/07/1973
965,828	72/415,693	08/07/1973
965,829	72/391,481	08/07/1973
965,830	72/401,349	08/07/1973

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed

Patent No. 4,647,447, Heinz Gries, Douwe Rosenburg, Hanns-Joachim Weinmann, DIAGNOSTIC MEDIA, Interference No. 102,867, final judgment adverse to the patentee rendered May 4, 1994, as to claim 18.

Patent No. 4,700,310, Joseph A. Volk, Jr., AUTOMATIC PELLET MILL CONTROLLER WITH STEAM TEMPERATURE CONTROL, Interference No. 102,147, final judgment adverse to the patentee rendered April 19, 1990, as to claims 1-4, 6, 8, 12-20 and 22-26.

Patent No. 4,844,896, Howard A. Bohm, Deborah R. Friend, MICROENCAPSULATED INSECTICIDAL PATHOGENS, Interference No. 103,138, final judgment adverse to the patentee rendered April 28, 1994, as to claims 1-18.

Patent No. 4,925,816, Keiichiro Watanabe, Tsuneaki Ohashi, Tadaaki Matsuhisa, NOVEL SOLID SOLUTION, HEAT-RESISTANT SINTERED BODY AND METHOD OF PRODUCING THE SAME, Interference No. 103,206, final judgment adverse to the patent rendered April 29, 1994, as to claims 1-3.

Patent No. 4,946,387, Loren S. Adell, MULTI-COATED ORTHODONTIC ARCH WIRE, Interference No. 102,628, final judgment adverse to the patentee rendered May 27, 1994, as to claims 1-8

Patent No. 4,948,586, Howard A. Bohm, Deborah R. Friend, MICROENCAPSULATED INSECTICIDAL PATHOGENS, Interference No. 103, 138, final judgment adverse to the patentee rendered April 28, 1994, as to claims 1-13.

Patent No. 4,976,922, Simon Chippett, Stephen A. Conviser, STERILIZATION METHOD, Interference No. 103,159, final judgment adverse to the patentee rendered April 29, 1994, as to claims 1-14.

Patent No. 5,013,907, Glenn Bateman, OPTICAL TIME DOMAIN TESTING INSTRUMENT, Interference No. 102,942, final judgment adverse to the patentee rendered May 25, 1994, as to claims 6-9.

Patent No. 5,021,145, Andrew P. Chapple, CATALYST, Interference No. 103,269, final judgment adverse to the patentee rendered May 26, 1994, as to claim 1.

Patent No. 5,039,484, Simon Chippett, Stephen A. Conviser, STERILANT MIXTURE, Interference No. 103,158, final judgment adverse to the patentee rendered April 29, 1994, as to claims 1-14.

Patent No. 5,129,260, Euphratius M. Van Der Avoird, PLATE BRAKE TESTER, Interference No. 103,249, final judgment adverse to the patentee rendered April 26, 1994, as to claims 1-6.

Patent No. 5,155,625, Toru Komatsu, Yasutoshi Itoh, Naoto Iwanabe, Hidenori Sato, WATER-DROP-REPELLANT MIRROR INCLUDING A VIBRATION PLATE AND HEATING MEANS, Interference No. 103,252, final judgment adverse to the patentee rendered May 17, 1994, as to claims 1-3, 5-11 and 13-19.

NANNIE B. HENRY, *Deputy Clerk*
Board of Patent Appeals & Interferences
(703) 603-3298

Erratum

"All reference to Patent No. Re. 34,625 to Leif A.E. Akesson, et. al., of Sweden for 'SINTERED BODY FOR CHIP FORMING MACHINING' appearing in the *Official Gazette* of May 31, 1994 should be deleted since no patent was granted."

"All reference to Patent No. 5,266,898 to Mineyuki Konishi of Japan for 'MAGNETIC RESONANCE IMAGING APPARATUS' appearing in the *Official Gazette* of Nov. 30, 1993 should be deleted since no patent was granted."

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Dowling Distillers Products, Cincinnati, Ohio, Reg. No. 690,337 for the mark "OLD BOONE AND DESIGN", Canc. No. 22,464.

North American Soccer League DBA NASL, New York, N.Y., Reg. No. 1,084,333 for the mark "NASL", Canc. No. 22,378.

Tiara Furs, Fort Collins, Co., Reg. No. 1,538,228 for the mark "TIARA", Canc. No. 22,311.

Dwight O. Haugen dba Time Plus International, Inc., Seattle, Wash., Reg. No. 1,520,893 for the mark "DAY MANAGER", Canc. No. 21,916.

Zfax Image Corp., Dallas, Tex., Reg. No. 1,490,988 for the mark "ZFAX", Canc. No. 21,871.

The Disc System, Inc., Atlanta, Ga., Reg. No. 1,642,230 for the mark "DISC AND DESIGN", Canc. No. 22,074.

Sentinel Communications Company, Naples, Fla., Reg. No. 992,777 for the mark "TV WEEKLY CABLE GUIDE", Canc. No. 22,042.

Mizzy, Inc., Clifton Forge, Va., Reg. No. 752,383 for the mark "ORAL-EASE" Canc. No. 22,327.

Georesearch, Inc., Billings, Mont., Reg. No. 1,503,447 for the mark "GEORESEARCH", Canc. No. 22,143.

$5 to $10 Store, Inc., Los Angeles, Calif., Reg. No. 1,509,696 for the mark "$5 to $10 STORE", Canc. No. 22,154.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey For with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is important that patent practitioners complete each survey form no later than the time of response to the Office action being surveyed. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for patents

Certificate of Correction Issued for July 5, 1994

P. 7,516	4,736,866	4,991,578	5,052,176
P. 8,346	4,923,364	4,999,950	5,052,636
Re. 34,159	4,944,748	5,025,859	5,052,994
Re. 34,400	4,961,865	5,030,692	5,053,134
Des. 334,735	4,963,698	5,032,393	5,053,441
Des. 334,752	4,968,880	5,035,994	5,053,775
Des. 334,753	4,980,369	5,039,447	5,054,030
Des. 338,994	4,981,664	5,052,094	5,055,919
Des. 339,321	4,985,225	5,052,102	5,057,299

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5,086,290	5,178,159	5,218,415	5,238,923	5,256,733	5,271,770	5,281,074	5,289,969
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5,103,437	5,188,936	5,219,555	5,240,340	5,258,804	5,272,374	5,282,900	5,290,864
5,106,645	5,188,960	5,220,054	5,241,024	5,259,579	5,272,439	5,282,920	5,291,630
5,109,517	5,189,232	5,220,410	5,241,263	5,259,741	5,272,806	5,282,974	5,291,743
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5,117,836	5,189,423	5,222,121	5,241,647	5,260,580	5,273,266	5,283,165	5,291,914
5,120,113	5,189,865	5,223,374	5,241,859	5,260,942	5,273,283	5,283,484	5,292,389
5,120,122	5,189,964	5,223,754	5,242,192	5,261,408	5,273,501	5,283,545	5,292,685
5,124,527	5,190,097	5,223,893	5,242,826	5,261,463	5,273,607	5,283,608	5,292,715
5,126,133	5,190,322	5,224,986	5,242,995	5,262,202	5,273,640	5,283,854	5,292,775
5,126,279	5,191,810	5,225,216	5,243,025	5,262,257	5,273,662	5,283,855	5,293,043
5,126,768	5,191,889	5,225,486	5,243,215	5,262,529	5,273,729	5,283,878	5,293,206
5,128,157	5,193,891	5,225,571	5,243,417	5,262,849	5,274,426	5,284,105	5,293,333
5,132,217	5,194,173	5,226,067	5,243,511	5,262,870	5,274,518	5,284,146	5,293,369
5,133,829	5,196,384	5,227,486	5,244,589	5,263,161	5,274,697	5,284,467	5,294,016
5,135,737	5,198,245	5,227,865	5,245,057	5,264,563	5,275,161	5,284,492	5,294,321
5,135,864	5,199,349	5,228,619	5,246,012	5,264,643	5,275,187	5,284,588	5,294,485
5,137,817	5,199,481	5,228,815	5,246,238	5,264,680	5,275,324	5,284,953	5,294,587
5,145,817	5,200,397	5,229,182	5,246,585	5,264,753	5,275,554	5,284,984	5,294,761
5,145,842	5,201,020	5,229,416	5,246,667	5,264,772	5,275,985	5,285,024	5,294,915
5,148,933	5,201,577	5,229,680	5,246,757	5,266,390	5,276,479	5,285,079	5,295,156
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5,150,895	5,202,270	5,229,879	5,247,309	5,266,901	5,276,794	5,285,551	5,295,288
5,151,429	5,202,311	5,229,959	5,247,393	5,267,140	5,276,824	5,285,738	5,295,417
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5,159,267	5,204,723	5,230,751	5,248,758	5,267,721	5,277,100	5,285,788	5,296,051
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5,162,546	5,205,287	5,231,003	5,249,176	5,268,288	5,277,188	5,285,828	5,296,192
5,163,829	5,205,895	5,231,172	5,249,386	5,268,400	5,277,524	5,286,089	5,296,434
5,164,496	5,206,042	5,231,343	5,250,165	5,268,424	5,277,539	5,286,117	5,296,435
5,164,741	5,207,453	5,231,393	5,250,410	5,268,476	5,278,013	5,286,167	5,297,027
5,164,953	5,208,831	5,232,079	5,250,989	5,268,770	5,278,072	5,286,211	5,297,173
5,165,011	5,209,216	5,232,148	5,251,418	5,268,833	5,278,862	5,286,553	5,298,150
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5,168,017	5,211,809	5,232,646	5,251,840	5,269,488	5,279,330	5,287,328	5,298,855
5,168,323	5,212,311	5,234,571	5,252,394	5,269,503	5,279,350	5,287,462	5,298,885
5,168,800	5,213,589	5,234,803	5,252,640	5,269,852	5,279,431	5,287,713	5,300,073
5,171,353	5,213,639	5,234,924	5,253,045	5,269,988	5,279,528	5,287,812	
5,171,404	5,213,872	5,235,343	5,254,133	5,270,186	5,279,633	5,287,825	
5,171,524	5,214,288	5,235,900	5,254,423	5,270,228	5,279,721	5,288,108	
5,173,306	5,214,462	5,236,102	5,254,558				

Summary of Final Decisions

Issued by the Trademark Trial and Appeal Board

May 9-13, 1994

Date Issued	Type of Proceeding	Proceeding or Appl'n No.(s)	Party/Parties	Issue	TTAB Decision	Mark and Goods of Registration Cited by Examining Atty	Recommended for Publication	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services
5-9	EX EX EX EX EX EX EX	74/208,457 74/208,458 74/208,459 74/208,460 74/208,461 74/208,462 74/208,463	Calloway's Nursery, Inc	whether applicant's mark is primarily merely a surname	Refusal Affirmed (in all seven applications)		No		"CALLOWAY'S" [flower and vegetable seeds; plants; Christmas tree ornaments; horticultural and gardening books; gardening and lawn hand tools; ornamental stands and containers for flowers and plants; truck hauling of agricultural and horticultural goods; insecticides and fertilizers; etc.]
5-9	EX	74/208,807	Spiegel, Inc	2(d)	Refusal Affirmed	"HOME RESOURCES" [telephone shop-at-home services in the field of home decorating merchandise, household appliances, and home improvement and repair equipment; consulting services in the field of do-it-yourself household repairs and improvements; etc.]	No		"HOME SOURCE" [catalogs featuring home furniture, fixtures and accessories]
5-12	OPP	86,935	New England Mutual Life Ins. Co. v. Kaplan Group, Inc.	2(d)	Refusal Affirmed	"THE NEW ENGLAND COLLECTION" [and oval design] [real estate brokerage and consulting services]	No	"THE NEW ENGLAND" [financial advisory and management services]	"THE NEW ENGLAND COLLECTION" [and oval design] [real estate brokerage and consulting services]
5-13	OPP	84,808	Fratelli Lozza (USA), Inc. v. Lozza, USA	whether applicant is estopped, by virtue of decision in a civil action, from claiming right to register its asserted mark	Opposition Sustained		No		"LOZZA" [optical accessories, namely, eye glass frames]

(I)EX=EX PARTE APPEAL, OPP=OPPOSITION, C=CANCELLATION, CU=CONCURRENT USE, (R)=REQ FOR RECONSIDERATION

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Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
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Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	07/12/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	05/06/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	09/20/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	07/19/93
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ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	08/29/93
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DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	09/15/92
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SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	01/15/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/01/93

*A communication from the examiner should have been received in most applications filed prior to this date

Expiration of Patents: The patents within the range of numbers indicated below expire during June 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents ..... Numbers 4,027,339 to 4,032,988 inclusive
Plant Patents ..... 4,059 to 4,068

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of June 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/10/93	04/26/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 40, 41, 42	01/06/94	03/14/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/11/94	02/16/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/14/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/29/93	02/03/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/23/93	04/08/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/06/93	02/22/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/24/94	05/03/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/21/94	01/24/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/13/94	04/18/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/27/94	04/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/27/93	03/21/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/30/93	10/20/93
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jaqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	12/27/93	—0—
Renewals (All Classes)	03/14/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

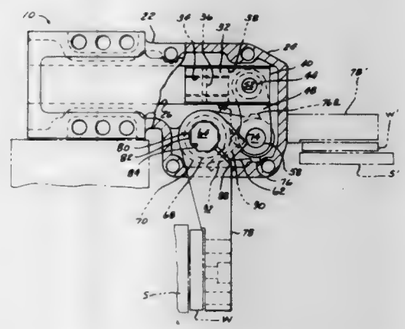
1. ** Assigned to each law office.
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3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dateshave either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

JULY 5, 1994

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,905,973 (2327th)
POWER OPERATED CLAMP WITH EXTERNALLY MOUNTED ADJUSTABLE CLAMP ARM
John A. Blatt, 47 Willison, Grosse Pointe Shores, Mich. 48236
Reexamination Request No. 90/003,193, Sep. 13, 1993.
Reexamination Certificate for Patent No. 4,905,973, issued Mar. 6, 1990, Ser. No. 295,767, Jan. 11, 1989.
Int. Cl.[5] B23Q *3/03*
U.S. Cl. 269—32



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–7** is confirmed.

New claims **8–14** are added and determined to be patentable.

1. A power operated clamp for securing a workpiece relative to a workpiece support, said clamp including a cylinder having a reciprocal piston and connected piston rod projecting from said cylinder, said clamp comprising:

a bifurcated hollow housing connectable to said cylinder, said housing having an elongated internal guide slot with a free end of said piston rod extending within said slot, and a pair of coaxial apertures having a common axis offset from and perpendicular to a longitudinal axis of said slot;

a rod end connected to said free end of said piston rod for reciprocal movement, said rod end slidingly guided within said guide slot;

a pivot pin rotatably disposed within said apertures for angular movement about said common axis, said pivot pin having an end extending externally from said housing and a lever arm extending internally within said housing;

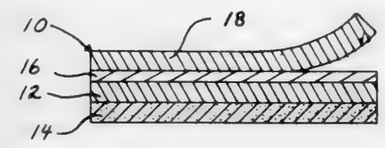
a pair of opposed links pivotally connected to said rod end at one end and pivotally connected to said lever arm at another end for transforming reciprocal movement of said rod end into angular movement of said pivot pin;

a clamp arm connected to said end of said pivot pin external to said housing for movement between workpiece clamping and release positions;

a stop formed on said lever arm of said pivot pin engageable with said housing when said clamp arm is in said clamping position; and

shaped mating surface means formed on said clamp arm and said end of said pivot pin for adjusting the angular orientation of said clamp arm with respect to said clamping position without disassembling said housing.

B1 4,909,244 (2328th)
HYDROGEL WOUND DRESSING
Alan J. Quarfoot, Palatine; Patrick H. Hyla, Lake Zurich, and Donald Patience, Barrington, all of Ill., assignors to The Kendall Company, Boston, Mass.
Reexamination Request No. 90/003,049, May 7, 1993.
Reexamination Certificate for Patent No. 4,909,244, issued Mar. 20, 1990, Ser. No. 935,426, Nov. 26, 1986.
Int. Cl.[5] A61L *15/00*
U.S. Cl. 602—48



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** to **10** is confirmed.

3. A composite wound dressing comprising a layer consisting essentially of hydrogel adapted for absorption of exudation from said wound; an adhesive material for adhering the dressing to the skin surrounding the wound; an outer oxygen-and vapor-permeable layer for permitting transpiration of liquid from said dressing to ambient air; and a removable vapor impermeable sheet material releasably secured on the outer surface of said oxygen- and vapor-permeable layer; said adhesive material being present in a layer between said outer layer and said hydrogel layer, said hydrogel layer having smaller surface dimensions than said adhesive layer, whereby said adhesive layer has free surface areas extending beyond the periphery of said hydrogel layer for adhering said dressing to the skin.

B1 5,103,873 (2329th)
MECHANISM FOR CONTROLLING GRIFFE FRAME MOVEMENT
Dario Bassi, Chaponnay, France, assignor to Staubli-Verdol S.A., Chassieu, France
Reexamination Request No. 90/003,216, Oct. 8, 1993.
Reexamination Certificate for Patent No. 5,103,873, issued Apr. 14, 1992, Ser. No. 654,545, Feb. 13, 1991.
Claims priority, application France, Feb. 22, 1990, 90 02466
Int. Cl.[5] D03C *3/08, 3/36*
U.S. Cl. 139—59

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

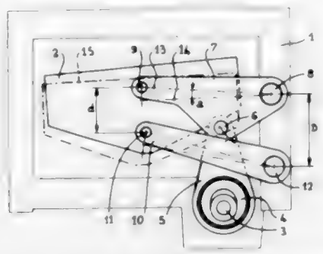
Claim **2**, dependent on an amended claim, is determined to be patentable.

New claims **3–6** and **7** are added and determined to be patentable.

1. In a weaving loom having a framework, a mechanism for controlling the reciprocating movement of two griffe frames of a shed-forming device, wherein the mechanism comprises, a

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first lever, a first pivot means for articulating one end of said first lever to the framework and a second pivot means for articulating the other end of said first lever to one of the griffe frames, a second lever, a third pivot means for articulating one end of said second lever to the framework and fourth pivot means for articulating the other end of said second lever to said one of the griffe frames, said first and second levers defining



the first of two opposing *jointless* sides of a shiftable quadrilateral, a portion of the framework between said first and third pivot means and a portion of said one of said griffe frames between said second and fourth pivot means defining a second of two opposing sides of said shiftable quadrilateral, and a control member connected to said first lever for reciprocally shifting said quadrilateral to thereby move said one of the griffe frames between first and second positions.

B1 5,188,250 (2330th)
PLASTIC BEVERIDGE BOTTLE WITH TWIST-OFF CLOSURE

Theodore J. Kovacic, Bedford; Richard H. Kaufman, Chappaqua, both of N.Y.; Martin M. Bostwick, Norwalk, Conn.; Donald C. Crescenzi, Killingsworth, Conn.; William H. Valls, Harwinton, Conn., and Thomas Bucaccio, Westmount, Canada, assignors to Kraft General Foods, Inc., Northfield, Ill.

Reexamination Request No. 90/003,092, Jun. 4, 1993.
Reexamination Certificate for Patent No. 5,188,250, issued Feb. 23, 1993, Ser. No. 893,612, Jun. 5, 1992.
Int. Cl.[5] A61J *1/06*
U.S. Cl. 215—32

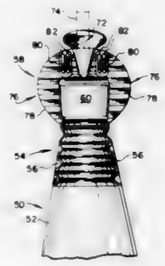
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT

Claims **1**, **8** and **17** are determined to be patentable as amended.

Claims **2–7**, **9–16** and **18–22**, dependent on an amended claim, are determined to be patentable.

New claims **23–33** are added and determined to be patentable.

1. A one-piece plastic beverage bottle comprising:
an upstanding [main bottom] *lower* portion *and an upwardly and inwardly-tapered upper portion* in which a beverage is contained;
a circular top *forming a mouth portion suitable for introduction into a human mouth, said top* extending upwardly from *said tapered upper portion with* said [main portion] *lower*



and upper portions [and] centered about a central vertical axis, said top including a top end having a small, central aperture which extends through said top end; and
a closure for said central aperture of said top end, said closure including
a short neck piece extending upwardly from said top end and surrounding said aperture,
a vertical extension of said neck piece, and
planar wings extending laterally from said vertical extension on opposite sides thereof and extending vertically downwards from said vertical extension so as to be below said top end [and] , *to be* laterally adjacent *and down around* said top *and to end adjacent said tapered upper portion;* whereby said wings are twisted about the vertical axis to shear said neck piece and hence to open said aperture for drinking of the beverage in said main portion.

STATUTORY INVENTION REGISTRATIONS

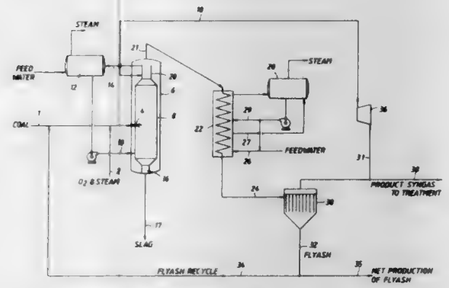
PUBLISHED JULY 5, 1994

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1325
ONE STAGE COAL GASIFICATION PROCESS

Egon L. Doering; Phillip E. Unger, both of Houston, and Eugene Alsandor, Sugar Land, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1992, Ser. No. 960,345
Int. Cl.[5] C10J *3/16*
U.S. Cl. 48—197 R **10 Claims**



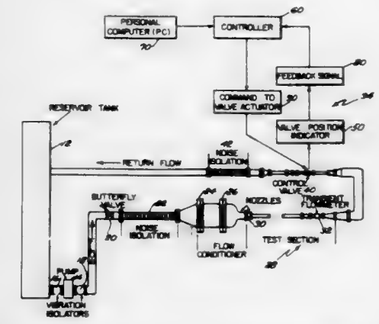
1. A non-catalytic, one stage, upflow process for gasification of a carbonaceous material, wherein the process consisting essentially of the steps of:
a) partially combusting in a fired, vertical slagging gasifier a stream comprising an oxygen-containing gas and a dry particulate carbonaceous material at high temperatures and forming a molten slag stream and a gaseous product stream having entrained therein sticky, molten slag particles;
b) separating said molten slag stream from the gaseous stream;
c) quenching the gaseous product stream in a quench zone with an inert gas thereby cooling the gaseous product stream and the entrained molten slag particles in the gaseous product stream to flyslag particles;
d) passing said gaseous product stream and entrained flyslag particles directly from the quenching step (c) to the thermal energy recovery step (e), without further processing and without flyslag particle removal;
e) recovering high level thermal energy from a flyslag-laden gaseous product stream in a fire tube heat exchanger; and
f) separating the flyslag particles from the gaseous product stream of step (e).

H1326
TRANSIENT FLOW LOOP SYSTEM

Paul J. Lefebvre, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 24, 1990, Ser. No. 632,708
Int. Cl.[5] F16K *31/00*
U.S. Cl. 137—486 **4 Claims**

1. A transient flow loop for generating user defined transients in a fluid flow which comprises:
a storage tank for supplying the fluid;
a pumping means to supply the fluid at a constant pressure;
noise reducing means for obtaining noise-free environment for testing of the flow of the fluid;
a flowmeter means for accurately measuring the flow rates of the fluid;

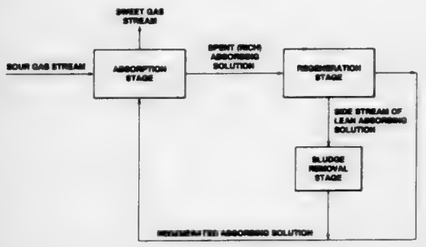


control valve means for controlling the transients to be introduced in the flow rate of the fluid.

H1327
METHOD FOR PURIFYING AMINE GAS SWEETENING SYSTEMS BY ADDITION OF CO_2

Michael E. Moir, and William A. Rendall, both of Calgary, Canada, assignors to Exxon Production Research Company, Houston, Tex.

Filed Sep. 25, 1990, Ser. No. 587,703
Claims priority, application Canada, Sep. 29, 1989, 614910
Int. Cl.[5] B01D *53/34*
U.S. Cl. 423—228 **15 Claims**



1. In a gas sweetening system which acid gas is removed from gas by an acid gas absorbing solution comprising amine, a process for removing sludge, formed as a reaction product of said absorbing solution and elemental sulfur, from said absorbing solution comprising:
(a) contacting a stream generated absorbing solution with CO_2 such that said sludge forms a precipitate; and
(b) removing precipitate from said stream of absorbing solution.

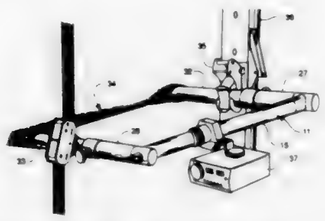
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H1328

ADJUSTABLE AEROMEDICAL EQUIPMENT BRACKET

Melvin S. Horton, Prattsburg, N.Y., and Thomas E. Philbeck, Jr., San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 20, 1992, Ser. No. 963,978
Int. Cl.[5] E04G *3/00*; F16M *11/38*; A47F *5/00*
U.S. Cl. 248—276 9 Claims



1. An equipment support device comprising:
(a) an extensible tubular member having first and second ends;
(b) means defining a threaded lock fitting along said extensible tubular member for locking said extensible tubular member at a preselected length;
(c) substantially parallel first and second tubular end members of preselected inner diametric size attached to said extensible tubular member at corresponding said first and second ends thereof for receiving substantially parallel first and second rod members; and
(d) first and second set screws threadably received by corresponding said first and second tubular end members for releasably fixing said first and second rod members within corresponding said first and second tubular end members.

H1329

DRILL COLLAR CONNECTIONS

Jeffrey R. Bailey; Richard P. McBride, both of Houston; Mark C. Moyer, Missouri City, all of Tex., and James B. Day, New Orleans, La., assignors to Exxon Production Research Company, Houston, Tex.

Filed Apr. 28, 1992, Ser. No. 875,172
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—334 15 Claims



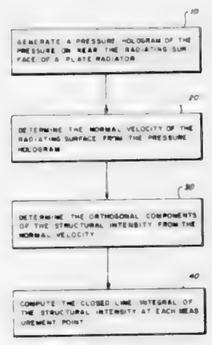
1. A threaded connection for use in connecting two adjacent sections of pipe in a pipe string, said threaded connection comprising:
a) a generally tubular pin member on one end of a first pipe section having a longitudinal axis, at least a portion of said pin member having a generally frustoconical outer surface which tapers radially inwardly toward said end of said first pipe section, said frustoconical outer surface having pin threads formed thereon;
b) said pin member having a nose, a shoulder and a pin length equal to the axial distance between said nose and said shoulder;
c) a generally tubular box member on one end of a second pipe section, at least a portion of said box member having a generally frustoconical inner surface which tapers radially outwardly toward said end of said second pipe section, said frustoconical inner surface having box threads formed thereon which correspond to and are threadedly engageable with said pin threads formed on said pin member;
d) said box threads having a first engaged box thread corresponding to the pin thread nearest said shoulder and a last engaged box thread corresponding to the pin thread nearest said nose; and
e) said threaded connection being designed and engineered so as to have a bending strength ratio of about 3.20 or greater.

H1330

METHOD OF MEASURING STRUCTURAL INTENSITIES IN VIBRATING PLATE RADIATORS

Earl G. Williams, 4507 Twinbrooke St., Fairfax, Va. 22032

Filed Sep. 30, 1991, Ser. No. 767,188
Int. Cl.[5] G03H *3/00*
U.S. Cl. 367—8 2 Claims



1. A non-contact method of measuring structure-borne intensities in a vibrating plate radiator having at least one source of vibration, said method comprising the steps of:
producing a pressure hologram of the pressure radiated from a surface of the radiator;
determining the velocity of said radiator normal to said surface from said pressure hologram; and
determining at least one vector component of the structure-borne intensity from said velocity of said radiator normal to said surface.

H1331

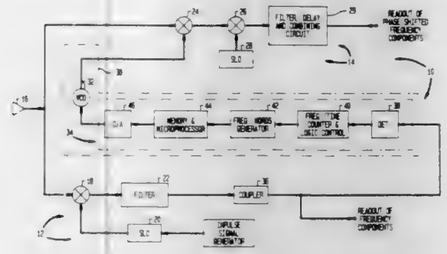
WIDE BANDWIDTH, HIGH RESOLUTION CIRCUITRY FOR PHASE SHIFTED FREQUENCY DETECTION

William J. Skudera, Jr., Oceanport, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 17, 1992, Ser. No. 899,793
Int. Cl.[5] G01R *23/16*
U.S. Cl. 324—76.23 20 Claims

1. Circuitry for analyzing the phase shifted frequency components of composite signals, comprising:
a wide bandwidth Chirp-Z signal analyzer for deriving segregated time domain outputs of the phase shifted frequency components;
a swept-tuned, narrow bandwidth superheterodyne signal analyzer for outputting the phase shifted frequency components with high resolution; and

interface means between said Chirp-Z and superheterodyne analyzers for sychronizing the presence of the phase



shifted frequency components at the outputs of those analyzers.

H1332

THERMAL CONDUCTIVE MATERIAL

Clifford K. Deakyne, Wilmington, Del., and John G. Lavin, Swarthmore, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 570,308, Aug. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 251,783, Oct. 3, 1988, abandoned. This application Jan. 27, 1992, Ser. No. 827,142
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—290 4 Claims



1. A thermally conductive composite material comprising a resin reinforced with a three-dimensional arrangement of discontinuous mesophase pitch based carbon fibers said material having a thermal conductivity above about 10(BTU) (in)/(ft^2) (hr) (°F.) as measured on the axis of lowest thermal conductivity through the material.

H1333

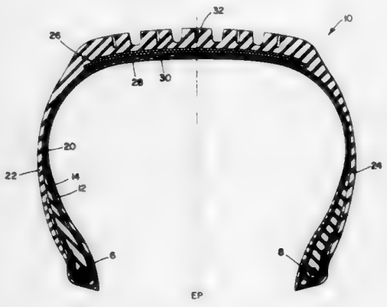
HIGH STRENGTH REINFORCEMENT

Farrel B. Helfer, 453 Palisades Dr., Akron, Ohio 44303; Dong K. Kim, 4194 Big Spruce Dr., Akron, Ohio 44313; John G. Morgan, 7741 Fox Run Ave., NW.; Robert M. Shemenski, 204 Sutton Ave., NE., both of North Canton, Ohio 44720; Italo M. Sinopoli, 4646 Yale Ave., NW., Canton, Ohio 44709; Guy Jeanpierre, 82, Cité Steekraiz, Bissen, Grand Duchy of Luxembourg 7790 , and Gia V. Nguyen, 164, Avenue de Mersch, Arlon, Belgium 6700

Filed Mar. 21, 1990, Ser. No. 496,759
Int. Cl.[5] D04H *3/00*
U.S. Cl. 428—294 2 Claims

1. A reinforced layer of elastomer for reinforcement of elastomeric articles having at least one layer of cord spaced in a direction lateral to the direction of reinforcement, each cord have a diameter in the range of 0.30 mm to 1.6 mm and formed in a single step where all its filaments have the same lay direction, each cord made of steel having a cord break strength (CBL) defined by the expression:

$$CBL = N(720.4D^2 - 352.6D^3)CE$$



where CE is the cord efficienty, D is the filament diameter of 0.255 MM and N is the number of filaments in each cord.

H1334

METHOD OF MAKING A TEFLON BONDED CATHODE FOR USE IN A HIGH TEMPERATURE CELL AND HIGH TEMPERATURE CELL INCLUDING SAID CATHODE

Edward J. Plichta, Howell, and Wishvender K. Behl, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

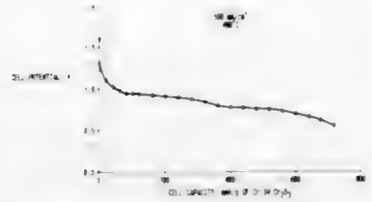
Filed Jun. 10, 1991, Ser. No. 715,083
Int. Cl.[5] H01M *4/48, 4/62, 6/20*
U.S. Cl. 429—103 1 Claim

1. A high temperature electrochemical cell including sodium as the anode, a solid electrolyte separator of B''-Al_2O_3', and a Teflon bonded iron (iv) sulfide cathode emersed in a molten salt electrolyte of $NaAlCl_4$ and capable of being electrochemically operated at 200° C., wherein the teflon bonded cathode is obtained by a method including the steps of:
(A) forming a mixture of about 80 weight percent FeS_2 as the active cathode component, about 10 weight percent graphite as the conductive diluent, and about 10 weight percent Teflon as the cathode binder,
(B) drop wise adding a wetting agent of distilled water-isopropylalcohol (60/40 weight percent) solution to the mixture to form a stiff dough,
(C) roll pressing the dough onto a expanded metal grid current collector and sintering at about 280° C. for about one hour under vacuum, and
(D) cooling under vacuum to ambient temperature.

H1335
HIGH TEMPERATURE MOLTEN SALT THERMAL CELL

Edward J. Plichta, Howell, and Wishvender K. Behl, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 8, 1993, Ser. No. 14,606
Int. Cl.[5] H01M *6/34*
U.S. Cl. 429—199 **7 Claims**



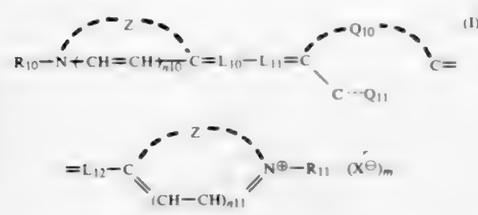
1. A high temperature molten salt thermal cell including an alkali metal containing anode, a molten alkali metal halide electrolyte and at least one binary sulfide of chromium as the cathode.

H1336
SILVER HALIDE PHOTOGRAPHIC MATERIAL

Koichi Kuno; Tetsuo Yoshida; Masahiro Okada, and Shigeru Ohno, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

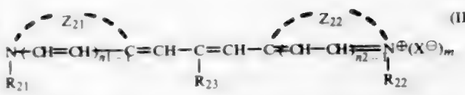
Continuation of Ser. No. 700,338, May 7, 1991, abandoned, which is a continuation of Ser. No. 302,697, Jan. 27, 1989, abandoned. This application Sep. 2, 1992, Ser. No. 938,584
Claims priority, application Japan, Jan. 27, 1988, 63-16255; Jan. 27, 1988, 63-16257
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—522 **15 Claims**

1. A silver halide photographic material comprising a support having provided thereon a silver halide emulsion layer and another hydrophilic colloidal layer, in which said silver halide emulsion layer contains at least one sensitizing dye selected from the group consisting of a compound represented by formula (I):



(I)

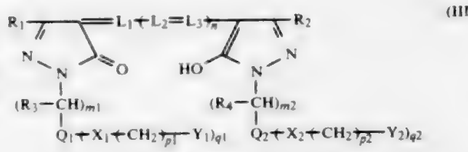
wherein Z and Z_1 each represents a non-metallic atomic group necessary to complete a 5- or 6-membered nitrogen-containing heterocyclic ring; R_{10} and R_{11} each represents a substituted or unsubstituted alkyl group, or an aryl group; Q_{10} and Q_{11} are taken together to represent a non-metallic atomic group necessary to complete a 4-thiazolildinone, 5-thiazolidinone or 4-imidazolidinone nucleus; L_{10}, L_{11} and L_{12} each represents a substituted or unsubstituted methine group; or L_{10} and R_{10} or L_{12} and R_{11} are connected via a methine chain to form a nitrogen-containing heterocyclic ring; n_{10} and n_{11} each represents 0 or 1; X represents an anion; m represents 0 or 1; and when m is 0, the compound has a structure of an intramolecular salt, and a compound represented by formula (II):



(II)

wherein Z_{21} and Z_{22} each represents a non-metallic atomic group necessary to form a substituted or unsubstituted benzothiazole, benzoselenazole, naphthothiazole, naphthoselenazole or quinoline ring; R_{21} and R_{22} each represents a lower alkyl group, or an alkyl group having a sulfo or carboxyl group; R_{23} represents a lower alkyl group; X represents an anion; n1 and n2 each represents 1 or 2; m represents 1 or 0; and when m is 0, the compound has a structure of an intramolecular salt,

said silver halide emulsion layer, said hydrophilic colloidal layer; or bath contains a dye represented by Formula (III):



(III)

wherein R_1 and R_2 each represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a cyano group, $-COOR_5$, $-CONR_5R_6$, $-COR_7$, $-SO2R_7$, $-SOR_7$, $-SO_2NR_5R_6$, $-OR_5$, $-NR_5R_6$, $-NR_6COR_7$, $-NR_5CONR_5R_6$, or $-NR_6SO_2R_7$, wherein R_5 and R_6 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group; R_7 represents an alkyl group or an aryl group; or R_5 and R_6, or R_6 and R_7 are taken together to form a 5- or 6-membered ring; R_3 and R_4 each represents a hydrogen atom or alkyl group; Q_1 and Q_2 each represents a substituted or unsubstituted aryl group; X_1 and X_2 each represents a mere bond or a divalent linking group; Y_1 and Y_2 each represents a sulfo group or a carboxyl group; L_1, L_2, and L_3 each represents a substituted or unsubstituted methine group; n represents 0, 1, or 2; m1 and m2 each represents 1 or 2; p1 and p2 each represents 0, 1, 2, 3, or 4; and q1 and q2 each represents 1, 2, or 3, wherein in formula (III) the alkyl group as represented by R_1, R_2, R_5, R_6, and R_7 contains up to 8 carbon atoms, the alkyl group as represented by R_3 or R_4 contains up to 4 carbon atoms, the aryl group as represented by R_1, R_2, R_5, R_6, and R_7 is a substituted or unsubstituted phenyl group or a substituted or unsubstituted naphthyl group, and the aryl group as represented by Q_1 or Q_2 is an unsubstituted phenyl group, an unsubstituted naphthyl group, or a phenyl or naphthyl group substituted with a substituent other than sulfo and carboxyl groups.

H1337
PROCESS FOR BIODEGRADATIOON OF SOIL CONTAMINANTS THAT CONTAIN VOLATILE/SEMIVOLATILE COMPONENTS

Ronald E. Hoeppel, Oak View, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 21, 1992, Ser. No. 948,036
Int. Cl.[5] C12M *1/04, 1/06*
U.S. Cl. 435—313 **15 Claims**

1. An apparatus for the continuous treatment of soils contaminated with volatile and nonvolatile hydrocarbon contaminants, said apparatus biodegrading said volatile and nonvolatile hydrocarbon contaminants thereby rendering said soils environmentally safe, said apparatus comprising:

an enclosed primary vessel having a removable top and a bottom, said enclosed primary vessel being adapted to receive and hold said contaminated soils so as to allow said hydrocarbon contaminants to be removed from the soils within said enclosed vessel;

a plurality of evenly spaced air diffusers positioned at the bottom of said enclosed vessel;

first pumping means for providing moist air to said enclosed vessel and for forcing said moist air through said air diffusers in an upward direction through said enclosed vessel so as to remove said volatile hydrocarbon contaminants from said soils;

a plurality of evenly spaced air intakes positioned at the top of said enclosed vessel;

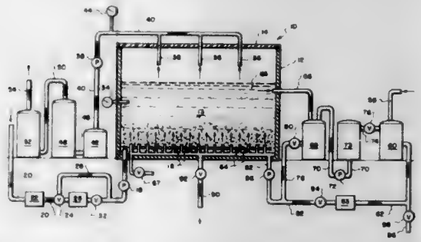
second pumping means for withdrawing said moist air including said volatile hydrocarbon contaminants from said enclosed vessel through said air intakes;

a vapor phase bioreactor connected to said second pumping means for removing said volatile hydrocarbon contaminants from said moist air withdrawn from said enclosed vessel;

a granular activated carbon filter connected to said vapor phase bioreactor for absorbing any remaining hydrocarbon contaminants from said moist air withdrawn from said enclosed vessel;

said granular activated carbon filter having an air exhaust pipe, said granular activated carbon filter expelling environmentally safe non-polluted air through said air exhaust pipe;

a plurality of evenly spaced water jets positioned at the bottom of said enclosed vessel;



third pumping means connected to said enclosed vessel for providing water to said enclosed vessel and for forcing water provided to said enclosed vessel through said water jets in an upward direction through said enclosed vessel so as to remove said nonvolatile hydrocarbon contaminants from said soils;

first treatment tank means connected to said third pumping means for storing water to be provided to said enclosed vessel, said first treatment tank means having therein surfactants, said surfactants being added to the water stored within said first treatment tank means to allow the water provided to said enclosed vessel to penetrate and loosen said nonvolatile hydrocarbon contaminants from said soils, the water having said nonvolatile hydrocarbon contaminants added thereto forming a supernatant, said supernatant being formed within said vessel above said contaminanted soils and below said evenly spaced air intakes, said supernatant including oil sludge;

second treatment tank means connected to said enclosed vessel;

fourth pumping means connected to said second treatment tank means for withdrawing said supernatant from said enclosed vessel and providing said supernatant to said second treatment tank means, said oil sludge and heavy nonvolatile hydrocarbon contaminants within said supernatant settling to the bottom of said second treatment tank means;

third treatment tank means connected to said fourth pumping means, said third treatment tank means having nutrients to effect biological growth of microorganisms within said nonvolatile hydrocarbon contaminants such that the remainder of said nonvolatile hydrocarbon contaminants are degraded and converted into a non-toxic condition;

said third treatment tank means being connected to said first treatment tank means so as to return water treated within said second and third treatment tank means to said first treatment tank means.

H1338
OILED POLYMER AND PROCESS FOR THE PRODUCTION THEREOF

Steven S. Chin, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 31, 1991, Ser. No. 816,508
Int. Cl.[5] C08K *5/02*
U.S. Cl. 524—379 **14 Claims**

1. An oiled polymer comprising a styrene-isoprene-styrene block copolymer and from about 5 to 50 parts of oil.

H1339
AQUEOUS PROCESS FOR RECYCLING ACETAL POLYMER AND MOLDINGS THEREOF

Leslie M. Blair, 42 Lake Dr., Parkersburg, W. Va. 26101

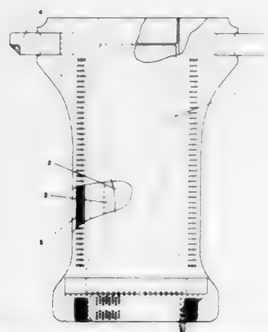
Filed Jun. 3, 1992, Ser. No. 893,064
Int. Cl.[5] C08G *2/00*
U.S. Cl. 528—230 **11 Claims**

1. An aqueous process for recycling acetal polymer, and moldings thereof, into a formaldehyde monomer solution by heating, under pressure, a slurry of at least one acetylpolymer, water, and an acid decomposition catalyst until the acetyl polymer is dissolved, thereby resulting in a solution comprised of formaldehyde monomer.

H1340
DISPOSABLE SANITARY GARMENT

Jerry J. Yetter, and Charles D. Broaddus, both of The Procter & Gamble Company, Miami Valley Laboratories, P.O. Box 398707, Cincinnati, Ohio 45239-8707

Continuation of Ser. No. 758,253, Aug. 26, 1991, abandoned, which is a continuation of Ser. No. 452,998, Dec. 19, 1989, abandoned. This application Mar. 20, 1992, Ser. No. 855,148
Int. Cl.[5] A61F *13/16*
U.S. Cl. 604—376 **15 Claims**



12. A disposable absorbent structure comprising a water-permeable topsheet, a water-impermeable backsheet, and an absorbent core, said structure being characterized in that said absorbent core comprises oxidized cellulose.

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REISSUES

JULY 5, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,653

HETEROCYCLIC SPIRO COMPOUNDS AND METHODS FOR PREPARING THE SAME

Shin-ichi Tsukamoto; Hitoshi Nagaoka, both of Tokyo; Shinji Usuda, Ushiku; Masatomi Harada, Ohmiya, and Toshinari Tamura, Hasuda, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Original No. 4,940,795, dated Jul. 10, 1990, Ser. No. 254,375, Oct. 5, 1988. Application for reissue Jul. 7, 1992, Ser. No. 909,639

Claims priority, application Japan, Oct. 5, 1987, 62-252104; Nov. 12, 1987, 62-286297; Apr. 5, 1988, 63-84327

Int. Cl.[5] **C07D** *705/02*

U.S. Cl. 546—16 **2 Claims**

1. 2,8-Dimethyl-3-methylene-1-oxa-8-azaspiro[4,5]decane *or a pharmaceutically acceptable salt thereof.*

Re. 34,654

ELECTRONIC STILL CAMERA WITH SLOW-IN, FAST OUT MEMORY ADDRESSING

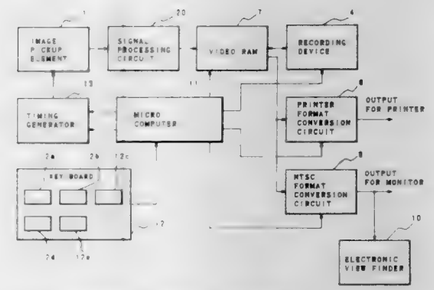
Masao Yamawaki, Kabushiki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Original No. 4,903,132, dated Feb. 20, 1990, Ser. No. 248,713, Sep. 26, 1988. Application for reissue Feb. 20, 1992, Ser. No. 838,649

Claims priority, application Japan, Sep. 26, 1987, 62-241055

Int. Cl.[5] **H04N** *5/76*

U.S. Cl. 348—231 **37 Claims**



12. An electronic still camera comprising:

an image pickup means for photoelectrically converting an image of an object to output video signals comprising picture elements;

an image storage means for storing said video signals for at least one picture plane;

a recording means for recording said video signals read out from said image storage means;

a processing means for processing said video signals read out from said image storage means;

a first control means for synchronously writing, at a first clock frequency, the output video signals of said image pickup means to said image storage means; and

a second control means for synchronously reading out, at a second clock frequency, the video signals stored in said storage means to said processing means, said second clock frequency being different from said first clock frequency.

Re. 34,655

VEHICLE EXHAUST GAS SYSTEMS

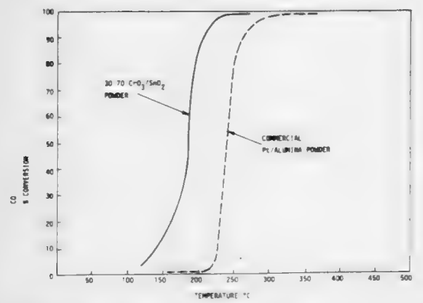
Philip G. Harrison, Widmerpool, and Peter J. F. Harris, Wantage, both of England, assignors to Arvin UK Limited, Lancashire, England

Original No. 4,908,192, dated Mar. 13, 1990, Ser. No. 163,819, Mar. 10, 1988. Application for reissue Mar. 12, 1992, Ser. No. 850,282

Claims priority, application United Kingdom, Aug. 8, 1986, 8619456

Int. Cl.[5] **B01D** *53/36*

U.S. Cl. 423—213.2 **8 Claims**



1. A method for the catalytic oxidation of carbon monoxide and unburnt hydrocarbon components of vehicle exhaust gas streams, which comprises using as the catalyst a mixed oxide catalyst composition consisting *essentially* of *a calcined mixture of* tin (IV) oxide (SnO_2) and chromium (VI) oxide (CrO_3) free from platinum and other noble metals or noble metal oxides, and containing a Sn:Cr weight ratio (calculated as SnO_2:CrO_3) in the range of 1:99 to 99:1, said catalyst composition having been obtained by impregnating tin (IV) oxide (SnO_2) with chromium (VI) oxide (CrO_3) *to form an impregnated product consisting of tin (IV) oxide (SnO_2) and chromium (VI) oxide (CrO_2)* and calcining the resulting *impregnated* product.

Re. 34,656

USE OF TETRACYCLINE TO ENHANCE BONE PROTEIN SYNTHESIS AND/OR TREATMENT OF BONE DEFICIENCY

Lorne M. Golub, Smithtown; Thomas F. McNamara, Port Jefferson, and Nungavaram S. Ramamurthy, Smithtown, all of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Original No. 4,925,833, dated May 15, 1990, Ser. No. 946,726, Dec. 29, 1986. Continuation-in-part of Ser. No. 699,048, Feb. 7, 1985, Pat. No. 4,704,383, which is a continuation-in-part of Ser. No. 566,517, Dec. 29, 1983, Pat. No. 4,666,897. Application for reissue May 4, 1992, Ser. No. 878,172

Int. Cl.[5] **A61K** *31/65*

U.S. Cl. 514—152 **20 Claims**

20. A method of treating mammal with bone deficiency disease by enhancing bone protein synthesis in said mammal which comprises administering to the mammal an effective amount of a tetracycline.

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PLANT PATENTS

GRANTED JULY 5, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,813
ROSE PLANT 'AUSVELVET'
David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England
Filed Sep. 30, 1992, Ser. No. 954,959
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the bush class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its bushy growth, floriferousness, and highly scented flowers.

8,814
ROSE PLANT NAMED 'AUSCLUB'
David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England
Filed Sep. 30, 1992, Ser. No. 955,911
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant of the *Rosa hybrida* class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its pink flowers paler than those of Mary Rose but darker than those of Chaucer and having glossy foliage.

8,815
MINIATURE ROSE PLANT NAMED 'MORDASHIN'
Ralph S. Moore, 2519 E Noble Ave., Visalia, Calif. 93277
Filed Dec. 14, 1992, Ser. No. 992,819
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct cultivar of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers, basically yellow and edged with red, with the reverse being yellow, the bud being pointed in the early opening stage, resembling in form Rise'N Shine (miniature — U.S. Plant Pat. No. 4,231) with the open flower being very double and rounded with 40 or more petals; and further characterized by a plant of compact, vigorous, upright shape with main stems and shoots with less than average thorniness, the said plant being easy to propagate from soft wood cuttings with an abundance of small semi-glossy foliage, the flowers being usually borne singly on medium length stems.

8,816
***GERBERA JAMESONII* PLANT NAMED TEREEUW**
Lambertus J. M. Stravers, Carlsbad, Calif., assignor to Terra Nigra B.V., De Kwakel, Netherlands
Filed Sep. 7, 1993, Ser. No. 116,620
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gerbera plant named 'Tereeuw', as illustrated and described, characterized by its semi-double type, a distinct warm yellow ray floret which is a solid yellow color throughout, a very distinctive green disc floret, the outermost florets of which display yellow stigmas and the middle flowers of which show yellow anthers, yellow perianth lobe color and 120 mm overall flower diameter.

8,817
POINSETTIA PLANT "490 PINK"
Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.
Filed May 4, 1993, Ser. No. 57,304
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—86.3 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its intense dark green foliage, pink bracts and epinasty resistance.

8,818
GERANIUM PLANT NAMED FISCASA
Ingeborg Schumann, Albstadt, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland
Filed Jul. 21, 1993, Ser. No. 94,324
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant named Fiscasa, as illustrated and described.

8,819
ANTHURIUM PLANT NAMED COTTON CANDY
Richard J. Button, 1245 Obisbo Ave., Coral Gables, Fla. 33134, and Ann E. Lamb, Lake Placid, Fla., assignors to Richard J. Button, Coral Gables, Fla.
Filed Aug. 5, 1993, Ser. No. 102,236
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named Cotton Candy, as illustrated and described.

8,820
ANTHURIUM PLANT NAMED 94-4
Richard J. Henny, Tavares, Fla., assignor to Florida Foundation Seed Producers, Inc., Greenwood, Fla.
Filed Aug. 9, 1993, Ser. No. 103,572
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named 94-4, as illustrated and described.

8,821
ANTHURIUM PLANT NAMED WHITE ARISTOCRAT
Robert D. Hartman, Lake Placid, Fla., assignor to Twyford International, Inc., Sebring, Fla.
Filed Aug. 23, 1993, Ser. No. 110,719
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named White Aristocrat, as illustrated and described.

8,822
GUZMANIA PLANT NAMED ORIENTAL
Henri De Meyer, Destelbergen, Belgium, assignor to H. De Meyer - De Rouck, Laarne, Belgium
Filed Aug. 9, 1993, Ser. No. 104,506
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.8 **1 Claim**

1. A new and distinct cultivar of Guzmania plant named Oriental, as illustrated and described.

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8,823

HOP PLANT NAMED "H87207-2"

Gene Probasco, Yakima, Wash., assignor to John I. Haas, Inc., Yakima, Wash.

Filed Dec. 17, 1992, Ser. No. 993,067

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—100 1 Claim

1. A new variety of hop plant substantially as herein shown and described characterized particularly as to novelty by its cones' unusually high percentage of beta acids when compared to its female parent variety Galena (unpatented).

8,824

HOP PLANT NAMED "H87203-1"

Gene Probasco, Yakima, Wash., assignor to John I. Haas, Inc., Yakima, Wash.

Filed Dec. 17, 1992, Ser. No. 993,068

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—100 1 Claim

1. A new variety of hop plant substantially as herein shown and described characterized particularly as to novel by its cones' usually high percentage of beta acids when compared to its female parent variety Galena (unpatented).

PATENTS

GRANTED JUL. 5, 1994

ERRATA

For CLASS	See PATENT NO.
134-167	5,325,609
56-010	5,325,650
68-012	5,325,677
477-110	5,325,740
601-034	5,325,849
137-091	5,325,852
607-122	5,326,870
269-182	5,326,076
280-735	5,326,146
264-022	5,326,393
252-584	5,326,423
117-105	5,326,424
117-104	5,326,425
210-122	5,326,458
210-150	5,326,459
210-160	5,326,460
210-186	5,326,461
427-301	5,326,626
428-457	5,326,839
524-813	5,326,853
530-326	5,326,860
540-474	5,326,861
540-456	5,326,862
540-200	5,326,863
534-577	5,326,865
534-792	5,326,866
540-575	5,326,870
570-172	5,326,913
570-176	5,326,914
505-162	5,326,986
502-211	5,327,015
257-380	5,327,224
348-188	5,327,226
348-489	5,327,227
348-647	5,327,228
348-742	5,327,229
348-008	5,327,230
348-079	5,327,231
348-412	5,327,232
348-152	5,327,233
348-399	5,327,234
348-441	5,327,235
348-495	5,327,236

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ERRATA—CONTINUED

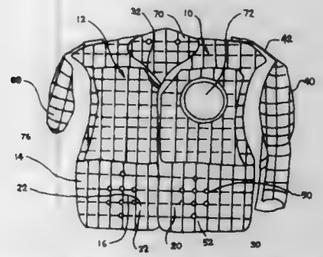
348-476	5,327,237
348-473	5,327,238
348-607	5,327,239
348-607	5,327,240
348-606	5,327,241
348-606	5,327,242
348-656	5,327,243
348-594	5,327,244
348-723	5,327,245
348-246	5,327,246
348-100	5,327,247
346-108	5,327,338
346-160	5,327,339
382-044	5,327,501
382-056	5,327,502
382-058	5,327,503
348-097	5,327,533
395-800	5,327,579

PATENTS

GRANTED JULY 5, 1994

GENERAL AND MECHANICAL

5,325,537
ATHLETIC SAFETY JACKET
Sebastino T. Marion, 21821 Lakeview, St. Clair Shores, Mich. 48080
Filed Jul. 26, 1991, Ser. No. 736,548
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **7 Claims**



1. An athletic safety protector for protecting a wearer from projectiles in sports activities comprising in combination a jacket having an upper torso covering portion forming a shield and removably attached sleeves attached to the upper torso covering portion at the shoulders with hook and loop features wherein each sleeve forms arm shields; said shields are constructed of a plurality of rigid members over their entirety comprised of compressed dense plastic closed cell polyethylene foam;

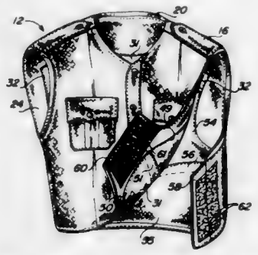
said rigid members being enclosed between two fabric layers;

said fabric layers being quilted together between said rigid members forming flattened compression borders therebetween to allow the bending of the shields and freedom of movement to the wearer; some of said flattened compressed borders between said rigid members having apertures therein to allow air flow between the wearer and the environment to cool the wearer and to lessen perspiring of the wearer while said jacket is worn; wherein said rigid members are square shaped in plan view and diamond shaped in cross-section forming a pyramidal shaped projection toward both the inside and outside of the garment.

5,325,538
BODY ARMOR VEST FOR UNOBTRUSIVE WEAR OVER A SHIRT
Richard W. Schoenweiss, 1121 Algoma St., Deltona, Fla. 32735, and Cheryl K. Allen, 1154 Arrowhead Trail, Enterprise, Fla. 32725
Continuation of Ser. No. 799,361, Nov. 27, 1991, Pat. No. 5,157,792, which is a continuation of Ser. No. 642,711, Jan. 17, 1991, abandoned, which is a continuation of Ser. No. 402,215, Sep. 1, 1989, abandoned. This application Oct. 26, 1992, Ser. No. 965,976
Int. Cl.[5] A41D *1/04*
U.S. Cl. 2—2.5 **12 Claims**

1. A body armor vest suitable for unobtrusive wear over a shirt having a collar, sleeves and front, back and side outside surfaces, said vest comprising:

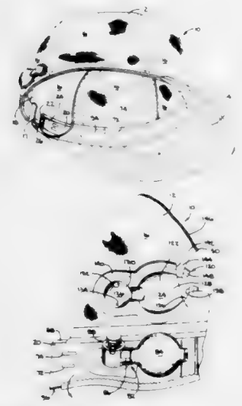
a unitary carrier member including an outer layer with integrally formed front, rear and side portions having outer and inner surfaces; said outer surfaces being dimensioned, configured and adapted to simulate the outside surfaces of the shirt, and said outer layer being continuous and unbroken except for a lower edge, first and second arm openings through which the sleeves can be extended, a neck opening through which the collar can be extended, and a side opening between said first arm opening and said lower edge; means releasably closing said side opening; a front inner layer secured to said inner surface of said outer layer front portion to define a front pocket with a front pocket opening; means releasably closing said front pocket opening; a rear inner layer secured to said inner surface of said outer layer rear portion to define a rear pocket with a rear pocket opening; and means releasably closing said rear pocket opening;



a first flexible ballistic panel removably received within said front pocket in wraparound front torso protecting position therein; and

a second flexible ballistic panel removably received within said rear pocket in wraparound rear torso protecting position therein.

5,325,539
HEADWEAR PIECE WITH COVER FOR SIZE ADJUSTMENT ACTUATOR
Robert A. Kronenberger, Deerfield, Ill., assignor to American Needle, Buffalo Grove, Ill.
Continuation-in-part of Ser. No. 931,879, Aug. 18, 1992, Pat. No. 5,315,715, and a continuation-in-part of Ser. No. 926,505, Aug. 7, 1992. This application Aug. 28, 1992, Ser. No. 938,843
Int. Cl.[5] A42B *1/22*
U.S. Cl. 2—195.2 **25 Claims**



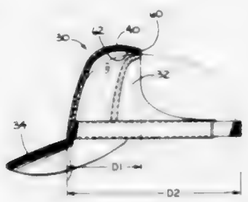
1. A headwear piece comprising:

a crown defining a first opening for reception of the head of a wearer;

an inflatable bladder;

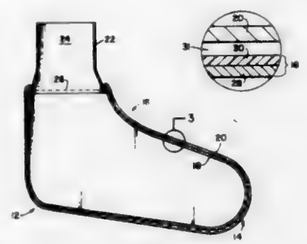
means for mounting the inflatable bladder to the crown so that the inflatable bladder resides between the crown and a wearer's head in the crown opening;
means for selectively introducing a fluid to the bladder;
means for covering the fluid introducing means and allowing operation of the fluid introducing means from a location externally of the crown; and
means for connecting the covering means to the crown,
said connecting means comprising a rim on the covering means, a bead, and means for captively holding at least a part of at least one of the inflatable bladder and crown between the rim and bead.

5,325,540
HEADWEAR PIECE WITH CROWN OPENING
Robert A. Kronenberger, Deerfield, Ill., assignor to American Needle, Buffalo Grove, Ill.
Filed Dec. 2, 1992, Ser. No. 984,466
Int. Cl.[5] A42B *1/04*
U.S. Cl. 2—209.3 **10 Claims**



1. A baseball-style headwear piece comprising:
a crown for replacement on the head of a wearer and having a front and rear and a top and bottom,
said crown being defined at least in part by first and second panels defined at least in part from a flexible fabric and joined to each other;
a bill on the headwear piece projecting forwardly of the crown,
there being means on the crown for gripping the head of a wearer to maintain the headwear piece in place on a wearer's head,
said crown having a front wall with a forwardly facing surface,
said front wall blending into a top wall that is angularly disposed to the front wall, extends rearwardly and terminates at an edge that bounds an opening in the crown through which a substantial portion of a wearer's head can be exposed with the headwear piece in place on a wearer's head,
said top wall having at least a portion that extends substantially horizontally to abut to a wearer's head to maintain the headwear piece in a consistent location on a wearer's head,
at least one of said first and second panels being pre-formed into a shape to define a portion of the front and top wall and joined to the other of the first and second panel along a vertical seam so that the other of the first and second panels retains the pre-formed shape of the one of the first and second panels,
said front wall curving into laterally spaced side walls,
said front wall, top wall, and side walls being configured to cause the appearance of the headwear piece from the front thereof to be substantially the same as that of a conventional baseball-style cap,
said top wall edge extending from the front of the crown no more than one half the distance between the front and rear of the crown.

5,325,541
WATERPROOF OVERSOCK
Ellery T. Willard, Johnstown, N.Y., assignor to Gates-Mills, Inc., Johnstown, N.Y.
Filed Jan. 29, 1993, Ser. No. 11,506
Int. Cl.[5] A41B *11/00*
U.S. Cl. 2—239 **16 Claims**



1. A waterproof oversock comprising:
an inner liner composed of a waterproof, water vapor permeable, substantially nonstretchable fabric, said inner liner having an oversized, foot shaped body for loosely enclosing a wearer's foot, said foot shaped body including an aperture at an upper end for receiving a wearer's foot therein;
a substantially nonstretchable, protective outer fabric shell for enclosing said inner liner, said outer shell including an oversized, foot shaped body; and
means for securing the foot shaped body of said outer shell about the foot shaped body of said inner liner.

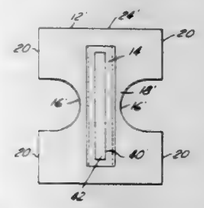
5,325,542
DECORATIVE SOCK AND METHOD
Kimberly S. Lenerville, P.O. Box 131, Toast, N.C. 27049
Continuation of Ser. No. 943,030, Sep. 10, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,687
Int. Cl.[5] A41D *27/08*
U.S. Cl. 2—244 **18 Claims**



1. A sock with a cuff having a free end for producing a distinctly audible sound upon movement while being worn comprising: a plurality of streamers each of said streamers attached at one end to the free end of said cuff, a plurality of hard, relatively heavy bangle-like objects each attached to the other ends of said streamers, said objects for producing audible sound upon collision with another of said objects during sock movement.

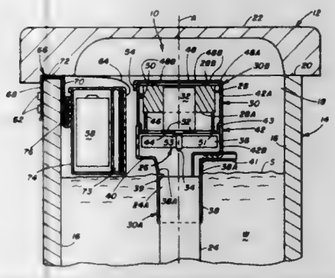
5,325,543
UNDERGARMENT WITH A POCKET FOR RELEASABLY SECURING AN ABSORBENT PAD
Tanya R. Allen, 18984 Fairfield, Detroit, Mich. 48221
Continuation of Ser. No. 653,623, Jan. 11, 1991. This application Jul. 27, 1992, Ser. No. 919,981
Int. Cl.[5] A41B *9/12*
U.S. Cl. 2—406 **16 Claims**

1. An improved undergarment comprising:
a body portion configured initially in an hour-glass shape to partially form a pair of leg openings laterally spaced and separated by a crotch portion, and two pairs of body sides, each pair being longitudinally spaced;
a one piece pocket portion sized to be substantially coextensive with a standard sanitary napkin and configured to fit between said leg openings and having a peripheral edge defined by a pair of longitudinally spaced transverse edges and a pair of laterally spaced side edges;
each pair of body sides being joined to form a waist opening



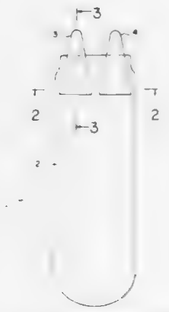
and complete the formation of the pair of leg openings; and
said pocket portion overlaying said crotch portion and being attached to the body portion along the side edges to form a pocket and a pair of longitudinally spaced openings between the pocket portion and the body portion so that a user's fingers may be inserted within either one of the openings to grasp an end of the sanitary napkin and pull the sanitary napkin through the other opening and into a desired location within the pocket.

5,325,544
TOILET FLUSH TANK AND BOWL AIR DEODORIZING APPARATUS
Michael S. Busch, 509 S. Grandview, Apt. 2, Daytona Beach, Fla. 32118
Filed Nov. 27, 1992, Ser. No. 982,399
Int. Cl.[5] E03D *9/052*
U.S. Cl. 4—213 **14 Claims**



1. An air deodorizing apparatus for use in a toilet having a bowl, a flush tank connected with and extending above the bowl for holding water to use in flushing the bowl, a top cover overlying the flush tank, and an overflow pipe disposed in the flush tank and spaced below the top cover, the overflow pipe having an upper open end providing an open passage between the bowl and the interior of the flush tank above the overflow pipe permitting passage of air between the bowl and flush tank and passage of water in the flush tank overflowing the upper open end of the overflow pipe downward through the overflow pipe into the bowl, said air deodorizing apparatus for recirculating and filtering toilet flush tank and bowl air, comprising:
(a) a fan having a fan blade being rotatable for inducing a flow of air past said fan upon operation thereof;
(b) an annular air filter having opposite air flow inlet and outlet sides;
(c) a housing capable of mounting within the flush tank of the toilet about and above the upper open end of the overflow pipe in the toilet tank between the overflow pipe and top cover of the toilet, said housing including means for supporting said fan within said housing in axially aligned relation with the toilet tank overflow pipe and for mounting said annular air filter in concentric relation around said fan with said fan blade rotatable adjacent to said air flow inlet side of said annular filter; and
(d) means connected to said fan for controlling operation of said fan;
(e) said housing including
(i) a lower portion having a tubular sleeve adapted to fit over the upper open end of the overflow pipe in the flush tank, and
(ii) an upper portion of said housing having an outer annular wall supported by said lower portion of said housing and defining a chamber, a transverse wall extending across said outer annular wall and the flow path of air from said lower portion of said housing through said chamber of said upper portion thereof, said transverse wall supporting said motor in said chamber and having openings defined therein permitting passage of air flow upwardly through said chamber, and an intermediate annular wall mounted on and extending upwardly from said transverse wall, said intermediate wall being shorter in height than said outer wall and spaced radially inwardly therefrom, said intermediate wall supporting said annular air filter above said transverse wall.

5,325,545
ANIMAL SOCKS FOR CHILDREN
Takahiro Hirano, Sano, Japan, assignor to Hirano Seni Co., Ltd., Japan
Filed Oct. 30, 1992, Ser. No. 969,493
Claims priority, application Japan, Oct. 31, 1991, 3-089883[U]; May 28, 1992, 4-035950[U]
Int. Cl.[5] A41B *11/00*
U.S. Cl. 2—239 **4 Claims**

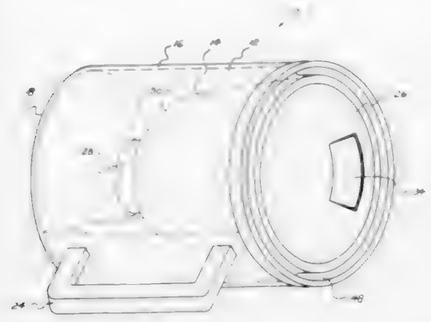


1. A pair of socks, each of the socks comprising:
a sock main body for covering a foot;
a pair of bags knitted integrally with and continuously to the sock main body of each of the socks, the bags being aligned traversely on an upper portion of the sock main body and extending upright from respective opening portions located at base portions of the bags, an inside of the bags being in communication with an inside of the sock main body at the respective opening portions of the bags;
stuffing simulating the shape of the ears of an animal inserted into the inside of the bags; and
means for constricting a diameter of the opening portions of the bags after the stuffing have been inserted into the inside of the bags to prevent the stuffing from falling out of the bags, wherein the bags, when filled with the stuffing

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and the opening portions thereof are constricted, form the simulated ears of an animal.

5,325,546
HAND HELD SPITTOON
Norman B. Setliff, Rte. 1, Box 40c, Coolridge, W. Va. 25825
Filed May 7, 1993, Ser. No. 57,862
Int. Cl.[5] A61J *19/00*
U.S. Cl. 4—267 9 Claims



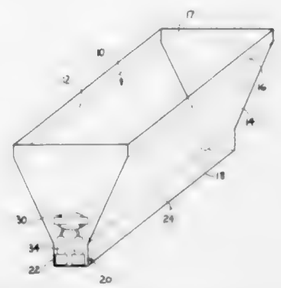
1. A spittoon comprising:
a receptacle; and
a sleeve disposed interiorly of said receptacle, said sleeve having an upper and lower end and a sidewall, said sleeve further comprising
means defining an opening in said lower end thereof for providing a restrictive passage into said receptacle,
means defining a drain hole in said sidewall thereof, and
a drain plug received by said drain hole.

5,325,547
WATER CLOSET TANK FLUSH VALVE
Wilton J. Pino, 922 Sharp Rd., Baton Rouge, La. 70815
Filed Jan. 6, 1993, Ser. No. 1,042
Int. Cl.[5] E03D *1/34*
U.S. Cl. 4—378 5 Claims



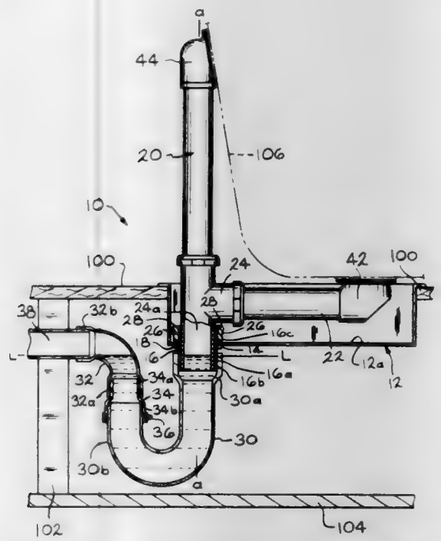
1. A flush valve extension assembly for use in a water closet having a tank for holding water to be conveyed through a drain tube to a bowl by activation of an existing flush valve having a flexible flush valve member adapted to seat on an existing valve seat on said drain tube, said flexible flush valve member being pivotally attached to an overflow tube positioned in the tank, said flush valve extension assembly comprising:
(a) a tube assembly having formed therein a channel for receiving a flexible strap member, said assembly including a shoulder member extending outward from an outer surface of said tube assembly in a position to divide said tube assembly into an upper section above said shoulder member, and a lower section below said shoulder member, said upper section being of a predetermined length and having a valve seat formed at the upper end thereof, said lower section being dimensioned to be received within said existing drain tube so as to allow said shoulder member to seat on said existing valve seat;
(b) a gasket fittable about the outer surface of said lower section in a position to form a water tight seal between said shoulder member and said existing flush valve seat; and
(c) a flexible strap having opposite ends connectable to one another in a plurality of selectable positions so as to form a loop, said loop having a portion thereof confined in said channel and a portion thereof extending around said overflow tube in order to retain said tube assembly on said drain tube.

5,325,548
MILKHOUSE SINK
Ronald G. Forbes, RR3 Ingersol, Ontario, Canada, and Mitchell R. Anderson, 80 Front St East, No. 623, Toronto, Ontario, Canada N5E 1T4
Filed Jul. 6, 1992, Ser. No. 908,077
Claims priority, application Canada, Jul. 3, 1991, 2046168
Int. Cl.[5] A47K *1/04*
U.S. Cl. 4—638 13 Claims



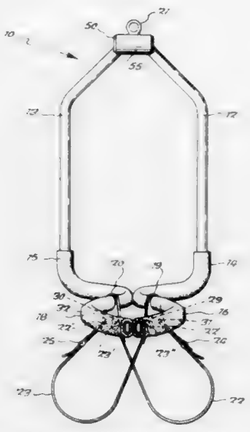
1. In a washing apparatus for use on a dairy farm for washing a milk pipeline system, in which the apparatus includes at least one milking machine unit, the unit comprising a set of four inflations each having a predetermined length, and includes a means for flushing wash water through the units, and the apparatus includes an elongate milkhouse sink;
an improvement to the milkhouse sink, wherein:
the sink includes a narrow trough extending longitudinally coextensively along the sink bottom having substantially vertical side-wall, and the trough further having a depth and dimensons such that the inflations extend a substantial distance into the trough and the trough alone will hold and constrain the milking machine inflations substantially upright in the lateral direction at the sink bottom during the washing procedure;
the sink above the trough is wider than the trough, and has the capacity to contain enough water to flush through the pipeline system.

5,325,549
TRAP FITTING ASSEMBLY FOR MOUNTING IN FLAMMABLE FLOORS
Kenneth R. Cornwall, 4963 Springfield Dr., Dunwoody, Ga. 30338
Continuation of Ser. No. 700,406, May 15, 1991, abandoned.
This application Mar. 31, 1993, Ser. No. 40,578
Int. Cl.[5] E03C *1/20*
U.S. Cl. 4—679 21 Claims



1. An improved trap fitting assembly which prevents smoke and fire from spreading through a flammable floor of a building through the trap fitting assembly which comprises:
(a) a non-flammable support means adapted for mounting in an opening in the floor;
(b) a non-flammable nipple in the form of a short segment of pipe mounted in an opening through the support means, the nipple having opposed ends with an inside wall forming an opening along a longitudinal axis between the ends and with the nipple having an outside wall threaded along the length of the nipple and secured to the opening in the support means by a threaded non-flammable ring seal, wherein an extension of the nipple projects below the support means;
(c) a flammable, elongated pipe mounted above the nipple having opposed upper and lower open ends along the axis, the lower end of the pipe mounted on the inside wall of the nipple and secured to the inside wall of the nipple by a jam nut threadably mounted on the outside wall of the nipple wherein a ring gasket is mounted adjacent the jam nut so as to form a waterproof seal between the outside wall of the nipple and the opening of the support means to prevent water from leaking between the outside wall of the nipple and the opening of the support means; and
(d) a non-flammable J-pipe removably mounted to the extension of the nipple below the opening in the support means by a connection means, wherein the nipple provides a non-flammable connector between the J-pipe and the support means such as to prevent the J-pipe from separating from the support means during a fire and wherein in use the J-pipe is filled with water in a lower portion of the J-pipe thereby preventing smoke and fire from moving through the nipple.

5,325,550
APPARATUS FOR USE IN TRANSPORTING A DISABLED PERSON
Robert C. Dearstyne, 387 Willow Green Dr., Amherst, N.Y. 14228, and Abir Mullick, 341 Parkside Ave., Buffalo, N.Y. 14150
Filed Oct. 23, 1992, Ser. No. 965,995
Int. Cl.[5] A61G *7/10*
U.S. Cl. 5—89.1 2 Claims



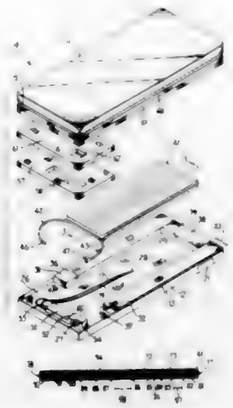
1. A carriage for a person which may be attached to a transporting means, said carriage comprising:
a) a frame;
b) means attached to the frame for holding the torso of the person in an essentially vertical position; and
c) a thigh retaining means, said thigh retaining means comprising first and second strap attachment means secured to the frame, said first attachment means being positioned above a first thigh of the person when the thigh retaining means is engaged and said second strap attachment means being positioned above a second thigh of the person when the thigh retaining means is engaged, a first strap attached to said first strap attachment means, and when the thigh retaining means is engaged, passing under said first thigh and up to and attached to the second strap attachment means, and a second strap attached to the second strap attachment means, and when the thigh retaining means is engaged, passing under said second thigh and up to and attached to the first strap attachment means, so that when the straps are so attached, the thighs of the person are held in a substantially horizontal position.

5,325,551
MATTRESS FOR RETARDING DEVELOPMENT OF DECUBITUS ULCERS
James G. Tappel, Prairieville Township, Barry County; Christopher J. Hopper, Oshtemo Township, Kalamazoo County, and Stephen C. Travis, Paw Paw Township, VanBuren County, all of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed Jun. 16, 1992, Ser. No. 900,067
Int. Cl.[5] A61G *7/04*
U.S. Cl. 5—453 37 Claims

1. An apparatus comprising: a mattress unit having an inflatable bladder therein, and having selectively actuable means therein responsive to a gas pressure in said bladder for selectively supplying pressurized gas to and selectively removing gas from said inflatable bladder so as to automatically maintain said gas pressure in said bladder substantially at a specified

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pressure value, wherein said selectively actuable means is disposed in a foot support portion of said mattress unit, and



wherein said bladder is disposed in an upper body support portion of said mattress unit.

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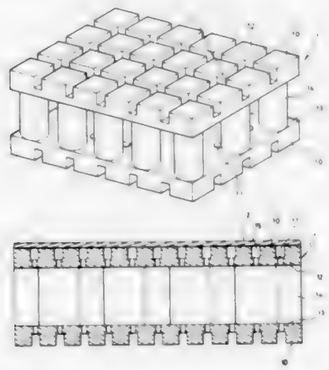
VENTILATED MATTRESS STRUCTURE

Lin S. Fong, P.O. Box 82-144, Taipei, Taiwan

Filed Jul. 12, 1993, Ser. No. 89,587

Int. Cl.[5] A47C *27/14*

U.S. Cl. 5—408 **1 Claim**



1. A bed comprising:

an upper member having a plurality of ventilation holes and a plurality of protuberances on a top, said upper member having a flat bottom;

a lower member having a plurality of ventilation holes and a plurality of protuberances on a bottom, said lower member having a flat top;

a plurality of cylindrical members located between said upper member and said lower member and formed integrally with the bottom of said upper member and the top of said lower member;

said bed being integrally made of foamed polyethylene.

5,325,553

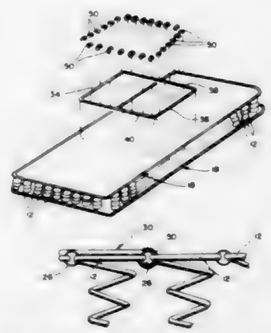
MATTRESS SPRING STRUCTURE WITH REINFORCING FRAME IN THE LUMBAR AREA

Craig M. Ripley, Proctorville, Ohio; Charles B. Clark, Huntington, W. Va.; Thomas L. McFadden, and Jerome M. Sachs, both of Baltimore, Md., assignors to Namaco Enterprises, Huntington, W. Va.

Continuation of Ser. No. 40,506, Mar. 31, 1993, abandoned, which is a continuation of Ser. No. 934,103, Aug. 21, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,801

Int. Cl.[5] A47C *27/04, 27/07*

U.S. Cl. 5—475 **9 Claims**



1. In a mattress spring structure,

a plurality of coil springs arrayed in longitudinal and transverse rows of such coil springs between upper and lower margins and opposite side margins of said spring structure, with the coils in each row aligned with the others in each said row, the structure including a border piece which defines the said upper, lower and side margins,

means securing each coil spring of each transverse row in paired joinder to a coil spring of an adjacent transverse row, a central area of the spring structure being defined by a selected succession of transverse rows of coil springs,

a strengthening frame member receivable exteriorly against and encircling a major expanse of the spring structure central area, the frame member comprising

a first transverse frame segment extending along a juncture of the coil springs of a transverse row first in selected succession of such with an extra succession transverse row adjacent thereto, there being joining members closely joining together said first transverse segment and each joined pair of coil springs in the said first succession transverse row and the extra succession transverse row adjacent thereto,

a second transverse frame segment extending along a juncture of the coil springs of a transverse row last in the selected succession of such with an extra succession transverse row adjacent thereto, there being joining members closely joining together said second transverse segment and each joined pair of coil springs in the last transverse row and the extra succession transverse row adjacent thereto, and

a pair of longitudinal frame segments spaced inwardly from the spring structure side margins and extending longitudinally in between adjacent longitudinal rows of coil springs, opposite ends of the transverse frame members being connected to opposite ends of the longitudinal frame members, there being joining members, closely joining together said longitudinal frame segments and successive ones of pairs of coil springs comprised each of a coil spring in one of the adjacent longitudinal rows and a coil spring in the other of the adjacent longitudinal rows.

5,325,554

RETAINER FOR BEDCLOTHES

David M. Lewis, 2307 SW. 15th St., Apt. #6, Deerfield Beach, Fla. 33442

Filed Dec. 21, 1992, Ser. No. 993,680

Int. Cl.[5] A47C *21/02*

U.S. Cl. 5—498 **9 Claims**



1. In a combination of a mattress, having an article of bedclothing thereon, with a retainer means for holding said article in flat and smooth position on said mattress, said mattress having broad upper and lower faces and narrow vertical sides, said retainer means comprising:

A) a hem means extending along at least two opposing edges of the article of bedclothing, each of said hem means provided with an aperture at a location intermediate the ends thereof;

B) an elongate, rigid batten means removably inserted within each said hem means for applying tension forces uniformly along each of said edges, each batten means provided with attachment means at a location substantially equidistant from the ends thereof, said attachment means arranged for access through said aperture;

C) an elongate, flaccid, tension member selected from the group consisting of cord, string, tape strip and ribbon, said tension member having a flaccid intermediate portion and two opposed flaccid end portions, each end portion provided with connecting means for removably attaching to said attachment means on said batten means when said intermediate portion passes beneath said lower face of said mattress and said end portions extend upward along opposed sides of said mattress said connecting means being spaced apart along said tension member by an adjustable distance therebetween, each of said end portions being provided with tension maintaining means for applying and maintaining tension on said connecting means by shortening the distance of said tension member between said connecting means to thereby pull said article of bedclothing down upon said mattress.

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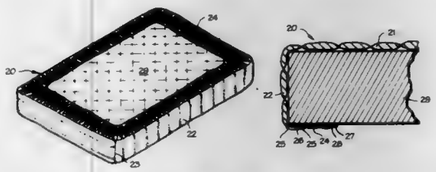
INELASTIC MATTRESS COVERING WITH AN ELASTIC UNDERSKIRT

John W. Whitley, Monroe, N.C., assignor to Perfect Fit Industries, Inc., Monroe, N.C.

Filed Apr. 9, 1993, Ser. No. 45,643

Int. Cl.[5] A47G *9/04, 9/02*

U.S. Cl. 5—500 **21 Claims**



1. A mattress covering comprising:

a substantially inelastic top portion dimensioned to cover the top surface of mattresses of a predetermined standard top surface size;

a substantially inelastic side skirt extending generally perpendicularly from the periphery of said top portion and having corners extending generally straight and generally perpendicularly from said top portion for fitted disposition of said side skirt on the side walls and corners of any mattress of said standard top surface size and a predetermined standard range of heights; and

an elastic underskirt extending from the periphery of said side skirt an extent sufficient to extend under the side walls and corners of the highest height mattress of said standard height range to retain said top portion and said side skirt in fitted relation on any mattress of said predetermined standard top surface size and predetermined standard height range.

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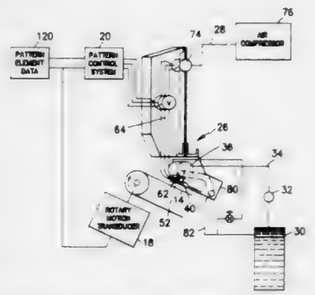
METHOD AND APPARATUS FOR MEASURING THE POSITION OF A DYE DEFLECTOR BLADE

William H. Stewart, Jr., Campobello; Charles A. Wethington, Pauline, and Jerry E. Bode, Green, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jul. 7, 1993, Ser. No. 88,502

Int. Cl.[5] D06B *1/02*

U.S. Cl. 8—151 **16 Claims**



1. An apparatus for applying liquids to a moving substrate comprising means for conveying the substrate in a predetermined path of travel, liquid applicator means having a row of outlets extending across and positioned above the substrate path for discharging a corresponding row of generally parallel, undeflected primary streams of liquid on a trajectory directed toward the substrate path, a source of electrically encoded pattern data, gas passage means positioned adjacent to said row of outlets and aligned with the discharge axes of the outlets for selectively deflecting, in accordance with pattern data from such data source, the trajectory of said primary streams of liquid emerging from said outlets with streams of gas from said gas passage means which intersect said primary streams of liquid, a liquid collection chamber positioned adjacent to said outlets and opposite from said gas passage means, said liquid collection chamber having an opening which extends along said row of outlets and which is positioned to receive said gas streams and primary liquid streams deflected by said gas streams and thereby prevent said streams from contacting said substrate, a liquid deflector blade having a longitudinal axis and supportably positioned in said opening with an outer edge of said liquid deflector blade extending along the opening and positioned closely adjacent said row of outlets to intercept and direct deflected liquid into the collection chamber and a means for precisely measuring the position of said liquid deflector blade in relation to said opening so that said liquid deflector blade may be adjusted along said longitudinal axis.

11. A process for applying liquids to a moving substrate comprising the steps of conveying the substrate in a predetermined path of travel, applying a row of generally parallel undeflected primary streams of liquid on a trajectory directed toward the substrate path, selectively deflecting said primary streams of liquid in accordance with patterned data with emerging stream of gas which intersect with primary streams of liquid, deflecting said gas streams and primary liquid streams off of a liquid deflector blade into a liquid collection chamber

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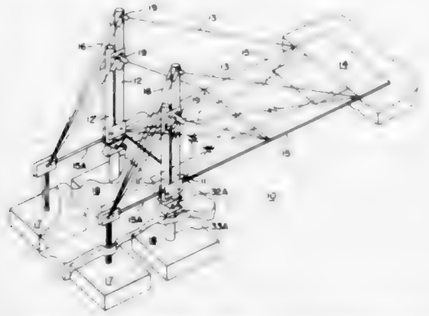
and measuring a position of said liquid deflector blade so that said liquid deflector may be located to precisely deflect said gas streams and primary liquid streams away from said substrate.

5,325,557

PORTABLE, DEMOUNTABLE BRIDGE TO FORD RIVERS AND THE LIKE

Julio P. Penuela, Transversal 3a. No. 87-15, Santa Fé de Bogotá, Colombia

Filed Jan. 22, 1992, Ser. No. 824,142
Int. Cl.[5] E01D *15/12, 5/00, 11/00*
U.S. Cl. 14—8 **13 Claims**



1. A portable, demountable bridge to ford rivers and the like, comprising:

a pair of footings for supporting the bridge, wherein the footings are buried at different heights in the soil, the footing buried closer to the object being crossed receiving a load in a downward direction, and the footing buried further from the object being crossed resisting an upward force that is produced by the bridge and objects on the bridge, wherein the soil is located directly over this further footing and acts as a counterweight of the bridge;

at least two bridge supporting units, wherein each bridge supporting unit includes least one pole unit that transfers load to the footing closer to the object being crossed, wherein each pole unit at least one support tube, wherein a removable first bracket is fixed to each supporting unit;

a second bracket removably connected to the first bracket;

at least one panel forming a roadway track for the bridge;

a first elongated support member connecting the panel to the second bracket; and

a second elongated support member connecting the footing buried further from the object being crossed to the second bracket.

5,325,558

WHEELCHAIR RAMP APPARATUS

Brent J. Labreche, 8329 Wren Rd. SE., Ft. Myers, Fla. 33912

Filed Oct. 4, 1993, Ser. No. 130,686
Int. Cl.[5] B65G *67/02;* **E01D** *15/00*
U.S. Cl. 14—69.5 **3 Claims**

1. A wheel chair ramp apparatus, comprising,

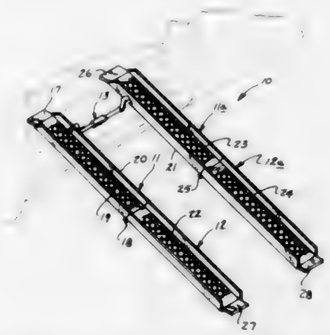
a first ramp member spaced from a second ramp member, the first ramp member including a first U-shaped track and a second U-shaped track, wherein the first U-shaped track includes a first track first end plate projecting beyond the first U-shaped track, and a first U-shaped track second end hinge hingedly mounting the first U-shaped track to the second U-shaped track,

and

the second ramp member includes a third U-shaped track, with a third U-shaped first end plate extending beyond the third U-shaped track, and a third U-shaped track second end hinge hingedly securing the third U-shaped track to a fourth U-shaped track, with the first U-shaped track having a first floor, the second track having a second floor, with the first floor and the second floor in a coplanar relationship in a first position and arranged in a parallel spaced relationship in a second position, with the third track having a third floor, the fourth track having a fourth floor, with the third floor and the fourth floor arranged in a coplanar relationship in the first position, and the third floor and the fourth floor arranged in a parallel spaced relationship in the second position,

and

the first U-shaped track having first track side walls, the third track having third track side walls, wherein one of said first track side walls is arranged in a facing relationship to a further one of said third track side walls, with a connector link adjustably directed between the first U-



shaped track and the third U-shaped track and mounted to one of said first U-shaped track side walls and to a facing one of said third U-shaped track side walls,

wherein the connecting link includes a first L-shaped link fixedly mounted to said one of said first track side walls, and a second L-shaped link mounted fixedly to one of said third track side walls, and with a first adjuster rod directed into the first L-shaped link and a second adjuster rod directed into the second L-shaped link, wherein the first adjuster rod and the second adjuster rod are arranged in a coaxially aligned relationship relative to one another, with the first adjuster rod having a right hand thread, the second adjuster rod having a left hand thread, and an internally threaded adjuster sleeve having a sleeve right hand threaded portion threadedly receiving the first adjuster rod, and a sleeve left hand threaded portion threadedly receiving the second adjuster rod.

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COMPACT DRIVE-THROUGH VEHICLE WASH

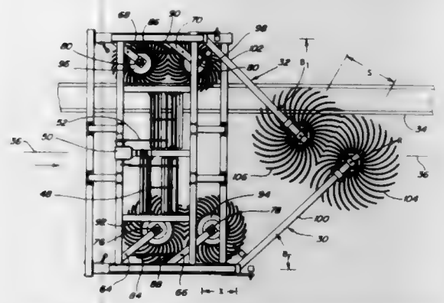
Michael J. Belanger, Walled Lake, and Barry S. Turner, Livonia, both of Mich., assignors to Belanger, Inc., Northville, Mich.

Division of Ser. No. 837,548, Feb. 14, 1992, Pat. No. 5,177,825, which is a continuation of Ser. No. 634,423, Dec. 27, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,327
Int. Cl.[5] B60S *3/06*
U.S. Cl. 15—97.3 **14 Claims**

1. A drive-through vehicle wash of the type in which a vehicle is translated forwardly relative thereto along a longitudinal axis by a conveyor, the vehicle wash comprising:

a frame having right and left frame members adapted to be affixed to a floor surface on opposite sides of the longitudinal axis to allow a vehicle to pass therebetween;

a first and second wraparound washer having an elongated right and left booms horizontally, pivotably attache to the frame right and left members above the path of the vehicle, each boom being positionable in an inward position toward the longitudinal axis and forming an acute angle therewith cantileverly extending forwardly from the frame in the direction of the vehicle's travel, a right and left carriage slidably mounted on the right and left boom, and right and left wraparound wheels attached to the right and left carriages respectively, having a maximum radius R for rotation about generally vertical right and left wraparound wheel axes, and drive means for rotating the right



and left wraparound wheels as the vehicle moves through the vehicle wash causing the booms to pivot and the carriages to translate relative to the boom enabling the wraparound wheels to follow the outer contour of the vehicle as it passes thereby; and

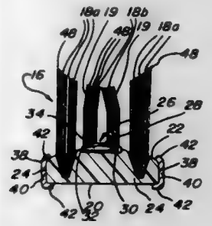
wherein said first wraparound washer has its boom pivotably attached to the frame at a point which is longitudinally forward a distance X of the point in which the second wraparound wheel boom is pivotably attached to the frame, where X is not more than R.

5,325,560

ORTHODONTIC TOOTHBRUSH

Bernadino J. Pavone, 8986 Hackberry, Plymouth, Mich. 48170, and John A. Venditti, 47565 Gratiot, Mt. Clemens, Mich. 48045

Filed Jan. 8, 1993, Ser. No. 2,219
Int. Cl.[5] A46B *9/04, 17/08, 7/06*
U.S. Cl. 15—106 **15 Claims**



13. A toothbrush comprising:

an elongated handle,

a neck connected to said elongated handle,

a head portion connected to said neck longitudinally opposite from said elongated handle, said head portion having an inside and an outside surface both of which are peripherally bordered by a sidewall therearound,

a plurality of tufts having a plurality of bristles therein, said plurality of bristles being arranged in a pattern projecting from said inside surface of said head portion, said pattern of said plurality of bristles having outside rows and medial rows,

a flexible member located centrally adjacent to said inside surface, said medial rows of bristles being attached to said flexible member and extending therefrom, whereby said flexible member allows said medial rows of bristles to move toward and away from said inside surface of said head portion; and

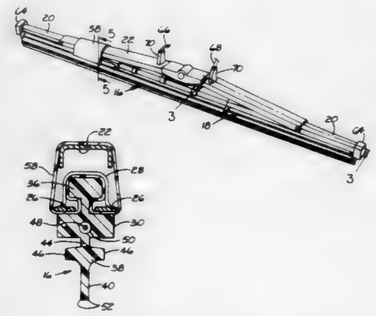
said outside rows of bristles being attached to a rigid section of said head portion transversely adjacent to said flexible member.

5,325,561

HEATED FLEXIBLE WINDSHIELD WIPER

Edward A. Kotlar, 8111 Castle Pines Ave., Las Vegas, Nev. 89113

Continuation of Ser. No. 522,078, May 10, 1990, abandoned, which is a continuation of Ser. No. 375,695, Jul. 5, 1989, abandoned. This application May 9, 1991, Ser. No. 698,372
Int. Cl.[5] B60S *1/38, 1/04*
U.S. Cl. 15—250.06 **9 Claims**



1. A heated windshield wiper device constructed and arranged to wipe a windshield of a vehicle comprising:

a one piece elongated and flexible body of an elastomeric material which does not deteriorate when in use at temperatures of up to 200° F. having:

an elongated and flexible mid portion;

an elongated and flexible head portion carried by the mid portion;

an elongated and flexible hinge portion carried by the mid portion;

an elongated and flexible lip portion carried by the hinge portion and having a free edge for wiping the windshield;

said hinge portion in cross-section being thin relative to adjacent portions of said mid and lip portions to permit said lip portion to rock relative to said mid portion and having generally opposed grooves opening outwardly on opposite sides of said hinge and disposed between said mid and lip portions;

an elongated passage in the mid portion and directly overlying the hinge portion and the free edge of the lip portion of the body and extending longitudinally in the mid portion generally parallel to the free edge of the lip and the passage not being greater than approximately 0.040 of an inch in diameter; and

only one elongated and flexible electric resistance heater element in said flexible body and disposed in the passage and extending longitudinally therein and in heat transfer relationship with the adjacent hinge and lip portions and being not greater than about 0.025 of an inch in diameter.

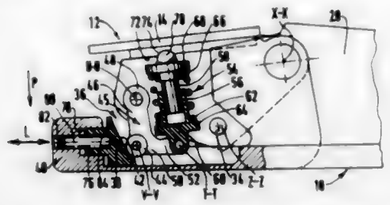
VOL 1164 ISS 1 JL 5 1994 UMI

5,325,562

SCREEN WIPER INCLUDING MEANS FOR ADJUSTING THE WIPING TORQUE

Maurice Journee, Reilly, France, assignor to Paul Journee, S.A., Colombes, France

Filed Jun. 10, 1993, Ser. No. 74,789
Claims priority, application France, Jun. 10, 1992, 92 06982
Int. Cl.[5] B60S *1/32*
U.S. Cl. 15—250.2 **8 Claims**



1. A screen wiper that has a wiper blade for wiping a screen, said screen wiper comprising: a wiper arm carrying the wiper blade; a drive head; articulating means defining an articulation axis and articulating said wiper arm and the wiper blade on the drive head about said axis; torque applying means coupled between and to said drive head and said wiper arm with the wiper blade for applying a wiping torque to said wiper arm and the wiper blade, said torque applying means including at least one spring for applying to said wiper arm and the wiper blade a wiping torque having a value which is substantially constant for a pre-determined angular position of said wiper arm with respect to said drive head; and torque adjusting means coupled between and to said drive head and said wiper arm for automatically adjusting the value of said wiping torque as a function of variation in said angular position, said torque adjusting means having a cam connected to said drive head and a cam follower element connected to said wiper arm and cooperating with said cam, such that said follower is displaced along said cam as a function of relative angular displacements between said wiper arm and said drive head, so as to apply a complementary torque to said wiper arm such as to vary the value of said wiping torque, said screen wiper further including a transmission member connecting said cam follower element to said wiper arm, and loading means for applying a resilient loading force to said transmission member such that said transmission member can be displaced with respect to said wiper arm against said loading force, and means defining a pivot axis parallel to said articulation axis and mounting said transmission member on said wiper arm for pivoting movement about said pivot axis, said loading means having a resilient loading member urging said transmission member into rotation about said pivot axis in a direction to maintain said cam follower element in contact with said cam.

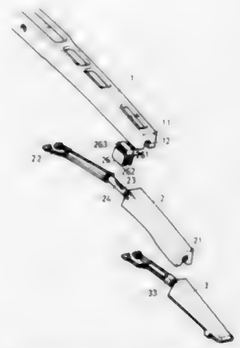
5,325,563

WINDSHIELD WIPER ASSEMBLY WITH TILTABLE BLADE

Lai W. Cayan, No. 17, Na Chang Chou, Soun Hsie Hsan, Taipei, Taiwan

Filed Jul. 20, 1993, Ser. No. 94,808
Int. Cl.[5] B60S *1/38, 1/40*
U.S. Cl. 15—250.33 **2 Claims**

1. A windshield wiper assembly comprising:
an elongated arm having two opposite ends, two elongated links, two elongated blade holders, and an elongated blade;
said arm having an adjusting hole at each end, said arm having a pair of axially aligned projections extending therefrom into each hole bore and said arm having a downward facing round connecting opening;
each link having a mortise at a first end receiving one of the blade holders therein, a clamping coupling at a second end for holding the blade, and a cylinder intermediate said ends, said cylinder having an elongated trapezoidal depression therein, a portion of said cylinder is rotatably received into said downward facing round connecting opening to thereby enable relative rotation about a longitudinal axis of the link between the link and the arm;
said blade is coupled with the clamping coupling of each link and with the blade holders;
a positioning device is provided at each end of the arm to control the rotational movement of a respective link, each said device includes a case having a plurality of pairs of



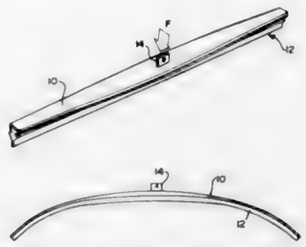
elongated channels therein, a round connecting slot and a projecting tab extending from said case into said round connecting slot, said case is received into the adjusting hole with one of said pairs of channels receiving the respective projections, said projecting tab being received into said trapezoidal depression and said cylinder being received into the connecting slot, wherein the relative rotation between the links and the arm can be adjusted by choosing a different pair of channels to receive the projections, thus changing the longitudinal position of said projecting tab within said trapezoidal depression.

5,325,564

WINDSCREEN WIPER BLADE WITH CURVED BACKING MEMBER

Adriaan R. Swanepoel, 309 Aries Street, Waterkloof Ridge, Pretoria, Transvaal Province, South Africa

Continuation of Ser. No. 928,981, Aug. 12, 1992, abandoned. This application Dec. 15, 1993, Ser. No. 167,615
Claims priority, application South Africa, Aug. 16, 1991, 91/6473; Jan. 17, 1992, 92/0354
Int. Cl.[5] B60S *1/38*
U.S. Cl. 15—250.42 **16 Claims**



1. A windscreen wiper assembly comprising:
an elongated wiper blade having first and second longitudinal ends, a wiper edge defined along the length thereof from said first longitudinal end to said second longitudinal end, and a substantially flat mounting face defined along the length thereof from the first longitudinal end to the second longitudinal end and opposed to said wiper edge; and
an elongate, curved, one-piece backbone having first and second longitudinal ends and a substantially flat mounting surface defined along the length thereof from said first longitudinal end to said second longitudinal end, said backbone having a cross-sectional profile defining a thickness and a width thereof, said backbone being secured to said wiper blade so that said mounting surface is in opposed facing relation to and in substantially continuous contact with said mounting face of said wiper blade, said curved backbone being substantially coextensive with said wiper blade, said backbone being formed from a resiliently flexible material and having a connecting formation projecting from a position intermediate said first and second longitudinal ends, the thickness of said backbone being greater at said position, said connecting formation providing a means for connection to a displacing and force applying member;
the thickness of said backbone gradually decreasing along at least a first portion of said backbone, which is defined between said position and said first longitudinal end;
the backbone being curved in a plane, and the backbone having a cross-sectional profile and a free-form curvature which vary along its length, and wherein the second differential of the function M(x) increases along said first portion towards said first longitudinal end, where

$$M(x) = \frac{E * I(x)}{R(x)}$$

with 'E=the modulus of elasticity of the backbone;
I(x)=the cross-section moment of inertia of the backbone about a neutral axis at a distance x from said position transverse to the plane of curvature; and
R(x)=the free-form radius of curvature of the backbone in the plane of curvature at x.

5,325,565

DEVICE FOR COLLECTING DUST, WATER OR THE LIKE

Yasuhiro Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Hoky, Nagareyama, Japan

Filed Sep. 18, 1992, Ser. No. 947,175
Claims priority, application Japan, Sep. 30, 1991, 3-251310
Int. Cl.[5] A47L *13/52*
U.S. Cl. 15—257.4 **8 Claims**



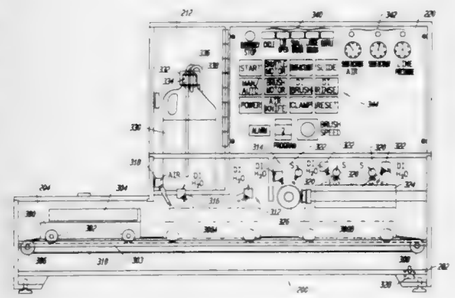
1. A refuse collecting device for collecting debris from the surface of a floor comprising:
a main body having an opening at a front end thereof;
a blade made of an elastic material, which is attached adjacent an extreme end of said opening of said main body;
a rotating shaft which extends laterally along an underside of said blade at a rear end thereof, said rotating shaft being pivotally supported between opposite sidewalls of said collecting device main body, whereby a front edge of said blade is moveable toward and away from the surface of the floor by rotating on said shaft, said blade having an inclined portion toward the rear end thereof, said inclined portion being arranged to contact said main body and to provide a substantially vertical barrier to inhibit dust from exiting said device when said device is rested upon the floor.

5,325,566

AUTOMATIC WASH STATION FOR CLEANING MAGNETIC DISK HEADS

Hooshang Jahani, Fremont, Calif., assignor to Tooltek Engineering Corp., Fremont, Calif.

Filed Aug. 24, 1992, Ser. No. 934,032
Int. Cl.[5] B08B *11/02*
U.S. Cl. 15—302 **27 Claims**



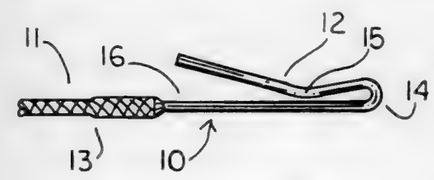
1. A magnetic head cleaning apparatus comprising:
a wash station housing;
a shuttle for holding a magnetic head;
means for dispensing a liquid onto the magnetic head while the head is held by the shuttle in a first location in the housing;
means for brushing the magnetic head while the head is in a second location in the housing;
means for drying the magnetic head while the head is in a third location in the housing; and
means for moving the shuttle from an initial position, and among the means for dispensing, the means for brushing and the means for drying, while the shuttle is holding the magnetic head, and for returning the shuttle to the initial position.

5,325,567

BRAIDED LINE APPARATUS

Peter C. Mele, P.O. Box 533, Crown Point, N.Y. 12928

Continuation-in-part of Ser. No. 844,446, Mar. 2, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 113,343
Int. Cl.[5] D07B *1/12*
U.S. Cl. 24—122.6 **2 Claims**



1. A braided line apparatus comprising:

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flexible, braided line with an inner core having an inner core diameter;

a constant diameter solid shaft having first and second ends, the diameter of said shaft being slightly larger than said inner core diameter;

said first end of said shaft being inserted into the inner core of said braided line and being bonded thereto to maintain said shaft in position with respect to said braided line;

said shaft including a bend of at least 180 degrees, whereby said second end of said shaft is adjacent said first end, said shaft further including an arcuate neck portion located between said bend and said second end such that said second end angles away from said first end; and

wherein, when opposite pulling forces are simultaneously applied to said braided line and said shaft, said braided line constricts about said shaft.

5,325,568

TIE-DOWN DEVICE COMBINING A LOOPED STRAP AND A SNUBBING CLINCH

Ronald Bruhm, 707 Arrow Rd., Weston Ontario, Canada M2L 2N9

Filed Jun. 21, 1993, Ser. No. 91,616
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—301 **2 Claims**



1. A load holding tie-down device comprising in combination,

a looped elastomeric strap;

a strap snubbing member of generally sinusoidal configuration; said snubbing member being composed of,

firstly, a hook member having a looped strap holding connecting bar contiguous with said hook and presenting a strap entering aperture between the distal end of said hook and an end of said strap holding bar,

secondly, a snubbing assembly secured co-terminously to said connecting bar, consisting of a pair of parallel snubbing bars spaced apart sufficiently to accomadate at least two lays of said strap fitted therebetween,

thirdly, a connecting piece spanning and connecting the ends of said parallel snubbing bars,

said snubbing assembly being spaced apart from and in parralel with said holding bar to provide sufficient space to accomadate one lay of said strap when looped around said loop holding bar prior to being fitted between the snubbing bars of the snubbing assembly.

5,325,569

REFASTENABLE MECHANICAL FASTENING SYSTEM HAVING PARTICULAR VISCOSITY AND RHEOLOGY CHARACTERISTICS

David J. K. Goulait, and Dennis A. Thomas, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 30, 1992, Ser. No. 969,604
Int. Cl.[5] A44B *18/00*
U.S. Cl. 24—448 **11 Claims**



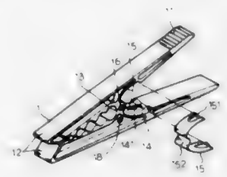
1. A free-formed prong joined to a substrate, said prong being made of a thermally sensitive material deposited onto said substrate, said thermally sensitive material comprising a storage modulus less than 5000 dynes/cm^2 at an application temperature, a storage modulus of at least 1×10^6 dynes/cm^2 at a temperature no more than 40° C. lower than said application temperature, said prong comprising a base comprising the plane of attachment of said prong to said substrate such that said prong is joined at said base to said substrate; a shank having a proximal end and a distal end, said proximal end being contiguous with said base, said shank projecting longitudinally outwardly from said base and said substrate; and an engaging means for causing mechanical interference between said engaging means and a receiving surface, said engaging means being joined to said distal end of said shank such that said engaging means laterally projects radially outwardly beyond the periphery of said shank and away from said substrate, said engaging means forming an included angle of greater than or equal to 180°.

5,325,570

CLIP

Hsu Chin-Ho, No. 37, Sec. 1, Hanna Koou Rd., Taichung City, Taiwan

Filed Aug. 30, 1993, Ser. No. 114,026
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—530 **4 Claims**



1. An improved clip, said clip is characterized in that:

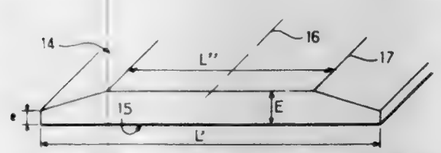
said clip including two interconnected clip bodies which each being miror image of the other and being formed integrately, each of said bodies having a force action arm and a clamping arm, the supporting point for the pressure action being exactly the connection of said two bodies, a groove being formed between said force action arm of each body and each side of said supporting point, said grooves, suit a U shaped spring strip which presses outward on said force action arms of said bodies to render said clamping arms of each body capable of clamping an article.

5,325,571

METHOD AND DEVICE FOR PRODUCING A SHAPED NON-WOVEN, NON-WOVEN OBTAINED AND USE THEREOF

Robert M. Bolliand, Ecully, France, assignor to Centre Technique Industriel dit: Institut Textile de France, France

Filed Jul. 6, 1992, Ser. No. 908,402
Claims priority, application France, Jul. 16, 1991, 91 09254
Int. Cl.[5] D04H *18/00;* **D01G** *25/00*
U.S. Cl. 28—112 **4 Claims**



1. A method for producing a shaped non-woven, comprising the following steps:

a) feeding fibers into carding machine, in sequential manner over median portions narrowing from one sequence to another;

b) superposing layers of a fibrous web leaving said carding machine on a receiving system;

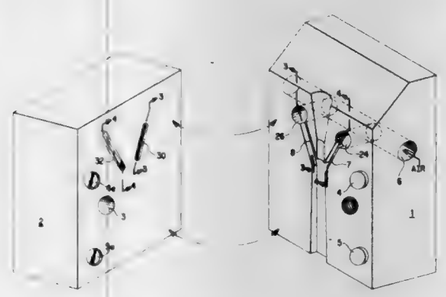
c) feeding the fibrous web over a limited width l of the carding machine, the width L is smaller that the width L of the receiving system, and superposing the sequentially narrowing fibrous web leaving said machine in at least ten layers and needling the superposed layers.

5,325,572

YARN TREATING JET

Frederick S. Dickson, III, Hockessin; Perry H. Lin, Seaford, and Norvel W. Orendorf, Georgetown, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 23, 1992, Ser. No. 903,091
Int. Cl.[5] D02G *1/16;* **D02J** *1/08*
U.S. Cl. 28—276 **2 Claims**



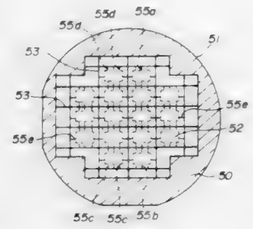
1. A yarn bulking jet comprising: a body and a cover fastened together, said body having a longitudinal passage recessed in a surface of the body contiguous with said cover through which yarn passes for treatment; a pair of angularly disposed conduits recessed in said surface and in communication with said passage for directing fluid against opposite sides of the yarn and a protrusion formed on the surface of the cover that fits into one of said angularly disposed conduits to reduce the cross-sectional area of said one angularly disposed conduit.

5,325,573

METHOD OF FABRICATING A SAW DEVICE

Tsutomu Miyashita, Inagi, and Yoshio Satoh, Atsugi, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 683,042, Apr. 10, 1991, Pat. No. 5,243,249. This application Jun. 2, 1993, Ser. No. 70,176
Claims priority, application Japan, Apr. 11, 1990, 2-95532
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **5 Claims**



1. A method for fabricating a surface-acoustic-wave device, comprising the steps:

covering an upper major surface of a piezoelectric substrate with a conductor layer;

patterning the conductor layer to form a plurality of device patterns that are separated from each other by a first conductor strip, said first conductor strip being formed so as to extend along a dicing line defined on the upper major surface of the substrate for separating the substrate into a number of chips each ductor strip electrically, and a fourth conductor strip provided on the upper major surface of the substrate in correspondence to a region offset from the passage of the surface acoustic waves for connecting the second part of the interdigital electrodes to the first conductor strip and; and

separating the surface-acoustic-wave devices from each other by dicing along the dicing line that the first conductor strip is removed from each surface-acoustic-wave device.

5,325,574

METHOD OF FORMING A QUARTZ OSCILLATOR TEMPERATURE SENSOR

Michiaki Takagi, and Mitsuru Nagai, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 782,771, Oct. 17, 1991, Pat. No. 5,265,311, which is a continuation of Ser. No. 563,879, Aug. 6, 1990, abandoned, which is a continuation of Ser. No. 265,865, Oct. 6, 1988, abandoned. This application Aug. 27, 1993, Ser. No. 113,558
Claims priority, application Japan, Feb. 27, 1987, 62-28640; Sep. 8, 1987, 62-224428; Nov. 20, 1987, 62-29560; Nov. 20, 1987, 62-293562; Aug. 28, 1992, 4-230203
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **7 Claims**

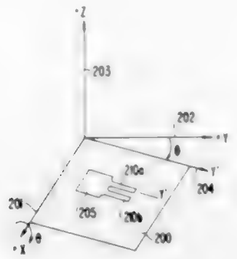
1. A method of forming a quartz oscillator temperature sensor, comprising:

providing an α-quartz single crystal having an electrical axis (+X) perpendicular to a mechanical axis (+Y) and defining an XY plane and an optical axis (+Z) perpendicular to the XY plane;

cutting a substantially flat wafer having a thickness between about 80 and 150 μm from the quartz crystal, the wafer cut in the plane obtained by rotating the XY plane about the (+X) axis in a clockwise (−Z) direction by an angle of about 15 to 25° to yield a plane defined by the +Y axis

and a Y' axis defined as the (+Y) axis after rotation of the plane of the wafer about the (+X) axis;

forming a tuning fork shaped piece of quartz having a base



and a pair of parallel arms extending from the base from the wafer, in which the arms are parallel with a Y' axis;

disposing excitation electrodes on the tuning fork; and

enclosing the tuning fork within a housing

5,325,575

METHOD AND APPARATUS FOR ASSEMBLING COMPONENT PARTS

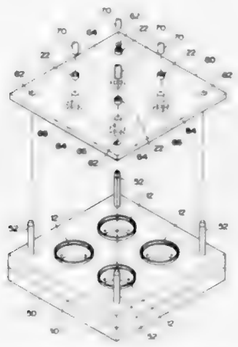
Eiichi Ichikawa, 7-20, Chiyoda 2-chome, Naka-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jul. 26, 1991, Ser. No. 736,752

Claims priority, application Japan, Jul. 27, 1990, 2-200988

Int. Cl.[5] B23P *19/02*

U.S. Cl. 29—281.3 **24 Claims**



1. An apparatus for assembling component parts of a product manufactured by assembling a plurality of kinds of component parts coaxially, comprising:

a reference jig provided with at least one aperture and including holding means, positioned adjacent said at least one aperture and separate therefrom for holding a component part of one of said plurality of kinds in said at least one aperture of said reference jig;

a superposing jig provided with at least one aperture and including holding means, positioned adjacent said at least one aperture and separate therefrom, for holding a component part of another kind of said plurality of kinds in said at least one aperture of said superposing jig;

guide means for guiding said superposing jig toward said reference jig in such a manner that an axis of said component part held by said superposing jig is aligned with an axis of said component part held by said reference jig; and

an assembling jig for assembling said component part held by said superposing jig to said component part held by said reference jig.

5,325,576

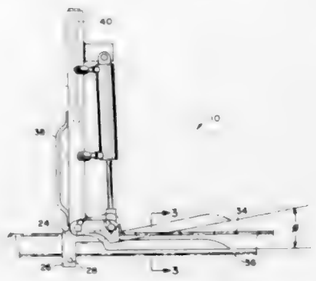
PROCESS AND APPARATUS FOR DISASSEMBLING PLANKS FROM A TRUCK BED

Lawrence Henderson, 101 Henderson Dr., Clemson, S.C. 29631

Filed Mar. 31, 1993, Ser. No. 41,401

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—426.5 **15 Claims**



13. A process for removing planks held by support beams from a truck bed comprising the steps of:

providing an apparatus comprising:

a vertical body having a top and bottom portion said bottom portion terminating in an anchor means for securing said vertical body to one of said support beams;

a pair of spaced-apart blades pivotally attached to opposing sides of said bottom portion of said vertical body, said blades connected by a connecting bolt proximate said bottom portion of said vertical body;

lifting means for lifting said blades, said lifting means pivotally attached to said pair of spaced-apart blades and to said top portion of said vertical body;

securely anchoring said vertical body to one of said support beams with said blades straddling said support beam and positioned below said planks; and

activating said lifting means thereby forcefully and simultaneously lifting said blades and removing said planks.

5,325,577

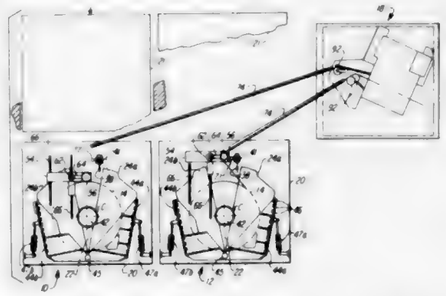
METHOD FOR AUTOMATICALLY OPENING ROLL CASSETTE BY SUCTIONING

Donald O. Bigelow, Webster; Craig A. Caprio, Rochester, and John B. Chemelli, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 917,536, Jul. 21, 1992, Pat. No. 5,283,945, which is a continuation of Ser. No. 633,508, Dec. 28, 1990, abandoned. This application May 19, 1993, Ser. No. 63,472

Int. Cl.[5] B23P *19/04;* **G03B** *1/04;* **B65B** *43/38*

U.S. Cl. 29—426.5 **9 Claims**



1. A method for automatically opening a cassette having at least two separable parts and for removing a web wound in a roll within the cassette, the web having a leading end and the cassette having a latch for retaining the cassette parts in a cassette closed condition, said method including the sequential steps of:

releasing the latch;

moving one of the cassette parts to an open position;

moving the other of the cassette parts to an open position;

rotating the roll in a web unwinding direction;

suctioning the leading end of the web away from the roll during rotation of the roll; and

transporting the leading end of the web out of the cassette to a remote location.

5,325,578

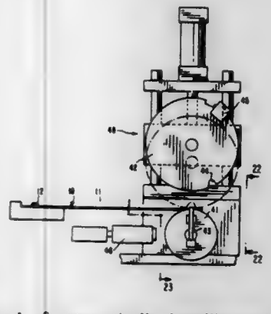
APPARATUS AND METHOD FOR AUTOMATICALLY INSTALLING CLAMPS

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Switzerland

Continuation-in-part of Ser. No. 16,794, Feb. 20, 1987, abandoned. This application Feb. 24, 1988, Ser. No. 160,004

Int. Cl.[5] B23P *17/00;* **B21D** *53/56*

U.S. Cl. 29—429 **44 Claims**



1. A method of automatically installing and fastening a clamp made from a flat blank onto an object of predetermined configuration, comprising the steps of separating individual blanks from a supply of similarly oriented blanks, feeding the thus-separated individual blank to a deformation station, deforming the flat blank into a clamp having an internal configuration slightly larger than the configuration of the object, picking-up with the use of a transfer mechanism the thus-deformed clamp from the deformation station and transferring it to the object to be fastened where it is placed over the object, and thereafter tightening the clamp over the object to be fastened.

5,325,579

METHOD OF MAKING WINDOW ASSEMBLY

Bruce A. Baier, Pella, Iowa, assignor to Pella Corporation, Pella, Iowa

Continuation-in-part of Ser. No. 793,475, Nov. 18, 1991. This application May 4, 1992, Ser. No. 877,717

Int. Cl.[5] B23P *19/00;* **E06B** *3/32*

U.S. Cl. 29—462 **6 Claims**

1. The method of making window assemblies comprising the steps of,

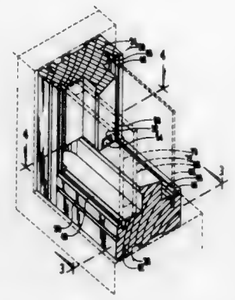
preparing an inventory of extended length stile and rail frame members each of which includes a retention groove extending the substantial length thereof,

determining the size of the window unit to be installed in the assembled stile and rail frame members and the length of the required stile and rail frame members,

cutting tenon and mortise ends on said stile and rail frame members,

connecting said stile and rail frame members to form a window assembly frame with said retention grooves being in a common plane,

positioning a window unit having retention means in the assembled window frame, and



moving a plurality of spaced apart removable window unit retention means into said retention grooves to releaseably lock said window unit in said window assembly frame.

5,325,580

PROCESS FOR THE PRODUCTION OF ENAMELLED WORKPIECES

Hermann Gruber, Leverkusen; Eberhard Arning, Kaarst, both of Fed. Rep. of Germany; Hans Hoffmann, Brügge, Belgium; Alain Viquesnel, Iouy en Iossas, France; Paul Zybell, Zanica, Italy; Dieter Margotte, and Keith Foster, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany and Miles Inc., Pittsburgh, Pa.

Filed Feb. 5, 1993, Ser. No. 13,958

Claims priority, application Italy, Feb. 18, 1992, MI92 /000350

Int. Cl.[5] B23P *17/04;* **B21D** *35/00*

U.S. Cl. 29—527.4 **14 Claims**

1. A process for the production of shaped workpieces of metal sheet enamelled with two layers, wherein one or both of said layers have been applied prior to shaping of the workpiece, comprising: 1) coating the sheet, before shaping, with at least one enamel polymer suspension, wherein the polymer suspension comprises a mixture of thermosetting binder system, solvent and a suspension aid, said thermosetting binder system comprises at least one acid-functional polymer and at least one epoxy-functional polymer, said acid-functional and epoxy-functional polymers are nitrogen- and halogen-free and burn at temperatures of 200 to 500 degrees C. and wherein the acid-functional polymer has a content of acid-functional groups between 0.5 and 30 weight % and the epoxy-functional polymer has a content of epoxy-functional groups between 0.5 and 30 weight %; 2) drying the coated sheet; 3) mechanically shaping the dried coated sheet thereby producing shaped sheet workpieces. 4) coating the shaped sheet workpieces with an enamel frit, if only one layer has been applied prior to shaping; and 5) firing the workpieces; thus obtained at temperatures of 560° to 850° C.

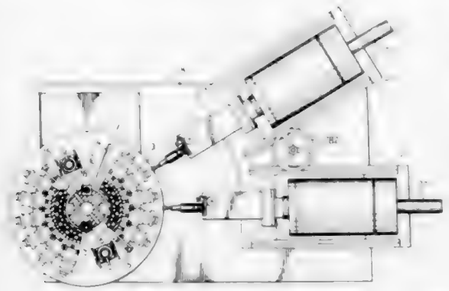
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5,325,581

CLAMPING AND DRILLING DEVICE FOR A CURVED PLATE

Chuan-Chia Sun, Kaohsiung Hsien; Yu-An Hsieh, Kaohsiung, and Ching-Fu Lin, Kaohsiung Hsien, all of Taiwan, assignors to Metal Industries Research & Development Centre, Kaohsiung, Taiwan

Filed Aug. 16, 1993, Ser. No. 107,225
Int. Cl.[5] B23Q *3/06*; B23B *39/16*
U.S. Cl. 29—563 4 Claims



1. A clamping and drilling device for a curved plate that has a radius of curvature and a width, said device comprising:

a machine body;

an indexing apparatus mounted on said machine body, said indexing apparatus having an index plate mounted rotatably thereon;

a clamping assembly including an upright post that has a lower end fixed to said index plate, a pivot seat fixed on said upright post between said index plate and a top end of said upright post, a first engaging unit and upper and lower circular hollow casings mounted coaxially to said upright post, each of said hollow casings having a covering plate spaced from the other one of said covering plates, said lower circular hollow casing being attached securely to said index plate, said upper circular hollow casing having a second engaging unit, a threaded hole which extends vertically through said second engaging unit, and a threaded shaft which is threaded into said threaded hole, said threaded shaft having a lower end journalled to said pivot seat parallel to said upright post, thereby retaining said upper hollow casing on said upright post at a desired height relative to said lower casing which is equal to said width of said curved plate, said second engaging unit engaging said first engaging unit so as to prevent said upper hollow casing from rotating relative to said upright post and so as to permit said upper hollow casing to move axially along said upright post;

each of said upper and lower casings having an abutting plate which is fixed perpendicularly on a respective one of said covering plates and which extends radially thereon, a radial groove and an elongated movable piece provided slidably in a respective said radial groove, each of said elongated movable pieces having two clamping units, each of said upper and lower casings further having a driving means for moving said two clamping units relative to one another;

a control member for actuating said driving means synchronously;

means for synchronously moving said elongated movable pieces along said radial grooves of said lower and upper casings so as to define a distance between said elongated movable pieces and said upright post, said distance being equal to said radius of curvature of said curved plate; and

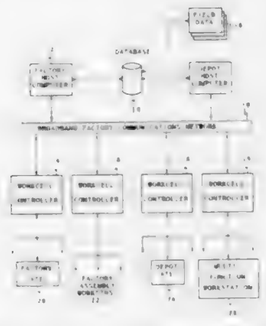
a drilling assembly provided on said machine body, said drilling assembly including an upright holding member with a first drilling bit extending toward an axis of said upright post, a second drilling bit which is disposed right below said first drilling bit in a parallel manner and which extends toward said axis of said upright post, and means for adjusting a vertical height between said first and second drilling bits.

5,325,582

MULTI-FUNCTION WORKSTATION FOR ASSEMBLY AND REPAIR OF PRINTED WIRING BOARD ASSEMBLIES

Peter S. Glaser, Del Mar, Calif.; Jeffery A. Calkins, Auburn, N.Y., and Jeffrey M. Riggs, Colorado Springs, Colo., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 19, 1992, Ser. No. 963,887
Int. Cl.[5] H05K *3/34*; B23Q *41/00*
U.S. Cl. 29—840 10 Claims



1. A method of operation of a multi-function workstation for assembling and repairing printed wiring board assemblies (PWBAs), comprising the steps of:

unambiguously identifying a PWBA from product code markings on the PWBA;

retrieving product data relating to an identified PWBA;

inspecting the PWBA at the workstation, based in part on the retrieved product data, and identifying any defects in the PWBA; and

removing and replacing a defective component in the PWBA with minimal operator intervention;

wherein all of the foregoing steps are performed at a single integrated multi-function workstation and are driven by the retrieved product data.

4. A multi-function workstation for assembling and repairing printed wiring board assemblies (PWBAs), comprising:

a single workstation site and a plurality of component means situated about said single workstation site in a manner permitting each of said component means to operate at said single workstation site;

said component means including means for unambiguously identifying a PWBA from product code markings on the PWBA;

said component means also including means for retrieving product data relating to an identified PWBA;

said component means also including means for inspecting the PWBA at the workstation, based in part on the retrieved product data, and identifying any defects in the PWBA; and

said component means also including means for removing and replacing a defective component in the PWBA with minimal operator intervention;

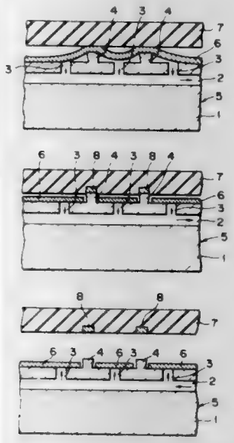
wherein all of the component means are driven by the retrieved product data.

5,325,583

METHOD FOR MANUFACTURING PRINTED CIRCUIT BOARD

Seizaburo Shimizu, Yokohama; Osamu Sasaki, Sagamihara; Akira Yoshizumi, Yokohama, and Hideo Ohta, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 766,670, Sep. 27, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,476
Claims priority, application Japan, Sep. 28, 1990, 2-259022; Nov. 16, 1990, 2-308474; May 30, 1991, 3-127810; Aug. 15, 1991, 3-205285
Int. Cl.[5] H05K *3/10*; H01K *3/10*; B23P *19/00*
U.S. Cl. 29—849 34 Claims



1. A method for manufacturing a printed circuit board, comprising the steps of:

manufacturing a printed circuit original plate having protruding patterns which have the same shape as circuit patterns to be formed and a height at least the same as a thickness of a metal foil used and each of which is constituted by a flat or projecting curved surface to be brought into contact with said metal foil and side surfaces converging inwardly from said flat or projecting curved surface over at least a portion of said side surfaces; and

heating under pressure said protruding patterns of said original plate against a thermoplastic resin with said metal foil interposed therebetween to transfer portions of said metal foil in contact with said protruding patterns onto a surface of said thermoplastic resin, thereby forming said circuit patterns.

18. A method for manufacturing a printed circuit board, comprising the steps of:

manufacturing a printed circuit original plate having protruding patterns which have the same shape as circuit patterns to be formed and a height at least the same as a thickness of a metal foil used, each of said protruding patterns having a flat or projecting curved surface to be brought into contact with said metal foil, said original plate having a plurality of holes positioned in non-protruding regions; and

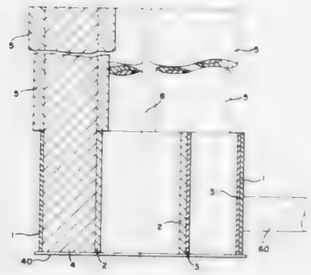
heating under pressure said protruding patterns of said original plate against a resin film with said metal foil interposed therebetween while drawing said metal foil for said original plate by suction through said holes of said original plate to transfer portions of said metal foil in contact with said protruding patterns onto a surface of said resin, thereby forming said circuit patterns.

5,325,584

MICROCONNECTORS, ELECTRIC SUPPLY LEADS USING THEM AND METHOD OF MANUFACTURE

Ingolf Jasch, Leichlingen, Fed. Rep. of Germany, assignor to Schwarz Pharma AG, Monheim, Fed. Rep. of Germany

Filed Nov. 9, 1992, Ser. No. 973,704
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1992, 4223152
Int. Cl.[5] H01R *43/20*
U.S. Cl. 29—876 4 Claims



1. A process for producing a microcoupling comprising:

obtaining a device having a cylindrical outer sleeve (**1**); a cylindrical central element (**2**) arranged coaxially in the outer sleeve (**1**); a plurality of cylindrical spacers (**3**) arranged between the outer sleeve (**1**) and the central element (**2**); a plurality of cylindrical assembly elements (**4**), each of which is arranged between and in contact with two neighboring spacers (**3**), the central element (**2**) and the outer sleeve (**1**); the assembly elements (**4**) constituting assembly pins projecting beyond the arrangement comprising the outer sleeve (**1**), central element (**2**), and spacers (**3**);

fitting a microcoupling sleeve onto each assembly pin;

interconnecting the microcoupling sleeves with an adhesive to monolithically bond the said sleeves together, and thereby form a microcoupling; and

removing the microcoupling from the device.

5,325,585

METHOD FOR THE ASSEMBLY OF A SUN ROOF OF AN AUTOMOTIVE VEHICLE

Katsuaki Sasaki; Tomonori Otsubo; Tomoo Taguchi; Yoshihiro Konno; Yasukazu Watanabe, and Shigefumi Kohno, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 3, 1992, Ser. No. 940,385
Claims priority, application Japan, Sep. 5, 1991, 3-254643; Sep. 5, 1991, 3-254644; Sep. 30, 1991, 3-278566
Int. Cl.[5] B23P *17/00*; B60J *7/08*
U.S. Cl. 29—897.2 16 Claims

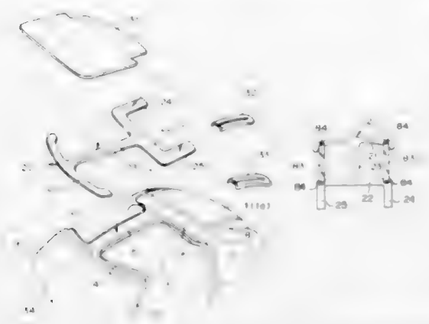
1. A method for the assembly of a sun roof for an automotive vehicle, wherein the sunroof comprises (1) a pair of left-hand and right-hand roof opening sections each at a front portion of a roof panel, wherein the openings each form an open-side transversing the roof panel, and wherein the openings each form a closed-side at a front side, a rear side, and a longitudinally inner side; (2) a movable roof member large enough to substantially cover the pair of the left-hand and right-hand roof opening sections, wherein the movable roof member moves longitudinally through a base frame fixed to a body of the vehicle, and wherein the movable roof member simultaneously opens and closes the left-hand and right-hand roof opening sections; and (3) said base frame comprises (a) a front base frame section extending transversely over substantially the entire length of and along a front header constituting a front edge portion of the roof opening sections, (b) a rear base frame section extending transversely over substantially the entire

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length of and along a front edge portion of a rear roof panel section; and (c) a middle base frame section extending longitudinally and connecting a middle portion of said front base frame section and a middle portion of the rear base frame section;

wherein the method for assembly comprises the steps of:

connecting a transversely outer side portion of said front header to said front edge portion of the rear roof panel section or connecting a transversely outer side portion of said front base frame section of the base frame to said rear base frame section with at least one aligning jib;



fixing said base frame to said body so that the transversely outer side portion of said front header is connected to said front edge portion of the rear roof panel section with said at least one aligning jig or the transversely outer side portion of said front base frame section of the base frame is connected to said rear base frame section thereof with said at least one aligning jig; and

(3) releasing said at least one aligning jig after said base frame has been fixed to said body

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5,325,586

DOUBLE ROW ANGULAR CONTACT BALL BEARINGS AND A METHOD FOR THE MANUFACTURE THEREOF

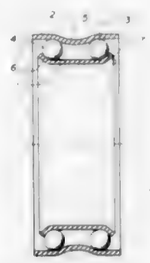
Borje Andersson, Sandard, Sweden, assignor to SKF Nova AB, Sweden

Continuation of Ser. No. 574,742, Aug. 30, 1990, Pat. No. 5,177,869, which is a continuation of Ser. No. 309,472, Feb. 10, 1989, abandoned. This application Aug. 26, 1992, Ser. No. 935,390

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[5] **B23P** *11/00*

U.S. Cl. 29—898.062 **8 Claims**



1. A method of manufacturing double row, angular contact ball bearings having first and second rings and two rows of balls engaging in axially spaced confronting raceways of the rings consisting of the steps of:

a. shaping sheet metal tubular work pieces into first and second race rings having at least one partially finished raceway;

b. introducing rows of balls between said race rings in rolling contact with said first and second rings;

c. bending said first race ring proximate said at least one partially finished raceway to form said at least one partially finished raceway into a finished raceway whereby the balls are permanently encapsulated in two rows forming a bearing free from play.

5,325,587

WIRE STRIPPER

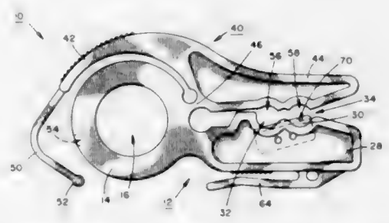
Richard A. Steiner, East Haddam, and Charles J. Gargano, Guilford, both of Conn., assignors to Rostra Tool Company, Branford, Conn.

PCT No. PCT/US92/02060, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO93/18895, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 16, 1992, Ser. No. 952,905

Int. Cl.[5] **B21F** *13/00*

U.S. Cl. 30—91.2 **21 Claims**



1. A wire stripper, comprising:

(a) generally elongate lower body member having first and second ends;

(b) a generally elongate upper clamping member having first and second ends and generally overlying said lower body member;

(c) an integral flexible hinge member joining said lower body member and said upper clamping member intermediate said respective first and second ends;

(d) integral biasing means disposed at and between said first ends, so as to bias said first ends apart by rotation of said upper clamping member around said flexible hinge member, and so as to draw said second ends toward each other, and to permit said second ends to be drawn apart by the further tensioning of said biasing means by the rotation of said upper clamping member around said hinge member;

(e) a cutting blade disposed in said second end of said lower body member along the major axis of said lower body member and extending above the upper surface thereof, such that a cable inserted between said second ends when said first ends are drawn together will come into cutting engagement with said cutting blade when said second ends are subsequently drawn together, and one or more layers of said cable will be severed by said cutting blade when said wire stripper is rotated about said cable in a plane orthogonal to the axis of said cable; and

(f) said integral biasing means comprises a resilient spring arm extending between the distal ends of said lower body member and said upper clamping member.

5,325,588

KNIFE WITH MULTIPLE CUTTING POSITIONS

Carl E. Rogers, 12005 Lake Lery Ave., Baton Rouge, La. 70816

Filed May 4, 1993, Ser. No. 57,255

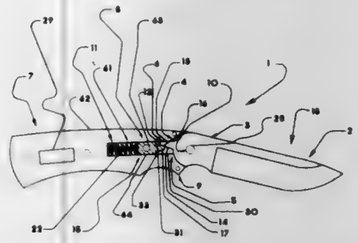
Int. Cl.[5] **B26B** *1/04*

U.S. Cl. 30—161 **18 Claims**

1. A knife having angularly adjustable cutting positions, comprising:

a. a blade having a base portion, said base portion having an outer edge including an engagement portion including a positioning means for positioning said blade in a plurality of angular cutting positions with reference to a handle, said positioning means comprising a tail portion extending from said base portion of said blade and into said handle, said tail portion having an upper surface and a lower surface;

b. said handle including a biased engagement means for selectively engaging said positioning means and fixing said blade in each of said angular cutting positions, said handle having a blade end, said engagement means comprising a locking member slidably positioned in said handle between said resilient means and said base portion of said blade, said locking member having an upper surface mat-



ingly engageable with said lower surface of said tail portion in a first cutting position, and a lower surface matingly engageable with said upper surface of said tail portion in a second cutting position, said locking member further having a means for retracting said locking member against a resilient means and away from engagement with said tail portion so as to allow said blade to be pivoted between said first cutting position and said second cutting position; and

said resilient means for biasing said engagement means against said positioning means, said resilient means being positioned in said handle; and

wherein said base portion of said blade is pivotally attached to said blade end of said handle at a pivot point located within said base portion.

5,325,589

HAIR CLIPPER

Nobuhiro Kubo, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 7, 1991, Ser. No. 712,097

Claims priority, application Japan, Jun. 15, 1990, 2-158043; Aug. 28, 1990, 2-227332

Int. Cl.[5] **B26B** *19/00*

U.S. Cl. 30—201 **5 Claims**

1. A hair clipper comprising:

a housing having a rearward end and an opposed forward end with a cutter head including a stationary blade with a toothed leading edge and a moveable blade with a toothed leading edge mounted for reciprocation in a reciprocation direction with said toothed leading edges overlapping in a hair shearing relationship;

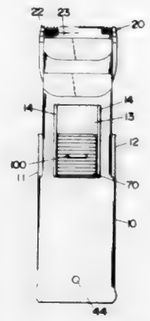
said stationary blade having an outer scalp engaging surface and an inner surface facing toward said moveable blade;

the outer surface of said stationary blade along its leading edge being inclined relative to said inner surface so as to produce a shorter length of hair which is cut when there is a lesser amount of overlap in said hair shearing relationship;

at least one of said stationary blade and said moveable blade being a longitudinally moveable blade mounted for movement in a direction generally perpendicular to said reciprocation direction so as to adjust a cut length of hairs sheared between said blades;

an adjustor handle mounted on said housing for generally longitudinal movement thereon toward and away from said cutter head;

linkage means between said longitudinally moveable blade



and said adjustor handle for moving said longitudinally moveable blade in a rearward direction to decrease said length of hair which is cut when said adjustor handle is moved forward toward said cutter head.

5,325,590

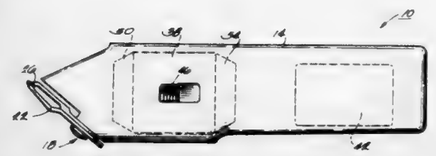
HAIR TRIMMER HAVING A LOW-FRICTION ROTARY DRIVE

Matthew L. Andis, Racine, and John Piwaron, Milwaukee, both of Wis., assignors to Andis Company, Racine, Wis.

Filed Mar. 9, 1993, Ser. No. 28,271

Int. Cl.[5] **B26B** *19/02, 19/06, 19/00*

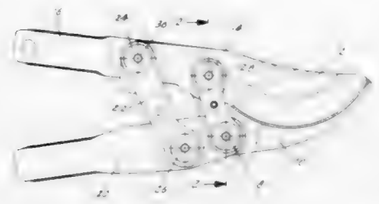
U.S. Cl. 30—216 **8 Claims**



1. A hair trimmer for use with a cutting head assembly having a reciprocable cutter, said trimmer comprising a body, drive means for reciprocating the cutter, said drive means including a reciprocable drive member, and hinge means supported by said body and supporting said drive member for reciprocal movement in a plane relative to said body, said hinge means including an elongated hinge arm having opposite ends respectively connected to said body and said drive member and having a cross section transverse to said elongation with a height and a first thickness, and said hinge arm including, intermediate said opposite ends, a pivot for affording lateral reciprocal movement of said hinge arm and for preventing deflection of said drive member away from said plane, said pivot comprising a portion of said hinge arm having a second thickness which is substantially reduced in comparison to said first thickness and which extends in the direction of elongation for a distance about equal to said second thickness.

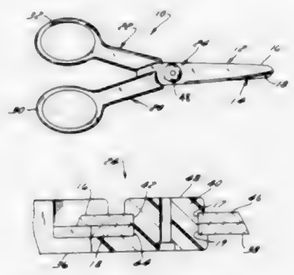
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5,325,591
BRANCH PRUNING SHEARS
Gebhard Orthey, Nauroth, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany
Filed Jul. 23, 1992, Ser. No. 921,291
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1991, 9109070
Int. Cl.[5] B26B *13/00, 13/26*
U.S. Cl. 30—252 8 Claims



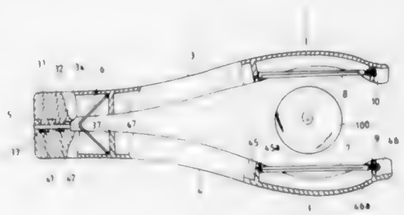
1. Pruning shears comprising
a cutter and a cutting lever pivotally connected to the cutter by a first joint, the cutting lever arm including a gripping handle;
a tang pivotally connected to the cutting lever by a second joint, another gripping handle being arranged on said tang, the cutter being pivotally connected to the tang via a link; and
a strap extending between the first and second joints and bridging the cutter and tang to prevent the cutter and tang from tilting apart during cutting, wherein the strap is connected to the cutting lever via a dowel pin which extends between the tang and the cutter and acts as stop.

5,325,592
PIVOTED TOOL HAVING INTEGRAL PIVOT MEMBER AND METHOD OF PRODUCING SAME
Erkki O. Lindén, Billnäs, and Karl S. Rönnholm, Karis, both of Finland, assignors to Fiskars Oy Ab, Helsinki, Finland
Continuation-in-part of Ser. No. 986,057, Nov. 30, 1992. This application Feb. 26, 1993, Ser. No. 23,811
Int. Cl.[5] B26B *13/28*
U.S. Cl. 30—254 10 Claims



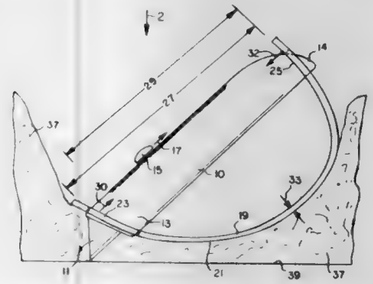
1. A tool having a force applying end and an opposed working end disposed across a pivotable joint through which a force may be transmitted, wherein said tool includes first and second elongated members having first and second handles molded into engagement with a respective one of said elongated members at the force applying end thereof, each of said members having oppositely facing inner and outer surfaces, said members being disposed for cooperative engagement about said pivotable joint and further wherein said joint is comprised of:
(a) first and second registering apertures, one of each formed in a respective one of said elongated members; and
(b) a pivot member integrally formed with said first handle, said pivot member having a shank projecting from said first handle through said first and second apertures into engagement with the interior surfaces thereof; said shank terminating in a head lying adjacent and effectively in contact with the outer surface of said second elongated member.

5,325,593
DOUBLE-BLADE PEELER
Ming-Jing Chen, No. 3, Alley 55, Lane 352, Chye Dong Load, Ah Yi Li, Changhua, Taiwan
Filed May 21, 1993, Ser. No. 64,455
Int. Cl.[5] A47J *17/02*; B26B *3/00*
U.S. Cl. 30—279.6 2 Claims



1. A double-blade peeler comprising
a pair of longitudinally extended blade members, each of said blade members having opposing longitudinal ends and a pair of pivot pins, each pin extending from one of said longitudinal ends respectively, each of said blade members having a centrally disposed elongated through opening formed therethrough and extending longitudinally, each of said blade members having a pair of cutting edges, each edge forming an opposing longitudinally extending side of said elongated through opening;
a first and second longitudinally extending handle member, each of said first and second of handle members having an arcuately shaped frontal portion defined by longitudinally extending upper wall and a pair of integrally formed longitudinally extending opposing side walls, each of said first and second handle members having at least a pair of transversely directed tongues extending in spaced parallel relation each from the other formed on a rear portion of said handle members and a pair of adjacent recess openings formed between said tongues, each of said tongues having a longitudinally directed through opening formed therein, said tongues and said pair recesses of said first handle member being offset with respect to said tongues and said recesses of said second handle member for respective coupling of each of said tongues of one handle member within one of respective recesses of said other handle member with each of said longitudinally directed through openings being disposed in a longitudinally aligned relation, each of said first and second handle members having a first partition and a longitudinally displaced second partition respectively, each of said first and second partitions being disposed transversely in said arcuately shaped frontal portion and extending between said opposing side walls, each of said first and second partitions having a respective longitudinally directed through bore formed therethrough;
a pin member secured within said longitudinally aligned through openings of each of said tongues for lockingly securing said rear portion of said first handle member to said rear portion of said second handle member; and,
a pair of threaded rod members, each of said threaded rod members having a recess formed in one end thereof and being threadedly coupled within said through bore in one of said partitions of one of said first and second handle members, respectively whereby each of said blade members is pivotally coupled about a longitudinal axis between said first and second partitions of the respective first and second handle members, each of said blade members having a first one of said pivot pins disposed in said through bore of the other of said partitions and a second one of said pivot pins disposed in said recess of said respective threaded rod, wherein the tightness with which each of said blade members is secured in the respective handle member is adjustable by rotation of the respective threaded rod.

5,325,594
HAND TOOL FOR CUTTING INSULATION BATTS
James P. Szafranski, 418 Water St., Ellsworth, Me. 04605
Filed Apr. 12, 1993, Ser. No. 44,721
Int. Cl.[5] B26B *9/00*
U.S. Cl. 30—294 5 Claims



1. A hand-operated tool for cutting a batt of soft fibrous insulation comprising:
an elongated cutter blade housing having a first end and a second end;
a cutter blade projecting out of said housing at said first end;
a one-piece insulation compression member formed of a transparent plastic material; said compression member comprising a planar sheet-like wall element having a first end portion detachably fitting onto the first end of the cutter blade housing, and a second end portion fitting onto the second end of the cutter blade housing;
said end portions of the planar wall element having socket openings therein fitting around the respective ends of the cutter blade housing to detachably connect the insulation compression member to the cutter blade housing;
said planar wall element is curved so that a central portion of said planar wall element is spaced away from said blade housing;
the curvature of said planar wall element being such that a person's hand can be curled around the blade housing within a free space formed between the end portions of the planar wall element, whereby said blade housing can be pulled across an insulation batt to enable said planar wall element to compress the batt material in advance of said cutter blade; and
said planar wall element having a continuous uninterrupted batt compressing surface that is flat and smooth in a direction taken normal to the cutter blade, said batt compression surface uniformly compressing areas of an insulation batt contiguous to the blade.

5,325,595
WALLPAPER OUTSIDE CORNER TRIMMER GUIDE
Charles W. Marlin, 3035 Westwood Dr., Grand Island, N.Y. 14072
Filed Dec. 11, 1992, Ser. No. 989,148
Int. Cl.[5] G01B *1/00*
U.S. Cl. 30—294 7 Claims



1. A rectangular shaped wallpaper outside corner trimmer guide, said guide being about six inches long and about 1 and ¼ inches wide, said guide having a gripping portion about ¼ inch wide and a blade portion about ¾ inch wide, said blade portion being about 0.023 inches thick and said gripping portion having a thickness in the range of 0.046 inches to about 0.120 inches, the difference in thickness between the gripping portion and the blade portion resulting in at least one straight ledge along the entire length of the guide, the thickness of said ledge in the range of 0.023 to 0.056 inches.

5,325,596
SELF DEFENSE GLOVE
Joseph L. Baker, 969 Hillsboro Mile, Hillsboro Beach, Fla. 33062
Filed Jun. 4, 1993, Ser. No. 72,148
Int. Cl.[5] B26B *27/00*
U.S. Cl. 30—298 19 Claims



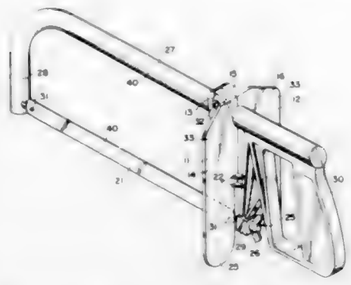
1. A self-defense weapon, comprising:
a glove having a back portion, a palm portion, finger members, and a sleeve, said glove to be worn on a hand of a wearer;
a retractable blade,
means for housing said retractable blade, said means for housing attached to one of a plurality of said finger members proximal the wearer's fingertips; and
means for actuating said blade, said means for actuating attached to said glove, said means for actuating disposed remote from, said blade housing and a lanyard connecting said actuating means to said housing means.

5,325,597
HACKSAW HAND GUARD
Norman E. Clifton, Jr., 607 Trumpetvine Ct., Jacksonville, Fla. 32225
Filed May 21, 1993, Ser. No. 64,637
Int. Cl.[5] B27B *21/00*
U.S. Cl. 30—514 20 Claims

1. A hand guard for a hacksaw having a handle, a frame and

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a blade, said hard guard comprising a pair of mating halves that are substantially mirror images of each other, each said half including an integral supporting flange for clamping around



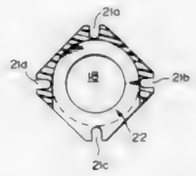
the hacksaw frame adjacent the handle and a wing shield member tapering outwardly and rearwardly from said flange, clamping means for releasably locking said pair of halves together around the hacksaw.

5,325,598

VARIABLE APERTURE PEEP SIGHT FOR BOWS

David D. Hall, 4926 NW. 29th Pl., Gainesville, Fla. 32606-6008, and Garret Hull, 18015 Butternut Rd., Lynnwood, Wash. 48037

Filed Apr. 30, 1992, Ser. No. 877,049
Int. Cl.[5] F41G *1/467*
U.S. Cl. 33—265 **6 Claims**



1. An adjustable aperture peep sight for mounting between filaments of an archery bowstring comprising:

a peep housing generally having two substantially planar exterior surfaces and a peripheral surface, said housing defining a peep hole having a central axis generally perpendicular to said exterior surfaces and defining a receiving slot, said slot inwardly depending from said peripheral surface of said housing to define an orifice and bounded by said housing, said housing further defining a plurality of bowstring filament receiving notches located at said peripheral surface whereby a corresponding number of filaments of a bowstring may be located therein when mounting said peep housing; and

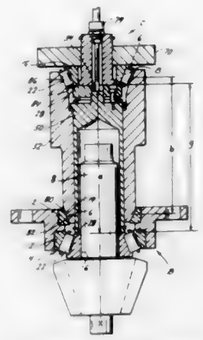
an aperture reducing disc, said disc being slidably receivable in said receiving slot in a direction substantially perpendicular to said axis of said hole, wherein at least one of said plurality of bowstring receiving notches is located at said orifice of said receiving slot to prevent ingress of egress of said aperture reducing disc when a bowstring filament is located therein.

5,325,599

GAUGING APPARATUS AND PROCESS FOR SETTING ANTIFRICTION BEARINGS

Daniel T. Russell, East Sparta, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Dec. 17, 1992, Ser. No. 992,542
Int. Cl.[5] G01B *5/02*
U.S. Cl. 33—517 **18 Claims**



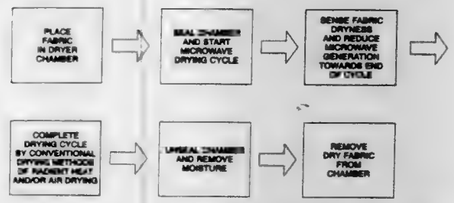
1. An apparatus for determining the length of a spacer that fits between end faces on corresponding positioned races of first and second antifriction bearings that support a shaft within a housing and permit relative rotation between the shaft and the housing about an axis, with the spacer establishing a setting for the bearings, each bearing having the capacity to transmit radial and axial loads and including an inner bearing component that fits around the shaft and has an outwardly presented surface that is inclined with respect to the axis, and an outer bearing component which is fitted into the housing and has an inwardly presented surface that is likewise inclined to match the inclination of the inclined outwardly presented surface on the inner component, one of the components being a race with its inclined surface being a raceway on that race, the other component being another race having a raceway and rolling elements located around the raceway with its inclined surface being formed by the rolling elements, said apparatus determining the length of the spacer while the first bearing is around the shaft and in the housing with its rolling elements seated against the raceways of its races and while one of the components of the second bearing is withdrawn and the other component of the second bearing is within the interior of the housing, one of the positioned races between which the spacer will fit being on the withdrawn component of the second bearing and the other being on the like component of the first bearing, said apparatus comprising: a first measuring element which is adapted to extend axially into the housing and at its end bear against the end face of the positioned race of the first bearing, the first element having a reference surface located axially from the end which will bear against the positioned race of the first bearing so as to in effect project the end face of that race out of the housing; a second measuring element having at one end a first inclined surface which matches the inclination and diameter of the inclined surface on the remaining component of the second bearing and will fit against that inclined surface, and a second inclined surface located axially from the first inclined surface with the inclination of the second surface matching that of the first surface so as to in effect project the inclined surface of the remaining component for the second bearing out of the housing, the diameter of the second surface on the second measuring element corresponding generally to the diameter of the inclined surface on the remaining component so that the second surface will accommodate the withdrawn component of the second bearing with the end face on the positioned race of that component presented toward the end face of the positioned race of the first bearing, and means for measuring the distance between the reference surface on the first element and the end face of the positioned race on the withdrawn component when the inclined surface of that component is against the second inclined surface of the second measuring element, the improvement comprising: a third inclined surface located on the second measuring element and being offset axially from the first inclined surface and further being at a different inclination with respect to the axis, with the inclination matching the inclination of the inclined surface on a remaining component for a different second bearing, and a fourth inclined surface on the second measuring element where it is offset axially from the second inclined surface, the inclination of the fourth surface matching the inclination of the third surface and the diameter of the fourth surface corresponding generally to the diameter of the inclined surface on the withdrawn component of the different second bearing, whereby the apparatus will determine the lengths of spacers for sets of bearings having different inclined surfaces on the components of their second bearings.

5,325,600

METHOD AND APPARATUS FOR THE PREVENTION OF SCORCHING OF FABRIC SUBJECTED TO MICROWAVE HEATING

Philip J. Gentile, East Syracuse, N.Y., assignor to Micro Dry, Inc., Tulsa, Okla.

Filed Apr. 6, 1992, Ser. No. 863,997
Int. Cl.[5] F26B *3/347*
U.S. Cl. 34—260 **9 Claims**



1. A method of preventing an arcing condition in a microwave fabric dryer, comprising the steps of:

a) determining approaching completion of a microwave drying cycle for fabric being dried in a microwave fabric dryer;

b) reducing microwave generation in response to said determining step (a); and

c) completing a drying cycle by a radiant heating technique to substantially dry said fabric.

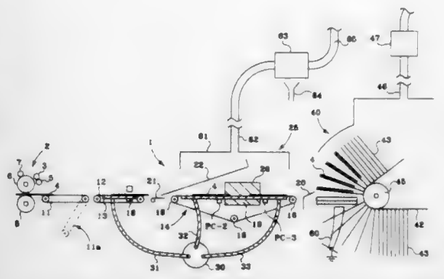
5,325,601

METHOD FOR DRYING AND CURING A COATED METAL SUBSTRATE

Donald L. Brownewell, Naperville; Louis S. Comadena, Burr Ridge, and Dwight B. Raddatz, Woodridge, all of Ill., assignors to Alltrista Corporation, Muncie, Ind.

Continuation of Ser. No. 686,961, Apr. 18, 1991. This application Jan. 5, 1993, Ser. No. 1,202
Int. Cl.[5] F26B *3/34*
U.S. Cl. 34—247 **9 Claims**

1. A process for drying and curing a coating on a metal substrate, comprising the steps of inductively heating a coated metal substrate to rapidly heat the coated metal substrate to a first temperature sufficient to substantially dry the coating; and further gradually heating the coated metal substrate until the coated metal substrate has been raised to a second temperature and maintaining said second temperature for a sufficient duration to cure the coating.

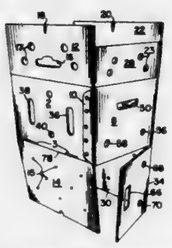


5,325,602

COLLAPSIBLE CORRUGATED BOX

Linda Nainis, Chevy Chase, Md., and Robert J. Milevski, Princeton, N.J., assignors to Protext, Inc., Chevy Chase, Md.

Continuation-in-part of Ser. No. 866,572, Apr. 10, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 43,853
Int. Cl.[5] F26B *5/06*
U.S. Cl. 34—287 **5 Claims**



1. The method of salvaging books that have been soaked by water comprising the steps of

assembling a box of non-wettable, strong material from a flat blank having a plurality of openings providing large open areas in its bottom, top, sides and end members, to permit rapid extraction of water from the box,

placing the wet books in the box and transporting them to a freezer facility,

freezing the books, and

freeze drying the books to extract water from the books within the box.

5,325,603

SOLIDS FEED SYSTEM AND METHOD FOR FEEDING FLUIDIZED BEDS

Donald H. Eastham, Bay S. Louis, Miss., and James W. Reeves, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 527,738, May 23, 1990, Pat. No. 5,175,943. This application Nov. 16, 1992, Ser. No. 957,153
Int. Cl.[5] F26B *3/08*
U.S. Cl. 34—371 **20 Claims**

1. A method for continuously feeding particulate solids to a fluidized bed reactor comprising:

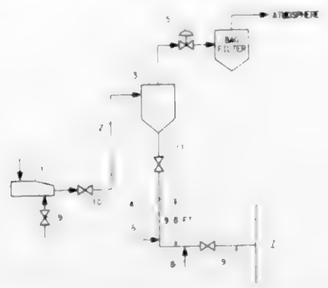
(a) entraining said solids in a flow of inert gas in a line leading to a cyclone wherein gas and solids are separated into an exit gas stream and a gravity stream of solids;

(b) delivering said gravity stream of solids to an essentially

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vertical standpipe and delivering said exit gas stream to a vent line;

(c) providing valve means within said vent line to control the pressure therein thereby controlling the effective hydrostatic head of a solids column in said standpipe;



(d) fluidizing solids in said standpipe by introducing a flow of inert gas at one or a plurality of locations in said standpipe; and

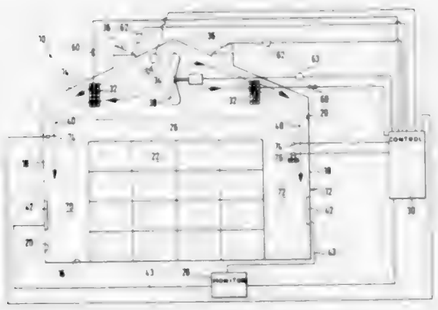
(e) feeding solids, in a dense phase, from said standpipe directly to a fluidized bed reactor by a feed conduit without valve means, said feed conduit having a bend which is greater than the angle of repose of the particulate solids.

5,325,604

AUTOMATIC CONTROL SYSTEM FOR WOOD DRYING KILN

Robert L. Little, Knoxville, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Dec. 17, 1992, Ser. No. 992,461
Int. Cl.[5] F26B *3/02*
U.S. Cl. 34—493 **14 Claims**



1. A method for controlling environmental conditions of a kiln within which a stack of lumber is dried comprising the steps of:

providing a sensor within the kiln and from which a sample from the stack can be suspended and which generates a signal corresponding to the weight of the sample, at a spaced location from the stack but in the kiln;

positioning the sensor adjacent an interior wall of the kiln and clamping the sample to the sensor so that the weight of the sample is suspended from the sensor;

determining the actual moisture content of the sample continuously as a function of the weight of the sample and the signal generated by the sensor;

comparing the actual moisture content of the sample with the moisture content which the sample is desired to possess; and

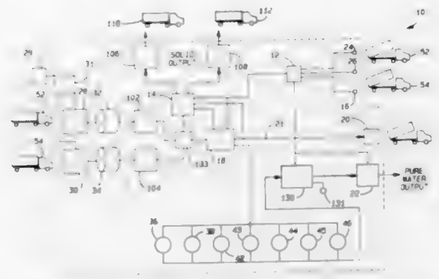
altering environmental conditions in the kiln in accordance with variations detected between the actual moisture content and the desired moisture content.

5,325,605

METHOD AND APPARATUS FOR WASTE TREATMENT

E. Bayne Carew, 23131 Lodge Ln., Dearborn, Mich. 48124

Filed Oct. 14, 1992, Ser. No. 960,991
Int. Cl.[5] F26B *13/10*
U.S. Cl. 34—526 **4 Claims**



3. A method of treating a material comprising the steps of:

providing a computer;

providing a material to be cleaned to the system, a waste description being associated with the material;

storing that waste description in the computer;

analyzing a sample of the actual material, and comparing the analyzed sample with the description stored in the computer;

updating the computer record if the actual analyzed sample differs from that in the description;

the computer making a determination of whether the particular material can be processed;

heating the material if the computer determines the material can be processed; and

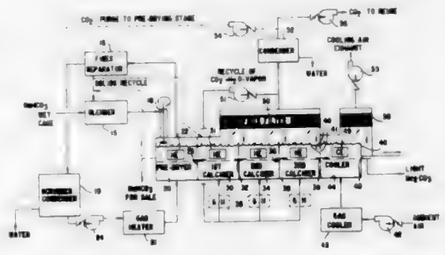
causing a cleaned material to be outputted of the system.

5,325,606

PROCESS AND APPARATUS FOR DRYING AND CALCINING SODIUM BICARBONATE

Erik Liborius, Ellicot City, Md., assignor to Niro A/S, Soeborg, Denmark

Filed Dec. 23, 1992, Ser. No. 994,429
Int. Cl.[5] F26B *3/08*
U.S. Cl. 34—589 **9 Claims**



1. Apparatus for drying and calcining sodium bicarbonate and cooling sodium carbonate comprising:

a plurality of adjacent fluid bed sections interconnected by means permitting continuous fluid flow of particulate material from a first to a last one of said adjacent fluid bed sections, at least a first one of said fluid bed sections comprising a wet cake fluid bed dryer section, a last one of said fluid bed sections comprising a particulate material fluid bed cooling section and a sequence of adjacent fluid bed sections between said first and said last ones of said fluid bed sections comprising a plurality of adjacent fluid bed calciner sections;

means for providing an essentially carbon dioxide gas to said fluid bed dryer section to fluidize a particulate feed material delivered to said dryer section;

means for heating said fluidized particulate feed material in said fluid bed dryer section to vaporize water from said particulate feed material in said fluid bed dryer section;

means for providing a mixture of carbon dioxide and water vapor to each of said plurality of adjacent fluid bed calciner sections to fluidize particulate material in each of said fluid bed calciner sections and means to heat the particulate material in each successive fluid bed calciner section to increase the total amount of sodium bicarbonate converted to sodium carbonate in each successive fluid bed calciner section;

means for providing atmospheric air to said fluid bed cooling section to fluidize the particulate material in said fluid bed cooling section; and

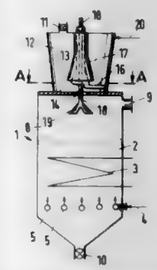
means for cooling said fluidized material; whereby a sodium bicarbonate wet cake material delivered to said first fluid bed dryer section is dried in said dryer section and moved as a particulate material successively through each of said fluid bed calciner sections to said fluid bed cooling section wherein it is withdrawn as a substantially anhydrous sodium carbonate particulate product.

5,325,607

REACTOR FOR DRYING WATER-CONTAINING SOLIDS IN A HEATED FLUIDIZED BED AND METHOD OF OPERATING THE REACTOR

Hans-Jürgen Weib, Oberursel; Wolfgang Frank, Eschborn; Wladyslaw Lewandowski, Schwalbach, and Wolfgang Scheler, Bad Homburg, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 14, 1993, Ser. No. 122,030
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1992, 4232110
Int. Cl.[5] F26B *17/00*
U.S. Cl. 34—586 **4 Claims**



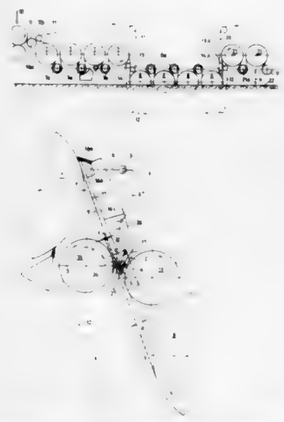
1. In a reactor for drying water-containing solids in a heated fluidized bed, which reactor comprises said fluidized bed and above the fluidized bed a vapor-collecting space provided with a vapor outlet and, above the vapor-collecting space, means for feeding the water-containing solids through an outlet opening downward to the fluidized bed, an approximately conical distributor surface, which is rotatable about a vertical axis, is provided in the vapor-collecting space below said outlet opening, said surface sloping at an angle from about 25° to 70° from the horizontal and having at least one aperture which occupies about 30 to 90% of the theoretical overall area of the distributor surface.

5,325,608

ARRANGEMENT FOR THE TRANSFER OF A TRAVELING WEB

Wolfgang Mayer, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Fed. Rep. of Germany

Filed Aug. 14, 1992, Ser. No. 929,973
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 9110134
Int. Cl.[5] F26B *11/02*
U.S. Cl. 34—114 **20 Claims**



1. An arrangement for transferring a traveling web to be dried from a first drying cylinder to a second drying cylinder, the arrangement comprising:

a first porous support belt for traveling together with the web, the first belt having a first side for supporting the web and the first side of the first belt first wrapping the web around the first cylinder and then passing with the web away from the first cylinder;

a first guide roll spaced away from the first cylinder, the first guide roll being free of suction devices;

the first belt having a second side opposite the first side thereof, the second side of the first belt wrapping around the first guide roll after the web has been separated from the first belt;

a second porous support belt for traveling with the web, the second support belt having a third side for receiving the web from the first support belt and for supporting the web and having an opposite fourth side;

a second guide roll over which the fourth side of the second support belt wraps, thereby forming a wrapping zone along the second guide roll; the second guide roll being free of suction devices; the second drying cylinder being placed with respect to the first and second guide rolls such that the web is transferred from the first side of the first support belt to the third side of the second support belt and the web then passes on the third side of the second support belt and is wrapped directly around the second drying cylinder;

the first cylinder and the first guide roll defining a travel path for the first support belt therebetween; the second guide roll being placed near the travel path of the first support belt from the first drying cylinder to the first guide roll; the travel path of the first support belt in the direction toward the first guide roll passing said wrapping zone and that passing is located at a first distance upstream in the path of the first support belt from where the first support belt meets the first guide roll to wrap thereabout;

air guide means located above the second side of the first support belt, along the travel path of the first support belt,

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and at the first guide roll upstream in the travel path of the first support belt where the first support belt contacts the first guide roll, said air guide means being provided for directing air through the first porous support belt to separate the web from the first support belt and bring the separated web into supporting contact with the second support belt, such that the second support belt receives the web and thereafter supports the web to move the web toward the second cylinder.

5,325,609

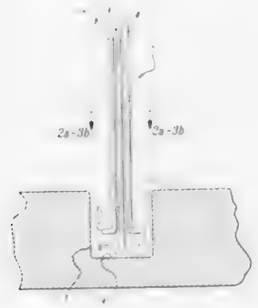
DEVICE FOR WASHING MICROTITER PLATE WELL WITH SWIRLING CURRENT

John R. Wells, Culver City, Calif., assignor to Source Scientific Systems Inc., Garden Grove, Calif.

Continuation of Ser. No. 521,160, May 8, 1990, abandoned. This application Sep. 29, 1993, Ser. No. 129,548

Int. Cl.[5] B08B *3/02, 9/08*

U.S. Cl. 134—167 R 5 Claims



1. A probe employed in conjunction with an apparatus for washing a coated vessel with wash liquid, the coated vessel having a bottom and sidewalls and containing a pre-wash liquid, the probe comprising

a liquid channel and

a vacuum channel,

said liquid channel and said vacuum channel being adjacent to one another and coupled to one another with respect to movement,

said vacuum channel terminating with an inlet for aspirating liquids, said inlet being positionable adjacent to the bottom of the coated vessel for removing substantially all liquids therefrom by aspiration,

said liquid channel terminating with an outlet for expressing wash liquid, said liquid channel being bent for orienting said outlet for expressing wash liquid directly onto the sidewalls of the coated vessel when said inlet of said vacuum channel is positioned adjacent to the bottom of the coated vessel, said inlet being positioned lower than said outlet and all other structural elements of the probe when the probe is positioned adjacent to the bottom of the coated vessel,

whereby the coated vessel may be washed by positioning said inlet adjacent to the bottom of the coated vessel, then aspirating substantially all of the pre-wash liquid therefrom through said outlet and then expressing wash liquid directly onto the sidewalls of the coated vessel by means of said outlet without repositioning the probe.

5,325,610

DRYING APPARATUS

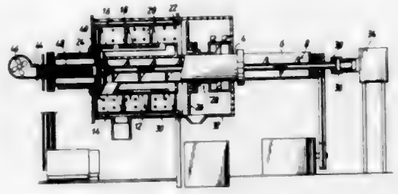
Tian F. Jou, No. 328, Changlue Rd., Hsiushui Hsiang, Changhua Hsien, Taiwan

Continuation-in-part of Ser. No. 767,077, Sep. 27, 1991, Pat. No. 5,137,042. This application Jun. 8, 1992, Ser. No. 894,902

The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[5] F26B *11/12*

U.S. Cl. 34—182 2 Claims



1. A drying apparatus comprising:

(a) conveying means comprising (i) a tubular member consisting of a first section providing an inlet through which recyclable pieces mixed with water can be introduced into said tubular member and a second section providing an outlet through which recyclable pieces mixed with water can be discharged from said tube and (ii) a conveyor screw rotatably supported in said tubular member for moving recyclable pieces mixed with water from said inlet toward said outlet;

(b) drying and conveying means comprising (i) a cylinder enclosing said second section of said tubular member for receiving the recyclable pieces mixed with water discharged from said tubular member of said conveying means, said cylinder having a number of apertures formed therein, (ii) a helical screw conveyor within said cylinder so that relative rotation of the screw conveyor conveys the recyclable pieces therethrough while allowing the water to discharge through said apertures therein; and

(c) a housing comprising (i) a water collecting section enclosing said cylinder for collecting water discharged through said apertures and (ii a recyclable piece-collecting section sealingly attached to said water collecting section for collecting the recyclable pieces from said cylinder and having an outlet for discharging recyclable pieces from said housing.

5,325,611

COMFORT CRADLE SYSTEM FOR FOOTWEAR CONSTRUCTION

Robert M. Dyer, St. Louis County, Mo.; Zenon O. Smotryez, and Edward J. Norton, both of Middlesex County, Mass., assignors to Brown Group, Inc.

Continuation of Ser. No. 962,913, Oct. 19, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,680

Int. Cl.[5] A43B *13/12, 13/28*

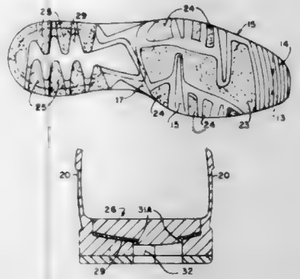
U.S. Cl. 36—30 R 8 Claims

1. In footwear having a foot supporting body construction comprising:

a) an assembly consisting of an outsole and a midsole together having longitudinally extending top and bottom surfaces forming a foot supporting structure, said surfaces defining a forepart, an instep portion, and a heel portion with an opening extending lengthwise of said longitudinal top and bottom surfaces and through said top and bottom surfaces of said instep and heel portions;

b) a plurality of spaced apart finger elements positioned in said heel portion extending inwardly to intersect said lengthwise opening in said heel portion and having free ends in said opening; and

c) a foot heel supporting cradle device disposed in said opening, said cradle device presenting a bearing surface



on said finger elements for support in said opening in said heel portion.

5,325,612

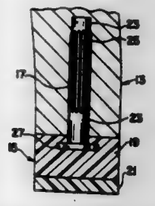
SHOE WITH IMPROVED DUAL HARDNESS HEEL-LIFT

Barry W. Lock, Washington, and William J. Scholl, St. Louis, both of Mo., assignors to Nine West Group, Inc., St. Louis, Mo.

Continuation of Ser. No. 842,015, Feb. 25, 1992, which is a continuation-in-part of Ser. No. 555,079, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 482,249, Feb. 20, 1990, abandoned. This application Jun. 16, 1993, Ser. No. 79,066

Int. Cl.[5] A43B *21/00*

U.S. Cl. 36—34 R 22 Claims



1. A shoe comprising a heel with a wear-resistant, non-slip dowel-lift, said dowel-lift comprising a dowel and a unitary dual hardness polyurethane material having two portions, a first portion having a Shore A Hardness not less than 96 which adheres to said dowel and second portion of a thermoset polyurethane elastomer having a Shore A Hardness between 81 and 93, a rebound resilience of greater than 40% and an NBS abrasion resistance of greater than 350, said second portion molded to and directly adhering to said first portion wherein said second portion is not greater than 2.5 millimeters in vertical height and wherein said second portion has a bottom surface adapted for contacting a walking surface when said shoe is in normal use.

5,325,613

SHOE WITH A CENTRAL CLOSURE

Reinhold Sussmann, Scheinfeld, Fed. Rep. of Germany, assignor to Tretorn AB, Helsingborg, Sweden

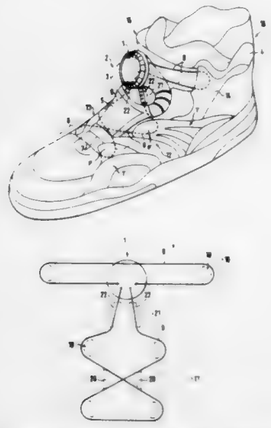
Filed Jan. 28, 1993, Ser. No. 10,385

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1992, 9200982[U]

Int. Cl.[5] A43B *11/00*

U.S. Cl. 36—50.1 27 Claims

1. A sport, recreation or rehabilitation shoe, having an upper formed of an elastically flexible material at least at side parts thereof, two rope-type tension elements, guide elements on at least one of the upper and an instep cover, each of the rope-type tension elements being guided along a respective path by respective ones of said guide elements, and a central closure to which the two rope-like tension elements are coupled; wherein the central closure is provided with an operating member and two tensioning devices that are operatively connected to the operating member so as to be adjustable independently and jointly with respect to each other thereby, said central closure forming a means for selectively shortening and elongating the paths of the tension elements and thereby tightening respective portions of the upper, one tension element being coupled with each of the tensioning devices; wherein the tensioning devices are disengageably coupled to each other by coupling elements,



said coupling elements being selectively disengageable as a means for enabling only one of the two tensioning devices to be activated in a closing direction by said operating member and being engageable as a means for enabling both of the tensioning devices to be simultaneously activated in the closing direction by the same operating member, depending on whether one or both of the tension elements is to be shortened to tighten the upper; and wherein detention means are provided for securing the two tensioning devices in a selected adjustment position independently of each other, such that the path of one of the tension elements can be shortened while enabling an attained position of adjustment of the other tension element to be maintained.

5,325,614

ADJUSTABLE FIT SHOE CONSTRUCTION

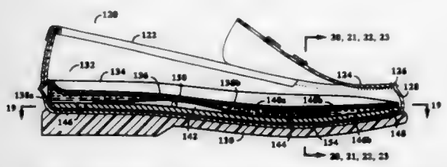
Henri E. Rosen, 229 Coolidge Ave., Watertown, Mass. 02172

Continuation-in-part of Ser. No. 861,114, Mar. 31, 1992, Pat. No. 5,241,762. This application Mar. 31, 1993, Ser. No. 40,640

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[5] A43B *3/26*

U.S. Cl. 36—97 10 Claims



1. A shoe comprising a bottom member, an upper member having two opposing side portions and a top portion, said bottom and upper members defining an enclosure, and an adjustment means disposed within the enclosure adjacent and

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along at least a portion of the bottom member, said adjustment means and said upper member defining a cavity for insertion of a foot, said shoe having a heel portion, a midportion and a toe portion, said cavity having a width extending between the two side portions at about the midportion of the shoe and also having a fitting height extending vertically from the adjustment means to the top portion of the upper member within the cavity at about the midportion, said cavity also having a defined circumference at about the midportion, said adjustment means being disposed in a position for changing the relationship between the width of the cavity and the fitting height of the cavity while maintaining the defined circumference substantially constant so as to improve the fit of the shoe, wherein said adjustment means comprises a fluid-containing bladder

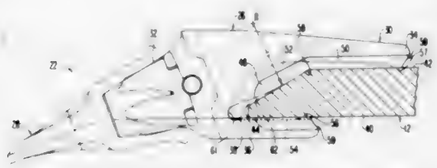
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5,325,615

ATTACHMENTS FOR EXCAVATING BUCKETS

Brian J. Hutchins, Tualatin; William C. Johnston, Sherwood, and Timothy L. Mayfield, Cornelius, all of Oreg., assignors to ESCO Corporation, Portland, Oreg.

Continuation of Ser. No. 811,288, Dec. 20, 1991, abandoned.
This application Mar. 29, 1993, Ser. No. 38,076
Int. Cl.[5] E02F *9/28*
U.S. Cl. 37—455 **35 Claims**



1. An attachment adapted to mount to a front edge of a bucket, the front edge defining an inner surface, an outer surface and a beveled surface oriented at an inclination to the inner and outer surfaces, said attachment comprising a unitary, single piece body having a rear base portion adapted to engage and mount the attachment to the front edge of a bucket and a working end projecting forwardly from said base portion, said base portion including an end face facing in a generally rearward direction and at least one rearwardly extending leg having a generally convex-shaped face engaging the beveled surface of the bucket upon assembly, said body further including a recess defined by at least said convex-shaped face and said end face, said recess being continuously open rearwardly and laterally to accommodate receipt of the front edge of the bucket.

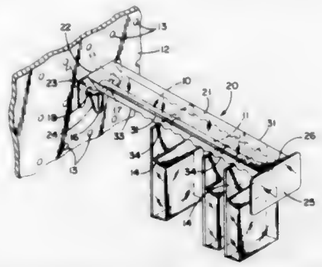
5,325,616

LABEL HOLDER FOR DISPLAY HANGERS

Stanley C. Valiulis, Rockford, Ill., assignor to Southern Imperial, Inc., Rockford, Ill.

Filed Mar. 18, 1993, Ser. No. 33,010
Int. Cl.[5] G09F *3/10*
U.S. Cl. 40—299 **4 Claims**

1. A combination of, an elongated merchandise support hook having front and rear portions, and a device for use with the support hook to display information relating to merchandise on the hook and to help hold the merchandise in spaced relation along the hook, said device comprising a single piece of plastic having an elongated strip overlying the hook, said strip having front and rear ends and having longitudinally extending side margins, a downwardly extending mounting portion integral with the rear end of said strip and releasably attached to the rear portion of the hook, a tab portion extending downwardly from the front end of said strip and adapted to support a merchandise information label, each of said side margins including integral means defining a downwardly facing lower edge having front and rear portions, at least the front portion of each of said lower edges being scalloped to help



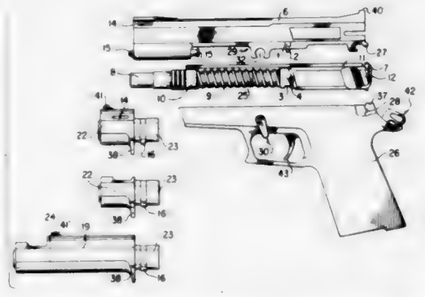
hold the merchandise in spaced relation along the front portion of the hook.

5,325,617

SYSTEM FOR CHANGING THE BARREL OF A GUN OR WEAPON

Maximilian Vojta, and Franz Gabriel, both of Wiesengasse 159, A-2551 Enzesfeld, Austria

Filed Mar. 14, 1991, Ser. No. 669,607
Claims priority, application Austria, Mar. 15, 1990, 618/90
Int. Cl.[5] F41A *21/48*
U.S. Cl. 42—75.03 **17 Claims**



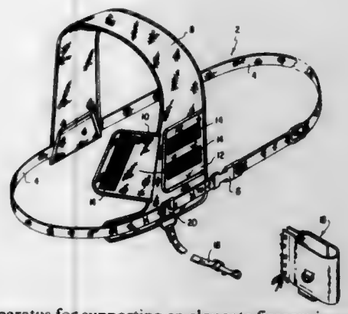
1. A system for changing the barrel of a firearm, said firearm comprising: a stock having a trigger mounted thereon; a housing part removably attached to said stock in a fixed operative position, said housing part having a sighting mechanism on its upper side; a barrel mounted in the housing part; a breech block disposed in the housing part which travels rearward on firing; a locking system mounted in the housing part cooperating with said breech block; a closing spring surrounding the barrel; means for connecting the closing spring to the breech block; a firing pin reciprocally received within the breech block; means for removably retaining said barrel, closing spring, breech block, connecting means, and locking system within said housing part; a releasable key means for holding said housing part in the fixed operative position, said releasable key means having a release position to remove the housing part in a direction substantially transverse thereto, said barrel, closing spring, breech block, connecting means, and locking system being retained within the housing part in operative positions with respect to each other, said housing part being held in fixed position with respect to the stock; wherein said housing part has an interior space of cylindrical design and further comprising a slide securing the barrel, breech, locking system, breech closing spring and firing pin in the housing part, said slide sliding transverse in the housing part and contacting the barrel such that the barrel can be easily removed from the housing part and replaced with another barrel.

5,325,618

SAFETY DEVICE FOR A RIFLE

Harold W. Turner, P.O. Box 652, Corbin, Ky. 40702

Filed Jan. 15, 1993, Ser. No. 5,090
Int. Cl.[5] F41C *33/00;* **F41H** *17/00*
U.S. Cl. 42—85 **19 Claims**



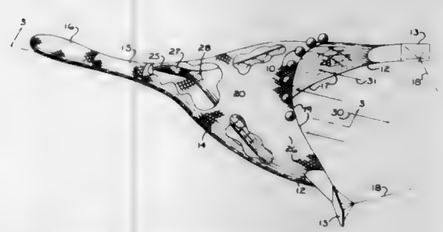
1. Apparatus for supporting an elongate firearm in a substantially upright orientation on the chest of a user, comprising:
holding means for securely holding a first portion of said firearm near a shoulder of said user,
securing means for securing said holding means to the breast of the user; and
support means for supporting a second portion of said firearm directly below said shoulder, wherein said support means and said holding means are oriented so as to hold the firearm in a substantially vertical orientation.

5,325,619

SELECTIVE EXCLUDING FISHING TRAWL DEVICE

Nelson G. Paul, 2216 Dobbin Pl., Raleigh, N.C. 27604-3878

Filed Oct. 26, 1992, Ser. No. 966,426
Int. Cl.[5] A01K *73/02*
U.S. Cl. 43—9.2 **5 Claims**



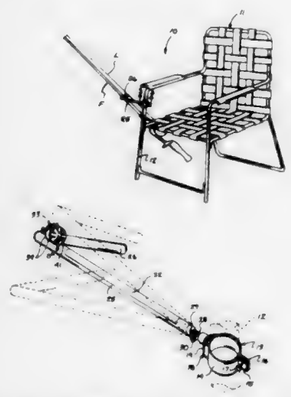
1. A trawling net device comprised of:
an outer net assembly and an inner net assembly, said outer net assembly and inner net assembly comprising netting material;
wherein the outer net assembly is comprised of netting material having a tubular funnel shape terminating in an aft collection bag;
wherein the inner net assembly, having a tubular funnel shape, is comprised of second netting material, said second netting material comprising larger size net meshes relative to the netting material comprising the outer net assembly;
said outer and inner net assemblies being joined at the forward extremity of said trawling net device;
said outer and inner net assemblies further joined with an inner tubular section, said inner tubular section joining an opening in the aft end of the inner net assembly and an opening in a central portion of said outer net assembly, said central portion being forward of said aft collection bag; said inner tubular section forming a passage between the aft end of the inner net assembly and exterior of said trawling net device;
whereby, by means of trawling stream flow, said inner tubular section and and said inner net assembly exclude species from the aft collection bag which are sized so as to be unable to pass through the meshes of the second netting material, such excluded species being directed through said inner tubular section to the exterior of said trawling device.

5,325,620

CHAIR ATTACHED FISHING POLE SUPPORT

Bernard L. Reed, and Nannie S. Reed, both of 2252 Meridian Ct., Columbus, Ohio 43232

Filed Sep. 20, 1993, Ser. No. 123,804
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 **5 Claims**



1. A chair attached fishing pole support, comprising,
a split discontinuous cylindrical sleeve having an outer side wall, with the sleeve formed of a discontinuity including a first flange and a second flange arranged in a facing relationship on opposed sides of the discontinuity, with a fastener directed threadedly through the first flange and the second flange to permit securement of the first flange and the second flange together for securement of the split discontinuous cylindrical sleeve about a chair leg, and
a receiving cup mounted to the outer side wall, the receiving cup including a receiving cavity, and
an arcuate flange complementarily received within the receiving cavity, the receiving cup having a receiving cup side wall, with the receiving cup side wall having a side wall slot, with the arcuate flange having a flange supporting rod integrally mounted to the arcuate flange directed through the side wall slot, with a shaft body integrally mounted to the flange supporting rod at a first end of the shaft body, with the shaft body having a body second end, with the body second end including a shaft leg integrally mounted to the second end at an acute included angle to define an intersection of the shaft leg and the shaft body to position a fishing pole at the intersection.

5,325,621

ANIMAL TRAP

Joseph N. Giglietti, 202 N. Center St., Joliet, Ill. 60433

Filed Jun. 2, 1993, Ser. No. 71,587
Int. Cl.[5] A01M *23/08*
U.S. Cl. 43—61 **8 Claims**

1. A preset animal trap comprising:
at least one side wall defining a chamber, said at least one

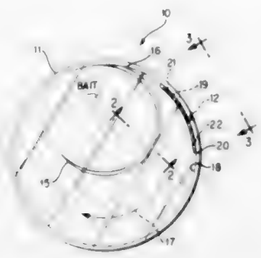
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side wall having a top end and a bottom end and forming an entrance hole larger then the size of an animal to be trapped;

a top end wall adjacent said top end of said at least one side wall;

a bottom end wall adjacent said bottom end of said at least one side wall;

a resilient trap door secured to an inside surface of said at least one side wall, said trap door conforming to said inside surface of said at least one side wall and, in a closed position, completely covering said entrance hole;



means for inhibiting said trap door from being opened from inside said chamber; and

a spiral-shaped inner partition having its outermost end abutting said at least one side wall forming a non-continuous loop pathway, said spiral-shaped inner partition forming a spiral animal pathway from said entrance hole for a distance greater than an overall length of the animal to be trapped, thereby allowing said resilient trap door to return to a fully closed position over said entrance hole.

5,325,622

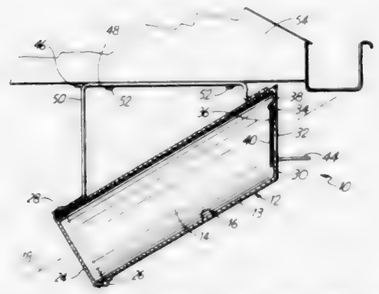
BIRD TRAP ASSEMBLY

Dwain H. Merickel, R.R. 1-Box 69, Elysian, Minn. 56028

Filed May 25, 1993, Ser. No. 66,766

Int. Cl.[5] A01M *23/08*

U.S. Cl. 43—66 **12 Claims**



1. A trap assembly for trapping birds which have a natural instinct to nest or roost in dark places, the trap assembly comprising:

a housing having a closed end and an open end truncated along a first plane angularly offset from a longitudinal axis of the housing, the housing being constructed of a light impermeable material such that a darkened area is created within the housing such that the birds are enticed to enter the housing through the open end;

trap means immediately adjacent the open end for trapping the birds within the housing thereby preventing the birds from exiting the housing via the open end; and

mounting means attached to the housing for mounting the trap assembly at an angle above the ground surface with the closed end closer to the ground surface that the open end.

5,325,623

MATERIAL FOR MAKING MARINE STRUCTURE

Makoto Sakuraoka, Kobe; Tetuo Morita, Osaka; Shinichi Nakade, Itami; Akihiro Nakahara, Ibaragi; Tomoko Noyama, Takarazuka, and Kimihiro Tanida, Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Dec. 22, 1992, Ser. No. 994,644

Claims priority, application Japan, Dec. 27, 1991, 3-346974; Dec. 27, 1991, 3-346983; Dec. 7, 1992, 4-326997

Int. Cl.[5] A01K *69/08*

U.S. Cl. 43—100 **16 Claims**

1. A portion of a fish-cultivating frame or a pontoon frame, comprising a rubber composition which has been shaped by vulcanization into a predetermined configuration, wherein said rubber composition comprises a base rubber and in an amount sufficient to co-crosslink said rubber, a metal salt of an α, β-unsaturated fatty acid.

5,325,624

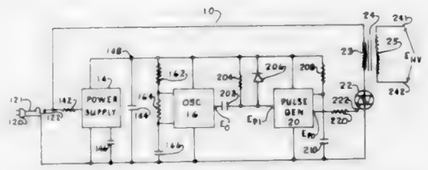
ELECTRONIC FLY POPULATION CONTROL APPARATUS

R. H. Richardson, Rte. #1, Box 12A, Hayesville, N.C. 28904, and Hank Beesley, 2991 Woodrow Way, Atlanta, Ga. 30319

Filed Sep. 8, 1992, Ser. No. 941,987

Int. Cl.[5] A01M *1/22*

U.S. Cl. 43—112 **4 Claims**



1. A device for controlling the population of flies within a building by applying short duration high voltage bursts to destroy the nervous system of the files, said device comprising:

(a) an electronic circuit means for generating high voltage bursts with sufficiently high voltage to destroy the nervous system of a fly, said bursts being of insufficient power to cause ignition of materials within the vicinity of said building, said circuit means having:

a high-voltage transformer having a primary coil and a secondary coil;

a triac switch connected to the primary coil;

a pulse generator connected between said triac and an oscillator, for controlling said triac to turn on to allow current to flow through said transformer;

an oscillator connected to said pulse generator, for controlling the pulse repetition rate of said pulse generator, and

(b) roosting means connected to said secondary coil, providing a roosting surface for said flies, said roosting means having a pair of parallel conductors extending between two points within said building, said conductors being spaced $\frac{1}{4}$ to 3/16 in. apart and neither of which conductors being rounded to any point of said building;

whereby when a power source is applied to said circuit means, said pulse generator has a pulse width of 1–20 milliseconds, and said oscillator has a frequency of 0.2–1 Hz, thereby conduction of current flowing through said triac is limited to occur once every 1–5 seconds, and therefore a high voltage is being generated in the secondary coil and presented between said conductors only in short burst simultaneously.

5,325,625

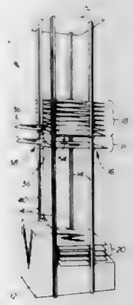
AUTOMATED ADJUSTABLE INTERVAL INSECT TRAP

Yongbiao Liu, and Kenneth F. Haynes, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Sep. 9, 1993, Ser. No. 119,276

Int. Cl.[5] A01M *1/14*

U.S. Cl. 43—114 **22 Claims**



1. An automated, adjustable-interval insect trap, comprising:

a plurality of capturing means for capturing insects, said plurality of insect capturing means being selectively displaceable into an insect capturing position;

guide means for guiding movement of said plurality of insect capturing means into said insect capturing position; and

positioning means for positively positioning said plurality of insect capturing means along said guide means into said insect capturing position whereby a different one of said plurality of insect capturing means is selectively positioned in said insect capturing position for a selected time interval.

5,325,626

FIRE ANT PESTICIDE DISPENSER APPARATUS

Robert L. Jackson, 856 Kirkland St., Batesburg, S.C. 29006

Filed May 28, 1993, Ser. No. 69,167

Int. Cl.[5] A01M *1/20*

U.S. Cl. 43—124 **9 Claims**



1. A device for use with an insecticide, said device consisting of:

a hollow conduit having a first end and a second end;

a reservoir attached to said first end;

a lid, said lid removably attached to said reservoir;

a pointed tip, said tip having a first end and a second end, said tip tapered from said first end to said second end, said first end having a diameter;

a manifold having an exterior surface and a first end and a second end, said first end of said manifold attached to said second end of said hollow conduit, said second end of said manifold being attached to said first end of said pointed tip, said manifold having a main passage formed therein in fluid communication with said hollow conduit so that said insecticide can flow from said hollow conduit through said main passage, said manifold having a plurality of holes formed between said exterior surface of said device and said main passage so that said insecticide can flow from said reservoir to said exterior surface through said conduit, said main passage and said plurality of holes when poured into said reservoir, said manifold having an annular channel formed in said exterior surface where said holes exit said manifold in order to prevent clogging of said holes when said device is pushed into soil.

5,325,627

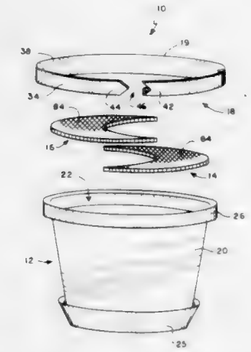
WEED CONTROL DEVICE FOR POTTED PLANTS

Charles E. Anderson, 3904 Retama, Victoria, Tex. 77901

Continuation-in-part of Ser. No. 931,958, Aug. 19, 1992. This application Mar. 15, 1993, Ser. No. 31,485

Int. Cl.[5] A01G *9/02*

U.S. Cl. 47—84 **15 Claims**



1. A weed control device for potted plants, comprising:

a mat of porous construction adapted to fit within the open top of a pot and engage a side wall thereof for inhibiting weed growth by shading the pot interior from light; and,

a retainer positioned atop said mat for holding said mat within the pot by applying a downward force principally about the periphery of said mat, said retainer having a substantially triangular cross-sectional configuration and including:

a substantially vertical side surface for engaging the side wall of the pot;

a substantially horizontal bottom surface normally extending from said side surface for engaging said mat; and,

an inclined surface joining said side surface and said bottom surface.

5,325,628

AUTOMATIC DOOR OPERATOR

Dan C. Yingling, 11020 Yingling La., Frazeysburg, Ohio 43822

Continuation of Ser. No. 755,667, Sep. 6, 1991, abandoned. This application Apr. 2, 1993, Ser. No. 41,923

Int. Cl.[5] E05F *11/00*

U.S. Cl. 49—360 **6 Claims**

1. An automatic door operator assembly for use in opening and closing a door slideably mounted to a building structure and movable along a path adjacent a doorway of said structure, the doorway defining an area inside said building structure and an area outside said building structure, said operator assembly comprising:

a motorized unit secured on a first side of said doorway and inside said building structure;

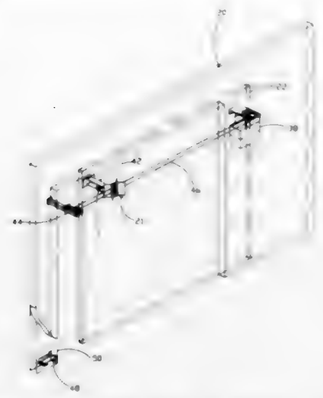
a gear drive driven by said motorized unit;

said door mounted on the outside of said building structure and at least one structural member rigidly secured to said door;

an idler bracket assembly secured to a second side of said

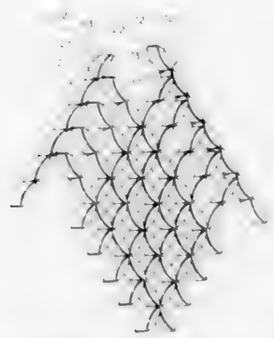
doorway opposite said first side of said doorway and inside said building structure; and

a flexible member forming a continuous loop, said flexible member in association with said gear drive, said structural



member, and said idler bracket assembly, such that said flexible member actuated by said gear drive engages said structural member causing said door to open or close depending upon the direction of movement of said flexible member.

5,325,629
GRATINGS FOR WINDOWS/DOORS
Chi-Lu Hsu, No. 9, Lane 76, An-Kung Rd., Sec. 1, Hsin-Den, Taiwan
Filed May 18, 1993, Ser. No. 62,609
Int. Cl.[5] **E06B** *3/68*
U.S. Cl. 49—50 **1 Claim**



1. Gratings for windows/doors comprising a plurality of top members which each as a plurality of lower notches or cuts formed only at lower side of said top members, and a plurality of bottom members which each has a plurality of upper notches or cuts formed only at upper side of said bottom members; each notch of said plurality of lower notches having a depth equal to one half a depth of said top members, each notch of said plurality of upper notches having a depth equal to one half a depth of said bottom members, said top members and said bottom members being assembled by engaging said lower notches or cuts of said top members with said upper notches or cuts of said bottom members so that said top members intersect with said bottom members at each engaged notch or cut; said top members and said bottom members having sections with opposing convex side walls, a concave upper wall and a concave lower wall between adjacent notches or cuts of said lower notches and said upper notches, said convex side walls having end edges adjacent said notches or cuts, wherein a full end edge of said end edges of said opposing convex side walls of said top members are engaged to a full end edge of said end edges of said opposing convex side walls of said bottom members when said bottom members are assembled.

5,325,630
DOOR HOLE COVER
Howard M. Allenbaugh, Huntington Beach, Calif., assignor to M.A.G. Eng. & Mfg. Inc., Huntington Beach, Calif.
Filed Apr. 28, 1993, Ser. No. 53,777
Int. Cl.[5] **E05C** *7/02*; **E06B** *7/00*
U.S. Cl. 49—62 **12 Claims**



1. A door hole cover, comprising:

a first cover plate having a substantially flat inner surface for contact with one side of a door and having a size that is larger than the size of a hole in the door;

a second cover plate having a substantially flat inner surface for contact with an opposite side of the door and having a size that is larger than the size of the door hole;

a centering disk having an aperture located substantially at its center and having a size that is slightly less than the size of the door hole; and

a fastener adapted to pass through the hole in the door and the aperture in the centering disk and to secure the first cover plate and the second cover plate to the door such that the centering disk within the door hole substantially prevents movement of the first and second cover plates with respect to the door.

5,325,631
WINDOW REGULATOR
Christopher Lee, Gurnee, Ill., and Douglas L. Juga, Kenosha, Wis., assignors to A.L. Hansen Mfg. Co., Waukegan, Ill.
Filed Mar. 25, 1993, Ser. No. 36,417
Int. Cl.[5] **E05F** *11/48*
U.S. Cl. 49—352 **5 Claims**

1. In a window regulator of the type comprising

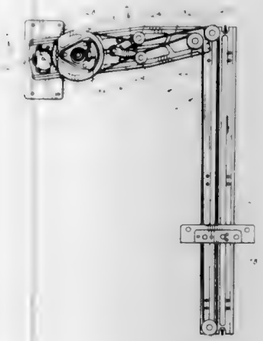
a frame; a traveller guided for movement along the frame and configured to support a window such that movement of the traveller along the frame opens and closes the window; a pair of guide pulleys, each positioned near a respective edge of the frame; a hub mounted on the frame for rotation, a gear linkage comprising a driven gear mounted for rotation with the hub and a drive gear mounted to the frame in engagement with the driven gear; and a tension member coupled to the hub and the traveller and guided by the guide pulleys to caused the traveller to move along the frame in response to rotation of the hub; the improvement comprising:

a post secured to the frame to extend toward the hub and to prevent rotation of the post with respect to the frame;

a force transmitting structure secured to the hub;

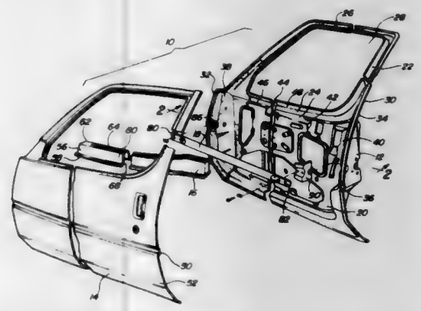
a coil spring positioned adjacent the post and dimensioned to engage the post frictionally, said coil spring defining a first

end portion coupled to the force transmitting structure such that rotation of the hub in a first direction moves the force transmitting structure and the first end portion in a



coil spring tightening direction to cause the coil spring to grip the post, said coil spring then transmitting a braking force to the force transmitting structure to brake rotation of the hub with respect to the post.

5,325,632
COMPOSITE DOOR ASSEMBLY
David Djavairian, Rochester Hills; Richard B. Freeman, Oxford; Earl E. Kansier, Lake Orion, and Jack J. Ritchie, Washington, all of Mich., assignors to The Budd Company, Troy, Mich.
Filed Oct. 21, 1992, Ser. No. 964,376
Int. Cl.[5] **B60J** *5/04*
U.S. Cl. 49—502 **21 Claims**



1. A vehicle door comprising:

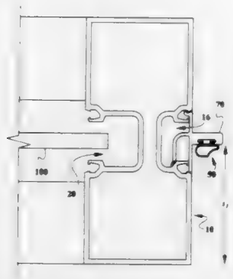
an outer panel;

a metal inner panel having first and second laterally extending ends, said metal inner panel having a tailored portion which is tailored along the first laterally extending end to provide reinforcement;

an intrusion beam assembly secured to said inner panel along said tailored portion and the second laterally extending end; and

means for connecting said inner and outer panels.

5,325,633
SNAP-IN DOORSTOP AND FLAT FILLER FOR STOREFRONT AND CURTAINWALL FRAMING SYSTEMS
Robert D. Magoon, Duluth, Ga., assignor to Kawneer Company, Inc., Norcross, Ga.
Filed May 28, 1993, Ser. No. 68,987
Int. Cl.[5] **E06B** *1/04*
U.S. Cl. 49—504 **8 Claims**



1. A glazing pocket filler for use with a frame member having a glazing pocket of predetermined width for receiving a lateral edge of an infill panel, said frame member further including an interior glazing pocket edge formation and front and rear glazing pocket walls having outer edges, and said forward glazing pocket wall including an inwardly convex wall portion, said glazing pocket filler comprising:

a filler panel having an inward face, a forward edge, and a rearward edge, and having a length substantially corresponding to said predetermined width of said glazing pocket; and

a spring leg extending inward and forward from said filler panel and having a bearing surface located at a forward end thereof;

said spring leg being configured such that when said filler panel is positioned across said glazing pocket said bearing surface of said spring leg engages said inwardly convex wall portion of said forward glazing pocket wall to bias said rearward edge of said filler panel into engagement with said interior glazing pocket edge formation and simultaneously to bias said inward face of said filler panel snugly against said outer edges of said front and rear glazing pocket walls.

5,325,634
HOURGLASS WORM GEAR
Tohru Kobayashi; Nobuyuki Tomita; Tsunetoshi Sonohara; Hiroshi Kawada, all of Nagoya; Shigeyuki Shimachi, Sendai, and Hiroshi Gunbara, Matsue, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 933,206, Aug. 21, 1992, Pat. No. 5,235,786, which is a continuation-in-part of Ser. No. 608,469, Nov. 2, 1990, abandoned. This application Mar. 25, 1993, Ser. No. 36,704
Claims priority, application Japan, Nov. 6, 1989, 1-287345; Jan. 22, 1990, 2-10659
Int. Cl.[5] **B23C** *3/05*
U.S. Cl. 51—105 GG **2 Claims**

1. An apparatus for making an hourglass worm gear for meshing with a worm wheel comprising:

a worm shaft provided in connection with said worm gear;

a wheel shaft provided in connection with said worm wheel;

a grinding wheel for grinding gear tooth surfaces in said worm gear, said grinding wheel having a radius of curvature of an arc-shaped cross-sectional contour represented by "r";

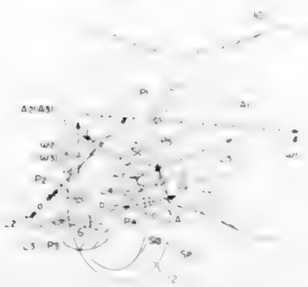
said worm shaft and said wheel shaft having a distance therebetween represented by "e"; and

means for successively generating a series of gear tooth

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surfaces in said worm gear with said grinding wheel such that r=(−0.3 to 1.0)e.



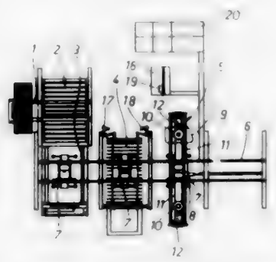
wherein an effective gear tooth engagement range is enlarged and a load bearing ability is increased.

5,325,635

CUTTING AND GRINDING APPARATUS FOR A GLASS SHEET EDGE

Kimmo J. Ikola, Kangasala, and Kimmo E. Stenman, Tampere, both of Finland, assignors to Tamglass Engineering Oy, Finland

PCT No. PCT/FA91/00347, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/09404, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 20, 1991, Ser. No. 50,314
Claims priority, application Finland, Nov. 22, 1990, 905760
Int. Cl.[5] R24B *9/10*; C03B *33/02*
U.S. Cl. 51—165.71 **5 Claims**



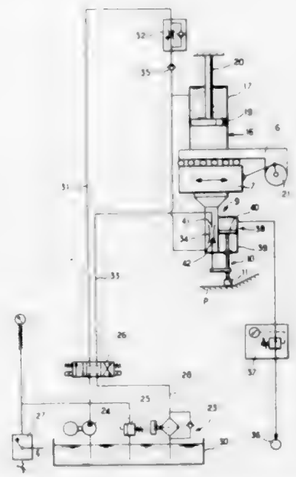
1. A cutting and grinding apparatus for a glass sheet edge, comprising a cutting machine (3) for cutting a contour, a crushing machine (4) for removing an edge zone outside the cut contour, a grinding machine (5) for grinding the edges of a glass sheet blank, and a conveyor (6, 7, 8) for carrying a glass sheet blank to each of the above-mentioned machines for performing their respective cutting, edge-removing and grinding operations, said grinding machine (5) comprising two rotatable glass-supporting tables (10) and two grinding heads (12), positioned relative to tables (10) in a manner that the edges of glass sheets (9) lying on the tables can each be brought into a contact with its own respective grindstone (13), characterized in that the apparatus further includes displacement guides (11) for shifting tables (10) aside from a transfer line (6) included in said conveyor (6, 7, 8), as well as a displacement mechanism (15) for tables (10), which is on the one hand controlled to carry out a shifting movement between transfer line (6) and grinding head (12) and, on the other hand, an advancing movement during a grinding operation for maintaining the edge of glass sheet (9) in contact with grindstone (13) during the rotation of a glass sheet having a shape other than circular

5,325,636

POLISHING MACHINE WITH PNEUMATIC TOOL PRESSURE ADJUSTMENT

Claude Attanasio, Chalon Sur Saone, and Jean-Claude Seigue, Virey Le Grand, both of France, assignors to SEVA, Chalon Sur Saone, France

Filed May 28, 1992, Ser. No. 889,621
Claims priority, application France, Jun. 4, 1991, 91 06756
Int. Cl.[5] B24B *49/08, 49/16*
U.S. Cl. 51—165.9 **5 Claims**



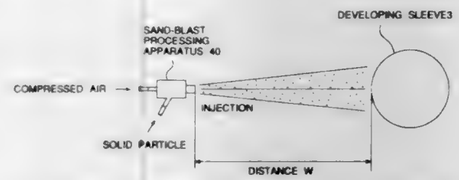
1. A polishing machine, comprising: an elongate frame (1), a polishing head assembly movably mounted on the frame, a polishing tool (10; 45) mounted on a tool holder (9) carried by the assembly, means for initiating the tool to execute a polishing action on a workpiece (P) width which it is placed in contact by moving the polishing head assembly parallel to the frame and generally perpendicularly to the workpiece, transverse reciprocating motion means (6, 7) interposed between and interconnecting the tool holder (9) and the head assembly for imparting a back-and-forth movement to the polishing tool in a direction generally parallel to a surface of the workpiece being polished, and a dual-action pneumatic system (38; 50) coupled to the tool holder for regulating the pressure exerted by the tool on the workpiece, wherein the tool holder comprises a body (55) attached to the transverse reciprocating motion means (6, 7), a carriage (61) fitted with means (62, 63) for mounting the tool and slidably mounted in the body (55), said carriage comprising at an end opposite the tool, a piston (64) engaged in a cylinder (65) mounted in the body, the piston and cylinder forming a first pneumatic jack for actuating the tool in a descending mode, the carriage being mechanically linked to a a needle (42) mounted so as to be movable in a sleeve (41) which forms a narrowed passage for hydraulic regulation means (34) controlling the initiating means (16, 17, 19, 20) for moving the polishing head assembly, said sleeve being disposed in a body (77) mounted in the body of the tool holder and being connected to a hydraulic system by passages (76, 78, 79), and wherein the tool holder is further provided with a second pneumatic jack (67) mounted in the body of the tool holder, said second jack having a piston (72) fixed to a shaft (73) mechanically linked to the carriage (61), the second jack being capable of being fed on either side of the piston (72) from a compressed air source through respective feed ducts (70, 71) in order to effect the descending or ascending movement of the tool.

5,325,637

DEVELOPING APPARATUS WITH AN IMPROVED SLEEVE

Kazuo Yasuda; Hiroyuki Tokimatsu; Masakazu Fukuchi; Meizo Shirose, and Yoshiaki Kobayahi, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,205
Claims priority, application Japan, Oct. 31, 1991, 3-286616; Dec. 19, 1991, 3-336655
Int. Cl.[5] B24C *1/06*
U.S. Cl. 51—319 **5 Claims**



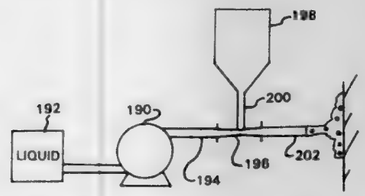
1. A method of finishing a surface of a means for holding a developing agent thereon in a developing apparatus for developing a latent image with a developing agent, comprising the steps of:
providing a smooth surface of the holding means;
sand-blasting said surface of the holding means with amorphous particles; and
sand-blasting the surface of the holding means with spherical particles, after said sand-blasting step with amorphous particles.

5,325,638

PLIANT MEDIA BLASTING DEVICE

William R. Lynn, 38 Prospect St., Dover, N.H. 03820

Continuation-in-part of Ser. No. 543,325, Jun. 25, 1990, which is a continuation-in-part of Ser. No. 376,764, Jul. 7, 1989, abandoned. This application Sep. 15, 1992, Ser. No. 945,221
Int. Cl.[5] B24C *1/00*
U.S. Cl. 51—320 **6 Claims**



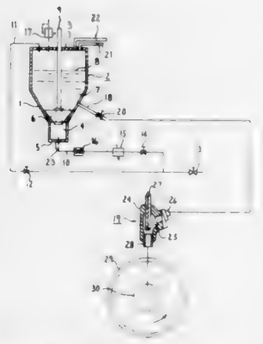
1. A method of treating a contaminated surface with a plurality of discrete, individual particles of a pliant particulate blasting media capable of absorbing a contaminant from said surface, said method comprising the steps of:
a) using a dry light resilient absorbent cellular material as the pliant particulate blasting media;
b) pretreating the pliant particulate blasting media with a dry powder to increase the density and abrasiveness of said pliant particulate blasting media;
c) rotating a rotatable wheel, having a plurality of tines, at a high rotational speed within a housing having a housing inlet and a housing outlet;
d) conveying said pliant particulate blasting media, pretreated with a dry powder to increase the density and abrasiveness of said pliant particulate blasting media, from a storage container to said housing inlet;
e) accelerating said plaint particulate blasting media via said plurality of tines of said rotating wheel; and
f) discharging said accelerated pliant particulate blasting media from said housing outlet against the contaminated surface and absorbing contaminant from said surface with said absorbent cellular material.

5,325,639

METHOD FOR DRESSING A GRINDING WHEEL

Matao Kuboyama, Shizuoka; Shigeharu Kobayashi, Yokohama, and Fukuzo Yagishita, Shizuoka, all of Japan, assignors to Fuji Seiki Machine Works, Ltd., Shizuoka, Japan

Filed Mar. 2, 1993, Ser. No. 25,107
Claims priority, application Japan, Mar. 10, 1992, 4-086163
Int. Cl.[5] B24C *1/02*
U.S. Cl. 51—320 **12 Claims**



1. A dressing method for dressing a super-abrasive grinding wheel, comprising the steps of: providing a slurry of liquid and solid particles wherein the particle size is smaller than grain size of the grinding wheel and the particles are free of sharp edges and wherein the solid particles are synthetic resin with a specific density in the range of 1.0 to 1.5 and a Mohs scale hardness in the range of 3.0 to 4.0, and blasting the slurry at low pressure through a blasting nozzle onto a surface of the grinding wheel to remove foreign material on the grinding wheel by impact and by cleaning action of the blasted stream.

5,325,640

FOLDING STAGE SYSTEM

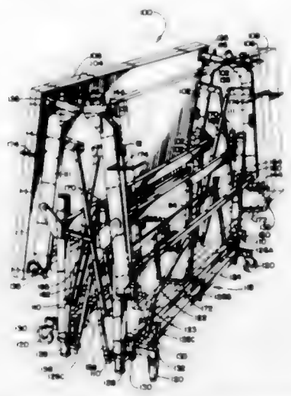
Thomas J. Luedke, Apple Valley; Randy G. Aagaard, Richfield; Carl A. Niemi, Excelsior, and Andrew J. Shea, Eden Prairie, all of Minn., assignors to Sico Incorporated, Minneapolis, Minn.

Filed Aug. 9, 1991, Ser. No. 743,154
Int. Cl.[5] E04H *3/26, 3/28*
U.S. Cl. 52—9 **18 Claims**

1. A folding stage, comprising:
a pair of adjacent stage panels forming a stage surface;
a folding framework, folding from a use position wherein the stage panels form a stage surface, to a storage position wherein the stage panels substantially oppose one another;
detachable bridging panels having a first end mounting to the folding stage and extending from the folding stage for forming an extended stage surface;
support legs supporting the framework;

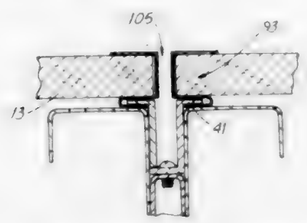
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means for supporting detachable bridging panels from the stage; and,



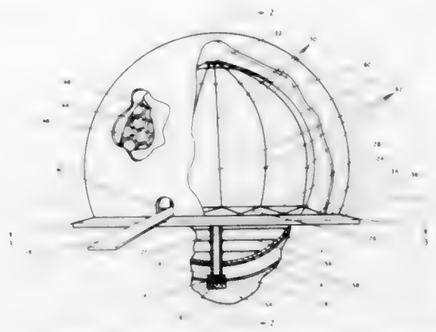
means for retaining the detachable bridging panels adjacent an outer surface of the stage panels in the folded storage position.

5,325,641
SYSTEM FOR MOUNTING A WALL PANEL
J. Reed Felton, Milwaukee, Wis., assignor to T. J. Hale Company, Menonmonee Falls, Wis.
Continuation-in-part of Ser. No. 830,059, Feb. 3, 1992, Pat. No. 5,189,850. This application Jan. 19, 1993, Ser. No. 5,814
Int. Cl.[5] A47G *29/02*
U.S. Cl. 52—36.4 **11 Claims**



1. In a wall-like display structure of the type supporting wall panels each having (a) an edge, (b) an exterior surface and (c) an interior surface parallel to the exterior surface, an improved system for mounting a wall panel and including:
a pair of studs, each stud having a flange surface substantially coplanar with the flange surface of the other stud;
a pair of upright members interposed between the studs, each upright member being spaced from the other upright member and including a lip spaced from the lip of the other upright member and extending generally parallel to a stud flange surface; and,
a spring clip attached to each lip, each clip including an opening receiving the edge of a separate panel, each clip contacting the inner and outer surfaces of the panel received therein,
whereby the panels are retained in a mounted coplanar position relative to the studs.

5,325,642
GEODESIC HAZARDOUS WASTE CONTAINMENT BUILDING
Warren L. Cooley, P.O. Box 2392, Davis, Calif. 95617
Filed Jan. 17, 1992, Ser. No. 822,071
Int. Cl.[5] E04H *7/22*; **E04B** *1/32, 1/98*
U.S. Cl. 52—811 **7 Claims**



1. A spherical building for the containment of hazardous waste material comprising:
a) a vertical elongated column member contacting the earth,
b) an inner geodesic spherical enclosure defining an interior space and supported by said elongated column member,
c) an outer above grade geodesic dome structure,
d) an outer below grade dome structure,
e) a means for supporting said inner geodesic spherical enclosure in a position approximately concentric to said outer above grade geodesic dome structure and said outer below grade dome structure,
f) a conduit surrounding the inner spherical enclosure and defined by the concave surfaces of the outer above and below grade dome structures, whereby said spherical building provides a plurality of barriers for the containment of hazardous waste materials.

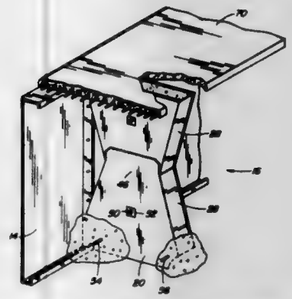
5,325,643
SOIL RETAINER BLOCK
William F. Mitchell, 704 Canteberry Hill, San Antonio, Tex. 78209, and Stan Motz, 265 Sandy Oaks, Seguin, Tex. 78155
Filed Aug. 4, 1992, Ser. No. 925,391
Int. Cl.[5] E02D *19/02, 31/02*
U.S. Cl. 52—169.1 **4 Claims**



1. A soil retaining apparatus, comprising:
a block constructed from a lightweight, high density material adapted to be positioned over the opening between the ground and a suspended, pier supported building foundation to prevent backfill soil from entering the space underneath the suspended, pier supported building foundation, said block, comprising:
a front face portion,
a plurality of raised reinforcing ribs extending from said face portion,

first and second angled ledges interconnecting said raised reinforcing ribs, and
a first edge formed integrally with and extending from said first angled ledge and a second edge formed integrally with and extending from said second angled ledge to anchor said block in the ground and against the suspended, pier-supported building foundation to cover the opening between the ground and the suspended, pier supported building foundation to prevent backfill soil from entering the space underneath the suspended, pier-supported building foundation.

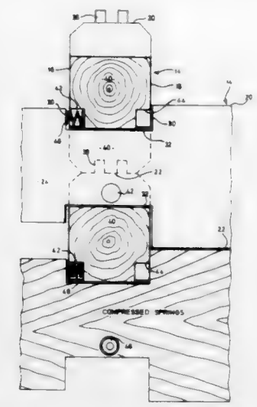
5,325,644
POOL WALL CONSTRUCTION
Kerry J. Cornelius, 40 Leeson Street, St. Catharines, Ontario, Canada L2T 2R4
Filed Aug. 10, 1992, Ser. No. 926,704
Int. Cl.[5] E04H *3/16*
U.S. Cl. 52—169.7 **2 Claims**



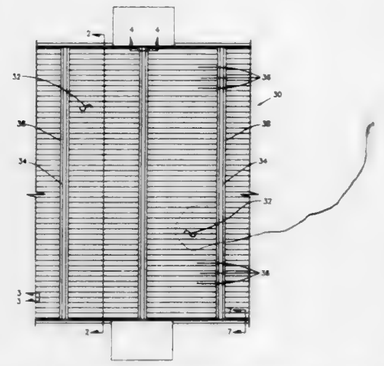
1. A swimming pool wall structure comprising:
a plurality of pool wall panels containing terminal end edges, said panels secured together in end-to-end relation to define the perimeter of said pool, flanges on the terminal end edges of each of said panels for securing to juxtaposed flanges on adjoining panels, said flanges extending generally normal to, and outwardly of, said pool wall; and a plurality of members for supporting and bracing the pool wall, said members spaced about the outer perimeter of said wall structure, each of said members comprising a concrete form configured to accept at least portions of said flanges of said panels, each said concrete form comprising front and rear walls spaced by side walls and open at the ends thereof; and slots in one of said side walls for receiving said portions of said flanges of the pool wall panels, whereby concrete poured into said form encompasses said portions of said flanges.

5,325,645
INTERSECTING JOINT
Ronald A. Wrightman, Bracebridge, Canada, assignor to True North Log Homes, Bracebridge, Canada
Continuation of Ser. No. 514,824, Apr. 26, 1990. This application Sep. 5, 1991, Ser. No. 759,039
Claims priority, application Canada, Nov. 23, 1989, 2002665
Int. Cl.[5] E04B *1/10*
U.S. Cl. 52—233 **9 Claims**

1. A corner construction for the intersecting walls of a building having walls formed from a plurality of horizontal structural members stacked one above another, each of said members having notches in at least one of their upper and lower surfaces at the corner to allow the members of each wall to extend past the other, each of said notches having a pair of spaced vertical surfaces juxtaposed with oppositely directed flanks of the structural member received in said notch, resilient biasing means acting between members of intersecting walls, said biasing means being located between one of said vertical surfaces and one of said flanks to apply and maintain a net force between members of intersecting walls acting in a direction to induce the other flank to engage the opposite vertical surface and bias the one wall toward the other.



5,325,646
TANK COVER STRUCTURE
Jeffrey A. Hallsten, and John Hallsten, both of Sacramento, Calif., assignors to Hallsten Supply Co., Sacramento, Calif.
Filed Aug. 20, 1992, Ser. No. 932,491
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—246 **34 Claims**



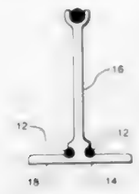
1. A cover for an open-topped structure such as a tank, comprising:
a plurality of panels and a plurality of cross members, a multiplicity of planks forming each panel, said planks connected together edge-to-edge, and said panels arranged side-by-side with adjacent panels connected together by a cross member, the ends of said cross members engaging cover support means attached to the open-topped structure;
each of said panels having a side member extending transversely along at least one edge thereof, said side member having plank receiving means therein and said cross member and said side member each having connecting means therein for forming a substantially gas-tight connection therebetween; and
a sealing member on each of the panels said sealing member

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engaging said cover support means for providing a substantially gas-tight seal therewith

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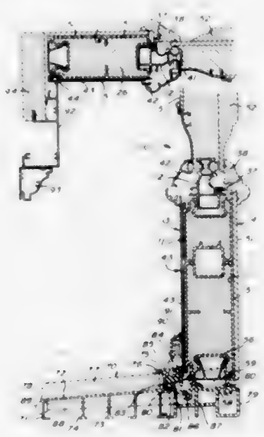
5,325,647
COMPOSITE CEILING GRID
John S. Forry, and Chester W. Hallett, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Aug. 21, 1992, Ser. No. 933,093
Int. Cl.[5] E04B *9/06*
U.S. Cl. 52—309.15 **7 Claims**



1. A support element with two ends comprising
(a) a generally inverted T-shaped, elongated member having a horizontal section with a midpoint and a flat vertical section with two ends, said horizontal section having the first end of the vertical section joined thereto and extending therefrom at the midpoint thereof, the second end of the flat vertical section being an enlarged bulb shape;
(b) said T-shaped member being formed of a non-metallic material;
(c) said T-shaped member being reinforced at, at least, two selected spaced points with meal reinforcing elements terminating at the ends of the support element; and
(d) said reinforcing elements being flat metal strips or wires embedded within the non-metallic material

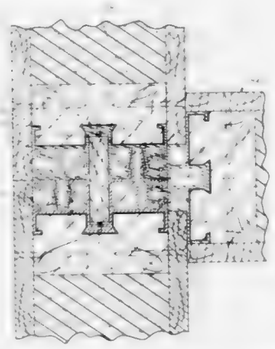
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5,325,648
COMPOSITE EXTERIOR DOOR STRUCTURE
Jacques Ménard, Montreal, Canada, assignor to Michel Hébert, Deison, Canada
Filed Apr. 20, 1992, Ser. No. 871,030
Int. Cl.[5] E06B *3/70*
U.S. Cl. 52—456 **18 Claims**



1. A composite exterior door structure comprising an inner frame of transversely connected elongated structural members formed of synthetic low thermally conductive material, said structural members having opposed parallel flat side walls and edge walls, said edge walls being formed with connecting means, means to interconnect said structural members together to form a rectangular frame, connectors of low thermally conductive material connected to said connecting means of inner ones of said edge walls of said structural members, an outer metal door covering connected over an outer one of at least some of said opposed parallel flat side walls of said structural members forming said rectangular frame by displaceable connections, said connections being concealed behind said metal door covering and permitting said outer door covering to shift due to expansion and contraction thereof while remaining connected to said structural members, and an inner door covering immovably secured to said rectangular frame and thermally insulated from said outer door metal covering.

5,325,649
EASILY-ASSEMBLED HOUSING STRUCTURE AND CONNECTORS THEREOF
Matsuji Kajiwara, Bellevue, Wash., assignor to Nikken Seattle, Inc., Tukwila, Wash.
Filed Jul. 7, 1992, Ser. No. 909,599
Int. Cl.[5] E04B *2/32*
U.S. Cl. 52—582 **13 Claims**

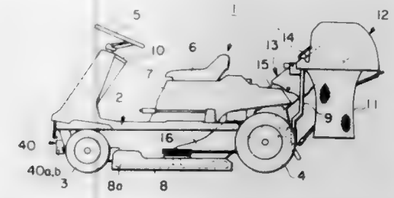


1. An easily-assembled housing structure comprising:
a plurality of generally planar panels, at least two of said panels being adjacent first and second panels each having attached snap-together panel connectors having forward facing sections for joining adjacent said first and second panels together to form interconnected panels by pushing them together with abutting confronting locking surfaces, said locking surfaces each being substantially perpendicular to the plane of the panel to which the connector is attached so that the locking surfaces engage one another to prevent unsnapping of the connectors by attempting to pull the panels apart in the direction parallel to the plane of the panels and perpendicular to the forward facing sections, wherein said panels may be interconnected simply by inserting one connector into the other to lock the panels together.

5,325,650
APPARATUS FOR CONTROLLING TRAVELING OF MOWER
Shinya Fuse; Hironori Kato; Naoki Kinoshita; Akio Noji; Tadashi Shimada, and Toshikazu Nakamura, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 962,503
Claims priority, application Japan, Oct. 31, 1991, 3-311332; Nov. 5, 1991, 3-315183
Int. Cl.[5] A01D *75/28, 61/00*
U.S. Cl. 56—10.2 **16 Claims**

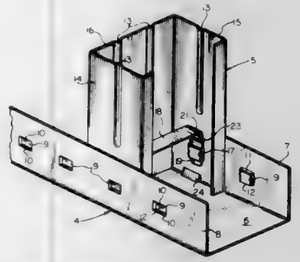
1. An apparatus for controlling the traveling of a mower in

which cut grass is conveyed within a shooter by an air flow fed into the shooter along with the grass and received in a grass-bag, said apparatus comprising:
conveying state detector means for detecting the conveying state of cut grass in the shooter,
jam judging means for outputting a jam prevention com-



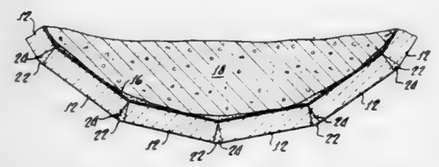
mand when the conveying state represented by a detection signal from the conveying state detector means is more degraded than a jam prevention criterion, and
means responsive to the jam prevention command for decelerating the traveling speed of the mower while continuing the feeding of the air flow to the shooter and the mowing work.

5,325,651
WALL FRAME STRUCTURE
Dolph A. Meyer, Carlingford, and Wijatmodjo Sardjono, Ryde, both of Australia, assignors to Uniframes Holdings Pty. Limited, Smithfield, Australia
Continuation-in-part of Ser. No. 521,137, May 8, 1990, Pat. No. 5,157,883, and Ser. No. 455,428, Dec. 11, 1989, abandoned. This application Sep. 16, 1991, Ser. No. 760,100
Claims priority, application Australia, Jun. 24, 1988, PI2713; May 8, 1989, PJ4059; Feb. 4, 1991, PK4446
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—715 **5 Claims**



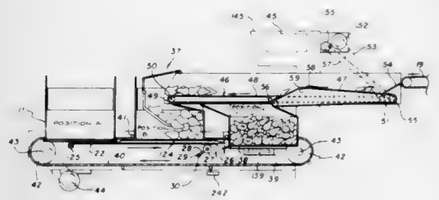
1. A wall frame structure including:
a generally horizontally extending metal plate of generally "U-shaped" transverse cross-section so as to have longitudinally extending substantially parallel transversely spaced side walls, said side walls being joined by a longitudinally extending base, each side wall being deformed to have a plurality of deformations which project inwardly toward the other side wall, and which deformations are arranged in pairs, with each pair including a deformation from each side wall;
a substantially vertically extending metal stud of substantially "C-shaped" transverse cross-section so as to have longitudinally extending transversely spaced parallel side walls joined by a longitudinally extending base, said stud having adjacent one end an aperture in each stud side wall and engaged with said plate by being positioned between the plate side walls and by having the plate side walls abutting the stud side walls so as to be substantially superposed with respect thereto, each stud side wall having an aperture aligned with a respective deformation of a pair of deformations of said plate so that the associated pair of deformations extends through the apertures; and
clip means engaging the deformations associated with said stud and abutting the stud side walls to thereby inhibit separation of each stud side wall with its associated superposed plate side wall, under loading.

5,325,652
CONTOURED MARBLE AND METHOD OF FABRICATION
David Feder, 1626 Foothill La., Santa Ana, Calif. 92705
Filed Aug. 17, 1992, Ser. No. 930,810
Int. Cl.[5] E04G *21/14, 23/00;* **E04F** *13/14*
U.S. Cl. 52—746 **2 Claims**



1. A method for forming a solid stone appearing facade on a curved surface, said method comprising the steps of:
adhering a plurality of elongate stone strips on a flexible mesh with the elongate stone strips in an abutting relationship;
adhering said flexible mesh to a curved surface and causing groutable spaces between said elongate strips;
grinding the elongate strips to an arcuate contour and thereafter;
grouting the groutable spaces with a settable material; and
smoothing the settable material to form a contiguous surface with said elongate strips.

5,325,653
CONTAINER FILLING APPARATUS
Jerry L. Boyd, 2521 Sutton Pl., Bakersfield, Calif. 93309
Filed Dec. 14, 1992, Ser. No. 990,176
Int. Cl.[5] B65B *5/10, 39/00*
U.S. Cl. 53—248 **14 Claims**



1. Apparatus for filling items into containers, comprising:
a support on which a container is received during a filling operation;
a conveyor for feeding items to a location from which they are dropped into a container on the support;
a deflecting and cushioning device movable upwardly and downwardly between a lower active position in which the device projects downwardly into a container on said support and is contacted by items falling from the conveyor toward the bottom of the container, to prevent or reduce damage to the items, and an upwardly retracted position;
said device including an upper panel mounted for upward and downward swinging movement, and a lower panel

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connected to said upper panel for movement upwardly and downwardly therewith and for pivotal movement relative to the upper panel,

said lower panel projecting downwardly beneath said upper panel and having a portion which is received within the container in said lower position of the device and which has an upwardly facing inclined cushioned surface onto which said items fall from the conveyor for deflecting the items along an inclined path toward the bottom of the container; and

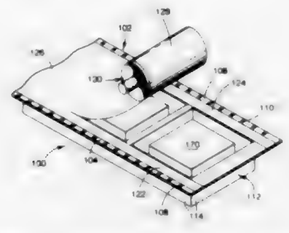
actuating means for swinging said upper panel of said device upwardly and downwardly, carrying said relatively movable lower panel.

5,325,654

CARRIER TAPE WITH COVER STRIP

Timothy J. Juntunen; Dale R. Tidemann, both of Eau Claire, and Joseph E. Weiler, Colfax, all of Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 19, 1992, Ser. No. 900,423
Int. Cl.[5] B65D *73/02*
U.S. Cl. 53—440 **21 Claims**



13. A method of loading electronic components into a carrier tape for seriatim delivery by an advancement mechanism, comprising the steps of:

(a) providing a unitary, flexible carrier tape, comprising:

(i) a top surface having first and second parallel longitudinal edge surfaces, at least one of the edge surfaces including means for engaging the advancement mechanism, and

(ii) a plurality of pockets depending downwardly from the top surface between the edge surfaces and along the length of the carrier tape for containing the electronic components,

(b) placing an electronic component within each pocket;

(c) providing a flexible elongate cover strip adapted to overlie the pockets, and having a medial portion and first and second parallel longitudinal bonding portions;

(d) affixing the first bonding portion to the first longitudinal edge surface and the second bonding portion to the second longitudinal edge surface of the carrier tape to cover the pockets; and

(e) drying the carrier tape within an oven to enable evaporation of entrained moisture from the electronic components

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5,325,655

METHOD OF PROCESSING GARBAGE, PARTICULARLY PLASTIC

Zakaria K. Doleh, P.O. Box 7364, Dubai, United Arab Emirates

Filed Aug. 19, 1992, Ser. No. 932,811
Claims priority, application European Pat. Off., Aug. 23, 1991, 91202162.3
Int. Cl.[5] B65B *1/24, 11/30, 61/00*
U.S. Cl. 53—436 **20 Claims**

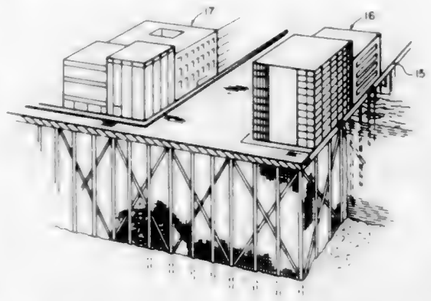
19. A method for processing garbage comprising the consecutive method steps:

A. separating the garbage in fractions;

B. compressing the fractions in a container according to a desired predetermined composition;

C. placing the container in a casing consisting of a web of metal wire coated with plastic; and

D. placing the container on a destination place wherein the destination place is a sea, wherein the container is placed



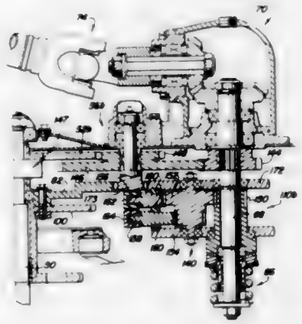
in a space defined by piles arranged in a sea bottom and the space is covered by sheets of plastic; and wherein the space is covered at an upper side by a road surface by cutting or shredding the plastic and other suitable materials into small pieces and adding it to an asphalt mixture for building roads.

5,325,656

COTTON HARVESTER WITH VARIABLE RATIO SPINDLE-TO-DRUM SPEED

Joel M. Schreiner, Ankeny, and Donald K. Davenport, Woodburn, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Feb. 1, 1993, Ser. No. 11,569
Int. Cl.[5] A01D *46/18*
U.S. Cl. 56—10.2 H **29 Claims**



6. In a cotton harvester having a engine-driven ground drive for moving the harvester forwardly through a field of cotton plants, a picker row unit having an upright housing, an upright picker drum supported in the housing and including upright columns of spindles rotatable about spindle axes, a variable ratio drum-to-spindle drive comprising:

a drum drive drivingly connected to the ground drive for rotating the picker drum at a speed proportional to the forward speed of the harvester;

a spindle drive for rotating the spindles about the spindle axes; and

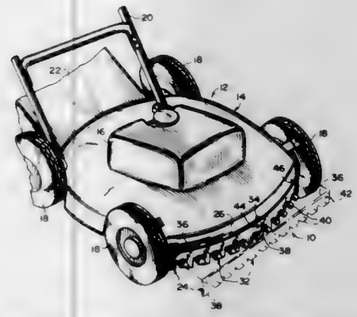
transmission structure operably connecting the drum and spindle drives and changeable to increase the ratio of the spindle speed to drum speed for row unit forward speeds below a preselected speed and to decrease the ratio of spindle speed to drum speed for row unit forward speeds above a preselected speed.

5,325,657

DEBRIS GUIDING DEVICE FOR A LAWN MOWER

Russell R. Bevis, 1303 Live Oak Plantation Rd., Tallahassee, Fla. 32312

Filed Jul. 30, 1992, Ser. No. 921,734
Int. Cl.[5] A01D *34/68*
U.S. Cl. 56—320.1 **5 Claims**



1. A debris guiding device for a lawn mower of the type having a deck, an engine supported on the deck, wheels attached to the deck and contacting the ground, a handle attached to the deck, and a grass catcher bag attached to the deck, said debris guiding device comprising

an elongated, flexible, comb-like implement located at a front portion of the lawn mower deck for directing lawn debris directly under the front portion of the deck, whereby lawn debris is subsequently lifted, cut, and discharged into the grass catcher bag when a person gripping the handle pushes the lawn mower with the lawn mower engine running, said implement further comprising

a flat spine which can be flexed to fit against the front portion of the lawn mower deck,

a first set of flat teeth spaced apart and extending vertically from said flat spine, and

a second set of flat teeth spaced apart with each located one after another between each of said first set of flat teeth, and extending at about a forty-five degree angle from said flat spine; and

means for securing said implement to the front portion of the deck of the lawn mower.

5,325,658

SPINNING MACHINE WITH FALSE-TWISTING DEVICES

Gerd Stahlecker, Eislingen/Fils, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 871,125
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1991, 4122463
Int. Cl.[5] D01H *13/04*
U.S. Cl. 57—90 **12 Claims**

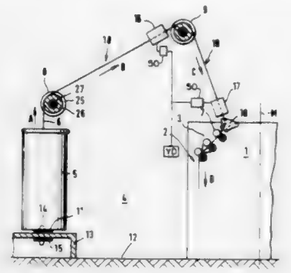
1. A ring spinning machine comprising:

a plurality of spinning stations which each contain a three-cylinder drafting unit;

guiding devices which are between cans containing sliver and the drafting units wherein slivers are in the range from 0.3 to 0.8 Nm, with one sliver respectively being withdrawn from one of the cans and fed to the drafting units by the guiding devices, the guiding devices forming at least one deflecting guide for the slivers so that the slivers are withdrawn from the cans in the upward direction and are then deflected downward to the pertaining drafting units;

first mechanical false-twisting devices for each sliver arranged in the area of the deflecting guide, said first false-twisting devices providing the respective sliver with a false twist which at least partially runs back to the can from which the sliver was withdrawn; and

second mechanical false-twisting devices for each sliver arranged directly in front of the drafting units, said second



false-twisting devices providing a false twist to the respective sliver which runs back to the deflecting guide,

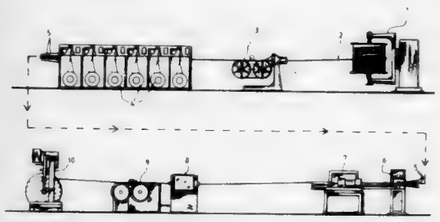
wherein feeding rollers which are situated in front of the pertaining false-twisting elements are connected in front of the drafting units and the delivery speed of these feeding rollers is approximately 5 percent lower than the feeding speed of the drafting units.

5,325,659

S/Z CABLING MACHINE FOR LAYING FIBERS AROUND A GROOVED PULL-RELIEVER

Bengt A. Nortenius, Hudiksvall, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Division of Ser. No. 690,294, Apr. 24, 1991, Pat. No. 5,259,180. This application Aug. 13, 1993, Ser. No. 105,686
Claims priority, application Sweden, May 21, 1990, 9001827
Int. Cl.[5] H01B *13/02;* **G02B** *6/10*
U.S. Cl. 57—293 **6 Claims**



1. A cabling machine for laying optofibers, cables or other elongate elements into oscillating, waveshape grooves extruded around a pull-reliever to produce a finished article comprising a pull-reliever reeling-off device for reeling-off a pull-reliever in a first direction, a braking capstan located downstream of the pull-reliever reeling-off device in the first direction, a fiber reeling-off device located downstream of the braking capstan in the first direction for reeling-off fibers, an S/Z-bench located downstream of the fiber reeling-off device in the first direction for laying the fibers around the pull-reliever, a yarn spinner located downstream of the S/Z bench in the first direction for fixating the fibers on the pull-reliever, and a wheel capstan and a taking-up device located downstream of the spinner in the first direction for forwardly pulling and taking-up the finished article respectively, said S/Z bench including a laying-on tube provided with a laying-on head so that the fibers pass over the laying-on tube up to and through

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holes in the laying-on head, where the fibers are laid on the pull-reliever and fixated with yarn taken from the yarn spinner located immediately downstream of the laying-on head, the pull-reliever reeling-off device and the braking capstan being rotatably mounted; the laying-on tube being freely rotatable and being guided by way of the fibers being laid into the grooves in the pull-reliever; the laying-on tube being connected to a transmission; and a sensor connected to the transmission for detecting rotation of the laying-on tube caused by the oscillating, waveshape of the grooves in the pull-reliever and for causing the reeling-off device and the braking capstan to rotate and perform a correcting function which counteracts excessive rotation or twisting of the laying-on tube such that the grooves in the pull-reliever in a vicinity of the laying-on head will extend substantially rectilinearly and such that the fibers will extend substantially parallel with the laying-on tube in the absence of friction thereagainst

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5,325,660

METHOD OF BURNING A PREMIXED GAS IN A COMBUSTOR CAP

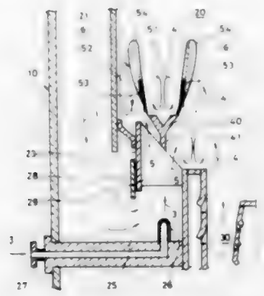
Masayuki Taniguchi; Yasuo Yoshii, both of Katsuta; Tadayoshi Murakami, Hitachi; Shigeru Azuhata, Hitachi; Norio Arashi, Hitachi; Kenichi Sohma, Ibaraki; Michio Kuroda, Hitachi, and Hironobu Kobayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 495,907, Mar. 20, 1990, Pat. No. 5,216,885. This application Mar. 8, 1993, Ser. No. 27,982

Claims priority, application Japan, Mar. 20, 1989, 1-66232; Sep. 21, 1989, 1-245534

Int. Cl.[5] F02C *7/26*

U.S. Cl. 60—39.06 **8 Claims**



1. A method for operating a gas turbine combustor including a plurality of serially arranged combustion chambers, a first nozzle adapted to eject a jet of a premixed gas containing fuel and air, premixed gas burning means for burning the jet of premixed gas from an interior to an exterior of the jet, gas mixing means for mixing a combustion gas with the jet of premixed gas exteriorly of the jet, and means for exhausting combusted gas to a gas turbine, the method comprising the steps of:

forming a flame within an upstream combustion chamber; and

then forming another flame within a downstream combustion chamber communicated to the upstream combustion chamber when a load in the upstream combustion chamber reaches a predetermined level.

5,325,661

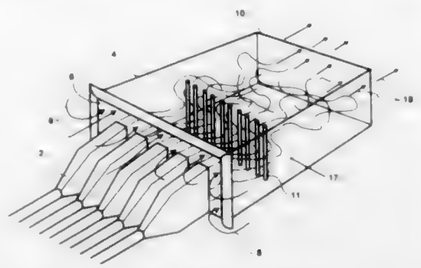
JET MIXER NOISE SUPPRESSOR USING ACOUSTIC FEEDBACK

Edward J. Rice, Westlake, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 14, 1993, Ser. No. 46,256

Int. Cl.[5] F02C *7/00*

U.S. Cl. 60—204 **6 Claims**



1. A jet mixer noise suppressor, comprising:

a first nozzle outputting a first air stream along a first path generating feedback of a first acoustic wave from downstream of said first nozzle;

a second nozzle outputting a second air stream along a second path, synchronous with said first air stream, and generating feedback of a second acoustic wave from downstream of said second nozzle;

an ejector having an inlet, outlet and shroud, said ejector receiving said first and second air streams from said first and second nozzles through said inlet, receiving entrained air produced from said first and second air streams through said inlet, receiving said first and second acoustic waves fed back from downstream of said first and second nozzles through said outlet, and mixing said first and second air streams and said entrained air responsive to said first and second acoustic waves in said shroud; and

first and second obstacles, disposed in said shroud of said ejector and positioned in said first and second paths to be in contact with said first and second air streams so that said first and second acoustic waves are out of phase with each other.

5,325,662

ADVANCED EXHAUST DISCHARGE FOR PUMP JET PROPULSION APPARATUS

A. Michael Varney, Winter Park; John Martino, Longwood, both of Fla., and Kimball P. Hall, Poquott, N.Y., assignors to Hall Marine Corporation, Poquott, N.Y.

Filed Nov. 2, 1993, Ser. No. 146,324

Int. Cl.[5] B63H *21/32*

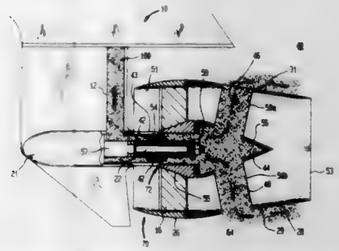
U.S. Cl. 60—221 **10 Claims**

1. A pump jet apparatus for a marine outboard motor comprising:

a rotor hub, said rotor hub receiving exhaust from said motor;

an exhaust plenum positioned rearwardly of said rotor hub receiving exhaust from said rotor hub; and

at least one hollow stator vane extending radially from said exhaust plenum,



wherein said exhaust from said motor is discharged into said rotor hub and exits through said at least one stator vane.

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DIAGNOSTIC SYSTEM FOR A SECONDARY AIR SUPPLIER IN AN ENGINE

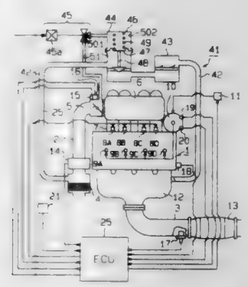
Tokiji Itoh, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 2, 1993, Ser. No. 42,317

Claims priority, application Japan, Apr. 27, 1992, 4-108009

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—274 **6 Claims**



1. A diagnostic system for a secondary air supplier in an engine, the engine including a cylinder; an intake passage; an exhaust passage; an injector for injecting fuel into one of the cylinder and the intake passage; a sensor for detecting an air-fuel ratio (A/F) of the exhaust gas within the exhaust passage; an engine controller for executing feedback control of an amount of fuel injected by the injector, in such a way that the air-fuel ratio (A/F) approaches a theoretical air-fuel ration, wherein the amount of fuel injected is a function of a changeable feedback correction factor (FAF); and wherein the engine controller is equipped with a memory unit for changing and storing the value of the feedback correction factor (FAF),

the secondary air supplier including an air supply unit for supplying secondary air from the intake passage to the exhaust passage, so that the secondary air mixes with existing exhaust gas to change the air-fuel ratio of the exhaust gas; a detection unit for detecting a condition of the engine; and a control unit for controlling the air supply unit in accordance with the engine condition, whereby the secondary air is supplied to the exhaust passage by means of the air supply unit when the engine is in a predetermined condition in which the engine controller interrupts the feedback control of the amount of the fuel injected, the diagnostic system comprising:

command means for instructing the secondary air supplier to temporarily supply air to the exhaust passage when the engine controller executes the feedback control of the amount of fuel injected;

sampling means for sampling the changeable feedback correction factor (FAF) from the memory unit, said sampling means detecting a first feedback correction factor before the secondary air is supplied based on the instruction of said command means, and a second feedback correction factor after the secondary air has been supplied;

calculation means for calculating a deviation value (ΔFAF) between said first and said second feedback correction factors; and

diagnostic means for determining that the secondary air supplier is malfunctioning when said deviation value is smaller than a predetermined value (α).

5,325,664

SYSTEM FOR DETERMINING DETERIORATION OF CATALYSTS OF INTERNAL COMBUSTION ENGINES

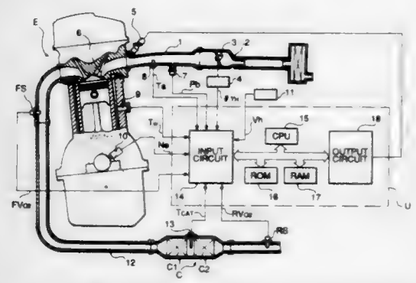
Yasunari Seki; Toshihiko Sato; Katuhiro Kumagai; Hiroshi Maruyama; Yoichi Iwata; Tsuyoshi Takizawa; Kenichi Maeda; Shigetaka Kuroda; Masataka Chikamatsu; Shukoh Terata; Kazutomo Sawamura; Hajime Uto; Takuya Aoki, and Makoto Kobayashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 961,794

Claims priority, application Japan, Oct. 18, 1991, 3-271203; Oct. 18, 1991, 3-271204; Mar. 10, 1992, 4-86284

Int. Cl.[5] F02F *3/26*

U.S. Cl. 60—276 **14 Claims**



1. A catalyst deterioration-determining system for determining deterioration of catalyst means of an internal combustion engine having:

an exhaust passage;

catalyst means arranged in said exhaust passage;

an oxygen concentration sensor arranged in said exhaust passage downstream of said catalyst means for sensing concentration of oxygen contained in said exhaust gases;

determining means for comparing an output from said oxygen concentration sensor with a predetermined reference value and determining, from a result of said comparison, whether the air-fuel ratio of a mixture supplied to said engine is richer or leaner than a stoichiometric air-fuel ratio;

air-fuel ratio control means responsive solely to an output from said determining means for calculating an air-fuel ratio correction value and controlling the air-fuel ratio of said mixture by means of the calculated air-fuel ratio correction value; and

operating condition detecting means for detecting operating conditions of said engine,

said catalyst deterioration-determining system comprising:

inversion time period measuring means for measuring a time period elapsed from the time said air-fuel ratio control means causes an inversion in the value of said air-fuel ratio of said mixture with respect to said stoichiometric air-fuel ratio in response to said output from said determining means to the time an inversion occurs in said output from said determining means, when it is detected by said oper-

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ating condition detecting means that said engine is in a predetermined operating condition; and

deterioration determining means for comparing said time period measured by said inversion time period measuring means with a predetermined time period and determining that said catalyst means is deteriorated, when said measured time period is shorter than said predetermined time period.

5,325,665

CATALYTIC CONVERTER ARRANGEMENT

Kimitsugu Kiso, and Hideharu Ehara, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 6, 1992, Ser. No. 956,986
Claims priority, application Japan, Oct. 7, 1991, 3-081299[U]
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—300 **1 Claim**



1. A catalytic converter arrangement incorporated in an exhaust system of an internal combustion engine, said arrangement comprising:

(a) an exhaust manifold for ducting emissions from said engine; and

(b) a first catalytic converter positioned in an engine compartment, said first catalytic converter connected to and positioned immediately downstream from said exhaust manifold and having a metal catalyst support adapted to be electrically heated and a ceramic catalyst support on an upstream side of said metal catalyst support, and

(c) a second catalytic converter which is connected to and positioned downstream from said first catalytic converter through front and rear exhaust pipes, said second catalytic converter having a ceramic catalyst support, and having a capacity which is larger than that of said first catalytic converter

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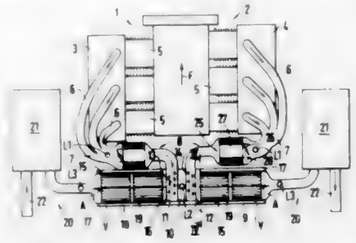
5,325,666

EXHAUST SYSTEM OF AN INTERNAL-COMBUSTION ENGINE

Erwin Rutschmann, Tiefenbronn, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F Porsche AG, Fed. Rep. of Germany

PCT No. PCT/EP91/01287, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/02715, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 10, 1991, Ser. No. 975,569
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1990, 4024801
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—302 **23 Claims**

1. An exhaust system of a multi-cylinder internal-combustion engine, the exhaust gases of which are guided by means of a collector approximately centrally to a housing which has catalysts at opposite ends, all exhaust gas being led out to the open air downstream of the catalysts, wherein the collector is provided with an end piece which projects into an expansion



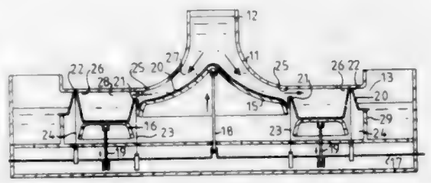
chamber which is centrally arranged in the housing, said end piece being provided with radial openings on its lateral surface.

5,325,667

MACHINE FOR TRANSFORMING PRESSURE OR POTENTIAL ENERGY OF A FLUID INTO MECHANICAL WORK

Stig Lundbäck, Vaxholm, Sweden, assignor to Humanteknik AB, Stockholm, Sweden

Continuation of Ser. No. 906,050, Jun. 26, 1992, abandoned, which is a continuation of Ser. No. 689,865, Jun. 5, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 23,134
Claims priority, application Sweden, Dec. 8, 1988, 8804449-0
Int. Cl.[5] F16D *31/02;* **F01L** *15/18*
U.S. Cl. 60—398 **2 Claims**



1. A machine for transforming pressure or potential energy of a fluid into mechanical work, comprising

a working chamber (**27,28**) the volume of which is cyclically variable in response to reciprocatory motion of a wall (**20**) which partially defines the working chamber,

a reciprocatory power member (**15,16**) which is displaceable by said wall under action of the pressure of the fluid on the wall during expansion of the working chamber,

an inlet conduit (**12**) communicating with the working chamber,

an outlet conduit (**13**) communicating with the working chamber,

an outlet valve (**22**) which is closable to prevent fluid flow in the outlet conduit int he direction away from the working chamber, and

a driven member (**17**) operatively connected with the power member (**15,16**),

characterized in that

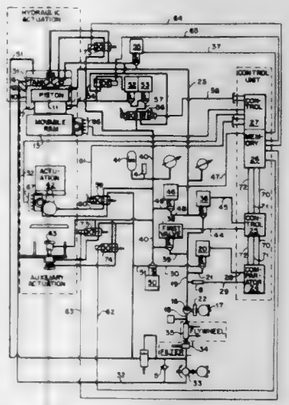
the outlet conduit (**13**) comprises a gap-like passage (**26**) which substantially surrounds the working chamber (**27,28**) and extends along the periphery thereof and which is openable by means of the outlet valve (**22**) to permit fluid flow therethrough from the working chamber substantially without any pressure drop, and further characterized by a second valve (**21**) which is disposed in a circumferentially extending gap-like passage (**25**) between radially inner (**27**) and radially outer (**28**) portions of the working chamber and which is openable by means of the second valve (**21**) to permit fluid flow between the inner and outer portions of the working chamber substantially without any pressure drop.

5,325,668

METHOD AND APPARATUS FOR HYDRAULIC PRESSING

Ulrico Walchhutter, Piazza Giolitti 6, Milano, and Renato Bossetti, Novara, both of Italy, assignors to S.I.T.I. Societa Impianti Termoelettrici Industriali S.p.A. and Ulrico Walchhutter, Milan, Italy

Division of Ser. No. 623,946, Dec. 6, 1990, Pat. No. 5,158,723. This application Oct. 16, 1992, Ser. No. 962,318
Claims priority, application Italy, Jun. 10, 1988, 20936 A/88; Jun. 10, 1988, 20937 A/88; Jan. 26, 1989, 19203 A/89
The portion of the term of this patent subsequent to May 21, 2002, has been disclaimed.
Int. Cl.[5] F16D *31/02;* **B29C** *43/58*
U.S. Cl. 60—413 **43 Claims**



1. A hydraulic circuit for feeding a pressurized liquid flow to hydraulic actuation means by means of check valve means open towards said hydraulic actuation means, comprising:

a positive-displacement pump which has a flywheel for storing kinetic energy;

an actuation motor for said positive-displacement pump;

first valve means for discharging to a tank a liquid flow from said positive-displacement pump so that said hydraulic actuation means are actuated by closing said first valve means; and

control means to control a speed of an opening stroke of a poppet of said first valve means;

wherein said flywheel accumulates kinetic energy during opening of said first valve means and yields kinetic energy during closing of said first valve means.

5,325,669

LOW BREAKOUT HYDRAULIC POWER TRANSFER UNIT AND METHOD OF OPERATION THEREOF

Brian P. Barker, Ventura, and James L. Coakley, Fillmore, both of Calif., assignors to Pneumo Abex Corporation, Oxnard, Calif.

Filed Jul. 22, 1992, Ser. No. 918,467
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—428 **17 Claims**

1. A power transfer unit for transferring power between two hydraulic systems, comprising:

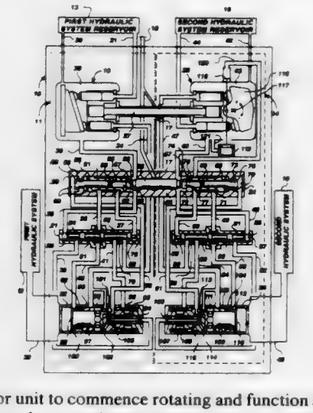
(a) a first pump/motor unit that is associated with a first hydraulic system to allow fluid flow between the pump-/motor unit and the first hydraulic system;

b) a second pump/motor unit that is associated with a second hydraulic system to allow fluid flow between the second pump/motor unit and the second hydraulic system, the second pump/motor unit being driveably connected to the first pump/motor unit;

c) a detection means for sensing a fluid flow demand in the first hydraulic system and the second hydraulic system;

d) a first valve means for isolating the first pump/motor unit from the first hydraulic system automatically when the detection means senses substantially no fluid flow demand in the first hydraulic system and a second valve means for isolating the second pump/motor unit from the second hydraulic system automatically when the detection means senses substantially no fluid flow demand in the second hydraulic system;

e) a mode means for commanding, when the detection means senses a flow demand in the second hydraulic system, the first valve means to access the first pump/motor unit to the first hydraulic system thereby causing the first pump-



/motor unit to commence rotating and function as a motor to drive the second pump/motor unit as a pump;

f) a delay means for delaying the opening of the second valve means to access the second pump/motor unit to the second hydraulic system until after the second pump/motor unit is rotating and functioning as a pump with pressure substantially equal to or greater than the fluid pressure in the second hydraulic system; and

g) a bypass means for bypassing flow from the second pump-/motor unit, when the second pump/motor unit is functioning as a pump, to achieve smooth fluid flow delivery from the second pump/motor unit to the second hydraulic system as the fluid flow demand to the second hydraulic system decreases below the fluid flow demand at which the power transfer unit would cease rotating smoothly in the absence of such bypass pass flow, and until the fluid flow demand decreases to zero.

5,325,670

CLUTCH CONTROL DEVICE FOR TRANSMISSION

Takashi Iino, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 12, 1990, Ser. No. 464,301
Claims priority, application Japan, Feb. 10, 1989, 1-31718
The portion of the term of this patent subsequent to Apr. 5, 2010, has been disclaimed.
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—468 **12 Claims**

1. A clutch control device for a transmission having a clutch for controlling the transfer of power through the transmission and a hydraulic servo unit for selectively connecting and disconnecting the clutch, said clutch control device comprising:

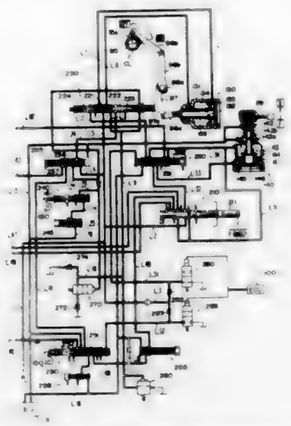
a first discharge oil passage for discharging working oil from

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the hydraulic servo unit when the clutch is connected by the hydraulic servo unit to start the transfer of power;

an orifice disposed in said first discharge oil passage;

a second discharge oil passage for discharging the working oil from said first discharge oil passage, said second discharge oil passage communicating with said first discharge oil passage upstream of said orifice with respect to



the direction in which the working oil flows through said first discharge oil passage; and

a relief valve disposed in said second discharge oil passage and openable only when the pressure of the working oil in said second discharge passage is higher than the pressure of the working oil which is developed in said first discharge oil passage upstream of said orifice when the working oil is at a normal temperature

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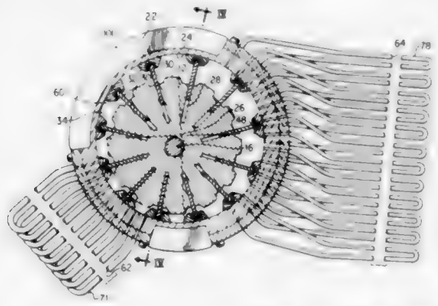
ROTARY HEAT ENGINE

Daniel E. Boehling, 1801 Oakengate La., Midlothian, Va. 23113

Filed Sep. 11, 1992, Ser. No. 943,489

Int. Cl.[5] F02G *1/04*

U.S. Cl. 60—682 **6 Claims**



1. An engine comprising a stator having a circular interior surface, a rotor surrounded by said stator surface, means mounting the rotor for rotation about an axis parallel to but spaced from the central axis of said stator surface, a series of vanes carried by the rotor, means urging the vanes radially outward from the rotor, a corresponding number of shoes having arcuate surfaces slidable against and curved to conform to said stator surface, said arcuate surfaces having the same fixed arcuate length, means mounting each shoe on one of said vanes for pivotal movement about a pivotal axis adjacent to the radially outer end of the vane, said vanes and shoes separating a series of chambers between the rotor and said stator surface, said chambers being caused to expand in constant progression and said shoes to move apart in constant progression as the shoes move around one half of said stator surface from where the stator surface is closest to the rotor to where the stator surface is furthest from the rotor, and said chambers being caused to contract in progression and said shoes to move toward each other in constant progression as said shoes continue movement around the other half of said stator surface, means forming ports through said stator surface, each port being open into only one chamber at a time as the chambers rotate past each port, and said ports comprising a first set of ports which open into the chambers during their expansion and a second set of ports which open into the chambers during their contraction, means forming a first set of passages extending from said first set of ports through and outside of the stator, means forming a second set of passages extending from said second set of ports through and outside of the stator, means to heat a portion of said means forming said first set of a passages, means to cool a portion of said means forming said second set of passages, said heating means and cooling means being located outside of the chambers and the portion of the stator which encloses them, and means for sealing said chambers and passages to confine gas in the space within them and prevent outflow of gas from said space during operation of the engine.

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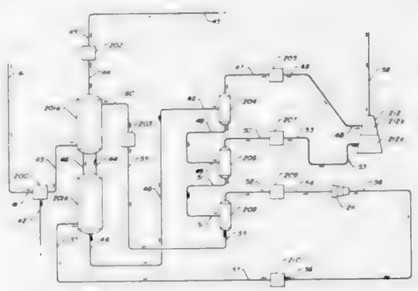
PROCESS FOR THE PURIFICATION OF GASES

Paulino Forte, Yonkers, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Dec. 3, 1992, Ser. No. 985,077

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—17 **25 Claims**



1. A process for the rejection of a light component from a gas mixture thereof with hydrocarbons comprising:

(a) contacting the gas mixture with a lean solvent stream in a recovery zone to provide a light component rich stream and a first rich solvent stream;

(b) passing said first rich solvent stream to a purification zone and therein countercurrently contacting said first rich solvent stream with a light gas stream to displace the light component from said first rich solvent stream and to provide a second rich solvent stream; and

(c) flashing said second rich solvent stream in a flash zone to provide a gas product stream and the lean solvent stream.

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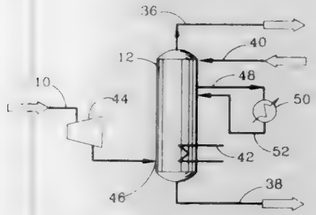
NATURAL GAS LIQUEFACTION PRETREATMENT PROCESS

Charles A. Durr, Houston, and William C. Petterson, Missouri City, both of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Feb. 23, 1993, Ser. No. 21,384

Int. Cl.[5] F25J *3/06*

U.S. Cl. 62—23 **17 Claims**



1. A method of pretreating a natural gas stream for liquefaction by removing freezable components, comprising the steps of:

introducing a natural gas feed stream to a feed point on a scrub column having upper enriching and lower stripping sections, wherein the feed stream contains methane and C_{5+} hydrocarbons and wherein the feed stream has a C_2–C_4 vapor to liquid mass ratio above 1.0;

contacting the feed stream with a liquid reflux stream introduced to the upper section of the column to absorb C_{5+} hydrocarbons from the feed stream;

recovering an overhead vapor product containing C_2–C_4 hydrocarbons and having a concentration of less than about 1 ppm C_{6+} hydrocarbons;

reboiling a portion of liquid in the lower section of the column to strip lighter hydrocarbons from the feed stream;

recovering a liquid bottom product enriched in C_{5+} hydrocarbons; and

operating the column to obtain the C_2–C_4 hydrocarbons primarily in said overhead product.

5,325,674

PROCESS FOR THE PRODUCTION OF NITROGEN BY CRYOGENIC DISTILLATION OF ATMOSPHERIC AIR

Sophie Gastinne, Notre Dame de Gravencho; Francois Venet, Paris, both of France; Bao Ha, Vacaville, Calif., and Naohiko Yamashita, Kobe, Japan, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes George Claude, Paris, France; Liquid Air Engineering Corporation, Montreal, Canada and Teisan, K.K., Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 843,940

Claims priority, application France, Aug. 18, 1989, 89 11009

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—38 **20 Claims**

1. A process for producing gaseous nitrogen from a mixture to be treated in a distillation column, said mixture comprising nitrogen and oxygen, said process comprising:

(a) compressing the mixture to be treated to a pressure at least equal to the column pressure;

(b) cooling the compressed gas mixture and subjecting at least a first portion of said cooled mixture to expansion through a turbine to produce required refrigeration for the column and thereafter fractionated distillation in the column to obtain, at the bottom of the column, an oxygen-enriched fraction and, at the top of the column, a nitrogen enriched fraction;

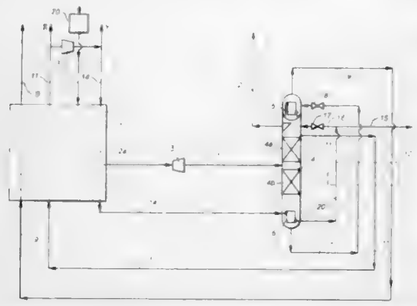
(c) drawing off at least a portion of the nitrogen-enriched fraction as nitrogen product;

(d) compressing the remaining portion of the nitrogen-enriched fraction;

(e) recycling at least a portion of the compressed remaining portion of the nitrogen-enriched fraction to the bottom reboiler of the column where it condenses to provide reboil for the column;

(f) introducing at least a portion of the condensed nitrogen stream of step (e) to the top of the column as additional reflux; and

(g) drawing off an oxygen-enriched fraction in liquid form from the bottom of the column and expanding at least a



portion of said fraction to a pressure less than the column pressure and vaporizing this portion by heat exchange with the condensing nitrogen-enriched fraction at the top of the column, and wherein said process further comprises:

expanding said compressed gas mixture in the turbine to produce required refrigeration for the column, and venting the expanded gas mixture with waste stream from the column after heat exchange in a main heat exchanger.

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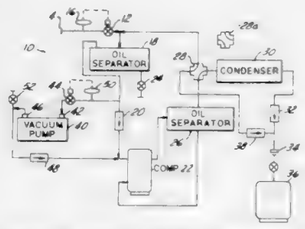
REFRIGERANT HANDLING SYSTEM AND METHOD WITH ENHANCED RECOVERY VACUUM CAPABILITY

Kenneth W. Manz, Paulding, and Christopher M. Powers, Bryan, both of Ohio, assignors to SPX Corporation, Muskegon, Mich.

Filed Aug. 2, 1993, Ser. No. 100,425

Int. Cl.[5] F25B *45/00*

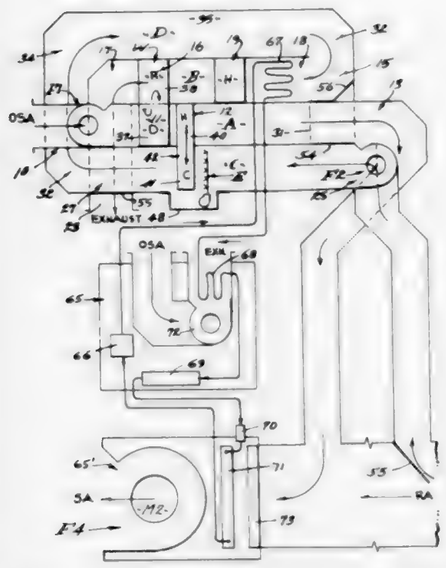
U.S. Cl. 62—77 **15 Claims**



1. In a refrigerant handling system that includes a compressor for pumping refrigerant and means for connecting an inlet of said compressor to a source of refrigerant to be pumped, the improvement wherein said inlet-connecting means comprises a vacuumpump and means responsive to refrigerant pressure at said inlet-connecting means for selectively connecting said vacuum pump in series with said compressor inlet for drawing a deeper vacuum at said inlet-connecting means than can be obtained by said compressor alone.

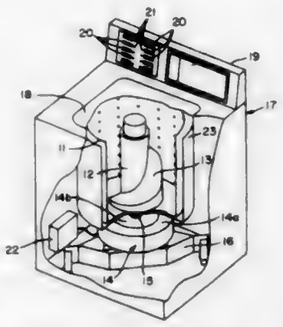
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5,325,676
DESICCANT ASSISTED MULTI-USE AIR PRE-CONDITIONER UNIT WITH SYSTEM HEAT RECOVERY CAPABILITY
Milton Meckler, 930 #2, 20th St., Santa Monica, Calif. 90403
Filed Aug. 24, 1992, Ser. No. 933,782
Int. Cl.[5] F25D *23/00*
U.S. Cl. 62—93 26 Claims



1. A convertible desiccant assisted air pre-conditioner for implemented use to dehumidify an air column delivered into an air conditioned space, and including;
- a first ducting means dedicated to dehumidification of incoming air at an intake end and delivering supply air at a discharge end for conditioning said air conditioned space,
- a second ducting means dedicated to desiccant regeneration by means of return air from said air conditioned space,
- there being at least one air flow control means at an intake end of the second ducting means,
- a third ducting means for receiving return air at an intake end and delivering exhaust air at a discharge end,
- there being one air flow control means space at the intake end of the third ducting means and at least one air flow control means space at the discharge end of the third ducting means,
- a coupler means duct open between the at least one air flow control means at an intake end of the second ducting means and said one flow control means space at the intake end of the third ducting means,
- desiccant dehumidifying means exposed to an air column flowing through the first ducting means for dehumidification and exposed to an air column flowing through the second ducting means for regeneration of weakened desiccant,
- heater means for tempering the air column to a regenerating temperature through the second ducting means,
- and heat transfer means exposed to air columns flowing through each of said first and third ducting means.

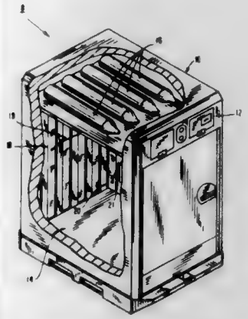
5,325,677
ELECTRONIC WASHER CONTROL INCLUDING AUTOMATIC BALANCE, SPIN AND BRAKE OPERATIONS
Thomas R. Payne; Steven A. Rice; Richard E. McKnight, Jr., and William W. Wead, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Division of Ser. No. 936,012, Aug. 27, 1992. This application Sep. 27, 1993, Ser. No. 127,683
Int. Cl.[5] D06F *33/02*
U.S. Cl. 68—12.04 19 Claims



1. A fabric washing machine, comprising:
- rotatable container to receive fluid and fabrics to be washed in the fluid;
- fluid supply means to introduce fluid into said container;
- drain means to remove fluid from said container;
- agitation means adapted to contact fabrics in said container;
- an electric motor and means connecting said motor to said agitation means to selectively oscillate said agitation means; and
- control means connected to said motor and to said fluid supply means and effective, subsequent to a washing operation of said machine, to cause said drain means to remove the standing wash fluid from said container, to cause said fluid supply means to introduce sufficient fluid to submerge the fabrics in fluid and to oscillate said agitation means in an asymmetric pattern to thereby minimize the imbalance of the wash load in said container.

13. A fabric washing machine, comprising:
- a rotatable container to receive fluid and fabrics to be washed in the fluid;
- fluid supply means to introduce fluid into said container;
- drain means to remove fluid from said container;
- agitation means adapted to contact fabrics in said container;
- an electric motor and means connecting said motor to said container and said agitation means to selectively oscillate said agitation means and rotate said container; and
- control means connected to said motor, to said fluid supply means and to said drain means; said control means being effective, subsequent to a washing operation of said machine, to cause said drain means to remove standing wash fluid from said container; to energize said motor with a constant torque signal to rotate said container and the wet fabrics therein and to measure the time required for said container to accelerate from a first predetermined velocity to a second higher predetermined velocity, the measured time being representative of the weight of the load of wet fabrics; to further energize said motor with a constant torque signal to rotate said container for an additional predetermined acceleration and to measure the value of a predetermined attribute of the further acceleration representative of the amount of unbalance present in the load of wet fabrics.

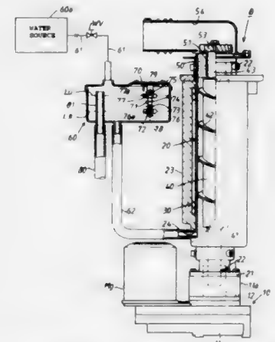
5,325,678
TEMPERATURE CONTROLLER APPARATUS
Frederic M. Borah, Merrick; Anthony P. Caruso, St. James; Anthony Leib, Jr., Planview; Richard J. Gavarian, New Hyde Park, and Edwin D. Lopez, Glen Oaks, all of N.Y., assignors to Peerless Instrument Co., Inc., Elmhurst, N.Y.
Filed Dec. 8, 1992, Ser. No. 986,672
Int. Cl.[5] F25B *49/00*
U.S. Cl. 62—126 27 Claims



1. Temperature controller apparatus for generating a temperature control signal for supply to a device which regulates flow of a coolant into a chamber so as to control the temperature of said chamber so as to maintain said chamber at a desired one of a plurality of set temperatures, said apparatus comprising:
- memory means for storing predetermined control data, said predetermined control data being related to said set temperatures;
- a plurality of input means for receiving input signals representing temperatures at respective locations in said chamber and for processing each of said respective input signals so as to form respective temperature signals and for outputting the same therefrom;
- means for determining whether each of said input means receives the respective input signal;
- means for producing a fail signal in response to any of said input means failing to receive the respective input signal;
- means responsive to said fail signal for selecting only the respective output temperature signal from each of said input means which received the respective input signal; and
- means for processing each selected temperature signal so as to produce said temperature control signal without utilizing said predetermined control data, said means for processing including means for generating said temperature control signal from said predetermined control data stored in said memory means based upon the desired set temperature when none of said input means receives the respective input signal.

5,325,679
ELECTRIC CONTROL APPARATUS FOR AUGER TYPE ICE MAKING MACHINE
Susumu Tatematsu; Junichi Hida; Yasumitsu Tsukiyama, and Naoya Uchida, all of Toyoake, Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan
PCT No. PCT/JP91/01464, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992
PCT Filed Oct. 25, 1991, Ser. No. 859,456
Claims priority, application Japan, Oct. 26, 1990, 2-289508; Oct. 26, 1990, 2-289509
Int. Cl.[5] F25C *1/14*
U.S. Cl. 62—188 5 Claims

1. An electric control apparatus for an auger type ice making machine having a water tank for supplying water connected to an evaporator housing incorporating an auger rotatable by an electric motor and having an evaporator provided on an outer wall thereof, a compressor connected to the evaporator, a water tank arranged to supply fresh water therefrom into the evaporator housing, and a solenoid water valve disposed within a water supply pipe connecting the water tank to a source of water, to thereby permit supply fresh water into the tank when the solenoid water valve is opened by energization thereof, the electric control apparatus comprising:
- a first float switch for detecting the level of water in the water tank to be actuated when the water level drops below a lower limit;
- a second float switch for detecting the level of water in the water tank to be actuated when the water level reaches an upper limit;
- a first control means for, when the first float switch is actuated, opening the solenoid water valve by energization



thereof and cutting off power supply to the electric motor and the compressor;
- a second control means for, when the second float switch is actuated after the first float switch is actuated in accordance with an increase of water in the water tank, closing the solenoid water valve by deenergization thereof and then permitting power supply to the electric motor and the compressor;
- a first timer means for, when the first float switch is actuated, starting measurement of a first control time set longer by a predetermined time than a time for the level of water in the water tank to reach the upper limit from the lower limit; and
- a third control means for closing the solenoid water valve by deenergization thereof when the measurement of the first control time terminates in a condition where the first float switch is not switched due to suspension of water supply.

5,325,680
SELF-COOLING BEVERAGE CONTAINER WITH EVACUATED REFRIGERANT RECEIVING CHAMBER
Francisco J. Baroso-Lujan, Cuicuilco No. 77, Col. Vertiz Narvarte, CP 03650, Mexico, and Ernesto M. Galvan-Duque, Seneca 41, Col. Polanco, CP 11560, Mexico
Filed Mar. 29, 1993, Ser. No. 38,479
Int. Cl.[5] F25D *3/10*
U.S. Cl. 62—294 17 Claims

1. A self-cooling beverage container comprising:
- a can having a cylindrical wall extending at least through a major portion of a height of the can, a top having means for opening the can and a bottom;
- a first compartment defined by the mall, the top and the bottom, containing a beverage;
- a second compartment containing a refrigerant fluid under relatively high pressure;
- a third compartment containing a gas under partial vacuum;

a partition separating the third compartment from the second compartment; and

a partition breaking means actuatable from outside of the container for perforating said partition to permit the refrigerant fluid to flash towards and expand into said third compartment for producing a decrease in the temperature of the beverage contained in said first compartment.

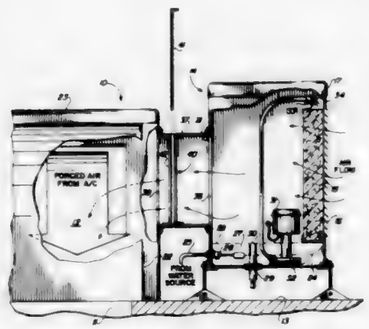


5,325,681

AIR CONDITIONING SYSTEM

Stanley C. Ellis, 4918 W. Joyce Cir., Glendale, Ariz. 85308, and Richard L. Jeanblanc, 3526 W. Danbury, Glendale, Ariz. 85308

Filed May 24, 1993, Ser. No. 65,397
Int. Cl.[5] F28D *5/00*
U.S. Cl. 62—314 **5 Claims**



1. A compact air conditioning system comprising:

an air conditioner having a first duct means connecting said air conditioner to a point of use,

an evaporative cooler comprising a housing having at least one moistened pad mounted therein for cooling atmospheric air upon it passing therethrough,

a second duct means for connecting the hollow interior of said housing with said first duct means,

blower means for forcing conditioned air from said air conditioner through said first duct means and for drawing atmospheric air through said pad, said second duct means and into said first duct means for movement to the point of use,

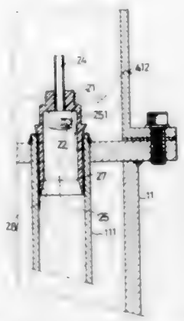
and damper means mounted in said second duct means for selectively admitting and/or blocking the air flowing therethrough from said evaporative cooler.

5,325,682

WATER DISTRIBUTOR AND ICE CUTTER FOR A TUBE-ICE MACHINE

Sen-Mu Chiang, No. 28, Nung 30, Lane 151, Wu-Sheng Road, Tainan, Taiwan

Filed Aug. 18, 1993, Ser. No. 107,602
Int. Cl.[5] F25C *1/12*
U.S. Cl. 62—320 **4 Claims**



1. A water distributor and an ice cutter for use in a tube-ice machine having a frame, a compressor, a condenser, a water receiver, a float valve, a vertical vaporizer, a water distributor and an ice cutter, comprising:

a plurality of water distributors respectively fixed in an upper end of each of a plurality of ice making tubes vertically provided in said vertical vaporizer and cooled by refrigerant, a water supply tank provided at an upper end portion of said vertical vaporizer with each of said plurality of water distributors projecting therein, each said water distributor having a hollow cylindrical body, a plurality of vertical projecting ridges spaced around an outer surface of said cylindrical body for each said water distributor to distributor to insert tightly in said upper end of each of said ice making tubes, a multi-angled head formed at a top portion of said cylindrical body, two opposing water passageways, a float surface respectively formed on opposing sides of an inner surface of said cylindrical body for each said water passageway to open into said inner surface of said cylindrical body for water to flow through said water passageways and flow down along said inner surface as a swirling water film in said interior of said water distributor and an inner surface of a respective ice making tube;

an ice cutter provided under said vertical vaporizer, having a motor with a speed reducer, a cylinder fixed on a base case, a turning disc rotated by said motor, two opposite fun-shaped cutting blades fixed on a higher level and two opposite fan-shaped sustain plates fixed on a lower level of said turning disc, four straight openings formed between each adjacent cutting blade and sustain plate for cut-off ice pieces to fall down therethrough, a net formed as a bottom of said cylinder to receive ice pieces falling down through said openings, an exit provided at one side of said cylinder fixed on said base, a curved guide plate provided inside said exit to guide fallen ice pieces through said exit for use; and,

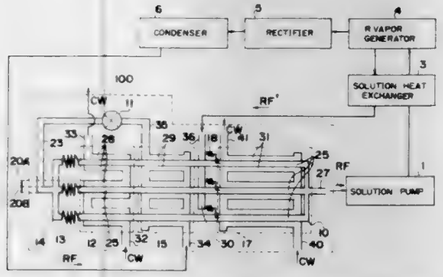
each said water distributor receiving water from said water supply tank, water flowing as swirling water film through said two water passageways and along said inner surface of each said water distributor and said ice making tube and gradually frozen therein to become a long bar of ice, unfrozen water in said ice making tubes flowing through said ice cutter and into a water tank and pumped up again into said water supply tank for being recirculated through said ice making tubes, circulation of refrigerant and water being stopped temporarily responsive to each said ice making tube having completed making a long bar of ice therein, subsequently hot air being blown into said vertical vaporizer to melt said long bars of ice in each of said tubes, wherein said long bars of ice drop down on said ice cutter, a plurality of long bars of ice falling down on said sustain plates and said cutting blades to be cut by said blades rotating, cut-off ice pieces falling down through said openings between each said blade and each said sustain plate on said net and guided by said curved guide plate in said cylinder to be pushed out of said exit for use, each of said bars of ice having been cut being temporarily supported by said rotating blade and then falling on said sustain plate to be supported thereon and cut by one of said cutting blades into a small piece to fall down through said opening, cutting operation of said ice cutter continuing until all of said bars of ice are cut up.

5,325,683

HEAT PUMP APPARATUS

Yoshiaki Yamamoto, Katano; Shinji Omura, Kadoma; Hisaaki Gyoten, Neyagawa, and Yasushi Nakagiri, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 16, 1993, Ser. No. 33,253
Claims priority, application Japan, Mar. 16, 1992, 4-058246
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—476 **6 Claims**



1. A heat pump apparatus using a refrigerant as a heat exchanging medium comprising:

refrigerant solution means for producing a poor solution of said refrigerant; and

heat exchange means, said heat refrigerant means comprising:

evaporation means for evaporating said refrigerant to produce a refrigerant vapor thereof;

first refrigerant path means provided inside said evaporating means passing therethrough, said first refrigerant path means having an inlet for taking said refrigerant and a predetermined number of first refrigerant paths which are branched from said inlet and extending out said evaporation means for carrying said taken refrigerant and said refrigerant vapor therethrough;

absorption means for making said refrigerant vapor be absorbed into said poor solution; and

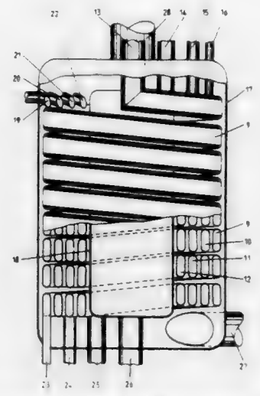
second refrigerant path means provided inside said absorption means passing therethrough, said second refrigerant path means having said predetermined number of second refrigerant paths including first ends each connected to a branched end of said first refrigerant paths for taking said refrigerant vapor into said absorption means and second ends, and said second refrigerant paths further including an outlet joining said second ends of second refrigerant paths for carrying said refrigerant vapor absorbed poor solution therefrom.

5,325,684

ABSORBER FOR A DIFFUSION ABSORPTION PLANT

Hans Stierlin, c/o DAWP-Greatherm AG, Münchwiesen 5, 8952 Schlieren, Switzerland, and John R. Ferguson, Hemel Hempstead, Great Britain, assignors to Hans Stierlin, Switzerland

PCT No. PCT/CH90/00067, § 371 Date Jul. 15, 1991, § 102(e) Date Jul. 15, 1991, PCT Pub. No. WO90/10835, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 14, 1990, Ser. No. 598,710
Claims priority, application Switzerland, Mar. 14, 1989, 934/89
Int. Cl.[5] F25B *37/00;* **B01D** *53/18;* **F28D** *7/02*
U.S. Cl. 62—487 **12 Claims**



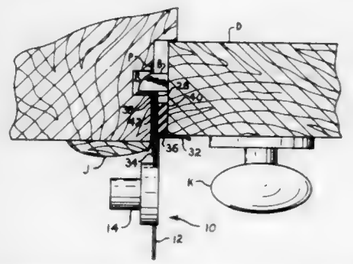
1. An absorber for a diffusion absorption plant consisting of at least one tube coil extending helically about a vertical axis in a cylindrical housing, the outer surface of said tube coil being capillary active, wherein vertically consecutive windings of said tube coil are spaced apart such that a helical gap containing accumulated refrigerant solution is formed between said consecutive windings.

5,325,685

PORTABLE AUXILIARY DOOR LOCK

Jeffery D. Frank, 3540 Soda Canyon Rd., Napa, Calif. 94558

Filed Mar. 29, 1993, Ser. No. 38,602
Int. Cl.[5] E05C *19/18*
U.S. Cl. 70—14 **12 Claims**



1. An auxiliary lock for securing a hinged door comprising:

an elongate, substantially uniform thickness slide bar having a first face, an opposite second face, and a slide bar hook extending in a first direction and defining an included angle of about 90° with said slide bar first face;

a lock cylinder having at least a rear element, and axial positioning means for axially positioning said lock cylinder along said slide bar; said lock cylinder adjacent said

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first face of said slide bar and extending in the first direction;

said rear element including an extension and a door stop extending in a second direction, said door stop defining an included angle of about 90° with said lock cylinder extension;

retaining means for retaining said rear element extension closely adjacent said slide bar second face;

said retaining means further comprises two oppositely positioned ears extending from said rear element extension, said ears slidably capturing said slide bar therebetween, and a spacer element surrounding said slide bar and compressed between a door edge and an associated door jamb whereby;

said slide bar hook is inserted within a door bolt recess of a door jamb; said lock cylinder and said door stop are selectively positioned along said slide bar to allow the door to be closed and latched, and said lock cylinder is slid along said slide bar toward the door until said door stop is in contact with the door.

5,325,686

WALL MOUNT GUN LOCK ASSEMBLY

James K. Bentley, 29100 N. Lower Valley Rd., Box 4645-21, Techachapi, Calif. 93561

Filed Apr. 26, 1993, Ser. No. 51,864
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—58 **10 Claims**



1. A wall mount gun lock assembly comprising:

an open loop ring housing having a top wall, a bottom wall, a front wall, and left and right side walls;

an open loop ring having opposite end tips that are laterally spaced from each other a predetermined distance;

the front wall of said open loop ring housing having a horizontally oriented key lock housing aperture therein, a pair of laterally spaced vertically oriented walls extend rearwardly from said key lock housing aperture;

a key lock housing having a front wall and laterally spaced vertically oriented left and right side walls and said side walls have front edges, said key lock housing being horizontally telescopically removably received in said key lock housing aperture;

said open loop ring housing having aperture means that allows said open loop ring to be rotated through a predetermined path of travel between a first position wherein both of said end tips are positioned within said open loop ring housing and a second position wherein both of said end tips are outside said open loop ring housing thus allowing one of said end tips to be threaded through the trigger guard of a fire arm; and

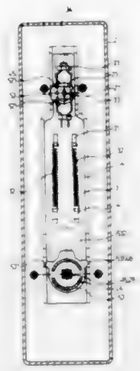
means for releasably capturing the end tips of said open loop ring while they are positioned within said open loop ring housing.

5,325,687

CONTROL MECHANISM FOR A DOOR LOCK

Jui-Chang Lin, No. 297, Bor-Ay Road, Kaohsiung, Taiwan

Filed Apr. 15, 1993, Ser. No. 46,746
Int. Cl.[5] E05B *59/00*
U.S. Cl. 70—107 **3 Claims**



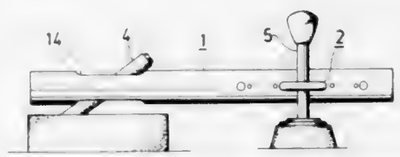
1. A control mechanism for a door lock comprising an outer cap, a lock mechanism and a first knob provided in said outer cap, an inner cap, a second knob and a third knob provided in said inner cap, a plate fixed in said inner cap, said second knob including an axle extended through said plate and extended toward said outer cap, a shaft coupled between said first knob and said third knob, said third knob including a tube extended through said plate and extended toward said outer cap, a slide including a pair of oblong holes engaging with said axle and said tube respectively and slidable relative to said plate, a resilient member engaged on said axle and secured to said plate for positioning said axle, biasing means coupled between said plate and said slide for biasing said slide to move relative to said plate, said slide including a lower shoulder and at least one upper shoulder formed in an upper portion thereof and including at least one protrusion extended toward said plate, said axle including a first disc and a second disc engaged thereon and rotated in concert therewith, said first disc including a pair of first shoulders formed thereon for engaging with an upper shoulder of said slide and said second disc including a lug extended therefrom for engaging with said lower shoulder of said slide, and said tube including a third disc engaged thereon and engaged on said shaft, said third disc including at least one extension extended outward therefrom for engaging with said at least one protrusion of said slide, whereby, said tube and said axle are coupled together via said slide.

5,325,688

ASSEMBLY OPTIONAL MULTI-PURPOSE AUTOMOBILE LOCK

J. Jaw-Jia, 6/F, No. 36-5, He-Ping Road, Pan-Chiao City, Taipei County, Taiwan

Filed May 10, 1993, Ser. No. 58,127
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—200 **3 Claims**



1. A multi-purpose automobile lock adapted to be applied to

a steering wheel to prevent rotation of the steering wheel, and between a parking brake lever and a shift lever to prevent movement of the levers, the lock comprising:

a) an elongated rod member having first and second ends;

b) a first elongated channel defined by the elongated rod member adjacent to the first end, the first elongated channel configured to accommodate a portion of a steering wheel rim therein;

c) a second elongated channel defined by the elongated rod member adjacent to the second end of the elongated rod member;

d) a generally U-shaped hook member having opposite ends;

e) a lock configured to receive the opposite ends of the hook member;

f) a plurality of latching holes defined by the elongated rod member, the latching holes communicating with the first elongated channel and spaced so as to receive the opposite ends of the hook member; and,

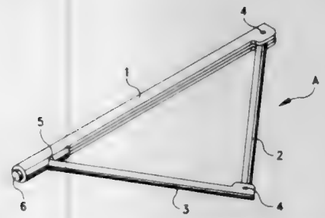
g) attaching means separate from the hook member and latching holes to removably attach one of the hook member and the lock to the elongated rod member.

5,325,689

ANTITHEFT DEVICE FOR USE ON BICYCLES

David J. Warner, Cheshire, United Kingdom, assignor to Maureen Warner, Knokker-Heist, Belgium

Filed Sep. 4, 1992, Ser. No. 940,481
Claims priority, application United Kingdom, Sep. 19, 1991, 9119990; Nov. 8, 1991, 9123837
Int. Cl.[5] E05B *71/00*
U.S. Cl. 70—233 **22 Claims**



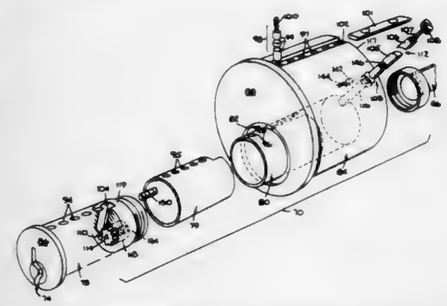
1. A bicycle antitheft device comprising at least three substantially rigid limbs and a security lock housed in one of said limbs, two of said limbs being pivotally attached to one other of said limbs, said limbs being lockable with said lock in a first position wherein said limbs cooperate to define a closed frame structure having an open interior area, wherein said device is securable to a bicycle so that a portion of said bicycle passes through said open interior area, said limbs being pivotable for movement to a second position in which all of said limbs, other than a first one of said limbs, are nested within the first limb and cooperate therewith to form a rectilinear structure which is securable in substantially parallel relation to a rectilinear portion of said bicycle.

5,325,690

LOCK ADJUSTABLE TO OPERATE WITH DIFFERENT KEYS

Richard S. Adler, 910 Franklin Lakes Rd., Franklin Lakes, N.J. 07417; Paul F. Morris, New York, N.Y.; Karl D. Kirk, New York, N.Y.; John Milich, Hastings on Hudson, N.Y., and Gerard M. Perichon, New York, N.Y., assignors to Richard S. Adler, New York, N.Y.

PCT No. PCT/US89/03196, § 371 Date Feb. 24, 1992, § 102(e) Date Feb. 24, 1992
Continuation-in-part of Ser. No. 99,099, Aug. 21, 1987, Pat. No. 4,850,210. This PCT application Jul. 24, 1989, Ser. No. 809,554
The portion of the term of this patent subsequent to Jul. 25, 2004, has been disclaimed.
Int. Cl.[5] E05B *25/00*
U.S. Cl. 70—383 **36 Claims**



1. A lock assembleable into a lock assembly and selectively operable therein by each of a plurality of different keys comprising:

a casing;

a plurality of cylinders rotatably disposed one in the other in said casing, said lock including structure closing one end thereof, a keyway being disposed in said one end in which a key may be inserted for operating said lock;

a plurality of pin tumblers;

means in said casing and said plurality of cylinders for movably receiving said plurality of pin tumblers, said pin tumblers being positionable by a key inserted in said keyway, said tumblers being configured to form a first common pin tumbler shear line between a first and a second of said plurality of cylinders when said pin tumblers are positioned by a first key inserted in said keyway, said first common pin tumbler shear line permitting rotation of said first cylinder relative to said second cylinder, said pin tumblers also being configured to form a second common pin tumbler shear line between said second cylinder and said casing when said pin tumblers are positioned by a second key different from said first key inserted in said keyway, said second common pin tumbler shear line permitting rotation of said second cylinder relative to said casing; and

means actuable from the exterior of said lock assembly when said lock is assembled therein for selectively engaging said first and said second cylinders independently of the positioning of said pin tumblers, whereby said first key but not said second key is operable to rotate said first cylinder relative to said second cylinder and said casing across said first common pin tumbler shear line when said means for engaging does not engage said first and second cylinders, and said second key but not said first key is operable to rotate said first and second cylinders together relative to said casing across said second common pin tumbler shear line when said means for engaging engages said first and second cylinders;

said means for engaging comprises at least one movable engaging member and means in at least said first and

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second cylinders for movably receiving said at least one engaging member, said at least one engaging member defining an adjustable shear line, said means for engaging including movable structure for moving said at least one engaging member between a first position placing said adjustable shear line in a first position between said first and second cylinders, and a second position engaging said first and second cylinders and placing said adjustable shear line in a second position between said second cylinder and said casing,

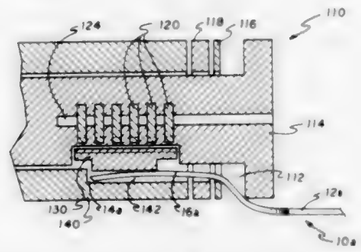
said means for engaging comprises an actuating member which is removably coupleable to said moving structure through said keyway from said one end of said lock, said movable structure and said actuating member including mutually engageable structure for engaging and moving said movable structure upon selected movement of said actuating member.

5,325,691

METHOD AND APPARATUS FOR USE IN PICKING AND DECODING SIDEBAR LOCKS

Donald J. Embry, Cloverport, Ky., assignor to HSL Marketing, Inc., Atlanta, Ga.

Filed Jan. 19, 1993, Ser. No. 6,260
Int. Cl.[5] E05B *19/20*
U.S. Cl. 70—394 **6 Claims**



1. A lock picking and decoding apparatus for decoding a sidebar cylinder lock, the cylinder lock including a cylinder housing having means defining a notch in an interior wall thereof; a lock cylinder having a plurality of bores and a plurality of tumblers disposed within a respective one of the plurality of bores, each one of the plurality of tumblers further having means defining a V-notch therein; means defining a key slot having an opening, a top surface, and a right side; and a locking bar engagable with both the notch and the tumblers, said lock decoding apparatus comprising

a torquing tool, including a handle with an elongated strip on spring metal extending therefrom, said torquing tool being dimensioned and configured so as to be passed between the lock cylinder and the cylinder housing and to apply a biasing force against the locking bar to bias the locking bar out of the notch in the interior wall of the cylinder housing and to bias the locking bar against the tumblers,

a picking device comprising a handle having an elongated member extending therefrom, said elongated member having a picking end and being dimensioned and configured so as to fit in the key slot and engage said picking end and each one of the plurality of tumblers, said picking device further comprising a plurality of notches disposed equidistantly apart along said elongated member, wherein when said picking device is inserted into the key slot, each one of said plurality of notches successively engage the opening of the key slot and with the engagement of each one a said plurality of notches with the opening of the key slot, said picking end is engagable with a respective one of the plurality of tumblers to pick the respective one of the plurality of tumblers,

a decoding tool including a handle having an elongated element extending therefrom, said elongated element having an offset end and being dimensioned and configured so as to fit into the key slot and extend said offset end into the key slot to engage an innermost one of the plurality of tumblers,

means for gauging a position of the tumbler, the position of the tumbler corresponding to a code for making a key cut, whereby

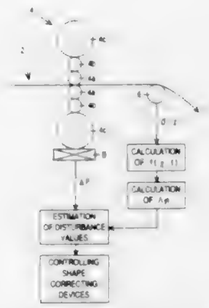
said decoding tool is insertable into the key slot to engage one of the plurality of tumblers and said means for gauging the position of the tumbler provides an indication of the code for making a key cut.

5,325,692

METHOD OF CONTROLLING TRANSVERSE SHAPE OF ROLLED STRIP, BASED ON TENSION DISTRIBUTION

Ikuya Hoshino; Tatsuro Matsuura; Teiichi Abe, all of Nagoya; Atsushi Kimura, Ichinomiya, and Yukihiro Maekawa, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Japan

Filed Sep. 28, 1992, Ser. No. 951,803
Int. Cl.[5] B21B *37/00*
U.S. Cl. 72—8 **5 Claims**



1. A method of controlling a transverse shape of a strip rolled by a rolling mill having a pair of work rolls, equipped with a plurality of shape correcting devices for correcting the shape of the rolled strip in the direction of width thereof, said shape correcting devices being associated with said work rolls, said devices including a tilt adjusting device, a work roll bending force adjusting device, and a bending force differential adjusting device, said method comprising the steps of:

detecting a change in a rolling force acting on said strip;

detecting a tension distribution of the rolled strip in said direction of width of the strip, immediately after the rolling of the strip;

calculating a strain distribution of said rolled strip in said direction of width, on the basis of the detected tension distribution;

calculating from the calculated strain distribution, a shape parameter which represents a shape error of said rolled strip;

estimating, on the basis of the detected change in the rolling force and the calculated shape parameter, first, second and third disturbance values of said rolling mill which should be zeroed by said tilt adjusting device, said bending force differential adjusting device and said work roll bending force adjusting device, respectively, said first, second and third disturbance values being estimated according to the equation (46), (51) and (59) identified in the specification, respectively, so as to offset a delay in the detection of said tension distribution which is reflected on said shape parameter, each of said equations (46), (51) and (59) including a value for offsetting said delay in the detection of said tension distribution, and a value relating to a response characteristic of a corresponding one of said tilt adjusting

device, said bending force differential adjusting device and said work roll bending force adjusting device; and

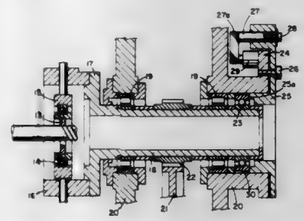
controlling said shape correcting devices, according to the estimated first, second and third disturbance values, without an influence of said delay in the detection of said tension distribution.

5,325,693

APPARATUS FOR THE CONTINUOUS PRODUCTION OF HELICAL OR ANNULAR CORRUGATED METAL TUBES

Ernst Hoffmann, Langenhagen; Wolfram Kiebl, Isernhagen, and Harry Staschewski, Langenhagen, all of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 10, 1992, Ser. No. 976,146
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137275
Int. Cl.[5] B21D *15/04*
U.S. Cl. 72—19 **5 Claims**



1. Apparatus for the continuous production of a helical or annularly corrugated, thin-walled, in particular longitudinally welded metal tube, the apparatus comprising a housing in which a corrugation head is located coaxial to the metal tube running through, the corrugation head having a freely rotating the roller ring, the apparatus also having attraction device for running through the metal tube, wherein

the roller ring and thereby the corrugation head, and mechanically attached parts thereof, have a limited axial displacement with respect to the housing, wherein the apparatus further comprises a force measuring device,

wherein the roller ring, the corrugation head or at least one part of the mechanically attached parts affects the force measuring device for measuring axial forces that cause the axial displacement, wherein the apparatus further comprises an angular velocity controller and

a motor for driving the corrugation head under the control of the controller wherein the angular velocity of the motor is controlled as a function of a force measured by the force measuring device.

5,325,694

EXTRUSION BILLET TAPER QUENCHING SYSTEM

David R. Jenista, Wyoming, Mich., assignor to Granco Clark, Inc., Grand Rapids, Mich.

Filed Mar. 15, 1993, Ser. No. 31,628
Int. Cl.[5] B21C *31/00*
U.S. Cl. 72—20 **18 Claims**

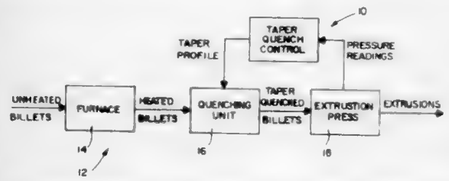
1. A quenching system for a billet extrusion operation, said quenching system comprising:

a controllable quenching unit for quenching a heated billet to be extruded;

memory means for storing a target quenching profile;

interface means for providing an interface with a press ram pressure sensor; and

control means coupled to said memory means and said interface means for controlling said quenching unit to quench a heated billet according to the target quenching profile, said control function including sampling said interface means at a plurality of ram positions during extrusion of a



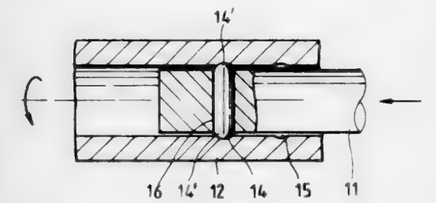
quenched billet and modifying the target quenching profile as a function of the sampled pressures.

5,325,695

DEVICE FOR MANUFACTURING LUBRICANT SUPPLY GROOVES IN FLUID BEARINGS

Young-sun Seo, and Sang-cherl Han, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 16, 1992, Ser. No. 961,850
Claims priority, application Rep. of Korea, Feb. 19, 1992, 92-2596
Int. Cl.[5] B21D *17/02*
U.S. Cl. 72—112 **5 Claims**



1. A process of forming lubricant supply grooves in a member of a fluid bearing, comprising the steps of:

inserting a working body into a through hole of a tool body so that working portions formed on opposite ends of said working body project from an outer surface of said tool body, said working portions corresponding in shape to the lubricant supply grooves;

drawing said tool body through the member so as to plasticly deform portions of an inner surface of said member, due to contact with said working portions, to define said supply grooves.

5,325,696

APPARATUS AND METHOD FOR STRENGTHENING BOTTOM OF CONTAINER

K. Reed Jentzsch, and Mark A. Jacober, both of Arvada, Colo., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 799,241, Sep. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 600,943, Oct. 22, 1990, Pat. No. 5,105,973. This application Apr. 28, 1993, Ser. No. 54,787
Int. Cl.[5] B21D *51/26*
U.S. Cl. 72—117 **69 Claims**

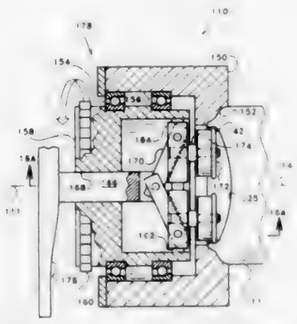
1. Apparatus for reforming a thin-walled container body having an outer wall that is disposed around a container axis, a bottom that is attached to said outer wall and that provides an annular supporting surface, an outer connecting portion that interconnects said outer wall and said supporting surface, and a bottom recess portion that is disposed radially inwardly of said supporting surface, said bottom recess portion comprising a generally concave center panel and an inner wall that dis-

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poses said center panel above said supporting surface, said apparatus comprising:

a tooling device comprising a body and a tooling element that is operatively attached to said body, said tooling element comprising at least one reforming roller, each said reforming roller being substantially disk-shaped, having a reforming surface which is engageable with said inner wall, and having a thickness which is less than a height of an upper end of said inner wall above a reference plane which substantially contains said supporting surface;

means for positioning said tooling element within an exterior space defined by said inner wall and said center panel of said bottom recess portion of said container body;



first means for providing relative transverse movement between said tooling element and all of said container body; and

means, comprising said tooling element, and comprising said first means for providing relative transverse movement between said tooling element and said container body, for reworking at least a part of said inner wall into a predetermined position of having an upwardly and outwardly orientation relative to said supporting surface and said container axis, respectively, said means for reworking comprising second means for providing relative movement between said tooling element and said container body to relatively advance said tooling element about said inner wall.

5,325,697

METHOD AND APPARATUS FOR CONTINUOUSLY HOT ROLLING FERROUS LONG PRODUCTS

Terence M. Shore, Princeton; Harold E. Woodrow, Northboro, and Melicher Puchovsky, Dudley, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Continuation of Ser. No. 860,257, Mar. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 696,206, May 6, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 84,083

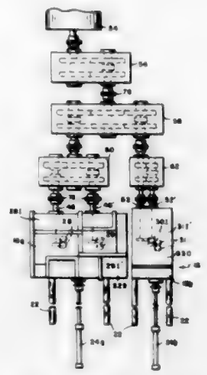
Int. Cl.[5] B21B *1/00, 35/02*

U.S. Cl. 72—234 **15 Claims**

1. A method of continuously hot rolling and sizing long products, comprising:

subjecting the products to progressively diminishing area reductions in a succession of first, second and third mechanically interconnected two roll passes driven by a common mill drive, the said area reductions being achieved by imparting a first cross sectional configuration to the products rolled in said first roll pass, and by imparting a different second cross sectional configuration to the products rolled in each of said second and third roll passes; and

selectively adjusting the speeds at which each of said roll passes is driven by said common mill drive in order to



change the drive speed ratios between successive roll passes.

5,325,698

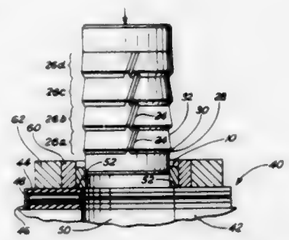
STEPPED EXTRUSION DIE ASSEMBLY

Vijay Nagpal, Westland; William J. Fuhrman, Bloomfield Hills, and David H. Dodds, South Lyon, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1992, Ser. No. 953,343

Int. Cl.[5] B21K *1/30*

U.S. Cl. 72—267 **9 Claims**



1. An extrusion die assembly for forming by extrusion an annular part generally symmetrical about an axis,

said annular workpiece being hollow and thereby defining an inner surface and an outer surface, with each said surface being coaxially disposed about said axis, and

said workpiece having a generally uniform length along said axis extending from a leading end to a trailing end,

a first die member,

a second die member,

said first and second die members being coaxially disposed relative to one another and reciprocal relative to one another,

each said die member having an extrusion forming surface contiguous with a respective one of said inner and outer surfaces of said workpiece, with said workpiece being disposed between the relatively reciprocal first and second die members,

one of said die members including means for extruding a radially projection profile in said workpiece, said profile being of uniform configuration including depth and volume throughout its axial length from the leading end of said workpiece to the trailing end thereof,

said means including a series of successively axially spaced die profile segments, each die profile having a leading end

and a trailing end, the leading end thereof increasing radially in substantially equal proportion from one die profile segment to the next successively arranged die profile segment, whereby as each die profile is successively traversed across said workpiece from one segment to the next segment, said profile will be formed in said workpiece in uniformly successive stages; and

means for maintaining the axial position of the workpiece at the leading end thereof fixed relative to said other die member as the leading end of any one of said die segments axially traverses said workpiece in the direction of the workpiece leading end, whereby axial extrusion of the workpiece is limited to the direction towards the trailing end of said workpiece and said die segment.

5,325,699

ELECTROMAGNETIC RE-DRAW SLEEVE ACTUATOR

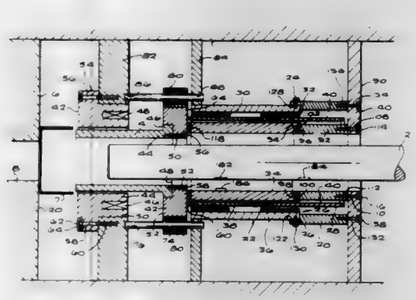
Keith O. Stuart, Cypress, Calif., assignor to Aura Systems, Inc., El Segundo, Calif.

Continuation of Ser. No. 730,634, Jul. 16, 1991, Pat. No. 5,212,977. This application Feb. 18, 1993, Ser. No. 19,053

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] B21D *24/10*

U.S. Cl. 72—347 **9 Claims**



1. In a can forming apparatus in which a cylindrical re-draw sleeve holds a can material preform against an ironing die while a ram pushes said preform through an opening in said die to form a can body, an improvement comprising:

a linear electromagnetic actuator having an actuator core mounted to said apparatus, a coil element moveable between a first position and a second position along an axis of relative movement, a magnetic circuit for defining radially directed flux in both an inward and an outward direction relative to said axis of relative movement, wherein the entire length of said coil along the axis of relative movement is disposed within the flux path in both the first position and the second position, and means for applying current to said coil so that current can be applied in one direction through the portions of the coil disposed in the inwardly radially directed flux, and applied in the opposite direction through the portions of the coil disposed in the outwardly radially directed flux so that the flux/current products are additive, said redraw sleeve being mounted to said coil element and further being in a retracted position to allow placement of said can material preform against said ironing die when said coil element is in said first position and in an extended position to hold said can material preform against said ironing die when said coil element is in said position; and

a timing and control circuit to activate said actuator to place said coil element in said second position when said ram is in a retracted position and to return said coil element to said first position when said ram is in an extended position.

5,325,700

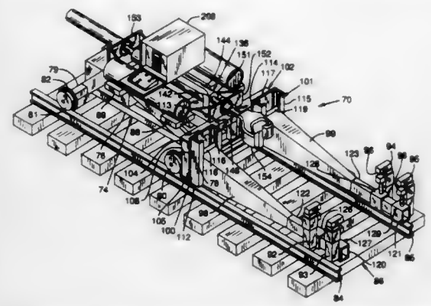
RAILCAR CUSHION DEVICE TESTER AND METHOD

Glen L. Litten, Springfield, Oreg., assignor to Emerald Hydraulics, Inc., Springfield, Oreg.

Filed Apr. 13, 1993, Ser. No. 48,131

Int. Cl.[5] G01M *17/00*

U.S. Cl. 73—11.06 **31 Claims**



1. A tester for analyzing the performance of a railcar cushion device, comprising:

a frame for supporting said tester;

means for securing said frame to a cushion device;

a hydraulic ram mounted on said frame;

coupling means on said hydraulic ram for operatively engaging the cushion device;

means for supplying hydraulic fluid to said ram;

a valve for regulating, responsive to an electrical control signal, the introduction of hydraulic fluid into and discharge of said fluid from said hydraulic ram to thereby apply force to said cushion device;

a transducer for generating a feedback signal related to the motion of said cushion device; and

an electronic motion controller for monitoring said feedback signal and for generating said control signal such that said hydraulic ram applies sufficient force to said cushion device to move said cushion device in a predetermined motion.

5,325,701

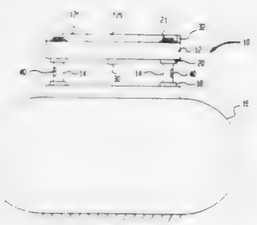
IMPACT DYNAMOMETER

Stephen Zilliacus, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 11, 1992, Ser. No. 927,992

Int. Cl.[5] G01M *7/00*

U.S. Cl. 73—12.04 **11 Claims**



1. An impact dynamometer for determining a force history associated with an impact force that contains high and low frequency components, comprising:

means for receiving the impact force at a zone of impact;

means for measuring acceleration of said receiving means at said zone of impact;

means, in cooperation with said receiving means, for defin-

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ing a plurality of structural load paths to transmit the impact force from said receiving means, each of said structural load paths being located distally from said zone of impact;

means, in cooperation with said defining means, for measuring acceleration of said receiving means at said structural load paths, wherein the acceleration measured at said zone of impact and at said structural load paths is indicative of the high frequency components;

means, in cooperation with said defining means, for measuring the impact force at said structural load paths as a measure of the low frequency components; and

means, in cooperation with said defining means, for elastically absorbing the impact force via said structural load paths, whereby structural integrity of said impact dynamometer is maintained

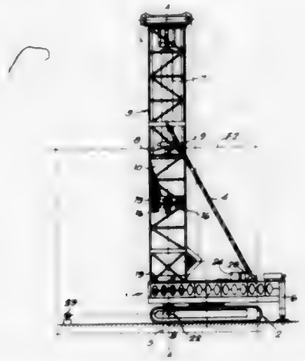
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5,325,702

MACHINE AND METHOD FOR DETERMINING THE LOAD CAPACITY OF FOUNDATION PILES

Alexander J. Verstraeten, Knokke-Heist, Belgium, assignor to Funderingstechnieken Verstraeten B.V., NE Oostburg, Netherlands

Filed Sep. 16, 1992, Ser. No. 945,764
Int. Cl.[5] G01M *7/00*
U.S. Cl. 73—12.13 **18 Claims**



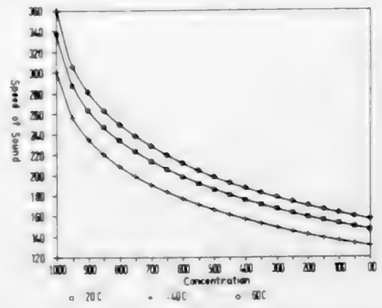
16. A method for determining the load capacity of foundation piles which method comprises exerting several successive blows with prolonged impact on a foundation pile via a pressure capsule mounted between the top of the foundation pile and an anvil, using a drop-weight which has means attached to the bottom of the drop-weight to enable its impact on the foundation pile to be prolonged by absorbing said impact and slowly transmitting it to the foundation pile, said means comprising pairs of spring means having different non-compressed lengths; recording each impact on the foundation pile and displaying said recording by means of a computer; measuring the settlement of the foundation pile under the effect of each blow by means of a measuring device and in using a printer to print out a load/settlement diagram calculated by the computer.

5,325,703

METHOD FOR IDENTIFYING THE CONCENTRATION OF FUELS OR GASES

Valentin Magori, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 24, 1992, Ser. No. 950,235
Claims priority, application European Pat. Off., Sep. 26, 1991, 91116461.4
Int. Cl.[5] G01N *29/02*
U.S. Cl. 73—23.32 **23 Claims**



1. A method for identifying the concentration of fuels or gases in air comprising the steps of:

conducting an air/fuel mixture whose concentration is to be identified through an ultrasound measuring section of known length;

directing ultrasound through said mixture in said measuring section;

determining the speed of sound through said air/fuel mixture; and

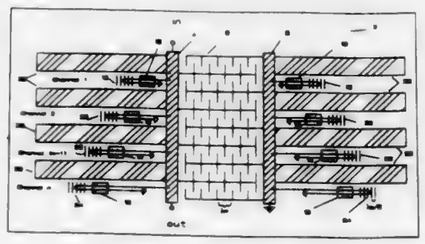
identifying the concentration of said mixture on the basis of the speed of sound through said mixture in said measuring section.

5,325,704

SURFACE ACOUSTIC WAVE (SAW) CHEMICAL MULTI-SENSOR ARRAY

Elio A. Mariani, Hamilton Square, and William J. Skudera, Jr., Oceanport, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 22, 1993, Ser. No. 157,847
Int. Cl.[5] G01N *30/76, 30/78, 30/48*
U.S. Cl. 73—24.06 **20 Claims**



1. A surface acoustic wave, multi-channel sensor which comprises a piezoelectric substrate; a bidirectional surface acoustic wave transducer disposed on the substrate; a plurality of pairs of acoustic sensing and reference channels, each pair member being substantially identical to its corresponding other pair member, the sensing channels being sequentially disposed on the substrate in juxtaposition with one side of the transducer and the reference channels being sequentially disposed on the

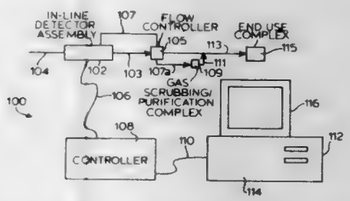
substrate in juxtaposition with the other side of the transducer; each respective sensing channel and reference channel pair sequentially comprising a thin film whose composition is capable of absorbing a chemical vapor to be monitored, and a metallic surface acoustic wave grating reflector capable of receiving incident surface acoustic waves transmitted by the transducer through the thin film and reflecting them back again into the thin film to the transducer; for each channel pair, the reflector grating and thin film is spaced equidistantly from the center line of the bidirectional transducer such that each respective sensing channel and reference channel pair is a mirror image of the other; an acoustic absorber disposed on the substrate between each sensing channel and each reference channel; means for protecting each of the reference channels from ambient conditions and simultaneously exposing each of the sensing channels to ambient conditions; means for applying an RF signal to the transducer which causes the propagation of an acoustic signal into each of the sensing channels and reference channels; and means for detecting output signals from the transducer.

5,325,705

IN-LINE DETECTOR SYSTEM FOR REAL-TIME DETERMINATION OF IMPURITY CONCENTRATION IN A FLOWING GAS STREAM

Glenn M. Tom, New Milford, Conn., assignor to Novapure Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 628,490, Dec. 14, 1990, Pat. No. 5,138,869. This application Aug. 17, 1992, Ser. No. 930,184
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] G01N *29/02*
U.S. Cl. 73—31.03 **13 Claims**



1. An in-line detector system for sensing concentration of an impurity species in a flowing gas stream, which is conveniently calibratable, said system comprising:

a purifier unit for gas stream impurity removal;

an impurity introduction source for selectively introducing a known, selected concentration of impurity to gas contacted therewith; and

means defining a flow passage assembly having an inlet end and an outlet end, and constructed and arranged:

for flowing at least a portion of gas from the flowing gas stream through the purifier unit to yield impurity-reduced gas;

for flowing impurity-reduced gas to an impurity concentration sensing locus;

in selective flow communication relationship with the impurity introduction source for contacting gas from the flowing gas stream with impurity to yield impurity-enhanced gas containing a known, selected concentration of impurity, and for flowing impurity-enhanced gas to an impurity concentration sensing locus; and

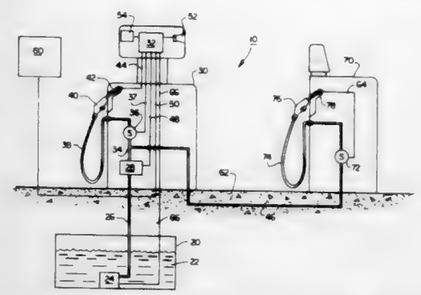
for discharging impurity-reduced gas and impurity-enhanced gas from the outlet end.

5,325,706

DISPENSER LEAK DETECTION

John S. Grose, Kernersville, N.C., assignor to Gilbarco, Inc., Greensboro, N.C.

Filed Jul. 21, 1992, Ser. No. 917,762
Int. Cl.[5] G01M *3/28*
U.S. Cl. 73—40.5 R **25 Claims**



1. An apparatus for detecting leaks in piping connecting master and satellite motor fuel dispensers in which the master dispenser includes:

a. a switch activatable to turn on a pump to pump motor fuel from a reservoir to the master dispenser,

b. a meter to detect the flow of motor fuel being dispensed, and

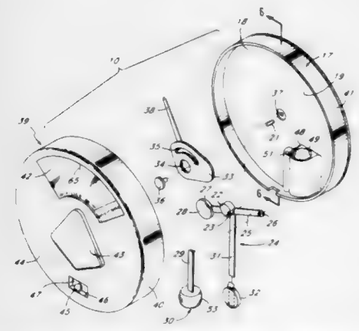
c. piping to the satellite dispenser downstream of the meter, said apparatus comprising electronic means for simulating the activation of the switch and for determining the meter's detection of the flow of motor fuel during a time of simulated activation of the switch and for outputting a leak detection signal when such flow is detected.

5,325,707

AIR FILTER CONDITION INDICATOR

Harry F. Slater, P.O. Box 617, Suisun City, Calif. 94585

Filed Mar. 8, 1993, Ser. No. 28,555
Int. Cl.[5] G01M *3/00*
U.S. Cl. 73—40 **10 Claims**



1. An air filter condition indicator which provides an indication of the degree of clogging of the air filter being checked, said air filter being mounted in an air treating apparatus of the type having an air fan with an air intake, an air volume between said air filter and said air intake of said air fan, said air filter condition indicator comprising:

a housing having a base plate having a front surface and a back surface;

a cylinder member held by said base plate, said cylinder having a first end and a second end;

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a balance assembly support pin held by said base plate of said housing;

a balance assembly rotatingly held by said support pin and said balance assembly comprising:

a hub member rotatingly supported on said balance assembly support pin;

a generally horizontal balance lever held by said hub member, said balance lever extending away from said hub, said balance lever having a first end which supports a counterweight and a second end which supports a piston rod;

a piston rod having a piston end and a balance lever end rotatingly supported on the second end of the generally horizontal balance lever, a piston held by the piston end of the piston rod, said piston being positioned in said cylinder member between the first end and the second end thereof;

a counterweight mounted on the first end of the generally horizontal balance lever;

an actuation weight held by said actuation weight arm; an indicator member moveable in response to rotational movement of said balance assembly; and

a first air passageway to one of the first and second ends of the air cylinder, said first air passageway being connected to ambient air and a second air passageway to the other of the first and second ends of the air cylinder, said second air passageway being connected to said air volume between said air filter and said fan, whereby said piston and said balance assembly moves in response to a pressure differential across said air filter when said fan is operating.

5,325,708

DETECTOR FOR HELIUM LEAKS

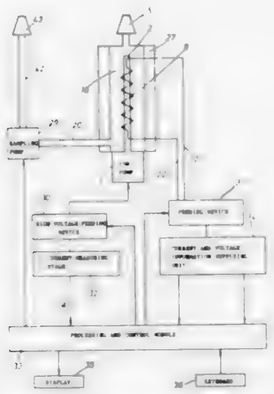
Mauro De Simon, Osoppo, Italy, assignor to Varian S.p.A., Turin, Italy

Filed Aug. 21, 1992, Ser. No. 934,176

Claims priority, application Italy, May 14, 1992, T092A000416

Int. Cl.[5] **G01M** *3/04*

U.S. Cl. 73—40.7 **16 Claims**



1. An improved unit for detecting helium leaks comprising a cylindrical tube, internally coated by a reflecting material, concentrically located inside a cylindrical housing and defining a first sampling chamber between the inner surface of the cylindrical tube and the outer surface of a capillary membrane, as well as a second thermally insulating chamber between the outer surface of the cylindrical tube and the inner surface of the housing, said first chamber being equipped with a sintered filter with an extended surface and adapted to cool the gas flow exiting from the chamber and directed towards the outside environment, and such as to form a flame barrier; a free portion of said capillary membrane partially protruding through into a flange provided at the suction inlet of an ion pump; said unit further comprising:

means for transforming a signal I_a that is proportional to the current drawn by the ion pump into n signals Out_1, . . . Out_n the voltage of which is proportional to the current of the signal I_a, said signals being activated one after the other when signal I_a subsequently reaches n current thresholds, and being deactivated when signal I_a subsequently reaches as many current thresholds;

means for evaluating the level of the current drawn by the ion pump;

means for selecting said means for evaluating the level of the current drawn by the ion pump on the basis of the voltage level reached by the n signals Out_1, . . . Out_n from said means for transforming the signal I_a;

means for calculating the value He of the helium concentration in a gas mixture contained in the sampling chamber on the basis of the evaluated value I_c of the current drawn by the ion pump, on the basis of the value T of the temperature of the capillary membrane, on the basis of the level I_o of the bottom current drawn by the ion pump, on the basis of the permeability of quartz to helium, exponential term, and on the basis of the time constant Γ of the system that depends upon the volume of the capillary membrane and the pumping rate of the ion pump, according to the following relationship:

$$He = S \cdot \left(I - I_0 + \Gamma \cdot \frac{dI_c}{dt} \right) \cdot \frac{1}{T} \cdot \exp\left(\frac{E_0}{T} \right)$$

two stages, a pulsating feeding stage and a sampling stage respectively, adapted to cyclically switch from a phase in which the first stage that pulsatingly feeds the heater filament of the capillary membrane is activated to a phase in which the second stage which measures the voltage and current values of the filament is activated, said voltage and current values being used by a subsequent processing stage for calculating the filament temperature;

a stage for processing the value t_x of the capillary membrane temperature in which the filament voltage value V_f and current value I_f are combined with the temperature value t_o and the resistance value R_o at known conditions in accordance with the following law:

$$t_x = \frac{1}{Q} \cdot \left(\frac{V_f}{I_f \cdot R_0} - 1 \right) + t_0$$

where

Q is the proportionality constant of the material used for making the filament;

a stage for a timed raising of the threshold of the maximum admissible current drawn by the ion pump, adapted to increase the depletion speed of the ion pump that becomes 10 times greater than that of the normal working conditions, thus allowing for a quicker removal of the helium accumulated;

a stage for measuring and comparing the power drawn by the ion pump both in presence and without the flow of gas from the sampling pump;

a check-trigger stage for the ion pump adapted to check that the triggering of the ion pump has taken place.

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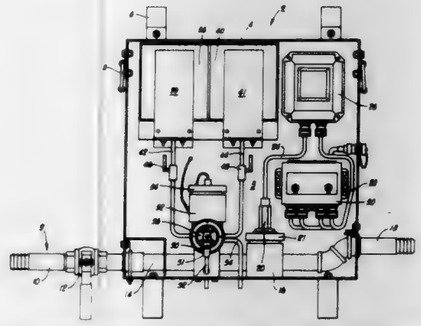
MEASUREMENT, CALIBRATION AND PROBE STORAGE APPARATUS FOR MEASURING PH OF FLUIDS AND SLURRIES

C. Lynden Lee, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 14, 1993, Ser. No. 4,324

Int. Cl.[5] **G01N** *33/00, 11/00*

U.S. Cl. 73—61.43 **12 Claims**



1. A measurement, calibration and probe storage apparatus for use in connection with the protection of oil and gas comprising:

a) a rigid, protective, mountable, enclosure having a conduit means routed therethrough for the conveyance of at least one of a fluid, a slurry and mixture thereof;

b) a cylindrical flow chamber being configured to accommodate a removable probe sensor means therein and a removable dust cap thereon, the flow chamber being in fluid communication with the conduit;

c) at least one removable dip probe sensor means for measuring a preselected attribute of said at least one of a fluid, a slurry, and mixture thereof, in which the probe sensor is immersed;

d) an electronic processor means in electrical communication with the probe sensor for calculating and rendering a value of the attribute being measured;

e) a cylindrical probe sensor storage and calibration chamber being proximal to the flow chamber, adapted to accommodate the removable probe sensor therein and a removable dust cap thereon, the storage and calibration chamber further having a drain tube and an overfill tube, both being in fluid communication with the storage and calibration chamber, the drain tube being selectively controlled by a multi-position control valve means;

f) a dust cap being configured to be accommodated by the flow chamber and the storage and calibration chamber; and

g) a control valve means for selectively controlling the filling of the storage and calibration chamber from at least one calibration fluid reservoir, and for the draining of the calibration chamber.

5,325,710

CRANK ANGLE DETECTING SYSTEM FOR A TWO-CYCLE ENGINE

Koji Morikawa, Tokyo, Japan, assignor to Fuji Jikogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1992, Ser. No. 892,166

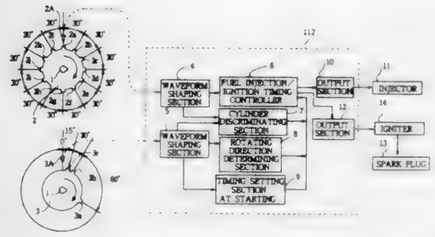
Claims priority, application Japan, Jun. 26, 1991, 3-57166[U]

Int. Cl.[5] **G01M** *15/00*

U.S. Cl. 73—116 **2 Claims**

1. A crank angle detecting system for a two-cycle engine having a crankshaft, a first detecting disk coaxially connected to an end of said crankshaft and provided with a plurality of first projections disposed at equal angular intervals, a second detecting disk coaxially connected to said end of the crankshaft and said first detecting disk and provided with second projections disposed at un-equal angular intervals, the number of the second projections being smaller than the number of the first projections, a first pickup for detecting said first projections and for producing first pulse signals having regular intervals, and a second pickup for detecting said second projection and for generating second pulse signals, said second projections being disposed such that pulses produced by the second projections for one of the cylinders of the engine are generated at a timing different from the other cylinders of the engine, an improvement of the system comprising:

a first waveform shaping circuit responsive to said first pulse signals for generating regular pulse signals occurring at regular intervals;



a second waveform shaping circuit responsive to said second pulse signals for generating irregular pulse signals occurring at irregular intervals;

discriminating means responsive to said regular and said irregular pulse signals for discriminating a cylinder number and for generating a cylinder number signal;

determining means responsive to said irregular pulse signals for determining a rotational direction and for generating a direction signal; and

timing control means responsive to said regular pulse signal, to said cylinder number signal and to said direction signal for calculating an ignition timing for accurate control of said system.

5,325,711

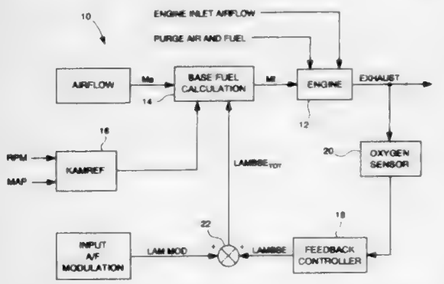
AIR-FUEL MODULATION FOR OXYGEN SENSOR MONITORING

Douglas R. Hamburg, Bloomfield Hills; Thomas S. Gee, Canton; Thomas A. Schubert, Novi, and Paul F. Smith, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 88,296

Int. Cl.[5] **G01M** *15/00*

U.S. Cl. 73—118.1 **21 Claims**



1. For use with a vehicle including an electronic control unit for controlling fuel supply to an internal combustion engine having an oxygen sensor for sensing engine exhaust gas oxygen

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level, a method of monitoring operation of the sensor, the method comprising:

generating a modulated air-fuel signal having a modified square-wave waveform, the modified square-wave waveform being designed to produce a particular engine exhaust response for interrogating the oxygen sensor;

operating the engine based on the modulated air-fuel signal, the oxygen sensor producing an associated output signal in response to sensed exhaust gas oxygen levels; and

processing the output signal of the oxygen sensor associated with the particular engine response so as to determine the operating condition of the oxygen sensor.

5,325,712

AIR FLOW METER

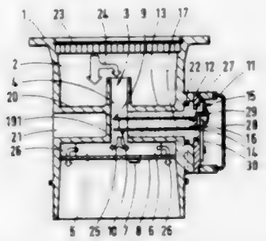
Mitsukuni Tsutsui, Naka; Shinya Igarashi, Katsuta, and Minoru Takahashi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Katsuta, both of Japan

Continuation of Ser. No. 795,200, Nov. 19, 1991, abandoned. This application Oct. 21, 1993, Ser. No. 140,813

Claims priority, application Japan, Nov. 21, 1990, 2-316892

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—118.2 **12 Claims**



1. An air flow meter comprising: a body forming a main passage defining an intake air passage of an internal combustion engine; auxiliary passage defining means unitarily molded with said body and arranged in said main passage to form an auxiliary passage having a longitudinal passage in the axial direction of said main passage and at least two transverse passages in the radial direction of said main passage; said auxiliary passage defining means having radially directed portions thereof defining said transverse passages respectively connected to an internal wall of said main passage; a heat-sensitive resistor arranged in said longitudinal passage of said auxiliary passage for metering the flow rate of intake air; said heat sensitive resistor being connected to a holder in only one of said transverse passages; and another of said transverse passages having a hollow space therein, the wall thickness of the auxiliary passage defining means being rendered substantially uniform, said hollow space being separated from said longitudinal passage by an auxiliary member forming part of said auxiliary passage defining means.

5,325,713

APPARATUS AND METHOD FOR DETERMINING THE INTEGRITY OF COATED PAPER

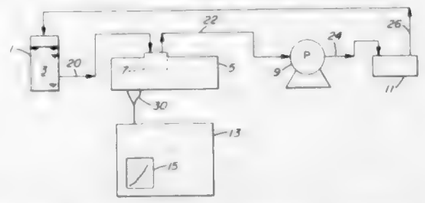
Kenneth L. Furst, Appleton, Wis.; Robert O. Dilmore, Ross Township, Allegheny County, Pa.; Milan D. Janic, Columbus, Ohio, and Bozidar Stipanovic, Lake Forest, Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 29, 1993, Ser. No. 54,631

Int. Cl.[5] G01N *33/34*; **G01B** *17/00*

U.S. Cl. 73—150 R **16 Claims**

1. Apparatus for measuring the integrity of a paper coating comprising, in combination, a reservoir for a test liquid, means for retaining a sample of coated paper, said retaining means being separate from but in liquid communication with said test liquid reservoir, means for applying ultrasonic energy to the sample of coated paper, photoelectric means for continuously measuring the turbidity of the test liquid, said photoelectric means being in liquid communication with said reservoir and said sample retaining means, recording means electronically



connected to said photoelectric means for continuously recording said turbidity measurements, and means, including pumping means, for circulating test liquid between said reservoir, said photoelectric means, and said paper sample retaining means.

5,325,714

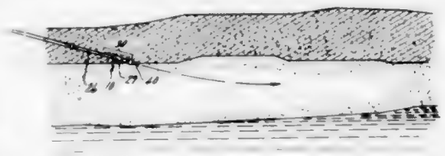
STEERABLE MOTOR SYSTEM WITH INTEGRATED FORMATION EVALUATION LOGGING CAPACITY

Bjorn Lende, Stavanger; Anders K. Nesheim, Bru; Nils Reimers, Stavanger, and Sigurd Solem, Randaberg, all of Norway, assignors to Baker Hughes Incorporated, Houston, Tex.

Filed May 12, 1993, Ser. No. 60,563

Int. Cl.[5] E21B *47/00*; **G01V** *3/18*

U.S. Cl. 73—153 **23 Claims**



16. A steerable motor system with an integrated formation evaluation device for drilling a well or the like below ground level having an uphole portion close to said ground level and a downhole portion disposed distal to said ground level comprising:

a housing;

a drive shaft disposed through a portion of said housing, said drive shaft located along the central axis of said housing;

a downhole motor mounted within said housing, said downhole motor drivingly engaging said drive shaft;

means for stabilizing said downhole motor being mounted uphole of said bit;

a resistivity measuring device mounted within said housing between said means for stabilizing said bit and said downhole motor, said formation evaluation device adapted for generating an output signal; and

a surface signaling device adapted for receiving said output signal from said formation evaluation device and relaying said signals to a receiver located above ground level.

5,325,715

FLUID FLOWMETER

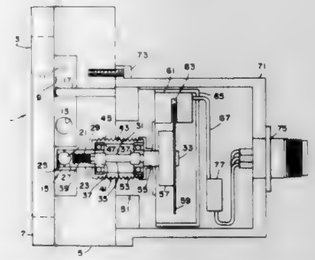
Charles D. Foran, Jr., Richardson, Tex., and William J. LoPresti, Lutz, Fla., assignors to Flowdata, Inc., Richardson, Tex.

Continuation-in-part of Ser. No. 391,198, Aug. 9, 1989, Pat. No. 4,996,888. This application Jun. 7, 1993, Ser. No. 73,611

The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.

Int. Cl.[5] G01F *1/08*

U.S. Cl. 73—261 **10 Claims**



1. A fluid meter comprises a casing having a chamber and a fluid inlet and a fluid outlet communicating with the chamber; first and second rotors are positioned within the chamber and have intermeshing lobes and valleys for turning in the chamber as fluid flows from the inlet through the chamber, around the rotors and out through the outlet; a response shaft is rotationally coupled with at least one rotor; an indicator connected to a distal end of the shaft for rotating with the shaft; an indicator housing mounted on a wall of the casing, the indicator housing having a bearing for medially supporting the response shaft and having an encoded disk mounted on a second end of the response shaft opposite the rotational coupling with at least one rotor, and an indicator cable mounting positioned adjacent the encoder disk, for mounting an indicator cable for picking up variations on a periphery of the encoder disk for indicating rotational movement of the encoder disk and rotational movement of rotors within the fluid meter casing chamber, wherein an optical reader mount surrounds the bearing and the shaft and is threadably mounted on the wall of the casing at one end, the optical reader mount threadably receiving a bearing mount for tightly securing the optical reader mount against the wall and the bearing mount within the wall and the optical reader mount.

5,325,716

APPARATUS FOR DETERMINING THE PRESSURE DISTRIBUTION ALONG A LIMITED DISTANCE AND METHOD FOR MANUFACTURING IT

Hans W. Häfner, Aichach/Walchshofen, and Gerhard Altmayer, Rehlingen-Siersburg, both of Fed. Rep. of Germany, assignors to Pfister Messtechnik GmbH, Augsburg, Fed. Rep. of Germany

Filed Feb. 7, 1992, Ser. No. 832,860

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1991, 4104177; May 10, 1991, 4115292

Int. Cl.[5] G01F *23/18*

U.S. Cl. 73—301 **17 Claims**

8. Apparatus for determining a filling level of liquids or pourable materials in containers comprising:

a support element of substantial linear extension extending over a range of longitudinal filling levels of a liquid or pourable material to be measured in a container and of a high longitudinal tensile strength and flexible in at least one lateral direction;

a plurality of discrete individual pressure sensor means, distributed longitudinally at spaced-apart positions along the linear extension of said support element, for sensing a pressure exerted on the support element by a substance filling the container to a longitudinal filling level, and for providing a corresponding plurality of measuring signals, each measuring signal indicative of said pressure at the longitudinal position of a selected one of the sensor means;

a plurality of electrical conductor means, each connected to a respective one of said pressure sensor means for conveying said measuring signals from the pressure sensor means; and

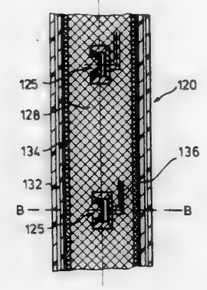
evaluation means, connected to said electrical conductor means, for receiving the measuring signals from each of said pressure sensor means, and for evaluating said measuring signals for determining the filling level at which the substance is filling the container;

wherein:

said support element is of a rope-type form and comprises:

a body element formed of elastomeric material and having an essentially circular cross-section;

said pressure sensor means are embedded in the elastomeric material;



further comprising:

a cover element fixedly surrounding said body element; and

said cover element having a high longitudinal tensile strength, being non-elastic in a peripheral direction, and being deformable in at least one radial direction;

further comprising:

a plurality of electronic means, connected between the plurality of pressure sensor means and the plurality of electrical conductor means, for conditioning the plurality of measuring signals;

wherein:

said evaluation means is adapted to sequentially interrogate individual ones of said electronic means for sequentially receiving individual ones of the measuring signals therefrom; and

said evaluation means is responsive to a number of said measuring signals for determining said filling level.

5,325,717

ADJUSTABLE MEASURING DEVICE

Rodney W. Robbins, Florence; E. Stanley Robbins, Killen; Frans M. Weterrings, Tuscumbia; Charles R. Hebner, and John E. Watkins, both of Florence, all of Ala., assignors to Robbins Industries, Inc., Florence, Ala.

Filed Nov. 30, 1992, Ser. No. 985,186

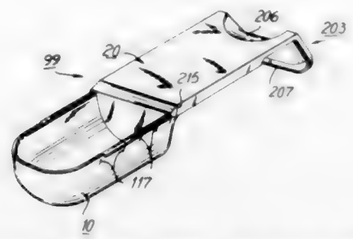
Int. Cl.[5] G01F *19/00*

U.S. Cl. 73—429 **10 Claims**

1. An adjustable measuring device comprising, in combination, a body member having a bowl, said bowl having a forward end wall, a rear end wall, opposing side walls and a bottom wall, a slider member slidably secured to said body member and having a dam element extending into said bowl, said am element being shaped to fit the internal contours of said bowl so as to form a movable barrier to change the effective volume of said bowl, said slider member extending outwardly from said body to serve as a handle and having an extension adjacent one end, said extension extending in a direction trans-

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verse to said slider member to a location substantially in the plane of said bottom wall of said bowl, said body member further having tongues at said side walls' upper edges, and said slider member further having grooves at its side edges, said grooves positively engaging with said tongues so as to securely



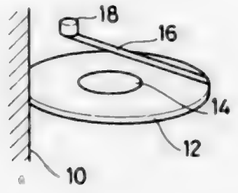
slidably attach said slider member to said body member, in which a portion of at least one of said side walls of said body member is relatively flexible, whereby said slider member can be disassembled from said body member by exerting inward pressure on said side walls.

5,325,718

DUAL-FREQUENCY VIBRATION SENSOR

Hisao Ono, Okazaki, Japan, assignor to Yupiteru Industries Co., Ltd., Japan

Filed Feb. 7, 1992, Ser. No. 832,910
Claims priority, application Japan, Feb. 13, 1991, 3-005594[U]
Int. Cl.[5] G01H *11/08*
U.S. Cl. 73—654 **5 Claims**



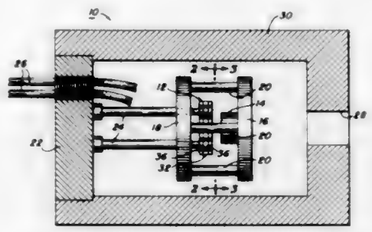
1. A vibration sensor, comprising:
a vibration plate secured to an object whose vibrations are to be sensed, said vibration plate having a natural frequency within the range from 100 to 700 Hz for resonating within a first specific range of the frequencies at which said object can vibrate;
a vibration element connected to said vibration plate,
said vibration element having a natural frequency of not more than 10 Hz for resonating within a second specific range of frequencies at which said object can vibrate, said second specific range lying lower than said first specific range, said vibration element transmitting the vibration resulting from the resonance thereof to said vibration plate, and
a piezoelectric transducer element fixed to said vibration plate, said piezoelectric transducer element being capable of generating an electrical signal in response to the stress applied by said vibration plate when said vibration plate vibrates.

5,325,719

MAGNETICALLY DRIVEN RESONANT DISC PRESSURE TRANSDUCER

Fred Petri, Snohomish, and Gene E. Gassner, Redmond, both of Wash., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jan. 25, 1993, Ser. No. 8,171
Int. Cl.[5] G01L *11/00*
U.S. Cl. 73—702 **21 Claims**



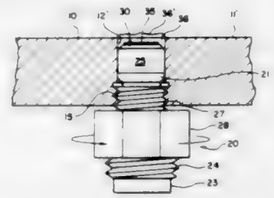
1. A pressure transducer for measuring the pressure of a fluid, comprising:
a vibratory disc adapted to be disposed in communication with said fluid; and
means for exciting said disc to vibrate in a thickness-shear mode, the frequency of vibration being representative of the pressure of said fluid, wherein said disc is fabricated from a crystalline non-piezoelectric material.

5,325,720

METHOD FOR MAKING A DYNAMIC PRESSURE SENSOR AND A PRESSURE SENSOR MADE ACCORDING TO THE METHOD

Allan J. Zuckerwar, Newport News; William E. Robbins, Achilles, and Glenn M. Robins, Gloucester, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 7, 1993, Ser. No. 138,046
Int. Cl.[5] G01L *7/08*; **G01M** *9/00*
U.S. Cl. 73—756 **8 Claims**



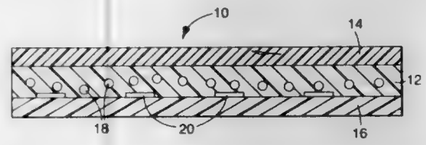
6. A method for mounting a dynamic pressure sensor flush with a test surface, comprising the steps of:
(a) providing an opening through the test surface;
(b) providing a dynamic pressure sensor with a stretched metal membrane, said membrane forming a flat top surface with a rounded edge and a side wall fitting loosely inside said opening;
(c) applying a thin indicator layer having a color different from that of the membrane to the top surface of said membrane;
(d) depositing a layer of metal on said side wall and on said metal membrane over said indicator layer;
(e) machining said deposited layer of metal to form a new side wall fitting tightly in said opening and having a flat top;
(f) mounting said pressure sensor adjustably in said opening with said flat top protruding slightly beyond said test surface;
(g) removing deposited metal protruding beyond said test surface in small steps; and
(h) fixing said pressure sensor in place when said indicator layer has been removed.

5,325,721

SYSTEM FOR INDICATING EXPOSURE TO PRESELECTED TEMPERATURES OR TAMPERING

Daniel B. Pendergrass, Jr., Mendota Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 17, 1993, Ser. No. 18,930
Int. Cl.[5] G01B *11/16*; **G01K** *5/56*; **B32B** *5/16*
U.S. Cl. 73—762 **32 Claims**



1. A device for selectively indicating strain, comprising a layer of polymeric binder that is stiff below a preselected stiffening temperature, and distributed in or adjacent to said binder layer, microcapsules containing an indicating means, whereby when the binder is stiff, minor flexure of the device causes rupture of the microcapsules and releases the indicating means, said device having a non-stiff state above the stiffening temperature of the binder such that a given strain applied to the binder layer in the non-stiff state will not release the indicating means and having a stiff state below the stiffening temperature of the binder such that the same given strain applied to the binder layer in the stiff state will release the indicating means, wherein the stiffening temperature of the binder is less than about 110° C.

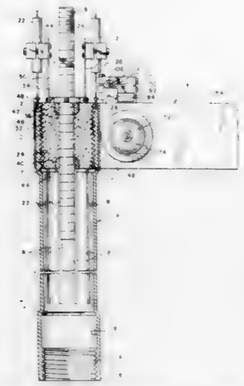
5,325,722

SPLIT PIPE TESTING DEVICE FOR THE MEASUREMENT OF BOND OF REINFORCEMENT UNDER CONTROLLED CONFINEMENT

Javier Malvar, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1992, Ser. No. 931,464
Int. Cl.[5] G01N *3/10*, *3/24*
U.S. Cl. 73—789 **16 Claims**

1. A method for determining the stress-slip relationship of a specimen in a material, the method comprising the steps of:
a) installing the specimen and the material in a testing apparatus, said specimen located in said material and the testing apparatus attached to the outer surface of said material;
b) installing said testing apparatus, said specimen and said material in a testing machine, the testing machine attached to both said testing apparatus and to said specimen, said testing machine capable of applying a force to said testing apparatus and said specimen;
c) applying an initial confining pressure to said material;
d) applying a force to said specimen and said testing apparatus to cause said specimen to be displaced from said material;
e) maintaining the confining pressure of step c at the initial confining pressure before, during and after step d;
f) measuring the displacement of said specimen relative to said material;



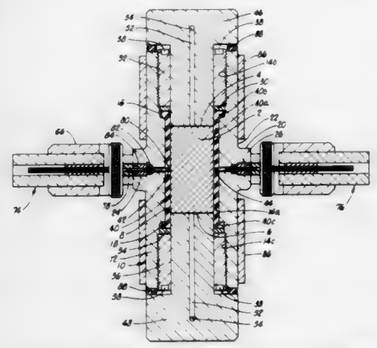
g) measuring the radial displacement of said material;
h) measuring the force applied in step d.

5,325,723

CORE SAMPLE TEST METHOD AND APPARATUS

David L. Meadows, Rush Springs, Okla., and Stewart E. Rowell, White Hall, Ark., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 4, 1992, Ser. No. 985,396
Int. Cl.[5] G01N *3/00*
U.S. Cl. 73—794 **6 Claims**



1. An apparatus for detecting changes in longitudinal and lateral dimensions of a core sample extracted from an oil or gas well, comprising:
a housing;
a sealing sleeve fixed inside said housing and adapted to receive a core sample without said sealing sleeve being removed from said housing;
retaining means for releasably retaining the core sample within said sealing sleeve and for transferring a longitudinal force to the core sample;
longitudinal deflection sensing means for sensing a change in longitudinal dimension of the core sample in response to an applied longitudinal force;
lateral deflection sensing means for sensing a change in lateral dimension of the core sample in response to the applied longitudinal force; and wherein:
said housing includes:
a support body having a contoured inner surface provid-

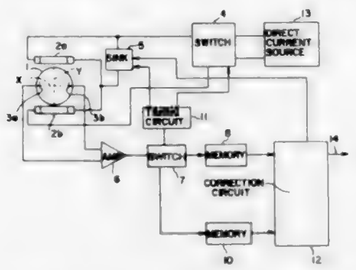
ing a support shoulder for fixedly supporting said sealing sleeve inside said body;
a first washer disposed adjacent and end of said sealing sleeve;
a first annular holding member connected to said body adjacent said first washer;
a second washer disposed adjacent another end of said sealing sleeve; and
a second annular holding member connected to said body adjacent said second washer; and
said retaining means includes:
a first end cap slidably received in said first annular holding member; and
a second end cap slidably received in said second annular holding member.

5,325,724

APPARATUS FOR MEASURING THE FLOWRATE OF A FLUID

Wilfried Kiene, Am Fuchsber 33, D-3510 Münden, and Peter Nissen, Birkenweg 1, 3405 Rosdorf, both of Fed. Rep. of Germany

Filed Nov. 23, 1992, Ser. No. 979,833
Claims priority, application European Pat. Off., Nov. 22, 1991, 91119972.7
Int. Cl.[5] G01F *1/60*
U.S. Cl. 73—861.16 **14 Claims**



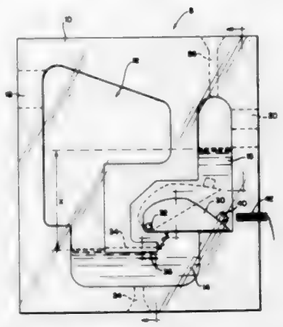
1. Apparatus for measuring the flowrate of a fluid containing electrical charges, said apparatus comprising:
a pipe section through which said fluid containing electrical charges flows;
at least one electromagnet for generating a magnetic field extending through said pipe section;
current supply means for supplying an excitation current to said electromagnet;
a current sink selectively connectable in parallel with said electromagnet and through which a portion of said excitation current passes when said sink is connected in parallel with said electromagnet;
means, including at least two electrodes disposed along a line passing through said pipe section in the region of said magnetic field, for generating signals representative of displacements of electrical charges in said fluid;
a timing circuit for selectively connecting said current sink in parallel with said electromagnet to draw a portion of said excitation current through said sink and thereby change the level of said excitation current supplied to said electromagnet;
and a correction circuit responsive to said signals representative of displacements of electrical charges in said fluid for developing an output signal representative of the flowrate of said fluid in said pipe section, whereby said output signal is only minimally dependent on the flow profile or the level of the fluid in the pipe section.

5,325,725

WATER COOLED STATOR WINDING LEAK DETECTOR

Harold C. Sanderson, Tribes Hill, and Donald R. Albright, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 29, 1993, Ser. No. 98,782
Int. Cl.[5] G01F *3/26*
U.S. Cl. 73—861.21 **10 Claims**



1. A low flowrate gas flow detector for measuring gas flow through a vent line, said detector comprising:
a gas flow inlet connected to an upstream end of said vent line;
a gas flow outlet connected to a downstream end of said vent line;
a chamber, connected between said gas flow inlet and said gas flow outlet, including a water trap;
measurement cup means, located in said chamber and said water trap, for moving through one operating cycle under the influence of a predetermined quantity of gas flow;
means for pivotally mounting said cup means to have a negative buoyancy in water and for movement between a gas trap position and a gas release position where said gas trap position traps a sufficient quantity of gas under said cup means to provide a positive buoyancy to said cup means and said release position releases said predetermined quantity of gas;
means for guiding gas from said inlet to a position under said cup means in said gas trap position; and
means for counting the number of cycles of said cup means per unit of time, said flow rate equal to the number of cycles per unit time multiplied by said predetermined quantity of gas trapped and released by said cup means during one cycle.

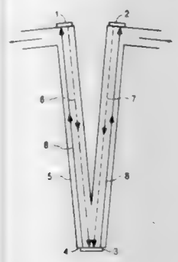
5,325,726

METHOD AND DEVICE FOR MEASURING VOLUME FLOWS IN LIQUIDS AND GASES

Gunther Krieg, Karlsruhe; Thomas Dörnhöfer, Karlsbad, and Michael Schultz, Herxheim, all of Fed. Rep. of Germany, assignors to Prof. Dr. Ing. Gunther Krieg, Karlsruhe, Fed. Rep. of Germany

Filed May 5, 1992, Ser. No. 878,491
Claims priority, application Fed. Rep. of Germany, May 5, 1991, 4114650
Int. Cl.[5] G01F *1/66*
U.S. Cl. 73—861.29 **21 Claims**

1. A method for measuring a volume flow of fluids in flow channels using ultrasound, the method comprising the steps of disposing two ultrasonic transducers each having a different transmitting frequency in the respective flow channels manner that wave trains emitted by the respective ultrasonic transducers travel toward one another and speed vectors of the respective wave trains have components in the flow direction and



against the flow direction; providing a superimposed signal; and evaluating a superimposed signal with respect to time.

5,325,727

APPARATUS AND METHOD FOR MEASURING THE MASS FLOW RATE OF LIQUID FROM A VESSEL

Steven A. Miller, Amsterdam, N.Y.; Peter G. Frischmann, Scottsdale, Ariz., and Neil A. Johnson, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 10, 1993, Ser. No. 28,869
Int. Cl.[5] G01F *1/42*
U.S. Cl. 73—861.61 **11 Claims**

1. A method for measuring a flow rate of a liquid having a density ρ from a vessel having an inner cavity and a pouring channel, comprising:
providing a first gas flow rate into the liquid in the cavity at a first position, the inner cavity having a cross-sectional area A_1 at the first position;
providing a second gas flow rate into the liquid in the pouring channel at a second position, the pouring channel having a cross-sectional area A_2 at the second position, there being a vertical distance z between the first and second positions;
determining a pressure differential p_1-p_2 between the first and second gas flows; and
determining the liquid flow rate m through the pouring channel according to the proportional relation,

$$m \propto \rho A_2 \left[\frac{2\left(\frac{(p_1 - p_2}{\rho} + gz\right)}{\left(1 - \frac{A_2^2}{A_1^2}\right)} \right]^{\frac{1}{2}}$$

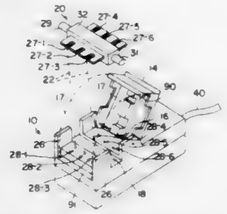
where g is gravity.

5,325,728

ELECTROMAGNETIC FLOW METER

Douglas J. Zimmerman, Coon Rapids, and Frank D. Dorman, Minneapolis, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 22, 1993, Ser. No. 81,032
Int. Cl.[5] G01F *1/00*
U.S. Cl. 73—861.12 **20 Claims**



1. An apparatus for measuring fluid flow, comprising;
a base unit assembly having a cover piece coupled to an upper surface thereof, said base unit and cover piece defining a lateral flow channel therebetween, said cover piece being moveable from an open position in which said flow channel is exposed from above, to a closed position in which said cover piece defines a top of said flow channel;
a tubular insert, adapted to be received in said flow channel, said insert being further adapted to be connected at its ends to a fluid flow circuit such that said fluid flows through said insert;
a plurality of sensing electrodes, extending into said tubular insert and terminating on an inner surface thereof;
a plurality of connectors, projecting upward out of said upper surface of said base unit and adapted to engage said sensing electrodes when said tubular insert is secured in said flow channel;
a first, substantially "E" shaped magnetic core structure having first and second side legs and a center leg, said first magnetic core structure being disposed in said base unit assembly such that said center leg is disposed adjacent said flow channel;
a second, substantially "E" shaped magnetic core structure having first and second side legs and a center leg, said second magnetic core structure being disposed in said cover piece such that when said cover piece is in said closed position, said center leg is disposed adjacent said flow channel, a central portion of said flow channel being thereby disposed within a gap between said center legs of said first and second magnetic core structures; and
a wire coil assembly having first and second electrical terminals, said coil assembly disposed around said center leg of said first magnetic core structure and responsive to an electrical coil driver signal to establish a uniform magnetic field in said central portion of said flow channel between said center legs of said first and second magnetic core structures.

5,325,729

GAS TURBINE METER

Franklin D. Goodson, Katy, and Zaki D. Husain, Helmut Zenger, all of Houston, Bob E. Kubin, Spring, Charles Aun, Jack Harshman, Missouri, all of Tex., assignors to Daniel Industries, Inc., Houston, Tex.

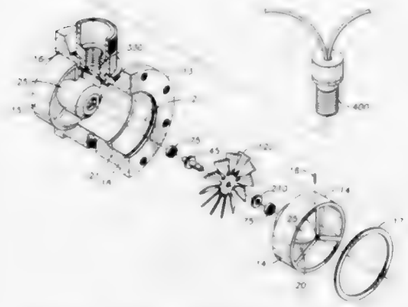
Filed Feb. 12, 1992, Ser. No. 834,601
Int. Cl.[5] G01F *1/115*
U.S. Cl. 73—861.91 **7 Claims**

1. A gas turbine meter for metering a stream comprising:
(a) a housing having an interior passage, an interior surface, and first and second opposing entrances to the passage;
(b) a first flow diffuser disposed in the first entrance and a

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second flow diffuser disposed in the second entrance, said first and second diffusers each having a bearing disposed in a central diffuser bore, each the diffuser bore comprising an inner recess and an adjacent larger diameter outer cavity forming a shoulder for interiorly abutting the bearing, the bore of said second diffuser including a larger diameter outer opening adjacent the cavity;

(c) a rotor shaft comprising a central body, opposing smaller diameter members depending from the central body forming a first shoulder having a first radial surface, and opposing smaller diameter arms depending from the members and received in the bearings, the arms forming a second shoulder having a second radial surface for exteriorly abutting the bearings, wherein the central body is received



in the larger diameter outer opening of the second diffuser bore for shielding the bearing in the second diffuser bore from debris in a stream;

(d) a rotor unitarily formed from a magnetizable metallic disk, said rotor comprising a central aperture, an adjacent planar radial surface, and a plurality of radially spaced vanes formed by a plurality of radially spaced slits extending inward from the disk circumference, the slits including terminal elongated slots having a larger width to bifurcate the vane into an inclined blade portion and a shank portion integral with the rotor planar surface, the central aperture receiving a member of the shaft, the rotor planar radial surface affixedly abutting the first radial surface; and

(e) a magnetic pick-up mounted in said housing for detecting the revolutions of said rotor

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5,325,730

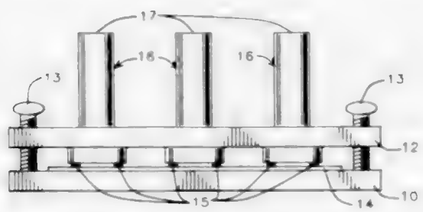
THIN FILM SAMPLER FOR FILM COMPOSITION QUANTITATIVE ANALYSIS

Wonder D. Wang, Taipei, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Division of Ser. No. 758,564, Sep. 12, 1991, Pat. No. 5,248,614. This application Jul. 1, 1993, Ser. No. 84,941

Int. Cl.[5] **H01L** *21/66, 21/306;* **G01N** *31/00, 1/28*

U.S. Cl. 73—863 **5 Claims**



1. A semiconductor test fixture for sampling thin films on the surface of a semiconductor wafer in the process of manufacturing integrated circuits thereon comprising:

a first plate for supporting said wafer;

at least one test fluid reservoir having a projecting collar around one end thereof and a sealing means under said collar;

a second plate having at least one opening therein for allowing the major portion of said at least one test fluid reservoir to pass through and with said collar of the reservoir supporting said second plate;

means associated with said first and second plates for tightening said second plate against said collar of the reservoir and in turn the sealing means of said collar against said wafer which is supported upon said first plate so as to allow a fluid to be contained in said reservoir without leakage.

5,325,731

FLUID FLOW AND MOUNTING SYSTEM FOR A SAMPLING PUMP

Royce Miller, Liberty, and Dale Schafer, Missouri City, both of Tex., assignors to Precision General, Inc., Houston, Tex.

Filed Jul. 10, 1992, Ser. No. 911,414

Int. Cl.[5] **G01N** *1/14*

U.S. Cl. 73—863.83 **20 Claims**



16. A method of mounting a sampling pump from a pipe line having a sampling port while providing fluid flow to the sampling pump, the sampling pump including a manifold block having a pair of fluid ports for passing fluid into and out of the manifold block, and a valve assembly mounted to the pipe line sampling port and including a pair of passageways for transmitting fluid from the pipe line to the manifold block and for returning fluid from the manifold block to the pipe line, the method comprising:

(a) sealingly fixing a mounting nipple having an axial flow path therethrough to one of the pair of fluid ports in the manifold block, while engaging a manifold stop surface on the mounting nipple with the manifold block to fix the axial position of the mounting nipple with respect to the manifold block;

(b) positioning the sampling pump and the mounting nipple, the mounting nipple being fixed to the sampling pump, to engage a valve assembly stop surface on the mounting nipple with the valve assembly to position the mounting axially with respect to the valve assembly;

(c) selectively rotating the sampling pump and mounting nipple with respect to the valve assembly until the other of the pair of ports in the manifold block is at a preselected position with respect to the other of the through passageways in the valve assembly;

(d) fixedly securing the mounting nipple to the valve assembly to lock the selected rotational position of the sampling pump and mounting nipple with respect to the valve assembly and to fix the axial position of the mounting nipple with respect to the valve assembly; and

(e) mounting a rigid flow line having preselected dimensions between the other of the pair of ports in the manifold block and the other of the through passageways in the valve assembly.

5,325,732

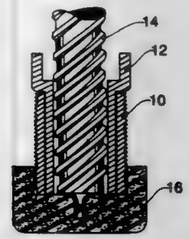
MOTION-TRANSMITTING COMBINATION COMPRISING A CASTABLE, SELF-LUBRICATING COMPOSITE AND METHODS OF MANUFACTURE THEREOF

Ferdinand L. Vogel, 4500 Lakeshore Ap. 31, Port Huron, Mich. 48060

Continuation of Ser. No. 882,366, May 6, 1992, abandoned, which is a continuation of Ser. No. 451,213, Dec. 15, 1989, abandoned. This application Aug. 20, 1992, Ser. No. 933,020

Int. Cl.[5] **F16H** *1/18;* **F16C** *33/00*

U.S. Cl. 74—424.8 R **19 Claims**



1. A motion-transmitting assembly comprising a metal member and a polymer composite member, the polymer composite member being mounted in relatively movable clasping engagement with a surface portion of the metal member, wherein

the metal member has a wear-resistant self-lubricating surface consisting of a porous metal oxide layer or a porous electrolyzed metal layer, with a porosity between about 1 percent and about 35 percent by volume, and a first self-lubricating compound impregnated into the pores of the metal oxide or electrolyzed metal layer,

the polymer composite member is a self-lubricating polymer composite comprising a thermosetting, thermoplastic or thermoset/thermoplastic polymer and a second self-lubricating compound wherein the second self-lubricating compound is about 1–70 percent by weight of the total self-lubricating polymer composite, the polymer composite member being encased in a metal shell, and

wherein there is low clearance between the metal member and the polymer composite member.

5,325,733

WORK VEHICLE IMPLEMENT LEVER LOCK

Stamos I. Papasideris, Bristol, and Thomas F. Stiegart, Somonauk, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Feb. 11, 1993, Ser. No. 16,226

Int. Cl.[5] **G05G** *5/08, 5/18*

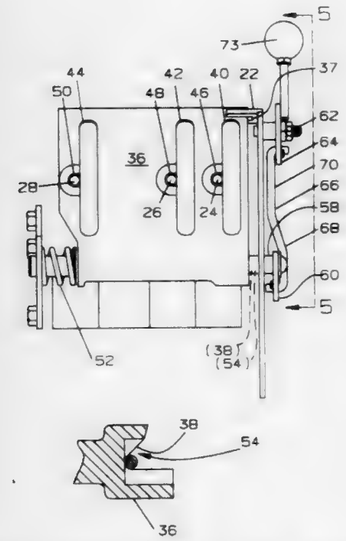
U.S. Cl. 74—483 R **6 Claims**

1. In a work machine control assembly having a plurality of implement actuation levers each associated with a respective actuating element for controlling respective movements of an implement of the work machine in response to pivotal movement of the actuating elements in response to movement of the respective actuation lever, said actuating elements each having a longitudinal axis, a first end portion pivotally connected to a frame and a latchable element extending generally along the actuating element axis and outwardly from a second end portion of the actuating element, the improvement comprising:

a gate having a cam surface and a plurality of spaced apart slots, each slot having an axis extending in a first direction with a latch opening communicating with said slot and extending in a second direction transverse the slot axis, each slot being of a size sufficient to receive a respective latchable element for movement along the slot in response to movement of said respective lever and said gate being moveable in the second direction between a first position at which the latchable elements are positioned within a respective slot and free to move along said slot and a second position at which the latchable elements are within respective latch openings and maintaining said latchable element and associated actuating elements against pivotal movement;

means for biasing the gate in the second direction;

a cam follower contactable with the cam surface of the gate and being moveable along the cam surface for moving the gate between the first and second positions;



a first rotatable shaft having a longitudinal axis and being connected to the cam follower and being rotatable for controllably moving the cam follower along the cam surface of the gate;

a first link connected to the first rotatable shaft, extending transverse the first rotatable shaft axis and being moveable therewith;

a second rotatable shaft having a longitudinal axis extending generally parallel to said first rotatable shaft;

a second link connected to the second rotatable shaft, extending transverse the second rotatable shaft axis and being moveable therewith;

a connecting link having first and second end portions, said first end portion being pivotally connected to said first link and said second end portion being pivotally connected to said second link; and

a lock actuation lever connected to the second rotatable shaft for controllably rotating the second rotatable shaft and responsively moving the gate and locking and releasing the associated actuating elements.

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DEVICE FOR POSITIONING A SENSOR

Martin Jordan, Koblenz, Fed. Rep. of Germany, assignor to Lucas Industries public limited company, Solihull, England

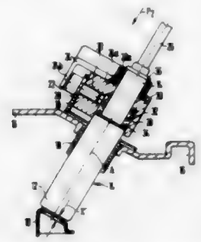
PCT No. PCT/EP91/02021, § 371 Date Jun. 21, 1992, § 102(e) Date Jun. 12, 1992, PCT Pub. No. WO92/08136, PCT Pub. Date May 14, 1992

PCT Filed Oct. 24, 1991, Ser. No. 859,725

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1990, 4033860

Int. Cl.[5] G01D *21/00;* **G01P** *1/02;* **G01B** *7/14*

U.S. Cl. 73—866.5 **11 Claims**



1. A device for positioning a sensor (**12**) with respect to a body (**10**) with a spacing (X) precisely adjusted between said sensor (**12**) and said body (**10**) comprising:

(a) a stationary support (**16**, **20**) for said sensor (**12**);

(b) a spring (**28**) biasing said sensor (**12**) with respect to said support (**16**, **20**) towards said body (**10**);

(c) an adjustment member (**24**) carried by said support (**16**, **20**) and having an operative connection with said sensor (**12**), said adjustment member (**24**) being movable with respect to said support (**16**, **20**) between first and second positions (I, II);

(d) said adjustment member (**24**) upon movement from one of its positions (I or II) to the other (II or I) effecting movement of said sensor (**12**) to a predetermined position located precisely at said spacing (X) from said body;

(e) said spring (**28**) also biasing said adjustment member (**24**) towards said stationary support (**16**, **20**).

5,325,735

BICYCLE SPEED CONTROL APPARATUS HAVING A SPEED INDICATOR

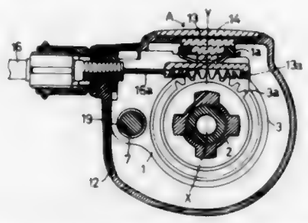
Masashi Nagano, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jan. 15, 1993, Ser. No. 5,073

Claims priority, application Japan, Jan. 21, 1992, 4-001598[U]

Int. Cl.[5] F16C *1/10;* **G05G** *11/00*

U.S. Cl. 74—502.2 **8 Claims**



1. A speed control apparatus for controlling a change speed device of a bicycle, comprising:

shift means including a takeup reel which rotates about a first axis and is adapted to wind a speed control cable, and a shift lever pivoted about said first axis to rotate said takeup reel; and

indicator means for displaying a speed condition, said indicator means including an indicator element disposed above said takeup reel and at least partly overlapping said takeup reel in plan view, said indicating element being interlocked through engagement with said shift means to rotate about a second axis intersecting said first axis.

5,325,736

BEARING DEVICE FOR SUPPORTING A MOTOR SHAFT

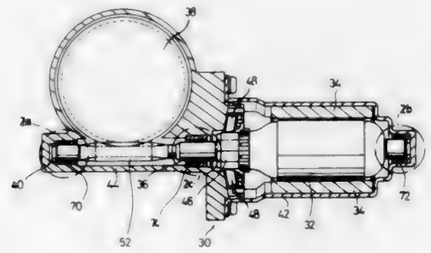
Kazuaki Tsujita, Kosai, Japan, assignor to ASMO Co., Ltd., Shizuouka, Japan

Filed Dec. 11, 1992, Ser. No. 989,213

Claims priority, application Japan, Feb. 27, 1992, 4-018398[U]

Int. Cl.[5] F16H *55/22*

U.S. Cl. 74—425 **6 Claims**



1. A bearing device for supporting a rotor shaft of a motor, comprising:

a first radial bearing for supporting a second end of the rotor shaft;

a second radial bearing for supporting a second end of the rotor shaft;

compensating means for supporting an intermediate section of the rotor shaft, when said intermediate section is caused to bend, said intermediate section being located between said first and second ends of the rotor shaft; and

wherein said compensating means includes a radial bearing having an inner peripheral surface which is spaced away from the rotor shaft, when the rotor shaft is free from load.

5,325,737

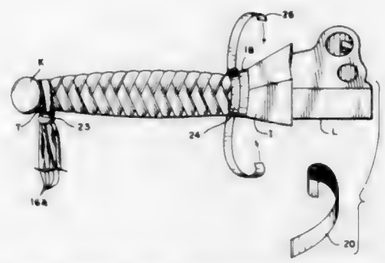
COVER FOR LEVERS

Anthony M. Bendetti, P.O. Box 1676, Troy, N.Y. 12181-1676

Filed Jan. 9, 1993, Ser. No. 5,786

Int. Cl.[5] B62K *21/26;* **G05G** *1/04*

U.S. Cl. 74—551.9 **18 Claims**



1. A cover used for a lever having an initial end and a terminal end, said cover comprising:

at least one elongate strip wrapped around the lever so as to cover the same, said elongate strip comprises a longitudinal serrated portion providing a plurality of strands, said plurality of strands being braided around the lever from the initial end to the terminal end of the lever, and a lateral unserrated portion circumferentially wrapped around the initial end of the lever;

first fixing means for securing said unserrated portion around the initial end of the lever; and

second fixing means for securing said braided strands around the terminal end of the lever.

5,325,738

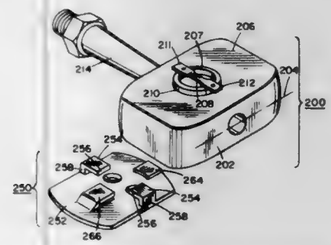
LOCKING MECHANISM FOR A CLIPLESS BICYCLE PEDAL

Richard M. Bryne, 2172 Pine St., San Diego, Calif. 92103

Continuation-in-part of Ser. No. 804,070, Dec. 9, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 947,350

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—594.6 **20 Claims**



1. A locking mechanism for a clipless pedal system having a pedal and a cleat for attachment to a rider's shoe, said locking mechanism comprising:

a body having a lower end for attachment to a first surface and an upper end with a head portion disposed on top of a neck portion, said head portion having at least one head diameter and a head thickness and said neck portion having a plurality of diameters with at least one neck diameter smaller than said head diameter, and a third diameter below said neck portion, said neck portion having a neck length at a location corresponding to said neck diameter; and

at least two engaging means disposed on a second surface, each engaging means comprising:

at least one first extension affixed perpendicular to said second surface with a first spacing between said first extension of one said engaging means and said first extension of another said engaging means, said first spacing being greater than said head diameter of said head;

a second extension affixed perpendicular to said first extension at a first height above and parallel to said second surface with a second spacing between said second extension of one said engaging means and said second extension of the other said engaging means, said second spacing being smaller than said first spacing, said head diameter and said third diameter, and larger than said neck diameter, and said head thickness being smaller than said first height;

wherein placement of said two engaging means at a first angle relative to said neck diameter of said neck portion causes said body and said engaging means to be releasably locked together and rotation of said two engaging means relative to said second diameter to a second angle different from said first angle causes said body and said engaging means to be releasable from each other.

5,325,739

TRANSMISSION FOR AUTOMOTIVE VEHICLE

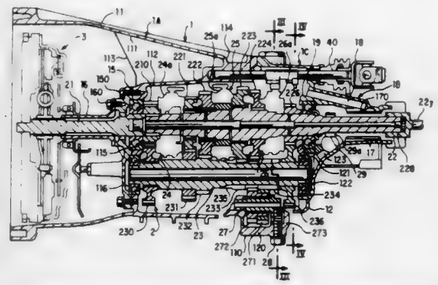
Hideo Toyota, Hiroshima, and Wataru Kuwahara, Hatsukaichi, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 18, 1992, Ser. No. 976,929

Claims priority, application Japan, Nov. 19, 1991, 3-303427

Int. Cl.[5] F16H *57/02*

U.S. Cl. 74—606 R **10 Claims**



1. A transmission apparatus having a transmission casing and a transmission housed in the transmission casing, said transmission including a clutch, various speed gears, a shaft for supporting said various speed gears, front and rear bearings spatially provided in an axial direction of said shaft for rotatably supporting said shaft relative to said transmission casing, and speed gear shift means, having a control rod and a gear change lever, for changing gear speeds, said transmission casing comprising:

a front part casing shaped generally as a frustum of a cone for forming a front part of said transmission casing;

a rear part casing shaped generally as a frustum of a cone for forming a rear part of said transmission casing, said rear part casing being connected to said front part casing so as to form said transmission casing so that it has a cross section gradually decreasing from its front to its back;

wherein a generally cylindrical transitional portion is formed by a rear end portion of said front part casing and a front end portion of said rear part casing, said generally cylindrical transitional portion being displaced behind the front bearing and in front of the rear bearing in the axial direction of said shaft.

5,325,740

ARRANGEMENT FOR CONTROLLING THE OUTPUT POWER OF A DRIVE UNIT OF A MOTOR VEHICLE

Hong Zhang, Bietigheim-Bissingen, and Martin Streib, Vaihingen/Enz, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 3, 1992, Ser. No. 923,582

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1991, 4125574; Apr. 2, 1992, 4210956

Int. Cl.[5] F16H *59/14*

U.S. Cl. 477—110 **11 Claims**

1. In a motor vehicle having a drive unit including a drive motor for generating an output torque, a transmission unit and a power transmitting device including a torque converter interconnecting the drive motor and transmission unit for transmitting torque therebetween with the power transmitting device having an output torque, the transmission unit having a transmission ratio U and the torque converter having an amplification V, an arrangement for controlling the output power of the drive unit, the arrangement comprising:

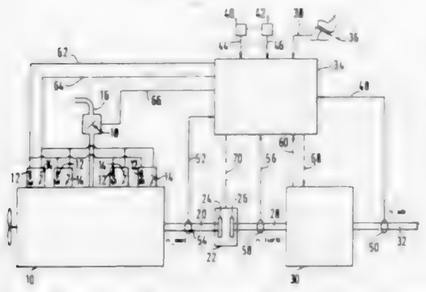
signal means for supplying a signal indicative of a driver command;

a control apparatus including:

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first means for determining a desired value (m_ab_des) for the output torque of said drive motor occurring at the output end of said power transmitting device;

second means for determining a desired value for a drive motor torque (m_mot) from said desired value (m_ab_des) of said output torque and from variables representing said transmission ratio U of said transmission unit and the amplification V of said torque converter;



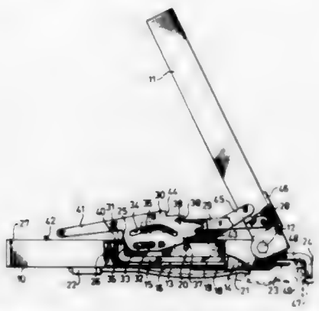
said second means functioning to provide said desired value for said drive motor torque (m_mot) to adjust said desired value (m_ab_des) of said output torque; and,

third means for controlling said drive motor torque (m_mot) in accordance with said desired value (m_ab_des).

5,325,741
CAN LID REMOVER

Erik J. H. Astrom, Kärrvägen 26, S-135 55 Tyresö , Sweden

PCT No. PCT/SE91/00137, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO91/13022, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 22, 1991, Ser. No. 920,567
Claims priority, application Sweden, Feb. 23, 1990, 9000648-7
Int. Cl.[5] B67B *7/00*
U.S. Cl. 81—3.37 **9 Claims**

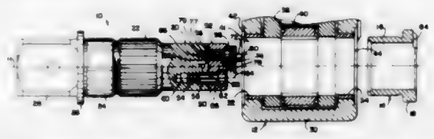


1. Can lid remover for use when opening a paint can or other can, at its upper end provided with an opening, surrounding by an outer peripheral flange (**49**) and closed by means of a lid (**47**) having a central main portion, sunk into the can opening, a cylindrical wall portion, projecting in an upward direction from said main portion, and an outer peripheral flange (**48**) which is provided at the upper end of said wall portion and by means of which the lid (**47**) is supported resting on said flange (**49**) of the can with its cylindrical wall portion in contact with the inner side of the can, said can lid remover comprising a pair of mutually expandable wedge means (**17, 23**) which may be driven in between the lid flange (**48**) and the can flange (**49**) in adjacent initial positions in which they are located in side-by-side relationship in a common plane and which, after having been driven in between said two flanges, may be moved in relation to each other in a direction substantially perpendicular to said plane to mutually expanded positions while lifting the lid flange (**48**) from the can flange (**49**), characterized in that it also comprises a holder-up (**24**) which is located in front of the wedge means (**17, 23**) and adapted to be applied against the inner side of the cylindrical wall portion of the lid (**47**) and which may be moved in relation to the wedge means (**17, 23**) from an outer end position at a greater distance from these means to an inner end position at a shorter distance from these means while forcibly driving in the wedge means (**17, 23**) between the lid flange (**48**) and the can flange (**49**), and means (**21**) for releasably holding the wedge means (**17, 23**) in their adjacent initial positions during at least an initial portion of the movement of the holder-up (**24**) from its outer end position to its inner end position.

5,325,742
HYDRAULIC TORQUE WRENCH DRIVE SHAFT RETAINER

Douglas P. Miller, New Berlin, Wis., assignor to Applied Power Inc., Butler, Wis.

Filed Jun. 4, 1993, Ser. No. 72,620
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—57.44 **11 Claims**



1. In a retainer for a hydraulic torque wrench drive shaft of the type having a bearing co-axial with and journalling a free end of said shaft, said shaft having an axially facing end-face adjacent to said bearing, an improvement comprising:

an eccentric having a bearing end surface in facing abutment with said end face of said shaft and a free end surface on the opposite side of said eccentric from said bearing end surface;

wherein said eccentric has a pivot axis and a plunger axis, said pivot and plunger axes being parallel to said shaft axis and said pivot axis being spaced apart from said shaft axis;

a plunger secured to said eccentric co-axial with said plunger axis, said plunger extending beyond said bearing and free end surfaces of said eccentric from a locking end which is beyond said bearing end surface to an operator end which is beyond said free end surface;

a pivot pin having an axis co-axial with said pivot axis pivotally connecting said shaft and said eccentric so that said eccentric is axially fixed to said shaft and rotatable between a locked position in which said eccentric bearing surface extends beyond an edge of said shaft end face and overlaps said bearing and an unlocked position in which said eccentric does not overlap said bearing;

wherein said shaft has at least one axially facing hole in said end face into which said plunger locking end can be engaged in said locked position of said eccentric, said plunger being releasable so as to rotate said eccentric to said unlocked position so that said eccentric can be drawn axially into said bearing.

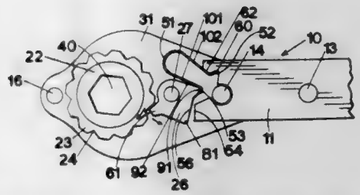
5,325,743
AUTOMOTIVE RATCHET WRENCH

Darryl L. Engel, LaOtto, Ind., assignor to Universal Tool & Stamping Company, Inc., Butler, Ind.

Filed Jun. 4, 1993, Ser. No. 70,909
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—61 **3 Claims**

1. An improved ratchet wrench comprising, a flat handle,

first and second end plates with said first plate attached at a first end of said handle to a first side of said handle and said second end plate attached to said first end of said handle to a second side of said handle, first and second aligned openings formed in said first and second end plates, a ratchet wheel with a nut engaging opening rotatably mounted in said first and second aligned openings, teeth formed on the outer surface of said ratchet wheel and having substantially right angle surfaces between adjacent teeth, a pawl pivotally supported by said first and second end plates and formed with a first projection that has a substantially right angle surface receivable in said sub-

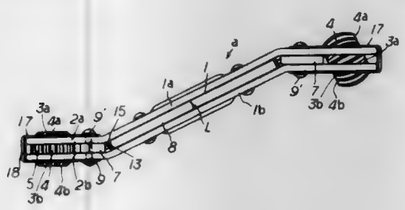


stantially right angle surfaces between adjacent teeth of said ratchet wheel, a second projection formed on said pawl and formed with a flat surface which is engageable with a mating flat surface on said handle so as to limit rotary motion of said pawl in a first direction, a third projection formed on said pawl on a side opposite said first projection formed with sharp corner, a U-shaped spring with a first and second legs joined in the middle and with bent portions formed at their free ends, said bent portion of said first leg engageable over said sharp corner of said third projection, and an opening formed in said handle in which said bent portion of said second leg is received.

5,325,744
WRENCH HAVING WRENCH SLEEVES REVERSIBLE UPSIDE DOWN

Masao Horikawa, Sanjo, Japan, assignor to Hokuyo Sangyo Co., Ltd., Niigata, Japan

Filed Nov. 23, 1992, Ser. No. 980,274
Claims priority, application Japan, Nov. 30, 1991, 3-317186
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—63.2 **9 Claims**



1. A wrench comprising:

a grip handle having a wrench receiving portion provided at an end thereof;

at least one wrench sleeve, wherein first and second wrench holes different in size are formed at a top and a bottom, respectively, of said wrench sleeve mounted horizontally rotatable within said wrench receiving portion provided at said end of said grip handle;

ratchet teeth formed on an outer peripheral surface of said wrench sleeve; and

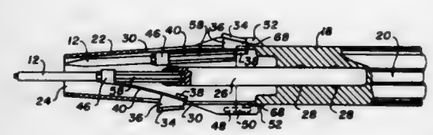
a switch lever having ratchet pawls each engageable with said ratchet teeth and said switch lever being provided on one side of said wrench sleeve;

said wrench sleeve having a barrel shape, and said wrench sleeve being mounted within said wrench receiving portion so as to be rotatable through 360° both clockwise and counterclockwise in a vertical direction about an axis parallel to a length of said end portion such that first and second opening surfaces formed by said first and second wrench holes are reversible upside down.

5,325,745
SCREWDRIVER

Albert Koehler, 2615 Murray Street, Port Moody, British Columbia, V3H 1X1, Canada

Filed Jul. 19, 1993, Ser. No. 92,852
Int. Cl.[5] B25G *1/08;* **B25B** *23/00*
U.S. Cl. 81—439 **10 Claims**



1. A screwdriver having a plurality of bits and comprising:

a housing have a hollow interior to receive the bits, the housing having a handle and an open end, remote from the handle;

an internal column, attached to the housing and having a recessed end to receive a bit and to prevent rotation of the bit relative to the housing;

a plurality of openings around the housing and extending longitudinally of the housing;

operating means for each bit, each operating means comprising an actuator having an external thumb piece, a narrowed bridge section passing through an opening in the housing and an enlarged inner end within the housing;

a leaf spring attached to an inner end of each actuator and adapted to receive a bit;

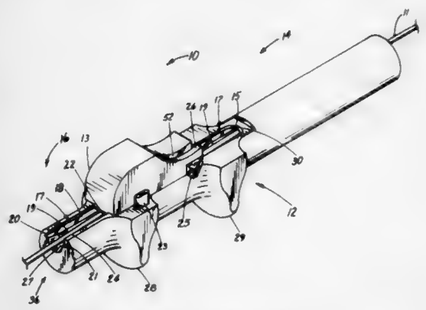
whereby a bit may be moved from a position of storage within the handle by pressing a pre-selected sactuator, moving the bit attached to the actuator out of the open end of the housing and retracting the actuator, and thus the attached bit, to engage the bit in the recess of the internal column

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5,325,746
WIRE GUIDE CONTROL HANDLE

Burton A. Anderson, Bloomington, Ind., assignor to Cook Incorporated, Bloomington, Ind.

Continuation-in-part of Ser. No. 767,273, Sep. 27, 1991, Pat. No. 5,159,861. This application Aug. 31, 1992, Ser. No. 938,885
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] A61B *17/00;* **B65H** *20/00*
U.S. Cl. 81—487 **19 Claims**



1. A wire guide control handle comprising:

an elongated member having an enclosed passageway extending longitudinally therein and a channel communicating with said enclosed passageway for receiving a wire guide, said channel including a support surface for supporting said wire guide; and

a slide positioned and slidable in said channel and having a bottom surface for engaging and fixedly positioning said wire guide in said channel, said slide having a plurality of positions in said channel and being slidable in said channel such that said bottom surface of said slide and said support surface of said channel are substantially parallel to one another and variably spaced from one another at all of said positions of said slide in said channel.

5,325,747

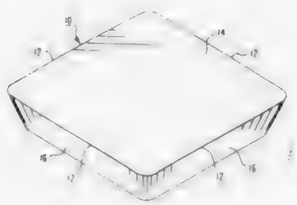
METHOD OF MACHINING USING COATED CUTTING TOOLS

Anakkavur T. Santhanam, Monroeville; Rajendra V. Godse, Greensburg; Dennis T. Quinto, Greensburg; Kenneth E. Undercoffer, Greensburg; Prem C. Jindal, Greensburg, all of Pa.; Roger A. Baillargeon, Enfield, Conn., and William D. Ewald, Raleigh, N.C., assignors to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 751,910, Aug. 29, 1991, Pat. No. 5,232,318, which is a continuation-in-part of Ser. No. 583,889, Sep. 17, 1990, abandoned. This application Aug. 13, 1992, Ser. No. 929,625

Int. Cl.[5] **B23B** *1/00, 27/16*

U.S. Cl. 82—1.11 **18 Claims**



1. A method of machining titanium alloys and high temperature superalloys comprising the steps of:

machining an alloy selected from the group consisting of titanium alloys and high temperature superalloys at a predetermined speed with a cemented carbide cutting tool having a refractory coating;

wherein said refractory coating has an inner CVD layer and an outer PVD layer;

and wherein said cemented carbide consists essentially of tungsten carbide grains bonded together by a binder selected from the group consisting of cobalt and cobalt alloys;

and wherein said cobalt forms about 3 to 10 weight percent of said cemented carbide;

and wherein said PVD layer has a residual compressive stress.

5,325,748

PROFILE CUTTING TOOL

Harry Ehrenberg, Haifa, Israel, assignor to Neumo Grundbesitz-GmbH, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 976,961

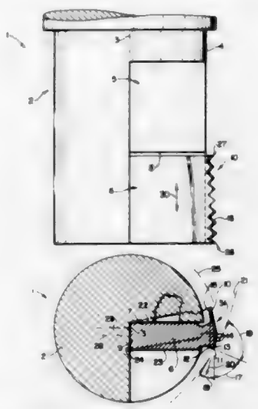
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137467

Int. Cl.[5] **B23G** *5/18;* **B23C** *5/12*

U.S. Cl. 82—13 **18 Claims**

1. A profile cutting tool for cutting workpiece profiles, comprising:

a cutting insert (**6**) including a plate body, said plate body having a plate section, said plate section having a substantially constant thickness, said plate body having plate surfaces including an edge face (**31**) and first and second side faces (**22, 23**) connected to said edge face (**31**), said first and second side faces being larger than said edge face, said edge face and at least one of said first and second side faces providing a cutting edge (**11**) at their junction, at least one of said first and second side faces providing a cutting breast face (**12**), said plate body defining a median plate plane (**28**) parallel and equidistant between said side faces (**22, 23**), said edge face (**31**) being oriented substantially at right angles to said median plate plane (**28**), said edge face providing a back face (**13**) adjacent said cutting



edge (**11**), said cutting edge (**11**) defining a longitudinal edge extension (**30**), said cutting edge (**11**) and said edge face (**31**) providing cutting profiles (**14, 15**) including at least one profile projection (**14**) and at least one profile depression (**15**), said cutting profiles (**14, 15**) having a longitudinal profile extension, said longitudinal profile extension being transverse to said median plate plane (**28**), wherein said longitudinal profile extension is inclined with respect to said longitudinal edge extension (**30**).

5,325,749

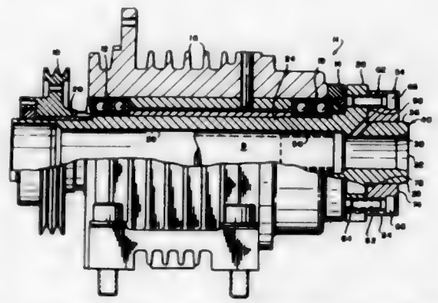
MACHINE TOOL HAVING A QUICK RELEASE DRAW TUBE AND JAW CHUCK ADAPTER

James P. Peris; Gregory Ayzenshtok, both of Horseheads, and Terrence M. Sheehan, Elmira, all of N.Y., assignors to Hardinge Brothers, Inc., New York, N.Y.

Division of Ser. No. 717,520, Jun. 19, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 31,412

Int. Cl.[5] **B23B** *31/16, 31/20*

U.S. Cl. 82—142 **10 Claims**



1. A machine tool device for converting a machine tool headstock to selectively mount a collet or jaw chuck thereon for holding a workpiece, the device comprising:

a spindle constructed and arranged to be rotatably mounted in the headstock of a machine tool, said spindle including first and second ends and a diameter, said first end of said spindle including a flange portion and a concentric projection member extending from said flange portion, said projection member being constructed and arranged to releasably hold a collet; and

an adaptor removably mounted to said flange and adapted to receive a jaw chuck for use instead of said collet.

5,325,750

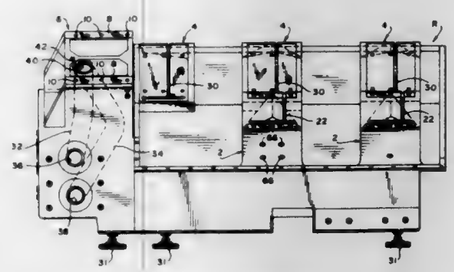
MACHINE TOOL ASSEMBLY HAVING REPLICATED SUPPORT SURFACES

Robert B. Carlyle, Horseheads; Terrence M. Sheehan; Harold E. Walburn, both of Elmira, and Brian M. Eaton, Pine City, all of N.Y., assignors to Hardinge Brothers, Inc., New York, N.Y.

Filed Nov. 5, 1991, Ser. No. 788,043

Int. Cl.[5] **B23B** *17/00*

U.S. Cl. 82—149 **8 Claims**



1. A machine tool assembly, comprising:

a) a base;

b) a headstock support surface disposed in one end of said base;

c) a bedway support surface disposed on said base; and

d) a layer of resin disposed on said bedway support surface defining a top surface substantially parallel with said headstock support surface.

5,325,751

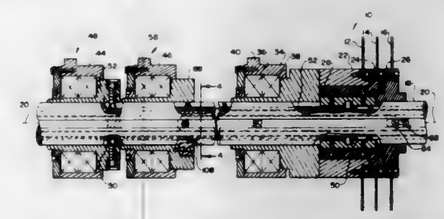
GANG RIP SAW ASSEMBLY

Max A. Green, New Hope, and Marvin W. Lee, Blaine, both of Minn., assignors to Mereen-Johnson Machine Company, Minneapolis, Minn.

Filed Feb. 17, 1993, Ser. No. 18,113

Int. Cl.[5] **B27B** *5/34*

U.S. Cl. 83—13 **26 Claims**



1. A method of adjusting backlash out of a positioning assembly for a shaft-mounted saw hub comprising the steps of:

a) threadably engaging a threaded member in a shaft-mounted ring radially-inwardly wherein the threaded member has an eccentric pin extending from a radially inward end thereof;

b) receiving the eccentric pin in an aperture of an axially oriented ring positioning strap to adjustably secure the strap to the ring; and

c) rotating the threaded member through a partial revolution while the pin is engaged with the strap to adjust out backlash between the strap and the ring.

5,325,752

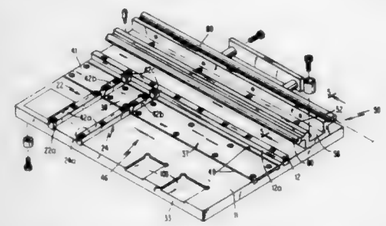
CUTTER INSTRUMENT FOR PRECISION CUTTING OF RECTANGULAR SHAPES FROM A CORRUGATED CARDBOARD SHEET

William H. Bory, Baltimore, Md., assignor to Chesapeake Corporation, Baltimore, Md.

Filed Jun. 10, 1992, Ser. No. 896,780

Int. Cl.[5] **B26D** *1/04*

U.S. Cl. 83—468.4 **9 Claims**



1. A cutter instrument for precision cutting a sheet object into a precision cut sample of predetermined dimensions, comprising:

a support base for supporting said sheet object for cutting;

a cutter on said support base and including at least one pair of cutting blades being substantially parallel with and spaced a predetermined precision distance from each other for cutting said precision cut sample from said sheet object;

a bearing arrangement mounted on said support base for movably mounting said cutter to said support base and for directing the movement of said cutter along said support base to obtain said precision cut from said sheet object;

a first guide mounted on said support base and including a guide surface extending in the direction of movement of said cutter, said sheet object being positioned with said first guide for predetermined alignment with said cutter;

a second guide including a second guide rail mounted on said support base and extending perpendicular to the moving direction of said cutter and including a guide surface against which said sheet object is positioned for further predetermined alignment with said cutter; and

at least a pair of cutting grooves in said support base at locations respectively corresponding to the respective paths of movement of said cutting blades to thereby respectively receive the cutting edges of said cutting blades, wherein said cutting grooves extend through the second guide rail so as to define an uninterrupted, continuous cutting path through which the cutting blades respectively move through the second guide rail.

5,325,753

CUTTING BLADE HOLDER ASSEMBLY

Horst Schussler, Rossdorf, Fed. Rep. of Germany, assignor to Maschinenfabrik Goebel GmbH, Darmstadt, Fed. Rep. of Germany

Filed Apr. 8, 1992, Ser. No. 865,271

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1990, 40342522

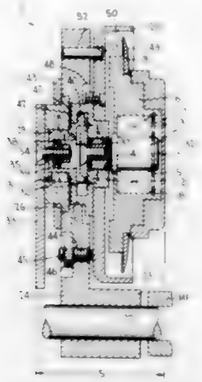
Int. Cl.[5] **B23D** *19/00*

U.S. Cl. 83—481 **2 Claims**

1. A cutting blade holder assembly comprising, a first subassembly mounted on a machine frame provided by supporting the holder assembly, said first subassembly including a first

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claw coupled having an axial shaft and a second subassembly spaced a predetermined distance apart from and releasably coupled to said first subassembly, said second subassembly including a second claw coupler having a shaft coaxial with the first claw coupler shaft, a cutting tool hub rotatably mounted on said second claw coupler shaft, and a circular cutting tool mounted on said hub for rotation together therewith, said first claw coupler being rotatably mounted on said first subassembly for interengagement with said second claw coupler for



releasably coupling said second subassembly to said first subassembly, said first subassembly including a lever mounted to said first claw coupler for manual rotation thereof into and out of engagement with said second claw coupler, said holder assembly further comprising an adjustable stop means on said first subassembly which bears against said second subassembly for adjusting the distance between said subassemblies, and said first assembly further including resilient means for resiliently coupling said subassemblies together at a spacing permitted by said stop means.

5,325,754

APPARATUS FOR CUTTING PROFILE STRIPS FORMED OF RUBBER MIXTURES

Hans-Joachim Pohl, Hanover, Fed. Rep. of Germany, assignor to Paul Troester Maschinenfabrik, Hanover, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 888,038, May 22, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 106,192

Claims priority, application Fed. Rep. of Germany, May 24, 1991, 4116971

Int. Cl.[5] **B26D** *1/18*

U.S. Cl. 83—488 **7 Claims**

1. Cutting apparatus for cutting into sections a profile strip of rubber mixture which is transported by a conveyor which is stopped intermittently for making a cut, said apparatus comprising a frame, a circular knife secured on a knife shaft, bearing means for rotatably supporting said knife shaft and knife, supporting means for supporting said bearing means on said frame, transverse motion means for moving said bearing means, knife shaft and knife transversely of said profile strip, height positioning means for positioning said bearing means, knife shaft and knife at a lower height during movement of said bearing means, knife shaft and knife transversely of said strip in one direction for effecting a cut of said strip and for positioning said bearing means, knife shaft and knife at a higher height during return movement of said bearing means, knife shaft and knife in an opposite direction,

a motor mounted on said frame and having a motor shaft, and

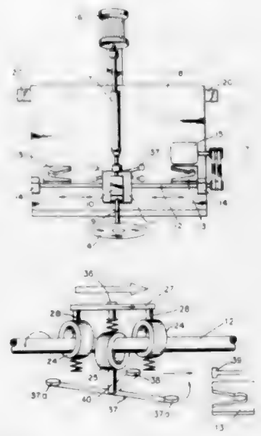
a telescopic connecting shaft connecting said motor shaft with said knife shaft for driving said knife shaft and knife in rotation while permitting relative movement between said motor and said bearing means, knife shaft and knife.

6. Cutting apparatus for cutting into sections a profile strip of rubber mixture which is transported by a conveyor which is stopped intermittently for making a cut, said apparatus comprising a main frame, a seesaw frame pivotally mounted on said main frame for tilting about a horizontal axis and having an upper end portion and a lower end portion,

a circular knife fixed on a knife shaft, bearing means rotatably supporting said knife shaft and knife,

transverse motion means for moving said bearing means, knife shaft and knife transversely of said profile strip,

guiding means on said lower end portion of said seesaw frame for guiding said bearing means, knife shaft and knife in movement transversely of said strip,



a motor mounted on said upper end portion of said seesaw frame, said motor having a shaft, and

a telescopic connecting shaft connecting said shaft of said motor with said knife shaft to drive said knife shaft and knife in rotation while permitting relative movement between said motor and said bearing means, and

height positioning means for positioning said bearing means, knife shaft and knife at a lower height during movement of said bearing means knife shaft and knife transversely of said strip in one direction for effecting a cut of said strip and for positioning said bearing means, knife shaft and knife at a higher height during return movement of said bearing means, knife shaft and knife in an opposite direction,

said height positioning means comprising means for tilting said seesaw frame about said horizontal axis.

5,325,755

PUNCH PRESS

Kyushin Morita, Ishikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

PCT No. PCT/JP91/00379, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO91/14520, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 927,520

Claims priority, application Japan, Mar. 23, 1990, 2-71925

Int. Cl.[5] **B21D** *28/36*

U.S. Cl. 83—698.11 **10 Claims**

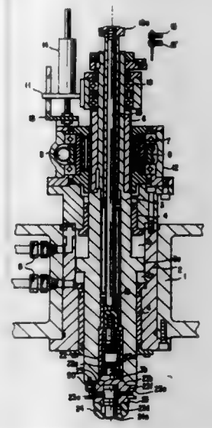
1. A punch press comprising:

an upper assembly including an upper main shaft having a lower end detachably mounting an upper die, said upper assembly including an upper clamping means for automatically clamping and unclamping said upper die by an action in an axial direction of said upper main shaft;

a lower assembly including a lower main shaft having an upper end detachably mounting a lower die, said lower assembly further including a lower clamping means for releasably clamping said lower die on the upper end of said lower main shaft; and

an angular phase adjusting means for adjusting angular phases of said upper and lower dies to a predetermined phase relationship relative to each other;

wherein said upper clamping means includes an axially mov-



able member extending coaxially within said upper main shaft, a clamping mechanism mounted to a lower end of said axially movable member, a mechanical spring means for normally biasing and axially movable member in an upward direction to provide a clamping force for clamping said upper die, and a means for moving said axially movable member and said clamping mechanism in a downward direction against the bias of said mechanical spring means to an unclamping position for unclamping said upper die.

5,325,756

STRINGED MUSICAL INSTRUMENT

David B. Sugden, Kingston Beach, Australia, assignor to Gondwana Musical Instrument Company Pty. Ltd., Tasmania, Australia

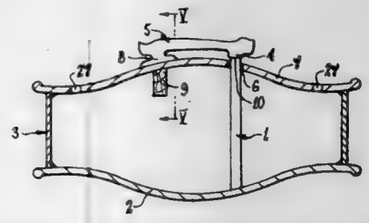
PCT No. PCT/AU91/00576, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/10829, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 12, 1991, Ser. No. 920,287

Claims priority, application Australia, Dec. 13, 1990, PK 3884

Int. Cl.[5] **G10D** *1/02*

U.S. Cl. 84—277 **13 Claims**



1. A musical instrument of the stringed kind including, a sound box having top and bottom plates which are spaced apart, a string supporting bridge positioned over the top plate and having one of two opposite ends connected to said top plate, said one end being adjacent the string of said instrument of highest pitch, a sound post extending between said top and bottom plates and having a lower end connected to said bottom plate, an opening in said top plate, a connection between an upper end of said post and the other said end of the bridge such that said end is supported by the upper end of the post, said connection being effected through said opening and arranged so as to not impede movement of the top plate towards and away from the bottom plate, a bass bar connected to the underside of said top plate and extending transverse to said bridge, said bass bar being located so that said one end of the bridge is located between the bass bar and the sound post and is spaced from the bass bar, and a tension member extending across the undersurface of said top plate in substantially the longitudinal direction of said bridge and having each of two opposite ends secured to said top plate at locations beyond the ends of said bridge.

5,325,757

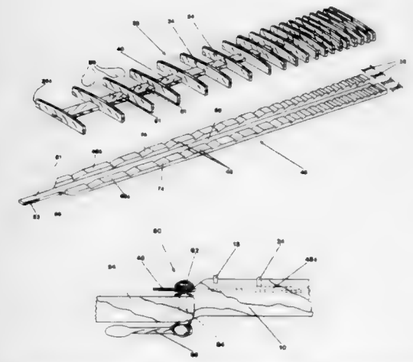
FRET RETRACTABLE NECK FOR STRINGED MUSICAL INSTRUMENTS

Serban Ghenea, 15473 Hazelnut Crescent, Pierrefonds, Quebec H9H-4A8, Canada

Filed Sep. 11, 1992, Ser. No. 943,527

Int. Cl.[5] **G10D** *3/06*

U.S. Cl. 84—314 R **20 Claims**



1. A stringed musical instrument that can be played either as a fretted or as a fretless instrument of a type comprising a fret fingerboard having a fingerboard surface defining fret slots with movable frets mounted therein, said stringed musical instrument comprising:

a cam structure movably mounted within an interior cavity of the fingerboard for impinging on respective ones of the frets for selectively moving the frets outwardly through the slots in the fingerboard to extend exteriorly of the fingerboard surface and for allowing the frets to be returned into the interior of the fingerboard approximately at or below the fingerboard surface;

an interconnected fret assembly comprising said frets and a longitudinal fret interconnecting member that is attached to and movable with the frets.

5,325,758

BLANK FIRING ATTACHMENT

David W. Compton, 20 Rosebank Crescent, Kitchener, Ontario, Canada N2E 2R4, and Thomas Hortobagyi, 6 Ashwood Dr., Cambridge, Ontario, Canada N3C 3H8

Filed Apr. 16, 1993, Ser. No. 46,855

Int. Cl.[5] **F41A** *21/26*

U.S. Cl. 89—14.500 **4 Claims**

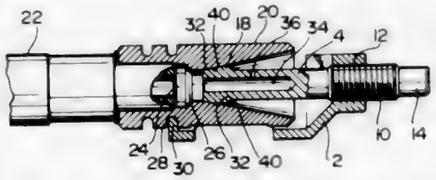
1. A blank firing attachment for use on a gas operated auto-

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matic rifle or light machine gun of the type having a barrel, a muzzle compensator affixed to the forward end of the barrel and an automatic firing mechanism actuated by gas pressure in the barrel caused by firing a bullet, comprising:

a) a body adapted to be attached to said muzzle compensator, said body being generally half cylindrical and having a flange at its forward end for engagement with a groove in said muzzle compensator;

b) a stem attached to said body, said stem having a forward end, a rear end, an axial cavity open at said forward end

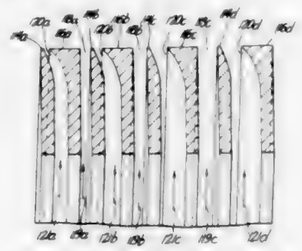


and a gas exhaust port leading from said cavity, said forward end of said stem having a tapered sealing surface and being insertable into the forward end of said muzzle compensator, whereby said tapered sealing surface seals against a mating tapered internal wall of said muzzle compensator to form a partially sealed chamber open through said gas exhaust port, whereby sufficient gas pressure is retained in said barrel after a blank round is fired to actuate said automatic firing mechanism of said rifle.

5,325,759
FLASH SUPPRESSOR

Joseph G. Warner, 33828 Stonewood, Sterling Heights, Mich. 48077, and Paul A. Petrovich, 11269 Judd Rd., Fowlerville, Mich. 48836

Division of Ser. No. 48,594, Apr. 19, 1993. This application Oct. 1, 1993, Ser. No. 130,578
Int. Cl.[5] F41A *21/32*
U.S. Cl. 89—14.3 **4 Claims**



3. A flash suppressor for a gun comprising:

means for attaching the suppressor to a barrel of the gun;

a longitudinal axis of the suppressor;

a series of rings disposed along the longitudinal axis;

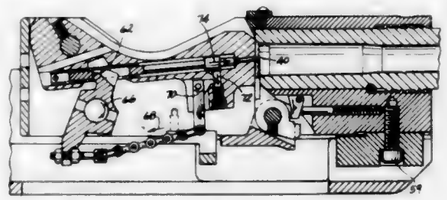
means along the axis for connecting the rings together;

wherein the rings define a first set of gaps, the rings defined a second set of gaps alternated with the first set of gaps, the gaps of the first set are curved and the gaps of the second set are straight.

5,325,760
AUTOFIRE MECHANISM FOR INDUSTRIAL GUNS

William G. Dennis, deceased, late of Florissant, Mo. by Barbara M. Dennis, executrix , assignor to Olin Corporation, East Alton, Ill.

Filed Dec. 3, 1992, Ser. No. 999,346
Int. Cl.[5] F41A *3/06*
U.S. Cl. 89—25 **3 Claims**



1. An autofiring mechanism for an industrial gun of the type having a rotary falling breech block lowered and raised by a handle, comprising:

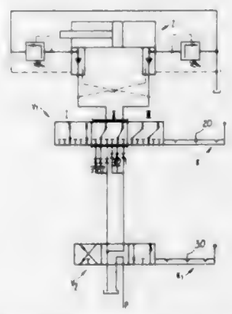
a rotary cocking cam attached to the handle movable in a first direction to cock the gun and lower the breech block and in a second direction to raise the breech block; and

a puller means connecting the rotary cocking cam to a trigger, the puller means being rigid in tension and flexible in compression.

5,325,761
SWITCHING ARRANGEMENT FOR CONTROLLING THE SPEED OF HYDRAULIC DRIVES

Friedrich Schwing, Gelsenkrichen, Fed. Rep. of Germany, assignor to Friedrich Wilh. Schwing GmbH, Fed. Rep. of Germany

Filed Mar. 23, 1992, Ser. No. 855,980
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1991, 4109754
Int. Cl.[5] F15B *13/04*
U.S. Cl. 91—31 **4 Claims**



1. A switching arrangement for a speed control of a hydraulic drive having an inlet line and an outlet line, the hydraulic drive being selectively driven at any one of a plurality of particular drive speeds, said selected drive speed being selected and set via a command switch, the switching arrangement comprising:

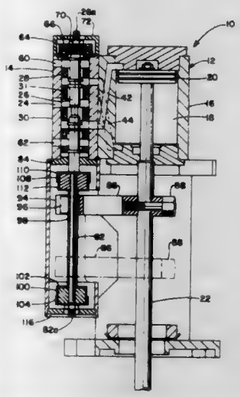
a plurality of pairs of fluid restrictions, such that each restriction in a particular pair of restrictions correspond to a same particular drive speed and each pair of restrictions corresponds to a particular drive speed different than a drive speed for any other of said pairs of restrictions; and

a speed control valve slide having a plurality of switching positions, for selectively connecting said inlet line to one of said restrictions in said selected pair of restrictions and said outlet line to the other of said restrictions in said selected pair of restrictions, with the position of the speed control valve slide being controlled by said command switch such that said pair of restrictions are connectable to said inlet and outlet lines in an order of increasing or decreasing drive speed.

5,325,762
FLUID PRESSURE OPERATED PISTON ENGINE ASSEMBLY

John T. Walsh, Duluth; Robert J. Woodlief, Lawrenceville, and Patricia A. Sloan, Canton, all of Ga., assignors to Nordson Corporation, Westlake, Ohio

Continuation of Ser. No. 968,447, Oct. 29, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 96,862
Int. Cl.[5] F01L *25/08;* **F15B** *15/20*
U.S. Cl. 91—275 **26 Claims**



1. A fluid pressure operated piston engine assembly comprising:

a fluid pressure operated piston engine including a piston chamber, a piston reciprocable in the chamber, and a drive shaft attached to the piston and reciprocable therewith through a drive shaft stroke having a first end and a second end;

fluid valve means for coupling fluid under pressure to alternative portions of the piston chamber, including a valve spool translatable to (a) a first position in which the valve means is operable to couple fluid under pressure to a first portion of the piston chamber, tending to move the drive shaft toward the second end of its stroke and (b) a second position in which the valve means is operable to couple fluid under pressure to a second portion of the piston chamber, tending to move the drive shaft toward the first end of its stroke;

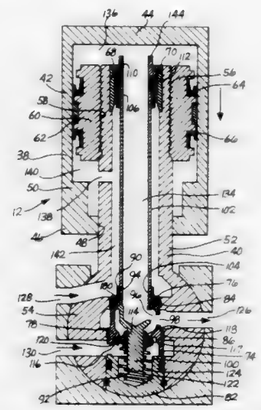
first means for coupling to the fluid valve means, mounted externally from the piston chamber, for reciprocal movement, and including a pair of diametrically opposed magnets; and

second means for mechanically coupling the first means to the piston engine drive shaft such that as the drive shaft approaches the first end of a stroke, the first means is moved to a first position relative to the valve spool and such that as the drive shaft approaches the second end of its stroke the first means is moved to its second position relative to the valve spool, wherein, as the drive shaft approaches each end of its stroke, fluid under pressure is coupled to one of said portions of the piston chamber to effect reversal of the direction of travel of the drive shaft.

5,325,763
INTERNAL CHECK VALVE

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Apr. 28, 1993, Ser. No. 54,530
Int. Cl.[5] F15B *11/20*
U.S. Cl. 91—422 **23 Claims**



1. An internal check valve for use in a linear hydraulic motor, comprising:

a piston-cylinder unit including a cylinder body reciprocally slidable on a piston component, said piston component including a tubular piston rod and a piston head defining first and second working chambers within said cylinder body;

said tubular piston rod including a center tube located within the piston rod, said center tube providing a fluid passageway through its center which communicates with the first working chamber, and an annular second passageway being formed by and radially between the piston rod and the center tube, the second passageway providing fluid communication with the second working chamber;

a spring biased check valve positioned within said piston rod and operatively connected with one of said passageways, said spring biased check valve having a valve member displaceable from a valve seat by hydraulic pressure to overcome said spring bias and allow flow in one direction; and

wherein said center tube is axially displaceable relative to said piston rod, displacement being effected by end of stroke movement of said cylinder body, and such displacement of said center tube causing displacement of said valve member to mechanically open said spring biased check valve.

5,325,764
COFFEE EXTRACTOR

Toshio Nakamura, Osaka; Yukitoshi Kunihiro, Kawanishi; Yoshiyuki Ujino; Masaaki Sirakawa, both of Nishinomiya, and Hideo Obata, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 13, 1993, Ser. No. 3,575
Int. Cl.[5] A47J *31/00*
U.S. Cl. 99—282 **5 Claims**

1. A coffee extractor comprising:

a body;

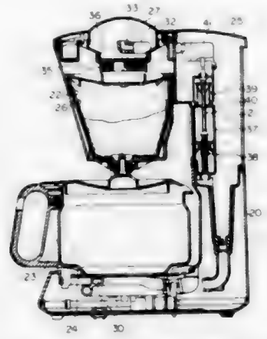
a water tank disposed in said body and having a bottom section;

an extracting chamber, disposed in said body, for extracting coffee;

a check valve;

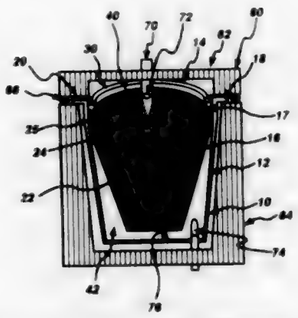
VOL 1164 ISS 1 JL 5 1994 UMI

a riser pipe connected to the bottom section of the water tank through said check valve and having an upper end;
means for heating water led into said riser pipe;
a passage change-over housing connected with said upper end of the riser pipe, said passage change-over section having a lower section;
a discharge passage connected to the passage change-over housing and having a discharge outlet;



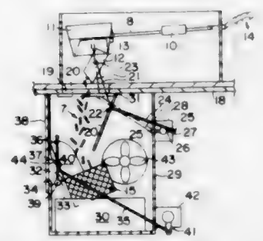
a valve port formed in the lower section of the passage change-over housing, for returning hot water into said water tank;
a valve element for opening and closing the valve port; and
an actuating mechanism, disposed in the water tank, for causing the valve element to close the valve port when water in said water tank is heated up to a set temperature, wherein the outlet end of the discharge passage is located at a position higher than said passage change-over housing.

5,325,765
BEVERAGE FILTER CARTRIDGE
John E. Sylvan, Brookline, and Peter B. Dragone, Concord, both of Mass., assignors to Keurig, Inc., Waltham, Mass.
Filed Sep. 16, 1992, Ser. No. 945,746
Int. Cl.[5] A47J *31/24, 31/14*
U.S. Cl. 99—295 **16 Claims**



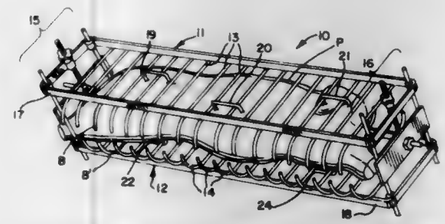
1. A beverage brewing apparatus comprising:
a housing having a first component defining a brewing chamber with an access opening, and a second component which may be opened to afford access to said brewing chamber via said access opening, and which may be closed to coact in sealing engagement with said first component to close said access opening;
an impermeable piercable cartridge removably received in said brewing chamber via said access opening, said cartridge being internally subdivided by a filter element into first and second cartridge chambers;
a beverage extract contained in said first cartridge chamber;
liquid inlet and outlet means extending through said housing into said brewing chamber to penetrate through said cartridge into communication respectively with said first and second cartridge chambers; and
means for injecting liquid into said first cartridge chamber via said inlet means for combination with said beverage extract to produce a liquid beverage, said filter element being adapted to accommodate passage therethrough of said beverage into said second cartridge chamber for outflow through said outlet means.

5,325,766
APPARATUS FOR COOKING FRENCH FRIES FROM PRE-COOKED FROZEN CONDITION
Marc Mareels, Botermelkstraat 34, 9400 Ninove, Belgium
Filed May 20, 1991, Ser. No. 702,831
Claims priority, application European Pat. Off., May 21, 1990, 90870078.4
Int. Cl.[5] A47J *37/00*
U.S. Cl. 99—357 **5 Claims**



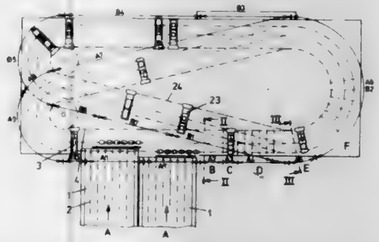
1. Apparatus for cooking French fries from a frozen pre-cooked condition, characterized in that the apparatus includes a first enclosure wherein a freezing temperature prevails, a bin mounted in said enclosure for holding French fries, a first basket having a base and defining in part a balance and mounted in said enclosure and being below said bin for receiving French fries from said bin, a lever fitted with an adjustable counterbalance completing the definition of said balance, and an evaporator mounted on said enclosure over which a cold airflow is maintained to dry the air therein the first enclosure and therefore defrost the French fries, a flexible conveyor belt defined in part by a plurality of flexible fingers mounted in said enclosure below said bin and above said first basket, said conveyor being operable to deliver French fries, extracted by gravity from said bin to make said fries fall, into said first basket, said first basket being sealed at said base by a pivoting spout, said first basket being in the form of a funnel, said first enclosure being placed above a second enclosure and separated from said first enclosure by an isothermic partition and trap, the opening of said trap begin synchronized with the pivoting of said pivoting spout, said trap being controlled by an electric motor with programmed control, said lever being equipped with a "reed" switch for moving and stopping said conveyor, said pivoting spout being hinged to said first basket and forming the bottom of said basket, said pivoting spout being joined to said trap by a link, defined as a cable to synchronize the pivoting of said spout with the opening of said trap, said trap being downwardly openable and the trap in an open position directing the French fries, which fall under the influence of gravity, into a cooking basket, said cooking basket being installed to rock relative to said second enclosure and the rocking being caused by a set of levers from an electrical motor with programmed control, said set of levers including a first lever activated directly by said electric motor, said lever being hinged to a second lever and installed to pivot relative to said second enclosure, all things are such that the activation of said first lever acts on the rocking of said cooking basket and on said second lever which, when said cooking basket is in a rocked position, said cooking basket pushes on a means for opening a front door forming part of said second enclosure.

5,325,767
SPIT BASKET
Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co., Inc., North Aurora, Ill.
Filed Feb. 10, 1993, Ser. No. 16,081
Int. Cl.[5] A47J *43/18*
U.S. Cl. 99—421 R **12 Claims**



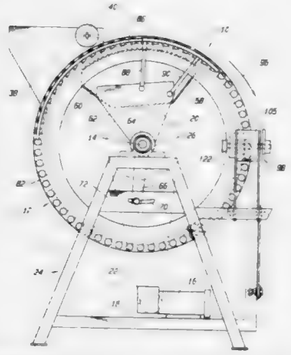
1. In a spit basket for use in rotisserie-type outdoor cooking devices of the type wherein the spit basket comprises opposing sets of food-holding fingers having end projections extending basket-inwardly for a distance and a long axis of rotation, the improvement comprising a plurality of double-skewer, U-shaped, prongs extending basket-inwardly from and relative to each set of food-holding fingers said prongs being staggered longitudinally relative to each other and each has a base of the U-shape thereof attached to at least two adjacent food-holding fingers, the double-skewers extending transversely to the long axis of rotation, and the double-skewers of the prongs extend basket-inwardly at a distance less than said end projections of said food-holding fingers.

5,325,768
APPARATUS FOR BREAKING AND OPENING EGGS
Brand van den Hazel, Putten, Netherlands, assignor to FPS Food Processing Systems B.V., Barneveld, Netherlands
PCT No. PCT/NL91/00223, § 371 Date May 3, 1993, § 102(e) Date May 3, 1993, PCT Pub. No. WO92/08402, PCT Pub. Date May 29, 1992
PCT Filed Nov. 8, 1991, Ser. No. 50,183
Claims priority, application Netherlands, Nov. 9, 1990, 9002455
Int. Cl.[5] A23J *1/09*; A47J *43/14*
U.S. Cl. 99—498 **4 Claims**



1. In an apparatus for breaking and opening eggs and for removing and catching the yolks and whites thereof, comprising:
(A) a first conveyor adapted to travel in a first direction of travel;
(B) a supply belt for supplying eggs to the first conveyor;
(C) spaced-apart egg carriers operably and serially connected to the first conveyor for individually carrying an egg supplied from the supply belt;
(D) an egg receiving member operably connected to each egg carrier for receiving the egg carried by said each carrier;
(E) an egg opening element operably associated with each egg carrier for breaking and opening the egg received by the egg receiving member;
(F) a second conveyor adapted to travel underneath and in alignment with at least a portion of travel of the first conveyor;
(G) egg holders operably connected to the second conveyor; and
(H) a cup member operably connected to each egg holder for catching the yolk and white of the egg openable by said opening element; the improvement comprising:
(1) a plurality of egg carriers oriented in a direction transverse to the first direction of travel of the first conveyor;
(2) a plurality of juxtapositioned egg receiving members on each egg carrier and being configured to receive an egg with the longitudinal axis thereof oriented in the first direction of travel of the first conveyor; and
(3) a plurality of supply belts being equal in number to the number of juxtapositioned egg receiving members on an egg carrier and each belt being arranged such that eggs are exclusively supplied by each belt to a selected one of the juxtapositioned egg receiving members.

5,325,769
WALNUT CRACKING MECHANISM
Michael P. Filice, Orinda; Robert Lemos, Salida, and Robert P. Baker, Hughson, all of Calif., assignors to Filembak, Inc., Orinda, Calif.
Filed Sep. 25, 1992, Ser. No. 950,895
Int. Cl.[5] A23N *5/00*
U.S. Cl. 99—571 **22 Claims**



1. A mechanism for cracking elongated nuts which is especially applicable to cracking walnuts, comprising:
a. a rotating member, said rotating member including a plurality of cells, each cell thereof being sized to contain a single elongated nut, each cell further including a block and an entrance to said cell, each block being capable of contacting a nut;
b. orienting means for positioning a nut in each of said cells such that the dimension of elongation of the nut lies between said block and said entrance to each of said cells;
c. a plurality of cracking heads each associated with each of said cells, each of the cracking heads being sized to move in and out of said entrance of each of said cells and being capable of contacting the elongated nut in each of said cells; and
d. impact means for imparting an impingement force to any of said plurality of cracking heads, said impact means

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comprising a striker capable of advancing and contacting any said plurality of cracking heads, and actuating means for periodically advancing said striker commensurate with the rotation of said rotating member to effect sequential alignment of said striker with said plurality of cracking heads

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5,325,770

APPARATUS AND METHOD FOR BALING CUT FIBERS AND PRODUCT

Craig R. Lukhard, Newark; Elwood A. Roth, Seaford, both of Del., and Maurice C. Todd, Chadds Ford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 531,661, Jun. 1, 1990, Pat. No. 5,200,269. This application Oct. 21, 1992, Ser. No. 964,084

Int. Cl.[5] **B65B** *13/02*

U.S. Cl. 100—3 **1 Claim**

1. A process for producing a bale of crimped nylon staple yarn from a continuous nylon multifilament tow comprising:
continuously cutting the fiber tow into segments and doffing the cut tow segments by directing the segments radially outward and downward utilizing centrifugal and gravitational forces for extending and separating the segments perpendicular to the filaments;
continuously transporting the separated segments along angled slides by gravity as a charge to a charge chamber;
depositing the charge onto a support platen at a tramping position;
accumulating the continuously transported segments to form a next charge;
tramping the charge in the tramping position to a preselected pressure to form a compacted layer and pressing the support platen down one layer thickness;
holding the last compacted layer in place to retain the layer compaction;
depositing the next charge onto the last compacted layer at the tramping position;
repeating the tramping, holding, depositing and accumulating steps until there are a plurality of compacted layers to form a bale;
pressing the bale to a first pressure higher than the preselected tramping pressure;
partially reducing the pressing to a pressure intermediate the first and preselected pressures; and
strapping the bale to hold the compacted layers against expansion.

5,325,771

OIL FILTER CRUSHING APPARATUS AND METHOD

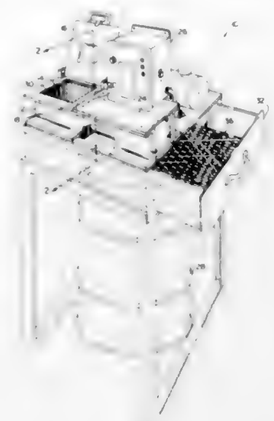
Drew W. Morris, P.O. Box 10111, Greenville, S.C. 29603

Continuation-in-part of Ser. No. 737,969, Jul. 30, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 55,504

Int. Cl.[5] **B30B** *9/06, 13/00, 9/32*

U.S. Cl. 100—37 **20 Claims**

1. An oil filter crushing apparatus comprising:
a housing defining an interior space for crushing an oil filter and a bottom surface;
a crushing member for crushing the oil filter fitted within said housing having a crushing surface and defining a slot opening through said crushing surface;
a puncturer having a point, said puncturer movably attached to said crushing member within said slot opening, said puncturer positioned within said slot of said crushing member behind said crushing surface when said puncturer is in a retracted position and at least said point of said puncturer being forward of said crushing surface when said puncturer is in a puncturing position;
means for forcing said crushing member through said interior space;
means for forcing said puncturer to tilt from the retracted position to the puncturing position as said crushing member moves through said interior space;



whereby an oil filter in said interior space can be punctured by said puncturer as said crushing member crushes the oil filter.

5,325,772

POSTAGE METER

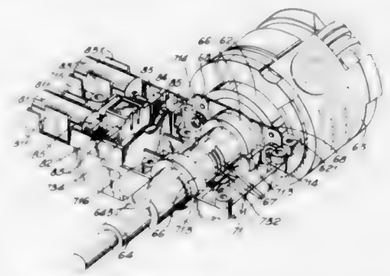
Hugh McChesney, Hertfordshire, England, assignor to Pitney Bowes plc, Harlow, England

Filed Nov. 24, 1993, Ser. No. 160,109

Claims priority, application United Kingdom, Sep. 21, 1990, 9020633

Int. Cl.[5] **B41J** *1/34*

U.S. Cl. 101—76 **10 Claims**



1. A postage meter comprising:
a base,
a print drum assembly which includes a print drum and a drum shaft rotatively supported by said base of said postage meter, said print drum including radially positionable value printing elements and said drum shaft having, located in a respective groove therein, a plurality of linearly movable racks connected to said value printing elements in such a manner that linear movement of one rack alters the radial position of a corresponding value printing element, a drive gear assembly contained in a gearbox housing rotatively mounted to said drum shaft such that said gearbox housing is supported by said drum shaft in a cantilevered manner at a point axially along said drum shaft and supportively mounted to said base, said drive gear assembly having:
a plurality of gears rotatively mounted in said gearbox housing, herein called cross-over gears, arranged to independently drive corresponding racks;
said cross-over gears driving a respective one of said racks in said respective groove; and,
a drive means for each cross-over gear, each of said drive means including a motor mounted in said gearbox housing and a respective drive connecting means mounted in said gearbox housing for causing said cross-over gear to rotate in response to actuation of said respective motor in a predetermined manner, said respective motor for independently driving a respective one of said cross-over gears in said gearbox housing whereby said motors can cause simultaneous rotation of said cross-over gears about a respective rotation axis common to said cross-cover gears.

5,325,773

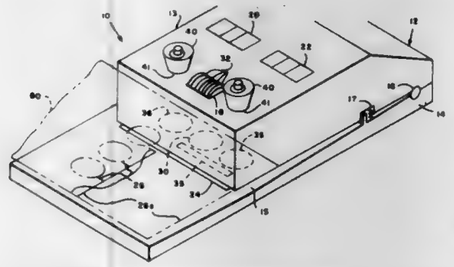
MULTI-VALUE DISPENSING APPARATUS

Flavio M. Manduley, Woodbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 28, 1992, Ser. No. 997,048

Int. Cl.[5] **B41L** *47/46*

U.S. Cl. 101—91 **11 Claims**



1. A value dispensing apparatus comprising:
a housing,
a plurality of printheads each having a single fixed value font supported in said housing,
a pair of counters supported within said housing,
a platen,
said printheads spaced from and movable relative to said platen for contact therewith,
a plurality of activators, each activator being supported by one of said printheads, each of said activators having means for communicating with one of said counters for incrementing each of said counters one unit so as to count the number of contacts between each one of said printhead and said platen, and disabling means in communication with said counters and said printheads for rendering a printhead in a non-printable state upon its respective counter attaining a zero value.

5,325,774

RIBBON PATH INDICATOR SYSTEM

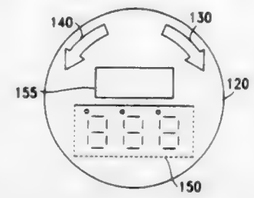
Richard E. Breton, Rochester, N.H.; Gilles L. Fecteau, Saco, Me., and Joel C. Hern, Rollingsford, N.H., assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 11,035

Int. Cl.[5] **B41J** *15/00*

U.S. Cl. 101—228 **11 Claims**

1. A ribbon path indicator system for assisting an operator in webbing ribbons of a web material exiting a printing unit of a printing press through paths of roll, comprising:
(a) a plurality of rolls, each roll having an associated remote display device;
(b) each associated remote display device including a directional display indicator and a next roll display indicator, the remote display device displaying ribbon path instructions to the operator including one of a clockwise or counterclockwise wrapping direction, and an identity of a next roll to be wrapped; and
(c) controlling means coupled to each of the remote display



devices, the controlling means issuing commands to each remote display device to display a preselected one of the clockwise or counterclockwise wrapping direction, and a preselected next roll to be wrapped.

5,325,775

CHAMBERED DOCTOR BLADE

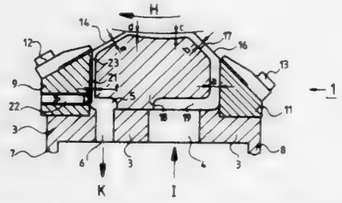
Heinrich K. Grosshauser; Reinhold R. Dürr, both of Würzberg, and Thomas Kübert, Karlstadt-Karlburg, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jan. 5, 1993, Ser. No. 466

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1992, 4200837

Int. Cl.[5] **B41F** *31/04, 31/06*

U.S. Cl. 101—366 **4 Claims**



1. A chambered doctor blade for a short inking unit of a rotary press, said chambered doctor blade comprising:
a base plate having an ink supply opening and an ink outlet opening;
first and second spaced doctor blade holders positioned in said base plate, said first doctor blade holder having an inner surface adjacent said ink outlet opening;
first and second doctor blades in said first and second doctor blade holders;
a screened ink roller having an ink receiving surface;
an ink receiving chamber in said chambered doctor blade;
a profiled body secured in said ink receiving chamber, said profiled body defining a tapered ink flow path in said ink receiving chamber, said tapered ink flow path reducing in flow area from said ink supply opening to said ink outlet opening; and
a baffle plate carried on said inner surface of said first doctor blade holder and facing said profiled body, said baffle plate having a first end secured to said first doctor blade holder and a second end whose position with respect to said profiled body is adjustable.

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5,325,776

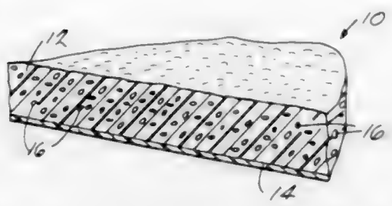
BACKING FOR FLEXOGRAPHIC PRINTING PLATES

Thomas K. Rather, Sr., and Kathyrn E. Rather, both of 3383 Ironworks, Georgetown, Ky. 40324

Continuation of Ser. No. 843,892, Feb. 27, 1992, abandoned. This application Aug. 25, 1993, Ser. No. 111,825

Int. Cl.[5] B32B *3/26*; B41N *6/00*

U.S. Cl. 101—382.1 8 Claims



1. In combination, a flexographic printing cylinder, a flexible printing plate and a cushioning backing sheet material positioned between said cylinder and said plate,

said backing sheet material being formed of an elastomeric matrix containing as a filler, comminuted particles of a resilient cross-linked elastomer of approximately 1 to 3 microns in diameter and discrete, separated voids approximately 10 to 50 microns in diameter, said backing having a uniform thickness of about 30 to 60 mils and having a density greater than 40 pounds per cubic foot, and being sufficiently deformable to experience a reduction in thickness of 6 to 9 percent when subjected to a compressive force of 45 psi and having a resiliency sufficient to recover at least 99.5 percent of its original thickness within 0.1 second after said compressive force is removed.

5. A backing material for mounting flexible printing plates to a printing cylinder comprising

a base film having a thickness of 2 to 10 mils,

a layer of resilient cushioning material adhered to said base film having a uniform thickness of about 30 to 60 mils and comprising 25 to 40 percent by volume of pneumatically compressible, discrete closed cell voids, the majority of which are in the 10 to 50 micron range and are separated from each other by a tough resilient elastomeric matrix, said matrix containing particles of a resilient cross-linked elastomer approximately 1 to 3 microns in diameter, said layer being microsanded on its exposed side to provide a uniform caliper within 0.0005 inch, said layer having a density greater than about 40 pounds per cubic foot and being sufficiently deformable to experience a reduction in thickness of 6 to 9 percent when subjected to a compressive force of 45 psi and having a resiliency sufficient to recover at least 99.5 percent of its original thickness within 0.1 second after said compressive force is removed.

5,325,777

IMAGE FORMING APPARATUS AND METHOD

Geun-yong Park, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 7, 1993, Ser. No. 72,009

Claims priority, application Rep. of Korea, Aug. 6, 1992, 92-14138

Int. Cl.[5] B41F *1/30*

U.S. Cl. 101—409 4 Claims

1. An image forming apparatus comprising:

means for printing an image on a sheet of a print medium;

a support plate;

a rotary shaft extending from said support plate;

a drum disposed on said rotary shaft;

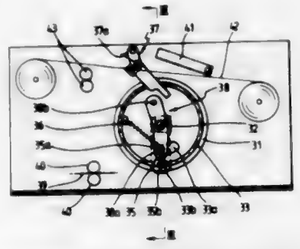
a drum gear disposed on said rotary shaft, said drum gear having a first guide slot formed therein and a cam surface defined thereon, said cam surface having a recessed portion;

a clamp coupled to said rotary shaft to be rotatable about said shaft and movable in radial directions of said drum, a first portion of said clamp having a first interlocking pin which is slidably received in said first guide slot and a second portion of said clamp having a cam pin with which rides along said cam surface;

a first spring coupled to said clamp to bias said cam pin towards said recessed portion of said cam surface, a clamping portion of said clamp being pressed towards said drum when said cam pin is received in said recessed portion to clamp an edge of said sheet against said drum;

s second spring;

a release lever swingably mounted on said support plate and



elastically biased in a first direction by said second spring; and

a lifter rotatably coupled to said rotary shaft, one end of said lifter having a second guide slot in which said first interlocking pin of said clamp is also slidably received, and the other end of said lifter having a second interlocking pin which is engaged with said release lever when said drum is in a first position and said release lever is rotated in a second direction which is opposite to the first direction, to cause said lifter to rotate and thus cause said first interlocking pin to move relatively in said first guide slot to thereby move said cam pin along said cam surface and out of said recessed portion and thus cause said clamping portion of said clamp to move away from a surface of said drum to allow said edge of said sheet to be inserted therebetween.

5,325,778

DEVICE FOR CLAMPING AND TENSIONING PRINTING PLATES

Georg Hartung, Seligenstadt, and Helmut Schild, Steinbach-/Taunus, both of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Apr. 30, 1993, Ser. No. 56,293

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1992, 4214168

Int. Cl.[5] B41F *21/00*

U.S. Cl. 101—415.1 18 Claims

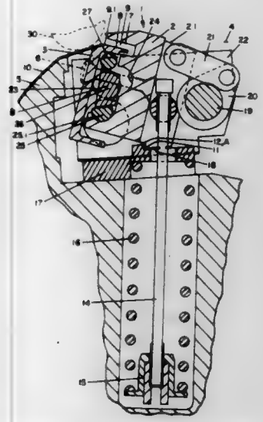
1. A device for clamping and tensioning a printing plate having a leading edge and a trailing edge onto a plate cylinder of a sheet-fed rotary printing press wherein said plate cylinder includes an elongated cylinder channel having a bottom, said elongated cylinder channel being disposed longitudinally in said plate cylinder for receiving and supporting said clamping and tensioning device, said clamping and tensioning device comprising, in combination,

a clamping and tensioning rail disposed in said cylinder channel, said clamping and tensioning rail including upper and lower clamping parts having opposed clamping faces,

clamp actuating means for relatively moving said upper and lower parts with respect to one another to open and close a gap between said opposed clamping faces for respectively receiving and gripping said trailing edge of said printing plate therein,

means defining a first pivot axis for pivotally supporting said clamping and tensioning rail, said first pivot axis being disposed a substantial predetermined first distance from said gap,

means defining a second pivot axis for pivotally supporting said clamping and tensioning rail, said second pivot axis being disposed a substantially smaller second distance than said predetermined first distance from said gap,



and actuating means for pivoting said clamping and tensioning rail successively about said first and second pivot axes toward said trailing edge of said printing plate while said gap is open to receive said trailing edge therein and for pivoting said clamping and tensioning rail in the opposite direction about said second pivot axis after said trailing edge is gripped in said gap in order to tension said printing plate on said plate cylinder.

5,325,779

PRINTING CYLINDER/ROLLER CLEANING APPARATUS FOR PRINTING PRESS

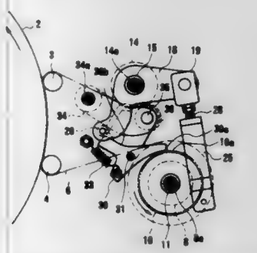
Toshihiko Ebina, Ibaraki, Japan, assignor to Komori Corporation, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,481

Claims priority, application Japan, Jan. 27, 1992, 4-34052

Int. Cl.[5] B41K *35/00*

U.S. Cl. 101—423 5 Claims



1. A printing cylinder/roller cleaning apparatus for a printing press, comprising

a cleaning cloth;

a take-up shaft for taking up said cleaning cloth;

a supply shaft for supplying said cleaning cloth;

a ratchet wheel coaxially mounted on said supply shaft;

a lock member with a cam surface, engaged with said ratchet wheel when said cleaning cloth is not taken up;

an actuating member having a swing lever coaxially mounted on said take-up shaft, said swing level having a swing end, and said swing end of the swing lever slides on the cam surface of said lock member, thereby releasing engagement between said ratchet wheel and said lock member;

a first one-way clutch for connecting said take-up shaft with said actuating member only in a direction to take up said cleaning cloth; and

driving means for pivoting said actuating member in response to a cleaning operation of the printing cylinder/-roller.

5,325,780

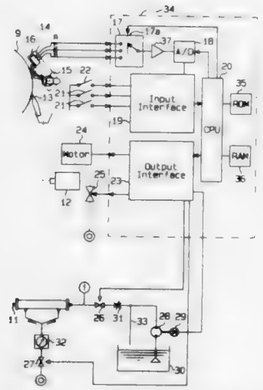
INK WASHING DEVICE FOR A PRINTING MACHINE

Fumio Matsuda, Toyohashi; Isao Chonan, Ichinomiya; Hideo Kitagawa, Gifu, and Katsunori Furuta, Mino, all of Japan, assignors to Sakurai Graphic Systems, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,798

Int. Cl.[5] B41F *35/00, 33/00*

U.S. Cl. 101—424 13 Claims



1. An ink washing device, for performing a washing operation in a printing machine, the printing machine including a plurality of ink rollers for supplying ink to a cylinder plate, a deposit roller having an outer surface where excess ink from the ink rollers is deposited, said outer surface having a luminance that varies with the amount of the deposited ink, and a spraying device for spraying washing fluid on at least one ink roller to initiate a washing operation, the ink washing device comprising:

scraping means, disposed adjacent to said deposit roller, for removing the deposited ink on said outer surface; and

operating detection means for determining the completion of the washing operation, said operating detection means including a luminance detector means responsive to said luminance of said outer surface during removal of the deposited ink, said operating detection means indicating completion of the washing operation when a luminance signal from the luminance detector means exhibits substantially no change.

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5,325,781

METHOD FOR THE MANUFACTURE OF OBJECTS HAVING SUPERFICIAL RELIEF PATTERNS

Guy Dupont, Jurbise; Pierre Tissot, Bruxelles, both of Belgium, and Joëlle Manceaux, Joinville Le Pont, France, assignors to Ferchim Engineering SA, Lausanne, Switzerland

Filed Jul. 30, 1992, Ser. No. 922,206

Claims priority, application Switzerland, Jul. 30, 1991, 02279/91

Int. Cl.[5] B41F *23/04*; B05D *3/02*

U.S. Cl. 101—487 16 Claims



1. A method of manufacturing decorative, shaped objects having at least one surface provided with a decorative relief pattern, which comprises

(a) continuously printing a web of two-dimensional material with an expandable ink which expands when heated;

(b) drying the printed web at a temperature lower than the temperature at which the ink expands;

(c) coiling the printed and dried web;

(d) transforming the coiled web into shaped objects; and then,

(e) expanding the expandable ink to form the relief pattern on the surface of the shaped objects.

5,325,782

INSENSITIVE GUN PROPELLANT

Bernard Strauss, Rockaway, and Sam M. Moy, Parsippany, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1993, Ser. No. 93,914

Int. Cl.[5] C06B *45/12*

U.S. Cl. 102—285 7 Claims

1. A gun propellant having reduced sensitivity to impact and improved burning rate, comprising crystallized NNHT particles admixed with a binder and at least one plasticizer

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5,325,783

PROPELLANT FORMULATION AND PROCESS

James Wong, Wayland, Mass., assignor to Composite Materials Technology, Inc., Shrewsbury, Mass.

Continuation-in-part of Ser. No. 269,884, Nov. 10, 1988. This application Sep. 21, 1989, Ser. No. 415,926

Int. Cl.[5] C06B *45/00*

U.S. Cl. 102—289 7 Claims

1. The process of forming a propellant or other explosive device which comprises adding to the normal organic propellant oxidizer a substantial weight of metal filaments from the group consisting of Aluminum, Zirconium, Titanium, and Niobium and alloys thereof having predetermined substantially uniform surface to volume ratios, the metal filaments having at least one dimension less than 10 microns, the filaments extending generally in the direction of desired flame propagation.

5,325,784

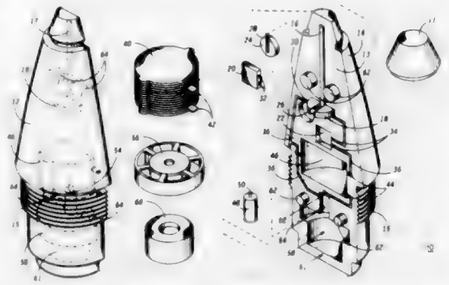
ELECTRONIC FUZE PACKAGE AND METHOD

Monty W. Bai, Scottsdale, and Danny E. Minks, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 1, 1993, Ser. No. 11,580

Int. Cl.[5] F42C *13/04*

U.S. Cl. 102—293 18 Claims



15. A method for making an electronic fuze package comprising the steps of:

molding a left casing comprising a substantially flat left surface having a plurality of left casing recesses;

molding a right casing comprising a substantially flat right surface having a plurality of right recesses, wherein the combination of the left casing and the right casing, positioned with the substantially flat left surface placed against the substantially flat right surface, defines a fuze casing having a plurality of casing recesses formed from the combination of the plurality of left casing recesses and the plurality of right casing recesses, the plurality of casing recesses for the mounting of a plurality of fuze components; and

plating on a plurality of electrical tracks on the left casing, the plurality of plated-on electrical tracks including a plurality of component connections immediately adjacent to the plurality of casing recesses for electrically coupling the plurality of fuze components in a fuze circuit when the plurality of fuze components are mounted within the fuze casing.

5,325,785

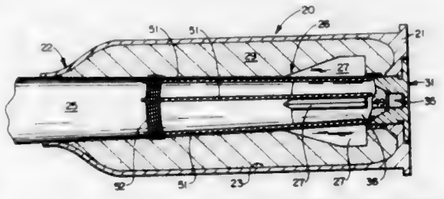
STRAND IGNITION FOR PROPELLANT OF SHELL-COATED PROJECTILE

Carl Gardner, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 13, 1990, Ser. No. 492,161

Int. Cl.[5] F42B *5/02*

U.S. Cl. 102—430 2 Claims



1. In an improved cartridge having a shell case housing a propellant and having an ignition device to activate the propellant, an improvement in said ignition device comprising provision of strands of ignitable material, said strands being adjacent, a surface of said propellant; a one piece strand holder for said strands, said one piece strand holder having a body with integral forward and aft portions said body being hollow and cylindrical, and having a platform being flat and fitted within said body, and further having a combustion chamber adjacent to said platform in near relationship to the aft portion of said body, a primer head for said body, and said combustion chamber also housing an igniter booster charge; igniter means communicating with said combustion chamber for the ignition of said booster charge; and a plurality of conduits and channels extending longitudinally along said body of said strand holder in communication with said combustion chamber, said conduits and channels receiving said strands, said conduits communicate between said combustion chamber and said channels holding said ignition strands whereby the ignition of said booster charge in said combustion chamber by the igniter means in sequence will ignite said strands which will act to ignite said propellant.

5,325,786

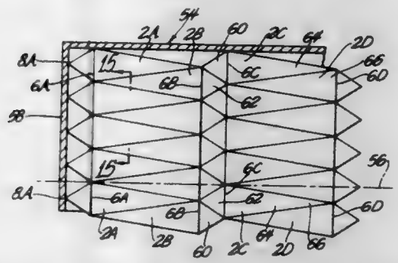
FLECHETTE FOR A SHOTGUN

Paul A. Petrovich, 11269 Judd Rd., Fowlerville, Mich. 48836

Filed Aug. 10, 1993, Ser. No. 105,983

Int. Cl.[5] F42B *7/02*

U.S. Cl. 102—438 4 Claims



1. An arrangement of flechettes in a cylinder, comprising:

individual flechettes each having a solid elongate body;

a front end of the solid body;

a rear end of the solid body;

a waist on the solid body closer to the front end than the rear end, the solid body tapering from the waist to the ends;

a center of gravity in the solid body closer to the front end than the rear end

other flechettes each having a generally pyramidally shaped body having an apex and a base;

a solid portion of the pyramidally shaped body extending from the apex toward the base;

a hollow portion of the pyramidally shaped body between the solid portion and the base;

a center of gravity of the pyramidally shaped body closer to the apex than the base said other flechettes interdigitated with the individual flechettes.

4. An array of gun shot bodies in a cylinder, comprising:

a central axis of the cylinder;

longitudinal axes parallel to the central axis;

flechettes placed along and centered on the longitudinal axes;

noses of the flechettes;

tails of the flechettes;

waists of the flechettes between the noses and the tails, the flechettes tapering from the waists to the noses and tails, said waists being closer to the noses of the flechettes than the tails of the flechettes, a center of gravity within each flechette along a longitudinal axis closer to the nose of the flechette than the tail of the flechette;

the waists of first flechettes being in a first plane so that noses of the first flechettes are on a same side of the first plane;

the waists of second flechettes being in a second plane so that noses of the second flechettes are on a same side of the second plane;

the waists of third flechettes being in a third plane so that noses of the third flechettes are on a same side of the third plane;

wherein the first flechettes interdigitate with the second flechettes and the second flechettes interdigitate with both the first and third flechettes;

tail facets of the first flechettes between the waists and tails of the first flechettes;

tail facets of the second flechettes between the waists and tails of the second flechettes;

first flat interfaces between the tail facets of the first flechettes and the tail facets of the second flechettes;

nose facets of the second flechettes between the waists and noses of the second flechettes;

nose facets of the third flechettes between the waists and noses of the third flechettes;

second flat interfaces between the nose facets of the second flechettes and the nose facets of the third flechettes.

5,325,787

ARMOR-PIERCING FRAGMENTATION PROJECTILE

Roland Boual, Saint-Germain-du-Puy, France, assignor to Giat Industries, Versailles, France

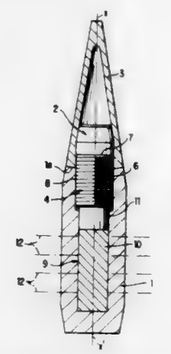
PCT No. PCT/FR92/00153, § 371 Date Nov. 10, 1992, § 102(e) Date Nov. 10, 1992, PCT Pub. No. WO92/15836, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 17, 1992, Ser. No. 946,471

Claims priority, application France, Feb. 28, 1991, 91 02386

Int. Cl.[5] F42B *12/56*

U.S. Cl. 102—506 9 Claims



1. An armor-piercing, explosive-free fragmentation projectile comprising a one-piece body made of a first material, a head made of a second material, and means for causing multiple fragmentation of the body upon impact, said means comprising a blind bore delimited by the body and occupied by a mass of incompressible material subjecting said body to a fragmentation prestress by the head being secured to the body, said blind bore extending within said body substantially along its entire length, wherein said first material is selected from the group consisting of sintered tungsten, depleted uranium, and tungsten carbide.

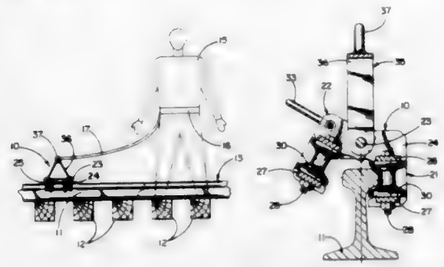
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5,325,788

SAFETY TROLLEY RESTRAINT SYSTEM FOR RAILROAD BRIDGES HAVING PIVOTAL CLAMPING ROLLERS

Michael R. Strickland, Richmond Hill, and Kevin R. MacDonald, Toronto, both of Canada, assignors to Smmart Equipment Inc., Mississauga, Canada

Filed Jan. 7, 1993, Ser. No. 1,170
Int. Cl.[5] B61B *13/04*
U.S. Cl. 104—119 **4 Claims**



1. A safety trolley resistant system attachable to a railroad track rail for rolling movement along the top thereof so as to movably anchor the end of a personnel safety line secured to a safety belt, comprising, in combination,

a carriage including a pair of frame halves pivotally hinged together about a generally horizontally extending pivot pin, each of said frame halves including a pair of spaced-apart, generally vertical end plates and a pair of generally horizontally extending, vertically spaced-apart support plates, said end plates each having a profile formed to engage and retain opposite sides of said railroad track rail top therebetween,

a plurality of rollers journalled on axles secured between said spaced-apart support plates in each of said frame halves, each of said rollers having upper and lower end flanges with a reduced diameter center section formed so as to engage and retain opposite sides of said railroad track rail top therebetween,

selectively engageable retaining means for securing said hinged frame halves in closed position with said rollers clamped so that said upper and lower end flanges substantially envelop said rail top, said retaining means also being disengageable for releasing at least one of said hinged frame halves to pivot open and unclamp all of said plurality of rollers on said one hinged frame half from said rail top,

and restraint attachment means carried by said carriage for securing said end of said personnel safety line thereto.

5,325,789

TRACK SWITCH FOR MONORAILS HAVING VERTICALLY MOVABLE SWITCH SEGMENTS

Oscar C. Tapias, 80-10 258th St., Floral Park, N.Y. 11004

Filed May 6, 1993, Ser. No. 58,863
Int. Cl.[5] E01B *25/12*
U.S. Cl. 104—130 **18 Claims**

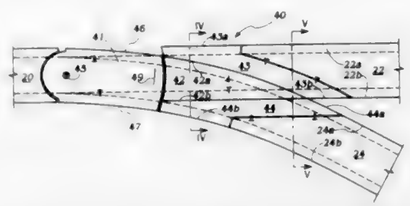
1. A track switch for a train for selectively coupling a main track to a selected one of first and second tracks, said track switch comprising:

first channel means;

first support means movable within said first channel means between a raised position wherein said first support means forms a first track connection between said main track and said first track and a lowered position wherein the first channel means forms a first gap between said main track across the entire cross-section thereof and said first track;

second channel means;

second support means movable within said second channel means between a lowered position wherein the second channel means forms a second gap between the main track across the entire cross-section thereof and said second track and a raised position wherein said second channel means forms a second track connection between the main track and said second track; and



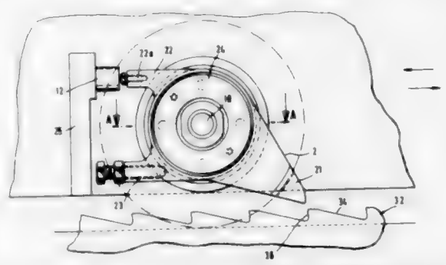
control means for moving one of said first and second support means to said raised position and the other of said first and second support means to said lowered position, so that a continuous section of track is formed through said track switch for passage of the train.

5,325,790

ROLLBACK-PREVENTING APPARATUS FOR A RAIL VEHICLE

Hans Drayer, Denzlingen, Fed. Rep. of Germany, assignor to Heinrich Mack GmbH & Co., Waldkirch, Fed. Rep. of Germany

Filed Jun. 25, 1993, Ser. No. 81,100
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1992, 4220940
Int. Cl.[5] B61K *7/00*
U.S. Cl. 104—249 **7 Claims**



1. Rollback-preventing apparatus for a rail vehicle for engaging a toothed rack secured to a rail track supporting the rail vehicle comprising:

a detent pawl for mounting on a wheel of the rail vehicle, the detent pawl having a ratchet,

means employing a function for engaging said detent pawl and a rotating part of said rail vehicle for raising said pawl out of engagement with the toothed rack during forward movement of the rail vehicle, and

a stop for limiting the rotational movement of said detent pawl in a direction away from engagement with the toothed rack.

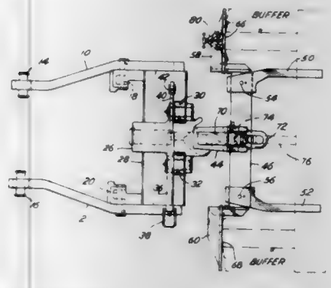
5,325,791

COUPLING MEANS FOR RAILCAR MOVING VEHICLES

Randal L. Atchley; Henry L. Merchant, both of LaGrange, and Richard L. Lich, Newnan, all of Ga., assignors to Trackmobile, Inc., LeGrange, Ga.

Filed Jul. 29, 1991, Ser. No. 737,222
Int. Cl.[5] B61C *11/00*
U.S. Cl. 105—75 **15 Claims**

1. A coupling mechanism for a railcar moving vehicle intended for coupling to a European-type railcar having an end sill, a draft hook, and a pair of buffers, said coupling mechanism comprising, in combination, longitudinal lifting beam means carried at its inner end by said railcar moving vehicle and pivotal up and down relative thereto about a generally horizontal axis, a transverse bar carried at the outer end of said lifting beam means, casting means supported by said transverse bar for lateral movement relative thereto, crossbar means supported centrally on an outer end of said casting means for pivotal movement about a generally vertical axis, a pair of generally horizontal lifting fork means, one mounted at each end of said crossbar means and extending outwardly therefrom



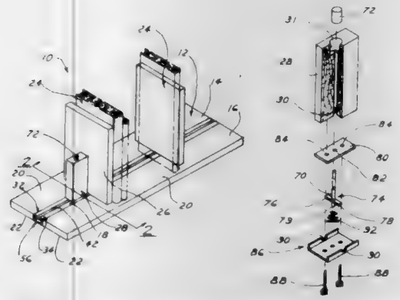
for engagement beneath an end sill of a railcar, and power means for raising and lowering said lifting beam means to raise and lower said lifting fork means, where said casting means is mounted on said transverse bar by a plurality of rollers for rolling movement laterally back and forth on said transverse bar, second power means for controlling the lateral movement of said casting means along said transverse bar, and sensing means for sensing lateral movement of the end of said railcar relative to said coupling mechanism, said sensing means being connected to said second power means to control lateral movement of said casting means in accordance with said relative lateral movement of said railcar.

5,325,792

BOOKSHELF WITH ADJUSTABLE LOCKING BOOKENDS

Bernard J. Mulloy, 2092 128th Ave., Hopkins, Mich. 49328

Filed Sep. 11, 1992, Ser. No. 943,776
Int. Cl.[5] A47B *65/00*
U.S. Cl. 108—28 **19 Claims**



1. A bookshelf with at least one adjustable bookend mounted thereon comprising:

a shelf having top and bottom surfaces;

an open guideway extending through the shelf and longitudinally along the shelf;

channel means, mounted on the shelf and having a longitudinally extending opening communicating with the guideway in the shelf, for forming a longitudinal slot along the shelf, the channel means including a pair of spine channels, each having first and second legs, the second leg spaced from the first leg and disposed adjacent one side of the guideway;

a plurality of spaced, open-ended apertures co-linearly formed in the second leg of each spine channel; and

the second legs of the pair of spine channels being spaced apart to form the longitudinally extending opening therebetween aligned with the guideway in the shelf;

a link channel having a central wall formed between two spaced outwardly extending legs;

means for joining one of the legs of the link channel and the first leg of each spine channel to the shelf;

a book support member;

a base attached to the book support member;

lock means, mounted in the base and having a lock bar accessible at a first end for manual movement through the base, for releasably locking the base and the attached book support member in a selectively adjustable position along the length of the shelf;

a second end of the lock bar extending through the base and the guideway into the longitudinally extending opening in the channel means;

a cross bar mounted on the second end of the lock bar and releasably engageable with one of the apertures in the channel means to lock the book support member and the base in a selective position along the shelf; and

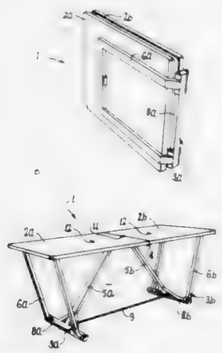
biasing means, acting on the lock bar, for normally biasing the lock bar and the attached cross bar to a first position in which the cross bar engages one of the apertures in the channel means.

5,325,793

FOLDING TABLE

Donald A. Martin, Toorak, Australia, assignor to Teston Investement Pty. Lt., Toorak and Coralex Pty Ltd., South Yarra, both of Australia, a part interest

PCT No. PCT/AU91/00173, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/16834, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 26, 1991, Ser. No. 949,536
Claims priority, application Australia, May 9, 1990, PK0013
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—130 **7 Claims**



1. A folding table comprising:

(a) a table top divided into two sections, each of which has an underside and a topside, the two sections being connected by a hinge arrangement; and

(b) on the underside of each table top section a leg arrangement comprising:

(i) a leg brace having a top end and a bottom end, the top

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end being pivotally attached to the underside of the table top section near the hinge arrangement and

(iii) a leg member having a top end and a bottom end, the bottom end of the leg member being pivotally attached to the bottom end of the leg brace and the top end of the leg member being detachably attachable to the underside of the table top section at a location distant from the hinge arrangement

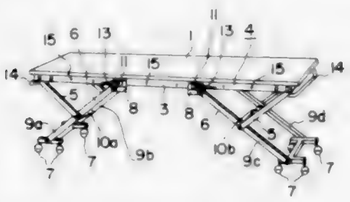
wherein when the table is folded, the leg brace of each leg arrangement rests against the underside of the table top section and the leg member rests against the topside of the table top section.

5,325,794

DISPLAY TABLE

Kenro Hontani, Hiroshima, Japan, assignor to Daiki Shoji Kabushiki Kaisha, Hiroshima, Japan

Continuation-in-part of Ser. No. 676,791, Mar. 28, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 941,664
Claims priority, application Japan, Jun. 26, 1992, 4-193392
Int. Cl.[5] A47B *9/00*
U.S. Cl. 108—117 **5 Claims**



1. A display table comprising

a table top;

a supporting frame fixed to an under surface of said table top, said frame comprising a pair of girder members and a pair of beams, and each of said beams being provided with engaging holes and a slit;

four legs coupled to said supporting frame, each leg comprising a crank bar and a rod so that an upper end of said crank bar is pivotally connected to one of four corners of said frame and a lower end of said crank bar is rotatably connected to a middle of said rod;

a sliding member movably held in said slit provided in each of said beams, said sliding member having an approximately "I" shaped cross section;

a stopper mechanism comprising a movable housing, a bolt, and a wedge member, said movable housing being mounted to said sliding member, said wedge member being movably provided in said movable housing so that a tapered portion of said wedge member is in contact with a rod member of said bolt, and said bolt is movable in the vertical direction by an operating means so as to engage one of said engaging holes.

5,325,795

MOBILE MATERIAL DECONTAMINATION APPARATUS

Joseph M. Nelson, Westover Hills, Del., and Michael G. Hrubetz, Dallas, Tex., assignors to Hrubetz Environmental Services, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 667,952, Mar. 12, 1991, Pat. No. 5,261,765, which is a continuation-in-part of Ser. No. 458,084, Feb. 5, 1990, Pat. No. 5,011,329. This application Feb. 25, 1992, Ser. No. 841,350
Int. Cl.[5] B09B *3/00*
U.S. Cl. 110—236 **46 Claims**

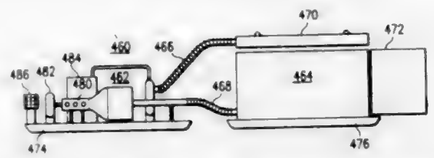
1. Apparatus for decontaminating material, comprising.

a container having at least one opening for transferring contaminated material with respect to an interior of the container;

a cover for covering said opening;

an injection inlet for delivering a heated gas into said container;

a vapor outlet for removing vapors from said container;



a burner/blower assembly coupled to said injection inlet for supplying the heated gas to the interior of said container for raising the temperature of contaminated material in said container and for vaporizing the contaminants, and said burner/blower assembly coupled to said vapor outlet to define a closed-loop system; and

an exhaust outlet of said container and a fresh air inlet to said container

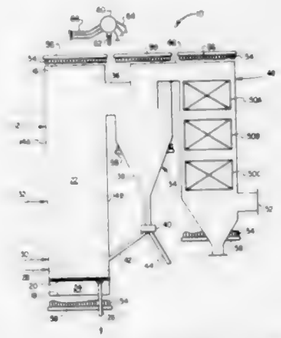
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5,325,796

PROCESS FOR DECREASING N_2O EMISSIONS FROM A FLUIDIZED BED REACTOR

Juan A. Garcia-Mallol, Morristown, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed May 22, 1992, Ser. No. 886,892
Int. Cl.[5] F22B *1/02*
U.S. Cl. 110—245 **30 Claims**



21. A method of operating a fluidized bed reactor to simultaneously lower emissions of N_2O, NOx and SOx comprising:

(a) providing a furnace section having a bed of particulate material in a lower region which contains nitrogen-containing fuel particles for combustion and sorbent particles for sulfur capture;

(b) introducing a primary, oxygen-containing gas into said lower region of said furnace to fluidized said bed of particulate material, a portion of said particulate material passing from said lower region of said furnace to an upper region thereof;

(c) maintaining said lower region at a temperature below approximately 1600° F. to lower emissions of NOx; and

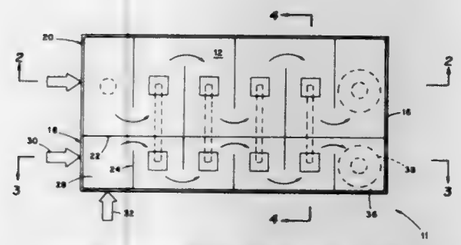
(d) controlling the ratio of relatively fine to relatively coarse particulate material passed from said lower region to said upper region to maintain a predetermined temperature in said upper region for reducing emissions of N_2O formed during combustion while permitting efficient sulfur capture to lower SOx emissions.

5,325,797

STAGED FLUIDIZED-BED COMBUSTION AND FILTER SYSTEM

Joseph S. Mei, Morgantown, W. Va., and John S. Halow, Waynesburg, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 18, 1993, Ser. No. 108,501
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—245 **19 Claims**



1. A fluidized-bed combustion and filter system, which comprises:

a first fluidized-bed unit defined by an enclosure formed by a top wall, a bottom wall, and at least one surrounding wall and a common side wall;

a plurality of internal baffles within said first fluidized bed unit alternately projecting from said at least one side wall and said common side wall, said internal baffles dividing said first fluidized-bed unit into multiple stage compartments with communication between stage compartments;

a gas inlet port communicating into each stage compartment for introducing gas to fluidize material in said stage compartment to convey said material through said stage compartment;

an inlet port communicating with a first of said stage compartments for introduction of material to be processed within said first fluidized-bed unit;

an outlet port communicating with a terminal of said stage compartments for withdrawal of material processed in said first fluidized-bed unit;

a second fluidized-bed unit defined by an enclosure formed by a top wall, a bottom wall, and surrounding walls, one of said surrounding walls being said common side wall of said first fluidized-bed unit, said common side wall being a terminus for alternating of said baffles of said first fluidized-bed unit;

a plurality of internal baffles within said second fluidized-bed unit alternately projecting from oppositely-disposed side walls, said internal baffles dividing said second fluidized-bed unit into multiple stage compartments with communication between stage compartments;

a gas inlet port communicating into each stage compartments of said second fluidized-bed unit for introducing gas to fluidize material in said stage compartments to convey said material through said stage compartments;

a further inlet port communicating with a first of said stage compartments of said second fluidized-bed unit for introduction of material to be processed within said second fluidized-bed unit;

a further outlet port communicating with a terminal of said stage compartments of said second fluidized-bed unit for withdrawal of material processed in said second fluidized-bed unit; and

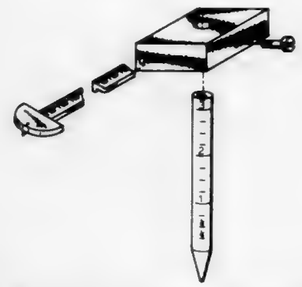
at least one conduit connecting said first and said second fluidized-bed units for conveying reaction products between said first and second fluidized-bed units.

5,325,798

PLANTING SPACER AND PLANTING DEPTH DEFINING DEVICE

Brian W. Nowell, and Gregory L. Nowell, both of 4303 N. Rogers Rd., Spring Valley, Calif. 91977

Filed Dec. 22, 1992, Ser. No. 995,159
Int. Cl.[5] A01C *5/02*
U.S. Cl. 111—99 **6 Claims**



1. A planting spacer and planting depth defining device comprising:

A) a rod element having a planting hole-defining point on one end thereof, a longitudinal axis extending through said point, and a plurality of planting hole depth-defining markings thereon;

B) a mounting block mounted on said rod element and slidable longitudinally of said rod element, said mounting block having a bore defined therethrough, a slot defined therethrough, said slot including a first portion and a second portion, with said second portion being oriented at an angle to said first portion, and block attaching means for attaching said block to said rod element;

C) a spacing ruler mounted on said block in said slot to slide in said slot, said spacing ruler having a first section which is slidably received in said first portion and a second section which is slidably received in said second portion, said second section being oriented at an angle to said first section and having a top planar surface, said ruler being elongated and having a plurality of rigid marking projections on said top planar surface, said rigid markings being raised above said top planar surface; and

D) ruler attaching means for attaching said ruler to said block so that said ruler can slide in said slot longitudinally of said ruler, said ruler attaching means including a flexible calibrating projection element mounted at one end thereof on said block adjacent to said slot and having a free end thereof located in said second portion, said free end engaging said rigid marking projections as said ruler is moved in said slot.

5,325,799

SEED BOOT INSERT

Don C. Rowlett, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Sep. 25, 1992, Ser. No. 951,631
Int. Cl.[5] A01C *5/00;* **A01B** *15/00*
U.S. Cl. 111—152 **2 Claims**

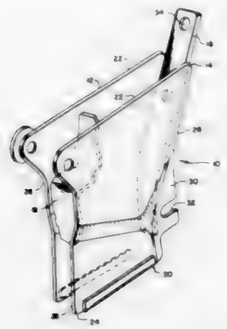
1. A seed boot for depositing a seed within a furrow comprising:

spaced side members, said side members of the seed boot are of a quadrangular form having a linear top edge and linear bottom edge, an insert secured to said linear bottom edge of each of said side members of the seed boot, each of said side members of the seed boot includes a rearwardly facing edge extending upwardly and forwardly from rearward corner bottom edge of said side member and a leading edge extending upwardly and forwardly from a forward corner bottom edge of said side member, said

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leading edge having a greater angle of inclination than the angle of inclination of said rearward edge of each of said side members of said seed boot, said side members of the seed boot are tapered downwardly and forwardly and said face plate of the seed boot is spaced from the bottom edge of said side members of the seed boot and extends upwardly and forwardly from the forward bottom corner of each side member between the forward leading edges of said side members of the seed boot;

a face plate extending between forward edges of said side members;



a rear spacer member extending between rearward edges of said side members; and

a wear insert secured to at least one of said side members of the seed boot, said insert is an elongated rectangular bar shape having a top and bottom surface, a leading and trailing face and longitudinal side faces extending between and around the peripheral edges of said top and bottom surfaces, at least two of the corners formed by the intersection of said top surface and said longitudinal side faces of said insert are radiused.

5,325,800

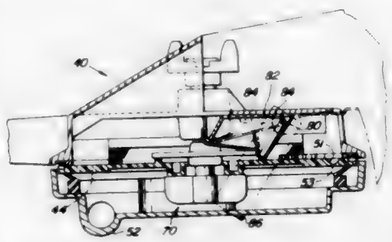
DEVICE FOR SEALING THE SEED METER OF A VERTICALLY FOLDED PLANTING UNIT

Donald R. Wisor, Moline, Ill., and Jeffrey C. Schick, Davenport, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 29, 1992, Ser. No. 953,444

Int. Cl.[5] A01C *7/00*

U.S. Cl. 111—185 **5 Claims**



1. An agricultural planter comprising.

a toolbar that can be pivoted from a horizontal planting position to a vertical transport position;

a planting unit is mounted to the toolbar, the planting unit having a vertical planting configuration and a horizontal transport configuration, the planting unit is provided with a seed hopper for holding seed, a seed meter for controlling how fast seed is planted by the planter unit, the seed meter is provided with a seed reservoir, a discharge area and a seed meter disc, a furrow opening for opening and closing a seed trench for receiving the seed, and means for sealing the seed meter to prevent seeds from the seed reservoir from entering the seed discharge area when the toolbar is rotated, thereby rotating the planting unit from a vertical planting configuration into a horizontal transport configuration, the means for sealing the seed meter comprises a resilient and elastic sealing diaphragm positioned across from the seed meter disc and a means for expanding the diaphragm against the seed meter disc, so that the diaphragm contacts the seed meter disc thereby sealing the seed meter to prevent seeds from the seed reservoir from entering the seed discharge area.

5,325,801

PRECISION-TYPE SINGLE-SEED PNEUMATIC PLANTER

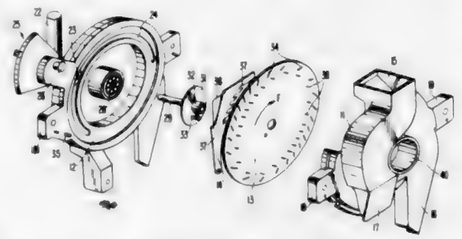
Antonino F. Fiorido, Pordenone, Italy, assignor to Matermacc S.r.l., Pordenone, Italy

Filed Oct. 6, 1992, Ser. No. 957,089

Claims priority, application Italy, Oct. 7, 1991, PN91 A 000065

Int. Cl.[5] A01C *7/00*; **B65G** *59/04*

U.S. Cl. 111—185 **8 Claims**



1. A pneumatic precision-type single-seed planter comprising: a seed container including an inlet through which seeds can be loaded in the planter and an outlet through which the seeds are discharged; a suction housing mounted to said seed container, said suction housing having an opening therein through which air can be evacuated to create suction in the planter; a disk having two sides and rotatably supported in the planter, one side of said disk facing the interior of said suction housing and the other side of said disk facing the interior of said seed container, and said disk having a series of elongate perforations of a narrow width extending therethrough adjacent the outer periphery of the disk; and a selector element disposed at the side of the disk facing the interior of said seed container and located at the periphery of the disk, said selector element having an edge defining a plurality of slots and a plurality of projections terminating at sharp points between said slots, said slots and projections collectively forming a series of ridges directly behind which said elongate perforations pass as said disk is rotated such that the area of each said perforation of the disk that is exposed to the interior of said seed container is reduced by said ridges as the perforation travels past said selector element upon rotation of said disk, whereby said selector element can throttle suction effected in each said perforation via the interior of said suction housing in such a manner as to allow only a single seed to be held on said disk under suction at each said perforation which has been rotated past said selector element.

5,325,802

SEWING MACHINE FOR LARGE-SURFACE, FRAME CLAMPED MATERIAL

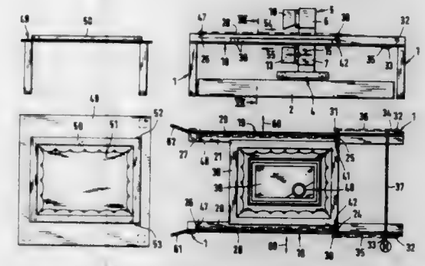
Klaus Stutznäcker, Frechen, Fed. Rep. of Germany, assignor to Nähmaschinenfabrik Emil Stutznäcker GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 9, 1992, Ser. No. 910,810

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1991, 4124194

Int. Cl.[5] D05B *11/00*

U.S. Cl. 112—117 **31 Claims**



1. A sewing machine for large surfaced material comprising means for sewing upon relatively large surfaced material, means for effecting longitudinal and transverse displacement of said sewing means, a pair of endless conveyors disposed in general side-by-side relationship, each of said pair of conveyors being defined by upper and lower generally parallel conveyor runs and opposite bight conveyor runs therebetween, a sewing zone being located generally between said opposite bight conveyor runs, a loading zone being disposed generally outside of said sewing zone, said pair of endless conveyors each having first and second coupling means for selectively coupling and uncoupling with respect to third and fourth coupling means of respective first and second frames, said first and second frames each being adapted to hold respective first and second relatively large surfaced material which is sewn in said sewing zone by said sewing means, said first and second coupling means being spaced a maximum distance between each other as measured in predetermined opposite directions of conveyor runs travel, said maximum distance between said first and second coupling means being at least equal to one linear dimension of said frames, and means for selectively simultaneously driving said pair of endless conveyors to simultaneously move one of said frames from said loading zone in a first direction of travel established by a first portion of each of said pair of said conveyors while simultaneously moving the other of said frames from said sewing zone to said loading zone in a second direction of travel established by a second portion of each of said pair of said conveyors opposite to said first direction.

5,325,803

ICEBREAKING SHIP

Peter Jans, Emden; Karl-Heinz Rupp, and Jens-Holger Hellmann, both of Hamburg, all of Fed. Rep. of Germany, assignors to Thyssen Nordseewerke GmbH, Emden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 820,423, Jan. 14, 1992, Pat. No. 5,231,944. This application May 10, 1993, Ser. No. 66,611

Claims priority, application Fed. Rep. of Germany, May 9, 1992, 4215334

Int. Cl.[5] B63B *35/08*

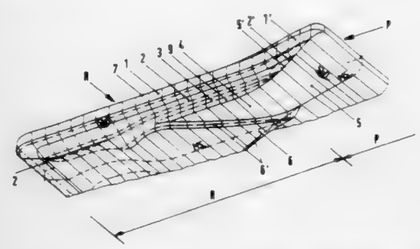
U.S. Cl. 114—40 **17 Claims**

1. A ship for breaking ice to clear a channel through an ice field, the ship having a hull, said hull having a bow, a stern, a length extending from said bow to said stern, first and second sides extending from said bow to said stern, and a width between said first and second sides, said hull comprising:

icebreaking means, said icebreaking means extending across a width of said bow and along a substantial portion of the length of said hull along each of said first and second sides thereof;

said hull is for being disposed in water to a depth defined by a water line, and said icebreaking means being disposed at least in the vicinity of the water line;

said first and second sides of said hull have a first wall portion disposed below the water line, a second wall portion disposed above the water line, and a connecting portion connecting said first wall portion to said second wall portion;



said connecting portion being disposed substantially along said water line of said ship;

said hull having a first width at said first wall portions, and a second width at said second wall portions, said first width being less than said second width;

said connecting portion comprising said icebreaking means along each of said first and second sides;

each of said first wall portions and said second wall portions are disposed substantially vertically; and

said connecting portion is disposed obliquely downward between said first wall portion and said second wall portion at an angle of about 30°.

5,325,804

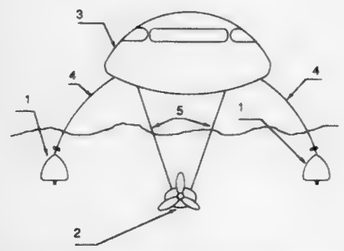
FUEL-EFFICIENT WATERCRAFT WITH IMPROVED SPEED, STABILITY, AND SAFETY CHARACTERISTICS

Richard T. Schneider, 17 Alachua Highlands, Alachua, Fla. 32615

Filed Jan. 8, 1993, Ser. No. 2,302

Int. Cl.[5] B63B *1/12*

U.S. Cl. 114—61 **17 Claims**



1. A watercraft having improved performance capabilities comprising

a cabin, having a top surface and a bottom surface;

a plurality of elongate hulls, having a bow end and a stern end and comprising a void space, each of said hulls further comprising a flow tube extending lengthwise through the hull and having a bow-end opening and a stern-end opening arranged such that water passes through said flow tube continuously while said watercraft is moving forward under normal operating conditions with each of said hulls submerged;

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means for flooding said void space with water and for removing the water as desired;

a plurality of stanchions which connect said hulls to said cabin such that in normal operating mode the bottom surface of said cabin is operationally disposed above the surface of the water, and said hulls being sufficiently separated such that the watercraft's center of gravity remains positioned between the center of buoyancy of said hulls when one of said hulls is on the water's surface, another is submerged, and said cabin is in contact with the water's surface, said stanchions not contributing significantly to the buoyancy of the watercraft as a whole; and

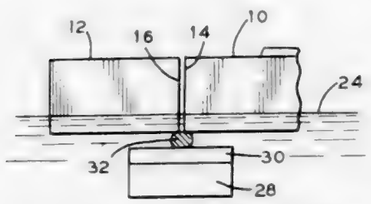
means for propulsion.

5,325,805

METHOD FOR JOINING MODULES OF SHIPS

Robert E. Howson, New Orleans, La., assignor to McDermott International, Inc., New Orleans, La.

Filed Aug. 5, 1993, Ser. No. 102,370
Int. Cl.[5] B63B *3/02*
U.S. Cl. 114—77 A **3 Claims**



1. A method for joining modules of ships, comprising:

a. floating and positioning the modules adjacent each other such that the edges to be joined are adjacent such other;

b. tightly positioning a flat flexible band in flat contact against the exterior of the modules over the joint formed by the adjacent edges of the modules such that water is eliminated between the band and the modules and is prevented from entering the joint from the exterior;

c. dewatering the interior of the adjacent modules at the abutting edges; and

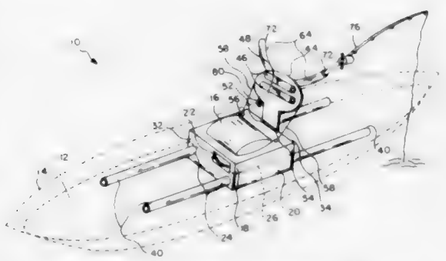
d. joining the adjacent modules at the adjacent edges by welding on the interior of the modules.

5,325,806

SEAT FOR INFLATABLE VESSELS

Rodney S. Lee, 1708 Academy Dr., Melbourne, Fla. 32901

Filed Dec. 14, 1992, Ser. No. 990,091
Int. Cl.[5] B63B *7/08*
U.S. Cl. 114—345 **7 Claims**



1. A vessel and seat apparatus, comprising:

an inflatable vessel having a flexible vessel floor,

a support structure placed on said vessel floor for supporting a person in a seated position, wherein said support structure comprises a top surface, and front and rear wall portions,

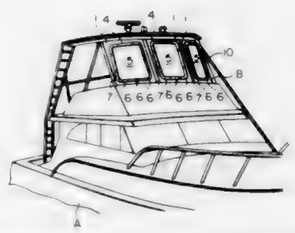
an elongate member extending from said support structure having a surface substantially parallel to and abutting said vessel floor substantially along the entire length of said elongate member for more widely distributing the weight of said structure and said person over said vessel floor, an opening being provided in said front wall portion and a corresponding opening being provided in said rear wall portion and said member for distributing weight passing through said openings and extending to the front of and to the rear of said support structure.

5,325,807

WINDOW ASSEMBLY FOR ATTACHMENT TO A FLEXIBLE SHEET

Toshio Hidekura, Kawasaki, Japan, assignor to Toshio Hidekura, Kanagawa, Japan

Filed Feb. 5, 1993, Ser. No. 14,314
Claims priority, application Japan, Feb. 13, 1992, 4-59384
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—361 **4 Claims**



1. A window assembly for attaching a rigid window pane to a flexible sheet comprising a first frame member having a first planar surface placed in contact with one side of said sheet and a second planar surface adapted to receive the window pane, a second frame member having a contour similar to that of said first frame member and a planar surface placed in contact with the other surface of the sheet in opposition to said first planar surface, means for securing said first and second frame members together with the sheet clamped between said first and second frame members, a third frame member having a contour similar to that of said first frame member to cover said second planar member and engage the peripheral surface of the window pane received in said first frame member and means for fastening said third frame member to said first frame member to secure said window pane in fixed position.

5,325,808

FILLER AND PRESSURE INDICATOR VALVE

David A. Bernoudy, Jr., P.O. Box 1704, Boulder, Colo. 80306

Filed Apr. 23, 1993, Ser. No. 52,180
Int. Cl.[5] B60C *23/02*
U.S. Cl. 116—34 R **17 Claims**

1. A filler and pressure indicator valve comprising:

a valve body adapted to be installed in a tire or tube filler stem,

a passage through the body between an upstream end where air can be introduced for filling the tire and a downstream end where air flows from the stem to the tire,

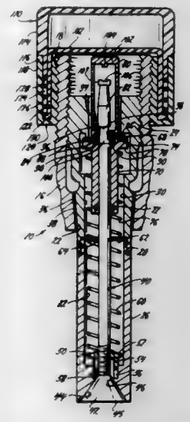
a main valve means for normally blocking the flow of air through the passage and being operable to unblock the flow of air through the passage in response to actuation by an air filler tool engaging the upstream end,

a sensor valve including a sensor valve seat in the passage and a sensor valve member movable into and away from sealing engagement with the valve seat,

means for maintaining the sensor valve member in sealing engagement with the sensor valve seat in response to maintenance of air pressure above a predetermined level at the downstream end,

means for moving the sensor valve member away from sealing engagement with the sensor valve seat in response to reduction of air pressure to a level below said predetermined level,

means for moving the sensor valve member away from sealing engagement with the sensor valve seat in response



to said actuation by an air filler tool engaging the upstream end,

a cap assembly mountable over the upstream end and including an indicator movable into and away from a position at which it is visible,

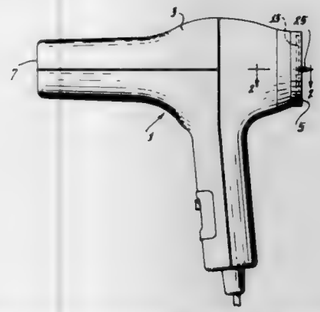
and means responsive to movement of the sensor valve member away from sealing engagement with the sensor valve seat for moving the indicator into said visible position.

5,325,809

HAIR DRYER WITH ALARM NOTIFYING USER OF CLOGGED FILTER

Theodore B. Mulle, Jr., Ridgefield, Conn., assignor to Conair Corporation, Stamford, Conn.

Filed Apr. 26, 1993, Ser. No. 52,582
Int. Cl.[5] G08B *21/00*
U.S. Cl. 116—70 **4 Claims**



3. A warning system formed as part of a hair dryer to provide a warning whenever an air inlet of said hair dryer becomes overly clogged with hair other matter, said system including

a dryer housing having an air inlet, an air filter across said air inlet, and means for supporting said air filter, said air filter having an outer side and an inner side inside of said housing,

an air actuated whistle mounted in said air filter having a whistle air inlet and a whistle air outlet, said whistle being mounted with said whistle air inlet adjacent said outer side of said air filter and said whistle air outlet adjacent said inner side of said air filter,

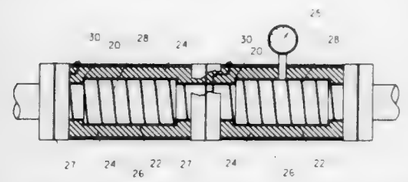
whereby air will pass through said whistle when said air filter has become clogged, causing it to blow, and thereby giving a warning that said air filter has become clogged.

5,325,810

LEAK OBSERVATION THROUGH CAPILLARY ACTION THAT EXPOSES MOISTURE

Tommy C. Bannister, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 21, 1993, Ser. No. 79,421
Int. Cl.[5] G01M *3/00*
U.S. Cl. 116—200 **6 Claims**



1. A system for detecting and locating a fluid leak in a fluid containing vessel enclosed within an insulating material, the system comprising:

a wick, associated with a selected area of the fluid containing vessel, having a sensing portion and a transmission portion, the sensing portion contacting an exterior surface of the selected area of the fluid containing vessel, the transmission portion extending from the sensing portion through the insulation to transmit by capillary action leaked fluid from the selected area of the fluid containing vessel;

leak proof barriers, incorporated into the insulating material, for isolating the selected area of the fluid containing vessel so a fluid leak in the selected area is contained between leak proof barriers; and

indicator means connected to the transmission portion of the wick, the indicator means activated by the leaked fluid transmitted through the wick to indicate a fluid leak in the selected area of the fluid containing vessel at the sensing portion of the wick.

5,325,811

BOOKMARK

Michael Miroyan, P.O. Box 3007, San Pedro, Calif. 90731

Filed Jun. 14, 1993, Ser. No. 77,554
Int. Cl.[5] B42D *9/00*
U.S. Cl. 116—235 **8 Claims**

1. A bookmark for locating an exact page and line in a book comprising:

(a) a thin, elongated, planar body having a face and a back, said face having an upper terminal portion and a lower terminal portion, said body having a slit extending between said upper and lower terminal portions, said slit defining a track;

(b) a first display imprinted on said upper terminal portion of said face of said body, said first display including at least one object depicting feature having a particular size and shape and being located proximate said slit;

(c) a second display imprinted on said lower terminal portion of said face of said body, said second display including an object-depicting feature generally corresponding to said

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object-depicting feature imprinted on said upper terminal portion; and

(d) an indicator means for indicating a particular line on a selected page of the book, said indicator means comprising:

(i) an indicator element overlying said face of said body proximate said slit and having a size and shape corresponding to the size and shape of said object-depicting feature of said display, said element being movable along said track from a first position overlying said



object-depicting feature of said first display, to a second position on said face intermediate said upper and lower terminal portions of said body, to a third position overlying said object-depicting feature of said second display;

(ii) a backing member overlying said back of said body proximate said slit; and

(iii) flexible connector means for interconnecting said backing member and said indicator element through said slit.

5,325,812

SUBSTRATE HOLDING AND ROTATING ARRANGEMENT FOR VACUUM PROCESSES

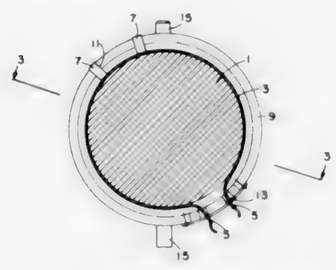
Francis Thiebaud, Oberschan, Switzerland, and Friedrich Stingl, Balzers, Liechtenstein, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed Dec. 10, 1992, Ser. No. 988,728

Claims priority, application Switzerland, Dec. 19, 1991, 3790/91

Int. Cl.[5] **B05C** *13/00*

U.S. Cl. 118—500 **8 Claims**



1. Arrangement for holding essentially flat substrates having different sizes for being disposed in a vacuum working installation comprising:

an outer, essentially rigid holding device (**9**); and

a spring clasp (**3**) having two ends which can be placed into the holding device (**9**) having a plurality of receivers (**11,13**) for holding a substrate (**1**), the spring clasp (**3**) holding the substrate (**1**) according to a peripheral contour of a substrate having an angular, oval or at least nearly circular shape, and a holding element (**5**) at each end of the clasp for clamping in the substrate, the spring clasp (**3**) having at least one essentially outwardly directed support element (**7**) for supporting the spring clasp together with the holding element (**5**) in the holding device (**9**) or on the receivers (**11, 13**).

5,325,813

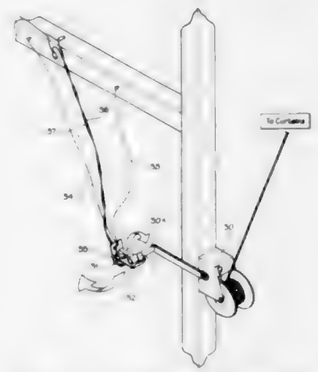
CURTAIN CONTROL SYSTEM FOR ANIMAL ENCLOSURES

James A. Sutton, Jr., 541 Gaither Rd., Statesville, N.C. 28677

Filed Jul. 29, 1992, Ser. No. 921,233

Int. Cl.[5] **A01K** *31/18*

U.S. Cl. 119—21 **6 Claims**



1. In a curtain control system for controlling curtains of an animal enclosure having an electrically-operated forced air ventilation system and a plurality of adjustable drop curtains, each of said drop curtains having an associated curtain control device for providing supplemental ventilation during power failure or excess temperatures in the enclosure; each of the curtain control devices including a winch for winding and unwinding a curtain control cord extending between the curtain and the winch, the winch having stop means for holding the winch, winch release means moveable between a hold position for normally holding the winch handle stationary to prevent unwinding of the curtain control cord and a release position to release the winch handle and thereby release of the curtains to a dropped, open position; electromagnet means for holding the winch release means in the hold position during application of current thereto, and permitting movement of the winch release means to the release position upon interruption of electric current to the electromagnet means;

the improvement comprising:

(a) circuit means electrically cooperating with the electromagnet means for interrupting the flow of electricity to all of the curtain control devices upon movement or change of any single winch release means to the release position to thereby cause the release of all of the curtains upon the release of any of the curtains.

5,325,814

APPLICATION FOR BIOLOGICALLY ACTIVE SUBSTANCE

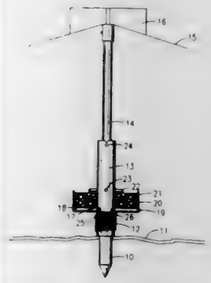
Ian M. Duncan, Zimbabwe, South Africa, assignor to Agricura (Private) Limited, Zimbabwe, South Africa

Filed Mar. 9, 1993, Ser. No. 28,797

Claims priority, application Zambia, Mar. 16, 1992, 37/92

Int. Cl.[5] **A01K** *29/00*

U.S. Cl. 119—157 **9 Claims**



1. A vertical applicator for a biologically active substance comprising:

an anchor for anchoring the applicator at a desired location;

a substance dispensing system, resiliently and pivotally supported by the anchor, comprising a reservoir for containing a biologically active substance, a dispensing element for dispensing the substance to an outlet, means for interconnecting and for conveying the substance from the reservoir to an inlet of the dispensing element, a catchment zone, located adjacent and below the outlet of the dispensing element, for receiving surplus substance dispensed by the dispensing element, and means interconnecting the catchment zone with the reservoir for recycling the surplus substance from the catchment zone to the reservoir; and

a lure holder for holding a lure to attract an animal into contact with the dispensing element.

5,325,815

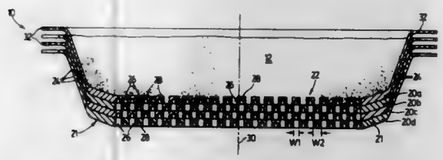
SIFTING DEVICE

Ralph P. Gumpesberger, 59 Osborne Ave (B. Apt.), Toronto, Ontario, Canada M4E 3B1

Filed Sep. 1, 1993, Ser. No. 114,409

Int. Cl.[5] **A01K** *29/00*

U.S. Cl. 119—166 **23 Claims**



1. A device for shifting a siftable material, the device comprising at least three nestable trays,

each tray having a base and sidewalls projecting upwardly and outwardly from the base to retain a siftable material and the trays having corresponding profiles so that said trays may be nested done atop another to form a vertically stacked array of said trays capable of holding a quantity of said material,

said base of each tray having a plurality of rib means for defining a plurality of openings sized to permit said material to pass through and to prevent the passage of substantially larger objects found in said material,

said openings in each tray being arranged in a pre-set pattern wherein the openings of one of said trays are blocked by the rib means of at least one other tray when said trays are nested one atop another in a predetermined orientation.

each of said trays being capable of sifting said material by lifting the uppermost tray of said stacked array and allowing the material therein to pass through the openings, and with the other nested trays of said stacked array blocking one another to prevent passage of the material therethrough, the lifted tray being returnable to the bottom of said stacked array after being cleared of any retained objects.

5,325,816

POROUS ANIMAL LITTER

Maurice G. Pattengill, Golden, and Jerry D. Glynn, Aurora; Martin A. Jones, Boulder, all of Colo., assignors to Western Aggregates, Inc., Boulder, Colo.

Filed Aug. 18, 1993, Ser. No. 108,472

Int. Cl.[5] **A01K** *1/015*

U.S. Cl. 119—173 **19 Claims**

1. A waterproof litter receptacle for use in disposal of animal waste products, said litter receptacle containing a layer of porous expanded shale, said porous shale having a porosity of at least 10% by volume for reducing bulk density of said porous shale and said porous shale having an ability to absorb liquid waste upwardly from said bottom of said receptacle.

5,325,817

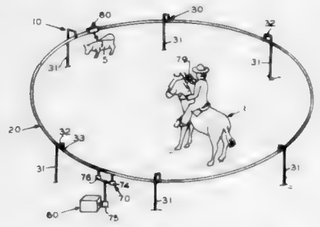
ANIMAL TRAINING APPARATUS

Steven K. Huffman, 6470 Sunrise Ave., Nampa, Id. 83686

Filed Nov. 12, 1993, Ser. No. 150,866

Int. Cl.[5] **A01K** *15/02*

U.S. Cl. 119—839 **17 Claims**



1. Training apparatus for animals, comprising:

an elongated pneumatic tube provided with an air port for receiving air and a second air port for releasing air in and from said tube;

tube support means for holding said tube at a selected height above ground level;

a piston mounted within said tube for reciprocal movement therein, said piston provided with a first magnet;

air injection means for injecting compressed air into said tube through a desired air port for movement of said piston along the length of said tube;

control means for controlling air flow to and from said air ports for selected movement of said piston within said tube;

carriage means mounted on an exterior surface of said tube for reciprocal movement thereon, said carriage means provided with second magnet means in magnetic engagement with said first magnet of said piston for movement of said carriage means together with the movement of said piston; and

an animal image connected to said carriage for movement therewith for animal training.

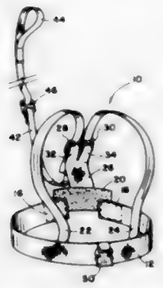
VOL 1164 ISS 1 JL 5 1994 UMI

5,325,818

SAFETY HARNESS FOR INFANTS AND TODDLERS

Jamie S. Leach, 130 E. 10th St., Ada, Okla. 74820

Filed Aug. 4, 1993, Ser. No. 101,737
Int. Cl.[5] A01K *3/00*; A62B *35/00*; A63B *69/00*
U.S. Cl. 119—770 7 Claims



1. A safety harness for a child comprising a waistband having two free ends which can be brought as close together as required by the waist dimension of the child, means for connecting the free ends of the waistband so that the waistband is snugly received around the waist of the child, the waistband having a front portion which engages the front portion of the waist of the child and a rear portion which engages the rear portion of the waist of the child, a fastening strap having a lower end and an upper end, the lower end of the fastening strap attached to the rear portion of the waistband and extending upwardly therefrom, the upper end of the fastening strap dividing into two buckle straps extending upwardly from the fastening strap, a slide buckle associated with each buckle strap, each slide buckle having an upper end, a lower end and an intermediate central rod, each buckle strap having an upper end which loops over the central rod in a slide buckle and which attaches to itself so as to form a closed loop over the central rod of the slide buckle, a pair of shoulder straps having forward ends and rear ends, the forward ends of the shoulder straps being attached to the front portion of the waistband and extending over the shoulders of the child, the rear ends of the shoulder straps slidably engaging the buckles so that each shoulder strap fits underneath the upper end of its associated buckle, over the looped end of the associated buckle strap and downwardly beneath the upper end of the slide buckle, the rear ends of the shoulder straps being connected together below the buckles, an elongated tether strap having a forward end and a rear end, the forward end of the tether strap being attached to the rear ends of the shoulder straps where they connect together whereby the tether strap becomes an extension of the shoulder straps, the rear end of the tether strap being engagable by an adult for controlling the child while, at the same time, allowing the child sufficient room for moving about.

5,325,819

NON-CHOKING STRAIN-REDUCING DOG HARNESS

Mark J. Krauss, East Greenwich, R.I., assignor to American Cord & Webbing Co., Inc., Woonsocket, R.I.

Filed Oct. 21, 1993, Ser. No. 141,115
Int. Cl.[5] A01K *15/00, 27/00*
U.S. Cl. 119—792 8 Claims

1. A dog harness adapted to be attached to a dog and coupled with a leash comprising:

a split collar having two ends for placing around the neck of a dog and having a front and a rear, a front ring attached to the front of the collar and a releasable buckle attached to the ends of the collar with a buckle male member attached to one end and a buckle female member attached to the other end, a rear ring attached to one end of the collar, and another rear ring attached to the other end of the collar adjacent the male member and female member, respectively, of the releasable buckle;

a single split cord passing through the front ring to form a pair of loops to be disposed within the foreleg pits of the dog, the cord having a pair of free ends, one cord free end passing through one rear ring and a further ring attached to this cord free end, the other cord free end passing through the other rear ring and a fastener attached to this



free end for releasably attaching to the further ring, the further ring being adapted to couple with a leash;

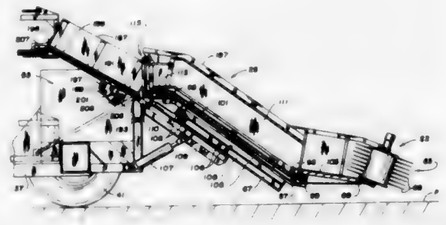
whereby when the leash and harness are unstrained the cord loops are loose and do not apply pressure to the foreleg pits of the dog, and when the leash and harness are strained, the cord loops apply pressure to the foreleg pits of the dog causing the dog to react to decrease the pressure.

5,325,820

POULTRY HARVESTER

Douglas V. Briggs, and George C. Stevens, both of Northwood, N.H., assignors to American Calan, Inc., Northwood, N.H.

Filed Oct. 14, 1992, Ser. No. 961,173
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—846 22 Claims



1. A poultry harvester for capturing poultry on a generally horizontal plane, such as the floor of a poultry house, and transferring a predetermined number of captured poultry to a compartment of a cage having a plurality of compartments, the poultry harvester comprising:

means for capturing the poultry;

means for counting the captured poultry;

means for conveying the captured poultry;

means for depositing the conveyed poultry into each of the compartments of the cage;

means for providing relative movement between the depositing means and the cage; and

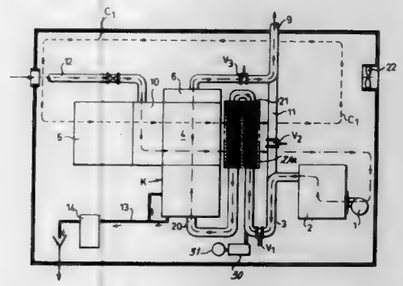
means, responsive to the counting means, for controlling said depositing means and said movement providing means to deposit the predetermined number of poultry as counted by said counting means in each of the compartments of the cage.

5,325,821

METHOD AND DEVICE IN CLOSED HEATING PLANTS

Stig Glöersen, Luotsikatu 4 B 12, SF-00160 Helsinki, Finland

PCT No. PCT/SE91/00012, § 371 Date Sep. 5, 1992, § 102(e) Date Sep. 5, 1992, PCT Pub. No. WO91/10868, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 8, 1991, Ser. No. 867,714
Claims priority, application Sweden, Jan. 8, 1990, 9000007
Int. Cl.[5] F22B *33/00*
U.S. Cl. 122—1 R 15 Claims



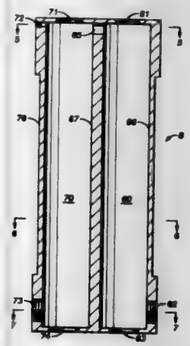
1. A method of utilizing the high energy values of fossile fuels in closed boiler systems with the aid of a processor which includes a heat pump and a heat-exchanger, in which heat exchange is effected between two air flows circulating through the heat exchanger by generating a first circulation of boiler-room air, via the heat pump and the heat exchanger, and by generating a second circulation through the heat exchanger by extracting exhaust air or flue gases, or a mixture thereof, by suction, said second circulation generating a subpressure in the boiler room such as to cause external fresh air to flow in through the heat exchanger, characterized in that the exhaust air or the flue gases, or said mixture thereof, is or are caused to pass a cooling device and thereby pre-cooled prior to passing through the heat exchanger in said second circulation.

5,325,822

ELECTRTIC, MODULAR TANKLESS FLUIDS HEATER

Guillermo N. Fernandez, 3107 Timberlark, Kingwood, Tex. 77339

Continuation-in-part of Ser. No. 780,797, Oct. 22, 1991. This application Oct. 22, 1991, Ser. No. 780,650
Int. Cl.[5] F22B *5/00*
U.S. Cl. 122—13.2 13 Claims



1. A heater apparatus designed for heating of a continuous flow of fluids therethrough comprising one or more modules disposed in serial fashion, each of said modules constituting a modular apparatus comprising:

(a) a first chamber and a second chamber each for the receipt of a flow of fluid therethrough and wherein the flow of fluid enters the first chamber at one end and exits it at the other end whereupon it enters the second chamber at one end and exits at the other end;

(b) a first temperature sensing means operably disposed in the first chamber for measuring the temperature of fluid therethrough and a second temperature sensing means operably disposed in the second chamber for measuring the temperature of the flow of fluid therethrough, and a means for comparing the temperature of fluid flow in the first chamber against the temperature of fluid flow in the second chamber;

(c) a heating element disposed in each of said chambers operably connected to said first and second temperature sensing means for measuring the temperature of the flow of fluid through each said first and second chamber and to said means for comparing the differences in temperature of fluid flow therein;

(d) a means for energizing each of said heating elements selectively;

(e) a temperature set means operatively connected to each of said heating elements for the separate actuation thereof;

(f) an electronic means coupling each said temperature measuring means to said temperature set means so that each of said heating elements are selectively energized when the temperature of the flow of fluid in either of the chambers is lower than the temperature set means; and

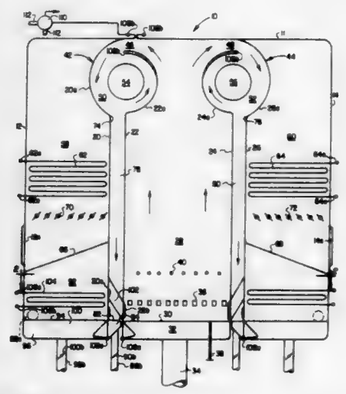
(g) said the means for energizing the heating elements comprises means for energizing the heating element immediately proximate to the fluid entering the first module when the temperature of the fluid is below that which is desired and wherein said means for energizing said heating element proximate to the entering fluid in the last module continues to heat the fluid until a preset predetermined temperature is reached.

5,325,823

LARGE SCALE FLUIDIZED BED REACTOR

Juan A. Garcia-Mallol, Morristown, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Dec. 24, 1992, Ser. No. 996,284
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D 32 Claims



1. A fluidized bed reactor, comprising:

a vessel;

first and second generally vertical, spaced members extending between opposite walls of said vessel for partitioning said vessel into first, second and third portions;

a furnace section disposed in said second portion and comprising means for supporting a fluidized bed of particulate solids including fuel which combusts to generate heat and a mixture of combustion gases and entrained particulate solids,

means disposed in said vessel for separating said entrained particulate solids of said mixture from said combustion gases; and

first and second heat exchange means respectively disposed in said first portion and said third portion for receiving and removing heat from said separated particulate solids and said separated combustion gases

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5,325,824

SPLIT CYCLE INTERNAL COMBUSTION ENGINE

John D. Wishart, 8 Chapel Street, Blackburn, Vic. 3130, Australia

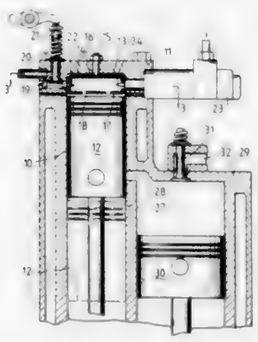
PCT No. PCT/AU91/00230, § 371 Date Nov. 27, 1992, § 102(e) Date Nov. 27, 1992, PCT Pub. No. WO91/19084, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 952,751

Claims priority, application Australia, May 29, 1990, PK 0359

Int. Cl.[5] F02B *33/20*

U.S. Cl. 123—72 **4 Claims**



1. An internal combustion engine comprising a firing cylinder and a separate compressor comprising a compression cylinder having reciprocating therein respectively a power piston and a compression piston connected to a common crankshaft, the firing cylinder extending beyond the top limit of travel of the power piston to thereby include an upswept space constituting a combustion chamber, characterized by:

a hollow dome located wholly within the combustion chamber with the closed top of the dome adjacent to the head of the firing cylinder and the open base of the dome nearer to the power piston, said dome being spaced from the walls of the combustion chamber;

means directing a charge of air from the compressor around the interior wall of the dome when the power piston is at or near the top dead centre;

means directing fuel separately from said air into the interior of the dome to mix with the air after all the air has entered the dome and while the power piston remains at or near top dead centre;

and auxiliary means for facilitating ignition for heating at least a portion of the fuel/air mixture when the temperature of the dome is insufficiently high for ignition.

5,325,825

FINGER LEVER OR ROCKER ARM FOR A VALVE ACTUATING MECHANISM OF AN INTERNAL COMBUSTION PISTON ENGINE

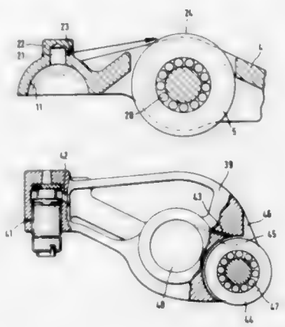
Dieter Schmidt, Nuernberg, and Arndt Ihlemann, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Ina Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Oct. 13, 1993, Ser. No. 136,581

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1992, 4234868

Int. Cl.[5] F01L *1/18*

U.S. Cl. 123—90.39 **6 Claims**



1. A finger lever or a rocker arm (**4,25,39**) for a valve actuating mechanism (**1**) of an internal combustion piston engine comprising a roller (**5**) which rolls against the periphery of a cam (**3**) and is rotatably mounted on a pin (**17**) guided in side walls (**18,19**) of the finger lever or the rocker arm (**4,25,39**) which is provided with a bore (**23**) directed towards the periphery of the roller (**5**) and communicating with a lubricant duct (**38**), characterized in that the bore (**23,27,43**) has a diameter of at least one of equal and less than one half of a millimeter in the region of its smallest cross-section and extends essentially tangentially with respect to the periphery of the roller (**5, 44**).

5,325,826

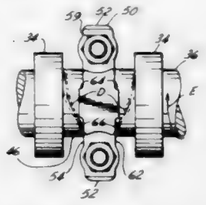
JOURNAL BEARING OIL DIVERTER

Philip D. Cierpial, Detroit, and Matt A. Vance, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 4, 1993, Ser. No. 145,550

Int. Cl.[5] F01M *9/10*

U.S. Cl. 123—90.34 **11 Claims**



1. An oiling mechanism for use in an internal combustion engine having a camshaft which includes a cam lobe portion and a journal portion having oil supplied to a surface of the journal, the oiling mechanism comprising:

at least one camshaft bearing member affixed to the engine about the camshaft journal portion; and

a diverter affixed to the camshaft bearing member provided adjacent to the camshaft journal, the diverter comprises at least one oil diverter pad protruding from a portion of the bearing member wherein oil will be diverted from the camshaft journal toward the cam lobe.

5,325,827

STARTING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

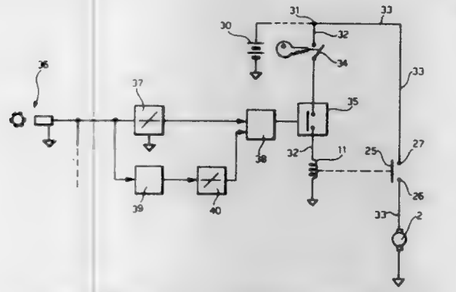
Giancarlo Fasola, Milan, Italy, assignor to Industrie Magneti Marelli SpA, Milan, Italy

Filed Mar. 22, 1993, Ser. No. 34,155

Claims priority, application Italy, Mar. 24, 1992, T092 A 000249

Int. Cl.[5] F02N *11/08*

U.S. Cl. 123—179.3 **1 Claim**



1. A starting system for an internal combustion engine, including:

a direct-current voltage supply,

an electric starter motor for rotating a movable pinion,

an electromagnetic operating device including a solenoid and an associated movable which, as a result of the passage of a current through the solenoid, can bring about:

a movement of the pinion towards a working position in which it can be coupled for rotation with a rotary member of the internal combustion engine, and the supply of current to the electric motor,

sensor means for supplying an electrical signal indicative of the speed of rotation of the shaft of the internal combustion engine, and

control means for controlling the connection of the electromagnetic operating device to the voltage supply the control means including comparator means which are arranged to compare the signal supplied by the sensor means with a predetermined threshold which corresponds to the speed at which the internal combustion engine can keep itself running,

the control means being arranged:

to derive a signal indicative of the angular acceleration of the shaft of the internal combustion engine from the signal supplied by the sensor means, and

to cut off the current supply to the solenoid of the electromagnetic operating device in operation, as soon as the speed of rotation of the engine shaft exceeds the threshold and the angular acceleration of the shaft is less than or equal to zero.

5,325,828

AIR INTAKE ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

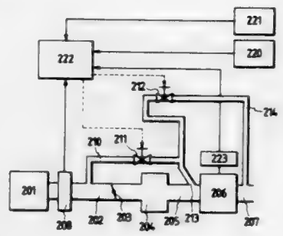
Jun'ichi Yamaguchi, Hitachi; Minoru Ohsuga; Toshiharu Nogi, both of Katsuta; Mamoru Fujieda, Tomobe; Nobuo Kurihara, Hitachioota; Yoshishige Ohyama, Katsuta; Hiroyuki Yamada, Katsuta, and Shigeyuki Kemma, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 12, 1993, Ser. No. 105,366

Claims priority, application Japan, Aug. 31, 1992, 4-230864

Int. Cl.[5] F02M *23/06, 25/07*

U.S. Cl. 123—308 **26 Claims**



1. An air intake arrangement for an internal combustion engine comprising:

a main air intake conduit leading to a gas intake valve (**241, 306**) for respective engine cylinders (**206, 244, 307, 150**) and including a main air intake passage (**202**), a main collector (**204, 104, 304, 319**) chamber and independent branching air intake passages (**205, 305, 105**) for the respective engine cylinders (**206, 244, 307, 150**) connected in series;

a throttle valve (**203, 314, 103**) disposed in the main intake air passage (**202**) for controlling the flow rate of air passing therethrough

an auxiliary air intake passage (**210, 308, 113**) bypassing said main air intake conduit, an inlet port of said auxiliary air intake passage (**210, 308, 113**) opens into the main air intake passage (**202**) at the upstream of said throttle valve (**203, 314, 103**), an outlet port (**213**) of said auxiliary air intake passage (**210, 308, 113**) opens into the respective independent branching air intake passages (**205, 305, 105**) near the gas intake valve (**241, 306**) for the respective engine cylinders (**206, 244, 307, 150**) in such a manner that gas blown-out from said auxiliary air intake passage (**210, 308, 113**) induces a gas swirl in the respective engine cylinders(**206, 244, 307, 150**);

an intake air control valve (**211, 313, 109**) disposed in said auxiliary air intake passage (**210, 308, 113**) for controlling the flow rate of air passing therethrough;

an EGR gas passage (**214**) merged into said auxiliary air intake passage (**210**) at the downstream of said intake air control valve (**211**);

an EGR gas control valve (**212**) disposed in said EGR gas passage (**214**) for controlling the flow rate of EGR gas passing therethrough; and

a control unit (**222**) which determined an operating condition of the internal combustion engine and controls opening degrees of said intake air control valve (**211**) and said EGR gas control valve (**212**) based on the determined engine operating condition.

5,325,829

INTAKE MANIFOLD AIR INLET CONTROL ACTUATOR

Orest Iwasiuk, Farmington Hills, Mich., assignor to Schmelzer Corporation, Oxford, Mich.

Filed Sep. 25, 1992, Ser. No. 951,632

Int. Cl.[5] F02D *9/00*

U.S. Cl. 123—336 **13 Claims**

1. An actuator for opening and closing throttle valves, said

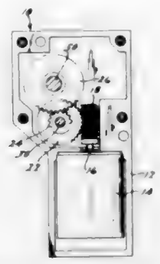
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valves fixedly disposed on a rotatable throttle shaft, in a plurality of air inlet ports in an intake manifold of an internal combustion engine comprising

a housing;

a reversible motor disposed in said housing;

power transmission means operably engaged with said motor comprising a non-planetary gear train containing a plurality of gears including a worm gear disposed in said housing.



a rotary shaft having a longitudinal axis rotatably mounted in said housing operably engaged at one end thereof with said power transmission means so that operation of said power transmission means rotates said rotary shaft about its longitudinal axis, and operably engaged at the other end with said throttle shaft whereby rotation of said rotary shaft rotates said throttle shaft thereby opening and closing said air inlet ports

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5,325,830

DEVICE FOR GOVERNING THE IDLING RPM OF AN INTEGRAL COMBUSTION ENGINE

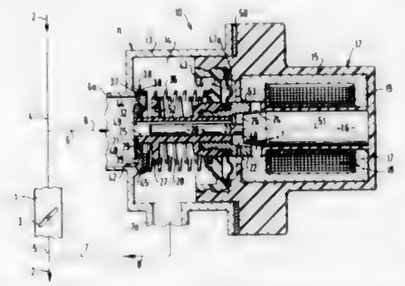
Uwe Hammer, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 7, 1993, Ser. No. 71,820

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1992, 4231239

Int. Cl.[5] F02M *23/04*; **F02D** *9/02*

U.S. Cl. 123—339 **6 Claims**



1. A device for governing the idling rpm of an internal combustion engine by controlling a quantity of operating fluid that flows in a flow line to the engine, having an electromagnetic regulating drive (**22**) disposed in a drive housing (**15**) that is activated by a speed-dependent control signal, a regulator housing (**13**) and an adjusting element (**21**) coupled to the regulating drive, said adjusting element is engaged by a first spring (**36**) and at whose end remote from the regulating drive, a valve element (**29**) is disposed, by means of which a closing element (**30**) engaged by a second spring (**28**) is displaceable from a closing position into an opening position when the regulating drive is activated, and the valve element assumes an open position when the regulating drive is not activated and a closed position during increasing activation, the closing element (**30**) has a first frustoconical surface (**37**) that rests against a first corresponding surface (**44**) embodied on the regulator housing (**13**) in the closed position of the closing element (**30**) and, with this surface, forms a first conical seat (**38**), and has a second frustoconical surface (**39**) that rests against a second corresponding surface (**45**) embodied on the valve element (**29**) in the open position of the closing element (**30**) and, with this surface, forms a second conical seat (**40**), and that the first and second springs (**28**, **36**) are disposed parallel to each other such that when the valve element (**29**) is adjusted into the open position or the closed position, only the force of the first spring (**28**) is effective.

5,325,831

CENTRIFUGAL GOVERNOR FOR FUEL INJECTION PUMP

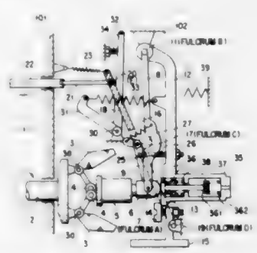
Shizuo Handa, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya City, Japan

Filed Jul. 30, 1993, Ser. No. 99,571

Claims priority, application Japan, Jul. 31, 1992, 4-205696; Jul. 27, 1993, 5-185068

Int. Cl.[5] F02D *31/00*

U.S. Cl. 123—373 **6 Claims**



1. A centrifugal force governor with a governor cover, used for a fuel injection pump comprising:

a cam shaft for driving the fuel injection pump;

a fly weight provided for said cam shaft;

converting means for converting a centrifugal force of the fly weight generated by the rotation of the cam shaft, into a force in an axial direction;

a control block, provided in said converting means, moved in the axial direction in accordance with the centrifugal force of the fly weight, and having a fulcrum A;

a guide lever, one end of which is jointed to said control block by the fulcrum A, and the other end is supported by a fulcrum B provided on said governor cover, being rotatable around the fulcrum B in accordance with the movement of the control block;

a tension lever rotatably supported by the fulcrum B;

urging means for urging the tension lever around the fulcrum B, toward the control block;

a control lever, one end of which is rotatably supported by a fulcrum D, and the other is jointed to a control rack for controlling the injection quantity of the fuel injection pump, having a fulcrum C in a mid-portion thereof;

a reverse Angleich lever one end of which is jointed to said control block so as to move along therewith, and the other is jointed to the fulcrum C;

reverse Angleich lever urging means for urging said reverse Angleich lever toward the guide lever so that the reverse Angleich lever and the fulcrum C move along with the rotation of the guide lever; and

shifting means provided between said reverse Angleich lever and said tension lever, for regulating the movement of said reverse Angleich lever when the centrifugal force of said fly weight reaches a predetermined value, and for shifting the control lever so that the injection quantity of

said fuel injection pump increases by moving said reverse Angleich lever and said fulcrum C in spite of an urging force of said reverse Angleich lever urging means for achieving a reverse Angleich operation, when the centrifugal force exceeds the predetermined value.

5,325,832

POWER-CONTROLLING METHOD FOR CONTROLLING MIXTURE-COMPRESSING INTERNAL COMBUSTION ENGINE

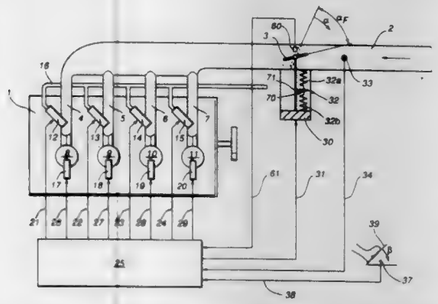
Kurt Maute, Sindelfingen; Wolfgang Strauss, Denkendorf, and Andreas Weber, Lorch, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Apr. 5, 1993, Ser. No. 42,554

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1992, 4214179

Int. Cl.[5] F02D *11/10*

U.S. Cl. 123—396 **12 Claims**



1. An apparatus, for controlling delivered power form a mixture-compressing internal combustion engine, comprising an electronic control unit, a butterfly valve, an electric motor operatively connected with the butterfly valve and configured to be triggered by the electronic control unit for actuating a throttle butterfly into a desired position, and a setting spring device arranged to act against the electric motor wherein, during normal operation of the engine, the butterfly valve controls induced mass flow corresponding to current load demand and a fuel injection quantity is matched to the induced mass flow and during deactivated periods of the electric motor, the throttle butterfly is mechanically decoupled therefrom and is held by the setting spring device in a specified opening position, wherein, during the deactivation of the electric motor, with decreasing load demand at least one of the following occurs: the mixture composition is altered in a lean direction, the ignition timing is displaced in a retarded direction, and a frequency of the cylinder shut-downs is increased.

5,325,833

CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Wataru Fukui; Atsuko Hashimoto, and Noriaki Hayashi, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 87,266

Claims priority, application Japan, Jul. 10, 1992, 4-183902

Int. Cl.[5] F02P *5/155*; **F02D** *41/04*

U.S. Cl. 123—414 **2 Claims**

1. A control apparatus for an internal combustion engine, comprising:

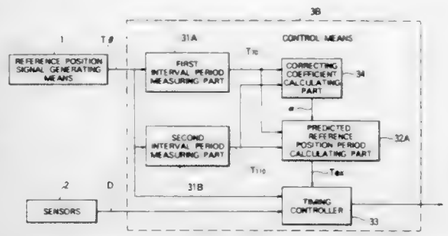
reference position signal generating means for generating a reference position signal representing a first reference position and a second reference position for each cylinder of said engine in synchronism with operation of said engine;

period measuring means for measuring predetermined interval periods of said reference position signal;

predicted reference position period calculating means for calculating a succeeding period of said reference position signal as a predicted reference position period;

timing control means for correcting a control signal for controlling operation of said engine on the basis of said predicted reference position period; and

correcting coefficient calculating means for calculating a



ratio between a first period extending from said first reference position to said second reference position and a second period from said second reference position to said first reference position on the basis of said predetermined interval period, to thereby calculate a correcting coefficient on the basis of said ratio;

wherein said predicted reference position period calculating means calculates said predicted reference position period on the basis of said predetermined period and said correcting coefficient.

5,325,834

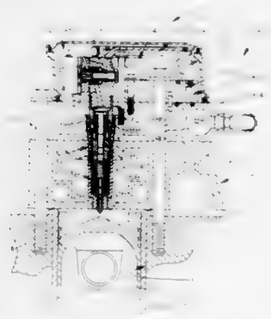
METHOD OF AND CONVERSION KIT FOR CONVERTING AN ENGINE TO HYDRAULICALLY-ACTUATED FUEL INJECTION SYSTEM

Benny Ballheimer, and Lloyd E. Thompson, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 3, 1993, Ser. No. 100,953

Int. Cl.[5] F02M *47/02*, *55/02*

U.S. Cl. 123—446 **13 Claims**



1. A fuel injection system for an existing internal combustion engine, the engine having a cylinder block and a cylinder head defining a plurality of injector bores and being conventionally mounted to the cylinder block, comprising:

an adapter assembly releasably connected to the cylinder head and defining an actuating fluid manifold therein and a plurality of injector bores in substantial axial alignment with the plurality of injector bores in the cylinder head;

a plurality of fuel injector sleeves, one positioned in each of

the plurality of injector bores in the cylinder head and the adapter assembly;

a plurality of hydraulically-actuated fuel injectors, one positioned in each of the plurality of injector sleeves with the injectors each having an actuating fluid inlet passage; and

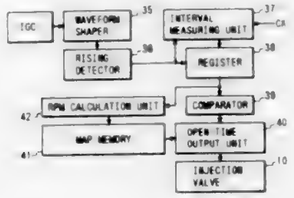
the adapter assembly including actuating fluid passage means for communicating between the actuating fluid manifold and the actuating fluid inlet passage of each of the injectors.

5,325,835

ELECTRONIC FUEL INJECTION SYSTEM FOR ENGINE

Ryuichi Kimata, and Takao Kashima, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 77,400
Claims priority, application Japan, Jun. 30, 1992, 4-194504
Int. Cl.[5] F02D *41/34*
U.S. Cl. 123—475 **6 Claims**



1. An electronic fuel injection system for an engine comprising a self-triggered ignition unit for generating ignition signals induced on the primary side of an ignition coil in synchronism to the rotation of an engine crankshaft, said ignition signals contributing to the ignition, and also generating paired voltage signals before and after and of the opposite polarity to each of said ignition signals, a fuel injection valve for supplying fuel into an intake manifold, and a microcomputer for controlling the "open" time of said fuel injection valve according to an engine operating condition, said system further comprising:

means for detecting the time interval between adjacent two of said voltage signals for every voltage signal generation;

judging means for comparing two latest successive time intervals which have been detected; and

means for determining one of said paired voltage signals to be a specific signal for obtaining a fuel injection timing according to the result of judgment by said judging means.

5,325,836

FLEXIBLE FUEL CONTROL SYSTEM WITH FUEL TRANSIT DELAY COMPENSATION

Daniel V. Orzel, Westland; William E. Boruta, Dearborn, and Judith M. Curran, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 5, 1992, Ser. No. 971,749
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—478 **6 Claims**

1. In combination,

an internal combustion engine having a fuel intake mechanism which is responsive to a control signal,

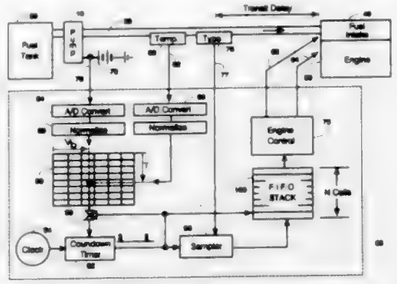
a fuel tank,

a fuel line for transporting fuel from said tank to said intake mechanism,

a fuel-type sensor positioned on said fuel line and spaced from said intake mechanism for generating a fuel-type signal indicative of the type of fuel flowing past said sensor,

means for generating a numerical estimate of the transit time required for fuel to flow from said sensor to said intake mechanism,

air/fuel mixture control means for generating said control signal in response to said fuel-type signal, and



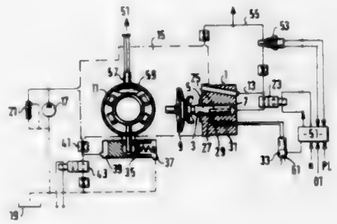
and delay means connecting said sensor to said air/fuel mixture control means for delaying said fuel-type signal by a delay interval having a duration corresponding to said numerical estimate.

5,325,837

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Helmut Laufer, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 1, 1993, Ser. No. 130,495
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1992, 4238980; Jun. 25, 1993, 4321156
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—506 **13 Claims**



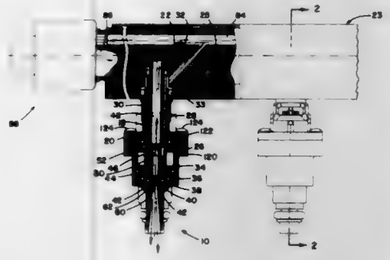
1. A fuel injection apparatus for internal combustion engines, having at least one pump work chamber (**7**), defined by a pump piston (**5**) in a bore (**3**) of a cylinder liner (**1**), said work chamber is made to communicate with an injection valve (**33**) via a line (**29**) which is supplied with fuel from a low-pressure fuel chamber (**15**) and is relieved via a fuel line (**13**) having a control valve (**23**) electrically actuated by a control unit (**51**), wherein a fuel quantity injected at the injection valve (**33**) and the instant of injection are controllable by the electrically actuated control valve (**23**) during a pumping stroke of the pump piston (**5**) in such a manner that the injection quantity is split into a successive preinjection quantity and a main injection quantity, a sensor (**61**) is disposed on the injection valve (**33**), said sensor detects the injection onset and injection end of said injection valve (**33**) and directs a signal to the control unit (**51**) that triggers the electric valve (**23**) said control unit compares this signal, representing an actual value, with a set-point value derived from a performance graph and if the actual value deviates therefrom readjusts the triggering for the opening and closing motion of the electrically actuated valve (**23**), the sensor (**61**), is embodied as a needle stroke transducer, and does not transmit the signal for the opening or closing motion of the nozzle needle to the control unit (**51**) until a certain limit value beginning at the onset of motion of the nozzle needle in the opening and closing direction is exceeded or fails to be attained.

5,325,838

LIQUIFIED PETROLEUM GAS FUEL INJECTOR

David E. Bennett, 14687 County Rd. 8 SE., Lake Lillian, Minn. 56253

Filed May 28, 1993, Ser. No. 68,769
Int. Cl.[5] F02B *43/00*
U.S. Cl. 123—527 **13 Claims**



1. A fuel injector for a fuel supply system which injects liquified petroleum gas fuel into an internal combustion engine, the engine having an intake manifold, said fuel injector comprising:

a housing assembly having an inner wall;

a cooling bushing disposed within the housing assembly, the cooling bushing having upper and lower ends, an outer wall disposed against the inner wall of the housing assembly, and a hollow core, the outer wall having a groove receiving supply fuel flowing generally from the upper end toward the lower end;

means for allowing vaporization of return fuel in fluid communication with the supply fuel, the return fuel flowing through the hollow core generally from the lower end toward the upper end and exhausting therefrom, thereby cooling the supply fuel flowing through the groove; and

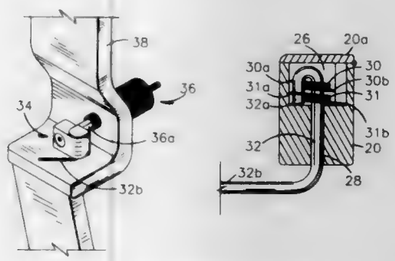
means for controlling the rate at which fuel is injected into the intake manifold in operable connection with computer means.

5,325,839

SPRING BIASED ARROW REST

Darrell J. Scheffer, 32765 SE. Compton Rd., Boring, Oreg. 97009-9001

Filed Jul. 9, 1993, Ser. No. 89,696
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—44.5 **9 Claims**



1. An arrow rest for an archery bow having an arrow support arm that pivots, on a generally horizontal plane, from an initial arrow receiving position, and returns automatically to said initial position after being displaced, comprising:

mounting means mounted on the bow, said mounting means having an essentially vertical through passage, said passage comprising a journaling sleeve portion and a spring chamber portion; cap means adapted to close said spring chamber;

arrow support means comprising a one piece arrow support wire having an essentially vertical portion pivotally mounted in said journaling sleeve, and said wire having a substantially horizontal first end extending outwardly from said mounting means, forming said arrow support arm; an upper portion of said vertical portion extending into said spring chamber and forming a spring contact means;

bias means positioned in said spring chamber in communication with said spring contact means and adapted to locate said spring contact means in said initial position and capable of returning said spring contact means to said initial position after being displaced forward, as by an arrow being discharged from the bow, or backward, as by being accidentally snagged on a branch;

said spring chamber includes a front stop surface and a back stop surface;

said bias means includes a first spring means comprising a coil spring wound helically around said upper portion, in a first direction, and abutting against said spring contact means and one of said front and back stop surfaces; and a second spring means comprising a coil spring wound helically around said upper portion, in a direction opposite to said first direction, and abutting against said spring contact means and the other of said front and back stop surfaces,

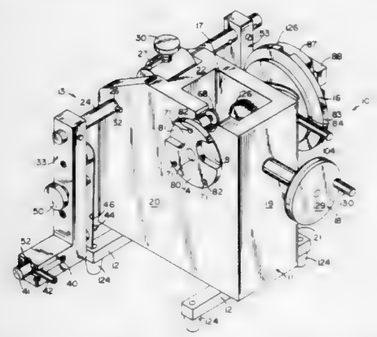
wherein said first spring means is of predetermined tension.

5,325,840

WATCH CRYSTAL CUTTING MACHINE

Henry V. Schohl, 208 Barber St., Spring Lake, Mich. 49456

Filed Nov. 9, 1992, Ser. No. 973,652
Int. Cl.[5] B23B *3/28*; B24B *9/14*
U.S. Cl. 125—23.01 **20 Claims**



20. A mechanism for inscribing a blank of mineral glass crystal material used for a watch bezel, comprising in combination:

a base including levelling means for providing elevation adjustment to said base;

a first shaft extending through said base and journalled therein for rotation about a longitudinal axis of said first shaft;

a first clamp attached to one end of said first shaft for releasably retaining the blank of mineral glass crystal material;

a second clamp attached to an opposite end of said first shaft for releasably retaining a pattern;

a second shaft extending through said base generally parallel to said first shaft, and journalled therein for rotation about a longitudinal axis of said second shaft;

an inscribing tool coupled to one end of said second shaft on

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a same side of said base as said first clamp and adapted to engage said inscribing tool against the blank of mineral glass crystal material;

a stylus coupled to an opposite end of said second shaft on a same side of said base as said second clamp for following said pattern; and

a transmission for driving said first shaft through at least one complete rotation while said stylus follows said pattern and said inscribing tool engages the blank of mineral glass crystal material.

5,325,841

BARBECUE APPARATUS AND METHOD

Virgil Hooper, Sr., 700 Johnson Dr., Richmond, Calif. 94806-1748

Filed Feb. 5, 1993, Ser. No. 14,139
Int. Cl.[5] A47J *37/00*
U.S. Cl. 126—25 R **7 Claims**



1. Deep pit barbecue apparatus comprising, in combination:

a housing having a bottom, a peripheral wall extending upwardly from said bottom, and a top disposed over said bottom, said bottom, peripheral wall, and top defining a housing interior, and said top defining a primary vent over said bottom interconnecting said housing interior to the ambient atmosphere;

a fuel grate located under said primary vent disposed within said housing interior closely adjacent to said bottom and spaced from said bottom to support combustible fuel;

a grill having grill openings positioned within said housing interior at a location between said fuel grate and said primary vent, said grill being located at least about 2½ feet over the housing bottom and directly above said fuel grate and directly under said primary vent; and

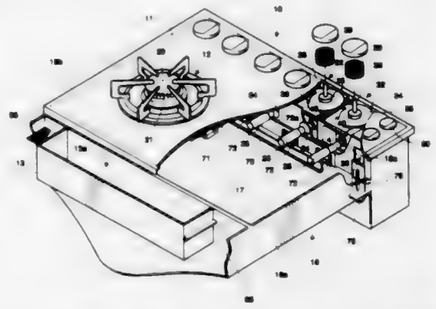
a secondary vent positioned below said grill and above said grate for venting potentially harmful combustion gases from said housing interior into the ambient atmosphere to prevent contamination of food on said grill by said vented combustion gases, said secondary vent comprising a plurality of spaced secondary vent holes formed in said housing peripheral wall under and closely adjacent to said grill and closure means for selectively adjusting the effective size of at least some of said secondary vent holes, and said housing defining air intake holes below said fuel grate to replace gases emitted by said apparatus through said primary vent and said secondary vent with ambient air, said top defining an elongated passageway extending upwardly from said housing interior and leading to said primary vent, said apparatus including control means for controlling gas flow through said elongated passageway and out said primary vent for maintaining a positive pressure within said housing interior at the location of said secondary vent holes below and closely adjacent to said grill to promote the passage of combustion gases outwardly from said housing interior closely adjacent to said grill and directly into the ambient atmosphere through said secondary vent holes, said control means comprising a selectively positionable damper in said passageway adjacent to said primary vent to vary the effective size of said passageway.

5,325,842

DUAL MODE DOWNDRAFT GAS RANGE

Stanley H. Beach, Indianapolis; Paul Noel, Greenfield; Steve Schatz, New Palestine; John Harper, and Virgil Montgomery, both of Indianapolis, all of Ind., assignors to Maytag Corporation, Newton, Iowa

Continuation-in-part of Ser. No. 919,710, Jul. 24, 1992, Pat. No. 5,213,091, and a continuation-in-part of Ser. No. 919,728, Jul. 24, 1992, Pat. No. 5,209,217. This application Oct. 29, 1992, Ser. No. 968,159
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—39 R **42 Claims**



1. A dual mode gas range with a sealed range top, comprising:

a plurality of gas burners sealed to said range top;

a powered air source including a primary combustion air blower, and a pressurizable air plenum connected with said primary combustion air blower;

a combined air/gas supply controller comprising a plurality of chambers, each said chamber providing gas and primary combustion air for one of said plurality of gas burners;

a plurality of sealed conduits, each said sealed conduit connecting one of said chambers to one of said gas burners;

each said chamber of said combined air/gas supply controller having an air/gas outlet in communication with one of the sealed conduits, an air flow control inlet opening in communication with said pressurizable air plenum, and an atmospheric air inlet opening in communication with atmosphere;

said combined air/gas supply controller further comprising for each said chamber, a gas valve, an air flow control plate carried adjacent said air flow control inlet opening and a common operator for said gas valve and said air flow control plate for providing a combined control of air from said pressurizable air plenum and gas from said gas valve to said chamber;

said combined air/gas supply controller still further comprising for each said chamber an air gate operable to close or open said atmospheric air inlet opening of said chamber; and

a system for operating said plurality of gas burners,

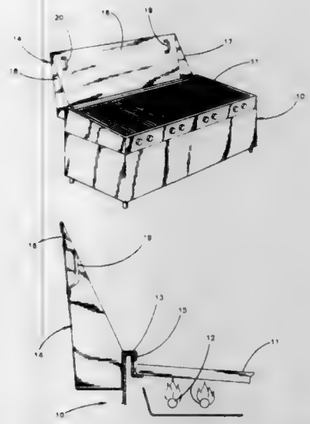
said system operating said air gate for closing said atmospheric air inlet openings of said plurality of chambers and operating said primary combustion air blower in a power burner mode, and operating said air gate for opening said atmospheric air inlet opening to atmosphere in non-powered operation of said gas burners.

5,325,843

REMOVABLE CATCH PAN FOR A BROILER

Sam Bravata, Jr., 4124 Jefferson, SE., Wyoming, Mich. 49508

Continuation of Ser. No. 699,914, May 14, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 145,393
Int. Cl.[5] F24C *15/20*
U.S. Cl. 126—299 C **7 Claims**



1. A removable catch pan for receiving and holding debris scraped from a grille of a standard broiler over a rear edge thereof, wherein the rear edge of the broiler is about at the level of the grille, the catch pan comprising a trough in the form of a relatively narrow, elongated container having an open top and closed bottom, the container having a relatively low front wall on an elongated side of the container and a relatively high back wall on an opposite elongated side of the container, the catch pan further including mounting means for removably mounting the catch pan at the rear edge of the broiler in a position such that debris scraped over the rear edge of the broiler passes over the top edge of the front wall and falls into the container for collection, the back wall of the container extending above the top edge of the front wall a sufficient distance that debris scraped forcefully from the rear edge of the broiler strides the back wall and is deflected into the container, the catch pan being manually removable to remove debris from the container.

5,325,844

LIGHTWEIGHT, DISTRIBUTED FORCE, TWO-AXIS TRACKING, SOLAR RADIATION COLLECTOR STRUCTURES

William E. Rogers; David N. Borton, both of Troy, and John E. Durnin, Grafton, all of N.Y., assignors to Power Kinetics, Inc., Troy, N.Y.

Filed Feb. 11, 1992, Ser. No. 834,165
Int. Cl.[5] F24J *2/38, 2/10*
U.S. Cl. 126—605 **31 Claims**

1. A solar radiation collector system, comprising:

at least one curved rim;

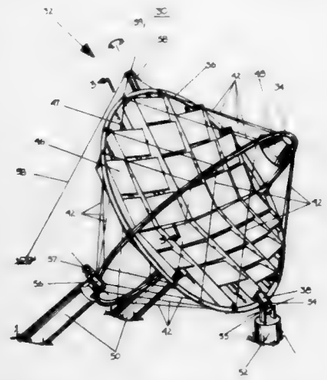
structural means carrying at least one radiation transducer means connected with said curved rim;

mutual stabilization means interconnecting said curved rim and said structural means,

said mutual stabilization means, said curved rim, and said structural means forming an integral, distributed force, tension-compression unit which is stable in all orientations;

receiver means disposed at a point of focus of said radiation transducer means for receiving solar radiation directed to it by said radiation transducer means;

ground support means coupled with said tension-compression unit for rotatably supporting said tension-compression unit from the ground, said means including first means having one end rollingly engaging said rim and the opposite end arranged for connection to a first ground support for rotatably supporting said tension-compression unit from said rim to the ground, and second means separate from said first means having one end fixed to said rim and the opposite end extending from said rim and arranged for connection to a second ground support located outside the plane of said rim and including bearing means



for rotatably supporting said tension-compression unit from the ground at said second ground support outside the plane of said rim;

first drive means for imparting rotational movement for said tension-compression unit to effect a desired primary tracking motion to adjust for the apparent motion of the sun; and

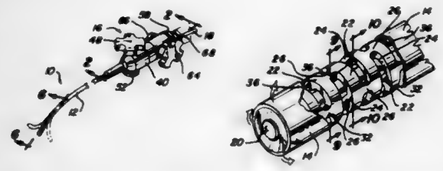
second drive means for moving said radiation transducer means to provide for a second dimension adjustment for the apparent motion of the sun.

5,325,845

STEERABLE SHEATH FOR USE WITH SELECTED REMOVABLE OPTICAL CATHETER

Edwin L. Adair, 317 Paragon Way, Castle Pines Village, Colo. 80104

Filed Jun. 8, 1992, Ser. No. 894,824
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **3 Claims**



1. A medical apparatus having a steerable and removable sterile sheath which is disposable after a single use, for use with an optical catheter which has no steering mechanism, wherein said sheath with a catheter therein is positionable in a passageway leading to a body cavity of a patient for observation and/or treatment, said apparatus comprising:

an elongated, bendable, hollow body having a distal end, a proximal end and a central channel extending from said proximal end to said distal end for receiving an optical catheter having a distal end alignable with said distal end

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of said body and a proximal end extendable outwardly beyond said proximal end of said body, the catheter being conformable to the shape and movement of said body;

an articulatable hollow, cylindrical member within said sheath body at the distal end thereof having a distal end and extending along said sheath body for a short distance toward said proximal end;

activatable means extending within said sheath body from a connection to said articulatable member to said proximal end of said sheath;

control means connected to said activatable means at said proximal end of said sheath for selectively deflecting said articulatable member and said distal end of said sheath body to bend the distal end of the removable catheter therein

a flexible and removable non-steerable catheter having a longitudinal body having a distal end, said distal end of said catheter body being aligned with said distal end of said sheath so that said distal end of said catheter bends with said distal end of said sheath when said distal end of said sheath is deflected by said control means;

a fiber bundle extending through said longitudinal body for providing light to the site; and

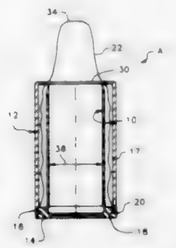
an optic bundle extending through said longitudinal body for transmitting an image from the site to a viewing device.

5,325,846

ENDOSCOPIC DRAPING APPARATUS AND METHOD

Steve Szabo, Largo, Fla., assignor to Linvatec Corporation, Largo, Fla.

Filed Jul. 27, 1992, Ser. No. 919,875
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **23 Claims**



14. In combination, an endoscopic instrument comprising at least one of a camera, a coupling, or a light source, and an apparatus for dispensing a drape around said endoscopic instrument, said apparatus comprising:

a mandrel having a bore therethrough, said bore being larger than said instrument to allow said mandrel to pass over said instrument;

a drape mounted to said mandrel;

an outer assembly mounted to said mandrel creating an annular space in which said drape is disposed, said outer assembly having an opening thereon;

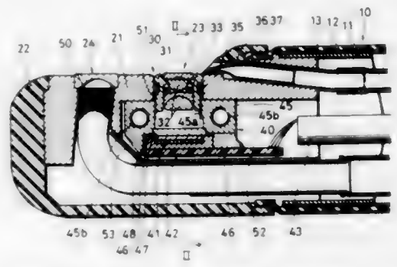
said drape extending into said bore such that advancement of said outer assembly brings said drape into contact with said instrument, with further movement of said outer assembly resulting in said drape extending through said opening in said outer assembly to drape said instrument as said bore is passed over said instrument.

5,325,847

DISTAL END PART OF ENDOSCOPE

Shinichi Matsuno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,036
Claims priority, application Japan, Oct. 25, 1991, 3-278194; Sep. 18, 1992, 4-249379
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **13 Claims**



1. A distal end part of an endoscope comprising:

a distal end block in said distal end part of said endoscope, said distal end block having a first hole extending perpendicularly to a longitudinal axis of said distal end block and a second hole extending along said longitudinal axis;

an objective optical system which is disposed in said first hole of said distal end block, so that an optical axis of said objective optical system perpendicularly intersects said longitudinal axis of said distal end block; and

a planar image sensor incorporated in said second hole of said distal end block along the longitudinal axis of said distal end block, and secured in opposing relation to said objective optical system to convert an image of an object, which is formed by said objective optical system, into an electric signal

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5,325,848

ENDOSCOPIC TISSUE MANIPULATOR WITH EXPANDABLE FRAME

Ronald D. Adams, Wyoming; Randy J. Embertson, Cincinnati, both of Ohio; M. Joshua Tolkoff, Brookline, Mass.; Robert C. Allman, Wakefield, Mass., and Fernando A. de Toledo, Concord, Mass., assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 10, 1992, Ser. No. 943,096
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **32 Claims**



1. An endoscopic tissue manipulator, comprising:

a handle;

a support tube extending from said handle and defining a longitudinal axis, said support tube including an elongated continuous slot formed therein, said slot having a plane normal to said longitudinal axis;

an expandable frame mounted within said support tube adjacent to said slot; and

means for expanding said frame transversely from said support tube through said slot to provide a spatula-shaped in an expanded configuration platform for manipulating tissue;

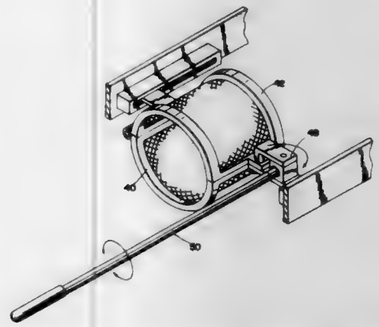
wherein said frame comprises a plurality of elongated flexible frame members, each frame member being adapted to flex laterally to extend through said slot, in a common transverse direction relative to said support tube.

5,325,849

CONTINUOUS PASSIVE MOTION DEVICE

Eric P. Rugo, P.O. Box 3233, Sea Bright, N.J. 07760

Filed Jun. 1, 1992, Ser. No. 891,726
Int. Cl.[5] A61H *1/02*
U.S. Cl. 601—34 **3 Claims**



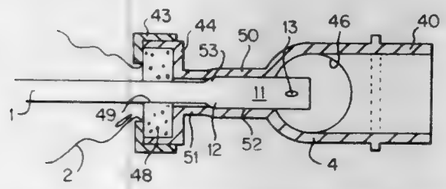
1. In a continuous passive motion device for exercising a lower limb, including a frame having two generally parallel and rigid longitudinal support members, a foot support, and means for actuating the machine to cause the longitudinal support members and the foot support to move a patient's leg resting in the machine through extension and flexion, the improvement comprising: an ankle hold assembly rotatably secured to said frame such that said ankle hold assembly may be brought into a position adjacent the anterior portion of the patient's ankle; means for enabling said ankle hold assembly to inhibit upward motion of the patient's ankle perpendicular to said longitudinal support members; and means for enabling a patient in the prone position to cause said ankle hold assembly to rotate to said position adjacent the patient's ankle.

5,325,850

SUCTION CATHETER ASSEMBLIES

Karl Ulrich, Belmont, and Tom Devlin, Cambridge, both of Mass., assignors to Smith Industries Medical Systems, Inc., Keene, N.H.

Filed Sep. 30, 1992, Ser. No. 953,932
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.26 **10 Claims**



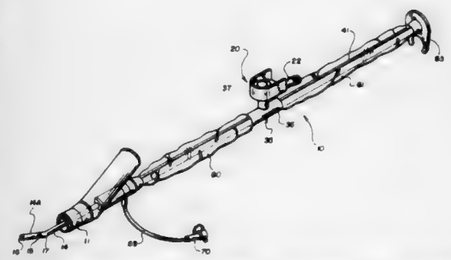
1. A suction catheter assembly for use in removing undesirable fluid from a patient, the catheter assembly comprising: an aspirating catheter having a proximal end and a distal end, said distal end being suitable for insertion into a patient; a vacuum connecting member located in the vicinity of the proximal end of the aspirating catheter; a patient connecting member mounted to surround the aspirating catheter in the vicinity of the distal end of the aspirating catheter, the patient connecting member having a first fluid seal in the form of a sliding seal with the outside of the aspirating catheter; a protective sleeve surrounding at least the majority of the length of the catheter where it extends between the vacuum connecting member and the patient connecting member, the protective sleeve being adapted to permit the catheter to be extended from the protective sleeve into the patient and to be withdrawn from the patient; and the aspirating catheter having a radially enlarged portion close to its distal end which forms a second fluid seal in addition to said first sliding seal with the inside of the patient connecting member when the aspirating catheter is pulled proximally to its full extent into the protective sleeve so that gas is effectively prevented from flowing into the protective sleeve via the patient connecting member.

5,325,851

APPARATUS AND METHOD FOR VENTILATING AND ASPIRATING

Valdon G. Reynolds; Gordon S. Reynolds, both of Bountiful, and Joseph T. Sorenson, Murray, all of Utah, assignors to Sorenson Laboratories, Inc., Salt Lake City, Utah

Filed Apr. 1, 1991, Ser. No. 678,663
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.16 **38 Claims**



1. A ventilating and aspirating apparatus for delivering respiratory gases to the trachea of a patient and aspirating congested lungs and breathing passageways comprising:

a flexible catheter tube having a catheter lumen and a longitudinal catheter axis, said catheter tube being extendable into and withdrawable from a patient's trachea and having a distal end structured to permit secretions to enter said catheter lumen;

a vacuum valve with an inlet connected to the lumen of said catheter tube, an outlet constituting means for connection to a vacuum source, and an actuator for selectively communicating the lumen of said catheter tube with the vacuum source;

a resilient, pliable sheath having a longitudinal sheath axis, said sheath receiving and coaxially surrounding said catheter tube and having an open distal end through which said catheter tube is slidable;

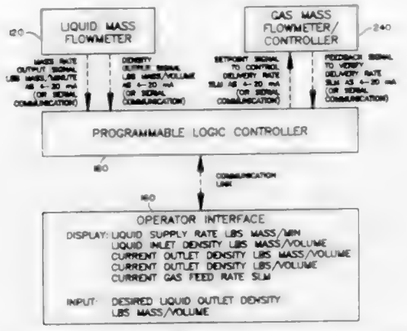
a manifold connected to the distal end of said sheath and having a center passage in open communication with the interior of said sheath, said manifold including means for establishing a fluid connection between said center passage and a patient ventilation and exhalation apparatus and being structured to permit slidable passage of said catheter tube through said center passage; and

an "O"-ring disposed within said manifold, said "O"-ring fitting coaxially over said catheter tube thereby isolating the distal portion of said catheter tube extending beyond said "O"-ring.

5,325,852
METHOD AND APPARATUS FOR ADJUSTING THE DENSITY OF A LIQUID

Lyle W. Clem, Algonquin, Ill., assignor to Accurate Metering Systems, Inc., Schaumburg, Ill.

Filed Jul. 21, 1993, Ser. No. 95,665
Int. Cl.[5] G05D *11/06*
U.S. Cl. 137—91 **12 Claims**



1. An apparatus for adjusting the density of a liquid, the apparatus including a liquid mass flow meter, a fluid mass flow meter, a programmable logic controller and an operator interface; the apparatus further comprising:

a) a means to determine a characteristic of a first liquid connecting the liquid mass flowmeter to the programmable logic controller;

b) a means for reading the characteristic of the first liquid connecting the programmable logic controller and the operator interface;

c) a means for feeding data from the liquid mass flowmeter and the fluid mass flowmeter to the programmable logic controller;

d) a means for combining the first liquid from the liquid mass flowmeter with a fluid from the fluid mass flowmeter to form a combined liquid;

e) a means for adjusting the characteristic of the combined liquid;

f) the characteristic being density;

g) the liquid mass flowmeter providing a control signal output;

h) the control signal output indicating an instantaneous density of the combined liquid, a mass rate of the combined liquid, and a volumetric flow rate of the flowing liquid

i) the programmable logic controller being set to provide the combine liquid with a predetermined density;

j) the means for adjusting the characteristic of the combined liquid including means to adjust an amount of the fluid to have the combined liquid reach the predetermined density;

k) the characteristic further being density with a temperature compensation factor; and

l) the control signal output being a linearized current signal.

5,325,853
CALIBRATION MEDIUM CONTAINMENT SYSTEM

Russell L. Morris, St. Paul, and David W. Deetz, North Oaks, both of Minn., assignors to Diametrics Medical, Inc., Roseville, Minn.

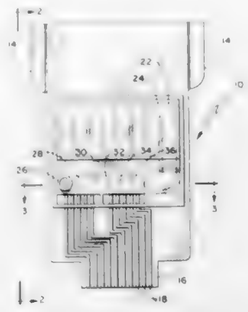
Filed Sep. 2, 1992, Ser. No. 940,271
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—630 **17 Claims**

1. A self-contained self-calibrating disposable cartridge for the analysis of liquid samples insertable for use with an associated diagnostic instrument comprising:

(a) an enclosure containing a dual-function chamber for calibration media storage and fluid sample analysis, said dual-function chamber defining a hollow interior and inlet and outlet accesses;

(b) an array of electrochemical sensors including sensor electrodes in communication with the interior of the dual-function chamber;

(c) an amount of at least one compatible calibration material for one or more of the electrochemical sensors predisposed



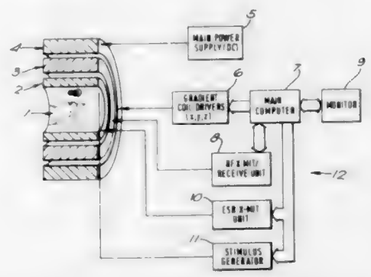
and stored in the dual-function chamber in contact with said one or more of the electrochemical sensors for immediate availability for the cailbration thereof, said calibration material further being of a type displaced by the introduction of a liquid sample to be analyzed to prevent cross-contamination; and

(d) a plurality of conductors connected to the sensor electrodes for connecting the sensor electrodes to calibration and analysis devices outside the cartridge.

5,325,854
MAGNETIC RESONANCE IMAGING

Gosta J. Ehnholm, Helsinki, Finland, assignor to Instrumentarium Corporation, Helsinki, Finland

Filed Nov. 12, 1991, Ser. No. 789,992
Claims priority, application United Kingdom, Nov. 12, 1990, 9024528
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—653.4 **18 Claims**

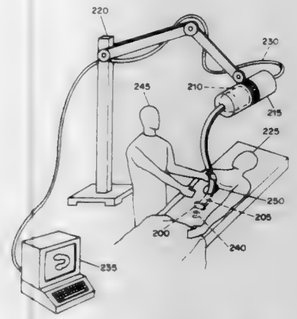


1. A method of electron spin resonance enhanced magnetic resonance imaging of repetitive biological electromagnetic activity in a human or non-human animal body, said method comprising the steps of administering to said body a physiologically tolerable paramagnetic substance capable of associating with a cell membrane lipid, the paramagnetic substance being selected from the group comprising ionic or ionisable materials, and synchronizing magnetic response signal generation and detection with said repetitive biological electromagnetic activity.

5,325,855
FLEXIBLE INTRAOPERATIVE RADIATION IMAGING CAMERA

Farhad Daghighian, New York; Saul Miodownik, West Hempstead; Peter Shenderov, Brooklyn, and Behzad Eshaghian, New York, all of N.Y., assignors to Memorial Hospital For Cancer And Allied Diseases, New York, N.Y.

Filed Aug. 7, 1992, Ser. No. 927,156
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—653.1 **9 Claims**



1. An imaging apparatus for creating images of beta ray radiation emitting objects during surgical operations, comprising:

a scintillator means for receiving beta ray radiation and for converting beta ray radiation into light signals;

a flexible bundle of optical fibers having a first end and a second end, the first end optically connected to the scintillator means, the flexible bundle of optical fibers channelling the light signals from the first end to the second end; and

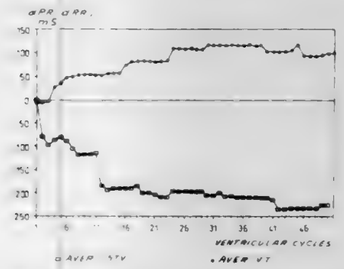
a position sensitive light signal detector means optically connected to the second end of the flexible bundle of optical fibers for receiving the light signals and for producing images of the radiation emitting objects;

the flexible bundle of optical fibers allowing the scintillator means to be flexibly moved relative to the position sensitive light signal detector means during surgical operations.

5,325,856
METHOD AND APPARATUS FOR ANALYZING CARDIAC ACTIVITY FOR IMPLANTABLE TACHYCARDIA DETECTION AND TREATMENT

Remi Nitzsche, Beynes; Marcel Limousin, Montrouge, and Peter Jacobson, Haguenau, all of France, assignors to ELA Medical, Montrouge, France

Filed Dec. 22, 1992, Ser. No. 995,033
Claims priority, application France, Dec. 31, 1991, 91 16365
Int. Cl.[5] A61B *5/0464*
U.S. Cl. 128—703 **42 Claims**



1. A method of analysis of cardiac activity for an implantable tachycardia sensing device which detects and analyzes the signals coming from the atrium and the ventricle, characterized by:

detecting R waves from the ventricle and P waves from the atrium;

determining an RR interval between successive sensed R waves corresponding to a cardiac cycle;

determining a PR interval between an R wave and the P wave immediately preceding said R wave, for said cardiac cycle;

calculating a divergence of RR intervals dRR;

calculating a divergence of PR intervals dPR;

determining a difference between the calculated divergences dPR and dRR and comparing said difference to at least one of a first value and second value;

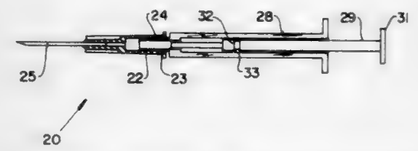
triggering a first signal corresponding to a ventricular tachycardia when the calculated divergence dPR exceeds the calculated divergence dRR by said first value; and

triggering a second signal corresponding to a supraventricular tachycardia when the calculated divergence dRR exceeds the calculated divergence dPR by said second value.

5,325,857
SKIN BIOPSY DEVICE AND METHOD

Hossein Nabai, 14555 Levan Rd., Ste. 410, Livonia, Mich. 48154, and Homayoon Rahbari, 1314 N. Macomb St., P.O. Box 360, Monroe, Mich. 48161

Filed Jul. 9, 1993, Ser. No. 88,678
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **12 Claims**

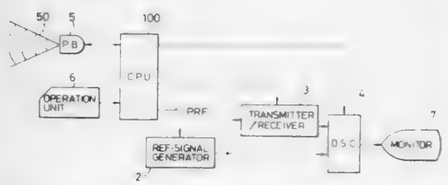


1. A device for performing a skin biopsy procedure comprising the combination of a syringe; a detachable needle mounted on the end of the syringe; and a thin cylindrical punch mounted on the same end of the syringe as said needle, said punch being only available for excising a specimen for analysis from a patient when said needle is removed from the end of said syringe.

5,325,858
ULTRASONIC IMAGING SYSTEM CAPABLE OF VARYING MAXIMUM PULSE REPETITION FREQUENCY DEPENDING UPON PULSE TRANSMISSION FREQUENCY

Takenori Moriizumi, Tochigiken, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 129
Claims priority, application Japan, Jan. 10, 1992, 4-002785
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.07 **12 Claims**



1. An ultrasonic imaging system comprising:

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ultrasonic probe means for transmitting ultrasonic pulses having a specific transmission frequency to a biological body under medical examination and for receiving corresponding ultrasonic echoes reflected from an interior portion of said biological body to derive an ultrasonic image signal;

storage means for storing at least one pulse repetition frequency signal, each one of said at least one pulse repetition frequency signal representing a periodic pulse sequence having a temporally constant, periodically repeating pulse repetition frequency term, wherein each one of said at least one pulse repetition frequency signal corresponds to a specific transmission frequency of said ultrasonic pulses transmitted from said ultrasonic probe means; and

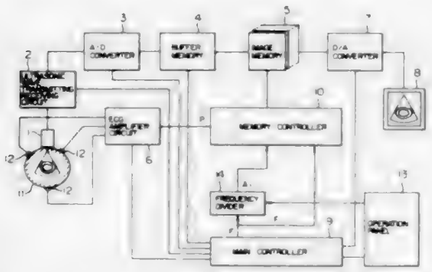
control means for reading said at least one pulse repetition frequency signal from said storage means when said specific transmission frequency is set, and for controlling said ultrasonic probe means in such a manner that said ultrasonic pulses having said specific transmission frequency are transmitted from said ultrasonic probe means within the temporal duration of a given pulse repetition frequency term and said corresponding ultrasonic echoes are received by said ultrasonic probe means are completely attenuated within a temporal duration of said given pulse repetition frequency term, thereby producing an ultrasonic image of said interior portion of said biological body by processing said ultrasonic image signal.

5,325,859

ULTRASONIC DIAGNOSIS APPARATUS

Ken Ishihara, 1-15 Chigusa-1-chome, Takarazuka-shi, and Toshihiko Kawano, Nagareyama, both of Japan, assignors to Ken Ishihara, Takarazuka and Hitachi Medical Corp., Tokyo, both of Japan

Filed Jan. 13, 1993, Ser. No. 3,623
Claims priority, application Japan, Jan. 14, 1992, 4-023434
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.07 14 Claims



1. An ultrasonic diagnosis apparatus comprising:

ultrasonic wave transmitting/receiving means for transmitting ultrasonic signals to a subject and receiving reflected echo signals reflected from said subject;

means for controlling said ultrasonic wave transmitting-/receiving means such that the ultrasonic signals repetitively scan said subject at a predetermined scan period;

image memory means for storing a plurality of image data pieces;

detection means for detecting biophysical signals of said subject;

means for setting a reference timing on a basis of the biophysical signals;

image display means for displaying an image corresponding to said image data pieces being delivered out of said image memory means, said image display means displaying the image at a predetermined display period;

means for controlling said image memory means so as to store said plurality of image data pieces based on the reflected echo signals, wherein said plurality of image data pieces respectively correspond to two-dimensional images of said subject at different time points and said time points associated with said plurality of image data pieces are sequentially displaced by a first time interval and in synchronism with said reference timing; and

control means for controlling said image memory means so as to sequentially deliver said plurality of image data pieces stored in said image memory means at second time intervals longer than said first time interval during scanning of the ultrasonic signals.

5,325,860

ULTRASONIC AND INTERVENTIONAL CATHETER AND METHOD

James B. Seward, and Abdul J. Tajik, both of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Nov. 8, 1991, Ser. No. 790,580
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 14 Claims



1. A catheter apparatus, comprising:

an elongated flexible body having proximal and distal ends;

an ultrasonic transducer mounted proximate the distal end of the catheter body to transmit ultrasound and receive resultant echoes so as to provide a field of view within which flow rates can be measured and features imaged, an electrical conductor disposed in the catheter body for electrically connecting the transducer to control circuitry external of the catheter;

port means disposed in the catheter body and extending from proximate the proximal end of the catheter body to proximate the distal end of the catheter body for receiving a therapeutic device whereby the therapeutic device can be delivered to proximate the distal end of the catheter for operation within the ultrasonic transducer field of view, an operational end of the therapeutic device projecting from proximate the distal end of the catheter body into the ultrasonic transducer field of view so as to allow visualization of the therapeutic device during its operation; and

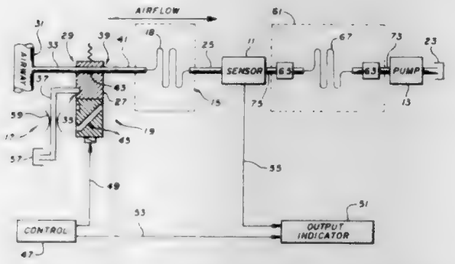
guide wire port means disposed in the catheter body and extending from proximate the proximal end of the catheter body to proximate the distal end of the catheter body for receiving a guide wire.

5,325,861

METHOD AND APPARATUS FOR MEASURING A PARAMETER OF A GAS IN ISOLATION FROM GAS PRESSURE FLUCTUATIONS

Peter P. Goulding, Oceanside, Calif., assignor to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation-in-part of Ser. No. 725,723, Jul. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 336,688, Apr. 12, 1989, abandoned. This application Nov. 23, 1992, Ser. No. 980,551
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—719 14 Claims



1. In a system for measuring oxygen concentration of a test gas, the system including a source of the test gas, a sensor having a substantially linear response to said oxygen concentration in a first desired pressure range and a non-linear response to said oxygen concentration in a second pressure range, said sensor being connected in selective fluid communication with and downstream from the source of the test gas for measuring the oxygen concentration of the test gas, and pump means in fluid communication with the sensor to draw the test gas from the source of the test gas into the sensor, an improvement for isolating the sensor from fluctuations in the pressure of the test gas and maintaining the pressure of the test gas substantially in said first desired pressure range for measuring the oxygen concentration, the improvement comprising:

a storage capacitor upstream from the sensor in fluid communication therewith and operative to store a quantity of gas;

a source of an alternate gas having an essentially constant pressure;

fluid flow control means for isolating the storage capacitor and the sensor from any fluctuations in the pressure of the test gas while said oxygen concentration is being measured, said fluid flow control means having a first fluid flow path connectable between said storage capacitor and said source of the test gas, and a second fluid flow path connectable between said storage capacitor and said source of alternate gas, the fluid flow control means being switchable between a first setting opening the first fluid flow path for the test gas into the storage capacitor and a second setting closing said first flow path and opening the second fluid flow path between the storage capacitor and the alternate gas source;

indicator means in electrical communication with said sensor for providing an output signal representing the measurement of the oxygen concentration; and

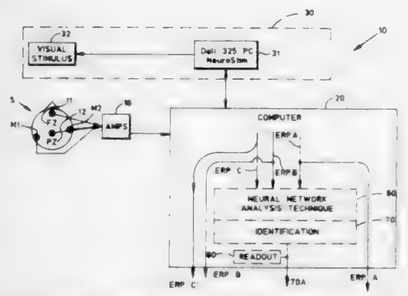
timing control means in electrical communication with said fluid flow control means and said indicator means for controlling said indicator means to provide said output signal only when the pressure of the test gas in the sensor is held constant, said timing means including means for controlling said fluid flow control means to open the first fluid path to fill said storage capacitor and said sensor with said test gas, and to close said first fluid path and open said second fluid flow path when said storage capacitor and said sensor are filled with said test gas to hold the pressure of the test gas constant during measurement of said oxygen concentration.

5,325,862

METHOD AND/OR SYSTEM FOR PERSONAL IDENTIFICATION AND IMPAIRMENT ASSESSMENT FROM BRAIN ACTIVITY PATTERNS

Gregory W. Lewis, Solana Beach, and David L. Ryan-Jones, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 26, 1993, Ser. No. 39,596
Int. Cl.[5] A61B *5/0484*
U.S. Cl. 128—731 61 Claims



1. An apparatus for identifying an individual based upon data representing at least one pattern of physiological activity generated in the brain of said individual comprising:

a stimulator located with respect to said individual to provide a first stimulation event which includes at least one stimulus for said individual to evoke a first event related pattern of physiological activity generated in the brain;

at least one sensor adapted to be operatively disposed with respect to the scalp or skin of said individual that provides signals representative of said first event related pattern of physiological activity generated in the brain; and

a data acquisition/transformation stage coupled to receive said signals representative of said first event related pattern of physiological activity generated in the brain being adapted to transform said signals representative of said first event related pattern of physiological activity generated in the brain into first pattern classification feature signals representative of said first event related pattern of physiological activity generated in the brain of said individual, said data acquisition/transformation stage being further adapted to provide a memory to store said first pattern classification feature signals of said first event related pattern of physiological activity generated in the brain of said individual, said stimulator being adapted to provide a subsequent stimulation event which includes at least one stimulus for said individual to evoke a subsequent event related pattern of physiological activity generated in the brain, said at least one sensor being adapted to be operatively disposed with respect to the scalp or skin of said individual to provide signals representative of said subsequent event related pattern of physiological activity generated in the brain and said data acquisition/transformation stage being adapted to transform said signals representative of said subsequent event related pattern of physiological activity generated in the brain into subsequent pattern classification feature signals representative of said subsequent event related pattern of physiological activity generated in the brain of said individual, said data acquisition/transformation stage being further adapted to compare the stored said first pattern classification feature signals of said first event related pattern of physiological activity generated in the brain of said individual with said subsequent pattern classification feature signals represen-

VOL 1164 ISS 1 JL 5 1994 UMI

tative of said subsequent event related pattern of physiological activity generated in the brain of said individual to indicate the identification thereof.

5,325,863

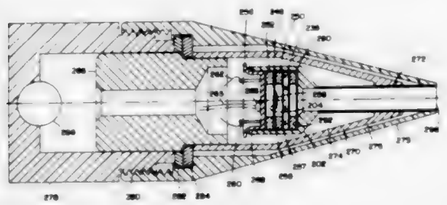
RADIATION DETECTOR WITH HIGH THERMAL STABILITY

Francesco Pompei, Boston, Mass., assignor to Exergen Corporation, Newton, Mass.

Continuation-in-part of Ser. No. 760,006, Sep. 13, 1991, which is a continuation of Ser. No. 646,855, Jan. 28, 1991, Pat. No. 5,199,436, which is a division of Ser. No. 338,968, Apr. 14, 1989, Pat. No. 5,012,813, which is a continuation-in-part of Ser. No. 280,546, Dec. 6, 1988, Pat. No. 4,993,419. This application Feb. 6, 1992, Ser. No. 832,109

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—736 **35 Claims**



1. A radiation detector comprising

an infrared radiation sensing device for receiving radiation from an external target;

a thermally conductive duct thermally coupled to the sensing device, the duct passing radiation from the external target to the sensing device; and

a thermally conductive shield surrounding but spaced from the duct and sensing device, the shield being thermally coupled to the duct at a location between the sensing device and an end of the duct directed toward the target.

5,325,864

DIAGNOSTIC TESTING DEVICE FOR THE SKIN

Jan Gerber, Bartokhof 23, 2402 GC Alphen aan de Rijn, Netherlands

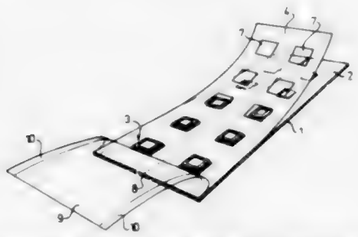
PCT No. PCT/NL91/00129, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO92/01421, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 18, 1991, Ser. No. 960,363

Claims priority, application Netherlands, Jul. 20, 1990, 9000167

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—743 **9 Claims**



1. Diagnostic testing device for the skin comprising at least one row of compartments, each compartment adapted to contain a diagnostic aid, an adhesive strip on which said at least one row of compartments is located, and a removable protective strip which is stuck to the adhesive strip at the same side as the compartments, said protective strip being provided with an opening at the position of each compartment, and said protective strip having number of rows of openings corresponding to the number of rows of compartments.

5,325,865

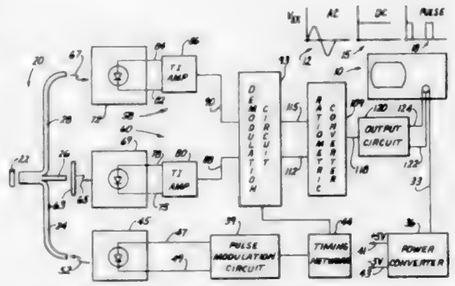
INTRACRANIAL PRESSURE MONITORING SYSTEM

Ronald B. Beckman, Mission Viejo, and Jesse N. Bequette, Costa Mesa, both of Calif., assignors to Baxter International, Inc., Deerfield, Ill.

Filed Feb. 26, 1990, Ser. No. 485,349

Int. Cl.[5] A61B *5/03*

U.S. Cl. 128—748 **21 Claims**



1. An apparatus for sensing a physical parameter including:

a sensor exhibiting a physical change in response to the physical parameter;

a source of light disposed in a particular environment and providing an incident light signal having undesirable properties which vary in response to a change in temperature in the particular environment;

means for directing the incident light signal onto the sensor and receiving a reflective light signal from the sensor, the reflective light signal having first characteristics dependent upon the physical change of the sensor and second characteristics dependent upon the undesirable properties of the incident light signal;

detection means responsive to the reflective light signal for detecting the first characteristics of the reflective light signal to provide an indication of the physical parameter in the environment; and

a filter included in the detection means and disposed in the particular environment, the filter having optical properties which inhibit the second characteristics of the reflected light signal.

5,325,866

FLEXIBLE BIOPSY FORCEPS

Jacek Krzyzanowski, 17 Oxenden Crescent, Etobicoke, Ontario M9C 4H3, Canada

Filed Apr. 20, 1993, Ser. No. 50,580

Int. Cl.[5] A61B *17/28*

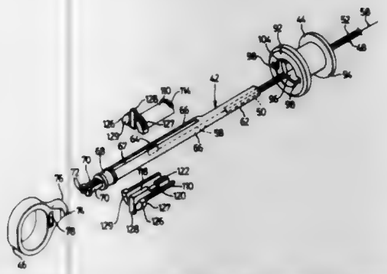
U.S. Cl. 128—751 **9 Claims**

1. A biopsy forceps device, comprising;

a) a flexible sheath and a cable extending through said flexible sheath;

b) a jaw assembly operably coupled to one end of said cable and sheath; and

c) a handle assembly operably coupled to said sheath, said handle assembly including a shaft member and a spool slidably mountable on said shaft, the spool having first locking means which are of unitary construction with the spool, including a spool insert receivable by the spool, the spool insert including second locking means which are of unitary construction with the spool insert, the first locking means lockingly engagable with the second locking means for irreversibly locking the spool insert and spool together, the other end of said cable operably coupled to said spool insert when the handle assembly is assembled, whereby movement of said spool on the shaft moves the cable with respect to the sheath for opening and closing the jaw assembly, wherein said spool includes as axial passageway extending therethrough, said spool insert



comprising a pair of shell members which are generally half-cylindrically shaped and receivable within the axial passageway, wherein said first locking means comprises a pair of spaced slots located at a first end of the spool, including a pair of spaced ridges extending into said axial passageway and having ridge end portions spaced from a second end of the spool.

5,325,867

DEVICE FOR WITHDRAWING BODY FLUIDS

Falko Skrabal, Graz; Erich Kleinhappl, Weinitzen, and Helmut List, Graz, all of Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland

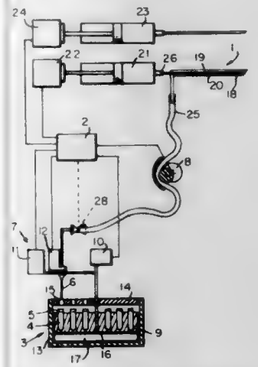
PCT No. PCT/AT91/00066, § 371 Date Jan. 24, 1992, § 102(e) Date Jan. 24, 1992, PCT Pub. No. WO91/18551, PCT Pub. Date Dec. 12, 1991

PCT Filed May 21, 1991, Ser. No. 820,591

Claims priority, application Austria, Jun. 1, 1990, 1208/90

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—765 **20 Claims**



1. A device for withdrawing body fluids, such as blood, urine and tissue fluid, comprising a sampling unit connected to a hollow needle, and a storage system comprising a heat-insulating housing having openings through which said hollow needle may pass, wherein said heat-insulating housing encases several separate sample containers placed on a movable carrier, each said sample container being sealed by means of a puncturable membrane so as to be gas-tight, said sample containers intended to receive fractions of said body fluid collected at given intervals, said device also comprising a control unit being provided to control the positioning of said hollow needle over each of said sample containers in turn and to control the insertion of said hollow needle into each sample container through said puncturable membrane, wherein said sampling unit is configured as a two-channel cannula, a first of said channels being connected via a first connecting tube to said hollow needle and a second of said channels being connected via a second connecting tube to a pump operated by said control unit, and wherein said sample containers have rigid walls, and wherein the pressure prevailing inside said sample containers is lower than the ambient pressure.

5,325,868

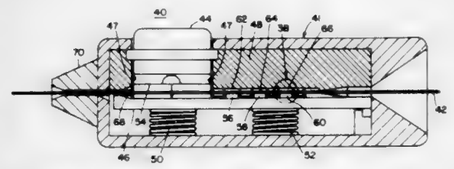
SELF-GRIPPING MEDICAL WIRE TORQUER

Carey D. Kimmelstiel, 47 Overlook Dr., Framingham, Mass. 01701

Filed May 4, 1993, Ser. No. 57,703

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—772 **27 Claims**



1. A self-gripping medical wire torquer comprising:

a sleeve body;

separate clamp means within said sleeve body, biased for automatically grasping a wire and releasably fixing said sleeve body in place on the wire; and

release means, for temporarily releasing said clamp means to slide and reposition the torquer along the wire.

5,325,869

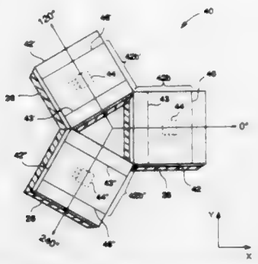
APPARATUS FOR LOAD AND DISPLACEMENT SENSING

Theodore J. Stokes, 512 W. 5th St., Monroe, Mich. 48161

Filed Dec. 16, 1991, Ser. No. 808,105

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—779 **1 Claim**



1. An apparatus for load and displacement sensing adapted for measuring the magnitude and direction and two-dimensional shear forces exerted upon the load bearing portions of a body, the apparatus comprising:

a deformable pad having a first and second side, and

a plurality of sensors, each sensor having three magnets affixed to one side of said deformable pad and three transducers for sensing the magnetic field strength affixed to the other side of said deformable pad, each transducer being aligned with one of said magnets and having an output which varies according to the magnitude and direction of said normal and two-dimensional shear forces, said forces moving said magnets in relation to said trans-

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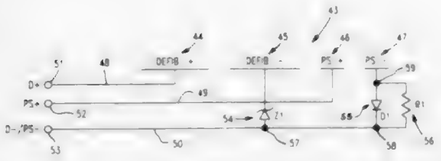
ducers, said magnets are oriented so that their respective pole segments are disposed 120° from each other

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5,325,870
MULTIPLEXED DEFIBRILLATION ELECTRODE APPARATUS

Mark W. Kroll, Minnetonka; Theodore P. Adams, Edina; Joseph S. Perttu, Chanhassen, and Charles Supino, Arden Hills, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Dec. 16, 1992, Ser. No. 991,132
Int. Cl.[5] A61N *1/04*
U.S. Cl. 607—122 **17 Claims**

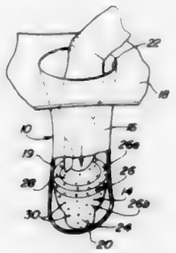


1. An implantable defibrillation electrode apparatus, comprising:
a. a body structure;
b. a number "X", wherein X is at least 3, of electrode members disposed on said body structure for electrical communication with the exterior environment;
c. a number "X−Y", wherein Y is a number between 1 and X−2, of conductive lead members, each lead member being communicatively connected to at least one electrode member and extending therefrom to a predetermined point on said body structure, and wherein each said electrode member is connected to at least one said lead member and at least one said lead member is connected to more than one said electrode member; and
d. rectifier means connected between at least one lead member and at least one electrode member.

5,325,871
FEMALE CONDOM

Alla V. K. Reddy, 9 Webster Ct., Plainsboro, N.J. 08535

Filed May 20, 1991, Ser. No. 702,185
Int. Cl.[5] A61F *6/06*
U.S. Cl. 128—830 **1 Claim**

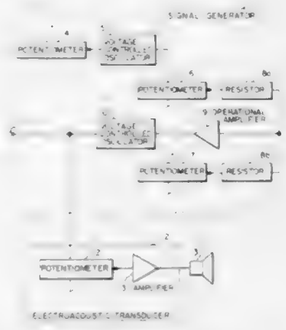


1. In a female condom having a pouch with a closed end and a tubular portion insertable into a vagina and the pouch further including an open end thereon connected to a shield portion secured to the pouch for covering the perineum of a user the improvement comprising:
a retention member insertable within the pouch following insertion of the pouch within a vagina; said retention member including a head portion having a continuous circumferentially formed rim and a conical outer surface and a tip portion having a bullet-like shape with an outer surface thereon integrally joined to said conical outer surface; said head portion rim having an outer diameter greater than the greatest diameter of said conical outer surface and said rim being compressible for insertion of said retention member tip first into said pouch; said head portion rim being expandable with respect to the pouch adjacent the closed end of said pouch following insertion therein for forcing the pouch against the vagina so as to secure the pouch within the vagina against separation from the vagina during coitus and said retention member having an interiorly located conically shaped surface extending to said rim and surrounded at one end thereof by said rim; said conically shaped inner surface having a depth for covering the glans penis of a penis and combining with said rim to form a smooth uninterrupted surface for receiving the glans penis therein during coitus.

5,325,872
TINNITUS MASKER

Søren E. Westermann, Hellerup, Denmark, assignor to Tøpholm & Westermann ApS, Vaerloese, Denmark

PCT No. PCT/EP91/00390, § 371 Date Aug. 31, 1992, § 102(e) Date Aug. 31, 1992, PCT Pub. No. WO91/17638, PCT Pub. Date Nov. 14, 1991
PCT Filed Mar. 2, 1991, Ser. No. 923,803
Claims priority, application Fed. Rep. of Germany, May 9, 1990, 4014872
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—897 **13 Claims**



1. In a tinnitus masker for inhibiting tinnitus comprising:
at least one signal generator (1), a controllable amplifier (2) connected to said at least one signal generator, at least one electroacoustic transducer (3) connected to said controllable amplifier for conversion of electrical signals to acoustic signals, and a voltage source, the improvement wherein said at least one signal generator (1) comprises means for generating a continuously repeated, sinusoidal pure tone signal which continuously and slowly moves through an audio frequency range in a cyclic manner to remove tinnitus for a period of time.

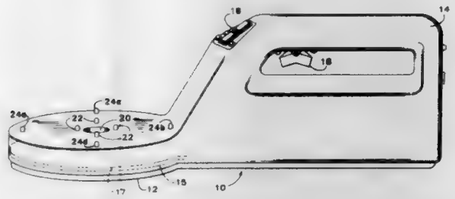
5,325,873
TUBE PLACEMENT VERIFIER SYSTEM

Richard E. Hirschi, Lebanon; James P. Karbowski, Philomath, both of Oreg.; James L. Tiefenthal, Columbus, Ohio, and Ronald M. Isaac, Libertyville, Ill., assignors to Abbott Laboratories, Ill. and White's Electronics, Inc., Oreg.

Filed Jul. 23, 1992, Ser. No. 917,259
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—899 **23 Claims**

1. A system for detecting the position of an object located within a body of material or a mass, comprising;
(a) at least one resonant circuit, having a resonant frequency, attached to said object;

(b) transmitter means adapted to be located outside the body for transmitting inductive energy;
(c) receiver means in operative association with said transmitter means for detecting the ringing of the resonant circuit in response to said inductive energy;
(d) a probe adapted to be positioned outside the body including at least one transmitting coil and first and second receiver coils, said first receiver coil providing signals indicative of the position of said object relative to a first

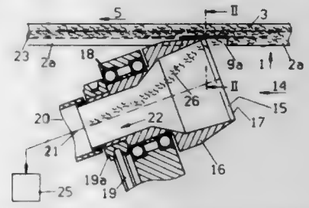


axis and said second receiver coil providing signals indicative of the position of said object relative to a second axis, said first and second axes being substantially mutually orthogonal, said probe further including a sensing coil for providing a signal indicative of the relative proximity of the object to the receiver means, wherein said first ad second receiver coils each include a pair of coils situated side-by-side in the same plane and connected in series-opposed fashion.

5,325,874
APPARATUS FOR REMOVING SURPLUS FROM A STREAM OF FIBROUS MATERIAL

Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Jan. 26, 1993, Ser. No. 9,092
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1992, 4202198
Int. Cl.[5] A24C *5/18*
U.S. Cl. 131—84.4 **16 Claims**

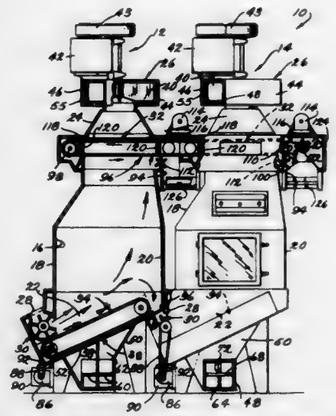


1. Apparatus for removing a surplus of material from a stream, comprising means for moving the stream lengthwise along a predetermined path; two rotary material engaging members having marginal portions extending into said path so that the surplus of material is located at one side of said members, said marginal portions being nearest to each other at a predetermined point within said path; means for rotating said members in opposite directions; and means for removing the surplus including a driven cutting edge which removes the surplus at said point and at said one side of said members, said surplus removing means comprising a rotary tube having an end adjacent said members and said cutting edge being disposed at said end of said rotary tube.

5,325,875
APPARATUS FOR SEPARATING THRESHED LEAF TOBACCO

G. A. John Coleman, and William C. Lacy, Jr., both of Richmond, Va., assignors to Universal Leaf Tobacco Co., Inc., Richmond, Va.

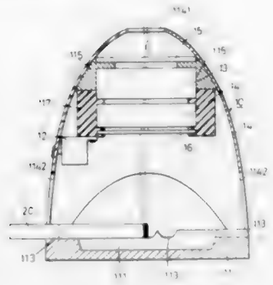
Continuation-in-part of Ser. No. 591,054, Oct. 1, 1990, Pat. No. 5,099,863, which is a continuation-in-part of Ser. No. 88,390, Aug. 24, 1987, abandoned, and a continuation-in-part of Ser. No. 304,267, Jan. 31, 1989, abandoned. This application Dec. 11, 1991, Ser. No. 804,741
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] A24B *3/16*
U.S. Cl. 131—109.2 **11 Claims**



1. A method of separating lighter particles from heavier particles in a mixture thereof utilizing a plurality of successive side-by-side separation chambers for continuous movement of particles therethrough from an initial end chamber downstream to a final end chamber, each of said chambers having a pair of opposite sides one of which is a projecting side and one of which is a receiving side with the receiving side of each chamber upstream of said final end chamber having an opening therein which is disposed in immediate feed communicating relation with the projecting side of the next downstream chamber, said method comprising the steps of
establishing a generally upward air flow in each of said plurality of separation chambers between the opposite sides thereof,
projecting particles from the projecting side of each chamber into and across the generally upward air flow therein so that lighter particles are carried upwardly by the generally upward air flow in each chamber and particles including heavier particles move downwardly through the generally upward air flow in each chamber, the particles projected from the projecting side of said initial end chamber being the lighter and heavier particles of the mixture,
causing some of the particles projected from the projecting side of each chamber upstream of aid final end chamber to reach the receiving side thereof and to pass through the opening therein to immediately become particles projected from the projecting side of the next downstream chamber into and across the generally upward air flow in the next downstream chamber,
receiving the lighter particles carried upwardly by the air flow within said chamber and moving the same in such a way as to enable them to be discharged from the chambers, and
receiving the particles including heavier particles which move downwardly within the generally upward air flow

in said chambers and moving the same in such a way as to enable them to be discharged from the chambers.

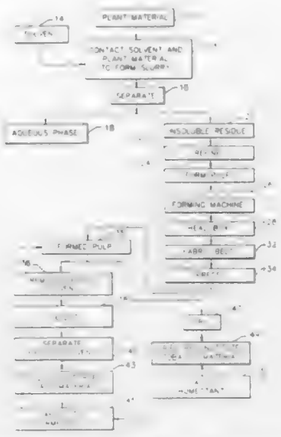
5,325,876
ASHTRAY WITH OZONE GENERATOR AND CATALYTIC EXCHANGER
Tsung-Hsun Yang, No. 167, Yung-Feng Rd., Tai-Ping Hsiang, Taichung Hsien, Taiwan
Filed Jan. 4, 1993, Ser. No. 231
Int. Cl.[5] A24F *19/00*
U.S. Cl. 131—242 **2 Claims**



1. An ash tray comprising:
an enclosure including a base plate with a top surface which has a central recess and a plurality of grooves that extend from the periphery of said base plate to said central recess, and an inverted bowl-shaped cover member having a lower portion provided with a plurality of notches along the periphery of said lower portion and connected to the periphery of said base plate, said cover member and said base plate cooperatively confining a hollow space therebetween, said notches communicating said hollow space and an exterior of said enclosure, said cover member further having a topmost portion provided with a through-hole which communicates said hollow space and the exterior of said enclosure;
a pair of holding members fixed on opposite sides of an inner wall surface of said cover member;
a catalytic exchanger member provided detachably between said pair of holding members adjacent to said through-hole;
an ozone generating device provided detachably between said holding members below said catalytic exchanger;
an exhaust fan unit provided detachably between said holding members below said ozone generating device and capable of drawing air to pass through said ozone generating device; and
a transformer mounted on a lowermost portion of one of said holding members and connected electrically to said ozone generating device for providing a high voltage to said ozone generating device to facilitate production of ozone gas.

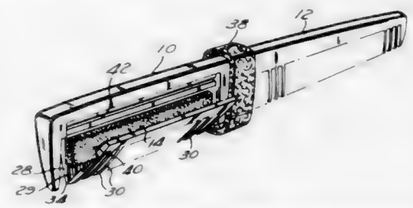
5,325,877
TOBACCO RECONSTITUTION PROCESS
Harvey J. Young, Advance; Edward J. Stephen Sohn, Lewisville, and Lila H. O'Connor, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Jul. 23, 1993, Ser. No. 96,768
Int. Cl.[5] A24B *3/14*
U.S. Cl. 131—370 **28 Claims**

1. A process for collecting dispersed plant material particles during the formation of a reconstituted plant material, the process comprising the steps of:
(a) extracting extract components from plant material having pectins using a solvent having an aqueous character thereby providing a solvent and a plant portion insoluble in the solvent;
(b) separating at least a portion of the solvent from the insoluble plant portion;
(c) refining the insoluble plant portion in step (b) to form a pulp and forming the pulp into a predetermined shape;



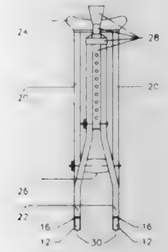
(d) removing solvent from the formed insoluble plant portion, the removed solvent having plant material particles dispersed therein;
(e) collecting the solvent having dispersed plant material particles therein;
(f) separating at least a portion of the solvent from the dispersed plant material particles; and
(g) collecting the dispersed plant material particles.

5,325,878
FLUID DISPENSING COMB
William D. McKay, 528 Kelso St., Flint, Mich. 48506
Continuation-in-part of Ser. No. 917,854, Jul. 17, 1992. This application Aug. 19, 1992, Ser. No. 932,890
Int. Cl.[5] A45D *24/22*
U.S. Cl. 132—116 **1 Claim**



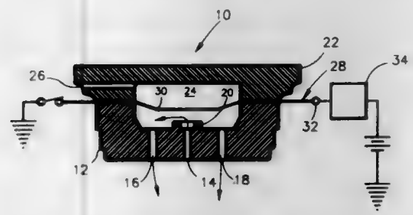
1. A fluid dispensing comb for applying fluid to the hair, said fluid dispensing comb comprising:
a) a body having a plurality of teeth formed thereon said teeth configured to have a V-shape and an apex, a groove being formed at least partially within said teeth;
b) an absorbent pad disposed within the groove defined by said teeth formed upon said body;
c) a hinge configured to allow said teeth to separate into first and second sides, the first sides of said teeth being attached to said body and the second sides of said teeth being detached from said body, such that said absorbent pad is removable and insertible into said groove by rotating said second sides of said teeth about said hinge; and
d) an absorbent material positioned generally about the comb such that excess fluid is caught thereby to prevent dripping of the excess fluid, said absorbent material being configured as a cuff having a pocket into which said excess fluid is captured.

5,325,879
FOLDABLE CRUTCH
Donald H. Burns, P.O. Box 1291, Kemah, Tex. 77565
Filed Mar. 30, 1993, Ser. No. 39,977
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—67 **10 Claims**



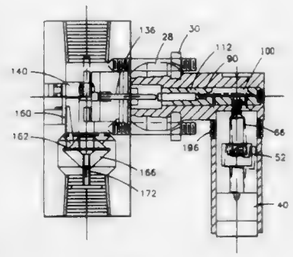
1. An improved foldable crutch having a first section demountably connected to a second section, the improvement comprising:
an elastic cord having an end affixed to one of the first and second sections interior of such section; and
a non-elastic flexible cable having one end connected to said elastic cord and extending interior of said first and second sections, said cable extending continuously from said one of said first and second sections into the other of said first and second sections, said cable having an opposite end affixed within the other section.

5,325,880
SHAPE MEMORY ALLOY FILM ACTUATED MICROVALVE
A. David Johnson, San Leandro, and Curtis A. Ray, Alamo, both of Calif., assignors to TiNi Alloy Company, San Leandro, Calif.
Filed Apr. 19, 1993, Ser. No. 49,572
Int. Cl.[5] F16K *31/00*
U.S. Cl. 137—1 **27 Claims**



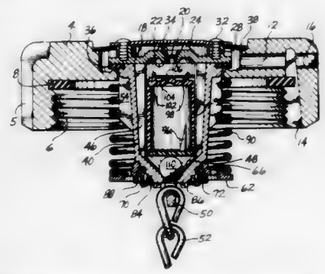
1. A method of controlling the flow of fluid through a valve having a port which communicates with a flow passage, the method comprising the steps of providing a thin film control element which is comprised of a deformable thin film portion formed of a shape memory alloy material having a certain phase change transition temperature, cooling the deformable thin film portion to a cold temperature below said phase change transition temperature, deforming the deformable thin film portion while it is at said cold temperature to a deformed shape at which said deformable thin film portion is at a first position relative to the port for controlling flow of fluid therethrough in a first operating mode, heating the deformable thin film portion through said phase change transition-temperature, and enabling said deformable thin film portion while being heated through said phase change transition temperature to change shape to a memory shape at which said deformable thin film portion is at a second position relative to the port for controlling flow of fluid therethrough in a second operating mode.

5,325,881
SEISMIC VALVE
Donald B. Hunter, 1137 W. Yale, Ontario, Calif. 91762, and William J. Cox, 545 E. Arrow Hwy., Pomona, Calif. 91767
Filed Dec. 4, 1992, Ser. No. 985,893
Int. Cl.[5] F16K *17/36*
U.S. Cl. 137—39 **15 Claims**



1. A seismic valve comprising:
a valve body;
a valve within the valve body;
a cripple column attached to the valve body;
closing means for urging the valve to a closed position within the valve body;
holding means for holding the valve in an open position against the urging of the closing means, the holding means releasable from the valve with buckling of the cripple column, and
means for causing the cripple column to lengthen as it moves from an unbuckled to a buckled condition.

5,325,882
PRESSURE AND THERMAL RELIEF VALVE FOR FUEL TANK
Alan K. Forsythe, Vashon; Zdenek Gabrlik, Seattle, and John M. Morris, Auburn, all of Wash., assignors to GT Development Corporation, Tukwila, Wash.
Filed Oct. 12, 1988, Ser. No. 256,911
Int. Cl.[5] B65D *51/16*
U.S. Cl. 137—73 **36 Claims**



1. A pressure relief valve for a tank comprising:
a valve plug positioned outwardly of an opening in the tank;
a stem having a first portion and a second portion; said second portion being attached to the valve plug; and
biasing means for exerting an axial, inward force on the first

VOL 1164 ISS 1 JL 5 1994 UMI

portion of the stem to put the stem in tension and bias the valve plug into a position in which it closes the opening; one of said first and second portions having a first abutment surface; and said stem including a deflectable retainer portion carried by the other of said first and second portions and having a second abutment surface positioned to abut the first abutment surface to transmit axial forces between said first and second portions, and fusible material positioned radially between said other portion and said retainer portion substantially opposite said one portion to prevent said retainer portion from deflecting and to maintain said abutment surfaces in an abutting relationship, to in turn maintain said first and second portions in a force transmitting position relative to each other; and

said biasing means being resilient to allow the stem and the valve plug to move outwardly in response to increased pressure in the tank to relieve pressure in the tank; and said fusible material being meltable at elevated temperatures exceeding a predetermined level, to allow said retainer portion to deflect, said first and second portions to separate from each other, and the valve plug and said second portion to move away from the opening.

5,325,883

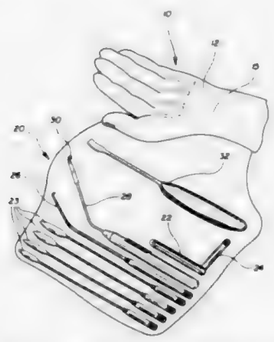
DEVICE AND METHOD FOR CARPAL TUNNEL RELEASE

Terrence R. Orr, 2141 White Sands Dr., South Lake Tahoe, Calif. 96150

Division of Ser. No. 787,029, Nov. 4, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,287

Int. Cl.[5] **A61B** *17/32*

U.S. Cl. 128—898 **8 Claims**



1. A method for incising a carpal ligament in a patient who is experiencing carpal tunnel syndrome comprising the steps of:

providing a cannula having a closed blunt end and an open end through which a knife and an endoscope may be inserted, the cannula having a slot extending between its ends for allowing simultaneous viewing and cutting of the carpal ligament;

making an incision near the patient's wrist;

inserting the closed blunt end of the cannula through the incision and under the carpal ligament;

inserting the endoscope into the open end of the cannula and viewing the carpal ligament through the cannula slot; and

inserting a knife into the open end of the cannula and sectioning the ligament.

5,325,884

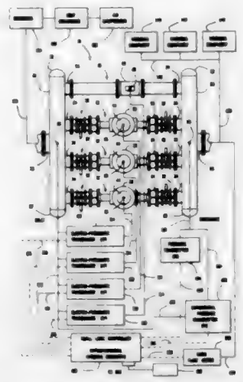
COMPRESSED AIR CONTROL SYSTEM

Robert J. Mirel, Scarsdale, N.Y.; Robert E. Wilson, Norwalk, Conn., and E. Charles Hunt, White Plains, N.Y., assignors to Conservair Technologies, Kenosha, Wis.

Filed Jul. 10, 1991, Ser. No. 727,985

Int. Cl.[5] **G05D** *7/06*

U.S. Cl. 137—110 **20 Claims**



1. An air control system for a main conduit of a substantially continuous flow compressed air system in which air-weight flow throughout the air control system is controlled comprising compressed air supply means providing an air supply, air-operated equipment served by said compressed air supply means and providing an air demand and a main air supply conduit connected between said compressed air supply means and said air-operated equipment to channel said air supply to said air demand, said air supply being subject to fluctuation according to variations in said air supply means and in said air demand wherein said air control system comprises:

a) a continuously variable adjustable flow controller for controlling air flow through said main air supply conduit, said flow controller comprising a plurality of flow sub-controls in parallel configuration, each of said sub-controls having a low inertial, mechanical and fluid dynamic hysteresis;

b) pressure monitoring means downstream of said flow controller and generating a pressure related demand signal, said demand signal fluctuating over time as a function of variations in said pressure;

c) actuator means to operate said flow controller in response to said demand signal to stabilize downstream air pressure; thereby to adjust said flow controller to vary said air flow rate in said main air conduit according to downstream pressure variations; and

d) a by-pass sub-control openable in response to a predetermined pressure difference across said control unit to provide a substantially free-flow by-pass airway.

5,325,885

ANTI-SIPHON DEVICE FOR SANITARY APPLIANCE

Francescato Ivan, Carouge, and Daniel Meylan, Versoix, both of Switzerland, assignors to Kugler Fonderie et Robinetterie S.A., Geneva, Switzerland

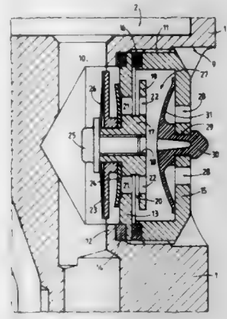
Filed Jan. 21, 1993, Ser. No. 6,992

Int. Cl.[5] **E03C** *1/10*

U.S. Cl. 137—217 **10 Claims**

1. A backflow preventing device located downstream of a water control member of a sanitary fitting comprising a casing defining a cavity which communicates with a water feeding pipe and with an air inlet, as well as with two shutting members, serially mounted and displaceable under the effect of a

depression in the water feeding pipe, thereby connecting the water feeding pipe with the open air through said cavity, said casing having an outer wall provided with passes establishing a communication between the inside of the casing and ambient air; a first umbrella-shaped membrane fixed to said outer wall by a central pin and resting against the inner side of said outer wall through its periphery, whereby in a rest state, the passage are closed; said casing further having an inner wall provided with bores establishing a communication between the inside of said casing and the water feeding pipe; a second thick membrane forced against the outer side of said inner wall through



its central portion by resilient means having an adjustable force, whereby in a rest position, a peripheral portion of said second membrane closes said bores; a member fastened with, but spaced apart from, the inner wall of said casing and located inside said casing, said member having openings which provide communication between the passages of the outer wall and the bores of the inner wall when said first and second membranes are resiliently displaced by a depression in the water feeding pipe, said membrane limiting the extent of axial deformation of said first membrane to avoid any damage to said first membrane.

5,325,886

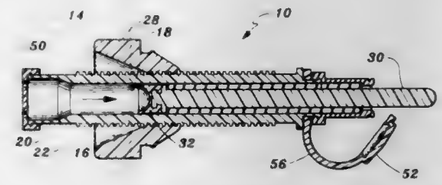
INFLATION AND PRESSURE INDICATOR APPARATUS FOR TIRES

James E. Klink, 2322 Peachtree Cir., Antioch, Calif. 94509

Filed Apr. 5, 1993, Ser. No. 42,670

Int. Cl.[5] **B60C** *23/04*; **F16K** *37/00*

U.S. Cl. 137—227 **9 Claims**



1. Apparatus for inflating a tire connected to a tire rim and indicating the pressure of said tire while the tire in on said rim, said apparatus comprising, in combination;

an elongated body element having an outer cylindrical surface for connection with said tire rim and defining an elongated passageway leading from the interior of the tire to which said elongated body element is connected to the ambient atmosphere;

an elongated valve element having indicia thereon slidably disposed within said elongated passageway and moveable between an extended position wherein said elongated valve element extends at least partially out of said elongated body element to display the indicia on said elongated valve element and a fully retracted position wherein said elongated valve element is fully retracted into said elongated body element and does not extend outwardly therefrom;

seal means attached to said elongated valve element, said seal means engaging said elongated body element when in said extended position and disengaged from said elongated body element when in said fully retracted position;

spring means within said elongated body element operatively associated with said elongated valve element for biasing said elongated valve element against movement toward said extended position;

tire rim mounting means extending about the other cylindrical surface of said elongated body element and selectively moveable along at least a portion of the length of said elongated body element; and

securement means for securing said mounting means at a predetermined location along the length of said elongated body element, said securement means including a plurality of spaced detents extending along at least a portion of the length of said elongated body element for frictionally engaging said securement means.

5,325,887

CONNECTING DEVICE FOR A SANITARY APPLIANCE MIXING VALVE

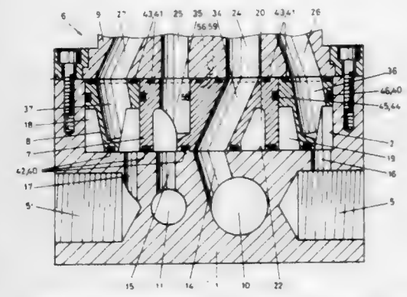
Werner Egli, Wallisellen, and Rene Dolder, Jona, both of Switzerland, assignors to Fides Trust AG, Zurich, Switzerland

Filed May 17, 1993, Ser. No. 62,181

Claims priority, application Switzerland, May 18, 1992, 1587/92

Int. Cl.[5] **F16K** *11/00*

U.S. Cl. 137—270 **13 Claims**



1. A connecting device for a sanitary appliance mixing valve, said connecting device comprising:

a) a first housing (**1**) having one pair of connection sockets for hot water feed lines and one pair of connection sockets for cold water feed lines, said housing defining a cylindrical recess (**2**) having a flat bottom surface (**22**), and a plurality of internal tap lines (**14–17**) individually extending from the sockets to said bottom surface,

b) a second housing (**9**) mounted to the first housing over and closing the recess, said second housing being adapted to receive the mixing valve, and defining a plurality of feed passages (**24,25**) thereto, said passages terminating at a surface of the second housing facing the bottom surface of the recess, and

c) a disc-like connector (**6**) disposed in the recess and defining, in a lower surface opposite the bottom surface of the recess, a plurality of concentric annular channels (**18–20**) individually communicating with said tap lines, and a plurality of through passages (**34–37**) extending through the connector from the annular channels to the feed passages,

d) wherein at least a portion (**7**) of the connector carrying through passages (**34,35**) communicating with said feed

passages (**24,25**) is rotationally displaceable through 180° to reverse hot and cold water feeds to the mixing valve, thereby correcting for improperly interchanged connections to the hot and cold water feed line sockets, and

e) wherein resilient sealing means (**40–43**) are disposed at an upper surface and at the lower surface of the connector to seal the through passages of the connector to the first and second housings

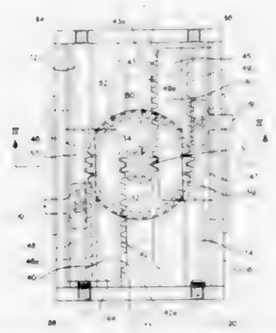
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5,325,888

PIPELINE VALVE TRANSMISSION APPARATUS

Gary M. Stary, 636 Thorn Hollow Dr., Coraopolis, Pa. 15108

Filed Apr. 30, 1993, Ser. No. 56,313
Int. Cl.[5] F16K *37/00*
U.S. Cl. 137—553 **19 Claims**



1. A transmission apparatus for transmitting power from an actuator producing a rotational output to a receiving apparatus constructed to receive a rotational input, comprising:

a housing;

a mounting base mounted within said housing having a bearing surface;

a first rack mounted for translational movement on said bearing surface within said housing and having a first toothed surface and a second toothed surface, said first and second toothed surfaces facing in the same direction on parallel planes;

a pinion within said housing having a toothed surface constructed for engagement with said first toothed surface of said first rack and means for receiving rotational input from the actuator;

a gear within said housing having a toothed surface constructed for engagement with said second toothed surface of said first rack; and

means for coupling said gear to said receiving apparatus to rotate said receiving apparatus.

5,325,889

LAMINATED CONDUIT PLATE FOR FLUID DELIVERY SYSTEM

Carlton H. Paul, Groton, and Russell L. Keene, Jr., Sudbury, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Mar. 30, 1993, Ser. No. 40,321
Int. Cl.[5] F16K *27/00*
U.S. Cl. 137—594 **17 Claims**

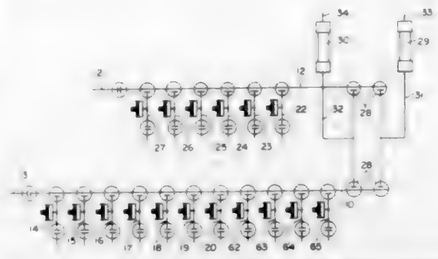
1. In a system for directing a plurality of fluids in sequence to a treatment reservoir, a laminated plate means which comprises:

a plurality of laminated layers,

a first set of internal conduits enclosed by said plate means,

a second set of internal conduits enclosed by said plate means, an internal layer positioned to separate a plurality of said first set of internal conduits from a plurality of said second set of conduits,

holes extending through said plate means for providing fluid communication between said first set of internal conduits and said second set of internal conduits;



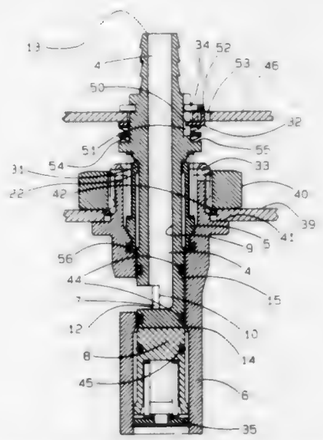
and, means on said plate for attaching fluid pumping means to an outside surface of said plate to effect fluid transfer between said first set of internal conduits and said second set of internal conduits via said holes.

5,325,890

SANITARY COUPLING

Steven Wilkins, Union City, Pa., assignor to Snap-Tite, Inc., Union City, Pa.

Filed Jul. 15, 1993, Ser. No. 92,208
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.03 **16 Claims**



1. A sanitary coupling comprising a coupler member and a nipple member, said coupler includes a first body member having a first passageway and a first valve means, said nipple member includes a second body member having a second passageway and a second valve means, said first and second valve means permit communication of said first and second passageways during union of said coupler and nipple members, said first body member of said coupler member includes a first end portion, a second end portion, and an intermediate portion, said first passageway includes a first longitudinal bore and a first transverse port disposed in said intermediate portion of said first body member intersecting said first longitudinal bore, said second body member of said nipple member includes a first end potion, a second end portion, and an intermediate portion, said second body member includes a second longitudinal bore extending from said first end portion to said second end portion of said second body member, said second passageway includes a second transverse port disposed in said intermediate portion of said second body member intersecting said second longitudinal bore, said first body member of said coupler member includes first and second shoulders thereon and said first valve means includes first and second shoulders thereon, a first spring disposed between said first shoulder of said first body member and said first shoulder of said valve means, said first spring urging said valve means toward said second end portion of said first body member, said second shoulder of said first body member engaging said second shoulder of said valve means restraining movement of said first valve means past said second end portion of said first body member when said coupler and nipple members are disunited, said second longitudinal bore of said second body member of said nipple member includes a first shoulder and retaining means adapted to reside within said second longitudinal bore, said second valve means of said second body member includes a first shoulder and a second shoulder, a second spring disposed between said retaining means and said first shoulder of said second valve means urging said second valve means toward said second end portion of said second body member, said second shoulder of said second valve means engages said first shoulder of said second longitudinal bore restraining movement of said second valve means when said coupler and nippler member are disunited.

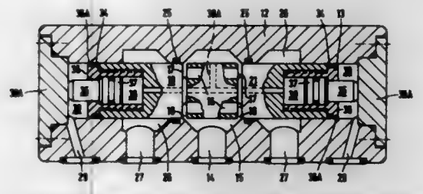
5,325,891

HYDRAULIC VALVE

Ernst Mateja, Neunkirchen, Fed. Rep. of Germany, assignor to Ecker Maschinenbau GmbH, Neunkirchen-Heinitz, Fed. Rep. of Germany

Continuation of Ser. No. 539,374, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 426,508, Oct. 23, 1989, abandoned, which is a continuation of Ser. No. 331,053, Mar. 28, 1989, abandoned, which is a continuation of Ser. No. 89,240, Aug. 25, 1987, abandoned. This application Jan. 6, 1993, Ser. No. 1,205

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1986, 3629318; Jul. 3, 1987, 3722053
Int. Cl.[5] F16K *11/07*
U.S. Cl. 137—625.48 **8 Claims**



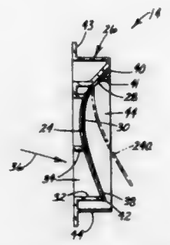
1. A hydraulic valve comprising an outer component having an at least partially cylindrical internal surface and an inner component having an at least partially cylindrical external surface adjacent said internal surface, said external surface having at least one slot-shaped outlet and said inner component defining two plenum chambers in communication with said outlet and at least one passage connecting said chambers, said internal surface having two spaced-apart grooves and two recesses flanking said grooves, and further comprising a sealing element disposed in each of said grooves and contacting said external surface, at least one of said components being movable with reference to the other of said components between at least one first position in which said sealing elements seal said outlet from said recesses and at least one second position in which said outlet communicates with one of said recesses, said internal surface further having an annular inlet disposed between said grooves and communicating with said chambers in the first position of said one component so that the chambers can be filled with a pressurized hydraulic fluid.

5,325,892

UNIDIRECTIONAL FLUID VALVE

Daniel A. Japuntich, St. Paul; Vaughn B. Grannis, Inver Grove Heights; Harold J. Seppala, St. Paul, and Anthony B. Ferguson, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 891,289, May 29, 1992, abandoned. This application Nov. 25, 1992, Ser. No. 981,244
Int. Cl.[5] F16K *15/16*
U.S. Cl. 137—855 **16 Claims**



1. A unidirectional fluid valve that comprises:

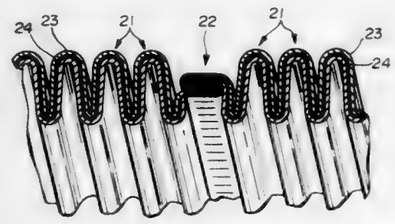
a flexible flap having a first portion and a second portion, the first portion being attached to a valve seat, the valve seat having an orifice and a seal ridge that has a concave curvature when viewed from a side elevation, the flexible flap making contact with the concave curvature of the seal ridge when a fluid is not passing through the orifice, the second portion of the flexible flap being free to be lifted from the seal ridge when a fluid is passing through the orifice, wherein the concave curvature of the seal ridge corresponds to a deformation curve exhibited by the second portion of the flexible flap when exposed to (i) a uniform force that acts along the length of the deformation curve normal thereto, (ii) a force acting in the direction of gravity having a magnitude equal to a mass of the second portion of the flexible flap multiplied by at least one gravitational unit of acceleration, or a combination of (i) and (ii).

5,325,893

AIR DUCT AND PAPER THEREFOR

Akinobu Takagi, Numazu; Isao Ohtake, Shizuoka; Osamu Nakano, Shizuoka, and Toru Murakami, Shizuoka, all of Japan, assignors to Tokushu Paper Mfg. Co., Ltd., Shizuoka, Japan

Filed Oct. 1, 1992, Ser. No. 955,053
Claims priority, application Japan, Oct. 4, 1991, 3-080938[U]; Jan. 9, 1992, 4-002373
Int. Cl.[5] F16L *9/04*
U.S. Cl. 138—143 **6 Claims**



1. An air duct comprising:

a tubular member formed from a metal sheet;

a water absorbing paper disposed around an outer periphery of said tubular member for absorbing and retaining con-

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densation condensed on said tubular member to prevent the same from falling; and

adhesive directly interposed between said tubular member and said paper to adhesively secure said tubular member and said paper.

5,325,894

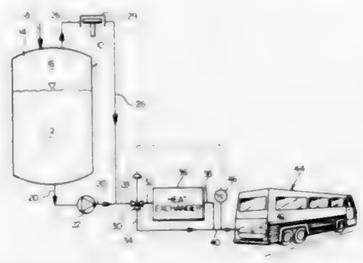
METHOD AND APPARATUS FOR FUELING VEHICLES WITH LIQUEFIED NATURAL GAS

Richard J. Kooy, Western Springs, and Don H. Coers, Naperville, both of Ill., assignors to Chicago Bridge & Iron Technical Services Company, Oak Brook, Ill.

Continuation of Ser. No. 986,997, Dec. 7, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,355

Int. Cl.[5] **B65B** *31/00*; **F17C** *9/04*

U.S. Cl. 141—4 **20 Claims**



1. A method comprising:

withdrawing liquefied natural gas stored in a primary insulated storage tank at a low pressure and at a temperature close to its boiling point;

increasing the pressure of the withdrawn liquefied natural gas and then feeding the pressurized liquefied natural gas through a heat exchanger to warm the liquefied natural gas to a subcooled or near saturated liquid condition at a temperature of about −220° F. to −126° F. when at a pressure of about 50 psig to 550 psig; and

feeding the said warmed and pressurized liquefied natural gas to an insulated tank on a vehicle at a refueling facility, said vehicle using liquefied natural gas as its fuel and the insulated vehicle fuel tank being adapted to safely contain and store the said liquefied natural gas in liquid form, at an approximate saturated condition at a temperature of about −220° F. to −126° F. and a pressure of about 50 psig to 550 psig.

5,325,895

DEVICE FOR FILLING AND CLOSING PRESSURIZED-STEAM CONTAINERS

Costanzo Pan, Borgosatollo, Italy, assignor to Dierre Finanziaria, S.r.l., Brescia, Italy

Filed Oct. 29, 1992, Ser. No. 968,286

Claims priority, application Italy, Mar. 31, 1992, MI92U000315; Jul. 30, 1992, MI92A001867

Int. Cl.[5] **B65B** *31/00*

U.S. Cl. 141—39 **15 Claims**

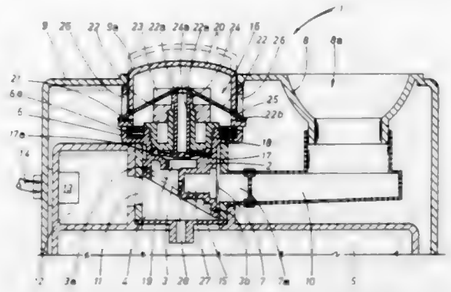
1. A device for filling and closing pressurized-steam containers comprising:

a closing member (**2**) operatively and sealingly engaged to a filler (**4**) exhibited by a container (**5**);

an operating cap (**6**) integral with the closing member (**5**) and rotatable so as to bring the closing member from a sealing position in which said filler (**4**) is hermetically closed to the environment to a supply position in which the filler (**4**) is in communication with the environment, said device further comprising:

a covering envelope (**9**) fastened to the container (**5**), arranged to accommodate the operating cap (**6**) and the filler (**4**) at least partly;

a filling header (**8**) exhibiting a supply opening (**8***a*) oriented upwardly with respect to the covering envelope (**9**) and communicating with a connecting portion (**7***a*) opening to the closing member (**5**) at said filler (**4**), said connecting portion (**7***a*) being selectively connected to and hermetically separated from the filler (**4**) when the closing member (**2**) is in the supply position and sealing position respectively;



safety means (**16**) for inhibiting movement of the closing member (**2**) from the sealing position to the supply position when pressure within the container (**5**) exceeds a predetermined value.

5,325,896

STAGE II VAPOR RECOVERY SYSTEM

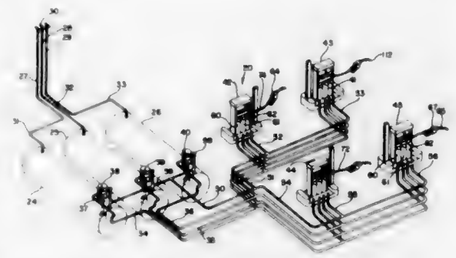
Wolfgang H. Koch, Batavia; Dennis J. Strock, Woodridge; Michael S. Butkovich, Aurora, and Harry B. Hartman, Sugar Grove, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 664,326, Mar. 4, 1991, Pat. No. 5,213,142. This application Apr. 9, 1992, Ser. No. 865,838

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] **B60S** *5/02*

U.S. Cl. 141—59 **10 Claims**



1. A vapor recovery system, comprising:

a storage tank for storing liquid volatilizable hydrocarbon fuel;

vent pipe means connected to said storage tank for venting said storage tank;

a dispenser for metering said fuel from said storage tank;

a fuel pump for pumping fuel to said dispenser from said storage tank;

a vapor pump positioned in proximity to said dispenser for withdrawing volatilized hydrocarbon vapors under suction pressure;

a nozzle for controlling dispensing of said fuel into a fill opening of a consumer's tank, for recovering volatilized hydrocarbon vapors emitted from said consumer's tank during fueling, and for collecting condensate;

fuel line means including a fuel line connecting said storage tank and said dispenser, and a fuel hose connecting said dispenser and said nozzle; and

vapor return line means including a vapor return hose connecting said nozzle and said vapor pump for receiving vapors from said nozzle and for collecting condensed vapors forming said condensate, and said vapor return line means including a vapor return line connecting said dispenser and said storage tank for passage of said vapors to said storage tank; and

said nozzle having

spout means for discharging said liquid volatilizable hydrocarbon fuel into said fill opening of said customer's tank;

vapor collection means for collecting a substantial amount of said volatilized hydrocarbon vapors emitted from said customer's tank during said fueling, said vapor collection means including passage means for passing said vapors to said vapor return hose wherein said vapor collection means includes a vapor inlet positioned in proximity to said spout means;

condensate withdrawal means for substantially removing said condensate in said vapor return hose so as to substantially minimize the blockage of vapors being drawn through said vapor return hose; and

automatic shutoff means for stopping the dispensing of fuel when said fuel enters said vapor inlet, wherein said automatic shutoff means includes a liquid sensing tube disposed along said spout means, within said passage means and extending to a position adjacent said vapor inlet.

5,325,897

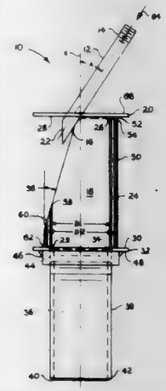
FLUID CATCH COLLECTOR FOR SAMPLING AND DRAIN VALVES

Thomas R. Richardson, Rte. 5, Box 6, CR 243, and Chris Caso, 521 Holly St., both of Angleton, Tex. 77515

Filed Apr. 14, 1993, Ser. No. 45,704

Int. Cl.[5] **G01N** *1/10*

U.S. Cl. 141—86 **14 Claims**



1. A collector providing for the sampling, drainage, collection and containment of fluid residue escaping from an outlet valve, comprising:

an upper chamber having a volume therein and defined by an upper plate, side walls and a lower plate, with said side walls having a first opening means therethrough and said lower plate having a second opening means therein;

a drain pipe, having a first end and a second end;

said upper chamber communicating with the outlet valve by means of said drain pipe, with said drain pipe first end connected to the outlet valve and said second end passing through said upper plate and opening into said second chamber;

a lower chamber having a volume therein and defined by said lower plate, side walls and a bottom;

said lower chamber communicating with said upper chamber by said second opening means in said lower plate; and

an axially concentric and rotatable outer closure sleeve including third opening means therein and surrounding said upper chamber, whereby;

said outer closure sleeve is axially rotated about said upper chamber of said collector to align said third opening means of said outer closure sleeve and said first opening means of said side walls of said upper chamber, the outlet valve is opened, and fluid is drained from said second end opening of said drain pipe and accessed by means of said aligned first and third opening means, with any fluid residue remaining after the outlet valve is closed being collected within said collector and protected from the elements by axially rotating said outer closure sleeve to displace said outer closure sleeve third means from said side walls first opening means.

5,325,898

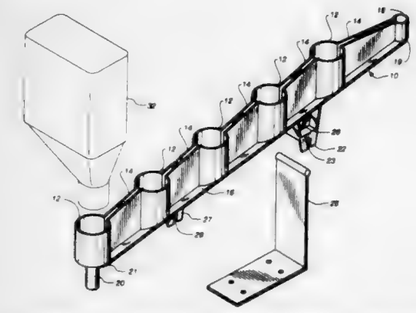
DEVICE FOR COLLECTING VISCOUS FLUIDS

Gerard Forgnone, 1587 Turquoise Ct., Santa Maria, Calif. 93455

Filed Sep. 10, 1993, Ser. No. 119,516

Int. Cl.[5] **B65B** *1/04*, *3/04*

U.S. Cl. 141—106 **26 Claims**



1. A device for collecting residual fluids from a plurality of containers having open necks which comprises:

a trough-like member having an upper end and a lower end;

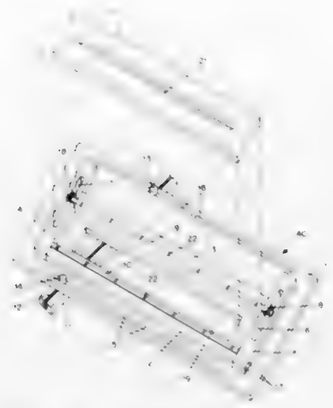
a plurality of container holders, operably joined to said trough-like member, for receiving said open necks of the containers in an inverted, fluid draining position;

an outlet adjacent to the lower end of said trough-like member; and

support means operably joined to said trough-like member for supporting said device at an angle from a horizontal surface so that said outlet is proximate to the container for collecting the fluid, said support means comprises a primary support member joined in the proximity of the upper end of said trough-like member and capable of releasably connecting to a mounting stand for mounting said device above the horizontal surface so that one of said open necks of the containers for collecting the fluid mates with said outlet in such a manner to provide secondary support for the device,

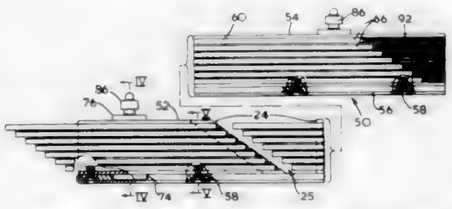
whereby at least a portion of the residual fluid remaining in the inverted containers flows by gravity through said trough-like member to said outlet and the fluid can be collected in any container that is positioned below said outlet.

5,325,899
ROUTER FIXTURE
Edmund Kochling, 290 Lovell St., Worcester, Mass. 01602
Filed Nov. 30, 1992, Ser. No. 982,784
Int. Cl.[5] B27G *23/00*; B27C *5/00*
U.S. Cl. 144—144 R 11 Claims



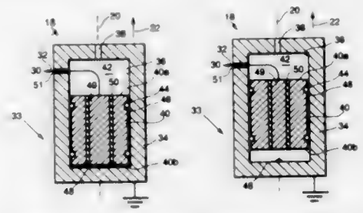
1. A router fixture which is positionable over a workpiece comprising
- a baseplate having a top surface, a bottom surface and a baseplate aperture extending from the top surface to the bottom surface;
- a pair of horizontally slidable guides on the top surface of the baseplate which are adjustable to define an area for receiving a template in a fixed horizontal position, said template having a template aperture which is positionable over the baseplate aperture and which defines the area to be cut out of the workpiece; and
- vertical template retention means for retaining the insertable template in a fixed vertical position within said pair of horizontally slidable guides,
- whereby the positioning of the template in the horizontally slidable guides results in the formation of a pair of horizontal guides for restraining movement of the router such that the router will not cut out any area of the workpiece which is not exposed by the template aperture.

5,325,900
FENCE
Andrea Garuglieri, Colle Brianza, Italy, assignor to Black & Decker Inc., Newark, Del.
Filed Aug. 24, 1993, Ser. No. 111,754
Int. Cl.[5] B27C *1/12*
U.S. Cl. 144—253 J 6 Claims



1. A fence for supporting a workpiece while it is cut with a cutting element, comprising:
- a work table;
- two frame members attached to said work table in a longitudinally spaced-apart relationship defining an opening between said frame members, each of said frame members having longitudinal grooves defined therein;
- frame elements movably engaged in said longitudinal grooves; and
- moving means for moving said frame elements longitudinally in said grooves, whereby said opening can be adjusted to conform with the size and position of said cutting element

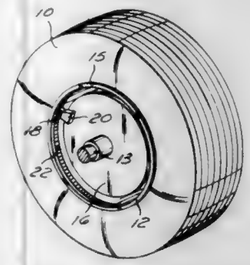
5,325,901
VEHICLE WHEEL INCORPORATING TIRE AIR PRESSURE SENSOR
Ross D. Olney, West Hills, and John W. Reeds, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Oct. 6, 1992, Ser. No. 957,291
Int. Cl.[5] B60C *23/00*
U.S. Cl. 152—418 31 Claims



1. A sensor for sensing the pressure in a tire which is mounted on a wheel of a vehicle, said vehicle including a vehicle speed sensor, comprising:
- an inertial mass means capable of being supported by a wheel for outward movement in response to centrifugal force which results from rotation of the wheel;
- a pressure transmitting means for transmitting a tire pressure from a tire mounted on said wheel to the inertial mass means in opposition to said outward movement;
- a switch means which is actuated from a first state to a second state in response to the inertial mass means moving outward a predetermined distance in response to a centrifugal force; and
- a computing means responsive to said vehicle speed sensor and said switch for computing the tire pressure based upon the vehicle speed at which said switch changes state.

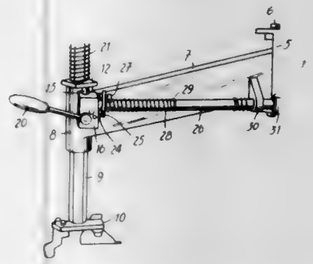
5,325,902
AUTOMATIC TIRE PRESSURE MONITOR AND INFLATION SYSTEM
Richard T. Loewe, 12882 Olympia Way, Santa Ana, Calif. 92705; Gary B. Shelly, 237 Lanai La., Placentia, Calif. 92670, and Fredrick M. Moran, 1436 E. Northshore Dr., Tempe, Ariz. 85283
Filed Jun. 19, 1992, Ser. No. 901,240
Int. Cl.[5] B60C *23/00*
U.S. Cl. 152—419 14 Claims

1. A device for maintaining a desired inflation pressure within a tire of a vehicle, the tire mounted upon a wheel, said device comprising
- (a) a sensing means for sensing the inflation pressure of the tire;
- (b) an inflation means responsive to said inflation pressure sensing means, disposed upon said wheel, said inflation means increasing the pressure within said tire in response to said sensing means, said inflation means comprising an air compressor driven by an electric motor; and
- (c) a generator having coils disposed upon the wheel and having a magnet mounted upon a non-rotating portion of the vehicle such that movement of the coil proximate the



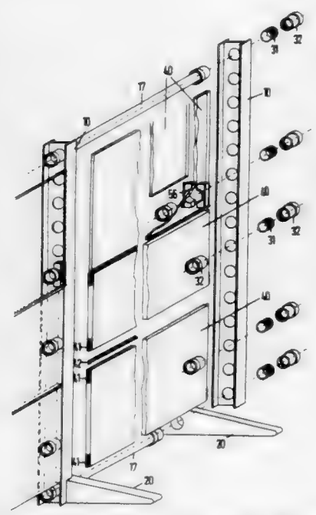
magnet induces a voltage into the coil for driving the electric motor.

5,325,903
DEVICE FOR THE ADJUSTMENT OF THE TOOL OF AN APPARATUS FOR FITTING AND REMOVING AUTOMOBILE TIRES
Francis du Quesne, Kleistraat 138, 2630 Aartselaar, Belgium
Filed May 27, 1993, Ser. No. 67,881
Claims priority, application Belgium, May 27, 1992, 09200497
Int. Cl.[5] B60C *25/06*
U.S. Cl. 157—1.24 3 Claims



1. Device for adjusting in the horizontal and vertical plane the distance between a wheel fixed on a rotating table and the tool of an apparatus for fitting or removing an automobile tire, which apparatus comprises a base, a vertical column mounted on the base, an arm being pivotable in a horizontal plane with respect to said column, a rod being movable vertically at free end of said arm, a tool for the fitting and removal of the tire and installed at the bottom of said rod, a rotating table provided with hooks for fastening the wheel on the table and arranged below said tool, a clamping plate freely located around said rod, a pressure stud to press said clamping plate into an oblique position on the vertical rod to raise it slightly and to fix this and the tool with respect to the wheel, an eccentric actuating said pressure stud, a second eccentric acting in conjunction with a pressure stud, a clamping plate acting in conjunction with said pressure stud, said clamping plate being movable into an oblique position around a stop rod in order to pivot lightly and to fix said arm in a horizontal position with respect to the wheel, said stop rod being guided along the length of said arm in a housing and in a guide forming part of said arm, both eccentrics forming part of a cylinder with control lever in order to rotate said cylinder in said housing, one extremity of said stop rod works in conjunction with a bearing block forming part of said vertical column, a pressure spring located between said stop rod and the last mentioned clamping plate, the whole being intended to displace slightly and simultaneously fix the tool at a distance from the wheel, both in the vertical plane and in the horizontal plane.

5,325,904
PARTITIONING SYSTEM
Martin Leitner, Mozartstr. 3, D-7022 Leinfelden, Fed. Rep. of Germany, assignor to Martin Leitner, Fed. Rep. of Germany
PCT No. PCT/EP92/00038, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO92/13149, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 10, 1992, Ser. No. 949,840
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1991, 4100900
Int. Cl.[5] A47G *5/00*
U.S. Cl. 160—135 39 Claims



1. In a partitioning system having vertical posts and horizontal connecting tubes, where panels are attachable to the posts with connecting elements, the posts having a connecting bar which is perpendicular to a plane of the partition with a row of connecting bores, and cantilevered arm elements which extend perpendicular with respect to the partition plane can be attached to the posts, the improvement comprising:
- the connecting bar (**15**) having at least one support bar (**11**, **12**) oriented in the plane of the partition;
- the connecting elements (**30**) comprising a threaded coupling (**31**) insertable within one said bore (**16**) of the connecting bar (**15**) and two screw sockets (**32**), said screw sockets (**32**) screwed on the threaded coupling (**31**) from both sides of the post (**10**), where said screw sockets (**32**) have an outside diameter which is larger than an inside diameter of the bores (**16**);
- said screw sockets (**32**) having at a distance corresponding to a thickness of the cantilevered arm elements (**20**, **20'**, **25**) from a front facing said threaded coupling (**31**) a shoulder (**36**) with a widened diameter;
- the cantilevered arm elements (**20**, **20'**, **25**) having vertical slits (**22**, **27**) for receiving the support bars (**11**, **12**) of a post (**10**) and and having an arm bore (**23**, **28**) for the screw socket (**32**) in an area outside of the shoulder (**36**), said arm bore (**23**, **28**) aligned with one corresponding said bore (**16**) of the connecting bar (**15**), and the cantilevered arm element (**20**, **20'**, **25**) connectable with the post (**10**) with one said connecting element (**30**); and
- at least one panel (**40**) fixable between the support bars (**11**, **12**) of the posts (**10**) and said shoulders (**36**) of said screw sockets (**32**) with said connecting elements (**30**) disposed on the posts (**10**).

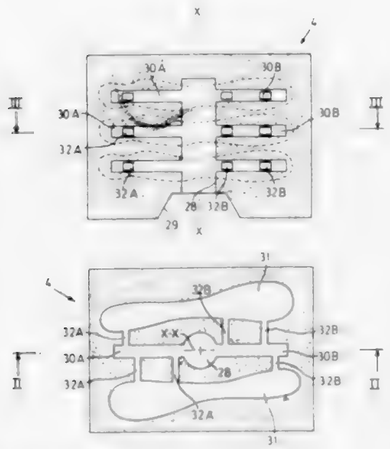
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5,325,905

METHOD AND APPARATUS FOR MULTI-STAGE, LOW-PRESSURE METAL CASTING

Pascal Sourlier, Maxeville, France, assignor to Pont-A-Mousson S.A., Nancy, France

Continuation of Ser. No. 984,728, Dec. 4, 1992, abandoned, which is a continuation of Ser. No. 718,704, Jun. 21, 1991, abandoned. This application Jul. 27, 1993, Ser. No. 97,599
Claims priority, application France, Jun. 22, 1990, 9007860
Int. Cl.[5] B22D *17/06*
U.S. Cl. 164—119 **8 Claims**



1. A method of low-pressure metal casting in a multi-stage sand mold, wherein said sand mold comprises,

a plurality of stages,

a vertical chamber traversing the plurality of stages,

each of said plurality of stages including (i) at least one impression, (ii) at least one intermediate duct in liquid communication with said vertical chamber and extending horizontally outwardly from said vertical chamber, (iii) ingates extending between and in liquid communication with said at least one intermediate duct and said at least one impression, wherein the sum of the areas of the entry section of the intermediate ducts belonging to each stage is less than 10% of the area of the section of the vertical chamber;

said method comprising the step of introducing molten metal into the vertical chamber at an initial feed rate and at an initial feed pressure, (i) so that it passes from the chamber into the intermediate ducts, into the ingates, and into the impressions, and (ii) so that the feed rate of the molten metal as it passes from the vertical chamber into the intermediate ducts is less than the initial feed rate.

6. A multi-stage sand mold for low-pressure metal casting, comprising,

a plurality of stages,

a vertical chamber traversing all the stages,

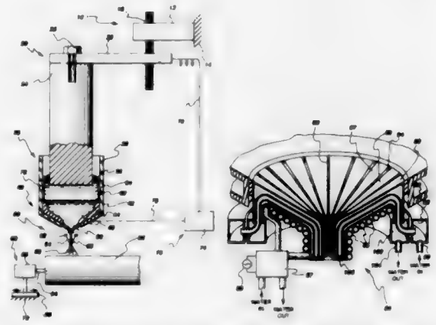
each of said plurality of stages including (i) at least one impression, (ii) at least one intermediate duct in liquid communication with said vertical chamber and extending horizontally outwardly from said vertical chamber, (ii) ingates extending between and in liquid communication with said at least one intermediate duct and said at least one impression, wherein the sum of the cross-sectional areas of the intermediate duct(s) associated with each stage is less than 10% of the cross-sectional area of the vertical chamber.

5,325,906

DIRECT PROCESSING OF ELECTROSLAG REFINED METAL

Mark G. Benz, Burnt Hills, and Thomas F. Sawyer, Charlton, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 779,773, Oct. 21, 1991, Pat. No. 5,160,532. This application Aug. 7, 1992, Ser. No. 926,113
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] B22D *11/06, 27/02*; C21C *7/00*
U.S. Cl. 164—270.1 **34 Claims**



1. Apparatus for producing refined metal alloy which comprises

electroslag refining apparatus comprising a refining vessel adapted to receive and to hold a refining molten slag,

a body of molten slag in said vessel, and means for positioning an electrode in said vessel in touching contact with said molten slag,

electric supply means adapted to supply refining current to said electrode and through said molten slag to a body of refined metal beneath said slag to keep said refining slag molten and to melt the end of said electrode in contact with said slag,

means for advancing said electrode toward and into contact with said molten slag at a rate corresponding to the rate at which the contacted surface of said electrode is melted as the refining thereof proceeds,

a cold hearth vessel beneath said electroslag refining apparatus, said cold hearth being adapted to receive and to hold electroslag refined molten metal in contact with a solid skull of said refined metal formed on the walls of said cold hearth vessel,

a body of refined molten metal in said vessel beneath said body of molten slag,

a cold finger apparatus below said cold hearth adapted to receive and to dispense as a stream refined molten metal processed through said electroslag refining process and through said cold hearth, said cold finger apparatus having a bottom pour orifice,

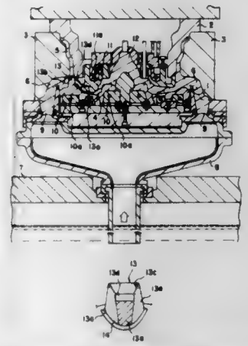
a skull of solidified refined metal in contact with said cold hearth and said cold finger apparatus including said bottom pour orifice, and means for converting the stream of molten metal passing from said bottom pour orifice into a refined solid metal body.

5,325,907

METALLIC MOLD FOR CASTING VEHICLE WHEEL

Shigemitsu Nakabayashi; Yoshimichi Asai, and Akihiro Okumura, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 796,187, Nov. 22, 1991, abandoned. This application May 7, 1993, Ser. No. 57,457
Claims priority, application Japan, Nov. 29, 1990, 2-325777; Mar. 1, 1991, 3-35804
Int. Cl.[5] B22D *17/06*
U.S. Cl. 164—306 **5 Claims**



1. A metallic mold for casting a vehicle wheel having openings in a periphery of a disk portion of the wheel, said metallic mold comprising:

a first mold for forming that external side of said wheel which faces an outside of a vehicle when mounted thereon;

a second mold for forming an internal side of said wheel;

said first mold having projections for forming said openings and said projections abutting said second mold;

wherein a coating material consisting of tungsten carbide is selectively coated by electric discharge coating on at least base portions which extend diametrically inwards of said wheel, among outer surfaces of said projections.

5,325,908

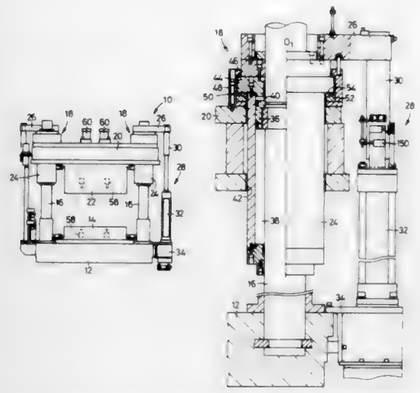
HYDRAULICALLY OPERATED CASTING MACHINE FOR PRODUCING A FORMED PRODUCT, HAVING MOLD CLOSING AND CLAMPING CYLINDERS

Sakae Sugishima, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 31, 1992, Ser. No. 999,409
Claims priority, application Japan, Jan. 17, 1992, 4-27230; Jan. 17, 1992, 4-27231; Jan. 17, 1992, 4-27232
Int. Cl.[5] B22D *33/04*
U.S. Cl. 164—341 **9 Claims**

1. In a casting machine having a stationary die plate, a stationary die fixed to the stationary die plate, a movable die plate, a movable die carried by the movable die plate and facing the stationary die, a plurality of guide posts fixed to outer portions of said stationary die plate outside an inner portion of said stationary die plate to which said stationary die is fixed, and a plurality of mold clamping hydraulic cylinders having respective pistons provided on said guide posts, respectively, said mold clamping hydraulic cylinders further having respective cylinder housings which are fixed to outer portions of said movable die plate and axially slidably engage said guide posts and said pistons, said stationary and movable dies cooperating to produce a formed product when the stationary and movable dies are clamped together by said mold clamping hydraulic cylinders, said forming machine comprising:

two-piece sliding members interposed between said movable die plate and said cylinder housings of said hydraulic cylinders, respectively, each of said two-piece sliding members including a first member and a second member having opposing non-horizontal contact surfaces which slidably contact each other, said two-piece sliding members allowing said outer portions of said movable die plate to float with respect to said cylinder housings, said pistons of said hydraulic cylinders, and said guide posts.

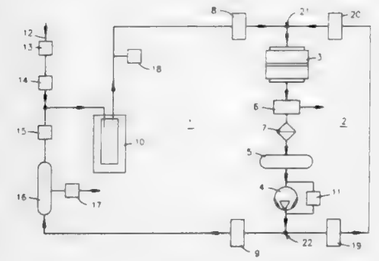


5,325,909

PROCESS FOR HARDENING SAND FOUNDRY PARTS

Artur Unterderweide, Hauptstrasse 23, D-3565 Breidenbach, Fed. Rep. of Germany

PCT No. PCT/DE92/00506, § 371 Date Feb. 23, 1993, § 102(e) Date Feb. 23, 1993, PCT Pub. No. WO93/00187, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 19, 1992, Ser. No. 975,943
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1991, 4120928
Int. Cl.[5] B22C *9/12*
U.S. Cl. 164—456 **4 Claims**



1. A process for the hardening of a sand foundry part wherein a hardening gas is circulated through a sand foundry part containing a binding agent to cause hardening of said sand foundry part, the process comprising the steps of:

providing a primary gas supply circuit and a secondary gas supply circuit, said primary gas supply circuit having a part in common with said secondary gas supply circuit, and said primary circuit being provided with a source of hardening gas;

providing a sand foundry part containing a binding agent in said part in common with said primary and secondary gas supply circuits and in communication with any gasses circulating therein;

circulating by means of said primary gas supply circuit a hardening gas/carrier gas through said sand foundry part containing said binding agent;

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closing said primary gas supply circuit when the quantity of said hardening gas present in the part of the primary gas supply circuit common to the secondary gas supply circuit is an amount corresponding to, or slightly exceeding, the theoretical quantity for a complete hardening reaction;

opening the secondary gas supply circuit; and

circulating the hardening gas/carrier gas through the secondary supply circuit until the hardening of the sand foundry part has been completed.

5,325,910

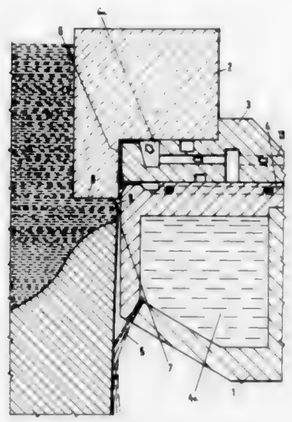
METHOD AND APPARATUS FOR CONTINUOUS CASTING

Wolfgang Schneider, St. Augustin, and Kurt Krämer, Bonn, both of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Continuation of Ser. No. 779,126, Oct. 16, 1991, abandoned, which is a continuation of Ser. No. 660,223, Feb. 20, 1991, abandoned, which is a continuation of Ser. No. 512,051, Apr. 12, 1990, abandoned, which is a continuation of Ser. No. 399,390, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 294,945, Jan. 3, 1989, abandoned, which is a continuation of Ser. No. 183,405, Apr. 12, 1988, abandoned, which is a continuation of Ser. No. 909,827, Apr. 19, 1986, abandoned. This application Jun. 28, 1993, Ser. No. 83,381

Int. Cl.[5] **B22D** *11/04, 11/07*

U.S. Cl. 164—472 **25 Claims**



1. A method for continuous casting with a continuous casting annular mold, comprising:

providing a continuous annular casting mold having a superstructure secured over a chill, the chill having an inner wall with an inner wall surface which extends away from the superstructure, the superstructure including an overhand spaced from the inner wall of the chill,

cooling the inner wall surface of the chill,

directing a gas to flow under pressure parallel to the inner wall surface of the chill toward an area of transition of the overhang and the inner wall surface of the chill,

directing a lubricant to mix with the flow of gas upstream of the transition so as to provide a mixture of the lubricant and gas under pressure in which the mixture flows in a direction parallel to the inner wall surface of the chill toward the transition,

introducing at the transition of the overhang and the inner all surface of the chill the mixture of the lubricant and gas under pressure, the mixture being introduced in a direction parallel to the inner wall surface of the chill,

drawing off cast material from below the chill, and

maintaining a gap between the material to be cast and the inner wall surface of the chill by flowing the mixture through the gap so as to avoid lubricant combustion, subsequent underdosing of the lubricant along the inner wall surface of the chill, and liquation and tacky area formation of the material being cast, and the molten material remaining spaced apart from the inner wall surface during passage of the molten material through the mold.

9. A method for continuous casting with a continuous casting annular mold, comprising the steps of:

cooling an inner wall surface of a chill, the inner wall surface extending away from a superstructure of a continuous annular casting mold;

directing a gas to flow under pressure parallel to the inner wall surface of the chill toward an area of transition of the overhang and the inner wall surface of the chill;

directing a lubricant to mix with the flow of gas upstream of the transition so as to provide a mixture of the lubricant and gas under pressure in which the mixture flows in a direction parallel to the inner wall surface of the chill toward the transition;

introducing at the transition of the overhang of the superstructure and the inner wall surface of the chill the mixture of the lubricant and gas under pressure;

directing the mixture to flow before the mixture reaches the transition in a direction which is parallel to the inner wall surface of the chill and thereafter through a gap between the inner wall surface and a molten material to be cast;

introducing the molten material to be cast adjacent to the overhang; and

keeping the molten material from touching the inner wall surface during passage of the molten material through the mold by flowing the mixture through the gap so as to avoid lubricant combustion, subsequent underdosing of the lubricant along the inner wall surface of the chill, and liquation and tacky area formation of the molten material being cast, whereby the molten material remains spaced apart from the inner wall surface.

5,325,911

METHOD OF PRODUCING FE-NI SERIES ALLOYS HAVING IMPROVED EFFECT FOR RESTRAINING STREAKS DURING ETCHING

Masaomi Tsuda, and Toshihiko Taniuchi, both of Kanagawa, Japan, assignors to Nippon Yakin Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 389,991, Aug. 7, 1989, abandoned. This application Apr. 17, 1991, Ser. No. 686,847

Claims priority, application Japan, Aug. 19, 1988, 63-204621; Aug. 19, 1988, 63-204622

The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.

Int. Cl.[5] **B22D** *11/00, 25/06*

U.S. Cl. 164—477 **5 Claims**

1. A method of producing Fe-Ni series alloys for use in a shadow mask for a cathode tube, having an improved effect of restraining streaks during etching, which comprises continuously casting a molten metal of Fe-Ni series alloy consisting essentially of 30–50 wt % of Ni, 0.001–0.03 wt % of B and the balance being substantially Fe to form a continuously cast slab having not more than a 20% equiaxial crystal structure, and then heating the resulting continuously cast slab at a temperature of not lower than 1000° C. for not less than 1 hour.

5,325,912

AIR CONDITIONING SYSTEM WITH REDUCED ENERGY CONSUMPTION DURING DEFROSTING FOR AN ELECTRIC VEHICLE

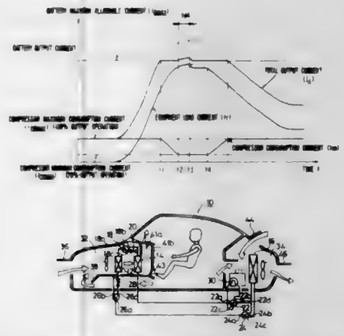
Yoshihiko Hotta, and Akihiro Tajiri, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,824

Claims priority, application Japan, Nov. 27, 1991, 3-312825

Int. Cl.[5] **F25B** *29/00;* **B60S** *1/08*

U.S. Cl. 165—12 **7 Claims**



1. An air conditioning system for use in a battery powered traction motor driven electric vehicle, comprising:

a battery for supplying power in said electric vehicle;

an air conditioning mechanism, powered by said battery, for air conditioning a passenger room of said electric vehicle;

at least one sensor means for outputting a signal indicating whether a window of said electric vehicle is in a clear or an unclear state;

glass heating means, powered by said battery, for heating said window; and

controlling means for receiving the signal from said at least one sensor, said controlling means being provided for energizing said glass heating means by supplying power to said glass heating means from said battery, said control means further outputting a signal for controlling the power consumed from said battery by said air conditioning mechanism when it is determined, based on said signal outputted form said at least one sensor, that said window is in an unclear state, wherein said controlling means reduces the power consumed form said battery by said air conditioning mechanism during a period in which said glass heating means is simultaneously energized.

5,325,913

MODULE COOLING SYSTEM

Frank E. Altoz, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1993, Ser. No. 81,712

Int. Cl.[5] **F28D** *15/02*

U.S. Cl. 165—32 **20 Claims**

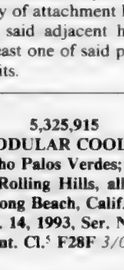
1. A cooling device for at least one electronic component comprising:

a heat sink enclosure having an interior cavity and a release opening joining the interior cavity to an area external of said enclosure;

a wick bonded to the inside surface of the interior cavity of said enclosure;

a meltable pellet inserted into the release opening of said enclosure;

a working fluid, said working fluid being sealed inside the interior cavity of said enclosure and permeating said wick; said enclosure mounted in thermal contact with said at least one electronic component;



whereby upon melting of said pellet, a vapor of said working fluid travels through said release opening acting to cool to said enclosure and said at least one electronic component.

5,325,914

MOUNTING BRACKET FOR A HEAT EXCHANGER

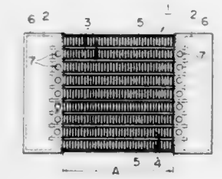
Hiroshi Tanaka, Isesaki, Japan, assignor to Sanden Corporation, Isesaki, Japan

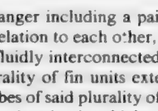
Filed Aug. 18, 1993, Ser. No. 108,507

Claims priority, application Japan, Aug. 27, 1992, 4-060324

Int. Cl.[5] **F28F** *9/00*

U.S. Cl. 165—67 **8 Claims**





1. In a heat exchanger including a pair of header pipes extending in parallel relation to each other, a plurality of parallel heat transfer tubes fluidly interconnected between said pair of header pipes, a plurality of fin units extending between adjacent heat transfer tubes of said plurality of parallel heat transfer tubes, and at least one bracket in which at least one of said pair of header pipes is supported and which has a plurality of attachment holes for attaching said at least one bracket to an external member via fasteners inserted through said attachment holes, the improvement comprising:

each of said plurality of attachment holes being located at a position between said adjacent heat transfer tubes and between said at least one of said pair of header pipes and one of said fin units.

5,325,915

MODULAR COOLER

Robert E. Fouts, Rancho Palos Verdes; Craig Fouts, Encinitas, and Earl J. Fouts, Rolling Hills, all of Calif., assignors to Earl's Supply Co., Long Beach, Calif.

Filed Jul. 14, 1993, Ser. No. 91,997

Int. Cl.[5] **F28F** *3/08*

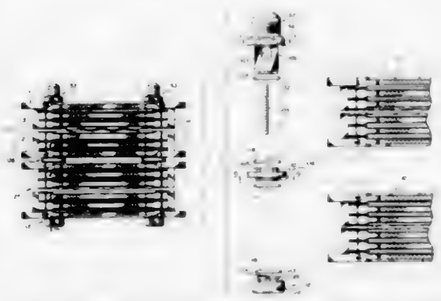
U.S. Cl. 165—78 **7 Claims**

1. In a modular cooler comprised of a plurality of interconnected units, each of said units comprising an upper plate and

VOL 1164 ISS 1 JL 5 1994 UMI

a lower plate, a pair of spaced end walls secured to said upper and lower plates, a plurality of spaced cooling plates mounted below said upper plate, above said lower plate and between said end walls and secured thereto, each of said cooling plates having a hollow midbody portion with integral flanges at each end of said midbody portion, with apertures, therethrough, said apertures in said flanges being in fluid communication with the interior of said midbody portion, a pair of spaced openings in each of said upper and lower plates, one of said openings being on one side of said upper and lower plates and the other of said openings being on the other side of said upper and lower plates, the openings on said one side of said lower plates being aligned with the openings on said one side of said upper plates and with said apertures extending through one of said flanges with the other of said openings in said upper and lower plates being aligned with each other and with the apertures in the other of said flanges whereby fluid communication is provided from said one of said openings in one of said upper plates, through said aligned apertures in one of said flanges, through said midbody portions and out said other of said aligned apertures in the other of said flanges and through said other of said openings in said upper and lower plates, one of said units being secured in a fluid-tight manner to another of said units with the lower plate of one of said units being disposed adjacent the upper plate of another of said units, the improvement which comprises:

fluid tight sealing means being mounted in each of said openings in both the lower plate of one of said units and the upper plate of said another of said units; and



a nipple assembly mounted in a fluid tight manner in each of said openings in the upper plate of one of said units, each of said nipple assemblies including an insert portion extending downwardly through said respective ones of said openings with an adjustable member coupled to each of said insert portions and to a fluid tight sealing member mounted in said aligned openings in the lower plate of said another of said units, each of said nipple assemblies having a throughbore extending therethrough in fluid communication with both an opening through said insert portion and said apertures through said flanges aligned with respective ones of said openings, said adjustable member being a threaded rod extending through aligned openings and aligned flanges on both sides of said cooler, said threaded rod being threaded at one end in a threaded hole in said insert portion and at the other end in a threaded hole in said cylindrical portion, said threaded rod being threaded substantially along the entire length thereof between said insert portion and said cylindrical portion whereby tightening the same draws said units together in a tight fluid tight relationship.

3. In a modular cooler comprised of a plurality of interconnected units, each of said units comprising an upper plate and a lower plate, a pair of spaced end walls secured to said upper and lower plates, a plurality of spaced cooling plates mounted below said upper plate, above said lower plate and between said end walls and secured thereto, each of said cooling plates having a hollow midbody portion with integral flanges at each end of said midbody portion, with apertures therethrough, said apertures in said flanges being in fluid communication with the interior of said midbody portion, a pair of spaced openings in each of said upper and lower plates, one of said openings being on one side of said upper and lower plates and the other of said openings being on the other side of said upper and lower plates, the openings on said one side of said lower plates being aligned with the openings on said one side of said upper plates and with said apertures extending through one of said flanges with the other of said openings in said upper and lower plates being aligned with each other and with the apertures in the other of said flanges whereby fluid communication is provided form said one of said openings through said aligned apertures, in one of said flanges, through said midbody portions and out of said other of said aligned apertures in the other of said flanges and through said other of said openings in said upper and lower plates, one of said units being secured in a fluid-tight manner to another of said units with the lower plate of one of said units being disposed adjacent the upper plate of another of said units, the improvement which comprises:

fluid tight sealing means being mounted in each of said openings in both the lower plate of one of said units and the upper plate of said another of said units;

a nipple assembly mounted in a fluid tight manner in each of said openings in the upper plate of one of said units, each of said nipple assemblies including an insert portion extending downwardly through said respective ones of said openings with an adjustable member coupled to each of said insert portions and to a fluid tight sealing member mounted in said aligned openings in the lower plate of said another of said units, each of said nipple assemblies having a throughbore extending therethrough in fluid communication with both an opening through said insert portion and said apertures through said flanges aligned with respective ones of said openings; and

a threaded nipple on each of said nipple assemblies extending away from said cooler, said nipples being mounted to a nut coupled to said insert portion

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5,325,916

METHOD OF COATING ALUMINUM SUBSTRATES WITH SOLID ADSORBENT

Stephen R. Dunne, Bethel, Conn., and Albert S. Behan, Bronxville, N.Y., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 895,975, Jun. 9, 1992, Pat. No. 5,260,243, which is a continuation-in-part of Ser. No. 386,319, Jul. 28, 1989, Pat. No. 5,120,694. This application Sep. 21, 1993, Ser. No. 124,830

Int. Cl.[5] **B01J** *20/18*

U.S. Cl. 165—104.12 **5 Claims**

4. A zeolite coated heat exchanger tube comprising:

(a) a continuous length of tube comprising a high heat conductivity material, said tube having an inside surface, a first end, and a second end opposite;

(b) an aluminum substrate surface disposed on the inside surface of said tube;

(c) a zeolite layer disposed on said aluminum substrate surface;

(d) a vapor tight seal disposed at said first end and said second end creating a vapor space inside said tube surrounded by said zeolite layer; and

(e) a refrigerant disposed with said vapor space.

5,325,917

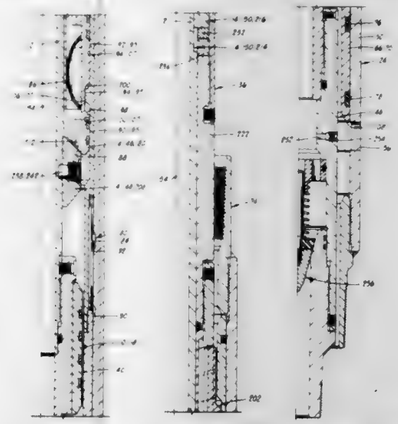
SHORT STROKE CASING VALVE WITH POSITIONING AND JETTING TOOLS THEREFOR

David D. Szarka, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 781,701, Oct. 21, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 69,576

Int. Cl.[5] **E21B** *23/00, 34/14*

U.S. Cl. 166—240 **20 Claims**



1. A positioning tool apparatus for positioning a sliding member of a well tool, said apparatus comprising:

an inner mandrel; and

operating means for selectively operably engaging the sliding member of the well tool in response to longitudinally reciprocating motion of said inner mandrel, said operating means comprising:

radially outwardly biased engagement means for automatically engaging the sliding member of the well tool when aligned therewith, said engagement means having a pair of engagement surfaces thereon with a recess defined therebetween, each of said engagement surfaces having chamfers at opposite ends thereof and being adapted for engagement with corresponding latching surfaces in the sliding member of the well tool; and

locking means, connected to said inner mandrel, for locking said engagement means in operable engagement with the sliding member when said engagement surfaces of said engagement means are engaged with the engagement surfaces of the sliding member.

5,325,918

OPTIMAL JOULE HEATING OF THE SUBSURFACE

James G. Berryman, Danville, and William D. Daily, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 2, 1993, Ser. No. 100,800

Int. Cl.[5] **E21B** *36/04, 43/22, 43/24;* **G01V** *3/04*

U.S. Cl. 166—248 **10 Claims**

1. A method for optimized joule heating of the subsurface comprising:

(a) imaging a first resistivity distribution of an underground area using electrical resistance tomography (ERT);

(b) joule heating said underground area with optimally directed currents;

(c) imaging a second resistivity distribution of said underground area using ERT, to show changes in regional resistivity caused by said joule heating;

(d) adjusting said joule heating based on the imaged effects; and

(e) repeating steps (a) through (d) until a desired heating effect is achieved.

5,325,919

Patent Not Issued For This Number

5,325,920

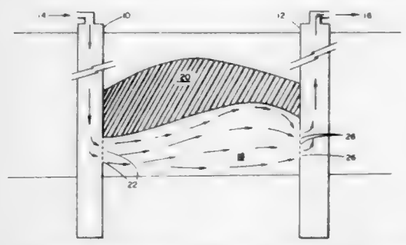
ENHANCED OIL RECOVERY FROM LOW PERMEABILITY RESERVOIRS USING ORGANOSILICONE SURFACTANTS

Nizar F. Djabbarah, Richardson, Tex., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 18, 1992, Ser. No. 992,675

Int. Cl.[5] **E21B** *43/22*

U.S. Cl. 166—272 **21 Claims**



1. A method for minimizing formation damage in a diatomaceous or silicon containing formation during a steam-flood comprising:

injecting an organosilicone surfactant foam into an interval of said formation along with steam in an amount and for a time sufficient to cause a local equilibrium with the silicon containing formation thereby preventing dissolution of silicon from the formation so as to minimize caving near a wellbore and permeability reduction in the formation.

5,325,921

METHOD OF PROPAGATING A HYDRAULIC FRACTURE USING FLUID LOSS CONTROL PARTICULATES

Michael H. Johnson; Hang Nguyen, both of Spring, Tex., and Lewis B. Ledlow, Mandeville, La., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Oct. 21, 1992, Ser. No. 964,413

Int. Cl.[5] **E21B** *43/267*

U.S. Cl. 166—280 **28 Claims**

1. A method for hydraulically fracturing and propping a subterranean formation to increase the production of fluids from a well therein comprising the steps of:

(1) injecting a fluid pad having a first fluid loss coefficient into the well at a pressure sufficient to fracture the formation, whereby a filter cake having a permeability lower than that of the formation is formed on at least part of the fracture;

(2) injecting a proppant transport fluid into the well, said proppant transport fluid having a second fluid loss coefficient higher than the first fluid loss coefficient; and

(3) at least partially removing the filter cake.

25. A method for treating a subterranean formation having a well therein and fractures extending from the well into the subterranean formation, comprising injecting a fluid pad into the well to form a low permeability filter cake on at least part of the fractures where the fluid pad comprises:

(1) a cake-building solid particulate comprising a distribution of graded calcium carbonate particle sizes;

(2) a filtration control additive comprising at least one modified lignosulfonate;

(3) a fluid viscosifier; and

(4) water.

5,325,922

RESTORING LOST CIRCULATION

M. Kenneth Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

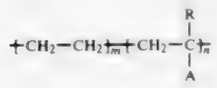
Filed Oct. 22, 1992, Ser. No. 964,819
Int. Cl.[5] E21B *33/13*
U.S. Cl. 166—293 **12 Claims**

1. A method for restoring drilling fluid circulation to a borehole of a well having surrounding strata being invaded by the drilling fluid which is thereby escaping the borehole, comprising:

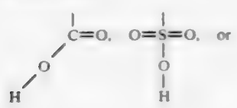
preparing a cementitious slurry comprising:

(a) a cementitious component selected from granulated water-quenched blast furnace slag and a proton acceptor metal compound and

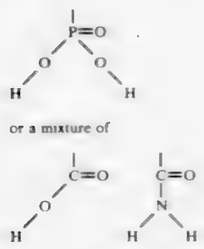
(b) an activator wherein, when said cementitious component is said blast furnace slag, said activator is optionally an alkaline agent, and when said cementitious component is said metal compound, said activator is a phosphorus acid or one of a polymer component of the formula:



wherein A is



or a mixture of



and wherein R is H or a 1–10 carbon atom alkyl radical and the ratio of m to n is within the range of 0:1 to 100:1; and

(c) a water source selected from water, brine, seawater, water base drilling fluid, and water emulsion drilling fluid;

displacing the cementitious slurry into the strata which the first said drilling fluid is invading, the cementitious slurry being in direct contact, during and after placement, with the drilling fluid in the borehole; and

allowing the cementitious slurry to solidify in situ to form a plug in the wellbore and thereby sealing the strata from the wellbore.

5,325,923

WELL COMPLETIONS WITH EXPANDABLE CASING PORTIONS

Jim B. Surjaatmadja; Richard L. Giroux, and Timothy W. Helton, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

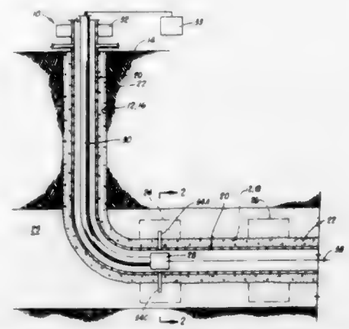
Continuation-in-part of Ser. No. 953,671, Sep. 29, 1992, Pat. No. 5,249,628. This application Sep. 30, 1993, Ser. No. 129,922
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—308 **21 Claims**

1. A method of fracturing a subsurface formation of a well having a well casing cemented in a borehole intersecting said subsurface formation, comprising:

(a) providing an opening through said casing communicating an interior of said casing with said subsurface formation;

(b) providing at least a first expandable casing portion in said casing;

(c) communicating a fracturing fluid through said opening to said subsurface formation;



(d) applying pressure to said fracturing fluid and through said opening to said subsurface formation;

(e) initiating a fracture in said subsurface formation adjacent said opening;

(f) during step (e), allowing said casing to move with said subsurface formation by means of expansion of said first expandable casing portion; and

(g) thereby preventing destruction of a bond between said casing and cement surrounding said casing during step (e).

5,325,924

METHOD AND APPARATUS FOR LOCATING AND RE-ENTERING ONE OR MORE HORIZONTAL WELLS USING MANDREL MEANS

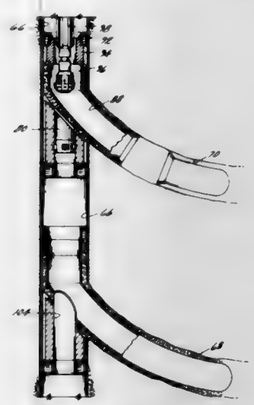
Daniel S. Bangert, Kingwood; Alfred R. Curington, The Woodlands, and L. Cameron White, Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Aug. 7, 1992, Ser. No. 926,452
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[5] E21B *43/14*
U.S. Cl. 166—313 **41 Claims**

1. A method for directing an object either through a primary borehole or through a branch borehole, comprising the steps of:

installing guide means in said primary borehole, said guide means being defined by at least one housing positioned at a location proximate to the intersection between a primary borehole and a selected branch borehole previously formed or to be formed, said housing having at least one upper passageway and at least first and second lower passageways, said first lower passageway being associated with diverter means attached to said guide means;

establishing communications between said first lower passageway and said selected branch borehole; and



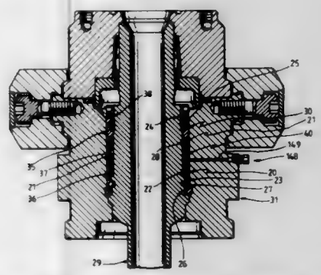
directing an object from said upper passageway to either said first lower passageway or to said second lower passageway.

5,325,925

SEALING METHOD AND APPARATUS FOR WELLHEADS

Jerry D. Smith, and Philip F. Huang, both of Houston, Tex., assignors to Ingram Cactus Company, Houston, Tex.

Filed Jun. 26, 1992, Ser. No. 904,461
Int. Cl.[5] E21B *33/12*
U.S. Cl. 166—387 **64 Claims**



46. A method for sealing an annulus between concentric, spaced apart inner and outer generally cylindrical surfaces, each surface having an upper and a lower portion, comprising the steps of:

a) providing a seal assembly, having upper and lower metallic seal members, within the annulus adjacent the inner and outer surfaces, the lower seal member having an inner seal for engaging, and sealing against, the lower portion of the inner surface and an outer seal for engaging, and sealing against, the lower portion of the outer surface;

b) energizing the seal assembly to first cause one of the seals of the lower seal member to completely engage, and seal against, one of the lower portions of one of the surfaces, before the other seal of the lower seal member completely engages, and seals against, the other lower portion of the other surface, and before the upper seal member has engaged, and sealed against, the upper portions of the surfaces; and

c) energizing the seal assembly to then cause the upper seal member to engage, and seal against, the upper portions of the surfaces.

5,325,926

REVERSIBLE CASING FOR A DOWN-THE-HOLE PERCUSSIVE APPARATUS

Warren T. Lay, and Leland H. Lyon, both of Roanoke, Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 5, 1993, Ser. No. 14,441
Int. Cl.[5] E21B *4/06;* **B23Q** *5/033*
U.S. Cl. 166—380 **10 Claims**



7. A method for producing a reversible casing for a down-the-hole drill, said casing being capable of being reversed lengthwise when one end thereof becomes abraded during use, comprising:

a. providing an elongated hollow tubular casing having a first casing end and a second casing end;

b. providing a bore formed by an internal surface therein;

c. providing a snap ring groove in said internal surface for retaining therein a snap ring adapted for supporting operative drill backhead elements within said bore, said snap ring having a snap ring aspect ratio between 1.0 and 6.0, said snap ring groove being substantially centered between said first and second casing ends, said snap ring groove extending in a radial direction from said axis of said bore, as viewed in a plane transverse to said lengthwise direction of said body, said snap ring groove having:

i. a length L, as measured in said lengthwise direction;

ii. a depth t, as measured in said radial direction; and

iii. a shoulder ratio D/t, said length L having a maximum in the following ranges:

Range of Max. Groove Length, L, (inches)	Range of Bore Diameter, D, (inches)	Range of Shoulder Ratio, r = D/t	Range of Snap Ring Aspect Ratio, k = l/t
0.25–7.80	2.0–10.0	10.0–150.0	1.0–6.0

whereby a snap ring will be restrained by said snap ring groove from skewing out of said snap ring groove when casing is not connected to operative elements of said drill;

d. providing a first groove means in said internal surface between said snap ring groove and said first casing end, for supporting operative elements of a drill backhead in said bore and for defining, with said operative elements of a drill backhead, passageways for flow of percussive fluid therein, when said first casing end is connected to a drill backhead; and

e. providing a second groove means in said internal surface between said snap ring groove and said second casing end, for supporting operative elements of a drill fronthead in said bore and for defining, with said operative elements of a drill fronthead, passageways for flow of percussive fluid therein, when said second casing end is connected to a drill fronthead.

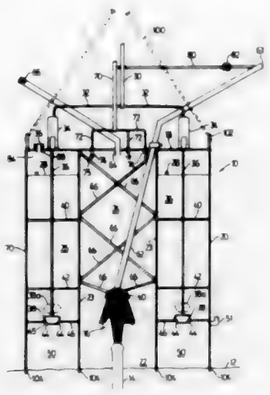
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5,325,927

DEVICE FOR QUENCHING OPEN AIR FIRES

Jose Valente, 119 Givins Street, Toronto, Ontario, Canada M6J 2Y1

Filed Sep. 30, 1991, Ser. No. 767,705
Int. Cl.[5] A62C *3/06*
U.S. Cl. 169—49 6 Claims



1. A device for quenching open air fires comprising a vessel having.

(i) a substantially airtight top and sides;

(ii) at least a partially open bottom permitting placement of said vessel vertically down over a flame source wherein said bottom rests on grade surrounding said flame source;

(iii) an inner quenching chamber; and

(iv) an outer chamber including:

(a) a lower outer chamber;

(b) an upper outer chamber which is fillable with a liquid sealing means to absorb thermal energy from a flame emanating from said flame source;

(c) a floor between said upper outer chamber and said lower outer chamber; and

(d) a means to release said liquid sealing means into the lower outer chamber comprising at least one remotely actuable plug for selectively sealing an opening in said floor, and an actuator for unseating said plug from said opening,

wherein said released liquid sealing means partially fills said lower outer chamber to form a temporary airtight seal between said lower outer chamber and said grade whereby said flame may be starved of a source of oxygen and extinguished.

5,325,928

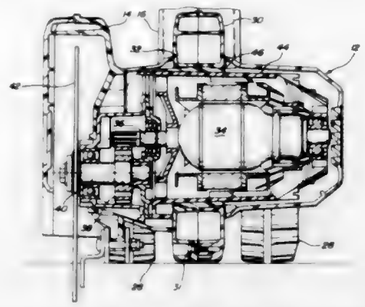
POWER-DRIVEN EDGER WITH ON-CENTER WHEEL

Robert P. Wagster, Baltimore; Vernon R. Lacher, Fallston, and John S. Vantran, Baltimore, all of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 7, 1993, Ser. No. 1,147
Int. Cl.[5] A01D *55/00*
U.S. Cl. 172—15 27 Claims

24. A power edger having a front and rear and including a substantially vertically oriented cutting blade and further including drive means including a transversely disposed electric motor having a rotational axis and a circumferential casing, for rotatably driving said substantially vertically oriented cutting blade, wherein said drive means has associated therewith a center of gravity, comprising:

a wheel assembly including a first wheel, journalled directly to said circumferential casing of said motor so that said first wheel completely surrounds and rotates about said



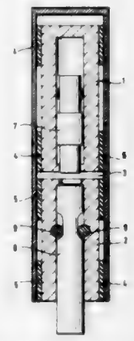
motor, said wheel assembly being substantially radially aligned with the center of gravity of said drive means.

5,325,929

HYDRAULIC IMPACT HAMMER

Timmo Sippus, Hollola, and Seppo Jurvanen, Lahti, both of Finland, assignors to Bretec Oy, Lahti, Finland

Continuation-in-part of Ser. No. 910,705, Jul. 8, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 77,555
Claims priority, application Finland, Jul. 9, 1991, 913311
Int. Cl.[5] B25D *17/24*
U.S. Cl. 173—211 7 Claims



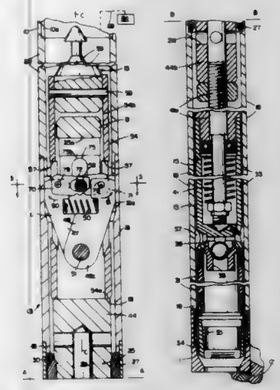
1. A hydraulic impact hammer comprising an outer protective casing, a first guide member defining a first cylindrical bore, a first attenuating element supporting the first guide member inside the casing in a manner allowing the first guide member to move radially and axially relative to the casing, a piston fitted slidably in the first cylindrical bore, a second guide member defining a second cylindrical bore, an impact member fitted slidably in the second cylindrical bore, and a second attenuating element supporting the second guide member inside the casing in a manner allowing the second guide member to move radially and axially relative to the casing independently of the first guide member and without allowing direct contact between the second guide member and the protective casing, said first and second attenuating elements biasing the first and second guide members to respective positions such that the first guide member is spaced from the second guide member and the second bore is substantially coaxial with the first bore, and the hammer being such that upon displacing the piston in the direction toward the impact member, the piston can enter the second bore and strike the impact member directly.

5,325,930

OVERCENTER TOGGLE LATCH APPARATUS

Simon J. Harrison, Callander, Canada, assignor to Longyear Company, Salt Lake City, Utah

Continuation-in-part of Ser. No. 791,847, Nov. 14, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,632
Int. Cl.[5] E21B *25/02*
U.S. Cl. 175—246 19 Claims



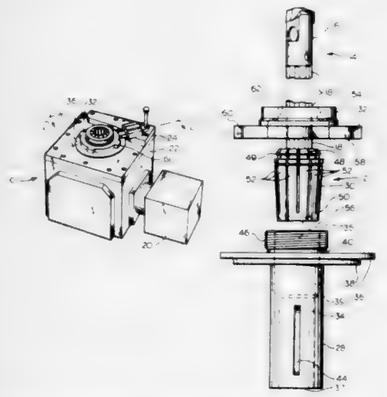
1. A wireline drilling apparatus that has a central axis and that is movable axially inwardly through a drill string toward a bit end of the drill string to seat on a drill string landing shoulder and latchingly engage a drill string latch seat and is retractable axially outwardly through the drill string in a direction away from the bit end of the drill string, said drill string having a central axis, comprising: an axially elongated latch body having an axial outer end portion, an axial inner end portion and a shoulder seatable on the landing shoulder; a drilling tool mounted to the inner end portion of the latch body; a latch assembly comprising a first and a second latch, each latch having an axial outer end portion and an axial inner end portion; and first, generally transverse, latch pivot means mounting the inner end portions of the latches to the latch body to mount the latches for pivotal movement relative to the latch body between a latch seated position seatable in the latch seat to block movement of the latch body axially outwardly through the drill string and a retracted position permitting the latch body moving axially through the drill string, and retractor means mounted to the latch body for limited axial movement relative to the latch body between an axial inner position relative to the latch body and an axial outer position relative to the latch body, and in operative relationship with the latch assembly for moving the latches from the latch seated position to the latch retracted position while moving axially outwardly relative to the latch body and after moving the latches away from their latch seated position, axially retracting the latch body through the drill string and thereby the drilling tool; the retractor means having an axial outer overshot coupling portion and a second portion extending axially inwardly of the overshot coupling portion and the latch assembly including locking means mounted for movement with the latches and relative to the latches and connected to the latches for, after the latches have moved from the latch retracted position to their latch seated position, lockingly retaining the latches in their latch seated position until the retractor means is moved axially outwardly relative to the latch body and after the latches have been locked in their latch seated position, for retracting the latches from their latch seated position when the retractor means is moved axially outwardly; said locking means being connected to the retractor means and at least in part being mounted to the latches to move with the latches and relative to the latches; the locking means including a first link having a first end portion and a second end portion radially inwardly of the first end portion of the first link and radially more closely adjacent to the outer end portion of the second latch than the first end portion of the first link when the first latch is in its latch seated position; a first transverse pivot pivotally connecting the first end portion of the first link to the outer end portion of the first latch; a second link having a first end portion and a second end portion, the second end portion of the second link being radially inwardly of the first end portion of the second link when the second latch is in its latch seated position; and a second transverse pivot pivotally connecting the first end portion of the second link to the outer end portion of the second latch; each of the first and second pivots having a transverse pivot axis that is transversely spaced from the other, and the retractor means including second pivot means having a transverse pivot axis parallel to and transversely intermediate the pivot axes of the first and second pivots for pivotally connecting the second end portions of the first and second links to the second portion of the retractor means; said second pivot means being connected to the retractor means for movement with the retractor means and movement relative to the latches between a position that the second means pivot axis is axially inwardly of the pivot axes of both of the first and second pivots to retain the latches in their latch seated position and a position that is axially outwardly of the pivot axes of both of the first and second pivots to permit the latches moving to their retracted position and for retracting the latches when the retractor means is moved axially outwardly relative to the latch body.

5,325,931

CHUCK ASSEMBLY FOR A DRILL BOX OF A MINE DRILL

Gerald L. Woods, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Aug. 27, 1993, Ser. No. 113,568
Int. Cl.[5] B23B *31/20, 31/165, 31/173;* E21B *3/00*
U.S. Cl. 175—257 20 Claims



1. A drill box of a mine drill comprising:

a source of rotary power;

a drive member operatively connected to said source of rotary power to rotatably drive a chuck assembly having releasably secured therein a mining tool including a working end and a depending rod-like member, said chuck assembly including;

a spindle operatively connected to said drive member and having a sleeve of a cylindrical shape including a threaded collar end and a bottom end and an opening extending a selected distance from said collar end to said bottom end,

a collet closer including an annular housing having an aper-

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ture threaded for threadingly engaging said threaded collar end, and

a collet extending a selected distance within said opening of said sleeve, said collet having a forward end portion and an opposing tapered rear end portion and an internal bore capable of receiving the rod-like member of the mining tool,

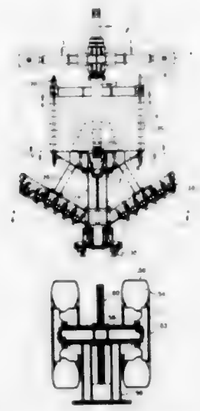
whereby said collet closes uniformly around the rod-like member of the mining tool as said collet is compressed within said opening of said sleeve by the action of said collet closer threadingly engaging said threaded collar end.

5,325,932

DOWN REAMING APPARATUS

Llewellan Anderson, Renton; Brian W. Kelley, Kent; Larry F. Rowe, Federal Way, and Thomas C. Whitehouse, Puyallup, all of Wash., assignors to The Robbins Company, Redmond, Wash.

Filed Mar. 27, 1992, Ser. No. 859,321
Int. Cl.[5] **E21B** *7/28, 17/10;* **B60C** *17/04*
U.S. Cl. 175—325.3 **28 Claims**



15. A stabilizer for a rock boring apparatus adapted to be attached to a drill string, said stabilizer comprising:

a rotationally stationary stabilizer hub adapted to be oriented around the drill string such that the drill string is rotatable relative to said rotationally stationary stabilizer hub; and

a plurality of wheel assemblies radially and fixedly attached to said stabilizer hub, each of said wheel assemblies having a compressible wheel means having an axis of rotation and adapted to be oriented against a bored hole wall, said axis of rotation being oriented substantially perpendicular to the longitudinal axis of the drill string, and each of said wheel assemblies having a rotatable overload wheel means having a radius less than that of said compressible wheel means such that said overload wheel means is oriented against the bored hole wall upon substantial compression of said compressible wheel means.

5,325,933

STEERING CONTROL OF TRACKED VEHICLE

Shigenori Matsushita, Ninomarumachi, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 994,626
Int. Cl.[5] **B62D** *11/08;* **F16D** *67/04*
U.S. Cl. 180—6.7 **15 Claims**

1. A steering control system for a tracked vehicle having a left drive sprocket and a right drive sprocket, wherein power of an engine is transmitted to said right drive sprocket by a right driving shaft which is coupled to an output shaft via a right clutch and a right brake, and power of an engine is transmitted to the left drive sprocket by a left driving shaft which is coupled to an output shaft via a left clutch and a left brake, said system comprising:

control valves for separately controlling hydraulic pressure to said right clutch, said left clutch, said right brake, and said left brake;

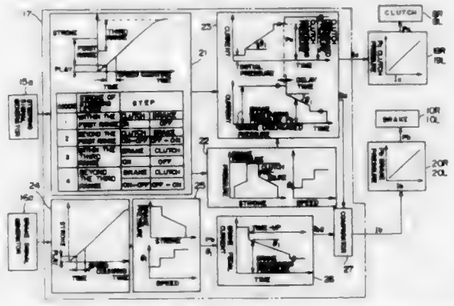
a steering lever which is movable between a neutral position and a full stroke position;

a steering signal generator for generating a steering signal corresponding to the amount of movement of said steering lever from said neutral position; and

a controller for receiving the steering signal from said steering signal generator and for outputting steering control signals to the control valve for one of said clutches and to the control valve for the brake associated with said one of said clutches;

wherein changes with time of the steering control signals outputted from said controller to the control valve of said one of said clutches and to the control valve of the brake associated therewith, when the amount of operation of said steering lever increases from its neutral position to its full stroke position, include:

(a) a first range in which the clutch hydraulic pressure changes from a clutch completely engaging pressure to a clutch engagement maintaining pressure corresponding to the stroke position of said steering lever, while



the brake hydraulic pressure is a brake completely disengaging pressure, and

(b) a second range in which the clutch hydraulic pressure changes from the clutch engagement maintaining pressure to a clutch completely disengaging pressure while the brake hydraulic pressure changes from a braking preparation pressure, which is slightly higher than an initiating brake engagement pressure, to a brake completely engaging pressure;

wherein the changes with time of the steering control signals outputted from said controller to the control valve of said one of said clutches and to the control valve of the brake associated therewith, when the amount of operation of said steering lever decreases from its full stroke to its neutral position, include:

(c) a third range in which the brake hydraulic pressure changes from a brake completely engaging pressure to a brake engagement maintaining pressure corresponding to the stroke of said steering lever, with the clutch hydraulic pressure being the clutch completely disengaging pressure, and

(d) a fourth range in which the brake hydraulic pressure changes from the brake engagement maintaining pressure to the brake completely disengaging pressure while the clutch hydraulic pressure changes from a clutch preparation pressure, which is slightly higher than a clutch engagement initiating pressure, to the clutch completely engaging pressure; and

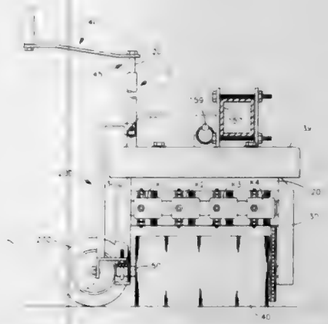
wherein said first range and said third range overlap, and the degree of overlap is adjustable.

5,325,934

HIGHLY MANEUVERABLE TRAILER DRIVER

Raymond L. Larson, 2623 E. 223rd St., Long Beach, Calif. 90810

Filed Oct. 25, 1993, Ser. No. 142,902
Int. Cl.[5] **B62D** *51/06*
U.S. Cl. 180—13 **6 Claims**



1. A trailer driver for a trailer comprising:

an inverted U-shaped frame providing a base having two integral, opposing, mutually parallel, downwardly extending, spaced apart arms, and an upwardly extending fixed bearing supporting a vertical hitch shaft rotatably engaged within the bearing, the hitch shaft adapted for engaging a cover means, and further providing a fixed steering sprocket coaxial with the hitch shaft;

a horizontal axle having rotatably mounted thereon a drive wheel and drive sprocket, the axle fixed to the arms and positioned between same;

a prime mover fixed to the frame and providing a driven sprocket interconnected with the drive sprocket by a first transfer means for driving the driven sprocket and drive wheel;

a steering assembly comprising a rotatable steering shaft held in a fixed orientation by the cover means and providing a rotatable steering sprocket at one end of the steering shaft, the rotatable steering sprocket being laterally displaced from the fixed steering sprocket, and a steering arm at the other end of the steering shaft, the rotatable and fixed steering sprockets being interconnected by a second transfer means so that rotation of the steering arm applies torque, through the steering shaft, rotatable steering sprocket, second transfer means and fixed steering sprocket, to the frame and drive wheel thereby rotating the frame, and drive wheel with respect to the hitch shaft and cover means;

a trailer hitch clamping means removably and non-rotatably attached to the hitch shaft and adapted for holding a trailer hitch fixedly thereto, whereby a trailer is supported on the frame for moving by the trailer driver.

5,325,935

REACH FORKLIFT

Shigeru Hirooka, Kyoto; Ikuya Katanaya, Nara; Koji Orita, and Shinobu Tanaka, both of Kyoto, all of Japan, assignors to Nippon Yusoki Co., Ltd., Kyoto, Japan

Filed May 18, 1993, Ser. No. 63,189
Int. Cl.[5] **B62D** *61/06*
U.S. Cl. 180—211 **9 Claims**

1. A reach forklift comprising:

a forklift body;

left and right straddle arms;

a pair of load wheels supported in a steerable manner in the vicinity of front ends of said left and right straddle arms, respectively;

driving means for steering said load wheels, said load wheels and said driving means being housed in said straddle arms;

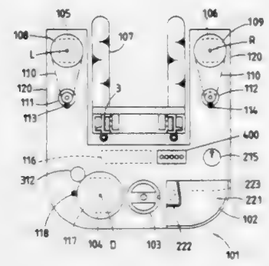
a drive wheel disposed in a rear portion of said forklift body; and

a steering wheel for steering said drive wheel;

steering angle detecting means for detecting steering angles of said left and right load wheels and said drive wheel,

wherein each of said left and right straddle arms comprises:

a bracket which rotatably supports a steering shaft, the center of said steering shaft being positioned at an outer



position in the width direction of said forklift body, said bracket being fixed to a lower face of said steering shaft, supporting said load wheels at an outer position of said forklift body, and rotatably supporting the center of said load wheel in the width direction of said load wheel, said center of said load wheel being separated from said center of said steering shaft by a predetermined distance;

a gear which is fixed to said bracket and formed into a sector shape, the arc portion of said sector gear being directed to the center of said forklift; and

a driving gear which engages with said sector gear and is driven by said driving means, said driving gear being positioned in the side of the center of said forklift.

5,325,936

LADDER LEVELER

Gerald Baker, 2526 Valley View Dr., Missoula, Mont. 59803

Filed Jun. 11, 1993, Ser. No. 90,695
Int. Cl.[5] **E06C** *7/44*
U.S. Cl. 182—204 **8 Claims**



1. Ladder leveler device comprising:

generally rectangular shaped base plate;

the base plate having a plurality of threaded holes;

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a plurality of hollow jack screws which are complimentary to and thread through the plurality of threaded holes in the base plate;
a plurality of Allen head bolts, washers and lock-nuts which bolts repose freely within the hollow jack screws;
a longitudinally disposed square tubular guide attached to the center of base plate;
a square tubular shaft which is slidable within the square tubular guide;
a plurality of longitudinally aligned holes on one longitudinal side of the square tubular shaft,
a restraint through the square tubular shaft located at an end of the square tubular shaft where the plurality of longitudinally aligned holes commence;
a longitudinal cut-out of the center of the longitudinal side of the square tubular shaft opposite the longitudinal side of the square tubular shaft containing the plurality of longitudinally aligned holes;
a pivoting foot secured to an end of the square tubular shaft opposite the end of the square tubular shaft where the plurality of longitudinally aligned holes commence;
a spring biased pin means attached to the center of the square tubular guide

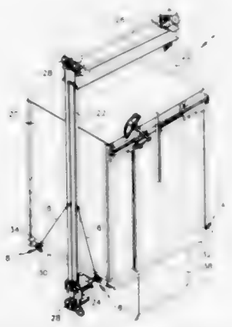
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5,325,937

ELEVATOR PLATFORM ISOLATION

T. Thomas Suchodolski, Ware, Mass., and Minglun Qiu, Bloomington, Ind., assignors to Otis Elevator Company, Farmington, Conn.

Filed May 13, 1993, Ser. No. 62,354
Int. Cl.[5] B66B *9/00*
U.S. Cl. 187—1 R **4 Claims**



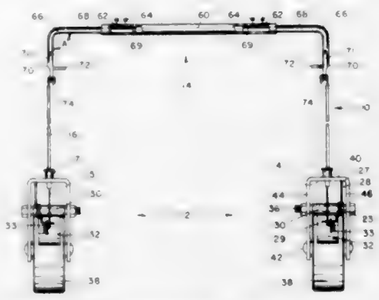
1. An apparatus for supporting an elevator cab, said apparatus comprising:
a frame disposed in a first plane;
a platform for supporting said cab, said platform being disposed in a second plane;
a plurality of braces having a first end portion attaching to said frame and a second end portion extending from said frame;
a means for attenuating vibrations within said frame, said means attaching directly between said second end portion of said braces and said platform whereby said means isolates said platform from vibrations in said frame; and
means for replacing said means for attenuating vibrations without disconnecting said braces from said platform.

5,325,938

AUTOMATIC SHOPPING CART BRAKE ENGAGED BY NESTING OF CARTS

Clyde V. King, 4501 Husband Rd., Paducah, Ky. 42003

Continuation of Ser. No. 866,792, Apr. 8, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 136,396
Int. Cl.[5] B62B *5/04*
U.S. Cl. 188—19 **15 Claims**



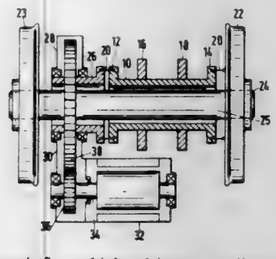
1. A shopping cart brake system, comprising:
1) a first shopping cart having a front end panel and an upwardly pivotal hinged rear panel, said upwardly pivotal hinged rear panel having at least one reinforcement rod extending along the side thereof;
2) a universal wheel brake assembly comprising:
a wheel housing mounted to the frame of a shopping cart;
a wheel rotatably mounted onto an axle within said wheel housing;
a curved brake shoe substantially enclosed within said wheel housing having an outer exterior surface and an interior high surface area contact surface, said brake shoe having a mandrel attached at one end of said exterior surface and a tab extending from said exterior brake shoe surface having at least one hole therein;
means for pivotally attaching said brake mandrel within said wheel housing providing for engageable contact of said interior contact surface of said brake shoe with said wheel;
spring means within said housing for biasing said brake shoe against said wheel for locking said wheel; and
means for retracting said brake shoe permitting rotation of said wheel, said means comprising a cable connection within said wheel housing; and
3) a handle assembly, comprising:
a stationary handle;
a pivoting handle having a central member with a pair of lateral arms extending therefrom in cooperative communication with said cable connection means;
means for pivotally attaching said lateral arms to the frame of said shopping cart, whereby said lateral arms extend past said pivot point;
stop means for limiting pivotal movement of said pivoting handle;
means for connecting said pivoting handle with said brake assembly whereby manual pivotal movement of said pivoting handle in a backward and downward direction compresses said spring means to unbias and disengage said brake shoe against said shopping cart wheel permitting rotation of said wheel, and releasing said pivoting handle allows pivotal movement of said handle in the opposite direction allowing said spring means to automatically bias said brake shoe against said wheel preventing rotation of said wheel; and
said stop means being in cooperative engagement with said pivoting handle for limiting pivotal movement of said pivoting handle and actuating the brake, said stop means being cooperably engageable with said reinforcement rod extending along the side of said upwardly pivotal hinged rear panel of said cart whereby engagement of a front end panel of a second cart being stacked within said first parked cart engages said upwardly pivotal hinged rear panel of said first cart pivoting said hinged rear panel upward moving said reinforcement rod and slidably engaging said stop means of said first cart extending from one or both of said lateral arms of the parked first cart to pivoting said pivoting handle disengaging said brake of said front parked first cart.

5,325,939

DRIVE UNIT FOR VEHICLES DRIVEN ON RAILS

Lutz Schwendt, Vellmar, Fed. Rep. of Germany, assignor to ABB Patent GmbH, Mannheim, Fed. Rep. of Germany

Filed Nov. 13, 1992, Ser. No. 975,665
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137234
Int. Cl.[5] B61C *9/44;* **B61H** *5/00*
U.S. Cl. 188—33 **5 Claims**



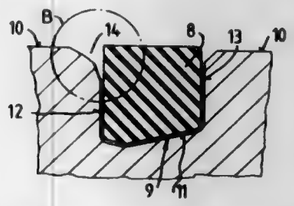
1. A drive unit for vehicles driven on rails, comprising an electric drive motor, a transmission being driven by said drive motor, said transmission having a main transmission hollow drive shaft, a hollow coupling shaft having ends, brake surfaces integrally supported on said hollow coupling shaft, a wheel set having wheels, one flexible rubber coupling connected between said hollow drive shaft and one of said ends of said hollow coupling shaft, and another flexible rubber coupling connected between one of said wheels and another of said ends of said hollow coupling shaft.

5,325,940

DISC BRAKE CYLINDER GROOVE WITH A RECESS CONSISTING OF THREE SECTOR SURFACES

Helmut Rueckert, Reinheim, and Kurt Ruehle, Karben, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 12,064
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1992, 4202927
Int. Cl.[5] F16D *65/20;* **F16B** *15/08*
U.S. Cl. 188—71.8 **7 Claims**



1. A disc brake with a brake caliper which straddles the outside edge of a brake disc and brake pads arranged on both sides of the brake disc and which is provided with a hydraulic actuating device, adapted to press the brake pads to the brake disc and having at least one brake cylinder and a brake piston axially, displaceable within the brake cylinder, an elastic sealing ring arranged in a surrounding annular groove inside the brake cylinder which rests frictionally for sealing purposes on an outside surface area of the brake piston, the annular groove having a groove wall nearest to the brake pads which is generally perpendicular to the brake piston axis and a surrounding recess adjacent to the brake cylinder, said recess receiving the sealing ring which is elastically pressed by the brake piston as the latter is axially displaced when the brake is applied, said recess having at least three adjacent surrounding conical surfaces the cross-sections of which are generally straight lines, with the angles of the straight lines towards the brake cylinder axis increasing progressively, starting from the surface which borders on the cylinder surface to the surface which borders on the groove wall.

5,325,941

COMPOSITE BRAKE ROTORS AND CLUTCHES

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Continuation-in-part of Ser. No. 580,932, Sep. 11, 1990, abandoned. This application May 21, 1992, Ser. No. 887,185
Int. Cl.[5] F16D *65/10;* **B22F** *7/02*
U.S. Cl. 188—218 XL **1 Claim**



1. A rotor member and brake pad assembly for frictional coupling in a brake or a clutch, said rotor member comprising:
a first surface, normal to the axis of rotation of said member, said surface being specifically smoothed for frictional coupling,
a second surface longitudinally opposed to said first surface; and
said rotor member comprised of a homogeneous material having a thermal conductivity in excess of 75 BTU/hr ° F.,
wherein the homogeneous material is comprised of a composite comprising a low density metal and a non-metallic material,
wherein the low density metal is selected from the group consisting of aluminum, and aluminum alloy, magnesium, a magnesium alloy and a mixture thereof,
wherein the non-metallic material is a refractory ceramic selected from the group consisting of a metal oxide, metal nitride, metal carbide, metal silicides and mixtures thereof, and
wherein the composite comprises about 50% to about 85% by weight of the low density metal and from about 50% to about 15% by weight of the non-metallic material, said brake pad comprising cupric oxide, antimony sulfide, silicon alumina alloy, barium sulfate, kevlar, zinc sulfide, coke, and graphite.

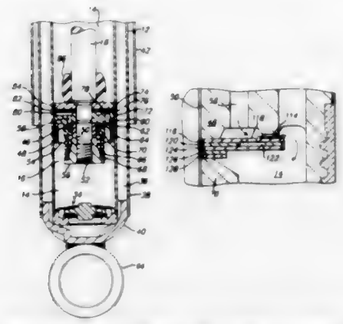
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5,325,942

TUNABLE HYDRAULIC VALVE FOR SHOCK ABSORBER

Gary W. Groves, and David T. Boucher, both of Monroe, Mich., assignors to Monroe Auto Equipment Company, Monroe, Mich.

Filed Mar. 14, 1991, Ser. No. 669,645
Int. Cl.[5] F16F *9/50*
U.S. Cl. 188—282 **8 Claims**



1. A direct acting hydraulic shock absorber comprising:
a pressure cylinder having a piston reciprocably disposed therein, said piston defining upper and lower ends of said pressure cylinder,
a reserve tube coextensive of and surrounding said pressure cylinder and defining a fluid containing reservoir therein,
upper and lower generally cup-shaped end caps closing the opposite ends of said reservoir,
valve means adjacent said lower end cap for controlling fluid flow between said pressure cylinder and said reservoir,
said piston having a valve assembly disposed at one end thereof, said valve assembly being variably responsive to a plurality of selected ranges of fluid pressure differentials between said upper and lower ends to provide a plurality of fluid flow paths between said upper and lower ends, said valve assembly having a first deflectable apertured valve disk, a second deflectable apertured valve disk and a hydraulic fluid bleed port,
wherein a first range of selected fluid pressure differentials causes fluid to flow along a first fluid flow path through said bleed port, a second selected range of fluid pressure differentials provides a second fluid flow path through the respective apertures of said first and second valve disks, and a third selected range of fluid pressure differentials deflects both said first and second valve disks providing a third fluid flow path.

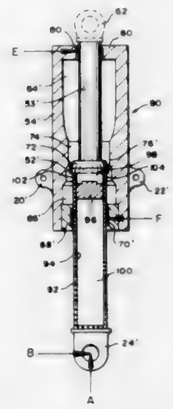
5,325,943

VARIABLE ORIFICE OIL/GAS DAMPER FOR AIRCRAFT LANDING GEAR

Harry C. Ralph, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 589,659, Sep. 28, 1990, abandoned. This application Jun. 17, 1992, Ser. No. 899,942
Int. Cl.[5] F16F *9/48*
U.S. Cl. 188—288 **6 Claims**

1. A variable orifice damper for dissipating energy in an aircraft landing gear, comprising:
a hollow cylinder having an elongated wall defining a longitudinal axis, said elongated wall being closed at each longitudinal end, the cylinder containing a first cavity portion, a second cavity portion, and a third cavity portion located between the first cavity portion and the second cavity portion along the longitudinal axis of the cylinder between the longitudinal ends, the cross sectional area of the first and second cavity portions being constant and the cross sectional area of the third cavity portion changing along the longitudinal axis of the cylinder, such that at each end of the third cavity portion the cross sectional area of the third cavity portion equals that of the adjacent first and second cavity portion respectively, and between each end of the third cavity portion the cross sectional area of the third cavity portion is reduced along the longitudinal axis of the cylinder; and
a piston rod defining a longitudinal axis and mounted coaxially with the cylinder for sliding movement in the cylinder relative to the cavity portions, said piston rod having a first portion supported laterally by, and extending through one of said closed longitudinal ends of the cylinder, a second portion supported laterally by, and extending through the other of said closed longitudinal ends of the cylinder, and a piston head located between the first portion and the second portion, the cross sectional area of the piston head changing along the longitudinal axis of the piston rod, the piston head being adapted to pass through the cavity portions with a predetermined space therebetween, the size of the space changing as the position of the piston head changes relative to its position in the third cavity portion such that it is greater adjacent the first and second cavity portions than along the third cavity portion.

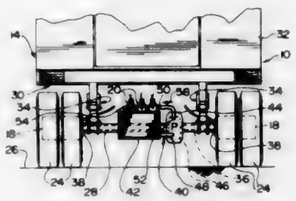


5,325,944

APPARATUS AND METHOD FOR BRAKING A VEHICLE

Robert L. Livingston, Sr., 921 1/2 St. Croix St., Hudson, Wis. 54016

Continuation of Ser. No. 697,582, May 9, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,003
Int. Cl.[5] F16D *57/02*
U.S. Cl. 188—294 **6 Claims**



1. Apparatus for braking a vehicle having an axle which is coaxial with a wheel engaging the surface over which the vehicle travels and rotatable with the wheel, comprising:

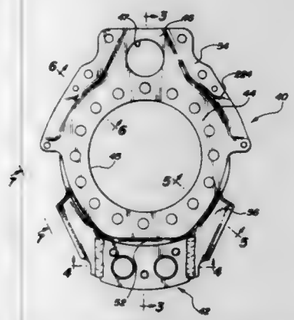
(a) a closed hydraulic circuit;
(b) a pump in said circuit, said pump having an impeller rotatable by the axle as the vehicle moves over the surface;
(c) means for selectively increasing, in sequence, the restriction of flow through said closed hydraulic circuit, wherein, as flow is restricted, a back-pressure is induced in said pump to apply a drag to the axle, said means for increasing the restriction of flow through said closed hydraulic system including a plurality of gate valves mounted within said closed hydraulic circuit, each of said gate valves having a vale element disposed for, and limited to, movement between a first, retracted position, wherein flow through said circuit is unimpeded, and a second, extended position, wherein flow is restricted in some measure;
(d) wherein a gate valve upflow of an adjacent gate valve, when said valve element of said upflow gate valve is in its second, extended position, restricts flow through said circuit to a lesser extent than does the adjacent downflow gate valve, when said valve element of said adjacent downflow gate valve is in its second, extended position, and wherein said valve elements of said plurality of gate valves, when actuated to effect braking of the vehicle, are moved from their defined first, retracted positions to their second, extended positions in sequence from an upflowmost gate valve to a downflowmost gate valve in said circuit such that flow through said circuit is incrementally more restricted as it passes through said gate valves.

5,325,945

VEHICLE BRAKE SUPPORT ASSEMBLY

Donald G. Walker, Sterling Heights, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 23, 1992, Ser. No. 950,583
Int. Cl.[5] F16D *51/00*
U.S. Cl. 188—341 **2 Claims**



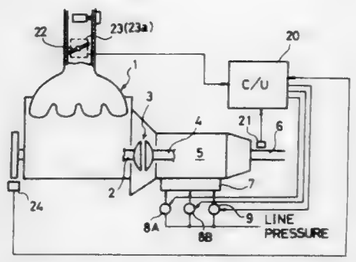
1. A brake support assembly for a vehicle comprising:
a stamped metal plate having a substantially planar and circular mounting portion;
diametrically opposed, planar first and second support portions;
said first support portion being offset from said mounting portion;
a first transition section respectively joining said first support portion to said mounting portion;
a first pair of reinforcing ribs extending along opposite edges of said first support portion having a first portion extending orthogonal to said planar first support portion; a second portion extending radially in a plane substantially parallel to said planar first support portion and a third portion extending orthogonal to said second portion, said first, second and third portions being continuously connected to form an involuted rib;
said first pair of reinforcing ribs being terminated in a second transition section extending from opposite edges of said planar first support portion to said mounting portion;
said second transition section including an orthogonally extending reinforcing rib of decreasing length to a length of zero in the region of the mounting portion;
a second pair of reinforcing ribs extending from opposite edges of said second support portion having a first portion extending orthogonal to said planar second support portion and a second portion extending radially in a plane substantially parallel to said planar second support portion, said first and second portions being continuously connected to form a continuous flange;
a bracket extending across said first support portion in spaced relation thereto and secured by laterally spaced edges welded to said first pair of reinforcing ribs;
a pair of laterally spaced apertures through said first support portion of said plate and a pair of laterally spaced apertures through said bracket with each aperture through said bracket axially aligned with and of the same diameter as one of said apertures through said first support portion of said plate;
a pair of sleeve-type bushings press-fit to said laterally spaced and axially aligned apertures provided through said bracket and said first mounting portion of said support plate;
a pair of anchor pins with each anchor pin having a cylindrical surface supported internally of one of said sleeve-type bushings and each of its ends extending axially from one end of its respective sleeve-type bushing;
a pair of brake shoes with each brake shoe comprised of a table supporting friction lining material and a pair of spaced generally parallel webs secured to and supporting said table, said brake shoes each having their webs at one end seated for pivoting movement about said one of said anchor pins, the opposite ends of said brake shoe supporting cam follower rollers;
means biasing said cam following rollers into contact with a cam actuator;
means for selectively rotating said cam actuator to displace said brake shoes; and
said first pair of reinforcing ribs disposed in the space defined between said webs of said brake shoes.

5,325,946

CONTROL DEVICE AND CONTROL METHOD FOR AUTOMATIC TRANSMISSION FOR VEHICLE

Masuo Kashiwabara, and Akira Shimizu, both of Isesaki, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

Filed Oct. 2, 1992, Ser. No. 956,852
Claims priority, application Japan, Oct. 2, 1991, 3-080174[U]
Int. Cl.[5] F16D *33/00*
U.S. Cl. 192—3.31 **18 Claims**



1. A control device for an automatic transmission for a vehicle comprising:
a torque converter placed between an output shaft of an engine and an input shaft of a gear type transmission;

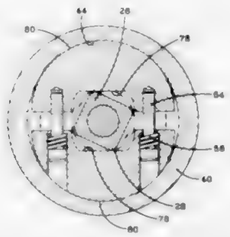
a lockup clutch for mechanically and directly engaging the input shaft with the output shaft of said torque converter;
a deceleration detecting means for detecting a deceleration driving state of the engine;
a non-deceleration detecting means for detecting a non-deceleration state of the engine;
a control value switching means for switching and setting a lockup force control value of said lockup clutch so that a lockup force in the deceleration driving state detected by said deceleration driving detecting means is smaller than a lockup force in the non-deceleration driving state;
a lockup control means for controlling lockup of said lockup clutch based on said lockup force control value in a predetermined driving zone including at least a deceleration driving zone; and
a lockup force increase restraining means for forcedly delaying a rise in a lockup force of the lockup clutch during transition from the deceleration driving state to the non-deceleration driving state.

5,325,947

POWER TRANSFERRING APPARATUS

Jacob A. Campbell, 3494 Welty Rd., Lucas, Ohio 44843

Filed Dec. 31, 1992, Ser. No. 999,313
Int. Cl.[5] F16D *13/06, 13/16, 43/20*
U.S. Cl. 192—54 **1 Claim**



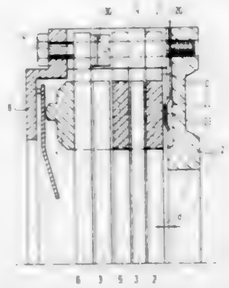
1. An apparatus for transferring power, said apparatus comprising:
a shaft, said shaft having first and second ends, said shaft having an axial centerline;
a pair of shoes, said shoes being in contact and in operative association with said second end of said shaft, said shoe having radially inward and radially outward surfaces, said shoes being radially outwardly displaceable between first and second positions, in said first position said shoes being radially inward and in said second position said shoes being radially outward;
an outer member, said outer member having an interior surface which defines a recess, said recess of said outer member being non-circular, said shoes being located within said recess, said radially outward surface of said shoes engaging said interior surface of said outer member and transferring rotational energy from said shaft to said outer member in said shoes or in said second position, said outer member freely rotatable when said shoes are in said first position; and,
a guide, said guide having lateral edges, said lateral edges of said guide being adjacent lateral edges of said shoes and restraining said shoes to move along a line, said guide further comprising a first end, said first end of said guide fitting into said second end of said shaft.

5,325,948

CLUTCH WITH STRUCTURAL PLATES, ESPECIALLY OF CARBON-CARBON

Guy Prud'Homme, Ste Foy Les Lyon, France, assignor to Carbone Industrie, Bagnolet Cedex, France

Filed Oct. 5, 1992, Ser. No. 956,311
Claims priority, application France, Oct. 9, 1991, 91 12431
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[5] F16D *13/40*
U.S. Cl. 192—70.14 **5 Claims**



1. In a clutch with structural plates of carbon-carbon, comprising,
a drive flywheel,
a first driving plate forming with the flywheel a first non-clutching interface,
at least one pair of driven plates connected to an output shaft, a next adjacent driving plate being interposed between each pair of driven plates,
a second driving plate,
a thrust plate forming with the second driving plate, a second non-clutching interface,
a casing with a mechanism operable to apply pressure to the thrust plate and provided with a plurality of bars fitted into respective radial recesses of the driving plates and being fixed to the flywheel,
the improvement wherein said clutch further includes a packing-up device eliminating play at at least one of the non-clutching interfaces and comprising means pressing the second driving plate against said thrust plate, and wherein the packing-up device further comprises at least one resilient metal tongue located between the second driving plate and a next adjacent driving plate, and said at least one resilient metal tongue having an operative curved end pressing the second driving plate against said thrust plate.

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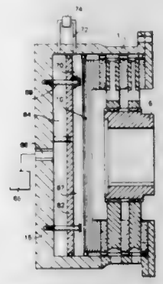
BRAKE OR CLUTCH UNIT WEAR ADJUSTMENT MEANS

Simon P. Dommett, Wootton; Peter R. Davies, Brogborough, and Ian N. Hakon, Bedford, all of England, assignors to TI Interlock Limited, Bedford, England

Continuation of Ser. No. 920,218, Jul. 24, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,376
Claims priority, application United Kingdom, Jul. 25, 1991, 9116107
Int. Cl.[5] F16D *13/75, 65/72*
U.S. Cl. 192—70.25 **5 Claims**

1. A clutch or brake unit comprising:
a cylinder having a closed end,
a piston slidably received within said cylinder and defining a main chamber with said closed end thereof,
a pressure plate slidably received within said cylinder and defining with said piston an auxiliary chamber,
fluid pressure supply means selectively operable to supply pressure fluid to said main chamber,

pressure fluid passage means permitting flow of said pressure fluid only into said auxiliary chamber, said auxiliary chamber being sealed against outflow of said pressure fluid therefrom,
friction members movable together by movement of said



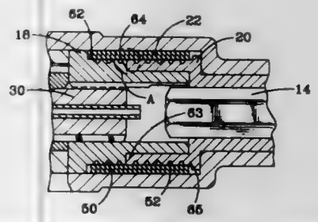
pressure plate away from said closed end in response to fluid pressure in said main and auxiliary chambers to effect clutch or brake actuation, and
return means acting on said piston to effect movement thereof towards said closed end on release of said fluid pressure to end said clutch or brake actuation.

5,325,950

LUBRICANT REMOVER FOR A WRAP SPRING CLUTCH

Robert R. Kimberlin, Troutville, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 937,035, Aug. 31, 1992, abandoned. This application Aug. 24, 1993, Ser. No. 111,231
Int. Cl.[5] F16D *13/08, 41/34, 13/74*
U.S. Cl. 192—415 **6 Claims**



3. In a percussive apparatus activated by a percussive fluid containing a lubricant, said apparatus having a wrap spring clutch assembly for transmitting rotary motion comprising:
(a) a first hub having a first exterior frictional surface formed thereon, said first surface encircling a first hub longitudinal axis;
(b) a second hub having a second exterior frictional surface formed thereon, said second surface encircling a second hub longitudinal axis, said second hub being coaxial to said first hub;
(c) a wrap spring in helical frictional engagement with a portion of both said first frictional surface and said second frictional surface, no portion of said wrap spring being fixedly attached to either said first or said second frictional surface, wherein relative rotary motion between said first hub and said second hub is permitted in a first direction and restricted in a second direction;
(d) means on one of said hubs for transmitting a portion of said lubricant below an exterior surface of said hub, said means being positioned entirely between a top and bottom edge of said hub surface, without intersecting said top or bottom edges, whereby frictional engagement of said wrap spring is improved; and
(e) said means for transmitting a portion of said lubricant comprising a continuous groove in said surface of said hub, extending in a spiral around said hub, said groove extending in a direction opposite to a helical direction of said wrap spring.

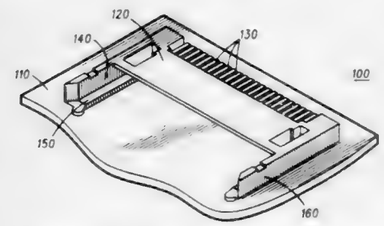
6. In a percussive apparatus activated by a percussive fluid containing a lubricant, said apparatus having a wrap spring clutch assembly for transmitting rotary motion comprising:
(a) a first hub having a first exterior frictional surface formed thereon, said first surface encircling a first hub longitudinal axis;
(b) a second hub having a second exterior frictional surface formed thereon, said second surface encircling a second hub longitudinal axis, said second hub being coaxial to said first hub;
(c) a wrap spring in helical frictional engagement with a portion of both said first frictional surface and said second frictional surface, no portion of said wrap spring being fixedly attached to either said first or said second frictional surface, wherein relative rotary motion between said first hub and said second hub is permitted in a first direction and restricted in a second direction;
(d) means on one of said hubs for transmitting a portion of said lubricant below said exterior surface of said hub, said means being positioned entirely between a top and bottom edge of said hub surface, without intersecting said top or bottom edges, whereby frictional engagement of said wrap spring is improved; and
(e) said means for transmitting a portion of said lubricant comprising a plurality of grooves in said surface of said hub, extending around a perimeter of said hub, said grooves being substantially parallel to each other and each groove positioned in a plane that is transverse to said longitudinal axis of said hub.

5,325,951

PERIPHERAL CARD HEADER LEAD-IN ARRANGEMENT

Roger W. Ady, Lisle, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

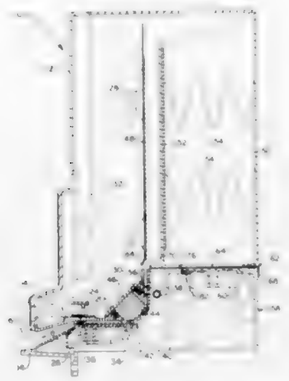
Filed Oct. 29, 1993, Ser. No. 144,846
Int. Cl.[5] B65G *11/00*
U.S. Cl. 193—1 **7 Claims**



1. A peripheral card header assembly and arrangement for receiving a peripheral card, said arrangement providing an anti-jam feature for inserted cards and comprising in combination:
a three-sided frame assembly having:
alignment means for aligning said peripheral card in both horizontal and vertical directions, including means to guard against jamming and for guiding said peripheral card into its final connected position, and
hold-down means for retaining said peripheral card header securely on a mounting surface, said hold-down means having an angled lead-in ramp for effecting said guiding action for said peripheral card onto and within said frame assembly, said ramp projecting below said mounting surface.

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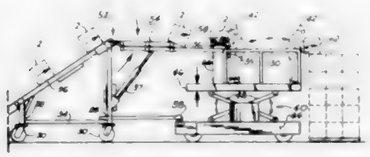
5,325,952
ANTIRETRIEVAL DEVICE FOR CURRENCY VALIDATORS
John H. McGinley, Chardon; William D. Bruch, Solon; Vladimir Suris, Mayfield Hts., and John T. Lynch, Bedford Hts., all of Ohio, assignors to Dixie-Jarco, Inc., Eastlake, Ohio
Filed Feb. 26, 1992, Ser. No. 841,569
Int. Cl.[5] G07D 7/00
U.S. Cl. 194—203 14 Claims



8. In a currency validator having a note path comprising a horizontal portion interconnecting a vertical portion, a cash box opposite the vertical portion, and a punch plate in reciprocating communication with the cash box across the vertical portion, the improvement of an antiretrieval device, comprising:

a set of teeth interposed at an end of the vertical portion of the note path and between the cash box and the note path, said set of teeth traversing an end of a plate secured to a casing of the currency validator, said end of said plate being spring biased.

5,325,953
ADAPTABLE CONVEYOR FOR MAN-LOADED CARGOS
John Doster, Rte. 1, Box 68, Saltillo, Miss. 38866; Jimmy Barnett, Rte. 1, Box 192, and Joe W. Barnett, Rte. 1, Box 515, both of Nettleton, Miss. 38858
Filed Nov. 13, 1992, Ser. No. 975,915
Int. Cl.[5] B65G 41/00
U.S. Cl. 198—304 5 Claims



1. An apparatus for transporting cargo items for manual positioning into a storage configuration comprising, in combination:

means, at a working height, for urging cargo items onto a conveyor;

a plurality of non-powered telescoping roller conveyors descending from said means for urging to a powered elevating conveyor belt;

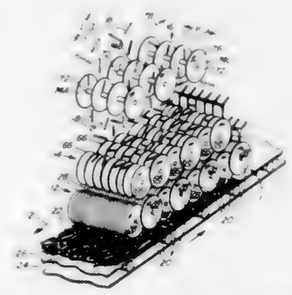
said roller conveyors having means for free movement relative to said means for urging;

a mobile, elevatable work platform coupled to said powered elevating conveyor belt for movement thereof;

said powered elevating conveyor belt having a roller conveyor extension at its upper end;

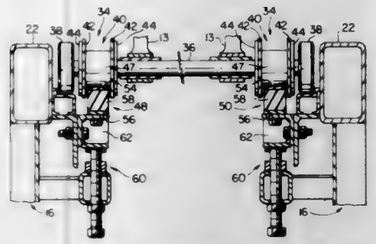
means for positioning said roller conveyor extension at a height with respect to said elevatable work platform.

5,325,954
ORIENTER
Bradley J. Crittenden, Port Moody; Derek Barnes, West Vancouver; Robert M. Knudson, Coquitlam, and Frank L. Laytner, Burnaby, all of Canada, assignors to Trus Joist MacMillan, Boise, Id.
Filed Jun. 29, 1993, Ser. No. 83,238
Int. Cl.[5] B65G 47/24
U.S. Cl. 198—382 17 Claims



1. An orienter system for orienting strands with their longitudinal axes substantially parallel comprising an orienter formed by a plurality of spaced parallel orienter shafts each mounting a plurality of axially spaced radial orienter discs, said orienter discs on adjacent said orienter shafts overlapping, a plurality of side by side orienting passages, said orienting passages having their longitudinal axes substantially parallel and through which said strands pass and are aligned with their longitudinal axes substantially parallel to said longitudinal axes of said orienting passages and form a mat, said orienter discs defining opposite sides of said orienting passages, a preorienter positioned directly above said orienter, said preorienter including a plurality of spaced parallel preorienter shafts having their axes substantially perpendicular to said longitudinal axes of said orienting passages, a plurality of preorienter discs mounted in axially spaced relationship on each of said preorienter shafts, each said preorienter disc extending substantially radially of its preorienter shaft, said preorienter discs on adjacent of said preorienter shafts overlapping, a plurality of side by side preorienter passages, said preorienter passages having their longitudinal axes substantially parallel to said longitudinal axes of said orienting passages and having their opposite sides defined by said preorienter discs, said preorienter passages having widths W at least twice as wide as widths X of said orienting passages therebelow, said widths W and X being measured perpendicular to said longitudinal axes of said passages and the direction of flow of said strands through said passages and means for mounting said preorienter discs so that the maximum spacing T between their peripheries and the adjacent portions of the top of said orienter passages is not more than 30 cm (12 inches) but does not exceed the average or mean length L of strands to be oriented.

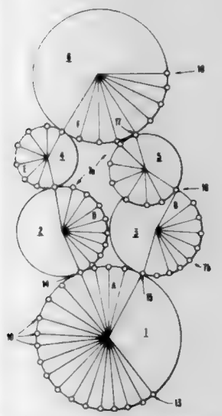
5,325,955
ESCALATOR STEP CHAIN SUPPORT APPARATUS
Hermann W. Ahls, Obernkirchen OT Vehlen; Martin Mehlert, Nienstaedt, and Jan G. Harbers, Ahnsen, all of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.
Filed Oct. 8, 1993, Ser. No. 134,036
Int. Cl.[5] B66B 23/12
U.S. Cl. 198—332 5 Claims



1. A step chain support apparatus, for an escalator having a frame with a first landing, a second landing, and an inclined section attached therebetween, a step chain for travel along a predetermined path, having a plurality of axles with rollers, and a pair of roller tracks for supporting the step chain along the path, comprising:

a pair of arcuated ramps for supporting the step chain in a transition area between either of said landings and said inclined section, inboard of the roller tracks, wherein each of said ramps comprises a first bushing, a second bushing, and an elastomeric center section attached to said bushings.

5,325,956
METHOD AND APPARATUS FOR ORIENTING ELONGATED COMPONENTS WITH DISTINCT ENDS
Billy J. Keen, Jr., Chesterfield, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Feb. 24, 1993, Ser. No. 22,720
Int. Cl.[5] B65G 47/24
U.S. Cl. 198—395 21 Claims



1. An apparatus for orienting elongated components having different ends, wherein the elongated components may be input into the apparatus without regard to their orientation with respect to their ends, comprising:

a positioning mechanism having holding means along its surface for receiving randomly oriented elongated components;

means for identifying and moving improperly oriented elongated components relative to a datum line;

at least one transfer means having a plurality of holding means along the surface of each transfer means for receiving properly oriented elongated components;

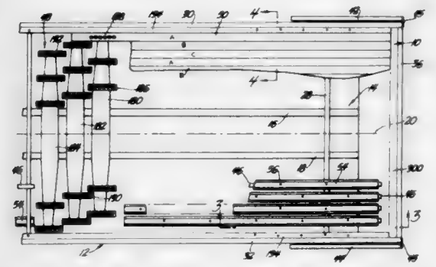
a 180°-turning mechanism having a plurality of holding means along its surface for receiving improperly oriented elongated components and turning them 180° to be properly oriented;

an assembly mechanism having a plurality of holding means along its surface for receiving both the originally properly oriented elongated components and the elongated components which have been turned to be properly orientated;

means for maintaining an appropriate relative position between an individual elongated component and an individual holding means; and

means for transferring elongated components from a holding means on one mechanism to a holding means on an adjacent mechanism.

5,325,957
BEARING FOR RECIPROCATING FLOOR CONVEYOR
Arthur Wilkens, R.R. 2, Box 46A, Osborne, Kans. 67473
Filed Aug. 23, 1993, Ser. No. 110,505
Int. Cl.[5] B65G 25/04
U.S. Cl. 198—750 9 Claims



1. A reciprocating floor conveyor having cross beams; a plurality of parallel spaced apart guide beam assemblies each of which has at least one guide beam assembly section attached to the cross beams; bearings mounted on the guide beam assemblies; a plurality of elongated floor slats supported by the bearings; and a floor slat drive assembly connected to the floor slats and operable to reciprocate the floor slats back and forth to convey material supported by the floor slats, and wherein each bearing includes an upper section with an upwardly facing bearing surface that engages and supports a floor slat and extends substantially the full length of the guide beam assembly section upon which it is mounted, sides that extend downwardly from the upper section with an upwardly facing bearing surface, a generally downwardly facing surface on each side that cooperates with a floor slat to limit vertical movement of the floor slat and to enclose the upwardly facing bearing surface from one end of the guide beam assembly section to the other end, and fasteners that secure each bearing to a guide beam assembly section.

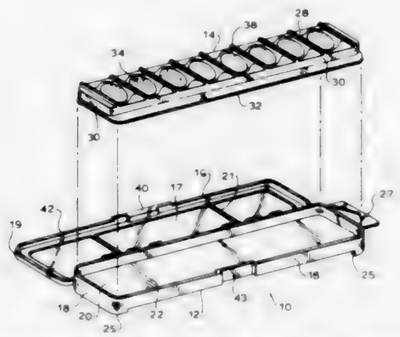
5,325,958
COMBINATION PAINT TRAY AND STORAGE BOX
James D. Arasim, Racine, Wis., assignor to Western Publishing Co., Inc., Racine, Wis.
Filed Feb. 4, 1993, Ser. No. 13,755
Int. Cl.[5] B44D 3/04
U.S. Cl. 206—1.8 1 Claim

1. A combination tray and box for storing and using a plurality of paint colors, comprising:

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an elongated housing being generally defined by a planar bottom and four sides where said four sides define an interior perimeter and interior volume, said planar bottom having a first side disposed to the interior of said housing, and a second side disposed to the exterior of said housing;

insert means for storing paint, said insert means comprising a molded, unitarily formed body defined by a plurality of sidewalls which terminate in a peripheral flange, said body having an exterior perimeter less than said interior perimeter of said housing where said body is adapted to fit within said interior volume of said housing and rest against said first side of said planar bottom thereof, thereby defining a



channel between said insert and said interior perimeter of said housing, said body defining a plurality of adjacent paint wells disposed in a linear relationship along the longitudinal extent thereof, each having an elliptical planform extending downwardly from an open top end to a closed bottom end, and a plurality of transverse raised ribs, each juxtaposed between adjacent paint wells and extending transversely between two of said sidewalls to segregate an area adjacent each well; and

cover means associated with said housing for concealing said interior volume and said insert means, said cover means pivotally attached to said housing along one of said four sides thereof.

5,325,959

BOOKMARK EYEGLASS CASE COMBINATION

Irwin Goldberger, 991 Benton St., Woodmere, N.Y. 11598

Filed Mar. 25, 1993, Ser. No. 36,713

Int. Cl.[5] A45C *11/04*

U.S. Cl. 206—5 **18 Claims**

1. A bookmark and eyeglass case in combination with a book, said book having an outside top cover comprising:

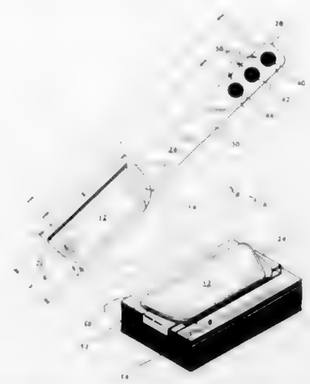
an eyeglass case having an open end and a closed end, with a length and a width, said length being a distance between said open end and said closed end with said length being greater than said width, with a top side extending between said open end and said closed end, and with a bottom side extending between said open end and said closed end;

an eyeglass case attachment means on said eyeglass case for releasably attaching said eyeglass case to a bookmark;

a bookmark having a first end and a second end, with a top surface extending between said first end and said second end, and with a bottom surface extending between said first end and said second end;

a bookmark attachment means on said bookmark for releasably attaching said bookmark to said eyeglass case attachment means; and

means for fastening said first end of said bookmark to an end of said eyeglass case so that the bookmark extends along the length of the eyeglass case;



wherein said eyeglass case is held in place on the outside top cover of the book.

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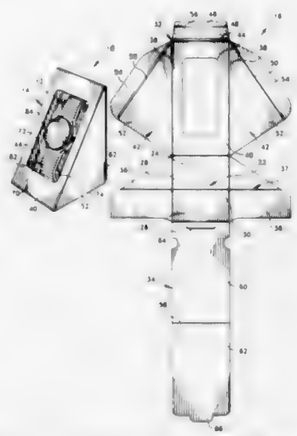
WATCH DISPLAY PACKAGE

Jack Sims, North Providence, R.I., assignor to International Packaging Corporation, Pawtucket, R.I.

Filed Mar. 18, 1993, Ser. No. 33,021

Int. Cl.[5] B65D *85/40*

U.S. Cl. 206—45.19 **18 Claims**



1. A package construction for alternatively displaying and enclosing a wristwatch comprising:

a generally wedge-shaped housing having an inclined front panel, a rear panel and a display opening in said front panel;

an easel-like display member received in said housing, said display member being operative for holding said watch with the face thereof aligned with said display opening; and

a cover panel hingeably attached to said housing, said cover panel being hingeably moveable between a first position wherein said cover panel lies adjacent to said front panel and covers said display opening and a second position wherein said cover panel lies adjacent to said rear panel, whereby said watch is viewable through said display opening.

7. A package construction comprising a generally wedge-shaped housing having

a base panel;

first and second inner side panels extending upwardly from said base panel;

an inclined front panel extending upwardly and rearwardly from said base panel, said front panel having a display opening formed therein;

first and second outer side panels extending downwardly from said front panel so as to overlap said inner side panels;

two side flaps extending inwardly from said outer side panels;

a rear panel extending upwardly from said base panel so as to overlap said side flaps;

a cover panel attached to said housing, said cover panel being moveable between a first position wherein said cover panel lies adjacent to said front panel and a second position wherein said cover panel lies adjacent to said rear panel; and

means for releasably securing said cover panel to said front panel.

16. A blank for a package construction comprising:

a base panel having first and second ends and opposite sides;

two inner side panels respectively extending outwardly from the opposite sides of said base panel;

a rectangular front panel extending outwardly from the first end of said base panel, said front panel including a first end adjacent said base panel, an opposite second end, and opposite sides, said front panel further having a window formed therein;

a top flap extending outwardly from the second end of said front panel;

two triangular side panels respectively extending outwardly from the opposite sides of said front panel;

side flaps extending outwardly from said side panels;

a rectangular rear panel extending outwardly from the second end of said base panel, said rear panel having a first end adjacent said base panel and an opposite second end, and further including a slot formed therein adjacent said first end thereof; and

a rectangular cover panel extending outwardly from the second end of said rear panel.

5,325,961

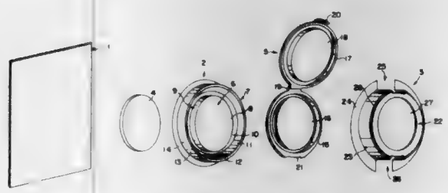
BLISTER PACKAGE FOR COSMETIC ARTICLE AND MEANS TO PROTECT APPLICATOR THEREFOR

John M. B. Ford; Kenneth Vilag; Tammye L. Byars, all of Cordova, and Robin L. Turner, Memphis, all of Tenn., assignors to Intellectual Property Holding Co., Wilmington, Del.

Filed Jul. 6, 1992, Ser. No. 908,057

Int. Cl.[5] B65D *69/00*

U.S. Cl. 206—229 **14 Claims**



1. A display package for a cosmetic article, which comprises:

a support panel having a first surface;

a first preformed blister formed from a transparent thermoformable material and mounted on said first surface of said support panel and adapted to confine a cosmetic applicator, said first blister comprising a first horizontal wall, a first peripheral skirt depending substantially perpendicularly from the periphery of said first wall and a first flange extending radially outward from the lower edge of said first skirt whereby said first blister is mounted on said support panel; and

a second preformed blister formed from a transparent thermoformable material and mounted over said first preformed blister on said first surface of said support panel and enclosing said first preformed blister, said second blister comprising a second horizontal wall, a second peripheral skirt depending substantially perpendicularly from the periphery of said second wall and a second flange extending radially outward from the lower edge of said second skirt beyond the perimeter of said first flange of said first blister whereby said second blister is mounted on said support panel;

wherein said first preformed blister further comprises a central blister portion having a horizontal top wall and a depending circumferential side wall, a circumferential trough about said central blister portion and a circumferential outer wall about said trough, said outer wall having means for mounting said first preformed blister to said support panel; whereby said central blister portion comprises means to confine a cosmetic applicator; and

whereby said first preformed blister and said second preformed blister define an area therebetween which is adapted to confine a cosmetic article, and whereby said first preformed blister comprises a support for a cosmetic article in said package.

5,325,962

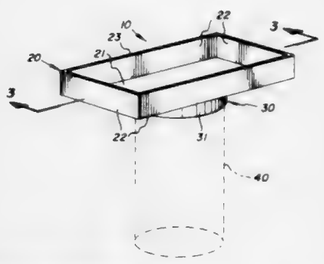
COMBINED LID AND TRAY ATTACHMENT

Angela R. N. Ouellette, 4601 NW. 2nd Ave., #804, Boca Raton, Fla. 33432

Continuation-in-part of Ser. No. 937,531, Aug. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 829,711, Feb. 27, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 144,000

Int. Cl.[5] B65D *45/00*

U.S. Cl. 206—229 **1 Claim**



1. A cleaning kit comprising:

a substantially rectangular shaped sponge measuring 4.5 inches in length by 2.75 inches in width by 0.5 inches in depth and having a first broad face comprising ordinary sponge material and a second broad face comprising an abrasive plastic material for scouring, said broad faces each having a broad face area defined by said length and width,

a cylindrical cleanser can of conventional design having a top end and a bottom end, said top end having an upper rim measuring 9.25 inches in circumference and a bead protruding radially outward from said upper rim and a top wall with a plurality of cleanser dispensing perforations,

a tray structure for receiving and retaining said sponge having a rectangular bottom wall having an area and a shape substantially matching those of one of said broad face areas of said sponge and having a substantially pe-

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ripheral side wall extending upward from said bottom wall and having an open top for exposing said sponge to the atmosphere surrounding said tray structure to permit moisture to evaporate from said sponge, and a can engaging flange extending downward from said bottom wall for sliding over said can upper rim and having engaging means within said flange for receiving and engaging said bead to removably secure said tray structure to said can

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5,325,963

PACK FOR CIGARETTES OR THE LIKE

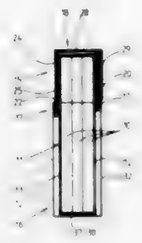
Heinz Focke, Verden, and Harald Gosebruch, Hannover, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Sep. 8, 1992, Ser. No. 941,799

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, 4129609

Int. Cl.[5] **B65D** *85/10*

U.S. Cl. 206—268 **9 Claims**



1. A pack for cigarettes (10) which are packed in an inner wrapper (12), wherein

said pack comprises a top part (15) designed as a hinge-lid pack, and a bottom part (16) designed as a soft pack, said top part and said bottom part being connected to one another by an adhesive bond;

said top part (15) consists of a first one-piece folded blank, made of thin cardboard, having a rear pack panel (22) and a hinged lid (18); said hinged lid (18) having a rear lid panel (24), lid side tabs (26, 31), a top lid panel (28) and a front lid panel (29); said hinged lid (18) being hingedly connected to said rear pack panel (22) by a hinge line (25) between said rear pack panel (22) and said rear lid panel (24);

the bottom part consists of a second one-piece folded blank which is made of thinner foldable packaging material, and which is folded to have the form of a cup; said cup having a front wall (32), bottom tabs (37, 38) connected to one another to form a bottom wall, a side tab (35) connected to a connecting side strip (36) to form one side wall, and a second side wall (34); and

the top part (15) contains a collar (19) comprising a collar front panel (20) and two collar side panels (21), the collar front panel (20) forming a front side of said top part (15) and being directly connected to said front wall (32) of said bottom part (16).

5,325,964

FIBROUS INSULATION SUPPORT PINS

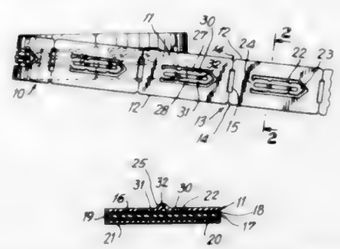
John E. Lyons, Levitown, N.Y., assignor to Duro Dyne Corporation, Farmingdale, N.Y.

Filed Apr. 29, 1993, Ser. No. 52,527

Int. Cl.[5] **B65D** *85/24*

U.S. Cl. 206—345 **9 Claims**

1. An article of manufacture, a strip of separable insulation support pins comprising a metal band having a rear surface, an elongate, double faced adhesive tape member coextensive with said band, said tape member including a first face adhesively bonded to said rear surface, and a release layer covering the adhesive surface of said tape remote from said band, said band being divided into segments separated by frangible transverse score lines, said segments each including a cutout area defining



an elongate tine having a point at one end and a flexible line at the other end hingedly joining said tine to said segment.

5,325,965

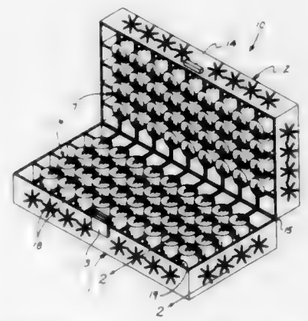
CONTAMINATED NEEDLE DISPOSAL SYSTEM AND DEVICE

James H. Kelley, 17159 E. Evans Ave., Aurora, Colo. 80013

Filed Jul. 30, 1993, Ser. No. 99,518

Int. Cl.[5] **B65D** *83/10*

U.S. Cl. 206—366 **3 Claims**



1. A contaminated needle disposal system/device, comprising,

a first container and a second container, with the first container having a first container rear wall, the second container having a second container rear wall, wherein the first container rear wall and the second container rear wall include an interconnecting hinge, with the first container including a first matrix of disposable cylinders contained therewithin, and the second container having a matrix of second cylinders contained therewithin, said cylinders of said first matrix of cylinders and said second matrix of cylinders each include a radial array of frangible mounting rods extending therefrom interconnecting adjacent cylinders.

5,325,966

TOOL BOX

Fu-Ping Chang, No. 7, Ta Chih Lane, Hsueh Fu Rd., Ta Yu Hsiang, Taichung Hsien, Taiwan

Filed Jun. 2, 1993, Ser. No. 72,054

Int. Cl.[5] **B65D** *21/02*

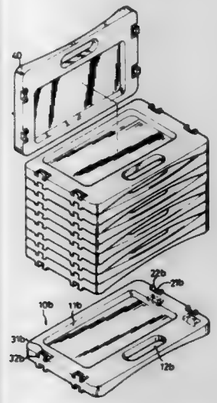
U.S. Cl. 206—372 **2 Claims**

1. A tool box comprising:

a cover comprising at least one first recess formed therein, at least one anchor formed in said recess, at least one pair of claws formed thereon and at least one second recess formed between said pair of claws; and

a number of trays each comprising at least one first recess formed in a first side thereof, at least one anchor formed in said first recess, at least one pair of claws formed on the first side thereof, at least one second recess formed between said pair of claws, at least one third recess formed in a second side thereof, at least one anchor formed in said third recess, at least one pair of claws formed on the second side thereof and at least one fourth recess formed between said pair of claws formed on the second side thereof;

said pair of claws formed on said cover being insertable in said first recess formed in one tray while said pair of claws formed on the first side of said tray being insertable in said



first recess formed in said tray, and said cover then being slidable relative to said tray, so that said anchor and said pair of claws formed on said cover respectively engage with said pair of claws and said anchor formed on the first side of said tray, thereby restraining said cover from moving relative to said tray in a direction being perpendicular to said cover and said tray;

said anchor and said pair of claws formed on the second side of each tray being respectively engageable with said pair of claws and said anchor formed on the first side of the next tray, thereby restraining said trays from moving relative to one another in a direction being perpendicular to said trays.

5,325,967

PACKAGING DEVICE USING MEMBRANE, PLATFORM AND APERTURE AS A MEANS OF RESTRAINT

Juanita A. Gonzales, P.O. Box 60131, Palo Alto, Calif. 94306-0131

Filed May 28, 1992, Ser. No. 890,651

Int. Cl.[5] **B65D** *85/30, 73/00*

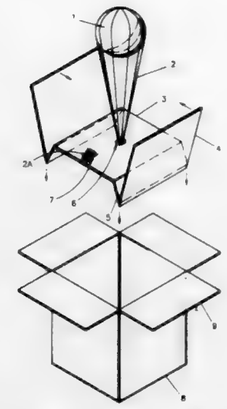
U.S. Cl. 206—462 **3 Claims**

1. A package for holding at least one object safe from damage due to rough handling of the package, comprising:

a cardboard carton having a bottom and sidewalls extending upwardly therefrom,

a load bearing supporting sheet fastened within said carton a distance above the bottom of said carton and comprising at least one edge, first and second surfaces, and an aperture therethrough,

said at least one object positioned on the first surface of said supporting sheet in alignment with said aperture and held tightly thereon by a flexible membrane, first portions of said flexible membrane extending about and tightly enveloping said at least one object, second portions of said flexible membrane extending through said aperture and along the second surface of said supporting sheet, and free ends of said flexible membrane being fastened to an edge of said supporting sheet by a metal staple extending through said free ends of said flexible membrane and said edge of said supporting sheet thereby preventing said at



least one object from moving in relation to said supporting sheet and thereby protecting said at least one object from damage.

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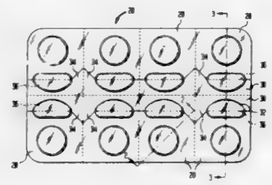
PACKAGE FOR HOLDING TABLETS

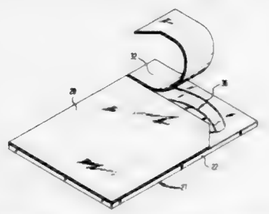
Harry S. Sowden, Southampton, Pa., assignor to McNeil-PPC, Inc., Milltown, N.J.

Filed Jul. 14, 1993, Ser. No. 92,401

Int. Cl.[5] **B65D** *83/04*

U.S. Cl. 206—532 **10 Claims**





1. A package for holding a plurality of tablets comprising:

a sheet containing a plurality of depressions, each depression capable of holding therein at least one tablet each said depression comprising a well and having a perimeter;

a cover for sealing to said sheet around the perimeter of each said depression, said sheet divided by a plurality of perforations into discrete subdivisions so that each subdivision contains one of said depressions and has a predetermined width and length;

an adhesive layer attaching said sheet to said cover around the perimeter of each of said depressions wherein said cover completely seals said depressions; and

a plurality of access tabs formed in said cover by perfora-

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tions, said access tabs corresponding in number to said subdivisions, each of said access tabs placed in spaced apart relation to each of said depressions, and each said access tab having a length equal to the width of said subdivision and a width which varies along said subdivision width wherein each said access tab forms a generally trapezoidal portion extending from a generally rectangular portion, and each said access tab is sealed to said sheet in the area of said rectangular portion but not sealed to said sheet in the area of said trapezoidal portion

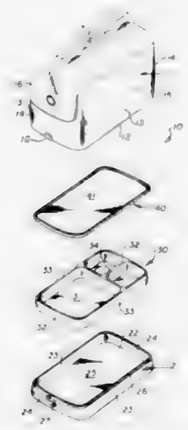
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5,325,969

LUNCH PAIL HAVING DETACHABLE FOOD COMPARTMENT

Delbert L. Gordon, 233 Laurel St., Lake Jackson, Tex. 77566, and Troy L. Smith, P.O. Box 1818, Brazoria, Tex. 77422

Filed Feb. 17, 1993, Ser. No. 18,353
Int. Cl.[5] H45C *11/20*
U.S. Cl. 206—546 **7 Claims**



1. A lunch pail having a first food and beverage compartment and a detachable second food compartment for selectively carrying different types of lunches and other articles comprising:

an upper member having a bottom wall, opposed side walls and end walls extending upwardly therefrom defining a first food and beverage compartment, an open and closable lid at an upper end of said side walls and end walls defining a closure for said first food and beverage compartment, a handle on said lid, and one element of a fastening mechanism on the exterior of said opposed end walls disposed adjacent said bottom wall;

said upper member opposed side walls and end walls extending a short distance beneath said bottom wall to define a depending lip surrounding a central recessed area; and

a lower member having a bottom wall, opposed side walls and end walls extending upwardly therefrom defining a second food compartment having an open top end sized to be slidably received within said upper member depending lip and engaged on said recessed area, and a mating element of said fastening mechanism on the exterior of each said end wall adjacent said open top end that will releasably engage said fastening mechanisms on said upper member end walls;

said lower member being selectively releasably connected to the bottom of said upper member and said connected upper and lower members conveniently carried as a single unit whereby food, beverages, and other articles of one type may be contained in said first food and beverage compartment and isolated from food and other articles of another type contained in said second food compartment; and

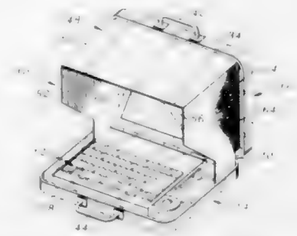
said upper member being selectively capable of use independently of said lower member when disconnected therefrom for containing food, beverages, and other articles.

5,325,970

CARRYING CASE FOR PORTABLE COMPUTERS

Thomas A. Dillon, 4545 Ocean Valley La., San Diego, and Richard E. Hemperly, 2620 Luciernaga St., Carlsbad, Calif. 92009

Filed Oct. 26, 1992, Ser. No. 966,690
Int. Cl.[5] H05K *5/00*
U.S. Cl. 206—576 **2 Claims**



1. An improved carrying case for containing and transporting a portable computer having a display screen housed in a top of the computer which is hinged to swing between a closed position and a vertically oriented open position wherein the display screen and computer controls are exposed to a user of the computer, said carrying case comprising:

a base portion including a bottom upon which the computer will rest when contained within the case in a normal horizontal operating position;

a cover portion connected to the base portion for swinging between a closed position over the base portion and a vertically extending open position; and

a collapsible shield secured to the cover portion wherein said collapsible shield expands from a collapsed condition within the closed carrying case to an open condition wherein the shield extends generally orthogonally to the cover portion and over a part of the base portion int its open condition and combines with the base and cover portions to define a collapsible shield enclosure for the display screen of the computer when it is in the case and is in its open position, the collapsible shield enclosure comprising means for hinging to and for folding within the cover portion to place the shield in its collapsed condition and for unfolding to place the shield in its open condition in the open carrying case, the means comprising a top panel hinged to the cover portion at a rear edge thereof and right and left side panels hinged to the top panel along right and left edges thereof wherein the top panel extends horizontally from the cover portion and the side panels extend from the top panel to the base and cover portions and combine therewith to form five sides of the shield enclosure when the shield is in its open condition.

5,325,971

METHOD AND RECEPTACLE FOR FILTERING LAWN AND GARDEN DEBRIS

Sharon B. Moran, 7040 W. Gardiner St., Milton, Fla. 32583

Filed Aug. 16, 1993, Ser. No. 106,554
Int. Cl.[5] B07B *1/49*
U.S. Cl. 209—417 **8 Claims**

1. A receptacle for lawn and garden debris comprising:

(a) basket means for containing said debris therein, said basket means having an open top and a closed bottom, and, comprised of a generally rigid equally sized open mesh material for screening or filtering said debris deposited thereon, said closed bottom comprising a wire frame around its perimeter for support and rigidity;

(b) handle means comprising a bent wire rod secured to said basket means adjacent said open top for grasping said basket means and for supporting said basket means in a range of selected inclined positions, said handle means being pivotable with respect to said basket means and further comprising a stop for inclining said basket means in a selected position with respect to the ground; and,

(c) wheel means secured to said basket means adjacent said closed bottom for transporting said basket means.

5. A method of filtering or screening garden and lawn debris comprising the steps of:

(a) inclining basket means with respect to the ground, said basket means being configured to contain said debris therein, and, having an open top and a closed bottom, said



basket means being comprised of a generally rigid equally sized open mesh material and said closed bottom comprising a wire frame extending around its perimeter for support and rigidity;

(b) securing handle means comprising a bent wire rod to said basket means adjacent said open top for grasping said basket means and for supporting said basket means in a range of inclined positions, said handle means being pivotable with respect to said basket means and comprising a stop for inclining said basket means in a selected position with respect to the ground;

(c) securing wheel means to said basket means adjacent said closed bottom for transporting said basket means; and,

(d) screening or filtering said debris deposited upon said basket means when said basket means is supported in a selected inclined position with respect to the ground.

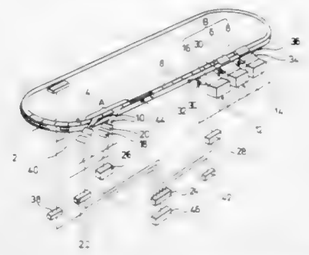
5,325,972

METHOD OF CONTROLLING SORTING SYSTEMS, AND A SORTING SYSTEM THUS CONTROLLED

Ole Prydtz, Hjortshoej, and Ralph Kofoed, Hornslet, both of Denmark, assignors to Kosan Crisplant A/S, Aarhus, Denmark

PCT No. PCT/DK90/00048, § 371 Date Aug. 26, 1991, § 102(e) Date Aug. 26, 1991, PCT Pub. No. WO90/09849, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 20, 1990, Ser. No. 752,665
Claims priority, application Denmark, Feb. 24, 1989, 0858/89
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—552 **2 Claims**

1. A sorter system comprising a decentralized control system including a coding unit and loading master unit for defining a destination code for each of a plurality of article carrying trays or sections of a sorting conveyor; a sorter master unit for transferring the destination code to an unloading master unit which is a superior control unit for operation and check functions in receiving stations, such that the unloading operation in the receiving stations is actuated only by a locally detected arrival of a relevant designated article carrying tray or section; a superior sorter master unit, which controls and checks the loading of the articles onto respective, individually identified carrying trays or sections; and a coding master unit which controls and further conveys the coded destination code data for the articles, wherein the sorter master unit is additionally connected with a machine master unit and a system master



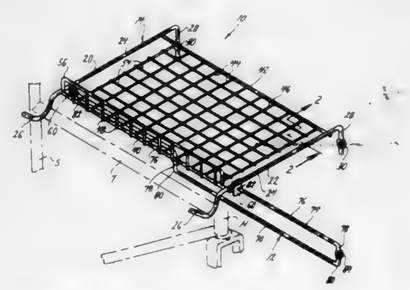
unit, while the sorter master unit itself is subordinated to a managing master unit.

5,325,973

BICYCLE SUPPORT RACK

Michael H. Reedy, Edwardsville, Ill., assignor to Lee Rowan Company, St. Louis, Mo.

Filed Mar. 10, 1993, Ser. No. 28,974
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—18 **16 Claims**



1. A bicycle support rack comprising:

a resilient element having an unflexed position comprising a U-shape, the resilient element comprising a central base portion mounted on a wall and opposite outer segments which extend from the central base portion to terminate in bent ends;

a planar member having a back end mounted on the wall at an elevation different from the central base portion, and extending from the back end to a forward portion,

the forward portion providing a pair of laterally spaced sprockets for removable engaging the bent ends while the outer segments of the resilient element are flexed from the unflexed position, said resiliency retaining the bent ends in engagements with the sockets;

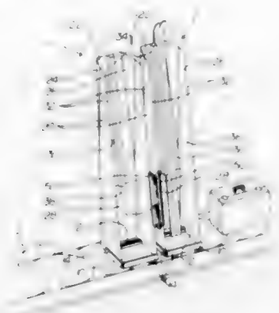
retaining means for supporting a bicycle by a top tube thereof, the retaining means being cooperatively supported by and disposed in a rigid relation with the removably engaged resilient element and planar member and the planar member comprises a pair of laterally spaced wire segments, the wire segments having rear apertured portions for receiving fasteners.

5,325,974

DISPLAY DEVICE FOR ELONGATED OBJECTS

Joel L. Staehs, DeSoto, Tex., assignor to BAE Automated Systems, Inc., Carrollton, Tex.

Filed Apr. 26, 1993, Ser. No. 52,725
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—60.1 12 Claims



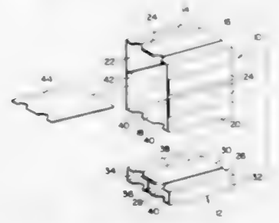
1. A display device for elongated objects, said device being adapted for use in conjunction with a flat plate claim apparatus, said device comprising a rigid plate adapted for attachment to a flat plate of said flat plate claim apparatus, a base plate fixed to said rigid plate, and a channel member fixed to said base plate and upstanding therefrom, said channel member and said base plate defining a compartment open on one side and an upper end thereof, and adapted to receive and retain elongated objects.

5,325,975

SUTURE DISPLAY CABINET

David L. Brown, Wallingford, Conn.; Guenter Mattke, Hilton, N.Y., and Peter J. de Leon, Westport, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jun. 14, 1991, Ser. No. 715,470
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—189 16 Claims



1. A suture display cabinet comprising:

a plurality of suture display boxes, each box being dimensioned for displaying at least one vertically disposed column of individual suture packages stacked one on top another, each box having a back wall, two side walls, a top and a bottom wall, said side walls, top wall and bottom wall of each box having an externally positioned dovetail connection member, ad said back wall of each box having at least one key hole slot therein for connecting said boxes to a support structure;

a plurality of single suture storage boxes, said storage boxes each having a back wall, two side walls, a top and bottom wall, said top and bottom walls corresponding in size to said top and bottom walls of said suture display boxes, said top and bottom walls each having an externally positioned dovetail connection member,

wherein said top wall of said suture storage boxes are modularly connected to said bottom wall of said suture display boxes, and said suture display boxes are modularly connected to adjacent side walls of said suture display boxes to form individual rows of interconnected boxes, and wherein said bottom wall of each said suture storage boxes of said individual rows of interconnected boxes are modularly connected to corresponding walls of said suture display boxes of said individual rows of interconnected boxes to form said suture display cabinet; and

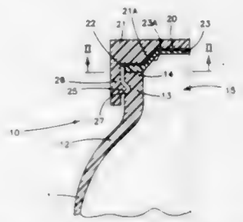
means secured to said suture display cabinet for enhancing portability of said suture display cabinet.

5,325,976

CONTAINER CLOSURE ASSEMBLY

Emery I. Valyi, 19 Moseman Ave., Katonah, N.Y. 10536, and Charles J. Brun, 2042 Erichman La., Xenia, Ohio 45385

Filed Jul. 26, 1993, Ser. No. 96,426
Int. Cl.[5] B65D 17/44
U.S. Cl. 215—232 14 Claims



1. A container closure assembly which comprises: a plastic container having a container neck and a rim portion defining an access opening for the container; a barrier layer having a rim and a central portion completely covering the access opening and with the barrier layer rim portion adhered to said container rim portion, said barrier layer including a weakened portion in said barrier layer central portion; a removable closure member adapted to fit over said container neck, covering said container rim and barrier layer and engaging said container neck portion, said closure member intimately contacting said barrier layer when said closure member is removed by twisting; wherein the closure member and barrier layer include stepped portions adjacent one another over the axis opening, said barrier layer stepped portions including corner portions thereof; whereby twisting the closure member places the barrier layer stepped portions under torsion breaking the barrier layer at the weakened portion and opening the container.

5,325,977

VENTED CLOSURE FOR A CAPILLARY TUBE

John L. Haynes, Chapel Hill, N.C.; Stephen C. Wardlaw, Old Saybrook, Conn., and Edward Williamson, Dover, N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

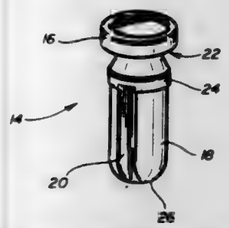
Division of Ser. No. 711,844, Jun. 7, 1991, Pat. No. 5,203,825.
This application Jan. 21, 1993, Ser. No. 7,313
Int. Cl.[5] B65D 51/16
U.S. Cl. 215—307 3 Claims

1. A closure for sealing one end of a capillary tube having a pair of open ends, said closure comprising:

an integral body including an enlarged head portion and a substantially cylindrical plug extending from said enlarged head portion;

a sealing ring projecting radially from said plug having a bottom surface for removably positioning said closure at a predetermined venting position within one open end of a capillary tube wherein another open end of the capillary tube draws a liquid into the tube by means of capillary action;

a vent groove extending substantially longitudinally within an exterior surface of said plug from a proximal end of said plug to a point partially through said sealing; and



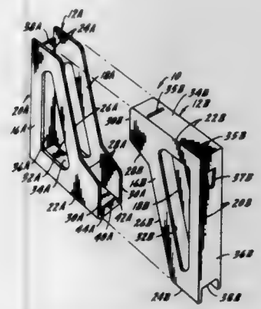
a substantially annular recess defined within said plug between said sealing ring and said enlarged head portion.

5,325,978

NESTING MAGAZINE ORGANIZER

Donald B. Rabig, Elizabeth, N.J., assignor to Sterling Plastics Co., Mountainside, N.J.

Filed Apr. 13, 1987, Ser. No. 37,529
Int. Cl.[5] B65D 6/00
U.S. Cl. 220—4.24 8 Claims



1. A nesting container assembly for holding a plurality of magazines, comprising:

a first container having a first side wall having a first bottom edge, a first rear edge, a first top edge and a first front edge;

a second side wall having a second bottom edge, a second rear edge, a second top edge and a second front edge;

a bottom wall connecting said first and second bottom edges of said first and second side walls together;

a rear wall connecting said first and second rear edges of said first and second side walls together;

said rear wall has a height less than that of said first and second rear edges so as to define a recess;

said bottom wall and said rear wall maintaining said first and second side walls in substantially parallel, spaced apart relation;

said first and second top edges of said first and second side walls being unconnected with each other;

said first and second front edges of said first and second side walls being unconnected with each other;

said first container further including an upstanding tab connected to said bottom wall between said first and second front edges and having a width less than that of said bottom wall to define first and second grooves between said tab and said first and second front edges;

a second container having the above described components;

said first and second side walls of said first container fits within said first and second side walls of said second container with a friction fit;

said first and second top edges of said first and second side walls of said first container being accommodated in said first and second grooves and said second container;

said first and second top edges of said first and second side walls of said second container being accommodated in said first and second grooves of said first container;

said tab of said first container being accommodated in said recess of said second container;

said tab of said second container being accommodated in said recess of said first container;

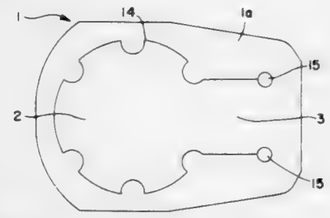
whereby said first container is accommodated in an inverted position within said second container with a friction fit.

5,325,979

FUEL ERRONEOUS SUPPLY PREVENTION SHUTTER

Hideaki Watanabe, Okayama, Japan, assignor to O M Industrial Co., Ltd., Okayama, Japan

Filed Mar. 24, 1993, Ser. No. 36,512
Int. Cl.[5] B67C 3/34
U.S. Cl. 220—86.2 3 Claims



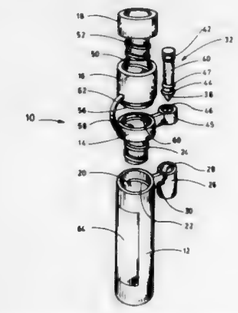
1. A fuel erroneous supply prevention shutter of a leaf spring type retained in the vicinity of a filler neck of a filler pipe by a shutter support portion within the filler pipe of an automobile, said shutter being opened or closed when a fuel supplying nozzle is inserted in or extracted from said filler pipe, wherein a main body of said shutter is integrally formed with a shutter working portion via an arm portion which elastically deforms when the shutter opens, and said shutter main body surrounding said shutter working portion includes an opening having concave and convex portions on its periphery for engaging said shutter main body with the lower portion of a cap retainer.

5,325,980

LOCKING VIAL

Michael C. Grimm, 25382 Derby Hill Dr., Laguna Hills, Calif. 92653; Philippe F. Bailley, 59 Dearborn, Norwood, N.J. 07648, and Joseph W. Price, 116 Via Undine, Newport Beach, Calif. 92663

Filed Aug. 20, 1992, Ser. No. 932,798
Int. Cl.[5] B65D 21/02, 51/28, 55/02, 55/16
U.S. Cl. 220—212 17 Claims



1. A locking vial assembly for use in storing semen samples

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on a mounting member immersed in liquid nitrogen comprising:

a main vial with an aperture member formed along an outer surface thereof and securing means formed along an outer surface thereof for engaging the mounting member and thereby preventing the main vial from being accidentally detached from the mounting member, wherein said securing means comprising a depending hook for insertion through and secure engagement with a slot formed in the mounting member;

a cap for securely closing the vial, the cap also having an aperture, member with the apertures of the cap and the vial being positioned for mutual alignment while the cap securely closes the vial; and

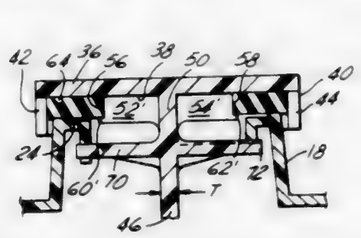
a locking pin received in the apertures while the apertures are mutually aligned, the locking pin being sized for one-way insertion through the apertures, the locking pin being removable from the apertures only by severing said locking pin.

5,325,981

PLASTIC RESERVOIR CAP

Jaime L. Klomhaus, Shelby Township, Oceana County; David S. Cook, and Craig R. Koss, both of Marysville, all of Mich., assignors to Huron Plastics Group, Inc., Port Huron, Mich.

Filed Aug. 26, 1992, Ser. No. 935,836
Int. Cl.[5] B65D *41/56*
U.S. Cl. 220—212 11 Claims



1. An all plastic reservoir cap for use with a reservoir having an outwardly projecting neck and an inwardly projecting cam lip, the cap comprising, in combination:

a circular cap portion having an inner face with an integrally molded encircling peripheral flange projecting perpendicularly away from said face to surround the reservoir neck when the cap is mounted thereon;

a stem portion unitary with the cap portion and centrally arranged on said face and projecting perpendicularly therefrom and provided with fluid level measuring indicia;

stiffly resilient locking ears unitary with said stem portion at a point spaced from said face, said point being above said measuring indicia and projecting laterally from the stem portion to engage beneath a cam lip of a reservoir neck upon which the cap is intended to be mounted and resistingly flex as the cap is turned on said neck to draw the cap portion toward the neck;

a resilient gasket overlying in juxtaposition to said face of the cap portion adjacent the peripheral flange and disposed between such face and the locking ears to be squeezed against the end of a reservoir neck upon which the cap is intended to be mounted; and

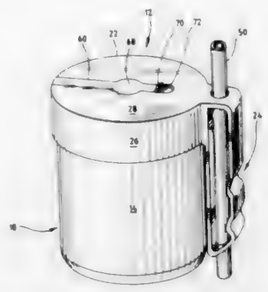
means for retaining the gasket in the cap.

5,325,982

COMBINATION CAP AND HANDLE FOR A BEVERAGE CONTAINER

Bryce R. Cobb, Jr., Detroit, Mich., assignor to BCI of Chicago, Inc., Oak Park, Ill.

Filed Aug. 2, 1993, Ser. No. 100,680
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—212.5 10 Claims



1. A combination cap and handle for a beverage container having a narrow open neck upstanding from the upper end of a container body, said combination cap and handle comprising:

a. a cylindrical cap having an annular perimetric wall, a top wall having a port therethrough and an open end opposite said top wall, an internal annular wall concentric with said perimetric wall and depending from said top wall in communication with said port, said depending wall constructed and arranged to be removably installed on said narrow open neck;

b. a handle formation integrally formed with the cap and extending downwardly from said top wall spaced from and parallel to the container body when the cap is installed;

c. said handle having axially aligned apertures for retaining a straw therein; and

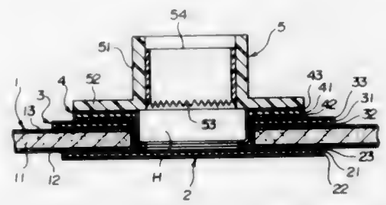
d. a resealable closure means for said port integrally formed with said cap.

5,325,983

LIQUID CONTAINER WITH SPOUT

Takayuki Imai; Yoshiaki Take; Hideki Yamamoto, and Ken Shimatani, all of Tokyo, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 30, 1992, Ser. No. 953,840
Claims priority, application Japan, Sep. 30, 1991, 3-86727
Int. Cl.[5] B65D *17/42*
U.S. Cl. 220—277 6 Claims



1. A liquid container with a spout attached to an exterior surface of a part defining a spouting hole in the container body of a composite sheet, wherein:

the composite sheet has a layered composition of an innermost layer of a low-smelly and low-absorbent resin/a core of paper/an outermost layer of a polyolefin resin;

a sealing film sealing the hole in the composite sheet from inside the container body, the sealing film having a layered composition of a liquid-contacting layer/a core/a sealing layer, both the liquid-contacting layer and the sealing layer being made of a low-smelly and low-adsorbent resin;

a connecting film and a spout-attached film sandwiched between the container body and the spout of a polyolefin resin sequentially from said container body;

the connecting film having a hole coaxially adjoining the hole in the container body and having a diameter compatible with the hole in the container body, the connecting film having a layered composition of a container body side innermost layer of a polyolefin resin/a core/a spout-attached film side outermost layer of the same resin as the innermost layer of the container body, the innermost layer of the connecting film being heatsealed to the outermost layer of the container body;

the spout-attached film having a hole of smaller diameter than the hole in the container body, the hole in the spout attached film coaxially adjoining the hole in the container body;

the spout-attached film having a layered composition of a spout side outermost layer of a polyolefin resin/a core/a connecting film side innermost layer of the same resin as the innermost layer of the container body;

the spout-attached film being heatsealed to an area between the outermost layer of the connecting film and a portion of the outermost layer of the sealing film adjoining the hole in the container body so that a part of the spout-attached film surrounding the hole in the spout-attached film adjoins said portion of the outermost layer of the sealing film; and

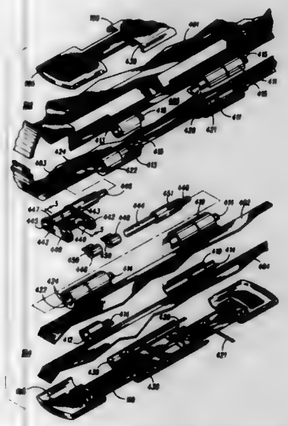
the spout being heatsealed to the outermost layer of the spout-attached film.

5,325,984

FRICTION CLUTCH FOR DUAL PIVOT POINT HINGE

Roger W. Ady, Lisle, and William R. Groves, Naperville, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1993, Ser. No. 79,031
Int. Cl.[5] B65D *85/57*
U.S. Cl. 220—342 10 Claims



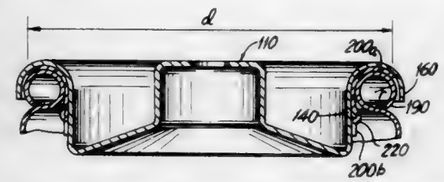
1. An electronic assembly enclosure comprising a body; a cover; hinging means for hinging said cover to said body such that said cover is movable relative to said body and locatable in a plurality of positions from 0 to 360 degrees relative to said body, said hinging means including first and second hinge axles for permitting said cover to move relative to said body about a first and a second pivot axis; and a friction clutch, having first and second clutch axles coupled to the first and second hinge axles for receiving torque from the first and second hinge axles during rotation of the cover relative to the body, said clutch further comprising first and second spring members clamped to the first and second clutch axles for exerting a braking friction upon the first and second clutch axles, in response to the torque exerted upon the clutch axles, said braking friction permitting said cover to move relative to said body about but one pivot axis at a time.

5,325,985

GASKET WITH A SELF-SUPPORTING PROTRUSION

Charles S. Radtke, Little Ferry, N.J., assignor to Precision Valve Corporation, Yonkers, N.Y.

Continuation of Ser. No. 814,370, Dec. 26, 1991, abandoned.
This application Oct. 25, 1993, Ser. No. 140,966
Int. Cl.[5] B65D *53/00*
U.S. Cl. 220—378 23 Claims



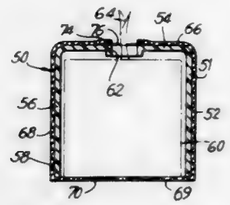
1. A gasket for sealing a channel of a mounting cup to a bead of a container, comprising gasket material having a first and second portion, the first portion for being positioned at least partially within the channel portion of a mounting cup and the second portion having an inner surface and an outer surface, the inner surface for being positioned contiguous to a smooth skirt of the mounting cup, and at least one self supporting protrusion associated with the second portion of the gasket material, the protrusion extending radially outward from the second portion.

5,325,986

BATHROOM ACCESSORIES

Jeffrey A. Richardson, Woodstock, and Robert Orlando, Round Lake Beach, both of Ill., assignors to R. A. Briggs & Company, Lake Zurich, Ill.

Division of Ser. No. 641,606, Jan. 15, 1991, Pat. No. 5,165,567.
This application Aug. 19, 1992, Ser. No. 932,349
Int. Cl.[5] B65D *90/06*
U.S. Cl. 220—400 2 Claims



1. A bathroom accessory comprising:

a rigid container having side walls, a base at one end and a mouth at another end, the mouth including a rim;

a decorative, washable cloth bag for covering the container, the washable cloth bag having an opening and a bottom, the shape of the bottom conforming to the base of the container, the bag also having pleated sides which conform to the side walls of the container; and

retaining means attached to the opening of the bag and positionable inwardly of the rim of the container for retaining the bag around the container, wherein the retaining means comprises elastic for securing the bag over the

rim of the container, the elastic having a circumference less than that of the mouth of the container,

wherein the base of the container includes a narrow, elongated opening formed therein, and the bottom of the bag includes a narrow, elongated opening formed therein in register with the elongated opening formed in the container, and wherein the container is adapted to be inverted for covering a facial tissue dispenser box having a size slightly smaller than the size of the container, whereby tissues may be dispensed through the openings in the container and the bag.

5,325,987

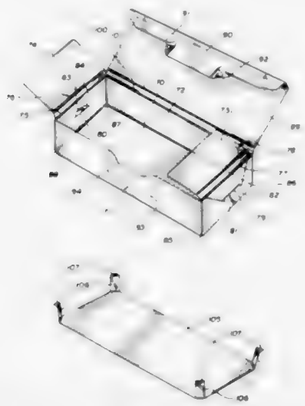
STERILE PACKAGE FOR SURGICAL DEVICES

Marvin Alpern, Glen Ridge, N.J.; Robert Cerwin, Pippersville, Pa.; Michael O'Toole, Suffern, N.Y.; Teresa M. Simons, Milltown, and Deborah M. Transue, Bridgewater, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 991,602, Dec. 16, 1992. This application May 17, 1993, Ser. No. 62,265

Int. Cl.[5] B65D *90/04*

U.S. Cl. 220—409 **2 Claims**



1. A sterile box for holding surgical instruments in a surgical package, said box comprising:

a flat bottom and four vertical side walls extending from said bottom on the same side thereof, the corners of said box where a pair of vertical side walls and said bottom are joined having cutout areas to form rounded corners at the bottom of said box,

said box including an insert positioned in said box, said insert comprising a bottom member having substantially the same size and shape as the bottom of said box,

said insert having a pair of longitudinal edges and a pair of transverse edges, four vertical members extending from the same side of said bottom member, each of said vertical members diagonally connecting a longitudinal edge and a transverse edge of said bottom member and each vertical member having a horizontal outwardly extending triangular shape member attached at the top of said member.

5,325,988

INSULATED JACKET FOR BEVERAGE BOTTLE

Mark E. Ekern, 207 N. Prairie, Flandreau, S. Dak. 57028

Filed Jul. 15, 1993, Ser. No. 92,451

Int. Cl.[5] B65D *90/04*

U.S. Cl. 220—411 **3 Claims**

1. An insulation jacket for a beverage container comprising a lower cup-shaped portion formed to receive the lower part of said container and an upper portion formed to fit the upper portion of said container, both of said portions being formed of a foamed insulating material, said upper portion and lower portions being connected by an elastic retaining cord having



two ends with each respective end attached to one of said upper and lower portion.

5,325,989

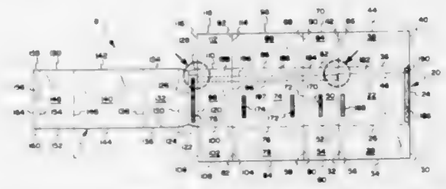
BOX AND BLANK FOR PACKAGING POWDERED SOAP OR THE LIKE

Kenneth D. Karalus, Bellevue, Wash., assignor to Eagle Paper Box Company, Tacoma, Wash.

Filed May 4, 1993, Ser. No. 56,225

Int. Cl.[5] B65D *90/04*

U.S. Cl. 220—416 **18 Claims**



1. A box for forming a package for granular material, said box comprising:

a) a first series of connected panels for forming outer walls of the box;

b) a second series of panels forming a liner within said box;

c) said first series of panels including connected first, second, third and fourth panels;

d) said second series of panels including first, second and third panels;

e) each of said panels of said first series including a pair of oppositely positioned closure flaps for forming the top and bottom ends of the box;

f) a tear strip disposed on at least three of said outer walls of said box, said tear strip being located between said top and bottom ends of said box, said tear strip defining a cap above said tear portion and defining a main body below said tear portion;

g) a first angled knife cut initiating said tear strip, said first angled knife cut being disposed on one of said at least three outer walls;

h) a second angled knife cut terminating said tear strip, said second angled knife cut being disposed on another one of said at least three outer walls distant from said first angled knife cut;

i) each said first and second angled knife cuts preventing tearing into a fourth one of said outer walls; and

j) wherein removal of said tear strip causes said cap to substantially separate from said main body while said first and second angled knife cuts prevent further tearing into said fourth one of said outer walls of the box during repeated opening and closing of said box by moving said cap toward and away said main body for accessing the granular material.

5,325,990

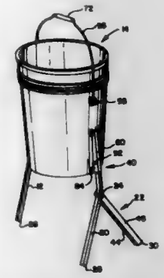
CONTAINER SUPPORT

Jeffrey L. Temple, P.O. Box 122, Fredericktown, Ohio 43017-9355

Filed Jul. 16, 1993, Ser. No. 93,090

Int. Cl.[5] A47G *23/00*

U.S. Cl. 220—628 **20 Claims**



16. A container and support therefor comprising:

a. a container;

b. a first leg having a first end and a second end with said first end attached to said container and said first leg extending downward and outwardly away from said container in a vertical plane passing through a vertical center line of said container;

c. a second leg having a first end and a second end with said first end attached to said container opposite said first leg and said second leg extending first downward and outwardly away from said container in said vertical plane and then downward and away from said vertical plane; and

d. a third leg having a first end and a second end with said first end of said third leg attached to said second leg and said third leg extending downward and away from both said vertical plane and said second end of said second leg.

5,325,991

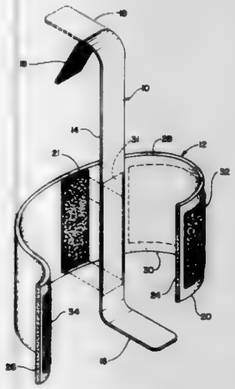
ADJUSTABLE MULTI-PURPOSE DRINK HOLDER WITH DETACHABLE INSULATOR BLANKET

Garry L. Williams, 2990 SW. Cornell Ave., Palm City, Fla. 33990

Filed Nov. 18, 1993, Ser. No. 154,234

Int. Cl.[5] B65D *25/34*

U.S. Cl. 220—739 **9 Claims**



1. A reusable and adjustable combined receptacle holder and support means, said holder means of said reusable adjustable combined receptacle holder and support means including a flexible, resilient blanket adapted to be wrapped into a cylinder defining an open ended chamber to removeably receive said receptacle, said support means of said reusable and adjustable combined receptacle holder and support means including a thin and narrow elongated hand bendable member bendable into an L-shaped configuration, a velcro strip bonded on the back face of said hand bendable member, a complementary velcro strip bonded on the inner surface of said blanket adapted to be releasably secured to said back face of said bendable member adjacent said bent L-shaped configuration, a pair of complimentary velcro strips bonded on the adjacent front edges of said blanket, one of said pair of complementary velcro strips being mounted on the outer side of said blanket and the other of said pair of complementary velcro strips mounted on the inner side of said blanket for securing said blanket into said cylinder, and the upper end of said bendable member adapted to be bent into a configuration complementing the configuration to which it can be releasably be secured, whereby when in the assembled condition the blanket is wrapped around said bendable member and is in frictional engagement with the surface of the support to which said combined holder and support means is being supported.

5,325,992

BAG DISPENSER

Josef Koller, Neuenkirch, and Rudolf Schmid, Zofingen, both of Switzerland, assignors to Folag AG Folienwerke, Sempach-Station, Switzerland

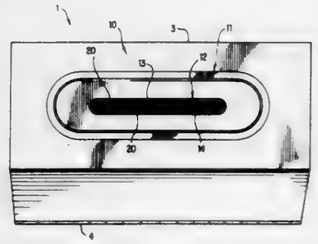
PCT No. PCT/CH91/00031, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO91/11942, PCT Pub. Date Aug. 22, 1991

Continuation of Ser. No. 834,320, Dec. 10, 1991, abandoned. This PCT application Feb. 7, 1991, Ser. No. 92,945

Claims priority, application Switzerland, Feb. 13, 1990, 457/90

Int. Cl.[5] B65H *1/00*

U.S. Cl. 221—63 **13 Claims**



1. A dispensing device comprising a container for a supply of items forming a web, said device comprising:

a recess formed in an outer wall of the container, and

a braking unit overlapping the recess,

wherein the braking unit further comprises two lips which work together when items are dispensed, and

a linear slit between the two lips which enables the items to pass between the two lips,

the two lips being fitted with bristles which constitute active elements of the two lips,

unattached ends of the bristles of one of the lips extend into, and mesh with, an area of unattached ends of the bristles of the opposite lip,

wherein the items are camisole-shaped and sequentially joined bags having a body with a bottom part and handles at the upper part, whereby the bottom part of the body of one of the bags is connected to the leading edge of the handles of the next bag,

wherein a nozzle for dispensing the bags is connected to the recess, the nozzle comprising a hollow cover in the base of which there is an oblong and virtually linear opening, the

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distance between the edges of the opening being considerably larger than the thickness of a bag, and

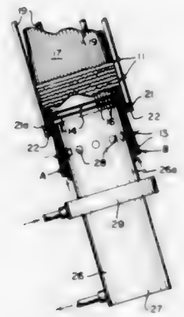
wherein the braking unit is attached to the hollow cover in such a way that it overlaps the linear opening in the hollow cover.

5,325,993

METHOD AND APPARATUS FOR DISPENSING CUP-LIKE MEMBERS FROM A NESTED STACK

Clayton C. Cooper, III, 5 Captains Blvd., Waterford, N.Y. 12188

Filed Nov. 23, 1992, Ser. No. 980,574
Int. Cl.[5] B23Q *7/04*
U.S. Cl. 221—211 **5 Claims**



1. The method of separating and dispensing cup-like members individually from a nested stack thereof comprising the steps of:

a) securing said nested stack to present for withdrawal therefrom one of said members while providing access to the cup-like interior of said member,

b) inserting a suction source into said cup-like interior to cause said interior to adhere to said suction source,

c) withdrawing said suction source and said cup-like member from said stack,

d) providing a source of positive air pressure and directing said pressure toward said stack immediately adjacent to said cup-like member as it is withdrawn from said stack,

e) said positive pressure acting to separate the withdrawn member from the next adjacent member in the stack and acting to return said next adjacent member into nesting relation with said stack where said member through frictional engagement with the withdrawn member has become disengaged from said stack,

f) said suction source being directed laterally within said cup-like interior and said positive pressure directed generally perpendicular to said suction source.

5,325,994

METHOD AND APPARATUS FOR TEMPERATURE REGULATING AND DISPENSING FLOWABLE MATERIAL

Peter Mizialko, 312 Sanford Ave., Lyndhurst, N.J. 07071, and Anthony Dispoto, Moon Valley Rd., Milford, Pa. 18337

Filed Feb. 26, 1992, Ser. No. 841,704
Int. Cl.[5] B67D *5/62*
U.S. Cl. 222—54 **35 Claims**

1. Apparatus for dispensing flowable material comprising:

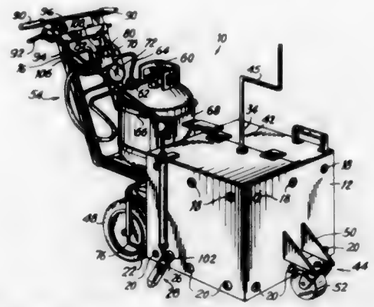
holding means for holding a supply of flowable material;

dispensing means for releasing an amount of flowable material from said holding means;

first heating means for heating said flowable material in said hold means;

second heating means for heating said dispensing means, said second heating means being in operative association with the first heating means such that the first heating means can be activated by the second heating means;

unified control means for: (a) sensing the condition of the second heating means; and (b) sensing the condition of said flowable material in the holding means, wherein said unified control means coordinates the operation of the



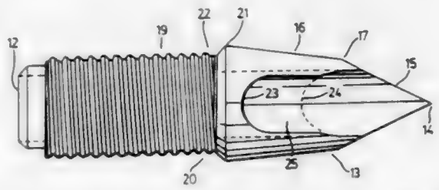
first and second heating means; such that the second heating means intermittently activates the first heating means in response to a preselected sensed condition of the flowable material of said holding means; and such that the first and second heating means are disabled in response to the sensing of a temperature at or below a preselected temperature of the second heating means.

5,325,995

PIERCING NOZZLE FOR POUCH FITMENT

Raymond P. Harrison, Pontypool, and Ralph C. Wirsig, Kingston, both of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

Continuation of Ser. No. 828,919, Jan. 27, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 51,826
Claims priority, application United Kingdom, Jul. 27, 1989, 8917163
Int. Cl.[5] B67B *7/24*
U.S. Cl. 222—81 **4 Claims**



1. A spout for insertion into and securement to a plastic film pouch comprising a tube having

(A) a piercing portion at one end of said tube;

(B) a delivery portion at the opposite end of said tube; and

(C) a film securement portion joining said piercing portion to said delivery portion;

said tube having a longitudinal passage for providing fluid flow communication from the piercing portion to the delivery portion;

said film securement portion being adapted to secure, with a substantially liquid-tight seal, the film of said plastic pouch having been pierced by said piercing portion,

said piercing portion having its shape essentially defined by

(1) one slice further defined by a plane at a first angle to the axis of said tube to form a tip at said one end of said tube; and

(2) an additional two slices being symmetrical about said axis to form a point at said tip at said one end of said tube furthest away from said film securement portion, each of said additional two slices defined by a plane at a second angle to the axis of said tube, the second angle being different from said first angle;

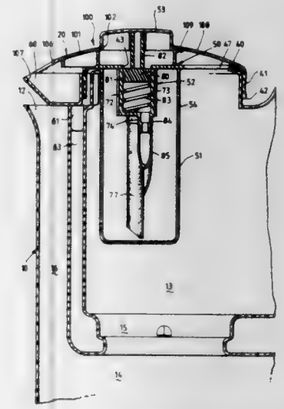
said slice and said additional two slices having a confluence therebetween to form a shoulder.

5,325,996

BEVERAGE VESSEL WITH FLAVORING CONCENTRATE DISPENSER

Francis R. Bannigan, Huntingdale, Australia, assignor to Gondal Pty. Ltd., Victoria, Australia

Filed Apr. 7, 1993, Ser. No. 43,898
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—133 **6 Claims**



1. A beverage vessel comprising a receptacle arranged to contain a liquid beverage, the receptacle including a pouring spout, and a removable lid assembly adapted to be secured to the top of the receptacle, a reservoir adapted to contain a flavouring concentrate, the reservoir being positioned within the said receptacle in sealed association with the lid assembly, and the lid assembly including a manually operable pump for transferring a measured quantity of flavouring concentrate from the reservoir to a storage chamber in fluid communication with the spout such that as the vessel is tilted to pour the beverage, the transferred quantity of flavouring concentrate starts leaving the spout before the beverage in the receptacle.

5,325,997

COMBINED HAND WEIGHT AND PROTECTIVE SPRAY DEVICE

Kenneth E. Washington, 532 Summit Ridge Dr., Chesapeake, Va. 23320, and Larry E. Washington, 880 S. Spigel Dr., Virginia Beach, Va. 23454

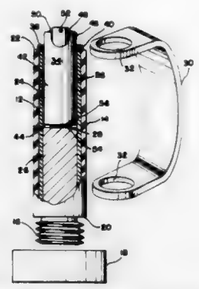
Filed Jul. 13, 1993, Ser. No. 90,236
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—175 **6 Claims**

1. A hand exercise weight and attack repellant combination device for use by walkers and joggers comprising:

a handle member having a threaded first end, a container receiving second end, and a resilient outer covering at a central hand gripping portion thereof;

a removable exercise weight having a threaded connection for engaging said threaded first end;

a replaceable attack repellant container for dispensing a repellant agent contained in said container, said container



being disposed in said receiving second end and having means for releasing said repellant agent; and

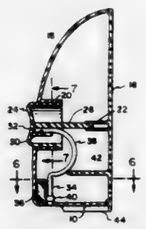
a strap attached to said first end and to said second end.

5,325,998

PRESSURIZED INVERTED DISPENSER

Robert A. Bennett, Easton, Conn., assignor to Charlotte Ambrogio; Sally Conant and Robert Bennett, Stratford, Conn.

Filed Aug. 16, 1993, Ser. No. 106,583
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—185 **6 Claims**



1. A pressurized inverted dispenser comprising:

a hollow vertically elongated body having a lower end with an aperture, an upper end, a flat vertical cover and a front curved wall with a button receiving opening, the front wall, the cover, the upper end and the lower end being sealed together, the inside surface of the cover being provided with first means for supporting a connector;

a button disposed in the opening having an exposed generally vertical front surface and slidably movable toward and away from the cover between depressed and extended positions, the button having a rear surface, a horizontally elongated connector secured to the rear surface and slidably engaging the first means, and second means for slidably supporting a horizontal leg of a spring; and

a spring disposed in the body, the spring having a first vertical end leg aligned with the aperture and a second horizontal end leg, said horizontal end leg slidable in said second means, and a U shaped central section disposed between and secured to said first and second legs, the spring normally maintaining the button in the extended position, with the section extending toward the aperture and the free end of the first leg closing and sealing the aperture, the section when the button is depressed extending away from the aperture and withdrawing the free end of the first leg out of engagement with the aperture, thus opening the aperture.

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ASSEMBLY FOR DISPENSING AT LEAST ONE LIQUID PRODUCT OR A PRODUCT IN THE FORM OF A CREAM

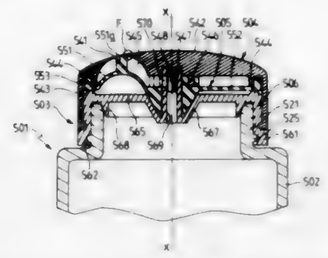
Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 931,325, Aug. 18, 1992, abandoned, which is a division of Ser. No. 683,824, Apr. 11, 1991, Pat. No. 5,161,718. This application Sep. 17, 1993, Ser. No. 130,147

Claims priority, application France, Apr. 13, 1990, 90 04829

Int. Cl.[5] **B05B** *11/04*

U.S. Cl. 222—212 **6 Claims**



1. A distributor head assembly, which is attached to a container of flexible material holding at least one liquid product, such as a cream, for delivering the liquid product comprising:

at least one delivery channel with a first end connected to an opening of said container, said delivery channel having a second end for dispensing the product from the container;

a cap having an exterior surface and an opening defining a fixed, rigid seat in said exterior surface; an intermediate element of elastic material carrying a flexible valve in said delivery channel and cooperating with said opening of said cap, said container having a throat having a predetermined diameter, said distributor head assembly having a member attached to said throat of said container and having a side facing away from said container, said member having a passage of a diameter less than said predetermined diameter, said intermediate element being located on said side of said member facing away from said container,

said flexible valve having a rest position where said valve is in contact in a non-sealing manner with said fixed, rigid seat, said valve flexing into a dispensing position where said valve is inwardly extended away from said seat by elastic deformation in response to a pressure increase of said liquid product and outwardly extended to return to said rest position in response to a decrease in pressure of the liquid product to allow for air recirculation in said delivery channel, said delivery channel including a space between said intermediate element and said cap which space is in communication with said container through said passage in said member attached to said throat of said container.

5,326,000

MEDIUM DISPENSER WITH MOUNTING SUPPORT FOR OPTIONAL SECONDARY DISPENSING UNIT

Karl-Heinz Fuchs, Radolfzell, Fed. Rep. of Germany, assignor to Ing. Erich Pfeiffer GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 16, 1992, Ser. No. 852,280

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1991, 4108646

Int. Cl.[5] **B05B** *7/00*

U.S. Cl. 222—321 **12 Claims**

1. A dispenser for discharging media during a discharge operation, comprising:

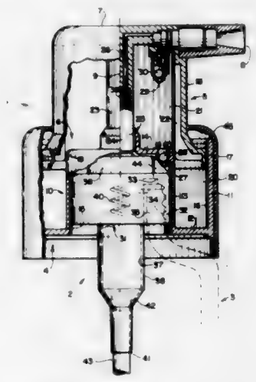
at least one dispenser casing having at least one casing jacket (**11**, **13**);

at least one pressure chamber peripherally bounded by said at least one casing jacket (**11**);

a plunger casing slidably mounted within said at least one dispenser casing said plunger casing and said casing jacket forming a substantially medium-tight seal at their junction, said at least one casing jacket (**11**) providing at least one inner sleeve (**13**) bounding an axial passage opening (**24**);

a central shaft axially mounted within said plunger casing and passing through said passage opening, said passage opening sealingly engaging said central shaft so as to prevent leakage from said at least one pressure chamber while permitting said central shaft to slide-within said passage opening to a depressed position;

a mounting support integrally formed at least partially within said at least one inner sleeve of said at least one casing jacket, said mounting support being constructed so as to engage a secondary discharge unit and maintain said



at least one dispenser casing and said at least one casing jacket in a fixed position relative to said secondary discharge unit with respect to said discharge operation;

at least one discharge outlet and a chamber outlet for exhausting said at least one pressure chamber to said at least one discharge outlet via a discharge channel when the plunger casing is depressed into the at least one dispenser casing; and

a second discharge channel traversing said central shaft and forming a passageway between said secondary discharge unit and said at least one discharge outlet; and

whereby a compact dispenser is provided by:

forming said mounting support as part of said at least one pressure chamber;

circumferentially defining the at least one pressure chamber around the mounting support; and

utilizing the plunger casing as part of the at least one pressure chamber.

5,326,001

PAINT APPLICATOR SYRINGE

Kimberly K. Holmquist, Box 393, Leach Hill Rd., Kennedy, N.Y. 14747, and Martin Hand, 550 Kiantone Rd., Jamestown, N.Y. 14701

Filed May 24, 1993, Ser. No. 65,379

Int. Cl.[5] **G01F** *11/00*

U.S. Cl. 222—387 **1 Claim**

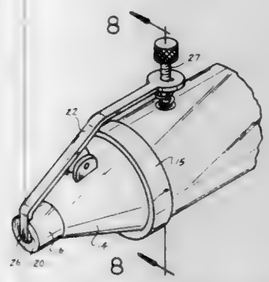
1. A paint applicator syringe, comprising,

a tubular body, the tubular body having an externally threaded first end portion spaced from a tubular body second end portion, with the second end portion including an annular flange projecting exteriorly of the tubular body, and

a conical head, the conical head including an internally threaded skirt in secured orientation relative to the externally threaded first end portion, with the conical head further including an outlet tube, the outlet tube having an outlet opening, and

a plunger rod, the plunger rod slidably directed through the tubular body, having a piston with the piston including a cylindrical seal, the cylindrical seal arranged for sealing engagement within the tubular body defining a fluid cavity between the seal and the outlet opening, and

a bifurcated mount integrally secured to the conical head, and an actuator lever, the actuator lever including an actuator lever lug, the actuator lever lug received within the bifurcated mount, with an axle removably mounted



through the actuator lug and the actuator lever, with the actuator lever including a first end positioned over the tubular body, and the actuator lever including a second end, with the second end having a metering flange in contiguous communication with the outlet opening, whereupon displacement of the actuator lever first end towards the tubular body effects displacement of the metering flange relative to the outlet opening, and

a lever spring captured between the actuator lever first end and the tubular body, and

an externally threaded adjuster rod threadedly directed through the actuator lever and the lever spring, with the adjuster rod including an adjuster rod annular flange rotatably mounted within the tubular body.

5,326,002

SPRAYING CAN WITH PREASSEMBLED DISPENSER VALVE

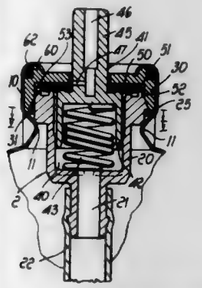
Uberto Dubini, Via Tubi, 12 - 22053 Lecco (Prov. of Como), Italy

Filed Feb. 8, 1993, Ser. No. 14,485

Claims priority, application Italy, Feb. 21, 1992, MI92A000396

Int. Cl.[5] **B65D** *83/14*

U.S. Cl. 222—402.1 **4 Claims**



1. Spraying can with preassembled dispenser valve, for dispensing fluids in general, comprising a can body with which a dispenser valve is associated, wherein said can body has, at its mouth, a cylindrical neck in which said dispenser valve is inserted, said valve having a cup-like body to which an upper cap is coupled, said upper cap defining, in cooperation with said cup-like body, a cavity in which a shutter, which protrudes from said upper cap, can move, said cylindrical neck being seamed onto said upper cap to sealingly coupled said dispenser valve to said can body wherein said cylindrical neck has, proximate to its region of coupling with the can body, shaped indents which are arranged mutually circumferentially spaced and act as a supporting element for said cup-like body, and wherein on said cup-like body, engagement teeth are provided which are arranged radially and which are coupled in a snap-together manner in an internal groove of said upper cap.

5,326,003

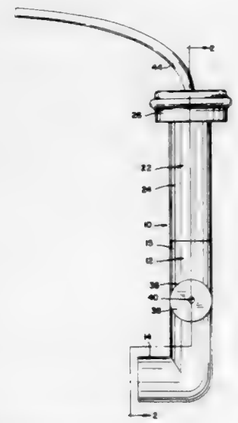
APPARATUS FOR DISPENSING BEVERAGES FROM A CONTAINER

Robert Kitto, 6167 South Guthrie Rd.; Tregg Peyton, 709 Larchmont, and William M. Hoag, S42 W25312 Dale Dr., all of Waukesha, Wis. 53186

Filed Apr. 13, 1992, Ser. No. 868,076

Int. Cl.[5] **B67D** *5/00*

U.S. Cl. 222—460 **15 Claims**



1. An apparatus for dispensing a beverage from a container comprising:

a first tubular member having an open end for coupling to the container and made of elastic material to stretch around the container providing a fluid-tight seal thereto, said first tubular member including a round tubular portion with the open end being formed by an outwardly projecting flange at a first end of the tubular portion and by an end cap extending across the flange, the end cap having an aperture through which a neck of a container is inserted during use of the apparatus;

a second tubular member connected at one end to a second end of the round tubular portion of said first tubular member for receiving the beverage, and having a portion with an opening about which a user's mouth can be placed to receive the beverage,

one of said first and second tubular members having an inlet opening; and

a tube in communication with the inlet opening, and extending through said first tubular member and projecting outward from the open end.

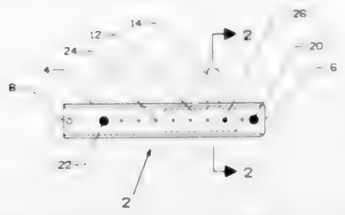
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5,326,004

NECKTIE POSITIONING DEVICE

Ralph D. Daily, Jr., 63 Maple Ave., Unionville, Conn. 06085

Filed Oct. 13, 1992, Ser. No. 959,809
Int. Cl.[5] A41H *1/00, 21/00;* **B43L** *7/00*
U.S. Cl. 223—111 **3 Claims**



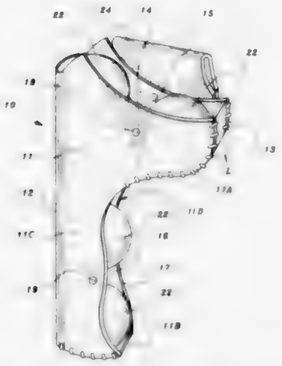
1. A necktie positioning device comprising:
a generally rigid, generally elongated body member, said body member having a first end and a second end, said body member being unmarked with units of measurement, said body member further comprising at least one first marking and at least one second marking, said first marking being proximate to said first end, said second marking being disposed from about one inch to about four inches from said second end, said markings being clearly discernible from said body member;
a generally rigid sliding member, said sliding member being slidably engaged to said body member such that said member is relatively movable along a longitudinal path of said body member;
said body member envelopes said sliding member;
a generally rigid arm, said arm being joined to said sliding member, said arm projecting outwardly from said body member, said arm being adapted for insertion in a belt loop; said body member includes a plurality of apertures, said apertures being sized to accept fastening means for the prevention of said relative movement, and said apertures being located on said body member so that the said sliding member may be secured at a number of positions relative to said body member.

5,326,005

BALL HOLSTER

Gary L. Fisher, 10309 Bel-Aire, Dallas, Tex. 75218

Filed Jan. 7, 1993, Ser. No. 1,628
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—253 **4 Claims**



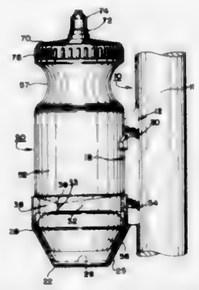
1. A ball carrying device for the storage and removal of balls comprising:
a body of material of sufficient size to accommodate a plurality of balls formed into a U-shape with a front fold;
means for securing said body to the player;
said body being closed along a rear upper portion by a divider panel; said divider panel extending inside said body and joined behind said front fold dividing said body into a upper ball recess with a top opening and a lower ball recess with a rear opening to allow insertion and removal of balls from the top and rear;
said lower ball recess is closed on the bottom by securing a bottom panel;
a first spacer to adjust the center of said upper ball recess to a dimension slightly less than a diameter of a ball to allow said body to conform to the ball upon insertion and removal;
a second spacer to adjust the center of said lower ball recess to a dimension slightly less than a diameter of a ball to allow said body to conform to the ball upon insertion and removal;
a plurality of a hooked fastening means for retaining the majority of balls in said upper ball recess and each ball in said lower ball recess by being secured at a point where the respective ball touches the sides of said upper ball recess and said lower ball recess.

5,326,006

ACCESSORY HOLDER AND ASSOCIATED BOTTLE FOR BICYCLES

Edward H. Giard, Jr., 1653 Imperial Cir., Naperville, Ill. 60563, assignor to Edward H. Giard, Jr., Naperville, Ill.

Filed May 15, 1992, Ser. No. 883,091
Int. Cl.[5] B62J *7/06;* **B65D** *23/00*
U.S. Cl. 224—32 R **5 Claims**



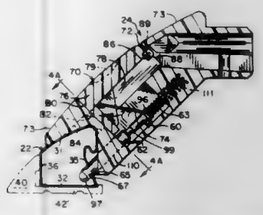
1. A bottle and bottle holder for mounting on a bicycle comprising:
a bottle comprising:
a frustoconical base section;
a generally cylindrical center section having a diameter;
a collar section having a mouth allowing replacement or removal of liquids or ice; and
engaging means defined in the center section of a size to releasably and securely retain a first and second generally arcuately shaped pincer;
a holder comprising:
an elongated base member adapted to be mounted to a bicycle frame, the elongated base member having a first end and a second end;
a bottle supporting member extending generally normal tot he plane of the elongated base member adapted to conformingly engage the frustoconical base section of the bottle and attached to the base member by a first arm extending obliquely from the first end of the base member;
a bottle enclosing structure extending generally upwardly from the bottle supporting member in a direction parallel to the elongated base ember;
a first generally arcuately shaped resilient pincer connected to the elongated base member having ends extending from the elongated base member toward the bottle enclosing structure; and
a second generally arcuately shaped resilient pincer connected to the bottle enclosing structure having ends extending from the bottle enclosing structure toward the ends of the first generally arcuately shaped resilient pincer;
said first pincer and said second pincer forming an enclosure, the ends of said first and second pincers being generally opposed and spaced,
whereby insertion of the frustoconical base section between the pincers will spread the pincers apart by camming action so the engaging means in combination with said first and second pincers securely lock the bottle to the holder; and
whereby the bottle may be release by pivoting the bottle between the pincers, spreading the pincers to release the pincers from the engaging means.

5,326,007

LOCKING MECHANISM FOR AUTOMOBILE LUGGAGE RACKS

Richard I. Pudney, Croswell; Charles R. Schriner, Port Huron; Charles E. Stringer, Deckerville; Mark C. Towns, and Gary M. Cronce, both of Port Huron, all of Mich., assignors to Masco Industries, Inc., Taylor, Mich.

Continuation of Ser. No. 561,696, Aug. 1, 1990, Pat. No. 5,205,453. This application Jan. 25, 1993, Ser. No. 7,490
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—321 **10 Claims**



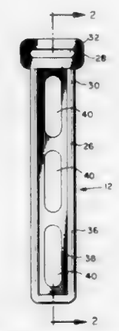
1. An article carrier for an automotive vehicle having an exterior body surface, comprising in combination,
at least one elongated member adapted to be mounted on said exterior body surface, said elongated member having a plurality of longitudinally spaced apertures therein,
an article securing member adapted to be mounted for longitudinal movement on said elongated member,
said article securing member including means cooperable with said apertures for locking and longitudinally adjusting said article securing member at predetermined positions along said elongated member,
said locking and adjusting means including a latching member carrier by said article securing member and having one end thereof engageable and disengageable with said apertures, an actuating member carried by said article securing member and being manually movable from a latching position to an unlatching position, and a pivotally movable lever link having a body portion and first and second ends, said body portion extending between and being pivotally connected adjacent each of said first and second ends respectively to said latching member and said actuating member for disengaging said one end of said latching member from said apertures incident to said actuating member being manually moved to said unlatching position to cause pivotal movement of said first and second ends of said lever link, respectively with said latching member and said actuating member.

5,326,008

BREAKER TOOL FOR ADJUSTING THE SIZE OF HANGING FILE FRAMES TO FIT INTO A DESIRED DRAWER OF A DESK OR CABINET

Donald J. Polak, Brentwood, and Kenneth E. McDonald, Columbia, both of Tenn., assignors to Pelikan, Inc., Franklin, Tenn.

Division of Ser. No. 865,370, Apr. 8, 1992, Pat. No. 5,237,732. This application Apr. 13, 1993, Ser. No. 48,827
Int. Cl.[5] B26F *3/02*
U.S. Cl. 225—93 **2 Claims**



1. A hand-held breaker tool for adjusting the length of side rails of frames that support hanging file folders in a drawer, by breaking off an unwanted excess length portion of the side rails, said side rails extending in a longitudinal direction and having a series of spaced apart crimp lines of weakness along an end portion of the side rails extending perpendicular to the longitudinal direction, comprising
a tool having a longitudinal handle portion extending in a first direction,
a head portion integral with the handle portion and positioned at one end of the handle portion and in line with the handle portion, and
a transverse slot formed in the head portion and extending in a second direction which is perpendicular to the first direction and adapted,
whereby when a side rail of a frame for supporting hanging files is inserted in the second direction into said transverse slot adjacent a crimp line of weakness, and the unwanted excess end portion of the side wall rail is subjected to bending back and forth about the crimp line, the side rail breaks off evenly only along the crimp line to adjust the length of the side rail to the proper size to fit into a desired drawer.

5,326,009

AIR NOZZLE FOR USE IN PRODUCTION OF NONWOVEN FABRIC

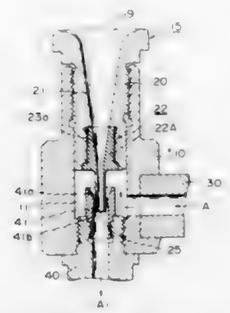
Yoshinori Kobayashi; Naoyuki Tamura, both of Yamaguchi, and Haruo Sasako, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 679,150, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 586,375, Sep. 21, 1990, abandoned, which is a continuation of Ser. No. 304,225, Jan. 31, 1989, abandoned. This application Mar. 26, 1993, Ser. No. 37,530
Claims priority, application Japan, Feb. 15, 1988, 63-32418
Int. Cl.[5] B65H *20/14;* **D01G** *25/00*
U.S. Cl. 226—97 **4 Claims**

1. An air nozzle for use in the production of nonwoven fabric adapted to receive spun filaments from a spinning nozzle and feed the filaments in an air jet onto a receiver, comprising:
a) a nozzle body having an inlet through which said filaments from said spinning nozzle are received;

b) an air passage for guiding air to the periphery of an outlet of said nozzle body at the tip thereof, then for allowing the air to be injected in the direction in which said outlet of said nozzle body is directed, wherein said filaments are discharged from the inside of said nozzle body in the flow of said air in said air passage, then fed toward said receiver,

said nozzle body having a conical passage the diameter of which gradually decreases from said inlet for receiving said filaments, and a straight passage continuing from said



conical passage and extending with a constant diameter toward said outlet of said nozzle body, and a corner portion at a boundary between said conical passage and said straight passage being fitted with a ceramic formed body as an exchangeable element into the boundary and being positioned at the outlet side of the nozzle body; and

c) a feeding guide tube having a constant inner diameter connected to the outlet side of said nozzle body,

the inner diameter of said feeding guide tube being larger than the outer diameter of the outlet of said nozzle body so as not to disturb an airflow from said air passage

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5,326,010

TRACTION UNIT FOR A DRAWING MACHINE

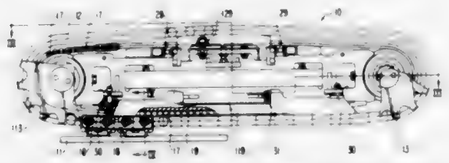
Paolo Moras, Udine, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Dec. 21, 1992, Ser. No. 993,705

Claims priority, application Italy, Dec. 24, 1991, UD91 A 000217

Int. Cl.[5] B65H *20/00*

U.S. Cl. 226—172 **8 Claims**



1. Traction unit for a drawing machine, the unit cooperating with a drawing die and comprising at least two drive chains with drawing links lying on the same plane, each of said at least two drive chains comprising a plurality of links having an opposed inner surface and outer drawing surface and opposed lateral outer sides, each of said at least two drive chains cooperating with load bearing rollers and with a rigid guide, the drawing action being obtained by the forward movement of the drive chains with drawing links and by the reciprocal contact taking place between the drawing chains with drawing links in their opposed drawing segment, the unit being characterized in that the load bearing rollers comprise a linked chain of idler rollers positioned in a ring, the linked chain of idler rollers being able to be moved by sliding and being placed between the inner surface of the links and the rigid guide, in which each link has at each of its two lateral outer sides a lateral drawing and, on the inner side of the lateral drawing links, lateral idler rollers link, said link further comprising a link body cooperating with a connecting and positioning pivot and being included in an intermediate position between the lateral drawing links, and further comprising lateral idler rollers, each of which is provided between said link body and each of said lateral drawing links.

5,326,011

REDUCED-SKEW WEB DRIVE BETWEEN ROLLERS OF DIFFERING COEFFICIENTS OF FRICTION, PARTICULARLY TO TRANSPORT PAPER, METAL OR FILM IN A LASER IMAGER

Donald V. Mager, Mendota Heights, and Daniel A. Baker, Minnetonka, both of Minn., assignors to Printware, Inc., St. Paul, Minn.

Filed Jan. 22, 1993, Ser. No. 7,601

Int. Cl.[5] B41J *15/00*

U.S. Cl. 226—181 **19 Claims**



1. In an imager for marking a web of photosensitive medium with light, the imager having a plurality of pairs of opposed rollers for guiding the web through the imager with at least one roller of each pair serving to drive the web, the improvement wherein at least one of the plurality of pairs of opposed rollers comprises:

a first roller with a surface made of a first material having a predetermined coefficient of friction; and

a second roller, opposed to the first roller so that the web may past between the first and the second roller, with a surface made of a second material having a coefficient of friction relatively lower than the predetermined coefficient of friction; and wherein at least three succeeding ones of the plurality of pairs of opposed rollers comprise:

a first roller pair located first in the direction in which the web is driven where the surface of the first material is disposed to a first side of the web;

a second roller pair located second in the direction in which the web is driven where the surface of the first material is disposed to a second side of the opposite to the first side; and

a third roller pair located third in the direction in which the web is driven where the surface of the first material is again disposed to the first side of the web.

5,326,012

BUTTON FEED UNIT FOR BUTTON APPLICATOR

Kazuyoshi Ito, and Toshiaki Sodeno, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,308

Claims priority, application Japan, Dec. 25, 1991, 3-343165

Int. Cl.[5] A41H *37/10*

U.S. Cl. 227—119 **8 Claims**

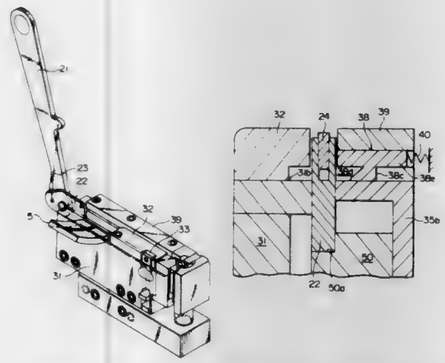
3. A button feed unit for a button applicator to feed a button element to the button applicator from a supply of button elements, while orienting said button element, said button element

having a circular head having a front face and a back face and an orienting recess on a back face thereof, comprising:

a pair of front guide base members which are provided with guide faces facing upwardly for guiding the front face of said button element, said guide faces disposed lengthwise along a feed direction of said button element and providing a pusher passage therebetween;

first and second back guide members which are arranged above said guide faces;

a pusher arranged to reciprocate in said pusher passage for translating said button head along said feed direction, said



pusher having means for arresting axial rotation of said button head when said orienting recess reaches a select rotational position; and

said first back guide member having a replaceable attachment having guide means extending approximately parallel to said feed direction and having a wedge shaped recess formed by a first wall and a second wall, said first and second walls respectively contacting said front face and said back face for pinching a part of the button head between said walls, and spring means for urging the button head resiliently toward said second back guide member.

5,326,013

SELF CONTAINED GAS POWERED SURGICAL APPARATUS

David T. Green, Westport; Keith Ratcliff, Sandy Hook; Keith L. Milliman, Norwalk; Henry R. Sienkiewicz, Stamford, and Mitchell J. Palmer, New Milford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 915,425, Jul. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 781,012, Oct. 18, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 949,685

Int. Cl.[5] A61B *17/072*

U.S. Cl. 227—176 **38 Claims**

1. Apparatus for driving surgical fasteners comprising:

a) a frame portion;

b) a body portion extending from said frame portion;

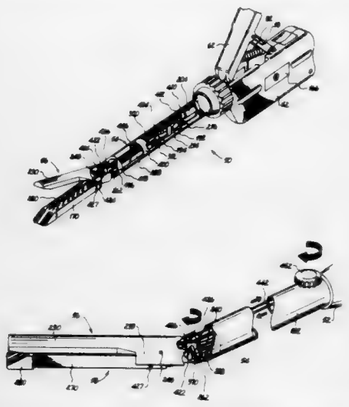
c) a cartridge assembly including:

i) a proximal cartridge mounting portion maintained in a distal end portion of said body portion and defining a longitudinal axis extending therethrough; and

ii) a distal cartridge housing portion movably connected to said proximal cartridge mounting portion on a pivot axis in alignment with and transverse to said longitudinal axis and having a tissue engaging surface thereon;

d) articulation means associated with said body portion and actuable from said frame portion for moving said distal cartridge housing portion relative to said proximal cartridge mounting portion about said pivot axis;

e) an anvil member having a fastener forming surface thereon, said anvil member mounted relative to said cartridge housing portion of said cartridge assembly so as to be movable between an open position wherein said fastener forming surface is spaced from said tissue engaging surface and a closed position wherein said fastener forming surface in is close cooperative alignment with said tissue engaging surface of said cartridge housing portion;



f) means associated with said body portion for moving said anvil member between said open position and said closed position; and

g) means for ejecting said surgical fasteners from said cartridge housing portion of said cartridge assembly, whereby said fasteners form against said fastener forming surface of said anvil member.

5,326,014

HEAD OF ULTRASONIC WIRE BONDING APPARATUS AND BONDING METHOD

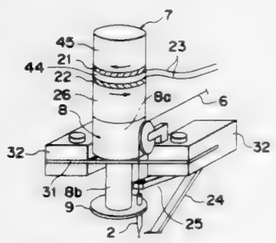
Makoto Morita, Neyagawa, and Masaru Nagaike, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 25, 1993, Ser. No. 140,519

Claims priority, application Japan, Oct. 26, 1992, 4-287344

Int. Cl.[5] H01L *21/607*

U.S. Cl. 228—110.1 **4 Claims**



1. A head of an ultrasonic wire bonding apparatus for bonding a lead wire to a lead frame, comprising:

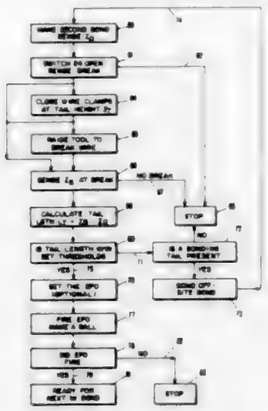
a capillary;

a capillary supporting member; and

a vibrator, vertically arranged and connected to the capillary supporting member, for producing ultrasonic torsional vibration along opposite directions and applying the vibration to the capillary via the capillary supporting member, the vibrator having two piezoelectric elements superimposed on each other via a column member in

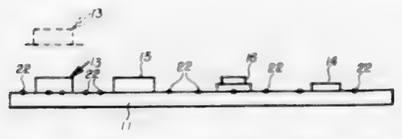
which magnets are circularly arranged so as to produce the ultrasonic torsional vibration along the opposite directions.

5,326,015
WIRE BONDER TAIL LENGTH MONITOR
James M. Weaver, Madison, Conn.; Ehud Efrat, Horsham; Daniel J. Muldoon, Hatboro, both of Pa., assignors to Kulicke and Soffa Investments, Inc., Wilmington, Del.
Filed Mar. 29, 1993, Ser. No. 38,843
Int. Cl.[5] H01L *21/603*
U.S. Cl. 228—102 **19 Claims**



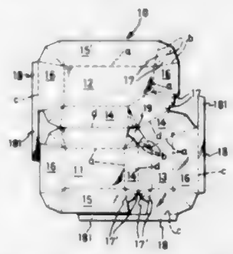
15. A method of monitoring the making of fine wire tails after making a second wire bond of a fine wire interconnection, comprising the steps of:
making a second wire bond with a fine wire in a bonding tool,
raising the bonding tool to a predetermined tail length height while the fine wire is still attached to said second bond,
clamping the fine wire at said tail length height,
raising said bonding tool to a flame off height after clamping said fine wire to break said fine wire at said second bond,
sensing the Z axis height of said bonding tool at said second bond and at the Z axis height when said fine wire breaks,
determining the length of fine wire tail extending from said bonding tool, and
determining if the length of fine wire tail is of a length that is proper for making a ball on said fine wire tail before making a ball.

5,326,016
METHOD FOR REMOVING ELECTRICAL COMPONENTS FROM PRINTED CIRCUIT BOARDS
Marvin S. Cohen, 22 Lancaster Dr., and Marcio A. Lopes, 10 Second St., both of Framingham, Mass. 01701
Filed Apr. 15, 1993, Ser. No. 47,024
Int. Cl.[5] B23K *1/00, 1/018*
U.S. Cl. 228—264 **20 Claims**



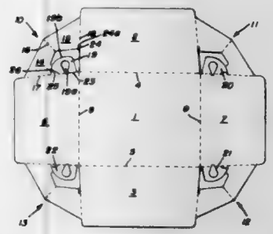
1. A method of removing an individual surface mounted electrical component from a printed circuit board retaining a plurality of other components, said individual component having a plurality of leads connected to circuitry on said board by a connection alloy comprising at least two constituent metals and having a given melting point less than that of either of said constituent metals, and comprising the steps of:
obtaining a removal alloy comprising a plurality of constituent metals and having a particular melting point below said given melting point;
heating said removal alloy to a temperature greater than said particular melting point but below said given melting point so as to produce a molten state thereof;
sequentially contacting said connection alloy on each of said leads with said molten removal alloy and causing thereby a reaction producing a molten state for said connection alloy; and
separating said individual component from said printed circuit board while retaining thereon said other components.

5,326,017
PAPER CONTAINER WITH MULTIPLE COMPARTMENTS PARTITIONED BY WALLS IN DIFFERENT HEIGHTS
Yuan-Shin Liu, 11th-1 Floor, No. 90, Fu Hsin S. Road, Sec. 1, Tah An District, Taipei, Taiwan, and Richard C. H. Chang, 19, Alley 2, Lane 685, Chung Cheng Road, Fuan Yuan City, Taichung Hsien, Taiwan
Filed Sep. 2, 1993, Ser. No. 115,053
Int. Cl.[5] B65D *5/48, 5/62*
U.S. Cl. 229—120.17 **2 Claims**



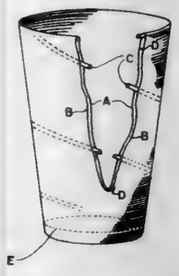
1. A paper board made from a polyethylene coated laminate of fibers and additives, the paper board being foldable into a container having multiple compartments partitioned by walls of different heights and having a pattern comprising:
a) a middle opening formed in the pattern;
b) a plurality of embossed first folding lines defining a plurality of bottom sections positioned around the middle opening;
c) a plurality of sidewall sections, each sidewall section adjoining a bottom section along a first folding line;
d) a plurality of pairs of partitioning wall sections, each pair of partitioning wall sections being adjoined to each other along an embossed second folding line and each partitioning wall section being adjoined to a bottom section along a first folding line;
e) a plurality of corner sections, each corner section adjoining two adjacent sidewall sections, two adjacent partitioning wall sections or one sidewall section and one partitioning wall section, and each corner section being formed by a plurality of embossed third folding lines defining two adjacent equiangular triangular-shaped connection sections; and
f) a strip section adjoining a top edge of each of at least some of the sidewall sections along an embossed fourth folding line, with each strip section being free from connection with any of the remaining sidewall sections.

5,326,018
CONTAINER CORNER STRUCTURE AND CONTAINER BLANK TOGETHER WITH A METHOD OF FORMING A CONTAINER CORNER STRUCTURE
Gary W. Baugus, Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Jul. 30, 1993, Ser. No. 99,630
Int. Cl.[5] B65D *5/24*
U.S. Cl. 229—187 **6 Claims**



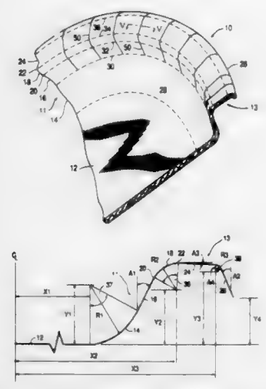
1. Corner structure for a container formed from a unitary blank, said corner structure comprising a quadrilateral main panel with right angle corners, an end wall foldably joined to an end edge of said main panel, a side wall foldably joined to a side edge of said main panel which intersects said end edge of said main panel, said end wall and said side wall having adjacent end edges, a locking tab foldably joined to an end edge of said end wall said locking tab having an aperture which extends into the associated end wall and which includes an engagement edge which is engageable by a machine element to begin insertion of the locking tab which is disposed in flat face contacting relation with the adjacent side wall panel, a retention slit struck from said locking tab and forming a projection from the adjacent end edge of said end wall, and collapsible web structure joined at its ends to said adjacent end edges respectively along fold lines one of which terminates at a point spaced from an end edge of said web structure to accommodate a locking slit extending from an end edge of said web structure, said locking slits and said retention slits in snug proximity to each other and with a portion of each of said locking tabs in contacting relation with the part of said collapsible web structure which is adjacent to said retention slit.

5,326,019
DOUBLE WALLED PAPER CUP
Steven K. Wolff, 1418 SW. 351st St., Federal Way, Wash. 98023
Filed May 3, 1993, Ser. No. 55,255
Int. Cl.[5] B65D *3/22*
U.S. Cl. 229—1.5 B **5 Claims**



1. A beverage receptacle comprising: an inner wall of cylindrical construction and having a fixed radius and having an outer surface and an inner surface, a spacer in connection with said outer surface, said spacer disposed upon said outer surface in a spiral configuration with radius corresponding to that of said inner wall, an outer wall of cylindrical construction and of larger diameter than said inner wall, said outerwall in connection with said spacer so as to form an air space between said inner and outer walls.

5,326,020
RIGID PAPERBOARD CONTAINER
James O. Cheshire, Neenah; Mark B. Littlejohn; Denny R. Garns, both of Appleton, and Erland S. Sandstrom, Menasha, all of Wis., assignors to James River Corporation of America, Richmond, Va.
Continuation of Ser. No. 937,708, Sep. 1, 1992, abandoned. This application Aug. 31, 1993, Ser. No. 126,900
Int. Cl.[5] B65D *1/34*
U.S. Cl. 229—2.5 R **35 Claims**



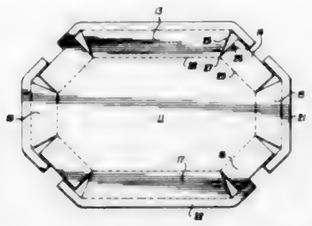
1. A container, having a finished diameter D, formed from a blank, said container comprising:
a substantially planar inner region;
a sidewall region including;
a generally annular region flaring upwardly and outwardly from a periphery of said planar inner region and a first frusto-conical region adjoining said annular region, said first frusto-conical region sloping outwardly and upwardly from said annular region; and
a rim region including an outwardly flaring arcuate annular region adjoining an outer periphery of said first frusto-conical region having a first portion thereof extending generally upwardly from said first frusto-conical region and a second portion thereof flaring generally downwardly at an angle between about 6° to about 12° relative to a plane defined by said planar inner region, a second frusto-conical region extending downwardly and outwardly from said second portion of said arcuate annular region at an angle of about 6° to about 12° relative to a plane defined by said planar inner region and a lip portion extending outwardly and downwardly from said second frusto-conical region at an angle greater than 45° with respect to said plane.

5,326,021
RIGID INSULATED FOOD TRAY
Robert A. Farrell, Silver Spring, Md., and Todd H. Huffman, Richmond, Va., assignors to Westvaco Corporation, New York, N.Y.
Filed Jan. 28, 1993, Ser. No. 10,561
Int. Cl.[5] B65D *5/56*
U.S. Cl. 229—109 **12 Claims**

1. A fluid container comprising: an outer article blank; an inner blow molded polymer lining wherein said article blank is further comprised of an integral sheet of thermal insulated, corrugated paperboard, said sheet having a centralized bottom

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panel defined by a plurality of straight first score lines continued substantially end to end to and from points of angular departure around a closed perimeter of a polygon, each of said first score lines delineating a bottom edge of a corresponding side wall section also having lateral edges and a top edge, said lateral edges respective to adjacent said side wall sections



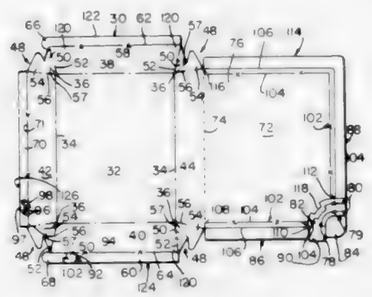
radiating in straight lines from one of said points of angular departure to said top edges of said respective side walls, at least one wall panel of said top edge being defined by a straight second score line delineating a top flange panel such that said blank is formed into a tray; and a polymer lining is in integral contact with said tray to form said fluid container such that said polymer lining is blow molded into contact with said tray.

5,326,022

CARTON WITH VENT OPENING ARRANGEMENT

James R. Green, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed Jun. 10, 1993, Ser. No. 74,757
Int. Cl.[5] B65D *5/54*
U.S. Cl. 229—120 **22 Claims**



1. A one-piece carton blank of foldable sheet material formable into an enclosed container, said container being suitable to retain consumable contents therein containing liquids so that said consumable contents can be (1) heated in an oven while retained therein and (2) thereafter consumed while retained therein, said carton blank is cut and scored such that said carton blank includes:

a bottom wall panel having a periphery defined by four interconnecting side fold lines interrelated so that there are four different pairs of adjacent side fold lines wherein each adjacent side fold line of a pair of adjacent side fold lines extends at an angle with respect to each other from a corner point defining one of four corners of said bottom wall panel;

four side wall panels integral with said bottom wall panel along said side fold lines and interrelated so that there are a first pair of opposed side wall panels, a front side wall panel, and a rear side wall panel, said side wall panels being foldable along said side fold lines in a uniform direction relative to said bottom wall panel to form compartment sides;

an integral connection between adjacent side wall panels, said integral connection being foldable and sealable to form leak tight sealed integral corners; and

a lid wall panel integral with said rear side wall panel along a lid fold line, said lid wall panel being foldable along said lid fold line in a direction inward toward said bottom wall panel so that in a closed position said lid wall panel encloses a container space defined by said bottom wall panel and said four side wall panels wherein said consumable contents are contained,

said lid wall panel having cuts therein defining a vent access section operable to be manually removed from said lid wall panel along a predetermined vent separation path in response to a manual venting procedure so as to expose a vent access opening to an interior of said container space, said vent access section including a grippable portion extending from an edge of said lid wall panel operable to be gripped as an initial step in said manual venting procedure,

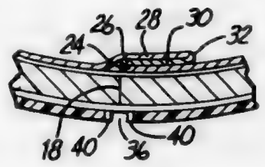
said lid wall panel having cuts therein defining an eating access section operable to be manually separated along a predetermined eating access separation path in response to a predetermined manual eating access opening procedure so as to enable said eating access section to be manually moved to an access position during said manual eating access operating procedure, the exposure of said vent access opening exposing a portion of said eating access section communicating therewith operable to be gripped as an initial step in said manual eating access operating procedure.

5,326,023

DOUGH CONTAINER WITH PREWEAKENED NON-PEEL LABEL

Michael J. Rice, St. Paul; Gregory P. Holl, Coon Rapids, and Robert A. Strange, Andover, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 17,772, Feb. 16, 1993, which is a division of Ser. No. 792,456, Nov. 15, 1991, Pat. No. 5,205,479. This application Jun. 25, 1993, Ser. No. 83,671
Int. Cl.[5] B65D *3/26*
U.S. Cl. 229—202 **3 Claims**



1. A no-peel, easy-open composite cylindrical container for refrigerated dough products, comprising:

a container body comprising:

a fibrous tubular core including a longitudinal butt joint;

an inner liner adhesively bonded to an inner surface of the fibrous core, the inner liner having a longitudinal seam located proximate the butt joint;

an outer label layer adhesively bonded to an outer surface of the fibrous core;

means for weakening the outer label layer located substantially in radial registry with the butt joint while providing sufficient strength to resist internal container pressure and opens upon application of external pressure along the outer surface of the container along the butt joint without removal of a portion of the container body prior to opening; and

at least one end member for sealing the container, wherein the end member is suitable for vacuum packaging;

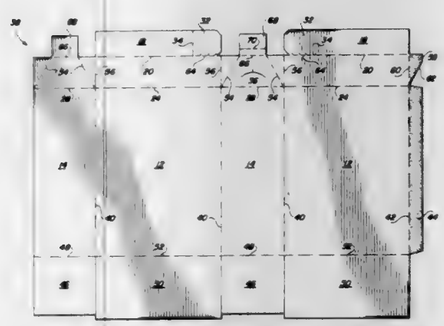
and further comprising a second end member suitable for vacuum packaging.

5,326,024

CARTON WITH RECLOSABLE POURING OPENING

James C. Fogle, Marietta, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Sep. 29, 1993, Ser. No. 128,980
Int. Cl.[5] B65D *5/70, 5/74*
U.S. Cl. 229—214 **4 Claims**



1. A carton for packaging pourable material, comprising:

opposite side panels connected to opposite end panels and to a bottom panel;

an upper sloped panel section connected to each of the side panels along a fold line;

an upper end panel section connected to each of the end panels along a fold line;

gusset panels connecting each of the upper end panel sections to the upper sloped panel sections;

means in addition to the gusset panels for holding the upper sloped panel sections and upper end panel sections in closed condition;

a tear strip connected to the upper sloped panel sections, the tear strip extending from an end of the carton adjacent one of the upper end panel sections to a point spaced therefrom to form a tab when the tear strip is separated from the upper sloped panel sections back to said point, whereby separation of the tear strip allows access tot he adjacent upper end panel section to permit said adjacent upper end panel section to be pulled outwardly, pivoting down about the fold line connecting said adjacent upper end panel section to the end panel associated therewith and causing the gusset panels connected to said adjacent upper end panel section to fold outwardly; and

said adjacent upper end panel section including a slit for receiving the end portion of said tab to maintain said adjacent upper end panel section in closed position after it has been reclosed by pivoting said adjacent upper end panel section up about said fold line to cause the associated gusset panels to fold inwardly.

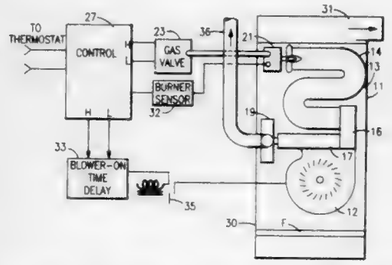
5,326,025

WARM UP METHOD FOR TWO STAGE FURNACE

Daniel J. Dempsey, Carmel, and Kevin D. Thompson, Indianapolis, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 8, 1993, Ser. No. 89,792
Int. Cl.[5] G05D *23/00*
U.S. Cl. 236—11 **3 Claims**

1. In a furnace for supplying circulating heated air to an interior comfort space and in which at least one burner sends heated combustion products through a heat exchanger which are exhausted therefrom through an exhaust vent to an outside environment, the burner being actuable into a high-fire full heat mode, a low-fire partial heat mode, and shut off; a circulation blower is operative to force return air drawn from said comfort space through said heat exchanger to absorb heat from said combustion products, from where the air is returned as heated circulation air to said comfort space; controller means responsive to a thermostat in said comfort space and operative to select a call for low heat or a call for high heat depending on heating conditions in said comfort space, including means for actuating said at least one burner at said high-fire mode when there is a call for high heat and at said low-fire mode when there is a call for low heat, and for shutting off said at least one burner when said thermostat is satisfied; and blower delay



timer means for delaying energization of said circulation blower by a first predetermined delay period after actuation of said at least one burner into said high-fire mode to permit the vent gases to heat up suitably before said blower forces said return air therethrough;

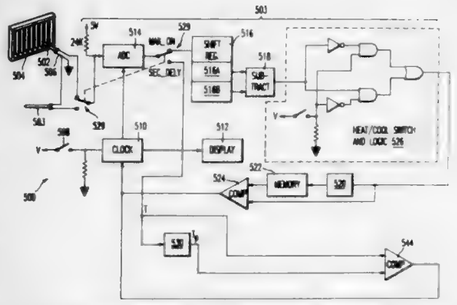
the improvement wherein said blower delay timer means is operative for delaying energization of said circulation blower by a second time delay period, longer than said first time delay period, after actuation of said at least one burner into said low-fire mode to permit said vent gases to heat up suitably under low heat operation before said blower forces said return air therethrough.

5,326,026

ENERGY AND PEAK-LOAD CONSERVING THERMOSTAT AND METHOD WITH CONTROLLED DEADBAND

Donald E. Jefferson, Silver Spring, Md., and Arnold D. Berkeley, 9748 Avenel Farm Dr., Potomac, Md. 20854, assignors to Arnold D. Berkeley, Potomac, Md.

Continuation-in-part of Ser. No. 880,556, May 8, 1992, Pat. No. 5,244,146. This application Jul. 27, 1993, Ser. No. 97,056
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] F23N *1/00*
U.S. Cl. 236—11 **20 Claims**



1. A fuel-conserving thermostat for controlling operation of a heating system that consumes fuel during a fuel-on interval

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and heats a defined space, thereby increasing a space temperature of said space; said space being thermally conductive to an ambient, whereby a heat flux occurs from said space to said ambient; said heating system comprising:

heating means for providing heat during said fuel-on interval;

delivery means for delivering heat to said space during a delivery interval, whereby a heat flux occurs from said heating means to said space during said delivery interval;

a heat exchanger;

signal-receiving means, coupling said thermostat and said heating means, for:

initiating one of said fuel-on intervals, which begins when said signal-receiving means receives a FUEL=1 signal from said thermostat;

terminating said fuel-on interval and initiating a fuel-off interval in which said furnace does not consume fuel, said fuel-off interval beginning when said signal-receiving means receives a FUEL=0 signal from said thermostat;

initiating one of said delivery intervals, which begins when said signal-receiving means receives a DELY=1 signal from said thermostat; and

terminating said delivery interval and initiating a nondelivery interval in which said furnace does not deliver heat to said space, said nondelivery interval beginning when said signal-receiving means receives a DELY=0 signal from said thermostat;

said thermostat including:

a timer providing timing signals;

a temperature sensor having means for providing a space-temperature signal representative of said space temperature,

means for providing a set-point-temperature signal representative of a set-point temperature; and

means for providing said FUEL=0, FUEL=1, DELY=0, and DELY=1 signals;

said thermostat further comprising: means for providing a maximum-on signal representative of a maximum fuel-on interval, where said maximum-on signal is provided by signal generating means for providing a signal representative of how long said heat exchanger can operate during a fuel-on interval in a linear mode before its mode of operation becomes nonlinear; and

burn-control means for causing a fuel-on interval to have a duration of no longer than said maximum fuel-on interval; and

said temperature sensor having coupled thereto means for predetermining a deadband of from 1 to 4 degrees Fahrenheit for said temperature sensor.

5,326,027

AUTOMATIC CONFIGURATION OF AIR CONDITIONING CONTROLLER

Louis E. Sulfstede, Tyler, Tex., assignor to American Standard Inc., New York, N.Y.

Filed Nov. 12, 1991, Ser. No. 790,031

Int. Cl.[5] B05D *23/00;* **F24F** *11/02*

U.S. Cl. 236—51 **14 Claims**

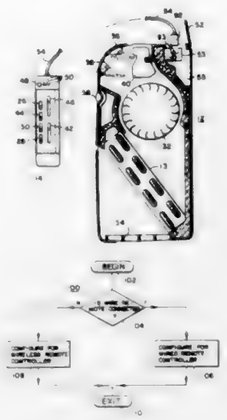
1. A method of configuring an air conditioner for remote control by either a wired receptacle or a wireless receiver comprising the steps of:

determining, independently of a control wire connection between the air conditioning system and a portable wired remote controller, if the portable wired remote controller is physically connected to the air conditioning system by means of the wired receptacle;

providing an indication that the portable wired remote controller is physically connected to the wired receptacle;

automatically configuring the air conditioning system to operate using the portable wired remote controller if the portable wire remote controller is physically connected to the air conditioning system;

automatically configuring the air conditioning system to operate with a wireless remote controller and the wireless receiver if the portable wired remote controller is not connected to the air conditioning system; and



operating the air conditioning system in accordance with the established configuration.

5,326,028

SYSTEM FOR DETECTING INDOOR CONDITIONS AND AIR CONDITIONER INCORPORATING SAME

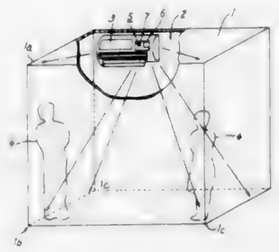
Hiroshi Kano, Kyoto, and Masakazu Asano, Neyagawa, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 24, 1993, Ser. No. 111,068

Claims priority, application Japan, Aug. 24, 1992, 4-224142; Mar. 3, 1993, 5-042748

Int. Cl.[5] F24F *7/00;* **G01B** *11/28*

U.S. Cl. 236—49.3 **5 Claims**



1. A system to be installed within a room for detecting indoor condition data including data as to the interior area of the room and the number and position of occupants therein, the system comprising:

light-emitting means for emitting a spotlight having an optical axis extending from one point toward an interior surface of the room and oriented toward successively varying directions to form a multiplicity of light spots dispersed on the interior surface at approximately equal spacings,

means for controlling and driving the light-emitting means so as to form the multiplicity of light spots one by one successively,

optical means disposed besides the light-emitting means at a specified distance therefrom for concentrating light reflected from a reflecting surface provided by the interior surface or an object inside the room,

a position sensitive light detector having a light detecting surface at the position where the reflected light is concentrated for outputting signals in accordance with a light incident position on the light detecting surface,

first arithmetic means for calculating three-dimensional coordinates of a reflecting position on the reflecting surface from the signal outputs from the position sensitive light detector and serving as input data, based on the principle of triangulation of the three positions of a focal position of the light-emitting means, the position of center of the optical means and the reflecting position,

second arithmetic means for calculating the indoor condition data based on the result of calculation obtained by the first arithmetic means for the entire region of the reflecting surface, and

means for outputting the result of calculation by the second arithmetic means.

5,326,029

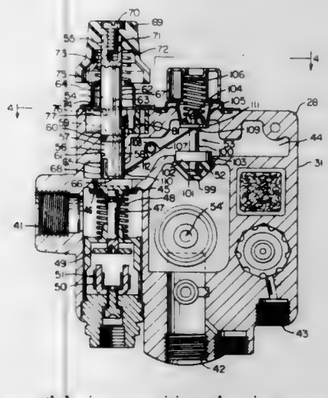
CONTROL SYSTEM, CONTROL DEVICE THEREFOR AND METHODS OF MAKING THE SAME

Gilbert Schultz, Fullerton, Calif., assignor to RobertShaw Controls Company, Richmond, Va.

Filed Aug. 5, 1993, Ser. No. 102,375

Int. Cl.[5] G05D *15/00;* **F23D** *5/16*

U.S. Cl. 236—68 D **20 Claims**



1. In a control device comprising a housing means, an electromagnetic means carried by said housing means, a movable valve means carried by said housing means and normally being disposed in a first operating position thereof and being adapted to be held in a second operating position thereof by said electromagnetic means as long as said electromagnetic means remains energized, electrical switch means carried by said housing means and being operatively interconnected to said electromagnetic means so that said electromagnetic means is adapted to be energized when said switch means is in a first operating condition thereof and is prevented from being energized when said switch means is in a second operating condition thereof, and a shift means carried by said housing means and being adapted to be axially moved from a first position thereof to a second position thereof so as to engage said valve means and move said valve means from said first operating position thereof to said second operating position thereof, the improvement wherein said shaft means has actuator means operatively interconnected to said switch means and is rotatably movable from a first rotatable position thereof to a second rotatable position therof to place and hold said switch means in said first operating condition thereof.

5,326,030

METHOD AND APPARATUS FOR CROP SPRAYING

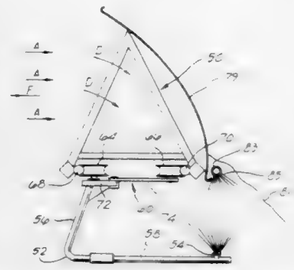
Roger S. Benest, St. Lawrence, Channel Islands, assignor to Benest Engineering Limited, Channel Islands

PCT No. PCT/GB90/01033, § 371 Date Feb. 24, 1993, § 102(e) Date Feb. 24, 1993, PCT Pub. No. WO92/00670, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 4, 1990, Ser. No. 962,802

Int. Cl.[5] B05B *1/20*

U.S. Cl. 239—1 **19 Claims**



1. A method of spraying in relation to row crops comprising:

a) providing downwardly extending support elements carrying spray means in the region of their lower ends;

b) positioning said support elements in relation to at least two crop rows so that the support elements extend downwardly between the crop rows;

c) moving said support elements lengthwise of said crop rows while said spray elements effect spraying;

d) selectively delivering a spray through said spray means in at least one direction generally upwardly and horizontally with respect to the ground so as to treat crop material in said crop rows;

e) using said support elements to sense the central region between said two crop rows; and

f) providing means for permitting lateral floating movement of each of said support elements with respect to a mounting therefor and in both lateral directions, such that each of the support elements independently weaves along a central path between two adjacent crop rows during said movement lengthwise of said crop rows.

5,326,031

APPARATUS FOR DISPENSING CONDUCTIVE COATING MATERIALS INCLUDING COLOR CHANGING CAPABILITY

Ronald D. Konieczynski, North Royalton, Ohio, assignor to Nordson Corporation, Westlake, Ohio

Filed Oct. 15, 1992, Ser. No. 961,156

Int. Cl.[5] B05B *5/025*

U.S. Cl. 239—3 **53 Claims**

1. A method for supplying electrically conductive coating material to at least one electrostatic coating dispenser comprising:

transferring coating material from a supply through a first transfer unit to a first reservoir and through a second transfer unit to a second reservoir while electrically isolating the supply from the coating dispenser;

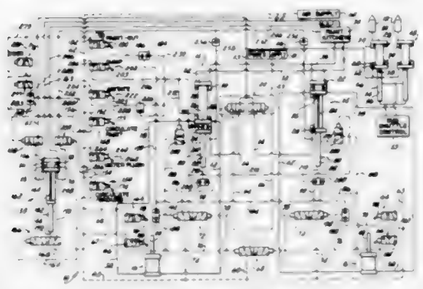
transferring the coating material from said first and second reservoirs to a flow control means;

alternatively transferring the coating material through said flow control means to the coating dispenser from said first reservoir and said second reservoir;

moving said first transfer unit to a first position to electrically isolate said first reservoir from said supply while coating material is being transferred from said first reservoir through said flow control means to the coating dispenser;

moving said second transfer unit to a second position to

electrically isolate said second reservoir from said supply while said coating material is being transferred from said second reservoir through said flow control means to the coating dispenser; and



electrically charging the coating material sprayed from the coating dispenser.

5,326,032

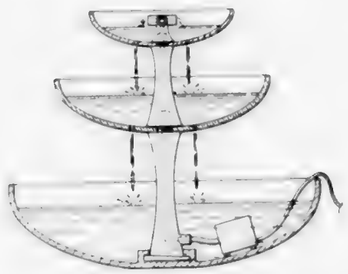
LOW SPLASH STEADY STATE WATERFALL

Patrick Quillin, Box 700512, Tulsa, Okla. 74170-0512

Filed Aug. 16, 1993, Ser. No. 106,864

Int. Cl.[5] B05B *17/08*

U.S. Cl. 239—20 **2 Claims**



1. A minimal splash water fall having a series of bowls secured above one another for maintaining constant volume of water in each bowl, said water fall comprising: at least one intermediate bowl mounted above a bottom most bowl and a top-most bowl mounted above said intermediate bowl so as to form a series of bowls one above the other, said bowl of decreasing diameter from said bottom most bowl to said topmost bowl, said topmost bowl and said intermediate bowl having a radius R and a center, and each of said topmost and said intermediate bowls having at least one discharge opening for directing the fall of water, said discharge opening located within ½ R of said center of said topmost and intermediate bowls, said bottom most bowl in connection with a pump for bringing water to said topmost bowl at a rate suitable for maintaining a steady level of water in each bowl.

5,326,033

ADJUSTABLE CONTROL VALVE FOR FLOW REGULATION OF GAS OR LIQUID AND USE OF SUCH VALVE

Ole A. Anfindsen, P.O. Box 30, N-4301, Sandnes, Norway

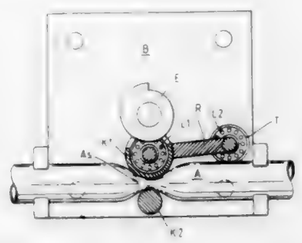
PCT No. PCT/NO91/00078, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/19124, PCT Pub. Date Dec. 12, 1991

PCT Filed May 24, 1991, Ser. No. 949,510

Claims priority, application Norway, May 25, 1990, 902308

Int. Cl.[5] F16K *7/07*; **B05B** *1/30*

U.S. Cl. 239—61 **14 Claims**



1. An adjustable control valve for flow regulation of gas or liquid by compressing a hose at a site between two clamping members of a hose clamp device, thereby adjusting selectively the flow cross-section of the hose, one of said clamping members being operatively disposed in engagement with a movable cam disk operated by a shifting mechanism and mounted for actuating the clamp device to exert incrementally varying compression of said hose in accordance with the setting of the cam disk, wherein said one of the clamping members in engagement with the cam disk is disposed on a pivot arm, which is pivotably hinged on the pivot pin substantially spaced, along said hose, from said one of the clamping members.

5,326,034

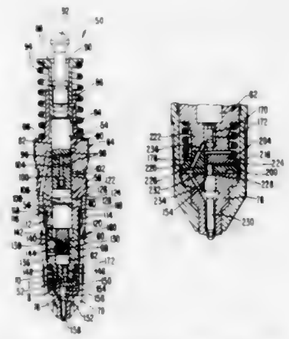
COMPACT CLOSED NOZZLE ASSEMBLY FOR A FUEL INJECTOR

Lester L. Peters, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jul. 27, 1993, Ser. No. 97,214

Int. Cl.[5] F02M *47/00*

U.S. Cl. 239—90 **28 Claims**



1. A fuel injector adapted to inject fuel at high pressure into the combustion chamber of an engine, comprising:

an injector body containing an injector cavity and an injector orifice communicating with one end of said injector cavity to discharge fuel into the combustion chamber, said injector body including a fuel transfer circuit for transferring supply fuel to said injector orifice;

a nozzle valve element positioned in one end of said injector cavity adjacent said injector orifice, said nozzle valve element operable to be placed in an open position in which fuel may flow from said fuel transfer circuit through said injector orifice into the combustion chamber and a closed position in which fuel flow through said injector orifice is blocked;

biasing means operatively connected to said nozzle valve element for biasing said nozzle valve element into said closed position, said biasing means including a nozzle spring having an inner radial extent, wherein said injector body includes a stationary housing mounted in said injector cavity adjacent said nozzle valve element, at least a portion of said stationary housing being positioned within said inner radial extent of said nozzle spring and at least a portion of said fuel transfer circuit being formed in said stationary housing within said inner radial extent of said nozzle spring.

5,326,035

HIGH PURITY CLEANING SYSTEM

Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, Japan; Michiya Kawakami, Tokyo; Yasuyuki Yagi, Sendai; Makoto Ohwada, Iwaki, and Kiyoshi Takahara, Tokyo, all of Japan, assignors to Tadahiro Ohmi, Miyagi, Japan

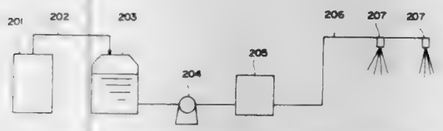
PCT No. PCT/JP91/00002, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO91/11021, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 7, 1991, Ser. No. 867,692

Claims priority, application Japan, Jan. 7, 1990, 2-873

Int. Cl.[5] B05B *1/24*

U.S. Cl. 239—135 **8 Claims**



1. A cleaning system for delivering a flow of ultrapure water to the surface of an object, comprising:

a source of ultrapure water;

a nozzle for delivering a flow of ultrapure water toward the surface of an object;

a conduit connecting said ultrapure water source to said nozzle in fluid communication with one another;

a heater attached to said conduit for heating the ultrapure water as it flows through said conduit; and

a pump in fluid communication with said conduit for effecting a flow of ultrapure water from said source to said nozzle;

wherein each surface of the cleaning system over which the ultrapure water flows from said ultrapure water source to said nozzle comprises one of a metal and a metal alloy having a passivated film formed thereon, said film being formed by heating said surface in an ultrapure atmosphere and finishing said surface to a mirror-like state.

5,326,036

RADIALLY LOCKING SPRAY NOZZLE CAP

Wilfred H. Wilger, 219 Ball Crescent, Saskatoon, Sask., Canada S7K 6E1

Continuation of Ser. No. 828,298, Jan. 30, 1992, abandoned. This application Feb. 16, 1993, Ser. No. 19,174

Int. Cl.[5] B05B *1/00*

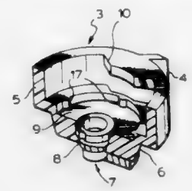
U.S. Cl. 239—600 **11 Claims**

1. A radially locking spray nozzle cap, adapted to hold a spray tip sealingly in liquid transfer communication with a nozzle body supplying liquid to be sprayed and requiring application during installation of said nozzle cap to lock it on said nozzle body of no axial pressure greater than liquid compression, said cap comprising:

a) generally cylindrical side walls, adapted to permit slight radial deformation of their generally circular shape,

b) a bottom wall adapted to retain a spray tip in relatively fixed position sealingly against a nozzle body to which said cap is attached,

c) a pair of diametrically opposed lock lugs projecting radially inwardly at the top of said cylindrical side walls,



adapted to fit over the bottom end of a nozzle body and, on rotation of the cap on said nozzle body, to engage a retainer flange on said nozzle body which flange holds said spray tip and cap sealingly in liquid communication with said nozzle body, said lock lugs being adapted to permit radial displacement and, on further rotation of said cap, being adapted to ride over radial lock tabs on said nozzle body which radially distort said resiliently side walls, then to remain in locked position in a pair of recesses on said nozzle body which retain said lock lugs without significantly distorting said resilient side walls.

5,326,037

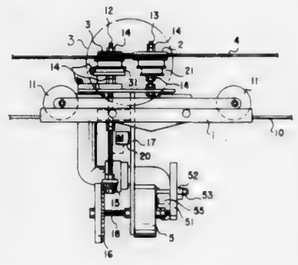
AUTOMATIC WASHING AND STERILIZING DEVICE FOR A STABLE

Tyh-Yuan Hour, 82, To-Syn Village, Luh-Jeau Shian, ChiaYi Hsien, Taiwan

Filed Jun. 10, 1993, Ser. No. 74,748

Int. Cl.[5] B05B *3/14, 3/18*

U.S. Cl. 239—743 **2 Claims**



1. An automatic washing and sterilizing device for a stable comprising;

a crane mounted for movement along a steel cable;

first and second threaded shafts which are mounted to said crane and which extend from said crane adjacent one another;

a motor for rotating said first shaft;

first and second winding wheels, each said winding wheel being provided with a plurality of grooves of progressively different diameters about which a tension wire is wound;

a first mounting means for mounting said first winding wheel to said first shaft for rotation therewith;

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a second mounting means for mounting said second winding wheel for rotation on said second shaft;

at least one of said mounting means allowing its associated one of said winding wheels to be adjustably positioned on its associated one of said shafts such that a selected one of said grooves of the one of said winding wheels engages the tension wire while an adjacent selected one of said grooves of the other of said winding wheels also engages the tension wire; and

a nozzle fastened to said crane for movement therewith

5,326,038

BEATING APPARATUS FOR FIBER SUSPENSIONS

Harry Nilsson, Hauptstrasse 58, CH-8274-Tagerwilen, Switzerland

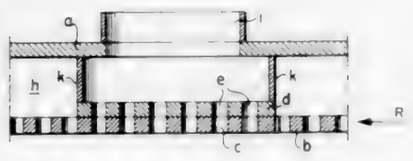
PCT No. PCT/SE92/00237, § 371 Date Dec. 9, 1992, § 102(e) Date Dec. 9, 1992, PCT Pub. No. WO92/18691, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 10, 1992, Ser. No. 955,867

Claims priority, application Sweden, Apr. 12, 1991, 9101114-8

Int. Cl.[5] B02C *19/00*

U.S. Cl. 241—74 5 Claims



1. A beating apparatus for fiber suspensions including:

a housing having inlet means for suspension and outlet means for beaten suspension, said inlet means communicating with an inlet compartment of said housing and said inlet means communicating with an outlet compartment of said housing;

a rotatable drum arranged in said housing and having an envelope wall and at one axial end an end wall, said drum being open at its axial end opposed to said end wall, perforations extending between an inner and an outer surface of said envelope wall, one of said surfaces providing a first beating surface;

a plurality of stators circumferentially spaced about said envelope wall in said housing, each of said stators carrying a stator shoe having perforations extending between first and second opposed surfaces thereof, one of said opposed surfaces providing a second beating surface located close to said first beating surface; and

shield and guide means arranged between said inlet and said outlet to allow flow from said inlet to said outlet only through said perforations of said stator shoes, wherein said shield and guide means comprises portions of said stators and shield means extending between adjacent stators, said portions of said stators and said shield means together with the stator shoes of said stators providing a partition in said housing dividing it into said inlet compartment and said outlet compartment, the arrangement being such that flow from said inlet and said inlet compartment passing through said perforations of said envelope wall is conducted to said outlet, whereas flow from said outlet and said inlet compartment passing only through said perforations of said stator shoes in returned to said inlet compartment.

5,326,039

AUTOMATIC BOBBIN CHANGING APPARATUS FOR A WINDING MACHINE

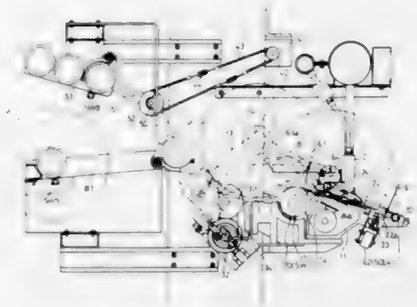
Fumio Tanae, Iyo, and Shunzo Naito, Matsuyama, both of Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Continuation of Ser. No. 751,783, Aug. 29, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 22,868

Claims priority, application Japan, Aug. 31, 1990, 2-232015

Int. Cl.[5] B65H *67/04*

U.S. Cl. 242—35.5 A 7 Claims



1. An automatic bobbin changing apparatus of a winding machine having a plurality of work stations disposed along the lengthwise direction of a machine frame, which comprises:

a yarn treating device, a cradle turning device, an empty bobbin donning device and a package receiver projecting outwardly for guiding fully wound packages which have been doffed from the cradle, which are disposed at a winding portion of each work station of said winding machine.

said yarn treating device including:

a threading motor;

a yarn threading arm connected to said threading motor for engaging a yarn which is sucked to a sucking device and for threading said yarn to a winding bobbin located at the winding portion; and

a yarn guide rotatably disposed at an end of said yarn threading arm;

said cradle turning device comprising:

a cradle turning motor;

a drive shaft connected to said cradle turning motor for turning cradles from a winding position to a doffing and donning position across a center of a cradle;

a cradle turning shaft;

a power transmitting device disposed between said drive shaft and said cradle turning shaft and provided with a play mechanism for permitting rotation of said drive shaft without rotation of said cradle turning shaft; and

a cam, integrally disposed with said drive shaft, for opening and closing said cradles;

said empty bobbin donning device comprising:

a small motor; and

an empty bobbin arm connected to said small motor for being turned from an empty bobbin supply position until it abuts with a mechanical stop; and

a control means disposed in said winding machine for operating said yarn treating device, said cradle turning device, said empty bobbin donning device and said package receiver when at least one of the packages at said winding portions reaches a state where it should be changed.

5,326,040

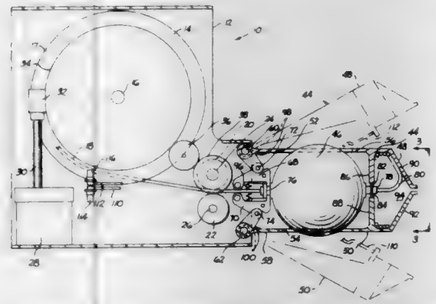
SPHERE AND CABLE DEPLOYER

Richard E. Kramer, Damascus, Md., assignor to Fairchild Space and Defense Corporation, Germantown, Md.

Filed Apr. 23, 1993, Ser. No. 51,336

Int. Cl.[5] B65H *75/40*; H01Q *1/30*

U.S. Cl. 242—390.2 10 Claims



1. Sphere and cable deploying apparatus comprising a cable member, a spherical member connected to said cable member, a storage drum for storing at least a portion of said cable member with at least a portion said cable member being wound on said drum, means operatively associated with said cable member for applying tension to said cable member as said cable member is being unwound from said storage drum, and a housing including releasable storage means for releasably storing said spherical member in an undeployed configuration and means for opening said releasable storage means for releasably storing said spherical member.

5,326,041

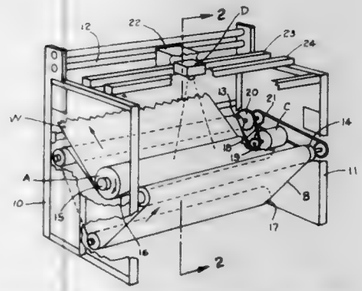
WEB ROLL CONTROL AND METHOD

William J. Alexander, III, Mauldin, and Shala W. Summey, III, Greenville, both of S.C., assignors to Alexander Machinery, Inc., Mauldin, S.C.

Filed Nov. 2, 1992, Ser. No. 969,991

Int. Cl.[5] B65H *16/00*

U.S. Cl. 242—563 3 Claims



1. Apparatus for unwinding a web roll comprising:

a control device for positioning a web roll transversely upon a looped drive belt for winding and unwinding a web from said web roll thereby varying the size of said web roll;

an electric motor driving said looped drive belt during winding and unwinding of said web roll;

a trough in said looped drive belt supporting said web roll during winding and unwinding without restraint upon the web roll causing said web roll to rock back and forth in a longitudinal direction in the trough;

an ultrasonic transducer carried above and directed downwardly toward said web roll sending a signal and receiving a return signal indicative of the size of said web roll while said roll is rocking back and forth changing its position upon said belt; and

signaling means actuated by said ultrasonic transducer when said web roll reaches a predetermined size producing a change of operation in said electric motor while said web roll is rocking back and forth.

5,326,042

SEAT BELT PRETENSIONER

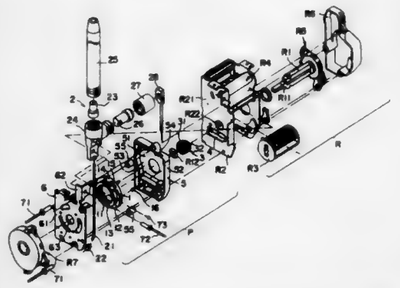
Muneo Nishizawa, and Tetsuya Hamaue, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,123

Claims priority, application Japan, Dec. 17, 1991, 3-353003

Int. Cl.[5] B60R *22/46*; B65H *75/00*

U.S. Cl. 242—374 1 Claim



1. A seat belt pretensioner of the type which rotates the take-up shaft of a retractor in the belt-winding direction so as to wind a length of the belt onto the retractor reel and including a driven gear connected to the retractor take-up shaft and a driving gear connected to a power source, the driving gear normally being held in clearance from the driven gear in the set condition of the pretensioner and being displaced and rotated upon operation of the power source to engage it with the driven gear and to drive the driven gear in rotation, characterized in that the teeth of one of the gears have addenda having top land surfaces that diverge from the addendum circle in the direction of the root circle and in a direction with respect to the direction of rotation of the driving gear such as to facilitate movement of the driving gear into engagement with the driven gear in the event of a collision of the addenda of the two gears, the top land surface of each tooth of said one gear being a surface that is left when a generally wedge-shaped portion defined by a first edge at the intersection of one face and the addendum circle, a second edge spaced apart circumferentially from the first edge and at the intersection of the other face and the addendum circle, and a third edge on the other face and spaced apart from the addendum circle in the direction of the root circle is removed from a normal addendum.

5,326,043

SEAT BELT RETRACTOR

Toshimi Yamanoi, Isehara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 19, 1993, Ser. No. 19,482

Claims priority, application Japan, Feb. 26, 1992, 4-038244

Int. Cl.[5] B60R *22/46*

U.S. Cl. 242—396.5 11 Claims

1. A seat belt retractor, comprising:

a housing;

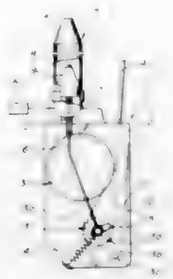
a spool rotatably mounted within said housing and utilized for winding thereon a seat belt webbing;

pretensioning means active to generate driving force substantially instantaneously in response to a predetermined condition;

first connecting means between said pretensioning means

and said spool so disposed as to convert driving force generated by said pretensioning means into rotational energy for said spool;

clamping means active to permit winding and unwinding of said seat belt webbing in a first state and to clamp said seat



belt webbing against movement in a predetermined direction in a second state; and

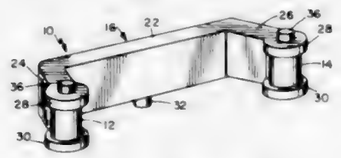
second connecting means attached to said clamping means and so disposed as to move said clamping means to said second state in response to generation of driving force by said pretensioning means.

5,326,044

TAPE ALIGNMENT DEVICE FOR TAPE CARTRIDGE

ohn L. Haller, 7249 Carrizo Dr., La Jolla, Calif. 92037

Filed Mar. 9, 1992, Ser. No. 848,524
Int. Cl.[5] G11B *23/04*
.S. Cl. 242—346.1 16 Claims



1. A tape alignment device, comprising:

a guide member consisting of a single piece of material having opposite, outer ends, the outer ends comprising spaced first and second tape guides, and a rigid connecting portion extending between the tape guides to secure them rigidly together in predetermined relative positions and orientation;

each tape guide being formed integrally in one piece with said connecting portion and having an at least partially curved, fixed tape guide surface for guiding tape around the tape guide, the guide surface having an upper and a lower end, the tape guide surfaces defining first and second vertical guide axes, respectively, and each tape guide having at least one guide shoulder projecting transverse to the guide axis at the upper or lower end of the respective guide surface;

the connecting portion comprising a straight, elongate rear wall having opposite first and second ends, and straight, first and second side arms projecting outwardly at an obtuse angle from the respective first and second ends of said rear wall and having outer ends offset forwardly from said rear wall, each tape guide comprising an at least partially cylindrical enlargement formed integrally at the outer end of the respective side arm; and

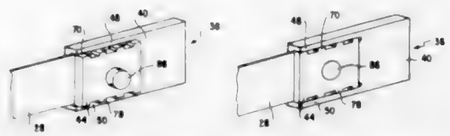
a securing mechanism for mounting the guide member in a tape cartridge housing with the tape guides positioned on opposite sides of a tape head opening in the housing to guide tape across the tape head opening.

5,326,045

LEADER BLOCK FOR STORAGE TAPE MEDIA

Michael V. Konshak, Louisville, and Justus A. W. Horstman, Boulder, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Apr. 20, 1993, Ser. No. 50,506
Int. Cl.[5] G03B *1/02*
U.S. Cl. 242—358 5 Claims



1. A combination clamping device and intermediate member, comprising:

a main body including a top portion, a bottom wall, and a first side wall that includes said top portion;

a clamp member including upper side edges, lower side edges, and a bottom;

a punch member integrally joined to one of said main body and said clamp member; and

an intermediate member to be clamped between said main body and said clamp member;

wherein said main body, said clamp member and said punch member are in first positions in which at least portions of said clamp member lower side edges are integrally connected to said main body top portion, an intermediate space thereby being defined by said bottom wall and said first side wall of said main body and said bottom of said clamp member, said intermediate member being received in said intermediate space, and

wherein a shear force required to sever said integral connection between said clamp member and said main body depends upon an area of connection between said main body top portion and said portions of said clamp member lower side edges, and

wherein said punch member and at least one of said main body and said clamp member are movable to second positions after said integral connection is severed to capture said intermediate member and, in said second positions, said intermediate member is clamped between said bottom wall of said main body and said bottom of said clamp member, said punch member is located through said intermediate member, said clamp member lower side edges are adjacent to said main body bottom wall, and said clamp member upper side edges are adjacent to said main body top portion.

5,326,046

TAPE CASSETTE WITH REEL LOCKING MEMBER SUPPORTED FOR SLIDING MOVEMENT BY CONVERGING RIBS

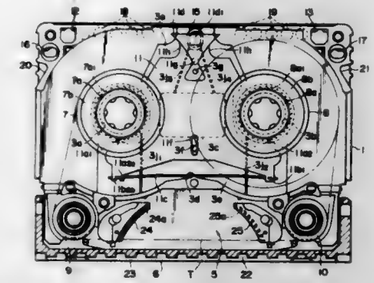
Osamu Taguchi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 956,957
Claims priority, application Japan, Oct. 25, 1991, 3-305580
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—343.2 4 Claims

1. A tape cassette comprising:

a case body consisting of an upper half case and a mating lower half case; a pair of hubs contained within said case body and holding a tape-like recording medium between said hubs; and a locking member contained in a recess formed in an inner surface of said lower half case so as to be brought by sliding movement in a locking direction into engagement with respective circumferences of said hubs to lock said hubs and to be disengaged from said respective circumferences of said hubs to unlock said hubs;

wherein a plurality of ribs are formed on a surface of said recess formed in said inner surface of said lower half case, said locking member being supported for sliding move-



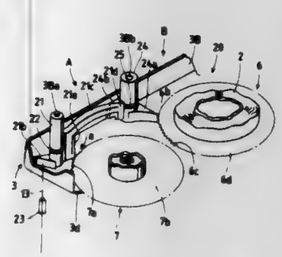
ment on said plurality of ribs, and said plurality of ribs include ribs inclined at an angle to converge toward each other in said locking direction.

5,326,047

REEL-LOCKING MECHANISM FOR COMPACT TAPE CASSETTE

Hitoshi Takahashi, Mito, and Kazuhiko Suzuki, Ibaraki, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 13, 1991, Ser. No. 744,436
Claims priority, application Japan, Aug. 31, 1990, 2-229804; Sep. 29, 1990, 2-262382; Sep. 29, 1990, 2-262383; Nov. 29, 1990, 2-331061; Feb. 22, 1991, 3-015244
Int. Cl.[5] G11B *15/32, 23/04*
U.S. Cl. 242—343.2 36 Claims



1. A compact size tape cassette comprising:

(a) a housing;

(b) a supply reel hub and a take-up reel hub rotatably mounted within the housing, with a magnetic tape wound around said reel hubs; and

(c) first and second brake mechanisms associated with said take-up reel hub and said supply reel hub, respectively, for locking said reel hubs in position against rotation relative to said housing, said first and second brake mechanisms being interlocked such that a releasing motion of said first brake mechanism is transmitted to said second brake mechanism to cause a releasing motion of said second brake mechanism in synchronism with the releasing motion of said first brake mechanism,

wherein said supply reel hub has an annular flange, said take-up reel hub having an annular flange, said first brake mechanism including a first toothed gear formed on a periphery of said annular flange of said take-up reel hub, a brake arm pivotally mounted within said housing, and a first spring for urging said brake arm to turn in a first direction, said brake arm having a first locking pawl normally held in mesh with said first toothed gear by the force of said first spring, a first engagement portion engageable with a brake-releasing element to turn said brake arm in a second direction opposite to said first direction for disengaging said locking pawl from said first toothed gear, and an arm for transmitting an angular motion of said brake arm in said second direction to said second brake mechanism, said second brake mechanism including a second toothed gear formed on a periphery of said annular flange of said supply reel hub, a brake member pivotally mounted within said housing, and a second spring for urging said brake member to turn in said second direction, said brake member having a second locking pawl normally held in mesh with said second toothed gear by the force of said second spring, and a second engagement portion held in contact with a distal end of said transmitting arm, said brake member being rotatable in said first direction to disengage said second locking pawl from said second toothed gear when said angular motion of said brake arm in said second direction is transmitted to said second engagement portion via said transmitting arm, and

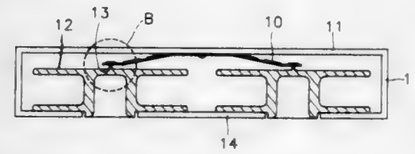
wherein said take-up reel hub further has a second annular flange spaced from the first-mentioned annular flange, said first brake mechanism further including an abutment spaced from a periphery of said second annular flange by a clearance when said first locking pawl is in mesh with said first toothed gear and engageable with said periphery of said second annular flange when said first locking pawl is out of mesh with said first toothed gear to prevent said first locking pawl from moving into a space between said second annular flange and said first-mentioned annular flange of said take-up reel hub.

5,326,048

REEL SPRING OF VIDEO TAPE CASSETTE

Kichung Kim, Seoul, Rep. of Korea, assignor to Youngkwang Precision, Seoul, Rep. of Korea

Filed Apr. 7, 1992, Ser. No. 864,640
Claims priority, application Rep. of Korea, Jan. 11, 1992, 92-266
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—343.2 7 Claims



1. In a magnetic tape cassette comprising two tape reels having protruding pivots, the pivots having a lateral portion and a contact point, and a base portion having apertures for installing a reel spring in an upper housing of the tape cassette,

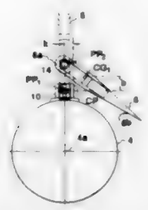
the reel spring comprising a pair of end portions extending at a certain angle to the plane of the base portion wherein tension embossments are made longitudinally to improve the spring tension and receiving embossments are made towards the tips of the spring for receiving the protruding pivots of the tape reels, the receiving embossments being spaced apart from said tension embossments, said receiving embossments having a flat bottom surface, said bottom surface being of sufficient breadth so as to retain the pivots via the contact point thereof without substantially contacting the lateral portion thereof, whereby friction is minimized and said tape reels can run freely, while the pivots are prevented from disengaging from the spring by edges of the receiving embossments.

5,326,049

DEVICE INCLUDING A BODY HAVING FOLDED APPENDAGE TO BE DEPLOYED UPON ACCELERATION

Hanan Rom, Misgav, and Oded Yehezkeli, Kiryat Haim, both of Israel, assignors to State of Israel - Ministry of Defense Rafael-Armament Development Authority, Haifa, Israel

Filed Jan. 11, 1993, Ser. No. 3,045
Claims priority, application Israel, Apr. 30, 1992, 101730
Int. Cl.[5] F42B *10/14*
U.S. Cl. 244—3.280 17 Claims



1. A device including a body having an appendage normally folded in an inoperative position on the body and to be unfolded to an operative position when the body is accelerated in the direction of the longitudinal axis of the body; said device including:

a socket member fixed to said body so as to project outwardly of its outer surface;

a hinge member pivotally mounted at one end to said socket member about a first pivot axis extending outwardly of the outer surface of said body and perpendicular to the longitudinal axis of said body;

the opposite end of said hinge member pivotally mounting said appendage about a second pivot axis extending further outwardly of the outer surface of said body and parallel to the longitudinal axis of said body;

said socket member including a contact surface outwardly of the outer surface of said body engageable by said appendage in its normal folded position to locate the center of gravity of the appendage outwardly of the first pivot axis and inwardly of said second pivot axis, such that the acceleration of the body produces a moment first pivotting the appendage about said first pivot axis to move the center of gravity of the appendage outwardly of said second pivot axis, and then to move the appendage about both said first and second pivot axes to the operative position of the appendage.

9. A missile including a wing normally folded in an inoperative position on the missile and to be unfolded to an operative position when the missile is accelerated in the direction of the longitudinal axis of the missile;

a socket member fixed to said missile so as to project outwardly of its outer surface;

a hinge member pivotally mounted at one end to said socket member about a first pivot axis extending outwardly of the outer surface of said missile and perpendicular to the longitudinal axis of said missile;

the opposite end of said hinge member pivotally mounting said wing about a second pivot axis extending further outwardly of the outer surface of said missile and parallel to the longitudinal axis of said missile;

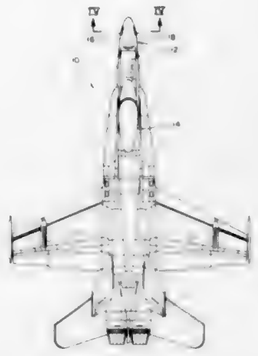
said socket member including a contact surface outwardly of the outer surface of the missile engageable by said wing in its normal folded position to locate the center of gravity of the wing outwardly of the first pivot axis and inwardly of said second pivot axis, such that the acceleration of the missile produces a moment first pivotting the wing about said first pivot axis to move the center of gravity of the wing outwardly of said second pivot axis, and then to move the wing about both said first and second pivot axes to the operative position of the wing.

5,326,050

AERODYNAMIC SURFACE DISTENSION SYSTEM FOR HIGH ANGLE OF ATTACK FOREBODY VORTEX CONTROL

Peter T. Zell, San Jose, Calif., assignor to The United States of America as represented by the Administrator of National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 8, 1993, Ser. No. 14,584
Int. Cl.[5] B64C *5/00*
U.S. Cl. 244—75 R 11 Claims



1. An aerodynamic surface distension system for generating control forces on an aircraft, the system comprising:

first and second inflatable membranes disposed symmetrically on opposite sides of a forebody portion of the aircraft, each membrane being substantially flush with an outer surface of the forebody portion in a non-deployed position and extending radially outwardly of the forebody outer surface when in a deployed position, and each membrane defining an interior chamber and an exterior surface, the exterior surfaces of the first and second membranes comprising first and second control surfaces when inflated; and

inflatable means for moving the first and second control surfaces from the non-deployed position to the deployed position at high angles of attack.

5,326,051

ELECTRO-EXPULSIVE DEICING SYSTEM HAVING CIRCUIT BOARD EXPULSIVE MEMBERS

Nathan Pisarski, Stow, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 30, 1992, Ser. No. 906,714
Int. Cl.[5] B64D *15/16*
U.S. Cl. 244—134 D 29 Claims

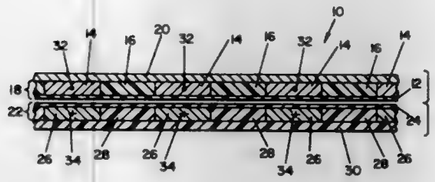
1. A deicing apparatus comprising:

a first circuit board having a first pattern of a plurality of first electrically conductive members formed on a first substrate and electrically isolated from one another in parallel spaced-apart relationship;

a second circuit board having a second pattern of a plurality of second electrically conductive members formed on a second substrate and electrically isolated from one another in parallel spaced-apart relationship; and,

electrical connection means for electrically interconnecting said first pattern to said second pattern so that any electrical current flowing in said first electrically conductive members flows in the same direction in adjacent said first electrically conductive members and also flows in adjacent said second electrically conductive members in a direction opposite to the flow in said first electrically conductive members, thereby producing an electro-expulsive separation force between said first and second electrically conductive members which produces a separation between said first and second electrically conductive members,

wherein said first circuit board is superposed proximate to said second circuit board so that said first and second electrically conductive members are substantially parallel.

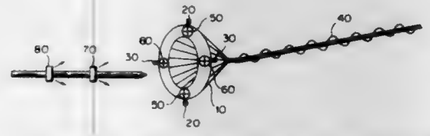


5,326,052

CONTROLLABLE HOSE-AND-DROGUE IN-FLIGHT REFUELING SYSTEM

Yaacov Krispin, Rockville, Md., and Mordekhai Velger, Rehovot, Israel, assignors to ENIG Associates, Inc., Silver Springs, Md.

Filed Oct. 2, 1991, Ser. No. 769,435
Int. Cl.[5] B64D *39/00*
U.S. Cl. 244—135 A 27 Claims



1. An in-flight hose-and-drogue refueling system comprising, in combination:

a) a refueling hose-and-drogue unit extending from a refueling aircraft;

b) a refueling probe extending from an aircraft to be refueled for engaging with said refueling drogue;

c) a light source mounted on said refueling probe;

d) first and second electrooptical sensing means, mounted on said drogue, each for sensing the relative position of said light source on said probe in relation to said drogue and for generating signals representative of said relative positions, said second electrooptical sensing means providing redundancy with respect to said first electrooptical sensing means;

e) a drogue steering means for steering the drogue;

f) electronic circuit means for resolving lateral and vertical positions of the drogue relative to said light source on said probe solely from signals generated by either said first or said second electrooptical sensing means, and generating signals representative thereof;

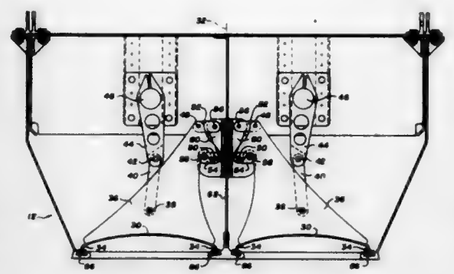
g) control means, connected to said electronic circuit means and to said drogue steering means, for controlling the steering of the drogue to cause the drogue to move closer to said probe based on signals received from said electronic circuit means.

5,326,053

CONTROLLED FLOW AERIAL DELIVERY SYSTEM

Larry T. Pahl, 2240 Brewster Place, Abbotsford, B.C., Canada V2S 5P9 , and Gregory N. Thorne, 30850 Burgess Av., RR 1, Mt. Lehman, B.C., Canada V0X 1V0

Filed Mar. 30, 1993, Ser. No. 40,315
Claims priority, application Canada, Jun. 5, 1992, 2070546
Int. Cl.[5] B64D *1/16*
U.S. Cl. 244—136 19 Claims



1. A tank system for an aerial liquid delivery for discharging a high volume of liquid in a short time interval comprising:

a liquid tank for containing a liquid and having a liquid aperture for discharging a high volume of the liquid, the liquid aperture opening to ambient;

an inward opening door for the liquid aperture having means for sealing the liquid aperture;

means for moving the door, the door moving means being configured to remotely open the door a predetermined amount;

an air pressure reservoir separate from the liquid tank and being connected to the liquid tank; and

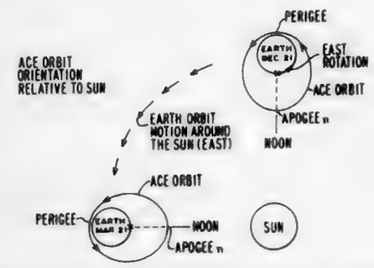
means for pressurizing the air pressure reservoir and the liquid tank.

5,326,054

APOGEE AT CONSTANT TIME-OF-DAY EQUATORIAL (ACE) ORBIT

Andrew E. Turner, Palo Alto, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 915,825, Oct. 6, 1986, abandoned. This application Jan. 21, 1988, Ser. No. 146,651
Int. Cl.[5] B64G *1/10*
U.S. Cl. 244—158 R 16 Claims



1. A man-made satellite that is made to travel in an elliptical orbit about the earth, wherein:

the satellite revolves about the earth a discrete number of times per day;

each of the apogees corresponding to the daily revolutions is positioned over the same earth longitude at substantially the same local time-of-day for each day of the year; and

the apsidal rotation rate in inertial space of the orbit is sub-

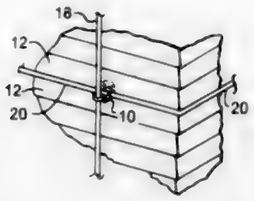
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stantially equal to the mean rate at which the earth revolves about the sun.

5,326,055
UNIVERSAL HORIZONTAL AND VERTICAL SIDING CLIP

Mark Page, and Donald Santucci, both of Naperville, Ill., assignors to DEK, Inc., St. Charles, Ill.

Filed Jun. 14, 1993, Ser. No. 76,401
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—74.3 **8 Claims**

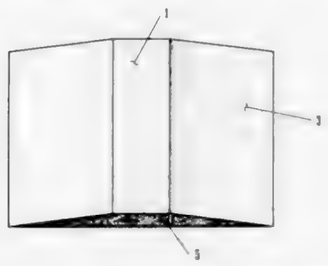


1. Clip apparatus for attaching vertically and horizontally disposed wires and cables to a building wall, said wall comprised of plural overlapping longitudinal siding members and defining a longitudinal recess between adjacent siding members in the region of said overlapping; the clip apparatus including flange means for insertion into the longitudinal recess thereby affixing the clip to the building wall; first horizontal cable attaching means for securing generally horizontal cable spans to the clip; second vertical cable attaching means for securing generally vertical cable drops to the clip; said first and second attaching means being spaced respective first and second distances outwardly from the flange means and building wall surface whereby a single clip may be used for the simultaneous attachment of both horizontal and vertical cables without physical interference therebetween; the first distance for the horizontal attaching means is less than the second distance for the vertical attaching means and whereby said first distance is selected such that cables retained by the horizontal attachment means are positioned immediately adjacent the means for affixing the clip to the building wall whereby the overlapping siding member may provide protection of such cables.

5,326,056
HAND REST

Heidi A. Smith, P.O. Box 21411, Oklahoma City, Okla. 73156-1411

Filed Jul. 10, 1992, Ser. No. 911,403
Int. Cl.[5] B68G *5/00*
U.S. Cl. 248—11.8 **15 Claims**

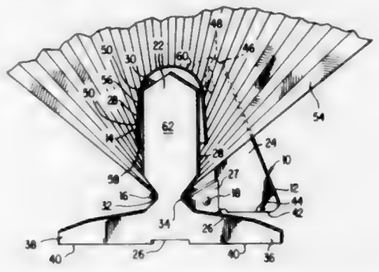


1. In a device for use by a manicurist while giving another person a manicure while having a table, with a ventilation system built into the surface of the table designed to remove particles and fumes from the air around the manicurist to work on, such as a dina meri ® vented table, the device comprising:
a) means for supporting the hands, wrists and forearms of the manicurist;
b) means for supporting the hands, wrists and forearms of the person receiving the manicure; and
c) means for allowing the vent system built into the table to continue its function unimpaired;
so as to allow the device to be placed on the dina meri ® vented table aligning the means for allowing the vent system to properly function directly over the vent in the surface of the table between the manicurist and the other person, provide comfortable support for the person receiving the manicure, provide comfortable support for the manicurist's hands, wrists and forearms while performing the manicure and allowing the vent system to function properly.

5,326,057
APPARATUS AND METHOD FOR DISPLAYING TWO DECORATIVE ITEMS AS A UNIT

Shou-Mei Lin, 11th Floor, 210 Nung An Street, Taipei, Taiwan

Filed May 10, 1993, Ser. No. 58,200
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—152 **18 Claims**



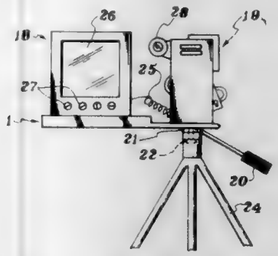
1. Apparatus for displaying two items adjacent one another, said apparatus comprising:
a U-shaped bracket having a front arm and a rear arm interconnected at a base to form the shape of a U, said bracket including a middle attachment means for attaching said first displayed item to said bracket between said front and rear arms for holding said first displayed item between said front and rear arms;
a pocket attaching means for attaching to said second displayed item and for forming a pocket cavity thereon for receiving said front arm so that said pocket attaching means can support said second displayed item on said front arm adjacent said first displayed item.

5,326,058
MONITOR MOUNTING PLATE FOR VIDEO EQUIPMENT

Charles C. Beaver; Terry L. Biship, and James E. Rose, all of Bay City, Mich., assignors to Avalon Video, Inc., Bay City, Mich.

Filed Jun. 14, 1993, Ser. No. 75,620
Int. Cl.[5] F16M *11/04*
U.S. Cl. 248—187 **2 Claims**

1. A monitor mounting plate for video equipment said plate comprising a single flat member of essentially rectangular configuration having a top surface, a bottom surface, one full long side, one full short side, one partial long side, and one partial short side, all having outer edges;
said plate having an upwardly directed lip along the full short side, an upwardly directed lip along the majority of the full long side, an upwardly directed lip along the majority of the partial long side, and no upwardly directed lip along the whole of the partial short side such that the three upwardly directed lips combine to form a rigidly attached short rail along a substantial portion of the outer edge of the top surface of the plate,

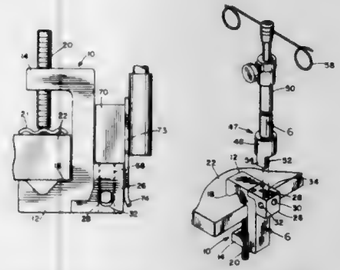


said plate having an arcuate notch formed in a corner not having a rail thereon such that the remaining corner not having a rail thereon is formed in a tongued configuration;
said plate having two slots therethrough which are adjacent and parallel to each other and are open through the outside edge of the partial short side of the plate.

5,326,059
QUICK CLAMPING SYSTEM

Jeffery W. Pryor, Vista, and Jack W. Ratcliff, Carlsbad, both of Calif., assignors to Pryor Products, Oceanside, Calif.

Filed Dec. 23, 1992, Ser. No. 995,768
Int. Cl.[5] A47B *6/06*
U.S. Cl. 248—231.7 **17 Claims**

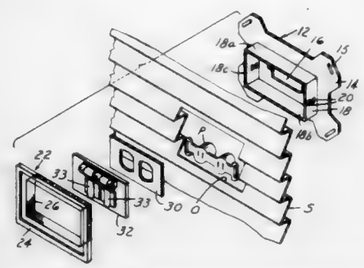


1. A clamping apparatus for clamping objects to a support, comprising:
a clamping device having clamping means for releasable clamping engagement on a selected support member of any shape in any horizontal or vertical orientation, the clamping means defining a clamping direction of engagement with the support member, and having a support portion for projecting outwardly from the support member when the clamping device is secured to the support member;
the support portion having three bores projecting inwardly from spaced regions on the outer surface of the support portion, a first one of the bores being oriented parallel to the clamping direction and the other two bores being oriented orthogonally to one another and to the first bore; and
a carrier for supporting one or more objects, the carrier having a pin member for selective engagement in any one of the bores.

5,326,060
PLASTIC BUILDING WALL MOUNT ASSEMBLY

Norman L. Chubb, Dearborn; Richard J. MacLeod, Milford, and Charles E. Schiedegger, Metamora, all of Mich., assignors to Mid-America Building Products Corporation, Plymouth, Mich.

Filed Jun. 25, 1992, Ser. No. 904,384
Int. Cl.[5] E06B *1/30*
U.S. Cl. 248—231.9 **4 Claims**



1. A plastic building wall mounting bracket assembly comprising
a one-piece mounting bracket having a back wall with a central opening and an integral continuous peripheral wall extending substantially orthogonally from said back wall, a portion of said back wall extending outwardly past the peripheral wall such that the back wall may be fastened to a wall of a building with siding applied thereafter over the bracket, said siding having an opening formed by edges and the peripheral wall of the bracket extending through the opening in the siding such that the edges of the siding are placed closely adjacent the peripheral wall, said peripheral wall having an outer surface, an inner surface and a free edge,
a flange member having an outside flange and an integral flange wall extending substantially orthogonally from an inside periphery of the outside flange, said flange wall having an outer surface and an inner surface, wherein the flange member is telescopically received within said one-piece mounting bracket such that said outer surface of said flange wall is positioned adjacent said inner surface of said peripheral wall, and the outside flange covers the free edge of the peripheral wall and the inner surface of said peripheral wall of said mounting bracket so that only said flange member is visible from outside the building,
a cover piece received within the flange wall of said flange member,
said cover piece being interposed between said flange wall of said flange member and said back wall of said bracket,
interengaging means on said inner surface of said peripheral wall of said mounting bracket and said outer surface of said flange wall of said flange member for securing the flange wall of said flange member to said peripheral wall of said mounting bracket at one of a plurality of predetermined positions with respect to the back wall of said mounting bracket.

5,326,061
SHELF MOUNTING MEANS

Glen R. Hamilton, Box 39, Eubank, Ky. 42567

Continuation of Ser. No. 921,075, Jul. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 786,548, Nov. 1, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 29,712
Int. Cl.[5] A47G *29/02*
U.S. Cl. 248—239 **1 Claim**

1. Mounting means in combination with a shelf on a vertical wall for releasably securing said shelf horizontally to said vertical wall comprising
a) said shelf having a vertical rear edge surface and horizon-

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tally extending upper and lower surfaces, said rear edge surface having formed with a cavity extending horizontally into said shelf through said rear edge surface, said cavity being spaced from said upper and lower surfaces

b) a bushing having an outer configuration received fully and in a close fit within said cavity,

c) means on the exterior of the bushing anchoring the bushing in the cavity,

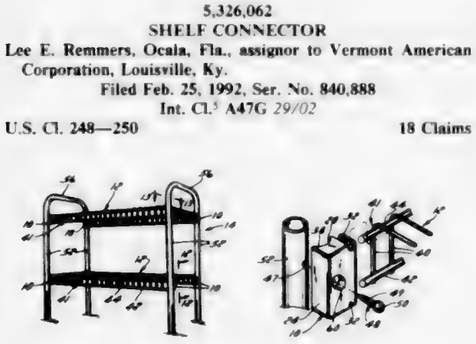
d) a screw having a head and shank portion adapted to project substantially horizontally from the wall, and



e) a seat end on the bushing fitting over and behind an upper edge portion of the head projecting form the wall thereby resisting straight-line horizontal displacement of the bushing from the screw head and therefore of the shelf from the wall,

f) the rear edge of the shelf adapted to be mounted flush against the wall with the bushing concealed and the shelf being removable by lifting the bushing from the screw head and horizontally displacing the shelf way from the wall.

5,326,062
SHELF CONNECTOR
Lee E. Remmers, Ocala, Fla., assignor to Vermont American Corporation, Louisville, Ky.
Filed Feb. 25, 1992, Ser. No. 840,888
Int. Cl.[5] A47G *29/02*
U.S. Cl. 248—250 **18 Claims**



1. A shelf connector device comprising:

a front face having a bore therein with a longitudinal axis therethrough;

an outer side wall contiguous with said front face, extending along the longitudinal axis;

an inner side wall contiguous with said front face opposing said outer side wall, said inner side wall being narrower in width than said outer said side wall;

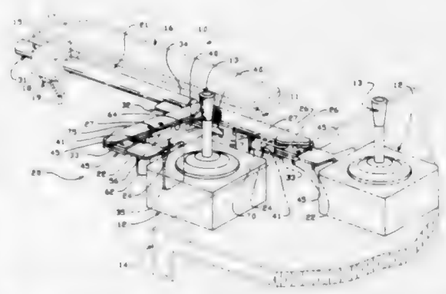
a top end wall contiguous with said front face, and contiguous and shorter in length than said inner side wall and said outer side wall;

a bottom end wall opposing said top end wall, said bottom end wall being contiguous with said front face, said inner side wall, and said outer side wall, said bottom end wall being of the same width and length of said top end wall;

a back surface being irregular in shape formed having at least one channel, and a longitudinal slot, said back surface being adapted for supporting at least one stringer rod and at least one support rod of a shelf, said back surface having a depression therein adapted for mounting said shelf connector to a frame support member; and

at least one of said top end wall and said bottom end wall having a groove formed therein, said groove being positioned in a horizontal plane, perpendicular to a longitudinal axis of said shelf connector, near said inner side wall, and extending from said front face toward said back surface of said shelf connector.

5,326,063
SWING-AWAY JOYSTICK ASSEMBLY
Rex W. Stevens, Clovis, Calif., assignor to Quickie Designs Inc., Fresno, Calif.
Filed Jun. 30, 1992, Ser. No. 906,563
Int. Cl.[5] F16M *11/08*
U.S. Cl. 248—282 **12 Claims**



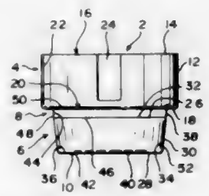
9. A swing-away joystick mounting assembly for mounting a joystick to a wheelchair frame supporting a seat, comprising:

extending means having a wheelchair frame mounting end and a joystick mounting end, said extending means movably supporting the joystick carried by said joystick mounting end in pantographic movement between a retracted position proximate said seat and an extended position displaced away from said retracted position and away from said seat;

locking means coupled between said frame mounting end and said joystick mounting end for releasably locking said extending means in a selected one of said retracted position and said extended position; and

spring biasing means coupled to said locking means for biasing said extending means toward an intermediate position from both said retracted position and said extended position.

5,326,064
HOLDER FOR PREVENTING SPILLS
Hugo C. Sapien, 3122 Peach Tree La., Missouri City, Tex. 77459
Filed May 7, 1993, Ser. No. 58,595
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—311.2 **20 Claims**



1. A holder comprising:

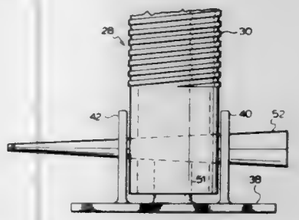
(a) an upper section formed from a tubular wall member having a first inner diameter at an open first end and a second inner diameter at an open second end, a generally cylindrical inner surface and a generally longitudinal slot forming a passage through the tubular wall member, said slot leading from the first end of the tubular wall member to a point between the first end and the second end of the tubular wall member;

(b) a lower section with an open first end and an opposite second end formed from a tubular wall member having a generally frustoconical inner surface, the lower section having a first inner diameter at the first end and a second inner diameter at the second end which is smaller than the first inner diameter;

(c) an end closure located at the second end of the lower section; and

(d) a connecting means attaching the second end of the upper section to the first end of the lower section.

5,326,065
FOOT OR TOP PLATE ASSEMBLY
George W. Jackson, 2570 Drew Road, Mississauga, Ontario, Canada L4T 3M5
Filed Dec. 24, 1992, Ser. No. 996,743
Int. Cl.[5] E04G *25/00*
U.S. Cl. 248—351 **16 Claims**



1. A foot or top plate assembly for a shoring structure or tower, said assembly comprising:

a wedged pin having an elongated cone shape having a taper,

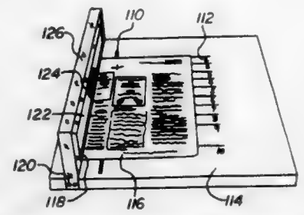
a screw jack shaft having a hollow end adapted to receive the wedged pin in a friction fit in an engaged position,

a base plate having a support means for receiving the wedged pin in a friction fit and said support means adapted to receive said hollow end in a sliding fit,

said wedged pin pivotally connecting the base plate to the screw jack, whereby as said wedged pin is moved between said engaged position and a disengaged position relative movement between said base plate and said screw jack is effected.

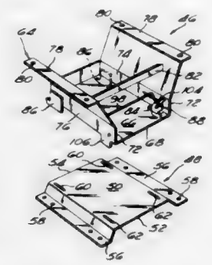
5,326,066
PRECISION PORTABLE SCANNING TABLE WITH ATTACHMENT APPARATUS
Steven N. Tischer, 831 Amsterdam Ave., Atlanta, Ga. 30306, assignor to Steven N. Tischer, Atlanta, Ga.
Filed Sep. 25, 1992, Ser. No. 952,671
Int. Cl.[5] A47B *23/06*
U.S. Cl. 248—451 **6 Claims**

6. A portable scanning table, for use with a hand-held optical sensor for scanning material to be scanned, said scanning table comprising a table having a flat top for receiving the material to be scanned, a guide carried by said table, means for preventing motion of said guide along said flat top of said table, and means for resiliently urging said guide against said flat top, so that said material to be scanned can be held between said guide and said flat top, and said optical scanner can be slid along said guide for scanning said material to be scanned, a compressible gasket fixed to said guide between said guide and said flat top of said table, wherein said means for resiliently urging said guide against said flat top comprises at least one spring extending between said table and said guide, and further including hinge means for movably attaching said guide to said table,



said hinge means comprising a double hinge fixed to said guide and said table for allowing motion of said guide relative to said table.

5,326,067
QUICK RELEASE PEDESTAL
Jose M. Gonzalez, Cerritos, Calif., assignor to Hi-Tech Seating Products, South Gate, Calif.
Filed Aug. 14, 1992, Ser. No. 930,719
Int. Cl.[5] B60N *2/00*
U.S. Cl. 248—503.1 **11 Claims**



1. A quick release pedestal for a vehicle seat, comprising:

a base member rigidly attachable to a floor portion of a vehicle and defining front and back edges, a first pair of elongate slots extending in spaced, parallel relation normal to the back edge and a second pair of elongate slots extending in spaced, parallel relation normal to the front edge; and

a seat support member releasably attachable to said base member including:

a first pair of hook members adapted to be receivable into said first pair of slots, each of the first pair of hook members defining an engagement portion which extends rearwardly toward the back edge of the base member when the second pair of hook members are received in said second pair of slots;

a second pair of hook members adapted to be receivable into said second pair of slots, each of the second pair of hook members defining an engagement portion which extends forwardly toward the front edge of and is abutted against the base member when the second pair of hook members are received in said second pair of slot members; and

a release mechanism attached to and interconnecting the second pair of hook members for selectively releasing said seat support member from engagement to said base member when said first pair of hook members are received into said first pair of slots and said second pair of hook members are received into said second pair of slots;

said seat support member further including:

a generally planar lower plate portion having front and back edges and opposed side edges;

first and second side wall portions having inner and outer

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surfaces and extending upwardly from the opposed side edges of said lower plate portion; and

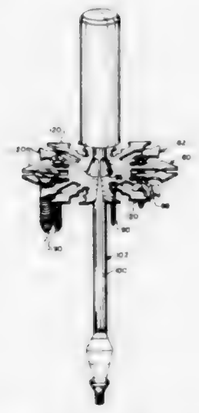
a third pair of elongate slots disposed within said lower plate portion adjacent the front edge thereof and extending in spaced, parallel relation between said first and second side wall portions, each of the second pair of hook members extending through a respective one of said third pair of elongate slots.

5,326,068

SCREW AND NUT HOLDER FOR TOOL

James M. Spears, 205 Newbridge St., Menlo Park, Calif. 94025

Filed Aug. 21, 1989, Ser. No. 396,491
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—682 1 Claim



1. A tool having a rigid shank with one end of the shank having means for engaging a workpiece; and

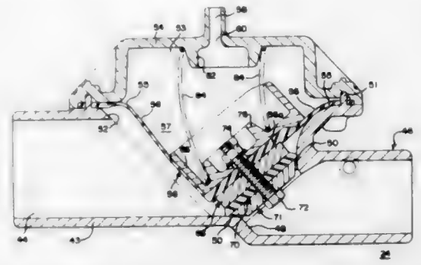
a yieldable plastic body of one-piece construction and having an outer periphery and a number of slots extending into the body from said outer periphery, first slots releasably holding nuts and second slots holding screws, each slot having an open outer end to allow fastener parts to be inserted into and to be taken out of the slot, said body having projections extending into the slots for changing the width of the slots, at least a pair of said projections presenting means inserted into the hole of a nut to hold the nut in the slot, each of said slots having a radial length sufficient for receiving a number of fastener parts to be frictionally held in the slots of the body, said body having a central hole which mounts the body on said shank of the tool, as tubular flange surrounding the central hole, there being a slit extending between the outer periphery and the hole and through one side of the flange for allowing the shank of the tool to be directed through said slit, into the hole, and into frictional engagement with the inner peripheral surface of said flange, said body being positionable along the shank with the body in the line of sight of the user, whereby fastener parts held by the body can be carried by the tool, said body having a pair of edges extending outwardly from the end of each second slot, respectively, for guiding screws into the slot, each pair of edges being convergent to each other as the body is approached.

5,326,069

VACUUM TOILET SYSTEM AND DISCHARGE VALVE THEREOF

Christopher J. Clear, Columbia City, and John M. Grooms, Rochester, both of Ind., assignors to Burton Mechanical Contractors, Inc., Rochester, Ind.

Filed Oct. 28, 1992, Ser. No. 967,454
Int. Cl.[5] F16K *31/145*
U.S. Cl. 251—61.5 7 Claims



1. A discharge valve for a vacuum toilet system having an open position and a closed position, said discharge valve comprising:

(a) a valve body having an entry opening and an exit opening, and defining a valve housing having a longitudinal axis generally normal to axes defined by the entry and exit openings;

(b) a valve stop in said valve body not located along the longitudinal axis of the valve housing;

(c) a valve plunger disposed within the valve housing for reciprocating movement relative to said valve stop to alternatively open and close said discharge valve in response to a pressure condition communicated to said discharge valve, said plunger having a first end and a second end opposite said first end, said valve plunger having seating means connected to the first end of said plunger matable with said valve stop to provide liquid and air-tight closure of said discharge valve when it is in the closed position, a piston operator being operatively connected to the second end of said valve plunger; and

(d) control means operatively connected to said valve plunger for regulating the reciprocated movement of said valve plunger in an arc between the open and closed positions of said discharge valve.

5,326,070

SOLENOID VALVE

Tibor Baron, Dixon, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed May 24, 1993, Ser. No. 66,956
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.15 11 Claims

1. A solenoid valve comprising:

a cylindrical body having an outside wall defining an internal cavity, said body having a radially inwardly extending end wall disposed at one end thereof;

an end cap fixedly secured to the opposite end of said body, said end cap having a through bore;

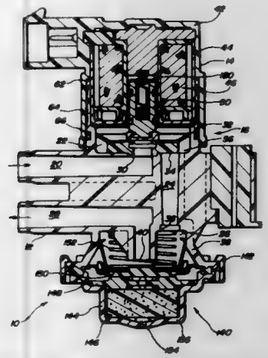
an upper armature disposed within said internal cavity of said body;

a lower armature disposed within said internal cavity between said upper armature and said end cap, said upper and lower armatures defining an annular space between said upper and lower armatures and said body;

a valve seat fixedly secured to said lower armature and adapted to mate with said through bore in said end cap;

biasing means disposed between said upper and lower armatures, said biasing means urging said valve seat into engagement with said through bore in said end cap;

a coil assembly disposed within said annular space such that when fluid is applied to said through bore and said coil assembly is de-energized, said biasing means holds said valve seat against said through bore and prevents flow through said through bore, and when said coil assembly is energized, said valve seat and said lower armature are drawn toward said upper armature to permit flow through said through bore;



first cushioning means for reducing noise, said first cushioning means disposed between said upper and lower armatures; and

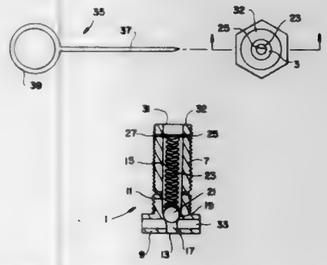
second cushioning means for reducing noise, said second cushioning means disposed between said lower armature and said coil assembly.

5,326,071

DRAIN PLUG AND METHOD FOR REMOVING FLUID FROM A TANK USING A DRAIN PLUG

Donald B. Gunness, Abercrombie, N. Dak., assignor to Donald B. Gunness, Abercrombie, N. Dak.

Filed Jun. 14, 1993, Ser. No. 76,139
Int. Cl.[5] F16K *31/44*
U.S. Cl. 251—145 8 Claims



5. A drain plug, comprising:

a bolt having a head portion, a shaft portion, and a bore extending through said head and shaft portions, said bore defining a fluid passage;

a valve seat disposed in said bore;

a check ball movably disposed in said bore;

biasing means, disposed in said bore, for biasing said check ball against said valve seat thereby preventing a flow of fluid through said fluid passage; and

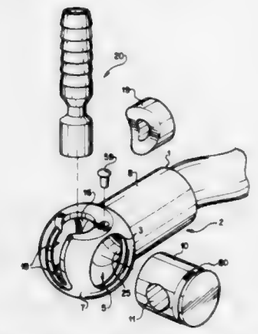
means for moving said check ball away from said valve seat such that fluid can flow through said fluid passage, said moving means including a passageway which extends into said head portion transversely with respect to said fluid passage and a member which is removably received in said passageway such that when said member is received in said passageway it moves said check ball away from said valve seat.

5,326,072

PLUG-IN SAFETY COUPLING, IN PARTICULAR FOR COMPRESSED AIR LINES

Albrecht Wuthrich, Wolhusen, Switzerland, assignor to Hans Oetiker AG, Maschinen-und Apparatefabrik, Switzerland

Continuation-in-part of Ser. No. 423,394, Sep. 27, 1989, abandoned. This application Jun. 8, 1992, Ser. No. 896,092
Claims priority, application Switzerland, Feb. 3, 1988, 377/88-9
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.2 23 Claims



1. A plug-type safety coupling for pressure lines comprising: a plug (**20**) and a coupling barrel (**1**) having a housing (**2**;**37**), a blocking element (**10**) sealably mounted and secured within said housing (**2**;**37**), said blocking element (**10**) rotatable between a blocking position and a working position, said housing (**2**;**37**) comprising a one-piece shaped part that can be screwed on to a pressure line end piece, said blocking element (**10**) having a bore (**11**,**46**) passing through it, said bore (**11**;**46**) forming a bush (**51**) for the plug (**20**), said bush (**51**) comprising two sequential axial borings (**52**,**53**) with different diameters, and forming an annular groove (**54**) surrounding said smaller diameter axial boring (**53**) in communication with said larger diameter axial boring (**52**), said plug (**20**) sealably fitting into said annular groove (**54**), a seal (**55**) between said plug (**20**) and said bush (**51**) disposed between an outer surface (**56**) of a nipple (**57**) enclosed by the annular groove (**54**) and an inner side surface (**58**) of the plug (**20**), and said blocking element (**10**) sealed against the housing (**2**;**37**) by means of a loop seal (**19**;**43**;**47**) having at least one loop, said loop seal disposed within a corresponding groove (**25**;**34**;**42**) in one of the surface of the blocking element (**10**) and the inner surface of the housing (**2**;**37**).

5,326,073

VALVE WITH CYLINDRICAL METERING DEVICE

Kenneth E. Beyer, West Hartford, and Wilhelm H. Horlacher, Newington, both of Conn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 12, 1993, Ser. No. 90,353
Int. Cl.[5] F16K *5/10*
U.S. Cl. 251—209 3 Claims

1. A valve, comprising:

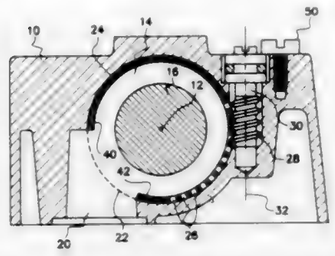
a fluid channel disposed within a valve body;

a port connecting said fluid channel in fluid communication with a location external to said valve body;

a throttle member shaped to form a partial cylinder, said throttle member having a plurality of deformations in its surface, said throttle member being rotatable about a central axis of said partial cylinder;

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a threaded member having a thread formed therein, said threaded member being rotatable about a central axis of said threaded member, said thread being disposed within at least one of said plurality of deformations, said throttle member being selectively movable into blocking relation



between said port and said fluid channel in response to rotation of said threaded member; and

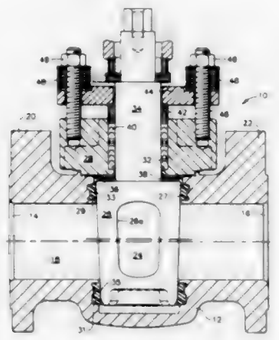
a spool member disposed within said valve body, said spool member being disposed in coaxial and concentric relation with said throttle member.

5,326,074

ENHANCED SEALING ARRANGEMENT FOR A ROTARY VALVE SHAFT

Thomas F. Spock, Jr.; David Klotter, and Steve Kirk, all of Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio

Filed Nov. 6, 1992, Ser. No. 972,609
Int. Cl.[5] F16K *41/04, 41/08*
U.S. Cl. 251—214 **7 Claims**



1. A valve assembly, comprising:

a) a valve body, said valve body having an inlet, an outlet and a flow passage extending therebetween;

b) a fluid control member disposed in the flow passage between the inlet and the outlet for controlling the flow of fluid through said valve body;

c) an actuating shaft interconnected with said fluid control member and extending out of said body for effectuating rotation of the fluid control member;

d) a structural member circumferentially surrounding said shaft, said structural member having a generally cylindrical internal bore with a cylindrical sidewall for receiving said shaft, said sidewall being radially spaced from said shaft to define a sealing cavity therebetween, said bore extending axially along the shaft from a first end located proximal to the fluid control member to a second end located distal to the fluid control member;

e) an annular lip located at the first end of the bore proximal to the fluid control member, said lip being located adjacent to the fluid control member between the shaft and the cylindrical sidewall, said lip extending axially away from said fluid control member into said sealing cavity and forming an axial sealing surface at the outboard end of the lip opposite the valve control member, the outer circumferential surface of said lip defining an annular sealing surface in generally parallel relationship to the cylindrical sidewall;

f) sealing means for inhibiting fluid flow between the shaft and the cylindrical sidewall, said sealing means including a plurality of annular sealing rings disposed in axially stacked relationship in said sealing cavity with a lip sealing ring positioned partially between the sidewall and the annular sealing surface of said lip, said lip sealing ring being formed of a material having a different coefficient of thermal expansion than the material of the structural member and being in contacting relationship with said annular surface whereby sealing effectiveness between the lip sealing ring seal and the annular sealing surface of the lip is increased for enhanced suppression of fluid flow between the cylindrical wall and the sealing means whenever sealing pressure between the sealing means and the sidewall is reduced due to thermally induced relative dimensional changes between the structural member and the sealing means; and

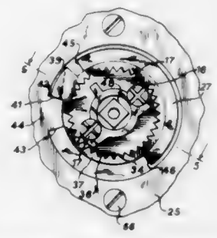
g) means disposed at the second end of the bore for applying an axially compressive force against the plurality of annular rings, said force applying means being operative to enhance the sealing effect between the lip sealing ring and the axial sealing surface of the lip.

5,326,075

STOP ASSEMBLY FOR A VALVE

David W. Goff, Morgantown, W. Va., assignor to Sterling Plumbing Group, Inc., Rolling Meadows, Ill.

Filed Apr. 22, 1993, Ser. No. 51,498
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—285 **3 Claims**



1. A stop assembly for use with a valve having a rotatable valve stem that projects through a covering element, comprising:

a projection means on the covering element forming a first stop and a second stop, said first and second stops being located on an escutcheon;

a first stop ring mounted around the valve stem adjacent the covering element, adapted to rotate when the stem rotates, and having two stop surfaces extending radially therefrom;

a second stop ring mounted around the valve stem adjacent the covering element adapted to rotate when the stem rotates and having at least one stop face extending radially therefrom;

interfitment means which can adjustably fix the circumferential position of the stop surface relative to the stop face; and

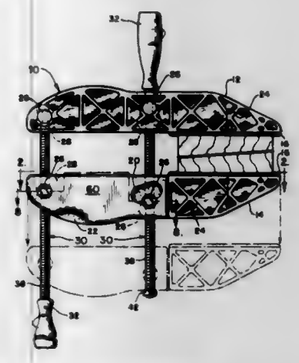
the parts being juxtaposed such that upon stem rotation a first stop surface can contact the first stop to define a first rotational limit in one rotational direction, and the stop face can cut out the other of the stop surfaces so as to define an adjustable second rotational limit in one rotational direction opposite to the first.

5,326,076

HAND CREW CLAMP

Joseph A. Sorensen, Lincoln, and Toby J. Beckmann, Seward, both of Nebr., assignors to Petersen Manufacturing Co. Inc., Dewitt, Nebr.

Filed Jun. 7, 1993, Ser. No. 73,097
Int. Cl.[5] B25B *1/02*
U.S. Cl. 269—182 **10 Claims**



1. A hand screw clamp comprising:

first and second jaws;

a pair of threaded rods, each comprising a handle for manual rotation;

a pair of first couplers mounted to the first jaw and coupled to the threaded rods;

a pair of releasable couplers mounted to the second jaw and coupled to the threaded rods, said releasable couplers each comprising a threaded portion engageable with the respective threaded rod and a slidable portion sized to accommodate sliding movement of the respective threaded rod; and

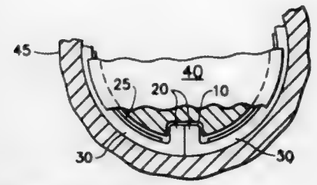
an actuating element movably mounted to the second jaw and engaged with both of the releasable couplers, said actuating element positioned adjacent the second jaw and movable along a direction substantially transverse to a plane passing through the threaded rods, said actuating element movable between an engaged position, in which both of the threaded portions are engaged with the respective threaded rods and manual rotation of the handles moves the second jaw along the threaded rods, and a disengaged position, in which both of the threaded portions are disengaged from the respective threaded rods and the threaded rods are free to slide past the slidable portions without rotation of the threaded rods.

5,326,077

BUTTERFLY VALVE SEAL RETAINER

William R. Spencer, Springdale, and Edwin K. Miller, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 4, 1993, Ser. No. 131,179
Int. Cl.[5] F16K *1/22*
U.S. Cl. 251—306 **9 Claims**



1. A butterfly valve comprising:

a butterfly vane including a radial notch;

a seal groove in the vane; and

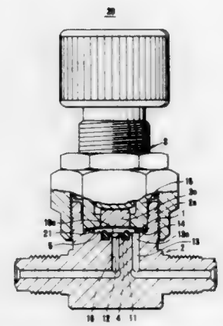
a seal including tabs disposed within the seal groove wherein the tabs are adapted to fit within the notch.

5,326,078

METAL DIAPHRAGM VALVE

Miyoshi Kimura, Yabutsukahonmachi, Japan, assignor to Benkan Corporation, Japan

Filed Jul. 8, 1993, Ser. No. 87,376
Int. Cl.[5] F16K *7/16*
U.S. Cl. 251—331 **3 Claims**



1. In a metal diaphragm valve having a valve casing having therein a cylindrical bore and a casing bed, a domed diaphragm made of a resilient metal which is normally urged to bulge upward, a centrally disposed annular valve seat in the bed of the valve casing beneath the diaphragm, a valve drive system operatively connected to the diaphragm, an inlet passage formed in the bed of the valve and having an entrance port opening into the bore, the entrance port being situated concentrically centrally of the annular seat to supply fluid to the bore, and an outlet passage defined in the bed and from which fluid leaves the bore, in which the valve shuts the fluid-flow relationship between the inlet and outlet passages, when the valve drive system exerts pressure on the diaphragm to cause it to depress downward into contact with the valve seat, the improvements comprising a concentric annual groove in the casing bed surrounding the entrance port of the inlet passage, the annular groove being cut so as to have its outer top periphery flush with the horizontal plane of the casing bed, a portion of the annular valve seat positioned in the annular groove and extending above said casing bed, and said entrance port termi-

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nating in an upper rim, said rim being upset into a conical shape to embrace a portion of said valve seat.

5,326,079

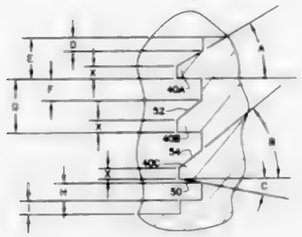
SELF-SEALING VALVE BODY AND ORIFICE MEMBER ASSEMBLY

Robert F. Ferrando, 7 Hillock Dr., Wallingford, Conn. 06492; Frank A. Molgano, III, 489 Wolcott Rd., Unit 95, Bristold, Conn. 06010; Dennis Mudge, C-501, 300 Gold Spring Rd., Rocky Hill, Conn. 06067, and Michael A. Puhalski, 28 Old Village La., Farmington, Conn. 06085

Filed Aug. 16, 1993, Ser. No. 107,407

Int. Cl.[5] F16K *27/08*

U.S. Cl. 251—359 **11 Claims**



1. A valve, comprising:

a valve body having a first conduit formed therein; and

an orifice member disposed within said first conduit, said orifice member being held in position relative to said first conduit by a plurality of protrusions formed on the internal surface of said first conduit, each of said plurality of protrusions extending in a circular configuration around said internal surface of said first conduit, said plurality of protrusions being sized to be deformed by an outer surface of said orifice member when said orifice member is forcibly inserted into said first conduit.

5,326,080

APPARATUS FOR TIGHTENING BANDS, IN PARTICULAR BANDS AS FITTED TO FURNITURE FRAMES

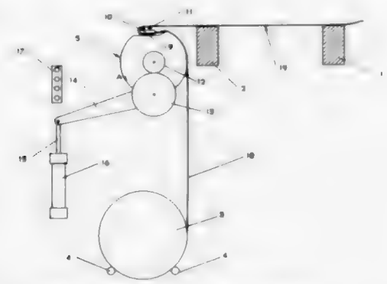
Giuseppe Seroldi, Seregno, Italy, assignor to INTES S.A.S. Di Giuseppe Seroldi E.F. LLI & C., Novedrate, Italy

Filed Jan. 23, 1992, Ser. No. 824,559

Claims priority, application Italy, Apr. 24, 1991, MI91U-000362

Int. Cl.[5] B66D *1/34;* **A44B** *11/12*

U.S. Cl. 254—219 **4 Claims**



1. A band tightening apparatus comprising:

a roll rotatable about an axis; and

a pressure member having a top and mounted to the roll and spaced away from the roll, the pressure member allowing a portion of a band to be inserted between the pressure member and the roll wherein the band is folded over the top of the pressure member, the pressure member applying a slight tractional force to the band during a first rotation of the roll while permitting the band to run between the pressure member and the roll, the band being prevented from running between the pressure member and the roll through subsequent rotations of the roll through a frictional force caused by the band being pressured against itself, the pressure member comprising a bar parallel to the axis of the roll, and the roll having a recess thereon, the recess having a flat bottom wall, the flat bottom wall having spacer means secured thereto, and the bar being mounted to the spacer means.

5,326,081

METHOD AND APPARATUS FOR COOLING HOT GASES

Olli E. Arpalahti, Varkaus, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

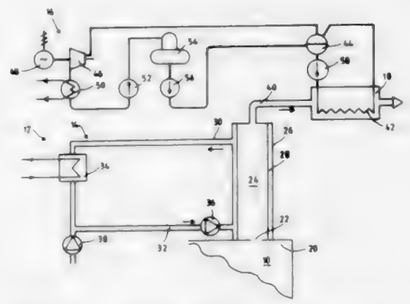
PCT No. PCT/FI91/00205, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO92/01202, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 1, 1991, Ser. No. 958,124

Claims priority, application Finland, Jul. 4, 1990, 903358

Int. Cl.[5] F27D *17/00*

U.S. Cl. 266—44 **21 Claims**



2. Apparatus for cooling exhaust gases from a molten phase furnace, comprising:

a molten phase furnace having a roof and a gas outlet disposed in said roof;

a waste heat boiler;

an upwardly extending cooling shaft disposed directly above said furnace and connected to said furnace gas outlet and to said waste heat boiler, and for conducting exhaust gases from said furnace to said boiler;

a steam turbine connected to said waste heat boiler;

heat transfer surfaces provided on said cooling shaft; and

an essentially closed gas circulation system for circulating a cooling gas through said heat transfer surfaces, said gas circulation system comprising a pressure compressor for pressurizing the cooling gas, and heat exchanger means for cooling the cooling gas.

5,326,082

SELF LOCKING, SNAP MOUNTED ATTACHMENT DEVICE

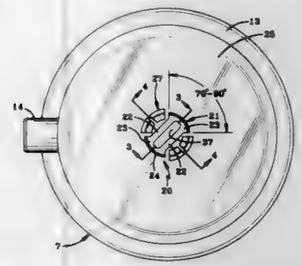
Jack D. Ecktman, Indianapolis, and Matthew A. Robbins, Elkhart, both of Ind., assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Jun. 10, 1992, Ser. No. 896,706

Int. Cl.[5] B60G *11/26*

U.S. Cl. 267—64.27 **20 Claims**

17. A self locking, snap mounted attachment device including a member having a generally flat base portion; a rigid post having a pair of diametrically opposed arcuate end surfaces and at least one arcuate flexible finger mounted on opposite sides of said post between said arcuate end surfaces and formed integrally with said flat base portion and projecting outwardly therefrom, each of said fingers having a stem, an outwardly



extending shoulder and an outer angled camming surface; said stems and arcuate end surfaces defining an imaginary circle generally complementary to a circular opening in a support member into which said attachment device is to be inserted for securing said member thereto.

5,326,083

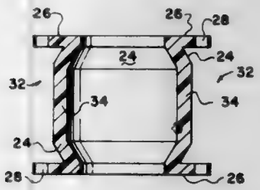
COMPRESSION SPRING WITH CONE SHAPED FRUSTUMS SUBJECT TO COMPRESSION SET

Neal E. Wydra, Glen Ellyn, and David W. Geick, North Aurora, both of Ill., assignors to Miner Enterprises, Inc., Geneva, Ill.

Continuation of Ser. No. 812,602, Dec. 23, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,698

Int. Cl.[5] F16F *7/00;* **B60R** *19/24*

U.S. Cl. 267—139 **8 Claims**



1. A compression spring adapted to absorb collision energy and to be compressively displaced in response to a collision between two masses at a substantially constant spring rate over a major portion of its displacement, said spring comprising:

a) a hollow spring member formed of an elastomer having a molecular structure and having a ratio of plastic strain to elastic strain that is greater than 1.5 to 1, the molecular structure of said member being oriented in at least one direction;

b) said spring member having a spherical segment whose ends terminate in a transition means, said transition means comprising an integral extension of said spherical segment extending at an angle from the spherical segment;

c) said spring having means for interconnection between two members for absorbing energy; and

d) the material of said spherical segment, transition means and the angle being oriented to provide a relatively constant spring rate over a major portion of the compressive displacement of the material.

5,326,084

ONE PIECE BEARING UNIT SLEEVE FOR SUSPENSION MEMBER

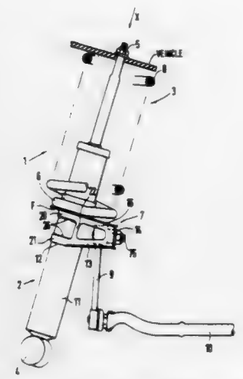
Peter Mevissen, Weil der Stadt, and Hans-Jürgen Wöhler, Stuttgart, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Jan. 19, 1993, Ser. No. 5,262

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1992, 4201837

Int. Cl.[5] B60G *15/07, 21/055*

U.S. Cl. 267—221 **4 Claims**



1. A vibration damper for a wheel of a motor vehicle, comprising:

a coil spring; and

a bearing unit for a suspension part of a stabilizer which is held on a spring strut, wherein the bearing unit comprises a holding element which has a sleeve part that extends around a cylinder of the spring strut and is connected with the cylinder, the holding element also having a projecting console constructed in one piece with the sleeve part and providing a bearing for the suspension part, and a face constructed in one piece with the sleeve part and the console, the face forming a spring plate for the coil spring which is coaxial with respect to the spring strut, the coil spring being supported on the vehicle at an end facing away from the bearing, wherein the face of the spring plate includes a limit stop for a last winding of the coil spring.

5,326,085

DEVICE FOR SUPPORTING SLABS DURING THE PHASES OF PUNCHING AND IN GENERAL OPERATIONS OF PLASTIC DEFORMATION

Antonio Codatto, Lonigo, Italy, assignor to Sapim Amada S.P.A., Turin, Italy

Filed Mar. 1, 1993, Ser. No. 24,513

Claims priority, application Italy, Mar. 18, 1992, V19-2A000045

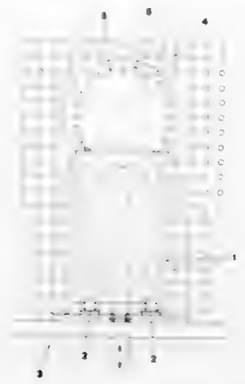
Int. Cl.[5] B25B *11/00*

U.S. Cl. 269—20 **3 Claims**

1. A device for supporting a slab (1) during the phases of punching and operations of plastic deformation, said punching and said operations of plastic deformation being carried out by a plurality of tools (5) located above said slab, said slab being movable along two axes, which comprises a plurality of jacks (6), said slab having a lower surface, said slab having two main dimensions, said jacks being placed under said slab (1) in a location corresponding to at least a substantial portion of said surface of the said slab, said jacks being placed at a distance one from the other, said distance being substantially less than the extension of the two main dimensions of said slab, each of said

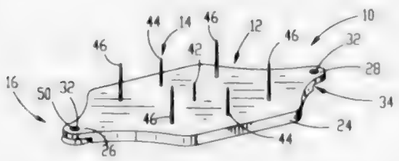
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jacks having a stem (7), said stem having in its upper part a mushroom head (8), said head (8) having a top part, a device (9) having load bearing rotating balls being placed on said top part, each of said heads being in contact with said lower surface of said slab, a control system for controlling each of said



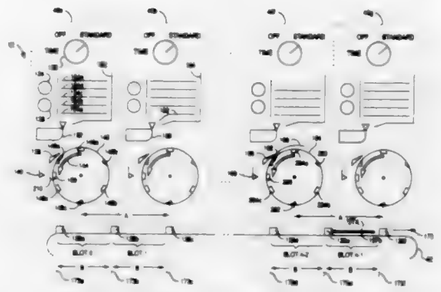
jacks adapted to lower each of said stems of each of said jacks at a time for an interval of time necessary to avoid interference of said jack with the portions of said slab which have been deformed downwardly, said control systems comprising a reservoir of air (1) and a control valve (11).

5,326,086
CUTTING RACK
Frank Radencic, 7932 Haskell, Kansas City, Kans. 66109
Filed Jun. 14, 1993, Ser. No. 76,311
Int. Cl.[5] B23Q *1/00*
U.S. Cl. 269—54.5 **7 Claims**



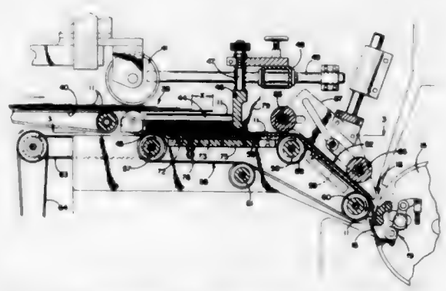
1. A cutting rack for holding a victual comprising:
a base presenting a body for receiving a victual thereon and having a first end and an opposed second end projecting outwardly from said body and each of said ends having a bottom surface, said body presenting a top face and a substantially planar underside, each of said ends presenting a relieved area between each end bottom surface and said body underside for locating said end bottom surfaces in spaced relationship to a supporting surface engaged by the underside of said body;
a plurality of tines projecting upwardly from the top face of said base for holding the victual in position on the body of the base; and
means for defining only a single upright pivot axis passing through one of said ends, including structure pivotally and removably connected to the bottom surface of said one of said ends of said base and positioned in said relieved area for releasably securing said base to a supporting surface without penetration of the latter.

5,326,087
SYSTEM AND METHOD FOR CALIBRATING A DOCUMENT ASSEMBLY SYSTEM HAVING MULTIPLE ASYNCHRONOUSLY OPERATED SECTIONS
James C. Colson, Austin; David O. Craig, Round Rock, and David C. Loose, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 12, 1993, Ser. No. 3,381
Int. Cl.[5] B65H *39/02*; G06F *15/20*
U.S. Cl. 270—58 **33 Claims**



1. A method of calibrating a document assembly system, comprising the steps of:
initiating an operation of multiple asynchronously operated sections of a document assembly line of the document assembly system;
during said operation, sensing activations of multiple activation elements in different ones of said asynchronously operated sections along said document assembly line; and
in response to said activations, determining positional information for relating said activation elements to said asynchronously operated sections of said document assembly line.

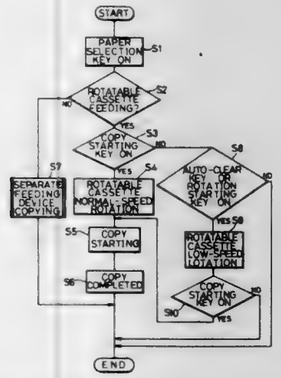
5,326,088
APPARATUS FOR FEEDING SIGNATURES TO A ROTARY DRUM WITH ANGULARLY SPACED GRIPPERS
John R. Newsome, c/o SIM Products, R.R. #1, Box 58A, Moccasin Rd., Shumway, Ill. 62461
Filed Aug. 27, 1992, Ser. No. 935,909
Int. Cl.[5] B65H *5/22*
U.S. Cl. 271—3.1 **3 Claims**



3. The combination of, a drum rotatable continuously about a generally horizontal axis and having a plurality of angularly spaced grippers each adapted to receive and close upon a signature at a transfer station as the gripper rotates through said transfer station, and an apparatus for feeding signatures to said grippers at said transfer station, said apparatus being characterized by an upright hopper adapted to contain an upright

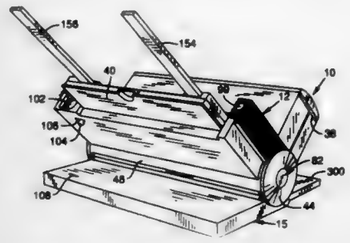
stack of generally horizontally disposed signatures, conveyor means for stripping signatures one-by-one from the bottom of said stack and for continuously advancing said signatures fowardly first along a generally horizontal path and then along a downwardly and forwardly sloping path as a running shingle having a substantially uniform setback, means for driving said conveyor means in timed relation with rotation of said drum, the lower end of said downwardly sloping path being located at said transfer station, said conveyor means presenting successive leading signatures to successive grippers as said grippers rotate to said transfer station and while said signatures are still in said running shingle whereby successive leading signatures are pulled out of said shingle by successive grippers as the latter close upon the signatures and rotate out of the transfer station.

5,326,089
ROTATABLE-CASSETTE-TYPE FEEDING DEVICE FOR USE IN IMAGE FORMING APPARATUS
Masashi Toyoda, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 8, 1992, Ser. No. 957,891
Claims priority, application Japan, Oct. 18, 1991, 3-270889
Int. Cl.[5] G03G *21/00*; B65H *1/00*
U.S. Cl. 271—162 **14 Claims**



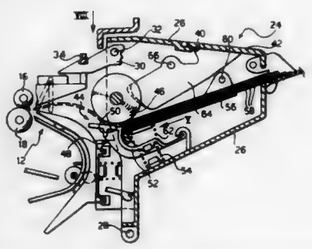
1. A rotatable-cassette-type feeding device for use in an image forming apparatus comprising:
paper accommodation means for housing sheets of paper, which is rotated either to a longitudinal feeding station for feeding sheets of paper to the image forming apparatus in a length-wise direction or to a lateral feeding station for feeding sheets of paper thereto in a width-wise direction;
rotation driving means for rotating the paper accommodation means between the longitudinal feeding station and the lateral feeding station of the sheets of paper;
drive control means for controlling the rotation driving means in its rotation speed in such a manner that, during a state wherein no image forming process is required, the paper accommodation means is rotated at a speed that is lower than that marked during an image forming operation.

5,326,090
PRINTER SHEET FEEDER HAVING A RETRACTABLE SHEET STACK SUPPORT
Ng L. Hock, Singapore, Singapore; James J. Girard, Boise, Id.; Lee G. Keen, Singapore, Singapore; James L. K. Chan, Singapore, Singapore, and Chuin K. Lim, Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 887,517, May 19, 1992, abandoned. This application Oct. 7, 1992, Ser. No. 957,931
Int. Cl.[5] B65H *1/00*
U.S. Cl. 271—162 **10 Claims**



1. An automatic sheet feeder for a printer comprising:
a paper advance mechanism for advancing a sheet from a stack of paper contained in the sheet feeder to a printer;
a case in which said advance mechanism is substantially contained;
an opening formed in said case for receiving such a stack of paper; and
a door pivotally mounted on said case for rotation about a first axis, said door having a closed position in which said door covers said opening and an open position in which said door extends from said case for providing support for the stack of paper; and
a pair of support arms pivotally mounted on said door for rotation about a second axis orthogonal to said first axis so that said arms are received in said opening when said door is in the closed position, said arms being movable between a first position which permits moving said door to the closed position and a second position in which said arms extend from said door for providing support for the stack of paper.

5,326,091
PHOTOCOPYING MACHINE WITH AN AUXILIARY SHEET FEEDER
Felice Giacometto, Caluso; Andrea Perino, Cuorgné, and Francesco Beltramo, San Giusto Canavese, all of Italy, assignors to Olivetti-Canon Industriale S.p.A., Ivrea, Italy
Filed Dec. 23, 1992, Ser. No. 994,965
Claims priority, application Italy, Jan. 13, 1992, T092 A 000017
Int. Cl.[5] B65H *5/00*
U.S. Cl. 271—10 **10 Claims**



1. A photocopying machine having a body with an auxiliary

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sheet feeder which includes a casing containing a tray for supporting the sheets to be supplied to the machine and a sheet-separation unit including a motor-driven sheet-separating roller cooperating with a pad, the sheet-separation unit being arranged to supply the sheets to at least one pair of contrarotating register rollers which are carried by the machine and are situated on an entrainment path both for the sheets coming from a main feeder and for sheets coming from the auxiliary feeder, wherein the improvement consists in that the casing is pivotable on the body of the machine and is movable between a raised, working position and a lowered, inoperative potition, the casing having a closure hook for restraining the casing in said raised, working position, the hook being connected to a release handle which is situated within the casing and can be operated manually through an opening closed by a cover hinged to the casing.

5,326,092

APPARATUS FOR CONVEYING A PAPER ALONG WITH A PAPER CONVEYING PATH

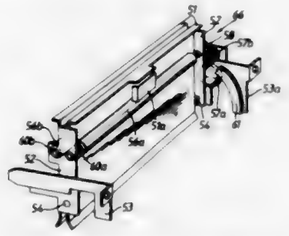
Koichi Ando, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 6, 1993, Ser. No. 1,098

Claims priority, application Japan, Jan. 10, 1992, 4-002553; Oct. 13, 1992, 4-273276

Int. Cl.[5] B65H *5/00*

U.S. Cl. 271—272 **1 Claim**



1. An apparatus for conveying a paper along a paper conveying path, comprising:

means for guiding a paper in the paper conveying path, the guiding means including a pair of plateshaped guide plates facing each other across the paper conveying path;

roller means, provided with the guiding means, for conveying the paper along the guiding means by the rotation thereof, the roller means including a pair of conveyor rollers respectively mounted adjacent the pair of guide plates;

means for supporting the guide plates movably between a first position located in the paper conveying path and a second position located out of the paper conveying path; and

means for rotating the roller means associated with the movement of the guide plates from the first position to the second position, the rotating means including a gear mounted at one end of one of the pair of conveyor rollers and a stationary rack engaging the gear to rotate the one conveyor roller.

5,326,093

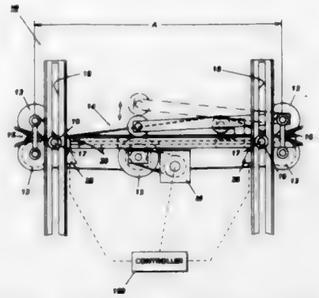
UNIVERSAL INTERFACE MODULE INTERCONNECTING VARIOUS COPIERS AND PRINTERS WITH VARIOUS SHEET OUTPUT PROCESSORS

Thomas E. Sollitt, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 24, 1993, Ser. No. 66,385

Int. Cl.[5] B65H *29/20*

U.S. Cl. 271—306 **9 Claims**



1. A universal interface for operatively connecting and feeding the sequential copy sheet output of various selectable reproduction machines widely varying ranges of sheet output level heights and direction to various selectable independent copy sheet processing units having widely varying sheet input level heights, comprising:

a free-standing movable universal interface module of a fixed narrow width;

said narrow free-standing universal interface module providing a repositionable sheet feeding path therethrough, from one side to the other of said module, for transporting said copy sheet output of said selected reproduction apparatus to said sheet input of said selected copy sheet processing module;

said repositionable sheet feeding path through said universal interface module including integral vertically repositionable sheet receiving or sheet discharging sheet path ends opening at opposite sides of said interface module, which sheet path ends are readily independently repositionable over a large vertical height range;

a retention system for retaining said sheet path ends at selected height positions mating with a selected reproduction apparatus sheet output level and a selected copy sheet processing unit sheet input level so that said repositionable sheet feeding path is operatively connecting therebetween to feed sheets from said reproduction apparatus to said copy sheet processing module;

wherein said repositionable sheet feeding path through said universal interface module provides selectably reversible feeding of said copy sheets therethrough in either direction.

5,326,094

AUDIO SPORTS GAME

Timothy G. Quinn, 1255 Chimney Ridge, Traverse City, Mich. 49684

Filed Feb. 19, 1993, Ser. No. 19,761

Int. Cl.[5] A63B *63/08*

U.S. Cl. 273—1.5 R **18 Claims**

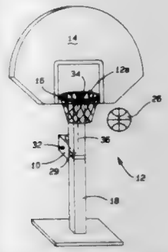
1. A basketball goal apparatus comprising:

(a) a hoop defining an opening therethrough such that an object can pass through said opening;

(b) net means depending from said hoop such that as said object passes through said hoop, said object must pass through said net means;

(c) an audio message generator for selectively generating one of a plurality of user selectable audio messages prior to a user attempting to cause said object to pass through said opening, each of said messages providing a setting for said user by generating a description of a fictional game situation, cheers and a count down, said audio message generator also being capable of generating at least one final message;

(d) a user operable switch for actuating said audio message generator to generate a user selected one of said plurality of messages which provide settings for said user; and



(e) a sensor operably associated with said hoop such that said sensor is in a position to sense an object passing through said hoop, said sensor being in communication with said audio message generator such that when one of said messages providing said setting is being generated, and said object is sensed passing through said opening, a signal is transferred from said sensor to said audio message generator for generating said final message and terminating said message providing said setting until another of said messages providing another setting is selected by a user.

5,326,095

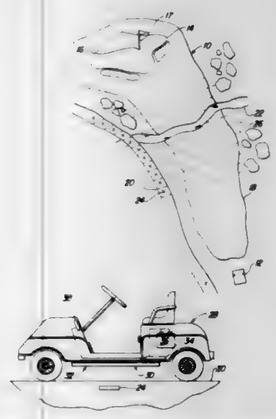
GOLF INFORMATION SYSTEM

Douglas P. Dudley, Orlando, Fla., assignor to Yardmark, Inc., Orlando, Fla.

Continuation of Ser. No. 750,823, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 449,995, Dec. 13, 1989, Pat. No. 5,044,634, which is a continuation-in-part of Ser. No. 172,458, Mar. 21, 1988, abandoned. This application Sep. 9, 1992, Ser. No. 942,343

Int. Cl.[5] G06F *15/28;* **A63B** *67/02*

U.S. Cl. 273—32 R **13 Claims**



1. A golf information system providing a golfer with information regarding the distance to designated points relative to various positions on a golf course hole comprising:

a movable receiver including antenna means for receiving at least one signal from which the position of said receiver on the golf course is determined, said receiver interpreting said signal via a memory, said signal defining a location on said golf course corresponding directly to a location within said memory and correlating the position of said receiver to corresponding data defining said information, said data being predetermined and based solely on said position, said receiver relaying said information derived from said memory to display means for displaying said information to the golfer regarding the distance to designated points on a golf course hole relative to said receiver, said receiver passively providing said information without golfer input as said receiver is moved on said golf course.

5,326,096

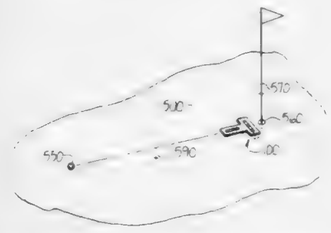
GOLF PUTTING AID

Peter B. H'Doubler, 1965 S. Fremont, #2300, Springfield, Mo. 65804

Filed Mar. 26, 1993, Ser. No. 37,253

Int. Cl.[5] A63B *57/00;* **G01C** *9/00*

U.S. Cl. 273—32 H **3 Claims**



1. A golf putting aid indicative of the inclination of a golf green to a user comprising:

a housing having first and second generally normal legs;

an imaginary central longitudinal axis in each leg, said axis of said first leg intersecting the axis of the second leg in a generally normal relationship therebetween;

an elongated groove lying along a portion of each imaginary longitudinal axis extending along each leg;

at least a first pair of float levels positioned in said groove of said first leg, one of said float levels indicative of a slope of said groove of said first leg in one direction with the other of said float levels indicative of a slope of said groove of said first leg in an opposed direction;

at least a second pair of float levels positioned in said groove of said second leg with each level being on an opposed side of the imaginary longitudinal axis of said first leg normally intersecting the axis of said second leg, one of said float levels indicative of a slope of said groove of said second leg in one lateral direction relative to the slope of said groove in said first leg with the other of said float levels indicative of a slope of said groove in an opposed lateral direction relative to the first leg groove;

indicia on each of said float levels indicative of a degree of the slope of each groove containing said float levels;

whereupon said first leg allows for a user positioning of the aid on a golf green and extension of said first leg and said groove along a line between the cup and ball with the second leg and said groove therein traversing the line with each float level of said second pair of float levels on opposed sides of the line, said first pair of float levels and indicia thereon indicative of the slope of said groove and underlying green along the line between the cup and ball with said second pair of float levels and indicia thereon indicative of the slope of said underlying green normally

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traversing the line, whereby to inform the user of the degree of slope of the golf green underlying said aid.

5,326,097
RACKET FOR PLAY AND SPORTS
Chien P. Yu, No. 15, Lane 251, Tung Yang Rd., Tung Yang Li, Feng Yuan City, Taichung Hsien, Taiwan
Filed Mar. 26, 1992, Ser. No. 857,824
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] A63B *59/18*
U.S. Cl. 273—67 R **1 Claim**



1. A racket comprising a ring, an envelope formed of resilient fabric encasing said ring, said envelope having an opening for insertion of said ring therein, and

first and second frames each including a head portion and a handle portion formed integral with each other, each of said head portions including a radially inward portion having an annular grove formed therein and a radially outward portion, said head portion of said first frame including a plurality of stubs formed in said radially outward portion thereof, said head portion of said second frame including a plurality of hubs formed in said radially outward portion thereof engaged with said stubs of said head portion of said first frame for securing said first and second frames together, said grooves of said head portions forming an annular space when said frames are secured together,

said ring having a size matching that of said annular space, said ring and a portion of said envelope of resilient fabric being held in said annular space encased by said head portions and arranged for said envelope to form a ball striking surface.

5,326,098
BADMINTON RACKET
Li-Min Ou, and Chien-Der Lin, both of No. 1-3, Lane 251, Tong-Yeang Rd., Feng-Yuan, Taichung, Taiwan
Filed Dec. 10, 1993, Ser. No. 165,116
Int. Cl.[5] A63B *49/08*
U.S. Cl. 273—73 R **1 Claim**

1. An improved badminton racket comprising:

a head having a strung surface;

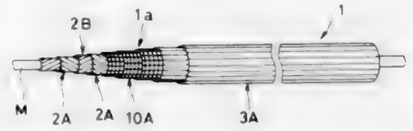
a shaft fastened at an upper end thereof with a lower end of said head;

a hand grip provided axially in an upper segment thereof with a receiving hole of an appropriate depth and dimensioned to receive therein a lower segment of said shaft, said receiving hole having a bottom wall on which a conical portion is disposed axially such that said conical portion is gradually smaller in dimension from a lower end thereof toward an upper end thereof, said hand grip further provided axially an elongate through hole extending from said upper end of said conical portion through a lower end wall of said hand grip, said receiving hole further provided axially on an inner wall thereof with a plurality of recessed strips spaced at a predetermined interval; and



a cap dimensioned to fit securely over said lower end of said hand grip.

5,326,099
GOLF CLUB
Shinji Yamamoto, and Kazutsugu Takamizawa, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1992, Ser. No. 995,691
Claims priority, application Japan, Dec. 26, 1991, 3-345599; Dec. 27, 1991, 3-107764[U]; Dec. 27, 1991, 3-107770[U]
Int. Cl.[5] A63B *53/02, 53/10*
U.S. Cl. 273—80.2 **12 Claims**

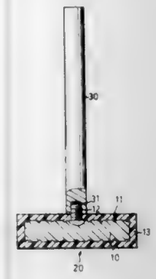


1. A golf club comprising a club head having a hosel portion, a protrusion extending from said hosel portion and a club shaft having an axis and a recess formed in a tip end thereof complementary with and fitted over said protrusion in an over-hosel arrangement, said club shaft comprising a plurality of fiber-reinforced resin layers wound in tubular form, said layers including a plurality of bias layers having the reinforcing fibers therein disposed in an inclined relationship with respect to the axis of the shaft, a plurality of straight layers having the reinforcing fibers therein disposed in a parallel relationship with respect to the axis of said shaft and at least one reinforcing layer having the reinforcing fibers arranged therein so as to cross the axis of the shaft, said reinforcing layer being tubularly wound in the interior of said shaft and extending from said tip end of said shaft in the axial direction only a distance of from 100 to 400 mm.

5,326,100
CROQUET MALLET WITH FOAM OR CUSHION OUTER LAYER
Chiu-Yuan Chen, No. 146, Shan Ying Road, Kuei Shan Hsiang, Taoyuan Hsien, Taiwan
Filed Aug. 20, 1993, Ser. No. 109,450
Int. Cl.[5] A63B *59/10*
U.S. Cl. 273—83 **2 Claims**

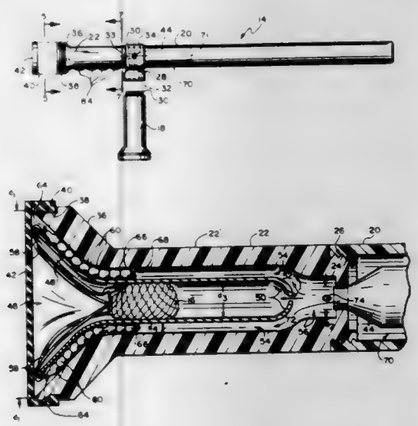
1. A toy croquet mallet comprising a handle portion and a striking head portion; said handle portion having a lower connecting section with a means for detachably engaging with said striking head portion; said striking head portion has a cylindrical main body and a connecting boss projecting from a central portion of said main body; said main body having a

plurality of recesses formed on a peripheral surface thereof and being wrapped by a relatively supple protective layer to insure safety in playing croquet game, and said recesses distributed on



th surface of said main body increasing contact area of said protective layer on said periphery of said main body and thus more securely associating said protective layer with said main body.

5,326,101
LAW ENFORCEMENT BATON WITH PROJECTABLE RESTRAINING NET
Larry R. Fay, 717 Lawrence St., Watertown, N.Y. 13601
Filed May 3, 1993, Ser. No. 55,350
Int. Cl.[5] F41B *15/02;* **F41F** *1/00*
U.S. Cl. 273—84 R **19 Claims**



1. A law enforcement baton comprising:

a) a rigid, elongated shaft having coextensive, proximal and distal lengths, said distal length having a first, central, longitudinally extending bore extending inwardly from a first opening at the distal end of said distal length opposite said proximal length;

b) a net removably positioned within said first bore, said net having a predetermined perimeter;

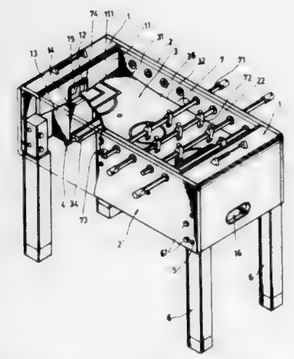
c) means positioned in said proximal length selectively actuable to apply a force internally of said baton against said net, said force being directed into said first bore in a direction toward said first opening, said force being of a magnitude sufficient to expel said net from said first bore through said first opening and to propel said net outwardly from said distal length;

d) a first plurality of bore holes longitudinally extending within said distal length from a respective first plurality of openings at said distal end, inwardly towards said proximal length, said first plurality of bore holes extending in parallel, annularly spaced relation about said first, central bore;

e) a first plurality of flexible lines attached at first ends thereof about said perimeter of said net and extending therefrom terminating in free, second ends thereof; and

f) a first plurality of retaining elements each configured to removably engage a portion of, and become entangled with, said net when moved thereagainst in a predetermined direction, said retaining elements being attached to said lines in longitudinally spaced relation therealong, each of said first plurality of lines including said first plurality of retaining elements being removably positioned within a respective one of said first plurality of bore holes with portions of said lines between said first and second ends thereof extending between said first opening and said first plurality of openings.

5,326,102
QUICKLY ASSEMBLED KNOCKDOWN FOOTBALL TABLE
Charles Chang, C/O Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (104), Taiwan
Filed Aug. 9, 1993, Ser. No. 103,201
Int. Cl.[5] A63F *7/36*
U.S. Cl. 273—85 D **1 Claim**



1. A knockdown football table for playing purposes comprising:

a pair of end panels, a pair of side panels and a bottom plate combinable for forming a football playing field generally rectangular shaped, having four supporting leg members secured on a bottom portion of said end panels and said side panels;

each said end panel having an end wall portion bent inwardly downwardly from a vertical panel portion of said end panel to have a longitudinal section generally U shaped to be contiguous to the bottom plate, having a goal opening formed in a central portion of said end wall portion, a ball box positioned below said end wall portion and communicating with said goal opening for collecting a ball therein, and a transverse slot notched in between said end wall portion and said ball box for receiving a transverse end portion of said bottom plate;

each said side panel including: a reinforcing side plate having a height lower than that of the side panel integrally combined with the side panel and having a bottom edge portion longitudinally formed on a bottom portion of the reinforcing side plate contiguous to a longitudinal side edge portion of the bottom plate;

said bottom plate having a pair of said transverse end portions transversely formed on two opposite end portions of the bottom plate engageable with a pair of transverse slots

with each said slot recessed in between a lower edge portion of said end wall portion of the end panel and said ball box, a pair of longitudinal side edge portions disposed on two opposite longitudinal side portions of the bottom plate; each said longitudinal side edge portion of said bottom plate engageable with the bottom edge portion of the reinforcing side plate of each said side panel when assembling the side panel with the bottom plate, a plurality of packing sleeves transversely juxtapositionally secured on a bottom surface of the bottom plate; each said packing sleeve having a groove longitudinally recessed in the sleeve to have a cross section of arcuate shape concave inwardly towards the bottom surface for snugly engaging a fastening bolt with the groove of the packing sleeve by passing the fastening bolt through each fastening bolt hole formed in the side panel, and a field surface formed on an upper surface of the bottom plate for marking features thereon for simulating a football field; and

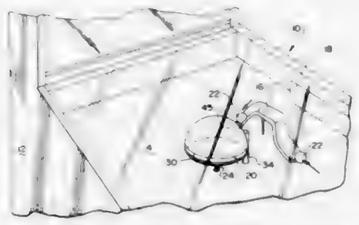
each said fastening bolt snugly engageable with the groove of the packing sleeve beneath the bottom plate and having a head portion formed on a first end of said fastening bolt retained on a first side panel by passing the fastening bolt through the first side panel to engage the groove in the packing sleeve and, with the screw portion formed on a second end of the fastening bolt protruding outwardly through a second side panel to be limited by a nut and a washer retained on the second side panel for fastening the second side panel and the first side panel to two opposite side edge portions of the bottom plate for firmly fastening the side panels with the bottom plate, and with said two side panels combinable with said two end panels by screws for forming a football table from a knockdown state thereof.

5,326,103

TURNTABLE AND COVER FOR AMUSEMENT DEVICE

John L. Lund, Des Plaines, and Joseph E. Kaminkow, Arlington Heights, both of Ill., assignors to Data East Pinball, Inc., Melrose Park, Ill.

Filed Jul. 8, 1993, Ser. No. 88,751
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—118 R **14 Claims**



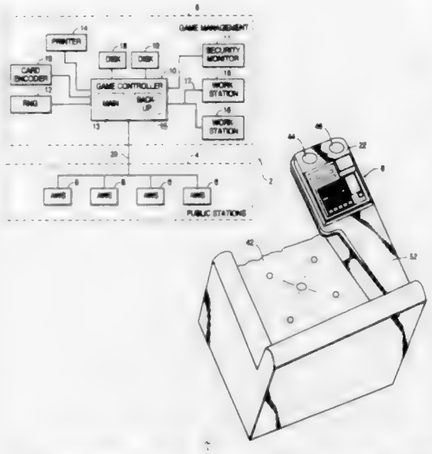
5. A pinball machine which comprises a frame that carries a playfield, and means for launching balls on said playfield, said pinball machine having with said playfield a rotatable turntable; a cover having a position for enclosing and retaining a ball rolling on said turntable; and means for raising said cover from said position, to permit said ball to roll outwardly across the periphery of said turntable to another portion of said device.

5,326,104

SECURE AUTOMATED ELECTRONIC CASINO GAMING SYSTEM

Logan L. Pease, Reno; Eugene T. Bond, Las Vegas; Dwight E. Crevelt, Las Vegas, and Verne F. Holmes, Jr., Las Vegas, all of Nev., assignors to IGT, Reno, Nev.

Filed Feb. 7, 1992, Ser. No. 831,250
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—138 A **49 Claims**



1. An automated writing station for transmitting wager information to a central game controller to which a plurality of said writing stations are attached for playing a game of chance in which a group of symbols is selected from a large number of predetermined possible symbols, and for displaying results of the game, comprising:

keypad means operable by a patron for receiving wager information identifying symbols selected by the patron for the game of chance, said keypad means including a plurality of switching means each associated with one of the possible symbols for alternatively selecting and deselecting the symbol associated with the individual switching means when the switching means is activated by the patron;

account identifying means for receiving account identification information from the patron identifying a wagering account having a balance maintained within the central game controller;

wager activation means for generating a wager signal, in response to action by the patron, indicating that the wager information currently selected by the keypad means is to be entered as an irrevocable wager;

processing means connectable to said central game controller and connected to the keypad means, account identifying means, and wager activation means for receiving said wager information and said account identification information, and in response to receiving said wager signal, irrevocably transmitting signals to said central game controller, including the wager information and the account identification information, indicating that the wager information should be entered by the central game controller as an irrevocable wager associated with the patron account identified by the account identification information, and for subsequently receiving game results from said central game controller;

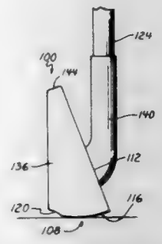
display means connected to the processing means for displaying the game results to the patron.

5,326,105

SEA PLANE SOLE FOR A GOLF CLUB

Francis A. Fenton, Jr., Sarasota, Fla., assignor to Fenton Golf, Inc., Sarasota, Fla.

Filed May 20, 1993, Ser. No. 64,634
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 A **19 Claims**



1. A head portion of an iron-type golf club, comprising:

a. a striking face on a front portion of the head;

b. a rear portion opposite the front portion;

c. a heel;

d. a toe; and

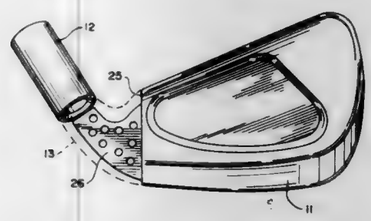
e. a sole having a contoured surface extending from a leading edge of the striking face towards the rear portion of the head, the contoured surface having a first portion beginning at the leading edge of the striking face and extending a predetermined distance toward the rear portion of the head, the first portion of the contoured surface having a convex camber of a predetermined radius, the contoured surface having a second portion beginning at the end of the first portion and extending the remaining distance towards the rear portion of the clubhead, the second portion of the contoured surface having a concave camber of a predetermined radius.

5,326,106

COMPOSITE IRON GOLF CLUB

Dean E. Meyer, LaGrange Park, Ill., assignor to Wilson Sporting Goods Co., Chicago, Ill.

Filed Jun. 11, 1993, Ser. No. 74,586
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **17 Claims**



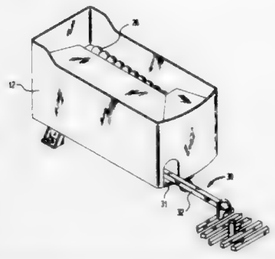
7. An iron type golf clubhead having a blade, a hosel, and a junction portion which joins the blade and the hosel, the blade being formed from a first material and the junction portion and the hosel being formed from a second material which is less dense than the first material, the blade having a face for striking a golf ball, a toe end, and heel end, and a bracket which extends from the heel end and which is thinner than the blade at the heel end and which is provided with openings, the junction portion surrounding the bracket and being secured thereto and the material of the junction portion extending through the openings in the bracket.

5,326,107

APPARATUS FOR BALL PLACEMENT ON A GOLF TEE

Hyo C. Park, Belle Mead, N.J., assignor to Forty Four International, Inc., Belle Mead, N.J.

Filed May 21, 1993, Ser. No. 65,665
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—201 **8 Claims**



1. A golf ball dispenser for dispensing golf balls one at a time to a golf tee comprising:

a housing for holding a plurality of golf balls; and

a horizontally movable arm member, said arm member movable between a first position within said housing and a second position above a tee said first position and said second position having a equal vertical height, said arm member including a guide wire for supporting a golf ball at a first end of said arm member;

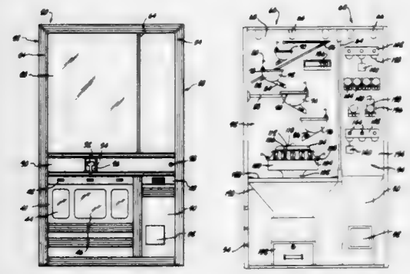
wherein said arm member releases a supported golf ball when said movable arm member is moved to said second position.

5,326,108

COIN GAME

William B. Faith, 6530 Lakeridge Rd., Los Angeles, Calif. 90068

Filed Jul. 9, 1992, Ser. No. 914,194
Int. Cl.[5] A63F *9/02*
U.S. Cl. 273—355 **13 Claims**



1. A coin game unit comprising:

a cabinet having a transparent enclosure section;

a coin game within the cabinet;

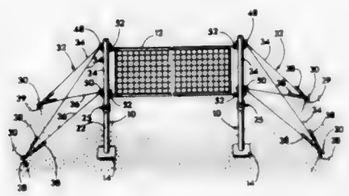
a prize dispenser within the cabinet for holding and dispensing prizes, the game and prize dispenser viewable at least on part through the transparent enclosure section;

a counter linked to the game for counting game points; and

a dispenser controller linked to the counter and the dispenser, for actuating the dispenser based on the counted game points.

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5,326,109
PORTABLE NET HOLDING ASSEMBLY
Daniel P. Robl, 95 Waukau Ave., Oshkosh, Wis. 54901
Filed Apr. 26, 1993, Ser. No. 51,516
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—411 **3 Claims**



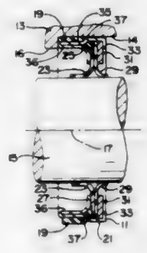


1. A portable net holding assembly for volley ball and the like, which comprises two identical halves, each half comprising:
(a) a substantially planar base member having (i) at least one downwardly depending spike adaptable for insertion into the ground adjacent the playing area for anchoring said base to the ground when in a deployed position, and (ii) an upwardly depending, centrally located male stud;
(b) an end pole having a longitudinal recess at one end thereof for accommodating said male stud;
(c) two elongated stakes adaptable to be inserted into the ground at spaced apart points remote from said base member and outwardly from the playing area whereby on assembly in a deployed position said stakes and said base member define a triangle, and each of said stakes having a hook near the exposed terminus when in a deployed position;
(d) a first line and a second line, said first line having looped termini releasably secured at each terminus to each of said stakes by said hook and extending from said pole and releasably connected thereto at a first point of convergence, and said second line having looped termini releasably secured at each terminus to each of said stakes by said hook and extending from said pole and releasably connected thereto at a second point of convergence longitudinally spaced from said first point of convergence, and adjustable means at each of said termini for said first and second lines to tension said lines when in a deployed position; and
(e) said pole having longitudinally spaced connecting means for releasably connecting a net thereto.

5,326,110
COMBINED HOLLOW CONTAINER AND DETACHABLY SECURED TOSSABLE SAUCER SHAPED DISC
John C. Gould, 3320 Glencairn Ct. Unit 101, Bonita Springs, Fla. 33923
Filed Dec. 6, 1993, Ser. No. 161,521
Int. Cl.[5] A63B *65/10*; **B65D** *23/12*
U.S. Cl. 273—424 **9 Claims**

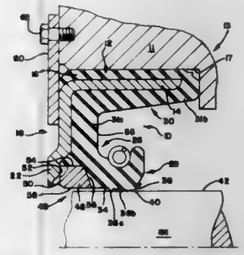
1. In combination:
a portable hollow upright container having at least a first vertical exposed surface;
at least a first tossable saucer shaped disc having a circular outer periphery and a concentric inner periphery; and
at least a first member integral with the container and projecting outward from said first surface, said first member terminating in a curved generally vertical exposed surface, the exposed surface of the first member having a circular outer periphery slightly smaller than the inner periphery of said first disc, said first disc being detachably securable to said first member with the inner periphery of the disc frictionally engaging the circular periphery of the exposed surface of said first member.

5,326,111
SEPARATELY BONDED ELASTOMERIC SLEEVE FOR SEAL CASING
Frederick R. Hatch, Ann Arbor, Mich., assignor to Mather Seal Company, Milan, Mich.
Continuation of Ser. No. 732,863, Jul. 19, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 956,816
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—37 **8 Claims**



1. A radial lip rotary shaft seal comprising:
a rigid annular seal case having a radial flange and an outer surface portion insertable into a bore that surrounds a shaft;
a first radial lip sealing element comprising polytetrafluoroethylene and supported by the radial flange for sealing between the case and the shaft;
a second sealing element extending axially along said outer surface of said case for sealing between the case and the bore;
said second sealing element comprising a preformed elastomeric disk having two radial faces, an inner peripheral edge, and an outer peripheral edge, said inner peripheral edge of said disk comprising a radially stretched portion surrounding said outer surface of said case;
said outer peripheral edge of said disk being radially stretched less than said inner peripheral edge and one of the radial faces engaging said outer surface via permanently stressed facial contact and bonded thereto with an adhesive, and the other radial face comprising a bore contacting sealing surface.

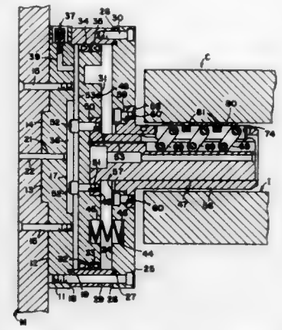
5,326,112
SEAL FOR HIGH PRESSURE APPLICATIONS
Alex Paykin, Skokie, Ill., assignor to SKF USA Inc., Elgin, Ill.
Filed Sep. 25, 1992, Ser. No. 951,006
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—153 **16 Claims**



1. A fluid seal assembly intended for use in high pressure sealing applications, said seal assembly comprising, in combination, a seal casing made from a rigid metal material and including a generally axially extending, cylindrical section for mounting relative to a first element of a multi-piece mechanism to be sealed, and a generally radially extending casing flange jointed at its outer margin to said cylindrical section, with said radial casing flange including a radially outer portion for bonding to an elastomeric seal body, and a radially inner margin portion, an elastomeric seal body formed in a single piece, and said seal body having a bonding element portion and a lip portion, said bonding element portion being joined to both said cylindrical casing sections and to said radially outer portion of said radial casing flange, said bonding element having an axial thickness greater than the thickness of said radial casing flange where said bonding element and said casing are secured to each other, said seal lip portion being radially flexible and having a lip body defined at least partially by a spring groove, a frustoconical air side surface and a frustoconical oil side surface, said surfaces meeting along a generally circular locus to define a seal band of intended contact with the outer surface of a second element of said multi-piece mechanism, said seal lip body further including generally cylindrical and beveled surfaces forming, in combination with said radially inner casing margin, a ring-receiving groove, and an annular lip reinforcing ring of trapezoidal cross-section made from a low friction material, said ring having an axially outer end face in direct contact with the axially inner end face of said radially inner margin of said casing radial flange, a generally cylindrical outer surface and a beveled, axially inner surface, with both of said cylindrical and beveled surfaces lying axially outwardly of the axially inner surface of said bonding element, said ring also having a generally cylindrical inner surface of very slightly increased diameter relative to the diameter of an associated shaft to be sealed, said reinforcing ring and said radially inner casing margin providing resistance to axial extrusion of said seal lip body.

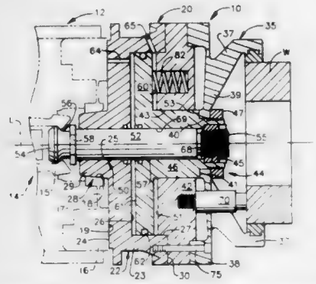
5,326,113
SINGLE ACTING CORE CHUCK
William W. Montalvo, III, Box 263P Egypt Rd., Raymond, Me. 04071
Filed Aug. 19, 1992, Ser. No. 931,961
Int. Cl.[5] B23B *31/40*
U.S. Cl. 279—2.09 **11 Claims**

1. A fluid actuated core chuck comprising a generally cylindrical compression ram mounted on a piston for linear movement; a sleeve surrounding a forward end of said ram and a plurality of elongated jaw members pivotally connected to the compression ram and movable radially outwardly with respect to the axis of said compression ram upon forward movement of



said ram whereby surfaces of the jaw members engage the inner surface of an opening through a core.

5,326,114
QUICKLY INTERCHANGEABLE CHUCK WITH MECHANICAL POWER ASSIST CLAMPING CAPABILITIES
Tadeusz W. Piotrowski, Cincinnati, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio
Filed Apr. 8, 1992, Ser. No. 865,380
Int. Cl.[5] B23B *31/32*
U.S. Cl. 279—4.05 **14 Claims**



1. A quickly interchangeable clamping chuck and draw bar assembly including mechanical power assist clamping capabilities for use in a machine tool, said assembly comprising:
a draw bar having a gripping device for releasably receiving and clamping a clamping stud of a machine tool part, said draw bar arrangement being reciprocable along a longitudinal axis to alternately clamp and release said gripping device, and having a two phase clamping stroke;
a quickly interchangeable clamping chuck having a chuck body with inner and outer faces and a bore extending therebetween;
means located adjacent said inner face of said body for preliminarily aligning said chuck with said longitudinal axis;
an axially movable member supported by said body for longitudinal reciprocation relative thereto;
at least one workpiece clamping device for receiving and clamping a workpiece, said clamping device comprising means for passively clamping a workpiece in clamped position and being connected to said movable member;
a clamping stud having inner and outer ends and connected to said movable member such that movement of said clamping stud in an inward direction along said longitudi-

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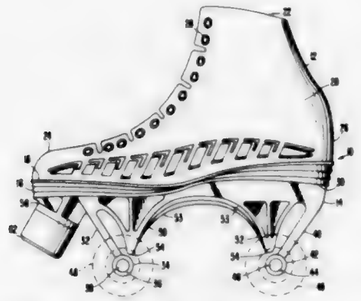
nal axis will correspondingly move said movable member; and

quick release means attached adjacent said inner end of said stud for receiving said draw bar gripping device, whereby the first phase of the stroke of said draw bar provides clamping between said gripping device and said stud, and further longitudinal movement during the second phase of said draw bar stroke axially displaces said clamping stud and said movable member relative to said bore to further mechanically tighten said workpiece clamping device.

5,326,115
HOMOGENEOUS INTEGRALLY MOLDED SKATE CHASSIS

Edwin Seltzer, West Chester, Pa., assignor to Roller Derby Skate Corporation, Litchfield, Ill.

Filed Dec. 30, 1992, Ser. No. 998,929
Int. Cl.[5] A63C *17/02*
U.S. Cl. 280—11.19 **5 Claims**



1. A plastic roller skate chassis molded of a single, homogeneous integrally molded piece comprising

a boot portion for receiving a skater's foot having a molded outer shell including a toe portion, a heel portion spaced from said toe portion and sidewall portions extending longitudinally from said toe to said heel portion,

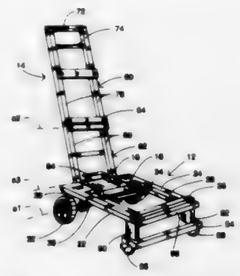
and a truck assembly molded integrally with said boot portion and including a single, unitary base portion extending between said sidewall portions and said heel and toe portions, said base portion including a bottom side and a top side surface which forms the bottom foot support for said skater's foot and with said heel, toe and sidewall portions defines a cavity within said molded outer shell for receiving a skater's foot which is supported and enclosed thereby, and wheel attachment means molded integrally with said base portion and extending from the bottom side of said base portion, said boot portion and truck assembly being formed as a single unitary piece with no junctures therebetween

wherein said wheel attachment means includes a first beam extending at an acute angle outwardly from the bottom side of said base portion in an area beneath the toe portion of said molded outer shell, said first beam angling toward the heel portion of said molded outershell and including a free end, first axle hub means formed at said free end of said first beam to receive and support a roller skate wheel axle, and a second beam extending at an acute angle outwardly from the bottom side of said base portion in an area beneath the heel portion of said molded outer shell, said second beam angling toward the toe portion of said molded outer shell and including a free end, second axle hub means formed at said free end of said second beam to receive and support a roller skate wheel axle, said first and second beams being configured to flex toward the bottom side of said base portion, and first and second spaced impact posts positioned between said first and second beams and extending adjacent thereto from the bottom side of said base portion, said first and second impact posts each having a free end to contact the first and second axle hub means respectively and being rigid to support the torsional rotation of said first and second beams, the free ends of said first and second impact posts having surfaces for supporting the torsional rotation of the first and second beams respectively.

5,326,116
FOLDABLE HAND TROLLEY AND ASSOCIATED METHOD OF USE

Nathan Flax, 5 Joyce La., Woodbury, N.Y. 11797

Filed Sep. 14, 1992, Ser. No. 944,513
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—47.371 **36 Claims**



1. A hand truck comprising:

a frame having an upper side defining a substantially planar load-bearing support surface, said frame also having an underside;

a rear axle connected to said frame proximately to a rear edge thereof;

a pair of rear wheels attached to said rear axle for rotation about a first axis defined thereby;

a handle pivotably coupled at a lower end to said frame for rotation about a second axis relative to said frame;

a cross-brace pivotably connected to said handle for rotation about a third axis spaced from said second axis; and

coupling means on said cross-brace and said frame for releasably connecting said cross-brace to said frame at a point spaced from said second axis and said third axis so that said cross-brace extends substantially parallel to said support surface in a use position of said handle, thereby establishing a triangulated truss connecting said handle to said frame in said use position of said handle.

5,326,117
HOSPITAL CART AND LID APPARATUS

Florence H. Cook, 64 West Union St., Goffstown, N.H. 03045

Filed Mar. 8, 1993, Ser. No. 27,423
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—79.2 **4 Claims**

1. A hospital cart and lid apparatus, comprising,

a support frame means for support of a flexible support container, wherein the support frame means includes a rigid basket hoop, with the rigid basket hoop including hoop side walls, a hoop front wall, and a hoop rear wall, with the flexible support container directed through the basket hoop, and,

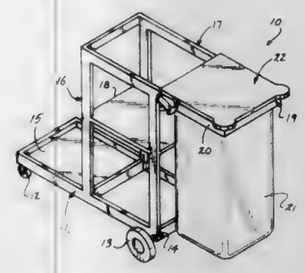
a rigid support container lid having a lid rear wall spaced from a lid front wall, spaced lid side walls, a lid top wall, and a lid bottom wall, with each of the lid side walls positioned in a parallel adjacency relative to one of the hoop side walls, and,

at least one rear wall hinge mounted to the hoop rear wall and to the support container lid to pivotally mount the support container lid over the basket hoop and arranged in

communication with the basket hoop in a first position and spaced from the basket hoop in a second position, and,

at least one spring-biased return member mounted to one of the hoop side walls in adjacency to the hoop rear wall, with the biased spring return member further mounted to an adjacent one of the lid side walls to bias the support container lid in the first position, and

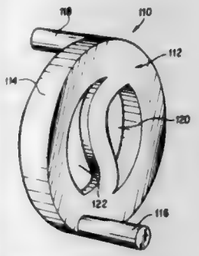
the spring biased return means includes a spring tube having a spring tube first end and a spring tube second end, the spring tube first end including a first end axle mounted to said at least one of the hoop side walls in adjacency to the hoop rear wall, with the spring tube second end having a second end slot, and a spring tube second end axle orthogonally directed through the spring tube second end slot, and a cam lug eccentrically mounted to the spring tube second end axle, and a spring cavity mounted within the spring tube extending between the slot and the spring tube first end, with a spring positioned within the spring cavity, and a follower block mounted to the spring in adjacency to the spring tube second end slot for biased communication of the follower block to the cam lug, the cam lug having a cam lug link fixedly mounted to the cam lug, and the cam lug link including a cam lug link axle spaced from the cam lug, and an axle support plate fixedly mounted to the support container lid pivotally mounting the cam lug link axle.



5,326,118
LIMITED TILT UNICYCLE

Richard DeRosa, Hopatcong, N.J., assignor to Research & Design Studio, Inc., Hopatcong, N.J.

Continuation-in-part of Ser. No. 636,134, Dec. 31, 1990, abandoned. This application Nov. 2, 1992, Ser. No. 970,277
Int. Cl.[5] B62K *1/00*
U.S. Cl. 280—205 **14 Claims**



1. A unicycle comprising:

(a) a wheel;

(b) a first foot support attached to and extending substantially at right angles from one side of said wheel;

(c) a second foot support attached to and extending substantially at right angles from the opposite side of said wheel in diametric opposition to said first foot support; and

(d) tilt limiting means associated with each of said first and said second foot supports for intermittently limiting the angle of tilt of said wheel relative to a supporting surface upon which said wheel may roll to a selected angle by contacting said supporting surfaces;

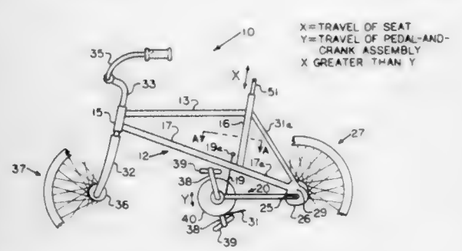
(e) said tilt limiting means are affixed to each of said foot supports at a free end thereof distal to said wheel; and

(f) said tilt limiting means are spheric in shape and are rigidly affixed to each of said foot supports.

5,326,119
BICYCLE AND MOPED SUSPENSION

David P. Ganoung, 2800½ Candelaria, NW, Albuquerque, N. Mex. 87107

Filed Sep. 1, 1992, Ser. No. 937,733
Int. Cl.[5] B62M *1/20*
U.S. Cl. 280—226.1 **20 Claims**



1. A suspension system for a bicycle, comprising:

means for providing a range of predominantly vertical motion of a seat used by a rider while pedaling the bicycle, said range of motion being relative to a main structure of the bicycle which positions a front wheel and a rear wheel of the bicycle relative to each other,

means for providing a spring force for suspending said seat and thus the bicycle rider within said range of motion of said seat,

means for providing a range of predominantly vertical motion of a pedal-and-crank assembly used by the rider for pedaling the bicycle, said range of motion of said pedal-and-crank assembly being relative to said main structure,

means for placing a downward limit on said range of motion of said pedal-and-crank assembly to thereby provide ground clearance for pedals of said pedal-and-crank assembly, and

means for mechanically coupling predominantly vertical motion of said seat, relative to said main structure, to predominantly vertical motion of said pedal-and-crank assembly, also relative to said main structure,

whereby pedaling by the rider does not cause constantly recurring, significant change in distance between said seat and said pedal-and-crank assembly.

5,326,120
WHEELCHAIR

Rolf-Dieter Weege, Kalletal, Fed. Rep. of Germany, assignor to Wilhelm Meyer GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 19, 1992, Ser. No. 693,096
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1991, 9113085[U]
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—250.1 **6 Claims**

1. A wheelchair having a tubular frame for supporting a seat, rear and front wheels and a back, said frame at each side comprising

an upright tubular rear post,

a horizontal seat-supporting tube extending forwardly from the rear post and having a rear and a forward end, the rear end being pivotally and shiftably connected to said post,

a wheel-supporting tube disposed beneath said seat-support-

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ing tube, having a rear and a forward end and having a first mount for a rear drive wheel and a second mount for a front wheel,

a vertically-adjustable clamp on said post rigidly connected to the rear end of said wheel-supporting tube,



a linking tube having an upper end pivotally connected to the forward end of said seat-supporting tube and having a lower end rigidly connected to said forward end of the wheel-supporting tube.

5,326,121

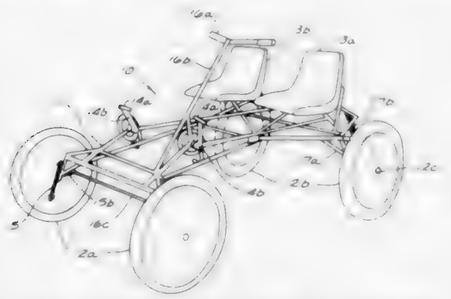
HUMAN POWERED FOUR WHEEL ON/OFF ROAD VEHICLE

Daniel G. Fisher, 4932 E. 3rd St., Tucson, Ariz. 85711

Filed Dec. 17, 1992, Ser. No. 992,063

Int. Cl.[5] B62K *19/00, 21/00, 23/00, 27/06*

U.S. Cl. 280—282 **15 Claims**



1. A four wheeled human powered vehicle comprising:

a) a frame;

b) two front wheels rotatably attached to said frame;

c) two rear wheels, each of said rear wheels rotatably attached to said frame;

d) a drive bar rotatably connected to said frame;

e) freewheel means connected to said drive bar mechanically connected to each of said rear wheels for transfer of rotational movement from said drive bar to each of said rear wheels and permitting each of said rear wheels to rotate at different speeds; and,

f) at least two propulsion assemblies attached to said frame, each propulsion assembly having,

1) a seating means for holding a human operator, and,

2) a drive train means for transferring a crank movement to said driven bar, said drive train means having selective multiple gearing.

5,326,122

BICYCLE CHEST SUPPORT

Paul V. Duffy, 296 West St., Needham, Mass. 02194

Filed Oct. 5, 1992, Ser. No. 956,247

Int. Cl.[5] B62K *19/40*

U.S. Cl. 280—288.4 **2 Claims**



1. A device for use with a bicycle having a handle stem, said device comprising:

a chest support member;

a support column having a top and a bottom;

means to mount said chest support member on said support column;

means disposed on said handle stem to pivotally mount said support column on said handle stem to allow movement of said chest support member to a first use position and to a second non-use position;

adjustable stop means adapted to allow said chest support member to be moved into a first use position adjusted for the positioning of said bicyclist's chest thereon,

wherein said adjustable stop means comprise a stop member having an end, said stop member attached to said support column, said stop member extending a length beyond said support column for said stop member's end to rest on said handle stem when said support column is moved into its use position and means to adjust the length of the extension of said stop member from the support column depending upon the angular positioning desired of said support column to said handle stem.

5,326,123

CONNECTOR ASSEMBLY

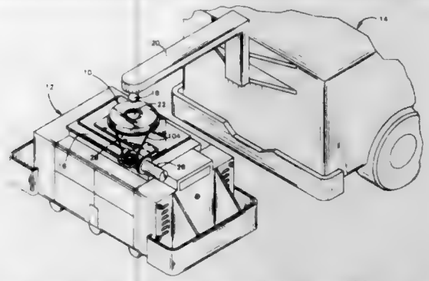
Vaughn W. Guest, Farmington, and Paul T. Carter, Sandy, both of Utah, assignors to Eaton-Kenway Inc., Salt Lake City, Utah

Filed Sep. 3, 1992, Ser. No. 940,284

Int. Cl.[5] B62D *53/12*

U.S. Cl. 280—434 **15 Claims**

13. An apparatus for use in interconnecting a vehicle and a trailer, said apparatus comprising gripper means for engaging a hitch element, said gripper means being operable between an open condition and a closed condition, said gripper means and hitch element being relatively movable to a position in which said gripper means at least partially encloses the hitch element when said gripper means is in the open condition, said gripper means being disposed in gripping engagement with the hitch element when said gripper means is in the closed condition to interconnect the vehicle and trailer, said gripper means includes an annular array of jaws having a central opening of a first size when said gripper means is in the open condition and a second size which is smaller than the first size when said gripper means is in the closed condition, motor means connected with said gripper means for operating said gripper means between the open and closed condition, drive means for interconnecting said annular array of jaws and said motor means to enable operation of said motor means to effect relative movement between said jaws, said drive means includes a rotatable member connected with said jaws, said motor means being operable to rotate said rotatable member in a first direction relative to said base to move said jaws toward each other and operate said gripper means from the open condition to the



closed condition, said motor means being operable to rotate said rotatable member in a second direction relative to said base to move said jaws away from each other and operate said gripper means from the closed condition to the open condition, said drive means further includes a plurality of links interconnecting said jaws and said rotatable member, each of said links having a first end portion pivotally connected to one of said jaws and a second end portion pivotally connected to said rotatable member.

5,326,124

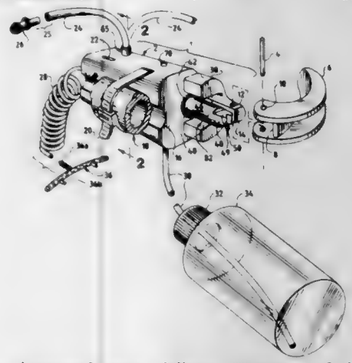
BICYCLE WATER DELIVERY APPARATUS

Michael Allemang, 2500 Sheridan Rd., Box 220, Zion, Ill. 60099

Filed May 13, 1993, Ser. No. 62,439

Int. Cl.[5] B62J *11/00*

U.S. Cl. 280—288.4 **15 Claims**



1. An improved water delivery apparatus of the type, adapted for use on a bicycle having a frame and handlebars, in which a water container is operably connected by a first length of tubing to a means for pumping having an inlet and a discharge side and operative by a means for actuation, to allow water to be delivered to the inlet side of the means for pumping and discharged from the discharge side thereof, and a means for mounting, wherein the improvement comprises:

a. a diverting valve;

b. a means for spraying water;

c. a second length of flexible tubing and a mouthpiece;

wherein the diverting valve is operably connected to the discharge side of the means for pumping, the second length of flexible tubing, and the means for spraying water; and

wherein said diverting valve is selectively operable between a first position, so as to form a path through which water may flow to and be sprayingly discharged through the means for spraying water, and a second position, so as to form a path through which water may flow through the second length of flexible tubing, said second length of flexible tubing being operably connected and extending from the diverting valve to the mouthpiece which may be placed in a bicycle rider's mouth to allow water to be discharged directly therein.

5,326,125

Patent Not Issued For This Number

5,326,126

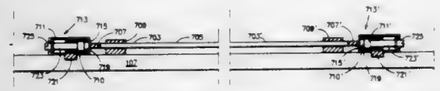
MODIFICATION OF THE FLEXIBILITY OF SKIS

Piero G. Ruffinengo, 820 Edgehill Rd., Salt Lake City, Utah 84103

Division of Ser. No. 900,604, Jun. 18, 1992, Pat. No. 5,269,555, which is a continuation-in-part of Ser. No. 715,598, Jun. 14, 1991, Pat. No. 5,251,923, and a continuation-in-part of Ser. No. 828,140, Jan. 30, 1992, Pat. No 5,280,942. This application Aug. 30, 1993, Ser. No. 114,212

Int. Cl.[5] A63C *5/075*

U.S. Cl. 280—602 **8 Claims**



1. A system for changing the stiffness of a ski, the ski having a forward end and a rearward end, said system comprising:

an elongated, substantially rigid engagement member attached to a ski and having active surfaces with a forward facing end surface and a rearward facing end surface, and support means for supporting said engagement member for movement longitudinally relative to said support means and the ski as the ski bends; and

adjustable impedance means fixed to the ski and having biasing means operatively engaging said forward facing end surface and adjustable impedance means fixed to the ski and having biasing means operatively engaging said rearward facing end surface, as bending moments are applied to the ski tending to cause the ski to bend, for changing the actual bending of the ski beneath said system, each of said biasing means applying a progressively increasing force to respective ones of said forward and rearward end surfaces as the bending of the ski increases.

5,326,127

SAFETY BINDING HEELPIECE FOR SKIS

Jean-Pierre Mercat, Meythet; Roland Bardin, Varennes Vauzelles, and Thierry Wunderlich, Nevers, all of France, assignors to Look, S.A., Nevers Cedex, France

PCT No. PCT/EP92/01380, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/22362, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 17, 1992, Ser. No. 969,166

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4120253

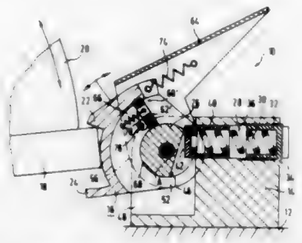
Int. Cl.[5] A63C *9/08*

U.S. Cl. 280—632 **30 Claims**

1. Heel unit (**10**) of a safety ski binding, comprising a base body (**14**) intended to be fixed to a ski (**12**), a return cam (**26**) rotatably mounted on the base body (**14**) about an axis (A) and returned by a first spring device (**28**) into a rotary starting position, a sole holder (**16**) rotatably mounted about the axis (A), a unidirectional blocking arrangement (**60**) arranged be-

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tween the return cam (**26**) and the sole holder (**16**) comprising at least one blocking arrangement (**60**), said blocking arrangement including at least one blocking member for blocking said sole holder in an opening direction of the sole holder and said blocking member being releasable against the slight spring force of a second spring device (**66**) by means of a manual release lever (**64**), one of the return cam (**26**) and the sole holder (**16**) being provided with a bearing face (**68**), having a generally circular shape and being concentric to the axis (A) of the return cam and of the sole holder, for the blocking member



(**62**) which is permanently resiliently urged into a blocking position between the return cam (**26**) and the sole holder (**16**), said blocking member (**62**) being supported in a force-locked manner on the bearing face (**68**) when the sole holder is urged in the opening direction, and permanently engaging the bearing face (**68**) without force transfer when the sole holder is urged in a closing direction, substantially independently of the actual rotary position of the sole holder (**16**) relative to the return cam (**26**), to permit a relative displacement of the sole holder (**16**) with respect to the return cam (**26**) in the closing direction and substantially without effort.

5,326,128

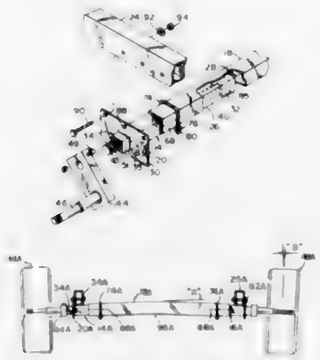
VARIABLE-WIDTH TORSION SPRING AXLE

John D. Cromley, Jr., Grand Rapids, Mich., assignor to CSN Manufacturing, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 756,493, Sep. 9, 1991, Pat. No. 5,163,701. This application Nov. 10, 1992, Ser. No. 974,142

Int. Cl.[5] **B62D** *63/06*; **B60B** *35/10*; **B60G** *3/14*

U.S. Cl. 280—656 **22 Claims**



1. A suspension assembly for attaching wheels to a frame comprising:

a pair of torsion spring subassemblies each including an outer tube and means for connecting the torsion spring subassemblies to the frame;

means for operably mounting a wheel assembly to each of the torsion spring subassemblies; and

means for adjustably interconnecting the pair of torsion spring subassemblies in mutually spaced arrangement to form a unitary axle-like assembly whereby the pair of torsion spring subassemblies can be adjusted to various desired spaced positions for connection to frames having different widths even though the particular width is unknown at the time of manufacture of the suspension assembly.

5,326,129

MEANS FOR A SHOCK ABSORBER

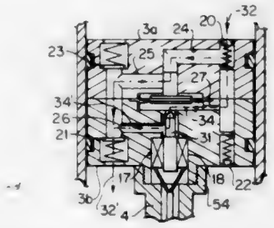
Kenth Öhlin, Sollentuna, and Tommy Malm, Norrahammer, both of Sweden, assignors to Ohlins Racing AB, Vasby, Sweden

Continuation of Ser. No. 360,569, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 93,940, Sep. 8, 1987, abandoned, which is a continuation of Ser. No. 821,730, Dec. 4, 1985, Pat. No. 4,732,408. This application Oct. 2, 1990, Ser. No. 593,386

Claims priority, application Sweden, Apr. 4, 1984, 8401874

Int. Cl.[5] **B60G** *11/26*

U.S. Cl. 280—707 **10 Claims**



1. A shock-absorber for a vehicle connected between a wheel assembly and the vehicle chassis and comprising in combination:

a cylinder, a piston slidably mounted within said cylinder, and means for securing one of said cylinder and piston to the wheel assembly and the other to the chassis, said cylinder defining first and second volumes on the opposite sides of said piston each containing a fluid for controllably dampening movement of said piston in said cylinder;

at least one main fluid flow path for conveying fluid between said first and second volumes in a first direction of flow and for conveying fluid between said second and first volumes in a second opposite direction, the direction of fluid flow in said at least one fluid flow path being at each instant dependent upon whether the pressure in said first volume is greater or less than in said second volume;

at least one control flow passageway extending between said first and second volumes, and means governed at least in part by the difference in pressures between said first and second volumes for generating a control pressure at a predetermined location in said control flow passageway;

valve means for infinitely varying the resistance to fluid flow in said at least one main fluid flow path;

first means responsive to at least one vehicle operating parameter for generating a repetitive signal having a manifestation on each occurrence thereof which corresponds to the instantaneous optimum desired dampening of said shock absorber, said signal having a repetition rate sufficiently high to ensure the generation of a plurality of said signals during a single cycle of reciprocation of said piston in said cylinder;

and second means responsive jointly to at least said manifestation of said repetitive signal and also to the magnitude of said control pressure at said predetermined location for controlling said valve means to infinitely vary the resistance to fluid transfer over said at least one main fluid flow path;

each of said main fluid flow path, said control flow passageway, said means for generating a control pressure, said valve means for infinitely varying the resistance to fluid flow, and said second means being incorporated within the confines of said piston to thereby minimize the length of the fluid flow passageways, minimize friction losses, and reduce the responsive time of the shock absorber.

5,326,130

VEHICLE INSTRUMENT PANEL STRUCTURE

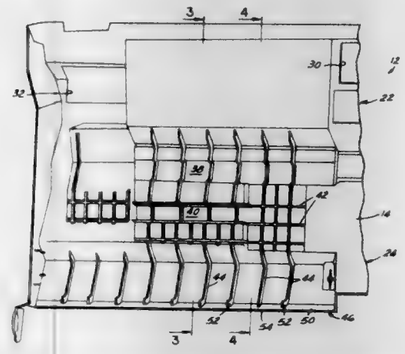
Dale G. Gedeon, Sterling Heights; David D. Segesta, Canton Township, Wayne County; Saad M. Abouzahr, Highland; Joseph J. Randazzo, Troy, and Clifton Ditchfield, Madison Heights, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 4, 1991, Ser. No. 787,174

The portion of the term of this patent subsequent to Dec. 5, 2010, has been disclaimed.

Int. Cl.[5] **B60R** *21/045*

U.S. Cl. 280—752 **3 Claims**



1. A vehicle instrument panel structure for extending transversely across the width of a vehicle interior forwardly of a vehicle occupant seat, the instrument panel structure comprising an upstanding backing plate having a forward face and a rearward face, a layer of foam material on the rearward face of the backing plate, the layer of foam material having a decorative covering thereover, the backing plate comprising a unitary member formed of a plastic material, the backing plate including an upper portion and a lower portion positioned in the path of occupant knee travel occurring upon sudden deceleration of a vehicle, the lower portion functioning as an occupant knee restraint, at least one transverse half of the lower portion including at least two elongated vertically spaced apart horizontally extending hollow rectangularly shaped protuberances centrally thereof positioned in the path of occupant knee travel occurring upon sudden deceleration of a vehicle, the protuberances extending rearwardly from the rearward face of the backing plate, a plurality of spaced apart horizontally extending and spaced apart vertically extending ribs on the forward face of the lower portion, a downwardly and forwardly extending lip having a rearward face and a forward face provided on the bottom of said transverse half of said lower portion, said lip functioning as an occupant ankle restraint, and a plurality of horizontally spaced apart vertically extending ribs on the forward face of the lip, said last mentioned ribs terminating short of the lower edge of the lip.

5,326,131

AIR BAG MOUNTING STRUCTURE FOR AIR BAG DEVICE FOR PASSENGER'S SEAT

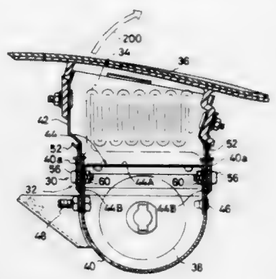
Keishi Yokota; Tadahiro Igawa; Akira Kokeguchi; Takeshi Satoh, and Yoshiaki Sakata, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 77,045

Claims priority, application Japan, Jul. 3, 1992, 4-176781

Int. Cl.[5] **B60R** *21/16*

U.S. Cl. 280—728 A **6 Claims**



1. An air bag mounting structure for an air bag device for a passenger's seat, said air bag device having an air bag with an end portion, comprising,

a retainer fixed with the end portion of the air bag, said retainer including a front-half portion having a rear rim, said end portion of the air bag being arranged to extend over the rear rim; and a rear-half portion attached to the front-half portion,

said rear-half portion including a lower retainer in a form of a container and having a front portion; a middle retainer attached to the lower retainer to cover the front portion of said lower retainer, said middle retainer including a main plate portion extending across the front portion of the lower retainer and having openings for allowing inflation gas to pass therethrough, and a raised portion raised from an end portion of the main plate portion toward the lower retainer and having a tip and a base, said tip of the raised portion being secured to said lower retainer; and a pocket portion formed between the base of the raised portion and the front portion of the lower retainer, said rear rim of the front-half portion together with the end portion of the air bag extending over the rear rim being inserted into the pocket portion, and

insertion members inserted through the pocket portion to secure the front-half and rear-half portions of the retainer and the end portion of the air bag.

5,326,132

REACTION CAN FOR AIR BAG SYSTEM

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Filed Aug. 25, 1992, Ser. No. 934,971

Int. Cl.[5] **B60R** *21/16*

U.S. Cl. 280—732 **6 Claims**

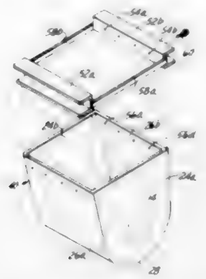
1. A two-piece reaction can (**40**) comprising:

the first piece comprising: a housing (**42**) formed from a light weight pliable material, comprising sides (**24***a*, *b*, **26***a*, *b*) defining an open mouth and a bottom (**28**) generally opposite the mouth;

the second piece comprising: reinforcement means (**50**; **50'**; **50''**, **108**) secured to and surrounding all of the sides, and positioned proximate the mouth to reinforce the housing including a reinforcement collar (**50**) positioned about the mouth and secured thereto and reinforcement straps (**108**)

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extending from one side of the collar across the bottom to another side of the collar, wherein the collar includes two L-shaped pieces positioned against two opposing sides and



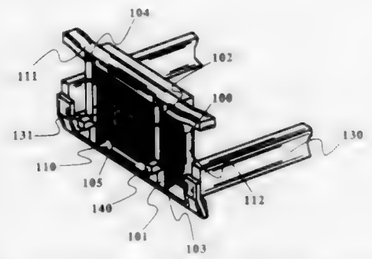
wherein the collar further includes two flat pieces joining the L-shaped pieces and positioned against other sides of the housing.

5,326,133

SENSOR AND BRACKET ASSEMBLY

David S. Breed, Boonton Township, Morris County, and Scott D. Phillips, Rockaway, both of N.J., assignors to Automotive Technologies International Inc., Denville, N.J.

Filed Nov. 20, 1991, Ser. No. 795,035
Int. Cl.[5] B60R *21/32*
U.S. Cl. 280—735 **39 Claims**



1. In a motor vehicle having a front end and occupant protection apparatus which is deployed in the event of a front end that crushes the front end of the vehicle to a prescribed depth requiring deployment of said occupant protection apparatus, said prescribed depth being the rearmost boundary surface of the crush zone at the time that sensor triggering is required, said boundary located between the crushed front end and the remainder of the vehicle, a displacement measuring device for determining that said front end of said vehicle has crushed to said rearmost surface of the crush zone comprising:

(a) an elongate bracket mounted in said front end of said vehicle, at least a part of said bracket is at said rearmost surface of the crush zone, said bracket having two ends and a strip of deformable material between said two ends; and

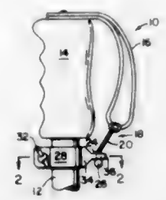
(b) sensing means for sensing the physical deformation of said bracket during a front end impact of said vehicle to initiate deployment of said occupant protection apparatus.

5,326,134

SKI POLE LATCH

E. Bruce Hiser, 464A Snyders Lake Rd., R.D. #4, Troy, N.Y. 12180

Filed Jul. 2, 1993, Ser. No. 86,690
Int. Cl.[5] A63C *11/22*
U.S. Cl. 280—822 **3 Claims**



1. In an improved ski pole having an elongate shaft, a hand grip at one end of said shaft to be held by a skier and a hand strap attached to the pole, the improvement comprising:

a flaccid connector having a first portion secured to the hand strap, a second portion of said connector forming an attachment means;

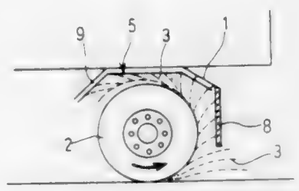
a reception means secured to said pole, said reception means adapted to receive and engage said attachment means forming an enclosure bound by the ski pole, the strap, the connector and the reception means, at least one interface of the enclosure between said pole, hand strap connector and reception means being detachable for opening and closing the enclosure whereby a skier may removably secure the pole to a ski lift during use; wherein the hand strap forms a loop and a loop and said first portion of the connector extends through said loop and attaches to itself by a collar member.

5,326,135

VEHICLE WHEEL SPLASH ATTENUATOR

Takeshi Nakayama; Itaru Kurimoto, both of Kanagawa, and Koutaro Endo, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Aug. 17, 1992, Ser. No. 931,230
Claims priority, application Japan, Aug. 19, 1991, 3-231016
Int. Cl.[5] B62D *25/16*
U.S. Cl. 280—850 **3 Claims**



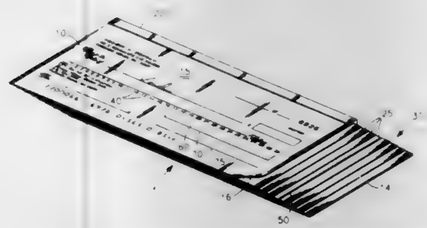
1. A splash attenuator for a vehicle tire, consisting of a deflection-suppressing member disposed opposite an inner face of a tire housing at a distance greater than 15 mm, spacer means disposed between said deflection-suppressing member and the inner face, and fastening means interconnecting the tire housing, spacer means and deflection-suppressing member to form an air space between the inner face and said deflection-suppressing member, said deflection-suppressing member having a plurality of strands projecting towards said tire defining a plurality of apertures for transmitting water flung from said tire through said apertures and into said air space, said deflection-suppressing member having a total surface area facing said tire, said plurality of apertures having a combined surface area facing said tire ranging from 25 to 55% of said total surface area and a length of each aperture in a circumferential direction of the tire ranges from 30 to 150 mm, each strand having a width facing said tire ranging from 2 to 15 mm and at least some of said strands having a triangular cross-section with an apex directed towards said tire and a bottom directed towards said inner face, whereby said deflection-suppressing member suppresses deflection of water passing through said apertures into said air space and impinging on the inner face of the tire housing.

5,326,136

CHECK BOOK WITH FORGERY AND THEFT INHIBITING FEATURES

Lawrence R. Doyle, P.O. Box 3172, Wrightwood, Calif. 92397

Filed Apr. 12, 1993, Ser. No. 45,641
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—58 **8 Claims**



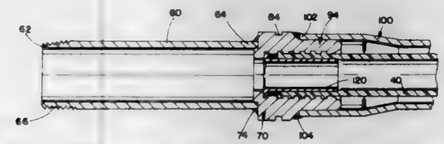
1. A check book comprising a plurality of rectangular paper checks each having a face and a back, the back of each preceding said check in contact with the face of each succeeding said check, all removably bound in offset stacked alignment such that a portion of the face of each said check is simultaneously visible with the book frontally viewed, each said succeeding face including thereon a marker stripe normally covered from view by each said preceding check such that if any said succeeding check is removed from the check book before the immediately said preceding check, the stripe of that said check following the removed said check is rendered visible when frontally viewed, thus visually indicating the missing said removed check whereby theft of a check from the check book is early indicated.

5,326,137

GAS RISER APPARATUS AND METHOD

James M. Lorenz, Madison; James L. Bucks, and John C. Bucks, both of Mentor, all of Ohio, assignors to Perfection Corporation, Madison, Ohio

Continuation-in-part of Ser. No. 764,458, Sep. 24, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,665
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—55 **35 Claims**



28. An assembled plastic-to-metal transition joint for use in gas risers, said joint comprising:

a metal pipe fitting;

a metal casing;

an adaptor sleeve having first and second ends and a set of grooves defined in an inner surface thereof, the first end of the adaptor sleeve being received within the metal pipe fitting and the second end of the adaptor sleeve being received within a first end of the casing, the pipe fitting and the casing first end being welded to said adaptor sleeve; and,

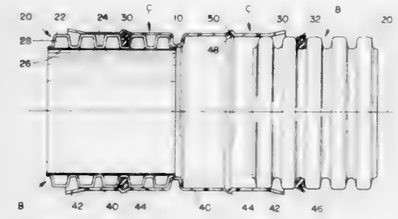
a plastic tube generally coaxially disposed within the casing, an outer surface of the tube near the first end being deformed into locking engagement with the grooves, the engagement preventing axial movement of the tube within the casing.

5,326,138

HIGH PRESSURE COUPLING FOR PLASTIC PIPE AND CONDUIT

Timothy S. Claes, Findlay; Dean A. Orians, Carey, and Stephen W. Switzer, Findlay, all of Ohio, assignors to Hancor, Inc., Findlay, Ohio

Filed Oct. 16, 1992, Ser. No. 962,984
Int. Cl.[5] F16L *17/03*
U.S. Cl. 285—110 **17 Claims**



1. A tubing coupling system comprising:

a first bell having a generally cylindrical interior surface and defining an annular groove peripherally around the interior surface;

a first length of corrugated tubing having a corrugated side wall defined by alternating, annular peak and valley portions and a smooth flexible inner liner connected with an inner surface of the valley portions to define a smooth, cylindrical interior fluid carrying surface, annular chambers being defined between the inner liner and each peak portion, under internal fluid pressure, the liner is urged into the annular chambers urging the valleys to move toward each other reducing a width of the peaks which urges the corrugated tubing length to shorten which shortening of the corrugated tubing length is resisted by backfill in the valley portions;

a first gasket received in one of the corrugation valley portions adjacent an end of the corrugated tubing length, the gasket having a resilient, outward projecting flange, the flange being resiliently biased to project outward beyond an outer diameter of the peak portions and an inner diameter of the bell cylindrical interior surface, the internal fluid pressure pushes fluid around the tubing end and against an inner surface of the gasket causing the gasket to function as a piston urging the corrugated tubing length to contract and urging the tubing end out of the bell, the valleys adjacent the tubing end which are received in the bell being shielded by the bell from receiving backfill which resists shortening, the flange portion being compressed into the one valley portion as the end of the corrugated tubing length is received into the bell until the gasket and flange portion reach the annular groove and the gasket flange portion being resiliently biased into the groove such that the flange portion interacts with the annular groove to block decoupling sliding movement of the gasket relative to the bell preventing the tubing length from contracting.

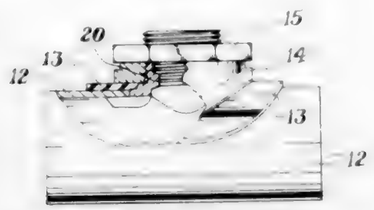
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5,326,139

COUPLING DEVICE FOR BRANCH POINTS ON A PIPE

Daniel P. Corcoran, 4871 Appletree La., Bay City, Mich. 48706

Filed Sep. 8, 1992, Ser. No. 941,896
Int. Cl.[5] F16L *5/00, 41/00*
U.S. Cl. 285—197 3 Claims



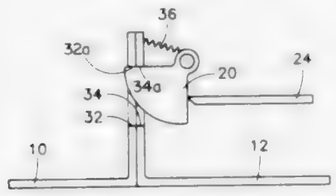
3. In combination:
a main pipe having an opening with edges, said opening extending through a wall of said main pipe and, said opening containing therein a stem pipe having an exterior threaded surface and a saddle-shaped base member bearing two sets of diametrically opposed integral lugs;
said stem pipe having surmounted thereon, a flat gasket, a collar, and a locking means, to lock the stem pipe, surmounted by the gasket and collar, in the opening, wherein the saddle-shaped base member is in alignment with the edges of the opening in the main pipe to prevent rotation of the saddle-shaped base member in the opening.

5,326,140

SUBMERGED CAM ACTUATED ROTARY LATCH FOR FRONT ACCESS PANELS

James F. Randall, Fountain Valley, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 12, 1993, Ser. No. 46,824
Int. Cl.[5] E05C *3/06*
U.S. Cl. 292—47 28 Claims



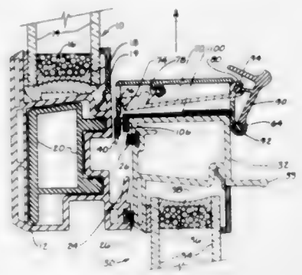
1. A cam actuated rotary latch apparatus for locking a front access panel relative to a panel member adjacent and parallel said front access panel, comprising
a first striker connected to and extending inwardly from an edge of said front access panel and having a first opening therein;
a second striker connected to said panel member and being parallel to said first striker whenever said front access panel and said panel member are mutually parallel in a closed position, said second striker having a second opening therein which is aligned with said first opening whenever said panel member and said front access panel are in said closed position;
a rotary latch rotatable about a first axis which is fixed relative to said panel member between a locked position in which said rotary latch is at least partly inserted through said first and second openings and an unlocked position in which said rotary latch is withdrawn from at least said first opening; and
a cam engaging said rotary latch and having an eccentric region of maximum extent and a normal region of minimum extent, said cam being movable in a plane parallel to a plane of said panel member between a closed position at which said eccentric region abuts said rotary latch inserted through said first and second openings and an open position at which said normal region faces said rotary latch withdrawn from at least said first opening, said cam being located near and submerged relative to said plane of said panel member, whereby user access to said cam without protrusion of said cam beyond an external surface of said panel member is permitted.

5,326,141

RETRACTABLE, SELF-LOCKING WINDOW LATCH

Wildridge H. Gorman, Gig Harbor, Wash., assignor to Milgard Manufacturing, Inc., Tacoma, Wash.

Filed Jun. 22, 1993, Ser. No. 80,967
Int. Cl.[5] E05C *5/00*
U.S. Cl. 292—66 10 Claims



1. A retractable window latch for locking together a first and a second window having interlocking meeting rails, comprising:
a latch body for securing to a frame of the first window, wherein the latch body includes a faceplate for being substantially flush with a first interlocking meeting rail of the first window;
a retractable bolt disposed in the latch body and extending outwardly through a slot in the faceplate, the bolt having a groove disposed at an outer end of the bolt;
a handle coupled to the bolt for retracting the bolt into the latch body such that the groove engages the faceplate;
a spring disposed between the latch body and the bolt for extending the bolt outwardly from the latch body; and
a flexible release disposed behind the faceplate of the latch body, wherein the release engages a second interlocking meeting rail of the second window such that the retractable bolt is lifted from the faceplate and extended outwardly from the latch body by the spring.

5,326,142

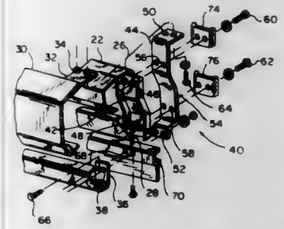
TRUCK WITH BRUSH/GRILL GUARD, SLANTED TUBULAR BUMPER, RALLY BAR AND RALLY BAR LIGHTS

David C. Dodds, Mason, Ohio; Ned J. Hart, Southfield, and Michael C. Allen, Royal Oak, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1993, Ser. No. 114,883
Int. Cl.[5] B60R *19/52*
U.S. Cl. 293—115 20 Claims

1. A guard and bumper assembly for a truck front bumper having a front surface, an upwardly extending lower flange positioned behind said front surface, and a downwardly extending upper flange positioned behind said front surface, said guard assembly comprising:
a brush guard having an upper flange with an opening and a lower flange with an opening;

a front mounting bracket having an upper end portion with an opening and being positionable between said upper flange and said front surface, and a lower end portion with an opening and being positionable between said lower flange and said front surface; and
a rear mounting bracket having an upper end portion with an opening, a lower end portion with an opening and a middle portion intermediate said upper and lower end portions, said middle portion having an upper opening alignable with said opening of said upper end portion of said front mounting bracket and a lower opening alignable with said opening of said lower end portion of said front mounting bracket to thereby sandwich said upper and lower flanges between said front and rear mounting brackets, said upper and lower end portion openings being respectively alignable with said upper and lower flange openings of said brush guard for mounting said brush guard on said rear bracket.

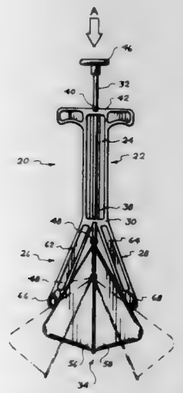


5,326,143

REFUSE COLLECTING DEVICE

Egon S. Babler, Northbrook, Ill., assignor to EMD Technologies, Inc., Bensenville, Ill.

Filed May 8, 1992, Ser. No. 880,459
Int. Cl.[5] A01K *29/00*
U.S. Cl. 294—1.4 9 Claims



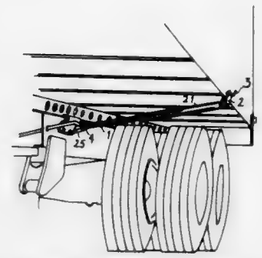
1. A device for collecting refuse comprising:
a frame member configured with a longitudinal channel, having an upper end, a lower end, and a pair of legs extending outwardly from the lower end of said frame member, and an actuating member slidably extending through said channel;
a disposable container having two half sections each half section having a substantially triangular cross section and a hinge connecting said two half sections; and
a U-shaped retaining member located between said legs for releasably retaining said hinge of said disposable container to said actuating member, said U-shaped retaining member having one upper portion, one curved portion, and one retaining arm, said upper portion secured to said actuating member and extending from said actuating member to said curved portion, said retaining arm being longer than said upper portion of said U-shaped retaining member and extending from the opposite end of said curved portion, said upper portion being substantially parallel to said retaining arm and being substantially orthogonal to said channel.

5,326,144

SEMITRAILER SLIDING TANDEM PIN PULLER

Clarence D. Forcier, 2330 Lexington Ave. S., Mendota Heights, Minn. 55120

Filed Jul. 26, 1993, Ser. No. 95,526
Int. Cl.[5] B25B *5/14*
U.S. Cl. 294—19.1 1 Claim



1. A device for pulling the pins of the sliding tandem frame of a truck semitrailer, said device comprising:
a spring having a ring at one end and a hook at the opposite end thereof;
a clamp comprising a first straight piece and a second generally L-shaped piece, wherein the shorter side of said second L-shaped piece is perpendicular to said first piece and the longer side of said second L-shaped piece is parallel to said first piece and defines a generally U-shaped space between itself and said first piece;
said clamp having defined into it a first opening in said first straight piece into which said hook of said spring is inserted,and a second opening defined into said longer side of said second L-shaped piece;
a combination locking stud and handle, wherein said locking stud is threaded and fits into said second opening defined into said clamp, and wherein said handle is formed perpendicular to said locking stud and wherein said handle has flattened sides;
a hollow, generally tubular guard fitted over said spring;
and a wire having a signal flag at one end, wherein said wire is tied around said spring and is passed to the outside through an eye formed into said guard, said wire extending a sufficient length so that said flag will extend beyond the semitrailer frame when the pins of the sliding tandem are pulled.

5,326,145

GOLF BALL RETRIEVER

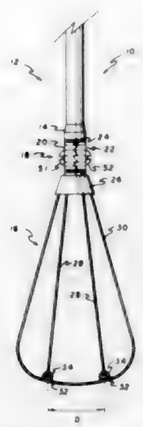
Do J. Lee, 2416 Winterstone, Plano, Tex. 75023

Filed Nov. 24, 1993, Ser. No. 156,703
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 4 Claims

1. A golf ball retriever for retrieving a regulation golf ball from a hazardous location, comprising;
an elongated handle having a front end thereof;
a cage element attached to said front end, said cage element

having a head portion and three flexible individual looping members extending out from said head portion, each one thereof forming a capturing loop about the periphery thereof, each of said three flexible individual looping members fixedly secured to said head portion; and

a retaining flexible loop element of said cage element fixedly secured to said head portion, said retaining flexible loop



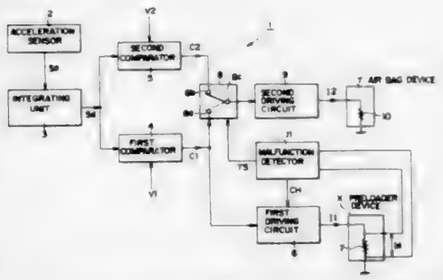
element including three engaging loops, each one of said engaging loops enclosed about each one of said three flexible individual looping members at a distal portion thereof relative to said head portion,

wherein, the retaining flexible loop element is within a plane perpendicular to all three planes formed by the capturing loops of the three flexible individual looping members.

5,326,146
APPARATUS FOR CONTROLLING A PLURALITY OF VEHICLE SAFETY DEVICES

Kunihiro Takeuchi, Higashimatsuyama, Japan, assignor to Airbag Systems Company, Ltd., Tomioka, Japan

Filed Feb. 19, 1993, Ser. No. 19,673
Claims priority, application Japan, Feb. 26, 1992, 4-072998
Int. Cl.[5] B60R *21/16, 21/32*
U.S. Cl. 280—735 **9 Claims**



1. An apparatus for controlling a plurality of vehicle safety devices, comprising:

sensor means for detecting vehicle acceleration;

integrating means for carrying out integration processing of output from the sensor means for vehicle collision detection;

first discrimination means for discriminating whether or not an output level from the integrating means has reached a predetermined first reference level;

first means for activating a first vehicle safety device in response to the discrimination output from the first discrimination means;

second discrimination means for discriminating whether or not an output level from the integrating means has reached a predetermined second reference level for activating another vehicle safety device after the elapse of a prescribed time from the activation of the first vehicle safety device;

malfunction detection means for detecting whether or not any malfunction has occurred in the activation system of the first vehicle safety device;

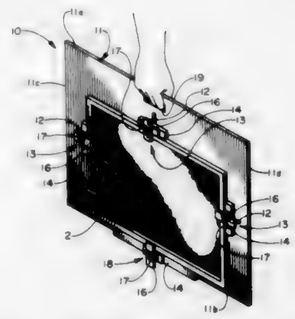
selection means that in accordance with the output of the malfunction detection means selects the output of the second discrimination means when it is determined that there is no malfunction in the activation system of the first vehicle safety system, and selects the output of the first discrimination means when it is determined that there is a malfunction in the activation system of the first vehicle safety system; and

second means for activating another vehicle safety device in response to the selection by the selection means.

5,326,147
DEVICE FOR CARRYING ARTWORKS

Nancy H. Watson, 1535 Helen Ct., Merced, Calif. 95340

Filed Oct. 28, 1992, Ser. No. 967,826
Int. Cl.[5] B65D *71/00*
U.S. Cl. 294—162 **14 Claims**

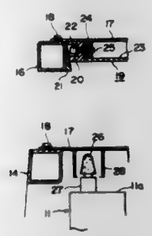


1. A device for carrying artworks, oil paintings and prints, the artwork including edges, a back side and an opposite front side having the artist's media thereon, the device comprising: a base for receiving the artwork thereon, the base having a top, a bottom and two opposite edges, at least two adjustable clamps carried by the base for clamping respective opposite edges of the artwork, means on the adjustable clamps for spacing the front side of the artwork from the base, so that the front side of the artwork having the artist's media thereon is secured to the device with minimal damage thereto, each of the adjustable clamps being selectively moveable along respective axes, whereby the precise positioning of the respective clamps may be selectively adjusted to accommodate artworks of various sizes and shapes, wherein each of the adjustable clamps include a respective moveable clamping flange, so as to be at least partly rotatable relative thereto, whereby with the respective clamps positioned as desired the clamping flange thereof may be at least partly rotated over the opposite edges of the back side of the artwork, such that the artwork is secured to the base for being carried by the device.

5,326,148
OPERATOR COMPARTMENT PROTECTING DEVICE FOR CONSTRUCTION VEHICLES

Toshio Kojima, and Hiroshi Ishida, both of Kashiwazaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,432
Claims priority, application Japan, Dec. 12, 1991, 109485
Int. Cl.[5] B62D *33/06;* **B60R** *21/13*
U.S. Cl. 296—190 **20 Claims**



1. An operator compartment protecting device, said device being adapted to be mounted beside and above an operator compartment on a vehicle body of a construction vehicle, said device comprising:

at least one support adapted to extend upwardly from the vehicle body;

a pair of beam members secured to an upper end portion of said at least one support in such a manner that they extend along opposite sides of the operator compartment, said beam members forming an opening therebetween above the operator compartment with the distance between said beam members being at least slightly greater than the corresponding dimension of the operator compartment;

a ceiling plate releasable secured to at least said pair of beam members, whereby upon said ceiling plate being released from said at least said pair of beam members the operator compartment can be lifted through the opening between said beam members;

at least one laterally extending reinforcing member fixed to a surface of said ceiling plate, each reinforcing member having first and second longitudinally spaced apart end portions, a first force-transmitting adjusting block adjustably mounted on said first end portion, a second force-transmitting adjusting block adjustably mounted on said second end portion, each said force-transmitting adjusting block making contact with a side surface of a respective one of said beam members, whereby the positions of said first and second force-transmitting adjusting blocks with respect to the associated reinforcing member can be varied.

5. An operator compartment protecting device, said device being adapted to be mounted beside and above an operator compartment on a vehicle body of a construction vehicle, said device comprising:

at least one support adapted to extend upwardly from the vehicle body;

a pair of beam members secured to an upper end portion of said at least one support in such a manner that they extend along opposite sides of the operator compartment, said beam members forming an opening therebetween above the operator compartment with the distance between said beam members being at least slightly greater than the corresponding dimension of the operator compartment;

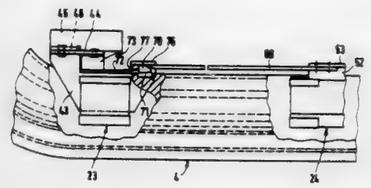
a ceiling plate releasably secured to at least said pair of beam members, whereby upon said ceiling plate being released from said at least said pair of beam members the operator compartment can be lifted through the opening between said beam members; and

a plurality of tubular guides fixed to a lower surface of said ceiling plate, each of said tubular guides being adapted to telescopically receive therein a respective one of a plurality of columnar support members mounted at spaced apart locations on an upper surface of the operator compartment.

5,326,149
BLOCKING DEVICE FOR SLIDING-LIFTING ROOFS FOR AUTOMOBILE

Albert Schlapp, Dreieich, Fed. Rep. of Germany, assignor to Rockwell Golde GmbH, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,335
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200724
Int. Cl.[5] B60J *7/19*
U.S. Cl. 296—224 **6 Claims**

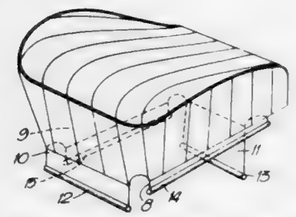


1. A blocking device for sliding-lifting roofs for roof openings of automobiles, the roof comprising a rigid sliding lid which is guided with forward and rear guide shoes on guide rails fixed laterally to the roof opening, the roof is connected in the rear region to pivoting-out elements and is pivotally journalled by pivot bearings mounted on the forward guide shoes about a horizontal axis extending transversely to the direction of sliding, blocking elements, disposed on at least one side of the sliding lid (3), comprising a control rod (69) fixed to the rear guide shoe (24) and slidably guided on the adjacent forward guide shoe (23), a detent element (70) actuated by the control rod (69), and a detent recess (71) on a guide rail outer frame (4) receiving the detent element (70) in a tilted position of the roof, the detent element (70) is attached to the forward guide shoe (23) and is continually biased by a spring (72) in the direction of moving out of the detent recess (71).

5,326,150
UPHOLSTERY FABRIC

Frank Robinson; Gerald F. Day, both of Derbyshire, and Keith Jeffcoat, Warwickshire, all of United Kingdom, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 412,173, Sep. 25, 1989. This application Sep. 30, 1991, Ser. No. 767,219
Claims priority, application United Kingdom, Sep. 22, 1988, 8822638
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[5] A47C *27/00*
U.S. Cl. 297—218 **14 Claims**



1. A piece of machine-knitted upholstery fabric for covering at least part of a surface of a three-dimensional support which

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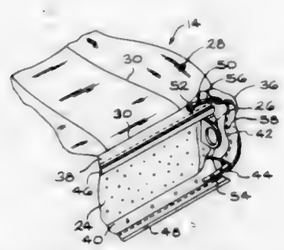
comprises a main portion comprising a knitted sequence of intermeshed loops of yarn and one or more tubular fabric portions integral with the main portion at location(s) where each such tubular fabric portion can serve as an anchorage device for facilitating the securing of the upholstery fabric piece to said support, each such tubular fabric portion comprising a knitted sequence of intermeshed loops of yarn of which loops of yarn at each end of said sequence intermesh with loops of yarn comprising the main portion whereby the main and tubular portion comprise an integral knitted structure.

5,326,151

SEAT COVER MEMBER WITH CABLE TIE CLOSURE

William M. Smith, Allen Park, and Marie T. Brooks, Pinckney, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Sep. 15, 1992, Ser. No. 944,987
Int. Cl.[5] A47C *31/00*
U.S. Cl. 297—219.1 **8 Claims**



1. A cover member for an article having a protuberance extending therefrom comprising:

one or more pieces of a sheet material joined together to form an envelope having a peripheral edge at an open end through which said article is inserted into said envelope with said protuberance extending from said envelope through said open end; and

means for closing said open end around said article and said protuberance with said protuberance extending through said open end, said closing means including a channel along a portion of said peripheral edge having first and second ends, a closure strap within said channel having an elongated body portion and first and second ends extending from the ends of said channel, said closure strap being tightly wrapped around said protuberance, said strap having a receptacle at said first end with a passage therethrough and a flexible locking tab extending into said passage and said strap body portion having a plurality of teeth transverse to the length of said body portion for engagement with said flexible tab when said body is inserted into said passage to hold said body portion in said housing forming a closed loop of desired length whereby said portion of said peripheral edge is drawn tightly around said protuberance.

5,326,152

FOLDING LAWN CHAIR COVER

Richard K. Baron, 8216 Briarwood La., Austin, Tex. 78758

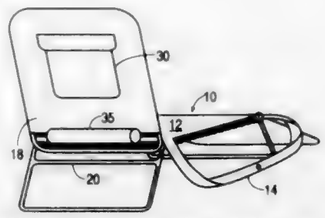
Filed Jan. 11, 1993, Ser. No. 2,579
Int. Cl.[5] A47C *4/34, 31/10*
U.S. Cl. 297—229 **4 Claims**

1. A cover for a folding lounge chair including a seat portion, a leg-rest portion, and a back-rest portion, said cover comprising:

a main cover formed of a material that substantially covers said seat portion, said leg-rest portion, and said back-rest portion of said folding lounge chair, wherein said main cover includes a first end, a second end, and a first side that extends between said first end and said second end;

a first flap formed in the proximity of said first end of said main cover for securing said main cover to said back-rest portion of said folding lounge chair;

a second flap formed in the proximity of said second end of said main cover for securing said main cover to said leg-rest portion of said folding lounge chair; and



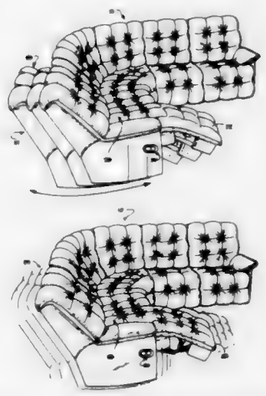
a shoulder strap attached at a first location along said first side of said main cover and at a second location along said first side of said main cover such that a person can support and carry said folding lounge chair with said shoulder strap when said folding lounge chair is in a folded position.

5,326,153

SOFA, LOVE SEAT, SECTIONAL OR MODULAR FURNITURE ARRANGEMENT WITH GLIDER/ROCKER RECLINER

James V. Muffi, Rte. 7, Box 399, Tupelo, Miss. 38801

Filed Oct. 20, 1992, Ser. No. 963,845
Int. Cl.[5] A47C *15/00, 1/02*
U.S. Cl. 297—232 **5 Claims**



1. A sofa, love seat, sectional or modular furniture arrangement comprising:

at least one seating section, and

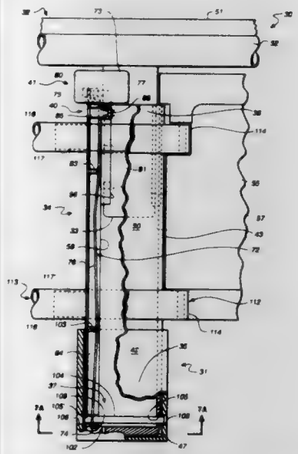
at least one glider/rocker recliner without an arm at one end placed adjacent to said seating section, whereby said seating section and said glider/rocker recliner together form the sofa, love seat, sectional or modular furniture arrangement.

5,326,154

SINGLE-POST, HEIGHT-ADJUSTABLE AND REMOVABLE ARMREST APPARATUS FOR A WHEELCHAIR

Daniel E. Williamson, and Gordon Stout, both of Fresno, Calif., assignors to Quickie Designs Inc., Fresno, Calif.

Filed Nov. 17, 1992, Ser. No. 977,573
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—411.36 **49 Claims**



1. A height-adjustable, removable armrest apparatus for a wheelchair having wheelchair frame means, said armrest apparatus comprising:

a base member formed for mounting to said wheelchair frame means;

an arm support assembly including a height-adjustable armrest post;

an elongated mounting assembly having a mounting end and an opposite armrest post engaging end;

a locking mechanism movably mounted to one of said mounting end of said mounting assembly and said base member for locking engagement with the other of said base member and said assembly mounting end, respectively, said locking mechanism being movable between a locked condition, locking said mounting end to said base member, and a unlocked condition, releasing said mounting end from said base member;

a securing mechanism movably mounted to one of said armrest post and said engaging end of said mounting assembly for locking engagement with the other of said assembly engaging end and armrest post, respectively, said securing mechanism being movable between a secured condition, locking said armrest post to said mounting assembly, and an unsecured condition, permitting height adjusting movement of said armrest post relative to said engaging end; and

a manually engageable single latch assembly co-operably coupled to both said locking mechanism and said securing mechanism, and formed for simultaneous cooperating movement, between said locking mechanism and said securing mechanism, of a selected one of:

(i) the locking mechanism from said locked condition to said unlocked condition, while said securing mechanism is retained in said secured condition, and

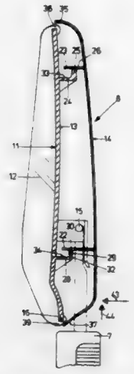
(ii) the securing mechanism from said secured condition to said unsecured condition, while said locking mechanism is retained in said locked condition.

5,326,155

BACK REST FOR A CHAIR

Konrad Wild, Engelthal, Fed. Rep. of Germany, assignor to Friedrich W. Dauphin GmbH & Co. Entwicklungs- und Beteiligungs-KG, Neukirchen, Fed. Rep. of Germany

Filed Feb. 14, 1992, Ser. No. 834,944
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1991, 4107451
Int. Cl.[5] A47C *7/14*
U.S. Cl. 297—452.38 **14 Claims**



1. A back rest for a chair, in particular an office chair, comprising

a base plate (**11**) having a rear side and edges (**16, 19, 41**); and

a concealing shell (**14**) having rims (**35, 37, 42**), the concealing shell (**14**) being disposed at the rear side of the base plate (**11**), and concealing with said rims (**35, 37, 42**) the base plate (**11**) in an area of said edges (**16, 19, 41**),

wherein the base plate (**11**) and the concealing shell (**14**) each are provided with connecting elements, which are engageable with each other and a pair of which forms a hook connection, which hook connection is lockable or releasable by displacing the base plate (**11**) and the concealing shell (**14**) in relation to each other and in a direction of displacement (**38**) substantially parallel to each other

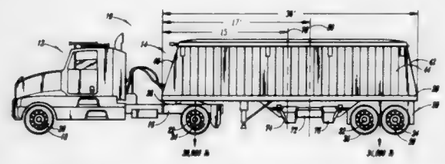
wherein the base plate (**11**) is provided with a padding (**12**), which embraces said edges (**16, 19, 41**) of the base plate (**11**) with padding strips (**36, 39**).

5,326,156

TRAILER CONSTRUCTION

Merle J. Heider, 203-12th St. SW.; Dale J. Heider, 1108 Eighth Ave. SW.; Leon J. Heider, 1107 Third Ave. SW., and Craig J. Heider, 812 S. Taft St., all of Humboldt, Iowa 50548

Filed Jun. 19, 1992, Ser. No. 901,125
Int. Cl.[5] B60P *1/56*
U.S. Cl. 298—24 **8 Claims**



1. An improvement in a tractor-trailer assembly comprising a trailer frame having front and rear ends, a tandem wheel and axle assembly connected to and supporting said trailer frame

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adjacent said rear end thereof, a tractor frame having a front wheel and axle assembly and a rear wheel and single axle assembly spaced apart from one another, and a fifth wheel positioned between said front wheel and axle assembly and said rear wheel and single axle assembly, coupling means detachably coupling said front end of said trailer frame to said fifth wheel whereby first, second, and third portions of the load carried by said trailer frame are transferred to a supporting surface through said tandem axle and wheel assembly, said rear wheel and single axle assembly, and said front wheel and axle assembly, respectively; said improvement comprising:

a pair of elongated sidewalls attached to said frame in spaced parallel relation to one another;

an elongated bottom wall between said pair of sidewalls and combining therewith to form a carrying compartment;

said bottom wall having a longitudinal axis, a forward end, a rear end, a front sloping portion, a rear sloping portion, and an intermediate portion, said front and rear sloping portions extending from said front and rear bottom wall ends respectively in a downwardly inclined direction toward said intermediate portion, said intermediate portion being between said front and rear inclined portions and being offset rearwardly from the longitudinal midpoint of said trailer frame, whereby the weight of a cargo within said carrying compartment will be distribute dina greater magnitude to said tandem wheel and axle assembly of said trailer frame than to said rear wheel and single axle assembly of said tractor frame;

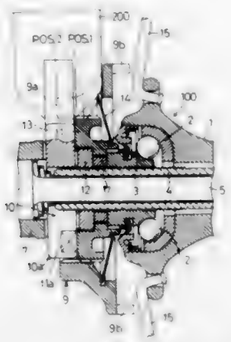
said intermediate portion of said bottom wall being positioned so that said weight of said cargo is distributed between said tandem wheel and axle assembly of said trailer frame and said rear wheel and single axle assembly of said tractor frame at a ratio of approximately 17:10.

5,326,157

WHEEL MOUNTING APPARATUS FOR A BICYCLE

Masashi Nagano, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jun. 29, 1992, Ser. No. 905,402
Claims priority, application Japan, Jul. 1, 1991, 3-160254
Int. Cl.[5] B60B *27/06*
U.S. Cl. 301—110.5 **5 Claims**



3. A wheel mounting apparatus for attaching a wheel to wheel forks of a body frame of a bicycle, comprising:

axle means for rotatably supporting said wheel and connecting said wheel to said wheel forks, said axle means including a pair of end portions for holding said wheel between said wheel forks;

locking means for preventing detachment of said axle means from said wheel forks, said locking means being switchable between an operative position to prevent detachment of said axle means from said wheel forks, and an inoperative position to allow detachment of said axle means from said body frame; and

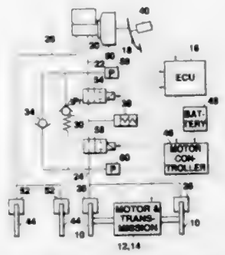
control means responsive to rotation of said wheel relative to said wheel forks to automatically switch said locking means from said inoperative position to said operative position.

5,326,158

BRAKE CONTROLLING APPARATUS FOR ELECTRIC VEHICLE

Harumi Obori, Toyota, and Shirou Monzaki, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 16, 1992, Ser. No. 991,196
Claims priority, application Japan, Dec. 24, 1991, 3-341300
Int. Cl.[5] B60L *7/24;* **B60T** *13/74*
U.S. Cl. 303—3 **20 Claims**



1. A brake controlling apparatus installed in an electric vehicle provided with a hydraulic braking means and a regenerative braking means, wherein said hydraulic braking means includes a fluid pressure generating means for generating a fluid pressure in accordance with the command for braking and a fluid pressure applying means having a characteristic in which the fluid consumption rises in the fluid-pressure range of 0 to P_0, and brakes driving wheels by the fluid pressure of said fluid pressure applying means, and said regenerative braking means brakes the driving wheels by the regeneration of the power of a driving motor, said brake controlling apparatus comprising:

a fluid flow cut-off means for cutting off the flow of hydraulic fluid from said fluid pressure generating means to said fluid pressure applying means when the fluid pressure of said fluid pressure generating means exceeds P_0;

a fluid flow inducing means for inducing the flow of hydraulic fluid from said fluid pressure generating means to said fluid pressure applying means while maintaining the pressure difference between said fluid pressure generating means and said fluid pressure applying means when the pressure difference exceeds ΔP_r;

a fluid consuming means for consuming the hydraulic fluid of said fluid pressure generating means with the characteristic approximate to the fluid consumption characteristic of said fluid pressure applying means when said fluid flow inducing means is inoperative; and

a regenerative braking controlling means for controlling said regenerative braking means in correspondence with the pressure difference between said fluid pressure generating means and said fluid pressure applying means;

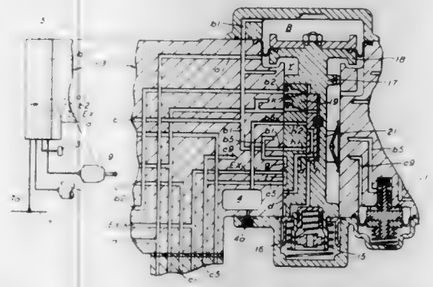
wherein the fluid consumption characteristic observed at said fluid pressure generating means is approximate to the fluid consumption characteristic of said fluid pressure applying means.

5,326,159

QUICK SERVICE LIMITING VALVE FOR FREIGHT BRAKE CONTROL VALVE DEVICE

James E. Hart, Trafford, and Edward W. Gaughan, Irwin, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 6, 1993, Ser. No. 132,261
Int. Cl.[5] B60T *17/04*
U.S. Cl. 303—38 **29 Claims**



1. For a railway car equipped with a fluid pressurized brake pipe and a fluid pressure operated brake cylinder device, a quick service limiting valve device comprising:

(a) a control piston having an application zone, a cut-off zone, and a limit zone intermediate said application and cut-off zones;

(b) fluid flow path means for conducting fluid under pressure from said brake pipe to said brake cylinder device in said application zone of said control piston;

(c) a control chamber in said fluid flow path means in which said control piston is operably disposed so as to be subject to the fluid pressure effective in said control chamber;

(d) first valve means for interrupting said fluid flow path means when said control piston is in said limit zone in accordance with the fluid pressure effective in said control chamber exceeding a first predetermined value;

(e) second valve means for providing a redundant cut-off of said fluid flow path means with said first valve means when said control piston is in said cut-off zone in accordance with the fluid pressure in said control chamber exceeding a second predetermined pressure greater than said first predetermined pressure; and

(f) said fluid flow path means including means for bypassing said second valve means when said control piston is in said application and limit zones in accordance with the fluid pressure in said control chamber being less than said second predetermined pressure.

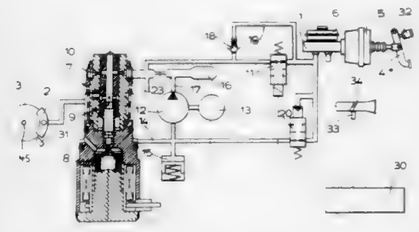
5,326,160

HYDRAULIC SYSTEMS FOR VEHICLES

John P. Bayliss, Worcestershire, and Sean Byrnes, Birmingham, both of England, assignors to Lucas Industries public limited company, England

Filed Nov. 30, 1992, Ser. No. 982,856
Claims priority, application United Kingdom, Dec. 11, 1991, 9126317; Dec. 11, 1991, 9126319; Dec. 20, 1991, 9127087; Mar. 30, 1992, 9206882
Int. Cl.[5] B60T *8/34*
U.S. Cl. 303—113.2 **12 Claims**

1. An hydraulic system for a vehicle of the type having a throttle for an engine controlled by a pedal, a front pair of first and second wheels and a rear pair of first and second wheels, means for driving said first and second wheels of at least one of said pairs, and a hydraulically actuated brake provided on each wheel of said wheels, the system comprising a hydraulic master cylinder assembly for applying all said brakes, a speed sensor for each said wheel for sensing the speed of rotation of each said wheel, modulator means for modulating the supply of fluid from said master cylinder assembly to said brakes, an electronic control module which receives signals from the speed sensors and incorporates means operative to actuate said modulator means in turn to control operation of a respective one of said wheels depending upon the nature and duration of the said signal, a pump adapted to make up a volume of fluid dumped from at least one of said brakes during an anti-lock mode whereby the said one brake can be re-applied at a rate determined by said modulator means, said pump also being



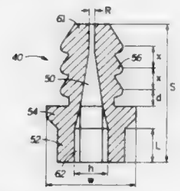
adapted to provide necessary pressure to operate a brake on one of said driven wheels for traction-control to correct spinning of that wheel, and a throttle sensor responsive to movement of said throttle and from which signals are transmitted to said electronic control module, whereby said signals from the throttle sensor changes as a foot is released from said throttle pedal, and means incorporated in said control module is adapted to recognise the said change in said signals form said throttle sensor and re-set said modulator means whereby said brakes can be re-applied fully.

5,326,161

ASSEMBLY AND ELASTOMERIC SEATING MEMBER FOR PROVIDING A FLEXABLE SEAT FOR A MEMBER

Graham L. Adams, and Guenter Trach, both of Hessen, Fed. Rep. of Germany, assignors to Motorola, Inc., Schaumburg, Ill.

PCT No. PCT/EP91/02103, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO92/08630, PCT Pub. Date May 29, 1992
PCT Filed Nov. 7, 1991, Ser. No. 910,290
Claims priority, application United Kingdom, Nov. 17, 1990, 9025030
Int. Cl.[5] B60T *8/36;* **H02G** *3/08*
U.S. Cl. 303—119.2 **19 Claims**



1. An assembly comprising:

a first housing;

a second housing, the first housing containing an array of first members mounted therein, said first members having respective wires extending therefrom for coupling said first members to electronic means sealed within the second housing; and

at least one elastomeric seating member mounted within a bore communicating between the first and second housings, the elastomeric seating member extending from the bore into the first housing and securely engaging the first

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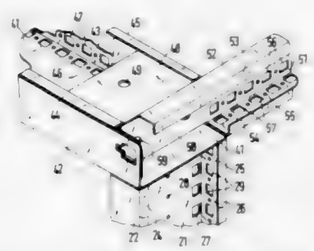
member so as to provide a set for the first member, the respective wire extending through the seating member and being grippingly engaged by the seating member such that the seating member provides a seal between the first and second housings and wherein the seating member permits the first member a small amount of movement to allow for alignment of the first member within the first housing.

5,326,162

RACK FOR A CONTROL CABINET

Klaus D. Bovermann, Breidenbach-Niederdieten, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Nov. 17, 1992, Ser. No. 978,213
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1991, 4137836
Int. Cl.[5] A47B *47/00*; C04H *12/00*
U.S. Cl. 312—265.1 13 Claims



1. In a rack for a control cabinet comprising a front frame and a rear frame with a plurality of corner areas having a plurality of vertical and horizontal frame pieces, said front and rear frames connected to each other by a plurality of upper depth braces and lower depth braces, the vertical and horizontal frame pieces, welded together in each of said corner areas with a corner connector, and the depth braces each forming, with two sides disposed perpendicular to each other, an inner edge, and a plurality of identical side rows of identical fastening receptacles or fastening bores disposed in each of said sides at a same distance from said inner edge, said vertical frame pieces and said horizontal frame pieces having identical cross sections and identical frame rows of said fastening receptacles or fastening bores,

the improvement comprising:

each of said vertical frame pieces and said horizontal frame pieces (**20**, **30**, **40**) and said depth braces (**50**, **60**) embodied as a C-profile having a base leg (**21**, **31**, **41**, **51**, **61**) and two lateral legs (**22**, **25**; **32**, **35**; **42**, **43**; **52**, **54**, **62**, **64**), each of said lateral legs having an end section (**24**, **26**; **34**, **36**;, **44**, **45**; **53**, **55**; **63**, **65**) bent at a right angle and oriented towards the other of said two lateral legs on said base leg, and forming an open side between said end sections,

the open side of each of the C-profile sections facing outwardly from the rack (**10**), and the horizontal frame pieces (**40**) covering the vertical frame pieces (**20**, **30**) in each of said corner areas,

each of the base legs (**21**, **31**; **41**, **51**; **61**) and each of the lateral legs (**25**, **35**; **43**, **54**; **64**) of each of the C-profile sections inwardly directed toward an interior of said rack (**10**) forming a row of said fastening receptacles (**27**, **29**; **37**, **39**; **46**, **47**; **56**, **57**; **66**, **67**) or fastening bores (**28**, **38**) in a metric division,

each of said corner connectors (**48**) welded into an end area of the horizontal frame pieces (**40**),

the inwardly directed lateral leg (**43**) of each of said horizontal frame pieces (**40**) forming a recess in said end area,

each of said depth braces (**50**, **60**) having an extended base leg (**51**, **61**) forming a plurality of fastening flanges (**58**) connected to said corner connectors (**48**),

said extended base legs (**51**, **61**) of said depth braces terminating flush with the base legs (**21**, **31**, **41**) of the vertical frame pieces (**20**, **30**), and

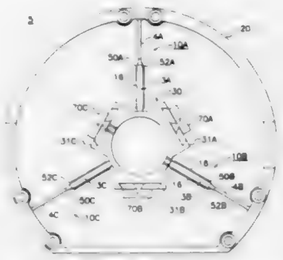
a plurality of installation rails (**80**), extending over at least a portion of the height of the rack (**10**) and having rail lateral legs (**82**, **84**) forming a plurality of rail fastening receptacles (**83**, **85**) in inch divisions, connected to the base legs (**21**, **31**) of the vertical frame pieces (**20**, **30**) and to a plurality of mounting rails (**90**) installed between the front and rear vertical frame pieces (**20**, **30**).

5,326,163

DITHER APPARATUS

Richard G. Langton, Shoreview, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 10, 1991, Ser. No. 698,641
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—350 15 Claims



1. A dither motor reed apparatus for use in a dither motor, the dither motor including a hub member and an outer support housing, wherein the dither motor reed apparatus comprises:

(a) a robust inner section having a hub end and a first joining end, wherein the hub end is rigidly affixed to the hub member; and

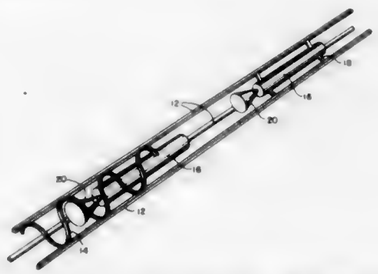
(b) an outer section which is more limber than the robust inner section, wherein the outer section has a support end and a second joining end, wherein the second joining end is integrally affixed to the first joining end of the robust inner section, and wherein the support end is rigidly affixed to the outer support housing.

5,326,164

FLUID MIXING DEVICE

James R. Logan, 4732-18th Ave. Ct., Moline, Ill. 61265

Filed Oct. 28, 1993, Ser. No. 142,872
Int. Cl.[5] B01F *11/02*
U.S. Cl. 366—127 10 Claims



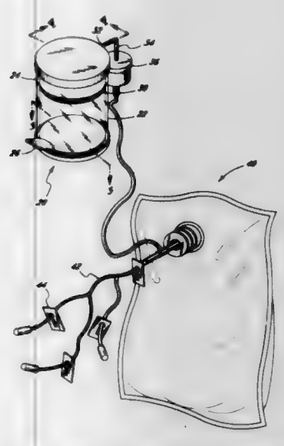
1. An apparatus for thoroughly mixing a flowable material, said apparatus comprising a tubular enclosure having an inside surface and through which the flowable material to be mixed can be passed, a fixed barrier extending along the inside surface of the tubular enclosure so as to produce chaotic flow of the material passing through the enclosure, and a sonic generator positioned inside of the barrier to produce a chopping action on material passing through the enclosure which chopping action occurs simultaneously with the chaotic flow of the material produced by the fixed barrier.

5,326,165

MIXING APPARATUS

Ben J. Walthall, Santa Ana; Mathew V. Caple, Riverside, and Thomas J. Murphy, Mission Viejo, all of Calif., assignors to Irvine Scientific Sales Co., Santa Ana, Calif.

Filed Jun. 26, 1991, Ser. No. 721,826
Int. Cl.[5] B01F *3/12*, *17/06*
U.S. Cl. 366—165 9 Claims



1. A unit volume mixing container for reconstituting a predetermined volume of powdered material and a predetermined volume of additives in a predetermined volume of pressurized fluid to produce a unit volume of reconstituted material, comprising:

an elongate, generally cylindrical housing having first and second ends and a fluid flow path extending therethrough;

a first, upstream mixing chamber in the flow path proximate the first end of the housing, said upstream mixing chamber containing said predetermined volume of powdered material;

a second, downstream mixing chamber in the flow path proximate the second end of the housing, said downstream mixing chamber containing said predetermined volume of additives;

a filter between said upstream and downstream mixing chambers for maintaining separation o the powered material and additives until the addition of the fluid;

an influent port in the housing, for directing said pressurized fluid into the upstream mixing chamber, generally along a tangent to the interior wall of the mixing chamber for contacting the powdered material and thereby creating a mixing vortex in the upstream chamber;

an effluent port in the housing, for directing mixed powdered material and additives in said fluid out of the downstream chamber; and

a receiving receptacle in fluid communication with and downstream form the downstream mixing chamber, said receiving receptacle having a preselected capacity substantially equal to said unit volume of the reconstituted material;

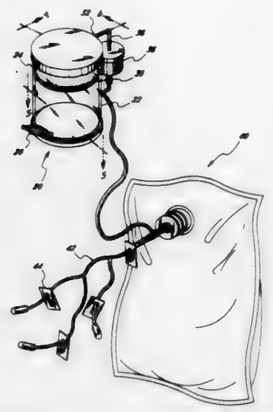
wherein the mixing of said predetermined volume of fluid, powdered material ad additives produces said unit volume of reconstituted material.

5,326,166

MIXING APPARATUS

Ben J. Walthall, Santa Ana; Matthew V. Caple, Riverside, and Thomas J. Murphy, Mission Viejo, all of Calif., assignors to Irvine Scientific Sales Co., Santa Ana, Calif.

Division of Ser. No. 721,826, Jun. 26, 1991. This application Oct. 23, 1992, Ser. No. 965,344
Int. Cl.[5] B01F *3/12*
U.S. Cl. 366—165 7 Claims



1. A method of reconstituting a powdered media in a buffer solution, comprising the steps of:

providing a vortex mixing apparatus having powdered culture media in a first mixing chamber therein and a buffer material in a second mixing chamber therein;

introducing an influent fluid stream under pressure into the first mixing chamber for mixing with the powdered culture media and creating a mixture therein; and

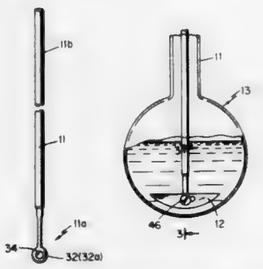
thereafter directing the mixture into the second mixing chamber for contacting the buffer material to produce a reconstituted media.

5,326,167

LABORATORY FLASK STIRRER ASSEMBLY ATTACHABLE WITH A NUT AND BOLT

Steven Ware, Vineland, and Howard Hayman, Elmer, both of N.J., assignors to Chemglass, Inc., Vineland, N.J.

Filed Feb. 23, 1993, Ser. No. 23,837
Int. Cl.[5] B01F *7/20*
U.S. Cl. 366—247 14 Claims



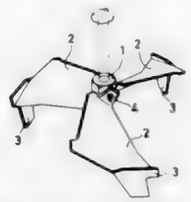
1. A stirrer system for stirring contents in a laboratory flask having a round or spherical bottom and a reduced neck, comprising:

(a) a stir shaft;

(b) a stir blade; and

(c) a nut and bolt assembly for pivotally attaching the stir blade to the stir shaft, wherein said stir shaft has a donut ring-shaped lower end including a throughbore in said lower end extending generally at a right angle to a shaft axis of the stir shaft and said nut and bolt assembly is received in said throughbore.

5,326,168
STIRRING BLADE UNIT
Akio Miura, Iwatsuki, Japan, assignor to Satake Chemikal Equipment Mfg., Ltd., Moriguchi, Japan
Filed Aug. 9, 1993, Ser. No. 103,120
Claims priority, application Japan, Aug. 7, 1992, 4-061081
Int. Cl.[5] B01F *13/00*
U.S. Cl. 366—343 **3 Claims**



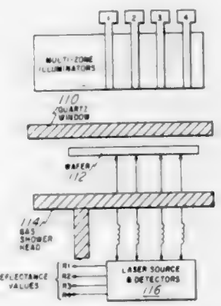
1. A stirring blade unit, comprising:
a boss;
a plurality of main blade bodies radially projected from an outer periphery of said boss; and
auxiliary blade bodies respectively provided at tip portion of said main blade bodies in a manner so as to be downwardly projected wherein each of said auxiliary blade bodies is fixed to the main blade bodies in such a manner that a lower portion of the auxiliary blade body is respectively below the main blade bodies and is slanted towards said boss such that said lower portion is positioned closer to said boss than an upper portion of the auxiliary blade body.

5,326,169
PAN RACK FOR MIXING MACHINE
Melvin E. Bricker, 2723 Saddleback Dr., Cincinnati, Ohio 45244
Filed Mar. 22, 1993, Ser. No. 34,274
Int. Cl.[5] B01F *15/00*
U.S. Cl. 366—349 **13 Claims**



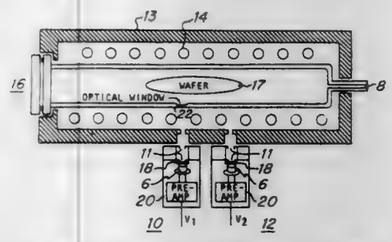
1. An attachment of the type supporting a pan for use with a mixing machine having a column with a bowl support, said bowl support having a lower surface and two opposed arms directed generally outward and forward from the column and including a pair of pins, each pin being mounted on an upper surface of one of the arms, the attachment comprising:
a mounting section having an inner end and an opposing outer end, said inner end of said mounting section having an inner end member adapted to be located adjacent the column,
a first side member having an inner end connected to one end of said inner end member to form a first corner adapted to engage one of the pair of pins, and
a second side member having an inner end connected to an opposite end of said inner end member to form a second corner adapted to engage another of the pair of pins,
an elbow-shaped hook including
a first arm including an upper end connected to said inner end member and a lower end extending downward from the upper end, and
a second arm having one end connected to the lower end of said first arm and having an opposite end extending generally horizontally and adapted to contact the lower surface of the bowl support; and
means connected to the mounting section for supporting the pan.

5,326,170
WIRELESS TEMPERATURE CALIBRATION DEVICE AND METHOD
Mehrdad M. Moslehi; Habib Najm, and Lino A. Velo, all of Dallas, Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.
Continuation of Ser. No. 928,564, Aug. 11, 1992, Pat. No. 5,265,957. This application Sep. 1, 1993, Ser. No. 115,920
Int. Cl.[5] G01K *15/00;* **G01J** *5/54*
U.S. Cl. 374—2 **17 Claims**



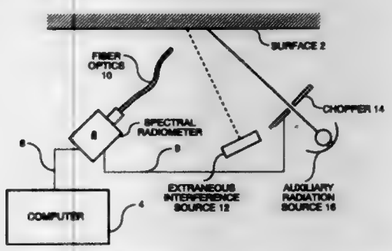
1. A method for calibrating at least one temperature sensor comprising the steps of:
providing a wafer having at least one plurality of calibration structures of a material having a melting point in the range of 150° to 1150° C., wherein said at least one temperature sensor is operable to detect a temperature dependent characteristic of said wafer and output a signal corresponding to said temperature depending characteristic;
selectively varying a power input and ramping the wafer temperature to said temperature depending characteristic;
selectively varying a power input and ramping the wafer temperature for a calibration run;
directing at least one light beam at the wafer;
monitoring the wafer surface reflectance at the point at which each light beam is directed during the step of ramping the wafer temperature;
detecting a first step change in the wafer surface reflectance corresponding to a wafer temperature equal to the melting point of said calibration structures;
determining a first set of sensor parameters corresponding to said first step change; and
calculating a set of calibration parameters for each temperature sensor being calibrated.

5,326,171
PYROMETER APPARATUS AND METHOD
Thomas E. Thompson, Los Altos, and Eugene R. Westerberg, Palo Alto, both of Calif., assignors to A G Processing Technologies, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 756,536, Sep. 9, 1991, Pat. No. 5,188,458, which is a division of Ser. No. 652,459, Feb. 7, 1991, Pat. No. 5,061,084, which is a continuation of Ser. No. 186,556, Apr. 27, 1988, abandoned. This application Feb. 19, 1993, Ser. No. 19,743
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] G01J *5/06*
U.S. Cl. 374—121 **2 Claims**



1. A method for sensing the temperature of a remote object that is heated within a chamber by a source of radiation that is supplied to the object from outside the chamber which includes a boundary wall having a window therein where the boundary wall and window include quartz, the method comprising the steps of:
supplying radiation within a first waveband from the source through the quartz of the boundary wall of the chamber to the object therewithin; and
sensing radiation from the remote object within the chamber through the quartz of the window within a limited waveband relative to the first waveband for which the quartz of the window exhibits a different transmissivity than the transmissivity of the quartz of the boundary wall to radiation within the first waveband for providing from the sensed radiation an output indication of the temperature of the remote object.

5,326,172
MULTIWAVELENGTH PYROMETER FOR GRAY AND NON-GRAY SURFACES IN THE PRESENCE OF INTERFERING RADIATION
Daniel L. P. Ng, Shaker Heights, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Dec. 14, 1992, Ser. No. 991,403
Int. Cl.[5] G01J *5/62, 5/52, 5/00*
U.S. Cl. 374—126 **2 Claims**

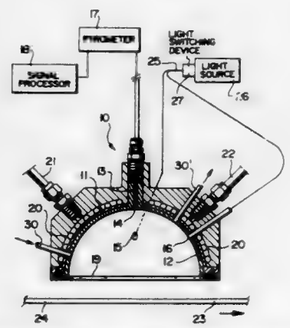


1. A pyrometer apparatus for detecting a temperature of a gray or non-gray surface which is receiving undesirable extraneous interfering radiation from an interfering radiation source comprising:
an auxiliary radiation source which directs auxiliary radiation onto said gray or non-gray surfaces;
a chopper for selectively allowing radiation to pass from the auxiliary radiation source to said surface;
a spectral radiometer for detecting and measuring a respective radiation spectrum of each of the auxiliary source, the gray or non-gray surfaces and the extraneous radiation source wherein S_0 represents the spectrum of the auxiliary radiation source, S_I represents the spectrum of the interfering radiation source, S_{II} represents the spectrum of the surfaces in the presence of the extraneous radiation when the chopper is not allowing radiation from the auxiliary source to reach the surface, S_{III} represents the spectrum of the surfaces in the presence of the extraneous radiation when the chopper is allowing the radiation from the auxiliary source to reach the surface; and,
a computer connected to the radiometer, said computer being programmed to:
calculate a surface reflectivity of the surface by dividing the S_{III} spectrum minus the S_{II} spectrum by the S_O spectrum;
calculate a surface emissivity by subtracting from 1 the calculated surface reflectivity divided by f; and
solve for T the equation

$$S_{II}(\lambda) = \left[1 - \frac{Z(\lambda)}{f}\right] \frac{C_1}{\lambda^5} \frac{1}{\exp\left(\frac{C_2}{\lambda T}\right) - 1} + hz(\lambda)\, S_I(\lambda)$$

where λ is a wavelength, $z(\lambda)$ is the measured reflectivity, C_1 and C_2 are radiation constants, and f and h are constants relating to a geometry of the pyrometry apparatus, using a method of least squares.

5,326,173
APPARATUS AND METHOD FOR REMOTE TEMPERATURE MEASUREMENT
Dan Evans; Matthew J. Fairlie; Karam Kang, and Serge Zouikin, all of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada
Filed Jan. 11, 1993, Ser. No. 2,736
Int. Cl.[5] G01K *13/06;* **G01J** *5/10*
U.S. Cl. 374—128 **21 Claims**



1. An apparatus for remotely measuring a temperature of a moving anisotropic surface, comprising:
detector means including a radiation receptor for detecting infra-red radiation emitted and reflected by said surface;
an integrating cavity at least partially surrounding said receptor for receiving radiation emitted and reflected by

said moving surface, when facing said cavity, and delivering said radiation to said receptor;

means for generating at least two infra-red radiation-containing beams within said integrating cavity positioned to cause said beams to strike said surface from different directions and at angles suitable for at least partial reflection to said receptor; and

means for determining said temperature of said surface from said radiation detected by said detector means.

17. A method of remotely measuring a temperature of a moving anisotropic surface, comprising:

directing at least two infra-red radiation-containing beams from within an integrating cavity onto said surface from different directions and at angles that result in at least partial reflection of said beams into said cavity;

collecting within said integrating cavity radiation from said beams reflected by said surface together with infra-red radiation emitted by said surface due to said temperature of said surface to produce combined radiation having an intensity;

measuring the intensity of said combined radiation; and

calculating said temperature of said surface from said measured intensity.

5,326,174

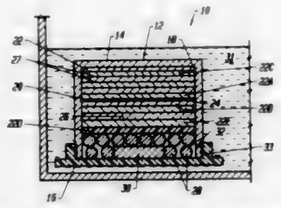
TEMPERATURE INDICATOR

Robert Parker, 411 Rolling La., Alamo, Calif. 94507

Filed May 28, 1992, Ser. No. 889,670

Int. Cl.[5] G01K *11/12, 11/18*

U.S. Cl. 374—134 **38 Claims**



1. A temperature indicator for indicating the temperature condition of an object while subjecting said object to an external temperature environment comprising:

an outer shell, at least a portion of said outer shell being substantially transparent;

means contained within said outer shell for modeling the thermal diffusivity of said object, at least a portion of said modeling means being substantially transparent, said modeling means including a plurality of heat receiving elements, which heat receiving elements are formed of a material having a thermal diffusivity such that when said heat receiving elements and said object are subjected to a temperature environment, the rate at which heat diffuses through heat receiving elements is proportional to the rate at which heat diffuses through said object; said outer shell comprising first and second sections which apply a compressive force to said modeling means when said first and second sections are secured together to thereby confine said modeling means within said outer shell; and

means for measuring the temperature within said outer shell, which measuring means is enclosed within said outer shell in thermal contact with said modeling means, said measuring means being positioned for at least partially displaying said measuring means through the transparent portions of said modeling means and said outer shell to indicate the temperature within said outer shell, said measuring means thereby indicating the temperature condition of said object.

5,326,175

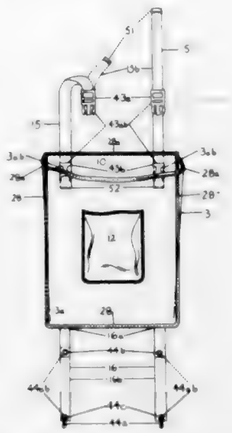
DEBRIS/STORAGE BAG

James E. Carter, P.O. Box 291054, Port Orange, Fla. 32129

Filed Apr. 13, 1992, Ser. No. 867,496

Int. Cl.[5] B65D *33/14*

U.S. Cl. 383—22 **4 Claims**



1. A lawnmower bag for attaching to a lawnmower having a lawnmower handle of the type having two elongated bars extending from the chassis of the lawnmower and at least one cross member perpendicular to the elongated bars, said bag comprising:

a back panel having a top, a bottom and opposed sides;

a front panel having a top, a bottom and opposed sides; said back and front panels joined at their respective bottoms and sides to form a bag with a closed bottom and sides and an open top;

two top straps extending away from the bag from the top of said back panel;

two bottom straps extending away from the bag from the bottom of said back panel;

said top and bottom straps being substantially parallel to the sides of the bag;

means on each top strap for fastening each respective top strap to itself to form a continuous single loop for locating each strap about a cross bar of the lawnmower;

means on each bottom strap for fastening each respective bottom strap to itself for securement on a respective elongated bar.

5,326,176

OVERPRESSURE VALVE FOR PACKAGING CONTAINERS

Klaus Domke, Ditzingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

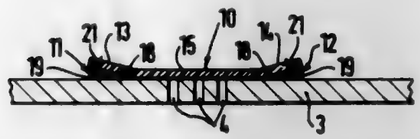
Division of Ser. No. 819,735, Jan. 13, 1992, Pat. No. 5,263,777. This application Feb. 17, 1993, Ser. No. 18,851

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1991, 4104803; Sep. 7, 1991, 4129838

Int. Cl.[5] B65D *33/01*

U.S. Cl. 383—103 **12 Claims**

1. An overpressure valve for packaging containers, said overpressure valve includes a thin, flexible film membrane for disposal on an outer wall of a container to cover at least one hole through a wall of the container for release of any gases within said container, said membrane includes first and second opposite edge sections spaced by a central section, first and second adhesive strips adhering to said first and second edge sections of said membrane and affixed to said outer wall in opposite sides of said at least one hole through said wall with an adhesive-free zone between said adhesive strips which rests upon said outer wall of said container over said at least one hole and which is spaced from said outer wall of said container due to an overpressure in said container, each of said first and



second adhesive strips include a thick portion along oppositely disposed edges of said membrane which extend across a width of said membrane with a very thin portion juxtaposed said central section, said first and second adhesive strips having an exposed surface which is in a plane with said central section.

5,326,177

PERFECTED AIR PAD

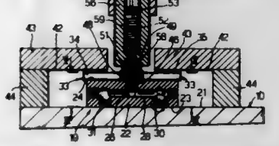
Renato Ottone, Ivrea, and Luigi Piovano, S. Giusto Canavese, both of Italy, assignors to Pluritec Italia S.p.A., Borgomanero, Italy

Filed Nov. 6, 1992, Ser. No. 972,974

Claims priority, application Italy, Nov. 8, 1991, TO91A-000857

Int. Cl.[5] F16C *32/06*

U.S. Cl. 384—12 **13 Claims**



1. An air pad for supporting a first member in relation to a second member, said members being mutually slidable, said pad comprising a body having two opposite faces, said body being provided with a number of supporting orifices located on one of said faces and supplied with compressed air, at least one compensating orifice being associated with the other of said faces and being supplied with compressed air, said body being removably connected to said first member, said second member comprising two contrast surfaces facing said two faces, wherein the improvement comprises a micropad provided with said compensating orifice and movable in relation of said body in a direction parallel to the axis of said compensating orifice, each one of said contrast surfaces constantly covering the orifices of the relevant facing face, said micropad being urged by compressed air toward the contrast surface facing said other face, said micropad having an active surface so sized as to cause said compensating orifice to generate a preload to compensate any variation on the load on said pad occurring during the mutual sliding of said members.

5,326,178

ANGULARLY BIASSED SELF-ALIGNING BEARING

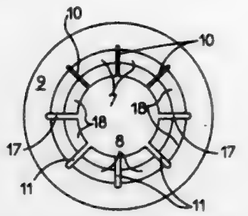
Gerorg Strobl, Stuttgart, Fed. Rep. of Germany, assignor to Johnson Electric S.A., Switzerland

Filed Nov. 12, 1992, Ser. No. 975,264

Claims priority, application United Kingdom, Nov. 12, 1991, 9124016

Int. Cl.[5] F16C *23/04*

U.S. Cl. 384—192 **16 Claims**



1. An angularly biassed self-aligning bearing comprising:

a bearing member with an outer surface having first and second external surfaces formed around the axis of the bearing member in which:

the first external surface is a part-spherical surface-of-revolution having a center of curvature lying on the axis of the bearing member; and

the second external surface is a second surface-of-revolution formed around the axis of the bearing member, is non-coincident with all imaginary spherical surfaces having the same center of curvature as the first external part-spherical surface-of-revolution and comprises at least one first portion which extends transversely of the axis of the bearing member;

a housing, for accommodating the bearing member, having an internal surface-of-revolution, formed around the axis of the housing; and

first and second resilient retaining means supported in engagement with the transversely extending first portion of the second external surface-of-revolution and resiliently distorted so as to urge the first external part-spherical surface-of-revolution axially into engagement with the internal surface-of-revolution and to impose turning moments which tilt the bearing member by a predetermined amount relative to the housing about an axis perpendicular to the axis of the housing.

5,326,179

APPARATUS FOR PRODUCING AN INFORMATION RECORDING CARD

Sigeru Fukai; Michio Shinozaki; Toshimasa Ishii; Kunio Omura; Hidetomo Sasaki; Ken Nishimura; Nobuaki Honma; Hiroyuki Kuroki, and Tomoyuki Marugame, all of Tokyo, Japan, assignors to Toppan Insatsu Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP90/00643, § 371 Date May 2, 1991, § 102(e) Date May 2, 1991, PCT Pub. No. WO91/00183, PCT Pub. Date Jan. 10, 1991

PCT Filed May 21, 1990, Ser. No. 678,328

Claims priority, application Japan, Jul. 4, 1989, 1-78913[U]; Aug. 17, 1989, 1-210729; Sep. 29, 1989, 1-255835; Sep. 29, 1989, 1-255836; Oct. 31, 1989, 1-127388[U]; Oct. 31, 1989, 1-283688; Mar. 30, 1990, 2-86711; Mar. 31, 1990, 2-34634[U]; Mar. 31, 1990, 2-34636[U]

Int. Cl.[5] B41J *2/325*

U.S. Cl. 400—120 **11 Claims**

1. A card producing apparatus comprising:

a feeder capable of containing a plurality of stacked cards for recording magnetic data and print data thereon, and allowing a predetermined number of cards to be removed from it;

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data writing means for writing magnetic data onto a card of said plurality of stacked cards;

said data writing means having first transport means for transporting said card in a predetermined direction therethrough;

a printer for writing print data on a predetermined portion of said card;

said printer having a holding stage for said card located on a sliding mechanism, a thermal ribbon feeding and take up mechanism, thermal heads and second transport means for transporting said card;

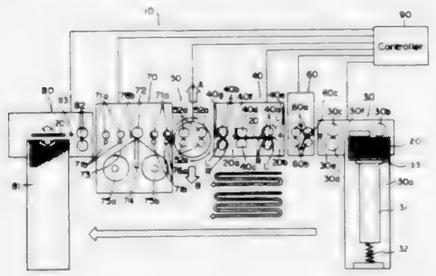
a coating device having heating means for forming a cover layer over a printed surface of said card;

a stacker, having third transport means for said card from said printer into said stacker for storing a predetermined number of said plurality of stacked cards therein;

first detecting means for detecting whether said card is present within said data writing means and when no said card is present within said data writing means, providing a card transporting command signal to introduce said card to said data writing means;

second detecting means for detecting whether said card is present within said printer and when no said card is present within said printer, providing a card transporting command signal to introduce said card from said data writing means into said printer; and

third detecting means for detecting a completion of printing by said printer so that said card transported out of said printer is stored in said stacker;



wherein said second transport means of said printer includes a reciprocating stage between a card inlet position and a card outlet position, said stage having a support surface for receiving, at said card inlet position, said card which slides thereon; a catching groove provided at said card inlet end of said stage, said catching groove being arranged to project above said support surface for supporting a trailing edge of an introduced said card after introduction of said card, said catching groove being lowered after said stage has been placed in said card outlet position and said card has been removed; a projection member being provided on a portion of said stage where a leading edge of said card is to be located, said projection member being arranged to support said leading edge of said card when said card is brought onto said support surface, said projection member being lowered below said support surface when said stage has been placed in said card outlet position; a claw member together with a presser member located above said card inlet position of said stage, said claw member being for causing said trailing edge of said card to slide to a predetermined position on said support surface when said card is brought onto said support surface, said presser member being for pressing said trailing edge of said card on said support surface toward said card outlet position when said stage has been placed in said card outlet position; said thermal head for effecting transfer to a predetermined portion of said card via said thermal ribbon being located above said card outlet position of said stage.

5,326,180

ARRANGING STRUCTURE OF PRINT WIRE DRIVING UNITS UTILIZED IN A DOT IMPACT PRINT HEAD

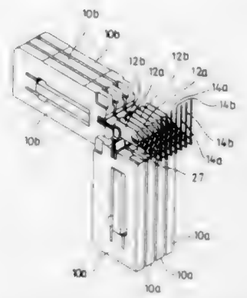
Atsushi Hirota, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 16, 1992, Ser. No. 946,178

Claims priority, application Japan, Sep. 18, 1991, 3-267119

Int. Cl.[5] B41J *2/295*

U.S. Cl. 400—124 **11 Claims**



1. An arranging structure of print wire driving units utilized in a dot impact print head, said print head having a front surface through which dot printing is effected, said arranging structure comprising:

a plurality of first print wire driving units each having a first unit frame; a first driving means mounted in said first unit frame; a first arm supported to said first driving means at a first predetermined angle of 90° between a longitudinal axis of said first arm and a longitudinal axis of said first driving means, said first arm being thinner than said first unit frame; and a first print wire having a rear portion affixed to said first arm and extending at an angle of approximately 90° thereto, and a front portion adapted to extend through said print head front surface to effect printing;

a plurality of second print wire driving units each having a second unit frame, the thickness of said second unit frame being equal to that of said first frame unit frame; a second driving means mounted in said second unit frame; a second arm supported to said second driving means at a second predetermined angle of 0° between a longitudinal axis of said second arm and a longitudinal axis of said second driving means, said second arm being thinner than said second unit frame; and a second print wire having a rear portion affixed to said second arm and extending at an angle of approximately 90° thereto, and a front portion adapted to extend through said print head front surface to effect printing;

said plurality of first print wire driving units being disposed side by side and said plurality of second print wire driving units being disposed side by side, said first and second pluralities being at an angle with respect to each other so that said first arms and said second arms are parallel and said first unit frames being offset with respect to said second unit frames by half the thickness of said second unit frames, whereby said first and second print wires alternately extend in a straight line through said print head front surface.

5,326,181

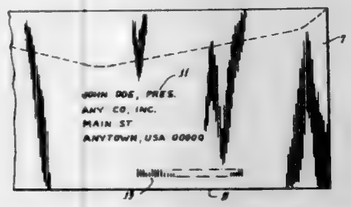
ENVELOPE ADDRESSING SYSTEM ADAPTED TO SIMULTANEOUSLY PRINT ADDRESSES AND BAR CODES

Lawrence F. Eisner, Cheshire, and Bruce E. Hurd, Monroe, both of Conn., assignors to Bryce Office Systems Inc., Oxford, Conn.

Continuation of Ser. No. 234,259, Aug. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 918,122, Oct. 14, 1986, abandoned. This application Sep. 4, 1990, Ser. No. 582,012

Int. Cl.[5] B41J *5/00;* **G06F** *15/20*

U.S. Cl. 400—104 **1 Claim**



1. A method of addressing substrates for use in mailing with a human readable address containing a zipcode and a bar code corresponding to the zipcode, utilizing a computer, comprising the steps of:

receiving in the computer a plurality of addresses, with preexisting zipcode information in each, as complete address data, requiring no manual inputting or identification;

automatically scanning the address data in the computer to find the preexisting zipcode, and then automatically converting, in the computer, the preexisting zipcode into a line of corresponding bar code; and

essentially simultaneously printing the complete address, including zipcode information and corresponding bar code, on a substrate, under control of the computer so that the substrate produced has human readable zipcode and bar code information thereon.

5,326,182

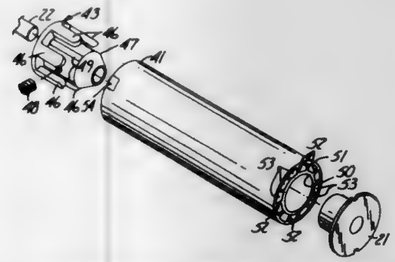
RIBBON ROLL DRIVE

Erick E. Hagstrom, Plymouth, Minn., assignor to Datamax Bar Code Products Corporation, Orlando, Fla.

Filed Sep. 14, 1992, Ser. No. 944,842

Int. Cl.[5] B41J *33/14*

U.S. Cl. 400—223 **16 Claims**



1. A ribbon spool drive system for rotating spool cores having ribbons wrapped therearound about an axis of the core, said cores each formed by inner and outer cylindrical shells concentric about and extending along said axis and spaced apart from one another by a plurality of support walls dividing the space therebetween into three or more compartments extending along said axis with said support walls being separated approximately equally from one another, said drive system comprising:

a motor having an output means operatively coupled thereto for selectively rotating said output means;

a drive shaft connected at one end thereof to said motor output means; and

a drive hub means having a collar portion affixed about said drive shaft and having at least three engagement fingers joined to, but in part spaced away from, said collar portion such that said core is mounted on said drive hub means through said inner cylindrical shell being slid over part of si collar portion with said engagement fingers extending into corresponding ones of said compartments in said core, said engagement fingers each having a pair of sides extending approximately along said axis which between them with respect to said axis, subtend an angle such that the two sides on each of said fingers contact support walls in said core.

5,326,183

CARRIAGE SPEED CONTROL BASED ON AVERAGE DOT DENSITY

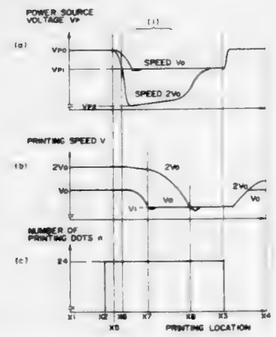
Tadashi Kasai; Jiro Tanuma; Naoji Akutsu; Hideaki Ishimizu, and Chihiro Komori, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 791,389

Claims priority, application Japan, Nov. 16, 1990, 2-308649; Feb. 7, 1991, 3-038178; Aug. 21, 1991, 3-233840

Int. Cl.[5] B41J *19/30*

U.S. Cl. 400—279 **10 Claims**



1. A printing control device for a printer having printing means and spacing control means, comprising:

printing dot density detecting means for determining printing dot density of print data to be supplied to a printing head;

averaging means interconnected to said printing dot density detecting means for averaging the printing dot density during a predetermined period of time; and

printing speed control means interconnected to said averaging means for selecting a printing speed in response to an average value of printing dot density received from said averaging means and controlling said printer to print at the selected printing speed.

5,326,184

APPARATUS AND METHOD FOR PICKING PAPER FROM A STACK

Alan Shibata, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 26, 1992, Ser. No. 967,079

Int. Cl.[5] B41J *13/16*

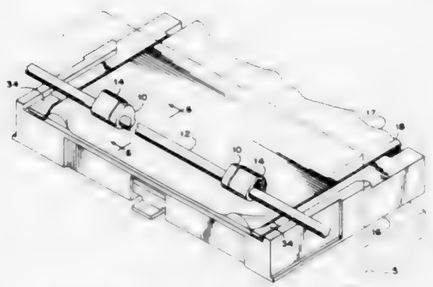
U.S. Cl. 400—624 **15 Claims**

9. A printer comprising:

means for forming an image on a sheet;

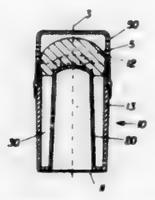
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means for supporting a stack of sheets;
means for picking a top sheet from the stack, said picking means including:
a rotatable drive shaft;
a pick roller drivably connected to said drive shaft and having a peripheral surface for engaging the stack and picking the top sheet therefrom when rotated by said drive shaft;
urging means for biasing the stack toward a first position whereat the first sheet is frictionally engageable with the pick roller when the pick roller is rotated;
a pick engager drivably connected to said drive shaft, said pick engager including a body having a transverse aperture for drivably receiving the rotatable drive shaft, and further including a raised peripheral portion for urging the stack to a second position spaced apart from



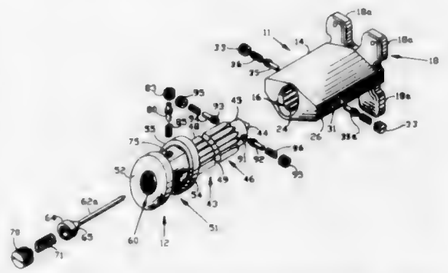
the pick roller when said pick engager is rotated by the drive shaft, said body being reversibly rotatable about said drive shaft; and
said pick engager being rotatable about the drive shaft from a first rotational position to a second rotational position relative to the drive shaft for releasing said stack to its first biased position for engaging the top sheet against the pick roller when the drive shaft is rotated to a predetermined position;
said drive shaft including a flat peripheral surface; and
said transverse aperture having a first surface adapted for engaging said flat peripheral drive shaft surface when said pick engager is in its first rotational position relative to said drive shaft, and having a second surface adapted for engaging said flat peripheral drive shaft surface when said pick engager is in its second rotational position relative to said drive shaft.

5,326,185
LOW COST FILL/INVERT SAMPLE SIZE PACKAGE FOR A COSMETIC STICK FORM PRODUCT
Arthur H. Dornbusch, Cincinnati; Marcus W. Greenwald, Loveland, and John J. Rego, Avon Lake, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 31, 1992, Ser. No. 938,904
Int. Cl.[5] A45D *40/00, 40/16*
U.S. Cl. 401—88 **10 Claims**



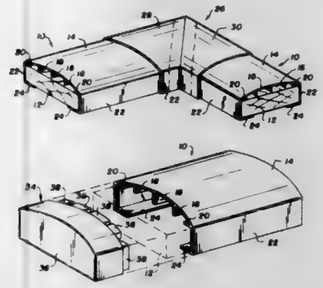
1. A sample size limited use fill/invert package having a solid stick form product therein, wherein said product is secured within said package in a fixed position throughout its use, said package comprising:
(a) a base holding said stick form product, said base having an enclosed body, a closed bottom and an open top, said stick form product having a substantially convex outer surface projecting from said open top of said base, said base further including a stalk axially oriented within said base and secured within said base adjacent said bottom, said stalk having a means, adjacent said top of said base, for securing said stick form product within said base, said base further including a trough along the inside perimeter of said base between said stalk and said body, said trough being substantially free of said stick form product at points adjacent said bottom of said base; and
(b) a cap for sealing said open top of said base when said package is not in use, whereby whenever said cap is removed the usable portion of said product is in its fully exposed condition for application.

5,326,186
ROBOT FRIENDLY PROBE AND SOCKET ASSEMBLY
Karen L. Nyberg, Vining, Minn., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Dec. 14, 1992, Ser. No. 993,744
Int. Cl.[5] F16D *1/00;* **F16B** *3/00*
U.S. Cl. 403—378 **10 Claims**



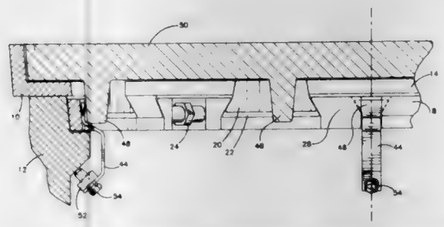
1. A probe and socket assembly adapted for use as a mechanical interface between structures, said assembly comprising:
a socket housing adapted for a rigid connection to a supporting structure, said housing having an axial opening extending therein, with said opening and the wall which defines said opening providing a socket;
a probe comprising a probe shaft and a probe handle adjoining said shaft;
automatic cooperable locking means on said probe shaft and said socket housing for automatically soft locking of the probe in said socket when the probe shaft is inserted a predetermined distance therein;
cooperable releasable second locking means on said probe shaft and said socket housing for hard locking of the probe in said socket; and
actuation means mounted on the probe handle for releasing the second locking means to permit withdrawal of the probe from the socket.

5,326,187
COVER FOR A RAIL OF A FENCE
Rodney L. St. Marie, 7747 184 Street, Surrey, B.C., Canada V3S 4P1 ; Frederik H. deJong, 2903 Silverlake Place, Coquitlam, B.C., Canada V3C 6A2 , and Anthony I. Funk, 5863 188A Street, Surrey, B.C., Canada V3S 7T3
Filed Oct. 15, 1992, Ser. No. 961,297
Int. Cl.[5] E04C *2/00;* **E04G** *7/00*
U.S. Cl. 403—402 **4 Claims**



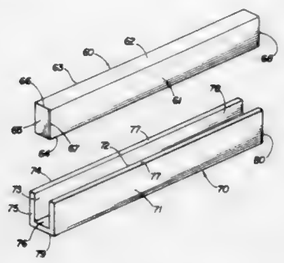
1. A unitary cover adapted to cover the upper rail of a railing, the upper rail having a top and a bottom and sides, the cover comprising:
a curved top with a concave inner surface to be positioned adjacent the top of the rail;
a plurality of longitudinal ribs on said inner surface;
side walls to be positioned adjacent the sides of the upper rail;
flanges on the ends of the side walls, remote from the curved top, to contact the bottom of the rail to locate the cover on the rail, the cover being of a plastic material and being means for distorting to fit over the rail and then being mean for resiling to contact the rail.

5,326,188
ANCHOR FOR MANHOLE COVER SUPPORT
Harold M. Bowman, 18867 N. Valley Dr., Fairview Park, Ohio 44126
Filed Dec. 8, 1992, Ser. No. 986,980
Int. Cl.[5] E02D *29/14*
U.S. Cl. 404—25 **7 Claims**



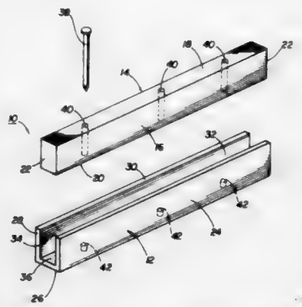
1. A manhole cover support adapted to mount to a manhole frame, such frame including a manhole having a central axis and a flange surrounding said manhole, said manhole cover support having an inner rim portion that surrounds and defines a central opening, said cover support having locking means including at least one receptacle formed in said rim portion and at least one locking arm which is constructed to engage said flange and lock said cover support to said frame, said receptacle being open in the upward direction for slidably receiving a cooperatively shaped head of said locking arm, said receptacle having a stop means for limiting the downward travel of said locking arm wherein said locking arm is separable from said receptacle when disengaged with said flange by sliding said locking arm axially of said manhole away from said stop means.

5,326,189
METHOD AND APPARATUS FOR FORMING A TRENCH WITH GRATES OR SOLID COVERS
John V. Beamer, Atlanta, Ga., assignor to Construction Casting Company, Atlanta, Ga.
Filed Oct. 16, 1992, Ser. No. 962,985
Int. Cl.[5] E02B *5/00*
U.S. Cl. 405—119 **5 Claims**



1. An improved trench form for shaping a trench of the type wherein the form is disposed within a ditch between two frame assemblies, concrete is poured within the ditch to encase the outer surface of the trench form and, after the concrete or other encasing material hardens, the form is removed, the improvement comprising.
(a) an elongated, rigid outer shell having upright opposed side walls, a forward end wall and an opposite rear end wall, a top wall and a bottom and having a channel longitudinally extending therethrough which is open through the end walls and the tope walls; and
(b) a core that is positioned within and is removable from the channel and having opposed ends, a top and a bottom surface and a shape which is complimentary to the shape of the channel, whereby, after the concrete hardens, the core is removed from the shell and then the shell is removed from the concrete.

5,326,190
METHOD AND APPARATUS FOR STABILIZING A TRENCH FORM DURING CONSTRUCTION
John V. Beamer, Atlanta, Ga., assignor to Construction Casting Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 962,985, Oct. 16, 1992. This application Mar. 22, 1993, Ser. No. 34,302
Int. Cl.[5] E02B *5/00*
U.S. Cl. 405—119 **6 Claims**



1. An improved trench form for shaping a trench of the type

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wherein the form is disposed within a ditch between two frame assemblies, concrete is poured within the ditch to encase the outer surface of the trench form and, after the concrete or other encasing material hardens, the form is removed, the improvement comprising:

(a) an elongated, rigid outer shell having upright opposed side walls, a forward end wall and an opposite rear end wall, a top wall and a bottom and having a channel longitudinally extending therethrough which is open through the end walls and the tope walls; and

(b) a core that is positioned within and is removable from the channel and having opposed ends, a top and a bottom surface and a shape which is complimentary to the shape of the channel, whereby, after the concrete hardens, the core is removed from the shell and then the shell is removed from the concrete; and

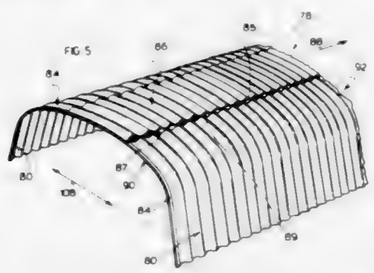
(c) means for fixing the position of the shell and the core relative to the trench while the concrete is poured within the ditch, the fixing means being removable from the core and the shell after the concrete is poured.

5,326,191

REINFORCED METAL BOX CULVERT

Michael W. Wilson, New Brunswick, and Thomas C. McCavour, Etobicoke, both of Canada, assignors to Michael M. Wilson, New Brunswick, Canada

Filed Mar. 5, 1993, Ser. No. 26,860
Int. Cl.[5] E01F *5/00*
U.S. Cl. 405—124 **20 Claims**



1. In a reinforced metal box culvert having a length and being characterized by having a crown, opposing sides and opposite curved haunches, each said haunch being intermediate said crown and a corresponding said side, and spaced apart reinforcing members applied to exterior portions of said box culvert sides, haunches and crown, said box culvert crown, opposing sides and opposite haunches being of corrugated metal sheet sections which are of the same or different thickness in metal and having similar corrugated profiles, said metal sheet corrugations extending parallel to culvert span and said metal sheets being secured in nested overlapping relation, the improvement comprising:

i) corrugated metal sheet reinforcement secured to at least said crown and extending continuously along said crown in the direction of the culvert length where such extension of sheet reinforcement is for a culvert length which is effectively supporting load,

ii) said corrugated metal sheet reinforcement having a corrugation profile which abuts at least said corrugated crown with troughs of said reinforcement sheet secured to crests of said corrugated crown along said culvert length,

iii) said corrugated metal sheet reinforcement having a curvature complementary to said corrugated crown to facilitate thereby securement of said troughs abutting said crests,

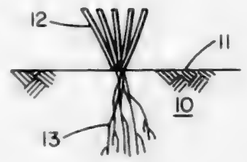
iv) said corrugated metal sheet reinforcement extending continuously along said culvert length in an uninterrupted manner to provide an optimum load carrying capacity for a selected extent of reinforcement provided by said corrugated metal sheet reinforcement secured to at least said corrugated crown.

5,326,192

METHODS FOR IMPROVING APPEARANCE AND PERFORMANCE CHARACTERISTICS OF TURF SURFACES

W. Wayne Freed, Signal Mountain, Tenn., assignor to Synthetic Industries, Inc., Chickamauga, Ga.

Filed Oct. 20, 1992, Ser. No. 964,209
Int. Cl.[5] E02D *3/12*; **C09K** *17/00*
U.S. Cl. 405—258 **18 Claims**



1. A method for the improvement of appearance and performance characteristics of turf surfaces comprising the steps of:

applying discrete fiber materials selected from the group consisting of man-made fiber forming substances to turf growing and turf containing areas, in an amount of from about 0.1 to about 0.5 percent by weight of said discrete fiber materials based upon the weight of said turf growing and turf containing material; and

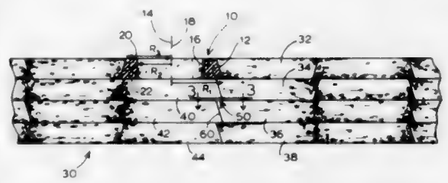
working said discrete fiber materials into said areas by driving said fibers into said areas to the extent that a first portion of said fiber materials is carried beneath the surface of said area, reinforcing and anchoring the turf at the root zone level and a second portion is at least partially exposed above the surface of said area, remaining visible with the turf.

5,326,193

INTERLOCKING RETAINING WALL APPARATUS

Daryl L. Peterson, P.O. Box 407, N. Bonneville, Wash. 98639

Filed Feb. 25, 1993, Ser. No. 23,350
Int. Cl.[5] E02D *3/02*
U.S. Cl. 405—286 **21 Claims**



1. An interlocking retaining wall apparatus comprising:

plural annular structures constructed and arranged to interlock with one another to form a wall, each annular structure having a generally truncated right-conical exterior surface including an axis therefor, a generally right-cylindrical interior surface including an axis therefor, wherein said axis for said interior surface is coincident with said axis for said exterior surface, and wherein each of said annular structures includes a flat top surface and a flat bottom surface, said top and said bottom surfaces being constructed and arranged to be substantially normal to said axes;

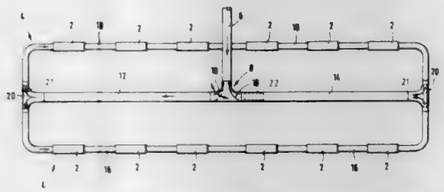
said plural annular structures being arranged, at least two structures high, in frictional engagement with vertically and laterally adjacent annular structures, to provide a wall which is substantially free of gaps when viewed from the side thereof.

5,326,194

DEVICE AND METHOD FOR PNEUMATICALLY FEEDING A PLURALITY OF FEEDING CHUTES

Akiva Pinto, Duesseldorf-Wittlaer; Guenter Lucassen, Haltern, and Reinhard Schmidt, Gescher, all of Fed. Rep. of Germany, assignors to Hergeth Hollingsworth GmbH, Duelman, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 948,601
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1991, 4131758
Int. Cl.[5] B65G *53/06*
U.S. Cl. 406—13 **12 Claims**



1. An apparatus for pneumatically feeding fiber flocks for use by fiber processing machines through a fiber and transport air flow, the apparatus comprising:

a plurality of feeding chutes for receiving fiber flocks and for delivering the fiber flocks to the fiber processing machines;

a closed circuit loop distributing line connected to each of said plurality of feeding chutes for transporting fiber flocks to said plurality of feeding chutes;

a first transport line section connected to said closed circuit loop distributing line for delivering fiber flocks to said closed circuit loop distributing line;

switching means associated with said first transport line section for selectively switching the direction of delivery of fiber flocks delivered by said first transport line section into one of at least two directions in said closed circuit loop distributing line, for allowing substantially uniform accumulation of fiber flocks from said first transport line to within said plurality of feeding chutes, through introduction of fiber flocks into each of said fiber feeding chutes from alternatingly different directions of said closed circuit loop distributing line;

said closed circuit loop distributing line including a second transport line section and a third transport line section each being connected to said switching means and extending in each of said at least two directions, respectively, of said closed circuit loop distributing line;

a plurality of feeding line sections; at least one of said feeding line sections being connected to at least one said fiber feeding chute and to at least one of said second and third transport line sections; and

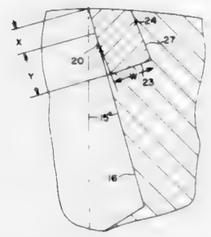
said closed circuit loop distributing line further including branching means arranged at the end of at least one of said second and said third transport line sections for connection to at least two of said feeding line sections.

5,326,195

DIAMOND FILM CUTTING TOOL

Steven J. Brox, Ridgefield, Wash., assignor to Norton Company, Worcester, Mass.

Continuation of Ser. No. 848,617, Mar. 9, 1992, abandoned. This application Oct. 8, 1993, Ser. No. 134,512
Int. Cl.[5] B23C *5/10, 5/18*; **B23B** *51/00*; **B23D** *77/00*
U.S. Cl. 407—32 **17 Claims**



1. A rotary cutting tool comprising a body member having an inner core of base material and an outer surface, said body member being fluted at least along a portion of its length and containing at least one fluted section defining a wedge-shaped section having a rake face ending at a cutting edge at the outer surface of the body member, said wedge-shaped section having a slotted channel disposed therejn in the base material and extending parallel to and adjacent to the cutting edge of the body member, said slotted channel containing a chemical vapor deposited diamond film cutter element having a major surface which extends from its position in the slot to the outer surface of the body member to form the cutting edge and has a portion of its major surface exposed near the cutting edge so that said rake face includes a first, diamond film rake face surface segment extending away from the cutting edge and a second, base material rake face surface segment extending generally in a direction away from the cutting edge from the boundary of the first surface segment remote from the cutting edge, the radial rake angle of the second rake face segment being less than the angle between the plane of that portion of the major surface which lies in the channel and underneath the base metal rake face segment and a plane through the rotational axis and said boundary.

5,326,196

PILOT DRILL BIT

Robert R. Noll, 2315 Willow Rd., Port Washington, Wis. 53074

Filed Jun. 21, 1993, Ser. No. 78,922
Int. Cl.[5] B23B *51/02, 51/06*
U.S. Cl. 408—56 **3 Claims**



1. A pilot drill bit, comprising,

an elongate shank, and an abutment flange fixedly and orthogonally mounted to the shank, and

a series of pilot drill sections of descending diametrical sizing spaced from said abutment flange to an outermost end of the drill bit terminating in a conical tip, and

each of the drill sections includes a fluted side wall, and wherein the shank, the abutment flange, and the drill sections are coaxially aligned relative to one another, and wherein each of the drill sections includes a first end wall spaced from and parallel a second end wall, wherein the

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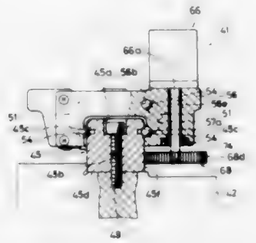
first end wall and the second end wall are orthogonally oriented relative to the axis, and

each drill section includes a central fluid cavity, and wherein the first end wall includes an internally threaded socket, and wherein the second end wall includes a threaded shank threadedly and removably mounted relative to the second end wall, wherein the threaded socket and the threaded shank are coaxially aligned relative to the axis, and wherein the side wall includes a plurality of fluid lubricant conduits directed therethrough in communication with the central cavity.

5,326,197
DRIVE APPARATUS

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,975
Claims priority, application Japan, Mar. 9, 1992, 4-085091
Int. Cl.[5] B23Q *1/14*; B61B *13/00*
U.S. Cl. 408—91 **9 Claims**



1. A drive apparatus comprising:

a track rail having a track formed along the axial direction;

a slider guided by said track;

a torque generation device mounted on said slider; and

a drive roller that rolls while engaging with said track rail by application of torque by an output shaft of said torque generation device;

wherein, indentations are formed in an engaging surface of at least either said track rail or said driver roller with respect to the other of said track rail or said drive roller, and wherein the side surface of said track rail serves as the track surface over which said driver roller is to roll.

5,326,198
MICROMETRIC DEVICE FOR FINISHING BORES

Giordano Romi, Sta.Bárbara d'Oeste-SP, Brazil, assignor to Industrias Romi S/A, Brazil

Filed May 4, 1993, Ser. No. 57,704
Claims priority, application Brazil, Oct. 8, 1992, PI 9204015
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—161 **15 Claims**

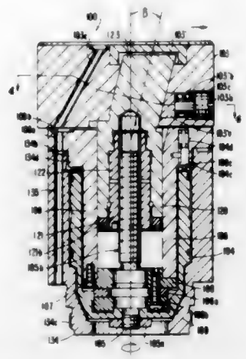
1. An improved micrometric device for finishing bores, comprising

a substantially cylindrical body having an interior,

a micrometric screw arranged in said interior, said micrometric screw having an axis of rotation and a threaded extension,

displacement means for displacing a tool holder on which a cutting tool is arranged, said displacement means comprising a backlash suppression system and movement transmission means,

said movement transmission means comprising a graduated drum arranged coaxially to said micrometric screw, and support means for axially and radially supporting said micrometric screw in relation to said body, said transmission means further comprising a cylindrical rod arranged in said body around said threaded extension of said micrometric screw, said cylindrical rod having an oblique portion or extension at an upper end thereof, said oblique extension being inclined at an angle of inclination in relation to an axis of said cylindrical rod, said movement transmission means further comprising a movable crossbeam on which the tool holder is mounted, said oblique

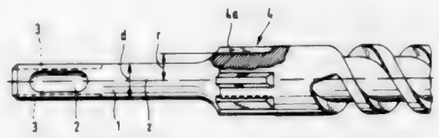


extension being slidably lodged in said movable crossbeam such that movement of said micrometric screw in the direction of its axis of rotation causes the tool holder to be displaced in a perpendicular direction to the axis of rotation of said micrometric screw.

5,326,199
TOOL BIT AND TOOL BIT CHUCK FOR MANUALLY OPERATED TOOLS

Werner Kleine, Achim-Uesen, and Reinhard Schulz, Munich, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Jul. 15, 1993, Ser. No. 92,343
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1992, 4223518
Int. Cl.[5] B23B *45/16*, *51/02*
U.S. Cl. 408—226 **8 Claims**

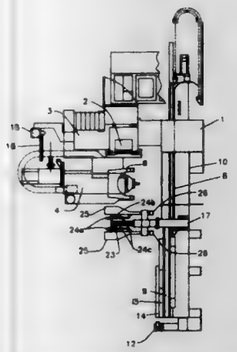


1. Tool bit to be inserted into a chuck in a manually operated tool used for chisel-cutting and/or percussion drilling, the tool bit comprising an axially extending shank section (1) and an axially extending working section, said shank section arranged to be inserted into the chuck and having a first end inserted first into the chuck, said shank section (1) has first faces (2) acting in the axial direction, second faces (3) acting in the circumferential direction and radially extending entrainment faces (4*a*) spaced axially from said first and second faces, said shank section (1) has a first axially extending subsection extending from the first end and a second axially extending subsection extending coaxially with and from said first subsection and spaced from the first end, said first subsection has an outer surface with a smaller diameter than an outer surface of said second subsection, said entrainment faces (4*a*), are formed in the outer surface of said second subsection, said entrainment faces (4*a*) have a least radial dimension from the axis greater than half the diameter (d) of the first subsection.

5,326,200
PRESS AND SUCTION APPARATUS OF A NUMBERICAL CONTROL ROUTER

Nobuyoshi Suzuki, Shizuoka, Japan, assignor to Heian Corporation, Shizuoka, Japan

Filed Jan. 5, 1993, Ser. No. 494
Int. Cl.[5] B23C *1/06*; B23Q *3/06*, *11/02*
U.S. Cl. 409—137 **4 Claims**



1. A press and suction apparatus of a numerical control router comprising:

a supporting bed,

a head structure provided with a process head having a main shaft motor with a rotary shaft for fixing a tool thereon of a drill or cutter,

first rail means for moving the head structure and being provided on the supporting bed,

suction table means for fixing a sacrifice board and a process board thereon,

second rail means on the supporting bed for moving the suction table means at a right angle to movement of the head structure,

a supporting frame attached to the supporting bed,

a plurality of rigid press members,

a plurality of press cylinder means, mounted on said supporting frame, for pressing said press members against at least one of the process board and sacrifice board when the process board or sacrifice board are placed on the suction table means, each said press cylinder means having a drive shaft and one said press member is secured to each said drive shaft,

guide means, mounted on said supporting frame, for guiding said shafts during a pressing operation,

a plurality of suction duct means for sucking dust and chips from the process board, the sacrifice board and the suction table, and

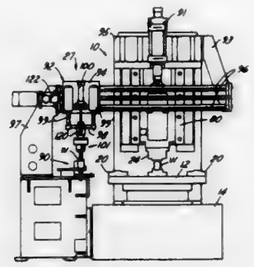
a plurality of suction cylinder means for lowering said suction duct means to the process board, the sacrifice board and the suction table, each said suction cylinder means having a drive shaft and one said suction duct is secured to a drive shaft of each said suction cylinder means.

5,326,201
LOADER/UNLOADER FOR BLIND BROACHING

Carrol L. King, Shelby Township, Macomb County, Mich., assignor to National Broach & Machine Company, Mt. Clemens, Mich.

Filed Jun. 25, 1993, Ser. No. 81,232
Int. Cl.[5] B23D *37/12*
U.S. Cl. 409—251 **18 Claims**

1. Apparatus for the progressive blind broaching of a plurality of workpieces comprising an indexing table having a central axis, means mounting said table for rotation about said central axis, means for intermittently indexing said table about said central axis in a step-by-step motion, a load station, an unload station, tool stations, all of said stations being arranged on said table in circumferentially spaced relation in a circle about said central axis, broaches mounted on said table at said tool stations, first and second rams mounted in circumferentially spaced relation adjacent to said table, each of said rams being adapted to releasably mount a workpiece to be broached opposite said circle of stations, means for moving said rams toward and away from said table at intervals between intermittent table indexing to cause said broaches to perform a material removing cut on workpieces mounted on said rams, said load

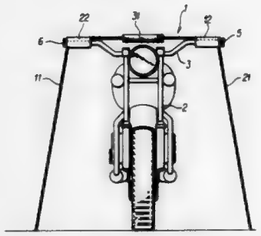


station having a releasable workpiece holder to deliver unbroached workpieces to said rams for broaching and said unload station having a releasable workpiece holder adapted to receive broached workpieces from said rams after broaching, a workpiece exchange depot at one side of said table, and means for transferring workpieces from said exchange depot to said load station and for transferring workpieces from said unload station to said exchange depot, said transferring means being arranged so as not to occupy or obstruct space along the remaining sides of said table.

5,326,202
TIE DOWN SYSTEM FOR MOTORCYCLES

Kent A. Stubbs, 2040 Stonybrook Dr., Red Bluff, Calif. 96080

Filed Oct. 4, 1993, Ser. No. 130,781
Int. Cl.[5] B60P *7/00*
U.S. Cl. 410—3 **2 Claims**



1. An apparatus for securing a motorcycle in an upright position during transport including in combination:

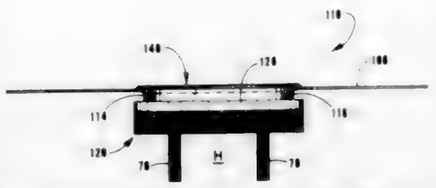
a. a first securing strap having at a first end a first grip cuff and at the other end a first securing means with which to secure the motorcycle to a transport vehicle;

b. a second securing strap interconnected with the first securing strap, the second securing strap having at a first end a second grip cuff, each of said grip cuffs comprising a cylinder open at both ends for placement of a motorcycle handlebar hand grip therein, and at the other end a second securing means; and

c. the first securing strap interconnected with the second securing strap by way of the first securing strap slidably passing through the second grip cuff and the second securing strap slidably passing throuh the first grip cuff.

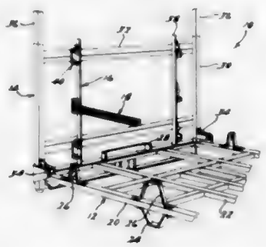
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5,326,203
STAKE POCKET ANCHOR
Johnnie D. Cockrell, P.O. Box 1352, Roseville, Calif. 95678
Filed Jul. 20, 1992, Ser. No. 915,303
Int. Cl.[5] B62D 33/02
U.S. Cl. 410—110 21 Claims



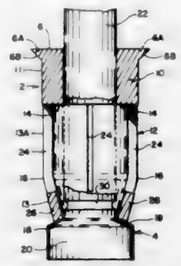
1. A stack pocket anchor mounted at a stake pocket, comprising:
a lower anchor plate placed within a hollow space of the stake pocket;
an upper locator plate placed over the hollow space of the stake pocket, and having a lower portion extending into the hollow space;
means for pinching said locator plate to said anchor plate to hold said locator plate and said anchor plate in a fixed relation with respect to the stake pocket, and
means for operatively coupling said pocket anchor to other instrumentalities, said means for operatively coupling including, with said upper and lower plates in their respective assembled positions, a temporarily unoccupied hole, said hole removably receiving means extending from said anchor plate and projecting above said locator plate.

5,326,204
DUNNAGE SUPPORT BAR
Bret M. Carlson, Grosse Pointe Farms, and Stephen M. Tobias, Cottrellville, both of Mich., assignors to Wolpac, Inc., Roseville, Mich.
Filed Nov. 20, 1992, Ser. No. 979,669
Int. Cl.[5] B60P 7/15
U.S. Cl. 410—143 15 Claims



1. A dunnage support bar for supporting and retaining dunnage, comprising:
a first member extending in a longitudinal direction and having first and second longitudinal bends defining a first base extending in a lateral direction orthogonal to said longitudinal direction and two first side walls each extending from said first base in a transverse direction orthogonal to said longitudinal and lateral directions, said first member having third and fourth longitudinal bends defining two retaining flanges each extending laterally inwardly from said first side walls, said first member having fifth and sixth longitudinal bends defining two retaining lips each extending laterally outwardly from said fifth and sixth bends and being located between said retaining flanges and said first base, at least one of said first side walls having a longitudinally extending rib therein for strengthening said first member and resisting bending thereof; and
a second longitudinally extending member having first and second longitudinal bends defining a second base and two second side walls each extending from said second base in said transverse direction, said second member having third and fourth longitudinal bends defining two tabs extending laterally inwardly from said second side walls;
said first and second members being assembled such that said tabs are each gripped by and fit within a retaining channel defined by said retaining flanges and retaining lips, whereby said first member fixedly retains said second member in place relative to said first member,
thereby defining a T-shaped channel within said dunnage support bar for receiving said dunnage.

5,326,205
EXPANDABLE RIVET ASSEMBLY
William E. Anspach, Jr., 1349 S. Killian Dr., Lake Park, Fla. 33403; William S. Reid, Ste. 550, Professional Office Bldg., 1932 Alcoa Hwy., Knoxville, Tenn. 37920, and Eddy H. Del Rio, 11413 52nd Rd. N., Royal Palm Beach, Fla. 33411
Filed May 27, 1992, Ser. No. 889,477
Int. Cl.[5] F16B 13/04, 13/06
U.S. Cl. 411—43 9 Claims



1. An expandable rivet for expanding in a hole, said rivet having a cylindrical body with an exterior surface for fitting in a hole, said cylindrical body having a top and a bottom, a radial projection means at the top of said cylindrical body for contacting the edge of a hole to control the extent the cylindrical body extends into a holes said cylindrical body having a longitudinal opening extending therethrough, a top portion of said cylindrical body having the opening with a first diameter for receiving a puller rod, a bottom portion of said cylindrical body below said top portion having the opening with a second diameter greater than the first diameter, said cylindrical body having an annular step facing downwardly where the two diameters of the opening meet forming a stop for a puller head, said bottom portion of said cylindrical body having a plurality of longitudinal slots therein extending between the exterior surface and the opening extending therethrough forming ribs, the lower part of said bottom portion being tapered inwardly to its end, a solid annular ring at the bottom of said tapered bottom portion connecting to the ribs, said solid annular ring having a bottom annular surface, said annular surface being tapered outwardly and downwardly for being contacted by a puller head for rivet expansion.

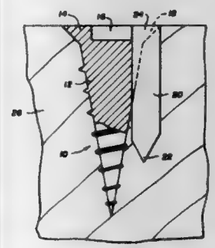
5,326,206
METHOD FOR COMPENSATING FOR BOLT HOLE MISALIGNMENT AND BOLT ASSEMBLIES THEREFOR
Jack W. Moore, Fullerton, Calif., assignor to Northrop Corporation, Los Angeles, Calif.
Filed Apr. 19, 1993, Ser. No. 49,889
Int. Cl.[5] F16B 39/28, 39/34, 43/02
U.S. Cl. 411—113 25 Claims

1. An assembly comprising a top plate having a plurality of bolt passage holes, said plate being in shear-resistant attachment to a support member having a corresponding plurality of bolt engaging bores even if said bolt passage holes and said bolt engaging bores are slightly out of alignment with each other, said assembly comprising a said top plate in which each of said bolt passage holes is formed to have a conical surface which tapers downwardly and inwardly through a substantial portion of the thickness of said plate to a minimum diameter, a said support member, and a plurality of threaded fastening bolts, one within each bolt passage hole and extending through a said bolt-engaging bore, each said bolt having a head provided with a rounded undersurface which engages the conical surface of



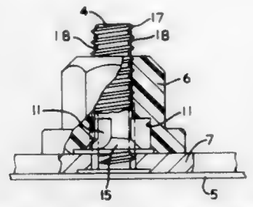
said bolt passage hole at an intermediate location thereon, and having a threaded shank having a diameter which is substantially smaller than the minimum diameter of the bolt passage hole, whereby each bolt shank passes non-concentrically through its oversize bolt passage hole, engages a bore of a support member, which may be slightly out of alignment therewith, and is threadably engaged by a nut aligned below said bores at the undersurface of the support member, and each bolt is tightened into a said nut until its rounded undersurface makes continuous line contact with the conical surface of the bolt passage in the top plate to produce shear-resistant engagement between the top plate and the support member, independent of frictional resistance.

5,326,207
SAFETY SCREW
Alexander Cerny, R.R. #1, Browning, Site C 16, Sechelt, British Columbia, Canada V0N 3A0
Filed Jul. 20, 1993, Ser. No. 93,916
Int. Cl.[5] F16B 15/00, 39/06
U.S. Cl. 411—357 5 Claims



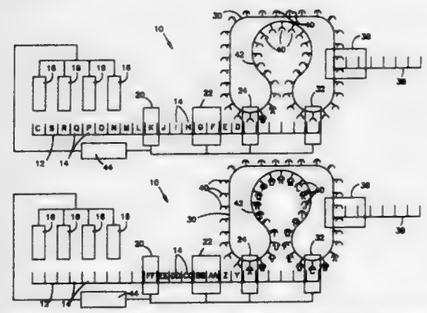
5. In combination, a screw having a threaded shaft, a head on the shaft, said head including means to permit rotation of the screw, and said shaft narrowing with distance from the head, a longitudinal slot extending from the head along the threaded shaft to receive a locking member, said slot being unobstructed at its end remote from the head to avoid distortion of the locking member; and
a locking member able to locate in the slot to prevent the screw from rotating, said slot having a depth less than the width of the locking member whereby the locking member, in the locking position, protrudes radially from the slot.

5,326,208
NUT FOR TURNING ONTO A THREADED STUD
Wolfgang Werner, Reutlingen, Fed. Rep. of Germany, assignor to Emhart Inc., Newark, Del.
Filed Jan. 28, 1993, Ser. No. 10,236
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 9201043
Int. Cl.[5] F16B 37/16
U.S. Cl. 411—437 10 Claims



1. A nut for turning onto a threaded stud and having a smooth bore extending from an inwardly-tapering conical lead-in area, wherein, in said lead-in area, a stripping zone is formed by a plurality of parallel tubular cavities of smaller diameter than the bore of the nut characterized in that said cavities begin at openings in said conical lead-in area and extend therefrom, said cavities being spaced apart and arranged symmetrically about the axis of the bore of the nut, in that the axis of each tubular cavity is spaced from the central axis of the bore of the nut by a distance smaller than the sum of the radii of the tubular cavity and of the bore and greater than the radius of the bore, in that the intersection of the walls of each tubular cavity with the wall of the bore of the nut forms cutting edges, and in that the respectively adjacent tubular cavities are linked to one another via linking cavities provided therebetween so that a coating stripped from the threaded stud as the nut is turned onto the stud can be accommodated in these cavities.

5,326,209
METHOD AND AN APPARATUS FOR FORMING A PLURALITY OF INDIVIDUAL BOOKS IN A PREDETERMINED SEQUENCE
B. Michael Duke, Clayton, Ohio, assignor to AM International, Inc., Chicago, Ill.
Filed Nov. 4, 1992, Ser. No. 971,288
Int. Cl.[5] B42C 1/00; B65H 43/02
U.S. Cl. 412—1 19 Claims



1. An apparatus for forming a plurality of individual books in a predetermined sequence, said apparatus comprising:
a main conveyor system having a plurality of spaced collating stations for receiving signatures;
a plurality of feeders for selectively feeding signatures to said spaced collating stations as said main conveyor sys-

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tem moves said plurality of spaced collating stations past said plurality of feeders to form the plurality of individual books in the predetermined sequence;

a reject means for rejecting a defective book from the sequence of books and leaving a space in the sequence of books;

a reorder means for causing said plurality of feeders to form a book that corresponds in sequence to the defective book;

a second conveyor for conveying the sequence of books away from said main conveyor system;

a first transfer means for transferring the sequence of books to said second conveyor; and

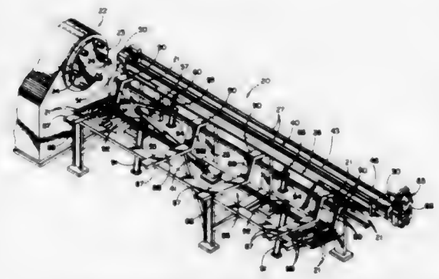
a second transfer means for transferring the book that corresponds in sequence to the defective book to said second conveyor downstream from said first transfer means and into the space in the sequence of books where the defective book was rejected from so that the books are in the predetermined sequence.

5,326,210

MACHINE FOR AUTOMATICALLY LOADING BAR STOCK

Gerald R. Savage, c/o Sharon Screw Products, Inc., 1928 12th St., Rockford, Ill. 61104

Filed Aug. 26, 1993, Ser. No. 112,615
Int. Cl.[5] B23B *13/04, 13/10*
U.S. Cl. 414—17 **13 Claims**



1. Apparatus for automatically loading elongated bars generally horizontally into the work holder of a machine tool, said apparatus comprising a main support having means for guiding a bar for lengthwise movement toward the work holder, a carriage mounted on said support for movement in first and second directions and operable when moved in said first direction to advance said bar along said guide means and toward said work holder, a first fluid-operated actuator for moving said carriage in said first direction through a first distance, a second fluid-operated actuator for thereafter moving said carriage in said first direction with a greater force and at a slower speed than said first actuator, and means for measuring displacement of said carriage in said first direction by said second actuator and for disabling said second actuator after said carriage has been moved through a second distance by said second actuator.

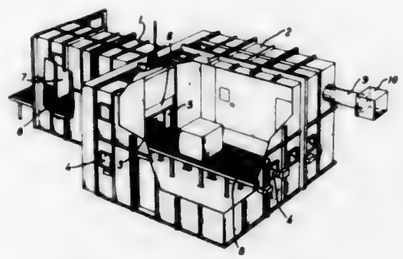
5,326,211

AIRLOCK SYSTEM

Richard J. Critchley, Near Chorley, England, assignor to British Nuclear Fuels plc, Warrington, England

Filed Jul. 1, 1991, Ser. No. 724,192
Claims priority, application United Kingdom, Jul. 13, 1990, 9015469
Int. Cl.[5] B65G *49/00*
U.S. Cl. 414—217 **4 Claims**

1. An airlock system comprising, in combination, means defining a containment constructed and arranged for receiving radioactive waste containers, means defining an opening through which the radioactive waste containers can be transferred into said containment, conveyor means to transfer radioactive waste containers through said opening into said containment from outside said containment, means forming a vertically oriented, vertically slidable door and at least one vertically oriented, horizontally slidable door, said doors being in contiguous relationship and selectively and variably movable across said opening in relatively transverse directions to vary a



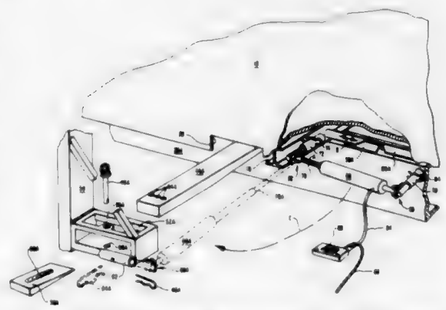
size of said opening by varying relatively transverse dimensions thereof to adapt the opening dimensions to dimensions of radioactive waste containers being transferred into said containment, and ventilation means for providing an inward airflow into the containment through the opening to prevent escape of atmosphere from the containment through the opening during transfer of the radioactive waste container through the opening.

5,326,212

SECTIONAL VAN TRAILER HAVING DETACHABLE, INTERCHANGEABLE COMPARTMENTS CAPABLE OF FORMING A CONTINUOUS VAN BODY

Hardy G. Roberts, 2790 Oneida La., Provo, Utah 84604

Continuation of Ser. No. 644,877, Jan. 23, 1991, abandoned, which is a continuation of Ser. No. 296,575, Jan. 12, 1989, abandoned. This application Sep. 4, 1991, Ser. No. 754,891
Int. Cl.[5] B65G *67/02*
U.S. Cl. 414—347 **35 Claims**



1. A trailer for hauling both household goods and commercial freight and capable of being pulled behind a vehicle having a hitch, the trailer comprising:

a lightweight trailer frame;

trailer hitching means, positioned adjacent to a first end of the lightweight trailer frame, for hitching the trailer to the vehicle;

at least one pair of wheels rotatably mounted on the lightweight trailer frame adjacent to a second end of the lightweight trailer frame;

a plurality of van section means, each van section means comprising a floor, a roof, two walls, two door openings

positioned opposite each other and means for forming a weather-tight barrier in the two door openings, and at least one side door, each of said doors being individually and securable to form a sealed compartment adapted for storing and transporting a variety of household goods or commercial freight, wherein at least one of the doors is a rollup door and further comprising support means for supporting the weight of the rollup door when said door is in the up position, said support means comprises a plurality of horizontal rollers which support the rollup door;

securing means for removably securing at least two of the van section means onto the lightweight trailer frame such that any one of the van section means may be selectively secured to and removed from the lightweight trailer frame, the van section means being removable from the lightweight trailer frame from at least one side of the lightweight trailer frame such that at least one of the van section means can be removed from the lightweight trailer frame regardless of its position on the lightweight trailer frame;

a force producing device comprising a hydraulic ram;

means for pivotally receiving the force producing device on a van section means such that the van section means is movable longitudinally or laterally on the trailer frame as the force producing device is operated; and

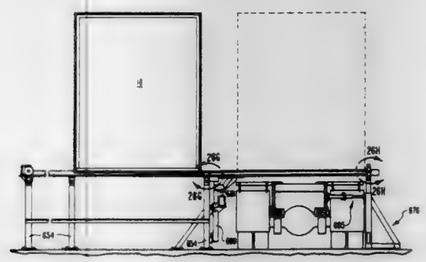
means for interconnecting adjacent van section means secured to the lightweight trailer frame, the means for interconnecting comprising means for attaching two van section means together such that at least two van section means are interconnected and secured onto the lightweight trailer frame to form a rigid and strong body and such that a plurality of van section means may be interchanged among a plurality of lightweight trailer frames and interconnected to one another to form a continuous van body providing an enclosed space including the lengths of two or more van section means.

5,326,213

SECTION VAN TRAILER HAVING DETACHABLE AND INTERCHANGEABLE COMPARTMENTS FOR TRANSPORTING BOTH HOUSEHOLD BELONGINGS AND COMMERCIAL FREIGHT

Hardy G. Roberts, 2790 Oneida La., Provo, Utah 84604

Division of Ser. No. 948,333, Sep. 18, 1992, abandoned, which is a division of Ser. No. 708,893, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 460,655, Jan. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 296,575, Jan. 12, 1989, abandoned. This application May 13, 1993, Ser. No. 62,147
Int. Cl.[5] B65G *67/02*
U.S. Cl. 414—392 **13 Claims**



7. An apparatus for removing and placing cargo compartments or van sections from and onto any one of a plurality of trailer frames having a plurality of different heights, each of the trailer frames having a first side and a second side, the trailer frames being used to transport the cargo compartments to a storage location positioned over an underlying surface, the apparatus comprising:

a rack supported above the underlying surface at a height greater than the highest of the one of the trailer frames from which a cargo compartment is to be removed, the rack comprising track means for receiving the cargo compartment and rolling the cargo compartment thereon, the track means comprising a first end and a second end;

track extension means comprising a first end and a second end, the track extension means being insertable under the cargo compartment when it is lifted above one of the trailer frames and for rolling the cargo compartment upon, the track extension means including means for aligning the first end of the same with the first end of the track means;

means for supporting the second end of the track extension means, the means for supporting being placed adjacent to the second side of one of the trailer frames during use, the means for supporting holding the cargo compartment above one of the trailer frames such that cargo compartments can be moved between the trailer frame and the rack; and

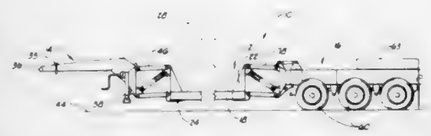
means for lifting the cargo compartment above one of the trailer frames, the means for lifting the cargo compartment being positioned adjacent to the one of the trailer frames during use, the means for lifting comprising a manually operable jack positioned on the rack and a manually operable jack positioned on the means for supporting the second end of the track extension such that the track extension means can be inserted under the cargo compartment.

5,326,214

METHOD AND APPARATUS FOR HANDLING A CUTTER OR THE LIKE

George W. Swisher, Jr., Oklahoma City, Okla., assignor to CMI Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 779,698, Oct. 21, 1991, abandoned. This application Jul. 7, 1993, Ser. No. 88,498
Int. Cl.[5] B60P *1/02*
U.S. Cl. 414—495 **7 Claims**



1. An apparatus for handling an object, comprising:

a lifting and lowering frame having first and second ends adapted to support the object;

first and second transport frames;

a first hydraulically actuated parallelogram connecting the first transport frame to the first end of the lifting and lowering frame; said first hydraulically actuated parallelogram comprising a hydraulic cylinder and at least one pair of upper and lower parallel linkages, each of said linkages and said cylinder being pivotally connected to the first transport frame and the first end of the lifting and lowering frame;

a second hydraulically actuated parallelogram connecting the second transport frame to the second end of the lifting and lowering frame; said second hydraulically actuated parallelogram comprising a hydraulic cylinder and at least one pair of upper and lower parallel linkages, each of said linkages and said cylinder being pivotally connected to the second transport frame and the second end of the lifting and lowering frame; and

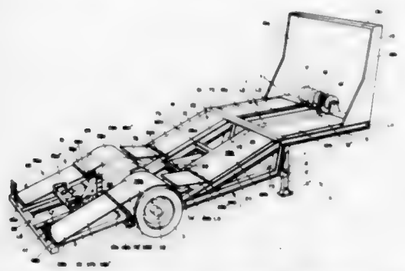
means for operating the hydraulically actuated parallelograms in unison, whereby the lifting and lowering frame may be raised and lowered in a horizontal plane with an angular orientation of the first and second transport

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frames with respect to the ground surface remaining unchanged

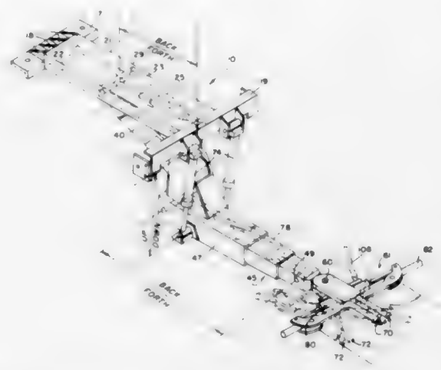
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5,326,215
UNIVERSAL VEHICULAR RECOVERY AND TOWING PLATFORM
Michael Eberhardt, 801 Patio Ct., St. Louis, Mo. 63129
Filed Jul. 20, 1992, Ser. No. 916,529
Int. Cl.[5] B60P *3/07*
U.S. Cl. 414—563 **19 Claims**



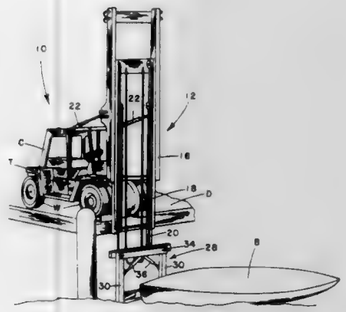
1. A device for transporting vehicles by hauling, as well as by engaging and towing the vehicles; the device comprising:
- a rigid, longitudinal first frame having front and rear ends and extending substantially horizontally therebetween, the front end being adapted for attachment to a fifth-wheel type truck tractor for pulling thereby;
- a vehicle support surface mounted substantially horizontally on the first frame, having right and left longitudinal portions, each right and left longitudinal portion being formed of a plurality of segments along the length thereof, at least one segment of each right and left longitudinal portion of the vehicle support surface being transversely divided into a plurality of subsegments, at least one subsegment of each transversely divided segment being movable;
- means for causing at least one subsegment of each transversely divided segment of each right and left longitudinal portion of the vehicle support surface to move;
- a jacking mechanism mounted beneath the front end of the rigid longitudinal first frame;
- a set of wheels supporting the rear end of the rigid longitudinal first frame; and
- a vehicle engagement assembly positioned along a central longitudinal axis of the first frame on the rear end thereof and pivotally attached thereto for securely retaining in position a vehicle loaded at least in part onto the device,
- wherein the rigid longitudinal first frame is constructed at least in part of heavy gauge angle iron and is formed of a plurality of horizontal longitudinal bars separated by and fixed to a plurality of horizontal transverse bars along the length of the longitudinal bars, and further comprising a central portion being angled forwardly upward in longitudinal section and having a plurality of substantially vertical bars positioned at a front end thereof, the substantially vertical bars being fixed at lower ends thereof to front ends of corresponding substantially horizontal longitudinal bars and further connecting at upper ends thereof forward ends of corresponding angled longitudinal bars, the angled longitudinal bars being fixed at rear ends thereof to the corresponding substantially horizontal longitudinal bars.

5,326,216
SELF-AUTO LOAD STEALTH DEVICE
Calvin W. Russ, 2119 E. Indian River Rd., Norfolk, Va. 23523
Filed Feb. 25, 1993, Ser. No. 28,703
Int. Cl.[5] B60P *3/12*
U.S. Cl. 414—563 **4 Claims**



1. A vehicle carrier with wheel lifting apparatus for a truck having an underframe comprising
- a channel having ledges along an opening of the channel for partially enclosing the channel, the channel being mounted to the underframe of the truck between a forward mount and a tail mount,
- a base being slidably received within the channel and being movably carried on the ledges,
- subtending arm pivotally mounted to the base at one end and secured at the other end to a rearwardly disposed housing,
- telescoping member assembly mounted within the housing for retracting or extending the telescoping member assembly, the end member of which terminates at a pivot,
- transverse member extending laterally in opposite directions from the pivot,
- wheel retainer supports mounted on the transverse member for selectively engaging and disengaging vehicular wheels from the wheel retainer supports,
- first hydraulic means connectively extending between the tail mount and the base,
- second hydraulic means connectively extending between the tail mount and the housing,
- third hydraulic means connectively extending between the housing and the pivot of the telescopic member assembly,
- fourth hydraulic means on the transverse member connectively extending between the pivot to each of the ends thereof for enabling selective engagement and disengagement of the wheel retainer supports with the vehicular wheels,
- fifth hydraulic means mounted on the transverse member proximate the wheel retainer supports, the fifth hydraulic means including a piston chamber having a hydraulicly driven reciprocating member, a stud extending from the piston through a wall of the chamber for engaging an aperture of the wheel retainer supports when lockingly engaging the aperture, and
- each of the first to the fourth hydraulic means being cooperatively operable to effect the wheel lifting apparatus of the vehicle carrier.

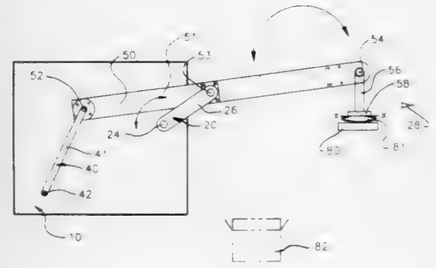
5,326,217
LIFT TRUCK WITH NEGATIVE DROP UPRIGHT
Clark C. Simpson, Martin, Mich.; Jeffery C. Hansell, Ames, Iowa, and Jack L. Shafe, Paris, Ky., assignors to Clark Material Handling Company, Lexington, Ky.
Filed Sep. 24, 1990, Ser. No. 587,042
Int. Cl.[5] B66B *9/20*
U.S. Cl. 414—635 **6 Claims**



1. In a lift truck having steerable and drive wheels for propelling and maneuvering the truck over a surface to pick up, transport, raise, lower and deposit loads above the surface in a positive lift mode, or below the surface in a negative lift mode, a power source of the truck for propelling it over the surface and operating its associated systems including an upright and carriage assembly, with drive means therefor, the improvements comprising:
- fixed and relatively movable mast sections operatively connected to the power source of the truck for extending the moveable mast section upwardly relative to the fixed mast section in a positive lift mode, or downwardly below the fixed mast section in a negative lift mode;
- said carriage assembly including load engaging means and being movable on said movable mast section; and
- said fixed and movable mast sections having laterally spaded, telescoping, interconnected rail members,
- a plurality of roller pairs longitudinally spaced along said rail members for anti-friction travel of the movable mast section in telescoping upwardly from the movable mast section in the positive lift mode and downwardly from the fixed mast section in the negative lift mode;
- first pairs of rollers situated adjacent opposite ends of each mast section;
- second pairs of rollers situated intermediate the first pairs of rollers such that when one of said first pairs of rollers on the movable mast section is telescoped out of engagement with the fixed mast section, a second pair of rollers remains in engagement therewith, cooperating with other first pairs of rollers wherein the forces are distributed relatively uniformly along a length of the upright assembly providing greater stability and rigidity for better control of the load in lifting it to maximum extension whereby the drive means moves the carriage assembly at a first, relatively slow speed over a first portion of a movement path and a second, relatively fast speed over a second portion of said movement path.

5,326,218
ROBOTIC ARM FOR HANDLING PRODUCT
David M. Fallas, 300 Leafy Hollow La., McGregor, Tex. 76657
Filed Mar. 8, 1993, Ser. No. 27,748
Int. Cl.[5] B66C *1/02*
U.S. Cl. 414—733 **5 Claims**

1. A robotic arm for moving product from a first handling location to a second handling location, comprising:
- (a) a support structure;
- (b) a driven shaft mounted to the support structure and adapted for rotation about a first axis;
- (c) means for selectively oscillating the shaft through successive, selected arcs of rotation;
- (d) a crank arm secured to the driven shaft at a first point such that the crank arm is rotated about the first axis;
- (e) a linkage member rotatably secured to the support structure for rotation about a second axis, the linkage member being rotatably secured to the support structure at a first linkage pivot point on the linkage member; and
- (f) an elongated boom member having a first end, a cranking point and a product handling end, the boom member being pivotally connected at its first end to the linkage member at a second linkage pivot point, and further being pivotally connected at its cranking point to the crank arm at a crank point on the crank arm,
- wherein the first axis of rotation and the second axis of rotation are selectively positioned, and the distances (i) between the first linkage pivot point and the second linkage pivot point; (ii) between the first point of the crank arm and the crank point of the crank arm; (iii) between the first end of the boom and the cranking point of the boom; and (iv) between the cranking point of the boom and the



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material handling point of the boom are each selectively chosen such that selected oscillation of the crank arm about the first axis of rotation effects movement of the product handling end of the boom in a path having an arcuate component and an approximately straight line component.

5,326,219

VACUUM BEAM PRODUCT DISPENSER AND SINGULATOR

James M. Pippin, Keller; Son T. Hoang, Garland, and Richard C. Hickey, Plano, all of Tex., assignors to ElectroCom Automation L.P., Arlington, Tex.

Filed Jan. 29, 1993, Ser. No. 2,664
Int. Cl.[5] B65G *59/06*, **B65H** *3/12*
U.S. Cl. 414—797.6 **17 Claims**

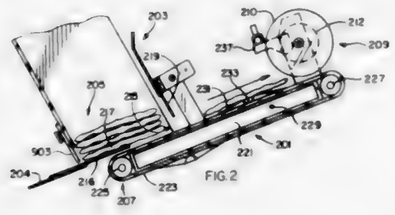


FIG.2

1. A vacuum beam product singulator comprising:
a selectively controlled longitudinally and laterally inclined conveyor belt having an adjustable drive roller and an adjustable idler roller, said conveyor belt further having an upstream input and a downstream output end;
a vacuum control element mounted at the surface of said conveyor belt for picking a bottom product from a stack of products and holding the picked product under vacuum control to the surface of the inclined conveyor belt during movement toward the downstream output end;
means connected to said vacuum control element for generating a vacuum through the vacuum control element to establish a vacuum force between the picked product and the conveyor belt; and
means for positioning a product stack non-orthogonally to the input end at an angle to the inclined conveyor belt, the picked product falling from the conveyor belt unless held to the conveyor belt by the vacuum control element.

5,326,220

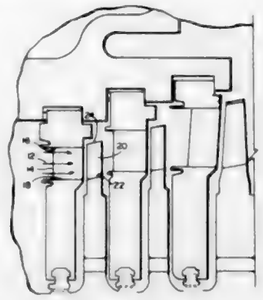
Patent Not Issued For This Number

5,326,221

OVER-CAMBERED STAGE DESIGN FOR STEAM TURBINES

Joseph W. Amyot, Rexford; Stephen G. Ruggles, Scotia; Philip F. Berrahou, Cohoes, all of N.Y., and Robert J. Orlando, West Chester, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1993, Ser. No. 112,365
Int. Cl.[5] F01D *9/02*, *5/14*
U.S. Cl. 415—191 **7 Claims**



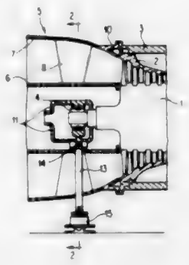
1. A nozzle for a steam turbine having a pair of adjacent blades having leading and trailing edges, blade bodies therebetween, and root and tip portions with a mid-region therebetween, said adjacent blades defining a throat therebetween measured by a series of straight lines extending from the trailing edges of a blade to the closest adjacent surface along the body of the adjacent blade and defining a pitch in the circumferential spacing between blades, the ratios of the throat to the pitch at successive profiles along said blades increasing from the root portions toward a mid-blade region and then decreasing from the mid-blade region to the tip portion, the blades being one of nozzle or bucket blades.

5,326,222

BEARING ARRANGEMENT FOR A THERMAL TURBO MACHINE

Kamil Matyscak, Uehlingen-Brenden, Fed. Rep. of Germany, and Michael Müller, Lengnau, Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Continuation of Ser. No. 800,017, Nov. 29, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,621
Claims priority, application European Pat. Off., Dec. 10, 1990, 90123734.7
Int. Cl.[5] F01D *25/00*
U.S. Cl. 415—213.1 **6 Claims**



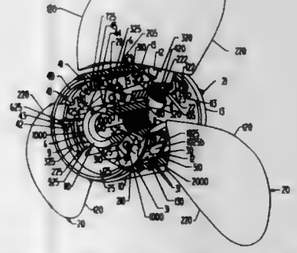
1. A thermal turbomachine having an outlet blading followed by an exhaust casing comprising:
a ring-shaped inner part and a ring-shaped outer part which delimit a diffuser;
a plurality of ribs connecting said ring-shaped inner and outer parts, said plurality of ribs uniformly distributed about circumferences of the inner and outer parts;
an outlet-end bearing arrangement including a bearing casing arranged in a hollow space within the ring-shaped inner part;
adjustment elements arranged inside of and connected to the ring-shaped inner part of the exhaust casing for positioning the bearing casing;
support means for supporting said bearing casing, said support means extending through both of said ring-shaped inner part and said ring-shaped outer part, said support means mounted upon a foundation such that said bearing casing is supported upon said foundation;
wherein the ring-shaped outer part of said exhaust casing is flanged to a housing of the thermal turbomachine, and further wherein exhaust flows through said diffuser from an upstream end to a downstream end, and said ring-shaped outer part is flanged to the housing of the thermal turbomachine at said upstream end; and
each of said ring-shaped inner part and said ring-shaped outer part extending in an axial direction from said upstream end, at which said ring-shaped outer part is flanged to said housing, to a location downstream of said bearing casing.

5,326,223

AUTOMATIC VARIABLE PITCH MARINE PROPELLER WITH MECHANICAL HOLDING MEANS

Stephen R. Speer, N. 14924 Edencrest Dr., Spokane, Wash. 99208

Division of Ser. No. 692,206, Apr. 26, 1991, Pat. No. 5,240,374, which is a continuation-in-part of Ser. No. 645,096, Jan. 24, 1991, Pat. No. 5,129,785, which is a continuation-in-part of Ser. No. 376,112, Jul. 6, 1989, Pat. No. 5,032,057, which is a continuation-in-part of Ser. No. 216,014, Jul. 7, 1988, Pat. No. 4,929,153. This application May 12, 1993, Ser. No. 60,807
Int. Cl.[5] B63H *3/00*
U.S. Cl. 416—46 **8 Claims**



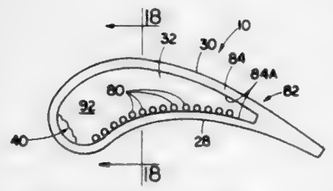
1. A variable pitch marine propeller comprising a hub case; drive securing means designed to secure the propeller to a rotating drive shaft on a boat, such that the propeller rotates with the drive shaft; a plurality of blades extending transversely outwardly from the hub case and rotatably secured to the hub case about a blade pivot axis transverse to the axis of the drive shaft, for pivotal movement about the blade pivot axis between two extreme angular pitch positions, a first lower, pitch position and a second, higher, pitch position; each blade comprising a hydrodynamic surface, having a leading edge, and a blade shaft extending from the hydrodynamic surface along the blade pivot axis to the hub case; the hydrodynamic surface being so formed, and the blade axis and hydrodynamic surface being so juxtaposed to each other and to the hub case, that the center of pressure of the blade during initial acceleration from low boat velocity, is located intermediate the pivot axis and the leading edge, such that the resultant hydrodynamic torque vector initially generated upon such acceleration of the propeller acts so as to tend to cause pivotal movement of the blade towards the higher pitch position; bias means operably connected between a blade and the hub case, tending to retain the blades in the first lower pitch position; centrifugal mass means, secured to the blades, the centrifugal mass means being located in such a position relative to the blades, that upon rotation of the propeller a centrifugal force is imparted to the blades tending to pivot the blades from the first, lower, pitch position to the second, higher, pitch position; and mechanical holding means operably connected to the blades to hold the blades against pivoting towards the second pitch position; such that the blades are caused to pivot towards the second higher pitch position when the net effect of the centrifugal force effect and the hydrodynamic torque effect is sufficient to overcome the bias means and the mechanical holding means.

5,326,224

COOLING HOLE ARRANGEMENTS IN JET ENGINE COMPONENTS EXPOSED TO HOT GAS FLOW

Ching-Pang Lee, Cincinnati; Theodore T. Thomas, Jr., and Anne M. Isburgh, both of Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 662,662, Mar. 1, 1991, abandoned. This application Dec. 2, 1991, Ser. No. 801,136
Int. Cl.[5] F01D *5/18*
U.S. Cl. 416—97 R **55 Claims**



20. A jet engine component, comprising:
(a) a body having a wall portion with an external surface exposed to a hot gas flow and an internal surface exposed to a cooling air flow; and
(b) a cooling hole arrangement including means defining a plurality of separate holes formed in spaced non-communicative flow relation to one another through said wall portion of said body to permit flow of the cooling air through said wall portion from said internal surface to said external surface thereof;
(c) each of said separate holes including at least one flow inlet formed at said internal surface of said wall portion for receiving the cooling air flow, at least a pair of flow outlets formed at said external surface of said wall portion for discharging the cooling air flow, and at least a pair of flow branches extending through said wall portion and between said flow inlet and said flow outlets for permitting passage of the cooling air flow from said flow inlet to said flow outlets.

5,326,225

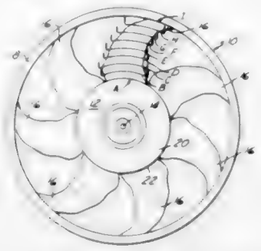
HIGH EFFICIENCY, LOW AXIAL PROFILE, LOW NOISE, AXIAL FLOW FAN

William P. Gallivan; Haran K. Periyathamby, and Alex S. Joseph, all of London, Canada, assignors to Siemens Automotive Limited, London, Canada

Continuation of Ser. No. 884,968, May 15, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 91,074
Int. Cl.[5] F04D *29/38*
U.S. Cl. 416—179 **2 Claims**

1. A one-piece high efficiency, low axial profile, low noise, axial flow fan comprising a hub that is rotatable about an axis, a plurality of skewed, airfoil-shaped fan blades distributed circumferentially around said hub and extending both radially

and axially away from said hub, each blade having a root joining with said hub, a circular band that is concentric with and spaced radially outwardly from said hub, each blade having a crest joining with said band, and wherein the axially



rearward face of said hub, the axially rearward edge of said band and the tails of said blades occupy a common plane that is perpendicular to said axis, and in which each of said blades is constructed substantially in accordance with parameters defined as

R (p.u.)	C (p.u.)	θ (deg.)	ϵ (deg)	Y OFFSET (mm)	SKEW (adjusted)
0.43	0.87	42	71.7	0	0.0
0.50	0.80	27	75.6	0	2.5
0.57	0.67	19	75.9	0	3.7
0.64	0.54	18	75.8	0	2.4
0.72	0.47	17	74.9	0	0.9
0.79	0.40	17	73.1	0	−1.2
0.86	0.34	17	72.3	0	−4.4
0.93	0.29	17	72.3	0	−8.0
1.00	0.23	20	72.8	0	−15.4

wherein R(p.u.) is radial distance from axis as a function of the fan's radius, C(p.u.) is chord length of the blade's airfoil-shaped cross section at the corresponding radial distance as a fraction of the cross section's radial distance, θ is the camber angle of the cross section, ϵ is the stagger angle of the cross section, and Y-OFFSET is measured between the trailing edge of the cross section and the back of the hub.

5,326,226

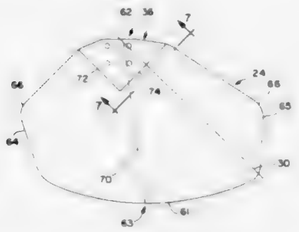
CONTINUOUS CURVE HIGH SOLIDITY HYDROFOIL IMPELLER

Wojciech Wyczalkowski, Harrisburg; John Von Essen, Palmyra, and Wojciech Zoladek, Hershey, all of Pa., assignors to Philadelphia Mixers Corporation, Palmyra, Pa.

Filed May 28, 1993, Ser. No. 68,964

Int. Cl.[5] F04D *29/38;* **B21H** *7/16*

U.S. Cl. 416—243 **8 Claims**



1. An impeller for producing fluid flow in an axial direction relative to a shaft rotating on an axis, comprising:

at least three blades, each said blade being of uniform thickness and extending outwardly along a respective radius relative to the axis of the shaft, each said blade being continuously curved to define a section of a regular cylinder; and having a leading edge and a trailing edge in a rotational direction of the shaft;

said regular cylinder defining a roll axis for each said blade, the roll axis occupying a plane that lags said radius in the rotational direction of the shaft, by an offset angle;

each of the blades defining a pitch angle relative to the radius, such that in the direction of axial flow, the leading edge precedes the radius and the trailing edge follows the radius; and,

at least one base member coupling between the blades and the shaft, each said blade and said base member abutting one another along at least one surface disposed at a predetermined angle relative to the roll axis.

5,326,227

EXHAUST APPARATUS WITH VACUUM PUMP

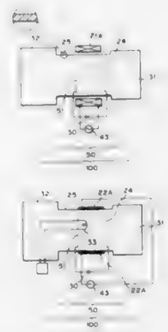
Kazutoshi Nagai, Tokyo; Tohru Satake; Hideaki Hayashi, both of Kanagawa, and Takanari Yasui, Miyagi, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Division of Ser. No. 833,853, Feb. 12, 1992, Pat. No. 5,240,381, which is a continuation-in-part of Ser. No. 739,361, Aug. 2, 1991, abandoned. This application Feb. 1, 1993, Ser. No. 11,783

Claims priority, application Japan, Aug. 3, 1990, 2-205224; Feb. 12, 1991, 3-38847; Feb. 12, 1991, 3-38848

Int. Cl.[5] H01J *41/14, 41/18*

U.S. Cl. 417—48 **8 Claims**



1. A high vacuum pumping system, comprising:

a vacuum pump; and

an exhaust apparatus provided between said vacuum pump and a vessel to be evacuated, said exhaust apparatus including

a first grid electrode, a second grid electrode installed opposite to the first grid electrode, a vessel for accommodating the two electrodes, means for inducing discharging between said first grid electrode and said second grid electrode by coupling of a high frequency field, said means for inducing discharging being disposed outside of said vessel and connected to a high frequency power supply, and a DC power supply for applying a high voltage between said first and second grid electrodes so as to get the second grid electrode positive.

5,326,228

LIQUID EJECTION MIXING AND DISPENSING APPARATUS

David A. Armitage, and John Peacock, both of Leicester, United Kingdom, assignors to Roussel-Uclaf, France

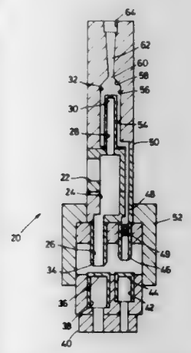
PCT No. PCT/GB92/00184, § 371 Date Dec. 1, 1992, § 102(e) Date Dec. 1, 1992, PCT Pub. No. WO92/14063, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 31, 1992, Ser. No. 937,910

Claims priority, application United Kingdom, Feb. 1, 1991, 91300829

Int. Cl.[5] B05B *7/26;* **F04F** *5/44*

U.S. Cl. 417—151 **3 Claims**



1. An ejector for mixing a stream of liquified gaseous propellant and a liquid stream containing an active ingredient comprising an inlet **22** opening into a diversion chamber **24** to divide propellant flow between a propellant-to-concentrate conduit **26** and a propellant-to-jet conduit **28** terminating in a main jet **30** opening into a mixing chamber **32**; propellant-to-concentrate conduit **26** terminates in a sharp orifice **34** to penetrate a seal **36** of an inlet conduit **38** of a liquid container **40** the liquid container having an outlet conduit **42** provided with a seal **44** to be penetrated by a sharp end **46** of a mixture conduit **48** connected by a metering jet **49** and an annular region **54** surrounding the propellant to jet conduit **28** to said mixing chamber **32**, the mixing chamber **32** is comprised of a cylindrical portion **56** adjacent to jet **30** and a funnel shaped portion **58** centered about an outlet point **60** opening into a flared recovery zone **62** terminating in a female connector **64**.

5,326,229

INTEGRAL AIR SUSPENSION COMPRESSOR AND ENGINE AIR PUMP

Ronald J. Collins, Dearborn, Mich. 48128, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 28, 1993, Ser. No. 82,638

Int. Cl.[5] F04B *23/10;* **B60G** *11/27;* **F01N** *3/22*

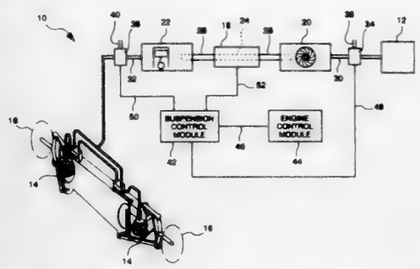
U.S. Cl. 417—201 **11 Claims**

1. An assembly for supplying compressed air to both an engine and an air suspension of a motor vehicle, the assembly comprising:

a motor having a shaft;

first compressor means driven by the shaft of the motor for producing high volumes of air at low pressure required by the engine, and for delivering the air produced by the first compressor to a line in communication with the engine; and

second compressor means driven by the shaft of the motor for producing low volumes of air at high pressure required by the air suspension, and for delivering the air produced



by the second compressor means to a line in communication with the air suspension.

5,326,230

CLOSED LOOP CONTROL CIRCUIT FOR VARIABLE HYDRAULIC PUMP

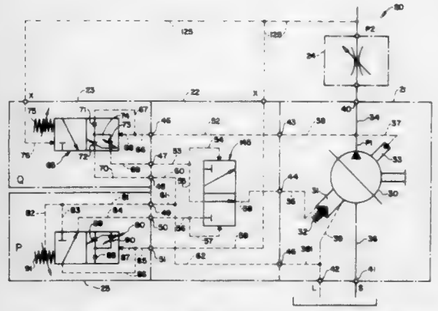
Günter Fischer, Gemünden, and Rainer Knöll, Burgsinn, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Oct. 23, 1992, Ser. No. 965,024

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 4135277

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—218 **8 Claims**



1. A closed loop control circuit for a variable displacement pump, the output flow of the pump being varied by control means, the control circuit comprising:

at least two closed loop controllers adapted to actuate the control means by control signals, and

at least one hydraulic switching valve connected between the closed loop controllers and the control means, wherein the control signals provided by the closed loop controllers are present as pressure signals and the switching valve selects the higher one of said control signals and passes the higher control signal to the control means so as to vary the displacement of the pump.

5,326,231

GAS COMPRESSOR CONSTRUCTION AND ASSEMBLY

Prakash N. Pandeya, Bristol, Tenn.; Gordon T. Boyd, Abingdon, and Robert D. Douglas, Bristol, both of Va., assignors to Bristol Compressors

Filed Feb. 12, 1993, Ser. No. 16,911

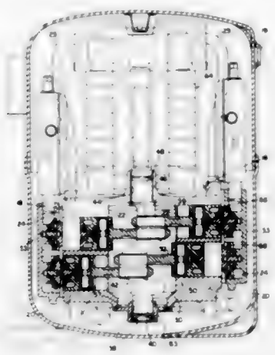
Int. Cl.[5] F01B *1/08;* **F04B** *35/04*

U.S. Cl. 417—271 **6 Claims**

1. A gas compressor comprising block means having two

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opposed cylinder bank means each having at least one cylinder formed therein, each said bank means having an upper end, a lower end, inner wall means, outer wall means, and opposite side wall means, floor means interconnecting said cylinder bank means at their lower ends, and roof means interconnecting said cylinder bank means at their upper ends, crankcase means formed by said inner wall means, roof means and floor means, said crankcase means having a longitudinal axis extending through said roof means and floor means, first bearing means positioned on said floor means and aligned with said axis for rotatably mounting one end of a crankshaft, aperture means



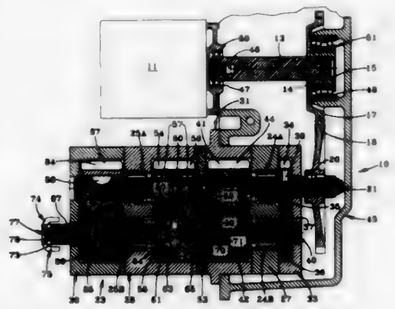
through said roof means, second bearing means positioned on said roof means and aligned with said axis for rotatably mounting the other end of said crankshaft through said aperture means, piston means mounted in said cylinders and each having a connecting rod mounted on said crankshaft, the adjacent edge portions of said inner wall means, said side wall means, said floor means and said roof means defining an access portal to said crankshaft and to said connecting rods through each side of said block means, drive means for said crankshaft means for rotating the same and reciprocating said pistons in said cylinders, and suction and discharge valve means for admitting said gas to and discharging said gas from said cylinders.

5,326,232

TWO STAGE PUMP ASSEMBLY WITH MECHANICAL DISCONNECT

David A. McDonnel, Speedway, and Karl L. Swartout, Mooresville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 20, 1993, Ser. No. 49,082
Int. Cl.[5] F04B *9/00*
U.S. Cl. 417—319 **5 Claims**



1. A two stage pump comprising:

a first pump assembly continuously drivingly connected to a rotatable input shaft;

a second pump assembly being selectively operable in conjunction with said first pump assembly;

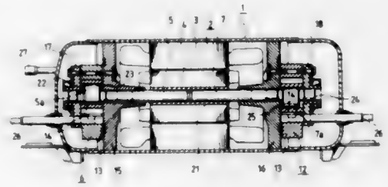
a selectively operable speed sensitive means having a longitudinal axis and having drive tang means being positionable radially with respect to said longitudinal axis for selectively engaging and disengaging a portion of the second pump assembly for operatively connecting the second pump assembly to the input shaft.

5,326,233

ENCLOSED MOTOR COMPRESSOR OF A TWO CYLINDER TYPE

Tetsuya Mochizuki; Susumu Kawaguchi; Masatoshi Sakai; Koichi Sato, and Hideaki Maeyama, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,229
Claims priority, application Japan, Jul. 3, 1992, 4-177008
Int. Cl.[5] F04B *27/08*
U.S. Cl. 417—350 **4 Claims**



1. An enclosed motor compressor of a two cylinder type, comprising:

first and second rotary shafts respectively having first and second eccentric portions for driving first and second compression means respectively disposed on both ends of a motor means;

first and second sub bearings respectively disposed on the opposite sides of said compression means to said motor means for supporting said rotary shafts; and

first and second main bearings respectively interposed between said motor means and said compression means for supporting said rotary shafts;

wherein a first clearance is formed between a surface of said first sub bearing forming one of said sub bearings and a first end face of the first eccentric portion of said first rotary shaft forming one of said rotary shafts, said surface of said first sub bearing being perpendicular to a first slide surface thereof and facing said first compression means forming one of said compression means and provided on said first sub bearing, said first end face of the first eccentric portion being opposed to said first sub bearing surface, said first clearance being arranged such that, when said first rotary shaft moved in the direction of said first compression means, said first sub bearing surface and said first end face of the first eccentric portion of said first rotary shaft can be brought into contact with each other;

a second clearance is formed between a surface of said first main bearing and a second end face of the first eccentric portion of said first rotary shaft, said surface of said first main bearing being perpendicular to the first slide surface thereof and facing said first compression means, said second end face of the first eccentric portion being opposed to said first main bearing surface, said second clearance being generated when said first sub bearing surface and said second end face of the first eccentric portion of said first rotary shaft are caused to get in contact with each other;

a third clearance is formed between a surface of said second sub bearing forming the other of said sub bearings and a first end face of the second eccentric portion of said second rotary shaft forming the other of said rotary shafts, said surface of said second sub bearing being perpendicular to a second slide surface thereof and facing said second compression means forming the other of said compression means and provided on said second sub bearing, said first end face of the second eccentric portion being opposed to said second sub bearing surface, said third clearance being generated when said first sub bearing surface and said second eccentric portion's first end face of said first rotary shaft are caused to get in contact with each other, said third clearance being set greater than said second clearance; and

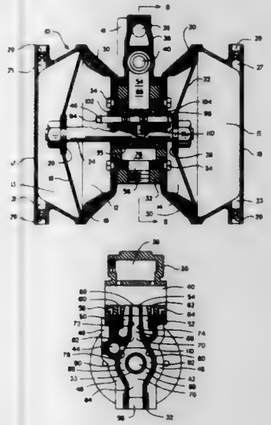
a fourth clearance is formed between a surface of said second main bearing perpendicular to the second slide surface thereof and facing said second compression means provided on said second main bearing and a second end face of the second eccentric portion of said second rotary shaft opposed to said second main bearing surface, said fourth clearance being generated when said first sub bearing surface and said first end face of the first eccentric portion of said first rotary shaft are caused to get in contact with each other.

5,326,234

FLUID DRIVEN PUMP

William F. Versaw, Pittsburgh; Charles W. Taylor, and Mitchell H. Jordan, both of Greensburg, all of Pa., assignors to Versa-Matic Tool, Inc., Export, Pa.

Filed Feb. 17, 1993, Ser. No. 18,807
Int. Cl.[5] F04B *35/00*
U.S. Cl. 417—393 **21 Claims**



1. A fluid driven pump, comprising:

inletting means for inletting fluid;

expanding chamber means for expanding upon introduction of fluid thereinto and contracting upon removal of fluid therefrom;

pumping chamber means positioned adjacent said expanding chamber means for pumping in response to expansion and contraction of said expanding chamber means;

outletting means for outletting pressurized fluid; and

control means for controlling a flow of fluid from said inletting means to said expanding means, and a flow of pressurized fluid from said expanding means to said outletting means;

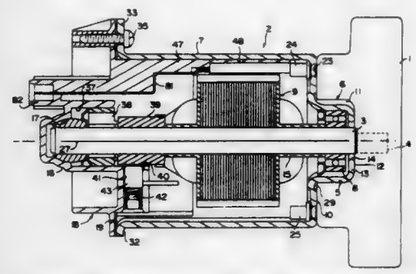
wherein said outletting means includes means for gradually reducing the pressure of the fluid within a portion of said outletting means to reduce blockage of said outletting means due to freezing.

5,326,235

ELECTRIC MOTOR WITH ATTACHED PUMP

Rainer Bruhn, Karlsruhe, Fed. Rep. of Germany, assignor to SWF Auto-Electric GmbH, Bietigheim-Bissingen, Fed. Rep. of Germany

PCT No. PCT/EP91/02272, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/14927, PCT Pub. Date Sep. 3, 1992
PCT Filed Dec. 2, 1991, Ser. No. 937,844
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1991, 4105349
Int. Cl.[5] F04B *35/04*
U.S. Cl. 417—410 R **48 Claims**



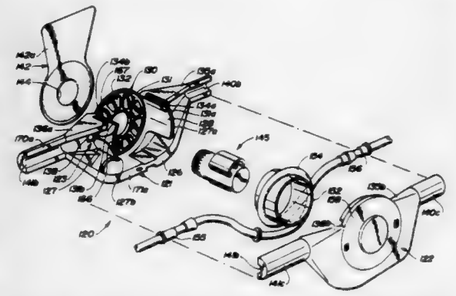
1. An electric motor connected with a pump, whereby the housing of the pump comprises a cylindrical insertion recess for a tappet-shaped stud of the motor housing which engages therein and whereby this stud additionally receives the first bearing, free from play, of the motor armature at the side of the pump and has an aperture for the armature and the motor driven shaft, wherein the housing of the motor is formed as a pot-shaped member deep drawn from a metal blank, the opening of the pot, facing away from the pump of said drawn member, is closed by a cover receiving the second bearing of the motor armature, and wherein, seen in the circumferential direction, the cross section of the wall of the stud, which protrudes from the bottom of the pot axially, is formed wavelike and has longitudinal flutes and which form fittingly engages into the insertion recess of the pump.

5,326,236

COMPLIANT ROTOR FOR AN IMPROVED CARTRIDGE FOR DRUG INFUSION PUMP

Thomas A. Kramer, San Carlos; Mike Lawless, Poway; Stephen J. Kreinick, San Diego, and John D. Gjata, La Jolla, all of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 24, 1993, Ser. No. 126,461
Int. Cl.[5] F04B *43/12*
U.S. Cl. 417—476 **15 Claims**



1. In a segmented peristaltic cartridge comprising a housing, a cover, and an open segment therebetween, said combination

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defining pump and chamber therein, said cartridge having respective inlet and outlet ports at opposite ends thereof, the housing including a rear segment wherein an arc of approximately 240° forms the internal periphery thereof, the cover, having an arc of approximately 240° which forms the internal periphery thereof, is joined to the housing, a tubing track is created by the space between said housing and said cover, said inlet and outlet ports being formed by the mating of said housing and cover segments, and a pump frame engaging said housing at the open segment thereof and providing a surface completing a missing chord of said tubing track, an improved rotor including an eccentric rotor and rotor shaft disposed in said chamber in the cartridge between said rear housing and said front cover, a sleeve mounted on the rotor, a length of resilient tubing spirally wrapped around said sleeve to be disposed in said tubing track, and having opposite ends engaging respective inlet and outlet ports of the cartridge, the improved rotor including:

a cylindrical body portion including an interior bore received on a motor shaft associated with the motor frame;

an outer cylindrical surface thereof; and

an eccentric structure mounted on the outer cylindrical surface of the rotor, said eccentric structure comprising at least one pair of base portions extending generally radially outwardly from the outer cylindrical surface of the rotor and spaced apart on the rotor cylindrical outer surface, a first beam member mounted at one end at the upper end of a first base portion, and an opposite end of the first beam member projecting outwardly from said first base portion, a second beam member having its one end mounted on an upper end of a second base portion, and an opposite end of the second beam member projecting outwardly from said second base portion, both first and second beam members disposed a common distance above the cylindrical outer surface of the rotor and generally concentric therewith, with the respective opposite ends of the beam members projecting toward each other but spaced apart at respective opposite ends thereof whereby in the assembled housing including said housing segment, cover segment, eccentric rotor, rotor sleeve and tube, the eccentric rotor engages said resilient tubing when the cartridge engages the motor frame and the rotor is connected to a rotational drive means, the flexible eccentric structure of the rotor enabling delivery of liquid medicant to a patient with increased reliability.

5,326,237

HIGH VOLUME PUMP WITH VALVE TUBE

Howard E. Cecil, Miramar, Fla., and Thomas Dupont, Hoschton, Ga., assignors to Dupont Industries, Inc., Braselton, Ga.

Filed Mar. 8, 1993, Ser. No. 28,557

Int. Cl.[5] F04B *7/00*

U.S. Cl. 417—511 **11 Claims**

1. A pump for moving a fluid, comprising:

an outer chamber having a first end wall portion containing a fluid entrance port and a second end wall portion containing a fluid exit port,

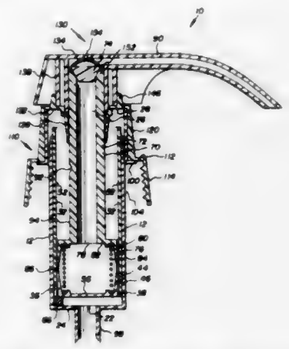
a valve tube slidably contained within said chamber and having a first edge with a cut out section, adjacent said chamber first end wall portion,

a first sealing member within said valve tube having a side edge resiliently bearing against said valve tube adjacent said first edge and having a bottom wall smaller than said chamber first end wall portion,

spacer means connecting and spacing apart said first sealing member and said chamber first end wall portion,

a plunger having a tubular stem portion containing a check valve plug and extending through said chamber exit port, and having a second sealing member contained within said valve tube and also having a side edge and a hole opening into said stem portion and an outwardly flared side wall bearing against said valve tube and oriented to oppose said first sealing member,

such that when said stem portion is moved outward through said exit port, said first and second sealing members move apart and create a low pressure area between them, while the friction of said second sealing member dragging against said valve tube moves said valve tube cut out section to a position beside said side wall edge of said first sealing member, permitting liquid to pass through said entrance port and said cut out section and into said valve tube between said first and second sealing members; and pushing said plunger stem portion back through said exit



port causes said second sealing member to once again drag against said valve tube and move said cut out section toward said first end wall portion and beyond said first sealing member side wall edge, pressurizing said liquid within the valve tube, the liquid thereby being driven up through said second sealing member hole and said plunger stem portion, dislodging said check valve plug and permitting said pressurized liquid to escape through said plunger stem portion.

5,326,238

ROTATING PISTON MACHINE HAVING CAM CONTROLLED ALTERNATING PISTONS

Jurgen Schukey, Hamburg, Fed. Rep. of Germany, assignor to SITA Maschinenbau-und Forschungs GmbH, Hamburg, Fed. Rep. of Germany

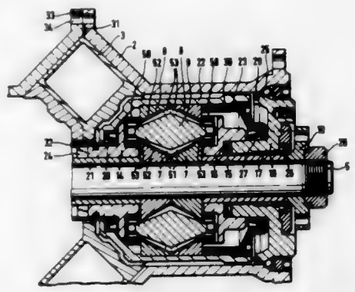
PCT No. PCT/EP91/02317, § 371 Date Aug. 5, 1993, § 102(e) Date Aug. 5, 1993, PCT Pub. No. WO92/10648, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 4, 1991, Ser. No. 74,829

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1990, 9016807

Int. Cl.[5] F01C *1/067, 1/077*

U.S. Cl. 418—36 **20 Claims**



1. Rotary piston machine having a casing (2), having a shaft (5) supported in the casing (2), having an annular space (1) in

which two rotation bodies (3, 4) are arranged and on whose walls, in which inlet and outlet openings (*6a–6h*) are provided for the working medium, the rotation bodies (3, 4) are in sealing contact, each rotation body (3, 4) having sector-shaped paddles (*3a–3d*, *4a–4d*) extending radially outwards, the two rotation bodies (3, 4) being coaxially arranged and their paddles interleaving with one another in such a way that each paddle of one rotation body is arranged between two paddles of the other rotation body, a cam track control (7, 8, 9) being provided by means of which, on rotation of the shaft (5), the two rotation bodies (3, 4) execute revolutions with cyclic changes to the rotational velocity and the distances between the paddles of the two rotation bodies, and the cam track control has first cam track control means in the form of first cam rings (7), second cam track control means in the form of second cam rings (8) and third cam track control means in the form of a cage (14) with, held within it so that they cannot be displaced in the peripheral direction, rolling bodies (9) narrowing conically to both ends, which rolling bodies (9) roll on the first (7) and second (8) cam rings, one (7, 8, 14) of the cam track control means being connected to the shaft (5) and another (7, 8, 14) of the cam track control means being torsionally connected to one of the rotation bodies (3, 4) and the remaining cam track control means (7, 8, 14) being connected to the casing (2), characterised in that the rolling bodies (9) are provided with bevel-wheel teeth (51), in that the surfaces, directed towards the rolling bodies (9), of the cam tracks (53) of the cam rings (7, 8) are arranged in a rotationally symmetrical area corresponding to the surface of the rolling bodies (9) and are provided with corresponding bevel-wheel teeth (54), and in that, as a maximum, one cam track control with a first and a second cam ring (7, 8) and rolling bodies (9) is provided for each rotation body (3, 4).

5,326,239

FLUID COMPRESSOR HAVING A HORIZONTAL ROTATION AXIS

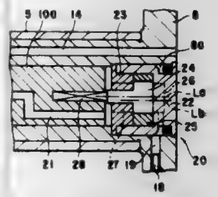
Takayoshi Fujiwara, Kawasaki, and Hisanori Honma, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1993, Ser. No. 10,874

Claims priority, application Japan, Jan. 31, 1992, 4-16121; Feb. 10, 1992, 4-23580

Int. Cl.[5] F01C *21/04*

U.S. Cl. 418—88 **7 Claims**



1. A fluid compressor having a horizontal rotation axis comprising:

a sealed casing;

an oil reservoir, formed at an inner bottom portion of the sealed casing, for receiving a lubrication oil;

a rotor situation within the sealed casing and supported with its axis situation horizontally, in parallel to the level of the lubrication oil in the oil reservoir at a predetermined distance kept between the rotor and the level of the lubrication oil;

a motor unit, provided on the rotor, for rotating the rotor;

a compression mechanism, providing on the rotor, for sucking, compressing and discharging a fluid to be compressed, in accordance with the rotation of the rotor; and

oil supply means, provided on the rotor, for sucking the lubrication oil from the oil reservoir by utilizing a torque of the rotor as a driving force, and forcefully supplying the lubrication oil to a discharge-side slide portion of the compression mechanism

said compression mechanism comprising:

a cylinder having open end portions rotatably supported by bearings;

a rotor piston situation within the cylinder and having end shaft portions rotatably supported by the bearings with an eccentricity to the cylinder;

a blade helically wound around the outer periphery of the rotor piston, the blade being able to project from and retreat in the periphery of the rotor piston; and

driving means for coupling the cylinder and the rotor piston, rotating together the cylinder and the rotor piston, taking the fluid to be compressed into a working space defined by the cylinder, the rotor piston and the blade, and successively conveying and compressing the fluid,

said oil supply means being provided on the at least one of the shaft portions of the rotor piston, within at least one of the bearings supporting the shaft portions,

said oil supply means comprising:

at least one winding portion adjoining the shaft portion of the rotor piston;

at least one support hole for supporting the shaft portion of the rotor piston within at least one of the bearings, the support hole adjoining the winding portion;

an eccentric support portion being eccentric to the center axis of the support hole, and having an eccentric chamber being defined between the periphery of the shaft portion and the inner cavity of the bearing;

a helical portion wound around the winding portion of the rotor piston, being able to project from and retreat in the periphery of the winding portion, projecting to the eccentric chamber, and being rotatable with the winding portion as one unit; and

an oil suck-up path having one opening end portion, which is open to the eccentric chamber, and the other opening end portion, which is immersed in the lubrication oil in the oil reservoir,

wherein in accordance with the rotation of the shaft portion, the helical portion is rotated, and the lubrication oil is sucked up through the oil suck-up path, led to the eccentric chamber and forcefully supplied to the compression mechanism.

5,326,240

METAL MOLD DEVICE FOR MOLDING A DISC SUBSTRATE

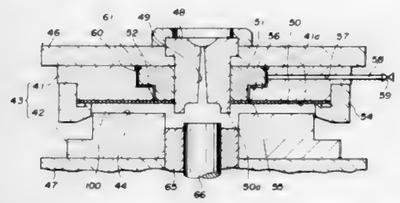
Junichiro Kudo, and Jun Shimizu, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 7, 1992, Ser. No. 957,671

Claims priority, application Japan, Oct. 12, 1991, 3-292558; Jan. 8, 1992, 4-019445; Apr. 21, 1992, 4-126662

Int. Cl.[5] B29C *45/00*

U.S. Cl. 425—3 **7 Claims**



1. A metal mold device for molding a substrate having a projection, the projection being formed in a central portion of the substrate and having an opening, the device comprising:

a first metal mold,

a second metal mold mounted facing said first metal mold,

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one of the first metal mold and the second metal mold being movable toward and away from the other of the first metal mold and the second metal mold, the second metal mold defining a mold cavity between it and said first metal mold,

a stamper mounted on said first metal mold and arranged within said mold cavity,

first stamper supporting means for holding a radially outer side of the stamper and being attached to the first metal mold, the first stamper supporting means constituting an outer edge of the mold cavity,

second stamper supporting means provided on the first metal mold for attracting a radially inner side of the stamper to the first metal mold, and

a sprue bushing having a resin injection port for guiding the molten resin therethrough, said sprue bushing being mounted on said first metal mold for facing said injection port within said mold cavity via a mid part of said first metal mold, said sprue bushing being engaged with the central aperture in said stamper for positioning said stamper

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5,326,241

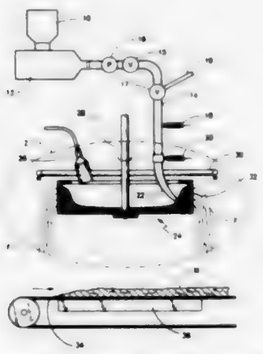
APPARATUS FOR PRODUCING ORGANIC FIBERS

Robert H. Rook; Daniel C. Bajer, and Fred L. Jackson, all of Littleton, Colo., assignors to Schuller International, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 691,572, Apr. 25, 1991, Pat. No. 5,242,633. This application Apr. 15, 1992, Ser. No. 869,555

Int. Cl.[5] B29C *47/08*

U.S. Cl. 425—7 **12 Claims**



1. Apparatus for producing organic fibers by means of a centrifugal spinning process, comprising:

a fiberizing disc having a diameter in the range of 3 inches to 48 inches connected to a substantially vertical shaft mounted for axial rotation;

the disc including a bottom wall, a circular sidewall extending upwardly from the bottom wall, terminating in an upper end, and having a vertical length extending from the bottom wall to the upper end, and an upper flange extending inwardly from the upper end of the circular sidewall;

means for introducing molten organic material capable of being fiberized by the rotating disc, said means including a nozzle located between the bottom wall, the circular sidewall and a plane extending through the upper end of the circular sidewall parallel to the bottom wall, the nozzle being positioned a short vertical distance from the bottom wall relative to the vertical length of the sidewall, the vertical distance being in the range of about ½ inch to 1½ inches, and a short horizontal distance from the circular sidewall relative to the diameter of the disc, the horizontal distance being in the range of about ½ inch to 3 inches; and

means for uniformly heating the interior of the disc to maintain the material therein in a molten state;

the circular sidewall containing fiberizing holes through which the molten material exits during rotation of the disc; and

a generally circular air ring located above and radially outwardly of the circular sidewall for directing compressed air in a downward direction.

5,326,242

POWDER MOLDING PRESS

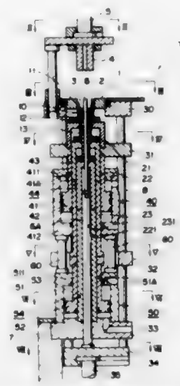
Takeshi Katagiri, Machida; Masao Yamamoto; Tukasa Tajima, both of Kawasaki, and Siro Shirasaki, Yokohama, all of Japan, assignors to Yoshizuka Seiki Co., Ltd., Japan

Filed Aug. 9, 1991, Ser. No. 744,182

Claims priority, application Japan, Aug. 10, 1990, 2-213508; Aug. 7, 1991, 3-222198

Int. Cl.[5] B22F *3/02*

U.S. Cl. 425—78 **4 Claims**



1. A powder molding press comprising:

a die plate provided with a die having a die hole to be filled with powder;

punch means including a pair of cooperating punch devices for pressing powder in said die hole, at least one of said punch devices comprising a plurality of cylindrical punches comprising a series of cylindrical punches including at least a first cylindrical punch, a second cylindrical punch, and a last cylindrical punch of said series assembled concentrically with each other to be axially movable relative to each other;

a plurality of axially spaced punch plates including one punch plate corresponding to each of said cylindrical punches, each of said punch plates being parallel to said die plate;

a plurality of hollow cylindrical punch adapters including one punch adapter corresponding to each of said cylindrical punches and being disposed in relation to the punch plates in a manner wherein an outermost cylindrical punch of the concentrically arranged plural punches is secured to a first punch plate disposed below the die plate through a first punch adapter, a second cylindrical punch of the plural punches disposed adjacently inside the outermost cylindrical punch extends through a through hole in the first punch adapter and is secured to a second punch plate disposed axially below the first punch plate through a second punch adapter which extends within the first punch adapter and is axially movable along an inner peripheral surface of the first punch adapter, and each succeeding cylindrical punch disposed concentrically within said second cylindrical punch extends through a through hole in the preceding punch adapter and is secured to a

succeeding punch plate through a succeeding punch adapter with each punch adapter extending within a preceding punch adapter and axially movable along an inner peripheral surface of the preceding punch adapter; and

hydraulic cylinder means comprising a plurality of hydraulic cylinder assemblies including one hydraulic cylinder assembly corresponding to each said cylindrical punch, each hydraulic cylinder assembly being provided with a through hole and axially arranged relative to each other in a manner wherein a first hydraulic cylinder assembly for actuating the first punch plate disposed below the die plate is disposed between the first and second punch plates and is coaxial with the first punch adapter, said second punch adapter extending through a through hole of the first hydraulic cylinder assembly and is axially moveable along an inner peripheral surface of the through hole of the first hydraulic cylinder assembly, a second hydraulic cylinder assembly for actuating the second punch plate is disposed between the second punch plate and a third punch plate disposed axially below the second punch plate and coaxially with the second punch adapter, a third punch adapter disposed concentrically within the second punch adapter extends through a through hole of the second hydraulic cylinder assembly and is axially movable along an inner peripheral surface of the through hole of the second hydraulic cylinder assembly, and each succeeding hydraulic cylinder assembly for actuating the corresponding punch plate is disposed axially below the second hydraulic cylinder assembly with each succeeding hydraulic cylinder assembly between the corresponding punch plate and a directly succeeding punch plate and arranged coaxially with the corresponding punch adapter so that each succeeding punch adapter is axially movable along an inner peripheral surface of a through hole of a directly preceding hydraulic cylinder assembly.

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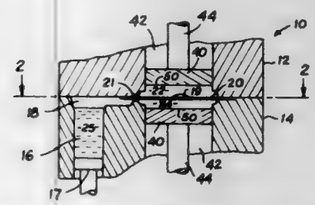
COMPRESSION-CAVITY MOLD FOR PLASTIC ENCAPSULATION OF THIN-PACKAGE INTEGRATED CIRCUIT DEVICE

Richard H. J. Fierkens, Keurbeck 15, 6914 Ae Herwen, Netherlands

Filed Jun. 25, 1992, Ser. No. 904,469

Int. Cl.[5] B29C *45/02, 45/56*

U.S. Cl. 425—116 **14 Claims**



1. A compression-cavity mold for encapsulating a thin-package integrated circuit lead frame in plastic, comprising:

a plastic-package mold assembly comprising an integral lower mold defining a lower cavity that includes shallow impressions wherein the integrated circuit lead frame is placed and comprising an integral upper mold defining an upper cavity, said upper mold being adapted for placement on said lower mold;

a reservoir for the plastic material used in the mold assembly;

a conduit in said mold assembly connecting said reservoir to said upper cavity and said lower cavity, so that plastic in said reservoir has a path of travel through said conduit and into both said upper and lower cavities;

first pressure means for forcing the plastic in said reservoir through said conduit and into said upper and lower cavities;

a bore hole in at least one of said integral upper and lower molds, said bore hole being coaxial with the lead frame and extending outwardly from the cavity associated with said at least one of said integral upper and lower molds;

an insert slideably mounted in said bore hole, said insert consisting of a body having the same cross-sectional shape as the cross-sectional shape of the bore hole and having an inner surface that matches the intended shape of the cavity associated with said at least one of said upper and lower molds, and said insert being adapted for inward movement with respect to said mold associated with said bore hole in response to a pressure exerted on the insert, so that the position of the insert in the bore hole defines the thickness of the plastic forced into the mold assembly by said first pressure means; and

second pressure means applied directly to said insert for causing the insert to slide inwardly with respect to said mold associated with said bore hole, thereby forcing excess plastic in said upper and lower cavities to flow through said conduit back into said reservoir, so that the thickness of the plastic forced into the mold assembly by said first pressure means can be reduced to a predetermined final thickness desired for the package of the integrated circuit lead frame.

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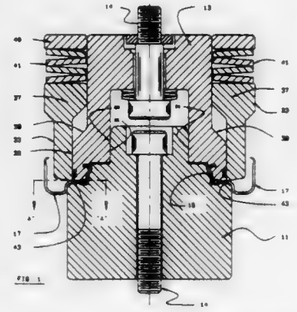
AXIALLY COMPACT COMPRESSION MOLD

Adrian V. Ridgill, Manning, and Mark O. Steele, Sumter, both of S.C., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Nov. 5, 1992, Ser. No. 972,261

Int. Cl.[5] B29C *43/00*

U.S. Cl. 425—127 **12 Claims**



1. A mold assembly for molding a sealing member to a seal case, said assembly comprising;

a first stationary mold member defining a first portion of said sealing member;

a second movable mold member defining a second portion of said sealing member;

said mold members cooperatively forming with said seal case a complete annular mold cavity when said second mold member is moved toward the first mold member and engages said seal case;

an annular clamping sleeve slidably supported on said second mold member;

resilient means engageable with said clamping sleeve for resiliently biasing said clamping sleeve against said seal case to retain said seal case in a fixed position on said first mold member;

said clamping sleeve being oriented so that during a closing stroke of the second mold member toward the first mold member the clamping sleeve engages the seal case before

completion of the closing stroke, and during an opening stroke of the second mold member away from the first mold member the clamping sleeve remains in engagement with the seal case while the second mold member separates from the molded sealing member; and

said clamping sleeve having an annular end portion engageable with the seal case and said molding material prior to completion of the closing stroke so that said annular end portion forms a flash barrier for preventing flow of molding material radially outwardly from the mold cavity

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5,326,245

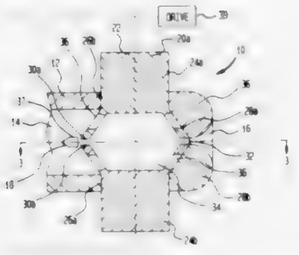
APPARATUS FOR EXTRUDING MATERIALS THAT EXHIBIT ANISOTROPIC PROPERTIES DUE TO MOLECULAR OR FIBRIL ORIENTATION AS A RESULT OF THE EXTRUSION PROCESS

Arthur Bross; Thomas J. Walsh, both of Poughkeepsie, and Thomas J. Walsh, III, Verbank, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1992, Ser. No. 904,754

Int. Cl.[5] B29C *47/00*; B44C *1/22*; C23F *1/00*

U.S. Cl. 425—131.1 **9 Claims**



1. An apparatus for extruding a polymer, such as a liquid crystal polymer, a ceramic, or composite material that is comprised of molecules or fibrils that exhibit anisotropic properties due to molecular or fibril orientation along a single axis as result of the extrusion process, comprising in combination

a first die face comprising a circular peripheral rim of a first member rotatable mounted in a housing;

a second die face comprising a circular peripheral rim of a second member rotatable mounted in said housing;

said first and second members rotatable mounted in said housing with said first and second die faces mounted in opposition to one another forming a die gap and said first and second members forming in combination a cavity;

a passage in said housing for introducing a material to be extruded into said cavity through openings in said first and second members;

said housing surrounding said gap so that extruded material exits only along an arc through a throat opening in said housing; and

means for rotating said first member in one direction and said second member in an opposite direction

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5,326,246

CONTROLLER FOR REVISING CONTROL PARAMETERS OF A MOLDING MACHINE

Kazuo Usui, and Chiharu Nishizawa, both of Sakaki, Japan, assignors to Nissei Jushi Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Dec. 8, 1992, Ser. No. 987,146

Claims priority, application Japan, Dec. 11, 1991, 3-350879

Int. Cl.[5] B29C *45/76*

U.S. Cl. 425—145 **18 Claims**

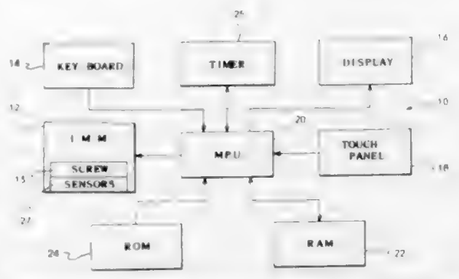
1. A controller for a molding machine, comprising

first input means for inputting control-parameters of said molding machine;

a display unit for showing a graph of a control-pattern of said molding machine, which is defined on the basis of the control-parameters, on a screen;

second input means for revising the graph on said screen to define a revised control-pattern;

calculating means for calculating revised control-parameters, which correspond to the revised control-pattern, when the control-pattern is revised;



a memory for storing the control parameters and the revised control-parameters; and

control means for storing the control-parameters in said memory, showing the graph of the control-pattern on said display unit, calculating the revised control-parameters by said calculating means when the graph is revised, and storing the revised control-parameters in said memory.

5,326,247

PASTE EXTRUDER

Karl Prenzel, Schwabach, and Heinrich Bergner, Adelsdorf, both of Fed. Rep. of Germany, assignors to WK Worek Kunststofftechnik GmbH, Adelsdorf/Neuhaus, Fed. Rep. of Germany

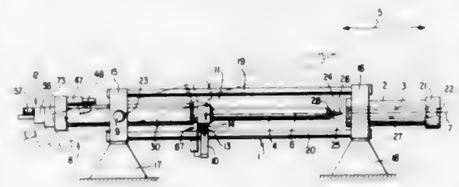
PCT No. PCT/DE92/00326, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO92/19435, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 24, 1992, Ser. No. 971,903

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1991, 9105099

Int. Cl.[5] B29C *47/66*

U.S. Cl. 425—185 **12 Claims**



1. An apparatus for extruding plastic tubing, comprising

(a) a machine stand;

(b) an extrusion cylinder supported by said machine stand; said extrusion cylinder including an interior space for receiving a plastic preform to be extruded from said cylinder;

(c) a housing;

(d) mounting means for supporting said housing on said machine stand;

(e) a hollow extrusion piston introducible into and withdrawable from said extrusion cylinder;

(f) an extrusion drive means positioned in said housing and connected to said extrusion piston for advancing said extrusion piston into and for withdrawing said extrusion piston from said extrusion cylinder; said extrusion drive means including a hollow cylinder forming a driven member of said extrusion drive means and being coupled to said hollow extrusion piston;

(g) a mandrel pulling rod mounted in, and axially displaceable relative to, said hollow extrusion piston;

(h) a mandrel affixed to said mandrel pulling rod and moving as a unit with said mandrel pulling rod; said mandrel being introducible into and withdrawable from said extrusion cylinder; and

(i) mandrel actuating means circumferentially surrounded by said hollow cylinder of said extrusion drive means in said housing and connected to said mandrel pulling rod for axially displacing said mandrel pulling rod.

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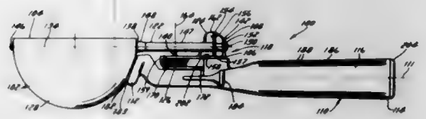
PRODUCT SERVING APPARATUS

Steven J. Thuecks, Brillion; William I. Kessler, Sheboygan, and Alan J. Schommer, Fredonia, all of Wis., assignors to The Vollrath Company, Inc., Sheboygan, Wis.

Filed Jan. 21, 1993, Ser. No. 7,626

Int. Cl.[5] A23G *9/00*

U.S. Cl. 425—187 **36 Claims**



1. An apparatus for serving a predetermined portion of a product, the apparatus comprising:

a server assembly; said server assembly including:

an apportioning means for establishing said predetermined portion, said apportioning means having an exterior surface and an interior surface, said interior surface defining a cavity for holding said product, said cavity being generally hemispherical and having a substantially diametral axis; said apportioning means having a first aperture and a second aperture, said first aperture and said second aperture being substantially aligned with said diametral axis and traversing said apportioning means from said exterior surface to said cavity;

a support assembly; said support assembly including:

a stem means for supporting said apportioning means, said stem means being affixed to said exterior surface, said stem means extending from said server assembly generally along a longitudinal axis, said longitudinal axis being generally parallel with said diametral axis;

said support assembly further including a first tab and a second tab, said first tab and said second tab each being affixed to said stem means and extending from said stem means toward said diametral axis;

a handle assembly having a first end and a second end, said handle assembly being substantially aligned with said longitudinal axis, said first end being substantially proximate said exterior surface, said handle assembly substantially intimately enveloping said stem means and at least a portion of each of said first tab and said second tab and presenting a generally smooth exterior intermediate said first end and said second end; and

a product separation assembly; said product separation assembly including:

a product separator means for separating said product from said interior surface, said product separator means being captively disposed intermediate said first and second apertures, said product separator means being configured for sweeping generally adjacent at least a portion of said interior surface to effect said separating;

a drive means coupled with said product separator means for driving said product separator means, said drive means being rotatably coupled with at least one of said first tab and said second tab, said drive means being substantially coaxial with said diametral axis, said product separator means responding to rotation of said drive means about said diametral axis to effect said sweeping; and

an actuator means for actuating said drive means, said actuator means being operably connected with at least one of said first tab and said second tab, said actuator means pivoting substantially about an actuator axis in response to an actuating force, said actuator axis being transverse to said longitudinal axis, said actuator means having a first motion translation means and said drive means having a second motion translation means, the first and second motion translation means cooperating to impart said rotation to said drive means in response to said pivoting of said actuator means.

5,326,249

APPARATUS FOR BENDING LAMELLAR WORKPIECES

Reinhard Weissfloch, Stolberg-Breinig, Fed. Rep. of Germany, assignor to Wegener GmbH, Aachen, Fed. Rep. of Germany

Continuation of Ser. No. 68,307, May 28, 1993, abandoned, which is a continuation of Ser. No. 698,124, May 10, 1991, abandoned. This application Oct. 25, 1993, Ser. No. 140,987

Claims priority, application Fed. Rep. of Germany, May 10, 1990, 4014994

Int. Cl.[5] B29C *53/00*

U.S. Cl. 425—383 **20 Claims**

1. Machine for bending reinforced thermoplastic workpieces, comprising:

a) a machine frame;

b) first and second spaced rest plates mounted to said frame, said plates having a first planar orientation, defining a rest plane, for supporting a workpiece and a second angularly disposed orientation for bending the workpiece;

c) a compression rest disposed between said plates;

d) a heated bending beam in alignment with and spaced from said compression rest;

e) a drive system operably associated with said frame for causing relative movement between said beam and said plates and said rest so that a workpiece supported by said plates and said rest in said first orientation may engage said beam;

f) means operably interconnecting said plates for defining therefor a common pivot axis;

g) means operably associated with said plates for causing at least one of said plates to be pivoted about said axis; and

h) means operably associated with said plates when in said first planar orientation for adjusting said plates relative to said common pivot axis so that said rest plane may be selectively positioned relative to said common pivot axis

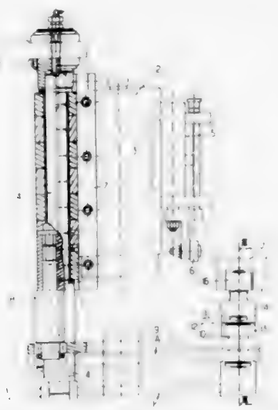
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prior to a workpiece on said plates being engaged by said bending beam.

5,326,250
OPENING AND CLOSING MECHANISM FOR PORTFOLIO BLOWING AND BLOWING-STRETCHING MOLD

Gerard Doudement, Le Havre, France, assignor to Sidel, Le Havre Cedex, France

Filed Sep. 23, 1992, Ser. No. 949,127
Claims priority, application France, Sep. 24, 1991, 91 11749
Int. Cl.[5] B29C 49/56
U.S. Cl. 425—541 6 Claims



1. An opening and closing mechanism for a portfolio blowing or stretching-blowing mold used for the manufacture of plastic containers such as bottles and flasks, said mold comprising two half-molds pressed against each other in the closed position of the mold, said mechanism comprising

a) a stationary common swivel pin (**4**) supporting the two half-molds (**3**) in free rotation,

b) two control arms (**9**) connected in free rotation at one of their ends to the two half-molds (**3**) at points on the half-molds located on opposite sides of the swivel pin,

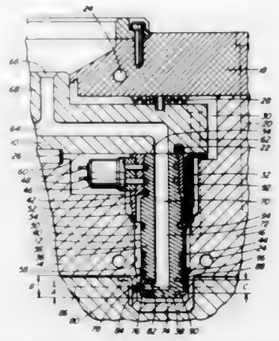
c) cam means comprising at least one follower roller (**16**) loosely mounted on a roller-support shaft substantially parallel to said swivel pin (**4**), and at least one guide cam (**17**) for causing the roller to move in a direction substantially perpendicular to said swivel pin, towards and away therefrom, and which intersects the pin, and

d) connection means for joining said roller to the other ends of the two control arms, wherein said connection means comprises two superposed connection rods (**13**, **14**) joined together by coupling means (**18**–**20**), said two connection rods supporting, respectively, at one of their ends, the roller-support shaft (**16***a*) and a coupling shaft (**10**) which joins the other ends of the control arms (**9**), said rods being mounted so as to rotate freely, at their other ends, on a common pin (**15**) substantially parallel to the swivel pin supporting the half-molds, and said connection rods extending approximately transversely to a plane (**M**) containing the swivel pin and the coupling shaft (**10**).

5,326,251
HEATED INJECTION MOLDING NOZZLE WITH ALTERNATE THERMOCOUPLE BORES

Jobst U. Gellert, 7A Prince St., Georgetown, Canada L7G 2X1

Filed Dec. 6, 1993, Ser. No. 161,814
Int. Cl.[5] B29C 45/20
U.S. Cl. 425—549 5 Claims



1. In an elongated injection molding nozzle having an outer surface, a rear end, a front end, a melt channel extending therethrough, and a heating element, the melt channel having a central portion extending forwardly from an inlet at the rear end and a plurality of radial portions branching outwardly from the central portion to convey molten material to a plurality of edge gates spaced around the outer surface in a common plane a first predetermined distance rearwardly from the front end of the nozzle, the heating element extending around the central portion of the melt channel and being spaced a second predetermined distance rearwardly from the front end of the nozzle, having the improvement wherein;

first and second thermocouple element receiving bores extend inwardly from the outer surface into the nozzle between the heating element and the front end of the nozzle, the first and second thermocouple element receiving bores being spaced longitudinally a third predetermined distance apart, whereby one of the first and second thermocouple element receiving bores is selected to receive a thermocouple element therein to monitor the operating temperature of the molten material, the one of the first and second thermocouple element receiving bores selected to receive the thermocouple element being predetermined by the molten material to be processed.

5,326,252
CATALYTIC COMBUSTION

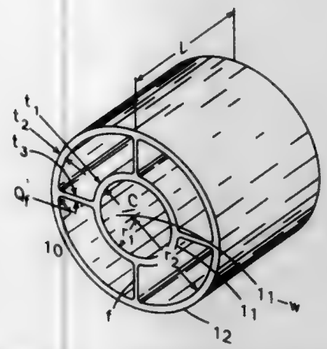
Thomas Tonon, 35 Birch Ave., Princeton, N.J. 08542

Filed Sep. 4, 1991, Ser. No. 754,605
Int. Cl.[5] F28D 7/10
U.S. Cl. 431—2 19 Claims

1. A method of constructing a catalytic heater, comprising the steps of:

(a) fabricating a first fluid carrying member having a plurality of wall surfaces, one of which is coated with a catalyst and another of which is uncoated;

(b) fabricating a second member precluded from carrying the same fluid as said first member and having inner and outer wall surfaces, with said inner wall surface spaced from an uncoated wall surface of said first member and said outer wall surface receiving a medium to be heated; and

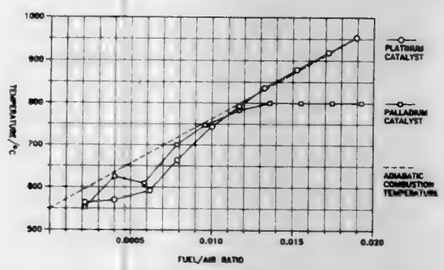


(c) providing for the application of a gaseous fuel/oxidizer mixture to said coated wall surface of said first member and producing combustion on said catalyst.

5,326,253
PARTIAL COMBUSTION PROCESS AND A CATALYST STRUCTURE FOR USE IN THE PROCESS

Ralph A. Dalla Betta, Mountain View; Toru Shoji, Sunnyvale, both of Calif.; Kazunori Tsurumi, Fujisawa, and Nobuyasu Ezawa, Koto, both of Japan, assignors to Catalytica, Inc., Mountain View, Calif. and Tanaka Kikinzoku Kogyo K.K., Japan

Filed Nov. 26, 1990, Ser. No. 617,975
Int. Cl.[5] F23D 21/00
U.S. Cl. 431—7 30 Claims



1. A partial combustion process comprising the steps of:

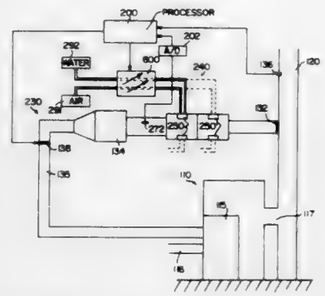
a. mixing an amount of an oxygen-containing gas with a combustible fuel to produce a combustible gas mixture, and

b. passing the combustible gas mixture into a combustion zone comprising palladium catalyst on at least a portion of a catalyst support having passageways for the passage and partial combustion of the combustible gas mixture and where the palladium catalyst is at least partially covered by a diffusion barrier to produce a partially combusted exhaust gas having a bulk temperature less than the adiabatic combustible temperature of the combustible gas mixture and a catalyst temperature less than the TGA temperature for the palladium catalyst.

5,326,254
FOG CONDITIONED FLUE GAS RECIRCULATION FOR BURNER-CONTAINING APPARATUS

Michael Munk, 130 Gun Club Rd., Stamford, Conn. 06903

Filed Feb. 26, 1993, Ser. No. 17,521
Int. Cl.[5] F23B 5/02
U.S. Cl. 431—115 17 Claims



1. A burner-containing apparatus having reduced noxious emissions, comprising:

a burner which receives input air and has an exhaust for exhausting flue gases;

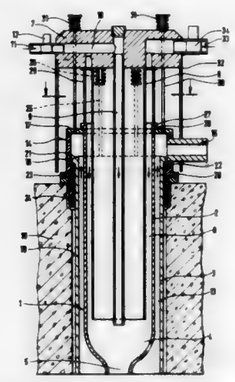
a flue gas recirculation system for recirculating a portion of the flue gases back to an input of the burner;

means for humidifying the recirculated flue gases, said means comprising a fogging device which produces a fog from a fogger water supply and a fogger air supply.

5,326,255
BURNER WITH RECUPERATIVE AIR PREHEATING AND THERMAL INSULATION BETWEEN THE RECUPERATOR AND THE EXTERNAL CAP OF THE BURNER

Joachim Wunning, Leonberg, Fed. Rep. of Germany, assignor to WS Warmeprozesstechnik GmbH, Renningen, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 943,738
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132236
Int. Cl.[5] F23D 11/44
U.S. Cl. 431—215 17 Claims



1. A burner suitable for heating a furnace chamber for an industrial process and comprising a tubular recuperative preheater of combustion air having at least an outer annular chan-

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nel for removal of combustion product gases, a combustion chamber at one end of said burner, for heating a furnace, and a feed-through burner cap located at the other end of said burner for access to said burner outside and said furnace and having means through which fuel and combustion can be controllably supplied to said burner, said combustion chamber, tubular recuperative preheater and burner cap being substantially aligned on a central axis of said burner and said tubular recuperative preheater being in fixed spatial position relative to said burner cap for supporting said burner cap outside of said furnace and having, at its end which is opposite said combustion chamber, an outflow collector cap connected to an outflow pipe for combustion product gases, said tubular recuperative preheater also being connected for axially countercurrent flow of combustion air supply to said combustion chamber and combustion product gas from said combustion chamber in respective channels which are thermally coupled to each other for heat transfer, comprising:

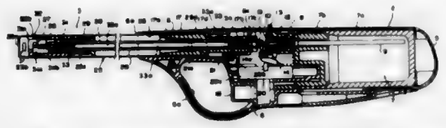
a fuel supply pipe coaxial with said central axis and extending from said feed-through burner cap to said combustion chamber and

a spacer sleeve (29) of a material having small heat conductivity located in the region between said outflow collector cap of said tubular recuperative preheater and said feed-through burner cap and mounted on said burner cap and said tubular recuperative preheater for maintaining the relative positions of said burner cap and said tubular recuperative preheater, whereby said burner cap is thermally isolated from hot parts of said burner.

5,326,256
IGNITING DEVICE

Tsutomu Shike; Toshihiko Eguchi, and Masaki Saito, all of Shizuoka, Japan, assignors to Tokai Corporation, Kanagawa, Japan

PCT No. PCT/JP91/01666, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO92/09852, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 29, 1991, Ser. No. 910,164
Claims priority, application Japan, Nov. 25, 1991, 3-96547; Nov. 25, 1991, 3-96548
Int. Cl.[5] F23Q *7/12*
U.S. Cl. 431—255 **1 Claim**

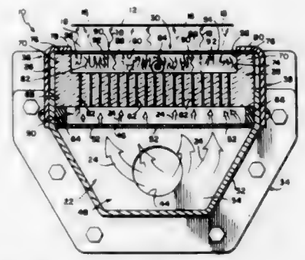


1. An igniting device comprising a body portion assembly including a gas reservoir, a valve mechanism for controlling gas supply from the reservoir and a piezoelectric unit and an engagement portion including an intermediate casing with transversely-extending engagement parts separable along a longitudinal plane and providing for gas communication with the valve mechanism and for electrical communication with the piezoelectric unit, a rod portion including a rod-like metal tubular member having a base portion with an annular groove at one end and a gas injection nozzle at the other end and including a hard gas pipe extending between the base portion and the gas injection nozzle to convey gas thereto, and a wire extending from a terminal in the base portion to the nozzle to provide electrical connection therebetween, the gas injection nozzle, the body portion assembly and the rode portion being assembled into a unit by engagement of the annular groove in the base portion of the rod portion with the engagement parts in the engagement portion of the body portion assembly so as to connect the gas pipe int he rod portion to the valve mechanism in the body portion assembly and to electrically connect the metal tubular member in the rod portion to the piezoelectric unit in the body portion assembly.

5,326,257
GAS-FIRED RADIANT BURNER

Curtis L. Taylor, Muncie, and Paul A. Pellinen, Yorktown, both of Ind., assignors to Maxon Corporation, Muncie, Ind.

Filed Oct. 21, 1992, Ser. No. 964,651
Int. Cl.[5] F23D *14/14*
U.S. Cl. 431—329 **51 Claims**



1. A radiant burner comprising

means for receiving a combustible air and fuel mixture,

a combustor unit formed to include an open-space combustion chamber having a top opening and means for communicating the combustible air and fuel mixture from the receiving means to the open-space combustion chamber, the combustor unit being a block of insulation material formed to include a cavity defining the open-space combustion chamber and a plurality of apertures defining the communicating means,

means for igniting the combustible air and fuel mixture extant in the open-space combustion chamber to produce a flame, and

means for covering the top opening of the open-space combustion chamber to define a flame retention region therein so that the flame is stabilized in and contained wholly within the open-space combustion chamber, the covering means including a radiant member having a heat-receiving surface communicating with the underlying flame produced in the open-space combustion chamber and blocking passage of the flame through the radiant member and a heat-radiating surface emitting flameless thermal radiation to heat a product positioned above the radiant member.

5,326,258
METHOD AND APPARATUS FOR HEATING PREFORM BLANKS COMPOSED OF PARTLY CRYSTALLINE SYNTHETIC RESINS PRODUCED BY INJECTION MOLDING

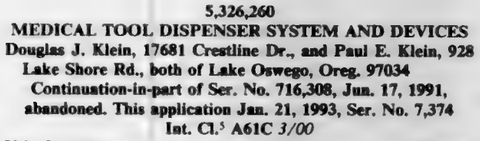
Franz Gittner, Soltendieck, and Uwe-Volker Roos, Bodenteich, both of Fed. Rep. of Germany, assignors to Bekum Maschinenfabriken GmbH, Fed. Rep. of Germany

Filed Apr. 12, 1993, Ser. No. 45,100
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1992, 4212248
Int. Cl.[5] F27D *7/00*
U.S. Cl. 432—5 **14 Claims**

1. A method for the controlled heating of cold preform blanks of partly crystalline synthetic resins, produced by an injection method which are conveyed through heating and cooling stations and subsequently are introduced to a blow molding apparatus for inflation of said preform blanks into hollow articles, the method comprising the steps of:

a. Rotating said preform blanks while conveying them along a predetermined path whereby said preform blanks are first conveyed through a temperature equalizing section, then through a heating/cooling section, and finally through a surface treatment and tempering section;

b. heating said preform blanks on one side of said path and simultaneously cooling them on the opposite side of said path while continuing to convey them along said path in said heating/cooling section; and

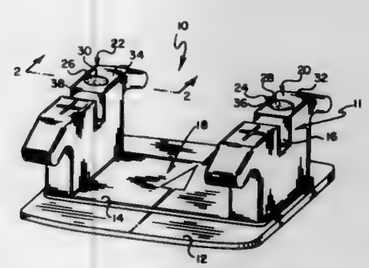


c. exposing said preform blanks to heated air contained within a substantially enclosed space while continuing to convey them along said path in said surface treatment and tempering section.

5,326,259
MARKED ORTHODONIC AID AND METHOD OF MANUFACTURING

Friedrich-Wilhelm Röhlcke, Kämpfelbach-Bilfingen, and Friedrich Sernetz, Pforzheim, both of Fed. Rep. of Germany, assignors to Dentaurum J.P. Winkelstroeter KG, Ispringen, Fed. Rep. of Germany

Continuation of Ser. No. 348,039, Apr. 13, 1989, Pat. No. 5,238,402. This application Apr. 16, 1993, Ser. No. 48,811
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1987, 3727102
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—8 **15 Claims**



1. An orthodontic aid comprising a metallic body having an outer surface with indicia consisting essentially of a remelt structure of the same material as said metallic body, the remelt structure of the marking area indicia having a predetermined thickness providing a permanent wear characteristic.

5,326,260
MEDICAL TOOL DISPENSER SYSTEM AND DEVICES

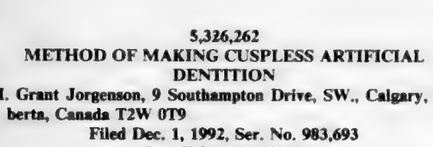
Douglas J. Klein, 17681 Crestline Dr., and Paul E. Klein, 928 Lake Shore Rd., both of Lake Oswego, Oreg. 97034

Continuation-in-part of Ser. No. 716,308, Jun. 17, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,374
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—11 **5 Claims**

1. A chain of elongate, homogeneous, hand-holdable, tool-dispensing medical devices that can be dispensed from an associated dispenser for cut-separation of a desired device from the chain, comprising:

plural, interconnected, cut-separable, elongate carrier bodies, with each of said bodies including a supply of medical tools formed integrally with and detachably joined to it;

each of said bodies also having digitally manipulable handle-positioner structure formed integrally with it adjacent one end thereof, said handle-positioner structure having dimensions sufficient for cooperating with the dispenser to position an adjacent, dispensed body for cut-separation from the chain, and for grasping by hand when handling a desired body that has been cut-separated from the chain; and



wherein each body has a generally slender, finger-like configuration, and said handle-positioner structure has a generally broad-expanse, bar-like shape the long axis of which is transverse to the long axis of the body for promoting both the hand-holdable and positioning features of that structure.

5,326,261
DENTAL MARKING PRODUCT

Michael D. Rains, 9209 Colima Rd., Whittier, Calif. 90605

Filed Jan. 15, 1993, Ser. No. 5,766
Int. Cl.[5] A61C *3/00, 9/00*
U.S. Cl. 433—141 **12 Claims**



1. A disposable dental marking product consisting essentially of:

a elongated shaft having a first end and a second end, said first end of said shaft being of sufficient dimensions to be gripped by a human hand; and

a marking composition placed directly on said second end, said marking composition being a colored, semi-solid oil soluble material capable of being transferred directly to a tooth, an orthodontic apparatus or dentures by application thereto without the aid of any liquid.

5,326,262
METHOD OF MAKING CUSPLESS ARTIFICIAL DENTITION

H. Grant Jorgenson, 9 Southampton Drive, SW., Calgary, Alberta, Canada T2W 0T9

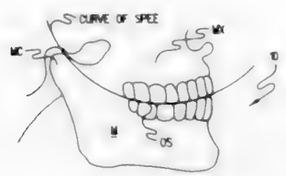
Filed Dec. 1, 1992, Ser. No. 983,693
Int. Cl.[5] A61C *13/08*
U.S. Cl. 433—197 **2 Claims**

1. A method of making cuspless artificial dentition comprising the steps of:

forming upper posterior teeth with functional occlusal surfaces;

forming lower posterior teeth with functional occlusal surfaces;

configuring and disposing said upper and lower posterior teeth to conform to the restored curves of Spee in an



anterior posterior direction and to conform to the restored curves of Wilson in a buccolingual direction.

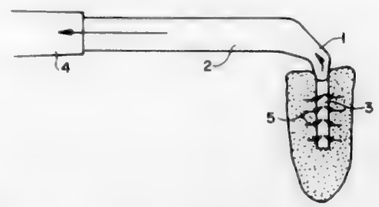
5,326,263
LIGHT-CURABLE TOOTH REINFORCEMENT
Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017
Filed Jun. 12, 1992, Ser. No. 898,769
Int. Cl.[5] A61C *5/02, 5/08*
U.S. Cl. 433—224 **12 Claims**



1. A method of reinforcing a tooth from which its nerve has been removed, and its canal has been cleaned to remove all diseased tissue, the method comprising: filling at least the apical portion of the canal with a soft resilient material; reaming out the canal with a reamer to form a converging section at its innermost portion, to an end of minimum diameter at the edge of the portion filled with the soft resilient material, so that the innermost portion matches the profile of the cutting end of the reamer; inserting a tool post into the bored out canal, the tool post being formed of a relatively flexible material, and having a substantially cylindrical shank with a diameter smaller than that of the canal, and an inwardly tapering, or convergent, first end, also similar to the profile of the cutting end of the reamer, such that the convergent first end seats against the convergent surface of the reamed out canal; adding a curable composite to fill the canal, surrounding the post, and permitting the composite to cure; the post being formed of physiologically inert, material which is sufficiently flexible that it can follow the curvature of the canal.

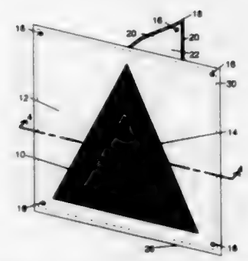
5,326,264
METHOD TO REINFORCE ENDODONTICALLY TREATED TEETH AND PASSIVE POST
Raed Al Kasem, 25 Donna St. #1207, Palm Harbor, Fla. 34684
Filed Jan. 5, 1993, Ser. No. 933
Int. Cl.[5] A61C *5/02*
U.S. Cl. 433—224 **14 Claims**

1. Method of mounting a passive metal post in a tooth comprising the steps of:
silicoating said post;
generating a post channel;
irrigating said post channel with about 1.5 ml of a first solution comprising about 17% Ethylene Diamine Tetracetic Acid having a pH of about 7.5 for about 1 minute;
irrigating said post channel with about 1.5 ml of said first solution for about 1 minute;
irrigating said post channel with about 2 ml of said first solution for about 1 minute;
irrigating said post channel with a second solution compris-



ing about 5.25% Sodium Hypochloride for about 2 minutes;
evacuating said post channel:
injecting a cement comprising chemical curer Bis-GMA and TEGDMA based, unfilled resin having a high compressive strength value and a low viscosity value into said post channel;
inserting said silicoated post into said post channel;
holding said post under pressure until said cement is set, thereby mounting said passive post.

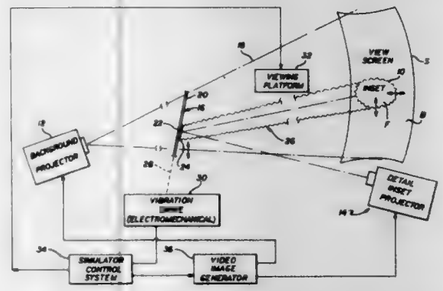
5,326,265
BATTLEFIELD REFERENCE MARKING SYSTEM SIGNAL DEVICE
J. Michael Prevou, 1313 N. Glen Dr., Chattanooga, Tenn. 37343
Filed Feb. 4, 1993, Ser. No. 13,710
Int. Cl.[5] F41A *33/00*
U.S. Cl. 434—11 **1 Claim**



1. A signal device adapted for suspension between two near vertical objects, comprising:
a. a first, generally rectangular front planar surface of flexible, brightly colored material of a first size;
b. a second material having properties which allow for recognition by thermal imaging viewing devices, and having a predetermined shape and a predetermined size, said predetermined size being smaller than said first size, said second material being of a color which allows sharp contrast to the naked eye between said brightly colored material and said second material;
c. a means of attaching said second material to said front planar surface;
d. at least one set of two parallel strips of elastic material, and means for attaching said elastic strips to said front planar surface, said parallel elastic strips placed apart a distance approximately equivalent to the length of a standard

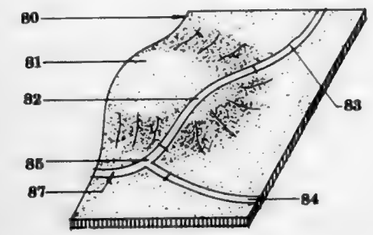
chemical light device, said parallel elastic strips each being attached in periodic intervals, said periodic intervals being the same on each individual elastic strip of the set, allowing unattached areas of similar periodic intervals on each strip, each of said unattached areas of sufficient length to allow the insertion and the secure holding of one end of said chemical light device between one individual elastic strip and its appurtenant area of said front planar surface;
e. a rear element, said rear element comprising two equal parts of different signaling media, and means for securing said rear element to said front planar surface;
f. a rear flap assembly having two major opposed panel surfaces;
g. means for attaching and pivotally mounting said rear flap assembly along an intersection of said different signalling media, and adapted to be rotated between two different signaling positions against each of the different signalling media;
h. means for sealing the periphery of said rear flap assembly after said rotation, against the periphery of one of the different signalling media, against which said rear flap assembly is rotated, and;
i. means for securing said signal device between two vertical supports.

5,326,266
AREA OF INTEREST DISPLAY SYSTEM WITH OPTO/MECHANICAL IMAGE COMBINING
Ralph W. Fisher, Park City, and Jim Austin, American Fork, both of Utah, assignors to Evans & Sutherland Computer Corporation, Salt Lake City, Utah
Filed Sep. 2, 1992, Ser. No. 939,013
Int. Cl.[5] G09B *9/32*
U.S. Cl. 434—44 **9 Claims**



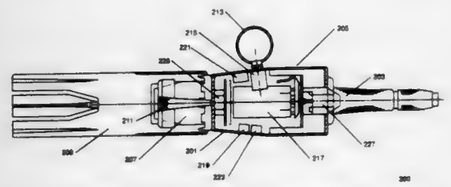
1. An area of interest display system wherein area of interest imagery of relative great detail and resolution is displayed in the spatial position of the foveal region of the eye of an observer and background imagery of relatively lesser detail and resolution is displayed about the area of interest imagery, comprising:
first display means for projecting said area of interest imagery;
second display means for projecting said background imagery and defining an area to receive said area of interest imagery;
means for combining said area of interest imagery and said background imagery whereby said area of interest imagery is set in said area to receive said image; and
means for oscillating said image boundary for said area of interest imagery in relation to said background imagery.

5,326,267
FLEXIBLE TERRAIN FEATURES FOR MINIATURE MODELING
James W. Brokaw, 3611 Quail Ridge La., Matthews, N.C. 28105
Filed Apr. 11, 1991, Ser. No. 684,027
Int. Cl.[5] G09B *29/12*
U.S. Cl. 434—151 **4 Claims**



1. Miniature accessories suitable for use in miniature gaming on a miniature landscape surface in which said miniature accessories are changed for each game and wherein the miniature landscapes include simulated hills and valleys which are traversed by miniature accessories, and wherein the improvement comprises preformed bulky ribbon-like miniature accessories that are flexible both horizontally and vertically at the same time throughout their length while maintaining a uniform transverse dimension, whereby the miniature accessories may be readily shaped into horizontal curves that also conform with vertically variable terrain.

5,326,268
TRAINING DEVICE FOR SIMULATING AN UNEXPLODED SUBMUNITION
Carl Campagnuolo, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 19, 1993, Ser. No. 5,695
Int. Cl.[5] G09B *19/00;* **F41A** *33/00*
U.S. Cl. 434—15 **4 Claims**

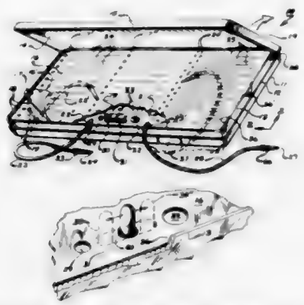


1. An acoustic training device for simulating the effects of a submunition in a tactical engagement simulation system employing acoustic receivers, said training device comprising a housing which resembles a submunition, means for generating an audible signal of a particular frequency and duration, motion sensing means, means responsive to said motion sensing means for activating said signal generating means, a manually operated switch for arming said device, and timing means to delay activation of said motion sensing means once armed so that said device may be deployed without activating said signal generating means, wherein said timing means comprises an R-C circuit and comparator, said R-C circuit comprising a power source, a first resistor and a capacitor in series, said resistor and capacitor being in parallel with said power source and with a second and third resistor which form a voltage divider, a first voltage between said first resistor and capacitor and a second voltage between said second and third resistors being the inputs to said comparator which outputs a signal

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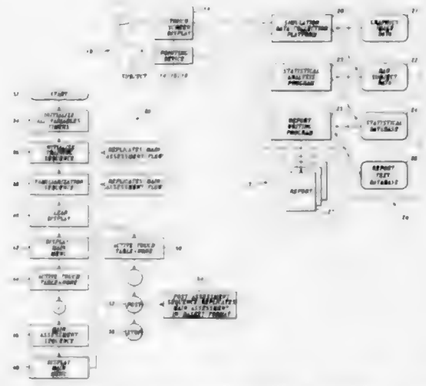
voltage when said capacitor charges to a predetermined voltage.

5,326,269
SCRAMBLE-CIRCUITED QUIZ-MODULE W/OVERLAYING Q&A-SHEETS
Maurice S. Kalik, and Azril O. Kalik, both of Box 7594, Chula Vista, Calif. 91912
Filed May 12, 1993, Ser. No. 59,574
Int. Cl.[5] G09B *7/10*
U.S. Cl. 434—338 **11 Claims**



1. An improved electrically operated Q&A-quiz apparatus, capable of accommodating one or more competitive players, or individually, serving as a general educational learning-aid; comprising:
- an electric housing employing a conventional electrical-current powering means;
- a planar upwardly facing electrical-panel supported by said housing, serving divisibly to support a roster-like plurality of question-terminals in an allocated space thereto, and a roster-like plurality of answer-terminals on an adjacent space thereto;
- a normally-open electrical-circuiting means, whereby each one of said question-terminals is thus individually capable of potentially cooperating with predetermined electrical continuity to a said answer-terminal;
- an electrical-circuit panel on-off switch, including a switch-stalk manual switching member extending perpendicularly from said electrical-panel, thereby enabling manual biasing of said switch from and off position to a discrete first electrical circuiting matrix, plus at least one additional alternate likewise switching position enabling biasing to at least one additional discrete alternate electrical-circuit matrix;
- a pair of flexibly attached conductor-probes extending sufficiently from said housing as to enable an operator to hold a conductor-probe in each hand, simultaneously touching a left conductor-probe to a selected question-terminal, and a right conductor-probe to the choosen answer-terminal, thereby facilitating completing of said electrical circuit when a correct answer has been selected;
- a variety of special Q&A-cards, each having both question and answer indicia imprinted thereon, whereby any selected Q&A-card is singly overlaid manually upon said electrical-panel, so that its plural question-apertures align over said electrical-panel's question-terminals, while its plural answer-apertures align over said electrical-panel's answer-terminals;
- a special alignment aperture indexing means acting to accept passage of said switch-stalk member in only one of either said first or said alternate switch positions, thereby causing said operator to bias said switch-stalk to a passaging position before a Q&A-card can be laid into place, thereby providing a significantly increased potential number of question and answer terminal juxtapositions, thus serving to further confound an operator as to any possibly learned matching arrangements of said discrete Q&A-terminals;
- a conventional indicator device means, included in said circuit, whereby selection of a correct answer becomes automatically visually or aurally announced to the operator.

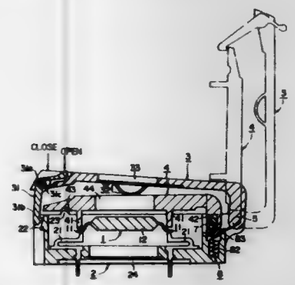
5,326,270
SYSTEM AND METHOD FOR ASSESSING AN INDIVIDUAL'S TASK-PROCESSING STYLE
David L. Ostby, Issaquah, Wash.; Shari Marihugh, 20631 - 303rd SE., Maple Valley, Wash. 98038, and Paul S. Ostby, Kirkland, Wash., assignors to IntroSpect Technologies, Inc., Seattle and Shari Marihugh, Hobart, both of Wash.
Filed Aug. 29, 1991, Ser. No. 751,548
Int. Cl.[5] G09B *7/00*
U.S. Cl. 434—362 **28 Claims**



1. A computer implemented method for assessing a task-processing style of an individual, comprising the steps of:
- a. defining a simulated situation for the individual with scenario data that are presented to the individual on a computer-controlled display;
- b. making available resource data to the individual on the computer-controlled display so that the individual can optionally select and review the resource data, the resource data being, at least in part, usable by the individual to resolve the simulated situation;
- c. recording each access of the resource data made by the individual, and the responses produced by the individual to resolve the simulated situation, thereby producing raw subject data;
- d. statistically analyzing the raw subject data to produce a statistical database in which are compiled the accesses made by the individual of the resource data and the responses of the individual to resolve the simulated situation; and
- e. using the statistical database, generating a report that generally characterizes the task-processing style of the individual in respect to a plurality of preselected parameters that are determined according to a set of predefined rules.

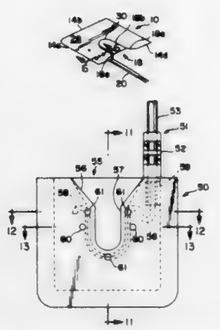
18. A computer for assessing an individual's task-processing style, comprising:
- a. a central processing unit;
- b. memory means for storing:
  - i. instructions that control the central processing unit;
  - ii. scenario data defining a simulated situation that is to be resolved by the individual;
  - iii. resource data, of which, at least a portion is useful in resolving the simulated situation; and
  - iv. response data that represent at least a part of the individual's resolution of the simulated situation;
- c. display means, connected to the central processing unit, for displaying:
  - i. the scenario data;
  - ii. specific resource data selectively accessed by the individual; and
  - iii. specific response data provided by the individual in resolving the simulated situation;
- d. entry means, electrically connected to the central processing unit, for enabling the individual to select the specific resource data for display on the display means and for entering the specific response data into the memory means;
- e. statistical analysis means, for analyzing the specific resource data selected by the individual and its sequential order of selection, and for analyzing the specific response data, producing a statistical database that is stored by the memory means; and
- f. report generation means for generating a report from the statistical database that defines the individual's task-processing style in respect to a plurality of preselected parameters in accord with predefined rules.

5,326,271
IC SOCKET
Nobuaki Kishi; Norio Kobayashi, and Junji Ishida, all of Saitama, Japan, assignors to Chichibu Fuji Co., Ltd., Saitama, Japan
Continuation of Ser. No. 687,706, Apr. 19, 1991, Pat. No. 5,244,404. This application Mar. 1, 1993, Ser. No. 24,396
Claims priority, application Japan, Oct. 31, 1990, 2-296750
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—72 **14 Claims**



1. An IC socket comprising:
- a socket base plate having contacts to which IC lead wires of an IC to be mounted are contacted and mounted;
- a pushing cover adapted to be pushed closed against said socket base plate with an IC therebetween; and
- a pushing member for pressing the IC lead wires against said contacts in response to a closing operation of said pushing cover, said pushing cover being rotatably supported on said socket base plate, said pushing member being rotatably supported on said socket base plate separately from said pushing cover, said pushing member further comprising a supporting end for supporting said pushing member on said socket base plate, said supporting end comprising a longitudinal hole therethrough, said longitudinal hole extending vertically and forming a vertical ovate slot, to permit vertical movement of said rotatable supported pushing member on said socket base plate.

5,326,272
LOW PROFILE ELECTRODE CONNECTOR
Robert P. Harhen; William J. Marlow, both of Andover, and Dawn E. Sissom, Lexington, all of Mass., assignors to Medtronic, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 472,504, Jan. 30, 1990, abandoned. This application Jan. 2, 1991, Ser. No. 636,830
Int. Cl.[5] A61B *5/04*
U.S. Cl. 439—86 **16 Claims**



1. A connector for slidable and electrically conductive engagement with an upstanding connecting member of an electrode, the connector comprising:
- a connector body having a multiplicity of sides, a top and bottom, the connector body having therein a channel, the channel communicating with one side and the bottom of said body so as to slidably and restrictively receive said member while permitting rotation said body and said electrode, the channel having a widened portion opening to the one side and tapering to a narrower portion, said narrower portion of said channel having a terminus at approximately the center of said connector body, and being interiorly concave so as to cooperate with said member;
- electrical conductor means for connecting said connector body to separate electrical input or output means, said electrical conductor means attached to and extending into said connector body at a point adjacent the channel opening; and
- means for electrically connecting said electrical conductor means to said channel.

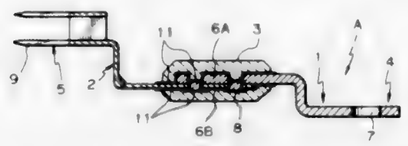
5,326,273
ELECTRIC CONNECTION TERMINAL
Shinji Kamon; Akihisa Mitsuishi; Masaru Shinmura; Toshiya Nishino, all of Saitama; Kazunori Kurata, and Toshihisa Sekido, both of Mie, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie and Honda Giken Kogyo K.K., Tokyo, both of Japan
Continuation of Ser. No. 727,737, Jul. 10, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 47,005
Claims priority, application Japan, Jul. 13, 1990, 2-74697[U]; Jun. 5, 1991, 3-050773[U]
Int. Cl.[5] H01R *4/62*
U.S. Cl. 439—92 **3 Claims**

1. An earth bracket for electrically connecting an aluminum car body to earth wires, comprising:
- an aluminum attaching member having a first coupling portion formed at one end thereof and a termination portion formed at the other end thereof, said termination portion having a hole formed therein so as to allow attachment to said aluminum car body by virtue of an aluminum bolt passing through said hole;
- a second copper attaching member, having a second cou-

pling portion at one end thereof, a plurality of protrusions formed on said second coupling portion;

a plurality of terminals at the other end of said second copper attaching member, said terminals being constructed so as to accept an end portion of the earth wires to be electrically connected to said aluminum car body;

said first coupling portions having apertures formed therein, each of said protrusions inserted into a respective one of said apertures, when said first and second coupling portions are disposed in overlapping relation to each other, so as to electrically and mechanically connect said aluminum attaching member and said second copper attaching member;



an adhesive layer disposed on said first and second coupling portions; and

a plastic resin layer disposed on said adhesive layer so as to encapsulate overlapping portions of said first and second coupling portions.

5,326,274

ELECTRICAL CONNECTOR

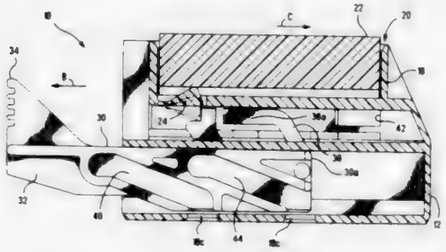
Matthias Pfaff, Offenbach, and Guido G. M. P. van de Burgt, Darmstadt, both of Fed. Rep. of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 1, 1993, Ser. No. 86,486

Claims priority, application United Kingdom, Jul. 8, 1992, 9214525

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—157 **11 Claims**



1. A connector comprising a housing comprising a first elongated slot and a second elongated slot, said housing also comprising a wall defining an aperture, a first resilient latch associated with said first elongated slot and said aperture, and a second resilient latch associated with said second elongated slot and said aperture;

a generally U-shaped latch camming slide having a first leg portion, a second leg portion and a joining portion joining said first and second leg portions, said first and second leg portions being received in said first and second elongated slots, respectively, so that said generally U-shaped latch camming slide can slide in and out of said housing, each of said first and second resilient detents having a shoulder notch; and

a locking insert for mounting in said aperture in order to bias said first and second resilient latches into said first and second elongated slots so that said shoulder notches of said first and second resilient detents engage said first and second resilient latches, respectively, thereby locking said generally U-shaped latch camming slide in said housing.

5,326,275

CONNECTING METHOD AND A CONNECTOR FOR FLEXIBLE PLANAR CONDUCTOR CABLES

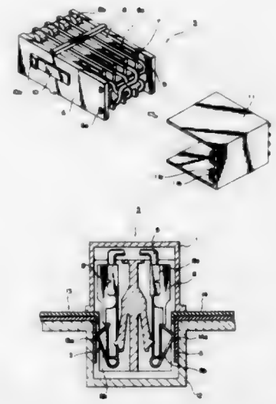
Koji Murakami, Mie, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Aug. 12, 1992, Ser. No. 928,302

Claims priority, application Japan, Aug. 13, 1991, 3-228903

Int. Cl.[5] H01R *31/08*

U.S. Cl. 439—189 **4 Claims**



1. A connector for forming a predetermined wiring circuit on a flexible planar conductor cable, comprising:

a housing;

a plurality of terminal groups mounted in said housing and having pressing protrusions to be pressure-contacted with a conductor pattern provided on a connecting portion of said cable;

a wiring conductor connected to each terminal of said plurality of terminal groups for forming a predetermined wiring circuit in said housing; and

engaging means provided in said housing for securing said housing to a cable holding portion of said cable, said engaging means being engaged with lock portions provided on said cable holding portion, wherein said cable holding portion comprises a recess, said connecting portion on said cable is disposed within said recess, and said pressing protrusions are provided on opposite sides of said housing, whereby said pressing protrusions of said terminals are pressure-contacted with said conductor pattern on said connecting portion of said cable when said housing is mated with said recess, thereby forming the predetermined wiring circuit.

5,326,276

CONNECTOR ASSEMBLY WITH DIMENSION-REDUCED TRANSVERSE WALL FOR EASY AND SAFE WITHDRAWAL OF THE BOARD INSERTED THEREIN

Lee Cheng, Cupertino, Calif., assignor to Foxconn International, Inc., Sunnyvale, Calif.

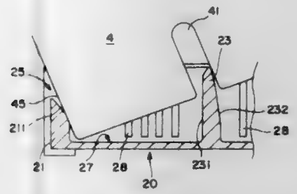
Filed Mar. 3, 1993, Ser. No. 25,590

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—326 **7 Claims**

1. A connector assembly at least comprising:

a first and a second card edge connectors (**20**, **10**), each including an elongated housing having a central slot (**27**) therein, and a plurality of contacts (**26**) arranged along two sides of the slot (**27**), said first and second connectors (**20**, **10**) lengthwise aligned and juxtaposed with each other on a mother board (**3**) for respectively receiving at least two separate regions (**43'**,**42'**) of a lower edge portion of a unitary daughter board (**4**), said regions (**43'**, **42'**) having different contact pitch arrangements thereof, said first connector (**20**) having higher contact density arrangement than the second connector (**10**) for electrical engagement with the region (**43'**) of the daughter board which is of a smaller contact pitch arrangement than the other region (**42'**);



the improvement comprising:

said first connector (**20**) including an outer end wall (**21**) positioned at an end thereof in a lengthwise direction and far from the second connector (**30**), said outer end wall (**21**) being recessed at the top to form a substantial space (**25**) thereof, a top surface (**211**) of the outer end wall (**21**) being much lower than a general top surface (**24**) of the first connector (**20**), so that said outer end wall (**21**) functions as a supporting pivot for stabilizing a rotative movement of the daughter board (**4**) without interference occurring thereof.

5,326,277

STRUCTURE FOR MOUNTING PACKAGES WITH ELECTRONIC CIRCUIT COMPONENTS ON A MOUNTING UNIT

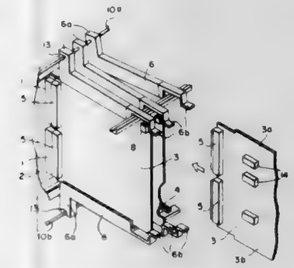
Masahiko Kuramitsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 41,057

Claims priority, application Japan, Apr. 7, 1992, 4-84358

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—327 **4 Claims**



1. A mounting structure comprising:

a mounting unit;

first connector attached to said mounting unit;

a pairs of guide rails attached to said mounting unit;

a package having electronic circuit components disposed thereon, said package having at least one second connector at one edge thereof which is engaged with said first connector when inserted into said mounting unit along said air of guide rails;

a rod;

a pair of arms each having first and second ends, said first end of each of said arms being supported on said rod so as to be able to pivot around said rod, said second end of each of said arms being engaged with an edge of said package when said package are mounted to said mounting unit and said arms are pivoted toward said package; and

a switch provided on said package, said switch being depressed by at least one of said arms when said arms are pivoted toward said package, thereby activating said electronic circuit components of said package and said switch being released when said arms are pivoted away from said package, thereby deactivating said electronic components of said package.

5,326,278

CONNECTOR ASSEMBLY FOR INTERCONNECTING TWO FLAT CABLES

Bernard Logerot, Mont-sous-Vaudrey; Jean-Pierre Huguenet, Moissey, and Francis Cabane, Dole, all of France, assignors to Amphenol Socapex, France

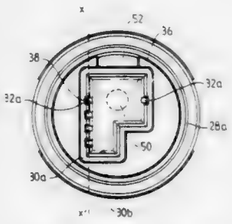
PCT No. PCT/FR92/00151, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1994, PCT Pub. No. WO92/15131, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 17, 1992, Ser. No. 937,875

Claims priority, application France, Feb. 18, 1991, 91 01903

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—404 **7 Claims**



1. A connector assembly for interconnecting two flat cables, the assembly comprising a male connector portion and a female connector portion, each connector portion being constituted by a cover and a base, each base having a first end for co-operating with said cover for wiring one of said cables, and a second end for co-operating with the base of the other connector portion, the connector assembly being characterized in that each cover includes a dome substantially in the form of a spherical cap whose diameter lies in the range of 25 mm to 60 mm, in that said second end of each base includes a substantially cylindrical sealing skirt and a contact support element for support contacts disposed inside said skirt, in that end faces of said skirts and of said support elements are disposed substantially in common planes perpendicular to an axis of the bases, and in that first ends of said contacts are set back relative to said support elements.

5,326,279

COMBINATION CONNECTOR ASSEMBLY

Tatsuya Sumida, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems Ltd., Yokkaichi, Japan

Filed Dec. 28, 1992, Ser. No. 997,561

Claims priority, application Japan, Dec. 27, 1991, 3-108020

Int. Cl.[5] H01R *13/60*

U.S. Cl. 439—540 **3 Claims**

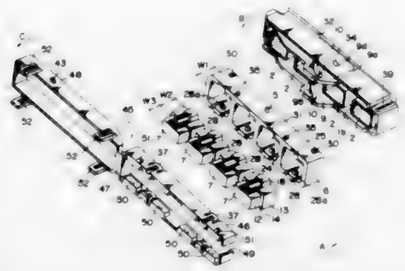
1. A combination connector assembly having interengageable male and female connector units adapted for simultaneous engagement in a condition such that plural pairs of connectors are held in position comprising:

first and second holding members removably holding the same number of male and female connector units adjacent each other respectively;

each male connector unit being comprised of a hollow cylindrical frame integrally connected at a first end with a wall

of said first holding member with a second end projecting toward said second holding member and adapted to support therein a plurality of male tabs extending through said wall for connection to a printed circuit board;

each female connector unit having a forward end with a recess therein for receiving the second end of a male connector unit therein and holes for receiving said male tabs and a rear end for receiving wire harness connecting means adapted to be electrically connected to said male tabs;



a cover detachably mounted on said second holding member in overlying engagement with said rear end of each female connector unit for holding said female connector units in said second holding member; and

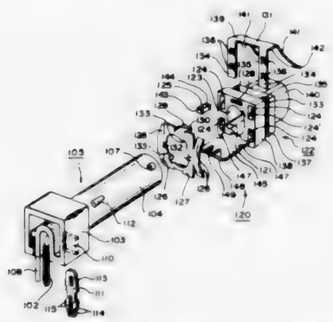
cam means connected to said first and second holding members for engaging and drawing said first and second holding members toward each other upon manipulation of said cam means for establishing electrical connection between said male tabs and said wiring harness connecting means simultaneously for said plural pairs of connectors.

5,326,280

COAXIAL CONNECTOR WITH INTEGRAL DECOUPLING UNIT

Francisco R. Briones, Markham, and Kamal S. Boutros, Richmond Hill, both of Canada, assignors to Amphenol Corporation, Wallingford, Conn.

Filed Jun. 14, 1993, Ser. No. 75,876
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—581 **75 Claims**



1. An electrical connector having at least one contact connected through at least one electrical component having first and second electrodes to a conductor external to the connector, comprising:

a dielectric member which surrounds at least a portion of the contact and which includes a recess for supporting the component therein;

a first conductive member secured to the dielectric member to engage the first electrode of the component;

a second conductive member secured to the dielectric body to engage the second electrode of the component and sandwich the component therebetween;

means for electrically connecting the first conductive member to the contact;

means for electrically connecting the second conductive member to the external conductor; and

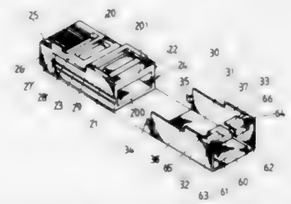
means on said dielectric member and on said contact for fixedly securing the dielectric member to the outer contact.

5,326,281

STRUCTURE FOR ELECTRO-MAGNETIC WAVE SHIELDING IN THE ELECTRIC PLUG USED IN TELECOMMUNICATION

Lin-Yen Yin, P.O. Box 80-20, Taipei Hsien, Taiwan

Filed Feb. 2, 1993, Ser. No. 12,381
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—607 **3 Claims**



1. An electric plug with electromagnetic wave shielding used for telecommunication comprising:

a main body molded from plastic and a metallic shielding sheet; wherein

each of two sides of said main body includes a groove located at the vertical center of a depressed side face and a stepped border near a front end thereof, and

said shielding sheet includes two depressed side sheet portions of substantially the same size as the side faces of said main body, the side sheet portions further including a tenon at the height of the grooves in said main body;

said shielding sheet also including a lower inward folding sheet portion and a plurality of upper folding sheet portions situated at a rear end of said shielding sheet, the upper folding sheets including a plurality of tabs; wherein

when said shielding sheet is slid onto said main body, said tabs are folded over said main body to secure the shielding sheet to said main body, the folding being accomplished by a machine operation.

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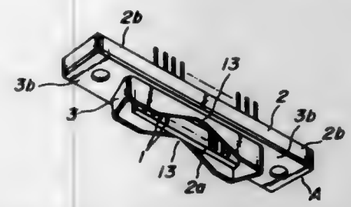
MINIATURE MULTIPLE ELECTRICAL CONNECTOR

Yoshiaki Igarashi; Yukio Saitoh; Fumio Furuya, and Akio Yamada, all of Tokyo, Japan, assignors to Daiichi Denshi Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 10,842, Jan. 29, 1993, abandoned, which is a division of Ser. No. 814,405, Dec. 23, 1991, Pat. No. 5,201,675.
This application Sep. 27, 1993, Ser. No. 127,335
Claims priority, application Japan, Dec. 27, 1990, 2-405192[U]
Int. Cl.[5] H01R *13/658*
U.S. Cl. 439—607 **2 Claims**

1. A miniature multiple electrical connector including a plug connector and a receptacle connector, said plug connector including an insulating block having contacts arranged on a fitting protrusion thereof and a metal shell fixed to the insulating block to surround the fitting protrusion with clearances therearound, and said receptacle connector including an insulating block having contacts arranged on a fitting recess

thereof and a metal shell fixed to the insulating block around its fitting recess and to be in contact with the inside of the metal shell of the plug connector upon mating the plug and receptacle connectors with each other, said insulating block and said metal shell of the receptacle connector being fixed to each other by fitting anchoring protrusions provided along both



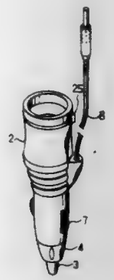
sides of the insulating block of the receptacle connector in anchoring apertures of fixing tongues provided on the metal shell of the receptacle connector, wherein the metal shell of the plug connector is formed with deformation preventing notches, one on each side thereof, whose center is deeper than both ends of the notch, each notch extending from a leading edge of the metal shell.

5,326,283

ELECTRICAL PLUG FOR AUTOMOBILE USE

Tonny Chen, Changhua City, Taiwan, assignor to E Lead Electronic Co., Ltd., Changhua City, Taiwan

Filed Aug. 3, 1993, Ser. No. 101,563
Int. Cl.[5] H01R *13/68*
U.S. Cl. 439—622 **2 Claims**



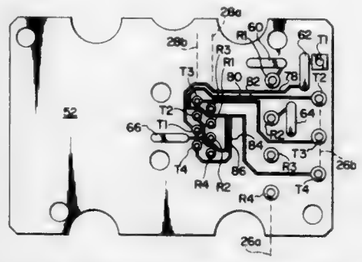
1. An improved electric plug for automobile use, comprising a plug body; a pair of flexible conducting strips; a cap threadedly attached to one end of said plug body; a contact pin led through said cap; a fuse and a spring means disposed in contact with said contact pin consecutively and said spring abutting against a conducting plate of a base seat; said flexible conducting strips each having an arc protrusion sticking out of a slot-like opening on said plug body; and an extension cord having two wires one of which is connected to one of said flexible conducting strips and the other is connected to said conducting plate; said plug being characterized by that a side hole is disposed on the periphery of said body so as to permit said extension cord to extend out of said plug body, serving as another power supply source; said plug body is provided with a socket means at a top end thereof so as to permit either another plug of an electric device to be inserted therein or several said identical plug bodies to be consecutively connected end to end.

5,326,284

CIRCUIT ASSEMBLIES OF PRINTED CIRCUIT BOARDS AND TELECOMMUNICATIONS CONNECTORS

Michel Bohbot, Cote St-Luc, and Paul A. Guilbert, Lasalle, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 26, 1992, Ser. No. 904,637
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—676 **3 Claims**



1. A circuit assembly of a telecommunications conductor and a circuit member being a planar support element rigidly carrying conductor paths in intimate contact with the support element, the conductor comprising:

first and second conductor pairs electrically connected to corresponding first and second pairs of conductor paths of the circuit member, each conductor connected to an individual circuit path, the two conductor pairs disposed in a rectilinear array with the conductors of the first of the pairs flanked by the conductors of the second pair and a parasitic reactance coupling existing between adjacent first conductors of the first and second pairs and between adjacent second conductors of the first and second pairs; and

first and second compensating reactances provided by the circuit member, the first compensating reactance comprising one capacitor formed by the support element and a first pair of conductor plates, one plate of the first pair being provided as part of the first conductor path of the first pair of conductor paths and the other plate of the first pair of plates being provided as part of the second conductor path of the second pair of conductor paths, the plates of the first pair being in opposition with the support element between them, and the second compensating reactance comprising another capacitor formed by the support element and a second pair of conductor plates, one plate of the second pair of plates being provided as part of the second conductor path of the first pair of conductor paths and the other plate of the second pair of plates being provided as part of the first conductor path of the second pair of conductor paths with the plates of the second pair being in opposition with the support element between them.

5,326,285

CONNECTION ARRANGEMENT BETWEEN TERMINAL BLOCKS

Ronald R. Maros, Itasca, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Dec. 14, 1992, Ser. No. 989,670
Int. Cl.[5] H01R *9/22*
U.S. Cl. 439—717 **3 Claims**

1. A mating pair of electrical terminal blocks, said terminal blocks comprising:

a first block;

a mating block, said first and mating blocks including:

a top surface;

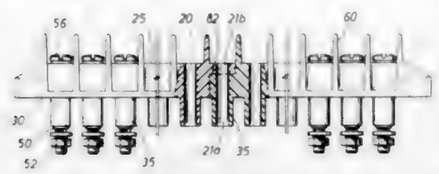
a bottom surface;

a plurality of equally spaced apertures, said apertures

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extending from said top surface to said bottom surface and terminating at said bottom surface in a cylindrically shaped tube;

a plurality of substantially rectangular barriers, said barriers spaced between said apertures; and



connection means integral with said first and mating blocks whereby, upon connection, said connection means form a first aperture and all of said apertures within said connection means, first block and said mating block are equally spaced from each other

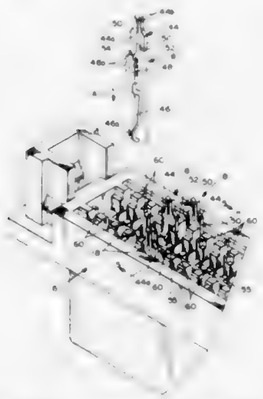
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5,326,286

ELECTRICAL CONNECTOR ASSEMBLY WITH TERMINAL ALIGNMENT SYSTEM

Craig Bixler, Elmhurst, and Richard A. Nelson, Glen Ellyn, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 17, 1992, Ser. No. 991,927
Int. Cl.[5] H01R *13/42*
U.S. Cl. 439—751 **8 Claims**



1. In an insulation displacement type electrical connector for termination to a cable having a plurality of spaced apart conductors with insulation surrounding each conductor, said connector including:

an insulative housing having a termination face at which said connector is terminated to said cable, a mating face and a plurality of terminal receiving cavities for insertion thereinto of a plurality of terminals in a given insertion direction, each said cavity having a terminal securing region in which a terminal is retained in said cavity;

an insulation displacement type terminal contained within each cavity, each terminal having a generally planar insulation displacement section at one end including an insulation displacement slot opening from a first edge of said insulation displacement section for piercing the insulation surrounding one of said conductors, a contact section at an opposite end for mating with a mating terminal, an intermediate terminal securing section between the ends of the terminal for securing said terminal in a respective one of said cavities within the housing, and a transition section between said terminal securing section and said insulation displacement section for displacing said terminal securing section from the plane of said insulation displacement section in a first direction generally parallel to the axes of said conductors of said cable;

wherein the improvement in said connector comprises:

a second edge of each said insulation displacement section opposite said first edge has a terminal alignment notch therein; and

said housing has a plurality of rib means adjacent said termination face, each for interengagement with one of said terminal alignment notches in said insulation displacement sections;

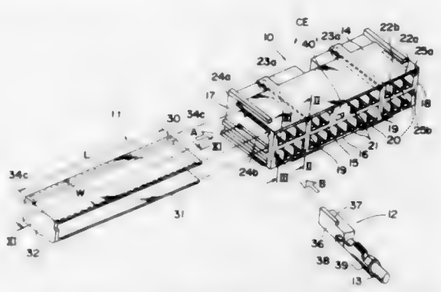
whereby upon insertion of said terminals into said cavities, the terminal alignment notch of each terminal engages a respective rib means to accurately align in a direction generally perpendicular to the axes of said insulated conductors of said cable the insulation displacement section of the terminal prior to termination thereof to one of said conductors.

5,326,287

CONNECTOR

Shozo Hamakita; Osamu Taniuchi; Yutaka Yokoyama, and Hajime Kawase, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Oct. 29, 1992, Ser. No. 968,486
Claims priority, application Japan, Oct. 30, 1991, 3-089252[U]; Oct. 31, 1991, 3-089748[U]
Int. Cl.[5] H01R *13/519*
U.S. Cl. 439—752 **6 Claims**



1. A connector for accommodating at least one terminal having a first engaging means and a second engaging means, said connector comprising: 'a retainer means provided with a third engaging means engageable with said second engaging means; and

a housing means extending in a first direction and having first and second walls, opposed to each other and perpendicular to said first direction, for accommodating said terminal inserted therein, said housing means being provided with a fourth engaging means engageable with said first engaging means and a guide means for engaging with and guiding said retainer means in a second direction perpendicular to said first direction, said housing means further having third and fourth walls, opposed to each other and extending perpendicular to said second direction, said third wall providing an opening aligned with said guide means and said fourth wall being closed, whereby when said terminal is properly placed in said housing means and said retainer means is engaged with said guide means, said third engaging means engages with said second engaging means to secure said terminal firmly together with the engagement between said first and fourth engaging means.

wherein said housing means comprises a plurality of terminal housing means extending in said first direction for accommodating each of a plurality of terminals therein, each of said terminal housing means being in alignment with each other side by side,

wherein said guide means comprises:

a first sub guide means formed in said housing means extending in said first direction, having a portion closed at a first side of said guide means, said portion being engageable with one side edge of said retainer means; and

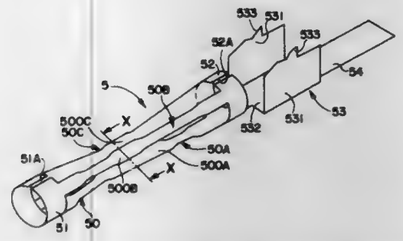
a second sub guide means formed in said housing means extending in said first direction, having a further portion closed at said second side of said guide means, said further portion being engageable with the other side edge of said retainer means, whereby when said retainer means is engaged with said guide means, said retainer means is held and guided by said portions, and further wherein said first wall is provided with a third sub guide means formed therein extending in said first direction.

5,326,288

CONTACT HAVING GENERALLY UNIFORM STRESS ACTING THEREON

Sidney Lu, Taipei, and Gwou-Jong Tseng, Taipei Hsien, both of Taiwan, assignors to Foxconn International, Inc., Sunnyvale, Calif.

Filed Feb. 25, 1993, Ser. No. 22,322
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—851 **9 Claims**



1. A female contact (5) for use with a connector comprising:

a forward contact section (50) having a front end, a rear end and at least three inwardly curved beams (50A, 50B, 50C) bowed to each other intermediate the front and the rear ends, each beam (50A, 50B, 50C) having an engaging region (500A, 500B, 500C) converging to an axis surrounded by the beams (50A, 50B, 50C) for retainable engagement with an inserted male contact;

a middle retention section (53) integrally connected to the rear end of the contact section (50) for retaining the female contact (5) within the connector; and

a rearward tail (54) integrally connected to the middle retention section (53); wherein

each beam (50A, 50B, 50C) of the contact section (50) has an expanded width (W1, W2, W3) proximate the front end, the rear end and the engaging region (500A, 500B, 500C).

5,326,289

FEMALE HYPERBOLOID ELECTRICAL CONNECTOR AND THE METHOD FOR FABRICATING SAME

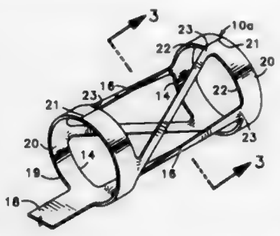
Donald R. Leisey, 8142 Jefferson St., Hummelstown, Pa. 17036

Filed Jul. 12, 1993, Ser. No. 89,196
Int. Cl.[5] H01R *13/11*
U.S. Cl. 439—851 **4 Claims**

1. In a female electrical connector formed of a flat blank of sheet metal and receptive of a male cylindrical pin for providing a separable conductive circuit therebetween, the improvement comprising:

a pair of spaced apart cylindrical ferrules concentrically disposed, each shaped by forming portions of said sheet metal into a tubular configuration, each ferrule having an inner diameter larger than the pin and each having spaced apart opposing circumferential edges separated by a predetermined distance; and

a plurality of spaced apart substantially planar and elongated resilient beam members each spanning the distance between said edges and integral therewith, each beam member including a flat and straight portion intermediate of said ferrules defining a contact surface, said beam members simultaneously and automatically positioned as generatrices of a hyperboloid of revolution during the formation of said ferrules, said hyperboloid having a throat diameter less than that of the pin, wherein insertion of the pin through said ferrules causes said contact surfaces to bear against the inserted pin and deflect radially outward while partially wrapping around the pin for effecting low resistance electrical contact along said contact surface.

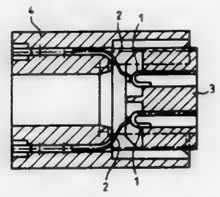


5,326,290

ELECTRICAL CONNECTOR

Bruno Chailleux, and Philippe Choquet, both of Le Mans, France, assignors to Framatome Connectors International, Courbevoie, France

Filed Sep. 16, 1992, Ser. No. 945,329
Claims priority, application France, Sep. 26, 1991, 91 11844
Int. Cl.[5] H01R *4/48*
U.S. Cl. 439—862 **8 Claims**



1. Connector comprising at least one elastically deformable lamellar flexible electrical contact member and at least one rounded rigid electrical contact member which come into electrical and mechanical contact with each other on relative displacement of said rigid member towards said flexible member along a path of insertion across which said flexible member is disposed, and flexed and tensioned elastically by said rigid member during said relative displacement and contact, said flexible member having a free end with a concave surface of contact facing towards said rigid member and into which an oppositely curved surface of contact transitions, said rigid member having a first radius of curvature and said concave contact surface of said flexible member having a second radius of curvature greater than said first radius of curvature of said rigid member,

whereby a wiping contact of said rigid member with said concave contact surface of said free end occurs during said displacement which results in an increase in a distance on and along said concave surface of said wiping contact concurrently with flexing of said flexible member without

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increasing a rate of tensioning of said flexible member over at least a portion of said displacement.

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ACTUATOR MECHANISM FOR OPERATING A TORPEDO TUBE SHUTTER DOOR

Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 13, 1992, Ser. No. 959,596
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—61 **3 Claims**



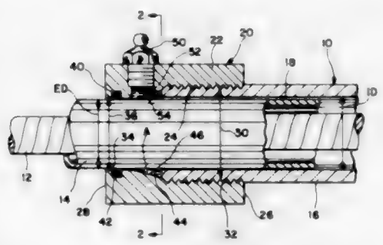
1. In a submarine vessel having an inner hull, an outer hull, and a non-pressure bearing shutter door mounted in said outer hull, an actuator mechanism for operating said shutter door comprising:
- a first hydraulic cylinder having first and second ends, said first end being mounted to the inner hull;
- a pivot link having a first end pivotably connected to said inner hull and a second end pivotably coupled to said second end of said first hydraulic cylinder.
- a second hydraulic cylinder having first and second ends, said first end being pivotably connected to said second end of said pivot link;
- a shaft rotatably mounted to the inner hull,
- a torque arm having first and second ends, said first end being keyed to said rotatable shaft, said second end being pivotably connected to said second end of said second hydraulic cylinder;
- a transfer link having first and second ends, said first end being keyed to said rotatable shaft; and
- a connector link having a first end pivotably connected to said second end of said transfer link and a second end pivotably connected to said shutter door, said shutter door being pivotably connected to said outer hull at one end thereof.

5,326,292

LUBRICATION ADAPTOR FOR A MARINE STEERING SYSTEM

Donald Brushaber, 221 Hayes Ct., Normandy Beach, N.J. 08739

Filed Aug. 19, 1993, Ser. No. 109,303
Int. Cl.[5] B63H *25/00*
U.S. Cl. 440—62 **10 Claims**



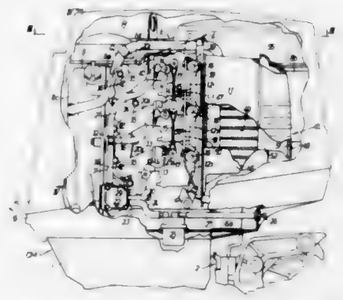
1. An improvement in a lubrication adaptor for a marine steering system in which a control cable is connected to a tubular member having an external diameter and being received within a control cable housing having an internal diameter, the relative dimensions of the external diameter of the tubular member and the internal diameter of the control cable housing providing a clearance between the tubular member and the control cable housing for telescopic axial movement of the tubular member relative to the control cable housing, and the lubrication adaptor includes a body extending axially between opposite ends, the body including a threaded bore having an internal diameter and extending axially from one end toward the other end of the body for threaded engagement with the control cable housing to secure the body to the control cable housing, a counterbore extending axially from the other end toward the one end of the body and having an internal diameter smaller than the internal diameter of the threaded bore and generally complementary to the external diameter of the tubular member, and a seal in the counterbore for engaging the tubular member and sealing a lubricant placed between the threaded bore and the seal, the improvement comprising:
- a chamber in the body, the chamber extending axially between the threaded bore and the counterbore, for containing the lubricant; and
- a lubrication fitting communicating with the chamber for supplying the lubricant to the chamber;
- the chamber including an internal surface having a surface contour configuration tapered from a larger diameter adjacent the threaded bore to a smaller diameter adjacent the counterbore for urging the lubricant supplied to the chamber in the direction away from the seal and toward the clearance between the tubular member and the control cable housing.

5,326,293

MULTI-CYLINDER ENGINE STRUCTURE AND OUTBOARD ENGINE

Motoyoshi Shishido; Sadafumi Shidara; Koji Koishikawa, and Hiroshi Yamamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 672,291, Mar. 20, 1991, abandoned.
This application Jun. 11, 1992, Ser. No. 896,901
Claims priority, application Japan, Mar. 22, 1990, 2-29237[U]; Mar. 22, 1990, 2-29238[U]
Int. Cl.[5] F02B *13/00*
U.S. Cl. 440—76 **15 Claims**



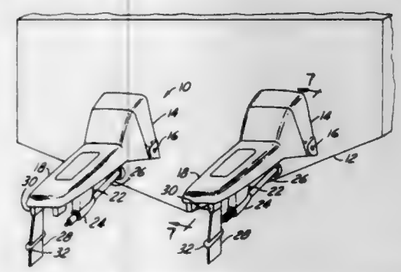
11. A multi-cylinder engine structure comprising:
- a multi-cylinder engine body having at least three cylinders vertically arranged therein; and
- a fuel feed system having a fuel pump connected to a plurality of carburetors which are in a vertical arrangement sideways of the engine body in independent correspondence to the cylinder,
- wherein each of the carburetors is connected to a cylinder head of the engine body via an intake manifold,
- the fuel pump having a pair of discharge pipes, said fuel pump being fixed to the cylinder head at a location below a lowermost one of the carburetors,
- the lowermost one of the carburetors being connected to one of the discharge pipes while remaining carburetors are connected to the other discharge pipe via diverging means, and
- wherein the vertically arranged carburetors, intake manifold and fuel pump are accommodated within a narrow space defined between a casing means and a lateral side of the engine body.

5,326,294

STERN DRIVE FOR BOATS

Harry L. Schoell, 2698 SW. 23rd Ave., Ft. Lauderdale, Fla. 33312

Filed May 25, 1993, Ser. No. 66,203
Int. Cl.[5] B63H *5/06*
U.S. Cl. 440—79 **12 Claims**



1. A stern drive unit mountable on a boat transom to submerge a propeller and a rudder below a water surface, comprising:
- a pivotal arm, extending generally perpendicularly to said boat transom when mounted thereon, having a propeller shaft support means and a rudder support means on a first end portion of said pivotal arm and a second end portion pivotally mountable to said boat transom;
- a propeller shaft rotatably mounted in said propeller shaft support means having a first end with a propeller mounted thereon and having a second end with a universal joint connectible to an engine-transmission assembly to rotate said shaft;
- a through transom fitting mountable in the transom and having an opening for receiving said propeller shaft;
- a stuffing box means mounted between said propeller shaft and said through transom fitting for sealing said transom against leaking;
- a rudder for steering said boat mounted on said rudder support means;
- means for rotating said rudder; and
- means for raising and lowering said pivotal arm to adjust the angle of the pivotal arm relative to the transom when attached thereto.

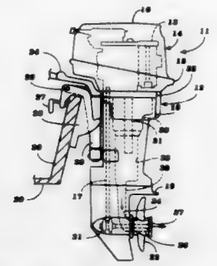
5,326,295

EXHAUST SYSTEM FOR MARINE PROPULSION UNIT

Manabu Nakayama, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 11, 1993, Ser. No. 105,038
Claims priority, application Japan, Aug. 17, 1992, 4-240025
Int. Cl.[5] B63H *23/32*
U.S. Cl. 440—89 **15 Claims**

1. An outboard motor comprised of an internal combustion having at least one exhaust port for discharging exhaust gases and an outer housing assembly comprising a driveshaft housing and a protective cowling surrounding said internal combustion engine, said driveshaft housing containing a driveshaft for driving a propulsion device for propelling an associated watercraft, an exhaust system for said engine comprised of an inlet for receiving exhaust gases from said exhaust port, high speed underwater exhaust discharge to which exhaust gases are delivered from said engine through said driveshaft housing and an above the water exhaust gas discharge formed in said outer housing assembly at a point above the water level even when the outboard and associated watercraft are stationary communicating with said exhaust system for discharging exhaust gases directly to the atmosphere, and an exhaust treatment device



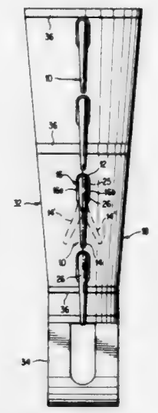
detachably affixed to said outer housing on the exterior thereof and having an inlet opening communicating with said above the water exhaust gas discharge and an outlet opening communicating directly with the atmosphere externally of said outer housing.

5,326,296

SWIMMERS AID

Juan J. De Jesus, Calle 5 No. G-1, Estancias de San Fernando Carolina, P.R. 00985

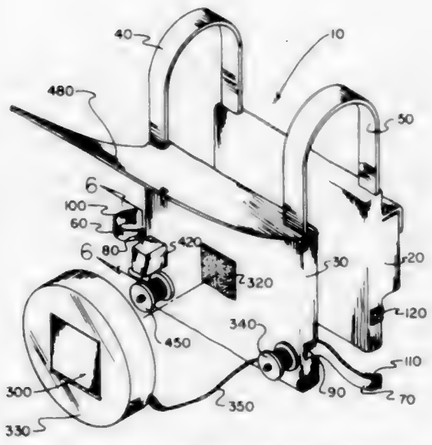
Filed Mar. 4, 1993, Ser. No. 26,000
Int. Cl.[5] A63B *31/12*
U.S. Cl. 441—60 **14 Claims**



1. A swimmer's aid comprising a flexible substantially planar finlet having upper and lower end parts and a latterly extending base having first and second sides and being integral with the upper end part of said finlet, means for releasably fixing said base to a portion of a swimmer's leg with the upper end part of said finlet extending from said base laterally away from said swimmer's leg portion and said lower end part extending freely downwardly from said upper end part and laterally spaced away from said portion of a swimmer's leg, said power end part of said finlet having a free end having flexibility enabling said free end to flex about said base beyond said first and second sides of said base and to either side of the plane of said finlet in response to up and down kicking motion in water of said leg portion, and means for restraining said finlet from flexing in response to said kicking motion in any other direction with respect to said leg portion.

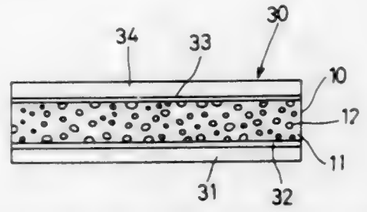
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5,326,297
LIFE JACKET
Keith O. Loughlin, Loughash Road, Newmarket An Fergus, Co-Clare, Ireland
Filed Mar. 8, 1993, Ser. No. 27,641
Int. Cl.[5] **B63C** *9/20*
U.S. Cl. 441—89 **9 Claims**



1. A new and improved life saving device comprising:
a life vest having
a front side including:
a pouch divided into first, second and third sections,
a cover to close the pouch,
a first fastener element on a lower right side of the front side, and
a second fastener on a lower left side of the front side;
a rear side including
a fastener element,
a first strap attached to a lower right side of the rear side, and
a second strap attached to a lower left side of the rear side;
a right shoulder strap attached between an upper right part of the front side and an upper right side of the rear side, connecting the front and rear sides; and
a left shoulder strap attached between an upper left part of the front side and an upper left side of the rear side, connecting the front and rear sides;
a flare gun held within the first section of the pouch on the front side of the life vest; and
flares held within the second section of the pouch on the front side of the life vest;
further including:
a strobe held within the third section of the pouch on the front side of the life vest,
a signal balloon attached to the rear side of the life vest,
a first spool attached to the rear side of the life vest having a tether, the tether being attached to the signal balloon,
a flare signal attached to the rear side of the life vest, and
a second spool attached to the rear side of the life vest having a tether, the tether being attached to the flare signal.

5,326,298
LIGHT EMITTER FOR GIVING PLASMA LIGHT EMISSION
Hideo Hotomi, Osaka, Japan, assignor to Minolta Camera Co., Ltd., Osaka, Japan
Continuation of Ser. No. 857,093, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 379,492, Jul. 13, 1989, abandoned. This application Mar. 16, 1993, Ser. No. 32,439
Claims priority, application Japan, Jul. 14, 1988, 63-176157
Int. Cl.[5] **H01J** *9/24, 9/395*
U.S. Cl. 445—24 **25 Claims**



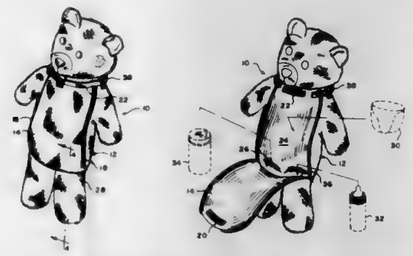
1. A method for manufacturing a light emitter material for giving plasma light emission upon application of an electric field comprising the steps of:
dissolving a resin in a solvent to provide a resin solution;
placing a vessel containing said resin solution in a vacuum apparatus;
evacuating said vacuum apparatus;
supplying a gas selected from the group consisting of rare gases, hydrocarbon gas and nitrogen gas to said vacuum apparatus to provide said resin solution with an atmosphere of said gas at a pressure or less than atmospheric pressure; and
agitating said resin solution to generate fine, randomly dispersed bubbles having sizes smaller than an electrode for one pixel entrapping said gas in said resin solution.

5,326,299
FLEXIBLE DISC TOY FOR SINGULAR AND MULTIPLE FLIGHTS AND BOUNCES
Gene M. Jasinski, 230 Renfaire Dr., Planteraville, Tex. 77363
Filed Mar. 23, 1992, Ser. No. 855,831
Int. Cl.[5] **A63H** *27/00*
U.S. Cl. 446—46 **18 Claims**



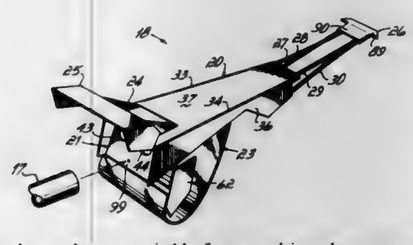
1. A pocket fitting, aerodynamically-shaped flexible flying toy which readily conforms to the hand in both throwing and catching modes and which, when rotated and simultaneously tossed on a plane relatively level to the ground, said toy will fly and land in a stabilized fashion, said toy comprising:
a) a substantially flat central portion of flexible material having a perimeter of equiangular polygonal shape defined by miltiple sides and miltiple corners connecting adjacent ones of said sides, said central portion having a surface area whose boundary is defined by a predetermined radius, for guiding the flight and descent of said toy,
b) a plurality of weights of substantially equal heft,
c) means for flexibly attaching said weights to said corners of said perimeter of said central portion between said sides thereof.

5,326,300
COMBINATION CARRYING DEVICE AND TOY
Scott Sonders, 15445 Ventura Blvd. #279, Sherman Oaks, Calif. 91403
Filed Feb. 16, 1993, Ser. No. 18,061
Int. Cl.[5] **A63H** *3/00;* **A45C** *15/00*
U.S. Cl. 446—74 **16 Claims**



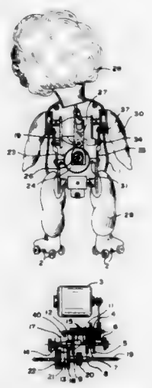
1. A combination carrying device and toy, comprising:
a) a body having an exterior surface defining a toy-like structure and having interior surfaces defining a plurality of hollow body cavities being sufficiently sized to contain and carry desired baby accessories, said plurality of hollow body cavities comprising at least one body cavity defining a central body cavity and appendage cavities in appendages of said body, said appendages defining legs, leg cavities defined therein for containing infant formula bottles;
b) at least one entry panel forming a portion of said exterior surface, said entry panel providing access to said central body cavity; and,
c) means for fastening said entry panel in a desired orientation relative to said exterior surface.

5,326,301
AIR PROPELLED TOY DRAGSTER CAR
James C. Woodside, 2800 W. Lower Springboro Rd., Franklin, Ohio 45005
Filed Nov. 17, 1992, Ser. No. 977,541
Int. Cl.[5] **A63H** *29/10, 27/00*
U.S. Cl. 446—176 **9 Claims**



1. A toy dragster suitable for propulsion along a smooth surface comprising:
a body having forward and rearward end aligned along a longitudinal axis;
a skate extending downwardly from the forward end of the body, the skate including a tip for contacting the smooth surface and supporting the forward end of the body above the smooth surface along the longitudinal axis;
a bouncer connected to the body between the forward and rearward ends, the bouner supporting and balancing the rearward end of the body transverse to the longitudinal axis, the bouncer being curved and having front and rear sections, wherein the front section connects to the body between the forward and rearward ends and the rear section of the bouncer connects to the wingplate; and
a wingplate oriented substantially perpendicular to the longitudinal axis and adapted to be acted upon by a blast of air to propel the dragster along the smooth surface.

5,326,302
PERFECTED ROLLER-SKATING DOLL
Jaime F. Llorens, Onil, Spain, assignor to Fabricas Agrupadas de Munecas de Onil, S.A., Onil, Spain
Filed Mar. 30, 1992, Ser. No. 859,973
Claims priority, application Spain, Oct. 30, 1991, 9103243[U]
Int. Cl.[5] **A63H** *11/10*
U.S. Cl. 446—288 **4 Claims**



1. Roller-skating doll having a body, alternately movable legs and a head movable in sync with said legs, said legs movable in two alternate speeds while said doll is in operation, said doll comprising a gear mechanism actuated by a motor, said mechanism including:
a drum having a winding ring-shaped groove;
axially movable cog wheel means engageable alternately with one or another wheel, of different sizes, in order to rotate said drum at two speeds;
a pin extending from each of said legs movably mated to said drum groove so that rotating movement is transmitted to said legs by said drum;
a socket enveloping a widened section of a shaft on which said wheels are mounted; and
a clutch assembly operable at certain times including a torus with respect to which said shaft can freely slide situated at said widened section such that the rotation of said shaft is not transmitted to said drum when said motor is desired to work at an idling speed.

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5,326,303

RIFLE WITH REALISTIC COCKING AND FIRING SOUND

Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889

Filed Jun. 15, 1992, Ser. No. 898,131
Int. Cl.[5] A63H *5/04*
U.S. Cl. 446—407 **16 Claims**



1. A toy gun, which comprises;
(a) a housing having a main section and a handle;
(b) a barrel connected to and extending from said main section of said housing;
(c) a trigger connected to said housing and pivotally mounting therein, said trigger having a finger portion below a pivot point and located outside of said housing, and having an engaging portion above said pivot point and located inside of said housing and having biasing means connected thereto so as to bias said trigger to a normal, first position, and having a second position when said trigger is pulled,
(d) a battery holder and connections for one or more batteries, located within said housing;
(e) a printed circuit board and a sound amplifier/speaker with electrical connection to said battery holder and to said sound amplifier/speaker with a break in the electrical connection operably connected, directly or indirectly, to said engaging portion of said trigger, such that when the trigger is in its first position, the electrical connection is incomplete and when pulled to its second position, the electrical connection is, either directly or indirectly, completed, said circuit board having sufficient circuitry components to recreate a realistic firing sound when said electrical connection is complete;
(f) a swivel cocking mechanism connected to said housing and pivotally mounted therein and having an open position and a closed position;
(g) cocking sound generating system including electrical connection to and from said printed circuit board, amplifier/speaker, and battery holder, with a break in said electrical connection operably connected, directly or indirectly, to said swivel cocking mechanism, such that when said swivel cocking mechanism is in its closed position, the electrical connection is incomplete and when it is in its open position, the electrical connection is complete so as to recreate a realistic cocking sound; and,
(h) a hammer which creates indirect operation between said trigger and said electrical connection of said circuit board, and said hammer also creates indirect operation between said swivel cocking mechanism and said electrical connection of said cocking sound generating system.

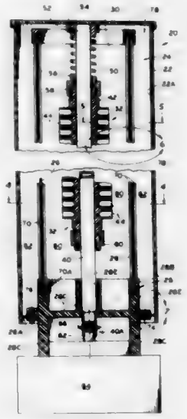
5,326,304

EXTRACTOR FOR RECOVERING ROYAL JELLY FROM ARTIFICIAL HONEYCOMB LATHES

Bohumir Z. Horr, 306 W. 93rd St., New York, N.Y. 10025

Filed Jun. 1, 1993, Ser. No. 68,774
Int. Cl.[5] A01K *59/00*
U.S. Cl. 449—50 **2 Claims**

1. A device for separating bee's royal jelly from a mixture of fluid royal jelly and particulate lavre comprising a vertically oriented upstanding supported cylindrical piston selectively detachable from its support having a wall bounding a royal jelly-separating chamber therein, a piston head adapted to be slidably disposed in said royal jelly-separating chamber having an initial starting position of movement at the bottom end thereof, a motor means having an upstanding driving shaft operatively disposed through said piston head, a rotor and cooperating connecting means for detachably interconnecting said rotor to extend from said upstanding driving shaft of said motor means centrally of said royal jelly-separating chamber, plural lathes with queen's cups in outwardly facing relation filled with said mixture of fluid royal jelly and particulate lavre mounted circumferentially about said rotor, and a piston rod consisting of a porous screen of plastic construction material with openings of a selected size to block the passage there-



through of said particulate lavre disposed in supported relation on said piston head and in encircling relation about said rotor delineating said royal jelly-separating chamber into an inner lavre-collection chamber and an outer royal jelly-collecting chamber, whereby the driving in rotation by said motor means of said rotor expels by centrifugal force said mixture from said queen's cups into contact against said screen resulting in the deposit of lavre in said lavre-collecting chamber and the passage therethrough only of fluid royal jelly into said royal jelly-collecting chamber preparatory to the facilitated removal thereof by movement of said piston rod with attached piston head thereon lengthwise of said piston which results in said piston head wiping said royal jelly from said chamber-bounding wall of said cylindrical piston.

5,326,305

PROTECTIVE BREAST PAD

Zhou Li Fochler, 301 Cathedral Pkwy., 14G, New York, N.Y. 10026

Filed Sep. 10, 1992, Ser. No. 942,504
Int. Cl.[5] A41C *3/14*
U.S. Cl. 450—57 **6 Claims**

1. A protective breast pad to be worn on an inner surface of a woman's garment over a breast of a woman which comprises:
a) a flat cushion sized to cover the breast of the woman;
b) an adhesive layer applied to one side of said flat cushion; and
c) a protective cover applied over said adhesive layer, so that when said protective cover is pulled off, said adhesive layer can be pressed against the inner surface of the woman's garment, to allow an opposite side of said flat cushion to cover the breast of the woman, wherein said protective cover includes an integral pull tab at its edge, so that said protective cover can be easily pulled off of said adhesive layer by said pull tab, wherein said flat cushion includes:
i) an inner soft material sheet;
ii) a liner sheet placed against one side of said inner soft material sheet and receiving said adhesive layer, said liner sheet having a plurality of small holes therethrough;
iii) a slightly larger outer fabric sheet placed against an opposite side of said inner soft material sheet; and



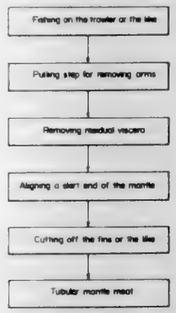
iv) stitches placed about the edges of said outer fabric sheet after the edges are folded over the edges of said inner soft material sheet and said liner sheet said liner sheet having a plurality of small holes therethrough;
v) a plastic sheet affixed to the back of said liner sheet over said small holes to form a pocket therein; and
vi) an absorbent sheet saturated with a perfume retained within the pocket formed by said plastic sheet to cover said small holes, so as to allow a perfume scent to exude through said small holes when said cover is pulled off.

5,326,306

METHOD AND AN APPARATUS THEREOF FOR CONTINUOUSLY PRODUCING A TUBULAR MANTLE MEAT

Toshiaki Katade; Tadanori Isayama, both of Fukuoka, and Takeya Yoshioka, Tokyo, all of Japan, assignors to Nippon Suisan Kaisha, Ltd., Tokyo, Japan

Filed May 3, 1993, Ser. No. 55,368
Claims priority, application Japan, May 8, 1992, 4-143314
Int. Cl.[5] A22C *25/14, 29/00*
U.S. Cl. 452—12 **13 Claims**



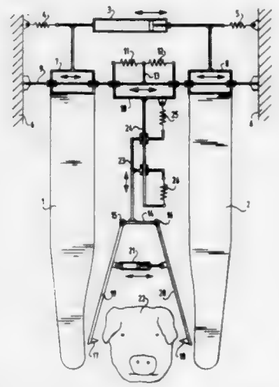
1. A method of continuously producing a tubular mantle meat of the cuttlefish subjected in sequence to steps comprising removing at least arms and viscera of the cuttlefish and cutting off at least fins of the cuttlefish, in which said method further comprises;
a pulling step of pulling the arms of the cuttlefish engaging with one of knife elements provided spaced at a certain distance on an endless chain running continuously toward a direction contrary to the run of said endless chain, thereby removing at least arms of the cuttlefish along with the viscera affixed to the arms, to prepare a tubular mantle;
a discharging step of moving the resultant tubular mantle in a state that it is engaged with said knife element, by using said endless chain running continuously and then discharging said tubular mantle at an exit end of said endless chain;
an aligning step of bringing a skirt end of said tubular mantle into contact with an aligning member, thereby aligning said skirt end along a line parallel to said aligning member; and
a cutting step of cutting off said skirt end, the fins and a portion of said tubular mantle adjacent to said fins, along cutting lines parallel to said aligning member.

5,326,307

STUNNING DEVICE FOR ANIMALS FOR SLAUGHTER

Wilhelmus A. Bernardus, Lichtenvoorde, and Hendrik J. Pardijs, Winterswijk, both of Netherlands, assignors to Stork RMS B.V., Lichtenvoorde, Netherlands

Filed Apr. 2, 1993, Ser. No. 42,481
Claims priority, application Netherlands, Apr. 2, 1992, 92.00622; Dec. 23, 1992, 92.02249
Int. Cl.[5] A22B *3/06*
U.S. Cl. 452—58 **23 Claims**



1. A device for stunning an animal comprising:
two electrodes for pressing against a head of the animal;
a support frame;
the two electrodes mounted relative to the support frame such that the electrodes have a first independent translation degree of freedom in a substantially vertical direction when the electrodes are pressed against the animal's head; and
a moving guide mounted relative to the support frame, the moving guide being movable in the substantially vertical direction to provide the first independent translation degree of freedom.

5,326,308

VERTICAL SCALDING APPARATUS

Lyle W. Norrie, 24 Stoneglen Drive, Etobicoke, Ontario, Canada M9C 2V5

Filed Apr. 23, 1993, Ser. No. 51,221
Int. Cl.[5] A22B *5/08*
U.S. Cl. 452—80 **9 Claims**

1. Vertical scalding apparatus for scalding animal carcasses on a conveyor line and comprising:
wall means defining at least a first and a further chamber means;
a conveyor system having at least first and further conveyor portions, associated with said first and further chamber means, and conveyor means connecting the same whereby said conveyor portions define a single conveyor path for

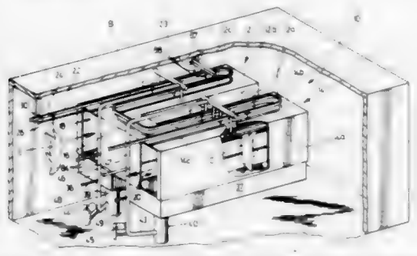
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moving carcasses through said first and further chamber means;

means for suspending carcasses at spaced intervals along said conveyor system, whereby said carcasses may be moved along said conveyor system within said chamber means along said conveyor path;

first hot water deluge tray means located along a first one of said conveyor portions being located on either side thereof above said carcasses, and first supply means for supplying a hot water deluge to said tray means whereby hot water may pour continuously downwardly alongside each side of carcasses on said first conveyor portion of said conveyor system;

first collector means beneath said first conveyor portion for collecting water pouring downwardly therearound; first filter means for filtering said water collected in said first collector means;



first pumping means for pumping said water back upwardly to said first water deluge tray means;

further hot water deluge tray means, together with further supply means, further collector means, further filter means, and further pumping means for said at least one further conveyor portion, whereby hot water may be poured downwardly around carcasses on said at least one further conveyor portion, and collected therebeneath and filtered and pumped therefrom upwardly once more, separately from water in said first chamber means;

tilt means operable to tilt said first and further tray means to facilitate cleansing thereof, and,

heating means for said water means in both said first and further chamber means whereby the same may be maintained at predetermined desired temperatures.

5,326,309

ANIMAL EVISCERATION

John W. Buhot, Coorparoo; Edward G. Mills, Wilston; Andrew M. Leiner, Sunnybank; Darryl J. Heidke, Morningside, and William J. Witham, Birkdale, all of Australia, assignors to Commonwealth Scientific & Industrial Research Organisation, Australian Capital Territory and Meat Research Corporation, New South Wales, both of Australia

PCT No. PCT/AU92/00296, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/22210, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 18, 1992, Ser. No. 975,534

Claims priority, application Australia, Jun. 18, 1991, PK6734

Int. Cl.[5] A22B *5/20*

U.S. Cl. 452—106 **17 Claims**

1. A process of eviscerating an animal carcass having a cranial end and a caudal end and having visera comprising both thoracic viscera and abdominal viscera, the process comprising the steps of:

suspending the carcass with the cranial end lower than the caudal end and, while the carcass is suspended in this position, at least partially severing connecting tissues selected from the aorta and the external iliac arteries, these tissues being tissues which might without being severed support the viscera and prevent the viscera falling from and detaching completely from the carcass during removal thereof;

subsequently suspending the carcass so as to be substantially horizontal and, while the carcass is suspended in the horizontal position, cutting the brisket; and

subsequently suspending the carcass so that the cranial end of the carcass is elevated above the caudal end and while



in this position pushing the viscera including both the thoracic viscera an abdominal viscera in a direction from the cranial end of the carcass towards the caudal end so that the thoracic viscera are pushed into the abdominal cavity and the viscera are pushed from the carcass between the hind legs of the carcass so as to fall from and detach completely from the carcass after passing between the hind legs.

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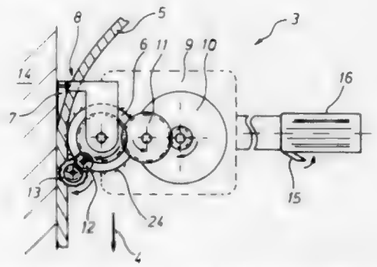
DE-RINDING DEVICE FOR PORK

Anton Gugg, Herzog-Odilo-Str. 19, A-5310 Mondsee, Austria

Filed Oct. 9, 1992, Ser. No. 959,220

Int. Cl.[5] A22B *5/16*

U.S. Cl. 452—133 **19 Claims**



1. A de-rinding device for pork having a de-rinding knife at a contact surface disposed at a distance from said de-rinding knife so that the rind is striped off in a relative movement of a meat area to be de-rinded passing between said de-rinding knife and said contact surface, and a drive unit, wherein said device comprises:

a de-rinding knife and a drive unit for said knife;

a portable carrying frame having at least one handle; said de-rinding knife and drive unit being carried by said frame approximately transverse to said handle and having a cutting edge disposed vertically in relation to the position of the user as determined by the position of the handle so that the de-rinding device removes the rind from a whole or half hog, in a suspended position; said frame being guided by hand whereby the de-rinding knife is part in contact with the outside of the hog, said de-rinding knife cuts off the broad side of a rind strip being removed.

5,326,311

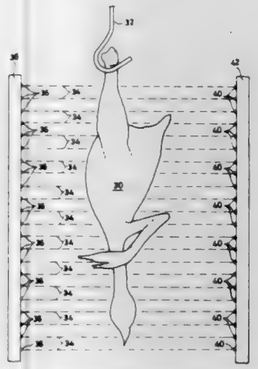
METHOD FOR CONTROLLING THE PROCESSING OF POULTRY, AND DEVICE FOR CARRYING OUT THIS METHOD

Nicolaas W. C. Persoon, Rotterdam, and Adrianus J. van den Nieuwelaar, Gemert, both of Netherlands, assignors to Stork PMT B.V., Boxmeer, Netherlands

Filed Dec. 19, 1990, Ser. No. 630,315

Int. Cl.[5] A22C *21/00*

U.S. Cl. 452—184 **5 Claims**



1. A method for processing poultry, such as whole poultry or parts thereof, comprising the steps of:

moving the poultry or poultry part along a path of conveyance in a controlled orientation;

directing radiation across the path of conveyance the poultry or poultry part, the radiation being directed essentially at right angles to the breast side or backside of the bird;

detecting radiation from the path of the poultry or poultry part to develop at least one observed contour of at least a portion of the poultry or poultry part;

evaluating the observed contour to establish the shape of at least a portion of the poultry or poultry part; and

controlling the processing of the poultry or poultry part in response to the shape of at least a portion of the poultry or poultry part.

5,326,312

COIN/TOKEN DISPENSING UNIT

Anthony F. Patroni, 9005 Amherst Ave., Margate, N.J. 08402, assignor to Boardwalk Regency Corp., Atlantic City and Anthony Patroni, Margate, both of N.J.

Continuation-in-part of Ser. No. 759,665, Sep. 13, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 957,809

Int. Cl.[5] G07D *1/00*

U.S. Cl. 453—57 **39 Claims**

16. A coin/token dispensing apparatus comprising:

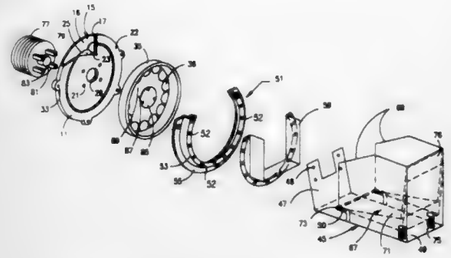
a reservoir for receiving coins/tokens to be dispensed;

a coin/token transport mechanism for transporting a coin/-token delivered from said reservoir to a coin/token exit, said transport mechanism comprising:

a rotatable coin/token driving plate, said driving plate receiving coins/tokens delivered from said reservoir and containing a plurality of coin/token engaging areas spaced substantially equidistant from a center of said driving plate, said areas catching and transporting coins to said exit while they are being supported by said stationary backplate; and

means for rotating said driving plate to transport coins/-tokens;

said exit being provided with an inclined exit ramp for receiving and guiding an edge of a coin/token, said rotatable driving plate delivering a coin/token to said ramp, said ramp including a curb portion along a side of said ramp



closest to said driving plate for preventing a coin transported on said ramp from side slipping off said ramp.

5,326,313

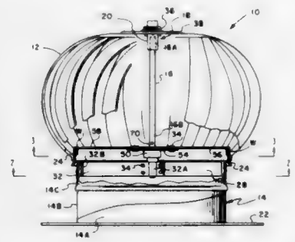
THRUST BEARING ASSEMBLY FOR ROOF TURBINE

William R. Miniat, Dallas, Tex., assignor to Clark United Corporation, Dallas, Tex.

Filed Sep. 21, 1992, Ser. No. 947,741

Int. Cl.[5] F23L *17/02*

U.S. Cl. 454—18 **4 Claims**



1. A wind-actuated turbine ventilator comprising, in combination:

a base adapted for surface mounting about an aperture through which a ventilating airflow is to be induced;

a wind-responsive turbine head coupled to said base for rotation about an axis;

thrust bearing means supporting said turbine head for rotation relative to said base, said thrust bearing support means including

an elongated axial shaft coaxially disposed within said turbine head in alignment with the rotational axis;

said axial shaft being secured to the base and having an end portion for rotatably supporting the turbine head;

shaft receiving means mounted on the turbine head and receiving the supporting end of the axial shaft;

centering means secured to the turbine head and movably coupled to said shaft for maintaining alignment of the turbine head relative to said shaft and limiting lateral movement of the turbine head relative to the base; said centering means including

a collar having a bearing pocket and having a base panel intersected by a bore in communication with said bearing pocket; and,

an annular bushing having a cylindrical body portion received within said collar bore and having a first annular shoulder portion received within said bearing pocket, and having a second annular shoulder portion disposed outside of said bearing pocket, said bushing being intersected by an axial bore for receiving said shaft, and being intersected

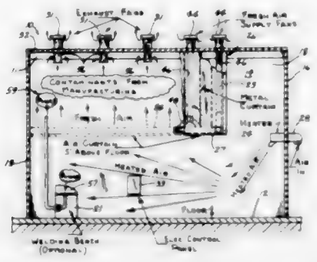
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by a transverse slot for permitting circumferential deflection of said body portion.

5,326,314
METHOD AND SYSTEM OF CLEANING INDUSTRIAL AIR

James M. Brockway; Mark J. Brockway, and Terry M. Brockway, all of Burlington, Iowa, assignors to Brockway Mechanical and Roofing Company, Inc., Burlington, Iowa

Filed Feb. 24, 1993, Ser. No. 21,771
Int. Cl.[5] F24F *7/08*
U.S. Cl. 454—66 **15 Claims**



1. In a building having a ceiling, a floor and a plurality of angularly related walls joining the floor and ceiling to form a room, an air cleaning system for the room comprising:

curtain means depending from the ceiling and having a lower edge spaced above the floor, said curtain means forming an enclosure within the room except for the open space between the floor and said lower edge;

air supply means for withdrawing air from external the building for subsequent transmission of the exterior air into said enclosure at a height generally equal the height of said curtain means lower edge;

air heating means for withdrawing air from external the building, for heating the external air and for transmission of said external, heated air into said enclosure;

air exhaust means for withdrawing air from within said enclosure and forcing it to outside the building; and

control means for controlling the operation of said air supply means, air heating means and air exhaust means to effect a predetermined number of air changes per unit of time within said enclosure.

5,326,315
AIR PASSAGE CHANGEOVER DEVICE

Michi Inoue, Kasugai; Akihito Higashihara, Chiryu; Hiroyuki Yamazaki, Haza; Fumio Kato, Kariya, and Hirotaka Chishiki, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 27, 1992, Ser. No. 982,684
Claims priority, application Japan, Nov. 29, 1991, 3-316922; Mar. 4, 1992, 4-47263
Int. Cl.[5] B60H *1/00*; **B60S** *1/54*
U.S. Cl. 454—126 **8 Claims**

1. An air passage changeover device comprising:

an air passage to guide an air flow;

an air blowing means to blow air into the air passage;

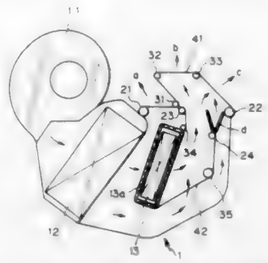
a drive roller provided in the air passage; and

a screen made of a flexible thin film having a draft hole through which air passes;

wherein the air passage is changed over when the screen driven by the drive roller is moved;

wherein the screen includes a flexible high strength member having high tensile and tear strength and also includes a flexible low frictional member having low friction and high air sealing property; and

wherein the high strength member includes a cloth layer composed of a large number of fibers, and the low friction

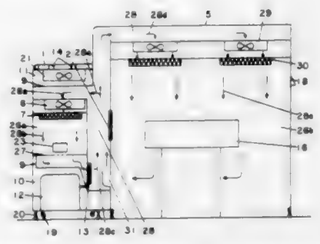


member includes a resin coat layer impregnated into at least one surface of the cloth layer.

5,326,316
COUPLING TYPE CLEAN SPACE APPARATUS

Naoyuki Hashimoto; Sakae Kobayashi, both of Hirakata, and Youichi Nakamura, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 16, 1992, Ser. No. 869,741
Claims priority, application Japan, Apr. 17, 1991, 3-85094
Int. Cl.[5] F24F *3/16*
U.S. Cl. 454—187 **7 Claims**



1. A plurality of self-contained, independently operable clean room bodies, each body comprising:

wall means for forming a sealable enclosure and having opening means for selectively coupling one of said plurality of clean room bodies to a different one of said plurality of clean room bodies so that a common clean room space within said one clean room body and said different clean room body is formed;

a first partition means within the enclosure defining an air conditioner setting space therein;

a second partition means within the enclosure defining a clean space portion therein that is shut off from said air conditioner-setting space;

an air circulator; and

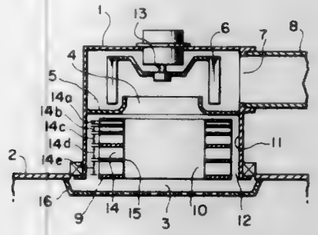
a dust catcher,

wherein at least one of the plurality of bodies further comprises an air conditioner set in the respective air conditioner-setting space of the one body.

5,326,317
VENTILATOR

Tetsuo Ishizu, and Masao Wakai, both of Komaki, Japan, assignors to Matsushita Seiko Co., Ltd., Osaka, Japan

Filed Oct. 14, 1992, Ser. No. 960,061
Claims priority, application Japan, Oct. 18, 1991, 3-270756
Int. Cl.[5] F24F *7/007, 13/24*
U.S. Cl. 454—354 **6 Claims**



1. A ventilator, comprising:

a main body which includes an intake opening;

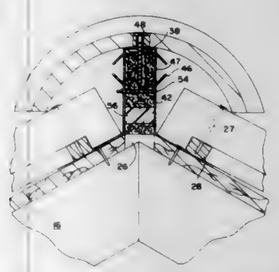
an air blower, incorporated in the main body, having a ventilation casing provided with a fan intake opening facing the intake opening of the main body; and

a cylindrical soundproof unit including an inner ventilation passage having a ventilation area which is larger than a fan intake space defined by the fan intake opening and which comprises a laminated plate which defines a plurality of air layers arranged in a direction intersecting a rotation axis of the air blower from the inner ventilation passage, said cylindrical soundproof unit being disposed between the fan intake opening and the intake opening of the main body, the soundproof unit being disposed so as to define a space between an outer periphery of the soundproof unit and an inner surface of the main body, and the plurality of air layers defined by said laminated plate of said soundproof unit being in communication with the inner ventilation passage and with the space.

5,326,318
ROOF RIDGE VENTILATOR

Martin J. Rotter, 115 Lismore Ave., Glenside, Pa. 19038

Filed Aug. 24, 1993, Ser. No. 110,893
Int. Cl.[5] F24F *7/02*
U.S. Cl. 454—365 **17 Claims**



1. A roof ridge ventilation system for ventilating a building having a sloped roof, which includes an open slot disposed along the roof ridge, a ventilator structure adapted to permit air from interior space under the roof to flow through the slot to the exterior, and at least one cap element supported and secured over said slot; wherein the ventilator structure of the system comprises:

(a) an elongated support member adapted to straddle the slot such that the support member is substantially aligned with and over the slot, said support member including:

(i) a cap element support portion running along the longitudinal axis of said support member,

(ii) two longitudinally-oriented side walls, each wall connected to and depending vertically downward from the support portion to define a channel therewith each said side wall having at least one vent opening therethrough, and

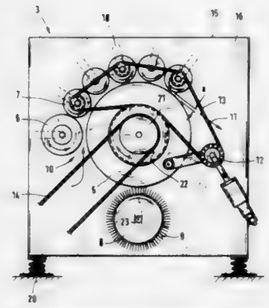
(iii) two longitudinally-oriented skirt portions, each skirt portion connected to and depending from one of the side walls at an angle generally conforming to the slope of the roof,

(b) air-permeable vent material positioned in and along said channel, substantially filling the channel between the side walls.

5,326,319
DEVICE FOR PREPARATION OF STRAW MATERIALS

Wilhelm von Allwörden, Oberstotzingen, and Martin Häfele, Adelmannsfelden, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 956,847
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1991, 4132759
Int. Cl.[5] A01F *12/40*
U.S. Cl. 460—119 **28 Claims**



1. A device in a grass-matting machine for breaking up straw material said device including an inlet (**10**) receiving cut straw material, an outlet (**11**) through which broken up straw material is discharged, a relatively large diameter central roll (**5**), a plurality of relatively small diameter planetary rolls (**6**, **7**) spaced at predetermined radial distances from said central roll (**5**) and spaced at circumferentially spaced distances from one another around a portion of the circumference of said central roll (**5**) between said inlet (**10**) and said outlet (**11**), every other one of said planetary rolls having a drive wheel on its end at one lateral side of said machine and each of the other of said planetary rolls having a drive wheel on its end at the other lateral side of said machine, a drive (**13**, **14**) operative to rotate said central and planetary rolls, said planetary rolls (**6**, **7**) being rotated in a direction opposite to the direction in which said central roll is rotated, said drive including a first drive means in driving engagement with said drive wheels on said every other one of said planetary rolls and a second drive means in driving engagement with said drive wheels on said other of said planetary rolls, a brush roll (**8**) positioned below said central roll and a frame (**15**) including side walls (**16**, **17**) supporting said rolls (**6**, **7**) at their ends to thereby form an assembly, said planetary rolls having a surface structure matching the surface structure of said central roll.

5,326,320

METHOD AND APPARATUS FOR FORAGE PROCESSING

Wilhelm von Allwoerden, Gailingen, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

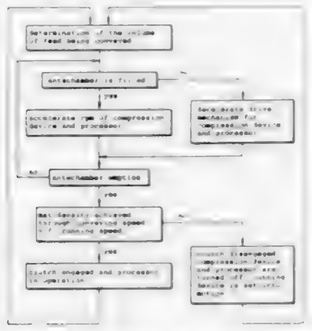
PCT No. PCT/EP90/00487, § 371 Date Mar. 20, 1992, § 102(e) Date Mar. 20, 1992, PCT Pub. No. WO82/03745, PCT Pub. Date Nov. 11, 1982

PCT Filed Mar. 27, 1990, Ser. No. 781,263

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1989, 3912437

Int. Cl.[5] **A01F** *12/40*

U.S. Cl. 460—149 **24 Claims**



15. An apparatus for processing forage in a manner accelerating its drying process comprising:

a gathering means (**1**) for stalk material,

a prechamber (**5**) downstream of said gathering means (**1**);

a pressing means (**7**), including pressing elements (*7a, 7b*) downstream of said prechamber (**5**),

a sensor in said prechamber (**5**) upstream of said pressing means (**7**) for monitoring the accumulated quantity of stalk material,

a variable speed drive means (**16**) connected in driving relation to said pressing means (**7**),

a control means (**20**) for said drive means (**16**) connected to said sensor and operative to set the speed of said drive means (**16**) in dependence on the quantity of stalk material sensed by said sensor,

a pickup (**26**) operative to deliver a signal to said control means (**20**) indicative of the mat length,

a vertically acting cutting means (**13**) downstream of said pressing means (**7**) disposed transverse to the direction of motion of said mat of stalk material,

said control means (**20**) being connected to said cutting means (**13**) and operative to actuate said cutting means (**13**) when said sensor delivers a prechamber empty signal to said control means (**20**), said control means (**20**) also actuating said cutting means (**13**) when said pick up (**26**) delivers a predetermined mat length signal to said control means (**20**).

5,326,321

ADJUSTING DEVICE FOR ADJUSTING THE INSTANTANEOUS RELATIVE ANGULAR DIFFERENCE BETWEEN TWO ROTATING MEMBERS

Ping-Lung Chang, No. 39, Lane 73 Der An First Street, Hua Lian City, Taiwan

Filed Jun. 25, 1992, Ser. No. 904,266

Int. Cl.[5] **F01L** *1/34*

U.S. Cl. 464—2 **5 Claims**

1. A device for adjusting the relative angular difference between rotating members comprising:

a) a rotatable driver member having an axis of rotation;

b) a rotatable follower member;

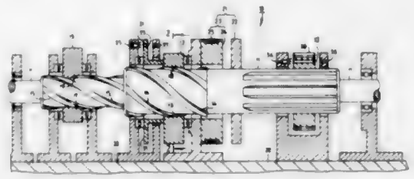
c) a guide arrangement interconnecting the rotatable driver member and the rotatable follower member such that the follower member rotates with the driver member whereby relative axial movement between the driver member and the follower member along the axis of rotation changes the angular position of the follower member with respect to the driver member;

d) axial movement means operatively associated with the driver member to axially move the driver member along its axis of rotation relative to the follower member, wherein the axial movement means comprises:

i) a permanent magnet attached to the driver member so as to rotate therewith and

ii) a stationary electromagnet including a core and a coil, and located adjacent to the permanent magnet such that attraction or repulsion of the permanent magnet toward or away from the electromagnet causes axial movement of the driver member; and,

e) control means operatively associated with the axial movement means, the control means comprising:



i) speed measuring means to measure the instantaneous rotational speed of the driver member;

ii) means to measure the instantaneous angular difference between the driver member and the follower member;

iii) data input means to store data relating to a desired angular difference between the driver member and the follower member at a particular rotational speed of the driver member; and,

iv) comparator means operatively associated with the speed measuring means, the means to measure the instantaneous angular difference, the data input means and the axial movement means to compare the measured angular difference with the desired angular difference at the speed of rotation of the driver member and to emit a control signal to the axial movement means to adjust the relative axial positions of the driver member and follower member such that the measured angular difference corresponds to the desired angular difference.

5,326,322

CONE STYLE UNIVERSAL JOINT

Mark A. Fechter, West Bend, Wis., assignor to Weasler Engineering, Inc., West Bend, Wis.

Filed Dec. 9, 1991, Ser. No. 805,338

Int. Cl.[5] **F16D** *3/16*

U.S. Cl. 464—11 **5 Claims**

1. A cone style universal joint, comprising:

a first yoke defining a first shaft axis and having a pair of opposed, spaced apart arms, said arms defining a first pivot axis which is substantially perpendicular to said first shaft axis;

a second yoke defining a second shaft axis and having a pair of opposed, spaced apart arms, said arms defining a second pivot axis which is perpendicular to said second shaft axis and is perpendicular to and intersects said first pivot axis;

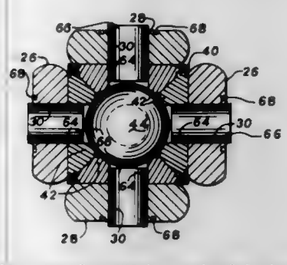
wherein the arms of said yokes circumscribe an interior space;

four cone bearings, one associated with each arm, in said interior space, each said bearing coaxial with the pivot axis defined by said associated arm and having an inwardly directed frusto-conical surface which bears on the frusto-conical surfaces of the two adjacent bearings and an inwardly facing recessed surface;

a ball captured within the recessed surfaces of the bearings;

means for securing each bearing to its associated arm; and

a seal block within the interior space and defining a sealed space within it, said ball being received in said sealed space and said bearings being received within apertures in walls of said seal block;



wherein the means for securing each of the bearings to its associated arm includes a pin extending from said arm into a bore in said bearing, said pin being received in said bore in a close sliding fit so that said pin can rotate relative to said bearing, each pin is secured in a bore in the associated arm by a swage around the bore on an exterior surface of said arm, the seal block is made of plastic material and said bearings are received within said apertures in a snap fit.

5,326,323

DEVICE FOR THE DAMPED TRANSFER OF THE ROTARY MOTION IN OVAL-WHEEL FLOWMETERS

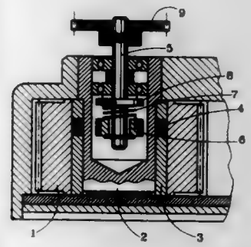
Herbert Krampitz, Potsdam, Fed. Rep. of Germany, assignor to Daniel Industries Inc., Houston, Tex.

Filed Aug. 21, 1992, Ser. No. 934,875

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4128795

Int. Cl.[5] **G01F** *3/10*

U.S. Cl. 464—29 **11 Claims**



1. A stabilizing apparatus for use with an oval gear meter having one or more oval gears, the oval gear meter for receiving material such that a quantity of material is measured by the meter, such meter having the characteristic of alternating acceleration and deceleration for a constant flow of material passing through the meter due to the eccentricity associated with the elliptic shape of the oval gear thereby causing excessive instability or oscillatory conditions with respect to the measured material, the stabilizing apparatus comprising:

(a) a first actuator operationally secured to and synchronized rotationally with an oval gear, said first actuator receiving rotational force from the oval gear representative of the quantity of material passing through the meter,

(b) a second actuator operationally secured to and synchronized rotationally with a shaft, said second actuator rotationally driven by force received from said first actuator for transferring rotational force to the shaft,

(c) a damping member in operative association with said first and second actuators such that the alternating acceleration and deceleration due to the eccentricity associated with the elliptic shape of the oval gear is smoothed to prevent excessive correction, instability or oscillatory conditions in the measured material.

5,326,324

DYNAMIC DAMPER FOR HOLLOW DRIVE SHAFT

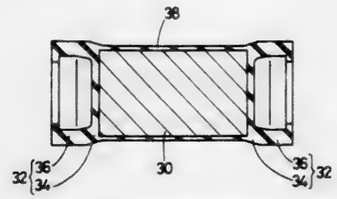
Masaaki Hamada, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Japan

Filed Nov. 12, 1992, Ser. No. 975,515

Claims priority, application Japan, Nov. 25, 1991, 3-335634

Int. Cl.[5] **F16C** *3/00*

U.S. Cl. 464—180 **11 Claims**



1. A dynamic damper for a hollow drive shaft, comprising:

a damper mass member disposed in a hollow bore of said drive shaft, such that said damper mass member is coaxial with said drive shaft with a predetermined clearance being provided between said damper mass member and an inner circumferential surface of said drive shaft; and

a pair of elastic support members respectively fixed to axially opposite ends of said damper mass member, said support members connecting said damper mass member to said drive shaft, thereby elastically supporting said damper mass member, each of said elastic support members including a tubular portion which extends from an outer periphery of a corresponding one of said axially opposite ends of said damper mass member in an axially outward direction of said damper mass member while at the same time expanding radially outwardly of said damper mass member, so that said tubular portion has a truncated conical shape.

5,326,325

CLAMP STRUCTURE FOR BALANCING ROTATING MEMBERS

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Switzerland

Filed Dec. 9, 1992, Ser. No. 988,281

Int. Cl.[5] **B65D** *63/02;* **F16L** *33/00*

U.S. Cl. 464—180 **25 Claims**

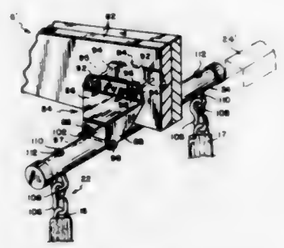


1. A balancing arrangement for a rotating member, comprising a clamp structure including clamping band means having a first clamping band portion and a second clamping band portion fixed relatively to said first clamping band portion, coun-

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terweight means for mounting on said clamp structure in predetermined position to balance any existing imbalances, said second clamping band portion at least partly surrounding said first clamping band portion, said first clamping band portion being disposed radially inwardly of and overlapped by said second clamping band portion said second clamping band portion spaced from said first clamping band portion, and means for securing said counterweight means on said second clamping band portion within the area of spaced overlap.

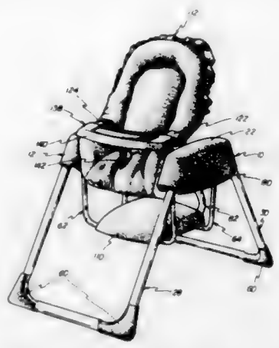
5,326,326
CHILDREN'S SWING
Joel C. Cunard, and Robert J. Boudreau, both of Bedford, Pa., assignors to Hedstrom Corporation, Bedford, Pa.
Continuation of Ser. No. 30,667, Mar. 12, 1993. This application Jun. 29, 1993, Ser. No. 84,413
Int. Cl.[5] A63G *9/00*
U.S. Cl. 472—118 **18 Claims**



1. A children's swing comprising
a swing platform;
elongated suspension means having opposite ends;
connecting means for connecting one end of the suspension means to the swing platform;
a bracket for securing the other end of the suspension means to a wood support beam, said bracket being constituted by a rigid unitary sheet metal having a generally trapezoidal main section, a flange extending from the base of the main section for positioning flat against a support beam, a pair of spaced-apart ears extending from the sides of the main section for bracketing said other end of suspension means, means defining a pair of flange holes in said flange and means defining aligned ear holes in said pair of ears, said ear holes defining a pivot axis that extends between said pair of ears parallel to said flange, and
fastener means for extending through said ear holes into said other end of the suspension means.

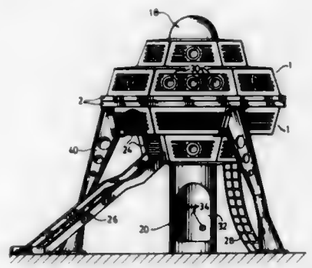
5,326,327
SWING ASSEMBLY
William B. Stephens, Boulder; Joseph E. Janicke, Eldorado Springs, and T. Brent Freese, Westminster, all of Colo., assignors to Gerry Baby Products Company, Denver, Colo.
Filed Sep. 8, 1992, Ser. No. 942,202
Int. Cl.[5] A63G *9/16*
U.S. Cl. 472—119 **28 Claims**

1. A swing assembly comprising:
first and second side housing members;
first support means including a front swing member and a rear swing member mounted to said housing means for pivotal movement relative to said housing members, wherein said front swing member extends between front portions of said first and second side housing members, and said rear swing member extends between rear portions of said first and second side housing members in spaced relation to said front swing member;
second support means mounted to said first support means for movement relative to said first and second side members, wherein said first and second support means are pivotable relative to each other;
a seat member mounted to said second support means and defining means for receiving a person therein; and



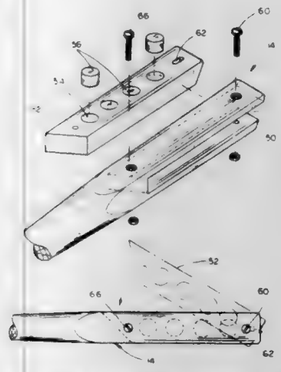
wherein said first and second support means cooperate to support said seat member for gliding movement relative to said housing members.

5,326,328
PLAY STRUCTURES
S. Eric Robinson, P.O. Box 10, Shallow Lake, Ontario, Canada N0H 2K0
Filed Apr. 10, 1992, Ser. No. 866,990
Int. Cl.[5] A63G *31/00*
U.S. Cl. 472—136 **17 Claims**



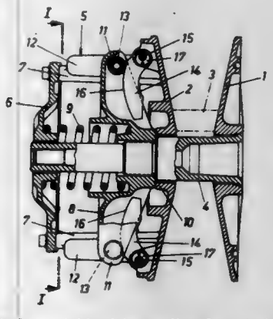
1. A unitary molded plastic building element for large play structures, said building element comprising a dish shape oriented about a central vertical axis, said dish shape having:
a bottom;
integral lower side walls projecting generally upwardly from the outer periphery of said bottom and defining a lower portion of said dish shape of one nominal diameter;
integral generally horizontal portions projecting outwardly from the top of said lower side walls; and
integral upper side walls projecting generally upwardly from the outer periphery of said horizontal portion and defining an upper portion of said dish shape having a substantially larger nominal diameter than the nominal diameter of said lower portion of said dish shape; said dish shape being sufficiently large to accommodate a child.

5,326,329
JUMP-SHOT POOL CUE
Robert J. Doss, P.O. Box 238, Seward, Nebr. 68434
Filed May 11, 1993, Ser. No. 59,842
Int. Cl.[5] A63D *15/08*
U.S. Cl. 473—47 **2 Claims**



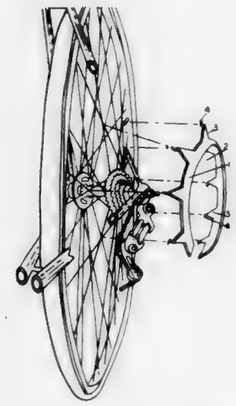
1. A pool cue stick for causing a pool cue ball to jump, comprising:
(a) an elongate body with a length of approximately thirty inches, said body having a first end and a second end, said first end having a cue tip secured thereto, said second end having a means for adjusting the weight of the cue stick comprising a weight carrier having a series of weight receiving apertures therein, and a radial slot cut through said second end of said elongate body, said weight carrier sized to fit within said radial slot; and
(b) a plurality of cylindrical weights sized to fit within said apertures.

5,326,330
VARIABLE RATIO DRIVE PULLEY
Willy Bostelmann, Wels, Austria, assignor to Bombardier Inc., Montreal, Canada
Filed May 11, 1993, Ser. No. 60,158
Claims priority, application Italy, May 12, 1992, 14A 967/92
Int. Cl.[5] F16H *55/52*
U.S. Cl. 474—13 **3 Claims**



1. An infinitely variable drive pulley for a belt drive transmission, said pulley comprising a shaft that carries opposed first and second frusto-conical flanges adapted to accommodate between them a drive belt, said first flange being axially fixed on the shaft, said second flange being arranged on the shaft so as to be moveable in the axial direction thereon against the force of at least one return spring, said pulley including centrifugal weights in the form of adjusting levers, each said lever being pivotally mounted on a pin that is carried at a fixed position relative to one of said flanges, each said lever defining a cam surface that is adapted to engage a follower that is fixedly related to the other said flange, each said lever being so disposed that upon rotation of said pulley a centrifugal force is generated to press said cam surface into engagement with said follower with a pressure that increases with the speed of rotation such engagement applying a force that urges second flange to move axially towards said first flange against the force of said return spring, wherein an adjustable eccentric member is interposed between each said lever end its associated pin, said eccentric member being angularly adjustable to effect variations in the position of said lever relative to said pin in a plane normal to the axis of said pin.

5,326,331
CHAIN, HUB, SPOKE AND DERAILLEUR GUARD
Orrin S. Hallock, III, 33 Roberts Rd., Cambridge, Mass. 02138
Filed Aug. 26, 1993, Ser. No. 112,132
Int. Cl.[5] F16H *7/18*
U.S. Cl. 474—144 **4 Claims**



1. A chain, hub, spoke and derailleur guard for a bicycle,
said bicycle having a rear driving wheel, said rear driving wheel having a tire mounted on a wheel rim supported by a radiating wheel support structure, said radiating wheel support structure supporting a central wheel hub, said central wheel hub, supporting portions of said bicycle, said central wheel hub having a multi gear freewheel, and a rear derailleur, said rear derailleur supported by said bicycle adjacent said driving wheel, said rear derailleur having a laterally movable chain cage, said multi gear freewheel and said chain cage supporting a drivechain, said drivechain movable by said chain cage between and engagable on at least an inner and outer gear cog supported by said multigear freewheel,
said chain, hub, spoke and derailleur guard, comprised of an annular member formed substantially of a solid substance, said annular member having an inner perimeteral edge, said inner perimeteral edge defining a central opening a diameter larger than the inner most gear cog of said multi gear bicycle gear hub, said annular member having mounting means for securing said annular member to the radiating wheel support structure of said bicycle drivewheel, said annular member having a chain cage stop means supported adjacent portions of the chain cage of said rear derailleur, when said drivechain is engaged on said inner most gear cog, thereby limiting the throw of inward shifting of said chain cage and preventing overshifting said drivechain inwardly off of said inner most gear cog and preventing said chain cage from contacting

said radiating support structure of said bicycle drivewheel,

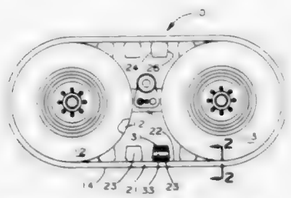
thereby providing a chain, hub, spoke and derailleur guard that is not mounted on the drivewheel hub, or sandwiched between the multi cog gear hub and the drivewheel hub or the inner most gear and the drivewheel thereby eliminating any noise or movement that might be transmitted from the drive train of the bicycle and amplified by the guard, also allowing the guard to be installed or removed without removing the multi cog gear hub.

5,326,332

ENDLESS ELASTOMERIC BELT

Brent C. Bargfrede, Dunlap; Anthony E. Kirn, Pekin, and Brian D. McFeeters, Morton, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 11, 1993, Ser. No. 74,524
Int. Cl.[5] F16H *7/00*; F16G *1/00*
U.S. Cl. 474—249 **3 Claims**



1. An endless elastomeric belt comprising:

an endless body of closed loop construction having an interior surface; and

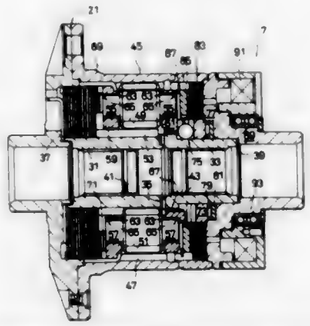
a plurality of longitudinally separated guide blocks bonded to and extending interiorly from the interior surface, each guide block having a pair of opposite end surfaces, a pair of belt positioning side surfaces, a tip portion, and a longitudinally extending slot formed in the tip portion.

5,326,333

DIFFERENTIAL APPARATUS WITH CARRIER AXIALLY MOVABLE RELATIVE TO AN OUTPUT HUB

Yoshikazu Niizawa, and Isao Hirota, both of Tochigi, Japan, assignors to Tochigi Fuji Sangyo Kabushiki Kaisha, Tochigi, Japan

Filed Nov. 18, 1992, Ser. No. 978,361
Claims priority, application Japan, Nov. 19, 1991, 3-303188
Int. Cl.[5] F16H *1/44*; F16D *27/115*
U.S. Cl. 475—249 **6 Claims**



1. A differential apparatus for controlling differential between left- and right-hand axles of a vehicle, said differential apparatus comprising:

a differential mechanism including a ring gear, a plurality of first planetary gears in mesh with said ring gear, a plurality of second planetary gears in mesh with said first planetary gears respectively, a sun gear in mesh with said second planetary gears, and a carrier for rotatably supporting said first and second planetary gears;

a differential case rotatably supported by a vehicle body, said differential case receiving therein said differential mechanism and being provided with said ring gear of said differential mechanism;

a first hub provided rotatably within said differential case, said first hub being provided with said sun gear of said differential mechanism and being fixed to one of said axles;

a second hub provided rotatably within said differential case, said second hub being rotatable relative to said first hub, said second hub being fixed to the other of said axles, said carrier being movable axially relative to said second hub and being integrally rotatable with said second hub;

a first friction clutch for limiting differential between said carrier and said first hub;

a cam mechanism for generating an engaging force by which said first friction clutch is engaged, said cam mechanism cooperating with said carrier to engage said first friction clutch; and

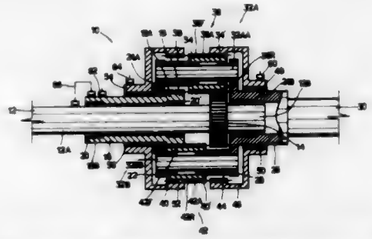
a second friction clutch for operating said cam mechanism.

5,326,334

CONTINUOUSLY ENGAGED GEARED AUTOMATIC TRANSMISSION WITH CONTROLLING BRAKES

Jong O. Ra, 24/1,265-154 Bokwang-Dong, Yongsan-Gu, Seoul, and Joon Y. Lim, Duckyong Villa Ka-204, 141-2, Duckjeong-Ri, Hoccheon-Uep, Yangju-Gun, Kyungki-Do, both of Rep. of Korea

Filed Jun. 23, 1992, Ser. No. 903,137
Claims priority, application Rep. of Korea, Jun. 26, 1991, 91-10947
The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.
Int. Cl.[5] F16H *37/06*
U.S. Cl. 475—330 **18 Claims**



1. An automatic variable speed transmission, comprising:

an input shaft (**12**) with a first section (**12A**) and a second section (**12B**) for receiving rotational input;

an input sun gear (**14**) integrally formed between said first section (**12A**) and said second section (**12B**) of said input shaft to enable simultaneous rotation with said input shaft;

a control shaft (**16**) having a sun gear (**18**) at an end (**16A**) and being rotatably and coaxially mounted on said first section (**12A**) of said input shaft to enable independent rotation about said input shaft;

a first carrier (**22**) coaxially mounted on said control shaft (**16**) near said sun gear (**18**) to enable independent rotation about said control shaft (**16**);

a second carrier (**28**) having a hollow cylinder part (**26**) and being coaxially mounted on said second section (**12B**) of said input shaft to enable independent rotation about said second section;

a plurality of locking pins (**32A**), (**32B**) secured to and interlinking said first and second carriers (**22**), (**28**) to enable simultaneous rotation of said first and second carriers (**22**), (**28**),

a plurality of first differential gears (**36**) with each said first differential gear (**36A**) being rotatably mounted on each said locking pin (**32AA**) and with the inner side of the rear portion of each said first differential gear being meshed with said input sun gear (**14**);

a low speed ring gear (**46**) rotatably mounted on said hollow cylinder part (**26**) and being meshed with said first differential gear (**36A**);

a plurality of second differential gears (**42**) with each said second differential gear (**42A**) being rotatably mounted on each said locking pin (**32BB**) and with each said second differential gear being meshed with each said first differential gear (**36A**) and said sun gear (**18**) respectively;

a reverse ring gear (**52**) rotatably mounted on said control shaft (**16**) and being meshed with each said second differential gear (**42A**);

an output shaft (**30**) integrally formed with said hollow cylinder part (**26**) of said second carrier (**28**);

a low speed brake means (**60**) for applying a braking force to said low speed ring gear (**46**) to provide a low speed driving;

a medium speed brake means (**62**) for applying a braking force to said control shaft (**16**) to provide a medium speed driving;

an interlocking means (**66**) for directly coupling the rotation of said input shaft (**12**) to said control shaft (**16**) so that they rotate simultaneously to provide high speed driving; and

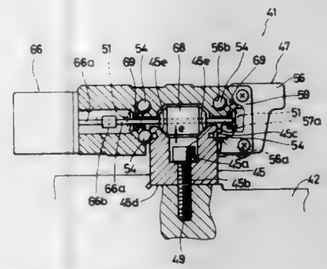
a reverse rotation brake means (**64**) for applying a braking force to said reverse rotation ring gear (**52**) to provide a reverse driving.

5,326,335

DRIVE APPARATUS

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,157
Claims priority, application Japan, Dec. 25, 1991, 3-356443
Int. Cl.[5] F16H *19/02*; B23Q *1/18*
U.S. Cl. 476—67 **8 Claims**



1. A drive apparatus comprising:

a track rail having formed along an axial direction thereof, and a mounting surface on a bottom thereof for mounting onto a prescribed frame;

a slider guided by said track;

a torque generation device mounted on a side of said slider so that an output shaft thereof is roughly perpendicular to said axial direction and roughly parallel with said mounting surface;

a drive roller that is driven to roll while engaging with said track rail by application of torque via the output shaft of said torque generation device; and

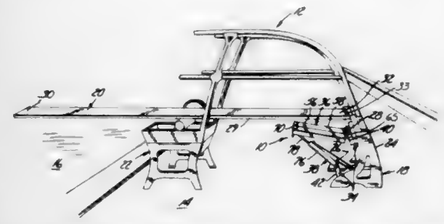
means for supporting said slider with respect to said track rail, said means substantially eliminating static load on said driver roller.

5,326,336

DIVING BOARD LIFT

Fredric Wemlinger, 5300 60th Street SW., St. Cloud, Minn. 56304

Filed Feb. 9, 1993, Ser. No. 15,565
Int. Cl.[5] A63B *5/10*
U.S. Cl. 482—30 **9 Claims**



1. A diving board lift assembly for lifting a diving board from a substantially horizontal diving position to a substantially upright storage position, the diving board for use in connection with a swimming area, said diving board lift assembly comprising:

a frame;

a lifting platform having a first end hingedly connected to the frame such that the lifting platform is pivotable about the first end, and a second end including at least one roller rotatably mounted for contacting and rolling along the underside of the diving board while the diving board is being pivoted to the substantially upright storage position, the second end being disengaged and separated from the diving board when the diving board is in the substantially horizontal diving position; and

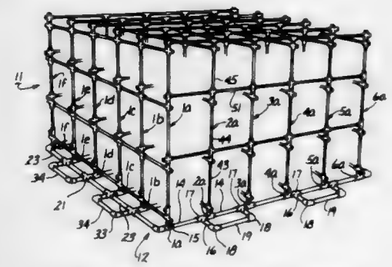
lifting means pivotally connected to the frame and the second end of the platform for lifting the second end of the platform into contact with the diving board such that the diving board is pivoted to the substantially upright storage position.

5,326,337

GYMNASTIC ASSEMBLY FOR SMALL CHILDREN

Eugene C. Pardella, 9629 Stamps Ave., Downey, Calif. 90240

Filed Apr. 21, 1993, Ser. No. 49,342
Int. Cl.[5] A63B *7/00*
U.S. Cl. 482—36 **17 Claims**



1. A gymnastic assembly for children comprising:

a plurality, of series of uprights;

each series of uprights lying in a vertical plane and all such planes being parallel;

each upright formed of at least three aligned vertical tubular members having adjacent ends;

corner joints for joining adjacent ends of the vertical tubular members;

each corner joint including a pair of vertically disposed

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four-way fittings, each fitting having horizontal and vertical sockets;

a short vertical tubular member having end portions thereon supported within adjacent vertical sockets of the pair of four-way fittings of each corner joint for joining the fittings together so that the horizontal sockets of one four-way fitting lie in the vertical plane of a series of uprights and the horizontal sockets of the other four-way fitting lie normal to said vertical plane;

horizontal tubular members having end portions supported within the horizontal sockets of the four-way fittings in the corner joints on adjacent uprights lying in the same vertical plane;

cross horizontal tubular members having end portions supported within the horizontal sockets of the four-way fittings of the corner joints on corresponding uprights lying in adjacent vertical planes; and

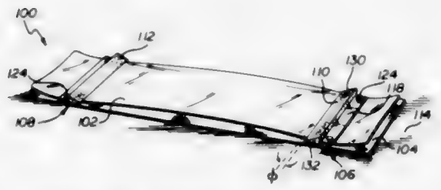
locking means for releasably retaining the tubular members within the sockets of the corner joints.

5,326,338

LATERAL EXERCISE APPARATUS AND METHOD

Joseph M. Makous, 53 Jefferson St., Bala Cynwyd, Pa. 19004

Filed Jan. 12, 1993, Ser. No. 3,271
Int. Cl.[5] A63B *23/04*
U.S. Cl. 482—51 **15 Claims**



1. A lateral exercise apparatus for use in performing side-to-side skating movements comprising:

surface layer means for performing said side-to-side skating movements on each side thereof, each side of said surface layer means having a very low coefficient of friction;

adjustable clamping means for adjusting the length of said surface layer means, said clamping means including at least one pair of releasable clamping surfaces for gripping said surface layer means;

resilient bumper means removably interlocked to one of said releasable clamping surfaces of said clamping means for terminating said side-to-side skating movements, said resilient bumper means having a low impact surface angle of less than or equal to 20°; said resilient bumper means comprises a channel for receiving a raised portion of one of said releasable clamping surfaces of said adjustable clamping means to form a removable interlock between said bumper means and said clamping means; and

high friction layer means for underlying and securing said surface layer means to a floor surface.

5,326,339

EXERCISING MACHINE CARRYING WHEEL ASSEMBLY

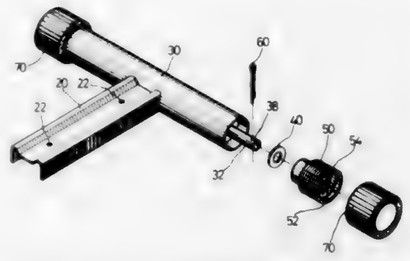
Leao Wang, Taichung Hsien, Taiwan, assignor to Greenmaster Industrial Corporation, Taichung Hsien, Taiwan

Filed Jan. 4, 1993, Ser. No. 419
Int. Cl.[5] A63B *22/06*
U.S. Cl. 482—57 **2 Claims**

1. An exercising machine carrying wheel assembly fastened to either end of the base of an exercising machine for permitting said exercising machine to be carried on the wheel frame assembly by lifting the other end of the base from the ground, the wheel frame comprising:

a mounting frame fastened to the base of said exercising machine;

a tubular wheel frame welded perpendicularly to the middle of said mounting frame, said tubular wheel frame having two central shafts longitudinally aligned at two opposite ends and respectively supported by two spaced inside flanges, each central shaft having an outer end extended out of said tubular wheel frame, the outer end of either central shaft having a pin hole;



two wheels respectively mounted on said central shafts and locked in place by cotter pins, each wheel being made from a stepped cylinder having a longitudinal center hole, through which either central shaft is inserted, and an opening on a respective periphery, through which either cotter pin is inserted into the pin hole on the respective central shaft;

washers respectively mounted on either central shaft and retained between either wheel and a respective adjacent inside flange; and

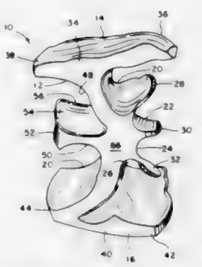
a cap mounted on each wheel.

5,326,340

EXERCISE DEVICE

Michael J. Coffey, 120-12 85th Ave., Jamaica, N.Y. 11415, assignor to Michael J. Coffey, Jamaica, N.Y.

Filed Jul. 29, 1993, Ser. No. 99,173
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—93 **7 Claims**



1. An ambidextrous grip device contoured to the shape of a human hand, comprising:

a central portion having a first and second end, a first and second side, and a top and bottom surface, the distance between the first and second sides being greater than the width of the central portion;

three projections extending from the top side of the central portion, the three projections and the first and second ends of the central portion defining four receptacle depressions, the receptacle depressions between the three projections having less depth than the receptacle depressions between the first and second ends of the central portion and the projections; and,

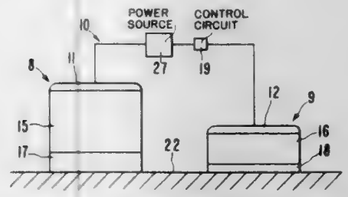
a wall member extending from the bottom side of the central portion, the wall member having an intermediate portion and terminating at an end portion, the end portion of the wall member having a greater width than the intermediate portion of the wall member.

5,326,341

IONTORPHORETIC DELIVERY DEVICE

Patrick J. Lew, Mountain View, and J. Richard Gyory, San Jose, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 788,661, Nov. 6, 1991, Pat. No. 5,162,043, which is a continuation of Ser. No. 502,608, Mar. 30, 1990, Pat. No. 5,084,006. This application Sep. 3, 1992, Ser. No. 939,820
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **26 Claims**



1. An electrically powered iontophoretic agent delivery device including a donor electrode assembly, a counter electrode assembly and a source of electrical power electrically connected to the donor electrode assembly and the counter electrode assembly, the donor electrode assembly comprising:

a) an agent reservoir containing an agent to be delivered through a body surface, the agent reservoir adapted to be placed in agent transmitting relation with the body surface; and

b) a donor electrode electrically connected to the source of electrical power, the donor electrode also being in electrical contact with the agent reservoir;

wherein the agent reservoir is comprised of about 10 to 60 wt. % of a hydrophilic polymer, about 10 to 60 wt. % of a solid, heat fusible hydrophobic polymer and up to about 50 wt. % of the agent.

5,326,342

ULTRASONIC ANGIOPLASTY DEVICE INCORPORATING ALL ULTRASOUND TRANSMISSION MEMBER MADE AT LEAST PARTIALLY FROM A SUPERLASTIC METAL ALLOY

Russell Pflueger, Newport Beach, and Henry Nita, Lake Forest, both of Calif., assignors to Baxter International Inc., Deerfield, Ill. and SonicStar International, Ltd., Jamestown, N.Y.

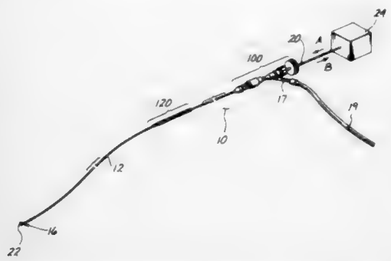
Division of Ser. No. 640,190, Jan. 11, 1991, Pat. No. 5,304,115. This application Jul. 8, 1992, Ser. No. 910,478
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **7 Claims**

1. An ultrasound transmitting catheter device for transmitting ultrasonic energy from an extrocorporeal ultrasound generating apparatus to a location within a mammalian body, said catheter device comprising:

an elongate flexible catheter having a proximal end, a distal end and at last one lumen extending longitudinally therethrough; and

an ultrasound transmission member formed of a superelastic metal alloy and having a proximal end which is connectable to an ultrasound source and a distal end which is substantially coterminous with the distal end of said catheter body; and

said ultrasound transmission member extending longitudinally through said flexible catheter such that, when said flexible catheter is placed in a bent configuration, said ultrasound transmission member will concomitantly assume a bent configuration.

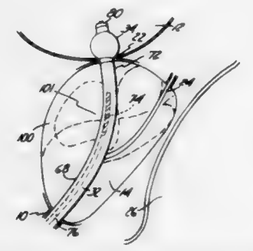


5,326,343

DEVICE FOR ASYMMETRICAL THERMAL THERAPY WITH HELICAL DIPOLE MICROWAVE ANTENNA

Eric N. Rudie, Plymouth; Bruce H. Neilson, Brooklyn Park, and James V. Kauphusman, Champlin, all of Minn., assignors to Urologix, Inc., Minneapolis, Minn.

Filed Mar. 6, 1992, Ser. No. 847,718
Int. Cl.[5] A61N *5/02*
U.S. Cl. 607—101 **39 Claims**



1. A device for selective-directional microwave thermal therapy comprising:

an intraurethral catheter shaft having an outer surface, a first end, a second end, a first side, a second side, a first lumen and a second lumen, the first lumen being positioned adjacent the first side of the shaft and having a first cross-sectional area, the second lumen being positioned adjacent the second side of the catheter shaft and having a second cross-sectional area greater than the first cross-sectional area of the first lumen, the first lumen communicating with the second lumen at the second end of the shaft;

antenna means within the shaft for generating an omnidirectional RF emission, the antenna means located between the first lumen and the second lumen; and

absorption means within the shaft between the antenna means and the outer surface of the shaft for absorbing a first amount of energy emitted by the antenna means on the first side of the shaft, and for absorbing a second amount of energy, greater than first amount of energy, on the second side of the shaft.

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MAGNETICALLY SUSPENDED AND ROTATED ROTOR

Gunter W. Bramm, Munich, Fed. Rep. of Germany, and Don B. Olsen, Salt Lake City, Utah, assignors to Life Extenders Corporation, Redlands, Calif.

Continuation of Ser. No. 810,006, Mar. 2, 1992, which is a continuation of Ser. No. 510,313, Apr. 16, 1990, Pat. No. 5,078,741, which is a continuation of Ser. No. 193,180, May 9, 1988, Pat. No. 4,944,748, which is a continuation of Ser. No. 914,486, Oct. 2, 1986, abandoned, which is a continuation of Ser. No. 720,081, Apr. 4, 1985, abandoned. This application Nov. 9, 1992, Ser. No. 953,409

Int. Cl.[5] A61N *1/10, 1/362;* F04B *17/00;* B63H *3/00*

U.S. Cl. 623—3 20 Claims



1. A pump implantable in a human body having a circulatory system for pumping blood to provide a replacement for, or an assist to, a natural heart, comprising:

a housing constructed of or coated with a blood compatible material having an inlet passage and an outlet passage for connecting the pump into the circulatory system of the human body into which the pump is implanted, the housing having an impellor chamber defining walls fluidly interposed between the inlet passage and the outlet passage;

an impellor constructed of or coated with a blood compatible material disposed in the housing impellor chamber and rotatable therein about an impellor rotation axis for drawing blood into the housing inlet passage and discharging blood from the housing outlet passage;

magnetic suspension means for magnetically suspending the impellor in said pump chamber out of contact with the walls of the impellor chamber, comprising:

permanent magnet impellor support comprising an assembly of permanent magnets mounted on the impellor and on the housing for exerting forces on the impellor tending to align the rotation axis of the impellor with a selected support axis of the housing while tending to drive the impellor axially away from a selected null position on said support axis at such times that the impellor is axially displaced from the null position;

an electromagnet mounted on the housing and positioned thereon to exert a force directed along the support axis on portions of the permanent magnet impellor support means dispose on the impellor at such times that an electric current is passed through the electromagnet, the electromagnet thereby exerting an axial force on the rotor,

electromagnet control means mounted on the housing for detecting a displacement of the impellor from a control position of the impellor on the support axis and passing a current through the electromagnet to drive the impellor toward the control position, the electromagnet control means comprising means for selecting the control position in a displaced relation to the null position along said support axis, whereby the permanent magnet rotor support means will exert a force on the impellor at such times that the impellor is in the control position, thereby enabling the permanent magnets of the permanent magnet impellor support means to balance a static force exerted axially on the impellor; and

impellor drive means mounted on the housing for sensing a preselected physical quantity related to a flow of blood in said circulatory system and magnetically coupled to the impellor for rotating the impellor at a rate varying in accordance with a selected relationship to the value of said physical quantity, said physical quantity being a pressure in the inlet passage of the housing;

wherein the inlet passage of the housing opening into the impellor chamber along the housing support axis and the outlet passage extends tangentially from portions of the impellor chamber displaced radially from the housing support axis and extending circumferentially about the impellor

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5,326,345

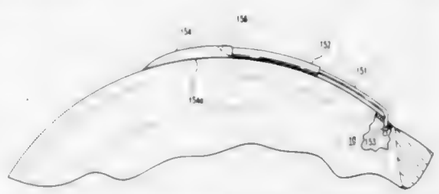
EYE FILTRATION PROSTHESES

Francis W. Price, Jr., 5511 Sunset La., Indianapolis, Ind. 46208

Continuation-in-part of Ser. No. 744,875, Aug. 14, 1991, Pat. No. 5,171,213. This application Nov. 3, 1992, Ser. No. 971,072

Int. Cl.[5] A61F *2/14;* A61M *5/00, 35/00*

U.S. Cl. 623—4 7 Claims



1. An eye filtration prosthesis for relieving intraocular pressure from within an eye, the eye having an interior portion and a periphery thereabout, said device comprising:

conduit means for receiving fluid from within the interior portion of the eye and draining fluid away from the eye; said conduit means including a drainage tube and a drainage plate attached thereto;

drainage port means for draining fluid received by said conduit means out of said prosthesis at a location exterior of the eye; said drainage port means being located about the periphery of said drainage plate;

a low pressure gradient unidirectional valve within said conduit means, said valve including means for allowing fluid to pass away from the eye under low pressure gradient conditions and preventing retrograde flow back into the eye; and

flow restrictor means for restricting fluid from flowing within said conduit means away from the eye; and

wherein said prosthesis, when implanted, is operable in a flow restricted state in which said flow restrictor means restricts fluid from flowing within said conduit means away from the eye and out of said prosthesis; and a free flow state in which said flow restrictor means has been deactivated to allow fluid to freely flow there past, with said valve allowing fluid to flow though said conduit means under low pressure gradient conditions while preventing retrograde flow back into the eye.

5,326,346

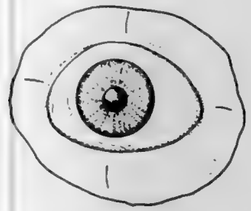
LIGHT-CURED URETHANE DIMETHACRYLATE OCULAR PROSTHESIS

Aquileo L. Cortes, San Antonio, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jul. 27, 1992, Ser. No. 920,267

Int. Cl.[5] A61F *2/14*

U.S. Cl. 623—4 8 Claims



1. An ocular prosthesis comprising a polymerized urethane dimethacrylate solid shell having a convex surface molded in the shape of the cornea and sclera of a normal human eye.

5,326,347

INTRAOCULAR IMPLANTS

J. Stuart Cumming, #201 - 1211 W. La Palma Ave., Anaheim, Calif. 92801

Filed Aug. 12, 1991, Ser. No. 744,472

Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 25 Claims



1. An intraocular implant for a human eye, said implant comprising:

an optical holder having a normal configuration in which the holder has normally anterior and posterior sides, a space between said sides, and light rays can pass through the holder in a direction from said anterior side, through said space, to said posterior side,

a lens within said space, and

mounting means connecting said holder and lens and mounting said lens on said holder for adjustment of the lens within said space relative to the holder without altering the shape of the holder or the spacing between said holder sides.

5,326,348

INTRAOCULAR MULTIFOCAL LENS

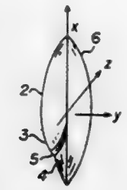
Lee T. Nordan, 9834 Genesee Ave., La Jolla, Calif. 92037

Continuation of Ser. No. 795,550, Nov. 21, 1991, Pat. No. 5,236,452, and a continuation of Ser. No. 583,151, Sep. 17, 1990, Pat. No. 5,074,877, which is a continuation of Ser. No. 509,871, Apr. 16, 1990, Pat. No. 5,019,099, which is a continuation of Ser. No. 232,140, Aug. 15, 1988, Pat. No. 4,917,681, which is a continuation of Ser. No. 88,227, Aug. 24, 1987, Pat. No. 4,769,003, which is a continuation-in-part of Ser. No. 69,197, Jul. 2, 1987, abandoned. This application Apr. 12, 1993, Ser. No. 44,739

The portion of the term of this patent subsequent to Sep. 6, 2005, has been disclaimed.

Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 5 Claims



1. An intraocular implant to replace the crystalline lens of a patient's eye, comprising:

an aspheric lens having a surface which has circumferentially non-uniform dioptic power, and including an aspheric sector and a spherical sector starting at an apex of said lens.

5,326,349

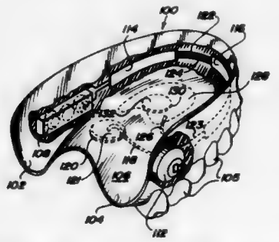
ARTIFICIAL LARYNX

David R. Baraff, 630 Llewelyn Rd., Berwyn, Pa. 19312

Filed Jul. 9, 1992, Ser. No. 910,217

Int. Cl.[5] A61F *2/20;* A61C *13/00*

U.S. Cl. 623—9 28 Claims



1. An artificial speech tone generation device for use by post-laryngectomy patients comprising:

(a) a tone frequency generation means arranged and constructed to provide a substantially natural sounding artificial human voice tone within a human oral cavity for modulation by oral anatomy and movement,

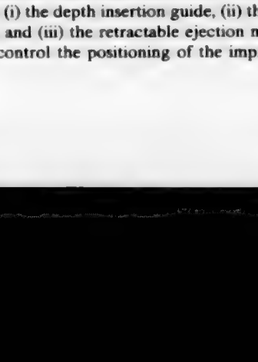
(b) a control means for manual operation by a user thereof including a hand activated control incorporating simultaneous on-off, pitch and volume control by a single control means over a predetermined continuum of control combinations combining pitch and volume,

(c) said tone frequency generation means being arranged and constructed for accommodation intraorally and said control means being arranged and constructed for operation in a hand of the user whereby a post-laryngectomy patient may effectively control volume and pitch of an artificial human voice tone in a more natural sounding combination than otherwise, and

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(d) in which the control means for manual operation and the tone frequency generation means are arranged and configured for intercommunication via spacially transmitted information carrying waveforms.

5,326,350
SOFT TISSUE CLOSURE SYSTEMS
Shu-Tung Li, 1 Kiowa Ter., Oakland, N.J. 07436
Filed May 11, 1992, Ser. No. 881,213
Int. Cl.[5] A61F *2/02, 13/20*
U.S. Cl. 623—11 **12 Claims**



1. A device for sealing a void in a soft tissue of a living being which comprises:

a) an implant, having a length comprised of collagen material which is capable of being resorbed in the living being characterized by being in a compressed configuration and self-expandable when wetted to contain an expanded average pore size of from about 100 μm to about 3,000 μm, said implant having a relaxation recovery time of from about 1 second to about 30 seconds and having a volume in its compressed configuration state which i from about 1/100 to about ½ of the volume of its expanded state and is formed by the steps comprising:

(i) forming an aqueous dispersion containing collagen;

(ii) pouring the aqueous dispersion into molds;

(iii) freeze drying the aqueous dispersion to form a collagen matrix;

(iv) crosslinking the collagen matrix by treatment with crosslinking agent;

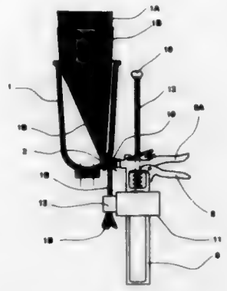
(v) spraying the crosslinked collagen matrix with water mist; and then

(vi) compressing the water mist treated collagen matrix;

b) a delivery means having an outlet at its distal end and a depth insertion guide, said delivery means being adapted to be inserted into the void to a depth which is controlled by the depth insertion guide, said implant being disposed within said delivery means; and

c) a retractable ejection means capable of ejecting the compressed implant out of the said outlet a controlled distance into the void of the soft tissue to form an expanded, hydrated matrix which conforms to seal the soft tissue void, wherein (i) the depth insertion guide, (ii) the length of the implant, and (iii) the retractable ejection mans, in combination, control the positioning of the implant within the void.

5,326,351
PROSTHESIS FITTING DEVICE
Maurice Sarazin, 123 Rue des Colverts, 34400 Lunel, France
PCT No. PCT/FR91/00453, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/18564, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 7, 1991, Ser. No. 946,419
Claims priority, application France, Jun. 7, 1990, 90 07452
Int. Cl.[5] A61F *2/80, 2/60*
U.S. Cl. 623—33 **17 Claims**



1. Apparatus for fitting a stump of a body member to a rest of a prosthesis having an open end for inserting the stump and a closed end against which the stump is adapted to bear, in which a jersey sheath is wrapped at least partly round the stump and threaded through an air exhaust opening at the closed end of the nest, said apparatus having a common support and comprising, mounted on the common support, traction means for applying traction force to the sheath for drawing the stump to the closed end of the nest, a bearing member bearing engageable with the nest in the immediate vicinity of the air exhaust opening for exerting a reaction force on the nest in response to the traction force applied by the traction means, and control means for controlling traction force applied by the traction means.

5,326,352
SELF ALIGNING AND QUICK COUPLING DEVICE FOR A PROSTHESIS
Lyle Ferrier, 3461 Burnside Rd., North Branch, Mich. 48461
Continuation of Ser. No. 799,758, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 440,118, Nov. 22, 1989, abandoned. This application Jul. 29, 1992, Ser. No. 922,358
Int. Cl.[5] A61F *2/80, 2/74*
U.S. Cl. 623—38 **6 Claims**



1. A prosthetic coupling, comprising:

a prosthetic socket;

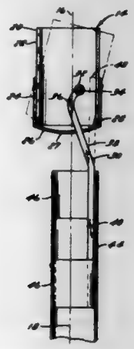
an artificial limb, removably attached to said prosthetic socket to permit said socket to remain attached to a wearer's limb stump while the artificial limb is removed;

a first plate having means for attaching to said socket and a second plate having means for attaching to said artificial limb, each of said plates having a attachment end, said plates being positioned to be in attachment end-to-attachment end alignment for attaching said artificial limb to said socket;

one of said attachment ends including a protrusion, said protrusion having a mating surface, and the other of said attachment ends including an aperture for receiving said protrusion, said aperture having a mating surface, said mating surface of said aperture being configured to mate with said mating surface of said protrusion, and

a pin inserted through a side of said socket and into said protrusion whenever said protrusion is disposed within said aperture, said pin locking said attachment ends to each other and being operable to force the attachment end of said first plate toward and maintaining engagement with the attachment end of said second plate to attach the artificial limb to the socket, said pin causing said first plate to be misaligned with respect said second plate to assist in tightening said first plate against said second plate.

5,326,353
LEG PROSTHESIS DEVICE HAVING HINGE ASSEMBLY FOR KNEELING
James D. Franklin, 110 Zimmerman Dr., Providence, Ky. 42450
Filed Dec. 9, 1992, Ser. No. 987,658
Int. Cl.[5] A61F *2/64*
U.S. Cl. 623—39 **10 Claims**



1. A leg prosthesis device for permitting a wearer to kneel thereupon comprising a

(a) a first member adapted to support an upper leg prosthesis;

(b) a second member spaced from said first member adapted to support a lower leg portion connected to a foot prosthesis;

(c) said first and second members being movable with respect to each other over a range defined by a maximum leg angle of about 180° and a minimum leg angle of about 20°;

(d) a connecting member having

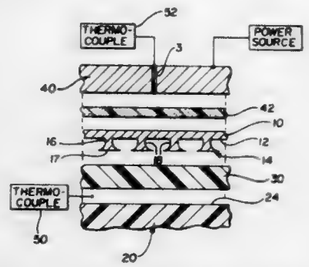
(i) a curved portion pivotally connected at one distal end to said first member and defining a pivot axis between said first and second members,

(ii) a first linear portion integral with said curved portion and angularly and integrally connected to a second linear portion, and

(iii) said second linear portion fixedly connected to said second member, said curved portion being pivotably connected to said first member at a point located intermediate a vertical extension of said second linear portion and a vertical axis of said second member when said leg angle is about 180°; and

(e) said first member having a slot through which said first linear portion extends and moves therealong having a length defining the limits of said range of leg angles.

5,326,354
METHOD FOR FORMING ATTACHMENT SURFACES ON IMPLANTS
Kofi B. Kwarteng, New York, N.Y., assignor to Howmedica Inc., New York, N.Y.
Continuation of Ser. No. 891,669, May 29, 1992, abandoned, which is a continuation of Ser. No. 697,834, May 9, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 87,360
Int. Cl.[5] A61F *2/54, 2/32;* **B28B** *11/08;* **B29C** *33/76*
U.S. Cl. 623—66 **6 Claims**



1. A method of producing a site for tissue ingrowth on at least a portion of a surface of a compression molded composite surgical implant comprising the steps of:

placing a metal space occupier possessing a desired tissue ingrowth pattern over the portion of the surface of the molded composite surgical implant;

placing a release film over the space occupier;

placing a tightly fitting metal susceptor over the release film in the area of said space occupier;

clamping said susceptor over said implant in a fixed position with respect thereto with a clamp;

heating only the surface of said composite implant by heating said metal space occupier by induction heating to a temperature above a melting point of the composite implant in the presence of only a thermal expansion force generated by said heating with said clamp in place to allow the space occupier to become embedded therein; and

solubilizing the embedded space occupier with an agent non-reactive toward the implant to remove the space occupier and leave the desired pattern in the implant surface to accept tissue ingrowth.

5,326,355
COMPOSITE MATERIAL HAVING ABSORBABLE AND NONABSORBABLE COMPONENTS FOR USE WITH MAMMALIAN TISSUE
Henry P. Landi, Westchester, N.Y., assignor to American Cyanamid Company, Wayne, N.J.
Continuation of Ser. No. 823,619, Jan. 21, 1992, Pat. No. 5,141,522, which is a continuation of Ser. No. 475,564, Feb. 6, 1990. This application Aug. 24, 1992, Ser. No. 935,141
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] A61F *2/54*
U.S. Cl. 623—66 **14 Claims**

1. A composite film for use with mammalian tissue consisting essentially of:

a) an unsintered, microfibrillar, nonabsorbable biocompatible component prepared from polytetrafluoroethylene,

b) at least one bioabsorbable fiber manufactured from a polymer prepared from one or more monomers selected from the group consisting of lactides, carbonates, oxalates and lactones, and

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c) wherein the composite film is in the form of a sheet.

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BIOCOMPATIBLE PERFORATED MEMBRANES, PROCESSES FOR THEIR PREPARATION, THEIR USE AS A SUPPORT IN THE IN VITRO GROWTH OF EPITHELIAL CELLS, THE ARTIFICIAL SKIN OBTAINED IN THIS MANNER, AND ITS USE IN SKIN GRAFTS

Francesco Della Valle, Padua; Gabriella Calderini, Carrara San Giorgio; Alessandro Rastrelli, Padua, and Aurelio Romeo, Rome, all of Italy, assignors to Fidia S.p.A., Abano Terme, Italy

Continuation of Ser. No. 708,717, May 31, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 19,818
Claims priority, application Italy, Jun. 1, 1990, 20513 A/90
Int. Cl.[5] A61F *2/10, 2/02, 2/54, 13/00*
U.S. Cl. 623—15 **20 Claims**



1. Biocompatible membranes consisting of materials of natural, synthetic or semisynthetic origin, and having a thickness of between 10 and 500 μ, which comprise an ordered series of holes of a defined and constant size between 10 and 1000 μ, separated from each other by a constant distance of between 50 and 1000 μ, said membrane enabling *in vitro* culture of keratinocytes within the holes and on both sides of said membrane.

5,326,357

RECONSTITUTED CARTRIDGE TISSUE

Rita A. Kandel, Toronto, Canada, assignor to Mount Sinai Hospital Corporation, Toronto, Canada

Filed Mar. 18, 1992, Ser. No. 835,831
Int. Cl.[5] A61F *2/28, 2/02, 13/00;* **C12N** *5/00*
U.S. Cl. 623—16 **22 Claims**



1. A biological material comprising cartilage tissue reconstituted on a substrate in vitro from isolated chondrocytes and characterized by a continuous layer of cartilage tissue, having a substantial extracellular matrix and comprising:

a superficial zone wherein chondrocytes are flattened and arranged parallel to the substrate;

mid and deep zones wherein the chondrocytes are spherical; and wherein the matrix in the superficial, mid and deep zones contains collagen fibres.

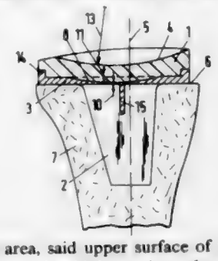
5,326,358

KNEE JOINT PROSTHESIS

Jacques-Hubert Aubriot, Caen, France, and Roland Willi, Neftenbach, Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterthur, Switzerland

Filed Aug. 27, 1992, Ser. No. 937,220
Claims priority, application China, Aug. 28, 1991, 2523/91
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 **6 Claims**

1. A knee joint prosthesis comprising a polyethylene tibial plateau having an upper and bottom surface, a plate having an upper and bottom surface, and a metal shank having a longitudinal axis, said bottom surface of the tibial plateau being coupled to said upper surface of the plate and said plate being secured to said metal shank and arranged to bear thereagainst along said longitudinal axis, said upper surface of the tibial plateau having two curved depressions contoured for receiving the femoral condyles of a distal femur, said bottom surface of the plate being planar for bearing against a tibia having a



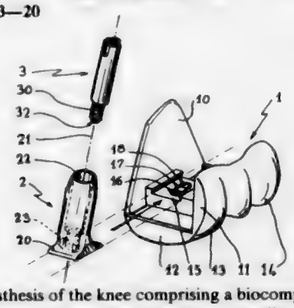
planar resection area, said upper surface of the plate having curved pockets beneath said depressions, the curvature of said pockets complementing in sagittal planes the curvature of said depressions, said plate, at the deepest point of said pockets, having a maximum wall thickness of 1.5 mm, and the thickness of said tibial plateau between said upper and bottom surface and above said pockets being a minimum of 6.5 mm.

5,326,359

KNEE PROSTHESIS WITH ADJUSTABLE CENTRO-MEDULLARY STEM

Jean-Loup Oudard, Saint-Nazaire-Les-Eymes, France, assignor to Etablissements Tornier, Saint-Ismier, France

Filed Nov. 24, 1992, Ser. No. 981,061
Claims priority, application France, Nov. 29, 1991, 91 15044
Int. Cl.[5] A61N *1/30*
U.S. Cl. 623—20 **6 Claims**



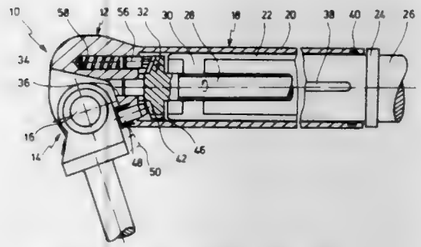
1. A prosthesis of the knee comprising a biocompatible plate means having a slideway having a bottom wall, a groove extending along said slideway, a plurality of spaced impressions in said bottom wall, a bushing having a base, said base being slideably receivable within said slideway so as to be engageable within said groove, a bore extending through said bushing and having a tapped portion, a centro-medullary stem having an end and a threaded portion, and threaded portion being securable to said tapped portion of said bushing so as to retain said end of said centro-medullary stem within one of said impressions to thereby secure said centro-medullary stem relative to said plate means.

5,326,360

ENDOPROSTHESIS FOR THE KNEE JOINT

Rainer Kotz, and Reinhard Windhager, both of Wien, Austria, assignors to Howmedica GmbH, Schonkirchen, Fed. Rep. of Germany

Filed Nov. 30, 1992, Ser. No. 983,015
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 9115810[U]
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 **6 Claims**



4. An expandable bone prosthesis comprising:

a first component having a joint part thereon;

a second component having a joint part at one end thereof, said second component having a telescoping stem extending from said joint part thereof for attachment to a bone, said telescoping stem having an inner member and an outer member axially adjustable with respect to one another by means of a threaded spindle fixedly attached to one of said inner and outer members and a threaded spindle nut fixedly attached to the other of said inner and outer members;

a pinion means attached to one of said threaded spindle or spindle nut for rotation therewith;

an indexing means for rotating said pinion means a predetermined amount upon movement of said joint components towards one another after implantation, said indexing means includes a pin which is spring mounted on said second component, said pin having a first end engageable with a surface of said first component and a second end for engaging teeth on said pinion upon engagement of said first end with said first component surface upon said movement of said joint components towards one another; and

a spring-loaded locking pawl is provided coacting with the teeth on said pinion which pawl rotates the pinion a further predetermined distance when the indexing pin disengages the teeth.

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TOTAL KNEE ENDOPROSTHESIS WITH FIXED FLEXION-EXTENSION AXIS OF ROTATION

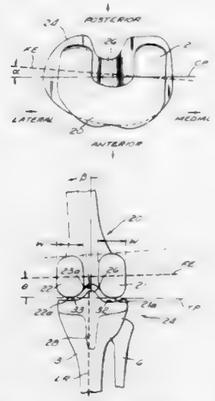
Anne Hollister, Torrance, Calif., assignor to Research and Education Institute, Inc., Torrance, Calif.

Continuation of Ser. No. 919,959, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 760,115, Sep. 16, 1991, Pat. No. 5,133,758. This application May 26, 1993, Ser. No. 68,069
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 **20 Claims**

14. A total knee endoprosthesis, having a fixed and non-moving flexion-extension axis of rotation, for implanation in a patient's body, comprising:

a femoral implant component for permanent affixation to the distal end of the patient's femur bone, said femoral implant component having spaced apart medial and lateral condyle portions, said condyle portions being generally circular as viewed in a plane perpendicular to said flexion-extension axis, through a sweep of from zero degrees to over 120 degrees from full extension to flexion, and having non-moving centers of rotation in said generally circular medial and lateral condyle portions, said medial condyle portion being larger than said lateral condyle portion; and

a tibial implant component for connection to the proximal end of the patient's tibia bone, said tibial implant component having a plateau surface facing said femoral implant component, said plateau surface having a medial and lateral concavity defined thereon, said two concavities



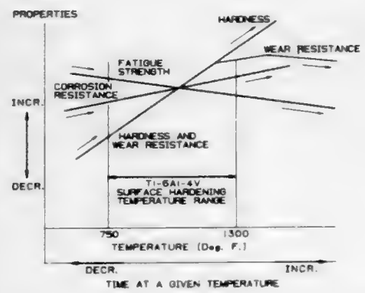
being separated by a raised eminence, wherein when said total knee endoprosthesis is implanted in the recipient's body, said fixed flexion-extension axis passes through the non-moving centers of rotation of said generally circular medial and lateral condyle portions, said flexion-extension axis thus being oriented posteriorly and inferiorly commencing from said medial condyle portion and extending to said lateral condyle portion along a line that is approximately 3.0 to 3.8 degrees from both the transverse and coronal planes.

5,326,362

METHOD OF SURFACE HARDENING ORTHOPEDIC IMPLANT DEVICES

H. Ravindranath Shetty; Walter H. Ottersberg, both of Warsaw; Jack E. Parr, North Webster, and Roy D. Crowninshield, Warsaw, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Continuation of Ser. No. 609,269, Nov. 5, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 12,617
Int. Cl.[5] A61F *2/02;* **A01N** *1/02*
U.S. Cl. 623—66 **18 Claims**



1. A method of manufacturing a titanium orthopedic implant

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device having enhanced surface hardness and wear resistance properties, comprising the steps of:

providing a titanium substrate in the form of an orthopedic implant device; and

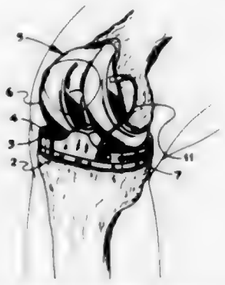
hardening the surface of said titanium substrate by exposing said titanium substrate to an atmosphere of undiluted molecular nitrogen gas at a process temperature within the range of 750° F. to 1300° F. for a process time duration sufficient to achieve a hardened surface region characterized primarily by solid solution hardening of the surface of the titanium substrate by dissolution of nitrogen in said titanium substrate.

5,326,363

PROVISIONAL IMPLANT

Jerry L. Aikins, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Sep. 14, 1992, Ser. No. 944,856
Int. Cl.[5] A61F *2/38*; A61B *5/103*
U.S. Cl. 623—20 **3 Claims**



1. A system for determining joint function, the system comprising:

a first prosthetic joint component having a first surface with a first electrically conductive region exposed thereon;

a second prosthetic joint component engageable with the first member, the second member having a second surface with a second electrically conductive region exposed thereon and an electrically non-conductive region adjacent the second conductive region; and

an indicator operatively associated with the second conductive region for indicating when the first conductive region makes electrical contact with the second conductive region, the second prosthetic joint component comprising a provisional joint replacement component having substantially the same size and shape as a corresponding component intended for permanent implantation.

5,326,364

TRAPEZIAL IMPLANT

Joseph S. Clift, Jr., Memphis; Kelly C. Richelsoph, Cordova, both of Tenn., and James W. Strickland, Zionsville, Ind., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Dec. 16, 1992, Ser. No. 991,609
Int. Cl.[5] A61F *2/42*
U.S. Cl. 623—21 **2 Claims**

1. In a prosthetic device adapted for presenting a prosthetic articular surface on a trapezium in a human hand, said prosthetic articular surface being adapted for engagement with a proximal end of a first metacarpal in said human hand, said prosthetic device including:

(a) a base member defining distal and proximal ends;

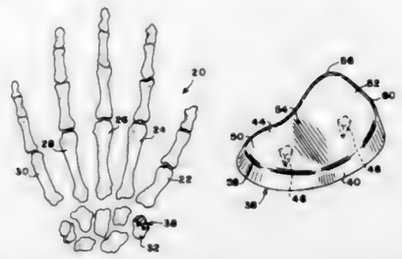
(b) said prosthetic articular surface being at said distal end;

(c) an attachment surface at said proximal end; and

(d) anchor means associated with said proximal attachment surface, the improvement comprising, in combination:

(1) said prosthetic device being fabricated from a relatively inelastic, abrasion-resistant and biocompatible material selected from the group consisting of: medical grade metals including titanium, zirconium and alloys thereof; said ceramics including alumina, zirconia and silica;

(2) said prosthetic articular surface having a saddle shaped configuration defined by a convex media portion, a convex lateral portion and a concave central portion therebetween; and an asymmetrical perimeter so as to substantially replicate the articular surface of a human trapezium;



(3) said proximal attachment surface being generally planar;

(4) said anchor means being in the form of a pair of spaced-apart posts extending perpendicularly from said proximal attachment surface and integrally formed with said base;

(5) said posts being tapered and terminating in a point; and

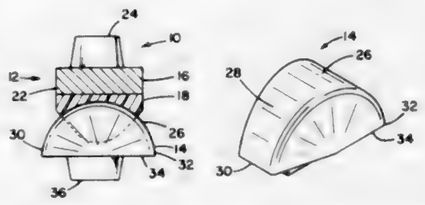
(6) said posts having sufficient rigidity to penetrate the cancellous interior of the trapezium without having pilot holes formed in said cancellous interior.

5,326,365

ANKLE IMPLANT

Franklin G. Alvine, 405 Harpel Dr., Sioux Falls, S. Dak. 57105

Filed Apr. 10, 1992, Ser. No. 867,151
Int. Cl.[5] A61F *2/42*
U.S. Cl. 623—21 **17 Claims**



1. A prosthetic ankle device, for ankle joint replacement, comprising:

a) a tibial member including a tibial bearing and a bearing holder, the tibial bearing having side portions and forming a concave surface intermediate the side portions, the bearing holder including a base plate proximate the bearing opposite the concave surface, and side walls laterally outside of the bearing side portions, the base plate including a tibial strut extending outward therefrom on a surface opposite the bearing; and,

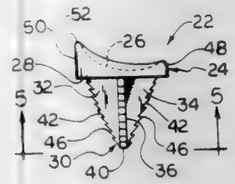
b) a talar member including a dome portion, the dome portion configured to mate with the concave surface of the tibial bearing, the dome extending along an arc from an anterior to a posterior position, wherein the dome includes sides tapering substantially along their entire length from the posterior to the anterior position, the talar member including a strut extending outward therefrom opposite the dome.

5,326,366

BIOMECHANICAL GREAT TOE IMPLANT

Joanne M. Pascarella, Memphis, Tenn., and John V. Vanore, Burr Ridge, Ill., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Feb. 16, 1993, Ser. No. 17,569
Int. Cl.[5] A61F *2/42*
U.S. Cl. 623—21 **4 Claims**



3. A medical implant for resurfacing a damaged base portion of a proximal phalanx in a human great toe, said proximal phalanx having a cancellous interior portion, said implant being adapted for articular engagement with a head of a human first metatarsal, said head of said first metatarsal defining an anatomical convex curvature, said implant comprising:

(1) a base having

a concave proximal articular surface shaped to naturally articulate with the head of said human first metatarsal, and

a generally planar distal seating surface opposite the articular surface;

(2) said articular surface defining a medial side and a lateral side and including a build-up extending upwardly from the distal seating surface along the lateral side;

(3) a stem extending perpendicularly from the seating surface of the base for anchoring the implant in the cancellous portion of the proximal phalanx; and

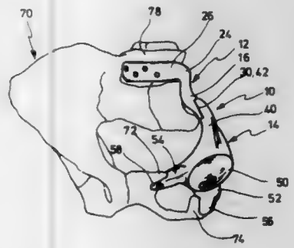
(4) said concave articular surface complementing said anatomical convex curvature of said first metatarsal head.

5,326,367

ENDOPROSTHESIS FOR A CANCER DAMAGED PELVIS

Bernd Robioneck, Kiel, Fed. Rep. of Germany, assignor to Howmedica GmbH, Schönkirchen, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 938,741
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1991, 9111221[U]
Int. Cl.[5] A61F *2/34*
U.S. Cl. 623—22 **2 Claims**



1. An endoprosthesis for cancer damaged hip bones comprising:

a first portion for attachment to a vertebra, said first portion including a first and second mounting bracket, of which the first mounting bracket engages a vertebra laterally and the second mounting bracket engages the front of the vertebra, wherein a nerve passage is formed between said first and second mounting brackets, said first mounting bracket laterally engaging the vertebra being planar, and the second mounting bracket being arched;

a second portion for attachment to the pelvis and having a prosthetic acetabular portion for placement in an acetabular recess in the pelvis, said second portion including a pair of supporting portions, the first supporting portion having an end supported on a pubic bone branch and the second supporting portion having an end supported on an ischium branch, and that each of said ends including a mounting bracket, said ends of the first and second supporting portions of the second portion forming an obtuse angle therebetween and including a tissue ingrowth surface and said acetabular portion including at least one through bore opening into the acetabular recess for receiving a screw; and

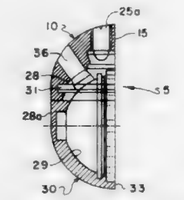
means for connecting said first and second portions, said means including interlocking portions which engage to prevent relative rotation between said first and second portions.

5,326,368

MODULAR ACETABULAR CUP

Carlos E. Collazo, Ridgefield Park, N.J., assignor to Howmedica, Inc., New York, N.Y.

Filed Sep. 22, 1992, Ser. No. 950,089
Int. Cl.[5] A61F *2/34*
U.S. Cl. 623—22 **15 Claims**



1. A prosthetic acetabular cup, comprising:

a first part defining an open hollow interior portion and having an outer surface including a first portion for engaging surface of a bone and a second portion; and

a second part having an inner surface coupled to the second portion of said outer surface of the first part, said second part having an outer surface for engaging the bone wherein the outer surface of the second part and the first portion of the outer surface of the first part together form a substantially non-hemispherical surface adapted to be received in and for engaging the bone within an elongated acetabular cavity; and

wherein said second outer surface portion of the first part defines at least one outwardly projecting member and said inner surface of the second part defines a complimentary shaped recess receiving said projecting member to form means for locking said first and second parts together; and

wherein said projecting member comprises a rib extending around said second portion of said first part that mates with a groove defined in said second part and said locking means comprises a threaded element passing through a threaded hole in said second part and received in a recess in the first part.

5,326,369

FLEXIBLE ACTUATING SCREW

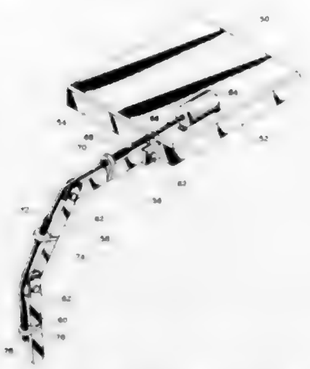
Leonard A. Schectman, 3742 Boanza Cir., Lantana, Fla. 33462

Filed Jun. 12, 1992, Ser. No. 898,089
Int. Cl.[5] A61F *2/54*, *2/70*
U.S. Cl. 623—24 **13 Claims**

1. A motor actuated screw device for the transmission of torque over articulating surfaces comprising:

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at least one high torque motor mounted on a support platform;
a cable means directly coupled to said high torque motor, said cable having a plurality of externally threaded cinctures coupled to said cable;
at least one articulating member hingedly mounted to said support platform;

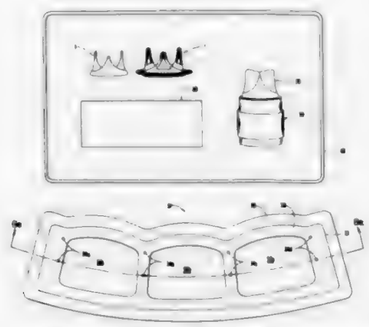


at least one internally threaded cable guide bushing fixedly attached to said articulating member and operatively associated with said cinctures; and
a means for controlling the directional rotation of said motor, said motor causing the rotation of said cable and said threaded cinctures through said threaded guide bushing, causing said articulating member attached to said guide bushing to move in direct response to said motor rotation.

5,326,370
PREFABRICATED STERILE AND DISPOSABLE KITS FOR THE RAPID ASSEMBLY OF A TISSUE HEART VALVE

Charles S. Love, Camarillo; Jack W. Love, Santa Barbara, and John H. Calvin, Carpenteria, all of Calif., assignors to Autogenics, Newbury Park, Calif.

Division of Ser. No. 646,001, Jan. 24, 1991, Pat. No. 5,163,955. This application Aug. 3, 1992, Ser. No. 925,376
Int. Cl.[5] A61F *2/24*
U.S. Cl. 623—2 **4 Claims**

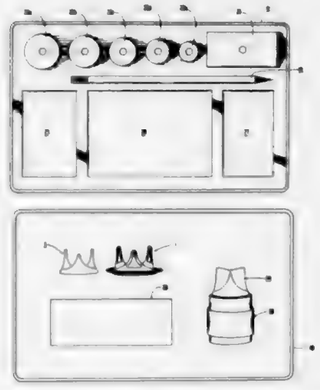


1. A precisely-configured tissue cutting die for cutting a modified frustrum shaped segment of tissue having a plurality of repeating irregularities on the lesser circumference for producing coaptive edges on a plurality of leaflets in a heart valve, comprising:
a frame;
at least one razor sharpened blade in the frame to form a precisely cut, non-rectangular outline configured for the construction of a heart valve having a plurality of leaflet coaptive edges; and
a plurality of ferrules embedded in the frame within the outline formed by the blade.

5,326,371
RAPID ASSEMBLY, CONCENTRIC MATING STENT, TISSUE HEART VALVE WITH ENHANCED CLAMPING AND TISSUE ALIGNMENT

Charles S. Love, Camarillo; Jack W. Love, Santa Barbara, and John H. Calvin, Carpenteria, all of Calif., assignors to Autogenics, Newbury Park, Calif.

Division of Ser. No. 646,001, Jan. 24, 1991, Pat. No. 5,163,955. This application Aug. 3, 1992, Ser. No. 925,589
Int. Cl.[5] A61F *2/24*
U.S. Cl. 623—2 **8 Claims**

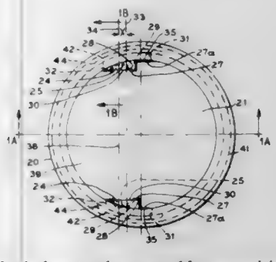


7. The method of assembling a heart valve during open heart surgery which is sized to the open annulus remaining after the patient's heart valve has been excised, comprising the steps of:
providing a first prefabricated, sterile and disposable tissue harvesting and preparing and annulus sizing kit which is not size-specific to said open annulus and which does not contain an assembled valve, said kit including a series of obturators of different size;
cutting a piece of tissue into a roughly-dimensioned piece of tissue;
selectively pushing said obturators into said open annulus;
selecting the obturator corresponding to the size of said open annulus;
selecting a second, prefabricated, sterile and disposable kit corresponding to the obturator selected from said first kit, said second kit comprising a tray containing, for rapid availability, the following components: a precisely configured cutting die, a first and a second stent, and an assembly mandrel, each of said components corresponding in size to said selected obturator;
positioning said cutting die adjacent said roughly-dimensioned piece of tissue and, before said tissue is mounted around one of said stents, utilizing said die to cut said tissue into a precisely cut piece of tissue;
mounting said tissue around said first stent; and
utilizing said mandrel to locate said second stent to permanently situate said tissue between said inner and outer stents and form said heart valve without any tissue cutting or trimming steps after said tissue is removed from said cutting die.

5,326,372
PROSTHETIC HEART VALVE ASSEMBLY

Harischandra K. Mhatre, Mahim Bombay, and Bhagavant R. Kalke, Worli, both of India, assignors to Kalke Mhatre Associates, Bombay, India

Filed Sep. 28, 1992, Ser. No. 951,805
Claims priority, application India, Mar. 26, 1992, 92/BOM/92
Int. Cl.[5] F16K *15/00*; A61F *2/24*
U.S. Cl. 623—2 **23 Claims**

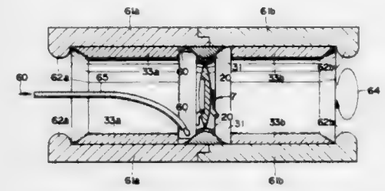


1. A prosthetic heart valve assembly comprising:
(a) an annular structure having a central passageway with a longitudinal axis; and
(b) flap means disposed across said passageway and pivotable in response to fluidic pressure variations applied on an upstream side thereof for achieving one way fluid flow through said passageway;
said flap means comprising at least one leaflet means that in a fully closed position generally extend(s) across said passageway; and each individual said leaflet means having a pair of outwardly extending ear members along respective outer peripheral portions, each said pair of ear members defining therebetween a pivot axis across their associated said leaflet means, each said leaflet means being bent along said pivot axis and having a flat configuration on each side of said pivot axis;
said annular structure comprising a rigid ring member having in cross-section a C-type configuration with a mid-region and integral radially outturned longitudinally opposite ends and with a circumferentially extending inner face and a circumferentially extending outer face and also having defined in said mid-region at least two circumferentially spaced holes that radially extend through said ring member, each said hole having sides that are radially inwardly tapered; at least two separate bearing housings each one having recess means defined in a circumferentially forward face thereof, having circumferentially extending groove means defined in a circumferentially rearward face thereof, and also having radially tapered side walls that are nestably and sealingly seated within a different one of said holes, there being one said recess means for pivotally receiving and holding each said ear member, and also one said hole for each said bearing housing; and band retaining means extending circumferentially completely around said outer face in said mid-region and engaged with said groove means of each said so seated bearing housing for holding said bearing housings in said holes;
and the interrelationship between said flap means and said annular structure being such that each said leaflet means is pivotable between fully open and fully closed positions across said passageway with said ear members each being pivotably associated with a different one of said recess means such that, when each said leaflet means is in said open position, one said side thereof is parallel to said longitudinal axis while the other said side thereof is inclined towards said longitudinal axis and towards said fully closed position; and edge portions of said ear members and of said leaflet means adjacent thereto wipe adjacent facial portions of said recesses and of said bearing housings adjacent thereto during pivotal movements of each said leaflet means.

5,326,373
TUBULAR CONNECTOR

Toshio Nagase, Tsukuba, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Division of Ser. No. 517,461, May 4, 1990, Pat. No. 5,041,131, which is a continuation of Ser. No. 185,356, Apr. 18, 1988, abandoned, which is a continuation of Ser. No. 899,846, Aug. 25, 1986, abandoned. This application Jun. 7, 1991, Ser. No. 711,789
Claims priority, application Japan, Aug. 30, 1985, 60-133310
Int. Cl.[5] A61M *1/10*
U.S. Cl. 623—3 **5 Claims**



1. A tubular connector to connect first and second fluid tubes especially configured for a blood pumping device, said tubular connector comprising:
an annular packing;
a first formed single wall tubular section having a first end with an annular recess and a second end, said first end having a threaded portion formed on a circumference;
a second formed single wall tubular section having a first end which is to be abutted with said first tubular wall section with said annular packing fitting between abutting faces thereof, said first end of said second tubular section having a threaded portion formed on a circumference extending from said first end to a shoulder, said second tubular section having a second end, one of said first and second tubular sections having the second end thereof connected to said blood pumping device and another tubular section having said second end thereof connected to a blood passage;
a sealing ring fitted inside said annular recess of said first tubular section;
a valve to control flow of fluid in an inside fluid path of said tubular connector, said valve having a valve seat fitted inside said sealing ring; and
a union nut meshing said threaded portion of first tubular section toward said second tubular section until a rear end of the union nut is stopped by said shoulder, wherein said first and second tubular sections are firmly pressed together.

5,326,374
BODY-IMPLANTABLE DEVICE FOR CONTROLLING THE SIZE OF A FLUID PASSAGEWAY

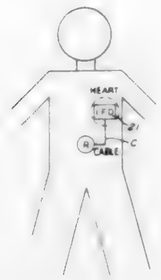
Michel N. Ilbawi, 1917 Midwest Club, Oak Brook, Ill. 60521; James E. Colgate, Evanston, Ill., and David A. Johnson, Evergreen Park, Ill., assignors to Michael N. Ilbawi, Oak Brook, Ill.

Filed Dec. 1, 1992, Ser. No. 983,658
Int. Cl.[5] A61M *1/10*
U.S. Cl. 623—3 **17 Claims**

1. A body implantable device made of a body compatible material for controlling the size of a fluid flow passageway within the body, which comprises:
a housing;
means for securing said housing within the body;
a flow passageway of unchanging cross-section extending through said housing;

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signal receiving means, responsive to electromagnetic signals emitted from outside the body and conveyed through the body without wires to said signal receiving means; and

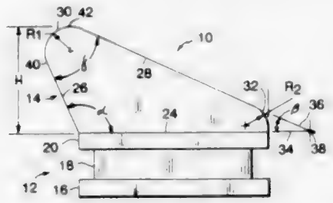


means for changing the cross-section of said flow passageway to another position in a manner responsive to signals received by said signal receiving means.

5,326,375
THYROPLASTY IMPLANT

William W. Montgomery, Chestnut Hill, and Sturat K. Montgomery, Needham, both of Mass., assignors to Boston Medical Products, Inc., Waltham, Mass.

Division of Ser. No. 707,704, May 30, 1991. This application Jul. 16, 1993, Ser. No. 93,265
Int. Cl.[5] A61F *2/02, 2/20*
U.S. Cl. 623—11 **7 Claims**



1. A thyroplasty implant for anchoring in a window cut through a thyroid lamina and causing medial displacement of a vocal cord comprising

a base for anchoring in said window, said base having a bottom tier, a middle tier, and an upper tier having respective lengths and widths that are aligned, and

a projecting member extending from said base for causing medial displacement of a vocal cord, said projecting member having a length and width at a portion adjacent said base that are aligned with said lengths and widths of said bottom tier, middle tier, and upper tier,

said projecting member having two generally parallel side surfaces that extend inward from two sides of said window and each generally have the shape of a triangle,

said triangle of each of said side surfaces having a first, base side that extends along said base of the implant, a second, rear side that makes an oblique angle with the base side and extends beyond is offset with respect to the base, and a third, inner side that makes acute angles with the base side and the rear side,

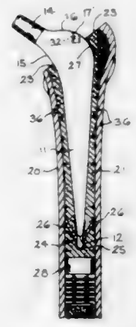
said projecting member having an innermost surface between the inner sides of said triangles of the two side surfaces that is arcuate at junctions of said innermost surface with the side surfaces and with a rear surface between the rear sides of said triangles,

said base and said projecting member being made of biocompatible material.

5,326,376
FEMORAL STEM PROSTHESIS

David B. Warner; Leslie N. Gilbertson; Gregory S. Meadows, all of Warsaw, and Kenneth S. Shipp, Winona Lake, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Aug. 23, 1993, Ser. No. 110,741
Int. Cl.[5] A61F *2/32, 2/36*
U.S. Cl. 623—23 **3 Claims**



1. A method for implanting a femoral hip joint prosthesis in a prepared intramedullary canal comprising the step of:

(a) providing a prosthesis having an elongated stem extending form a proximal end to a distal end and defining a first axis, said proximal end having a neck region which joins the stem at a juncture, said stem having anterior, posterior, medial, and lateral surfaces and said surfaces tapering downwardly from said juncture to said distal end; said neck region defining a second axis disposed at an obtuse angle with the first axis, and said medial surface defining a smooth arcuate path from the stem across the juncture to the neck region and said lateral surface defining an enlarged shoulder proximal said juncture; and said surfaces having a polished finish throughout such that substantially no interfacial bonding will occur between such surfaces and bone cement in contact therewith, said stem being formed of a titanium alloy and said surfaces being surface hardened after polishing such that the hardness of the surfaces is greater than an interior of the prosthesis

(b) placing cement in said intramedullary canal;

(c) inserting said prosthesis, distal end first, into said intramedullary canal such that substantially all of said stem is encapsulated within said cement;

(d) permitting said cement to set forming an interfacial bond with bone surface of said intramedullary canal and a support for said stem; and

(e) thereafter permitting said stem to subside within said cement without disrupting said interfacial bond.

5,326,377
METHOD OF TREATING HIDES

Timo Tuohimaa, Helsinki, and Aila Ukkonen, Espoo, both of Finland, assignors to AGA Aktiebolag, Sweden

PCT No. PCT/SE90/00652, § 371 Date Apr. 30, 1992, § 102(e) Date Apr. 30, 1992, PCT Pub. No. WO91/05877, PCT Pub. Date May 2, 1991
PCT Filed Oct. 11, 1990, Ser. No. 839,773
Claims priority, application Sweden, Oct. 13, 1989, 8903378-1
Int. Cl.[5] C14C *1/08, 3/04*
U.S. Cl. 8—94.18 **16 Claims**

1. A method of pre-treating and mineral-tanning hides or pelts which have been delimed and bated, characterized by agitating the pelts in a treatment vessel with a wash liquid containing 0.2–0.5 weight percent of acid based on the weight of the pelts; supplying carbon dioxide to said liquid during the treatment process in an amount corresponding to 0.5–5 percent of the weight of the pelts; draining the washing liquid from said pelts; optionally repeating the treatment with washing liquid at least once; and tanning said pelts with a mineral tanning substance after draining, or in case of repeated washing, final draining of washing liquid from the pelts.

5,326,378
TRIS (2-ACETOACETOXY ETHYL)-AMINE, AND ITS HYDROSOLUBLE SALTS, PREPARATION PROCESS, USE AS FORMALDEHYDE COLLECTORS AND FINISHING PROCESS FOR FABRICS

Didier Wilhelm, Issy les Moulineaux, and Antonio Gelabert, Bouffemont-Moiselles, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

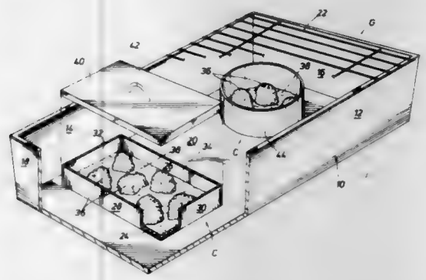
Filed Jun. 24, 1993, Ser. No. 80,825
Claims priority, application France, Jun. 25, 1992, 92 07798
Int. Cl.[5] D06M *13/322;* **C07C** *69/72*
U.S. Cl. 8—182 **5 Claims**

3. A process for finishing cellulose containing fibers which comprises placing the fibers in an aqueous finishing bath which contains an aminoplastic resin, the improvement comprising adding an effective amount of tris(2-acetoacetoxy ethyl)-amine or one of its hydrosoluble mineral or organic acid salts to act as a formaldehyde collector.

5,326,379
HEATING AND COOKING APPARATUS AND FUEL COMPOSITION FOR USE THEREIN

David H. Gardner, 2210 Seven Oaks Dr., Houston, Tex. 77339

Filed Mar. 31, 1993, Ser. No. 40,923
Int. Cl.[5] C10L *1/00*
U.S. Cl. 44—540 **7 Claims**



1. A fuel composition for use in cooking food wherein said food is directly exposed to flame from the burning fuel composition comprising:

a non-combustible, substantially heat resistant pervious substrate comprising lava rocks; and

an amount of 1.2-propylene glycol disposed on said substrate sufficient to fill the majority of surface interstices present in said substrate.

5,326,380
SYNTHESIS OF POLYCRYSTALLINE CUBIC BORON NITRIDE

Xian Yao, Orem, and Ghanshyam Rai, Sandy, both of Utah, assignors to Smith International, Inc., Houston, Tex.

Filed Oct. 26, 1992, Ser. No. 966,698
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **16 Claims**

1. A process for preparing a sintered polycrystalline compact with substantial intercrystalline bonding from high pressure boron nitride which comprises:

mixing grains of high pressure boron nitride with grains of a low pressure boron nitride, an aluminum containing adjuvant material, and a carbide, nitride, or carbonitride containing hard material;

subjecting the resulting mixture to elevated temperature in a non-oxidizing environment;

placing the mixture onto a cemented tungsten-carbide/-cobalt substrate;

loading the mixture and substrate into a closed container;

subjecting the closed container to elevated temperature and pressure conditions sufficient to melt cobalt from the substrate, and at which conditions the high pressure boron nitride is thermodynamically stable; and

maintaining the elevated temperature and pressure conditions for a time sufficient to allow for substantial intercrystalline bonding to thereby sinter the compact.

5,326,381
USE OF POLYTETRAFLUOROETHYLENE RESIN PARTICLES TO REDUCE THE ABRASION OF ABRASIVE PIGMENTS

Joseph H. Z. Wu, Somerset, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed May 10, 1993, Ser. No. 60,079
Int. Cl.[5] C09K *3/14*
U.S. Cl. 51—293 **17 Claims**

1. An improved pigment composition consisting essentially of particles of an abrasive pigment mixed with substantially spherical nonfibrillated colloidal particles of polytetrafluoroethylene resin, said particles of resin being present in an amount effective to reduce the Einlehner abrasion of said abrasive pigment.

5,326,382
SYNTHETIC ABRASIVE STONES AND METHOD FOR MAKING SAME

Henry C. Oat, P.O. Box 9307, Santa Fe, N. Mex. 87504

Continuation-in-part of Ser. No. 889,452, May 27, 1992, Pat. No. 5,266,087. This application May 12, 1993, Ser. No. 62,434
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **20 Claims**

1. A method of making synthetic abrasive stones, said method including the steps of:

providing a mixture of glass and 10.5–28% by weight foaming agent;

heating said mixture to a temperature of from 765° to 960° C.; and

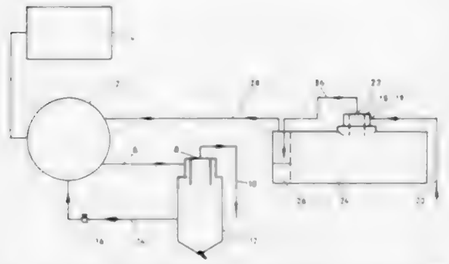
cooling said heated mixture to room temperature.

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5,326,383
SUCTION CLEANING SYSTEMS

Keith C. Harris, Junortoun, Australia, assignor to Spoutvac Manufacturing Pty Ltd, Victoria, Australia

PCT No. PCT/AU91/00133, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO91/15146, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 9, 1991, Ser. No. 934,505
Claims priority, application Australia, Apr. 10, 1990, PJ9575
Int. Cl.[5] B01D *45/12, 47/02*
U.S. Cl. 55—248 **10 Claims**

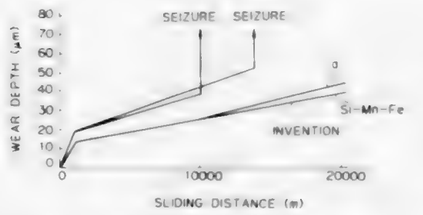


1. A suction cleaning system comprising an air pump, first separating means in a suction line leading to the pump for separating substantially all particulate matter from the incoming airstream with the exception of fine particulate matter, second separating means upstream of the pump and downstream of the first separating means for separating the fine particulate matter from the incoming air, said second separating means comprising a water chamber containing a volume of water in a liquid state, means for feeding the incoming air and fine particulate matter into the water chamber in a multiciplicity of fine streams at a position below the liquid water level therein to generate an air and water stream with the chamber above the liquid water level whereby the particulate matter is held in suspension in the water, and means for causing air substantially free from the suspended particulate matter to be withdrawn from the chamber for passage through the pump.

5,326,384
SLIDING MATERIAL

Eiji Asada; Takashi Tomikawa, and Kenichiro Futamura, all of Aichi, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

Filed Jul. 30, 1991, Ser. No. 737,865
Claims priority, application Japan, Jul. 31, 1990, 2-201248; Aug. 14, 1990, 2-213734; Aug. 31, 1990, 2-230068
Int. Cl.[5] C22C *29/00*
U.S. Cl. 75—231 **3 Claims**

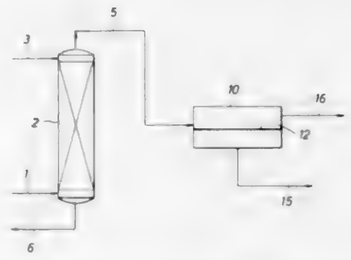


1. A sintered sliding material having a wear-resistance and corrosion-resistance to prevent intrusion of lubricating oil into the interior of said sliding materials, which consists of from 1 to 10% by weight of at least one element selected from the group consisting of graphite, MoS_2 and WS_2, from 1 to 30% by weight of at least one hard matter selected from the groups (a) and (b), and from 0.1 to 15% by weight of Sn, the balance being essentially Cu, wherein intrusion of lubricating oil into the interior of said sintered sliding material is prevented and wherein the groups (a) and (b) are defined as follows:
(a) Fe_2P, Fe_3P, FeB, Fe_2B, Mo, Co-based self fluxing alloy, and Ni-based self fluxing alloy, and
(b) Fe-Cr, Fe-Mn, Fe-Ni, Fe-Si, Fe-W, Fe-Mo, Fe-V, Fe-Ti, Fe-Nb, CuP, Cr, and W.

5,326,385
METHOD OF TREATING SOUR LIQUEFIED PETROLEUM GAS

Jayantilal B. Rajani; Thijme Last, both of Amsterdam; Michel Guirguis, Pernis; Johannes L. W. C. Den Boestert, and Hendrik C. Rijkens, both of Amsterdam, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 24, 1993, Ser. No. 21,818
Claims priority, application European Pat. Off., Feb. 24, 1992, 92200532
Int. Cl.[5] B01D *19/00, 53/22*
U.S. Cl. 95—46 **25 Claims**



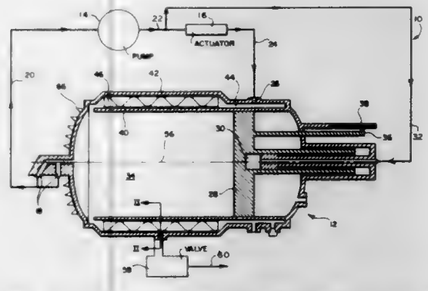
1. A method of removing hydrogen sulfide from sour liquefied petroleum gas comprising:
(a) contacting the sour liquefied petroleum gas in an extraction column with a liquid and regenerable absorbent to obtain a sweet liquefied petroleum gas which contains contaminants;
(b) supplying the sweet liquefied petroleum gas which contains contaminants to a membrane unit comprising a membrane selected from a permselective membrane and a porous hydrophobic membrane, a permeate outlet and a retentate outlet; and
(c) removing from the permeate outlet of the membrane unit sweet liquefied petroleum gas which is substantially free of contaminants and from the retentate outlet of the membrane unit sweet liquefied petroleum gas in which the contaminants are concentrated.

5,326,386
HYDRAULIC RESERVOIR WITH GAS/OIL SEPARATOR

Leung Lee, Brooklyn, and James J. Pavlica, East Northport, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 9, 1993, Ser. No. 45,602
Int. Cl.[5] B01D *53/22*
U.S. Cl. 96—6 **16 Claims**

1. A reservoir to supply hydraulic fluid to a hydraulic circuit to meet the needs of the hydraulic circuit, said reservoir including a housing, a fluid inlet, a fluid outlet and defining a fluid chamber such that said inlet and outlet communicate with said fluid chamber, the reservoir comprising: a piston located in the reservoir housing and acting on fluid in the fluid chamber so as to pressurize the fluid in the fluid chamber; a passive gas separating medium operatively associated with the reservoir housing for separating gas from hydraulic fluid circulating between said inlet, said chamber and said outlet; and means for venting gas separated from the hydraulic fluid by said gas separating medium to a zone external to the hydraulic circuit.



5,326,387
SURFACE PROTECTANT COMPOSITION

Robert D. Faber, Grand Rapids, and Steven J. Brouwer, Hudsonville, both of Mich., assignors to Amway Corporation, Ada, Mich.

Filed Aug. 5, 1992, Ser. No. 925,970
Int. Cl.[5] C09G *1/14*
U.S. Cl. 106—3 **11 Claims**

1. A nonaqueous surface protectant composition comprising:
a. from about 10 to about 99.9 percent by weight of a volatile silicone fluid;
b. from about 0.1 to about 10 percent by weight of a cross-linkable silicone fluid; and,
c. optionally, from about 1 to about 50 percent by weight of an organopolysiloxane fluid.

5,326,388
COLOR CHANGING COMPOSITIONS

Richard E. Miller, Nazareth, and Charlene R. Couch, Bethlehem, both of Pa., assignors to Binney & Smith Inc., Easton, Pa.

Continuation-in-part of Ser. No. 923,308, Jul. 31, 1992, Pat. No. 5,232,494. This application Jul. 16, 1993, Ser. No. 89,503
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—22 B **29 Claims**

1. A multiple coloring composition system comprising:
(a) an undercolor aqueous coloring composition comprising an undercolor dye whose coloring ability is destroyed in the presence of a pH of about 10 or greater; and
(b) an overcolor aqueous coloring composition comprising a colorant capable of maintaining its characteristic color in the presence of a pH of about 10 or greater and an effective amount of a base sufficient to yield a pH of said overcolor aqueous coloring composition of about 10 or greater.

5,326,389
ANTI-CORROSIVE PIGMENTARY COMPOSITION FOR COATINGS

Christian Cambon, Sanary, France, assignor to Etat Francais represente par le Delegue General pour l'Armement, Paris Armees, France

PCT No. PCT/FR91/00299, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO91/16381, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 11, 1991, Ser. No. 938,148
Claims priority, application France, Apr. 12, 1990, 90 04703
Int. Cl.[5] A04B *9/02*
U.S. Cl. 106—14.44 **10 Claims**

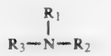
1. Anti-corrosive pigmentary composition for coating, characterized in that it contains zinc 8-hydroxyquinolate and at least one pigment.

5,326,390
ORGANIC VEHICLE AND ELECTRONIC PASTE

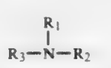
Berhan Tecle, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 5, 1993, Ser. No. 43,163
Int. Cl.[5] C09D *5/24, 105/00;* **B23K** *35/34*
U.S. Cl. 106—208 **7 Claims**

1. A high resolution, no-clean, screen printable vehicle suitable for an electronic paste composition comprising:
(a) an organo-soluble hydroxy alkyl substituted polysaccharide;
(b) a solvent for the polysaccharides;
(c) a monofunctional hydrogen bonding component selected from the group consisting of:
(i) alcohol having 1–4 carbon atoms,
(ii) acid having 1–4 carbon atoms, and
(iii) amine having a structure:



wherein R_1, R_2 and R_3 are independently H or alkyl of 1–4 carbon atoms, wherein the sum of $R_1+R_2+R_3$ is not more than 4 carbon atoms,
(d) a monofunctional hydrogen bonding component selected from the group consisting of:
(i) alcohol having at least 5 carbon atoms,
(ii) acid having at least 5 carbon atoms, and
(iii) amine having the general structure:



wherein R_1, R_2 and R_3 are independently hydrogen or alkyl, and wherein the sum of $R_1+R_2+R_3$ is at least 5 carbon atoms,
(e) an inorganic oxide particulate material having a surface area of at least 50 m^2/g.

5,326,391
MICROPOROUS MATERIAL EXHIBITING INCREASED WHITENESS RETENTION

Barbara J. Anderson, Saltsburg, Pa.; Paul L. Benenati, Copley, Ohio; Harlan B. Johnson, Pittsburgh, Pa.; Thomas A. Rechlicz, Lake Charles, La., and William A. Williams, Latrobe, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 18, 1992, Ser. No. 977,351
Int. Cl.[5] C08K *7/22;* **C04B** *16/08*
U.S. Cl. 106—409 **22 Claims**

1. In microporous material which on a coating-free, printing ink-free, and impregnant-free basis comprises:
(a) a matrix consisting essentially of substantially water insoluble thermoplastic organic polymer,
(b) finely divided substantially water-insoluble filler particles, of which at least 50 percent by weight are siliceous particles, said filler particles being distributed throughout said matrix and constituting from 40 to 90 percent by weight of said microporous material, and
(c) a network of interconnecting pores communicating substantially throughout said microporous material, said pores constituting from 35 to 95 percent by volume of said microporous material,
the improvement wherein said microporous material comprises whiteness retaining organic surface active agent selected from the group consisting of N,N-bis(2-hydroxyethyl)cocoamide, octyl-dimethyl-2-hydroxyethyl quaternary ammonium methane sulfonate, octyl-dimethyl-2-hydroxyethyl quaternary

ammonium dodecylbenzene sulfonate, sofa dimethyl ethyl ammonium ethosulfate, polyethyleneglycol (400) monolaurate, stearamidopropyldimethyl-2-hydroxyethylammonium nitrate, dimethyl cocobenzalkonium chloride, and lauramine oxide.

5,326,392

PLATY PIGMENTS

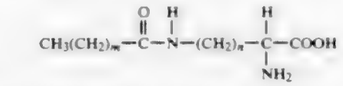
Harold A. Miller; Philip Greenberg, both of White Plains; Adolph Blum, Yorktown Heights, and Wasi Ahmed, Lake Mohegan, all of N.Y., assignors to The Mearl Corporation, Ossini, N.J.

Continuation-in-part of Ser. No. 622,055, Dec. 4, 1990, abandoned. This application Jul. 20, 1993, Ser. No. 93,903

Int. Cl.[5] **C04B** *14/20*

U.S. Cl. 106—417 **36 Claims**

1. A process for improving the tactile characteristics of a platy pigment comprising precipitating a compound of the general formula



where m is an even number from 8 to 18 and n is 3 or 4, onto the surface of said platy pigment, said precipitation being accomplished by adding an acid or alkaline solution of said compound to an aqueous dispersion of said platy pigment, the amount of said solution being such as to supply said compound in an amount of about 0.5–5.0% by weight of said platy pigment, while maintaining the temperature between about 15° and 80° C., said acid or alkaline solution being added at a rate not exceeding 1.50 mg of said compound per gram of platy pigment per minute, adding alkali or acid as required to bring the pH of the resulting mixture to between 1 and 8, and recovering said platy pigment coated with said compound.

5,326,393

PROCESS FOR DETERMINING THE ACTUAL TEMPERATURE OF A MOLDABLE MATERIAL CONTAINED WITHIN A MOLD OR PASSED THROUGH A DIE

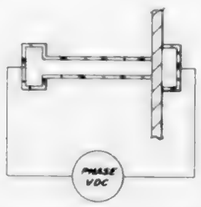
Jean-Pierre Ibar, New Canaan, Conn., assignor to Solomat Partners, L.P., Stamford, Conn.

Continuation-in-part of Ser. No. 882,754, May 11, 1992, abandoned, and a continuation-in-part of Ser. No. 903,062, Jun. 22, 1992, Pat. No. 5,271,876, which is a continuation-in-part of Ser. No. 663,988, Feb. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 245,413, Sep. 21, 1988, abandoned, said Ser. No. 882,754, is a continuation of Ser. No. 491,786, Mar. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 449,374, Dec. 6, 1989, abandoned, which is a continuation of Ser. No. 245,414, Sep. 21, 1988, abandoned. This application Mar. 5, 1993, Ser. No. 26,953

Claims priority, application France, Dec. 2, 1986, 86 16834; Dec. 2, 1986, 86 16836

Int. Cl.[5] **G01N** *27/00*; **G01R** *27/00*

U.S. Cl. 264—22 **20 Claims**



1. A process for determining the actual temperature of a non-conductive moldable material contained within a mold or passing through a die at a given point in time, said process comprises:

(a) shaping a non-conductive, moldable material, said moldable material either having dipoles or other charged particles therein, or being susceptible to the creation of dipoles or other charged particles therein when subjected to a polarization medium;

(b) polarizing at least a portion of the moldable material while within the mold or while passing through the die, by subjecting the material to a polarization medium, wherein during the polarization step, the moldable material is subjected to said polarization medium until either at least some of the dipoles or other charges within the moldable material are oriented in the direction of the polarization medium, or until at least some of the dipoles or other charged particles are created thereby;

(c) cooling the polarized, moldable treated material; and

(d) analyzing the effect of polarizing the moldable material while said moldable material is within the mold or passing through the die by permitting an at least partial relaxation of the polarized dipoles or other charges within the polarized, moldable material,

(i) wherein the relaxation results in the disorientation of, or decrease in, at least some of the polarized dipoles or other charges within the polarized, moldable material,

(ii) wherein the disorientation of, or decrease in, the polarized dipoles or other charges within the polarized, moldable material generates a measurable electrical current,

(iii) wherein the electrical current generated from the relaxation of polarized, moldable material is measured, and

(iv) wherein the measured electrical current is correlated to the temperature at which the polarization was performed.

5,326,394

OIL BASED PAINT

James C. Cobb, 34 Crawford Rd., Mt. Kuringai, New South Wales, Australia 2080

Continuation-in-part of Ser. No. 538,373, Jun. 15, 1990, abandoned. This application Oct. 28, 1992, Ser. No. 967,875

Claims priority, application Australia, Jun. 15, 1989, PJ4736; Oct. 23, 1989, PJ6993

Int. Cl.[5] **C11C** *3/00*

U.S. Cl. 106—504 **18 Claims**

1. An improved oil-based artist paint composition exhibiting reduced embrittlement on aging, said composition comprising:

an oil selected from the group consisting of linseed oil, rape seed oil, soya, cottonseed, sunflower oil and safflower oil,

a pigment,

an extender, and

a polymeric plasticizer compound selected from the group consisting of an acrylate polymer or copolymer, a soft resin copolymer, an epoxidized oil and a polyester, said polymeric plasticizer compound being present in an amount effective to plasticize said composition such that the weight ratio of said polymeric plasticizer compound to oil varies according to the oil absorbency of said pigment and is in the range of from 7:93 to 33.3:100.

5,326,395

SILICA PRODUCTS

Derek Aldcroft, Great Sutton; Ian P. McKeown, Liverpool; Bryan Rogers, Warrington, and Peter W. Stanier, Cheshire, all of Great Britain, assignors to Unilever Patent Holdings B.V., Netherlands

Filed Nov. 6, 1992, Ser. No. 971,615

Claims priority, application European Pat. Off., Nov. 7, 1991, 91310327.1

Int. Cl.[5] **C09D** *4/00*

U.S. Cl. 106—502 **10 Claims**

1. Wax coated amorphous silica matting agent characterised in that the wax coating is present in the range from about 5% to about 20% by weight of the matting agent and comprises

i. from about 50% to about 90% by weight of a hard microcrystalline wax,

ii. from about 5% to about 30% by weight of a plasticising microcrystalline wax, and

iii. from about 5% to about 20% by weight of a synthetic polyethylene wax.

5,326,396

LOW SHRINKAGE CEMENT COMPOSITION

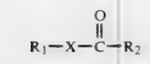
Baha E. I. Abdelrazig, Columbia; Ellis M. Gartner, Silver Spring, and David F. Myers, Columbia, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 29, 1993, Ser. No. 99,088

Int. Cl.[5] **C04B** *24/12*

U.S. Cl. 106—808 **18 Claims**

1. A cement admixture comprising at least one compound of the Formula I:



wherein R_1 represents a C_4–C_6 alkyl group, X represents an oxygen atom or a secondary nitrogen group (—NH—), and R_2 represents a hydrogen atom or a C_1–C_3 alkyl group when X is a secondary amine, or R_2 represents a primary nitrogen group ($—NH_2$) or a $—CH_2C(O)CH_3$ group when X is an oxygen atom; and at least one cement water reducing agent.

5,326,397

LOW SHRINKAGE CEMENT COMPOSITION

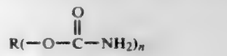
Baha E. I. Abdelrazig, Columbia; Ellis M. Gartner, Silver Spring, and David F. Myers, Columbia, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 29, 1993, Ser. No. 99,089

Int. Cl.[5] **C04B** *24/12*

U.S. Cl. 106—808 **16 Claims**

1. A cement admixture comprising at least one compound of the formula:



wherein n is 1 or 2 and when n is 1, R is a C_3–C_8 alkyl group or a C_5–C_6 cycloalkyl group and when n is 2, R is a C_2–C_{10} alkylene or an $A(OA)_xOA$ group in which A is a C_2–C_3 alkylene and x is an integer of from 0 to 10; and at least one cement water reducing agent; wherein the weight ratio of said at least one compound to said water reducing agent is from 0.2 to 200.

5,326,398

COMPACT SLIDE SPINNER USING A DISPOSABLE SLIDE HOLDER

Thomas F. Kelley, Canton, Mass.; Larry E. Shephard, Providence, R.I., and Robert L. Scott, Medfield, Mass., assignors to Statspin Technologies, Norwood, Mass.

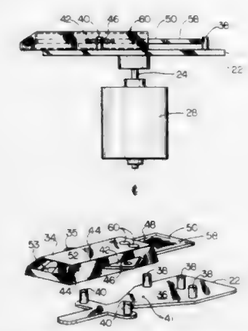
Filed Jul. 22, 1992, Ser. No. 918,491

Int. Cl.[5] **B05C** *11/02, 13/02, 5/00*

U.S. Cl. 118—52 **14 Claims**

1. A device for preparing a thin film from a fluid specimen placed upon a substrate comprising:

an enclosure for receiving said substrate and covering said fluid specimen during preparation of said thin film, said enclosure including a top, a bottom, and a plurality of sides joining said top to said bottom, at least one of said sides including an opening to receive at least a portion of said substrate therethrough, said top covering said fluid specimen on said substrate; and



a spinner for spinning said enclosure and said substrate received therewithin.

5,326,399

BOOTH STRUCTURE FOR COATING CATHODE-RAY TUBE HAVING DUST ABSORBING WALL SURFACES

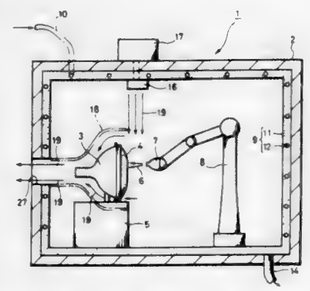
Takumi Takamura, Gifu, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 4, 1992, Ser. No. 924,516

Claims priority, application Japan, Aug. 6, 1991, 3-196870

Int. Cl.[5] **B05C** *15/00*

U.S. Cl. 118—64 **9 Claims**



1. A coating device for coating a cathode-ray tube with a layer, comprising:

a booth having means for supporting a cathode-ray tube to be coated, said booth having sidewalls and an upper wall;

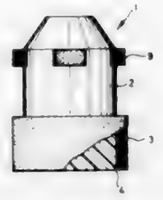
spraying means in said booth for spraying a coating solution onto the cathode-ray tube so as to form a layer on the cathode-ray tube;

water-containing means for absorbing dust particles floating in said booth being mounted on inner wall surfaces of said booth; and

water supply means for supplying water to said water-containing means being connected to said booth.

4. A coating device according to claim **1**, further comprising air-conditioning means being connected to the booth for controlling the temperature and humidity in the booth, said air-conditioning means having a filter and having exhaust means connected to a discharge port of the booth for exhausting the interior of the booth.

5,326,400
PLUG MEMBER FOR USE IN COATING AN INTERIOR SURFACE OF A PIPE
Shizuo Sagawa, 12-8 Minamikugahara 1-chome, Ota-ku, Tokyo, Japan
Filed Nov. 19, 1992, Ser. No. 973,273
Claims priority, application Japan, Nov. 12, 1991, 322403; Sep. 4, 1992, 260622
Int. Cl.[5] B08B *9/04*
U.S. Cl. 118—105 3 Claims



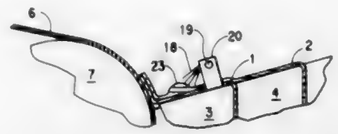
1. A plug member for use in coating an interior surface of an elongated pipe member, the plug member comprising a body of cylindrical configuration having an outer diameter smaller than an inner diameter of the pipe member, a first brush located at one end of the body, side brush comprising radially outwardly extending fibers having radially outer ends defining a cylindrical surface having a diameter close to the inner diameter of the pipe member nd a second brush located at an opposite end of the body, said second brush comprising a plurality of circumferentially spaced brushes extending around the periphery of the body.

5,326,401
EMULSION COATER
George MacNaughton, Andover; Steven Forti, Norwell, and Dietmar Stapelfeld, Marshfield, all of Mass., assignors to Wearguard Corp., Norwell, Mass.
Filed Aug. 28, 1992, Ser. No. 937,500
Int. Cl.[5] B05C *3/00*
U.S. Cl. 118—406 10 Claims



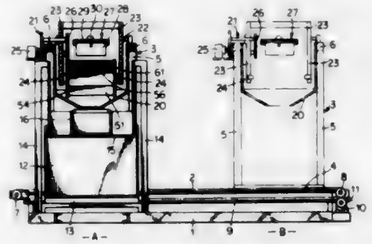
1. An emulsion coater apparatus comprising:
(a) a head for receiving a pre-pressurized emulsion, and delivering the emulsion at a pressure sufficient to cause the emulsion to traverse holes in a screen;
(b) means for moving the head relative to the screen; and
(c) means for removing excess emulsion from both sides of the screen.

5,326,402
SLIDE-BEAD COATING TECHNIQUE
John T. Chandler, Brevard, NC., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 31, 1992, Ser. No. 999,238
Int. Cl.[5] B05C *3/02*
U.S. Cl. 118—411 5 Claims



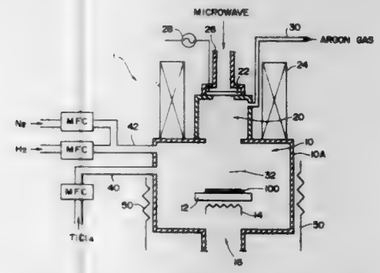
1. In a slide-bead coating apparatus having an included slide surface terminating at a coating lip and means for supplying a continuous liquid layer to said slide surface so as to form a liquid bridge between said coating lip and a substrate disposed adjacent said coating lip, said substrate adapted to be conveyed past said lip whereby said substrate continuously depletes liquid from said bridge onto said substrate, the improvement comprising means for supplying an air flow pulse that impinges upon an upper surface of said liquid layer opposite said slide surface between said liquid layer supply means and said coating lip, said pulse of air being sufficient to create a thicker wave region in said liquid layer.

5,326,403
EQUIPMENT FOR DISCHARGING TREATED ARTICLES FROM A BARREL IN A SURFACE TREATMENT SYSTEM
Akira Iwanaga, Mitaka, Japan, assignor to Towa Koki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 980,640
Claims priority, application Japan, Dec. 5, 1991, 3-348227
Int. Cl.[5] B05C *3/00*
U.S. Cl. 118—429 6 Claims



1. An equipment for discharging articles from a barrel in a surface treatment system, comprising: a carriage device supported for reciprocal movement in a horizontal direction between a first horizontal position where said articles are discharged from said barrel and a second horizontal position where new articles are charged in said barrel, said carriage device including a rotating mechanism for engagement with said barrel to rotate said barrel and a cover operating mechanism for engagement with a cover of an aperture of said barrel; a fluid tank supported at said first horizontal position for vertical movement between a first vertical position and a second vertical position which is lower than said first vertical position; and a receiver removably supported at said first horizontal position at a third vertical position where said receiver enters in said fluid tank when said fluid tank is moved to said first vertical position; wherein said rotating mechanism rotates said barrel at a fourth vertical position where said barrel is above said receiver and substantially fully enters in said fluid tank when said fluid tank is moved to said first vertical position; wherein said cover includes first means for releasable engagement with said barrel with a resilient force to shut said aperture, and includes second means for engagement with said cover operating mechanism; and wherein said cover operating mechanism includes: third means for releasable engagement with said first means of said cover for releasing said cover from said barrel against said resilient force, fourth means for releasable engagement with said second means of said cover when said third means engages with said first means, and driving means for bringing said third means and said fourth means into engagement with said first means and said second means when said carriage is located at said first horizontal position.

5,326,404
PLASMA PROCESSING APPARATUS
Junichi Sato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 18, 1992, Ser. No. 992,978
Claims priority, application Japan, Dec. 19, 1991, 3-353998
Int. Cl.[5] C23C *16/48*
U.S. Cl. 118—723 MR 3 Claims

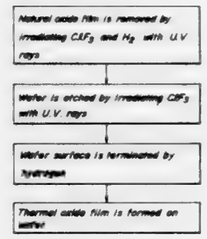


1. A plasma processing apparatus for processing semiconductor wafers, comprising:
a electron cyclotron resonance plasma generating apparatus including a plasma chamber in which plasma is generated during processing;
a wafer processing chamber in fluid communication with said plasma chamber to receive the plasma during the processing;
a wafer supporting platform in said wafer processing chamber on which said semiconductor wafers are mounted for the processing;
a first heater mounted in thermal communication with said wafer supporting platform and controllable to heat the semiconductor wafers during the processing;
a second heater mounted in thermal communication with said wafer processing chamber to heat walls of said wafer processing chamber during the processing; and
means for charging said wafer processing chamber with gases for the processing.

5,326,405
SOLID LACTULOSE
Henk Pluim, and Jan G. Kraaijenbrink, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands
Filed Oct. 9, 1991, Ser. No. 773,506
Claims priority, application European Pat. Off., Oct. 12, 1990, 90202712.7
Int. Cl.[5] C13F *1/00*; C07H *3/00*; C08B *37/00*
U.S. Cl. 127—42 4 Claims

1. A method for the preparation of water-free crystalline lactulose comprising simultaneously continuously stirring and reducing the water content by evaporation of an aqueous lactulose solution or lactulose suspension, optionally in the presence of seed crystals, until a free-flowing solid powder is obtained.

5,326,406
METHOD OF CLEANING SEMICONDUCTOR SUBSTRATE AND APPARATUS FOR CARRYING OUT THE SAME
Yoshio Kaneko; Munetaka Koda; Tadayoshi Shiraishi, and Takehiro Murakami, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan
Filed Jul. 30, 1992, Ser. No. 921,722
Claims priority, application Japan, Jul. 31, 1991, 3-213236; Nov. 22, 1991, 3-307834
Int. Cl.[5] B08B *3/12*; C03C *25/06, 15/00*; B44C *1/22*
U.S. Cl. 134—1 26 Claims



1. A method of cleaning a semiconductor wafer comprising the steps of:
introducing the semiconductor wafer having a natural oxide film formed on a surface of the semiconductor wafer into a reaction chamber; and
cleaning the surface of the semiconductor wafer by introducing a cleaning gas including at least a chlorine fluoride series gas into the reaction chamber and exciting the cleaning gas within the reaction chamber to produce reactive radicals and removing the natural oxide film formed on the semiconductor wafer with the reactive radicals to expose a raw surface of the semiconductor wafer, and etching the exposed raw surface of the semiconductor wafer.

5,326,407
PROCESS FOR WASHING SOLID PARTICLES COMPRISING A SOPHOROSIDE SOLUTION
Marc Baviere, Noisy le Roi; Didier Degouy, Houilles, and Jacqueline Lecourtier, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison Cedex, France
Filed Mar. 26, 1993, Ser. No. 37,382
Claims priority, application France, Mar. 26, 1992, 92/03787
Int. Cl.[5] B08B *3/04, 7/00*
U.S. Cl. 134—25.1 12 Claims

1. A process for cleansing solid particles impregnated with a polluting fluid comprising hydrocarbons, which comprises admixing said solid particles and a washing solution comprising sophorosides.

5,326,408
RAPIDLY DISSOLVING AND STORAGE STABLE TITANIUM PHOSPHATE CONTAINING ACTIVATING COMPOSITION
Gerald J. Cormier, Troy, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.
Filed Jun. 15, 1993, Ser. No. 77,473
Int. Cl.[5] C23C *22/05, 22/78*
U.S. Cl. 148—254 20 Claims

1. A liquid activating concentrate consisting essentially of water and:
(A) a component of dispersed Jernstedt titanium phosphate salt or salts;
(B) a component of dissolved sodium salt or salts; and

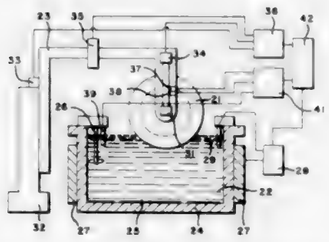
(C) a component of dissolved potassium salt or salts; and, optionally, one or more of the following:
(D) a component of thickening agent; and
(E) a conventional alkaline metal cleaner component, wherein in said liquid activating concentrate the ratio of potassium to titanium is within the range from about 8.0:1.0 to about 40:1.0 and the ratio of potassium to sodium is within the range from about 0.9:1.0 to about 2.5:1.0.

5,326,409

SYSTEM FOR PERIPHERAL DIFFERENTIAL HEAT TREATEMNT TO FORM DUAL-PROPERTY WORKPIECE

Wilford H. Couts, Jr., Northboro, Mass., assignor to Wyman-Gordon Company, Worcester, Mass.

Continuation of Ser. No. 747,451, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 497,804, Mar. 21, 1990, abandoned, which is a continuation of Ser. No. 233,220, Aug. 17, 1988, abandoned, which is a continuation of Ser. No. 29,615, Mar. 24, 1987, abandoned. This application May 1, 1992, Ser. No. 879,089
Int. Cl.[5] C21D *1/46*
U.S. Cl. 148—631 **12 Claims**



1. A method of heat treating each of a plurality of metal workpieces each having a central portion, an axis, and a peripheral portion having an outer surface, whereby the central portions and peripheral portions area put into different metallurgical states with peripherally and annularly uniform interface between them, comprising the steps of:
(a) brining the workpiece to a first metallurgical state, using a first temperature range,
(b) partially immersing the workpiece into a molten salt bath having a second chosen treatment temperature range, higher than said first temperature range, the bath having a well-defined surface,
(c) controlling the height and angle of an axis of rotation of the workpiece with respect to said well-defined surface of the salt bath, and
(d) rotating the workpiece about the axis to cause thermal contact between the salt bath and the outer surface of the peripheral portion at such speed and for such time as to cause the transformation of the peripheral portion to a changed metallurgical state.

5,326,410

METHOD FOR REINFORCING STRUCTURAL SUPPORTS AND REINFORCED STRUCTURAL SUPPORTS

Walter W. Boyles, Snellville, Ga., assignor to Timber Products, Inc., Conyers, Ga.

Filed Mar. 25, 1993, Ser. No. 36,876
Int. Cl.[5] E02D *27/42, 5/07*
U.S. Cl. 156—71 **31 Claims**

1. A method for reinforcing a support within a work area, the method comprising the steps of
coating the work area with a curable resin,
spirally wrapping the work area in a first direction around the support with at least one first porous, reinforcing fabric strip having longitudinal wrap threads and fiberglass weft rovings, said fabric being spirally wrapped so that said fiberglass weft rovings are oriented substantially parallel to a longitudinal axis of said support and said



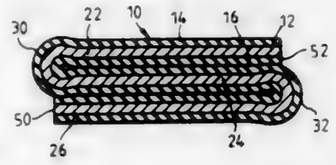
longitudinal threads are oriented at an angle to said longitudinal axis, and
impregnating said first reinforcing fabric with said resin, and curing said resin.

5,326,411

METHOD FOR MAKING BELTING WITH INCREASED EDGE MODULUS

Dale B. Arnold, Anthony, Kans., assignor to Morrison Company, Inc., Anthony, Kans.

Continuation-in-part of Ser. No. 77,792, Oct. 17, 1991, Pat. No. 5,244,083. This application Jun. 10, 1993, Ser. No. 74,742
Int. Cl.[5] B29C *47/02*
U.S. Cl. 156—137 **62 Claims**



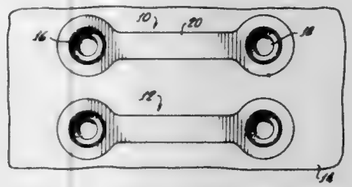
1. A method for making a multi-ply belt, comprising the steps of:
coating a fabric sheet with an elastomeric material to form a coated fabric sheet, said coated fabric sheet having a first end portion and a second end portion;
folding said coated fabric sheet onto itself a predetermined number of times along preselected imaginary lines to form a multi-ply belt having two longitudinal edges and two opposing surfaces, said preselected imaginary lines extending from said first end portion to said second end portion and dividing said coated fabric sheet into longitudinal portions;
curing said multi-ply belt;
constructing said first end portion and said second end portion of said coated fabric sheet at a predetermined angle with respect to said imaginary lines, so that said step of folding forms complementary end portions on said multi-ply belt; and
complementarily joining said complementary end portions together to form a multi-ply splice.

5,326,412

METHOD FOR ELECTRODEPOSITING CORROSION BARRIER ON ISOLATED CIRCUITRY

Christopher M. Schreiber, Newport Beach, and Haim Feigenbaum, Irvine, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,801
Int. Cl.[5] B32B *31/12*
U.S. Cl. 156—150 **7 Claims**



1. A method for forming corrosion resistant isolated circuitry comprising the steps of:
forming a conductive mandrel having a pattern of circuit elements therein, said pattern including a plurality of depressions extending below the surface of the mandrel and also including areas of the surface joining said depressions, .
coating the mandrel with a nonconductive material having a pattern defining a circuit to be formed, said circuit including features corresponding to said circuit elements,
plating a series of layers of electrically conductive material on said mandrel in said pattern, said layers being plated in said depression and on said surface areas, one of said layers adjacent said mandrel being a corrosion resistant material, and
separating the plated layers from the mandrel to provide a corrosion resistant isolated circuit having features corresponding to said circuit elements and to enable reuse of the mandrel to form additional corrosion resistant isolated circuitry.

5,326,413

HOT MELT ADHESIVE COMPOSITION THAT MELTS AT RELATIVELY LOW TEMPERATURES

Pascal E. Esemplare, Mountainside, and Ronald W. Gumbs, E. Brunswick, both of N.J., assignors to Pearle, Inc., Dallas, Tex.

Filed Nov. 19, 1990, Ser. No. 615,613
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—154 **43 Claims**

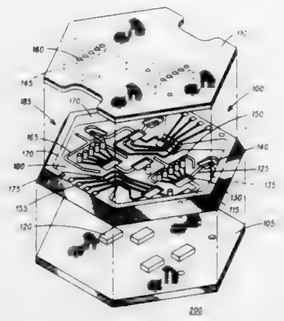
1. A method of mounting an ophthalmic lens for grinding, which comprises:
mounting the lens on a block such that a cavity results between the block and the lens;
filling the cavity between the lens and the block with a liquid hot melt adhesive at a temperature less than 190° F. (87.8° C.), the hot melt adhesive comprising 15–30 weight percent of a resin having a melt index of 300–500 dg/min per ASTM D1238, 15–30 weight percent of a wax having a Ring and Ball softening temperature between about 135°–160° F. (about 57°–71° C.), and 40–60 weight percent of a tackifier, and wherein the adhesive is strong enough to bind the lens to the block during grinding of the lens;
cooling the adhesive sufficient to bond the lens to the block.

5,326,414

METHOD FOR MAKING ELECTROSTATIC RF ABSORBANT CIRCUIT CARRIER ASSEMBLY

Mark D. Mosher, Scottsdale; Robert Fraser, Tempe, and Ronald D. Fuller, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 799,235, Nov. 27, 1992, Pat. No. 5,185,654. This application Jun. 25, 1992, Ser. No. 904,319
Int. Cl.[5] B32B *31/00;* H05K *3/36;* H01L *21/60*
U.S. Cl. 156—242 **6 Claims**



1. A method for providing a circuit carrier assembly comprising the steps of:
forming a polymeric support structure having a base and shrouding walls which form an internal cavity;
providing a plurality of conductor paths disposed within the cavity;
forming a polymeric cover having wall members integrally fashioned into a surface thereof, for making contact with conductor paths within said cavity;
depositing a layer of surface material on the cover and the cover wall members, said surface material comprising:
a thermosetting binder,
a non-conductive RF absorbing filler comprising 25 to 87 percent by weight loading of the binder, such that the surface material absorbs RF energy within a range of 1–60 GHz; and
a conductive filler comprising 1 to 4 percent by weight loading of the thermosetting binder and the non-conductive RF absorbing filler, such that the surface material limits the electrostatic energy stored by the polymeric cover; and
fixing the polymeric cover to the polymeric support structure to cover the cavity and provide said contact between the cover wall members and the conductive paths, thereby providing a circuit carrier assembly.

5,326,415

SCREEN PRINTING METHOD FOR MANUFACTURING A REFASTENABLE MECHANICAL FASTENING SYSTEM AND FASTENING SYSTEM PRODUCED THEREFROM

Dennis A. Thomas, and David J. K. Goulait, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 718,727, Jun. 21, 1991, abandoned. This application Sep. 3, 1993, Ser. No. 117,567
Int. Cl.[5] B29C *47/06*
U.S. Cl. 156—244.11 **40 Claims**

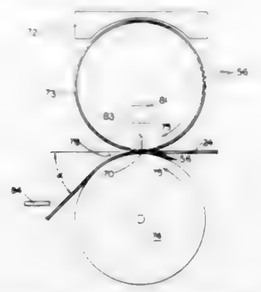
1. A method for making one or more free formed prongs useful as a component of a mechanical fastening system, the method comprising the steps of:
providing a depositing member having at least one aperture;
providing a molten thermally sensitive material;
providing a substrate;

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extruding said molten thermally sensitive material through said aperture;

depositing a discrete amount of said molten thermally sensitive material from said aperture onto said substrate;

stretching a portion of said discrete amount of said molten



thermally sensitive material in a direction having a vector component parallel to the plane of the substrate so as to free form a prong; and

solidifying said molten thermally sensitive material of said prong, said prong having a base, a shank, and an engaging means

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5,326,416

HEAT SEALING JAW ASSEMBLY WITH FILM SLACKENER

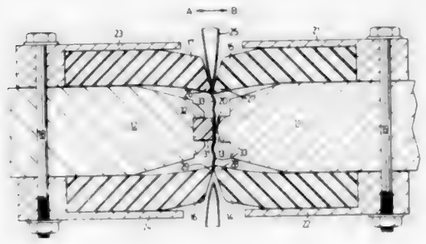
Arnold E. Perrett, Whitby, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Apr. 13, 1993, Ser. No. 45,296

Claims priority, application Canada, Apr. 15, 1992, 2066068

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—251 **4 Claims**



1. A process for heat sealing pouches from a tube of thermoplastic film in a vertical form, fill and seal machine, said machine having an opposing pair of jaws facing the tube, at least being capable of moving toward and away from the other jaw to collapse the tube therebetween; a heat sealing element on one jaw facing the tube; and a pad on the other jaw facing the heat sealing element, said process comprising the steps of

1) gripping the tube with top clamping elements at a top gripping point above the heat sealing element and with bottom clamping elements at a bottom gripping point below the heat sealing element;

2) moving the top gripping point and bottom gripping point toward the heat sealing element thereby relieving tension and forming a slack section in the film of the tube between the top clamping elements and the bottom clamping elements;

3) moving the heat seal element and the pad toward each other to meet in the slack section of the tube;

4) activating the heat seal element to produce a top heat seal of a previously filled pouch and a bottom heat seal of a next-to-be-filled pouch, said top and bottom heat seals being in the slack section of the tube;

6) severing the tube between the top and bottom heat seals;

7) deactivating and moving the heat seal element and pad away from said heat seals; and

8) releasing the tube from the top and bottom clamping elements.

5,326,417

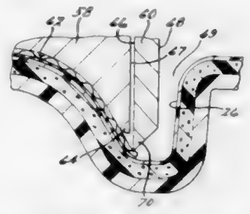
METHOD AND APPARATUS FOR PRODUCING TRIM PANELS

Richard A. Phelps, Ferndale, Mich., assignor to Chivas Products Limited, Sterling Heights, Mich.

Filed Jan. 14, 1993, Ser. No. 4,551

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—267 **22 Claims**



1. A method of installing a sheet of flexible material on an appearance surface of a support panel, said appearance surface being partitioned into contiguous first and second surface areas by a groove penetrating into the surface, the steps of the method comprising:

coating one face of the sheet with a heat activatable adhesive,

cutting the sheet into a desired shape and having a free edge,

positioning the one face of said sheet onto the first surface area such that the free edge of the sheet is proximate to one vertical wall of the groove,

moving a platen into engagement with the other face of the sheet and pressing the one face of the sheet against the first surface area,

heating the platen,

maintaining the heated platen in pressed engagement with the sheet for a time sufficient for the heat in the platen to activate the adhesive and the adhesive to adhere to the first surface area,

forcing a blade having opposite sides against the free edge portion of the sheet and the edge portion of the sheet downwardly and inwardly of the groove such that one side of the blade is adjacent to the edge portion of the sheet pressed against the one wall of the groove and the other side of the blade is spaced from the opposite wall of the groove by an air barrier, the blade shielding the opposite wall of the groove from exposure to heat from the platen, and

retracting the platen and the blade.

5,326,418

METHOD OF MAKING POSITIVE-TEMPERATURE-COEFFICIENT THERMISTOR HEATING ELEMENT

Yuan-Chang Yeh, No.101, 223 Alley, Sec.1, Tay Pyng Rd., Tsao Twen, Nan Tour, Taiwan

Filed Apr. 14, 1992, Ser. No. 868,122

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

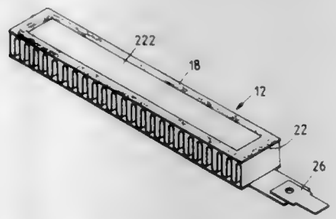
Int. Cl.[5] **B32R** *7/14*; **H01C** *7/02*; **H05B** *1/02*

U.S. Cl. 156—291 **2 Claims**

1. A method of making a positive-temperature-coefficient thermister (PTCR) heating element in which said heating element is made up of a plurality of linearly sequenced PTCR pieces, each of which has a front flat surface and a rear flat surface opposite and parallel to each other, with each surface provided with an electrode layer adhered thereto, said heating element further comprising two metal heat-radiating means used to sandwich said PTCR pieces between flat inner surfaces thereof wherein a metal film and an insulation adhesive layer are disposed between each said electrode layer of said PTCR pieces and each corresponding said inner flat surface of said heat-radiating means, said method characterized by the manufacturing steps of

(a) coating said insulation adhesive layer having a predetermined pattern on selected portions of said inner flat surfaces of said heat-radiating means opposite to each other;

(b) placing a metal film having a pattern complementary to said pattern of said insulation adhesive layer on only uncoated areas of the inner flat surface of each of said heat-radiating means;



(c) arranging in sequence and in a linear manner a plurality of said PTCR pieces provided with said electrode layers on the insulation adhesive and metal film which have been deposited on the inner flat surface of one of the heat-radiating means;

(d) stacking the other heat-radiating means having the insulation adhesive and metal film deposited on the inner surface thereof on top of the arranged PTCR pieces to form a stack assembly wherein the heat-radiating means sandwich the PTCR pieces, insulation adhesive and metal film between the flat inner surfaces thereof;

(e) applying a compressive pressure to said stacked assembly; and

(f) allowing said insulation adhesive layer to cure under said compressive pressure so that said PTCR pieces, said metal heat-radiating means and said metal films are held together intimately and firmly to form said heating element;

wherein the metal film is essentially solid and non-perforated.

5,326,419

DEVICE FOR SPLICING STRIPS OF LIMITED TRANSVERSE DIMENSIONS AUTOMATICALLY

Silvano Boriani; Eros Stivani, and Antonio Gamberini, all of Bologna, Italy, assignors to G.D. S.p.P., Bologna, Italy

Filed Oct. 15, 1992, Ser. No. 961,334

Claims priority, application Italy, Oct. 16, 1991, B091A000372

Int. Cl.[5] **B65H** *19/00, 26/00*

U.S. Cl. 156—361 **13 Claims**

1. A device for automatically splicing and supplying thin strips of material to a machine, said device comprising:

an operating reel rotatable about a first axis and adapted to supply the strip material to said machine;

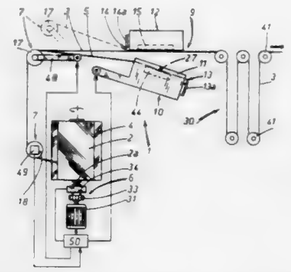
at least one standby reel rotatable about a second axis parallel with said first axis and adapted to supply the strip material to said machine upon depletion of the strip material from said operating reel;

means for rotatably driving said operating reel and said at least one standby reel selectively about said first and second axes respectively;

means for splicing a trailing end of said strip material from said operating reel to a leading end of said strip material from said at least one standby reel upon depletion of the strip material from said operating reel;

means for controlling the operation of at least said driving means and said splicing means;

sensing means for determining an amount of depletion of said operating reel and for generating a signal to said controlling means so that said splicing and driving means enable said at least one standby reel to supply said strip material to said machine when said operating reel is depleted; and



at least one feed roller for guiding the strip material as said strip material is supplied by the reels, said at least one feed roller being rotatable about a third axis, which third axis is generally perpendicular to said first and second axes, said at least one feed roller being operably connected to said sensing means and movable along said third axis so as to generally align itself with an outer periphery of said strip material on one of said reels as said sensing means detects the depletion of strip material therefrom.

5,326,420

MACHINE FOR ASSEMBLING LIQUID CRYSTAL CELLS

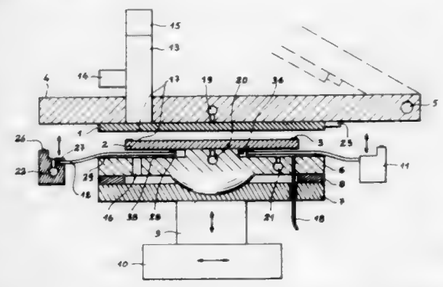
Bruno Vinouze, Port-Blanc, and René Baumes, Franconville, both of, France, assignors to France Telecom Etablissement Autonome De Droit Public, Paris and Societe D'Applications Generales D'Electricite et de Mecanique Sagem, Paris Cedex, both of France

Filed Mar. 2, 1993, Ser. No. 25,113

Claims priority, application France, Mar. 3, 1992, 92 02515

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—379 **12 Claims**



1. Machine for assembling liquid crystal cells, wherein it includes:

a) a mobile plate able to receive one first substrate of a cell to be assembled, said plate being provided with first suction means able to keep the first substrate positioned on the plate,

b) a position-adjustable mechanism plate with one central

VOL 1164 ISS 1 JL 5 1994 UMI

portion able to receive a second substrate of the cell to be assembled and with a peripheral horizontal flexural providing a free space between the mechanism plate and the second substrate, said mechanism plate being provided with second suction means able to keep the second substrate positioned on the mechanism plate, and third suction means in the horizontal flexural,

c) means to return the mobile plate and its first substrate so as to bring it above the mechanism plate with its second substrate, the first substrate thus being situated above the second substrate,

d) a frame disposed around the mechanism plate and under the periphery of the mobile plate, this frame being provided at its upper portion with a gasket,

e) means to move this frame vertically so as to bring to either a low position approximately at the level of the mechanism plate, or to an upper position so as to position it adjacent the mobile when the latter has returned above the mechanism plate,

f) a flexible film with imperviousness means at its periphery fixed to the frame and pieces at its center with an opening corresponding to the central portion of the mechanism plate, said film, occupying the space provided between the horizontal flexure of the mechanism plate and the second substrate,

g) fourth means for sucking in the volume between the mobile plate and the film, said film thus being able to be positioned on the horizontal flexure of the mechanism plate via the action of third suction means of the mechanism plate when the frame is in the low position, namely pressing on the first substrate second substrate unit via action of the fourth suction means when the frame is in the upper position, the second suction means of the mechanism plate having been rendered inoperable

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5,326,421

TAPE DISPENSERS

Gerald M. Taylor, 50 Townsend Lane, Harpenden, Hertfordshire Al5 2QS, England

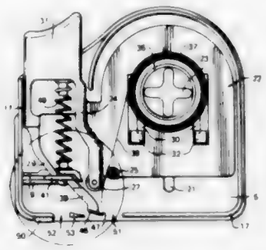
PCT No. PCT/GB91/01924, § 371 Date Jun. 26, 1992, § 102(e) Date Jun. 26, 1992, PCT Pub. No. WO92/07785, PCT Pub. Date May 14, 1992

PCT Filed Nov. 4, 1991, Ser. No. 862,586

Claims priority, application United Kingdom, Nov. 2, 1990, 9023809

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—526 **14 Claims**



1. A tape dispenser for adhesive tape, comprising a housing, carriage means within the housing for mounting a reel of tape, an aperture in the housing through which the tape is arranged to be dispensed on to a surface, applicator means within the housing movable to apply the tape to said surface, cutter means within the housing to sever the tape, and a sliding cam mechanism to effect movement of the cutter means in coordination with movement of the applicator means, wherein the sliding cam mechanism includes a tongue which is part of the carriage means and is in sliding contact with the cutter means, wherein the cutter means is retracted when the applicator means applies the tape to said surface, and wherein at the completion of the application the applicator means in its withdrawal causes the tape to be presented under tension to the cutter means to be severed thereby.

5,326,422

LABELLING MACHINE FOR LABELLING VESSELS

Hermann Kronseder, Regensburger Strasse 42, D-8404 Woerth, Fed. Rep. of Germany

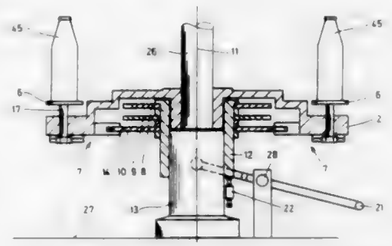
PCT No. PCT/EP91/00438, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/14625, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 8, 1991, Ser. No. 927,285

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1990, 4009642

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—566 **25 Claims**



1. In a labelling machine for labelling vessels of different shapes with different labels having a turntable adapted to be rotatingly driven about an axis and at least one labelling station for applying labels to said vessels located on the circumference of the path of rotation of the turntable, which station is followed by wipe-on and pressure-applying elements, means for feeding vessels to be labelled onto the turntable and for discharging labelled vessels therefrom, the turntable having at least one rotatably mounted rotary table on which said vessel sits while on said turntable, a stationary radial cam and a control member engagable with said cam and operatively connected to said rotary table for controlling rotary movement of the rotary table and the vessel sitting thereon during one revolution of the turntable, the improvement comprising at least two stationary radial cams, each having a different program of rotation for the rotary table for one revolution of the turntable, said radial cams being disposed in axially spaced relationship relative to the direction of the axis of the turntable, and means for optionally adjusting the engagement between said control member and radial cams to change-over the machine from one vessel type or one label type to another type.

5,326,423

DOPED CRYSTALLINE TITANYL ARSENATES AND PREPARATION THEREOF

Albert A. Ballman, Toms River, N.J., and Lap K. Cheng, Bear, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 857,050, Mar. 25, 1992, abandoned. This application Sep. 30, 1992, Ser. No. 954,174

Int. Cl.[5] C30B *9/12*

U.S. Cl. 252—584 **10 Claims**

1. A process for producing a single crystal of $MTiOAsO_4$ wherein M is selected from the group consisting of K, Rb, Cs and mixtures thereof, comprising the steps of preparing a homogeneous melt containing the components for forming $MTiOAsO_4$ and a flux comprising oxides of M and As; introducing a seed crystal of $MTiOAsO_4$ in the melt; actuating the controlled crystallization on the seed crystal; and continuing the crystallization until formation of the crystal is completed,

characterized by: producing a single domaon crystal by adding to said melt at least one dopant selected from the group consisting of Fe, Sc, In in an amount totalling at least about 0.01 percent by weight, based upon the total amount of $MTiOAsO_4$ formable from the components in the melt, effective to provide a doped single domain crystal of $MTiOAsO_4$ containing at least 10 ppm of said dopant.

5,326,424

CUBIC BORON NITRIDE PHOSPHIDE FILMS

Gary L. Doll, Southfield, Mich., and Kevin C. Baucom, Alburquerque, N. Mex., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 466,758, Dec. 6, 1989, Pat. No. 5,080,153, and a continuation-in-part of Ser. No. 670,854, Mar. 19, 1991, abandoned. This application Jul. 7, 1992, Ser. No. 909,918

Int. Cl.[5] C30B *23/06*

U.S. Cl. 117—105 **12 Claims**

1. A method for forming thin films of crystalline cub boron nitride phosphide comprising the following steps:

providing a silicon substrate oriented essentially throughout along the (100) crystallographic axis of the substrate;

providing a target comprising hexagonal boron nitride and boron phosphide, said target being disposed in proximity with said silicon substrate;

inducing vaporization of said target using a pulsed excimer laser operating at parameters sufficient to dissociate and vaporize said hexagonal boron nitride/boron phosphide target to atoms/ions;

heating said substrate to a temperature sufficient to sustain crystal growth, such that the vaporized boron, nitrogen and phosphorus atoms/ions deposit onto a surface of said silicon substrate to form a thin film layer of crystalline cubic boron nitride phosphide.

5,326,425

PREPARATION OF TERTIARYBUTYLDIMETHYLANTIMONY AND USE THEREOF

Robert W. Gedridge, Jr., Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1993, Ser. No. 34,792

Int. Cl.[5] C30B *25/02;* **C07F** *9/90*

U.S. Cl. 117—104 **14 Claims**

1. The compound having the formula $((CH_3)_3C)(CH_3)_2Sb$.

2. A process for preparing the compound having the formula $((CH_3)_3C)(CH_3)_2Sb$ which comprises:

A.) reacting SbX_3 with $((CH_3)_3C)MgX$;

B.) treating the resulting product with $(CH_3)MgX$; and,

C.) recovering $((CH_3)_3C)(CH_3)_2Sb$ from the reaction mixture, where X is a halide.

13. In a process of forming an antimony-containing semiconductor material by chemical vapor deposition, the improvement comprising using $((CH_3)_3C)(CH_3)_2Sb$ as a source of antimony.

5,326,426

UNDERCUT MEMBRANE MASK FOR HIGH ENERGY PHOTON PATTERNING

Andrew C. Tam, 12144 Via Roscole, Saratoga, Calif. 95070; Gerhard E. Wolbold, Waldstr. 38, Magstadt, Fed. Rep. of Germany D-7037, and Werner Zapka, Ritterstr. 29, 7034, Gartringen, Fed. Rep. of Germany

Filed Nov. 14, 1991, Ser. No. 791,712

Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 156—643 **39 Claims**

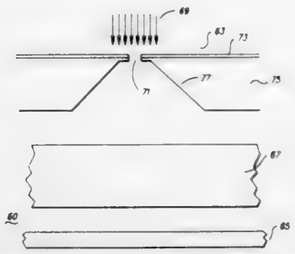
30. A method of laser processing a target substrate comprising the steps of:

generating a high energy radiation beam;

locating a transmission mask defining a desired processing pattern in front of said target substrate, said high energy radiation beam incident on said transmission mask, said mask comprising:

a substrate;

at least one dielectric layer formed on a first surface of said substrate to produce a layered structure having a thickness of a first dimension, said high energy radiation beam incident on said dielectric layer; and



at least one aperture in said layered structure, said aperture extending through said substrate and said dielectric layer, said aperture having a generally conically undercut edge profile with substantially vertical sidewalls of a second dimension adjacent to said first surface said second dimension being substantially less than said first dimension; and

imaging the radiation transmitted through said mask exiting said undercut aperture onto said target substrate.

5,326,427

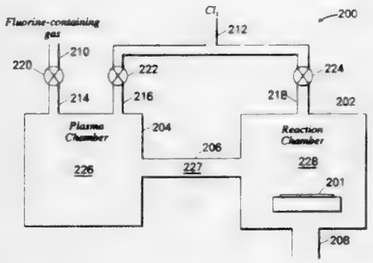
METHOD OF SELECTIVELY ETCHING TITANIUM-CONTAINING MATERIALS ON A SEMICONDUCTOR WAFER USING REMOTE PLASMA GENERATION

Chris Jerbic, Fremont, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Sep. 11, 1992, Ser. No. 943,839

Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 156—643 **11 Claims**



1. A method of selectively etching titanium-containing material on a semiconductor wafer in an atomic chlorine environment comprising:

providing an energy discharge chamber;

providing a reaction chamber;

providing a semiconductor wafer having exposed titanium-containing material to be etched in the reaction chamber;

providing an energy source;

providing a flow of gas including molecular chlorine into the energy discharge chamber;

providing means for applying the energy from the energy source to the gas flowing into the energy discharge chamber;

applying the energy from the energy source to the gas flowing into the energy discharge chamber to produce a discharge gas including atomic chlorine and ionized species;

providing a passageway for gas to pass from the energy discharge chamber and the reaction chamber, said passage of gas through the passageway into the reaction chamber requiring a passage time;

providing a flow of discharge gas from the energy discharge chamber into the passageway;

said passageway being of sufficient length that the ionized species in the discharge gas will recombine during the passage time therethrough;

said passageway being sufficiently short that the atomic chlorine will survive longer than the passage time therethrough;

said passage time of discharge gas through the passageway thereby causing a transformation of the resultant gas into an etching gas containing atomic chlorine, but free of ionized species; and

exposing the semiconductor wafer to the etching gas in the reaction chamber, thereby etching the exposed titanium-containing material on the semiconductor wafer

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5,326,426

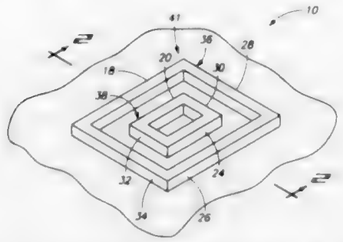
METHOD FOR TESTING SEMICONDUCTOR CIRCUITRY FOR OPERABILITY AND METHOD OF FORMING APPARATUS FOR TESTING SEMICONDUCTOR CIRCUITRY FOR OPERABILITY

Warren M. Farnworth, Nampa; Malcolm Grief, and Gurtej S. Sandhu, both of Boise, all of Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Sep. 3, 1993, Ser. No. 716,394

Int. Cl.[5] H01L *21/306*; **B44C** *1/22*; **C03C** *15/00*, *25/06*

U.S. Cl. 156—654 **20 Claims**



4. A method of forming a testing apparatus for engaging electrically conductive test pads on a semiconductor substrate having integrated circuitry for operability testing thereof, the method comprising the following steps:

providing a locally substantially planar outer surface of a first material on a semiconductor substrate;

providing a layer of second material atop the substantially planar outer surface of first material, the second material being capable of substantially masking the underlying first material;

patterning and etching the layer of second material to selectively outwardly expose the first material and define a grouping of discrete first material masking blocks, the discrete first material masking blocks of the grouping having respective centers, the respective centers of the grouping being positioned in sufficient proximity to one another such that the centers of the grouping fall within confines of a given single test pad which the apparatus is adapted to electrically engage;

forming projecting apexes beneath the masking blocks at the masking block centers, the projecting apexes forming a group falling within the confines of the given single test pad of which the apparatus is adapted to electrically engage;

removing the discrete first material masking blocks from the substrate after the exposing step; and

rendering the projecting apexes electrically conductive.

5,326,429

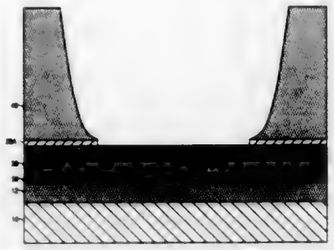
PROCESS FOR MAKING STUDLESS THIN FILM MAGNETIC HEAD

Uri Cohen, Palo Alto, Calif., and Gene P. Bonnie, Eden Prairie, Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 21, 1992, Ser. No. 918,725

Int. Cl.[5] B44C *1/22*; **C23F** *1/00*

U.S. Cl. 156—655 **54 Claims**



1. A process for pattern-etching an alumina layer, including the steps of: depositing an alumina layer; depositing over the alumina layer an adhesion metallic layer; depositing over the adhesion metallic layer at least one additional metallic layer including a top metallic layer; forming a photoresist mask pattern over the top metallic layer; pattern-etching the top metallic layer through the photoresist mask; pattern-etching through the top metallic layer, in reverse order of deposition, the other metallic layer or layers; pattern-etching the alumina layer with an alumina etchant comprising HF through the metallic layers; and removing the metallic layers.

5,326,430

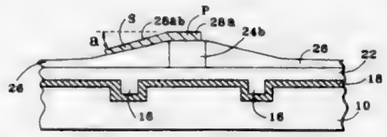
COOLING MICROFAN ARRANGEMENTS AND PROCESS

John E. Cronin, Milton; Rosemary A. Previti-Kelly, Richmond, both of Vt.; James G. Ryan, Sandy Hook, Conn., and Timothy D. Sullivan, Underhill, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 950,621, Sep. 24, 1992, Pat. No. 5,296,775. This application Dec. 7, 1993, Ser. No. 164,494

Int. Cl.[5] H01L *21/306*; **B44C** *1/22*; **C23F** *1/00*; **C03C** *15/00*

U.S. Cl. 156—656 **7 Claims**



1. A process for making a microfan comprising

forming a strip of sacrificial material on a planar surface of a heat source,

applying a spin on sacrificial material over the heat source and the strip to produce a sloping surface extending from about the top of the strip toward the planar surface of the heat source,

applying a layer of conductive material on the sloping surface and strip and

defining from the layer of conductive material a rotary blade on the sloping surface of the spin on sacrificial material and a stator at one end of the blade.

5,326,431

DRY ETCHING METHOD UTILIZING $(SN)_x$ POLYMER MASK

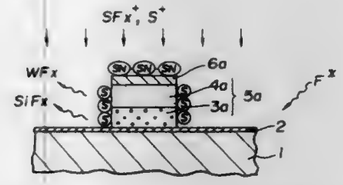
Shingo Kadomura, c/o Sony Corporation 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 893,059

Claims priority, application Japan, Jun. 3, 1991, 3-157479; Oct. 11, 1991, 3-290492; Feb. 28, 1992, 4-043783

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—659.1 **21 Claims**



1. A dry etching method comprising patterning a nitrogen based compound film into a shape to mask a lower target material layer selected from aluminum based materials and silicon based materials, and plasma etching said lower target material layer by using an etching gas containing a sulfur based compound capable of forming free sulfur in a plasma when dissociated by electric discharges so that free sulfur and sulfur nitrides are present during etching.

5,326,432

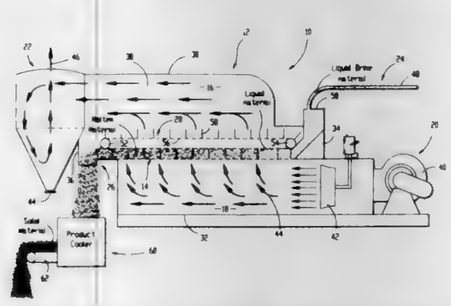
METHOD OF PRODUCING MAGNESIUM CHLORIDE HEXAHYDRATE AND OTHER ALKALINE EARTH SALTS

Bryan D. Evans, 7160 Mize Rd., Shawnee Mission, Kans. 66227

Filed Aug. 7, 1992, Ser. No. 925,915

Int. Cl.[5] B01D *1/14*; **C01F** *5/30*

U.S. Cl. 159—47.1 **16 Claims**



1. A process for producing solidified alkaline earth salts from a starting liquid brine containing such salts, comprising the steps of:

passing said brine into a drying chamber as a liquid;

fluidizing said liquid brine in said chamber by directly contacting said liquid brine in the chamber with upwardly flowing hot air for a period of from about 1–15 minutes, and heating the fluidized brine therein to a maximum temperature of from about 200°–275° F.,

the maximum temperature of said brine in said drying chamber being from about 200°–275° F.; and

cooling said heated brine to form said solidified salts.

5,326,433

MULTI-LEVEL SULFIDE CONTENT WHITE LIQUOR PRODUCTION AND UTILIZATION IN CELLULOSE PULPING

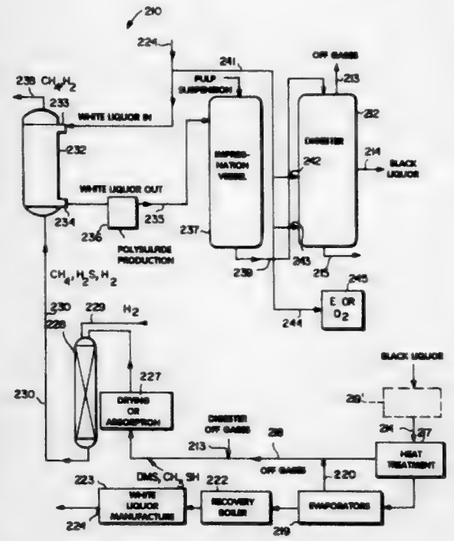
Rolf Ryham, Roswell, Ga.; James W. Smith, Toronto, Canada; Jian E. Jiang, Glens Falls, N.Y., and Kaj Henricson, Kotka, Finland, assignors to Ahlstrom Recovery Inc., Roswell, Ga.

Continuation-in-part of Ser. No. 651,462, Feb. 6, 1991, abandoned, and a continuation-in-part of Ser. No. 840,080, Feb. 21, 1992, and a continuation-in-part of Ser. No. 788,151, Nov. 5, 1991, abandoned. This application May 22, 1992, Ser. No. 887,004

Claims priority, application United Kingdom, May 24, 1991, 9111256

Int. Cl.[5] D21C *11/00*

U.S. Cl. 162—14 **4 Claims**



1. A method of producing kraft pulp by cooking comminuted cellulosic fibrous material with white liquor to produce kraft pulp and black liquor, comprising the steps of:

(a) treating a slurry of cellulosic fibrous material in a plurality of consecutive stages with white liquor, including at least first and second stages, using a first supply of white liquor on the first stage and a second supply of white liquor on another stage;

(b) subjecting the material treated with white liquor to cooking conditions in at least one of the stages to effect kraft cooking thereof, and producing black liquor;

(c) removing and treating sulfur from the black liquor and making at least two streams of white liquors from the remaining black liquor, and wherein the second stream of white liquor is used as the second supply of white liquor;

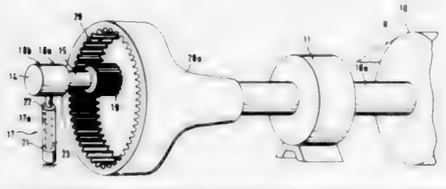
(d) adding the treated sulfur to the first stream of white liquor to produce the first supply of white liquor with a sulfur content greater than the sulfur content of the second supply of white liquor; and

wherein steps (a), (c) and (d) are practiced by: (i) pressure heating the black liquor at a temperature and for a time period such that substantial volumes of off gases containing organic sulfur compounds are produced; (ii) treating the off gases from step (i) to produce primarily hydrogen sulfide and methane; and (iii) using the hydrogen sulfide to produce the first supply of white liquor.

5,326,434
CREPING ADHESIVE FORMULATION
Frank E. Carevic, West Chester, and Gregory J. Rose, Kennett Square, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.
Filed May 7, 1993, Ser. No. 60,178
Int. Cl.[5] B31F *1/12*
U.S. Cl. 162—111 5 Claims

1. In a process of treating a paper web by applying an adhesive formulation to a creping surface and creping the web from said surface, the improvement which consists of employing an adhesive formulation comprising polyvinyl alcohol in an amount of at least about 60 % and a polyhydric alcohol taken from the group consisting of pentaerythritol, di-pentaerythritol, trimethylolpropane and di-trimethylolpropane said polyhydric alcohol being present in an amount from about 5% to about 30% by weight of the solids content of the adhesive

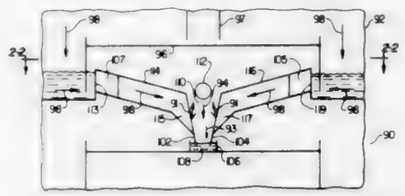
5,326,435
METHOD AND DEVICE IN A CRAWLING OPERATION OF A PRESS FELT IN A PAPER MACHINE
Martti Hirsimäki, Jyskä, Finland; Jouko Villa, Appleton, Wis., and Lauri Suvanto, Jyväskylä , Finland, assignors to Valmet Paper Machinery Inc., Finland
Filed Feb. 19, 1993, Ser. No. 20,139
Claims priority, application Finland, Feb. 20, 1992, 920746
Int. Cl.[5] D21F *1/32*
U.S. Cl. 162—199 7 Claims



1. A method in a crawling operation of a press felt in a paper machine, comprising
forming a nip between a center roll and a press roll in the paper machine,
passing the press felt as a closed felt loop through the nip,
arranging a drive roll such that the felt runs over the drive roll, said drive roll having a free revolving position during a running operation of the paper machine,
connecting an axle of the drive roll to a drive rim such that a rotation of the drive rim will cause a rotation of the drive roll,
engaging drive means with the drive rim to provide the crawling operation of the drive roll to move the felt when the paper machine is not in the running operation, and
switching the drive roll to the free revolving position when the paper machine is in the running operation by separating the drive means from the drive rim.

5,326,436
FRACTIONATOR FEED METHOD
Vijay R. Sampath, Bellingham, Wash., and David E. Bachmann, Irvine, Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Division of Ser. No. 745,641, Aug. 15, 1991, Pat. No. 5,230,839. This application Nov. 19, 1992, Ser. No. 978,619
Int. Cl.[5] B01D *3/14*
U.S. Cl. 203—98 1 Claim

1. A fractionating process for separating a feed mixture into a distillate product fraction and a residual liquid product fraction in a fractionating column comprising a feed section, wherein said feed mixture comprises a liquid and a vapor component containing entrained feed liquid, said fractioning processing comprising (i) introducing heat energy to vaporize said liquid to form ascending vapor, (ii) removing heat energy to condense vapor to form descending liquid reflux, (iii) contacting said ascending vapor with said descending liquid reflux, and further comprising:
a. forming, in said fractionating column feed section, a mixing zone between a first elongated baffle, a second elongated baffle, and a seal pan below said first elongated baffle and second elongated baffle, said seal pan comprising a seal pan mixture of liquids into which a portion of said first elongated baffle and said second elongated baffle extend;



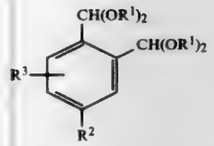
b. feeding said feed mixture downward into said mixing zone wherein said vapor component of said feed contacts said first elongated baffle and said second elongated baffle causing said vapor component to change direction which results in disengagement of said entrained feed liquid which is permitted to fall downward into said seal pan;
c. feeding said descending liquid reflux in said fractionating column feed section to said mixing zone; and,
d. mixing said feed mixture with said liquid reflux to form said seal pan mixture of liquids.

5,326,437
PROCESS FOR PRODUCTION OF PERFLUOROALKYSULPHONYL FLUORIDES
Andreas Bulan; Peter Hafermann; Michael Krancher, and Rainer Weber, all of Bayer Aktiengesellschaft, D 5090 Leverkusen, Bayerwerk, Fed. Rep. of Germany
Filed Mar. 5, 1993, Ser. No. 26,846
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1992, 4208364
Int. Cl.[5] C25B *3/08*
U.S. Cl. 204—59 F 11 Claims

1. In a process for the production of perfluoroalkylsulphonyl fluorides by electrolytic fluorination in a liquid mixture of anhydrous HF and alkylsulphonyl fluoride, the improvement which comprises including in the liquid solution at least one electrolyte component selected from the group consisting of alkaline earth fluorides, alkali tetrafluoroborates, alkali hexafluorophosphates, hexafluorophosphoric acid, tetrafluoroboric acid, boron trioxide, boron trifluoride and mixtures thereof.

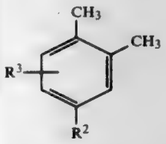
5,326,438
PHTHALADEHYDE TETRAALKYL ACETALS, THE PREPARATION THEREOF AND THE USE THEREOF AS STORAGE COMPOUNDS
Dieter Hermeling, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Division of Ser. No. 907,976, Jul. 2, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 38,084
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1991, 4122314
Int. Cl.[5] C25B *3/02*
U.S. Cl. 204—78 7 Claims

1. A process for preparing phthalaldehyde tetraalkyl acetals of the formula I



I

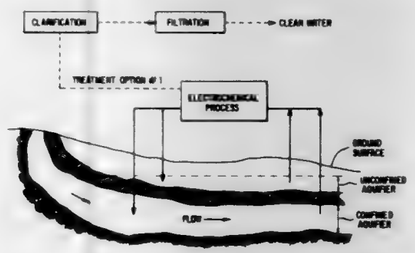
wherein
R^1 is C_1–C_6-alkyl,
R_2 is selected from the group consisting of C_4–C_{20}-alkyl and C_4–C_{20}-alkyl-cycloalkyl, said groups bearing alkyl substituents on the α-C atom, and
R^3 is selected from the group consisting of C_4–C_{20}-alkyl and C_4–C_{20}-alkyl-cycloalkyl, said groups bearing alkyl substituents on the α-C atom, or R^3 is hydrogen,
which comprises electrochemically oxidizing substituted xylenes of the formula II



II

where R^2 and R^3 have the meanings specified above, in an alcohol R^4OH where R^4 is C_1–C_8-alkyl.

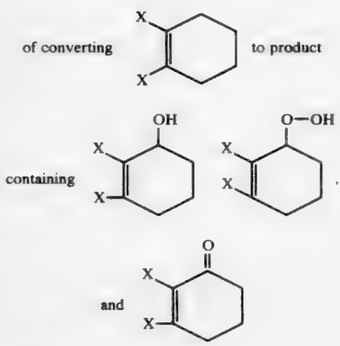
5,326,439
IN-SITU CHROMATE REDUCTION AND HEAVY METAL IMMOBILIZATION
Michael D. Brewster, Tonawanda, N.Y., assignor to Andco Environmental Processes, Inc., Amherst, N.Y.
Filed Feb. 24, 1993, Ser. No. 21,447
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—149 5 Claims



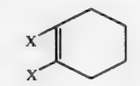
1. A method for removing hexavalent chromium contaminants from groundwater along with any heavy metal ions which are capable of forming an insoluble iron compound or complex comprising the steps of:
providing an electrochemical cell comprising a pair of outer electrode elements which are, respectively, an anode and a cathode, positioned in a parallel spaced apart relationship and a plurality of additional electrode elements disposed between said outer electrode elements in a closely spaced relationship therewith, said additional elements being substantially equidistantly spaced, one from another, and disposed parallel to said outer electrodes;
locating said cell in proximity to a flow of groundwater containing hexavalent chromium ions or said other heavy metal ions and removing a portion of said groundwater flow and directing it through said electrochemical cell while passing an electric current through the cell between the anode and cathode so as to anodically produce ferrous ions while cathodically producing hydroxide ions said ferrous ions being entrained in said flow; and injecting the flow of water from between said electrodes containing unreacted ferrous ions into said groundwater upstream of where said portion was removed.

5,326,440
PHOTOOXIDATION OF HYDROCARBONS
Mordechai Pasternak, Spring Valley, and Abraham Morduchowitz, Monsey, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Dec. 14, 1992, Ser. No. 990,493
Int. Cl.[5] C07C *3/00, 7/00*
U.S. Cl. 204—157.15 12 Claims

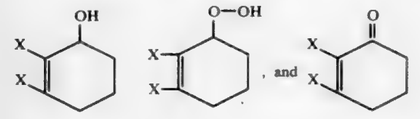
1. The method



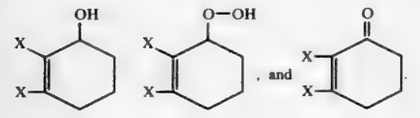
which comprises
maintaining in liquid phase, under photo-oxidation conditions, a charge liquid containing



wherein X is hydrogen or together both X's form a 1,3-butadiene chain cyclized to form a benzene ring;
contacting said charge liquid with oxidizing agent during a photooxidation reaction;
irradiating said charge liquid with radiation containing wave lengths of 2000 Å–7000 Å during a photooxidation reaction thereby forming reaction medium containing oxidized charge liquid containing



and
recovering said reaction medium containing oxidized charge liquid containing

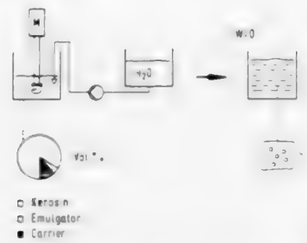


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5,326,441
PROCESS FOR SEPARATING AND CONCENTRATING GALLIUM FROM AN AQUEOUS SOLUTION CONTAINING GALLIUM, TOGETHER WITH ALUMINUM, ZINC AND COPPER

Ioannis Kirgios, Wesseling; Karl Schügerl, Hemmingen, and Wolfgang Degener, Bielefeld, all of Fed. Rep. of Germany, assignors to European Economic Community, Plateau du Kirchberg, Luxembourg

PCT No. PCT/EP90/02321, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/10621, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 19, 1990, Ser. No. 890,602
Claims priority, application Luxembourg, Jan. 19, 1990, 87662
Int. Cl.[5] B01D *17/06*; **B03C** *5/00*; **C02F** *1/48*
U.S. Cl. 204—186 **13 Claims**



1. A process for separating and concentrating gallium from an aqueous solution containing gallium together with aluminum, zinc and/or copper, comprising the steps of:

a) preparing a water-in-oil emulsion in a homogenizer, the emulsion being prepared from a neutral or alkaline aqueous phase and an organic phase, the organic phase containing an oil-soluble reactant, the oil-soluble reactant comprising a secondary amine and a non-ionic surfactant, the emulsion having a ratio by volume of aqueous phase to organic phase of from 2:3 to 3:2;

b) dispersing the emulsion in the aqueous solution in an extractor in a ratio by volume of aqueous solution to emulsion of from 30:1 to 10:1 until emulsion droplets having a diameter up to 1 mm are obtained, the aqueous solution containing at least 4 mol/l of HCl;

c) removing the emulsion from the aqueous solution and breaking the emulsion in a reactor using an applied high voltage alternating field having a field strength of at least 0.5 kV/cm and a frequency of more than 50 Hz to form an electrocoalesced organic phase and an electrocoalesced gallium-containing stripped-off aqueous phase, the reactor having coaxial, double insulated electrodes, and returning an unbroken portion of the emulsion to the extractor;

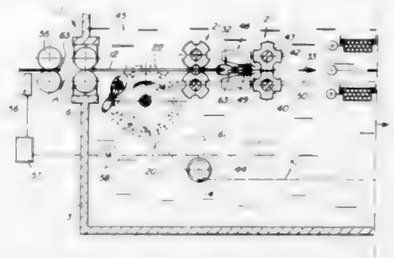
d) removing the electrocoalesced organic phase in a gravitational separator and returning the electrocoalesced organic phase to the homogenizer.

5,326,442
APPARATUS FOR THE GALVANIC TREATMENT OF ARTICLES

Dieter C. Schmid, Freudenstadt, Fed. Rep. of Germany, assignor to Gebr. Schmid GmbH & Co., Freudenstadt, Fed. Rep. of Germany

Filed Mar. 4, 1993, Ser. No. 26,488
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1992, 4208206; Apr. 15, 1992, 4212567
Int. Cl.[5] C25D *17/28*
U.S. Cl. 204—198 **39 Claims**

1. An apparatus for galvanic treatment of articles on a substantially horizontal passage path through a treatment chamber comprising conveying means for conveying the articles through a treatment medium in a conveying direction, and contacting means for supplying electrical power to the articles,

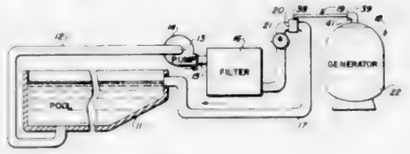


the contacting means being provided to contact the articles at least in the vicinity of a central area of the passage path.

5,326,443
CHLORINATING SYSTEM

Herbet Hilbig, P.O. Box 26217, Prescott Valley, Ariz. 86314

Filed Nov. 13, 1992, Ser. No. 976,321
Int. Cl.[5] C25B *9/00*, *15/08*, *15/02*
U.S. Cl. 204—229 **10 Claims**



1. A pool chlorinating system comprising a pump for circulating pool water, said pump having an inlet and an outlet, said pump delivering pressurized pool water from its outlet, a vessel, said vessel having an internal volume which is capable of changing when said vessel is subjected to pressure from within said vessel, said vessel being adapted to contain a chloride-containing electrolyte, electrolytic means in said vessel for releasing chlorine gas from said electrolyte, and gas and liquid delivery tube means having one end in communication with an uppermost region of said vessel and its opposite end in communication with the pressurized pool water delivered by said pump, said electrolyte having an upper level defining a void space between the upper level of said electrolyte and the uppermost region of said vessel, said tube means having an internal volume between its ends wherein said internal volume is selected in accordance with the volume of the void space, the amount of expansion undergone by said vessel when subjected to the pressure generated by said pump at the opposite end of the tube means, and the pressure exerted inside the vessel when the pump is on.

9. The pool chlorinating system of claim **1**, further comprising a source of intermittent electrical energy for powering said pump, a power supply for said electrolytic means, said power supply receiving electrical energy from the same source as said pump, and means for detecting the flow of pool water from the outlet of the pump, said detecting means interrupting the flow of electrical energy from said source to said power supply when it detects less than predetermined minimum flow from said pump.

5,326,444
APPARATUS FOR ELECTROLYTIC OZONE GENERATION

Shuji Nakamatsu; Yoshinori Nishiki, and Masaaki Katoh, all of Kanagawa, Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Mar. 9, 1993, Ser. No. 28,169
Claims priority, application Japan, Mar. 9, 1992, 4-086441
Int. Cl.[5] C25B *11/00*
U.S. Cl. 204—290 R **5 Claims**

1. An electrolytic ozone generating apparatus comprising a closely adhered electrode structure of

(i) an anode composed of an electrically conductive porous material carrying an ozone generating catalyst,

(ii) a perfluorocarbonsulfonic acid ion-exchange membrane which is a solid electrolyte, and

(iii) a cathode composed of a gas electrode carrying a catalyst, and

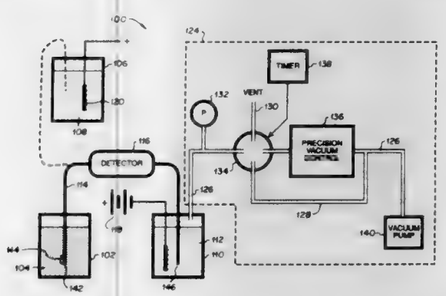
means for supplying an oxygen-containing gas to the cathode side,

wherein the gas electrode as the cathode has a hydrophilic property and a hydrophobic property and carries a catalyst unevenly distributed therein at the ion-exchange membrane side.

5,326,445
VACUUM INJECTION CAPILLARY ELECTROPHORESIS

Hermanus H. Lauer, Belmont, and Douglass McManigill, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1989, Ser. No. 346,428
Int. Cl.[5] G01N *27/26*, *27/447*
U.S. Cl. 204—180.1 **8 Claims**



1. A method wherein for injecting a sample into separation column, said method comprising the steps of:

inserting an inlet end of a capillary column into a sample solution; and

applying a vacuum to an outlet end of said column until a predetermined volume of sample solution is introduced through said inlet end, wherein said vacuum is maintained at a level between about 1 centimeter of water and 10 meters of water.

5,326,446
TREATMENT OF WATER WITH STATIC AND RADIO FREQUENCY ELECTROMAGNETIC FIELDS

Larry Binger, P.O. Box 790511, San Antonio, Tex. 78279

Filed Jul. 27, 1992, Ser. No. 920,610
Int. Cl.[5] C02F *1/46*
U.S. Cl. 204—305 **7 Claims**

1. An apparatus for the treatment, purification, and decontamination of water comprising:

a first electrode capable of being immersed in said water to be purified;

an electromagnetic field generator, said electromagnetic field generator capable of concurrently producing;

a first static electromagnetic bias field;

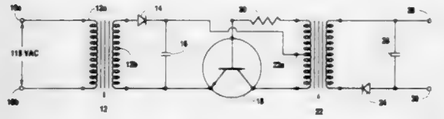
a second radio frequency electromagnetic field; and

a third low frequency electromagnetic field;

said electromagnetic field generator further capable of generating negative ions within said wate;

said electromagnetic field generator comprising:

a first step down transformer;



a second step up transformer; and

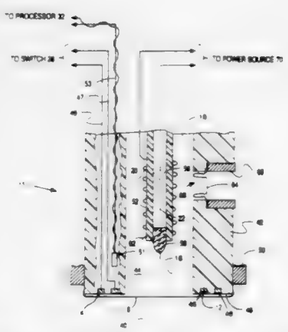
a power transistor positioned across a primary winding of said second step up transformer:

wherein a secondary winding of said step up transformer is connected to said first electrode and wherein the combination of said power transistor and said step up transformer creates an oscillator whose variable output is provided to said first electrode through said secondary winding of said step up transformer.

5,326,447
OXYGEN ANALYZER

Kenneth S. Fletcher, Rehoboth, Mass., assignor to The Foxboro Company, Foxborough, Mass.

Filed Sep. 30, 1992, Ser. No. 954,395
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—401 **47 Claims**



1. Apparatus for detecting a selected chemical in a fluid, comprising

a plurality of electrodes separated from said fluid by a membrane that is permeable to said selected chemical, each of said electrodes when energized producing a signal in response to said selected chemical in said fluid,

a power source for energizing said electrodes,

means for determining a level of said selected chemical in said fluid based on said signal produced by a first one of said electrodes, and

means for comparing said determined level with said signal produced by a second one of said electrodes, and means for detecting whether said membrane is faulty based on said comparing.

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5,326,448
METHOD FOR REDUCING THE POLARIZATION OF BIOELECTRICAL STIMULATION LEADS USING SURFACE ENHANCEMENT, AND PRODUCT MADE THEREBY
Josephus M. Otten, Miami, Fla., assignor to Telectronics Pacing Systems, Inc., Englewood, Colo.
Filed Oct. 15, 1992, Ser. No. 961,187
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—402 31 Claims

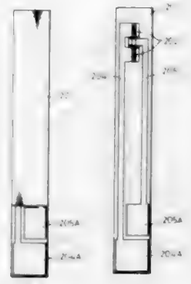
1. A method for manufacturing a metallic electrode of an implantable lead for generating bioelectrical stimulation pulses and sensing bioelectrical signals, comprising the steps of:
immersing the electrode in an electrolyte solution;
enhancing the surface of the immersed electrode by repetitively applying oscillating anodic and cathodic current pulses to the electrode at a set frequency in the range of from 1 hertz to 10 kilohertz, said anodic and cathodic current pulses each having a set amplitude in the range of from 1 milliampere to several amperes, so that a porous metallic hydrous oxide layer is formed on the surface of the immersed electrode; and
reducing the hydroxide on the surface of the immersed electrode by applying lower amplitudes reducing current pulses to the electrode, the reducing current pulses each having a set amplitude in the range of from approximately 1 microampere to approximately 100 milliamperes.

5,326,449
COMPOSITE MEMBRANE
David D. Cunningham, Lakemoor, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.
Continuation of Ser. No. 896,223, Jun. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 815,426, Dec. 31, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,105
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—403 18 Claims



1. A device for measuring the concentration of an analyte in a solution, which comprises:
(a) an electrically insulating housing which defines a first aperture, a second aperture, and a passage that extends from the first aperture through the housing to the second aperture and which is impervious to a solution that contains an analyte selectively catalyzed by an enzyme.
(b) means for conducting electrical current which extend through the first aperture into the passage and are sealed against the first aperture in a manner that prevents fluid flow; and
(c) a composite membrane located across the passage and ultrasonically welded to the housing so that the solution must pass to the second aperture through the composite membrane to contact the means for conducting electrical current, said composite membrane having
a porous membrane which is co-extensive with the composite membrane and which includes an internal surface defining micropores;
a biologically active material immobilized within the micropores of the porous membrane;
a blocking membrane having a portion which is embedded in the porous membrane within the micropores; and
a planar protecting membrane covering the enzyme membrane and ultrasonically welded to the housing.

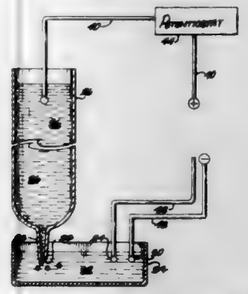
5,326,450
MINIATURIZED OXYGEN ELECTRODE
Akio Sugama; Hiroaki Suzuki, and Naomi Kojima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation-in-part of Ser. No. 850,834, Mar. 13, 1992, Pat. No. 5,281,323. This application Dec. 8, 1992, Ser. No. 987,163
Claims priority, application Japan, Mar. 20, 1991, 3-057220; May 28, 1991, 3-123787; Oct. 26, 1992, 4-287618
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—415 14 Claims



1. A miniaturized oxygen electrode device comprising:
an electrically insulating substrate;
a pair of component electrodes disposed on said insulating substrate;
an electrolyte-containing material interconnecting said component electrodes,
one of said pair of component electrodes being an oxygen reducing electrode during operation of said miniaturized oxygen electrode device; and
an oxygen gas-permeable membrane covering said electrolyte material,
said electrolyte-containing material having an elongated shape providing a length of material between said component electrodes which is effective for preventing any electroactive substance formed on either of said component electrodes during operation of said oxygen electrode device from diffusing along said material to the other of said component electrodes.

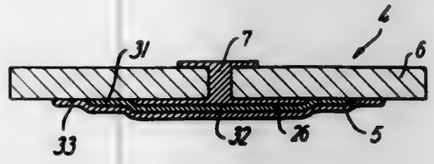
5,326,451
LIQUID ELECTRODE
Amy A. Ekechukwu, Augusta, Ga., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 6, 1993, Ser. No. 2,369
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—416 20 Claims

1. Apparatus for electrochemical analysis of ions in a solution, said apparatus comprising:
a cell, said solution contained by said cell;
an auxiliary electrode in said solution;
a reservoir which contains a polar electrolyte, feeds said polar electrtrolyte into said solution at a spaced apart distance from said auxiliary electrode, said electrolyte being immiscible in said solution; and



means for applying an electrical potential between said electrolyte and said auxiliary electrode.

5,326,452
GLASS ELECTRODE
Gjerloff Roed, Tastrup, and Niels D. Linnet, Birkerod, both of Denmark, assignors to Radiometer A/S, Copenhagen NV, Denmark
PCT No. PCT/DK91/00031, § 371 Date Oct. 6, 1992, § 102(e) Date Oct. 6, 1992, PCT Pub. No. WO91/12523, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 4, 1991, Ser. No. 917,013
Claims priority, application Denmark, Feb. 7, 1990, 0312/90
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—420 20 Claims

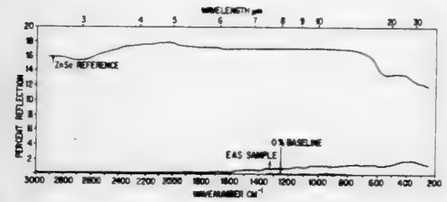


1. A glass electrode which comprises:
a membrane of ion sensitive glass which comprises a composite material comprising a matrix of ion sensitive glass and an inorganic solid filling material in a separate phase dispersed in said matrix, said filling material having a higher tensile strength than said matrix, said membrane of ion sensitive glass with said filling material having improved strength.

5,326,453
METHOD AND SOLUTION FOR ELECTRODEPOSITION OF A DENSE, REFLECTIVE TIN OR TIN-LEAD ALLOY
Duane W. Endicott, Scottsdale, Ariz.; Michael D. Gernon, North Providence, R.I., and Heng K. Yip, Selangor, Malaysia, assignors to Motorola, Inc., Schaumburg, Ill. and Technic, Inc., Cranston, R.I.
Filed Feb. 19, 1993, Ser. No. 19,729
Int. Cl.[5] C25D *3/32, 3/60*
U.S. Cl. 205—50 23 Claims

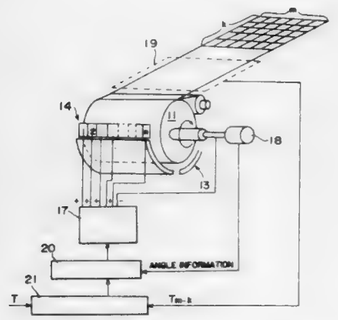
1. An electrodeposition solution for electrodepositing a tin or tin-lead alloy on a cathode, comprising:
an alkane or alkanol sulfonic acid and a tin alkane or alkanol sulfonate or a mixture of a tin and lead alkane or alkanol sulfonate;
a modified additive comprised of at least one nonionic surfactant, wherein an additive is electrolyzed prior to electrodepositing a tin or tin-lead alloy on a cathode to form the modified additive; and an aliphatic dialdehyde.

5,326,454
METHOD OF FORMING ELECTRODEPOSITED ANTI-REFLECTIVE SURFACE COATINGS
Darell E. Engelhaupt, St. Cloud, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.
Continuation of Ser. No. 92,738, Aug. 26, 1987, abandoned. This application Feb. 28, 1992, Ser. No. 844,969
Int. Cl.[5] C25D *5/10, 5/18*
U.S. Cl. 205—67 15 Claims



1. A method for application of a high specific area, anti-reflective surface to a substrate, said method comprising electrodepositing, by a bipolar pulse plating method which encompasses alternate plating and etching, a surface layer of metal exhibiting a dendritic crystal structure, and contacting said surface layer with an oxidizing solution to form an oxide layer on said surface layer to thereby form said anti-reflective surface.

5,326,455
METHOD OF PRODUCING ELECTROLYTIC COPPER FOIL AND APPARATUS FOR PRODUCING SAME
Toyoshige Kubo; Katsuhiko Fujishima, and Narito Yamamoto, all of Hitachi, Japan, assignors to Nikko Gould Foil Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 794,272, Nov. 19, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 965,115
Claims priority, application Japan, Dec. 19, 1990, 2-411764; Dec. 19, 1990, 2-411765; Dec. 19, 1990, 2-411766
Int. Cl.[5] C25D *1/04*
U.S. Cl. 205—77 25 Claims



1. A method of producing an electrolytic metallic foil comprising the steps of:
(a) providing electrolyte between a rotating cathode drum and at least one anode structure in the configuration of a sheet, the rotating cathode drum having an outer surface, the anode structure located opposite to the cathode drum outer surface and having a side facing the outer surface of the drum, the anode structure spaced from and along the

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drum so as to form a gap therebetween and having a width parallel to the rotational axis of the drum and a total length, the anode structure being defined by a main portion serving as a main anode and an end portion, the main portion defined by a first portion of the total length of the anode structure and the end portion defined by a second portion of the total length of the anode structure, the main portion being undivided widthwise, the end portion being divided widthwise into n foil thickness-uniformizing sub-anodes, the main portion and the sub-anodes being electrically insulated from each other;

(b) electrolytically depositing metal on the cathode drum outer surface by supplying electricity to the main anode at a current density D and supplying electricity to the foil thickness-uniformizing sub-anodes at current densities Dm, the current density D and densities Dm being set to attain a target foil thickness T;

(c) peeling off the resulting metallic deposition as a metallic foil from the cathode drum;

(d) measuring variations of thickness in the direction of the width of the resulting metallic foil as n thicknesses Tm corresponding to the n foil thickness-uniformizing sub-anodes, the foil width being the foil's dimension parallel to the rotational axis of the drum; and

(e) individually increasing or decreasing the quantities of electricity being supplied to the n foil thickness-uniformizing sub-anodes at the current densities Dm in response to the measured thicknesses Tm, so that the n foil thicknesses Tm are made to approach the target foil thickness T.

5,326,456

UPGRADING OF BITUMEN ASPHALTENES BY HOT WATER TREATMENT CONTAINING CARBONATE

(C-2726)

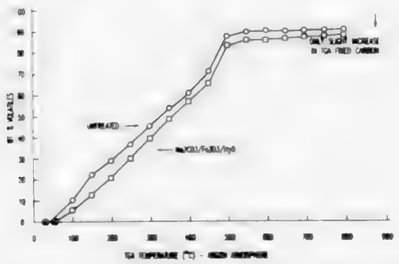
Glen B. Brons, Phillipsburg; Michael Siskin, Morristown, both of N.J., and Kazimierz O. Wrzeszczynski, Media, Pa., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 2, 1993, Ser. No. 42,032

The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.

Int. Cl.[5] **C10C** *3/00*; **C10G** *19/00*

U.S. Cl. 208—39 **16 Claims**



1. A process for producing hydrocarbons from recovered bitumen from tar sands or petroleum hydrocarbons which comprises mixing the bitumen with a deasphalting solvent to yield a deasphalted oil and a residual solid asphaltene, separating the residual solid asphaltene from the deasphalted oil, and heating the solid asphaltene fraction with superheated water containing a soluble carbonate salt at temperatures of from 300° to 425° C.

5,326,457

PROCESS FOR MAKING CARBON ELECTRODE IMPREGNATING PITCH FROM COAL TAR

John Stipanovich, Jr., Monroeville, Pa., assignor to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 6, 1992, Ser. No. 925,160

Int. Cl.[5] **C10G** *9/00, 11/00*

U.S. Cl. 208—42 **13 Claims**

1. Method of making a coal-tar pitch suitable for impregnating a carbon form comprising (1) centrifuging a coal tar at a viscosity less than 400 Saybolt Universal Seconds to remove at least 75% of the solids therein greater than 15 microns, (2) milling the centrifuged coal tar with milling media less than 5 mm in diameter, and (3) distilling the milled tar to produce a coal-tar impregnating pitch.

5,326,458

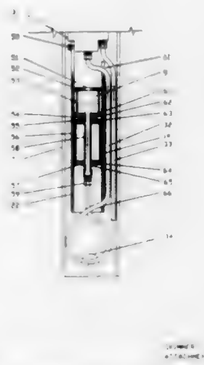
LIQUID SKIMMING SYSTEM

Alexander D. Johnson, 2008 Woolner Ave., Fairfield, Calif. 94533

Filed Oct. 30, 1992, Ser. No. 968,906

Int. Cl.[5] **C02F** *1/40*

U.S. Cl. 210—122 **14 Claims**



1. A skimmer assembly for use in selectively separating lighter than water liquid from water and for pumping at least the lighter than water liquid from the environment of the skimmer assembly to another location, said assembly comprising:

a pressurized gas operated pump assembly;

an apertured shield secured to and extending below said pump assembly; and

a float/filter assembly arranged within said shield for slidable motion therewithin, said float/filter assembly including a buoyant float member having an internal passageway coupled to said pump assembly and a filter member having an outlet coupled to said internal passageway of said float member and a filter element with a wall portion for selectively passing lighter than water liquid thereinto, said float/filter assembly having a buoyancy designed to position said filter element with said wall portion spanning a boundary between water and a lighter than water liquid,

said pump assembly including a pressure operated control logic valve for controlling the application of an externally supplied pressurized gas to said pump assembly so that said pump assembly only requires a supply of pressurized gas to operate.

5,326,459

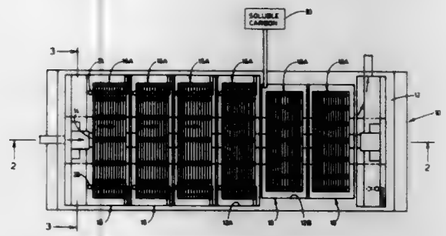
WASTEWATER TREATMENT APPARATUS

Charles R. Hlavach, Wauwatosa, and Keith A. Bergemann, Milwaukee, both of Wis., assignors to Envirex Inc., Waukesha, Wis.

Filed Nov. 12, 1992, Ser. No. 975,281

Int. Cl.[5] **C02F** *3/08*

U.S. Cl. 210—150 **20 Claims**



1. A wastewater treatment facility comprising:

a structure defining first and second tank portions;

a shaft rotatably supported by said structure;

a first biological reactor in said first tank portion and including a first rotatable biological contactor supported by said shaft and having a diameter;

a second biological reactor in said second tank portion and including a second rotatable biological contactor supported by said shaft and having a diameter greater than the diameter of said first rotating biological contactor;

means for providing a wastewater level in said first biological reactor such that said first rotatable biological contactor is completely submerged in wastewater; and

means for providing a wastewater level in said second biological reactor such that said second rotatable biological contactor is only partially submerged in wastewater.

5,326,460

PRETENSIONED MESH INSERT AND METHOD FOR PRODUCING A PRETENSIONED MESH INSERT

Robert R. Cheesman, Waukesha, and Michael D. Quick, North Prairie, both of Wis., assignors to Envirex Inc., Waukesha, Wis.

Filed Feb. 10, 1993, Ser. No. 16,005

Int. Cl.[5] **B01D** *33/333*

U.S. Cl. 210—160 **20 Claims**

1. A method of producing a pretensioned mesh insert for a traveling water screen basket comprising the steps of:

A. placing first and second panels together in face-to-face relation such that the screen panels have adjacent side edges, end edges, and first and second side margins adjacent said side edges;

B. establishing a pair of parallel fold lines on each of said margins and spaced inwardly from each of said side edges;

C. aligning said side margins of said first one of said screen panels in overlaying relation to said side margins of said second one of said screen panels;

D. securing said first and second side margins together; and

E. bending said side margins on said parallel fold lines to place one of said panels under tension and cause the other of said panels to be subjected to compressive forces sufficient to cause said compressed panel to bow relative to said panel under tension and to form longitudinal side edges on said mesh insert each having an S-shaped cross-section.



5,326,461

OIL FILTER AND HEAT EXCHANGER

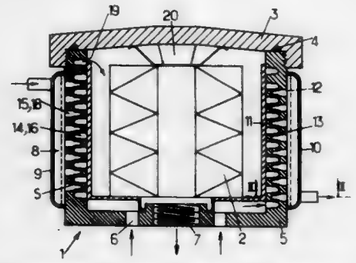
Guy Legrand, Elancourt, and Bernard Blazek, Villenave d'Ornon, both of France, assignors to Labinal, Montigny, France

Filed Dec. 7, 1992, Ser. No. 985,655

Claims priority, application France, Dec. 16, 1991, 91 15595

Int. Cl.[5] **B01D** *35/18*

U.S. Cl. 210—186 **8 Claims**



1. An oil filter for filtering a flowing oil comprising:

a filtering element for filtering the oil, said filtering element having an inlet side and an outlet side; and

a substantially cylindrical enclosed casing including

an oil inlet and an oil outlet between which said filtering element is disposed so that the oil flowing from said oil inlet to said oil outlet must pass through said filter element,

a closed top end and a closed bottom end,

a side wall between said top end and said bottom end including

a) an inner cylindrical sleeve,

b) an outer cylindrical sleeve coaxial with and surrounding said inner cylindrical sleeve so that an annular space is provided therebetween, and

c) an intermediate portion provided in the annular space and including (i) a radially inner portion in which an inner helical groove is hollowed out to define an inner circuit with said inner cylindrical sleeve and (ii) a radially outer portion in which an outer helical groove is hollowed out

to define an outer circuit with said outer cylindrical sleeve which said outer circuit is entwined with said inner circuit for mutual heat exchange, wherein (i) said inner helical groove defines an oil circuit having an upstream end in communication with said oil inlet and a downstream end in communication with the inlet side of said filtering element, (ii) the outer helical groove defines a cooling liquid circuit having a cooling liquid inlet and a cooling liquid outlet, and (iii) said radially inner portion having said inner helical groove defining said oil circuit has said inner cylindrical sleeve adjacent thereto and being in tight mutual contact therewith so that oil circulating in said oil circuit follows substantially all of said inner helical groove between said upstream end and said downstream end;

first means for providing fluid communication solely between the inlet and the upstream end of said inner helical groove;

second means for providing fluid communication solely between the downstream end of said inner helical groove and the inlet side of said filtering element; and

third means for providing fluid communication solely between the outlet side of said filtering element and said outlet.

5,326,462

GASOLINE UPGRADING PROCESS

Stuart S-S. Shih, Cherry Hill, N.J.; Kathleen M. Keville, Beaumont, Tex., and Daria N. Lissy, Glen Mills, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Aug. 13, 1992, Ser. No. 929,543

Int. Cl.[5] C10G *45/00*

U.S. Cl. 208—89 **17 Claims**

1. A process of upgrading a sulfur-containing feed fraction boiling in the gasoline boiling range which comprises:

contacting the sulfur-containing feed fraction with a hydrodesulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone with a catalyst system of acidic functionality comprising a zeolite having the topology of ZSM-5 and a constrained intermediate pore zeolite sorbing 10 to 40 mg 3-methylpentane at 90° C., 90 torr 3-methylpentane, per gram dry zeolite in the hydrogen form, to convert said portion to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product

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5,326,463

GASOLINE UPGRADING PROCESS

David L. Fletcher, Turnersville; Timothy L. Hilbert, Sewell; Michael S. Sarli, Haddonfield, and Stuart S. Shih, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Oct. 28, 1992, Ser. No. 967,322

Int. Cl.[5] C10G *45/00*

U.S. Cl. 208—89 **18 Claims**

1. A process of upgrading a sulfur-containing catalytically cracked feed fraction having a 95% point of at least about 325% and boiling in the gasoline boiling range which comprises:

contacting the sulfur-containing catalytically cracked feed fraction with a hydrodesulfurization catalyst in a hydrodesulfurization reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction high in paraffins which has a reduced sulfur content and a reduced octane number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate produce in an octane restoration reaction zone with a catalyst of acidic functionality to convert it to a produce comprising a fraction high in olefins boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product;

separating a fraction which contains a substantial amount of C_9 hydrocarbons from the product of the octane restoration reaction zone by fractionation; and

recycling at least a portion of the C_9 containing fraction to at least one of the reaction zones.

5,326,464

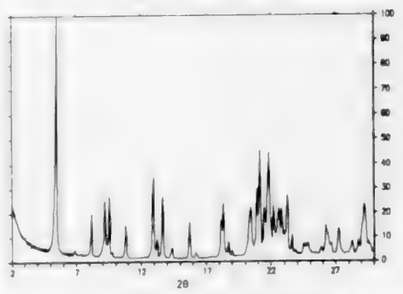
CRYSTALLINE COMPOSITION

Roland von Ballmoos, Hopewell; Cynthia T-W. Chu, Princeton Junction; Michael E. Landis, Woodbury, all of N.J., and Eric G. Derouane, Namur, Belgium, assignors to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 136,083, Dec. 21, 1987, Pat. No. 4,880,611, and a continuation-in-part of Ser. No. 117,858, Nov. 6, 1987, abandoned, which is a continuation of Ser. No. 878,754, Jun. 26, 1986, Pat. No. 4,891,197, which is a continuation-in-part of Ser. No. 642,925, Aug. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 562,673, Dec. 19, 1983, abandoned. This application Aug. 22, 1989, Ser. No. 397,076

Int. Cl.[5] C07C *4/06*; C10G *47/04*

U.S. Cl. 208—110 **15 Claims**



1. A process for converting feedstock comprising hydrocarbon compounds to product comprising hydrocarbon compounds of lower molecular weight than said feedstock hydrocarbon compounds which comprises contacting said feedstock at conditions for said conversion with catalyst comprising crystals having a framework topology after heating at 110° C. or higher giving an X-ray diffraction pattern with interplanar d-spacings at 16.4±0.2 Angstroms, 8.2±0.1 Angstroms, 6.21±0.05 Angstroms, 6.17±0.05 Angstroms, 5.48±0.05 Angstroms and 4.74±0.05 Angstroms, and without a significant interplanar d-spacing at 13.6–13.3 Angstroms.

5,326,465

PROCESS FOR THE PRODUCTION OF LPG RICH IN OLEFINS AND HIGH QUALITY GASOLINE

Huo Yongqing; Wang Zeyu; Wang Yamin, and Lu Yukang, all of Beijing, China, assignors to China Petro-Chemical Corporation and Research Institute of Petroleum Processing, Beijing, China

Filed Mar. 12, 1993, Ser. No. 30,578

Claims priority, application China, Oct. 22, 1992, 92111450.8

Int. Cl.[5] C10G *11/05, 11/18*; B01J *29/08*

U.S. Cl. 208—120 **18 Claims**

1. A process for producing LPG rich in propylene, butylenes and high octane number gasoline by catalytic conversion which comprises:

(1) contacting in a riser or a fluidized bed reactor a preheated hydrocarbon feedstock with a solid acidic catalyst which contains three zeolitic active components including rare-earth-containing high silica zeolite having the structure of a pentasil (ZRP), rare-earth-Y zeolite (REY) and high silica Y zeolite, and

(2) converting said feedstock in the reactor at a temperature in the range of from about 480° C. to about 550° C., a pressure in the range of from about 130 KPa to about 350 KPa, a weight hourly space velocity in the range of 1 to 150 hr^{-1}, and a catalyst-to-oil ratio in the range of 4 to 15.

5,326,466

DISTILLATE DEWAXING REACTOR SYSTEM INTEGRATED WITH OLEFIN UPGRADING

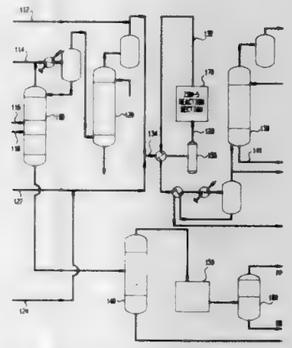
Mohsen N. Harandi, Langhorne, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 644,144, Jan. 22, 1991, Pat. No. 5,202,015. This application Apr. 12, 1993, Ser. No. 45,921

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] C10G *11/04, 11/05*

U.S. Cl. 208—120 **21 Claims**



16. An integrated process for the production and separation of C_5+ gasoline and dewaxed distillate products, comprising:

cracking hydrocarbon feedstock to provide a crackate comprising C_5–C_{12} hydrocarbons containing olefins and distillate rich in waxy n-paraffins;

fractioning said crackate and passing a portion of said light hydrocarbons containing olefins plus said distillate to a fluidized bed reaction zone containing acidic shape selective metallosilicate catalyst particles under reaction conditions sufficient to concurrently oligomerize said propene while cracking and/or isomerizing said distillate n-paraffins, whereby an effluent vapor is produced containing products comprising C_5+ gasoline and dewaxed distillate having a low pour point;

passing at least a portion of said effluent to an absorber in contact with lean oil from said cracking process main fractionator and recovering rich oil containing said products;

recycling said rich oil to said main fractionator; and separating and recovering said products.

5,326,467

RECOVERING POLYCHLORINATED BIPHENYLS FROM SOLUTION

Robert G. Shong, Houston, and Robert L. Horton, The Woodlands, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 28, 1992, Ser. No. 997,055

Int. Cl.[5] C10G *29/06*

U.S. Cl. 208—262.5 **10 Claims**

1. A method of recovering polychlorinated biphenyls from solution, which comprises:

mixing and reacting an alkali metal or alkaline earth hydroxide in glycol solution with polychlorinated biphenyls in non-aqueous solvent to form biphenyl phenoxy anions;

separating the glycol solution containing biphenyl phenoxy anions from the non-aqueous solvent; and

separating the biphenyl phenoxy anions from the glycol solution by mixing and reacting polydimethyldiallyl ammonium hydroxide with said anions to precipitate said anions from glycol solution.

5,326,468

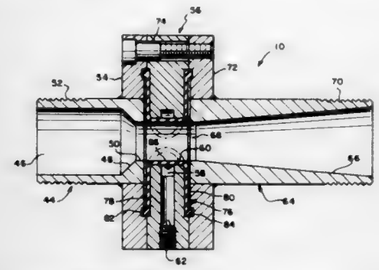
WATER REMEDIATION AND PURIFICATION METHOD AND APPARATUS

Dale W. Cox, 600 Lairport St., El Segundo, Calif. 90245

Filed Mar. 2, 1992, Ser. No. 843,389

Int. Cl.[5] C02F *9/00, 1/00, 1/32*; F15D *1/02*

U.S. Cl. 210—96.1 **3 Claims**



1. A nozzle comprising:

an inlet body having an inlet opening therethrough, said inlet body having means for connecting a pressurized stream of contaminated water thereto in communication with said inlet opening;

a throat body lying adjacent to and connected to said inlet body, said throat body having an opening therethrough, said throat body opening being in alignment with said inlet opening;

a resilient throat member attached to said throat body, said resilient throat member lying in said opening through said throat body so that said throat member defines a nozzle throat;

a fluid pressure port in said throat body, said fluid pressure port being connected between said throat member and said throat body so that pressurizing said port pressurizes said throat member to resiliently distend said throat member to reduce throat area therethrough;

an outlet body lying adjacent to and connected to said throat body, said outlet body having an outlet opening therethrough in line with said throat opening, said outlet opening being formed by a tapered expansion wall defining an expansion chamber therein, said wall being shaped to expand contaminated water passing through said throat to maintain optimum cavitation in the water as it moves through the length of said expansion chamber; and

means for sensing conditions in the contaminated water stream at the inlet and outlet of said nozzle and control means for controlling the pressure in said port to control nozzle area, said sensor means being connected to said

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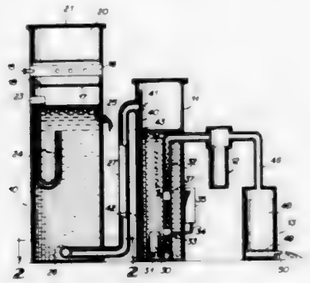
control means wherein said control means varies the nozzle throat to optimize cavitation conditions in response to the sensed conditions in said inlet and outlet of said nozzle.

5,326,469

METHOD AND APPARATUS FOR SEPARATING OIL AND WATER

Edwin H. Thompson, Norcross, Ga., assignor to Zander Filter Systems, Inc., Norcross, Ga.

Filed Sep. 14, 1992, Ser. No. 944,534
Int. Cl.[5] C02F *1/78*
U.S. Cl. 210—192 **5 Claims**



3. Oil and water separation apparatus comprising:
a settling chamber having an inlet and an outlet;
a reaction chamber having an inlet located in an upper portion of said reaction chamber through which a mixture of oil and water is introduced;
said settling chamber outlet comprising a scavenger tube providing fluid communication between a lower portion of said settling chamber and said reaction chamber inlet;
a pump means having an intake opening in fluid communication with said reaction chamber;
a reaction tube located in said reaction chamber and having an intake opening, said reaction tube extending upwardly from said reaction tube intake opening, said upwardly extending reaction tube being in fluid communication with said pump means;
ozone generation means;
conduit means for channeling ozone from said ozone generation means into said upwardly extending reaction tube;
means for filtering oil oxidized to particulate form by the ozone, said filtering means being in fluid communication with said reaction tube downstream of said conduit means for channeling ozone;
said pump means defining means for pumping said mixture of water and oil upwardly through said reaction tube containing ozone, out of said reaction chamber and through said filtering means.

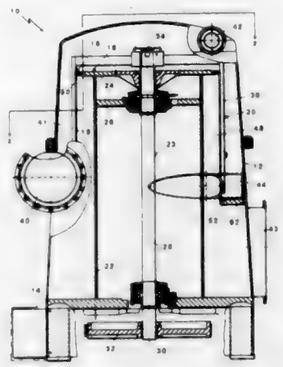
5,326,470

NON-COMPRESSIVE LOADING OF A SCREEN BASKET FOR A PULP PRESSURE SCREENING APPARATUS

Steven F. Shaw, Foxborough, Mass., assignor to Bird Escher Wyss Inc., Mansfield, Mass.

Filed Dec. 8, 1992, Ser. No. 986,757
Int. Cl.[5] B01D *33/067*
U.S. Cl. 210—232 **21 Claims**

1. A screening apparatus for separating acceptable and rejectable material from a pressurized stream of fluid pulp, the screening apparatus comprising:
a housing for receiving the pressurized stream of fluid;
a screen basket having openings sized to separate the acceptable and rejectable material traveling in the pressurized stream;
a rotor disposed concentrically with respect to the screen basket, the rotor carrying on one surface one or more pulsing elements in close proximity to the screen basket, for clearing the openings of the rejectable material;
a pair of support members rigidly secured to the housing;
screen basket position engagement elements attaching each of the support members to an opposite end portion of the screen basket,
said engagement elements, support members and end portions being configured so that said screen basket has no substantial compressive loading,



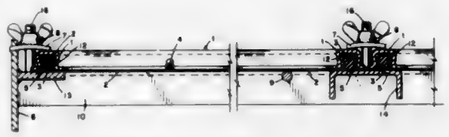
wherein the screen basket being attached to the pair of support members with the screen basket position engagement elements is not subjected to axial compressive loads, and
wherein the screen basket being disposed in the pair if support members places the screen basket in an axially tensioned condition.

5,326,471

MICROSTRAINER FILTER DECK PANEL

Kurt E. Pietzsch, Wiesbaden-Sonnenberg, Fed. Rep. of Germany, assignor to Dorr-Oliver Incorporated, Milford, Conn.

Filed Dec. 18, 1992, Ser. No. 992,979
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1992, 4200304
Int. Cl.[5] B01D *33/067*
U.S. Cl. 210—402 **4 Claims**



1. A screening drum comprising a drum having a mounting frame disposed on the periphery of said drum and a plurality of screening cartridges clamped to said frame, each of said plurality of screening cartridges comprising a cartridge frame and a flexible web of screening material stretched within said cartridge frame, said cartridge frame being formed from assembled profile rails, said assembled profile rails of said cartridge frame incorporating a groove that runs parallel to the periphery of said cartridge frame, said web of screening material having peripheral portions inserted in said groove, said groove further containing at least one cord of elastic material installed in said groove and projecting from an open side of said groove, said web of screening material being retained within said groove by said at least one cord of elastic material, said plurality of screening cartridges being clamped to said mounting frame by a plurality of clamping brackets, said mounting frame

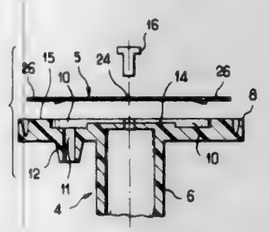
having a sealing surface, each of said plurality of clamping brackets engaging a back side of at least one of said profile rails with the open side of said groove facing said sealing surface, said cord of elastic material extending into sealing contact with said sealing surface.

5,326,472

FILTER FOR RAPID EXTRACTION OF THE AROMATIC SUBSTANCES OF A PRODUCT BY A LIQUID UNDER PRESSURE, AND AN APPARATUS EQUIPPED WITH A FILTER OF THIS TYPE

Daniel Combe, Fareins, France, assignor to SEB S. A., Selongey, France

Filed May 18, 1992, Ser. No. 885,287
Claims priority, application France, May 22, 1991, 9106149
Int. Cl.[5] B01D *27/10*
U.S. Cl. 210—455 **14 Claims**



1. A filter for the preparation of beverages by rapid extraction by a liquid under pressure of soluble aromatic substances of a product contained in a treatment vessel (3) having a bottom wall closed by the filter, said filer (5) comprising at least one orifice (17) adapted to cooperate with resilient closure means (18) which free said orifice (17) so as to provide a narrow passageway (19) when a predetermined pressure of said liquid is attained within the vessel (3), the width of said passageway being sufficiently small to ensure filtration of the liquid which has been in contact with said product, wherein the resilient closure means (18) are constituted by a plurality of tongues (18) uniformly spaced on said filter, each of said tongues being attached to the filter (5) and substantially closing-off said orifice (17).

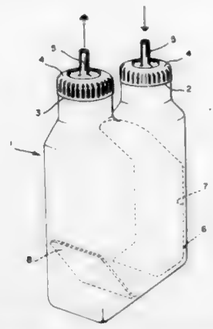
5,326,473

DEVICE FOR EXTEMPORANEOUS AND CONTINOUS PREPARATION OF DIALYSATE

Jean-Jacques Lascombes, 21, Rue d'Orleans, 31000 Toulouse, and Jean-Michel Pujo, Domaine de Montoussel, Beauville, 31140 Caraman, both of France

Filed Sep. 4, 1991, Ser. No. 754,901
Claims priority, application France, Sep. 13, 1990, 90 11578
Int. Cl.[5] B01D *24/00*
U.S. Cl. 210—474 **9 Claims**

1. Device for the extemporaneous and continuous preparation of a dialysate for use in a dialysis generator, said dialysate obtained from the dissolution of a concentrate and/or saturated solution prepared by dissolving a solid compound in treated water, said device comprising a container having a solid compound therein and having atop and bottom surfaces, said container being provided with means defining and inlet orifice for said treated water and means defining an outlet orifice for said dialysis solution, said inlet orifice having means for removable connecting a water outlet pipe in said dialysis generator, and said outlet orifice having means for removable connecting a dialysate inlet pipe in said dialysis generator, said inlet orifice for said treated water having a conduit leading said treated water to said solid compound in said container, and said conduit inside said container, said conduit formed by a portion of a wall of the container connecting the top and bottom surfaces thereof and by an inner partition thereof extending from said inlet orifice substantially parallel to said wall portion to an area near said bottom surface.



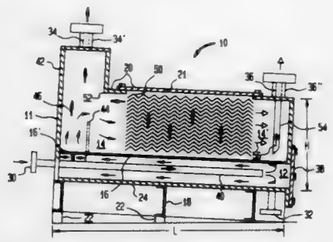
2. Device according to claim 1, wherein said inlet orifice for said treated water and outlet orifice for said dialysis solution are provided with a filter of a porosity between 1 and 100.

5,326,474

LOW FLOW FLUID SEPARATOR

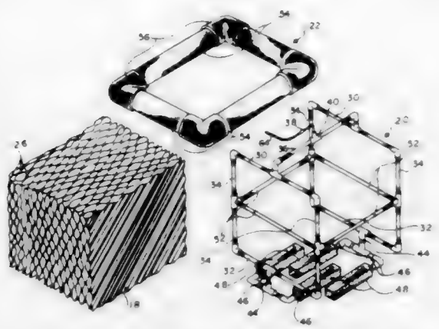
Michael K. Adams, Manassas, Va., and Thomas H. Hane, Annapolis, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 13, 1992, Ser. No. 976,033
Int. Cl.[5] C02F *1/40*
U.S. Cl. 210—519 **11 Claims**



1. A passive separator for separating at least a first fluid having a first density from a second fluid having a second density greater than said first density including
a first chamber having a first predetermined cross-sectional area,
a second chamber having a second predetermined cross-sectional area,
a conduit extending through said first chamber from a fluid inlet on a first side of said chamber and terminating near a second side of said first chamber;
said second chamber being located on top of said first chamber;
said first chamber having an opening on an upper side thru which fluids may flow upward into an enclosed passageway and into said second chamber said passageway connecting said first chamber and said second chamber, and
means atop said passageway for collecting a first fraction of said first fluid from said second chamber.

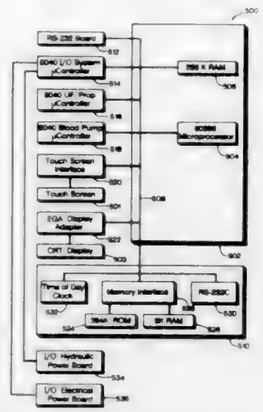
5,326,475
METHOD FOR AERATED BIOFILTRATION
Dana M. Kent, 4509 Hickory Creek La., Brandon, Fla. 33511
Continuation-in-part of Ser. No. 490,834, Mar. 8, 1990, Pat. No. 5,122,266. This application Jun. 15, 1992, Ser. No. 898,334
Int. Cl.[5] C02F *3/06*
U.S. Cl. 210—615 11 Claims



1. A method for removing contaminants from a body of water comprising in combination the steps of:
positioning a filter means in the water, the filter means having pluralities of separate tubular passages extending offset from the vertical therethrough with surfaces providing high surface area per volume;
supporting biological agents on the surfaces for removing contaminants from water to be cleaned as it flows through the filter means;
shielding the biological agents along the majority of the extent of the passages from deterioration by solar energy through the tubular shape of the passages and their orientation from the vertical;
locating the filter means spaced from the bottom of the water to be cleaned;
providing a fluid flow means with a discharge component;
effecting the flow of a pressurized fluid by the fluid flow means, from the discharge component, through the water, and across the surfaces in circuitous paths for the removing of contaminants from the water; and
positioning the discharge component beneath the filter means and above the bottom of the water for directing the flow of water upwardly through the filter means.

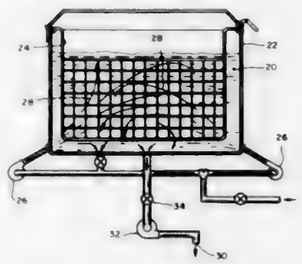
5,326,476
METHOD AND APPARATUS FOR KIDNEY DIALYSIS USING MACHINE WITH PROGRAMMABLE MEMORY
Jeffrey B. Grogan, West Linn, Oreg.; Thore Falkvall, Helsingborg, Sweden; Harley D. Johnson, Portland, Oreg.; Thomas D. Kelly, Portland, Oreg., and Alan G. Wolfe, Portland, Oreg., assignors to Althin Medical, Inc., Miami, Fla.
Continuation-in-part of Ser. No. 688,174, Apr. 19, 1991, Pat. No. 5,247,434. This application Nov. 12, 1992, Ser. No. 975,523
Int. Cl.[5] B01D *61/32*
U.S. Cl. 210—646 7 Claims

1. A method of providing operational instructions to a hemodialysis machine, having a programmable memory and having ultrafiltration capability, so as to enable the machine to perform ultrafiltration of fluid from a patient according to a time-variable ultrafiltration profile, the method comprising:
(a) entering into the programmable memory a prescribed time for dialysis;
(b) entering into the programmable memory a target ultrafiltration volume of fluid to be removed from the patient;
(c) entering into the programmable memory a proposed ultrafiltration profile being representable as a plot of coordinates on an ultrafiltration rate axis and a time axis and defining a profile ultrafiltration volume; and
(d) shifting the proposed ultrafiltration profile along the ultrafiltration rate axis to the degree necessary to make the



profile ultrafiltration volume equal to the target ultrafiltration volume, so as to allow the hemodialysis machine to achieve, while ultrafiltrating the fluid according to the shifted ultrafiltration profile, the entered target ultrafiltration volume within the entered prescribed time.

5,326,477
PROCESS FOR DIGESTING SOLID WASTE
Clark R. Fugua, Roanoke, Va.; Ronald L. Thomas, and Charles H. Gooding, both of Clemson, S.C., assignors to Bio-Sep, Inc., Clemson, S.C.
Continuation-in-part of Ser. No. 520,102, May 7, 1990, abandoned. This application Mar. 11, 1992, Ser. No. 849,469
Int. Cl.[5] C02F *3/34*
U.S. Cl. 210—632 54 Claims

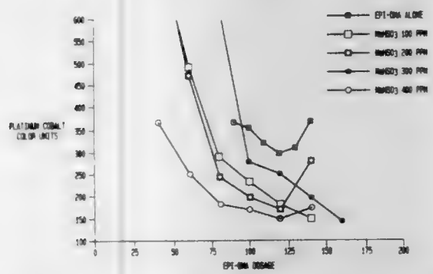


1. A process for disposing of solid waste such as absorbent pads which include a non-biodegradable plastic shell and an absorbent substantially cellulosic fibrous substrate secured to said plastic shell, wherein said process comprises:
separating said substrate from said plastic shell by agitating said wastes in an enzymatic digestive solution, generally without bacterial fermentation from added microorganisms, for a controlled time period to degrade and convert said substrate into a liquefied waste;
discharging said liquefied waste; and
recovering said non-biodegradable shell as a residual solid waste.

5,326,478
METHODS FOR CONTROLLING SCALE FORMATION IN AQUEOUS SYSTEMS
Libardo A. Perez, Morrisville; Donald T. Freese, Glenside; Judith B. Rockett, Perkasie, and William S. Carey, Ridley Park, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed Jul. 29, 1993, Ser. No. 99,674
Int. Cl.[5] C02F *5/10*
U.S. Cl. 210—698 2 Claims

1. A method of controlling the formation and deposition of scale forming salts in a circulating aqueous system comprising adding into said aqueous system a substoichiometric amount sufficient for the purpose of a treatment solution comprising a polyepoxysuccinic acid in combination with agaric acid, wherein said treatment solution has a ratio of polyepoxysuccinic acid to agaric acid of from about 100 to 1 to about 1 to 1.

5,326,479
TREATMENT OF PULP AND PAPER WASTEWATER WITH REDUCING AGENT AND A POLYMER FOR COLOR REMOVAL
Jawed M. Sarkar, Naperville; Amy M. Tseng, Woodbridge, and John H. Collins, Bloomingdale, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.
Filed Sep. 1, 1993, Ser. No. 115,469
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—719 7 Claims



1. A process for removing color from a pulp and paper wastewater containing aldehyde and keto-enol color producing functional groups which comprise the following steps:
(a) treating said wastewater with an effective amount of reducing agent selected from the group consisting of sodium bisulfite, sodium hydrosulfite and sodium persulfate to convert at least some of the color producing functional groups of said wastewater to anionically charged addition products, wherein the pH of the wasterwater is in the range between about 6.0 to about 11.0;
(b) treating said wastewater subsequent to step (a) with a cationic polymer which is capable of removing color including said addition products from said wastewater, wherein said cationic polymer is at least one polymer and/or copolymer selected from the group consisting of an epichlorohydrin-dimethylamine polymer, polyethyleneimines, polydiallyldimethylammonium chloride, copolymers of polydiallyldimethylammonium chloride and acrylamide, and an ethylenedichloride-ammonia polymer; and
(c) removing said color including said addition products from said wastewater.

5,326,480
TWO COMPONENT AGENT FOR COAGULATING PAINTS, WAXES, AND COATING COMPOSITIONS
Juergen Geke, Duesseldorf; Ragnar Margeit, Duisburg, and Hans Fehr, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
PCT No. PCT/EP91/01461, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO92/03510, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 3, 1991, Ser. No. 971,814
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1990, 4025730
Int. Cl.[5] C02F *1/54*; B03D *3/02*
U.S. Cl. 210—730 19 Claims

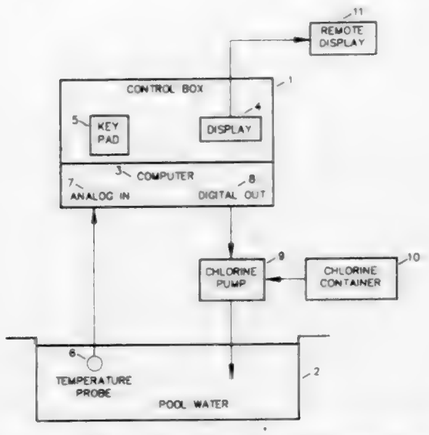
1. A two-component paint coagulant consisting of components A and B, wherein:
component A consists essentially of:
(A.a) from 50 to 100% by weight of at least one aluminosilicate,
(A.b) from 0 to 30% by weight of at least one silicic acid, an alkali metal or alkaline earth metal salt thereof, or a mixture of at least one silicic acid with an alkali metal or alkaline earth metal salt thereof,
(A.c) from 0 to 30% by weight of an alkaline earth metal salt,
(A.d) from 0 to 20% by weight of a cyanamide, dicyandiamide, calcium cyanamide, or a mixture of one or more thereof,
(A.e) from 0 to 10% by weight of a protonated or cationically modified polyethyleneimine,
(A.f) from 0 to 10% by weight of emulsifiers/dispersing aids,
(A.g) from 0 to 10% by weight of a component selected from the group consisting of amines and alkanolamines and mixtures thereof,
(A.h) from 0 to 10% by weight of one of
(A.h.1) a component selected from the group consisting of mixed formals, mixed ethers, and mixtures thereof, and
(A.h.2) a component selected from the group consisting of phosphates and additional silicates, and, optionally,
(A.i) antimicrobials and biocides, and, optionally,
(A.j) acids to adjust pH, and, optionally,
(A.k) corrosion inhibitors, and, optionally,
(A.l) antifoam agents;
and component B consists essentially of:
(B.a) from 5 to 30% by weight of waxes, synthetic waxes, wax analogues, or mixture of two or more thereof,
(B.b) from 70 to 95% by weight of water,
(B.c) from 0 to 20% by weight of a cyanamide, dicyandiamide, calcium cyanamide, or mixture of two or more thereof,
(B.d) from 0 to 10% by weight of a protonated or cationically modified polyethyleneimine,
(B.e) from 0 to 10% by weight of emulsifiers/dispersing aids,
(B.f) from 0 to 10% by weight of a component selected from the group consisting of amines and alkanolamines and mixtures thereof,
(B.g) from 0 to 10% by weight of one or
(B.g.1) a component selected from the group consisting of mixed formals, mixed ethers, and mixtures thereof, and
(B.g.2) a component selected from the group consisting of phosphates and additional silicates, and, optionally,
(B.h) antimicrobials and biocides, and, optionally,
(B.i) acids to adjust pH, and, optionally,
(B.j) corrosion inhibitors, and, optionally,
(B.k) antifoam agents.

5,326,481

METHOD FOR AUTOMATIC DISPENSING OF HYDROCHLORINE IN SWIMMING POOL WATER

S. Tomas Alwerud, 8031 La Jolla Scenic Dr., La Jolla, Calif. 92037

Filed Sep. 11, 1992, Ser. No. 943,682
Int. Cl.[5] C02F *1/76*
U.S. Cl. 210—742 **1 Claim**



1. A method for controlling the addition of chlorine to water in an existing swimming pool comprising:

(a) calibrating a chlorine dispensing device to determine the volume of chlorine dispensed per unit of time;

(b) measuring the temperature of the pool water;

(c) determining, based on said measured temperature, a hypothetical amount of chlorine necessary to be dispensed into a hypothetical pool having a fixed volume to maintain the level of chlorine in the water of said hypothetical pool within the range of from about 1.0 to about 2.0 ppm at said measured temperature;

(d) determining an actual amount of chlorine to be dispensed into said existing pool based on said hypothetical amount of chlorine determined in step (c) above by multiplying said hypothetical amount by a quota number which consists essentially of the ratio of the actual volume of the existing pool to the fixed volume of the hypothetical pool, thereby determining an actual amount of chlorine effective to maintain the chlorine level in the water of said existing pool at a desired level within the range of from about 1.0 to about 2.0 ppm;

(e) allowing the pump, based on said calibrated value of volume of chlorine dispensed per unit of time, to run for a length of time to dispense said actual amount of chlorine determined in step (d) above into the water of said existing pool;

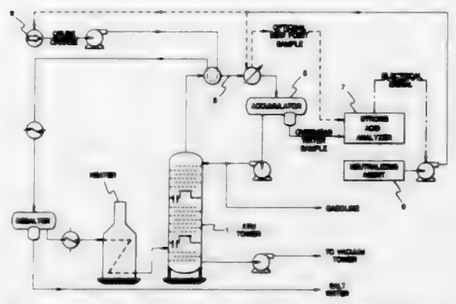
(f) measuring the chlorine level of the water in said existing pool after dispensing said actual amount of chlorine and adjusting said quota number higher or lower in proportion to the ratio of the desired level of chlorine to the measured level of chlorine, and accordingly adjusting the dispensing time of the pump based on said ratio; wherein said hypothetical amount of chlorine based on temperature, said calibrated volume of chlorine dispensed per unit of time, and said quota number are store in computer memory and said temperature is automatically measured and inputted into said computer and wherein said computer determines the amount of time for which the calibrated pump is to be run to dispense a desired amount of chlorine.

5,326,482

ON-LINE ACID MONITOR AND NEUTRALIZER FEED CONTROL OF THE OVERHEAD WATER IN OIL REFINERIES

Ronald B. Lessard, Elmhurst, Ill., and Paul Fearnside, Sugar Land, Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 867,890, Apr. 13, 1992. This application Oct. 21, 1993, Ser. No. 141,119
Int. Cl.[5] C02F *1/66*
U.S. Cl. 210—743 **5 Claims**



1. A method for controlling the acidity of overhead water in an oil refinery which includes a crude oil charge and a distillation tower having an overhead vapor line which produces a dew point condensate, comprising the steps of:

collecting a sample of said dew point condensate from said overhead vapor line,

automatically titrating said sample to detect the concentration of acid in said sample;

generating a signal responsive to the detected concentration of acid; and

dispensing a neutralizing agent into said crude oil charge or said overhead vapor line at a rate responsive to said signal to control said acidity.

5,326,483

METHOD OF MAKING CLEAR SHAMPOO PRODUCTS

Daniel J. Halloran, and Judith M. Vincent, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 19, 1993, Ser. No. 19,938
Int. Cl.[5] C11D *1/39, 1/835, 3/02*
U.S. Cl. 252—174.15 **7 Claims**

1. A method of making a clear shampoo composition containing a silicone cationic emulsion comprising the steps of (i) forming an aqueous solution of an anionic surfactant, the anionic surfactant being present in an amount of from 3 to 30 percent by weight on a solids basis, based on the total weight of the clear shampoo composition; (ii) adding to the aqueous solution at a temperature of from 5 to 30 degrees Centigrade from 0.25 to 25 percent by weight based on the total weight of the clear shampoo composition of a silicone containing cationic emulsion which is an amine substituted siloxane polymer having reactive silanol functionality that is stabilized in the form of an aqueous emulsion by means of a cationic surfactant and a nonionic surfactant, the siloxane polymer being present in the caticnic emulsion in the form of particles having a diameter of at least about one hundred nanometers; (iii) mixing the solution containing the cationic emulsion at a rate sufficient to disperse the siloxane polymer, but at a rate less than that which would cause the solution to foam or become aerated; (iv) adjusting the pH of the solution to a value of from 4 to 7; (v) and adding an electrolyte to the solution in an amount sufficient to provide a clear shampoo composition having a viscosity of from 1,000 to 15,000 centistokes; the total water content

of the clear shampoo composition being from 50 to 97 percent by weight.

5,326,484

MONODISPERSE SINGLE AND DOUBLE EMULSIONS AND METHOD OF PRODUCING SAME

Tadao Nakashima; Masataka Shimizu, and Masato Kukizaki, all of Miyazaki, Japan, assignors to Miyazaki-Ken, Japan

Filed Jun. 29, 1992, Ser. No. 906,282
Int. Cl.[5] B01J *13/00*
U.S. Cl. 252—314 **5 Claims**

1. A method of producing an o/w type monodisperse single emulsion which comprises introducing under pressure a dispersed phase-forming oily liquid into an aqueous continuous phase liquid containing a cationic surfactant through a hydrophilic porous glass membrane positively charged by surface treatment and having pores uniform in size at a pressure 1 to 10 times the critical pressure.

5,326,485

LOW ASH LUBRICATING OIL COMPOSITIONS

Michelle M. Cervenka, Belleville, Ill., and Marsha J. Lester, St. Louis, Mo., assignors to Ethyl Petroleum Additives, Inc., Richmond, Va.

Continuation of Ser. No. 825,603, Jan. 24, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,454
Int. Cl.[5] C10M *137/06*
U.S. Cl. 252—32.7 E **25 Claims**

1. An oil-based lubricant or functional fluid composition which comprises a major proportion of at least one base oil of lubrication viscosity, and minor/amounts of:

a) about 0.2 to about 2 wt. % of at least one overbased zinc dialkyl dithiophosphate characterized in that (i) each of the alkyl groups is a primary alkyl group containing from 6 to 10 carbon atoms, (ii) the over based to neutral ratio of said dithiophosphate is 0.96 or above as determined by ^{31}P nmr, (iii) the integrated ^{31}P nmr spectrum of said dithiophosphate shows less than about 0.25 area percent phosphorus at about 80 ppm, (iv) the integrated ^{31}P nmr spectrum of said dithiophosphate shows essentially no phosphate species at about 5 to about 15 ppm, and (v) said dithiophosphate exhibits a copper weight loss in ASTM Test Method D2619 of 0.70 maximum;

b) at least one hindered phenolic antioxidant or at least one aromatic secondary amine antioxidant; and

c) at least one overbased alkaline earth metal sulfurized alkyl phenate having a TBN as determined by ASTM Test Method D2896 of at least 200 or at least one alkaline earth metal alkyl aromatic sulfonate.

5,326,486

LUBRICATING OIL COMPOSITION

Kinya Mizui; Kazuyuki Watanabe; Hidenori Kaya, all of Ichihara; Takashi Hayashi, Waki; Kenji Shimamoto, Waki; Masahide Tanaka, Waki, and Kazunori Takahata, Waki, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 950,838
Claims priority, application Japan, Sep. 27, 1991, 3-249198; Jun. 15, 1992, 4-154755
Int. Cl.[5] C10M *105/48*
U.S. Cl. 252—46.006 **15 Claims**

1. A lubricating oil composition comprising

(1) 100 parts by weight of a polycarbonate represented by the following general formula (I),

(2) 0.0001–5 parts by weight of each of a phenol compound (b) and a sulfur compound (c), and

(3) 0–5 parts by weight of a triester phosphite compound (e) and/or a triester phosphate compound (f),

$$\frac{R_1OCOO((R_2O)_pCOO)_nR_3}{[R_1OCOO[(R_2O)_pCOO]_nR_3]} \quad (I)$$

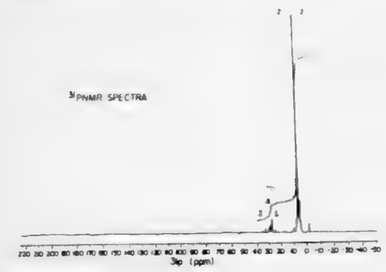
wherein R_1 and R_3 each are independently a hydrocarbon group having not more than 30 carbon atoms or a hydrocarbon group containing an ether bond and having 2 to 30 carbon atoms, R_2 is an alkylene group having 2 to 24 carbon atoms, p is an integer of 1 to 100, and n is an integer of 1 to 10.

5,326,487

MIXED PHOSPHOROUS- AND SULFUR- CONTAINING REACTION PRODUCTS USEFUL IN POWER TRANSMITTING COMPOSITIONS

Jack Ryer, East Brunswick; Antonio Gutierrez, Mercerville; James S. Puckace, Freehold; Raymond F. Watts, Long Valley; Stanley J. Brois, Westfield, and Craig W. Gleason, Scotch Plains, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 370,315, Jun. 22, 1989, Pat. No. 5,242,612, which is a continuation-in-part of Ser. No. 210,831, Jun. 24, 1988, abandoned. This application Aug. 10, 1992, Ser. No. 927,563
Int. Cl.[5] C10M *135/20, 137/00*
U.S. Cl. 252—46.7 **18 Claims**



1. A composition comprising reaction product of a reaction mixture comprising:

(1) at least one beta-hydroxy thioether reactant represented by the formula:

$$R—(SCH_2CH_2OH)_x \quad I$$

wherein R represents an unsubstituted or substituted hydrocarbyl group and wherein x is a number from 1 to about 3 and which identifies the number of —SCH_2CH_2OH groups attached to R;

(2) an amount of phosphorous-containing reactant selected from the group consisting of dihydrocarbyl hydrogen phosphite, trihydrocarbyl phosphite, and mixtures thereof, sufficient to provide at least about ten mole percent of phosphorous containing reactant based on the total moles of reactants in said reaction mixture; and optionally

(3) nucleophilic reactant containing at least one reactive hydroxy group and being free from any reactive mercapto or —SCH_2CH_2OH groups;

wherein said reaction mixture is admixed in a manner and under conditions sufficient to form a one or two phase mixture comprising:

(i) non-phosphorous containing compounds having within their structure at least one group represented by the formula:

$$—S—CH_2CH_2—Q— \quad I''$$

wherein Q is independently selected from the group consisting of oxygen or sulfur, said Q constituting a portion of the residue derived from: (1) beta-hydroxy

thioether reactant, (2) the hydrocarbyl portion of the organic phosphite reactant, (3) when present, the nucleophilic reactant, and (4) mixtures of (1) to (3); and wherein the remainder of Structure I", exclusive of Q, contains residue of beta-hydroxy thioether reactant; and;

(ii) phosphorous containing compounds comprising phosphorous acid and organic phosphites having within their structure at least one group represented by the formula

$$R—SCH_2CH_2O— \quad (I')$$

bonded directly to the phosphorous atom of the organic phosphite said $R—SCH_2CH_2O—$ group representing a residue of beta-hydroxy thioether.

5,326,488

MANNICH REACTION PRODUCT AND PROCESS FOR PRODUCING THE SAME AND USE OF THE PRODUCT

Tomiyasu Minokami; Hiroaki Koshima; Hirotaka Yamasaki, all of Sodegaura, and Masahisa Gotoh, Ichihara, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

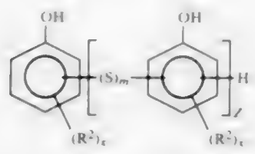
Filed Feb. 11, 1993, Ser. No. 16,232

Claims priority, application Japan, Feb. 18, 1992, 4-030840

Int. Cl.[5] C10M *135/30, 151/04*

U.S. Cl. 252—47.5 **12 Claims**

1. A Mannich reaction product which is obtained by reacting an alkenyl succinic acid or an alkenyl succinic anhydride with a polyamine containing at least one primary amino group and at least one further primary or secondary amino group; an aldehyde; and a sulfurized alkylphenol represented by the general formula (I)



(I)

wherein R^2 indicates an alkyl group having 4 to 25 carbon atoms, m indicates an integer of 1 to 8, x indicates 1 or 2, and z indicates an integer of 1 to 9

5,326,489

ELECTRORHEOLOGICAL FLUIDS

Yoshinobu Asako, Tsuchiura; Satoru Ono, Tsukuba; Minoru Aoki, Tsukuba; Izubo Okada, Tsukuba; Minoru Kobayashi, Tsukuba, and Ryuji Aizawa, Tsukuba, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Continuation of Ser. No. 731,491, Jul. 17, 1991, abandoned. This application Nov. 27, 1992, Ser. No. 982,627

Claims priority, application Japan, Jul. 20, 1990, 2-190635

Int. Cl.[5] C10M *169/04, 171/00*

U.S. Cl. 252—78.1 **23 Claims**

1. An electrorheological fluid composition comprising a dispersion of disperse-phase particles formed of a sulfonated polymer possessing aromatic rings substituted with sulfonic acid groups in an electrically non-conducting oil which electrorheological fluid is characterized by the fact that the number of sulfonic acid groups in said sulfonated polymer forming said disperse-phase particles exceeds the number of aromatic rings present in said sulfonated polymer, the ratio of said disperse-phase particles to said electrically non-conducting oil is 50–500 to 100 in parts by weight, said disperse-phase particles having an average particle diameter in the range of from 0.1 to 100 μm, the ratio between the number of sulfonic acid groups to those of the aromatic groups being 105 to 200 per 100 aromatic rings present in the sulfonated polymer and the water content in the dispersed phase is 1.0 to 10 parts by weight, based on 100 parts by weight of the sulfonated polymer.

5,326,490

SURFACE TENSION SULFURIC ACID COMPOSITION

Kiyoto Mori, Soka; Takao Shihoya, Tokyo, and Hisao Hara, deceased, late of Toyama, all of Japan by Misako Hara and Eriko Hara, legal heirs , assignors to Kanto Kagaku Kabushiki Kaisha and Nissan Chemical Industries, Ltd., both of Tokyo, Japan

PCT No. PCT/JP90/00345, § 371 Date Nov. 15, 1991, § 102(e) Date Nov. 15, 1991, PCT Pub. No. WO90/10730, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 15, 1990, Ser. No. 602,223

Claims priority, application Japan, Mar. 15, 1989, 1-60765

Int. Cl.[5] C09K *13/04, 13/08;* **H01L** *21/00, 21/02*

U.S. Cl. 252—79.2 **5 Claims**

1. A low surface tension sulfuric acid composition comprising sulfuric acid and a fluorine-type surface-active agent comprising a fluoroalkylsulfonamide compound of the general formula

$$R^1SO_2NR^2C_2H_4OA \quad (I)$$

wherein R^1 stands for a fluoroalkyl group, R^2 for a hydrogen atom or a lower alkyl group and A for H or SO^3H.

5,326,491

DETERGENTS CONTAINING CERTAIN SULFONATED DIBENZOFURANYLBIPHENYLS

Kurt Weber, Basel, Switzerland; Claude Eckhardt, Riedisheim, France, and Hans R. Meyer, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

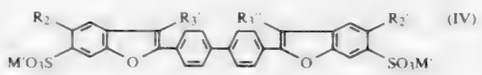
Continuation-in-part of Ser. No. 827,523, Jan. 28, 1992, abandoned, which is a continuation of Ser. No. 514,446, Apr. 25, 1990, abandoned. This application Apr. 30, 1993, Ser. No. 55,643

Claims priority, application Switzerland, Apr. 28, 1989, 1629/89

Int. Cl.[5] C11D *7/34, 7/54, 7/60*

U.S. Cl. 252—95 **5 Claims**

1. A detergent which is stable on storage and contains 0.5 to 30% of a peracid or a salt thereof or mixtures of peracids or salts thereof and also 0.03 to 0.8% of a fluorescent whitening agent or a mixture of fluorescent whitening agents, in which the fluorescent whitening agent consists essentially of a bisbenzofuranylbiphenyl compound of the formula (IV)



(IV)

in which R_2' is methyl, ethyl, chlorine or methoxy, R_3'' is methyl, ethyl, chlorine or phenyl and M' is hydrogen or sodium.

5,326,492

DISINFECTANT MIXTURE CONTAINING WATER SOLUBLE LUBRICATING AND CLEANING AGENTS AND METHOD

Robert H. Hodam, Jr., Sacramento, Calif., assignor to Medical Polymers, Inc., Austin, Tex.

Filed Nov. 18, 1991, Ser. No. 793,596

Int. Cl.[5] C11D *3/48;* **A01N** *25/34, 35/02*

U.S. Cl. 252—106 **13 Claims**

1. A liquid disinfectant mixture consisting essentially of:

from about 0.1 to about 7.5 weight percent, based on total weight of the composition, of a water-based polymer serving as a water-based lubricant, wherein said polymer is selected from the group consisting of polyethylene oxide, polyacrylamides, water soluble liquid silicone compounds and water soluble fluoridated compounds;

from about 1.0 to about 10 weight percent, based on total weight of the composition, of a disinfectant wherein said disinfectant is selected from the group consisting of phenols, alcohols, formaldehyde, glutaraldehyde, chlorehexidine, isophors and providone-iodine; and

water

5,326,493

SOLID DETERGENT COMPOSITION BASED ON N-ACYL SODIUM SALT

Masahiro Takahata; Toshio Nozaki, both of Chiba, and Koichi Yoshimura, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Dec. 3, 1992, Ser. No. 985,256

Claims priority, application Japan, Dec. 4, 1991, 3-320697

Int. Cl.[5] C11D *17/02, 1/10, 3/33*

U.S. Cl. 252—117 **4 Claims**

1. A solid detergent composition which comprises the following components (A) and (B):

(A) an N-acyl compound represented by the following formula (1):

$$R^1CONH(CH_2)_2COONa \quad (1)$$

wherein

R^1CO represents a straight chain acyl group having 10 to 16 carbon atoms; and

(B) one or more compounds selected from the group consisting of a higher fatty acid and a mixture of a higher fatty acid and a higher alcohol,

wherein said component (A) is present in an amount of from 50 to 95% by weight and said component (B) is present in an amount of from 5 to 50% by weight.

5,326,494

LIQUID PERSALT BLEACH COMPOSITIONS CONTAINING TARTRAZINE AS THE STABILIZER

William G. Woods, Riverside, Calif., assignor to U.S. Borax Inc., Valencia, Calif.

Division of Ser. No. 609,272, Nov. 5, 1990, Pat. No. 5,180,517. This application Sep. 30, 1992, Ser. No. 953,909

Int. Cl.[5] C01B *15/037*

U.S. Cl. 252—186.27 **11 Claims**

1. A stable, concentrated aqueous persalt bleach solution having a pH of a persalt selected from the group consisting of about 5 to 8 comprising about 5 to 30% of sodium perborate and sodium percarbonate, about 3 to 30% solubilizing agent, about 0.001 to 1.0% of an azo stabilizing agent selected to be tartrazine, and the balance of said solution is water, wherein all percentages are by weight.

5,326,495

TETRASUBSTITUTED METHANES HAVING LIQUID-CRYSTALLINE PROPERTIES

Rudolf Eidenschink, Gaustrasse, Fed. Rep. of Germany, assignor to Consortium für elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

PCT No. PCT/EP91/00681, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO91/16295, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 10, 1991, Ser. No. 934,539

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1990, 4011812

Int. Cl.[5] C09K *19/52, 19/34, 19/30, 19/12*

U.S. Cl. 252—299.01 **18 Claims**

1. A methane derivative of the general formula

$$C[—Sp—M—R]_4 \quad (I)$$

in which the radicals —Sp—M—R can be identical or different and where

Sp is, in each case independently of the other cases, is an alkylene or alkenylene radical having up to 12 carbon atoms which is unsubstituted or monosubstituted by halogen, —CN or $—CF_3$ and in which, in addition, one or two non-adjacent CH_2 groups can be replaced by —O—, —CO—, —COO—, —OOC—, —CONH— or —O-COO—, or is a single bond;

M is a mesogenic group of the general formula $—A—(Z_1—A_1)_m—(Z_2—A_2)_n—$ in which

Z_1 and Z_2 are each, independently of one another, $—CH_2C-H_2—$, —COO—, —OOC—, $—OCH_2—$, $CH_2O—$, —C≡C—, —N=N— or a single bond; A, A_1 and A_2 are each, independently of one another, a 1,4- phenylene radical which is unsubstituted or monosubstituted to tetrasubstituted by fluorine or chlorine and in which, in addition, one or two CH groups can be replaced by N, or are a 1,4-cyclohexylene radical which has, in particular, a trans-configuration and in which, in addition, one or two non-adjacent CH_2 groups can be replaced by —O—, or are a piperidine-1,4-diyl radical or a 1,4-bicyclo[2.2.2]octylene radical; and

n and m are each, independently of one another, 0 or 1, with the proviso that m or n is 1 at least once in one of the four substituents of the methane; and

R is hydrogen, halogen, —CN, $—CF_3$, $—OCF_3$, $—NO_2$, $—N(CH_3)_2$, a straight-chain or branched alkyl or alkenyl radical having up to 12 carbon atoms which is unsubstituted or monosubstituted or polysubstituted by —CN, $—NH_2$, $—CF_3$ or haloogen and in which one or more non-adjacent CH_2 groups can be replaced by the radicals —O—, —CO—, —COO—, —OOC— or —OCOO—.

5,326,496

COMPENSATOR FOR LIQUID CRYSTAL DISPLAY

Shigeki Iida; Takehiro Toyooka, both of Yokohama; Yasuyuki Takiguchi, and Takamichi Enomoto, both of Ota, all of Japan, assignors to Nippon Oil Company Limited and Ricoh Company Limited, Tokyo, Japan

Continuation of Ser. No. 6,666, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 470,100, Jan. 25, 1990, abandoned. This application Nov. 8, 1993, Ser. No. 149,002

Claims priority, application Japan, Jan. 26, 1989, 1-15099; Jun. 15, 1989, 1-150559

Int. Cl.[5] C09K *19/52, 19/56;* **G02F** *1/13*

U.S. Cl. 252—299.01 **11 Claims**



1. A compensator for liquid crystal display, comprising:

a light transmitting base;

an alignment layer formed on said base; and

a film formed on said alignment layer by a liquid crystalline polymer which exhibits a twisted nematic orientation in the state of liquid crystal and which assumes the state of glass at a temperature below the liquid crystal transition point thereof, said liquid crystalline polymer being

(1)

(a) an optically active main chain type liquid crystalline polymer selected from the group consisting of polyesters, polyamides, polycarbonates and polyesterimides, or

(b) an optically active side chain type liquid crystalline polymer selected from the group consisting of polyacrylates, polymethacrylates and polysiloxanes, or

(2)

(a) a main chain type liquid crystalline polymer selected from the group consisting of polyesters, polyamides, polycarbonates and polyesterimides, in combination with an optically active compound, or

(b) a side chain type liquid crystalline polymer selected from the group consisting of polyacrylates, polymethacrylates and polysiloxanes, in combination with an optically active compound.

5,326,497

NITROGEN HETEROCYCLES AND LIQUID CRYSTALLINE MIXTURES CONTAINING THEM

Richard Buchecker, Zurich; Stephen Kelly, Möhlin, and Martin Schadt, Seltisberg, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 2, 1992, Ser. No. 955,633

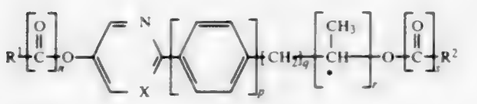
Claims priority, application Switzerland, Oct. 16, 1991, 3034/91; Aug. 28, 1992, 2679/92

Int. Cl.[5] **C09K** *19/30, 19/12;* **C07D** *239/02, 213/62*

U.S. Cl. 252—299.61 **5 Claims**

1. A compound of the formula

I



wherein

R^1 is C_{5-12}-alkyl or C_{5-12}-alkenyl;

R^2 is C_{1-9}-alkyl or C_{2-9}-alkenyl; provided that at least one of groups R^1 and R^2 is alkenyl;

X is a CH group or nitrogen;

n is either 0 or 1;

q is a whole number between 2 and 6 inclusive;

r is either 0 or 1 provided that the sum of q and r is at least 3,

s is either 0 or 1;

p is either 1 or 2, provided that n is zero when p is 2.

5,326,498

AROMATIC ESTERS AND LIQUID CRYSTAL MIXTURES CONTAINING SAME

Stephen Kelly, Möhlin, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

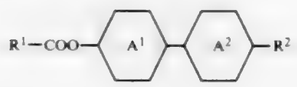
Filed Oct. 30, 1992, Ser. No. 969,619

Claims priority, application Switzerland, Nov. 8, 1991, 3273/91; Jun. 18, 1992, 1927/92

Int. Cl.[5] **C09K** *19/34;* **C07D** *239/02, 213/62*

U.S. Cl. 252—299.61 **7 Claims**

1. A compound of the formula



wherein

R^1 is alkenyl with 2 to 12 carbon atoms;

R^2 is alkyl with 1 to 12 carbon atoms or alkenyl with 2 to 12 carbons atoms, in which at least one methylene group can be replaced by —O—;

A^1A^2 each independently is 1,4-phenylene which is unsubstituted or substituted with at least one halogen, or pyridine-2,5-diyl or pyrimidine-2,5-diyl;

with the proviso that only one of the rings A^1 or A^2 is either pyridine-2,5-diyl or pyrimidine-2,5-diyl.

5,326,499

ANTIFOAMS FOR THE PAPER INDUSTRY, BASED ON OIL-IN-WATER EMULSIONS

Brigitte Wegner, Speyer; Knut Oppenlaender, Ludwigshafen; Rudolf Schuhmacher, Boehl-Iggelheim; Andreas Hohmann, and Gabriele Dralle-Vos, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 20, 1992, Ser. No. 933,191

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4127719

Int. Cl.[5] **B01D** *19/04;* **D21H** *21/12*

U.S. Cl. 252—321 **2 Claims**

1. A process, for preventing foam in pulp cooking, in the beating of paper stock, in paper making and in dispersing pigments for paper making, which comprises adding an effective amount of an antifoam, said antifoam being based on an oil-in-water emulsion in which the oil phase accounts for from 5 to 50% by weight of the emulsion and contains

(a) a member selected from the group consisting of an alcohol of not less than 12 carbon atoms, fatty esters of alcohols of not less than 22 carbon atoms and C_1–C_{36}-carboxylic acids, distillation residues which are obtainable in the preparation of alcohols having a relatively large number of carbon toms by the oxo synthesis or by the Ziegler method and which may be alkoxylated, and a mixture therein,

(b) a fatty ester of a C_{12}–C_{22}-carboxylic acid with a monohydric to trihydric C_1–C_{18}-alcohol and, optionally,

(c) a hydrocarbon having a boiling point above 200° C. or a fatty acid of 12 to 22 carbon atoms, in combination with

(d) from 1 to 80% by weight of polyglyceryl esters which are obtainable by not less than 20% esterification of a polyglycerol mixture of

from 0 to 10% by weight of monoglycerol,

from 15 to 40% by weight of diglycerol,

from 30 to 55% by weight of triglycerol,

from 10 to 25% by weigth of tetraglycerol,

from 0 to 15% by weight of pentaglycerol,

from 0 to 10% by weight of hexaglycerol and

from 0 to 5% by weight of polyglycerols having higher degrees of condensation

with one or more fatty acids of 12 to 36 carbon atoms.

5,326,500

VERMICULITE COMPOSITION WITH IMPROVED CHEMICAL EXFOLIATION

Semyon D. Friedman, Baltimore, Md.; Robert W. McKinney, Palm Coast, Fla.; Chia-Chih Ou, Lexington, Mass.; Robert M. Spotnitz, Baltimore, and Shaohai Wu, Ellicott City, both of Md., assignors to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 14, 1993, Ser. No. 76,664

Int. Cl.[5] **C04B** *20/06*

U.S. Cl. 252—378 R **21 Claims**

1. A vermiculite composition comprising a vermiculite ore concentrate material having at least 85% of at least one vermiculite mineral specie or mixture thereof having a specific density in the range of from 2.3 g/cm^3 to 2.7 g/cm^3 and at least 30 meq/100 gm of the vermiculite mineral specie of intercalated cations selected from the group consisting of lithium, (C_2–C_6 alkyl) ammonium, allylammonium, or ammonium C_3–C_6 alkyl carboxylic acid.

5,326,501

POLYTHIOL COMPOUND, AND OPTICAL MATERIAL AND PRODUCT PRODUCED THEREFROM

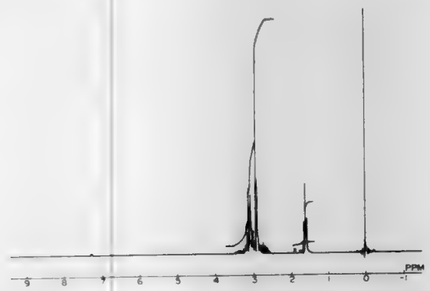
Tsuyoshi Ohkubo, Hachioji; Chau Nguyen, Ohme, and Reisuke Okada, Hinodemachi, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Dec. 24, 1990, Ser. No. 633,304

Claims priority, application Japan, Dec. 28, 1989, 1-343298; Oct. 19, 1990, 2-281089

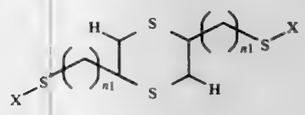
Int. Cl.[5] **F21V** *9/00;* **C08G** *18/32, 75/00*

U.S. Cl. 252—582 **6 Claims**



1. An optical material comprising a polymer obtained by polymerizing:

a component (A) which at least contains a polythiol compound (a_1) having the formula:



wherein

X is $—(CH_2CH_2S)n_2—H$, n_1 is an integer of 1 to 5, and n_2 is an integer of 0 to 2, and

a component (B) which contains at least one member of a compound (b_1) having at least two vinyl groups per molecule, a compound (b_2) having at least two iso(thio)-cyanate groups per molecule and a compound (b_3) having at least one vinyl group and at least one iso(thio)cyanate group per molecule.

5,326,502

PYRIDYLBENZIMIDAZOLE COMPOSITIONS FOR ABSORBING ULTRAVIOLET LIGHT

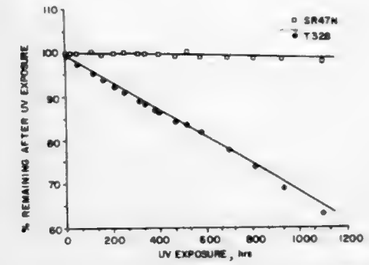
George R. Bird, Princeton, N.J.; Louis Locatell, Chico, Calif.; Kenneth S. Norland, Lexington, and Louis M. Scarmoutzos, Andover, both of Mass., assignors to Steadfast, Incorporated, Cambridge, Mass.

Filed Aug. 2, 1990, Ser. No. 561,930

Int. Cl.[5] **F21V** *9/04;* **C07F** *9/80;* **C07D** *487/00*

U.S. Cl. 252—589 **36 Claims**

1. A composition for absorbing ultraviolet light comprising an effective amount of at least one metal complex of a pyridylbenzimidazole compound and a carrier subject to ultraviolet light degradation,



said pyridylbenzimidazole compound being effective to protect said carrier against ultraviolet light degradation.

5,326,503

LATTICED PACKING MEMBER FOR GAS-LIQUID CONTACTORS

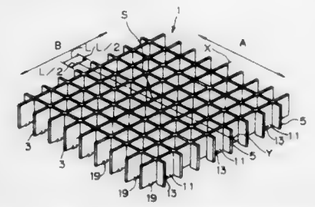
Koichiro Iwashita; Takakazu Sunada; Makiichi Ishihara, all of Tokyo; Sunao Ushio, Kanagawa; Kouichi Shinohara, Kanagawa, and Takami Yamada, Kanagawa, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Kabushiki Kaisha Meiji Gomu Kasei, both of Tokyo, Japan

Filed Jul. 26, 1993, Ser. No. 95,518

Claims priority, application Japan, Jul. 30, 1992, 4-059006

Int. Cl.[5] **B01F** *3/04*

U.S. Cl. 261—112.1 **6 Claims**



1. A lattice packing member for gas-liquid contacting system comprising an odd number of plural longitudinal strips and an even number of plural lateral strips, the even number being one less the odd number of the longitudinal strips, wherein the longitudinal and lateral strips are crossed at right angles on their sides, the bottom of said longitudinal and lateral strips respectively is chamfered and has at least one projected area on which a notch is formed, a reinforcement with a flat bottom is provided at the center of lattice sections other than said sections with a projected area, the longitudinal strip located at the center of the latticed member coincides with the axial center line X of the lateral strip in the direction A of its length, a lateral strip constitutes the axial center line Y of the longitudinal strip in the direction B of its length which passes the center of the lateral lattice sections located at the center of the member, and said axial center lines X and Y intersect with each other at the center of the member.

5,326,504

ORDERED PACKING

Robert G. Gates, Mendham, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Aug. 16, 1993, Ser. No. 106,738

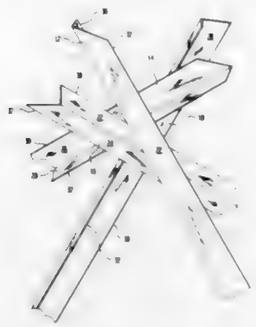
Int. Cl.[5] **B01F** *3/04*

U.S. Cl. 261—112.1 **6 Claims**

1. A ordered packing for intimately contacting a vapor phase with a liquid phase, said ordered packing comprising:

a plurality of elongated elements, each of the elongated

elements having at least one elongated surface configured to be wet by the liquid phase and thereby form a film of the liquid phase on the at least one elongated surface;
the plurality of elongated elements packed to form a structure such that in each of a plurality of parallel planes, extending in two orthogonal directions, the elongated elements cross one another to form lattices having openings defined between the crossings of the elements;
the plurality of elongated elements interleaved within said

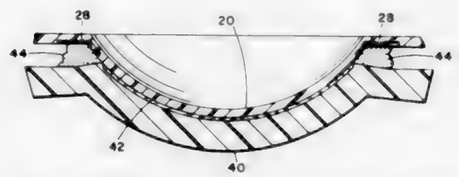


structure such that elongated elements pass through the openings of the lattices and form repeating clusters of four of the elongated elements in a pyramid-like arrangement, thereby to provide by each of said clusters and the at least one elongated surface of each of the elongated elements thereof, at least four pathways for the liquid phase to descend through the structure; and
the structure having an open area for the vapor phase to ascend through the structure and contact the descending liquid phase.

5,326,505
METHOD FOR TREATING AN OPHTHALMIC LENS MOLD

Jonathan P. Adams, Jacksonville; Edmund C. Rastrelli, and John C. Heaton, both of Atlantic Beach, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed Dec. 21, 1992, Ser. No. 992,884
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.4 **8 Claims**

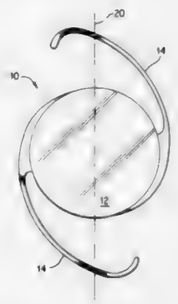


1. A method of separating a molded, polymerized ophthalmic lens formed by a mold, said mold comprised of at least two pieces, a female, concave piece and a male, convex piece forming a cavity therebetween when said pieces are mated at least one piece having a flange thereabout, from the excess material surrounding the lens outside the mold cavity, said method comprising:
increasing the surface energy of at least a portion of the flange surface of one mold piece,
filling the female, concave mold piece of said mold with monomer,
mating the male, convex piece of the mold onto the monomer-containing female, concave piece of the mold and expelling excess monomer from the mold cavity and into contact with the mold material having an increased surface energy,
polymerizing said monomer, and
separating the mold pieces removing the lens from the mold piece while retaining the polymerized excess monomer on the flange surface having an increased surface energy.

5,326,506
METHOD FOR MAKING A COMPOSITE INTRAOCULAR LENS

David P. Vanderbilt, St. Louis, Mo., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 634,919, Dec. 27, 1990, Pat. No. 5,217,491. This application Jan. 28, 1993, Ser. No. 10,373
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.7 **14 Claims**



1. A method for making a composite intraocular lens having a optic portion and a haptic portion, said method comprising the steps of:
forming a core of a high refractive material suitable for use as an intraocular lens optic;
swelling said core;
polymerizing about said core a polymerizable material capable of forming said haptic portion to form an outer layer about said core, whereby said outer layer is bonded to said core, said outer layer and said core forming a composite rod; and
machining said composite rod to form said composite intraocular lens having an optic portion and a haptic portion.

5,326,507
MANUFACTURE OF POLARIZING FILMS

Karl-Heinz A. O. Starzewski, Bad Vilbel, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen

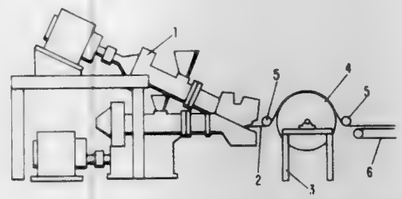
Filed Mar. 29, 1993, Ser. No. 38,015
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1992, 4211779
Int. Cl.[5] B29C *55/06*
U.S. Cl. 264—1.3 **8 Claims**

1. Process for manufacturing a polarizing film based on polyvinyl alcohol and at least one dichroic substance by casting or extrusion of a mixture or polyvinyl alcohol and a solvent, whereby the polyvinyl alcohol contains the dichroic substance, drying and stretching of the film at between 10° and 210° C. by 300 to 1200%, wherein, depending on the width of the unstretched film b_o a stretch gap l_o is provided, satisfying the condition $b_o/l_o < 3$.

5,326,508
METHOD FOR MANUFACTURING SEMIFINISHED PRODUCTS FROM A MIXTURE OF RUBBER AND RUBBER-LIKE PLASTIC MATERIALS BY SHOCK COOLING TO INCREASE TACKINESS

Michaela Kaefer, Wedemark, and Holger Hoffmann, Helpsen, both of Fed. Rep. of Germany, assignors to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,369
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 4211669
Int. Cl.[5] B29C *47/88, 43/52*
U.S. Cl. 264—28 **13 Claims**



1. A method for manufacturing calendered and/or extruded semifinished products with increased surface tackiness from a mixture of rubber and rubber-like plastic materials, said method comprising the steps of:
producing semifinished products by extrusion and/or calendering; and
shock cooling the hot semifinished products at a maximum shock cooling temperature of 0° C. for increasing tackiness.

5,326,509
FABRICATION OF BENZBISAZOLE POLYMERS INTO MONOLITHIC ARTICLES

Hoe H. Chuah, Houston, Tex., and Ivan J. Goldfarb, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

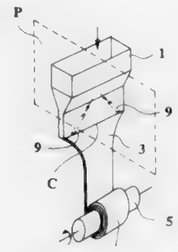
Filed Oct. 7, 1993, Ser. No. 134,194
Int. Cl.[5] B29C *39/02*
U.S. Cl. 264—28 **5 Claims**

1. A method for fabricating a monolithic polybenzbisazole article comprising the steps of:
(a) dissolving at least one benzbisazole polymer in a strong acid at an elevated temperature;
(b) transferring the resulting solution to a mold;
(c) cooling the solution in mold to a temperature below the gelation temperature of the acid-polymer mixture, thus providing a polymer-acid gel;
(d) ageing the gel for about 0.25 to 10 days;
(e) replacing the acid in the gel with water thus providing a coagulated gel;
(f) replacing the water in the gel with a lower aliphatic alcohol; and
(g) densifying the gel, thus providing said monolithic article.

5,326,510
CARBON COMPOSITE MATERIAL INCORPORATING CARBON FILM, FORMING MATERIAL AND PROCESS FOR PRODUCING THE CARBON FILM

Kouji Shinohara, Nara; Juuji Mondori, Hashimoto; Hirofumi Miyanoshita, Sakai, and Teruyuki Kurimoto, deceased, late of Nara, all of Japan by Kurie Kurimoto, legal representative , assignors to Osaka Gas Company Limited, Osaka, Japan

PCT No. PCT/JP90/01667, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO91/10557, PCT Pub. Date Jul. 25, 1991
PCT Filed Dec. 20, 1990, Ser. No. 761,872
Claims priority, application Japan, Jan. 17, 1990, 2-8928
Int. Cl.[5] D01F *9/00*
U.S. Cl. 264—29.1 **9 Claims**



1. A process for producing a tapelike pitch-based carbon film characterized in that spinnable pitch is extruded from a nozzle having a slit into a sheet of pitch, which is then pulled by and wound on a take-up device, made infusible and carbonized, wherein gas streams having a temperature of about 200° to about 400° C. and having an outward component and a downward component are applied to the sheet of pitch being reduced in width by the pull in the vicinity of widthwise opposite ends thereof before the sheet fully solidifies, in directions symmetric with respect to a phantom plane extending through a central point of the slit and perpendicular to a plane in the lengthwise direction of the slit, to prepare a tapelike pitch film, which is made infusible and carbonized, and wherein the resulting carbon film has an aspect ratio of about 10 to about 1000.

5,326,511
METHOD FOR FORMING COMPRESSIBLE MATERIAL INTO DISCRETE SOLID BLOCKS

Donnell Cooper, Charlotte, and Bobby L. Starling, Statesville, both of N.C., assignors to Pneumafil Corporation, Charlotte, N.C.

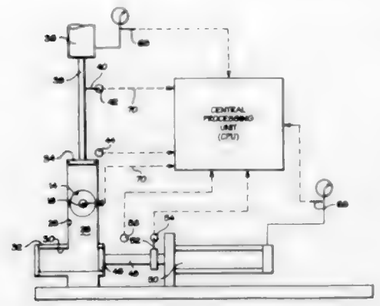
Filed Aug. 12, 1992, Ser. No. 928,806
Int. Cl.[5] B30B *15/26*
U.S. Cl. 264—40.1 **6 Claims**

1. A method of forming a compressible and cohesive material into discrete solid briquettes, said method comprising, in the following sequence, the steps of:
(a) providing a generally confined compression chamber;
(b) feeding said material into said chamber at a predetermined volumetric flow;
(c) moving a first ram into said chamber to initially compress and densify said material therein;
(d) generating a first signal that is a function of the density of said material in said chamber;
(e) comparing said first signal to a signal corresponding to a predetermined density;
(f) decreasing said flow of material fed to said chamber in response to said first signal indicating that said density of said material in said chamber is above a predetermined level;
(g) moving a second ram into said chamber to compress and

densify said material therein into a briquette having a predetermined volume;

(h) generating a second signal that is a function of the density of said material in said chamber;

(i) comparing said second signal to said signal corresponding to a predetermined density;



(j) increasing said flow of material fed to said chamber is response to said second signal indicating that said density of said material in said chamber is below a predetermined level, and decreasing said flow of material fed to said chamber in response to said second signal indicating that said density of said material in said chamber is above a predetermined level.

5,326,512

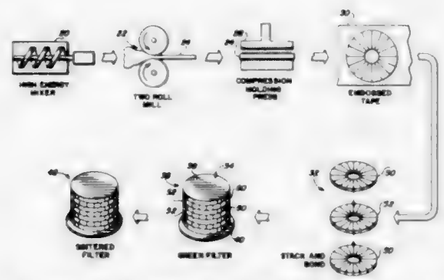
POROUS CERAMIC FILTER AND PREPARATION THEREOF

Thomas L. Stillwagon, Long Beach, and Douglas J. Twait, Bellflower, both of Calif., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 16, 1992, Ser. No. 991,805

Int. Cl.[5] C04B *38/06*

U.S. Cl. 264—44 **25 Claims**



1. A method for preparing a cermic filter, comprising the steps of:

mixing together a ceramic powder, a pore forming agent, and any sintering aids required in the sintering of the ceramic powder;

molding two types of annular filter plates from the powder one having an external opening and the other having an internal opening

allernatingly stacking the types of the filter plates together to form a filter assembly, wherein the filter assembly has the form of a hollow body having an external sidewall with openings therein, and a plenum in the interior of the body; and

sintering the filter assembly.

5,326,513

PROCESS AND DEVICE FOR THE PRODUCTION OF PLASTIC FIBER BOARDS

Albert Kubbutat, Wittislingen, Fed. Rep. of Germany, assignor to Sto Porawer GmbH, Lauingen, Fed. Rep. of Germany

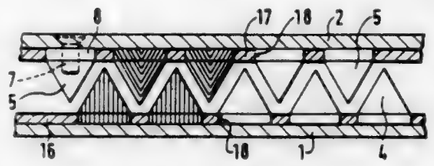
PCT No. PCT/EP90/00371, § 371 Date Sep. 9, 1991, § 102(e) Date Sep. 9, 1991, PCT Pub. No. WO90/10533, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 7, 1990, Ser. No. 752,576

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907521

Int. Cl.[5] B29C *67/22; E04G 15/00*

U.S. Cl. 264—45.3 **12 Claims**



1. Process for producing plastic fiber boards comprising:

providing a material selected from the group consisting of balls of expanded glass, expanded clay, pumice granules and mica;

providing a foaming and hardenable binder selected from the group consisting of organic and inorganic binders, said organic binder being selected from the group consisting of epoxy resin and PU phenol resin;

mixing said material with said binder to from a mixture thereof;

providing two mold plates in relative spaced relation and for relative movement with respect to each other;

providing a plurality of mold bodies in relative spaced relation on each mold plate to form interstices between said mold bodies on each mold plate with said mold bodies projecting into the space between said mold plates and in interfitting spaced relation in said interstices in said mold bodies on the other mold plate forming a matrix space between said mold plate and mold bodies;

adding said mixture into said matrix space between said mold plates and mold bodies;

compressing said mixture in said matrix space by moving said mold plates toward each other;

foaming and hardening said binder in situ in said matrix space thereby forming a plastic fiber board having spaced recesses on opposite sides thereof.

5,326,514

PROCESS FOR THE PRODUCTION OF HOLLOW BODIES OF THERMOPLASTIC MATERIAL AND HOLLOW BODIES PRODUCED BY THAT PROCESS

Günter Linden, Bonn; Detlef Vogeley, and Klaus Esser, both of Königswinter, all of Fed. Rep. of Germany, assignors to Kautex Werke Reinold Hagen AG, Bonn, Fed. Rep. of Germany

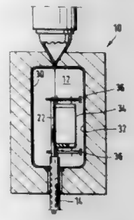
Filed Feb. 4, 1993, Ser. No. 13,596

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 4203705

Int. Cl.[5] B29C *49/20, 49/46*

U.S. Cl. 264—83 **32 Claims**

1. A process for the production of hollow bodies of thermoplastic material by blow molding, comprising: forming a preform having at least one opening; expanding the preform within a blow molding mold by increased internal pressure until it bears against the mold cavity surface of the blow molding mold to form a hollow body; introducing an additional body into the preform, the additional body being disposed on a holding means which is joined to the wall of the hollow body; treating at least a portion of the inside surface of the hollow body with at least one treatment medium with which the plastic material forming regions of the hollow body wall to be treated reacts to change at least one property of the material of the treated regions, wherein the additional body is firstly held in a first position in which it is at a spacing from an adjacent wall region of the hollow body at which it is to be disposed in the hollow body, said spacing being selected to be large enough to permit substantially unimpeded access for the treatment medium to the region between the additional body and the adjacent wall region of the hollow body and after a



sufficient period of action of the treatment medium the additional body is displaced relative to the holding means into a second position in which it is at an at least substantially reduced spacing from the wall region of the hollow body to which the holding means is joined, the at least one contact surface area between the holding means and the inside surface of the wall of the hollow body being substantially smaller than the projection of the additional body onto the region of the wall of the hollow body at which the holding means is disposed.

5,326,515

METHODS OF MANUFACTURING GLOVES

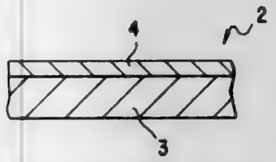
Toshiaki Sakaki, Kakogawa, Japan, and Daijiro Toji, Kedah, Malaysia, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Division of Ser. No. 874,910, Apr. 28, 1992, abandoned. This application Feb. 12, 1993, Ser. No. 17,398

Claims priority, application Japan, Apr. 30, 1991, 3-99194

Int. Cl.[5] B28B *1/38*

U.S. Cl. 264—137 **4 Claims**



1. A glove manufacturing method comprising the steps of:

immersing a heated glove mold in natural rubber latex, said natural rubber latex comprising a heat-sensitive coagulant, thereby to form a first layer on the surface of said mold; and

immersing at least a part of said first layer in a second rubber latex different from said natural rubber latex before said first layer has fully dried, such that said first layer contains water when said first layer is immersed in said second rubber latex, thereby to laminate, on the surface of said first layer, a second layer different from said first layer, such that the first layer is in contact with the second layer.

5,326,516

METHOD OF PREPARING A CURED PIGMENTED THERMOSETTING POLYMER COMPOSITION EXHIBITING IMPROVED COLOR VALUES AND REDUCED HAZE

Selby M. Brannon, Geneva, Ohio, assignor to Plasticolors, Inc., Ashtabula, Ohio

Continuation of Ser. No. 884,255, May 8, 1992, abandoned, which is a continuation of Ser. No. 609,105, Oct. 31, 1990, abandoned, which is a continuation of Ser. No. 475,766, Feb. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 416,471, Oct. 3, 1989, abandoned. This application May 10, 1993, Ser. No. 60,498

Int. Cl.[5] B29C *47/36*

U.S. Cl. 264—143 **22 Claims**

1. A method of preparing a cured pigmented thermosetting polymer composition exhibiting improved color values and reduced haze which comprises the steps of

(i) preparing a pigmented thermoplastic polymer composition according to the method comprising the steps of

(A) selecting at least one thermoplastic polymer having a refractive index which is within about 0.06 units of the refractive index of the thermosetting resin;

(B) preparing a mixture of said thermoplastic polymer and at least one color pigment, dye or mixture thereof under high shear in a high-intensity mixer; and

(C) forming a slurry comprising said mixture obtained in step (B) in at least one liquid copolymerizable monomer containing at least one $CH_2{=}C<$ group, and

(ii) incorporating said pigmented thermoplastic polymer composition into a polymerizable thermosetting polymer composition and molding and curing the resulting composition to provide a cured pigmented composition exhibiting improved color value and reduced haze.

5,326,517

METHOD OF FORMING FINISHED CUPS OF EXPANDED RESIN

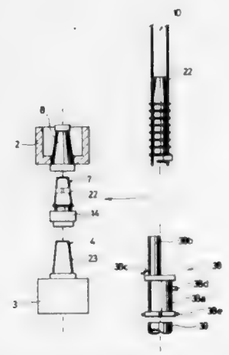
Masato Yaita, and Toshikazu Ohmori, both of Koga, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Division of Ser. No. 599,769, Oct. 18, 1990, Pat. No. 5,127,815. This application Jul. 1, 1992, Ser. No. 907,474

Claims priority, application Japan, Oct. 31, 1989, 1-284452; Mar. 7, 1990, 2-057470

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—51 **13 Claims**



1. A method of forming finished cups of expanded resin employing transferring means capable of a) transferring a performed article that was supplied thereto, to a finish-forming mold for subjecting said preformed article to a process for forming finished articles, said preformed article being obtained through a process for forming preformed articles by filling a

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mold cavity formed in a preforming mold with expandable thermoplastic resin particles and heating said particles such that they are expanded and fused, b) collecting from said finish-forming mold a finished article that was formed by heating and compressing said preformed article in said finish-forming mold and whose wall thickness is thinner than the wall thickness of said preformed article, and c) discharging said finished article, and said method comprising the steps of

a first step of supplying a first preformed article to said transferring means after said first preformed article went through said process for forming preformed articles;

a second step of discharging a first finished article from said transferring means;

a third step of heating and compressing a second preformed article in said finish-forming mold and forming a second finished article;

a fourth step of transferring said first preformed article, supplied to said transferring means, to said finish-forming mold; and

a fifth step of transferring said second finished article after it was formed from said finish-forming mold to said transferring means,

wherein said first step, second step and third step are conducted simultaneously, and said fourth step and fifth step are conducted simultaneously

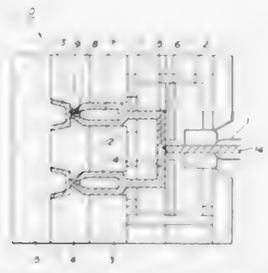
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5,326,518

PREPARATION OF SINTERED ZIRCONIA BODY

Yutaka Kimura; Osamu Minesita; Yukihiko Haneishi, and Osamu Tanegashima, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,131
Claims priority, application Japan, Oct. 8, 1991, 3-260266
Int. Cl.[5] C04B *35/48*
U.S. Cl. 264—63 **9 Claims**



1. A method for injection molding a zirconia composition in a mold defining a cavity and having a runner and a pin gate disposed at the end of the runner in fluid communication with the cavity, said pin gate having a diameter of 0.5 to 3 mm and the ratio of the gate diameter (mm) to the cavity volume (cm^3) being in the range of 0.05 to 15, said zirconia composition being comprised of an organic binder in an amount of 45 to 57%, by volume of the composition, and a zirconia power containing 2 to 10 mol% of Y_2O_3 and having a specific surface area of 5 to 10 m^2/g as measured by the BET method and a product of an average particle size by the specific surface area of 1.0 to 2.7 $\mu m \cdot m^2/g$, said method comprising

an injection step of passing the zirconia composition in molten state through the runner and injecting it into the cavity through the pin gate while the runner is heated hot enough to keep the zirconia composition molten,

a solidification step in which the runner is kept hot enough to keep the zirconia composition molten and the pin gate is cooled enough to allow the zirconia composition to solidify so that the zirconia composition solidifies in the cavity and the pin gate while the zirconia composition remains molten in the runner, and

a separation step of separating the solidified portion at the pin gate and the solidified portion in the cavity by rupture, thus obtaining the solidified portion in the cavity as a runnerless molding.

5,326,519

PROCESS OF PREPARING ZIRCONIUM OXIDE-CONTAINING CERAMIC FORMED BODIES

Nils Claussen, Auf den Schwarzen Bergen 15, D-2107 Rosengarten, Fed. Rep. of Germany

Filed Oct. 31, 1991, Ser. No. 786,196
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1990, 4039531; Aug. 31, 1991, 4126738
Int. Cl.[5] C04B *35/48*
U.S. Cl. 264—65 **14 Claims**

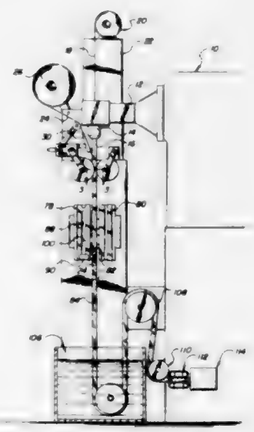
1. Process for the production of a zirconium oxide-containing ceramic formed body, said body being free from amorphous phases on the grain boundaries and triple points and displaying a shrinkage of less than 8% in comparison with its green body comprising producing a finely-divided, mechanically alloyed powder mixture of at least 1% by volume zirconium metal powder and at least 20% by volume of one or more metallic powder selected from the group consisting of the elements magnesium, aluminum, copper, selenium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, zinc, strontium, yttrium, biobium, cerium, hafnium and tantalum, as well as the oxides thereof and zirconium oxide, sodium oxide, potassium oxide and lithium oxide, pressing said mixture to give a green body and sintering said green body in an oxygen-containing atmosphere.

5,326,520

LAMINATING FILM TO PLASTICS EXTRUDATE AND CORNERING EXTRUDATE WITH SELECTED RADII

Donald L. Franck, Warren; Edward J. Wenzel, Troy, both of Mich., and Edward Stachowicz, Bensalem, Pa., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 29, 1993, Ser. No. 53,750
Int. Cl.[5] B29C *47/02*
U.S. Cl. 264—171 **11 Claims**



8. A mold comprising a plurality of mold portions associated with one another for movement between open and closed positions and defining a mold cavity therein, one of said mold portions having at least first and second forming die sections, each of said sections having end wall means spaced from one another, said end wall means of the second of said die sections defining one end of said mold cavity to mold plastics material supplied to said cavity into a molded part with a predetermined shape having at least one end with a squared corner having a minimized radius as determined by the amount of spacing between end walls of said first and second forming die sections, the first of said of said forming die sections having a recess therein which extends through the end wall means thereof and forms a portion of said cavity, gas venting means provided by the space between said end wall means of said sections, gas discharge means pneumatically communicating with said gas venting means for transmitting and exhausting gases from said mold generated during molding so that said plastics material will flow against said end wall of said second section and completely fill said cavity to fully form said molded part with said squared corner, and means connecting said second die sections to said one of said mold portions for adjustable movement relative thereto so that the gas capacity of said venting means can be varied to vary the radius of said squared corner of said one end of said molded part.

10. A method for making finish moldings having a finished show surface for application to support surfaces comprising the steps of:

extruding a profiled strip of heated plastics base material,

passing a paint film of plastics material through a guide plate for guiding and progressively preforming said paint film of plastics material into a shape for fitting on said heated and profiled strip while maintaining said show surface of said paint film outboard of said guide plate as said strip is extruded,

applying said preformed paint film onto said profiled strip so that it laminates directly thereto and so that said strip and film form a composite with said film providing a finish coat therefor, and

compression forming said composite with a multi-part die so that said composite is finished with a squared corner at one end within a predetermined range of corner radii.

11. A mechanism for making moldings of predetermined lengths with a squared end corner and having a finished show surface for attachment to support surfaces comprising:

plastics extrusion means for extruding a profiled strip of heated plastics material,

a supply of paint film,

film guiding and film curving means for curving said film while guiding said film from said supply to a station adjacent to said strip while said strip is being extruded from said plastics extrusion means,

apply wheel means located at said station for applying said film to said profiled strip so that it laminates thereto,

compression mold means having a plurality of mold portions associated with one another and relatively movable between open and closed positions and defining a mold cavity therein, one of said mold portions having at least first and second forming die sections, each of said die sections having end wall means spaced from one another, said one of said end wall means defining one end of said cavity to mold plastics material supplied to said cavity into a part with a predetermined shape having at least one end with a squared corner having a minimized radius as determined by the amount of spacing between end walls of said first and second forming die sections, the first of said forming die sections having a recess therein to define a portion of said cavity, gas venting means provided by the spacing between said end wall means of said sections and gas discharge means pneumatically communicating with said gas venting means for transmitting and exhausting gases from said mold generated during molding so that said plastics will completely fill said cavity to fully form said molded part with said squared corner.

5,326,521

METHOD FOR PREPARING SILICONE MOLD TOOLING

Douglas A. East, 2498 Honey Springs Rd., Jamul, Calif. 91935

Filed May 26, 1993, Ser. No. 67,846
Int. Cl.[5] B29C *33/40*
U.S. Cl. 264—225 **13 Claims**

1. A method for preparing silicone molding tooling of a shaped article, comprising the steps of:

providing a curable silicone resin composition having at least two parts that, upon mixing, cure to form a silicone rubber;

mixing the parts of the silicone resin composition to form an uncured silicone rubber having a viscosity between about one million centipoise and about four million centipoise and having the ability to hang on a vertical surface in a layer of about 0.2 cm thickness without significant slumping, said mixing being accomplished in such a manner that entrainment of air in said uncured silicone rubber is avoided;

spraying the uncured silicone rubber onto a surface to be molded in a single operation with said mixing step, said spraying being done in such a manner that entrainment of air in said uncured silicone rubber is avoided, wherein said layer is at least about 0.1 cm thick; and

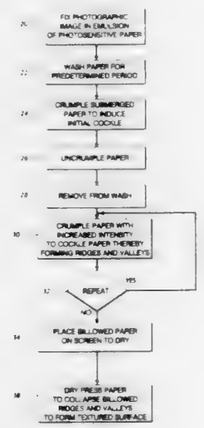
allowing said silicone rubber to cure on said surface to form a mold of said surface.

5,326,522

TREATMENT FOR TEXTURING PAPER

Ron Lee, 280 Elizabeth St., A105, Atlanta, Ga. 30307

Filed Jul. 15, 1993, Ser. No. 92,118
Int. Cl.[5] D21J *3/00;* **B29C** *53/00*
U.S. Cl. 264—232 **7 Claims**



1. A method of forming a textured sheet of fibrous material, comprising:

providing a substantially planar sheet of fibrous material;

washing said sheet in an aqueous solution for a predetermined period of time;

crumpling the sheet loosely into a substantially spherical ball;

uncrumpling the ball to return the sheet to a substantially planar sheet;

repeating the crumpling and uncrumpling steps a predetermined number of times to form a plurality of ridges and valleys in the sheet;

drying the sheet; and

compressing the sheet in a press, whereby the height of the

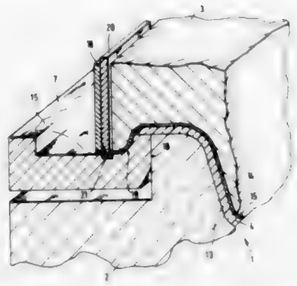
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ridges and the depth of the valleys in the sheet are reduced to provide a textured surface in the sheet.

5,326,523
METHOD FOR THE MANUFACTURE OF A PLASTIC MOLDED PART

Andreas Güstävel, Ratingen; Ralf Horstkötter, Balve; Rolf Schlenz, Belbert, and Harald Strunk, Plettenberg, all of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Sep. 30, 1991, Ser. No. 769,107
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1990, 4030964
Int. Cl.[5] B29C *45/08, 45/16*
U.S. Cl. 264—257 **16 Claims**



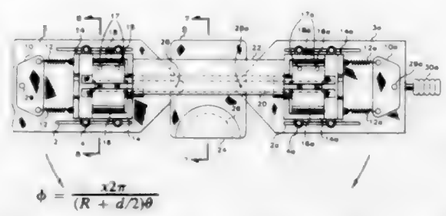
1. A method for manufacturing a plastic molded part in a mold having a mold cavity comprised of a lower mold half and an upper mold half, the method comprising the steps of:
opening the mold cavity by moving the lower and upper mold halves apart;
arranging at least one web of decorative material between the mold halves;
holding the web of decorative material between the mold halves by a clamping frame located outside the mold cavity, the clamping frame including an upper and lower frame half, the lower frame half having a cutting plane and an immersion edge spaced from the cutting plane;
introducing a plasticized plastic composition into the open mold cavity and against the web;
lowering the immersion edge of the lower frame half into the lower mold half to close a side edge of said open mold cavity before the plastic composition reaches the cutting plane thereby preventing escape of said plastic composition from said open mold cavity; and
closing the upper and lower mold halves to compact the composition between the mold halves and also against the web of decorative material in the mold cavity to shape the molded part, wherein the clamping frame holds the decorative material so that web can slip with respect to the composition during compaction of the composition against the web.

5,326,524
METHOD OF MAKING PLASTIC RODS

Vergil H. Rhodes, Jr.; John D. Winkel, and Benedict R. Bonazza, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 23, 1990, Ser. No. 489,152
Int. Cl.[5] B29C *53/00*
U.S. Cl. 264—294 **6 Claims**

1. A method for making fiber reinforced plastic rods to minimize tensioning and buckling of continuous reinforcing fibers when said rods are bent, said method comprising:
(a) heating a rod having longitudinally arranged continuous reinforcing fibers; and
(b) twisting said rod to rotate said continuous reinforcing fibers about the longitudinal axis of said rod, thereby conforming said continuous reinforcing fibers into helices according to the formula:



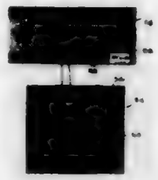
$$\phi = \frac{x2\pi}{(R + d/2)\theta}$$

wherein ϕ=number of helices, expressed in radians, per unit length
R=inside radius of a bend to be postformed in said rod
d=diameter of said rod
Θ=radians of said bend to be postformed about said inside radius
x=a non-zero real number
and R and d are expressed in consistent units of length,
whereby said bend postformed to said twisting is limited as to said inside radius of said bend and the radians of said bend about said inside radius.

5,326,525
CONSOLIDATION OF FIBER MATERIALS WITH PARTICULATE METAL ALUMINIDE ALLOYS

Amit K. Ghosh, Thousand Oaks, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 11, 1988, Ser. No. 217,253
Int. Cl.[5] B22F *3/14*
U.S. Cl. 419—23 **29 Claims**



1. A method for fabricating a metal aluminide composite which comprises:
providing a metal aluminide,
providing a reinforcing fiber material,
placing a diffusion barrier metal selected from the group consisting of silver, copper and gold, and alloys thereof, between said metal aluminide and said reinforcing fiber material, and
pressing and heating the metal aluminide, the reinforcing fiber material and the diffusion barrier metal at a temperature at which diffusion bonding occurs.

5,326,526
SINTERED IRON ALLOY COMPOSITION AND METHOD OF MANUFACTURING THE SAME

Yutaka Ikenoue; Koichiro Hayashi, both of Chiba; Makoto Kano, and Akira Fujiki, both of Kanagawa, all of Japan, assignors to Hitachi Powdered Metals Co., Ltd., Chiba and Nissan Motor Co., Ltd., Kanagawa, both of Japan

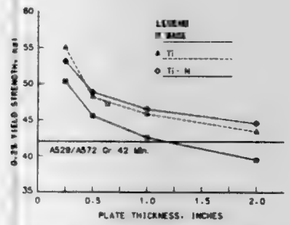
Filed Sep. 30, 1991, Ser. No. 767,475
Claims priority, application Japan, Oct. 18, 1990, 2-280216
Int. Cl.[5] B22F *3/16*
U.S. Cl. 419—38 **18 Claims**

1. A sintered alloy composition comprising:
about 1.5 to about 2.5% carbon by weight;
about 0.5 to about 0.9% manganese by weight;
about 0.1 to about 0.2% sulfur by weight;
about 1.9 to about 2.5% chromium by weight;
about 0.15 to about 0.3% molybdenum by weight;
about 2 to about 6% copper by weight;
not more than about 0.3% by weight of a metal material comprising at least one member selected from the group consisting of tungsten and vanadium;
a first solid lubricant material present in an effective amount to provide lubrication, the solid lubricant material comprising at least one member selected from the group consisting of magnesium metasilicate minerals and magnesium orthosilicate minerals; and
balance iron.

5,326,527
TITANIUM-BEARING LOW-COST STRUCTURAL STEEL

Richard L. Bodnar, and Steven S. Hansen, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 8, 1992, Ser. No. 941,453
Int. Cl.[5] C22C *38/14*
U.S. Cl. 420—126 **6 Claims**



1. A fully killed steel consisting essentially of, in weight percent, from about 0.15 to about 0.27 percent carbon, from about 0.5 to about 1.5 percent manganese, less than about 0.04 percent phosphorus, less than about 0.05 percent sulfur, from about 0.1 to about 0.4 percent silicon, from about 0.005 to about 0.020 percent titanium, from about 0.004 to about 0.015 percent nitrogen, with the mole ratio of titanium to nitrogen being less than about 3.42, from about 0.02 to about 0.04 percent vanadium, and the remainder iron plus incidental impurities.

5,326,528
MAGNESIUM ALLOY

Kunihiko Makino, Yamaguchi; Noboru Miyamoto, and Kyosuke Kanemitsu, both of Tokyo, all of Japan, assignors to Ube Industries, Ltd., Yamagushi, Japan

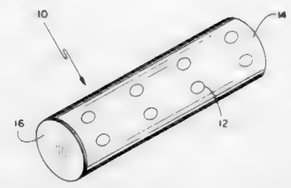
Filed Jan. 13, 1993, Ser. No. 3,644
Claims priority, application Japan, Jan. 14, 1992, 4-040053
Int. Cl.[5] C22C *23/04*
U.S. Cl. 420—411 **8 Claims**

1. A magnesium alloy consisting essentially of zinc in the amount of 4.0 to 15.0 weight %, silicon in the amount of 0.5 to 3.0 weight %, the remainder being magnesium.

5,326,529
METHOD OF INHIBITING CORROSION OF CONCRETE REINFORCEMENTS

Boris A. Miksic, North Oaks, and Lawrence Gelner, St. Paul, both of Minn., assignors to Cortec Corporation, St. Paul, Minn.

Filed May 24, 1993, Ser. No. 67,511
Int. Cl.[5] C23F *11/00*
U.S. Cl. 422—7 **7 Claims**

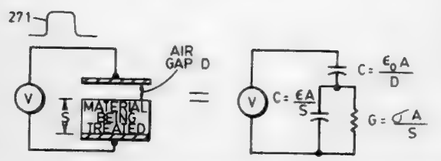


1. A method of inhibiting corrosion of metal reinforcement structures within cured concrete, the method comprising:
(a) providing a plurality of exteriorly-accessible generally uniformly distributed openings in the concrete;
(b) providing a plurality of containers each having a cavity containing therein a corrosion inhibitor composition comprising by weight from about 1% to about 90% migrating corrosion inhibitor and from about 10% to about 99% adsorbent material upon which the corrosion inhibitor is adsorbable, with said containers having respective walls defining said cavity which are permeable to the migrating corrosion inhibitor; and
(c) placing on container into each of a sufficient number of the exteriorly-accessible openings whereby a sufficient quantity of migrating corrosion inhibitor exits from the containers cavity to thereby migrate to and inhibit corrosion of the metal reinforcement structures embedded within the concrete.

5,326,530
ENERGY-EFFICIENT ELECTROMAGNETIC ELIMINATION OF NOXIOUS BIOLOGICAL ORGANISMS

Jack E. Bridges, Park Ridge, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Jan. 22, 1991, Ser. No. 643,332
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—22 **19 Claims**



1. An energy-efficient electromagnetic method for elimination of noxious biological organisms comprising the steps of:
(a) conveying a material contaminated with noxious biological organisms into and through an exposure chamber;
(b) in the exposure chamber, exposing the contaminated material to a spatial non-uniform, high intensity electric field; and
(c) in the exposure chamber, suppressing excessive current flow in localized regions, including suppressing arcing and current streamers;
the amplitude of the current density and electric field within the exposure chamber being controlled, in accordance with the conductivity and/or dielectric constant of the contaminated

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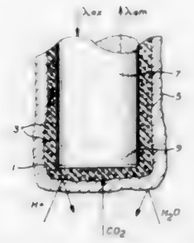
material, so that the electric field intensity is of the order of 3,000 volts/centimeter or more

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5,326,531
CO_2 SENSOR USING A HYDROPHILIC POLYURETHANE MATRIX AND PROCESS FOR MANUFACTURING

Soonkap Hahn, Poway; Alan Nelson, San Diego; Monte Bennett, Escondido, and Henry K. Hui, Laguna Niguel, all of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Filed Dec. 11, 1992, Ser. No. 989,102
Int. Cl.[5] G01N *21/00, 33/50*
U.S. Cl. 422—82.06 16 Claims



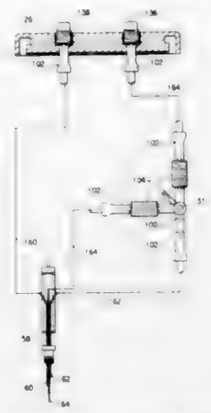
1. A carbon dioxide sensor element comprising:
an optical fiber having a surface portion;
a hydrophilic, gas permeable, cross-linked polymeric matrix disposed over std optical fiber surface portion, said hydrophilic polymeric matrix containing an aqueous dye-buffer solution physically entrapped in and dispersed throughout said hydrophilic polymeric matrix, said hydrophilic polymeric matrix formed from a polyurethane pre-polymer compound having a plurality of terminal isocyanate functional groups, said polyurethane pre-polymer compound being cross-linked by addition of said aqueous dye-buffer solution at room temperature; and
a layer of a gas permeable, hydrophobic material coating said hydrophilic polymeric matrix.

5,326,532
APPARATUS FOR CHEMICALLY PROCESSING TOXIC MATERIALS

William R. Taylor, Dunstable, Mass., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1993, Ser. No. 27,911
Int. Cl.[5] G01N *1/10, 1/34*
U.S. Cl. 422—100 8 Claims

1. Apparatus for passing a fluid through a processing column for effecting a chemical change in the fluid, the fluid being disposed in a vial having a septum seal capable of being pierced, said apparatus comprising:
a closed container having a first access port, a second access port and a bore, the vial being positioned in the bore;
a needle assembly having first, second, and third needles, the first needle being connected to the first access port, the third needle being connected to one end of the processing column;
a plunger, mounting the needle assembly, the plunger located within the bore in the container and containing the processing column, the plunger being disposed in and extending through the top of the container and being actuatable from outside the container to introduce the needle assembly into the vial through the septum seal; and valve means disposed in the container, actuatable from outside the container, for selectively connecting the second



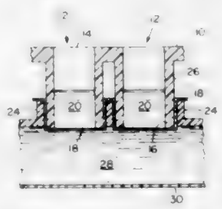
access port alternatively to the second needle or to an opposite end of the processing column

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5,326,533
MULTIWELL TEST APPARATUS

Carolyn Lee, Sudbury; Donald Rising, Stow, and Thomas Zermani, Concord, all of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Nov. 4, 1992, Ser. No. 971,498
Int. Cl.[5] B01D *27/08, 29/03;* C12M *1/12, 1/20*
U.S. Cl. 422—101 9 Claims

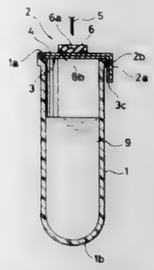


1. An apparatus suitable for separating liquid samples comprising:
a plate having a plurality of wells, each of said wells having a first open end, a second end and an outside peripheral surface,
a single separation membrane in sealing relationship with each of said second ends,
and a template having a plurality of holes of a size and arrangement corresponding to said wells,
said template being positioned so as to retain said membrane in sealing relationship with the second end and outside peripheral surface of each of said wells, and each second end extending through said template.

5,326,534
LIQUID COLLECTION TUBE

Sakae Yamazaki, and Takato Murashita, both of Yamanashi, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 449,973, Dec. 12, 1989, abandoned. This application Aug. 7, 1992, Ser. No. 927,193
Claims priority, application Japan, Dec. 16, 1988, 63-317754
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 7 Claims



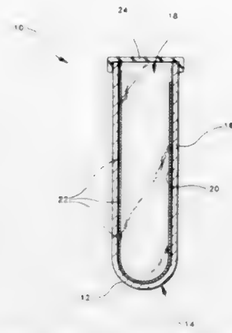
1. A liquid collecting tube comprising:
a tubular member having an open end and a closed bottom for receiving a liquid therein; and
closure means for closing said open end of said tubular member without using a separate cap member, said closure means being made of a material capable of being pierced by a piercing needle;
said closure means including:
a film sealing member for maintaining said open end of said tubular member sealed when taking out the liquid from said tubular member with a take-out tool which is insertable through said film sealing member, said film sealing member being bonded to and sealing said open end of said tubular member with a first adhesive strength; and
a separable member separably laminated on said film sealing member on the side thereof opposite said open end of said tubular member, said separable member being bonded to said film sealing member and being separable from said film sealing member prior to insertion of said take-out took into said tubular member through said film sealing member;
said separable member comprising a gas barrier layer provided on the side of said separable member which is laminated on said film sealing member, and a re-sealing member provided on the side of said separable member opposite to the side thereof which is laminated on said film sealing member, said re-sealing member re-sealing the closure means which is pierced by the piercing needle after removal of the piercing needle from said closure means; and
said separable member being bonded to said film sealing member with a second adhesive strength which is lower than said first adhesive strength.

5,326,535
TUBE HAVING UNITARY BLOOD COAGULATION ACTIVATOR AND METHOD FOR ITS PREPARATION

Erwin A. Vogler, Newhill; Jane C. Graper, Durham, and Garry R. Harper, Raleigh, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 30, 1993, Ser. No. 54,340
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 8 Claims

5. A method for preparing a plastic blood collection assembly comprising the steps of:
a) contacting an inside wall surface of a plastic tube having an open end and a closed end with a solvent which causes said inside wall surface to become sticky;
b) unitarily adhering particles of a blood clotting activator to the sticky inside wall surface, said particles being partially embedded in the plastic inside wall surface;

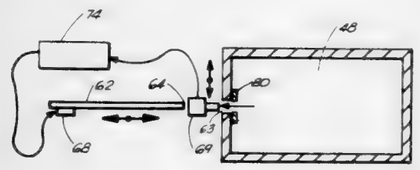


c) evaporating the solvent on said inside wall surface and on said particles; and
d) covering said open end with a puncturable septum.

5,326,536
APPARATUS FOR INJECTING NO_x INHIBITING LIQUID REAGENT INTO THE FLUE GAS OF A BOILER IN RESPONSE TO A SENSED TEMPERATURE

H. Randy Carter, Lancaster, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

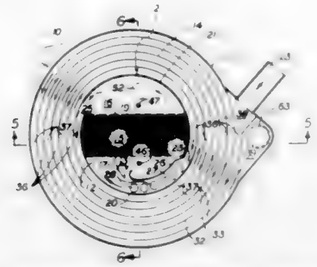
Filed Apr. 30, 1993, Ser. No. 54,924
Int. Cl.[5] B01J *10/00*
U.S. Cl. 422—111 6 Claims



1. An apparatus for injecting NO_x inhibiting liquid reagent into a boiler having boiler gas flowing therein in response to a sensed temperature range of said gas comprising;
conduit having a nozzle for injecting NO_x inhibiting reagent into the boiler;
mounting means for movably mounting the conduit to a wall of the boiler for reciprocating the conduit into and out of the boiler;
drive means operatively connected to the conduit for moving the conduit along the mounting means;
a temperature sensor for monitoring boiler gas temperature in the boiler area wherein said conduit will be reciprocated into and out of the boiler; and
control means connected between the drive means and the temperature sensor for operating the drive means in response to a sensed predetermined temperature range.

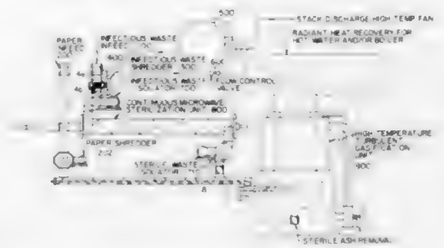
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5,326,537
COUNTERFLOW CATALYTIC DEVICE
James M. Cleary, P.O. Box 541, Falmouth, Mass. 02540
Filed Jan. 29, 1993, Ser. No. 11,290
Int. Cl.[5] F01N *3/10*
U.S. Cl. 422—173 9 Claims



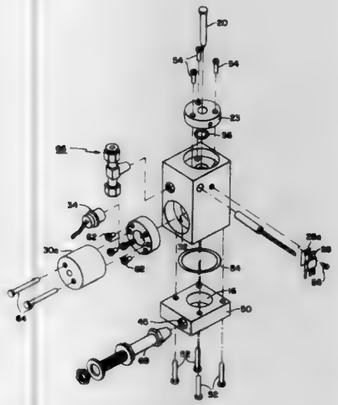
1. A compact catalytic oxidizer having a transverse, two dimensional flow path for treatment of vapor mixture comprising:
a) shell means for enclosing a central volume of generally circular cross-section having a longitudinal axis and a wall of generally cylindrical configuration, including an inlet header and an exhaust header;
b) a combined catalyst chamber and spiral heat exchanger integrally connected and coaxially positioned within the shell means, also of cylindrical configuration, for providing a continuous transverse flow path from the inlet header to the exhaust header having a longitudinal and transverse dimension for two dimensional flow of vapor comprising
i) spiral heat exchanger means for providing counter-flow heating of vapor comprising a pair of spaced spiral plates forming therebetween a first spiral flow passage having an external end and an internal end defining a transverse inlet spiral flow path and a second spiral flow passage having an internal end and an external end defining a transverse exhaust spiral flow path; and
ii) a catalyst chamber centrally positioned along the longitudinal axis of the shell means having permeable partition means for dividing the catalyst chamber into three zones comprising an inlet zone comprising an inlet plenum having an inlet aperture, a central core zone for containing a catalyst means, and an exhaust zone comprising an exhaust plenum having an exhaust aperture; wherein the inlet spiral flow path of the heat exchanger is connected to the inlet plenum defining a first heat exchange region, and the transverse spiral exhaust flow path is connected to the exhaust plenum and is positioned adjacent to the inlet spiral flow path defining a second heat exchange region and said inlet aperture and exhaust aperture are positioned on opposite sides of the catalyst chamber for providing transverse two dimensional flow of hydrocarbon vapor previously heated in the spiral heat exchanger with flameless combustion of the vapor introduced therein and;
c) control means for controlling the flameless combustion reaction and preventing explosive combustion comprising means for controlling temperature of the catalytic oxidizer comprising sensing means for sensing the temperature in the catalyst chamber; bypass means associated with the sensing means for automatically connecting the exhaust plenum with a relief means to moderate the temperature of the catalyst chamber; heater means connected to the sensing means for controlling the temperature of the vapor mixture entering the catalyst chamber; and pressure relief means connected to the bypass means for relieving over pressure in the catalytic oxidizer configured to move between a closed position to an open relieving position, in response to excess pressure.

5,326,538
CLOSED STERILIZATION SYSTEM FOR TREATING A PRODUCT SUCH AS TOXIC OR INFECTIOUS WASTE
David R. Walker, Clearwater, Fla., assignor to Serawaste Systems Corporation, Tampa, Fla.
Filed Mar. 13, 1991, Ser. No. 669,449
Int. Cl.[5] B09B *3/00*
U.S. Cl. 422—184 16 Claims



1. A sterilization system for treating a product comprising:
(A) first infeed means for feeding a product into said system;
(B) first preparing means for receiving said product from said first infeed means and for rendering said product suitable for sterilization;
(C) sterilizing means for sterilizing said product, said sterilizing means having an inlet for receiving said product from said first preparing means and an outlet for discharging a sterilized product;
(D) combustion means for incinerating said sterilized product;
(E) first conveying means for conveying said sterilized product from said outlet of said sterilizing means into said combustion means;
(F) first isolation means, positioned between said first preparing means and the inlet of said sterilizing means, for isolating product present in said sterilizing means from the product present in said first preparing means;
(G) second isolation means, positioned between said outlet of said sterilizing means and said first conveying means, for isolating said sterilized product from the product in said sterilization means, wherein each of said first and second isolation means comprises
(i) a housing having an inlet and an outlet and (ii) second conveying means, disposed within said housing, for moving said product from said housing inlet to said housing outlet and for isolating said product being discharged from said housing outlet from said product being received in said housing inlet;
wherein said second conveying means comprises
a rotary shaft centrally disposed within said housing and having opposite ends protruding from said housing;
at least two curved vanes rotatably mounted on said shaft and forming a compartment within a peripheral area of said housing between said housing inlet and outlet, said vanes rotating in a direction such that product is moved from said housing inlet to said housing outlet;
wherein said housing inlet and outlet are longitudinally offset from each other relative to a centerline of said shaft, thereby ensuring that said product being received in said housing inlet is isolated from said product being discharged from said housing outlet; and
wherein each of said rotating vanes of said second conveying means has a curved cross section and a cutting edge at a tip thereof which contacts an inner surface of said housing, said cutting edge having a helical trace relative to an axis of rotation of the rotary shaft thereby enabling said rotary shaft to cut any product which may become caught on the edge of the vane.

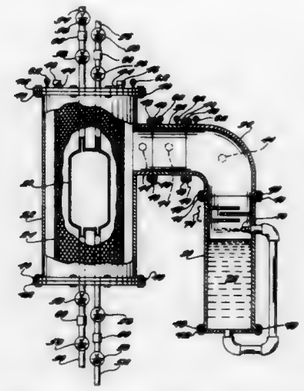
5,326,539
OZONE GENERATOR WITH INTERNAL HEATING MEANS
Brian B. Taylor, Windham, Conn., assignor to Environics Inc., West Wilmington, Conn.
Filed Jun. 11, 1993, Ser. No. 75,109
Int. Cl.[5] B01J *19/08*
U.S. Cl. 422—186.3 3 Claims



1. An ozone generator comprising:
a generally sealed housing have a substantially cylindrical interior side wall, and top and bottom walls sealed thereto;
an ultraviolet lamp supported at least partially within said housing and disposed along the central axis of and generally spaced from the substantially cylindrical interior side wall and including mean for energizing the lamp;
said lamp being primarily located adjacent to one of said end walls of the cylindrical interior;
a heater provided for raising the temperature of the air within said housing and closed-loop means for controlling the rate at which said heater operates to maintain the desired temperature control of air as it passes therethrough,
an air inlet in the cylindrical side wall disposed to admit air primarily tangentially to said side wall and adjacent an end wall thereof; and
an air outlet in the cylindrical side wall disposed adjacent to the end wall opposite to the inlet end wall and disposed generally tangential to the side wall whereby air entering the housing travels in a generally cyclonic pattern passing around the ultraviolet lamp to exit the air outlet thereby to provide the desired ozone.

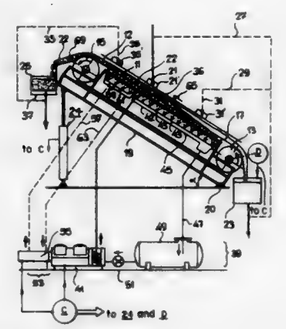
5,326,540
CONTAINMENT SYSTEM FOR SUPERCRITICAL WATER OXIDATION REACTOR
Philippe Chastagner, 3134 Natalie Cir., Augusta, Ga. 30909-2748
Filed Nov. 27, 1991, Ser. No. 798,784
Int. Cl.[5] F28D *21/00*
U.S. Cl. 422—205 20 Claims

1. An apparatus for use with a reaction vessel and a liquid coolant, said reaction vessel operating at a pressure and having at least one inlet line and at least one outlet line, said apparatus comprising:
a containment substantially surrounding said reaction vessel and spaced apart therefrom, said containment having a first wall with a pressure rating limit, said wall defining a volume;
a chamber adjacent to, extending from and in fluid communication with said containment and having a second wall, said first wall in sealing engagement with said second wall, said chamber containing said liquid coolant therein; and



baffle means between said reaction vessel and said coolant in said chamber for preventing said coolant from contacting said reaction vessel,
said containment dimensioned so that, in the event of a rupture of said reaction vessel, said pressure will not exceed said pressure rating limit of said wall.

5,326,541
DEVICE FOR SUBSTANCE SEPARATION FROM A LIQUID MIXTURE BY CRYSTALLIZATION, AND METHOD
Joachim Ulrich; Manfred Stepanski, and Yavus Oezoguz, all of Bremen, Fed. Rep. of Germany, assignors to Gebrüder Sulzer Aktiengesellschaft, Winterthur, Switzerland and Sandvik Process Systems GmbH, Fellbach, Fed. Rep. of Germany
Filed Nov. 25, 1991, Ser. No. 798,283
Claims priority, application Switzerland, Nov. 27, 1990, 03750/90
Int. Cl.[5] B01D *9/00*; C13K *1/10*
U.S. Cl. 422—254 13 Claims



1. An endless belt separator device for separating a substance from a liquid mixture by crystallization,
said device comprising
an elongated endless band or belt (12) defining an upper run

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(17) and a lower, or return run, and wherein the surfaces of said endless belt define an inner side and an outer side;

a crystallization surface (11) formed on the outer side of said upper run (17) of the endless band or belt (12);

mounting means (19, 20, 24) for mounting said upper run of the band or belt at an angle of inclination (α) which places one end portion of said endless band or belt at a higher elevation, with respect to a horizontal plane and defining an upper end portion, that an opposite, or lower end portion of the upper run;

at least one feeding station (21, 31, 35) for applying the liquid mixture onto the crystallization surface (11) at a level above said lower end portion;

speed controllable drive means (D, 13) coupled to said endless band or belt for driving said endless band or belt in a direction such that the upper run of said band or belt runs upwardly;

means (39, 42, 43, 45) for controlling the temperature, by selective cooling or heating, of said upper run (17) of the band or belt (21) and hence of said crystallization surface (11), said temperature control means being located in heat transfer relation with respect to said upper run,

said temperature control means including a plurality of heat exchange means (43, 59) forming a plurality of temperature zones on said crystallization surface, and thereby forming a temperature profile on said crystallization surface along the length thereof, in which the temperature at said upper end portion will differ from the temperature of the lower end portion and vary between a higher and a lower temperature on said crystallization surface;

a control unit (C) controlling the speed of operation of said drive means (D) and hence of said endless band or belt (12), and said temperature control means (39, 42, 43, 45) to thereby control the temperature profile on said crystallization surface (11); and

wherein said mounting means comprise adjustable means (24) for adjusting said angle of inclination (α) and for setting said angle at a level as a function of the liquid mixture and the substance to be crystallized therefrom at said controlled speed of said drive means (D) and said temperature profile controlled by said temperature control means (39, 42, 43, 45).

5,326,542

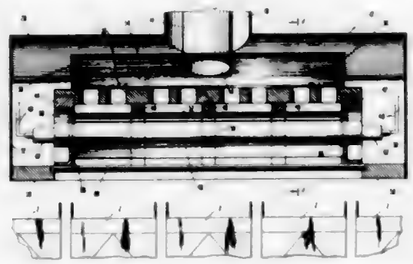
METHOD AND APPARATUS FOR STERILIZING CARTONS

Charles E. Sizer, Colleyville, Tex.; Terry D. Erickson, and Terrence F. Manley, both of St. Paul, Minn., assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Oct. 1, 1992, Ser. No. 955,259

Int. Cl.[5] A61L *2/10*

U.S. Cl. 422—291 **18 Claims**



1. Apparatus for sterilizing the interior of food cartons of the type having a bottom and upright side walls, the apparatus comprising:

(a) conveyor means for supporting and advancing a plurality of cartons along a path;

(b) a source of ultraviolet light, said source of ultraviolet light being elongated and having a longitudinal axis, said path being substantially parallel to said axis;

(c) a relfector extending along said longitudinal axis and spaced from said source of ultraviolet light for reflecting light from said source of ultraviolet light toward a bottom and side walls of cartons on said conveyor means, said reflector being elongated and being transversely curved about said longitudinal axis, said reflector having opposite parabolic sides joined together along an apex parallel to said longitudinal axis, said sides being rotated from the vertical about 13 degrees toward each other and having a common focus at the source ultraviolet light;

(d) cooling means for cooling said reflector means; and

(e) power means for operating said source of ultraviolet light.

5,326,543

PROCESS, INSTALLATION AND CHAMBER FOR REDUCING BIOLOGICAL ACTIVITY IN AN ENCLOSURE, PARTICULARLY FOR A STORAGE SPACE

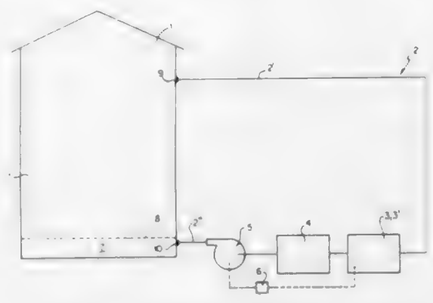
Alintor Fiorenzano, Jr., Rio de Janeiro, Brazil, assignor to Clover Electronics LTDA., Brazil

Continuation of Ser. No. 693,158, Apr. 29, 1991, abandoned. This application May 25, 1993, Ser. No. 65,891

Claims priority, application Brazil, Oct. 1, 1990, PI9004909

Int. Cl.[5] A61L *9/00*

U.S. Cl. 422—292 **12 Claims**



1. Apparatus for reducing biological activity in a storage enclosure and keeping it low, for preserving the storage enclosure's contents against deterioration, comprising:

a chamber in fluid communication with a storage enclosure, said chamber having an air inlet and an air outlet;

oxidation means in said chamber for oxidizing air in said chamber;

air line means connecting said chamber to said storage enclosure;

propelling means in communication with said chamber for propelling oxidized air from said chamber to a storage enclosure; and,

means for releasing air from said storage enclosure;

said oxidation means for oxidizing air including at least one block which is provided with capillaries, a heating filament connectable to an electric energy source passing through said capillaries, said block being so arranged between said inlet and outlet of the chamber whereby at least part of the air that circulates in the chamber passes through the capillaries; and

a heat exchanger means for cooling the air that leaves the chamber, said heat exchanger means being connected between the oxidation means and said storage enclosure.

5,326,544

COMBINATION STERILIZED HOT-WATER PRODUCER AND INCINERATION SYSTEM

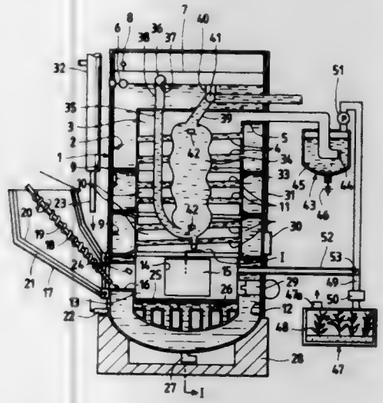
Yoshishige Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Oze, Japan

Filed Nov. 12, 1991, Ser. No. 789,873

Claims priority, application Japan, Dec. 17, 1990, 2-417737

Int. Cl.[5] A61L *2/04*

U.S. Cl. 422—295 **4 Claims**



1. A combination sterilized hot-water producer and incineration system comprising;

a combustion zone having an upper portion and a lower portion;

combustion means disposed in said lower portion of said combustion zone;

garbage feed means in communication with the lower portion of said combustion zone;

water feed means;

water tank means completely surrounding said combustion zone, said water tank means including an upper tank, an intermediate tank and a lower tank in communication with each other, said combustion zone being surrounded by water within said upper, intermediate and lower tanks, said water tank means including a water supply inlet in communication with said water feed means, and a heat exchange means to heat with heat from said combustion zone water in said water tank means, said heat exchange means including a plurality of tubes in communication with said water tank means, said plurality of tubes passing through the upper portion of said combustion zone;

water sterilizer means disposed in the interior of said intermediate and upper tanks and said heat exchange means, said water sterilizer means including a sterilizing chamber having a inlet means and an outlet means, said inlet means positioned in said upper portion of said combustion zone and in communication with said upper tank in said water tank means to permit water in said upper tank above said combustion zone to pass into said sterilizing means, said outlet means permitting water having been sterilized in said sterilizing chamber to be removed from the system;

outlet means for combustion zone gases in communication with said upper portion of said combustion zone, said outlet means terminating within a body of water in an exhaust gas purifying means;

means to remove purified exhaust gas from said purifying means; and

means to reduce carbon dioxide in the removed purified exhaust gas to remove oxygen therefrom.

5,326,545

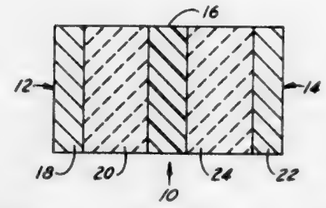
METHOD OF MAKING LITHIUM BATTERY ELECTRODE COMPOSITIONS

Rene Koksbang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Mar. 30, 1993, Ser. No. 39,872

Int. Cl.[5] C01G *31/02*

U.S. Cl. 423—62 **20 Claims**



1. A method of preparing a vanadium oxide based active material composition for an electrode of an electrochemical cell, by the steps consisting essentially of:

a. forming a wet mixture comprising at least one volatile constituent and an oxide of vanadium represented by the general formula V_2O_5;

b. atomizing the mixture of step (a) to form droplets thereof and contacting the droplets with a stream of hot gas at a temperature to evaporate such volatile constituent thereby providing fine particles of the oxide of vanadium at least a major portion of such particles represented by the general formula V_2O_5;

c. directing the fine particles onto a collection surface; and

d. removing the fine particles from the collection surface to form a collection of powder material suitable for use in an electrode of an electrochemical cell.

5,326,546

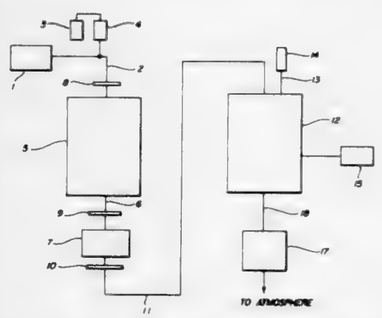
METHOD AND APPARATUS FOR CHLORINE DIOXIDE MANUFACTURE

Aaron Rosenblatt, New York, N.Y.; David H. Rosenblatt, Baltimore, Md.; David Feldman, New York, N.Y.; Joseph E. Knapp, Pittsburgh, Pa.; Diane Battisti, Greensburg, Pa., and Badie Morsi, Pittsburgh, Pa., assignors to Iolab Corporation, Claremont, Calif.

Division of Ser. No. 408,153, Sep. 14, 1989, Pat. No. 5,110,580. This application Apr. 29, 1992, Ser. No. 875,509

Int. Cl.[5] C01B *7/00;* **C09K** *3/00*

U.S. Cl. 423—241 **3 Claims**



1. A composition for selectively removing chlorine gas from a humidified gaseous stream at about ambient temperature comprising chlorine dioxide and chlorine comprising soda-lime particles having an average particle size of about 10 mesh or smaller.

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5,326,547
PROCESS FOR PREPARING POLYSILICON WITH DIMINISHED HYDROGEN CONTENT BY USING A TWO-STEP HEATING PROCESS

Robert H. Allen, and James E. Boone, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Continuation of Ser. No. 791,882, Nov. 13, 1991, Pat. No. 5,242,671, which is a continuation-in-part of Ser. No. 255,967, Oct. 11, 1988, abandoned. This application Apr. 26, 1993, Ser. No. 53,527

Int. Cl.[5] C01B *33/02*

U.S. Cl. 423—349 **20 Claims**



1. A method for producing polysilicon particles having a reduced hydrogen content, said process comprising:

(a) forming polysilicon particles which have a size within the size range of from about 150 to about 3000 microns, the formation being by a process which comprises thermally decomposing silane in a first fluidized bed comprised of silicon particles whereby the silane metal produced from the thermal decomposition of the silane is deposited on the particles; and

(b) subjecting the formed particles to heat in a second fluidized bed in the presence of a non-containing inert gas for a time and at a temperature of from about 890° C. to about 1200° C., which temperature exceeds the first fluidized bed temperature, whereby the combination of the time and the temperature in the second fluidized bed are sufficient to reduce the hydrogen content of the formed particles but insufficient to melt-consolidate the particles.

5,326,548
FIBROUS ANHYDROUS MAGNESIUM OXYSULFATE AND PROCESS FOR THE PREPARATION THEREOF

Satoshi Otaka, Yamaguchi; Tadashi Matsunami, and Yukio Tasaka, both of Ube, all of Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Apr. 14, 1992, Ser. No. 868,119

Claims priority, application Japan, Apr. 16, 1991, 3-173481

Int. Cl.[5] C01F *5/40*

U.S. Cl. 423—554 **11 Claims**



6. A process for the preparation of a fibrous anhydrous magnesium oxysulfate having the formula of $MgSO_4.5Mg(OH)_2$, comprising the steps of:

preparing a magnesium oxysulfate having a formula of $2MgSO4.Mg(OH)2.3H2O$ by dispersing magnesium hydroxide or magnesium oxide into an aqueous solution of magnesium sulfate having a concentration of 1.5 to 5.0 mol/l and then subjecting the dispersion to a hydrothermal reaction carried out at a temperature of 100° to 200° C. and under a pressure of 1 to 15 kg/cm^2 for 0.1 to 5 hours;

cooling and diluting, with water or an aqueous solution of magnesium sulfate, a slurry of said magnesium oxysulfate having a formula of $2MgSO_4.Mg(OH)_2.3H_2O$ to a concentration of 0.5 to 2.5 mol/l of the aqueous solution of magnesium sulfate and to a temperature of 10° to 60° C. to thereby decompose the $2MgSO_4.Mg(OH)_2.3H_2O$ and produce fibrous magnesium oxysulfate having a formula of $MgSO_4.5Mg(OH)_2.8H_2O$; and heat treating the fibrous magnesium oxysulfate having a formula of $MgSO_4.Mg(OH)_2.8H_2O$ to obtain the fibrous anhydrous magnesium oxysulfate having the formula of $MgSO_4.5Mg(OH)_2$.

5,326,549
COMPOSITE METAL HYDROXIDE AND PROCESS FOR THE PRODUCTION THEREOF

Shigeo Miyata, Takamatsu, Japan, assignor to Kabushiki Kaisha Kaisui Kagaku Kenkyujo, Kagawa, Japan

Filed Nov. 4, 1992, Ser. No. 971,459

Claims priority, application Japan, Nov. 7, 1991, 3-319827

Int. Cl.[5] C01G *49/00, 51/00, 53/00*

U.S. Cl. 423—594 **4 Claims**

1. A composite metal hydroxide of the formula,

$$Ca_{1-x}M^{2+}{}_x(OH)_2$$

wherein M^{2+} is at least one divalent metal ion selected from the group consisting of Mg^{2+}, Mn^{2+}, Fe^{2+}, Co^{2+}, Ni^{2+}, Cu^{2+} and Zn^2, and x is defined by $0.005<x<0.4$.

5,326,550
FLUIDIZED BED REACTION SYSTEM FOR STEAM/HYDROCARBON GAS REFORMING TO PRODUCE HYDROGEN

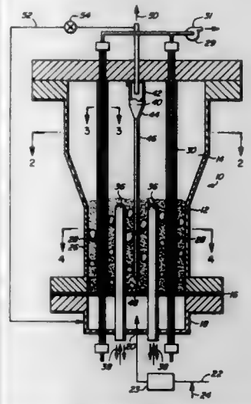
Alaa-Eldin M. Adris; John R. Grace; Choon J. Lim, all of Vancouver, Canada, and Said S. Elnashaie, Riyadh, Saudi Arabia, assignors to The University of British Columbia, Vancouver, Canada

Filed Oct. 23, 1992, Ser. No. 965,011

Int. Cl.[5] C01B *3/26*

U.S. Cl. 423—652 **10 Claims**

1. A method for producing hydrogen gas comprising forming a fluidized bed of a suitable particulate catalyst by introducing reacting gases comprising a mixture of steam and hydrocarbon gas into the bottom of said fluidized bed to fluidize said particulate catalyst and form said fluidized bed, said fluidized bed occupying a portion of a vessel and forming a reaction zone, forming a freeboard zone in said vessel above said fluidized bed reaction zone, reacting said reacting gases within said fluidized bed reaction zone to produce hydrogen gas, separating said hydrogen gas from other gases in said fluidized bed reaction zone as molecular or atomic hydrogen through a perm selective membrane means that permits transfer of hydrogen therethrough while preventing the transmission of said other gases present in said reaction zone therethrough, separating further hydrogen gas from said other gases through said perm selective membrane means in said freeboard zone, said hydrogen gas after permeation through said perm selective membrane means providing a source of relatively pure hydrogen gas and withdrawing said relatively pure hydrogen gas.



5,326,551
NUCLEAR IMAGING USES OF RADIO-LABELLED ATRIAL NATRIURETIC FACTOR

Pavel Hamet; Johanne Tremblay, both of Montréal; Raymond Lamberet, Laval, and Jean Léveillé, Outremont, all of Canada, assignors to L'Istitut de Recherches Cliniques de Montreal and L'Hotel-Dieu de Montreal, Montreal, Canada

PCT No. PCT/CA90/00192, § 371 Date Feb. 5, 1991, § 102(e) Date Feb. 5, 1991, PCT Pub. No. WO90/14845, PCT Pub. Date Dec. 13, 1990

Continuation-in-part of Ser. No. 363,709, Jun. 9, 1989, abandoned. This PCT application Jun. 8, 1990, Ser. No. 634,220

Int. Cl.[5] A61K *49/02*

U.S. Cl. 424—1.45 **41 Claims**



1. A nuclear imaging method for quantifying uptake, binding, and/or displacement of atrial natriuretic factor in a target organ of a mammal which comprises administering a diagnostically effective amount of a radio-labelled mammalian atrial natriuretic factor, active fragment or analog thereof to a live mammal, and subsequently imaging the live mammal or a portion thereof at one or more observation times using a suitable radio-detecting device in order to quantify the uptake, binding and/or displacement of said radio-labelled atrial natriuretic factor, fragment or analog in one or more target organs.

5,326,552
FORMULATIONS FOR NANOPARTICULATE X-RAY BLOOD POOL CONTRAST AGENTS USING HIGH MOLECULAR WEIGHT NONIONIC SURFACTANTS

George C. Na, Fort Washington, and Natarajan Rajagopalan, Phoenixville, both of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 17, 1992, Ser. No. 991,909

Int. Cl.[5] A61K *49/04, 9/14, 9/50*

U.S. Cl. 424—4 **12 Claims**

1. A composition comprised of nanoparticles containing an X-ray diagnostic compound, having a nonionic surfactant having a molecular weight of at least 4000 as a surface modifier adsorbed on the surface thereof in an amount of 1 to 75% by weight based on the total weight of the particle and a cloud point modifier associated therewith present in an amount of 0.01–20% by weight based on the total weight of the composition .

5,326,553
COMPOSITIONS OF IODOPHENOXY ALKANES AND IODOPHENYL ETHERS IN FILM-FORMING MATERIALS FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Carl R. Illig, Phoenixville; Eugene R. Cooper, Berwyn; John L. Toner, Downingtown; Donald A. Upson, West Chester; Brent D. Douty, Coatesville; Thomas J. Caulfield, Audubon, all of Pa.; Bacon, Edward R., East Greenbush, N.Y.; Kimberly G. Estep, Albany, N.Y.; Kurt A. Josef; Shaughnessy Robinson, both of Clifton Park, N.Y., and Paul P. Spara, Fairport, N.Y., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Feb. 2, 1993, Ser. No. 12,171

The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.[5] A61K *49/04, 31/075*

U.S. Cl. 424—5 **29 Claims**

1. An x-ray contrast composition designed for depositing a thin, flexible film membrane onto the mucosal lining of the nutrient absorbing inner surface of the intestine of a patient to form a barrier between said nutrient absorbing inner surface and the content of said intestine, said flexible film membrane to remain bound to said mucosal lining until eliminated by normal cell turnover comprising based on w/w:

(a) of from about 0.001 to about 15% of a polymeric material capable of forming a film membrane on the gastrointestinal tract in the Ph range of from about 5 to about 8, said polymeric material is selected from the group consisting of

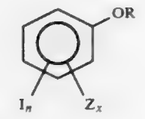
anionic polymers carrying negative charges in the ionized form,

cationic polymers carrying positive charges in the ionized form, and

neutral polymers, said neutral polymers having polarizable electrons selected from the group consisting of oxygen, nitrogen, sulfur, fluoride, chloride, bromide and iodide: in combination with

(b) of from about 0.001 to about 15% of a divalent cation to potentiate the binding of said flexible film membrane to said mucosal lining selected from the group consisting of Ca^{++}, Mg^{++}, Zn^{++} and Ba^{++}; and

(c) an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein

Z is H, halo, C_1–C_{20} alkyl, cycloalkyl, lower alkoxy,

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cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;
R is C_1–C_{25} alkyl, cycloalkyl, or halo-lower-alkyl, optionally substituted with halo, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy, $(CR_1R_2)_p$—$(CR_3{=}CR_4)_mQ$, or $(CR_1R_2)_p$—C≡C—Q;
R_1, R_2, R_3 and R_4 are independently lower-alkyl, optionally substituted with halo;
x is 1–4;
n is 1–5;
m is 1–15;
p is 1–10; and
Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl
in a pharmaceutically acceptable carrier

5,326,554
ORAL COMPOSITIONS FOR TREATING PLAQUE AND GINGIVITIS
Thomas E. Fitz, Jr., Loveland, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 23, 1993, Ser. No. 52,316
Int. Cl.[5] A61K *7/16, 7/18*
U.S. Cl. 424—49 4 Claims

1. Aqueous dentifrice toothpaste gel or cream consisting essentially of about 5% to about 70% of bicarbonate salt, from about 0.25% to about 2% of sodium carbonate, from about 10% to about 50% water, and from about 6% to about 70% of a silica dental abrasive which does not excessively or unduly abrade tooth enamel or dentin.

5,326,555
CLEAR HAIR SPRAY COMPOSITION CAPABLE OF FORMING LOW TACK FILMS WHICH DRY RAPIDLY
Eugene E. Hardy, Saddle Brook, and Edward W. Walls, Jr., Cranford, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.
Filed Mar. 22, 1993, Ser. No. 34,999
Int. Cl.[5] A61K *7/11, 31/765;* C08L *33/02*
U.S. Cl. 424—71 9 Claims

1. A clear hair spray composition exhibiting reduced drying times and reduced tack during use as compared to compositions without component (b) below being present, consisting essentially of, by weight of the composition,
(a) about 2–9% of a fixative resin that is a linear homopolymer or random copolymer including a monomer selected from the group consisting of a vinyl monomer and an acrylate monomer,
(b) about 0.08–0.35% of a hydrolyzed crosslinked maleic anhydride-C_1–C_5 alkyl vinyl ether copolymer,
(c) about 11.8–41.92% water, and
(d) about 55–80% alcohol having 2–4 carbons.

5,326,556
SHAVING COMPOSITIONS
Alfred G. Barnet, Hingham, and Merrill R. Mezikofsky, Wakefield, both of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Jan. 25, 1991, Ser. No. 645,938
Int. Cl.[5] A61K *7/15*
U.S. Cl. 424—73 7 Claims

1. A shaving composition in the form of a self-foaming gel comprising, in percent by weight of the composition, about 65 to 80% water, about 12 to 25% of a water soluble soap selected from sodium, potassium and triethanolamine salts of stearic, palmitic, myristic, oleic and coconut oil fatty acids, and mixtures thereof, about 1 to 5% of a volatile hydrocarbon selected from n-pentane, isopentane, neopentane, n-butane, isobutane, and mixtures thereof, about 0.002 to 0.01% of an anionic, amphoteric or nonionic fluorosurfactant, and about 1 to 4% of a hydrogenated polyisobutene.

5,326,557
MOISTURIZING COMPOSITIONS CONTAINING ORGANOSILICON COMPOUNDS
David A. Glover; Gary E. LeGrow; Linda M. Madore, and Regina M. Malczweski, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Apr. 6, 1993, Ser. No. 43,325
Int. Cl.[5] A61K *31/74, 7/48;* C08K *5/54;* C08L *83/06*
U.S. Cl. 424—78.03 18 Claims

1. A skin care composition comprising 3.0 to 50.0 percent by weight of at least one surfactant selected from the group consisting of anionic, nonionic, and amphoteric, emulsifying agents; 0.1 to 20.0 percent by weight of a skin conditioning agent; 0.05 to 5.0 percent by weight of a thickening agent; 1.0 to 20.0 percent by weight of an emollient or humectant; add the balance being water; the skin conditioning agent being an oxyethylene functional organosilane compound having the formula $RSiR'_3$ in which R is the radical $—O(CH_2CH_2O)_xR''$; R' is an R group or an alkyl radical having one to six carbon atoms; R'' is a radical selected from the group consisting of hydrogen; an alkyl group of one to six carbon atoms; and an aryl group; and x is an integer having a value of six to thirty.

5,326,558
MEGAKARYOCYTOPOIETIC FACTOR
Katherine Turner, Melrose; Steven C. Clark, Winchester; Thomas G. Gesner, Beverly, and Rodney M. Hewick, Lexington, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 457,196, Dec. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 390,901, Aug. 8, 1989, abandoned. This application Jun. 29, 1990, Ser. No. 546,114
Int. Cl.[5] C07K *15/00;* A61K *37/02*
U.S. Cl. 424—85.1 7 Claims

1. A human megakaryocyte colony stimulating factor protein, substantially free from association with other proteinaceous material, said protein being characterized by possessing
(a) the ability to stimulate growth and development of colonies consisting of megakaryocyte cells;
(b) an apparent molecular weight of about 28–38 kd as determined by 12% sodium dodecyl sulfate polyacrylamide gel electrophoresis under non-reducing conditions;
(c) an apparent molecular weight of about 20–27 kd as determined by 12% sodium dodecyl sulfate polyacrylamide gel electrophoresis under reducing conditions; and
(d) a partial amino acid sequence selected from the group consisting of:
(i) Ser Arg Cys Phe Glu Ser Phe Glu Arg;
(ii) Arg Val Cys Thr Ala Glu Leu Ser Cys Lys Gly;
(iii) Lys Ala Pro Pro (X) Gly Ala Ser Gln Thr Ile Lys; and
(iv) Lys Tyr Asp Lys Cys Cys Pro Asp Tyr Glu Ser Phe Cys Ala Glu Val His Asn Pro, wherein (X)=Ser or Thr.

5,326,559
TREATMENT OF ACCELERATED ATHEOSCLEROSIS WITH INTERLEUKIN-2 RECEPTOR TARGETED MOLECULES
D. Douglas Miller, 7295 Greenway Ave., University City, Mo. 63130
Filed May 16, 1991, Ser. No. 701,219
Int. Cl.[5] A61K *37/02*
U.S. Cl. 424—85.2 11 Claims

1. A method for inhibiting accelerated atherosclerosis in a patient suffering from vascular injury, said method comprising administering to said patient a molecule which is capable of specifically binding to an interleukin-2 receptor expressed on a cell of said patient which contributes to the process of accelerated atherosclerosis, said molecule being capable of decreasing the viability of said cell, said molecule being a hybrid molecule comprising a first and a second portion joined together covalently, said first portion comprising a cytotoxin capable of decreasing cell viability and said second portion comprising interleukin-2 or an antibody capable of binding to the interleukin-2 receptor.

5,326,560
INSECTICIDE CARRIERS AND INSECTICIDES
Jack A. Henderson, 1609 Stanford, NE., Albuquerque, N. Mex. 87106-3729
Continuation of Ser. No. 687,726, Apr. 18, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 51,008
Int. Cl.[5] A01N *63/00, 65/00, 25/08*
U.S. Cl. 424—93 L 7 Claims

1. An insecticidal composition comprising an insecticidally effective amount of an insecticide selected from the group consisting of *Bacillus thuringiensis*, pyrethrum and a mixture of pyrethrum and pipernoyl butoxide, in combination with an insecticidal activity extending amount of semi-solid petrolatum and diatomaceous earth.

5,326,561
ANTIFUNGAL SYNERGISTIC COMBINATION OF ENZYME FUNGICIDE AND NON-ENZYMATIC FUNGICIDE AND USE THEREOF
Gary E. Harman; Matteo Lorito, both of Geneva, N.Y.; Antonio Di Pietro, Cordoba, Spain, and Christopher K. Hayes, Geneva, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Dec. 15, 1992, Ser. No. 990,609
Int. Cl.[5] A61K *37/54;* C12N *9/24, 9/42;* A01N *43/50*
U.S. Cl. 424—94.61 14 Claims

1. A liquid composition for inhibiting the germination or growth of a fungus, said composition comprising
(a) a biologically pure fungal cell wall degrading enzyme selected from the group consisting of endochitinases, chitin 1,4-β-chitobiosidases, β-N-acetylglucosaminidases, and glucan 1,3-β-glucosidases, and
(b) a non-enzymatic fungicide selected from the group consisting of (i) sterol synthesis inhibiting fungicides and (ii) captan, said non-enzymatic fungicide being present at a concentration providing about 4% to less than 95% inhibition of spore germination when used without (a),
(a) and (b) being present in a weight ratio of (a) to (b) ranging from 2:1 to 500,000:1 on a biologically pure enzyme basis.

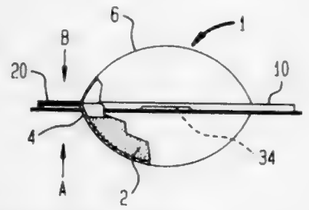
5,326,562
PHARMACEUTICAL DOSAGE UNIT FOR TREATING INFLAMMATION COMPRISING PROTEASE NEXIN-I
Randal W. Scott, Cupertino, Calif., assignor to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.
Division of Ser. No. 804,332, Dec. 6, 1991, Pat. No. 5,206,017, which is a continuation-in-part of Ser. No. 505,442, Apr. 5, 1990, Pat. No. 5,112,608, which is a continuation-in-part of Ser. No. 25,450, Mar. 13, 1987, Pat. No. 5,278,049, which is a continuation-in-part of Ser. No. 871,501, Jun. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 870,232, Jun. 3, 1986, abandoned. This application Nov. 23, 1992, Ser. No. 980,311
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] A61K *37/547, 37/48, 37/54*
U.S. Cl. 424—94.64 12 Claims

1. A pharmaceutically acceptable injectable dosage unit for treating inflammation, comprising:
a pharmaceutically effective amount of protease nexin-I; and
a pharmaceutically acceptable carrier.

5,326,563
NICOTINE COMPOSITIONS
Frank R. Spindler, 42 Abang Avenue, Tanah Merah, Queensland, 4129, and Bhupat Rawal, Suite 1, Kenmore Village Shopping Centre, Kenmor, QLD, 4069 both of Australia
Division of Ser. No. 499,305, May 17, 1990, Pat. No. 5,158,771. This application Sep. 22, 1992, Ser. No. 948,500
Claims priority, application Australia, Nov. 19, 1987, PI5511
Int. Cl.[5] A61K *31/465;* A24B *15/24*
U.S. Cl. 424—197.1 11 Claims

1. A composition for use in the suppression of a smoking habit by dermal application comprising a tobacco plant extract which comprises between 0.1% and 8.0% of nicotine and at least one additional tobacco derivative in a water based solvent, wherein said tobacco plant extract is obtained from tobacco leaves which have been processed after harvesting within about 24 hours so as to minimize the development of degradation products in said tobacco leaves, and wherein said at least one additional tobacco derivative is soluble in said solvent.

5,326,564
RESEALABLE COSMETIC PRODUCT
Joseph LaRosa, Danbury; John Vaccaro, Stamford, both of Conn., and Victoria Connell, New York, N.Y., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.
Filed Nov. 25, 1992, Ser. No. 981,708
Int. Cl.[5] A45D *40/00;* A61K *9/48*
U.S. Cl. 424—401 16 Claims



1. A cosmetic product comprising:
a cosmetic composition pharmaceutically acceptable for application to a human body; and
a container for enclosing the cosmetic composition comprising:
(i) a first section defined by a hemispheroidal chamber having an open mouth with a circumferential edge thereabout, a flange projecting outwardly from and at least partially encompassing the circumferential edge, and a sealing web completely covering the mouth as well as at least a portion of the flange; and
(ii) a second section defined by a hemispheroidal chamber having an open mouth with a circumferential edge thereabout, a flange projecting outwardly from and at least partially encompassing the circumferential edge, a lip at least partially encompassing a peripheral edge of the flange, and at least one clamping means formed on the lip for releasably engaging the first section flange thereby releasably joining first and second sections to one another.

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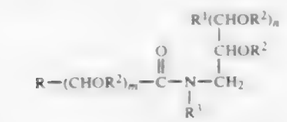
5,326,565

COSMETIC COMPOSITION

Peter Critchley, Bedford; Desmond B. Hagan, South Wirral; Susan E. Kirsch, St. Albans; David T. Parrott, Oxton; Anthony V. Rawlings, Northants, all of England; Ian R. Scott, Allendale, N.J., and Anthony P. Taylor, Wirral, England, assignors to Elizabeth Arden Co., New York, N.Y.

Division of Ser. No. 781,052, Oct. 21, 1991, Pat. No. 5,198,210.
This application Dec. 4, 1992, Ser. No. 985,993
Claims priority, application United Kingdom, Oct. 22, 1990, 9022922; Dec. 20, 1990, 9017708
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] A61K *7/00, 7/06*
U.S. Cl. 424—401 3 Claims

1. A synthetic pseudoceramide having the structure (2):



(2)

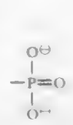
where

R represents a linear or branched, saturated or unsaturated, hydroxylated or non-hydroxylated, phosphorylated or non-phosphorylated, sulphated or non-sulphated aliphatic hydrocarbon group having from 1 to 49 carbon atoms or the sub-group Y—O—(C_aH_b)—;

R^1 represents a linear or branched, saturated or unsaturated, hydroxylated or non-hydroxylated, phosphorylated or non-phosphorylated, sulphated or non-sulphated aliphatic hydrocarbon group having from 1 to 28 carbon atoms;

R^2 represents H, a sugar residue, a sulphate residue or a phosphate residue P_i;

P_i represents the group:

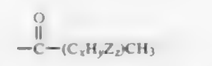


R^3 represents H, or the sub group (3):



X^1, X^2 and X^3 each individually represent H C_{1-5} alkyl or C_{1-5} hydroxyalkyl;

Y represents H or a residue or a C_{14-22} fatty acid having the structure (4):



(4)

Z represents —OH —OP_i —OSO_3 or an epoxy oxygen,

a is an integer of from 7 to 49

b is an integer of from 10 to 98

c is 0 or an integer of from 1 to 4

d is 0 or 1

x is an integer of from 12 to 20

y is an integer of from 20 to 40

z is 0 or an integer of from 1 to 4

n is 0 or 1

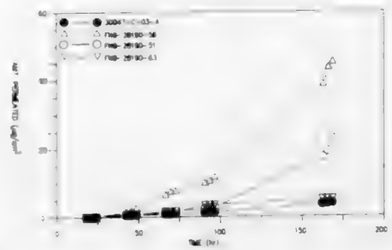
m is 1.

5,326,566

USE OF DIBUTYL ADIPATE AND ISOPROPYL MYRISTATE IN TOPICAL AND TRANSDERMAL PRODUCTS

Prakash V. Parab, Williamsville, N.Y., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 89,069, Jul. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 790,939, Nov. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 701,944, May 17, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 108,279
Int. Cl.[5] A61K *9/10*
U.S. Cl. 424—401 17 Claims



1. A single or multiple phase topical composition for enhancing skin penetration of a pharmacologically active agent comprising

a pharmacologically effective amount of a pharmacologically active agent, such agent being an oil-soluble steroid, retinoid or aretinoid or a water-soluble α- or β-hydroxycarboxylic acid, ketocarboxylic acid or ester, lactone or salt thereof; and

(1) when the active agent is oil-soluble, an oil phase containing as a first solvent system, dibutyl adipate or a mixture of dibutyl adipate and isopropyl myristate, the oil-soluble active agent being solutiblized in the first solvent system, the first solvent system being present in an amount such that the oil-phase has a degree of unsaturation of 1 to 1.5 with respect to the oil-soluble active agent, any excess oil-soluble active agent not solubilized in the oil-phase being suspended in the composition; or

(2) when the active agent is water-soluble,

(i) a second oil phase containing as a second solvent system, dibutyl adipate or a mixture of dibutyl adipate and isopropyl myristate; and

(ii) a water phase, the water-soluble active agent being solubilized in the water phase, any excess water-solublle active agent not solubilized in the water phase being solubilized in the second oil phase and/or suspended in the composition.

5,326,567

ANTIMICROBIAL COMPOSITIONS USEFUL FOR MEDICAL APPLICATIONS

Christopher C. Capelli, 4500 7th St., Kenosha, Wis. 53142

Continuation of Ser. No. 683,436, Apr. 10, 1991, abandoned.
This application Jun. 28, 1993, Ser. No. 82,168
Int. Cl.[5] A01N *25/00, 59/08;* A61L *15/16;* A61K *33/14*
U.S. Cl. 424—405 16 Claims

1. An antimicrobial composition consisting essentially of

(a) a stabilizing acyclic polyether polymer;

(b) silver ion; and

(c) a stabilizing halide selected from the group consisting of chloride, bromide, and iodide, wherein the ratio of equivalents of said halide to equivalents of said silver ion is greater than 4 to 1, when said halide is chloride; is greater than 2.1 to 1, when said halide is bromide; and is greater than 1.1 to 1, when said halide is iodide; and

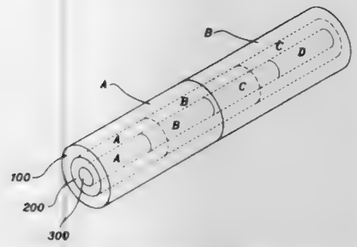
wherein said antimicrobial composition has long-term photostability of greater than 72 hours in direct sunlight.

5,326,568

METHOD OF TISSUE-SPECIFIC DELIVERY

Vincent C. Giampapa, 87 Valley Rd., Montclair, N.J. 07042

Continuation-in-part of Ser. No. 695,107, May 3, 1991, Pat. No. 5,201,728. This application Apr. 30, 1992, Ser. No. 876,783
Int. Cl.[5] A61F *2/02;* A61K *9/22*
U.S. Cl. 424—426 7 Claims



1. A method of bio-oncotic tissue-specific delivery of therapeutic agents, comprising the steps of:

(a) furnishing an implantable element that is biodegradable in situ within human tissue, said implantable element defining a series of respectively concentric shells having said therapeutic agents incorporated upon or within each of said shells such that the outermost shell and said agents associated therewith will be delivered earliest while the innermost shell and its agents will be delivered last within said human tissue, said agents to be delivered selected from the group consisting essentially of chemotherapeutics, analgesics, hormones, enzymes, anesthetics, anti-inflammatories, antibiotics, and immunoglobulins, and the material of said biodegradable element selected from the group consisting essentially of processed sheep dermal collagen, Hench's bioglass, fibrinogen, polyimino-carbonates, and polylactic acid;

(b) integrating into a surface of said element a vaso-inductive agent selected from the group consisting essentially of vascular endothelial growth factor, platelet growth factor, vascular permeability growth factor, fibroblast growth factor, and transforming growth factor beta; and

(c) subcutaneously implanting and securing said element into said tissue,

whereby, following implantation of said element into said tissue, said vaso-inductive agent will stimulate capillary growth thereby facilitating delivery of said therapeutic agents to said tissue.

5,326,569

MEDICAL FOODS FOR THE NUTRITIONAL SUPPORT OF CHILD/ADULT METABOLIC DISEASES

Phyllis J. B. Acosta, Westerville; Richard A. Grondalski, Columbus; Jeffrey W. Liebrecht, Columbus, and Patricia A. Reynolds, Columbus, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 23, 1992, Ser. No. 997,254
Int. Cl.[5] A61K *37/18*
U.S. Cl. 424—440 17 Claims

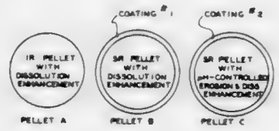
1. A composition of matter which is in powdered form and may be reconstituted and orally administered for use in the nutritional support of individuals having inherited metabolic diseases, said composition comprising a mixture of (a) a premix base in physical admixture with (b) a blend of synthetic alpha amino acids, wherein said premix base consists essentially of fats, carbohydrates, minerals, vitamins, trace elements, taurine and antioxidants, and wherein said fat content comprises 25 to 35% by dry weight of said premix base, said carbohydrate content comprises 55 to 70% by dry weight of said premix base, said vitamin content comprises 0.1 to 1.0% by dry weight of said premix base, said taurine content comprises 0.05 to 1.0% by dry weight of said premix base, and said mineral content comprises 5 to 15% by dry weight of said premix base, said premix base comprising not less than about 55% and not more than about 90% by dry weight of said composition, said fat content consisting of about 12% to about 25% by dry weight of said composition, said alpha amino acid blend consists of about 10% to about 45% by dry weight of said composition, and wherein said fat is a blend of at least two fat sources selected from the group consisting of pork lard, beef tallow, herring, menhaden, pilchard, sardine, babassu, caster, coconut, corn, cottonseed, jojoba, linseed, oiticica, olive, palm, palm kernel, peanut, rice bran, rapeseed, safflower, sesame, soy, sunflower, tall and tung oils, and wherein the sole source of amino acids in said composition is said amino acid blend which comprises up to eighteen individual synthetic amino acids selected from the group consisting of L-alanine, L-arginine, L-aspartic acid, L-cystine, L-glutamic acid, L-glutamine, glycine, L-histidine, L-isoleucine, L-leucine, L-lysine, L-methionine, L-proline, L-phenylalanine, -L-serine, L-thronine, L-typtophan, L-tyropsine and L-valine.

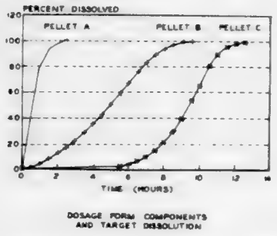
5,326,570

ADVANCED DRUG DELIVERY SYSTEM AND METHOD OF TREATING PSYCHIATRIC, NEUROLOGICAL AND OTHER DISORDERS WITH CARBAMAZEPINE

Edward M. Rudnic, Gaithersburg, and George W. Belendiuk, Potomac, both of Md., assignors to Pharmavene, Inc., Gaithersburg, Md.

Filed Jul. 23, 1991, Ser. No. 734,541
Int. Cl.[5] A61K *9/54*
U.S. Cl. 424—458 25 Claims





1. A drug delivery system for the oral administration of carbamazepine, comprising:

(a) a sustained release unit containing carbamazepine;

(b) an immediate release unit containing carbamazepine; and

(c) an enteric release unit containing carbamazepine, said combination of components (a), (b), and (c) containing a therapeutically effective amount of carbamazepine.

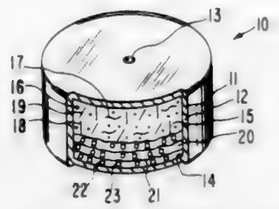
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5,326,571

DOSAGE FORMS COMPRISING POLYMERS COMPRISING DIFFERENT MOLECULAR WEIGHTS

Jeri D. Wright, Dublin; Brian L. Barclay, Sunnyvale, and David R. Swanson, Palo Alto, all of Calif., assignors to ALZA Corporation, Santa Clara, Calif.

Division of Ser. No. 688,807, Apr. 22, 1991, Pat. No. 5,208,037. This application Sep. 4, 1992, Ser. No. 941,332
Int. Cl.[5] A61K *9/24*
U.S. Cl. 424—473 13 Claims



1. A dosage form for the administration of a drug to a patient, the dosage form comprising:
(a) a first composition comprising 10 ng to 750 mg of drug;
(b) a second composition for pushing the first composition from the dosage form;
(c) a wall surrounding the first and second compositions, said wall comprising at least in part a composition permeable to the passage of fluid; and,
(d) at least one exit means in the wall for delivering the drug from the dosage form to the patient; and wherein said,
(e) first composition comprises a carboxymethylcellulose comprising a 10,000 to 300,000 molecular weight; and said,
(f) second composition comprising a carboxymethylcellulose comprising a molecular weight greater than 300,000 to 1,200,000; and wherein said
(g) first and second compositions, when the dosage form is in operation, cooperate to deliver substantially all the drug in the dosage form to the patient over time.

5,326,572

FREEZE-DRIED POLYMER DISPERSIONS AND THE USE THEREOF IN PREPARING SUSTAINED-RELEASE PHARMACEUTICAL COMPOSITIONS

Dev K. Mehra, Furlong, Pa.; Chimanlal I. Patel, Edison, and Clayton I. Bridges, Jr., Somerset, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 327,934, Mar. 23, 1989, abandoned. This application Mar. 5, 1990, Ser. No. 489,166
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—484 8 Claims

1. A method of preparing an aqueous polymer dispersion in which the polymer concentration is from about 30% to about 70% comprising the steps of:
(1) forming an aqueous polymer pseudolatex by dissolving a polymer in a water-immiscible solvent; emulsifying the polymer solvent solution in water at a polymer content of about 30% and removing the solvent;
(2) freeze drying the pseudolatex from step 1; and
(3) redispersing the freeze-dried pseudolatex in water to the desired polymer content up to about 70%.

5,326,573

COATED GRANULES CONTAINING LIQUID AND SOLID ACTIVE COMPOUNDS

Elmar Antfang, Monheim; Dimitrios Kerimis, Cologne, and Rolf-Jürgen Singer, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 461,207, Jan. 5, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 23,418
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1989, 3901274
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] A61K *9/58*
U.S. Cl. 424—490 11 Claims

1. Coated granules from 0.1 to 3 mm in size and containing liquid and solid active compounds, comprising
a) 50–99.5% by total weight of carrier granules having a non-absorptive surface,
b) 0.1–20% by total weight of at least one active compound which is liquid at room temperature and at least one active compound which is solid at room temperature and which are present in finely divided form, and,
c) 0.1–49% by total weight of at least one adhesive based on polyurethane as a binder, optionally mixed with a further adhesive selected from the group consisting of polyvinyl acetate, polyvinylpyrrolidine, polyvinyl alcohol, vinyl acetate/di-n-butyl maleate copolymer, acrylic acid ester, vinyl acetate/ethylene, vinyl acetate/ethylene/vinyl chloride, vinyl acetate/acrylic acid ester, vinyl acetate/vinyl ester and styrene/acrylic acid ester, and
d) 1–40% by total weight of at least one additive selected from the group consisting of an extender, a grinding auxiliary, a colorant, water and an organic solvent.

5,326,574

CHEWING GUM UTILIZING CODRIED 3-1-MENTHOXYPROPANE-1,2-DIOL

Albert H. Chapdelaine, Naperville, and Michael R. Dzija, Brookfield, both of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation of Ser. No. 807,476, Dec. 13, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,466
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—5 21 Claims

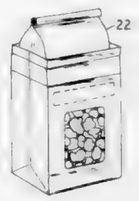
1. A chewing gum which is free of the undesireable gum base softening effect associated with the use of 3-1-menthoxypropane-1,2-diol comprising 3-1-menthoxypropane-1,2-diol codried with a carrier.

5,326,575

BAG-IN-A-BAG WINDOW BAG ASSEMBLY WITH HIGH RESOLUTION CONTENT INDICIA

Scott Spaulding, Olathe, Kans., assignor to Bagcraft Corporation of America, Chicago, Ill.

Continuation-in-part of Ser. No. 707,856, May 30, 1991, abandoned. This application May 26, 1992, Ser. No. 887,954
Int. Cl.[5] B65D *30/08, 33/00, 33/04*
U.S. Cl. 426—87 3 Claims



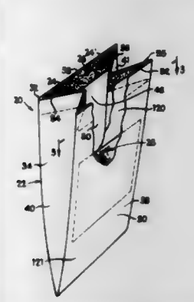
1. A bag-in-a-bag assembly comprising an inner opaque bag containing a product and an outer window-style bag containing said product containing inner opaque bag, said outer bag having a front panel which contains and defines a window-like aperture, and a graphic-style content indicia patch secured to the inner surface of said outer bag front panel so as to underlie said window-like aperture with said graphics being visible to a consumer through said window-like aperture;
said outer bag containing low resolution printed text indicia on its outer surface for generally indicating to the consumer the product contained inside said inner bag;
said graphic-style content indicia being high resolution printed indicia graphically depicting the product contained inside said inner bag and said indicia extending over at least the area of said window-like aperture such that the consumer sees through said window-like aperture, a picture that replicates the appearance of the product that is contained in the inner bag; and
a liner adhesively secured to the inner surface of the front panel of the outer bag so as to underlie the window-like aperture and patch and secure the patch in position at the window-like aperture between the front panel and the liner and said patch being narrower than said front panel but at least as large as said window-like aperture and said liner being at least as wide as the front panel and being larger in size than said patch so as to totally enclose the perimeter of said patch within the perimeter of said liner secured to said inner surface of said front panel.

5,326,576

CONTAINER APPARATUS

John C. Zuege, Fowler, Ind., assignor to A B Specialty Packaging, Inc., Hialeah, Fla.

Filed Apr. 20, 1992, Ser. No. 871,236
Int. Cl.[5] A23L *1/18*; B65D *81/34*
U.S. Cl. 426—107 12 Claims



1. A container apparatus for use in filling, storing, shipping and cooking various types of food, in which the container apparatus facilitates and maintains the positioning and cooking of the food in a substantially restricted predetermined location within the cooking apparatus to, in turn, maximize exposure of said food, during cooking, to a heat enhancer positioned within an oven, or positioned within the container apparatus itself, towards improving and enhancing the cooking of the food therewithin, said container apparatus comprising:
bag means having front panel means and back panel means each of said front and back panel means having first and second sides respectively and converging at first and second opposite sides of said bag means;
first gusseted side panel means at said first side of said bag means for operably connecting said first side of each of said front and back panel means, and second gusseted side panel means at said second side of said bag means for operably connecting said second side of each of said front and back panel means,
each of said first and second gusseted side panel means being operably positioned adjacent each of said front and back panel means, respectively, and opposite in position to each other,
said front and back panel means and said first and second gusseted side panel means each having an exterior surface, an interior surface collectively defining an interior region, a top end and a bottom end, wherein said bottom ends are operably configured to form a substantially sealed bottom region,
said first and second gusseted side panel means each including a first flap having a first side edge operably attached to said first and second sides of said front panel means, respectively, and a second side edge operably positioned opposite to said first side edge of said first flap and extending inwardly toward said interior region of said bag means,
said first and second gusseted side panel means each further including a second flap having a first side edge operably attached to said first and second side of said back panel means, respectfully, and a second side edge operably positioned opposite said first side edge of said second flap and extending inwardly toward said interior region of said bag means, each of said second side edges of said first and second flaps being attached to each other respectfully so as to form inwardly extending gussets;
heat enhancement means operably positioned proximate to said front panel means for intensifying and concentrating heat to enhance the cooking of said food;
bag panel attachment means operably located proximate said top end of both said front and back panel means at a position substantially above said predetermined location of said food within said cooking apparatus,
said bag panel attachment means being operably sealed to maintain said second flaps of said first and second gusseted side panel means and said back panel means adjacent each other prior to filling said cooking apparatus with said food, to further maintain said respective second flaps substantially juxtaposed against said back panel means during the filling, storing and shipping of said bag means and during at least a portion of said cooking of said food within said bag means;
said bag panel attachment means operably segregating and maintaining said food in said interior region during filling, storing and shipping of said apparatus for maximized direct exposure of said food, during cooking, to said heat enhancement means, and to further preclude against the inadvertent migration of said food into portion of said interior region separated from said heat enhancement means by said inwardly extending gussets,
each of said top ends of said front and back panel means and said first and second gusseted side panel means being operably sealable to one another prior to cooking and releasable from each other after cooking, by bag closure means, so as to form a substantially sealed top region after said food is operably positioned within said interior region, which may be re-opened for exposure to said food after cooking.

5,326,577

SHRINK WRAP PACKAGE FOR FRAGILE FOOD PRODUCTS

Donald G. Warnock, Madera, Calif., assignor to Warnock Food Products, Inc., Madera, Calif.

Filed Oct. 2, 1992, Ser. No. 955,657
Int. Cl.[5] B65D *85/30*
U.S. Cl. 426—124 17 Claims

13. A package containing a food product comprising:
an internal support sheet having a front side, a back side, an upper end, and a lower end;
a first fold line located horizontally on said support sheet between the upper and lower ends, said first fold line dividing said support sheet into a vertical support back and a horizontal support shelf, the horizontal support shelf protruding perpendicularly from the front side of the vertical support back along the first fold line to form a first inside corner, a space adjacent to the front side of the

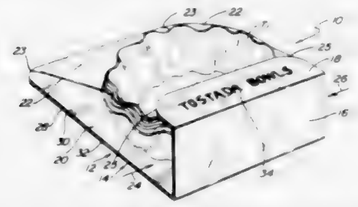
VOL 1164 ISS 1 JL 5 1994 UMI

horizontal support shelf and to the front side of the vertical support back defining a protective support space for the food product;

a cover sheet being thinner than said support sheet and having an inner surface, an outer surface, a top end, and a bottom end, the outer surface of said cover sheet being suitable for receiving and bearing printed matter related to the food product;

a primary fold line located horizontally on said cover sheet between the top and bottom ends, said primary fold line dividing said cover sheet into an upper portion and a lower portion, the upper portion being about twice as long as the vertical support back and the lower portion being about twice as long as the horizontal support shelf;

said cover sheet being located adjacent to said support sheet with the inner side and the primary fold line of said cover



sheet located adjacent to the back side and the first fold line of said support sheet;

the upper and lower portions of said cover sheet being folded respectively around the vertical support back and the horizontal support shelf to form three layers, the inner surface of said cover sheet facing the front and back sides of said support sheet, the matter printed on the outer surface of said cover sheet being exposed away from both the front and back sides of the support sheet; and

a transparent shrink wrap securing the food product in the protective support space while visually exposing the food product and the matter printed on the outer surface of said cover sheet, thereby providing a package which protects the food product, is visually informative as to a condition of the food product, and is attractive for viewing by a prospective purchaser.

5,326,578

METHOD OF CONTROLLING A FOOD THAWING APPARATUS

Kwang-Hyun Yun, Kyonggi, Rep. of Korea, assignor to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 11, 1993, Ser. No. 16,276

Claims priority, application Rep. of Korea, Feb. 17, 1992, 92-2324

Int. Cl.[5] A23B *4/06*

U.S. Cl. 426—231 **6 Claims**

1. A method of controlling a food thawing apparatus comprising the steps of:

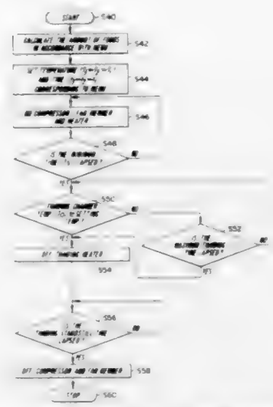
A) operating a compressor, an evaporator, and a fan for circulating cooled air,

B) supplying a portion of said cooled air to a thawing chamber,

C) operating a heater to heat the cooled air in said thawing chamber,

D) sensing a temperature in said thawing chamber,

E) deactivating said heater upon the lapsing of a minimum time period if the sensed temperature has reached a reference temperature, while continuing to operate said heater upon the lapsing of said minimum time period if the sensed temperature has not reached said reference temperature, and



F) deactivating said heater upon the lapsing of a maximum time period regardless of whether the sensed temperature has reached said reference temperature.

5,326,579

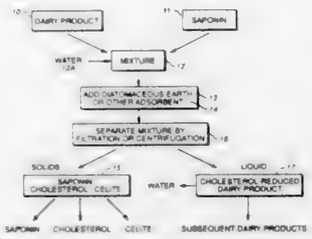
PROCESS TO REMOVE CHOLESTEROL FROM DAIRY PRODUCTS

Thomas Richardson, Davis, Calif., and Rafael Jimenez-Flores, Champaign, Ill., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 598,356, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 421,153, Oct. 13, 1989, abandoned. This application Jul. 6, 1992, Ser. No. 906,108

Int. Cl.[5] A23C *7/00*

U.S. Cl. 426—417 **19 Claims**



1. A process for the removal of cholesterol from a processed or unprocessed daily product, which process comprises:

(a) obtaining a processed or unprocessed food-grade liquid daily product containing cholesterol, with the proviso that if water is not present in the foot-grade daily product, adding water in between 1 and 80 fold by weigh of the daily product to the daily product to produce a liquid oil phase and a liquid aqueous phase;

(b) containing with agitation the food-grade daily liquid product of step (a) at a temperature of between 35° and 80° C. as a liquid with a non-toxic food grade saponin present as an aqueous solution in an amount effective to bind up to about 80% or more of the cholesterol present in the liquid dairy product and to produce an insoluble cholesterol:-saponin complex in the liquid oil/aqueous phases;

(c) contacting with agitation the cholesterol:saponin complex formed in the liquid oil and liquid aqueous phases of step (b) at a temperature of between about 35° and 80° C. with an effective amount of powdered solid adsorbent selected from the group consisting of diatomateous earth, silica, alumina, aluminum oxide, and bentonite to produce an insoluble cholesterol: saponin:adsorbent complex in the liquid daily product and water;

(d) separating the insoluble cholesterol: saponin:adsorbent complex formed in step (c) from the liquid daily product and water; and

(e) separating the liquid dairy product and water of step (d) recovering the liquid food grade dairy product having a reduced content of cholesterol.

5,326,580

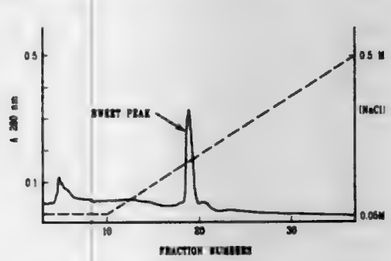
BRAZZEIN SWEETENER

Bengt G. Hellekant; Ding Ming, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Feb. 16, 1993, Ser. No. 21,540

Int. Cl.[5] C07K *7/10;* **A23L** *1/236*

U.S. Cl. 426—548 **5 Claims**



1. A sweet protein containing an amino acid sequence substantially the same as that shown in SEQ ID NO:1, the protein being essentially free of *Pentadiplandra brazzeana* plant material other than Brazzein.

5,326,581

CHOCOLATES

Hiroshi Higashioka, and Yukitaka Tanaka, both of Ibaraki, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 765,975

Claims priority, application Japan, Sep. 26, 1990, 2-258299

Int. Cl.[5] A23G *3/00*

U.S. Cl. 426—607 **11 Claims**

1. A chocolate comprising (1) cacao mass, cacao powder, or mixtures thereof; (2) sweetener; and (3) fats; wherein said fats are comprised of (a) 50–98% by weight of cacao fat, a fat similar thereto, or mixtures thereof, and (b) 10–50% by weight of a diglyceride composition which consists of one or more diglycerides and has a melting point of 25° C. or less, based on the total weight of fats wherein said chocolate has a soft texture below room temperature and exhibits stable qualities above room temperature.

5,326,582

NONAQUEOUS SHORTENING COMPOSITIONS WITH REDUCING SUGAR PARTICLES SUSPENDED THEREIN

Eddy R. Hair, Cincinnati, Ohio, and Nancy A. Kinsch, Thornhill, Canada, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 10, 1992, Ser. No. 974,032

Int. Cl.[5] A23D *9/00*

U.S. Cl. 426—613 **16 Claims**

1. A nonaqueous shortening composition comprising:

(a) from about 90 to 99.5% by weight of an edible lipid;

(b) from about 0.25 to 5% by weight of reducing sugar particles substantially uniformly suspended throughout the nonaqueous shortening composition; and

(c) less than about 0.1% by weight of water.

5,326,583

METHOD FOR PREPARING SNACK FROM CHLOROPHYLL-CONTAINING PLANT TISSUE

Kazumitsu Taga, Neyagawa; Toshihiko Narukami, Ikoma, and Yoshiyuki Miyaoku, Sakai, all of Japan, assignors to House Food Industrial Co., Ltd., Higashi-Osaka, Japan

Filed Oct. 15, 1991, Ser. No. 775,452

Claims priority, application Japan, Oct. 19, 1990, 2-281337

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] A23L *1/18;* **A23P** *1/12, 1/14*

U.S. Cl. 426—615 **8 Claims**

1. A method for preparing a puffed snack from a chlorophyll-containing plant, comprising the steps of:

pulverizing chlorophyll-containing plant tissue under completely light shielding conditions;

storing the resulting pulverized material under complete light shielding conditions or light shielding conditions applied within 24 hours after pulverization;

puffing the pulverized material in a screw extruder having a die wherein the temperature of the die ranges from 90° to 150° C. for the resulting pulverized material having a water content of 9–11%; the temperature of the die ranges from 100° to 210° C. for the resulting pulverized material having a water content of from 11 to 15%; and the temperature of the die ranges from 160° to 240° C. for the resulting pulverized material having a water content of from 15% to 20%, so that the degree of puffing falls within the range of from 3.0 to 28.0 times the volume of the chlorophyll-containing plant to give a puffed product having a water content of not more than 7% by weight or drying the puffed product until the water content is not more than 7% by weight;

applying fat and oil to the resulting puffed product; and

packing the resulting snack into a container having light shielding properties, wherein the total time for light exposure during the steps of puffing, applying fat and oil and packing is less than 18 hours.

5,326,584

BIOCOMPATIBLE, SURFACE MODIFIED MATERIALS AND METHOD OF MAKING THE SAME

Ihab Kamel, Philadelphia, and David B. Soll, Rydall, both of Pa., assignors to Drexel University and Ophthalmic Research Corporation, both of Philadelphia, Pa.

Continuation-in-part of Ser. No. 820,169, Jan. 13, 1992, Pat. No. 5,260,093, which is a continuation-in-part of Ser. No. 342,270, Apr. 24, 1989, Pat. No. 5,080,924. This application Nov. 18, 1992, Ser. No. 977,984

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—491 **19 Claims**

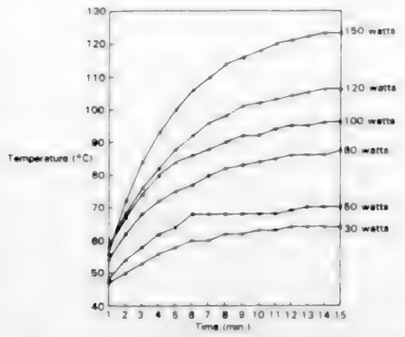
1. A method of permanently modifying a surface of a polymeric substrate material to produce a microscopically smooth, biocompatible surface thereon, comprising the steps of:

removing at least a portion of the surface of the polymeric substrate material; and

covalently grafting a polymeric biocompatible material to

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the polymeric surface of the substrate material by radio frequency plasma treatment, the biocompatible polymeric



material comprising substantially the same material as the polymeric substrate.

5,326,585

METHOD AND COMPOSITIONS FOR MANUFACTURE OF CHEMICAL SENSORS

Alan M. Nelson, and Carmen L. Soikowski, both of San Diego, Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation of Ser. No. 874,031, Apr. 27, 1992, Pat. No. 5,262,192. This application Aug. 17, 1993, Ser. No. 108,108

Int. Cl.[5] G02B *6/22;* **B05D** *5/06*

U.S. Cl. 427—163 **30 Claims**

1. A method of making an analyte sensor including an optical fiber having a surface portion covered with a polymeric analyte sensing matrix including a dye indicator material, comprising the steps of:

preparing an analyte permeable polymer with an analyte sensitive indicator dye covalently bonded to the analyte permeable polymer to form a liquid polymeric analyte sensing matrix;

forming a liquid mixture of said liquid polymeric analyte sensing matrix with a crosslinking agent and a crosslinking inhibitor which can be removed by exposure to heat;

coating said optical fiber surface portion with said liquid mixture; and

heating said liquid mixture on said optical fiber surface portion for a sufficient period of time to remove said crosslinking inhibitor from said liquid mixture, whereby said crosslinking agent crosslinks said liquid polymeric analyte sensing matrix in situ on said optical fiber surface portion thereby producing a cured sensing matrix.

5,326,586

COATING OF DRUG FORMS

Sven Grabowski; Kurt Wendel, both of Ludwigshafen, and Astrid Kah-Helbig, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 7, 1992, Ser. No. 957,375

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1991, 4133192

Int. Cl.[5] A61K *9/00*

U.S. Cl. 427—487 **1 Claim**

1. A process for coating drug forms by application of an aqueous dispersion which contains as binder a redispersed latex of a physiologically acceptable emulsion polymer onto the drug form and evaporating the water at a temperature at which the latex particles form a film, which comprises employing a polymer dispersion which has been prepared by emulsion polymerization of one part by weight of at least one ethylenically unsaturated polymerizable monomer, by means of initiators which provide free radicals, in the presence of from 0.1 to 2 parts by weight of saccharified starch of average molecular weight 2,500–25,000, and from 0 to 5% by weight, based on the monomer or monomers, of a surfactant, with or without further additives, drying to a powder and redispersing in water.

5,326,587

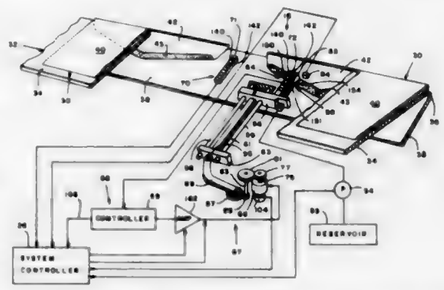
METHOD OF DEPOSITING A LIQUID

Norman J. Bergman, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 481,545, Feb. 20, 1990, Pat. No. 5,145,709. This application Apr. 13, 1992, Ser. No. 867,636

Int. Cl.[5] B05D *5/10*

U.S. Cl. 427—8 **4 Claims**



1. A method for positioning a liquid outlet of a liquid applicator for causing a liquid to be discharged from said liquid applicator whereby said liquid is deposited on a flap of an envelope being moved to and past said liquid outlet at a speed of at least about 65 inches per second a given path with said flap extending from said envelope in an opened configuration thereof, said method comprising:

sensing the location of the edge of said flap within about 0.2 inch of said liquid outlet upstream thereof a plurality of times as said flap moves to and past said liquid outlet; and

moving said liquid outlet in accordance with said sensing to track said flap while causing said liquid to be discharged from said liquid applicator and deposited onto said flap.

5,326,588

CATHODE RAY TUBE

Hang-ku Ji, Kyunggi-do, Rep. of Korea, assignor to Samsung Electronic Devices Co., Ltd., Kyuggi-do, Rep. of Korea

Filed Jul. 3, 1991, Ser. No. 725,073

Claims priority, application Rep. of Korea, Jul. 4, 1990, 90-10099

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—68 **3 Claims**

1. A method for manufacturing a screen of a color cathode ray tube comprising a panel and a panel skirt, the method comprising the steps of:

(a) coating an adhesion strengthening layer comprising poly vinyl alcohol and photosensitizer over an inner surface of the panel and an inner surface of the panel skirt;

(b) coating black matrix stripes and fluorescent stripes on said adhesion strengthening layer within boundaries of the panel;

(c) coating a pyrolysis mitigating layer comprising mixture of 38% acryl emulsion, 2% poly vinyl alcohol and water in the ratio of approximately 1:1:21 by weight on said adhesion strengthening layer within boundaries of the panel skirt;

(d) coating an organic film layer comprising organic film forming resin over the black matrix stripes and fluorescent stripes within boundaries of the panel;

(e) coating a thin metal film on the organic film layer and the pyrolysis mitigating layer; and

(f) baking the resulting layered structure, thereby removing said adhesion strengthening layer, organic film layer and pyrolysis mitigating layer.

5,326,589

METHOD OF PROTECTING ELECTRONIC OR ELECTRIC PART

Hiroshige Okinoshima; Toshio Shiobara, and Tsutomu Kashiwagi, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd, Tokyo, Japan

Continuation-in-part of Ser. No. 823,477, Jan. 22, 1992, abandoned. This application Feb. 4, 1993, Ser. No. 13,409

Claims priority, application Japan, Jan. 22, 1991, 3-21650

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—79 **11 Claims**

1. A method of protecting an electronic or electric part which comprises

coating the electronic or electric part with a silicone rubber composition comprising a silicone rubber base and a filler which comprises metal oxide fine particles obtained by deflagration of metal powder dust in an oxygen-containing atmosphere and having a mean particle size of 0.01 to 20 μm, and a specific surface area of 5 to 15 m^2/g; and

curing the silicone rubber composition to form a protective coat on the electronic or electric part.

5,326,590

METHOD OF REJUVENATING RUBBER PRINTING BLANKETS

Gary Fujii, Torrance, and Lowell W. Huff, Fullerton, both of Calif., assignors to Clayton Chemical Company, Los Angeles, Calif.

Filed Aug. 31, 1992, Ser. No. 938,276

Int. Cl.[5] B05D *5/00*

U.S. Cl. 427—140 **32 Claims**

1. A method of rejuvenating and repairing a rubber printing blanket, the method comprising the steps of:

mixing a rubber sweller solvent selected from the group consisting of glycol ethers, pyrrolidones and mixtures thereof with a thickening agent to thereby form a mixture; and

applying the resulting mixture to the rubber printing blanket.

5,326,591

BISMUTH-CONTAINING LEAD-FREE GLASS ENAMELS AND GLAZES OF LOW SILICA CONTENT

Gordon J. Roberts, Parma, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 963,410, Oct. 19, 1992, Pat. No. 5,252,521. This application Aug. 11, 1993, Ser. No. 105,226

Int. Cl.[5] B32D *17/06*

U.S. Cl. 427—162 **15 Claims**

1. A method of decorating a section of glass comprising coating said glass with a lead-free composition, such lead-free composition comprising a glass frit including from about 35% to about 77% by weight of bismuth oxide, form about 10% to about 33% by weight of boron oxide, and from abut 10% to about 32% by weight of zinc oxide, and firing the led-free composition at a temperature sufficient to fuse and cure the lead-free composition.

5,326,592

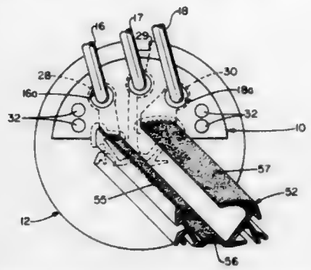
ON DIE SOLUTION COATING OF EXTRUDED PROFILES AND APPARATUS THEREFOR

James R. Goewey, Marion, and Keith E. Wilson, Wabash, both of Ind., assignors to GenCorp Inc., Fairlawn, Ohio

Filed May 13, 1991, Ser. No. 699,069

Int. Cl.[5] B05D *5/00;* **B05C** *3/20*

U.S. Cl. 427—256 **18 Claims**



18. A solution coating process, comprising the steps of;

extruding a polymeric article through a die plate, providing a coating block abuttingly secured to the die plate and in alignment with said extruded article, said coating block having at least one coating die cavity opening which conforms to one or more selected surfaces of said extruded article emerging from said die plate and having at least one coating solution opening, said coating block containing coating means including at least one channel communicating with said coating cavity opening and said coating solution opening, said coating means being located on the back of the coating block adjacent said die plate whereby the surface of said die plate forms a wall of each said channel, said coating block cooperating with and being adapted to receive said extruded article from said die plate,

feeding at least one liquid polymer coating solution to said coating block having said at least one channel therein communicating with a preselected surface of said extruded article to be coated, and

applying said at least one liquid polymer coating solution to said preselected surface of said extruded article as it emerges from said die plate.

5,326,593

SURFACE ROUGHENING OF RESIN MOLDED ARTICLES FOR METALLIZING

Tomoyoshi Koizumi, and Yukio Ichikawa, both of Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,057

Claims priority, application Japan, Jun. 14, 1991, 3-168957

Int. Cl.[5] B05D *3/10*

U.S. Cl. 427—307 **8 Claims**

1. A method for roughening the surface of a resin molded article to make it susceptible to metallizing, which comprises the step of contacting a resin molded article at least the surface portion of which to be roughened mainly comprises a block copolymer comprising 100 parts by weight of a polyarylene sulfide component block and from 100 to 200 parts by weight of a polyarylene sulfide ketone component block with a solvent capable of dissolving a polyarylene sulfide ketone more than a polyarylene sulfide.

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5,326,594
METAL PRETREATED WITH AN INORGANIC/ORGANIC COMPOSITE COATING WITH ENHANCED PAINT ADHESION
Ashok Sabata, Middletown, and Wim J. van Ooij, Fairfield, both of Ohio, assignors to Armco Inc., Middletown, Ohio
Filed Dec. 2, 1992, Ser. No. 984,385
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—327 **16 Claims**

1. A method of pretreating metal to improve paint adhesion, comprising the steps of:
providing an alkaline solution including at least one of a dissolved silicate and a dissolved aluminate,
rinsing a metal sheet with the alkaline solution,
drying the sheet to form a relatively insoluble inorganic layer,
coating the inorganically coated sheet with an organic layer, the organic layer including a silane and a crosslinking agent, and
curing the organic layer thereby forming a siloxane containing layer on the inorganic layer.

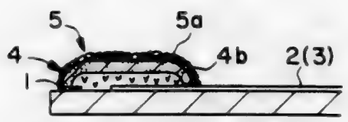
5,326,595
POST COATING TREATMENT OF SILICON CARBIDE COATED CARBON-CARBON SUBSTRATES
David M. Shuford, Grand Prairie, Tex., assignor to Loral Vought Systems Corporation, Grand Prairie, Tex.
Filed Jul. 25, 1983, Ser. No. 516,948
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—376.2 **20 Claims**

1. A method for post-treating of a carbonaceous substrate having a primary protective coating of silicon carbide to seal the silicon carbide coating and substrate comprising:
(a) forming a first slurry of from about 22.3% to about 27.2% monoaluminum phosphate, from about 18.23% to about 22.27% water, from about 12.6% to about 15.4% particulate silicon carbide, from about 12.67% to about 15.4% silicon carbide felt, from about 15.2% to about 18.6% alumina, and from about 9.0% to about 11.0% of a material from the group consisting of boron and zirconia hydride;
(b) coating the primary coating of the carbonaceous substrate with a thin film of said first slurry,
(c) curing the substrate by progressive heating to about 1500° F. in an inert atmosphere at a rate which prevents bubbling or blistering of said film of said first slurry, and maintaining the substrate at about 1500° F. for a sufficient period of time to complete the curing process;
(d) forming a second slurry of from about 11.6% to about 14.2% water, from about 31.1% to about 38.1% of a 38% aqueous solution sodium silicate, from about 2.2% to about 2.8% sodium borate, from about 22.5% to about 27.5% particulate silicon carbide, and from about 22.5% to about 27.5% silicon carbide felt;
(e) coating the substrate produced in step (c) with a thin film of said second slurry; and
(f) curing said thin film of said second slurry by progressive heating of the substrate to about 600° F. at a rate sufficient to prevent blistering or bubbling of said thin film of said second slurry.

5,326,596
COATING METHOD
Akira Kasari, Hiratsuka; Hiroaki Oda, Hiratsuka; Mitsuru Muramoto; Yasumasa Okumura, both of Kanuma, and Yasuji Tanaka, Aichi, all of Japan, assignors to Kansai Paint Company, Ltd., Amagasaki, Japan
Filed Dec. 1, 1992, Ser. No. 983,707
Claims priority, application Japan, Dec. 19, 1991, 3-355076
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—379 **2 Claims**

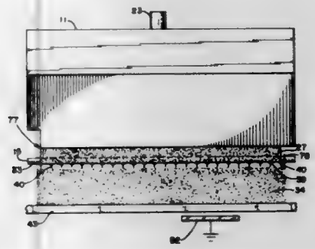
1. A method for forming a coating film, comprising the steps of:
(a) coating a metal panel with a cationic electrophoretic coating composition and heating the composition to form an electrophoretic coating,
(b) applying to the electrophoretic coating an aqueous primer containing a polyurethane emulsion prepared by subjecting a carboxyl-containing urethane prepolymer to chain extension by water,
(c) applying an intermediate coating composition to the primer surface,
(d) baking the aqueous primer and the intermediate coating composition at the same time, and
(e) applying a top coating composition to the cured coating and baking the composition.

5,326,597
METHOD OF PRODUCING OXYGEN SENSOR FOR AIR-FUEL RATIO CONTROL HAVING A PROTECTIVE LAYER INCLUDING OXYGEN STORAGE MATERIAL
Toshiki Sawada; Masaru Yamano; Kazuo Taguchi; Takao Kojima; Hiroyuki Ishiguro, and Masahiko Yamada, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Division of Ser. No. 479,695, Feb. 14, 1990, Pat. No. 5,160,598.
This application Feb. 25, 1992, Ser. No. 840,829
Claims priority, application Japan, Feb. 14, 1989, 1-32603; Feb. 14, 1989, 1-32604; Feb. 14, 1989, 1-32605
Int. Cl.[5] B05D *1/00, 5/12, 1/36, 1/18*
U.S. Cl. 427—448 **40 Claims**



29. A method of producing an oxygen sensor for air-fuel ratio control comprising a sensor element having a main body and electrodes disposed on sides of the main body and protective layers on the side of the sensor element assigned to be exposed to a gas to be measured for oxygen, the method comprising the steps of:
(a) disposing electrodes on sides of the main body,
(b) forming a first protective layer of metal oxide on said side of the sensor element, said first protective layer having a length,
(c) immersing at least a portion of the first protective layer in a metal salt solution of an oxygen storage component, and
(d) forming a second protective layer of a metal oxide on said first protective layer.

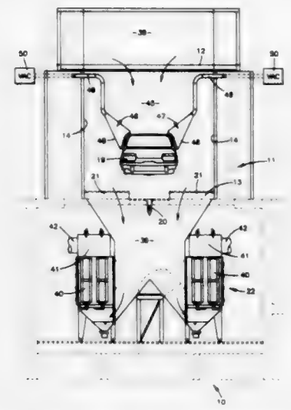
5,326,598
ELECTROSPRAY COATING APPARATUS AND PROCESS UTILIZING PRECISE CONTROL OF FILAMENT AND MIST GENERATION
Albert E. Seaver; William R. Berggren, both of Woodbury; Daniel R. Danielson, Oakdale; Eugene E. Harkins, Vadnais Heights, and Ross M. Kedl, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 2, 1992, Ser. No. 956,641
Int. Cl.[5] B05D *1/04;* **B05B** *5/035*
U.S. Cl. 427—473 **20 Claims**



18. A method of variably controlling the emission of a liquid being applied as a coating material in an electrospray coating process, comprising the steps of:
a) providing a metering portion for dispensing liquid to a lower shaping means;
b) positioning lower shaping means below said metering portion such that dispensed liquid flows from said metering portion onto said lower shaping means so as to surround said lower shaping means, said lower shaping means creating a layer having a single continuous and substantially constant local radius of curvature of the dispensed liquid around the lower shaping means so that the number and position of filaments of said liquid extending from the lower shaping means is variable depending on the magnitude of a potential applied to the surface of the liquid surrounding the lower shaping means;
c) adjusting the potential applied to the surface of the liquid so that a specific potential produces a desired number and position of filaments of said liquid and so that at a specific potential said liquid filaments are spatially and temporally fixed to permit generation of a uniform mist of highly charged droplets; and
d) directing the flow of the mist toward selected deposition sites on a movable substrate.

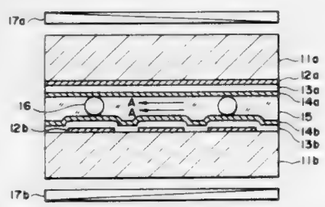
5,326,599
CABIN PURGE SYSTEM FOR AUTOMOTIVE POWDER COATING
Jeffrey R. Shutic, Wakeman, Ohio, assignor to Nordson Corporation, Westlake, Ohio
Filed Feb. 11, 1993, Ser. No. 16,612
Int. Cl.[5] B05D *1/06, 1/12*
U.S. Cl. 427—478 **9 Claims**

1. A method of powder spraying a workpiece having an exterior, a pair of side openings one on each side of the exterior, an additional opening on the exterior, and a hollow interior cavity connected to the openings, which comprises the steps of:
spraying powder on the exterior of the workpiece;
positioning a pair of inlet hood assemblies respectively at the side openings on each side of the workpiece;
connecting the pair of inlet hood assemblies to a vacuum source; and
purging the cavity of excess powder by extracting the powder from the cavity through the inlet hood assemblies by

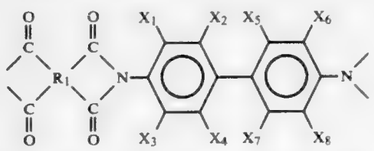


operation of the vacuum source while allowing replenishing air to enter the cavity through the additional opening.

5,326,600
LIQUID CRYSTAL DEVICE
Masanobu Asaoka, Yokohama; Hideaki Takao, Sagamihara; Takeshi Togano, Yokohama, and Makoto Kojima, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 2, 1992, Ser. No. 969,970
Claims priority, application Japan, Nov. 8, 1991, 3-319634
Int. Cl.[5] G02F *1/1337*
U.S. Cl. 428—1 **9 Claims**



1. A liquid crystal device, comprising: a pair of substrates and a ferroelectric liquid crystal disposed between the substrates; at least one of said pair of substrates having thereon an alignment film comprising a polyimide having a recurring unit of the following formula (I):


(I)

wherein R_1 denotes a tetravalent organic residue; and X_1–X_8 independently denote an alkyl group having 1–15 carbon atoms, an alkoxy group having 1–15 carbon atoms, CF_3 group, halogen or hydrogen atom, with the proviso that at least one of X_1–X_4 is not hydrogen atom, at least one of X_5–X_8 is not hydrogen atom, and at least one of X_2, X_4, X_5 and X_7 is not hydrogen atom.

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5,326,601

GLASS ARTICLE HAVING A RESIN LAMINATE BONDED THERETO

Nagahiro Kawano; Michiaki Aikawa, and Kiyoshi Esaki, all of Kurume, Japan, assignors to Tsukihoshi Kasei Kabushiki Kaisha, Kurume, Japan

PCT No. PCT/JP91/01525, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/11137, PCT Pub. Date Jul. 9, 1992
PCT Filed Nov. 7, 1991, Ser. No. 863,309
Claims priority, application Japan, Dec. 24, 1990, 2-418420
Int. Cl.[5] B32B *1/08, 17/10, 25/08*
U.S. Cl. 428—34.7 7 Claims

1. A glass article having an exterior surface directly bonded to

a layer (A) formed from a resin composition comprising a styrene-butadiene copolymer latex and polyvinylpyrrolidone wherein the content of the polyvinylpyrrolidone in the resin composition is in the range from 0.2 to 1.0 weight parts based on 100 weight parts of the styrene-butadiene latex, and

a layer (B) directly bonded to said layer (A), said layer (B) formed from a resin composition comprising an aqueous polyurethane, an aqueous epoxy resin, an aqueous amino resin and a surface active agent containing halogen wherein the contents of the aqueous epoxy resin, the aqueous amino resin and the surface active agent containing halogen in the resin composition are in the ranges from 10 to 60 weight parts, from 10 to 70 weight parts and from 0.05 to 1.0 weight parts, respectively, based on 100 weight parts of the aqueous polyurethane, wherein

the weight parts of both layers (A) and (B) are based on solid content of the respective components.

5,326,602

POLYETHYLENE BLENDS

Mahmoud Rifi, Kendall Park, N.J., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 1, 1992, Ser. No. 983,652
Int. Cl.[5] C08K *5/01;* C08L *23/08*
U.S. Cl. 428—35.7 9 Claims

1. A pre-formed composition having essentially no yield point comprising a blend of:

(a) at least about 50 percent by weight of a copolymer of ethylene and one or more 4 to 8 carbon atom alpha-olefins having a density in the range of 0.880 to 0.915 gram per cubic centimeter; a melt index in the range of about 0.05 to about 0.8 gram per 10 minutes; long chain branching in an amount of about 0.5 to about 1.5 long chains per 1000 carbon atoms; and a molecular weight of at least about 200,000;

(b) at least about 5 percent by weight of a copolymer of ethylene and vinyl acetate or a copolymer of ethylene and ethyl acrylate, the percent by weight being based on the combined weight of components (a) and (b); and

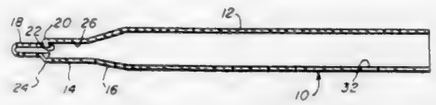
(c) a liquid hydrocarbon oil having a viscosity in the range of about 100 to about 3000 Saybolt Universal Seconds at 100° F. is an amount of about 5 to about 30 parts by weight of oil per 100 parts of the combined weight of components (a) and (b).

5,326,603

HOLLOW TUBE COMPONENT FOR A DISPENSING APPLICATOR

Darrell W. Van Dyke, Liberty, and John P. Rowe, Antioch, both of Ill., assignors to Gam-Med Packaging Corporation, Antioch, Ill.

Division of Ser. No. 807,220, Dec. 16, 1991, Pat. No. 5,229,061.
This application Jan. 6, 1993, Ser. No. 1,503
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—35.7 6 Claims



1. A hollow dispensing applicator product made by utilizing a mold, said mold comprising:

a one-piece, smooth-surfaced member, said member comprising a main body section having a cross section and having a forward end-portion and a rear end-portion; a shoulder section having a cross section and having a forward end-portion and a rear end-portion, said rear end-portion of said shoulder section extending from said forward end-portion of said main body section; a neck section having a cross section and having a forward end-portion and a rear end-portion, said rear end-portion of said neck section extending from said forward end-portion of said shoulder section; a stem-element section having a cross section and having a forward end-portion and a rear end-portion, said rear end-portion of said stem-element section extending from said forward end-portion of said neck section, said sections having common, colinear, central, longitudinal axes;

and said member comprising a re-entrant section comprising a sloping, straight-line, re-entrant surface connecting said forward end-portion of said neck section to said rear end-portion of said stem-element section; said re-entrant surface having a first end connected to said forward end-portion of said neck section, and a second end connected to said rear end-portion of said stem-element section; said re-entrant surface forming an angle of between 65 and 90 degrees with respect to said common, colinear, central longitudinal axes, said re-entrant surface sloping such that said first end thereof is forward of said second end, said forward end-portion of said neck section overlapping said rear end-portion of said stem-element section; and

said member being made of metal having a high heat capacity and coefficient of thermal conductivity for use in a dip-molding process; said main body portion having a cross section at least one of equal to and greater than the cross sections of said shoulder section, said neck section, and stem-element section for allowing for the stripping from the mold, said hollow dispensing applicator product being made by a method comprising:

(a) providing a fluidized bed of meltable particulate resinous material having a melting temperature;

(b) heating said mold to said melting temperature of said resinous material;

(c) totally immersing said heated mold into said fluidized bed of material to develop a coating over said mold exposed thereto such that said main body portion, said shoulder section, said neck section and said stem-element section are completely immersed in said bed of material;

(d) removing said mold from said bed;

(e) heating said mold with said coating thereon a second time;

(f) cooling said coating on said mold; and

(g) stripping said coating from said mold to thus form said hollow dispensing applicator product;

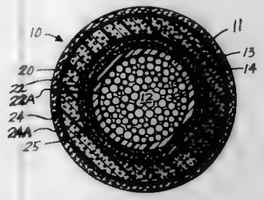
(h) said step (c) comprising exposing said re-entrant surface to said material and causing said material to fill a space defined between said overlapping of said neck section with said stem-element section, and coating said re-entrant surface of said mold with said material, said step of causing the material to fill causing a substantially triangular-shaped filling between said re-entrant surface, said forward end-portion of said neck section, and said rear end-portion of said stem-element section.

5,326,604

THERMAL PROTECTION SLEEVE FOR REDUCING OVERHEATING OF WIRE BUNDLES UTILIZED IN AIRCRAFT APPLICATION

Mickey A. Williamson, Everett, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 638,475, Dec. 12, 1990, which is a division of Ser. No. 355,619, May 23, 1989, abandoned. This application Feb. 10, 1993, Ser. No. 15,187
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.2 5 Claims



1. An electric cable having a wire bundle core surrounded by a thermal and chafe protection sleeve, said protective sleeve comprising a first layer of silicone foam core communicating with said wire bundle core, a layer of acrylic adhered fiberglass communicating with said silicone foam core, and fiberglass lacing tape surrounding and communicating with said layer of acrylic adhered fiberglass.

5,326,605

REACTIVE PRESSURE SENSITIVE ADHESIVE COMPOSITION, SEALER TAPE, SHEET OR MOLDING BY USE THEREOF

Kiyoshi Ono; Yoshio Kishimoto, and Tetsuhito Satou, all of Tokyo, Japan, assignors to Nichiban Company, Limited, Tokyo, Japan

Continuation of Ser. No. 796,894, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 259,821, Oct. 19, 1988, abandoned. This application May 26, 1993, Ser. No. 66,929
Claims priority, application Japan, Oct. 22, 1987, 62-266899; Oct. 22, 1987, 62-266901
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 10 Claims

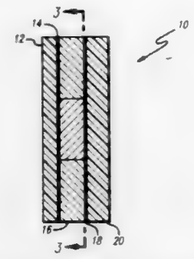
1. A sealer tape, sheet or molding which comprises a non-solvent based reactive pressure sensitive adhesive composition having tackiness under ambient conditions and having tough or elastic physical properties after curing, said pressure sensitive adhesive further having a thickness between approximately 25 μm and 1 cm, comprising a saturated polyester resin which is non-flowable at 5° C. to 35° C., a (meth)acrylic urethane oligomer having a viscosity of 10^2 cps or higher at 5° to 35° C. and a heat-curable catalyst, said adhesive composition being applied onto a substrate surface or a mold surface which has been optionally subjected to a releasing agent treatment.

5,326,606

BULLET PROOF PANEL

Joseph Labock, Bat Yam, Israel, assignor to Armorvision Plastics & Glass, Los Angeles, Calif.

Filed Aug. 12, 1992, Ser. No. 928,791
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—49 6 Claims



1. A panel effective in blocking the penetration of a bullet, said panel comprising a first outer polycarbonate sheet having a thickness of at least about 3 mm., an intermediate layer of bullet-resistant ceramic tiles bonded to said polycarbonate sheet and a second inner layer of a polycarbonate sheet bonded to said bullet resistant ceramic tiles and having a thickness of about at least 6 mm., said polycarbonate sheets being bonded to opposite sides of the layer of tiles by a polyurethane adhesive.

5,326,607

AMORPHOUS CARBON SUBSTRATE FOR A MAGNETIC DISK AND A METHOD OF MANUFACTURING THE SAME

Kazuo Muramatsu; Nobuhiro Ohta; Shunsuke Takada; Motoharu Sato; Masami Takao; Hiroko Nagata, and Satoru Takada, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 28, 1991, Ser. No. 676,569
Claims priority, application Japan, Mar. 29, 1990, 2-83137; Aug. 31, 1990, 2-231069; Nov. 26, 1990, 2-324941; Dec. 12, 1990, 2-410434; Dec. 12, 1990, 2-410435; Dec. 12, 1990, 2-410436
Int. Cl.[5] C01B *31/02*
U.S. Cl. 428—65 4 Claims

1. A lightweight, high strength, heat resistant textured amorphous carbon substrate for a magnetic disk, having a textured surface with an average surface roughness Ra in the range of 20 to 100 Å and a ratio Ra_2/Ra_1, where Ra_1 is the surface roughness of the textured surface with respect to a circumferential direction, and Ra_2 is the surface roughness of the textured surface with respect to a radial direction, in the range of 0.75 to 1.25.

5,326,608

DISC CARTRIDGE

Masaru Ikebe, Saku; Haruo Shiba, Komoro, and Yukio Miyazaki, Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,380
Claims priority, application Japan, Jun. 21, 1991, 3-055227
Int. Cl.[5] G11B *23/033*
U.S. Cl. 428—65 6 Claims

1. A disc cartridge comprising:

a casing made of a synthetic resin material;

a disc medium rotatably arranged in said casing; and

a lifter means arranged on an inner surface of said casing so as to press said disc medium;

said lifter means being formed integrally with said casing and into a plate-like shape in such a manner that a proxi-

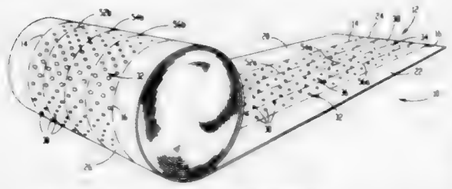
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mal end thereof is connected to said casing and a distal end thereof is rendered free, said proximal end being formed



with an adjacent V-shaped groove on at least one side of the lifter means.

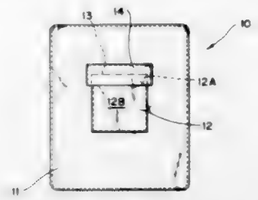
5,326,609
EXPANSION JOINT FIRE BARRIER
Henry Gohlke, Norman, Okla., assignor to Metalines, Oklahoma City, Okla.
Filed Jun. 25, 1992, Ser. No. 904,394
Int. Cl.[5] B32B *1/04; E04C 2/32*
U.S. Cl. 428—76 **29 Claims**



1. An expansion joint barrier comprising:
a layer of barrier material;
a sheet of metallic material forming an outer shell covering said layer of barrier material; and
means for holding said layer and sheet in a superposed relationship,
said sheet including a plurality of spaced dimples defined in the surface thereof, said dimples being separated by areas of undimpled planar surfaces therebetween.

5,326,610
WASHCLOTH INCLUDING A POCKET FOR RETAINING AN OBJECT
Thomas Moss, 10101 Forum, #2021, Farmpark, Houston, Tex. 77036
Filed Dec. 30, 1992, Ser. No. 998,629
Int. Cl.[5] A47K *7/03;* **B32B** *3/14*
U.S. Cl. 428—78 **5 Claims**

1. A washcloth including a pocket for holding an object comprising:
a first piece of fabric having a predetermined length and width;
a second piece of fabric, said second piece of fabric having a predetermined length and width, the predetermined length and width of said second piece of fabric being smaller in size relative to said first piece of fabric, said second piece of fabric being secured relative to said first piece of fabric for defining a pocket therebetween with an opening in communication with said pocket being provided for enabling an object to be inserted within said pocket; and
a third piece of fabric positioned adjacent to said opening to form a closure, said third piece of fabric having a predetermined length and width and being secured to said first piece of fabric to provide said closure for the opening provided in communication with said pocket for retaining



an object positioned within said pocket, said predetermined length of said third piece of fabric being greater than and overlapping the predetermined length of said second piece of fabric while permitting manipulation of said third piece of fabric for enabling an object to be passed beneath said third piece of fabric and into said pocket.

5,326,611
COVER-GASKET ASSEMBLY FOR HARD DISK DEVICE
Hirofumi Kishita; Kazuhiko Tomaru; Noboru Shimamoto, all of Annaka; Kouichi Yamaguchi, Takasaki, and Shinichi Sato, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Apr. 9, 1993, Ser. No. 44,624
Claims priority, application Japan, Apr. 10, 1992, 4-140908
Int. Cl.[5] B32B *3/14*
U.S. Cl. 428—78 **4 Claims**

1. A cover-gasket assembly for a hard disk device, comprising a gasket applied to a predetermined position of a cover for the hard disk device, wherein said gasket is formed essentially of a cured product of a liquid fluorosilicone rubber composition having a water vapor permeability coefficient of 40 g.mm/m^2.24 hr or below, wherein said liquid fluorosilicone rubber composition comprises:
(a) a fluorine-containing diorganopolysiloxane having the following general formula (1):

$$\begin{array}{c} R^1 \quad R^4\text{—}Rf\ R^3 \\ | \quad\quad | \quad\ | \\ XO\text{—}(SiO)_l\text{—}(SiO)_m\text{—}(SiO)_n\text{—}X \\ | \quad\quad | \quad\ | \\ R^1 \quad R^2 \quad R^1 \end{array} \tag{1}$$

wherein R^1 and R^2 may be the same or different from each other and are each an unsubstituted or substituted monovalent hydrocarbon group which does not have aliphatic unsaturated bonds, R^3 is a monovalent aliphatic unsaturated hydrocarbon group, R^4 is a divalent hydrocarbon group having no aliphatic unsaturated bonds or is a group represented by the following general formula (2):

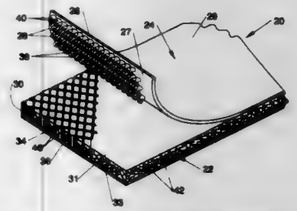
$$-R^5\text{—}O\text{—}R^6\text{—} \tag{2}$$

wherein R^5 and R^6 are each a divalent hydrocarbon group having no aliphatic unsaturated bonds, Rf is a perfluoroalkyl group of from 4 to 10 carbon atoms or a perfluoroalkyl ether group of from 5 to 15 carbon atoms, X is a hydrogen atom or a group represented by the following general formula (3):

$$-Si(R^7)_3 \tag{3}$$

wherein R^7 may be the same or different from each other and are each an unsubstituted or substituted monovalent hydrocarbon group, l and m are each an integer of 1 or above, and n is an integer of 0 or above, and further, wherein said fluorine-containing diorganopolysiloxane comprises cyclic siloxanes having a molecular weight of 3,000 or below in a concentration of 0.01% by weight or below;
(b) a filler; and
(c) a curing agent.

5,326,612
NONWOVEN FEMALE COMPONENT FOR REFASTENABLE FASTENING DEVICE AND METHOD OF MAKING THE SAME
David J. K. Goulait, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 20, 1991, Ser. No. 703,441
Int. Cl.[5] A44B *17/00;* **B32B** *3/06*
U.S. Cl. 428—100 **47 Claims**

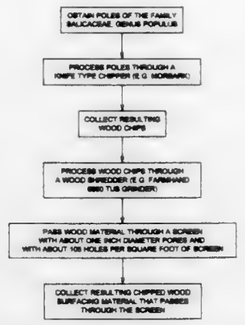


1. A female component for a refastenable fastening device, said female component having a planar outwardly facing surface capable of engaging a complimentary hook fastening component which has a base with individual hooks having blunt heads extending outward from said base, said female component comprising:
a backing, and
a non-woven fibrous web having a basis weight between about 6 and about 42 g/m^2 so that there is space between the fibers in said fibrous non-woven web to allow said hook fastening component to penetrate said nonwoven web, said nonwoven web comprised of a plurality of fibers, wherein the plan view area occupied by any inter-fiber bonds of said nonwoven web is less than about ten percent of the total area of said nonwoven web, said nonwoven web being secured to said backing by bonds so that the total plan view bonded area occupied by both any inter-fiber bonds of said nonwoven web and by the bonds between said nonwoven web and said backing is between about 10 percent and about 35 percent of the total area of the female component.

5,326,613
TUBULAR POLYAMIDE CASING
Karl Stenger, Ruedesheim/Rhein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Continuation of Ser. No. 633,040, Dec. 24, 1990, abandoned.
This application Oct. 23, 1992, Ser. No. 965,532
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1989, 3943024
Int. Cl.[5] B65D *75/00, 85/72*
U.S. Cl. 428—34.8 **15 Claims**

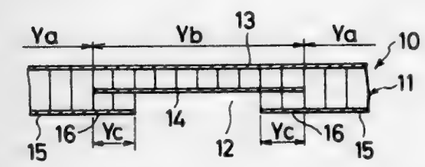
1. An easily peelable, tear resistant, monolayered, biaxially stretch-oriented and heat-set tubular packaging casing having a natural crystal-clear appearance, comprising a polymer mixture of polyamide-6 and an aromatic copolyamide comprised of at least one unit each of hexamethylene diamine, terephthalic acid and isophthalic acid wherein said casing is substantially shrink resistant in both transverse and longitudinal directions at temperatures below 80° C., said tubular packaging casing has been heat set in a blown up state, and wherein said polymer mixture is comprised of about 10 to 90% by weight of said aromatic copolyamide.

5,326,614
CHIPPED WOOD SURFACING MATERIAL
Lawrence A. Doose, P.O. Box 190, Onamia, Minn. 56351
Filed May 28, 1993, Ser. No. 69,984
Int. Cl.[5] B32B *5/12*
U.S. Cl. 428—107 **17 Claims**



1. A method of manufacturing a chipped wood surfacing material, comprising the steps of:
processing poles of the Family Salicaceae, genus Populus through a knife type chipper to from wood chips comprising a plurality of wood fibers;
shredding said wood chips under conditions sufficient to loosen but not separate the bonding between said fibers in said chips and to entrap extrinsic air between said wood fibers; and
passing said wood chips through a screen with a pore size of about one inch in diameter to form a plurality of wood particles having, in aggregate, a critical height of at least 8 feet at an uncompressed depth of 6 inches at any outdoor temperature.

5,326,615
HONEYCOMB CORE PANEL STRUCTURE
Toshifumi Tsuchihashi, Tokyo, and Kenzo Suzuki, Hino, both of Japan, assignors to The Yokohama Rubber Co., Ltd. and Hino Motors, Ltd., both of Tokyo, Japan
Filed Jan. 15, 1993, Ser. No. 5,140
Claims priority, application Japan, Jan. 16, 1992, 4-005812
Int. Cl.[5] B32B *3/12*
U.S. Cl. 428—116 **4 Claims**



1. A honeycomb panel structure comprising a web of honeycomb core having downwardly opening pockets therein formed at predetermined locations and intervals, an upper support plate member extending linearly over an upper surface of said web, a lower support plate member extending over a lower surface of said web in parallel spaced relation to said upper support plate member, said lower support plate having openings therein at said predetermined locations forming the openings of each of said pockets, and an intermediate support

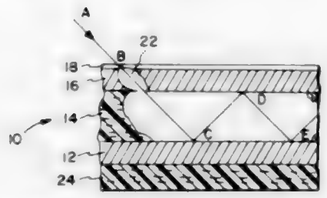
plate member located between and spaced from said upper and lower support plate members and extending over and defining a bottom wall of each of said pockets, said intermediate support plate member extending into said web and away from the pockets in opposite directions so that it overlaps said lower support plate member.

5,326,616

LASER-PROTECTION SURGICAL DRAPE

David Butterworth, Colleyville, and Joseph Salvatore, Arlington, both of Tex., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed May 8, 1992, Ser. No. 880,795
Int. Cl.[5] B32B 3/10
U.S. Cl. 428—131 20 Claims



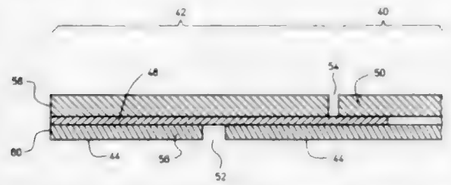
1. A multi-layer article to provide protection from laser radiation during medical procedures, comprising:
a) a first metallic layer having a top reflective surface to be placed proximal to a source of laser radiation and a bottom surface to be placed distal from the laser source,
b) a flame-resistant, radiation-absorbing layer having a bottom surface adjacent to the top surface of the first metallic layer, and
c) a second metallic layer having
i) a reflective bottom surface adjacent to the top surface of the radiation-absorbing layer and
ii) a top surface having a non-reflective, flame-resistant coating in which the first metallic layer has a thickness that is greater than the thickness of the second metallic layer.

5,326,617

CURL PREVENTION USING A TRANSVERSE SLIT ON TRAY-LOADED FILM FOR PRINTERS

Craig A. Wright, San Diego, Calif., and John A. Underwood, Dublin, Ireland, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 601,545, Oct. 22, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 969,546
Int. Cl.[5] B41M 5/00; B32B 3/00
U.S. Cl. 428—136 4 Claims



1. A sheet of media suitable both for manual feeding as well as automatic tray-loaded feeding into inkjet printers comprising:
an elongated film sheet having a finished film portion having a length and a leader portion, said leader portion being separatable from said finished film portion after a printing operation is completed;
a backing sheet having a thickness and width underlying said elongated film sheet for providing the sole connection for holding together said finished film portion and said leader portion during the feeding of said film sheet as well as during the printing operation, said backing sheet underlying the entire leader portion and joined together therewith along a first junction by an adhesive layer completely covering said junction, said backing sheet also underlying a forwardmost lateral strip of said finished film portion and jointed together therewith along a second junction by an adhesive layer completely covering said junction, said backing sheet being separatable from said finished film portion after a printing operation is completed;
a lateral slit in said backing sheet in an intermediate location in said first junction, said lateral slit extending completely through said thickness of said backing of said lacking sheet and continuously across the entire width of said backing sheet to provide an expansion and contraction joint during any time period when multiple sheets of media are stacked in a tray-loaded printer, and
wherein a composite laminant is formed by said backing sheet, said adhesive layer along said first and second junctions, said film leader, and said forwardmost lateral strip of said finished film portion in order to facilitate the manual feeding and the tray-loaded feeding media into the printer

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5,326,618

MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCTION THEREOF

Katsumi Ryoke; Yutaka Kakuishi; Toshiyuki Kitahara, and Akihiro Matsufuji, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 26, 1992, Ser. No. 858,189
Claims priority, application Japan, Mar. 27, 1991, 3-063447
Int. Cl.[5] B32B 3/10, 7/02, 5/16; G11B 5/66
U.S. Cl. 428—141 6 Claims

1. A magnetic recording medium comprising a nonmagnetic support having formed thereon a magnetic layer containing a ferromagnetic powder, an abrasive, and a binder, wherein the ferromagnetic powder is a metal magnetic powder having a crystallite size of not larger than 200 Å, and the abrasive comprises (i) an inorganic powder having a Mohs' hardness of 10 and a mean particle size of 0.1 to 0.9 μm which is contained in an amount of from 0.1 to 10 parts by weight per 100 parts by weight of the ferromagnetic powder, and (ii) an inorganic powder having a Mohs' hardness of from 8 to 9; and wherein the total amount of the inorganic powders (i) and (ii) is from 0.1 to 20 parts by weight per 100 parts by weight of the ferromagnetic powder, a center-line average surface roughness (Ra) of the magnetic layer is less than 5 nm, and said magnetic recording medium has a back layer.

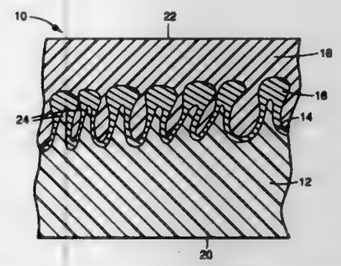
5,326,619

THERMAL TRANSFER DONOR ELEMENT COMPRISING A SUBSTRATE HAVING A MICROSTRUCTURED SURFACE

William V. Dower, St. Paul, and Mark K. Debe, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 28, 1993, Ser. No. 144,731
Int. Cl.[5] B41M 5/26
U.S. Cl. 428—164 33 Claims

1. A thermal transfer donor element, comprising:
a) a substrate having a microstructured surface, said surface comprising a plurality of randomly positioned discrete protuberances of varying heights and shapes;
b) a black metal layer on said microstructured surface;
c) a gas-producing polymer layer having a thermally available nitrogen content of greater than about 10 weight percent, said gas-producing polymer layer being over said black metal layer; and



d) a thermal mass transfer material in or over said gas-producing polymer layer.

5,326,620

MULTI-USABLE THERMAL TRANSFER INK SHEET

Takao Arimura; Masao Saisho; Jun Sogabe; Katsuhiro Yoshida, and Noahiro Ikeda, all of Osaka, Japan, assignors to Fujicopian Co., Ltd., Osaka, Japan

Filed Aug. 5, 1992, Ser. No. 925,016
Claims priority, application Japan, Aug. 9, 1991, 3-200682
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—195 2 Claims

1. A multi-usable thermal transfer ink sheet comprising a foundation, a heat-meltable, multi-transferable ink layer provided on the foundation, and a heat-meltable overcoat provided on the ink layer, said overcoat having a greater cohesive force than that of said ink layer, wherein the multi-transferable ink layer is a layer containing 5 to 40% by weight of a copolymer of ethylene with another vinyl monomer, 10 to 40% by weight of a softening agent and 30 to 60% by weight of a pigment, and the overcoat is a layer containing 50 to 90% by weight of a copolymer of ethylene with another vinyl monomer and 0 to 50% by weight of a pigment, the melt viscosity measured at 100° C. of the overcoat is not less than 2,900 poises and the difference between the melt viscosity measured at 100° C. of the overcoat and the melt viscosity measured at 100° C. of the ink layer is not less than 1,000 poises.

5,326,621

ENERGY-INDUCED DUAL CURABLE COMPOSITIONS

Michael C. Palazzotto, St. Paul; Katherine A. Brown-Wensley, Lake Elmo, and Robert J. DeVoe, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 513,610, Apr. 24, 1990, Pat. No. 5,147,900, which is a division of Ser. No. 90,694, Aug. 28, 1987, Pat. No. 4,950,696. This application Aug. 19, 1992, Ser. No. 932,083
Int. Cl.[5] C08G 18/22, 18/16; C08F 2/50; G03C 1/735
U.S. Cl. 428—195 22 Claims

1. An article having on at least one surface thereof a polymerizable coating composition comprising a polymeric precursor comprising at least one ethylenically-unsaturated monomer and polyurethane precursors, said polyurethane precursors comprising at least one monomer having at least two isocyanate groups and at least one monomer having at least two isocyanate-reactive hydrogen atoms, and a curing agent comprising
2) an organometallic compound having the structure

$$L^1L^2L^3M$$

wherein
L^1 represents none, or 1 to 12 ligands contributing pi-electrons that can be the same or different ligand selected from substituted and unsubstituted acyclic and cyclic unsaturated compounds and groups and substituted and unsubstituted carbocyclic aromatic and heterocyclic aromatic compounds, each capable of contributing 2 to 12 pi-electrons to the valence shell of M;
L^2 represents none, or 1 to 24 ligands that can be the same or different contributing an even number of sigma-electrons selected from mono-, di-, and tri-dentate ligands, each donating 2, 4, or 6 sigma-electrons to the valence shell of M;
L^3 represents none, or 1 to 12 ligands that can be the same or different, each contributing no more than one sigma electron each to the valence shell of each M;
M represents 1 to 4 of the same or different metal atoms selected from the elements of Periodic Groups IVB, VB, VIB, VIIB, and VIII (CAS version of the Periodic Table);
with the proviso that said organometallic compounds contain at least one of a metal-metal sigma bond and L^3; and with the proviso that L^1, L^2, L^3, and M are chosen so as to achieve a stable configuration; and
2) an onium salt.

5,326,622

HEAT TRANSFERABLE INKED RIBBON

Mitsuo Yamane, Yokkaichi, and Takashi Kawaguchi, Nishikasugai, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 601,368, Oct. 23, 1990, abandoned. This application Aug. 14, 1992, Ser. No. 929,411
Claims priority, application Japan, Oct. 27, 1989, 1-281511; Oct. 27, 1989, 1-281523
Int. Cl.[5] B32B 3/00, 7/06, 7/10
U.S. Cl. 428—200 26 Claims



1. A heat transferable inked ribbon for transferring an image onto a sheet or film upon the application of heat, wherein said image is capable of being retransferred,
said ribbon comprising: a base film, an ink layer in contact with said base film and a control layer disposed over said ink layer;
said ink layer containing a first colorant, a binder and a pressure sensitive adhesive; and
said control layer containing a thermoplastic resin, a tackifying resin, and a second colorant which is not talc or titanium dioxide and having a higher viscosity, heat sensitive adhesiveness, cohesive forces and hardness than said ink layer.

5,326,623

CIRCUIT BOARD

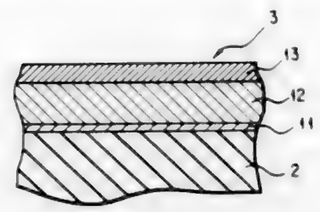
Koji Yamakawa; Kaoru Koiwa; Takaaki Yasumoto; Kiyoshi Iyogi, all of Kawasaki, and Nobuo Iwase, Kamakura, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1993, Ser. No. 10,298
Claims priority, application Japan, Jan. 28, 1992, 4-012846
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—210 18 Claims

1. A circuit board, comprising:
a ceramic substrate; and

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a circuit pattern formed on said substrate and having a multilayered structure in which a bonding layer comprising Ti and at least one element selected from the group consisting of N and O, a conductor layer consisting essentially of



Cu and O to 5 atomic % of Ti, and a protective layer comprising Ti and at least one element selected from the group consisting of N and O are stacked in the order named.

5,326,624

PHOTOGRAPHIC SUPPORT

Masayuki Tsubaki; Touru Noda, both of Tokyo; Nobushige Ikeya, and Takuya Seri, both of Kurashiki, all of Japan, assignors to Mitsubishi Paper Mills Limited and Mitsubishi Kasei Corporation, both of Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,047

Claims priority, application Japan, Sep. 9, 1991, 3-228103

Int. Cl.[5] B32B *27/10;* **G03C** *1/86*

U.S. Cl. 428—213 **7 Claims**

1. A photographic support comprising a paper substrate and the resin layers formed on both sides thereof, each of said resin layers being made of a resin composition comprising a polyethylene resin, wherein the resin layer on the side on which a photographic layer is to be provided is thicker than the resin layer on the opposite side by 3 μm or greater, and the polyethylene resin in the resin layer on the side opposite from the photographic layer is a compounded resin prepared by melting and mixing 5–25 parts by weight of a low-density or medium-density polyethylene resin having a density of 0.925 g/cm^3 or below and a melt index defined by JIS K6760 of 0.2–4 g/10 min and 95–75 parts by weight of a high-density polyethylene resin having a density of 0.950 g/cm^3 or more and a melt index defined by JIS K6760 of 18.5–50 g/10 min.

5,326,625

SEALABLE, OPAQUE, BIAXIALLY ORIENTATED MULTILAYER POLYPROPYLENE FILM, PROCESS FOR ITS PRODUCTION AND ITS USE

Detlef E. Schuhmann, Kiedrich; Herbert Peiffer, Mainz-Finthen, and Gunter Schloegl, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1992, Ser. No. 887,827

Claims priority, application Fed. Rep. of Germany, May 28, 1991, 4117442; Feb. 3, 1992, 4202982

Int. Cl.[5] B32B *7/12*

U.S. Cl. 428—215 **26 Claims**

1. A sealable, opaque, biaxially orientated multilayer polypropylene film comprising a core layer, an intermediate layer and a sealable top layer, wherein said intermediate layer is located between said core layer and said top layer, wherein

a) the core layer comprises a propylene polymer and calcium carbonate having an average particle diameter of 1 to 2 μm,

b) the intermediate layer comprises a propylene polymer, and

c) the top layer comprises

a copolymer of

ethylene and propylene,

ethylene and butylene,

propylene and butylene,

ethylene and an α-olefin having 5 to 10 carbon atoms, or

propylene and an α-olefin having 5 to 10 carbon atoms, or

a terpolymer of

ethylene and propylene and butylene, or

ethylene and propylene and an α-olefin having 5 to 10 carbon atoms, or

a mixture of one or more of the above copolymers and terpolymers with polypropylene or

a mixture of two or more of said copolymers, said terpolymers, or both of said copolymers and said terpolymers,

wherein the top layer has a thickness of ≦0.4 μm, and wherein the top layer does not comprise either polydimethylsiloxane or silicon dioxide.

5,326,626

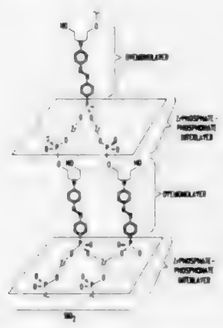
STABLE POLAR OPTICALLY NONLINEAR MULTILAYER FILMS AND DEVICES USING THE SAME

Christopher E. D. Chidsey, North Plainfield; Howard E. Katz, Summit; Thomas M. Putvinski, Scotch Plains, all of N.J.; Geoffrey R. Scheller, Allentown, Pa.; Marcia L. Schilling, Basking Ridge, and William L. Wilson, Somerville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 779,430, Oct. 17, 1991. This application Dec. 17, 1992, Ser. No. 992,515

Int. Cl.[5] B05D *3/10*

U.S. Cl. 427—301 **11 Claims**



1. A process of producing a polar-ordered film on a surface, which comprises

a) chemically modifying the surface of a support to provide phosphoryldioxy groups at the surface, wherein phoshoryldioxy refers to the $-PO_3^{2-}$, $-PO_3H^-$ and $-PO_3H_2$ groups present in phosphonic acids and their salts, and to the monoesters, monothioesters and monoamides of phosphoric acid and their salts, and wherein said support is chosen from the group consisting of glass, quartz, aluminum, gold, silicon, phosphorus-doped silicon dioxide coated on silicon, thermal silicon dioxide on silicon, conductive indium tin oxide coated on glass, and conductive cadmium tin oxide coated on glass,

b) treating the modified surface with a halide or salt of a multivalent metal resulting in phosphoryldioxy metal termination, wherein said multivalent metal is chosen from the group consisting of Al, Ga, Hf, In, Cd, Pb, Ta, Y, Zr and elements of the lanthanide series with an atomic number ranging from 57 to 71,

c) treating the metal terminated surface with a polar organic dye having at one end at least one of said phosphoryldioxy groups, and at the other end at least one group capable of being chemically modified to provide at least one of said phosphoryldioxy groups, and

d) chemically modifying said other end group to provide thereat the phosphoryldioxy groups, and

e) repeating steps b, c and d to deposit a multilayer film.

5,326,627

POLYOLEFIN-BASED WRAPPING FILM

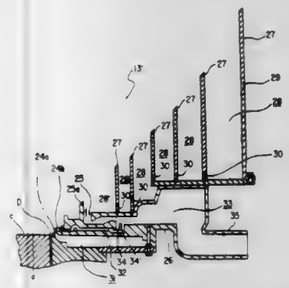
Takao Yazaki; Masataka Noro; Takashi Matsui; Noriyuki Kobayashi; Hironari Sano, and Koji Yamamoto, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,543

Claims priority, application Japan, Nov. 27, 1991, 3-312307; Jun. 25, 1992, 4-167646

Int. Cl.[5] B32B *27/32;* **B29C** *47/88*

U.S. Cl. 428—216 **30 Claims**



1. A wrapping film of a polyolefin-based resin, wherein the film has the following properties:

(1) a thickness ranging from 6 to 100 μm;

(2) a birefringence Δn_A ranging from 0.6×10^{-3} to 8×10^{-3}, said birefringence defined by equation:

$$\Delta n_A = |n_{MD} - n_{TD}|$$

wherein n_{MD} is a refractive index in the machine direction, and n_{TD} is a refractive index in the transverse direction;

(3) a ratio S_{MD}/S_{TD} ranging from 0.65 to 1.50, wherein S_{MD} and S_{TD} are each heat shrinkage in the machine direction and that in the transverse direction when the film is allowed to stand in a silicone oil bath at 140° C. for 3 minutes; and

(4) a strain recovery of 18 mm or more, as determined by clamping a circular film specimen having a diameter of 100 mm, indenting at the center thereof with a hemispherical indenter 20 mm in diameter to cause deformation, and measuring the maximum strain which disappears completely upon removal of the indenter.

5,326,628

FRICTIONAL MATERIAL COMPRISING BI-COMPONENT YARN TWISTED WITH A METAL WIRE

Sirou Takahata; Jirou Amakawa, and Masami Tsuji, all of Nara, Japan, assignors to Nichias Corporation, Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 871,305

Claims priority, application Japan, Apr. 26, 1991, 3-122809

Int. Cl.[5] D03D *13/00*

U.S. Cl. 428—222 **4 Claims**

1. In a frictional material which includes a cloth impregnated with an impregnating agent, said cloth including a plurality of yarns of a single type each having a center core in the form of a roving or a yarn of inorganic fiber and a covering element in the form of a sliver of an organic fiber, said covering element being wound around said center core so as to substantially cover said center cord, said center core being made of one or more of a glass fiber, rock wool and a ceramic fiber, said covering element being made of one or more of a staple fiber, an aromatic polyamide fiber or a flame-resistant fiber, and said impregnating agent includes one or both of a bituminous material and a synthetic resin, the improvement comprising wherein said center core and said covering element of said yarn are proportioned so that a ratio of said center core to the entirety



is 35 to 70%, said center core has a thickness in the range of 100 to 300 TEX, said covering element has a thickness in the range of 150 to 300 TEX, and said covering element covers more than 80% of said center core, said cloth being woven from a multiple yarn which includes a metal wire twisted with said plurality of yarns.

5,326,629

POROUS POLYMER FIBER FILTERS

Walter L. Vaughn, and Milton S. Wing, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 708,417, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 234,978, Aug. 22, 1988, abandoned, which is a division of Ser. No. 776,534, Sep. 16, 1985, Pat. No. 4,766,036. This application Jul. 22, 1993, Ser. No. 95,979

The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.[5] B01D *27/02;* **C08K** *5/20;* **B32B** *27/34*

U.S. Cl. 428—224 **5 Claims**

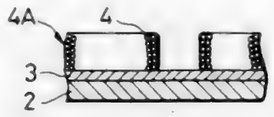


1. A filter material comprising fibers or filaments, wherein said fibers or filaments comprise an olefin polymer extruded in elongate form and oriented to a dimensionally stable form at a temperature below that at which stress relaxation can occur, wherein said polymer having pendant reactive or polar side-groups, wherein said olefinic polymer does not contain filler, and wherein the fibers or filaments have been swollen in a chemical reactant which reacts with said side groups to yield microporosity.

5,326,630
REINFORCING FIBER SHEET, METHOD OF MANUFACTURING THE SAME, AND METHOD OF REINFORCING STRUCTURE WITH THE REINFORCING FIBER SHEET

Makoto Saito; Makoto Takezawa, and Hiroshi Inoue, all of Oi, Japan, assignors to Tonen Corporation, Tokyo, Japan

Continuation of Ser. No. 646,572, Jan. 28, 1991. This application Mar. 15, 1993, Ser. No. 31,436
Claims priority, application Japan, Jan. 30, 1990, 2-19927; Jan. 30, 1990, 2-19928; Apr. 10, 1990, 2-94436; Apr. 10, 1990, 2-94437; Apr. 10, 1990, 2-94438; Oct. 12, 1990, 2-275049
Int. Cl.[5] B32B *5/08, 31/00, 35/00;* C09J *5/00, 7/00*
U.S. Cl. 428—231 22 Claims



1. A reinforcing fiber sheet comprising:
(a) a resin-penetrable support sheet; and
(b) reinforcing fibers which have not yet been impregnated with a matrix resin, said fibers being arranged in one direction on one of the surfaces of said support sheet and attached to the surface with an adhesive layer

5,326,631
UNSINTERED FIBER BURNER MADE WITH METAL FIBERS, CERAMIC FIBERS AND BINDING AGENT

Martin G. Carswell, San Jose; Robert M. Kendall, Sunnyvale, and John D. Sullivan, Fremont, all of Calif., assignors to Alzeta Corporation, Santa Clara, Calif.

Filed Jun. 7, 1993, Ser. No. 71,973
Int. Cl.[5] F23D *14/12;* B05D *5/00*
U.S. Cl. 428—256 12 Claims

1. An unsintered fiber burner made with metal fibers mixed with ceramic fibers, said metal fibers being resistant to the high temperature and oxidizing conditions to which said burner will be exposed, the mixed fibers being bonded together as a porous layer adherent to a foraminous support by a binding agent in the aqueous suspension of said mixed fibers used to vacuum mold said unsintered fiber burner.

5,326,632
MOISTURE-PERMEABLE WATERPROOF FABRIC AND PROCESS FOR PRODUCTION THEREOF

Tatsuya Zenda; Yutaka Hayashi, both of Ishikawa; Motoaki Kitagawa, Hikone, and Takashi Seino, Shiga, all of Japan, assignors to Komatsu Seiren Co., Ltd. and Toray Industries, Inc., Japan

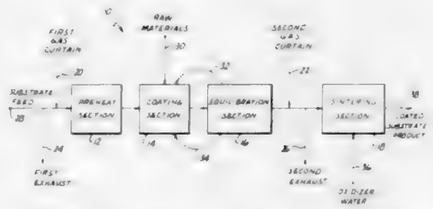
Continuation-in-part of Ser. No. 740,294, Aug. 5, 1991, abandoned. This application Mar. 4, 1992, Ser. No. 846,521
Claims priority, application Japan, Aug. 7, 1990, 2-207564
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—262 13 Claims

1. A moisture-permeable waterproof fabric having a resin layer formed on at least one surface thereof, wherein the resin layer is composed of a mixture comprising a copolymer product obtained by reacting a urethane prepolymer having isocyanate terminals with an N-carboxyamino acid annhydride and an amine, and a polyurethane having a 100% modulus of at least 40 kg/cm^2, wherein the amount of the resin product contained in the resin layer is 12.9 to 85.3% by weight of total solid resin, and the amount of the urethane/amino acid copolymer contained in the resin layer is 0.9 to 9.0% by weight of total solid resin, wherein the moisture permeability of said resin layer is at least 8,000 gm^2-24 hours and the water pressure resistance of said resin layer is at least 2,000 mm H_2O and wherein the retention ratio of the water pressure resistance after washing is at least 80%.

5,326,633
COATED SUBSTRATES

Thomas J. Clough, Santa Monica; Victor L. Grosvenor, Topanga, and Naum Pinsky, Thousand Oaks, all of Calif., assignors to Ensci, Inc., Pismo Beach, Calif.

Division of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, and a continuation of Ser. No. 839,060, Feb. 21, 1992, Pat. No. 5,152,791, and a continuation of Ser. No. 815,424, Dec. 31, 1991, abandoned, said Ser. No. 839,060, said Ser. No. 815,424, each is a continuation-in-part of Ser. No. 770,557, Oct. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, and a continuation-in-part of Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, and a continuation-in-part of Ser. No. 348,787, May 8, 1989, abandoned, and a continuation-in-part of Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, said Ser. No. 348,789, said Ser. No. 348,788, said Ser. No. 348,787, said Ser. No. 348,786, each is a continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and a continuation-in-part of Ser. No. 272,539, Nov. 17, 1988, abandoned, said Ser. No. 272,517, said Ser. No. 272,539, each is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Nov. 9, 1992, Ser. No. 972,857
Int. Cl.[5] D04H *1/58*
U.S. Cl. 428—288 31 Claims



1. An article comprising a three dimensional inorganic substrate other than electrically conductive tin oxide having a coating containing electrically conductive tin oxide on at least a portion of all three dimensions thereof produced by a process comprising:
contacting an inorganic three dimensional substrate which includes external surfaces and shielded surfaces which are at least partially shielded by other portions of said substrate with a composition comprising a tin chloride-forming compound at conditions effective to form a tin chloride-forming compound containing coating on at least a portion of said substrate; forming a liquidus tin chloride-forming compound containing coating on at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate and at conditions effective to do at least one of the following: (1) coat a larger portion of said substrate with said tin chloride-forming compound; (2) distribute said tin chloride-forming compound over said substrate; and (3) make said tin chloride-forming compound containing coating more uniform in thickness; and
contacting said substrate with said tin chloride-forming compound containing coating with an oxidizing agent at conditions effective to convert the tin chloride forming compound to tin oxide and form a tin oxide coating on at least a portion of said three dimensions of said substrate including the shielded surfaces of said substrate.

5,326,634
ADHESIVE TAPE

Kunihiro Sato, Ishinomaki; Kazunori Oride, Tokyo; Keiji Yoshimura, Urayasu, and Hiroyuki Yuasa, Syonan, all of Japan, assignors to Moby Dick Inc.; Freund Industrial Co., Ltd. and Yugen Kaisya Fujiken, all of Tokyo, Japan

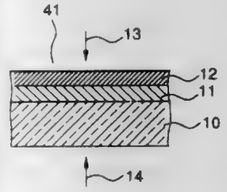
Continuation of Ser. No. 524,642, May 16, 1990, abandoned. This application Jul. 28, 1992, Ser. No. 921,370
Claims priority, application Japan, May 18, 1989, 1-124794
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—314.4 8 Claims

1. An adhesive heat sensitive tape for adhering to materials exhibiting relatively large degree of stretchability which comprises:
a tape base material comprising a closed-cell chloroprene sponge rubber having stretchability, and
an adhesive as a layer for adhering to said materials exhibiting relatively large degree of stretchability comprised of a first rubber having halogen atoms in a molecule thereof and having unsaturated bonds in main chains, the adhesive being coated on a surface of said tape base material.

5,326,635
MAGNETIC RECORDING MEDIUM HAVING A NON-MAGNETIC UNDERLAYER CONTAINING ELECTRICALLY CONDUCTIVE TIN OXIDE COATED PIGMENT

Noboru Koyama, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed May 12, 1992, Ser. No. 881,620
Claims priority, application Japan, May 24, 1991, 3-149753
Int. Cl.[5] G11B *51/00*
U.S. Cl. 428—323 9 Claims



1. A magnetic recording medium which comprises;
(a) a support;
and provided thereon, in sequence
(b) a non-magnetic layer having a thickness of 0.5 to 6 μm and containing an electrically conductive coated pigment, said pigment being coated with a compound selected from the group consisting of tin oxide and an antimony solid solution type tin oxide,
(c) a magnetic layer, wherein the specific surface resistance of the magnetic layer is not more than 1.0×10^{10} Ω/square, and
(d) said magnetic layer and said non-magnetic layer are formed by a wet-on-wet method.

5,326,636
ASSEMBLY USING ELECTRICALLY CONDUCTIVE CEMENT

David Durand, Providence; David P. Vieau, East Greenwich; g-Ling Chu, Cranston, and Tai S. Wei, Warwick, all of R.I., assignors to Poly-Flex Circuits, Inc., Cranston, R.I.

Division of Ser. No. 436,199, Nov. 14, 1989, Pat. No. 5,180,523. This application Sep. 29, 1992, Ser. No. 953,609
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—323 2 Claims

1. An assembly comprising a substrate having a circuit printed thereon and at least one electrical component electrically connected to said circuit with an electrically conductive cement, the electrically conductive cement comprising a polymeric carrier having a volumetric shrinkage characteristic of about 4 to about 16%; and
a filler comprising about 60 to about 90% by weight of the cement including conductive particles consisting of:
i) agglomerate particles having a mean particle size of about 4.5 microns, an aspect ratio of about 1:1:1 and a rough external appearance characterized by sufficient recesses

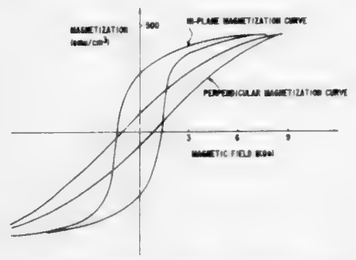


and ridge like boundaries so as to effect enhanced electrical contact between surfaces adhered with the cement,
ii) a mixture of flake particles having a FSSS of about 0.90 to about 1.30 microns and a surface area of about 0.3 to 0.6 m^2/g and a particle size distribution of about 90% < 14 microns, 50% < 7 microns, and 10% < 2 microns, and
iii) powder particles having a mean particle size of about 1.6 microns.

5,326,637
MAGNETIC RECORDING MEDIUM HAVING A CO-O MAGNETIC LAYER, AND SPECIFIED IN-PLANE PROPERTIES

Shogo Nasu, 322-204, 1-ban, Kitaochiai 1-chome, Suma-ku, Kobe-shi, Hyogo-ken, and Koji Saiki, Lune-Toyonaka 121, 6-1, Kitajo-cho 4-chome, Toyonaka-shi, Osaka-fu, both of Japan

Continuation of Ser. No. 655,698, Feb. 14, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 24,109
Claims priority, application Japan, Feb. 19, 1990, 2-39199; Sep. 7, 1990, 2-238688; Dec. 28, 1990, 2-416992; Jan. 23, 1991, 3-024090
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—336 12 Claims



1. A magnetic recording medium, comprising a magnetic film consisting of Co-O having an in-plane coercive force not less than 500 Oe isotropically provided on a substrate, wherein said magnetic film has an in-plane squareness ratio of not less than 0.6 and wherein saturation magnetization is in a range of 300–700 emu/cm^3.

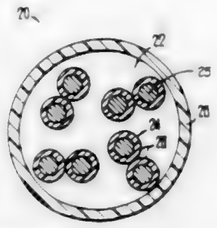
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5,326,638

TRANSMISSION MEDIA COVERED WITH LEAD-FREE STABILIZED POLYVINYL CHLORIDE SHEATH WITH SACRIFICIAL COMPONENT

John J. Mottine, Jr., Omaha, Nebr., and Lloyd Shepherd, Madison, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 29, 1991, Ser. No. 751,485
Int. Cl.[5] B32B *15/00*; H01B *7/00*
U.S. Cl. 428—379 18 Claims



1. A cable comprising:
at least one longitudinally extending transmission medium;
a lead-free polyvinyl chloride based material which surrounds at least a portion of said longitudinally extending transmission medium, said polyvinyl chloride based material being a composition comprising:
a polyvinyl chloride resin;
a stabilization system which comprises a calcium-zinc stabilizer and a sacrificial constituent which protects the polyvinyl chloride resin from oxygen-catalyzed expulsion of hydrogen chloride; and
a lubricant; and
a jacket which is comprised of a plastic material and which is disposed about said at least one transmission media.

5,326,639

THERMOPLASTIC OLEFIN POLYMER AND METHOD OF PREPARING SAME

Lewis R. Leonard, Ingham County, Mich.; Anteo Pelliconi, Rovigo, Italy; Giuliano Cecchin, and Giovanni Patroncini, both of Ferrara, Italy, assignors to Himont Incorporated, Wilmington, Del.

Continuation of Ser. No. 542,468, Jun. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 397,616, Aug. 23, 1989, abandoned. This application Jun. 8, 1993, Ser. No. 73,631
Int. Cl.[5] C08L *23/16, 23/20, 23/04*
U.S. Cl. 428—402 16 Claims

1. A thermoplastic olefin polymer prepared by sequential polymerization in at least two stages comprising:
a) greater than 60 to about 85 parts of a crystalline polymer fraction selected from the group consisting of (i) a copolymer of propylene and at least one alpha-olefin having the formula $H_2C{=}CHR$, where R is H or a $C_{2\text{-}6}$ straight or branched chain alkyl, containing over 85% by weight propylene and having an isotacticity index of greater than 75, (ii) a polybutene-1 having an isotacticity index of greater than 75, (iii) an ethylene homopolymer having a density of 0.95 g/cm^3 or greater, or a copolymer of ethylene with a $C_{3\text{-}8}$ alpha-olefin having a density of 0.94 g/cm^3 or greater, or (iv) mixtures thereof;
b) from about 1 up to less than 15 parts of a semi-crystalline, low density, essentially linear copolymer fraction having a crystallinity of 20 to 60% by differential scanning calorimetry and consisting of propylene and over 90 wt. % of units of the alpha-olefin ethylene or of units consisting substantially of the alpha olefin ethylene and a different alpha-olefin having the formula set forth above in a), which copolymer is insoluble in xylene at room temperature; and
c) from about 10 to less than 39 parts of an amorphous copolymer fraction of the alpha-olefin ethylene and propylene containing from about 30 to about 80 weight % ethylene, with or without (i) 1 to 10% of a diene or (ii) about 3 to about 10 % of a different alpha-olefin termonomer having the formula set forth above in a), which amorphous copolymer fraction is soluble in xylene at room temperature, provided that the alpha-olefin(s) used to produce b) and c) are the same,

said thermoplastic olefin polymer having a flexural modulus lower than 1000 MPa to 150 MPa, tensile strength greater than 7 MPa, impact strength such that it breaks with a ductile impact failure at −18° C. and an elongation at break over 200%, wherein the total polymerized alpha-olefin monomer content is from 10 to 30% by weight, excluding, if present, the different alpha-olefin termonomer of component c) (ii), and the total of components a), b) and c) is 100 parts.

5,326,640

MICROWAVE ABSORBING ARTICLE

Joseph E. Japka, Lincoln Park, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Sep. 16, 1992, Ser. No. 945,454
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—403 8 Claims

1. A microwave absorbing article of predetermined density comprising a hollow or solid glass microsphere having a diameter of 1–100 microns, and, deposited thereon, alternating layers of elemental iron material and passivated elemental iron in that order said article including at least two layers of iron and two layers of passivated iron in which the total thickness of the deposited iron layers if about 1–3 μm.

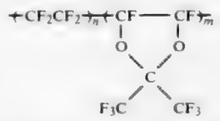
5,326,641

MAGNETIC RECORDING MEDIUM COMPRISING A FERROMAGNETIC THIN FILM AND A PROTECTIVE LAYER OF FLUORINE BASED RESIN

Yasuo Nishikawa, and Toshio Ishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 736,332, Jul. 26, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,066
Claims priority, application Japan, Jul. 27, 1990, 2-197609
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—421 8 Claims

1. A magnetic recording medium comprising a non-magnetic support having provided thereon a magnetic layer comprising a ferromagnetic metal thin film, wherein a protective layer mainly comprising a fluorine-based resin represented by formula (I).



(I)

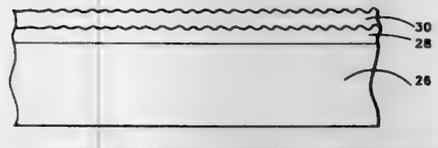
wherein m is an integer of 1 or more, and n is an integer of 10 or more, is provided on the ferromagnetic metal thin film, wherein said fluorine-based resin has a weight average molecular weight of 1,500 to 15,000.

5,326,642

INFRARED ABSORPTIVE COATING FOR BERYLLIUM SURFACE

Harry A. Moreen, Huntington Beach, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Nov. 19, 1991, Ser. No. 794,189
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—469 2 Claims



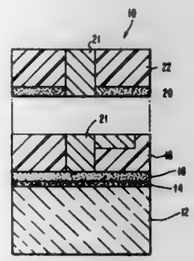
1. A nuclear hard, infrared absorptive composite comprising:
(a) a piece of beryllium with a roughened surface; and
(b) a layer, less than about 0.0005 inch thick, of anodized aluminum oxide on the roughened surface of the piece.

5,326,643

ADHESIVE LAYER IN MULTI-LEVEL PACKAGING AND ORGANIC MATERIAL AS A METAL DIFFUSION BARRIER

Eleftherios Adamopoulos, Bronx, N.Y.; Jungihl Kim, Seoul, Rep. of Korea; Kang-Wook Lee, Yorktown Heights, N.Y.; Tae S. Oh, Cheongryang, Rep. of Korea; Terrence R. O'Toole, Hopewell Junction, N.Y.; Sampath Purushothaman, Yorktown Heights, N.Y.; John J. Ritsko, Mount Kisco, N.Y.; Jane M. Shaw, Ridgefield, Conn.; Alfred Viehbeck, Stormville, and George F. Walker, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1991, Ser. No. 771,929
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—472.2 31 Claims



1. A multilayer article of manufacture comprising a substrate having adhered to it a diffusion barrier having the structure

$$R_1{+}I{\frac{}{}}_n I{-}R_2$$

wherein I is an imide group, isoimide group, amic acid group or an ester of said amic acid with an organo hydroxy compound having from one to six carbon atoms, I being based on a cyclic diamine and a cyclic tetracarboxylic acid anhydride, an unsaturated heterocyclic diamine or a diamino organo phosphine,
n is from about one to about 100,
R_1 is an imide of an amino organo phosphine, an imide of an unsaturated heterocyclic amine or an imide of an unsaturated heterocyclic dicarboxylic acid,
$R_2{=}R_1$ or an imide of an acetylene amine or an imide of a vinyl amine, where the surface of said diffusion barrier opposite said substrate is adhered to a polyimide, said article having one set or a plurality of alternating layers of said diffusion barrier and said polyimide.

5,326,644

REPULPABLE PRESSURE-SENSITIVE ADHESIVE COMPOSITIONS

William F. Scholz, Altadena, and Robert H. Van Ham, Arcadia, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Feb. 5, 1993, Ser. No. 14,119
Int. Cl.[5] B32B *27/10, 23/08, 27/36*
U.S. Cl. 428—514 29 Claims

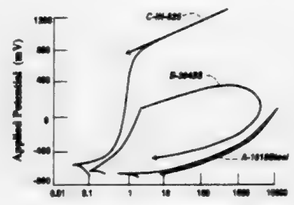
1. A water-dispersible, inherently tacky pressure-sensitive adhesive comprising a tacky emulsion polymer formed from about 55% to 90% by weight of a first monomer which is at least one alkyl acrylate containing from 4 to about 8 carbon atoms in the alkyl group, from about 10% to about 20% by weight of hydroxyethyl methacrylate from 0% to about 30% by weight of at least one vinyl ester, and from 0% to about 30% by weight methyl acrylate, said emulsion polymer having a glass transition temperature of about −15° to about −50° C., formed in the presence of anionic and nonionic surfactants, and in the presence of a sufficient amount of chain transfer agent to provide a repulpable pressure-sensitive adhesive which when applied to paper will pass Tappi UM 204.

5,326,645

NICKEL-CHROMIUM CORROSION COATING AND PROCESS FOR PRODUCING IT

Adil A. Ashary, Indianapolis, and Robert C. Tucker, Jr., Brownsburg, both of Ind., assignors to Praxair S.T. Technology, Inc., Danbury, Conn.

Filed Mar. 6, 1992, Ser. No. 847,192
Int. Cl.[5] B21D *39/00*; B05D *1/36, 7/00*
U.S. Cl. 428—552 19 Claims



1. A process for protecting a metallic alloy from corrosion by applying an impervious coating to such alloy consisting essentially of the steps:
(a) preparing a metallic alloy substrate,
(b) preparing a powder comprising between 21 to 23 weight percent chromium; between 8 to 10 weight percent molybdenum; between about 2.5 to 3.5 weight percent iron; between about 3 to 4 weight percent niobium and remainder substantially nickel;
(c) thermal spraying the powder composition of step (b) at a selected gas temperature and gas pressure onto the metallic alloy substrate to produce a coating in excess of 0.0035 inch thick and having the characteristics such that when subjected to the ASTM G-61 corrosion test, a current density of less than 50 microamperes per square centimeter results when a potential of 400 millivolts is applied; and
(d) depositing a coating on top of the coating of step (c), said coating selected from the group consisting of chromium oxide, aluminum chromium oxide, titanium oxide, mixed oxides of aluminum chromium and titanium, tungsten carbide cerments, tungsten carbide-cobalt cermets, tungsten carbide-nickel cermets, tungsten carbide-chromium-cobalt cermets, tungsten carbide-chromium-nickel cer-

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mets, chromium carbide-nickel-chromium cermets, chromium-carbide-IN-625 cermets, and tungsten-titanium carbide-nickel cermets.

5,326,646

SYNCRONIZER RING HAVING A SPRAY-COATED FILM OF A WEAR-RESISTANT BRASS MATERIAL

Kunio Nakashima; Masao Hosoda; Wataru Yago, and Kazuyuki Inagaki, all of Toyama, Japan, assignors to Chuetsu Metal Works Co., Ltd., Toyama, Japan

Filed Dec. 4, 1992, Ser. No. 984,940
Int. Cl.[5] B22F *5/08*
U.S. Cl. 428—561 4 Claims



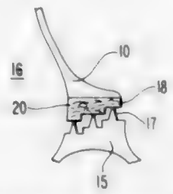
1. A synchronizer ring which comprises a ring body having a sliding portion, and a directly spray-coated wear-resistant film formed on a surface of the sliding portion, said film being made of a wear-resistant brass alloy which comprises Cu, Zn and at least one element selected from the group consisting of Al, Mn, Fe, Ni, Si, Co, Cr, Ti, Nb, V, Zr, and Mo.

5,326,647

ABRADABLE LAYER FOR A TURBO-ENGINE AND A MANUFACTURING PROCESS

Herbert Merz, München, and Wolfgang Weiler, Dachau, both of Fed. Rep. of Germany, assignors to MTU Motoren- Und Turbinen-Union, Fed. Rep. of Germany

PCT No. PCT/EP92/01812, § 371 Date May 17, 1993, § 102(e) Date May 17, 1993, PCT Pub. No. WO93/06341, PCT Pub. Date Apr. 1, 1993
PCT Filed Aug. 8, 1992, Ser. No. 64,149
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1991, 4130946
Int. Cl.[5] B32B *5/02*; F01D *11/02*; B22F *3/26*
U.S. Cl. 428—605 14 Claims



1. An inlet coating for labyrinth seals of a turbo-engine, the labyrinth seals being made of a layered composite material having a core, shell and embedments wherein the core is composed of one of a felted and three-dimensionally crosslinked fiber body made of one of an iron base alloy, nickel base alloy and cobalt base alloy; wherein the shell is made of a shell material composed of at least one precious metal or precious-metal alloy, the core being completely surrounded by the shell material, and wherein the embedments are made of oxidation-stable sliding materials of the oxide, carbide or nitride group with a hexagonal crystal lattice layer structure.

5,326,648

SURFACE-TREATED STEEL SHEET HAVING IMPROVED WELDABILITY AND PLATING PROPERTIES, AND METHOD FOR PRODUCING THE SAME

Chiaki Kato; Yasuji Uesugi; Nobuyuki Morito; Akira Yasuda; Kouichi Yasuda, and Hajime Kimura, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Feb. 20, 1991, Ser. No. 658,084
Claims priority, application Japan, Feb. 21, 1990, 2-40490; Dec. 21, 1990, 2-404896
Int. Cl.[5] B32B *5/14, 15/18*
U.S. Cl. 428—610 9 Claims

1. A surface-treated steel sheet having an improved weldability comprising an extra low carbon steel sheet having a carbon content less than 0.01% by weight, an iron-carbon plated layer or a carbon-rich layer converted from the iron-carbon plated layer by annealing on at least one major surface of the extra low carbon steel sheet, and a zinc or zinc-alloy plated layer on the iron-carbon plated layer or the carbon-rich layer.

5,326,649

X-RAY TRANSMITTING MEMBRANE FOR MASK IN X-RAY LITHOGRAPHY AND METHOD FOR PREPARING THE SAME

Meguru Kashida; Yoshihiko Nagata, and Hitoshi Noguchi, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,838
Claims priority, application Japan, Mar. 27, 1991, 3-087625
Int. Cl.[5] B32B *9/00*; G03F *9/00*
U.S. Cl. 428—698 4 Claims

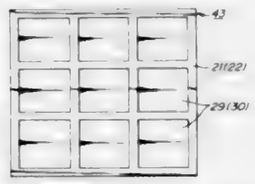
1. An X-ray transmitting frame-supported membrane of silicon nitride having a thickness in the range from 0.1 to 10 μm formed by the method of chemical vapor-phase deposition from a silicon-containing compound and a nitrogen-containing compound as the reactant gases, of which the content of hydrogen does not exceed 1.0 atomic % and transmission of light having a wavelength of 633 nm therethrough is at least 70%.

5,326,650

SOLID OXIDE FUEL ELECTRODES AND PROCESS FOR PRODUCING

Yoshihiko Ishida, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 857,966, Mar. 26, 1992, abandoned.
This application Apr. 9, 1993, Ser. No. 44,108
Claims priority, application Japan, Mar. 27, 1992, 3-085834
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—27 3 Claims



1. A solid oxide fuel cell comprising a separator plate made of a material having oxidation resistance, reduction resistance and electron conductivity, an air electrode spacer made of a material having oxidation resistance and electron conductivity, a flat plate-shaped solid oxide fuel cell element, a fuel electrode spacer made of a material having reduction resistance and electron conductivity and another spacer plate made of a material having oxidation resistance, reduction resistance and electron conductivity, said separator plate, said air electrode spacer, said flat plate-shaped solid oxide fuel cell element, said fuel electrode spacer and said another spacer plate being successively laminated in this order,

said solid oxide fuel cell element comprising an ion-conductive ceramic plate, and an air electrode and a fuel electrode formed on opposite surfaces of said ion-conductive ceramic plate, respectively, wherein conductive strips which have less resistance than said electrode are formed in a continuous pattern on a surface of at least one of said air electrode and said fuel electrode,

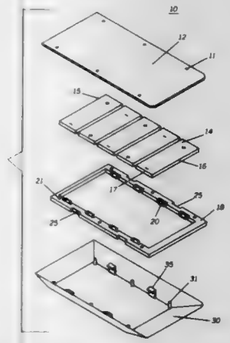
wherein an oxidizing gas chamber is defined by said separator plate, said air electrode spacer and said fuel cell element, and a fuel gas chamber is defined by said another separator plate, said fuel electrode spacer and said fuel cell element.

5,326,651

WELDLESS BATTERY PACK WITH WIPING CONTACTS

Alay M. Mehta, Plantation, and Mark S. Bresin, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1992, Ser. No. 970,884
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—96 18 Claims



1. A battery pack, comprising:

at least one cell having a positive and a negative terminal;

a header for mounting said at least one cell, the header having at least one wiping contact for connection to either the positive or negative terminal of the cell or cells;

a first housing member for receiving the header and the cell or cells;

a second housing member mounted above the header and coupled to the first housing member;

means for wiping the wiping contact while the at least one cell is enclosed within the first and second housing members.

5,326,652

BATTERY PACKAGE AND METHOD USING FLEXIBLE POLYMER FILMS HAVING A DEPOSITED LAYER OF AN INORGANIC MATERIAL

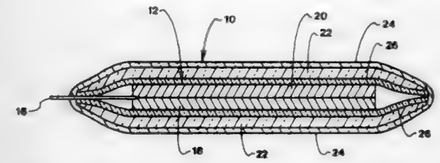
Rickie C. Lake, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Jan. 25, 1993, Ser. No. 8,529
Int. Cl.[5] H01M *2/04, 2/08*
U.S. Cl. 429—127 20 Claims

1. A battery package for a thin battery comprising:

a flexible polymer base film attached to and enclosing the battery; and

a flexible layer of an inorganic material deposited on the base film to encapsulate and seal the battery wherein the inorganic material is selected from the group consisting of silicon nitride, aluminum nitride and aluminum oxide.

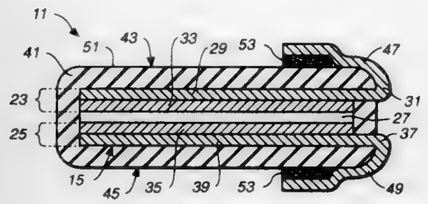


5,326,653

BATTERY UNIT WITH REINFORCED CURRENT COLLECTOR TABS AND METHOD OF MAKING A BATTERY UNIT HAVING STRENGTHENED CURRENT COLLECTOR TABS

On-Kok Chang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Oct. 29, 1992, Ser. No. 968,173
Int. Cl.[5] H01M *2/30*
U.S. Cl. 429—162 16 Claims



1. A battery unit, comprising:

a battery having an anode including an anode current collector tab, a cathode including a cathode current collector tab, and an electrolyte disposed between the anode and the cathode;

packaging material surrounding the battery to form a package having top and bottom sides, at least a portion of the anode current collector tab and at least a portion of the cathode current collector tab extending past an exterior surface of the packaging material;

the extended portions of the anode current collector tab and the cathode current collector tab being secured to the exterior surface of the packaging material on at least one of the top and bottom sides of the package.

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5,326,654

MULTILAYER ADHESIVE LABEL

Rolf Will, Bad Toelz, and Hans-Peter Ast, Holzkirchen, both of Fed. Rep. of Germany, assignors to Zweckform Etikettiertechnik GmbH, Holzkirchen, Fed. Rep. of Germany

Division of Ser. No. 702,237, May 17, 1991, Pat. No. 5,262,251, which is a division of Ser. No. 454,518, Dec. 21, 1989, Pat. No. 5,032,477, which is a division of Ser. No. 254,383, Oct. 5, 1988, Pat. No. 4,911,994, which is a continuation of Ser. No. 70,642, Jul. 2, 1987, Pat. No. 4,801,514, which is a continuation of Ser. No. 739,376, May 30, 1985, abandoned. This application Jun. 28, 1993, Ser. No. 83,799

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430162

The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.

Int. Cl.[5] H01M *2/02*

U.S. Cl. 429—167 3 Claims



1. Multilayer adhesive label adhering onto a circumferential surface of a dry-cell battery body, the body having an axis and top and bottom end faces, wherein the label comprises.

a) a bottom layer of a stretchable foil stretched in circumferential direction of the body, a contact adhesive layer onto the bottom side of the bottom layer adhering onto the circumferential surface, a vapor deposited layer of a metal on the top side of the bottom layer, a primer layer on the top side of the vapor deposited layer, and an imprint on the primer layer,

b) a top layer of a stretchable foil stretched in circumferential direction of the body, a laminating adhesive layer on the bottom side of the top layer adhering onto the primer layer and the imprint,

wherein the bottom layer and the top layer are shrinkable, and wherein the label defines first edge portions extending along a generating line of the circumferential surface and overlap and second edge portions which extend axially beyond the end faces of the body, the second edge portions being shrunk onto the end faces and the contact adhesive layer on the bottom side of the bottom layer adhering onto the end faces.

5,326,655

BATTERY TERMINAL

Renard E. Mix, and Tony E. Key, both of Yorktown, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 7, 1993, Ser. No. 57,925

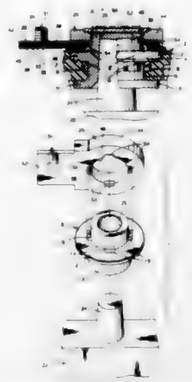
Int. Cl.[5] H01M *2/02*

U.S. Cl. 429—178 8 Claims

1. A corrosion-resistant and vibration-resistant battery terminal comprising a terminal post projecting outboard a battery container and a connector engaging said terminal post, said connector comprising:

a creep-resistant metal blade having an aperture through one end receiving said terminal post, means on the other end for coupling said blade to a battery cable connector, and a tin-based coating covering said other end;

a Pb-based alloy collar bonded to and embedding said one end of said blade, said collar having an opening therein which receives said terminal post wherein said alloy is



richer in tin contiguous the blade than elsewhere in the collar.

5,326,656

BIPOLAR BATTERY ELECTRODE

Clarence A. Meadows, Muncie; Robert E. Adams, Selma, and James R. Bish, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 21, 1993, Ser. No. 79,029

Int. Cl.[5] H01M *10/18, 4/72*

U.S. Cl. 429—178 9 Claims



1. In a bipolar battery comprising a stack of bipolar electrodes each comprising a substantially planar, electrolyte-impervious, electrically conductive septum having a positive polarity face and a negative polarity face on opposite sides thereof, and a monopolar electrode at each end of said stack, the improvement comprising:

a nonconductive electrode frame engaging the periphery of each of said bipolar electrodes;

a pair of mesa-like, nonconductive lattices integral with and on opposite sides of said electrode frame, said lattices each laying inboard the periphery of, and standing in relief from, said electrode frame so as to overlay and provide a plurality of pockets extending across said face,

a shoulder formed between said frame and said lattice and surrounding said lattice;

active material filling said pockets;

discrete spacer frames interjacent said electrode frames for spacing said electrodes from each other, said spacer frames each having a pair of faces on opposite sides thereof confronting said electrode frames, and an internal rim defining an electrolyte retention region between adjacent electrodes in said stack;

an annular recess in each of said faces contiguous said rim receiving a said shoulder such that a said lattice nests within said spacer frame; and

terminal means engaging said monopolar electrodes for electrically connecting said battery to external electrical circuitry.

5,326,657

POLYMERIC SOLID ELECTROLYTES AND PRODUCTION PROCESS THEREOF

Masanobu Suga; Seiichi Akita, and Nobuyuki Kuroda, all Kanagawa, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 917,974

Claims priority, application Japan, Jul. 26, 1991, 3-187654

Int. Cl.[5] H01M *6/18*

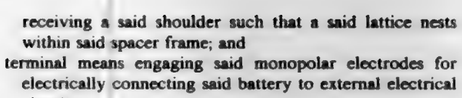
U.S. Cl. 429—192 8 Claims

1. A polymeric solid electrolyte having an ionic conductivity of at least about 10^4 S/cm at 0° C., which is obtained by reacting, in the presence of a radical polymerization initiator and a radical polymerization-initiation accelerator, an effective amount of each of the following compounds:

a) a compound selected from the group consisting of alkali metal perchlorates, alkali metal tetrafluoroborates, alkali metal hexafluorophosphates, alkali metal trifluoroacetates, alkali metal trifluoromethanesulfonates, quaternary ammonium perchlorates, quaternary ammonium tetrafluoroborates, quaternary ammonium hexafluorophosphates, quaternary ammonium trifluoromethanesulfonates, N-alkyl pyridinium perchlorates, N,N-dialkylpyrrolidium perchlorates, N-alkyl pyridinium tetrafluoroborates, N,N-dialkylpyrrolidium tetrafluoroborates, N-alkyl pyridinium tetrafluoroborates, N, N-dialkylpyrrolidium tetrafluoroborates, N-alkylpyrrolidium hexafluorophosphates and N,N-dialkylpyrrolidium hexafluorophosphates;

b) the compound selected from the group consisting of ethylene carbonate, propylene carbonate, γ-butyrolactone, dimethoxyethane, acetronitrile, dimethylsulfoxide, dioxolane and sulfolane;

c) a compound having the formula:



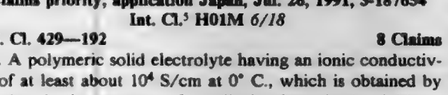
(2)

wherein R^5 is an alkyl group having 1 to 5 carbon atoms, or a group of the formula:



wherein R^6 is a hydrogen atom or an alkyl group of 1 to 5 carbon atoms;

d) a compound having the formula:



(3)

wherein R^7 and R^8 are independently each a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, and n is an integer such that $1 \leqq n \leqq 30$.

5,326,658

LITHIUM SECONDARY BATTERY USING A NON-AQUEOUS SOLVENT

Yuzuru Takahashi; Kenichi Nakamura; Jitsuo Oishi, and Hiroaki Shigeta, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,174

Claims priority, application Japan, Dec. 17, 1991, 3-353225; Feb. 4, 1992, 4-47938; Aug. 28, 1992, 4-230070

Int. Cl.[5] H01M *4/36;* C10B *31/00*

U.S. Cl. 429—194 11 Claims

1. A lithium secondary battery using a non-aqueous solvent wherein the anode material is prepared by the pyrolysis of organic compound starting materials obtained by reacting at least one conjugated polycyclic compound with a nitrocompound or with a nitrating agent, the anode material containing at least the elements carbon and nitrogen; the nitrogen content ranging from 0.5% to 6% by weight and 80% or more of this nitrogen is bound to carbon by either C—N or C═N bonds; and the ratio of the intensity of the x-ray photoelectron spectroscopy ("XPS") peak observed for the anode material at 401.2±0.2 eV to the intensity of peak observed for the anode material at 398.8±0.4 eV is 1.0:1 or more.

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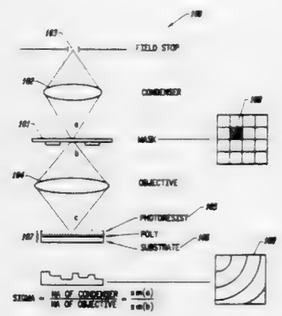
METHOD FOR MAKING MASKS

Yong Liu; Avideh Zakhor, and Andrew Neureuther, all of Berkeley, Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Mar. 5, 1992, Ser. No. 847,757

Int. Cl.[5] G03F *9/00*

U.S. Cl. 430—5 11 Claims



1. A method for making a mask for optical lithography or other projection printing, wherein said mask is represented by an initial mask pattern and wherein said mask provides an output image focused on a first focal plane, substantially on the surface of a wafer, said output image having a substantially binary configuration on said wafer, and wherein on said wafer, said image is zero in a first domain and one in a second domain, and wherein as light is applied to said mask, said mask allows light to pass through it and onto a wafer at varying intensities, such intensities represented by output intensity values, the threshold values of which produce said output images within predetermined constraints, said method comprising the steps of:

defining sampling points which are representative of said first and second domains;

defining local objective functions, which include error functions representative of the degree to which said output intensity values of said sampling points are within said predetermined constraints, and which include penalties reflective of the relative importance of each of said regions;

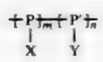
combining said local objective functions to give a total objective function;
adjusting said mask pattern to provide for minimization by optimization of said total objective function;
transferring said mask pattern to a mask generating machine to generate a mask; and
generating a mask.

5,326,660
ERASABLE OPTICAL RECORDING MEDIA
Dean B. Parkinson, deceased, late of Redwood City, Calif. by Elfriede Parkinson, executrix , assignor to SRI International, Calif.
Filed Mar. 29, 1993, Ser. No. 38,368
Int. Cl.[5] G11B *7/00, 7/24, 7/26*
U.S. Cl. 430—19 **16 Claims**

1. An optical recording structure, for use with a recording laser providing light of a predetermined frequency, comprising a thermally stable substrate having coated thereon, a stable and erasable layer of a polymer recording medium comprising a poly(ester-amide) obtained by the reaction of a bis-oxazoline with a diacid, and a laser-sensitive dye material which is absorptive at the frequency of the recording laser.

5,326,661
PHOTOREFRACTIVE POLYMERS CONTAINING DISCRETE PHOTOCONDUCTIVE AND ELECTROOPTICAL UNITS
Michael Sansone, Union; Harris A. Goldberg, Middlesex; James L. McGinnis, Hunterdon, all of N.J.; Karsten Blatter, Frankfurt, Fed. Rep. of Germany; Ching F. Shu, Union, and Anthony East, Morris, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.
Filed Nov. 13, 1991, Ser. No. 792,546
Int. Cl.[5] G03G *5/07;* **C08F** *226/06*
U.S. Cl. 430—20 **25 Claims**

1. A photorefractive composition comprising a polymer the monomeric units of said polymer corresponding to the formula:

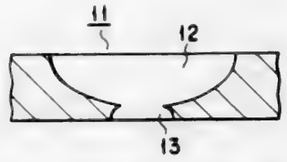


where P and P′ could be the same or different and represent monomer moieties, m and n are integers which total at least 10, with the m monomer comprising between about 10–90 mole percent of the total (m+n) monomer units, X comprises a photoconductive moiety selected from the group consisting of carbazole, benzotriazole, arylhydrazone and oxadiazole, and Y comprises a nonliner optical moiety selected from the group consisting of oxynitrostilbene, aminonitrostilbene, aminonitroazobenzene, and amino dicyanovinyltriene, said X and Y moieties being covalently linked to the same polymer chain.

5,326,662
PASSIVATED TONER COMPOSITIONS AND PROCESSES THEREOF
Don B. Jugle, deceased, late of Rochester, N.Y. by Kip L. Jugle, executor ; Jacques C. Bertrand, Ontario, and Roger N. Ciccarelli, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 1, 1992, Ser. No. 907,097
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—110 **21 Claims**

1. A toner composition consisting essentially of resin particles passivated pigment particles encapsulated within a polymeric coating, and a passivated tribofiller component coated with a polymeric coating, and wherein the tribofiller component possesses the same, or substantially the same index of refraction as the resin particles in the visible region of the spectrum; and wherein said tribofiller is selected from the group consisting of orthoclase, albite, fused silica, a metal halide, magnesium oxide, soda lime, and glass.

5,326,663
METHOD OF MANUFACTURING SHADOW MASK
Hiroshi Tanaka, Fukaya; Makoto Kudou, and Katsumi Ichikawa, both of Kumagaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 23, 1992, Ser. No. 965,720
Claims priority, application Japan, Oct. 24, 1991, 3-275923
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—23 **16 Claims**



1. A method of manufacturing a shadow mask having first and second major surfaces and a plurality of apertures, said apertures having different opening sizes on said first and second major surfaces, comprising the steps of:
(i) forming photoresist layers on said first and second major surfaces of a metal substrate, respectively;
(ii) exposing and developing said photoresist layers of said first and second major surfaces to form a first opening resist pattern layer on said first major surface, and to form a second opening resist pattern layer which is different in size from said first opening resist pattern on said second major surface;
(iii) etching the first major surface to form first openings;
(iv) after the first opening resist pattern layer is removed, applying an etching resistive agent composition containing an acrylic resin, casein, and a leveling agent to said first major surface to form an etching resistive layer;
(v) etching the second major surface to form second openings which are different from said first openings in size; and
(vi) removing said etching resistive layer and the second opening resist pattern layer, thereby forming said apertures, each having said first and second openings for communicating with each other.

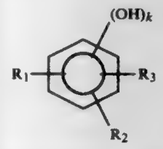
5,326,664
METHOD FOR MAKING ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE BY REVERSAL DEVELOPMENT
Yuji Takagami; Sadao Kuriu, and Koshiro Ikegami, all of Tsukuba, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan
Filed Oct. 18, 1991, Ser. No. 779,085
Claims priority, application Japan, Oct. 19, 1990, 2-282192
Int. Cl.[5] G03G *13/26*
U.S. Cl. 430—49 **7 Claims**

1. A method for making an electrophotographic lithographic printing plate by reversal development which comprises uniformly charging the surface of an organic photoreceptor comprising an electrically conductive support and, provided thereon, an organic photoconductive compound bound with a resin binder, exposing the surface to a light image to form a static latent image corresponding to the light image on the surface of the organic photoreceptor and then, subjecting the static latent image to reversal development with an electrophotographic liquid developer containing charged toner particles, wherein the reversal development is carried out with the electrophotographic liquid developer having an

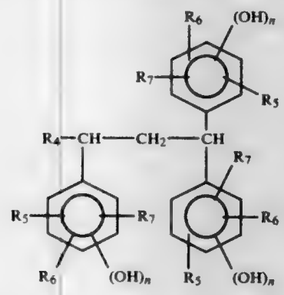
electrodeposition potential set within the range of 0–80 V in absolute value.

5,326,665
POSITIVE TYPE RESIST COMPOSITION
Haruyoshi Osaki, Toyonaka; Hiroshi Moriuma, Nara, and Yasunori Uetani, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Mar. 1, 1993, Ser. No. 24,499
Claims priority, application Japan, Mar. 5, 1992, 4-048438
Int. Cl.[5] G03F *7/023, 7/30*
U.S. Cl. 430—192 **20 Claims**

1. A positive type resist composition comprising in admixture an alkali-soluble resin and a quinonediazide compound, wherein the alkali-soluble resin containing resin (A) is obtainable through a condensation reaction with at least one phenol compound represented by the following general formula (I):


(I)

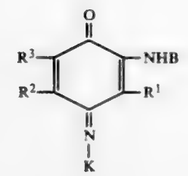
wherein R_1 to R_3 independently of one another each represent a hydrogen atom or an alkyl or alkoxy group having 1–4 carbon atoms and k represents 1 or 2, at least one compound represented by the following general formula (II):


(II)

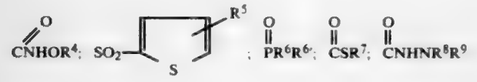
wherein R_4 represents a hydrogen atom, an alkyl group having 1–4 carbon atoms or a phenyl group, R_5 to R_7 independently of ne another each represent a hydrogen atom or an alkyl or alkoxy group having 1–4 carbon atoms and n represents 1 or 2, and an aldehyde compound.

5,326,666
DYE-DONOR ELEMENT FOR USE IN THERMAL DYE SUBLIMATION TRANSFER
Luc Vanmaele, Lochristi, and Wilhelmus Janssens, Aarschot, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium
Filed Mar. 31, 1993, Ser. No. 40,610
Claims priority, application European Pat. Off., Apr. 21, 1992, 92201111.9
Int. Cl.[5] G03C *5/54, 1/72, 5/16*
U.S. Cl. 430—201 **7 Claims**

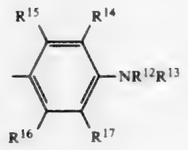
6. Thermal dye sublimation transfer method comprising the step of imagewise heating a dye donor element in face-to-face relation with a receiving element, said donor element comprising a support provided with a dye layer containing a dye dispersed in a polymeric binder, characterized in that said dye corresponds to the following formula (I)


(I)

wherein
R^1, R^2 and R^3 independently represent hydrogen, halogen, nitro, an alkyl group, a cycloalkyl group, an aryl group, an alkoxy group, an aryloxy group, a alkylthio group, a arylthio group, an acylamino group, a sulfamoyl group, a carbamoyl group, which groups may be substituted, or R^2 and R^3 together can form a saturated or aromatic or heterocyclic ring fused-on the cyclohexadiene ring, which ring may be substituted;
B represents



wherein
R^4 represents hydrogen, an alkyl group, a cycloalkyl group, an aryl group, which groups may be substituted, SO_2R^{10}, COR^{10}, $POR^{10}R^{11}$;
R^5 represents hydrogen, halogen, nitro, cyano, an alkyl group, an aryl group, an alkoxy group, an alkylthio group, which groups may be substituted;
R^6 and $R^{6'}$ independently represent an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an amino group or a heterocyclic group, which groups may be substituted, or R^6 and $R^{6'}$ together form a 5- or 6-membered ring, which ring may be substituted;
R^7 represents an alkyl group, an aryl group, a cycloalkyl group, which groups may be substituted;
R^8 and R^9 independently represent hydrogen, an alkyl group, an aryl group, a cycloalkyl group, which groups may be substituted, or R^8 and R^9 together can form a heterocyclic ring, which ring may be substituted;
R^{10} and R^{11} independently represent an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an amino group or a heterocyclic group, which groups may be substituted, or R^{10} and R^{11} together form a 5- or 6-membered ring, which ring may be substituted;
K represents



wherein:
R^{12} and R^{13} (independently) represent hydrogen, an alkyl group, an aryl group, a heterocyclic group, which groups may be substituted, or R^{12} and R^{13} together represent the necessary atoms to close a heterocyclic ring, which ring may be substituted, or R^{12} and/or R^{13} together with R^{14} and/or R^{17} represent the necessary

atoms to close a ring fused-on the benzene ring, which ring may be substituted;

R^{14}, R^{15}, R^{16} and R^{17} (independently) represent hydrogen, hydroxy, halogen, an alkyl group, a cycloalkyl group, an aryl group, an alkyloxy group, an aryloxy group, a carbamoyl group, a sulfamoyl group, which groups may be subsituted, NH—SO_2R^{18}, NH—COR^{18}, O—SO_2R^{18}, O—COR^{18}, or R^{14} and R^{15} together and-/or R^{16} and R^{17} together represent the necessary atoms to close (a) ring(s) fused-on the benzene ring or R^{14} and/or R^{17} together with R^{12} and/or R^{13} represent the necessary atoms to close a heterocyclic ring fused-on the benzene ring, which groups may be substituted;

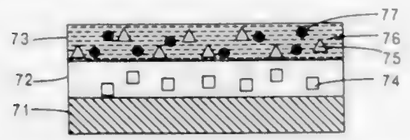
R^{18} represents an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group, an aryl group, an alkyloxy group, an aryloxy group, an alkylthio group, an arylthio group, an amino group, a heterocyclic group, which groups may be substituted.

5,326,667

IMAGE FORMING METHOD AND LIGHT-SENSITIVE MATERIAL USING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND

Hiroaki Yokoya; Keiji Takeda; Osami Tanabe, and Katsuji Kitatani, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 6, 1992, Ser. No. 879,844
Claims priority, application Japan, May 7, 1991, 3-131789
Int. Cl.[5] G03C *5/54; 1/68; 1/71; 1/46*
U.S. Cl. 430—203 **22 Claims**



1. An image forming method comprising the steps of (1), (2), (3) and (4):

(1) imagewise exposing to light a light-sensitive polymerizable layer of a light-sensitive material, said light-sensitive material comprising a support and the light-sensitive polymerizable layer which contains silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound or/and a cross-linkable polymer and a colorant;

(2) heating the light-sensitive polymerizable layer at a temperature in the range of 70° to 200° C. for 1 to 180 seconds to harden the ethylenically unsaturated polymerizable compound or/and the cross-linkable polymer within the exposed area or, in the alternative, within the unexposed area;

(3) removing the unhardened area with a solvent to obtain a hardened image whereby a color image is formed; and then

(4) placing the light-sensitive material in contact with an image receiving material whereby the color image is transferred to the image receiving material.

5,326,668

METHOD OF IMAGE FORMATION BY SILVER SALT DIFFUSION TRANSFER

Koukichi Waki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 785,070, Oct. 30, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,687
Claims priority, application Japan, Nov. 1, 1990, 2-296401
Int. Cl.[5] G03C *5/54*
U.S. Cl. 430—250 **10 Claims**

1. A method of image formation comprising developing a photosensitive element comprising an image-wise exposed photosensitive silver halide emulsion layer using an alkaline processing element containing a silver halide solvent to convert at least a part of the unexposed silver halide in the emulsion layer to a transferrable silver complex salt, and transferring at least a portion of the silver complex salt onto an image-receiving element comprising an image-receiving layer containing silver precipitation nuclei to form an image in the image-receiving element, wherein the silver halide grains in the photosensitive silver halide emulsion layer comprise silver iodobromide or silver chloroiodobromide having an average silver iodide content of from 0.5 to 3.5 mol %; and wherein silver bromide or silver iodobromide having a silver iodide content of not higher than 10 mol % is formed after chemical sensitization on the surface of the grains in an amount of from 3 to 20% by weight in terms of silver, and the alkaline processing element contains a hydroxylamine developing agent.

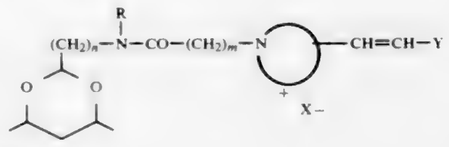
5,326,669

PHOTOSENSITIVE COMPOSITIONS

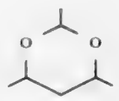
John Curtis, Princeton, N.J., assignor to Ulano Corporation, Brooklyn, N.Y.

Filed May 4, 1992, Ser. No. 878,239
Int. Cl.[5] G03C *1/73;* **C08F** *8/00*
U.S. Cl. 430—283 **12 Claims**

1. A photosensitive polymer composition comprising a compound of the structure



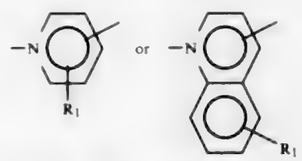
wherein



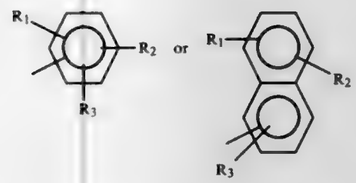
is a polyvinyl acetal,
n is an integer from 1 to 6,
R is hydrogen or alkyl,
m is an integer from 1 to 6,
X is an anion,



is a divalent radical having the structure



Y is a monovalent radical having the structure



and more particularly, Y=phenyl and naphthyl unsubstituted or substituted with hydrogen, alkyl, alkenyl, alkoxy, aralkyl, and R_1, R_2, R_3 and R_4 are hydrogen, alkyl, alkenyl, alkoxy, aralkyl, substituted alkyl, substituted alkoxy, carboxy, carboxy ester, amino, substituted amino, amido, substituted amido, cyano, hydroxy, nitro, isocyanato, sulphonyl halide, and may be the same or different, or R_1 taken together with R_2 is methylenedioxy.

5,326,670

PROCESS FOR FORMING RESIST PATTERN

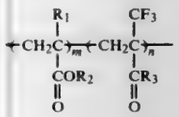
Akiko Kotachi, Yokohama, and Satoshi Takechi, Machida, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 7, 1991, Ser. No. 711,779
Claims priority, application Japan, Jun. 8, 1990, 2-150820
Int. Cl.[5] G03F *7/30, 7/012*
U.S. Cl. 430—296 **4 Claims**

1. A process for forming a multilevel resist pattern, which comprises steps of:

coating a semiconductor substrate to be fabricated with a resist to form a lower resist layer thereon;

coating the lower resist layer with a resist composition comprising an azide compound and a copolymer of the formula (1):



(1)

wherein,

R_1 means CH_3, CF_3, CN, CH_2OH, or CH_2CO_2R, wherein R means an alkyl having 1 to 5 carbon atoms

R_2 means a hydrocarbon radical having at least one Si,

R_3 means OH, O—$C(CH_3)_3$, NH_2, or $NHCH_2OH$, and, a ratio of n to m is more than 0 and is 1 or less than 1, to form an upper resist layer thereon,

heating the substrate to cause a cross-linking in the said upper resist layer,

exposing the resist to a predetermined pattern of high energy radiation to form a latent image in the resist layer corresponding to the radiation pattern, and

developing the pattern-wise exposed resist layer to selectively remove the exposed areas of the resist with a developer to form an upper resist pattern.

5,326,671

METHOD OF MAKING CIRCUIT DEVICES COMPRISING A DIELECTRIC LAYER OF SILOXANE-CAPROLACTONE

Paula J. Brown, Cream Ridge; Treliant Fang, Lawrenceville, both of N.J.; Jose A. Ors, New Hope, Pa.; Venkataram R. Raju, New Providence, N.J., and Akshay V. Shah, Londonderry, N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1992, Ser. No. 997,058
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—311 **8 Claims**



1. A method for making a circuit device comprising the steps of:

applying a mixture to a substrate;

solidifying at least part of the mixture to form a solid film layer;

and using the film layer as a dielectric;

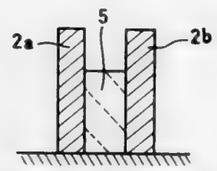
wherein said mixture comprises from twenty to sixty weight percent of triazine and from one to ten weight percent of siloxane-caprolactone copolymer.

5,326,672

RESIST PATTERNS AND METHOD OF FORMING RESIST PATTERNS

Toshihiko Tanaka; Mitsuaki Morigami; Iwao Higashikawa, and Takeo Watanabe, all of Tokyo, Japan, assignors to SORTEC Corporation, Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,715
Claims priority, application Japan, Apr. 23, 1992, 4-129326; May 13, 1992, 4-146873; May 13, 1992, 4-146874; Jul. 7, 1992, 4-201879
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—322 **13 Claims**



1. A method of forming resist patterns, comprising carrying out a rinsing treatment such that a contact angle falling within the range of 60° to 120° is formed between a rinse and the surface of a resist which has been treated with a developer in a rinsing process when developing a resist pattern.

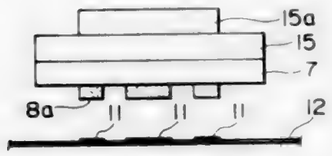
VOL 1164 ISS 1 JL 5 1994 UMI

5,326,673

METHOD BY USE OF THE LETTERPRESS

Kuninobu Kurumisawa, No. 741-1, Washisu, Oaza, Sugito-cho, Kitakatushika-gun, Saitama-ken, Japan

Division of Ser. No. 605,376, Oct. 30, 1990, Pat. No. 5,185,225.
This application Oct. 30, 1992, Ser. No. 968,876
Claims priority, application Japan, May 29, 1990, 2-139055; Jul. 5, 1990, 2-178627
Int. Cl.[5] G03C 1/725
U.S. Cl. 430—322 3 Claims



1. A method of transferring an image to a surface by use of a letterpress comprising

forming a photosensitive resin layer as a non-adhesive protective film on a manuscript film,

pressure bonding a supporting substrate coated with an adhesive on the resin layer wherein said adhesive is adjacent to said resin layer,

irradiating using a parallel light beam through said manuscript film to expose said resin layer to said light beam for a given time,

forming a hardened area corresponding to an image of said manuscript film on said resin layer,

removing said non-adhesive protective film,

rinsing the resin layer with water,

removing said resin layer other than said hardened area to form a letterpress corresponding to the image of said manuscript film on said supporting substrate,

coating a convex surface shape of said letterpress with a fluid photosensitive resin film,

press printing said convex surface shape on a transfer material to cause the photosensitive resin film to be transferred and adhere to the material,

exposing the photosensitive resin film transferred to light,

using said photosensitive resin film as a mask for resist, coloring said transfer material with dye, and

thereafter removing the photosensitive resin film transferred onto said transfer material by rinsing with water so as to transfer the concave surface shape of said letterpress onto said transfer material.

5,326,674

METHOD FOR PROCESSING PHOTOSENSITIVE COPYING MATERIALS

Tadao Toyama, and Atsushi Sakamoto, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Apr. 28, 1992, Ser. No. 875,028
Claims priority, application Japan, Apr. 30, 1991, 3-099286; Apr. 30, 1991, 3-099287
Int. Cl.[5] G03C 5/00
U.S. Cl. 430—325 20 Claims

1. A method for processing a photosensitive copying material comprising the steps of imagewise exposing to light a photosensitive copying material which comprises a support having in order (i) a first photosensitive organic coating layer whose solubility in a developing solution varies through irradiation with light rays and (ii) a second organic coating layer containing a water-insoluble and organic solvent-soluble polymeric compound having a film-forming ability and then developing the imagewise exposed copying material, wherein the imagewise exposed material is dipped in the developing solution and then water-washed to remove the first and second organic coating layers on non-image portions.

5,326,675

PATTERN FORMING METHOD INCLUDING THE FORMATION OF AN ACIDIC COATING LAYER ON THE RADIATION-SENSITIVE LAYER

Hirokazu Niki, Yokohama; Rumiko Hayase, Kawasaki; Naohiko Oyasato, Kawaguchi; Yasunobu Onishi, Yokohama; Akitoshi Kumagae, Yachiyo; Kazuo Sato, Yokohama; Masataka Miyamura, Kamakura, and Yoshihito Kobayashi, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 9, 1992, Ser. No. 987,821
Claims priority, application Japan, Dec. 9, 1991, 3-324162; Sep. 14, 1992, 4-244714
Int. Cl.[5] G03C 5/00
U.S. Cl. 430—326 18 Claims

1. A pattern forming method comprising the steps of:

forming, on a substrate, a radiation-sensitive layer comprising as a main component a radiation-sensitive composition containing a compound capable of generating an acid when exposed to a chemical radiation and a compound having at least one linkage decomposable by an acid;

forming an acidic coating layer on the radiation-sensitive layer;

pattern-exposing the radiation-sensitive layer and the acidic coating layer to a chemical radiation; and

developing the radiation-sensitive layer and the acidic coating layer by removing exposed parts of the layers after the pattern exposing step.

5,326,676

DYE-DONOR ELEMENT FOR USE ACCORDING TO LASER-INDUCED THERMAL DYE TRANSFER

Luc Vanmaele, Lochristi, and Wilhelmus Janssens, Aarschot, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 31, 1993, Ser. No. 40,605
Claims priority, application European Pat. Off., Apr. 21, 1992, 92201112
Int. Cl.[5] G03C 5/54, 1/72, 5/16
U.S. Cl. 430—338 5 Claims

1. Dye-donor element for use according to laser-induced thermal dye transfer, said dye-donor element comprising a support having thereon a dye layer and an infrared-absorbing dye which is different from the dye in the dye-layer, characterized in that said infrared-absorbing dye is a 2-carbazoyl-4-[N-(o,o'-disubstituted, p-substituted aminoaryl)imino]-1,4-quinone or a 2-hydroxaminocarbonyl-4-[N-(o,o'-disubstituted, p-substituted aminoaryl)imino]1,4-quinone.

5,326,677

OPTICAL RETRIEVAL APPARATUS USING A TELLURIUM (IV) LEUCO DYE

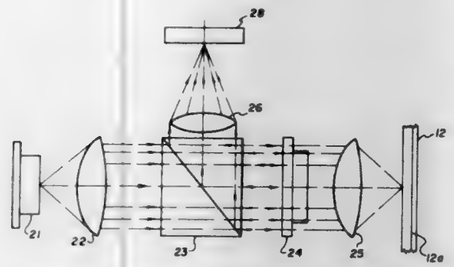
James C. Fleming, Webster, and Michael R. Detty, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,943
Int. Cl.[5] G11B 7/24
U.S. Cl. 430—347 1 Claim

1. An optical retrival apparatus comprising:

(a) an optical element having a substrate and on the surface of said substrate, a single dye containing recording layer having a mixture of a binder, sensitizing dye, and a tellurium (IV) leuco dye and which has information dye marks recorded therein and a light reflecting layer, said dye marks being formed by the leuco dye which, in selected areas, has been thermally reacted upon to become an absorption dye, the dye marks absorbing in the near-infrared portion of the spectrum;

(b) illuminating means including a laser for producing a beam which illuminates said optical element and which is reflected from said reflecting layer so as to be modulated by said marks, said illuminating means includes a polarization beam splitter and a quarter wave plate which causes the radiation which illuminates the optical element to be



circularly polarized and the reflected modulated beam to be linearly polarized; and

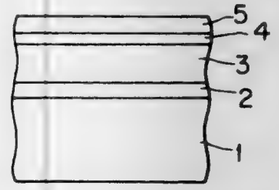
(c) sensor means responsive to said reflected modulating radiation beam to produce electrical signals having an information content corresponding to the dye marks.

5,326,678

HIGH DIELECTRIC POLYMERIC OPTICAL RECORDING MEDIUM

Akio Kojima, Mitaka; Takeo Yamaguchi, Kamiitabashi; Masao Yoshikawa, Yokohama; Isamu Shibata, Fuchu, and Kaoru Teramura, Hino, all of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan

Continuation of Ser. No. 366,447, Jun. 15, 1989, abandoned.
This application Apr. 23, 1992, Ser. No. 873,667
Claims priority, application Japan, Jun. 15, 1988, 63-145808; Sep. 28, 1988, 63-240826; Oct. 31, 1988, 63-273244
Int. Cl.[5] G11B 7/24
U.S. Cl. 430—495 18 Claims



1. A high dielectric polymeric optical recording medium for recording information by heating portions of the recording medium corresponding to information to be recorded by being exposed to a beam of light, followed by the application of a reverse electric field to the recording medium, thereby selectively reversing the polarity of the heated portions in said recording medium, comprising

a lower electrode,

a recording layer formed on said lower electrode, which comprises a high dielectric polymeric composition comprising a high dielectric polymeric material having a rectangular dielectric hysteresis curve and a nonionic dye serving as a light-absorption agent which is compatible with or dispersible in said high dielectric polymeric material,

an upper electrode formed on said recording layer, and

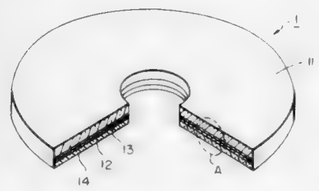
an insulation layer interposed at least between said recording layer and said upper electrode or between said lower electrode and said recording layer.

5,326,679

RECORDING MEDIUM

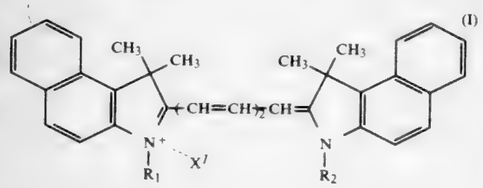
Shuichi Yanagisawa; Atsushi Yoshizawa; Tatsuro Sakai; Satoru Tanaka; Makoto Okano; Takashi Chuman; Yasushi Araki; Taishi Tsuji, and Fumio Matsui, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 877,418, Apr. 30, 1992, abandoned.
This application May 27, 1993, Ser. No. 68,577
Claims priority, application Japan, Aug. 20, 1991, 3-208003; Sep. 25, 1991, 3-245889
Int. Cl.[5] G03C 1/72; G11B 7/007
U.S. Cl. 430—495 2 Claims



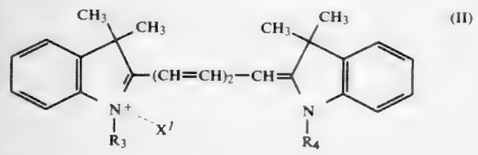
1. A recording medium comprising a light-transmitting substrate having formed on one side thereof pregrooves, a light-absorbing layer provided on the pregrooved side of said substrate, and a light-reflecting layer provided on said light-absorbing layer, wherein said light-absorbing layer contains:

(a) a first cyanine dye having an absorption band in a wavelength region of light for recording or reproduction, and which is represented by formula (I):



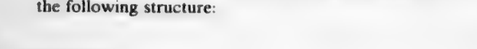
wherein R^1 and R^2 each represent an alkyl group having from 1 to 8 carbon atoms, and X^- represents a counter ion, and

(b) a second cyanine dye having an absorption band in a shorter wavelength region than that of said first cyanine dye and having a smaller absorption than that of said first cyanine dye in said wavelength region of light for recording or reproduction, and which is represented by formula (II):



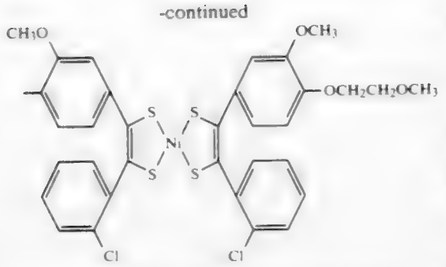
wherein R^3 and R^4 each represents an alkyl group having from 1 to 8 carbon atoms, and X^- has the same meaning as defined above, and

(c) a first quencher effective to prevent photodeterioration of said first cyanine dye and said second cyanine dye of the following structure:

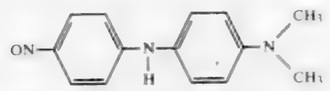


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-continued



(d) a second quencher having the following structure:



and wherein the weight ratio of the amount of said second cyanine dye to the amount of said first cyanine dye in said light-absorbing layer is designated α and has a value of from 1 to 3, and the weight ratio of the amount of said first quencher to the amount of said second quencher in said light absorbing layer is designated as δ and has a value of from 0.5 to 1, and the ratio of the total weight of said first quencher and said second quencher to the total weight of said first cyanine dye and said second cyanine dye is designated as γ and has a value of from 0.25 to 0.5, and the product of α multiplied by γ is a value of less than 1.1.

5,326,680

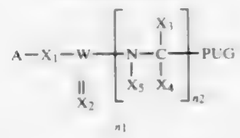
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Atsuhiro Ohkawa; Tatsuhiko Obayashi, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 19, 1992, Ser. No. 885,359
Claims priority, application Japan, May 22, 1991, 3-145175
Int. Cl.[5] G03C *7/26, 7/32, 1/42*
U.S. Cl. 430—544 **9 Claims**

1. A silver halide color photographic light-sensitive material comprising at least one light-sensitive silver halide emulsion layer formed on a support wherein said light-sensitive material contains a compound represented by the following general formula (I):

General formula (I)



wherein A is (i) a coupler residue bonded to X_1 at a coupling position at A or (ii) an oxidation-reduction group which is cleavable from X_1 by oxidation or reduction, X_1 is an oxygen atom, X_2 is an oxygen atom, W is a carbon atom or a sulfur atom, X_3 and X_4 are each a hydrogen atom or an organic group, X_5 is an alkyl group, PUG is a photographically useful group which bonds to the remainder of the compound represented by general formula (I) through a hetero-atom in PUG, n_1 is 1, n_2 is either 1 or 2, two X_3, two X_4, and two X_5 are either identical or different, when n_2 is 2; and wherein any two of X_3, X_4, X_5 do not form a ring by bonding.

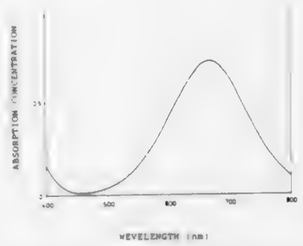
2. The material according to claim 1, wherein PUG represents a development restrainer.

5,326,681

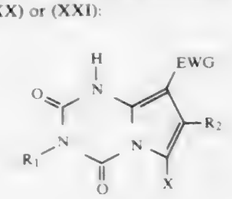
DYE FORMING COUPLERS AND SILVER HALIDE COLOR PHOTOSENSITIVE MATERIAL CONTAINING THE SAME

Kozo Sato, and Yoshio Ishii, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

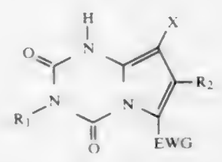
Continuation-in-part of Ser. No. 798,114, Nov. 26, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 14,419
Claims priority, application Japan, Nov. 30, 1990, 2-336807; Feb. 19, 1992, 4-069854
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—558 **5 Claims**



1. A silver halide color photosensitive material comprising a support having thereon at least one hydrophilic colloidal layer containing at least one dye forming coupler represented by formula (XX) or (XXI):



(XX)



(XXI)

wherein EWG represents an electron withdrawing group having a Hammett's σ_p value of not less than 0.3; R_1 and R_2 each represent a substituent; and X represents hydrogen atom or a group releasable on a coupling reaction with an oxidation product of an aromatic primary amine developing agent.

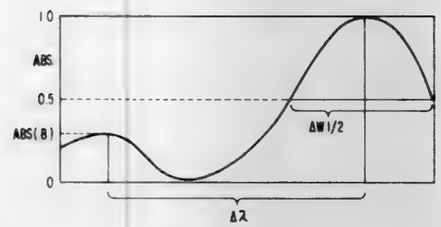
5,326,682

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

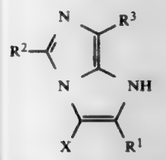
Katsuyoshi Yamakawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 29, 1993, Ser. No. 82,976
Claims priority, application Japan, Jul. 8, 1992, 4-203238
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—558 **8 Claims**

1. A silver halide color photographic material containing at least one 1H-imidazo[1,5-a]imidazole cyan coupler represented by the following Formula (I) in at least one red-sensitive silver halide emulsion layer provided on a support:



(I)



wherein R^1 represents a hydrogen atom or a substituent; R^2 and R^3 each represent a substituent, provided that at least one of R^1, R^2 and R^3 represents an electron attractive group; and X represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of a color developing agent.

5,326,683

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kazunobu Katoh, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1993, Ser. No. 39,797
Claims priority, application Japan, Mar. 30, 1992, 4-102387
Int. Cl.[5] G03C *1/06, 1/485*
U.S. Cl. 430—596 **16 Claims**

1. A reversal type silver halide photographic material comprising a support having thereon a previously fogged silver halide emulsion layer and a light-sensitive silver halide emulsion layer comprising at least one silver halide, wherein at least one of said previously fogged silver halide emulsion layer and a hydrophilic colloid layer adjacent thereto contains at least one hydrazine nucleating agent and at least one of said light-sensitive silver halide emulsion layer and a hydrophilic colloid layer adjacent thereto contains at least one redox compound capable of releasing a development restrainer when oxidized, and wherein aid nucleating agent and said redox compound are not contained in the same layer.

5,326,684

HEAT-DEVELOPABLE COLOR PHOTOSENSITIVE MATERIAL CONTAINING CALCIUM IN AN AMOUNT OF AT LEAST 2000 PPM BASED ON TOTAL BINDER WEIGHT

Yasuo Aotsuka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 12, 1993, Ser. No. 3,492
Claims priority, application Japan, Jan. 13, 1992, 4-023165
Int. Cl.[5] G03C *1/00*
U.S. Cl. 430—617 **14 Claims**

1. A heat-developable color photosensitive material comprising at least a photosensitive silver halide, a dye providing compound, a surfactant and a binder on a support,

said photosensitive material containing calcium in an amount of 2,000 to 10,000 parts by weight per million parts by weight of the total binder,

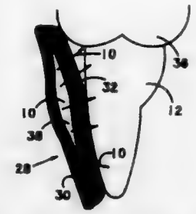
wherein the dye providing compound is a silver halide reducing agent which releases a diffusible dye upon reduction of silver halide by the dye providing compound.

5,326,685

VISCOUS FLUID DISPENSING APPARATUS

Thomas J. Gaglio, 4421 La Paloma, and Luigi Santoriello, 3463 State St., #359, both of Santa Barbara, Calif. 93105

Continuation-in-part of Ser. No. 655,137, Feb. 13, 1991, abandoned. This application Sep. 14, 1992, Ser. No. 944,303
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—215 **16 Claims**



1. An applicator for applying a viscous fluid to a surface of a human body on a time-release basis comprising:

a) a flexible backing material of a closed-cell material; and,

b) a flexible dispensing material of an open-celled material disposed over and carried by said flexible backing material, said open-celled material having an internal structural spacing sized relative to viscosity of the fluid to absorb and allow the fluid to slowly pass therethrough; wherein,

c) said flexible backing material and said flexible dispensing material are sealed together about a periphery thereof forming a hollow pocket and the fluid is disposed in said hollow pocket.

5,326,686

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kazunobu Katoh, and Yoshiharu Yabuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1993, Ser. No. 84,999
Claims priority, application Japan, Jul. 3, 1992, 4-177109
Int. Cl.[5] G03C *1/184*
U.S. Cl. 430—517 **16 Claims**

1. A silver halide photographic element comprising a support having a front surface and a back surface, having on the back surface a hydrophobic polymer layer which is not substantially swollen with processing solutions and a non-light-sensitive hydrophilic polymer layer between the hydrophobic polymer layer and the support and having on the front surface a hydrophilic colloid layer which contains a dispersion of fine solid grains of a dye having an absorption peak wavelength of from 600 nm to 1200 nm and which has thereon at least one light-sensitive silver halide emulsion layer.

5,326,687

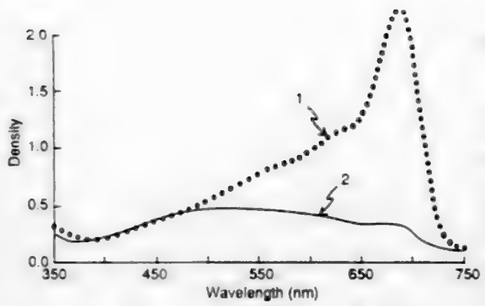
PHOTOGRAPHIC SILVER HALIDE ELEMENT CONTAINING MICROPRECIPITATED METHINE OXONOL FILTER DYE DISPERSIONS

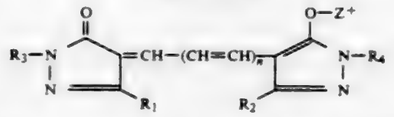
John Texter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 812,519, Dec. 20, 1991, Pat. No. 5,274,109. This application Oct. 8, 1993, Ser. No. 134,342
Int. Cl.[5] G03C *1/84*
U.S. Cl. 430—522 **18 Claims**

1. A photographic element comprising a support having disposed thereon a radiation sensitive emulsion layer and a layer, which is the same or different from the radiation sensitive layer, comprising an amount effective as a photographic filter dye of a microprecipitated methine oxonol filter dye dispersion comprising a filter dye having the formula:

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wherein n is 0, 1, or 2; R_1, R_2, R_3, and R_4 are the same or different substituted or unsubstituted alkyl or aryl groups, one or more of R_1, R_2, R_3, and R_4 contains carboxy substituent $-CO_2Z$, wherein Z^+ is a statistical mixture of hydrogen (H^+) and alkali or tetraalkylammonium cations (M^+) such that $Z^+ = xH^+ + (1-x)M^+$, where x is a decimal ranging from about 0.33 to about 0.95

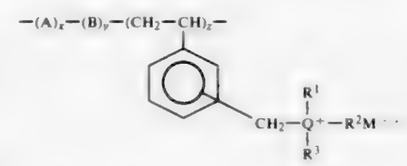
5,326,688

COATING COMPOSITIONS FOR ANTISTATIC LAYERS FOR PHOTOGRAPHIC ELEMENTS

Ronald M. Stimson; James Skoronski, both of Rochester; Thomas M. Smith, Spencerport, and Jack J. Holt, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1993, Ser. No. 68,479
Int. Cl.[5] G03C *1/82*
U.S. Cl. 430—527 **16 Claims**

1. A coating composition for applying an antistatic layer to a surface comprising a hydrophobic binder and an antistatic polymer having the formula:



wherein:

A represents units of an addition polymerizable monomer containing at least two ethylenically unsaturated groups;

B represents units of a copolymerizable α, β-ethylenically unsaturated monomer;

Q is N or P;

R^1, R^2 and R^3 are independently selected from the group consisting of carbocyclic and alkyl groups;

$M-$ is an anion;

x is from about 0.1 to about 20 mole percent;

y is from about 0 to about 90 mole percent; and

z is from about 10 to about 99 mole percent;

in a solvent mixture comprising from 8 to 30 percent by weight of n-propyl acetate, 1-methoxy-2-propanol or cyclohexane; from 50 to 55 weight percent of acetone and the balance methanol.

5,326,689

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Masahiko Murayama, Minami Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 18, 1993, Ser. No. 107,569
Claims priority, application Japan, Aug. 20, 1992, 4-221538; Aug. 11, 1993, 5-199704
Int. Cl.[5] G03C *1/85, 1/86*
U.S. Cl. 430—530 **9 Claims**

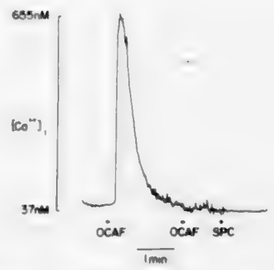
1. A silver halide photographic material comprising at least one light-sensitive layer on a polyester support, wherein said polyester support has a glass transition temperature of 90° C. to 200° C. and has been subjected to glow discharge treatment; wherein said polyester support comprises a polyester containing naphthalenedicarboxylic acid and ethylene glycol as main components.

5,326,690

OVARIAN CANCER ASCITES FACTOR, IN ISOLATED FORM

Yan Xu, Brampton, and Anne E. Goodbody, Toronto, both of Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Division of Ser. No. 41,974, Apr. 2, 1993, Pat. No. 5,277,917. This application Oct. 1, 1993, Ser. No. 130,239
Int. Cl.[5] C12Q *1/02, 1/00*; G01N *33/566*; A61K *31/66*
U.S. Cl. 435—29 **1 Claim**



1. A screening method useful for identifying compounds capable of inhibiting an ovarian cancer cell factor, which method comprises the steps of:

(1) incubating (a) a factor which is free of proteins and peptides, which is recoverable from ovarian cancer ascites fluid, and which stimulates intracellular calcium release within ovarian cancer cells, with (b) a candidate inhibitor of said factor, and (c) a factor-responsive cell-line; and

(2) determining the effect of said candidate inhibitor on the intracellular calcium levels within said factor-responsive cell-line, whereby the inhibitory effect of the candidate inhibitors is revealed.

5,326,691

MICRO-LIBRARIES AND METHODS OF MAKING AND MANIPULATING THEM METHODS FOR GENERATING AND ANALYZING MICRO-LIBRARIES

John Hozier, 8950 S. Tropical Trail, Merritt Island, Fla. 32952

Filed Nov. 21, 1991, Ser. No. 795,462
Int. Cl.[5] C12Q *1/68, 1/24, 1/00*
U.S. Cl. 435—6 **54 Claims**

1. A method for generating and analyzing micro-libraries of cellular clones, comprising the steps of:

(A) providing a population of mother cells that represents a plurality of microscopic subpopulations that differ, one from the other, by at least one genetic characteristic;

(B) immobilizing said population such that said mother cells are retained and the approximate density of said subpopulations in said population on said surface is between 10 subpopulations per mm^2 and 10^6 subpopulations per mm^2; then

(C) bringing said first surface into close proximity of a second surface such that (i) daughter cells replicated from said mother cells, but not said mother cells, come into contact with and are immobilized on said second surface during the process of replication or after separating from said mother cells, and (ii) subpopulations of said daughter cells immobilized on said second surface are positioned thereon in a spatial relationship with respect to one another which is substantially similar to the spatial relationships with respect to one another of said subpopulations of mother cells immobilized on said first surface such that corresponding mother cell and daughter cell subpopulations can be identified by their similar positions in said spacial relationships on the two surfaces, thereafter

(D) treating said second surface such that microscopic subpopulations of said daughter cells are rendered distinguishable, one from the other; and then

(E) examining said second surface to detect the presence of at least one microscopic subpopulation of daughter cells.

5,326,692

FLUORESCENT MICROPARTICLES WITH CONTROLLABLE ENHANCED STOKES SHIFT

John M. Brinkley, Elmira; Richard P. Haugland, and Victoria L. Singer, both of Eugene, all of Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Filed May 13, 1992, Ser. No. 882,299
Int. Cl.[5] C12Q *1/68*; G01N *33/545*; C09K *11/02*
U.S. Cl. 435—6 **15 Claims**

1. A fluorescent microparticle made by the process comprising: a) selecting a series of dyes comprising an initial donor dye with a desired excitation peak and a final acceptor dye with a desired emission peak, wherein the desired excitation peak and the desired emission peak are determined in a polymeric material, and wherein said polymeric material is made up of polymerizable monomers, and wherein each dye in the series has a spectral overlap sufficient to allow for significant energy transfer of excitation energy to the final acceptor dye, b) incorporating said series of dyes in a polymeric microparticle comprising said polymeric material, wherein said series of dyes are randomly incorporated into said polymeric microparticle.

5,326,693

METHOD FOR CONCURRENT FERMENTATION OF BASIC AMINO ACID AND ACIDIC AMINO ACID

Hideo Kuronuma; Harufumi Miwa; Shigeru Nakamori, all of Kawasaki; Toshimasa Ishii, Yokkaichi, and Yasuhiko Yoshihara, Saga, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Division of Ser. No. 655,993, Feb. 15, 1991, Pat. No. 5,196,326. This application Dec. 8, 1992, Ser. No. 986,749
Claims priority, application Japan, Feb. 15, 1990, 2-34066; Feb. 4, 1991, 3-100574
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] C12P *13/04, 39/00*
U.S. Cl. 435—42 **10 Claims**

1. A method for concurrent fermentative production of a basic L-amino acid and an acidic L-amino acid, which comprises (a) culturing a basic L-amino acid-producing bacteria belonging to the genus Brevibacterium or the genus Corynebacterium under a condition for producing an acidic L-amino acid, wherein said basic L-amino acid-producing bacteria is biotin-auxotropic and said condition for producing an acidic L-amino acid is (i) a biotin-poor medium, containing 0.5 to 10 μg/l of biotin, or (ii) a medium containing a sufficient amount of biotin and either a surfactant or a lactam type antibiotic, incorporated into said medium at the initial stage or during the incubation, wherein said basic L-amino acid-producing bacteria is selected from the group consisting of *Brevibacterium lactofermentum, Brevibacterium flavum, Brevibacterium ammoniagenes, Corynebacterium acetoacidophilum, Corynebacterium glutamicum* and *Corynebacterium acetoglutamicum;* and (b) recovering said basic L-amino acid and said acidic L-amino acid.

5,326,694

PROCESS FOR SYNTHESIZING HUMAN H2-PRORELAXIN, HUMAN H2-RELAXIN AND FUSION PROTEINS THEREOF

Peter J. Hudson, Bulleen; Hugh D. Niall, Elwood, and Geoffrey W. Tregear, Hawthorn, all of Australia, assignors to Howard Florey Institute of Experimental Physiology and Medicine, Victoria, Australia

Continuation of Ser. No. 665,129, Mar. 6, 1991, Pat. No. 5,179,195, which is a division of Ser. No. 21,885, Mar. 4, 1987, Pat. No. 5,023,321, which is a division of Ser. No. 560,790, Dec. 13, 1983, Pat. No. 4,758,516. This application Apr. 20, 1992, Ser. No. 871,318
Claims priority, application Australia, Dec. 13, 1982, PF/7247/82
The portion of the term of this patent subsequent to Jul. 19, 2005, has been disclaimed.
Int. Cl.[5] C12N *15/00*; C07K *7/10*
U.S. Cl. 435—69.4 **6 Claims**

1. A process for synthesizing human H2-prorelaxin comprising A and B peptides separated from each other by a C peptide, comprising incubating a microorganism, transformed by an expression transfer vector comprising a deoxynucleotide sequence coding for said human H2-prorelaxin under conditions suitable for expression of said sequence coding for said human H2-prorelaxin, and purifying said human H2-prorelaxin from a lysate or culture medium of said microorganism.

5,326,695

PLATELET DERIVED GROWTH FACTOR AGONISTS

Maria Andersson; Gudrun Backstrom; Ulla Engström; Carl-Henrik Heldin; Ulf Hellman; Arne Östman, and Bengt Westermark, all of Uppsala, Sweden, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Filed May 15, 1992, Ser. No. 883,949
Int. Cl.[5] C12N *5/00, 15/00*; C12P *21/00*
U.S. Cl. 435—70.1 **8 Claims**

1. Isolated platelet derived growth factor agonist which binds to PDGF-β receptor and comprises amino acids 97–180 of PDGF-B monomer with the proviso that residues 124 and 133 are not cysteine.

5,326,696

SELECTING LOW FREQUENCY ANTIGEN-SPECIFIC SINGLE B LYMPHOCYTES

Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 905,040, Jun. 26, 1992, Pat. No. 5,256,542, which is a continuation-in-part of Ser. No. 848,249, Mar. 9, 1992, Pat. No. 5,213,960. This application Feb. 17, 1993, Ser. No. 21,619
Int. Cl.[5] G01N *33/533, 33/536, 21/64*
U.S. Cl. 435—7.24 **13 Claims**

1. A method of selecting antigen-specific B lymphocytes from a mixture of cells using a fluorescence activated cell sorting apparatus which has several channels, each of said channels capable of viewing a different fluorochrome, comprising:

labeling B lymphocytes in the mixture with at least two different antigen probes, wherein each probe comprises an antigen which binds the antibodies on the target B lymphocyte surface, said antigen conjugated with a fluorochrome, wherein said fluorochromes yield different colors upon activation;

selecting B lymphocytes which are positive for both fluorochromes attached to the antigen probes.

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5,326,697

COMPOSITION AND METHOD OF ASSAYING FOR D-β-HYDROXYBUTYRATE

Thomas A. Magers, South Bend, Ind., assignor to Miles Inc., Elkhart, Ind.

Division of Ser. No. 545,634, Jun. 29, 1990, Pat. No. 5,190,863. This application Sep. 8, 1992, Ser. No. 941,707
Int. Cl.[5] C12Q *1/32*
U.S. Cl. 435—25 15 Claims

1. A composition for exhibiting sufficient color transition upon contacting a test sample to demonstrate the presence or concentration of D-β-hydroxybutyrate in the test sample, said composition consisting essentially of:

a) about 50 to about 5000 units of D-β-hydroxybutyrate dehydrogenase;

b) about 10 to about 500 mM of nicotinamide adenine dinucleotide;

c) a disulfide reductase system comprising about 10 to about 200 mM of L-cystine and about 100 to about 2000 units of cystine reductase; and

d) a sufficient amount of a thiol-responsive indicator dye to provide a measurable color transition in proportion to the amount of D-β-hydroxybutyrate in the test sample.

5,326,698

METHOD OF PURIFICATION OF PENICILLIN AMIDASE USING PHENYLBUTYLAMINE-EUPERGIT

Volker Kasche, Bremen; Fridolin Löffler, Bensheim; Dieter Krämer, Mainz, and Gerd Janowski, Münster, all of Fed. Rep. of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 489,539, Mar. 7, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,264
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1989, 3909018
Int. Cl.[5] C12N *9/86, 9/00*
U.S. Cl. 435—231 10 Claims

1. A method for purification of penicillin amidase on substrates which contain aromatic groups, comprising:

absorbing pencillin amidase in a buffered aqueous solution at a pH near neutral on a specific carrier material T-PbA by hydrophobic interaction, said carrier material prepared by covalently bonding phenylbutylamine to a carrier prestage T-Vs-A by reaction of the phenylbutylamine with glycidyl groups on the carrier, which glycidyl groups constitute the activated group on the carrier substrate; and

eluting the absorbed enzyme from the carrier substrate with a buffered aqueous acid eluting solution.

5,326,699

SERUM-FREE MEDIUM FOR CULTURING ANIMAL CELLS

Hisashi Torishima, Osaka; Hirokuni Arakawa, Kumamoto; Ryohei Yamamoto, Takatsuki; Toyokazu Nishino, Ibaraki, and Chikaaki Sakai, Neyagawa, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Okayama, Japan

Continuation of Ser. No. 842,980, Feb. 28, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 120,235
Claims priority, application Japan, Feb. 28, 1991, 3-034150
Int. Cl.[5] C12N *5/00*
U.S. Cl. 435—240.2 18 Claims

1. A serum-free medium for culturing animal epithelial cells comprising 9.0–14.0 mg/l of methionine, 5.0–11.5 mg/l of threonine, 7.0–11.0 mg/l of tyrosine, 9.0–14.5 mg/l of phenylalanine, 400.0–550.0 mg/l of glutamine, 7.0–9.5 mg/l of aspartic acid, 19.0–28.0 mg/l of lysine HCl, 33.0–40.0 mg/l of serine, and up to 0.1 mM of Ca in the form of calcium chloride; and one or more conventional ingredients selected from the group consisting of glucose, vitamins, minerals, growth factors, HEPES, and amino acids other than the foregoing listed amino acids.

5,326,700

DNA SEQUENCES ENCODING T-PA DERIVATIVES WITH CLEAVABLE SITES

David T. Berg, Beech Grove, and Brian W. Grinnell, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 6, 1990, Ser. No. 609,510
Int. Cl.[5] C12N *5/00, 15/00, 9/48*
U.S. Cl. 435—240.2 7 Claims

1. A recombinant DNA molecule that comprises a DNA sequence encoding a protein comprising, from amino-terminus to carboxy-terminus:

a) a t-PA signal peptide;

b) a t-PA propeptide region which contains an amino acid sequence that is capable of being uniformly cleaved by a mammalian cell associated protease, said amino acid sequence selected from the group consisting of; Arg Ile Xaa Xaa Xaa (SEQ. ID NO:7): Ser Arg Xaa Xaa Xaa (SEQ. ID NO:8): Glu Arg Xaa Xaa Xaa (SEQ. ID NO:9): and Val Arg Xaa Xaa Xaa (SEQ. ID NO:10), wherein the amino acids at positions Xaa are Lys or Arg; and

c) a human tissue plasminogen activator derivative lacking the Finger, Growth Factor and Kringle 1 domains.

5,326,701

PROCESS FOR PRODUCING ALPHA-CYCLODEXTRIN USING CYCLOMALTODEXTRIN GLUCANOTRANSFERASE IN PRESENCE OF CYCLOHEXANE

Wen J. Shieh, and Allan R. Hedges, both of Crown Point, Ind., assignors to American Maize Technology Inc., Dimmitt, Tex.

Continuation of Ser. No. 772,487, Oct. 7, 1991, abandoned. This application Mar. 9, 1993, Ser. No. 28,628
Int. Cl.[5] C12P *19/18, 19/04;* C12N *9/10, 1/20*
U.S. Cl. 435—97 10 Claims

1. In a process for making an alpha-cyclodextrin using a cyclomaltodextrin glucanotransferase obtained from *Bacillus macerans*, the improvement comprising treating a starch hydrolysate with said cyclomaltodextrin glucanotransferase obtained from *Bacillus macerans* at a temperature of between about 15° C. and about 40° C., the conversion being performed in the presence of cyclohexane and recovering said alpha-cyclodextrin.

5,326,702

BIOLOGICAL PROCESS FOR PRODUCING α-HYDROXYAMIDE OR α-HYDROXY ACID

Takakazu Endo, Kanagawa; Tomohide Yamagami, Osaka, and Koji Tamura, Kanagawa, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 791,523
Claims priority, application Japan, Nov. 14, 1990, 2-308269
Int. Cl.[5] C12R *1/01;* C12N *1/12;* C12P *13/02, 7/42*
U.S. Cl. 435—129 9 Claims

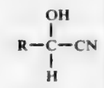
1. A process for biologically producing an α-hydroxyamide or an α-hydroxy acid represented by formula (III):



(III)

wherein R represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group or a substituted or unsubstituted aryl group; and X represents an amido group or a carboxyl group, comprising reacting

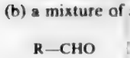
(a) an α-hydroxynitrile represented by formula (I):



(I)

wherein R is as defined above, or

(b) a mixture of an aldehyde represented by formula (II):



(II)

wherein R is as defined above, and hydrogen cyanide, with a microorganism which produces such an amide or acid from the corresponding α-hydroxynitrile, wherein the reaction with a microorganism occurs in the presence of a sulfite ion, a disulfite ion or a dithionite ion.

5,326,703

METHOD OF DEGRADING POLLUTANTS IN SOIL

Terry C. Hazen, Augusta, Ga., and Geralyne Lopez-De-Victoria, Irmo, S.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 681,289, Apr. 8, 1991, abandoned, which is a division of Ser. No. 461,596, Jan. 5, 1990, abandoned. This application Jun. 10, 1992, Ser. No. 896,762
Int. Cl.[5] C12N *1/38, 1/30, 1/12*
U.S. Cl. 435—262.5 8 Claims

1. A method of degrading a concentration of a pollutant in soil, said pollutant concentration being above a preselected level, said soil containing naturally occurring bacteria, said method comprising the steps of:

placing a quantity of tetrachloroethylene in said pollutant whereby said bacteria are drawn to said tetrachloroethylene and whereby said bacteria begin to degrade said pollutant;

monitoring said pollutant concentration; and

removing said tetrachloroethylene from said pollutant when said pollutant concentration has been reduced to said preselected level.

5,326,704

Patent Not Issued For This Number

5,326,705

PROCESS FOR PRODUCING OPTICALLY ACTIVE 1,3-BUTANDIOL BY ASYMMETRIC ASSIMILATION

Akinobu Matsuyama, Niigata, and Yoshinori Kobayashi, Niigata, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 744,912, Aug. 14, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,499
Int. Cl.[5] C12P *41/00*
U.S. Cl. 435—280 7 Claims

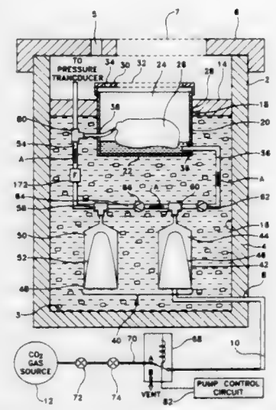
1. A process for producing an optically active 1,3-butanediol, comprising treating an enantiomeric mixture of 1,3-butanediols with a microorganism selected from the group consisting of *Aciculoconidium aculeatum, Brettanomyces anomalus, Cochliobolus miyabeanus, Corynespora cassiicola, Dactylium dentroides, Echinopodospora jamaicensis, Hamigera avellanea, Helminthosporium sigmoideum, Nectria cinnabarina*, and *Phialocephala bactrospora*, and which is capable of catabolizing (S)-1,3-butanediol in said enantiomeric mixture of 1,3-butanediols, and recovering optically active (R)-1,3-butanediol.

5,326,706

HOMEOSTATIC ORGAN PRESERVATION SYSTEM

Marc J. Yland, E. Setauket, N.Y., and David Anaise, El Paso, Tex., assignors to Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 380,870, Jul. 17, 1989, abandoned. This application Aug. 31, 1990, Ser. No. 576,058
Int. Cl.[5] A01N *1/02;* C12M *1/36;* A61N *1/30;* A61M *1/00*
U.S. Cl. 435—283 20 Claims



1. A homeostatic organ preservation system, which comprises:

means defining a chamber for holding a donor organ;

a pump for providing a perfusion solution to the organ, the pump being operable to provide perfusion solution to the organ at a predetermined pump pulse pressure and a predetermined pump stroke volume;

a first conduit coupled to the pump and adapted to be coupled to the organ, the first conduit being adapted to provide perfusion solution from the pump to the organ;

a second conduit coupled to the pump and communicating with the organ chamber, the second conduit being adapted to return perfusion solution from the organ chamber to the pump;

a pressure sensor coupled to the first conduit to sense the pressure of the perfusion solution in the first conduit and provided to the organ, the pressure sensor providing an output signal being indicative of the vascular resistance of the organ; and

pump control means for controlling the pump, the pump control means being responsive to the output signal of the pressure sensor to raise and lower the pump pulse rate respectively in response to a decrease and increase in the organ vascular resistance.

5,326,707

COMPOSITION AND DEVICE FOR URINARY PROTEIN ASSAY AND METHOD OF USING THE SAME

Gunter Franke, Leichlingen, Fed. Rep. of Germany; Michael Salvati, St. Paul, Minn., and Ronald G. Sommer, Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

Filed Nov. 29, 1991, Ser. No. 800,272
Int. Cl.[5] G01N *33/00*
U.S. Cl. 436—86 28 Claims

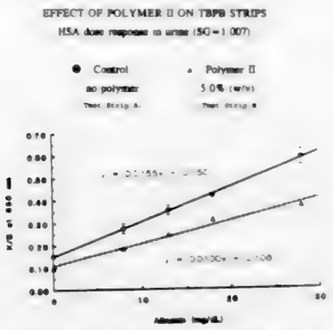
1. An indicator reagent composition capable of exhibiting a sufficient color transition upon contacting a protein-containing test sample to demonstrate the presence or concentration of protein in the test sample consisting essentially of:

(a) an indicator dye capable of interacting with a protein and exhibiting a color transition upon such interaction, said indicator dye being present in an amount of about 0.05 to

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about 0.6 millimoles per liter of the composition and wherein the indicator dye is selected from the group consisting of 3',3'',5,5''-tetraiodo-3,4,5,6-tetrabromophenolsulfophthalein, 3,3''-diiodo-5,5'',3,4,5,6-hexabromophenolsulfophthalein, and combinations thereof;

(b) a buffer present in an amount of about 250 to about 750 millimoles per liter of the composition wherein the buffer is selected from the group consisting of citric acid, maleic

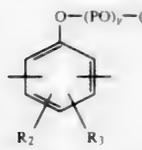


acid, tartaric acid, phthalic acid, sulfosalicyclic acid, succinic acid, malonic acid, their respective alkali metal and ammonium salts and combinations thereof;

(c) a hydrophobic polymeric compound present in an amount of about 1% to about 8% by weight per milliliter of the composition having the general structural formula.

$$H-[-A-R_1-]_n-A-E,$$

wherein A is



and PO is an oxypropylene unit, EO is an oxyethylene unit, y is a number in the range of 0 to about 20, z is a number in the range of 0 to about 20, the sum of y+z is a number in the range of about 2 to about 20, and R_2 and R_3 are selected, independently, from the group consisting of hydrogen, alkyl group, an aralkyl group, and an aryl group;

R_1 is methylene or oxygen;

n is a number in the range of 1 to about 8; and

E is hydrogen or methylol when R_1 is methylene, or E is hydroxy when R_1 is oxygen; and

(d) a carrier vehicle for said composition.

5,326,708

FORENSICALLY ACCEPTABLE DETERMINATIONS OF GESTATIONAL FETAL EXPOSURE TO DRUGS AND OTHER CHEMICAL AGENTS

Douglas E. Lewis, 1131 W. Oakdale Ave., Chicago, Ill. 60657

Continuation of Ser. No. 843,526, Feb. 28, 1992, abandoned. This application Sep. 1, 1993, Ser. No. 115,902

Int. Cl.[5] **G01N** *33/00*

U.S. Cl. 436—92 **50 Claims**

1. A method for preparing a concentrated neonatal meconium extract containing substantially all of at least one target analyte present, if any, in a sample of infant meconium suspected of containing said at least one target analyte, said at least one target analyte is selected from the group consisting of amphetamine, opiate, cocaine metabolite and cannabinoids, said concentrated meconium extract being specifically intended for use in subsequent qualitative and quantitative determinations of maternal use or exposure to said at least one target analyte during pregnancy and fetal exposure to said at least one target analyte, said method comprising:

providing a test sample of newborn meconium suspected of containing said at least one target analyte;

adding a substantially non-aqueous, volatile organic acid to said sample to form a first mixture;

agitating the first mixture for a time sufficient to extract substantially all of said at least one target analyte from the meconium sample, without diluting the sample with water, until a substantially uniform first liquid homogenate is obtained;

adding a volatile organic solvent to said first liquid homogenate to form a two-phase mixture including an organic phase and a second phase;

thoroughly mixing the two-phase mixture for a time sufficient to permit substantially all of said extracted at least one target analyte to be extracted and collected into said organic phase; and

thereafter, separating the organic phase from the second phase, wherein said organic phase is concentrated to provide said concentrated extract.

5,326,709

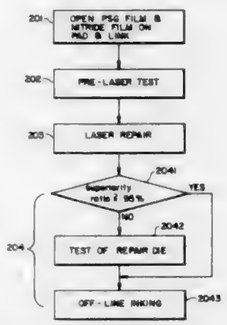
WAFER TESTING PROCESS OF A SEMICONDUCTOR DEVICE COMPRISING A REDUNDANCY CIRCUIT

Hong-bae Moon, Jeonlabuk-do; Bon-youl Ku, Daeku; Gi-seung Song, and Tae-wook Seo, both of Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 18, 1992, Ser. No. 993,007

Int. Cl.[5] **G01R** *31/26;* **H01L** *21/66*

U.S. Cl. 437—8 **9 Claims**



1. A testing process for a wafer containing a plurality of semiconductor chips, each chip having first and second passivation layers, redundancy circuits with program elements and pads for electrical connection thereto, comprising the steps of:

(a) selectively removing a first passivation layer portion disposed over said pads of each said semiconductor chip to obtain a plurality of exposed pads and selectively removing a second passivation layer portion disposed over said program elements of each said semiconductor chip;

(b) electrically testing every chip on said wafer through said exposed pads to identify defective chips on said wafer, including identification of defective but repairable chips and defective and unrepairable chips;

(c) repairing said repairable chips by cutting said program elements on said repairable chips with a laser beam to obtain repaired chips;

(d) testing a sample of said repairable chips after said laser repairing step to determine a representative goodness ratio of successfully repaired repairable chips versus unsuccessfully repaired repairable chips;

(e) quality testing all of said repairable chips, identified in step (b) and which underwent laser repair in step (c), to determine which of said repairable chips were successfully repaired and which of said repairable chips were unsuccessfully repaired, if said goodness ratio is less than a threshold value, said step of quality testing all of said repairable chips being omitted if said goodness ratio is greater than or equal to said threshold value; and

(f) quality marking each said defective unrepairable chip and each of said unsuccessfully repaired repairable chips as determined by said quality testing step.

5,326,710

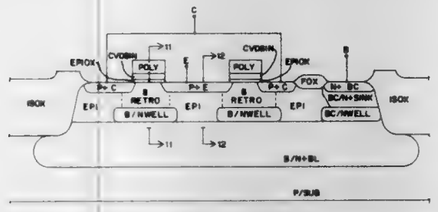
PROCESS FOR FABRICATING LATERAL PNP TRANSISTOR STRUCTURE AND BICMOS IC

Christopher C. Joyce, Gorham, and Murray J. Robinson, Falmouth, both of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 10, 1992, Ser. No. 942,977

Int. Cl.[5] **H01L** *21/265*

U.S. Cl. 437—31 **20 Claims**



1. A method of forming a lateral PNP transistor in a substrate of semiconductor material during a BICMOS process for fabricating bipolar NPN transistors and CMOS transistors including PMOS transistors and NMOS transistors in a BICMOS integrated circuit, said method comprising:

forming a base N+ buried layer in the IC substrate to underlie a bipolar PNP transistor during an N type buried layer mask, etch and N type introduction sequence used to form a buried collector layer in the semiconductor material substrate to underlie NPN transistors of the BICMOS IC;

forming a PNP base Retro NWELL and a PNP base contact Retro NWELL in the base N type buried layer to underlie the active base region and base contact region respectively of the bipolar PNP transistor during a Retro NWELL mask, etch and N type introduction sequence used to form Retro NWELLs in the IC substrate to underlie PMOS transistors of the BICMOS IC;

growing an epitaxial layer in the range from undoped to low doped EPI across the IC substrate including the area for the PNP transistor;

forming a PNP base contact N+ sink region over the base contact NWELL during a sink definition mask, etch and N type introduction sequence of the BICMOS process used to form an NPN collector sink region through the epitaxial layer to a buried collector layer for bipolar NPN transistors;

separating the PNP base contact N+ sink region from a collector region of the PNP transistor by field oxide during an active area definition mask, etch and grow sequence of the BICMOS process used for framing CMOS transistors in field oxide and isolating PMOS and NMOS transistors with field oxide;

forming the collector and emitter regions of the bipolar PNP transistor using at least one of an NPN base definition mask, etch and P type introduction sequence of the BICMOS process used to form a base region of bipolar NPN transistors, and a P+S/D mask definition, etch and P type introduction sequence of the BICMOS process used to form the source and drain of PMOS transistors and to enhance the base region of bipolar NPN transistors;

and forming metal contacts to the collector, emitter and base contact regions of the PNP transistors;

thereby forming the lateral PNP transistor using the steps of the BICMOS process for fabricating NPN and CMOS transistors without adding additional steps.

5,326,711

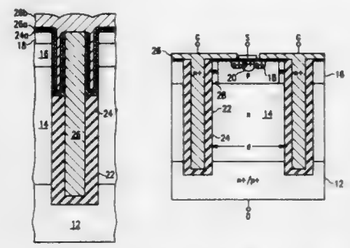
HIGH PERFORMANCE HIGH VOLTAGE VERTICAL TRANSISTOR AND METHOD OF FABRICATION

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 4, 1993, Ser. No. 69

Int. Cl.[5] **H01L** *21/265*

U.S. Cl. 437—33 **4 Claims**



1. A method of fabricating a high performance high voltage transistor at a face of a semiconductor substrate, comprising the steps of:

growing an epitaxial layer of a first conductivity type on the semiconductor substrate such that a drift region forms within said epitaxial layer;

diffusing a base layer of a second conductivity type on said epitaxial layer;

diffusing a source layer of said first conductivity type on said base layer such that a channel forms within said base layer;

forming a trench region through said source layer, said base layer, and said epitaxial layer and into the semiconductor substrate;

depositing a thick oxide layer on said source layer and inner walls of said trench region;

depositing a thick gate layer of said first conductivity type on said thick oxide layer and within said trench region;

removing a portion of said thick gate layer above said source layer;

removing a portion of said thick oxide layer such that a remaining thick oxide layer does not extend beyond said epitaxial layer;

depositing a thin oxide layer onto said source layer, said thick oxide layer, said thick gate layer, and said inner walls of said trench region;

depositing a thin gate layer of said first conductivity type on said thin oxide layer;

removing said thin gate layer and said thin oxide layer from a lateral surface of said thick gate layer; and

depositing a second thick gate layer of said first conductivity type on said thin gate layer and said lateral surface of said thick gate layer.

5,326,712

METHOD FOR MANUFACTURING A THIN FILM TRANSISTOR

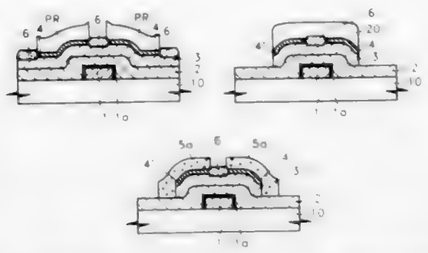
Byung-seong Bae, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do

Filed Dec. 3, 1992, Ser. No. 984,112

Claims priority, application Rep. of Korea, Dec. 3, 1991, 91-22055

Int. Cl.[5] **H01L** *21/265*

U.S. Cl. 437—40 **8 Claims**



1. A method for manufacturing a TFT comprising the steps of:

forming a gate electrode on a glass substrate;

forming a gate insulating layer to cover said gate electrode;

sequentially forming a first material layer for forming a semiconductor layer on said gate insulating layer and a second material layer which is highly doped with an impurity;

forming an anti-oxidizing pattern on said second material layer to expose a portion of said second material layer on said gate electrode;

performing anodic oxidation after forming said anti-oxidizing pattern to oxidize said exposed portion of said second material layer, thereby obtaining an anodic oxidation layer;

removing said anti-oxidizing pattern;

forming a mask pattern to cover said anodic oxidation layer formed on said gate electrode and simultaneously patterning said first and second material layers by employing said mask pattern; and

forming symmetrical source and drain electrodes, which center on said anodic oxidation layer formed on said gate electrode, to cover said patterned first and second material layers after removing said mask pattern.

5,326,713

BURIED CONTACT PROCESS

Jin-Yuan Lee, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor manufacturies Company, Hsinchu, Taiwan

Filed Sep. 4, 1992, Ser. No. 941,229

Int. Cl.[5] **H01L** *21/283*

U.S. Cl. 437—41 **14 Claims**

8. The method of forming a buried contact to active device regions in a silicon substrate comprising:

forming a silicon oxide layer over said silicon substrate;

forming a first polysilicon layer over said silicon oxide layer;

providing a resist mask having an opening over the planned said buried contact and isotropically etching said first polysilicon layer to form a tapered opening to said underlying silicon oxide which opening undercuts said resist mask;

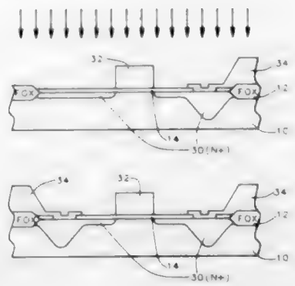
anisotropically etching said silicon oxide layer using the said resist mask which results in an opening to said silicon substrate corresponding to the planned said buried contact while leaving a silicon oxide border uncovered with said first polysilicon layer;

depositing a second polysilicon layer over said first polysilicon layer, the opening to said silicon substrate and said border of uncovered silicon oxide;

masking the planned said buried contact with a resist mask;

forming openings to the planned said active device regions wherein at least one of said device regions is adjacent to said opening of the planned buried contact;

removing said resist mask;



implanting ions through said second polysilicon layer in said opening to said silicon substrate to form said active device regions; and

heating the structure to cause the formation of a buried region under said buried contact by outdiffusion from the first and second polysilicon layers and to make electrical contact to at least one of said adjacent active device regions.

5,326,714

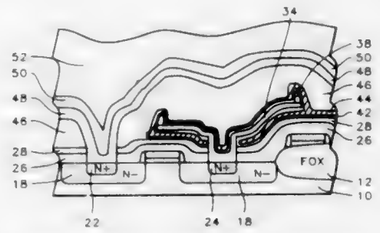
METHOD OF MAKING A FULLY USED TUB DRAM CELL

H. T. Liu, Keelung, and J. H. Lee, Taipei, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Jul. 22, 1993, Ser. No. 94,702

Int. Cl.[5] **H01L** *21/70*

U.S. Cl. 437—52 **25 Claims**



1. A method for fabricating a dynamic random access memory (DRAM) having a capacitor comprising:

forming field oxide regions in and on a semiconductor substrate;

forming a gate silicon oxide layer over the surface of said semiconductor substrate;

depositing a gate polysilicon layer overlaying said gate silicon oxide layer and patterning said gate polysilicon to form gate electrodes;

forming lightly doped drain regions within said silicon substrate;

depositing and etching a spacer silicon oxide to form spacers on the sidewalls of said gate electrodes;

forming a first layer of silicon oxide overlying said gate electrodes;

depositing a layer of silicon nitride overlaying said first silicon oxide layer;

forming a second layer of silicon oxide overlying said silicon nitride layer;

opening a contact through said first and second silicon oxide layers and said silicon nitride layer to said lightly doped drain region within said silicon substrate which will form the node of said capacitor;

depositing a first layer of doped polysilicon overlying said silicon nitride layer and filling said contact opening wherein portion of said first polysilicon contacting said lightly doped drain region which forms said node will be the bottom electrode of said capacitor;

depositing a third layer of silicon oxide overlying said first polysilicon layer;

etching away said third layer of silicon oxide overlying said first polysilicon layer;

etching away said third layer of silicon oxide leaving portion only within area of planned said capacitor;

depositing a second layer of polysilicon overlying said third silicon oxide layer;

anisotropically etching said first and second polysilicon layers to remove all of said second polysilicon layer except for spacers on the sidewalls of said third silicon oxide layer to construct a tub shape and to remove all of said first polysilicon layer except for portion underlying said third silicon oxide layer and said spacers;

etching away said second silicon oxide layer and said third silicon oxide layer leaving cavities underlying said first and second polysilicon layers wherein said first and second polysilicon layers form the storage node of said capacitor;

depositing a capacitor dielectric layer over all surfaces of said substrate wherein said capacitor dielectric layer will cover exposed top and bottom surfaces of said first and second polysilicon layers;

depositing a third polysilicon layer conformally so that said third polysilicon layer covers said first and second polysilicon layers and fills all said cavities underlying said first and second polysilicon layers wherein said third polysilicon layer forms the top electrode of said capacitor;

depositing a first insulating layer over the surface of said substrate and reflowing said insulator by thermal treatment;

depositing a fourth layer of doped polysilicon overlying said first insulating layer;

forming a silicide layer over said fourth polysilicon layer;

depositing a second insulating layer over said silicide layer and reflowing said insulator by thermal treatment;

forming N+ regions in said lightly doped drain regions by outdiffusing dopants from the overlying doped polysilicon layers during said reflowing of said first and second insulating layers;

opening contact holes through said second insulating layer to said silicide layer; and

depositing a metal layer into said contact holes to form contacts to said silicide layer to complete formation of said DRAM with capacitor.

5,326,715

METHOD FOR FORMING A FIELD OXIDE FILM OF A SEMICONDUCTOR DEVICE

Se A. Jang, Ichonkun; Kyung M. Lee, Jungrangku, and Chung S. Han, Seongnamsi, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Oct. 13, 1993, Ser. No. 136,566

Claims priority, application Rep. of Korea, Oct. 13, 1992, 1992-18846

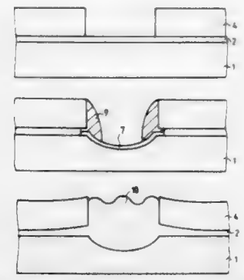
Int. Cl.[5] **H01L** *21/76*

U.S. Cl. 437—70 **6 Claims**

5. A method for forming a field oxide film of a semiconductor device, comprising the steps of:

forming a first oxide film and a nitride film, in this order, over a semiconductor substrate, etching a predetermined portion of said nitride film to form a field oxide region, and forming a first field oxide film in said field oxide region;

etching said first field oxide film to form a round recess on said semiconductor substrate, forming a second oxide film having a small thickness over said round recess of the semiconductor substrate, depositing a second polysilicon film over the entire exposed surface of the resulting structure, and etching said second polysilicon film without



using any mask to form polysilicon film spacers respectively at side walls of said first oxide film and nitride film forming the field oxide region; and

forming a second field oxide film over the field oxide region, etching the nitride film and the first oxide film, etching an upper portion of said second field oxide film, and smoothing the entire exposed surface of the resulting structure to form a third field oxide film.

5,326,716

LIQUID PHASE EPITAXIAL PROCESS FOR PRODUCING THREE-DIMENSIONAL SEMICONDUCTOR STRUCTURES BY LIQUID PHASE EXPITAXY

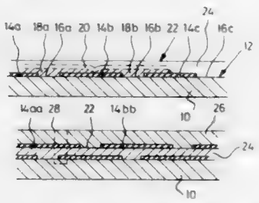
Elisabeth Bauser, and Horst P. Strunk, both of Stuttgart, Fed. Rep. of Germany, assignors to Max Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Continuation of Ser. No. 124,849, Sep. 29, 1987, abandoned. This application Jul. 15, 1991, Ser. No. 731,347

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1986, 3604260

Int. Cl.[5] **H01L** *21/20, 21/208, 21/82*; **C30B** *19/00*

U.S. Cl. 437—92 **27 Claims**



1. A method of manufacturing a three-dimensional semiconductive structure comprising a substrate having an active component connectable in a first circuit and at least one layer of a semiconductor material, said semiconductor layer having an active component connectable in a second circuit, having high structural perfection and having low mechanical stresses, said method comprising the steps of:

(a) providing a substrate having a surface, said substrate surface being crystallographically oriented in such a fashion that during crystal growth, crystal growth velocity is smaller perpendicularly to said surface as compared to crystal growth velocity parallel to said surface,

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(b) depositing a mask pattern on said substrate surface, said mask pattern having mask pattern portions masking areas of said surface and narrow intermediate spaces between said mask portions, said intermediate spaces being narrower than said mask portions whereby said surface is exposed in said spaces to have an exposed area less than that of said masked areas; and

(c) by means of liquid-phase epitaxy from solution, growing said semiconductor material on said surface exposed between said mask portions and over said mask pattern portions to form said semiconductor layer.

5,326,717

METHOD OF FABRICATING A COMPOUND SEMICONDUCTOR DEVICE

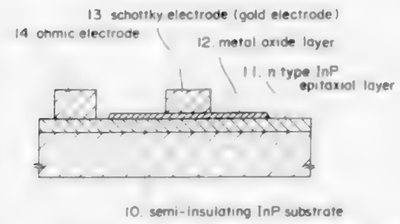
Toyoaki Imaizumi; Osamu Oda, and Hironobu Sawatari, all of Toda, Japan, assignors to Nikko Kyodo Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 990,707

Claims priority, application Japan, Dec. 17, 1991, 3-353644; Mar. 24, 1992, 4-098733

Int. Cl.[5] H01L *21/203*

U.S. Cl. 437—105 **3 Claims**



1. A method of fabricating a compound semiconductor device comprising:

adsorbing a metal thin layer with not more than 10 monolayers of a metal whose oxide is stable, on a substrate, the surface on which a III–V compound semiconductor is epitaxially grown, or on a III–V compound semiconductor substrate, by flowing a carrier gas from a source material to a substrate, wherein the temperature at the substrate is controlled to be higher by 0.1° to 10° C. than that at the source material;

forming a metal oxide layer by oxidizing the metal thin layer, and

forming a Schottky electrode on the metal layer.

5,326,718

METHOD FOR MANUFACTURING A LATERALLY LIMITED, SINGLE-CRYSTAL REGION ON A SUBSTRATE AND THE EMPLOYMENT THEREOF FOR THE MANUFACTURE OF AN MOS TRANSISTOR AND A BIPOLAR TRANSISTOR

Helmut Klose, Munich; Thomas Meister, Taufkirchen; Hans-Willi Meul, Bruckmuehl, and Reinhard Stengl, Stadtbergen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 950,068

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1991, 4131619

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—89 **7 Claims**

1. A method for manufacturing a laterally limited, single-crystal region on a substrate, comprising the steps of:

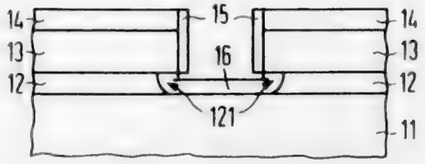
a) providing a substrate made of a single-crystal material;

b) forming a first layer on a surface of the substrate, said first layer being selectively etchable with respect to the substrate and comprising SiO_2;

c) forming a second layer on the first layer, the second layer being selectively etchable with respect to the first layer and comprising polycrystalline silicon;

d) providing an opening in the first and second layers so as to expose an area on the surface of the substrate;

e) covering surfaces and side walls of the second layer with a third layer;



f) selectively etching the first layer with respect to the substrate and the second layer so as to provide an undercut between the second layer and the surface of the substrate, the third layer resisting the etchings of the first layer; and

g) forming a single-crystal region on the exposed surface of the substrate by selective epitaxy, no nucleation occurring at the surface of the third layer in the selective epitaxy step.

5,326,719

THIN FILM GROWTH USING TWO PART METAL SOLVENT

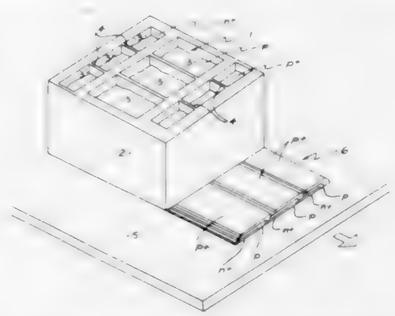
Martin A. Green, and Stuart R. Wenham, both of New South Wales, Australia, assignors to Unisearch Limited, Kensington, Australia

Continuation-in-part of Ser. No. 592,923, Oct. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 322,758, Mar. 13, 1989, abandoned. This application Feb. 18, 1993, Ser. No. 19,458

Claims priority, application Australia, Mar. 11, 1988, PI7209; Jun. 23, 1988, PI8959

Int. Cl.[5] H01L *21/208*

U.S. Cl. 437—119 **27 Claims**



14. A method of coating a glass sheet with thin film silicon comprising the steps of:

dissolving silicon in a solution of gold and tin wherein the gold and tin are present in a ratio of from 7:3 to 4:1 (gold:-tin by weight to form a solution of silicon, gold and tin, the dissolving being carried out at a first temperature below about 600° C. until the silicon reaches approximately the saturation level of silicon in the solution;

wetting a surface of the glass sheet by contacting the solution with the sheet and maintaining the surface in contact with the solution;

precipitating silicon from the solution onto the surface by lowering the temperature of the solution; and

controlling the rate of growth and final thickness of the silicon film by controlling the rate of change of the solution temperature and the length of time the surface remains in contact with the solution.

5,326,720

METHOD FOR PRODUCING SILICON DIOXIDE FILM WHICH PREVENTS ESCAPE OF SI COMPONENT TO THE ENVIRONMENT

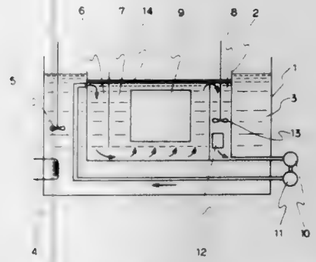
Takuji Goda, Sagamihara; Yasuto Sakai, Takarazuka; Akihiro Hishinuma, Nishimomiya; Hideo Kawahara, Kawanishi, and Shigehito Deki, Kobe, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jun. 23, 1992, Ser. No. 861,892

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[5] B05D *1/18*

U.S. Cl. 437—130 **7 Claims**



1. A method for producing a silicon dioxide film which comprises contacting a substrate with a treating liquid comprising a hydrosilicofluoric acid solution supersaturated with silicon dioxide to deposit a silicon dioxide film on the surface of a substrate, the method being characterized in that a means for preventing an Si component from escaping from the treating liquid is provided.

5,326,721

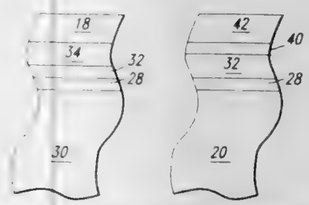
METHOD OF FABRICATING HIGH-DIELECTRIC CONSTANT OXIDES ON SEMICONDUCTORS USING A GE BUFFER LAYER

Scott R. Summerfelt, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 1, 1992, Ser. No. 877,287

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—131 **19 Claims**



1. A method for fabricating a structure useful in semiconductor circuitry, comprising:

growing a germanium layer directly (or indirectly) on a non-germanium semiconductor substrate or on an intervening layer which intervening layer is on a non-germanium substrate; and

depositing (a high-dielectric constant oxide) an oxide having a dielectric constant of greater than 100 on said germanium layer.

5,326,722

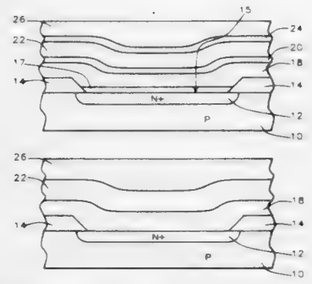
POLYSILICON CONTACT

Heng-Sheng Huang, Taipei, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jan. 15, 1993, Ser. No. 5,079

Int. Cl.[5] H01L *21/329*

U.S. Cl. 437—186 **23 Claims**



1. The method of forming a small crystalline grained multilayer, polysilicon buried contact to a buried region comprising:

providing on a semiconductor substrate a layer of silicon oxide through which an opening has been formed to said semiconductor substrate at the location of said buried contact;

removing native silicon oxide formed within said opening by using hydrofluoric acid, a de-ionized water rinse, and spin dry and immediately transferring said semiconductor substrate into a silicon deposition chamber;

depositing at least one first layer of silicon over said layer of silicon oxide and within said opening in direct contact to said silicon substrate;

forming at least one layer of native silicon oxide on top of said silicon layer having a thickness of less than about 30 Angstroms;

forming a second silicon layer over said native silicon oxide layer; and

annealing said semiconductor substrate causing silicon oxide gas from the chemical breakdown of said native silicon oxide layer to be exhausted and effective removal of said thin native silicon oxide layer, causing the transformation of any amorphous silicon into said small crystalline grained polysilicon and causing the completion of said buried contact to said buried region.

5,326,723

METHOD FOR IMPROVING STABILITY OF TUNGSTEN CHEMICAL VAPOR DEPOSITION

William G. Petro, San Jose, and Farhad K. Moghadam, Los Gatos, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 9, 1992, Ser. No. 942,985

Int. Cl.[5] H01L *21/00*

U.S. Cl. 437—192 **10 Claims**

6. In the fabrication of the semiconductor wafer, a tungsten CVD process comprising the steps of:

depositing tungsten on the wafer;

removing the wafer from the chamber;

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in-situ cleaning of the chamber with nitrous fluoride and hydrogen plasmas; and



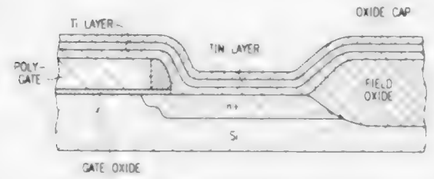
purging the chamber with a mixture of silane, nitrogen and argon gases at a pressure, wherein the silane comprises between one and two percent of the mixture.

5,326,724

OXIDE-CAPPED TITANIUM SILICIDE FORMATION

Che-Chia Wei, Wylie, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1991, Ser. No. 815,312
Int. Cl.[5] H01L *21/283, 21/31*
U.S. Cl. 437—200 **20 Claims**



1. A method for fabricating integrated circuit devices, comprising the steps of:

providing a substrate having thereon a partially fabricated integrated circuit structure, said structure including exposed portions consisting essentially of silicon;

depositing a metal layer over said exposed portions;

depositing a metal nitride layer over said metal layer;

providing a dielectric layer directly overlying said metal nitride layer, said dielectric layer comprising an oxide;

applying heat until portions of said metal layer react with portions of said exposed silicon to form metal silicides wherein said dielectric layer suppresses substantial silicon out diffusion through metal layer; and

removing selected portions of said dielectric layer by means of an etch process using buffered HF solution applied for about 60 seconds or less.

5,326,725

CLAMPING RING AND SUSCEPTOR THEREFOR

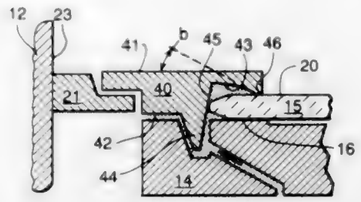
Semyon Sherstinsky, San Francisco; Charles C. Harris, Los Gatos; Mei Chang, Cupertino; Dale R. Du Bois, Los Gatos; James F. Roberts, Campbell; Susan Telford, Cupertino; Ronald L. Rose, Los Gatos; Meng C. Tseng, San Jose, and Karl A. Littau, Sunnyvale, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 11, 1993, Ser. No. 31,259
Int. Cl.[5] C23C *16/00*
U.S. Cl. 437—225 **13 Claims**

10. A method of preventing deposition on the edge and backside of a semiconductor wafer during chemical vapor deposition processing which comprises;

mounting a wafer to be processed onto a susceptor surface in a chemical vapor deposition chamber;

providing a clamping ring having a lip for overlying the edge of said wafer and downwardly extending fingers adjacent to said lip;



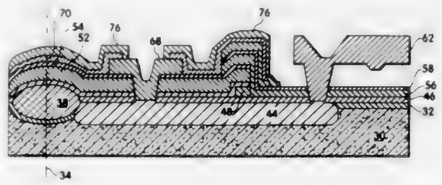
providing pockets in said susceptor surface along the periphery thereof sized to accommodate said fingers therein; whereby the clamping ring aligns the wafer and the susceptor as the fingers are inserted into said pockets.

5,326,726

METHOD FOR FABRICATING MONOLITHIC CHIP CONTAINING INTEGRATED CIRCUITRY AND SUSPENDED MICROSTRUCTURE

Robert W. K. Tsang, Bedford, and Theresa A. Core, North Andover, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 899,765, Jun. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 569,080, Aug. 17, 1990, abandoned, and Ser. No. 872,037, Apr. 22, 1992. This application Jun. 21, 1993, Ser. No. 80,677
Int. Cl.[5] H01L *21/465*
U.S. Cl. 437—228 **20 Claims**



1. A method of fabricating a microchip which includes a suspended microstructure and circuitry, said method comprising the steps of;

(1) forming transistors in a first region of a surface of a substrate said step including the formation of dielectrics on said substrate,

(2) forming a layer of material on said surface which will act as an etch stop for the etching of oxide,

(3) removing dielectrics formed on said substrate during said formation of said transistors from a second region of said substrate, except for a layer of oxide on said surface, said second region defining where said microstructure will be formed,

(4) passivating said surface in said second region,

(5) depositing a layer of spacer oxide over said surface of said substrate to act as a spacer for the formation of said suspended microstructure,

(6) etching anchor openings in said spacer oxide layer defining anchors from which said suspended microstructure will be supported,

(7) depositing a layer of polysilicon over said spacer oxide form which said suspended microstructure will be formed,

(8) etching said polysilicon to form said polysilicon into said microstructure,

(9) removing said spacer oxide from said first region of said surface,

(10) forming a protective layer of oxide over said polysilicon in said second region,

(11) forming conductive paths on said microchip for electrically interconnecting said transistors to form a circuit and for electrically interconnecting said microstructure to said circuit,

(12) passivating said first region of said microchip, and

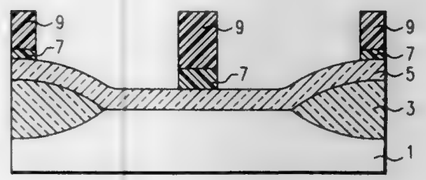
(13) etching said spacer oxide layer to remove all of said oxide and release said microstructure into a suspended state.

5,326,727

METHOD FOR INTEGRATED CIRCUIT FABRICATION INCLUDING LINEWIDTH CONTROL DURING ETCHING

Taeho Kook, Lower Macungie Township, Lehigh County, Pa.; Avinoam Kornblit, Highland Park, N.J., and Kolawole R. Olasupo, Kutztown, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1992, Ser. No. 998,503
Int. Cl.[5] H01L *21/31*
U.S. Cl. 437—229 **9 Claims**



1. A method of integrated circuit fabrication comprising the steps of:

forming a layer of first material on a substrate;

covering said layer of first material with a layer of second material of photoresist, said second layer being a planarizing layer;

covering said layer of second material with a resist, said second material reducing reflections of radiation used in the selective exposure of said resist;

selectively exposing portions of said resist to radiation;

etching said planarizing layer in a plasma comprising oxygen and at least one member selected from the group consisting of halogens and halogen hydrides, said at least one member and said oxygen having concentrations selected to minimize changes in the dimensions of the resist during etching which exposes portions of said material.

5,326,728

LEAD-FREE ENAMEL COMPOSITIONS FOR THE DECORATION OF LOW-EXPANSION GLASS-CERAMICS

Gerard R. M. Boury, Darvault, and Daniel L. G. Ricoult, Palaiseau, both of France, assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 12, 1993, Ser. No. 134,664
Claims priority, application France, Feb. 12, 1993, 93 01611
Int. Cl.[5] C03C *8/16, 8/14, 8/02*
U.S. Cl. 501—17 **5 Claims**

1. A lead-free enamel composition containing finely divided glass particles, finely divided pigment particles, and an organic binder, characterized in that the glass exhibits a coefficient of thermal expansion less than or equal to 60×10^{-7}/K and a softening temperature T_L above 650° C., and consists essentially, expressed in weight percent based on the oxides, of

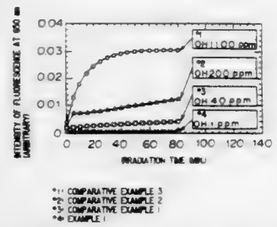
SiO_2	35–50	$Li_2O + Na_2O + K_2O$	<8		
B_2O_3	23–30	CaO	1–5		
Al_2O_3	10–22	CaO + MgO + ZnO + BaO + SrO	<7		
Li_2O	1–3	TiO_2	0–2		
Na_2O	0–3	ZrO_2	0–5.		
K_2O	2–5				

5,326,729

TRANSPARENT QUARTZ GLASS AND PROCESS FOR ITS PRODUCTION

Susumu Yaba, and Shinya Kikugawa, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,396
Claims priority, application Japan, Feb. 7, 1992, 4-056774; Dec. 9, 1992, 4-352095
Int. Cl.[5] C03C *3/06*
U.S. Cl. 501—54 **3 Claims**



1. Quartz glass obtained by flame-hydrolyzing a glass-forming raw material to obtain fine particles of quartz glass, having the fine particles of quartz glass deposited and grown on a substrate to obtain a porous quartz glass product and heating the porous quartz glass product to obtain a transparent quartz glass product, which has an OH content of not more than 10 ppm, a halogen content of at least 400 ppm and which contains hydrogen, wherein the amount of hydrogen molecules released when heated to 1,000° C. under vacuum is in the range of from 1×10^{18} to 1×10^{20} molecule/m^2.

5,326,730

BARIUM ALUMINOSILICATE GLASSES

William H. Dumbaugh, Jr., Painted Post, and Josef C. Lapp, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 8,561, Jan. 22, 1993, abandoned. This application May 17, 1993, Ser. No. 61,459
Int. Cl.[5] C03C *3/085, 3/097, 3/078, 3/091*
U.S. Cl. 501—69 **4 Claims**

1. A glass exhibiting a strain point higher than 660° C., a liquidus temperature no higher than 1,175° C., a weight loss of less than 1 mg/cm^2 after immersion for 24 hours in an aqueous 5% by weight HCl solution at 95° C., and long term stability against devitrification at melting and forming temperatures, said glass being essentially free from alkali metal oxides and consisting essentially, expressed in terms of mole percent on the oxide basis, of

SiO_2	65–76	MgO	0–5		
Al_2O_3	7–11	CaO	0–10	TiO_2	0–3
BaO	12–19	SrO	0–10	Ta_2O_5	0–3
B_2O_3	0–5	MgO + CaO + SrO	0–15	TiO_2 + Ta_2O_5	0.5–5.

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CERAMIC COMPOSITIONS FOR WEAR RESISTANT APPLICATIONS

Rakesh Bhola; Sankar Dasgupta, and James K. Jacobs, all of Toronto, Canada, assignors to Electrofuel Manufacturing Company, Toronto, Canada

Filed Nov. 18, 1993, Ser. No. 154,039
Int. Cl.[5] C04B *35/10*; B24D *3/24*
U.S. Cl. 501—87 7 Claims



1. A composition for a hard, sintered ceramic article, essentially consisting of:

50–80% by volume alumina,

5–40% by volume titanium carbonitride, the nitride and carbide content in said carbonitride being defined such that the fraction C/C+N has a value between 0.1 and 1,

1–30% by volume polycrystalline filaments selected from the group consisting of titanium diboride, titanium nitride and alloys thereof, said filaments having diameters in excess of 4 μm and lengths greater than 150 μm, and a grain growth modifier in less than 0.1 wt. %, selected from the group consisting of magnesia, nickel oxide and cobalt oxide;

said hard ceramic article having density in excess of 99% of the theoretical density defined by said composition, subsequent to sintering, and said sintered ceramic article having hardness greater than 20 GPa.

5,326,732

CARBON-SILICON CARBIDE COMPOSITE MATERIAL AND METHOD FOR THE PREPARATION THEREOF

Ichitaro Ogawa, Tosu, Japan, assignor to Japan as represented by Director General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 119,019
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—90 6 Claims



1. A carbon-silicon carbide composite material which is an integral shaped body consisting essentially of carbon as the matrix phase and particles of silicon carbide in an acicular or needle-like configuration as the reinforcing dispersed phase uniformly and isotropically dispersed in the matrix phase, the particles of silicon carbide being formed in the matrix phase by the in situ crystal growth.

5,326,733

SILICON NITRIDE SINTERED PRODUCT EXCELLENT IN WEAR RESISTANCE

Ken-ichi Mizuno, and Yo Tajima, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Dec. 7, 1992, Ser. No. 986,563
Claims priority, application Japan, Dec. 5, 1991, 3-349227
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—97 3 Claims

1. A silicon nitride sintered product, consisting essentially of:

(i) silicon nitride as a predominant phase,

(ii) 0.1 to 1% by weight of Al as calculated on the basis of Al_2O_3,

(iii) an amount greater than 0 and up to 6% by weight, on an oxide basis, of a sintering aid constituent consisting essentially of Mg, Zr, and at least one member selected from the group consisting of Ce, Yb, Er, and Pr, or oxides thereof wherein the grain boundary glassy phase content of said product is 8% by volume or less.

5,326,734

PILLARED INTERLAYERED KANDITE CLAY COMPOSITIONS

David E. W. Vaughan, Flemington, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 857,032, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 628,514, Dec. 17, 1990, abandoned. This application Dec. 4, 1992, Ser. No. 985,399
Int. Cl.[5] B01J *21/16*
U.S. Cl. 502—84 30 Claims

1. A microporous pillared kandite clay composition which includes separated layers wherein the interlayer distances are substantially greater than the interlayer distances of a precursor of the same but non-separated clay and wherein the composition includes pillars derived from a solution of specific molecular or ionic cluster compounds selected from the group consisting of an inorganic oxide, sulfide, metal cluster and combinations thereof wherein said pillars separate and cross link said layers, wherein said pillars have definite chemical composition and which on calcination, permanently pillar and separate said layers.

13. A process for producing pillared kandite clay compositions which includes separated layers wherein the interlayer distances are substantially greater than the interlayer distances of a precursor of the same but non-separated clay and wherein the composition includes pillars derived from molecular or ionic compounds selected from the group consisting of an inorganic oxide, sulfide, metal cluster and combinations thereof which separates said layers, comprising the steps of:

i) intimately mixing an amount of a finely divided kandite clay precursor with a solution comprising water to produce a precursor suspension slurry;

ii) adding an effective amount of pillaring medium to said precursor suspension and maintaining said mixture for a period of time sufficient to allow infusion of the pillaring medium into the clay precursor;

iii) heating the kandite clay precursor containing the pillaring medium at a temperature sufficient to decompose the pillaring medium to an inorganic pillar separating layers of the precursor and therefore produce the pillared kandite clay composition.

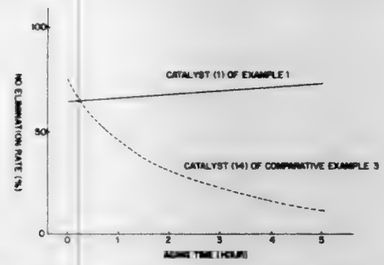
5,326,735

IRIDIUM CATALYSTS FOR PURIFYING EXHAUST GAS

Takashi Itoh, and Yukio Kosaki, both of Ichikawa, Japan, assignors to N.E. Chemcat Corporation, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,879
Claims priority, application Japan, Jul. 10, 1992, 4-207502
Int. Cl.[5] B01J *27/22, 27/224, 27/24*
U.S. Cl. 502—177 8 Claims

1. A catalyst for purifying exhaust gas, consisting essentially of an iridium with crystallite diameter of 2 to 100 nm supported on one carrier selected from the group consisting of metal carbides and metal nitrides, wherein the supported amount of



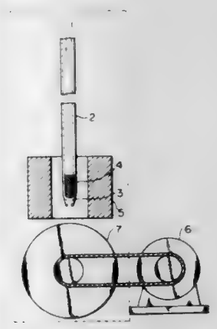
said iridium is 0.005 to 10.0% by weight based on the total amount of the iridium and the carrier.

5,326,736

AMORPHOUS ALLOY CATALYSTS FOR CONVERSION OF EXHAUST GASES TO HARMLESS GASES

Koji Hashimoto, 25-5, Shogen 2-Chome, Izumi-ku, Sendai-shi, Miyagi-ken; Kiyohiro Teruuchi, Sendai; Hiroki Habazaki, Sendai; Asahi Kawashima, Sendai, and Katsuhiko Asami, Sendai, all of Japan, assignors to Koji Hashimoto and Daiki Engineering Co., Ltd., Japan

PCT No. PCT/JP89/00979, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO91/04790, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 27, 1989, Ser. No. 856,159
Int. Cl.[5] B01J *23/89, 21/06, 27/128*; B01D *53/36*
U.S. Cl. 502—326 1 Claim



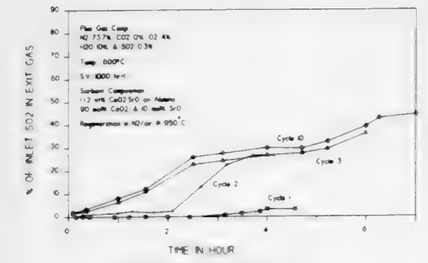
1. Catalysts for conversion of exhuast gases to harmless gases, comprising an amorphous alloy consisting of 20–80 at % of at least one element selected from Ti and Zr, 0.5–20 at % of at least one element selected from Ru, Pd, Rh, Pt and Ir, with the balance being substantially 10 at % of at least one element selected from Ni and Co, having been subjected to activation treatment by immersion in hydrofluoric acid.

5,326,737

CERIUM OXIDE SOLUTIONS FOR THE DESULFURIZATION OF GASES

D. Alan R. Kay, Burlington, Canada, and William G. Wilson, Pittsburgh, Pa., assignors to Gas Desulfurization Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 290,392, Dec. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 100,291, Sep. 23, 1987, Pat. No. 4,885,145, which is a continuation-in-part of Ser. No. 846,272, Mar. 31, 1986, Pat. No. 4,714,598, which is a division of Ser. No. 718,989, Apr. 2, 1985, Pat. No. 4,604,268, which is a continuation-in-part of Ser. No. 521,751, Aug. 8, 1983, Pat. No. 4,507,149, which is a continuation-in-part of Ser. No. 471,773, Mar. 3, 1983, abandoned, which is a continuation of Ser. No. 174,024, Jul. 31, 1980, Pat. No. 4,397,683. This application Feb. 28, 1992, Ser. No. 843,312
Int. Cl.[5] B01J *20/06, 20/04, 23/10*; C01F *17/00*
U.S. Cl. 502—400 9 Claims



Breakthrough Curve of CeO_2 SrO/Al_2O_3

1. A solid solution of oxides containing oxygen ion vacancies for the desulfurization of sulfur containing gases consisting essentially of:

(a) no greater than 99.95 mole percent of a solvent having at least one lanthanide oxide which crystallizes in the fluorite habit; and

(b) between 0.05 and about 15 mole percent of a solute having at least one second oxide capable of forming a solid solution with said at least one solvent lanthanide oxide, wherein the valence of said second oxide differs from the valence of said at least one lanthanide oxide, said at least one solvent lanthanide oxide being selected from one of the group of lanthanide oxides which do not crystallize in the fluorite habit and the group of oxides of the alkaline earth elements.

5,326,738

STABLE, COVALENTLY-BONDED SUPPORTS FOR CHEMICAL SEPARATION APPARATUS MADE THROUGH A HYDRIDE INTERMEDIATE

Junior E. Sandoval, 4231 Norwalk Dr. #EE 311, San Jose, Calif. 95129, and Joseph J. Pesek, 4142 Rosenbaum Ave., San Jose, Calif. 95136

PCT No. PCT/US90/05202, § 371 Date Mar. 9, 1992, § 102(e) Date Mar. 9, 1992, PCT Pub. No. WO91/04095, PCT Pub. Date Apr. 4, 1991
Continuation-in-part of Ser. No. 407,816, Sep. 15, 1989, Pat. No. 5,017,540. This PCT application Sep. 13, 1990, Ser. No. 838,429
Int. Cl.[5] B01J *20/06, 20/22, 20/30*
U.S. Cl. 502—401 15 Claims

1. A solid intermediate, useful in chromatographic or electrophoretic separations after derivatization, comprising:

an inorganic oxide substrate defining a surface and having silicon hydride groups attached to the surface, the surface being exposable to fluids with components therein being separated.

2. The solid intermediate as in claim 1 wherein the inorganic oxide substrate is selected from the group consisting of oxides

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of silicon, aluminum, zirconium, tin, titanium, and combinations thereof.

5,326,739

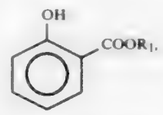
PROCESS FOR PRODUCING 3,5-DI(α-METHYLBENZYL)SALICYLIC ACID DERIVATIVE, AND USE OF POLYVALENT-METAL-MODIFIED PRODUCT THEREOF AS COLOR DEVELOPER

Yoshimitsu Tanabe, Yokohama; Keizaburo Yamaguchi, Chiba, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 740,386, Aug. 5, 1992, Pat. No. 5,274,150. This application Oct. 12, 1993, Ser. No. 134,719
Claims priority, application Japan, Aug. 6, 1990, 2-206711
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—210 **15 Claims**

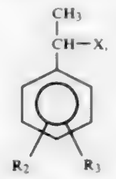


1. A color-developing sheet comprising a substrate and, as a color developer, a polyvalent-metal-modified reaction product of a polyvalent metal salt and an α-methylbenzyl-substituted salicylic acid derivative composition comprising 60–90% by weight of a 3,5-di(α-methylbenzyl)salicylic acid derivative, which is produced by reacting a salicylic acid ester represented by the formula (I)



(I)

where R_1 represents an alkyl group, an aralkyl group or a cycloalkyl group each having 1 to 12 carbon atoms, with an α-methylbenzyl halide represented by the formula (II)



(II)

where R_2 and R_3 each represent a hydrogen atom or an alkyl group of 1–4 carbon atoms and X represents a halogen atom, in the presence of an acid catalyst and hydrolyzing the resulting 3,5-di(α-methylbenzyl)salicylic acid ester.

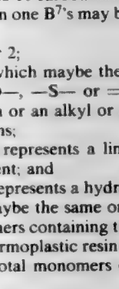
5,326,740

THERMAL TRANSFER IMAGE-RECEIVING MATERIAL

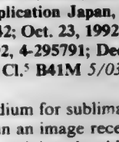
Tetsu Kamosaki; Mitsugu Tanaka, and Masakazu Yoneyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 14, 1992, Ser. No. 960,869
Claims priority, application Japan, Oct. 18, 1991, 3-297782; Jun. 11, 1992, 4-176028
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **18 Claims**

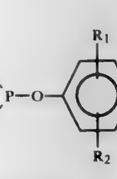
1. A thermal transfer image-receiving material having an image-receiving layer comprising a thermoplastic resin capable of receiving a dye, on a support, wherein the thermoplastic resin is a polyester obtained by poly-condensation of monomers represented by formula (1), (2), (3) and (4) of monomers represented by formula (1), (2), (5) and (6):



(1)



(2)



(3)

(4)

(5)

(6)

where

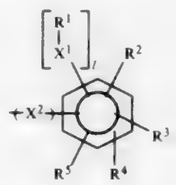
A_1 and A_2 each represents a substituted or unsubstituted alkylene, arylene or cycloalkylene group having from 1 to 18 carbon atoms and may be the same or different;

A_3 and A_4 each represents a substituted or unsubstituted alkylene or arylene group having from 1 to 18 carbon atoms and may be the same or different;

B_1, B_2, B_3, B_5 and B_4 each represents a hydrogen atom or a substituted or unsubstituted alkyl group having from 1 to 8 carbon atoms and may be the same or different;

L_1 and L_2 each represents a linking group capable of bonding adjacent groups via a bonding group of ether, ester, amido or urethane and may be the same or different;

a and b each represents 1 or 2 and may be the same or different, M_1 and M_2 each represents an anti-fading group of formula (7) and may be the same or different:



(7)

wherein

R^1 represents a hydrogen atom, or a substituted or unsubstituted alkyl, alkenyl, aryl, heterocyclic or silyl group having from 1 to 21 carbon atoms; and if l is more than 1, the more than one R^1's may be same or different from each other;

X^1 represents —O—, —S— or $=N-R^{(1)}$ wherein $R^{(1)}$ is a hydrogen atom or a substituted or unsubstituted alkyl or aryl group having up to 18 carbon atoms;

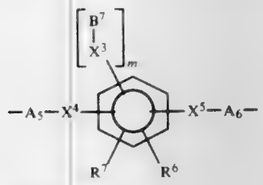
when X^1 is —O— and R^1 is an alkyl group, then if two adjacent —OR^1 groups are present, the two adjacent —OR^1 groups may be bonded to each other to form a methylene or ethylene group;

X^2 represents a bonding group of ether, ester, amido or urethane;

l represents a number from 1 to 3; and

R^2, R^3, R^4 and R^5 each represents a hydrogen atom, an organic residue or $[R^1—X^1]_l$ wherein R^1 and X^1 have the same meaning as those described above, and may be the same or different; and

M_3 and M_4 each represents an anti-fading group of formula (8) and may be the same or different;



(8)

wherein

B^7 represents a hydrogen atom, or a substituted or unsubstituted alkyl, alkenyl, aryl, heterocyclic or silyl group having from 1 to 18 carbon atoms; and if m is more than 1, the more than one B^7's may be same or different from each other;

m represents 1 or 2;

X^3, X^4 and X^5, which maybe the same or different, each represents —O—, —S— or $=N-B^8$ wherein B^8 is a hydrogen atom or an alkyl or aryl group having up to 18 carbon atoms;

A_5 and A_6 each represents a linking group may be the same or different; and

R^6 and R^7 each represents a hydrogen atom or an organic residue and maybe the same or different, and

wherein the monomers containing the anti-fading groups are present in the thermoplastic resin in an amount of 1 mol % or more of the total monomers constituting the thermoplastic resin.

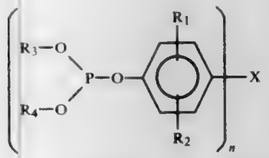
5,326,741

RECORDING MEDIUM FOR SUBLIMATION TYPE HEAT-SENSITIVE TRANSFER RECORDING PROCESS

Kenji Kushi; Takayuki Iseki; Tadayuki Fujiwara; Kazuhiko Jufuku, and Akifumi Ueda, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

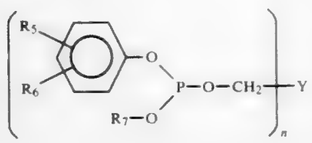
Filed Feb. 25, 1993, Ser. No. 22,296
Claims priority, application Japan, Feb. 27, 1992, 4-041741; Feb. 27, 1992, 4-041742; Oct. 23, 1992, 4-286399; Oct. 26, 1992, 4-287982; Nov. 5, 1992, 4-295791; Dec. 28, 1992, 4-348725
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **21 Claims**

1. A recording medium for sublimation heat-sensitive transfer recording, wherein an image receiving layer comprising a resin composition containing dyeable resin and at least one member selected from the group consisting of phosphite antioxidants shown in Formulas (1), (2), and (3) below, is formed on a substrate



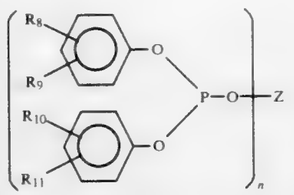
(1)

wherein R_1 and R_2 represent H or an alkyl group having a number of carbon atoms within a range of 1–20, R_3 and R_4 represent an alkyl group having a number of carbon atoms within a range of 1–20, X represents H or an atomic group having 1–10 carbon atoms as a main skeleton thereof, and n has a value of 1, 2, 3, or 4



(2)

wherein R_5 and R_6 represent H or an alkyl group having a number of carbon atoms within a range of 1–20, R_7 represents an alkyl group having a number of carbon atoms within a range of 1–20, Y represents H or an atomic group having 1–10 carbon atoms as a main skeleton thereof, and n has a value of 1, 2, 3, or 4.



(3)

wherein R_8, R_9, R_{10}, and R_{11} represent H or an alkyl group having a number of carbon atoms within a range of 1–20, Z represents H or a monocyclic atomic group having 1–13 carbon atoms as a main skeleton thereof, and n has a value of 1, 2, 3, or 4.

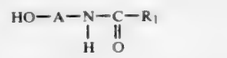
5,326,742

RECORDING MEDIUM FOR SUBLIMATION TYPE HEAT-SENSITIVE TRANSFER RECORDING PROCESS

Kenji Kushi; Takayuki Iseki; Tadayuki Fujiwara; Kazuhiko Jufuku, and Akifumi Ueda, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,298
Claims priority, application Japan, Feb. 25, 1992, 4-038164; Oct. 26, 1992, 4-287530; Oct. 27, 1992, 4-289117; Nov. 13, 1992, 4-303974
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **13 Claims**

1. A recording medium for sublimation heat-sensitive transfer recording process, wherein an image receiving layer constituting a resin composition containing dyeable resin and at least one member selected from the group consisting of compounds shown in Formula (1) below, is formed on a substrate:



(1)

wherein R_1 represents an alkyl group having a number of carbon atoms within a range of 1–20, and A represents a substituted or unsubstituted phenylene group or naphthalene group.

5,326,743

PIPERAZINE-2,3-DIONES AS PLANT GROWTH REGULATORS

Costin Rentzea, Heidelberg; Albrecht Harreus, Ludwigshafen; Andreas Landes, Limburgerhof; Helmut Walter, Obrigheim, and Wilhelm Rademacher, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

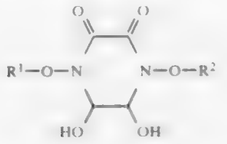
Filed Aug. 6, 1993, Ser. No. 102,743

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1992, 4226558

Int. Cl.[5] **A01N** *43/60*; **C07D** *241/08*

U.S. Cl. 504—235 **10 Claims**

1. Piperazine-2,3-diones of the formula



where R^1 and R^2 are identical or different and each is C_1–C_{20}-alkyl, C_3–C_{18}-alkenyl or C_3–C_8-alkynyl, where these groups may carry from one to five halogen atoms; C_3–C_{10}-cycloalkyl, C_5–C_{10}-cycloalkenyl, C_3–C_{10}-cycloalkylmethyl or C_1–C_4-cycloalkenylmethyl, where the rings may carry from one to three C_1–C_4-alkyl groups or a phenyl ring or norbonyl, adamantyl or tricyclodecamyl; or phenyl, phenyl-C_1–C_4-alkyl or phenyl-C_2–C_6-alkenyl, where the aromatic radicals may carry from one to five halogen atoms and/or from one to three of the following groups; nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio.

5,326,744

GLYCOL ALDEHYDE AND LACTIC ACID DERIVATIVES AND THE PREPARATION AND USE THEREOF

Joachim Rheinheimer, Ludwigshafen; Ernst Baumann, Speyer; Uwe J. Vogelbacher, Ludwigshafen; Thomas Saupe, Sandhausen; Matthias Bratz, Speyer; Norbert Meyer, Ladenburg; Matthias Gerber, Mutterstadt; Karl-Otto Westphalen, Speyer; Helmut Walter, Obrigheim, and Uwe Kardorff, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

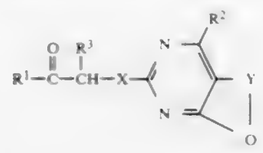
Filed Dec. 21, 1992, Ser. No. 994,252

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142570

Int. Cl.[5] **C07D** *405/02*; **A01N** *43/54*

U.S. Cl. 504—241 **10 Claims**

1. A glycol aldehyde or lactic acid derivative or a sulfur analog thereof of the formula I



I

where

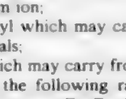
R^1 is

hydrogen;

succinylimidoxy;

a 5-membered heteroaromatic structure which is bonded via a nitrogen atom, contains two or three nitrogen atoms and may carry one or two halogen atoms or one or two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

a radical



in which m is 0 or 1 and R^{14} and R^{15} are identical or different and are each

hydrogen;

C_1–C_6-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl, where these three radicals may each carry from one to five halogen atoms or one or two of the following groups: C_1–C_6-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, C_1–C_6-alkylthio, C_3–C_6-alkenylthio, C_3–C_6-alkynylthio, C_1–C_6-haloalkoxy, cyano, C_1–C_6-alkylcarbonyl, C_3–C_6-alkenylcarbonyl, C_3–C_6-alkynylcarbonyl, C_1–C_6-alkoxycarbonyl, C_3–C_6-alkenyloxycarbonyl, C_3–C_6-alkynyloxycarbonyl, bis-C_1–C_6-dialkylamino, cyclo-C_1–C_6-alkyl or unsubstituted or substituted phenyl;

unsubstituted or substituted cyclo-C_3–C_6-alkyl; or unsubstituted or substituted phenyl; or R^{14} together with R^{15} form an unsubstituted or substituted, cyclized C_4–C_7-alkylene chain or together form an unsubstituted or substituted, cyclized C_3–C_6-alkylene chain having a hetero atom selected from the group consisting of oxygen, sulfur and nitrogen;

R^1 is furthermore a group



where R^{16} and R^{17} are identical or different and are each hydrogen, C_1–C_6-alkyl, unsubstituted or substituted phenyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl and l is 1, 2, 3 or 4;

R^1 is furthermore a group

where R^{18} is C_1–C_6-alkyl, unsubstituted or substituted phenyl, C_1–C_6-haloalkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl l is 1,2,3 or 4 and k is 0, 1 or 2;

R^1 is furthermore OR^5, where R^5 is

(a) hydrogen, an alkali metal cation, one equivalent of an alkaline earth metal cation, the ammonium cation or an organic ammonium ion;

(b) C_3–C_{12}-cycloalkyl which may carry from one to three C_1–C_4-alkyl radicals;

(c) C_1–C_{10}-alkyl which may carry from one to five halogen atoms or one of the following radicals: C_1–C_4-alkoxy, C_1–C_4-alkylthio, cyano, C_1–C_6-alkylcarbonyl, C_3–C_{12}-cycloalkyl, C_1–C_8-alkoxycarbonyl, phenyl, phenoxy or phenylcarbonyl, where the aromatic radicals in turn may each carry from one to five halogen atoms or from one to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

(d) C_1–C_{10}-alkyl which may carry from one to five halogen atoms and carries one of the following radicals: a 5-membered heteroaromatic structure containing from one to three nitrogen atoms or a 5-membered heteroaromatic structure containing one nitrogen atom and one oxygen or sulfur atom, which may carry from one to four halogen atoms or one or two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

(e) C_2–C_6-alkyl which carries one of the following radicals

in the 2-position: C_1–C_6alkoximino, C_3–C_6-alkenyloximino, C_3–C_6-haloalkenyloximino or benzyloximino;

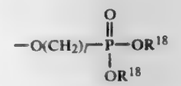
(f) C_3–C_6-alkenyl or C_3–C_6-alkynyl, where these groups in turn may carry from one to five halogen atoms;

(g) phenyl which may carry from one to five halogen atoms or from one to three of the following radicals; C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

(h) a 5-membered heteroaromatic structure which is bonded via a nitrogen atom, contains from one to three nitrogen atoms and may carry one or two halogen atoms or one or two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

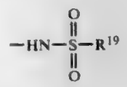
(i) a group $-N{=}CR^6R^7$, where R^6 and R^7 are each C_1–C_{20}-alkyl which in turn may carry phenyl, C_1–C_4-alkoxy or C_1–C_4-alkylthio; or phenyl; or R^6 and R^7 together form a C_3–C_{12}-alkylene chain which may carry from one to three C_1–C_3-alkyl groups;

R^1 is furthermore a radical



where R^{18} and l have the abovementioned meanings,

R^1 is furthermore a radical



where R^{19} is C_1–C_6-alkyl or phenyl which in turn may carry from one to four of the following substituents: halogen, nitro, cyano, C_1–C_6-alkyl;

R^2 is halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

R^3 is

hydrogen;

C_1–C_8-alkyl, C_2–C_8-alkenyl, C_2–C_8-alkynyl, phenyl, C_3–C_8-cycloalkenyl or C_3–C_8-cycloalkyl, each of which may carry from one to five halogen atoms and, independently of one another, from one to three of the following substituents:

(i) hydroxyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, cyano, nitro, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylcarbonyl, C_1–C_4-alkyl, phenylcarbonyl, C_3–C_{12}-cycloalkyl, C_3–C_{12}-cycloalkenyl;

(ii) a 5-membered heterocyclic structure containing no double bonds or one or two double bonds and from one to four nitrogen atoms or one or two nitrogen atoms and additionally one sulfur or oxygen atom, which may carry from one to three halogen atoms or from one to three of the following radicals: nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl or phenyl, which in turn may carry from one to three halogen atoms or from one to three methyl groups;

(iii) thienyl which may carry from one to three halogen atoms or from one to three of the following radicals: C_1–C_4-alkyl, C_1- or C_2-haloalkyl and nitro;

(iv) pyridyl which may carry from one to three halogen atoms or from one to three of the following radicals: C_1–C_4-alkyl, C_1- or C_2-haloalkyl or nitro;

(v) naphthyl, quinolyl, benzoxazolyl, benzothiazolyl, benzothienyl, indazolyl or benzotriazolyl, each of which may carry from one to three halogen atoms or from one to three of the following radicals: C_1–C_4-alkyl and C_1- or C_2-haloalkyl;

(vi) phenyl which in turn may carry from one to five halogen atoms or from one to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, cyano, nitro, C_1–C_4-dialkylamino or C_1–C_4-alkylthio;

(vii) a 5-membered or 6-membered heterocyclic structure containing no double bonds or one or two double bonds and one or two oxygen or sulfur atoms, which may furthermore carry the following radicals: C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy or nitro;

R^3 may furthermore be a 5-membered heterocyclic structure containing no double bonds or one or two double bonds and from one to four nitrogen atoms or one or two nitrogen atoms and additionally one sulfur or oxygen atom, which may carry from one to three halogen atoms or from one to three of the following radicals: nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_4-alkoxy or phenyl, which in turn may carry from one to three halogen atoms or from one to three methyl groups; or R^3 is a 6-membered heterocyclic structure selected from the group consisting of morpholin-1-yl, 3,5-dimethylmorpholin-1-yl and 1-piperidyl, a 5-membered heterocyclic structure containing no double bonds or one or two double bonds and one or two oxygen or sulfur atoms, which may furthermore carry the following radicals: halogen, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy; R^3 together with R^1 are an unsubstituted or substituted C_4–C_7-alkylene chain where CH_2 may be replaced by oxygen sulfur or nitrogen;

X is oxygen, sulfur or a single bond and

Y is a C_2–C_4-alkylene or C_2–C_4-alkenylene chain where in each case a methylene group may be substituted by an oxo group (αO) and/or where the alkylene or alkenylene chain may be substituted by C_1–C_4-alkyl, phenyl, C_1–C_4-alkoxy or C_1–C_4-alkoxycarbonyl;

in the abovementioned cases the expression unsubstituted or substituted meaning in each case that the groups so referred to may carry one or more of the following substituents: halogen, nitro, cyano, C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy and C_1–C_6alkylthio, and environmentally compatible salts of the compound I.

5,326,745

SUPERCONDUCTING DEVICE WITH C-AXIS ORIENTATION PERPENDICULAR TO CURRENT FLOW

Toshikazu Nishino, Kawasaki; Ushio Kawabe, Tokyo; Yoshinobu Tarutani, Yamanashi; Shinya Kominami, Tokorozawa; Toshiyuki Aida, Tokyo; Tokuumi Fukazawa, Tachikawa, and Mutsuko Hatano, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 155,806, Feb. 16, 1988, Pat. No. 5,126,315.

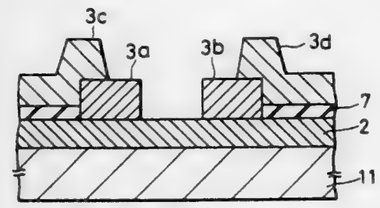
This application Mar. 17, 1992, Ser. No. 853,593

Claims priority, application Japan, Feb. 27, 1987, 62-42558; Jun. 15, 1987, 62-147043; Jun. 29, 1987, 62-159596

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] **H01B** *12/00*; **H01L** *39/22, 23/48*

U.S. Cl. 505—220 **3 Claims**



1. A superconducting apparatus comprising:

a superconductor, formed of a high T_c superconducting oxide having a crystalline structure substantially all of the

crystals of which have a c-axis oriented in the same direction; and

means for making a superconducting current flow through the superconductor so that the c-axis of the crystals is substantially perpendicular to a direction of the current flowing therethrough

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5,326,746

FABRICATION METHOD OF SUPERCONDUCTIVE THIN FILM TRANSISTOR

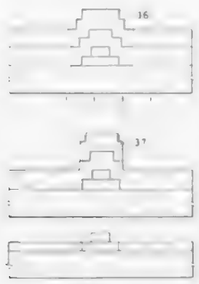
Hisashi Ohtani; Akiharu Miyanaga, both of Kanagawa, and Shunpei Yamazaki, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 24, 1992, Ser. No. 856,673

Claims priority, application Japan, Mar. 27, 1991, 3-089541

Int. Cl.[5] H01L *39/22, 49/02, 27/01, 23/48*

U.S. Cl. 505—330 8 Claims



1. A method of fabricating a superconductive thin film transistor comprising the steps of:

forming a channel layer comprising a non-superconductive material having a perovskite structure on a substrate; and

forming source and drain regions comprising an oxide superconducting material on said substrate so that said channel layer contracts and intervenes between said source and drain regions, wherein a-b planes of said oxide superconducting material are substantially aligned with a surface of said substrate.

5,326,747

PROCESS FOR PATTERNING LAYERED THIN FILMS INCLUDING A SUPERCONDUCTOR

Hiroshi Inada, and Michitomo Iiyama, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 865,498

Claims priority, application Japan, Apr. 9, 1991, 3-103955; Apr. 10, 1991, 3-104655; Apr. 10, 1991, 3-104656; Apr. 10, 1991, 3-104657

Int. Cl.[5] H01L *21/00*

U.S. Cl. 505—413 23 Claims



1. A process for patterning layered thin films comprising the steps of

(a) heat-treating a bottom oxide superconductor layer which is on a substrate, in ultra high vacuum at a temperature which is lower than the oxygen-trap temperature at which oxygen can enter into said oxide superconductor but is higher than a temperature which is lower by 100° C. than said oxygen-trap temperature,

(b) depositing another thin film which is an insulator, ordinary conductor, or oxide superconductor having a different crystal orientation from said bottom superconductor layer, on an entire surface of the heat-treated bottom superconductor layer, and

(c) patterning said another thin film.

5,326,748

CYCLIC ALCOHOLS AND THEIR USE AS PERFUMING INGREDIENTS

Christian Chapuis, Mies, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

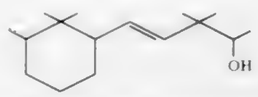
Filed May 10, 1993, Ser. No. 59,683

Claims priority, application Switzerland, Jun. 2, 1992, 1763/92

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—22 11 Claims

1. Compound of formula



(I)

having a double bond in one of the positions indicated by the dotted lines.

5,326,749

MACROPHAGE ACTIVATING FACTOR FROM VITAMIN D BINDING PROTEIN

Nobuto Yamamoto, 1040 66th Ave., Philadelphia, Pa. 19126

Continuation-in-part of Ser. No. 767,742, Sep. 30, 1991, Pat. No. 5,177,001, and a continuation-in-part of Ser. No. 576,248, Aug. 31, 1990, Pat. No. 5,177,002, which is a continuation-in-part of Ser. No. 439,223, Nov. 20, 1989, abandoned. This application Jan. 4, 1993, Ser. No. 320

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[5] A61K *37/02*; C07K *7/10, 9/00, 15/14*

U.S. Cl. 514—8 4 Claims

1. A macrophage activating factor comprising an isolated and purified polypeptide having the amino acid sequence of vitamin D-binding protein, and a terminal N-acetylgalactosamine group linked to a threonine or serine residue of said polypeptide at amino acid position 418.

5,326,750

Patent Not Issued For This Number

5,326,751

ENKEPHALIN ANALOGS

Ronald C. Haaseth, and Victor J. Hruby, both of Tucson, Ariz., assignors to Arizona Board of Regents on behalf of the University of Arizona, Tucson, Ariz.

Filed Jun. 26, 1992, Ser. No. 904,425

Int. Cl.[5] A61K *37/02*; C07K *5/12, 7/06*

U.S. Cl. 514—17 17 Claims

1. A polypeptide of the formula:

wherein

R^1 is L-tyrosine, or L-tyrosine with a halogen or methyl substitutions;

R^2 is D-penicillamine or D-cysteine;

R^3 is phenylalanine or phenylalanine with one to three same or different halogen, nitro, or methyl substitutions; and

R^4 is D-penicillamine, L-penicillamine, D-cysteine or L-cysteine.

5,326,752

SUBSTITUTED LACTOSE AND LACTOSAMINE DERIVATIVES AS CELL ADHESION INHIBITORS

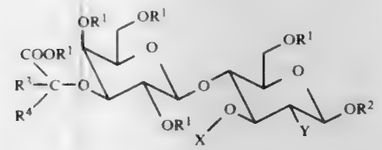
Mina Nashed; Falguni Asgupta, both of Alameda; Saeed Abbas, Vallejo; John Musser, and Darwin Asa, both of Alameda, all of Calif., assignors to Glycomed Incorporated, Alameda, Calif.

Filed Nov. 27, 1991, Ser. No. 800,557

Int. Cl.[5] A61K *31/70, 31/715, 37/00, 37/10*

U.S. Cl. 514—25 20 Claims

1. A compound of the formula



(1)

wherein each R^1 is independently H or lower alkyl (1–4C);

R^2 is H, lower alkyl (1–4C), or alkylaryl, said alkylaryl having the formula (CH_2)m-Ar, wherein m is 1–10, and Ar is a mono or bicyclic aromatic residue;

R^3 and R^4 are each independently H, alkyl (1–6C), aryl or R^3 and R^4, taken together, form a five or six-membered ring;

Y is H, OR^1, $OOCR_1$, $NR^1{}_2$, $NCOR^1$, or SR^1; and

X is $—CHR^5(CHOR^1)_nCHR^6OR^1$ wherein R^5 and R^6 are independently H, lower alkyl (1–4C) and n=1,2, or 3;

or X is benzoyl or naphthoyl having 1–3 hydroxyl substituents.

5,326,753

FREEZE-DRIED COMPOSITION CONTAINING A 2-DIMETHYLAMINO ETOPOSIDE DERIVATIVE

Kazuo Ohtsuki, Tokyo, and Taka'aki Ohkuma, Yono, both of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 636,676, Jan. 2, 1991, abandoned. This application May 20, 1992, Ser. No. 887,589

Claims priority, application Japan, Jan. 19, 1990, 2-008153

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—33 7 Claims

1. A freeze-dried preparation consisting essentially of (1) about 5 to about 50 W/W% of a combination of a non-volatile acid and a pharmaceutically acceptable salt thereof selected from the group consisting of phosphoric acid with its pharmaceutically acceptable salt, an oxycarboxylic acid having 6 carbon atoms with its pharmaceutically acceptable salt, a dicarboxylic acid having 4 carbon atoms with its pharmaceutically acceptable salt, and an aminoacetic acid with its pharmaceutically acceptable salt, (2) about 15 to about 80 W/W% of 4-O-(2-deoxy-2-dimethylamino-4,6-O-ethylidene-β-D-glucopyranosyl)-4′-demethyl-4-epipodophyllotoxin hydrochloride and (3) at least one sugar as a stabilizer, such that said freeze-dried preparation, upon reconstitution with water, does not crystallize and has a pH not less than about 3 but less than about 5.

7. A freeze-dried preparation consisting essentially of (1) about 0.1 to about 5 parts by weight of a combination of a non-volatile acid and a pharmaceutically acceptable salt thereof selected from the group consisting of phosphoric acid with its pharmaceutically acceptable salt, an oxycarboxylic acid having 6 carbon atoms with its pharmaceutically acceptable salt, a dicarboxylic acid having 4 carbon atoms with its pharmaceutically acceptable salt, and an aminoacetic acid with its pharmaceutically acceptable salt, (2) 1 part by weight of 4-O-(2-deoxy-2-dimethylamino-4,6-O-ethylidene-β-D-glucopyranosyl)-4′-demethyl-4-epipodophyllotoxinhydrochloride and (3) about 0.1 to about 10 parts by weight of at least one sugar as a stabilizer, such that said freeze-dried preparation, upon reconstitution with water, does not crystallize and has a pH not less than about 3 but less than about 5.

5,326,754

ANTITUMOR ANTIBIOTIC BMY-41219

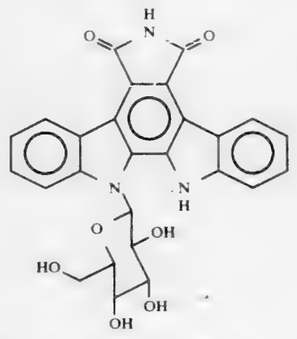
Kin S. Lam, Cheshire, Conn.; Leonard A. McDonald, Salt Lake City, Utah; Jacqueline Mattei, Branford, Conn.; Salvatore Forenza, and James A. Matson, both of Cheshire, Conn., assignors to Bristol-Myers Squibb Co., New York, N.Y.

Continuation of Ser. No. 830,969, Feb. 6, 1992, which is a continuation of Ser. No. 764,114, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 489,431, Mar. 6, 1990, abandoned. This application May 18, 1993, Ser. No. 63,383

Int. Cl.[5] C07D *273/00*; A61K *31/00*

U.S. Cl. 514—42 1 Claim

1. A pharmaceutical composition for treating P388 leukemia comprising a tumor-inhibiting amount of the compound having the formula



in combination with a pharmaceutical carrier.

5,326,755

CERTAIN 2,4-PENTADIENAMIDE PESTACIDES

Robert J. Blade, and George S. Cockerill, both of Hertfordshire, Great Britain, assignors to Roussel UCLAF

PCT No. PCT/GB91/00539, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO91/16301, PCT Pub. Date Oct. 31, 1991

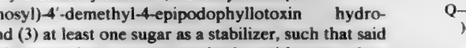
PCT Filed Apr. 8, 1991, Ser. No. 923,970

Claims priority, application United Kingdom, Apr. 12, 1990, 9008380

Int. Cl.[5] C07F *7/10*; C07C *233/12, 222/47*; A01N *55/00*

U.S. Cl. 514—63 8 Claims

1. A compound of formula (I):



or a salt thereof, wherein Q is phenyl, or Q is a dihalovinyl group of a group $R^7—C≡C—$ where R^7 is C_{1-4} alkyl, tri C_{1-4} alkylsilyl, halogen or hydrogen; Q^1 is a 1,2-cyclopropyl ring optionally substituted by 1 to 3 member of the group selected from C_{1-3} alkyl, halo, C_{1-3} haloalkyl, alkynyl or cyano; at least one of R^1, R^2, R^3 and R^4 being hydrogen and the others being independently selected from the group consisting of hydrogen, halo, C_{1-4} alkyl and C_{1-4} haloalkyl; X^1 is oxygen or sulfur; R^5 is C_{1-8} hydrocarbyl optionally substituted by halo, cyano, trifluoromethyl, trifluoromethylthio or C_{1-6} alkoxy; and R^6 is selected from the group consisting of (A) $—Y=X^2—(R^8)_a$ where X^2 is O or S, Y is carbon, R^8 is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-5} alkylcarbonyl or phenyl or CO_2R^9 where R^9 is an C_{1-4} alkyl or phenyl, and a is 1 or 2; and

(B) $—CR^{15}R^{16}X^3R^{17}$ wherein R^{15} and R^{16} are hydrogen or

C_{1-4} alkyl, X^3 is oxygen or sulfur and R^{17} is C_{1-4} alkylcarbonyl or phenyl alkylcarbonyl

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5,326,756

R-4-OXO-5 PHOSPHONONORVALINE USED AS NMDA ANTAGONISTS

Jeffrey P. Whitten, and Bruce M. Baron, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 790,291, Nov. 8, 1991, abandoned, which is a division of Ser. No. 553,431, Jul. 20, 1990, Pat. No. 5,095,009, which is a continuation-in-part of Ser. No. 508,333, Apr. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 409,478, Sep. 19, 1989, abandoned. This application Jul. 20, 1992, Ser. No. 917,723

Int. Cl.[5] **A61K** *31/675*

U.S. Cl. 514—114 **6 Claims**

1. R-4-oxo-5-phosphononorvaline, a pharmaceutically acceptable acid addition salt thereof, a pharmaceutically acceptable basic addition salt thereof, or a tautomer thereof

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5,326,757

PHARMACEUTICALLY ACTIVE ANTIOXIDANT CONTAINING COMPOSITION AND THE METHOD OF ITS USE TO PREVENT AND TREAT RESTENOSIS FOLLOWING ANGIOPLASTY

Harry B. Demopoulos, Scarsdale, N.Y., assignor to Health Maintenance Programs, Inc., Elmsford, N.Y.

Continuation of Ser. No. 817,293, Jan. 6, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 108,849

Int. Cl.[5] **A01N** *45/00*; **A61K** *31/59*

U.S. Cl. 514—167 **18 Claims**

1. A pharmaceutically active antioxidant containing composition consisting essentially of a formulation including L-ascorbic acid, reduced form, in an amount of between about 6,500 and about 10,000 mg; L-glutathione, reduced form, in an amount of between about 325 and about 500 mg; D,L-alpha tocopheryl acetate in an amount of between about 600 and about 1,000 IU; and beta carotene in an amount of between about 90 and about 150 mg; said composition capable of being administered in four substantially equal dosages throughout a single 24 hour period and said composition being effective in the prevention and treatment of restenosis in mammalian organisms in need thereof.

5,326,758

LOW DOSE TEMAZEPAM

William R. Sterling, Pine Brook, N.J., assignor to Sandoz Pharm. Corp., E. Hanover, N.J.

Division of Ser. No. 876,269, Apr. 30, 1992, Pat. No. 5,211,954, which is a continuation of Ser. No. 709,866, Jun. 3, 1991, abandoned, which is a division of Ser. No. 569,787, Aug. 17, 1990, Pat. No. 5,030,632, which is a continuation of Ser. No. 434,142, Nov. 9, 1989, abandoned, which is a continuation of Ser. No. 295,332, Jan. 10, 1989, abandoned, which is a continuation of Ser. No. 910,571, Sep. 23, 1986, abandoned. This application Mar. 17, 1993, Ser. No. 32,216

The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.

Int. Cl.[5] **A61K** *31/55, 9/48, 9/14*

U.S. Cl. 514—221 **3 Claims**

1. A method of treating transient insomnia in a human in need of said treatment which comprises administering orally to said human a temazepam formulation consisting essentially of 5 to 10 milligrams of crystalline temazepam having a surface area of from 0.65 to 1.1 m^2/g and 95% of the temazepam having a particle size of less than 65 microns.

5,326,759

9-AMINO-7-(SUBSTITUTED)-6-DEMETHYL-6-DEOXYTETRACYCLINES

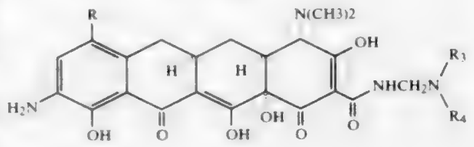
Joseph J. Hlavka, Tuxedo Park; Phaik-Eng Sum, Pomona, both of N.Y.; Yakov Gluzman, Upper Saddle River, N.J., and Ving J. Lee, Monsey, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 771,697, Oct. 4, 1991, Pat. No. 5,281,628. This application Nov. 1, 1993, Ser. No. 146,666

Int. Cl.[5] **A61K** *31/54, 31/535*; **C07D** *265/30, 209/18, 207/00*

U.S. Cl. 514—227.5 **18 Claims**

1. A compound of the formula:



wherein:

R=NR_1R_2,

and when R_1=hydrogen, R_2=methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl or 1,1-dimethylethyl;

and when R_1=methyl or ethyl, R_2=methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl or 2-methylpropyl;

and when R_1=n-propyl, R_2=n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl or 2-methylpropyl;

and when R_1=1-methylethyl, R_2=n-butyl, 1-methylpropyl or 2-methylpropyl;

and when R_1=n-butyl, R_2=n-butyl, 1-methylpropyl or 2-methylpropyl;

and when R_1=1-methylethyl, R_2=2-methylpropyl;

R_3 is selected from (C_7–C_9)aralkyl group; a heterocycle group selected from 2 or 3-furanyl, 2 or 3-thienyl, 2,3 or 4-pyridyl, di(C_1–C_3)alkyl substituted pyridyl, benzofuranyl, benzothienyl, quinolinyl;

R_4 is selected from hydrogen; straight or branched (C_1–C_3)alkyl group; (C_6–C_{10})aryl group; (C_7–C_9)aralkyl group; a heterocycle group selected from 2 or 3-furanyl, 2 or 3-thienyl, 2,3 or 4-pyridyl, di(C_1–C_3)-alkyl substituted pyridyl, benzofuranyl, benzothienyl, quinolinyl or $-(CH_2)_n$ when n=1–4 and R_6 is selected from hydrogen; straight or branched (C_1–C_3)alkyl; or (C_6–C_{10})aryl; or R_3 and R_4 taken together are—$(CH_2)_2W(CH_2)$—2, wherein W is selected from $(CH_2)_n$ and n=0–1, —NH, —N(C_1–C_3)alkyl, —N(C_1–C_4)alkoxy, oxygen, sulfur or substituted congeners selected from (L or D) proline, ethyl (L or D) prolinate, morpholine, pyrrolidine or piperidine; and the pharmacologically acceptable organic and inorganic salts and metal complexes.

5,326,760

AMINOBUTANOIC ACID COMPOUNDS HAVING METALLOPROTEASE INHIBITING PROPERTIES

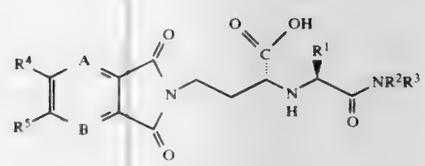
Andrew B. McElroy, Durham; Peter J. Brown, Chapel Hill; David H. Drewry, Durham; James M. Salovich, Cary, and Frank J. Schoenen, Efland, all of N.C., assignors to Glaxo, Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 905,934, Jun. 29, 1992, abandoned. This application Mar. 15, 1993, Ser. No. 31,439

Int. Cl.[5] **A61K** *31/395, 31/40*; **C07D** *209/48*

U.S. Cl. 514—235.2 **20 Claims**

1. Aminobutanoic acids of the following formula (I):



(I)

wherein:

A and B are independently CR where

R is hydrogen, halogen, C_{1-4}alkyl, C_{1-4}alkoxy;

R^1 is C_{3-6}alkyl or C_{1-4}alkylthioC_{1-4}alkyl;

R^2 is hydrogen, C_{1-4}alkyl or hydroxyC_{1-4}alkyl;

R^3 is C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}alkylamino, tris(hydroxymethyl)methyl, aryl, substituted aryl, arylsulfonyl, (substituted aryl)sulfonyl, benzylsulfonyl, heteroarylsulfonyl, (substituted heteroaryl)sulfonyl, heteroarylcarbonyl, (substituted heteroaryl)carbonyl or $-(CH_2)_nCHR^6R^7$ where

n is the integer 0, 1, 2, 3 or 4;

R^6 is hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}alkylamino;

R^7 is hydroxy, mono- or di-(C_{1-4}alkyl)amino, aryl, substituted aryl, heteroaryl, substituted heteroaryl, a saturated 5, 6, or 7 membered ring optionally interrupted by 1, 2, 3, or 4N, S, or O heteroatoms, sulfonyl or carbonyl, with the proviso that any two O or S atoms are not bonded to each other, such saturated ring optionally mono-, di-, tri-, or tetrasubstituted independently with C_{1-4}alkyl, hydroxy, oxo, nitro, hydroxyC_{1-4}alkyl, aryl, substituted aryl, aminocarbonyl or acetylamino substitutents; or

CHR^6R^7 together form a saturated 5 to 13 membered ring optionally interrupted by 1, 2, 3, or 4N, S, or O heteroatoms, sulfonyl or carbonyl, with the proviso that any two O or S atoms are not bonded to each other, such saturated ring optionally mono-, di-, or tri, or tetrasubstituted independently with C_{1-4}alkyl, hydroxy, oxo, nitro, hydroxyC_{1-4}alkyl, aryl, substituted aryl, aminocarbonyl or acetylamino substituents, a saturated 6, 7 or 8 membered bicyclic ring optionally interrupted by 1, 2, 3, or 4N, S, or O heteroatoms, with the proviso that any two O or S atoms are not bonded to each other, a 9 or 10 membered bicyclic ring which is partially aromatic, such bicyclic ring optionally mono-, di-, or trisubstituted independently with C_{1-4}alkyl, halogen, amino, hydroxy, (C_{1-2}alkylsulfonyl)amino, nitro, aminosulfonyl, carboxy, COO(C_{1-4}alkyl), trifluoromethyl, mono- or disubstituted (C_{1-2}alkyl)amino or trifluoromethylsulfonylamino substituents, a 9 or 10 membered heterobicyclic ring which is partially aromatic, interrupted by 1, 2, 3, or 4 N, S, O heteroatoms, carbonyl or sulfonyl, with the proviso that any two O or S atoms are not bonded to each other, such heterobicyclic ring optionally mono-, di-, or trisubstituted independently with C_{1-4}alkyl, halogen, amino, hydroxy, (C_{1-2}alkylsulfonyl)amino, nitro, aminosulfonyl, carboxy, COO(C_{1-4}alkyl), trifluoromethyl, mono- or disubstituted (C_{1-2}alkyl)amino or trifluoromethylsulfonylamino substituents; or

NR^2R^3 together form a saturated 5, 6, or 7 membered ring interrupted by 1, 2, 3, or 4 N, S, or O heteroatoms, sulfonyl or carbonyl, with the proviso that any two O or S atoms are not bonded to each other, such saturated ring optionally mono-, di-, or trisubstituted independently with C_{1-4}alkyl, hydroxy, nitro, aryl, substituted aryl, 2,3-dihydroxypropyl, heteroaryl, substituted heteroaryl, $-CH_2COO(C_{1-4}alkyl)$, $COO(C_{1-4}alkyl)$, amino, carboxy, acetylamino, oxo, aminosulfonyl, aminocarbonyl, trifluoromethyl, trifluoromethylsulfonylamino, mono- or di-(C_{1-4}alkyl)amino, halogen or (C_{1-4}alkylsulfonyl)amino substituents, an 9 or 10 membered heterobicyclic ring which is partially aromatic, interrupted by 1, 2, 3, or 4N heteroatoms, such heterobicyclic ring optionally mono-, di-, or trisubstituted independently with oxo, aryl, substituted aryl, heteroaryl, substituted heteroaryl, C_{1-4}alkyl, halogen, amino, hydroxy, acetylamino, (C_{1-4}alkylsulfonyl)amino, nitro, aminosulfonyl, aminocarbonyl, carboxy, COO(C_{1-4}alkyl), trifluoromethyl, mono- or disubstituted (C_{1-4}alkyl)amino, 2,3,-dihydroxypropyl or trifluoromethylsulfonylamino substituents;

R^4 is hydrogen, hydroxy, C_{1-6}alkyl, C_{1-6}alkoxy or halogen;

R^5 is hydrogen, C_{1-6}alkyl, amino, aminoC_{1-4}alkyl, mono-or di-(C_{1-4}alkyl)amino, mono- or di-(C_{1-4}alkyl)aminoC_{1-4}alkyl, acetylamino, aryl, substituted aryl, (aryl)sulfonylamino, nitro, (C_{1-4}alkyl)sulfonylamino, hydroxy, C_{1-6}alkoxy, halogen, morpholino, piperazinyl, piperidinyl, (aryl)C_{1-4}alkoxy, (substituted aryl)C_{1-4}alkoxy, aryloxy, (substituted aryl)oxy, (aryl)C_{1-4}alkyl, (substituted aryl)C_{1-4}alkyl, heteroaryl, substituted heteroaryl, (heteroaryl)C_{1-4}alkyl, (substituted heteroaryl)C_{1-4}alkyl, (heteroaryl)C_{1-4}alkoxy, (substituted heteroaryl)C_{1-4}alkoxy, heteroaryloxy or (substituted heteroaryl)oxy; or

R^4R^5 together form an aryl, substituted aryl or a saturated 5 or 6 membered ring optionally interrupted by 1, 2, or 3N, S, or O heteroatoms, with the proviso that any two O or S atoms are not bonded to each other, such saturated ring optionally mono-, di-, or trisubstituted independently with from C_{1-4}alkyl, oxo, nitro or aminosulfonyl substituents;

wherein substituted aryl is defined as an aryl mono-, di-, or trisubstituted independently with C_{1-4}alkyl, halogen, amino, hydroxy, acetylamino, (C_{1-4}alkylsulfonyl)amino, nitro, aminosulfonyl, aminocarbonyl, carboxy, COO(C_{1-4}alkyl), trifluoromethyl, mono- or disubstituted (C_{1-4}alkyl)amino, aryl, 2,3,-dihydroxypropyl or trifluoromethylsulfonylamino substituents;

wherein heteroaryl is defined as a 5 or 6 membered aromatic ring optionally interrupted by 1, 2, 3 or 4 N, S, or O heteroatoms, with the proviso that any two O or S atoms are not bonded to each other;

wherein substituted heteroaryl is defined as heteroaryl mono-, di-, or trisubstituted independently with C_{1-4}alkyl, halogen, amino, hydroxy, acetylamino, (C_{1-4}alkylsulfonyl)amino, nitro, aminosulfonyl, aminocarbonyl, carboxy, COO(C_{1-4}alkyl), trifluoromethyl, mono- or disubstituted (C_{1-4}alkyl)amino, aryl, 2,3,-dihydroxypropyl, or trifluoromethylsulfonylamino substituents; or a pharmaceutically acceptable acid-addition or organic base-addition salt thereof.

5,326,761

FLUID OPHTHALMIC COMPOSITION BASED ON LIPID MICROPARTICLES CONTAINING AT LEAST ONE ACTIVE PRINCIPLE

Annouk Rozier, Clermont-Ferrand, France, assignor to Merck Sharp & Dohme-Chibret, Paris, France

Filed Jan. 10, 1991, Ser. No. 639,478

Claims priority, application France, Jan. 12, 1990, 90 00340

Int. Cl.[5] **A61K** *31/535, 31/715*

U.S. Cl. 514—235.8 **13 Claims**

1. In a fluid ophthalmic composition comprising a fluid dispersant medium and an effective amount of at least one opthalmic pharmaceutical or diagnostic active principle, the improvement wherein the active principle is contained in lipid microparticles suspended in the fluid dispersant medium, wherein the lipid microparticles are prepared from a lipid base having a melting point of between 30° and 40° C.

5,326,762

INHIBITORS OF ACYL-COENZYME A: CHOLESTEROL ACYL TRANSFERASE

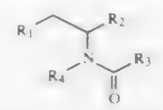
John Clader, Cranford; Sundeep Dugar, Parlin, both of N.J.; Timothy Kogan, Half Moon Bay, Calif.; Bradley Tait, Canton, Mich., and Wayne Vaccaro, Princeton, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 547,644, Jul. 3, 1990, Pat. No. 5,149,709. This application May 19, 1992, Ser. No. 885,420

Int. Cl.[5] H01N *43/40*; C07D *211/70*

U.S. Cl. 514—241 10 Claims

1. A compound represented by the formula



wherein one of R_1 and R_2 is a heteroaryl group selected from the group consisting of pyridinyl, pyrimidinyl, pyrazinyl, and triazinyl; X-substituted heteroaryl wherein X is 1 to 3 substituents independently selected from the group consisting of halogeno, lower alkyl, hydroxy, lower alkoxy, amino, lower alkylamino, lower dialkylamino, acetamido, methanesulfonylamino, carboxy and lower alkoxycarbonyl; or N-substituted triazinyl wherein the N-substituents are selected from the group consisting of lower alkyl, 2-(trimethylsilyl)ethoxymethyl and R_5CO- wherein R_5 is lower alkyl, phenyl, benzyl or 2,2-dimethylpropyl:

and the other is phenyl or X-substituted phenyl, wherein X is as defined above;

R_3 is a diphenyl substituted alkyl chain of 1 to 25 carbon atoms, branched or straight, saturated or containing one or more double bonds; or $—(CH_2)_7CH=CH(CH_2)_7CH_3$;

R_4 is hydrogen, lower alkyl, phenyl, or X-substituted phenyl;

or a pharmaceutically acceptable salt thereof.

5,326,763

METHODS FOR USING (2-IMIDAZOLIN-2-YLAMINO) QUINOXALINE DERIVATIVES

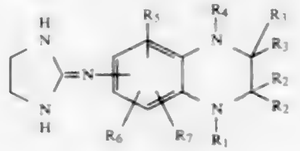
Charles Gluchowski, Pompton Lakes, N.J.; Michael E. Garst, Newport Beach, Calif.; James A. Burke, Tustin, Calif., and Larry A. Wheeler, Irvine, Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 820,329, Jan. 13, 1992, Pat. No. 5,231,096, which is a continuation-in-part of Ser. No. 758,696, Sep. 12, 1991, Pat. No. 5,204,347, which is a division of Ser. No. 420,817, Oct. 12, 1989, Pat. No. 5,077,292, and a continuation-in-part of Ser. No. 560,776, Jul. 31, 1990, Pat. No. 5,112,822, which is a continuation-in-part of Ser. No. 420,817, Oct. 12, 1989, Pat. No. 5,077,292. This application Jan. 29, 1993, Ser. No. 10,954

Int. Cl.[5] A61K *31/495, 31/50*

U.S. Cl. 514—249 16 Claims

1. A method of treating a mammal for a reduction in inflammation comprising administering to a mammal an effective amount of a compound selected from the group consisting of those having the formula



, pharmaceutically acceptable acid addition salts thereof and mixtures thereof, wherein R_1 and R_4 are independently selected from the group consisting of H and alkyl radicals having 1 to 4 carbon atoms; the R_2s are independently selected from H or alkyl radicals having 1 to 4 carbon atoms or are, together, oxo; the R_3s are independently selected from H or alkyl radicals having 1 to 4 carbon atoms or are, together, oxo; the 2-imidazolin-2-ylamino group may be in any of the 5-, 6-, 7- or 8- positions of the quinoxaline nucleus; and R_5, R_6 and R_8 each is located in one of the remaining 5-, 6-, 7- or 8- positions of the quinoxaline nucleus and is independently selected from the group consisting of Cl, Br, H and alkyl radicals having 1 to 3 carbon atoms.

5,326,764

METHOD FOR THE TREATMENT OF HYPERPROLIFERATIVE DISORDERS

Leonard M. Milstone, Hamden, and Pauline M. Schwartz, Madison, both of Conn., assignors to Yale University, New Haven, Conn.

Division of Ser. No. 783,560, Nov. 28, 1991, Pat. No. 5,242,921, which is a continuation of Ser. No. 551,053, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 187,489, Apr. 27, 1988, abandoned. This application Jun. 16, 1993, Ser. No. 77,152

Int. Cl.[5] A61K *31/505*

U.S. Cl. 514—258 8 Claims

1. A method for the treatment of hyperproliferative disorders of skin epidermal cells which comprises the concurrent administration to a patient of an efficacious amount of an inhibitor of the de novo pathway in DNA synthesis and an efficacious amount of an inhibitor of the salvage pathway in DNA synthesis, wherein the inhibitor of the de novo pathway is 5-fluorouracil and the inhibitor of the salvage pathway is dipyridamole, wherein the dipyridamole is administered topically at the site of the hyperproliferative disease and is applied at a concentration between about 0.1 and about 5 wt. %, and wherein the 5-fluorouracil is administered orally or by injection.

5,326,765

2,2,4-TRIALKYL-1,2-DIHYDROQUINAZOLINE-3-OXIDES

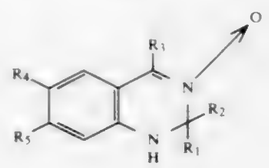
Donald W. Combs, Piscataway; Robert Falotico, Belle Mead, and Victor Bandurco, Bridgewater, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation of Ser. No. 479,915, Feb. 14, 1990, abandoned. This application Nov. 6, 1991, Ser. No. 789,379

Int. Cl.[5] A61K *31/505*; C07D *403/04*

U.S. Cl. 514—259 18 Claims

1. A compound of the formula I:



where

R_1 R_2 are the same or different and are hydrogen, C_1-C_6 alkyl, C_1-C_6 hydroxyalkyl, carboethoxyethyl or R_1 and R_2 together form a 5 to 8 membered ring;

R_3 is hydrogen or C_1-C_6 alkyl; and

R_4 and R_5 are the same or different and are hydrogen, C_1-C_6 alkoxy, methylenedioxy, halogen, methylthio or dialkylamino;

with the proviso that when R_4 and R_5 are both hydrogen, R_1 and R_2 cannot both be methyl;

with the proviso that when R_4 and R_5 are both H, R_3 is methyl, R_1 and R_2 can not be the combination of H and propyl.

5,326,766

4-(2-(4-(2-PYRIDINYLOXY)PHENYL)ETHOXY)-QUINAZOLINE AND ANALOGUES THEREOF

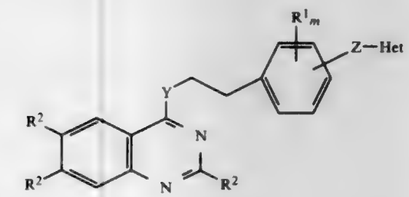
Barry A. Dreikorn, 5 All Saints Close, Marcham, Oxfordshire, England OX 136 PE ; Sylvester V. Kaster, 8720 Rosewood La., Indianapolis, Ind. 46240; Neil V. Kirby, 9731 Trilobi Dr., Indianapolis, Ind. 46236; Robert G. Suhr, 1522 Bruner Dr., Greenfield, Ind. 46140, and Brian R. Thoreen, 7344 Crickwood Pl., Indianapolis, Ind. 46268

Filed Aug. 19, 1992, Ser. No. 932,431

Int. Cl.[5] C07D *247/02, 401/12, 401/10*; A61K *31/505*

U.S. Cl. 514—259 19 Claims

1. A compound of the formula (I):



wherein:

Het is pyridyl, pyrazinyl, pyrimidinyl, or pyridizinyl, optionally substituted with one or more groups selected from halo, lower alkyl, lower alkoxy, haloalkyl, haloalkoxy, NO_2, CN, and lower alkoxy-carbonyl;

Z is a single bond connecting a carbon atom of Het to a carbon atom of the phenyl group, CH_2, NH, O, S, $—CH_2O—$, or $—OCH_2—$;

m is 4;

R^1 are independently H, halo, lower alkyl, lower alkoxy, haloalkyl, haloalkoxy, NO_2, CN, lower alkoxy-carbonyl, O-phenyl, or O-substituted phenyl;

substituted phenyl refers to phenyl substituted with lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkylthio, halo, hydroxy, NO_2, haloalkyl, haloalkoxy, haloalkylthio, CN, phenyl, O-phenyl, C_1–C_4 alkanoyloxy, or benzyloxy;

Y is CH_2, NR^3, or O, where R^3 is selected from H, lower alkyl, lower alkyl-carbonyl, lower alkyl-carbonyloxy, SOq-lower alkyl, SOq-phenyl or substituted phenyl; and q is an integer from 0 to 2;

R^2 are independently H, halo, lower alkyl, lower alkoxy, haloalkyl, haloalkoxy, NO_2, CN, or lower alkoxy-carbonyl;

or an N-oxide or salt thereof.

5,326,767

α-ARYLACRYLATES SUBSTITUTED BY A HETEROCYCLIC RADICAL, AND FUNGICIDES WHICH CONTAIN THESE COMPOUNDS

Franz Schuetz, Ludwigshafen; Thomas Kuekenhoehner, Frankenthal; Jochen Wild, Deidesheim; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

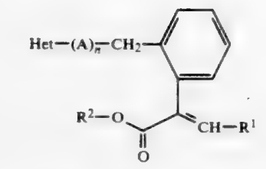
Division of Ser. No. 376,999, Jul. 7, 1989, Pat. No. 5,157,037. This application Jun. 11, 1992, Ser. No. 897,093

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1988, 3823991

Int. Cl.[5] C07D *239/38, 215/36, 213/70*; A61D *31/505*

U.S. Cl. 514—269 10 Claims

1. A compound selected from the group consisting of a compound of formula I



wherein Het is a member selected from the group consisting of 2-quinolyl; 4-methyl-2-quinolyl; 3-chloro-5-trifluoromethyl-2-pyridyl; 2-methyl-6-trifluoromethyl-4-pyrimidinyl; 4-trifluoromethyl-2-pyrimidinyl; 6-methyl-2-pyridyl; and 6-isopropyl-2-pyridyl; A is sulfur; R^1 is methoxy; R^2 is methyl; and n is 1; and its plant-tolerated acid addition salts, metal complexes, and N-oxides.

5,326,768

3,4-ANNELATED BENZIMIDAZOL-2-(1H)-ONE 1-CARBOXYLIC ACID DERIVATIVES

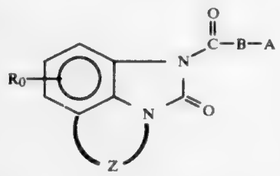
Ineke Van Wijngaarden; Derk Hamminga, and Wouter Wouters, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Division of Ser. No. 631,957, Dec. 21, 1990, Pat. No. 5,183,822. This application Sep. 28, 1992, Ser. No. 951,835

Int. Cl.[5] C07D *471/04*; A61K *31/47*

U.S. Cl. 514—292 6 Claims

1. A 3,4-annelated benzimidazol-2(1H)-one 1-carboxylic acid derivative of formula (1):



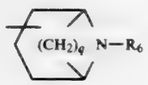
(1)

wherein

R_0 is hydrogen, alkyl, alkoxy or alkylthio having 1–4 carbon atoms, hydroxy, or halogen;

Z may be ethylene, trimethylene or tetramethylene which may optionally be substituted with 1–3 methyl groups;

A is a group of the formula (5):



(5)

wherein

q is 2 or 3 , and R_6 is alkyl having 1–4 carbon atoms, cycloalkyl having 3–6 C-atoms, cyclopropyl methyl, allyl, proparyl or benzyl, and

B is an oxygen atom or a group —N(R)—, wherein R is hydrogen, alkyl having 1–6 carbon atoms or benzyl;

or a pharmaceutically acceptable acid addition salt thereof.

5,326,769

(S)-1-[(10-CHLORO-6,7-DIHYDRO-4-OXO-3-PHENYL-4H-BENZO[A]QUINO-LIZIN-1-YL)CARBONYL]-3-ETHOX-YPYRROLIDINE

Richard R. Scherschlicht, Inzlingen, Fed. Rep. of Germany, and Ulrich Widmer, Rheinfelden, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 818,653, Jan. 6, 1992, Pat. No. 5,281,711. This application Mar. 24, 1993, Ser. No. 36,295

Claims priority, application Switzerland, Jan. 25, 1991, 228/91

Int. Cl.[5] A61K *31/435*; C07D *221/04*

U.S. Cl. 514—294 4 Claims

1. A pharmaceutical composition for treating sleep disorders which comprises an effective amount of (S)-1-[(10-chloro-6,7-dihydro-4-oxo-3-phenyl-4H-benzo[a]quinolizin-1-yl)carbonyl]-3-ethoxypyrrolidine and a therapeutically inert carrier material.

5,326,770

MONOAMINE OXIDASE-B (MAO-B) INHIBITORY 5-SUBSTITUTED 2,4-THIAZOLIDINEDIONES USEFUL IN TREATING MEMORY DISORDERS OF MAMMALS

Wendell W. Wilkerson, New Castle, Del., assignor to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

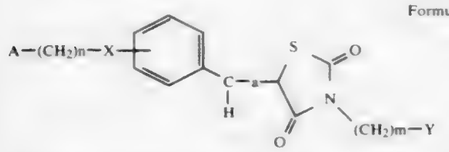
Filed Jul. 17, 1992, Ser. No. 913,963

Int. Cl.[5] A61K *31/47, 31/425*; C07D *215/16, 215/38, 215/18, 277/04*

U.S. Cl. 514—314 13 Claims

1. A compound of the Formula

Formula I



or a pharmaceutically acceptable salt thereof, wherein:

A is a straight or branched alkyl of 1 to 10 carbon atoms, phenyl optionally substituted with 1–3 substituents independently selected from the group within the definition for R^1, pyridyl or naphythyl

R^1 is H, halo, C_1 to C_{10} alkyl, alkenyl, alkynyl, bicycloalkyl, aryl optionally substituted with 1–2 substituents independently selected from the group within the definition for R^2, $-C(=O)NR^2$, $-C(=O)OR^2$, $-CHO$, $-CN$, $-NO_2$, $-N(R^2)_2$, $NR^2C(=O)R^2$, $-NR^2C(=O)OR^2$, $-NR^2C(=O)N(R^2)_2$, $-NR^2SO_2R^2$, $-OR^2$, $-OC(=O)OR^2$, $-OC(=O)N(R^2)_2$, $-SO_2N(R^2)_2$, $-S(O)R^2$, and $-SO_2R^2$;

n is 1 to 6;

X is O, S(O)p, or NCH_3

p is 0, 1, or 2;

a is a double bond;

m is 1 to 6

Y is $-CN$, $-COR^2$, $-CO_2R^2$, $-S(O)pR^2$,

or $-SCN$;

R^2 and R^3 are independently H, alkyl of 1 to 6 carbon atoms, aryl, acyl or alkaryl of 1 to 10 carbons.

5,326,771

PIPERIDYLMETHYL-SUBSTITUTED CHROMAN DERIVATIVES

Hans-Georg Heine, Krefeld; Bodo Junge, Wuppertal; Peter-Rudolf Seidel, Cologne; Rudolf Schohe-Loop, Wuppertal; Thomas Glaser, Overath; Jean M. V. De Vry, Roesrath; Wolfgang Dompert, and Henning Sommermeyer, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

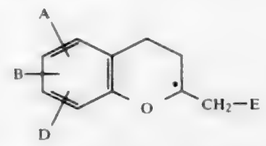
Filed Nov. 30, 1992, Ser. No. 983,988

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140542

Int. Cl.[5] A61K *31/445*; C07D *405/06, 405/14*

U.S. Cl. 514—316 15 Claims

1. Piperidylmethyl-substituted chroman derivatives of the general formula (I)



(I)

in which

A, B and D are identical or different and represent hydrogen, halogen, cyano, azido, nitro, difluoromethyl, trifluoromethyl, difluoromethoxy, trifluoromethoxy, hydroxyl or carboxyl, or represent straight-chain or branched alkyl, alkenyl, acyl or alkoxycarbonyl having in each case up to 8 carbon atoms, or represent a group of the formula $-NR^1R^2$, $-NR^3-L-R^4$ or $-OR^5$, wherein

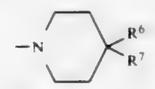
R^1, R^2 and R^3 are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, phenyl or benzyl,

L denotes the —CO— or $-SO_2-$ group,

R^4 denotes straight-chain or branched alkyl having up to 8 carbon atoms or benzyl, or phenyl, which is optionally substituted by halogen, hydroxyl, nitro, cyano, trifluoromethyl, trifluoromethoxy or by straight-chain or branched alkyl or alkoxy having up to 6 carbon atoms,

R^5 denotes straight-chain or branched alkyl or alkenyl having in each case up to 8 carbon atoms, which are optionally substituted by cycloalkyl having 3 to 6 carbon atoms or phenyl,

E represents a heterocyclic radical of the formula



wherein

R^6 denotes hydrogen, hydroxyl, halogen, phenyl or piperidinyl,

R^7 denotes straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by up to 3 identical or different substituents from the group consisting of hydroxy, straight-chain or branched alkoxy having up to 6 carbon atoms and phenyl, wherein the phenyl ring in turn can be substituted by up to 3 identical or different substituents from the group consisting of halogen, trifluoromethyl, trifluoromethoxy and cyano; denotes phenyl, which is optionally substituted by up to 3 identical or different substituents from the group consisting of halogen, trifluoromethyl, trifluoromethoxy, cyano, nitro, hydroxyl and straight-chain or branched alkyl and alkoxy having in each case up to 6 carbon atoms; or denotes a group selected from the formula $-CO-NR^8R^9$, $-CO-R^{10}$ or $-OR^{11}$, wherein

R^8 and R^9 are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or phenyl, and

R^{10} and R^{11} are identical or different and denote phenyl, which is optionally substituted by up to 2 identical or different substituents from the group consisting of halogen, cyano, nitro, trifluoromethyl and trifluoromethoxy, and salts thereof, with the proviso that R^6 does not denote hydrogen or hydroxyl if R^7 represents unsubstituted phenyl, and with the further proviso that if R^7 denotes $CONR^8R^9$ hydroxylalkyl or alkoxyalkyl then R^6 does not denote hydrogen.

5,326,772

DIARYL COMPOUNDS FOR THEIR USE

Kurt Klemm, Allensbach; Wolf-Rüdiger Ulrich, Constance, and Dieter Flockerzi, Allensbach, all of Fed. Rep. of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

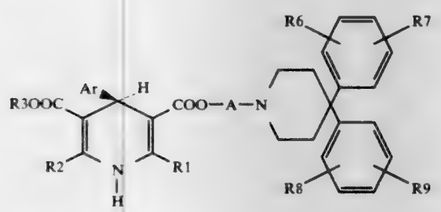
Continuation of Ser. No. 593,380, Sep. 28, 1990, abandoned, which is a continuation of Ser. No. 311,976, Feb. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 202,575, May 24, 1988, abandoned, which is a continuation-in-part of Ser. No. 31,834, Mar. 27, 1987, Pat. No. 4,975,440, which is a continuation-in-part of Ser. No. 781,808, Sep. 30, 1985, Pat. No. 4,707,486. This application May 7, 1992, Ser. No. 881,319

Claims priority, application Switzerland, Sep. 28, 1984, 04652/84-8; Sep. 28, 1984, 04653/84-0; Mar. 27, 1986, 01263/86-7; Feb. 19, 1988, 00629/88-0; Feb. 19, 1988, 00630/88-6

Int. Cl.[5] A61K *31/445*

U.S. Cl. 514—318 10 Claims

1. A method of reducing susceptible metastasis and neoplastic growth in a mammal which comprises administering to the mammal a therapeutically-effective amount of an optically-pure antineoplastic compound having only inferior calcium channel blocking activity and of formula I



(I)

wherein

Ar is a 3-nitrophenyl or 2,3-dichlorophenyl;

R1 is methyl;

R2 is methyl or amino;

R3 is methyl or ethyl;

each of R6, R7, R8 and R9 is hydrogen;

A is ethylene, propylene or A1-0-A2;

A1 is ethylene; and

A2 is ethylene;

or a pharmacologically-acceptable salt thereof.

5,326,773

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

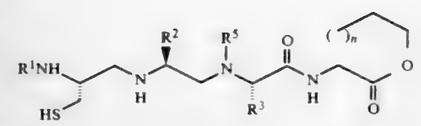
S. Jane de Solms, Norristown, and Samuel L. Graham, Schwenksville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 29, 1992, Ser. No. 968,106

Int. Cl.[5] A61K *31/44, 31/415, 31/335*; C07D *313/04*

U.S. Cl. 514—336 4 Claims

1. A prodrug of the formula IV:



IV

R^1 is hydrogen, an alkyl group, an aralkyl group, an acyl group, an aracyl group, an aroyl group, an alkylsulfonyl group, aralkylsulfonyl group or arylsulfonyl group, wherein alkyl and acyl groups comprise straight chain or branched chain hydrocarbons of 1 to 6 carbon atoms;

R^2 and R^3 are the side chains of naturally occurring amino acids, and their oxidized forms which may be methionine sulfoxide or methionine sulfone, or in the alternative may be substituted or unsubstituted aliphatic, aromatic or heteroaromatic groups, comprising allyl, cyclohexyl, phenyl, pyridyl, imidazolyl or saturated chains of 2 to 8 carbon atoms which may be branched or unbranched, wherein the aliphatic substitutents may be substituted with an aromatic or heteroaromatic ring;

R^5 is an alkyl group, wherein the alkyl group comprises straight chain or branched chain hydrocarbons of 1 to 6 carbon atoms, which may be substituted with an aromatic or heteroaromatic group;

n is 0, 1 or 2;

and the pharmaceutically acceptable salts and disulfides thereof.

5,326,774

PHARMACEUTICAL PREPARATION OF ANTIHYPERTENSIVE, ANTIANGINAL, ANTIARRHYTHMIC AND ANTIGLAUCOMIC ACTION

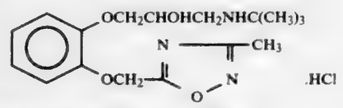
Mikhail D. Mashovsky, Leningradsky prospekt, 57-A, kv. 55; Sergei D. Juzhakov, ulitsa Ostrovityanova, 26, korpus 2, kv. 32; Leonid V. Rozenshtraukh, ulitsa Osennaya, 2, kv. 27; Oleg S. Medvedev, Berezhkovskaya naberezhnaya, 14, kv. 32; Evgeny P. Anjukhovsky, ulitsa Osennaya, 2, kv. 4; Elena V. Dorodnikova, ulitsa Garibaldi, 27, korpus 3, kv. 47; Olga V. Dolgun, ulitsa Pyrieva, 5, korpus 5, kv. 187; Aron Y. Bunin, Verkhny Mikhailovsky proezd, 10, kv. 155; Valentina N. Ermakova, Volzhsky bulvar, 20, kv. 148, all of Moscow; Vladimir I. Metelitsa, Jubileiny prospekt, 35, kv. 186, Moskovskaya oblast Khimki and Vladimir K. Piotrovsky, prospekt Mira, 184, kv. 184, Moscow, all of Russian Federation

Filed Aug. 11, 1992, Ser. No. 928,046

Int. Cl.[5] C07D *413/12*; A61K *31/42*

U.S. Cl. 524—361 6 Claims

1. A pharmaceutical preparation having antihypertensive, antianginal, antiarrhythmic and antiglaucomic effect, comprising an active principle, which is 3-methyl-5-[2-(3-tert-.butylamino-2-hydroxypropoxy)phenoxymethyl]-1,2,4-oxadiazole hydrochloride of the following formula:



.HCl

and a pharmaceutically acceptable diluent.

5,326,775

BENZOXAZOLINONYL ALKYLAMIDES

Said Yous, Lille; Isabelle Lesieur, Gondecourt; Patrick Depreux, Armentieres; Daniel H. Caignard, Paris; Béatrice Guardiola, Neuilly sur Seine; Gérard Adam, Le Mesnil le Roi, and Pierre Renard, Versailles, all of France, assignors to Adir et Compagnie, Courbevoie, France

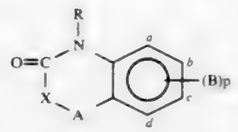
Division of Ser. No. 848,373, Mar. 9, 1992, Pat. No. 5,240,919. This application Apr. 28, 1993, Ser. No. 54,604

Claims priority, application France, Mar. 25, 1991, 91 03538

Int. Cl.[5] **C07D** *277/68*

U.S. Cl. 514—375 **15 Claims**

1. A compound selected from those formula (I):



(I)

in which:

A represents oxygen,

X represents a single bond,

R represents:

hydrogen or lower alkyl, and in this case p=1 and B represents $—CH_2—CH_2—NR_1—CO—R_2$ where R_1 represents hydrogen or linear or branched lower alkyl, and

R_2 represents:

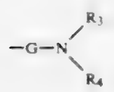
hydrogen or,

a cycloalkyl or linear branched lower alkyl, optionally substituted with halogen or,

cycloalkyl substituted with linear or branched lower alkyl or,

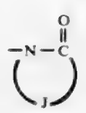
phenyl or indolyl or phenyl (lower alkyl) or substituted phenyl or substituted indolyl or substituted phenyl (lower alkyl), or

a group of the formula:



G representing linear or branched lower alkyl,

R_3 and R_4, which may be identical or different, each represent lower alkyl or hydrogen or phenyl or phenyl (lower alkyl), or R_3 and R_4, together with the nitrogen atom to which they are attached, form a pyrrolidino group optionally substituted with one or more lower alkyl, or oxo, phenyl phenyl (lower alkyl), substituted phenyl or, substituted phenyl (lower alkyl), in the definitions of R_2, R_3 and R_4, the term "substituted" qualifying phenyl and phenyl (lower alkyl) and indoyl meaning that these groups are substituted with one or more radicals chosen from lower alkyl, lower alkoxy, trifluoromethyl, and halogen, or alternatively R_1, with R_2 and the group N-Co, forms a pyrrolidinone system of formula:



J being lower-alkylene having three carbon atoms or R represents $(CH_2)_2—NR_1—CO—R_2$ with R_1 and R_2 having the same definition as given above, and in which case p equals 0 or 1 and B represents lower alkoxy, and its isomers, epimers and diastereoisomers as well as, its addition salts with a pharmaceutically-acceptable acid or base, lower alkyl and lower alkoxy having 1 to 6 carbon atoms inclusive and cycloalkyl having 3 to 8 carbon atoms inclusive.

5,326,776

ANGIOTENSIN II RECEPTOR ANTAGONISTS

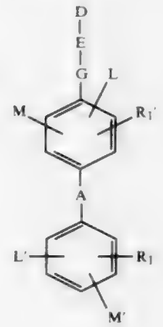
Martin Winn, Deerfield, Ill.; Biswanath De, Cincinnati, Ohio; Thomas M. Zydowsky, Waukegan, Ill.; Daniel J. Kerkman, Lake Villa, Ill.; John F. DeBernardis, Lindenhurst, Ill.; Saul H. Rosenberg, Libertyville, Ill.; Kazumi Shiosaki, Libertyville, Ill.; Fatima Z. Basha, Lake Forest, Ill.; Kenneth P. Spina, Chicago, Ill.; Thomas W. von Geldern, Richmond, Ill.; Steven Boyd, Mundelein, Ill.; Diane M. Yamamoto, Gurnee, Ill., and Anthony K. L. Fung, Gurnee, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 844,817, Mar. 2, 1992, abandoned. This application Feb. 24, 1993, Ser. No. 21,839

Int. Cl.[5] **A61K** *31/41, 31/415;* **C07D** *403/10, 403/12*

U.S. Cl. 514—382 **26 Claims**

1. A compound of the formula:



I

wherein

A is

(i) a covalent bond,

(ii) —O—,

(iii) —C(O)—,

(iv) $—CH_2—$,

(v) —S—, —S(O)— or $—S(O)_2—$;

E—G is

(i) $—N(R_5)—$,

(ii) —O—,

(iii) —S—,

(iv) $—N(R_5)—CH(R_5)—$,

(v) $—O—CH(R_5)—$,

(vi) $—S—CH(R_5)—$,

(vii) $—CH(R_5)—N(R_5)—$,

(viii) $—CH(R_5)—O—$,

(ix) $—CH(R_5)—S—$,

(x) $—N(R_5)—N(R_5)—$,

(xi) $—C(R_5)=C(R_5)—$ or

(xii) $—CH(R_5)—C(R_5')(R_5)—N(R_5)—$ wherein at each occurrence R_5 is independently selected from hydrogen, loweralkyl, alkoxy-substituted loweralkyl, halo-substituted loweralkyl, carboxy-substituted loweralkyl, heterocyclic-substituted loweralkyl, alkenyl, alkynyl, cycloalkyl or cycloalkylalkyl and R_5' is hydrogen, halo, hydroxy, carboxy, alkoxy or thioalkoxy;

L, L', M and M' are independently selected from

(i) hydrogen,

(ii) loweralkyl,

(iii) halo-substituted loweralkyl,

(iv) halo,

(v) —CN,

(vi) $—NO_2$,

(vii) —OH,

(vii) hydroxy-substituted loweralkyl,

(ix) alkoxy-substituted loweralkyl,

(x) $—NH_2$,

(xi) alkylamino,

(xii) dialkylamino,

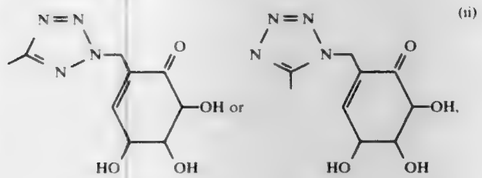
(xiii) —SH,

(xiv) alkoxy and

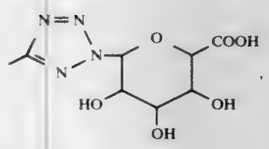
(xv) thioalkoxy;

R_1 and R_1' are independently selected from

(i) tetrazolyl,



(ii)



(iii)

and

(iv) hydrogen:

with the proviso that one of R_1 and R_1' is hydrogen, but R_1 and R_1' are not both hydrogen; and

D is a 5-membered heterocyclic ring comprising 1, 2, 3 or 4 nitrogen atoms or 2 nitrogen atoms and 1 oxygen atom or 2 nitrogen atoms and 1 sulfur atom, the remaining ring atoms being carbon atoms and the 5-membered heterocyclic ring comprising 0, 1 or 2 double bonds; the nitrogen atoms of the 5-membered heterocyclic ring can be substituted with a substituent R_2 wherein at each occurrence R_2 is independently selected from hydrogen, loweralkyl, carboxy-substituted loweralkyl or alkoxycarbonyl-substituted loweralkyl; one or two carbon atoms of the 5-membered heterocyclic ring can also be substituted with an oxo (=O) substituent and the sulfur atoms of the 5-membered heterocyclic ring can be substituted with one or two oxo (=O) substituents; the nitrogen atoms of the 5-membered heterocyclic ring can be oxidized; the 5-membered heterocyclic ring can also be substituted with one or two substituents independently selected from R_3 and R_4, R_3 being bonded to a carbon atom or a nitrogen atom of the 5-membered heterocyclic ring and R_4 being bonded to a carbon atom or a nitrogen atom of the 5-membered heterocyclic ring, wherein

R_3 is

(i) hydrogen

(ii) loweralkyl,

(iii) halo,

(iv) halo-substituted loweralkyl,

(v) thioalkoxy,

(vi) alkoxy-substituted loweralkyl,

(vii) thioalkoxy-substituted loweralkyl,

(viii) aryl,

(ix) arylalkyl,

(x) $—NO_2$, or

(xi) $—COOR_8$ wherein R_8 is hydrogen or a carboxy-protecting group, and

R_4 is

(i) hydrogen,

(ii) loweralkyl,

(iii) halo-substituted loweralkyl,

(iv) —CN,

(v) $—NO_2$,

(vi) $—NH_2$,

(vii) $—NH—C(=N(R_{25a}))(R_{26a})$ wherein R_{25a} is hydrogen, —CN or $—NO_2$ and R_{26a} is hydrogen, loweralkyl, alkylamino, dialkylamino, alkoxy or thioalkoxy,

(viii) —CHO or —CH(=N—OH),

(ix) $—NHS(O)_2R_{20}$ or $—CH_2NHS(I)_2R_{20}$ or $—NHC(O)R_{21}$ or $—N(OH)C(O)R_{21}$ or $—CH_2NHC(O)R_{21}$ or $—CH_2N(OH)C(O)R_{21}$ wherein R_{20} is loweralkyl, halo-substituted loweralkyl or $—NR_{27a}R_{27b}$ wherein R_{27a} and R_{27b} are independently selected from hydrogen, —OH and loweralkyl and R_{21} is loweralkyl, halo-substituted loweralkyl, amino, alkylamino, dialkylamino or —COOH,

(x) $—CH(OH)R_{22}$ or $—C(O)R_{22}$ wherein R_{22} is loweralkyl, halo-substituted loweralkyl, $—CF_2COOR_{23}$ or $—CH_2COOR_{23}$ wherein R_{23} is hydrogen or a carboxy-protecting group,

(xi) $—COOR_{24}$ or $—CH_2COOR_{24}$ wherein R_{24} is hydrogen or a carboxy-protecting group,

(xii) $—C(O)NR_{25}R_{26}$ or $—CH_2C(O)NR_{25}R_{26}$ or $—NHC(O)NR_{25}R_{26}$ or $—CH_2NHC(O)NR_{25}R_{26}$ or $—NHC(S)NR_{25}R_{26}$ or $—CH_2NHC(S)NR_{25}R_{26}$ wherein R_{25} and R_{26} are independently selected from hydrogen, loweralkyl, hydroxy, alkoxy, hydroxy-substituted loweralkyl, alkoxy-substituted loweralkyl, alkoxy-substituted alkoxy and $—S(O)_2R_{28a}$ wherein R_{28a} is loweralkyl or aryl;

(xiii) $—CH_2OR_{27}$ wherein R_{27} is selected from hydrogen, loweralkyl and $—C(O)R_{28}$ wherein R_{28} is hydrogen, loweralkyl or aryl;

(xiv) $—CH_2NR_{29}R_{30}$ wherein R_{29} is selected from hydrogen, loweralkyl, $—C(O)R_{31}$, $—C(O)NR_{31}R_{32}$ and $—S(O)_2R_{33}$ wherein R_{31} is selected from hydrogen, loweralkyl and aryl and R_{33} is selected from loweralkyl and halo-substituted loweralkyl and wherein R_{30} and R_{32} are independently selected from hydrogen, loweralkyl, hydroxy and alkoxy;

(xv) $—SO_3H$, $—OSO_3H$ or $—CH_2SO_3H$,

(xvi) $—OPO_3H$, $—PO_3H_2$ or $—CH_2PO_3H_2$,

(xvii) $—SO_2NR_{25}R_{26}$ or $—CH_2SO_2NR_{25}R_{26}$ wherein R_{25} and R_{26} are defined as above or

(xviii) $—C(O)NHSO_2R_{59}$, $—C(O)NHC(O)R_{59}$ or $—C(O)NHNHSO_2R_{59}$ wherein R_{59} is loweralkyl, halo-substituted loweralkyl or aryl;

or a pharmaceutically acceptable salt or prodrug thereof.

5,326,777

MICROBICIDAL COMBINATIONS OF ACTIVE COMPOUNDS

Georg-Wilhelm Ludwig, Krefeld; Otto Exner, Ratingen; Hans-Georg Schmitt, Krefeld; Karl-Heinz Büchel, Burscheid, and Graham Holmwood, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 1, 1992, Ser. No. 907,496

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1991, 4122868

Int. Cl.[5] **A01N** *43/52, 43/64*

U.S. Cl. 514—383 **1 Claim**

1. A method of protecting plastics from fungi, said method comprising applying to said plastics a fungicidally effective amount of a synergistic mixture of tebuconazole or a salt thereof and carbendazim in a synergistic weight ratio of tebuconazole to carbendazim of from 1:9 to 9:1.

VOL 1164 ISS 1 JL 5 1994 UMI

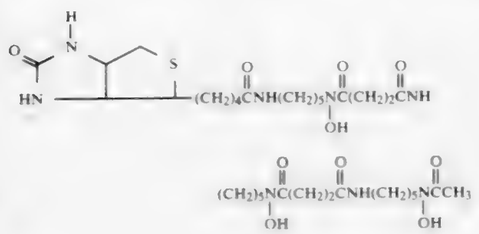
5,326,778

CONJUGATES OF BIOTIN AND DEFEROXAMINE FOR RADIOIMMUNOIMAGING AND RADIOIMMUNOTHERAPY

Scott F. Rosebrough, Avon, N.Y., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Mar. 3, 1992, Ser. No. 845,416
Int. Cl.[5] C07D *495/04*; A61K *31/415*
U.S. Cl. 514—387 **12 Claims**

1. A compound having the formula



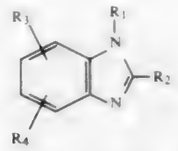
5,326,779

METHOD OF INHIBITING THE ADVANCED GLYCOSYLATION OF PROTEINS USING 1,2-DISUBSTITUTED-BENZIMIDAZOLES

Peter C. Ulrich, Old Tappan, N.J.; Anthony Cerami, Shelter Island, and Dilip R. Wagle, Valley Cottage, both of N.Y., assignors to The Rockefeller University, New York, N.Y. and Alteon Inc., Northvale, N.J.

Continuation-in-part of Ser. No. 805,200, Dec. 10, 1991, Pat. No. 5,238,963, which is a division of Ser. No. 481,869, Feb. 20, 1990, Pat. No. 5,128,360, which is a continuation-in-part of Ser. No. 220,504, Jul. 18, 1989, abandoned, which is a division of Ser. No. 798,032, Nov. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192. This application Dec. 8, 1992, Ser. No. 986,673
Int. Cl.[5] A61K *31/415*
U.S. Cl. 514—395 **11 Claims**

1. A method for inhibiting the advanced glycosylation of a target protein comprising contacting the target protein with an effective amount of composition comprising a compound selected from the group consisting of compounds of the formula



(I)

wherein R_1 is hydrogen or an amino group; R_2 is an amino group or a guanidino group when R_1 is hydrogen; or R_2 is an amino group when R_1 is an amino group; R_3 and R_4 are independently hydrogen, hydroxy, a lower alkyl group, a lower alkoxy group, or an aryl group; and their biologically or pharmaceutically acceptable acid or alkali addition salts; and mixtures thereof, and a carrier therefor.

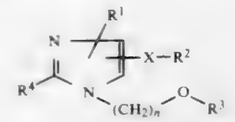
5,326,780

IMIDAZOLE DERIVATIVES HAVING ANTI-HIV ACTIVITY

Hirohiko Sugimoto, Suita; Masaru Ogata, Kobe; Hiroshi Matsumoto, Ibaraki; Ken-ichi Sugita, Kashiwara; Akihiko Sato, Ibaraki, and Tamio Fujiwara, Kobe, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jan. 12, 1993, Ser. No. 3,126
Claims priority, application Japan, Jan. 16, 1992, 4-005577
Int. Cl.[5] A61K *31/415*; C07D *233/84, 233/66, 233/60*
U.S. Cl. 514—398 **7 Claims**

1. A compound of the formula



wherein

R^1 is C_1–C_{10} alkyl or phenyl which is unsubstituted or may be substituted by C_1–C_{10} alkyl, halogen, nitro, amino, hydroxy, or C_1–C_{10} alkoxy;

R^2 is phenyl which is unsubstituted or may be substituted by C_1–C_{10} alkyl, halogen, nitro, amino, hydroxy, C_1–C_{10} alkoxy or benzyloxy;

R^3 is C_1–C_{10} alkyl; phenyl which is unsubstituted or may be substituted by C_1–C_{10} alkyl, halogen, nitro, amino, hydroxy or C_1–C_{10} alkoxy; benzyl; hydroxy-(C_1–C_{10})alkyl which is unsubstituted or may be substituted by C_1–C_{10} alkyl, phenyl, benzoyl, 4-nitrobenzoyl, 4-tert-butylbenzoyl, benzenesulfonyl, toluenesulfonyl, formyl, acetyl, propionyl, butyryl or valeryl;

R^4 is hydrogen; C_1–C_{10} alkyl; halogen; benzoyl; 4-nitrobenzoyl; 4-tert-butylbenzoyl; benzenesulfonyl; toluenesulfonyl; formyl; acetyl; propionyl; butyryl; valeryl; hydroxy-(C_1–C_{10})alkyl which is unsubstituted or may be substituted by C_1–C_{10} alkyl, phenyl, benzyl, benzoyl, 4-nitrobenzoyl, 4-tert-butylbenzoyl, benzenesulfonyl, toluenesulfonyl, formyl, acetyl, propionyl, butyryl or valeryl;methoxycarbonyl;ethoxycarbonyl;tert-butoxycarbonyl; benzyloxycarbonyl; carbamoyl; or hydroxy;

X is S, SO, SO_2, CH_2, or Se; and

n is an integer of 1 or 3,

or a pharmaceutically acceptabe salt thereof.

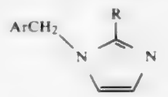
5,326,781

MEDICAMENTS

Ann J. Hunter, Harlow; Rodney C. Young, Hertford, and Lars M. Wood, London, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

PCT No. PCT/GB91/00724, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO91/16890, PCT Pub. Date Nov. 14, 1991
PCT Filed May 7, 1991, Ser. No. 946,366
Claims priority, application United Kingdom, May 9, 1990, 9010366.4
Int. Cl.[5] A01N *43/38*
U.S. Cl. 514—410 **3 Claims**

1. A method of treating anxiety and/or cognitive disorders in a host in need thereof which comprises administering an effective amount of a compound of the formula (1):



Formula (1)

wherein

Ar is 3,5-difluorophenyl, 2,6-dichlorophenyl, 3,4-dihydroxyphenyl, or 3-fluoro-4-methoxyphenyl and

R is SH, or

Ar is phenyl and R is CH_2NH_2 or CH_2OH,

or a pharmaceutically acceptable salt thereof.

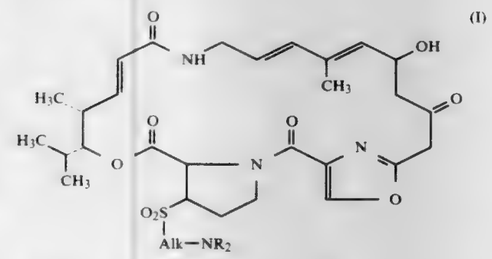
5,326,782

SALTS DERIVED FROM 26-(DIALKYLAMINOALKYLSULPHONYL)PRISTINAMYCIN IIB

Jean-Claude Barriere, Bures-sur-Yvette; Jean-Pierre Corbet, Ecully; Jean-Marc Paris, Vaires-sur-Marne, and Xavier Radisson, Lyons, all of France, assignors to Rhone-Poulenc Rorer S.A., France

PCT No. PCT/FR91/00582, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO92/01694, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 15, 1991, Ser. No. 961,925
Claims priority, application France, Jul. 16, 1990, 90 09037
Int. Cl.[5] A61K *31/42*; C07D *498/16*
U.S. Cl. 514—411 **7 Claims**

1. Salts of 26-((2-dialkylaminoalkyl)sulphonyl) pristinamycin II_B (26S) formula:



(I)

in which Alk represents a linear or branched alkylene radical and R represents linear or branched alkyl radicals, said alkyl radicals containing 1 to 10 carbon atoms, said salts are chosen from di-p-toluyltartrate, di-t-butylacetyltartrate, di-butyryltartrate and di-i-valeryltartrate.

7. Method for use of a salt according to claim 1 as a purification means for a [26-[(2-dialkylaminoalkyl)sulphonyl]pristinamycin]26-((2-dialkylaminoalkyl)-sulphonyl)pristinamycin II_B as defined in claim 1.

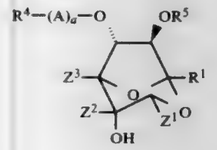
5,326,783

CHOLESTEROL LOWERING COMPOUNDS

Tesfaye Biftu, Westfield; Chan-Hwa Kuo, South Plainfield, and Conrad Santini, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 935,485, Aug. 25, 1992, abandoned. This application Jan. 19, 1993, Ser. No. 4,875
Int. Cl.[5] A61K *31/335, 31/365*; C07D *405/06, 319/04*
U.S. Cl. 514—452 **14 Claims**

1. A compound of structural formula (I)



(I)

wherein

A is —C(O)—, —NR^3—C(O)—, or —OC(O)—;

a is zero or 1;

R^1 is selected from the group consisting of:

(1) $C_{1\text{-}20}$alkyl,

(2) substituted $C_{1\text{-}20}$alkyl in which one or more substituents is selected from a group herein termed X^3 wherein the group X^3 consists of.

(a) halogen,

(b) hydroxy,

(c) R^3R^3N—,

(d) R^2O—,

(e) R^2O—C(O)—,

(f) R^3—C(O)—O—,

(g) oxo,

(h) $C_{3\text{-}10}$cycloalkyl,

(i) aryl substituted with X and Y,

(j) heteroaryl substituted with X and Y,

(k) heterocycloalkyl,

(l) aryl $S(O)_n$, wherein aryl is substituted with X and Y,

(m) R^3—C(O)—NR^3—,

(n) R^3R^3N—C(O)—,

(o) —CO_2H,

(p) —vinylidene,

(q) R^3—C(O)—,

(r) R^2O—C(O)—O—,

(s) R^3R^3N—C(O)—O—, and

(t) R^2O—C(O)—NR^3—;

(3) $C_{1\text{-}20}$alkyl wherein one or more of the carbons is replaced by —NR^3—, —O—, or —$S(O)_n$—;

(4) substituted $C_{1\text{-}20}$alkyl wherein one or more of the carbons is replaced by —NR^3—, —O— or —$S(O)_n$— and wherein one or more carbon substituents is selected from the group X^3, defined above;

(5) aryl substituted with X and Y;

(6) heteroaryl substituted with X and Y;

(7) $C_{2\text{-}20}$alkenyl wherein alkenyl contains one or more double bonds;

(8) substituted $C_{2\text{-}20}$alkenyl wherein alkenyl contains one or more double bonds and wherein one or more of the saturated carbons is substituted with a substituent selected from the group X^3, defined above;

(9) $C_{2\text{-}20}$alkenyl wherein alkenyl contains one or more double bonds and one or more of the nonolefinic carbons is replaced by —NR^3—, —O— or —$S(O)_n$—;

(10) substituted $C_{2\text{-}20}$alkenyl wherein alkenyl contains one or more double bonds and one or more of the nonolefinic carbons is replaced by —NR^3—, —O— or —$S(O)_n$— and wherein one or more of the saturated carbons is substituted with a substituent selected from the group X^3, defined above;

(11) $C_{3\text{-}10}$cycloalkyl;

(12) substituted $C_{3\text{-}10}$cycloalkyl in which one or more of the substituents is selected from the group consisting of $C_{1\text{-}10}$alkyl—$S(O)_n$—, $C_{1\text{-}10}$alkyl, and the members of the group X^3, defined above;

each R^2 is independently selected from:

(1) $C_{1\text{-}10}$alkyl;

(2) aryl substituted with X and Y;

(3) aryl$C_{1\text{-}4}$alkyl wherein aryl is substituted with X and Y;

(4) heteroaryl wherein heteroaryl is substituted with X and Y;

(5) heteroaryl$C_{1\text{-}4}$alkyl— wherein heteroaryl is substituted with X and Y;

(6) heterocycloalkyl$C_{1\text{-}4}$alkyl—;

(7) $C_{2\text{-}10}$alkenyl;

(8) aryl$C_{2\text{-}10}$alkenyl wherein aryl is substituted with X and Y; and

(9) $C_{3\text{-}10}$alkynyl;

each R^3 is independently selected from:

(1) $C_{1\text{-}10}$alkyl;

(2) aryl substituted with X and Y;

(3) aryl$C_{1\text{-}4}$alkyl wherein aryl is substituted with X and Y;

(4) heteroaryl wherein heteroaryl is substituted with X and Y;

(5) heteroaryl$C_{1\text{-}4}$alkyl— wherein heteroaryl is substituted with X and Y;

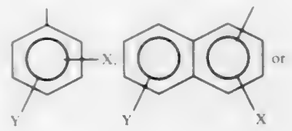
(6) heterocycloalkyl$C_{1\text{-}4}$alkyl—;

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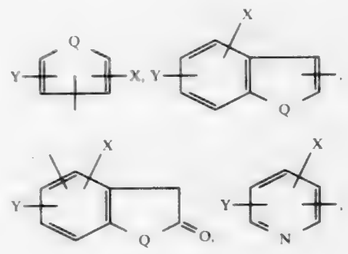
(7) C_{2-10}alkenyl;
(8) arylC_{2-10}alkenyl wherein aryl is substituted with X and Y;
(9) C_{3-10}alkynyl;
(10) hydrogen; and
(11) C_{1-5}alkyl substituted with X^1;

R^4 is selected from the group consisting of:
(1) C_{1-20}alkyl;
(2) substituted C_{1-20}alkyl in which one or more substituents is selected from the group X^3, defined above;
(3) C_{1-20}alkyl wherein one or more of the carbons is replaced by $—NR_3—$, —O—, or $—S(O)_n—$;
(4) substituted C_{1-20}alkyl wherein one or more of the carbons is replaced by $—NR^3—$, —O— or $—S(O)_n—$ and wherein one or more carbon substituents is selected from the group X^3, defined above;
(5) aryl substituted with X and Y;
(6) heteroaryl substituted with X and Y;
(7) C_{2-20}alkenyl wherein alkenyl contains one or more double bonds;
(8) substituted C_{2-20}alkenyl wherein alkenyl contains one or more double bonds and wherein one or more of the saturated carbons is substituted with a substituent selected from the group X^3, defined above;
(9) C_{2-20}alkenyl wherein alkenyl contains one or more double bonds and one or more of the nonolefinic carbons is replaced by $—NR^3—$, —O— or $—S(O)_n—$;
(10) substituted C_{2-20}alkenyl wherein alkenyl contains one or more double bonds and one or more of the nonolefinic carbons is replaced by $—NR^3—$, —O—, or $—S(O)_n—$ and wherein one or more of the saturated carbons is substituted with a substituent selected from the group X^3, defined above;
(11) C_{2-20}alkynyl wherein alkynyl contains one or more triple bonds;
(12) substituted C_{2-20}alkynyl wherein alkynyl contains one or more triple bonds and wherein one or more of the saturated carbons is substituted with a substituent selected from the group X^3, defined above;
(13) C_{2-20}alkynyl wherein alkynyl contains one or more triple bonds and one or more of the saturated carbons is replaced by $—NR^3—$, —O—, or $—S(O)_n—$;
(14) substituted C_{2-20}alkynyl wherein alkynyl contains one or more —triple bonds— and one or more of the saturated carbons is replaced by $—NR^3—$, —O—, or $—S(O)_n—$ and wherein one or more of the saturated carbons is substituted with a substituent selected from the group X^3, defined above;
(15) aryl substituted with X and Y;
(16) heteroaryl substituted with X and Y;
(17) C_{3-5}cycloalkyl;
(18) substituted C_{3-5}cycloakyl in which one or more of the substituents is selected from:
(a) $R^3O—$, and
(b) $R^3R^3N—$; and
(19) hydrogen;

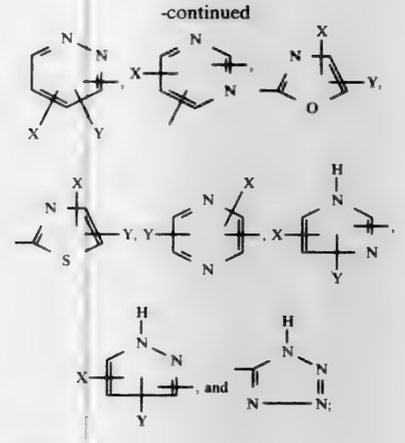
aryl including X, Y substitution is:



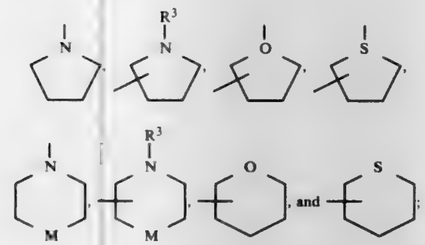
heteroaryl including X, Y substitution is selected from



-continued



wherein:
Q is $—NR^3$, —O— or —S—;
heterocycloalkyl is selected from:



wherein:
M is $—NR^3$, —O—, —S— or $—CH_2—$;
X and Y are each independently selected from:
(1) hydrogen;
(2) hydroxy;
(3) halogen;
(4) trifluoromethyl;
(5) C_{1-10}alkyl;
(6) aryl substituted with X^1 and Y^1;
(7) $R^2O—$;
(8) arylcarbonyloxy—, wherein aryl is substituted with X^1 and Y^1;
(9) $R^3—C(O)—O—$;
(10) $—CO_2R^2$;
(11) $—CO_2H$; and
(12) nitro; and
X^1 and Y^1 are each independently selected from:
(1) hydrogen;
(2) hydroxy;
(3) halogen;
(4) trifluoromethyl;
(5) C_{1-4}alkyl;
(6) $R^2O—$;
(7) $R^3—C(O)—O—$;
(8) $—CO_2R^2$;
(9) $—CO_2H$; and
(10) nitro;
or the pharmaceutically acceptable salt thereof.

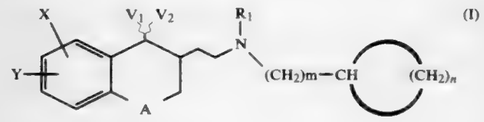
5,326,784

CYCLOALKYLALKYLAMINES WHICH ARE SIGMA-RECEPTOR LIGANDS AND THEIR APPLICATION IN THERAPY

Jean-Louis Junien, Sevres; Alain Calvet, L'Hay-les-Roses; Henri Jacobelli, Paray-Vieille-Poste, and Francois Roman, Vitry-sur-Seine, all of France, assignors to Institut de Recherche Jouveinal, Fresnes, France

Filed Jul. 29, 1993, Ser. No. 99,299
Claims priority, application France, Jul. 31, 1992, 92 09536
Int. Cl.[5] A61K *31/135, 31/35;* **C07C** *211/19;* **C07D** *311/74*
U.S. Cl. 514—456 **18 Claims**

1. New cycloalkylalkylamines which are sigma-receptor ligands of general formula (I)



(I)

in which:
R_1 is H or lower alkyl;
X and Y, which may be identical or different, are H, OH, lower alkyl, lower alkoxy, halogen or nitrile;
V_1 and V_2 together form a double bond attached to an oxygen atom or else to a hydroxyimino radical N—OH, or else are linked as an ethylenedioxy chain $—O—CH_2—CH_2—O—$;
A represents a valency bond, an oxygen atom, a methylene group or alternatively an ethylene group;
m is equal to 1 or 2;
n has the value of an integer from 2to 5; and their addition salts with pharmaceutically acceptable acids.

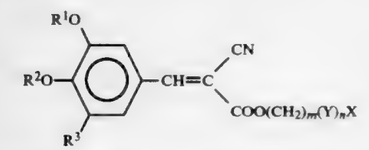
5,326,785

CAFFEIC ACID DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Hidetsura Cho, Ibaraki; Mie Tamaoka, Uda; Seiitsu Murota, and Ikuo Morita, both of Tokyo, all of Japan, assignors to Suntory Limited, Osaka, Japan

Continuation of Ser. No. 750,396, Aug. 27, 1991, Pat. No. 5,232,941. This application Mar. 31, 1993, Ser. No. 40,604
Claims priority, application Japan, Aug. 30, 1990, 2-26493
Int. Cl.[5] C07D *317/08;* **A61K** *31/21*
U.S. Cl. 514—465 **2 Claims**

1. A caffeic acid compound represented by the following formula (I):



(I)

wherein one of R^1 and R^2 is a member selected from the group consisting of a hydrogen atom, a C_1–C_6 alkyl group, a group $—CO_2R^4$, R^4 representing a C_1–C_{12} alkyl group, a C_6–C_{10} aryl group, a hydrogen atom or a C_7–C_6 alkyl group and R^6 representing a hydrogen atom or a C_1–C_6 alkyl group, and the other of R^1 and R^2 is the group $—CO_2R^4$ or the group $—CONR^5R^6$, or R^1 and R^2 are coupled together to represent a 5-membered ring so formed, Y represents a vinylene group, an oxygen atom or a sulfur atom, X represents a substituted or unsubstituted C_6–C_{10} aryl group, or a substituted or unsubstituted C_7–C_{12} aralkyl group, m means an integer of 0–8, n denotes an inter of 0 or 1, and R_3 represents a hydrogen atom, a hydroxyl group, a group $—OCO_2R^7$, R^7 representing a C_1–C_{12} alkyl group, a

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C_6–C_{10} group, a hydrogen atom or a C_7–C_{12} aralkyl group, or a group —$OCONR^8R^9$, R^8 representing a C_1–C_6 alkyl group and R^9 representing a hydrogen atom or a C_1–C_6 alkyl group, or a pharmaceutically acceptable salt thereof.

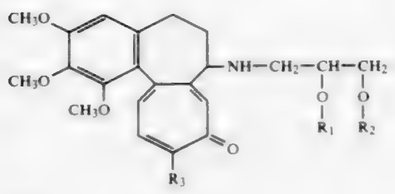
5,326,786

5,6,7,9-TETRAHYDRO-1,2,3-TRIMETHOXY-9-OXOBENZO[ALPHA]HEPTALENE DERIVATIVE AND PHARMACEUTICAL USE

Kiyoshi Akiyama, Komatsu, Japan, assignor to Ohgen Research Laboratories Ltd., Ishikawa, Japan

Filed Apr. 23, 1993, Ser. No. 51,297
Claims priority, application Japan, Dec. 28, 1992, 4-358821
Int. Cl.[5] A61K *31/13;* **C07C** *225/20*
U.S. Cl. 514—467 **5 Claims**

1. A compound represented by the following formula and a salt thereof:



(I)

wherein

R_1 and R_2 each represent a hydrogen atom or a protective group for a hydroxyl group, or R_1 and R_2 combine to represent a protective group for hydroxyl groups, and

R_3 represents CH_3O— or CH_3NH—.

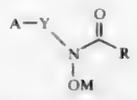
5,326,787

CYCLOALKYL N-HYDROXY DERIVATIVES HAVING LIPOXYGENASE INHIBITORY ACTIVITY

Dee W. Brooks, Libertyville; Jimmie L. Moore, Gurnee, both of Ill., and Karen E. Rodriques, Stow, Mass., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 883,618, May 12, 1992, abandoned. This application Aug. 25, 1993, Ser. No. 111,764
Int. Cl.[5] A01N *55/02*
U.S. Cl. 514—507 **5 Claims**

1. A compound having the structure



or a pharmaceutically acceptable salt thereof wherein

M represents hydrogen, a pharmaceutically acceptable cation, or a pharmaceutically acceptable metabolically cleavable group;

R is NR^1R^2 wherein

R^1 is selected from the group consisting of
hydrogen,
hydroxyl,
alkyl of from one to six carbon atoms,
hydroxyalkyl of from one to six carbon atoms, and
alkoxyalkyl in which the alkoxy portion and the alkyl portion each contain, independently, from one to six carbon atoms; and

R^2 is selected from the group consisting of
hydrogen,
alkyl of from one to six carbon atoms,
hydroxyalkyl of from one to six carbon atoms,
alkoxyalkyl in which the alkoxy and the alkyl portion each contain, independently, from one to six carbon atoms, and
alkanoyl of from two to eight carbon atoms;

A is selected from the group consisting of
(a) cycloalkyl of from three to eight carbon atoms, and
(b) optionally substituted cycloalkyl of from three to eight carbon atoms,
wherein the optional substituents on the cycloalkyl groups are selected from the group consisting of
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
alkoxyalkyl,
hydroxy, and
halogen; and

Y is selected from the group consisting of
alkylene of from one to six carbon atoms,
alkenylene of from two to six carbon atoms, and
cyclopropyl;
with the proviso that when A is cyclopropyl then Y is not alkylene.

5,326,788

BIOLOGICAL FLUID PURIFICATION SYSTEM

Daniel Meruelo, Scarborough, and Gad Lavie, New York, both of N.Y., assignors to New York University, New York, N.Y.

Continuation of Ser. No. 299,971, Jan. 19, 1989, Pat. No. 5,149,718. This application Jul. 1, 1992, Ser. No. 907,080
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] A61K *31/05, 31/045;* **A61F** *5/44;* **A61B** *19/00*
U.S. Cl. 514—732 **31 Claims**

1. An article of manufacture for holding a biological fluid and including means to inactivate any virus in such fluid, comprising:

container means for holding a biological fluid which may be contaminated with a virus, and

an effective amount for inactivating said virus of at least one antiviral compound selected from the group consisting of antiviral effective aromatic polycyclic diones; antiviral effective analogs, isomers, homologs and derivatives of said aromatic polycyclic diones; physiologically acceptable salts of said diones, analogs, isomers, homologs and derivatives; and mixtures of said diones, analogs, isomers, homologs, derivatives and salts, said compound being present in said container means for contacting said fluid when said fluid is introduced into said container means.

5,326,789

WATER-BASED MICROEMULSIONS OF A TRIAZOLE FUNGICIDE

Kolazi S. Narayanan, Palisades Park, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 654,250, Feb. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,014, Jun. 28, 1990, Pat. No. 5,156,666, which is a continuation-in-part of Ser. No. 505,030, Apr. 5, 1990, Pat. No. 5,160,528, which is a continuation-in-part of Ser. No. 448,707, Dec. 11, 1989, Pat. No. 5,072,463. This application Oct. 22, 1992, Ser. No. 964,803
Int. Cl.[5] A01N *25/00, 43/64*
U.S. Cl. 514—788 **15 Claims**

1. An inert matrix composition for forming a clear, efficacious aqueous microemulsion upon admixture with a predetermined amount of a triazole fungicide and dilution water, which is stable at or below room temperature for an extended period of time, consisting essentially of:

(i) a predetermined mixture of nonionic surfactants comprising:

(a) about 5–30% of a C_6–C_{18} alkylpyrrolidone;

(b) about 5–30% of an alkyl phenol ethoxylated alcohol with an HLB ≥ 6; and

an anionic surfactant comprising:

(a') a metal salt of dodecylsulfate, dodecylbenzene sulfonate, dodecyltoluene sulfonate or lignin sulfonate, and

(iii) about 5–40% water;

(iv) up to 60% by weight of an N-alkyl(C_1–C_4)pyrrolidone; by weight of the composition.

5,326,790

ADMINISTRATION OF SKIN MEDICATIONS BY USE OF DICARBOXYLIC ACIDS AND DERIVATIVES

Carl R. Thornfeldt, Ontario, Oreg., assignor to Dermatologic Research Corporation, Napa, Calif.

Continuation-in-part of Ser. No. 324,997, Mar. 15, 1989, abandoned, which is a division of Ser. No. 164,317, Mar. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 932,954, Nov. 19, 1986, abandoned. This application Apr. 16, 1992, Ser. No. 869,920
Int. Cl.[5] A01N *37/02, 25/00*
U.S. Cl. 514—784 **14 Claims**

1. A method for administering a therapeutic agent to a subject suffering from a disease controllable thereby, said method comprising administering to said subject a composition comprising:

(a) a therapeutically effective amount of said therapeutic agent, and

(b) a therapeutically effective of a compound selected from the group consisting of dicarboxylic acids having 7 to 13 carbon atoms, and mono- and dimercapto derivatives, salts, monoglyceride esters, sucrose esters, amides and anhydrides thereof.

5,326,791

PROCESS FOR SEPARATION OF HYDROLYZABLE FROM NON-HYDROLYZABLE WASTE PLASTICS FOR RECOVERY OF STARTING MATERIALS AND OTHER CONVERSION PROCESSES, RESPECTIVELY

Ramzi Y. Saleh, Flemington, and William E. Wellman, Edison, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 20, 1991, Ser. No. 812,176
Int. Cl.[5] C08J *11/14*
U.S. Cl. 521—45 **5 Claims**

1. A process for the reactive separation of certain hydrolyzable polymers from certain non-hydrolyzable polymers in mixtures thereof, comprising:

(a) contacting the starting materials of neutral liquid water and a mixture of non-hydrolyzable polymers selected from the group consisting of polyolefins and hydrolyzable polymers;

(b) heating the starting materials to a temperature of from about 200° C. up to the critical temperature of water at autogeneous pressure for a time sufficient to selectively convert the hydrolyzable polymers to corresponding water-soluble components; and

(c) separating the water soluble components from the non-hydrolyzable polymers at reaction conditions in (b).

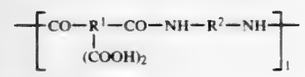
5,326,792

POLYIMIDE PHOTOSENSITIVE COVER COATING AGENT

Yoshinori Masaki; Kouichi Kunimune, both of Ichiharashi, and Hirotoshi Maeda, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

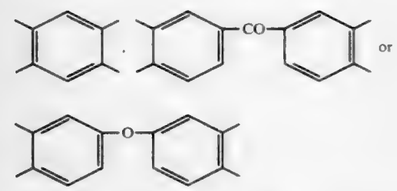
Filed Nov. 23, 1992, Ser. No. 980,164
Claims priority, application Japan, Dec. 9, 1991, 3-350325
Int. Cl.[5] C08F *2/48;* **C08J** *3/28;* **C08G** *73/10*
U.S. Cl. 522—135 **3 Claims**

1. A photosensitive cover coating agent obtained by mixing a polymer (A) comprising repetition units expressed by the formula



(I)

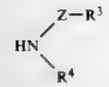
wherein R^1 represents



and R^2 represents a divalent organic group,

a compound (B) having two or more acryloyl groups or methacryloyl groups in one molecule,

a compound (C) expressed by the formula (II)



wherein Z represents a divalent aliphatic group or alicyclic group, R^3 represents a hydrogen atom, a monovalent organic group or a group represented by an aliphatic group, an alycyclic group, an aromatic group, an araliphatic group of 1 to 10 carbon atoms, an unsaturated bond, hydroxyl group, carboxyl group, ether, amide, ester or ketone and R^4 represents a hydrogen atom or —Z—R^3, in 0.01 to 0.80 molar equivalent based upon the compound (B), the total quantity of (B) and (C) being 20 to 200 parts by weight based upon 100 parts by weight of (A) and

a photopolymerization initiator or a sensitizing agent (D) in a quantity of 0.5 to 20 parts by weight based upon 100 parts by weight of (A).

5,326,793

GLASS FIBER REINFORCED POLYCARBONATE/POLYESTER BLENDS

Robert R. Gallucci, Mt. Vernon, Ind., and Kelvin T. Okamoto, Wilmington, Del., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 523,162, May 14, 1990, abandoned. This application Aug. 10, 1990, Ser. No. 565,850
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] C08J *8/32*
U.S. Cl. 523—217 **6 Claims**

1. A thermoplastic resin composition comprising:

(a) an aromatic polycarbonate resin present at a level of from 4% to 49% by weight based on the total weight of said composition;

(b) a poly(1,4 butyleneterephthalate) resin present at a level of from 50% to 95% by weight based on the total weight of said composition; and

(c) a glass fiber reinforcing agent treated with a sizing agent selected from the group consisting of diepoxy functional cyanurates, triepoxy functional cyanurates, diepoxy functional isocyanurates, and triepoxy functional isocyanurates.

5,326,794

BARBITURIC ACID-MODIFIED BISMALEIMIDE WITH DIAMINE AND POLYISOCYANATE-MODIFIED EPOXY RESIN

Jing-Pin Pan, Hsinchu; Chuen-Chyr Chen, Taichung; Gwo-Yuh Shiau, and Ker-Ming Chen, both of Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Continuation-in-part of Ser. No. 520,465, May 8, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 911,692

Int. Cl.[5] **C08L** *63/02, 63/04, 63/06;* **C08K** *5/07*

U.S. Cl. 523—454 **2 Claims**

1. A process for manufacturing resins for use in a high glass transition temperature printed circuit board comprising:

dissolving bismaleimide in a cosolvent of butyrolactone/-methyl ethyl ketone wherein the weight of the cosolvent is 0.7 to 0.9 times that of the bismaleimide and the ratio by weight of butyrolactone/methyl ethyl ketone is from 5:1 to 3:1, and then adding a barbituric acid or its derivative whereby said bismaleimide undergoes reaction with said barbituric acid, the reaction of said bismaleimide with said barbituric acid being carried out at a temperature between 100° and 130° C. for about 0.5 to 1 hour to form a first product;

dissolving an epoxy resin modified with a secondary diamine and polyisocyanate into 0.75 to 0.95 times by weight of a cosolvent of butyrolactone-methyl ethyl ketone having a ratio by weight of butyrolactone/methyl ethyl ketone of 0.25/1 to 0.35/1 at a temperature between 100° to 150° C. and then cooling to about 50° to 85° C., adding a curing agent dissolved in a solvent to form a first solution, adding said first solution into said first product and then stirring for 0.5 to 1.5 hour at a temperature of about 70° to 130° C. to produce the resins.

5,326,795

STORAGE-STABILITY ADDITIVES FOR UNSATURATED THERMOSETTABLE RESINS

Paul L. Wykowski, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 99,107, Jul. 28, 1993, abandoned, which is a division of Ser. No. 861,685, Apr. 1, 1992, Pat. No. 5,272,197, which is a continuation-in-part of Ser. No. 464,491, Jan. 12, 1990, abandoned. This application Oct. 20, 1993, Ser. No. 139,969

Int. Cl.[5] **C08K** *5/07;* **C08J** *5/08*

U.S. Cl. 523—454 **8 Claims**

1. A storage stable thermosettable ethylenically unsaturated resin composition comprising (1) at least one vinyl ester resin resulting from reacting a polyepoxide with an unsaturated monocarboxylic acid; and (2) at least one 1,4-naphthoquinone substituted on the 2 or 3 or both the 2 and 3 positions with a Cl, Br, nitro or cyano substituent; wherein component (2) is present in an amount of from about 5 to about 20,000 parts per million parts by weight based upon the combined weight of components (1) and (2).

5,326,796

USE OF AN ARYLSULPHONYLURETHANE AS FILM FORMING RESIN IN NITROCELLULOSE NAIL VARNISHES, NEW ARYLSULPHONYLURETHANES AND NEW NITROCELLULOSE NAIL VARNISHES

Maryse LeCacheur, Bergerac; Eric Wimmer, Saint Jaen de Braye, and Vincent Mutterer, Stasbourg, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

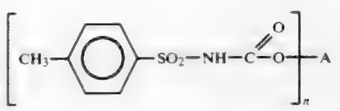
Filed May 4, 1993, Ser. No. 57,082

Claims priority, application France, May 6, 1992, 92 05560

Int. Cl.[5] **C08L** *1/18;* **C07C** *265/12*

U.S. Cl. 524—31 **8 Claims**

1. A poly(arylsulphonylurethane) of molecular weight 450–1500 of formula (II)



(II)

wherein n is an integer and $2 \leqq n \leqq 5$ and A is a di-, tri, tetra- or pentavalent organic radical, depending whether n is equal to 2, 3, 4 or 5 respectively, and A is the residue of a polyol of structure

$$A{+}OH)_n$$

and A is a member selected from the group consisting of polymethylene glycols, polyoxyalkylene glycols, polyethertriols, polyethertetraols, glycerol, trimethylolalkanes and xylitol.

5,326,797

FIRE RESISTANT ROOFING ASPHALT COMPOSITION

Harold Zimmerman, Little Rock, Ark.; David Ploense, North Richland Hills, Tex.; Robert Lilleston, Downey, Calif., and Mario Butera, North Little Rock, Ark., assignors to GS Roofing Products Company, Inc., Irving, Tex.

Division of Ser. No. 838,567, Feb. 19, 1992, Pat. No. 5,169,690, which is a division of Ser. No. 499,627, Mar. 26, 1990, Pat. No. 5,100,715. This application Aug. 31, 1992, Ser. No. 938,855

Int. Cl.[5] **C08L** *95/00;* **C08K** *5/06, 5/02, 3/10*

U.S. Cl. 524—59 **16 Claims**

1. A fire resistant roofing asphalt composition capable of achieving an unrestricted UL Class A rating when applied to layers of fiberglass and polyester mats consisting essentially of:

a thermoplastic elastomer modified bitumen;

a filler; and

no greater than about 10 percent by weight of a fire retardant consisting essentially of:

a brominated diphenyl ether;

antimony oxide; and

zinc borate.

5,326,798

WATERPROOFING MEMBRANE APPLICABLE BY HEATING WITH AIR-BLOWN BITUMEN

Marco Danese, Via Tezone 5, 37100 Verona, Italy

Filed Apr. 13, 1992, Ser. No. 867,647

Claims priority, application Italy, Apr. 15, 1991, VR91A000034

Int. Cl.[5] **C08L** *95/00;* **C08K** *3/26, 3/24*

U.S. Cl. 524—70 **6 Claims**

1. Method of waterproofing covering structures comprising the step of applying by means of hot air-blown bitumen on a new covering structure or on a previous waterproofing layer based on air-blown bitumen, a composition comprising 50 to 80% by weight of distilled bitumen, 8 to 20% by weight of an amorphous copolymer selected from ethylene-propylene copolymer and ethylene-propylene-butene-1 copolymer and mixtures thereof, and 1 to 20% by weight of amorphous polypropylene homopolymer, said amorphous polypropylene homopolymer having a viscosity between 1000 and 50000 mPa×s and a crystallinity less than or equal to 20 J/g.

5,326,799

COMPOSITION

Luca P. Fontana, Evansville; Kenneth F. Miller, and Edgar E. Bostick, both of Mt. Vernon, all of Ind., assignors to General Electric Company, Pittsfield, Mass.

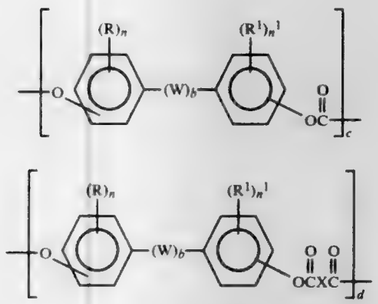
Division of Ser. No. 690,747, Apr. 24, 1991, Pat. No. 5,210,122. This application Mar. 31, 1993, Ser. No. 40,719

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] **C08K** *5/07, 5/34;* **C08L** *67/00*

U.S. Cl. 524—91 **4 Claims**

1. A composition comprising an admixture of

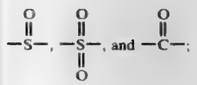


wherein:

R is independently selected from halogen, monovalent hydrocarbon, and monovalent hydrocarbynoxy radicals;

R^1 is independently selected from halogen, monovalent hydrocarbon, and monovalent hydrocarbonoxy radicals;

W is selected from divalent hydrocarbon radicals, —S—, —S—S—, —O—,



n and n^1 are independently selected from integers having a value of from 0 to 4 inclusive;

b is either zero or one;

x is an aliphatic group of about 6 to 18 carbon atoms, inclusive;

d is from about 2 to 30 mole percent of the total units c+d; the weight average molecular weight of (a) being from about 22,400 to 100,000 and

(b) an amount, effective to stabilize the composition against ultraviolet radiation effects, of an ultraviolet screener additive which is incompatible with an aromatic polycarbonate at ordinary processing temperature.

5,326,800

USE OF SALTS IN COMBINATION WITH HALOGENATED PHTHALIMIDES FOR FLAMEPROOF FINISHING OF GLASS FIBRE-CONTAINING POLYCARBONATE MOULDED MEMBERS

Klaus Horn, Krefeld; Jürgen Kirsch; Richard Weider, both of Leverkusen; Hugo Obermann, Dormagen; Dieter Freitag, and Karsten-Josef Idel, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 11, 1993, Ser. No. 29,865

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1992, 4208643; Jul. 1, 1992, 4221581

Int. Cl.[5] **C08K** *5/3417, 5/42, 5/5317*

U.S. Cl. 524—94 **7 Claims**

1. A method of preparing flame-resistant, glass fibre-containing polycarbonate resins from glass fibre-containing polycarbonate moulded members, characterised in that

either glass fibre-containing polycarbonate moulded members are shredded and then processed with salts of sulphonic acids, phosphonic acids and/or carboxylic acids and with halogenated phthalimides and optionally with polycarbonate resin and/or glass fibres together in known manner via the melt to obtain glass fibre-containing flame-resistant polycarbonate resin,

or glass fibre-containing polycarbonate moulded members already containing incorporated salts of sulphonic acids, phosphonic acids and/or carboxylic acids are shredded and then processed with halogenated phthalimides and optionally with polycarbonate resin and/or glass fibres together in known manner via the melt to obtain glass fibre-containing flame-resistant polycarbonate resin,

or glass fibre-containing polycarbonate moulded members already containing incorporated salts of sulphonic acids, phosphonic acids and/or carboxylic acids and halogenated phthalimides are shredded and then optionally processed with polycarbonate resin and/or glass fibres together in known manner via the melt to obtain glass fibre-containing flame-resistant polycarbonate resin.

5,326,801

POLYMER COMPOSITIONS CONTAINING ORGANIC PHOSPHITE STABILIZERS

Marco Foà, and Sauro Strologo, both of Novara, Italy, assignors to Himont Incorporated, Wilmington, Del.

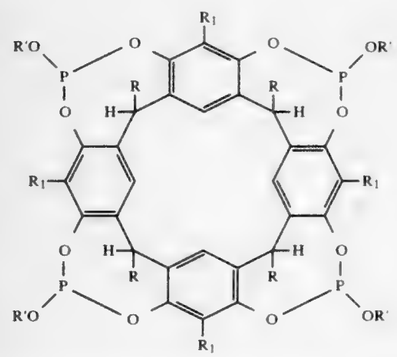
Division of Ser. No. 794,552, Nov. 19, 1991, Pat. No. 5,162,548. This application Jul. 28, 1992, Ser. No. 921,952

Claims priority, application Italy, Nov. 20, 1990, 22118 A/90

Int. Cl.[5] **C08K** *5/527, 5/529;* **C07F** *9/6574*

U.S. Cl. 524—109 **3 Claims**

1. Polymer compositions comprising the phosphites of the formula:



where R, equal or different, are H; linear or branched C_1-C_{30}

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alkyl radicals; C_5–C_6 alicyclic radicals; C_7–C_{12} aralkyl radicals; 2-furfuryl or phenyl radicals, optionally substituted by one or more electron donor groups selected from alkyl and alcoxyl groups, and present in the para or meta positions, or both; 2-cyclohexylethyl or p-phenylphenyl; R', equal or different, are C_1–C_{30} alkyl radicals, or C_5–C_{30} simple or condensed alicyclic radicals; aryl radicals, simple, double, or condensed, optionally substituted with C_1–C_9 alkyl groups, or with aryl groups joined by a heteroatom, or by a $C(R_2R_3)$ group, where R_2 and R_3, equal or different, are H, or C_1–C_6 alkyl, or C_6–C_{10} aryl radicals; R_1 radicals, equal or different, are H or C_1–C_4 alkyl radicals; with the proviso that when R is H, R_1 are C_1–C_4 alkyls.

5,326,802

BETA CRYSTALLINE MODIFICATION OF 2,2',2''-NITRILO[TRIETHYL-TRIS-(3,3',5,5'-TETRA-TERT-BUYTL-1,1'-BIPHENYL-2,2'-DIYL)PHOSPHITE]

Stephen D. Pastor, Danbury, Conn., and Sai P. Shum, Hawthorne, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 30, 1992, Ser. No. 983,181
Int. Cl.[5] C07F *9/6574;* **C08K** *5/52*
U.S. Cl. 524—119 **8 Claims**

6. The beta, triclinic crystalline form of 2,2',2''-nitrilo[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl)phosphite], characterized by melting in the range of 200°–207° C. and by an X-ray diffraction pattern exhibiting lines of very high intensity at 8.4 and 17; lines of high intensity at 9.9, 10.6, 11.4, 17.5, 19.1, 20.2; lines of medium intensity at 4.6, 4.9, 7.1, 12.7, 13.2, 13.6, 15.3, 15.8, 16.4, 16.7, 18.4, 19.7, 21.7, 23.4; and lines of weak intensity at 7.8, 8.8, 9.4, 12, 14.1, 14.6, 21, 22.3, 22.8, 23.9, 24.7, 25.3, 25.5, 26.4, 27.27.7, 28.4 and a relative absolute configuration of the three stereo axes of the dibenzo[d,f][1,3,2-]dioxaphosphepin rings of R*,R*,S*.

7. A composition stabilized against thermal, oxidative and actinic induced degradation which comprises

(a) a polyolefin, and

(b) an effective amount of the beta crystalline form of 2,2',2''-nitrilo[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl)phosphite] according to claim 6.

5,326,803

ORGANOHYDROGEN POLYSILOXANE COATED PHOSPHITES

Roger W. Avakian, and James A. Mahood, both of Parkersburgh, W. Va., assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 27, 1993, Ser. No. 10,219
Int. Cl.[5] C08K *9/06*
U.S. Cl. 524—120 **18 Claims**

1. An organic phosphite composition comprising:

a an organic phosphite particle comprising

i) a solid organic phosphite core, and

ii) an organohydrogen polysiloxane coating attached to said core, said coating protecting said phosphite core from moisture.

5,326,804

ORGANOPOLYSILOXANE RUBBER COMPOSITION FOR COATING HIGH VOLTAGE ELECTRICAL INSULATORS HAVING IMPROVED ELECTRICAL PROPERTIES

Balwantrai Mistry, 49 Rhonda Rd., Unit 115, Guelph, Ontario, Canada N1H 7A4 ; Edward A. Cherney, 28 Claymore Dr., Toronto, Ontario, Canada M8Z 2S2 , and Seraj ul Huda, 329 Lake Promenade, Toronto, Ontario, Canada M8W 1A6

Continuation of Ser. No. 649,906, Feb. 1, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,533
Int. Cl.[5] C08L *83/04;* **C08K** *9/06, 3/22*
U.S. Cl. 524—188 **11 Claims**

1. An organopolysiloxane rubber composition for coating high voltage electrical insulators comprising the product which is obtained by mixing the following:

a) 30 to 50 weight percent of a mixture of

i) 40 to 44 weight percent of polydimethyl siloxane fluid of the formula

$$HO[(CH_3)_2SiO]_nH$$

wherein n has an average value such that the viscosity is in the range, from 10 to 15 Pa.S at 25° C;

ii) 2 to 3 weight percent of a reinforcing filler of the formula

$$SiO_2$$

with a specific gravity of 2.2 and a range of particle size 0.5 to 10 microns,

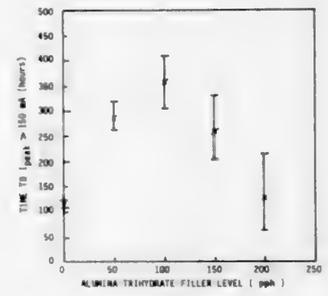
iii) 1 to 3 weight percent of an organosilicon cross-linking agent of the formula

$$RSi(ON{=}CR'_2)_3$$

wherein R and R'represent a group of monovalent hydrocarbon radicals,

iv) 0.5 to 2.0 weight percent of an adhesion promoter of the formula

$$NHCH_2CH_2NH_2$$



$$CH_2$$

$$CH_2CH_2Si(OMe)_3$$

wherein Me is the methyl radical,

v) 0.1 to 0.2 percent by weight of a condensation catalyst consisting of an organotin salt of carboxylic acid of the formula

$$(C_4H_9)_2Sn(OCOC_{10}H_{20}CH_3)_2,$$

and

vi) 36 to 48 weight percent of alumina trihydrate, the alumina trihydrate having a median particle size of 13μm, containing 65.1 percent Al_2O_3, 34.5 percent combined H_2O, 0.3 percent Na_2O, 0.02 percent CaO, 0.01 percent combined H_2O, 0.3 percent Na_2O, 0.02 percent CaO, 0.01 percent SiO_2 and having a specific gravity of 2.42, the aluminum trihydrate being present in a proportion of 90 to 110 parts by weight per 100 parts by weight of the polyorganosiloxane base;

with

50 to 70 weight percent of a hydrocarbon solvent as a dispersion medium for the above composition.

5,326,805

FLAME-RETARDANT PLASTICS MOLDING COMPOSITION OF IMPROVED STABILITY

Martin Sicken, Cologne, and Wolfgang Wanzke, Gersthofen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 30, 1993, Ser. No. 100,909
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1992, 4225477
Int. Cl.[5] C08K *5/3492, 3/28*
U.S. Cl. 524—101 **15 Claims**

1. A flame-retardant plastics molding composition comprising

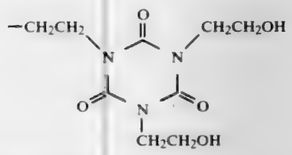
50 to 85% by weight, based on the total amount of molding composition, of an olefin polymer and

15 to 50% by weight, based on the total amount of the molding composition, of a flameproofing system comprising

80 to 50% by weight of an ammonium polyphosphate of the formula $(NH_4PO_3)_n$, in which n is a number from 200 to 1000 (=component A), and

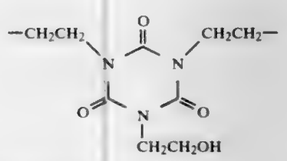
50 to 20% by weight of a compound (=component B) comprising

a) units of the formula I



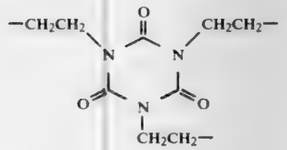
(I)

b) units of the formula II



(II)

c) units of the formula III



(III)

and

d) units of the formula IV

$$Ar(COO—)_m \qquad \text{(IV)}$$

in which Ar is a mono-, di- or trinuclear aromatic six-membered ring system and m is 2, 3 or 4.

5,326,806

REINFORCED FLAME-RETARDANT POLYESTER RESIN COMPOSITIONS

Takahiro Yokoshima, Susono, and Takuro Kitamura, Moka, both of Japan, assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 23, 1992, Ser. No. 996,297
Claims priority, application Japan, Dec. 26, 1991, 3-356844
Int. Cl.[5] C08K *3/34*
U.S. Cl. 524—411 **17 Claims**

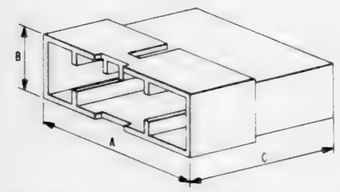
1. A resin composition comprising (A) a polyester, (B) a flame retardant, (C) antimony oxide or an antimonate and (D) a filler, which filler includes plate-like magnesium silicate filler having an average particle size of 1.8 μm or less, and acicular calcium metasilicate filler.

5,326,807

CONNECTOR

Tetsuo Kato, and Masahiro Kanda, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,339
Claims priority, application Japan, May 29, 1992, 4-139028
Int. Cl.[5] C08K *5/09, 3/16*
U.S. Cl. 524—413 **6 Claims**



1. A connector comprising a housing comprising a resin composition comprising (A) 100 parts by weight of a 4,6-nylon resin, (B) from 80 to 120 parts by weight of a polyphenylene ether resin modified with an unsaturated organic acid compound, and (C) from 0.1 to 0.4 part by weight of a copper halide.

5,326,808

ODOR FREE, AIR DRY, AQUEOUS EMULSION PAINTS

F. Louis Floyd, Strongsville, and Gary P. Craun, Berea, both of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Filed Feb. 18, 1993, Ser. No. 19,633
Int. Cl.[5] C08J *3/02*
U.S. Cl. 524—457 **20 Claims**

1. An aqueous air-dry paint coating composition containing an emulsion polymerized polymeric binder free of organic coalescing solvent, the polymeric binder comprising:

a vinyl acetate polymer comprising polymerized vinyl acetate monomer containing an oligomer having a number average molecular weight between about 200 and 20,000 and a Tg below about −20° C., the oligomer selected from a polyurethane and a polyester, the polymeric binder containing between about 3% and 50% by weight of said oligomer to provide a polymeric binder having a Tg less than 20° C., where said polymeric binder is produced by mixing the oligomer in the vinyl acetate monomer to provide an organic solution of oligomer and vinyl acetate monomer, where said organic solution is dispersed into and polymerized in water to produce an oligomer modified vinyl acetate emulsion polymer where the oligomer is soluble in the polymerized vinyl acetate monomer.

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5,326,809

POLY[(VINYL ALCOHOL)-CO-(VINYL AMINE)] COPOLYMERS AS STABILIZING PROTECTIVE COLLOIDS IN AQUEOUS EMULSION POLYMERIZATION

Richard H. Bott, Macungie; William E. Lenney, Allentown; Keith D. Campbell, Slatington, all of Pa.; Jeffrey A. Kuphal, Flemington, N.J., and Chung-Ling Mao, Emmaus, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 25, 1992, Ser. No. 981,572

Int. Cl.[5] C08F *2/16*

U.S. Cl. 524—459 **29 Claims**

1. In a method for preparing an aqueous polymer emulsion by the free radical aqueous emulsion polymerization of at least one ethylenetically unsaturated monomer in the presence of a stabilizing composition, the improvement which comprises using a stabilizing composition comprising the poly{(vinyl alcohol)-co-(vinyl amine)} copolymer

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5,326,810

RUBBER COMPOSITIONS FOR TIRE TREADS OF DRIVING STABILITY

Takao Muraki, Hiratsuka; Kinya Kawakami, Kanagawa, and Masayoshi Daio, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Japan

Continuation of Ser. No. 814,084, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 663,807, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 363,025, Jun. 8, 1989, abandoned. This application Jun. 24, 1992, Ser. No. 902,799

Claims priority, application Japan, Jun. 16, 1988, 63-146891

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[5] C08K *3/04*

U.S. Cl. 524—496 **3 Claims**

1. A rubber composition for use in tire treads which comprises:

(a) 100 parts by weight of a base rubber consisting essentially of one or more styrene-butadiene rubbers having a glass transition temperature higher than −40° C., or a blend of one or more of said styrene-butadiene rubbers with a diene rubber selected from the group consisting of natural rubber, polyisoprene rubber, butadiene rubber, butyl rubber and halogenated butyl rubber; and

(b) 50–200 parts by weight of a carbon black having an N_2SA of 140–160 m^2/g as defined by nitrogen adsorption surface area, a DBP of more than 120 ml/100 g as defined by dibutyl phthalate adsorption, a ΔDBP of larger than 30 ml/100 g as determined by the difference of DBP subtracted by 24M 4 DBP and a ΔDst of smaller than 50 μm as defined by aggregate size distribution of Dst diameter.

5,326,811

PLATED POLYAMIDE RESIN ARTICLES

Hironari Sano, and Koji Nishida, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 899,907

Claims priority, application Japan, Jun. 17, 1991, 3-144912

Int. Cl.[5] C08L *77/00*

U.S. Cl. 524—505 **22 Claims**

1. A plated polyamide resin article obtained by plating a molded article of a polyamide resin composition consisting essentially of (A) from 30 to 80% by weight of a polyamide resin, (B) from 20 to 70% by weight of a polyphenylene ether resin, (C) from 1 to 50 parts by weight, per 100 parts by weight of the sum of (A) and (B), of an impact modifier, and (D) from 0.01 to 30 parts by weight, per 100 parts by weight of the sum of (A) and (B), of a compatibilizer, in which said polyamide resin forms a continuous phase, and said polyphenylene ether resin forms a dispersed phase, said polyamide resin having a crystallinity of from 20 to 55% with a γ crystal fraction of the crystalline region thereof being not less than 72%.

5,326,812

AQUEOUS COATING AGENT AND AQUEOUS EMULSION, PROCESS FOR THE PREPARATION THEREOF

Wolfgang Diener; Manuela Krieter, both of Wuppertal; Ronald Obloh, Dortmund, and Peter Schreiber, Hattingen, all of Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit beschrankter Hafrung, Wuppertal, Fed. Rep. of Germany

Filed Sep. 7, 1993, Ser. No. 117,436

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1992, 4229982

Int. Cl.[5] C08L *75/06*

U.S. Cl. 524—507 **8 Claims**

1. An aqueous coating agent on the basis of one or more polyols having ionic groups or groups convertible into ionic groups, which can contain pigments, fillers and/or optional conventional lacquer adjuvants and/or solvents, comprising

A) 10 to 40 wt.-% of one or more polyols having a number-average molecular weight (Mn) of 500 to 200000, an OH-number of 15 to 300 and a content of ionic groups and/or groups convertible into ionic groups of 5 to 400 meq/100 g solid resin, which are at least partly neutralized,

B) 0.5 to 10 wt.-% of one or more chlorinated polyolefines having a chlorine content of 15 to 35 wt.-%,

C) 5 to 40 wt.-% of one or more aromatic solvents having a boiling range from 100° to 160° C.,

D) 25 to 75 wt.-% of water,

E) 0 to 30 wt.-% of one or more further water dilutable binders which are free from groups reactive with NCO,

the percentages by weight of components A) to E) adding up to 100 wt.-% and

F) one or more polyisocyanates having on average at least two free isocyanate groups per molecule, in such an amount that the ratio of the number of reactive isocyanate groups to the OH-groups of the polyols is 0.5:1 to 5:1,

the coating agent being a two-component system, one component containing the polyols and the other component containing the polyisocyanates.

5,326,813

THERMOPLASTIC RESIN COMPOSITION CONTAINING A MODIFIED POLYPHENYLENE ETHER

Akihiko Okada, and Akitoshi Masuyama, both of Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,462

Claims priority, application Japan, Dec. 10, 1991, 3-325796; Jan. 30, 1992, 4-014815

Int. Cl.[5] C08L *71/02;* **C08F** *283/08*

U.S. Cl. 524—508 **10 Claims**

1. A thermoplastic resin composition which comprises (A) 100 parts by weight of a styrenic polymer having a high degree of syndiotactic configuration, (B) 1 to 350 parts by weight of an inorganic filler and (C) 0.1 to 3.5 parts by weight of a polyphenylene ether that is modified with a compound having an ethylenic double bond and a polar group in the same molecule, said ether having a modification rate of 1.3% to 10% by weight.

5,326,814

HIGH-GLOSS LATEX PAINTS AND POLYMERIC COMPOSITIONS FOR USE THEREIN

John Biale, Anaheim, Calif., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 363,492, Jun. 8, 1989, Pat. No. 5,084,505, and a continuation-in-part of Ser. No. 722,360, Jun. 19, 1991, Pat. No. 5,173,534, which is a continuation of Ser. No. 303,805, Jan. 30, 1989, abandoned. This application Oct. 31, 1991, Ser. No. 785,463

Int. Cl.[5] C08L *33/00*

U.S. Cl. 524—555 **6 Claims**

1. A copolymer comprising:

(a) about 25 to about 60 weight percent soft monomer whose homopolymer has a T_g of less than about −20° C., the soft monomer being selected from the group consisting of nonfunctional acrylic monomers, non-functional methacrylic monomers, and mixtures thereof;

(b) about 40 to about 75 weight percent hard monomer whose homopolymer has a T_g of greater than about 30° C., the hard monomer being selected from the group consisting of alkenyl aromatic monomers, non-functional acrylic monomers, non-functional methacrylic monomers, acrylonitrile monomer, and mixtures thereof, provided that the acrylonitrile monomer comprises less than about 10 weight percent of the copolymer;

(c) about 1 to about 3 weight percent olefinic carboxylic acid monomer;

(d) about 0.5 to about 3 weight percent copolymerizable surfactant monomer containing a group having the formula

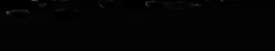
$$R—O—(CH_2CHO)_x—$$

wherein R is selected from the group consisting of alkyl groups containing about 12 to about 20 carbon atoms and alkylaryl groups whose alkyl moiety contains about 8 to about 9 carbon atoms, x is greater than 40,

(e) about 0.5 to about 4 weight percent additional monomer selected from the group consisting of cyanoacetoxy-containing monomers and acetoacetoxy-containing monomers having the respective formulas



and



wherein R_1 is selected from the group consisting of hydrogen and halogen, R_2 is selected from the group consisting of hydrogen, halo, thio and monovalent organic radicals, R_3 is a divalent radical, and R_4 is selected from the group consisting of hydrogen and monovalent organic radicals; and

(f) about 0.5 to about 3 weight percent ethyleneureido-containing monomer, and monomers (a), (b), and (c) in total constitute at least about 90 weight percent of the monomeric content of the copolymer.

5,326,815

POLYURETHANE COATING COMPOSITION DERIVED FROM POLYESTER POLYOL CONTAINING LONG-CHAIN ALIPHATIC POLYOL

Paul Serdiuk, Warren, and Alan L. Steinmetz, Milford, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Sep. 29, 1992, Ser. No. 954,733

Int. Cl.[5] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—591 **19 Claims**

1. A coating composition comprising:

(a) an aqueous medium,

(b) an water-dispersible polyurethane resin that is the reaction product of a mixture comprising:

(1) a hydroxy-functional polyester component that is the reaction product of a mixture comprising a carboxylic acid component comprising at least two carboxylic acid functional groups, a C36 dimer fatty alcohol, and a short-chain polyol having 12 or fewer carbon atoms,

(2) a multifunctional compound having at least one active hydrogen group and at least one water-stabilizing group,

(3) an active hydrogen-containing capping or chain extending agent, and

(4) a polyisocyanate, and

(c) an aminoplast crosslinking agent.

5,326,816

ROOM TEMPERATURE CURABLE SILICONE COMPOSITION

Hitoshi Kinami; Shinichi Sato; Hirokazu Yamada, and Toshio Takago, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 893,016

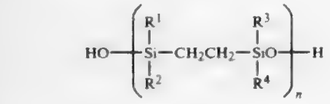
Claims priority, application Japan, Jun. 3, 1991, 3-159976

Int. Cl.[5] C08K *5/16*

U.S. Cl. 524—718 **6 Claims**

1. A room temperature curable silicone composition, comprising

(A) an organopolysilethylenesiloxane represented by the following general formula (1):



wherein R^1, R^2, R^3, and R^4, which may be the same or different, each represent a substituted or unsubstituted monovalent hydrocarbon group having 1 to 10 carbon atoms, and n is an integer of 10 or more,

(B) an organosilicon compound having two or more hydrolyzable groups in the molecule, and

(C) one or more compounds selected from the group consisting of ultraviolet absorbing agents and antioxidants.

5,326,817

BLEND OF POLYPHENYLENE ETHER, POLYCARBONATE OR POLYOXYMETHYLENE RESINS AND MULTI-PHASE THERMOPLASTIC RESINS

Yuichi Orikasa, Yokohama, and Suehiro Sakazume, Fujisawa, both of Japan, assignors to Nippon Petrochemicals Co. Ltd. and Nippon Oil & Fats Co. Ltd., Japan

Filed Mar. 21, 1989, Ser. No. 326,294

Claims priority, application Japan, Mar. 23, 1988, 63-68532; Apr. 1, 1988, 63-80618

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] C08L *59/00, 71/12, 69/00*

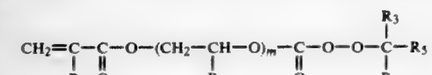
U.S. Cl. 525—64 **4 Claims**

1. A thermoplastic resin composition which comprises:

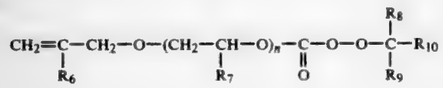
(i) 10 to 30% by weight of polyphenylene ether resin alone or a mixture of the polyphenylene ether resin and a styrene polymer,

(II) 90 to 70% by weight of at least one kind of resin selected from the group consisting of polycarbonate resins and polyoxymethylene resins, and

(III) 0.1 to 100 parts by weight, based on 100 parts by weight of the resins (I) + (II), of a multi-phase structure thermoplastic resin formed by melting and mixing a graft polymerization precursor obtained by copolymerizing at least one vinyl monomer selected from the group consisting of vinyl aromatic monomers, (meth)acrylonitrile monomers, and vinyl ester monomers, with at least one radical polymerizable or copolymerizable organic peroxide represented by the following general formulae (a) and (b)



(a)



(b)

wherein R_1 is a hydrogen atom or an alkyl group having 1 or 2 carbon atoms, each of R_2 and R_7 is a hydrogen atom or a methyl group, R_6 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, each of R_3, R_4, R_8, and R_9 is an alkyl group having 1 to 4 carbon atoms, each of R_5 and R_{10} is an alkyl group having 1 to 12 carbon atoms, a phenyl group, an alkyl-substituted phenyl group or a cycloalkyl group having 3 to 12 carbon atoms, m is 1 or 2, and n is 0, 1 or 2, in particles of an epoxy group-containing olefin copolymer which is composed of 60 to 99.5% by weight of ethylene and 40 to 0.5% by weight of glycidyl acrylate or methacrylate.

5,326,818

POLYSILOXANIC STABILIZERS CONTAINING STERICALLY HINDERED PHENOL GROUPS AND REACTIVE GROUPS

Luciano Pallini, San Donato Milanese; Daniele Fabbri, Ricccione; Rossella Farris, and Carlo Neri, both of San Donato Milanese, all of Italy, assignors to Eni Chem Synthesis S.p.A., Palermo, Italy

Division of Ser. No. 944,061, Sep. 11, 1992, Pat. No. 5,292,850. This application Dec. 2, 1993, Ser. No. 160,619

Int. Cl.[5] C08L *83/00*

U.S. Cl. 525—106 **20 Claims**

1. A polymeric composition comprising an organic polymer and a stabilizing quantity of a polymeric stabilizer having a formula:

$$MX_mY_pZ_qM'$$

wherein

X is $-O-\underset{\displaystyle R_2}{\overset{\displaystyle R_1}{\overset{|}{\underset{|}{Si}}}}-$ or $-O_{3/2}Si-\underset{\displaystyle R_2}{|}$

Y is $-O-\underset{\displaystyle R_4}{\overset{\displaystyle R_1}{\overset{|}{\underset{|}{Si}}}}-$ or $-O_{3/2}Si-\underset{\displaystyle R_4}{|}$

Z is $-O-\underset{\displaystyle R_1}{\overset{\displaystyle R_1}{\overset{|}{\underset{|}{Si}}}}-$ or $-O_{3/2}Si-\underset{\displaystyle R_1}{|}$ or $-O_{4/2}Si-$

M is $R''-\underset{\displaystyle R}{\overset{\displaystyle R'}{\overset{|}{\underset{|}{Si}}}}-$, H, R_3,

M' is —OM,

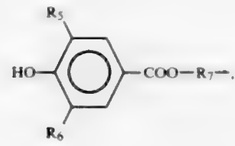
M and M' can optionally form together a direct bond thus producing a cyclic structure,

R_1 is a phenyl or a linear or branched alkyl radical containing from 1 to 20 carbon atoms,

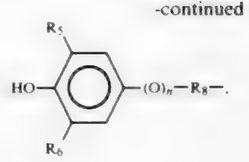
R_2 is a reactive organic group which contains a carbon-carbon double bond, an epoxy ring, a sulfide group, or an aminic group,

R_3 is a linear or branched alkyl radical containing from 1 to 6 carbon atoms,

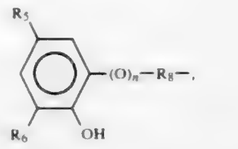
R_4 is a radical selected from the group consisting of



-continued



and



wherein,

R_5 and R_6, which may be the same or different, are linear or branched alkyl radicals which contain from 1 to 10 carbon atoms,

R_7 is a linear or branched alkylene radical which contains from 3 to 10 carbon atoms,

R_8 is a linear or branched alkylene radical which contains from 1 to 10 carbon atoms or a biradical selected from the group consisting of $—R_9—COO—R_{10}$, $—R_9—COO—R_{11}—$,

R_9, R_{10} and R_{11}, which may be the same or different, are linear or branched alkylene radicals which contain from 2 to 10 carbon atoms,

R' is a phenyl or a linear or branched alkyl radical which contains from 1 to 10 carbon atoms,

R'' is the same as R', R_2 or R_4,

m and p, which may be the same or different, are integers from 1 to 50, and

q is an integer between 0 and 50,

n is equal to 0 or 1.

5,326,819

WATER ABSORBENT POLYMER KEEPING ABSORBED WATER THEREIN IN THE FORM OF INDEPENDENT GRAINS

Taiji Kanbayashi, Nara, and Chuzo Kato, Tokyo, both of Japan, assignors to Oosaka Yuuki Kagaku Kogyo Kabushiki Kaisha, Oosaka, Japan

Division of Ser. No. 673,170, Mar. 18, 1991, Pat. No. 5,029,933, which is a continuation of Ser. No. 337,889, Apr. 14, 1989, abandoned. This application Oct. 9, 1991, Ser. No. 773,495

Claims priority, application Japan, Apr. 16, 1988, 53-94308

Int. Cl.[5] C08L *63/00*

U.S. Cl. 525—119 **4 Claims**

ALKYL ESTER	CARBON NUMBER OF ALKYL GROUP	ACRYLIC ESTER	METHACRYLIC ESTER
2-ETHYLHEXYL	8	-85°C	-10°C
LAURYL	12	+5°C	-65°C
LAURYL TRIDECYL	12,13	>+5°C	<-45°C
TRIDECYL	13	+20°C	-45°C
STEARYL	18	>+35°C	+30°C

1. A method for the production of water absorbent polymer beads which retain a bead like shape after absorption of water which comprises:

i) dissolving a copolymer as a dispersing agent in an aliphatic hydrocarbon to form a solution; said copolymer comprising the following:

a) an alkyl acrylate or methacrylate monomer having an alkyl group of eight or more carbon atoms, in the amount of 45 to 70 weight percent,

b) one or more kinds of monomers selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl acrylate, diethylaminoethyl methacrylate, acryloyloxyethyltrimethylammonium chloride, methacryloyloxyethyltrimethylammonium chloride, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl acrylate, 2-hydroxypropyl methacrylate, acrylamide, dimethylacrylamide, dimethylaminopropylacrylamide, dimethylaminopropylmethacrylamide, acrylamidepropyltrimethylammonium chloride, and methacrylamidepropyltrimethylammonium chloride in the amount of 5 to 25 weight percent, and

c) unsaturated monomers having affinity with an aliphatic hydrocarbon solvent selected from the group consisting of alkyl methacrylates wherein the alkyl group contains less than 5 carbon atoms and vinyl acetate, being capable of copolymerizing with the above-mentioned (a) and (b) so as to raise the glass transition temperature of said copolymer, in the amount of 20 to 40 weight percent,

ii) dispersing a solution of an acrylic acid and an alkali metal salt of an acrylic acid obtained by partially neutralizing an acrylic acid, in said solution of said copolymer in said aliphatic hydrocarbon, and then polymerizing the resultant mixture by water/oil suspension polymerization so as to subject said resultant mixture to a self-crosslinking reaction, and

iii) subjecting said resultant polymer of ii) to a crosslinking reaction in the presence or absence of an inorganic compound by means of crosslinking agent and

iv) drying to form beads.

5,326,820

COATING AGENTS BASED ON HYDROXYL-CONTAINING POLYCONDENSATION AND POLYADDITION PRODUCTS AND THEIR USE

Peter Hoffmann, Senden; Werner-Alfons Jung, Ascheberg, and Michael Brünnemann, Münster, all of Fed. Rep. of Germany, assignors to BASF Lacke+Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP91/01379, § 371 Date Mar. 15, 1993, § 102(e) Date Mar. 15, 1993, PCT Pub. No. WO92/02590, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 24, 1991, Ser. No. 969,276

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1990, 4024204

Int. Cl.[5] C08L *75/04*

U.S. Cl. 525—123 **18 Claims**

1. A coating agent based on hydroxyl-containing polycondensation and polyaddition products, comprising

A) a hydroxyl-containing component (A) as binder,

B) at least one polyisocyanate as crosslinking agent, and

C) one or more organic solvents,

in which the components (A) and (B) are present in such amounts that the ratio of the number of free OH groups of component (A) to the number of isocyanate groups of component (B) is in the range from 1:3 to 3:1, in which

I.) component (A) comprises

A1) 5 to 80% by weight of at least one polyester and/or one alkyd resin (A1) having an OH number from 0 to 200 mg of KOH/g, an acid number from 0 to 200 mg of KOH/g and a number average molecular weight of between 500 and 10,000

A2) 95 to 20% by weight of at least one polyaddition resin (A2) having an OH number from 30 to 250 mg of KOH/g, an acid number from 0 to 50 mg of KOH/g and a number average molecular weight of between 1,000 and 10,000,

the sum of the weight proportions of components (A1) and (A2) being in each case 100% by weight and

II.) component (A) is obtained from

1.) at least one polyester and/or one alkyd resin (A1), which is obtained by reaction of

a) polycarboxylic acids and/or esterifiable derivatives thereof and, optionally, monocarboxylic acids, 5 to 100 mol % of this carboxylic acid component being cycloaliphatic polycarboxylic acids and/or esterifiable derivatives thereof,

b) polyols, optionally together with monools, and optionally, a component capable of reacting with the reaction produce from a) and b),

2.) at least one polyaddition resin (A2), at least some of which has been prepared in the presence of component (A1) using from 5 to 30% by weight, based on the total weight of the monomers employed, of at least one vinyl ester of saturated aliphatic monocarboxylic acids having 9 to 11 carbon atoms which are branched at the α carbon atom, and

3.) optionally, at least one further polyaddition and/or one further polycondensation resin.

5,326,821

RESIN COMPOSITION FOR POWDER COATINGS

Shingo Sasaki, Aichi; Kazuyuki Wakamura, Kyoto; Taisaku Kano, and Takayoshi Sekido, both of Kanagawa, all of Japan, assignors to Unitika Ltd., Hyogo and Mitsui Toatsu Chemicals, Inc., Tokyo, both of Japan

Continuation of Ser. No. 925,893, Aug. 7, 1992, abandoned, which is a continuation of Ser. No. 663,064, Mar. 1, 1991, abandoned, which is a continuation of Ser. No. 263,229, Oct. 27, 1988, abandoned. This application Nov. 5, 1992, Ser. No. 972,090

Claims priority, application Japan, Oct. 28, 1987, 62-272047

Int. Cl.[5] C08L *67/02, 33/14*

U.S. Cl. 525—124 **13 Claims**

1. A process for producing a resin composition for powder coatings, which comprises:

(1) reacting a polyester resin (A1) with an acrylic resin (A2) to prepare a composition (A) containing a polyester resin (A1), an acrylic resin (A2) and a copolymer (CP) formed by said reaction, wherein said polyester resin (A1) has an average of 0.1 to 1.0 carboxyl groups in one molecule, a hydroxyl value of 10 to 100 and a softening point of 50° to 150° C., and said acrylic resin (A2) has an average of 0.1 to 4.0 glycidyl groups in one molecule, a hydroxyl value of 30 to 150 and a softening point of 50° to 150° C.; and

(2) melt-kneading 5 to 50 parts by weight of a blocked isocyanate with 100 parts by weight of said composition (A).

5,326,822

HEAT-CURABLE MOLDING MATERIAL

Anton Hesse; Walter Heckmann, both of Weinheim; Harald Kroeger, Schifferstadt; Bernd L. Marczinke, Speyer, and Volker Warzelhan, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 26, 1992, Ser. No. 904,669

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1991, 4124952

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—168 **8 Claims**

1. A process for the preparation of a molding material containing

A) 100 parts by weight of an unsaturated polyester,

B) from 0 to 400 parts by weight of a vinyl or allyl monomer copolymerizable with A,

C) from 5 to 200 parts by weight of a semicrystalline propylene homo- or copolymer containing predominantly propylene and having a random distribution of the monomers,

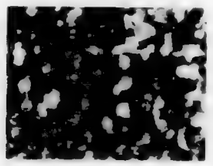
D) from 0.01 to 5 parts by weight of a free radical initiator and

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E) conventional additives and assistants,

wherein component C is dispersed in the form of solid, round particles having a smooth surface and a mean diameter of from 1 to 200 μm in a coherent phase of components A + B,

wherein a melt of the unsaturated polyester A is combined with a melt of the propylene polymer C, the mixture of said melts is subjected to a strong shear field in the absence



of free radical initiator, the propylene polymer being comminuted to a particle size of less than 200 μm, the melt if cooled to below the crystallite melting point of the propylene polymer so that a dispersion of solid propylene polymer particles in liquid unsaturated polyester is formed, then, optionally, the monomer B is added directly to the dispersion, and finally the additives D and E are mixed in.

5,326,823

POLYFLUOROPOLYETHER GRAFT COPOLYMERS

Richard J. Rolando, and Anthony B. Clinch, both of Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 665,264, Mar. 6, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 81,803

Int. Cl.[5] C08F *255/00, 263/04, 265/04*

U.S. Cl. 525—276 **14 Claims**

1. A fluorochemical graft copolymer comprising: a base polymer comprising polymerized units derived from monomers having terminal olefinic double bonds, having grafted thereto a plurality of polyfluoropolyether monomer units, said fluorochemical graft copolymer being prepared according to the process comprising the steps of

(1) feeding to a reactor in an inert atmosphere materials comprising:

(a) a base polymer comprising polymerized units derived from monomers having terminal olefinic double bonds;

(b) (i) at least one free radical initiator and a polyfluoropolyether monomer having a backbone comprising polyfluorooxyalkylene units, the monomer being terminated on at least one end with a functional group comprising a polymerizable double bond; and wherein all materials are substantially free of oxygen; or

(b) (ii) a peroxidic polyfluoropolyether;

(2) reacting the materials in the reactor to provide the fluorochemical graft copolymer; and

(3) withdrawing the fluorochemical graft copolymer from the reactor

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5,326,824

SYNDIOTACTIC PROPYLENE COPOLYMER, METHOD FOR PREPARING SAME, AND ITS USE

Tadashi Asanuma, and Kazuhiko Yamamoto, both of Takaishi, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed May 14, 1991, Ser. No. 699,632

Claims priority, application Japan, May 18, 1990, 2-126914; May 21, 1990, 2-129021; Jul. 18, 1990, 2-187881; Jul. 20, 1990, 2-190724; Jul. 24, 1990, 2-193905; Sep. 19, 1990, 2-247160; Mar. 18, 1991, 3-052652

Int. Cl.[5] C08F *255/02, 255/04*

U.S. Cl. 525—288 **13 Claims**

1. A syndiotactic propylene graft copolymer which is obtained by heating a homopolymer having a substantially syndiotactic structure of propylene or a copolymer having a substantially syndiotactic structure of propylene and another α-olefin and a radical polymerizable unsaturated compound selected form the group consisting of an unsaturated carboxylic acid, a derivative of an unsaturated carboxylic acid, a hydrolyzable unsaturated silane, styrene, vinyl chloride and vinylidene chloride in the presence of a radical initiator up to the decomposition temperature or more of said radical initiator, the content of radical polymerizable unsaturated compound units grafted on said propylene homopolymer or copolymer being from 0.1 to 50% by weight of said propylene homopolymer or copolymer.

5,326,825

PROCESS FOR THE PREPARATION OF A GRAFT COPOLYMER BOUND CATALYST

Jan H. Näsman, Dragonvägen 58 a C 48, SF-20720 Åbo; Mats J. Sundell, Kuppisgatan 89 b 8, SF-20810 Åbo, and Kenneth B. Ekman, Isännänkatu 13 C 34, SF-20780 St. Karins, all of Finland

Filed Nov. 27, 1992, Ser. No. 982,495

Int. Cl.[5] C08F *255/02, 259/08*

U.S. Cl. 525—301 **6 Claims**

1. A metal loaded graft copolymer comprising a polymer backbone selected from the group consisting of polyolefins and fluorinated polyethylene, that is grafted with acrylic and/or methacrylic acid monomer, wherein the weight ratio between grafted monomer and polymer backbone being from 0.5 to 20, and the mole ratio between loaded metal and grafted monomer being from 0.001 to 0.5, the copolymer being obtained by

exposing the said polymer backbone to radiation in an inert atmosphere,

immersing the irradiated polymer in an aqueous solution of the monomer selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof,

separating the resulting graft copolymer, and

loading a transition metal ion onto the graft copolymer.

5,326,826

RADIATION-SENSITIVE POLYMERS CONTAINING DIAZOCARBONYL GROUPS AND A PROCESS FOR THEIR PREPARATION

Horst Roeschert, Ober-Hilbersheim, Fed. Rep. of Germany; Hans-Joachim Merrem, Basking Ridge, N.J.; Georg Pawlowski, Wiesbaden; Juergen Fuchs, Floersheim/Wicker, both of Fed. Rep. of Germany, and Ralph Dammel, Coventry, R.I., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 26, 1992, Ser. No. 841,532

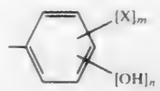
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106357

Int. Cl.[5] C03F *7/023;* **C08F** *30/08*

U.S. Cl. 525—326.5 **46 Claims**

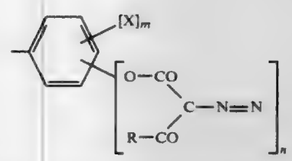
1. A radiation-sensitive polymer, comprising:

(a) units having side groups of the general formula I



and

(b) units having radiation-sensitive side groups of the general formula II



wherein the numerical ratio of units (a) to units (b) is about 98:2 to 0:100, and

wherein

R is an acyclic, isocyclic or heterocyclic radical having 3 to 20 carbon atoms,

X is a (C_1–C_6)alkyl, (C_1–C_6)alkoxy-(C_1–C_6)alkyl, carboxyl, formyl, (C_1–C_{15})alkoxycarbonyl, (C_2–C_5)alkanoyl or (C_1–C_6)alkoxy group or a halogen atom,

m is 0, 1 or 2, it being possible for the radicals X to differ if m = 2, and

n is 1 or 2, it being possible for the radicals R to differ if n = 2.

45. A process for the preparation of the radiation-sensitive polymer as claimed in claim **1**, comprising the steps of:

at least partially esterifying a polymer that contains phenolic hydroxyl groups and that is not radiation-sensitive with a compound comprising —CO—CH_2—CO—R groups, and then

treating the resultant product with a diazo transfer reagent.

5,326,827

HEAT-CURABLE RESIN COMPOSITION CONTAINING ACRYLIC POLYMER HAVING ALICYCLIC EPOXIDE FUNCTIONS

Kei Aoki, Ikoma; Shinji Nakano, Takatsuki, and Nobuaki Tomita, Nara, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 791,507, Nov. 14, 1991, abandoned. This application Oct. 21, 1993, Ser. No. 139,076

Claims priority, application Japan, Nov. 14, 1990, 2-310000

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—337 **7 Claims**

1. A curable resin composition comprising:

(a) an acrylic polymer having a plurality of alicyclic epoxide functions and a plurality of hydroxyl functions produced by copolymerizing a monomer mixture comprising an acrylic monomer having at least one alicyclic epoxide function and a hydroxyl group-containing monomer;

(b) an amount of a polyfunctional alicyclic epoxide compound equal to or less than the equivalent relative to the hydroxyl number of said acrylic polymer; and

(c) an amount of heat-latent cationic polymerization initiator effective to initiate a cationic polymerization reaction of said acrylic polymer upon heating.

5,326,828

TETRABENZYLTHIURAM DISULFIDE/UREA CURED ELASTOMERIC COMPOSITION

Donald G. Rowland, Woodbridge; David T. Faiman, and Thomas L. Jablonowski, both of Naugatuck, all of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Continuation of Ser. No. 595,156, Oct. 10, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 959,507

Int. Cl.[5] C08C *19/20, 19/22*

U.S. Cl. 525—346 **5 Claims**

1. In a vulcanization process, the improvement which comprises combining with a thermosettable elastomeric composition a cure system consisting essentially of from about 0.02 to about 3.0 parts tetrabenzylthiuram disulfide, between 0.02 to about 6.0 phr urea and about 0.05 to 10 phr sulfur, each such cure system ingredient being present in an amount effect not only for enabling the thermosettable composition to cure to preselected physical property ranges but also for reducing to lesser-than-conventional levels the amount of nitrosamine generated upon curing.

5,326,829

PROCESS FOR THE PRODUCTION OF ACTIVATED POLYETHERS

William E. Slack, Moundsville, and Rick L. Adkins, New Martinsville, both of W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Filed Oct. 7, 1992, Ser. No. 957,921

Int. Cl.[5] C08G *65/32*

U.S. Cl. 525—403 **3 Claims**

1. A method of preparing an activated polyether polyol by reacting an aminoalcohol selected from the group consisting of N-alkylaminoalcohol, N-arylaminoalcohol and dialcoholamine having 1 to 18 carbon atoms in the alkyl or aryl moiety with a polyether terminated by a good leaving group selected from the group consisting of a halide, a sulfonate and a nitrophenoxy group, at 50° to 250° C. which polyether polyol is activated by a resulting tertiary amine group.

5,326,830

PROCESS FOR PREPARING CHAIN EXTENDED POLYMERS AND GRAFT AND BLOCK COPOLYMERS

Shaul M. Aharoni, Morris Plains, N.J., assignor to AlliedSignal Inc., Morristownship, N.J.

Continuation of Ser. No. 916,553, Jul. 20, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 152,061

Int. Cl.[5] C08L *77/00, 67/00;* **C08G** *63/91*

U.S. Cl. 525—418 **19 Claims**

1. A process for forming chain extended polymers which comprises the steps of:

(a) forming an intimate mixture of one or more polymers and an effective amount of one or more effective phosphorus-(III)-containing chain extension reagent compounds;

wherein said polymer or polymers have one or more reactive groups for chain extension of said polymer or polymers;

wherein said effective phosphorus (III)-containing chain extension reagent is not a trislactam;

wherein at least one of said effective chain extension reagents has bonded to the phosphorus(III) atom at least one group which is a nitrogen-containing heteroaromatic moiety that is bonded through a nitrogen of the heteroaromatic moiety to the phosphorus(III) atom by a single bond; and

(b) heating said mixture for a time and at a temperature sufficient to form said extended chain polymer or copolymer.

5,326,831

PHENOL TERMINATED DIESTER COMPOSITIONS DERIVED FROM DISCARBOXYLIC ACIDS, POLYESTER POLYMERS OR ALKYD POLYMERS, AND CURABLE COMPOSITIONS CONTAINING SAME

Albert I. Yezrielev, Seebrook, Tex.; William E. Wellman, Edison, N.J.; Ralph M. Kowalik, Kingwood, Tex.; George A. Knudsen, Scotch Plains, N.J., and Michael G. Romanelli, Brooklyn, N.Y., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 572,754, Aug. 24, 1990, Pat. No. 5,210,155. This application Jan. 19, 1993, Ser. No. 6,229

Int. Cl.[5] C08G *63/12, 63/16, 63/133, 63/19*

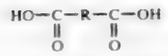
U.S. Cl. 525—437 **29 Claims**

1. A process for preparing a non-liquid crystalline, phenol terminated diester composition comprising:

i) forming a mixture comprising:

a. an aromatic dihydroxy compound having the formula HO-A-OH, wherein A is a divalent aromatic radical selected from the group consisting of phenylene, naphthylene and bis-phenylene radicals,

b. a dicarboxylic acid having the formula



wherein R is a divalent aliphatic radical or a mixture of such radicals having from 2 to 40 carbon atoms; and

c. a diol having the formula HO—R_1—OH wherein R_1 is a divalent aliphatic or cycloaliphatic radical or mixtures thereof having from 2 to 40 carbon atoms, said component (b) being present in molar excess with respect to component (c),

ii) heating said mixture in a first stage at a temperature of from about 140° C. to about 220° C. to form a carboxy terminated polyester, and

iii) further heating the product of step (ii) above the temperature of step (ii) to a temperature of up to about 260° C. to form the phenol terminated diester.

5,326,832

POWDER PAINT AND A POLYESTER RESIN FOR POWDER PAINT

Eimbert G. Belder; Fokeltje A. Koldijk; Frits Visser; Tosko A. Misev; Albertus R. Hofkamp, and Marten Houweling, all of Zwolle, Netherlands, assignors to DSM N.V., Netherlands

Continuation of Ser. No. 497,023, Mar. 22, 1990, abandoned. This application Jul. 7, 1992, Ser. No. 908,882

Claims priority, application Netherlands, Mar. 23, 1989, 8900718; Jun. 3, 1989, 8901412

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—438 **6 Claims**

1. Powder paint comprising a polyepoxy compound, a polyester resin and customary additives, the polyester resin having an acid number ranging from 15 through 70 and a hydroxyl number of 10 or below and being substantially based on units of dicarboxylic acids, glycols and monomers of functionality three or higher, wherein the dicarboxylic acids are comprised of 75–90 mole % of isophthalic acid and 10–25 mole % of 1,4-cyclohexane dicarboxylic acid and wherein the glycols are comprised of at least 50 mole % of branched aliphatic glycols with 5–11 carbon atoms, which may optionally comprise an ester group, and at most 50 mole % of aliphatic glycol with 2–6 carbon atoms, and wherein the monomers have a functionality three or higher in an amount of at most 8 mole % of dicarboxylic acids plus glycols.

5,326,833

LIQUID REACTIVE COMPOSITIONS COMPRISING POLYISOCYANATES, EPOXIDES AND SOLUTIONS OF ALKALI METAL HALIDES IN POLYOXYALKYLENIC COMPOUNDS

Fabrizio Parodi, Genoa, and Carla Zannoni, Milan, both of Italy, assignors to ENICHEM S.p.A., Milan, Italy

Filed Nov. 25, 1992, Ser. No. 981,426

Claims priority, application Italy, Nov. 26, 1991, MI91-A-003160

Int. Cl.[5] C08G *18/22, 18/58, 59/30, 59/40;* **C08F** *283/10, 4/08;* **C08L** *63/02*

U.S. Cl. 525—528 **23 Claims**

1. A reactive composition liquid at a temperature lower than 70° C., comprising:

A) at least one organic polyisocyanate;

B) a mono- or polyepoxide, or a mixture of different mono- and/or polyepoxides, the ratio of isocyanate groups to epoxy groups in components A and B ranging from 99:1 to 50:50;

C) a catalyst, liquid at a temperature of less than 70° C., consisting of a solution of at least one alkali metal halide in a polyoxyalkylenic compound or in a mixture of different polyoxyalkylenic compounds, said polyoxyalkylenic compound containing at least one alcohol hydroxyl group wherein the weight ratio of alkali metal compound to polyoxyalkylenic compound ranges from 1:2 to 1:20 and wherein the weight ratio of the alkali metal halide to the mixture of A and B components ranges from 0.01:100 to 5:100.

5,326,834

AUTOCLAVABLE CONTAINERS COMPRISING POLY(ARYL ETHER SULFONES) HAVING ENVIRONMENTAL STRESS-CRACK RESISTANCE

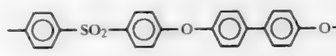
Marvin E. Sauers, Flowery Branch, and Barry L. Dickinson, Alpharetta, both of Ga., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 806,488, Dec. 13, 1991, abandoned, which is a continuation of Ser. No. 163,781, Mar. 3, 1988, abandoned. This application May 27, 1993, Ser. No. 68,241

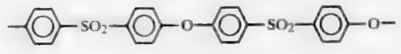
Int. Cl.[5] C08G *75/02;* **C08L** *81/06*

U.S. Cl. 525—534 **3 Claims**

1. An autoclavable container comprising a poly(aryl ether sulfone) capable of withstanding at least 1000 cycles of steam sterilization at a stress level of 500 psi without stress-crack failure, said steam sterilization cycle conducted for 30 min. at 270° F. and 27 psi using aqueous morpholine at a concentration of 50 ppm, said poly(aryl ether sulfone) consisting of from 60 to about 100 mole % of the structural unit:



and, correspondingly, from 40 to 0 mole % of the structural unit:



with the proviso that no other structural units are present.

5,326,835

MULTI-STAGE PROCESS FOR PRODUCING POLYETHYLENE

Antero Ahvenainen; Kari Sarantila; Henrik Andtsjö, all of Porvoo; Jouni Takakarhu, Helsinki, and Ari Palmroos, Kerava, all of Finland, assignors to Neste OY, Finland

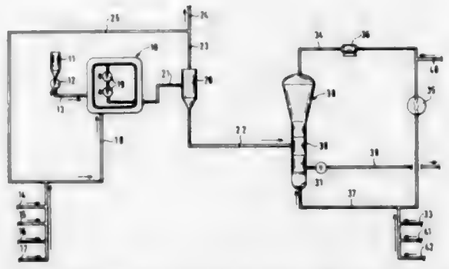
PCT No. PCT/FI91/00406, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO92/12182, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 20, 1991, Ser. No. 920,569

Claims priority, application Finland, Dec. 28, 1990, 906428

Int. Cl.[5] C08F *2/06*

U.S. Cl. 526—64 **15 Claims**



1. A multi-stage process for producing polyethylene having a bimodal and/or broad molecular weight distribution in a multi-step reaction sequence, in which the first stage is a liquid phase polymerization step and the second step comprises one or more gas phase polymerization steps, said process comprising polymerizing ethylene in the first step in the presence of an ethylene polymerizing catalyst system, hydrogen and optional comonomer in a loop reactor in an inert low boiling hydrocarbon medium during a residence time which is at least 10 minutes and which is sufficiently long to produce polyethylene in an amount of 20–90% based on the total polymer produced in the process, discharging the resulting reaction mixture from the loop reactor, removing hydrogen, unreacted reactants, and the inert hydrocarbon medium from said reaction mixture, transferring the produced polymer from which hydrogen, unreacted reactants and the hydrocarbon medium has been removed into one or more gas phase reactors, and completing the polymerization in the gas phase reactor in the presence of ethylene and optionally hydrogen and comonomer to produce polyethylene having bimodal and/or broad molecular weight distribution.

5,326,836

PROCESS FOR THE PREPARATION OF A FLAME RETARDANT STYRENIC RESIN

Yong Y. Hwang, and Bong H. Park, both of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

Filed Sep. 2, 1992, Ser. No. 938,867

Claims priority, application Rep. of Korea, Sep. 3, 1991, 91-15366

Int. Cl.[5] C08F *4/34, 212/08*

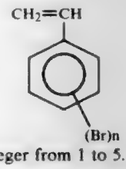
U.S. Cl. 526—79 **5 Claims**

1. A process for preparing a flame retardant styrenic resin which comprises:

(1) an initiation step wherein 3 to 10 parts by weight of a bromostyrene compound of formula(I), 10 to 25 parts by weight of styrene, 5 to 10 parts by weight of an unsaturated nitrile, 0.01 to 0.5 part by weight of a chain transfer agent and 0.01 to 1.0 part by weight of an initiator are introduced to a polymerization reactor and polymerized until the conversion reaches 30 to 50%;

(2) a control step wherein 10 to 35 parts by weight of a bromostyrene compound, 20 to 50 parts by weight of styrene, 5 to 20 parts by weight of an unsaturated nitrile, 0.01 to 1.0 part by weight of an initiator and 0.01 to 0.5 part by weight of a chain transfer agent are introduced to the reactor in one or more divisions in accordance with the progress of said polymerization until the conversion reaches 80 to 90%; and

(3) an optimization step wherein 3 to 10 parts by weight of styrene, 5 parts by weight or less of an unsaturated nitrile, 0.01 to 0.3 part by weight of a chain transfer agent and 0.01 to 0.5 part by weight of an initiator are introduced to the reactor until the polymerization is completed:



(I)

wherein, n is an integer from 1 to 5.

5,326,837

CATALYST SYSTEMS FOR SYNDIOSPECIFIC POLYMERIZATION OF STYRENES

Yury V. Kissin, East Brunswick, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 20, 1992, Ser. No. 979,693

Int. Cl.[5] C08F *4/622, 12/08*

U.S. Cl. 526—150 **42 Claims**

1. A process for polymerizing styrene by contacting it under polymerization conditions with a catalyst composition comprising at least three components:

(i) trimethylaluminum,

(ii) at least one of the organotin compounds with general formulae:

$R_1R_2R_3Sn—O—SnR_4R_5R_6$

or $R_1R_2R_3Sn—OH$

or R_1R_2SnO

or $R_1Sn(O)OH$;

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different C_1–C_{20} alkyl groups or aryl groups or alkylaryl groups,

(iii) at least one derivative of a transition metal having the formula Cp_nMA_{m-n}, wherein

M is a metal selected from the group of titanium, zirconium and hafnium;

Cp is a cyclopentadienyl or a substituted cyclopentadienyl group, wherein one or several substituents are alkyl groups of 1 to 6 carbon atoms;

A is selected from the group consisting of a halogen, hydrogen, or an oxyhydrocarbyl group OR', wherein R' is a C_1–C_6 linear or branched alkyl group, a substituted or non-substituted aryl group, or an arylalkyl group;

n is 0 or 1; and m is 4 or 3;

provided that the molar ratio between said trimethylaluminum and the organotin compound is higher than 1.

5,326,838

METHOD OF PREPARING HOMOPOLYMERS OF CONJUGATE DIENES AND COPOLYMERS OF CONJUGATE DIENES WITH OTHER DIENES OR VINYL AROMATIC COMPOUNDS

V. Ruiz Santa Quiteria, Madrid; M. D. Parellada Ferrer, Coslada; W. Michiels Vega, Alcala de Henares; M. A. Madueno Casado, Puertollano, and A. Mendez Perez, Bilbao, all of Spain, assignors to Repsol Quimica, S.A., Madrid, Spain

Continuation of Ser. No. 722,908, Jun. 28, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 996,845

Claims priority, application Spain, Jun. 29, 1990, P9001799

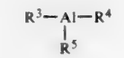
Int. Cl.[5] C08F *4/54, 36/06*

U.S. Cl. 526—187 **12 Claims**

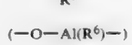
1. The method of preparing homopolymers of conjugated dienes or copolymers of conjugated dienes with another diene or with vinyl aromatic compounds in which the vinyl content is above 70%, characterized by use of a catalytic composition comprising:

(a) an organomagnesium compound MgR^1R^2 (I), wherein R^1 and R^2 are selected from the group consisting of aliphatic, alicyclic or aromatic hydrocarbons radicals having from 2 to 20 carbon atoms, which may be the same or different,

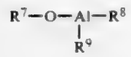
(b) an organoaluminium compound selected from the group consisting of those represented by following formulae (II) to (V):



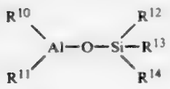
(II)



III



(IV)

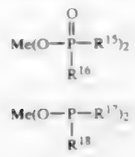


(V)

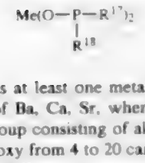
where the groups R^3 to R^{14} can be H or the same or different radicals, selected from the group of normal,

secondary or tertiary alkyl, cycloalkyl or aryl radicals containing 2 to 20 carbon atoms, and

(c) an organic barium, strontium or calcium compound selected from the group consisting of those represented by the following formulae (VI) to (VII):



(VI)



(VII)

where Me is at least one metal selected from the group consisting of Ba, Ca, Sr, where R^{15} to R^{18} are selected from the group consisting of alkyl, cycloalkyl, aryl, phenoxy or alkoxy from 4 to 20 carbon atoms, which may be the same or different.

5,326,839

AMORPHOUS COPOLYMERS OF TWO FLUORINATED RING MONOMERS

Paul R. Resnick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 878,481, May 5, 1992. This application May 24, 1993, Ser. No. 65,044

Int. Cl.[5] B32B *15/04*

U.S. Cl. 526—247 **2 Claims**

1. An article selected from the group consisting of plastic sheets and films and metal sheets and foils carrying on at least one of its surfaces a coating of an amorphous copolymer of 1–99.5 mol % of perfluoro (2,2-dimethyl-1,3-dioxole) with a complementary amount of 99–0.5 mol % of at least one other comonomer, said copolymer being selected from the group consisting of dipolymers with perfluoro (butenyl vinyl ether) and terpolymers with perfluoro (butenyl vinyl ether) and with a third, comonomer, wherein the third comonomer can be (a) a perhaloolefin in which halogen is fluorine or chlorine, but at least one half of the halogen atoms must be fluorine, or (b) a perfluoro (alkyl vinyl ether); the amount of the third comonomer, when present, being at most 40 mol % of the total composition.

5,326,840

RADIATION-SENSITIVE MIXTURE CONTAINING NOVEL POLYMERS EMBODYING UNITS COMPOSED OF AMIDES OF α, β-UNSATURATED CARBOXYLIC ACIDS AS BINDERS

Klaus-Juergen Przybilla, Frankfurt am Main; Georg Pawlowski, Wiesbaden, and Horst Roeschert, Ober-Hilbersheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

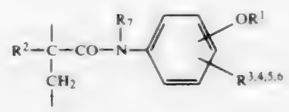
Filed Jun. 9, 1992, Ser. No. 895,666

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4120172

Int. Cl.[5] C08F *20/60, 24/00, 30/08*

U.S. Cl. 526—262 **18 Claims**

1. A polymer embodying units of the formula I



(I)

where

R^1 is an acid-cleavable benzyl, trialkylsilyl, alkoxycarbonyl, tetrahydropyranyl or tetrahydrofuranyl group,

R^2 is (C_1–C_4) alkyl, halogen (C_1–C_4) alkyl or hydrogen,

$R^{3,4,5,6}$ are, independently of one another, an optionally halogen-substituted aliphatic, araliphatic or aromatic radical containing 1 to 20 carbon atoms, a halogen atom or hydrogen, and

R^7 is (C_1–C_4) alkyl or hydrogen.

8. A polymer as claimed in claim 1, which is a copolymer that contains, in addition to units of the formula I containing acid-cleavable groups, units derived from maleimide.

5,326,841

GERMICIDAL BARRIERS

Jack H. Fellman, Portland, Oreg., assignor to Epitope, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 301,099, Jan. 25, 1989, abandoned. This application Jun. 23, 1989, Ser. No. 370,683

Int. Cl.[5] C08F *20/04, 20/52, 20/70;* **A61K** *31/74*

U.S. Cl. 526—292.3 **29 Claims**

1. An elastomeric article comprising the cross-linked, polymerized product of (i) a quaternary ammonium compound having the formula $N^+R_4X^-$ wherein at least one of the R groups is a hydrophobic unsaturated alkyl and the remaining R groups are hydrophobic alkyl or aryl and X is halogen or a small anion with (ii) a free-radical co-polymerizable compound, wherein the product is complexed with iodine.

5,326,842

SELF-ADHESIVE ACRYLATE COPOLYMERS, A PROCESS FOR THEIR PREPARATION AND SELF-ADHESIVE WEBS, WHICH CONTAIN THEM

Hans Knudsen, and Wolfgang Meyer, both of Rorschach, Switzerland, assignors to Sellotape AG, Rorschach, Switzerland

Division of Ser. No. 884,738, May 15, 1992. This application Mar. 4, 1993, Ser. No. 26,503

Claims priority, application European Pat. Off., May 31, 1991, 91108989.7

Int. Cl.[5] C08F *4/04*

U.S. Cl. 526—317.1 **12 Claims**

1. A method of preparing a self-adhesive web, which comprises:

adhering to a web a self-adhesive acrylate copolymer obtained by subjecting acryl monomers to a combined suspension polymerization and emulsion polymerization.

5,326,843

METHOD FOR MAKING AN ALKALI-SOLUBLE EMULSION COPOLYMER

Dennis P. Lorah, Lansdale, and Thomas G. Madle, Flourtown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 4, 1993, Ser. No. 130,971

Int. Cl.[5] C08F *20/06*

U.S. Cl. 526—318.6 **27 Claims**

1. An emulsion polymerization process for making a low molecular weight alkali-soluble copolymer of a water insoluble monoethylenically unsaturated aromatic monomer and methacrylic acid, comprising:

heating an aqueous reaction mixture, said reaction mixture having a pH of less than or equal to about 4.5 and comprising:

from about 25 parts by weight to about 75 parts by weight of the water insoluble monoethylenically unsaturated aromatic monomer;

from about 25 parts by weight to about 75 parts by weight of methacrylic acid;

a polymerization initiator;

a reducing agent;

a catalyst effective for promoting decomposition of the polymerization initiator in the presence of the reducing agent; and

an amount of a chain transfer agent effective to limit copolymer weight average molecular weight to a range of about 2,000 to about 40,000;

to a temperature greater than or equal to about 75° C.; and maintaining the reaction mixture at a temperature greater than or equal to about 75° C. for a period of tinge effective to allow formation of the copolymer.

5,326,844

PRIMER COMPOSITIONS

Hironao Fujiki, Takasaki; Masanobu Miyakoshi, Annaka; Takeo Yoshida, Annaka; Yoshifumi Inoue, Annaka, and Masatoshi Arai, Annaka, all of Japan, assignors to Shin-Etsu Chemical Company, Limited, Tokyo, Japan

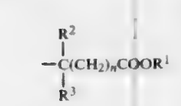
Filed Apr. 7, 1993, Ser. No. 43,852

Claims priority, application Japan, Apr. 7, 1992, 4-114074

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 **14 Claims**

1. A primer composition comprising an organic silicon compound having in a molecule at least one group of the formula (1):



(1)

wherein

R^1 is a substituted or unsubstituted monovalent hydrocarbon group or a group represented by $QSi(R^4O)_a(R^5)_{3-a}$,

Q is a divalent organic group,

R^4 and R^5 each are a substituted or unsubstituted monovalent hydrocarbon group,

letter a is an integer of 0 to 3,

R^2 and R^3 each are a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group,

letter n is 0, 1 or 2,

an organic titanium compound, and

an organic solvent.

5,326,845

MOISTURE CURABLE SILICONE-URETHANE COPOLYMER SEALANTS

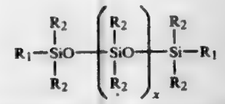
Gary L. Linden, Centerville, Ohio, assignor to DAP Products Inc., Tipp City, Ohio

Continuation-in-part of Ser. No. 781,543, Oct. 22, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 990,047

Int. Cl.[5] C08G *77/26*

U.S. Cl. 528—28 **13 Claims**

1. A clear, paintable, one-part storage stable, moisture curable, sealant/caulk composition for filling joints between adjacent structural units, said composition being devoid of solvent and comprising a polyurethane-silicone copolymer, said copolymer comprising the reaction product of a hydroxy functional siloxane having a molecular weight of less than about 5,000 and an aliphatic or alicyclic polyisocyanate compound, said hydroxy functional siloxane being represented by the formula



wherein each R_1 is $—CH_2CH_2CH_2OH$ each R_2 is methyl and wherein x is from 1 to about 50, said copolymer, prior to moisture curing, comprising about 8.67 wt. % of free NCO groups, said composition emitting only CO_2.

5,326,846

PROCESS FOR PRODUCING IMPACT-RESISTANT POLYACETAL RESIN COMPOSITION

Satoshi Nagai; Masao Hasegawa; Hiroshi Mimura, and Makoto Kobayashi, all of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 1, 1993, Ser. No. 41,197

Claims priority, application Japan, Apr. 4, 1992, 4-082535

Int. Cl.[5] C08G *18/00*

U.S. Cl. 528—44 **10 Claims**

1. A process for producing an impact-resistant polyacetal resin composition, which comprises mixing with shear a polyacetal resin (A), a thermoplastic polyurethane (B), a polyhydric alcohol (C) selected from the group consisting of glycerine, trimethylolethane, trimethylolpropane, hexantriol, triethanolamine, diglycerine, pentaerythritol, tetraethanol, ethylenediamine, methylglucosite, aromatic diamine-tetraethanol adduct, sorbitol, dipentaerythritol, cyclodextrin, a phenoxy resin and polyvinyl alcohol, and at least one compound (D) selected from the group consisting of a polyisocyanate (d_1) and a compound (d_2) which generates a polyisocyanate under heat, while at least two components (A) and (B) are melted.

5,326,847

HINDERED PHENOLIC ANTIOXIDANT; ANTIOXIDANT CONTAINING HYDROPHILIC URETHANE POLYMER; DRY CLEANING SOLVENT RESISTANT, WATERPROOF, MOISTURE-VAPOR PERMEABLE MATERIAL CONTAINING THE POLYMER; AND METHOD OF MAKING THE SAME

Malcolm B. Burleigh, and Roger A. Mader, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 546,260, Jun. 28, 1990, Pat. No. 5,173,300. This application Dec. 18, 1992, Ser. No. 993,293

Int. Cl.[5] C08G *18/12*

U.S. Cl. 528—60 **6 Claims**

1. A polymer comprising a moisture-vapor permeable, water-impermeable, hydrophilic urethane polymer having a hindered phenolic antioxidant reacted into its structure wherein said urethane polymer comprises the reaction product of a polyisocyanate having an NCO functionality of at least about 2.0 with a polyol having at least two hydroxyl groups and a polyurethane oxide content of from about 20 to about 100 percent by weight based upon the weight of the polyol, wherein said hindered phenolic antioxidant is selected from the group consisting of hindered phenolic antioxidants of the general formula $CR[(CH_2)_x—OH]_{3-y}[(CH_2)_1—OP]_y$ wherein

R is selected from the group consisting of —H, $—CH_3$, $—C_2H_5$, $—(CH_2)_wOH$, and $—(CH_2)_wOP$;

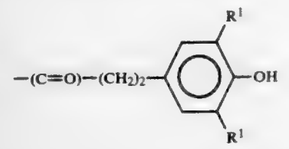
q is an integer of 0 to 2;

x is an integer of 0 to 2;

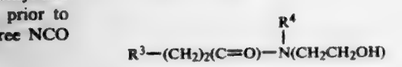
y is an integer of 1 to 2;

w is an integer of 0 to 2; and

P has the general formula



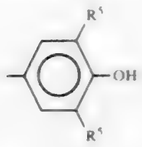
wherein R^1 represents a tertiary butyl group and wherein the values of x, q, and w are such that not more than one of x, q, and w can equal 0 at a time; and hindered phenolic antioxidants of the general formula



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-continued

wherein R^3 has the formula



wherein

R^5 is a tertiary butyl group; and

R^4 is selected from the group consisting of —H, an alkyl group, and $—CH_2OH$; and wherein the hydrophilic urethane polymer comprises the reaction product of:

(a) about 0.1 to about 10 weight percent of the hindered phenolic antioxidant;

(b) about 5 to about 60 weight percent of a polyisocyanate; and

(c) about 10 to about 70 weight percent of a polyol composition having an average molecular weight of about 500 to about 4000 comprising about 20 to 100 weight percent polyethylene oxide based upon the weight of the polyol composition

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5,326,848

THERMOTROPIC LIQUID CRYSTAL POLYESTER

Tsugunori Kashimura, Kurashiki; Mitsuo Matsumoto, Okayama, and Shuhei Ishino, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

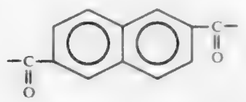
Continuation-in-part of Ser. No. 726,912, Jul. 8, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 959,342

Claims priority, application Japan, Jul. 9, 1990, 2-182279; Jul. 10, 1990, 2-183278; Jul. 13, 1990, 2-186173; Jan. 9, 1992, 4-21906

Int. Cl.[5] C08G *63/00, 63/02*

U.S. Cl. 528—190 **14 Claims**

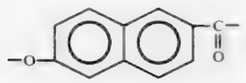
1. A thermotropic liquid crystal polyester consisting essentially of a structural unit (4) represented by the following formula:



a structural unit (2) represented by the following formula

$—O—CH_2CH_2—O—$

and a structural unit (3) represented by the following formula:



said structural units (4) and (2) being present in about equimolar amounts, the sum of said structural units (4) and (2) being 15 to 90 mol % and said structural unit (3) being present in an amount of 10 to 85 mol % prepared by a method (I) comprising:

reacting a polyethylene naphthalate consisting essentially of units having structural unit (4) and structural unit (2), and an acyloxyaromatic carboxylic acid consisting essentially of 6-acyloxy-2-naphthoic acid; or prepared by a method (II) comprising:

reacting a polyethylene naphthalate consisting essentially of units having structural unit (4) and structural unit (2), a hydroxyaromatic carboxylic acid consisting essentially of 6-hydroxy-2-naphthoic acid and a lower aliphatic acid anhydride of from 1.02 to 1.50 mole equivalent based on the hydroxyaromatic carboxylic acid in the presence of solvent at a temperature ranging form 100° C. to 150° C. until the conversion of the hydroxyaromatic carboxylic acid reaches not less than 95 mol %, and reacting the obtained reaction mixture at a temperature higher than 150° C.

5,326,849

METHOD FOR PRODUCING AN AROMATIC POLY (THIO) ETHER KETONE

Yukio Takahashi, Kitami; Norihiko Yoneda, Sapporo, and Seiichi Nozawa, Yamato, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

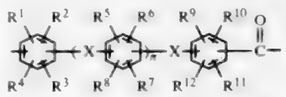
Continuation of Ser. No. 787,793, Nov. 4, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 136,731

Claims priority, application Japan, Nov. 5, 1990, 2-299253; Sep. 5, 1991, 3-226242

Int. Cl.[5] C08G *63/06*

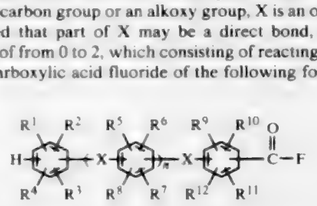
U.S. Cl. 528—207 **9 Claims**

1. A method for producing an aromatic polyether ketone having repeating units of the following formula (II):



(II)

wherein each of R^1 to R^{12} is a hydrogen atom, a halogen atom, a hydrocarbon group or an alkoxy group, X is an oxygen atom, provided that part of X may be a direct bond, and n is an integer of from 0 to 2, which consisting of reacting an aromatic ether carboxylic acid fluoride of the following formula (I):



(I)

wherein R^1 to R^{12}, X and n are as defined above, under pressure of at least 5 atms in an aprotic organic solvent in the presence of boron trifluoride.

5,326,850

MOLDING MATERIALS BASED ON UNSATURATED COPOLYAMIDES

Walter Goetz; Brigitte Gareiss; Andreas Deckers, all of Ludwigshafen, and Petra Baierweck, Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 3, 1993, Ser. No. 25,864

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1992, 4206949

Int. Cl.[5] C08G *69/26, 69/08;* **C08J** *3/28*

U.S. Cl. 528—345 **7 Claims**

1. A process for producing structures, which comprises (1) molding a copolyamide molding material consisting essentially of:

A) from 40 to 100% by weight of a copolyamide based on

a_1) from 1 to 20 mol%, based on the copolyamide, of at least one monomer that contains at least one olefinic doubles bond, selected from the group consisting of

α_1) olefinically unsaturated lactams,

α_2) olefinically unsaturated aminocarboxylic acids,

α_3) olefinically unsaturated discarboxylic acids, and

α_4) olefinically unsaturated diamines

and

a_2) from 80 to 90 mol%, based on the copolyamide, of at least one monomer that contains no olefinic double bonds, selected from the group consisting of

β_1) lactams,

β_2) aminocarboxylic acids,

β_3) dicarboxylic acids, and

β_4) diamines

and

B) from 0 to 35% by weight of an impact modifying rubber,

C) from 0 to 50% by weight of a filler or reinforcing agent,

D) from 0 to 20% by weight of a flame retardant, and

E) from 0 to 10% by weight of further additives and processing aids

and (2) exposing the molded material to high-energy radiation

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5,326,851

LOW-VISCOSITY POLYARYLENE SULFIDES

Burkhard Köhler; Udo Wolf; Wolfgang Rüsseler, all of Krefeld, and Wilfried Haese, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen

Filed Nov. 16, 1992, Ser. No. 977,062

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4138905

Int. Cl.[5] C08G *75/14;* **C08F** *283/00*

U.S. Cl. 528—388 **13 Claims**

1. Polyarylene sulfides obtained by reaction of aromatic dihalogen compounds with—based on aromatic dihalogen compounds—98 to 120 mol-% alkali metal sulfides and/or hydrogen sulfides, the ratio of sulfides to hydrogen sulfides being between 100:0 and 60:40, in dipolar aprotic solvents in the presence of—based on aromatic dichlorine compounds—0.1 to 10 mol-% cycloaliphatic unsaturated acids comprising at least 50% by weight abietic acid.

5,326,852

METHOD FOR PRODUCTION OF ALKYLENE OXIDE POLYMERS

Masato Fujikake; Morio Nakamura; Shinji Kobayashi; Katsunori Tanaka, and Masahiro Suzuki, all of Himeji, Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyogo, Japan

Filed Jul. 1, 1992, Ser. No. 907,039

Claims priority, application Japan, Jul. 11, 1991, 3-196973

Int. Cl.[5] C08G *65/12*

U.S. Cl. 528—414 **11 Claims**

1. A method for production of alkylene oxide polymers comprising reacting an alkylene oxide in an inert hydrocarbon solvent in the presence of a catalyst, wherein said catalyst is obtained by the method comprising the steps of:

(a) reacting a zinc compound represented by the formula ZnR_2, wherein R represents an alkyl group having 1 to 6 carbon atoms, with an aliphatic polyhydric alcohol having two or more carbon atoms and two or more hydroxyl groups in an amount of 0.2 to 1.1 equivalent based on said zinc compound;

(b) reacting the obtained reaction product in the step (a) with a monohydric alcohol having 1 to 6 carbon atoms in an amount of not less than 0.1 equivalent based on said zinc compound; and

(c) applying heat treatment at 80° to 200° C. for 5 to 180 minutes to the reaction product obtained in the step (b).

5,326,853

LOW FORMALDEHYDE, HIGH GEL FRACTION LATEX BINDER

Peter C. Hayes, Stow, Ohio, assignor to GenCorp Inc., Fairlawn, Ohio

Filed Sep. 16, 1993, Ser. No. 122,821

Int. Cl.[5] C08L *33/00*

U.S. Cl. 524—813 **5 Claims**

1. A high gel fraction latex binder composition, comprising; a binder dispersed in water and containing from about 70 percent to about 97 percent by weight of insoluble gel at 20° C. in toluene, said binder being the reaction product of monomers comprising a primary comonomer component of from 10 to 90 percent by weight of one or more conjugated diene monomers having from 4 to 8 carbon atoms and from 90 to 10 percent by weight of one or more vinyl-substituted aromatic monomers having from 8 to 12 carbon atoms; and

from about 0.1 to about 15 parts by weight of at least one functional containing monomer based upon 100 parts by weight of said primary comonomer component,

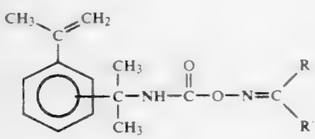
optionally from about 0.1 to about 35 parts by weight of a vinyl chloride monomer or a vinylidene chloride monomer, or combinations thereof,

optionally from about 0.1 to about 10 parts by weight of an alkyl acrylate or alkyl methacrylate monomer wherein said alkyl has from 1 to 10 carbon atoms or a hydroxyl derivative thereof,

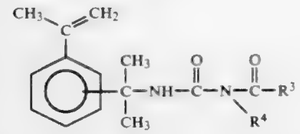
optionally from about 0.1 to about 25 parts by weight of an acrylonitrile monomer or derivative thereof,

wherein the amounts of said optional monomers are based upon 100 parts by weight of said primary comonomer component, and

from about 0.5 to about 20 parts by weight per 100 parts by weight of said primary comonomer component of one or more ketoxime or amide blocked isopropenyl α,α-dimethyl benzyl isocyanate compounds having the formula



or



wherein R and R′ independently is an alkyl having from 1 to 10 carbon atoms, and R^4 is hydrogen, or wherein R^3 and R4, independently, is an alkyl, an aromatic, or combinations thereof having from 1 to 10 carbon atoms, or wherein said R^3 and R^4 are connected to form an internal amide.

5,326,854

FLOCCULATION PROCESS USING LACTAM OR VINYL SULFONATE POLYMER

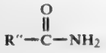
G. Allan Stahl, Humble, Tex.; Henry L. Hsieh, and Ahmad Moradi-Araghi, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 756,851, Jul. 18, 1985, Pat. No. 5,080,809, which is a continuation-in-part of Ser. No. 568,363, Jan. 9, 1984, Pat. No. 4,951,921, which is a continuation-in-part of Ser. No. 461,707, Jan. 28, 1983, Pat. No. 4,644,020. This application Jan. 14, 1992, Ser. No. 820,719

Int. Cl.[5] B01D *21/01;* **C02F** *1/56;* **C08L** *33/24, 39/06*

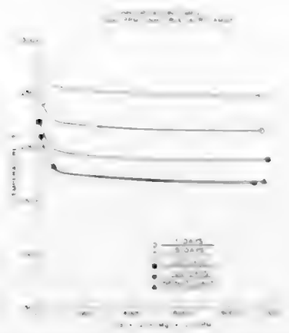
U.S. Cl. 528—488 **28 Claims**

1. A flocculating process comprising adding a polymer of an N-vinyl lactam and an unsaturated amide of the formula



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where R'' is an unsaturated 1-alkenyl radical to a liquid con-



taining solids, wherein the temperature of the liquid is at least about 170° F.

5,326,855

PROCESS FOR THE MANUFACTURE OF ELASTOMERS IN PARTICULATE FORM

Henry Kahn, 5603 Rutherglen, Houston, Tex. 77096

Continuation of Ser. No. 737,808, May 23, 1985, abandoned, which is a continuation of Ser. No. 539,577, Oct. 6, 1983, abandoned. This application May 15, 1987, Ser. No. 50,736

Int. Cl.[5] **C08F** *6/24*

U.S. Cl. 528—498 **12 Claims**

1. A process for the manufacture of rubber, consisting of:

A. feeding catalyst, a set of purified monomers taken from the following table and diluents to a reaction system

Rubber	Monomer	Monomer
Ethylene-Propylene-Diene	Ethylene	Ethylidene Norbornene propylene
Epichlorohydrin	Epichlorohydrin	Ethylene oxide
Butyl	Isobutylene	Isoprene

with a diluent selected from C_3, C_4 and C_5 hydrocarbons and C_1 chlorinated hydrocarbons or a mixture of these;

B. reacting the set of monomers, diluents and catalysts in the reactor system to form a particulate rubber product set out in said table;

C. rece. g the product in a purification system

D. purifying the product in the purification system from the remaining reaction components by settling the product in fresh diluent;

E. separating the product from the diluent by flash evaporating at a pressure in the range of 1–10 psig the diluent from the product in the absence of water and steam; and

F. finish drying the product in a dryer;

whereby the group consisting of ethylene-propylene-diene rubber, butyl rubber and epichlorohydrin rubber are all produced by substantially the same equipment.

5,326,856

BIFUNCTIONAL ISOTHIOCYANATE DERIVED THIOCARBONYLS AS LIGANDS FOR METAL BINDING

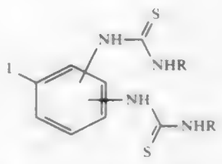
Daniel J. Coughlin, Robbinsville, and Benjamin A. Belinka, Jr., Kendall Park, both of N.J., assignors to Cytogen Corporation, Princeton, N.J.

Filed Apr. 9, 1992, Ser. No. 866,375

Int. Cl.[5] **C07C** *337/06, 335.22;* **C07D** *207/44, 213/71*

U.S. Cl. 534—14 **45 Claims**

1. A chelating agent of the formula:



in which NHCSNHR is in the 2,3- or 3,4-positions, and R is H or a substituent of the general formula:

$$R=-(NH)_a(CH_2)_bCY(NH)_d(CH_2)_e-Z$$

in which

a=0 or 1;

b=0–10;

CY is C=S, C=O or CH_2;

d=0–2;

e=1–10;

Z=is H, $N(R')_3{}^+X^-$, SO_3H, CO_2H, OH, H_2PO_3; in which X^- is a counterion such as a halide or an acid salt and R' is a C_1 to C_4 lower alkyl; and

L comprises a reactive linker group selected from the group consisting of a primary amine, hydrazide, acid hydrazide, thioacid hydrazide, semicarbazide, thiosemicarbazide, reactive disulfide group, p-mercuribenzoate group, maleimide group, carboxylic acid, a carboxylic acid ester, an isothiocyanate, and succinate.

10. A complex comprising the chelating agent of claim **1** and a metal ion.

13. A conjugate comprising the chelating agent of claim **1** and a targeting molecule capable of specific interaction with a target molecule, said targeting molecule selected from the group consisting of an antibody, a protein, a peptide, a nucleic acid, and a steroid.

5,326,857

ABO GENOTYPING

Fumi-ichiro Yamamoto, Bellevue; Thayer White, Seattle; Senitiroh Hakomori, Mercer Island, all of Wash., and Henrik Clausen, Holte, Denmark, assignors to The Biomembrane Institute, Seattle, Wash.

Continuation-in-part of Ser. No. 402,695, Aug. 31, 1989, Pat. No. 5,068,191. This application Aug. 29, 1991, Ser. No. 752,101

Int. Cl.[5] **C07H** *21/02;* **C12N** *15/70, 5/10*

U.S. Cl. 536—23.2 **30 Claims**

1. An isolated DNA molecule encoding a human histo-blood group A glycosyltransferase.

5,326,858

NUCLEIC ACID ENCODING N-ACETYLMURAMIDASE M1

Henri Lichenstein, Ventura; Keith Langley, Newbury Park, and Mark Zukowski, Thousand Oaks, all of Calif., assignors to AMGEN Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 421,820, Oct. 16, 1989, abandoned. This application Jul. 28, 1992, Ser. No. 921,371

Int. Cl.[5] **C07H** *21/04;* **C12N** *15/56;* **A61K** *37/54*

U.S. Cl. 536—23.2 **5 Claims**

1. A purified and isolated nucleic acid encoding the expression of a polypeptide having the biological activity of *Streptomyces globisporus* N-acetylmuramidase M1 described by a nucleotide sequence selected from the group consisting of:

a) the nucleotide sequence as shown in FIG. **1**;

b) a nucleotide sequence which hybridizes under stringent conditions to the nucleotide sequence defined in (a); and

c) a nucleotide sequence encoding the same polypeptide as encoded by the nucleotide sequences of (a) or (b) by means of degtenerate codons.

5,326,859

DNA AND RECOMBINANT PLASMID

Haruo Sugano, Tokyo; Masami Muramatsu, Tokorozawa, and Tadatsugu Taniguchi, Tokyo, all of Japan, assignors to Juridical Foundation, Japanese Foundation for Cancer Research, Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 201,359

Int. Cl.[5] **C12N** *15/22, 15/00*

U.S. Cl. 536—23.52 **9 Claims**

1. A DNA which consists essentially of a DNA which codes for human fibroblast β_1 interferon polypeptide.

5,326,860

PITUITARY ADENYLATE CYCLASE ACTIVATING PROTEIN PRECURSOR

Haruo Onda, Ibaraki, Japan; Akira Arimura, New Orleans, La.; Chiharu Kimura, Ibaraki, and Chieko Kitada, Osaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 540,105, Jun. 10, 1990, Pat. No. 5,198,542. This application Sep. 4, 1992, Ser. No. 940,443

Int. Cl.[5] **C07K** *13/00*

U.S. Cl. 530—324 **7 Claims**

1. A precursor protein comprising an amino acid sequence which corresponds to the following formula:

Lys Arg His Ser Asp Gly Ile Phe Thr Asp Ser Tyr Ser Arg
Tyr Arg Lys Gln Met Ala Val Lys Lys Tyr Leu Ala Ala Val
Leu Gly Lys Arg Tyr Lys Gln Arg Val Lys Asn Lys Gly Arg
Arg Ile

5,326,861

PREPARATION OF ORGANIC MACROCYCLIC COMPOUNDS

Stephen A. Madison, Valley Cottage, N.Y.; Jean H. Koek, Schiedam, Netherlands; Johan J. W. Eshuis, Rotterdam, Netherlands, and Ronald P. Potman, Schiedam, Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Oct. 21, 1992, Ser. No. 964,243

Int. Cl.[5] **C07D** *255/00*

U.S. Cl. 540—474 **1 Claim**

1. A method for the preparation of 1,4,7-tritosyl-1,4,7-triazacyclononane which comprises reacting

i) diethylenetriamine tritosylate and

ii) a cyclising agent selected from the group consisting of ethylene glycol ditosylate, ethylene glycol dibenzene sulphonate, ethylene dibromide, ethylene dichloride and diacetylglycol

under alkaline conditions in a reaction medium comprising an organic solvent wherein the cyclising agent is soluble and water, at a temperature within the range of from 45° C. to 90° C. and exposing the reaction medium to ultrasound.

5,326,862

PROCESS FOR THE PREPARATION OF SULPHINYLPRISTINAMYCIN IIB

Xavier Radisson, Lyons, France, assignor to Rhone-Poulenc Rorer S.A., France

PCT No. PCT/FR91/00580, § 371 Date Jan. 14, 1993, § 102(e) Date Jan. 14, 1993, PCT Pub. No. WO92/01693, PCT Pub. Date Feb. 6, 1992

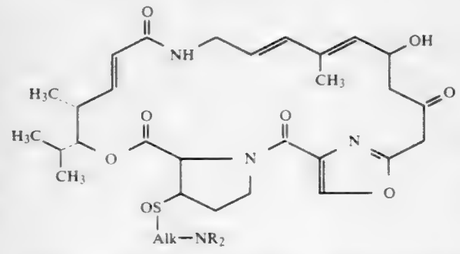
PCT Filed Jul. 15, 1991, Ser. No. 961,926

Claims priority, application France, Jul. 16, 1990, 90 09034

Int. Cl.[5] **C07D** *498/16*

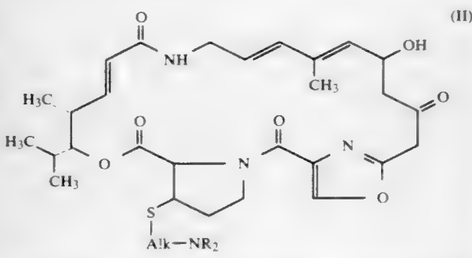
U.S. Cl. 540—456 **3 Claims**

1. Process for the preparation of (2-dialkylaminoalkyl)-26-sulphinylpristinamycin II_B of formula:



in which Alk represents a straight-chain or branched alkylene radical and R represents straight-chain or branched alkyl radicals, these radicals containing 1 to 10 carbon atoms, comprising oxidation of the corresponding (2-dialkylaminoalkyl)-26-thiopristinamycin II_B, of formula:

(II)



in which Alk and R are as defined above, by hydrogen peroxide in the presence of sodium tungstate, in alcoholic medium.

5,326,863

AZETIDIN-2-ONE DERIVATIVES AS SERINE PROTEASE INHIBITORS

William T. Han, Cheshire, Conn., assignor to Bristol-Myers Squibb Company, New York, N.Y.

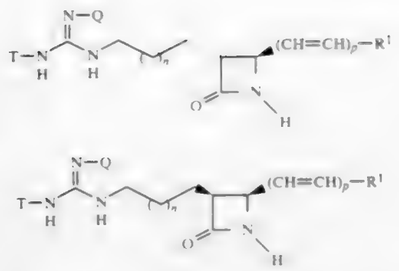
Division of Ser. No. 957,233, Oct. 6, 1992, Pat. No. 5,250,677, which is a division of Ser. No. 833,876, Feb. 11, 1992, Pat. No. 5,175,283, which is a division of Ser. No. 696,641, May 7, 1991, Pat. No. 5,110,812, which is a division of Ser. No. 533,270, Jun. 4, 1990, Pat. No. 5,037,819. This application Jul. 23, 1993, Ser. No. 96,321

Int. Cl.[5] **C07D** *205/09, 205/08;* **A61K** *31/395;* **C07B** *53/00*

U.S. Cl. 540—200 **2 Claims**

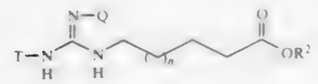
1. A process for preparing compounds of Formulas 3*a'* and 3*b'*

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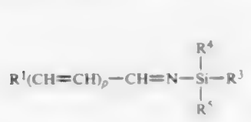
wherein Q and T can be the same or different amino protecting groups, p is 1 or 2, R^1 is phenyl or alkyl substituted phenyl, n is 1 to 3; comprising the steps of:

(a) forming a trianion of a compound of Formula iv using a strong base

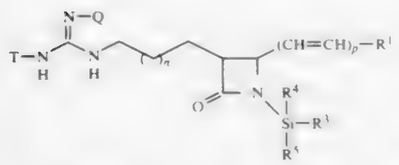


wherein T, Q and n are as defined above and R^2 refers to alkyl;

(b) reacting the trianion of a compound of Formula iv with a silylimine of Formula v

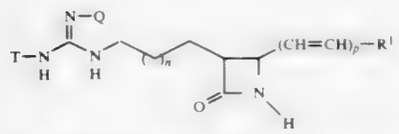


wherein R^1 and p are as defined above and R^3, R^4 and R^5 can independently be alkyl, phenyl or alkyl substituted phenyl to afford a compound of Formula vi



in which T, Q, n, p, R^1, R^4, R^3 and R^5 are as defined previously;

(c) hydrolyzing the nitrogen silicone bond of a compound of Formula vi to afford a compound of the formula 3, and



(d) separating the cis and trans isomers of a compound of Formula 3 to produce compounds of Formulas 3*a*′ and 3*b*′.

5,326,864

METHOD FOR THE PREPARATION OF CALCIUM-BINDING POLYCARBOXY COMPOUNDS BASED ON POLYSACCHARIDES, AND REPLACEMENTS FOR PHOSPHATES IN DETERGENTS, BASED ON THESE POLYCARBOXY COMPOUNDS

Arie C. Besemer, Amerongen, and Herman Van Bekkum, Vlaardingen, both of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno, The Hague, Netherlands

PCT No. PCT/NL91/00068, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO91/17189, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 26, 1991, Ser. No. 949,498

Claims priority, application Netherlands, Apr. 27, 1990, 9001027

Int. Cl.[5] **C08B** *37/00*

U.S. Cl. 536—123.1 **9 Claims**

1. Method for the preparation of a calcium-complexing polycarboxy compound based on a polysaccharide, comprising oxidizing inulin in an aqueous reaction medium in the presence of a low concentration of hypohalite as an oxidizing agent, using a total amount of oxidizing agent of less than 1.2 times the amount required for the oxidation of each C3–C4 dihydroxyethylene group of the inulin to two carboxyl groups, to produce a polycarboxyinulin having an average of 1.0–3.0 carboxyl groups per monosaccharide unit.

5,326,865

ARYLAZO AND POLY(ARYLAZO) DYES HAVING AT LEAST ONE CORE RADICAL SELECTED FROM NAPHTHYL OR ANTHRACYL AND HAVING AT LEAST ONE 2,3-DIHYDRO-1,3-DIALKYL PERIMIDINE SUBSTITUENT

Robert P. Grasso; Michael K. O'Brien, both of Wilmington, Del., and Paul J. Shannon, Exton, Pa., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jun. 8, 1990, Ser. No. 535,268

Int. Cl.[5] **C09B** *29/36, 31/14, 31/28;* **C09K** *19/24*

U.S. Cl. 534—577 **17 Claims**

1. An arylazo or poly(arylazo) dichroic dye having (a) one to five arylazo groups wherein the aryl radicals are selected from the group consisting of napthhthyl, anthracyl and phenyl radicals, and at least one aryl radical is a naphthylor anthracyl radical, and (b) having at least one 2,3-dihydro-1,3-dialkyl perimidine substituent

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5,326,866

LIQUID AZO DYE AND INK COMPOSITION CONTAINING THE SAME

Takashi Ono, Takatsuki; Tatsuya Yagyu, Neyagawa, and Tetsui Akase, Moriguchi, all of Japan, assignors to Orient Chemical Industries, Ltd., Osaka, Japan

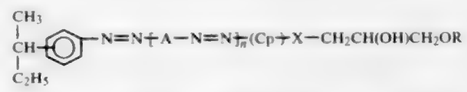
Filed May 12, 1993, Ser. No. 59,666

Claims priority, application Japan, May 14, 1992, 4-121882

Int. Cl.[5] **C09B** *29/15, 29/46;* **C09D** *11/02, 11/18*

U.S. Cl. 534—792 **5 Claims**

1. A liquid azo dye represented by the formula:



(wherein, A stands for a phenylene group which may have a substituent, n is o or 1, Cp is a pyrazolone derivative residue or a naphthol derivative residue, X is —NH— or —COO— and R is an alkyl group having 3 to 12 carbon atoms).

5,326,867

PRADIMIC ACIDS, AMIDES, AND PRADIMICIN DERIVATIVES

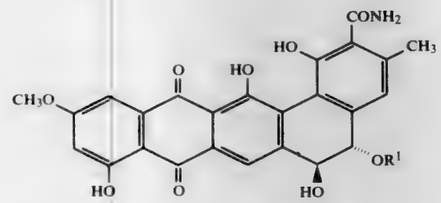
Satsuki Okuyama, Hachioji; Takaaki Okita, Tokyo, and Hajime Kamachi, Urayasu, all of Japan, assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Jul. 16, 1992, Ser. No. 914,908

Int. Cl.[5] **C07H** *15/24;* **C07C** *13/00*

U.S. Cl. 536—6.4 **11 Claims**

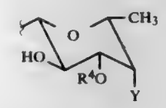
1. A compound of the formula



(II)

wherein

R^1 is hydrogen or a group of the formula



Y is OH or NR^2R^3;

R^2 is hydrogen or methyl;

R^3 is hydrogen, C_{1-5} alkyl, or an amino protecting group;

R^4 is hydrogen, β-D-xylosyl, or a hydroxy protecting group; or an acid addition salt thereof.

5,326,868

CERTAIN ARYL FUSED PYRROLOPYRIMIDINES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

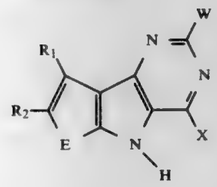
Andrew Thurkauf, Branford, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation of Ser. No. 865,129, Apr. 8, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 106,193

Int. Cl.[5] **C07D** *495/14, 487/14, 491/147*

U.S. Cl. 544—250 **6 Claims**

1. A compound of the formula:



wherein:

X is hydrogen, halogen, or hydroxyl;

W is

phenyl, thienyl, or pyridyl;

phenyl, thienyl, or pyridyl, each of which may be mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, amino, mono or dialkylamino where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

E represents oxygen, sulfur, NH, or NMe;

R_1 is

hydrogen, halogen, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms; and

R_2 is

hydrogen, halogen, hydroxy, amino, lower alkyl having 1–6 carbon atoms; or

$—OR_6$, $—COR_6$, $—CO_2R_6$, $—OCOR_6$, or $—R_6$, where

R_6 is hydrogen, phenyl, pyridyl, straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkyl or pyridylalkyl where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; or

$—CONR_7R_8$ or $—(CH_2)_nNR_7R_8$, where

n is 0, 1, or 2;

R_7 represents hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms; and

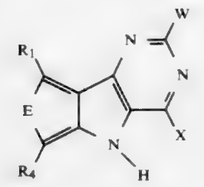
R_8 is hydrogen, phenyl, pyridyl, straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkyl or pyridylalkyl where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; or

NR_6R_7 forms a heterocyclic group which is morpholyl, piperidyl, pyrrolidyl, or N-alkyl piperazyl; or

$—C(OH)R_9R_{10}$ where

R_9 and R_{10} are the same or different and represent straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms.

2. A compound of the formula:



wherein:

X is hydrogen, halogen, or hydroxyl;

W is

phenyl, thienyl, or pyridyl;

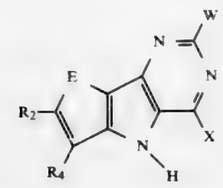
phenyl, thienyl, or pyridyl, each of which may be mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, amino, mono or dialkylamino where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

E represents oxygen, sulfur, NH or NMe; and

R_1 and R_4 are the same or different and represent

hydrogen, halogen, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms.

3. A compound of the formula:



X is hydrogen, halogen, or hydroxyl;

W is

phenyl, thienyl, or pyridyl;
phenyl, thienyl, or pyridyl, each of which may be mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, amino, mono or dialkylamino where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;
E represents oxygen, sulfur, NH or NMe;
R_4 is
hydrogen, halogen, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms; and
R_2 is
hydrogen, halogen, hydroxy, amino, lower alkyl having 1–6 carbon atoms; or
$—OR_6$, $—COR_6$, $—CO_2R_6$, $—OCOR_6$, or $—R_6$, where
R_6 is hydrogen, phenyl, pyridyl, straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkyl or pyridylalkyl where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; or
$—CONR_7R_8$ or $—(CH_2)_nNR_7R_8$, where
n is 0, 1, or 2;
R_7 represents hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms; and
R_8 is hydrogen, phenyl, pyridyl, straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkyl or pyridylalkyl where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms; or
NR_6R_7 forms a heterocyclic group which is morpholyl, piperidyl, pyrrolidyl, or N-alkyl piperazyl; or
$—C(OH)R_9R_{10}$ where
R_9 and R_{10} are the same or different and represent straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, or phenylalkyl where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms

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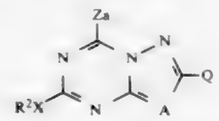
5,326,869

CHEMICAL PROCESS

Jonathan Hutton, Adlington, England, assignor to Imperial Chemical Industries, PLC, London, England

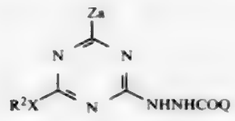
Filed Nov. 20, 1992, Ser. No. 979,096
Claims priority, application United Kingdom, Nov. 25, 1991, 9124968
Int. Cl.[5] C07D *487/04*
U.S. Cl. 544—209 **11 Claims**

1. A process for the preparation of a compound of formula II,



II

which comprises reacting a compound of formula III



III

with a polyphosphoric acid silyl ester; wherein
Q is selected from the group consisting of furyl, thienyl, oxazolyl, thiazolyl, isoxazolyl and isothiazolyl, optionally bearing 1 or 2 substituents independently selected from (1–4C)alkyl and halogeno;
R^2X is aryloxy; and
Z_a is aryloxy

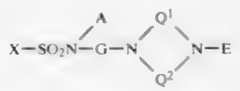
5,326,870

SUBSTITUTED SULFONAMIDE DERIVATIVE AND A PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Akiro Kajihara, Niiza, and Toshio Asano, Mishima, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/00146, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO92/14712, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 13, 1992, Ser. No. 927,493
Claims priority, application Japan, Feb. 13, 1991, 3-19761
Int. Cl.[5] C07D *401/12, 243/08, 295/067, 295/104*
U.S. Cl. 540—575 **5 Claims**

1. A substituted sulfonamide derivative represented by formula (I) or a pharmaceutically acceptable acid addition salt thereof



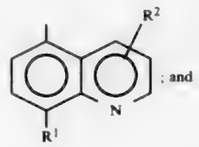
(I)

wherein A represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms; G represents a group selected from a methylene group and an alkylene group having 2 to 6 carbon atoms, which are each unsubstituted or each have at least one carbon-bonded hydrogen atom substituted with an alkyl group having 1 to 6 carbon atoms or with a hydroxyl group; Q^1 represents an ethylene group which is unsubstituted or has at least one carbon-bonded hydrogen atom substituted with an alkyl group having 1 to 6 carbon atoms; Q^2 represents a group selected from an ethylene group and a trimethylene group, which are each unsubstituted or each has at least one carbon-bonded hydrogen atom substituted with an alkyl group having 1 to 6 carbon atoms; E represents a group selected from a alkyl group having 1 to 6 carbon atoms, a group represented by formula (II-a) and a group represented by formula (II-b), which are each unsubstituted or each have at least one carbon-bonded hydrogen atom substituted with an alkyl group having 1 to 6 carbon atoms or with a hydroxyl group,

- G - J - Z (II-a),

- G - Z (II-b),

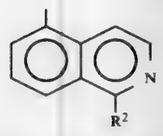
wherein G is as defined above, J represents an oxygen atom, a sulfur atom or a nitrogen atoms, and Z represents an aryl group having 5 to 10 carbon atoms which is unsubstituted or has at least one carbon-bonded hydrogen atom substituted with an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms or a halogen atom, or a pyridyl group, with the proviso that a nitrogen atom of said pyridyl group is not bonded to said G or said J; and X represents a group represented by a formula selected from the following formulae:



(III-a)

; and

-continued



(III-b)

wherein R^1 represents a hydrogen atom, a halogen atom or an alkyl group having 1 to 6 carbon atoms, and R^2 represents a hydrogen atoms or a hydroxyl group, with a proviso that when R^2 is a hydroxyl group and bonded to the 2-position of formula (III-a), said group of formula (III-a) is a carbostyril group, with the proviso that when E represents said alkyl group or said group of formula (II-b), X represents said group of formula (III-a).

5,326,871

OPTICALLY ACTIVE PYRIMIDINE COMPOUND, PROCESS FOR PRODUCING THE SAME AND LIQUID CRYSTAL COMPOSITION CONTAINING THE SAME

Takayuki Higashii, Takatsuki; Shoji Toda, Ibaraki; Masayoshi Minai, Moriyama; Chizu Sekine, Tsukuba; Takeshi Tani, Tsukuba, and Koichi Fujisawa, Tsukuba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

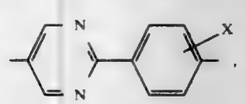
Filed Dec. 17, 1992, Ser. No. 992,027
Claims priority, application Japan, Dec. 26, 1991, 3-344604
Int. Cl.[5] C07D *239/02*; C09K *19/34*
U.S. Cl. 544—298 **10 Claims**

1. An optically active pyrimidine compound represented by the following general formula (I):

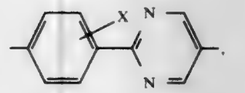


(I)

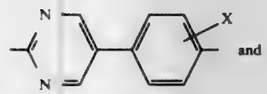
wherein R represents a fluoroalkyl group having 1 or 2 carbon atom(s); R^1 represents an alkyl group having 1–15 carbon atoms; R^2 represents an alkyl group having 1–15 carbon atoms or an alkoxyalkyl group having 2–15 carbon atoms, both the alkyl and alkoxyalkyl groups being optionally substituted by halogen atom; Y represents, —O—, —COO— or —OCO—; A is selected from the group consisting of:



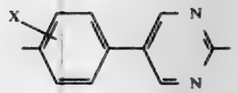
,



,



and



wherein X represents a hydrogen atom or a halogen atom; m and s each represent 0 or 1; and C* represents an asymmetric carbon atom.

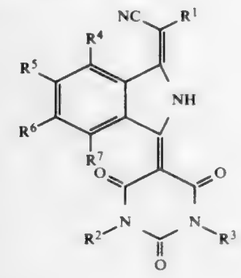
5,326,872

PROCESS FOR PREPARATION OF ASYMMETRIC ISOINDOLINE PIGMENTS

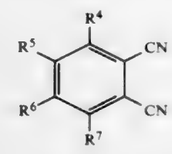
Barbara J. Wagner, Charleston, S.C., and Bernd Kaletta, Leverkusen, Fed. Rep. of Germany, assignors to Miles Inc., Pittsburgh, Pa. and Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 689,398, Apr. 22, 1991, Pat. No. 5,177,209. This application Mar. 6, 1992, Ser. No. 843,591
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] C07D *403/04*
U.S. Cl. 544—300 **16 Claims**

1. A process for preparing an asymmetric isoindoline pigment of the formula



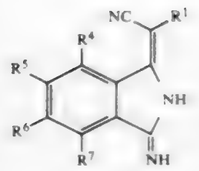
wherein
R^1 is an electron-withdrawing group;
R^2 and R^3 are independently
(1) hydrogen,
(2) C_1–C_6 alkyl, or
(3) C_6–C_{10} aryl; and
R^4, R^5, R^6, and R^7 are independently
(1) hydrogen,
(2) halogen,
(3) C_1–C_6 alkyl,
(4) C_1–C_6 alkoxy, or
(5) C_6–C_{10} aryloxy; comprising
(a) reacting a 1,2-dicyanobenzene of the formula



wherein R^4, R^5, R^6, and R^7 are defined as above, with an alcohol in an organic medium in the presence of a base, thereby forming an imino-isoindoline intermediate composition;
(b) reacting the imino-isoindoline intermediate composition, without first isolating said intermediate composition, with 0.9 to 1.5 molar parts, relative to the 1,2-dicyanobenzene, of a cyanomethylene compound of the formula

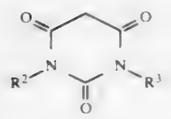
$NC—CH_2-R^1$

wherein
R^1 is an electron-withdrawing group that under the reaction conditions does not decompose or undergo significant chemical reactions to form a group that is not itself an electron-withdrawing group,
thereby forming a semi-condensed product of the formula



wherein R^1 is an electron-withdrawing group and R^4, R^5, R^6, and R^7 are defined as above; and

(c) isolating the semi-condensed product and then condensing said semi-condensed product in the presence of water at a temperature of 30° C. to 100° C. and at a pH between 1 and 6 with 1 to 3 molar parts, relative to the 1,2-dicyanobenzene, of a barbituric acid derivative of the formula



wherein R^2 and R^3 are defined as above, thereby forming the asymmetric isoindoline pigment.

5,326,873

PALLADIUM CATALYZED ADDITION OF AMINES TO 3,4-EPOXY-1-BUTENE

Stephen A. Godleski, Fairport, and Yann Hung, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1992, Ser. No. 893,725

Int. Cl.[5] C07D *295/00, 211/20, 207/04, 213/00*

U.S. Cl. 544—401 **20 Claims**

1. A process of forming N-substituted-4-amino-2-buten-1-ol comprising the steps of:

providing a quantity of 3,4-epoxy-1-butene;

providing a quantity of an amine; and

reacting said quantity of 3,4-epoxy-1-butene with said amine in a reaction medium and in the presence of a catalyst consisting essentially of a bound complex of palladium with up to four phosphine ligands to form N-substituted-4-amino-2-buten-1-ol, wherein said palladium is bound to a support selected from the group consisting of polystyrene, polystyrene beads crosslinked with divinylbenzene, alumina, silica gel, polyvinyl chloride, polybutadiene, polyvinyl alcohol, copolymers of styrene and methacrylate, and cellulose.

5,326,874

PROCESS FOR PREPARING TRANS-PIPERIDINE-2,5-DICARBOXYLATES

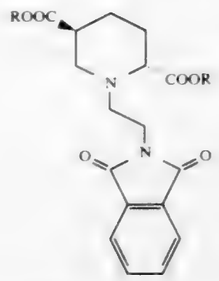
Frank J. Urban, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 20, 1993, Ser. No. 104,153

Int. Cl.[5] C07D *401/00*

U.S. Cl. 546—200 **2 Claims**

1. A compound of the formula



wherein R is $(C_1$–$C_3)$alkyl.

5,326,875

ALKYLATION OF AZAGLYCINE DERIVATIVES

Patrice Talaga, Brussels, Belgium, and Wolfgang König, Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 21, 1992, Ser. No. 822,929

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 4102015

Int. Cl.[5] C07C *281/06*

U.S. Cl. 546—332 **2 Claims**

1. A process for the preparation of an alkylated azaglycine derivative of the formula I

$$X\text{—}(A)_n\text{—}N(R)\text{—}NH\text{—}CO\text{—}NH_2 \qquad (I)$$

in which

X is an amino protective group wherein said protective group is Fmoc, Boc or Z; or X is C_1–C_8-alkanoyl, C_6–C_{14}-arylcarbonyl or C_6–C_{14}-aryl-C_1–C_4-alkanoyl;

A is an α-amino acid or an α-amino acid radical whose amino group is monosubstituted, on the third function, when present, A is optionally protected;

n is 0–10, X being C_1–C_8-alkanoyl, C_6–C_{14}-arylcarbonyl or C_6–C_{14}-aryl-C_1–C_4-alkanoyl if n=0; and

R is C_1–C_{18}-alkyl, C_6–C_{14}-aryl-C_1–C_4-alkyl, C_5–C_7-heteroaryl, or pyridyl C_1–C_4-alkyl wherein heteroaryl does not contain an acidic-NH group, and wherein said C_6–C_{14}-aryl-C_1–C_4-alkyl, C_5–C_7-heteroaryl, or pyridyl C_1–C_4-alkyl are optionally substituted in the aromatic ring by a halogen, a C_1–C_6 alkyl or a C_1–C_6 alkoxy;

which comprises reacting a compound of the formula II

$$X\text{—}(A)_n\text{—}NH\text{—}NH\text{—}CO\text{—}NH_2 \qquad (II)$$

in which X, A and n have the above mentioned meanings, with a primary or secondary C_1–C_{18}-alkylalkanol, a C_6–C_{14}-aryl-C_1–C_4-alkanol, a C_5–C_7-heteroaryl alcohol or a pyridyl C_1–C_4 alkanol, wherein said heteroaryl does not contain an acetic-NH group and wherein said C_6–C_{14} aryl-C_1–C_4 alkanol, C_5–C_7 heteroaryl alcohol and pyridyl C_1–C_4 alkanol are optionally substituted in the aromatic ring by a halogen, a C_1–C_6 alkyl or a C_1–C_6 alkoxy, and excess DEAR, and a tri-C_1–C_6-alkylphosphine, tri-C_6–C_{14}-arylphosphine or pyridyl-di-C_6–C_{14}-arylphosphine, it being possible for the aryl moiety to be optionally substituted by di-C_1–C_4-alkylamino, in an ether at 0° C. to 30° C., and removing the amino protective group X, with the proviso that X is not Fmoc when tri-n-butylphosphine is used.

5,326,876

PROCESS FOR PREPARING AN ALKYL SULFONATE DERIVATIVE

Ken Kawata, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 904,511, Jun. 25, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 31,135

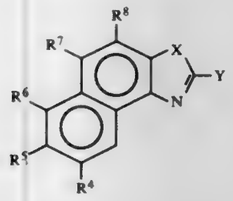
Claims priority, application Japan, Jun. 26, 1991, 3-181978

Int. Cl.[5] C07D *293/10, 277/60, 263/58, 209/56*

U.S. Cl. 548—100 **12 Claims**

1. A process for preparing an alkyl sulfonate derivative comprising:

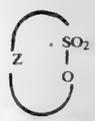
causing a nitrogen-containing heterocyclic compound represented by the following formula (1):



(1)

wherein X represents —O—, —S—, —NR^1—, —Se—, —Te— or —CR^2R^3—, in which each of R^1, R^2 and R^3 independently represents a hydrogen atom or a lower alkyl group which may be substituted with a halogen atom, a lower alkoxy group, an amino group or a hydroxy group and R^2 and R^3 may be bonded each other to form a 5 to 8-membered ring containing oxygen or nitrogen together with a carbon atom of a pyrrole ring to which R^2 and R^3 are bonded, Y represents a hydrogen atom, a mercapto group, an arylthio group which may be substituted with a halogen atom, an aralkyl group which may be substituted with a halogen atom, a sulfo group, a halogen atom, an alkyl group which may be substituted with a halogen atom, an alkylthio group which may be substituted with a sulfo group, an alkoxy group or an alkoxyalkoxy group, an alkylsulfonyloxy group which may be substituted with a halogen atom or an arylsulfonyloxy group which may be substituted with a halogen atom or an alkyl group and each of R^4, R^5, R^6, R^7 and R^8 independently represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group which may be substituted with a sulfo group, an aryloxy group, an alkylthio group, a haloalkyl group, a halogen atom, a cyano group, a carboxy group or a sulfo group;

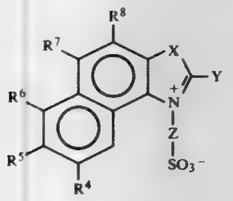
to react in the presence of Lewis acid with an aliphatic sultone represented by the following formula (2):



(2)

wherein Z represents an alkylene group which may substituted with an alkyl group, an alkoxy group or halogen atom;

to give an alkyl sulfonate derivative represented by the following formula (3):



(3)

wherein Y, R^4, R^5, R^6, R^7, R^8, X and Z represent the meanings defined above.

5,326,877

HERBICIDAL SUBSTITUTED TRIAZOLINONES

Markus Lindig, Kansas City, Mo.; Kurt Findeisen, Leverkusen, Fed. Rep. of Germany; Klaus-Helmut Müller, Duesseldorf, Fed. Rep. of Germany; Hans-Joachim Santel, Leverkusen, Fed. Rep. of Germany; Robert R. Schmidt, Bergisch-Gladbach, Fed. Rep. of Germany; Harry Strang, Kansas City, Mo.; Dieter Feucht, Monheim, Fed. Rep. of Germany; Klaus König, Odenthal, Fed. Rep. of Germany, and Klaus Lürssen, Bergisch Gladbach, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

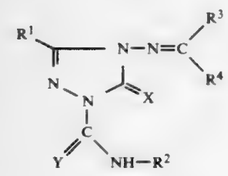
Division of Ser. No. 660,321, Feb. 22, 1992, Pat. No. 5,194,085, which is a continuation-in-part of Ser. No. 433,650, Nov. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 409,175, Sep. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 200,995, May 31, 1988, abandoned. This application Oct. 16, 1992, Ser. No. 962,442

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1987, 3719575; Feb. 5, 1988, 3803523; Nov. 19, 1988, 3839206

Int. Cl.[5] C07D *249/14*

U.S. Cl. 548—263.8 **16 Claims**

1. A hydrazone of the formula



in which

R^1 represents hydrogen, methyl, ethyl, n- or i-propyl, i-, n-, s- or t-butyl, n- or i-pentyl, n- or i-hexyl; cyclopropyl, methoxymethyl, ethoxymethyl or propoxymethyl,

R^2 represents hydrogen or represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, allyl, propargyl, in each case, straight-chain or branched pentyl, hexyl, heptyl, octyl, butenyl, pentenyl, hexenyl, butynyl, pentynyl, or hexynyl, each of which is optionally monosubstituted, disubstituted or trisubstituted by halogen; or additionally represents cyclopropyl, cyclopentyl, cyclohexyl, cyclohexenyl, cyclopropylmethyl, cyclopropylethyl, cyclohexylmethyl, cyclohexylethyl or cycloheptyl, which are in each case optionally monosubstituted, disubstituted or trisubstituted by identical or different substituents from the group consisting of fluorine, chlorine, methyl, ethyl and cyano; or represents benzyl, phenylethyl or phenyl,

X represents oxygen or sulphur,

Y represents oxygen or sulphur, and

R^3 and R^4, independently of each other, each represents hydrogen, alkyl with 1 to 4 carbon atoms, phenyl or benzyl.

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5,326,878

METHOD FOR THE RESOLUTION OF CHIRAL HYDANTOINS

Dominique Depernet, Brissac-Quince; Roger Bouaziz, Paris; Gerard Coquerel, Notre Dame de Bondeville, and Marie N. Petit, Mont-Saint-Aignan, all of France, assignors to Jouveinal SA, Paris, France

PCT No. PCT/FR91/00906, § 371 Date Jul. 21, 1992, § 102(e) Date Jul. 21, 1992, PCT Pub. No. WO92/08702, PCT Pub. Date May 29, 1992

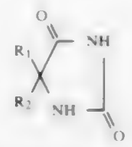
PCT Filed Nov. 15, 1991, Ser. No. 910,184

Claims priority, application France, Nov. 16, 1990, 90 14487

Int. Cl.[5] **C07D** *417/04, 233/74*

U.S. Cl. 548—315.1 **14 Claims**

1. A method of resolving a chiral hydrantoin of the formula



in which R_1 is lower alkyl and R_2 is phenyl, phenyl-C_{1-2}-alkyl or a 5 to 7 membered heterocyclic ring in which one ring member is nitrogen, oxygen or sulfur, wherein any phenyl group is optionally substituted 1 to 3 times by the same or a different lower alkyl or alkoxy group or halogen, the method comprising

dissolving the chiral hydantoin to be resolved in an alkaline solution, combining the alkaline solution with at least one molar equivalent of an enantiomer of α-methylbenzylamine per mole of hydantoin to be resolved, recovering the resulting diastereoisomeric salt and contacting the diastereoisomeric salt with an acid solution to crystallize the enantiomer of the hydrantoin

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5,326,879

INDOLE DERIVATIVES

Toshihiro Takahashi; Hitoshi Inoue, both of Saitama; Masato Horigome, Tokyo; Kenichi Momose, Saitama; Masanori Sugita, Saitama; Kouichi Katsuyama, Saitama; Chikako Suzuki, Saitama; Shinji Nagai, Saitama; Masao Nagase, Saitama, and Koichi Nakamaru, Saitama, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

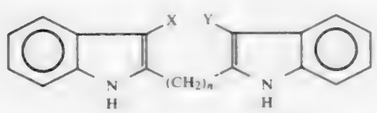
Filed Sep. 22, 1992, Ser. No. 949,028

Claims priority, application Japan, Oct. 7, 1991, 3-285535

Int. Cl.[5] **C07D** *403/06;* **A61K** *31/40*

U.S. Cl. 548—455 **3 Claims**

1. A compound of the formula (I)



(I)

wherein

X and Y each independently represent H or $—CH_2CH_2R$;

R represents substituted amino of NR_1R_2;

R_1 represents H or C_1-C_6 alkyl;

R_2 aralkyl;

n is an integer of 4 to 8; with the proviso that X and Y both do not represent H when n is 4, or a pharmaceutically acceptable acid addition salt thereof.

5,326,880

ASYMMETRICAL POLYPYRROLIDONYL COMPOUNDS HAVING A WIDE LIQUID RANGE

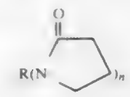
William L. Mandella, Boonton; Paul D. Taylor, West Milford, both of N.J., and Terry E. Smith, Murray, Ky., assignors to ISP Investments Inc., Wilmington, Del.

Filed Mar. 2, 1993, Ser. No. 26,314

Int. Cl.[5] **C07D** *207/12*

U.S. Cl. 548—519 **11 Claims**

1. A non-polymeric, asymmetrical compound having a freezing point below 0° C. and a boiling point above 300° C. at atmospheric pressure and having the formula



wherein R in the asymmetrical structure is selected from the group of a C_5 to C_{25} aliphatic hydrocarbon, and a C_5 to C_{25} aliphatic hydrocarbon ether or polyether and n is an integer having a value of from 2 to 5.

5,326,881

UNSATURATED IMIDE COMPOUNDS CONTAINING ALICYCLIC STRUCTURE, PROCESS FOR PRODUCING THE SAME AND INTERMEDIATE THEREFOR

Yasuhiro Hirano; Yasuhiro Endo; Kazuo Takebe; Mitsuhiro Shibata, all of Tsukuba; Shuichi Kanagawa, Tsuchiura; Yutaka Shiomi, Tsukuba; Masatsugu Akiba, Tsukuba, and Shinichiro Kitayama, Tsukuba, all of Japan, assignors to Sumitomo Chemical Company Ltd., Osaka, Japan

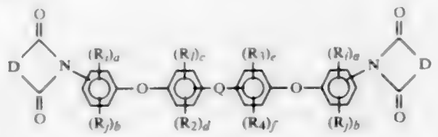
Filed Oct. 28, 1993, Ser. No. 142,578

Claims priority, application Japan, Oct. 28, 1992, 4-290036; Nov. 13, 1992, 4-303616; Nov. 19, 1992, 4-310247; May 24, 1993, 121136; May 27, 1993, 5-125888

Int. Cl.[5] **C07D** *207/452*

U.S. Cl. 548—521 **2 Claims**

1. An unsaturated imide compound represented by formula (1):



wherein Q represents an alicyclic structure-containing hydrocarbon having 4 to 20 carbon atoms; each of R_1, R_2, R_3, R_4, R_i and R_j represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1–6 carbon atoms or a halogen-containing hydrocarbon group having 1–6 carbon atoms; and each of a, b, c, d, e and f represents an integer of 0–4 satisfying $a+b \leqq 4$, $c+d \leqq 4$ and $e+f \leqq 4$; and D represents a divalent organic group having 2–24 carbon atoms and having an ethylenically unsaturated double bond.

5,326,882

CHEMILUMINESCENT 3-(SUBSTITUTED ADAMANT-2'-YLIDENE) 1,2-DIOXETANES

Irena Bronstein, Newton; Brooks Edwards, Cambridge, and Rouh-Rong Juo, Alston, all of Mass., assignors to Tropix, Inc., Bedford, Mass.

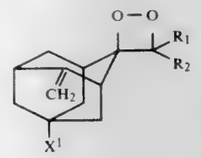
PCT No. PCT/US91/06096, § 371 Date Apr. 30, 1992, § 102(e) Date Apr. 30, 1992

Continuation-in-part of Ser. No. 559,152, Jul. 25, 1990, abandoned, which is a division of Ser. No. 367,772, Jul. 17, 1989, abandoned. This PCT application Aug. 30, 1991, Ser. No. 849,086

Int. Cl.[5] **C07D** *327/06*

U.S. Cl. 549—16 **3 Claims**

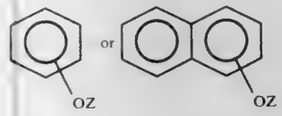
1. A compound of the formula



wherein

R_1 is $O(CH_2)_n CH_3$, wherein n is an integer of 0–19,

R_2 is



wherein Z is a moiety selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-1,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate adenosine monophosphate, adenosine, α-D-glucoside, β-D-glucoside, α-D-mannoside, β-D-mannoside, β-D-fructofuranoside, β-D-glucosiduronate, p-tolunesulfonyl-L-arginine ester, and p-toluenesulfonyl-1-arginine amide.

5,326,883

OXIME ETHER DERIVATIVES HAVING LIPOXYGENASE INHIBITORY ACTIVITY

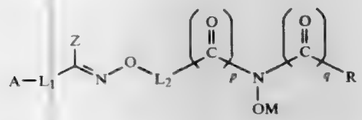
Dee W. Brooks, Libertyville; Andrew O. Stewart, Wildwood, both of Ill., and Robert G. Maki, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 18, 1992, Ser. No. 992,388

Int. Cl.[5] **C07D** *307/58, 333/32;* **A61K** *31/34, 31/38*

U.S. Cl. 549—65 **4 Claims**

1. A compound having the structure



or a pharmaceutically acceptable salt thereof wherein

M is selected from the group consisting of

hydrogen,

a pharmaceutically acceptable cation, and

a pharmaceutically acceptable metabolically cleavable group;

p is zero and q is one, and R is selected from the group consisting of

hydrogen,

alkyl of from one to twelve carbon atoms,

cycloalkyl of from three to eight carbon atoms,

and $—NR_1R_2$ wherein

R_1 is selected from the group consisting of

hydrogen,

alkyl of from one to six carbon atoms,

hydroxyalkyl of from one to six carbon atoms, and

alkoxyalkyl in which the alkoxy portion and the alkyl portion each contain, independently, from one to six carbon atoms; and

R_2 is selected from the group consisting of

hydrogen,

hydroxy,

alkyl of from one to six carbon atoms.

hydroxyalkyl of from one to six carbon atoms,

alkoxyalkyl in which the alkoxy portion and the alkyl portion each contain, independently, from one to six carbon atoms,

alkanoyl of from two to eight carbon atoms,

alkyl(carbocyclic aryl) in which the alkyl portion contains from one to six carbon atoms, and

optionally substituted (carbocyclic aryl);

L_1 is a direct bond or is selected from the group consisting of

alkyl of from one to six carbon atoms,

alkylenyl, of from one to six carbon atoms, and

alkynyl of from two to six carbon atoms;

L_2 is a direct bond or is alkyl of from one to six carbon atoms;

Z is selected from the group consisting of

hydrogen,

alkyl of from one to six carbon atoms, and

halosubstituted alkyl of from one to six carbon atoms;

A is selected from the group consisting of

(a) optionally substituted thienyl; and

(b) optionally substituted furanyl;

wherein the optional substituents are selected from the group consisting of

(1) alkyl of from one to six carbon atoms,

(2) haloalkyl of from one to six carbon atoms,

(3) alkoxy of from one to twelve carbon atoms,

(4) halogen;

(5) phenyl or naphthyl, optionally substituted with

alkyl of from one to six carbon atoms,

haloalkyl of from one to six carbon atoms,

alkoxy of from one to six carbon atoms,

halogen;

(6) phenoxy or naphthyloxy, optionally substituted with

alkyl of from one to six carbon atoms,

haloalkyl of from one to six carbon atoms,

alkoxy of from one to six carbon atoms,

halogen;

(7) phenylthio, optionally substituted with

alkyl of from one to six carbon atoms,

haloalkyl of from one to six carbon atoms,

alkoxy of from one to six carbon atoms,

halogen;

(8) phenylalkyl, where the alkyl contains from one to six carbon atoms, and the phenyl group is optionally substituted with

alkyl of from one to six carbon atoms,

haloalkyl of from one to six carbon atoms,

alkoxy of from one to six carbon atoms,

halogen.

5,326,884

PROCESS FOR OPTICALLY ACTIVE 3-(METHANE-SULFONYLOXY)THIOLANE AND ANALOGS

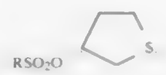
Frank J. Urban, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 382,602, Jul. 19, 1989, Pat. No. 4,954,647, which is a division of Ser. No. 183,102, Apr. 19, 1988, Pat. No. 4,874,877. This application Apr. 27, 1990, Ser. No. 515,924

Int. Cl.[5] C07D *333/32*

U.S. Cl. 549—66 **9 Claims**

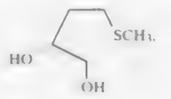
1. A process for the preparation of an optically active compound of the formula



(I)

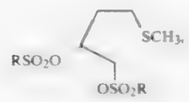
wherein R is (C_1–C_3) alkyl, phenyl or tolyl, which comprises the steps of:

(a) reacting an optically active diol of the formula



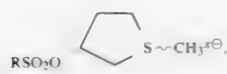
(II)

in a reaction-inert solvent with at least 2 molar equivalents of RSO_2Cl in the presence of at least 2 equivalents of a tertiary amine to form an optically active disulfonate of the formula



(III)

(b) with or without isolation, allowing to stand or heating the disulfonate of the formula (III) neat or in the same or another reaction-insert solvent to form an optically active sulfonium salt of the formula



(IV)

wherein X is RSO_3 or halogen; and

(c) with or without isolation, heating the sulfonium salt of the formula (IV) with up to three molar equivalents of an additional nucleophilic anion in the same or another reaction-inert solvent to form the compound of the formula (I).

5,326,885

PROCESS OF PREPARING ENRICHED ENANTIOMERS OF GLYCEROL CARBONATE AND DERIVATIVES THEREOF FOR SYNTHESIS OF β-BLOCKERS

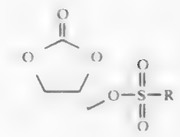
Alan G. Olivero, Windsor; Jonathan M. Cassel, Healdsburg, and James R. Poulsen, Bodega Bay, all of Calif., assignors to Cognis, Inc., Santa Ross, Calif.

Continuation of Ser. No. 877,556, May 1, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 140,799

Int. Cl.[5] C07D *317/08*

U.S. Cl. 549—229 **5 Claims**

1. A compound of enzymatically enriched R-glycerol carbonate, having the formula



wherein R represents substituted or unsubstituted alkyl having from 1–20 carbon atoms, substituted or unsubstituted cycloalkyl having from 3 to 6 carbon atoms, said alkyl or cycloalkyl substituents being selected from the group consisting of cyclopentyl and cyclohexyl, or substituted or unsubstituted aryl having from 6–10 carbon atoms, said aryl substituents being selected from the group consisting of $—NO_2$, -halogen and alkyl.

5,326,886

MAINTAINING VPO CATALYST PERFORMANCE BY ALUMINIZING REACTOR INTERNALS IN OXIDATION OF BUTANE TO MALEIC ANHYDRIDE

John T. Shultz, Medina, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 9, 1991, Ser. No. 803,947

Int. Cl.[5] C07D *307/60*

U.S. Cl. 549—259 **15 Claims**

1. A fluid-bed process for the oxidation of *n*-butane to produce maleic anhydride wherein said process utilizes a catalyst comprising phosphorus, wherein metallic surfaces of process equipment which come into contact with the catalyst at elevated temperatures are covered with a coating comprising aluminum oxide.

5,326,887

PROCESS FOR THE PREPARATION OF 1,4-DIOXANE-2,5-DIONES

Robert Di Cosimo, Wilmington, Del.; John R. Moran, Charleston, S.C., and Charles E. Nakamura, Claymont, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 661,783, Feb. 27, 1991, abandoned. This application Feb. 14, 1992, Ser. No. 836,228

Int. Cl.[5] C07D *323/04*

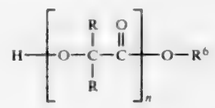
U.S. Cl. 549—274 **15 Claims**

1. A process for making 1,4-dioxane-2,5-diones of the structure.



(I)

wherein each R is independently H or hydrocarbyl, optionally substituted with a halogen, by reacting an ester of an α-hydroxy acid dimer substrate of structure:



wherein each R is independently hydrogen on hydrocarbyl, optionally substituted with a halogen, and R^6 is hydrocarbyl, optionally substituted with a halogen, and n=2, over a fixed bed catalyst, the process carried out at about 150° C. to about 350° C., wherein the reactants are in the vapor phase, followed by collection of the effluent product and wherein the equivalent alcohol of R^6 has a pKa of less than 14.5.

5,326,888

CARBONYLATION OF ALLYLIC ALCOHOLS AND SYNTHESIS OF AN AMBERGRIS FRAGANCE COMPOUND

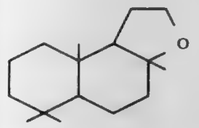
Jonathan M. Cassel, Healdsburg; Steven M. Hoagland, San Fransisco, and James M. Renga, Santa Rosa, all of Calif., assignors to Henkel Research Corporation, Plymouth Meeting, Pa.

Filed Oct. 9, 1990, Ser. No. 594,249

Int. Cl.[5] C07D *307/92*

U.S. Cl. 549—458 **10 Claims**

1. A process for the preparation of an ambergris fragrance compound having the structure (B)



(B)

comprising carbonylating an allylic alcohol selected from the group consisting of nerolidol, monocyclonerolidol, farnesol, and monocyclofarnesol with carbon monoxide at a pressure of at least about 30 bar in the presence of a polar solvent and an effective amount of a palladium halide catalyst; reducing the carbonylated product, either as the acid form or as the ester, to homofarnesol or monocyclohomofarnesol; and treating the reduced product under acid-catalyzed conditions to undergo cyclization.

5,326,889

PROCESS FOR PRODUCING 1,4-BUTANEDIOL AND TETRAHYDROFURAN

Sadakatsu Suzuki; Tatsumi Ichiki, and Hiroshi Ueno, all of Saitama, Japan, assignors to Tonen Corporation, Tokyo, Japan

Division of Ser. No. 807,974, Dec. 16, 1991, abandoned, which is a division of Ser. No. 616,488, Nov. 21, 1990, Pat. No. 5,099,038. This application Nov. 4, 1992, Ser. No. 971,495

Claims priority, application Japan, Dec. 7, 1989, 1-316474

Int. Cl.[5] C07D *307/08, 27/06*

U.S. Cl. 549—508 **1 Claim**

1. A two stage process for preparing 1,4-butanediol and tetrahydrofuran which comprises in a first stage converting maleic anhydride into a reaction product comprising 50–95 mol % gamma-butyrolactone, 1–30 mol % tetrahydrofuran, 0.5–5 mol % n-butanol and 0–10 mol % succinic anhydride in a liquid phase hydrogenation process at 150°–300° C. and a pressure of 60–150 kg/cm^{2}G using a catalyst being either a nickel catalyst, a nickel catalyst incorporated with rhenium or a rhenium compound or a catalyst composed of palladium, cobalt and niobium, and a second stage which comprises catalytically hydrogenating the unpurified reaction product of the first stage in the gas phase at a temperature of 150° C.–250° C. and a pressure of 10–100 kg/cm^{2}G and a molar ratio of H_2 to gamma-butyrolactone of 50–1500 and in the presence of a solid catalyst containing (i) copper, chromium and manganese or (ii) copper, chromium, manganese and barium to produce a reaction product wherein the molar ratio of tetrahydrofuran to 1,4-butanediol is in the range of 0.05 to 200.

5,326,890

SULFONATED SILICONES AND METHODS FOR THEIR PRODUCTION

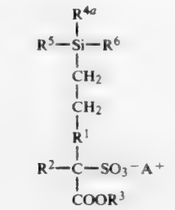
Gary E. Wnek, Latham, and Jun-Kang Liu, Troy, both of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Oct. 16, 1992, Ser. No. 962,143

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—11 **40 Claims**

1. A compound of formula



wherein

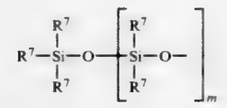
R^1 is phenylene, naphthylene, or linear or branched alkylene;

R^2 is hydrogen or lower-alkyl;

R^3 is alkyl;

R^{4a} is lower-alkyl, lower alkoxy, or tri(lower-alkyl)siloxy;

R^5 and R^6 are independently chosen from the group consisting of lower-alkyl, lower-alkoxy and



R^7 is lower-alkyl;

m is zero or an integer from 1 to 100; and

A^+ is hydrogen, alkali metal, ammonium or tetra(lower-alkyl)ammonium.

5,326,891

HYDROPHOBICIZED DOUBLE LAYER HYDROXIDE COMPOUNDS

Wolfgang Breuer, Duesseldorf, and Hans-Christian Raths, Monheim, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/01993, § 371 Date Apr. 29, 1993, § 102(e) Date Apr. 29, 1993, PCT Pub. No. WO92/07795, PCT Pub. Date Mar. 5, 1992

PCT Filed Oct. 21, 1991, Ser. No. 50,037

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1990, 4034305

Int. Cl.[5] C07F *19/00, 5/06, 3/02, 3/06*

U.S. Cl. 556—28 **19 Claims**

1. A hydrophobicized double layer hydroxide compound of the formula

$$(M(II)_{1-x}M(III)_x(OH)_2)A_a\,B_b \cdot z\,H_2O \qquad (I)$$

wherein M(II) is a divalent metal cation selected from the group consisting of magnesium, zinc, calcium, iron, cobalt, copper, cadmium, nickel and manganese;

M(III) is a trivalent metal cation selected from the group consisting of aluminum, iron, chromium, manganese, bismuth and cerium;

A is an equivalent of a monoanion of an aliphatic $C_{2\text{-}34}$ monocarboxylic acid or an equivalent of a dianion of an aliphatic $C_{4\text{-}44}$ dicarboxylic acid;

B is an anion selected from the group consisting of carbon-

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ate, hydrogen carbonate, sulfate, nitrate, nitrite, phosphate, hydroxide, and halide;
$0.1 \leqq x \leqq 0.5$;
$0 < a \leqq 0.5$;
$0 \leqq b \leqq 0.5$;
$0 < a+b \leqq 0.5$; and
$0 \leqq z \leqq 10$;
and wherein the number ratio of a to b is in the range of from 0.49:0.01 to 0.05:0.45; provided that the compound of formula I does not include compounds that contain both magnesium and aluminum as cations and either or both of carbonate and sulfate as anions.

12. A process for the preparation of a hydrophobicized double layer hydroxide compound of the formula

$$(M(II)_{1-x}M(III)_x(OH)_2)A_a B_b \cdot z\ H_2O \qquad (I)$$

wherein M(II) is a divalent metal cation selected from the group consisting of magnesium, zinc, calcium, iron, cobalt, copper, cadmium, nickel and manganese;
M(III) is a trivalent metal cation selected from the group consisting of aluminum, iron, chromium, manganese, bismuth and cerium;
A is an equivalent of a monoanion of an aliphatic C_{2-34} monocarboxylic acid or an equivalent of a dianion of an aliphatic C_{4-44} dicarboxylic acid;
B is an anion selected from the group consisting of carbonate, hydrogen carbonate, sulfate, nitrate, nitrite, phosphate, hydroxide, and halide;
$0.1 \leqq x \leqq 0.5$;
$0 < a \leqq 0.5$;
$0 \leqq b \leqq 0.5$;
$0 < a+b \leqq 0.5$; and
$0 \leqq z \leqq 10$;
provided that the compound of formula I does not include compounds that contain both magnesium and aluminum as cations and either or both of carbonate and sulfate as anions, comprising reacting at least one double-layer hydroxide compound of the formula

$$(M(II)_{1-x}M(III)_x(OH)_2)\ B \cdot z\ H_2O \qquad (II)$$

in which M(II), M(III), B, x and z are as defined above, but excluding compounds of formula II that contain both magnesium and aluminum as cations and either or both of carbonate and sulfate as anions, with at least one aliphatic C_{2-34} monocarboxylic acid and/or at least one C_{4-44} aliphatic dicarboxylic acid by either
a) carrying out the reaction in an organic solvent, and removing the solvent thereafter by drying at 20° to 150° C., or
b) directly reacting the above components together, or
c) reacting the at least one double layer hydroxide compound of formula (II) with an alkali metal and/or alkaline earth metal salt of the at least one mono- and/or dicarboxylic acid in aqueous suspension.

5,326,892

BIMETALLIC ALKOXIDE REAGENTS AND METHOD OF MAKING THE SAME

Brian A. Vaartstra, Bethel, Conn., assignor to Advanced Technology Materials, Inc., Danbury, Conn.

Filed Nov. 24, 1992, Ser. No. 980,762
Int. Cl.[5] **C07F** *7/24, 7/28*
U.S. Cl. 556—28 **15 Claims**

1. A bimetallic alkoxide compound having a 1:1 atomic ratio of lead and a Group IVB element and having formula $R^1_xPbM(OR^2)_y(OR^3)_z$; wherein
M is a Group IVB metal;
R^1, R^2, and R^3 are independently selected hydrocarbyl groups; and
where lead may be present in the +2 or +4 oxidation states; and
when lead is in the +2 oxidation state,
x is [0,] 1 or 2;
y and z range from 0 to 4; and
$x+y+z=6$; and
when lead is present in the +4 oxidation state,
x ranges from [0] 1 to 3;
y and z range from 0 to 6; and
$x+y+z=8$.

11. A bimetallic alkoxide compound having a 1:1 atomic ratio of lead and a Group IVB element and having formula $R^1_xPbM(OR^2)_y(OR^3)_z$; wherein
M is a Group IVB metal;
R^1 is a hydrocarbyl group; and
where R^2 and R^3 are independently selected from the group consisting of neopentyl, t-butyl, s-butyl, n-butyl, ethyl, and methyl; and
where lead may be present in the +2 or +4 oxidation states; and
when lead is in the +2 oxidation state,
x is 0, 1 or 2;
y and z range from 0 to 4; and
$x+y+z=6$; and
when lead is present in the +4 oxidation state,
x ranges from 0 to 3;
y and z range from 0 to 6; and $x+y+z=8$.

5,326,893

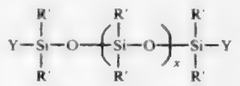
AROMATIC CYANATE-SILOXANE

Zeng K. Liao, Lake Jackson, Tex., and Chun S. Wang, Tainan, Taiwan, assignors to The Dow Chemical Company, Midland, Mich.

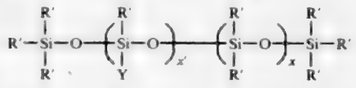
Division of Ser. No. 93,497, Jul. 16, 1993, which is a division of Ser. No. 837,464, Feb. 14, 1992, Pat. No. 5,260,398, which is a continuation-in-part of Ser. No. 505,310, Apr. 5, 1990, abandoned. This application Oct. 27, 1993, Ser. No. 147,279 Int. Cl.[5] **C07F** *7/04*
U.S. Cl. 556—414 **4 Claims**

1. A compound containing an average of more than one aromatic cyanate group and at least one organosiloxane moiety per molecule represented by the following general formulas I, II, III, or IV

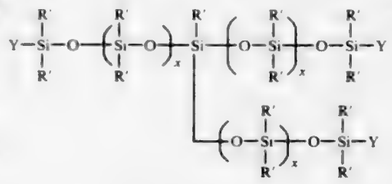
Formula I



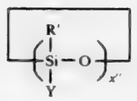
Formula II



Formula III

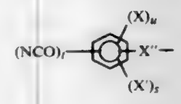


Formula IV

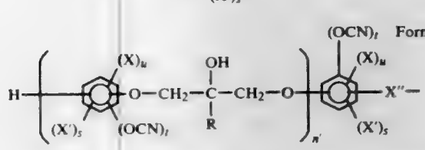


wherein each R′ is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; each Y is a hydrocarbyl group having from 2 to about 20 carbon atoms or an entity represented by the following formulas V, VI, VII, VIII, IX, X, or XI with the proviso that at least an average of more than one Y is other than a hydrocarbyl group:

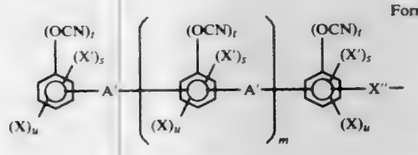
Formula V



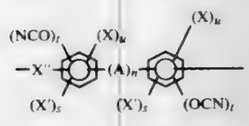
Formula VI

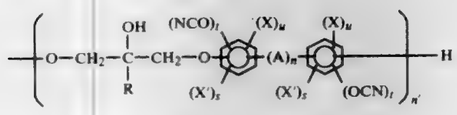


Formula VII

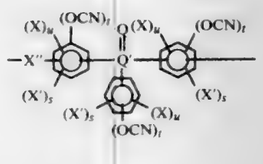


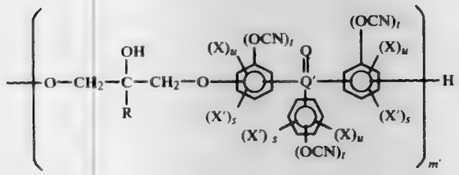
Formula VIII



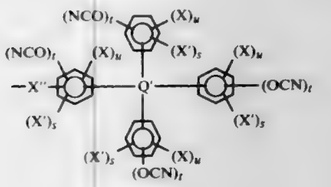


Formula IX

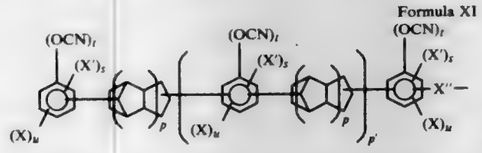




Formula X



Formula XI



wherein each A is independently a divalent hydrocarbyl group having from 1 to about 20 carbon atoms, —O—, —S—, —S—S—, —SO—, $—SO_2—$, or —CO—; each A′ is independently a divalent hydrocarbyl group having from 1 to about 20 carbon atoms; each Q is independently hydrogen or an alkyl group having from 1 to 10 carbon atoms; each Q′ is independently a tetravalent hydrocarbyl group having from 1 to about 20 carbon atoms; each R is independently hydrogen or an alkyl group having from 1 to about 3 carbon atoms; each X is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 12 carbon atoms, a halogen atom, or a hydroxyl group; each X′ is independently hydrogen or an unsaturated aliphatic or unsaturated cycloaliphatic group or such unsaturated aliphatic or unsaturated cycloaliphatic group having an oxygen atom between such group and the aromatic ring; each X″ is independently a divalent aliphatic or a divalent cycloaliphatic group; each m independently has an average value from about 0.01 to about 8; each m′ independently has an average value from about zero to about 8; each n independently has a value of zero or 1; each n′ independently has an average value from about 0.001 to about 20; each n independently has a value from 1 to about 3; each p independently has a value from zero to about 10; each p′ independently has an average value from zero to about 8; and each s, t and u independently has a value from 1 to about 3 with the proviso that the sum of s, t and u satisfies the valency of the ring; each x independently has a value from zero to about 500; each x′ independently has a value from 2 to about 500; each x″ independently has a value from 2 to about 10; and the sum of x and x′ is from about 2 to about 1000.

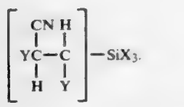
5,326,894

β-CYANOALKYLSILANE PREPARATION USING DIVINYLBENZENE/4-VINYLPYRIDINE COPOLYMER RESIN AS CATALYST

Howard M. Bank, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 23, 1993, Ser. No. 155,899
Int. Cl.[5] **C07F** *7/10*
U.S. Cl. 556—415 **13 Claims**

1. A process for preparation of beta-cyanoalkylsilanes described by formula



(1)

the process comprising: contacting a silicon hydride described by formula

$HSiX_3$

with an unsaturated olefinic nitrile described by formula



(3)

in the presence of a divinylbenzene/4-vinylpyridine copolymer based resin catalyst at a temperature within a range of about 50° C. to 250° C.; where X is a halogen and each Y is independently selected from a group consisting of hydrogen and lower alkyl radicals comprising one to eight carbon atoms.

5,326,895

3-(VINYLBENZYLOXY)PROPYLSILANE COMPOUNDS

Tohru Kubota; Toshinobu Ishihara; Mikio Endo, and Katsuhiro Uehara, all of Jouetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 813,612, Dec. 26, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,845

Claims priority, application Japan, Dec. 26, 1990, 2-413948; Dec. 9, 1991, 3-350090

Int. Cl.[5] C07F *7/08, 7/18*

U.S. Cl. 556—445 17 Claims

1. A method of manufacturing 3-(vinylbenzyloxy)propylsilane compounds, comprising:

subjecting at least one 3-(vinylbenzyloxy)-1-propene compound represented by the formula, $CH_2CH\Phi CH_2OCH_2CHCH_2$, wherein Φ is a benzene ring, and at least one hydrogensilane represented by the formula $HSiR_n^1(OR^2)_{3-n}$, wherein R^1 and R^2 are each a hydrocarbon residue containing 1 to 4 carbon atoms, and n is 0, 1 or 2, to a hydrosilylation reaction in the presence of a platinum catalyst.

5,326,896

CONVERSION OF DIRECT PROCESS HIGH-BOILING COMPONENT TO SILANE MONOMERS IN THE PRESENCE OF HYDROGEN GAS

Kirk M. Chadwick, S. Glamorgan, United Kingdom; Ajay K. Dhaul, Carrollton, Ky.; Roland L. Halm, Madison, and Richard G. Johnson, Hanover, both of Ind., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 14, 1993, Ser. No. 91,933

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—466 31 Claims

1. A process for converting a high-boiling component resulting from the reaction of an organochloride with silicon, to monosilanes, the process comprising: contacting a high-boiling component, resulting from the reaction of an organochloride with silicon, and hydrogen gas at a temperature within a range having a lower limit greater than 250° C. and an upper limit of 1000° C.

5,326,897

PROCESS FOR THE STABILIZATION OF ETHANOLIC ETHYLMAGNESIUM CARBONATE SOLUTIONS

Erhard Jägers, Bornheim; Andreas Seidel, Köln, and Karen Pottkämper, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,528

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1992, 4207883

Int. Cl.[5] C07C *69/96;* C07F *3/02*

U.S. Cl. 558—260 4 Claims

1. A process for the stabilization of a solution of ethylmagnesium carbonate in ethanol, which has been prepared by the reaction of a suspension of magnesium ethylate in ethanol with carbon dioxide, which comprises adding 0.2 to 1.0 % by weight of water, based on the ethylmagnesium carbonate solution, to the solution or its starting materials.

5,326,898

SUBSTITUTED PHENYLETHENYL COMPOUNDS HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

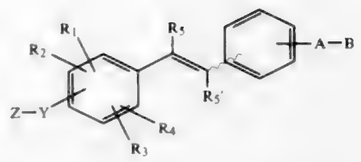
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Feb. 11, 1992, Ser. No. 833,688

Int. Cl.[5] C07C *321/00*

U.S. Cl. 560—17 23 Claims

1. A compound of the formula



wherein

R_1, R_2, R_3 and R_4 independently are hydrogen, lower alkyl of 1 to 6 carbons, halogen or lower alkoxy of 1 to 6 carbons;

R_5 and R_5' independently are hydrogen, lower alkyl of 1 to 6 carbons or halogen;

Y is oxygen or sulfur;

Z is branch-chained alkyl of 3 to 10 carbons, and straight chain alkenyl having 2 to 10 carbons, or cyclo or branched chained alkenyl of 3 to 10 carbons, and the Z-Y substituent is in a 1,2 (ortho) or 1,3 (meta) position on the phenyl ring relative to the ethene moiety;

A is $(Ch_2)_n$ where n is 0–5, lower branched chain alkyl having 3 to 6 carbons, cycloalkyl having 3 to 6 carbons, alkenyl having 2 to 6 and 1 or 2 double bonds, alkynyl having 2 to 6 carbons and 1 or 2 triple bonds;

B is COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_2O-COR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, $—COR_7$, $CR_7(OR_{12})_2$, or $CR_7OR_{13}O$, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl, R_{11} is alkyl of 1 to 10 carbons, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons.

5,326,899

PROCESS FOR PREPARATION OF IODOPROPARGYL CARBAMATES

Barry C. Lange, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 14, 1993, Ser. No. 76,561

Int. Cl.[5] C07C *261/00*

U.S. Cl. 560—167 10 Claims

1. Process for producing N-alkyl iodopropargyl carbamate comprising:

A. reacting a dialkyl(C_1–C_3) carbonate with propargyl alcohol in the presence of a first catalyst under conditions to produce dipropargyl carbonate;

B. reacting said dipropargyl carbonate with an alkyl(C_1–C_6-)amine to produce N-alkyl(C_1–C_6) propargyl carbamate;

C. reacting said N-alkyl(C_1–C_6) propargyl carbamate with an iodinating agent to produce N-alkyl(C_1–C_6) iodopropargyl carbamate.

5,326,900

AROMATIC KETO COMPOUNDS, THE PREPARATION THEREOF, AND DRUGS AND COSMETICS CONTAINING THESE

Hans-Heiner Wuest, Dossenheim, and Bernd Janssen, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

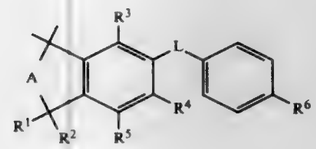
Division of Ser. No. 790,452, Nov. 12, 1991, Pat. No. 5,194,664, which is a division of Ser. No. 467,193, Jan. 18, 1990, abandoned. This application Dec. 4, 1992, Ser. No. 985,927

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1989, 3903992

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—51 11 Claims

1. A compound of the formula I

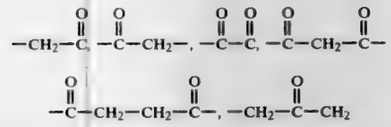


(I)

where

A is ethylene or methylene which can be substituted by methyl, hydroxyl or oxo,

L is one of the following



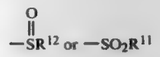
R^1 and R^2 are hydrogen or methyl,

R^3 is hydrogen, hydroxyl or C_1–C_6-alkoxy,

R^4 is hydrogen, C_1–C_4-alkyl, halogen or methoxy,

R^5 is hydrogen, or methoxy, and

R^6 is



or $CHR^7—OH$

where

R^7 is hydrogen or C_1–C_4-alkyl,

R^{11} is hydrogen, C_1–C_4-alkyl, or $—OR^{13}$ or $—NR^{14}R^{15}$ where R^{13} is hydrogen, C_1–C_8-alkyl, which can be substituted by 1 or 2 hydroxyls, or aryls or aralkyl, each of which can be substituted in the aryl moiety by a substituent selected from the group consisting of methyl, methoxy, cyano, and halogen, and where R^{14} and R^{15} are hydrogen, or aralkyl or aryl which can be substituted by a substituent selected from the group consisting of methyl, methoxy, cyano, and halogen, or R^{14} and R^{15} form, together with the nitrogen to which they are bonded, a 5- or 6-membered saturated heterocyclic radical, or a 5- or 6-membered saturated heterocyclic radical which has an oxygen in addition to the nitrogen, and R^{12} is C_1–C_4-alkyl, and the physiologically tolerated salts thereof.

5,326,901

3-BUTENOIC ACID DERIVATIVES AS INTERMEDIATES FOR PESTICIDES

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

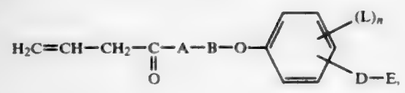
Continuation of Ser. No. 731,189, Jul. 15, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,635

Claims priority, application Switzerland, Jul. 18, 1990, 2383/90

Int. Cl.[5] C07C *69/52*

U.S. Cl. 560—221 8 Claims

1. A 3-butenoic acid derivative of the formula



(IV)

wherein

A is oxygen,

B is C_2–C_6alkylene,

D is oxygen, sulfur or —O—CH_2—, is phenyl; phenyl substituted by from one to three substituents selected from the group consisting of halogen, C_1 to C_4 alkyl and C_1 to C_4 alkoxy.

L is halogen or methyl, and

n is 0, 1 or 2.

5,326,902

OXYALKYNE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESSES FOR PREPARING SUCH COMPOUNDS AND COMPOSITIONS

Ulrich Seipp, Aachen; Werner Vollenberg; Werner Englberger, both of Stolberg; Cornelia Geist, Aachen, and Michael Haurand, Stolberg, all of Fed. Rep. of Germany, assignors to Gruenenthal GmbH, Aachen, Fed. Rep. of Germany

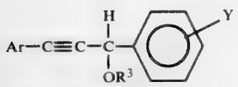
Filed Mar. 24, 1993, Ser. No. 36,331

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1992, 4210332

Int. Cl.[5] C07C *67/00;* A61K *31/38;* C07D *307/52*

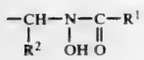
U.S. Cl. 560—254 20 Claims

1. An oxyalkyne compound corresponding to the formula I



wherein

the substituent Y in the meta- or para-position is

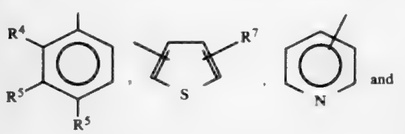


R^1 represents CH_3 or NH_2;

R^2 represents H or CH_3;

R^3 represents H, C_{1-3}-alkyl or $COCH_3$, and

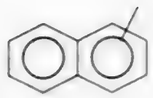
Ar represents an aromatic residue selected from the group consisting of



and

VOL 1164 ISS 1 JL 5 1994 UMI

-continued



wherein

R^4, R^5 and R^6 are each independently selected from the group consisting of H, F, Cl, Br, C_{1-6}-alkyl, CF_3 and C_{1-6}-alkoxy, and

R^7 represents H, F, Cl, Br, C_{1-3}-alkyl or CF_3 in the form of racemates or mixtures of diastereoisomers or in optically active form.

5,326,903

PROCESS FOR PREPARING ISOCYANATES USING SINTERED OXIDES

Yuuji Shimasaki; Hideyuki Kanbe, both of Suita, and Masako Hokazono, Nishinomiya, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Dec. 28, 1992, Ser. No. 997,394

Claims priority, application Japan, Jan. 10, 1992, 4-003173; Jan. 10, 1992, 4-003174

Int. Cl.[5] C07C *263/04*

U.S. Cl. 560—345 10 Claims

1. A process for preparing isocyanates comprising thermally decomposing carbamates, passing said carbamates through a catalyst bed of a sintered oxide during said step of thermally decomposing, said step of thermally decomposing occurs at a reaction temperature in the range of from 300° C. to 450° C. and said step of thermally decomposing occurs when said carbamates are in a gaseous phase

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5,326,904

PEROXYACID MANUFACTURE

John P. Sankey, Warrington, England, assignor to Solvay Interox Limited, Warrington, England

Division of Ser. No. 773,586, Nov. 20, 1991, Pat. No. 5,220,052. This application Jun. 14, 1993, Ser. No. 76,179

Claims priority, application United Kingdom, May 24, 1989, 8911057

Int. Cl.[5] C07C *409/16*

U.S. Cl. 562—2 1 Claim

1. 6,6'-terephthal-di(amidoperoxyhexanoic) acid.

5,326,905

BENZYLPHOSPHONIC ACID TYROSINE KINASE INHIBITORS

Robert L. Dow, Waterford, and Steven W. Goldstein, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

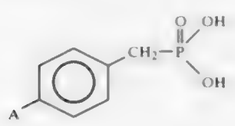
PCT No. PCT/US91/01731, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/15495, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 14, 1991, Ser. No. 934,469

Int. Cl.[5] C07F *9/44*

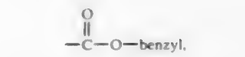
U.S. Cl. 562—8 7 Claims

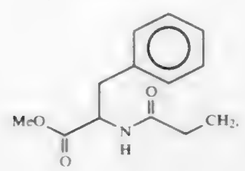
1. A compound of the formula

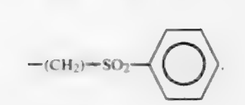


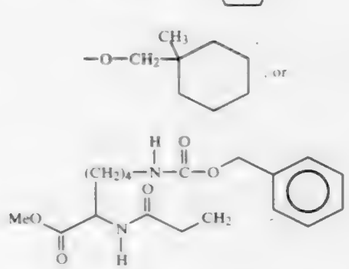
Formula I

wherein A is,









and the pharmaceutically-acceptable cationic salts thereof.

5,326,906

PROCESS FOR THE EXTRACTIVE REMOVAL OF PHOSPHO- AND SULFOBETAINES FROM ACIDIC REACTION SOLUTIONS

Heribert Tetzlaff, Frankfurt am Main; Matthias Krull, Bad Soden am Taunus; Gernot Kremer, Kelkheim, and Christoph Porz, Meckenheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 10, 1992, Ser. No. 819,406

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1991, 4100533

Int. Cl.[5] C07C *61/00*; B01D *35/00*

U.S. Cl. 562—11 18 Claims

1. A process for the extractive removal of ampholytes based on phospho- and sulfobetaines from their acidic aqueous reaction solutions, which comprises the ampholytes being extracted from the reaction solution with a liquid cation exchanger which is immiscible with the acidic aqueous reaction solution, where the cation exchanger is dissolved in at least one organic solvent which is immiscible with water and forms an organic phase with the organic solvent, subsequently the organic phase which being loaded with the ampholyte being separated from the reaction solution, and then the ampholytes being back-extracted from the organic phase with aqueous solvents.

5,326,907

2-AMINOETHANESULFONIC ACID DERIVATIVES OF 3,5-DISUBSTITUTED-4-HYDROXYPHENOLIC THIOETHERS

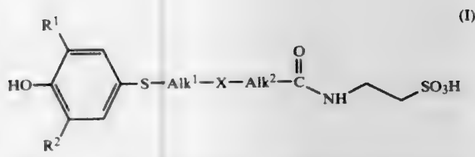
Richard A. Partis, Evanston, and Richard A. Mueller, Glencoe, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 18, 1992, Ser. No. 993,329

Int. Cl.[5] C07C *149/00*

U.S. Cl. 562—44 12 Claims

1. A compound of the formula I



(I)

wherein R^1 and R^2 are the same or different and independently represent tert-alkyl, halogen, or phenyl; Alk^1 represents straight or branched chain alkylene of 2 to 10 carbon atoms which can optionally be substituted by hydroxy, provided that said hydroxy is not attached to a carbon which is adjacent to sulfur or oxygen, X represents sulfur or oxygen, and Alk^2 represents straight or branched chain alkylene of 1 to 4 carbon atoms; or a pharmaceutically acceptable salt thereof.

5,326,908

PROCESS FOR THE PREPARATION OF ASPARAGINE

Robert Erickson, 266 S. Warrington Rd., Des Plaines, Ill. 60016; Ron Bray, 1303 Whitney La., Buffalo Grove, Ill. 60089; Mark Johnson, 17482 W. Windslow, Grayslake, Ill. 60030; Loraine Klein, 331 Somerset Dr., Streamwood, Ill. 60107, and Dennis A. Seagle, 610 Checker Dr., Buffalo Grove, Ill. 60089

Filed Dec. 9, 1992, Ser. No. 988,052

Int. Cl.[5] C07C *229/00*

U.S. Cl. 562—561 8 Claims

1. A improved process for the preparation of asparagine comprising the steps of:

a) Preparing a slurry of L-aspartic acid, methanol and mineral acid to yield the beta-methyl aspartate;

b) Neutralizing said beta-methyl aspartate with a sufficient quantity of aqueous ammonia;

c) Heating the mixture so as to remove any excess methanol;

d) Treating the mixture with additional excess ammonia for a sufficient period of time;

e) Concentrating the solution and adjusting the pH to approximately 5.4; and

f) Recovering the resulting asparagine monohydrate product.

5,326,909

STABILIZATION OF MONOMERIC N-VINYLFORMAMIDE

Michael Kroener, Mannheim, and Jacques Dupuis, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

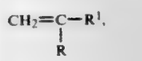
Filed May 24, 1993, Ser. No. 65,492

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1992, 4218221

Int. Cl.[5] C07C *233/09*

U.S. Cl. 564—4 3 Claims

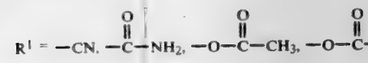
1. A method of stabilizing N-vinylformamide, which may contain customary polymerization inhibitors, against polymerization during storage or transport, which comprises adding to the N-vinylformamide monomers of the general formula

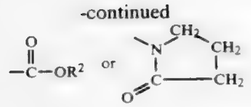


(III)

where

R + H, CH_3





R^2 + C_1–C_4-alkyl,

as stabilizer.

5,326,910

MONOPHOSPHA-S-TRIAZINES OF IMPROVED HYDROLYTIC AND THERMAL OXIDATIVE STABILITY

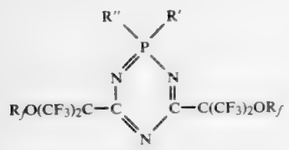
Kazimiera J. L. Paciorek, Corona Del Mar; Steven R. Masuda, and Wen-Huey Lin, both of Laguna Niguel, all of Calif., assignors to Lubricating Specialties Co., Vernon, Calif.

Filed Mar. 1, 1993, Ser. No. 24,149

Int. Cl.[5] C07F *9/6584*

U.S. Cl. 564—13 5 Claims

1. A monophospha-s-triazine having a general formula $[R_fOC(CF_3)_2CN]_2[R'R''PN]$ represented by structural arrangement:



(I)

in which R_f is a group having the formula C_nF_{2n+1} where n is an integer from 1 to 10 inclusive and one or more groups selected from $C_3F_7(OCF(CF_3)CF_2)_m$, $CF_3(OCF_2CF_2)_m$, $C_2F_5(OCF_2CF_2)_m$, $C_3F_7(OCF_2CF_2CF_2)_m$ or $C_4F_9(OCF_2CF_2CF_2CF_2)_m$ where m is zero or n integer from 1 to 20 inclusive, wherein R' and R'' are individually selected from the group consisting of C_6H_5 and R—C_6H_4, wherein R is an aromatic, alkyl, perfluoroalkyl or perfluoroalkylether moiety, C_6F_5 and $R_fC_6F_4$, wherein R_f is a perfluoroalkyl or perfluoroalkylether moiety.

5,326,911

PROCESS FOR THE PREPARATION OF ORTHO-AMIDES

Heinz-Ulrich Blank, Odenthal; Helmut Kraus; Gerhard Marzolph, both of Cologne, and Nikolaus Müller, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

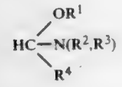
Filed Jul. 20, 1992, Ser. No. 916,922

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1991, 4125159

Int. Cl.[5] C07C *209/06, 209/14, 209/22*

U.S. Cl. 564—468 11 Claims

1. A process for the preparation of an ortho-amide of the formula



in which

R^1 denotes straight-chain or branched C_1–C_8-alkyl, C_2–C_8-alkenyl, C_2–C_8-alkoxyalkyl, C_3–C_8-alkoxyalkenyl, C_3–C_8-cycloalkyl, C_2–C_8-alkylene-OM^1 or C_7–C_{10}-aralkyl,

R^2 and R^3, independently of one another, represent straight-chain or branched C_1–C_8-alkyl, C_2–C_8-alkenyl, C_2–C_8-alkoxyalkyl, C_3–C_8-alkoxyalkenyl, C_3–C_8-cycloalkyl, C_6–C_{12}-aryl, C_7–C_{10}-aralkyl, or a 5- to 8-membered saturated or unsaturated heterocyclic ring containing 1 or 2

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hetero atoms selected from the group consisting of N, O and S, or R^2 and R^3, together with the N atom which they substitute, form a 5- to 8-membered ring which can contain a further hetero atom selected from the group consisting of N, O and S, and

R^4 represents $-OR^5$ or $-N(R^5,R^6)$ in which R^5 and R^6, independently of one another and independently of R^2 and R^3, have the range of meanings mentioned in the case of R^2 and R^3,

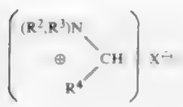
which comprises maintaining an alcohol solution of an alcoholate of the formula

$$M^1OR^1$$

in which

M^1 is an equivalent of an alkali metal cation or alkaline earth metal cation,

at a temperature of 120° to 200° C. in a high boiling non-solvent selected from the group consisting of a hydrocarbon, a halogenated, nitro, or cyano hydrocarbon, an ether and a silicon oil, distilling off the entire alcohol and alcohol of crystallization, thereby to place the alcoholate in highly active form, and reacting such highly active alcoholate with a salt of the formula



in which

$X^{\ominus}$ is a C_1–C_8-alkylsulphate, C_6–C_{12}-arylsulphonate, tetrafluoroboranate, C_6–C_{12}-arylsulphate, chloride, bromide, iodide, hexafluorophosphate, C_1–C_8-alkylsulphonate, C_1–C_8-halogenoalkylsulphonate, C_1–C_8-halogenoalkylsulphate, perchlorate or hexachloroantimonate anion.

5,326,912

HYDROGENATION CATALYST, AND A METHOD FOR ITS PREPARATION AND USE, IN PARTICULAR FOR HYDROGENATION AND/OR HYDROGENOLYSIS OF CARBOHYDRATES AND POLYHYDRIC ALCOHOLS

Guiseppe Gubitosa, Novara, and Bruno Casale, Cameri, both of Italy, assignors to Montecatini Technologie S.r.l. and Novamont S.p.A., Milan, Italy

Filed Jan. 29, 1993, Ser. No. 11,189

Claims priority, application Italy, Jan. 31, 1992, TO92A000080

Int. Cl.[5] **C07C** *27/00, 29/00, 31/18*

U.S. Cl. 568—861 **9 Claims**

1. A method for producing a lower polyhydric alcohol, or mixtures thereof, by means of hydrogenolysis under pressure of a higher polyhydric alcohol or a mixture of higher polyhydric alcohols, in the presence of a tri-metallic catalyst comprising, relative to 100 parts of the catalyst:

(a) 0.5 to 5 weight % ruthenium;

(b) 1 to 10 weight % of a metal consisting of either palladium, platinum or rhodium; and

(c) 0.5 to 2.5 weight % copper, wherein the copper content is lower than the content of the metal disclosed in (b), and wherein the catalyst is on an inert support comprising activated carbon.

5,326,913

PROCESS FOR PREPARING FLUORINATED COMPOUND

Hirokazu Aoyama, and Satoshi Koyama, both of Osaka, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Jun. 11, 1992, Ser. No. 897,261

Claims priority, application Japan, Jun. 14, 1991, 3-143088

Int. Cl.[5] **C07C** *17/26*

U.S. Cl. 570—172 **17 Claims**

1. A process for preparing a fluorinated compound of the formula:

$$R—CCl_2CF_2CF_3 \quad (I)$$

wherein R is a perfluoroalkyl group, a perchloroalkyl group, a polyfluoroalkyl group, a polychloroalkyl group or a polychloropolyfluoroalkyl group, each having at least one carbon atom, which process comprises reacting, at a reaction temperature from −20° C. to +150° C., tetrafluoroethylene with a compound of the formula:

$$R—CFCl_2 \quad (II)$$

wherein R is the same as defined above, in the presence of a Lewis acid, wherein said Lewis acid is at least one member selected from the group consisting of anhydrous aluminum chloride, anhydrous zirconium tetrachloride, anhydrous zinc chloride, anhydrous tin chloride, anhydrous titanium tetrachloride, anhydrous iron chloride, anhydrous antimony pentachloride, anhydrous aluminum chlorofluoride, anhydrous zirconium chlorofluoride, anhydrous zinc chlorofluoride, anhydrous tin chlorofluoride, anhydrous titanium chlorofluoride, anhydrous iron chlorofluoride and anhydrous antimony chlorofluoride.

5,326,914

HOMOGENEOUS CATALYTIC HYDRODECHLORINATION OF CHLOROCARBONS

Ralph T. Baker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 27, 1993, Ser. No. 68,444

Int. Cl.[5] **C07C** *17/10*

U.S. Cl. 570—176 **8 Claims**

1. A liquid phase process for the homogeneous catalytic hydrodechlorination of a compound having the formula R_fCClXY wherein X and Y are independently H, F, Cl or R_f provided X and Y are not both Cl; R_f and R_f' are independently F, CF_3, $(CF_2)_nCl$ or $(CF_2)_nCF_3$, and n is 1–4, which comprises reacting the compound with hydrogen while in solution with a Periodic Table Group 6–10 metal complex hydrodechlorination catalyst containing tertiary Periodic Table Group 15 ligands, without added base, to form R_fCHXY, wherein the Periodic Table Group 6–10 metal is selected from Re, Mo, W, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, and Pt, with the tertiary Periodic Table Group 15 ligand selected from phosphine, arsine, stibine, and bismuthine.

5,326,915

CATALYST GRANULES, IN PARTICULAR FOR THE OXIDATIVE DEHYDROGENATION OF METHANOL IN ORDER TO YIELD FORMALDEHYDE

Augusto Viola; Massimo Bruss; Bernardo Merighi, and Giuseppe Gubitosa, all of Novara, Italy, assignors to Montecatini Tecnologie S.p.A., Milan, Italy

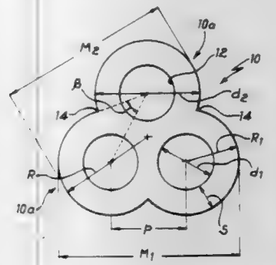
Division of Ser. No. 984,315, Dec. 1, 1992. This application Jun. 1, 1993, Ser. No. 71,655

Claims priority, application Italy, Oct. 6, 1992, MI 92A 002301

Int. Cl.[5] **C07C** *45/38*

U.S. Cl. 568—474 **26 Claims**

1. A process for the manufacture of formaldehyde comprising dehydrogenating methanol in the presence of catalyst granules at a temperature ranging from about 230° C. to about 450° C. and wherein the methanol and the oxygen present in the feed gas are kept outside of explosive limits, each catalyst granule having a cylindrical shape displaying a cross-section with at least three points of contact with a circumscribed



circumference of said granules, each catalyst granule having at least three through-bores having axes which are substantially parallel to each other and to the axis of the granule, and substantially equidistant from each other, said catalyst granules comprising iron and molybdenum oxides.

5,326,916

PROCESS FOR PRODUCING ACROLEIN

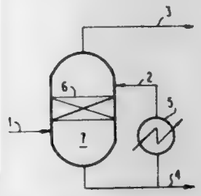
Yoshinori Kobayashi; Yasuo Matsumoto; Tadashi Mizuno, and Masamitu Fukuda, all of Ehime, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Mar. 8, 1993, Ser. No. 28,534

Claims priority, application Japan, Mar. 6, 1992, 4-049359

Int. Cl.[5] **C07C** *45/78, 45/80*

U.S. Cl. 568—492 **5 Claims**



1. A process for producing acrolein which comprises bringing a reaction gas resulting from a catalytic oxidation of propylene into contact in a cooling tower with a condensate which is being circulated through said cooling tower and a circulating part, thereby to cool and separate said reaction gas and discharge an effluent gas from said cooling tower,

said condensate in a bottom part of said cooling tower having a temperature of from 35° to 50° C.,

said effluent gas discharged from said cooling tower having a temperature of from 35° to 55° C.,

the temperature of said effluent gas being kept nearly equal to or higher than the temperature of said condensate in said bottom part of said cooling tower.

5,326,917

FLUORINATED MONOMERS AND POLYMERS

Andrew E. Feiring; Bruce E. Smart, and Zhen-Yu Yang, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 994,032, Dec. 21, 1992, Pat. No. 5,260,492. This application May 14, 1993, Ser. No. 61,888

Int. Cl.[5] **C07C** *41/00*

U.S. Cl. 526—247 **2 Claims**

1. A compound of the formula

$$CF_2ClCFCl(CF_2)_nCH_2OCF{=}CF_2,$$

wherein n is 1, 2 or 3.

5,326,918

PURIFICATION OF 1,1-DICHLORO-1-FLUOROETHANE

Yves Correia, Chateau-Arnoux, and Sylvain Perdrieux, Vernaison, both of France, assignors to Elf Atochem S.A., France

Filed Nov. 5, 1993, Ser. No. 147,512

Claims priority, application France, Nov. 18, 1992, 92 13851

Int. Cl.[5] **C07C** *17/38, 19/02;* **C07B** *63/00*

U.S. Cl. 570—177 **9 Claims**

1. Process for the purification of a 1,1-dichloro-1-fluoroethane containing unsaturated impurities, comprising subjecting the product to be purified in the liquid phase, in the presence of oxygen, to an irradiation by short-wavelength UV rays between about 200 to about 360 nm, then washing with an alkaline and/or reducing solution, and drying.

5,326,919

MONOMER RECOVERY FROM POLYMERIC MATERIALS

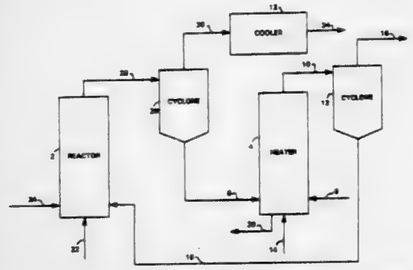
Mark A. Paisley, Upper Arlington, and Robert D. Litt, Orient, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation-in-part of Ser. No. 839,925, Feb. 21, 1992, abandoned, which is a continuation of Ser. No. 571,196, Aug. 23, 1990, Pat. No. 5,136,117. This application Feb. 8, 1993, Ser. No. 14,833

The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.

Int. Cl.[5] **C07C** *4/22*

U.S. Cl. 585—241 **18 Claims**



15. A process for monomer recovery from a polymeric material comprising heating said polymeric material in a pyrolyzer at a rate of at least 500° C./second to recover a monmoeric component of said polymeric material essentially without the formation of solid carbon and non-monomeric liquid components by contacting for less than 2 seconds said polymeric material with a heat-transfer material that circulates through said pyrolyzer.

5,326,920

ISOBUTYLENE OLIGOMERIZATION USING SUPPORTED ACID CATALYSTS

Suzzy C. Ho, Plainsboro, and Margaret M. Wu, Skillman, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 996,385, Dec. 22, 1992, Pat. No. 5,294,578. This application May 5, 1993, Ser. No. 57,030

Int. Cl.[5] **C07C** *2/00*

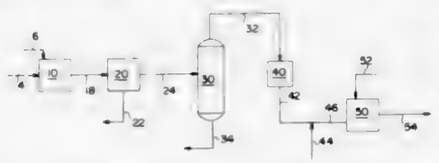
U.S. Cl. 585—528 **19 Claims**

1. A process for the production of polyisobutylene (PIB) which comprises:

contacting isobutene-containing feed, under heterogeneous oligomerization conditions with a catalyst composition comprising halides of a metal component anchored on a solid adsorbent inorganic oxide support by an oxygen-metal bond and a promoter selected from the group con-

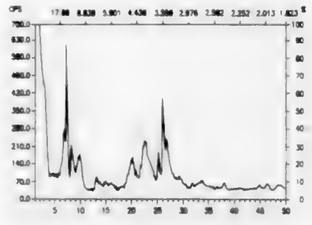
sisting of water, alkanol, alkyl halide and HCl, to provide a reaction mixture containing said polyisobutene, wherein said inorganic oxide support has a pore size of 50 to 400 angstroms;
and separating and recovering said polyisobutene.

5,326,921
ALCL$_3$-CATALYZED PROCESS FOR PREPARING POLY-N-BUTENES FROM MIXED BUTENES
Frank J. Chen, Edison, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.
Continuation of Ser. No. 823,120, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 262,919, Oct. 26, 1988, abandoned. This application Sep. 18, 1992, Ser. No. 947,904
Int. Cl.^{5} C07C *2/02*
U.S. Cl. 585—532 **25 Claims**



1. A process for preparing low molecular weight poly-n-butene having an M_n in the range of about 300 to about 900, having a molecular weight distribution less than about 1.4, and having less than about 10% by weight of light-end polymer of number average molecular weight less than or equal to about 250, said process comprising:
(a) providing a monomer feedstream comprising
from 10 to 50 wt. % isobutylene;
1-butene;
and 2-butene;
(b) selectively polymerizing the isobutylene to form a composition comprising polyisobutylene and unreacted monomers;
(c) separating the unreacted monomers from the polyisobutylene as an unreacted monomer feedstream, the unreacted monomer feedstream comprising less than 5% by weight isobutylene and at least about 12% by weight normal-butenes;
(d) injecting into the unreacted monomer feedstream derived in accordance with step (c), an amount of HCl of from about 0.01 to 0.6 parts by weight per 100 parts by weight of said unreacted monomer feedstream, in the substantial absence of aluminum trichloride catalyst and under conditions sufficient to substantially completely react the injected HCl and thereby form 2-chlorobutane cocatalyst, thereby producing a treated unreacted monomer feedstream which contains less than 1.0 ppm free HCl;
(e) simultaneously introducing the treated unreacted monomer feedstream mixture and aluminum trichloride chloride catalyst as separate streams into a reaction zone;
(f) contacting the introduced treated unreacted monomer feedstream mixture and the introduced catalyst in the reaction zone at from 10° C. to 90° C., for a time and under conditions sufficient to form a polymerization reaction mixture comprising the poly-n-butene;
(g) withdrawing the polymerization reaction mixture from the reaction zone; and
(h) recovering the poly-n-butene product from the withdrawn polymerization reaction mixture.

5,326,922
HYDROGEN TRANSFER PROCESS
Albin Huss, Jr., Chadds Ford, Pa.; Quang N. Le, Cherry Hill, and Robert T. Thomson, Lawrenceville, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.
Filed Aug. 13, 1992, Ser. No. 929,547
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.
Int. Cl.^{5} C07C *2/58*
U.S. Cl. 585—722 **23 Claims**



1. A process for transferring hydrogen from a paraffin to an olefin, said process comprising contacting said paraffin and said olefin under sufficient hydrogen transfer conditions, said paraffin and said olefin being contacted with a catalyst comprising MCM-36, said MCM-36 being a pillared, layered material having the X-ray diffraction pattern of Table 6.

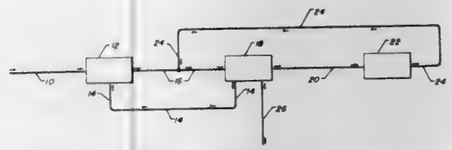
5,326,923
METHOD FOR REGENERATING CERTAIN ACIDIC HYDROCARBON CONVERSION CATALYSTS BY SOLVENT EXTRACTION
Michael D. Cooper; Pradip Rao, both of San Jose; David L. King, Mountain View, and Ronald R. Lopez, San Jose, all of Calif., assignors to Catalytica, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 588,448, Sep. 26, 1990, abandoned, Ser. No. 697,318, May 7, 1991, Pat. No. 5,157,197, and Ser. No. 697,320, May 7, 1991, abandoned. This application Nov. 22, 1991, Ser. No. 796,940
Int. Cl.^{5} C07C *2/58*; B01J *20/34*
U.S. Cl. 585—725 **31 Claims**

1. A method for regenerating an acidic alumina, solid, hydrocarbon conversion catalyst which has been used in the alkylation of isoparaffin with olefins, wherein said hydrocarbon conversion catalyst does not contain a significant Lewis acid component, the method comprising the steps of:
a. separating the acidic alumina, solid, hydrocarbon conversion catalyst from a hydrocarbon conversion reaction medium,
b. contacting the acidic alumina, solid, hydrocarbon conversion catalyst with a liquid solution comprising a solvent selected from the group consisting of SO_2, C_1–C_4 alcohols, C_1–C_4 ketones, C_1–C_4 aldehydes, acetonitrile, anisole and phenol, and
c. separating the catalyst component from the solvent.

5,326,924
ALKYLATION AID
John C. Kisalus, Houston, Tex., assignor to Nalco Chamical Company, Naperville, Ill.
Continuation of Ser. No. 17,961, Feb. 24, 1987, abandoned. This application Aug. 19, 1987, Ser. No. 87,170
Int. Cl.^{5} C07C *2/58, 2/62*
U.S. Cl. 585—725 **3 Claims**

1. An alkylation process which comprises contacting an alkylatable paraffinic hydrocarbon and an olefinic alkylating agent at alkylation conditions with a catalyst composition comprising a strong acid in the presence of a promoter, the promoter comprising from 5–85% by weight of an oil-soluble C_8–C_{24} tertiary alkyl primary amine salt of a mixed C_6–C_{22} mono- and di-alkyl phosphate ester, from 5–55% by weight of either alpha or beta pinene and with the balance of said promoter being a hydrocarbon solvent.

5,326,925
ISOMERIZATION PROCESS FOR 2,3-DIMETHYLBUTANE PRODUCTION
J. W. Adriaan Sachtler, Des Plaines, Ill., assignor to UOP, Des Plaines, Ill.
Filed Dec. 23, 1991, Ser. No. 812,384
Int. Cl.^{5} C07C *5/13*
U.S. Cl. 585—736 **17 Claims**



1. A process for the isomerization of a feedstream comprising C_6 hydrocarbons, said process comprising:
(a) contacting said feedstream comprising said C_6 hydrocarbons with an isomerization catalyst at isomerization conditions including a temperature of from 40°–300° C., a pressure of from 4 to 70 barsg and a Liquid Hourly Space Velocity of from 1 to 40 hrs^{-1} in a first reaction zone to convert normal hexane to methyl pentanes and recovering a first reaction zone effluent;
(b) separating at least a portion of said first reaction zone effluent into a first recycle stream comprising normal hexane and an intermediate feedstream comprising methyl pentanes;
(c) contacting a combined feed comprising said intermediate feedstream and a second recycle stream comprising methyl pentanes with an isomerization catalyst at isomerization condition including a temperature of from 0°–300° C., a pressure of from 4 to 70 barsg, and a Liquid Hourly Space Velocity of from 1 to 100 hrs^{-1} in a second reaction zone to convert methyl pentanes to 2,3-dimethylbutane and recovering a second reaction zone effluent;
(d) separating at least a portion of said second reaction zone effluent into a product stream comprising dimethylbutanes and said second recycle stream comprising methyl pentanes; and
(e) recovering said product stream from said process.

5,326,926
ISOMERIZATION WITH IMPROVED RVP AND C4 RECOVERY
Lynn H. Rice, Palatine, Ill., assignor to UOP, Des Plaines, Ill.
Filed Mar. 11, 1993, Ser. No. 29,495
Int. Cl.^{5} C07C *5/13*
U.S. Cl. 585—738 **17 Claims**

1. A process for the isomerization of a feed stream comprising C_4–C_6 hydrocarbons and separation of a reactor effluent, said process comprising:
(a) contacting a feed stream comprising C_4–C_6 hydrocarbons in an isomerization reaction zone with an isomerization catalyst at isomerization conditions to produce an isomerization zone effluent;
(b) passing at least a portion of said isomerization zone effluent to a stabilizer zone and recovering from said stabilizer a stabilizer overhead stream comprising C_4 and lighter hydrocarbons, a bottoms stream comprising C_5 and heavier hydrocarbons and a stripper feed comprising C_4 hydrocarbons and lower boiling material;
(c) passing said stripper feed to a stripping zone and separating said stripper feed into a stripper overhead stream comprising C_3 hydrocarbons and lower boiling material and a stripper bottoms stream comprising C_4 hydrocarbons;
(d) mixing at least a portion of said stripper overhead stream with a hydrocarbon fraction produced by said stabilizer having a boiling point at or below the boiling point of said stripper feed; and,
(e) recovering said stripper bottoms stream from said stripping zone.

5,326,927
RECOVERY OF A USEFUL POLYMERIZABLE FRACTION
Uwe Stabel, Edingen-Neckarhausen; Gerd Wunsch, Speyer; Helmut Woerz, Mannheim; Andreas Fried, Bobenheim-Roxheim, and Ruediger Kotkamp, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed May 4, 1993, Ser. No. 56,791
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1992, 4242054
Int. Cl.^{5} C07C *7/00*; C10G *9/00*; B01D *3/00*
U.S. Cl. 585—800 **1 Claim**

1. A process for the recovery of a useful polymerizable fraction consisting essentially of styrene, methylstyrenes, vinyltoluenes, indene, methylidenes and fractions having boiling points between those of styrene and methylidenes from crack gases of a stream cracker, which process comprises: obtaining a product stream from the steam cracker, feeding the product stream to the top of a distillation unit, removing those products which have boiling points lower than the useful polymerizable fraction and recycling the removed products to the steam cracker, removing those products which have boiling points higher than the useful polymerizable fraction and recycling the removed products to the steam cracker, and recovering the useful polymerizable fraction from the distillation unit.

5,326,928
SEPARATION OF ALIPHATIC PARAFFINS BY ADSORPTION
Eric Benazzi, Montesson; Gérard Hotier, Rueil Malmaison; Jean-Marie Basset, Villeurbanne; Agnès Choplin, Villeurbanne; Albert Theolier, Decines, and Christophe Nedez, Saint Fons, all of France, assignors to Institute Francais du Petrole, Rueil Malmaison, France
Filed Mar. 5, 1993, Ser. No. 26,791
Claims priority, application France, Mar. 6, 1992, 92 02811
Int. Cl.^{5} C07C *7/12*
U.S. Cl. 585—820 **8 Claims**

1. A process for separating aliphatic paraffins having varying degrees of branching in a hydrocarbon charge containing molecules of 5 to 14 carbon atoms into at least one first effluent comprising less branched paraffins and at least one second effluent comprising more branched paraffins, said process comprising contacting the hydrocarbon charge with at least one adsorbent bed comprising at least one microporous solid having grafted in the pores thereof an organometallic compound of a quantity and shape sufficient to yield pores selective for entry of the less branched paraffins but not the more branched paraffins.

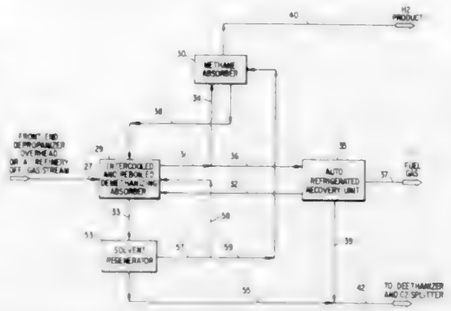
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5,326,929
ABSORPTION PROCESS FOR HYDROGEN AND ETHYLENE RECOVERY

Yuv R. Mehra, The Woodlands, Tex.; Wilfred K. Lam, Arcadia, and Dow W. Mullins, Glendora, both of Calif., assignors to Advanced Extraction Technologies, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 836,911, Feb. 19, 1992, Pat. No. 5,220,097. This application Aug. 31, 1992, Ser. No. 937,156
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] C07C *7/00;* **F25J** *3/00;* **B01D** *19/00*
U.S. Cl. 585—809 **20 Claims**

1. A process for recovering ethylene and a selected proportion of hydrogen from a stream of feedstock gases selected from the group consisting of cracked hydrocarbon gases and refinery off-gases, comprising removing at least 75% of said ethylene in a solvent-based, demethanizing absorber, prior to an auto refrigerated recovery unit which recovers the remainder of said ethylene from said feedstock gases, and recovering said selected proportion of hydrogen as the overhead stream from a methane absorber which receives a selected portion of

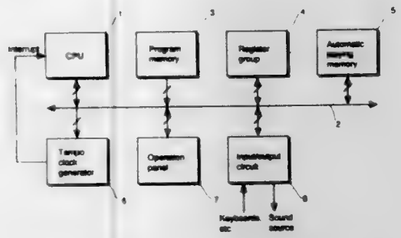


overhead gases from said demethanizing absorber and removes methane therefrom in a rich solvent bottom stream

5,326,930
MUSICAL PLAYING DATA PROCESSOR

Tokuji Hayakawa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 595,025, Oct. 10, 1990, abandoned.
This application Feb. 19, 1993, Ser. No. 20,859
Claims priority, application Japan, Oct. 11, 1989, 1-264503; Oct. 11, 1989, 1-264504; Oct. 11, 1989, 1-264505
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—636 **15 Claims**

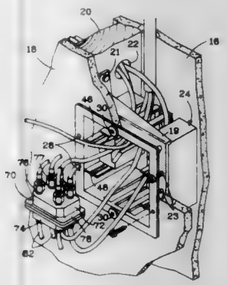


1. A musical playing data processor comprising:
time specifying means for specifying a first time indicative of a start of a predetermined musical playing period and a second time indicative of an end of the predetermined musical playing period in real time while previously recorded musical playing data is being reproduced, the first and second times being specified in accordance with a number of clock pulses;
first time storage means for storing the specified first time;
second time storage means for storing the specified second time;
record means for recording in real time new musical playing data, wherein the previously recorded musical playing data between the first and second specified times is replaced with the new musical playing data.

5,326,931
CABLE DISTRIBUTION INTERFACE UNIT

Steven L. Cain, Lilburn; Eddie Drake, Tucker; Vernon R. Miller, Atlanta, all of Ga., and Palamadi S. Vishwanath, Annapolis, Md., assignors to The Whitaker Corporation, Wilmington, Del. and Smart House, Upper Marlboro, Md.

Filed Nov. 21, 1991, Ser. No. 795,589
Int. Cl.[5] H02G *3/10;* **H01R** *13/66*
U.S. Cl. 174—48 **11 Claims**

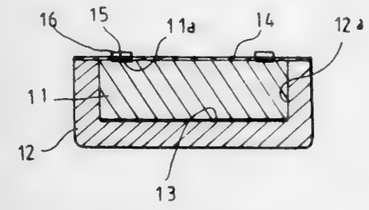


1. An electrical cable distribution interface unit for a building structure for mounting within a framework defined by studs and between adjacent ones of the studs and between opposed wall panels to be mounted to said framework, said unit comprising a housing having dimensions permitting mounting within the space bounded by the adjacent studs and the wall panels, said housing at least including side walls and, in at least one of said side walls, a series of slots, each of said slots having width and length to laterally receive a cable inserted therethrough in an easy sliding fit to facilitate extraction during cable termination of sufficient lengths of said cables forwardly of said housing and permitting access to the cable ends for termination thereof to terminals of an electronic module, afterwhich during positioning of said electronic module into said housing said slots enable excess portions of said cable lengths to be manually urged back through said slots and laterally out of said housing and into space within said framework, said housing including affixed therewithin, mounting means to receive and hold said electronic module with at least a set of said cables terminated thereto extending through at least said slots at right angles to the housing wall containing said slots whereby said housing no longer need retain said excess cable portions thus enabling the volume dimension of said housing to be of a reduced size when manufacturing thereof.

5,326,932
SEMICONDUCTOR PACKAGE

Jin Sung You, Choongcheongbook, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Oct. 22, 1992, Ser. No. 964,718
Claims priority, application Rep. of Korea, Jan. 14, 1992, 421/1992
Int. Cl.[5] H01L *23/02*
U.S. Cl. 174—52.4 **5 Claims**



1. A semiconductor package comprising:
a semiconductor chip provided on its upper surface at opposite side edges thereof with a plurality of bonding pads;
a base provided with a cavity in which the semiconductor chip is seated;
a lid fixedly attached to an upper surface of the semiconductor chip received in the cavity for electrically insulating the semiconductor package;
a plurality of solder bumps formed in said lid and being disposed on and in direct contact with the bonding pads, respectively;
a plurality of metal contacts formed on and in direct contact with the solder bumps of the lid, respectively; and
said semiconductor chip being fixedly attached to the cavity of the base by an adhesive material.

5,326,933
ELECTRICAL INSTALLATION SYSTEM

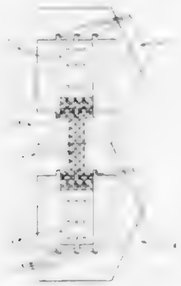
Hasso Freundner, Halver, and Walter Grabowski, Olpe-Biggesee, both of Fed. Rep. of Germany, assignors to Dorma GmbH + Co. KG, Ennepetal, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 960,508
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1990, 4011711
Int. Cl.[5] H02G *3/18*
U.S. Cl. 174—53 **19 Claims**

1. An electrical junction box system for a building, the junction box system for containing an electrical connection for transmitting power from an electric power line to at least one electrical device, the at least one electrical device having at least two conductors for receiving power, said electrical junction box system comprising:

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at least one junction box, said at least one junction box having aback portion and at least an openable front portion, the front portion defining a cavity therein, the cavity being configured for receipt of the at least one electrical device through said front portion;
means for conducting electricity from at least a first position within said at least one junction box to a second position within said at least one junction box;
said back portion of said at least one junction box comprising means for receiving and retaining said means for conducting electricity, said means for receiving and retaining being integral with said back portion of said junction box;
said means for conducting electricity being configured for being inserted into and removed from said means for receiving and retaining;
said means for conducting electricity comprising means for being received by said means for receiving and retaining;
said means for conducting electricity comprising at least two separate conductors, said at least two separate conductors being insulated from one another;



means for slidably plugging together said at least two separate conductors of said means for conducting electricity with said at least two conductors of said electrical device upon insertion of said electrical device into said first portion of said at least one junction box and slidably unplugging said at least two separate conductors from said at least two conductors of said electrical device upon removal of said electrical device out of said first portion of said at least one junction box;
means for fastening said at least one junction box to a structural element of a building;
said means for receiving and retaining comprises means for positioning said means for conducting in at least three stationary positions within the at least one junction box;
said means for positioning comprise slot means; and
said means for being received of said means for conducting comprise projections configured to substantially correspond to said slot means.

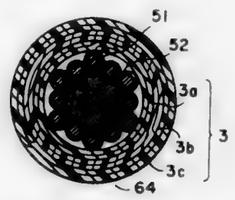
5,326,934
MULTI-COMMODITY CONNECTIVITY SYSTEM
Dolan M. LeMaster, Mesa, and Gary H. Beals, Scottsdale, both of Ariz., assignors to Communication Integrators Inc., Tempe, Ariz.
Filed Jul. 8, 1991, Ser. No. 726,953
Int. Cl.[5] H02G *3/60*; H02B *1/20*
U.S. Cl. 174—59 **12 Claims**

1. A multi-commodity connectivity expansion cabinet comprising:
an elongated communication raceway;
an elongated power raceway extending substantially parallel to and spaced apart from said communication raceway;
a first frame extending between said communication and power raceways to define a communication break-out bay;
a second frame extending between said communication and power raceways to define a power break-out bay;
at least one communication breakout panel residing within said communication break-out bay, said communication panel having a multiplicity of individual communication cable connectors each having a first number of conductors for routing communication connectivity to individual workstations and at least one collective communication cable connector having a second number of conductors,



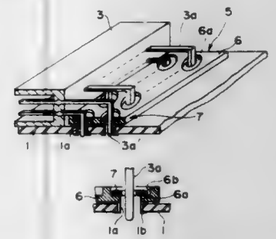
(said second number being greater than said first number), for routing collective communication for a plurality of said individual workstations to a communication distribution center; and
at least one circuit breaker panel residing within said power break-out bay.

5,326,935
MULTI-LAYERED INSULATED WIRE FOR HIGH FREQUENCY TRANSFORMER WINDING
Tadashi Yamaguchi, Toubu; Masataka Muramatsu, Maruko, and Naoki Katagiri, Ueda, all of Japan, assignors to Totoku Electric Co., Ltd., Tokyo, Japan
Filed Aug. 12, 1992, Ser. No. 929,657
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—120 R **5 Claims**



1. A multi-layered insulated electric wire for a winding to be used in a high frequency switching power transformer, comprising:
a plurality of small diameter conductors arranged substantially in parallel to each other to form a bundled conductor having a round cross-section, and
at least three insulating layers, each comprising a helically wrapped layer of a heat-resistant plastic film wound around said bundled conductor,
any two insulating layers of said at least three insulating layers provides an insulating resistance of 3.75 kV for one minute, and
each of the aforesaid at least three insulating layers is independent respectively and is separable from the other layers.

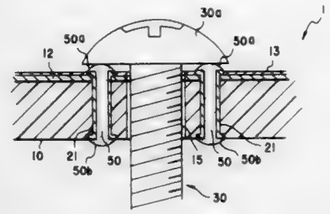
5,326,936
MOUNTING DEVICE FOR MOUNTING AN ELECTRONIC DEVICE ON A SUBSTRATE BY THE SURFACE MOUNTING TECHNOLOGY
Kenjiro Taniuchi; Hideo Miyazawa; Kouji Ishikawa, and Kouji Watanabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 10, 1991, Ser. No. 774,510
Claims priority, application Japan, Oct. 11, 1990, 2-272551
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—260 **15 Claims**



1. A mounting device for mounting an electronic device on a substrate, the electronic device having a plurality of interconnection pins for electrical interconnection to said substrate, said mounting device comprising:
a plate member of an insulating material having upper and lower major surfaces, the interconnection pins of the electronic device being connected to the substrate through said plate member, said lower major surface of said substrate being formed so as to be mounted upon an upper major surface of said substrate;
a plurality of counter-bores defined on the upper major surface of said plate member in correspondence to the plurality of interconnection pins of the electronic device, each of said plurality of counter-bores having a first diameter and a bottom surface at a level below the upper major surface of said plate member;
a plurality of through-holes defined on said plate member in correspondence to each of said plurality of counter-bores, each of said plurality of through-holes being further defined concentric to a counter-bore corresponding thereto and having a second diameter that is smaller than the first diameter, each of said plurality of through-holes extending from the bottom surface of the corresponding counter-bore to the lower major surface of said plate member;
a plurality of solder rings positioned in said plurality of counter-bores; and
holding means provided on the upper major surface of said plate member for holding said plurality of solder rings in said corresponding counter-bores such that said solder rings do not come off from said counter-bores.

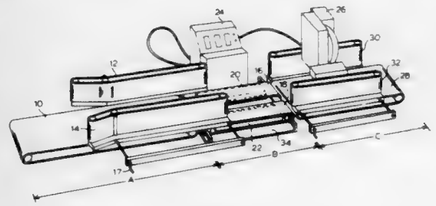
5,326,937
GROUNDING STRUCTURE OF A PRINTED WIRING BOARD
Shinya Watanabe, Inagi, Japan, assignor to Fujitsu Isotec Limited, Inagi, Japan
Filed Jan. 22, 1993, Ser. No. 7,963
Claims priority, application Japan, Jan. 28, 1992, 4-012867
Int. Cl.[5] H05K *1/11*
U.S. Cl. 174—263 **5 Claims**

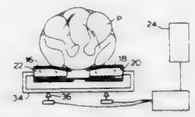
1. A printed wiring board to be fixed to a frame by screws, including a substrate made of electrically insulating material and a ground pattern provided on an upper surface of the printed wiring board, said printed wiring board comprising:
fixing holes provided by penetrating the printed wiring board through the ground pattern and the substrate, for making the screws fix the printed wiring board to the frame; and
at least one grounding through hole provided near by at least one of said fixing holes by penetrating the printed wiring board through the ground pattern and the substrate, said



grounding through hole being filled with solder so that the solder is electrically connected with the ground pattern and an upper surface of the solder filled in said ground through hole is raised from an upper surface of the printed wiring board so as to be touched with a head of the screw when the printed wiring board is fixed to the frame by the screw screwed through the fixing hole.

5,326,938
WEIGHTING/LABELLING APPARATUS INCORPORATING IMPROVED CONVEYOR AND METHOD
Sidney S. Tolson, Scotland Neck, N.C., assignor to Ossid Corporation, Rocky Mount, N.C.
Filed Apr. 16, 1993, Ser. No. 48,893
Int. Cl.[5] G01G *23/38, 19/00*; B65G *15/14*
U.S. Cl. 177—5 **24 Claims**





1. An apparatus for the weighing and labelling of a product with a non-flat bottom in a high-speed processing environment, comprising:
(a) first conveyor means moving at a first selected speed, and having an entry end and an exit end and operative to align and stabilize a product with a non-flat bottom in a position suitable for being weighed while moving on a second conveyor means at a weighing station;
(b) second conveyor means moving at a second selected speed equal to or higher than said first speed and having an entry end at which said aligned and stabilized product with a non-flat bottom is received from said exit end of said first conveyor means, said second conveyor means being deformable and adapted in response to the weight of said product and shape of said non-flat bottom to form a longitudinal depression in which said product is supported while being transported by said second conveyor means,

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said second conveyor means being operative to align and stabilize said product while being transported on said second conveyor means and to discharge said product at an exit end of said second conveyor means in a position suitable for being labelled while moving on a third conveyor means at a labelling station;

(c) said second conveyor means being mounted on a weighing device capable of registerng the weight of the product transported thereby to produce individual product weight information and transmit said product weight information as a signal to a signal processing device;

(d) third conveyor means moving at a third speed equal to or higher than said second speed and having an entry end at which the aligned, stabilized and weighed product is received from the exit end of the second conveyor means, said third conveyor means being operative to align and stabilize each said product received from the exit end of said second conveyor means and to maintain each said product in a position suitable for being labelled while being moved continuously on said third conveyor means;

(e) a signal processing device operatively associated with said weighing device and connected to receive said signal;

(f) labelling means mounted adjacent said third conveyor means and connected to said signal processing device, said labelling means being adapted in response to said signal being received and processed by said signal processing device for imprinting and transferring a label onto each of said products in sequence prior to each of said products being expelled from the said weighing/labelling apparatus.

5,326,939

IDENTIFICATION UNIT FOR GARBAGE CANS

Gerhard Schäfer, Neunkirchen-Salchendorf, Fed. Rep. of Germany, assignor to Fritz Schafer Gesellschaft mit beschränkter Haftung, Neunkirchen, Fed. Rep. of Germany

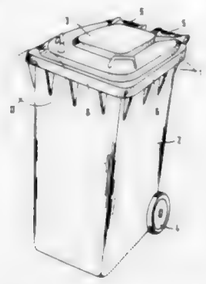
PCT No. PCT/EP91/01445, § 371 Date Apr. 14, 1992, § 102(e) Date Apr. 14, 1992, PCT Pub. No. WO92/03361, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 1, 1991, Ser. No. 847,043

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1990, 9011787

Int. Cl.[5] G01G *19/08, 13/14*

U.S. Cl. 177—139 **6 Claims**



1. An identification unit for a garbage can, which can be emptied by one of an emptying device and a dumping arrangement into collecting vehicles having an on-board identification system associated with the emptying device and the dumping arrangement, respectively, and which can be weighed on one of the emptying device and the dumping arrangement, respectively, for determining a weight of garbage contained therein before and after emptying;

wherein the identification unit comprises a coding sensor adapted to cooperate with the on-board identification system; and wherein the garbage can has a stiffening collar and a dumping engagement grip; and further wherein the coding sensor comprises threads cooperating with a matching thread in one of the stiffening collar and the dumping engagement grip.

5,326,940

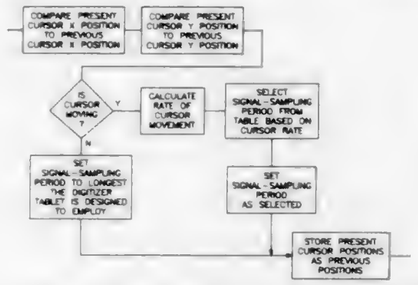
DYNAMICALLY-ADJUSTABLE SCANNING RATE IN DIGITIZERS

Dana Doubrava, and Waldo L. Landmeier, both of Phoenix, Ariz., assignors to CalComp Inc., Anaheim, Calif.

Filed Jun. 23, 1992, Ser. No. 903,605

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 **12 Claims**



1. In a digitizer tablet having grid wires that are sequentially and repetitively scanned to develop a positional signal related to a cursor, a method of setting the signal-sampling period of each wire to reduce jitter associated with non-movement of the cursor and signal error associated with rapid movement of the cursor comprising periodically performing the steps of:

a) comparing the present position of the cursor to the prior position of the cursor when the steps of the method were performed previously;

b) if the cursor has not moved from the prior position, setting the signal-sampling period of each wire to a longest signal-sampling period the digitizer tablet is designed to employ and proceeding to step (f);

c) if the cursor has moved from the prior position, determining the present speed of movement of the cursor;

d) determining a signal-sampling period of each wire inversely related to the present speed of movement of the cursor such that the faster the present speed of movement of the cursor, the shorter the signal-sampling period of each wire as compared to the longest signal-sampling period the digitizer tablet is designed to employ;

e) setting the signal-sampling period of each wire to that determined in step (d); and,

f) saving the present position of the cursor as the prior position of the cursor.

5,326,941

Patent Not Issued For This Number

5,326,942

NOISE SUPPRESSION MUFFLER FOR MOISTURE LADEN EXHAUST GASES & METHOD

Jerry W. Schmid, 12945 Ixora Rd., North Miami, Fla. 33181

Filed Feb. 9, 1993, Ser. No. 15,615

Int. Cl.[5] F01N *7/12*

U.S. Cl. 181—235 **7 Claims**

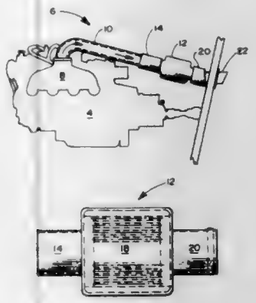
1. An exhaust system for an internal combustion engine having an exhaust manifold for collection of exhaust gases from a plurality of individual combustion chambers of an internal combustion engine, a riser having an inlet and an outlet, the inlet thereof being operatively connected to the exhaust manifold and the outlet thereof being connected to a muffler, and an injection system for introduction of a cooling fluid into the exhaust system to lower the temperature of the exhaust gases before such gases enter the muffler,

wherein the muffler comprises:

(i) a housing which defines an internal chamber;

(ii) an inlet pipe for conducting a fluid laden exhaust gas from an exhaust system riser into the internal chamber; and,

(iii) a sound dampening element within said internal chamber, said element comprising a low density, foam composition of closed-celled construction and defining sound dampening channels surrounded by closed-cell, porous mass through said internal chamber.



5,326,943

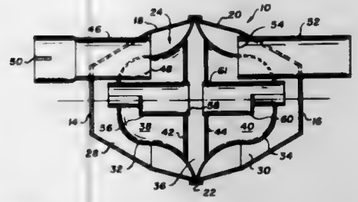
EXHAUST MUFFLER

Neil Macaulay, Unit 19, 19695-96 A Ave., Langley, B.C., V3A 4P8, Canada

Filed Dec. 27, 1993, Ser. No. 172,791

Int. Cl.[5] F01N *1/08*

U.S. Cl. 181—269 **8 Claims**



1. A muffler comprising:

a main body having a downstream end and an upstream end relative to gas flow;

an inner vessel attached to the main body to divide the interior of the main body into an inner chamber and first and second outer chambers;

a resonating chamber within the inner chamber to divide the inner chamber into first and second inner chambers;

the resonating chamber having a perforate wall on its upstream side;

an inlet pipe extending into the upstream end of the main body and terminating in a downstream end communicating with the first outer chamber and the first inner chamber;

an outlet pipe extending into the upstream end of the main body and terminating in a downstream end communicating with the second outer chamber and a second inner chamber;

a first inner pipe communicating the first outer chamber, the first inner chamber, and the resonating chamber; and

a second inner pipe communicating the second outer chamber, the second inner chamber and the resonating chamber.

5,326,944

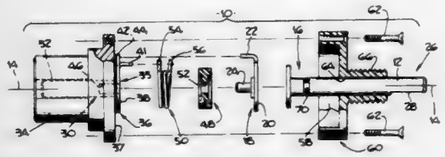
TEASE-PROOF ROTARY SWITCH

Ricardo L. Garcia, Fountain Valley, Calif., assignor to Cole Instrument Corp., Santa Ana, Calif.

Filed May 22, 1992, Ser. No. 887,325

Int. Cl.[5] H01H *21/76, 5/00*

U.S. Cl. 200—11 R **10 Claims**



1. A tease-proof rotary switch assembly comprising:

a rotary switch assembly which rotates about a central longitudinal axis and which includes a plurality of closed circuit positions at discrete intervals in a rotational arc about the axis, each successive closed circuit position being separated by some rotational arc during which the circuit is open;

a driving member, including a driving arm, capable of rotational motion about said central longitudinal axis and adapted to be coupled to said rotary switch assembly by a spring member;

a driven member, including a driven arm; capable of rotational motion about said central longitudinal axis, connected to said rotary switch assembly;

said spring member, capable of rotational motion about said central longitudinal axis, interposed between said driving and driven members and coupled thereto, said spring member engaging said driving member arm and said driven member arm;

said driving member arm being capable of being rotationally displaced a predetermined amount in either rotational direction before said spring member urges, through contact with the driven arm, said driven member to rotate said switch assembly to the next closed circuit position in the rotational arc through stored internal energy imparted to said spring member by the rotation of said driving member, whereby integral switching from one closed circuit position to the next successive closed circuit position is assured.

5,326,945

SHOCK SENSOR

Noriyuki Gotoh; Yasunori Ohtuki; Naoharu Yamamoto, all of Miyagi; Hiroyuki Sada, Hyogo; Akihiko Kuroiwa, Hyogo, and Hiroshi Moriyama, Hyogo, all of Japan, assignors to Tokin Corporation, Sendai and Sensor Technology Co. Ltd., Kobe, both of Japan

Filed Dec. 2, 1992, Ser. No. 984,908

Claims priority, application Japan, Dec. 2, 1991, 3-108237[U]; Jan. 20, 1992, 4-1553[U]; Jan. 20, 1992, 4-1554[U]; Jan. 29, 1992, 4-8948[U]; Apr. 8, 1992, 4-116986; Jun. 30, 1992, 4-45562[U]

Int. Cl.[5] H01H *35/14, 9/00*

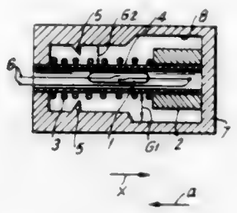
U.S. Cl. 200—61.45 R **7 Claims**

1. A shock sensor comprising a hollow cylindrical member containing a reed switch disposed within an activation area thereof, a cylindrical magnet surrounding and loosely fitted externally to said hollow cylindrical member and adapted to be movable along its outer peripheral surface during an applied shock, an elastically yieldable member cooperatively associated with said magnet and for urging said magnet to a stationary position located at one end of said hollow cylindrical member towards an anti-impact direction, stopper means located at an opposite end of said hollow cylindrical member forward of said activation area for restricting the movement of

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said magnet during said applied shock, said stopper means providing a stop position for said magnet, and a housing containing said hollow cylindrical member, said magnet, said elastically yieldable member, and said stopper means, wherein:

a gap is provided between an outer peripheral surface of said magnet and in inner peripheral surface of said housing,



said gap in said activation area between said stationary position and said stop position being narrower than an annular gap in a remaining area, and wherein said reed switch is caused to be closed by a magnetic force applied by said magnet when said magnet is caused to move into said activation area towards said stop means.

5,326,946

ELECTRICAL SWITCH

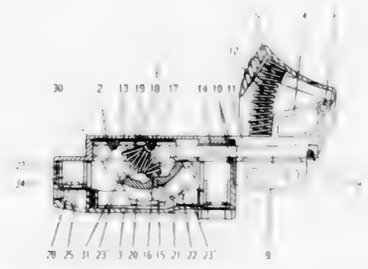
Alois Schäffeler, Spaichingen, Fed. Rep. of Germany, assignor to Marquardt GmbH

Filed Oct. 29, 1992, Ser. No. 968,328

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138484; Nov. 25, 1991, 4138902

Int. Cl.[5] H01H *33/06*

U.S. Cl. 200—144 R **18 Claims**



1. An electrical switch, comprising:

a lower housing component and an upper housing component connectable to one another in a locking fashion, said lower housing component including contact lug receptacles;

contact lugs arranged in respective ones of said contact lug receptacles of said lower housing component and having normally opened contacts;

a contact element including a switching contact arranged in said upper housing component;

a slider rod slidingly disposed in said upper housing component and having one end projecting out of said upper housing component;

an actuation element coupled to said one end of the slider rod for moving the slider rod between first and second positions in said upper housing component;

a pressure spring operatively arranged between said slider rod and said contact element for flipping said contact element between an off-position when said actuation element moves said slider rod in the first position in which the switching contact does not touch the normally opened contacts of said contact lugs and an on-position when said actuation element moves said slider rod in the second position in which the switching contact touches the normally opened contacts of said contact lugs, wherein one of said contact lugs is arranged on a side of said lower housing facing away from said contact element in the off-position; and

an arc extinction lug comprising an extension attached to the normally open contact of said one contact lug.

5,326,947

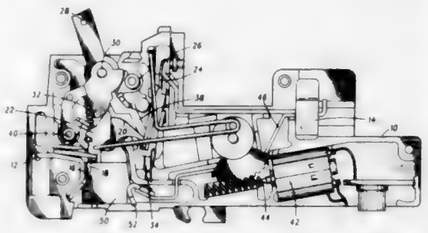
ARC EXTINGUISHING DEVICE MADE OF CONDUCTIVE PLASTIC

Thomas A. Edds, 3512 Old Orchard Rd. NE., and Willard J. Rezac, 6817 Devonshire Dr. NE., both of Cedar Rapids, Iowa 52402

Filed Nov. 13, 1992, Ser. No. 976,077

Int. Cl.[5] H01H *33/08, 9/34*

U.S. Cl. 200—144 R **41 Claims**



1. An arc extinguishing device for deposition along a predetermined path of movement between two electrical contacts in an electrical distribution device, the device comprising:

a generally u-shaped member having a bight portion defined by a bottom wall with two upstanding side walls, the bight portion having sufficient width to allow the movement of the electrical contacts between the two side walls;

the u-shaped member made of a conductive plastic composition, the composition having a thermoplastic base resin and an effective amount of a conductive modifier to exhibit static dissipative properties and remove electric potential from the u-shaped member.

5,326,948

APPARATUS FOR EQUIPMENT UNIT PROTECTION SWITCHING

Robert C. Brockway, Salem; Philip S. Dietz, East Hampstead, and Lo C. Nguyen, Windham, all of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 767,304, Sep. 27, 1991, Pat. No. 5,191,970. This application Feb. 18, 1993, Ser. No. 18,966

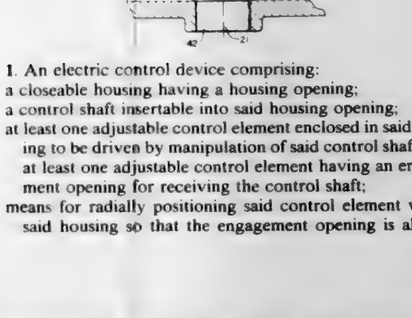
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] H01H *3/04, 3/20*

U.S. Cl. 200—335 **22 Claims**

1. Apparatus for use in effecting an equipment unit protection switch from an equipment unit being removed from an equipment frame in which it is intended to be inserted to a standby equipment unit, the equipment unit including a circuit board intended to be inserted in a connector in the equipment frame and a latch pivotally mounted on said circuit board at a pivot point for securing the equipment unit in the equipment frame, the apparatus being CHARACTERIZED BY,

said latch having a first lever arm and a second lever arm, the first lever arm extending from the pivot point in a first direction and the second lever arm extending from the pivot point in a second direction, the first lever arm being used for application of a first force for causing rotational movement of the latch about the pivot point, the second lever arm having a cam out surface for applying a force toward removal of the circuit board from the connector in the equipment frame when the circuit board is fully inserted in the connector and when the first force is applied to the first lever arm in a direction toward removing the circuit board from the connector, the cam out surface being arranged such as to allow initial movement of the first lever arm from a closed position prior to applying the second force toward removing the circuit board from the equipment frame so that the first lever arm of the latch is allowed to move freely prior to the cam out surface applying the second force toward removing the circuit board from the connector in the equipment frame,



light responsive switch means associated with said latch and being responsive to said initial movement of said latch for generating an equipment unit removal indicated signal for initiating the equipment unit protection switch prior to any movement of said circuit board in its connector, and

means responsive to said equipment unit removal indication signal for effecting the protection switch.

5,326,949

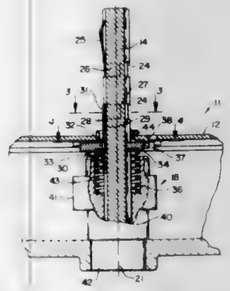
ADJUSTABLE DEVICE, PARTICULARLY AN ELECTRIC SWITCHING, CONTROLLING OR REGULATING DEVICE

Siegfried Mannuss, Sternenfels, Fed. Rep. of Germany, and Emmett L. Nichols, Whitesburg, Ga., assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Continuation of Ser. No. 687,177, Apr. 18, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 48,160

Int. Cl.[5] H01H *19/10*

U.S. Cl. 200—336 **9 Claims**



1. An electric control device comprising:

a closeable housing having a housing opening;

a control shaft insertable into said housing opening;

at least one adjustable control element enclosed in said housing to be driven by manipulation of said control shaft, said at least one adjustable control element having an engagement opening for receiving the control shaft;

means for radially positioning said control element within said housing so that the engagement opening is aligned with the housing opening to receive the control shaft there through;

quick connection means secured to said control shaft for axially securing said control shaft relative to said at least one adjustable control element, said quick connection means permitting insertion at said control shaft into said at least one adjustable control element through said housing and inhabiting retraction therefrom, wherein said positioning means includes radial guidance means connected to the casing for positioning said at least one adjustable control element.

5,326,950

DRIVE MECHANISM FOR AN ELECTRIC SWITCH, IN PARTICULAR A CIRCUIT BREAKER OR POWER SWITCH

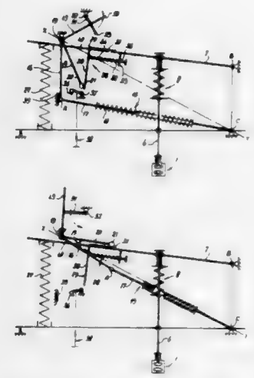
Arend J. W. Lammers, Hengelo; Gerhardus L. Nitert, Enter, and Gerrit W. Hendriks, Hellendoorn, all of Netherlands, assignors to Holec Systemen En Componenten B.V., Hengelo, Netherlands

Filed Jul. 6, 1992, Ser. No. 909,189

Claims priority, application Netherlands, Jul. 3, 1991, 9101162

Int. Cl.[5] H01H *3/46*

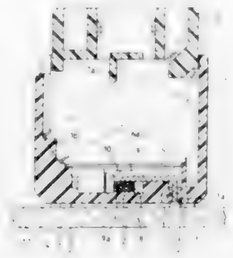
U.S. Cl. 200—469 **25 Claims**



1. A drive mechanism for an electric switch made up of at least one switching unit, comprising a biasing mechanism in the form of a transition point or overturn mechanism which can act upon the at least one switching unit, actuating means for tensioning the biasing mechanism, drive means for driving the at least one switching unit under the influence of the energy stored in the biasing mechanism, means for resetting the at least one switching unit from a driven state, and a coupling mechanism for coupling the biasing mechanism in a biased state thereof with the drive means, for driving the at least one switching unit, and for releasing the coupling of the biasing mechanism and the drive means when the at least one switching unit is in the driven state, wherein the coupling mechanism is designed to bias the biasing mechanism by the actuating means from a rest position to a position before the transition point or dead center thereof, and the drive means and the coupling mechanism form a movement-direction-dependent carrier mechanism, such that the biasing mechanism and the drive means act upon each other only in a direction of movement opposite to a direction in which the biasing mechanism operates, for driving the at least one switching unit.

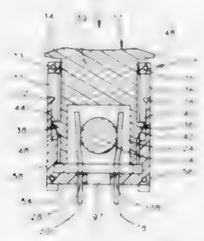
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5,326,951
PUSH BUTTON SWITCH
Takahiro Murakami, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Jan. 12, 1993, Ser. No. 3,173
Claims priority, application Japan, Jan. 23, 1992, 4-001966; Jan. 23, 1992, 4-010038; Jan. 23, 1992, 4-010083; Jan. 23, 1992, 4-010084
Int. Cl.[5] H01H *13/14*
U.S. Cl. 200—520 6 Claims



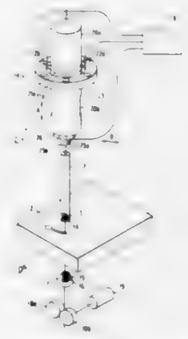
1. A push button switch comprising:
a housing having an opening formed in an upper surface thereof and an inner bottom surface;
a stem disposed in said opening, said stem being supported to be movable with respect to said housing;
a fixed contact member located on the inner bottom surface;
a movable contact member located adjacent the fixed contact; and
an elastic member having a first end connected to said stem and a second end connected to said housing, said elastic member including a buckling portion located between the first and second ends, said elastic member being arranged in said housing such that when said stem is moved toward said inner bottom surface, said buckling portion contacts said movable contact member, thereby biasing said movable contact member into said fixed contact.

5,326,952
ELECTRIC SWITCH
Ralph G. Ipcinski, Hollis, N.H., assignor to C & K Components, Inc., Newton, Mass.
Filed May 24, 1993, Ser. No. 64,894
Int. Cl.[5] H01H *13/14*
U.S. Cl. 200—530 3 Claims



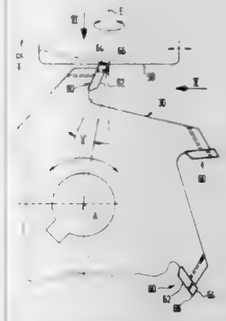
1. An electric switch comprising an actuator, a movable contact, a housing, a first fixed contact, a second fixed contact and a bracket, the housing having a first portion and a second portion, the first portion having an outer surface, and slots formed on the outer surface the bracket including a generally rectangular foundation portion having a pair of opposite long side edges a rectangular first side part extending integrally from one of said long side edges, and a rectangular second side part extending integrally from the opposite long side edge thereof and in spaced parallel relation with the first side part, each of the first and second side parts includes a pair of spaced engagement appendages wherein the bracket is engaged to the housing, by abutting an inner surface of the foundation portion against an outer surface of the second portion and bending the engagement appendages into engagement with the slots formed on the outer surface of the first portion, the movable contact being cylindrical in configuration, the actuator, being of one piece construction, includes cavity and a bottom surface, the bottom surface defining an opening into the cavity, the actuator also having a block portion from which four wall portions extend to define the cavity and the block portion including an upper surface, two of the wall portions being in spaced opposed relation to each other, the opposed wall portions each having a through hole whose diameter is substantially equal to the diameter of the movable contact, the housing including a cavity section and having a bottom wall, the bottom wall having a first through aperture and a second through aperture, the first and second apertures spaced from each other wherein the, first through aperture holds the first fixed contact, and the second through aperture holds the second fixed contact, with a portion of each of the first and second fixed contacts extending into the cavity section and a portion of each of the first and second fixed contacts extending externally of the housing, the actuator movably positioned within the housing with the four wall portions extending within the housing, the movable contact engaged to the through holes and transversely positioned in the cavity whereby movement of the actuator toward the bottom wall will force the movable contact between and into abutting relation with fixed contacts which are adapted to actuate the circuit to which the switch may be connected.

5,326,953
WIRE ELECTRODE FEEDER FOR WIRECUT ELECTRICAL DISCHARGE MACHINE
Yoshitaka Ohnishi; Naoki Yagi, both of Hyogo; Yoshio Shibata, Aichi; Masato Banzai, Aichi, and Toshio Suzuki, Aichi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 12, 1992, Ser. No. 928,346
Claims priority, application Japan, Oct. 28, 1991, 3-281323
Int. Cl.[5] B23H *7/10*; H02N *2/00*
U.S. Cl. 219—69.12 15 Claims



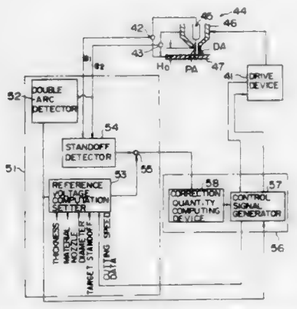
15. A wire electrode feeder for a wirecut electrical discharge machine adapted for use with a wire electrode, comprising:
means for vibrating a body in a first direction which is parallel to a wire feeding direction;
means for selectively grasping said wire electrode, said means for grasping being mounted on said body; and
means for activating said means for grasping when said body has a component of vibration in a wire feeding direction, wherein said body includes a horn through which said wire electrode passes and which has a length corresponding to a portion of the natural wavelength of vibration produced in the first direction at a predetermined frequency so as to produce vibration in the first direction having a point of maximum deflection proximate a connecting point of said means for grasping and said body.

5,326,954
PROCESS AND MACHINE FOR THE ELECTRIC DISCHARGE MACHINING OF CUTTER PLATES
Peter Lenard, Biberach/Riss, and Norbert Bailer, Schemmerhofen, both of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Fed. Rep. of Germany
PCT No. PCT/EP92/01008, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO92/19410, PCT Pub. Date Nov. 12, 1992
PCT Filed May 8, 1992, Ser. No. 958,109
Claims priority, application Fed. Rep. of Germany, May 8, 1991, 4115107
Int. Cl.[5] B23H *7/10*
U.S. Cl. 219—69.12 3 Claims



2. A machine for electric discharge machining of cutter plates (60) having a cutting edge (66) parts of which extend at varying angles with respect to a workpiece axis (A), said cutting edge (66) being formed by a flank (64) and an adjacent face (62) of the cutter plate (60), the machine comprising
a mount (26) for at least one cutter plate (60),
a program controlled motor (28) for rotating the cutter plate (26) about said workpiece axis (A),
a wire fixture (46) over which an electrode wire (50) is guided, and
a carriage arrangement (14, 18, 34) with program controlled drives for rectilinear relative movements between the cutter plate (60) and the electrode wire (50) along the three axes of a rectangular coordinate system,
characterized in that the wire fixture (46) is rotatable under program control about a tool axis (E) which extends at right angles to the electrode wire (50) and to two axes (X, Y) of the coordinate system said wire fixture (46) being rotationally adjustable with respect to said mount (26) in such manner that the electrode wire 50, when machining the flank (64) of the cutter plate (60), intersects the cutting edge (66) in a point lying on said tool axis (E).

5,326,955
STANDOFF CONTROL METHOD AND APPARATUS FOR PLASMA CUTTING MACHINE
Yozo Nishi, Komatsu; Eiichi Nozaki; Masahiko Hasegawa, both of Hiratsuka; Iwao Kurkawa, Yokohama, and Atsushi Wakui, Naka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
PCT No. PCT/JP91/00514, § 371 Date Oct. 19, 1992, § 102(e) Date Oct. 19, 1992, PCT Pub. No. WO91/16170, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 17, 1991, Ser. No. 941,087
Claims priority, application Japan, Apr. 17, 1990, 2-102329; Apr. 17, 1990, 2-102330; Apr. 17, 1990, 2-102656
Int. Cl.[5] B23K *10/00, 9/073*
U.S. Cl. 219—121.56 13 Claims



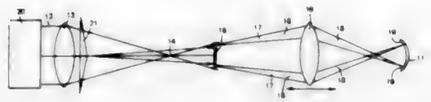
1. In a standoff control method for a plasma cutting machine which detects the arc voltage between a workpiece to be cut and one of (a) an electrode of a torch and (b) a nozzle surrounding said electrode so as to control the standoff between said torch and said workpiece to be cut to a predetermined value in accordance with the detected voltage, said standoff control method for a plasma cutting machine comprising the steps of: detecting the voltage between said workpiece to be cut and one of (a) said electrode and (b) said nozzle so as to obtain a deviation with respect to a reference voltage, and varying the vertical repositioning speed of said torch in accordance with the degree of said deviation;
the improvement comprising:
linearly varying said vertical repositioning speed of said torch at a first rate in proportion to the degree of said deviation when said deviation exceeds a first predetermined value but is less than a second predetermined value; and
linearly varying said vertical repositioning speed of said torch at a second rate in proportion to the degree of said deviation when said deviation exceeds said second predetermined value, said second rate being greater than said first rate.

5,326,956
LASER PROFILING OF LENS EDGE
James G. Lunney, Dublin, Ireland, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jul. 28, 1992, Ser. No. 921,193
Claims priority, application Ireland, Jul. 29, 1991, 2667/91
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 8 Claims

1. A method for forming a curved edge on a lens comprising the steps of
providing an annular laser beam, irradiating a first peripheral region of the lens with the laser beam for a first number of shots to remove a layer of lens material from the first peripheral region through ablative photodecomposition;
altering the internal diameter of the annular laser beam to expose the second peripheral region of the lens; and

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irradiating a second peripheral region of the lens with the laser beam for a second number of laser shots to remove a



layer of lens material from the second peripheral region, wherein said second number of laser shots is greater than said first number of laser shots.

5,326,957

APPARATUS FOR AND METHOD OF WELDING SURFACE-TREATED METALLIC WORKPIECES

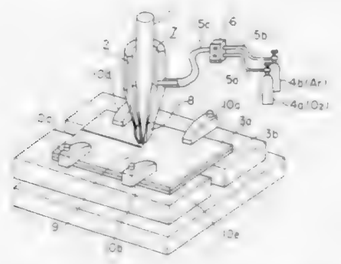
Norio Karube, Machida; Yoshinori Nakata; Atsushi Mori, both of Minamitsuru, and Etsuo Yamazaki, Hachioji, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP92/00517, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO92/19412, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 21, 1992, Ser. No. 938,177

Int. Cl.[5] B23K *9/167*

U.S. Cl. 219—137 WM **4 Claims**



1. A method of welding surface-treated metallic workpieces each comprising a base material coated with a material whose evaporation temperature is lower than the melting temperature of the base material, according to one of a gas-shielded arc welding and a plasma welding process, said method comprising the steps of:

supplying an auxiliary gas comprising an oxygen gas and at least one other gas to a welding point on the surface-treated metallic workpieces; and

increasing a proportion of the oxygen gas in said auxiliary gas higher as a rate at which the surface-treated metallic workpieces are welded is increased.

5,326,958

DRIVE DEVICE FOR PUSH-PULL WELDING TORCHES

Ewald Geus, Blasbach, Fed. Rep. of Germany, assignor to Alexander Binzel GmbH & Co. KG, Alten-Buseck, Fed. Rep. of Germany

PCT No. PCT/EP91/00511, § 371 Date Sep. 23, 1992, § 102(e) Date Sep. 23, 1992, PCT Pub. No. WO91/14530, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 18, 1991, Ser. No. 927,299

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1990, 4009391

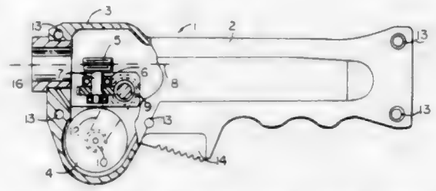
Int. Cl.[5] B23K *9/133*

U.S. Cl. 219—137.31 **18 Claims**

1. A drive device for continuously consumable wire electrodes of electric welding torches, comprising:

a housing having a handle adapted to be enclosed by a user's hand and a housing part arranged outside the are of the handle, said housing part being formed on one of a front side or rear side of said handle; and

a drive unit located in said housing part, said drive unit having a wire drive roller adapted to feed the wire electrode along a wire feed axis and having a drive motor arranged outside the wire feed axis, said drive motor acting on the wire drive roller via gearing, said drive motor having an armature on a motor shaft running in a first reference plane which is at a distance from a parallel



second reference plane in which the wire feed axis runs, said handle and said housing part being adapted to be coaxial to the wire feed axis with the wire electrode passed through said handle and said housing part, said drive motor being oriented with said motor shaft at right angles to said wire feed axis whereby a third reference plane running longitudinally through said wire feed axis and running perpendicular to each of said first and second reference planes, intersects said motor shaft in the area of its armature.

5,326,959

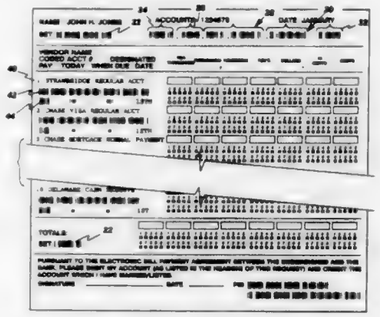
AUTOMATED CUSTOMER INITIATED ENTRY REMITTANCE PROCESSING SYSTEM

Justin J. Perazza, 1 Stag's Leap Ct., Vincentown, N.J. 08088-9041

Filed Aug. 4, 1992, Ser. No. 925,574

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **14 Claims**



1. An automated Bill payment process for Bill Payers, comprising the steps of:

(a) Storing in computer memory of a financial institution Pre-Registration information for all Billers to be paid from the account of each Bill Payer;

(b) Collecting completed Customer Payment Instructions from Bill Payers;

(c) Scanning each CPI to identify, as to each Bill Payer, (i) the amount to be paid to each Biller, and (ii) if applicable, the Designated Date;

(d) Electronically creating a bank debit for each Bill Payer's account, for the amounts designated on the CPI for the Bill Payer; and

(e) Electronically creating a bank credit for each Biller for the amount designated on the CPI for that Biller; and

(f) Electronically creating the record containing the Bill Payer's account number with the Biller, along with other appropriate billing data and the date of credit of the Biller's account, and transmitting the record to the Biller.

5,326,960

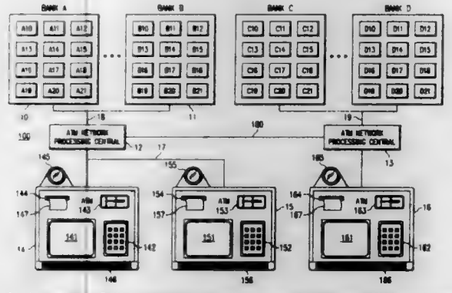
CURRENCY TRANSFER SYSTEM AND METHOD

David H. Tannenbaum, 14860 Oaks North Pl., Addison, Tex. 75001

Filed Nov. 25, 1992, Ser. No. 981,813

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **29 Claims**



1. A system for currency management between a depositing user and a recipient user using an electronic funds retrieval system, said retrieval system having associated therewith a plurality of input devices for accepting user information, said management system comprising:

means for accepting from a depositing user at one of said input devices an amount of currency to be available for withdrawal;

means for creating a unique temporary identification number and for associating said unique identification number with said accepted available withdrawal amount; and

means for associating said unique identification number and said accepted available withdrawal amount with a particular account in said system accessible via any of said input devices associated with said system.

5,326,961

BAR CODE READER WITH COMPARISON OF BAR WIDTHS AND SIGNAL TRANSITIONS

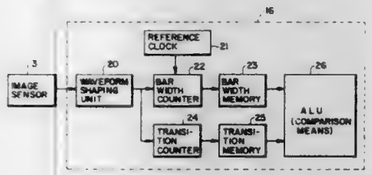
Yosimitu Sibata, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 23, 1993, Ser. No. 51,372

Claims priority, application Japan, Apr. 24, 1992, 4-107047; Mar. 10, 1993, 5-049037

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—463 **10 Claims**



1. A bar code reader for reading a bar code containing a plurality of bar data, comprising:

means for converting an image of said bar code into an information signal;

first means for detecting the respective widths of said bar data on the basis of said information signal provided by said converting means;

second means for detecting a number of said bar data on the basis of said information signal provided by said converting means;

means for recognizing information represented by said bar code from the respective widths of said bar data; and

means for comparing a number of widths of said bar data detected by said first detecting means and a number of said bar data detected by said second detecting means and for inhibiting said recognizing means when said number of widths of said bar data is smaller than said number of said bar data.

5,326,962

DUAL-FOCUS OPTICAL SCANNER AND SUCH A SCANNER USED AS WANDTYPE SYMBOL

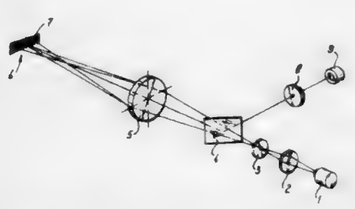
Ke-Ou Peng, Delft, Netherlands, assignor to Opticon Sensors Europe B.V., Hoofdorp, Netherlands

Filed Jul. 2, 1992, Ser. No. 907,824

Claims priority, application European Pat. Off., Jul. 8, 1991, 91201783.7

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **5 Claims**



1. An optical scanner for scanning an object, provided with optical illuminating means for illuminating the object to be scanned with a light point derived from a light source, which illuminating means have their own optics, and with optical imaging means for imaging the object onto a point sensor, which imaging means have their own optics, characterized in that said illuminating means and said imaging means are embodied in a coaxial relation with substantially coincident optical axes, and that the focal plane (A) of the illuminating optics and the focal plane (B) of the imaging optics in the object area are slightly spaced.

5,326,963

ELECTRO-OPTIC BARCODE READER

Herbert C. Knapp, Holliston; Vance A. Parker, Princeton; Larry K. Baxter, Marblehead, all of Mass., and Jon F. Evans, Litchfield, N.H., assignors to Kronos Incorporated, Waltham, Mass.

Filed Oct. 2, 1992, Ser. No. 956,726

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **27 Claims**

1. A barcode reader for reading barcodes having a plurality of interspaced marks of minimum standardized dimensions, comprising:

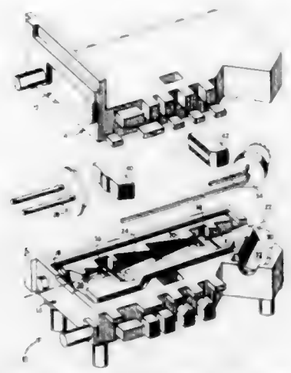
a housing having an interior channel having an axis and a capacity having an axis, the channel and cavity both in open communication with a barcode reading region defined at a preselected location of said housing wherein the channel and the cavity are disposed such that the axis of the cavity is angled relative the axis of the channel;

a photo-detector having an active area, said photo-detector mounted within said housing and in communication with said channel;

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a photo-emitter disposed in the cavity such that said photo-emitter emits light directly at said barcode reading region; and

at least one optical element having at least one curved surface, said at least one optical element disposed in said channel of said housing to define a virtual optical window



co-located at said barcode reading region, said at least one optical element having a field of view of a preselected shape selected to be no bigger than the minimum standardized dimension of the interspaced marks of the barcodes to be read and having a focal point originating at the active area of the photo-detector.

5,326,964

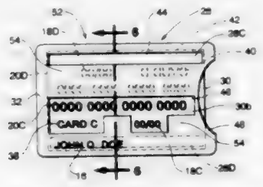
SEPARABLE MULTI-ACCOUNT SAFETY CREDIT CARD

J. Marlin Risser, 801 Mill Rd., Elizabethtown, Pa. 17022

Filed Mar. 10, 1993, Ser. No. 29,171

Int. Cl.[5] G06K *19/00*; **B42D** *15/00*

U.S. Cl. 235—487 **3 Claims**



1. A separable safety credit card having separate component parts therefor which are required to be mechanically assembled for credit card use, said card comprising in combination a sleeve component adapted to insertably receive and positionally support a multi-account insert component, and cut-out means provided within said sleeve component to selectively display from said multi-account insert component an account designator and a corresponding account number with an expiration date therefor, and an electro-magnetic data strip also corresponding to said account designator.

5,326,965

NON-CONTACT IC CARD AND METHOD OF INITIALIZING SAME

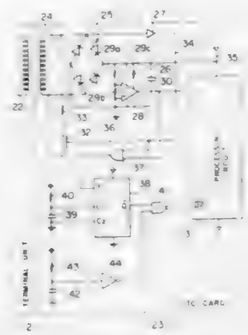
Takeshi Inoue, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 917,377

Claims priority, application Japan, Jul. 24, 1991, 3-184308

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—492 **9 Claims**



1. A non-contact IC card comprising:

power-supply receiving means for receiving power through electromagnetic coupling with a terminal unit;

signal transmitting/receiving means for transmitting signals to and receiving signals from the terminal unit;

signal processing means, connected to the power-supply receiving means and the signal transmitting/receiving means, for processing signals; and

resetting means, connected to the signal processing means, for resetting the signal processing means when no signal has been transmitted by the signal transmitting/receiving means during a predetermined time period after the signal transmitting/receiving means has transmitted a signal.

5,326,966

MAGNETIC CARD COMPRISING A POLYESTER FILM, ULTRA-VIOLET CURING INK LAYER, A MAGNETIC LAYER, AND AN ANTISTATIC ADHESIVE LAYER COMPRISING SPECIFIED POLYMERS

Masayuki Fukuda, Sagamihara, and Sadayoshi Miura, Yamato, both of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 626,891, Dec. 13, 1990, Pat. No. 5,182,169. This application Oct. 7, 1992, Ser. No. 957,101

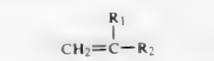
Claims priority, application Japan, Dec. 14, 1989, 1-324262

Int. Cl.[5] G11B *5/00, 25/04*

U.S. Cl. 235—493 **5 Claims**

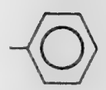
1. A magnetic card comprising an antistatic adhesive film, an ink layer made of an ultra-violet-curing ink and a magnetic layer, both of said layers being provided on the adhesive film, wherein the adhesive film comprises a polyester film and an antistatic adhesive layer provided on at least one side of the polyester film, said adhesive layer comprising a copolymer (A) and a polymer (B) at a weight ratio of 95:5 to 50:50, the copolymer (A) having a second order transition temperature (Tg) of 10°–80° C. and being obtained by copolymerizing

(a) 70–99% by weight of a compound represented by the following formula (I)



(I)

wherein R_1 is a hydrogen atom or a methyl group; and R_2 is —$COOR_3$ in which R_3 is a straight or branched alkyl group of 1–20 carbon atoms), or R_2 is



or —C≡N,

(b) 1–10% by weight of the compound N-methylol(meth)acrylamide,

(c) 0–5% by weight of an ethylenic compound having a carboxy group in the molecule, other than the compound (I), and

(d) 0–29% by weight of another compound copolymerizable with the compounds of (a) to (c), the total of the compounds of (a) to (d) being 100% by weight,

and the copolymer (B) having the molecular weight of 5,000 or more and being obtained by polymerizing or copolymerizing

(e) 30–100% by weight of a compound represented by the following formula (II)



(II)

wherein R_4, R_5 and R_6 are independently a hydrogen atom or a lower alkyl group; R_7 is a bivalent organic group; X is an alkali metal or —$NH(R_8)_3$ in which R_8 is a hydrogen atom or a lower alkyl group; and n is 0 or 1, and

(f) 0–70% by weight of another compound copolymerizable with the compound (e), the total of the compounds of (e) and (f) being 100% by weight.

5,326,967

APPARATUS FOR MONITORING THE CLOSING OF A WINDOW BY AN ELECTRIC MOTOR, PARTICULARLY A WINDOW OF A MOTOR VEHICLE

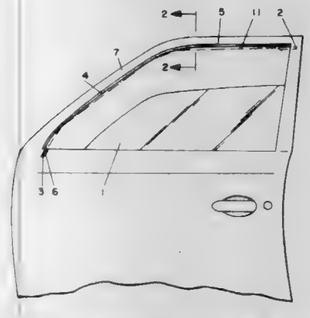
Rolf Herrmann, and Gregor Aussendorf, both of Lippstadt, Fed. Rep. of Germany, assignors to Hella KG Hueck & Co., Lippstadt, Fed. Rep. of Germany

Filed Feb. 19, 1993, Ser. No. 19,834

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1992, 4205251

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—221 **20 Claims**



1. A monitoring apparatus for monitoring the closing of a window, particularly of a motor vehicle window, having a sender and a receiver for electro-magnetic transmissions, at least one deflecting means for deflecting light which aids in transmitting electro-magnetic emissions from said sender to said receiver, wherein said means for deflecting light is arranged along at least a non-linear portion of an upper edge area of a window opening, for deflecting light along a path in said window opening substantially corresponding in shape to a shape of said non-linear portion and being positioned close to said non-linear portion, whereby said apparatus can be used in a system for causing operation of said window to stop or be reversed if an object is placed at said non-linear portion to thereby cause a transmission intensity change t the receiver during a closing process.

5,326,968

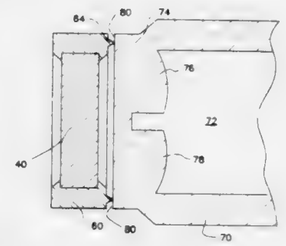
PHOTOELECTRIC SENSOR WITH A CIRCULAR POLARIZING LENS ATTACHED TO ITS HOUSING

Donald D. Johnson, Pearl City; Surrinder S. Puri, Schaumberg, and Jim Yee, Rockford, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 12, 1993, Ser. No. 30,947

Int. Cl.[5] G02F *1/01*

U.S. Cl. 250—225 **14 Claims**



1. A photoelectric sensor, comprising:

a housing having a light transmissive operative face, said operative face being formed as an integral portion of said housing;

a light emitting device disposed within said housing for directing light through said operative face in a direction away from said housing;

a light sensitive device disposed within said housing for responding to light passing through said operative face in a direction from outside of said housing; and

a laminated polarizing member attached to an outer surface of said operative face of said housing, said polarizing member being disposed in light transmission association with said operative face, said polarizing member comprising a planar portion having a periphery, said periphery being encapsulated within a molded rim, said molded rim being attached to said housing, said molded rim being attached to said housing by ultrasonic welding, said molded rim being fused to said housing along a preformed ridge extending from said molded rim in a direction toward said housing.

5,326,969

SYSTEM FOR CHARACTERIZING FLOW PATTERN AND PRESSURE OF A FLUID

John E. Fagan; James J. Sluss, Jr.; John W. Hassell; R. Brian Mears; Ronnie B. Beason; Sonja R. Wilkinson; Tommy Lear, and Kok S. Tan, all of Norman, Okla., assignors to Gas Research Institute, Chicago, Ill.

Division of Ser. No. 965,828, Oct. 22, 1992, Pat. No. 5,271,675. This application Sep. 21, 1993, Ser. No. 125,046

Int. Cl.[5] H01J *5/16*; **G01K** *1/14*

U.S. Cl. 250—227.16 **66 Claims**

1. An apparatus for viewing a flow of a fluid disposed between two facings used for testing the fluid, the apparatus comprising:

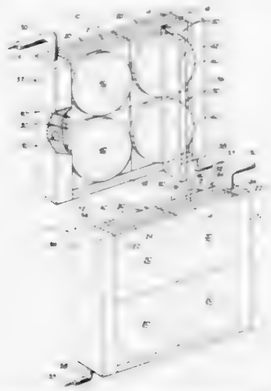
a first facing having a front surface and a rear surface;

a second facing having a front surface and a rear surface, the second facing disposable opposite and spaceable apart from the first facing wherein a gap is formed therebetween for containing the fluid;

a light source for providing light;

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a plurality of transmitting fiber optic members, wherein a portion of each transmitting fiber optic member is supported within the first facing, each transmitting fiber optic member having a transmitting fiber input end disposed near the light source and a transmitting end, the transmitting end open to the front surface of the first facing;
a plurality of receiving fiber optic members, wherein a portion of each receiving fiber optic member is supported within the second facing, each receiving fiber optic member having a receiving fiber output end and a receiving end, the receiving end open to the front surface of the

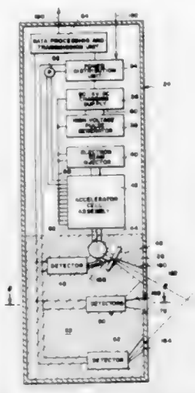


second facing for receiving light transmitted from a corresponding and optically aligned transmitting end;
light conversion means, connected to the receiving fiber output end, for converting light received by the receiving fiber optic members into electronic signals;
signal receiving means, connected to the light conversion means, for receiving the electronic signals;
signal processing means, connected to the signal receiving means, for processing the electronic signals; and
signal conversion means for converting the signals processed by the signal processing means into an image of the flow of the fluid

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5,326,970
METHOD AND APPARATUS FOR LOGGING MEDIA OF A BOREHOLE
John R. Bayless, 20325 Seaboard Rd., Malibu, Calif. 90265
Filed Nov. 12, 1991, Ser. No. 792,467
Int. Cl.[5] G01V *5/08*
U.S. Cl. 250—269 24 Claims

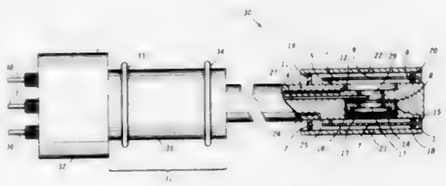
1. An apparatus for logging media comprising:
first means for producing a series of repetitive electrical pulses;
an electron beam injector receiving said electrical pulses and producing an electron beam;
a plurality of induction-type acceleration cells of a linear induction accelerator, said cells containing magnetic induction cores, said cells receiving said electron beam and confining and focusing and directing said electron beam along a path, said cells receiving said pulses which drive said cells, each cell of said cells containing a plurality of permanent magnets encompassing said path, said magnets producing a substantially constant magnetic field over the operating temperature range of −10° C. to 200° C., said induction cores to provide a high inductance for said electrical pulses and said magnets to focus and guide said electron beam, said cells substantially raising the energy level of said electron beam;
second means for producing x-rays, said second means to receive said electron beam and responsively create a stream of x-rays, said stream of x-rays to be emitted exteriorly of said apparatus and penetrate said media; and
detector means located to receive scattered said x-rays from said media, whereby comparing of the energy and amount



of said x-rays received by said detector means to the amount of x-rays emitted exteriorly of said apparatus results in a determination as to the properties of density and composition of said media

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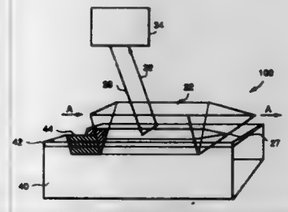
5,326,971
TRANSMISSION ELECTRON MICROSCOPE ENVIRONMENTAL SPECIMEN HOLDER
N. David Theodore, Mesa, and Juan P. Carrejo, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 17, 1993, Ser. No. 62,262
Int. Cl.[5] H01J *37/295, 37/30*
U.S. Cl. 250—311 9 Claims



1. An environmental chamber for a transmission electron microscope, comprising
a transmission electron microscope having a specimen holder;
a specimen held in a predetermined position within the transmission electron microscope such that an electron beam is directed through the specimen to a detector;
a first removable sleeve which surrounds the specimen holder;
a first end seal at a first end of the first removable sleeve which forms a seal between the first removable sleeve and the specimen holder;
a second end seal at an end opposing the first end of the first removable sleeve, the second end seal forming a seal between the first removable sleeve to the specimen holder in such a way as to form a first differential chamber;
a first aperture formed in the first removable sleeve such that the electron beam is allowed to pass through the first aperture to impinge upon a predetermined portion of the specimen;

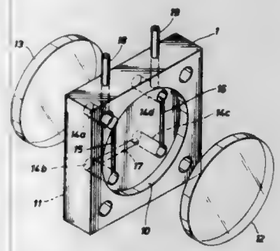
a second aperture formed in the first removable sleeve such that the electron beam passes through the specimen then through the second aperture to impinge upon the detector;
a first vacuum line which allows material to be removed from the first differential chamber; and
a reactive inlet line extending into the first differential chamber in such a way as to allow a desired material to be introduced onto the specimen.

5,326,972
DIAMOND-BASED, SELF-SAMPLING INTERNAL REFLECTION ELEMENT FOR ON-LINE ANALYSIS OF MATERIALS IN A RECYCLE STREAM
Peter J. Codella, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 25, 1993, Ser. No. 37,146
Int. Cl.[5] G01N *21/35, 21/01*
U.S. Cl. 250—339.01 20 Claims



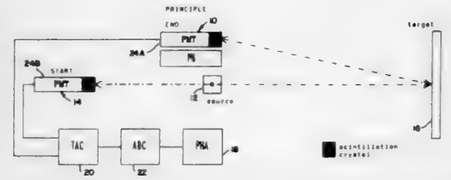
1. An apparatus for identifying solid materials, wherein said apparatus is comprised of:
a solid material to be sampled having first and second sides;
an optical element means such that said optical element means is embedded substantially in said first side of said material; and
a detection means which is operatively connected to said optical element means such that said detection means produces a light beam which interacts with said optical element and said material to produce a spectrum of said material that is used to identify said material.

5,326,973
DEVICE FOR GAS ANALYSIS
Anders Eckerbom, Bromma; Carl Hamilton, Kista, and Robert Zyzanski, Gustavsberg, all of Sweden, assignors to Artema Medical AB, Sweden
Filed Dec. 31, 1992, Ser. No. 999,203
Claims priority, application Sweden, Jan. 3, 1992, 9200023-1
Int. Cl.[5] G01N *21/03*
U.S. Cl. 250—343 13 Claims



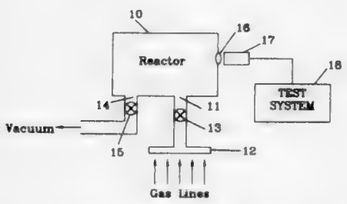
1. A device for analyzing at least two gases in a gas flow comprising:
cuvette means having an inlet, an outlet and an unbroken gas flow conduit between the inlet and the outlet, the cuvette means including a cuvette block containing at least two cuvettes, which at least two cuvettes are interconnected end to end by channels to form the unbroken as flow conduit, and further including first and second cuvette windows, which cuvette windows are transparent to radiation,
radiation source means for emitting at least two parallel and spaced apart ray paths of detectable wavelength radiation;
filter means for transmitting radiation of a specific wavelength; and
detector means comprising at least two detectors for converting the radiation into an electrical signal,
wherein said first cuvette window is positioned between the radiation source means and the at least two cuvettes, and said second cuvette window is positioned between the at least two cuvettes and the at least two detectors;
and wherein the at least two cuvettes and at least two detectors are positioned relative to the ray paths so that the radiation in each ray path passes through a cuvette to a corresponding detector for analysis of gas in the cuvette.

5,326,974
RANGE-FINDING METHOD AND DEVICE
Matti Karras, and Juha Kostamovaara, both of Oulu, Finland, assignors to Rautaruukki Oy, A Corp. of Finland, Oulo, Finland
PCT No. PCT/FI90/00304, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 19, 1992, PCT Pub. No. WO91/09324, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 19, 1990, Ser. No. 863,300
Claims priority, application Finland, Dec. 20, 1989, 896152
Int. Cl.[5] G01S *17/08*
U.S. Cl. 250—366 12 Claims



1. A method for determining distance of a target comprising: (i) one of the gamma quanta, traveling in opposite directions, created from a radioactive source in β^+ annihilation, travels to the target and the other one to a detector, which detects it, and time measuring starts; (ii) a quantum Compton-scattered from the target is detected by the same or a separate detector, and time measuring stops; (iii) the distance of the target is calculated from the time difference between (i) and (ii).

5,326,975
MEASUREMENT OF GAS LEAKS INTO GAS LINES OF A PLASMA REACTOR
Gabriel G. Barna, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 15, 1993, Ser. No. 76,031
Int. Cl.[5] G01N *21/73*
U.S. Cl. 250—372 15 Claims



1. A method for testing for gas leaks in plasma reactors and

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gas lines introducing gas into the reactor, comprising the steps of:

measuring the intensity of the plasma reaction light emission;

introducing known increments of a test gas into the reactor;

measuring the intensity of the plasma reaction light emission after each introduction of an increment of test gas into the reactor;

producing a curve resulting from the intensity readings vs increments of introduced gas;

performing a regression analysis on the curve to determine a value of gas at which the intensity is equal to zero, which value, multiplied by −1, of gas is the amount of gas that has been leaking into the reactor; and

determining from the regression analysis whether there exists a gas leak.

5,326,976

RADIATION MEASURING DEVICE FOR MEASURING DOSES FROM A RADIOTHERAPY APARATUS

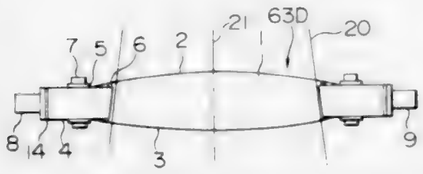
Hiroshi Kikuchi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,637

Claims priority, application Japan, Jun. 5, 1991, 3-133906

Int. Cl.[5] H01J *47/02*

U.S. Cl. 250—385.1 **5 Claims**



1. A radiation monitor for a radiation generating apparatus which generates a radiation beam having a conical shape along a longitudinal axis thereof, comprising

a frame made of an insulating material;

a high-voltage electrode;

a collecting electrode opposing said high-voltage electrode; and

a ditch circumferentially located on an end of said radiation monitor;

wherein said ditch prevents leakage current from flowing along said frame between said high-voltage electrode and said collecting electrode,

wherein an ionization space for developing ionization current from passage of said radiation beam therethrough being formed by said frame, said high-voltage electrode and said collecting electrode.

5,326,977

GAMMA-RAY COMPENSATED IONIZATION CHAMBER

Minoru Oda, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,243

Claims priority, application Japan, Jun. 10, 1991, 3-163342

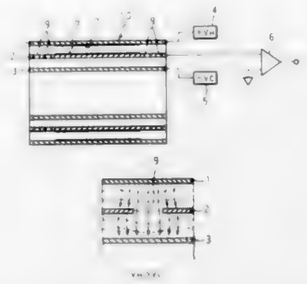
Int. Cl.[5] G01T *3/00, 1/185*

U.S. Cl. 250—390.01 **7 Claims**

1. A gamma-ray compensated ionization chamber having a neutron ionization chamber and a compensating ionization chamber formed among a first electrode, a second central electrode, and a third electrode disposed apart from one another at a prescribed distance, means for measuring a neutron flux from a neutron current outputted by the central electrode, wherein a gamma-ray current component contained in an ionization current flowing in the neutron ionization chamber from said first electrode to the second central electrode is compensated by a gamma-ray ionization current flowing in the compensating chamber from said second central electrode to said third electrode, comprising:

a plurality of holes formed in said second central electrode for passing through an electrode force from said first electrode to said third electrode; and

means for varying the ratio of a voltage potential of the first electrode to a voltage potential of said third electrode;



whereby the effective volumes of both chambers where the gamma-ray currents flow are varied by a change in electric force from the neutron ionization chamber to the compensating ionization chamber through said plurality of holes so as to equalize the quantity of the gamma-ray currents flowing in both chambers.

5,326,978

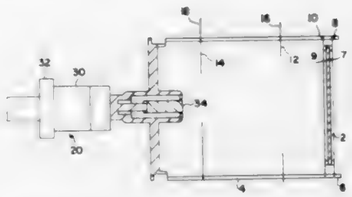
FOCUSED ELECTRON-BOMBARDED DETECTOR

Verle Aebi, Menlo Park; Ross A. LaRue, Milpitas; Kenneth Costello, Union City, and Stephen J. Bartz, Foster City, all of Calif., assignors to Intevac, Inc., Santa Clara, Calif.

Filed Dec. 17, 1992, Ser. No. 992,430

Int. Cl.[5] H01J *37/252*

U.S. Cl. 250—397 **18 Claims**



1. A charged particle detector comprising:

a microchannel plate for generating electrons in response to the impact of a charged particle on a surface of the microchannel plate;

acceleration means for accelerating the electrons generated by the microchannel plate;

focusing means for focusing the accelerated electrons in a predetermined direction along an electron beam path; and

transducer means comprising a solid state diode for detecting the electrons focused by the focusing means and for generating a signal representative of energy of the charged particle.

5,326,979

ELECTRON BEAM LITHOGRAPHY SYSTEM

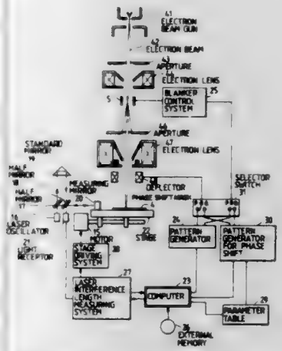
Katsuhiro Kawasaki, Katsuta; Takashi Matsuzaka, Iruma; Hiroya Ohta, and Toshihiko Kohno, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 950,689

Claims priority, application Japan, Sep. 25, 1991, 3-243873

Int. Cl.[5] H01J *37/256*

U.S. Cl. 250—492.2 **12 Claims**



1. An electron beam lithography system comprising:

a means for generating an electron beam,

a means for forming a predetermined pattern on a target by scanning of said electron beam on the target, and

a means for generating a phase shift pattern relating to said predetermined pattern.

5,326,980

ION IMPLANTER WITH PLURAL SURFACE POTENTIAL SENSORS

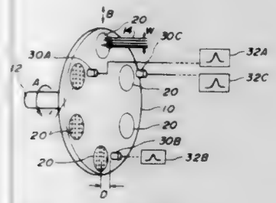
Kazuhiro Tajima, and Hideki Kimura, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jul. 2, 1992, Ser. No. 907,533

Claims priority, application Japan, Jul. 8, 1991, 3-166565; Jul. 17, 1991, 3-176327; Apr. 13, 1992, 4-091330

Int. Cl.[5] H01J *37/30*

U.S. Cl. 250—492.21 **15 Claims**



1. An ion implanter comprising:

means for irradiating an ion beam;

a rotary disc having a front surface with a number of substrates fixed and equally spaced circumferentially thereon, said rotary disc being supported for rotation and reciprocation so that said substrates are exposed in succession to the ion beam;

a plurality of surface potential sensors positioned adjacent said front surface of said rotary disc, said surface potential sensors being respectively positioned at different angular distances with respect to the ion beam for generating a plurality of respective surface potential signals in response to surface potentials at said different angular distances on said respective substrates; and

means responsive to the respective surface potential signals for estimating a surface potential produced on each of said substrates when said each substrate is exposed to the ion beam.

5,326,981

ELECTRON BEAM EXCITED ION IRRADIATION APPARATUS

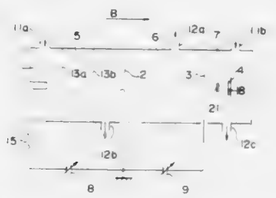
Tamio Hara, Tokyo; Manabu Hamagaki, Higashi-Matsuyama; Katsunobu Aoyagi, Tsurugashima; Takeshi Yamada, Kobe; Makoto Ryoji, Tokyo; Masakuni Tokai, Inami, and Yosuke Kajiyama, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo and Riken Institute of Physical and Chemical Research, Saitama, Japan

Filed Sep. 25, 1992, Ser. No. 950,661

Claims priority, application Japan, Sep. 27, 1991, 3-274960

Int. Cl.[5] H01J *37/30*

U.S. Cl. 250—492.21 **15 Claims**



1. An electron beam excited ion irradiation apparatus comprising:

a plasma filling chamber having a cathode and a first acceleration electrode, the first acceleration electrode acting as an anode with respect to the cathode when a first specific potential difference is applied between the first acceleration electrode and the cathode, the first specific potential difference changing an inert gas in the plasma filling chamber into a plasma;

an electron beam acceleration chamber having a second acceleration electrode, the second acceleration electrode acting as an anode with respect to the first acceleration electrode when a second specific potential difference is applied between the second acceleration electrode and the first acceleration electrode, the second specific potential difference drawing a plurality of electrons from the plasma and forming an accelerated electron beam; and

an ion generation chamber having a material setting member and a material, the material being positioned on a side of the material setting member facing the second acceleration electrode, the second acceleration electrode generating a plurality of ions when the accelerated electron beam passes through an active gas in the ion generation chamber, the plurality of ions directed towards the material,

the ion generation chamber further having electron movement direction changing means for changing a direction of the electron beam to prevent injection of the material by the electron beam, the electron movement direction changing means positioned between the material and the second acceleration electrode.

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5,326,982

ANALOGUE DISPLACEMENT SENSOR

Rudolf Wiklund, Täby, Sweden, assignor to Geotronics AB, Danderyd, Sweden

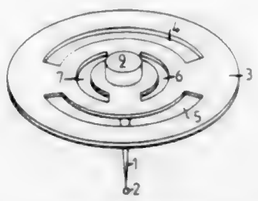
PCT No. PCT/SE91/00224, § 371 Date Jan. 1, 1993, § 102(e) Date Jan. 1, 1993, PCT Pub. No. WO91/14923, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 924,008

Claims priority, application Sweden, Mar. 23, 1990, 90010646; Mar. 23, 1990, 90010653; Mar. 23, 1990, 90010661

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **33 Claims**



1. A sensor for sensing displacement of a measuring tip which contacts an obstacle comprising:

a) a mechanical sensing unit including a stick having said measuring tip at one end thereof;

b) suspension means in said mechanical sensing unit suspending said stick to permit angular motion in relation to an axis of said sensor in several angular directions around said axis and about a central point, and to permit axial motion along said axis of the sensor, in order to permit motion detection in three dimensions;

c) means to force said stick towards a position which represents a neutral position for said measuring tip in response to a force which displaces said measuring tip;

d) sensing means including a part movable with said stick and a stationary part for angular sensing of the direction and size of a displacement of said sensor tip from said neutral position acting in a plane perpendicular to said symmetry axis of the sensor;

e) said sensing means being adapted to sense direction and size of displacements in the axial direction from said neutral position as well as said angular displacement sensing.

5,326,983

STORAGE PHOSPHOR CASSETTE AUTOLOADER HAVING CASSETTE SENSOR

Shahram Hejazi, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1993, Ser. No. 85,703

Int. Cl.[5] G01N *23/00*; **G03B** *42/02*

U.S. Cl. 250—589 **6 Claims**

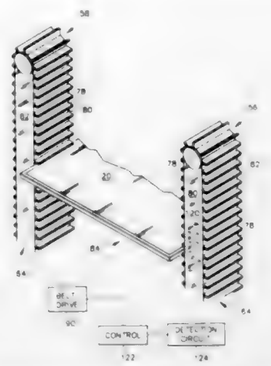
1. A storage phosphor cassette autoloader comprising:

first and second endless conveyor belts, said conveyor belts being spaced apart and having a plurality of outwardly extending shelves in vertical alignment so as to define a storage phosphor cassette read site and a plurality of storage phosphor cassette retaining sites, said first and second conveyor belts being of nonmetallic material;

a mounting assembly for movably mounting each of said first and second conveyor belts;

a drive operatively connected to said mounting assembly for said first and second conveyor belts for driving said first and second conveyor belts in unison to transfer cassettes in said retaining sites serially through said read site; and

a capacitive sensor located at one of said read or said retaining sites on the opposite side of one of said first and second conveyor belts from said shelves to sense the presence of a cassette at said read or retaining sites, said cassette having a metallic portion which is capable of being sensed by said sensor.



5,326,984

ELECTROMAGNETIC WAVE DETECTOR

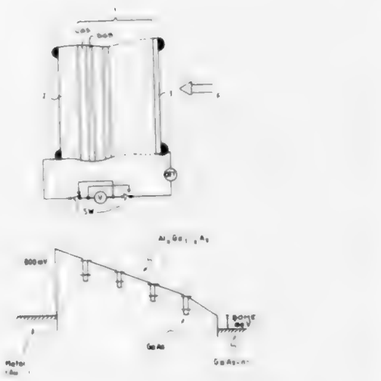
Emmanuel Rosencher, Bagneux, and Philippe Bois, Cesson, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Jun. 30, 1992, Ser. No. 906,659

Claims priority, application France, Jul. 5, 1991, 91 08451

Int. Cl.[5] H01L *29/205, 29/56, 31/06*

U.S. Cl. 257—21 **19 Claims**



1. An electromagnetic wave detector, comprising:

a stack of layers of different materials having different forbidden band gaps, so as to constitute a stack of quantum wells, the stack of layers having first and second major surfaces and an ohmic contact on the first major surface and a rectifying junction on the second major surface; and

means for applying a voltage of alternating polarity across the ohmic contact, the stack of layers, and the rectifying junction.

5,326,985

BIPOLAR DOPED SEMICONDUCTOR STRUCTURE AND METHOD FOR MAKING

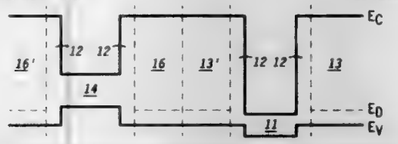
Herbert Goronkin, Tempe; Jun Shen, Phoenix, and Saied N. Tehrani, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1992, Ser. No. 951,994

The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.

Int. Cl.[5] H01L *29/161, 29/205*

U.S. Cl. 257—22 **13 Claims**



1. A bipolar doped semiconductor structure comprising:

a p-type quantum well including a first undoped channel layer having a first material composition sandwiched between two wide bandgap undoped spacer layers having a second material composition; an n-type quantum well including a second undoped channel layer having a third material composition sandwiched between two wide bandgap undoped spacer layers having the second material composition; and at least one doping region adjacent to one of the undoped spacer layers, wherein the doping region has the second material composition and has dopant atoms or native defects with a doping energy level, wherein the doping energy level is below a valence band maximum energy of the first undoped channel layer and above the conduction band minimum energy of the second undoped channel layer.

5,326,986

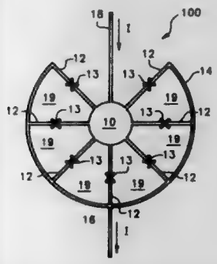
PARALLEL N-JUNCTION SUPERCONDUCTING INTERFEROMETER WITH ENHANCED FLUX-TO-VOLTAGE TRANSFER FUNCTION

John H. Miller, Jr.; Terry D. Golding, and Jaiming Huang, all of Houston, Tex., assignors to University of Houston - University Park, Houston, Tex.

Continuation-in-part of Ser. No. 665,026, Mar. 5, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 932,622

Int. Cl.[5] H01L *45/00*; **H03K** *17/92*; **G01R** *33/02*; **H01B** *12/00*

U.S. Cl. 505—162 **12 Claims**



1. A superconducting quantum interference grating capable of detecting magnetic flux, comprising:

at least three Josephson junctions connected electrically in parallel, a first terminal of each of said junctions connected to a central hub, said junctions physically arrayed radially about said central hub.

5,326,987

Patent Not Issued For This Number

5,326,988

SUPERCONDUCTING SWITCHING DEVICE AND METHOD OF MANUFACTURING SAME

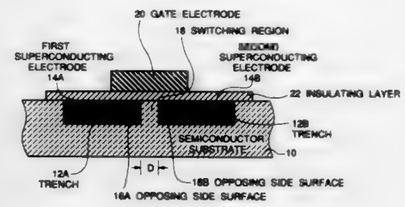
Ichiro Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 686,151, Apr. 16, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,656

Claims priority, application Japan, Apr. 16, 1990, 2-99669

Int. Cl.[5] H01L *39/22, 27/12, 45/00*

U.S. Cl. 257—39 **5 Claims**



1. A superconducting device comprising:

a semiconductor substrate,

first and second trenches formed on a principal surface of said semiconductor substrate separated from each other,

first and second superconductor electrodes filled in said first and second trenches, said first and second superconductor electrodes being planarized to have a surface coplanar with said principal surface of said semiconductor substrate, said first and second superconductor electrodes forming a channel region which is formed by said semiconductor substrate at said principal surface of said semiconductor substrate and which is defined by opposing sides of said first and second superconductor electrodes and which has a length corresponding to a distance between opposing upper side edges of said first and second trenches,

a gate insulator film formed directly on a planar surface which is formed of said principal surface of said semiconductor substrate and said surface of each of said first and second superconductor electrodes, said gate insulator film covering said channel region and at least a portion of each of said first and second superconductor electrodes adjacent to said channel region, and

a gate electrode formed on a portion of said gate insulator film so as to extend over said channel region and at least a portion of each of said first and second superconductor electrodes, so as to control a carrier concentration in said channel region.

5,326,989

SEMICONDUCTOR DEVICE HAVING THIN FILM TRANSISTOR AND METHOD OF MANUFACTURING THE SAME

Takeo Muragishi, Hyogo, Japan, assignor to Mistubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 845,979

Claims priority, application Japan, Dec. 4, 1991, 3-319471

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—67 **9 Claims**

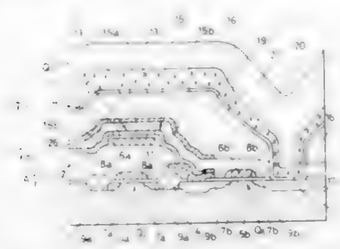
1. A semiconductor device having a thin film transistor, comprising:

a first insulating layer formed on a semiconductor substrate;

a thin film transistor including a gate electrode layer and a silicon layer separated from each other by a second insulating layer and formed on the surface of said first insulating layer, said thin film transistor further including a channel region formed in said silicon layer in a position opposite to said gate electrode layer, and a pair of impurity regions formed on the both sides of said channel region;

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an oxidation preventing film formed over said thin film transistor, said oxidation preventing film arranged for preventing said silicon layer in said thin film transistor



from being oxidized by preventing oxygen from passing beneath said oxidation preventing film; and

third insulating layer formed over said oxidation preventing film

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5,326,990

COMPOSITE LEAD FRAME WITH CONNECTED INNER AND OUTER LEADS

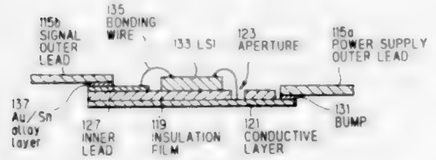
Mamoru Mita; Tomio Murakami; Shoji Takagi, all of Ibaraki; Hiroki Tanaka, Osaka, and Kenji Yamaguchi, Ibaraki, all of Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,656

Claims priority, application Japan, Sep. 9, 1991, 3-227912; Apr. 17, 1992, 4-098196; Apr. 24, 1992, 4-106353

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—672 4 Claims



1. A composite lead frame, comprising:

a metal lead frame comprising a frame member, and outer leads integral with said frame member; and

a flexible lead-patterned substrate comprising an insulation film, and inner leads provided on said insulation film;

wherein said outer leads of said metal lead frame and said inner leads of said flexible lead patterned substrate are correspondingly connected via Au-Sn alloy layers, each of said Au-Sn alloy layers containing 10 to 40 weight % of Au.

5,326,991

SEMICONDUCTOR DEVICE HAVING SILICON CARBIDE GROWN LAYER ON INSULATING LAYER AND MOS DEVICE

Hidemi Takasu, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 10, 1991, Ser. No. 804,576

Claims priority, application Japan, Sep. 24, 1991, 3-243507

Int. Cl.[5] H01L *31/0312, 29/04, 27/01, 29/12*

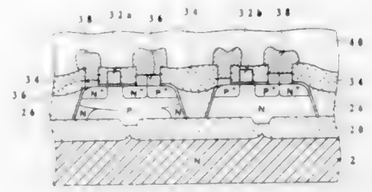
U.S. Cl. 257—77 2 Claims

1. A semiconductor device comprising:

a) a silicon substrate having a surface;

b) an insulating layer formed on the entire surface of said substrate, said insulating layer having at least two bird's beak structures wherein an end portion of each of said at least two bird's beak structures meet together;

c) a plurality of first growth layers of silicon carbide which have a same crystal plane as said substrate, said plurality of first growth layers being isolated from one another; and



d) an element formed in each of said plurality of first growth layers.

5,326,992

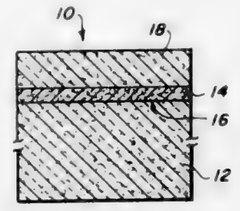
SILICON CARBIDE AND SICALN HETEROJUNCTION BIPOLAR TRANSISTOR STRUCTURES

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 29, 1992, Ser. No. 921,151

Int. Cl.[5] H01L *29/161, 29/205, 29/225*

U.S. Cl. 257—77 18 Claims



1. A silicon carbide (SiC) heterojunction bipolar transistor (HBT) structure comprising:

an emitter region of a hexagonal SiC material;

a base region of a first cubic SiC material overlying said emitter region contiguously thereto so as to form an electrically active heterojunction therebetween; and

a collector region of a second cubic SiC overlying said base region.

5,326,993

INSULATED GATE BIPOLAR TRANSISTOR

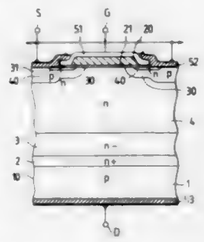
Noriyuki Iwamuro, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 17, 1992, Ser. No. 870,324

Claims priority, application Japan, Apr. 23, 1991, 3-091846

Int. Cl.[5] H01L *29/740, 29/747*

U.S. Cl. 257—139 5 Claims



1. An IGBT, comprising:

a semi-conductor substrate having first and second opposite surfaces; said substrate including:

a drain area of one conductivity type adjacent the first opposite surface;

a high impurity density area of another conductivity type disposed on the drain area of the semiconductor substrate;

a low impurity density area having an impurity density lower than the high impurity density area of the other conductivity type disposed on the high impurity density area;

a conductivity modulation area of the other conductivity type having a selected impurity density and thickness disposed between the second opposite surface and the low impurity density area, the low impurity density area having a thickness in a range of 20~50% of the sum of the thickness of said low impurity density area and the thickness of said conductivity modulation;

an insulation film disposed on the conductivity modulation area;

a gate disposed on said insulation film overlying the conductivity modulation area;

the semiconductor substrate including a channel forming layer of the one conductivity type disposed in the conductivity modulation area adjacent the second opposite surface with edge portions extending beneath an edge of the gate;

a source layer of said other conductivity type diffused in the channel forming layer extending beneath the channel forming layer defining a window beneath a central portion of the gate;

a drain terminal connected to and extending from the drain area;

a source terminal connected to and extending from the source layer; and

a gate terminal connected to and extending from the gate.

5,326,994

PROTECTIVE CIRCUIT FOR PROTECTING CONTACTS OF MONOLITHIC INTEGRATED CIRCUITS BY PREVENTING PARASITIC LATCH UP WITH OTHER INTEGRATED CIRCUIT ELEMENTS

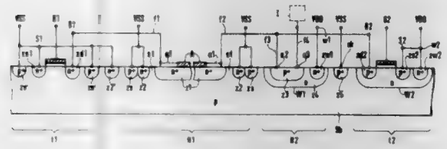
Burkhard Giebel, Denzlingen, and Wilfried W. Gehrig, March, both of Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,765

Claims priority, application European Pat. Off., Oct. 22, 1991, 91117957.0

Int. Cl.[5] H01L *29/74, 29/06, 29/78*

U.S. Cl. 257—174 6 Claims



1. In a monolithic integrated circuit defined in a substrate (Sb) including a plurality of active circuit elements (t2'), a connecting contact (A), and a first and second supply terminal (VSS, VDD), a protective circuit for protecting the connecting contacts from electrostatic discharges by means of resistive and sink devices for electrostatic discharges comprising:

at least one four-layer device (thyristor) (ta, ts) with defined switching threshold and a low-resistivity sink path (sa) from the connecting contact (A) to at least one of the first and second supply terminals (VSS, VDD) proximate to each connecting contact (A); and

means (zw2, z5) for preventing substantial flow of parasitic current (i3, i4) between at least portions of the four-layer device (ta, ts) and at least one of said plurality of active circuit elements (t2'), prevention of said flow of said parasitic current (i3, i4) by said means (zw2, z5) thereby preventing the operation of a four-layer device (ta, t2') in said monolithic integrated circuit.

5,326,995

SEMICONDUCTOR DEVICE HAVING A HETEROJUNCTION INTERFACE FOR TRANSPORTING CARRIERS WITH IMPROVED CARRIER MOBILITY

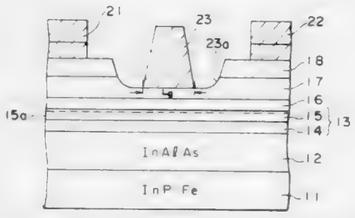
Tatsuya Ohori, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 1, 1992, Ser. No. 907,405

Claims priority, application Japan, Jul. 3, 1991, 3-162571

Int. Cl.[5] H01L *29/80, 29/161*

U.S. Cl. 257—194 10 Claims



1. A heterojunction semiconductor device comprising:

a semi-insulating substrate having an uppermost surface;

a channel layer, having upper and lower major surfaces and formed on said upper major surface of said semi-insulating substrate, receiving and transporting carriers therethrough, said channel layer including a two-dimensional carrier gas formed therein along said upper major surface of said channel layer and comprising:

an undoped first sub-layer of a first semiconductor material having a lower major surface coincident with said lower major surface of said channel layer and an upper major surface, and

an undoped second sub-layer of a first semiconductor material having a lower major surface coincident with said upper major surface of said channel layer and a lower major surface formed on said upper major surface of said first sub-layer;

a carrier supplying layer, of a doped third semiconductor material, having upper and lower major surfaces and formed with said lower major surface thereof on said upper major surface of said channel layer, said carrier supplying layer generating said carriers;

a source electrode, formed on and in ohmic contact with said upper major surface of said carrier supplying layer, injecting said carriers into said two-dimensional carrier gas from said carrier supplying layer;

a drain electrode, formed on and in ohmic contact with said upper major surface of said carrier supplying layer and spaced apart from said source electrode, recovering said carriers from said two-dimensional carrier gas via said carrier supplying layer;

a gate electrode, formed on said upper major surface of said carrier supplying layer and between said source and drain electrodes, controlling a flow of said carriers through said two-dimensional carrier gas;

said first and second sub-layers having first and second saturation drift velocities of said carriers, respectively, said first saturation drift velocity being substantially lager than said second saturated drift velocity; and

said carriers flowing through said two-dimensional carrier gas and being transported through said second sub-layer in a relatively lower energy state of said carriers, a number

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of said carriers in said two-dimensional carrier gas being transported through said first sublayer upon acceleration of said number of carriers to a relatively higher energy state higher than said relatively lower energy state.

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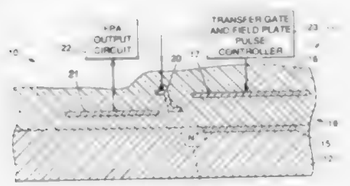
CHARGE SKIMMING AND VARIABLE INTEGRATION TIME IN FOCAL PLANE ARRAYS

Michael J. McNutt, El Toro, Calif., assignor to Loral Fairchild Corp., Syosset, N.Y.

Continuation of Ser. No. 890,016, May 27, 1992, abandoned. This application Jul. 6, 1993, Ser. No. 87,034

Int. Cl.[5] **H01L** *29/796, 27/14, 29/56*

U.S. Cl. 257—229 **11 Claims**



1. A focal plane array comprising a plurality of pixel elements, wherein each pixel element comprises

a substrate;

a doped region connected to a diode disposed in the substrate;

a cathode plate formed on the surface of the substrate, and wherein the substrate, doped region, and cathode plate form the diode.

an insulating layer disposed over the cathode plate, the doped region, and the substrate;

a field plate disposed above the cathode plate and separated therefrom by the insulating layer;

a transfer gate disposed above the substrate that is laterally separated from the cathode plate, the doped region, and the field plate, and that is separated therefrom by the insulating layer;

a readout gate disposed above the substrate that is laterally separated from the transfer gate and that is separated from the substrate by the insulating layer, and wherein a portion of the transfer gate overlaps the readout gate: and

a controller coupled to the field plate and the transfer gate that is adapted to pulse the transfer gate to a predetermined potential relative to potentials of the field plate and substrate to transfer charge to the readout circuit and produce a predetermined amount of charge skimming in the focal plane array, and pulse the field plate with a predetermined voltage to forward bias the diode and dump charge to the substrate, reset its potential, and suppress charge integration therein, and wherein the controller is adapted to produce a field plate pulse whose relative location within a frame time determines the starting time for charge integration, wherein the size of the field plate pulse relative to the potentials of the transfer gate and the substrate determines the amount of charge that is dumped.

5,326,997

LINEAR IMAGE SENSOR WITH SHUTTER GATES FOR DRAINING EXCESS CHARGE

Junji Nakanishi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 984,083

Claims priority, application Japan, Jun. 18, 1992, 4-186218

Int. Cl.[5] **H01L** *29/78, 27/14, 31/00*

U.S. Cl. 257—230 **6 Claims**

1. A linear sensor comprising

a semiconductor substrate;

a one-dimensional array of photodectors for producing signal charges in response to incident light;

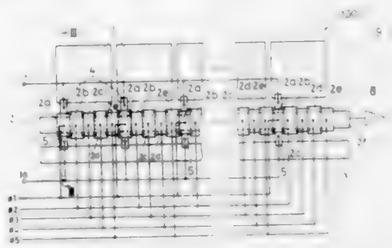
a charge transfer part for transferring signal charges stored in said photodetector array, said charge transfer part being disposed on one side of and parallel to said photodetector array;

a charge drain part for draining signal charges through said charge transfer part, said charge drain part being disposed on an opposite side of said charge transfer part from said photodetector array;

said charge transfer part including:

a charge coupled device (CCD) having at least four CCD transfer gates for each photodetector for transferring signal charges from each photodetector in a direction along said photodetector array;

photodetector transfer gates for controlling charge transfer from said photodetector array to said CCD, each photodetector transfer gate being disposed between one of said photodetectors and one of said CCD transfer gates corresponding to said photodetector;



shutter gates for controlling charge transfer from a respective CCD transfer gate of said CCD transfer gates for each photodetector to said charge drain part, each shutter gate being disposed between and respectively connected to one of said transfer gates for each photodetector and said charge drain part; and

at least four phase driving clocks for controlling said CCD transfer gates and said shutter gates, said driving clocks turning off the two CCD transfer gates adjacent a CCD transfer gate connected to a shutter gate when said shutter gate and said CCD transfer gate connected to said shutter gate are turned on to transfer signal charges to said charge drain part.

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SEMICONDUCTOR MEMORY CELL AND MANUFACTURING METHOD THEREOF

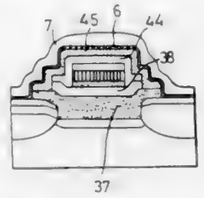
Young K. Jun, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Aug. 17, 1992, Ser. No. 931,077

Claims priority, application Rep. of Korea, Aug. 16, 1991, 91-14124; Apr. 17, 1992, 92-6494

Int. Cl.[5] **H01L** *29/68, 21/265*

U.S. Cl. 257—306 **17 Claims**



1. A semiconductor memory device, comprising:

a plurality of switching transistors each having a gate and

source and drain regions formed in an active region of a semiconductor substrate;

word lines coupled to the gates of the switching transistors through an insulating layer;

bit lines coupled to the source regions of the switching transistors;

tubular storage electrodes coupled to the drain regions of the switching transistors, each tubular storage electrode having an interior region, wherein a bit line passes through the interior regions of the tubular storage electrodes;

a dielectric layer on the tubular storage electrodes; and

a plate electrode on the dielectric layer.

5,326,999

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND MANUFACTURING METHOD THEREOF

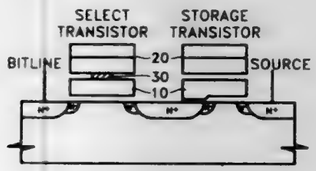
Keon-soo Kim, Kyungki-do, and Hyung-kyu Lim, Seoul, both of Rep. of Korea, assignors to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 13, 1992, Ser. No. 976,200

Claims priority, application Rep. of Korea, Nov. 19, 1991, 91-20632

Int. Cl.[5] **H01L** *29/68;* **G11C** *11/34*

U.S. Cl. 275—315 **14 Claims**



1. A semiconductor memory device, comprising:

a plurality of non-volatile memory cells each comprised of a storage transistor and a select transistor having respective gate structures separated by a short distance from each other;

wherein said gate structure of each said storage transistor includes:

a first layer comprised of a tunneling oxide film and a contiguous first insulating film formed on a surface of a semiconductor substrate;

a floating gate comprised of a first conductive layer formed on said first insulating layer;

an second insulating layer formed on said floating gate; and,

a control gate comprised of a second conductive layer formed on said second insulating layer;

wherein said gate structure of each said select transistor includes:

a first insulating layer formed on said surface of said semiconductor substrate;

a first conductive layer formed on said first insulating layer;

a second insulating layer formed on said first conductive layer; and,

a second conductive layer formed on said second insulating layer;

wherein, in each said non-volatile memory cell, a flank portion of said first conductive layer of said select transistor extends beyond said second insulating layer and said second conductive layer towards said gate structure of said storage transistor; and,

wherein each of said non-volatile memory cells further includes:

a first diffusion region formed in said surface of said semiconductor substrate between said respective gate structures of said select transistor and said storage transistor and at least partially beneath said tunneling oxide film of said storage transistor;

a second diffusion region formed in said surface of said semiconductor substrate adjacent a side of said gate structure of said select transistor opposite from said gate structure of said storage transistor;

a third diffusion region formed in said surface of said semiconductor substrate adjacent a side of said gate structure of said storage transistor opposite from said gate structure of said select transistor;

a device insulating layer formed on said surface of said semiconductor substrate and said respective gate structures of said select and storage transistors;

a first contact hole formed in said device insulating layer to leave a marginal edge portion of an upper surface of said second conductive layer of said select transistor and said flank portion of said first conductive layer of said select transistor uncovered by said device insulating layer; and,

a conductive material disposed in said first contact hole to thereby form a butted contact electrically coupling said first and second conductive layers of said select transistor.

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SEMICONDUCTOR DEVICE INTERCONNECTED TO ANALOG IC DRIVEN BY HIGH VOLTAGE

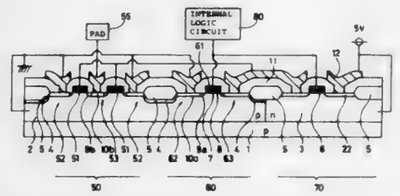
Kazuaki Miyata, and Masayuki Masuda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,683

Claims priority, application Japan, Jul. 16, 1991, 3-175249

Int. Cl.[5] **H01L** *27/02, 29/10, 29/78*

U.S. Cl. 257—344 **7 Claims**



7. A semiconductor device comprising:

a semiconductor substrate having a main surface;

a semiconductor region of a first type conductivity having a first element forming region and a second element forming region separated by a field isolating oxide, the main surface of said semiconductor substrate being substantially planar throughout said first and second element forming regions;

a first field effect transistor formed in said first element forming region; and

a second field effect transistor formed in said second element forming region;

said first field effect transistor including:

(i) first and second impurity regions of a second type conductivity formed spaced apart on the main surface of said semiconductor substrate, and

(ii) a first gate electrode formed between said first and second impurity region on said main surface of said semiconductor substrate through an insulating film, said first gate electrode circumscribing said first impurity region, wherein

said first impurity region has a first low concentration,

said second field effect transistor including:

(i) third and fourth impurity regions of the second type conductivity formed spaced apart on the main surface of said semiconductor substrate, and

(ii) a second gate electrode formed between said third and fourth impurity regions on said main surface of said semiconductor substrate through an insulating film,

said third impurity region has a second impurity con-

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centration which is lower than said first low concentration.

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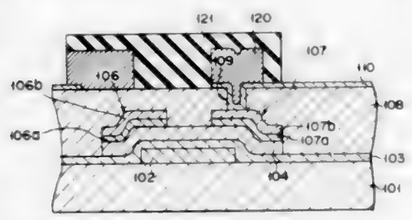
THIN FILM TRANSISTOR ARRAY HAVING SINGLE LIGHT SHIELD LAYER OVER TRANSISTORS AND GATE AND DRAIN LINES

Haruo Wakai, Fussa; Nobuyuki Yamamura, Hachioji; Syunichi Sato, Kawagoe, and Minoru Kanbara, Hachioji, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 734,017, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 503,455, Apr. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 241,304, Sep. 7, 1988, Pat. No. 5,032,883. This application Apr. 1, 1993, Ser. No. 41,537

Int. Cl.[5] H01L *27/01, 27/13, 29/78*

U.S. Cl. 257—350 8 Claims



1. A thin film transistor array, comprising:

a single substrate;

a plurality of thin film transistors formed on said single substrate, each thin film transistor having at least a gate electrode, a semiconductor layer having a channel portion and a source electrode and a drain electrode;

a plurality of gate lines and a plurality of drain lanes provided over said single substrate in an intersecting relation via an insulating film, said gate lines and drain lines being connected to gate and rain electrodes of the transistors at locations near the respective intersections of the gate and rain lines;

a plurality of transparent electrodes electrically connected to the source electrodes and providing a matrix array arranged in a plurality of regions surrounded with the gate and drain lines, respectively;

a transparent insulating film formed at least on said thin film transistor, said gate lines and said drain lines, said transparent insulating film having a first surface which is in contact at least with said thin film transistors and said gate and drain lines, and a second surface which is an opposite surface opposing said first surface; and

a single light shield film formed on said second surface of said transparent insulating film, said single light shield film being over said single substrate so as to cover the channel portions of said transistors, said gate lines, and said drain lines, and said single light shield film having a width which is not less than an interval between adjacent peripheral edges of said plurality of transparent electrodes, so as to overlap the edges of said plurality of transparent electrodes, to thereby shield said plurality of transparent electrodes, to thereby shield said channel portions from light and to shut of light leaking from among a plurality of transparent electrodes.

5,327,002

SRAM WITH GATE OXIDE FILMS OF VARIED THICKNESS

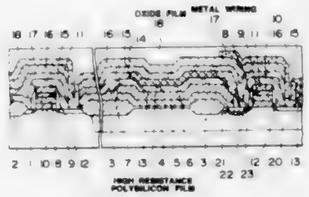
Makoto Motoyoshi, Chiba, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

Filed May 8, 1992, Ser. No. 880,700

Claims priority, application Japan, May 15, 1991, 3-110285

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—380 7 Claims



1. A semiconductor memory device comprising:

a memory cell including a first inverter and a second inverter, each of said inverters having a load member and a driving transistor connected in series, an output of the first inverter being connected to an input of the second inverter and an output of the second inverter being connected to an input of the first inverter, and storage nodes respectively constituted by junction points in each of said inverters; and

switching transistors each connected between corresponding one of the storage nodes and a bit line, said each switching transistor having a gate connected to a word line;

the improvement comprising:

a film thickness of a gate oxide film of each switching transistor is thicker than a film thickness of a gate oxide film of said driving transistor in each of said inverters, said film thickness of the gate oxide film of each switching transistor being equal to a film thickness of a gate oxide film of a peripheral metal-oxide semiconductor device subject to hot carrier deterioration.

5,327,003

SEMICONDUCTOR STATIC RAM HAVING THIN FILM TRANSISTOR GATE CONNECTION

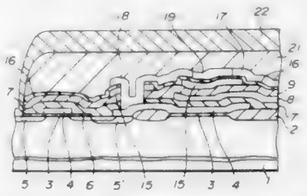
Kazuo Itabashi, and Taiji Ema, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 846,829, Mar. 6, 1992, abandoned. This application Jan. 15, 1993, Ser. No. 5,186

Claims priority, application Japan, Mar. 8, 1991, 3-067707; Jun. 18, 1991, 3-145940

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—385 21 Claims



1. A semiconductor memory device comprising:

a semiconductor substrate;

a memory cell provided on the semiconductor substrate and including first and second transfer transistors, first and second driver transistors and first and second thin film transistor loads, each of said first and second transfer transistors, said first and second driver transistors and said first and second thin film transistor loads having a source, a drain and a gate electrode;

a connection region in which the drain of the second thin film transistor load, the gate electrode of the first thin film transistor load and the gate electrode of the first driver transistor are electrically connected;

the gate electrode of the first driver transistor, the gate electrode of the first thin film transistor load and the drain of the second thin film transistor load being made of conductor layers which are stacked in succession on said semiconductor substrate, a respective insulator layer being interposed between each two successively stacked conductor layers and thereby defining a bottom conductor layer and successive, intermediate and top conductor layers with respective insulation layers interposed therebetween; and

a surface portion of the bottom conductor layer being exposed in the connecting region and at least transverse wall surfaces of each intermediate conductor layer being exposed within the connecting region and the top conductor layer being connected electrically within, and by, the connecting region with the exposed top surface portion of the bottom stacked conductor layer and primarily with the respective transverse wall surfaces of the intermediate, stacked conductor layers.

5,327,004

SOLID-STATE IMAGING DEVICE WITH AN ELECTRICALLY CONNECTED LIGHT SHIELD LAYER

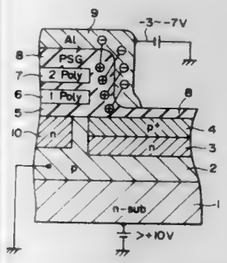
Toshirou Kurusu, and Hiromi Suzuki, both of Kagoshima, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,784

Claims priority, application Japan, Mar. 24, 1992, 4-098803

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—435 18 Claims



1. A solid-state imaging device comprising:

a photosensor region having a surface,

a hole accumulation layer on said surface of said photosensor region,

an insulation film covering said hole accumulation layer,

a light-shielding film partially covering said insulation film, and

means for applying voltage to said light-shielding film, said voltage being lower than a voltage at said hole accumulation layer, such that positive charges in said insulation film are attracted toward said light-shielding film.

5,327,005

STRIPED CONTACT IR DETECTOR

Russell D. Granneman, Goleta, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Dec. 18, 1991, Ser. No. 809,819

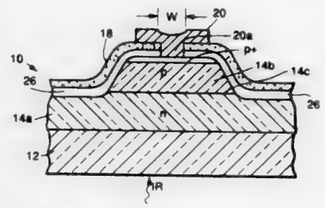
Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—443 13 Claims

1. A backside-illuminated radiation detector comprising:

a radiation responsive region have a first surface for receiving incident radiation and a second, opposite surface;

an electrical contact that is conductively coupled to the second surface of the radiation responsive region, said contact having a substantially planar upper portion having a first surface and an oppositely disposed second surface facing said second surface of said radiation responsive region, said second surface of said contact having at least one substantially linear, stripe-like portion projecting therefrom and oriented at least approximately perpendicular to a rotation axis of the detector for conductively coupling said electrical contact to said radiation responsive region; and



a radiation absorptive region interposed between said second surface of said radiation responsive region and said second surface of said contact for absorbing substantially all radiation that would otherwise impinge on and reflect from said second surface of said contact.

5,327,006

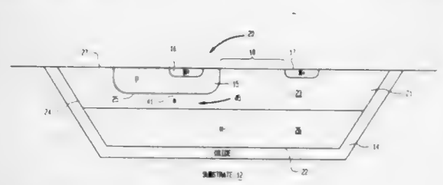
THIN, DIELECTRICALLY ISOLATED ISLAND RESIDENT TRANSISTOR STRUCTURE HAVING LOW COLLECTOR RESISTANCE

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 461,715, Jan. 8, 1990, abandoned. This application Sep. 5, 1991, Ser. No. 755,314

Int. Cl.[5] H01L *29/04*

U.S. Cl. 257—583 73 Claims



1. A semiconductor device comprising:

a semiconductor substrate having a dielectrically isolated island region of semiconductor material of a first conductivity type;

a first semiconductor region of a second conductivity type, opposite to said first conductivity type, formed in a first surface portion of said island region, such that semiconductor material of said first conductivity type of said island region extends beneath said first semiconductor region and thereby separates a bottom portion of said first semiconductor region from a bottom portion of said island region, and wherein said island region has an impurity concentration which is greater at an interface with said first semiconductor region than at said bottom portion of said island region;

a second semiconductor region of said first conductivity type, formed in a first surface portion of said first semiconductor region; and

wherein said substrate is biased at a first bias voltage, said island region is biased at a second bias voltage, and said first semiconductor region is biased at a third bias voltage, said second and third bias voltages establishing a reverse

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bias voltage differential between said island region and said first semiconductor region, said first, second and third bias voltages being such that a portion of said island region which extends beneath said first semiconductor region and separates a bottom portion of said first semiconductor region from a bottom portion of said island region is depleted of carriers prior to the occurrence of a breakdown voltage field between said island region and said first semiconductor region.

5,327,007

SEMICONDUCTOR SUBSTRATE HAVING A GETTERING LAYER

Makoto Imura, Tokyo, and Kenji Kusakabe, Hyogo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,345
Claims priority, application Japan, Nov. 18, 1991, 3-301440
Int. Cl.[5] H01L *21/322, 21/38, 29/34, 29/36*
U.S. Cl. 257—610 **9 Claims**



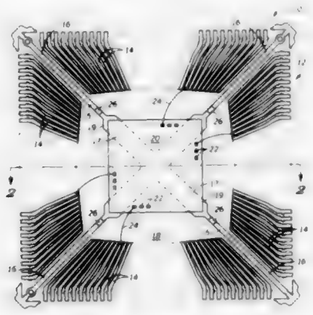
1. A semiconductor substrate, comprising:
a first single crystalline silicon layer having a main surface where a semiconductor element is formed and a junction surface on an opposite side of said first single crystalline silicon layer, and uniformly having a first concentration of oxygen in the range of 2×10^{17} atoms/cm^3 to 3×10^{17} atoms/cm^3 along a direction perpendicular to the main surface; and
a second single crystalline silicon layer joined to said junction surface of said first silicon crystalline silicon layer and uniformly having a second concentration of oxygen along a direction perpendicular to the main surface which is in the range of 16×10^{17} atoms/cm^3 to 17×10^{17} atoms/cm^3 along a direction vertical to the main surface.

5,327,008

SEMICONDUCTOR DEVICE HAVING UNIVERSAL LOW-STRESS DIE SUPPORT AND METHOD FOR MAKING THE SAME

Frank Djennas; Isaac T. Poku, and Robert Yarosh, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 22, 1993, Ser. No. 35,422
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—666 **24 Claims**



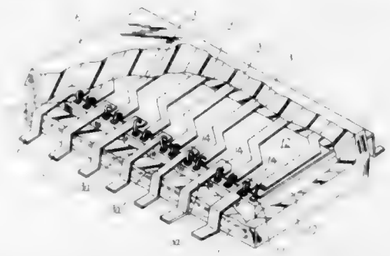
1. A semiconductor device comprising:
a lead frame comprising:
a plurality of leads having inner lead portions and outer lead portions, wherein the inner lead portions define a die receiving area having a central region;
a plurality of tie bars traversing the die receiving area and being interconnected near the central region thereof, each tie bar having a width;
a semiconductor die mounted on and supported by the one or more tie bars in the die receiving area, the die have a diagonal distance which is more than four times the tie bar width;
means for electrically coupling the semiconductor die to the inner portions of the leads; and
a package body encapsulating the semiconductor die and inner lead portions of the plurality of leads;
wherein the plurality of tie bars is the only portion of the lead frame supporting the semiconductor die.

5,327,009

MINIATURIZED INTEGRATED CIRCUIT PACKAGE

Masahiko Igeta, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 24, 1993, Ser. No. 64,980
Claims priority, application Japan, May 22, 1992, 4-130319
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 **6 Claims**



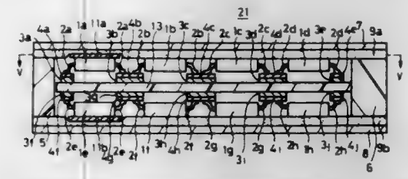
1. A semiconductor device comprising a semiconductor chip having first and second sides parallel to each other, a plurality of bonding terminals arranged in line along said first side, an insulating film covering said semiconductor chip without covering said bonding terminals, a plurality of first leads provided correspondingly to first ones of said bonding terminals, a plurality of second leads provided correspondingly to remaining second ones of said bonding terminals, each of said first leads having an inner end portion provided on said insulating film such that a corresponding one of said first ones of said bonding terminals exists between said inner end portion and said first side of said semiconductor chip and a remaining portion extended from said inner end portion to an outside of said semiconductor chip with passing over said first side of said semiconductor chip, each of said second leads having an inner end portion provided on said insulating film adjacently to a corresponding one of said second ones of said bonding terminals and a remaining portion extended from said inner end portion to an outside of said semiconductor chip with passing over said second side of said semiconductor chip, a plurality of first bonding wires each connecting each of said first ones of said bonding terminals to said inner end portion of a corresponding one of said first leads, and a plurality of second bonding wires each connecting each of said second ones of said bonding terminals to said inner end portion of a corresponding one of said second leads.

5,327,010

IC CARD HAVING ADHESION-PREVENTING SHEETS

Takeshi Uenaka, Sanda; Jun Ohbuchi, Itami; Shigeo Onoda, Itami; Makoto Omori, Itami; Hajime Maeda, Itami, and Toru Tachikawa, Itami, all of Japan, assignors to Ryoden Kasei Co., Ltd., Hyogo and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Jul. 17, 1990, Ser. No. 553,459
Claims priority, application Japan, Sep. 9, 1989, 1-233476; Sep. 12, 1989, 1-236281
Int. Cl.[5] H01L *23/02, 23/12;* **G06K** *19/00*
U.S. Cl. 257—679 **6 Claims**



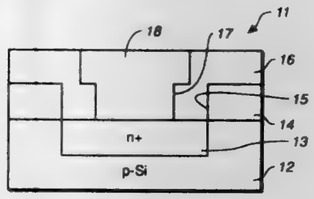
1. An IC card comprising a substrate having two opposing major surfaces, a plurality of semiconductor devices mounted on at least one of said major surfaces of said substrate, and a casing housing said substrate with said semiconductor devices mounted thereon, said casing comprising a frame having opposed sides, opposed front and rear ends, an electrical connector disposed at the front end, two panels, each panel having an inside surface and an outside surface, and an adhesive layer disposed over the inside surface of each of said panels, each of the adhesive layers bonding one of said panels to respective opposite sides of said frame including adhesion preventing means for preventing only those semiconductor devices mounted proximate the rear end from adhering to said adhesive layers, said adhesion preventing means being disposed between said panels and those semiconductor devices mounted proximate the rear end whereby forces bending said IC card are not transmitted to those semiconductor devices mounted proximate the rear end adjacent to said adhesion preventing means.

5,327,011

SEMICONDUCTOR DEVICE WITH ENHANCED VIA OR CONTACT HOLE CONNECTION BETWEEN AN INTERCONNECT LAYER AND A CONNECTING REGION

Seiichi Iwamatsu, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 918,295
Claims priority, application Japan, Jul. 23, 1991, 3-182132; May 13, 1992, 4-120209
Int. Cl.[5] H01L *23/48, 29/46*
U.S. Cl. 257—750 **8 Claims**



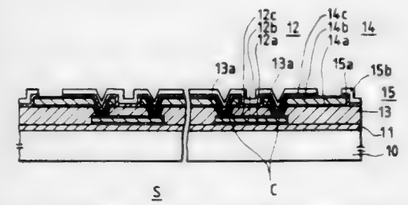
1. A semiconductor device comprising:
a conductive interconnect layer connected to a connecting region formed in a surface of a substrate through a contact hole in an interlayer insulating film formed on said substrate.
said interconnect layer not filling all of said contact hole leaving therein a void extending substantially from a bottom of said contact hole at said substrate to the upper surface of said interconnect layer,
said void thereafter filled with a conductive plug electrode, said plug electrode penetrating to the bottom of said void in contact with said connecting region,
principal contact between said interconnect layer and said connecting region accomplished by side surface engagement between said interconnect layer and said plug electrode and by bottom surface engagement between said connection region and said plug electrode,
wherein the diameter of said contact hole is about equal to or less than four times a thickness of said interconnect layer.

5,327,012

SEMICONDUCTOR DEVICE HAVING A DOUBLE-LAYER INTERCONNECTION STRUCTURE

Kohsaku Yano; Tetsuya Ueda; Teruhito Ohnishi, and Hiroshi Nishimura, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 675,833, Mar. 27, 1991, Pat. No. 5,198,884. This application Dec. 23, 1992, Ser. No. 993,885
Claims priority, application Japan, Mar. 27, 1990, 2-77863
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—758 **11 Claims**



1. In a semiconductor device of the type which comprises a first metal film formed on a semiconductor substrate, an insulating film having openings and formed on the first metal film, a second metal film provided in electric connection with the first metal film through the openings of the insulating film, and a protective layer made of a film selected from the group consisting of phosphosilicate glass and non-doped silicate glass and a silicon nitride film formed on the second metal film in this order wherein the first and second metal films have, respectively, a multi-layer structure including a first sub-layer made of a member selected from Ti, TiN, TiW, Co and W, a second sub-layer made of a metal selected from Al and Al alloys containing Si, Cu, Ti, Pd or mixtures thereof in an amount of up to 5 wt % in total, and a third sub-layer made of a member selected from the group consisting of Ti, TiN, TiW, Co and W, the improvement characterized in that a value obtained by multiplying a thickness of the silicon nitride film formed on the second metal film layer at the openings by a stress of the silicon nitride film is not larger than 2/5 of a value of a thickness of the silicon nitride film formed on the second metal film on portions other than the openings by a stress of the silicon nitride film on the portions.

5,327,013

SOLDER BUMPING OF INTEGRATED CIRCUIT DIE

Kevin D. Moore, Schaumburg, and Carl Missele, Elgin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 876,147, Apr. 30, 1992. This application Jul. 15, 1993, Ser. No. 91,937
Int. Cl.[5] H01L *23/48, 29/40, 29/44, 29/52*
U.S. Cl. 257—772 **2 Claims**

1. A solder-bumped integrated circuit die comprising
a substrate,
a passivation layer overlying the substrate, said passivation

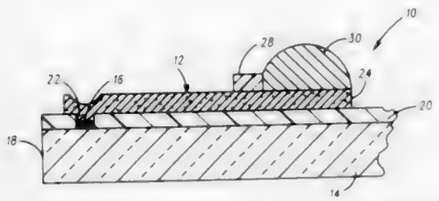
VOL 1164 ISS 1 JL 5 1994 UMI

layer being formed of a material nonwettable by a solder metal and defining an opening,

a metal contact exposed through said opening,

a terminal formed of an electrically conductive, solder-wettable material comprising copper particles and a polymeric binder, said terminal comprising a bond pad overlying said passivation layer spaced apart from the metal contact and a runner section extending from the bond pad and connected to the metal contact for conducting electrical signals between the bond pad and the metal contact, and

a solder bump bonded to the bond pad.



5,327,014

FIRING CONTROL DEVICE FOR TRIGGERING A PASSENGER RESTRAINT SYSTEM OF A VEHICLE

Anton Huber, Regensburg; Dieter Neugebauer, Regenstauf, and Marten Swart, Regensburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

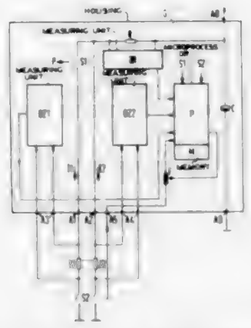
PCT No. PCT/EP91/01524, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/03311, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 9, 1991, Ser. No. 956,019

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1990, 90116107

Int. Cl.[5] B60R *21/32*

U.S. Cl. 307—10.1 **10 Claims**



1. A firing control device for triggering a passenger restraint system of a vehicle by electrically firing at least one firing pellet, comprising:

at least one measuring unit which measures, during a crash, at least one value which depicts on a firing current flowing through a respective firing pellet;

a measuring resistor in the measuring unit, which resistor is inserted into a firing circuit of the respective firing pellet in order to determine data relating to a variation of the firing current flowing across said resistor during triggering or data which is dependent thereon;

a processor which, during operation, derives criteria for the necessity of triggering from output signals of at least one crash sensor;

a memory, for storing specific data which is determined in the case of a crash and from which it can later be detected whether and how the passenger restraint system triggered during the crash, said memory storing

at least some of the data determined which relate to the criteria derived by the processor during a crash,

and at least some of the data determined by means of the measuring unit;

the measuring resistor being inserted into a firing circuit of the respective firing pellet in such a way that it is not directly accessible from the outside via external terminals of a housing of the firing control device;

the processor, the at least one measuring unit and the memory, but no firing pellet and also no explosive charge of the passenger restraint system, being mounted in the housing, wherein the housing survives a crash intact and cannot be opened without leaving behind detectable damage.

5,327,015

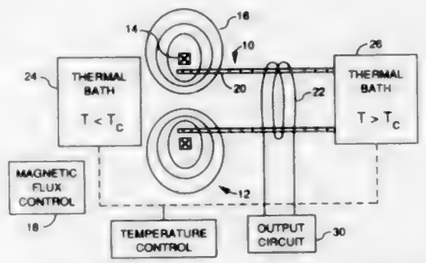
SUPERCONDUCTOR DEVICE TO PRODUCE ELECTRICAL IMPULSES

Kirk E. Hackett, Beaconsfield, United Kingdom, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 9, 1992, Ser. No. 848,566

Int. Cl.[5] H01H *47/00*

U.S. Cl. 505—211 **9 Claims**



1. An apparatus to produce electrical impulses, said apparatus comprising:

a tube, said tube composed of superconducting material;

a source of magnetic flux, said source located at an end of said tube, said source located about said end;

means for intercepting magnetic flux from said source of magnetic flux, said means for intercepting magnetic flux being able to output an electrical impulse; and

means for progressively changing the superconducting state of said tube, said means for progressively changing having a temperature control means, a temperature lower than a critical temperature being selectively applied to said end having said source, and a temperature greater than said critical temperature being applied opposite to said source.

5,327,016

LOAD CONTROL CIRCUIT INCLUDING AUTOMATIC AC/DC DISCERNMENT

Stephen Su; Warren J. Schultz, both of Tempe, and Lloyd Hayes, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

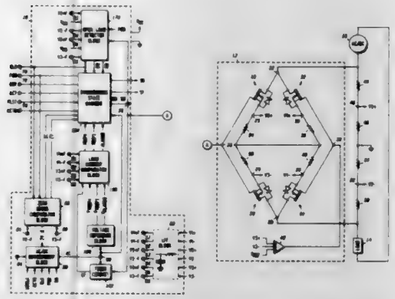
Filed Apr. 6, 1992, Ser. No. 864,102

Int. Cl.[5] H03K *5/22*

U.S. Cl. 307—128 **7 Claims**

1. A control circuit for alternately rendering a switch operative and non-operative, the switch being coupled to a load and a power supply, the switch providing a plurality of sense voltages in response to the signal level of the power supply, the control circuit comprising:

an AC/DC discernment circuit being responsive to one of the plurality of sense voltages of the switch for providing an output signal indicative of whether the power supply is providing an AC or DC signal; and



means responsive to said output signal of said AC/DC discernment circuit for providing a control signal to the switch for alternately rendering the switch operative and non-operative.

5,327,017

CIRCUIT ARRANGEMENT FOR SWITCHING OF RF SIGNALS

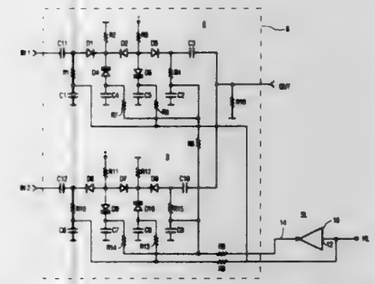
Bertram Fischer, Deisslingen, and Gerhard Maier, Dauchingen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed May 15, 1992, Ser. No. 884,421

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1989, 3937934

Int. Cl.[5] H03K *17/76*

U.S. Cl. 307—243 **4 Claims**



1. A circuit arrangement of a first and a second input terminals and means for the switching over of RF signals from the first and second input terminals to an output terminal, said means including diodes each having a cathode and an anode, said means comprising:

the first input terminal being coupled to the output terminal by first, second and third series connected diodes in the order recited, the cathodes of the first and second diodes being connected together and the anodes of the second and third diodes being connected together,

the cathodes of the first and second diodes being connected to the cathode of a first varactor diode, the anode of the first varactor diode being coupled to a reference potential via a first capacitor,

the anodes of the second and third diodes being connected to the anode of a second varactor diode, the cathode of the second varactor diode being coupled to the reference potential via a second capacitor,

the second input terminal being coupled to the output terminal by a fourth, fifth and sixth series connected diodes in the order recited, the anodes of the fourth and fifth diodes being connected together and the cathodes of the fifth and sixth diodes being connected together,

the anodes of the fourth and fifth diodes being connected to the anode of a third varactor diode, the cathode of the third varactor diode being coupled to the reference potential via a third capacitor,

the cathodes of the fifth and sixth diodes being connected to the cathode of a fourth varactor diode, the anode of the fourth varactor diode being coupled to the reference potential via a fourth capacitor.

5,327,018

INTERFACE CIRCUIT FOR CHIP CARDS

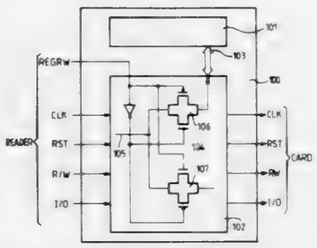
Thierry Karlisch, Aubagne; Jacek Kowalski, Trets, and Patrice Peyret, Aix en Provence, all of France, assignors to Gemplus Card International, Gemenos, France

Filed Oct. 30, 1992, Ser. No. 969,414

Claims priority, application France, Oct. 31, 1991, 91 13528

Int. Cl.[5] H03K *17/50*

U.S. Cl. 307—244 **3 Claims**



1. Specialized interface circuit for chip card, comprising a first set of connections to be connected to the card, a second set of connections to be connected to a card reader's data processing system, and a control register for controlling the circuit operation wherein the second set of connections comprises a sub-set of connections which are identical to the first set and a switching control connection, and that the circuit also comprises means of switching enabling either the connections of the sub-set to be linked respectively to the corresponding connections in the first set, or the connections of the sub-set to be linked to the control register, actuated by the control connection.

5,327,019

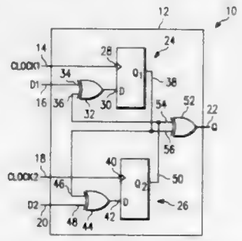
DOUBLE EDGE SINGLE DATA FLIP-FLOP CIRCUITRY

Wallace A. Kluck, Richardson, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jul. 30, 1992, Ser. No. 922,271

Int. Cl.[5] H03K *3/284, 3/289, 3/29, 19/21*

U.S. Cl. 307—272.1 **10 Claims**

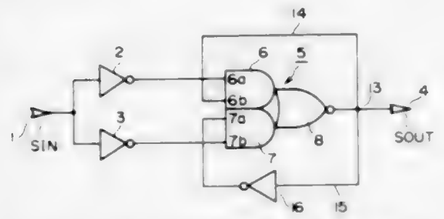


1. A double-clock, flip-flop circuit for producing a circuit

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output signal in response to two clock input signals, comprising:
a first flip-flop for producing a first output signal in response to a first clock signal;
a second flip-flop for producing a second output signal in response to a second clock signal;
means for generating an input data signal to said first flip-flop in response to said second output signal; and
means for generating said circuit output signal in response to exclusively either said first flip-flop producing said first output signal or said second flip-flop producing said second output signal.

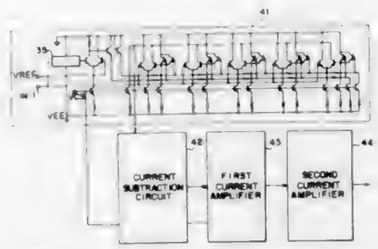
5,327,020
SCHMITT TRIGGER INPUT BUFFER CIRCUIT
Nobuyuki Ikeda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 27, 1992, Ser. No. 967,105
Claims priority, application Japan, Oct. 29, 1991, 3-282562
Int. Cl.[5] H03K *3/295*
U.S. Cl. 307—290 **22 Claims**



1. A Schmitt trigger input buffer circuit, comprising:
an input terminal;
a first input gate having a first output;
a second input gate having a second output;
said first and second input gates being connected in parallel to said input terminal and having different operating threshold voltages;
a dual-input-AND pair and dual-input-NOR composite gate having a first set of inputs connected respectively to said first and second output of said first and second input gate, having a second set of inputs for independently enabling said composite gate to be responsive to a selected one of said first set of inputs, and having an output;
an output terminal connected to said output of said composite gate; and
a circuit for feeding back said output signal of said composite gate to said second set of inputs of said composite gate.

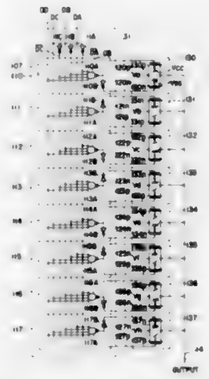
5,327,021
WAVEFORM SYNTHESIZING CIRCUIT
Yasunori Kanai; Toshizi Shimada; Takahiko Nakao, all of Nagano, and Yoshio Watanabe, Kawasaki, all of Japan, assignors to Shinko Electric Ind., Co., Ltd., Nagano and Fujitsu Ltd., Kawasaki, both of Japan
Filed Jun. 9, 1992, Ser. No. 895,901
Claims priority, application Japan, Jun. 10, 1991, 3-164973
Int. Cl.[5] H03K *5/24*
U.S. Cl. 307—360 **9 Claims**

1. A waveform synthesizing circuit comprising:
a plurality of output signal switching means for outputting predetermined magnitudes of voltage or current signals when a voltage or current value of an input pulse reaches respectively assigned comparing reference values;
signal summing means for superimposing output signals from a plurality of said switching means;
delay means for providing a delayed pulse with a predetermined delay period relative to said input pulse that is applied to a plurality of said switching means;
comparing reference means for providing said comparing reference values that consists of first references each of which is provided to a plurality of said switching means with given differences between a plurality of said switching means according to an order of operation of a plurality of said switching means for a rising period of said input pulse, and second references each of which is provided to said plurality of switching means with given differences between a plurality of said switching means according to



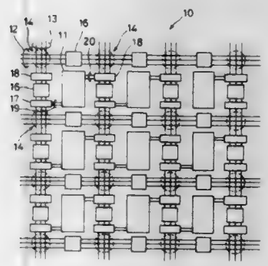
an order to operation of a plurality of said switching means for a falling period of said input pulse; and
comparing signal switching means for providing either said first references or said second references to a plurality of said output signal switching means, by deciding the outputting period of said delayed pulse from said delay means as said falling period of said input pulse and the other period as said rising period of said input pulse.

5,327,022
MULTIPLEXER CIRCUIT LESS LIABLE TO MALFUNCTION
Shigeru Yamada, Yokohama; Isao Abe, and Tsutomu Takahashi, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 19, 1992, Ser. No. 885,363
Claims priority, application Japan, May 20, 1991, 3-114928
Int. Cl.[5] G11C *8/00*; **H03K** *19/20*
U.S. Cl. 307—443 **14 Claims**



1. A multiplexer circuit comprising:
a plurality of means for decoding digital timing signals;
a plurality of means for passing an analogue potential to an output terminal corresponding to a decoded result of the decoding means, and preventing the passing means from passing more than one signal simultaneously; and
means for supplying a timing signal to the decoding means at the time when the digital signals change, thereby preventing a plurality of the passing means from turning on simultaneously.

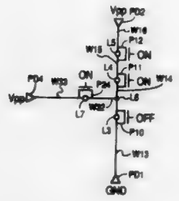
5,327,023
PROGRAMMABLE LOGIC DEVICE
Keiichi Kawana, and Norimitsu Sako, both of Tokyo, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Filed Mar. 26, 1992, Ser. No. 857,986
Claims priority, application Japan, Mar. 28, 1991, 3-064626; Apr. 25, 1991, 3-095179
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 **13 Claims**



1. A programmable logic device comprising:
a plurality of logical elements arranged in an array; and
wire means disposed in vertical and horizontal channels between said logical elements to connect arbitrarily and programmably said logical elements,
wherein said wire means include:
wire groups each consisting of a plurality of wire elements and combinable to intersect each other;
connecting means, provided at intersections of said wire groups, for connecting one wire element of one wire group to a corresponding wire element of another wire group of two wire groups combinable to intersect each other at the intersection; and
switching means, provided between adjacent intersections, for connecting programmably and mutually said plurality of wire elements of each said wire group.

5,327,024
FIELD PROGRAMMABLE ANTIFUSE DEVICE AND PROGRAMMING METHOD THEREFOR
William D. Cox, Milpitas, Calif., assignor to QuickLogic Corporation, Santa Clara, Calif.
Filed Jul. 2, 1992, Ser. No. 907,904
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **16 Claims**

1. In a programmable device, a method for reducing a resistance between a first portion of an antifuse to be programmed and a conductor carrying a first programming voltage, comprising the steps of:
establishing a first conductive programming branch from a source of said first programming voltage to said first portion of said antifuse to be programmed; and



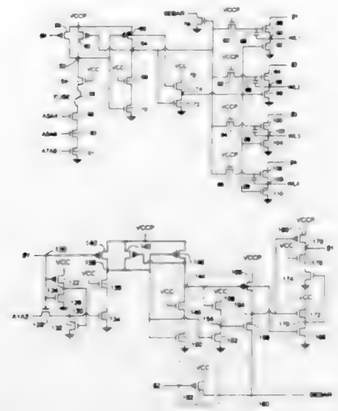
establishing a second conductive programming branch from a source of said first programming voltage to a location on said first conductive programming branch, said location being spaced from said first portion of said antifuse to be programmed, said location on said first conductive programming branch being occupied at least partially by an antifuse which has already been at least partially programmed.

5,327,025
Patent Not Issued For This Number

5,327,026
SELF-TIMED BOOTSTRAP DECODER
Kim C. Hardee, and Kenneth J. Mobley, both of Colorado Springs, Colo., assignors to United Memories, Inc., Colorado Springs, Colo. and Nippon Steel Semiconductor Corporation, Chiba, Japan
Filed Feb. 17, 1993, Ser. No. 18,802
Int. Cl.[5] H03K *17/10*
U.S. Cl. 307—482 **13 Claims**

1. A bootstrap decoder circuit comprising:
at least one word line driver circuit having an input for receiving at least one input signal; and
at least one clock generator circuit coupled to said at least one word line driver circuit;
said word line driver circuit providing a bootstrap enable signal to said at least one clock generator circuit and at least one word line signal in response to receiving sad at least one input signal;
said at least one clock generator circuit providing, in re-

sponse to the bootstrap enable signal, a clock signal to said at least one word line driver circuit,



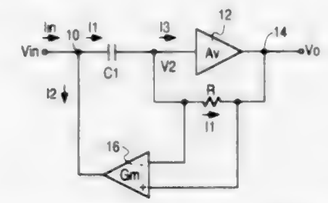
said at least one word line driver circuit basing said word line signal further on the clock signal.

5,327,027

CIRCUIT FOR MULTIPLYING THE VALUE OF A CAPACITOR

Stewart S. Taylor, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Dec. 24, 1991, Ser. No. 814,965
Int. Cl.[5] H03F *3/08*
U.S. Cl. 307—490 **11 Claims**



1. A circuit for multiplying the value of a capacitor comprising:

a capacitor having a first terminal connected to a first input node of a capacitor multiplying circuit, said first input node for receiving a first input voltage;

a feedback amplifier connected to a second terminal of said capacitor for amplifying a voltage at said second terminal of said capacitor, said feedback amplifier having a current sensing element connected in a feedback path between an input terminal of said feedback amplifier and an output terminal of said feedback amplifier, said current sensing element providing a signal generally corresponding to a current which flows through said capacitor; and

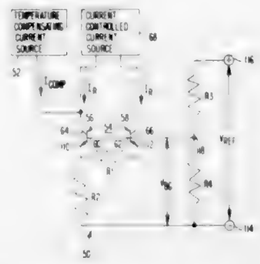
a conversion circuit having at least one input terminal coupled to said current sensing element, said conversion circuit having an output terminal connected to said first terminal of said capacitor, said conversion circuit providing an output current for diverting current from flowing through said capacitor and thus effectively amplifying the capacitance value of said capacitor as seen at said first input node, wherein said conversion circuit comprises a transconductance amplifier.

5,327,028

VOLTAGE REFERENCE CIRCUIT WITH BREAKPOINT COMPENSATION

Daniel Yum, Poway, and Seungbeom K. Kim, Montebello, both of Calif., assignors to Linfinity Microelectronics, Inc., Garden Grove, Calif.

Filed Jun. 22, 1992, Ser. No. 901,810
Int. Cl.[5] G06G *7/10;* **H03K** *3/26, 3/01;* **G05F** *3/16*
U.S. Cl. 307—491 **11 Claims**



1. A voltage reference circuit comprising:

a band-gap reference circuit having a plurality of transistors and operative to produce a reference voltage in accordance with the amount of conduction of the plurality of transistors;

means for generating a compensating current in accordance with operating temperature of the voltage reference circuit; and

means for applying the compensating current to the band-gap reference circuit to vary the amount of conduction of the plurality of transistors in accordance therewith;

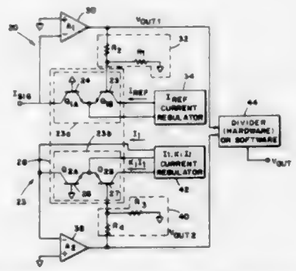
each of the plurality of transistors having a collector current flowing therein, and the means for applying the compensating current adding the compensating current to the collector current flowing in one of the plurality of transistors.

5,327,029

LOGARITHMIC CURRENT MEASUREMENT CIRCUIT WITH IMPROVED ACCURACY AND TEMPERATURE STABILITY AND ASSOCIATED METHOD

M. Nance Ericson, and James M. Rochelle, both of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed May 6, 1993, Ser. No. 58,654
Int. Cl.[5] G06G *7/24*
U.S. Cl. 307—491 **11 Claims**



1. A logarithmic measurement circuit for operating upon an input electric signal I_{SIGNAL} comprising:

a quad array of dielectrically isolated, well-matched bipolar transistors;

first circuit means associated with the quad array including a first operational amplifier, a first divider including a first resistor and a second resistor, and a current regulator which cooperate with a first two transistors of the quad array for converting the input signal I_{SIGNAL} logarithmically to provide a first output signal V_{OUT1} in accordance with the equation:

$$V_{OUT1}=N_1(1+R_2/R_1)(k/q)T_1 ln(10)\log(I_{REF}/I_{SIGNAL})$$

wherein N is the emission coefficient of the first two transistors of the quad array, R_1 is the first resistor, R_2 is the second resistor, k is Boltzman's constant, q is the electronic unit charge, T_1 is the absolute temperature of the first two transistors in degrees Kelvin, and I_{REF} is the reference current transmitted through the current regulator;

second circuit means associated with the quad array for biasing the second two transistors at a fixed collector current ratio and including a second operational amplifier, a second divider including third and fourth resistors which cooperate with the second two transistors of the quad array to provide a second output signal V_{OUT2} in accordance with the equation:

$$V_{OUT2}=N_2(1+R_4/R_3)(k/q)T_2 ln(10)\log(K_i)$$

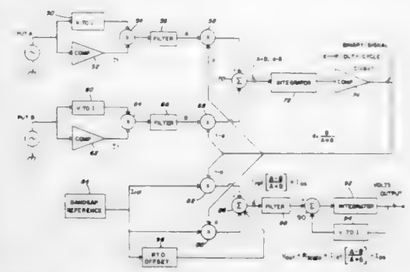
wherein N_2 is the emission coefficient of the second two transistors of the quad array, R_3 is the third resistor, R_4 is the fourth resistor, k is Boltzman's constant, q is the electronic unit charge, T_2 is the absolute temperature of the second two transistors in degrees Kelvin, and K_i is the ratio of the fixed collector currents on the second two transistors; and

means connected to the first and second circuit means for ratioing the first and second output signals V_{OUT1} and V_{OUT2} to provide a resultant output signal V_{OUT} which corresponds to the equation:

$$V_{OUT}=V_{OUT1}/V_{OUT2}=[(1+R_2/R_1)/(1+R_4/R_3)]\log(I_{REF}/I_{SIGNAL})/\log(K_i)$$

so that the resultant output signal V_{OUT} is temperature independent.

represent the respective amplitudes of the pair of signals; and



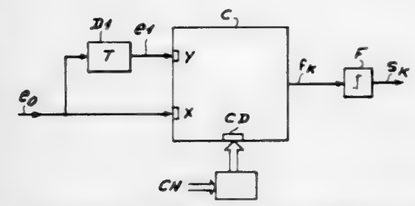
output circuit means responsive to said binary signal for providing the value of $K(A-B)/(A+B)$, where K is a constant scale factor.

5,327,031

VARIABLE-DELAY CIRCUIT

Roland Marbot, Versailles; Andrew Cofler; Michel Combes, both of Paris; Jean-Claude Lebihan, Montrouge, and Reza Nezamzadeh-Moosavi, Bois D'Arcy, all of France, assignors to Bull S.A., Paris, France

Filed Mar. 8, 1993, Ser. No. 47,545
Claims priority, application France, Mar. 24, 1992, 92 03527
Int. Cl.[5] H03K *5/13*
U.S. Cl. 307—603 **11 Claims**



1. A delay circuit for furnishing an output signal (s_K) having a delay (Θ) with respect to a logical input signal (e_0), said delay (Θ) being adjustable as a function of a set-point delay (CN), said circuit being characterized in that it includes a fixed delay circuit (D1) receiving said input signal (e_0) and furnishing a delayed signal (e_1) having a fixed delay (T) with respect to the input signal (e_0), and a combination circuit (C) with two inputs (X, Y) receiving said input signal (e_0) and said delayed signal (e_1), respectively, and including a control input (CD) receiving a control variable (K) representing said set point, said combination circuit being designed in such a way as to furnish at its output a combination signal (f_K) resulting from the superposition with weighing and an integral effect of the signals applied to its inputs (X, Y), said weighing consisting in assigning two weighing coefficients associated respectively with the input signal (e_0) and the delayed signal (e_1), whose values are a function of said control variable (K); and that said combination circuit (C) or said fixed delay circuit (D1) are dimensioned such that said fixed delay (T) is less than the transition time (t_m) that the combination signal (f_K) has when the combination circuit (C) receives only the input signal (e_0), and further wherein said combination circuit (C) includes a first and a second current source (S0, S1), respectively furnishing currents (I0, I1) that are proportional to said weighing coefficients; that said current sources (S0, S1) are connected to a terminal of a common impedance (Z) by way of two switch means (Q0, Q1), respectively, which are controlled by the input signal (e_0) and the delayed signal (e_1), respectively, the

5,327,030

DECODER AND MONOLITHIC INTEGRATED CIRCUIT INCORPORATING SAME

Lawrence M. DeVito, Tewksbury, and A. Paul Brokaw, Burlington, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation-in-part of Ser. No. 834,150, Feb. 10, 1992, abandoned, which is a division of Ser. No. 483,657, Feb. 23, 1990, Pat. No. 5,087,894, which is a division of Ser. No. 120,118, Nov. 13, 1987, Pat. No. 4,904,921. This application May 5, 1992, Ser. No. 878,489
Int. Cl.[5] H03K *5/24;* **G06G** *7/12*
U.S. Cl. 307—498 **14 Claims**

1. A decoder for processing a pair of signals of equal frequency to determine their relative amplitudes comprising:

means for rectifying and filtering the pair of signals to provide detected A and detected B signals;

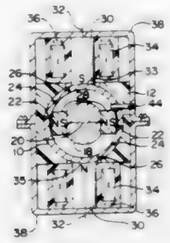
a charge balance loop responsive to said detected A and detected B signals for providing a binary signal having a duty cycle representative of $B/(A+B)$ where A and B

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potential (V) of said terminal constituting the measurement of said combination signal (f_K).

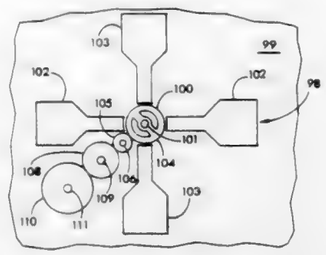
5,327,032
DUAL FLUX RING MULTIPLE POSITION ROTARY ACTUATOR
Theodore A. Esswein, St. Louis, Mo., assignor to Carter Automotive Company, Inc., Southfield, Mich.
Filed Feb. 18, 1993, Ser. No. 18,960
Int. Cl.[5] H02K *33/00, 35/00*
U.S. Cl. 310—36 **8 Claims**



1. A rotary actuator, comprising:
a annular stator ring having a central axis and comprising a plural number of magnetic flux obstructions spaced around the ring circumference;
a rotor having a central rotor axis and located within said stator ring for rotation around said central axis, said rotor having permanent magnet means located and polarized in a first plane coincident with the rotor axis;
pole piece means extending from said stator ring in a second plane extending through said central rotor axis;
a flux-conducting frame surrounding said stator ring such that said pole piece means is connected to said stator ring and to said frame;
an electrical winding encircling said pole piece means for generating a magnetic circuit that passes through the magnet means;
means for normally biasing said rotor to a position wherein the permanent magnet first plane is angularly related to the pole piece means second plane so that, when the winding is energized, the rotor is deflected from its normal position to an actuated position aligned with said flux obstructions; and
said permanent magnet means generating a magnetic flux within said stator ring slightly less than necessary to magnetically saturate said stator ring.

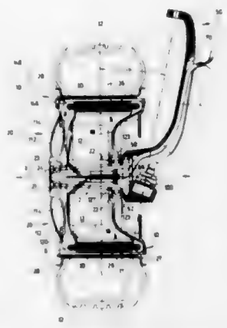
5,327,033
MICROMECHANICAL MAGNETIC DEVICES
Henry Guckel; Todd R. Christenson, and Kenneth J. Skrobis, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Division of Ser. No. 718,536, Jun. 24, 1991, Pat. No. 5,206,983. This application Dec. 30, 1992, Ser. No. 998,947
Int. Cl.[5] H02K *15/00, 57/00*
U.S. Cl. 310—40 MM **13 Claims**

1. A micromechanical magnetically actuated device comprising:
(a) a rotor having a periphery with a diameter less than about 200 μm and formed of a ferromagnetic material, a substrate, and means for mounting the rotor for rotation on the substrate about an axis of rotation, the rotor formed to have a high reluctance path therethrough and a low reluctance path therethrough;
(b) a stator having pole pieces formed of ferromagnetic material mounted on the substrate around the rotor for directing magnetic flux to the rotor and means for providing a time varying magnetic flux through the pole pieces



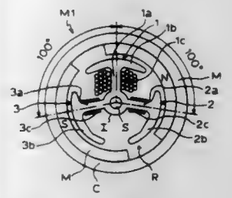
to the rotor which rotates about the axis of rotation of the rotor.

5,327,034
ELECTRICALLY MOTORIZED WHEEL ASSEMBLY
Pierre Couture, Boucherville; Bruno Francoeur, Loretteville; Julien Simard, Brossard; Francois-Xavier Bourgeois, St-Liboire, and Germain Harbec, Ste-Julie, all of Canada, assignors to Hydro-Quebec, Montreal, Canada
Filed Jul. 14, 1992, Ser. No. 913,021
Int. Cl.[5] H02K *7/14, 11/00, 5/18*
U.S. Cl. 310—67 R **65 Claims**



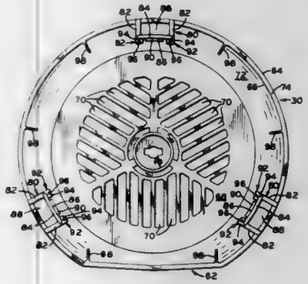
1. An electrically motorized wheel assembly comprising:
a hollow shaft having a first opening at one end thereof and a second opening, said first opening receiving conductors from outside of said assembly;
a stator coaxial with and fixedly attached to said shaft, said stator being provided with a hollow portion and coils;
a rotor coaxial with said stator and mounted for rotation about said stator;
a converter converting an input electrical current to a variable AC electrical current, said converter including power electronics fixedly mounted within said hollow portion, said converter also including input terminals receiving said input electrical current and output terminals delivering said variable AC electrical current to said coils of said stator.

5,327,035
VIBRATOR MOTOR FOR A WIRELESS SILENT ALERTING DEVICE
Sosuke Sunaga, Isesaki, Japan, assignor to Tokyo Parts Industrial Co., Ltd., Isesaki, Japan
Filed Apr. 30, 1993, Ser. No. 56,369
Claims priority, application Japan, Oct. 1, 1992, 4-286987
Int. Cl.[5] H02K *7/06, 1/22*
U.S. Cl. 310—81 **8 Claims**



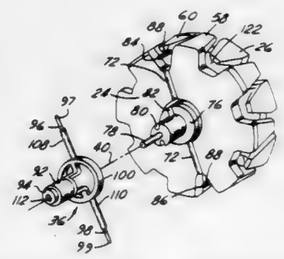
1. A vibrator motor, comprising:
an armature rotor,
said armature rotor including a shaft, an armature core fixedly mounted on said shaft, and armature windings,
said armature core having at least three poles, each of said poles having a radially extending winding arm having an radial axis and an arcuate blade, all of said arcuate blades having an equal arcuate length, dimensional centers measured in the arcuate direction of said arcuate blades being located at angularly even pitch about the axis of said shaft so that any arcuate blades adjacent to each other have an equal spacing therebetween, the radial axis of said radially extending winding arm of at least one of said poles being angularly unevenly disposed about the axis of said shaft and out of alignment with the dimensional center of said arcuate blade of the corresponding pole so that the center of means of said armature core is located off the axis of said shaft.

5,327,036
SNAP-ON FAN COVER FOR AN ELECTRIC MOTOR
Timothy W. Carey, Grabill, Ind., assignor to General Electric Company, Fort Wayne, Ind.
Filed Jan. 19, 1993, Ser. No. 6,254
Int. Cl.[5] H02K *5/00, 5/24*
U.S. Cl. 310—89 **13 Claims**



1. An electric motor, comprising:
a frame;
a stator supported by said frame;
at least one end shield mounted to said frame;
a rotor rotatably supported by the end shield adjacent said stator;
a fan rotatably mounted adjacent the end shield;
a cover mounted adjacent the fan;
wherein said end shield has a front face and an annular face and receiving means formed in the annular face for receiving and engaging a portion of said cover, said receiving means including at least one slot in said annular face, and a bearing surface disposed substantially coplanar to said front face for engaging a portion of said cover;
wherein said cover has mounting means for cooperating with said receiving means, comprising at least one bracket extending from a peripheral surface of the cover, said bracket having a projection extending substantially orthogonally therefrom for engagement with said slot, and at least one back stop for engaging the bearing surface of the end shield; and
wherein said bracket comprises a surface, radially inwardly spaced from the peripheral surface of the cover and extending substantially concentrically therewith, and wherein said projection extends substantially orthogonally from said inwardly spaced surface.

5,327,037
AUTOMOTIVE ALTERNATOR SLIP RING ASSEMBLY
Duane Rasmussen, Dexter, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 23, 1992, Ser. No. 980,393
Int. Cl.[5] H02K *13/02*
U.S. Cl. 310—232 **7 Claims**

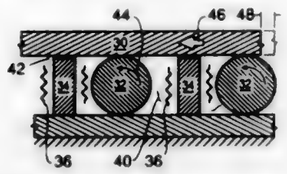


1. A slip ring assembly for use in an attachment arrangement for sealingly mounting the slip ring assembly between a mold and a pole piece, each of the mold and pole piece having a seal surface, and around a rotor shaft of a rotor assembly during injection molding of a mold material under pressure, the slip ring assembly comprising:
at least one slip ring;
at least one electrically conductive terminal connected to the slip ring; and
a mold shutoff ring supporting the terminal and having seal surfaces, the seal surfaces of the shutoff ring being adapted to sealingly mate with the respective seal surfaces on the mold and on the pole piece and sufficiently strong to withstand pressures applied to the mold shutoff ring during injection molding;
whereby when the mold shutoff ring mates with the pole piece and the mold during a molding operation, the pressurized molten mold material is prevented from passing between the shutoff ring and the mold and between the shutoff ring and the pole piece.

5,327,038
WALKING EXPANSION ACTUATOR
Gordon W. Culp, Van Nuys, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Continuation-in-part of Ser. No. 697,368, May 9, 1991, abandoned. This application Dec. 16, 1991, Ser. No. 807,667
Int. Cl.[5] H02N *10/00;* **F04B** *19/24*
U.S. Cl. 310—306 **44 Claims**

1. An actuator comprising:
a stationary sheet;
a translatable sheet opposite the stationary sheet;
a rolling barrier, having rolling contact with the stationary

sheet and the translatable sheet, for moving one sheet relative to the other;
a fixed barrier attached to the stationary sheet, and extending to a point proximate the translatable sheet, and;
two end walls, said stationary sheet, translatable sheet, rolling barrier, fixed barrier, and end walls, forming the boundaries of a chamber;



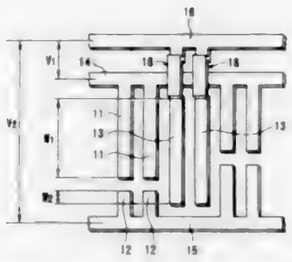
a heat source in the chamber;
a thermoexpansive material in the chamber;
a means of activating the heat source to provide an exobaric pulse in the thermoexpansive material, which expands in the chamber, forcing the rolling barrier to translate the translatable sheet relative the stationary sheet by rolling contact with the sheets.

5,327,039

WEIGHTING TRANSDUCER FOR SURFACE ACOUSTIC WAVE FILTER

Yoshihiro Yamada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 23, 1992, Ser. No. 903,007
Claims priority, application Japan, Jun. 27, 1991, 3-157067
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 B **4 Claims**



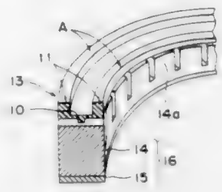
1. A weighting transducer for a surface acoustic wave filter, comprising:
a first, a second and a third bus electrode; and
respective pluralities of first, second and third transducer fingers, formed and periodically arranged on a surface of a piezoelectric substrate in a transmission direction of a surface acoustic wave,
wherein said first transducer fingers are connected to said first bus electrode and said second transducer fingers are connected to said second bus electrode, each of said first transducer fingers forming a pair with corresponding one of said second transducer fingers so as to form a plurality of pairs of transducer fingers,
each said pair of transducer fingers being arranged on the surface of said piezoelectric substrate so as to be in opposing positions to each other along the surface of the piezoelectric substrate, and being spaced from each other by a predetermined interval in a longitudinal direction of the transducer fingers; and
said third transducer fingers being connected to said third bus electrode,
said third transducer fingers being interdigitated with said plurality of pairs of transducer fingers such that each of said third transducer fingers overlaps with a respective one of said plurality of pairs of transducer fingers in the longitudinal direction of the transducer fingers, thereby defining a respective overlap distance with each transducer finger of said respective pair of transducer fingers, and
wherein a sum of said overlap distance between the first transducer finger of said respective pair of transducer fingers and the respective third transducer finger, adjacent each other, and the overlap distance between the second transducer finger of said respective pair of transducer fingers and said respective third transducer finger is equal to the corresponding sums of the respective overlap distances of the other of the interdigitated said third transducer fingers and said pairs of transducer fingers.

5,327,040

ULTRASONIC MOTOR WITH A VIBRATING BODY AND A MOVING BODY DRIVEN THEREBY

Masanori Sumihara, Moriguchi; Katsu Takeda, Osaka; Takahiro Nishikura, Ikoma, and Osamu Kawasaki, Tsuzuki, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Apr. 2, 1992, Ser. No. 862,219
Claims priority, application Japan, Apr. 2, 1991, 3-069727
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **4 Claims**



1. An ultrasonic motor, comprising:
a moving body; and
a vibrating body, said moving body being pressed against said vibrating body for movement of said moving body in a direction of movement by the friction force between said moving body and said vibrating body when said vibrating body is excited to generate a progressive wave of flexural vibration therein;
wherein said vibrating body comprises a piezoelectric body bonded to an elastic base board; and
wherein said moving body comprises a one-piece body made of a resin composite material reinforced with at least carbon fibers, said one-piece body including a beam extending in the direction of movement of said moving body, said beam having lateral ends thereof, two first projections projecting upwardly from respective said lateral ends of said beam and defining a pressure receiving surface, and a second projection projecting downwardly from said beam toward said vibrating body and defining a sliding contact surface for contact with said vibrating body.

5,327,041

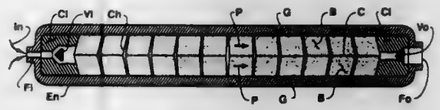
BIAXIAL TRANSDUCER

Gordon W. Culp, Van Nuys, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Division of Ser. No. 726,441, Jul. 5, 1991. This application Mar. 12, 1993, Ser. No. 30,738
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 **3 Claims**

1. A pump comprising a chamber having interior surfaces, at least two layers of biaxer segments a resilient closure an inlet valve and an outlet valve,

each said layer of biaxer segments having a support surface and a responsive surface, where the responsive surfaces of two biaxer segments are joined to common electrodes and the support surfaces are joined to ground electrodes attached to interlot surfaces of said pump chamber, said biaxer segments having spaces between them, having an axis about which the biaxer segments are distributed and each layer having a periphery at the end of a radius from the axis,
said resilient closure is placed between the chamber and the layer's periphery to provide fluid closure for the pump,



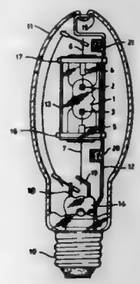
a pulsating electric source is connected to the common electrodes to activate the biaxer segments,
said biaxers responsive to pulses of said pulsing electric source by shearing predominantly proximate said common electrodes, said shearing varying the volume of the spaces between said segments thereby changing the volume of open space in the chamber causing a change in chamber pressure,
wherein a decrease in chamber pressure induces fluid into the chamber through the inlet valve and an increase in chamber pressure exhausts fluid through the outlet valve thereby providing pumping action.

5,327,042

METAL HALIDE LAMP

Simone P. Bazin, Bedford; Richard A. Parrott, Merrimack, and Edward H. Nortrup, Bedford, all of N.H., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Jul. 2, 1992, Ser. No. 909,234
Int. Cl.[5] H01J *61/34*
U.S. Cl. 313—25 **7 Claims**



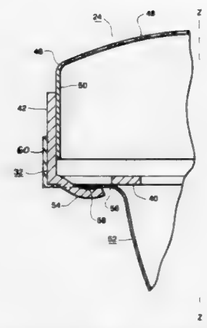
1. A metal halide discharge lamp comprising:
an outer evacuated sealed glass envelope and a getter material contained in said envelope for removing gaseous materials therefrom,
a pair of electrical conductors extending into the interior of said glass envelope;
an arc tube disposed within the outer glass envelope, said arc tube containing an arc sustaining chemical fill and including a pair of spaced electrodes being electrically connected to said electrical conductors for creating an electric arc during operation of said lamp;
said getter material comprising from about 60 to about 85 percent zirconium, from about 10 to about 20 percent vanadium, and from about 2 to about 10 percent manganese, and having an activation temperature of less than about 350 degrees Centigrade.

5,327,043

INTERNAL MAGNETIC SHIELD-FRAME MOUNTING MEANS

Dennis C. Lambert, Leola, Pa., assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Jul. 15, 1992, Ser. No. 913,339
Int. Cl.[5] H01J *29/80, 1/00, 5/02*
U.S. Cl. 313—407 **6 Claims**



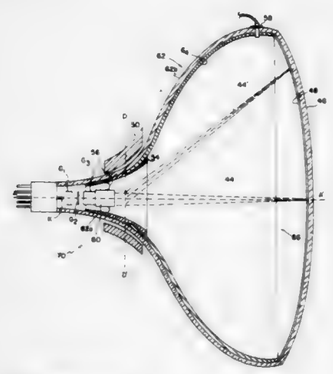
1. In a cathode-ray tube having a faceplate panel joined to a funnel and having an internal magnetic shield connected to a bottom surface of a flange of a shadow mask frame, the improvement comprising said flange of said shadow mask frame having a plurality of integral shield-retaining clips formed therein, wherein each of said shield-retaining clips being formed from said flange of said frame by piercing said flange to raise said clips out of the body of said flange, thereby providing a cavity directed toward a central longitudinal axis of said tube to retain a shoulder of said shield therein, each of said clips overlapping at least a portion of said shield to retain said shield in contact with said flange of said frame.

5,327,044

ELECTRON BEAM DEFLECTION LENS FOR CRT

Hsing-Yao Chen, Barrington, Ill., assignor to Chunghwa Picture Tubes, Ltd., Yangmei, Taiwan

Filed Apr. 27, 1992, Ser. No. 874,043
Int. Cl.[5] H01J *29/70*
U.S. Cl. 313—433 **52 Claims**



1. A CRT comprising:
a display screen responsive to a beam of electrons incident thereon for providing an image;
a source of energetic electrons;
low voltage beam forming means disposed intermediate said

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display screen and said source of energetic electrons and adjacent said source of energetic electrons for forming said energetic electrons into said beam and directing said beam along an axis toward said display screen;

high voltage focus lens means disposed intermediate said beam forming means and said display screen for forming a beam electrostatic focus region in the CRT for focusing the electron beam to a spot on said display screen; and

magnetic deflection means disposed outwardly from and around at least a portion of said focus lens means for forming a beam magnetic deflection region for deflecting the electron beam over said display screen such that the spot is displaced across the display screen in a raster-like manner, and wherein said beam electrostatic focus region and said beam magnetic deflection region overlap and are coincident along said axis.

5,327,045

GAS DISCHARGE ELECTRODES AND LAMPS

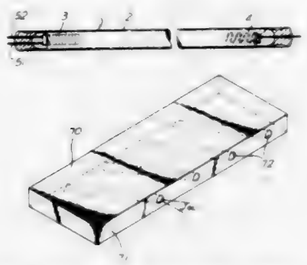
Neil A. Fox, Eversham, England, assignor to Smiths Industries Public Limited Company, London, United Kingdom

Continuation-in-part of Ser. No. 667,868, Mar. 19, 1991, Pat. No. 5,142,196. This application Jul. 28, 1992, Ser. No. 921,011

Claims priority, application United Kingdom, Mar. 31, 1990, 9007327

Int. Cl.[5] H01J *61/04*

U.S. Cl. 313—631 **4 Claims**



1. In a cold cathode discharge lamp comprising an envelope of planar shape filled with a discharge gas and having first and second electrodes at opposite ends of the envelope separated by the discharge gas, the improvement wherein at least one of the electrodes is a block of metal extending laterally along a side of the envelope, said metal block electrode having a plurality of holes arranged side-by-side along the electrode, each hole extending at an angle away from the normal to a surface of the metal block electrode and providing a region of high current density.

5,327,046

HIGH PRESSURE DISCHARGE LAMP HAVING OVERCURRENT FUSE PROTECTION

Jagannathan Ravi, Elmira, N.Y., and Gerard Luijks, Gerwen, Netherlands, assignors to North American Philips Corporation, New York, N.Y.

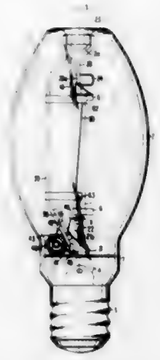
Continuation-in-part of Ser. No. 626,914, Dec. 12, 1990, Pat. No. 5,159,242. This application Oct. 26, 1992, Ser. No. 966,214

Int. Cl.[5] H01J *7/44*

U.S. Cl. 315—52 **14 Claims**

1. In a high pressure discharge lamp having a discharge vessel, and means for connecting said discharge vessel to a source of electric potential to energize said discharge vessel to emit light, said discharge vessel having an operating current during lamp operation and a short-term starting current substantially greater than said operating current during lamp start-up, said operating current of said discharge vessel increasing over lamp life from a nominal operating current to an overcurrent higher than said nominal operating current, the improvement comprising:

a power dissipating resistive fuse connected electrically in series with said discharge vessel for disconnecting said discharge vessel from said source of electric potential upon an increase of said operating current to a predetermined overcurrent over lamp life, said resistive fuse being heated by passage of said operating current during lamp



operation to a temperature substantially controlled by said operating current, said resistive fuse being selected such that in response to an increase in said operating current to said predetermined overcurrent, said resistive fuse reaches a temperature such that it breaks and disconnects said discharge vessel from said source of electric potential, said resistive fuse passing said short-term starting current and not disconnecting said discharge vessel during each lamp start-up.

5,327,047

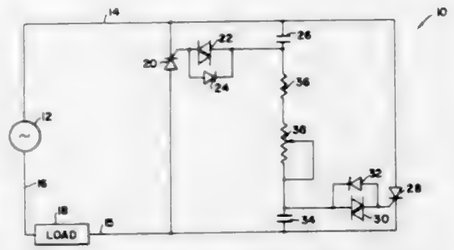
ELECTRICAL DIMMER SYSTEM EMPLOYING ALTERNATELY APPLIED SILICON CONTROLLED RECTIFIERS

Bernard Gershen, Centerport, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Sep. 30, 1992, Ser. No. 954,229

Int. Cl.[5] G05F *1/00*

U.S. Cl. 315—194 **8 Claims**



1. A dimmer control system comprising, in combination:

first and second conductors spaced apart from each other and respectively connected to the positive and negative terminals of an AC voltage source;

a first silicon controlled rectifier discrete current switching device and a second silicon controlled rectifier discrete current switching device, each of said switching devices connect between said fist and second conductors such that said first discrete current switching device conducts current to a load during a portion of the half cycles when positive AC voltage is applied to said first conductor and said second discrete current switching device conductors current to said load during a portion of the half cycles where positive AC voltage is applied to said second conductor;

first and second gate energization circuits respectively, connected to said first and second silicon controlled rectifiers; said first gate energization circuit comprises a first capacitor and a first diac connected in series with the gate terminal of said first silicon controlled rectifier and said second gate energization circuit comprises a second capacitor and a second diac connected in series with the gate terminal of said second silicon controlled rectifier.

5,327,048

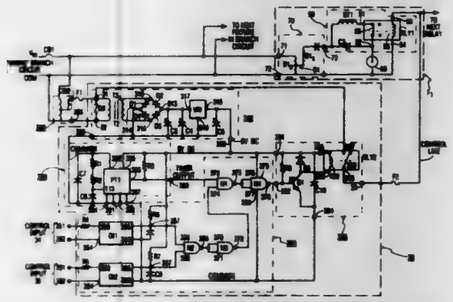
BI-LEVEL LIGHTING CONTROL SYSTEM FOR HID LAMPS

Patrick E. Troy, Chicago, Ill., assignor to North American Philips Corporation, New York, N.Y.

Filed Feb. 26, 1993, Ser. No. 23,534

Int. Cl.[5] H05B *41/42*

U.S. Cl. 315—240 **34 Claims**



1. A bi-level control system for an HID lighting system having (i) an AC power supply branch circuit with a line voltage line and a common line and (ii) a luminaire including an HID lamp and a ballast means connected to the HID lamp and to the line voltage and common lines for providing stable operating power to the lamp, said control system comprising:

capacitance switching means for switching a capacitance into and out of circuit with said HID lamp and ballast means to switch said HID lamp between a first light output level and a second, different light output level, said capacitance switching means having a pair of control inputs; and

control means including an output switchably connectable to a source of electric potential such that, with one of said control inputs of said capacitance switching means connected to the common line of the AC branch circuit and the other said control input of the capacitance switching means connected to said output of said control means with a single control line, said control means is effective to control the switching of said capacitance switching means with the single control line by switching of the source of electric potential to said output of said control means.

5,327,049

ELECTRODELESS LOW-PRESSURE DISCHARGE LAMP WITH PLASMA CHANNEL

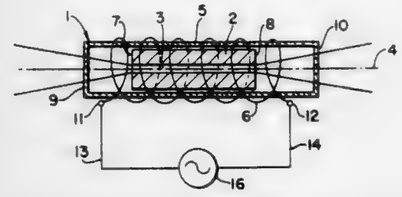
Ernst Smolka, Reutlingen; Werner Schwarz, Gelnhausen; Peter March, Frankfurt am Main, and Klaus-Jürgen Dietz, Wiesbaden, all of Fed. Rep. of Germany, assignors to Heraeus Instruments GmbH, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 877,410, May 1, 1992, abandoned. This application Dec. 30, 1992, Ser. No. 999,561

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1991, 4120730

Int. Cl.[5] H05B *41/24*; **H01J** *11/02*

U.S. Cl. 315—248 **13 Claims**



1. An electrodeless low-pressure discharge lamp, comprising

a lamp envelope (1) having a first end portion (9) and a second end portion (10);

a generally cylindrical element (2) inside said envelope (1), formed with an aperture defining a linear channel (3) from near said first end portion (9) of said envelope to near said second end (10) portion thereof;

a gas fill sealed in said envelope and extending through said channel (3), and adapted for ionization to form a plasma;

a cylindrical excitation coil (6) surrounding said envelope (1) and connected to a generator (16) for generating a high-frequency electromagnetic field, said gas fill forming a plasma in response to application of said electromagnetic field;

wherein

said aperture has a substantially smaller diameter than portions (9, 10) of said envelope beyond axial ends of said cylindrical element (2), thereby confining any arc discharge occurring in said plasma to said smaller diameter, and causing radiation from said arc discharge to be preferentially emitted along an optical axis (4) coinciding with said linear channel (3); and

wherein said cylindrical element (2) is made from a high-temperature-constant material.

5,327,050

ELECTRON EMITTING DEVICE AND PROCESS FOR PRODUCING THE SAME

Takeo Tsukamoto, Atsugi; Akira Shimizu, Sagamihara; Akira Suzuki; Masao Sugata, both of Yokohama; Isamu Shimoda, Zama, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo

Continuation of Ser. No. 525,314, May 21, 1990, abandoned, which is a continuation of Ser. No. 370,125, Jun. 20, 1989, abandoned, which is a continuation of Ser. No. 69,215, Jul. 2, 1987, abandoned. This application Apr. 27, 1992, Ser. No. 874,218

Claims priority, application Japan, Jul. 4, 1986, 61-156265; Sep. 9, 1986, 61-210588

Int. Cl.[5] H01J *1/14*

U.S. Cl. 313—363 **2 Claims**

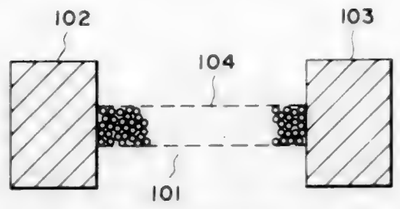
1. An electron emitting device which comprises:

a planar insulating substrate;

at least a pair of electrodes provided on said substrate;

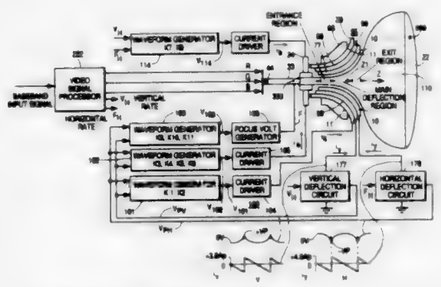
an electron emitting member comprising ultra-fine particles having diameters selected in the range of 0.1–10 μm and being disposed between said pair of electrodes and coming into contact with said substrate,

the electron emission occurring directly in response to a current which flows through said electron emission member by applying a voltage between said pair of electrodes,



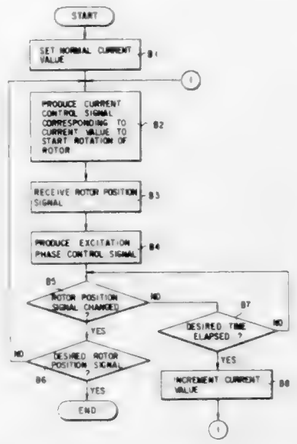
wherein the ultra-fine particles forming said electron emission member have an insulating layer on the surface of the particles.

5,327,051
DEFLECTION SYSTEM WITH A PAIR OF QUADRUPOLE ARRANGEMENTS
Jeffrey P. Johnson, Lawrenceville, and Michael D. Grote, Mercerville, both of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.
Filed Jul. 19, 1990, Ser. No. 554,503
Int. Cl.[5] H01J *29/56*
U.S. Cl. 315—368.28 **7 Claims**



1. A deflection apparatus, comprising:
a cathode ray tube including an evacuated glass envelope, a display screen disposed at one end of said envelope, and an electron gun assembly disposed at a second end in said envelope, said electron gun assembly producing an electron beam that forms a beam spot at electron beam landing locations on said screen;
a plurality of deflection windings for producing a main deflection field in a main deflection region of a deflection yoke that deflects the electron beam to said beam landing locations;
a first quadrupole arrangement for producing in a first region of a beam path of said electron beam a first quadrupole magnetic field that varies in accordance with said beam landing locations; and
a second quadrupole arrangement for producing in a second region of said beam path a second quadrupole magnetic field that varies n accordance with the beam landing locations, such that said first and second regions are at different distances from said display screen wherein said main deflection field region is interposed between said first and second regions.

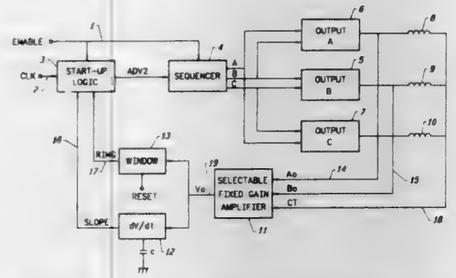
5,327,052
METHOD AND APPARATUS FOR CONTROLLING BRUSHLESS DC MOTOR
Tetsuji Sakurai; Hideo Masaki; Katsuhiko Kaida, and Takahiro Koyanagi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 26, 1992, Ser. No. 857,963
Claims priority, application Japan, Mar. 29, 1991, 3-091671
Int. Cl.[5] H02P *6/02, 1/18*
U.S. Cl. 318—254 **5 Claims**



1. A DC motor control apparatus comprising:
a DC motor having a rotor;
supply means for supplying a drive current to the DC motor;
detection means for detecting a magnetic polar position of the rotor;
determination means for determining whether the rotor is rotated in accordance with the magnetic polar position detected by the detection means; and
control means for controlling the supply means to supply a predetermined value of the drive current to the DC motor when the DC motor is started, and, when the determination means indicates that the rotor is not rotated, for controlling the supply means to increase the value of the drive current supplied to the DC motor at a predetermined rate until the rotor is rotated,
wherein the DC motor includes a plurality of coils, and the detection means detects the magnetic polar position of the rotor based on back electromotive forces generated on the plurality of coils by the drive current supplied to the plurality of coils by the supply means.

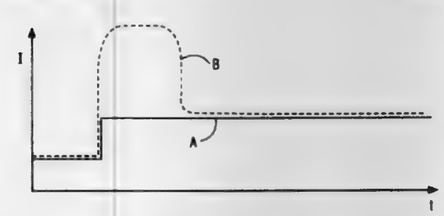
2. A method for controlling a DC motor, comprising the steps of:
supplying a predetermined value of drive current to the DC motor when the DC motor is started, the DC motor having a rotor;
detecting a magnetic polar position of the rotor;
determining whether the rotor is rotated in accordance with the detected magnetic polar position of the rotor; and
when the determining step indicates that the rotor is not rotated, increasing the value of the drive current supplied to the DC motor at a predetermined rate until the rotor is rotated,
wherein the DC motor includes a plurality of coils, and the step of detecting the magnetic polar position of the rotor includes the step of detecting back electromotive forces generated on the plurality of coils by supplying the drive current to the plurality of coils.

5,327,053
APPARATUS AND METHOD FOR DETECTING ROTOR POSITION IN A SENSORLESS AND BRUSHLESS DC MOTOR
Christopher E. Mann, Santa Cruz; Robert P. Cloutier, Campbell, and Michael W. Null, Santa Cruz, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Aug. 12, 1992, Ser. No. 929,614
Int. Cl.[5] H02D *7/00*
U.S. Cl. 318—254 **10 Claims**



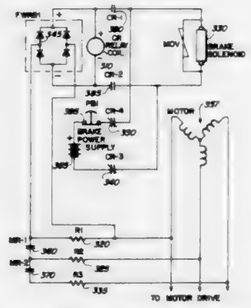
1. Apparatus for starting a three-phase brushless DC motor comprising:
means for electrically energizing phase windings of a motor thereby inducing movement of a rotor; and
means for detecting during said start-up of the motor a qualified range of the back EMF signal in an off-winding of the motor so as to determine a suitable rotor position for start-up while said energized phase windings remain energized, said suitable position determinable from slope and polarity data derived over said qualified range of said back EMF signal.

5,327,054
CONTROLLING ELECTRONICALLY COMMUTATED MOTOR
Günter Gleim, Villingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany
Filed Jul. 23, 1992, Ser. No. 915,351
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3942003
Int. Cl.[5] H02P *1/00*
U.S. Cl. 318—255 **21 Claims**



1. A method for controlling an electronically commutated motor by controlling the winding current of said motor, wherein during an operational mode change of said motor said winding current is first changed to a value in excess of the value needed to maintain a motor parameter at a desired level until the desired level of the parameter is reached, and then said winding current is changed to the value needed to maintain said parameter at said desired level, an improvement comprising the steps of:
shifting the commutation time of said motor such that the temporal maximum of the magnetic field of said motor coincides with the position of the motor poles which results in attainment of a maximum parameter altering force:
generating and storing control values in accordance with changes in said parameter during said operational mode changes;
monitoring said parameter during normal operation of said motor and generating additional values in accordance with changes in said parameter;
storing said additional values; and,
extrapolating said stored values and providing a corrected parameter.

5,327,055
MECHANICAL BRAKE HOLD CIRCUIT FOR AN ELECTRIC MOTOR
Craig T. Danielson; Michael P. McIntosh, and Hector E. Mery, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 8, 1993, Ser. No. 28,074
Int. Cl.[5] H02P *3/04*
U.S. Cl. 318—366 **15 Claims**



1. A dynamic braking circuit for an electric motor comprising:
a mechanical brake power supply having first and second terminals;
a first control relay having first, second, third and fourth movable contacts and a coil, said coil having first and second terminals;
a brake solenoid having first and second terminals;
a first resistor R_t having a first terminal connected to said first movable contact of said first control relay and a second terminal;
a first capacitor C_t being connected in series with said first resistor and between said first resistor at its second terminal and said second movable contact of said first control relay;
a second resistor R_b being connected in parallel with said first capacitor C_t;
said first movable contact of said first control relay being connected between said first terminal of said coil of said first control relay and said first terminal of said brake solenoid;
said second movable contact of said first control relay being connected between said second terminal of said coil of said first control relay and said second terminal of said brake solenoid;
said third movable contact of said first control relay being connected between said second terminal of said brake solenoid and one of said terminals of said brake power supply;
said fourth movable contact of said first control relay being connected between said first terminal of said brake solenoid and the other of said terminals of said brake power supply;

a rectifier bridge connected in parallel with said first relay coil;

a third resistor having a first and second terminal and being connected in parallel with said rectifier bridge, said second terminal being further connected to said electric motor.

5,327,056

CIRCUIT CONFIGURATION FOR LIMITING THE CUTOFF VOLTAGE ON A SERVOMOTOR

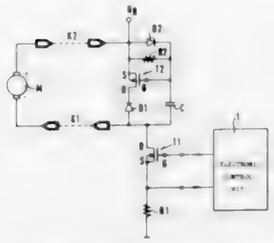
Heinz Loreck, Idstein, and Mario Engelmann, Neu-Anspach, both of Fed. Rep. of Germany, assignors to Alfred Teves, GmbH, Frankfurt, Fed. Rep. of Germany

Filed May 5, 1993, Ser. No. 50,359

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1990, 4035066

Int. Cl.[5] H02P *3/08*

U.S. Cl. 318—563 **12 Claims**



1. A circuit configuration for limiting the cutoff voltage occurring in controlling a servomotor by means of width-modulated direct-current pulses, characterized in the a so-called free-wheel diode is connected in series with a transistor and in parallel with the servomotor, the control electrode of the transistor being connected to the servomotor via a capacitor so that the transistor is connected through for a short time upon the appearance of the cutoff voltage.

5,327,057

METHOD OF GENERATING ROBOT CONTROL AXIS POSITION DATA

Hajimu Kishi; Kunio Tanaka, and Shinsuke Sakakibara, all of Tokyo, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

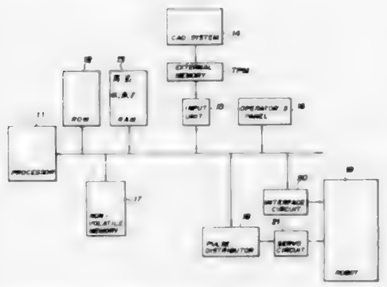
PCT No. PCT/JP85/00585, § 371 Date Jun. 16, 1986, § 102(e) Date Jun. 16, 1986, PCT Pub. No. WO86/02469, PCT Pub. Date Apr. 24, 1986

Continuation of Ser. No. 881,033, Jun. 16, 1986, abandoned. This PCT application Oct. 18, 1985, Ser. No. 6,149

Claims priority, application Japan, Oct. 19, 1984, 59-220081

Int. Cl.[5] G05B *19/19*

U.S. Cl. 318—568.11 **4 Claims**



1. A method of generating and storing robot control axis positions and controlling a robot therefrom, said method comprising the steps of:

a) receiving, input to a CAD system, a workpiece shape and a tool attitude conforming to a task to be executed by a robot and storing the workpiece shape and the tool attitude in a RAM;

b) calculating, by the CAD system, a tool tip portion in a workpiece coordinate system by using the workpiece shape;

c) specifying the position of each axis constituting the robot by using the tool tip position and the tool attitude and storing the position of each axis in the RAM;

d) successively specifying positions of each control axis of the robot along a tool path and storing the positions of each control axis along the tool path in the RAM; and

e) controlling the robot based on the positions of each control axis of the robot along the tool path stored in the RAM.

5,327,058

METHOD OF CONTROL FOR AN INDUSTRIAL ROBOT

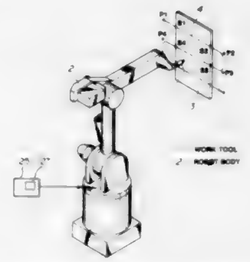
Tatsuya Rembutsu, Kawasaki, Japan, assignor to Tokico Ltd., Japan

Continuation of Ser. No. 642,357, Jan. 17, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,681

Claims priority, application Japan, Jan. 19, 1990, 2-9543

Int. Cl.[5] G05B *19/19*

U.S. Cl. 318—568.11 **11 Claims**



1. A method for controlling the operation of an industrial robot, said industrial robot comprising:

a work tool; and

an operating means for moving and positioning said work tool and for switching the operational state of said work tool, said method comprising the steps of:

(a) obtaining first data for determining a path of the work tool, said first data comprising time data and position data;

(b) obtaining second data for determining said operational state of said work tool during the movement of said work tool in said path, said second data consisting of time data;

(c) inputting said first data and said second data into said operating means;

(d) moving said work tool along said path based on said first data while controlling the operational state of said work tool based on said second data.

5,327,059

TAPE DRIVE CAPSTAN MOTOR SERVO SYSTEM WITH STATIC FRICTION COMPENSATION

Van K. Truong, Harbor City; Edward H. Patrick, Westminster, and David E. Woodral, Walnut, all of Calif., assignors to Archive Corporation, Costa Mesa, Calif.

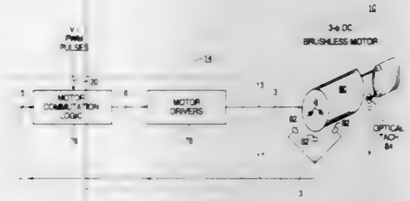
Filed Sep. 24, 1992, Ser. No. 950,457

Int. Cl.[5] H02P *1/28, 1/30*

U.S. Cl. 318—632 **18 Claims**

1. A power-conserving method for starting motor rotation in a data storage device having a motor, where said motor is to rotate in response to application of a motor drive voltage V and a motor drive current I, said method comprising the steps of:

(a) applying to said motor a first of a plurality of successively increasing, predetermined motor drive voltage signals, $V_1, V_2, \ldots, V_i$ where i is an integer greater than 2;



(b) examining said motor for signs of rotational motion;

(c) applying to said motor a next larger of said plurality of motor drive voltage signals if no said signs of motor rotation are detected during a predetermined time interval; and

(d) repeating said examining step (b) and said applying step (c) until said signs of rotational motion are detected.

5,327,060

POSITIONING DEVICE USING LORENTZ FORCES

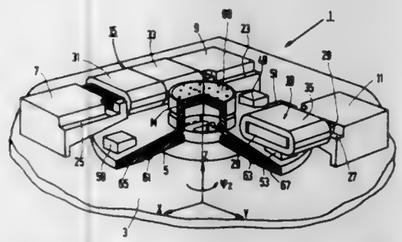
Gerard Van Engelen, and Adrianus G. Bouwer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 594,519, Oct. 4, 1990, abandoned. This application Mar. 2, 1993, Ser. No. 24,919

Claims priority, application Netherlands, Oct. 5, 1989, 8902472

Int. Cl.[5] G05B *1/06*

U.S. Cl. 318—640 **5 Claims**



1. A positioning device comprising a table, which is displaceable in at least coordinate directions (X, Y) by means of at least one electric linear X-motor and at least one electric linear Y-motor and is supported without contact by a static gas bearing on a base, coil systems and magnet systems corresponding to the two motors being connected to the base and to the table, respectively, characterized in that during operation with a substantially constant, coil-system-independent air gap thickness in the static gas bearing the base connected to said coil systems and the table connected to said magnet systems are guided with respect to each other and are coupled to each other in said at least two coordinate directions solely by Lorentz forces produced by the coil systems and magnet systems.

5,327,061

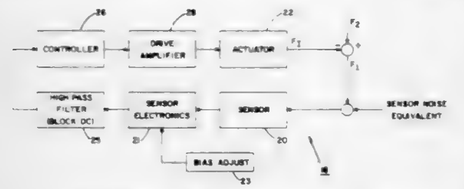
FORCE (TORQUE) NULLING INERTIALLY SERVOED STRUCTURAL INTERFACE

Sarma N. Gullapalli, Bethel, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 26, 1992, Ser. No. 904,812

Int. Cl.[5] F16F *15/00;* **F16M** *13/00*

U.S. Cl. 318—649 **16 Claims**



1. An apparatus for nulling the transmission of disturbing forces through a structural member disposed between first and second assemblies by application of a corrective inertial force on said structural member, said apparatus comprising:

means for sensing said disturbing force transmitted from the first assembly to said structural member, wherein said means for sensing further includes means for outputting a signal proportional to said disturbing force on said structural member;

means for applying said corrective inertial force to said structural member so as to null transmission of the disturbing force from the first assembly through said structural member to the second assembly, wherein the applied corrective inertial force is proportional to the output signal of said means for sensing the disturbing force.

5,327,062

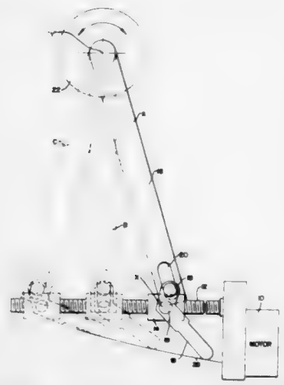
PRECISION DRIVE ASSEMBLY FOR TELESCOPES AND OTHER INSTRUMENTS

Edward R. Byers, 29001 W. Highway 58, Barstow, Calif. 92311

Filed Sep. 30, 1991, Ser. No. 767,212

Int. Cl.[5] G05B *19/06, 19/19*

U.S. Cl. 318—687 **3 Claims**



1. A precision drive assembly for turning an instrumentality about a particular axis through a predetermined arc, said assembly including: a drive motor; a lead screw coupled to said motor to be rotated thereby about the longitudinal axis of said lead screw; a nut threaded to said lead screw to be driven along said lead screw from one end thereof to the other depending upon the direction of rotation of said lead screw by said motor; a tangent arm connected at one end to said instrumentality to turn said instrumentality through said predetermined arc about

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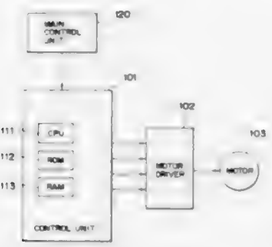
said particular axis; means coupling the other end of said tangent arm to said nut so that movement of said nut along said lead screw causes said tangent arm to turn said instrumentality through said arc about said particular axis; and means for correcting angular position and rate errors of the instrumentality by controlling the relation between the position of said nut on said lead screw and the angular displacement of said instrumentality as a function of the tangent of the angle between said tangent arm and the longitudinal axis of said lead screw and in accordance with a predetermined mathematical formula.

5,327,063

METHOD OF CONTROLLING A STEPPING MOTOR

Akira Miyakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,419
Claims priority, application Japan, Aug. 30, 1991, 3-219831
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **3 Claims**



1. A method of controlling a stepping motor, comprising the steps of:

determining an amount of rotation of the stepping motor in conformity with a rotation indicating command;

determining whether or not rotation actuating control of the stepping motor is to be performed by a ramp-up operation in accordance with the amount of rotation of the motor;

said determining step determining whether rotation actuating control of the stepping motor is executed by a ramp-up operation or in a self-starting range;

controlling the rotation of the stepping motor by providing driving pulses sequentially to respective phases of the stepping motor to produce magnetization of the respective phases in accordance with the amount of rotation of the motor to stop a phase of the motor at a desired stop position at a stopping time;

maintaining the magnetization to hold a rotor of the stepping motor in a stable position with respect to the phase which has been magnetized last at the stopping time in said controlling step; and

changing a magnetization maintaining time in said maintaining step in accordance with the determination in said determining step,

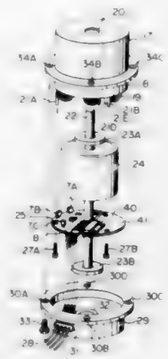
said changing step comprising the step of maintaining the magnetization maintaining time of the stepping motor for a short time when said determining step determines that the rotation actuating control is executed by the ramp-up operation and maintaining the magnetization maintaining time of the stepping motor for a long time, longer than the short time, when said determining step determines that the rotation actuating control is executed in the self-starting range.

5,327,064

BRUSHLESS MOTOR INCORPORATING AN INTEGRATED CIRCUIT HAVING A SINGLE CHIP PERIPHERAL CIRCUIT

Noriaki Arakawa, Tochigi; Makoto Isii, Utsunomiya, and Yasutsugu Kawaguchi, Tochigi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 723,389, Jun. 28, 1991, abandoned.
This application Jul. 16, 1993, Ser. No. 92,575
Claims priority, application Japan, Jul. 6, 1990, 2-177452; Jul. 6, 1990, 2-177453
Int. Cl.[5] H01H *35/00*
U.S. Cl. 318—801 **11 Claims**



1. A brushless motor comprising:

a first case member;

a second case member cooperating with said first case member to form a motor casing; and

accommodated in said motor casing:

(a) a rotor;

(b) a stator attached to said first case member;

(c) a commercial power source connection for receiving commercial AC power;

(d) an integrated circuit within said second case member so as to be separated from said stator, and including an inverter for rotatingly driving said rotor, a drive circuit for driving said inverter, a control circuit for controlling the speed of said rotor, a protection circuit for protecting said inverter from excess current, and a power converter connected to said commercial power source connection for converting the received commercial AC power to power for supplying to said drive circuit;

(e) speed detection means for detecting the speed of said rotor, said speed detection means connected to said integrated circuit;

(f) a substrate having mounted thereon said integrated circuit and said speed detection means; and

(g) heat radiation means within said second case member and closely connected to said integrated circuit.

5,327,065

HAND-HELD INDUCTIVE CHARGER HAVING CONCENTRIC WINDINGS

Michael F. Bruni, Hermosa Beach, and Gerald A. Cox, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

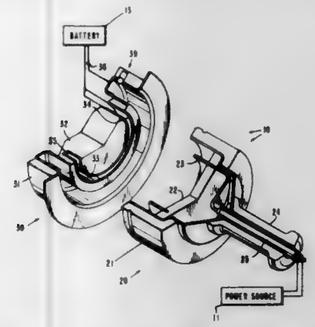
Filed Jan. 22, 1992, Ser. No. 823,949
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—2 **8 Claims**

1. An inductive charger comprising:

a removable primary coil assembly comprising a housing, a primary core disposed in the housing, a primary winding

protruding from the primary core, and an electrical cable coupled to the primary winding that is adapted to couple power thereto from an external power source; and

a secondary coil assembly comprising a receptacle housing that is matable with the removable primary coil assembly, a secondary core disposed in the receptacle housing, first and second concentric secondary windings disposed in the



secondary core that are couplable to a battery and wherein the first and second concentric secondary windings have a gap therebetween that is adapted to receive the primary winding therein;

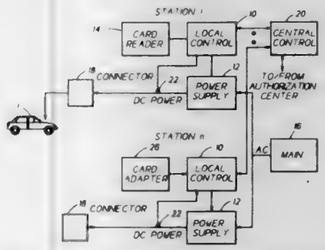
wherein the primary and secondary coil assemblies form a transformer when the respective primary and secondary windings and primary and secondary coil assemblies are mated.

5,327,066

METHODS AND APPARATUS FOR DISPENSING A CONSUMABLE ENERGY SOURCE TO A VEHICLE

Harry F. Smith, Newtown, Conn., assignor to Intellectual Property Development Associates of Connecticut, Inc., Trumbull, Conn.

Filed May 25, 1993, Ser. No. 66,967
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—2 **32 Claims**



1. A battery charging system for use with electrically powered vehicles, the system comprising:

a plurality of battery charging stations, each of said battery charging stations including,

means for dispensing electrical power to a battery of an electrically powered vehicle;

means for receiving an indicia that includes information representative of a value, said receiving means including means for coupling to a memory device that is located within the electrically powered vehicle for receiving the indicia therefrom, the indicia being stored within the memory device, said indicia further including information for uniquely identifying the electrically powered vehicle; and

local control means having an output coupled to said electrical power dispensing means for enabling and disabling an operation thereof, said local control means further having a first input coupled to an output of said receiving means for receiving said indicia therefrom;

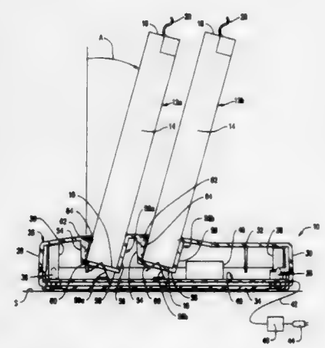
said system further including central control means that is bidirectionally coupled to each of said local control means for receiving said indicia therefrom and for transmitting an enabling signal thereto, said central control means further being bidirectionally coupled to a further control means, said central control means including means for transmitting said indicia to said further control means for verification and for receiving an acknowledging signal therefrom in response to said indicia being verified by said further control means, said central control means further including means for generating said enabling signal and for transmitting said enabling signal to one of said local control means in response to a receipt of said acknowledging signal from said further control means, and wherein each of said local control means enables said electrical power dispensing means to dispense an amount of the electrical power to the battery of an electrically powered vehicle only in response to a receipt of said enabling signal from said central control means.

5,327,067

PORTABLE COMPUTER BATTERY CHARGING APPARATUS

Erica Scholder, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

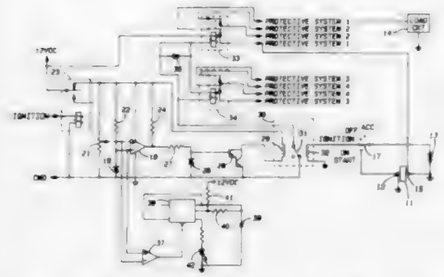
Filed Jun. 2, 1993, Ser. No. 71,125
Int. Cl.[5] H01M *10/46*
U.S. Cl. 320—2 **14 Claims**



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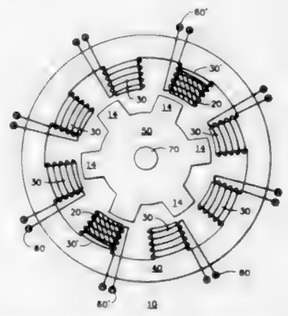
energy to the battery, through its contact area, in response to receipt of the second battery end portion in said well structure.

5,327,068
BATTERY PROTECTION SYSTEM
Robin E. Lendrum, Livonia, and Eric R. Hempelmann, Farmington Hills, both of Mich., assignors to Peerless Innovations, Inc., Livonia, Mich.
Filed Jul. 1, 1992, Ser. No. 907,394
Int. Cl.[5] H02G *3/00*; **H02H** *7/18*; **H02J** *7/00*
U.S. Cl. 320—13 **2 Claims**



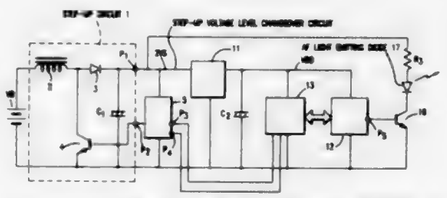
1. In an engine-driven system having an engine, a storage battery to provide starting power for the engine, charging means connected to the battery and driven by the engine to provide charging current for the battery when the engine is running, an ignition switch having a first condition in which the engine is operative and a second condition in which the engine is inoperative, and a load circuit connected to the battery to receive electrical power from the battery, a battery protection system to protect the battery from being discharged below a predetermined minimum value sufficient to start the engine, said protection system comprising:
(a) a protection circuit comprising:
(i) a stable voltage source,
(ii) a comparator connected to the stable voltage source and to the battery to compare voltage derived from the battery with voltage derived from the stable voltage source,
(iii) controllable switching means connected in series with the load circuit to disconnect the load circuit from the battery when the battery voltage decreases below a predetermined value,
(iv) a latchable switching means comprising:
(1) a fixed contact;
(2) a movable contact;
(3) setting means connected to a charge-measuring means to be controlled thereby to move the movable contact into conductive connection with the fixed contact only when the value functionally related to the charge remaining in the battery is below the predetermined value sufficient to start the engine;
4) resetting means connected to the ignition switch to be energized thereby to move the movable contact out of conductive connection with the fixed contact when the ignition switch is in its first condition; and
b) actuating means connected to the protection circuit and to the ignition switch to actuate the protection circuit when the ignition switch is in its second condition, to disconnect the load circuit from the battery when the value functionally related to the charge remaining in the battery decreases below a predetermined value sufficient to start the engine, said actuating means comprising a coil connected in series with the battery and the ignition switch being energized only when the ignition switch is in its first condition, said coil being operatively connected to normally closed contacts conductively connected to each other only when the ignition switch is in its second condition and electrically separated from each other when the ignition switch is in its first condition, the normally closed contacts being connected in series with the battery and the protection circuit to require the protection circuit to operate when the ignition switch is in its second condition and to prevent the protection circuit from operating when the ignition switch is in its first condition.

5,327,069
SWITCHED RELUCTANCE MACHINE INCLUDING PERMANENT MAGNET STATOR POLES
Arthur V. Radun, Ballston Lake, N.Y., and Eike Richter, Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Jun. 19, 1992, Ser. No. 901,472
Int. Cl.[5] H02K *29/00*
U.S. Cl. 322—10 **8 Claims**



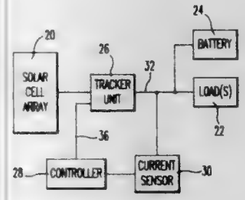
1. A switched reluctance machine comprising:
a rotor including multiple rotor teeth;
a stator including multiple stator teeth wherein a plurality of the stator teeth comprise permanent magnets.

5,327,070
POWER SUPPLY CIRCUIT FOR DRIVING A LIGHT EMITTING ELEMENT
Yoichi Seki; Shinichi Endo; Hiroyuki Saito; Akira Ito, and Michio Kawai, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan
Filed Apr. 27, 1992, Ser. No. 874,496
Claims priority, application Japan, Apr. 25, 1991, 3-095116
Int. Cl.[5] G03B *13/36*; **G05F** *1/62*
U.S. Cl. 323—222 **9 Claims**



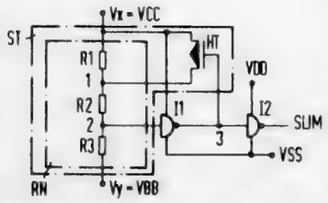
1. A power supply circuit for driving a light emitting element, comprising:
a step-up capacitor having two terminals;
a step-up circuit connected to said step-up capacitor to apply a step-up voltage of a first level thereto;
a step-up voltage level changeover means connected to both of the terminals of said step-up capacitor for changing over the step-up voltage level applied to said step-up capacitor to a second step-up voltage level that is higher than the first step-up voltage level;
a distance measuring light emitting element connected to both terminals of said step-up capacitor for selectively receiving the voltages of first and second step-up voltage applied thereto;
an operating means generating a step-up voltage changeover signal which is the first step-up voltage when said distance measuring light emitting element does not emit and the second step-up voltage when said light emitting element emits; and
a control means connected between said operating means and said step-up voltage changeover means, and communicating said step-up voltage to said changeover signal.

5,327,071
MICROPROCESSOR CONTROL OF MULTIPLE PEAK POWER TRACKING DC/DC CONVERTERS FOR USE WITH SOLAR CELL ARRAYS
Martin E. Frederick, Silver Spring, and Joel B. Jermakian, Laurel, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.
Continuation of Ser. No. 787,993, Nov. 5, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 127,886
Int. Cl.[5] G05F *5/00*
U.S. Cl. 323—299 **4 Claims**



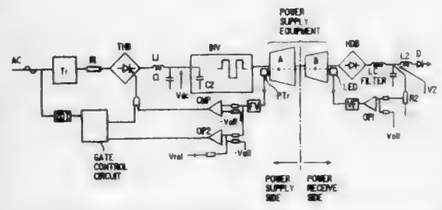
1. A solar powered system, comprising:
a plurality of solar cell array strings;
means for receiving power generated by the plurality of solar cell array strings;
a plurality of power tracking means coupled to respective solar cell array strings and to said means for receiving power generated by the plurality of solar cell array strings for regulating the voltage of the respective solar cell array strings;
means for sensing the power output of the solar powered system connected to the output of the plurality of power tracking means and producing at least one sensed power output signal; and
a singular control circuit which receives at least one signal indicating power output from the means for sensing, and which supplies a separate control signal to each of the plurality of power tracking means thereby to individually regulate a voltage of each of the plurality of solar array strings such that a maximum power is output to the means for receiving.

5,327,072
REGULATING CIRCUIT FOR A SUBSTRATE BIAS VOLTAGE GENERATOR
Dominique Savignac, Ismaning; Manfred Menke, Munich, and Dieter Gleis, Grosskarolinenfeld, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 21, 1992, Ser. No. 839,787
Claims priority, application European Pat. Off., Feb. 21, 1991, 91102555.9
Int. Cl.[5] G05F *3/16*; **H03L** *1/00*
U.S. Cl. 323—313 **25 Claims**



1. A regulating circuit for a switched substrate bias voltage generator for generating a controlled substrate bias voltage which fluctuates between first and second threshold values in an integrated semiconductor circuit, comprising:
a Schmitt trigger circuit disposed between a first potential and a second potential of a semiconductor circuit, said Schmitt trigger circuit having an output side and an input for controlling a hysteresis function of said Schmitt trigger circuit;
an inverter array connected downstream of the output side of said Schmitt trigger circuit, said inverter array being connected to the first potential and to a first supply potential of the semiconductor circuit in terms of supply voltage, and said inverter array having an output;
the input of said Schmitt trigger circuit for controlling the hysteresis function of said Schmitt trigger circuit being connected to the output of said inverter array;
means for turning off the substrate bias voltage generator when a given first threshold of the substrate bias voltage is reached, and for turning on the substrate bias voltage generator when a given second threshold of the substrate bias voltage is reached.

5,327,073
LOAD-DISPATCHING APPARATUS HAVING IMPROVED POWER SUPPLY CUT-OFF
Junji Hirai; Toshihiro Ishibashi, and Yuji Nitta, all of Iruma, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Kitakyushu, Japan
PCT No. PCT/JP92/00583, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO92/21131, PCT Pub. Date Nov. 26, 1992
PCT Filed May 8, 1992, Ser. No. 961,705
Claims priority, application Japan, May 21, 1991, 3-146936
Int. Cl.[5] H01F *27/24*
U.S. Cl. 323—362 **3 Claims**



1. A non-contact type load-dispatching apparatus having a

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power supply side core and a power receiving side core both provided with a plurality of teeth wound by winding, wherein each of a plurality of teeth top surfaces formed by respective said teeth is oppositely positioned to each other being magnetically connected for supplying power without contact at the time of power supply, comprising:

teeth top surfaces of respective teeth of said power supply side core and receiving side core disposed oppositely on the respective circumferences with a gap therebetween which allows coupling-uncoupling of said cores therethrough;

a light signal generation circuit, provided in said power receiving side, for generating light signals which show receiving side voltages;

a voltage signal generation circuit for receiving said light signals and for generating corresponding voltage signals; and

a cut-off circuit for cutting off power supply when one of said generated voltage signals is lower than a predetermined value,

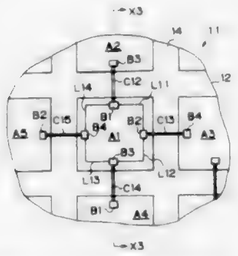
wherein each of said voltage signal generation and cut-off circuits is provided in the power supply side.

5,327,074

INTEGRATED CIRCUIT DEVICE

Masayuki Ehiro, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 10, 1991, Ser. No. 805,002
Claims priority, application Japan, Dec. 19, 1990, 2-403716
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158.1 **11 Claims**



1. An integrated circuit device comprising:

a substrate;

a plurality of integrated circuit elements formed on said substrate in matrix manner and insulated to each other by lattice shaped insulating belt portions, each of said integrated circuit elements including,

an internal circuit for performing a predetermined

a burn-in circuit for performing a burn-in process to said internal circuit when a burn-in control signal is supplied thereto, and

at least two pads connected to each other and to said burn-in circuit for supplying said burn-in control signal to said burn-in circuit; and

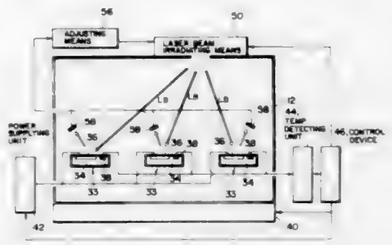
burn-in connecting lines extending across said insulating belt portions for electrically connecting one pad of one integrated circuit element to one pad of one of adjacent integrated circuit elements, and another pad of said one integrated circuit to one pad of another adjacent integrated circuit element, so that said one integrated circuit element is electrically connected to said one and another adjacent integrated circuit elements and said one and another adjacent integrated circuit elements are electrically connected to each other through said one integrated circuit element.

5,327,075

BURN-IN APPARATUS AND METHOD FOR SEMICONDUCTOR DEVICES

Tatsuya Hashinaga, and Masanori Nishiguchi, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 17, 1992, Ser. No. 914,559
Claims priority, application Japan, Jul. 19, 1991, 3-179774; Jul. 29, 1991, 3-189019; Jul. 31, 1991, 3-192307; Jul. 31, 1991, 3-192310; Jul. 31, 1991, 3-192312
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—158.1 **20 Claims**



1. A burn-in apparatus comprising:

at least one burn-in board for mounting a plurality of semiconductor devices having semiconductor chips incorporated therein;

a burn-in test chamber for accommodating said burn-in boards;

measuring means for detecting electric characteristics of temperature sensors which are built in the respective semiconductor chips for individually determining junction temperatures of the semiconductor chips, and for generating signals corresponding to said junction temperatures;

laser beam irradiating means provided in said burn-in test chamber for selectively irradiating a laser beam to the respective semiconductor devices which are mounted on said at least one burn-in board positioned in said burn-in test chamber, where said laser beam is irradiated based on a control signal; and

control means for generating a control signal for said laser beam irradiating means based on outputs from said measuring means so that said laser beam irradiating means irradiates a laser beam to each semiconductor device which has a junction temperature below a predetermined temperature to maintain junction temperatures of the respective semiconductor devices in said predetermined junction temperature.

5,327,076

GLITCHLESS TEST SIGNAL GENERATOR

Philip A. Bailey, Lino Lakes, Minn., assignor to Micro Control Company, Minneapolis, Minn.

Filed Sep. 17, 1992, Ser. No. 946,544
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158.1 **6 Claims**

1. A test signal generating system for generating glitchless test signals to be provided to an electronic circuit component under test in a burn-in system, the test signal generating system comprising:

a data generator providing a data signal;

a timing generator providing a cycle clock signal;

a format selector providing a format signal;

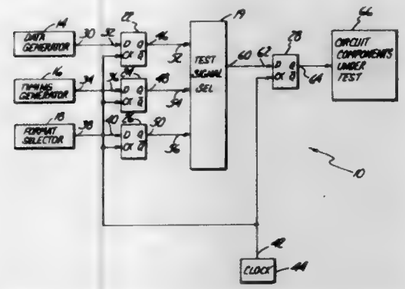
a trigger clock providing a trigger clock signal formed of pulses and having trigger clock period;

first storage means, connected to the data generator, the timing generator, the format selector and the trigger clock, for storing as stored signals the present states of the data signal, the cycle clock signal and the format signal upon receipt of one of the pulses in the trigger clock signal;

test signal selection means, coupled to the first storage means, for receiving the stored signals and providing a test signal based on the stored signals;

second storage means, coupled to the test signal selection means and the trigger clock, for storing as a stored test signal a present state of the test signal upon receipt of a pulse in the trigger clock signal; and

wherein the second storage means provides the stored test signal until a subsequent pulse in the trigger clock signal such that glitches in the test signal caused by skew in timing of providing the stored signals to the test signal selection means are not passed to the electronic circuit component under test.

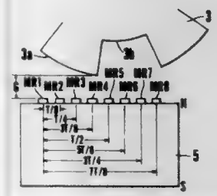


5,327,077

DEVICE INCLUDING AN EVEN NUMBER OF EQUALLY SPACED MAGNETO-RESISTORS FOR DETECTING ROTATION OR STRAIGHT MOTION OF A MOVING BODY

Shuichi Honda, Kyoto, Japan, assignor to Murata Mfg. Co. Ltd., Japan

Filed Dec. 28, 1992, Ser. No. 997,208
Claims priority, application Japan, Jan. 6, 1992, 4-018289
Int. Cl.[5] G01P *3/488, 3/50;* **G01B** *7/14;* **G01D** *5/14*
U.S. Cl. 324—207.21 **3 Claims**



1. A movement detector device for a moving body comprising;

a magnet having pole faces;

an even number of magneto-resistors each fixedly mounted in a plane above one of said pole-faces of said magnet and located in the direction of movement of a ferromagnetic part to be detected arranged on a moving body, said part having a plurality of detection portions spaced apart by an equal pitch;

said magneto-resistors being spaced to equally divide a distance corresponding to said pitch of the part to be detected, and further being separated from the body by a gap;

said magneto-resistors being interconnected in series with each other;

output signal pickup points provided at locations where connecting portions appear between the adjacent magneto-resistors; and

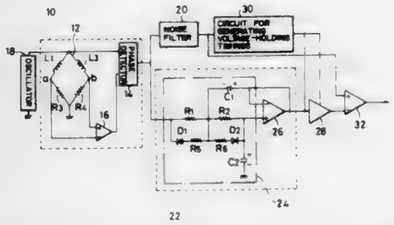
a signal processor circuit for differentially amplifying a pair of signals among the signals taken out from the output signal pickup parts, those signal having a phase difference equal to ½ a period, and outputting the outputs rendered to the differential amplification as detection signals.

5,327,078

POSITION DETECTING APPARATUS HAVING A MEAN VALUE CALCULATING CIRCUIT INCLUDING A LOW PASS FILTER

Akira Mori, Cigasaki, Japan, assignor to Kabushiki Kaisha Komatsu Speisakusho, Tokyo, Japan

PCT No. PCT/JP91/00096, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/11685, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 29, 1991, Ser. No. 915,850
Claims priority, application Japan, Jan. 31, 1990, 2-21261
Int. Cl.[5] G01B *7/34;* **G01D** *5/245*
U.S. Cl. 324—207.24 **18 Claims**



2. A position detecting apparatus of the type having:

a detecting circuit for detecting a magnetic characteristic of a rod, the magnetic characteristic of said rod being periodically varied in the direction of the longitudinal axis of said rod, and for producing an output voltage corresponding to the thus detected magnetic characteristic, and

a comparator circuit for comparing the output voltage of said detecting circuit with a reference voltage and for producing, responsive to a comparison of the output voltage of said detecting circuit with said reference voltage, a comparator circuit output voltage representative of the position of said rod,

said position detecting apparatus further comprising:

a mean value calculating circuit for calculating the mean value of the output voltage from said detecting circuit and for delivering the thus calculated mean value to said comparator circuit as said reference voltage, said mean value calculating circuit having an input end and an output end and including a plurality of stages of low-pass active filters which have different values of center frequency and which are connected in series between said input end and said output end such that the center frequency of the low-pass active filter of each one of said plurality of stages is higher than that of the low-pass active filter of the next adjacent one of said plurality of stages which is further from the input end.

5,327,079

METHOD AND DEVICE FOR NON-DESTRUCTIVE TESTING OF A PENETRATION OF A REACTOR PRESSURE VESSEL LID

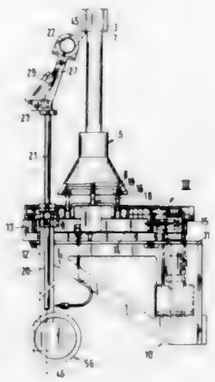
Hans Haller, and Filippo D'Annucci, both of Mannheim, Fed. Rep. of Germany, assignors to ABB Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,383

Claims priority, application Fed. Rep. of Germany, May 13, 1992, 4215700

Int. Cl.[5] **G01N** *27/82, 27/72;* **G01R** *33/00;* **G21C** *17/00*

U.S. Cl. 324—219 **13 Claims**



6. In a reactor pressure vessel having a depositing ring, a lid being disposed on the depositing ring and having an interior, a penetration in the form of a connector welded in the lid, a bush penetrating and being supported on the connector, defining an annular gap between the connector and the bush, and the bush having a lower end extending further into the interior of the lid than the connector,

a device for non-destructively testing the penetration, comprising a manipulator disposed inside the depositing ring, a frame supported on said manipulator, lockable floating bearings on said frame, a housing carried by said bearings, a rotary plate received by said housing, a lifting cylinder having a free end and being eccentrically associated with said rotary plate, said lifting cylinder being vertically adjustable and carrying out a rotary movement of said rotary plate, a probe, and a probe drive disposed at said free end of said lifting cylinder for moving said probe in an axially parallel direction relative to the connector

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5,327,080

METHOD AND DEVICE FOR NONDESTRUCTIVE TESTING OF A PENETRATION OF A REACTOR PRESSURE VESSEL LID

Hans Haller, Mannheim, Fed. Rep. of Germany, assignor to ABB Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 954,383, Sep. 30, 1992. This application Feb. 18, 1993, Ser. No. 19,031

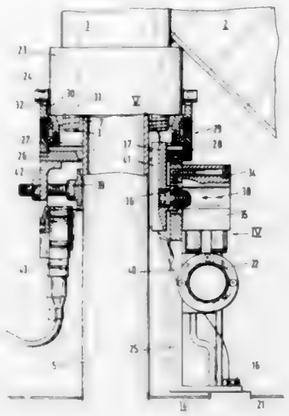
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1992, 4237695

Int. Cl.[5] **G01N** *27/82, 27/72;* **G01R** *33/00;* **G21C** *17/00*

U.S. Cl. 324—219 **12 Claims**

2. In a reactor pressure vessel having a depositing ring; a lid mounted on the depositing ring; a penetration of the lid being constructed as a welded-in connector; a sleeve being retained above the lid, penetrating the connector forming an annular gap between the sleeve and the connector, and having a lower end protruding farther into the interior of the lid than the connector; a frame; fixable floating bearings disposed on the frame; a housing carried by the floating bearings; a turntable disposed on the housing; a manipulator disposed inside the depositing ring for supporting the frame; a vertically adjustable lifting cylinder being associated with the turntable in an eccentric configuration, the lifting cylinder having a piston rod with a free end; an arm being carried by the free end of the piston rod and having an end facing away from the piston rod; and a sensor drive on the arm,

a device for nondestructive testing of the penetration, comprising a carrier ring fitting over the sleeve, being secured



to the end of the arm facing away from the piston rod and having an upper surface; a support ring contacting the connector and being joined to the upper surface of said carrier ring; a pneumatic cylinder being carried by the arm, said pneumatic cylinder having a piston penetrating the arm transversely to the longitudinal direction of the sleeve, said piston of said pneumatic cylinder having a free end; and a thrust piece on the free end of said piston of said pneumatic cylinder.

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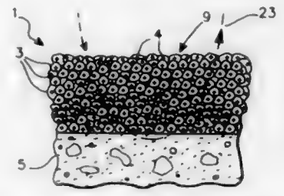
METHOD FOR DETERMINING THE THICKNESS OF A MATERIAL BY MEANS OF A RADIANT ENERGY PROBE

George E. Rudd, Murrysville; Rajender K. Sadhir, Pittsburgh; William G. Clark, Jr., Murrysville Boro, and Robert E. Shannon, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 668,838, Mar. 31, 1991, abandoned. This application May 28, 1993, Ser. No. 68,311

Int. Cl.[5] **G01B** *7/10;* **G01N** *27/90;* **G01R** *33/12, 35/00*

U.S. Cl. 324—230 **9 Claims**



1. A method for determining a thickness of a structure formed of non-electrically conductive material that is adjacent to a second material that is both non-electrically conductive and nonferromagnetic by means of an eddy current probe that electromagnetically couples with ferromagnetic material, said coupling being characterized by a magnitude, comprising the steps of:

uniformly dispersing a tagging substance in the first non-conductive material to a selected density, wherein said tagging substance consists predominantly of finely divided particulate ferromagnetic material from iron lignosulfonate to tag the material forming said structure;

calibrating said eddy current probe with a non-electrically conductive sample material having a known thickness that has been tagged with the same type of particulate ferromagnetic material at the same density by measuring the magnitude of the electromagnetic coupling at said known thickness, and

scanning said eddy current probe over said structure, and

determining the thickness of said structure by comparing the magnitude of the electromagnetic coupling between said probe and said structural material with the magnitude of said electromagnetic coupling with said sample material.

5,327,082

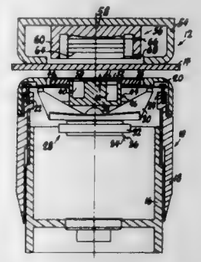
ON LINE ELECTROMAGNETIC WEB THICKNESS MEASURING APPARATUS INCORPORATING A SERVOMECHANISM WITH OPTICAL DISTANCE MEASURING

A. James Gabura, Toronto; Ross K. MacHattie, Bolton, and Larry A. McNelles, Thornhill, all of Canada, assignors to Valmet Automation (Canada) Ltd., Concord, Canada

Filed Jan. 13, 1992, Ser. No. 819,762

Int. Cl.[5] **G01B** *7/10, 11/14;* **G01N** *21/86*

U.S. Cl. 324—231 **15 Claims**



15. A method for measuring the thickness of a nonconductive sheet having opposite surfaces with a pair of interacting elements adapted to produce a sensible indication of the distance therebetween including the steps of positioning said interacting elements respectively adjacent to said opposite sides of said sheet, maintaining one of said interacting elements at a fixed distance from one surface of said sheet, optically measuring the distance between the other surface of said sheet and the other interacting element and maintaining said other interacting element at a constant distance from said other sheet surface in response to said measuring step whereby said indication is a measure of sheet thickness.

5,327,083

METHOD AND APPARATUS USING MAGNETIC FLUX SCANNING TO TEST GRAIN STRUCTURE OF MAGNETIC SHEET MATERIAL

Layton D. Crytzer, Natrona Heights, and Leroy R. Balmer, Saxonburg, both of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Filed Mar. 19, 1992, Ser. No. 854,030

Int. Cl.[5] **G01N** *27/72;* **G01R** *33/12*

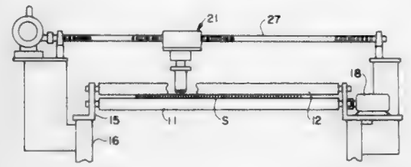
U.S. Cl. 324—239 **19 Claims**

1. Apparatus for continuously testing the grain structure which can adversely affect the magnetic quality of an electrically conductive steel strip, said apparatus including the combination of:

means for inducing only a direct current magnetic flux field on one side of said steel strip to a detection site at that side of said steel strip without contacting the strip;

means for advancing said steel strip relative to said means for inducing a magnetic flux field, which field is parallel to the direction of strip advancement to allow continuous examination of the grain structure at diverse detection sites;

means for moving transversely across the width of said steel strip, said means for inducing a magnetic flux field; and



means responsive to flux leakage at grain boundaries in the steel strip which leakage results from the relative advancing and transverse movement between said strip and responsive means for deriving an electrical signal indicative of the grain structure of the steel strip at selected detection sites established by the flux field without contacting the strip, said means responsive includes a magnetic pickup head oriented to define a pickup area having a length equal to or larger than a nominal grain size of the strip, the length oriented in a direction of strip movement.

5,327,084

ORGANIC MATERIAL USABLE IN A MAGNETOMETER AND PROBE FOR AN ELECTRON PARAMAGNETIC RESONANCE (EPR) MAGNETOMETER USING SAID MATERIAL

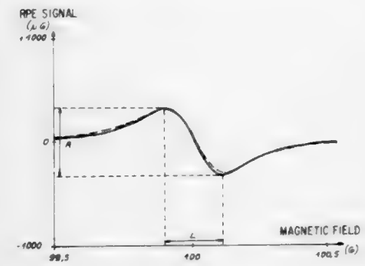
Laurence Theurel, Grenoble; Medhi Moussavi, Saint Egréve, and Jean-Claude Marchon, St. Vincent de Mercuze, all of France, assignors to Commissariat a l'Energie Atomique and Centre National de la Recherche Scientifique, both of Paris, France

Filed Mar. 9, 1993, Ser. No. 28,223

Claims priority, application France, Mar. 11, 1992, 92 03011

Int. Cl.[5] **G01V** *3/00*

U.S. Cl. 324—301 **4 Claims**



1. Organic material usable in an electron paramagnetic resonance magnetometer, characterized in that it is constituted by a radical cation salt of formula:

$$(Ar)_2{}^{\cdot+}X^-$$

in which Ar represents an aromatic hydrocarbon, which is unsubstituted or substituted by at least one element chosen from within the group constituted by halogen atoms or alkyl and alkoxy radicals and X^- is an anion chosen from among $TeOF_5^-$ or $SeOF_5^-$.

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5,327,085
METHOD FOR INCREASING RESOLUTION IN A NMR SOLIDS IMAGING SYSTEM
David G. Cory, Boston, Mass., assignor to Bruker Instrumen[illegible], Inc., Billerica, Mass.
Filed Jan. 17, 1991, Ser. No. 642,397
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—307 **20 Claims**

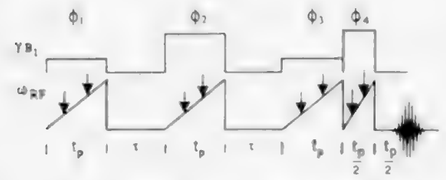


1. In an NMR imaging experiment for obtaining spatial spin density data of abundant nuclei in a solid object in which said nuclei are placed in a magnetic field having a spatial gradient and excited with a radio frequency pulse and output magnetization is subsequently detected, a method for improving image resolution comprising the steps of

A. irradiating said nuclei with at least one radio-frequency pulse sequence after said nuclei are excited and before said output magnetization is detected, said pulse sequence being composed of at least two radio-frequency composite inversion pulses, each of said composite inversion pulses having a predetermined non-zero effective field in the same direction and wherein the sign of the effective field in the first pulse is different from the sign of the effective field in the second pulse; and

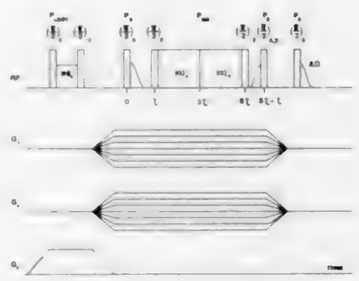
B. varying the strength of said magnetic field gradient during step A.

5,327,086
MULTIPLE-QUANTUM NMR WITH FREQUENCY-MODULATED CHIRP PULSES
Geoffrey Bodenhausen, Pully; Jean-Marc Böhlen, Lausanne, and Irene Burghardt, Reneus, all of Switzerland, assignors to Spectrospin AG, Faellanden, Switzerland
PCT No. PCT/EP90/01131, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO92/01235, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 11, 1990, Ser. No. 956,885
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—307 **24 Claims**



1. In a method which includes the step of exciting a multiple quantum coherence in an NMR pulse experiment, said exciting step including the steps of subjecting a nuclear spin system to a magnetic field and irradiating said nuclear spin system, while subjected to said magnetic field, with a first sequence of RF pulses which includes a basic sequence having a first $\pi/2$-pulse, a first π-pulse generated after a defocusing time interval τ following the first $\pi/2$-pulse, and a $\pi/2$-pulse generated after another time interval τ following the first π-pulse, said method further including the step of reconverting said excited multiple quantum coherence into a transverse magnetization for inducing a free induction decay, said reconverting step including the step of irradiating said nuclear spin system with a second sequence of RF pulses; the improvement comprising wherein said step of irradiating with said first sequence of RF pulses includes the step of generating each of the three RF pulses of said basic sequence as a chirp pulse having a duration t_p by sweeping the frequency of the exciting RF field in a monotonic fashion with respect to time during said duration t_p between a lower limit frequency ω_{RFmin} and an upper limit frequency ω_{RFmax}; and wherein said step of irradiating with said second sequence of RF pulses includes the step of generating as one of the pulses of said second sequence a fourth chirp pulse with a duration $t_p/2$ and an amplitude between 2 and 4 times the amplitude of said first $\pi/2$-pulse.

5,327,087
NMR MAGIC SANDWICH IMAGING METHOD
Siegfried Hafner, Blaustein, Fed. Rep. of Germany; Dan E. Demco, Cluy-Napoca, Romania, and Rainer Kimmich, Ulm, Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik GmbH, Fed. Rep. of Germany
Filed Mar. 26, 1992, Ser. No. 858,539
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1991, 4110199
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **21 Claims**



1. NMR imaging method for the investigation of short transverse relaxation time substances, said method comprising the steps of:

exposing the short transverse relaxation time substances to a homogeneous magnetic field;

exposing the short transverse relaxation time substances to a sequence of RF pulses including an excitation pulse sequence and a magic sandwich pulse sequence; and

at least in one time interval between the end of the excitation pulse sequence and the appearance of an echo signal, overlapping the homogeneous magnetic field, at least temporarily, with at least one gradient field.

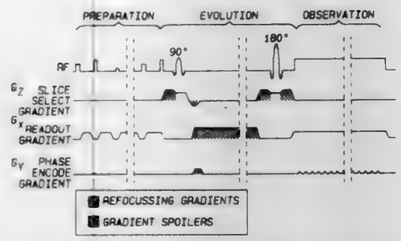
5,327,088
MULTIPLEXED ECHO TRAINS IN NUCLEAR MAGNETIC RESONANCE
James G. Pipe, Ann Arbor, Mich., assignor to The University of Michigan, Ann Arbor, Mich.
Filed Jul. 31, 1992, Ser. No. 924,645
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **47 Claims**

1. A method for generating nuclear magnetic resonance signals from an object, the method comprising the steps of:

imprinting a repetitive pattern on a longitudinal magnetization of the object, said pattern being composed of a sum of

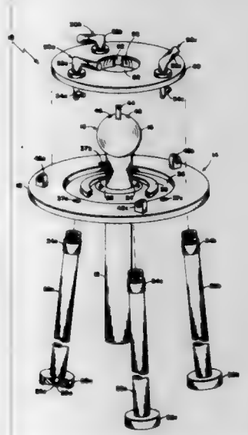
complex exponentials, wherein a train of spin-echoes is generated during a spin preparation stage;

allowing said spins to precess in an evolution stage; and



sensing said train of echoes generated by said spins in an uninterrupted readout period during an observation stage.

5,327,089
PORTABLE ASSEMBLY FOR SUPPORTING MAGNETIC AND ELECTRICAL SENSORS
Charles W. Ouellette, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.
Filed Sep. 30, 1992, Ser. No. 954,622
Int. Cl.[5] G01V *3/00, 3/08, 3/40*; G01R *33/02*
U.S. Cl. 324—345 **15 Claims**



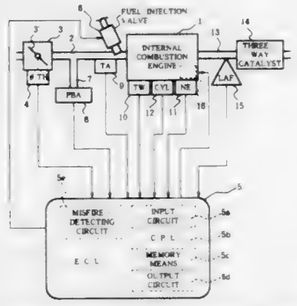
1. A portable assembly for supporting a magnetic sensor comprising:

a pedestal comprising a platform and a plurality of supporting legs, each one of the plurality of supporting legs connected to the platform, said platform having an aperture and a portion of a spherical surface disposed with said aperture extending through said portion;

a sensor module comprising a ball member having a spherical shape complementary to said portion of said platform and disposed over said portion of said platform, said ball member having a flange adapted for mating with a magnetic sensor, wherein said sensor module extends down through said aperture in said platform; and

a locking cover having an aperture, said locking cover disposed over said ball member with the ball member extending into the aperture of the locking cover.

5,327,090
MISFIRE-DETECTING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WHICH DETECTS A MISFIRE DUE TO THE FUEL SUPPLY SYSTEM
Yuuichi Shimasaki; Masaki Kanehiro; Takuji Ishioka; Takashi Hisaki; Shigeru Maruyama; Shigetaka Kuroda; Masataka Chikamatsu, and Hideaki Arai, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 846,632, Mar. 5, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,036
Claims priority, application Japan, Mar. 7, 1991, 3-067937; Nov. 14, 1991, 3-326506
Int. Cl.[5] F02P *17/00*
U.S. Cl. 324—378 **12 Claims**



1. A misfire-detecting system for detecting a misfire occurring in an internal combustion engine having an ignition system including at least one spark plug, engine operating condition-detecting means for detecting values of operating parameters of said engine, signal-generating means for determining ignition timing of said engine, based upon the detected values of said operating parameters of said engine and for generating an ignition command signal indicative of the determined ignition timing, and igniting means responsive to said ignition command signal for generating sparking voltage for discharging said at least one spark plug,

said misfire-detecting system comprising:

voltage value-detecting means for detecting a value of said sparking voltage generated by said ignition means after generation of said ignition command signal; and

misfire-determining means for determining a duration of a discharge of said at least one spark plug, based upon an output form said voltage value-detecting means, and for determining whether or not a misfire has occurred in said engine, based upon the determined duration of said discharge, wherein said misfire-determining means includes

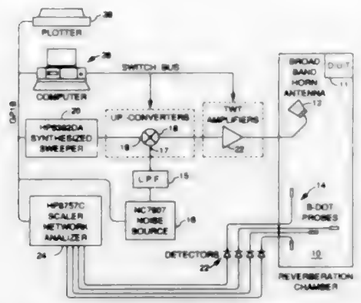
measuring means for measuring said duration of said discharge form a time of generation of said ignition command signal, based upon said output from said voltage value-detecting means, said measuring means for determining a reference voltage value based upon said output form said voltage value-detecting means whenever said ignition command signal is generated, for measuring a time period during which said sparking voltage subsequently detected by said voltage value-detecting means is continuously greater than the determined reference voltage value, and for adopting a measured time period as said duration of said discharge, and

comparator means for comparing the measured duration of said discharge with a predetermined time period,

wherein said misfire-determining means determines that a misfire has occurred in said engine, when the measured duration of said discharge is shorter than said predetermined time period, as a result of said comparison by said comparator means.

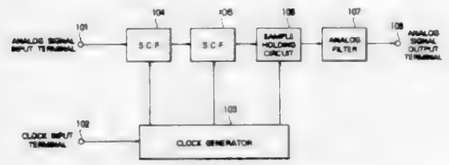
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5,327,091
ELECTRONIC MODE STIRRING
Thomas A. Loughry, Connellsville, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 4, 1993, Ser. No. 27,046
Int. Cl.[5] G01R *27/00*
U.S. Cl. 324—627 **6 Claims**



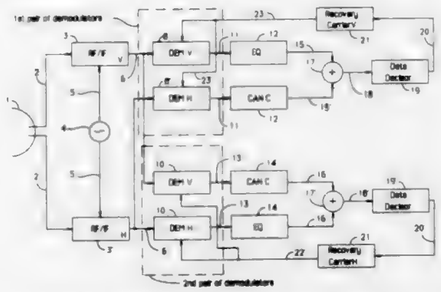
1. An electronic mode stirrer for a device under test positioned in a reverberation chamber, the combination comprising:
a broad band antenna in said chamber;
a source of band limited white gaussian noise;
a source of swept carrier frequency;
means for up-converting said gaussian noise with said carrier frequency, and for suppressing said carrier to produce a narrow band of gaussian noise at the center frequency of said carrier; and
means for supplying said narrow band of gaussian noise to said antenna.

5,327,092
SWITCHED CAPACITOR FILTER CIRCUIT EMPLOYING TWO SWITCHED CAPACITOR FILTERS
Kazunori Inogai; Yoshiaki Shinagawa, and Kouichi Honma, all of Yokohama, Japan, assignors to Matsushita Elecric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 19, 1992, Ser. No. 853,794
Claims priority, application Japan, Apr. 11, 1991, 3-079184
Int. Cl.[5] H03K *5/00, 5/159*
U.S. Cl. 328—167 **1 Claim**



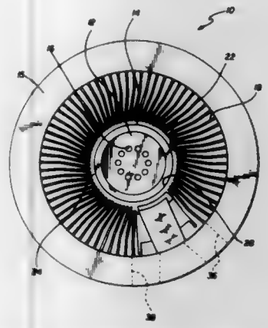
1. A switched capacitor filter circuit comprising:
(a) a first switched capacitor filter for sampling an input analog signal at a sampling interval T_1 and for outputting a first sampled output signal;
(b) a second switched capacitor filter, receiving said first sampled output signal, for performing a non-recursive filtering operation on said first sampled output signal and for outputting a second sampled output signal at a second sampling interval T_1/n, said second switched capacitor filter comprising:
(i) m parallel-connected branches, each of said branches including a predetermined number of parallel-connected capacitors,
(ii) first means for sequentially selecting said branches at said sampling interval T_1 and for simultaneously providing said capacitors of each one of said branches, when it is selected, with said first sampled output signal,
(iii) second means for selecting, at a time when said branches are being sequentially selected by said first means, each of said capacitors of ones of said branches other than one of said branches which is currently being selected by said first means,
(iv) third means for sequentially selecting at said second sampling interval T_1/n, at a time when said branches are not being selected by said first means, one of said capacitors of each of said branches, so as to select m capacitors in each sequential selection,
(v) fourth means for weighting sampled values stored by said capacitors selected by said second means and said capacitors selected by said third means in accordance with ratios of capacitance values of said capacitors selected by said second means and said capacitors selected by said third means and an integrating capacitor, and
(vi) fifth means for obtaining a sum of weighted sampled values provided by said fourth means and for outputting said sum of said weighted sampled values as said second sampled output signal at said second sampling interval T_1/n; and
(c) a low pass analog filter, connected to said second switched capacitor filter, for suppressing unnecessary components of said second sampled output signal having frequency multiples of n/T_1.

5,327,093
METHOD AND SYSTEM FOR SYNCHRONIZING MUTUALLY INTERFERING SIGNALS IN DIGITAL RADIO TRANSMISSIONS WITH FREQUENCY RE-USE
Maurizio Bolla, Milan; Leonardo Rossi, Piacenza, and Arnaldo Spalvieri, Senigallia, all of Italy, assignors to Alcatel Italia S.p.A., Milan, Italy
Filed Jan. 21, 1993, Ser. No. 6,805
Claims priority, application Italy, Jan. 22, 1992, MI92A000110
Int. Cl.[5] H03D *3/00;* **H03L** *7/07;* **H04B** *1/12, 7/10*
U.S. Cl. 329—308 **5 Claims**



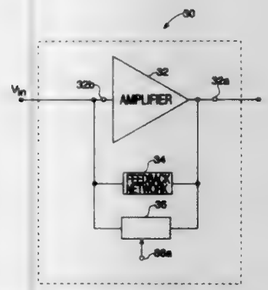
1. System for demodulating mutually interfering (H and V) radio signal, in which system on each polarization there are used a demodulator, a cancellation circuit, an equalizer, a carrier recovery circuit and a decision circuit, wherein on each polarization there are at least a pair of demodulators, a first pair thereof operate a baseband conversion of both signals H and V using said carrier recovery circuit driven through data of one of the two signals (e.g. V), a second pair thereof operate a baseband conversion of both signals H and V too, but using said carrier recovery circuit now driven by data of the other signal (e.g. H).

5,327,094
JITTER SUPPRESSION IN CROSSED-FIELD AMPLIFIER BY USE OF FIELD EMITTER
J. Rodney M. Vaughan, Redwood City, Calif.; Kenneth F. Ramacher, and Edward M. Doyle, both of Montoursville, Pa., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Dec. 11, 1992, Ser. No. 989,090
Int. Cl.[5] H03F *3/54;* **H01J** *25/50*
U.S. Cl. 330—47 **23 Claims**



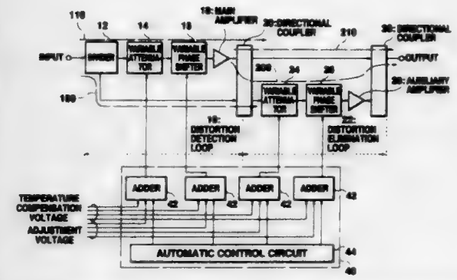
1. In a crossed-field amplifier having an anode and a cathode creating an electric field across a magnetic field in an interaction area, the improvement comprising:
field emitter means connected to said cathode for providing priming electrons in said interaction area upon initiation of said amplifier to enable a fast start-up of said amplifier, wherein said priming electrons are emitted in response to said electric field.

5,327,095
METHOD AND CIRCUIT FOR INCREASING THE OUTPUT IMPEDANCE OF AN INACTIVE AMPLIFIER
William H. Gross, Sunnyvale, and John W. Wright, Los Altos, both of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.
Filed Feb. 19, 1993, Ser. No. 20,619
Int. Cl.[5] H03F *1/36*
U.S. Cl. 330—75 **65 Claims**



17. A method for increasing the output impedance of an amplifier circuit, the amplifier circuit including at least one input for receiving an input signal, an output for producing an output signal when the amplifying circuit is in an amplifying state, and a first amplifier for receiving the input signal and for producing the output signal, the amplifier circuit adapted to be coupled to a feedback network which monitors the output signal to generate a feedback signal to control the output during the amplifying state, the method comprising the steps of:
(a) deactivating the first amplifier to put said amplifier circuit into a non-amplifying state; and
(b) driving the feedback network when the amplifier circuit is in the non-amplifying state to increase the effective impedance of the network.

5,327,096
CONTROL CIRCUIT FOR AUTOMATICALLY CONTROLLED FEED FORWARD NONLINEAR DISTORTION COMPENSATION AMPLIFIER
Hironori Sakamoto; Akira Ito, both of Mitaka, and Toshio Nojima, Yokosuka, all of Japan, assignors to Japan Radio Co., Ltd.; Nippon Telegraph & Telephone Corporation and NTT Mobile Communication Network Inc., Tokyo, Japan
Filed Feb. 11, 1993, Ser. No. 16,244
Claims priority, application Japan, Feb. 27, 1992, 4-041737
Int. Cl.[5] H03F *1/00*
U.S. Cl. 330—151 **25 Claims**



1. A control circuit used to control an amplifier, wherein the amplifier comprises a main amplifier amplifying an input signal, first coupling means for coupling an output of said main amplifier to a first feed forward signal and for generating a second feed forward signal, second coupling means for coupling the output of said main amplifier to said second feed forward signal and for generating an output signal, first adjustment means for adjusting a relationship of at least one of an amplitude and a phase between said input signal and said first feed forward signal, and second adjustment means for adjusting a relationship of at least one of an amplitude control signal for adjusting a relationship of at least one of an amplitude and a phase between the output of said main amplifier and said second feed forward signal, said first adjustment means responsive to at least one of a first amplitude control signal and a first phase control signal, said second adjustment means responsive to at least one of a second amplitude control signal and a second phase control signal, said control circuit comprising:
(a) distortion detection control means for generating at least one of said first amplitude control signal and said first phase control signal to make said second feed forward signal substantially contain only a distortion element, the distortion element contained in the output of the main amplifier;
(b) distortion elimination control means for generating at least one of said second amplitude control signal and said second phase control signal to substantially eliminate the distortion element from said output signal; and
(c) first adding means for adding at least one of a first amplitude offset signal to said first amplitude control signal and a first phase offset signal to said first phase control signal.

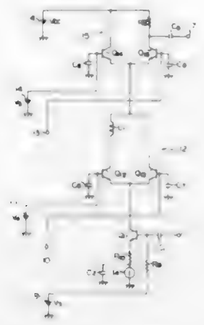
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GAIN CONTROL CIRCUIT

Sadao Igarashi, and Kazuharu Aoki, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 6,336
Claims priority, application Japan, Jan. 23, 1992, 4-010389
Int. Cl.[5] H03G *3/30*; H03F *3/45*
U.S. Cl. 330—254 24 Claims



1. A gain control circuit, comprising:
a current dividing type gain control unit including, first and second transistors having emitters connected to each other;
a high frequency check means having one end connected to the collector of said first transistor and the other end connected to the collector of said second transistor for checking a high frequency signal current;
an input terminal composed of the node where said emitters are connected to each other for causing an emitter direct current to be conducted therethrough and a signal current also to be input thereto;
an output terminal composed of the node where the collector of one of said first and second transistors is connected to said high frequency check means for causing a collector direct current to be conducted therethrough and a signal current also to be output therefrom; and
a means for changing the dividing ratio of the collector direct current to said first and second transistors, whereby gain is controlled by said dividing ratio; and
a rear stage circuit unit including at least one transistor having an emitter connected to the output terminal of said gain control unit and a collector serving as an output terminal.

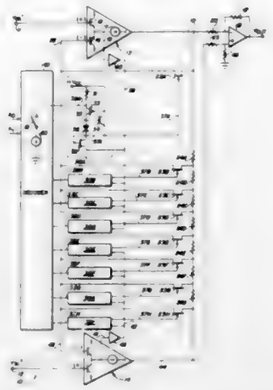
5,327,098

PROGRAMMABLE GAIN AMPLIFIER CIRCUITRY AND METHOD FOR BIASING JFET GAIN SWITCHES THEREOF

Johanie F. Molina; R. Mark Stitt, II, and Rodney T. Burt, all of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Jul. 29, 1993, Ser. No. 98,845
Int. Cl.[5] H03G *3/30*; H03F *3/45*
U.S. Cl. 330—254 15 Claims

13. A method of biasing a JFET having a source or drain electrode coupled to a first input conductor of an operational amplifier, an input signal being carried by a second input conductor of the operational amplifier, the method comprising the steps o f:
(a) applying the first input conductor to an input of a buffer circuit, causing the buffer circuit to produce a signal representative of the input signal; and
(b) coupling the signal to a gate of the JFET to cause the gate and the source of the JFET to be at substantially the same potential as the input signal to maintain the JFET in its triode region despite large variations in the input signal.

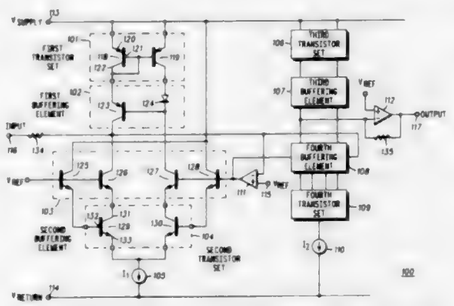


5,327,099

DIFFERENTIAL STAGE THAT PROVIDES MINIMAL OFFSET BETWEEN INPUTS

George H. Fergus, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1993, Ser. No. 100,223
Int. Cl.[5] H03F *3/45*; H03G *3/10*
U.S. Cl. 330—254 18 Claims



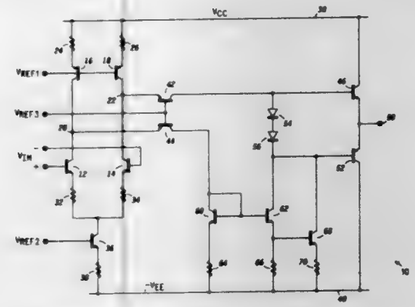
1. A differential stage that provides minimal offset between differential inputs, the differential stage comprises:
a first transistor set, wherein each transistor of the first transistor set includes an input terminal, a common terminal, and an output terminal, wherein the input terminals are operably coupled together, and wherein the common terminals are operably coupled together;
a first buffering element that is operably coupled to at least one output terminal of the first transistor set;
a second transistor set, wherein each transistor of the second transistor set includes an input terminal, a common terminal, and an output terminal, wherein the common terminals are operably coupled together; and
a second buffering element that is operably coupled to the first buffering element and to the output terminals of the second transistor set, wherein the input terminals of the second transistor set provide, via the second buffering element, the differential inputs, and wherein the coupling between the second buffering element and the first buffering element provides an output of the differential stage.

5,327,100

NEGATIVE SLEW RATE ENHANCEMENT CIRCUIT FOR AN OPERATIONAL AMPLIFIER

Troy L. Stockstad, Phoenix; Renwin J. Yee, Mesa, and Thomas D. Petty, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,142
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—255 19 Claims



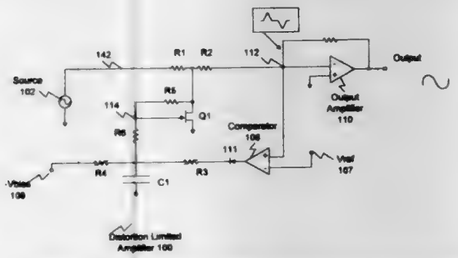
1. An operational amplifier, comprising:
a differential input stage responsive to first and second input signals for developing first and second voltages at first and second nodes;
a first transistor having a base, an emitter and a collector, said emitter being coupled to an output of the operational amplifier, said collector being coupled to a first power supply conductor, said base being coupled to said second node; and
circuit means having first and second conduction paths coupled to said first and second nodes respectively, said second conduction path being further coupled to said base of said first transistor for providing a drive signal to said base of said first transistor upon sensing a predetermined level of said first and second voltages.

5,327,101

DISTORTION-FREE LIMITER FOR A POWER AMPLIFIER

Gerald D. Neely, Dearborn, Mich.; Alfonso Molinar, Chihuahua, Mexico; Andrew C. Krochmal, Plymouth, Mich., and Robert T. Zeff, Modesto, Calif., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 2, 1993, Ser. No. 85,369
Int. Cl.[5] H03G *3/30*
U.S. Cl. 330—284 11 Claims



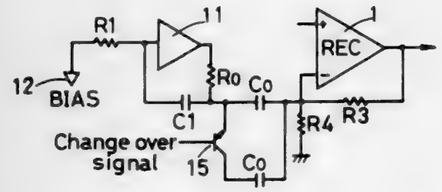
9. A method of limiting clipping of an inverting amplifier, comprising the steps of:
(a) comparing a signal level at an inverting input of said inverting amplifier to a reference voltage and generating a pulse when said signal level exceeds said reference voltage level;
(b) storing a charge in response to said pulse generated in said step (a); and
(c) shunting a portion of the input signal to ground through a gating means when said stored charge causes a gate voltage of said gating means to rise above cutoff.

5,327,102

SOUND RECORDING APPARATUS

Hideaki Sugibayashi, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 8, 1992, Ser. No. 957,553
Claims priority, application Japan, Oct. 9, 1991, 3-290967; Aug. 3, 1992, 4-206598
Int. Cl.[5] H03F *3/191*
U.S. Cl. 330—304 2 Claims



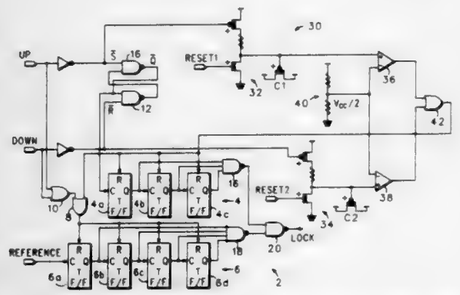
1. A sound recording apparatus for equalizing a sound signal before the sound signal is recorded onto a recording medium, comprising:
an amplifier to which the sound signal is inputted; and
a simulated inductor circuit connected to the amplifier said simulated inductor circuit including a buffer whose input side is coupled to a predetermined bias; a plurality of capacitors for connecting the output side of the buffer to the amplifier; and switch means for changing an equalizing characteristic by changing a selected capacitance by switching among the plurality of capacitors.

5,327,103

LOCK DETECTION CIRCUIT FOR A PHASE LOCK LOOP

Nathan Baron, Oranit; Judah Adelman, Jerusalem, and Yehuda Volpert, Petach Tikva, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 29, 1993, Ser. No. 86,263
Claims priority, application United Kingdom, Jul. 2, 1992, 9214181
Int. Cl.[5] H03L *7/095*
U.S. Cl. 331—1 A 15 Claims



1. A lock detection circuit for a phase lock loop (PLL) for

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detecting when a signal generated by the PLL is substantially locked to a reference signal, the lock detection circuit comprising:

means for generating first and second pulses, the first and second pulses respectively representing positive and negative differences between a parameter of the PLL signal and a parameter of the reference signal;

first counting means for counting sets of the first and second pulses, each set comprising a first pulse followed by a second pulse, the first counting means on counting a predetermined number of sets of pulses providing a first count complete signal, the lock detection circuit being characterised by:

second counting means for counting transitions of the reference signal, and being coupled to the means for generating whereby the second counting means is reset by the first or second pulses, the second counting means on counting a predetermined number of transitions of the reference signal providing a second count complete signal; and

logic means for generating a signal indicating lock has been achieved in response to the receipt of either the first or second count complete signal.

5,327,104

PIEZOELECTRIC OSCILLATOR FORMED IN RESIN PACKAGE CONTAINING, IC CHIP AND PIEZOELECTRIC OSCILLATOR ELEMENT

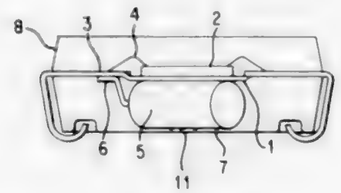
Masayuki Kikushima, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,832

Claims priority, application Japan, Oct. 21, 1991, 3-272769; Aug. 5, 1992, 4-209210

Int. Cl.[5] H01L *23/12, 25/065;* **H03B** *5/36*

U.S. Cl. 331—68 **29 Claims**



1. A piezoelectric oscillator comprising at least one IC chip mounted on one surface of a lead frame, and at least one piezoelectric oscillator element mounted on an opposite surface of the lead frame, a body of said piezoelectric oscillator being molded from resin to form a rectangular resin package surrounding said at least one IC chip and said at least one piezoelectric oscillator element, said piezoelectric oscillator element having a longitudinal axis arranged to extend within a range from −45° to +45° of a diagonal line extending between two diametrically opposed corners of said rectangular resin package.

5,327,105

GAS CELL FOR A MINIATURIZED ATOMIC FREQUENCY STANDARD

Irving Liberman, Pittsburgh, and Peter J. Chantry, Churchill Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 815,677, Dec. 31, 1991, Pat. No. 5,192,921. This application Oct. 26, 1992, Ser. No. 966,209

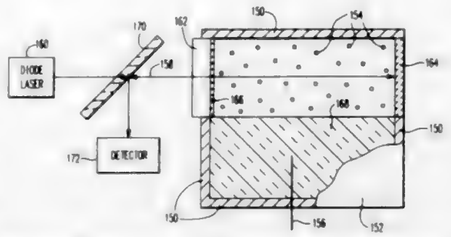
Int. Cl.[5] H01S *1/06;* **H03L** *7/26*

U.S. Cl. 331—94.1 **10 Claims**

1. A gas cell for an atomic frequency standard comprising:

a container having a window, said container operable to hold a vapor;

means for reflecting light disposed within said container; and means for introducing a microwave signal into said container;



wherein said container is a resonator for said microwave signal.

5,327,106

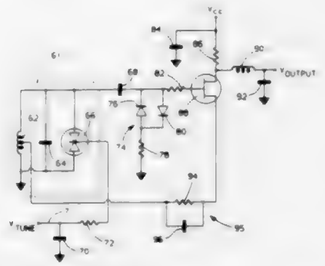
LOCAL OSCILLATOR WITH REDUCED HARMONIC

Stuart B. Sanders, Kokomo, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed Feb. 1, 1993, Ser. No. 11,925

Int. Cl.[5] H03B *5/12, 1/04;* **H03L** *5/00*

U.S. Cl. 331—109 **5 Claims**



1. An apparatus comprising:

a field effect transistor (FET) having a source, a gate, and a drain;

tank circuit means coupled to the gate and drain of the FET for causing a fundamental frequency oscillating signal to be generated at the source of the FET; and

a bi-directional clamp circuit having first and second diodes connected in parallel, each diode allowing current flow in a direction opposite to current flow in the other diode, the bi-directional clamp circuit coupled to the gate of the FET to limit a swing of a gate voltage of the FET, preventing the gate voltage of the FET from entering a saturation region and a cut-off region.

5,327,107

ELECTRICAL APPARATUS WITH DIGITALLY SET TRANSFER FUNCTION

Brian J. Buck, Northampton, England, assignor to GEC-Marconi Limited, United Kingdom

Filed Sep. 24, 1992, Ser. No. 950,804

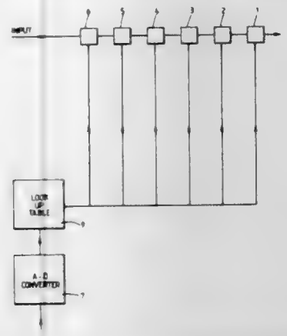
Claims priority, application United Kingdom, Nov. 25, 1991, 9124974

Int. Cl.[5] H03H *7/20*

U.S. Cl. 333—139 **6 Claims**

1. An electrical apparatus comprising: a number of units, each of which, when selected, presents to an input signal a transfer function of a different fixed value; and control means

for making a selection of said units so as to present to the input signal a desired total transfer function value within a predetermined range, the ratio between each transfer function value and the next smaller transfer function value being less than 2:1.



5,327,108

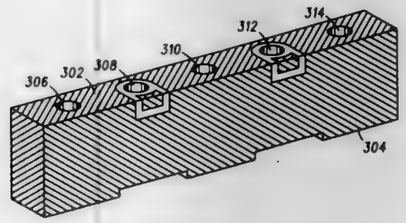
SURFACE MOUNTABLE INTERDIGITAL BLOCK FILTER HAVING ZERO(S) IN TRANSFER FUNCTION

Truc G. N. Hoang, San Diego, Calif., and Darren V. Weninger, Maize, Kans., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 962,622, Oct. 16, 1992, abandoned, which is a continuation of Ser. No. 667,844, Mar. 12, 1991, abandoned. This application Jan. 6, 1994, Ser. No. 178,350

Int. Cl.[5] H01P *1/205*

U.S. Cl. 333—203 **15 Claims**



1. A surface mountable interdigital block filter for filtering electrical signals, the block filter being substantially directly mountable on a conductive surface of a substrate, comprising:

a substantially parallelepiped volume of dielectric material having at least a first and a second surface. substantially arranged to provide;

at least three primary apertures extending coaxially from said first and Second surfaces and having conductive material disposed on an inner surface of said apertures to provide conductive resonator means,

input and output secondary apertures extending coaxially from said first and second surfaces and having conductive material disposed on an inner surface of said secondary apertures to provide conductive resonator means, for at least facilitating external conductive connections and at least allowing desired provision and extraction of electrical signals,

wherein the secondary apertures are operably coupled to the primary apertures and the apertures are arranged in an order of:

a first primary aperture, the input secondary aperture, a second primary aperture, any primary apertures selected in addition to the three primary apertures, the output secondary aperture and a third primary aperture,

a first conductive line is utilized for input into the input secondary aperture and a second conductive line is utilized for output from the output secondary aperture,

wherein adjacent apertures are at least alternately connected and unconnected to a ground respectively along the first surface and along the second surface such than said conductive resonator means are interdigitated; and

conductive material is disposed on at least Dart of the surfaces of the volume of dielectric material, substantially arranged to at least permit conductive surface mounting of the surface mountable interdigital block filter on the conductive surface of the substrate and to provide an electrical signal filter that provides for selectable frequency rejection response operation

wherein the input and output secondary apertures are utilized, respectively, to radiate and receive signals to and from adjacent conductive interdigitated resonator(s) means,

wherein said conductive interdigitated resonator means are constructed and arranged such that the block filter has at least a first pole and at least a first zero in its frequency transfer function provided by at least a first resonator that is utilized for zero(s) of a frequency transfer function, and

wherein the input and output secondary apertures have a length that is different from the length of the primary apertures.

5,327,109

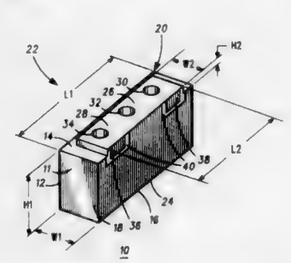
BLOCK FILTER HAVING HIGH-SIDE PASSBAND TRANSFER FUNCTION ZEROES

Truc G. Hoang, San Diego, Calif.; Reddy R. Vangala, and Frederick L. Sassin, both of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1992, Ser. No. 971,387

Int. Cl.[5] H01P *1/205*

U.S. Cl. 333—206 **7 Claims**



1. A side-step ceramic block filter comprised of:

a substantially rectangular block of ceramic material having a first length L1, a width, W1, and a first height, H1, said rectangular block having a substantially planar first top, bottom and four side surfaces, at least three of said side surfaces having a height substantially equal to H1;

a substantially parallelepiped-shaped mesa having a second (i) top surface and (ii) at least four side surfaces and formed of said ceramic material, located on said first top surface of said block, said mesa having a height H2 less than H1, and having a width W2 less than W1, and a length L2 less than L1, at least one of said second side surfaces of the mesa and at least one of said first side surfaces of said rectangular block are substantially co-planar defining a substantially co-planar surface and having a combined height equal to H2 and H1;

at least two resonator holes extending through said substantially rectangular block of ceramic material and through said mesa;

a metallization layer coating said first top, bottom, and four side surfaces of said rectangular block and said at least four side surfaces of said mesa, excluding the second top surface of said mesa, but including inner surfaces of said resonator holes, said metallization layer of said resonator

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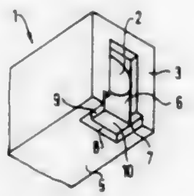
holes being electrically coupled to said metallization on said bottom surface of said rectangular block; and

first and second input/output pads located on said co-planar surface, electrically isolated from metallization on said co-planar surface and located proximate to said second top surface.

5,327,110
CERAMIC COAXIAL RESONATOR

Christian Block, Graz, Austria, assignor to Siemens Matsushita Comp. GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Sep. 1, 1993, Ser. No. 115,935
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1992, 4229165
Int. Cl.[5] H01P *7/04*
U.S. Cl. 333—222 **2 Claims**



1. A coaxial resonator, comprising:

a ceramic body having outer surfaces including an end surface forming a connecting side, said ceramic body having a through hole extending longitudinally through said ceramic body defining an inner surface in said through hole, and said end surface having an indentation formed therein surrounding said through hole,

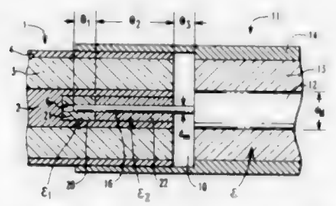
metallizing disposed on said inner surface and on all of said outer surfaces including said indentation except for said end surface, said metallized outer surfaces forming an external conductor and said metallized inner surface forming an internal conductor, and

said ceramic body having notches extending inwardly from one of said outer surfaces in the vicinity of said indentation for galvanic separation of said internal conductor metallizing of said through hole and said indentation from said external conductor metallizing, said notches separating out a surface portion from said one outer surface forming a connection for said internal conductor through said metallizing of said indentation.

5,327,111
MOTION INSENSITIVE PHASE COMPENSATED COAXIAL CONNECTOR

John W. Gipprich, Millersville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 16, 1992, Ser. No. 945,567
Int. Cl.[5] H01P *1/04*
U.S. Cl. 333—260 **9 Claims**



6. A motion insensitive coaxial connector comprising:

a male member having a first outer conductor and a first inner conductor, the first outer conductor and the first inner conductor being positioned coaxially, and the first inner conductor including a substantially cylindrical body and a substantially cylindrical stub extending from the body and having a minor diameter;

a female member having a second outer conductor and a second inner conductor, the second outer conductor and the second inner conductor being positioned coaxially, and the second inner conductor including a substantially cylindrical cavity having a diameter larger than the minor diameter;

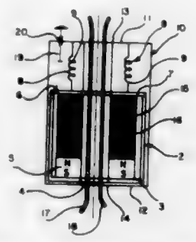
said male and female members being connectable with respect to each other to form a gap between the substantially cylindrical body of the first inner conductor and an end of the second inner conductor; and

a dielectric sleeve positioned within the cavity, the sleeve having a first portion and a second portion, the first and second portions of the dielectric sleeve having different dielectric constants, and wherein, when said male and female members are connected, the stub passes through the gap and the second portion of the dielectric sleeve and extends into the first portion of the dielectric sleeve.

5,327,112
ELECTROMAGNETIC ACTUATOR OF THE TYPE OF A RELAY

Gianpaolo Rossetti, Cremona, Italy, assignor to Bticino S.p.A., Italy

PCT No. PCT/EP89/00784, § 371 Date Mar. 4, 1991, § 102(e) Date Mar. 4, 1991, PCT Pub. No. WO90/00807, PCT Pub. Date Jan. 25, 1990
PCT Filed Jul. 7, 1989, Ser. No. 635,190
Claims priority, application Italy, Jul. 8, 1988, 21296 A/88
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 **7 Claims**

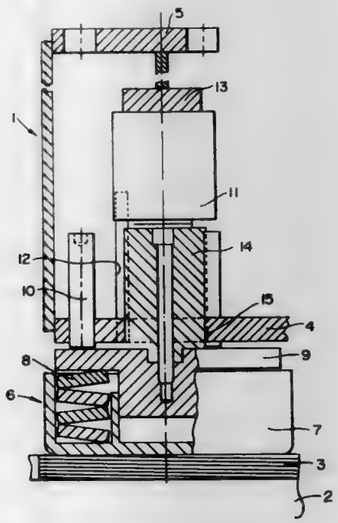


1. An electromagnetic actuator (1) of the type of a relay having a yoke (2) polarized by an annular permanent magnet (5) and an annular movable armature (6) which is attracted by the yoke (2) against a spring means (8), the actuator being controlled by an electrical current sensor comprising a transformer (16) having a toroidal core (15) wherethrough at least one electric conductor (17) is passed, the toroidal core (15) being fitted coaxially between the annular permanent magnet (5) and the annular movable armature (6), the transformer (16) being incorporated into the actuator (1) such that the toroidal core is crossed by a first magnetic flux from the permanent magnet, a second magnetic flux induced in the toroidal core by current flowing in the conductor (17) interfering orthogonally with the first magnetic flux from the permanent magnet (5).

5,327,113
TRANSFORMER WITH COIL COMPRESSION

Guenther Voetsch, Weiz, Austria, assignor to Elin Energieversorgung GmbH, Vienna, Austria

PCT No. PCT/AT91/00068, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO91/19304, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 7, 1991, Ser. No. 949,639
Claims priority, application Austria, Jun. 8, 1990, 1253/90
Int. Cl.[5] H01F *27/30*
U.S. Cl. 336—197 **7 Claims**



1. A substation transformer, comprising:

a winding compression ring;

a winding closed off by said winding compression ring;

a compression beam having a first support surface that extends horizontally and a second support surface, said first support surface having a bore and being positioned at a lower portion of said compression beam, said second support surface being positioned at an upper portion of said compression beam;

expanding spring elements disposed concentrically around a core portion of said winding, said expanding spring elements being disposed between said compression beam and said winding compression ring, each of said spring elements comprising a spring, a bushing for receiving said spring, and a compression piston provided to close an open end of said bushing, said compression piston being adapted to limit a path of movement of said spring, said spring comprising disk springs;

post-installation modification apparatus comprising:

compression means for compressing said winding, said compression means comprising a hydraulic cylinder adapted to be removably inserted between said compression beam and said winding compression ring;

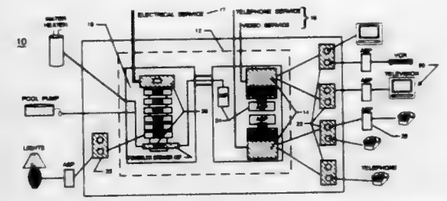
adjustment screw adapted to be adjusted within a threaded bore provided in said first support surface of said compression beam, and to act on said compression piston to thereby adjust compression of said disk springs; and

a stop adapted to be removably included in said bushing to limit movement of said compression piston and thereby to hold said disk springs in a pre-stressed state.

5,327,114
SERVICE ENTRANCE DISTRIBUTION AND MANAGEMENT SYSTEM FOR COMMUNICATION SYSTEMS

Russell A. Straate; James Dickens, both of Lexington; Dean A. Hatton, Winchester, and Billy R. Unseld, Lexington, all of Ky., assignors to Square D Company, Palatine, Ill.

Division of Ser. No. 466,541, Jan. 17, 1990, abandoned. This application Jul. 26, 1991, Ser. No. 720,301
Int. Cl.[5] G08B *1/00*; **G06F** *15/00*
U.S. Cl. 340—286.06 **3 Claims**



2. A method for formatting wire and cable within a facility comprising a plurality of rooms, so as to provide communication services throughout the facility via said wire and cable, said method comprising the steps of:

selecting a centralized location for the entrance of incoming services to the facility;

determining the services to be provided to the facility;

selecting an appropriate location for a distribution center means from where said services may be distributed across the facility;

determining the number of rooms to be formatted;

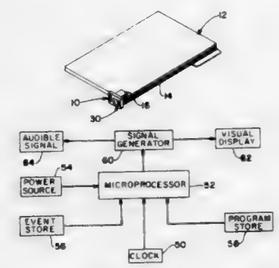
determining the specific communication services to be distributed in each of said facility rooms; and

determining appropriate locations for termination of services in each of said facility rooms.

5,327,115
PROGRAMMABLE DOCUMENT CLIP

Remi Swierczek, 9771 Maidstone Dr., Mentor, Ohio 44060

Filed Jul. 29, 1992, Ser. No. 921,558
Int. Cl.[5] G08B *1/00*
U.S. Cl. 340—309.15 **13 Claims**



1. A device for the monitoring of a critical deadline associated with a document having an edge portion comprising:

a document attachment member having a base portion and a clip portion, said clip portion having a first and a second end, said first end attached to said base member and at least said second end biased into contact with at least one document, said document attachment member being physically retained in direct and removable contact on said at least one document at an edge portion of said at least one document; and

an electrical circuit means including a housing supported on

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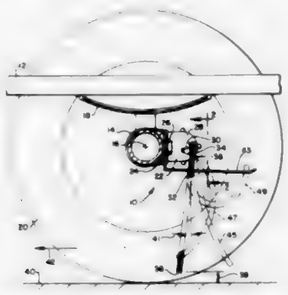
said base portion of said document attachment member, to allow said circuit means to be selectively attached to said at least one document, said electrical circuit means comprising a timing circuit means for monitoring elapsed time and for producing one or more timing signals at predetermined times relative to said critical deadline, a signalling means for producing a signal capable of human detection, and a control means for receiving said timing signal and energizing said signalling means.

5,327,116

LOW TRAILER TIRE DETECTION DEVICE

Billy D. Davidson, 2742 Larkspur, Dallas, Tex. 75233

Filed Dec. 31, 1992, Ser. No. 999,597
Int. Cl.[5] B60C *23/00, 23/06*
U.S. Cl. 340—443 **12 Claims**



6. A low tire pressure detection device for use in detecting deflation of a tire while it is supporting a tow trailer from a surface for movement in a given direction therealong, said device comprising:

(a) a sealed housing enclosing an electrical contact switch activatable upon rotation of a pivot shaft from a first biased non-signal position to a second signal position, which pivot shaft has an outside portion which sealingly and rotatably extends through a portion of said housing wherein said switch enclosed within said housing further comprises:

(i) a cam formed on said pivot shaft within said housing for rotation with said pivot shaft;

(ii) a flexible contact positioned adjacent said cam for movement of said flexible contact upon rotation of said pivot shaft from said first biased non-signal position to said second signal position; and

(iii) a fixed contact spaced apart from said flexible contact engageable by said flexible contact to complete an electrical circuit upon rotation of said pivot shaft from said first biased non-signal position to said second signal position, such that said cam moves said flexible contact;

(b) a resilient sensor rod mounted on said outside portion of said pivot shaft extending therefrom at an angle forward in the direction of movement of said tire with said pivot shaft in said first biased non-signal position, said resilient sensor rod having an end spaced a predetermined distance from said surface, such that upon at least partial deflation of said tire, said resilient sensor rod contacts said surface and is moved over center to rotate said pivot shaft to said second signal position; and

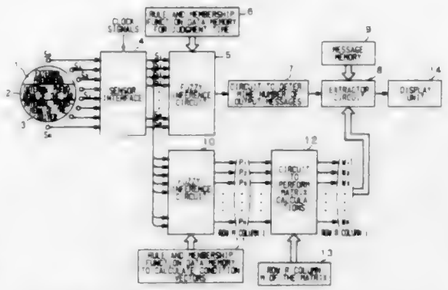
(c) a remote signal device electrically activated upon rotation of said pivot shaft to said second signal position.

5,327,117

ADAPTIVE MESSAGE DISPLAY APPARATUS

Masatsune Kohsaka, Kyoto, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Mar. 23, 1992, Ser. No. 855,914
Claims priority, application Japan, Mar. 22, 1991, 3-059099
Int. Cl.[5] G08B *25/00*
U.S. Cl. 340—525 **17 Claims**



1. A message display apparatus comprising:

at least one sensor which outputs data representing a current state of at least one monitored phenomenon;

first means, responsive to an output of said at least one sensor, for determining one or more display elements corresponding to a sensed state of said at least one monitored phenomenon and for determining a priority ranking of each display element corresponding to the sensed state of said at least one phenomenon;

second means, responsive to the output of said at least one sensor, for calculating a time allowance within which a human being must make a judgment regarding the sensed state of said at least one monitored phenomenon; and

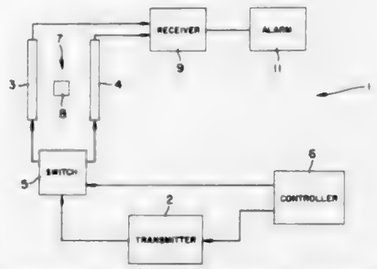
third means responsive to outputs of said first and second means for establishing a form of a display.

5,327,118

EAS SYSTEM WITH ALTERNATING ON/OFF TRANSMITTER OPERATION AND LOOP ANTENNA

Frank Drucker, Plantation; Sylvie R. Morin, and Harry E. Watkins, both of Boca Raton, all of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Division of Ser. No. 967,846, Oct. 28, 1992. This application Sep. 8, 1993, Ser. No. 118,015
Int. Cl.[5] G08B *13/187*
U.S. Cl. 340—572 **7 Claims**



1. An EAS system for transmitting signals into and receiving signals from an interrogation zone comprising;

a first antenna, said first antenna when driven transmitting signals into a first part of said interrogation zone, said first part of said zone being less than said entire zone;

a second antenna, said second antenna when driven transmitting signals into a second part of said interrogation zone, said second part of said interrogation zone being less than said entire interrogation zone and partially overlapping with said first part of said interrogation zone;

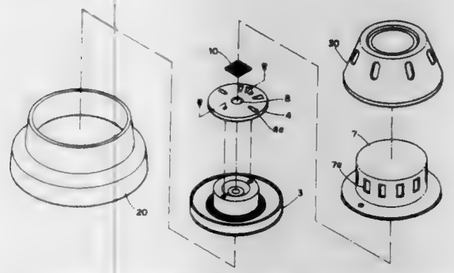
and means for developing coded message signals and for alternatively driving said first and second antennas with the same coded message signal in its entirety, whereby said first and second antennas transmit first and second signals containing the same entire coded message signal into said first and second parts, respectively, of said interrogation zone.

5,327,119

IONIZING SMOKE SENSOR

Kanji Ishii, Yokohama, Japan, assignor to Hochiki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 697,539, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 455,073, Dec. 22, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 919,705
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—629 **5 Claims**



1. An improved ionizing smoke sensor for detecting smoke having a two-chambered structure;

a body cover for mounting said smoke sensor to a surface, and an outer cover removably mounted to said body cover and having smoke inflow passageways;

a radiation source for irradiating radiation,

an internal electrode having said radiation source extending through an insulating member,

a plate-like intermediate electrode having opening means therein,

an internal ionization chamber surrounding said internal electrode and defined by said intermediate electrode and said insulating member further extending about said internal electrode and contacting said intermediate electrode, said internal and intermediate electrodes exhibiting a voltage Vi therebetween, and said opening means comprising a mesh defining a plurality of apertures centrally disposed opposite to said internal electrode and said radiation source for enabling passage of radiation therethrough,

an external electrode contacting and supporting said insulating member and being secured thereto, and an external ionization chamber where smoke can flow in from the outside disposed about the outside of said internal ionization chamber and defined by said external electrode, said intermediate electrode and said insulating member, and said external and intermediate electrodes exhibiting a voltage Vo therebetween,

said internal chamber and said external chamber being concentrically disposed within said outer cover; and a voltage source being applied across said chambers,

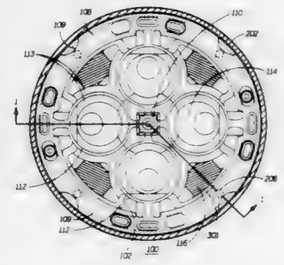
said radiation source irridating radiation to said external ionization chamber through said mesh, defined by said plurality of apertures which acts as a part of said intermediate electrode and faces said radiation source, and said mesh functioning as a part of the intermediate electrode in generating a flow of ions in said internal ionization chamber and in preventing the invasion of particles of thread, moisture, insects and dust to said internal ionization chamber as well as suppressing the rush of air flowing therethrough, and having a mesh structure with a rate of porosity of at least fifty (50) percent and less than eighty (80) percent by means of said plurality of apertures being in the range of from about 20 to about 50 mesh holes per inch, with said plurality of apertures centrally clustered so as to be disposed in juxtaposition to said radiation source; whereby the electric field distribution in said inner ionization chamber is rendered substantially homogenous so that fluctuation of the voltage Vi is minimized, thereby improving the ability of the improved sensor to more accurately detect a change in the smoke condition entering said sensor, and minimizing sensor error caused by the rushing air flow and invasion of said particles.

5,327,120

STABILIZED ELECTROMAGNETIC RESONANT ARMATURE TACTILE VIBRATOR

John M. McKee, Hillsboro Beach; Charles W. Mooney, Lake Worth; Irving H. Holden, and Gerald E. Brinkley, West Palm Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1992, Ser. No. 909,261
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.460 **16 Claims**



15. A selective call receiver comprising

a receiver for receiving radio frequency (RF) signals comprising information and for demodulating the RF signals to derive the information;

a decoder coupled to the receiver for decoding the received information and obtaining messages therefrom;

a processor coupled to the decoder for accepting the messages and for generating an alert signal in response thereto; and

an alert device coupled to the processor for generating a vibrating tactile alert in response to the alert signal, the alert device comprising:

a resonant armature system comprising:

at least two planar suspension members, substantially parallel to each other and separated by a distance, the at least two planar suspension members each comprising a plurality of independent planar spring members arranged regularly about a central planar region within a planar perimeter region; and

a movable mass positioned between and coupled to the at least two planar suspension members for resonating with the at least two planar suspension members at a fundamental mode resonant frequency, wherein the movable mass includes shaped channels formed therein that enable portions of the movable mass to pass freely through apertures in the at least two planar suspension members during operation of the alert device, thereby allowing a greater mass-to-volume ratio for the resonant armature system than would be possible without the shaped channels.

5,327,121

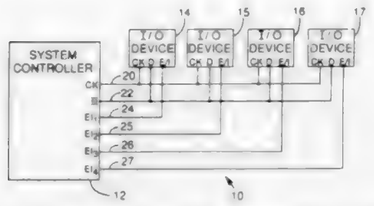
THREE LINE COMMUNICATIONS METHOD AND APPARATUS

Thomas L. Antles, II, Spokane, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 612,025, Nov. 9, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 998,899

Int. Cl.[5] H04Q 1/00

U.S. Cl. 340—825.51 20 Claims



1. A communications system for bidirectional data transfer between a master and a plurality of slaves comprising:

a bidirectional data bus connected to the master and each slave for transferring data between the master and the slaves;

a clock bus connected to the master and each slave for synchronizing data transfer operations;

a plurality of bidirectional enable/interrupt lines for intermittently transmitting interrupt request signals generated by the slaves to the master on, and for transmitting enable signals generated by the master to the slaves, each enable/interrupt line connecting the master to one of the slaves, the slaves driving the enable/interrupt lines with interrupt request signals in synchrony with a clock signal on the clock bus, and first asserting the interrupt request signals asynchronously with respect to edge transitions of the clock signal.

5,327,122

INSTALLATION FOR DATA TRANSMISSION WITH CORRECTION OF PHASE ERROR

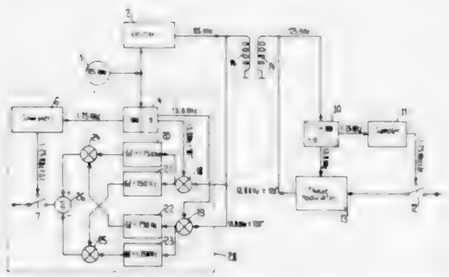
Massimo Casalegno, Frankfurter Landstrasse 5, D-6370 Oberursel/Ts, Italy

Continuation-in-part of Ser. No. 572,546, Aug. 27, 1990, abandoned. This application Sep. 12, 1991, Ser. No. 758,104

Claims priority, application Switzerland, Sep. 4, 1989, 03195/89

Int. Cl.[5] H04B 1/59

U.S. Cl. 340—825.7 9 Claims



1. A system for transmitting phase modulated at a comprising:

an inquiry unit in the form of an emitter-receiver and

a transponder arranged as a receiver-emitter such that a transmission of data takes place in at least one direction between said inquiry unit and said transponder, said transponder including a phase modulated emitter controlled by initial data, said phase modulated emitter acting on a signal derived from a carrier emitter by said inquiry unit,

and a phase demodulator wherein said phase demodulator comprises inputs for receiving a phase modulated signal transmitted by said transponder to said emitter-receiver and for receiving an unmodulated reference signal derived from said carrier and processor means for recovering a sequence of said initial data from said phase modulated signal and from said unmodulated reference signal independently of a carrier phase shift μ between said reference signal and the carrier component of said phase modulated signal, wherein,

said phase demodulator comprises a first stage yielding the raw real and imaginary components of the phase modulation of said phase modulated signal and means for the correction of said carrier phase shift μ of said phase modulation, and

said processor means recovers said data by determining axis rotation according to the equations:

$$X = x\cos\mu + y\sin\mu, \text{ or}$$

$$Y = y\cos\mu - x\sin\mu,$$

wherein x is the raw real component, y is the raw imaginary component, Y is the imaginary component, and X is the real component of said phase modulation.

5,327,123

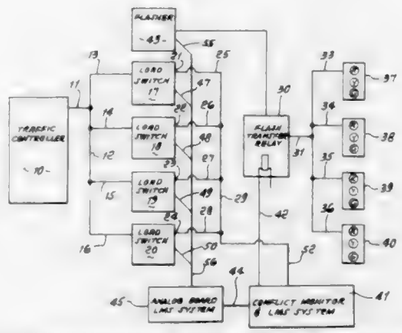
TRAFFIC CONTROL SYSTEM FAILURE MONITORING

Kenneth R. Heimann, Corona, and Hien T. Chu, Carson, both of Calif., assignors to Traffic Sensor Corporation, Corona, Calif.

Filed Apr. 23, 1992, Ser. No. 872,770

Int. Cl.[5] G08G 1/07

U.S. Cl. 340—916 19 Claims



1. In a traffic control system for use at a roadway intersection, the system including traffic control lights, a light flasher means for effecting light flashing, relay means for electrical coupling, and a plurality of load switches electrically coupled with said lights via said relay means to which said light flasher means is connected, said load switches having inputs, and a controller connected with said load switches for controlling normal operation of said lights and flashing of one or more of said lights by said light flasher means in the event of a system malfunction, the combination comprising

a) a microprocessor operatively connected with the said load switches, said light flasher means, and said relay means to monitor the system for detecting a malfunction event, for recording the detected malfunction event, and for transmitting the detected malfunction event to another location,

b) and verification means at said other location for

i) receiving said transmitted malfunction detection,

ii) verifying said event, and

iii) initiating malfunction corrective action,

c) whereby said corrective action in said system may be initiated without removing control by the controller of said operation of the traffic control lights at said intersection.

5,327,124

METHOD OF SECONDARY MODULATION OF A TRAIN OF RECORDED DATA

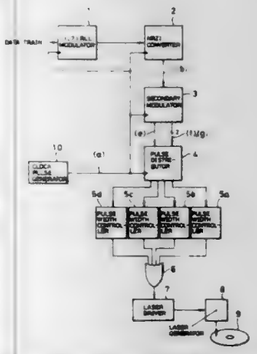
Kyota Funamoto, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,561

Claims priority, application Japan, May 21, 1992, 4-128873

Int. Cl.[5] H03M 5/00

U.S. Cl. 341—58 2 Claims



1. A secondary modulation method of performing secondary modulation on a train of data carried out with run length limited modulation to be recorded on a recording medium, said method comprising a step of:

replacing any bit excluding a leading bit of consecutive five or more ones in a bit pattern of said train of data, with a zero to provide a modulated bit pattern having no consecutive zeros, when said train of data has an odd-numbered bit pattern.

5,327,125

APPARATUS FOR AND METHOD OF CONVERTING A SAMPLING FREQUENCY ACCORDING TO A DATA DRIVEN TYPE PROCESSING

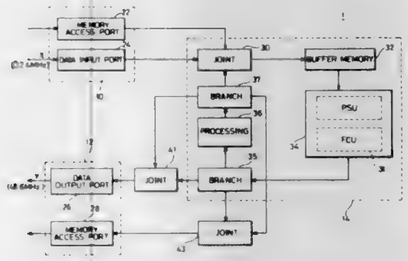
Toshihiro Iwase, Nara, and Hiroshi Kanekura, Yamatokouriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 13, 1993, Ser. No. 91,831

Claims priority, application Japan, Jul. 13, 1992, 4-184902

Int. Cl.[5] H03M 7/00; H04N 9/04

U.S. Cl. 341—61 14 Claims



1. An apparatus for converting a sampling frequency of digital signals sampled at a first sampling frequency into a second sampling frequency comprising:

input data packet producing means for receiving said digital signals sampled at said first sampling frequency and assigning generation numbers and node numbers indicative of predetermined destinations to the received digital signals in an order of reception for producing input data packets;

writing means for writing the produced input data packets into a memory means using said generation numbers related thereto as address signals;

reading means for reading, according to said produced data packets, from said memory means a predetermined set of said input data packets in accordance with instructions corresponding to the related node numbers; and

processing means for executing instructions allocated to said node numbers contained in said data packets read by said reading means in accordance with said node numbers and performing an operation on the read data packets, said processing means producing a plurality of data packets as a result of said operation such that a ratio between an input rate of said input data packets and a rate of the corresponding data packets produced by said processing means is equal to a ratio between said first sampling frequency and said second sampling frequency.

5,327,126

APPARATUS FOR AND METHOD OF PARALLEL JUSTIFYING AND DEJUSTIFYING DATA IN ACCORDANCE WITH A PREDETERMINED MAPPING

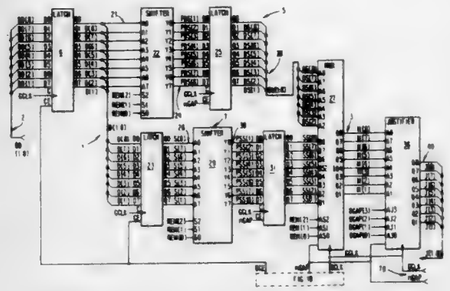
Matthew G. Beanland, Ringwood, Australia, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 28, 1992, Ser. No. 920,059

Claims priority, application Australia, Jun. 26, 1992, PL3249

Int. Cl.[5] H03M 9/00

U.S. Cl. 341—101 26 Claims



1. A justifier for performing parallel justification of data in accordance with a predetermined mapping, said justifier including:

an input bus for selectively communicating a plurality of information bits to said justifier;

control means responsive to a control signal indicative of said mapping for providing a remainder signal;

a first data path connecting said input bus to first inputs of a multiplexer and including a first shifter responsive to said remainder signal during a first cycle for shifting a predetermined number of said information bits from said input bus into the least significant bit position or positions of said first data path;

a second data path connecting said input bus to second inputs of said multiplexer and including a second shifter responsive to said remainder signal during a second cycle following said first cycle for shifting the remainder of the information bits from said input bus into the least significant bit position or positions of said second data path;

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said multiplexer being responsive to said remainder signal during a third cycle following said second cycle for communicating said information bits from said first and second paths to an output bus such that said mapping is followed and the sequence of said information bits is maintained.

5,327,127

MESSAGE ENCODING WHICH UTILIZES CONTROL CODES AND DATA CODES

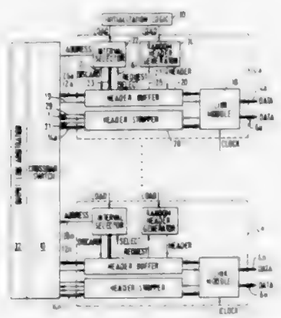
Michael D. May; Brian J. Parsons; Peter W. Thompson, and Christopher P. H. Walker, all of Bristol, United Kingdom, assignors to Inmos Limited, Bristol, England

Division of Ser. No. 546,092, Jun. 29, 1990, Pat. No. 5,130,977, and Ser. No. 546,402, Jun. 29, 1990, Pat. No. 5,140,583. This application Apr. 17, 1992, Ser. No. 870,393

Claims priority, application United Kingdom, Jun. 30, 1989, 8915135; Jun. 30, 1989, 8915137

Int. Cl.[5] H03M *7/20*

U.S. Cl. 341—102 **10 Claims**



1. A method of encoding data for transmission in bit sequences in which method each bit sequence contains an equal number of ones and zeros, said sequences being of a predetermined bit length and forming a finite set of permutations of equal numbers of ones and zeros, wherein a first subset of said finite sets is designated for use as data codes and a second subset of said finite set, distinct from said first subset, is designated for use as control codes for controlling transmission of said data codes, wherein said method is used to form message packets comprising at least one data code and an end of packet code which is selected from said second subset and which identifies the end of a packet, wherein each message packet further comprises first and second destination indicators for use in routing said message packet, the first destination indicator identifying an intermediate destination of the message packet at which intermediate destination the first destination indicator is deleted and the second destination indicator identifying a final destination of the message packet.

5,327,128

COMPACT GLITCHLESS M OF N DECODER CIRCUIT FOR DIGITAL TO ANALOG CONVERTERS

Man S. Lee, San Mateo, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Jan. 22, 1993, Ser. No. 7,893

Int. Cl.[5] H03M *7/20*

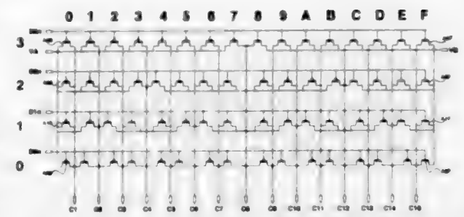
U.S. Cl. 341—102 **6 Claims**

1. An M-of-N decoder circuit comprising:

N output terminals;

$\log_2(N+1)$ logic input terminals; and

$(N+1)\log_2(N+1)$ pass transistor means each having a gate connected to one of said logic input terminals, a source connected to one of a voltage input terminal and an output terminal, and a drain connected to one of said output terminals, each for passing a voltage signal from source to drain when the gate has applied to it one logic level and



for not passing said voltage signal when the gate has applied to it a different logic level.

5,327,129

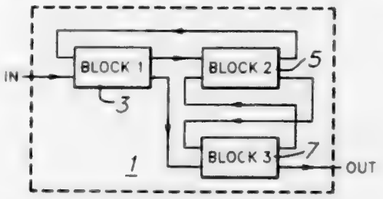
ACCURACY BOOTSTRAPPING

Eric G. Soenen, Dallas, Tex., and Randall L. Geiger, Boone, Iowa, assignors to The Texas A&M University System, College Station, Tex.

Continuation of Ser. No. 020,892, Feb. 22, 1993, abandoned, which is a continuation of Ser. No. 746,270, Aug. 15, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 87,943

Int. Cl.[5] H03M *1/10*

U.S. Cl. 341—120 **41 Claims**



1. A system physically realizing a transfer function and having improved accuracy and fast calibration, comprising:

a plurality of stages, each stage having one or more transfer functions defining a predetermined relationship between inputs and outputs, said plurality of stages coupled together to implement the system transfer function;

control logic for selectively reconfiguring said stages, for further coupling any one of said stages to the remaining ones so that the output of said one of said stages is coupled to the input of at least one other of said stages;

control logic for selectively causing said stages to transmit at their output responses to an input which enable characterization of transfer functions within said stages; and

operable to allow any one of said stages to be configured as the first stage in a sequence made up of at least one other of said stages, the first stage outputting responses indicative of the characteristics of the transfer functions within it in response to selective excitation, the remaining stages capturing said output responses from said first stage as a measurement of one or more of the transfer functions of said first stage.

5,327,130

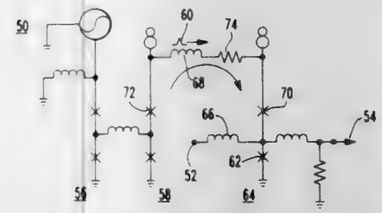
SPUR-FREE SIGMA-DELTA MODULATOR AND MULTIPLE FLUX QUANTA FEEDBACK GENERATOR

Joonhee Kang, Plum Boro; John X. Przybysz, Penn Hills, and Donald L. Miller, Penn Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 9, 1993, Ser. No. 103,844

Int. Cl.[5] H03M *3/00;* **G01R** *19/00*

U.S. Cl. 341—133 **9 Claims**



1. A spur free sigma-delta modulator analog-to-digital converter for converting an analog input signal to a digital output signal, said converter comprising:

a. integrating inductor means connected to said analog input signal;

b. pulse generator means connected to said integrating inductor means, said pulse generator means creating a sampling pulse;

c. quantizer means connected to said integrating inductor means, said quantizer means including a comparator Josephson junction which measures the current in said integrating inductor means and said sampling pulse and produces an output pulse when the current in said integrating inductor means and said sampling pulse exceeds a predetermined level; and

d. a race Josephson junction provided between said pulse generator means and said integrating inductor means, said race Josephson junction emitting a voltage pulse in response to every sampling pulse, said voltage pulse killing any retained persistent current in said pulse generator means.

5,327,131

PARALLEL A/D CONVERTER HAVING COMPARATOR THRESHOLD VOLTAGES DEFINED BY MOS TRANSISTOR GEOMETRIES

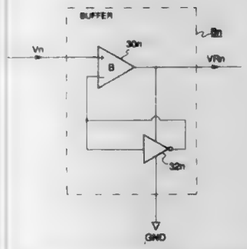
Masayuki Ueno, Ichikawa; Hiroshi Ogasawara, Chiba, and Hideo Sako, Tokyo, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Nov. 4, 1992, Ser. No. 971,509

Claims priority, application Japan, Nov. 7, 1991, 3-291263

Int. Cl.[5] H03M *1/36*

U.S. Cl. 341—136 **15 Claims**



1. An analog to digital converter for converting an analog input value into a digital output value, the converter comprising:

at least one switching comparator including a switching active element, a comparator output of the at least one switching comparator based on a comparator input of the at least one switching comparator and a predetermined logic threshold voltage, the predetermined logic threshold voltage set to a value within a range of the analog input value by adjusting a circuit parameter of said switching active element, the analog input value input to the at least one switching comparator; and

determining means for determining the digital output value based on the comparator output of the at least one switching comparator, wherein the predetermined logic threshold voltage of said at least one switching comparator is set based on a combination of a gain, an on or off resistance, a threshold voltage and a supplied voltage of said switching active element.

5,327,132

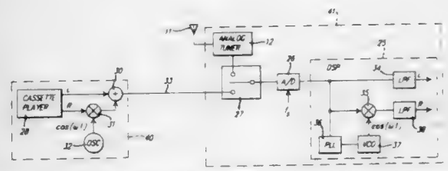
COMPOSITE SIGNAL GENERATION AND DECODING IN DIGITAL SIGNAL PROCESSING AUTOMOTIVE AUDIO SYSTEM

John E. Whitecar, Plymouth; Gregory R. Hamel, Livonia, and Sylvester P. Porambo, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 23, 1992, Ser. No. 980,070

Int. Cl.[5] H03M *1/12*

U.S. Cl. 341—141 **5 Claims**



1. A digital signal processing automotive audio/ system having an analog audio source, comprising:

a stereo signal source providing a first analog audio signal and a second analog audio signal;

mixing means coupled to said stereo signal source for mixing said second audio signal with an analog mixing signal having a predetermined frequency to generate a frequency-shifted audio signal;

summing means coupled to said stereo signal source and said mixing means for summing said first audio signal and said frequency-shifted audio signal to generate a composite analog signal;

an analog-to-digital converter coupled to said summing means and receiving said composite analog signal for generating a composite digital signal; and

digital decoding means coupled to said analog-to-digital converter for recovering a first digital audio signal and a second digital audio signal.

5,327,133

DIGITAL INTEGRATOR WITH REDUCED CIRCUIT AREA AND ANALOG-TO-DIGITAL CONVERTER USING SAME

Richard L. Greene, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 16, 1993, Ser. No. 19,379

Int. Cl.[5] H03M *1/50*

U.S. Cl. 341—143 **23 Claims**

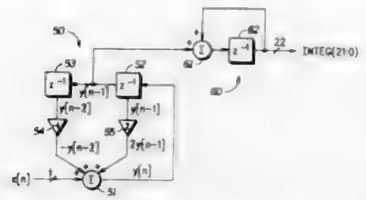
1. A digital integrator with reduced circuit area, comprising:

adder means for receiving a digital input signal to be integrated once for each cycle of a clock at a first input, and for providing an output thereof in response to an addition

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of said digital input signal to second and third inputs thereof;

first delay means coupled to said adder means, for delaying said output of said adder means for one cycle of said clock to provide a first delayed signal, and for multiplying said first delayed signal by two to provide said third input of said adder means; and



second delay means coupled to said first delay means and to said adder means, for delaying said first delayed signal for one cycle of said clock to provide a second delayed signal, and for multiplying said second delayed signal by negative one to provide said second input of said adder means.

5,327,134

D-A CONVERTER

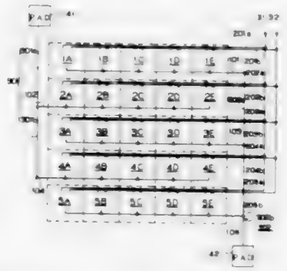
Yasuyuki Nakamura, and Toshio Kumamoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,116

Claims priority, application Japan, Oct. 7, 1991, 3-259081; Jun. 12, 1992, 4-153182

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—144 **45 Claims**



1. A D-A converter comprising:

(a) a plurality of complementary output cells being arranged in the form of a matrix, each said complementary output cell having:

(a-1) a changeover switch having a common terminal and first and second terminals, and

(a-2) a unit current source having a first end being connected to said common terminal and a second end;

(b) a plurality of first analog lines connecting prescribed ones of said second ends of said unit current sources in common;

(c) a pair of second analog lines connecting prescribed ones of said first analog lines to fixed potentials in common;

(d) first and second output current terminals being connected to all said first and second terminals of said changeover switches respectively; and

(e) a decoder receiving a digital signal and generating a control signal for controlling switching of said changeover switches on the basis of said digital signal and successively working said complementary output cells one by one with increase of a value indicated by said digital signal,

(b-1) each said first analog lines connecting all said second ends of said unit current sources of said complementary output cells being row-directionally arranged in each row,

(b-2) adjacent ones of said first analog lines being connected to different ones of said second analog lines,

(c-1) said pair of second analog lines extending on the opposite side of said complementary output cells in different directions being substantially parallel to the column direction.

5,327,135

SERIES-PARALLEL A-D CONVERTER

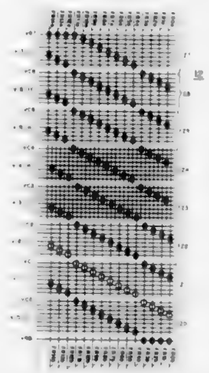
Shiro Hosotani, and Takahiro Miki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1993, Ser. No. 12,406

Claims priority, application Japan, Apr. 17, 1992, 4-097563

Int. Cl.[5] H03M *1/14*

U.S. Cl. 341—156 **27 Claims**



1. A series-parallel A-D converter comprising

an input terminal receiving a sample signal to be A-D converted,

a high potential point,

a low potential point,

a plurality of resistor groups connected in series between said high potential point and said low potential point for dividing a potential difference between said high potential point and said low potential point to provide a plurality of first reference potentials including potentials at said high and low potential points and put in a first descending order,

said first reference potentials paired adjacent to each other in said first order defining upper and lower limits of a plurality of voltage zones corresponding to said resistor groups,

each of said resistor groups including a plurality of resistors connected in series for dividing a potential difference between the upper and lower limits of said corresponding voltage zone to provide a plurality of second reference potentials including said first reference potentials and put in a second descending order,

said second reference potentials forming a reference potential band for each of said voltage zones corresponding thereto,

a plurality of bus line groups each having a plurality of analog bus lines arranged in a third order,

a plurality of potential line bands provided in one-to-one corresponding relation to said reference potential bands and each including a plurality of reference potential lines, said second reference potential in the corresponding reference potential band being applied respectively to said reference potential lines in said second order,

first A-D conversion means for comparing said sample signal with said first reference potentials to provide a first conversion result specifying as a corresponding zone one specific voltage zone having said upper and lower limits between which said sample signal falls,

a plurality of switch groups provided in corresponding relation to said voltage zones, and

second A-D conversion means for comparing said sample signal with said second reference potentials to provide a second conversion result specifying level relation between said sample signal and said second reference potentials,

each of said reference potential bands including a high potential group having said second reference potentials of relatively high levels and a low potential group having said second reference potentials of relatively low levels,

each of said potential line bands including a high potential line group and a low potential line group, said high potential group being applied to said high potential line group, said low potential group being applied to said low potential line group,

each of said switch groups including a plurality of switches disposed on said reference potential lines and said analog bus lines for connecting said reference potential lines in the corresponding potential line band to said analog bus lines with said second and third orders associated with each other,

said switches only in one of said switch groups corresponding to said specific voltage zone specified by said first A-D conversion means as said corresponding zone being permitted to conduct,

said switches disposed on each of said analog bus lines being smaller in number than said reference potential bands.

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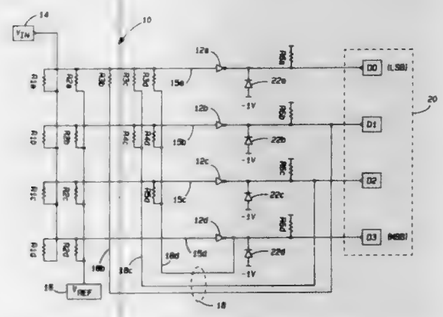
ASYNCHRONOUS SUCCESSIVE APPROXIMATION ANALOG-TO-DIGITAL CONVERTER

Mark E. Noneman, Ramona, and Clark R. Westmont, Emeryville, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 19, 1992, Ser. No. 932,434

Int. Cl.[5] H03M *1/36*

U.S. Cl. 341—159 **16 Claims**



1. An analog-to-digital converter comprising:

input means for receiving a sampled analog input signal;

output means for supplying a binary coded output signal having a plurality of bits of binary significance; and

a plurality of inverting amplifiers connected to said input means, each of said amplifiers having an input for receiving a scaled analog input signal and an output for providing one bit of the binary coded output signal, wherein each of said scaled analog input signals includes a combination of said sampled analog input signal and a feedback output signal from each of the amplifier outputs which provides a more significant bit of the binary output signal, and each of said feedback output signals are tapped from the output of an associated amplifier and scaled in proportion to the binary significance associated with said associated amplifier.

5,327,137

MULTIPLE RAMP PROCEDURE WITH HIGHER ORDER NOISE SHAPING

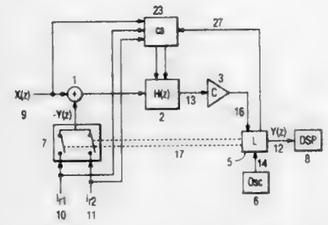
Joachim Scheerer, Am Fort Weisenau 38, D-6500 Mainz 1, and Hartmut Grützediek, An der Klosterheck 16, D-6500 Mainz 43, both of Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 45,576

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1992, 4212546

Int. Cl.[5] H03M *1/50*

U.S. Cl. 341—168 **14 Claims**



1. An analog to digital converter according to a multiple-ramp procedure for performing continuous integration of an input signal (9) applied thereto, comprising

a summation circuit (1) having a first input connected to said input signal (9);

a charge storage circuit (2) having an input connected to an output of said summation circuit (1),

a comparator circuit (3), with a switching threshold, having an input connected to an output (13) of the charge storage circuit (2), and generating a comparator output signal (16);

a logic circuit (5) evaluating said comparator output signal,

at least two analog switching control lines (17) connected to respective outputs of said logic circuit (5);

a clock oscillator (6) applying a clock signal (14) to an input of said logic circuit (5); and

a switching circuit (7) applying, as an input signal to said charge storage circuit (2), at least one of a first reference signal (r1) and a second reference signal (r2), as determined by control inputs connected via said analog switching control lines (17) to said respective outputs of said logic circuit (5),

wherein said comparator circuit (3) responds to an input signal (13) which crosses its switching threshold by producing a comparator output signal which triggers cessation of application of a currently applied one of said reference signals (r1,r2) and, at a predefined time with respect thereto, resumption of application of a different one of said reference signals (r1,r2), said triggering occurring in said logic circuit (5) at periodically recurrent time intervals at an edge of said clock oscillator output signal (14);

said logic circuit (5) generates an output signal (12), corresponding values of said summation circuit input signal (9) and said logic circuit output signal (12) collectively defining a transfer function H(z) of said analog-to-digital converter;

wherein, whenever at least one of said first and second reference signals (r1,r2) is zero, said transfer function H(z) has an Nth order, N≧1, low-pass filter characteristic; 'those instants when one of said reference signals is applied to said summation circuit (2) are defined as a "switched-on state" and said reference signal, and the duration of the switched-on state of the reference signal in a settled-down state and neglecting quantization noise, is a linear function of the input signal (9), and wherein a quantization noise transfer function

$$H_q(z) = 1/(1+H(z))$$

has a high-pass filter characteristic, thereby achieving greatest possible suppression of quantization noise in the

frequency range of the input signal (9) being converted in said analog-to-digital converter.

5,327,138

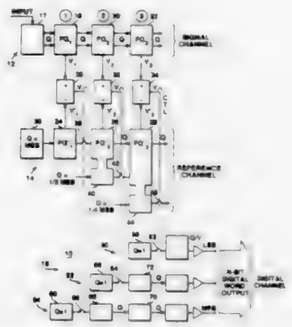
CHARGE-MODE ANALOG TO DIGITAL CONVERTER

Thomas E. Linnenbrink, Monument, Colo.; Mark Wadsworth, Richardson, Tex., and Stephen D. Gaalema, Colorado Springs, Colo., assignors to Q-Dot, Inc., Colorado Springs, Colo.

Continuation of Ser. No. 784,277, Oct. 29, 1991, Pat. No. 5,189,423, which is a continuation-in-part of Ser. No. 560,949, Jul. 31, 1990, Pat. No. 5,061,927. This application Feb. 23, 1993, Ser. No. 21,953

Int. Cl.[5] H03M *1/38;* **H01L** *29/78*

U.S. Cl. 341—172 **8 Claims**



1. A charge-mode analog to digital converter comprising:
a signal charge input adapted for input of a signal charge;
a charge channel coupled to the signal charge input having a plurality of serially coupled charge wells;
a reference channel having a plurality of serially coupled charge wells;
charge injection means for selectively injecting predetermined charges including a reference charge into the reference channel;
comparator means coupled to the charge channel and the reference channel for sensing the signal charge and the reference charge, and for comparing the signal charge to the reference charge to generate control signals, responsive thereto; and
a digital channel for generating a digital word responsive to the control signals wherein the digital word further includes digital bits such that each digital bit corresponds to an analog to digital conversion stage.

5,327,139

ID MICROWAVE HOLOGRAPHIC SENSOR

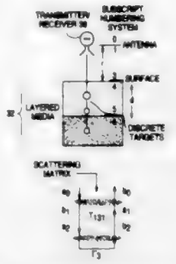
Walter J. Johnson, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 11, 1992, Ser. No. 944,163

Int. Cl.[5] G01S *13/04*

U.S. Cl. 342—22 **11 Claims**

1. A method for characterizing a target within a medium, comprising the steps of:
a) radiating an unmodulated electro-magnetic wave from an electro-magnetic wave source towards said medium;
b) changing the frequency of said electro-magnetic wave over a plurality of successive frequencies;
c) measuring electro-magnetic waves reflected from said medium at said plurality of successive frequencies for a single perpendicular distance form said medium to said electro-magnetic wave source to produce measured signals, respectively;
d) processing said measured signals to obtain a reflection coefficient dependent on both frequency of said electro-magnetic wave and said perpendicular distance;
e) repeating steps c) and d) to produce a plurality of reflection coefficients for a predetermined number of perpendicular distances;
f) averaging all said reflection coefficients over said predetermined number; and



g) integrating said averaged reflection coefficients over space, resulting in a true reflection coefficient which is only a function of frequency.

5,327,140

METHOD AND APPARATUS FOR MOTION COMPENSATION OF SAR IMAGES BY MEANS OF AN ATTITUDE AND HEADING REFERENCE SYSTEM

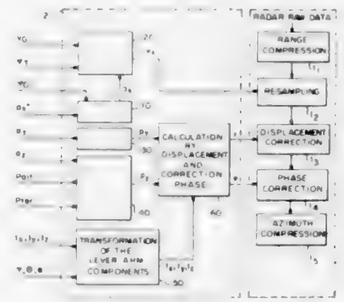
Stefan Buckreuß, Müchen, Fed. Rep. of Germany, assignor to Deutsche Forschungsanstalt für Luft- und Raumfahrt e.V., Köln, Fed. Rep. of Germany

Filed Jul. 29, 1993, Ser. No. 98,926

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1992, 4225413

Int. Cl.[5] G01S *13/90*

U.S. Cl. 342—25 **4 Claims**



1. A method for motion compensation of SAR images by means of an attitude and heading reference system, wherein
as desired flight direction a mean track angle (ψ_T) arising during a measurement flight is selected;
an acceleration ($a_x''(t)$) is turned through a drift angle (ψ_D) in the direction of a desired flight path, thereby giving an acceleration ($a_x'(t)$);
the speed ($v_{xo}'(t)$) in the desired flight direction is calculated form a ground speed ($v_G(t)$) in that the ground speed ($v_G(t)$ is projected on the desired flight direction on deviation from the latter;
a variation of the relative speed ($v_x'(t)$) in the desired flight direction is calculated by an integration of the acceleration in the desired flight direction ($a_x'(t)$) and before and after the integration the constant component of the signal and thus then the absolute forward speed ($v_x(t)$) is calculated by addition of a constant mean forward speed ($v_{xo}(t)$) to the speed ($v_x'(t)$) in the desired direction;
a relative change of the across heading horizontal position ($p_y(t)$) is calculated by a double integration of the across heading horizontal acceleration ($a_y'(t)$), and before and after each integration the constant component of the signal is substracted;
a relative change of a vertical position ($p_z'(t)$) is calculated by a double integration of the vertical acceleration ($a_z(t)$), and before and after each integration of the constant component of the signal is subtracted and the absolute vertical position ($p_z(t)$) is calculated by addition of a mean altitude over ground to the vertical position ($p_z'(t)$), and an actual slant range of the aircraft from an illuminated terrain strip ($R_i'(t)$) is calculated for each range gate in a manner known per se.

5,327,141

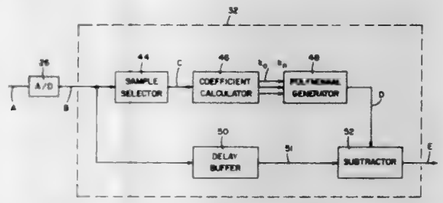
CLUTTER REMOVAL BY POLYNOMIAL COMPENSATION

Edward J. Sheldon, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 6, 1986, Ser. No. 927,612

Int. Cl.[5] G01S *13/534*

U.S. Cl. 342—159 **10 Claims**



1. A radar receiver wherein reflections from undesired clutter and desired moving targets are returned as a received signal, and wherein the received signal is fed to signal sampling means for providing a plurality, M, of received signal samples during a time interval, comprising:
(a) first means for selecting a subset of N samples, where N is less than M, of the M echo signal samples;
(b) second means, connected to receive the subset of N samples, for generating a set of coefficients of a polynomial to fit the N samples;
(c) third means, connected to receive the set of polynomial coefficients, for generating M polynomial samples; and
(d) subtraction means, connected to receive the M received signal samples and the M polynomial samples, for generating a compensated signal representing the received signal with reflections from the undesired clutter removed.

5,327,142

FREQUENCY ENCODING CIRCUIT IN BRAGG CELL RECEIVER

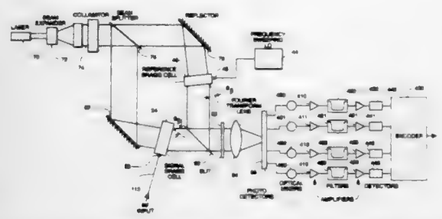
James B. Y. Tsui, Dayton, and Joseph Caschera, Beavercreek, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 1, 1992, Ser. No. 955,207

Int. Cl.[5] G01S *7/285;* **G01R** *23/17*

U.S. Cl. 342—192 **2 Claims**

2. A frequency measuring receiver which includes an encoder having N encoder outputs for determining frequency, wherein the receiver also includes N+4 filters for dividing a frequency band into N+4 contiguous channels comprising N principal channels, two guard channels at a first end of the band and two guard channels at a second end of the band, each of the N+4 filters having an output coupled via a detector to the encoder, so that signals from the detectors are supplied to the encoder;
wherein said encoder comprises comparison means for comparing amplitudes of the signals from said detectors, with signals from detectors for each principal channel being compared to signals from two detectors on either side, so that signals from five detectors for five adjacent channels are compared for each principal channel, threshold means for comparing the signals from the detectors for each principal channel to provide a threshold exceeded signal for each principal channel in which the output from the



detector is greater than a preselected threshold value, so that for any principal channel for which there is a threshold exceeded signal and the signal from the detector for that channel is greater than that of the two adjacent channels on either side an encoder output is produced indicating that a signal has a frequency within that channel.

5,327,143

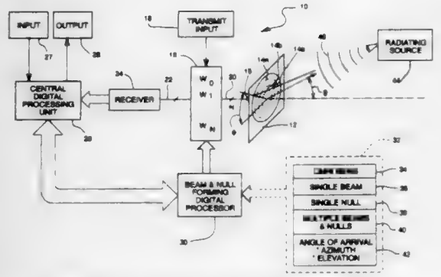
MULTIPLE ARM SPIRAL ANTENNA SYSTEM WITH MULTIPLE BEAMFORMING CAPABILITY

Allan C. Goetz, La Jolla, and Timothy L. Boolos, Escondido, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 22, 1992, Ser. No. 902,334

Int. Cl.[5] G01S *3/16, 3/28*

U.S. Cl. 342—382 **16 Claims**



1. A multifunction antenna system comprising:
antenna beamforming means having an array of N elements for transmitting and receiving radiating signals, said beamforming means further having N analytic signals associated with said N elements;
processing means for selecting a set of N vector weight coefficients which are representative of a predetermined beam pattern; and
multiplier means for multiplying said N vector weight coefficients by an input transmit signal to produce said N analytic voltage signals when transmitting signals within a selected beam pattern, said multiplier means applying said N vector weight coefficients by said N analytic signals to provide N weighted receive signals which enable processing of data received from a selected beam pattern when receiving signals.

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5,327,144
CELLULAR TELEPHONE LOCATION SYSTEM
Louise A. Stilp, Broomall, Pa.; Curtis A. Knight, Washington, D.C., and John C. Webber, Herndon, Va., assignors to Associated RT, Inc., Pittsburgh, Pa.
Filed May 7, 1993, Ser. No. 59,248
Int. Cl.[5] G01S *1/24, 3/02*; H04M *11/00*
U.S. Cl. 342—387 45 Claims

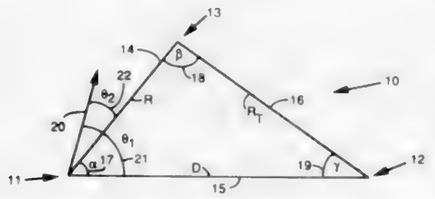


1. A cellular telephone location system for determining the locations of multiple mobile cellular telephones each initiating periodic signal transmission over one of a prescribed set of reverse control channels, comprising:

(a) at least three cell site systems, each cell site system comprising: an elevated ground-based antenna; a baseband convertor operatively coupled to said antenna for receiving cellular telephone signals transmitted over a reverse control channel by said cellular telephones and providing baseband signals derived from the cellular telephone signals; a timing signal receiver for receiving a timing signal common to all cell sites; and a sampling subsystem operatively coupled to said timing signal receiver and said baseband convertor for sampling said baseband signal at a prescribed sampling frequency and formatting the sample signal into frames of digital data, each frame comprising a prescribed number of data bits and time stamp bits, said time stamp bits representing the time at which said cellular telephone signals were received; and

(b) a central site system operatively coupled to said cell site systems, comprising: means for processing said frames of data from said cell site systems to generate a table identifying individual cellular telephone signals and the differences in times of arrival of said cellular telephone signals among said cell site systems; and means for determining, on the basis of said times of arrival differences, the locations of the cellular telephones responsible for said cellular telephone signals.

5,327,145
TIME DELAY PASSIVE RANGING TECHNIQUE
Carl O. Jelinek, Tustin, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed May 22, 1990, Ser. No. 526,924
Int. Cl.[5] G01S *3/04, 5/10*
U.S. Cl. 342—453 19 Claims



1. A method of passive ranging and geolocation based on signal emanations from an emitter and from an object, said method comprising the steps of:

measuring a first time of arrival difference (τ_1) of an active ranging and interrogation signal from an emitter and the passive return of a reflected signal from an object illuminated and interrogated by the emitter;

measuring a second time of arrival difference (τ_2) of an active answering signal from the object that is responsive to the emitter interrogation and a passive return of the answering signal that is reflected from the emitter;

measuring the respective bearings (θ_1, θ_2) of the arriving signals;

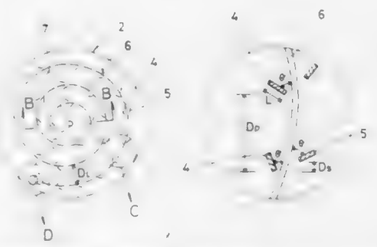
computing a platform angle (α) between the emitter and the object in accordance with a first predefined relationship;

computing a relative range (R_T) between the emitter and the object in accordance with a second predefined relationship;

computing a first range (R) from the platform to the emitter in accordance with a third predefined relationship; and

computing a second range (D) from the platform to the object in accordance with a fourth predefined relationship.

5,327,146
PLANAR ARRAY WITH RADIATORS ADJACENT AND ABOVE A SPIRAL FEEDER
Joo Sung Jeon, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 23, 1992, Ser. No. 855,819
Claims priority, application Rep. of Korea, Mar. 27, 1991, 91-4789
Int. Cl.[5] H01Q *1/38, 21/24*
U.S. Cl. 343—700 MS 10 Claims



1. A dipole array antenna, comprising:

(a) a first foam dielectric layer deposited on a conducting substrate;

(b) a first thin film layer deposited on said first foam dielectric layer;

(c) a spirally shaped feeder element formed on said first thin film layer and having respective ends;

(d) a connector attached to one of said ends;

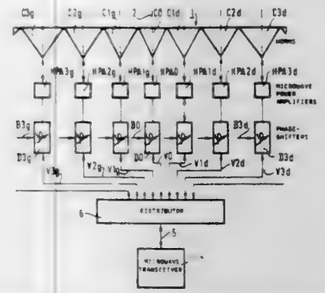
(e) a second foam dielectric layer deposited on said feeder element so as to prevent the energy loss of said feeder element; and

(f) a second thin film layer deposited on said second foam layer and including a plurality of dipoles formed thereon.

5,327,147
MICROWAVE ARRAY ANTENNA HAVING SOURCES OF DIFFERENT WIDTHS
Gérard Caille, Tournefeuille, and Frédéric Magnin, Toulouse, both of France, assignors to Alcatel Espace, Courbevoie, France
Filed Jul. 24, 1992, Ser. No. 918,034
Claims priority, application France, Jul. 26, 1991, 91 09506
Int. Cl.[5] H01Q *1/38, 13/02*
U.S. Cl. 343—700 MS 17 Claims

1. A microwave array antenna comprising a plurality of

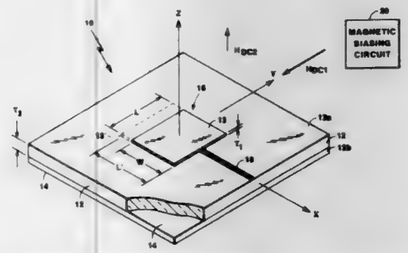
radiating sources whose widths measured in a direction from a center of the array towards its ends increase progressively from the center of the array towards its ends while the heights of said sources in a direction perpendicular to said widths



remain constant from the center of the array towards its ends, said radiating sources being disposed relative to each other in such a way that substantially no gaps are created in an illumination pattern of the array

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5,327,148
FERRITE MICROSTRIP ANTENNA
Hoton How, Malden, and Carmine Vittoria, Boston, both of Mass., assignors to Northeastern University, Boston, Mass.
Filed Feb. 17, 1993, Ser. No. 18,942
Int. Cl.[5] H01Q *1/38, 1/00*
U.S. Cl. 343—700 MS 21 Claims



1. A microstrip antenna comprising:

a ferrite loaded substrate having first and second opposing surfaces;

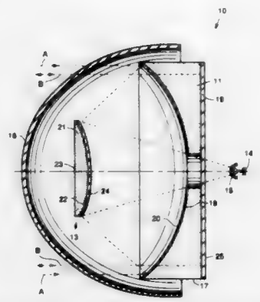
a ground plane conductor disposed over the first surface of said substrate;

a strip conductor having a rectangular shape disposed over the second surface of said substrate;

an RF feed circuit disposed on a first one of the first and second surfaces of said substrate and coupled to said first strip conductor; and

a DC magnetic field biasing circuit for providing a DC magnetic field to said ferrite substrate wherein the DC magnetic field is provided in a plane parallel to a plane in which the ferrite substrate is disposed and wherein the direction of the DC magnetic field is perpendicular to said RF feed circuit.

5,327,149
R.F. TRANSPARENT RF/UV-IR DETECTOR APPARATUS
Fernand B. Kuffer, Brea, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.
Filed May 18, 1992, Ser. No. 885,105
Int. Cl.[5] H01Q *21/280, 19/190, 15/140*; G01S *13/00*
U.S. Cl. 343—720 33 Claims



1. An apparatus for collecting and detecting radiant energy in optical and radio frequency regions of the electromagnetic spectrum comprising:

a. an optical telescope having an entrance aperture for collecting and focusing energy in an optical band of said electromagnetic spectrum onto a detector, said telescope being comprised of RF-transmissive elements including a primary mirror, at least one of said RF-transmissive elements having thereon on a conductive metal coating which is reflective to optical wavelengths and transmissive to radio frequency energy, and

b. a radio frequency antenna located rearward of said primary mirror, said radio frequency antenna being so constructed as to permit transmission and reception of radio frequency energy through all of said entrance aperture of said optical telescope.

5,327,150
PHASED ARRAY ANTENNA FOR EFFICIENT RADIATION OF MICROWAVE AND THERMAL ENERGY
Alan R. Cherrette, Hawthorne, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Mar. 3, 1993, Ser. No. 25,477
Int. Cl.[5] H01Q *13/10*
U.S. Cl. 343—771 7 Claims

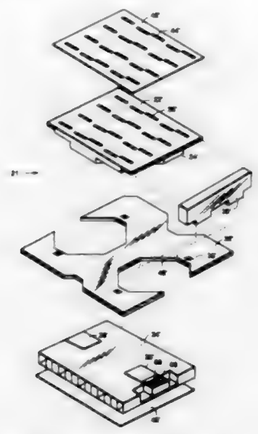
1. An active phased array antenna for radiating both microwave and thermal energy comprising a plurality of subarray elements, each subarray element comprising;

heat generating means including electronic circuit means comprising a plurality of electronic components including an RF amplifying means for amplifying radio frequency energy, housing means formed of heat conducting material, means mounting said circuit means in heat conducting relationship with said housing means, RF probe means connected with said electronic circuit means, said housing means including an opening for receiving said RF probe means,

an upper panel assembly of heat conducting material including a feed waveguide and a plurality of radiating waveguides, said feed waveguide adapted to receive energy generated from said RF amplifying means and including a plurality of coupling slots for coupling said RF energy to respective ones of said plurality of radiating waveguides, each of said radiating waveguide including a plurality of radiating slots therein for radiating RF energy, a first mirror bonded to an outside surface of said upper panel

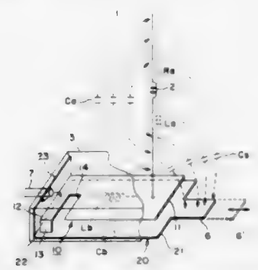
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assembly and having slots etched therein which are aligned with said radiating slots;
a lower panel assembly of heat conducting material, a second mirror bonded to an outside surface of said lower panel assembly, means joining at least some portion of said



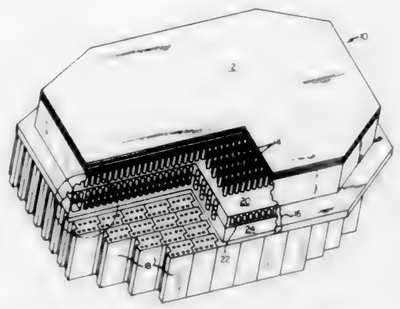
upper and lower assemblies in heat conducting contact with each other and with said housing means to form a composite assembly,
a circuit board positioned between said upper and lower panel assemblies for distributing power and control signals to said electronic circuit means.

5,327,151
BROAD-BAND NON-GROUNDED TYPE ULTRASHORT-WAVE ANTENNA
Yoshimi Egashira, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 26, 1992, Ser. No. 905,266
Claims priority, application Japan, Jun. 27, 1991, 3-156855
Int. Cl.[5] H01Q *1/50, 9/32*
U.S. Cl. 343—830 **2 Claims**



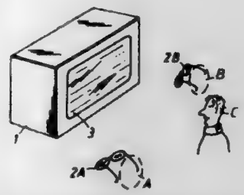
1. A broad-band non-grounded type ultrashort-wave antenna comprising:
a rod-form antenna element which has an electrical length substantially equal to N-lambda/2 in which lambda is the wavelength of electromagnetic waves in a frequency band used and N is an integer equal to or greater than 1;
a first elongated metal member, said first elongated metal member being connected to a base end of said antenna element at another end thereof;
a second elongated metal member installed parallel to said first metal member with a predetermined space in between, a base section of said second elongated metal member being connected to a base section of said first metal member, said second metal member having an electrical length equal to lambda/4;
a coaxial cable having a central conductor thereof connected to said first metal member at substantially said connection between said first and second metal members;
and elongated electrostatic coupling piece projecting from another end of said second metal member so that a stray capacity is created between said electrostatic coupling piece and said antenna element, said electrostatic coupling piece being narrower than either said first or second metal members; and
a means for varying a surface area of said electrostatic coupling piece; and wherein
an antenna element parallel resonance part formed by an inductance and a distributed capacitance of said antenna element, and a metal member parallel resonance part formed by an inductance of said first metal member and an electrostatic capacitance between said first and second metal members, are electrostatically coupled via said stray capacity which is present between said electrostatic coupling piece and said antenna element, thus forming a double tuned circuit.

5,327,152
SUPPORT APPARATUS FOR AN ACTIVE APERTURE RADAR ANTENNA
Bradford E. Kruger, Woodland Hills, and Walter J. Noble, Valencia, both of Calif., assignors to ITT Corporation, New York, N.Y.
Filed Oct. 25, 1991, Ser. No. 782,498
Int. Cl.[5] H01Q *21/00*
U.S. Cl. 343—853 **43 Claims**



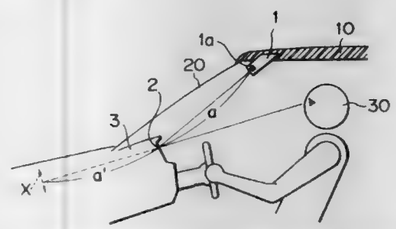
1. An active aperture radar antenna, comprising:
a plurality of T/R modules for producing and processing microwave signals;
a plurality of radiating elements, electrically coupled to said modules, for transmitting said microwave signals toward a target object and receiving signals reflected from said target object; and
support means for supporting said modules and said radiating elements in predetermined relative positions, said support means defining an interior flow passage between said modules and radiating elements and a surface exterior to said flow passage for supporting said modules, wherein said support means surface is actively cooled by the flow of coolant through said flow passage, thereby providing an actively cooled heat sink to said modules.

5,327,153
DISPLAY ARRANGEMENT
Hans Biverot, Vällingby, Sweden, assignor to Nobeltech Electronics AB, Jarfalla, Sweden
Filed Jun. 12, 1992, Ser. No. 897,471
Claims priority, application Sweden, Jun. 12, 1991, 9101778-0
Int. Cl.[5] H04M *3/10*
U.S. Cl. 345—5 **12 Claims**



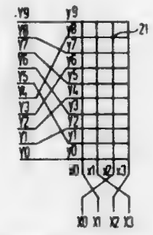
1. Display arrangement for displaying an image for a viewer on the basis of at least two variables for each picture element such as a picture element position and picture element information, the display arrangement including:
a first and a separate second display element arranged at a distance from one another in the optical viewing range of the viewer and means for mutual synchronization therebetween;
each display element of the display arrangement reproducing at least one variable;
the first and second display elements being arranged along a line creating a viewing direction for the viewer, which essentially coincides with the direction from the viewer to the first display element and the second display element being arranged in the immediate vicinity of the viewer and being carried by the viewer to follow the movements of the viewer whereby viewing is invariant in space.

5,327,154
INDICATION DISPLAY UNIT FOR VEHICLES
Kunimitsu Aoki, Susono, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Continuation of Ser. No. 262,376, Oct. 25, 1988, abandoned.
This application Jul. 3, 1991, Ser. No. 724,454
Claims priority, application Japan, Oct. 26, 1987, 62-268140
The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—7 **6 Claims**



1. An indication display unit for vehicles enabling a driver to sight at least one of a first indicting image and a second indicating image, comprising:
an image projection means for projecting said first indicating image, said image projection means including a display device; and
a reflecting means, having a front side facing a driver seat and a back side, located in front of the driver seat for receiving and reflecting said first indicating image being projected by said image projection means from said front side of said reflecting means, said reflecting means being made of a liquid crystal display which is transparent when in an off state to thereby permit said driver to sight said second indicating image located in said back side of said reflecting means.

5,327,155
DEVICE FOR DISPLAYING A PARAMETER VALUE
Sven-Gunnar Olsson, Arloev; Mats Iderup, Lund; Goeran Rydgren, Bunkeflostrand, and Goeran Cewers, Lund, all of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 5, 1992, Ser. No. 956,288
Claims priority, application Sweden, Oct. 4, 1991, 9102883-7
Int. Cl.[5] G09G *3/14*
U.S. Cl. 345—39 **16 Claims**



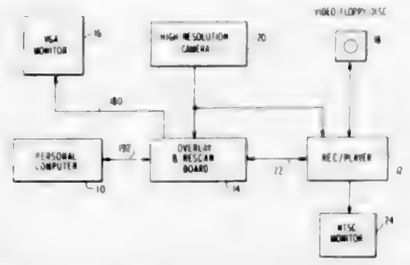
1. A device for displaying a parameter value comprising:
a row of light-emitting diodes, each light-emitting diode having a position input;
control means, having a plurality of address outputs respectively uniquely allocated to the light-emitting diodes in said row, for illuminating selected ones of said light-emitting diodes, to display a parameter value supplied to said control means, by supplying an electrical signal to the address outputs respectively allocated to said selected light-emitting diodes; and
hard-wired interconnection means, electrically connecting said address outputs and said position inputs with no two adjacent address outputs being respectively physically connected to two position inputs for light-emitting diodes which are adjacent in said row, for causing an immediately perceptible distortion in the display of said parameter value in the presence of a faulty illumination of one of said light-emitting diodes for permitting immediate identification of a fault in the display of said parameter value.

5,327,156
APPARATUS FOR PROCESSING SIGNALS REPRESENTATIVE OF A COMPUTER GRAPHICS IMAGE AND A REAL IMAGE INCLUDING STORING PROCESSED SIGNALS BACK INTO INTERNAL MEMORY
Kazuyuki Masukane, Garden City, N.Y., and Kenneth E. Bartsch, Lititz, Pa., assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 611,201, Nov. 9, 1990, abandoned. This application Jan. 8, 1993, Ser. No. 3,828
Int. Cl.[5] G09G *1/16*; H04N *5/272*
U.S. Cl. 345—113 **21 Claims**

1. An image data processing apparatus comprising:
randomly accessible first storing means consisting of a single memory unit for rewritably storing image data representative of one image frame;
first inputting means connected to a bus of a digital data processing system for inputting a first type of image data to said first storing means, said first type of image data being computer graphics data formatted to be non-interlaced and compatible with said data processing system;

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first control means for controlling write-in and read-out of image data with respect to said first storing means;
second inputting means for inputting a second type of image data representative of a real image in a raster scanning, interlaced fashion to said first control means;
first outputting means connected to said first control means for outputting image data of said first type;
second outputting means connected to said first control means for outputting image data of said second type;
first feedback means for feeding the first type of image data output from said first outputting means to said first storing means; and
second feedback means for feeding the second type of image data output from said second outputting means to said first storing means; wherein



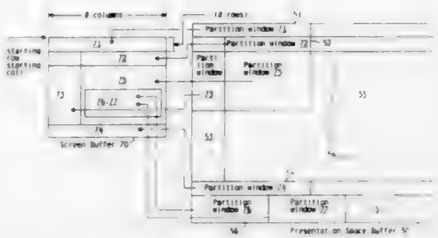
said first control means includes selective storing means for selectively storing either of image data input to said apparatus by said first or said second inputting means and image data appearing at said first or said second outputting means selectively through said first or second inputting means or said first or second feedback means into said first storing means based on commands from said processing system; and
said first control means also includes selective reading means for selectively reading out image data stored in said first storing means as either of image data of said first and said second type based on commands from said processing system, and feeding said first and said second type of image data to said first and said second outputting means, respectively.

5,327,157
DISPLAY WITH ENHANCED SCROLLING CAPABILITIES

Alex A. Akiyama, Tokyo, Japan; Leah J. H. Busboom, Oronoco, and William J. Maitland, Jr., Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 665,197, Mar. 1, 1991, Pat. No. 5,237,312, which is a division of Ser. No. 339,346, Apr. 17, 1989, Pat. No. 5,038,138. This application Dec. 18, 1992, Ser. No. 993,164
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—119 **10 Claims**

1. A computer display having a display screen and a cursor, comprising:
a display processor;
a screen buffer, connected to said display processor;
a presentation space buffer, connected to said display processor, said presentation space buffer being larger than said screen buffer;
means for defining a first partition, a second partition, and a third partition in said presentation space buffer;
first mapping means for mapping a first partition window from said first partition to said screen buffer;
first activating means for activating said first partition;
first writing means for writing said first partition window to said screen buffer responsive to said first activating means;
second mapping means for mapping a second partition window from said second partition to said screen buffer;
second activating means for activating said second partition;
second writing means for writing said second partition window to said screen buffer responsive to said second activating means;

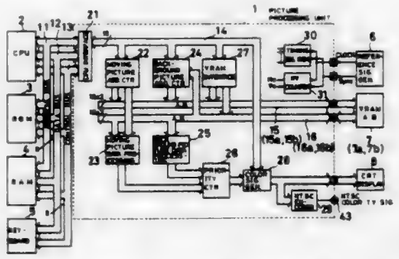


third mapping means for mapping a third partition window from said third partition to said screen buffer; and
means for displaying said screen buffer on said display screen, wherein partition windows that have been mapped and activated are displayed, and wherein partition windows that have been mapped but not activated are not displayed.

5,327,158
VIDEO PROCESSING APPARATUS

Toyofumi Takahashi; Michitaka Miyoshi, both of Tokyo; Masahiro Otake, and Satoshi Nishiumi, both of Kyoto, all of Japan, assignors to Ricoh Co., Ltd., Tokyo and Nintendo Co., Ltd., Kyoto, both of Japan

PCT No. PCT/JP90/00958, § 371 Date Apr. 10, 1991, § 102(e) Date Apr. 10, 1991, PCT Pub. No. WO91/02345, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 26, 1990, Ser. No. 651,265
Claims priority, application Japan, Aug. 1, 1989, 1-200073
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—126 **27 Claims**



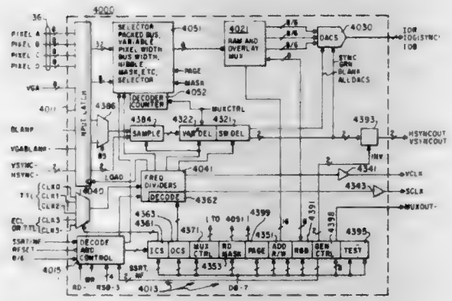
1. A video processing apparatus which displays a background picture, on display means having a display screen, composed of a plurality of pixels in a horizontal direction and a vertical direction, respectively, comprising:
position data generating means for generating first position data representative of a position in said horizontal direction and said vertical direction on said display screen;
parameter data applying means for applying parameter data for rotation of said background picture, said parameter data being sequentially changed within an angular range by which said background picture is to be rotated;
position data operation means for operating on second position data after performing said rotation on said display screen on the basis of said first position data and said parameter data;

first storage means for storing a plurality of character codes representative of a plurality of characters each composed of a plurality of pixels, said position operation means operating on said second position data for each of said plurality of pixels;
first reading means for generating a reading address for reading said character code from said first storage means on the basis of said second position data operated on by said position data operation means;
second storage means for storing color data of respective pixels constituting said character, said character having a plurality of pixels;
second reading means for reading said color data from said second storage means on the basis of the character code read by said first reading means and said second position data; and
video signal generating means for generating a video signal on the basis of the color data read by said second reading means.

5,327,159
PACKED BUS SELECTION OF MULTIPLE PIXEL DEPTHS IN PALETTE DEVICES, SYSTEMS AND METHODS

Jerry R. Van Aken; Carrell R. Killebrew, Jr., both of Sugar Land; Jeffrey L. Nye, Houston, and Karl M. Guttag, Missouri City, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 544,775, Jun. 27, 1990, abandoned. This application Sep. 3, 1993, Ser. No. 116,301
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—153 **20 Claims**

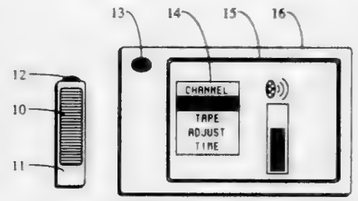


1. A palette device controllable by a digital computer with a video memory having a bus for supplying multiple color codes for the palette device in each bus cycle, said palette device comprising:
a multiple-bit input for simultaneous entry of said multiple color codes from the bus;
an input-latch connected to said multiple-bit input for temporarily storing color codes received at said multiple-bit input;
a look-up table memory for supplying color data words in response to the color codes from said input latch; and
color code transfer circuitry including an externally loadable control register storing a number of bits per color code and a number of color codes per bus cycle, and a multiplexer connected to said control register and connected between said input latch and said look-up table memory, said multiplexer supplying said look-up table memory with a sequence of a predetermined block of bits of data stored in said input latch, said block of bits being equal in number to said number of bits per color code stored in said control register thereby transferring individual ones of said multiple color codes from said input latch, said sequence continuing for a number block of bits equal in number to said number of color codes per bus cycle store in said control register for each loading of said input latch from said multiple-bit input, whereby said multiple color codes pack the entire width of the bus.

5,327,160
TOUCH SENSITIVE USER INTERFACE FOR TELEVISION CONTROL

David J. Asher, P.O. Box 8748, Albany, N.Y. 12208

Continuation of Ser. No. 698,498, May 9, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 978,148
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—156 **2 Claims**



1. A touch sensitive user interface for control of a television, having touch fader input for selecting and setting a plurality of operational parameters of said television, comprising:
(a) a touch fader for sensing the presence and position of a fingertip upon said touch fader, having a touchpoint output representing said fingertip presence and position, said touchpoint output having a plurality of touchpoint position states for indicating the linear position of said fingertip along said touch fader, and having a touchpoint invalid state for indicating the release of said fingertip from said touch fader;
(b) a transmitter electrically connected to said touch fader, having means to encode said touchpoint output into a transmit touchpoint signal, and incorporating a transmit transducer for transmitting said transmit touchpoint signal across a communication channel;
(c) a receiver located remotely from said transmitter, incorporating a receive transducer for receiving said transmit touchpoint signal from said communication channel, and having means to decode said transmit touchpoint signal into a received touchpoint signal; and
(d) a data processor electrically connected to said receiver and to said television, having means to interpret said received touchpoint signal as a command for selecting one of said operational parameters, comprising the steps of: (i) displaying a set of operational parameters on said television; (ii) changing the appearance of said set of displayed operational parameters in relationship to said touchpoint position states to indicate one of said set of operational parameters to be selected; and (iii) selecting one of said set of displayed operational parameters when said touchpoint output enters said state of touchpoint invalid, and further having means to interpret said received touchpoint signal as a value for setting said selected operational parameter, comprising the steps of: (i) displaying a range of values for said selected operational parameter on said television; (ii) changing the appearance of said displayed range of values in relationship to said touchpoint position states to indicate the value of said selected operational parameter to be set; and (iii) setting the value of said selected operational parameter when said touchpoint output enters said state of touchpoint invalid.

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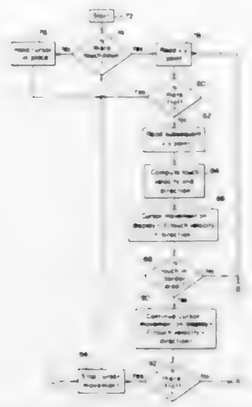
SYSTEM AND METHOD FOR EMULATING A MOUSE INPUT DEVICE WITH A TOUCHPAD INPUT DEVICE

James D. Logan, Windham, N.H., and Blair Evans, Idlewild, Mich., assignors to Microtouch Systems, Inc., Methuen, Mass.

Continuation of Ser. No. 391,482, Aug. 9, 1989, abandoned. This application Oct. 21, 1991, Ser. No. 780,446

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—157 **38 Claims**



1. A method of emulating a mouse input device with a touchpad input device, comprising:

designating a touch sensitive border area on the touchpad input device;

determining the direction of movement of a touch device across the surface of the touchpad input device;

causing a display cursor to move in the same relative direction as the determined direction;

sensing when the touch device stops moving in the determined direction in a touch sensitive area excluding the border area and in response stopping the display cursor movement to allow the cursor to be positioned where desired; and

sensing when the touch device stops moving in the determined direction after entering the border area and in response continuing the cursor movement in the relative direction to allow the cursor to be moved a greater distance than the touch device.

5,327,162

X-Y DIRECTION INPUT DEVICE

Masahiro Soma, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,518

Claims priority, application Japan, Mar. 17, 1992, 4-014205[U]; Mar. 17, 1992, 4-014206[U]; Mar. 17, 1992, 4-014207[U]; May 18, 1992, 4-124918

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—161 **12 Claims**

1. An x-y direction input device for controlling a cursor appearing on a display, said input device comprising:

a casing having a first surface;

an operating member having a lower surface and an upper surface, said lower surface being slidably disposed on the first surface, said operating member having a protrusion extending from the upper surface;

a first moving member having a first elongated body defining a first elongated opening, said first moving member being slidably connected to said casing wherein:

said protrusion extends through said first elongated opening, and

said first elongated body extends in a first direction and is restrained to slide in a second direction perpendicular to said first direction;

a second moving member having a second elongated body defining a second elongated opening, said second moving member being slidably connected to said casing wherein;

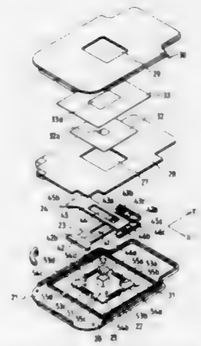
said protrusion extends through said second elongated opening,

said second elongated body extends in said second direction and is restrained to slide in said first direction, and

said first moving member is located between said second moving member and said operating member;

means for detecting a first movement of said first moving member in said second direction and for generating a first movement signal in response to said first movement;

means for detecting a second movement of said second moving member in said first direction and for generating a



second movement signal in response to said second movement;

a first end detector connected to said first moving member, said first end detector generating a first false pulse signal when said first moving member is disposed at an end of travel in said second direction;

a second end detector connected to said second moving member, said second end detector generating a second false pulse signal when said second moving member is disposed at an end of travel in said first direction; and

a frame fixedly connected to said casing and surrounding said first surface;

wherein said operating member includes a plurality of resilient members disposed to contact said frame when said operating member is in a position wherein one or more of said first end detector and said second end detector is generating said first or second false pulse signals; and

wherein said resilient members bias said operating member away from said frame.

5,327,163

DISPLAY INTEGRATED TYPE POSITION READING APPARATUS

Katsuhiko Hashimoto, Nara, and Koichi Oda, Sakai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 23, 1992, Ser. No. 979,888

Claims priority, application Japan, Nov. 28, 1991, 3-314887

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—173 **14 Claims**

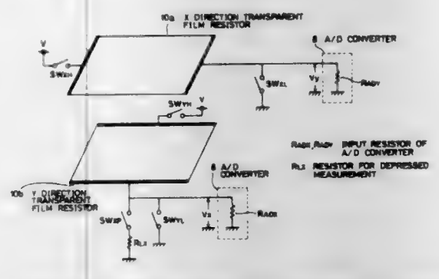
1. A display integrated type position reading apparatus comprising:

a display unit driven for display in accordance with a driving signal in synchronization with a predetermined clock signal;

a transparent conductive sheet member mounted on a display screen of said display unit;

depression detecting means for detecting that an arbitrary position on a main surface of said sheet member opposite to said display screen is depressed; and

position reading means, responsive to detection by said



depression detecting means, for reading out an electric signal indicative of the depressed position with a cycle in synchronization with said predetermined clock signal,

wherein said cycle is set so that position reading is carried out at a timing which avoids mixing of noise components, caused by a transition in the level of said driving signal, into said electric signal.

5,327,164

METHOD AND APPARATUS FOR PROVIDING A TOUCH SCREEN

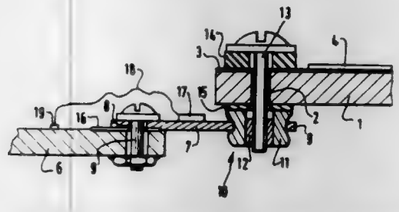
Pierre Fagard, Montigny le Bretonneux; Claude Nigen, Le Chesnay; Jean-Marc Coppin, Villeneuve Saint Georges, and Xavier Caugant, Versailles, all of France, assignors to Sextant Avionique, Meudon la Foret, France

Filed Mar. 12, 1993, Ser. No. 31,635

Claims priority, application France, Mar. 17, 1992, 92 03165

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—174 **13 Claims**



1. A tactile designation device for continuous capacitance detection comprising a glass plate covered with a metallic deposit on its entire surface, said tactile designation device is supported by flexible strips, by means of supply to said metallic surface and by strain gauges set up on said strips in order to measure flexing of said strips, said tactile designation device characterized by the fact that said strips support said plate from a printed circuit of assembly, each of said strips carrying at least one conducting part, each of said strips having a first end that is in contact with a supply track formed on said printed circuit, each of said strips having a second end that is in contact with attachment devices of said plate on said strip that is electronically conducting and in contact with said metallized surface.

5,327,165

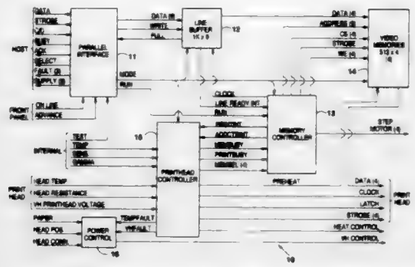
ELECTRONIC PRINTING SYSTEM FOR IMAGING THERMALLY SENSITIVE PAPER

J. W. Elliott, College Station, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 30, 1989, Ser. No. 330,454

Int. Cl.[5] G01D *15/10*

U.S. Cl. 346—76 PH **18 Claims**



1. A system for imaging lines of pixels on thermally sensitive paper in accordance with stored digital data, comprising:

a printhead comprising printhead segments each having a plurality of resistor elements corresponding to each pixel in a line and further comprising a segmented printhead shift register and corresponding segmented data latches;

a line buffer for accepting digital data in parallel form and transmitting the data in serial form;

a memory for accepting the transmitted serial data;

a memory controller for storing the transmitted data in the memory and sequentially outputing the data serially to each of the shift register segments in a graphics mode or simultaneously to each shift register segment in a gray scale mode;

a printhead controller for producing latch pulses for latching the outputs of the shift register segments into the corresponding data latch segments and further for producing separate strobe pulses for driving each printhead segment; and

means for printing pixels in either the graphics mode wherein each bit of the digital data signifies whether a pixel is to be printed or not or in the gray scale mode wherein separate words of the digital data for each pixel represent the desired optical density for that printed pixel.

5,327,166

IMAGE FORMING APPARATUS INCLUDING A PLURALITY OF PRINTING HEADS HAVING DIFFERENT IMAGE DENSITIES

Hirokatsu Shimada, Tokyo, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 14, 1992, Ser. No. 883,266

Claims priority, application Japan, May 15, 1991, 3-139685

Int. Cl.[5] B41J *2/32, 2/325*

U.S. Cl. 346—76 PH **11 Claims**

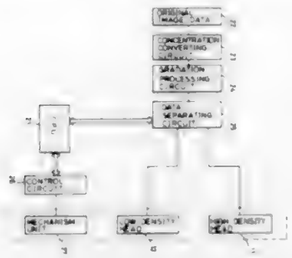
3. An image recording apparatus for recording an image on a recording medium based on image data, comprising:

first recording means for recording a partial image on said recording medium in a first pixel density,

second recording means for recording another partial image on said recording medium in a second pixel density lower than said first pixel density,

separating means for separating said image data into first

image data for said first recording means and second image data for said second recording means, and



controlling means for controlling said first recording means based on said first image data and said second recording means based on said second image data.

5,327,167

PRINTING CYLINDER ENGRAVING

Brendan T. Pollard, Betchworth, and Terence E. J. Marsh, Addleston, both of England, assignors to Zed Instruments Limited, Hersham and Brendon T. Pollard, Betchworth, England

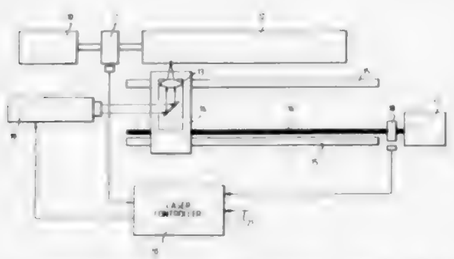
PCT No. PCT/GB91/00662, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO91/16784, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 26, 1991, Ser. No. 958,129

Claims priority, application United Kingdom, Apr. 26, 1990, 9009406

Int. Cl.[5] H04N *1/21*; B41J *2/435*

U.S. Cl. 346—108 **11 Claims**



1. A laser engraving machine including a motor (**10**) to rotate a printing cylinder (**12**) about its longitudinal axis, a laser (**19**), an engraving head (**13**) which focuses a beam from the laser (**19**) onto the surface of the printing cylinder (**12**) to ablate selected portions of the printing cylinder (**12**), a drive (**14,16,17**) to move the engraving head (**13**) along the printing cylinder (**12**) parallel to its longitudinal axis, a laser controller (**20**) arranged to control operation of the laser engraving head (**13**), and position encoders (**11,18**) coupled to both the printing cylinder (**12**) and the drive (**16,17**) for the engraving head (**13**) to provide data for the laser controller (**20**) corresponding to the current location of the engraving head (**13**) with respect to the printing cylinder (**12**) to enable it to control the operation of the laser; characterized in that it includes variable timing means (**37,38**) which are triggered by the engraving head (**13**) crossing into each cell (**1**) and which generate a variable time delay to determine the start time of the laser engraving in each pass of each cell (**1**) and also to determine the duration of the time for which the laser is turned ON to engrave material during each pass of each cell (**1**).

5,327,168

ROLLED SHEET CONVEYING APPARATUS OF PLOTTER AND ROLLED SHEET CONVEYING ROUTE CONTROL METHOD.

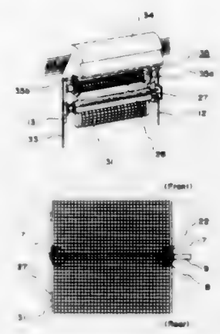
Seiji Oda, Tokyo, Japan, assignor to Mutoh Industries Ltd., Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 854,697

Claims priority, application Japan, Apr. 24, 1991, 3-119096

Int. Cl.[5] G01D *15/24*

U.S. Cl. 346—136 **5 Claims**



1. A rolled paper conveying apparatus for use with a plotter, comprising:

a feeding means supporting rolled paper and being rotatably supported on legs of said plotter;

a pair of tension rollers being journalled with respect said legs in order to impart weak tension to the paper sheet;

winding means for winding a payed-out portion of the paper sheet onto said winding means through a drive roller installed on the machine body, said winding means being rotatably journalled therewith; and

a route distance control mechanism associated with said tension rollers, for adjusting slants of said tension rollers so that said paper sheet is made parallel to a Y-rail of said plotter.

5,327,169

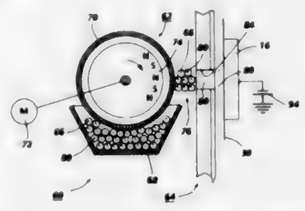
MASKED MAGNETIC BRUSH DIRECT WRITING FOR HIGH SPEED AND COLOR PRINTING

Michael D. Thompson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 5, 1992, Ser. No. 925,002

Int. Cl.[5] G01D *15/06*

U.S. Cl. 346—155 **4 Claims**



1. Printing apparatus including a toner delivery system, a printhead structure containing a plurality of apertures adapted to transport toner therethrough which toner is supplied by said delivery system to the vicinity of said apertures and means for supporting copy substrates for movement past said printhead, said supporting means being adapted to attract toner transported from said delivery system through said printhead whereby said toner is deposited in image configuration on said copy substrate, the improvement comprising:

magnetic brush developer roll means for presenting a two-component developer mixture directly to said printhead structure without quenching electrostatic fields in the vicinity of the apertures, said developer mixture comprising magnetic carrier and toner particles.

5,327,170

IMAGE RECORDING APPARATUS CAPABLE OF FORMING IMAGE OUTPUTS IN VARIOUS FORMATS

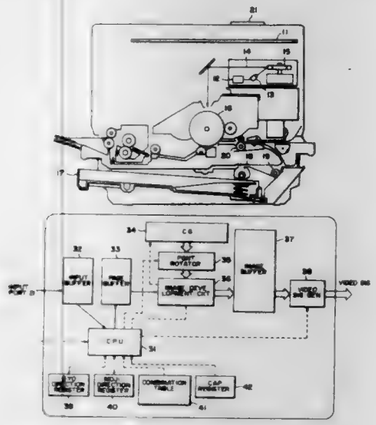
Yasuhito Suzuki, Kawasaki; Koichiro Akimoto, Yokohama; Hajime Ohshima, Tokyo; Kazuyuki Honda, and Yukio Isaka, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 384,777, Jul. 24, 1989, Pat. No. 4,952,948, which is a division of Ser. No. 313,361, Feb. 21, 1989, Pat. No. 4,876,562, which is a continuation of Ser. No. 779,107, Sep. 23, 1985, abandoned. This application Mar. 26, 1990, Ser. No. 498,969

Claims priority, application Japan, Sep. 25, 1984, 59-198623; Sep. 25, 1984, 59-198624; Sep. 25, 1984, 59-198626

Int. Cl.[5] G01D *15/14*

U.S. Cl. 346—160 **48 Claims**



1. An image recording apparatus comprising:

print data input means for inputting print data;

image forming means for forming an image on a record medium in accordance with the inputted print data; and

controlling means including first setting means for setting line direction data representing a line direction, second setting means for setting character direction data representing a character direction, and third setting means for setting line feed direction data representing a line feed direction, said controlling means being adapted to determine a processing mode of the inputted print data on the basis of the line direction data, the character direction data and the line feed direction data.

5,327,171

CAMERA SYSTEM OPTICS

Steven L. Smith, Oxford; Joseph P. Mulligan, Fairfield; Gregory P. Skinger, Southbury, and Robert H. Esslinger, Wilton, all of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed May 26, 1992, Ser. No. 889,037

Int. Cl.[5] H04N *9/73*

U.S. Cl. 348—223 **22 Claims**

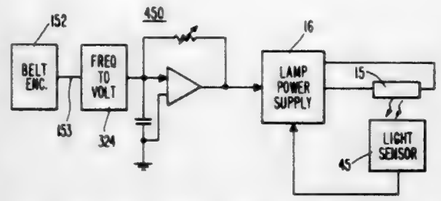
1. An optical object scanning system having an optical scanning device for providing a scan output signal including a scan output information portion representative of a scanned region of said object, said scan output information portion having a varying information amplitude, comprising:

illumination source means for illuminating said scanned region of said object;

detection means for receiving light reflected from said scanned region of said object;

white reference means for providing a white reference signal, said white reference means including at least one dedicated pixel for receiving light transmitted from said illumination source means, said at least one dedicated pixel being unavailable for receiving said reflected light from said scanned region of said object; and

adjusting means for adjusting said varying information amplitude of said scan output information portion in accordance with said white reference signal.



5,327,172

POLLING FOR DETECTION OF POWER SUPPLY OR OTHER FAILURES OF A DIGITAL CIRCUIT

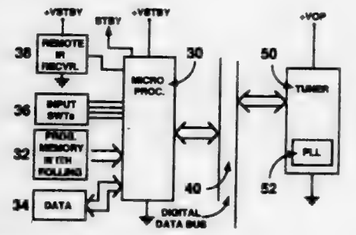
Siew M. Tan, and Chon S. Oh, both of Singapore, Singapore, assignors to Thomson Consumer Electronics, S.A., Courbevoie, France

Filed Apr. 23, 1992, Ser. No. 873,950

Claims priority, application United Kingdom, May 2, 1991, 9109595

Int. Cl.[5] H04N *5/63*

U.S. Cl. 348—378 **7 Claims**



7. An apparatus comprising:

a power supply having a run power supply and a standby power supply;

a digital circuit coupled to said run power supply;

a data bus coupled to said digital circuit and operable to communicate data bidirectionally via said data bus; and

a digital processor coupled to said standby power supply and coupled to said data bus for communication with said digital circuit, said digital processor having a plurality of operating modes including a protective operating mode, and having means to control said digital circuit and at least one other load powered by said power supply, said digital processor being programmed to monitor data on said data bus and to verify data from said digital circuit,

wherein upon failure of said run power supply, said digital circuit fails to provide data to said data bus, and said digital processor detects said failure and assumes said protective operating mode.

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5,327,173

MOVING IMAGE CODING APPARATUS AND MOVING IMAGE DECODING APPARATUS

Yoshitsugu Nishizawa; Yuji Takenaka, both of Kawasaki; Takahiro Hosokawa, Yokohama; Yuji Mori, and Hideki Miyasaka, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

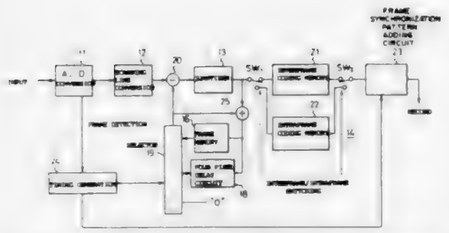
PCT No. PCT/JP90/00799, § 371 Date Feb. 19, 1991, § 102(e) Date Feb. 19, 1991, PCT Pub. No. WO90/16130, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 19, 1990, Ser. No. 655,359

Claims priority, application Japan, Jun. 19, 1989, 1-156573; Jun. 20, 1989, 1-157939

Int. Cl.[5] H04N *7/12, 1/41*

U.S. Cl. 348—412 16 Claims



1. A moving image coding apparatus for band compressing frames of moving image data, comprising:

intraframe coding means for band compressing the moving image data by intraframe coding;

interframe coding means for band compressing the moving image data by interframe coding;

block division means for dividing data in each frame into a plurality of blocks each of which includes a predetermined number of pixels; and

coding switch means for controlling said intraframe coding means and said interframe coding means so that coding is executed by said intraframe coding means for the moving image data of a predetermined portion of the pixels in each of the blocks, and coding is executed by said interframe coding means for the moving image data of a remaining portion of the pixels in each of the blocks,

wherein each of the blocks has an equal width in both vertical and horizontal directions, and a location of the predetermined portion of the pixels in each of the blocks, is the same for all pixels in a frame, and

wherein said moving image coding apparatus further comprises:

frame detecting means for detecting a synchronizing signal which is included in an input moving image signal,

clock generating means for generating a clock signal which indicates timing of an input of data of each pixel, synchronized with the synchronizing signal, and

timing generating means for generating a timing signal for controlling the switching in said coding switch means by dividing a frequency of the clock signal by a frequency dividing ratio which is determined based on the width of the blocks and the location of the predetermined portion of the pixels.

5,327,174

DEVICE FOR DISPLAYING TELETEXT DATA ON ONE SCREEN

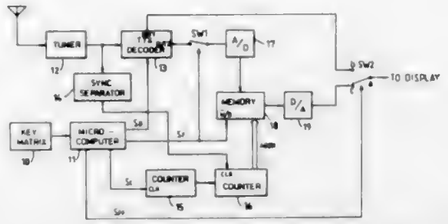
Jae W. Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 17, 1992, Ser. No. 914,524

Claims priority, application Rep. of Korea, Jul. 19, 1991, 11361

Int. Cl.[5] H04N *7/087*

U.S. Cl. 348—468 7 Claims



1. A device having a decoder for displaying teletext signals multiplexed into a television video signal, comprising:

an input device for outputting one of a plurality of different operating signals;

a microcomputer for outputting control signals in response to an operating signal from said input device;

a separator for separating a horizontal synchronizing signal from the video signal;

means for generating an address signal according to the separated horizontal synchronizing signal and a control signal outputted by said microcomputer; and

storing means, connected to a first output terminal of the decoder, for storing a teletext signal into a location designated by said address signal in accordance with a write control signal from said microcomputer, and for reading the stored teletext signal in accordance with a read control signal from said microcomputer, wherein said address signal generating means includes a first counter for designating a plurality of locations in said storing means, each of the locations able to store teletext data, said storing means storing teletext data in response to a control signal generated by said microcomputer, and a second counter for addressing a plurality of positions within the location designated by the first counter, each of the positions able to store teletext data involved in one horizontal scanning line, said second counter connected to receive the horizontal synchronizing signal from said separator.

5,327,175

CIRCUIT FOR DETECTING ODD AND EVEN FIELDS OF A VIDEO SIGNAL

Hak-Seong Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 998,726

Claims priority, application Rep. of Korea, Dec. 31, 1991, 25679

Int. Cl.[5] H04N *5/08*

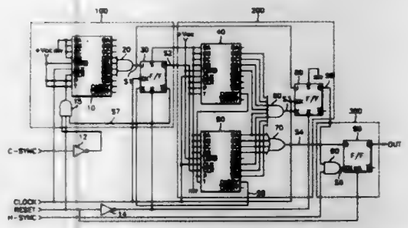
U.S. Cl. 348—526 5 Claims

1. A circuit for detecting odd and even fields of a video signal input, comprising:

first counter means for counting a clock pulse input to detect a vertical synchronous pulse interval of the video signal;

second counter means for counting the clock pulse upon detection of the vertical synchronous pulse interval to generate a window signal and a counting signal having a predetermined pulse width; and

output means for, in response to horizontal synchronous pulses and the window signal, generating a first logic state remaining for a next vertical synchronous pulse interval, and for generating a second logic state remaining for the next vertical synchronous pulse interval;



whereby the output means maintains the first logic state for the odd field and the second logic state for the even field.

5,327,176

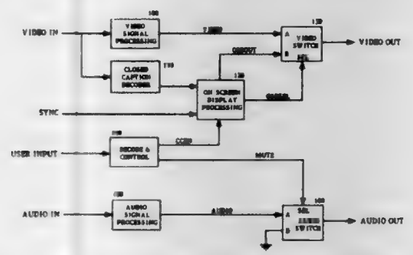
AUTOMATIC DISPLAY OF CLOSED CAPTION INFORMATION DURING AUDIO MUTING

Joseph W. Forler; John F. Teskey, both of Indianapolis, and Michael D. Landis, Fishers, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Mar. 1, 1993, Ser. No. 18,361

Int. Cl.[5] H04N *5/44, 5/445, 5/60*

U.S. Cl. 348—564 9 Claims



1. In a system for processing a television signal including a video component and a related audio component corresponding to respective visible and audible portions of the same television program, said audio portion containing a spoken portion related to said visible portion of said television program, said video component containing an auxiliary information component corresponding to a visible representation of said spoken portion of said television program, apparatus comprising:

means responsive to said video component for generating a video output signal corresponding to said visible portion of said television program;

means responsive to said auxiliary information component for selectively generating an auxiliary information output signal corresponding to said visible representation of said spoken portion of said television program related to said visible portion of said television program;

means for including said auxiliary information output signal, when generated, in said video output signal for displaying said visible representation of said spoken portion of said television program together with said related visible portion of said television program;

means responsive to said audio component for generating an audio output signal corresponding to said audible portion of said television program;

means for inhibiting the normal generation of said audio output signal during a predetermined operating condition of said system; wherein

said auxiliary information output signal generating means is coupled to said audio output signal inhibiting means for generating said auxiliary information output signal during said predetermined operating condition of said system when enabled to do so; and

means are coupled to said auxiliary information output signal generating means for, in a first mode, enabling said auxiliary information output signal generating means to generate said auxiliary information signal during said predetermined operating condition of said system, and for, in a second mode, disabling said auxiliary information output signal generating means from generating said auxiliary information output signal during said predetermined operating condition of said system.

5,327,177

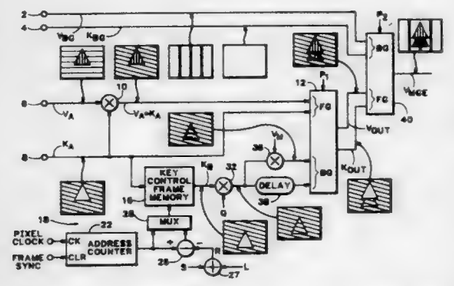
METHOD OF AND APPARATUS FOR PROCESSING A SHAPED VIDEO SIGNAL TO ADD A SIMULATED SHADOW

Philip DesJardins, and John J. Proctor, both of Nevada City, Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.

Filed May 26, 1992, Ser. No. 887,966

Int. Cl.[5] H04N *5/272, 5/275*

U.S. Cl. 348—586 10 Claims



1. A method of processing an input key control signal associated with a shaped video signal that represents an object to generate a signal containing simulated shadow information, said method comprising:

(a) combining the input key control signal with a processed key control signal to provide an output key control signal, and

(b) carrying out a selected operation on the output key control signal to provide the processed key control signal, and wherein said selected operation comprises translation.

5,327,178

STEREO SPEAKERS MOUNTED ON HEAD

Scott P. McManigal, 16 Inverness La., Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 716,395, Jun. 17, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 70,248

Int. Cl.[5] G02C *1/00;* H04M *1/05*

U.S. Cl. 351—158 6 Claims

1. In combination with support means attachable to an upper portion of the user's head, the improvement comprising:

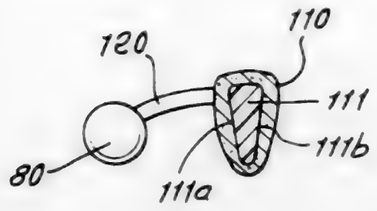
a) a first loudspeaker carried by said support means in offset, proximate relation to the ear opening of one of the user's ears, the loudspeaker having an input to receive electrical signals from a signal source,

b) the speaker having an audio output side, and said offset relation characterized in that said output side faces toward said ear opening and has spacing from said opening by an amount between about ¼ and 1 inch when said support means is attached to the user's head,

c) said support means including an ear stem of eyeglasses, and said support means including a closed loop sleeve on and having slidable connection with the stem, whereby

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the sleeve is adjustably slidable along said stem and rotatable thereabout to bring said loudspeaker into a position corresponding to said offset proximate relation to said ear opening, to be retained in said position, said sleeve being resiliently deformable and expandable to grip said stem, as the sleeve is rotated about the stem.



5,327,179

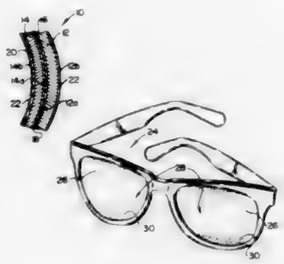
Patent Not Issued For This Number

5,327,180

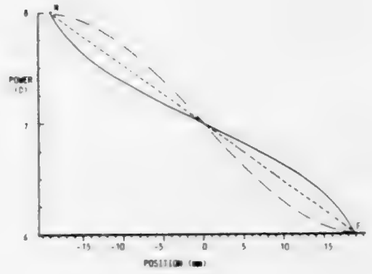
POLARIZED LENS AND METHOD OF MAKING SAME

Walter F. Hester, III, Lahaina, Hi., and Charley Richards, Indialantic, Fla., assignors to Hester Enterprises, Inc., Lahaina, Hi.

Filed Aug. 18, 1992, Ser. No. 931,843
Int. Cl.[5] **G02C** *7/10, 7/12*
U.S. Cl. 351—165 **30 Claims**



1. A lens, comprising:
a first lens element having inner and outer surfaces;
a bigradient coating on said inner surface of said first lens element;
a second lens element having inner and outer surfaces; and
a polarization film disposed between said inner surface of said second lens element and said bigradient-coated inner surface of said first lens element such that said first and second lens elements are laminated together with said polarization film between said two lens elements.



5,327,181

PROGRESSIVE LENS FOR SPECIALTY AND OCCUPATIONAL USE

Richard P. Waldo, West Woodstock, Conn., assignor to Gentex Optics, Inc., Carbondale, Pa.

Filed Jan. 12, 1993, Ser. No. 3,391
Int. Cl.[5] **G02C** *7/06*
U.S. Cl. 351—169 **11 Claims**

1. A lens having near vision and far vision poles and a progressive surface between said poles, said progressive surface having regions adjacent to said poles and a middle region between said poles and having a power law which provides power gradients in said regions adjacent to the poles which are relatively steep as contrasted with relatively gradual power gradients in said middle region thereof between said poles.

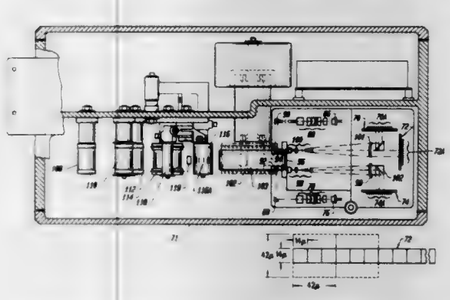
5,327,182

METHOD AND APPARATUS FOR READING PHOTOGRAPHICALLY RECORDED DIGITAL AUDIO SOUNDTRACKS

Michael Kohut, Ojai; Dana Wood, Los Angeles; Paul Wood, Glendale; Jeff Taylor, Chatsworth; Leroy Reese, Burbank; Aram Tanielian, Rancho Palos Verdes; Jaye M. Waas, Manhattan Beach; Mark Waring, Torrance, and George Carlsen, Cardiff, all of Calif., assignors to Sony Electronics, Inc., Park Ridge, N.J.

Filed Jun. 10, 1992, Ser. No. 896,229
Int. Cl.[5] **G03B** *31/02;* **G06F** *11/00*
U.S. Cl. 352—27 **11 Claims**

1. An apparatus for reading rows of digital audio bits that have been recorded photographically in bit areas of a motion picture film having a longitudinal axis, including:
a film transport means for continuously translating the film along a path parallel to the longitudinal axis;
a first array of radiation detectors mounted in a detector plane, wherein each of the detectors in the first array has a length L along a first axis parallel to the longitudinal axis and width W along a second axis substantially perpendicular to the longitudinal axis;
a first axis means for directing a first laser beam through a first region of the film at a first location along the path, wherein the first region is oriented substantially perpendicularly to the longitudinal axis; and
first lens means for receiving the first laser beam after it has propagated through the first region, converting the first laser beam into a first expanded beam, and projecting the first expanded beam onto a row of spots in the detector plane, wherein the row of spots extends along the second axis, wherein each of the spots has a length S along the first axis, wherein the length S is greater than the length L, wherein each of the spots has a width, along the second axis, equal to at least an integral multiple of the width W, wherein the bit areas are located within at least two spatially separated elongated soundtrack regions of the film, wherein the elongated soundtrack regions are oriented substantially parallel to the longitudinal axis, and wherein the first region intersects a first one of the elongated soundtrack regions;
a second array of radiation detectors mounted in a second detector plane, wherein each of the detectors in the second array has a length M along a third axis and a width X along a fourth axis,
a second laser means for directing a second laser beam through a second region of the film, wherein the second region is oriented substantially perpendicularly to the longitudinal axis and intersects a second one of the elongated soundtrack regions;
a second lens means for receiving the second laser beam after it has propagated through the second region, converting the second laser beam into a second expanded beam, and projecting at least a portion of the second expanded beam onto a second row of spots in the second detector plane, wherein the second row of spots extends along the fourth axis, each of the spots in the second row has a length T along the third axis, and the length T is greater than the length M;
a third array of radiation detectors mounted in a third detector plane, wherein each of the detectors in the third array has a length N along a fifth axis and a width Y along a sixth axis; and
wherein the second lens means projects a portion of the second expanded beam onto a third row of spots in the third detector plane, wherein the third row of spots extends along the sixth axis, each of the spots in the third row has a length U along the fifth axis, and the length U is greater than the length N.
2. A digital optical playback processor, including:
means for receiving a digital playback signal from a digital optical soundtrack read head, and an analog playback signal from an analog optical soundtrack read head, wherein the digital playback signal is indicative of digital audio bits read from bit areas of a photosensitive medium, and wherein the digital playback signal is also indicative of error code bits read from bit areas of the photosensitive medium;
an error detection and correction means for performing an error detection operation on the digital playback signal and generating an error corrected digital playback signal from the digital playback signal, wherein the error detection and correction means processes blocks of the digital playback signal, and wherein the error detection and correction means includes a means for generating an error rate signal for each of the blocks, a means for integrating the error rate signal to generate a filter control signal, and low-pass-filter means for filtering the error corrected digital output signal in response to the filter control signal to generate a filtered corrected digital playback signal;
digital-to-analog signal from the filtered generating a first analog signalfrom the filtered corrected digital playback signal; and
an automatic backup switching means, for receiving the first analog signal, the analog playback signal, and a control signal, and generating an output signal consisting of selected portions of the first analog signal concatenated with selected portions of the analog playback signal in response to the control signal.

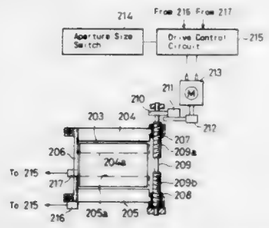


5,327,183

CAMERA HAVING FLASH

Hiroshi Kurei, Tokyo, Japan, assignor to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1992, Ser. No. 887,867
Claims priority, application Japan, May 24, 1991, 3-222529; May 27, 1991, 3-223764; May 27, 1991, 3-223765
Int. Cl.[5] **G03B** *15/02, 15/05, 17/02*
U.S. Cl. 354—129 **6 Claims**



1. A camera including a flash device comprising:
a focal-plane shutter including a leading-shutter-curtain and a trailing-shutter-curtain which are moved in a predetermined direction to open and close a film exposure aperture to thereby expose a film;
means for changing a size of said film aperture to a frame size corresponding to a change in said predetermined direction in which said leading and trailing-shutter-curtains are moved;
means for switching said flash device to cause an output of said flash device; and
means for controlling said switching means in accordance with a size of said film aperture so that the output of said flash is ended just before said trailing-shutter-curtain starts to close said film aperture.

5,327,184
ZOOM LENS BARREL WITH FOCAL LENGTH DETECTOR

Hiroshi Nomura; Norio Sato, and Nobuaki Aoki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 46,794
Claims priority, application Japan, Apr. 17, 1992, 4-024857; Apr. 17, 1992, 4-024858; Apr. 17, 1992, 4-024859; Apr. 17, 1992, 4-024860
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.1 20 Claims



1. A zoom lens barrel comprising a code plate and a brush assembly which selectively comes into contact with the code plate to detect focal length variance during zooming, so that focal length data thus detected can be transmitted to a camera body through a flexible printed circuit (FPC) board, one of the code plate and brush assembly being secured to a mounting member and the other of the brush assembly or code plate being secured to a linearly movable member, said linearly movable member being movable with respect to said mounting member, wherein

said brush assembly is provided with at least one elastically deformable leg which can be connected to the FPC board, and a connecting portion thereof connected to the code plate;

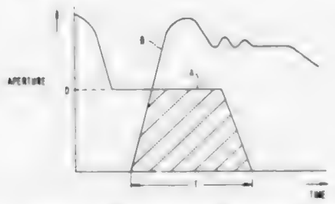
said mounting member or linearly movable member to which the brush assembly is secured is provided with an FPC board inserting groove with which the at least one elastically deformable leg of the brush assembly can come into contact; and

said FPC board is provided with an insertion portion which is inserted between the FPC board inserting groove and the at least one elastically deformable leg.

5,327,185
MOTOR DRIVEN SYSTEM FOR CONTROLLING THE DIAPHRAGM AND SHUTTER OF A CAMERA

Tadashi Nakagawa, Chiba, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1992, Ser. No. 971,436
Claims priority, application Japan, Nov. 7, 1991, 3-291298
Int. Cl.[5] G03B *9/08*
U.S. Cl. 354—228 7 Claims

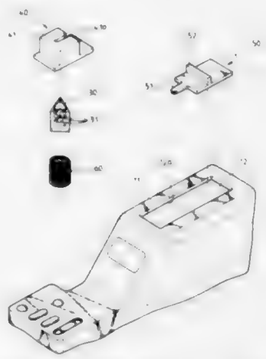


1. A motor driven shutter control device for a shutter having diaphragm blades and shutter blades, means for controlling the diaphragm blades and means for controlling the shutter blades, said device comprising a single motor, means for selectively controlling said motor for rotation in either of first and second opposite directions, and driving member coupled to be driven by the motor; wherein said means for controlling the diaphragm blades comprises a diaphragm setting member coupled to the driving member for setting the diaphragm blades to a predetermined position in response to rotation of the motor in said first direction, in a diaphragm setting operation, and a diaphragm closing member coupled to move the diaphragm blades to a closed position; said means for controlling said shutter blades comprising means coupled to said driving member to enable said shutter blades to move in a shutter opening direction, during said diaphragm setting operation, during rotation of the motor in said second direction, said means for moving said diaphragm blades to a closed position comprising means for releasing the closing member during an operation following said diaphragm setting operation with the shutter blades in an open position.

5,327,186
MULTI-DIRECTION REMOTE CONTROL UNIT FOR AN ELECTRONIC APPARATUS

Min-soo Lee, Suwon City, Rep. of Korea, assignor to Sam Sung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 17, 1993, Ser. No. 61,264
Claims priority, application Rep. of Korea, May 26, 1992, 92-9141
Int. Cl.[5] G03B *17/02, 17/38*
U.S. Cl. 354—266 5 Claims



2. An electronic apparatus having a remote control unit installed in a cabinet thereof, said remote control unit comprising:

a module housing mounted on said cabinet;

a transparent module disposed in said module housing; and

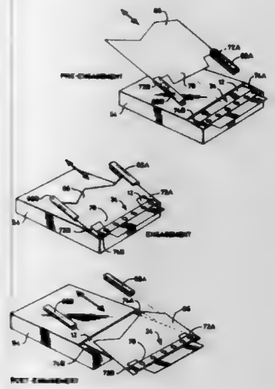
a plurality of receiving sensors disposed in said transparent module and being directed in different radial directions with respect to said transparent module, said remote control unit further comprising:

withdrawing means for allowing said module housing to move between a first position and a second position, in said first position said module housing protrudes from said cabinet to a first extent, in said second position said module housing protrudes from said cabinet to a second extent or is completely withdrawn into said cabinet, said second extent being less than said first extent.

5,327,187
FILM CASSETTE HAVING A FORCE TRANSMITTING MEMBER MOTION GUIDING SURFACE INCORPORATED THEREIN

Frederick Slavitter, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 16, 1993, Ser. No. 997,164
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—275 9 Claims

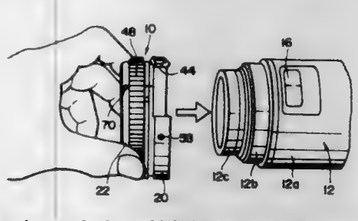


1. A film cassette for photographic apparatus, of the type having a force-transmitting member for moving a photographic sheet element of a self-developing, peel-apart film unit into or out of the apparatus for subsequent sheet element processing, comprising a cassette for enclosing a plurality of photographic sheet elements, in a stacked relation, of the type wherein each such sheet element has a leading end with a pocket on one side thereof for engagement with the force-transmitting member, said cassette having a motion-guiding surface thereon for engaging a first portion of the force-transmitting member for the purpose of guiding a second portion of the force-transmitting member into the sheet element pocket, for movement therewith.

5,327,188
ADAPTER DEVICE

Shinsuke Kohmoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1992, Ser. No. 999,378
Claims priority, application Japan, Jan. 10, 1992, 4-004162[U]
Int. Cl.[5] G03B *11/00, 17/00*
U.S. Cl. 354—295 21 Claims



1. An adapter device which is detachably attached to a camera lens including a stationery ring and a rotary ring rotatably attached to said stationary ring, said adapter device comprising:

a first ring being arranged to be attached to said stationary ring and having an inner periphery which is to be interfitted to an outer periphery of said stationary ring;

a second ring rotatably connected to said first ring, being arranged to be attached to said rotary ring and having an inner periphery which is to be interfitted to the outer periphery of said rotary ring;

fixing means for releasably fixing said adapter device to said camera lens;

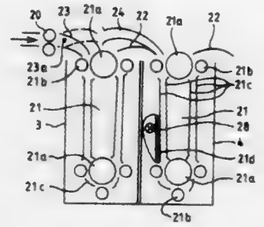
click stop means provided between said first ring and said second ring, for click-stopping said second ring at a prescribed angular position; and

coupling means for coupling said second ring to said first ring as a unit, whereby said first ring, said second ring, and said click stop means may be detachably attached and removed from said camera lens as a unit.

5,327,189
DEVICE FOR DEVELOPING PHOTOGRAPHIC FILM BASES

Ubbo Wernicke, Roesrath-Kleineichen, and Egon Bachem, Burscheid, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

PCT No. PCT/EP90/02165, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO91/10169, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 13, 1990, Ser. No. 859,732
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1989, 3942394
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—319 9 Claims



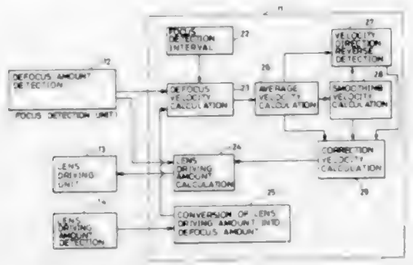
1. Device for developing photographic film bases comprising

a plurality of treatment tanks for film bases to be passed through consecutively, said treatment tanks having inlet apertures and being connected by transfer devices and guides, wherein at least one of said treatment tanks is a negative copy developing tank which contains a developing fluid suitable for developing copies of negatives, and further wherein a reverse developing tank containing a fluid bath for reverse developing is disposed in front of said negative copy developing tank in the direction of processing,

a first movable guide element on the guide paths to the inlet apertures of different developing tanks, wherein said movable guide element is capable of switching between the guide paths leading to different developing tanks,

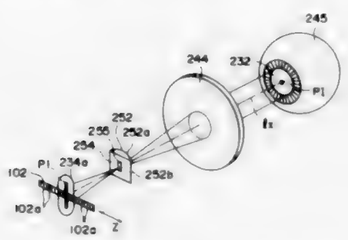
a guide bridging the reverse developing tank and ending at the inlet aperture of the negative copy developing tank, wherein the guide bridging the reverse developing tank is divided into a first part and a second part, the first part comprising a convertible guide channel and the second part comprising a movably mounted element acting in one position to divert the film base emerging from the reverse developing tank to the negative copy tank.

5,327,190
AUTOMATIC FOCUSING DEVICE
Kimihiko Nakamura, Osaka, and Masataka Hamada, Osakasayama, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 28, 1992, Ser. No. 889,359
Claims priority, application Japan, May 28, 1991, 3-124037
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **8 Claims**



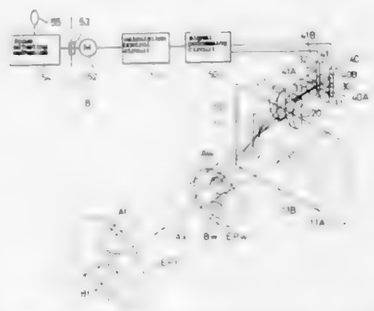
1. An automatic focusing device provided in a camera comprising:
first means for detecting whether an acceleration of an object toward the camera is reversed;
second means for calculating a movement amount of a photographic lens toward an in-focus position and changing a method for calculating the movement amount when the first means detects that the acceleration is reversed; and
third means for driving the photographic lens on the basis of the calculated movement amount.

5,327,191
EYE DIRECTION DETECTING APPARATUS
Osamu Shindo, and Shigeo Toji, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 576,191, Aug. 27, 1990, abandoned, which is a continuation of Ser. No. 282,035, Dec. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 152,359, Feb. 4, 1988, abandoned. This application Nov. 27, 1992, Ser. No. 982,427
Claims priority, application Japan, Jun. 11, 1987, 62-146067; May 20, 1988, 63-123562; Jun. 10, 1988, 63-143259; Dec. 17, 1988, 63-319337
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **94 Claims**



1. An eye direction detecting apparatus for a camera, comprising:
means for guiding substantially parallel rays of light through an eye piece element of a finer system of said camera towards said photographer's eye;
a light receiving system having means for receiving a first Purkinje image, based on a specular reflection of the cornea of said eye and reflecting light from a retina of said eye, is formed, said receiving means generating a light receiving output; and
a processing circuit for detecting the eye direction of said eye based upon said light receiving output of said receiving means.

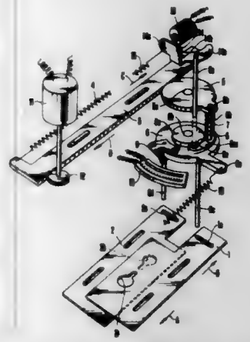
5,327,192
FOCUS DETECTING APPARATUS
Takayuki Sensui, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 19, 1992, Ser. No. 885,369
Claims priority, application Japan, May 20, 1991, 3-218155
Int. Cl.[5] G03B *13/36*; **G02B** *7/34*
U.S. Cl. 354—408 **22 Claims**



1. A focus detecting apparatus in which a pair of bundle of rays, transmitted through different portions of an exit pupil of a taking lens, are transmitted through a common focus detecting zone formed on an imaginary focal plane of the taking lens, comprising:
at least two re-imaging optical systems, each of which reform images of said pair of bundle of rays onto a pair of respective line sensors, said pair of line sensors being provided for each of said at least two re-imaging optical systems, wherein each of said pair of line sensors receives, through each of said at least two re-imaging optical systems, images of said pair of bundle of rays, that are incident on said focus detecting zone in different directions and which are transmitted therethrough, in accordance with a change in position of said exit pupil in an optical axis direction of said taking lens.

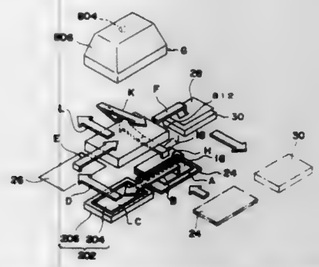
5,327,193
EXPOSURE DEVICE HAVING AN ACTUATABLE SHUTTER RELEASE
Nobuaki Date, and Shohei Takeda, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 692,815, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 336,047, Apr. 11, 1989, abandoned. This application Jul. 6, 1992, Ser. No. 909,118
Claims priority, application Japan, Apr. 15, 1988, 63-092935; Jun. 7, 1988, 63-139620; Jun. 7, 1988, 63-139621
Int. Cl.[5] G03B *7/097*; **H04N** *5/238*
U.S. Cl. 354—435 **14 Claims**

1. A camera having an exposure device for use in image recording which performs a shutter operation by actuation of a shutter release in such a manner that an aperture is varied from a closed state in an opening direction by movement of a shutter member, and then in predetermined timing said aperture is varied in a closing direction, comprising:
(a) a motor;
(b) an opening mechanism operably responsive to actuation of said shutter release, using said motor as a drive source, for driving said shutter member from the closed state in the opening direction;
(c) a spring member, charged by an operation of said opening mechanism, for driving said shutter member in the closing direction;
(d) a change-over mechanism for changing over said shutter member from being driven by said opening mechanism to being driven by said spring member in response to a current supply control of an electromagnet;
(e) image recording means; and



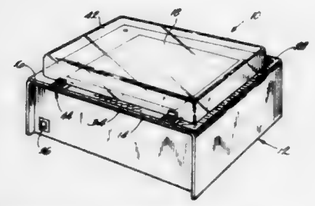
(f) control circuit means for causing said shutter member to move a plurality of times continuously upon a single actuation of said shutter release to effect substantially a plurality of cycles of shutter operation in the course of making a single image recording, said control circuit controlling said motor and said electromagnetic a plurality of times, said control means providing for image recording by said image recording means in a selective one of said plurality of cycles of shutter operation.

5,327,194
LITHOGRAPHIC PRINTING PLATE PRINTER
Yoshiyuki Doi; Keiji Osada; Toshimitsu Ishiwata; Kazuya Fujimoto; Shinichi Yabe, and Hiroshi Kawaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 1, 1993, Ser. No. 41,810
Claims priority, application Japan, Apr. 3, 1992, 4-082408; Apr. 9, 1992, 4-088558
Int. Cl.[5] G03B *27/04, 27/02*
U.S. Cl. 355—85 **18 Claims**



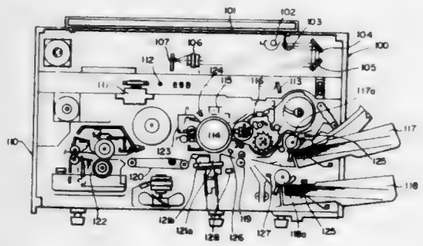
1. A lithographic printing plate printer comprising:
an original film loading section for loading a plurality of original films in a stacked state;
a lithographic printing plate loading section for loading a plurality of lithographic printing plates in a stacked state;
a printing surface plate on which the original film is brought into close contact with the lithographic printing plate;
a light source for printing an image on the original film onto the lithographic printing plate on said printing surface plate;
punch-hole punching means for punching a punch hole in the original film for positioning the original film on said printing surface plate;
original film transporting means for taking out the original film in said original-film loading section and transporting the film onto said printing surface plate via said punch-hole punching means; and
lithographic printing plate transporting means for taking out the lithographic printing plate in said lithographic printing plate loading section and transporting the printing plate onto said printing surface plate.

5,327,195
TRANSILLUMINATOR
Timothy G. J. Ehr, Menomonee Falls, Wis., assignor to Fotodyne Incorporated, Hartland, Wis.
Filed Mar. 31, 1993, Ser. No. 40,530
Int. Cl.[5] G03B *27/04*
U.S. Cl. 355—113 **17 Claims**



1. A transilluminator comprising
a housing having therein a UV-transmissible window,
a UV light source supported within said housing for transmitting UV light through said window,
a protector plate overlying said window,
means for securing said plate to said housing such that said plate is manually removable from said housing without tools, and
selectively engageable means for preventing removal of said plate from said housing without tools.

5,327,196
IMAGE FORMING METHOD
Shinji Kato, Kawasaki; Yasushi Koichi, Yamato, and Shin Hasegawa, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Nov. 25, 1992, Ser. No. 981,410
Claims priority, application Japan, Nov. 25, 1991, 3-335649; Feb. 17, 1992, 4-061175; Sep. 11, 1992, 4-269748
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 **17 Claims**



1. In an image forming method using an electrophotographic process, an estimated amount of toner to be supplemented for maintaining a desired image density is estimated in response to input data which are a ratio of reflection densities produced by an optical sensor responsive to a pattern for control, and an estimated toner consumption signal; and wherein toner supple-

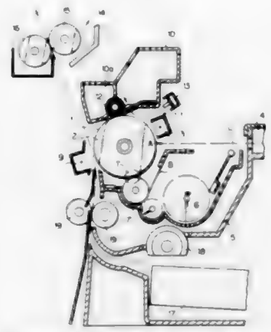
VOL 1164 ISS 1 JL 5 1994 UMI

ment control is executed based on said estimated amount of toner to be supplemented.

5,327,197
ELECTROPHOTOGRAPHIC APPARATUS

Yozo Matsuura; Hiromichi Ema, both of Tokyo; Shiroh Kondoh, Atsugi; Eiji Takenaka, Isehara, and Hiroshi Saitoh, Ayase, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 88,737
Claims priority, application Japan, Jul. 8, 1992, 4-180945
Int. Cl.[5] G03G *5/00*
U.S. Cl. 355—213 **7 Claims**



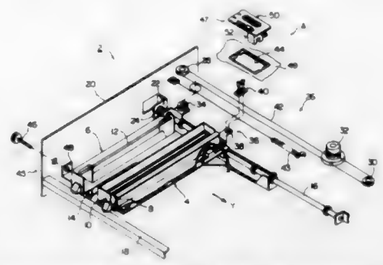
1. An electrophotographic apparatus for forming an image by an electrophotographic process, comprising:
a photoconductive belt having a tubular configuration;
a friction roller having an outside diameter smaller than an inside diameter of said photoconductive belt and received in said photoconductive belt, at least a surface of said friction roller being made of a material having high friction; and
a developing roller contacting a slack of said photoconductive belt which is ascribable to a difference between the outside diameter of said friction roller and the inside diameter of said photoconductive belt, said developing roller developing an electrostatic latent image formed on said photoconductive belt.

5,327,198
MOVEMENT HAMPERING DEVICE FOR AN EXPOSURE APPARATUS

Shoichi Kitagawa, Neyagawa; Mitsugu Miyamoto, Moriguchi; Daisuke Hayashi, Hirakata; Hideki Ishida, Yao, and Hiroshi Kusumoto, Wakayama, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 26, 1992, Ser. No. 966,457
Claims priority, application Japan, Nov. 20, 1991, 3-329610
Int. Cl.[5] G03G *15/28*
U.S. Cl. 355—236 **5 Claims**

1. An exposure apparatus comprising:
a first mirror frame
a second mirror frame,
the mirror frames being supported so as to be reciprocatingly movable on a main body of an image-forming machine,
an optical system driving device linked to the first mirror frame at a linking portion and linked to the second mirror frame for reciprocatingly moving the first mirror frame at a speed that is twice a speed of movement of the second mirror frame,
means providing an operating opening in the main body for adjusting a linking position of the first mirror frame with respect to the optical system driving device, and
a first mirror frame movement hampering device for hampering movement of the first mirror frame in an exposing direction, the first mirror frame movement hampering device including
a closure detachably provided in the operating opening, and
a movement hampering member mounted on the closure near the linking portion and capable of being positioned at a position at which the movement hampering member

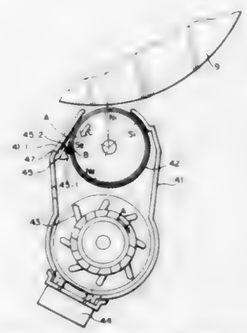


interferes with movement of the first mirror frame in the exposing direction, the movement hampering member being so mounted on the closure that the position of the movement hampering member is freely adjustable in a predetermined range in the reciprocating moving direction of the first mirror frame.

5,327,199
DEVELOPING DEVICE FOR A COLOR IMAGE FORMING APPARATUS

Takeyoshi Sekine, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 18, 1993, Ser. No. 108,195
Claims priority, application Japan, Aug. 20, 1992, 4-244317
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 **10 Claims**

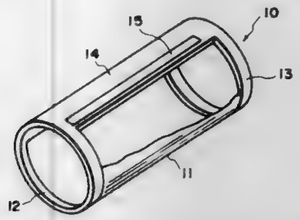


1. A developing device capable of bringing a developer deposited on a developing sleeve to an inoperative position by rotating said developing sleeve in a direction opposite to a direction for development, said device comprising:
a doctor means for regulating a thickness of a layer formed by the developer on said developing sleeve, said developer flowing through a gap between the said doctor means and said developing sleeve when transported toward the inoperative position in a reverse direction; and
a bypass for causing part of the developer being transported in the reverse direction of flow therethrough.

5,327,200
TRANSFER SHEET-CARRYING MEMBER AND IMAGE FORMING APPARATUS

Teigo Sakakibara, and Noriko Ohtani, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,239
Claims priority, application Japan, Aug. 1, 1991, 3-214245
Int. Cl.[5] G03G *15/16;* **B32B** *27/00*
U.S. Cl. 355—274 **12 Claims**



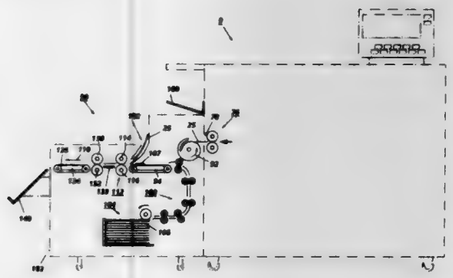
1. A transfer sheet-carrying member having a surface sheet showing a downwardly convex current-voltage characteristic across its thickness such that a when a first test current I_{10} is passed at an applied voltage of 10 volts, a second test current I_{50} is passed at an applied voltage of 50 volts and a third test current I_{4000} is passed at an applied voltage of 4000 volts, the current-voltage characteristic satisfies the relationships of:

$$I_{50} < 5 \times I_{10} \text{ and } I_{50} \leqq I_{4000}/150.$$

5,327,201
SIMULATED PHOTOGRAPHIC PRINTS USING A REFLECTIVE COATING

Robert M. Coleman, Altadena, and Leland D. Green, Sierra Madre, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 21, 1993, Ser. No. 95,622
Int. Cl.[5] G03G *8/00, 15/14*
U.S. Cl. 355—278 **18 Claims**

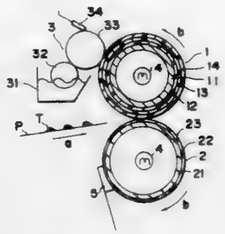


8. A method of creating simulated photographic prints using xerographic imaging, including the steps of:
forming a light reflecting light color film over one or more xerographically formed mirror images fused to a transparent substrate.

5,327,202
ELASTIC BODY OF AN ADDITION REACTION TYPE SILICONE RUBBER ELASTIC MATERIAL USED IN ELASTIC ROLLER AND FIXING DEVICE

Yasuo Nami, Kawasaki; Takeshi Menjo, Tokyo; Kazuo Kishino, and Hideo Kawamoto, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,514
Claims priority, application Japan, Aug. 1, 1991, 3-193176; Aug. 6, 1991, 3-219333; Sep. 20, 1991, 3-268965
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—282 **66 Claims**

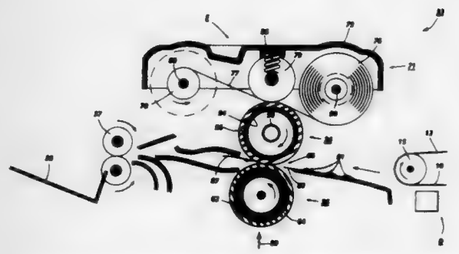


1. A elastic body comprising:
an addition reaction type silicone rubber elastic material obtained by curing a polysiloxane mixture;
said polysiloxane mixture comprising at least
(a) a straight-chain dimethyl polysiloxane having a viscosity of 80,000 poise or more at a temperature of 25° C. and terminated with a vinyl group; and
(b) a resinous organopolysiloxane having at least two vinyl groups and having a viscosity of 10 poise at a temperature of 25° C. and comprising a block copolymer having a resin segment comprising at least one of a 4-functional constitutional unit and a 3-functional constitutional unit, and a straight-chain oil segment comprising 100 or more continuous 2-functional constitutional units in the same molecule.

5,327,203
WEB RELEASE AGENT SYSTEM FOR A HEAT AND PRESSURE FUSER

Kenneth R. Rasch, and Frederick C. DeBolt, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 151
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—283 **5 Claims**



1. Apparatus for applying offset preventing liquid to a fuser roll, comprising:
a non-woven oil impregnated web material including subdenier fibers ranging from about 5% and 50% of said web material by weight, said web material comprises polyaramid fibers and a polyester fiber binder, said polyester fiber binder comprises approximately 70% of said web material

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by weight with the fibers of said polyester binder being approximately 1.5 denier; and

means for urging said web material into contact with the fuser roll to apply release material to the fuser roll.

5,327,204

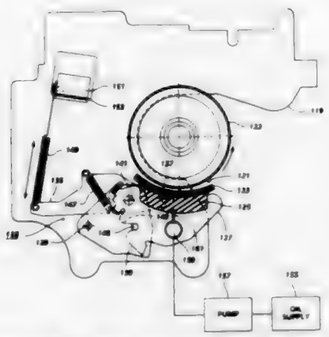
RELEASE AGENT MANAGEMENT CONTROL

Michael J. Sculley; Mark S. Amico, both of Rochester; Wayne D. Drinkwater, Fairport, and David M. Thompson, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1993, Ser. No. 156,333

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—284 **19 Claims**



1. Apparatus for applying release agent management material to a fuser member for fixing toner imaged prints, said apparatus comprising:

a wick structure for applying release agent material to an external surface of said fuser member;

means for counting a number of prints created and generating signals representative of said number of prints;

means for calculating print equivalency values for prints counted, said calculated equivalency values being representative of release agent used for fusing said prints;

means representing a number of print equivalency values calculated;

means representative of a predetermined print equivalency value; and

means for supplying release agent material to said wick for a predetermined period of time only after said predetermined equivalency value is exceeded.

5,327,205

AUTOMATIC DOCUMENT FEEDING DEVICE

Kenji Baba, Kofu, Japan, assignor to Nisca Corporation, Yamanashi, Japan

Continuation of Ser. No. 729,030, Jul. 12, 1991, Pat. No. 5,280,330. This application May 13, 1993, Ser. No. 60,525

Claims priority, application Japan, Jul. 12, 1990, 2-186005; Jul. 12, 1990, 2-186006

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—311 **1 Claim**

1. An automatic document feeding device for feeding document sheets having a leading end and a rear end one by one in an image processing machine having a transparent platen on which a document reading area having a front end portion defining a reading reference point and a document exit, which comprises:

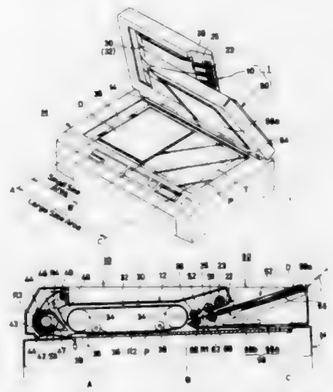
a document feeder unit disposed on the image processing machine for feeding and discharging the document sheet to and from the reading reference point of the document reading area,

said document feeder unit being opposite to said platen and covering an area on said platen to form a document processing passage,

a platen cover unit disposed on said image processing machine for retaining said document sheet on the platen so as to cover a remaining area on the platen other than the area covered by said document feeder unit,

said document feeder unit and said platen cover unit being adjacent to each other on the platen to form a document entrance to said document processing passage, and

at least one size discriminating sensor for detecting the document sheet being fed toward said document feeder unit and discriminating whether said document sheet is a small size or a large size, said document feeder unit operating, in response to whether said at least one sensor senses that said document sheet is of small size or of large size, so as



to 1) forward the document sheet through said document processing passage until said leading end of said document sheet reaches said reading reference point and feed out therefrom after image processing when said document sheet is discriminated to be a small size or 2) feed forward the document sheet through said document processing passage until the rear end of the document sheet reaches said entrance of said document processing passage, move backward the document sheet until said leading end of the document sheet reaches said reading reference point, and discharge forward the document sheet from said document processing passage after the image processing when said document sheet is discriminated to be a large size.

5,327,206

IMAGE FORMING APPARATUS INCLUDING A SHEET REFEEDING UNIT

Masahide Ueda, Takatsuki; Takashi Onishi, Toyohashi; Takuma Ishikawa, Toyokawa, and Hirofumi Tanahashi, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 14, 1992, Ser. No. 914,331

Claims priority, application Japan, Jul. 17, 1991, 3-176984; Dec. 20, 1991, 3-354465; Feb. 3, 1992, 4-010656[U]; Feb. 3, 1992, 4-010657[U]; Feb. 3, 1992, 4-010658[U]; Feb. 3, 1992, 4-046402

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—313 **16 Claims**

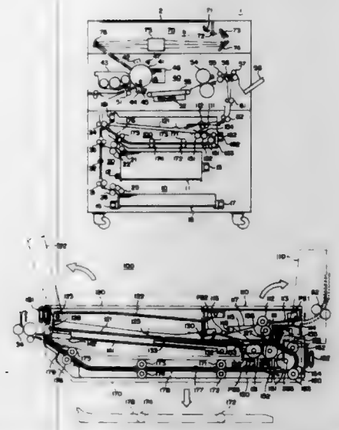
1. An electrophotographic image forming apparatus comprising:

a frame;

image forming means for forming an image on a sheet, the image forming means being fixed on the frame;

a refeeding unit comprising an intermediate tray for temporarily containing image-formed sheets as a pile thereon

and refeeding means for feeding the sheets from the intermediate tray toward the image forming means; and



adjusting means for adjusting a position of the sheets to be fed by said refeeding unit in a direction perpendicular to a sheet transporting direction by shifting said refeeding unit.

5,327,207

COPY MACHINE HAVING PLURAL TRAYS EACH TRAY CAPABLE OF STORING TWO DIFFERENT STACKS OF SHEETS

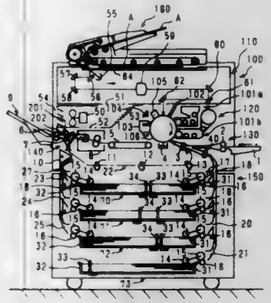
Masayuki Otake, Kakamigahara; Kiyoshi Sakamoto, Anpachi; Shuji Watanabe; Akira Inada, both of Ogaki; Nobuhiro Mabuchi, Hashima; Naoyuki Kikuchi, Ogaki; Shigeru Tanabe, and Takuo Otoshi, both of Anpachi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 19, 1992, Ser. No. 978,871

Claims priority, application Japan, Nov. 19, 1991, 3-331264

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—311 **18 Claims**



1. A copying machine for copying front and back faces of an original to a sheet, comprising:

means for feeding the original to a predetermined position;

means for optically scanning the original at said predetermined position to obtain an image;

sheet-feeding means for feeding the sheet, said sheet-feeding means including a tray having opposing sides for storing a stack of each of two kinds of sheets;

take out means for selectively taking out sheets separately from each stack in a respective different direction from the respective adjacent opposing side of said tray;

means for transferring said image onto the fed sheet;

fixing means for fixing the transferred image to the sheet;

first transmitting means for inverting the original fed to said predetermined position, and for transmitting the inverted original to said original-feeding means;

second transmitting means for transmitting the sheet to said sheet-feeding means.

5,327,208

COLOR IMAGE FORMING APPARATUS WITH A MULTICOLOR DETACHABLE PROCESS UNIT

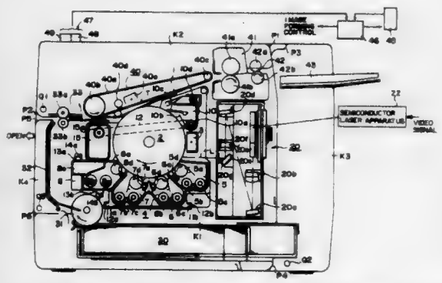
Shunji Matsuo; Shizuo Morita; Satoshi Haneda; Masakazu Fukuchi; Seiko Naganuma; Masahiko Itaya, and Fumiaki Hiraike, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 741,192, Jul. 30, 1991, which is a continuation of Ser. No. 516,046, Apr. 27, 1990, abandoned. This application Aug. 31, 1992, Ser. No. 939,547

Claims priority, application Japan, May 9, 1989, 1-117124; May 29, 1989, 1-135334; Jul. 29, 1989, 1-197657

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 R **7 Claims**



1. A color image forming apparatus for forming a color image, comprising:

an image retainer for carrying said color image;

charging means for charging a surface of said image retainer;

means for forming a latent image on the charged surface of said image retainer;

a multicolor developing unit including a plurality of color developing means for developing said latent image, wherein each of said color developing means develops said latent image with one of yellow, magenta, and cyan color developers;

black developing means for developing said latent image;

means for conveying a transfer sheet and transferring said developed latent image onto said transfer sheet;

cleaning mans for cleaning a residual developer on the surface of said image retainer;

wherein said image retainer and said cleaning means are formed as a detachable processing cartridge, and said multicolor developing unit is formed as a detachable developing cartridge;

first coupling means for simultaneously coupling said detachable processing cartridge, said detachable developing cartridge, and said black developing means to a body mans of said color image forming apparatus;

a plurality of developer tanks;

developer supplying means for supplying a plurality of color developers from said developer tanks to said multicolor developing unit and said black developing means; and

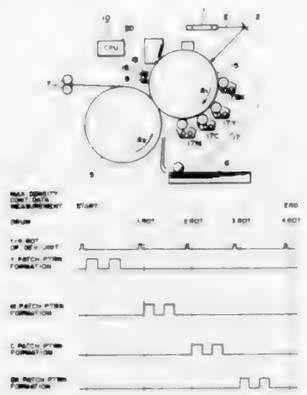
second coupling means for coupling said developer supplying means to said developer tanks;

wherein said body means has an upper half member which is pivotally movable by a hinge means between an open position where said detachable processing cartridge, said detachable developing cartridge and said black developing means are capable of being removed from said apparatus, and a closed position; and

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wherein said second coupling means releases said developer supplying means when said upper half member is at said open position.

5,327,209
COLOR IMAGE FORMING APPARATUS
Nobuatsu Sasanuma, Yokohama; Hisashi Fukushima, Kawasaki; Haruhiko Moriguchi, Yokohama, and Tetsuya Atsumi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 24, 1993, Ser. No. 80,863
Claims priority, application Japan, Jun. 26, 1992, 4-193110
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—327 **12 Claims**



1. A color image forming apparatus for automatically setting an image forming condition, comprising:

an electrophotographic photosensitive member movable along an endless path;

electrostatic latent image forming means for forming electrostatic latent images for different colors on said photosensitive member;

a plurality of developing means containing different color toners, operable corresponding to the electrostatic latent image;

transfer means for overlaying developed images sequentially onto a transfer material;

monitor image and forming means for forming a monitor image;

control means for controlling the image forming condition on the basis of the monitor image;

wherein detection of the monitor images for the respective developing means is completed within one-half the time required for said photosensitive member to rotate for image formation by all of said developing means.

5,327,210
LIGHT MEASUREMENT DEVICE
Yoshihiro Okui; Kazuhiko Naruse, both of Osaka; Taketoshi Kawamura, Itami; Shinji Shimizu, Osaka; Mikio Uematsu, Osaka; Hiroshi Furukawa, Osaka, and Izumi Horie, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 550,447, Jul. 10, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 22,790
Claims priority, application Japan, Jul. 11, 1989, 1-180048; Jul. 11, 1989, 1-180049; Jan. 18, 1990, 2-10133
Int. Cl.[5] G01J *1/42*
U.S. Cl. 356—218 **14 Claims**

1. A light measurement device comprising:

photoelectric conversion means for receiving light from an object to be measured and for converting the light to an output electrical signal representative of the intensity of the light;

temperature measurement means for measuring a temperature of the photoelectric conversion means;

offset amount measurement means for measuring an offset amount from the photoelectric conversion means in the absence of any light at an initial time period;

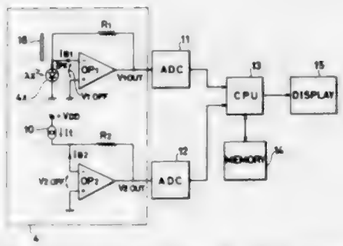
means for storing the measured offset amount;

means for storing an initial temperature of the photoelectric conversion means measured at the initial time period of the measurement of the offset amount;

means for measuring light from an object at a predetermined time period after the initial time period;

means for storing an output electrical signal representative of the intensity of the measured light from the object at the predetermined time period;

means for storing a temperature of the photoelectric conversion means measured at the same predetermined time period of the measurement of light from the object;



calculation means for subtracting the stored offset amount from the stored output electrical signal of the measured light from the object to produce a corrected output electrical signal of the measured light from the object;

means for outputting a permissible temperature difference, wherein the permissible temperature difference represents a permissible error of the output of the photoelectric conversion means;

judging means for judging whether a difference between the stored initial temperature and the stored temperature at the predetermined time period exceeds the output permissible temperature difference; and

warning means for warning when said judging means judges the difference between the initial temperature and the temperature at the predetermined time period exceeds the permissible temperature difference so that the offset amount measurement means must be employed before means for measuring light from the object can be employed.

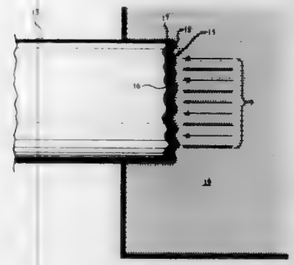
5,327,211
PROCESS FOR MOLECULAR-SPECIFIC OPTICAL FIBER PROBES FOR RAMAN DETECTION
Keith T. Carron, 1121 Park Ave., Laramie, Wyo. 82070, and Kenneth I. Mullen, 912 Garfield St., Laramie, Wyo. 82070
Filed Nov. 7, 1991, Ser. No. 788,900
Int. Cl.[5] G01J *3/44;* **B05D** *5/06*
U.S. Cl. 356—301 **26 Claims**

1. A process for molecular-specific coating of SERS fiber-optic probes comprising:

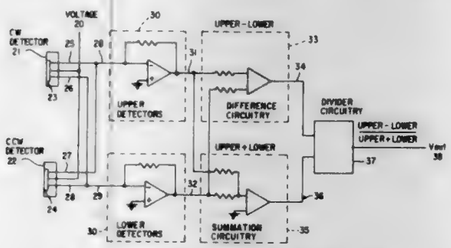
providing a fiber-optic SERS probe;

providing a molecular-specific coating; and

bonding by chemisorption, absorption, or adsorption said molecular-specific coating onto said probe.



5,327,212
ACCELERATION SENSING RING LASER GYROSCOPE
Joseph P. Ficalora, Oak Ridge, and Mark S. Grasso, Whippany, both of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed Apr. 23, 1991, Ser. No. 690,135
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—350 **9 Claims**



1. A ring laser gyroscope and accelerometer comprising:

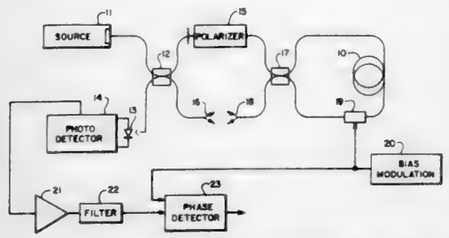
a ring laser frame containing reflective surfaces which define a closed loop optical path in which oppositely directed beams of light may travel; and,

means for analyzing intensity and motion of said oppositely directed beams of light and for providing an output signal proportional to acceleration, wherein said means for analyzing comprises:

a plurality of photodetectors each having an upper electrode and a lower electrode an located behind one of said reflective surfaces to measure changes in intensity and motion of said oppositely directed beams of light; and,

circuitry means for analyzing signals from said plurality of photodetectors.

5,327,213
CONFIGURATION CONTROL OF MODE COUPLING ERRORS
James N. Blake, and John R. Feth, both of Phoenix, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 14, 1991, Ser. No. 791,719
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—350 **85 Claims**



1. A rotation sensor capable of sensing rotation about an axis of a coiled optical fiber having a pair of principle birefringent axes, said sensing based on electromagnetic waves propagating in opposite directions in said coiled optical fiber to impinge on a photodetector with a phase relationship, said rotation sensor comprising:

a source capable of supplying an emitted electromagnetic wave characterized by an autocorrelation relationship over relative retardation time having therein a succession of peak values each separated from any other peak value adjacent thereto in said succession by a corresponding retardation interval, said autocorrelation relationship, for at least a plurality of initial ones of said retardation intervals, having values during a fraction of each that are relatively smaller than those said peak values thereof correspondingly adjacent to such retardation interval fractions;

a loop coupler having a pair of loop ports and at least one source port such that electromagnetic waves, occurring at said source port, are substantially transmitted through a coupling region in said loop coupler to thereafter occur at least in part at both of said loop ports, and such that electromagnetic waves, occurring at said loop ports, are substantially transmitted through said coupling region to thereafter occur at least in part at said source port;

a first coupling means for coupling said pair of loop ports of said loop coupler to corresponding ends of said coiled optical fiber such that electromagnetic waves, occurring at said loop ports, are substantially transmitted to said coiled optical fiber to result in electromagnetic waves propagating through said coiled optical fiber in opposite directions;

a polarizer having first and second ports each with a corresponding pair of principle polarization axes such that polarized electromagnetic waves, occurring along a transmission axis of said pair of principle polarization axes of one of said first and second ports thereof, are substantially transmitted to result in polarized electromagnetic waves appearing along said transmission axis of that remaining one of said ports, and such that polarized electromagnetic waves, occurring along a blocking axis of said pair of principle polarization axes of one of said first and second ports thereof, are substantially blocked from being transmitted to that corresponding said blocking axis of that remaining one of said ports;

a second coupling means coupling said first port of said polarizer to said source such that electromagnetic waves,

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emitted by said source, occur along at least said transmission principle polarization axis of said first port; and

an optical path length determination means coupled between said second port of said polarizer and said source port of said loop coupler, there being a pair of sets of electromagnetic wave transmission paths with each said set having each such path therein along a corresponding one of said principle polarization axes of said polarizer, said electromagnetic wave transmission paths each (a) beginning from a corresponding wave coupling location within said second coupling means at which coupling of electromagnetic waves occurs between pairs of said paths having each pair member from a different said set, and (b) continuing through said optical path length determination means into said loop coupler to a corresponding wave coupling location within either of said loop coupler and said first coupling means at

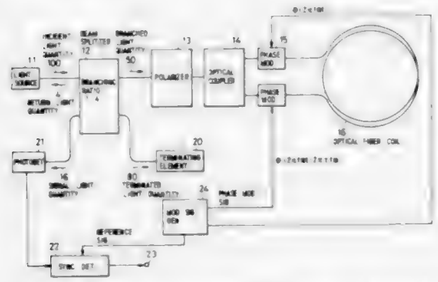
which coupling of electromagnetic waves also occurs between said pairs of said paths, said optical path length determination means being of a length such that polarized electromagnetic waves, propagating over pairs of said electromagnetic wave transmission paths containing a member from each said set to result in propagation time differences therebetween that are less than that delay equal to an initial four of said retardation intervals beginning from delay value zero, also have values for said time differences which differ substantially from delay values occurring at ends of any said initial four of said retardation intervals.

5,327,214

OPTICAL INTERFEROMETRIC GYRO HAVING REDUCED RETURN LIGHT TO THE LIGHT SOURCE

Eiichi Asami, Hannoh, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

PCT No. PCT/JP91/01149, § 371 Date Apr. 24, 1992, § 102(e) Date Apr. 24, 1992, PCT Pub. No. WO92/04597, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 29, 1991, Ser. No. 848,967
Claims priority, application Japan, Aug. 31, 1990, 2-230822; Nov. 27, 1990, 2-324013
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **3 Claims**



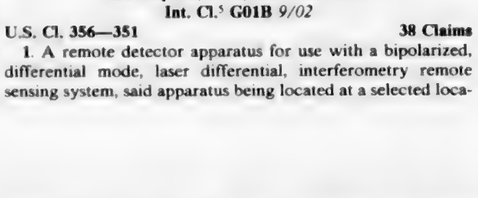
1. An optical interferometric gyro in which light from a light source is split by a first optical coupler into two light beams, one of the said light beams is further split by a second optical coupler into two light beams, one of said second-mentioned two light beams is provided as a clockwise light beam to one end of a looped optical transmission line, the other light beam is provided as a counterclockwise light beam to the other end of said looped optical transmission line, said clockwise and counterclockwise light beams having passed through said looped optical transmission line are combined by said second optical coupler to interfere with each other, the interference light is branched by said first optical coupler to said light source and a photodetector, and an angular velocity applied to said looped optical transmission line about its axis is detected from the output of said photodetector, characterized in that the branching ratio of said first optical coupler is selected such that the quantity of light to be branched to said photodetector is larger than the quantity of light to be branched to said light source.

5,327,215

SENSOR HAVING OPTICAL PASSIVE RING RESONATOR USING SAGNAC EFFECT

Walter Bernard, Daisendorf, and Götz Geister, Salem, both of Fed. Rep. of Germany, assignors to Bodenseewerk Gerätetechnik GmbH, Bodensee, Fed. Rep. of Germany

Filed Oct. 16, 1992, Ser. No. 961,249
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1991, 4135132
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **11 Claims**



1. A sensor making use of a non-reciprocal optical effect and comprising:

a passive ring resonator defining a closed light path;

light source means;

coupler means for coupling light from said light source means into said passive ring resonator in a first direction of propagation and in a second direction of propagation opposite to said first direction of propagation and for coupling light out of said passive ring resonator;

detector means exposed to light coupled out of said passive ring resonator by said coupler means;

interferometer means for superimposing light which has circulated in said passive ring resonator in said first direction of propagation, and light which has circulated in said passive ring resonator in said second direction of propagation, and producing interfering light; and

said detector arrangement including a detector exposed to said interfering light;

wherein said light source means comprises a broadband, incoherent light source emitting a band of light, and

said passive ring resonator has a resonance frequency lying within said band emitted by said broadband incoherent light source.

5,327,216

APPARATUS FOR REMOTE SEISMIC SENSING OF ARRAY SIGNALS USING SIDE-BY-SIDE RETROREFLECTORS

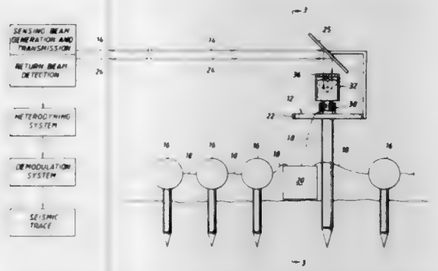
Albert J. Berni, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 18, 1992, Ser. No. 946,736
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—351 **38 Claims**

1. A remote detector apparatus for use with a bipolarized, differential mode, laser differential, interferometry remote sensing system, said apparatus being located at a selected location and adapted to enable the remote sensing system to detect an electrical signal coupled to said remote detector apparatus, comprising:

a casing, the casing being functional to couple motions at the selected location, the motions having directions of movement in any of three orthogonal directions; and

a means for converting two sensing signals transmitted from the remote sensing system into two polarized return sensing signals, said means being mounted on the casing and having the electrical signal coupled thereto, said means being functional for frequency modulating both of the return sensing signals to contain frequency components that represent common motions coupled to the casing and to contain between the return signals a difference signal which represents the electrical signal.

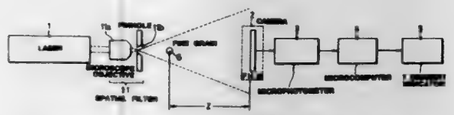


5,327,217

APPARATUS FOR MEASURING PARTICULATE SIZE WITHOUT CONTACTING THE PARTICULATE

Kenzo Kanai, Fukui; Hiroshi Ito, Minoo, and Norikane Kanai, Fukui, all of Japan, assignors to Kanai School, Inc., Fukui, Japan

Continuation of Ser. No. 868,850, Apr. 16, 1992, abandoned, which is a division of Ser. No. 504,358, Apr. 3, 1990, abandoned.
This application Jun. 21, 1993, Ser. No. 79,456
Claims priority, application Japan, Apr. 5, 1989, 1-87639
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—353 **3 Claims**



1. An apparatus for measuring particulate size without contacting the particulate, comprising:

(a) means for radiating a monochromatic laser beam on a path;

(b) spatial filter means, positioned in the path between the means for radiating and the particulate, for diverging the monochromatic beam from said radiating means and for forming behind the particulate a clear boundary diffraction interference fringe accurately inversely proportionate to the particulate size, by diffracting at a boundary around said particulate, when said particulate in a measuring position is radiated by said diverging monochromatic beam; and

(c) means for measuring the gap Δx of the boundary diffraction interference fringe and calculating the size of the particulate based on the formula $D=\lambda Z/\Delta x$, where D is the size of the particulate, λ is the wavelength of the monochromatic beam, and Z is the distance between the particulate and said boundary diffraction interference fringe.

5,327,218

METHOD AND APPARATUS FOR MEASURING DISPLACEMENT BY USING A DIFFRACTED INVERTED IMAGE PROJECTED ON A DIFFRACTION GRATING

Masahiko Igaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 791,371, Nov. 14, 1991, abandoned.
This application Nov. 2, 1993, Ser. No. 144,496
Claims priority, application Japan, Nov. 16, 1990, 2-310693; Oct. 15, 1991, 3-266230
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—356 **22 Claims**



1. An apparatus for measuring displacement, comprising:

a first optical grating;

a second optical grating displaced together with said first optical grating in a given direction;

an optical system for projecting a beam, having a focal point located between said first and second optical gratings onto said first optical grating, wherein the beam is split into overlapping diffracted light components forming diffracted images on said second optical grating shifted in a direction opposite to the displacing direction of said first optical grating; and

means for detecting the beam having passed through said second optical grating.

5,327,219

METHOD AND APPARATUS FOR REMOVING UNWANTED REFLECTIONS FROM AN INTERFEROMETER

Lawrence J. Steimle, Arcadia, and David L. Thiessen, Pasadena, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

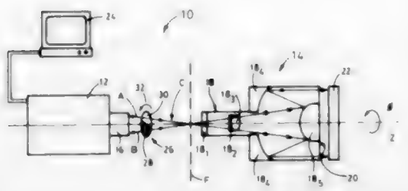
Filed May 15, 1992, Ser. No. 883,957
Int. Cl.[5] G01B *11/00, 9/02*
U.S. Cl. 356—359 **18 Claims**

1. An optical apparatus having an optical system with at least one refractive optical element, the apparatus comprising:

an optical source for generating an optical beam and for projecting the optical beam along an optical path through

the optical system, said optical beam being reflected back along the optical path through the optical system; and

aperture blocking means centered on the optical beam between the optical source and the refractive element of the optical system for cyclically blocking at least half of the optical beam such that a portion of the optical beam reflected from the refractive element is prevented from



interfering with a portion of the optical beam which is transmitted into, and reflected back out of, the optical system, the aperture blocking means transmitting that portion of the optical beam transmitted through the optical system while blocking any corresponding portion of the optical beam which could be reflected by the optical system.

5,327,220

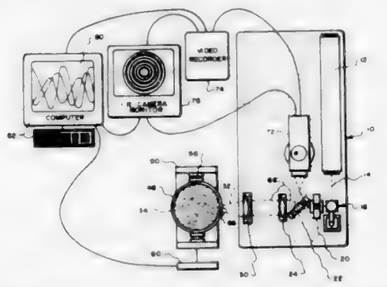
IR INTERFEROMETRIC APPARATUS AND METHOD FOR DETERMINING THE THICKNESS VARIATION OF AN OPTICAL PART WHEREIN SAID OPTICAL PART DEFINES NEWTON INTERFERENCE FRINGE PATTERNS

David J. Erickson, Huntington Beach, Calif., assignor to O.C.A. Applied Optics, Inc., Garden Grove, Calif.

Filed Jun. 26, 1992, Ser. No. 905,042

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—355 **16 Claims**



1. An IR interferometric thickness test apparatus for determining any variation in thickness of an IR optical part under test comprising,

a monochromatic optical system generating and focusing a converging monochromatic beam through the optical part and generating a reflected coincident return beam containing standing interference Newton fringes due to reflections off the inner and outer surfaces of the optical part,

said optical system being spaced from said optical part,

said surfaces forming an interferometer optical cavity and the position of these surfaces within the beam is not critical,

a detector for receiving said interference fringes and measuring the light intensity of the fringes and generating signals as a function of light intensity and thickness variations of the optical part, and

means for providing relative motion between said interferometer and said optical part.

5,327,221

DEVICE FOR DETECTING POSITIONAL RELATIONSHIP BETWEEN TWO OBJECTS

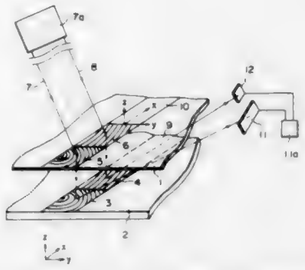
Kenji Saitoh, Yokohama; Masakazu Matsugu, Atsugi; Shigeyuki Suda, Yokohama; Yukichi Niwa, Narashino; Ryo Kuroda, Atsugi; Noriyuki Nose, Machida; Minoru Yoshii, Tokyo; Naoto Abe, Isehara, and Mitsutoshi Ohwada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 851,110, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 754,304, Sep. 4, 1991, abandoned, which is a continuation of Ser. No. 311,180, Feb. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 271,601, Nov. 15, 1988, abandoned. This application Jul. 29, 1992, Ser. No. 919,380

Claims priority, application Japan, Feb. 16, 1988, 63-033202; Feb. 16, 1988, 63-033205; Feb. 16, 1988, 63-033206; Feb. 16, 1988, 63-033208; Feb. 16, 1988, 63-033209; Sep. 5, 1988, 63-221535; Sep. 5, 1988, 63-221536; Sep. 9, 1988, 63-226003; Sep. 9, 1988, 63-226004; Sep. 9, 1988, 63-226005; Sep. 9, 1988, 63-226007

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—355 **15 Claims**



1. A device for detecting the positional relationship between a mask and a wafer in a predetermined direction, said device comprising:

light source means for emitting light toward the mask or the wafer;

first detecting means having a first light receiving surface, for detecting the position of incidence of a first light, upon said first light receiving surface, having been emitted rom said light source means and having been deflected by the mask and having been reflectively deflected by the wafer toward said first light receiving surface, wherein the position of the incidence of the first light upon said first light receiving surface is changeable with a change in the positional relationship between the mask and the wafer in said predetermined direction;

second detecting means having a second light receiving surface, for detecting the position of incidence of a second light, upon said second light receiving surface, having been emitted from said light source mans and having been reflectively deflected by the wafer to said second light receiving surface, wherein the state of the position of incidence of the second light resulting rom a change in the positional relationship between the mask and the wafer, in said predetermined direction differs from that of the first light; and

means for detecting the positional relationship between the mask and the wafer in said predetermined direction, on the basis of the detection by said first and second detecting means, whereby the positional relationship between the mask and the wafer is detected without being affected by a change in an inclination component between the mask and the wafer.

5,327,222

DISPLACEMENT INFORMATION DETECTING APPARATUS

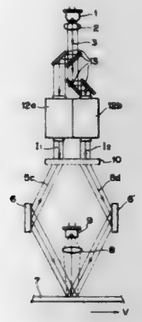
Takamiya: Makoto, Kawasaki; Kadowaki: Hidejiro, Yokohama, and Ishida: Yasuhiko, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 799,093, Nov. 27, 1991, abandoned. This application Dec. 9, 1993, Ser. No. 164,846

Claims priority, application Japan, Nov. 30, 1990, 2-333835

Int. Cl.[5] G01B *11/02*

U.S. Cl. 356—356 **15 Claims**



1. A displacement information measuring apparatus comprising:

light generating means for generating two light fluxes;

acoustic optical means which modulate each of the two light fluxes independently, for giving a predetermined frequency difference to the two light fluxes from the light generating means;

optical means including a diffraction grating upon which the two light fluxes having the predetermined frequency difference given by the acoustic optical means are incident so that said light fluxes are diffracted and emerged, said optical means causing said light fluxes from said diffraction grating to be incident upon an object in which the displacement information is to be measured, and said two light fluxes emergent from said acoustic optical means being incident upon said optical means in parallel condition to each other; and

detecting means for performing a detection by interference of one light flux incident upon said object and emergent from said object with the other of said two light fluxes incident upon said object and emergent from said object, the displacement information of said object being obtained from a beat signal corresponding to the frequency difference and obtained from said detecting means,

wherein said optical means is constituted such that a frequency of the beat signal may not be substantially affected by a variation of wavelength of the light fluxes incident upon the diffraction grating.

5,327,223

METHOD AND APPARATUS FOR GENERATING HIGH RESOLUTION OPTICAL IMAGES

Hans-Erdmann Korth, Stuttgart, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 19, 1992, Ser. No. 901,334

Claims priority, application European Pat. Off., Aug. 27, 1991, 91114365.9

Int. Cl.[5] G01B *9/02*

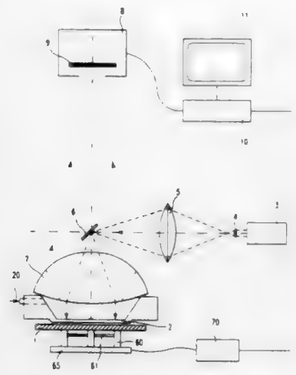
U.S. Cl. 356—359 **14 Claims**

1. A method for achieving a high resolution optical image of a surface of an object comprising the steps of:

providing a membrane mask having a plurality of pinholes,

the object and said mask located so that the surface of the object can receive light through said pinholes;

illuminating said mask and said object through said pinholes;



collecting light reflected from the object, passed through said pinholes, and interfering with light reflected from said mask;

processing the collected light in an image process; and

displaying the image.

5,327,224

SEMICONDUCTOR DEVICE WITH HYDROGEN ION INTERCEPTING LAYER

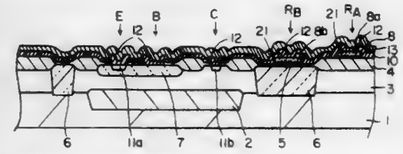
Masaaki Ikegami, and Tetsuo Higuchi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,650

Claims priority, application Japan, May 20, 1992, 4-127609

Int. Cl.[5] H01L *29/72*

U.S. Cl. 257—380 **13 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate;

a first insulating oxide film provided on said semiconductor substrate;

a second insulating oxide film provided on said semiconductor substrate, contiguous to said first insulating oxide film and having a film thickness larger than that of said first insulating oxide film;

a first polysilicon resistance film provided on said first insulating oxide film;

a second polysilicon resistance film provided on said second insulating oxide film;

a first electrode provided on said semiconductor substrate and electrically connected to said first polysilicon resistance film;

a second electrode provided on said semiconductor substrate and electrically connected to said second polysilicon resistance film;

an insulating protection film provided on said semiconductor substrate and covering said first polysilicon resistance film, said second polysilicon resistance film, said first electrode and said second electrode; and

hydrogen ion intercepting films which prevent passage of

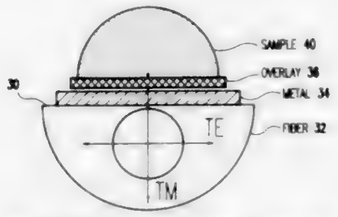
hydrogen ion interposed between said first insulating oxide film and said first polysilicon resistance film and bounded by opposite sides of said first polysilicon resistance film, and between said second insulating oxide film and said second polysilicon resistance film and bounded by opposite sides of said first polysilicon resistance film, respectively.

5,327,225

SURFACE PLASMON RESONANCE SENSOR

William J. H. Bender, Lancaster, Pa., and Raymond E. Dessy, Blacksburg, Va., assignors to The Center for Innovative Technology, Herndon, Va.

Filed Jan. 28, 1993, Ser. No. 10,267
Int. Cl.[5] G01N *21/55*
U.S. Cl. 356—445 **22 Claims**



1. A surface plasmon resonance sensor, comprising:
an optical fiber;
a source of electromagnetic radiation connected to said optical fiber;
first and second films coated on each other and on said optical fiber at a sample contacting region of said optical fiber, said first and second films having a combined thickness small enough to allow an evanescent field portion of a beam of electromagnetic radiation supplied from said source into said optical fiber to penetrate into both said first and second films; and
a detector connected to said optical fiber for detecting surface plasmon resonance as a function of a thickness and refractive index for both said first and second films and a refractive index of said sample.

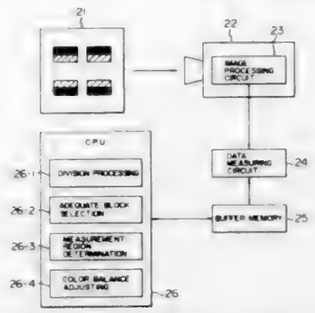
5,327,226

METHOD AND SYSTEM FOR AUTOMATICALLY ADJUSTING COLOR BALANCE OF A TV CAMERA

Kazuhiro Tanabe, Tachikawa, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 92,476
Claims priority, application Japan, Jul. 17, 1992, 4-213591
Int. Cl.[5] H04N *9/73*
U.S. Cl. 348—188 **10 Claims**

1. A method of automatically adjusting color balance of a TV camera, comprising the steps of:
picking up by a TV camera, an image of a chart board having an image region of a white level, an image region of a black level and an image region of a gray level to generate an image signal;
dividing the image signal into a plurality of blocks;
selecting adequate blocks corresponding to a white level, a black level and a gray level based on signal levels of the individual blocks; and
determining the white level, the black level and the gray level based on the signal levels of the selected adequate blocks and measurement regions for the white level, the black level and the gray level, respectively, and automatically adjusting the color balance, each of said measurement regions including at least one adequate block.

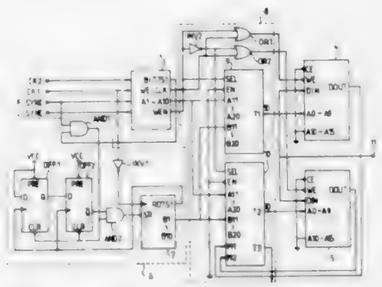


5,327,227

DE-INTERLEAVING METHOD AND APPARATUS FOR D2 MAC AUDIO

Hong S. Han, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyongki, Rep. of Korea

Filed Jan. 25, 1993, Ser. No. 8,465
Claims priority, application Rep. of Korea, Jan. 23, 1992, 92-886
Int. Cl.[5] H04N *11/08, 5/60*
U.S. Cl. 348—489 **5 Claims**



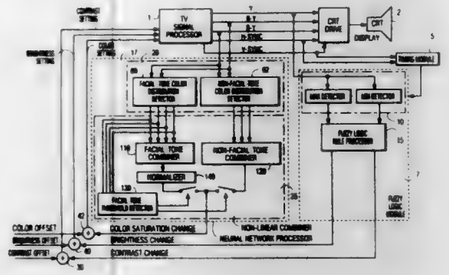
5. A method for de-interleaving audio data of a D2 MAC mode which is interleaved in units of packets and transmitted, comprising the steps of:
generating a write address for storing said interleaved audio data in units of packets;
storing said interleaved audio data according to the generated write address in units of packets;
generating a read address for reading out said audio data stored in units of packets in a de-interleaving order; and
reading out said stored audio data according to the generated read address.

5,327,228

SYSTEM FOR IMPROVING THE QUALITY OF TELEVISION PICTURES USING RULE BASED DYNAMIC CONTROL

Srinagesh Satyanarayana, and Sandeep M. Dalal, both of Ossining, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,309
Int. Cl.[5] H04N *9/64*
U.S. Cl. 348—647 **20 Claims**



1. A method for controlling the quality of a television picture comprising the steps of:
a) separating a video signal comprising said television picture into a luminance signal having a first range of luminance values and at least one color signal having a color quality parameter and a plurality of color values;
b) detecting for a first period of time, a first value of said first range of luminance values and a second value of said first range of luminance values;
c) deriving a first picture change signal by processing said first and second values in accordance with a plurality of preformulated rules;
d) detecting for said first period of time, the color distribution of said plurality of color values so as to determine a first color distribution value and a second color distribution value;
e) selecting either said first color distribution value or said second color distribution value as a second picture change signal, according to a first criteria;
f) altering said first range of luminance values in response to said first picture change signal; and
g) altering said color quality parameter in response to said second picture change signal.

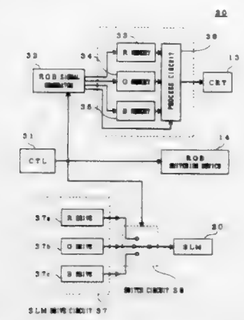
5,327,229

DISPLAY DEVICE

Toshio Konno, Hoya; Shintaro Nakagaki, Miura; Ichiro Negishi; Tetsuji Suzuki, both of Yokosuka; Fujiko Tatsumi, Yokohama; Ryusaku Takahashi, Yokosuka; Hiroyuki Bonde, Yokohama, and Tsutomu Matsumura, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 11, 1993, Ser. No. 16,732
Claims priority, application Japan, Feb. 13, 1992, 4-058862
Int. Cl.[5] H04N *9/30*
U.S. Cl. 348—742 **5 Claims**

1. A display device for displaying color information comprising:
a spatial light modulator including at least a photo-conductive layer, a photo-modulator layer and a dielectric mirror;
writing means for writing optical information represented by different colors onto said spatial light modulator time-divisionally in a sequence of said different colors;
reading means for producing reading lights having said different colors in synchronism with time-divisional writing of said optical information, and for projecting said reading lights to said spatial light modulator for reading said optical information written thereon;
driving means for supplying said spatial light modulator with different driving signals correspondingly with said reading lights having said different colors and in synchronism with time-divisional projections of said reading lights; and
means for projecting said optical information read out from said spatial light modulator by said reading lights on display means for displaying said color information.

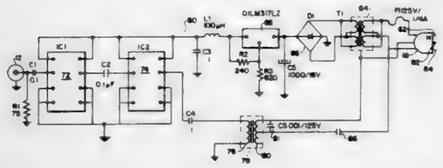


5,327,230

VIDEO MULTIPLYING SYSTEM

Gregory A. Dockery, 1938 Port La., Amarillo, Tex. 79106

Continuation of Ser. No. 454,423, Dec. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 409,667, Sep. 20, 1989, Pat. No. 5,151,838. This application Dec. 24, 1992, Ser. No. 997,119
Int. Cl.[5] H04N *1/00*
U.S. Cl. 348—8 **35 Claims**



1. A broadcast system for use with a video signal source having a source frequency, a power line and a monitor having a tunable frequency, comprising:
a transmitter, electrically connected to the power line, including:
input means for receiving a video signal at the source frequency from the video signal source,
modulation means for converting the signal from the source frequency to a broadcast frequency;
transmitter output means, electrically connected to the power line, for electromagnetically radiating the signal from the power line at the broadcast frequency; and
an antenna for receiving the electromagnetically radiated signal, including:
six switches having input ends and output ends;
an output having an output line and a return line, the return line connected to a ground;
three antenna lines, the first antenna line connected to the input of the first switch and the input of the sixth switch, the second antenna line connected to the input of the fourth switch and the input of fifth switch, the connection between the input of the fourth switch and the input of the fifth switch forming a first loop, the

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third antenna line connected to the input of the second switch and the input of the third switch, the connection between the input of the second switch and the input of the third switch forming a second loop, the output of the first switch and the output of the second switch connected together to form a third loop and connected to the output line, the output of the third switch and the fourth switch connected together to form a fourth loop, the output of the fifth switch connected to the output line, and the output of the sixth switch connected to the return line, whereby the impedance of the output line may be adjusted by closing one or more of the six switches,

demodulation means, connected to the output line, for converting the signal from the broadcast frequency to the tunable frequency, and

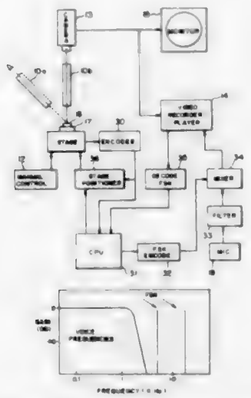
antenna output means, connected to the modulation means, for outputting the signal at the tunable frequency to the monitor.

5,327,231

METHOD OF SIMULTANEOUSLY RECORDING DYNAMIC DIGITAL DATA, AN ANALOG AUDIO SIGNAL AND A VIDEO SIGNAL

Michael J. Krummey, Madison, Wis.; Richard J. Lee, Murrysville, Pa.; James E. Nesbitt; William H. Powers, Jr., both of Pittsburgh, Pa., and Alfred J. Schwoeble, Monroeville, Pa., assignors to R. J. Lee Group, Inc., Monroeville, Pa.

Division of Ser. No. 730,084, Jul. 15, 1991, Pat. No. 5,216,500.
This application Apr. 30, 1992, Ser. No. 876,573
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—79 **11 Claims**



1. A method of simultaneously recording a signal indicative of dynamic digital data, and signals comprising at least one analog audio signal and video picture data of a television signal comprising the steps of:

a) encoding said dynamic digital data into a signal at audio frequencies between a lower threshold frequency and an upper threshold frequency,

b) filtering said analog audio input signal to remove frequencies between said lower threshold frequency and said upper threshold frequency,

c) combining said encoded dynamic digital data signal and said filtered analog audio signals, and

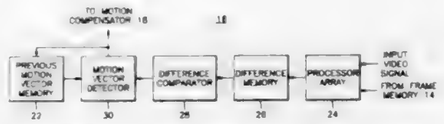
d) video recording said combined audio signal and said video signal into a television signal.

5,327,232

METHOD AND APPARATUS FOR DETECTING MOTION VECTORS

Sang-Ho Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 8, 1993, Ser. No. 73,747
Claims priority, application Rep. of Korea, Jun. 9, 1992, 1992-9947
Int. Cl.[5] H04N *7/133, 7/137*
U.S. Cl. 348—412 **2 Claims**



1. A method for determining motion vectors between a current frame and its preceding frame of video signals, wherein the current frame is divided into a plurality of search blocks of an identical size and the preceding frame is divided into a corresponding number of search regions, each search region being further divided into a multiplicity of subregions of said identical size, which comprises the steps of:

(a) comparing a given search block with a subregion selected from its corresponding search region and calculating the absolute value of difference in the mean luminance level between the pixels present in the search block and the pixels present in the selected subregion;

(b) repeating step (a) above for each of the remaining subregions in said corresponding search region to thereby obtain a multiplicity of the absolute values of difference;

(c) selecting the smallest value among the multiplicity of said absolute values of difference and defining a subset consisting of all minimum absolute values equal to the smallest value;

(d) deriving a subset of candidate vectors from the subset of said minimum absolute values, each candidate vector representing the displacement of the pixels between the search block and a subregion, entailing a corresponding minimum absolute value equal to the smallest value;

(e) comparing a predetermined motion vector retrieved from a storage means with the subset of said candidate vectors to determine the candidate vector closest to the predetermined motion vector;

(f) assigning the closest candidate vector as the motion vector of the search block and storing said closest candidate vector in the storage means as the predetermined motion vector for a subsequent search block; and

(g) repeating steps (a) to (f) until the entire current frame is searched against its entire preceding frame, to thereby determine the motion vectors therebetween.

5,327,233

MOVABLE SECURITY CAMERA APPARATUS

Seung L. Choi, Suweon, Rep. of Korea, assignor to SamSung Electronics, Ltd., Suwon, Rep. of Korea

Filed Sep. 16, 1991, Ser. No. 760,193
Claims priority, application Rep. of Korea, Dec. 15, 1990, 90-20717
Int. Cl.[5] H04N *7/00, 7/18*
U.S. Cl. 348—152 **27 Claims**

1. A movable watch camera apparatus comprising:

a MICOM for controlling the whole system and for controlling the motion of a watch camera on the basis of control programs in accordance with inputted moving path information;

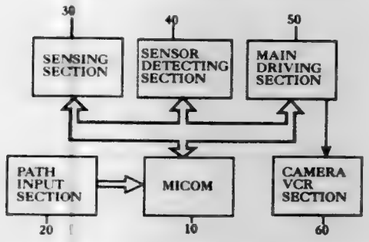
a path input section for inputting into said MICOM the moving path information for said watch camera;

a sensing section for providing the data for the moving direction of said camera, after sensors on a rail are controlled by path commands of said MICOM;

a sensor detecting section for detecting the moving path of said watch camera by sensing the states of said sensors of said sensing section;

a camera video cassette tape recording section including said watch camera and a video cassette tape recorder;

said watch camera being for taking photographs over the area to be guarded by moving along said rail; and



said video cassette tape recorder, being for recording the photographed data of said watch camera intermittently or continuously in accordance with the controls of said MICOM; and

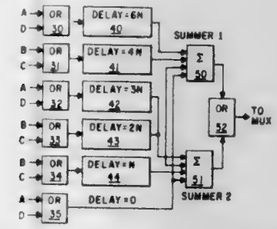
a main driving section for supplying driving power to said camera video cassette tape recording section, and for driving said watch camera or changing the moving direction of said watch camera according to the output of said sensor detecting section.

5,327,234

TIME DELAY AND INTEGRATE FOCAL PLANE ARRAY DETECTOR

Howard W. Creswick, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 15, 1991, Ser. No. 729,659
Int. Cl.[5] H04N *7/12*
U.S. Cl. 348—399 **20 Claims**



1. A forward looking infrared system, comprising:

(a) a scanner for scanning a scene in alternate odd and even channels at a predetermined scanning rate to provide a plurality of equally time spaced samples in each said channel;

(b) an offsetting circuit offsetting said samples in said even channels relative to said odd channels to be time spaced intermediate adjacent samples of said odd channels;

(c) a storage circuit storing a plurality of odd TV lines, each of said odd lines composed of the samples from a different one of said odd channels with individual samples from the following even channel disposed between an adjacent pair of samples of said odd channel and a plurality of even TV lines, each of said even lines composed of the samples from a different one of said even channels with individual samples from the following odd channel disposed between an adjacent pair of samples of said even channel; and

(d) video generating circuitry for generating video signals from said odd TV lines and said even TV lines in interlaced manner at a multiple of said predetermined rate;

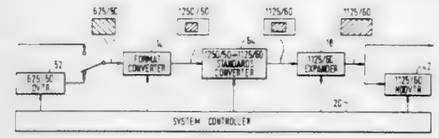
(e) wherein said scanner includes a plurality of detector elements arranged in columns and channels, and plural summing devices, each summing device associated with a different predetermined plurality of said detector elements in one of said channels to provide said sample for the associated channel.

5,327,235

VIDEO CONVERSIONS OF VIDEO SIGNAL FORMATS

John W. Richards, Stockbridge, United Kingdom, assignor to Sony United Kingdom Limited, Staines, United Kingdom

Filed Jan. 27, 1993, Ser. No. 9,670
Claims priority, application United Kingdom, Feb. 17, 1992, 9203331
Int. Cl.[5] H04N *7/01*
U.S. Cl. 348—441 **20 Claims**



1. An apparatus for up-converting a digital video signal from a first format having a first field/frame rate to a second higher-definition format having a second different field/frame rate, comprising:

storage means which can store input fields/frames of pixel data in the first format at said first field/frame rate;

storage control means for controlling said storage means to output the stored pixel data together with dummy data at said first field/frame rate as intermediate fields/frames in a third format having higher definition than said first format, such that the pixel data occupies a continuous active portion of each intermediate field/frame and the dummy data occupies the remainder of that intermediate field or frame; and

means for processing said intermediate fields/frames by expanding said active portions thereof in vertical and horizonal directions and changing the field/frame rate thereof to said second field/frame rate to produce output fields/frames in said second format such that the pixel data extends across substantially the whole of said output fields/frames in at least one of the vertical and horizontal directions.

5,327,236

VIDEO SWITCHER APPARATUS FOR WIDE SCREEN EDTV SIGNALS

Yoshio Sugimori, and Yoshihide Kimata, both of Tokyo, Japan, assignors to Nippon Television Network Corporation, Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 862,974
Claims priority, application Japan, Jul. 25, 1991, 3-186087
Int. Cl.[5] H04N *7/04, 5/268*
U.S. Cl. 348—495 **6 Claims**

1. A video switcher apparatus comprising:

a plurality of signal separator means to which wide screen EDTV signals, each representing an image and each composed of a main screen signal and a compensation screen signal for compensating the high frequency components of said main screen signal, are supplied and separated into main screen signals and compensation screen signals;

a plurality of compensation image modification means for returning compensation image signals to signals in original display positions with respect to said images represented by said EDTV signals, in which each of said compensa-

tion image signals as separated by a said respective signal separator means is received and returned to a signal in an original display position of the image;

a plurality of frequency multiplex means for multiplexing said compensation image signals with said main image signals matched to a spacial position of the main screen signals by said returning to the original display position, wherein said main screen signals and said compensation

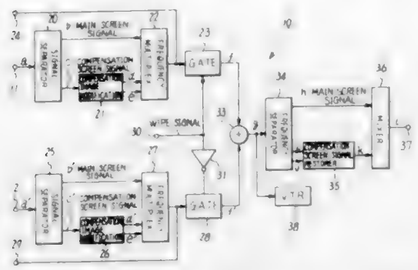


image signals are multiplexed in frequency for providing a multiplexed EDTV signal;

a signal switching means in which a plurality of EDTV signals multiplexed by the frequency multiplex means are suitably switched and then mixed; and

a signal conversion means in which the switched and mixed EDTV signals are converted to wide screen EDTV signals.

5,327,237

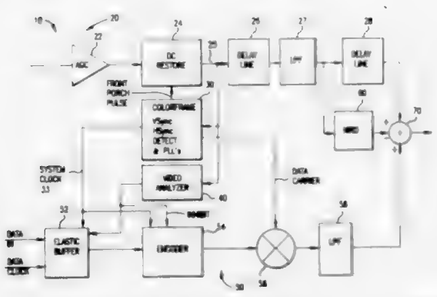
TRANSMITTING DATA WITH VIDEO

Richard C. Gerdes, Scottsdale; Charles Jungo, Gilbert, and Gerald Montgomery, Mesa, all of Ariz., assignors to Wave-Phore, Inc., Tempe, Ariz.

Filed Jun. 14, 1991, Ser. No. 715,920

Int. Cl.[5] H04N *7/08*

U.S. Cl. 348—476 **39 Claims**



1. A method for transmitting data in the same communications channel as a video signal being transmitted in a given frequency band, the video signal having a video bandwidth with an upper frequency limit and active and blanking intervals with a sync frequency, and the video signal and the data being uncorrelated with respect to each other, the method comprising:

detecting the active video intervals; and

transmitting the data at frequencies within the band and primarily near the upper frequency limit of the band substantially centered around quarter non-integral multiples of the sync frequency during at least some of the active video intervals.

5,327,238

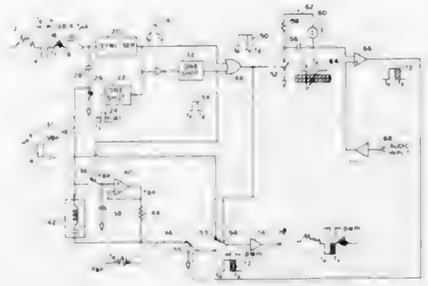
METHOD AND APPARATUS FOR MODULATING A SEPARATED TELEVISION HORIZONTAL SYNC PULSE AS A SUBCARRIER OF AUDIO INFORMATION

Wayne W. Chou, 25 Hauley Pl., Ridgefield, Conn. 06877

Filed Nov. 10, 1992, Ser. No. 974,138

Int. Cl.[5] H04N *7/093, 7/18, 7/10*

U.S. Cl. 348—473 **7 Claims**



1. A closed circuit television communication system for the transmission and reception of video signals over wires in which separated horizontal sync pulses of an original video signal are pulse width modulated by an audio signal, enabling the video signal to carry additional information which can be recovered on reception comprising:

an original video signal containing horizontal sync pulses,

means for separating said horizontal sync pulses from said original video signal,

means for forming pulse width modulated pulses which vary with an audio input signal,

said means for forming said pulse width modulated pulses includes means for producing stretched pulses which have a longer duration than said horizontal sync pulses of said original video signal, said stretched pulses being used to generate a linearly varying voltage with respect to time over a period of time determined by said stretched pulses,

means for replacing said horizontal sync pulses of said original video signal with said pulse width modulated pulses while preserving the original video signal levels surrounding said pulse width modulated pulses thereby providing a reconstituted video signal,

means for transmitting said reconstituted video signal over wire,

reception means coupled to said wire for receiving said reconstituted video signal,

sync separating means for separating said pulse width modulated pulses from said reconstituted video signal,

means for demodulating said pulse width modulated signals to produce an audio signal output.

5,327,239

VIDEO DATA SPLITTING CIRCUIT

Ki B. Kim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 20, 1991, Ser. No. 763,295

Claims priority, application Rep. of Korea, Nov. 9, 1990, 90-18064

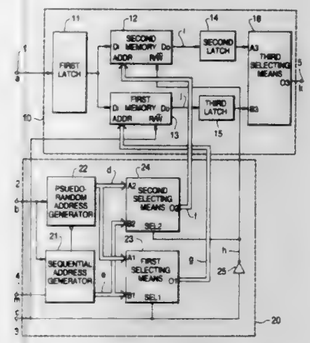
Int. Cl.[5] H04N *5/213, 5/14*

U.S. Cl. 348—607 **20 Claims**

1. A video data splitting circuit for removing noise during the transmission of video signals, comprising:

control means for sequentially generating sequential address signals and pseudo-random address signals on the basis of a period of a horizontal synchronizing signal after being synchronized with a clock signal, for alternately selecting said sequential address signal and said pseudo-random address signal in accordance with first and second complementary control signals to simultaneously produce first and second address signals; and

signal holding and outputting means coupled to receive video signals, for sequentially writing video signals onto a



memory to provide stored video signals and for randomly reading and outputting stored video signals in a scrambled form in accordance with said first and second address signals and said first and second complementary control signals.

5,327,240

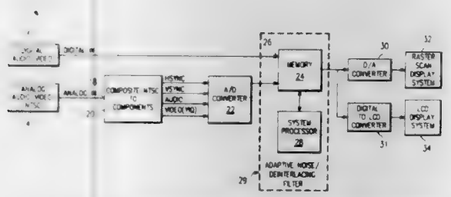
METHODS, SYSTEMS AND APPARATUS FOR PROVIDING IMPROVED DEFINITION VIDEO

Jeremiah Golston, SugarLand; Christopher J. Read, Houston, and Walt Bonneau, Jr., Missouri City, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 24, 1991, Ser. No. 814,970

Int. Cl.[5] H04N *5/14, 5/213, 7/01*

U.S. Cl. 348—607 **37 Claims**



1. A method for displaying images in a video display system comprising the steps of:

generating video component level signals for pixels of images to be displayed as first and second fields of interlaced rows updated on alternate scans, the component level signals quantified by video component values represented as digital signals;

deinterlacing the pixels in the first and second fields to produce pixels for deinterlaced images using the video component values as represented by the digital signals, said step of deinterlacing comprising the steps of:

computing a global mean video component value from the video component values generated for a previous scan of at least one of the first and second fields;

computing a global standard deviation from the global mean;

computing a local mean video component value from the video component values generated for the plurality of pixels being updated as part of the current scan of the first field and defining a neighborhood of a pixel in the second field being deinterlaced;

computing a local standard deviation from the local means video component value;

comparing the local standard deviation with a selected multiple of the global standard deviation; and

in response to said step of comparing, carrying forward the video component value generated as part of a previous scan of the second field for the pixel being deinterlaced when the local standard deviation is less than the selected multiple of the global standard deviation and setting the video component value for the pixel being deinterlaced to the computed local mean video component value when the local standard deviation exceeds the selected multiple of the global standard deviation; and

displaying the deinterlaced images using the digital signals video component values selected during said step of deinterlacing.

5,327,241

VIDEO SIGNAL PROCESSING APPARATUS FOR REDUCING ALIASING INTERFERENCE

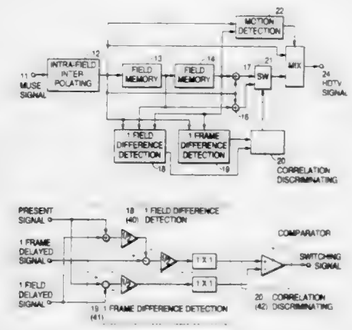
Atsushi Ishizu, Takatsuki; Masaki Tokoi, Neyagawa, and Yoshio Seki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 20, 1992, Ser. No. 915,551

Claims priority, application Japan, Jul. 19, 1991, 3-179474; Jul. 25, 1991, 3-186115

Int. Cl.[5] H04N *5/213*

U.S. Cl. 348—606 **12 Claims**



1. A video signal processing apparatus for reducing aliasing interference comprising:

an interpolating means which receives a high definition television signal which has been bandwidth-compressed by offset sub-sampling for interpolating a non-sample point from intra-field sample points of a sub-sampled signal;

a field averaging means for performing an inter-field averaging process from data of three adjacent fields of a signal thus interpolated;

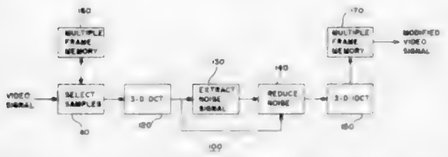
a frame averaging means for performing an inter-frame averaging process; and

a correlation discriminating means connected to a signal switching means for detecting one field difference and one frame difference and for switching an output signal of said inter-field averaging means and an output signal of said inter-frame averaging means in accordance with magnitudes of the differences thus detected.

5,327,242
VIDEO NOISE REDUCTION APPARATUS AND METHOD USING THREE DIMENSIONAL DISCRETE COSINE TRANSFORMS AND NOISE MEASUREMENT

Saiprasad V. Naimpally, Langhorne, Pa., and Jimmy C. Tran, Marlton, N.J., assignors to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Mar. 18, 1993, Ser. No. 33,576
Int. Cl.[5] H04N *5/21, 7/133*
U.S. Cl. 348—606 **22 Claims**



1. A method of processing a first video signal having a noise component to produce a second video signal representative of the first video signal with the noise component reduced, said method comprising the steps of:

(a) taking corresponding data samples in a plurality of frames of the first video signal to produce three dimensional (3-D) blocks of time spatial samples of the first video signal;

(b) transforming the 3-D blocks of time spatial samples of the first video signal to produce 3-D blocks of time frequency spectrum coefficients of the first video signal;

(c) generating, from selected segments of the 3-D blocks of time frequency spectrum coefficients of the first video signal, a 3-D block of time frequency spectrum coefficients of the noise component;

(d) modifying the 3-D blocks of time frequency spectrum coefficients of the first video signal as a function of the 3-D block of time frequency spectrum coefficients of the noise component to produce modified 3-D blocks of time frequency spectrum coefficients which represent the second video signal; and

(e) transforming the modified 3-D blocks of time frequency spectrum coefficients which represent the second video signal to produce corresponding 3-D blocks of data samples in a plurality of frames of the second video signal.

5,327,243
REAL TIME VIDEO CONVERTER

Michael Maietta, San Jose, and David M. Smith, Campbell, both of Calif., assignors to RasterOps Corporation, Santa Clara, Calif.

Continuation of Ser. No. 446,038, Dec. 5, 1989, abandoned. This application May 30, 1991, Ser. No. 709,079
Int. Cl.[5] H04N *7/01*
U.S. Cl. 348—565 **23 Claims**

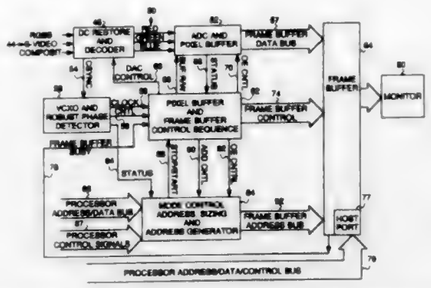
1. A converter for converting a video signal from a first to a second scan rate comprising:

a pixel buffer for storing a portion of the video signal having a first interlaced raster video scan rate;

an address generator for determining a display location for the video signal;

a non-interlaced raster frame buffer operatively connected to the pixel buffer for storing the video signal at a second scan rate differing from the first scan rate;

a control sequencer operatively connected to the pixel buffer and to the address generator for providing the portion of the video signal stored in the pixel buffer and the display location to the frame buffer upon occurrence of a predetermined event; and

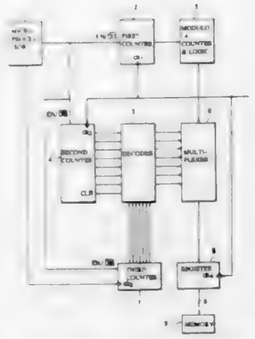


a means for controlling in response to a user command a display size and the display location of the video signal, wherein the display is a window.

5,327,244
STROBE TIMING CONTROL CIRCUIT FOR USE IN VIDEO TAPE RECORDER

Yong-Je Kim, Jinhae-city, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 711,374, Jun. 5, 1991, abandoned, which is a continuation of Ser. No. 269,305, Nov. 10, 1988, abandoned. This application Nov. 12, 1991, Ser. No. 789,794
Claims priority, application Rep. of Korea, Nov. 10, 1987, 12646/1987
Int. Cl.[5] H04N *5/272*
U.S. Cl. 348—594 **22 Claims**



1. A circuit for controlling the strobe timing a picture-in-picture feature, comprising:

a microcomputer;

first, second and third counters receiving from said microcomputer a control signal for varying strobe timing;

modulo-4 counter and logic means for receiving an output of said first counter;

decoder means for receiving outputs of said second and third counters, and for providing an output to a clear terminal of said second counter;

multiplexer for receiving the outputs of said decoder and said modulo-4 counter and logic means;

register means for receiving the output of said multiplexer;

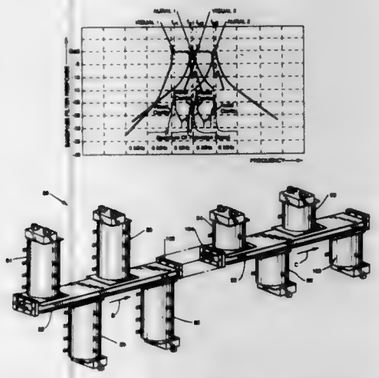
a memory connected to be addressed with said output of said multiplexer via said register means; and

means for applying vertical synchronizing pulses for subscreens to a clock terminal of said first and second counters and a clock terminal of said register means, and an output of said microcomputer to a clock terminal of said third counter.

5,327,245
METHOD AND APPARATUS FOR COMBINING ADJACENT CHANNEL TELEVISION SIGNALS

Robert M. Unetich, Upper St. Clair Township, Allegheny County, and Jeffrey M. Lynn, Peters Township, Washington County, both of Pa., assignors to Information Transmission Systems Corp., McMurray, Pa.

Filed Feb. 11, 1992, Ser. No. 834,166
Int. Cl.[5] H04N *5/38*
U.S. Cl. 348—723 **26 Claims**



1. A method of combining a plurality of immediately adjacent channel television signals, each of said channels including a visual signal and a separate aural signal, said method comprising the steps of:

a. providing a main transmission line for transmitting said plurality of television signals in a predetermined direction of transmission;

b. inserting the visual signal of a first television channel into said main transmission line in said predetermined direction;

c. then inserting the visual signal of a second, immediately adjacent television channel into said main transmission line in said predetermined direction, using a frequency band otherwise occupied by the aural signal of the first television channel as a guard band to separate the combined visual signals of said first and second television channels;

d. then inserting the aural signal of said first television channel into said main transmission line in said predetermined direction; and

e. then inserting the aural signal of said second television channel into said main transmission line in said predetermined direction.

5,327,246
PIXEL DEFECT REMOVING CIRCUIT FOR SOLID-STATE IMAGE PICKUP DEVICE

Norio Suzuki, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

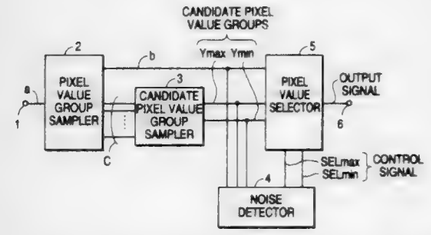
Filed Jan. 23, 1992, Ser. No. 824,523
Int. Cl.[5] H04N *5/335*
U.S. Cl. 348—246 **15 Claims**

11. A pixel defect removing circuit comprising:

a pixel value group sampler for receiving a video signal, and delivering a pixel value of a pixel of notice at a certain time t and a proximal pixel value group consisting of pixel values of a group of proximal pixels adjacent to the pixel of notice two-dimensionally around the pixel of notice;

a candidate pixel value group sampler for delivering, as candidates for a pixel value to be finally delivered from said circuit, a group of plural candidate pixel values from among the pixel values of said proximal pixel value group;

a noise detector for performing an operation to determine, based on the pixel value of the pixel of notice and the candidate pixel values, whether the pixel value of the pixel of notice is a pulse noise and to determine which pixel value should be finally delivered from said circuit from among the pixel value of the pixel of notice and the candidate pixel values, and for delivering a pixel selection signal indicative of the pixel value which is determined to be finally delivered from said circuit; and



a pixel value selector for selecting and delivering one pixel value from among the pixel value of the pixel of notice and the candidate pixel values on the basis of the pixel selection signal,

wherein Pmax and Pmin respectively denote a maximum pixel value and a minimum pixel value among the candidate pixel value group, and wherein the noise detector sets the selection signal to indicate Pmax when the pixel value of the pixel of notice is larger than Pmax and a difference between the pixel value of the pixel of notice and Pmax is larger than a first predetermined threshold value, and sets the selection signal to indicate Pmin when the pixel value of the pixel of notice is smaller than Pmin and a difference between the pixel of value of the pixel of notice and Pmin is larger than a second predetermined threshold value.

5,327,247
COMPENSATION OF LOSSES AND DEFECTS IN TELECINE DEVICES

Trevor M. Osborne, Stevenage; Terrence W. Mead, and Stuart Hunt, both of Hertford, all of United Kingdom, assignors to Rank Cintel Ltd., United Kingdom

PCT No. PCT/GB89/01539, § 371 Date Jun. 24, 1991, § 102(e) Date Jun. 24, 1991, PCT Pub. No. WO90/07842, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 22, 1989, Ser. No. 720,449
Claims priority, application United Kingdom, Dec. 23, 1988, 8830205; Jun. 16, 1989, 8913924
Int. Cl.[5] H04N *3/36, 5/253*
U.S. Cl. 348—100 **38 Claims**

1. A cathode ray tube (CRT) flying spot image scanning apparatus, comprising:

a scanning area for scanning with a flying spot;

means for addressing each location of the scanning area;

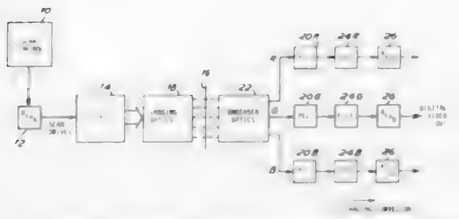
means for deriving a correction pixel map addressable by coordinates generated by the addressing means;

means for weighting an output video signal to compensate for defects and losses along the optical path of the apparatus, the weighting means comprising means for dividing the scanning area into a plurality of sub-areas for corresponding to a pixel of the correction pixel map;

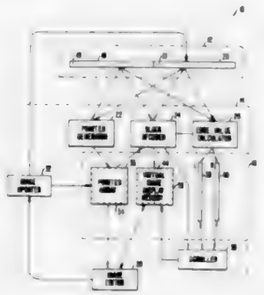
means for determining a correction factor for each subarea of the scanning area indicative of defects and losses associated with that area;

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storage means for holding derived correction factors;
means for applying the correction factors to output video data from the apparatus to produce a weighted video signal;
the addressing means including a digital scan generator and a scanning pixel map derived from the digital scan generator, the orientation of the image scanning performed by the flying spot and correction pixel map with respect to one another being variable; and
means for applying the correction factor derived for a given pixel to a pixel of the picture scan whose centre falls within that correction map pixel.

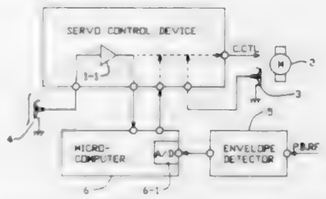


5,327,248
COMPRESSED IMAGE VIRTUAL EDITING SYSTEM
Robert F. Miller, Modesto, and Steven M. Blonstein, San Jose, both of Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan and Ricoh Corporation, Menlo Park, Calif.
Filed Mar. 23, 1992, Ser. No. 857,037
Int. Cl.[5] H04N *1/411*
U.S. Cl. 358—261.4 **14 Claims**



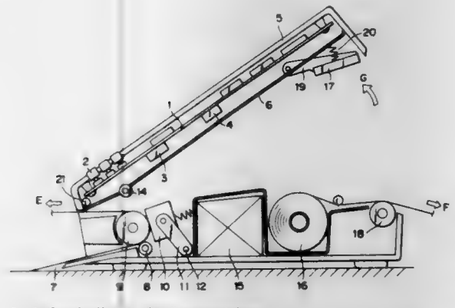
1. A method for handling a portion of a compressed image for editing, wherein the image is divided into blocks, each block being represented by digital data, and wherein the digital data for each block is compressed into a minimum coded unit, a plurality of said minimum coded units forming a compressed image data packet, the method comprising the steps of:
creating a pointer array, wherein each pointer in said pointer array points to a minimum coded unit within the compressed image data packet;
selecting blocks from the image to define a virtual image;
decompressing a set of minimum coded units corresponding to said virtual image;
editing said virtual image to form at least one edited block;
compressing said edited block into a edited minimum coded unit;
saving said edited minimum coded unit in an edited block memory; and
modifying a pointer in said pointer array, said pointer corresponding to said edited block, said pointer being modified to point to said edited minimum coded unit in said edited block memory,
whereby said blocks, whose corresponding minimum coded units are pointed to by the pointers of said pointer array as modified in said modifying step, collectively define an edited image.

5,327,249
APPARATUS AND METHOD FOR CONTROLLING THE CAPSTAN MOTOR OF THE VIDEO CASSETTE RECORDER HAVING FUNCTION OF AUTOMATIC FIVE/SLOW PLAYBACK
Kwang H. Lee, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Nov. 20, 1992, Ser. No. 979,632
Claims priority, application Rep. of Korea, Nov. 20, 1991, 20720/1991
Int. Cl.[5] H04N *5/95*
U.S. Cl. 358—338 **7 Claims**



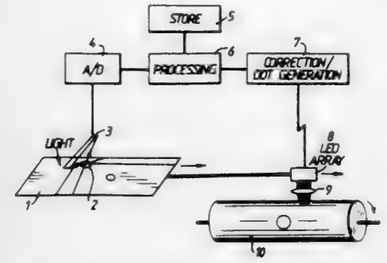
7. An apparatus for automatically controlling movement of a video tape in a VCR comprising:
servo control means for controlling a capstan motor with a capstan drive signal, said capstan drive signal active over a playback interval, said playback interval commencing with a controllable GO pulse in the front and a STOP pulse in the rear, said drive signal for driving the capstan motor to move the video tape;
control head means for detecting a control pulse from the video tape at a control pulse location between the front and rear of the playback interval;
envelope detecting means for receiving a radio frequency playback signal from the video tape and detecting an envelope signal from the playback signal; and
a microcomputer for sampling the detected envelope signal from said envelope detecting means, forming sampled first values proportional to the portion of the detected envelope signal between the front of the playback interval and the control pulse location, forming sampled second values proportional to the portion of the detected envelope signal between the control pulse location and the rear of the playback interval, A/D-converting the sampled first and second values to form first and second digital values, comparing the first digital value with the second digital value to provide a result, providing said result to said servo control means to control the time of the GO pulse and the STOP pulse so as to tend to make said first and second digital values equal whereby the video tape is tracked over the playback interval.

5,327,250
FACSIMILE DEVICE
Takeshi Ikeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 885,249, May 20, 1992, abandoned, which is a continuation of Ser. No. 496,636, Mar. 21, 1990, abandoned. This application Mar. 10, 1993, Ser. No. 29,357
Claims priority, application Japan, Mar. 31, 1989, 1-78334
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—401 **5 Claims**



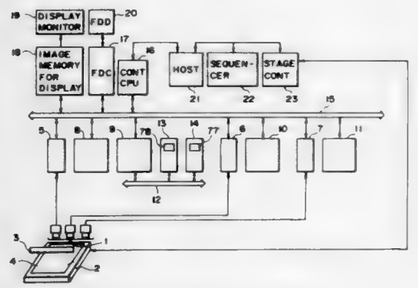
1. A facsimile device comprising:
a cover having first and second end portions, said first end portion being disposed at one end portion of said device, and said cover being openable about said one end portion of the device;
a record unit for recording on a record sheet, said record unit having a first roller provided at a second end portion of the device and a record head provided at said second end portion of said cover to record on the record sheet by cooperating with said roller;
a read unit for reading a document sheet, said read unit having a second roller for moving the document sheet relative to said read unit, an said read unit being provided at said one end portion of the device, and having a reading element for reading the document sheet by cooperating with said second roller;
means defining a record sheet feed path for feeding of the record sheet to said recording head and out of said record unit;
means defining a document sheet feed path for feeding of the document sheet to said reading element and out of said read unit;
a partitioning member inside said cover and extending from said one end portion to said other end portion of said device, said partitioning member being positioned to define a gap between said partitioning member and said cover, a portion of said partitioning member serving to define a portion of at least one of said record sheet feed path and said document sheet feed path, and a portion of said partitioning member being exposed when said cover is opened; and
a single printed circuit board arranged in said gap, said single printed circuit board having a key switch for receiving input for an operation controlling function, an element for a system controlling function and an element for a network controlling function, said single printed circuit board being received in and over substantially the entire space of said gap formed by said partitioning member and said cover.

5,327,251
IMAGE SCANNING APPARATUS
Peter J. Neilson, Shroud, United Kingdom, assignor to A.B. Dick Company, Niles, Ill.
Filed Aug. 30, 1990, Ser. No. 575,015
Claims priority, application United Kingdom, Sep. 8, 1989, 8920404
Int. Cl.[5] G04N *1/40*
U.S. Cl. 358—404 **4 Claims**



1. An image scanning apparatus, comprising an input image scanner for scanning an input image area with a beam of radiation and deriving from an image on at least part of the input image area a digital signal representing the image, an output image scanner for reproducing from said signal an output image on at least part of an output image area, the input image scanner and the output image scanner being arranged to scan the input and output image areas respectively simultaneously at a fixed relative rate, the output and input images being represented as a series of pixels arranged in orthogonal directions at fixed resolutions, and means in the data path between the input and output scanners for processing the digital signal to change the size of the output image relative to the input image, the processing means including a data store wherein the required data capacity of the store is less than 15% of that required to hold data corresponding to an image covering the whole of the input image area.

5,327,252
PRINT EVALUATION APPARATUS
Shinsuke Tsuruoka, Kawasaki; Hiroshi Haruyama, Yokohama, and Hideaki Uemura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 23, 1991, Ser. No. 764,364
Claims priority, application Japan, Sep. 21, 1990, 2-252279; Jun. 4, 1991, 3-132693; Jun. 4, 1991, 3-132694; Jun. 4, 1991, 3-132695; Jun. 4, 1991, 3-132699; Jun. 4, 1991, 3-132700; Jun. 4, 1991, 3-132701; Jun. 4, 1991, 3-132702
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—406 **76 Claims**



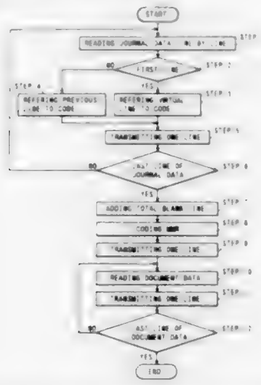
1. A print evaluating apparatus, comprising:

reading means having a plurality of photoreceptors to read a print pattern line by line;
relative movement means for imparting relative movement between the print pattern and said reading means in a direction different from a direction in which said photoreceptors are arranged; and
processing means for effecting plural operations in parallel for plural evaluation items for image signals corresponding to the print pattern supplied by said reading means during the relative movement, and for effecting evaluation on data provided by the operations, wherein said print pattern has plural pattern areas corresponding to the plural evaluation items, and wherein said processing means effects the parallel operation for the respective pattern areas.

5,327,253
FACSIMILE TRANSMISSION METHOD

Yuji Suzuki, Nagaokakyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 16, 1991, Ser. No. 808,373
Claims priority, application Japan, Dec. 17, 1990, 2-411128
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—426 **4 Claims**



1. A method of transmitting image data comprising the steps of:
transmitting journal data, the journal data including a last line of journal data;
inserting an MR coded white line after the last line of journal data; and
transmitting picture data after the MR coded white line, the picture data including a first line of picture data, the MR coded white line being a reference line for the first line of picture data;
wherein the journal data, the MR coded white line and at least a portion of the picture data define a single page of image data.

5,327,254
METHOD AND APPARATUS FOR COMPRESSING AND DECOMPRESSING IMAGE DATA

Mohammad A. Daher, 2723 - 6 Dorchester Pl., Charlotte, N.C. 28209

Filed Feb. 19, 1992, Ser. No. 838,560
Int. Cl.[5] H04N *7/12, 11/02*
U.S. Cl. 358—426 **30 Claims**

1. Apparatus for compressing digital image data having rows and columns of pixels, comprising:
(a) means for storing the image data;
(b) means for processing the image data which includes:
(i) means for resizing the image data into resized image data which includes:
means for selecting at least one row from the image data for inclusion in the resized image data; and
means for selecting at least one pixel within each selected row for inclusion in the resized image data; and
(ii) means for compressing the resized image data at least once, to create compressed image data; and
(c) means for communicating information between said storing means and said processing means.

10. Apparatus for decompressing compressed digital image data having rows and columns of pixels, comprising:
(a) means for storing the compressed image data;
(b) means for processing the compressed image data which includes:



(i) means for decompressing the compressed image data at least once, thereby creating decompressed image data, and
(ii) means for resizing the decompressed image data into inverse resized image data which includes:
means for selecting at least one row from the decompressed image data for inclusion in the inverse resized image data; and
means for selecting at least one pixel within each selected row for inclusion in the inverse resized image data; and
(c) means for communicating information between said storing means and said processing means.

5,327,255

Patent Not Issued For This Number

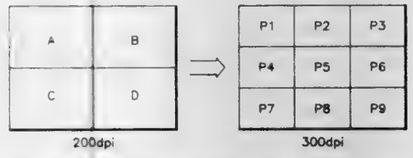
5,327,256
RESOLUTION CONVERSION METHOD OF PICTORIAL IMAGE PROCESSING SYSTEM

Ku-Su Kang, Seoul, and Seo-Kyu Kim, Kyounggi, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1991, Ser. No. 814,614
Claims priority, application Rep. of Korea, Dec. 7, 1991, 22373
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—445 **20 Claims**

1. A resolution conversion method for a pictorial image processing system, comprising the steps of;
storing pictorial image data received as an unit of line in an odd and an even line of a two-line buffer;
sequentially covering said pictorial image data stored in said two-line buffer with a mask so as to prevent overlapping of one portion of said pictorial image data from another;
reading said pictorial image data covered by said mask to perform a resolution conversion of said pictorial image data and storing the converted pictorial image data in a three-line buffer; and

recording said converted pictorial image data stored in said three-line buffer on a memory when said resolution conversion for two lines of said pictorial image data stored in

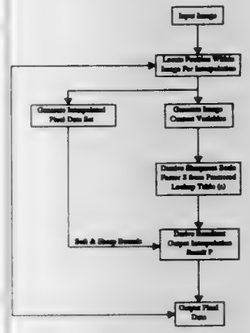


said two-line buffer is finished, and repeating all of said steps until all lines of said pictorial image data are recorded completely.

5,327,257
METHOD AND APPARATUS FOR ADAPTIVELY INTERPOLATING A DIGITAL IMAGE

Randal K. Hrytzak, Vancouver, and Alastair M. Reed, Delta, both of Canada, assignors to Cymbolic Sciences International Ltd., Richmond, Canada

Filed Feb. 26, 1992, Ser. No. 841,681
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—447 **32 Claims**

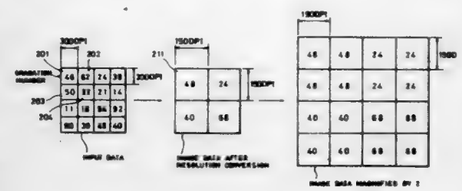


1. A method of reproducing an original image as an interpolated output image in which the original image is represented by digital input pixel data, said method comprising the steps of:
(a) loading the input pixel data into an input buffer;
(b) providing a coefficient buffer having a first memory segment loaded with a first set of precalculated interpolating coefficients, a second memory segment loaded with a second set of interpolating coefficients and a third memory segment loaded with a set of image characteristic coefficients;
(c) selecting a local position within said original image for interpolation;
(d) respectively addressing said first and second memory segments by means of input pixel data corresponding with said selected local position to respectively obtain first and second interpolated output image pixels;
(e) addressing the third memory segment by means of input pixel data corresponding with said selected local position to obtain an input image characteristic value;
(f) calculating a resultant output image pixel by combining said first and second interpolated output image pixels as a function of said input image characteristic value;
(g) selecting another local position within said original image for interpolation;
(h) repeating the steps (d) to (f) to obtain a further resultant output image pixel; and
(i) repeating said steps for further local positions to produce a collection of resultant output image pixels forming said interpolated output image.

5,327,258
IMAGE PROCESSING APPARATUS

Shigeru Ueda, Wako, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1991, Ser. No. 786,602
Claims priority, application Japan, Nov. 1, 1990, 2-293609
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—448 **12 Claims**

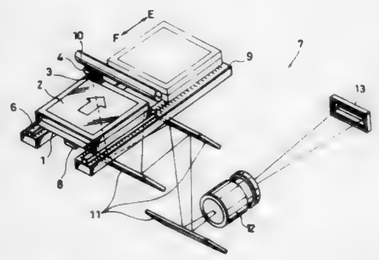


1. An image processing apparatus comprising:
input means for inputting first multivalue data for each pixel, said input means being capable of inputting the first multivalue data having a resolution different from a printing resolution of a printing unit;
resolution conversion means for generating second multivalue data, one pixel of the second multivalue data corresponding to one block of the first multivalue data so as to output to the printing unit the second multivalue data having a resolution corresponding to the printing resolution; and
assigning means for assigning a magnification ratio of an output image,
wherein said resolution conversion means determines a number of pixels of the first multivalue data corresponding to one block in accordance with the magnification ratio assigned by said assigning means.

5,327,259
IMAGE PROCESSING SYSTEM AND IMAGE PROCESSING METHOD

Katsuhiko Furusawa, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Dec. 12, 1991, Ser. No. 805,742
Claims priority, application Japan, Dec. 21, 1990, 2-401456
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—448 **25 Claims**



1. An image processing system for reading and processing an original image, comprising:
a plurality of document holders each for supporting an original document and having identification data;
a setup apparatus for reading the identification data and determining setup conditions relating to said original document;

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an image processing apparatus for reading the identification data from one of said plurality of document holders, and reading and processing the original image of the original document supported by one of said plurality of document holders; and

a communication line, connecting said setup apparatus and said image processing apparatus, for transferring the identification data read by said setup apparatus and the setup conditions determined by said setup apparatus to said image processing apparatus,

wherein said image processing apparatus is set with the setup conditions corresponding to the identification data read by said image processing apparatus to read and process the original image of the original document supported by said one of said plurality of document holders based on said setup conditions.

5,327,260

IMAGE PROCESSING APPARATUS FOR SMOOTHING EDGES OF IMAGE

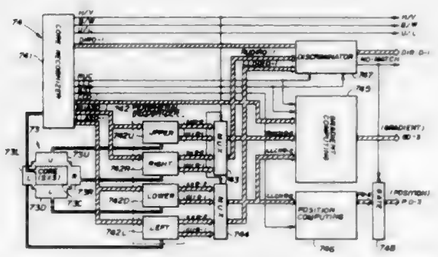
Mutsuo Shimomae, Yokosuka; Masayoshi Watanuki, and Shinichiro Nishioka, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Nov. 24, 1992, Ser. No. 980,964

Claims priority, application Japan, Nov. 28, 1991, 3-314928; Nov. 11, 1992, 4-301395

Int. Cl.[5] **H04N** *1/417, 1/40*

U.S. Cl. 358—448 **20 Claims**



1. An image processing apparatus for, smoothing edges of an image having a plurality of dots arranged in a dot matrix formation, said image processing apparatus comprising:

sampling means for sampling a group of dots from an image having a plurality of input black and white dots arranged in columns and lines, said group of dots being included in a prescribed region of the image, having a target dot at the center of the region, and being sampled with respect to each dot of the image;

pattern recognition means for recognizing a dot pattern from said sampled dots of said sampling means, said dot pattern being described by successive black dots and located at a boundary between a black dot region of the image and a white dot region thereof, and for producing a set of code signals with respect to each target dot from the result of the recognition, said code signals defining features of the recognized dot pattern for each target dot;

discrimination means for detecting whether or not each target dot is part of an inclined line having a gradient relative to the horizontal or vertical direction, in response to at least one of the code signals of said pattern recognition means, so that it is determined whether or not each target dot is to be corrected in order for smoothing edges of the image;

correction means having a pattern memory in which a set of predetermined correction dot data is stored, for inputting said code signals of said pattern recognition means to said pattern memory as address inputs when it is determined that the target dot is to be corrected, and for reading a corresponding correction dot data from said pattern memory in accordance with said code signals for each target dot; and

output means for outputting an image with corrected dots which are in accordance with the correction dot data of said correction means for each target dot.

5,327,261

IMAGE READING APPARATUS CAPABLE OF DETECTING PAPER SIZE

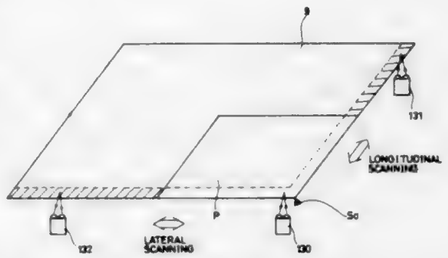
Yoshihiko Hirota; Kunihiko Omura; Shigeru Moriya; Hiroya Sugawa; Katsuaki Tajima, and Kaoru Tada, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 27, 1990, Ser. No. 516,134

Claims priority, application Japan, Apr. 29, 1989, 1-109821; Apr. 29, 1989, 1-109822; Apr. 29, 1989, 1-109823; Apr. 29, 1989, 1-109824; Apr. 29, 1989, 1-109825; Aug. 8, 1989, 1-206268

Int. Cl.[5] **H04N** *1/40, 1/387*

U.S. Cl. 358—449 **55 Claims**



1. An image reading apparatus comprising

an original placing platen formed of a rectangular transparent member on which an original is placed on a surface of said original placing platen;

photoelectrical conversion means for reading an image of the original placed on said transparent member;

original pressing means having an original pressing surface for pressing the overall surface of said original placing platen;

said original pressing surface having a first area formed at a portion opposing a first side of said transparent member and a second area formed at a portion opposing a second side of said transparent member, said first side intersecting at a right angle with the second side, said first and second areas being determined as a predetermined color by said photoelectrical conversion means; and

size detection means for detecting the size of the original based on a result of reading by said photoelectrical conversion means.

5,327,262

AUTOMATIC IMAGE SEGMENTATION WITH SMOOTHING

Leon C. Williams, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 24, 1993, Ser. No. 76,651

Int. Cl.[5] **H04N** *1/40*

U.S. Cl. 358—462 **20 Claims**

1. In a digital image processing system providing circuits for processing a digital image in accordance with one of a plurality of image types in accordance with an image type detection signal received at an image processing controller, a method for improving uniformity in image type detection, the steps comprising:

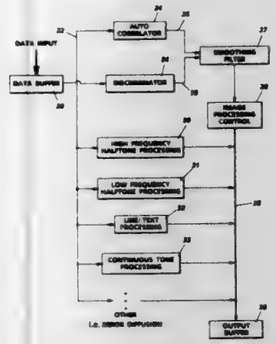
receiving from an image source a document image represented in a digital image signal format, having an unknown combination of the image types in the document

image, and storing digital image signals representing an area of the document image in a data buffer;

with an image segmentation circuit, receiving digital image signals from the data buffer and determining image types present in an area of the document image therefrom, said image segmentation circuit producing a detection signal for each digital image signal representing the image type at a corresponding location within the image;

converting the detection signals into a plurality of binary signals, each binary signal representing detection or non detection of a single image type;

for binary detection signals of a single image type, providing a first filter processing said binary detection signals to



provide a first state thereof whenever all the binary detection signals in a predetermined set thereof have a first state, and producing a first filtered binary detection signal indicative thereof;

for each binary detection signal of a single image type, providing a second filter, processing said first filtered binary detection signal to provide a first state thereof whenever any of the first filtered binary detection signals in a predetermined set thereof have a first state and producing a second filtered binary detection signal;

directing said second binary filtered detection signals to the image processing controller to control the circuits for processing plural image types in accordance with the determined image type.

5,327,263

IMAGE PROCESSING APPARATUS EMPLOYING A SPATIAL LIGHT MODULATOR

Masayuki Katagiri; Noritoshi Kako, and Yoji Noguchi, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 624,729, Dec. 11, 1990, Pat. No. 5,235,437. This application May 20, 1993, Ser. No. 63,780

Claims priority, application Japan, Dec. 18, 1989, 1-327636; Dec. 25, 1989, 1-335304; Jan. 5, 1990, 2-300; Jan. 5, 1990, 2-301; Feb. 22, 1990, 2-42093; Feb. 22, 1990, 2-42094; Feb. 22, 1990, 2-42095; Mar. 14, 1990, 2-63793; Apr. 6, 1990, 2-91728; Jun. 8, 1990, 2-150526

The portion of the term of this patent subsequent to Aug. 10, 2000, has been disclaimed.

Int. Cl.[5] **H04N** *1/028, 3/15;* **G02F** *1/135;* **C09K** *19/04*

U.S. Cl. 358—471 **8 Claims**

1. An image processing apparatus comprising:

a liquid modulator having a photoconductive material including an image-writing plane, a liquid crystal layer laminated on said photoconductive material, a pair of electrodes sandwiching said photoconductive material and said liquid crystal layer, and a spacer inserted between said photoconductive material and one of said electrodes surrounding said liquid crystal layer;

an analog writing system for analogously writing an original image in said liquid modulator;

a digital reading system for digitally reading the image written in said liquid modulator by emitting a laser beam for scanning said light modulator in two dimensions;

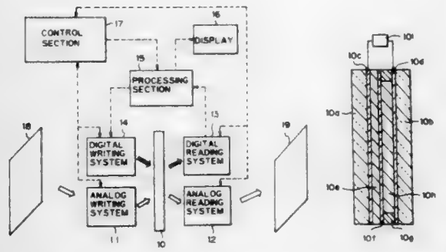
a processing section for image-processing the read image data;

a digital writing system for digitally writing processed image data in said light modulator by applying said laser beam for scanning on said light modulator in two dimensions; and

an analog reading system for analogously reading an image written in said light modulator,

wherein said liquid crystal layer comprises a liquid crystal which is selected from a group consisting of:

(1) a phase-transition type liquid crystal providing a storage function,



(2) a p-type smectic A liquid crystal providing a storage function, and

(3) a ferroelectric liquid crystal providing a storage function;

wherein the phase-transition type liquid crystal is selected from a group consisting of:

a p-type cholesteric liquid crystal,

a mixture of p-type cholesteric liquid crystal and p-type nematic liquid crystal, and

wherein the ferroelectric liquid crystal is selected from a group consisting of:

a chiral smectic C liquid crystal,

a mixture of chiral smectic C liquid crystal and non-chiral smectic C liquid crystal, and

a mixture of chiral smectic C liquid crystal and a photoactive material.

5,327,264

IMAGE TRANSMISSION APPARATUS FOR SELECTIVELY CHANGING AN IMAGE DISPLAY PIXEL NUMBER

Masaru Iyama, Ebina, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 26, 1992, Ser. No. 858,939

Claims priority, application Japan, Apr. 5, 1991, 3-072859

Int. Cl.[5] **H04N** *1/46, 1/36, 9/455, 9/07*

U.S. Cl. 358—515 **3 Claims**

3. An image transmission apparatus comprising:

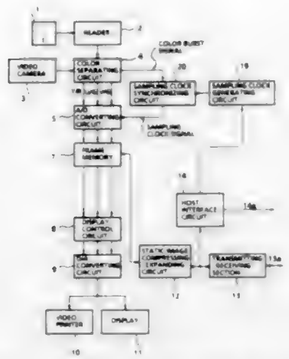
color separating means for dividing a video signal into color signals and a color burst signal;

sampling clock generating means for generating a clock signal of a frequency corresponding to a designated number of pixels;

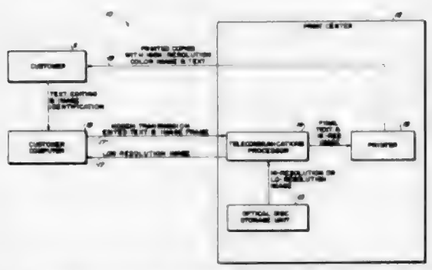
sampling clock synchronizing means responsive to the color burst signal for converting the clock signal supplied from said sampling clock generating means into a sampling clock signal synchronized with the color burst signal;

sampling means for sampling the color signal supplied from said color separating means in accordance with the sampling clock signal supplied from said sampling clock synchronizing means and producing sampled image data;

memory means for storing the sampled image data;
image data transmitting means for transmitting the sampled image data stored in said memory means; and
host interface means, operatively associated with said clock generating means, for (i) receiving information indicative of said designated number of pixels from a receiving station which receives said sampled image data transmitted by said image data transmitting means and displays or prints said received image data in accordance with said designated number of pixels, (ii) generating a control signal indicative of said designated number of pixels, and (iii) supplying said control signal to said clock generating means.

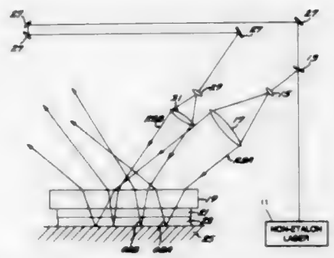


5,327,265
MODEM ACCESSABLE IMAGE DATABASE SYSTEM FOR ON-DEMAND PRINTING
Bruce A. McDonald, 14807 N. 73rd St., #103, Scottsdale, Ariz. 85260
Filed May 1, 1992, Ser. No. 877,219
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—527 **7 Claims**



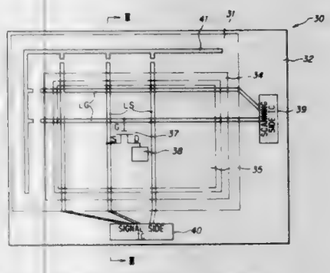
5. An apparatus for electronically editing and printing a document containing text material and one or more color images comprising:
a customer's computer,
a print center interconnected with said customer's computer through telephone lines or cellular phone,
said print center comprising a telecommunication processor, an optical disc storage unit containing high and low resolution versions of each optical image stored and a printer,
signal means for causing said customer's computer to communicate with said processor for transmitting a low resolution image from said optical disc storage unit to said customer's computer,
a first means for causing said customer's computer to arrange text material and a frame for said low resolution image in a customer selected document layout,
a second means for causing said customer's computer to transmit said document layout including said frame minus said low resolution image to said print center, and
a third means for causing said processor to retrieve from said optical disc storage unit said high resolution image corresponding to said low resolution image transmitted to said customer's computer for insertion within said frame, and
printer means for printing said document with said high resolution optical image in said frame and the associated text material.

5,327,266
SIMULTANEOUS MULTIPLE EXPOSURE HOLOGRAMS USING COHERENCE MISMATCH TO PREVENT CROSSTALK
Jerry L. Mulder, La Crescenta; Kevin H. Yu, Temple City, and John E. Wreede, Azusa, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 12, 1992, Ser. No. 975,366
Int. Cl.[5] G03H *1/28, 1/04*
U.S. Cl. 359—24 **2 Claims**



1. A method for simultaneously exposing a plurality of holograms in a holographic recording layer pursuant to plurality of beams that originate from a single laser source, wherein each hologram is formed pursuant to interference between two beams at a plurality of interference locations and has an associated efficiency, and wherein each point of interference between two beams has an associated path length difference that is the difference between (i) the path length of one of the interfering beams from the laser to the point of interference and (ii) the path length of the other interfering beam from the laser to the point of interference, the method comprising the steps of:
illuminating the holographic recording layer with a first reference beam and a first object beam that (a) originate from a laser, (b) interfere in the holographic recording layer at a plurality of first hologram interference locations, and (c) are matched in path length such the path length difference for each first hologram interference location is less than the coherence length of the originating laser, whereby the first reference beam and the first object beam interfere coherently; and
illuminating the holographic recording layer with a second reference beam and a second object beam that (a) originate from the same laser as the first reference beam and the first object beam, (b) interfere in the holographic recording layer at a plurality of second hologram interference locations, (c) are matched in path length such that the path length difference for each second hologram interference location is less than the coherence length of the originating laser, whereby the second reference beam and the second object beam interfere coherently, and (d) are mismatched in path length relative to the first reference beam and the first object beam so as to reduce the respective efficiencies of crosstalk holograms to be less than a desired level, wherein crosstalk holograms are formed by interference at crosstalk interference locations of (1) the first reference beam with the second object beam, (2) the first object beam with the second reference beam, (3) the first object beam with the second object beam, and (4) the first reference beam with the second reference, and wherein the path length mismatch is achieved by providing path length differences for all crosstalk interference locations that are sufficiently greater than the coherence length of the originating laser to achieve the desired reduced efficiency of the crosstalk holograms.

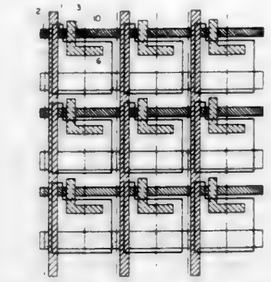
5,327,267
DIELECTRIC DISPLAY DEVICE HAVING ELECTRODES PROTECTED BY A STATIC CONDUCTOR
Keigo Aoki, Kyoto, and Yoshinao Ohnuma, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 1, 1992, Ser. No. 983,750
Claims priority, application Japan, Dec. 3, 1991, 3-318992
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—59 **4 Claims**



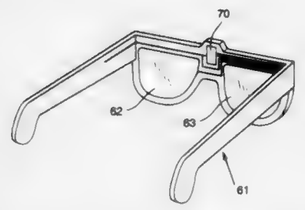
1. A dielectric display device comprising:
a pair of substrates, at least one of which is transparent, spaced a distance apart, in parallel to each other;
a dielectric display material inserted between said pair of substrates;
signal and scanning electrodes, at least one of said signal and scanning electrodes including a plurality of electrodes disposed in parallel on one of said pair of substrates;
a static erasing conductor disposed peripherally along at least one of said pair substrates, being initially connected to ends of each of said electrodes disposed in parallel to allow for release of static electricity from the electrodes through the connected static erasing conductor, and being subsequently separated by a laser and being maintained at a constant distance from ends of said electrodes disposed in parallel, to thereby shield the electrodes disposed in parallel from subsequent externally generated static electric effects.

5,327,268
REFLECTIVE TYPE LIQUID CRYSTAL DISPLAY WITH REVERSELY STAGGERED TFT STRUCTURES
Masaru Takabatake, Mobara; Yuji Mori, Ibaraki, and Yoshiharu Nagae, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 18, 1993, Ser. No. 18,135
Claims priority, application Japan, Feb. 19, 1992, 4-032210
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—59 **11 Claims**

1. A reflective type liquid crystal display including a plurality of scanning conductors, a plurality of signal conductors and a plurality of thin film transistors and reflective pixel electrodes provided in the vicinity of areas where the plurality of scanning conductors and the plurality of signal conductors intersect, comprising:
the thin film transistors having a reversely staggered structure where each transistor has a drain electrode comprising an area where a scanning conductor concerned and a signal conductor concerned intersect, a source electrode comprising an area where a short-circuiting conductor concerned parallel to the signal conductor and the scanning conductor intersect, a gate electrode comprising a region formed between the drain and source electrodes on the scanning conductor and a reflective electrode provided at an end of the short-circuiting conductor.



5,327,269
FAST SWITCHING 270° TWISTED NEMATIC LIQUID CRYSTAL DEVICE AND EYEWEAR INCORPORATING THE DEVICE
Mary Tilton, Jefferson, Wis., and Lenny Lipton, Greenbrae, Calif., assignors to Standish Industries, Inc., Lake Mills, Wis.
Filed May 13, 1992, Ser. No. 882,586
Int. Cl.[5] G02F *1/1335, 1/13, 1/1333*
U.S. Cl. 359—63 **16 Claims**



11. A pair of eyewear for viewing a field-sequential stereoscopic display, comprising:
a frame;
a pair of fast switching liquid crystal shutter assemblies arranged in the frame, wherein each of the pair of shutter assemblies further comprises:
a pair of substantially parallel, transparent substrates, each of the substrates having an interior surface and an exterior surface, wherein the substrates are separated by a distance, thereby defining a gap between the substrates;
a transparent, conductive electrode deposited on the interior surface of each of the substrates, each of the electrodes having a surface in contact with the interior surface of each of the substrates and an interior surface facing away from the interior surface of each of the substrates, wherein the interior surface of each of the electrodes is conditioned to define a preferred direction, and further, wherein the preferred direction of one of the electrodes is substantially perpendicular to the preferred direction of the other of the electrodes;
a nematic liquid crystal material having a director axis, and contained within the gap, wherein the director axis at each of the electrodes is aligned with the preferred

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direction of each of the electrodes, and wherein the conditioning of the electrodes causes the director axis of the liquid crystal material to assume a tilt angle with respect to the interior surface of each of the electrodes;

an optically active additive mixed with the liquid crystal material in an amount sufficient to impart a pitch equal to between one and two times the gap, and to cause the liquid crystal material to assume a helical structure, wherein the helical structure of the liquid crystal material is such that it assumes a twist of 270 degrees in the transmissive off state, and further, wherein the tilt angle between the director axis of the liquid crystal material and the interior electrode surface is maintained along the helical structure of the liquid crystal material; and

a polarizing filter arranged on the exterior surface of each of the substrates, wherein the polarizing filters have substantially perpendicular polarization axes and the polarizing axis of one of the polarizing filters is either substantially parallel or perpendicular to the direction of alignment of the director axis of the liquid crystal material at the interior surface of the electrode closest to that polarizing filter; and

a means for driving the shutter assemblies, substantially 180 degrees out of phase with respect to each other, so that the shutter assemblies alternately enter a transmissive state

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5,327,270

POLARIZING BEAM SPLITTER APPARATUS AND LIGHT VALVE IMAGE PROJECTION SYSTEM

Yoshito Miyatake, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 830,751, Feb. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 497,251, Mar. 22, 1990, abandoned. This application Sep. 24, 1993, Ser. No. 126,004

Claims priority, application Japan, Mar. 23, 1989, 1-70880

Int. Cl.[5] G02B *5/30, 27/28;* **G02F** *1/1335;* **G03B** *21/00*

U.S. Cl. 359—63 **14 Claims**



1. A polarizing beam-splitter apparatus comprising

a polarizing beam splitter commonly usable as a polarizer and an analyzer for transmitting a first polarized component of an incident light along a first optical axis and for reflecting a second polarized component of said incident light along a second optical axis; and

a quarter wave plate;

wherein said quarter wave plate is arranged in either said first optical axis or said second optical axis along which a light travels out from and travels back again to said polarizing beam splitter in such a manner that either a fast axis or a slow axis of said quarter wave plate is perpendicular to a plane containing both said first optical axis and said second optical axis.

5,327,271

LIQUID CRYSTAL DEVICE EMPLOYING POLYMER NETWORK ON ONE SUBSTRATE AND ALIGNMENT LAYER OR POLYMER NETWORK ON OTHER SUBSTRATE

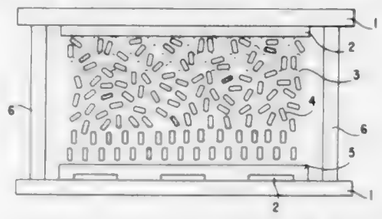
Kiyofumi Takeuchi; Haruyoshi Takatsu, both of Tokyo, and Yasuo Umezu, Saitama, all of Japan, assignors to Dainippon Ink and Chemical, Inc., Tokyo, Japan

Filed Aug. 16, 1991, Ser. No. 745,807

Claims priority, application Japan, Aug. 17, 1990, 2-216629; Oct. 8, 1990, 2-270104; Jan. 10, 1991, 3-001527

Int. Cl.[5] G02F *1/1337, 1/13*

U.S. Cl. 359—75 **27 Claims**



1. A liquid crystal device comprising a pair of substrates, each substrate having an electrode layer and at least one of the substrates being transparent, each of said substrates having formed thereon a network layer having a three-dimensional network structure having continuous fine voids which comprises a transparent solid substance, and a liquid crystal material filled between said pair of substrates and filling said voids in the network structure.

5,327,272

OPTICAL MODULATION ELEMENT

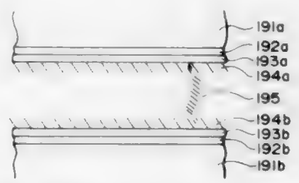
Ryoji Fujiwara, Chigasaki; Shuzo Kaneko, Yokohama; Akio Maruyama, Tokyo; Tomoko Maruyama, Isehara, and Tomoko Murakami, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,509

Claims priority, application Japan, Mar. 27, 1991, 3-063200; Jul. 26, 1991, 3-208930

Int. Cl.[5] G02F *1/1337, 1/137*

U.S. Cl. 359—75 **9 Claims**



1. An optical modulation element having a plurality of pixels, said optical modulation element comprising:

a pair of substrates each having a plurality of electrodes thereon,

a ferroelectric liquid crystal layer disposed between said pair of substrates, and

means for applying an external voltage between said electrodes in response to gradation signals to perform gradation drivings,

wherein said optical modulation element further comprises:

a conductive polymer layer with conductive fine granular tin oxide doped with Sb, and

a column-shaped orientation layer on and partially exposing said polymer layer.

5,327,273

BISTABLE FERROELECTRIC LIQUID CRYSTAL DISPLAY CELL

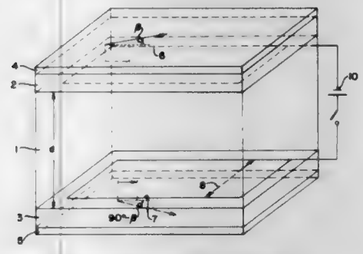
Leonid A. Beresnev, Moscow, U.S.S.R.; Richard Buchecker, Zurich, Switzerland; Nina I. Chernova; Vladimir G. Chigrinov, both of Moscow, U.S.S.R.; Jürg Fünfschilling, Basel, Switzerland; Marina V. Loseva, Moscow, U.S.S.R.; Yury P. Panarin, Moscow, U.S.S.R.; Evgeniy P. Pozhidaev, Moscow, U.S.S.R., and Martin Schadt, Seltisberg, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 925,882, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 770,739, Oct. 9, 1991, abandoned, which is a continuation of Ser. No. 543,508, Jun. 26, 1990, abandoned. This application Apr. 12, 1993, Ser. No. 46,468

Claims priority, application Switzerland, Jun. 29, 1989, 2408/89; Jun. 30, 1989, 2447/89; Oct. 18, 1989, 3780/89

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—104 **4 Claims**



1. A liquid crystal display cell comprising:

(a) two plate means, the first plate means having one surface connected to a first polarizer and a second surface having directional means for aligning liquid crystal molecules in the liquid crystal display cell, and its second plate means having one surface facing the directional means and a second surface connected to a second polarizer;

(b) chiral ferroelectric smectic liquid crystal means sandwiched between the two plates means having a structure which is influenced by an electric field so that its optical anisotropy changes and having an achiral smectic C host mixture with a spontaneous polarizability of about $P>10$ nC/cm^2 and a smectic C tilting angle of about $\theta>10°$, the host mixture comprising at least two liquid crystal components, the first component having a tilted smectic phase and the second component having at least one chiral dopant which induces a helical pitch in the host mixture of about $p<1$ μm; and

(c) electrode means for applying an electrical field to said plate means, the electrical field shaping the chiral ferroelectric smectic liquid crystal means so that after shaping at about a 0 voltage and with the first polarizer in a cross position with the second polarizer, the liquid crystal display cell forms dark parallel stripes.

5,327,274

OPTICAL CALCULATING APPARATUS

Akira Yamaguchi, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 13, 1992, Ser. No. 929,007

Claims priority, application Japan, Aug. 13, 1991, 3-203022

Int. Cl.[5] G02F *1/03, 1/1343, 3/00, 3/02*

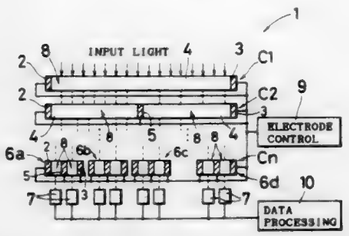
U.S. Cl. 359—107 **11 Claims**

1. An optical calculating apparatus comprising:

a plurality of unit components stacked in a pile;

each one of the units having a pair of electrodes, glass plates and a transmittance control layer located between the electrodes and made of a material having a transparency property effective to vary at least one of the transmittance amounts or transmittance direction of incident light in accordance with the strength of an electric field applied between the electrodes;

means for adjustably applying a driving voltage to the electrodes of each of the unit components, to control strength



of an electric field between the electrodes; wherein the electrodes are spaced in the direction perpendicular to the thickness direction and face each other; and

at least one unit includes a pair of individual electrodes and each of which face a common electrode.

5,327,275

SWITCHING SYSTEM OF OPTICAL TRANSMISSION LINES FOR PROTECTING FROM TROUBLE

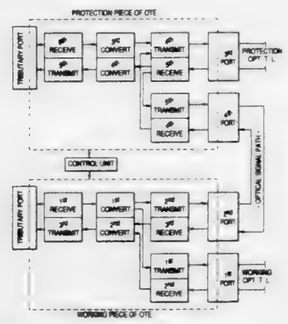
Kazuo Yamane; Naonobu Fujimoto; Takashi Kihara; Takeo Fukushima; Koichi Nishimura, and Hatsumi Iino, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 30, 1991, Ser. No. 784,211

Claims priority, application Japan, Oct. 30, 1990, 2-293420; Nov. 28, 1990, 2-327508

Int. Cl.[5] H04B *10/08;* **H04J** *14/00*

U.S. Cl. 359—117 **49 Claims**



1. A system for optical communication between optical terminal stations automatically and selectively switchable between normal and protection modes, comprising:

first and second optical terminal stations;

a plurality of working optical transmission lines, each connecting said first and second optical terminal stations and operable in the normal mode for transmitting optical signals in two opposite directions between said first and second optical terminal stations;

a protection optical transmission line, provided as a standby bidirectional optical transmission line for at least some of said working optical transmission lines, connecting said first and second optical terminal stations and operable in the protection mode for transmitting an optical signal between said first and second optical terminal stations;

each of said first and second optical terminal stations comprising:

a plurality of working pieces of optical terminal equipment respectively corresponding to said plurality of

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working optical transmission lines, each operable in the normal mode for transmitting and receiving signals over the respective working optional transmission line,

a protection piece of optical terminal equipment corresponding to said protection optical transmission line and operable in the protection mode for transmitting and receiving signals over the protection optical transmission line,

a plurality of bidirectional optical signal paths corresponding to respective working pieces of optical terminal equipment, each connecting a corresponding working piece of optical terminal equipment with said protection piece of optical terminal equipment and operable in the protection mode for signal transmission therebetween, and

a control unit which maintains the normal mode of each of the plurality of working pieces in the absence of any trouble occurring on the respective working optical transmission lines and which is responsive to a trouble occurring in one of the plurality of working optical transmission lines for disabling the normal mode and enabling the protection mode of operation of the respective working piece and of the protection piece;

each of said plurality of working pieces of optical terminal equipment comprising:

at least one bidirectional tributary port inputting and outputting tributary signals,

first and second bidirectional optical ports each inputting and outputting optical signals, said first bidirectional optical port being connected to a corresponding working optical transmission line, and said second bidirectional optical port being connected to a corresponding bidirectional optical signal path,

first receiving means, connected to said at least one bidirectional tributary port, for receiving tributary signals from said at least one tributary port,

first converting means, connected to said first receiving means, for converting the tributary signals to optical signals,

first transmitting means, connected to said first converting means and said first bidirectional optical port and operable in the normal mode for transmitting the optical signals, converted from the tributary signals, through said first bidirectional optical port and the corresponding working optical transmission line to the other of said first and second optical terminal stations,

second transmitting means, connected to said first converting means and said second bidirectional optical port and operable in the protection mode for transmitting the optical signals, converted from the tributary signals, through said second bidirectional optical port and the corresponding bidirectional optical signal path to said protection piece of optical terminal equipment,

second receiving means, connected to said first bidirectional optical port, for receiving optical signals transmitted in the normal mode from the other of said first and second optical terminal stations through said respective working line and said first bidirectional optical port,

third receiving means, connected to said second bidirectional optical port, for receiving optical signals transmitted in the protection mode from said protection piece of optical terminal equipment through the corresponding bidirectional optical signal path and said second bidirectional port,

second converting means, selectively connected to said second receiving means in said normal mode and to said third receiving means in said protection mode, for converting the respective optical signals received by said second and third receiving means to tributary signals to be output from said at least one bidirectional tributary port, and

third transmitting means, connected to said second converting means and said at least one bidirectional tributary port, for transmitting the tributary signals converted by said second converting means to said at least one bidirectional tributary port; and

said protection piece of optical terminal equipment comprising:

third and fourth bidirectional optical ports each inputting and outputting optical signals therethrough, said third bidirectional optical port being connected to said protection optical transmission line and said fourth bidirectional optical port being operatively connected to at least one of said plurality of bidirectional optical signal paths,

fourth receiving means, connected to said fourth bidirectional optical port, for receiving optical signals, transmitted in the protection mode through said fourth bidirectional optical port from the corresponding working piece of optical terminal equipment connected to the at least one of said plurality of bidirectional optical signal paths,

fourth transmitting means, connected to said fourth receiving means and said third bidirectional optical port, for transmitting the optical signals, received by said fourth receiving means in the protection mode, through said protection optical transmission line to the other of said first and second optical terminal stations,

fifth receiving means, connected to said third bidirectional optical port, for receiving optical signals, transmitted in the protection mode from the other of said first and second optical terminal stations, through said protection optical signal path and said third bidirectional optical port, and

fifth transmitting means, connected to said fourth bidirectional optical port, for transmitting the optical signals, received by said fifth receiving means in the protection mode through said fourth bidirectional optical port, to the corresponding working piece of optical terminal equipment connected to the at least one of said plurality of bidirectional optical signal paths

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5,327,276

OPTICAL LOCAL AREA NETWORK SYSTEM AND NODE APPARATUS USED IN THE SAME

Naoki Shimosaka, and Katsumi Emura, both of Tokyo, Japan, assignors to Nec Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,391

Claims priority, application Japan, Oct. 15, 1991, 3-296166; Oct. 31, 1991, 3-313453

Int. Cl.[5] H04J *14/02*

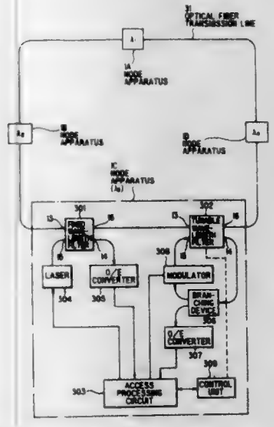
U.S. Cl. 359—125 14 Claims

1. An optical LAN system, comprising:

a plurality of node apparatus each being assigned with an address wavelengths which is different from wavelengths assigned to other node apparatus; and

an optical fiber transmission line for connecting said plurality of node apparatus;

wherein each of said plurality of node apparatus in receiving mode supplies a light of said address wavelength on said optical fiber transmission line, and where a first node apparatus selected from said plurality of node apparatus transmits data to a second node apparatus selected from said plurality of node apparatus, a light supplied from said second node apparatus is modulated by said data in said first node apparatus to be supplied on said optical fiber transmission line.



5,327,277

METHOD AND APPARATUS FOR DETERMINING EQUALIZATION DELAYS IN A TRANSMISSION SYSTEM AND RELATED APPARATUS

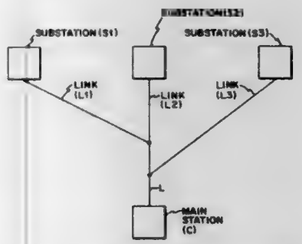
Gert Van Der Plas, Merchtem; Christiaan H. J. Sierens, Kontich, and Denis J. G. Mestdagh, Brussels, all of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jun. 2, 1992, Ser. No. 893,210

Claims priority, application European Pat. Off., Jun. 4, 1991, 91201355.4

Int. Cl.[5] H04J *14/08;* H04B *10/00*

U.S. Cl. 359—140 18 Claims



15. Apparatus for determining a first equalization delay to be used in a first substation (S3) of a transmission system including also at least a second substation (S1/S2), with a known second equalization delay, and a main station (C) which is coupled to said first and second substations via the cascade connection of a common link (L) and respective individual first (L3) and second (L1/L2) links, the first and second equalization delays being such that when the sending of information signals to said main station (C) by said first (S3) and second (S1/S2) substations is delayed with their respective first and second equalization delays, the propagation delays between said main station (C) and each of said first (S3) and second (S1/S2) substations and back are equal to a predetermined propagation delay, said apparatus comprising:

means for sending a first ranging signal to said first substation (S3) and for responding to a first reply signal sent by said first substation (S3) in response to said first ranging signal for coarsely determining an intermediate equalization delay with a first predetermined uncertainty time interval and for providing a second ranging signal between said main station (C) and said first and second substations (S1/S2/S3); and

means responsive to a second replay signal provided by said first substation (S3) to said main substation (C) in response to the second ranging signal for determining, in a fine measurement, while the sending of said information signals is interrupted at all substations, except the first one, for at least said first predetermined uncertainty time interval, said fine measurement taking into account said intermediate equalization delay to determine said first equalization delay with a second predetermined uncertainty time interval which is lower than said first predetermined uncertainty time interval.

5,327,278

OPTICAL TRANSMITTING AND RECEIVING SYSTEM HAVING POLARIZATION DIVERSITY IN EACH HYBRID CIRCUIT

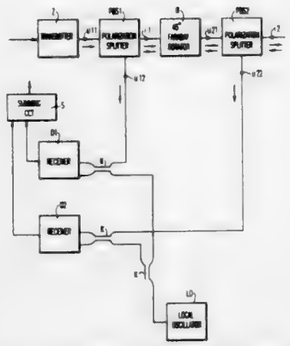
Mattijs O. van Deventer, Leidschendam, Netherlands, assignor to Koninklijke Ptt Nederland N.V., Groningen, Netherlands

Filed Feb. 6, 1992, Ser. No. 832,089

Claims priority, application Netherlands, Feb. 19, 1991, 9100292

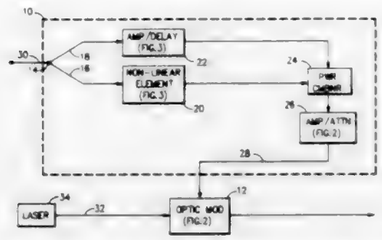
Int. Cl.[5] H04B *10/00, 10/06*

U.S. Cl. 359—156 9 Claims



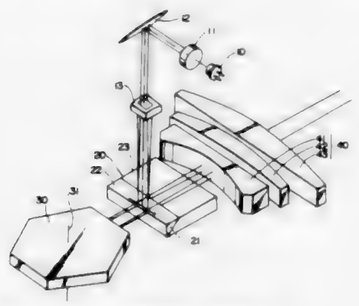
1. An optical transmitting and receiving system for connection to an optical bidirectional transmission path and comprising a transmitter, a receiving circuit and a hybrid circuit, said hybrid circuit having a bidirectional port connected to the transmission path, an outgoing input connected to the transmitter and at least one uni-directional incoming output connected to the receiving circuit, wherein the hybrid circuit is constituted by a fine polarisation splitter, (PBS1), a nonreciprocal polarisation rotator (R) and a second polarisation splitter (PBS2), a first incoming output (u11) of the first polarisation splitter (PBS1) serving as the transmitting input of the hybrid circuit and the second polarisation splitter (PBS2) having a bidirectional port (2) serving as the bidirectional port of the hybrid circuit and the outgoing input and output of the nonreciprocal polarisation rotator (R) being respectively connected to an incoming input (i1) of the first polarisation splitter (PBS1) and to a first incoming output (u21) of the second polarisation splitter (PBS2), and wherein the receiving circuit comprises two coherent receivers (O1, O2) connected to a local oscillator (LO) and the inputs of the coherent receivers are respectively connected to second outputs of the first and second polarisation splitters (PBS1, PBS2), the outputs of the coherent receivers being connected to a summing circuit (S) for obtaining a received signal.

5,327,279
APPARATUS FOR LINEARIZATION OF OPTIC MODULATORS USING A FEED-FORWARD PREDISTORTION CIRCUIT
James D. Farina, Tolland, and Gregory J. McBrien, Cromwell, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Jul. 17, 1992, Ser. No. 916,233
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—180 26 Claims



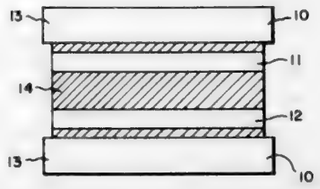
1. A predistortion circuit for linearizing an optic modulator, said predistortion circuit being operative in response to an input signal (X), comprising:
means for providing a first signal(X);
means for providing a second signal 2(X); and
means for combining said first and second signals to provide a modulating signal 2(X)—sin(X), such that the optic modulator receiving said modulating signal generates a linear output signal(X).

5,327,280
SCANNING OPTICAL SYSTEM
Akira Morimoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1990, Ser. No. 582,166
Claims priority, application Japan, Sep. 14, 1989, 1-239153
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] G02B *26/10*
U.S. Cl. 359—216 17 Claims



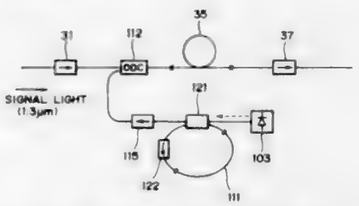
1. A scanning optical system comprising:
a laser light source;
a scanning deflector for deflecting a laser beam from said laser light source;
a scanning lens for focusing deflected light on a scanning surface; and
a focusing point changing element, having substantially no power, for changing a focusing point so that a curvature of field is reduced, said focusing point changing element being disposed between said scanning deflector and said scanning lens.

5,327,281
SOLID POLYMERIC ELECTROLYTES FOR ELECTROCHROMIC DEVICES HAVING REDUCED ACIDITY AND HIGH ANODIC STABILITY
Stuart F. Cogan, Sudbury, and R. David Rauh, Newton, both of Mass., assignors to EIC Laboratories, Norwood, Mass.
Filed Apr. 23, 1992, Ser. No. 872,224
Int. Cl.[5] G02F *1/153*; G02B *5/23*
U.S. Cl. 359—270 10 Claims



1. A co-polymer electrolyte, comprising a first monomer of a vinylic protonic acid and a second monomer comprising of either a N,N' dialkyl substituted acrylamide or a N,N'-dialkyl substituted methacrylamide or a mixture of the two, useful in electrochromic devices and exhibiting high anodic stability.

5,327,282
OPTICAL AMPLIFIER FOR 1.3 μM BAND
Keiko Takeda; Shinya Inagaki, and Kenji Tagawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 4, 1993, Ser. No. 26,513
Claims priority, application Japan, Mar. 4, 1992, 4-46528
Int. Cl.[5] H01S *3/00*
U.S. Cl. 359—341 16 Claims

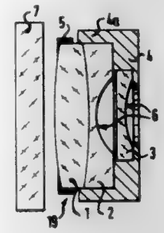


1. An optical amplifier amplifying signal light of 1.3 μm band comprising:
an optical waveguide having a waveguide region which is doped with Pr and of which a first end is supplied with said signal light;
pumping means for causing optical excitation in said waveguide region; and
booster means for increasing power density of fluorescence of 1.45 μm band generated in said waveguide region incidentally to optical amplification of said signal light; wherein
said signal light undergone amplification is output from a second end of said waveguide region.

5,327,283
ENDOSCOPE OPTICAL SYSTEM
Jürgen Zobel, Bretten, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany
Filed Apr. 21, 1993, Ser. No. 51,075
Claims priority, application Fed. Rep. of Germany, May 29, 1992, 4217889
Int. Cl.[5] G02B *23/00*
U.S. Cl. 359—434 8 Claims

1. Endoscope optical system, in which the object-side part of the objective is a negative lens cluster, wherein the lens cluster

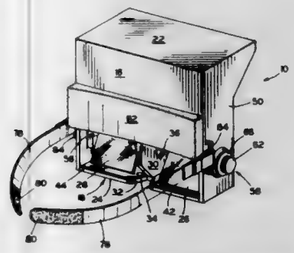
comprises two menisci each having negative refractive power, wherein the object-side meniscus Lx and the image-side meniscus Ly lie on the same axis, and wherein the following relationships apply for the refractive index n and the Abbe number v of the menisci:



$n(Lx) < n(Ly)$

$v(Lx) > v(Ly)$

5,327,284
DEVICE FOR DERIVING THREE DIMENSIONAL EFFECTS FROM A SINGLE TWO DIMENSIONAL IMAGE
Harold H. Kuester, 10627 Haller St., Defiance, Ohio 43512
Filed May 27, 1992, Ser. No. 889,165
Int. Cl.[5] G02B *27/22*
U.S. Cl. 359—479 14 Claims



1. An optical device for viewing a two dimensional image in three dimensional form comprising:
a) a housing, including a receiving aperature on a face of said housing and a viewing aperture on an opposite face of said housing;
b) a receiving mirror mounted in the receiving aperture of said housing for receiving a two dimensional image;
c) a right viewing mirror positioned in the viewing aperture and mounted on a right positioning means, said right viewing mirror in optical communication with said receiving mirror for providing a first image of the two dimensional image;
d) a left viewing mirror positioned in the viewing aperture, spaced apart from said right viewing mirror, and mounted on a left positioning means, said left viewing mirror in optical communication with said receiving mirror for providing a second image of the two dimensional image different from the first image;
e) a center journal positioned between said left viewing mirror and said right viewing mirror, said center journal adjustably retaining a first end of the right positioning means and a first end of the left positioning means such that a longitudinal center axis of the right positioning means is vertically spaced apart from a longitudinal center axis of the left positioning means; and
f) a pair of adjustment means externally positioned on said housing, a right adjustment means secured to a second end of the right positioning means and a left adjustment means secured to a second end of the left positioning means, each positioning means extending through an oversized aperture in said housing to facilitate normal movement and rotational movement of the adjustment means to position said right viewing mirror and said left viewing mirror whereby the positioning of said viewing mirrors causes the first image and the second image to merge and form a three dimensional image.

5,327,285
METHODS FOR MANUFACTURING MICROPOLARIZERS
Sadeg M. Faris, 24 Pocantico River Rd., Pleasantville, N.Y. 10570
Filed Jun. 11, 1990, Ser. No. 536,419
Int. Cl.[5] H04N *13/00*
U.S. Cl. 359—483 56 Claims



1. A method for fabricating a micropolarizer, comprising the steps of:
providing a first polarized film having a first polarization state,
and coated with photoresist;
exposing the film to a source of electromagnetic radiation through a mask having a first predetermined pattern;
removing parts of the first film exposed to the electromagnetic radiation through the mask;
repeating the providing, exposing and removing steps with a second polarized film having a second polarization state,
and coated with photoresist and using a mask having a second predetermined pattern that is an inverse of the first predetermined pattern;
aligning the first polarized film and the second polarized film so that the removed parts of the first film are aligned with those parts of the second film that were not removed;
laminating the aligned first and second films to one another.

5,327,286
REAL TIME OPTICAL CORRELATION SYSTEM
Jeffrey B. Sampsell, Plano, and Rachelle J. Bienstock, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 31, 1992, Ser. No. 937,987
Int. Cl.[5] G02B *27/46*, *9/64*
U.S. Cl. 359—561 18 Claims

1. An optical correlation unit for providing a correlation image from image data representing a first object and Fourier transform image data representing a second object, comprising:
a first phase modulating spatial light modulator, having an array of reflective elements and means for receiving electronic input to each reflective element, wherein said electronic input represents a point of an input image and controls the phase modulation by said reflective; element of light incident on its surface;

a coherent light source for illuminating the surface of said reflective elements of said first spatial light modulator;
a first Fourier transform lens for receiving light reflected from the surface of said first phase modulating spatial light modulator;
a second phase modulating spatial light modulator, having an array of reflective elements and having means for receiving electronic input to each reflective element, wherein said electronic input represents a point of an input

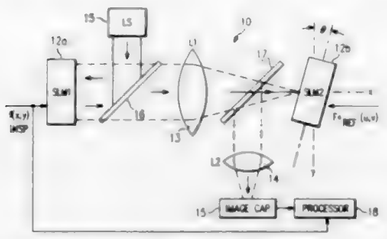
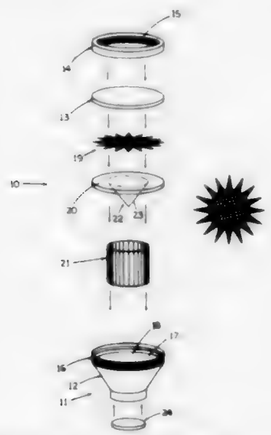


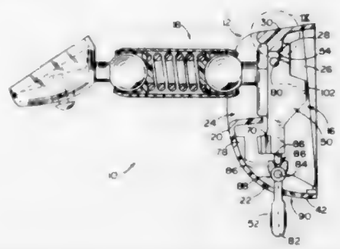
image and that controls the phase modulation by said reflective element, and wherein said second phase modulating spatial light modulator is located at the Fourier image plane of said first Fourier transform lens;
means for directing light reflected from said second spatial light modulator to a second Fourier transform lens;
a second Fourier transform lens for receiving said light reflected from said second spatial light modulator; and
an image capture device located at the Fourier image plane of said second Fourier transform lens.

5,327,287
LIGHT INTENSIFYING DEVICE
Curtis L. Atchley, 7531 Oriental Trail, San Antonio, Tex. 78244
Filed Mar. 22, 1993, Ser. No. 34,111
Int. Cl.[5] G02B *21/10*
U.S. Cl. 359—599 **6 Claims**



1. A light intensifying device, comprising:
a housing means with an interior 45 degree conic sectional reflective surface which is made to contain and support all assembled parts of the device and is made to connect in some manner to a camera, telescope, or other optical device;
a light blocking means which blocks a portion of the incoming light in a manner that will produce an image of uniform intensity as the light passes through the remaining elements of the device;
a light diffusing means that spreads the light in a manner that will produce an image of uniform intensity as the light passes through the device;
a cone shaped reflective means that is centered within the housing body and light diffuser to receive the light which has passed through the device and reflect a complete image of uniform intensity to a camera, telescope, or other optical device;
an upper cover means that will hold the component parts in place and prevent water and dust from entering the device;
a lower cover means that will hold the light diffuser in place and prevent water and dust from entering the device.

5,327,288
REDUCED VIBRATION DAY/NIGHT REARVIEW MIRROR ASSEMBLY
James M. Wellington, Holland; Craig M. Miller, Jenison, and Edward R. Adams, Spring Lake, all of Mich., assignors to Donnelly Corporation, Holland, Mich.
Filed Sep. 13, 1991, Ser. No. 759,899
Int. Cl.[5] G02B *5/08*
U.S. Cl. 359—606 **42 Claims**

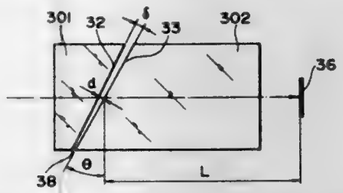


1. A day/night rearview mirror assembly for vehicles comprising:
a mirror case;
a prismatic mirror element having nonparallel, generally planar front and back surfaces and supported and retained in said mirror case;
actuator means mounted within said mirror case for shifting said mirror case and mirror element between a predetermined reflectivity day position and a reduced reflectivity night position, said actuator means including generally parallel pivot journal means and pivot shaft means for pivotally supporting said actuator means in said mirror case, said pivot journal means defining an open-sided channel extending across a width of said actuator means at a position spaced from said pivot shaft means; and
said mirror case including support means for receiving said pivot shaft means and including cooperating pivot axle means corresponding to said pivot journal means for pivotally engaging said pivot journal means, said pivot axle means have a surface engaging said pivot journal means, said surface being noncircular in cross section.

5,327,289
LUMINOUS FLUX SEPARATING OPTICAL SYSTEM
Fumio Watanabe, and Satoshi Yahagi, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan
Filed Nov. 14, 1991, Ser. No. 791,393
Claims priority, application Japan, Nov. 15, 1990, 2-309086
Int. Cl.[5] G02B *27/10*; H04N *9/097*
U.S. Cl. 359—634 **26 Claims**

1. A luminous flux separating optical system comprising:
a plurality of prisms; and

an air gap between the plurality of prisms which is not perpendicular to an optical axis of said optical system;

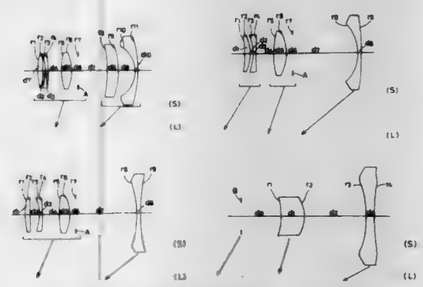


wherein said air gap is a wedge shape, open on a converging side of a luminous flux passing through said air gap;
wherein a wedge angle, δ, of said air gap equals:

$$\delta = \frac{d \cdot n \cdot \sin\theta \cos^2\theta}{2 \cdot L\,(1 - n^2 \sin^2\theta)}$$

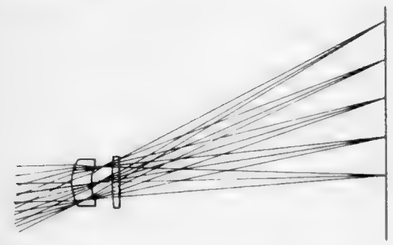
where
d = thickness of a center of said air gap,
n = refractive index of said plurality of prisms,
θ = angle formed between said air gap and a surface perpendicular to the optical axis, and
L = equivalent air thickness from said air gap to an image-forming position.

5,327,290
COMPACT SIZE ZOOM LENS SYSTEM
Akira Fukushima; Takashi Okada, both of Osaka; Junji Hashimura, Sakai; Hiromu Umeda, Sakai; Hisayuki Masumoto, Sakai, and Hisashi Tokumaru, Osakasayama, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Oct. 10, 1990, Ser. No. 595,389
Claims priority, application Japan, Oct. 13, 1989, 1-266602; Oct. 13, 1989, 1-266603; Oct. 13, 1989, 1-266604; Oct. 13, 1989, 1-266605; Oct. 13, 1989, 1-266606; Oct. 13, 1989, 1-266607; Oct. 13, 1989, 1-266608; Nov. 28, 1989, 1-308066; Nov. 28, 1989, 1-308067; Mar. 26, 1990, 2-077221; Mar. 26, 1990, 2-077222; Mar. 26, 1990, 2-077223; Mar. 26, 1990, 2-077224; Mar. 26, 1990, 2-077225; Mar. 26, 1990, 2-077226
Int. Cl.[5] G02B *15/14, 13/18*
U.S. Cl. 359—692 **42 Claims**



1. A zoom lens system comprising, from the object side to the image side, a front lens group having a positive refractive power and a rear lens group having a negative refractive power, the zoom lens system being operated by changing the air distance between the front and rear lens group during a zooming operation, where the zoom lens system is characterized in that the zoom lens system comprises at least three aspherical surfaces for correcting aberrations, and that the most object side lens element includes at least one of the aspherical surfaces and the rear lens group includes the remaining two aspherical surfaces.

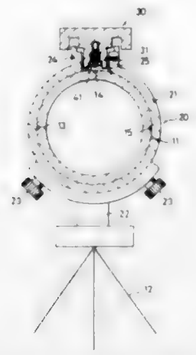
5,327,291
COMPACT OBJECTIVE LENS
James G. Baker, Bedford, N.H.; William T. Plummer, and Jon Van Tassell, both of Concord, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Mar. 30, 1992, Ser. No. 860,401
Int. Cl.[5] G02B *3/02, 9/04*
U.S. Cl. 359—716 **18 Claims**



1. A lens system for use in forming an image on a flat or weakly concave recording surface which has a half-diagonal length D_4, said lens system (i) having an equivalent focal length f_0, (ii) a diotropic power K_0, and (iii) including a stop or aperture, said lens system comprising:
(a) a first group on the object side of the stop or aperture having a positive dioptric power K_1 which is in the range from about 0.2 to about 0.5 times K_0, said first group comprising a concave surface preceding and adjacent to the stop or aperture, said concave surface having a radius of curvature, if spherical, or a central radius of curvature, if aspheric, lying in the range from about 0.1 to about 0.25 times f_0, the vertex or axial point of said concave surface lying within a distance along the lens system's optical axis from the axial point of the stop or aperture not greater than about 1/20 times f_0; and
(b) a second group on the image side of the stop or aperture consisting of a single component comprising one or more lens elements, said single component having:
(i) only two air surfaces;
(ii) a positive power;
(iii) a front vertex which lies axially to the rear of the axial point of the stop or aperture at a distance not greater than about 1/20 times f_0;
(iv) an axial thickness not greater than about 1/20 times f_0; and
(v) a forward surface adjacent to the stop or aperture having a curvature, if spherical, or an axial or central curvature, if aspheric, lying in the range from about −2.0 to about +1.5 times K_0;
said lens system:
(i) having a total diagonal field of view not exceeding about 62 degrees;
(ii) having an average field curvature whose magnitude in any azimuth does not exceed about 0.1 times K_0;
(iii) having a distortion not exceeding about 5% of D_4;
(iv) being corrected at least partially for lateral chromatic aberration; and
(v) having at least two elements made of materials differing in dispersive powers, at least one of the two elements is plastic.

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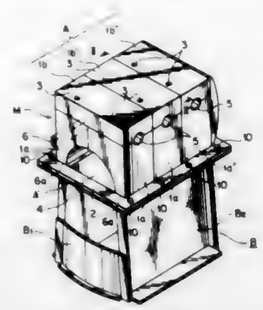
5,327,292
LENS BARREL ATTACHMENT
Haruki Eguchi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 20, 1992, Ser. No. 885,898
Claims priority, application Japan, May 21, 1991, 3-045665
Int. Cl.[5] G02B 7/02; G03B 17/00
U.S. Cl. 359—827 11 Claims



1. A lens barrel attachment for attaching a lens barrel to a tripod, said lens barrel having engaging recesses formed on an outer surface thereof and aligned on a circle having a center coinciding with a center of said lens barrel, said lens barrel attachment comprising:
an attachment ring connected to said tripod at a first portion, said attachment ring being rotatably fitted on said outer surface of said lens barrel and provided with a handle hole extending in a radial direction thereof;
a handle movably fitted in said handle hole and having a contact portion able to be brought into frictional contact with said lens barrel;
a pin supported by said handle and movable in a radial direction of said attachment ring; and
means for urging said pin so that a tip portion of said pin is objected onto said lens barrel relative to said contact portion, to be thereby engaged with one of said engaging recesses;
wherein said handle is threadingly fitted in said handle hole, and is rotatable therein such that said contact portion selectively comes into contact with said lens barrel or is separated from said lens barrel.

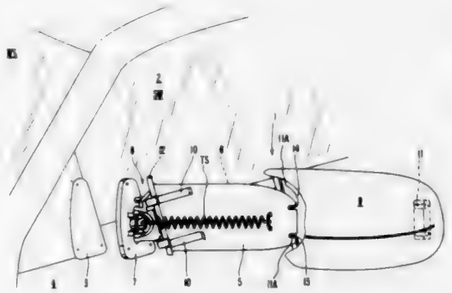
5,327,293
REFLECTION MIRROR APPARATUS
Mizuho Shimada, Yokohama, Japan, assignor to Equestrian Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 980,875
Int. Cl.[5] G02B 7/195, 5/08
U.S. Cl. 359—845 3 Claims

1. A reflection mirror apparatus having light reflection precision including:
a reflection mirror base body comprising a plurality of reflection mirror elements which define a three-dimensional rectangular base having a concave wall surface formed in one face thereof, said concave wall surface having a light reflection layer formed thereon; and
an auxiliary reflection mirror section extending from said face of said three-dimensional rectangular base having said concave wall surface formed therein, said auxiliary reflection mirror section comprising two pairs of opposed plates which form an open ended rectangular enclosure which extends from said face of said three-dimensional rectangular base having said concave wall surface formed therein, each of said plates being substantially parallel to



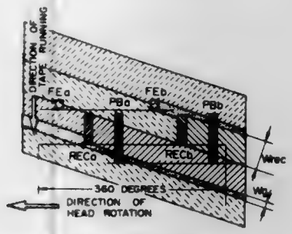
one another and having a light reflection layer applied to inner surfaces thereof.

5,327,294
EXTERNAL MIRROR FOR VEHICLE
Jörg-Uwe Koske, Simmozheim; Volker Nickel, Vöhringen; Robert Schwed, Stuttgart; Richard Merz, Starzach, and Arnold Klimas, Sindelfingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Sep. 11, 1992, Ser. No. 943,487
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1991, 4130176
Int. Cl.[5] G02B 7/182
U.S. Cl. 359—872 10 Claims



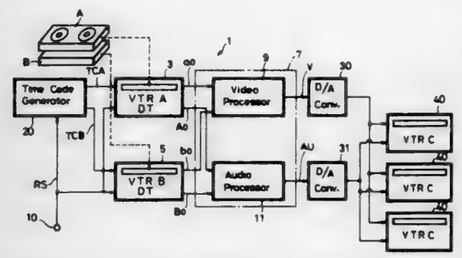
1. External mirror assembly for vehicles comprising:
a mirror glass support subassembly including:
(i) a mirror glass holding part attachable to a fixture on a vehicle bodywork part, and
(ii) a mirror glass securable to the holding part independently and separately from any exterior mirror casing, and
a separate exterior mirror casing which can be pushed over the mirror glass support subassembly and be detachably secured thereto subsequent to and separately from attachment of the mirror glass support subassembly to the vehicle bodywork part;
wherein the mirror casing can be detachably fixed by at least one leaf spring to the holding part or to a vehicle body panel of the vehicle; and
wherein said at least one leaf spring includes a leaf spring disposed along a cover plate on the side of the body panel, which leaf spring acts upon a catch on the mirror casing which is actuable from a cavity of the mirror casing through an opening in the cover plate, as a result of which a catch-locking of the mirror casing can be disabled.

5,327,295
MAGNETIC REPRODUCING APPARATUS AND MAGNETIC RECORDING APPARATUS WITH EDITING FUNCTION
Sigekazu Togashi, Katano; Kunio Suesada, Ikoma; Kunio Sekimoto, Katano; Yoshinobu Oba, Atsugi, and Tadashi Nakayama, Machida, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of Japan
Filed Jan. 2, 1991, Ser. No. 636,697
Claims priority, application Japan, Jan. 9, 1990, 2-1770
Int. Cl.[5] G11B 27/02, 15/14, 5/03
U.S. Cl. 360—13 7 Claims



1. A magnetic recording apparatus having an editing function, wherein during normal operation, azimuth recording is performed without forming a guard, said magnetic recording apparatus comprising:
system control means for controlling an operating condition of said magnetic recording apparatus;
signal processing means for processing an input signal, including modulation and shuffling, to modify a signal form of the input signal to form suitable for recording on a recording medium;
signal recording means including a recording amplifier and a plurality of recording heads for recording an output signal from said signal processing means on the recording medium;
track arrangement determining means for determining a portion of a previously recorded recording medium on which an insert recording signal section, selected by an operator or an editing controller, is to be insert-recorded, said track arrangement determining means determining the portion on the basis of a control signal from said system control means having a predetermined signal format;
guard position determining means, operative at a time of insert recording the insert recording signal section on the portion determined by said track arrangement determining means, for (i) predicting positions of leading and lagging boundaries for a set of new tracks including a plurality of new tracks to be formed after recording to said insert recording signal section, said leading and lagging boundaries (a) being defined with respect to a direction of movement of said recording medium during recording such that said leading boundary precedes said lagging boundary in the direction of movement, and (b) serving to define boundaries where the set of new tracks abuts previously recorded tracks, said prediction being performed on the basis of a location of the portion on the recording medium at which said insert recording signal section is to be insert-recorded as determined by said track arrangement determining means, and (ii) determining a position of a guard to be added so that (a) the guard is not added to a position at which two of the plurality of new tracks are in abutment to each other, and (b) the guard is added (1) to a leading side of said plurality of new tracks facing the leading boundary of (2) to each of both leading and lagging sides of said plurality of new tracks respectively facing the leading and lagging boundaries; and
guard adding means for adding the guard to the recording medium at the position determined by said guard position determining means.

5,327,296
DUPLICATING SYSTEM FOR VIDEO AND AUDIO SIGNALS USING TIMEBASE COMPRESSION AND HIGH SPEED RECORDERS
Fumihiro Nagasawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 5, 1991, Ser. No. 755,543
Claims priority, application Japan, Sep. 10, 1990, 2-239281
Int. Cl.[5] G11B 5/86, 27/02
U.S. Cl. 360—15 9 Claims



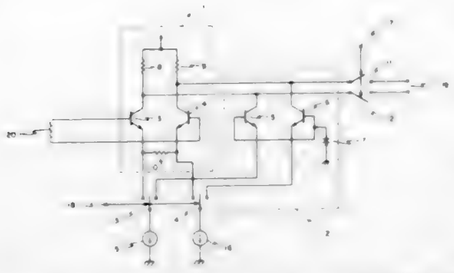
1. An apparatus for duplicating a video signal having video frame intervals, comprising:
a plurality n of video tape reproducing devices, each video tape reproducing device having a record medium on which said video signal is recorded and transport means for transporting said record medium at a speed n times as high as a normal transport speed and rotary head means having a normal rotary head rotational speed for reproducing said video signal from said record medium to produce a reproduced video signal, the reproduced video signals produced by said plurality n of video tape reproducing devices offset from each other by one of said frame intervals;
signal processing means for timebase-compressing said reproduced video signals, delaying at least one of the timebase-compressed video signals, and outputting an n-times normal speed reproduced signal; and
at least one video tape recorder having rotary head means for recording the n-times normal speed reproduced signal from said signal processing means on a respective additional record medium at a speed n times as high as a normal recording speed.

5,327,297
READ/WRITE AMPLIFIER CIRCUIT FOR MAGNETIC DISK UNIT
Hiroyuki Enami, and Tatsuo Nishizawa, both of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Nov. 12, 1991, Ser. No. 790,996
Claims priority, application Japan, Nov. 13, 1990, 2-306560
Int. Cl.[5] G11B 5/09, 5/02
U.S. Cl. 360—46 4 Claims

1. A read/write amplifier circuit comprising an input terminal supplied with a data signal which is to be read-out, a load, a read amplifier coupled to said input terminal and said load and activated in a read mode to amplify said data signal and supply an amplified data signal to said load together with a first bias current, a DC bias circuit coupled to said load and activated in a write mode for supplying said load with a second bias current that is equal to said first bias current, said load producing in said read mode a first DC bias voltage and in said write mode a second DC bias voltage that is equal to said first DC bias voltage, an output terminal, and a switch coupled

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between said load and said output terminal, said switch being turned ON in said read or said write mode and turned OFF in



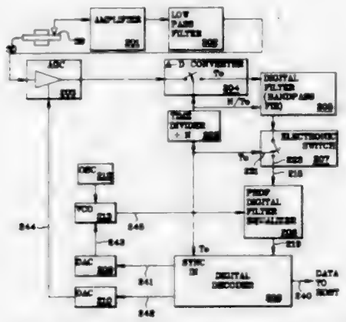
a mode other than said read or said write mode to bring said output terminal into a high impedance state.

5,327,298

NOISE MINIMIZATION FOR MAGNETIC DATA STORAGE DRIVES USING OVERSAMPLING TECHNIQUES

Hal H. Ottesen, and Gordon J. Smith, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 10, 1992, Ser. No. 943,270
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—48 **7 Claims**



1. In a disk recording system including a rigid magnetic disk, means for rotating the disk, a slider, a transducer mounted on the slider for creating an analog readback signal representing digital data from the disk, and means for maintaining the slider in a transducing relationship with the disk to enable the transducer to transduce the digital data in response to rotation of the disk, a method for extracting an anti-aliased low-noise representation of the digital data from the analog readback signal, the method comprising the ordered steps of:

(a) producing a first sequence of signals from the analog readback signal by periodically sampling the analog readback signal at a first sampling rate N/T_0, such that the time period T_0/N represents the time interval between two temporally consecutive periodic samples, where N is a positive number greater than unity;

(b) bandpass filtering the first sequence of signals such that the phase characteristics of the first sequence of signals are preserved in a filtered first sequence of signals;

(c) producing a second sequence of signals by sampling the filtered first sequence of signals at a second sampling rate $1/T_0$; and

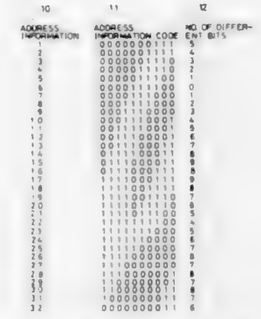
(d) reconstructing the anti-aliased low-noise representation of the digital data from the second sequence of signals by processing each signal in the second sequence of signals in a time period substantially equal to T_0.

5,327,299

METHOD OF ENCODING POSITION INFORMATION

Keiichi Nishikawa, and Yuji Ohmura, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 478,643, Feb. 12, 1990, abandoned. This application May 10, 1993, Ser. No. 59,724
Claims priority, application Japan, Feb. 22, 1989, 1-42211
Int. Cl.[5] G11B *21/08*
U.S. Cl. 360—48 **21 Claims**



1. A method of encoding position information for a group of recording portions on a recording medium, the recording medium having at least one group of recording portions, each group having a predetermined number of recording portions, each recording portion having a predetermined number of information units for storing a position information code indicating its position within the group, each recording unit within a group having an information code that differs from the information codes of every other recording unit within that group, said number of information units being less than one half the number of recording portions in the group, the method comprising the step of composing position information codes such that the position information code of any selected recording portion is different by one information unit from the position information codes of each recording portion spaced by one recording portion from said selected recording portion, by two information units from the position information codes of each recording portion spaced by two recording portions from said selected recording portion, and by three information units from the position information codes of each recording portion spaced by three recording portions from said selected recording portion.

5,327,300

DIGITAL INFORMATION REPRODUCING APPARATUS INCLUDING A CIRCUIT FOR DETECTING FREQUENCY DEVIATION OF A SYNCHRONISM CLOCK

Seiichirou Satomura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 413,483, Sep. 27, 1989, abandoned. This application Jun. 30, 1992, Ser. No. 908,548
Claims priority, application Japan, Sep. 29, 1988, 63-245486
Int. Cl.[5] G11B *5/09, 15/12*
U.S. Cl. 360—51 **11 Claims**

1. A digital information reproducing apparatus comprising:

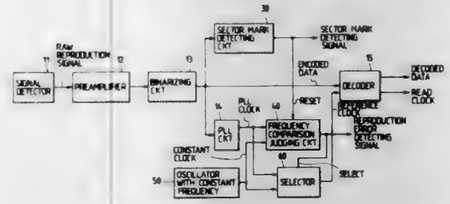
reading means for reading out digital information recorded on a recording medium;

first clock generating means for producing a first clock synchronized with the digital information read out by said reading means;

second clock generating means for generating a second clock of a predetermined frequency;

processing means for processing the digital information read out by said reading means on the basis of one of the first clock produced by said first clock generating means and the second clock generated by said second clock generating means;

judging means for judging whether a frequency of the first clock produced by said first clock generating means changes by a predetermined amount relative to the second



clock, regardless of whether or not the first clock synchronizes with the digital information read out by said reading means; and

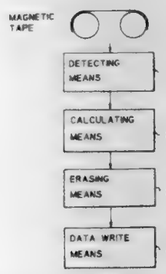
switching means for switching from the first clock produced by said first clock generating means to the second clock generated by said second clock generating means when said judging means judges that the frequency of the first clock changes by the predetermined amount, so that said processing means processes the digital information on the basis of the second clock when the frequency of the first clock has changed by the predetermined amount.

5,327,301

ERASING AND RECOVERING SYSTEM FOR DATA BLOCK ON A MAGNETIC TAPE

Naoki Hirabayashi; Toshiya Nakajima; Toshiyuki Kasada; Keiichi Kato, and Kinya Saito, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Mar. 18, 1992, Ser. No. 853,491
Claims priority, application Japan, Mar. 20, 1991, 3-056940
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—53 **5 Claims**



1. An erasing and recovering system for a data block on a magnetic tape in a magnetic tape recording and reproducing apparatus, the system comprising:

detecting means for detecting data error caused by a damaged portion on the magnetic tape by reading a data block just after the data block is written to the magnetic tape;

calculating means for calculating the circumference of the magnetic tape including the damaged portion;

erasing means for erasing a half of the circumference including the damaged portion; and

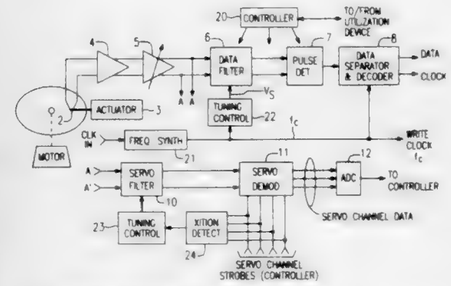
data write means for re-writing the same data block as the data block including the error into another half of the same circumference as the circumference including the damaged portion.

5,327,302

DATA FILTER TUNING FOR CONSTANT DENSITY RECORDING APPLICATIONS

John M. Khoury, New Providence, N.J., and Dale H. Nelson, Shillington, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 16, 1992, Ser. No. 943,337
Int. Cl.[5] G11B *5/035, 5/09*
U.S. Cl. 360—65 **11 Claims**



1. In a mass storage system having:

a tunable filter for filtering data read from the system, the filter having a characteristic frequency substantially determined by a control signal; and

a generator for producing a reference signal having a frequency substantially proportional to the frequency of the data;

characterized by:

a comparison network, responsive to the reference signal, for providing a control signal; and

a reference network, responsive to the control Signal, for providing an output signal coupled to the comparison network;

wherein the comparison network phase locks the output signal from the reference network to the frequency of the reference signal scaled by a predetermined scale factor Y/X and the characteristic frequency of the tunable filter is substantially proportional to the scaled frequency of the reference signal.

5,327,303

MR PREAMPLIFIER HAVING FEEDBACK LOOPS FOR MINIMIZING DIFFERENTIAL LOW FREQUENCY COMPONENTS AND REGULATING COMMON MODE LOW FREQUENCY COMPONENTS OF THE PREAMPLIFIER OUTPUT SIGNAL

Robert F. Smith, San Jose, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

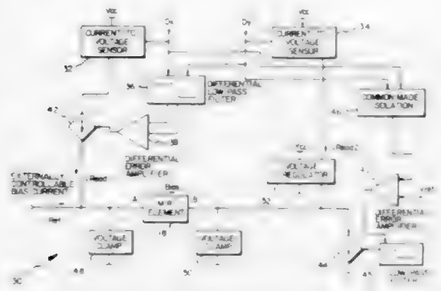
Filed Dec. 18, 1992, Ser. No. 993,316
Int. Cl.[5] G11B *5/02, 5/127, 5/133*
U.S. Cl. 360—67 **15 Claims**

5. A preamplifier and biasing circuit for producing at first and second output terminals a differential output signal derived from a magneto-resistive element that is coupled to the preamplifier at first and second element terminals, protecting the magneto-resistive element from voltage discharge between the magneto-resistive element and magnetic media, and coupling the first and second output terminals to other circuitry without physical coupling capacitors, wherein the preamplifier circuit is powered by a single ended power supply, the preamplifier circuit comprising:

means for producing a first read signal that is applied to the magneto-resistive element;

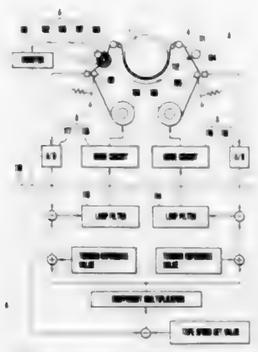
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means for producing a second read signal;
means for deriving a first output signal from the first read signal;
means for deriving a second output signal from the second read signal, wherein the first and second output signals together form the differential output signal;
a first feedback loop that adjusts a magnitude of the first read signal based on the differential output signal, to cause



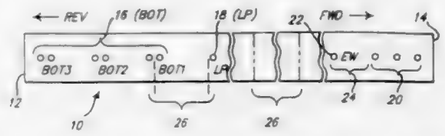
differential DC and low frequency components of the first output signal to equal differential DC and low frequency components of the second output signal; and
a second feedback loop that adjusts a magnitude of a sum of the first and second read signals based on the differential output signal, to cause common mode DC and low frequency components of the differential output signal to equal a reference voltage.

5,327,304
TAPE DRIVE CONTROLLING DEVICE
Mitsuru Owada; Takashi Kimura, and Keiichi Fukuzawa, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 30, 1991, Ser. No. 752,872
Claims priority, application Japan, Sep. 12, 1990, 2-239819; Nov. 14, 1990, 2-306013; Nov. 14, 1990, 2-306014; Jun. 14, 1991, 3-143208; Jun. 14, 1991, 3-143209; Jun. 14, 1991, 3-143210
Int. Cl.[5] G11B *15/46*
U.S. Cl. 360—73.05 **30 Claims**



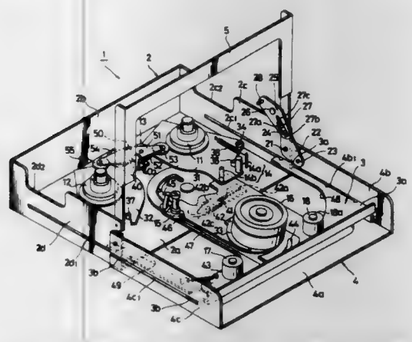
1. A tape drive controlling device which causes a tape to travel from one of first and second reels to the other while maintaining the tape in contact with a head, comprising:
(a) speed detecting means for detecting a travel speed of the tape;
(b) first tension detecting means for detecting a tension of the tape between the head and the first reel;
(c) second tension detecting means for detecting a tension of the tape between the head and the second reel;
(d) reel driving means for driving the first and second reels to cause the tape to travel;
(e) first arithmetic means for making a comparison between a tension value obtained through said first tension detecting means and a first tension reference value and inputting a result of the comparison to said reel driving means;
(f) second arithmetic means for making a comparison between a tension value obtained through said second tension detecting means and a second tension reference value and inputting a result of the comparison to said reel driving means;
(g) third arithmetic means for making a comparison between a speed value obtained through said speed detecting means and a speed reference value; and
(h) correcting means for correcting the first tension reference value and/or the second tension reference value on the basis of a result of the comparison obtained through said third arithmetic means.

5,327,305
TAPE FORMAT DETECTION SYSTEM
Kimberly I. Thomas, Ypsilanti, Mich., assignor to Conner Peripherals, Inc., San Jose, Calif.
Filed Aug. 14, 1992, Ser. No. 930,740
Int. Cl.[5] G11B *15/48, 15/18*
U.S. Cl. 360—74.5 **12 Claims**



1. A method of identifying the format of a data storage tape comprising:
moving the tape longitudinally while searching for physical format holes, and generating and storing a physical format datum indicative of locations of the physical format holes for identifying a cartridge type and also at least temporarily storing a head location datum indicative of the longitudinal position of a transducer head relative to the tape;
moving the transducer head laterally while moving the tape longitudinally searching for laterally spaced magnetic marks and generating and storing a lateral spacing datum indicative of spacing between the laterally spaced magnetic marks when laterally spaced magnetic marks are located;
moving the tape longitudinally while searching for longitudinally spaced magnetic marks and generating and storing a longitudinal spacing datum indicative of spacing between the longitudinally spaced magnetic marks using the head location datum when longitudinally spaced magnetic marks are located;
and using at least one of said stored lateral spacing datum and said stored longitudinal spacing datum to identify the format of said data storage tape.

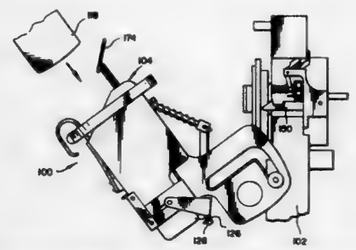
5,327,306
COMPACT MAGNETIC RECORDING AND REPRODUCING DEVICE HAVING MOVABLE REELS AND REEL SPINDLES
Yoshio Kondo, Tokyo, and Kenichi Fukahori, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 26, 1991, Ser. No. 674,977
Claims priority, application Japan, Mar. 30, 1990, 2-84302; Mar. 30, 1990, 2-84303
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] G11B *5/008, 5/027, 23/02*
U.S. Cl. 360—96.5 **23 Claims**



1. A system including a cassette and a device for loading a cassette into a recording/reproducing apparatus, comprising:
a tape cassette having tape take-up and supply reels arranged therein for movement so as to increase a dead space at a front of said tape cassette;
a first chassis on which a pair of reel drive spindles are slidably mounted for receiving the take-up and supply reels of said tape cassette loaded thereon;
a second chassis having a recording/reproducing head mounted thereon, said second chassis being slidably mounted on said first chassis; and
chassis guide means for providing relative motion between said first chassis and said second chassis and for providing selective movement of said recording/reproducing head on said second chassis into the increased dead space in said tape cassette and for providing movement of said pair of reel drive spindles away from said recording/reproducing head, thereby moving said take-up and supply reels.

5,327,307
MAGNETIC TAPE CASSETTE RECORDER HAVING A SLIDABLY AND TILTABLY MOUNTED CASSETTE HOLDER AND A LATCH INTERLOCK MECHANISM
Rafn Stefansson, San Marino, and Merle Westover, Pasadena, both of Calif., assignors to Datatape Incorporated, Pasadena, Calif.
Filed Apr. 17, 1992, Ser. No. 870,385
Int. Cl.[5] G11B *15/675, 15/66*
U.S. Cl. 360—96.5 **5 Claims**

1. A magnetic tape cassette recorder comprising:
a recorder frame;
magnetic tape cassette holding means for releasably holding a magnetic tape cassette;
mounting means on said recorder frame for slidably mounting said magnetic tape cassette holding means for linear sliding movement between a first position spaced from said frame and a second position within said frame, said mounting means including means for tilting said holding means, relative to said linear sliding movement when in said first position for facilitating insertion and removal of a magnetic tape cassette with respect to said cassette holding means;
cooperative latch means on said recorder frame and on said holding means for latching said holding means in said recorder frame when said holding means is in said second position;
interlock means coupled to said latch means for selectively locking and unlocking said latch means; and
wherein said recorder includes tape threading means mounted on said recorder frame for removing tape from a



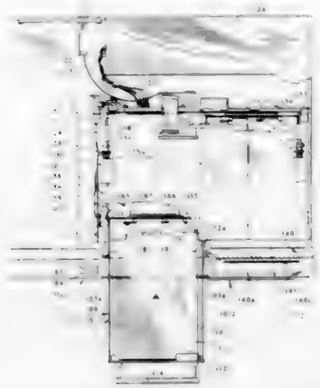
cassette held by said holding means at said second position within said frame, wherein said threading means (a) deactuates said interlock means to lock said latch means to prevent movement of said cassette holding means from said second position when said threading means has been actuated and removed tape from a cassette, and (b) actuates said interlock means to unlock said latch means to allow movement of said cassette holding means from said second position when said threading means has been deactuated and tape is returned to said cassette.

5,327,308
DISK DRIVE SYSTEM WITH TRANSPORTABLE CARRIER AND MOUNTING ASSEMBLY
George E. Hanson, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa
Continuation of Ser. No. 846,462, Mar. 3, 1992, abandoned, which is a division of Ser. No. 499,861, Mar. 26, 1990, Pat. No. 5,122,914, which is a division of Ser. No. 947,707, Dec. 30, 1986, Pat. No. 4,912,580, which is a division of Ser. No. 707,154, Mar. 1, 1985, abandoned, which is a continuation-in-part of Ser. No. 571,389, Jan. 17, 1984, Pat. No. 4,633,350. This application Feb. 23, 1993, Ser. No. 22,789
Int. Cl.[5] G11B *5/012*
U.S. Cl. 360—97.01 **51 Claims**

37. In combination with a computer housing, said computer housing having a port for receiving a disk drive apparatus, said disk drive apparatus comprising:
a support assembly mounted within said port and electrically connected to said computer housing, said support assembly defining a pair of spaced apart sides, said support assembly including a first electrical connector mounted in fixed alignment with respect to said pair of spaced apart sides;
a carrier, said carrier defining a frame enclosing an open space, a second electrical connector mounted to said frame, said carrier having sidewalls that are spaced apart so that said carrier can be located between said sides of said support assembly in a closely conforming manner, said carrier being readily removable and separable from said support assembly,
a disk drive mounted to said carrier, said disk drive being contained within said open space of said carrier; and
a plurality of conductors forming an electrical connection between said disk drive and said second electrical connector, said carrier being fully insertable in position between said sides of said support assembly so that said first and second connectors electrically engage one another without direct manipulation of said first or second connectors,

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engagement of said first and second electrical connectors establishing electrical connection between said disk drive



and said computer housing to carry all of the data, control, and power signals necessary for operation of said disk drive.

5,327,309

DISK DRIVE APPARATUS WITH SHUTTER LOCKING MECHANISM WHICH IS PREVENTIVE OF PLAY OF DISK CARTRIDGE IN LOADING CONDITION

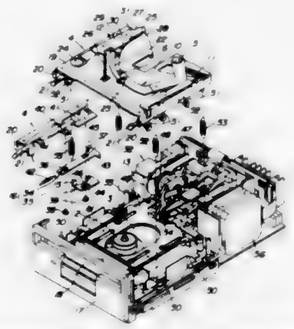
Tooru Takamiya, Kanagawa; Hiroshi Miyoshi; Osamu Ito, both of Tokyo, and Kiyoshi Ohmori, Miyagi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 20, 1990, Ser. No. 540,853

Claims priority, application Japan, Jun. 23, 1989, 1-161952; Jun. 23, 1989, 1-161953

Int. Cl.[5] G11B *5/016*

U.S. Cl. 360—99.02 **2 Claims**



1. A disk drive apparatus for driving a recording medium disk housed within a disk cartridge having a disk access window and a sliding shutter, comprising:

a chassis;

a disk driving mechanism including disk chucking means for chucking the disk on a turn table and for rotatingly driving the disk, said disk driving mechanism being mounted on the chassis;

cartridge holder for receiving the disk cartridge and for carrying the disk cartridge between a predetermined unloading position at which said disk cartridge is externally accessible for insertion and extraction and a predetermined loading position at which the disk is chucked by the disk chucking means;

a cartridge holder lifting mechanism for shifting said cartridge holder between said unloading and loading positions;

shutter operating means incorporated in said cartridge holder for shifting said sliding shutter between an open position in which said disk access window is exposed for reading and/or writing information on the disk and a closed position in which said disk access window is blocked, said shutter operating means including a pivotal arm for carrying said sliding shutter between said open and closed positions according to the relative positions of said disk cartridge and said cartridge holder;

arm lock means incorporated in said cartridge holder for locking said pivotal arm at a position corresponding to the fully open position of said shutter; and,

cartridge lock means incorporated in said cartridge holder for locking said disk cartridge within said cartridge holder, said cartridge lock means being engaged when said disk cartridge is fully inserted within said cartridge holder,

wherein said cartridge lock means comprises a slide plate movable within said cartridge holder in the direction of motion of said disk cartridge, said movement depending upon the relative position of said disk cartridge and said cartridge holder, and a pivotal lever carrying a cartridge locking pin, said pivotal lever being cooperated with said slide plate to engage said cartridge locking pin into a locking pin receptacle in said disk cartridge at the fully inserted position of said disk cartridge; and,

wherein said side plate is biased by said pivotal arm of said shutter operating means to a position for establishing locking engagement between said cartridge locking pin and said locking pin receptacle at the locked position of said pivotal arm by said arm lock means.

5,327,310

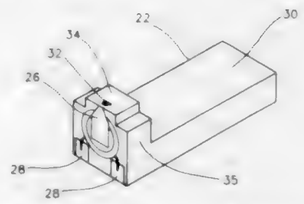
THIN FILM CONTACT RECORDING HEAD

Peter G. Bischoff, Cupertino; Chak M. Leung, Palo Alto, and Stephen S. Murray, Fremont, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Jun. 25, 1992, Ser. No. 904,033

Int. Cl.[5] G11B *5/60*

U.S. Cl. 360—103 **12 Claims**



1. A thin film magnetic head assembly for transducing data relative to a magnetic medium comprising:

a head slider formed as a single integral body with only one air bearing longitudinal rail having a leading or upstream edge and a trailing or downstream edge, said slider including a longitudinal section and a leg portion;

a thin film magnetic transducer disposed at said trailing edge at an end surface of said leg portion of said slider, said transducer being in contact or pseudo-contact with said magnetic medium during the transducing of said data;

said longitudinal section having an air bearing surface substantially perpendicular to said end surface of said leg portion; and

a configured wear padformed on said pedestal for reducing the contact area between the air bearing surface and said magnetic medium.

5,327,311

TECHIQUE FOR PROVIDING BACK BAR AND BOSS FOR SLIDER

Raju S. Ananth, San Jose, and Michael A. Verdone, Hillsborough, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

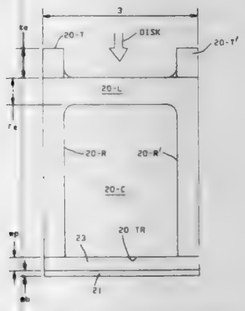
Division of Ser. No. 896,717, Jun. 10, 1992, Pat. No. 5,220,470, which is a division of Ser. No. 225,680, Jul. 29, 1988, abandoned, which is a division of Ser. No. 836,364, Mar. 5, 1986, abandoned.

This application Jan. 19, 1993, Ser. No. 6,422

The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.

Int. Cl.[5] G11B *5/60, 17/32*

U.S. Cl. 360—103 **67 Claims**



1. A method of adapting a magnetic recording slider having a prescribed shallow "flying cavity" on its media-confronting face to exhibit "self-purging", better stability and increased stiffness, and to resist "stiction", this method including: providing back bar means disposed across the cavity on the trailing face of the slider, while adapting this back bar means to include purge channel means disposed in fluid communication between the cavity and the ambient atmosphere whereby to better purge the cavity of gas and associated contaminants; and also providing "boss means" on the forward portion of this face, such as to pitch-up this face, at least sufficient to relieve stiction, wherein the boss means comprises one or more microprotuberances projecting a prescribed micro-dimension below the flying-surface of this face, but insufficient to interfere with slider flight.

5,327,312

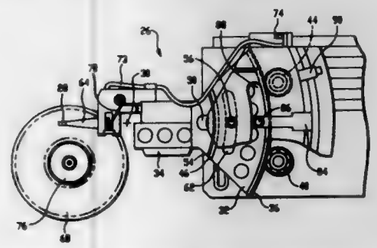
ROTARY ACTUATOR HAVING CANTILEVERED ROTATIONAL AXIS

Donald L. Ekhoff, 2600 Day Rd., Gilroy, Calif. 95020

Filed Feb. 16, 1993, Ser. No. 19,264

Int. Cl.[5] G11B *5/55*

U.S. Cl. 360—106 **17 Claims**



1. An actuator for use with a data disk comprising,

a rotary arm having a supported portion and having a cantilevered portion,

mounting means coupled to said supported portion of said arm to secure said arm for rotation about a virtual rotational axis, said mounting means being stationary with respect to said arm as said arm undergoes said rotational motion, said virtual axis being located within a region spanned by said cantilevered portion, said region being defined along said cantilevered portion, and

means for coupling a transducer to said cantilevered portion of said arm, thereby securing said transducer for displacement along an arcuate path when said arm is moved about said virtual rotational axis.

5,327,313

MAGNETORESISTANCE EFFECT TYPE HEAD HAVING A DAMAGE IMMUNE FILM STRUCTURE

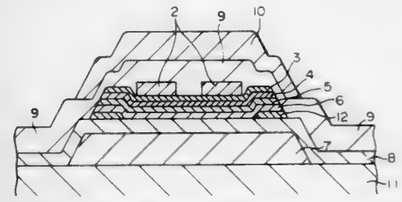
Kouichi Nishioka, Hiratsuka; Shigeru Tadokoro, Hitachi, and Shinji Narishige, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,472

Claims priority, application Japan, Aug. 1, 1991, 3-192418

Int. Cl.[5] G11B *5/127*

U.S. Cl. 360—113 **15 Claims**



1. A magnetoresistance effect type head comprising:

a ceramic substrate;

a first magnetic film provided on said ceramic substrate;

a second magnetic film provided adjacent said first magnetic film;

first and second insulating films provided between said first and second magnetic films;

a magnetoresistance effect type film provided between said first and second insulating films;

a bias film provided between said first and second insulating films and in contact with said magneto-resistance effect type film, for applying a magnetic field to said magnetoresistance effect type film;

a first conductive film member provided between said first and second insulating films and above said bias film; and

a pair of second conductive film members positioned between said first and second insulating films, separated from each other, and in contact with said first conductive film member.

5,327,314

DISK CARTRIDGE LIFTER WITH CUTOUT ACROSS FOLDING LINE

Shuichi Kikuchi, and Kiyoyuki Miyata, both of Miyagi, Japan, assignors to Sony Corporation, Japan

Filed Aug. 25, 1992, Ser. No. 934,244

Claims priority, application Japan, Aug. 30, 1991, 3-220264

Int. Cl.[5] G11B *23/03, 3/00*

U.S. Cl. 360—133 **17 Claims**

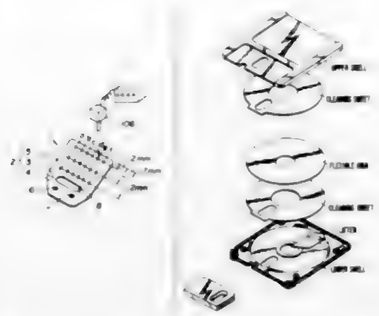
1. A lifter for a disk mounted in a disk cartridge comprising:

an essentially flat single thickness thin plate;

a cutout of predetermined shape formed in said flat thin plate; and

means defining a fold which extends across said flat thin

plate and through said cutout and which separates a base member which is fixed to said disk cartridge and a pressing member which extends from said base member at a predetermined angle.

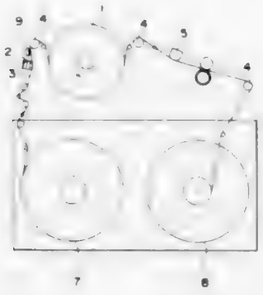


5,327,315

MAGNETIC RECORDER WITH REFRIGERATION ELEMENT TO LOCALLY COOL TAPE

Norimoto Nouchi; Yoshiaki Mizoh; Hiroshi Yoda, all of Osaka, and Masaya Sakaguchi, Shiga, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 1, 1992, Ser. No. 937,736
Claims priority, application Japan, Sep. 2, 1991, 3-221492
Int. Cl.[5] G11B 15/00
U.S. Cl. 360—137 25 Claims



1. A magnetic recorder comprising:

a rotating cylinder having magnetic heads for recording data on and reproducing data from a magnetic tape,

a tape transport system for transporting the magnetic tape around the rotating cylinder; and

a refrigeration post positioned so as to refrigerate the tape prior to the tape contacting the rotating cylinder; said refrigeration post comprising:

a post member which contacts the magnetic tape;

a thermoelectric refrigeration element having an endothermic side and an exothermic side, wherein the post member is connected to the endothermic side of the thermoelectric refrigeration element; and

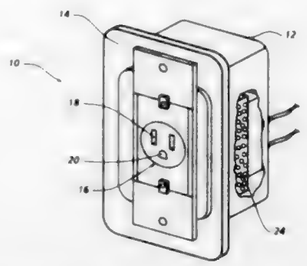
a heat radiation member connected to the exothermic side of the thermoelectric refrigeration element.

5,327,316

POWER TERMINAL PROTECTION DEVICE

Yung K. Yi, Upper Marlboro, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 9, 1990, Ser. No. 594,751
Int. Cl.[5] H02H 7/20
U.S. Cl. 361—56 10 Claims



1. In combination with an electrical power source and an outlet device having power terminal means for transferring voltage thereat to a load and inductance means coupling the source to the power terminal means for regulating increase in current conducted therebetween; transient suppression means for protecting the source from transient voltage above a threshold level at the power terminal means including: capacitor means connected to the inductance means for delaying supply of the transient voltage to the source, impedance means connected in parallel relation to the capacitor means for development of a shunt path in response to said transient voltage at the power terminal means, and shielding means electromagnetically separating the inductance means from the capacitor means for preventing interference with absorption of transient energy by the impedance means during said development of the shunt path.

5,327,317

SELF-TERMINATING DATA LINE DRIVER

Terry R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 13, 1991, Ser. No. 806,688
Int. Cl.[5] G11C 7/00
U.S. Cl. 361—88 11 Claims

1. An electronic device for driving differential potentials to first and second data lines, comprising:

a) a first node connectable to a first potential;

b) a second node;

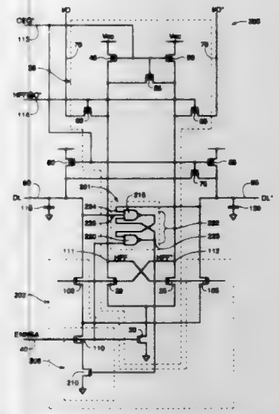
c) a gating device electrically interposed between said first node and said second node;

d) a first switching device interposed between said first data line and said second node;

e) a second switching device interposed between said second data line and said second node, said first data line capable of being pulled toward said first potential when said first switching device is actuated, and said second data line capable of being pulled toward said first potential when said second switching device is actuated; and

f) a differential signal sensing circuit for sensing said differential potentials on said first and second data lines, said first and second data lines in electrical communication with first and second input terminals, respectively, of said differential signal sensing circuit, said differential signal sensing circuit having an output terminal, a control input of said gating device in electrical communication with said output terminal of said signal sensing circuit, said gating device having first and second switching states controlled by an output signal from said differential signal sensing circuit, said output signal available at said output terminal, wherein

said differential potentials can be driven to said first and second data lines when said gating device has said first switching state and wherein the driving of said differential potentials is inhibited when said gating device has said second switching state, said gating device capable of attaining said second switching state when one of said first and second data lines has a potential equal to a trip point of said differential signal sensing circuit, said trip point determined by electrical characteristics of said differential signal sensing circuit.

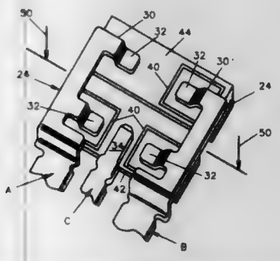


5,327,318

TELECOMMUNICATION EQUIPMENT PROTECTOR

Pravin N. Popat, Norton; Diethard Unterweger, Plainville; Gennady Baskin, Sharon; Ronald J. Candelet, Attleboro, and Gary L. Tonnies, North Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 7, 1992, Ser. No. 987,038
Int. Cl.[5] H02H 9/04
U.S. Cl. 361—55 5 Claims



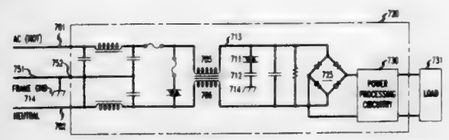
1. A surge protection device for protecting telecommunication equipment coupled to telephone ring, tip and common lines comprising a silicon semiconducting element having a reverse breakdown PN junction and having an upper and a lower surface, a first electrode disposed on the upper surface and a second electrode disposed on the lower surface, a generally flat electrically conductive heat sink plate, the silicon semiconducting element mounted on the heat sink plate with the second electrode in electrical and heat connection therewith, a first lead having a terminal portion lying in a plane, the lead having a platform portion disposed above the terminal portion and having a finger extending downwardly toward the plane and having a flat pad with sidewalls and a bottom surface, the bottom surface being in physical engagement with the first electrode through a thin layer of solder and being soldered thereto with sufficient solder that the solder wicks upwardly onto the sidewalls of the pad forming a meniscus therewith and a second generally flat lead lying in the plane having a distal end portion being physically and electrically connected to the heat sink and electrically insulative, heat conductive material encapsulating the element, heat sink plate and portions of the first and second leads whereby destruction of the silicon semiconducting element creating voids in the silicon caused by excessive voltage and current conditions result in melting the solder between the pad of the first lead and the first electrode which, upon melting, flows into the voids in the silicon element between the first and second electrodes to cause the surge protection device to fail closed preventing current from reaching telecommunication equipment coupled to the telephone lines.

5,327,319

COMMON MODE VOLTAGE SURGE PROTECTION CIRCUITRY

Victor K. Lee, Plano, and Donald B. Rose, Rockwell, both of Tex., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 750,381, Aug. 27, 1991, abandoned.
This application Apr. 16, 1993, Ser. No. 47,770
Int. Cl.[5] H02H 9/04
U.S. Cl. 361—118 8 Claims



1. In a power supply adapted to be powered by a source of AC energy; circuitry comprising

power processing circuitry for modifying voltage and current levels of the energy supplied by the source;

input circuitry including a power current carrying hot line, a neutral line, and a ground line and a rectifier connected to the hot and neutral line by first and second coupled longitudinal inductors, and the rectifier connecting the source of AC energy to the power processing circuitry and including;

an infrastructure for supporting electrical components of the power processing circuitry and input circuitry and connected to a ground, in common with the neutral line to be operative as a reference ground;

transient voltage surge protection circuitry connected to the power current carrying hot line between the source of AC energy and the rectifier of the input circuitry, and interconnecting the power current carrying hot line and the reference ground of the infrastructure; and the neutral line and including:

a voltage responsive breakdown apparatus and a Y-capacitor connected in series circuit and the Y-capacitor and connecting the power current carrying hot line to the reference ground and having sufficient capacitance to function as an open circuit at dielectric voltage test levels and to faciltate surge current conduction at voltage levels due to lightning surges.

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5,327,320

APPARATUS FOR SUPPRESSION OF INDIVIDUAL IGNITION EVENTS IN AN IGNITION SYSTEM

Uwe Fischer, Schwaikheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

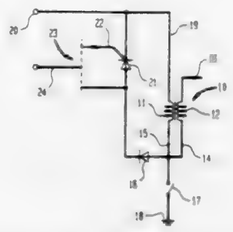
PCT No. PCT/DE91/00159, § 371 Date Mar. 25, 1992, § 102(e) Date Mar. 25, 1992, PCT Pub. No. WO91/14866, PCT Pub. Date Oct. 3, 1991

PCT Filed Feb. 27, 1991, Ser. No. 842,355

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1990, 4009033

Int. Cl.[5] **H01H** *47/00*

U.S. Cl. 361—152 **16 Claims**



1. An apparatus for suppression of individual ignition events in an ignition system having

at least one ignition coil (**10**), including a first primary winding connection (**15**) which is connected to a controllable ignition switch (**17**) and to an electrically controllable short-circuit switch (**21**) located on the primary side of the ignition coil (**10**), said short-circuit switch serving to suppress any primary-side high voltage occurring after opening of the controllable ignition switch (**17**),

wherein control energy for actuation of the short-circuit switch (**21**) is furnished from electromagnetic energy stored in the ignition coil (**10**) during a closing phase of operation of the ignition switch (**17**).

5,327,321

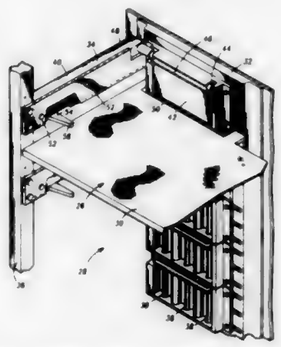
PROTECTIVE SHUTTER ASSEMBLY FOR ELECTRICAL TERMINALS AND METHOD OF USING SAME

Gary M. Rosen, 121 Evergreen Dr., Clemson, S.C. 29631

Filed Feb. 25, 1993, Ser. No. 23,039

Int. Cl.[5] **H02B** *1/14*

U.S. Cl. 361—617 **10 Claims**



1. A shutter assembly for covering an exposed electrical terminal located in a control center having at least one cell which receives an electrical control device connecting to the terminal, the assembly comprising:

a shutter having sufficient size to substantially cover the exposed terminal when superposed thereover, the shutter having a pivotal axis at one end, so that the opposite end of the shutter pivots away from the exposed terminal and swings clear of the control device to provide access to the terminal;

means for controlling the rotation of the shutter on the pivotal axis so the control means automatically pivots the shutter to expose the terminal when the control device is inserted in the cell and reversibly pivots the shutter to cover the terminal upon removing the control device from the cell, the control means including a rod being attached along the pivotal axis of the shutter, one end of the rod being affixed to a cam, a lever having one end extending into the area of the cell for engaging the control device upon entering the cell, a link having one end rotatably connecting to the end of the lever opposite the one end engaging the cell, the other end of the link rotatably connecting to the end of the cam opposite the connected to the rod, and means for biasedly returning the control means to the disengaged position so that the shutter covers the terminal after the control device is removed from the cell, the bias means connecting to the control means;

means for supporting the shutter in a superposed relation to the terminal and fastening the control means to the center, the support means includes rotatably mounting the lever to the control center so that the engaging lever end extends into the cell, and rotatably mounting at least one section of the rod to the control center so that the shutter is in superposed relation to the terminal and swings on the pivotal axis to clear the control device to provide access to the terminal.

5,327,322

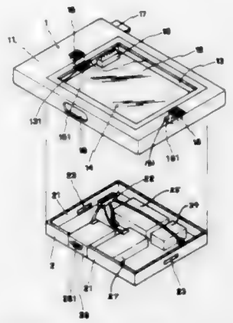
BUILT-UP PEN BASE COMPUTER

Hsi-Kuang Ma, 4F, No. 48, Sec. 2, Chung Cherng Road, Taipei, Taiwan

Filed Mar. 30, 1993, Ser. No. 40,257

Int. Cl.[5] **H05K** *7/10;* **G06F** *1/16*

U.S. Cl. 361—681 **3 Claims**



1. A pen base computer comprising:

a base including a mother board and a flush mounted liquid crystal display on a top of said mother board, said mother board including a rectangular bottom frame surrounding a rectangular chamber, two key holes at the middle of two opposite short sides of said rectangular bottom frame, two spring-supported keys respectively engageable within said key holes, a first connector and a slot at one side for inserting an IC card; and

a case fitted into said rectangular chamber for carrying computer peripheral equipment, said case including a second connector for electrically connecting the peripheral equipment carried thereon to the first connector on said mother board, and two opposite lock holes into which said spring-supported keys are releasably engaged to lock said case inside said rectangular bottom frame.

5,327,323

HARD DISK COMPATIBLE SYSTEM INCLUDING BRACKET, GUIDE RAILS, AND INTERFACE BOARD

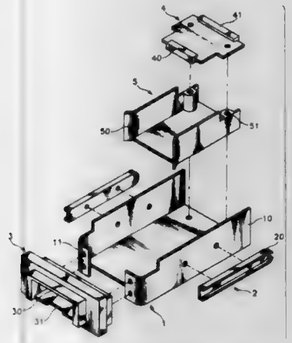
Yunpil Yeom, and Keesoon Park, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Dec. 15, 1992, Ser. No. 991,859

Claims priority, application Rep. of Korea, Apr. 16, 1992, 92 6300[U]

Int. Cl.[5] **H05K** *7/10;* **G06F** *1/16*

U.S. Cl. 361—685 **3 Claims**



1. A hard disk compatible system for a first computer and a second computer serving as a medium facilitating the direct interchange of information between the first computer and second computer, wherein the first and second computers have systems that are different, and wherein a need for duplicating data using an auxiliary memory unit is eliminated, the system comprising:

hard disk receiving means for receiving a hard disk from the first computer system to be compatible with the second computer system and connecting means for operatively connecting the hard disk receiving means to the second computer system, the hard disk receiving means having

a bracket slidably fitted on a body having a plurality of pairs of guide rails fixed on a sash of the second computer, and including a bracket guide;

a hard disk guide attached to the inside of a vertical portion of said bracket, for supporting a hard disk of the first computer; and

an inserting portion formed in the front side of said bracket, and including a deck to which a hard disk is inserted and a recess for removal of said hard disk; and

the connecting means having an interface board fitting in a connective portion of said hard disk guide inside said bracket, and including connectors.

5,327,324

SPRING CLIP FOR A HEAT SINK APPARATUS

Gregory A. Roth, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 5, 1993, Ser. No. 147,501

Int. Cl.[5] **H05K** *7/20*

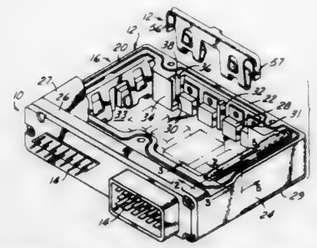
U.S. Cl. 361—707 **19 Claims**

1. A spring clip for urging an electrical component onto a heat sink housing, said spring clip comprising:

an elongated planar body having a longitudinal axis extending from a right end to a left end, an intermediate portion therebetween, and an inner edge and an outer edge parallel to said longitudinal axis;

retention means for securing the body to said, heat sink housing, said retention means depending downward from each of said right and left ends of said body;

urging means for contacting and urging the electrical component into a heat conducting relationship with the heat sink housing, said urging means including a first elongated member depending downward from said inner edge of



said body to a first end, a u-shaped junction extending from said first end to a second elongated member extending upward from said u-shaped junction toward said outer edge of said body, terminating at a contact surface.

5,327,325

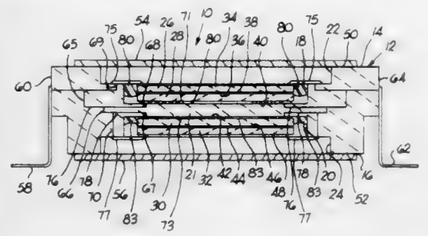
THREE-DIMENSIONAL INTEGRATED CIRCUIT PACKAGE

Earl R. Nicewarner, Jr., Gaithersburg, Md., assignor to Fairchild Space and Defense Corporation, Germantown, Md.

Filed Feb. 8, 1993, Ser. No. 14,516

Int. Cl.[5] **H05K** *7/02;* **H01L** *23/02*

U.S. Cl. 361—760 **7 Claims**



1. An integrated circuit package comprising a base substrate support member having an upper side and a lower side, said base substrate support member having a cavity in the upper side thereof and a cavity in the lower side thereof separated by a partition in said base substrate support member, a plurality of chips located in the cavity in the upper side of said base substrate support member, a plurality of chips located in the cavity in the lower side of said base substrate support member, said chips located in the cavity in the upper side of said base substrate support member having a back and being located in a back to back relationship and said chips located in the cavity in the lower side of said base substrate support member having a back and being located in a back to back relationship, said chips located in the cavity in the upper side of said base substrate support member being electrically connected to said chips located in the cavity in the lower side of said base substrate support member and means for closing the cavities in the upper and the lower sides of said base substrate support structure.

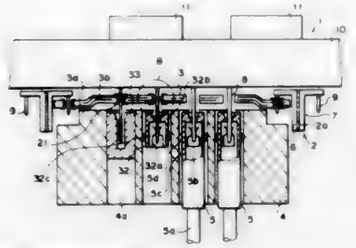
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5,327,326

LARGE SCALE INTEGRATED PACKAGE STRUCTURE

Mitsuo Komoto, and Hiroshi Endoh, both of Tokyo, Japan, assignors to NEC Corporation and Japan Aviation Electronics Industry Limited, both of Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,771
Claims priority, application Japan, Jul. 30, 1992, 4-223346
Int. Cl.[5] H05K *7/02*; H01R *23/68*, *29/00*
U.S. Cl. 361—760 11 Claims



1. LSI package structure in which:

an LSI package is provided, said LSI package comprising a substrate, at least one LSI loaded on one surface of said substrate, and a power supply pin, a ground pin and a signal input/output pin for said LSI protruded on the other surface of said substrate;

adjacent to a pin side surface of said LSI package, a power supply member having an electrically conductive portion for power supply bus and an electrically conductive portion for ground bus, and an interconnection board having a power supply pattern layer and a ground pattern layer connected to said electrically conductive portion for the power supply bus and said electrically conductive portion for the ground bus respectively, are disposed;

said power supply pin, said ground pin and said signal input-/output pin each extend through a through hole formed on said interconnection board, said power supply pattern layer and said power supply pin being interconnected within said through hole, said ground pattern layer and said ground pin being interconnected within said through hole; and

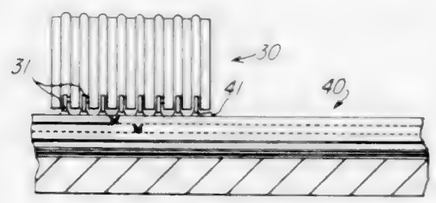
at the side of said interconnection board opposite said LSI package, said signal input/output pin and a signal input-/output cable are interconnected.

5,327,327

THREE DIMENSIONAL ASSEMBLY OF INTEGRATED CIRCUIT CHIPS

Dean L. Frew, Garland; Mark A. Kressley, Richardson; Arthur M. Wilson, Richardson; Junnita G. Miller, Richardson; Philip E. Hecker, Jr., Garland, all of Tex.; James Drumm, Crystal Lake, Ill.; Randall E. Johnson, and Rick Elder, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 30, 1992, Ser. No. 969,602
Int. Cl.[5] H05K *1/11*
U.S. Cl. 361—784 4 Claims



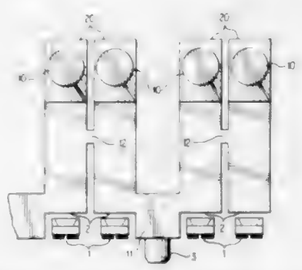
1. A multi-chip circuit module comprising a plurality of circuit chips assembled in a laminated stack, each of said chips having a plurality of layers of thin-film interconnect patterns thereon, a final layer of which comprises a reroute pattern that locates all circuit input and output pads along a single edge of each chip, and further including a bonded lead extending from each rerouted I/O pad to a point beyond said single edge of each chip, whereby an array of protruding lead tips extends from a single lateral face of said laminated stack.

5,327,328

LIGHTPIPE AND LIGHTPIPE ARRAY FOR REDIRECTING LIGHT FROM A SURFACE MOUNT LED

Norman Simms, Barnegat, and Michael Cazzola, Toms River, both of N.J., assignors to Dialight Corporation, Manasquan, N.J.

Filed May 28, 1993, Ser. No. 68,856
Int. Cl.[5] G01D *11/28*
U.S. Cl. 362—26 8 Claims



1. A lightpipe array for redirecting light from a plurality of surface mount LEDs, said lightpipe array comprising:

(a) a first pair of adjacently positioned lightpipes connected to each other by a first connecting portion;

(b) a second pair of adjacently positioned lightpipes connected to each other by a second connecting portion; and

(c) a third connecting portion for connecting said first pair of adjacently positioned lightpipes to said second pair of adjacently positioned lightpipes, said third connecting portion comprising an attachment means for attaching said lightpipe array to a circuit board such that each of said lightpipes in said first pair of adjacently positioned lightpipes and each of said lightpipes in said second pair of adjacently positioned lightpipes are aligned with a respective LED on said circuit board.

5,327,329

LIGHTING ATTACHMENTS FOR IN-LINE ROLLER OR BLADE SKATES

David L. Stiles, 56 Mt. Lebanon Dr., Wheeling, W. Va. 26003

Filed Mar. 24, 1993, Ser. No. 36,155
Int. Cl.[5] A63C *17/26*
U.S. Cl. 362—61 2 Claims

1. In combination with an in line skate having blade sides, a sole disposed above said blade sides, and an arch area disposed therebetween with said arch area having an opening therein, a lighting apparatus comprising:

a control box including electrical power means and switch means and having means for removably and adhesively installing said control box within said opening of said arch area of said skate;

lighting array means including light means, said lighting array means having means for temporarily, removably, adhesively, and releasably installing said lighting means along the blade side of said skate;

there being one lighting array means on each side of said skate, each said lighting array means comprising a square tube with individual lights, each individual light being a light emitting diode, and there further being double sided adhesive tape means along and coextensive with a selected side of said tube, opposite said lights, for temporary installation of each said lighting array means on the blade sides of said skate;

wiring means communicating between said control box and said lighting array means and retaining said control box and said lighting array means together as a unit;

said electrical power means providing electrical power for said lighting array means;

and said switch means providing for the selective operation of said lighting array means; whereby



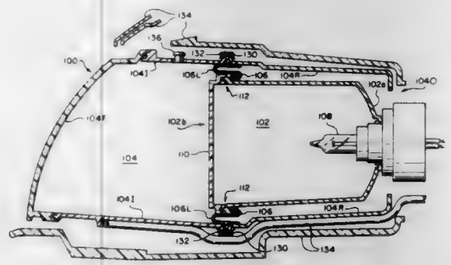
said control box is temporarily adhesively installed within said opening of said arch area and said lighting array means are temporarily adhesively installed on the blade sides of said skate and said switch means is actuated to operate said lighting array means including said light means on said skate, the mounting of said control box and said lighting array means on said skate being accomplished without need of modification of said skate in any manner.

5,327,330

INNER SEALED LAMP-WITHIN-A LAMP HEADLAMP FOR A MOTOR VEHICLE

Robert W. Van Oel, Saline, and James B. Winowiecki, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 7, 1993, Ser. No. 43,674
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—61 20 Claims



1. A headlamp unit for a motor vehicle comprising:

lamp body means defining an inner cavity for sealingly receiving and supporting a headlamp bulb in a first end of said inner cavity of said lamp body means and projecting light generated by said bulb from a second end of said inner cavity opposite to said first end;

housing means having an interior for adjustably receiving said lamp body means in a first end thereof and defining a lens in the second end thereof opposite to said first end such that light projected from said lamp body means is projected through said lens; and

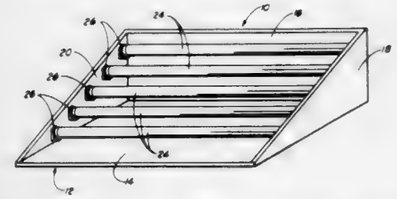
flexible inner seal means extending between said second end of said lamp body means and said housing means for sealing a portion of the interior of said housing means to said inner cavity of said lamp body means, said sealed portion of the interior of said housing means extending from said lens approximately to said lamp body means.

5,327,331

ARISING AID

Seth D. Roberts, 3210 Tolman Hall, Department of Psychology, University of California, Berkeley, Calif. 94720

Continuation of Ser. No. 220,459, Jul. 18, 1988, Pat. No. 5,079,682, which is a continuation-in-part of Ser. No. 82,677, Aug. 7, 1987, abandoned. This application Jan. 3, 1992, Ser. No. 816,669
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.
Int. Cl.[5] F21V *23/00*
U.S. Cl. 362—176 19 Claims



1. A method of illuminating a mammal having a preselected wake up time, comprising:

exposing the mammal to at least one source of artificial light for a period of exposure of at least about 0.5 hour and no longer than about 8 hours before the preselected wake up time, in which the artificial light increases in intensity as the preselected wake up time approaches, for at least a part of the period of exposure, said artificial light having a color temperature which remains substantially constant.

5,327,332

DECORATIVE LIGHT SOCKET EXTENSION

Beverly J. Hafemeister, 1192 Goss Ave., Menasha, Wis. 54952

Filed Apr. 29, 1993, Ser. No. 53,667
Int. Cl.[5] F21P *1/02*; F21V *35/00*
U.S. Cl. 362—392 15 Claims

1. A decorative extension simulating the appearance of a candlestick, comprising:

a hollow, generally cylindrical body portion having a lower end and an upper end;

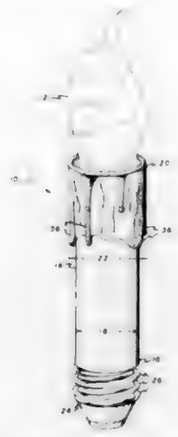
said lower end fitting over and enveloping an end portion of an electrical base having first and second electrically conductive contacts, with said electrical base extending from said lower end of said body portion and being of a size and configuration to removably fit within and make electrical contact with an electrical socket for an incandescent electric light bulb;

said upper end of said body portion having a larger diameter than said lower end of said body portion and fitting over and completely enveloping the outer surface of an electrical socket therein with said electrical socket having first and second electrically conductive contacts therein, and said electrical socket being of a size and configuration to make electrical contact with an incandescent electric light bulb having a base of equal size and configuration to said electrical base of said lower end of said body portion; and

a first electrically conductive connector electrically connected between said first electrically conductive contact

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of said electrical base and said first electrically conductive contact of said electrical socket, and a second electrically conductive connector electrically connected between said second electrically conductive contact of said electrical base and said second electrically conductive contact of said electrical socket, whereby;



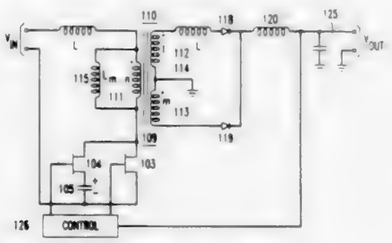
said extension is installed in a cooperating socket for an incandescent electric light bulb by means of said electrical base and an incandescent electric light bulb having a base of like size and configuration to said electrical base of said extension is installed within said electrical socket within said upper end of said extension.

5,327,333

PUSH PUSH DC-DC REDUCED/ZERO VOLTAGE SWITCHING CONVERTER WITH OFF-SET TAPPED SECONDARY WINDING

Jeffrey J. Boylan; Mark E. Jacobs, both of Dallas; Thomas P. Loftus, Jr., Mesquite, and Allen F. Rozman, Richardson, all of Tex., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 25, 1992, Ser. No. 981,638
Int. Cl.[5] H02M *1/14, 3/335*
U.S. Cl. 363—21 **6 Claims**



1. A DC-DC converter comprising:
an input for accepting a dc voltage source;
a power transformer including a primary winding and a secondary winding;
a power switching device;
an output for accepting a load to be energized including an inductor and a capacitor for filtering ripple voltage;
first and second rectifying diodes connecting opposite ends of the secondary winding to the inductor and capacitor;
the secondary winding including a fixed tap to divide it into two secondary winding segments with a 1:m turns relation and with the relative turns of the two secondary winding segments determined by the relation,

$$1 - D_A = D_B$$

where D_A is a duty cycle sustaining a regulated output voltage at a lowest input voltage V_A and D_B is a duty cycle sustaining the regulated output voltage at a highest input voltage input voltage V_B
the primary winding having a relation of n:1 with the one designated secondary winding segment, and
the relation between a voltage at the input V_{in} and a voltage at the output V_{out} being governed by the expression,

$$V_{out} = V_{in}[D(1 + m)/n]$$

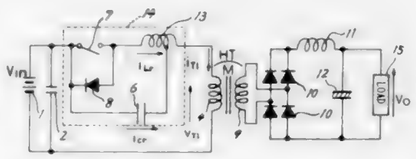
wherein ripple voltage at a power output is minimized and ripple current in the inductor is minimized.

5,327,334

ZERO CURRENT SWITCHING DC-DC CONVERTER INCORPORATING A TAPPED RESONANT INDUCTOR

Yasuhiro Makino, Kadoma, and Lu Ding, Moriguchi, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 9, 1993, Ser. No. 28,134
Claims priority, application Japan, Mar. 13, 1992, 4-055211
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **2 Claims**



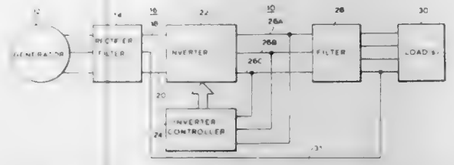
1. A current resonance DC-DC converter having a single switch device incorporated therein, the converter comprising a primary circuit and a secondary circuit, the primary circuit comprising a DC power supply having an input smoothing capacitor connected in parallel therewith, a zero-current switching (ZCS) resonance switch circuit and a primary inductance of a high-frequency transformer, the secondary circuit comprising a secondary inductance of the high-frequency transformer, rectifier diodes for rectifying voltage produced in the secondary inductance and a smoothing circuit for smoothing the voltage as rectified by the rectifier diodes, the current resonance DC-DC converter being characterized in that the ZCS resonance switch circuit comprises a semiconductor switch device and a diode connected together in parallel into a parallel circuit, the parallel circuit diode being connected at its cathode to one end of the DC power supply, a center-tapped resonance inductance adapted to produce voltages of the same polarity across the center tap and its respective opposite ends and connected at its resonance side to the anode of the parallel circuit diode, and a resonance capacitor connected to tile center tap of the resonance inductance and to said one end of the DC power supply, the resonance inductance being connected at a transformerside terminal thereof to one end of the transformer primary inductance, the other end of the transformer primary inductance being connected to the other end of the DC power supply.

5,327,335

HARMONIC FEEDBACK CONTROL FOR AN INVERTER

Vijay K. Maddali, Rockford, and Albert L. Markunas, Roscoe, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 28, 1992, Ser. No. 952,108
Int. Cl.[5] H02M *1/12*
U.S. Cl. 363—39 **25 Claims**



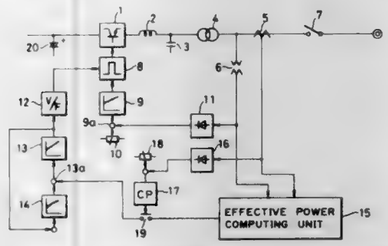
1. An inverter system comprising:
an inverter for inverting DC power into AC power wherein the AC power includes a fundamental component and harmonics thereof;
means connected between an AC output of the inverter and a load for sensing harmonics in the AC power;
means coupled to the sensing means for generating a harmonic waveform having a harmonic component for each harmonic sensed in the AC power; and
means coupled to the generating means for controlling the inverter in accordance with the harmonic waveform such that the harmonics in the AC power are reduced.

5,327,336

CONSTANT VOLTAGE CONSTANT FREQUENCY INVERTER AND METHOD FOR CONTROLLING THE SAME

Hidenori Ohkubo; Tetsuo Yasuda, and Kazuhisa Manabe, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 5, 1993, Ser. No. 997,705
Claims priority, application Japan, Jan. 8, 1992, 4-1759
Int. Cl.[5] H02M *3/24*
U.S. Cl. 363—97 **16 Claims**



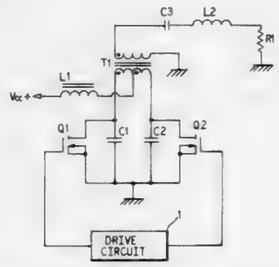
1. A constant voltage constant frequency inverter comprising:
main circuit means for converting a DC input voltage to an AC output voltage which has a frequency;
voltage control means for controlling the output voltage of said main circuit means;
frequency control means for controlling the frequency of the output voltage of said main circuit means so that the frequency is maintained at a reference frequency;
means for detecting the output voltage of said main circuit means;
means for detecting an output current of said main circuit means;
effective power computing means for computing effective power outputted from or inputted to said main circuit means based on the output voltage and the output current of said main circuit means; and
adjusting means for reducing a cross current flowing through said main circuit means by adjusting the reference frequency in accordance with an output of said effective power computing means, said adjusting means increasing the reference frequency when the effective power is flowing into the main circuit means and decreasing the reference frequency when the effective power is flowing out of said main circuit means.

5,327,337

RESONANT PUSH-PULL SWITCHING POWER AMPLIFIER

David W. Cripe, Quincy, Ill., assignor to Broadcast Electronics, Inc., Quincy, Ill.

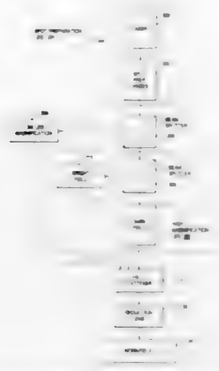
Filed Sep. 1, 1992, Ser. No. 937,700
Int. Cl.[5] H02M *3/337*
U.S. Cl. 363—134 **2 Claims**



1. An apparatus of the tuned switching type for generating alternating current output power, for use with a load representable as a series combination of a load capacitance, a load inductance and a load resistance, said apparatus comprising:
first and second active switching devices each having a low-impedance on state and a high-impedance off state and each having a controlled path having one end connected to a common circuit point;
means for driving said first and second switching devices between said on and off states in alternation at substantially 50% duty;
a coupling transformer having a primary winding with opposite ends respectively connected to the other ends of said controlled paths of said respective switching devices, said primary winding having a center tap, with a source of d.c. power being connectable across said center tap and said common circuit point, said transformer having a secondary winding forming an output of the apparatus, and across which an output signal is generated, and connectable to said load, said output signal having a fundamental frequency;
each controlled path of said first and second switching devices having a parallel capacitance associated therewith, the parallel capacitances of each of said first and second switching devices being equal, said parallel capacitances each having a value which is 0.0386 divided by the product of the fundamental frequency and said load resistance; and
said coupling transformer and said parallel capacitances forming, in combination with said load, a resonant circuit means for creating respective waveforms across said first and second switches for causing the voltage across the controlled path of each switch at the end of said off state to be substantially zero, the voltage across the controlled path of each switch to be substantially zero during a time that switch is in transition from said off state to said on state, and for causing the first derivative with respect to time of the voltage across the controlled path of each switch to be substantially zero at the end of said off state.

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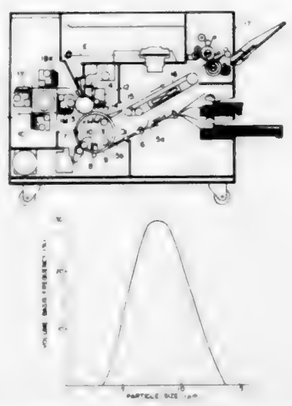
5,327,338
SCANNING LASER LITHOGRAPHY SYSTEM ALIGNMENT APPARATUS
Paul Allen; Mike Bohan; Tim Thomas, all of Beaverton, and Robin Teitzel, Portland, all of Oreg., assignors to ETEC Systems, Inc., Beaverton, Oreg.
Continuation of Ser. No. 777,490, Oct. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 472,787, Jan. 31, 1990, abandoned. This application Nov. 9, 1992, Ser. No. 973,567
Int. Cl.[5] **B41J** *2/435*
U.S. Cl. 346—108 **26 Claims**



1. A direct-write multiple radiant energy beam lithography system for writing to a semiconductor substrate, comprising:
(a) writing means for writing directly to said semiconductor substrate to form devices thereon, said writing means having a first radiant energy source for producing a first plurality of radiant energy beams, said first plurality of radiant energy beams being directed to said semiconductor substrate through a reduction lens; and
(b) alignment means for aligning said semiconductor substrate wtih said radiant energy beams, said alignment means allowing for viewing a reflected image of said semiconductor substrate through said reduction lens.

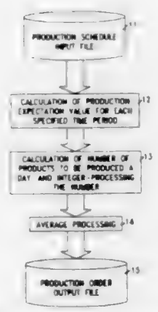
5,327,339
IMAGE FORMING METHOD
Kenichi Takeda, and Yuji Sakemi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 321,175, Mar. 9, 1989, abandoned. This application Jan. 19, 1993, Ser. No. 3,944
Claims priority, application Japan, Mar. 10, 1988, 63-054821; Jul. 20, 1988, 63-182562
Int. Cl.[5] **G01D** *15/14, 9/42;* **G03G** *15/09*
U.S. Cl. 346—160 **22 Claims**

1. An image forming method, comprising:
gradation-processing an image signal based on a halftone image to output a pulse-width-modulated signal;
forming an electrostatic latent image on a latent image-bearing member by using a laser beam providing a spot in the form of an ellipse having a shorter axis in its main scale direction and a longer axis in its sub-scan direction on the basis of the pulse-width-modulated signal; and
developing the electrostatic latent image with a two-component type developer comprising a toner and a carrier to reproduce the halftone image;
wherein said toner has a volume-average particle size (M) of 9 microns or below and comprises toner particles having a particle size of r; and has a volume-basis distribution such that it comprises 90% by volume or more of toner



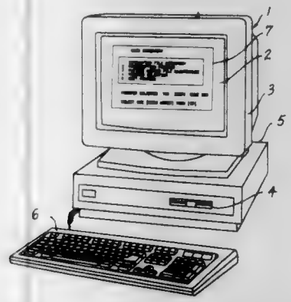
particles satisfying $M/2<r<3M/2$ and comprises 99% by volume or more of tone particles satisfying $0<r<2M$.

5,327,340
PRODUCTION ORDER DETERMINING METHOD
Kuniya Kaneko; Harumichi Wakiyama, both of Toyota, and Tadasi Naito, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Continuation-in-part of Ser. No. 743,874, Aug. 12, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 987,084
Claims priority, application Japan, Aug. 23, 1990, 2-220023
Int. Cl.[5] **G06F** *15/22*
U.S. Cl. 364—401 **9 Claims**



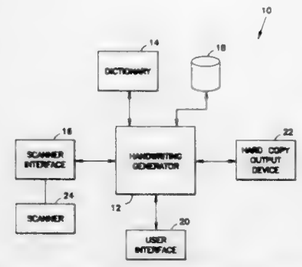
1. A method for controlling a production apparatus comprising the steps of:
providing production information in the form of a specified production time period and a number of products to be produced in the specified production time period with respect to each of a plurality of product types:
calculating a first production expectation value for each specified production time period to be produced a day with respect to each of the product types, by dividing the number of products to be produced in each specified production time period by a number of days included in the respective specified production time period;
summing the first production expectation values in each specified production time period for all the product types with respect to each day to calculate a total number of products to be produced each day, and then integer-processing the total number of products to be produced each day;
generating a production order sequence providing as many production orders for each day as the integer-processed number of products to be produced on that day, and then average-processing production intervals by summing the production expectation values for each respective product type to determine what product type should be produced in each production order; and
controlling a production apparatus to transfer a material to a production line based on the production order sequence generated, and producing the ordered product.

5,327,341
COMPUTERIZED FILE MAINTENANCE SYSTEM FOR MANAGING MEDICAL RECORDS INCLUDING NARRATIVE REPORTS
Edward J. Whalen, 61 Sage Cir., San Ramon, Calif. 94583, and Gardener Strong, 22 Olive Ave., Piedmont, Calif. 94611
Filed Oct. 28, 1991, Ser. No. 783,133
Int. Cl.[5] **G06F** *15/00*
U.S. Cl. 364—413.01 **13 Claims**



1. In a computerized data processing system including a central processor with means for data storage, a keyboard for data entry and a screen display for data review, a file maintenance system for computerized processing of multiple files having record sets in a predefined organizational structure comprising:
a plurality of discrete files, each file having a plurality of records in a record set associated with the file, wherein the record set includes:
standard, field-defined records, each with an identified data field in which field-defined data of limited character length forming the field-defined record is enterable, the standard, field-defined records being organized in different field-defined categories in the record set, wherein the data processing system includes means for entering field-defined data in an identified data field of a field-defined record and means for editing field-defined data entered in the identified data field of the field-defined record by reentry of field-defined data in the data field; and,
hybrid, extended-field records each with an identified data field in which extended-field data of virtually unlimited character length forming the extended field record is enterable, the hybrid, extended-field records being organized in different extended-field topical categories in the record set, wherein the data processing system included means for entering extended-field data in an identified data field of an extended-field record and means for editing extended-field data entered in the identified data field of the extended-field record without reentry of entered extended-field data in the identified data field.

5,327,342
METHOD AND APPARATUS FOR GENERATING PERSONALIZED HANDWRITING
Prannoy L. Roy, B-213, Greater Kailash-I, New Delhi, India 110 048
Continuation of Ser. No. 668,894, Mar. 31, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 136,598
Int. Cl.[5] **G06F** *15/38*
U.S. Cl. 364—419.1 **12 Claims**



1. A computer system for simulating handwriting in the production of output documents, comprising:
wordprocessing means for providing an original document including a plurality of words;
means for storing handwritten graphical representations of character strings in memory of the computer system to provide a dictionary in the memory of the computer system associating the character strings with their handwritten graphical representations;
string replacement means connected to said input means and said dictionary means for decomposing the words from said original document into word character strings, associating the word character strings with the character strings represented in said dictionary means and replacing the words with their handwritten graphical representation so as to product an output document of simulated handwriting, the string replacement means including means for:
associating a word character string with a plurality of character strings in the dictionary comprising the word character string if no corresponding character string exists in the dictionary for the word character string;
connecting the handwritten graphical representations of said plurality of character strings in the dictionary so as to form a contiguous graphical representation of the word character string; and
displaying and modifying said simulated handwritten document in order to effect changes in the placement and appearance of the handwritten graphical representation of character strings in said simulated and written document; and
means for outputting the simulated handwritten document to an output device.

5,327,343
UNIVERSALLY AND BIDIRECTIONALLY OPERABLE DEVICE FOR SIGNAL PATH CONTROL IN A MOTOR VEHICLE DIAGNOSTIC SYSTEM
Thomas Forchert, Stuttgart, and Konstantin Müller, Deizisau, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany
Filed Sep. 3, 1991, Ser. No. 753,991
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1990, 4027824
Int. Cl.[5] **G06F** *7/70;* **G06G** *7/76*
U.S. Cl. 364—424.01 **11 Claims**

1. A device for signal path control in a motor vehicle, whereby a signal path is connectable to one of n signal paths

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and to a specific signal path of a multiplicity n of signal paths, comprising

(a) rounded-up integer of p{(n/q)} q-poled multi-gang switching components operatively connected to be individually electrically driveable for switch actuation via p inputs,

(b) q single-gang switching components,

(c) switching section inputs of said multi-gangs switching components being connectable to the n signal paths and switching section outputs thereof being connected in parallel in the same order to q nodes,

(d) switching section inputs of said single-gang switching components being each connected to one of said q nodes and the switching section outputs thereof being connected to a signal line which is one of a common incoming line and a common outgoing line, and the single-gang switching components being operatively connected to be individually electrically driveable via q further inputs, and



(e) an assigned drive circuit comprising

(1) a shift register serially inputable via a loading input and having a transfer control input and an at least p+q bit-wide parallel output;

(2) a bank of latches having a common transfer input, in which bank the contents of storage cells of the shift register can be loaded when the transfer input of said parallel output of the shift register is driven, and

(3) a logic unit connected upstream which is connected on the input side to a selection control line and to a transfer control line and whose output is connected to the transfer control input of the shift register, the loading input of the latter and to the transfer input of the bank of latches, whereby the outputs of said latches are operatively connected to corresponding control terminals of the multi-gang switching components and single-gang switching components.

5,327,344

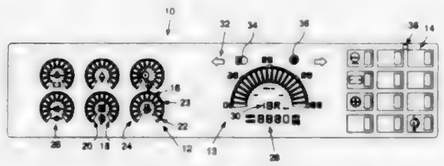
METHOD AND APPARATUS FOR RECONFIGURING A COMPUTERIZED MONITORING SYSTEM

John P. Hoffman, Peoria; Ricky D. Vance, Washington; Dennis A. Barney, Morton, and Joseph G. Kozlevcar, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 16, 1992, Ser. No. 945,463

Int. Cl.[5] **B60Q** *1/00;* **G06F** *15/20*

U.S. Cl. 364—424.03 **19 Claims**



17. An apparatus for indicating levels of sensed parameters on any of a plurality of vehicles, comprising:

means for producing an identification code, each of the plurality of vehicles having an identification code for identifying the type of brightness controls to be used in connection with that vehicle;

a plurality of gauge means for indicating a level of the sensed parameters, each of said gauge means having an outline segment means for illustrating a range of levels of the sensed parameter indicated by said gauge means and a symbol means for identifying the sensed parameter indicated by said gauge means, said outline segment means and symbol means being illuminable at a brightness level;

a photocell;

one of a plurality of brightness switches,; and

a control means for identifying which of said plurality of brightness switches is to be used in conjunction with the photocell in response to said identification code and for establishing said brightness level in response to both said photocell and said one of said plurality of brightness switches

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5,327,345

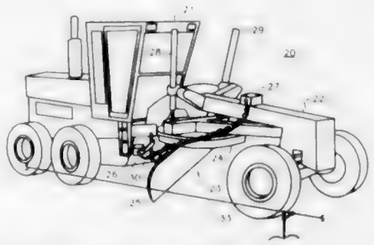
POSITION CONTROL SYSTEM FOR A CONSTRUCTION IMPLEMENT SUCH AS A ROAD GRADER

Edward G. Nielsen, Grand Rapids; Ross C. Stoepker, Kentwood, and Fred D. Litty, Grand Rapids, all of Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Filed Feb. 15, 1991, Ser. No. 656,792

Int. Cl.[5] **E01C** *19/00;* **A01B** *63/10*

U.S. Cl. 364—424.07 **30 Claims**



30. A road grader comprising:

a frame supported for horizontal motion in a longitudinal direction and positioning means for positioning a blade on said frame, said positioning means including a lateral-positioning device that responds to a hydraulic signal to adjust the lateral position of the blade and a vertical-positioning device that responds to a hydraulic signal to adjust the vertical position of said blade;

a sensor being carried by said blade and coupled to said positioning means, said sensor including a first ultrasonic transducer for generating an acoustic wave and for receiving a reflection of said acoustic wave from a reference, a second transducer for transmitting a second acoustic wave and receiving a reflection of said second acoustic wave from said reference, and a sensor control coupled to said first and second transducers to measure time periods between transmission and reception of each of said acoustic waves and therefrom determine the vertical and lateral distances of said construction tool from said reference, wherein said positioning means is responsive to the determined vertical distance to position said blade in said vertical direction and to the determined lateral distance to position the blade in said lateral direction to thereby reduce blade height errors resulting from lateral variations of said sensor from said reference.

5,327,346

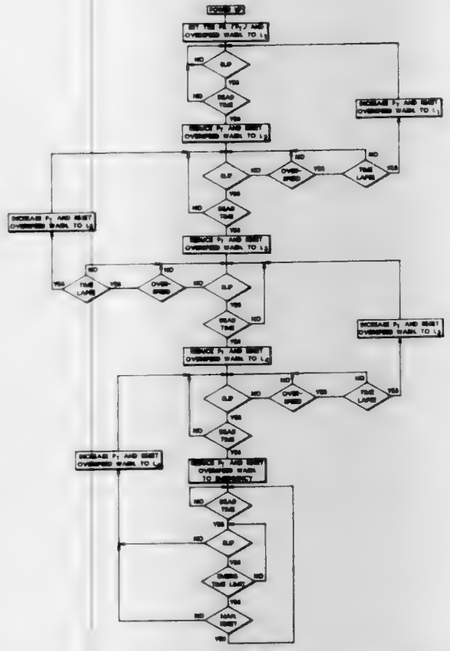
AUTOMATIC CONTROL FOR CENTRAL TIRE INFLATION SYSTEM

Fred L. Goodell, Marysville, Ohio, assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Aug. 23, 1991, Ser. No. 749,172

Int. Cl.[5] **B60C** *23/00, 23/02*

U.S. Cl. 364—426.02 **10 Claims**



1. In a central tire inflation system for controlling the inflation pressure in the tires of a driven wheeled vehicle, the system including a source of compressed air, conduit means connecting the source of compressed air with each of the vehicle wheels, valve means connected in the conduit means, and valve control means connected with the valve means and operable to actuate said valve means to selectively establish fluid communication with the source of compressed air to increase inflation pressure and to vent the tires to atmosphere to decrease inflation pressure, the improvement comprising,

slip detection means operatively associated with each driven wheel of the vehicle, said slip detection means being operable to detect the slippage rate of the vehicle's driven wheels to generate a slippage signal proportional to the detected slippage rate,

speed detecting means for detecting vehicle speed and providing a speed signal proportional to the detected vehicle speed,

calculating means connected with said slip detecting means, said speed detecting means and said valve control means, said calculating means being operable to process the speed signal and slippage signals to produce a signal to said valve control means upon detecting a predetermined slip rate for a predetermined time to actuate said valve means to vent the vehicle tires to reduce the pressure therein a predetermined amount.

5,327,347

APPARATUS AND METHOD RESPONSIVE TO THE ON-BOARD MEASURING OF HAULAGE PARAMETERS OF A VEHICLE

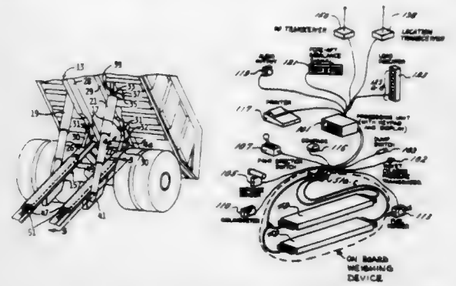
LeRoy G. Hagenbuch, 4602 N. Rosemead Dr., Peoria, Ill. 61614

Continuation of Ser. No. 964,126, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 351,179, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 910,648, Sep. 23, 1986, Pat. No. 4,845,648, which is a continuation-in-part of Ser. No. 874,273, Jun. 13, 1986, Pat. No. 4,831,539, which is a continuation-in-part of Ser. No. 717,042, Apr. 1, 1985, Pat. No. 4,839,835, which is a continuation-in-part of Ser. No. 604,739, Apr. 27, 1984, Pat. No. 4,630,227. This application Aug. 4, 1993, Ser. No. 102,531

The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.

Int. Cl.[5] **G01G** *19/08;* **G06F** *15/20*

U.S. Cl. 364—424.07 **37 Claims**



1. A system for acquisitioning and accumulating data indicative of haul cycles executed by a haulage vehicle moving between load and dump sites, where each haul cycle is a complete round trip from a load site to a dump site and back to a load site or from a dump site to a load site and back to a dump site, the system comprising:

first means mounted to the vehicle for providing a first set of data whose value is indicative of a loading or unloading of material into or from a body of the vehicle during each of the haul cycles;

second means for sensing a haulage parameter related to the efficiency of work done by the vehicle whose value varies during each of the haul cycles and providing a second set of data indicative of the value;

an electronic processor on-board the vehicle for acquiring the first and second sets of data, processing the data to detect a change in the value of either the first or second sets of data and providing a third set of data quantifying the change, which thereby defines a haulage event executed by the vehicle during a haul cycle; and

a storage medium for accumulating the third set of data from the electronic processor so as to create a historical record of the haulage events.

5,327,348

VEHICLE-DIRECTION DETECTING APPARATUS

Takahiro Kato, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 1, 1992, Ser. No. 937,707

Claims priority, application Japan, Sep. 10, 1991, 3-230415

Int. Cl.[5] **G06F** *15/50*

U.S. Cl. 364—449 **4 Claims**

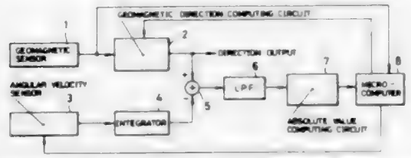
1. A vehicle-direction detecting apparatus comprising:

a geomagnetic sensor for detecting an intensity of geomagnetism in X and Y directions perpendicular to each other on the same plane where a vehicle lies;

computation means for computing a first direction signal in accordance with an XY output signal from said geomagnetic sensor and outputting said first direction signal;

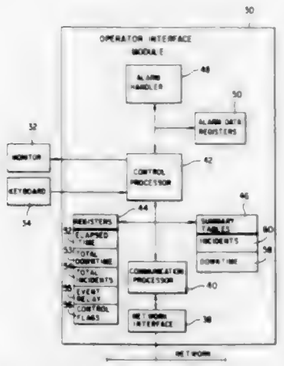
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an angular velocity sensor for detecting an angular velocity of said vehicle;
an integrator for integrating an output signal of said angular velocity sensor to yield a second direction signal;
means for computing a difference signal between said first direction signal and said second direction signal;
means for generating an absolute value signal of said difference signal;
first discriminating means for discriminating whether or not said absolute value signal is greater than a first predetermined value;



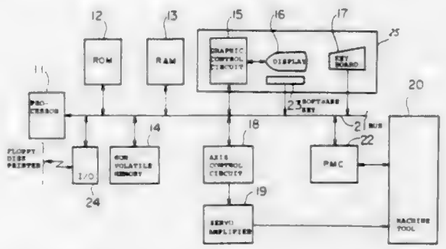
differentiating means for differentiating said absolute value signal;
second discriminating means for discriminating whether or not an output signal of said differentiating means is greater than a second predetermined value;
third discriminating means for discriminating whether or not said XY output signal of said geomagnetic sensor has a value within a predetermined range; and
compensation means for compensating for said first or second direction signal in accordance with discrimination results from said first to third discriminating means.

5,327,349
METHOD AND APPARATUS FOR ANALYZING AND RECORDING DOWNTIME OF A MANUFACTURING PROCESS
Stephen A. Hoste, Royal Oak, Mich., assignor to Square D Company, Palatine, Ill.
Filed Apr. 15, 1993, Ser. No. 48,155
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **11 Claims**



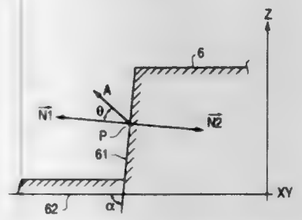
1. An operator interface module connected to a network of programmable logic controllers and other microprocessor based devices controlling a manufacturing process, said operator interface module for analyzing and recording downtime of said manufacturing process, and said operator interface module comprising:
a. a network interface module for connecting to said network;
b. a control processor;
c. a communications processor connected between said network interface module and said control processor, said communications processor for controlling communications between said operator interface module and said network of programmable logic controllers and other microprocessor based devices;
d. memory means accessible by said communications processor and said control processor;
e. an alarm handler connected to said control processor, said alarm handler for receiving a plurality of alarms from said network indicative of a downtime event of said manufacturing process, for determining which of said plurality of alarms caused said downtime event, and for determining an elapsed time of said downtime event;
f. alarm data registers accessible by said alarm handler and said control processor, said alarm data registers for storing data by said alarm handler related to said downtime event for each of said plurality of received alarms;
g. display means connected to said control processor;
h. keyboard entry means connected to said control processor;
i. wherein said control processor accesses said data stored in said alarm data registers and provides first and second data summary tables in said memory means, said first summary table for storing data based on total number of downtime incidents for each of said plurality of alarms and said second summary table for storing data based on total elapsed time of downtime incidents for each of said plurality of alarms; and
j. wherein said first and second summary tables are directly accessible by said network of programmable logic controllers and other microprocessor based devices.

5,327,350
INTERACTIVE TYPE NUMERICAL CONTROL APPARATUS AND METHOD THEREOF
Takahiko Endo, Minamitsuru, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP91/01523, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO92/09020, PCT Pub. Date May 29, 1992
PCT Filed Nov. 6, 1991, Ser. No. 861,811
Claims priority, application Japan, Nov. 16, 1990, 2-310712
Int. Cl.[5] G06F *15/46*; **G05B** *19/18*
U.S. Cl. 364—474.21 **6 Claims**



1. An interactive type numerical control apparatus having an interactive type data input function for controlling operation of a composite tool capable of performing a plurality of different machining functions on a workpiece attached to a turning machine and a turning machine tool capable of performing only one machining function on the workpiece, by creating a machining program based on input data, comprising:
tool selection means for selecting said composite tool to perform a machining function designated by a user when said composite tool is capable of performing said designated machining function, and for selecting said turning machine tool otherwise; and
NC sentence creation means for creating an NC sentence based on data designating a tool path of said composite tool.

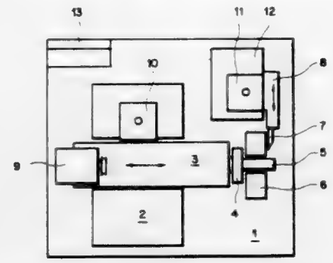
5,327,351
NON-CONTACT DIGITIZING METHOD
Hitoshi Matsuura, Hachioji, and Eiji Matsumoto, Yamanashi, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan
PCT No. PCT/JP91/01764, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO92/11974, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 25, 1991, Ser. No. 920,319
Claims priority, application Japan, Jan. 14, 1991, 3-14672
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.05 **3 Claims**



1. A non-contact digitizing method for creating tracing data of a configuration of a three-dimensional model while carrying gout a non-contact tracing of the configuration of the model, comprising the steps of:
measuring a plurality of distances from a tracer head to a plurality of measurement points on a surface of said model, said tracer head having an inclined measurement axis for controlling a rotation of said tracer head;
determining at least two surface vectors based on three of said plurality of measured distances;
determining a direction of a normal vector to said surface vectors based on a product of said surface vectors and also based on an angle between an axial vector, starting from one of said measurement points of said inclined measurement axis of said tracer head, and said normal vector at said one measurement point which said angle does not exceed 90°; and
sequentially creating said tracing data by controlling the rotation of the measurement axis of said tracer head based upon a projection obtained by projecting said normal vector in said determined direction on a plane on which said model is installed.

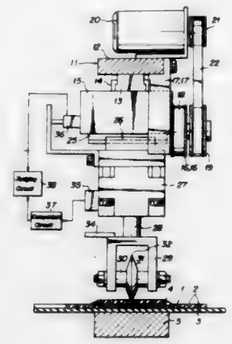
5,327,352
METHOD AND DEVICE FOR CONTROLLING ONE OR MORE AXES IN A MACHINE TOOL
Jean C. Simonin, and Cedric Paroz, both of Moutier, Switzerland, assignors to Tornos-Bechler SA, Moutier, Switzerland
Filed Jun. 24, 1991, Ser. No. 719,618
Claims priority, application Switzerland, Sep. 4, 1990, 2869/90
Int. Cl.[5] G05B *19/18*
U.S. Cl. 364—474.28 **20 Claims**

11. A method of controlling programmed movements effected by one or more incrementally operating driving means actuating one or more moving parts of a machine tool carrying out a machining operation on a rough workplace fixed to a workpiece holder of said machine tool, comprising the steps of:
calculating an optimum machining trajectory as a function of time,
establishing a step table in accordance with said calculating step, said table permitting a given profile to be obtained with a given material, taking into account characteristics of the machine tool, and
attributing to each driving means, by using numerical data stored from the step table, a series of incremental movement orders succeeding one another as a function of a time-dependent variable, the sequence of the orders being included in the step table, wherein the numerical data of



the step table indicate for each movement a variable number of increments or steps to be carried out during a fixed number of units of time.

5,327,353
METHOD OF DETECTING STATE OF CUTTING RUBBER SHEET HAVING PARALLEL CORDS EMBEDDED THEREIN
Jun Nagano, Tokorozawa, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Aug. 9, 1991, Ser. No. 742,806
Claims priority, application Japan, Aug. 21, 1990, 2-219845
Int. Cl.[5] B26D *1/18*
U.S. Cl. 364—474.09 **10 Claims**



1. A method of detecting a state of an operation of cutting a rubber sheet having a number of cords embedded therein in parallel with each other by moving a cutter in a cutting direction which is parallel to a direction in which the cords extend, comprising the steps of:
detecting a displacement of said cutter in a direction of the thickness of the rubber sheet to generate a first displacement signal;
detecting a displacement of the cutter in a direction perpendicular to the cutting direction to generate a second displacement signal;
comparing said first displacement signal with a first criterion which is predetermined in relation to a diameter of the cord;
generating a comparison signal for a predetermined time period when said first displacement signal exceeds the first criterion;
comparing said second displacement signal with a predetermined second threshold value within the predetermined time period of said comparison signal; and

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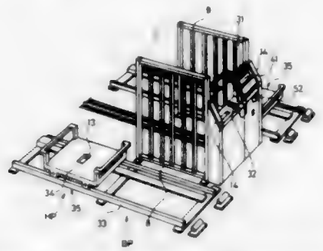
generating an abnormal signal when the second displacement signal exceeds said second criterion.

5,327,354

CONTROL SYSTEM FOR AUTOMATIC WAREHOUSING FACILITY

Kazushi Tsujimoto, Kasugai, Japan, assignor to Daifuku Co., Ltd., Osaka, Japan

Continuation of Ser. No. 721,124, Jun. 26, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 100,697
Claims priority, application Japan, Jul. 10, 1990, 2-183471; Jan. 25, 1991, 3-007348; Jan. 25, 1991, 3-007349; Jan. 25, 1991, 3-007350; Jan. 25, 1991, 3-007351
Int. Cl.[5] G06F *15/46*; B65G *1/06*
U.S. Cl. 364—478 **7 Claims**



1. A control system for an automatic warehousing facility provided with:
racks capable of storing goods in plural lots;
an incoming and outgoing goods handling device for handling incoming goods to be stored in the racks and outgoing goods to be withdrawn from the racks;
a control panel having means for effecting visual display on a screen;
said control system comprising:
control means for allowing said incoming and outgoing goods handling device to be automatically operated on the basis of input operation data on the storage and retrieval of goods, said control means being incorporated in said control panel;
means for detecting any abnormality with the incoming and outgoing goods handling device and for outputting an abnormality code corresponding to the abnormality;
means for storing data, in advance of occurrence of abnormalities, on the contents of each abnormality, cause, corrective measure and method of recovery for each abnormality code, said storing means being incorporated in said control panel;
means for retrieving the data stored upon receipt of an abnormality code and for outputting data corresponding to the abnormality code to the screen display means and causing the data to be displayed, said retrieving means being incorporated in said control panel; and
said control panel being disposed at an end of a travel zone allotted for said incoming and outgoing goods handling device.

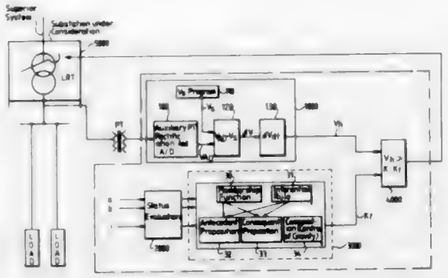
5,327,355

VOLTAGE OR REACTIVE POWER CONTROL METHOD AND CONTROL DEVICE THEREFOR

Tomio Chiba, Katsuta; Mitsuyasu Kido, Hitachi; Junzo Kawakami, Mito; Kunio Hirasawa, Hitachi, and Yoshiaki Matsui, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 17, 1992, Ser. No. 822,327
Claims priority, application Japan, Jan. 17, 1991, 3-003667
Int. Cl.[5] G05F *1/20*
U.S. Cl. 364—483 **42 Claims**

8. A method of controlling a voltage, using a tap transformer which varies voltage by change in the tap position, said method comprising:
detecting the voltage difference between said voltage and a reference voltage; and
controlling said tap transformer by fuzzy logic on the basis



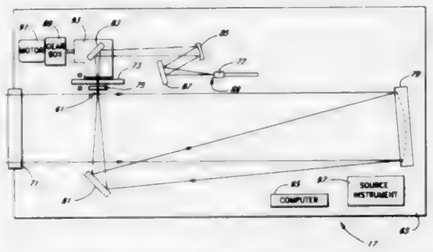
of control conditions, including said voltage difference and a predetermined desired number of tap position changes, wherein the fuzzy logic converts the control conditions into qualitative items, utilizing a membership function, and combines the qualitative items, utilizing an inferential rule, to induce a quantitative item.

5,327,356

EMISSIONS SPECTRAL RADIOMETER/FUEL FLOW INSTRUMENT

Fred D. Lang; Steven K. Petrie, both of Livermore, and Arnaldo G. Dall'Era, Mountain View, all of Calif., assignors to Wahlco Environmental Systems, Inc., Santa Ana, Calif.

Continuation of Ser. No. 450,687, Dec. 14, 1989, abandoned. This application Jun. 29, 1992, Ser. No. 908,525
Int. Cl.[5] G01N *21/17, 21/01*
U.S. Cl. 364—498 **9 Claims**



1. An emissions spectral radiometer including a source instrument located on one side of an exhaust gas duct and a detector instrument located on an opposite side of said duct from said first side, said instruments comprising:
in said source instrument:
a radiation source producing pure black body infrared radiation,
a reflector which produces parallel radiation from said source and directs it across the exhaust gas duct,
a rotating cage assembly which encloses the radiation source and said reflector, said cage assembly having at least one opening therein aligned with said reflector to allow the parallel radiation to escape from the cage assembly as it rotates to provide an alternating flow of radiation across the exhaust gas duct, and
in said detector instrument:
an array of optical reflectors which causes the parallel

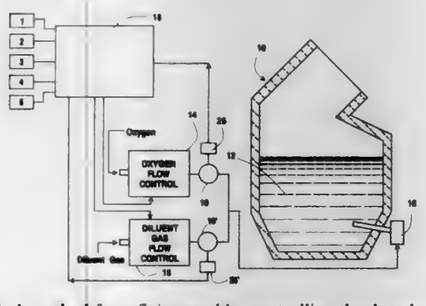
radiation to form a line image of finite length at a first focus point and then to form a spot image at the second focus point,
a rotating circular variable filter disposed at said first focus point for processing said radiation,
an optical slit located immediately in front of said circular variable filter to intercept stray radiation, and
an infrared radiation detector disposed at the second focus point for receiving radiation which has passed through said circular variable filter and producing an electronic signal output for input to a computer.

5,327,357

METHOD OF DECARBURIZING MOLTEN METAL IN THE REFINING OF STEEL USING NEURAL NETWORKS

Jonathan J. Feinstein, North Salem; Richard B. Mazzarella, Grand Island, and Lanier Stambaugh, Briarcliff Manor, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 3, 1991, Ser. No. 802,046
Int. Cl.[5] G06F *15/18, 15/46*; C21C *7/068*; C21D *3/04*
U.S. Cl. 364—502 **14 Claims**



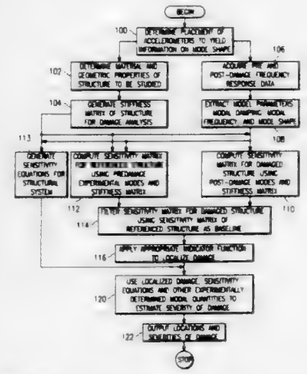
1. A method for refining steel by controlling the decarburization of a predetermined molten metal bath having a known composition of elements including carbon and having a known or estimated initial temperature and weight at the outset of decarburization of a molten metal bath in a refractory vessel with a process of decarburization performed through the injection of oxygen and a diluting gas into said bath under adjustable conditions of gas flow, comprising the steps of:
(a) training a first neural network to analyze input and output data representative of many process periods of one or more decarburization operations, from data including the bath chemistry, weight and temperature at the outset of each process period, the gas ratio of oxygen to diluent gas used during each process period, the counts of oxygen injected into the bath for each process period, and the final temperature obtained at the conclusion of each process period, until said first neural network is able to provide a substantially accurate output representing the counts of oxygen required to be injected into said predetermined bath at any preselected gas ratio to cause the temperature of the bath to rise to a specified aim temperature level as a result of such gas injection;
(b) training a second neural network to analyze input and output data representative of many process periods of one or more decarburization operations, from data including the bath chemistry, weight and temperature at the outset of each process period, the gas ratio of oxygen to diluent gas used during each process period, the counts of oxygen injected into the bath for each process period and the final carbon content obtained at the conclusion of each process period until said second neural network is able to provide a substantially accurate output schedule of oxygen counts to be injected into said predetermined bath to reduce the carbon level to a predetermined aim level in one or more successive stages corresponding to a preselected schedule of ratios of oxygen to diluent gas;
(c) employing said first neural network to compute the oxygen counts to be injected into said predetermined bath, from its known initial chemistry, weight and temperature at a first preselected ratio of oxygen to diluent gas to raise the bath temperature to a specified aim temperature level.
(d) injecting oxygen and diluent gas into said bath at said first preselected ratio until the oxygen counts computed by said first neural network are satisfied;
(e) employing said second neural network to provide an output schedule of oxygen counts to be injected into said predetermined bath from its known initial chemistry, weight and temperature to successively reduce the carbon level in said bath to a predetermined aim carbon level in one or more stages corresponding to a preselected schedule of ratios of oxygen to diluent gas;
(f) injecting oxygen and diluent gas into said bath at said preselected schedule of oxygen counts corresponding to said output schedule as computed by said second neural network;
(g) training a third neural network to analyze data from the bath chemistry, weight and temperature at the outset of each process period, the weight of each solid addition, if any, made during each process period, the counts of oxygen injected during each process period, the corresponding ratio of oxygen to diluent gas used during each process period and the resulting carbon content at the conclusion of each process period of the purpose of predicting an output representing the carbon content that would be obtained as a result of such oxygen injection; and
(h) employing said third neural network to compute the carbon content in the bath upon completion of the injection of oxygen intended as a result of computations performed in at least one of the steps (c) and (e).

5,327,358

APPARATUS AND METHOD FOR DAMAGE DETECTION

Norris Stubbs, College Station, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Aug. 7, 1991, Ser. No. 741,871
Int. Cl.[5] G06G *7/68*
U.S. Cl. 364—507 **94 Claims**

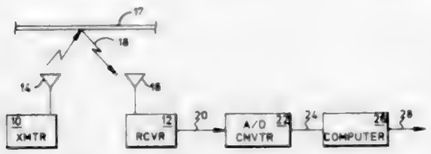


1. A method for detecting damage in a structure, comprising the steps of:
applying a first excitation force to the structure;
measuring with a transducer a first signal set in response to said first excitation force;
converting said first signal set to first data indicative of pre-damage modal parameters of the structure, said pre-damage modal parameters including at least one measured mode shape;
applying a second excitation force to the structure;

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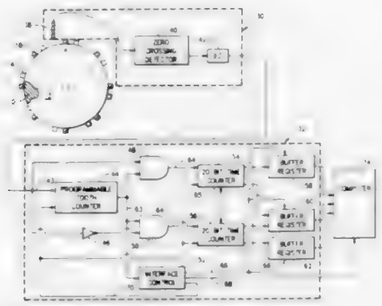
measuring with said transducer a second signal set in response to said second excitation force;
converting said second signal set to second data indicative of post-damage modal parameters of the structure, said post-damage modal parameters including at least one measured mode shape; and
identifying at least one location of the damage based upon said first and second data applied to an indicator function.

5,327,359
METHOD AND SYSTEM FOR INFERRING THE RADIO REFRACTIVE INDEX STRUCTURE OF THE ATMOSPHERE FROM RADIO MEASUREMENTS
Herbert V. Hitney, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 24, 1992, Ser. No. 950,569
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—550 **11 Claims**



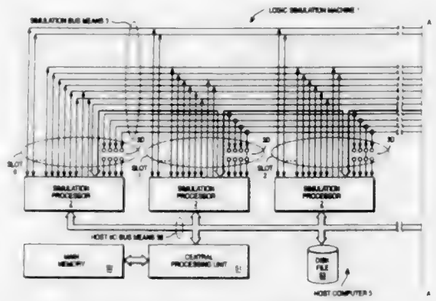
1. A method for determining the radio refractive index structure of the atmosphere comprising the steps of:
transmitting a radio frequency signal over a predetermined path;
receiving said radio frequency signal;
detecting the strength of said radio frequency signal;
determining a radio propagation factor from said strength of said radio frequency signal;
determining a base height function of the atmosphere; and
employing said radio propagation factor in said base height function to determine a trapping layer base height of the atmosphere which represents said radio refractive index structure of the atmosphere.

5,327,360
MEASURING RELATIVE DEFLECTION OF INTERSPACED TOOTHED WHEELS ON A LESS THAN ONCE PER REVOLUTION BASIS
Ronald D. Poisson, Springfield, Mass., assignor to United Technologies Corporation, Hartford, Conn.
Filed Sep. 24, 1992, Ser. No. 949,946
Int. Cl.[5] G06F *15/20*; **G01P** *3/489*
U.S. Cl. 364—571.07 **7 Claims**



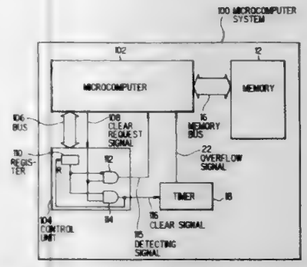
1. Apparatus, comprising:
a. a first rotatable member having a predetermined number of teeth disposed thereon;
b. a second rotatable member having a predetermined number of teeth disposed thereon, a position of the teeth of the first rotatable member being instantaneously varying relative to a position of the teeth of the second rotatable member;
c. sensing means for sensing an actual position of the teeth of the first rotatable member relative to an actual position of the teeth of the second rotatable member, and for providing one or more actual positional signals indicative thereof; and
d. signal processing means, responsive to the one or more actual positional signals, for determining an expected position of the teeth of the first rotatable member relative to an expected position of the teeth of the second rotatable member and for providing one or more expected positional signals indicative thereof, and for determining any difference between the one or more actual positional signals and the corresponding one or more expected positional signals and for calculating correction value signals indicative thereof.

5,327,361
EVENTS TRACE GATHERER FOR A LOGIC SIMULATION MACHINE
Gerald B. Long, and Mark D. Sweet, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 30, 1990, Ser. No. 502,148
Int. Cl.[5] G06F *7/38, 15/20*
U.S. Cl. 364—57 **9 Claims**



1. An all events trace gatherer, comprising:
a simulation bus;
a plurality of simulation processors for simulating a model in parallel, each processor putting a simulated result on the simulation bus in parallel;
a current state store means for storing current states of the model being simulated by the multiple simulation processors in parallel;
a change record means for storing all changes in the current states of the model being simulated by the multiple simulation processors in parallel over a plurality of simulation cycles; and
a control means, coupled to said simulation bus, for monitoring the current states of the model being simulated to detect a change in the current states stored in the current state store means and store the change into the change record means.

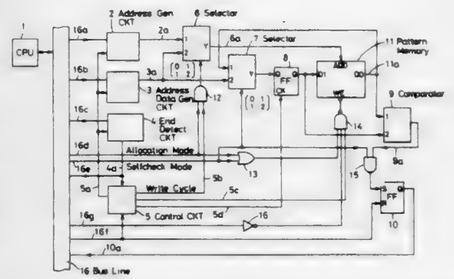
5,327,362
SYSTEM FOR DETECTING A RUNAWAY OF A MICROCOMPUTER
Masahiro Nomura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 16, 1992, Ser. No. 821,787
Claims priority, application Japan, Jan. 16, 1991, 3-002993
Int. Cl.[5] G06F *11/00*
U.S. Cl. 364—580 **3 Claims**



1. A system for detecting a runaway of a microcomputer, comprising:
a memory storing a predetermined program having at least two predetermined check routines for detecting a runaway condition of said predetermined program;
a microcomputer which carries out said predetermined program and supplies at least two passing signals by carrying out said at least two predetermined check routines, a first one of said passing signals being a set signal and a second succeeding one of said passing signals being a clear request signal;
a control unit responsive to said at least two predetermined check routines and including a register set by said first one of said passing signals and logic means responsive to a state of said register and said second succeeding one of said passing signals for generating a detecting signal if said register is not set when said clear request signal is generated by said microcomputer and a clear signal if said register is set when said clear request signal is generated; and
a timer reset by said clear signal, said timer generating an overflow signal to said microcomputer if not reset before a predetermined count is reached, either of said detecting signal or said overflow signal indicating a runaway condition.

5,327,363
PATTERN MEMORY CIRCUIT FOR INTEGRATED CIRCUIT TESTING APPARATUS
Tsutomu Akiyama, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan
Filed Mar. 16, 1992, Ser. No. 852,446
Claims priority, application Japan, Mar. 25, 1991, 3-084732
Int. Cl.[5] G05B *19/02*; **G11C** *7/00, 8/00*
U.S. Cl. 364—580 **4 Claims**

1. A pattern memory circuit for an integrated circuit testing apparatus, which comprises:
a pattern memory having an address input, a data input, a read/write input, and a data output;
a CPU in which a sequence program for diagnosis of the pattern memory is written, the CPU for generating a start signal, an allocation mode signal representing an allocation mode, a self-check signal representing a self-check mode, and a read enable signal;
an address generating circuit having an address input from the CPU and an address output, and adapted to generate addresses of the pattern memory;
an address/data generating circuit having an address/data input from the CPU and an address/data output, adapted to generate addresses of the pattern memory different from the addresses generated by the address generating circuit during the allocation mode, and adapted to generate data during the self-check mode;
an end detection circuit having an end address input from the CPU and an end detect output, and adapted to detect completion of the operation of the address generating circuit to notify the CPU of the completion;
a control circuit receiving the start signal from the CPU and the end detect signal from the end detection circuit, the control circuit being actuated by the start signal to generate a control signal for allowing operation of the address generating circuit, the address/data generating circuit, and the end detecting circuit, and to generate read and write cycle signals representing alternating read and write cycles;
a first selector for selecting the address/data output of the address/data generating circuit during a write cycles during the allocation mode, and for otherwise selecting the address output of the address generating circuit, the selection being output as a signal to the address input of the pattern memory;
a second selector for selecting the address/data output from the address/data generating circuit during the self-check



mode, and for otherwise selecting the data output from the pattern memory, the selection being output as a signal to the data input of the pattern memory; and
a comparator receiving signals from the data output and the data input of the pattern memory as inputs, the comparator adapted to compare data read from the pattern memory and data forwarded from the second selector during the self-check mode to determine coincidence therebetween, the comparator outputting a fault signal when coincidence is not determined;
whereby, during a first allocation mode, data stored in the pattern memory is transferred from first addresses to second addresses within the pattern memory;
whereby, after the first allocation mode and during the self-check mode, data from the address/data generating circuit is written into the first addresses during absence of a read enable signal from the CPU, and the data in the pattern memory is read out during presence of a read enable signal from the CPU and compared in the comparator with the data from the address/data generating circuit previously written in; and
whereby, after the self-check mode and during a second allocation mode, the data in the second addresses is transferred back to the first addresses.

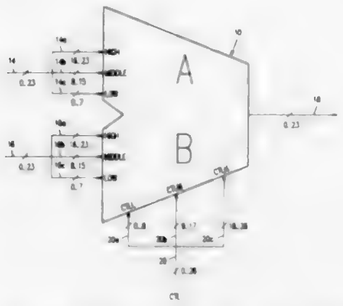
VOL 1164 ISS 1 JL 5 1994 UMI

5,327,364

ARITHMETIC LOGIC UNIT FOR MICROPROCESSOR WITH SIGN BIT EXTENDED

Morris E. Jones, Jr., Saratoga, and James A. Picard, San Jose, both of Calif., assignors to Chips and Technologies Inc., San Jose, Calif.

Continuation of Ser. No. 770,043, Sep. 30, 1991, Pat. No. 5,227,989, which is a continuation-in-part of Ser. No. 767,239, Sep. 27, 1991. This application Jul. 12, 1993, Ser. No. 90,385
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] G06F *7/50, 7/48*
U.S. Cl. 364—716 **6 Claims**



1. A circuit for operating upon in one cycle a signed byte operand "A" and a signed byte operand "B" responsive to a control signal "C", to produce a result signal, said control signal "C" indicating a particular arithmetic-logical operation and including sign extension op code indicia, each of said operands "A" and "B" having a low operand byte, a middle operand byte, and a high operand byte, said control signal having a low control byte, a middle control byte and a high control byte, said circuit including:

an arithmetic logic unit (ALU) divided into three separate portions including means directly responsive to said low operand byte, said middle operand byte, and said high operand byte of said signed byte operands, and to said control bytes including said sign extension op code indicia to produce a plurality of intermediate signals; and

logic means to combine said intermediate signals to generate a result signal equal to the result of first converting said signed byte operands into a signed word operands and then performing said particular arithmetic-logical operation.

5,327,365

GENERATING SYSTEM OF RANDOM-NUMBER SEQUENCES FOR A PARALLEL COMPUTER SYSTEM

Masahide Fujisaki, and Motoi Okuda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 20, 1992, Ser. No. 932,687
Claims priority, application Japan, Aug. 23, 1991, 3-211212
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—717 **17 Claims**

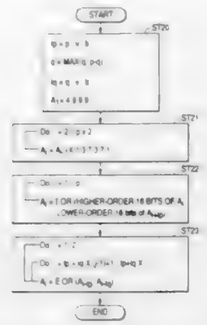
1. A method of generating random-number sequences in a parallel computer system comprising a plurality of processor elements, said method comprising:

defining a first set of processor elements required to generate random numbers and defining a second set of processor elements, coupled to said first set of processor elements and operable for generating random-number initial values;

generating, by one of said second set of processor elements, $p \times v \times k$ pieces of random-number initial values, wherein p is a parameter of a primitive irreducible polynomial prescribing random-number generation, v is a predetermined value not less than 1, and k is a number of said first set of processor elements;

allocating to said first set of processor elements respective random-number initial values; and

generating random numbers A_n, by one of said first set of processor elements, through bit-by-bit logical operation of



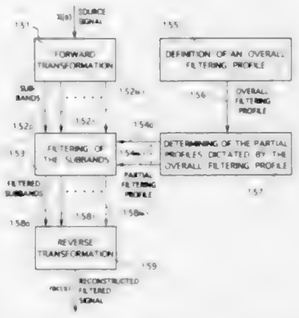
random-number values A_{n-pv} and A_{n-rv} using $p \times v$ pieces allocated thereto from said $p \times v \times k$ pieces of said generated random-number initial values, wherein q is defined as a parameter of a primitive irreducible polynomial prescribing random-number generation, r is defined as one of q and $(p-q)$, and n is defined as being greater than or equal to $p \times v + 1$.

5,327,366

METHOD FOR THE ADAPTIVE FILTERING OF A TRANSFORMED SIGNAL IN SUB-BANDS AND CORRESPONDING FILTERING METHOD

Mr. Joël Mau, Rennes, France, assignor to France Telecom and Telediffusion de France S.A., France

Filed Sep. 2, 1992, Ser. No. 940,203
Claims priority, application France, Sep. 3, 1991, 91 11029
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.18 **8 Claims**



1. A method of filtering a digital source signal comprising:

transforming the digital source signal from a temporal domain into a frequency domain to obtain at least two frequency sub-bands in the frequency domain;

defining an overall filtering profile corresponding to a filtering operation designed to filter the digital source signal;

determining a set of neighboring partial filtering profiles based upon the overall filtering profile, each partial filtering profile corresponding to a respective frequency sub-band, at least one partial filtering profile being a function of at least one other of the neighboring partial filtering profiles;

filtering each frequency sub-band based upon a corresponding partial filtering profile, at least two filtered frequency sub-bands having aliasing terms based upon the corresponding partial filtering profiles;

transforming filtered frequency sub-bands from the frequency domain into filtered temporal domain signals; and

reconstructing the filtered temporal domain signals to form an output signal, the output signal corresponding substantially to a filtered digital source signal, the step of reconstructing including at least partially compensating aliasing terms existing in at least one filtered frequency sub-band based upon the at least one partial filtering profile with aliasing terms existing in at least one other filtered frequency sub-band based upon at least one other neighboring partial filtering profile.

5,327,367

COMPUTER SYSTEM WITH VECTOR FUNCTIONAL UNIT FOR FAST FOURIER TRANSFORM

Shouichirou Yamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 986,535
Claims priority, application Japan, Dec. 5, 1991, 3-348345
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—726 **6 Claims**

STAGE 1	STAGE 2	STAGE 3
W 0	W 0	W 0
W 1	W 2	W 0
W 2		
W 3		

ROTATION FACTOR STORING ARRAY W OF THIS INVENTION

1. A computer system for Fast Fourier Transform with a vector functional unit having a maximum number of vector elements, comprising:

means for storing rotation factors by which a plurality of input elements are multiplied in Fast Fourier Transform into an array of rotation factors;

wherein, when a number of said rotation factors with a same value is not less than the maximum number of vector elements for said vector functional unit, each rotation factor with the same value is stored only once each time the vector element amounts to said maximum number.

5,327,368

CHUNKY BINARY MULTIPLIER AND METHOD OF OPERATION

Robert A. Eustace, Palo Alto, Calif., and Judson S. Leonard, Waban, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 917,725, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 726,627, Jun. 28, 1991, abandoned, which is a continuation of Ser. No. 370,914, Jun. 23, 1989, abandoned. This application Jun. 28, 1993, Ser. No. 84,763
Int. Cl.[5] G06F *7/50, 7/52*
U.S. Cl. 364—786 **13 Claims**

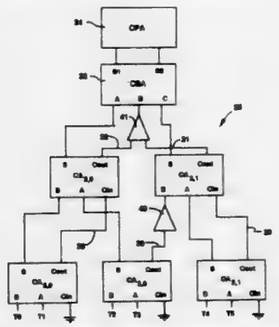
1. An apparatus for summing partial products, said apparatus comprising:

a plurality of chunky adders, each one of said plurality of chunky adders connected to at least one other of said chunky adders, each said connected chunky adder being at a lower or higher relative level of summation relative to at least one other of said connected chunky adders;

each said level of summation including those chunky adders capable of doing a summation in parallel with each other chunky adder at said same level of summation, a chunky adder being configured at a lower relative level of summation with respect to another chunky adder configured at a higher relative level of summation when a term of the summation in the lower relative level chunky adder is needed as an input term for the other chunky adder at a higher relative level;

each said chunky adder including a carry propagate adder broken into a plurality of equal bit length chunks and having an offset corresponding to the first breakpoint in said carry propagate adder, said offset being a smaller number of bit(s) than the number of bits of said chunk bit length;

each said chunk of each said carry propagate adder of each said chunky adder generating a sum output having a plurality of output bits and a single carry-out bit in response to a first plurality of first input integers and a second plurality of second input integers and a carry-in bit; said plurality of output bits, said first plurality of first input integers, and said second plurality of second input integers being equal in number;



each said chunky adder at a lower relative level of summation being connected to communicate said sum output and said single carry-out bit from at least one of said constituent chunks to at least one of said constituent chunks of one of said chunky adders at a higher relative level of summation, and at least one of said constituent chunks of each said chunky adder at said relative higher level of summation connected to receive said sum output and said carry-out bit from at least one of said constituent chunks of one of said chunky adders at said relative lower level of summation as one of said first and said second plurality of input integers and said carry-in bit.

5,327,369

DIGITAL ADDER AND METHOD FOR ADDING 64-BIT, 16-BIT AND 8-BIT WORDS

Yaron Ashkenazi, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1993, Ser. No. 40,676
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—787 **20 Claims**

1. An adder comprising:

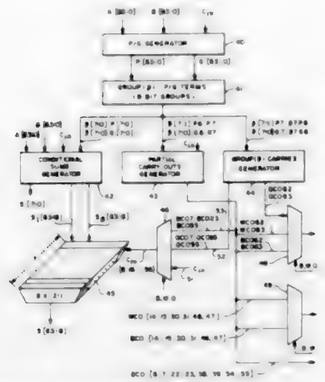
a first circuit coupled to receive A and B signals, each of said A and B signals comprising a plurality of bits, said first circuit logically combining said A and B signals to provide first propagate and generate signals;

a group of second circuits each coupled to receive a plurality of said first propagate and generate signals from said first circuit, said group of second circuits providing a plurality of group propagate and generate signals;

a third circuit coupled to said group of second circuits for providing first carry signals from said group propagate and generate signals taken as a continuous chain and sec-

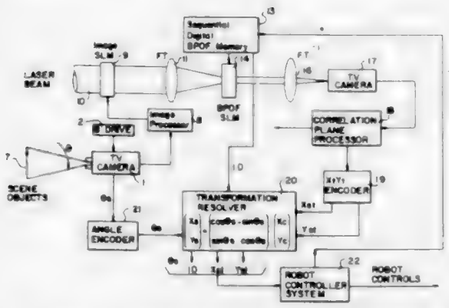
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ond carry signals from said group propagate and generate signals taken in chains shorter than said continuous chain;
a fourth circuit coupled to said group of second circuits and to receive said A and B signals for computing conditional sums for said A and B signals;
a first selector coupled to said third circuit for selecting



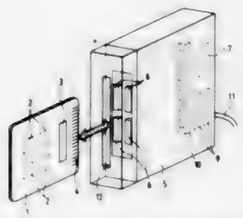
between said first carry signals and second carry signals, said first selector being controlled by an external mode signal; and,
a second selector coupled to said fourth circuit and said first selector for selecting between said conditional sums, said second selector being controlled by one of said first carry signals and said second carry signals.

5,327,370
CIRCULARLY SCANNED ELECTRONICALLY ADDRESSED OPTICAL CORRELATOR
Robert W. Brandstetter, Levittown, and Nils J. Fonneland, Lake Ronkonkoma, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Dec. 9, 1991, Ser. No. 804,019
Int. Cl.[5] G06E *3/00*
U.S. Cl. 364—822 **21 Claims**



1. A system for determining the location and orientation of a plurality of objects in a moving image frame, comprising:
image frame capture means for electronically capturing an image frame containing scene information;
image frame moving means for causing said image frame to move in respect to a target coordinate system;
storage means for storing reference image information about said plurality of objects, a separate reference image being stored for each object;
optical filter means for comparing said reference image information with said scene information by modulating a beam of light carrying said scene information with said reference image information to obtain a correlation image;
correlation means for detecting a selected one of said object in said correlation image; and
transformation resolver means for determining a position and orientation of said selected object in respect to said target coordinate system.

5,327,371
INFORMATION RECORDING AND REPRODUCING APPARATUS
Yooji Maruyama, Iruma; Yoshito Tsunoda, Suginami; Ryo Imura, Tokorozawa, and Kazuhisa Fujimoto, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 14, 1992, Ser. No. 837,634
Claims priority, application Japan, Feb. 21, 1991, 3-027088; Feb. 21, 1991, 3-027090; Aug. 23, 1991, 3-211876
Int. Cl.[5] G11C *19/08*
U.S. Cl. 365—1 **24 Claims**

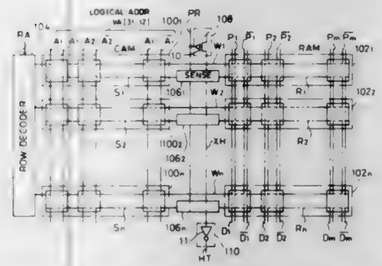


1. An information recording and reproducing apparatus comprising:
i) a card-like memory module including a memory element which is formed on a circuit substrate and which comprises:
a) a magnetic garnet film having an easy magnetization axis almost perpendicular to the main surface of said magnetic garnet film,
b) a plurality of first patterns which are arranged on said magnetic garnet film and each of which serves as a core to maintain a magnetic domain, said magnetic domain having a magnetic domain wall in which Bloch lines occur as information carriers, and
c) a plurality of second patterns which are arranged on said magnetic garnet film so as to sandwich every said magnetic domain maintained by said first patterns between said second patterns, which are longer in length than said first patterns, and each width of which is made larger at the end portion of said second pattern than at another portion thereof, and
ii) drive means for reading and writing information by driving said memory element in said memory module magnetically, wherein said memory module and said drive means can be attached to and detached from each other.

5,327,372
SEMICONDUCTOR MEMORY DEVICE
Akihisa Oka, and Seiji Yamaguchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 14, 1993, Ser. No. 4,273
Claims priority, application Japan, Jan. 17, 1992, 4-006273; Jan. 27, 1992, 4-011691
Int. Cl.[5] G11C *15/00*
U.S. Cl. 315—49 **8 Claims**

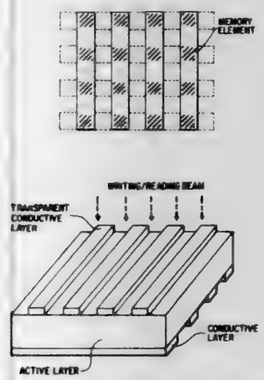
1. A semiconductor memory device comprising:
a plurality of first memory cell arrays which share first bit lines with each other, each of said plural first memory cell arrays having a first word line and a sense line, and having functions of storing information on said first bit lines at

assertion of said first word line and of asserting said sense line when the stored information conforms to other information on said first bit lines;
a plurality of second memory cell arrays which share second bit lines and third bit lines with each other, said second and third bit lines being separated from each other, each of said plural second memory cell arrays sharing said first word line with one of said plural first memory cell arrays so as to compose one entry, each of said plural second memory cell arrays having a second word line and having functions of storing information on said second bit lines at



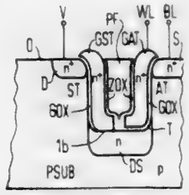
assertion of said first word line and of outputting the stored information onto said third bit lines at assertion of said second word line;
a plurality of sense circuits intervening between said plural first memory cell arrays and said plural second memory cell arrays, each of said plural sense circuits having a function of asserting said second word line of one of said plural second memory cell arrays at assertion of said sense line of corresponding one of said plural first memory cell arrays in the same entry; and
an entry selecting circuit for asserting one of said first word lines.

5,327,373
OPTOELECTRONIC MEMORIES WITH PHOTOCONDUCTIVE THIN FILMS
Chongyang Liu, Austin, Tex.; Horng-long Pan, Taipei, Taiwan; Allen J. Bard, and Marye A. Fox, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.
Filed Aug. 21, 1992, Ser. No. 933,452
Int. Cl.[5] G11C *11/42*
U.S. Cl. 365—112 **18 Claims**



1. A method for storing information as a quantity of electric charge in photoconductive films, the method comprising
irradiating a photoconductive film of single-layer composition with electromagnetic radiation, said film having conductivity less than $10^{-7}\Omega^{-1}cm^{-1}$;
establishing an electric field substantially perpendicular to the irradiated film; and
stopping the radiation wherein the quantity of electric charge is stored in the photoconductive film where said film was irradiated.

5,327,374
ARRANGEMENT WITH SELF-AMPLIFYING DYNAMIC MOS TRANSISTOR STORAGE CELLS
Wolfgang Krautschneider, Ottbrunn; Klaus Lau, Vagen, and Lothar Risch, Neubiberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
PCT No. PCT/DE91/00502, § 371 Date Dec. 29, 1992, § 102(e) Date Dec. 29, 1992, PCT Pub. No. WO92/01287, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 18, 1991, Ser. No. 956,896
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 4021127
Int. Cl.[5] G11C *7/06, 7/00*
U.S. Cl. 365—145 **7 Claims**



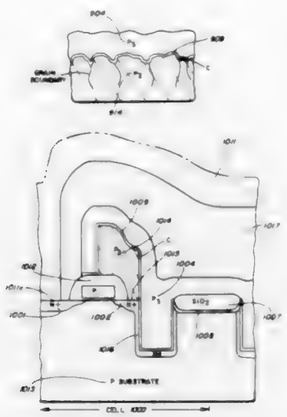
1. An arrangement with self-amplifying dynamic MOS transistor storage cells comprising: a multiplicity of MOS transistor storage cells which each have one selection transistor whose gate terminal is electrically connected to a word line and which each have one storage transistor whose gate terminal is connected to ground via a capacitor, wherein both the selection transistor and the storage transistor are MOS transistors, wherein a second terminal of each of the selection transistors is electrically connected to a bit line, wherein a third terminal of each of the selection transistors and a second terminal of each of the storage transistors form a common drain-source node, the third terminals of each of the storage transistors are electrically connected to a supply voltage; and wherein one voltage-dependent resistor connects the common drain-source node to the gate terminal of each of the storage transistors and the capacitor wherein the voltage-dependent resistor has a low resistance value during charging and a high resistance value during discharging of the capacitor.

5,327,375
DRAM CELL UTILIZING NOVEL CAPACITOR
Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022
Continuation of Ser. No. 868,793, Apr. 15, 1992, abandoned, which is a division of Ser. No. 551,557, Jul. 10, 1990, Pat. No. 5,136,533, which is a division of Ser. No. 216,873, Jul. 8, 1988, Pat. No. 4,958,318. This application Mar. 2, 1993, Ser. No. 24,917
Int. Cl.[5] G11C *11/401*
U.S. Cl. 365—149 **8 Claims**

1. A dynamic RAM cell comprising:
an MOS transfer transistor formed in a semiconductor substrate and having a source region, a drain region, a channel region, and an insulated gate, said transfer transistor being used for selectively writing data into and reading data out of said RAM cells;
a storage capacitor comprising:
a first electrode formed of a first conductive layer, said

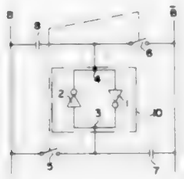
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first electrode being of a granular material and being electrically connected to said source region;
a second conductive electrode overlying said first electrode; and
a storage dielectric insulating layer located between said first and second electrodes;
a bit line connected to said drain; and



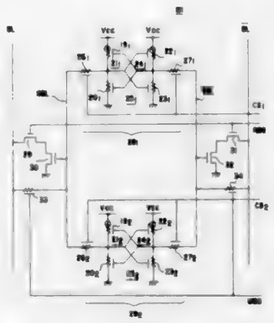
a word line connected to said insulated gate,
wherein said first electrode is formed to have an irregular surface formed along the surfaces of the grain boundaries of said first electrode and said storage dielectric and said second conductive electrode substantially follows the contours of said first electrode, thereby increasing the capacitance of said storage capacitor.

5,327,376
STATIC MEMORY CELL
Atsushi Semi, Gose, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 24, 1993, Ser. No. 25,368
Claims priority, application Japan, Feb. 25, 1992, 4-038097
Int. Cl.[5] B11C *13/00*
U.S. Cl. 365—154 **5 Claims**



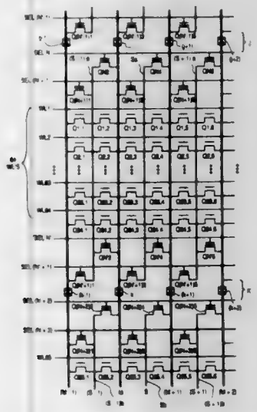
1. A static memory cell connected to a first bit line and a second bit line, comprising:
a first inverter means including a first input terminal and a first output terminal;
a second inverter means including a second input terminal connected to a first output terminal through a first node, and a second output terminal connected to the first input terminal through a second node;
a first switching means for allowing or not allowing conduction between the first bit line and the first node;
a first capacitor connected between the second bit line and the first node;
a second switching means for allowing or not allowing conduction between the second bit line and the second node; and
a second capacitor connected between the first bit line and the second node.

5,327,377
STATIC RANDOM ACCESS MEMORY THAT USES THIN FILM TRANSISTORS IN FLIP-FLOP CIRCUITS FOR IMPROVED INTEGRATION DENSITY
Shoichiro Kawashima, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed May 22, 1992, Ser. No. 887,039
Claims priority, application Japan, May 24, 1991, 3-120108
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—156 **9 Claims**



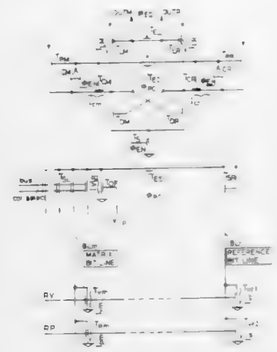
1. A static random access memory, comprising:
a memory cell array including a plurality of memory cells arranged into a plurality of memory cell columns, said memory cell column being divided into a plurality of memory cell groups each including a predetermined number of memory cells;
a plurality of bit lines provided in correspondence to said plurality of memory cell columns;
first decoding means supplied with column address data for selecting one of said plurality of memory cell columns;
second decoding means supplied with row address data for selecting one of said memory cell groups included in said selected memory cell column;
third decoding means supplied with said row address data for selecting one of said memory cells included in said selected memory cell group;
each memory cell group comprising said predetermined number of memory cells, a sub-bit line extending over said predetermined number of memory cells, a first selection circuit connected to said sub-bit line and further connected to one of said bit lines that corresponds to said memory cell group, said first selection circuit being activated in response to a first output signal of said second decoding means for causing a voltage change in said bit line in response to a voltage level on said sub-bit line, said first selection circuit comprising bulk transistors having diffusion regions formed in a semiconductor substrate, and a second selection circuit connected between said sub-bit line and said bit line that corresponds to said memory cell group, said second selection circuit comprising a transistor that is turned on in response to a second output signal of said second decoding means, for connecting said bit line and said sub-bit line electrically;
each memory cell comprising a plurality of thin film transistors connected with each other to form a flip-flop circuit, and a transfer gate transistor also of a thin film transistor for connecting said flip-flop circuit to said sub-bit line of the memory cell group in which said memory cell is included, said transfer gate being turned on in response to an output of said third decoding means;
said thin film transistors forming said second selection circuit being constructed on an elongate polysilicon strip such that said thin film transistor has a channel region formed in said polysilicon strip, with doped regions acting as source and drain of carriers formed at both sides of said channel region.

5,327,378
EASILY MANUFACTURABLE COMPACT EPROM
Reza Kazerounian, Alameda, Calif., assignor to WaferScale Integration, Inc., Fremont, Calif.
Filed Mar. 4, 1992, Ser. No. 846,183
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—185 **23 Claims**



1. An electrically programmable read only memory containing an array of floating gate transistors, said array comprising:
a virtual source;
a first group and a second group of floating gate transistors, wherein each floating gate transistor in said first and second groups comprises:
a drain region and a channel region formed between said drain region and said virtual source; and
a floating gate formed over the channel region between said virtual source and said drain region, said floating gate being separated by a dielectric material from said channel region;
at least one first select transistor connected between said virtual source and a first bit line which functions as a drain for said first group of floating gate transistors, but as a source for said second group of floating gate transistors; and
at least one second select transistor connected between said virtual source and a second bit line which functions as a drain for said second group of floating gate transistors, but as a source for said first group of floating gate transistors,
said first and said second select transistors being arranged so that said at least one second select transistor acts as the control transistor for each of the transistors in said first group of floating gate transistors in said array, and said at least one first select transistor acts as the control transistor for each of the transistors in said second group of floating gate transistors in said array, and said at least one first select transistor and said at least second select transistor comprise unprogrammed or substantially unprogrammed floating gate transistors.

5,327,379
CURRENT OFFSET SENSE AMPLIFIER OF A MODULATED CURRENT OR CURRENT UNBALANCE TYPE FOR PROGRAMMABLE MEMORIES
Luigi Pascucci, Sesto S. Giovanni, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Milan, Italy
Filed May 4, 1992, Ser. No. 878,823
Claims priority, application Italy, May 10, 1991, VA/91/A/0012
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—190 **26 Claims**



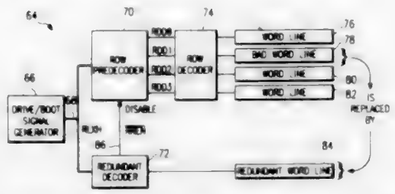
1. A current offset type differential sense amplifier comprising:
a first input node and a second input node connected to a first line containing at least a reference cell and a second line containing a selected memory cell, respectively, each line having an electrical path operatively connecting each of said lines through an essentially identical load to a supply rail; and
said identical loads of the two lines being cross-coupled to said input nodes and constitute also the loads of a differential input pair of transistors of said differential sense amplifier during a discrimination phase of a reading cycle and form together with said input transistor pair a latch for storing extracted data during a last phase of a reading cycle, said latch having a pair of output nodes; and
a second electrical path functionally connecting each of said lines to said supply rail, each of said paths being controlled by at least a pair of switches, said pair including a connecting switch between the supply rail and the respective line and a decoupling switch between the respective input node and the line; each pair of switches being driven by a control gate circuit, said circuit having a pair of input terminals and an output terminal, said output terminal connected to control terminals of said switches, the first input terminal connected to the respective line and the second input terminal connected to a first enabling timing signal.

5,327,380
METHOD AND APPARATUS FOR INHIBITING A PREDECODER WHEN SELECTING A REDUNDANT ROW LINE
David V. Kersh, III, Houston, and Roger D. Norwood, Sugarland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 265,105, Oct. 31, 1988, abandoned.
This application Feb. 8, 1991, Ser. No. 653,855
Int. Cl.[5] G11C *7/00, 8/00, 29/00*
U.S. Cl. 365—195 **17 Claims**
1. A circuit for replacing a defective signal path with a redundant signal path, comprising:

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a global signal source;

a local predecoder coupled to said global signal source and to a plurality of local predecoder lines, said local predecoder liens coupling said predecoder to a plurality of decoders, each of said decoders connected to a respective plurality of word lines, said predecoder and plurality of decoders decoding selected ones of a plurality of addressing signals and selecting at least one of a plurality of signal paths from said global signal source to one of said respective plurality of word lines; and



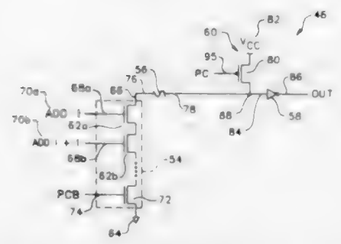
a redundant decoder connected to a redundant word line and coupled to said predecoder for responding to addressing signals corresponding to a defective signal path, said redundant decoder generating a decoding-inhibiting signal to said predecoder to block said predecoder from selecting one of said at least one of said plurality of signal paths and said redundant decoder selecting a redundant signal path for coupling said global signal source to said redundant word line.

5,327,381

REDUNDANCY SELECTION APPARATUS AND METHOD FOR AN ARRAY

Larry D. Johnson, San Jose, and Mark G. Johnson, Sunnyvale, both of Calif., assignors to Mips Computer Systems, Inc., Sunnyvale, Calif.

Filed Jun. 3, 1992, Ser. No. 892,919
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **11 Claims**



1. A fused decoder apparatus for receiving an address comprising a plurality of address bits from a plurality of address lines and outputting a select signal in response to a predetermined received address to select among a plurality of address rows, the apparatus comprising:

an NMOS gate coupled to said address lines to receive said plurality of address bits and having an output terminal to output a predetermined signal when all of said received address bits are in a predetermined state;

an inverter having an input and an output, the input coupled to receive the output from said NMOS gate and provide said select signal in response;

a fuse connecting said output terminal of said NMOS gate to said inverter;

exactly one PMOS transistor coupled between the output terminal of said NMOS gate and the input of said inverter, said PMOS transistor having a gate terminal coupled to a preload signal line, wherein said PMOS transistor, when placed in a conductive state, provides a conductive pathway between a source voltage and said NMOS gate when said fuse is not blown and said PMOS transistor, when placed in a conductive state, provides a high level input to said inverter, when said fuse is blown wherein said PMOS transistor is placed in said conductive state by said preload signal; and

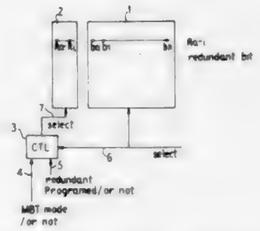
wherein said decoder provides said select signal in response to said address and wherein all transistors in said decoder which respond to said address are NMOS transistors.

5,327,382

METHOD OF TESTING REDUNDANT MEMORY CELLS

Katsunori Seno, c/o Device Tech. Div. Ulsi R & D Group, Atsugi Tech. Center Sony Corporation, Atsugi-shi Kanagawa-Ken, Japan, and Kurt Knorpp, c/o Sony Microelectronics Design Center Sony Corporation, 6118 River Oaks Pkwy., Redwood City, Calif. 95134

Filed Sep. 9, 1992, Ser. No. 942,627
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—210 **2 Claims**



2. Apparatus for testing a single chip semiconductor memory having plural normal memory cells arranged in a matrix and a plurality of word lines arranged in rows for simultaneously selecting a row of such cells for reading access, and a plurality of redundant memory cells arranged in an independent matrix comprising a gate having a first input connected to receive a signal indicating that a memory test is being executed, a second input connected to receive a signal indicating that a memory cell being accessed has a programmed location in said redundant memory, and a third input connected to receive a signal indicating that said matrix of normal cells is selected for operation; and means for connecting an output of said gate to said redundant memory cell matrix, whereby said redundant memory cell matrix is enabled for reading simultaneously with said normal memory array.

5,327,383

METHOD AND CIRCUITRY FOR ERASING A NONVOLATILE SEMICONDUCTOR MEMORY INCORPORATING ROW REDUNDANCY

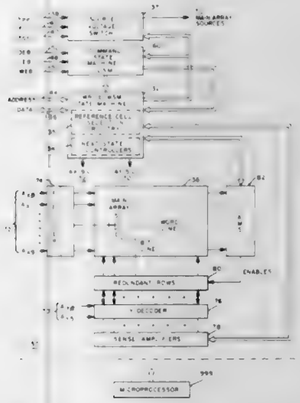
Amit Merchant, Citrus Heights; Mickey L. Fandrich, Placerville, and Neal Mielke, Los Altos Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 21, 1992, Ser. No. 871,485
Int. Cl.[5] G11C *7/00, 7/02*
U.S. Cl. 365—218 **34 Claims**

1. Circuitry for controlling the erasure of a nonvolatile semiconductor memory array including a multiplicity of rows of memory cells, each memory cell having a threshold voltage, the circuitry residing on a same substrate as the nonvolatile semiconductor memory array, the circuitry comprising:

a) a sequencer circuit for controlling the sequence of preconditioning and erasure of the nonvolatile semiconductor memory in response to an erase command, the sequencer circuit bringing a precondition enable signal active in response to the erase command, the sequencer circuit bringing an erase enable signal active in response to a precondition status signal:

b) a precondition controller for controlling the preconditioning of the nonvolatile semiconductor memory array, the precondition controller initiating preconditioning of the nonvolatile semiconductor memory array in response to the active precondition enable signal, the precondition controller generating the precondition status signal after the nonvolatile semiconductor memory array has been



preconditioned, the precondition controller causing the threshold voltages of the memory cells to be raised to a level sufficient to prevent overerasure; and

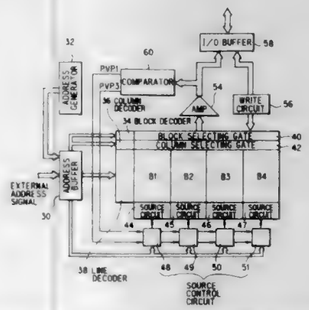
c) an erase controller for controlling the erasure of the nonvolatile semiconductor memory array, the erase controller initiating erasure of the nonvolatile semiconductor memory array in response to the active erase enable signal, the erase controller causing the threshold voltages of the memory cells to be brought to a level representative of an erased state.

5,327,384

FLASH MEMORY

Kazuhisa Ninomiya, Tokyo, Japan, assignor to Nec Corporation, Japan

Filed Dec. 28, 1992, Ser. No. 997,230
Claims priority, application Japan, Dec. 27, 1991, 3-359814
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 **6 Claims**



1. A flash memory, having a memory region divided into a plurality of memory blocks each having a plurality of memory cells, comprising:

means for erasing data written in each memory cell of any one of said memory cell blocks which is selected to be erased;

means for inspecting whether or not data is erased from each memory cell of each memory cell block, and for generating a control signal when data written of all of the memory cells of the memory cell block are erased completely; and

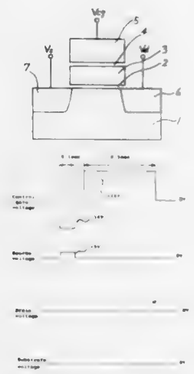
means for controlling said data erasing means in accordance with said control signal to prohibit the erasing operation to said memory cell block in which all the data have been erased, said means for controlling said data erasing means comprising a flip-flop circuit for latching said control signal.

5,327,385

METHOD OF ERASURE FOR A NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

Kenichi Oyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 19,899
Claims priority, application Japan, Feb. 19, 1992, 4-031186
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—218 **10 Claims**



1. A method of erasure for a non-volatile semiconductor memory device having a floating gate, said method comprising the steps of:

applying a first voltage having one polarity to a control gate of said memory device under a bias application between source and drain regions so as to accomplish an erasure by a tunneling of carriers from said floating gate through a tunneling oxide film; and

applying a second voltage having an opposite polarity to said one polarity to said control gate of said memory device without bias application between said source and drain regions so as to accomplish a convergence of a threshold voltage into a voltage level by a tunneling of carriers from a channel region of said memory device to said floating gate through said tunneling oxide film;

wherein a voltage level of said first voltage application has the same absolute value as a voltage level of said second voltage application.

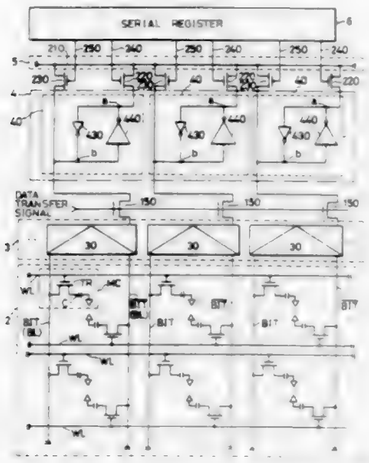
VOL 1164 ISS 1 JL 5 1994 UMI

5,327,386

DUAL PORT SEMICONDUCTOR MEMORY DEVICE WITH HIGH SPEED DATA TRANSFER DURING READING AND WRITING MODES

Yoshio Fudeyasu, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1991, Ser. No. 794,094
Claims priority, application Japan, Nov. 20, 1990, 2-316849
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—221 **22 Claims**



1. A semiconductor memory device comprising:

a first memory array having a plurality of first memory cells arranged in a plurality of columns,

a second memory array for temporarily storing a read out data signal from said first memory array and write data signal to be written into said first memory array, said second memory array including a plurality of second memory cells provided corresponding to said plurality of columns,

wherein each of said second memory cells includes

first and second complementary storage nodes,

bidirectional inverting means interconnecting said first and second storage nodes;

means for limiting magnitude of current flow within said inverting means in one direction to be less than that within said inverting means in the opposite direction,

data bus means for receiving a data signal read out from said second memory cell and an externally applied data signal,

read out means for reading out a data signal from one of said plurality of first memory cells,

amplifying means for reading and amplifying both a data signal read out by said read out means and a data signal temporarily stored in each second memory cell,

first connecting means for electrically connecting one node of said complementary storage nodes to said amplifying means at the time of data reading and data writing,

second connecting means, for electrically connecting the other one of said complementary storage nodes to said data bus means, after said one node is electrically connected to said amplifying means by said first connecting means, at the time of said data reading, and

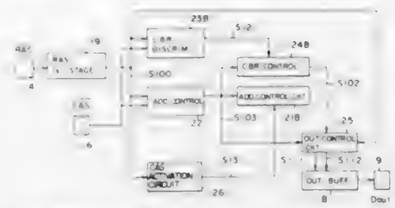
third connecting means for electrically connecting said one node to said data bus means, before said one node is electrically connected to said amplifying means by said first connecting means, at the time of said data writing.

5,327,387

DYNAMIC RANDOM ACCESS MEMORY HAVING AN IMPROVED OPERATIONAL STABILITY

Akira Sugiura, Kasugai, and Yukinori Kodama, Kawasaki, both of Japan, assignors to Fujitsu Limited and Fujitsu VLSI Limited, Kawasaki, Japan

Filed Nov. 5, 1992, Ser. No. 971,630
Claims priority, application Japan, Nov. 5, 1991, 3-288753
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—222 **9 Claims**



1. A dynamic random access memory, comprising:

a plurality of memory cells each storing information in the form of electric charges, said memory cells being arranged to form a memory cell array;

addressing means supplied with address data for selecting a memory cell from said memory cell array;

input/output means for writing and/or reading information to and from said selected memory cell; and

control means for controlling said input/output means such that said input/output means exhibits a high impedance state during a refreshing cycle of said memory cells, said control means comprising:

first input means supplied with a first timing signal for outputting a first control signal in response thereto;

second input means supplied with a second, different timing signal for outputting a second control signal in response thereto, said first timing signal and said second timing signal having a timing relationship such that a read/write cycle for writing and reading information to and from the selected memory cell is achieved when said first timing signal precedes said second timing signal and such that a refreshing cycle for refreshing said memory cells is achieved when said second timing signal precedes said first timing signal;

a timing control circuit supplied with said first and second control signals from said first and second input means, respectively, for producing a third control signal in response thereto such that said third control signal is produced in response to a leading edge of said second control signal and terminates in response to a trailing edge of said second control signal when in said read/-write cycle and such that said third control signal is produced in response to a leading edge of said first control signal and terminates in response to a trailing edge of said second control signal when in said refreshing cycle;

a detection circuit supplied with said first and second control signals from said first and second input means, respectively, for producing a fourth control signal when the timing of said second control signal has preceded the timing of said first control signal, thereby corresponding to said refreshing cycle;

a refresh control circuit supplied with said third control signal from said timing control circuit and said fourth control signal from said detection circuit for producing a fifth control signal such that said fifth control signal is produced in correspondence to a time interval extending from a time corresponding to the leading edge of said fourth control signal to a time corresponding to the trailing edge of said third control signal;

an output control circuit supplied with said third control signal from said timing control circuit and with said fifth control signal from said refresh control circuit, for producing sixth and seventh control signals such that said sixth control signal is produced only in said read/-write cycle, in correspondence to an interval extending from a time corresponding to the leading edge of said third control signal to a time corresponding to the trailing edge of said third control signal and such that said seventh control signal is produced in said read/-write cycle in correspondence to an interval extending from a time corresponding to the leading edge of said third control signal to a time corresponding to the trailing edge of said third control signal, said seventh control signal produced in said refreshing cycle in an interval extending from a time corresponding to the leading edge of said third control signal to a time corresponding to the trailing edge of said third control signal, wherein said seventh control signal does not overlap said sixth control signal during said refresh cycle;

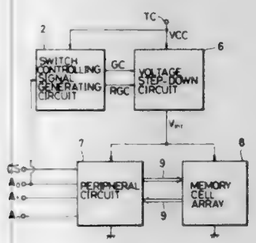
said output control circuit controlling said input/output means by said sixth and seventh control signals such that reading and/or writing of information to and from a selected memory cell is allowed only when said sixth and seventh control signals are provided simultaneously, said output control circuit further controlling said input/output means such that said input/output means exhibits a high output impedance state when said seventh control signal is not provided.

5,327,388

SEMICONDUCTOR MEMORY DEVICE

Yasuo Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 952,977
Claims priority, application Japan, Oct. 15, 1991, 3-265797
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—226 **8 Claims**



1. In a semiconductor memory device which includes a power source input terminal to which electric power is supplied from an external power source, a power source voltage step-down circuit connected to said power source input terminal for generating a stepped-down voltage lower than the voltage of the external power source, a memory cell array to which the stepped-down voltage is supplied, and a peripheral circuit connected to said memory cell array for receiving supply of the stepped-down voltage to perform a logic operation, the improvement which comprises:

current switching means attached to at least one of a plurality of circuit blocks for switching of current flowing through said at least one circuit block in response to a controlling signal, such that current consumption in said memory cell array during operation may be accurately measured, said plurality of circuit blocks comprising said power source voltage step-down circuit and said peripheral circuit; and

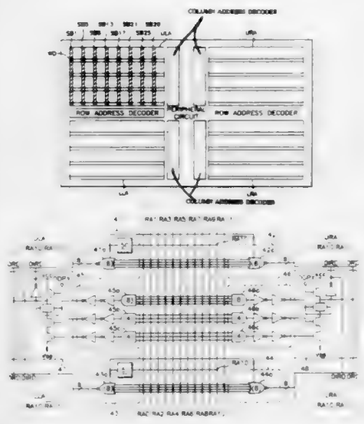
switch controlling signal generating means for generating said controlling signal in response to a signal from the outside.

5,327,389

SEMICONDUCTOR MEMORY DEVICE HAVING A BLOCK SELECTION FUNCTION WITH LOW POWER CONSUMPTIONS

Yong-Sik Seok, Daegu; Dong-Sun Min; Dong-Soo Jun, both of Seoul, and Jae-Gu Roh, Kyungki, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 27, 1992, Ser. No. 918,770
Claims priority, application Rep. of Korea, Aug. 14, 1991, 1991-14100
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.03 **10 Claims**



2. A semiconductor memory device having a plurality of main blocks, each main block including a plurality of subblocks, said semiconductor memory device comprising:

block selection means for selecting one of said main blocks in response to row address signals;

first means for selecting the subblocks of the selected main block in response to the row address signals; and

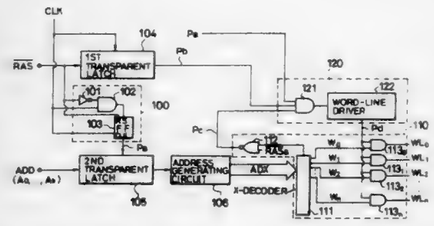
second means for maintaining the nonselected main blocks non-enabled in response to the row address signals.

5,327,390

SYNCHRONOUS BURST-ACCESS MEMORY

Atsushi Takasugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 735,626, Jul. 24, 1991, Pat. No. 5,268,865. This application Sep. 15, 1993, Ser. No. 121,504
Claims priority, application Japan, Jul. 25, 1990, 2-196877; Sep. 28, 1990, 2-259697
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230 **3 Claims**



1. A word-line driving circuit to drive word lines in a syn-

chronous dynamic memory that receives a clock signal, a row address strobe signal, and address signals, comprising

a clock generating circuit for generating an address latch clock signal that becomes active when the row address strobe signal and the clock signal are both active, and remains active until said row address strobe signal becomes inactive.

a first transparent latch circuit, clocked by said clock signal, for latching said row address strobe signal and generating therefrom a first internal signal;

a second transparent latch circuit, coupled to said clock generating circuit and clocked by said address latch clock signal, for latching the address signals;

an address generating circuit, coupled to said second transparent latch circuit, for generating a row address from the output of said second transparent latch circuit;

a word-line decoding circuit, coupled to said address generating circuit, for decoding said row address, thus selecting one word line, and generating a second internal signal that becomes active when said word line has been selected; and

gating and driving means, coupled to said first transparent latch circuit and said word-line decoding circuit, for receiving a control signal, gating said first internal signal according to said second internal signal and said control signal to generate a drive signal, and driving the selected word line by said drive signal.

5,327,391

DOUBLE BUFFER TYPE ELASTIC STORE COMPRISING A PAIR OF DATA MEMORY BLOCKS

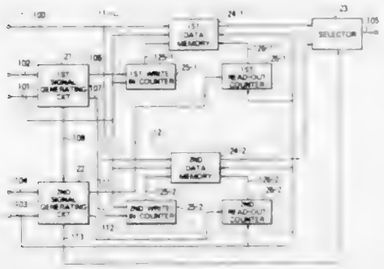
Hideyuki Hirata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 13, 1992, Ser. No. 867,355

Claims priority, application Japan, Apr. 11, 1991, 3-078084

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—233 **2 Claims**



1. A double buffer type elastic store supplied with a sequence of reception data, a sequence of reception clock pulses of a predetermined clock period, a sequence of reception frame pulses comprising successive reception frames each of which has a predetermined frame period, a sequence of system clock pulses of said predetermined clock period, and a sequence of system frame pulses comprising successive system frames each of which has said predetermined frame period and a system frame phase for producing a sequence of output data synchronized with said system frame phase within a predetermined phase difference, said sequence of reception clock pulses and said sequence of reception frame pulses being propagated through a time division transmission path, said elastic store comprising:

a first memory block which receives said sequence of reception data and memorizes said sequence of reception data as first memorized data;

a second memory block which receives said sequence of reception data and memorizes said sequence of reception data as second memorized data;

a first signal generating circuit supplied with said sequence of reception clock pulses and said sequence of reception frame pulses for alternately generating first and second write-in reset signals on reception of each of said reception frame pulses to alternately supply said first and said second write-in reset signals to said first and said second memory blocks, respectively, and generating an indication signal indicative of one of said first and said second memory blocks that is supplied with either said first or said second write-in reset signal, said first and said second memory blocks alternately memorizing said sequence of reception data every other frame in response to said first and said second write-in reset signals, respectively;

a second signal generating circuit supplied with said sequence of system clock pulses, said sequence of system frame pulses, and said indication signal for alternately generating first and second read-out reset signals on reception of each of said system frame pulses to alternately supply said first and said second read-out reset signals to said first and said second memory blocks, respectively, and generating a selection signal indicative of one of said first and said second memory blocks that is supplied with either said first or said second read-out reset signal, said first and said second memory blocks alternately delivering said first and said second memorized data every other frame, as first and second read-out data, in response to said first and said second read-out reset signals, respectively; and

a selector connected to said first and said second memory blocks for selecting one of said first and said second read-out data as selected read-out data in response to said selection signal to produce said selected read-out data as said sequence of output data.

5,327,392

SEMICONDUCTOR INTEGRATED CIRCUIT CAPABLE OF PREVENTING OCCURRENCE OF ERRONEOUS OPERATION DUE TO NOISE

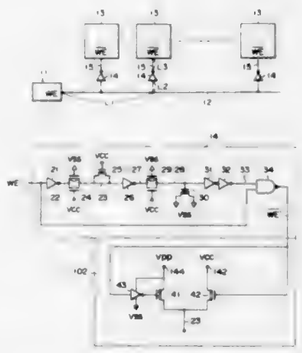
Nobuaki Ohtsuka, Yokohama, and Sumio Tanaka, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 765,505, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 444,984, Dec. 4, 1989, abandoned. This application Jun. 8, 1992, Ser. No. 895,450

Claims priority, application Japan, Jan. 13, 1989, 1-6218

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—233 **1 Claim**



1. A semiconductor integrated circuit comprising:

a plurality of memory blocks, each of the memory blocks having a plurality of memory cells, and each of the memory cells storing data in response to a write enable signal at ground potential;

control means for generating a control signal set at a power source potential when the memory blocks store data;

a plurality of first wirings for supplying the control signal generated by the control means to the memory blocks;

a plurality of inverting means, each of the inverting means being located near and corresponding to a respective one of the memory blocks, for inverting control signals supplied to the memory blocks by the plurality of first wirings, thereby generating write enable signals; and

a plurality of second wirings for supplying the write enable signals generated by the inverting means to the memory blocks, each of the second wirings being shorter than a portion of each of the first wirings coupled between the control means and the inverting means, wherein each of the inverting means includes:

a first inverter for inverting the control signal applied to the memory blocks by the plurality of first wirings,

a first transfer gate couple between a first node and an output of the first inverter,

a first depletion-type MOS transistor having a source and a drain coupled to the first node, and a gate coupled to a power-source potential terminal, the first depletion-type MOS transistor functioning as a first capacitor,

a second inverter for inverting a signal at the first node,

a second transfer gate coupled between a second node and an output of the second inverter, a second depletion-type MOS transistor having a source and a drain coupled to a ground-potential terminal, and a gate coupled to the second node, the second depletion-type MOS transistor functioning as a second capacitor, and

a NAND gate for generating a logic NAND of a signal at the second node and the control signal, thereby generating a write enable signal.

5,327,393

EXTERNAL MEMORY INTERFACE CIRCUIT CAPABLE OF CARRYING OUT INITIALIZATION OF EXTERNAL MEMORY WITH A REDUCED INITIALIZATION TIME DURATION

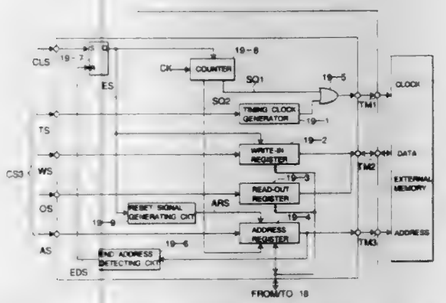
Mitsuhiro Koyanagi, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,610

Claims priority, application Japan, May 27, 1992, 4-134567

Int. Cl.[5] G11C *8/04*

U.S. Cl. 365—233 **2 Claims**



1. An external memory interface circuit included in a signal processing circuit which is for processing an input signal by using an external memory connected to said signal processing circuit, said signal processing circuit comprising clear signal generating means for generating a clear signal designating initialization of said external memory, said external memory interface circuit being connected to said clear signal generating means and comprising an address register for producing an address signal representing an address of said external memory at a time to supply said address signal to said external memory and a write-in register for writing said input signal in said external memory, said external memory interface circuit carrying out said initialization of said external memory on reception of said clear signal and further comprising:

end address detecting means connected to said address register for detecting an end address of said address signal to produce an end address detection signal;

signal generating means connected to said clear signal generating means and said end address detecting means for continuously generating an enable signal, a write-in pulse signal, and an address increment pulse signal until said signal generating means receives said end address detection signal after reception of said clear signal, said signal generating means supplying said enable signal, said write-in pulse signal, and said address increment pulse signal to said write-in register, said external memory, and said address register, respectively; and

reset signal generating means connected to said signal generating means for generating an address reset signal on reception of said enable signal to supply said address reset signal to said address register;

said write-in register successively producing zero data while said write-in register receives said enable signal to successively write said zero data in said external memory in synchronism with said write-in pulse signal, said address register producing address zero on reception of said address reset signal and increasing said address of said external memory one by one in response to said address increment pulse signal.

5,327,394

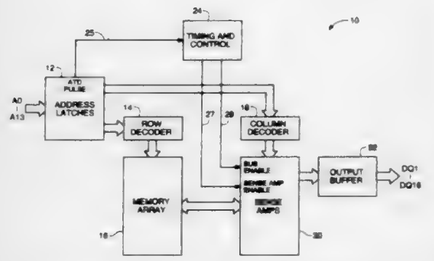
TIMING AND CONTROL CIRCUIT FOR A STATIC RAM RESPONSIVE TO AN ADDRESS TRANSITION PULSE

Robert S. Green, and Larren G. Weber, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 4, 1992, Ser. No. 831,452

Int. Cl.[5] G11C *7/02*

U.S. Cl. 365—233.5 **6 Claims**



1. A method of operating a memory comprising the steps of:

(a) providing an input address bus;

(b) providing a memory circuit including a memory array and coupled sense amplifiers, the sense amplifiers further including internal sense amplifier enable and output data bus enable nodes;

(c) generating an address transition signal from a series of address signals received on the input address bus, the address transition signal including a pulse train of two or more pulses;

(d) generating fixed pulse width sense amplifier enable and output data bus enable signals corresponding to the last pulse in the pulse train of the address transition signal if the pulses are spaced apart by less than a predetermined time interval; and

(e) generating fixed pulse width sense amplifier enable and output data bus enable signals corresponding to each pulse in the pulse train of the address transition signal if the

pulses are spaced apart by more than the predetermined time interval.

5,327,395

PAGE-MODE TYPE MEMORY WRITING CONTROL CIRCUIT USING END-OF-PAGE ADDRESS

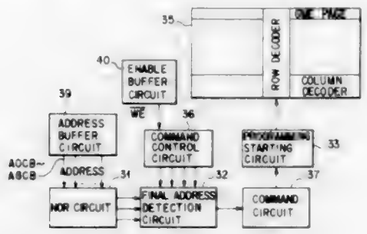
Yoshihisa Sugiura, Sagamihara; Yoshihisa Iwata; Masaki Momodomi, both of Yokohama; Yasuo Itoh, Kawasaki; Tomoharu Tanaka, Yokohama, and Yoshiyuki Tanaka, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 6, 1992, Ser. No. 957,000

Claims priority, application Japan, Oct. 7, 1991, 3-259471

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—238.5 **5 Claims**



1. A semiconductor memory device comprising:

a non-volatile semiconductor memory device writable page by page;

a logic circuit applied with address signals for detecting a final address in a page and generating a final address signal when said final address has been detected; and

a write circuit responsive to said logic circuit for writing data into said non-volatile semiconductor memory device in accordance with whether said final address signal has been generated.

5,327,396

UNDERWATER DETECTION SYSTEM

Nishimori Yasushi, Toyonaka, Japan, assignor to Furuno Electric Company, Limited, Hyogo, Japan

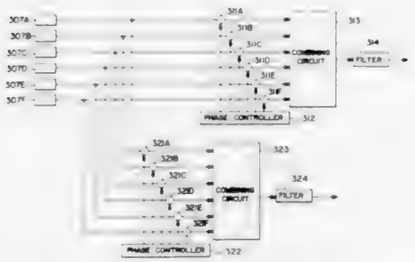
PCT No. PCT/JP91/01066, § 371 Date Apr. 9, 1992, § 102(e) Date Apr. 9, 1992, PCT Pub. No. WO92/02830, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 9, 1991, Ser. No. 847,070

Claims priority, application Japan, Aug. 9, 1990, 2-212075; Jun. 6, 1991, 3-134953; Jul. 19, 1991, 3-179559

Int. Cl.[5] G01S *15/50, 15/04*

U.S. Cl. 367—90 **29 Claims**



1. An underwater detection system comprising:

ultrasonic receiving means for successively searching areas in mutually different directions in a plurality of directions and receiving ultrasonic signals coming from the respective directions in the plurality of directions with a time difference therebetween;

phase difference detecting means for detecting a phase difference between the phases of the carriers of the received signals having come from the same direction in the plurality of directions and caught by said receiving means; and

computation means for computing the angular frequency or frequency of the received signals based on the phase difference between the carriers of signals.

5,327,397

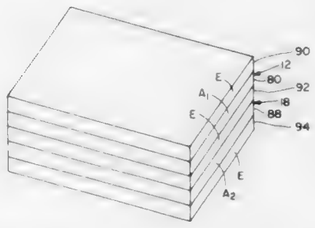
WIDEBAND, DERIVATIVE-MATCHED, CONTINUOUS APERTURE ACOUSTIC TRANSDUCER

Shawn E. Burke, Andover, Mass., and James E. Hubbard, Jr., Derry, N.H., assignors to The Charles Stark Draper Laboratories, Inc., Cambridge, Mass.

Division of Ser. No. 677,799, Mar. 29, 1991, Pat. No. 5,237,542. This application May 27, 1993, Ser. No. 68,996

Int. Cl.[5] G01S *15/00;* **H04R** *17/00*

U.S. Cl. 367—103 **5 Claims**



1. A wideband, derivative-matched, continuous aperture acoustic transducer, comprising:

a first sensor medium including a first sensor area having a predetermined spatial shaping;

a second sensor medium including a second sensor area having a spatial shading which is the spatial derivative of the spatial shading of said first area; said first and second spatially shaded areas being superimposed and coextensive along the sensing axis; and

a pair of electrodes about said first and second sensor mediums.

5,327,398

FISHFINDER WITH READOUT OF BOTTOM COVERAGE

Keith L. Wansley, Plant City, Fla., and Jeffrey O. Fellows, Hudson, N.H., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 19, 1993, Ser. No. 139,230

Int. Cl.[5] G01S *15/96*

U.S. Cl. 367—108 **12 Claims**

1. A fishfinder system for determining and displaying the location of fish or other targets in a body of water surrounding a boat, the system comprising:

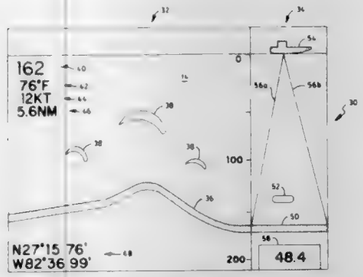
electromechanical transducer means for transmitting sound waves in a substantially conical beam into said body of water, for receiving corresponding echoes from obstructions including fish in the path of said sound waves and from the bottom of the body of water, and for generating electrical signals in accordance with said received echoes;

electrical transmitter means coupled to said transducer means for controlling transmission of said sound waves by the transducer means;

receiver means coupled to said transducer means for receiving and processing said electrical signals produced by said transducer means and for producing an output in accordance therewith;

processor means coupled to said receiver means for converting the output of said receiver means into electrical data representative of a display image of said received echoes in the form of a triangular cross-section of said conical beam;

said processor means comprising means for determining a



numerical value corresponding to the coverage of said conical beam on said bottom of said body of water; and

visual display means coupled to said processor and including a screen for displaying said echo display image and said numerical value corresponding to said coverage of said conical beam on said bottom of said body of water.

5,327,399

MULTIVIBRATOR WAVEFORM MONITORING SYSTEM

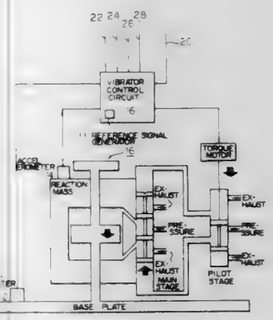
Masaaki Asada, Tokyo, and Kazuo Nakai, Kawasaki, both of Japan, assignors to Japex Geoscience Institute, Inc., Tokyo, Japan

Filed Nov. 19, 1991, Ser. No. 795,191

Claims priority, application Japan, Nov. 22, 1990, 2-318278

Int. Cl.[5] H04R *23/00*

U.S. Cl. 367—190 **2 Claims**



1. A multivibrator waveform monitoring system using a plurality of seismic energy sources for giving vibrations to strata and a prospector, connected to a geophone, for measuring reflected vibrations,

each of said plurality of seismic energy sources including:

a time-swept multifrequency vibrator;

communication means for carrying out communication with said prospector;

a detector for detecting a vibration frequency of said vibrator; and

control means for controlling the starting of operation of said vibrator based on phase difference cancellation information and operation starting instruction sent from said prospector,

said prospector including:

communication means for carrying out communication with said seismic energy source; and

synchronization control means for controlling the synchronization of said seismic energy sources, said synchronization control means receiving, by said communication means, information relating to the vibration frequency of said vibrator detected by said detector of each of said seismic energy sources, comparing a phase difference of vibrations between one of said plurality of the seismic energy sources as a master unit and each of the rest of said seismic energy sources as a slave unit, and calculating phase difference cancellation information for cancelling each of the phase differences of said each of said plurality of seismic energy sources, to thereby send said phase difference cancellation information and operation starting instruction for starting the operation of said vibrator by said communication means, and

means for adjusting a timing of starting the operation of a vibrator in each of said seismic energy sources based on said respective phase difference cancellation information, to make the phase of vibrations of said vibrator of each of said slave seismic energy sources to be the same as the phase of vibrations of said master unit.

5,327,400

TIME PIECE WITH LUNAR PHASE AND TIDES DISPLAY

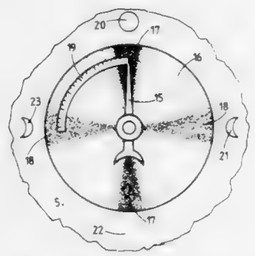
Jean-Daniel Dubois, Le Sentier, Switzerland, assignor to Nouvelle Lemania SA, L'Orient and Eberhard & Cie SA, Bienne, both of Switzerland

Filed Apr. 15, 1992, Ser. No. 868,501

Claims priority, application Switzerland, Apr. 15, 1991, 1112/91

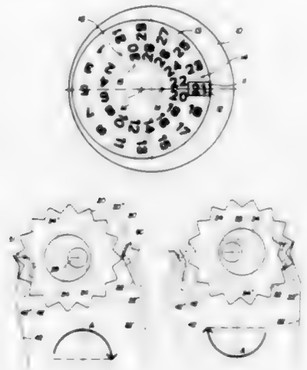
Int. Cl.[5] G04B *19/26*

U.S. Cl. 368—19 **7 Claims**



1. In a time piece comprising a dial, a time display, a motor that drives gearing, a winding mechanism comprising a winding stem enabling the winding of the motor in a first position and the time setting of the time display in a second position; the improvement wherein the time piece comprises further a time indicator, displaying simultaneously the moon phases and the tides, comprising a tides disk which can be seen through a window of the dial and which is driven by the gearing to make one turn in twenty-four hours, and a moon phase hand driven also by the gearing but at a speed of one turn in 29.5 days and which overlies the tides disk and points successively to signs representing the phases of the moon which are located on the dial around the tides disk, and wherein the end of the moon phase hand carries a graduated sector, extending over about one fourth of a circle, and which is concentric to the tides disk.

5,327,401
WRISTWATCH
René Besson, and Frank G. Vernay, both of Geneva, Switzerland, assignors to Montres Rolex S.A., Switzerland
Filed Jul. 29, 1992, Ser. No. 916,134
Claims priority, application Switzerland, Dec. 14, 1990, 3972/90
Int. Cl.[5] G04B *19/24*
U.S. Cl. 368—37 11 Claims



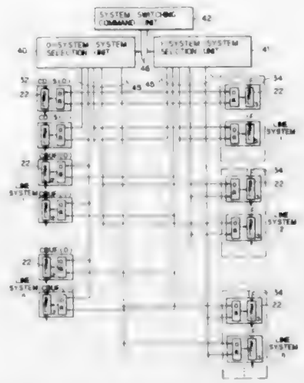
1. A wristwatch having a watch face and means for displaying a current date of a month via a window being provided in said watch face, said means for displaying the date comprising a rotatable disc being movable about a rotational axis, said rotatable disc having a first series of numbers comprising a first portion of the thirty-one possible dates of a month and a second series of numbers comprising a remaining portion of the thirty-one possible dates of a month, the first and second series of numbers being arranged in at least first and second concentric circles, and said watch comprises a mechanism for driving said rotatable disc about said rotational axis,

wherein said window is dimensioned so as to allow viewing of only one date number at a time from one of said first and second series of numbers, and said mechanism for driving said rotatable disc further includes a mechanism for moving said rotational axis of the rotatable disc radially from a first position in which a desired date number from said first series of number is visible through said window to a second position in which a desired date number from said second series of number is visible through said window.

5,327,402
CLOCK SUPPLY APPARATUS
Tadanao Shinomiya, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Apr. 30, 1993, Ser. No. 55,676
Claims priority, application Japan, Apr. 30, 1992, 4-111087
Int. Cl.[5] G04C *11/00, 13/00*; H04J *3/06*
U.S. Cl. 368—46 11 Claims

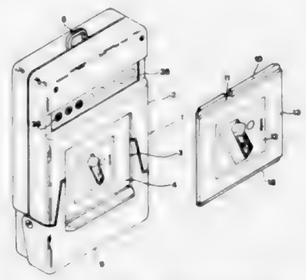
1. A clock supply apparatus provided with a plurality of duplexed clock supply routes which receive a single master clock at a clock receiver unit, generate a system clock duplexed to a 0-system and a 1-system, pair said 0-system and 1-system system clocks, and supply the same to each of the transmission units of a plurality of line systems; multistage clock selection units which are hierarchically inserted into said duplexed clock supply routes from the aforementioned clock receiver unit to said transmission units and perform the aforementioned alternate selection of the 0-system or 1-system; and system-selection units which control the aforementioned alternate selection of the 0-system or 1-system with respect to said clock selection units, wherein

the aforementioned system-selection unit is duplexed to a



0-system system-selection unit and a 1-system system-selection unit and, at the same time, a system switching command unit instructing which of these system-selection units is to be selected is provided.

5,327,403
TIME INDICATING DEVICE
Anders Bond, Sägvägen 4, S-776 35 Hedemora, Sweden
Filed Oct. 2, 1992, Ser. No. 955,665
Claims priority, application Sweden, Oct. 9, 1991, 9102917
Int. Cl.[5] G04F *3/00*
U.S. Cl. 368—107 10 Claims



1. A device for indicating a time remaining for an occurrence, the device comprising:

a clock for indicating time;

informing means for setting a time for an occurrence;

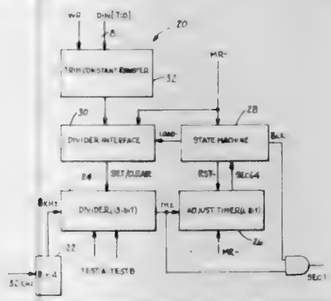
comparing means communicating with the clock and the informing means for continuously determining the difference between the indicated time of the clock and the time for the occurrence of the informing means, the comparing means dividing the difference into time increments remaining until the occurrence takes place;

said informing means comprising a card having markings on a side of the card for indicating a time for an occurrence and means for reading the time for the occurrence and sending the time for the occurrence to the comparing means, said card having a clock-face-like appearance, and the markings comprising a plurality of hour positions, a plurality of minute positions, an a.m. position and a p.m. position, the informing means also including reading means for optically reading said markings on the card;

displaying means communicating with the comparing means for displaying the time increments remaining until the time for the occurrence has been reached, the displaying means displaying a number of mutually spaced markings corresponding to a number of time increments remaining until the occurrence takes place, the displaying means further comprising a plurality of light emitting members, and including control means for controlling a switching on and a switching off of the light emitting members of the displaying means depending on the remaining time increments until the occurrence takes place, said control means being arranged to control the displaying means in order to activate a number of light emitting members corresponding to a number of time increments remaining until the occurrence takes place, said displaying means being adapted to continuously indicate the number of time increments remaining until said occurrence takes place, the displaying means performing a countdown each time a time increment expires; and

a housing for containing the clock, informing means, comparing means and displaying means, the housing having means for receiving and retaining said card such that the markings on the side of the card are directed inwardly towards an interior of the housing and an other side of the card is directed outwardly from the housing, said other side being adapted to receive a symbol for representing said occurrence, said means for receiving and retaining said card comprising a recess in said housing for receiving, engaging and holding at least one end of said card, and a frame part movably mounted to said housing for holding an opposite end of said card in said recess in a first position of said frame part, and for releasing said opposite end of said card and moving said card out of said recess in a second position of said frame part.

5,327,404
ON-CHIP FREQUENCY TRIMMING METHOD FOR REAL-TIME CLOCK
James B. Nolan, Phoenix, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Nov. 27, 1990, Ser. No. 619,146
Int. Cl.[5] G04B *18/00*
U.S. Cl. 368—201 18 Claims



1. Apparatus for adjusting the frequency of a device comprising:

trim constant register means for storing an amount and a direction of correction to be affected to the frequency of a real-time clock;

divider interface means directly connected to an output of said trim constant register means for providing an output signal dependent upon the output of said trim constant register means;

means for dividing the frequency of an incoming signal to the apparatus coupled to the output signal of said divider interface means, said dividing means being separated from said trim constant register means by said divider interface means;

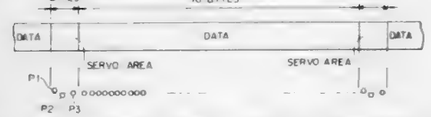
timer means responsive to a signal produced by said dividing means; and

state machine means coupled to said divider interface means for executing at least one of a first sequence of states for applying a signal representation of a stored amount of correction designating a slow correction from said trim constant register means to said divider interface means in a first manner that slows said frequency of said real-time clock in response to application of said direction of correction from said trim constant register means to said state machine means and a second sequence of states for applying a signal representation of a stored amount of correction designating a fast correction from said trim constant register means to said divider interface means in a second manner that accelerates said frequency of said real-time clock in response to application of said direction of correction from said trim constant register means to said state machine means, said state machine means being actuated by a direct connection with said timer means, said output signal of said divider interface means varying the output frequency of said dividing means in response to said application of said stored amount of correction in at least one of said first manner and said second manner.

5,327,405

Patent Not Issued For This Number

5,327,406
DATA RECORDING METHOD AND DATA RECORDING MEDIUM
Yoichiro Sako, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 2, 1992, Ser. No. 862,453
Claims priority, application Japan, Apr. 5, 1991, 3-100385
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 8 Claims



1. A data recording medium capable of recording data of a first data format in which one sector comprises a first data amount and data of a second data format in which one sector comprises a second data amount,

wherein a common divisor of said first data amount and said second data amount is selected to be a data amount of an address unit and an address is preliminarily recorded for each address unit.

5,327,407
TRACKING CONTROL APPARATUS FOR GENERATING SAWTOOTH TRACKING CONTROL SIGNAL FROM SINUSOIDAL TRACKING ERROR SIGNAL
Motoyuki Suzuki; Yoshio Suzuki, both of Yokohama, and Yukio Fukui, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 7, 1992, Ser. No. 832,406
Claims priority, application Japan, Feb. 7, 1991, 3-016336
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.25 10 Claims

1. A tracking control apparatus including an information recording and reproducing medium having tracks for recording and reproducing information by a light beam, comprising:

signal generation means for generating a signal proportional to a displacement between the light beam and a target track form a signal indicating a positioning error between the light beam and the target track and a signal indicating whether the light beam is on the target track or off the target track, in which the signal output form said signal

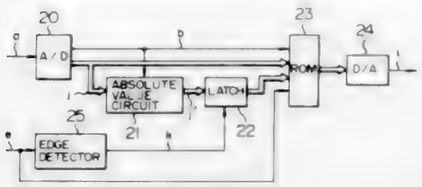
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generation means is a control signal used in tracking control means such that the light beam traces the target track and is moved transversely to the tracks of said information recording and reproducing medium;

wherein said signal generation means includes:

analog/digital conversion means for digitizing the signal indicating the positioning error between the light beam and the target track;

amplitude detection means for detecting an amplitude of the



signal indicating the positioning error between the light beam and the target track;

memory means for receiving an output signal from said analog/digital conversion means, an output signal from said amplitude detection means, and the signal indicating whether the light beam is on the target track or off the target track thereby to output a stored displacement of the light beam relative to the target track; and

digital/analog conversion means for converting an output from said memory means into an analog signal

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5,327,408

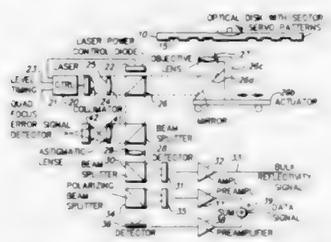
OPTICAL DISK WITH SECTOR SERVO PATTERNS COMPENSATING FOR VARIATIONS IN PATTERN SIZE AND/OR RADIAL VELOCITY

Karl A. Belser, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1990, Ser. No. 579,434

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.26 **19 Claims**



1. In an optical storage system, the combination of:

an optical storage disk that has a plurality of recording tracks;

means including laser means for directing a spot of coherent light at selectable tracks on the disk during rotation of the disk,

said optical disk being divided into a plurality of circumferentially spaced sectors numbered in sequence, said sectors having imprinted servo patterns, each even-numbered sector comprising a plurality of features in the form of depressions or embossments constituting a permutation of the arrangement of such features in intervening odd-numbered sectors, said features being arranged in a preselected spot position sensing pattern defined in part by edges offset circumferentially with respect to each other and offset radially from each other by a preselected distance that is chosen to optimize linearity of a track error signal for a preselected size of said spot and is independent of the pitch of said tracks;

a single photodetector for sensing, during rotation of the disk, the change in amplitude of light reflected from the disk as the spot passes over one of the features for generating a position sensing signal corresponding to the pattern; and

means for generating, from the light reflected, at least three phases of the position sensing signal, each of which phases is determined by said edges so as to cause the track error signal to be substantially linear within a desired range to either side of a point at which said track error signal changes polarity.

5,327,409

MAGNETO-OPTICAL DISC SYSTEM AND MAGNETO-OPTICAL DISC

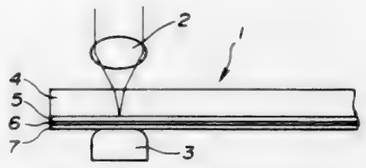
Itaru Suzuki, Miyagi; Hajima Yano, Kanagawa; Hiroyuki Wakasugi, and Kaoru Nakajima, both of Miyagi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 951,849

Claims priority, application Japan, Sep. 30, 1991, 3-278628

Int. Cl.[5] G11B *7/00*; G01J *1/20*

U.S. Cl. 369—44.26 **2 Claims**



1. A magneto-optical disc system, comprising a magneto-optical disc having a magneto-optical recording layer on one major surface thereof, with a protection film having a projection formed on said magneto-optical recording layer, and an optical system having a focus servo mechanism arranged on the other surface of the magneto-optical disc, characterized in that

the focus servo mechanism of the optical system satisfies the following formula 1:

$$\frac{2hV_x^2}{r^2\left(1+\frac{1}{4}\cdot\frac{m_D}{m}\right)} < 4\pi^2\cdot y\cdot 10^{-5}\cdot f_c^2 \qquad \text{[Formula 1]}$$

h: height of the projection on the protection film surface (m)

r: radius of the projection on the protection film surface (m)

m_D: mass of the magneto-optical disc (kg)

m: mass of the magnetic head (kg)

V_X: linear-velocity (m/second) of the focus servo mechanism relative to the disc

fc: servo frequency (Hz)

y: focal depth of the object lens (μm).

5,327,410

DIRECTION-DETERMINATION LOGIC AS FOR A SIGNAL PICKUP IN RECORDED SIGNAL RECOVERY APPARATUS

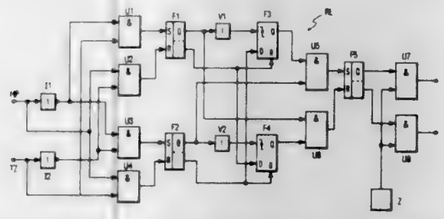
Günter Gleim; Friedrich Füldner, and Bernd Rekla, all of VS-Villingen-Schwenningen, Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villengen-Schwenningen

Filed Apr. 21, 1992, Ser. No. 871,445

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1989, 3932832; PCT Int'l Appl., Sep. 20, 1990, 90/01594

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.28 **8 Claims**



1. In apparatus for recovering signal from a recorded medium, circuitry to control the guidance of a detection device along tracks of said recorded medium comprising:

a source of bilevel tracking error signal;

a source of a bilevel representation of the envelope of signal recovered from said recorded medium;

a source of signal indicating when said detection device crosses said tracks;

logic circuitry, responsive to said bilevel tracking error signal and said bilevel representation of the envelope, for generating a direction signal having first and second states for indicating the direction of track crossings of said detection device, said logic circuitry arranged to detect the direction of track crossings only when track crossings occur at a rate less than a predetermined rate, and to maintain the one of said first and second states last exhibited when said rate of track crossings exceeded said predetermined rate, said logic circuitry including;

first circuitry for producing a signal representative of the portions of said bilevel representation of the envelope when transitions of said bilevel representation of the envelope alternate with transitions of said bilevel tracking error signal;

second circuitry for producing a signal representative of the portions of said bilevel tracking error signal when occurrences of transitions of said bilevel representation of the envelope alternate with occurrences of transitions of said bilevel tracking error signal; and

a bistable circuit responsive to said signal representative of portions of said bilevel tracking error signal and said signal representative of the portions of said bilevel representation of the envelope for producing said direction signal.

5,327,411

WRITE CONTROL METHOD AND APPARATUS FOR WRITING OPTICAL DISK DATA

Seiichi Iwasa, Sagamihara; Nagaki Koshino, Yokohama; Kenichi Utsumi, Tama, and Masahiro Nakada, Atsugi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 492,899, Mar. 13, 1990. This application Sep. 29, 1992, Ser. No. 953,188

Claims priority, application Japan, Mar. 20, 1989, 1-68355; Dec. 8, 1989, 1-319290

Int. Cl.[5] G11B *7/007, 21/10*

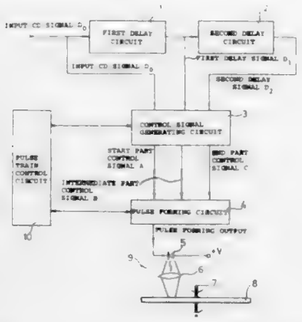
U.S. Cl. 369—59 **28 Claims**

1. A write control method for writing data represented by pit length on an optical disk medium using a laser in accordance with a write signal that includes mark signal parts each having a first length and space signal parts each having a second length, comprising the steps of:

(a) converting the mark signal parts to pulses;

(b) generating from the pulses a series of pulse trains which respectively correspond to the first lengths of the mark signal parts;

(c) recognizing the second length of one of the space signal parts immediately before one of the mark signal parts in



real time, at an end of the one of the space signal parts, to produce a recognition result;

(d) controlling at least one of a length and an amplitude of each of the pulse trains in accordance with the recognition result obtained in said step (c); and

(e) writing the data to the optical disk medium by applying successively the pulse trains controlled in step (d) to the laser.

5,327,412

CONTINUOUS PLAYING APPARATUS FOR USE IN DISC PLAYER

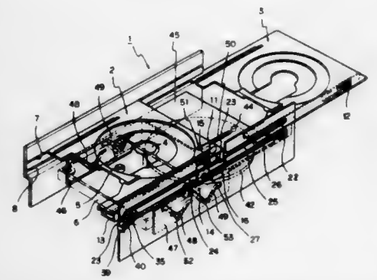
Chung G. Lee, Suweon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 30, 1991, Ser. No. 767,641

Claims priority, application Rep. of Korea, Nov. 12, 1990, 90-18262

Int. Cl.[5] G11B *17/08*

U.S. Cl. 369—75.2 **13 Claims**



1. A continuous playing apparatus in a disc player for playing a first and a second disc, comprising:

a housing;

first and second cartridges having first and second gears, for seating the first and second discs;

horizontal moving means alternately engaging said first and second gears, for horizontally and alternately moving said first and second cartridges, said first and second cartridges being spaced horizontally apart from each other and movably mounted on a first side of an upper portion of said

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housing so as to insert and eject the first and second discs to and from said housing, respectively;

a deck with a turntable and a pickup means mounted on the deck, and

lifting and lowering means for lifting and lowering said deck towards and away from the first and second cartridges;

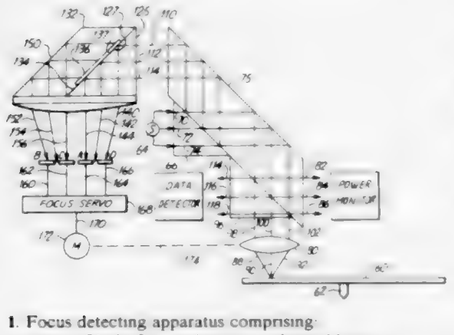
said deck loading and unloading the first and second discs on the turntable and said pickup means being mounted so as to play the first and second discs continuously.

5,327,413

RUGGEDIZED HOMOGENEOUS THIN DIELECTRIC FILM FOCUS SENSOR

Bernard S. Fritz, Eagan, Minn., assignor to Honeywell, Minneapolis, Minn.

Filed Oct. 1, 1992, Ser. No. 955,331
Int. Cl.[5] G11B *7/135*
U.S. Cl. 369—112 **7 Claims**



1. Focus detecting apparatus comprising:

a source of light for producing a polarized beam;

beam splitter means receiving the polarized beam and transmitting a part thereof to a first reflecting surface for reflection back to the beam splitter means to produce first and second beam portions, the first beam portion being reflected for use by a power monitor and the second portion being transmitted through lens means to a recording medium, the recording medium reflecting light back through the lens means, the lens means operable to collimate the reflected light from the recording medium when the recording medium is located a first distance from the lens means, the lens means transmitting the reflected light to the beam splitter means to produce third and fourth beam portions, the third beam portion being reflected for use by a data detector and the fourth portion being reflected in a first path;

first means having a first index of refraction positioned in the first path to receive light in the fourth portion from the beam splitter means, said first means having a first surface positioned at a first angle with respect to light in the fourth portion received from the lens means;

second means having the first index of refraction to receive the light passing through the first surface and having a second surface parallel to but displaced from the first surface by a medium having a second index of refraction, the first and second means being positioned so that the incidence angle at the first surface provides substantially total internal reflection;

first and second detector means for receiving the light reflected from the first surface and producing first and second outputs in accordance therewith, said first and second detector means for receiving substantially the same amount of light when light from the lens means is collimated but different amounts of light when not collimated;

third and fourth detector means for receiving the light transmitting through the first and second surfaces and producing third and fourth outputs in accordance therewith, the third and fourth detector means receiving substantially the same amount of light when light from the lens means is collimated but different amounts of light when not collimated; and

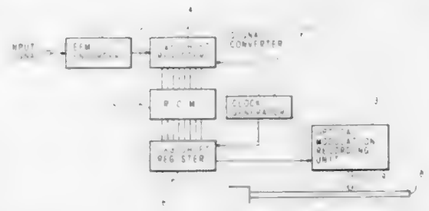
signal receiving means connected to the first, second, third and fourth detectors to receive the first, second, third and fourth outputs to provide a resultant output indicative of the receipt of light in different amounts by the first and second detectors and by the third and fourth detectors as an indication that the object is at other than the predetermined distance from the lens means.

5,327,414

SIGNAL RECORDING METHOD FOR OPTICAL DISK AND APPARATUS THEREFOR

Masami Makino, and Satoshi Sumi, both of Gifu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 493,648, Mar. 15, 1990, abandoned. This application Oct. 15, 1993, Ser. No. 136,617
Claims priority, application Japan, Mar. 16, 1989, 1-65503
Int. Cl.[5] G11B *7/00, 5/09*
U.S. Cl. 369—116 **12 Claims**



1. A signal recording method for an optical disk, comprising the steps of:

irradiating a laser beam on a rotating optical disk for an irradiation duration corresponding to a length of one value of a binary signal to be recorded;

non-irradiating of the laser beam on said optical disk for a turn-off duration corresponding to a length of the other value of the binary signal; and

forming a mark with the length corresponding to the irradiation duration and the turn-off duration of the laser beam on said optical disk so as to record said binary signal,

wherein the irradiation duration and turn-off duration are changes according to at least one of the length of corresponding said one value and the length of corresponding said other value of the binary signal which have been converted based on a conversion table, said conversion table including a converted value representative of a duration of an outputted turn-off signal, and

wherein said step of forming a mark comprises the steps of:

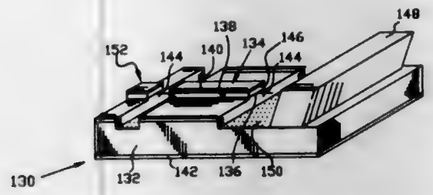
receiving and storing said binary signal into a storing means and outputting said binary signal from said storing means, compensating, based on said conversion table, said outputted binary signal dependent on the length of one of said value and said other value of said received binary signal, and storing a converted signal into another storing means, outputting said converted signal once stored therein into an optical modulation recording unit, and forming said mark on said optical disk based on said converted signal.

5,327,415

INTEGRATED LIGHT DEFLECTOR AND METHOD OF FABRICATION THEREFOR

Peter Vettiger, and Otto Voegeli, both of Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 820,471, Jan. 14, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 173,720
Int. Cl.[5] G02B *6/32*
U.S. Cl. 369—121 **6 Claims**



1. An optical storage system, comprising:

means for rotating an optical disk about a drive axis, said optical disk having information encoded on a surface thereof;

a semi-conductor laser light source of emitting a light beam when energized, said light source being formed from a large scale laser integration device, said device including:

an integral multilayered substrate having a first lower substrate surface, a second upper substrate surface parallel to said first substrate surface, and a wall integrally formed with and extending perpendicularly between said first substrate surface and said second substrate surface, said wall defining a laser mirror face through which the light beam of said laser light source is emitted above said first substrate surface and below said second substrate surface;

at least one free standing die cast deflector integrally formed on and extending from said first substrate surface, said free standing deflector being spaced from said laser mirror face to receive the light beam of said laser light source;

said deflector having a first deflector face, an upper surface and a rear surface;

said deflector face providing means for directing the light beam emitted by said semi-conductor laser light source to the surface of said optical disk;

detector means for receiving said light beam after it has been deflected by the optical disk for generating an output signal representative of the information encoded on the optical disk; and

information recovery means for processing the output signal and generating data signals representative of the information encoded on the surface optical media.

5,327,416

SURFACE SELECTION MECHANISM FOR OPTICAL STORAGE SYSTEM

Neville K. Lee, 59 Spywood Rd., Sherborn, Mass. 01770; Amit Jain, 64 Nashoba Dr., Marlborough, Mass. 01752, and Alina L. Gutierrez, 32 Marlboro St., Hudson, Mass. 01749

Filed Feb. 22, 1993, Ser. No. 20,512
Int. Cl.[5] G11B *7/00;* **G02B** *26/08*
U.S. Cl. 369—199 **3 Claims**

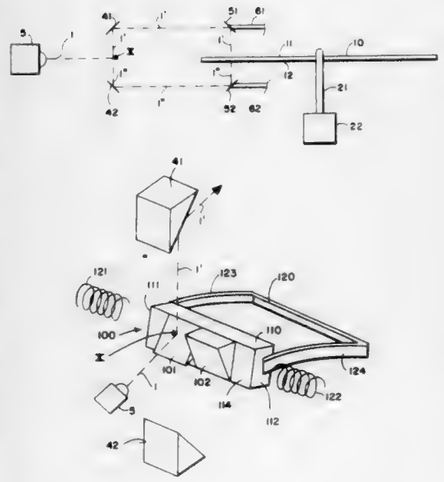
1. An apparatus for selectively directing a light beam at a first or a second recording surface of an optical storage disc, comprising:

a linearly movable member positioned in the path of the light beam;

first and second mirrors mounted side by side on said member, said mirrors being disposed at right angles to each other;

means for linearly moving said member to position said first mirror or said second mirror in the path of the light beam, one of the first and second mirrors being positioned when brought into the path of said light beam to reflect the beam of light from such first mirror along a path extending in a direction laterally of the first recording surface of said optical disc, the other of the first and second mirrors being positioned when brought into the path of said light beam to reflect the beam of light from such second mirror along a path extending in a direction laterally of the second recording surface of said optical storage disc;

first and second directing mirrors being in spaced apart relationship with said first and second mirrors and being in spaced apart relationship with each other, one of said directing mirrors being located both radially outwardly of said optical storage disc and laterally outwardly of said first recording Surface of such disc, the other one of said directing mirrors being located both radially outwardly of said optical storage disc and laterally outwardly of said second recording surface of such disc, one of said first and



second directing mirrors being positioned to receive the beam of light reflected from the one of the first and second mirrors and to reflect the received beam to travel along a path extending generally parallel to and spaced from said first recording surface, the other of said first and second directing mirrors being positioned to receive the beam of light reflected from the other of the first and second mirrors and to reflect the beam to travel along a path extending generally parallel to and spaced from said second recording surface; and

first and second reflecting mirrors, one of said first and second reflecting mirrors positioned to reflect the beam of light when traveling said path extending generally parallel to and spaced from said first recording surface to travel along a path normal to such recording surface, the other of said first and second reflecting mirrors positioned to reflect the beam of light when traveling along said path extending generally parallel to and spaced from said second recording surface to travel along a path normal to such recording surface.

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5,327,417

OPTICAL DISK DRIVE AND READ/WRITE APPARATUS

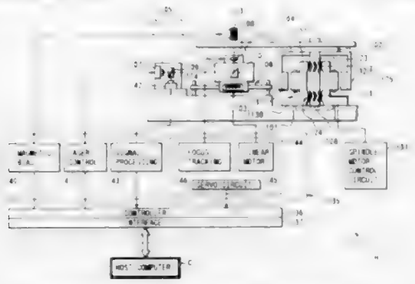
Katsuhiko Tanaka; Hideki Okatani; Michihiro Kuramochi, and Tetsuji Aoyagi, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 952,691

Claims priority, application Japan, Sep. 27, 1991, 3-248981; Dec. 4, 1991, 3-320499; Dec. 13, 1991, 3-330497; Dec. 13, 1991, 3-330498; Feb. 28, 1992, 4-043925; Feb. 28, 1992, 4-043928; Sep. 9, 1992, 4-240956

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—219 18 Claims



1. An optical disk driving apparatus comprising:

a driving means for rotating a magneto-optical disk held on a turntable;

a beam polarizing means for polarizing a laser beam emitted from a laser source in a direction toward a magnetized information area;

an optical head member having an objective lens for converging said polarized laser beam on said information area, said optical head member being opposed to said optical disk; and

a linear motor mechanism for moving said optical head member along the radial direction of said disk to a predetermined position of said information area of said optical disk,

wherein said optical head member comprises at least two optical heads facing on at least one side of said disk,

two optical heads facing on at least one side of said disk,

said optical heads being disposed on the circumference of a circle and having an equiangular interval,

said optical heads operative to independently perform an erasure, recording and reproduction of data from and in said disk through said optical heads, and said optical heads having the same composition, respectively;

further wherein the optical axis of the objective lens is moved along the radial direction of said disk by said linear motor mechanism so that the optical axis of the objective lens is on a center line extending on the axis of rotation of said disk

5,327,418

CIRCUIT ARRANGEMENT FOR CENTRALLY CONTROLLED TELECOMMUNICATIONS EXCHANGES

Richard Schlag, and Franz Schroeder, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 428,138, Oct. 27, 1989, abandoned.

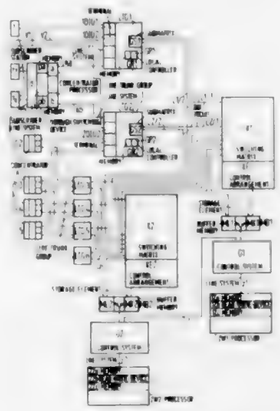
This application Nov. 16, 1992, Ser. No. 977,723

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836800; Feb. 21, 1989, 3905296

The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—58.1 14 Claims



1. A circuit arrangement for centrally controlled telecommunications exchanges, including PCM-TDM exchanges wherein are provided, in duplicate, a central switching matrix used for through-connection and a program-controlled central processor for standby operation which serves at least to control said matrix and to process the switching signals that are required for this purpose, and wherein a plurality of local line trunk groups are each equipped with a submatrix for the external connection of trunk and/or subscriber lines and with a local programmable control device to receive said switching signals from said lines, to preprocess said switching signals and transmit them to said program-controlled central processor and to transmit switching signals over these lines, and wherein, the respective submatrix in each of said line trunk groups, is connected internally group by group, separately over two groups of link circuits to switching matrix lines belonging, on the one hand, to a first, and on the other hand, to a second of the two switching matrices that are provided in parallel, and wherein, for a data exchange between the local programmable control device on the one hand and an operational or pre-operational part of the program-controlled processor, as the case may be, on the other, which serves for the switching signal operations and for the transmission of program and switching software, data connections for each local programmable control device are brought by the processor into operational condition to the local programmable control devices over one of the link circuits and through the switching matrix assigned thereto or retained therein, and wherein concentrators equipped with concentrator processors are connected, in their higher ranking switching center, to the submatrices of at least two line trunk groups, in order to perform their connecting process through one or the other of the line trunk groups, characterized in that

two categories of line trunk groups are formed;

each concentrator is connected to a line trunk group in the first category and line trunk group in the second category;

to load the local programmable control devices with program information and/or line data and, when necessary, to load each of said concentrator processors with connecting data in a similar manner,

firstly, the two individual connections for each line trunk group to the two switching matrices are reduced to one connection, such that the line trunk groups in the first category remain connected to the first two switching matrix and the line trunk groups in the second category to the second switching matrix, and the local programmable control devices associated with the line trunk groups in the first and second categories remain connected, through the data, to a first processor corresponding to the first switching matrix and a second processor corresponding to the second switching matrix, respectively;

secondly, further connecting procedures continue to be carried out with the aid of the line trunk groups belonging to the first category, whose local programmable control devices are connected to the first processor, which processor is still conducting the operation at the time; and

thirdly, the second processor performs the loading procedures with the local programmable control devices of the line trunk groups belonging to another (for example, the second) category and that, after the loading is completed, firstly, the local programmable control devices that have been loaded by the process are made accessible to the concentrator processors by the second processor, for the transmission of connecting data for new connections, and, secondly, connecting procedures for new connections are performed thereafter by the second processor.

5,327,419

COMMUNICATION SYSTEM HAVING A MULTIPROCESSOR SYSTEM SERVING THE PURPOSE OF CENTRAL CONTROL

Mark W. Clark; Wolfgang Siegmund, and Hans-Dieter Wunderlich, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

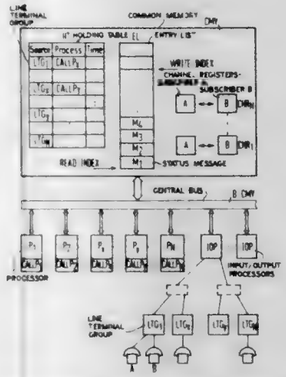
Filed Jul. 10, 1991, Ser. No. 727,977

Claims priority, application European Pat. Off., Jul. 16, 1990, 90113584

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] H04J *3/12*

U.S. Cl. 370—58.2 15 Claims



1. In a communication system having a plurality of terminal equipment connected via a plurality of line terminal groups as well as a switching matrix network for through-connection of calls, at least one terminal equipment of the plurality of terminal equipment and one line terminal group of the plurality of line terminal groups forming a source, and having a multiprocessor system for central control, the multiprocessor system having a central system bus to which a plurality of processors are connected, one of said plurality of processors operatively connecting said one line terminal group to said central system bus a memory system also connected to the central system bus and shared in common by all units of the multiprocessor system, said memory system having at least one entry list for the set up/administration of connections of the terminal equipment, a plurality of status messages relevant to the connections being intermediately stored in said entry list for further processing by a plurality of processes being executed on the plurality of processors, respectively, a method comprising the steps of: handling of a first status message of the plurality of status messages stored in the entry list and deriving from the source by a first process of the plurality of processes executed on a respective first processor of the plurality of processors being made dependent of a second process of the plurality of processes handling a second status message of the plurality of status messages and being executed on a second processor of the plurality of processors when both the first and second status messages derive from the same source; the second process handling the second status message storing an identifier of the source of the second message in a holding table created in the common memory system before a beginning of processing and the second process not in turn erasing the identifier until a conclusion of the handling of the second message; and the first process only beginning to handle the first status message when no entry of the identifier of the source due to a different process of the plurality of processes exists in the holding table at this time.

5,327,420

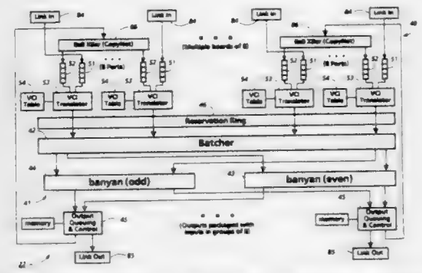
METHOD FOR BUILDING MULTI-BIT PARALLEL BATCHER/BANYAN NETWORKS

Joseph B. Lyles, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 20, 1992, Ser. No. 887,163

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60 2 Claims



1. In a switch having a non-blocking, self-routing switching fabric for routing packets from a plurality of input ports to a plurality of output ports in accordance with a virtual circuit designation and an output port address that is carried by each packet, with said output port address for any given packet being specified by the first few bits of a switch header that is appended to said packet; said switching fabric being composed of a plurality of parallel connected single bit wide sorting networks that are coupled to a plurality of parallel connected routing networks for providing multi-bit wide data paths between said input ports and said output ports, with each of said sorting networks begin coupled to a plurality of said routing networks for giving plural input ports simultaneous access to each of said output ports; the address bits for each of said packets being transmitted in bit parallel on all bits of said multi-bit wide data path, together with a prepended stopper ID that distinguishes said packet from any other packet that is simultaneously routed to the same output port of said switching fabric, thereby preventing packets from different sources from being intermingled at said output ports.

5,327,421

APPARATUS FOR INTERFACING BETWEEN TELECOMMUNICATIONS CALL SIGNALS AND BROADBAND SIGNALS

Thomas L. Hiller, Glen Ellyn; James J. Phelan, Downers Grove, and Meyer J. Zola, Oak Park, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 6, 1992, Ser. No. 972,786

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 13 Claims

1. In a telecommunications switching system, apparatus comprising:

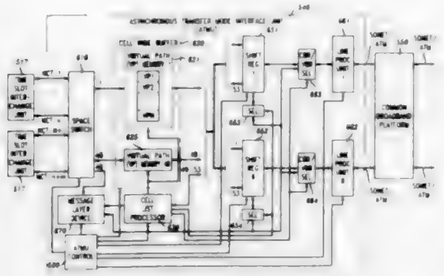
means for receiving a plurality of synchronous pulse code modulated (PCM) signals, each signal for carrying a plurality of PCM channels;

means for storing individual bytes of said PCM signals in selectable memory locations of a plurality of buffer memo-

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nies, each buffer memory for storing a plurality of said bytes; and

means for adding header data to outputs of ones of said buffer memories and for forming a plurality of composite packets, each composite packet comprising bytes from a plurality of PCM channels from a plurality of said PCM signals; and



means for transmitting periodically ones of said plurality of composite packets in output signals to a unit for switching packets of said output signals;

wherein said selectable memory locations are selected to group each of a plurality of bytes of channels destined for a common switching system into one of said composite packets.

5,327,422

CONTROLLABLE MULTIPLEXER FOR A DIGITAL SWITCH

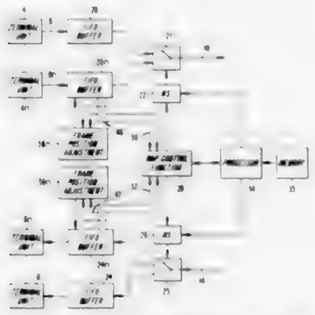
Erik O. Abefelt, Vällingby; Karl A. Bjenne, Huddinge, and Carl P. B. Lundh, Farsta, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 15, 1992, Ser. No. 990,506

Claims priority, application Sweden, Dec. 16, 1991, 9103715-0

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—63 **3 Claims**



1. A multiplexer for a digital switch, the multiplexer controlling data flow organized into frames and time slots, the data flow being directed from a first set of terminal units to a second set of terminal units, comprising.

a first multiplexer stage controlled by a first control memory, the first multiplexer stage being coupled between the first terminal units and the digital switch via a plurality of transmission links and having a first FIFO buffer means for forwarding the time slots from the first terminal units to the switch in an order determined by the first control memory;

a second multiplexer stage, controlled by a second control memory, the second multiplexer stage being coupled between said second terminal units and the digital switch via a plurality of transmission links and having a second FIFO buffer means for forwarding the time slots from the switch to the second terminal units in an order determined by the second control memory, wherein the first FIFO buffer means and the second FIFO buffer means provide indications whether the first FIFO buffer means and the second FIFO buffer means are empty or full, and a map control function is implemented when the empty or full indications are present in order to provide mapping information; and

a processor for controlling the first control memory and the second control memory; wherein the processor includes a memory which is used to check the mapping information in the first control memory and the second control memory, and the map control function is implemented when there is a disagreement between the memory and the first control memory or the second control memory.

5,327,423

METHOD AND A NETWORK FOR TRANSMITTING MESSAGES IN FREQUENCY CHANNELS

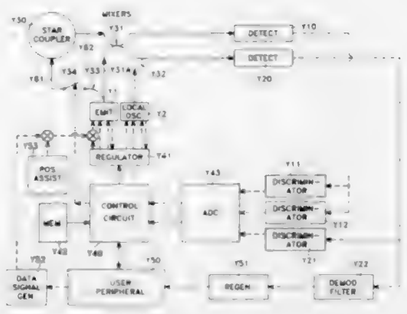
Olivier Audouin, Savigny sur Orge; Jean-Michel Gabriagues, le Val Saint-Germain, and Michel Sotom, Villebon sur Yvette, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jan. 24, 1992, Ser. No. 825,156

Claims priority, application France, Jan. 24, 1991, 91 00793

Int. Cl.[5] H04J *14/02*

U.S. Cl. 370—76 **4 Claims**



1. A method of transmitting data between external user peripherals by means of a transmission network including terminals and at least some common transmission lines which are common to all of the terminals, said data being separate from signalling transmitted between the terminals, said terminals being connected firstly to one another by means of said common transmission lines and secondly to respective external user peripherals whereby said terminals constitute ports via which said external user peripherals access said network, said method comprising the steps of:

forming individual messages from said data, each message to be transmitted between two respective user peripherals,

classifying said individual messages into heavyweight messages and lightweight messages, a heavyweight message requiring transmission at a higher data rate and for a longer call duration than a lightweight message, providing a plurality of frequency channels over said common transmission lines,

designating some of said plurality of frequency channels as respective message channels and designating another of said frequency channels as a shared channel,

tuning the two respective terminals between which each individual heavyweight message is to be transmitted to a same respective message channel throughout the duration of transmission of the heavyweight message,

transmitting the heavyweight messages in the respective message channels,

tuning the terminals to the shared channel when they are not tuned to a message channel, and

transmitting the lightweight messages in said shared channel.

5,327,424

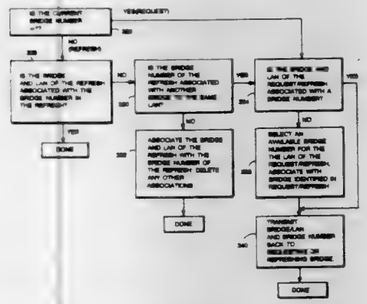
AUTOMATICALLY CONFIGURING PARALLEL BRIDGE NUMBERS

Radia J. Perlman, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 7, 1992, Ser. No. 864,846

Int. Cl.[5] H04L *12/46*

U.S. Cl. 370—85.13 **14 Claims**



1. A method of selecting a parallel bridge number for a given bridge connecting a first and second LAN, in a network comprised of LANs and bridges connected between the LANs wherein two or more bridges connected between the same LANs are distinguished by associating said bridges with parallel bridge numbers, comprising

storing a database comprising information that links identifiers of bridges connected to said first LAN to identifiers of other LANs to which said bridges are connected and to parallel bridge numbers assigned to said bridges,

transmitting, from said given bridge to said database, a message identifying said given bridge and said second LAN, and

selecting a parallel bridge number for said given bridge which has not been associated in said database with any bridge connected to said second LAN other than said given bridge.

5,327,425

NETWORK SYNCHRONIZATION CONTROL SYSTEM AND CONTROL METHOD

Tokuhiro Niwa, Ebina; Masashi Fukuda, Hadano; Ryouichi Matusita, Yokohama; Tutomu Koita, Hadano; Ihei Kajiya, Ebina, and Hiroshi Satou, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Computer Engineering Co., Ltd., Hadano and Hitachi Software Engineering Co., Ltd., Yokohama, all of Japan

Filed Sep. 10, 1992, Ser. No. 943,435

Claims priority, application Japan, Sep. 12, 1991, 3-233412

Int. Cl.[5] H04L *12/40;* **H04J** *3/06*

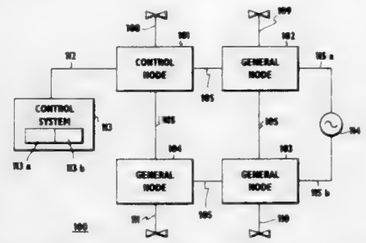
U.S. Cl. 370—85.1 **11 Claims**

1. In a network having one or more nodes connected to a transmission line and performing communication synchronously with an external network, a network synchronization control system comprising:

a) said one or more nodes each having a clock signal detection means for controlling a synchronous exchange of information between said external network and said one or more nodes in accordance with external network clock signal information received from said transmission line;

b) control node means comprising a first of said one or more nodes for controlling the exchange of control information with the remainder of said one or more nodes on said transmission line; and

c) transmission node means comprising a second of said one or more nodes and having an external network clock



signal receiving means for receiving clock signals from said external network, and a clock signal transmission control means responsive to said control information received from said control node means on said transmission line for generating said external network clock signal information based upon said clock signals and transmitting said external network clock signal information on said transmission line for said network.

5,327,426

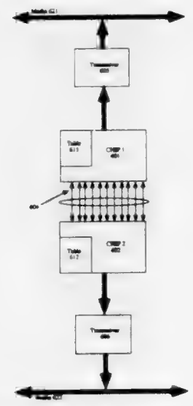
METHOD AND APPARATUS FOR PREVENTING UNNECESSARY RETRANSMISSION OF MESSAGES IN A NETWORKED MESSAGING SYSTEM

Robert A. Dolin, Jr., Menlo Park; Darron W. Fick, San Jose, and Glen M. Riley, Los Gatos, all of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Filed Sep. 27, 1991, Ser. No. 766,846

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.13 **23 Claims**



13. A networked system comprising:

(a) a first node coupled with a media for transmitting a message onto said media, said message comprising address information, said address information comprising a subnet field, said subnet field representing a value, said first node setting said subnet field to a first value indicating said first node has not yet been assigned to a subnet;

(b) a router node for receiving and retransmitting said mes-

sage, said router node replacing said first value with a second value; and

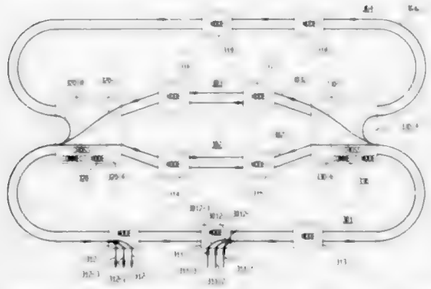
(c) a third node for receiving said retransmitted message

5,327,427

SELF-HEALING MESHED NETWORK USING LOGICAL RING STRUCTURES

Niranjan B. Sandesara, Freehold, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 577,219, Aug. 31, 1990, abandoned.
This application Jun. 22, 1993, Ser. No. 80,992
Int. Cl.[5] H04J 3/02
U.S. Cl. 370—85.14 17 Claims



1. Circuitry for configuring a hybrid ring composed of pairs of unidirectional communication paths and add-drop multiplexer (ADM) nodes, the circuitry comprising

a plurality of hybrid ring segments, each of said segments propagating multiplexed subchannels and operating at a given rate and each of said segments being independent of one another, and

cross-connect nodes terminating each of the ends of said segments, each of said cross-connect nodes including means for routing said subchannels from an incoming one of said segments to an outgoing one of said segments to configure the hybrid ring as a logical ring composed of a cascade of predetermined ones of said segments and preselected ones of said cross-connect nodes so as to couple each of the ADM nodes to the other ADM nodes on the hybrid ring, the circuitry thereby being configured so that the propagation of said multiplexed subchannels over the hybrid ring is uninterrupted by the failure of any one of the ADM nodes, of any one of the paths, or of any one of said cross-connect nodes.

5,327,428

COLLISION-FREE INSERTION AND REMOVAL OF CIRCUIT-SWITCHED CHANNELS IN A PACKET-SWITCHED TRANSMISSION STRUCTURE

Harmen Van As, Langnau am Albis; Wolfram W. Lemppenau, Kilchberg, and Erwin A. Zurfluh, Feldmeilen, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

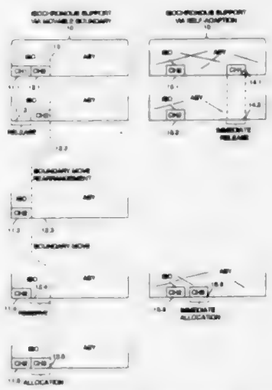
Filed Oct. 7, 1991, Ser. No. 772,892
Claims priority, application European Pat. Off., Apr. 22, 1991, 91810297.1
Int. Cl.[5] H04J 3/24
U.S. Cl. 370—94.2 18 Claims

1. Data transmission method for different classes of traffic with different synchronization and/or delay requirements (multi-media communication), in a network comprising stations and interconnection media which carries information organized into slots of constant size and with predefined framing periods for circuit-switched (CS) transmission, said media carrying asynchronous, synchronous, and circuit-switched slots and signalling traffic, comprising the following steps:

for asynchronous traffic (delay insensitive data traffic) embedding said asynchronous slots between a start-end delimiter pair characterizing and controlling said asynchronous traffic and indicating an address, and, if required, using a first insertion buffer means for delaying or bypassing said synchronous slots in said stations,

for synchronous traffic (delay sensitive data traffic) embedding said synchronous slots between a start/end delimiter pair characterizing and controlling said synchronous traffic and indicating an address, and, if required, using a second insertion buffer means for delaying or bypassing said synchronous slots in said stations,

for signalling traffic, which is inserted on demand, embedding signalling slots between a start/end delimiter pair characterizing and controlling the type of signalling and indicating an address, and delaying or bypassing it, if required, by using a third insertion buffer means,



for circuit-switched traffic embedding circuit-switched slots, having individual channel sizes, between a start/end delimiter pair characterizing and controlling said circuit-switched traffic and containing a channel identifier, said circuit-switched slots being released instantaneously in every framing period by any of the stations as at a free allocatable position, and bypassing said first, second and third insertion buffer means,

such that said circuit-switched traffic is transmitted in said free allocated position, fixed during at least one framing period, and permeated by asynchronous, synchronous and signalling traffic, and that the asynchronous, synchronous and signalling traffic are delayed or bypassed in accordance to a given hierarchy, and that the transmission of traffic is adapted to the current traffic demand by dynamic allocation among said asynchronous, synchronous and signalling traffic.

5,327,429

METHOD OF SEQUENCING SIGNAL PROCESSING IN THE REDUCED RATE COMMUNICATION MODE OF A DIGITAL CELLULAR RADIO SYSTEM

Luc Dartois, Carrieres Sous Poissy; Emmanuel Rousseau, Paris, and Jean-Pierre Guerlin, Le Plessis Bouchard, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 15, 1992, Ser. No. 913,834
Claims priority, application France, Jul. 18, 1991, 91 09089
Int. Cl.[5] H04J 3/12
U.S. Cl. 370—82 28 Claims

1. Method of sequencing signal processing in a digital cellular radio system having a reduced rate communication mode for conveying digitized speech over a communication channel between at least two terminals and a base station, said radio system using multiframes each comprising a sequence of frames, some of said frames being used for conveying digitized speech and being designated as traffic frames, said digitized speech comprising coded blocks each representing a single group of speech samples, each coded block being formed of 2·s sub-blocks, a pth sub-block of a coded block and a (p+s)th sub-block of a preceding coded block being combined in a pth packet conveyed during a pth traffic frame, each said multiframe comprising k groups of 2×s consecutive frames, each of said k groups of 2×s consecutive frames including only s traffic frames, any traffic frame being identified within its respective said multiframe by the expression s·j+p, each of said traffic frames comprising at least two disjoint time slots including a first time slot for a send packet and a second time slot for a receive packet, said method comprising the following steps during each group j of said k groups of 2×s consecutive frames:

during each traffic frame s·j+p, processing a pth receive packet in a respective receive time slot by recovering the pth receive sub-block of a (j+n)th coded receive block and the (p+s)th receive sub-block of a (j+n−1)th coded receive block, and processing a pth send packet in a respective send time slot by combining a pth send sub-block of a (j+n)th coded send block and a (p+s)th send sub-block of a (j+n−1)th coded send block;

during a send period, forming a next (j+n+1)th coded send block from a group of speech samples to be sent; and

during a receive period, recovering a prior (j+n−2)th coded receive block and recovering any corresponding speech samples contained therein,

where

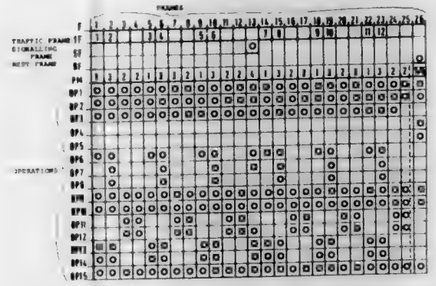
s is a positive integer representative of the number of sub-blocks in a coded block divided by 2,

k is a positive integer representative of the number of coded blocks in a multiframe,

j is a first integer variable $0 \leqq j < k$ representative of the position of a coded block within a multiframe,

n is a second integer variable representative of the rank of the coded send block whose first sub-block is sent on the first frame of said current multiframe, and

p is a third integer variable $0 < p \leqq s$ representative of the position of a sub-block within a coded block.



5,327,430

CIRCUIT ARRANGEMENT FOR BIT RATE ADAPTATION

Ralph Urbansky, Schwaig, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 628,799, Dec. 17, 1990, Pat. No. 5,195,088. This application Dec. 18, 1992, Ser. No. 993,259
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942883
Int. Cl.[5] H04J 3/06
U.S. Cl. 370—84 3 Claims

1. A circuit arrangement for converting the bit rate of a frame structured input signal to a predetermined nominal bit rate, each frame of said input signal including data bits and auxiliary bits; said circuit arrangement comprising:

an elastic store for receiving and storing data bits of the input signal;

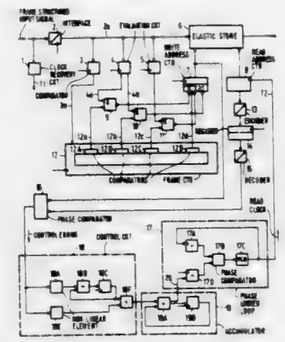
a write address counter for writing data bits of said input signal into said elastic store at the bit rate of said signal, keeping count of the data bits written therein;

a read address counter for reading-out the stored data bits and keeping count thereof, read-out being at a bit rate in accordance with a read clock supplied to said read address counter;

a phase comparator for determining the distance between the counts of said write address counter and said read address counter, and producing a control error signal corresponding to such distance;

a control circuit responsive to said control error signal to produce a frequency control signal;

a transformation circuit for transforming the frequency control signal into a pulse sequence with variable frequency; and



a read clock generating circuit for supplying said read clock to said read address counter substantially at said predetermined nominal bit rate, said read-clock generating circuit comprising an oscillator for receiving said pulse sequence and being controlled thereby to vary the bit rate of the read clock relative to said predetermined nominal bit rate in accordance with said pulse sequence; and

said phase comparator, control circuit, read clock generating circuit and write address circuit constituting a control loop whereby the bit rate of the read clock is controlled so as to rapidly restore the distance between the counts of said write address counter and said read address counter to a desired value in the event of abrupt departures from such desired value due to abrupt changes in the bit rate of said input signal.

5,327,431

METHOD AND APPARATUS FOR SOURCE ROUTING BRIDGING

Theodore Heske, III, Centerville, and Peter J. Kulik, Dayton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 382,605, Jul. 19, 1989, abandoned. This application Jun. 1, 1993, Ser. No. 70,647
Int. Cl.[5] H04L 12/42
U.S. Cl. 370—85.5 5 Claims

1. In a multiple network communication system, a method for determining when to copy frames from a network which are candidates for forwarding through a bridge to another network, comprising the steps of:

defining Segment Numbers which comprise a network number and a bridge number;

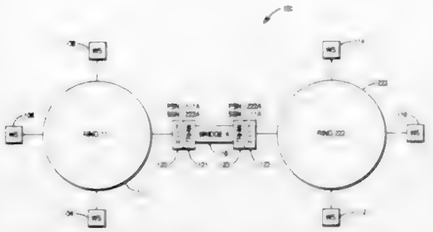
defining at least a Primary Segment Number comprising a primary network number and a bridge number corresponding to each bridge;

defining a Routing Information Field for inclusion in each

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frame comprising a Routing Control Word and at least a Segment Number;

unidirectionally scanning each frame, including the substeps of parsing the frame for the Routing Information Field, reading the Routing Control Word from the Routing Information Field, and parsing through the Segment Numbers in the frame in one direction; and



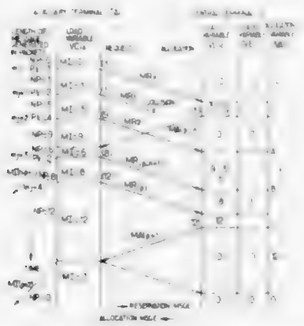
deciding on-the-fly whether to copy a scanned frame by an interfacing Protocol Handler for forwarding through a bridge, including the substeps of contemporaneously comparing said Primary Segment Number with each of said Segment Numbers to achieve a predetermined result, and interpreting the resulting independently of previous comparisons as being a copy or no-copy decision using specific information in a look-up table identified by said Routing Control Word.

5,327,432

PROTOCOL FOR MULTIPLE ACCESS TO A TELECOMMUNICATIONS CHANNEL FROM AUXILIARY TERMINALS BY DIGITIZED INFORMATION MESSAGES AND CORRESPONDING SYSTEM

Tarif Zein Al Abedeen, Toulouse, and Gérard Maral, Goyrans, both of France, assignors to France Telecom, Paris, France

Continuation of Ser. No. 811,648, Dec. 23, 1991, abandoned. This application May 10, 1993, Ser. No. 60,794
Claims priority, application France, Dec. 26, 1990, 90 16269
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—95.3 **12 Claims**



1. A protocol for providing multiple access to a telecommunications channel from auxiliary communication terminals and a central terminal, one of said auxiliary communication terminals being a current auxiliary communication terminal which sends a reservation message to said central terminal and said central terminal sending in turn an allocation message to said current auxiliary communication terminal, said allocation message being related to an information message to be generated by said current auxiliary communication terminal from a plurality of successive elementary information messages to be sent to another one of said auxiliary communication terminals, said current auxiliary communication terminal being thus subjected to successive reception of allocation messages sent by said central terminal, and to transmission of reservation messages to said central terminal and of information messages to said other auxiliary communication terminals, said protocol for said current auxiliary communication terminal comprising:

storing, in said current auxiliary communication terminal, said successive elementary information messages as a set of earlier, not yet transmitted, information messages;

sending to said central terminal at least one of said reservation messages of a first transmission order related to said set of earlier, not yet transmitted, successive elementary information messages, which are stored between the previous instant of reception by said current auxiliary communication terminal of an allocation message of a second transmission order which is lower than said first transmission order and the instant of transmission by said current auxiliary terminal of said at least one of said reservation messages of said first order; and

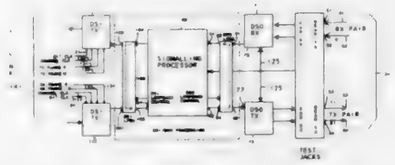
sending to another auxiliary communication terminal an information message of a third transmission order, which is higher than said first transmission order, after said current auxiliary communication terminal receives, from said central terminal, an allocation message of a fourth transmission order, which is higher than said first transmission order and lower than said third transmission order.

5,327,433

DIGITAL TANDEM CHANNEL UNIT INTERFACE FOR TELECOMMUNICATIONS NETWORK

Clifford L. Hall, Huntsville, Ala., assignor to Adtran Corporation, Huntsville, Ala.

Filed Aug. 30, 1991, Ser. No. 752,777
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—100.1 **19 Claims**



10. For use with a telephone communication network containing a digital communication link over which digitized communication signals, including information signals and telephone equipment operation control signals that have been encoded into digital format, are conveyed between stations of said network, and wherein said network includes one or more intermediate stations coupled in said digital communication link, a respective intermediate station having first and second digital communication ports to which respective portions of said digital communication link are coupled, and an intra-station, cross-connect communication path through which incoming digital communication signals received at said first and second ports are interfaced to said second and first ports, respectively, and transmitted therefrom as outgoing digital communication signals, a digital tandem channel unit which provides a digital cross-connect of received digital communication signals between said first and second ports comprising:

an interstation-to-intra-station digital signal interface unit, which is coupled to one of said first and second ports and receives incoming digital communication signals from said digital communications link to which said one of said first and second ports is coupled, provides a pattern of digitally encoded synchronization signals, replaces selected incoming digital communication signals with signals of said pattern of digitally encoded synchronization signals to provide a digitally modified version of said incoming digital communication signals, and transmits the digitally modified version of the incoming digital communication signals over an intra-station digital communications path employed as said intra-station, cross-connect communication path; and

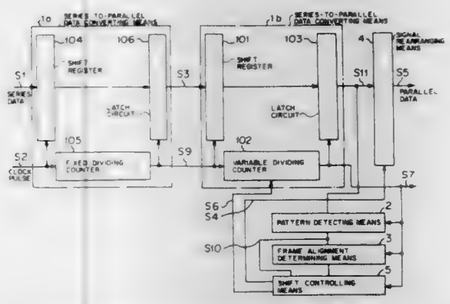
an intra-station-to-interstation digital signal interface unit, which is coupled to said intra-station digital communications path, and receives a digitally modified version of digital communication signals that has been transmitted over said intra-station digital communications path from an interstation-to-intra-station digital signal interface unit to which the other of said ports is coupled, and transmits outgoing digital communication signals containing said information and telephone equipment operation control signals as received at said other port in dependence upon the pattern of digitally encoded synchronization signals contained in the digitally modified version of incoming digital communication signals received at the other port.

5,327,434

FRAME ALIGNMENT CIRCUIT

Kazuo Kubo, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,591
Claims priority, application Japan, Mar. 17, 1992, 4-060062
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—105.1 **9 Claims**



1. A frame alignment circuit comprising:

a first series-to-parallel data converting means including:

a first shift register for receiving a clock signal and a series data signal, accumulating the series data signal and outputting an accumulated series data signal;

a first latch circuit for receiving the accumulated series data signal and a divided clock signal, converting the accumulated series data signal into a first parallel data signal and outputting the parallel data signal; and

a first counter for receiving the clock signal, dividing the clock signal into the divided clock signal and outputting the divided clock signal;

a second series-to-parallel data converting means including:

a second shift register for receiving the parallel data signal and the divided clock signal, accumulating the parallel data signal and outputting an accumulated parallel data signal;

a second latch circuit for receiving the accumulated parallel data signal and a second divided clock signal, further converting the accumulated parallel data signal into a second parallel data signal and outputting an accumulated second parallel data signal; and

a second counter for receiving the divided clock signal and a shifting signal, further dividing the divided clock signal and outputting the second divided clock signal;

pattern detecting means for receiving said accumulated second parallel data signal, detecting frame alignment pattern and outputting a frame alignment pattern detection result signal;

a frame alignment determining means for receiving said frame alignment pattern detection result signal, detecting a deviation of alignment of the frame alignment pattern and outputting a deviation of alignment signal;

a shift controlling means for receiving the deviation of alignment signal and the frame alignment pattern detection result signal, for expanding the deviation of alignment signal and outputting the shifting signal; and

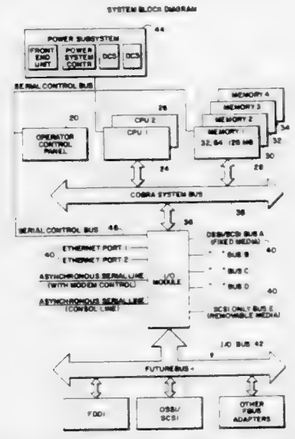
wherein the second counter, in response to the shifting signal, shifts an order of the second parallel data signal.

5,327,435

METHOD FOR TESTING A PROCESSOR MODULE IN A COMPUTER SYSTEM

Nicholas A. Warchol, Boxborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 13, 1992, Ser. No. 976,095
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—16.1 **3 Claims**



1. A method of testing a processor module in a computer system, the processor module including a processor containing a serial port and serial ROM coupled to the serial port by a serial bus, comprising:

providing a non-volatile memory coupled to the serial bus, the non-volatile memory containing processor module diagnostic instructions;

reading power-up instructions from the serial ROM into the processor via the serial bus in response to a system hardware reset;

reading the processor module diagnostic test instructions from the non-volatile memory into the processor via the serial bus in response to the power-up instructions.

5,327,436

COMMUNICATION CONTROL SYSTEM

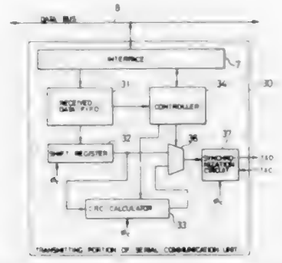
Takeshi Miyazaki, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 712,257, Jun. 7, 1991, which is a continuation of Ser. No. 508,391, Apr. 11, 1990, which is a continuation of Ser. No. 198,518, May 25, 1988, Pat. No. 4,939,741. This application Dec. 9, 1991, Ser. No. 804,797
Claims priority, application Japan, May 27, 1987, 62-128196
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 **31 Claims**

1. A serial communication system comprising:

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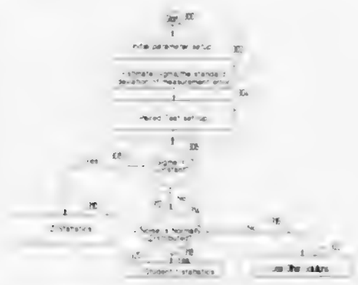
a modem for supplying serial data and a clock signal synchronous with respect to the serial data;
a clock generator for providing a system clock signal;
a synchronization circuit, coupled to receive the clock signal and the system clock signal, for synchronizing the clock signal with the system clock signal to provide a synchronized clock;
reception means responsive to the synchronized clock and for storing the serial data as received data therein;
a calculator for calculating an error detect code of the received data;
latch circuits for storing the received data supplied from the reception means for a desired period of time;



shift register means in data communication with the latch circuits for converting the data sorted in said latch circuits into serial data and for supplying the serial data to said calculator, wherein said shift register means and said calculator are operated in response to the system clock signal;
a counter for counting the synchronized clock so as to produce a calculation start signal for said calculator;
a direct memory access controller which is operated in response to the system clock signal; and
a microprocessor which is operated in response to the system clock signal

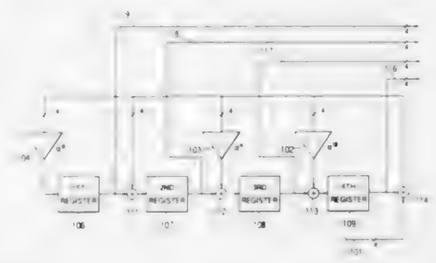
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5,327,437
METHOD FOR TESTING ELECTRONIC ASSEMBLIES IN THE PRESENCE OF NOISE
Raymond J. Balzer, Boulder, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 25, 1991, Ser. No. 797,616
Int. Cl.[5] G01R *17/00*
U.S. Cl. 371—25.1 **38 Claims**



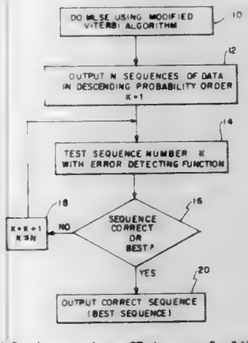
1. A method for pass/fail testing an electronic assembly with a desired confidence target level by measuring a parameter in the presence of noise with known noise characteristics and comparing said measurement with a predetermined limit, said method comprising the steps of:
A. calculating at least one statistical limit value from said confidence target level;
B. obtaining a test value which represents a measured value of said parameter;
C. calculating an average measurement value from all test values of said parameter including the test value obtained in step B;
D. calculating a statistical value from said predetermined limit, said average measurement value calculated in step C and said noise characteristics;
E. repeating steps B through D when said statistical value calculated in step D has a predetermined relationship to said statistical limit value calculated in step A;
F. resolving the pass/fail status of said assembly by comparing said average measurement value to said predetermined limit when said statistical value calculated in step D has a relationship other than said predetermined relationship to said statistical limit value calculated in step A.

5,327,438
ERROR CORRECTION SYSTEM CAPABLE OF CORRECTING AN ERROR IN A PACKET HEADER BY THE USE OF A REED-SOLOMON CODE
Hideki Okuyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 664,732, Mar. 5, 1991, abandoned. This application Oct. 7, 1993, Ser. No. 133,267
Claims priority, application Japan, Mar. 5, 1990, 2-54749
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 **5 Claims**



1. A transmitter for transmitting a packet of information which includes an input signal which successively conveys an information signal which may comprise a selected one of a data signal, a speech signal, and an image signal and which is preceded by a header information signal, said transmitter comprising:
packet header forming means responsive to said header information signal and operable in accordance with a predetermined algorithm for producing a Reed-Solomon code to form a packet header which is composed of said header information signal and an error correcting code signal for correcting said header information signal, said error correcting code signal being formed by the Reed-Solomon code, said packet header forming means comprising an input terminal for receiving one or more signal units in sequence; a plurality of multipliers for multiplying each of said signal units by predetermined constants; a plurality of registers; a plurality of exclusive-OR circuits, each having a first input coupled to an output of a respective one of said multipliers and a second input coupled to an output of a respective one of said registers, wherein said multipliers, registers, and exclusive-OR circuits carry out said predetermined algorithm for producing a Reed-Solomon code to generate error code units as said error correcting code signal; and
signal producing means for producing said packet header followed by said input signals accompanied by no error correcting code to form said packet of information.

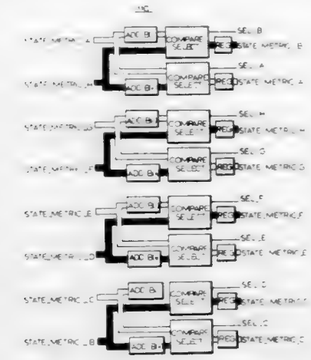
5,327,439
EFFICIENCY OF THE VITERBI ALGORITHM
Kari P. Estola, Tampere, and Harri A. Jokinen, Pertteli, both of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland
Filed Dec. 28, 1990, Ser. No. 635,345
Claims priority, application Finland, Mar. 12, 1990, 901230
Int. Cl.[5] G06F *11/10*; **H03M** *13/12*
U.S. Cl. 371—43 **7 Claims**



1. A method for improving efficiency of a Viterbi algorithm in a system receiving a signal string via a transmission channel having memory of at least part of a previous signal, comprising the steps of:
detecting, by using the Viterbi algorithm, a most probable sequence in said signal string;
detecting, by using an extension of the Viterbi algorithm, several additional sequences in said received signal string in descending probability order;
performing an error detection operation on all of said detected sequences until one of an error-free sequence and the sequence with the least number of errors is detected by the error detection operation as the best sequence; and
selecting the best sequence as a received sequence.

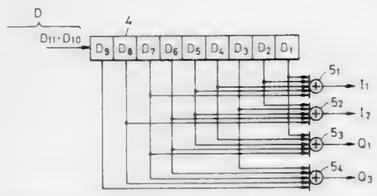
5,327,440
VITERBI TRELLIS CODING METHODS AND APPARATUS FOR A DIRECT ACCESS STORAGE DEVICE
Lyle J. Fredrickson, Sunnyvale, Calif., and James W. Rae, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 15, 1991, Ser. No. 776,142
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—43 **12 Claims**

11. Viterbi detector apparatus comprising:
means for sequentially receiving consecutive trellis coded data samples; said trellis coded data having a preselected number S of allowed states and predefined allowed state transitions;
systolic array add, compare and select (ACS) mean responsive to received consecutive trellis coded data samples for recursively calculating and storing path metrics and partial sums of metric update equations for each state to select one of said states having minimum error; and
path history means for storing said sequentially selected states for each state of said preselected number of allowed states, said path history means including S path memory blocks, each path memory being loaded with one of two alternative path histories with each selected state;
wherein said path history means includes alternating shift registers with parallel loading capability and parallel registers each with a multiplexer selecting each input data bit,



said alternating shift registers and parallel registers being interconnected in a ring.

5,327,441
METHOD AND CIRCUIT FOR DECODING CONVOLUTIONAL CODES
Katsuhiko Kawazoe, Yokohama; Shunji Honda; Shuji Kubota, both of Yokosuka, and Shuzo Kato, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 991,215
Claims priority, application Japan, Dec. 16, 1991, 3-331640
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—43 **14 Claims**



1. A simple decoder which decodes convolutional codes of constraint length K and coding rate R=n/m, generated by the modulo-2 addition of data selected from original data of consecutive K+n−1 bits in accordance with coupling coefficients of m code generating vectors each composed of predetermined K+n−1 coupling coefficients, where K, n and m are natural numbers, K being larger than 1 and m being larger than n, said simple decoder comprising:
m shift registers each supplied with one bit of sequentially received m-bit data of said convolutional codes and having x series-connected shift stages, where x is a predetermined integer which satisfies $x \geq (K-1)/(m-n)$, a total of N=mx shift stages of said m shift registers forming a shift register circuit for storing N pieces of encoded data;
n selective coupling means each for delivering the outputs from a plurality of stages selected from said N shift stages in accordance with a corresponding one of n sets of coupling coefficients each set of which are N elements in a corresponding one of n consecutive rows selected from a decoding generative matrix corresponding to a code generating vector of said encoder; and
n-modulo-2 addition circuit means connected to said n selective coupling means, each for performing modulo-2 addi-

tions of outputs in a corresponding one of said n groups selected from said plurality of shift stages;

said decoding generative matrix being an inverse matrix of a square matrix whose elements are N×N coefficients of N code generating polynomials which generates N=mx codes produced using m code generating vectors of said encoder.

5,327,442

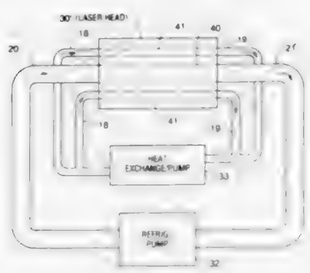
SOLID STATE LASER WITH DUAL COOLING LOOPS

J. Michael Yarborough; Gerald M. Mitchell, and Kenneth J. Bossie, all of Tucson, Ariz., assignors to Coherent, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 838,574, Feb. 19, 1992, abandoned. This application Sep. 14, 1992, Ser. No. 944,447

Int. Cl.[5] H01S *3/045*

U.S. Cl. 372—35 **18 Claims**



1. A solid state laser system, including

a gain medium;

an optical pumping means spatially separated from the gain medium;

the first coolant flow channel surrounding the optical pumping means; and

a second coolant flow channel surrounding the gain medium, wherein the optical pumping means includes at least one flash lamp which emits pumping radiation, the first coolant flow channel includes a first tube which is transmissive to the pumping radiation and includes a first coolant gas flowing therethrough, and the second coolant flow channel includes a second tube which is transmissive to the pumping radiation and includes a second coolant fluid flowing therethrough, wherein the second coolant fluid is a liquid mixture of water and alcohol.

5,327,443

PACKAGE-TYPE SEMICONDUCTOR LASER DEVICE

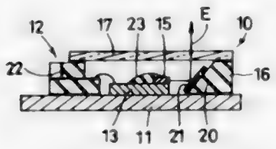
Haruo Tanaka, and Naofumi Aoki, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 27, 1992, Ser. No. 967,279

Claims priority, application Japan, Oct. 30, 1991, 3-285206; Nov. 20, 1991, 3-304820

Int. Cl.[5] H01S *3/04, 3/045*

U.S. Cl. 372—36 **16 Claims**



1. A package-type semiconductor laser device comprising.

a metallic heat sink plate having a substantially flat support surface and an exposed surface directed away from the support surface;

a semiconductor laser chip carried by the support surface of the heat sink plate, the laser chip having a front light emitting facet oriented so that the laser chip emits an output laser beam generally in parallel to the support surface of the heat sink plate;

a cap mounted on the support surface of the heat sink plate to enclose the laser chip, the cap having a transparent window in opposed relation to the support surface of the heat sink plate; and

a reflective member arranged within the cap for deflecting the output laser beam toward the window of the cap.

5,327,444

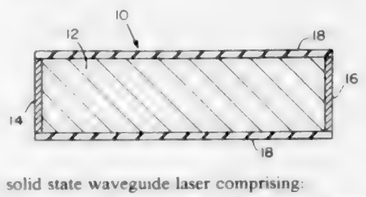
SOLID STATE WAVEGUIDE LASERS

Aram Mooradian, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 938,851, Sep. 1, 1992, which is a continuation of Ser. No. 712,185, Jun. 7, 1991, Pat. No. 5,150,374, which is a division of Ser. No. 341,028, Apr. 20, 1989, Pat. No. 5,050,179. This application Sep. 29, 1992, Ser. No. 952,952

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—44 **40 Claims**



1. A solid state waveguide laser comprising:

a) a solid state laser gain material having a cross-sectional width D, and length l and index of refraction n_1;

b) a reflective material having an index of refraction n_2 extending along the length of said gain material and wherein $n_2 > n_1$; and

c) input and output surfaces formed on the opposite ends of the gain material.

5,327,445

QUANTUM-WELL TYPE SEMICONDUCTOR LASER DEVICE

Narihito Matsumoto, Yokohama; Akihiko Kasukawa, Tokyo; Takeshi Namegaya, Kanagawa, and Hiroshi Okamoto, Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01213, § 371 Date Jul. 9, 1992, § 102(e) Date Jul. 9, 1992, PCT Pub. No. WO92/04753, PCT Pub. Date Mar. 19, 1992

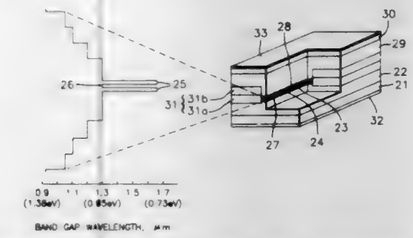
PCT Filed Sep. 12, 1991, Ser. No. 854,646

Claims priority, application Japan, Sep. 12, 1990, 2-241554; Sep. 13, 1990, 2-243074; Nov. 30, 1990, 2-336546

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **4 Claims**

1. A quantum-well type semiconductor laser device comprising a resonant cavity, an active layer comprising no more than two quantum-well layers and a barrier layer, and a pair of $Ga_xIn_{1-x}As_yP_{1-y}$ ($x \geq 0$, $y \leq 1$) semiconductive optical confinement layers arranged above and below said active layer, said layers being formed on an InP substrate in a given arrangement, first and second electrodes on opposite sides, respectively of the quantum-well layer(s), and wherein the bandgap energy of the optical confinement layers is greater than that of



the quantum-well layer(s) by 16 meV and the thickness of the quantum-well layer(s) is between 3 nm and 8 nm.

5,327,446

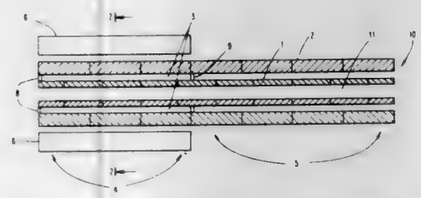
METHOD OF EXCITING LASER ACTION AND DELIVERING LASER ENERGY FOR MEDICAL AND SCIENTIFIC APPLICATIONS

Ronald W. Waynant, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Mar. 26, 1993, Ser. No. 38,198

Int. Cl.[5] H01S *3/03*

U.S. Cl. 372—61 **20 Claims**



1. A laser delivery device comprising an excitation section and a radiation propagation and delivery section, wherein said excitation section includes:

an inner tube;

an outer tube surrounding said inner tube end being coaxial along the entire length therewith;

an annular space defined between said inner and outer tubes and containing a gas;

a resonator means; and

means to apply a radio frequency discharge via coaxial electrodes in said excitation section to excite said gas in said annular space; and

said radiation propagation and delivery section includes an extension of said inner tube which extends beyond said excitation section.

5,327,447

WAVEGUIDE OPTICAL RESONANT CAVITY LASER

Aram Mooradian, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 712,185, Jun. 7, 1991, Pat. No. 5,150,374, which is a division of Ser. No. 341,028, Apr. 20, 1989, Pat. No. 5,050,179. This application Sep. 1, 1992, Ser. No. 938,851

The portion of the term of this patent subsequent to Jan. 22, 2009, has been disclaimed.

Int. Cl.[5] H01S *3/08*

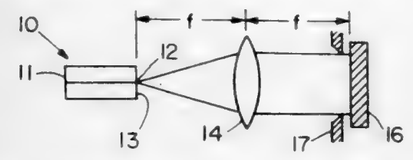
U.S. Cl. 372—92 **30 Claims**

1. A waveguide optical cavity resonator system comprising:

a laser diode having a facet for emitting a beam of light; and

a cavity resonator comprising;

a reflective surface for receiving the beam of light; and



a single spatial mode waveguide between the reflective surface and the facet for coupling the beam of light to the reflective surface.

5,327,448

SEMICONDUCTOR DEVICES AND TECHNIQUES FOR CONTROLLED OPTICAL CONFINEMENT

Nick Holonyak, Jr.; Fred A. Kish, both of Urbana, and Stephen J. Caracci, Champaign, all of Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Mar. 30, 1992, Ser. No. 860,454

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—94 **13 Claims**



1. A semiconductor ring laser device; comprising:

a semiconductor active region disposed between first and second semiconductor confining layers, said first and second semiconductor confining layers being of opposite conductivity type, and said first semiconductor confining layer being an aluminum-bearing III-V semiconductor material;

first and second electrode means respectively coupled with said first and second confining layers, said first electrode means including a conductive annular ring; and

lateral confining regions of a native oxide of aluminum formed in said first confining layer around both peripheries of said annular ring, said native oxide extending through at least most of the thickness of said first confining layer.

5,327,449

LASER RESONATOR

Keming Du, and Peter Loosen, both of Aachen, Fed. Rep. of Germany, assignors to Fraunhoefer-Gesellschaft zur Foerderung der Angewandten Forschung e.V., Fed. Rep. of Germany

PCT No. PCT/DE89/00249, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO89/10640, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 21, 1989, Ser. No. 601,756

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1988, 3813567

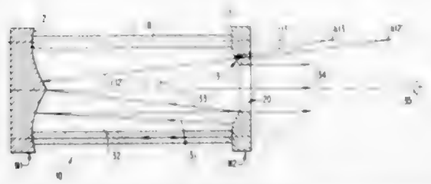
Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—95 **11 Claims**

1. A laser resonator for a carbon dioxide laser, comprising two resonator mirrors placed on ends of an excitable active medium, at least one of the resonator mirrors having at least two fully reflecting surface zones with different curvature radii, wherein, between the two resonator mirrors, at least one stable resonator chamber is provided by surface zones of both

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resonator mirrors in addition to an unstable resonator chamber formed with other surface zones of the resonator mirrors, and

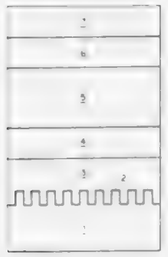


radiation between the resonator mirrors is coupled out through an opening in one of the resonator mirrors.

5,327,450
OPTICAL SEMICONDUCTOR DEVICE AND PROCESS OF PRODCUING SAME

Takuya Fujii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1992, Ser. No. 937,122
Claims priority, application Japan, Sep. 5, 1991, 3-226125
Int. Cl.[5] H01S *3/08, 3/19*
U.S. Cl. 372—96 **8 Claims**

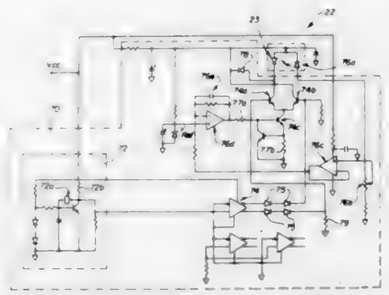


7. An optical semiconductor device, comprising:
a semiconductor substrate;
a diffraction grating in the form of a periodic corrugation formed by processing a surface of the semiconductor substrate for selectively transmitting a light having a specific wavelength; and
a guide layer, an active layer and a clad layer formed on the diffraction grating in that order,
said diffraction grating having a corrugation height determined by the following steps (A) to (D);
(A) preparing a plurality of reference samples having diffraction gratings with different corrugation heights, respectively, by (1) processing surfaces of a plurality of semiconductor wafers or a plurality of surface regions of a single semiconductor wafer; (2) forming on the diffraction gratings a guide layer, an active layer and a clad layer in that order; and (3) forming on the clad layer a double heterostructure composed of lower and upper layers, the upper layer having a bandgap greater than that of the active layer;
(B) measuring the photoluminescence intensity of the lower layers of the double heterostructures of the reference samples;
(C) determining two ranges of the corrugation height in which the photoluminescence intensity takes higher and lower levels of values, respectively, based on an interrelationship between the measured values of the photoluminescence intensity and the corresponding corrugation heights of the diffraction gratings; and
(D) electing the corrugation height within the determined range in which the photoluminescence intensity takes the higher level of value.

5,327,451
LASER DIODE ASSEMBLY FOR LASER SCANNER SYSTEM

Ray A. Walker, Eugene; Jeffrey A. Gohman, Hillsboro, both of Oreg.; Michael A. Lind, Kent, Wash.; Peter G. Howard, Junction City, Oreg.; William E. Ortyn, Duvall, Wash., and Michael R. Greenberg, Chico, Calif., assignors to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.

Filed Aug. 7, 1992, Ser. No. 927,129
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—98 **36 Claims**

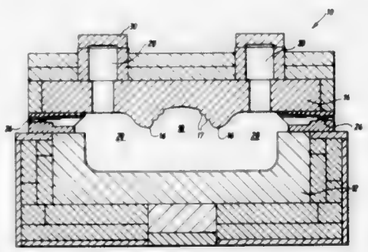


1. A laser source assembly for use in a laser instrument of a kind used to direct laser light to a target which is spaced from the laser instrument, said laser source assembly comprising:
light source means for producing a laser beam, said light source means being characterized by astigmatism; and
means for driving said light source means in a pulsed mode having a duty cycle which reduces and controls said astigmatism.

5,327,452
FOREHEARTH

John McMinn, Rotherham, England, assignor to Parkinson-Spencer Refractories Limited, West Yorkshire, England

Filed Mar. 13, 1992, Ser. No. 850,517
Claims priority, application United Kingdom, Mar. 13, 1991, 9105263
Int. Cl.[5] C03B *5/02, 5/04*
U.S. Cl. 373—27 **14 Claims**



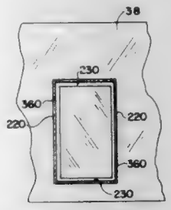
1. A forehearth, comprising:
(a) a trough comprising a bottom portion and two side portions;
(b) a roof disposed over said trough to define a chamber for containing molten glass;
(c) means for injecting cooling gas into a cooling zone, said cooling zone defined by at least two longitudinally disposed ridges extending downwardly toward said trough bottom portion from said roof;

(d) means for removing cooling gas from said cooling zone;
(e) means for heating side zones by introducing combustion gases into said side zones, said side zones defined by said longitudinally disposed ridges; and
(f) means for removing combustion gases from said side zones, said means for removing combustion gases being separate from said means for removing cooling gas.

5,327,453
DEVICE FOR RELIEF OF THERMAL STRESS IN SPRAY COOLED FURNACE ELEMENTS

Mark T. Arthur, Lakewood, and Gordon R. Roberts, North Olmsted, both of Ohio, assignors to Ucar Caron Technology Corporation, Danbury, Conn.

Filed Dec. 23, 1992, Ser. No. 995,089
Int. Cl.[5] F27D *1/12*
U.S. Cl. 373—74 **5 Claims**



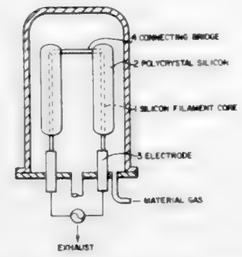
2. In an apparatus for use in conjunction with a vessel containing a body of molten metal, said apparatus having a closure element formed of a unitary inner plate and means for directing a spray of fluid coolant against the unitary inner plate for maintaining an acceptable temperature of said plate; the improvement for replacing a pre-determined cut-out portion of said unitary inner plate of said closure element which is spaced from the body of molten metal to lower the temperature at a site in the unitary inner plate of said pre-determined cut-out portion, said improvement comprising a pre-formed assembly welded to said pre-determined cut-out portion of said unitary inner plate including (i) a steel frame having dimensions and an outer periphery whereby the outer periphery of said steel frame fits closely in the site of the cut-out portion, said outer periphery of said steel frame being welded to said pre-determined cut-out portion of said unitary inner plate, (ii) a solid copper plate having a peripheral edge portion which abuts an which is pre-welded to said steel frame along its entire peripheral edge portion, said assembly having the same shape as said cut-out portion and forming a permanently fixed portion of said unitary inner plate.

5,327,454
BRIDGE FOR CONNECTING CORES IN A MANUFACTURING EQUIPMENT OF POLYCRYSTAL SILICON

Minoru Ohtsuki; Yusuke Miyamoto, both of Hiratsuka, and Kenichi Nagai, Tokyo, all of Japan, assignors to Komatsu Electronic Metlas Co., Inc., Japan

PCT No. PCT/JP90/01373, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO91/06507, PCT Pub. Date May 16, 1991
PCT Filed Oct. 25, 1990, Ser. No. 849,450
Claims priority, application Japan, Nov. 4, 1989, 1-286040
Int. Cl.[5] H05B *3/14;* **C23C** *13/08*
U.S. Cl. 373—133 **3 Claims**

1. A bridge connecting filament cores in polycrystalline silicon manufacturing equipment, said bridge consisting essentially of a material selected from the group consisting of molybdenum, tungsten and zirconium; wherein said filament cores are capable of being electrically heated and coated with polycrystalline silicon; wherein said polycrystalline silicon is

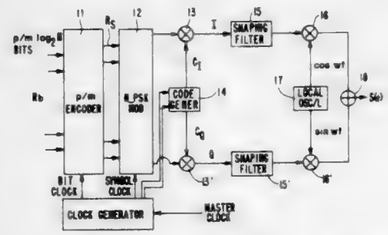


vapor deposited by the thermal decomposition of monosilane gas.

5,327,455
METHOD AND DEVICE FOR MULTIPLEXING DATA SIGNALS

Riccardo De Gaudenzi, Leiden; Roberto Viola, and Carlo Elia, both of Oegstgeest, all of Netherlands, assignors to Agence Spatiale Europeene, Paris, France

PCT No. PCT/EP92/02001, § 371 Date Jul. 9, 1993, § 102(e) Date Jul. 9, 1993, PCT Pub. No. WO93/05589, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 28, 1992, Ser. No. 50,285
Claims priority, application France, Sep. 11, 1991, 9111202
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **5 Claims**



1. In a Code Division Multiple Access satellite communication system, a method of multiplexing data signals to be transmitted on a modulated transmission carrier to a plurality of terminal stations by phase-shift keying carrier modulation, said method comprising the steps of:
prior to modulating the transmission carrier, individually encoding each binary signal into an individual symbol pertaining to a constellation of a finite number of symbols associated to the same number of distinct points so as to produce first and second bit streams, the first bit stream being in phase with an incoming signal and the second bit stream being in phase-quadrature with said incoming signal, and
assigning to each of said two bit streams an individual signature by applying an individual spreading code to such bit stream thereby to produce two spread code to such bit stream thereby to produce two spread composite bit streams intended each to being applied to a modulator, the individual spreading codes being in quasi-orthogonal cross-correlation therebetween.

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5,327,456

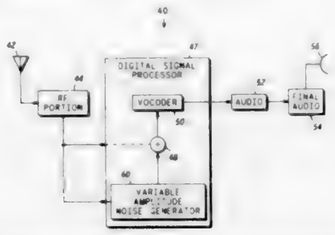
Patent Not Issued For This Number

5,327,457

OPERATION INDICATIVE BACKGROUND NOISE IN A DIGITAL RECEIVER

Raymond J. Leopold, Colorado Springs, Colo., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 13, 1991, Ser. No. 759,334
Int. Cl.[5] H04B *17/00, 1/10*
U.S. Cl. 375—10 9 Claims



4. In a digital communication system, apparatus for providing operation indicative background noise comprising:

a digital receiver including an antenna, an RF portion connected to the antenna, a digital portion connected to receive signals from the RF portion, and an audio portion connected to the digital portion; and

an amplitude controllable noise generator having a control signal input coupled to the RF portion and a signal output coupled to the digital portion, to provide background noise indicative of the operation of the receiver, the noise generator having the control signal input coupled to the RF portion to control the amplitude of the background noise in accordance with received signals.

5,327,458

AUTOMATIC EQUALIZER CAPABLE OF EFFECTIVELY CANCELLING INTERSYMBOL INTERFERENCE AND CROSS POLARIZATION INTERFERENCE IN CO-CHANNEL DUAL POLARIZATION

Takeshi Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,383
Claims priority, application Japan, Nov. 18, 1991, 3-302169
Int. Cl.[5] H03H *7/30, 7/40;* H03K *5/159*
U.S. Cl. 375—12 5 Claims



1. An automatic equalizer for use in combination with a receiver section comprising a demodulator which demodulates first and second received signals into first and second demodulated signals, respectively, said automatic equalizer being for equalizing said first demodulated signal into an equalized signal to produce said equalized signal as an output signal, said first and said second received signals being transmitted through a co-channel to said receiver section, said first received signal having a first polarization which carries a first data signal, said second received signal having a second polarization which carries a second data signal, and said first and said second demodulated signals having said first and said second data signals, respectively, said automatic equalizer comprising:

first equalizer means for equalizing said first data signal into a first equalized signal;

filter means for filtering said second data signal into a filtered signal;

producing means for producing an intermediate signal, dependent upon said first equalized signal and said filtered signal, to cancel cross-polarization interference; and

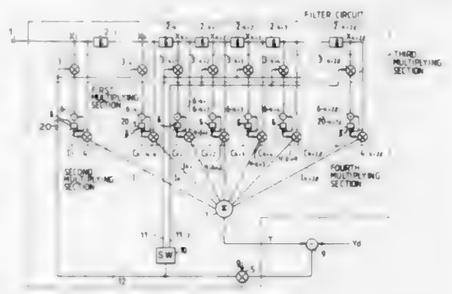
second equalizer means for equalizing said intermediate signal into a second equalized signal to cancel intersymbol interference and to produce a second equalized signal as said output signal.

5,327,459

SEMICONDUCTOR INTEGRATED CIRCUIT CONTAINING AN AUTOMATIC EQUALIZER INCLUDING A CIRCUIT FOR PERIODICALLY UPDATING A PLURALITY OF TAP COEFFICIENTS AT VARYING FREQUENCIES

Hirotaka Hara, Kodaira; Masaru Kokubo, Hachioji, and Toshiro Suzuki, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1991, Ser. No. 697,669
Claims priority, application Japan, May 11, 1990, 2-122303
Int. Cl.[5] H03H *15/00*
U.S. Cl. 375—14 17 Claims



1. An automatic equalizer comprising:

means for inputting a plurality of input sampling signals;

means for multiplying each of said plurality of sampling signals by a respective tap coefficient;

an adding circuit for adding together the sampling signals multiplied by said tap coefficients; and

updating means for periodically updating said tap coefficients on the basis of the signal output supplied by said adding circuit;

wherein the frequency at which updating means updates said tap coefficients is varied depending on the respective magnitudes of said tap coefficients.

5,327,460

METHOD AND APPARATUS FOR FILTERING POST DECISION FEEDBACK EQUALIZATION NOISE

Roy G. Batruni, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 7, 1992, Ser. No. 910,009
Int. Cl.[5] H03H *7/30;* H03D *1/04*
U.S. Cl. 375—14 12 Claims

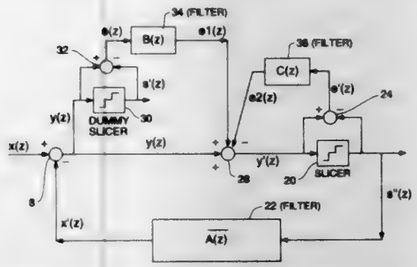
1. A method for compensating for noise during decision feedback equalization, including the steps of:

(a) performing decision feedback equalization on a noisy signal; and

(b) while performing step (a), isolating noise components of the noisy signal, thereby generating isolated noise components, and filtering the isolated noise components to generate post-decision feedback equalization noise having a desired spectrum and power, wherein step (b) includes the steps of:

filtering first isolated noise components of the noisy signal in a first filter having a first transfer function; and

filtering second isolated noise components of the noisy signal in a second filter having a second transfer function, wherein e(z) are the first isolated noise components, e'(z) are the second isolated noise components, the first transfer



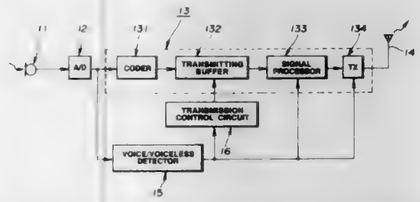
function B(z) and the second transfer function C(z) have a combined transfer function of form B(z)/C(z) wherein $B(z)=1+b_1(z)^{-1}+b_2(z)^{-2}+\ \cdot\ \cdot\ \cdot\ +b_{n1}(z)^{-n1}$ and $C(z)=1+c_1(z)^{-1}+c_2(z)^{-2}+\ \cdot\ \cdot\ \cdot\ +c_{n2}(z)^{-n2}$, and the first isolated noise components, the second isolated noise components, and the combined transfer function satisfy e'(z)=(B(z)/C(z)e(z).

5,327,461

VOICE COMMUNICATION APPARATUS USING A VOICE OPERATED TRANSMITTER

Naohide Kushige, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 2, 1992, Ser. No. 984,499
Claims priority, application Japan, Dec. 3, 1991, 3-319041
Int. Cl.[5] H04B *14/06*
U.S. Cl. 375—27 29 Claims



1. A voice communication apparatus in a radio communication system for transmitting a voice signal over a radio link, comprising:

analog-to-digital (A-D) converting means for converting an input voice signal into a digital signal;

encoding means for encoding the digital signal output from said A-D converting means;

a transmitting buffer for temporarily storing voice signal data encoded by said encoding means in a time series manner;

signal processing means for converting output data of said transmitting buffer with respect to its transmission rate to generate a burst signal;

transmitting means for transmitting an output signal of said signal processing means over the radio link;

detecting means for detecting voice and voiceless parts in said input voice signal on the basis of the output data of said A-D converting means; and

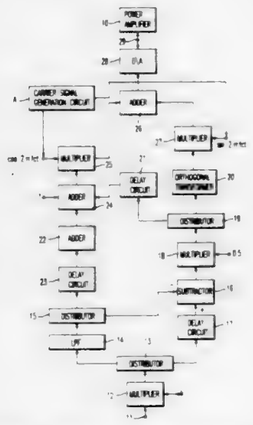
transmission control means for stopping output of the voice signal data from said transmitting buffer in response to detection of the voiceless part by said detecting means and, in response to detection of the voice part by said detecting means, for starting output of the voice signal data from said transmitting buffer in a time series manner sequentially from a voice-start-point of the voice part preceding a detected point of the voice part.

5,327,462

DIGITAL TYPE VSB MODULATION APPARATUS

Yasuo Takahashi; Tatsuya Ishikawa; Toshio Aoki; Nobuyuki Miki; Masatoshi Hamada; Masatoshi Hamada; Yasuhiro Hashimoto; Kenji Ueoka, and Nobuhiko Kawai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Nippon Hoso Kyokai, Tokyo, both of Japan

Filed Feb. 7, 1992, Ser. No. 832,724
Claims priority, application Japan, Feb. 8, 1991, 3-018030; Aug. 20, 1991, 3-208200
Int. Cl.[5] H03C *1/52;* H04L *27/04*
U.S. Cl. 375—61 18 Claims



1. A digital type VSB modulation apparatus comprising:

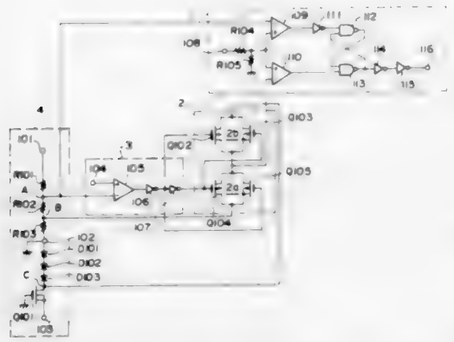
generation means for generating, from a digital baseband signal, an in-phase component of a modulation signal having a frequency spectrum having a high-frequency component whose level is half that of a low-frequency component thereof, and an orthogonal component of the modulation signal of a high-frequency component having a frequency spectrum whose level is half that of the low-frequency component of the in phase component;

a carrier signal generation means for generating two carrier signals having a same frequency and having different phases;

carrier component generation means for multiplying the in-phase component and the orthogonal component output from said generation means with the carrier signals output from said carrier signal generation means, respectively, so as to obtain a carrier in-phase component and a carrier orthogonal component; and

synthesis means for synthesizing the carrier in-phase component and the carrier orthogonal component output from said carrier component generation means so as to obtain a VSB modulation signal.

5,327,463
INTEGRATED CIRCUIT DEVICE FOR RS-232C LINE RECEIVER
Yoichi Matsumoto, Tokyo, Japan, assignor to Nec Corporation, Japan
Filed Mar. 25, 1991, Ser. No. 675,533
Claims priority, application Japan, Mar. 28, 1990, 2-79891
Int. Cl.[5] H04L 25/06
U.S. Cl. 375—76 2 Claims



1. An RS-232C line receiver IC for digital data transmission through an electric cable, having hysteresis characteristics in changes of an output voltage with respect to an input voltage, and conforming to the RS-232C standards, said line receiver IC comprising:

a reference voltage generating circuit (4) having a high reference voltage generating means for producing a high reference voltage (V_{IH}), a first reference voltage generating means for producing a first low reference voltage (V_{IL1}) and a second reference voltage generating means for producing a second low reference voltage (V_{IL2}); all of the second low reference voltage (V_{IL2}), the first low reference voltage (V_{IL1}), and the high reference voltage (V_{IH}) being within a voltage range extending from −3 volts to +3 volts; the potential of said first reference voltage generating means being higher than ground potential, and the potential of said second low reference voltage produced by said second reference voltage generating means being lower than the ground potential;

a switching circuit (2) including a first switching means (2*a*) having a first input node and a first output node, said first input node being connected to said first reference voltage generating means, and a second switching means (2*b*) having a second input node and a second output node, said second input node being connected to said second reference voltage generating means;

a switch control circuit (3) which receives said high reference voltage and which selectively makes conductive either one of said first switching means (2*a*) or said second switching means (2*b*) depending on whether said input voltage is higher than said high reference voltage; and

a hysteresis output circuit (1) having a first input terminal to which both the second output nodes of said first switching means (2*a*) and said second switching means (2*b*) are connected so as to selectively receive either said first low reference voltage or said second low reference voltage as a low input threshold voltage, a second input terminal to which said input voltage is applied, and a third input terminal which receives said high reference voltage as a high input threshold voltage from said high reference voltage generating means.

5,327,464
DISPERSAL SIGNAL REMOVING APPARATUS
Shigeru Harada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 1, 1992, Ser. No. 937,760
Claims priority, application Japan, Sep. 6, 1991, 3-254336
Int. Cl.[5] H03D 1/06; H04B 1/10
U.S. Cl. 375—99 5 Claims



1. An apparatus for removing a dispersal signal component from an input reception signal, said apparatus comprising:

dispersal canceler means receiving said input reception signal having said dispersal signal component for attenuating said dispersal signal component in response to receipt of a cancel signal and for supplying therefrom the input reception signal with an attenuated dispersal signal component, and, in the absence of receiving said cancel signal, for supplying the received input reception signal therefrom without attenuation of said dispersal signal component;

soft clamp means coupled to said dispersal canceler means for receiving the received input reception signal with said dispersal signal component and for supplying the same as an output signal therefrom without attenuating said dispersal signal component;

dispersal signal detecting means for receiving said output signal from said soft clamp means and for detecting therefrom the dispersal signal component;

cancel signal generating means for generating said cancel signal from the dispersal signal component detected by said dispersal signal detecting means;

hard clamp means coupled to said dispersal canceler means for receiving the input reception signal with said attenuated dispersal signal component and for further attenuating said dispersal signal component so as to produce an output reception signal; and

switching means for initially coupling said soft clamp means to said dispersal signal detecting means and, in response to detection of the dispersal signal component by said dispersal signal detecting means, for disconnecting said dispersal signal detecting means from said soft clamp means and allowing removal of the dispersal signal component from the input reception signal by said dispersal canceler means and said hard clamp means so as to produce said output reception signal

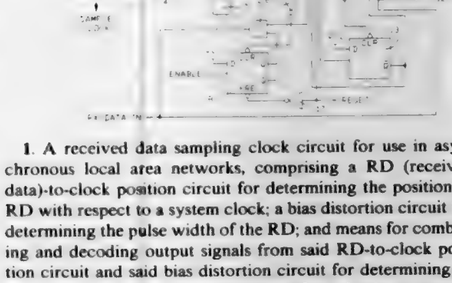
5,327,465
METHOD AND APPARATUS FOR SQUELCH CIRCUIT IN NETWORK COMMUNICATION
John M. Wincn; Nader Vijeh, both of Cupertino; Ian S. Crayford, San Jose, and Jeffrey M. Blumenthal, Fremont, all of Calif., assignors to Advanced Micro Devices Inc., Sunnyvale, Calif.
Division of Ser. No. 480,426, Feb. 15, 1990, Pat. No. 5,160,960.
This application Jun. 15, 1992, Ser. No. 899,083
Int. Cl.[5] H04B 1/10
U.S. Cl. 375—104 7 Claims

1. A squelch circuit for detecting an encoded signal having a particular order of transitions of a differential signal received from a first input signal and a second input signal, comprising:

a first comparator, responsive to the differential signal, for asserting a data signal if the first input signal is greater than the second input signal, otherwise;

said first comparator negating said data signal if said second input signal is greater than said first input signal;

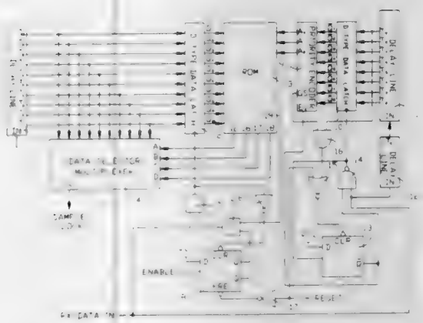
a second comparator, responsive to said differential signal and including a first voltage offset at an input to said second comparator, for asserting a positive squelch signal only if said first input signal exceeds said second input signal by said first offset voltage;



a third comparator, responsive to said differential signal and including a second voltage offset at an input to said third comparator, for asserting a negative squelch signal only if said second input signal exceeds said first input signal by said second offset voltage; and

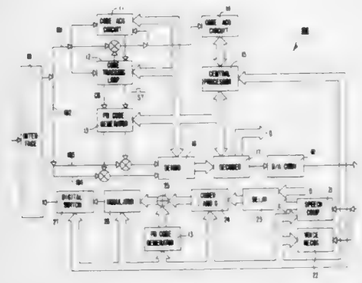
logic means, responsive to said data signal, said positive squelch signal and to said negative squelch signal, for asserting an unsquelch signal upon detecting a prespecified pattern of the particular order of transitions exceeding said first and second offset voltages.

5,327,466
1X ASYNCHRONOUS DATA SAMPLING CLOCK
Frank Marinaro, 22 Lauren Ave., Dix Hills, N.Y. 11746
Filed Aug. 28, 1991, Ser. No. 750,968
Int. Cl.[5] H04L 7/04
U.S. Cl. 375—106 19 Claims



1. A received data sampling clock circuit for use in asynchronous local area networks, comprising a RD (received data)-to-clock position circuit for determining the position of RD with respect to a system clock; a bias distortion circuit for determining the pulse width of the RD; and means for combining and decoding output signals from said RD-to-clock position circuit and said bias distortion circuit for determining an approximate center of said RD and for selecting a proper sampling clock for said RD.

5,327,467
CODE DISTRIBUTION MULTIPLE ACCESS COMMUNICATION SYSTEM WITH USER VOICE ACTIVATED CARRIER AND CODE SYNCHRONIZATION
Riccardo De Gaudenzi, Leiderdorp, and Roberto Viola, Oegstgeest, both of Netherlands, assignors to Agence Spatiale Europeenne, Paris, France
PCT No. PCT/EP90/01276, § 371 Date May 30, 1991, § 102(e) Date May 30, 1991, PCT Pub. No. WO91/02415, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 31, 1990, Ser. No. 663,835
Claims priority, application France, Aug. 3, 1989, 89 10481
Int. Cl.[5] H04L 7/00
U.S. Cl. 375—107 14 Claims



1. A process for achieving the synchronization between a user terminal and a master control station in a Code Distribution Multiple Access (CMDA) communication system comprising a plurality of user terminals and a centralized master control station, each user terminal and the master control station being adapted to transmit and receive communication signals over a two-way forward/return link, said user terminal being adapted to transmit voice activated carrier signals, said processing comprising the steps of:

achieving the synchronization in the forward link by using a master code transmitted uninterruptedly from the master control station, said master code having a higher power level than the return link signals, said master code serving to synchronize the user terminal to the master control station for demodulation of the communication signals; and

achieving the synchronization in the return link by using a synchronization signal transmitted form the user terminal during the pauses in a message when a pause has a duration longer than a predetermined time, said synchronization signal having a duration which should allow the master control station to be locked for further signal demodulation.

5,327,468
SYNCHRONIZATION OF TIME-OF-DAY CLOCKS IN A DISTRIBUTED PROCESSING NETWORK SYSTEM
Warren A. Edblad, Plum Boro; Albert W. Crew, Monroeville, and Carl J. Staab, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 19, 1992, Ser. No. 901,446
Int. Cl.[5] H04L 7/00; H04J 3/22, 3/12
U.S. Cl. 375—107 10 Claims

1. A distributed processing system comprising:

a plurality of stations each having a station processor with an operating system maintaining a station time-of-day clock and a network interface;

a data communications network for connecting said plurality of stations through the network interfaces;

synchronization means for synchronizing each of the station time-of-day clocks in each of the station processors;

wherein said synchronization means includes:

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a free running counter in each network interface for maintaining a count of time intervals;

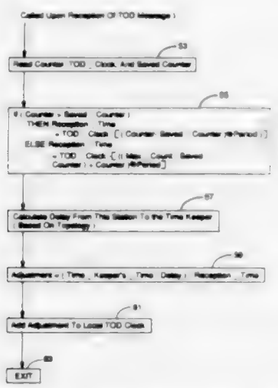
latching means counter in each network interface for selectively storing said count;

means within a designated timekeeper station for periodically generating a timing signal which is transmitted over said data communications network to all of said stations including said timekeeper station;

means in each of the network interfaces for saving said count in the free running counter in said latching means upon receipt of said timing signal;

means in said timekeeper station for subsequently transmitting over said data communications network to all of said stations a timekeeper time-of-day signal representing the time of day at the timekeeper station when said timing signal was received;

means in said stations other than said timekeeper station for determining a station reference time of day from the



latched count in the latching means, the count in the free running counter at the time of receipt of said timekeeper time-of-day signal and the time of day in the operating system time-of-day clock at the time of receipt of the timekeeper time-of-day signal; and

means in each station for determining the difference between the station reference time of day and the received timekeeper time of day and adjusting said time-of-day clock in said operating system based upon said difference;

wherein said data communications network connects said stations in a counter rotating ring configuration with said network interfaces retransmitting said timing signal and timekeeper time-of-day signals around said ring with a predetermined time delay; and

wherein said means for determining said station reference time of day takes into account said predetermined time delay for all network controllers between said station and the timekeeper station.

5,327,469

ARRANGEMENT FOR THE STORAGE OF ENVIRONMENTALLY HAZARDOUS WASTE

Hans Georgii, London, England, assignor to Hydro Beting AB, Stockholm, Sweden

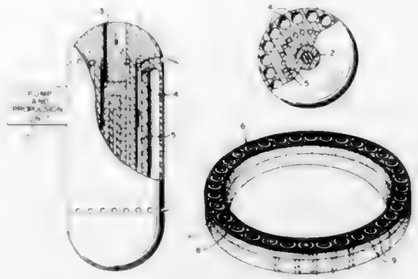
PCT No. PCT/SE89/00551, § 371 Date Apr. 9, 1992, § 102(e) Date Apr. 9, 1992, PCT Pub. No. WO91/05351, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 9, 1989, Ser. No. 844,650

Int. Cl.[5] G21F *9/24*

U.S. Cl. 376—272 **10 Claims**

1. An arrangement for the underwater storage of hazardous waste characterized in that the arrangement includes at least one substantially cylindrical concrete body (1) provided with a single central storage cavity (3) for accommodating and enclosing waste, and a plurality of ballast chambers (4) which are located in the vicinity of and within the cylindrical surface of said body and distributed around the circumference thereof



and which can be filled to varying degrees with water and the total volume of which is such as to enable the body to be brought to a water-buoyant state by emptying said ballast chambers.

5,327,470

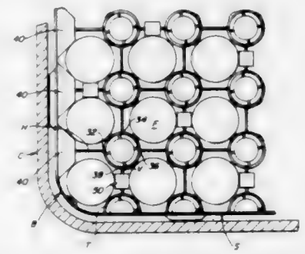
SPACER WITH STEAM SEPARATOR

Eric B. Johansson, Wrightsville Beach, N.C., assignor to General Electric Company, San Jose, Calif.

Filed Feb. 7, 1992, Ser. No. 832,835

Int. Cl.[5] G21C *3/34*

U.S. Cl. 376—438 **10 Claims**



1. In a cross point spacer including a spacer grid for defining surrounding cells in a fuel rod matrix interior of a fuel bundle at selected elevations within said fuel bundle comprising:

pluralities of normally aligned members for extension between respective rows and columns fuel rods for forming a first part of bounding cells around the fuel rod matrix of a fuel bundle;

vertically aligned subchannel tube connected to said members to form a second part of bounding cells around the fuel rod matrix of a fuel bundle and to form a mechanical interconnection to said grid members and to define subchannel flow volumes at the subchannel between adjacent fuel rods;

the improvement to said subchannel tubes comprising:

peripheral attachments interior of said tubes for providing a spiral flow to at least some of the steam water mixture flowing through said tube whereby at least some water is centrifugally classified from said steam flow through said subchannel tubes upon discharge of said coolant flow from said subchannel tubes; and

said peripheral attachments interior of said tubes defining a central flow free volume in said subchannel tubes for

providing the upward unobstructed flow of coolant within said tubes.

5,327,471

NUCLEAR REACTOR FUEL ASSEMBLY WITH A SUPPORTING COOLANT TUBE

Werner Meier, Kunreuth; Hans-Joachim Lippert, Höchstadt-/Aisch; Hans Lettau, Effeltrich, and Kurt Kraus, Höchstadt-/Aisch, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 924,056

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1990, 4006262; Sep. 18, 1990, 4029539

Int. Cl.[5] G21C *3/34*

U.S. Cl. 376—439 **32 Claims**



1. A nuclear reactor fuel assembly, comprising:

a) at least one coolant tube with an upper end having an opening formed therein and an upper end piece and a lower end having an opening formed therein and a lower end piece;

b) a bottom plate being supported by said coolant tube and joined to said lower end piece in a dimensionally rigid manner, said bottom plate having inlet openings formed therein for liquid coolant;

c) a cover plate retaining said upper end piece and having outlet openings formed therein for a liquid/steam mixture of coolant;

d) gridlike spacers defining meshes therein, means for retaining said spacers on said coolant tube between said plates; and

e) a plurality of fuel rods each being guided through a respective one of said meshes, each of said fuel rods being filled with nuclear fuel and each of said fuel rods being joined to at most one of said plates.

5,327,472

BOILING WATER NUCLEAR REACTOR AND NUCLEAR REACTOR FUEL ASSEMBLY FOR THE BOILING WATER REACTOR

Wendelin Kraemer, Frankfurt am Main; Walter Uebelhack, and Gustav Frömel, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

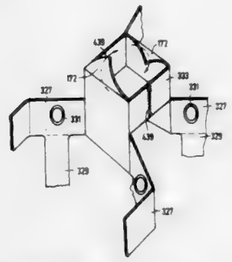
PCT No. PCT/DE91/00133, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO91/13442, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 20, 1991, Ser. No. 924,059

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1990, 4006264

Int. Cl.[5] G21C *3/39*

U.S. Cl. 376—439 **13 Claims**



1. A boiling water reactor, comprising:

a pressure vessel, a steam turbine connected to said pressure vessel, a reactor core disposed in said pressure vessel, at least one nuclear reactor fuel assembly disposed in said reactor core, and controllable absorber elements disposed in said reactor core outside said at least one fuel assembly;

said at least one fuel assembly including an elongated fuel assembly case with mutually parallel side walls laterally closing off said fuel assembly, an inlet end for liquid coolant, an outlet end for a liquid/steam mixture of the coolant, fuel rods containing nuclear fuel being disposed side by side and parallel to said side walls of said case, and a grid extending substantially perpendicularly to said side walls of said case, said grid having grid meshes formed therein through which said fuel rods extend;

said fuel rods being disposed in lengthwise rows and in crosswise rows intersecting said lengthwise rows, and each four of said fuel rods disposed in two adjacent lengthwise rows and in two adjacent crosswise rows forming one flow subchannel being parallel to said side walls of said case for coolant flowing in a given direction, said flow subchannels defining a center axis and side walls of said flow subchannels;

said grid being formed of ribs extending substantially parallel to said lengthwise rows and said crosswise rows and having edges facing away from the coolant flow, and at least two vanes disposed on said edges of said ribs in a center region of at least a plurality of said flow subchannels, said vanes being tapered in said given direction and curved at an angle with respect to the center axis for creating a swirl in the coolant around the center axis.

5,327,473

TIME PERIOD CONFIGURABLE FLUID FLOW CONTROL CIRCUIT

Hans Weigert, 284 Franklin Tpk., Ridgewood, N.J. 07450

Filed Oct. 30, 1992, Ser. No. 969,425

Int. Cl.[5] G06M *3/02*

U.S. Cl. 377—21 **18 Claims**

1. An electronic timing circuit that can be used to control the flow of fluid according to a specific time period that is allotted

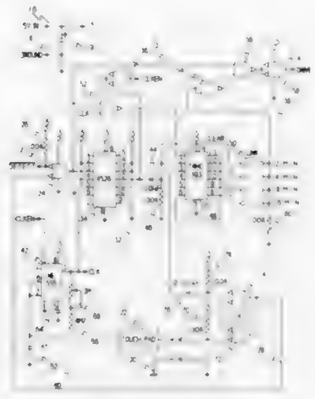
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for each of a number of users, said electronic timing circuit comprising:

a clock circuit-responsive to a clock enable signal, for providing a system clock signal;

a reset counter circuit responsive to said system clock signal and detect input signal, for providing said clock circuit enable signal and a flow time counter circuit reset signal; and

a flow time counter circuit responsive to said system clock signal and said flow time counter circuit reset signal, for



providing a drive output signal, wherein said flow time counter circuit dictates a maximum flow time period during which said drive output signal may remain active, and wherein said reset counter circuit dictates a system reset time during which said electronic timing circuit may reset itself after being used by one of said number of users but prior to subsequent use by another of said number of users or during which said flow time counter circuit may maintain a flow time count to ensure that each of said number of users is provided with said maximum flow time period.

5,327,474

X-RAY RADIOGRAPHIC APPARATUS FOR MEDICAL USE

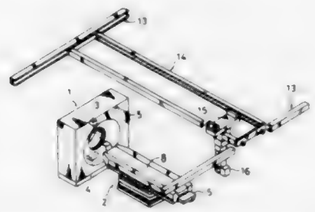
Yoshihiro Inoue, Higashi; Katsunori Sukeyasu, Nagaokakyo, and Yoshitaka Okumura, Kyoto, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 24, 1993, Ser. No. 21,855

Claims priority, application Japan, Feb. 28, 1992, 4-079146

Int. Cl.[5] H05G *1/60*

U.S. Cl. 378—20 **10 Claims**



1. An X-ray radiographic apparatus for medical use in photographing tomographic images and X-ray penetration images of an examinee, said apparatus comprising:

a bed horizontally movably supporting a top board for carrying the examinee;

a gantry for X-ray tomography including a first X-ray source revolvable around the examinee, and first X-ray detecting means for detecting transmitted X-rays;

a second X-ray source mounted on a moving mechanism movable on a three-dimensional coordinate system in an examination room accommodating said bed and said gantry;

a high voltage unit for supplying an X-ray generating high current to said first X-ray source and said second X-ray source;

switch means for selecting a destination of output of said high voltage unit; and

at least one second X-ray detecting means for detecting transmitted X-rays from said second X-ray source.

5,327,475

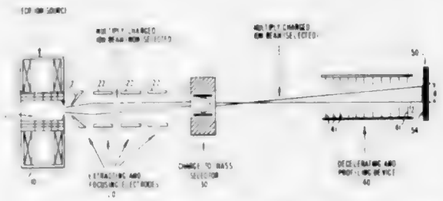
SOFT X-RAY SUBMICRON LITHOGRAPHY USING MULTIPLY CHARGED IONS

Konstantin S. Golovanivsky, Grenoble, France, and Erazm M. Omeljanovsky, New York, N.Y., assignors to Ruxam, Inc., New York, N.Y.

Filed Aug. 18, 1992, Ser. No. 931,703

Int. Cl.[5] G21K *5/00*

U.S. Cl. 378—34 **31 Claims**



1. A method for x-ray lithography on a material comprising the steps of:

b) placing a mask over the resist wherein the mask is not transparent to x-rays and contains a pattern so that some of the resist is not covered by the mask;

c) providing a layer of material over the mask and the not covered resist, the layer containing free electrons; and

d) irradiating the layer of material with multiply charged ions so that the ions interact with free electrons and produce soft x-ray photons having a photon energy between 0.1 and 1 keV for sensitizing the resist.

5,327,476

X-RAY EXAMINATION APPARATUS HAVING MEANS FOR CORRECTING SCATTERED-RADIATION EFFECTS IN AN X-RAY IMAGE

Rudolf Kemner, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1993, Ser. No. 44,310

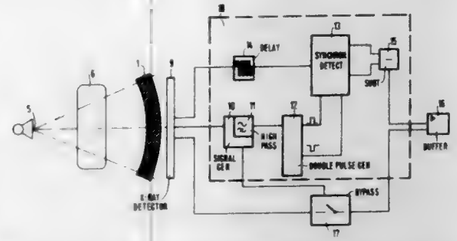
Claims priority, application European Pat. Off., Apr. 8, 1992, 92200998.0

Int. Cl.[5] H05G *1/64*

U.S. Cl. 378—98.4 **15 Claims**

1. An x-ray examination device comprising an x-ray source, a scattered-radiation grid, an x-ray detector for converting x-ray intensities constituting the x-ray image into a video signal containing information for producing a visible image and the x-ray examination apparatus also comprising means for correcting scattered-radiation effects in an x-ray image, characterised in that the means for correcting scattered-radiation effects in an x-ray image comprises signalling circuit means for providing selection signals, and video signal separation means for deriving, from the video signal generated by the x-ray detector, by using the selection signals a first separated video signal

derived from x-ray intensities at positions behind transparent parts of the scattered-radiation grid and a second separated video signal derived from x-ray intensities at positions behind



absorbing parts of the scattered-radiation grid, and in that the device further comprises subtraction means for subtracting the first separated video signal from the second separated video signal.

5,327,477

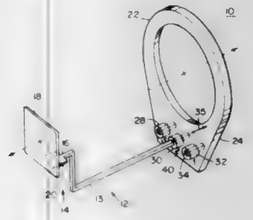
FILM POSITIONING SYSTEM FOR DENTAL X-RAY PROCEDURES

Paul Levy, 625 Main St., #19, Reading, Mass. 01867

Filed Dec. 29, 1992, Ser. No. 977,616

Int. Cl.[5] A61B *6/14*

U.S. Cl. 378—168 **13 Claims**



1. A film positioning system for dental X-ray procedures comprising:

a plurality of film carriers each including film holder means on one end and a uniquely shaped attachment rod extending therefrom;

an X-ray tube aiming device including a plurality of distinct positioning means for separately positioning each said film carrier in the proper orientation with respect to said X-ray tube; and

means for assuring each said uniquely shaped attachment rod is correctly associated with its corresponding distinct positioning means including an annotation on each said film carrier and complementary annotations proximate each said distinct positioning means for assuring proper orientation of said film holder within the patient's mouth.

5,327,478

CELLULAR NETWORK DATA TRANSMISSION SYSTEM

Mayer M. Lebowitz, 5515 Northaven Rd., Dallas, Tex. 75229

Continuation-in-part of Ser. No. 486,425, Feb. 28, 1990, Pat. No. 5,125,021, which is a continuation-in-part of Ser. No. 401,651, Aug. 31, 1989, Pat. No. 5,146,486. This application Jun. 12, 1992, Ser. No. 897,700

The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.

Int. Cl.[5] H04M *11/00, 11/04*

U.S. Cl. 379—40 **24 Claims**

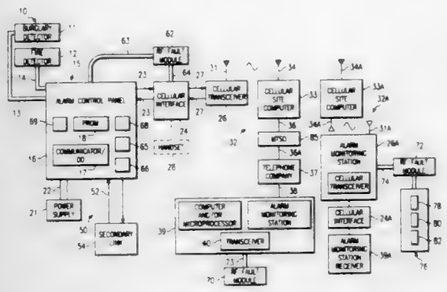
1. A system for transmitting data between a subscriber site and at least one monitoring station, comprising:

sensor circuitry for generating data responsive to an event at the subscriber site;

first transmission circuitry responsive to said sensor circuitry and being operable to transmit the data from the subscriber site using a cellular telecommunication network;

second transmission circuitry responsive to said sensor circuitry operable to transmit the data from the subscriber site using a second telecommunications network;

first fault detect circuitry coupled to said first transmission



circuitry for monitoring the operation of said cellular telecommunications network and, if the monitoring station is coupled to a cellular network, second fault detect circuitry at that monitoring station for continuously monitoring the operability of the cellular telecommunications network connected to the monitoring station; and

selection circuitry coupled to the first fault detect circuitry for automatically switching to said second transmission circuitry when said first fault circuitry detects a fault in said first transmission circuitry.

5,327,479

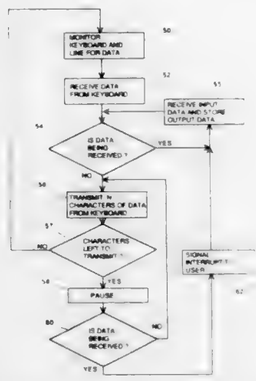
TELECOMMUNICATION DEVICE FOR THE DEAF WITH INTERRUPT AND PSEUDO-DUPLEX CAPABILITY

Robert M. Engelke, Madison; Kevin Colwell, Middleton, and Ronald W. Schultz, Madison, all of Wis., assignors to Ultratec, Inc., Madison, Wis.

Filed May 20, 1992, Ser. No. 886,642

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—52 **20 Claims**



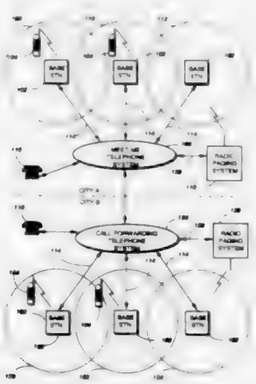
1. A telecommunication device for the deaf for communication over an analog telephone line, the device comprising:

a source of input data characters to be transmitted;

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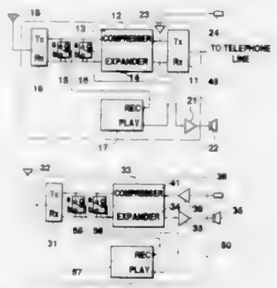
a destination for received data characters;
a microprocessor operating in accordance with a stored program code and connected to accept input data characters from the input source and to deliver data characters to the destination;
an analog input circuit adapted to being connected to the telephone line so as to be responsive to the reception of Baudot tones over the telephone line and also connected to the microprocessor so as to provide a digital input to the microprocessor of the data received over the telephone line;
an analog output line adapted to being connected to the telephone line so as to be capable of presenting Baudot tones over the telephone line and also connected to receive data from the microprocessor and transmit Baudot tones encoding such data over the telephone line; and
a memory device connected to the microprocessor containing the program code for operation of the microprocessor to control operation of the microprocessor to control operation of the telecommunications device to generally
(i) receive data entered from the input source;
(ii) present entered data from the input source on the analog output line;
(iii) receive input data from the analog input line; and
(iv) deliver data received on the input analog line to the destination;
the program code further constraining the microprocessor to operate in accordance with the following rules
(a) if any Baudot tones are being receiving on the input circuit, to not present output Baudot tones on the telephone line through the analog output line; and
(b) during transmission, to pause after a preselected number of data characters transmitted to the test during that pause for the receipt of any Baudot tones over the analog input circuit.

5,327,480
METHOD AND APPARATUS IN A COMMUNICATION SYSTEM FOR COMPLETING AN INBOUND CALL
Robert L. Breeden, Boca Raton, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 22, 1993, Ser. No. 20,921
Int. Cl.[5] **H04M** *11/00*
U.S. Cl. 379—57 20 Claims



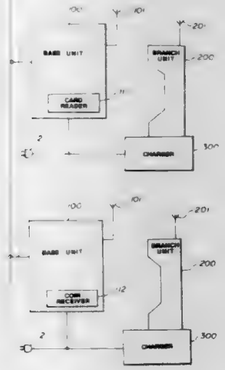
1. A method for completing an inbound call from a telephone system to a user of a portable communication unit including user controls operating in a communication system comprising a base station coupled to the telephone system by a telephone line, wherein the telephone system is capable of completing the inbound call by a plurality of procedures requiring a plurality of differing responses by the base station and the portable communication unit, the method comprising in the portable communication unit the steps of:
receiving a selective call message comprising a Call-Type Identifier and a Call-Completion Number;
establishing a communication link with the base station in response to said receiving step; and
transmitting thereafter the Call-Completion Number and a Call-Type Code in accordance with the received Call-Type Identifier,
wherein the method further comprises in the base station the steps of:
originating a call to the telephone system in accordance with the Call-Completion Number and the Call-Type Code received from the portable communication unit during said transmitting step; and
completing thereafter processing of the inbound call in a manner determined by the Call-Type Code.

5,327,481
RADIO COMMUNICATION DEVICE AND CORDLESS ANSWER PHONE
Masashi Horimoto, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Sep. 10, 1992, Ser. No. 943,304
Claims priority, application Japan, Sep. 17, 1991, 3-236510
Int. Cl.[5] **H04M** *11/00*; **G10L** *3/02*
U.S. Cl. 379—58 3 Claims



1. A cordless answer phone for performing a conversation between a base set and at least one hand set by a radio signal, comprising:
recording and reproducing means having a record terminal and a play terminal for recording and reproducing an answer message of a telephone subscriber and a telephone message input from a telephone subscriber line;
means for compressing an amplitude of a sound signal of the answer message and the telephone message;
means for expanding the amplitude of the sound signal of the answer message and the telephone message;
radio transmitting and receiving means having a transmitting part and a receiving part for performing a radio connection between the base set and the at least one hand set;
first switch means for selectively connecting the record terminal of the recording and reproducing means with either the compressing means or the transmitting part of the radio transmitting and receiving means; and
second switch means for selectively connecting the play terminal of the recording and reproducing means with either the expanding means or the receiving part of the radio transmitting and receiving means.

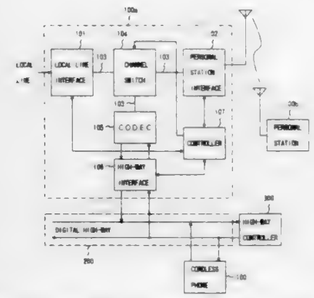
5,327,482
PUBLIC CORDLESS TELEPHONE SYSTEM WITH COIN/CARD INSERTION INHIBITING MEANS
Kazuo Yamamoto, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 7, 1992, Ser. No. 909,998
Claims priority, application Japan, Jul. 8, 1991, 3-167180
Int. Cl.[5] **H04M** *11/00*
U.S. Cl. 379—61 21 Claims



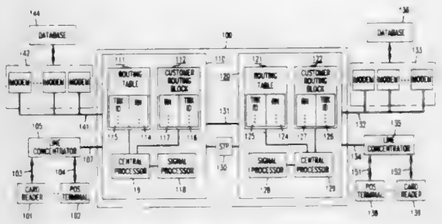
1. A public cordless telephone system comprising:
a base unit connected to a public line network;
at least one branch unit, having a battery for supplying power to the branch unit, for transmitting a call-origination signal to the public line network through the base unit;
a charger, connected to the base unit, for charging the battery of the branch unit;
radio link establishing means for establishing a radio link between the base unit and the branch unit;
calling enable means for, when a predetermined calling condition is satisfied, controlling the radio link establishing means to establish the radio link between the base unit and the branch unit and for enabling the transmission of the call-origination signal from the branch unit through the base unit to the public line network, wherein the calling enable means includes:
coin receiving means connected to the base unit for receiving a coin, and
means for enabling calling by the branch unit when a predetermined monetary amount is received by the coin receiving means;
charging means for charging a fee for a call placed through the public line network resulting from the call-origination signal enabled by the calling enable means;
detection means for detecting a charged state of the battery of the branch unit when the branch unit is mounted to the charger; and
coin reception inhibiting means for inhibiting reception of the coin in the coin receiving means when the detection means detects that the charged state of the battery of the branch unit is insufficient to make a call.

5,327,483
CORDLESS PHONE AND CORDLESS PHONE SYSTEM USING SUCH CORDLESS PHONE
Tetuya Kikuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 30, 1992, Ser. No. 954,667
Int. Cl.[5] **H04M** *11/00*; **H04Q** *7/00*
U.S. Cl. 379—61 17 Claims

6. A cordless phone in combination with a digital highway, the cordless phone comprising a base station coupled to a line connected to an external station, and a personal station communicating with said base station by radio, said digital highway being connected to at least one communication equipment, said base station of the cordless phone comprising:
first channel means for operatively coupling said personal station to the line so that communication between said personal station and the external station is carried out via the line and said base station;
second channel means for operatively coupling said personal station to the digital highway through which digital data is transmitted so that extension communication between said personal station and said at least one communication equipment connected to said digital highway is carried out via said digital highway and said base station;
third channel means for operatively coupling the line to the digital highway so that communication between said external station and said at least one communication equipment connected to said digital highway is carried out via the line, said base station and said digital highway; and
control means, coupled to the line, said personal station and the digital highway, for activating one of said first, second and third channel means based on control information supplied from a line, said personal station or the digital highway.



5,327,484
CALLING SYSTEM FOR SHORT DURATION DATA TRANSACTIONS
Francis J. Connell, Somerset, and Travis H. Gordon, Madison, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 30, 1992, Ser. No. 876,890
Int. Cl.[5] **H04M** *11/00, 3/00*
U.S. Cl. 379—93 16 Claims



1. A method of completing each call in a burst of calls a) originating from a plurality of sources each connected to a line concentrator and b) directed to a common destination, wherein said method comprises the steps of:
establishing an initial connection between a first one of said sources and said common destination through a communi-

cation path extending from said line concentrator to said common destination;

queuing subsequent calls in said burst of calls in said line concentrator when said communication path to said common destination is in use;

inhibiting the release of said communication path for the duration of said burst of calls; and

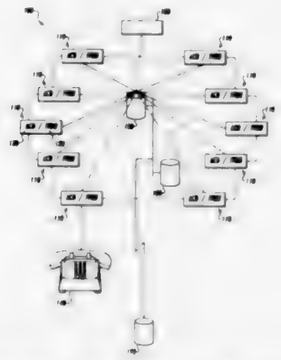
completing each subsequent call in said burst of calls by establishing a connection between a different one of said sources and said common destination, wherein said connection includes said communication path.

5,327,485

TELEPHONE LOTTERY PLAY SYSTEM

Frank Leaden, Roseville, Calif., assignor to Pacific Bell, San Francisco, Calif.

Filed Dec. 1, 1992, Ser. No. 984,130
Int. Cl.[5] H04M *11/00*; **G06F** *15/2*
U.S. Cl. 379—95 **19 Claims**



1. An interactive telephone lottery system for operating in conjunction with a state lottery computer so as to allow the lottery wagers to be placed through a telephone, said interactive telephone lottery system comprising:

a) means for authorizing telephone lottery playbooks for use, each said telephone lottery playbook having an associated playbook identification number and at least one playslip, each said playslip having an associated playslip identification number, said authorizing means also for providing a Personal Identification Number ("PIN") for use with an authorized telephone lottery playbook;

b) means, coupled to said telephone, for placing lottery wagers, comprising

i) means for prompting a user for said playbook identification number and said playbook PIN,

ii) means for verifying validity of said playbook identification number and said playbook PIN,

iii) means for prompting said user for an identification number for a playslip from said playbook,

iv) means for prompting said user for a wager selection for said playslip, and

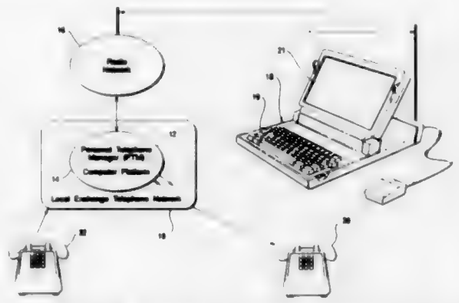
v) means for communicating said wager selection to said state lottery computer.

5,327,486

METHOD AND SYSTEM FOR MANAGING TELECOMMUNICATIONS SUCH AS TELEPHONE CALLS

Richard S. Wolff, West Caldwell; Warren S. Gifford, Holmdel; Michael Kramer, Bronx; David S. Miller, Bedminster; Gerardo Ramirez, Bridgewater, and David L. Turock, Highland Park, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 22, 1993, Ser. No. 45,005
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—96 **40 Claims**



1. Method for managing a telecommunications call in a telecommunications network from a caller to an end user, the method comprising the steps of:

receiving the call from the caller, the call including call identification information;

screening the call based on the caller identification through automated access to a data base; then

transmitting a first radio signal based on the caller identification information to a computer having a display screen which computer is locationally independent of the telecommunications network;

receiving the first radio signal;

presenting a first message identifying the caller and displaying objects on the display screen, each object representing a function which may be performed by the user in response to the call;

receiving user selection data representing a selection of one of the objects by the end user to identify the function to be performed in response to the call;

transmitting a second radio signal representing a second message identifying the function to be performed;

processing the second message in response to said second radio signal; and performing the identified function in the telecommunications network.

5,327,487

FACSIMILE APPARATUS AND METHOD FOR USE WITH CUSTOMER SWITCHING SYSTEM

Sanford S. Brown, Lincroft; Mark A. Crandall, Belford, and Harvey S. Schultz, Manalapan, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

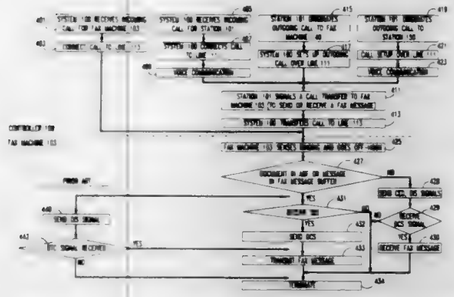
Filed Jan. 21, 1992, Ser. No. 822,806
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **32 Claims**

1. A facsimile (fax) apparatus comprising:

means for answering a call received over a communication channel connected to said fax apparatus;

means for detecting the presence of a fax message awaiting to be transmitted from said fax apparatus; and

means, responsive to said call and a detected presence of said fax message, for transmitting said fax message over said



channel without first sending a digital identification signal (DIS) over said channel.

5,327,488

REMOTELY INITIATED TELEMETRY CALLING SYSTEM

Stuart M. Garland, Morton Grove, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 20, 1992, Ser. No. 855,997
Int. Cl.[5] H04M *3/42, 11/00/3/00*
U.S. Cl. 379—201 **29 Claims**

1. In a communication switching system for serving a line and for serving a plurality of other lines, a method of establishing a special service call to a destination, comprising:

in said switching system, responsive to receipt of a special service call from said line, the special service call comprising an identifying indicator, deactivating a class of customer features for said line, said class of features identified by said identifying indicator and comprising features that might interfere with said special service call; and

in said switching system, responsive to receipt of said special service call extending said special service call toward said destination;

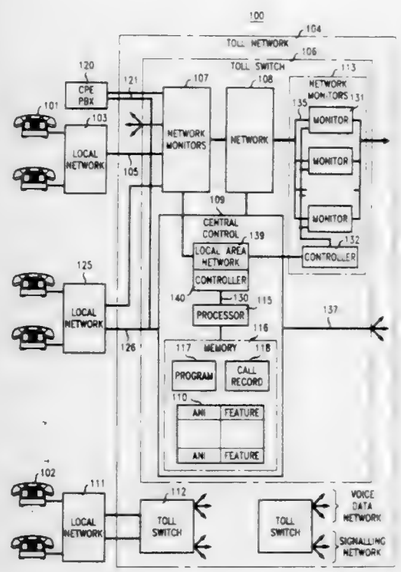
whereby features that might interfere with said special service call are automatically deactivated when said special service call is extended in said switching system toward said destination.

5,327,489

METHOD AND APPARATUS FOR MONITORING A NETWORK FOR CUSTOMER SIGNALING DURING THE TERM OF A CALL

Thomas W. Anderson, Naperville; Elliott Baral, Chicago; Ronald S. Byrd, North Aurora; Bernard W. Fecht, Naperville, all of Ill.; David S. Isenberg, Shrewsbury, N.J.; Larry W. Kirsch, Bolingbrook, Ill.; Frederick W. Korty; Ronald B. Martin, both of Wheaton, Ill., and Dario L. Parola, Matawan, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 16, 1991, Ser. No. 808,348
Int. Cl.[5] H04M *3/42, 1/64, 15/00, 9/08*
U.S. Cl. 379—207 **25 Claims**



1. In a telecommunications network comprising a plurality of network switches, a plurality of channels interconnected to said network switches, and a plurality of network monitors each under the control of one of said network switches and connected in pairs to respective opposite ends of one of said channels, each of said network monitors comprising a multi-tone signal processor and an echo canceler, a method for providing access to network services comprising the steps of:

receiving a call origination from an identified calling line on said one channel at a first of said plurality of network switches,

said first network switch determining that said identified calling line subscribes to network services,

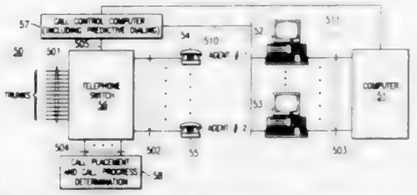
said first network switch enabling said multi-tone signal processor in one of said pair of network monitors to monitor said channel for signaling during a period from a call set-up continuing throughout a connection of said identified calling line and a terminating line, and ending upon a termination of the call by said identified calling line,

a second of said pair of network monitors canceling echoes of said signaling;

said one of said pair of network monitors reporting said signaling to said first network switch in response to its detection of signaling; and

said first network switch providing access to network services for said one of said channels.

5,327,490
SYSTEM AND METHOD FOR CONTROLLING CALL PLACEMENT RATE FOR TELEPHONE COMMUNICATION SYSTEMS
Ellis K. Cave, Garland, Tex., assignor to InterVoice, Inc., Dallas, Tex.
Filed Feb. 19, 1991, Ser. No. 657,631
Int. Cl.[5] H04M *1/26;* **H04Q** *3/64*
U.S. Cl. 379—216 **44 Claims**



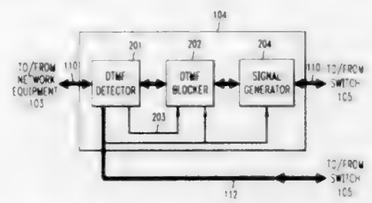
14. A method for controlling outbound calling connections for handling by one or more attendants, said method comprising:
monitoring statistical parameters concerning call completion times and each one of said attendants' availability;
incorporating with said statistical parameters a received delay parameter depending upon a desired approximate balance between idle attendants and an amount of non-communication holding time a completed call connection is to be subject to;
automatically attempting outbound call placement; and
adjusting under control of said monitoring step timing of attempted outbound calling connections depending upon each one of said attendants' availability and said call completion parameters and said delay parameter.

5,327,491
METHOD FOR PACING CALLS TO REDUCE NUISANCE CALLS
Dzu-Wan Syu, Centreville, Va., assignor to International Telesystems Corp., Herndon, Va.
Continuation of Ser. No. 800,546, Nov. 27, 1991, Pat. No. 5,179,589. This application Jan. 11, 1993, Ser. No. 2,612
The portion of the term of this patent subsequent to Nov. 27, 2008, has been disclaimed.
Int. Cl.[5] H04Q *3/64;* **H04M** *3/42*
U.S. Cl. 379—265 **1 Claim**



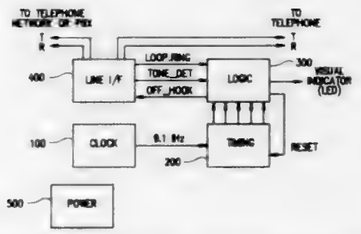
1. A method of pacing calls in a call origination management system that has a number of operators to which answered calls are connected, comprising the steps of:
determining a number of lines to dial;
dialing calls based on said number of lines to dial established in said determining step;
establishing an interrupt time slot for a dialed call that extends in duration from a time after a call is dialed to a time prior to a time when said call would be expected to result in a predetermined number of ring signals on a dialed line;
terminating a call in said interrupt time slot conditionally in order to reduce a ratio of nuisance calls to call attempts.

5,327,492
METHOD FOR SELECTIVELY CONTROLLING THE PROPAGATION OF DUAL-TONE MULTI-FREQUENCY SIGNALS WITHIN A TELECOMMUNICATIONS NETWORK
Dario L. Parola, Matawan, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 30, 1992, Ser. No. 876,555
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—361 **14 Claims**



1. A method for selectively controlling the propagation of dual-tone multi-frequency signals along a communications channel within a telecommunication network, comprising the steps of:
monitoring the communications channel to detect, during a pre-answer period of a call initiated from a first network user to a second network user supported by the communications channel, one or more dual-tone multi-frequency signals transmitted along said communications channel by said first network user; and
prohibiting, in response to detection of a specific one or more dual-tone multi-frequency signals, all dual-tone multi-frequency signals subsequently transmitted along said communications channel by said first network user from being propagated to said second network user, while permitting the propagation of all other voice channel audio signals subsequently transmitted along said communication channel from said first network user to said second network user.

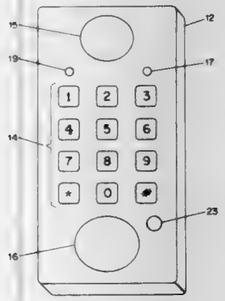
5,327,493
DEVICE FOR DETECTING TONES ON TELEPHONE LINES
Robert L. Richmond, Seattle, Wash.; Martin Richmond, Lexington, Mass.; Richard Aydelotte, Kirkland, and Bennet Blake, Lynnwood, both of Wash., assignors to Active Voice, Inc., Seattle, Wash.
Filed May 2, 1991, Ser. No. 694,697
Int. Cl.[5] H04M *1/64*
U.S. Cl. 379—372 **8 Claims**



5. A device for connecting to a telephone line for indicating the presence of a message waiting signal on the line comprising:
(a) line interface means for establishing communications on the line in response to one or more events selected from the following group:

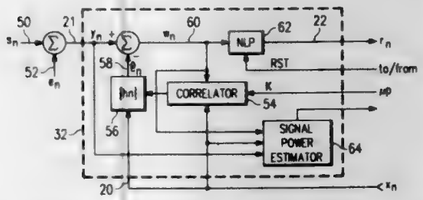
(i) periodically where the periods are between one second and 24 hours,
(ii) within one hour after a use of the line, and
(iii) within one hour after a ring;
(b) detection means for sensing whether the message waiting signal is present on the line; and
(c) indicator means, responsive to the detection means, for indicating whether the message waiting signal is present on the line.

5,327,494
DIAL TONE ANNUNCIATING SYSTEM AND METHOD
Henry Gifford, 230 Riverside Dr. #11C, New York, N.Y. 10025-6172
Filed Sep. 14, 1993, Ser. No. 120,946
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—387 **10 Claims**



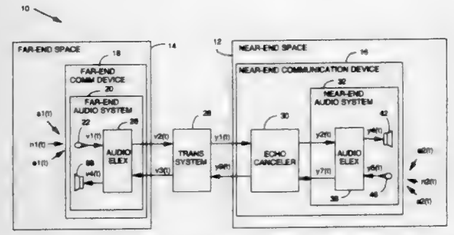
1. A telephone consisting essentially of:
a handset;
means for dialing incorporated into the handset;
means for detecting a dial tone; and
means, incorporated into the handset, for annunciating a detection of a dial tone in a manner which does not require a user to bring the handset to the user's ear to determine whether a dial tone is present.

5,327,495
APPARATUS AND METHOD FOR CONTROLLING AN ECHO CANCELER
Kishan Shenoi, Milpitas, and Thomas T. Oshidari, San Jose, both of Calif., assignors to DSC Communications Corporation, Plano, Tex.
Filed Oct. 23, 1992, Ser. No. 965,793
Int. Cl.[5] H04M *9/00*
U.S. Cl. 379—410 **13 Claims**



12. Apparatus for controlling an echo canceler having an adaptive filter controllable by an adaptive gain, and a residual echo suppressor controllable by a residual suppression threshold, the apparatus comprising:
means for determining the beginning of a transitional hangover time between double talk or soft double talk and single talk conditions;
a counter being initialized at the beginning of said transitional hangover time and for timekeeping during said hangover time;
means for computing an adaptive filter gain for time instances during said transitional hangover time, said computed gain varying gradually depending on an account of time lapse from the beginning of said transitional hangover time from a first predetermined value to a second predetermined value;
computing said residual suppression threshold for time instances during said transitional hangover time, said computed threshold varying gradually depending on an amount of time lapse from the beginning of said transitional hangover time from a third predetermined value to a fourth predetermined value; and
means for providing said adaptive filter with said computed gain and said residual echo suppressor with said computed residual suppression threshold.

5,327,496
COMMUNICATION DEVICE, APPARATUS, AND METHOD UTILIZING PSEUDONOISE SIGNAL FOR ACOUSTICAL ECHO CANCELLATION
Steve F. Russell, and John F. Doherty, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed Jun. 30, 1993, Ser. No. 85,749
Int. Cl.[5] H04K *1/02;* **H04L** *27/30;* **G10K** *11/16*
U.S. Cl. 380—6 **24 Claims**



7. An acoustical echo cancellation apparatus for use with an audio system, said audio system responsive to a first composite signal for converting said first composite signal to sound in an at least partially enclosed space, said at least partially enclosed space producing an acoustical echo in response, said audio system also for converting said acoustical echo and other sounds in said at least partially enclosed space to a second composite signal, said second composite signal including an echo component corresponding to said acoustical echo, said at least partially enclosed space and said audio system together forming a combined system having an overall impulse response, said apparatus comprising:
a signal generator for generating a pseudonoise signal;
an audio mixer responsive to an input audio signal and said psneudonoise signal for combining said input audio signal with said pseudonoise signal to produce said first composite signal;
means responsive to said second composite signal and said pseudonoise signal for generating a first estimate of said overall impulse response;
means responsive to said first composite signal and said first estimate for generating an echo estimation signal corresponding to an estimate of said echo component of said second composite signal; and
means for subtracting said echo estimation signal from said second composite signal to produce said output audio signal.

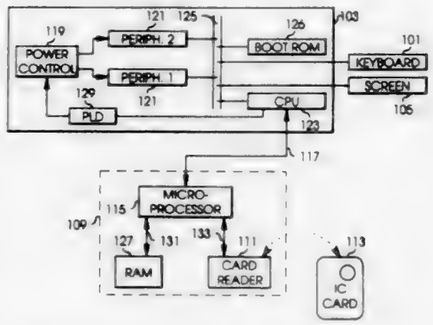
VOL 1164 ISS 1 JL 5 1994 UMI

5,327,497

PREBOOT PROTECTION OF UNAUTHORIZED USE OF PROGRAMS AND DATA WITH A CARD READER INTERFACE

David M. Mooney, Eden Prairie; James B. Glazier, Hopkins; David E. Wood, Shorewood; Joseph A. Kimlinger, Willernie, and Paul Goshgarian, Mound, all of Minn., assignors to Integrated Technologies of America, Inc., Hopkins, Minn.

Filed Jun. 4, 1992, Ser. No. 893,670
Int. Cl.[5] H04K *1/00*; H04L *9/00*
U.S. Cl. 380—25 7 Claims



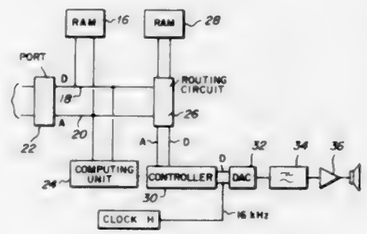
1. A secure computer providing for the controlled access of internal devices via a card reader, the computer comprising:
a user input device;
a card reader;
a screen display;
a central processign unit (CPU);
a program logic device (PLD) containing non-volatile CPU program code;
a CPU system boot ROM;
a plurality of peripheral devices;
a system data bus;
a microprocessor for writing and reading information to and from a card placed in the card reader;
the microprocessor and the CPU conneted through a dedicated data bus;
a power control circuit logically connected between the CPU and each of the plurality of peripheral devices for selectively controlling power to each of the plurality of peripheral devices;
said CPU system boot ROM including code for instructing the CPU to start executing the CPU program code in the PLD so that the CPU program code in the PLD takes over control of the CPU, so that upon a power-up, clear, or warm-boot reset of the computer the CPU program code in the PLD obtains control of the CPU; and
said CPU responsive to said CPU program code, to perform an authorization procedure comprising the steps of:
(a) instructing the microprocessor to read a card placed in the card reader by a user and obtain at least one question from a list of questions stored on the card;
(b) displaying the question to the user on the screen display, and waiting for a response from the user on the input device;
(c) passing the response to the microprocessor and the microprocessor comparing at least one user response to a lsit of correct answers stored on the card; and
(d) receiving the results of the comparison by the microprocessor and allowing access to the computer if at least one user response matches a corresponding correct answer.

5,327,498

PROCESSING DEVICE FOR SPEECH SYNTHESIS BY ADDITION OVERLAPPING OF WAVE FORMS

Christian Hamon, Dinan, France, assignor to Ministry of Posts, Tele-French State Communications & Space, Dinan, France

PCT No. PCT/FR89/00438, § 371 Date Nov. 15, 1990, § 102(e) Date Nov. 15, 1990, PCT Pub. No. WO90/03027, PCT Pub. Date Mar. 22, 1990
PCT Filed Sep. 1, 1989, Ser. No. 487,942
Claims priority, application France, Sep. 2, 1988, 88 11517
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—51 8 Claims



1. Process of speech synthesis from diphones stored in a dictionary as waveforms, for text-to-speech conversion, comprising: supplying a sequence of phoneme codes and respective prosodic information including the original fundamental period at the beginning and at the end of the phoneme and the duration thereof, and, for each phoneme, analysing and synthesizing each phoneme; and then concatenating the synthesized phonemes;
wherein said analysis comprises, for each phoneme, selecting two diphones among the stored diphones and determining the presence of voicing,
characterized in that
said analysis further includes, for voiced phonemes, subjecting the respective waveforms of the two diphones constituting the phoneme to filtering by a window having a predetermined position with respect to the waveform so selected that the window be centered on a point of the waveform representative of the beginning of a pulse response of vocal cords to excitation thereof, said window having a width substantially equal to twice the lesser of said original fundamental period and the fundamental synthesis period and having an amplitude progressively decreasing from the center of the window to zero at the edges thereof, and
displacing the signals resulting from said filtering and obtained for each diphone with such a time shift that they are spaced apart by a time equal to the fundamental synthesis period,
and characterized in that synthesis is achieved by adding the displaced overlapping signals.

5,327,499

SAFETY DEVICE FOR A HEARING AID

Mary D. Sohayda, 98 Washington Ave., Carteret, N.J. 07008

Filed Jun. 10, 1992, Ser. No. 896,385
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—68 5 Claims

1. A safety device for a hearing aid, comprising:
a) a hearing aid having a first end for facing into the ear of the wearer, and a second end for facing out of the ear of the wearer;
b) chain-attaching means integrally formed on the second end of said hearing aid;
c) a hole formed in said chain-attaching means;
d) a chain attached to the hole in said chain-attaching means,
e) a first ring on the first end of said chain for attachment to the chain-attaching means of the hearing aid; and



f) a second ring on the second end of said chain for attachment to an earring worn by the wearer of the hearing aid.

5,327,500

CERUMEN BARRIER FOR CUSTOM IN THE EAR TYPE HEARING INTRUMENTS

Donald E. K. Campbell, 245 Arnold La., Winter Springs, Fla. 32708

Filed Dec. 21, 1992, Ser. No. 994,531
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—68.6 11 Claims

1. A hearing instrument comprising:
a shell housing (1) including a sound outlet port (2);
a cerumen barrier having two components in combination:
a sound outlet base 4 comprising:
a bore defining the central axis for the passage of sound having a diameter which is at least about forty thousandths of an inch and at most about one hundred fifty thousandths of an inch; and
a cylindrical component of sound passage (3) insertable into said sound outlet port (2), incorporating a bore of same diameter as the bore of the central axis, having depth which is at least ten thousandths of an inch and at most about one hundred thousandths of an inch extended from the base (4), where the central axis for the passage of sound is therefore extended defined by the interior wall surface of said cylindrical component; and
a counter-bore (10) having at minimum about five thousandths of an inch diameter and at maximum about one hundred twenty thousandths of an inch diameter, having depth which is at minimum about five thousandths of an inch and at maximum about one hundred thousands of an inch; and



a detent cavity (11) which will accept a projecting detent of a minimum of about one thousandths of an inch radius and a maximum of about fifteen thousandths of an inch radius having at a minimum of about zero length (spherically shaped) to a maximum of about thirty thousandths of an inch (cylindrical surface area); and
a base (4) perimeter which is, at the minimum, limited by the outside perimeter of the bore defining the central axis for the passage of sound and the outside perimeter of the counter-bore (10), and at the maximum, a perimeter which is very large in comparison to said bore diameter, exceeding the tip diameter of the shell housing (1), thereby requiring trimming of said base (4) perimeter to match the contour of the hearing aid shell; and
a barrier door (9) which is defined by:
a male connector (8) which is fitted into the counter-bore (10) of the base component (4) and having a solid cylinder (20) with a cap (21) at the end of said cylinder where the cap has a maximum diameter which is greater than the diameter of the smaller top hole in the counter-bore (10), which in cooperation with the barrier door (9), rotates said connector within the base (4); and
a detent (12) which projects from the bottom surface of the barrier door (9) which in cooperation with the base detent cavity (11) properly aligns the door (9) and the base (4) such that their respective perimeters are flush; and
a sound outlet channel (16), positioned above the cylindrical component (3) when the barrier door (9) is properly aligned, which width is at a minimum of about thirty thousandths of an inch and at a maximum of about one hundred fifty thousandths of an inch, and height at a minimum of about five thousandths of an inch and at a maximum of about thirty thousandths of an inch, and length extending such that sound may exit both sides of the barrier door (9) when said door is properly aligned; and
a height at a minimum of about ten thousandths of an inch and at a maximum of about one hundred thousandths of an inch; and
a top surface area which is contoured to disallow any significant edges which can contact the ear canal creating discomfort during insertion; and
a perimeter of the said door (9) which is at a minimum, flush with the perimeter of top of the said base (4) at the surface between the two components, and at a maximum, as large as the perimeter of the tip of the shell housing (1).

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5,327,501

APPARATUS FOR IMAGE TRANSFORMATION

Tetsuro Kato, Kanagawa, and Yoshiyuki Nakamura, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 745,505, Aug. 15, 1991, which is a division of Ser. No. 525,136, May 17, 1990. This application Sep. 14, 1993, Ser. No. 121,444

Claims priority, application Japan, May 19, 1989, 1-124167; May 19, 1989, 1-124168

Int. Cl.[5] G06K 9/00

U.S. Cl. 382—44 3 Claims



1. An apparatus for image transformation having an input image memory for storing image data representative of an image at the position of each pixel of an input image, address generation means for generating a read address according to a desired transformation function, calculation means for performing an interpolating calculation on a plurality of image data read out from the input image memory according to the read address output from the address generation means thereby generating image data at the position of each pixel of an output image, and an output image memory for storing the image data output from the calculation means comprising

a) detection means for detecting whether or not a position designated by an address generated by the address generation means is located inside the input image stored in the input image memory, and

b) switch means responsive to the output signal from the detection means for selectively supplying image data read out from the input image memory and image data output from the output image memory to the calculation means, wherein the switch means, when the position designated by an address generated by the address generation means is located inside the input image stored in the input image memory, supplies image data read out from the input image memory to the calculation means, and when the same is located outside the input image stored in the input image memory, supplies image data read out from the designated address of the output image memory to the calculation means.

5,327,502

IMAGE CODING SYSTEM USING AN ORTHOGONAL TRANSFORM AND BIT ALLOCATION METHOD SUITABLE THEREFOR

Hiroyuki Katata; Yoji Noguchi, and Hiroshi Akagi, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 16, 1992, Ser. No. 821,221

Claims priority, application Japan, Jan. 17, 1991, 3-003943; May 23, 1991, 3-118825; May 23, 1991, 3-118826; Jun. 18, 1991, 3-146217

Int. Cl.[5] G06K 9/36

U.S. Cl. 382—56 2 Claims

1. An image coding system, comprising:

means for dividing one-screen image data of an original image into a plurality of blocks;

a transform means for determining transform coefficients for each block of the image data by performing an orthogonal transform to each of the divided image data;

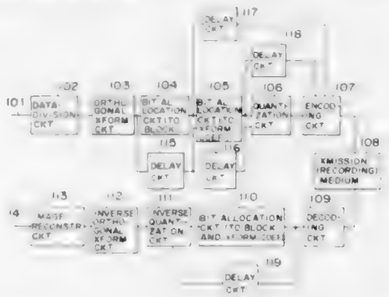
a first bit-allocation means for allocating bits to the blocks depending on statistical values of the transform coefficients of respective ones of the blocks so that an amount of information for each of regions of a regular size is made constant;

a second bit-allocation means for allocating bits to the transform coefficients of each block so that the number of bits falls within a range of the number of bits having been allocated to the corresponding block;

a quantization means for quantizing each of the transform coefficients by a quantization step depending on the number of bits assigned thereto to prepare quantization indices;

an encoding means for encoding the quantization indices and transmitting the encoded quantization indices as codes along with additional information at a constant bit rate;

a decoding means for decoding the codes received from the encoding means via a transmission medium to restore the quantization indices;



a third bit-allocation means for determining the number of the bits allocated to each transform coefficient based on the corresponding restored quantization indices and the additional information;

an inverse quantization means for inversely quantizing the quantization indices of each block depending on the decoded quantization indices, the additional information, and the number of bits assigned to the corresponding one of the blocks so as to restore the transform coefficients of each block;

an inverse transform means for performing an inverse orthogonal transform to the restored transform coefficients of each block to thereby restore the picture data for each block; and

means for reconstructing an image by combining the restored image data of the blocks.

5,327,503

IMAGE INPUTTING EQUIPMENT

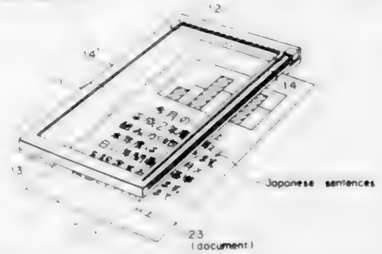
Toshimi Kiyohara, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 22, 1992, Ser. No. 824,098

Claims priority, application Japan, Jan. 31, 1991, 3-010685

Int. Cl.[5] G06K 7/00

U.S. Cl. 382—58 7 Claims



1. In an image inputting equipment which includes an image inputting portion for scanning documents to read the image information on the documents, a thin transparent type display device having on one face thereof an image display means for displaying an image of the document on the thin transparent type display device in accordance with the image information on the document read by the image input portion, the improvement thereof comprising a position detecting means for detecting a position on the thin transparent type display device of the image inputting portion so as to output positional information, said image inputting portion disposed for free sliding operation along the reverse face of the thin transparent type display device and located between the thin transparent type display device and the document so as to illuminate and sense an image of the document which is disposed adjacent thereto, the image display means in response to the positional information outputted from the position detecting means and the image information read by the image inputting portion displaying an image of the document on the thin transparent type display device so as to enable the image and the document corresponding to the image to be visually superposed and compared in real time as said image inputting portion slides along said reverse face.

5,327,504

DEVICE TO IMPROVE THE BASS REPRODUCTION IN LOUDSPEAKER SYSTEMS USING CLOSED HOUSINGS

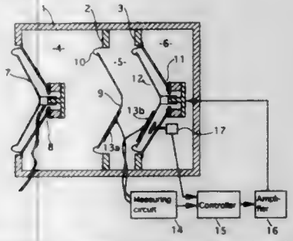
Maximilian H. Hobelsberger, Dorfstr;. 16, 5303 Wüenlingen, Switzerland

Filed Sep. 10, 1992, Ser. No. 942,710

Claims priority, application Switzerland, Oct. 5, 1991, 02928/91-5

Int. Cl.[5] H04R 3/00

U.S. Cl. 381—96 11 Claims



1. A loudspeaker system with closed housing for improved bass reproduction, comprising:

an acoustically closed housing;

a loudspeaker being so mounted in said housing that its membrane's front faces outward of said housing;

two stiff, soundproof and pressure-tight walls dividing the inner volume of said acoustically closed housing into three chambers, whereby the first of said chambers is enclosed by the membrane of the loudspeaker, the first of said inner walls and the walls of the housing, the second of said chambers is enclosed by said two inner walls and the walls of said housing, and the third of said chambers is enclosed by said second inner wall and the walls of said housing;

a stiff and pressure-tight membrane, being built into an opening of said first inner wall and separating said first and said second inner chamber, this membrane being connected to said first inner wall by flexible material to enable it to move;

an electrodynamic transducer with a pressure-tight membrane, being built into an opening of said second inner wall and separating with its membrane said second and said third chamber, whereby the diameter of the inner transducer's membrane is smaller than that of said other inner membrane, and whereby the transducer's membrane lies parallel to said other inner membrane;

distance measuring means for measuring the changes of the distance between the two inner membranes and producing an electrical signal proportional to the changes of the distance;

a power amplifier, the output of said amplifier being connected to said inner transducer to drive said transducer;

an electrical controller, to the input of which the signal produced by said distance measuring means is applied, the output of said controller being connected to the input of said power amplifier, and said controller being dimensioned to keep the distance between said inner membrane and said inner transducer's membrane constant by causing said inner transducer's membrane to move

5,327,505

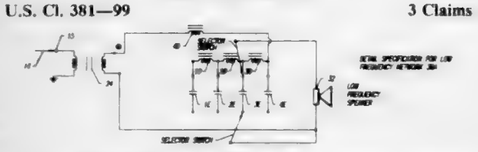
MULTIPLE OUTPUT TRANSFORMERS NETWORK FOR SOUND REPRODUCING SYSTEM

Man Ho Kim, AL. DOS Tupiniquins 285, S'ao Paulo, Brazil 04 077

Filed Jan. 24, 1992, Ser. No. 825,054

Int. Cl.[5] H03G 5/00

U.S. Cl. 381—99 3 Claims



1. In combination: sound reproducing equipment including an output power amplifier; a remote speaker unit; a plurality of extension leads extending between said power amplifier and said remote speaker unit; a corresponding plurality of capacitors included in said power amplifier for coupling said extension leads to said power amplifier; a high frequency speaker and a low frequency speaker included in said remote speaker unit; a corresponding plurality of output transformers included in said remote speaker unit each having a primary winding and a secondary winding and having respective ones of the primary windings connected to corresponding ones of said extension leads; a high frequency filter included in said remote speaker unit coupling the secondary of one of said output transformers to said high frequency speaker; a low frequency filter included in said speaker unit coupling the secondary winding of another of said output transformers to said low frequency speaker; said high frequency filter and said low frequency filter having predetermined crossover characteristics, said high frequency filter and said low frequency filter each including inductance means and capacitance means; first control means coupled to said high frequency filter for varying the inductance of said inductance means and the capacitance of said capacitance means included in said high frequency filter; and second control means coupled to said low frequency filter for varying the inductance of said inductance means and the capacitance of said capacitance means included in said low frequency filter.

5,327,506

VOICE TRANSMISSION SYSTEM AND METHOD FOR HIGH AMBIENT NOISE CONDITIONS

George M. Stites, III, 1715 Shore Rd., Linwood, N.J. 08221

Continuation-in-part of Ser. No. 504,971, Apr. 5, 1990, Pat. No. 5,208,867. This application May 3, 1993, Ser. No. 55,378

Int. Cl.[5] H04R 25/00

U.S. Cl. 381—169 19 Claims

1. A control circuit for a voice transmission system including an earpiece member having a structural configuration with an outer surface effective to removably interlock contiguously to the outer ear auricle of a wearer of the earpiece member, said earpiece member including a canal extension with means for receiving outbound voice sounds within the ear canal and means for sending inbound sounds to the ear canal, said circuit comprising:

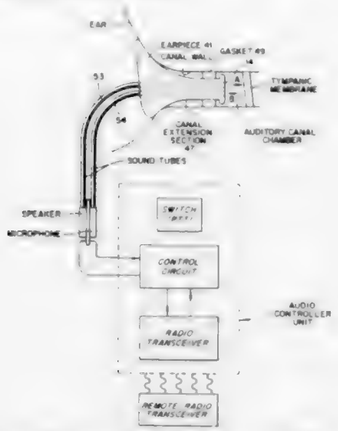
a) outbound audio circuit means, inbound audio circuit means and switch means for alternately activating the outbound audio circuit means and inbound audio circuit means,

b) the outbound audio circuit means being effective to receive outbound electrical voice signals from first micro-

phone means which picks up outgoing voice sounds from said means for receiving outbound voice sounds produced by reverse modulation of the tympanic membrane and obtained from the air within the external auditory canal of a person,

c) the inbound audio circuit means being effective to send inbound electrical sound signals from second microphone means to first speaker means which sends sounds into the external auditory canal to said tympanic membrane through said means for sending inbound sounds,

d) the outbound audio circuit means including amplifier means and processor means,



e) said amplifier means being effective to amplify intelligible said electrical voice signals said to a preselected fixed level output gain for producing increased gain audio signals each having a voice portion and a noise portion,

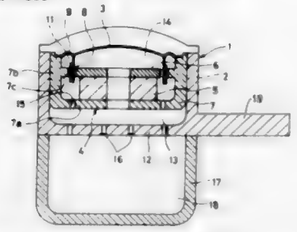
f) said processor means being effective to separate the noise portion from the voice portion for producing a clear voice sound to be transmitted by second speaker means disposed at a location remote from said person.

5,327,507

HEADPHONE APPARATUS

Akihisa Suzuki, Hiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1991, Ser. No. 680,253
Claims priority, application Japan, Apr. 10, 1990, 2-38889[U]
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—183 **1 Claim**



1. A headphone apparatus comprising:

a diaphragm,

a driving portion forming a first space between said driving portion and said diaphragm,

a first wall provided to form a second space between said driving portion and said first wall, said second space communicating with said first space via holes,

a second wall provided to form a third space between said first wall and said second wall,

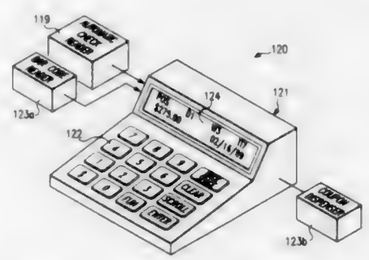
wherein said first wall includes through-holes communicating said second space with third space, and said third space is separated from external space by said second wall which seals and encloses said through-holes from said external space, so that waves of high frequency emitted via said through-holes do not pass to the external space, the capacity of said third space is greater than said second space and the capacity of said third space is ten times that of said second space.

5,327,508

METHOD AND SYSTEM FOR BUILDING A DATABASE AND PERFORMING MARKETING BASED UPON PRIOR SHOPPING HISTORY

David W. Deaton, and Rodney G. Gabriel, both of Abilene, Tex., assignors to Credit Verification Corporation, Abilene, Tex.

Continuation of Ser. No. 886,385, May 19, 1992, Pat. No. 5,201,010, which is a continuation-in-part of Ser. No. 826,255, Jan. 24, 1992, which is a continuation of Ser. No. 345,475, May 1, 1989, abandoned. This application Feb. 10, 1993, Ser. No. 16,991
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—7 **5 Claims**



1. A system for performing targeted marketing on customers in a retail establishment comprising:

a check reader for automatically reading the MICR code of a plurality of checks drawn on a plurality of different banking institutions, in order to generate unique identification codes for each customer;

a bar code reader for detecting the universal product code on products purchased by said customers;

a terminal for entering data relating to the customer's shopping habits;

a processing responsive to said check reader, bar code reader and terminal for creating a database of the store's customers' transaction data and universal product does of products purchased by said customers in association with said customers' unique identification codes;

said processor generating a signal upon entry of unique identification codes of customers whose prior transactions at the store meet predetermined infrequent product purchasing history criteria; and

circuitry responsive to said signal for dispensing a sales promotion at the point-of-sale to said customers whose prior transactions meet predetermined infrequent product purchasing history criteria, wherein said sales promotion incents said customers to purchase said products in a future transaction.

5,327,509

COMPRESSED IMAGE SYSTEM FOR TEXTURE PATTERNS

Henry H. Rich, Raleigh, N.C., assignor to Star Technologies, Inc., Sterling, Va.

Filed Apr. 27, 1992, Ser. No. 873,815
Int. Cl.[5] G09B *9/08*
U.S. Cl. 382—17 **10 Claims**

1. A compressed image system for texture patterns, having:

image generator means including means for storing digital data representative of a first base color, a second base color, and a third base color;

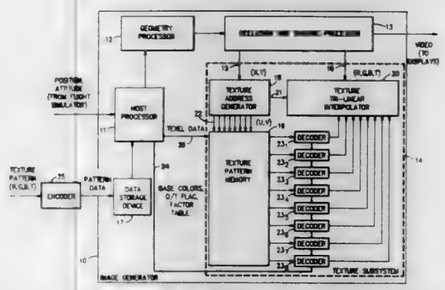
said image generator means also having texture memory means for storing texel data in bytes of a predetermined number of bits;

said image generator means also having data processor means for storing blend factor data in each byte of said texel data; and

the improvement comprising:

texel decoder circuit means for restoring compressed color components of a texture pattern, comprising:

circuit means to receive said digital data representative of said base colors;



means to store digital data in a predetermined compressed format with at least two base colors and two blend factors consisting of a primary blend factor and a secondary blend factor;

separator circuit means for recovering transparency factor data including primary blend factor data and secondary blend factor data;

translator circuit means connected to receive said blend factor data for recovering texel color;

primary interpolator circuit means to combine data representative of said first base color and said second base color to produce data indicative of an intermediate color from the relationship

$$\frac{d1}{d1 + d2}$$

where d1 and d2 are defined in FIG. 3; and

secondary interpolator circuit means to combine data representative of said third base color and said intermediate color from the relationship

$$\frac{d3}{d3 + d4}$$

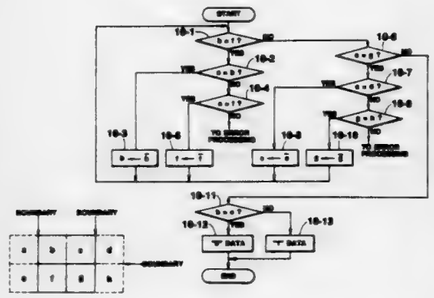
where d3 and d4 are defined in FIG. 3; whereby the color component is restored.

5,327,510

METHOD OF RECORDING/REPRODUCING DATA OF MESH PATTERN, AND APPARATUS THEREFOR

Shigenori Morikawa, Kokubunji; Takeshi Matsuoka, Kawasaki, and Hiroshi Chikakiyo, Fussa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 957,634, Oct. 6, 1992, which is a continuation of Ser. No. 680,164, Apr. 19, 1991, abandoned, which is a division of Ser. No. 389,287, Aug. 3, 1989, Pat. No. 5,042,079. This application Aug. 30, 1993, Ser. No. 113,957
Claims priority, application Japan, Aug. 12, 1988, 63-200225; Aug. 12, 1988, 63-200226; Aug. 12, 1988, 63-200227; Dec. 19, 1988, 63-163430[U]
Int. Cl.[5] G06K *9/20, 7/00, 19/06, 5/00*
U.S. Cl. 382—58 **10 Claims**



1. A binary data recording and reproducing method for recording, on a recording medium, an image including a mesh pattern formed of a plurality of boxes arranged in a checkerboard pattern, said boxes having a plurality of dark and light dots therein, and wherein an encoded image of one bit of a binary data signal includes a pattern of said dots having a predetermined number of dark and light dots, said mesh pattern including uniform identifiable boundaries between each said encoded image of one bit of a binary data signal and the dark and light dots thereof, said binary data reading and recording method comprising:

encoding a bit of binary data into a predetermined number of encoded bits;

two-dimensionally printing an encoded image of the thus encoded bits of one bit of binary data as dark and light dots on said data recording medium in accordance with a plurality of predetermined values thereof, the encoded image of said one bit of binary data comprising a one-bit encoded image;

reading the one-bit encoded image printed on said data recording medium;

identifying a plurality of dark and light levels of the printed dots that represent said one-bit encoded image in said mesh pattern, on the basis of data in said image read from the recording medium;

repairing incorrectly identified dark and light levels by reversing the incorrectly read level thereof, based on a known distribution pattern of dark and light levels on opposite sides of said uniform identifiable boundaries; and

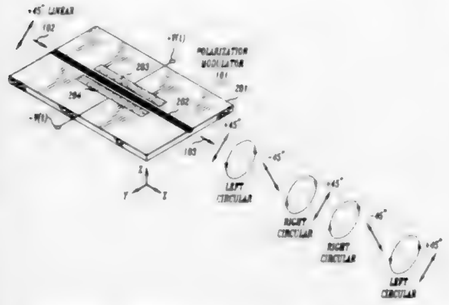
then comparing the identified dark and light values of the dots representing said one-bit encoded image in the printed mesh pattern with a predetermined reference pattern to decode said one bit encoded image in the printed mesh patterns into one bit of binary data.

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5,327,511
APPARATUS AND METHOD EMPLOYING FAST POLARIZATION MODULATION TO REDUCE EFFECTS OF POLARIZATION HOLE BURNING AND POLARIZATION DEPENDENT LOSS

Fred L. Heismann, Freehold, and Robert L. Rosenberg, Fair Haven, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 18, 1993, Ser. No. 79,432
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—1 **29 Claims**



1. Apparatus intended for use in reducing the effects of polarization dependent hole-burning and polarization dependent loss in an optical transmission system employing optical fiber amplifiers, the apparatus comprising

means for generating a polarized optical signal;

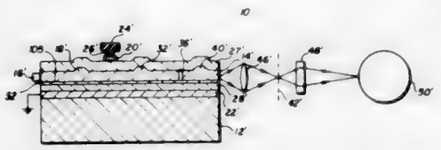
means for modulating the state of polarization of said polarized optical signal periodically between first and second states of polarization in at least one pair of orthogonal states of polarization so that substantially equal time is spent in each of the first and second states of polarization to generate a modulated optical signal; and

means for controllably transforming said modulated states of polarization of said modulated optical signal.

5,327,512
LANGMUIR-BLODGETT FILM IN AN INTEGRATED ELECTRO-OPTICAL SCANNER

Thomas L. Penner, Fairport; Nancy J. Armstrong, Ontario; David J. Williams, Fairport, and Joseph F. Revelli, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,716
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—3 **14 Claims**



1. An integrated electro-optic device for scanning a photosensitive medium with a focused line of light comprising a plurality of closely spaced intensity-modulated pixels to record a two-dimensional image, said device comprising:

an optical waveguide comprising a Langmuir-Blodgett film of optically transparent electro-optic polymer, said waveguide being adapted to transmit, by total internal reflection, a beam of light in a direction perpendicular to the film thickness;

means for producing a uniform phase front of light within said waveguide;

an array of electrodes comprising a planar electrode disposed on one side of a major surface of said waveguide, wherein said side of a major surface is perpendicular to the direction of film thickness of said waveguide, and a linear array of individual pixel-sized electrodes on the opposing side of said waveguide;

means for selectively applying an electric field between each of selected individual, pixel-sized electrodes and said planar electrode to cause selected portions of said waveguide to perturb selected portions of said phase front in accordance with pixel information to be recorded;

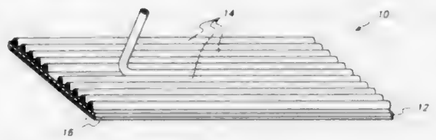
means for converting a perturbed wavefront of light within said optical waveguide to an intensity-modulated pixel pattern; and

means for imaging said intensity modulated pixel pattern at an image plane outside said optical waveguide; and further wherein, said Langmuir-Blodgett film comprises multiple layers of amphiphile molecules alternating with layers of spacer molecules such that said amphiphile molecules have the same polarity and comprise a hydrophilic head group and a lipophilic tail group joined through a linking group, and wherein said Langmuir-Blodgett film has a thickness of at least 210 nm and a second order polarizability of at least 10^{-9} electrostatic units.

5,327,513
FLAT CABLE

Phu D. Nguyen, San Jose; Ashok K. Mehan, Union City; Hans E. Lunk, Menlo Park, and James M. O'Brien, Fremont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed May 28, 1992, Ser. No. 890,045
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—114 **32 Claims**



1. A flat cable comprising

(a) a plurality of elongated conductive components each individually surrounded with an outer layer of a first polymeric insulating material; and

(b) a substrate comprising a second polymeric material capable of heat bonding to the first polymeric material;

the first polymeric material and the second polymeric material, which may be the same or different, being selected from thermoplastic polymers having a melting point greater than 200° C. and the insulated conductive components being bonded to a surface of the substrate and arranged substantially parallel to each other at a predetermined spacing.

22. A method of fabricating a flat cable which comprises;

(a) arranging a plurality of elongated conductive components each being individually surrounded by a layer of a first polymeric material, and each being substantially parallel to one another;

(b) providing a substrate comprising a second polymeric material mounted on a surface of a support layer peelably adhered to the polymeric substrate, the support layer comprising a material that is dimensionally stable at a selected temperature at which temperature the substrate and the first polymeric material can be caused to heat bond to one another;

(c) heating at least one of the first polymeric material or the substrate to the selected temperature;

(d) bringing the first polymeric material into contact with the substrate;

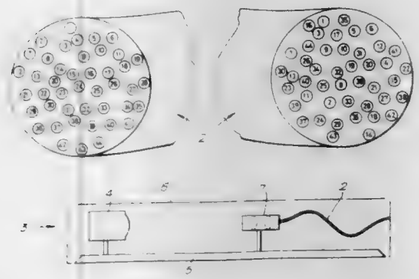
(e) cooling the resulting assembly;

(f) peelingly removing the support layer from the assembly.

5,327,514
VISUAL IMAGE TRANSMISSION BY FIBRE OPTIC CABLE

Gregory F. Dujon, Liverpool; Arthur B. Parker, Wirral, and Andrew J. Thomas, Hants, all of Great Britain, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northen Ireland, Great Britain

Filed Jul. 6, 1992, Ser. No. 906,888
Claims priority, application United Kingdom, Nov. 3, 1989, 8924793
Int. Cl.[5] G02B *6/04*
U.S. Cl. 385—115 **41 Claims**



22. An apparatus for calibrating an incoherent optical fibre bundle for use as pseudo-coherent optical fibre bundle for the transmission of visual images, said apparatus comprising:

an address array means for defining, for said incoherent optical fibre bundle, the position of individual pixels corresponding to the position of the ends of the individual optical fibres in the bundle;

means for transmitting a series of test images into one end of the incoherent optical fibre bundle, each test image producing a different illumination pattern and each test image illuminating a substantial proportion of the pixels, said series of test images selectively illuminating at least once each pixel of the address array;

means for analysing the output of the incoherent optical fibre bundle with reference to the transmitted images; and

means for generating a reference table of input to output position for each fibre of said incoherent optical fibre bundle based on the information provided by the test images; and

means, responsive to said reference table and output from said incoherent optical fibre bundle, for deconvolving an image transmitted along the incoherent optical fibre bundle.

5,327,515
METHOD FOR FORMING A BRAGG GRATING IN AN OPTICAL MEDIUM

Dana Z. Anderson, Boulder, Colo.; Turan Erdogan, Berkeley Heights, and Victor Mizrahi, Bedminster, both of N.J., assignors to AT&T Laboratories, Murray Hill, N.J.

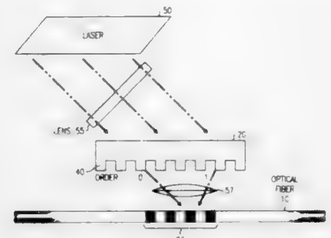
Filed Jan. 14, 1993, Ser. No. 4,770
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—123 **8 Claims**

3. A method for forming a grating in an optical waveguide comprising a glass that is sensitive to at least some wavelengths of electromagnetic radiation, to be referred to as "actinic radiation," the method comprising the steps of:

a) providing an optical phase grating;

b) impinging a single beam of actinic radiation on the phase grating such that actinic radiation is diffracted into at least two diffractive orders of the phase grating, resulting in an interference pattern; and

c) exposing at least a first waveguide to the interference pattern such that a grating pattern of refractive index



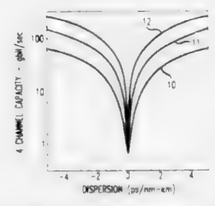
modulations is formed in the waveguide, wherein the impinging step comprises:

d) scanning the actinic beam along the phase grating, and during the scanning step, varying the intensity of the actinic beam.

5,327,516
OPTICAL FIBER FOR WAVELENGTH DIVISION MULTIPLEXING

Andrew R. Chraplyvy, Matawan; Robert W. Tkach, Little Silver, and Kenneth L. Walker, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 28, 1993, Ser. No. 69,962
Int. Cl.[5] G02B *6/02*
U.S. Cl. 385—123 **11 Claims**



1. Article comprising at least one optical fiber suitable, for use in wavelength division multiplex systems, the fiber including a core and a clad, having an attenuation at 1550 nm ≦ than 0.25 dB/km, having a cut off wavelength of less than 1.40 μm and a dispersion slope less than 0.15 ps/(nm^2-km) characterized in that the absolute magnitude of the average chromatic dispersion at 1550 nm for a fiber length of at least 2.2 km is in the range of 1.5–4ps/nm-km.

5,327,517
GUIDED-WAVE CIRCUIT MODULE AND WAVE-GUIDING OPTICAL COMPONENT EQUIPPED WITH THE MODULE

Yasufumi Yamada, Mito; Fumiaki Hanawa, Hitachiota; Kuniharu Kato, Naka; Yasuyuki Inoue, Mito; Masayuki Okuno, Mito; Toru Maruno, Tokorozawa; Tetsuo Yoshizawa, Mito, and Takao Kimura, Hitachi, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,777
Claims priority, application Japan, Aug. 5, 1991, 3-195485; Sep. 6, 1991, 3-227332; Mar. 13, 1992, 4-055335; Jun. 15, 1992, 4-155387; Jun. 15, 1992, 4-155388
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—137 **22 Claims**

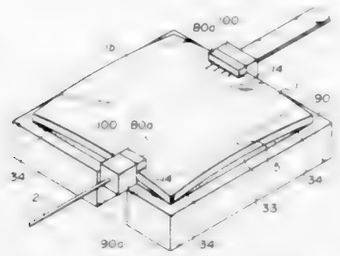
22. A guided-wave circuit module comprising:

a guided-wave circuit chip comprising an input waveguide part and an output waveguide part which include respec-

tively linear optical waveguides, and a guided-wave circuit part which has a curved guided-wave circuit having a predetermined function and which is positioned between the input waveguide part and the output waveguide part; and

a holder for supporting the guided-wave circuit chip;

wherein the guided-wave circuit part does not come into contact with the holder, at least each part of the input and output waveguide parts of the guided-wave circuit chip are fixed to the holder with a fixing agent, and at least



portions of the holder in contact with the guided-wave circuit chip are made of an inelastic material; and

wherein the input and output waveguide parts each have endfaces, the guided-wave circuit chip have upper and lower surfaces at the input and output waveguide parts and a warp having a finite radius of curvature at least in the direction along the endfaces of the input and output waveguide parts; and

at least one protective plate is fitted to the upper and lower chip surfaces at the input and output waveguide parts of the guided-wave circuit chip through a fixing agent

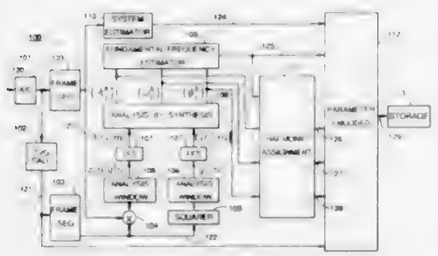
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5,327,518

AUDIO ANALYSIS/SYNTHESIS SYSTEM

E. Bryan George, Smyrna, and Mark J. T. Smith, Atlanta, both of Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Aug. 22, 1991, Ser. No. 748,544
Int. Cl.[5] G10L 9/02
U.S. Cl. 395—2.2 28 Claims



1. A method of extracting a set of parameters representative of input speech signals representing speech from a human vocal tract, the vocal tract having a frequency response capable of representation as a set of coefficients, such that artifact-free, modified synthetic speech signals can be generated from said parameters, comprising the steps of:

(a) digitizing the input speech signals into a speech data stream;

(b) isolating a sequence of overlapping speech data frames from the speech data stream, each of said speech data frames having a fundamental frequency;

(c) analyzing the sequence of overlapping speech data frames to produce a corresponding sequence of coefficient sets representative of an estimate of the frequency response of the human vocal tract;

(d) multiplying each of the overlapping speech data frames by an analysis window function to create a corresponding sequence of windowed data frames;

(e) calculating the discrete Fourier transform of each of the windowed data frames to produce a corresponding sequence of transformed data frames;

(f) approximating the corresponding sequence of overlapping speech data frames with a sequence of sinusoidal parameter sets using a first iterative analysis-by-synthesis means responsive to the sequence of transformed data frames and a discrete Fourier transform of the analysis window function;

(g) analyzing the sequence of sinusoidal parameter sets and the corresponding sequence of coefficient sets with a fundamental frequency estimator means to produce a sequence of estimates of the fundamental frequency of the corresponding overlapping speech data frames; and

(h) analyzing the sequence of fundamental frequency estimates and the corresponding sequence of sinusoidal parameter sets with a harmonic assignment means to produce a sequence of quasi-harmonic sinusoidal model parameter sets,

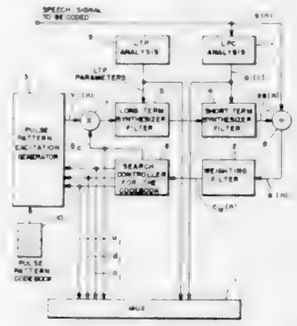
the set of parameters representative of the input speech signals comprising the sequence of coefficient sets representative of the estimate of the frequency response of the human vocal tract, the sequence of estimates of the fundamental frequency, and the sequence of quasi-harmonic sinusoidal model parameter sets.

5,327,519

PULSE PATTERN EXCITED LINEAR PREDICTION VOICE CODER

Jari Haggvist, Oulu; Kari Jarvinen, Tampere; Kari-Pekka Estola, Oulu, and Jukka Ranta, Salo, all of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed May 19, 1992, Ser. No. 885,651
Claims priority, application Finland, May 20, 1991, 912438
Int. Cl.[5] G10L 9/00
U.S. Cl. 395—2.28 7 Claims



1. A method for generating an excitation vector in a code excited linear predictive coder for processing digital speech signals partitioned into frames, in which:

(a) a short term synthesizer filter and a long term synthesizer filter are serially coupled together such that an output of said long term synthesizer filter feeds an input of said short term synthesizer filter, said long term synthesizer filter and said short term synthesizer filter are excited by an excitation vector to generate a reconstructed speech frame; and

(b) an error signal is formed for representing a difference between an input speech frame and the reconstructed speech frame;

the method comprising the steps of:

(i) deriving from a codebook all variations of a plurality of sets, each set comprising a predetermined number K of pulse patterns, the codebook having a number P of pulse patterns stored therein, wherein P>K;

(ii) with respect to individual ones of the plurality of sets, creating a plurality of excitation vector candidates by (a) arranging pulse patterns to form a candidate excitation vector, and (b) by shifting a position and changing an orientation of each pulse pattern along the candidate excitation vector;

(iii) determining which of the plurality of excitation vector candidates gives a minimum value for the error signal, and selecting the determined candidate excitation vector as an excitation vector; and

(iv) outputting the set, the position, and the orientation of pulse patterns along the selected excitation vector as output parameters of the coder.

5,327,520

METHOD OF USE OF VOICE MESSAGE CODER/DECODER

Juin-Hwey Chen, Neshanic Station, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 4, 1992, Ser. No. 893,296
Int. Cl.[5] G10L 9/00
U.S. Cl. 395—2.28 45 Claims

1. A method of processing a sequence of input samples comprising

gain adjusting each of a plurality of codevectors in a backward adaptive gain controller to produce corresponding gain-adjusted codevectors, each of said codevectors being identified by a corresponding index,

filtering each of said gain-adjusted codevectors in a synthesis filter characterized by a plurality of filter parameters to generate candidate codevectors, the synthesis filter comprising a short term synthesis filter and a long term synthesis filter, the long term synthesis filter being forward adaptive,

comparing said sequence of input samples with each of said candidate codevectors to determine, for said sequence of input samples, a candidate codevector substantially approximating said sequence of input samples, and

outputting

(i) the index for the candidate codevector, and

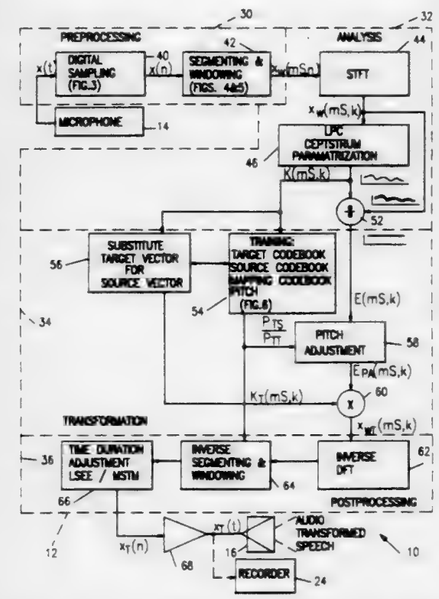
(ii) the parameters of said long term synthesis filter.

5,327,521

SPEECH TRANSFORMATION SYSTEM

Michael I. Savic, Ballston Lake, N.Y.; Seow-Hwee Tan, Glendale, Calif., and Il-Hyun Nam, Seoul, Rep. of Korea, assignors to The Walt Disney Company, Burbank, Calif.

Continuation of Ser. No. 845,375, Mar. 2, 1992, abandoned. This application Aug. 31, 1993, Ser. No. 114,603
Int. Cl.[5] G10L 3/00
U.S. Cl. 395—2.81 11 Claims



1. For use with a costume depicting a character having a defined voice with a pre-established voice characteristic, a voice transformation system comprising:

a microphone that is positionable to receive and transduce speech that is spoken by a person wearing the costume into a source speech signal;

a mask that is positionable to cover the mouth of the person wearing the costume to muffle the speech of the person wearing the costume to tend to prevent communication of the speech beyond the costume, the mask enabling placement of the microphone between the mouth and the mask;

a speaker disposed on or within the costume to broadcast acoustic waves carrying speech in the defined voice of the character depicted by the costume; and

a voice transformation device coupled to receive the signal from the microphone representing source speech spoken by a person wearing the costume, the voice transformation device transforming the received source speech signal to a target speech signal representing the utterances of the source speech signals in the defined voice of the character depicted by the costume;

wherein the voice transformation device stores a plurality of representations of the defined voice and transforms the voice of the person wearing the costume into the same defined voice of the character depicted by the costume, based upon association of the voice of the particular person with particular ones of the stored representations.

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5,327,522

NEURON UNIT

Toshiyuki Furuta; Hiroyuki Horiguchi; Hirotoshi Eguchi; Yutaka Ebi; Tatsuya Furukawa, all of Yokohama; Yoshio Watanabe, Kawasaki; Toshihiro Tsukagoshi, Itami; Takahiro Watanabe, Sagamihara; Shuji Motomura, Yokohama; Atsuo Hashimoto, Nishinomiya; Sugitaka Oteki, Minoo; Satoshi Otsuki, Nishinomiya; Eiki Aono, Minoo, and Takashi Kitaguchi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

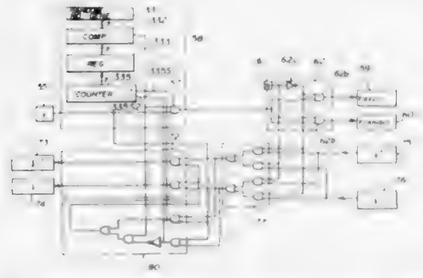
Continuation-in-part of Ser. No. 889,380, May 28, 1992, which is a division of Ser. No. 629,632, Dec. 18, 1990, Pat. No. 5,167,006.

This application Dec. 11, 1992, Ser. No. 989,781

Claims priority, application Japan, Dec. 29, 1989, 1-343891; Mar. 7, 1990, 2-55523; Mar. 9, 1990, 2-58515; Mar. 9, 1990, 2-58548; Mar. 12, 1990, 2-60738; Mar. 16, 1990, 2-67938; Mar. 16, 1990, 2-67939; Mar. 16, 1990, 2-67940; Mar. 16, 1990, 2-67941; Mar. 16, 1990, 2-67942; Mar. 16, 1990, 2-67943; Mar. 16, 1990, 2-67944; Oct. 11, 1990, 2-272827; Dec. 11, 1991, 3-351410; Jan. 24, 1992, 4-11217; Feb. 6, 1992, 4-21284; Mar. 12, 1992, 4-53204; Mar. 24, 1992, 4-65637; May 13, 1992, 4-120360; Jul. 31, 1992, 4-224702

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—27 27 Claims



1. A neuron unit for processing a plurality of input signals and for outputting an output signal which is indicative of a result of the processing, the neuron unit comprising:

a) input line means for receiving the input signals;

b) forward process means, coupled to said input line means, and including

supplying means for supplying weight functions, and

operation means for carrying out an operation on each of the input signals using one of the weight functions and for outputting the output signal; and

c) self-learning means, coupled to said forward process means, and including

function generating means for generating new weight functions based on errors between the output signal of said forward process means and teaching signals; and

varying means for varying the weight functions supplied by the supplying means of the forward process means to the new weight functions generated by said generating means,

said supplying means including:

first memory means for storing each weight function in the form of a binary value, and

first generating means, coupled to said first memory means, for generating a random pulse train based on each binary value stored in said first memory means,

said random pulse train describing each weight function in the form of a pulse signal having a pulse density which is defined by at least one of a number of first values and a number of second values of the pulse signal within a predetermined time, where the first and second values are arranged at random and the first and second values respectively correspond to high and low binary signal levels.

5,327,523

ROBOT CONTROLLING METHOD AND APPARATUS

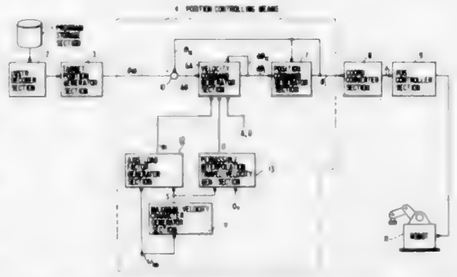
Atsushi Itoh, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 783,972

Claims priority, application Japan, Oct. 29, 1990, 2-291099; Sep. 30, 1991, 3-252119

Int. Cl.[5] G05B *19/407*

U.S. Cl. 395—95 12 Claims



1. A robot controlling apparatus including position controlling means that output a series of position commands for each axis of a robot according to an input of target position information for each said axis, said position controlling means comprising:

axis load factor calculating means for finding a maximum value of a maximum permissible velocity of each said axis as a maximum velocity character and calculating a ratio of the maximum permissible velocity of each said axis to the maximum velocity character as a load factor of each said axis;

permissible interpolation travel velocity calculating means for calculating a permissible interpolation travel velocity from the maximum velocity character and an override factor;

travel value calculating means for calculating a travel value of each said axis from a difference between the target position information and a preceding one of the series of position commands of each said axis;

velocity command calculating means for finding a travel distance of each said axis as a product of the travel value and the load factor of each said axis, defining a maximum value of the travel distance as a typical travel distance, calculating a travel velocity character in at least one of an acceleration region, a constant-velocity region or a deceleration region common to each said axis on the bases of an acceleration velocity, the permissible interpolation travel velocity and a deceleration velocity, and calculating a velocity command for each said axis from a ratio of a product of the travel velocity character and the travel value of each said axis to the typical travel distance;

position command calculating means for calculating a position command for each said axis from the velocity command for each said axis; and control means for controlling each said axis of said robot based on the position command for each said axis.

5,327,524

ELECTROPHOTOGRAPHIC RECORDING WITH MULTIPLE-BIT GREY LEVEL LED PRINTHEAD WITH ENHANCED ADDRESSABILITY

Yee S. Ng, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1992, Ser. No. 996,996

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—108 22 Claims

1. A non-impact printer apparatus comprising:

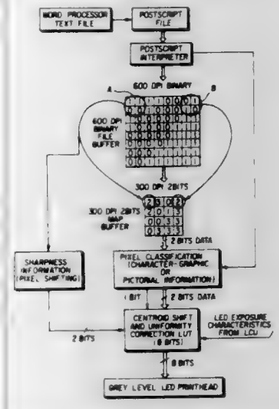
an electrophotoconductive recording medium;

means including a plurality of recording elements for cooperating with said medium to produce a modulated electrostatic charge on said medium representing an image to be recorded;

driving means, responsive to an enablement signal, for driving the recording elements for recording the image;

control means for controlling enablement times of the driving means for driving the recording elements during a main line pixel recording period for recording a line of pixels by said plural recording elements, said control means including:

(a) register means associated with each recording element for storing a respective first multibit data signal representing a recording duration for recording a pixel by a respective recording element during one of plural sub-line recording periods comprising said main line period,



(b) counter means for generating during each sub-line period a series of signals representing a time-changing count during a count cycle, the count recycling to establish plural pixel recording periods during said main line recording period, and

(c) comparator means for comparing a second multibit signal with a signal representing a particular sub-line period and for comparing the first multibit data signal with said count to enable the driving means during the particular sub-line period for a time related to said first multibit data signal; and wherein the counter means during each sub-line period is in a count-down mode and count-up mode.

5,327,525

SYSTEM FOR READYING HOST DEVICE TO TRANSFER DATA TO RECORDING DEVICE IN RESPONSE TO GATING SIGNAL SENT FROM RECORDING DEVICE

Kenichi Matsushima, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Continuation of Ser. No. 397,039, Aug. 22, 1989, abandoned.

This application Oct. 19, 1992, Ser. No. 963,008

Claims priority, application Japan, Aug. 23, 1988, 63-208795

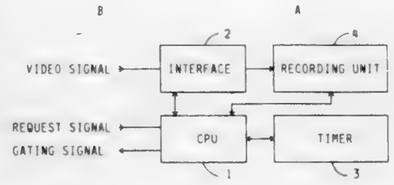
Int. Cl.[5] G06K *15/00*; H04N *1/32*

U.S. Cl. 395—114 23 Claims

1. A system for transferring and recording image data, comprising:

a host device for repeatedly outputting at a certain rate a video signal representative of image data to a cathode-ray tube for display of the image data by the cathode-ray tube and for outputting a request signal effective to request recording of the image data represented by the video signal being repeatedly outputted; and

a recording device responsive to the request signal to return to the host device a gating signal effective to change over coupling between the video signal and the cathode-ray tube to coupling between the video signal and the recording device or to change over coupling between the video signal and the recording device to coupling between the video signal and the cathode-ray tube, the gating signal defining a preceding preparation interval and a succeeding transfer interval, the recording device having means to



enable the host device to complete preparation of transfer of the image data and to change over the coupling within the preceding preparation interval and to enable the host device to carry out the transfer of the video signal during the succeeding transfer interval from the host device to the recording device so that the recording device records the image data.

5,327,526

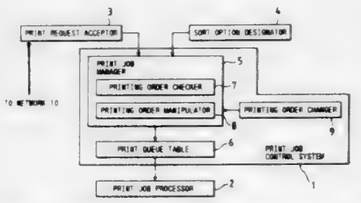
PRINT JOB CONTROL SYSTEM

Hideki Nomura, and Yuzo Fujita, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 10,459, Jan. 27, 1993, abandoned, which is a continuation of Ser. No. 595,809, Oct. 10, 1990, abandoned. This application Nov. 24, 1993, Ser. No. 156,971

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—115 6 Claims



1. A print job control system for controlling the order of executing a plurality of print jobs transmitted on a computer network having a plurality of workstations for transmitting the plurality of print jobs and corresponding print request, a print job processor for executing the print jobs, and means for designating any one of a plurality of sort options, said print job control system comprising:

means, responsive to the designated sort option, for managing the order of executing print jobs, the managing means including,

means for establishing a queue identifier having a priority value corresponding to the priority for executing the any one of the plurality of print jobs in accordance with the designated one of a plurality of sort options,

a print queue table for receiving the plurality of established queue identifiers at queue positions in said print queue table corresponding to the order of the print jobs in accordance with the priority value;

means for changing the order of executing print jobs including,

means for establishing the priority value of any one of the plurality of queue identifiers independent of the designated sort option.

means for periodically changing the priority value of any

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one of the plurality of queue identifiers in the print queue table by adding a predetermined value to reflect a high priority in accordance with the duration held in the print queue table; and

means for executing the print jobs in accordance with the order of queue identifiers in said print queue table

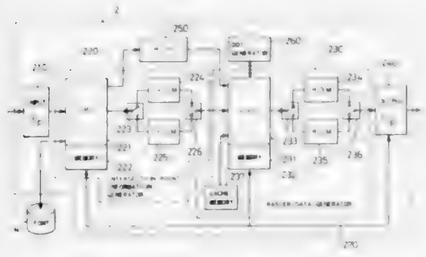
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5,327,527

METHOD OF AND APPARATUS FOR PROCESSING IMAGE DATA

Fumihiro Hatayama, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Aug. 28, 1991, Ser. No. 751,453
Claims priority, application Japan, Sep. 18, 1990, 2-248122
Int. Cl.[5] G06F *3/12*
U.S. Cl. 395—133 **20 Claims**



1. An image data processing method for producing raster data of an image comprising a plurality of image parts, comprising the steps of:

sequentially selecting one of said plurality of image parts;

comparing the size of the selected one of said plurality of image parts with a predetermined reference size; and

executing one-dimensional data processing for producing raster data representing a one-dimensional image portion of the selected one of said plurality of image parts when the selected one of said plurality of image parts is larger than said reference size, and executing two-dimensional data processing for producing raster data representing a two-dimensional image portion of the selected one of said plurality of image parts when the selected one of said plurality of image parts is smaller than said reference size.

5,327,528

METHOD AND APPARATUS FOR CURSOR MOVEMENT CONTROL

Kazuyoshi Hidaka, Yokohama, and Masanori Akaishi, Tokyo, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1991, Ser. No. 751,376
Claims priority, application Japan, Aug. 30, 1990, 2-226812
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—155 **13 Claims**

1. A method for moving a cursor on one of a plurality of graphics objects displayed on a display screen, comprising the steps of:

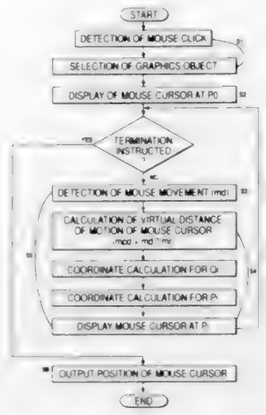
(a) entering a signal for pointing to a position on the display screen;

(b) determining a point on the display screen in response to the signal entered in step (a);

(c) selecting a particular graphics object of said plurality of graphics objects;

(d) determining a point on said particular graphics object which is near to the point determined in step (b);

(e) displaying a cursor at the point determined in step (d); and



(f) repeating said steps (a) to (e) until a signal indicative of a cursor constraint release is entered

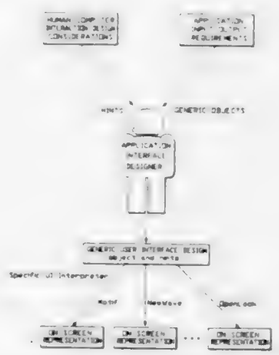
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5,327,529

PROCESS OF DESIGNING USER'S INTERFACES FOR APPLICATION PROGRAMS

Douglas A. Fults, San Leandro, and Anthony M. Requist, Alameda, both of Calif., assignors to Geoworks, Berkeley, Calif.

Continuation of Ser. No. 681,079, Apr. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,861, Sep. 24, 1990, abandoned. This application Sep. 9, 1992, Ser. No. 942,354
Int. Cl.[5] G06F *3/14, 9/45*
U.S. Cl. 395—155 **11 Claims**



1. A method for invoking a user interface for use with an application operating in a computer system comprising the steps of:

providing in the computer system a generic object class that corresponds to a class of function performed with the user interface;

specifying in the application instance data in the form of a generic object specification that corresponds to the generic object class, the instance data including attribute criteria, which are criteria that must be met by a specific user interface implementation that is selected using the instance data, and hint criteria, which are criteria that are permitted but not required to be specified in the instance data, and if specified, are permitted but not required to be met by a specific user interface implementation that is selected using the instance data;

providing in the computer system a specific use interface toolbox and controller that operates in the computer system to provide a selection of possible specific user interface implementations for use in performing the class of function; and

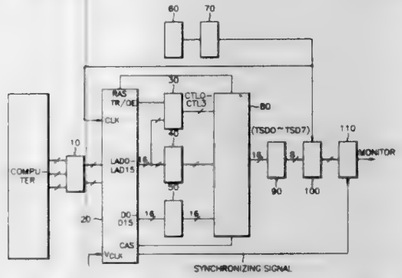
providing in the computer system an interpreter for the specific user interface toolbox and controller, the interpreter operating in the computer system to select a specific user interface implementation from the selection of possible specific user interface implementations, such that a selected specific user interface implementation satisfies both the attribute criteria and hint criteria specified for the generic object class, except if no specific user interface implementation satisfies both the attribute criteria and hint criteria specified for the generic object class then the interpreter being operable to select another specific user interface implementation that satisfies the attribute criteria but not all of the hint criteria that have been specified for the generic object class.

5,327,530

VIDEO BOARD FOR SERVING BOTH 1-BIT PLANE OPERATION AND 2-BIT PLANE OPERATION

Shee-Kyu Bae, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 28, 1990, Ser. No. 488,724
Claims priority, application Rep. of Korea, Jul. 21, 1989, 10386
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—162 **22 Claims**



1. A video board circuit supporting a one-bit plane video board mode and a two-bit plane video bard mode in a computer, comprising:

graphic processor means for providing graphic control signals to control an operation of the video board circuit in response to computer control signals of said computer;

memory means for storing picture information in response to said graphic control signals;

switching means for outputting said picture information from said memory means by separately buffering said picture information into a high order part having a first predetermined number of high order bits and a low order part having a second predetermined number of low order bits;

video output controlling means for selectively generating video output signals for one of the one-bit plane video board mode and the two-bit plane video board mode by shifting said picture information from said switching means in dependence upon selection signals; and

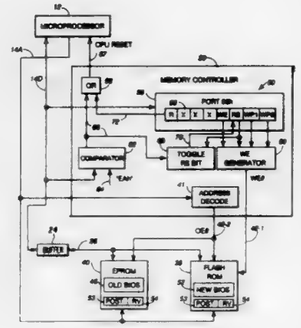
connector means for transmitting said video output signals corresponding to the one-bit plane video board mode and said video output signals corresponding to the two-bit plane video board mode.

5,327,531

DATA PROCESSING SYSTEM INCLUDING CORRUPT FLASH ROM RECOVERY

Richard Bealkowski, Delray Beach; Dhruvkumar M. Desai, Boynton Beach; Robert B. Haig, Delray Beach; Dennis L. Moeller, Boca Raton, and Essy Tashakori, Delray Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 21, 1992, Ser. No. 948,053
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **9 Claims**



1. In a personal computer comprising a non-volatile primary flash read only memory (ROM) for storing initialization information including a first reset vector containing a jump instruction, said flash ROM having a predetermined first location for storing said first reset vector, a non-volatile secondary ROM for storing initialization information including a second reset vector containing a jump instruction for ranching to initialization code, said secondary ROM having a second predetermined location for storing said second reset vector, a microprocessor for reading said first location in response to a CPU reset signal, a memory controller for controlling operation of said flash ROM and said secondary ROM, and bus means interconnecting said microprocessor, said ROMs, and said memory controller, the improvement comprising:

first means in said memory controller connected to said bus means for detecting a corrupted flash ROM, when said microprocessor is reading said first location, and generating a CPU reset signal in response thereto;

second means connected to said first means for receiving said CPU reset signal therefrom and switching said second ROM to become a primary ROM; and

third means connected from said first means to said microprocessor for transmitting said CPU reset signal thereto, whereby said microprocessor is reset causing said jump instruction in said second reset vector to be fetched from said second ROM and executed to thereby branch to said initialization code and initialize said personal computer using initialization information in said second ROM.

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5,327,532

COORDINATED SYNC POINT MANAGEMENT OF PROTECTED RESOURCES

Michael K. Ainsworth, Endicott; Cherie C. Barnes, Barton; Robert B. Bennett; Barbara A. M. Maslak, both of Endwell; Edmond A. Pruul, Afton; James M. Showalter; Thomas J. Szczygielski, both of Endicott, and Amos S. Tanner, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1990, Ser. No. 525,427
Int. Cl.[5] G06F *11/00, 13/00*
U.S. Cl. 395—200 21 Claims

1. A computer system or network comprising:
a first execution environment;
first sync point manager means, residing in said first execution environment, for coordinating a first commit procedure for said first execution environment;
means for coupling said first sync point manager means to a first resource manager which manages a first resource involved in said first commit procedure;
a second execution environment;
second sync manager means, residing in said second execution environment, for coordinating a second commit procedure for said second execution environment;
means for coupling said second sync point manager means to a second resource manager which manages a second resource involved in said second commit procedure;
recovery facility means, coupled to said first and said second sync point manager means to receive sync point information for and identification of said first and second resource managers in said first and second commit procedures, for recovering said first commit procedure and said second commit procedure; and
means for coupling said recovery facility means to said first resource manager and said second resource manager bypassing said first sync point manager means and said second sync point manager means, said recovery facility means recovering said first commit procedure by communicating a commit or backout command to said first resource manager bypassing said first and second sync point manager means and recovering said second commit procedure by communicating a commit or backout command to said second resource manager bypassing said first and second sync point manager means.

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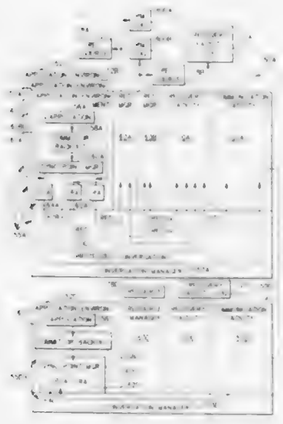
Patent Not Issued For This Number

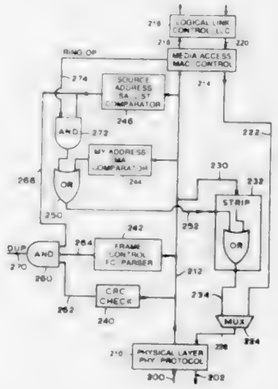
5,327,534

DETECTION OF DUPLICATE ALIAS ADDRESSES

Jerry D. Hutchison, Littleton, and Henry S. Yang, Andover, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 30, 1990, Ser. No. 559,031
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—200 16 Claims





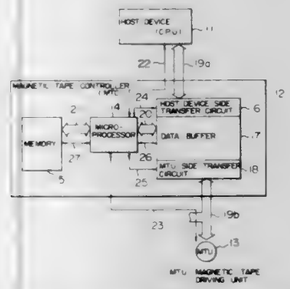
1. A station of the type for attachment to a communications network, said network capable of maintaining communications among a plurality of stations, comprising:
means for receiving a frame by said station, said frame having a source address field and a frame control field;
means for maintaining an selected individual address of said station;
means for maintaining a source address list of alias addresses of network entities that access said network through said station but are logically distinct therefrom, said source address list not containing said selected individual address;
means for determining that the contents of said source address field in said frame matches at least one alias address in said source address list;
means for determining that said frame control field of said frame has a predetermined contents; and,
means, responsive to said source address of said frame matching at least one alias address in said source address list and said frame control field of said frame having said predetermined contents, for setting an indicator that a duplicate address condition exits.

5,327,535

MAGNETIC RECORDING CONTROL APPARATUS

Mikito Ogata, Minamiashigara; Takahiko Nakamura, Fujisawa, and Toshifumi Nishimura, Minamiashigara, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Computer Engineering Co., Ltd., Kanagawa, both of Japan

Filed Aug. 25, 1992, Ser. No. 935,843
Claims priority, application Japan, Aug. 29, 1991, 3-217760; Sep. 12, 1991, 3-260435
Int. Cl.[5] G06F *15/02*
U.S. Cl. 395—275 16 Claims



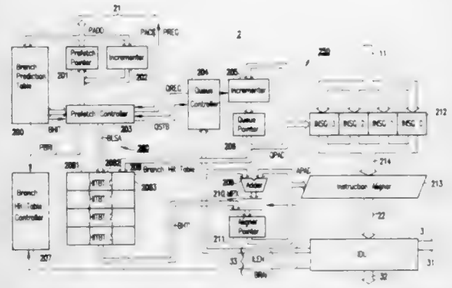
16. In a magnetic recording control apparatus for controlling a magnetic recording device dealing with a large capacity type magnetic recording medium having a capacity of a plurality of normal capacity type magnetic recording media, connected to a host device, and said magnetic recording control apparatus comprising a data buffer, and a transmitter, a method for using a large capacity type magnetic recording medium as a plurality of normal capacity type magnetic recording media in parallel comprising the steps of:
defining a plurality of virtual volumes on the large capacity type magnetic recording medium;
storing control data in memory to identify the virtual volume in the magnetic recording device;
defining a plurality of logical devices, each logical device corresponding to a virtual volume;
assigning the logical devices to the data buffer;
receiving data from the host device and storing the data temporarily in the logical devices which the host device designates; and
transmitting data in the logical device with said control data to the corresponding virtual volume in the large capacity type magnetic recording medium.

5,327,536

MICROPROCESSOR HAVING BRANCH PREDICTION FUNCTION

Nariko Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 22, 1991, Ser. No. 704,297
Claims priority, application Japan, May 22, 1990, 2-131812
Int. Cl.[5] G06F *9/26*
U.S. Cl. 395—375 8 Claims



4. A microprocessor having a branch prediction function in which an instruction prefetch operation for prefetching a branch target instruction responsive to a branch instruction is performed successively to an instruction prefetch operation for said branch instruction, said microprocessor including
a first buffer means for temporarily storing, in a queue, prefetched instruction data, including said branch target instruction,
decoder means for decoding instruction data supplied thereto,
second buffer means including a plurality of areas storing less significant bit data of address information as aligning information for said branch target instruction within said queue,
means responsive to said branch instruction being supplied to said decoder means for changing said aligning information in accordance with said less significant bit data stored in an area of said second buffer means corresponding to said branch instruction, and
aligner means coupled between said first buffer means and said decoder means for supplying a part of the instruction data stored in said first buffer means to said decoder means in response to said aligning information.

5,327,537

APPARATUS FOR CONTROLLING INSTRUCTION EXECUTION IN A PIPELINED PROCESSOR

Gary T. Corcoran, Fanwood, and Robert C. Fairfield, Randolph, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 493,015, Mar. 13, 1990, abandoned.
This application May 18, 1993, Ser. No. 63,354
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—375 9 Claims

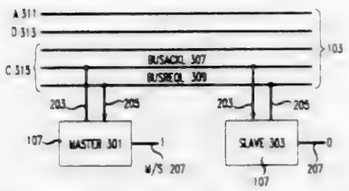
1. Apparatus for controlling execution of instructions in a processor, the processor having first pipelined instruction execution, the instructions being available to a programmer of the processor and belonging to classes including a first class in which an instruction belonging to the first class is completely executed during the first pipelined instruction execution and a second class in which an instruction belonging to the second class is not completely executed during the first pipelined instruction execution, and the instructions including a first instruction belonging to the second class, a second instruction belonging to the first class which performs an operation and which has a first side effect when executed after the first in-

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struction of halting the first pipelined execution of the second instruction until the execution of the first instruction is complete, and a third instruction belonging to the first class which performs the operation performed by the second instruction but does not have the first side effect in circumstances where the first instruction does have the first side effect,

the apparatus for controlling execution of instructions comprising:

means for receiving the instructions in a sequence thereof; and



pipelined execution control means which responds to the first instruction when received in the means for receiving the instructions and to the second instruction when received therein prior to completion of execution of the received first instruction by producing the first side effect but does not so respond to the third instruction when received therein prior to completion of execution of the received first instruction

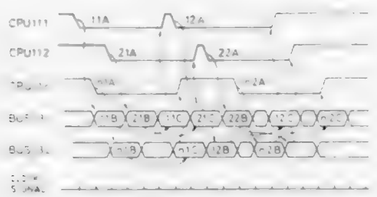
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5,327,538

METHOD OF UTILIZING COMMON BUSES IN A MULTIPROCESSOR SYSTEM

Kazumasa Hamaguchi, Kawasaki, and Shigeki Shibayama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 756,547
Claims priority, application Japan, Sep. 11, 1990, 2-239051
Int. Cl.[5] G06F *13/368*
U.S. Cl. 395—325 5 Claims



1. A method of utilizing common buses in a multiprocessor system where each of a plurality of common buses is connected to a plurality of processors and a plurality of shared memories, comprising the steps of

acquiring a first one of the plurality of common buses by one of the plurality of processors requesting access to one of the plurality of shared memories;

transmitting the request to said one of the plurality of shared memories via the first acquired one of the plurality of common buses;

releasing the first acquired one of the common buses by said one of the plurality of processors after transmitting said request without waiting for a reply therefor;

processing said request by said one of the shared memories;

acquiring a second one of the plurality of common buses independent of said first one by said one of the shared memories; and

transmitting a result of the processing to said one of the plurality of processors via the second acquired one of the plurality of common buses

5,327,539

ACCESS PROCESSING SYSTEM IN INFORMATION PROCESSOR

Kiyoshi Sudo; Yasutomo Sakurai; Koichi Odahara; Kenji Hoshi, and Hideharu Kanaya, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 26, 1992, Ser. No. 841,477
Claims priority, application Japan, Feb. 26, 1991, 3-030503
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—325 8 Claims



1. An access processing system in an information processor, comprising

an accessed device provided with a memory means;

an access deice for generating an access request signal for accessing said memory means according to a first access type; and

an address bus and an access mode bus each connected to said access device and said accessed device, said access device generating the access request signal for an access to said memory means according to the first access type when less than all bit of said address bus are used for the access, said access device loading said access mode bus with mode data indicating the first access type and loading bits of said address bus, unused as address bits, with data including write data to be transferred to said accessed device, and when the mode data received by said accessed device from said access device through said access mode bus indicates the first access type, said accessed device reads predetermined bits of said address bus as address data and other bits of said address bus as the write data to access said memory means of said accessed device.

5,327,540

METHOD AND APPARATUS FOR DECODING BUS MASTER ARBITRATION LEVELS TO OPTIMIZE MEMORY TRANSFERS

Thomas F. Heil; Daniel C. Robbins, both of Easley, and Edward A. McDonald, Lexington, all of S.C., assignors to NCR Corporation, Dayton, Ohio

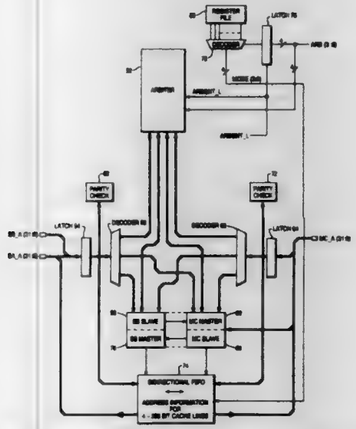
Continuation of Ser. No. 762,519, Sep. 18, 1991. This application Feb. 1, 1993, Ser. No. 16,652
Int. Cl.[5] G06F *13/362*
U.S. Cl. 395—325 16 Claims

1. In a computer system including a plurality of bus masters connected through a common bus to a shared resource, and a data buffer interposed between said common bus and said shared resource, each one of said plurality of bus masters having a unique arbitration value associated therewith for prioritizing access to said shared resource through an arbitration process, the operation of said data buffer capable of being configured in accordance with different buffer configuration parameters, a method for optimizing data transmissions between said bus masters and said shared resource, comprising the steps of:

storing buffer configuration parameters for each one of said plurality of bus masters within a register file, said buffer configuration parameters defining the optimal mode of buffer operation during data transmissions between each one of said plurality of bus masters and said shared resource;

determining the arbitration value associated with the bus master granted access to said shared resource upon conclusion of said arbitration process;

determining the bus master granted access to said shared resource by decoding the arbitration value associated with the bus master granted access to said shared resource:



retrieving the buffer configuration parameters associated with said bus master granted access to said shared resource from said register file; and

configuring said buffer to operate in accordance with said retrieved buffer configuration parameters.

5,327,541

GLOBAL ROTATION OF DATA IN SYNCHRONOUS VECTOR PROCESSOR

Peter Reinecke, Lockhart; Jimmie D. Childers, Missouri City, both of Tex.; Hiroshi Miyaguchi, Setagaya, Japan, and Moo-Taek Chung, Seoul, Rep. of Korea, assignors to Texas Instruments Inc., Dallas, Tex.

Continuation of Ser. No. 421,496, Oct. 13, 1989, abandoned. This application May 18, 1992, Ser. No. 887,228
Int. Cl.[5] G06F *12/00, 15/76*
U.S. Cl. 395—400 10 Claims

1. A data processing system for rotation manipulation of data, said system including:

a register file for storing said data;

a global rotation address generator;

a register address counter;

an instruction program memory;

said counter providing a relative register address to said generator;

said generator providing said relative address to address register locations in said register file and including:

a rotation value register;

a modulus register;

an offset register;

a comparator;

a data selector (C);

an OR gate; and

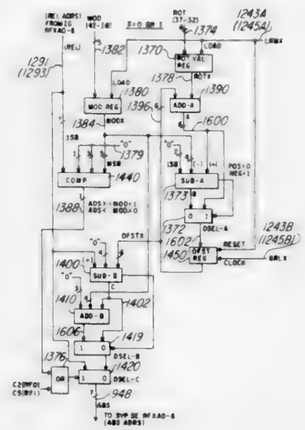
a subtractor (B);

said program memory defining a global rotation area and an input rotation value corresponding to an amount of said stored data for providing said rotation value and area to said rotation value register and modulus register, respectively;

an instruction decoder means for signaling said register file, modulus register, rotation value register and offset register of an impending global rotation, enabling loading of said rotation value and modulus registers by said program memory, and resetting said offset register;

said counter for providing said relative address to said comparator and said data selector-(C);

said comparator for comparing said relative address with output from said modulus register, determining whether selected ones of said address register file locations are outside said global rotation area, and sending a corresponding signal to said OR gate;



control bit means for sending a global rotate or not rotate signal to said OR gate;

said subtractor (B) for obtaining an absolute address by subtracting an offset value obtained from said offset register from a relative address value obtained from said counter;

where said absolute address may be utilized by a processor for accessing data rotationally from said register file.

5,327,542

DATA PROCESSOR IMPLEMENTING A TWO'S COMPLEMENT ADDRESSING TECHNIQUE

Ken Sakamura, Tokyo, and Toyohiko Yoshida, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 601,601, Oct. 18, 1990, abandoned, which is a continuation of Ser. No. 171,982, Mar. 23, 1988, abandoned. This application Jul. 8, 1993, Ser. No. 89,383
Claims priority, application Japan, Sep. 30, 1987, 62-246626
Int. Cl.[5] G06F *9/34, 12/00*
U.S. Cl. 395—400 4 Claims

1. In a data processor having an instruction execution unit and a decoding unit for decoding instructions, apparatus comprising:

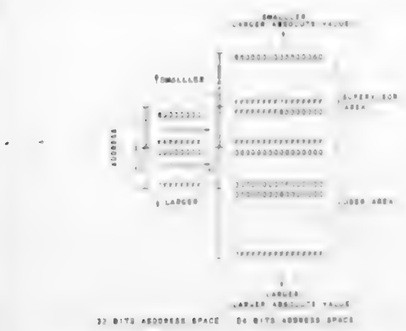
a memory containing a plurality of memory locations, each location having an address, each address having a maximum bit length;

means, for sequentially providing a first plurality of addresses for accessing said memory, at least a first of said first plurality of addresses having a number of bits, less than said maximum bit length, each of said first plurality of addresses being an address which is signed;

a sign extending means coupled to said means for sequentially providing, for receiving at least said first address from said means for sequentially providing, said first address having a bit length which is less than said maximum bit length and extending said first address into an extended address having a bit length equal to said maximum bit length wherein the least significant bits of said extended address are identical to said first address; and

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means, coupled to said memory, and to said sign extending means, for accessing data stored in said memory using



addresses selected from the group consisting of signed binary numbers, at least a first of said numbers being the two's complement of a second of said numbers.

5,327,543

SYSTEM FOR SELECTIVELY MASKING OPERAND PORTIONS FOR PROCESSING THEREOF

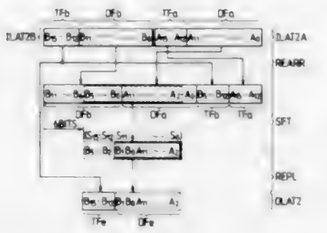
Masaharu Miura, 202, Hikariso, 6-2-3, Higashi-cho,, Houya-shi, Tokyo, and Shumpei Kawasaki, 301, Koganeinishi-Pahkuhoumuzu, 3-13-15, Nukuiminami-cho, Koganei-shi, Tokyo, both of Japan

Continuation of Ser. No. 241,909, Sep. 7, 1988, abandoned. This application Apr. 23, 1990, Ser. No. 513,034

Claims priority, application Japan, Sep. 10, 1987, 62-226895

Int. Cl.[5] G06F *9/302*

U.S. Cl. 395—375 **6 Claims**



1. A data processor comprising:

control signal generating means for generating control signals in accordance with instructions; and

execution means coupled to said control signal generating means and including first holding means for holding a first data having first and second information fields, second holding means for holding a second data having first and second information fields, operation means coupled to said first and second holding means for executing an operation in accordance with an instruction between said first and second data, and output holding means coupled to said operation means for holding an output data from said operation means, said output data having first and second information fields;

wherein said operation means includes,

means coupled to said control signal generating means responsive to a predetermined first instruction for conserving the first information field of said first data in the first information field of said output data, and means for preventing a conserved first information field of said output data from being disturbed during execution of said operation between the second information fields of said first and second data,

rearrange means coupled to said control signal generating means and responsive to said predetermined first instruction for rearranging said first and second information fields, respectively contained in said first and second data, into a serial form, including means for delivering serialized data as outputs to a shift operation means, said serialized data having first and second information fields, and

replace means coupled to said control signal generating means and responsive to said predetermined first instruction for replacing the first information field of data to be delivered as outputs from said shift operation means, with said first information filed of said first data.

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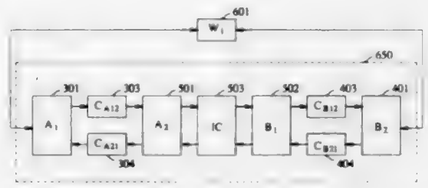
METHOD AND APPARATUS FOR DESIGNING GATEWAYS FOR COMPUTER NETWORKS

David Lee, Murray Hill; Arun N. Netravali, Westfield, and Krishan K. Sabnani, Berkeley Heights, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 29, 1991, Ser. No. 752,127

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—500 **2 Claims**



1. A method for synthesizing a gateway between a plurality of protocols, wherein a protocol provides a set of services, wherein each protocol is represented by a set of one or more directed graphs, wherein each directed graph includes a set of one or more edges, the method comprising the steps of:

(a) determining a set of common services equal to a subset of the intersection of the sets of services provided by at least two of the protocols; and

(b) determining a set of one or more processes to represent the set of common services;

wherein the step of determining a set of one or more processes comprises the steps of:

(1) deleting an edge of a first directed graph when the edge does not correspond to a member of the set of common services to form a first pruned directed graph;

(2) deleting an edge of the first pruned directed graph which is not within a strongly connected component of the first pruned graph that contains the initial state to form a second pruned directed graph; and

(3) deleting an edge of a second directed graph which does not corresponding to an edge in the second pruned directed graph.

5,327,545

DATA PROCESSING APPARATUS FOR SELECTIVELY POSTING WRITE CYCLES USING THE 82385 CACHE CONTROLLER

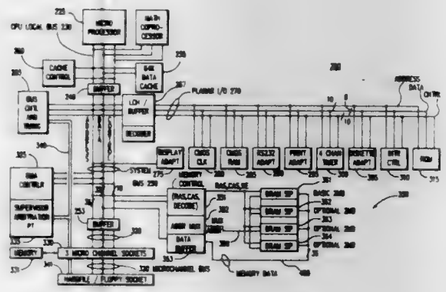
Ralph M. Begun, Boca Raton; Patrick M. Bland, and Mark E. Dean, both of Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 359,794, Jun. 1, 1989, Pat. No. 5,045,998, which is a continuation-in-part of Ser. No. 198,893, May 26, 1988, abandoned. This application May 7, 1991, Ser. No. 696,809

The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 **7 Claims**



1. A microcomputer system comprising:

a central processor unit (CPU) including means for executing instructions, said instructions including write operations directed to storage devices, and for generating address, data, and control information at initiation of said write operations;

a cache subsystem having an assigned range of addresses and including means for generating a first ready signal during each write operation;

said address information generated by the CPU during each of said write operations corresponding to a storage device to which the write operation is directed and each said address information being within or outside of said assigned range of addresses;

a CPU local bus connecting said CPU and cache subsystem;

buffer means, coupling the CPU local bus to a system bus, for routing processor-to-storage device data transfers during said write operations;

address decoder means connected to the CPU local bus and responsive to address information generated by the CPU at the initiation of write operations for determining whether the address information is within or outside of said assigned range of addresses;

logic means coupled to and controlled by said address decoder means at the initiation of a write operation for coupling said first ready signal to the CPU to initiate a next instruction and for posting the write operation to the buffer means when said generated address information lies within said assigned range of address; and

said logic means controlled by said address decoder means at the initiation of a write operation when said generated address information lies outside said assigned range of addresses for preventing the coupling of said first ready signal to the CPU and for preventing posting of the write operation.

5,327,546

METHOD OF SWITCHING BETWEEN DIFFERENT CONTROL MODES BY MAPPING CORRESPONDING OPERATION STATES WITH RESPECT TO OPERATION TABLES

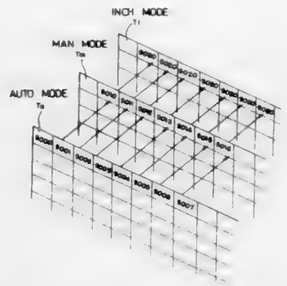
Satoru Yokoi, Kawagoe; Toru Kai, Hanno, and Noboru Suzuki, Iruma, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Mar. 24, 1992, Ser. No. 856,286

Claims priority, application Japan, Mar. 25, 1991, 3-082954

Int. Cl.[5] G06F *9/00, 9/26, 12/00*

U.S. Cl. 395—425 **2 Claims**



1. A method of switching between automatic, manual and inching control modes by an operator using a programmable sequential controller, comprising the steps of: storing in memory locations of the programmable sequential controller a first operation table of operating instructions in the automatic control mode for executing a plurality of processes in accordance with a predetermined sequence; storing, in memory locations of the programmable sequential controller a second operation table of operating instructions in the manual control mode, the memory locations of the instructions in the first and second tables respectively corresponding to each other, storing in memory locations of the controller a third operation table of operating instructions in the inching control mode, the memory locations of the instructions in the first and third tables respectively corresponding to each other; manually switching from one of the control modes to another of the control modes; and using the memory locations of the instructions in the operation table of said other control mode corresponding in memory location to the operating instructions in said one control mode.

5,327,547

TWO-LEVEL BRANCH PREDICTION CACHE

David R. Stiles, Sunnyvale; John G. Favor, San Jose, and Korbin S. Van Dyke, Fremont, all of Calif., assignors to Nexgen Microsystems, Milpitas, Calif.

Continuation of Ser. No. 844,995, Mar. 2, 1992, Pat. No. 5,163,140, which is a continuation of Ser. No. 485,306, Feb. 26, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,441

The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.

Int. Cl.[5] G06F *12/08, 13/00, 9/38*

U.S. Cl. 395—425 **12 Claims**

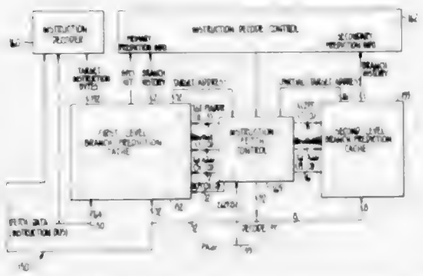
1. In a computer system that includes an instruction cache and decode logic responsive to fetched instructions, a branch prediction cache (BPC) structure comprising:

a first level BPC, separate from the instruction cache, having a first number N1 of lines for storing prediction information on up to N1 previously encountered branch instructions, each line in said first level BPC being configured to store an entry providing prediction information at a first level of detail, said first level BPC being responsive to a

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first subset of address bits from an input program counter (PC) containing the address of an encountered instruction, and including first means for enabling a given first level BPC entry to be output in the event that said first subset of address bits and the given first level BPC entry satisfy a predetermined condition; and

a second level BPC, separate from the instruction cache, having a second number N2 of lines, larger than said first



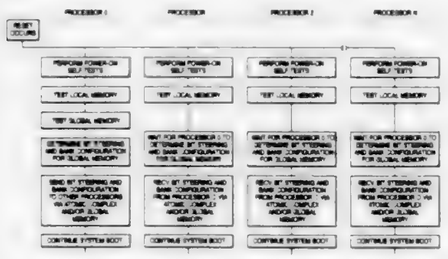
number of lines, for storing prediction information on up to N2 previously encountered branch instructions, each line in said second level BPC being configured to store an entry providing prediction information at a second level of detail, lower than said first level of detail, said second level BPC being responsive to a second subset of address bits from the input PC, and including second means for enabling a second level BPC entry to be output for use in the event that said predetermined condition is not met.

5,327,548

APPARATUS AND METHOD FOR STEERING SPARE BIT IN A MULTIPLE PROCESSOR SYSTEM HAVING A GLOBAL/LOCAL MEMORY ARCHITECTURE

William R. Hardell, Jr.; James D. Henson, Jr., both of Austin, and Oscar R. Mitchell, Pflugerville, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 9, 1992, Ser. No. 973,356
Int. Cl.[5] G06F *11/00, 12/00*
U.S. Cl. 395—425 **12 Claims**



1. Apparatus for steering spare bits in a multi-processor system having local and global memory, comprising:

means for selecting a first of multiple processors, selected by the processor first reaching a certain stage in a booting process, to test both first processor local memory and global memory, thereby determining the spare bit needs of the global memory;

means for generating address information to steer spare bits in first processor local memory and global memory;

means for enabling processors, other than the first processor, having local memory to specify by address information the steering of spare bits in respective local memory; and

means for transferring the address information relating to the steering of spare bits in global memory from the first processor to other of the multiple processors, thereby obviating the need for others of the multiple processors to test the global memory

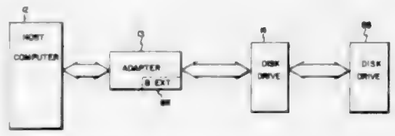
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5,327,549

DATA STORAGE SYSTEM INCLUDING A BIOS EXTENSION MEMORY ON AN ADAPTER BETWEEN A HOST COMPUTER AND DISK DRIVE

Haim N. Nissimov, West Hills, and Brady Keays, Thousand Oaks, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 818,279, Jan. 8, 1992, abandoned, which is a continuation of Ser. No. 487,026, Feb. 28, 1990, Pat. No. 5,247,633. This application Jul. 8, 1993, Ser. No. 89,427
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] G06F *13/00, 12/00*
U.S. Cl. 395—425 **8 Claims**



7. In a data storage system comprising:

a disk drive having address parameters;

a host computer; and

a basic input/output system (BIOS) having a basic input-/output system (BIOS) memory;

the improvement comprising an adapter connected between the host computer and the disk drive, the adapter including:

a basic input/output system (BIOS) extension memory storing a program, the host computer being responsive to the program to interrogate the disk drive to determine the type of the disk drive and to read address parameters from the disk drive, the host computer being responsive to the address parameters from the disk drive to allow the host computer to access each and every address location on the disk drive.

5,327,550

DISABLED MEMORY SECTIONS FOR DEGRADED OPERATION OF A VECTOR SUPERCOMPUTER

Richard D. Pribnow, Chippewa Falls, Wis., assignor to Cray Research, Inc., Eagan, Minn.

Filed Nov. 27, 1990, Ser. No. 618,685
Int. Cl.[5] G06F *13/18*
U.S. Cl. 395—575 **13 Claims**

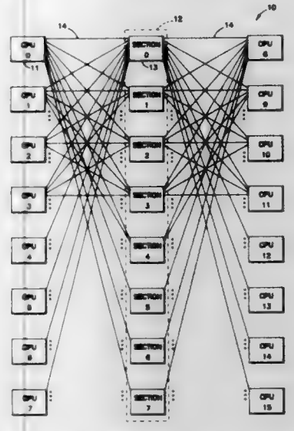
6. A multiprocessing computer system for simultaneously running operating programs and diagnostic programs, comprising;

memory means including multiple sections of memory having interleaved addresses for storing data at specified memory reference addresses within a contiguous address space across all of said sections;

processor means including a plurality of processors for executing instructions and for storing said data in said memory means;

failure detection means connected to said memory means and said processor means for detecting a hardware failure in said memory means; and

address translation means operable in response to said failure detection means for translating said memory reference addresses to a first portion of said memory means into



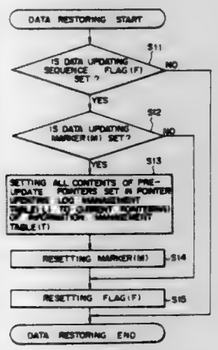
memory reference addresses to a second portion of said memory means.

5,327,551

SYSTEM USING COPY OF CURRENT POINTER SAVED BEFORE CHANGING A SELECTIVELY RESTORING ORIGINAL DATA BASED UPON STATUS OF UPDATING FLAG

Masamichi Kaneko, Zama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 28, 1991, Ser. No. 661,599
Claims priority, application Japan, Mar. 2, 1990, 2-051313
Int. Cl.[5] G06F *11/16*
U.S. Cl. 395—575 **7 Claims**



1. An updating method for data groups stored in a data processing system comprising a nonvolatile storage device including a data storage portion comprising pairs of first and second data domains, an information management table including contents and for managing a current pointer, and a pointer updating log management table, said method comprising the steps of:

(a) storing contents of the current pointer managed by the information management table in the pointer updating log management table;

(b) transferring contents of a first data domain, which are an object to be updated and are designated by the current pointer, to a second data domain when data updating is carried out;

(c) changing the contents of the information management table from the current pointer to a new current pointer pointing to the second data domain in response to said step (b);

(d) restoring, when an interruption occurs during at least one of said steps (b) and (c), the contents of the pointer updating log management table current pointer into the information management table; and

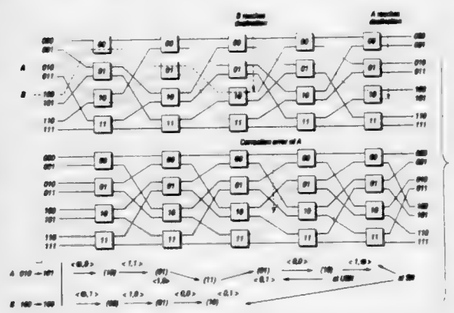
(e) providing an updating indicator indicating updating progress and said indicator allowing reversion to the first data domain when updating is not completed.

5,327,552

METHOD AND SYSTEM FOR CORRECTING ROUTING ERRORS DUE TO PACKET DEFLECTIONS

Soung C. Liew, Somerset, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Jun. 22, 1992, Ser. No. 902,010
Int. Cl.[5] H04J *13/00;* **H04Q** *11/04*
U.S. Cl. 395—575 **14 Claims**



13. A method of correcting a routing error caused by more packets at one switching node at one of a plurality of sequentially connected communication network routing stages of a dual-shuffle exchange (DSN) communication network requesting connection to a same node in a next sequential routing stage of the DSN than what the capacity of that same node to accept packets is, at least one of the routing stages having feedback, the DSN comprising a shuffle-exchange network (SN) having a plurality of switching nodes and a complementary unshuffle-exchange network (USN) having a plurality of corresponding companion switching nodes, at least one packet including a routing tag for routing the packet through the DSN to a destination, the routing tag in each packet comprising a bit sequence of a plurality of bits which route the packet and which are deleted one-by-one as the packet and the remaining bits of its routing tag are routed from one stage to the next towards the packet's destination, the method comprising the steps of:

deflecting at least one of the packets requesting connection to the said same node in the SN (or USN) to a companion node to that said same node in the USN (or SN);

modifying the routing tag of the at least one deflected packet so that the modified routing tag includes error correcting information, the error correcting information including a plurality of additional bits which are added to the bit sequence of the remaining bits of the routing tag after deflection; and

utilizing the error correcting information in the modified routing tag of the at least one deflected packet when it reaches the said companion node in the USN (or SN) to route the at least one deflected packet back to a node in one further next sequential stage of the SN (or USN), said node in the one further next sequential stage of the SN (or USN) being one which corresponds to the position of the

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node in the SN (or USN) from which deflection of the packet to the companion node in the USN (or SN) occurred and from which the at least one deflected packet can continue its route to said destination using its modified routing tag, the error correcting additional bits added to the routing tag after deflection being such that the bit sequence of the modified routing tag of the packet after routing to the node in the one further next sequential stage is the same as the bit sequence of the remaining bits of the routing tag of the packet when at the node from which deflection occurred.

5,327,553

FAULT-TOLERANT COMPUTER SYSTEM WITH /CONFIG FILESYSTEM

Douglas E. Jewett; Tom Bereiter, and Brian Vetter, all of Austin, Tex., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 455,065, Dec. 22, 1989, abandoned. This application Nov. 6, 1992, Ser. No. 973,202

Int. Cl.[5] **G06F** *15/16*

U.S. Cl. 395—575 **18 Claims**



10. A computer system comprising:

a) first, second and third central processing unit (CPU) units each having an address range and each executing a same instruction stream, each of said CPU units having a separate memory access port, wherein a failed one of said first, second and third CPU units is placed off-line and a remaining two of said first, second and third CPU units continue to execute said same instruction stream;

b) first and second memory units having identical address spaces within the address range of said CPU units for storing duplicative data to be accessed by said CPU units, each of said first and second memory units having first, second and third input/output ports coupled to said memory access ports of said first, second and third CPU units, respectively, wherein a failed one of said first and second memory units is placed off-line and a remaining one of said first and second memory units continues to be accessed by said CPU units; and

c) a filesystem storing a directory having an entry for each one of said CPU units and memory units which is currently operating.

5,327,554

INTERACTIVE TERMINAL FOR THE ACCESS OF REMOTE DATABASE INFORMATION

Michael A. Palazzi, III, 17 Maple Way, Mountain Lakes, N.J. 07046, and Frank A. Epps, III, 20 Bow St., East Greenwich, R.I. 02818

Filed Nov. 29, 1990, Ser. No. 619,412

Int. Cl.[5] **G06F** *3/00*

U.S. Cl. 395—600 **18 Claims**

12. A telecommunications device for creating an interactive terminal for accessing information from a remote computerized database using a communication exchange, wherein said interactive terminal is coupled to a television receiver for displaying information retrieved from said computerized database, said television receiver having an input port; said interactive terminal comprising:

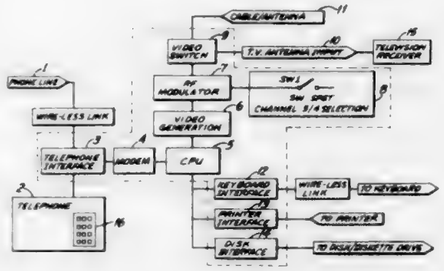
a telephone keypad having a plurality of keys for generating output signals corresponding to said keys when selected;

interface means coupled to said telephone keypad and to said communication exchange for communicating and receiving communication signals including carrier based signals over said communication exchange,

said interface means responsive to receiving said output signals generated by said keypad means for selectively uncoupling said keypad from said communication exchange and allowing a user to manipulate said information after it is retrieved from said database;

modem means coupled to said interface means for retrieving and converting said carrier based signals corresponding to said information from said remote database into digitally encoded data signals, and for converting digitally encoded data signals into carrier based signals for transmission via said communication exchange to said database;

control means coupled to said modem means for operating



said telecommunications device, said control means having a plurality of peripheral interfaces for supporting input/output devices, said control means responsive to said digitally encoded data signals;

programmable memory means coupled to said control means for storing said digitally encoded signals;

video signal processing means coupled to said control means for converting said digitally encoded data signals into corresponding video data signals including character generation; radio frequency modulating means coupled to said video processing means for receiving and modulating said video data signals over a carrier frequency, said radio frequency modulating means having a tuning circuit for tuning said modulating video signal across various frequencies; and

switching means coupled to a broadcast/cable exchange, to said input port of said television receiver and to said radio frequency modulating means, wherein said switching means is controlled by said control means and is responsive to said modulated video signal for transmitting to said television receiver said modulated video signal or broadcast signals received from said broadcast/cable exchange.

5,327,555

METHOD FOR RECONCILING ENTRIES IN A PLURALITY OF SCHEDULES

Thomas P. Anderson, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 14, 1991, Ser. No. 655,686

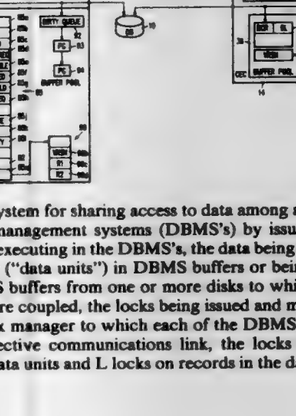
Int. Cl.[5] **G06F** *7/06, 15/16*

U.S. Cl. 395—600 **10 Claims**

1. In a computer, a method for reconciling entries in a plurality of schedules using a schedule history which includes entries from a last reconciliation, the schedule history not being one of the plurality of schedules and the method, performed by the computer, comprising the step of:

(a) for every entry which is not listed in all schedules in the plurality of schedules performing the following substeps:

(a1) if the entry is listed in the schedule history, deleting the entry from all schedules in the plurality of schedules in which the entry appears; and,



(a2) if the entry is not listed in the schedule history, adding the entry to all schedules in the plurality of schedules in which the entry does not appear;

wherein each entry in the plurality of schedules comprises a time and an activity associated with the time.

5,327,556

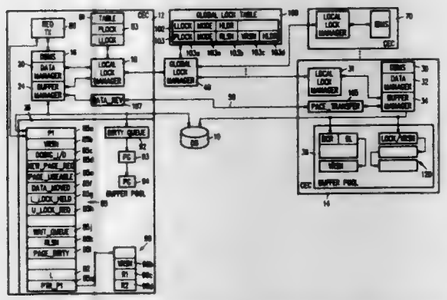
FAST INTERSYSTEM PAGE TRANSFER IN A DATA SHARING ENVIRONMENT WITH RECORD LOCKING

Chandrasekaran Mohan, San Jose, and Inderpal S. Narang, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 656,567, Feb. 15, 1991, abandoned. This application May 11, 1993, Ser. No. 59,734

Int. Cl.[5] **G06F** *15/40*

U.S. Cl. 395—600 **12 Claims**



1. In a system for sharing access to data among a plurality of database management systems (DBMS's) by issuing locks to processes executing in the DBMS's, the data being held in units of transfer ("data units") in DBMS buffers or being copied to the DBMS buffers from one or more disks to which all of the DBMS's are coupled, the locks being issued and managed by a global lock manager to which each of the DBMS's is coupled by a respective communications link, the locks including P locks on data units and L locks on records in the data units, the system including means for coupling each DBMS to all other DBMS's for transferring data, a method for providing fast access to data units, the method comprising the steps of:

maintaining a global lock table at the global lock manager, the global lock table including one or more entries, each entry corresponding to a lock granted to a DBMS;

issuing a P lock for updating a data unit to a first DBMS;

entering an entry for the P lock in the global lock table;

providing a first version of the data unit from a disk to a buffer of the first DBMS;

generating an updated version of the data unit in the buffer by updating the first version of the data unit at the first DBMS;

in response to updating the first version of the data unit:

generating a version number for the updated version of the data unit in the buffer of the first DBMS, the version number being a monotonically increasing number;

attaching the version number to the updated version of the data unit in the buffer of the first DBMS; and

storing the version number in the entry for the P lock in the global lock table;

issuing a request from a second DBMS for an L lock to read a record in the data unit;

in response to the request for the L lock, providing the second DBMS with the version number stored in the global lock table and granting the L lock;

if a buffer version of the data unit is in a buffer of the second DBMS, comparing the version number in the buffer version of the data unit with the version number from the global lock table and requesting the data unit from the global lock manager if the version number in the buffer version of the data unit is less than the version number from the global lock table; otherwise,

if no version of the data unit is in a buffer of the second DBMS, issuing a request from the second DBMS for a P lock to read the data unit;

providing a request from the global lock manager to the first DBMS to transfer the data unit to the second DBMS in response to the P lock request;

transferring the updated version of the data unit from the first DBMS to the second DBMS and providing the version number of the updated version of the data unit from the first DBMS to the global lock manager;

forwarding the version number received from the first DBMS by the global lock manager to the second DBMS;

if the version number provided to the second DBMS is greater than the version number in the updated version of the data unit received by the second DBMS or if the updated version of the data unit has not been received at the second DBMS when the version number arrives, writing the updated version of the data unit to a disk from the first DBMS, providing the updated version of the data unit to the second DBMS from the disk and reading the record; otherwise,

reading the record from the updated version of the data unit transferred to the second DBMS from the first DBMS.

5,327,557

SINGLE-KEYED INDEXED FILE FOR TP QUEUE REPOSITORY

James P. Enmond, Amherst, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 220,461, Jul. 18, 1988, abandoned. This application Aug. 24, 1990, Ser. No. 573,393

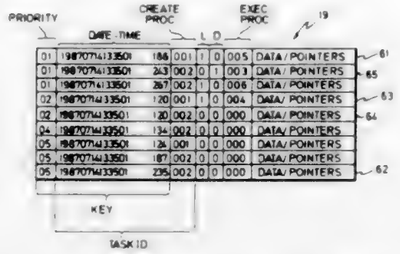
Int. Cl.[5] **G06F** *7/00, 9/46*

U.S. Cl. 395—650 **44 Claims**

1. A memory device in a data processing system, said memory device holding a queue of data, said queue comprising an ordered set of a multiplicity of records of said data, each of said records including an identifier field holding a respective identifier different from the respective identifiers in the identifier fields of the other ones of said records, each of said records also including a key field holding a respective key value having

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a most significant portion indicating a priority level and a less significant portion that is a predetermined function of the respective identifier in the record, said records having been stored in said queue sequentially with respect to said less significant portion of the key values, and said records being ordered



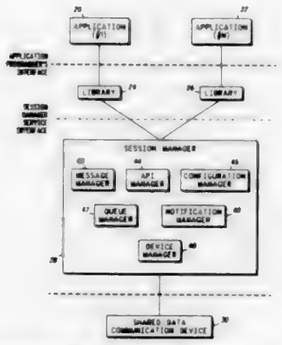
in said queue sequentially with respect to said key values but not sequentially with respect to said less significant portion of the key values, whereby records having the same priority level are included in respective blocks of said records, and the records in each block are ordered sequentially with respect to the less significant portion of the key values.

5,327,558

METHOD FOR ASYNCHRONOUS APPLICATION COMMUNICATION

Christopher J. Burke, Maple Valley; Erez Nir, Bellevue, and Janice M. Chaffee, Auburn, all of Wash., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1992, Ser. No. 876,889
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—650 **9 Claims**



1. In a data processing system comprising a processor, a modem, and a memory for storing a plurality of applications, at least one of which is not currently executing, and for storing a session manager for enabling a plurality of communications channels through said modem, a method for routing and delivering data messages to any of said applications, independent of user involvement, said method comprising:

a) receiving a data message from said modem by said session manager, said data message being addressed to said at least one application;

b) storing said message in said memory; and

c) routing said message to said at least one application upon request,

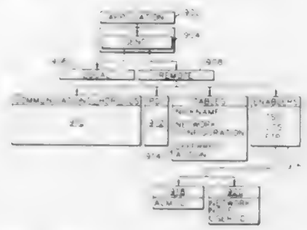
whereby messages may be received and routed asynchronously to inactive applications.

5,327,559

REMOTE AND BATCH PROCESSING IN AN OBJECT ORIENTED PROGRAMMING SYSTEM

Michael P. Priven; Robert L. Abraham, both of Marietta; Floyd W. Shackelford, Buford; Richard E. Moore, Marietta; Thomas P. Moorman; April D. E. Stiles, both of Atlanta, and Jane E. Schrock, Kennesaw, all of Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1990, Ser. No. 602,434
Int. Cl.[5] G06F *9/44, 15/16*
U.S. Cl. 395—700 **10 Claims**



1. A remote and batch object processing process for an object oriented computing system, said object oriented computing system including a plurality of objects, each object comprising an object frame and at least one object method, said object frame containing at least one data attribute of said object, said at least one object method comprising at least one method performed by said object oriented computing system upon at least one data attribute of the object associated with said at least one object method, said remote and batch object processing process comprising the following steps which are performed by said object oriented computing system:

determining that a selected object method of a selected object is to be processed by one of a batch system and a remote system;

creating a Communications Interface Packet (CIP) object from said selected object, said CIP object including a CIP object frame and at least one CIP object method, said CIP object frame including a pointer to said selected object and a pointer to said selected object method; and

delivering said CIP object to said one of a batch system and a remote system, for batch or remote processing respectively, of said selected object.

5,327,560

METHOD OF UPDATING NETWORK RECONFIGURATION INFORMATION EXCHANGED BETWEEN A HOST COMPUTER AND A COMMUNICATION CONTROL PROCESSOR

Toshiaki Hirata, Kawasaki; Akira Mineo, Sagamihara; Hidenori Shimizu, Yokohama; Takeshi Kondo, Kawasaki, and Kazuo Yagyu, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

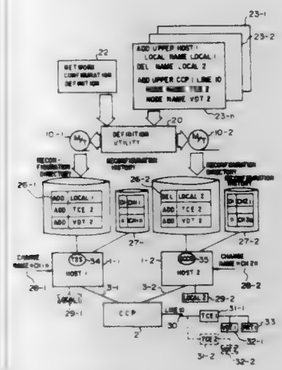
Filed Jul. 25, 1991, Ser. No. 735,629
Claims priority, application Japan, Jul. 30, 1990, 2-199292
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—700 **16 Claims**

1. A method of processing reconfiguration information for a network system including at least one host computer provided with network configuration definition information and a dictionary file for storing a plurality of reconfiguration directories each including a reconfiguration designating data for defining a relation between said network and a resource to be deleted from or added to said network, a communication control processor connected to said host computer, and a plurality of resources connected to said communication control processor, said network reconfiguration information processing method comprising the steps of:

supplying, by an operator, a new reconfiguration directory to said host computer;

inputting by said operator a reconfiguration command designating said new reconfiguration directory for instructing said host computer to update said network configuration definition information; and,

responsive to said reconfiguration command, reconfiguring



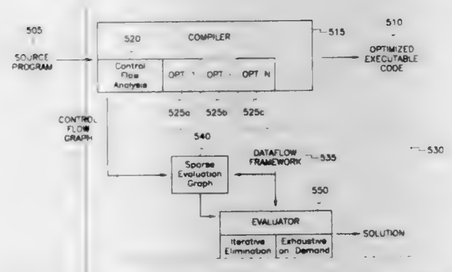
said network configuration definition information by said host computer in accordance with the reconfiguration designating data defined within said new reconfiguration directory designated by said reconfiguration command, and storing said new configuration directory in said directory file.

5,327,561

SYSTEM AND METHOD FOR SOLVING MONOTONE INFORMATION PROPAGATION PROBLEMS

Jong-Deok Choi, Mount Kisco, N.Y.; Ron K. Cytron, University City, Mo., and Jeanne Ferrante, Briarcliff, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1991, Ser. No. 763,099
Int. Cl.[5] G06F *9/45, 9/44, 9/00*
U.S. Cl. 395—700 **28 Claims**



14. A computer-based method for solving monotone information propagation problems during the optimization of source code, comprising the steps of:

(1) entering source code into an optimizer, said source code represented by a data flow framework, said data flow framework includes a flow graph;

(2) defining a dominator tree from said flow graph, and defining a dominance frontier from said dominator tree and said flow graph;

(3) constructing a sparse evaluation graph and a sparse map from said data flow framework, said dominator tree, and said dominance frontier, wherein said sparse map maps edges from said flow graph to nodes in said sparse evaluation graph;

(4) evaluating said sparse evaluation graph with respect to said data flow framework, in order to determine a partial solution to a monotone information propagation problem; and

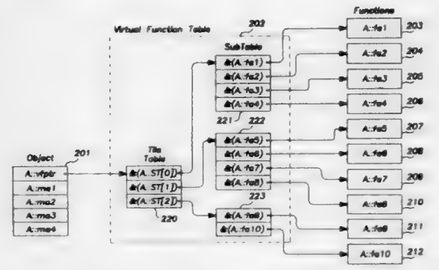
(5) applying said sparse map to said partial solution to obtain an extended solution to said monotone information propagation problem.

5,327,562

METHOD FOR IMPLEMENTING VIRTUAL FUNCTION TABLES IN A COMPILER FOR AN OBJECT-ORIENTED PROGRAMMING LANGUAGE

James L. Adcock, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed May 6, 1992, Ser. No. 880,168
Int. Cl.[5] G06F *9/45*
U.S. Cl. 395—700 **16 Claims**



1. A method in a computer system for generating a virtual function table for a class, the class specifying an object type in an object-oriented environment, the computer system having memory, the class having a plurality of virtual function members, each virtual function member having associated executable code, the virtual function table having a tile table and a plurality of sub-tables, the method comprising the steps of:

receiving a class definition for the class;

after receiving the class definition, allocating a plurality of sub-tables in the memory, each sub-table having entries;

allocating a tile table for the class in the memory, the tile table containing an entry for each allocated sub-table;

storing in each tile table entry a pointer to an allocated sub-table;

storing in each sub-table entry a pointer to the executable code associated with a virtual function member; and

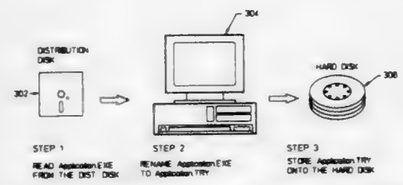
generating computer code to access the executable code of the virtual function members of the class through the tile table and the sub-tables.

5,327,563

METHOD FOR LOCKING SOFTWARE FILES TO A SPECIFIC STORAGE DEVICE

Jitendra K. Singh, San Jose, Calif., assignor to Hewlett-Packard, Palo Alto, Calif.

Filed Nov. 13, 1992, Ser. No. 976,176
Int. Cl.[5] G06F *12/14;* **H04L** *9/00*
U.S. Cl. 395—700 **6 Claims**



1. A computer implemented method, for locking a software program to a specific hard disk it is loaded onto and the hard

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disk includes sectors for storing software programs and files, comprising the steps of:

a) encrypting the software program;

b) storing the encrypted software program onto the hard disk within the hard disk sectors;

c) creating and storing a first file, having a known name, onto the hard disk within the hard disk sectors;

d) determining the sector location, on the hard disk, of the encrypted software program and the first file;

e) encrypting the sector location information of the encrypted software program and first file; and

f) storing the encrypted sector location information in the first file and

g) upon executing a copy program to copy the encrypted program and first file to another storage media or to the same storage media changing the sector location information defining the locations on the hard disk of the copy of the encrypted software program and first file, the new position of the encrypted software program and first file will not match the position of the original encrypted software program and first file after the copy program completes the copy process.

5,327,564

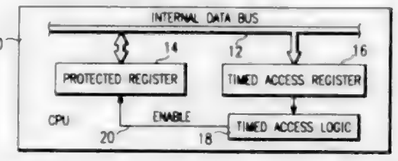
TIMED ACCESS SYSTEM FOR PROTECTING DATA IN A CENTRAL PROCESSING UNIT

Wendell L. Little, Carrollton, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 163,980, Mar. 4, 1988, abandoned. This application Jun. 13, 1991, Ser. No. 714,973

Int. Cl.[5] **G06F** *13/14*

U.S. Cl. 395—725 **7 Claims**



1. A protection system for protecting internal data in a CPU, comprising:

a protected internal register for storing the internal data without change except when accessed, said protected register having an enable input, and being configured to allow access thereto when an enable signal is received on said enable input;

access register means for receiving and storing access data;

compare means, connected to said access register means, for comparing said stored access data in said access register means with a predetermined access work and outputting a true compare signal if a match exists between said predetermined access word and said stored access data; and

enable timing means, connected to said enable input of said protected register, for generating said enable signal for a predetermined amount of time when said true compare signal is detected on the output of said compare means such that said protected internal register is accessible only during said predetermined time after receipt of access data corresponding to said predetermined access word.

5,327,565

DATA PROCESSING APPARATUS

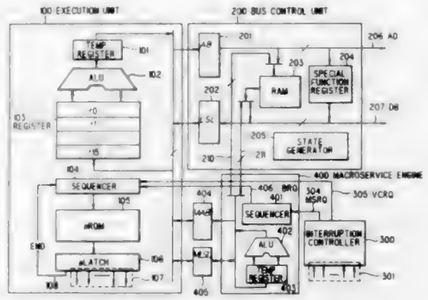
Hajime Sakuma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 871,231

Claims priority, application Japan, Apr. 26, 1991, 3-096497

Int. Cl.[5] **G06F** *9/46*

U.S. Cl. 395—725 **4 Claims**



1. A data processing apparatus, comprising:

a central processing unit for carrying out a predetermined logic calculation to control peripheral circuits;

an interruption controller for generating a processing request signal in response to an interruption request signal;

a data control unit connected to receive said processing request signal and carrying out a sequence control of a predetermined processing in response to said processing request signal, said data control unit generating an access request signal to said central processing unit;

a memory for storing predetermined processing information including an address of a specified register of a peripheral register set relating to said peripheral circuits, an address of a specified memory region of said memory, and a specified processing information; and

means for accessing a predetermined space of said memory directly from said data control unit;

wherein said data control unit accesses said peripheral register set and said memory in accordance with said addresses of said specified register and memory region when said access request signal is generated, and carries out said predetermined processing in accordance with said specified processing information.

5,327,566

STAGE SAVING AND RESTORING HARDWARE MECHANISM

Mark A. Forsyth, Fort Collins, Colo., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Jul. 12, 1991, Ser. No. 729,093

Int. Cl.[5] **G06F** *13/24*

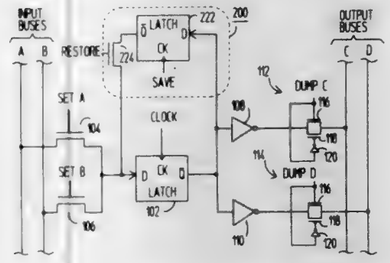
U.S. Cl. 395—775 **19 Claims**

1. An apparatus for performing state saving and restoring operations in a computer system having a central processor unit (CPU) with at least one data bus, at least one general purpose register, instruction decoding logic and a mechanism for detecting interrupt conditions, comprising:

an input section for transferring information from the at least one data bus to the at least one general purpose register for storing said information;

an output section for transferring the stored information from the at least one general purpose register to the at least one data bus; and

a memory device located substantially adjacent, and electrically connected to the at least one general purpose register and between said input section and said output section, for storing the contents of the at least one general purpose register when the CPU issues a SAVE control signal upon detection of an interrupt condition and transferring the contents back to be stored in the at least one general



purpose register when the CPU issues a RESTORE control signal upon decoding a return from interrupt and restore (RFIR) instruction.

5,327,567

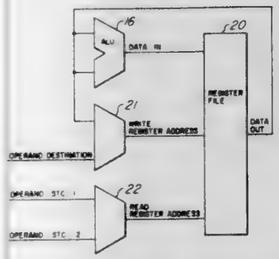
METHOD AND SYSTEM FOR RETURNING EMULATED RESULTS FROM A TRAP HANDLER

Douglas A. Johnson, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 437,723, Nov. 16, 1989, abandoned. This application Mar. 19, 1992, Ser. No. 855,137

Int. Cl.[5] **G06F** *9/00*

U.S. Cl. 395—775 **13 Claims**



7. A method for using an emulated result from a trap handler invoked from a trapping instruction in a program within a computer system comprising the steps of:

determining a first argument value to be moved from a source register set to a destination register set;

determining a second argument value in said source register set identifying a register of the destination register set to which said first argument value is to be moved;

executing an instruction to transfer control back to said program; and using said first argument value and said second argument value in a value return instruction, wherein said value return instruction causes moving of said first argument value from said source register set into said register of said destination register set.

5,327,568

APPARATUS FOR SUPPORTING GRAPHIC DATA DRIVEN PROGRAM DEVELOPMENT AND FOR DISPLAYING INSTRUCTION EXECUTION RESULTS SUPERIMPOSED ON THE GRAPHIC PROGRAM

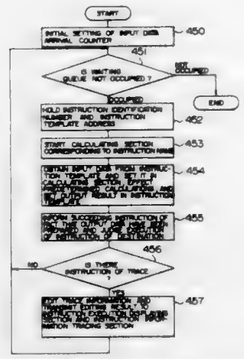
Yukihito Maejima, Hachioji; Taihei Suzuki, Kodaira; Yasuyoshi Kaneko, Yokohama; Mitsuyuki Masui, Yokosuka; Susumu Kawaguchi, Yokohama, and Hikaru Nakatani, Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Software Engineering Co., Ltd., Yokoyama, both of Japan

Filed Jul. 30, 1990, Ser. No. 559,240

Claims priority, application Japan, Jul. 31, 1989, 1-196589

Int. Cl.[5] **G06F** *15/60*

U.S. Cl. 395—800 **15 Claims**



1. A computer-implemented method for supporting development of graphic data driven programs comprising the steps of:

preparing a graphic data driven program representing a program operation desired by a designer by means of a graphic editor;

inputting said graphic program thus prepared into a computer;

displaying said graphic program on a display device in said graphic editor;

transforming said graphic program into a test form program which does not depend on a target machine;

transforming said text form program into instructions which are not executed by said target machine until all input data necessary for executing said instructions is available;

executing each of said executable instructions obtained by the transformation when respective input data is available; and

displaying results of the execution each of said executable instructions superposed on the displayed graphic program;

wherein said graphic data driven program is described by using nodes, each of said notes represents an instruction; directed arcs indicating a data flow between instruction nodes; input pin numbers indicating a position of input data; output pin numbers indicating a position of output data; a name representing a function of each of said instruction nodes; instruction identification numbers for identifying specified instructions among a plurality of instructions; and data names and numerical values inputted directly in the instructions;

wherein the step of transforming said text form program into instructions includes the step of transforming said text form program into instruction templates described in a language which depends on the target machine, the instruction templates corresponding to the instructions and including input data arrival counters; and

wherein the step of executing said executable instructions includes the steps of

setting, with an instruction execution control section, the

input data arrival counters to predetermined initial values each representing a number of input data which are necessary for executing a respective one of the instructions,

determining, with the instruction execution control section, if one of the instructions is registered in a waiting queue as being ready for execution,

executing, when it is determined that one of the instructions is registered in the waiting queue, with a calculating section, a calculation indicated by the instruction template of the registered instruction based on input data for the registered instruction to obtain output data for the registered instruction,

decrementing by one, with the instruction execution control section, the input data arrival counter for one of the instructions succeeding the registered instruction which is to receive as input data the output data for the registered instruction, and

registering in the waiting queue, with the instruction execution control section, the succeeding instruction when the input data arrival counter for the succeeding instruction has been decremented to a count value of zero.

5,327,569

DATA DRIVEN TYPE PROCESSOR INCLUDING A GENERATION MANAGEMENT SYSTEM

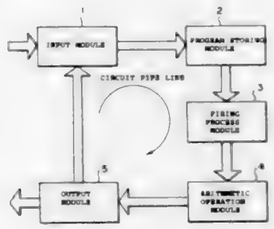
Kenji Shima, and Yoshie Inaoka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1990, Ser. No. 571,737

Claims priority, application Japan, Aug. 28, 1989, 1-218658; Aug. 28, 1989, 1-218659

Int. Cl.[5] G06F *7/00*

U.S. Cl. 395—800 **6 Claims**



1. A data driven type processor for processing token packets of data, each containing data and a tag for identifying said data, said tag containing a generation number, said processor comprising:

an input module means for receiving said packets;

a program storing module means, responsive to said input module means, for accessing a particular program previously stored therein based on information in the tag of one of said packets, and for modifying the tag of said one packet with the content of said program;

a firing process module means, responsive to said program storing means, for generating operand pairs from the tag of said one packet when said one packet is ready for execution and for storing said one packet into a memory when said one packet is not ready for execution;

an arithmetic operation module means, responsive to said firing process module means, and to arithmetic information included in the tag of said one packet for effecting a process on said one packet and for producing a resultant packet therefrom; and

an output module means, responsive to said arithmetic operation module means and coupled to said input module means, for determining whether said one packet is to be selectively outputted from said processor or forwarded to said input module means for internal reprocessing in said processor,

said firing process module means comprising:

a generation management means for determining whether the generation number contained in the tag of said one packet is within a range expressible by a generation region number contained in said tag and for producing the result thereof by outputting a judgment bit; and

a tag comparing means receiving the judgment bit and responsive to said generation management means and the judgment bit, for adding said output result of said generation management unit to the generation number of the tag of said one packet and for maintaining the execution sequence of said packets,

wherein the execution sequence of generations is maintained even if the generation number of said one packet is in excess of said generation region number evidencing a potential missequencing.

5,327,570

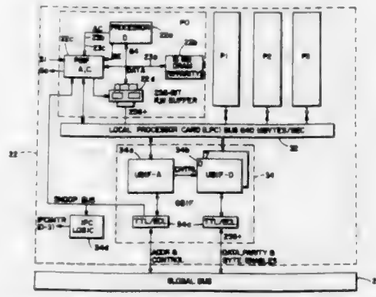
MULTIPROCESSOR SYSTEM HAVING LOCAL WRITE CACHE WITHIN EACH DATA PROCESSOR NODE

David J. Foster, White Plains; Armando Garcia, Yorktown Heights, and Robert B. Pearson, Cold Spring, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1991, Ser. No. 734,432

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—800 **19 Claims**



1. A multiprocessor data processing system having a plurality of data processors that are coupled through a system bus to a shared memory, said system comprising:

a plurality of processor nodes each including an associated data processor, each of said associated data processors being capable of generating a shared memory write command in conjunction with from one to N bytes of data to be written to said shared memory and from one to N corresponding byte enable signals;

each of said processor nodes further including an internal bus that is coupled to the associated data processor, and data buffer means coupled between said internal bus and a local bus, said local bus being coupled to each of said plurality of processor nodes, said data buffer means having a width of M times N bytes of data and being capable of buffering, prior to the buffered data being transferred to said shared memory over said local bus and said system bus, up to N data bytes from a plurality of data processor write commands that are all directed to a same M times N byte address region within said shared memory, each of said processor nodes further including byte_enable buffer means having an input coupled to said associated data processor for buffering up to M times N of said corresponding byte enable signals;

means for controlling a transmission of buffered bytes of data from said data buffer means to said local bus and a transmission of said corresponding buffered byte enable signals from said byte enable buffer means to said local bus, said controlling means including means, responsive to stored byte enable signals, for selectively generating a control signal on said local bus for specifying a shared memory write operation to be accomplished as one of a read-modify-write type of memory operation and a write type of memory operation;

means, responsive to said controlling means, for coupling buffered data bytes, the control signal, and the buffered byte enable signals from said local bus to said system bus for reception by said shared memory as write data bytes, as a memory control signal, and as memory byte enable signals, respectively; and

means, coupled to said system bus and said shared memory and responsive to the memory control signal specifying said read-modify-write memory operation, for reading data from a specified location within said shared memory, for selectively merging the write data bytes with the data read from the specified location in accordance with the byte enable signals to form resultant data bytes, and for storing the resultant data bytes back into the specified location.

5,327,571

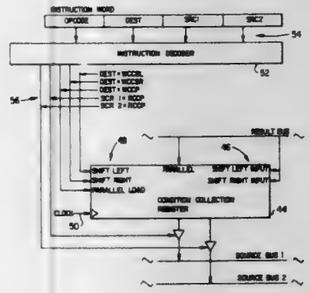
PROCESSOR HAVING DECODER FOR DECODING UNMODIFIED INSTRUCTION SET FOR ADDRESSING REGISTER TO READ OR WRITE IN PARALLEL OR SERIALLY SHIFT IN FROM LEFT OR RIGHT

Brian D. McMinn, Austin, Tex.; Robert H. Perlman, San Jose, Calif., and Prem Sobel, Pondicherry, India, assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 505,351, Apr. 3, 1990, abandoned. This application Aug. 10, 1993, Ser. No. 104,398

Int. Cl.[5] G06F *9/315, 9/312, 9/30*

U.S. Cl. 395—800 **6 Claims**



1. A processor for collecting boolean conditions of multiple operations comprising:

a multiple-bit condition collection register which, during and by processor operation, may be written and read in parallel or written serially and into which a single bit is shifted from either the left or the right;

a processor instruction decoder structurally interconnected to said condition collection register for decoding an unmodified processor instruction set including a plurality of operand register addresses for reading source information from and writing operation result information to said condition collection register, wherein said processor instruction decoder decodes a first operand address as a read address for said condition collection register so as to read the source information from said condition collection register in parallel, a second operand address as a write address for said condition collection register so as to write the operation result information to said condition collection register in parallel, a third operand address as a write address for said condition collection register so as to serially shift operation result information into said condition collection register from the left, and a fourth operand address as a write address for said condition collection register so as to serially shift operation result information into said condition collection register from the right.

5,327,572

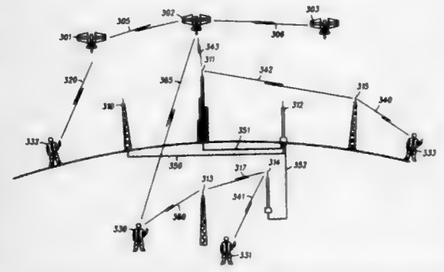
NETWORKED SATELLITE AND TERRESTRIAL CELLULAR RADIOTELEPHONE SYSTEMS

Thomas A. Freeburg, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 6, 1990, Ser. No. 488,912

Int. Cl.[5] H04B *7/19*

U.S. Cl. 455—13.1 **16 Claims**



1. A method of networking a satellite network and a terrestrial network comprising the steps of:

controlling a terrestrial network transmission within a frequency band with respect to a satellite network transmission also within said frequency band to overcome interference

and controlling a subscriber transmission to the terrestrial network with respect to the terrestrial network transmission within said frequency band to the satellite network to avoid causing interference at a satellite of the satellite network.

5,327,573

METHOD FOR SUPPORTING VOICE COMMUNICATIONS BETWEEN COMMUNICATION SYSTEMS

Vitaly Lenchik, Lake Zurich; Robert W. Furtaw, Schaumburg, and David S. Robins, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 656,360, Feb. 15, 1991, abandoned. This application Mar. 12, 1993, Ser. No. 68,830

Int. Cl.[5] H04B *3/36*

U.S. Cl. 455—14 **15 Claims**

1. A method of conducting a voice communication between a first communication unit serviced by a first radio frequency communication system and a second communication system serviced by a second radio frequency communication system, comprising the steps of:

A) determining whether a first multi-channel communication path exists between the first and second radio frequency communication systems;

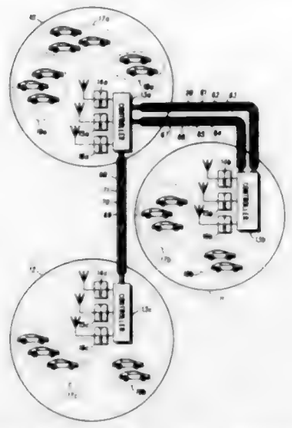
B) when the first multi-channel communication path so exists, determining whether the first multi-channel communication path has at least one channel to support the voice communication;

C) when the first communication path has at least one channel, initially establishing the voice communication using only one channel of the first multi-channel communication path;

D) when either the first multi-channel communication path does not exist or the first multi-channel communication path has insufficient capacity;

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i) automatically establishing a new multi-channel communication path to support the voice communication;



ii) initially establishing the voice communication using only one channel of the new multi-channel communication path.

5,327,574

MOBILE COMMUNICATION SYSTEM

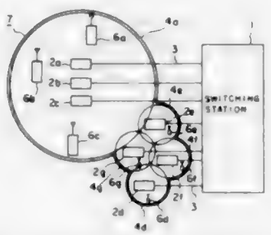
Takeshi Monma; Yasushi Ozu, and Mitsuo Fujyu, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1991, Ser. No. 658,481

Claims priority, application Japan, Feb. 23, 1990, 2-43717; Feb. 23, 1990, 2-43718; Feb. 23, 1990, 2-43719; Sep. 13, 1990, 2-242901

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.2 **7 Claims**



1. A mobile communication system comprising:

a switching station;

a plurality of base stations connected to said switching station,

a plurality of mobile stations moving in a service area formed by combination of communication zones, each of which zones includes at least one of said base stations;

said base stations and said mobile stations having a speech radio channel for speech and a control radio channel for communication of communication control signals, said speech radio channel and said control radio channel including an upward channel from the mobile stations to the base stations and a downward channel from the base stations to the mobile stations respectively,

at least one of said communication zones including a selected plurality of base stations, selected from among said plurality of base stations, installed within said zone;

one of said selected plurality of base stations installed within said at least one communication zone having allocated thereto a radio channel to be used for a selected specific case only and being set in the normally receiving state, and said one base station and said switching station having means for controlling the operation thereof such that if said one base station receives a general communication request signal through the upward channel of the radio channel allocated for the selected specific case only from a requesting mobile station within said at least one communication zone, said switching station commands general communication to said base station receiving the general communication request signal from the requesting mobile station and transmits a general communication signal of a prescribed signal to the requesting mobile station.

5,327,575

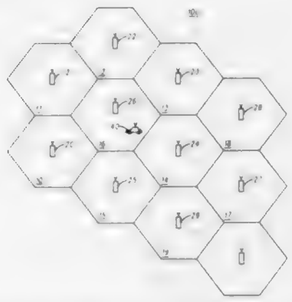
DIRECTIONAL HANDOVER CONTROL IN DIGITAL MOBILE RADIO SYSTEMS EMPLOYING MAHO

Barry J. Menich, Schaumburg, and Jeffrey D. Bonta, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 23, 1992, Ser. No. 856,278

Int. Cl.[5] H04B *1/00, 7/00;* **H04M** *11/00*

U.S. Cl. 455—33.2 **3 Claims**



1. A method of selecting handover targets for a communication unit exchanging a communicated signal through a serving base site in a digital cellular system, such method comprising the steps of:

A) determining a directionality of the communication unit based upon a first set of measured RSSI values of base sites within a base site frequency list;

B) comparing a timing advance value of the communication unit with a first threshold;

C) when the timing advance value exceeds the first threshold, modifying the base site frequency list to include base sites non-adjacent the serving base site based upon the directionality of the communication unit; and

D) selecting a handover target providing a highest relative RSSI value to the communication unit based upon a second set of measured RSSI values of base sites within the modified base site frequency list.

5,327,576

HANDOFF OF A MOBILE STATION BETWEEN HALF RATE AND FULL RATE CHANNELS

Jan Uddenfeldt, Vallingby, and Hans Hermansson, Johanneshov, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

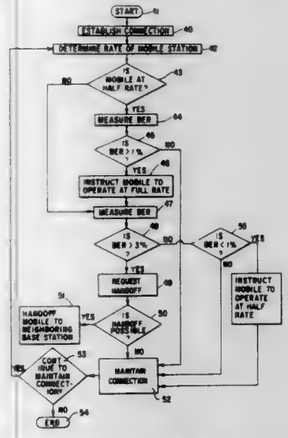
Continuation of Ser. No. 571,405, Aug. 23, 1990, abandoned. This application Dec. 17, 1992, Ser. No. 994,091

Int. Cl.[5] H04B *7/26*

U.S. Cl. 455—33.2 **19 Claims**

1. A method of communication in a cellular mobile radio system having a plurality of base stations in a plurality of cells for communication with a plurality of mobile stations in the cells, comprising the steps of:

transmitting a signal between a first base station and at least a first mobile station of the cellular mobile radio system, the signal being transmitted on a half rate channel having relatively slowly repeating time slots per frame or a full rate channel having relatively quickly repeating time slots per frame as compared to the relatively slowly repeating time slots, wherein the bit rates within the time slots of both the half and full rate channels are the same, wherein each bit transmitted in said half rate channel represents



more sensitive information than that of a corresponding bit transmitted in said full rate channel;

estimating periodically the quality of the received signal;

assigning the transmission of the signal to a half rate channel if the estimated quality is above a first predetermined value;

assigning the transmission of the signal to a full rate channel if the estimated quality is below the first predetermined value; and

handing off the mobile station between a half rate channel and a full rate channel depending upon the estimated quality.

5,327,577

HANDOVER METHOD FOR MOBILE RADIO SYSTEM

Jan-Erik Uddenfeldt, Vällingby, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 836,874, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 365,432, Jun. 13, 1998, Pat. No. 5,109,528. This application Jun. 3, 1993, Ser. No. 71,356

Claims priority, application Sweden, Jun. 14, 1988, 8802229-8

Int. Cl.[5] H04Q *9/00*

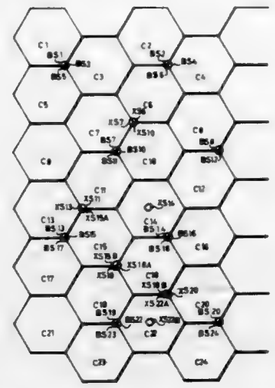
U.S. Cl. 455—33.2 **21 Claims**

1. A method of communication in a cellular mobile radio system having a plurality of base station transmitters and mobile stations comprising the steps of:

transmitting, from a first base station transmitter, radio signals digitally modulated with message information to a mobile station;

while transmitting the radio signals from the first base station transmitter to the mobile station, beginning to transmit from a second base station transmitter to the mobile station radio signals digitally modulated with substantially the same message information; and

terminating the transmission from the first base station transmitter to the mobile station while continuing to transmit from the second base station transmitter radio signals



digitally modulated with message information to the mobile station.

5,327,578

RADIO TELEPHONE SYSTEM SUPPORTING AUTOMATIC BUSY AND OUT-OF-RANGE INDICATIONS

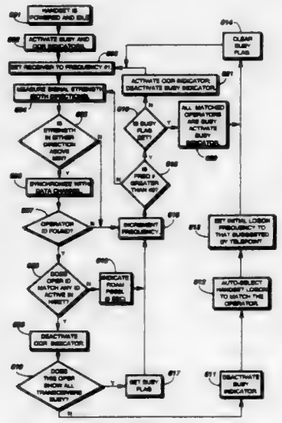
Robert L. Breeden; Gary S. Lobel, both of Boynton Beach, and Thomas V. D'Amico, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 579,646, Sep. 10, 1990, Pat. No. 5,203,013. This application Aug. 25, 1992, Ser. No. 935,492

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] H04B *17/00*

U.S. Cl. 455—34.2 **17 Claims**



1. In a radio telephone communication system having:

a base station with at least one frequency agile transceiver capable of time division duplex operation on at least one radio frequency channel for facilitating communication with at least one radio telephone on the at least one radio frequency channel, a method of determining acquisition status of the at least one frequency agile transceiver in the base station comprising the steps of:

at a radio telephone:

scanning a plurality of channels capable of being generated by the at least one frequency agile transceiver to find an available channel, the plurality of channels including the at least one radio frequency channel; and

providing an indication representing a base station busy status when all of the at least one frequency agile transceivers are in use indicating no available channels as determined when one of:

bidirectional time division duplex communication including a base station identification signal is being communicated by the at least one frequency agile transceiver on the at least one radio frequency channel; and

unidirectional time division duplex communication including a base station identification signal is being communicated by the at least one frequency agile transceiver on the at least one radio frequency channel.

5,327,579

SCANNING SYSTEMS USING TREE STRUCTURES

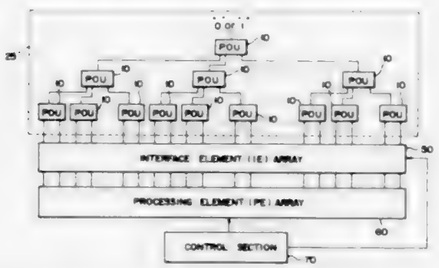
Tosio Kondo, Yokosuka, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 786,501, Nov. 1, 1991, abandoned. This application Nov. 16, 1993, Ser. No. 153,276

Claims priority, application Japan, Nov. 6, 1990, 2-300168

Int. Cl.[5] G06F *7/00, 15/16*

U.S. Cl. 395—800 **8 Claims**



1. A scanning system comprising two operating parts, one of the two operating part including:

a tree structural array composed of hierarchical layers arranged to include an upper layer and a lower layer, each layer in said tree structural array having propagation operating units which, except in said upper layer, are formed into at least one group, with one group being coupled to a particular one of said propagation operating units in said upper layer, and each of said propagation operating units having at least one propagation element of which propagation element E_i (where i is an integer) has a first, second and third select means SLA, SLB and SLD, respectively,

said first and second select means SLA and SLB selecting one of two input signals DA_j and DB_j from said lower layer by using input signals LA_{j+1} and outputting the selected results as signals LA_j and LB_j for providing select control of the first and second select means SLA and SLB in an adjacent propagation element E_{i+1} and for input to the third select means SLD in the propagation element E_{i+1}, and

said third select means SLD selecting one of said two input signals LA_{j-1} and LB_{j-1} by using an input signal U_j (wherein j is an integer) from said particular propagation operating unit in the upper layer and outputting the selected result to said propagation operating unit in the lower layer as an output signal U_k and of which the last propagation element E_N of said propagation operating unit outputs the selected results of the selected means SLA and SLB as signals DA_j and DB_j to said particular propagation operating unit in the upper layer; and

the other of the two operating parts including:

a one dimensional array connected to the propagation operating units in the lower layer and composed of operating units of which the lth operating unit outputting $0 \oplus a_1 \oplus a_2 \oplus \ldots \oplus a_r$, $1 \oplus a_1 \oplus a_2 \oplus \ldots \oplus a_r$ as signals DA_j and DB_j to one of the corresponding propagation operating units in the lower layer, receiving U_j from one of the corresponding propagation operating units in the lower layer and selecting one between pairs of $0 \oplus a_1 \oplus a_2 \oplus \ldots \oplus a_r$ and $1 \oplus a_1 \oplus a_2 \oplus \ldots \oplus a_2 \oplus \ldots \oplus a_r$ by the signal U_j as an operation result,

where l, r and j' are integers, $\oplus$ is an arbitrary operator and a data array of $a_1, a_2, a_3, \ldots$, and a_r is a subarray of a scan target data array assigned to the lth operating unit of the one dimensional array.

5,327,580

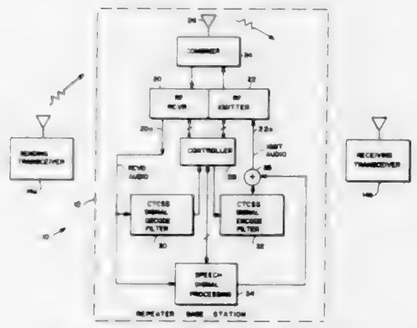
FULL DUPLEX RF REPEATER/BASE STATION PROVIDING MICROPROCESSOR-CONTROLLED SIMULTANEOUS CTCSS TONE ENCODE/DECODE

Claude L. Vignali, Forest; John R. Martin, Lynchburg; Rodney L. Nickel, Lynchburg, and Daniel I. Schwed, Lynchburg, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Continuation of Ser. No. 596,357, Oct. 12, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,030

Int. Cl.[5] H04B *1/40, 7/15*

U.S. Cl. 455—35.1 **17 Claims**



15. A method of operating a single microprocessor so as to substantially simultaneously encode and decode CTCSS signals within an RF duplex base station, said microprocessor independently performing the steps of:

(a) performing CTCSS tone encode functions in response to a first microprocessor interrupt input,

(b) performing CTCSS tone decode functions in response to a second microprocessor interrupt input;

(c) performing base station control functions; and

(d) applying timing signals to said microprocessor first and second interrupt inputs so as to time multiplex said microprocessor in real time between said CTCSS encode functions, CTCSS decode function, and said control function.

5,327,581

METHOD AND APPARATUS FOR MAINTAINING SYNCHRONIZATION IN A SIMULCAST SYSTEM

Steven J. Goldberg, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 29, 1992, Ser. No. 890,974

Int. Cl.[5] H04B *7/24;* **H04L** *7/00*

U.S. Cl. 455—51.2 **17 Claims**

10. A method for maintaining synchronization of data transmissions in a simulcast system, the simulcast system having a transmitter controller capable of synchronizing and maintaining synchronization of a plurality of base sites coupled to the transmitter controller, the plurality of base sites having trans-

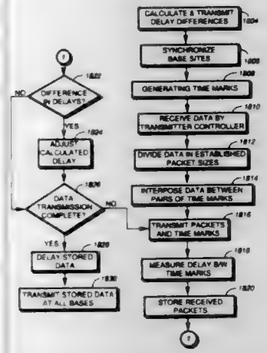
mitters capable of transmitting data as radio frequency transmission at substantially the same time, said method comprising the steps of:

(a) generating time marks at a predetermined time periods;

(b) dividing the data into predetermined packets to be interposed between at least a pair of time marks;

(c) transmitting the data packets and time marks to the plurality of base sites;

(d) periodically transmitting the data packets including the time marks to the plurality of base sites for determining variations in time to the plurality of base sites;



(e) receiving the data packets and time marks by the plurality of base sites;

(f) measuring the time between each consecutive pair of time marks;

(g) determining when there are variations in time between pairs of time marks and the predetermined time period; and

(h) adjusting for the difference in propagation delay of the respective base sites responsive to step (g) to compensate for variations in the propagation delays to the plurality of base sites.

5,327,582

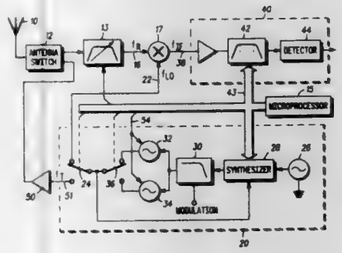
WIDEBAND WIRELESS COMMUNICATIONS RECEIVER

Donald H. Wong, Vancouver, Canada, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 24, 1992, Ser. No. 825,370

Int. Cl.[5] H04B *1/40*

U.S. Cl. 455—76 **9 Claims**



5. A wireless communications transceiver having the capability of transmitting and receiving radio signals throughout a range of frequencies including overlapping predetermined high-side and low-side frequency bands, comprising:

a) input means for receiving the radio signals to provide a radio signal at a desired receive frequency;

b) oscillator means for generating a local oscillator signal frequency that

i) is greater than said desired frequency when said desired frequency is less than a first threshold frequency, and

ii) is less than said desired frequency when said desired frequency is greater than a second threshold frequency wherein said second threshold frequency is greater than said first threshold frequency, and

iii) is within a total limited oscillator frequency range; and

c) mixer means, responsive to said input means and said oscillator means, for producing a signal at a selected intermediate frequency that

i) corresponds to a magnitude of a frequency difference between said desired receive frequency and said local oscillator signal frequency, and

ii) is less than one half of said total limited oscillator frequency range; and

d) transmitter means, responsive to said oscillator means, for transmitting a radio signal at a desired transmit frequency within the range of frequencies.

5,327,583

USING A CLOCK SIGNAL GENERATED BY A MICROCOMPUTER FOR PROVIDING A NEGATIVE BIAS VOLTAGE TO A GALIUM ARSENIDE FIELD EFFECT TRANSISTOR IN A HIGH FREQUENCY AMPLIFIER OF THE DEVICE

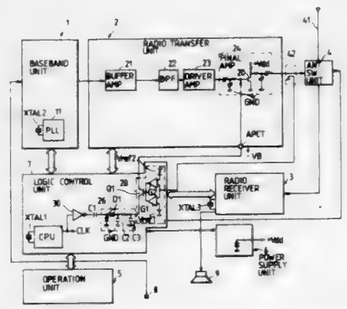
Shinji Yamada, Takasaki, and Akira Masuda, Annaka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 12, 1991, Ser. No. 743,854

Claims priority, application Japan, Sep. 13, 1990, 2-243119

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—89 **24 Claims**



10. A mobile radio communication device including a microcomputer supplying system clock signals having a predetermined frequency and a high-frequency power amplifier having a GaAs FET, said device comprising:

negative voltage generating means for receiving said system clock signals and forming a negative voltage; and

a control circuit for selectively supplying said negative voltage supplied from said negative voltage generating means to a gate of said GaAs FET, activation and deactivation operations of said GaAs FET being controlled in accordance with said negative voltage,

wherein said control circuit is electrically coupled between said negative voltage generating means and said gate of said GaAs FET.

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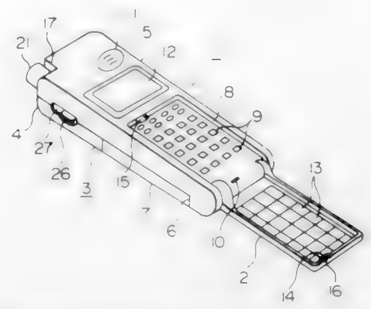
5,327,584

PORTABLE RADIO HAVING COVER RELEASING MECHANISM AND RECEIVE SWITCH WHICH ARE OPERABLE TOGETHER

Naotomo Adachi; Tetsuya Kubo; Ryoichi Kaiwa, and Michiyoshi Kudoh, all of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 5, 1992, Ser. No. 846,144
Claims priority, application Japan, Mar. 11, 1991, 3-044790
Int. Cl.[5] H04M *1/02*
U.S. Cl. 455—89 **6 Claims**

3. A portable radio comprising:
a radio body;
a cover operably connected to said radio body and having a first locking engaging portion;
a second locking engaging portion movable between a disengaging position and an engaging position with respect to said first engaging portion;
a receive switch disposed on said radio body;
a switch operating member movable between an actuating position and a releasing position, for actuating said receive switch; and
an operating portion for linking said second locking engaging portion and said switch operating member to move together, whereby a user is able, by a single operation, to release said cover and actuate said receive switch,



wherein said operating portion comprises a linking member integrally formed with said second locking engaging portion and said switch operating member.

DESIGN PATENTS

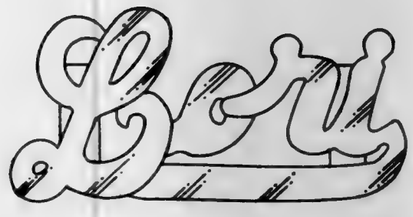
GRANTED JUL. 5, 1994

ERRATA

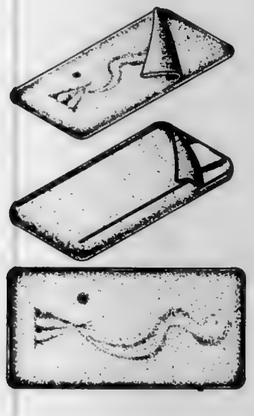
For CLASS	See PATENT NO.
3-265	D 348,475

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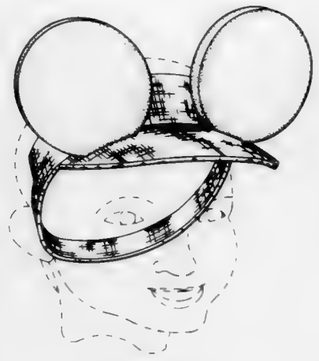
348,347
SNEAKER I.D.
David A. Krajci, R.R. 2, Box 1054-A, Cresco, Pa. 18326
Filed Oct. 10, 1991, Ser. No. 774,290
Term of patent 14 years
U.S. Cl. D2—976



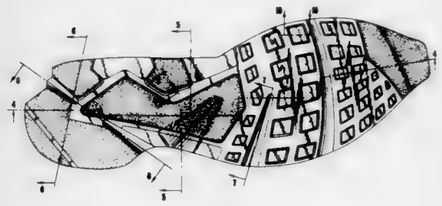
348,348
SLEEPING BAG ENSEMBLE
Randy D. Lawson, 104 Mimosa, Lake Jackson, Tex. 77566
Filed May 9, 1991, Ser. No. 697,469
Term of patent 14 years
U.S. Cl. D2—719



348,349
VISOR
Rebecca H. Blackwell, 8015 Coronet Dr., Pensacola, Fla. 32514
Continuation-in-part of Ser. No. 711,733, Jun. 7, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 5,403
Term of patent 14 years
U.S. Cl. D2—872



348,350
SHOE OUTSOLE
Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Feb. 5, 1993, Ser. No. 4,455
Term of patent 14 years
U.S. Cl. D2—957

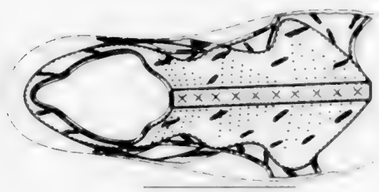


348,351
SHOE UPPER
Tory P. Orzeck, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 3, 1993, Ser. No. 9,025
Term of patent 14 years
U.S. Cl. D2—969



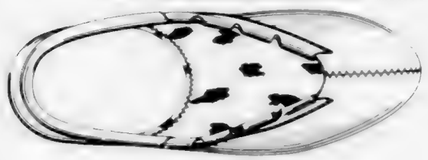
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348,352
SHOE UPPER
Bradford A. Johnson, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Sep. 1, 1993, Ser. No. 12,418
Term of patent 14 years
U.S. Cl. D2—969



348,353
SHOE UPPER
Steven C. McDonald, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Sep. 17, 1993, Ser. No. 13,627
Term of patent 14 years
U.S. Cl. D2—969

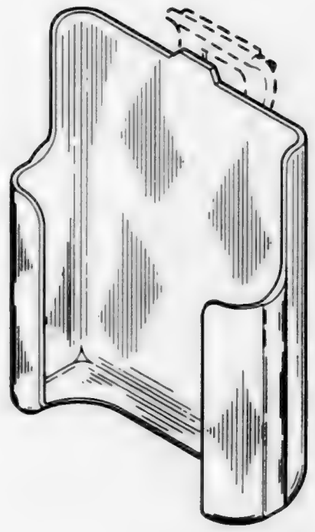




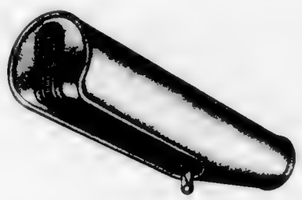
348,354
SUPPORT ELEMENT FOR A SHOE SOLE
Robert Lucas, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Feb. 5, 1993, Ser. No. 4,453
Term of patent 14 years
U.S. Cl. D2—977



348,355
SELECTIVE CALL RECEIVER CARRIER
William J. Scheid, Coral Springs; Martin D. McCluskie, Pompano Beach, and Frank A. DeLeo, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 13, 1992, Ser. No. 1,465
Term of patent 14 years
U.S. Cl. D3—218



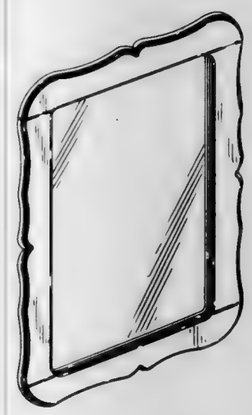
348,356
CASE FOR SPOTTING SCOPE
Masaaki Nemoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 2,893
Claims priority, application Japan, Jun. 23, 1992, 4-18588
Term of patent 14 years
U.S. Cl. D3—267



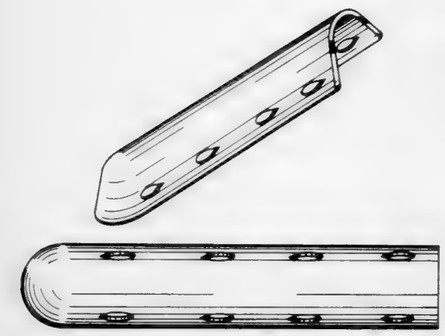
348,357
PUSH BROOM HEAD
Robert J. Libman, Champaign, Ill., assignor to The Libman Company, Arcola, Ill.
Filed Sep. 28, 1992, Ser. No. 951,706
Term of patent 14 years
U.S. Cl. D4—199



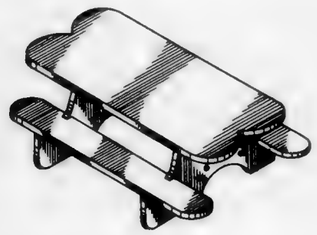
348,358
MIRROR
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Wetauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed May 6, 1993, Ser. No. 8,047
Term of patent 14 years
U.S. Cl. D6—300



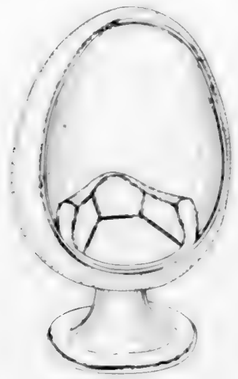
348,359
COVER FOR CLOTHES HANGERS
James Hasselbeck, 805 Hermosa #6, Cincinnati, Ohio 45238
Filed Apr. 24, 1992, Ser. No. 873,073
Term of patent 14 years
U.S. Cl. D6—328



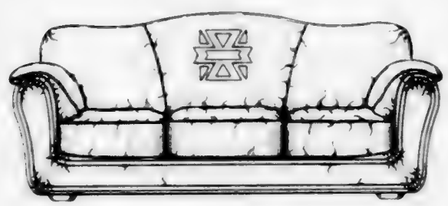
348,360
MULTI-USE TABLE
Cody Abbott, 3104 Perkins Rd., Urbana, Ill. 61801; David Bruns, 321 Walnut, and Jan Huffman, 1515 Clay St., both of Cedar Falls, Iowa 50613
Filed May 9, 1991, Ser. No. 703,144
Term of patent 14 years
U.S. Cl. D6—337



348,361
ACOUSTIC ENVIRONMENT MODULE
Jon Beecher, Buffalo, Minn., assignor to Starkey Laboratories, Inc., Eden Prairie, Minn.
Filed Sep. 8, 1992, Ser. No. 941,827
Term of patent 14 years
U.S. Cl. D6—365



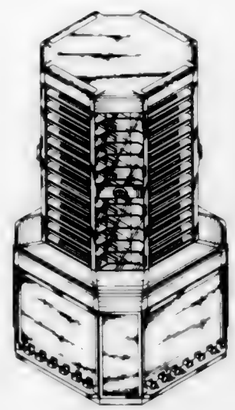
348,362
SEAT
Pasquale Natuzzi, Santeramo In Colle, and Giulio Riboldi, Briosco, both of Italy, assignors to Industrie Natuzzi Spa, Bari, Italy
Filed Aug. 7, 1992, Ser. No. 926,840
Term of patent 14 years
U.S. Cl. D6—381



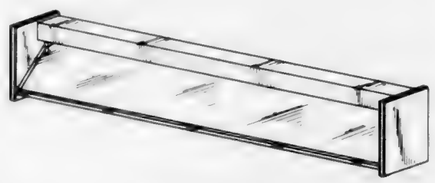
348,363
NIGHT STAND
Andrew R. Willemsen, 39 Liberty St., Newburyport, Mass. 01950
Filed Sep. 8, 1992, Ser. No. 939,883
Term of patent 14 years
U.S. Cl. D6—434



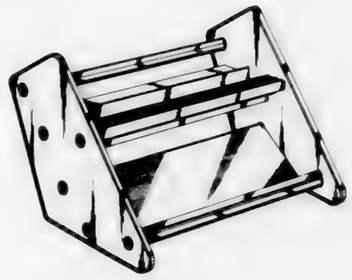
348,364
DISPLAY CASE
Harvey J. Engel, Boca Raton, Fla., assignor to Textron Inc., Providence, R.I.
Filed Oct. 26, 1992, Ser. No. 808
Term of patent 14 years
U.S. Cl. D6—457



348,365
DISPLAY CASE
Mark S. Johnson, 1228 Wisconsin Ave., Pittsburgh, Pa. 15216
Filed Sep. 2, 1992, Ser. No. 938,648
Term of patent 14 years
U.S. Cl. D6—471



348,366
BILEVEL SHELF UNIT
David M. Stravitz, 16 Park Ave., New York, N.Y. 10016
Filed Mar. 11, 1993, Ser. No. 5,813
Term of patent 14 years
U.S. Cl. D6—476



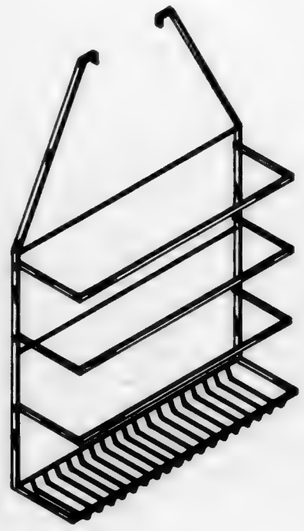
348,367
MOBILE FOOD PREPARATION REFRIGERATOR
Robert J. Geisen, Stillwater; Leo F. Giesen, Blaine, both of Minn., and Robert L. McMullen, Hudson, Wis., assignors to Nor-Lake, Incorporated, Hudson, Wis.
Filed Mar. 31, 1993, Ser. No. 6,509
Term of patent 14 years
U.S. Cl. D6—481



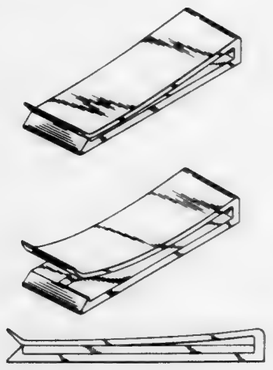
348,368
HOLDER WITH DISPENSING APERTURE FOR PACKAGES CONTAINING PAPER
Han Hazekamp, Gothenburg, Sweden, assignor to Molnlycke AB, Sweden
Filed Mar. 18, 1992, Ser. No. 853,321
Claims priority, application Sweden, Sep. 19, 1991, 91-1842
Term of patent 14 years
U.S. Cl. D6—518



348,369
STORAGE RACK FOR USE IN THE BATHROOM
Anne I. Nakamura, 1234-3 Kamaile St., Honolulu, Hi. 96814
Filed Jan. 29, 1993, Ser. No. 4,198
Term of patent 14 years
U.S. Cl. D6—525

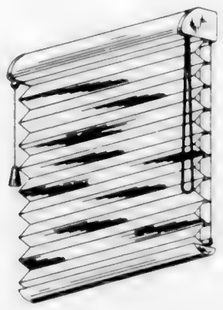


348,370
PASTE SQUEEZER
Udom Yarnmunilert, c/o Mr. Manit Harnvanich, 1435 W. Bonita La., Mount Prospect, Ill. 60056
Filed Jan. 11, 1993, Ser. No. 3,629
Term of patent 14 years
U.S. Cl. D6—541



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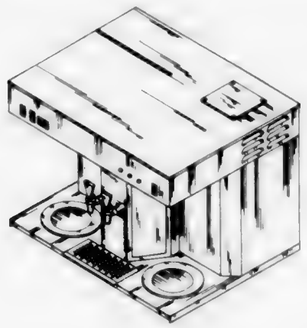
348,371
DOUBLE LAYER SHADE
Ren Judkins, Killbuck Township, Allegheny County, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.
Filed Oct. 3, 1991, Ser. No. 770,609
Term of patent 14 years
U.S. Cl. D6—577



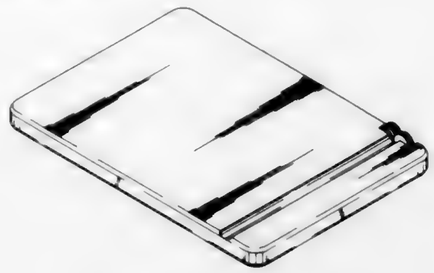
348,372
ORNAMENTAL CHILD'S PILLOW IN THE FANCIFUL FORM OF A TIGER
Karen Keller, Seattle, Wash., assignor to KKH, Inc., Encino, Calif.
Filed Sep. 7, 1993, Ser. No. 12,617
Term of patent 14 years
U.S. Cl. D6—598



348,373
MULTIPLE BEVERAGE BREWER
Joseph P. Webster, St. Charles County, Mo., assignor to Newco Enterprises, Inc., St. Charles, Mo.
Filed Jul. 14, 1992, Ser. No. 922,671
Term of patent 14 years
U.S. Cl. D7—311



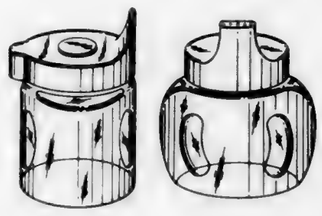
348,374
KNIFE SHARPENING CUTTING BOARD
Kim A. Dandurand, P.O. Box 1467, Sandpoint, Id. 83864-0866
Filed May 1, 1992, Ser. No. 878,003
Term of patent 14 years
U.S. Cl. D7—698



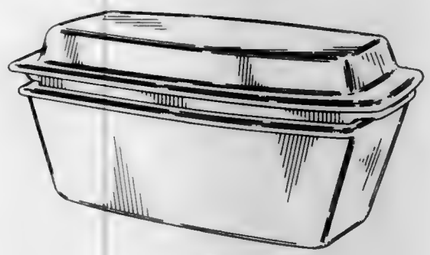
348,375
END CAP FOR A FREESTANDING RANGE CONTROL PANEL
Ned N. Ivanovich, Brampton, Canada, assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 24, 1992, Ser. No. 933,507
Term of patent 14 years
U.S. Cl. D7—402



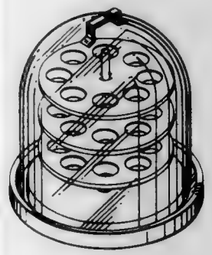
348,376
CLOSEABLE DRINKING CUP
Peter Röhrig, Vienna, Austria, assignor to Mam Babyartikel Gesellschaft m.b.H., Vienna, Austria
Filed Sep. 17, 1992, Ser. No. 948,815
Claims priority, application Austria, Mar. 20, 1992, MU-1010/92
Term of patent 14 years
U.S. Cl. D7—510



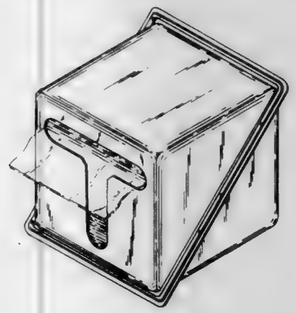
348,377
COMBINED BAKING DISH AND STEAMER TRAY
Lee F. Douglas, Dallas, Tex., assignor to LeeDee Products, Inc., Dallas, Tex.
Filed Nov. 5, 1992, Ser. No. 1,191
Term of patent 14 years
U.S. Cl. D7—538



348,378
CUPCAKE HOLDER
Joan T. Crane, 78 Sheridan Ave., Staten Island, N.Y. 10305
Filed Aug. 7, 1992, Ser. No. 926,547
Term of patent 14 years
U.S. Cl. D7—610



348,379
NAPKIN DISPENSER
Armando Parella, 37 Waters Ave., Everett, Mass. 02149
Filed Jan. 12, 1993, Ser. No. 3,646
Term of patent 14 years
U.S. Cl. D7—631



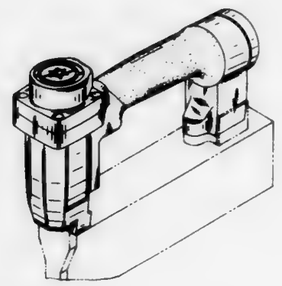
348,380
BLUNT NOSE KNIFE
Charles Allen, 602 E. 49th St., Austin, Tex. 78751
Filed May 25, 1993, Ser. No. 8,763
Term of patent 14 years
U.S. Cl. D7—649



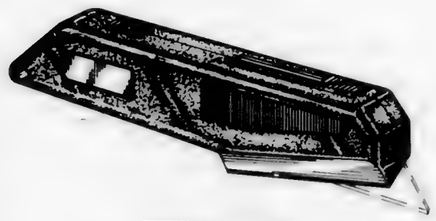
348,381
BOTTLE OPENER
Paul B. Rutherford, 943 Oak Ave. Apt. 'C', Carlsbad, Calif. 92008
Filed Jan. 25, 1993, Ser. No. 4,034
Term of patent 14 years
U.S. Cl. D8—40



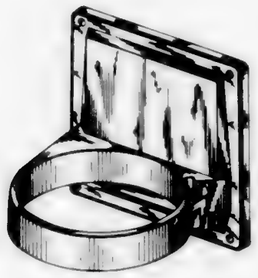
348,382
PORTABLE FASTENER DRIVING DEVICE HOUSING
David W. Kaiser, North Haven, Conn., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.
Filed Apr. 22, 1993, Ser. No. 7,449
Term of patent 14 years
U.S. Cl. D8—70



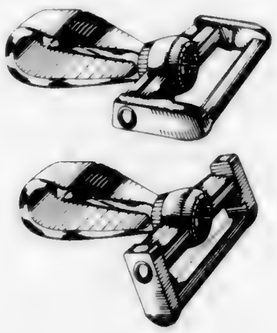
348,383
CUTTING TOOL
John H. Perkins, 12 Coachmans Run, Avon, Conn. 06001
Filed Oct. 26, 1992, Ser. No. 812
Term of patent 14 years
U.S. Cl. D8—99



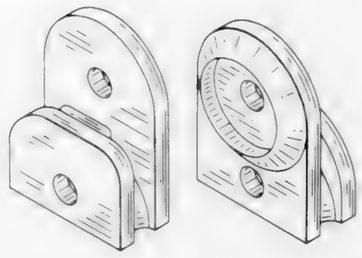
348,384
REGISTER MOUNTING BRACKET
Lee Karsten, Thiensville, Wis., assignor to Badger Meter, Inc., Milwaukee, Wis.
Filed Feb. 26, 1993, Ser. No. 5,316
Term of patent 14 years
U.S. Cl. D8—363



348,385
SWIVEL SNAP HOOK
Mark J. Krauss, East Greenwich, R.I., assignor to American Cord and Webbing Co., Inc., Woonsocket, R.I.
Continuation of Ser. No. 690,815, Apr. 24, 1991, Pat. No. 5,127,137. This application Apr. 23, 1992, Ser. No. 872,652
Term of patent 14 years
U.S. Cl. D8—367



348,386
COMBINED HANGER AND PULLEY FOR CORD
Denver L. Cogburn, R.R. 1, Box 2880, Wister, Okla. 74966
Filed May 27, 1992, Ser. No. 889,094
Term of patent 14 years
U.S. Cl. D8—373



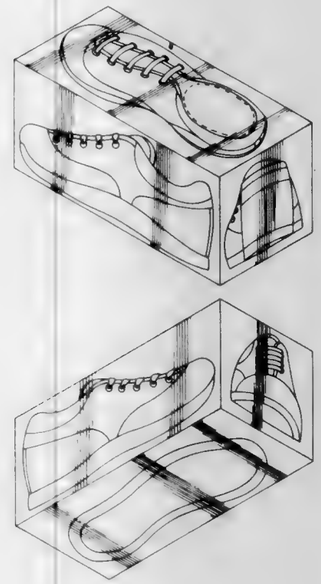
348,387
LOADING DOCK SEAL
Vincent Sullivan, Columbia, Md., assignor to The Serco Corporation, London, Canada
Filed Sep. 21, 1990, Ser. No. 586,056
Term of patent 14 years
U.S. Cl. D8—402



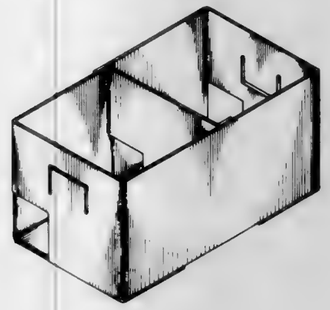
348,388
PUMP DISPENSER
Gene J. Kuzma, 1910 Crown Park Ct., Columbus, Ohio 43236
Filed Sep. 14, 1992, Ser. No. 948,715
Term of patent 14 years
U.S. Cl. D9—300



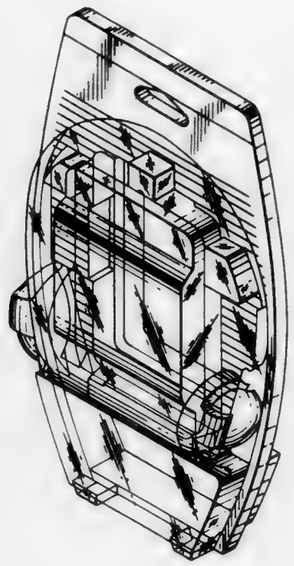
348,389
CONTAINER FOR PAPER INSERTS FOR ATHLETIC SHOES
John A. Nigro, 298 Lincoln St., Berkeley Heights, N.J. 07922
Filed Feb. 21, 1991, Ser. No. 658,567
Term of patent 14 years
U.S. Cl. D9—319



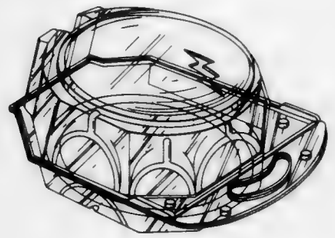
348,390
COLLAPSIBLE BOX FOR HOLDING GROCERY BAGS
Robert L. Van Ness, P.O. Box 5305, Blue Jay, Calif. 92317
Filed Jan. 21, 1992, Ser. No. 822,827
Term of patent 14 years
U.S. Cl. D9—346



348,391
PACKAGE FOR A HEADPHONE
Toru Ichikawa, Yokohama; Yuko Wada, Kawasaki; Yuko Suzuki, Fujisawa, all of Japan; Ellen Tave, Haworth, N.J.; Rosalin Yin, Riverdale, N.Y., and Yoshie Nagasaka, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 4, 1993, Ser. No. 5,419
Term of patent 14 years
U.S. Cl. D9—415

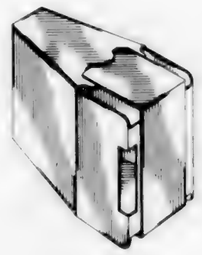


348,392
PACKAGE FOR A BICYCLE HELMET
Bill Tannen, Miami, Fla., assignor to J&B Importers, Miami, Fla.
Filed Apr. 22, 1993, Ser. No. 7,445
Term of patent 14 years
U.S. Cl. D9—415

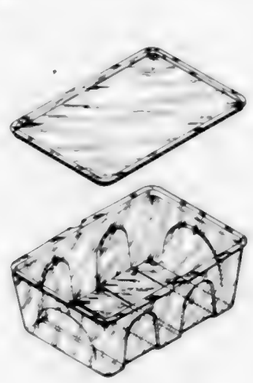


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348,393
DISPOSABLE CONTAINER FOR STORING AND DISPENSING A STACK OF IDENTICAL CARD-MOUNTED KEY BLANKS
William J. Neitzke, and G. Lynn Hagen, both of Paradise Valley, Ariz., assignors to Axxess Entry Technologies, Tempe, Ariz.
Filed Nov. 23, 1992, Ser. No. 1,757
Term of patent 14 years
U.S. Cl. D9—418



348,394
CONTAINER
William Dreyer, Towson, Md., assignor to Universal Synergetics, Inc., Mt. Laurel, N.J.
Filed Feb. 8, 1993, Ser. No. 4,550
Term of patent 14 years
U.S. Cl. D9—425



348,395
COMBINED JAR AND CAP
Peter Bertolini, Shelton, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Jan. 6, 1993, Ser. No. 3,430
Term of patent 14 years
U.S. Cl. D9—529



348,396
COMBINED BOTTLE AND CAP
Gene J. Kuzma, 1910 Crown Park Ct., Columbus, Ohio 43236
Filed Sep. 17, 1992, Ser. No. 948,967
Term of patent 14 years
U.S. Cl. D9—575



348,397
ALARM CLOCK
Joel K. Davis, Athens, Ga., assignor to GTC Properties, Inc., Wilmington, Del.
Filed Feb. 12, 1992, Ser. No. 834,511
Term of patent 14 years
U.S. Cl. D10—15



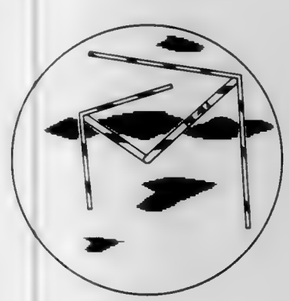
348,398
WALL CLOCK
Paul P. Chen, 307 S. State St. #7, Champaign, Ill. 61820
Filed Dec. 20, 1990, Ser. No. 631,029
Term of patent 14 years
U.S. Cl. D10—21



348,399
WALL CLOCK
Paul P. Chen, 307 S. State St. #7, Champaign, Ill. 61820
Filed Dec. 20, 1990, Ser. No. 631,027
Term of patent 14 years
U.S. Cl. D10—22



348,400
WALL CLOCK
Paul P. Chen, 307 S. State St. #7, Champaign, Ill. 61820
Filed Dec. 20, 1990, Ser. No. 631,028
Term of patent 14 years
U.S. Cl. D10—22



348,401
COMBINATION ANALOG AND DIGITAL WRISTWATCH CASE
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 11, 1992, Ser. No. 948,698
Term of patent 14 years
U.S. Cl. D10—30



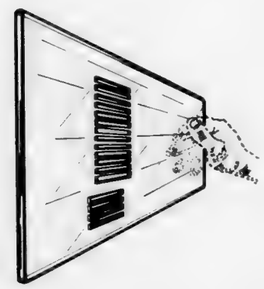
348,402
COMBINED TIMEPIECE AND GOLFING TOOL
Thomas L. McDonald, Prince Frederick, Md., assignor to LTJ Enterprises, Waldorf, Md.
Filed Feb. 19, 1992, Ser. No. 836,946
Term of patent 14 years
U.S. Cl. D10—31



348,403
WRISTWATCH
James Sener, West Hartford, Conn., assignor to By Design Corp., Cambridge, Mass.
Filed Feb. 20, 1992, Ser. No. 838,074
Term of patent 14 years
U.S. Cl. D10—32

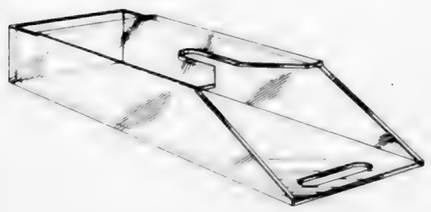


348,404
COMMON STOCK ANALYSIS TEMPLATE
David S. Yost, 5060 Lakeshore Rd., Fort Gratiot, Mich. 48059
Filed Feb. 9, 1993, Ser. No. 4,846
Term of patent 14 years
U.S. Cl. D10—64

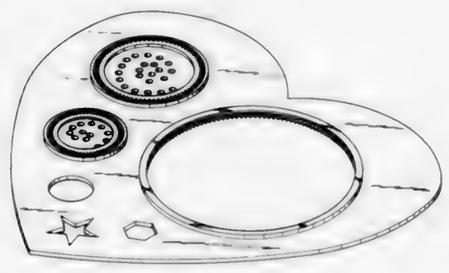


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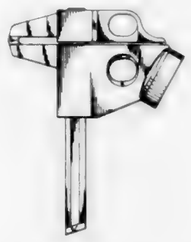
348,405
FISH MEASURING ENCLOSURE
Marilyn W. Storey, P.O. Box 46082, Garland, Tex. 75046, and Verle F. Wright, Jr., Rte. 1, Box 1739, Hemphill, Tex. 75948
Filed Mar. 30, 1993, Ser. No. 6,467
Term of patent 14 years
U.S. Cl. D10—70



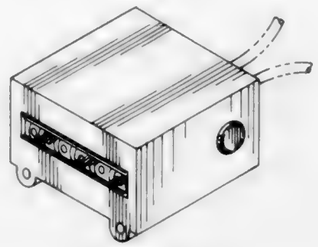
348,406
RULER
Hua Y. Sun, 7th Fl., No. 9-4, Alley 16, Lane 81, Sec. 7, Chung-shan N. Rd., Taipei, Taiwan
Filed Jul. 13, 1993, Ser. No. 10,582
Term of patent 14 years
U.S. Cl. D10—71



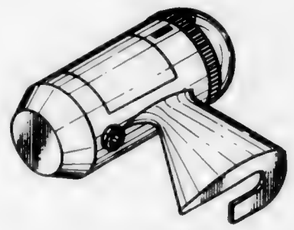
348,407
MEASURING CALIPER
Hans Meyer, 24, Rue du Bugnon, 1020 Renens, Switzerland
Filed Apr. 16, 1993, Ser. No. 7,321
Claims priority, application World Int. Prop. O., Oct. 16, 1992, DM/024159
Term of patent 14 years
U.S. Cl. D10—73



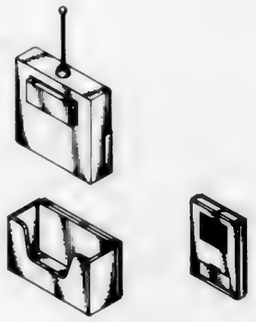
348,408
MINIATURE ELECTROMECHANICAL HOUR METER/COUNTER
Stan Mazulis, Wildwood, Ill., assignor to ENM Company, Chicago, Ill.
Filed Mar. 12, 1993, Ser. No. 5,780
Term of patent 14 years
U.S. Cl. D10—97



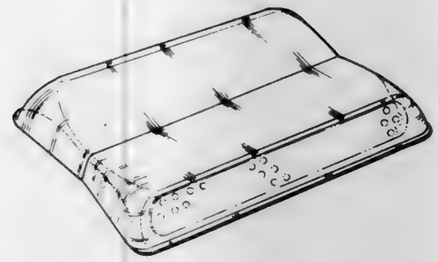
348,409
BICYCLE ATTACHED WARNING SIGNAL FOR DETECTING THE PROXIMITY OF A VEHICLE
John D. Nystrand, and Marie W. Nystrand, both of 623 W. Guadalupe Rd. #268, Mesa, Ariz. 85201
Filed Jan. 19, 1993, Ser. No. 3,745
Term of patent 14 years
U.S. Cl. D10—104



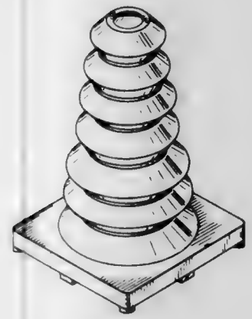
348,410
COMBINED TRANSMITTER AND RECEIVER FOR LOCATING LOST REMOTE CONTROL UNITS
Andre Adams, and Griffin Bryant, both of 2515 W. 25th St., Jacksonville, Fla. 32209
Filed Jun. 10, 1993, Ser. No. 9,303
Term of patent 14 years
U.S. Cl. D10—104



348,411
PAVEMENT MARKER
Peter Hedgewick, Windsor, Canada, assignor to Pac-Tec, Inc., Heath, Ohio
Filed Dec. 21, 1992, Ser. No. 2,741
Term of patent 14 years
U.S. Cl. D10—113



348,412
TRAFFIC CONE
Thomas J. Hazelton, Garden Grove, Calif., assignor to Eugene A. Gregory, Redondo Bch, Calif.
Filed Aug. 9, 1993, Ser. No. 11,519
Term of patent 14 years
U.S. Cl. D10—113



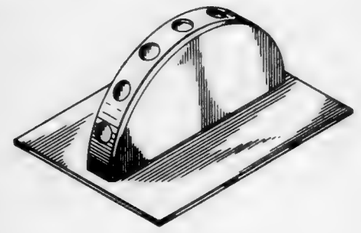
348,413
DIAMOND
Henry Grossbard, 552 Bch 132 St., Belle Harbor, N.Y. 11694
Filed Oct. 1, 1992, Ser. No. 71
Term of patent 14 years
U.S. Cl. D11—90



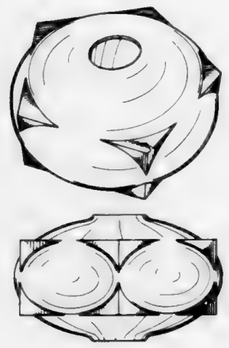
348,414
EASTER STOCKING
Pamela R. A. Henry, R.R. 1, Box 725, Amana, Iowa 52203
Filed Jul. 24, 1992, Ser. No. 917,622
Term of patent 14 years
U.S. Cl. D11—121



348,415
SEMI-CIRCULAR FLORAL STAND
Kevin X. Domurat, 4135 Dixie Canyon Ave., Sherman Oaks, Calif. 91423
Continuation-in-part of Ser. No. 743,218, Aug. 9, 1991, Pat. No. 5,195,270. This application Nov. 12, 1992, Ser. No. 1,398
Term of patent 14 years
U.S. Cl. D11—147

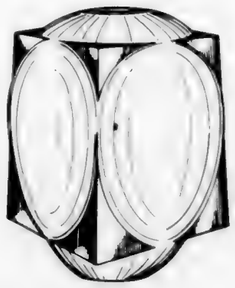


348,416
VASE
Reid Harvey, P.O. Box 592, Alfred, N.Y. 14802
Filed Mar. 22, 1988, Ser. No. 172,904
Term of patent 14 years
U.S. Cl. D11—153

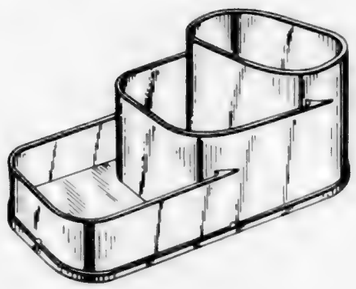


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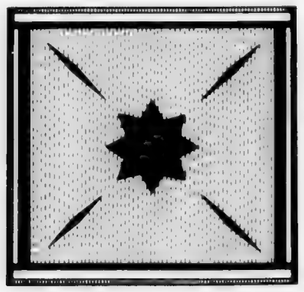
348,417
VASE
Reid Harvey, P.O. Box 592, Alfred, N.Y. 14802
Filed Mar. 22, 1988, Ser. No. 172,906
Term of patent 14 years
U.S. Cl. D11—153



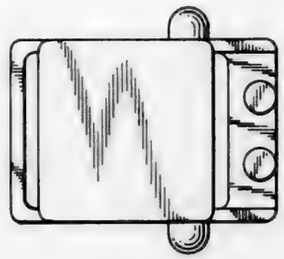
348,418
DECORATIVE PLANTER
Kimberly L. White-Wexler, and Richard T. Wexler, both of 590 Berkley St., Berkley, Mass. 02779
Filed Aug. 17, 1993, Ser. No. 11,889
Term of patent 14 years
U.S. Cl. D11—155



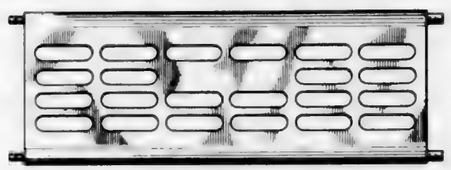
348,419
FLAG
C. David J. Harvey, and Tonya L. Harvey, both of 5000 Plymouth Rd., Baltimore, Md. 21214-2148
Filed Apr. 21, 1993, Ser. No. 7,376
Term of patent 14 years
U.S. Cl. D11—170



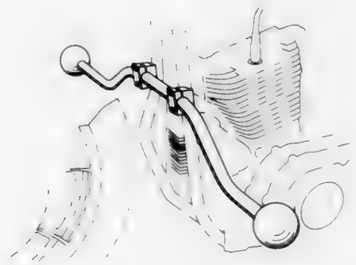
348,420
BELT BUCKLE
Richard A. Edsall, 321 Rte. 108, Ashton, Md. 20861
Filed Nov. 19, 1993, Ser. No. 15,518
Term of patent 14 years
U.S. Cl. D11—218



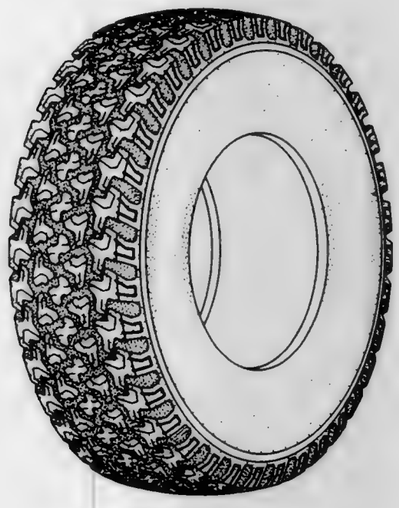
348,421
TRUCK BED CARGO RESTRAINING NET
Timothy J. Dexter, 2330 Ivanhoe Ave., Oxnard, Calif. 93030
Filed Feb. 22, 1993, Ser. No. 5,083
Term of patent 14 years
U.S. Cl. D12—98



348,422
MOTORCYCLE ENGINE GUARDS WITH HOLDING CLAMPS
Carl G. Rasmusen, 3701 S. Monterey Cir., Bountiful, Utah 84010
Filed Jan. 21, 1993, Ser. No. 3,902
Term of patent 14 years
U.S. Cl. D12—114



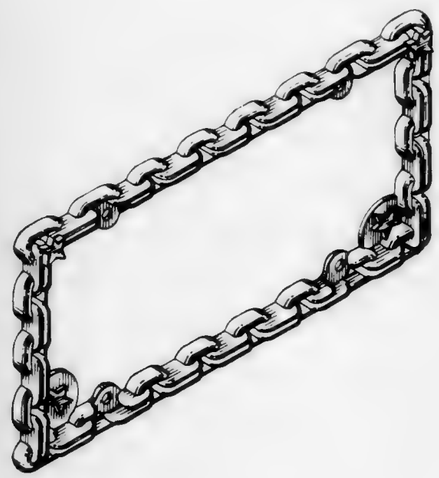
348,423
TIRE
Yasuo Himuro, Tachikawa, Japan, and Bill J. Wallet, Marshallville, Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Jan. 21, 1992, Ser. No. 823,641
Term of patent 14 years
U.S. Cl. D12—146



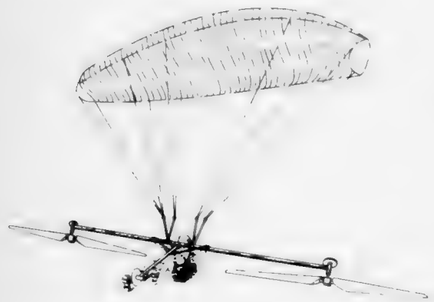
348,424
TIRE TREAD
Paul B. Maxwell, Stow; Sean D. Montag, Cuyahoga Falls; Deborah K. Vaughn-Lindner, North Canton, and William E. Egan, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 31, 1992, Ser. No. 937,194
Term of patent 14 years
U.S. Cl. D12—147



348,425
LICENSE PLATE HOLDER
Carl W. Leu, Miami, Fla., assignor to Poli-Auto, Inc., Miami, Fla.
Continuation-in-part of Ser. No. 740,019, Aug. 2, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 3,584
Term of patent 14 years
U.S. Cl. D12—193

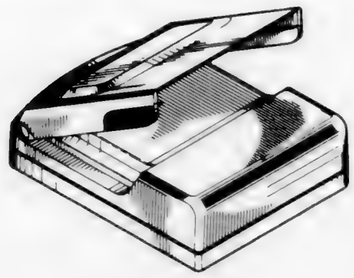


348,426
DEVICE FOR USE WITH A PARAGLIDER
Jose A. RinaldiBarbosa, 368 Broadway, New York, N.Y. 10013
Filed Feb. 5, 1993, Ser. No. 4,440
Term of patent 14 years
U.S. Cl. D12—321

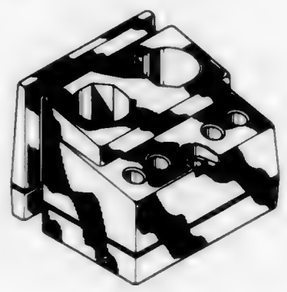


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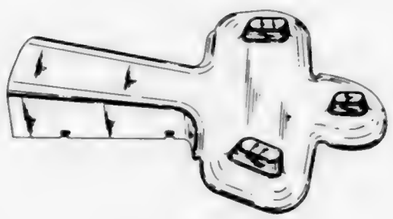
348,427
CHARGER FOR PORTABLE TELEPHONE BATTERIES
Kouji Ohmaki, Tokyo, Japan, and William S. Sepeta, Libertyville, Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 29, 1993, Ser. No. 13,657
Term of patent 14 years
U.S. Cl. D13—107



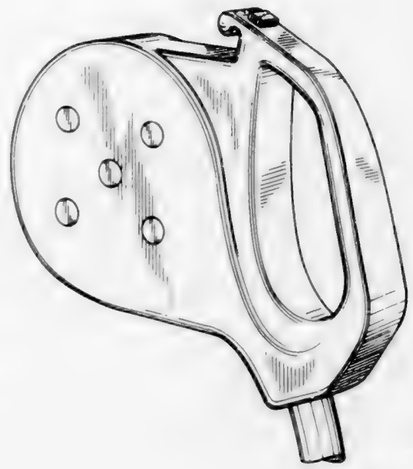
348,428
BATTERY CHARGER WITH MEANS FOR SUPPORTING DUAL BATTERY PACKS
P. Sean Gallagher, Park Forest, and William H. Schultz, Northbrook, both of Ill., assignors to Skil and S-B Power Tool Company, Chicago, Ill.
Filed Aug. 9, 1991, Ser. No. 743,563
Term of patent 14 years
U.S. Cl. D13—108



348,429
INSULATING COVER FOR POLE BRACKET SUPPORTS
Donald J. Farmer, Pine Bluff, Ark., assignor to Central Moloney, Inc., Pine Bluff, Ark.
Filed Sep. 15, 1992, Ser. No. 948,709
Term of patent 14 years
U.S. Cl. D13—129



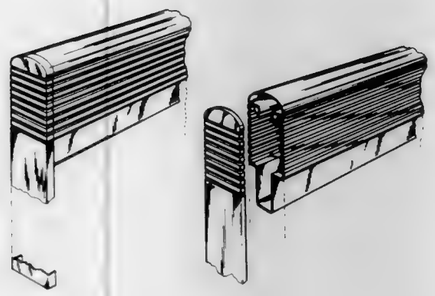
348,430
DEAD FRONT ELECTRICAL CONNECTOR FOR RECHARGING ELECTRIC VEHICLES
Ernest G. Hoffman, Middlefield, and Jerome E. Zimmermann, Southington, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.
Filed Feb. 1, 1993, Ser. No. 4,258
Term of patent 14 years
U.S. Cl. D13—133



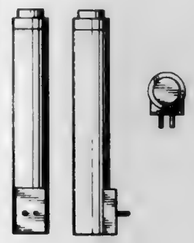
348,431
DEAD FRONT ELECTRICAL CONNECTOR FOR RECHARGING ELECTRIC VEHICLES
Ernest G. Hoffman, Middlefield, and Jerome E. Zimmermann, Southington, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.
Filed Feb. 3, 1993, Ser. No. 5,496
Term of patent 14 years
U.S. Cl. D13—133



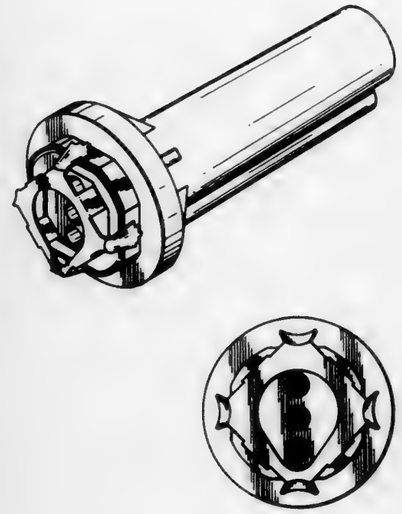
348,432
COMBINED WIRE MANAGEMENT CHANNEL AND END CAP THEREFOR
Virginia R. Dubruco, Denver, Colo., assignor to Herman Miller, Inc., Zeeland, Mich.
Division of Ser. No. 596,352, Oct. 12, 1990, Pat. No. Des. 331,916. This application Sep. 30, 1992, Ser. No. 954,929
Term of patent 14 years
U.S. Cl. D13—155



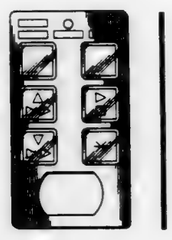
348,433
PIEZOELECTRIC ACTUATOR
Isao Tochihara, and Mitsunori Sano, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Oct. 22, 1992, Ser. No. 722
Claims priority, application Japan, Apr. 27, 1992, 4-12584
Term of patent 14 years
U.S. Cl. D13—158



348,434
RECESSED LIGHTING THERMAL PROTECTOR
Kenneth M. Cyll, West Buxton; Robert Ekowicki, Westbrook, and Carl Weymouth, Standish, all of Me., assignors to GTE Control Devices Incorporated, Standish, Me.
Filed Dec. 18, 1992, Ser. No. 2,732
Term of patent 14 years
U.S. Cl. D13—160

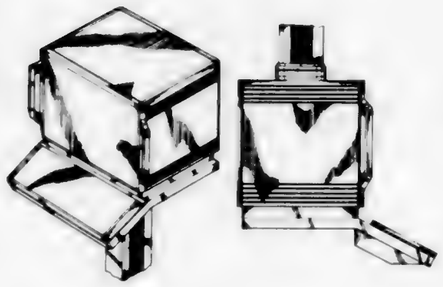


348,435
COMPACT REMOTE CONTROL
Robert P. Farinelli, and Thomas P. Carrin, both of Lexington, Ky., assignors to Square D Company, Palatine, Ill.
Filed Jan. 8, 1992, Ser. No. 818,230
Term of patent 14 years
U.S. Cl. D13—168

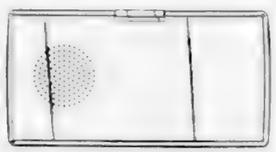


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348,436
HOUSING FOR A COMMAND PANEL SYSTEM USED TO MONITOR AND CONTROL WORK PROCESSES WITHIN A DESIGNATED AREA
Ansgar Brossardt, Krailling; Norbert Muller, Dietzholztal-Ewersbach; Udo Munch, Sinn, and Jurgen Zachrai, Dillenburg, all of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany
Filed Jul. 23, 1991, Ser. No. 735,537
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1991, M 91 00 478.0
Term of patent 14 years
U.S. Cl. D14—100

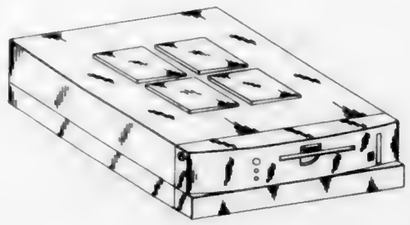


348,437
ELECTRONIC DATA ORGANIZER
Raymond Chan, Hong Kong, Hong Kong, assignor to IDT International Limited, Hamilton, Bermuda
Filed Mar. 9, 1992, Ser. No. 849,303
Claims priority, application United Kingdom, Jan. 6, 1992, 2020010
Term of patent 14 years
U.S. Cl. D14—100

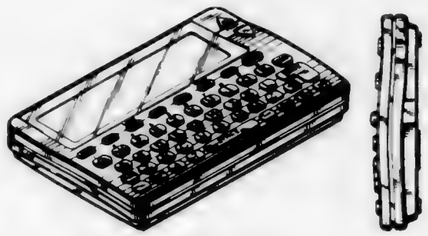




348,438
COMPUTER HOUSING
Joerg Ratzlaff, Altensteig, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 15, 1992, Ser. No. 914,379
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, M9201363.5
Term of patent 14 years
U.S. Cl. D14—100



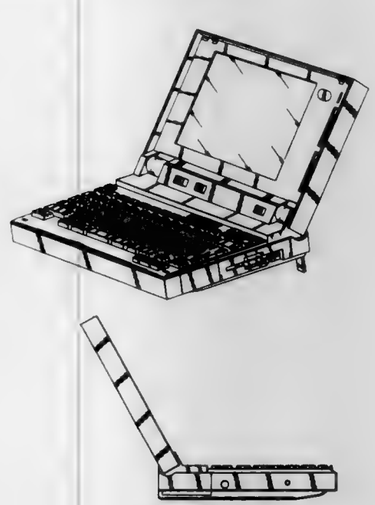
348,439
ELECTRONIC ROM CARD READER
Ngoc M. Luong, Maple Shade, N.J., assignor to Franklin Electronic Publishers, Incorporated, Mt. Holly, N.J.
Filed Sep. 17, 1992, Ser. No. 948,816
Term of patent 14 years
U.S. Cl. D14—105



348,440
DATA CARD TRANSACTION TERMINAL
Parameswaran B. Nair, Acworth; Kumar S. Choudhuri, Kennesaw; John C. Evans, Atlanta; James L. Hanna, Athens, and James F. Price, Alpharetta, all of Ga., assignors to MicroBilt Corporation, Atlanta, Ga.
Filed Jan. 8, 1993, Ser. No. 3,500
Term of patent 14 years
U.S. Cl. D14—105



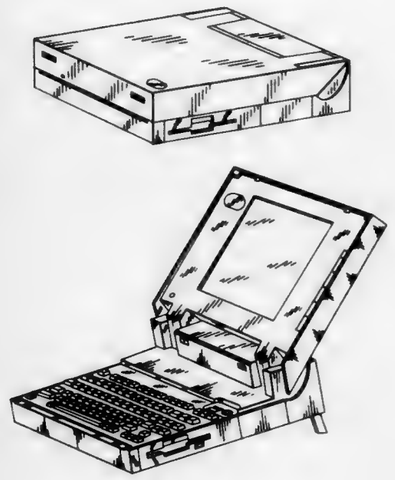
348,441
PORTABLE COMPUTER
Kazuhiko Yamazaki, Hiratsuka, Japan, assignor to International Business Machines Corp., Armonk, N.Y.
Filed Jun. 18, 1991, Ser. No. 718,873
Claims priority, application Japan, Dec. 27, 1990, 2-42992
The portion of the term of this patent subsequent to Nov. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—106



348,442
PERSONAL NOTEBOOK COMPUTER
Jungsik Yoon, Suwon-si, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyunggi-Do, Rep. of Korea
Filed Sep. 19, 1991, Ser. No. 762,240
Term of patent 14 years
U.S. Cl. D14—106



348,443
PERSONAL COMPUTER
Richard F. Sapper, Montagnola, Switzerland; Hisashi Shima, Fujisa, and Kazuhiko Yamazaki, Hiratuka, both of Japan, assignors to International Business Machines Corp., Armonk, N.Y.
Filed Apr. 10, 1992, Ser. No. 866,608
Claims priority, application Japan, Oct. 16, 1991, 31037/91
Term of patent 14 years
U.S. Cl. D14—106

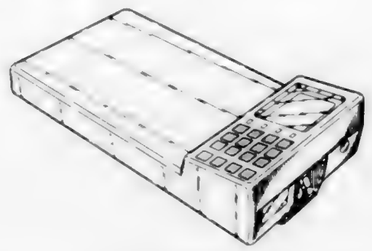


348,444
PORTABLE PERSONAL COMPUTER WITH A TOUCH SCREEN
Andronicos Papademetriou, Barrington; William R. Groves, Naperville; Roger W. Ady; Harold J. Gorenz, Jr., both of Lisle; C. Patrick Richardson, Barrington; Leonid Soren, Lincolnwood, all of Ill.; Hartmut Esslinger, Los Gatos, Calif.; Daniel K. Harden, and Mark B. Friesen, both of Palo Alto, Calif., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 13, 1992, Ser. No. 1,404
Term of patent 14 years
U.S. Cl. D14—106

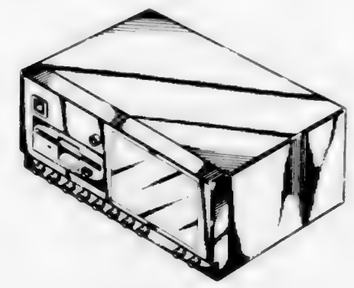


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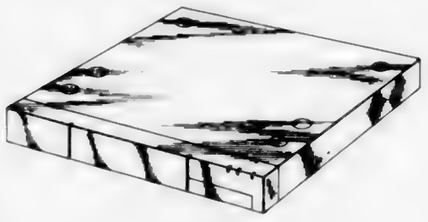
348,445
HAND HELD FINGERPRINT SCANNER FOR IMAGING AND CAPTURING A PHOTOGRAPHIC IMAGE
Glenn M. Fishbine, Eden Prairie, and Robert J. Withoff, Minnetonka, both of Minn., assignors to Digital Biometrics, Inc., Minnetonka, Minn.
Filed Jan. 31, 1992, Ser. No. 828,704
Term of patent 14 years
U.S. Cl. D14—107



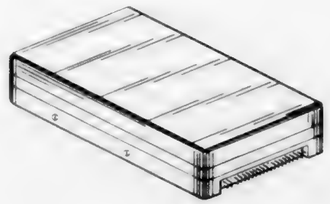
348,446
COMBINED DATA RECORDER AND REPRODUCER
Masafumi Ito, Tokyo; Koji Suzuki, Tokorozawa; Shigeru Hasegawa, Kodaira, and Katsuhiro Takashima, Urawa, all of Japan, assignors to TEAC Corporation, Japan
Filed Nov. 18, 1992, Ser. No. 1,637
Claims priority, application Japan, May 25, 1992, 15342/1992
Term of patent 14 years
U.S. Cl. D14—107



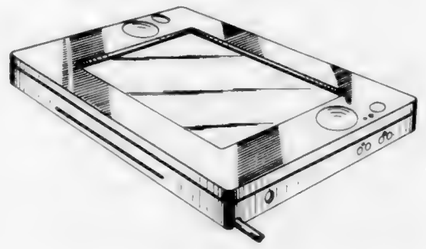
348,447
IMAGE MEMORY CONVERTER
Takeshi Komada, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1992, Ser. No. 2,677
Claims priority, application Japan, Jun. 19, 1992, 4-18232
Term of patent 14 years
U.S. Cl. D14—107



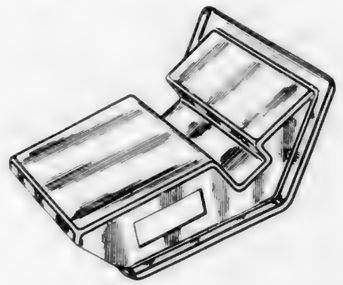
348,448
REMOVABLE RIGID DISK DRIVE
John D. Read, P.O. Box 738, Monument, Colo. 80132; Charles E. Vaillant, 110 Tower St., Hudson, Mass. 01749, and Gordon J. Norquay, 17390 Caribou Dr., Monument, Colo. 80132
Filed Mar. 20, 1992, Ser. No. 855,990
Term of patent 14 years
U.S. Cl. D14—109



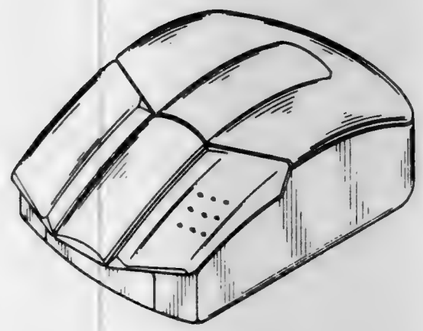
348,449
FLAT PANEL DISPLAY
Timothy J. Rodd, Emery Down, England, and Kazuhiko Yamazaki, Hiratsuka, Japan, assignors to International Business Machines Incorporated, Armonk, N.Y.
Filed Mar. 20, 1992, Ser. No. 854,278
Claims priority, application United Kingdom, Sep. 20, 1991, 2017597
Term of patent 14 years
U.S. Cl. D14—113



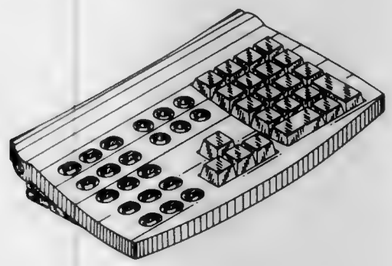
348,450
CONSOLE FOR USE IN CARS OR TRUCKS FOR DISPATCHING MESSAGES BY INTERCONNECTED DATA AND RADIO SYSTEMS
Michael B. Crary, Birchwood, Minn., assignor to Quicksilver Express Courier, Minneapolis, Minn.
Filed Sep. 16, 1991, Ser. No. 760,223
Term of patent 14 years
U.S. Cl. D14—114



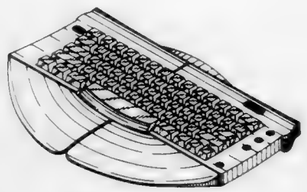
348,451
COMPUTER MOUSE
Shih-Yang, Tso 11th Fl., No. 116, Sec. 2, Nanking E. Rd., Taipei, Taiwan
Filed May 7, 1992, Ser. No. 880,356
The portion of the term of this patent subsequent to Nov. 24, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—114



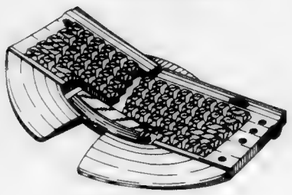
348,452
KEYPAD
Raymond W. Riley, San Jose; David W. Shen, Cupertino, and Stephen Peart, Los Gatos, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jun. 26, 1992, Ser. No. 905,093
Term of patent 14 years
U.S. Cl. D14—115



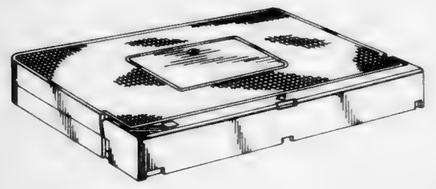
348,453
KEYBOARD WITH WRIST PAD
Raymond W. Riley, San Jose, David W. Shen, Cupertino, and Stephen Peart, Los Gatos, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jun. 26, 1992, Ser. No. 906,121
Term of patent 14 years
U.S. Cl. D14—115



348,454
COMBINED KEYPAD AND DISPLAY
Kenneth N. Weybright, Cincinnati, Ohio, assignor to Parker Marketing Research, Inc., Cincinnati, Ohio
Filed Aug. 20, 1992, Ser. No. 932,886
Term of patent 14 years
U.S. Cl. D14—115



348,455
WINDOWLESS CASSETTE
Alvin Yip, Hong Kong, Hong Kong, assignor to Lextron Media (HK) Ltd., Hong Kong
Filed Jul. 29, 1992, Ser. No. 922,058
Term of patent 14 years
U.S. Cl. D14—121



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348,456
TELEVISION RECEIVER
Thomas E. Renk, Jr., Indianapolis, Ind., assignor to Thompson Consumer Electronics, Inc., Indianapolis, Ind.
Filed May 12, 1992, Ser. No. 882,103
Term of patent 14 years
U.S. Cl. D14—126



348,457
VIDEO CASSETTE RECORDER
Gang H. Cha, Inchon, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 11, 1992, Ser. No. 850,056
Claims priority, application Rep. of Korea, Sep. 28, 1991, 14321/1991
Term of patent 14 years
U.S. Cl. D14—135



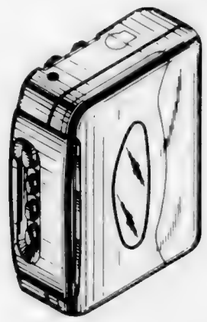
348,458
HANDHELD TELEPHONE
Michael Brown, Kanata; Edmond J. Helstab, Ottawa; Michael Kurtz, Ottawa, and John Johnson, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jun. 14, 1993, Ser. No. 11,282
Term of patent 14 years
U.S. Cl. D14—138



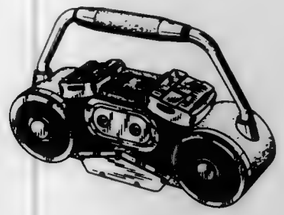
348,459
TELEPHONE
Yoshinobu Yamagishi, Tokyo, Japan, and James F. Wicks, Hoboken, N.J., assignors to Sony Corporation, Tokyo, Japan
Filed Jan. 8, 1993, Ser. No. 3,492
Claims priority, application Japan, Jul. 9, 1992, 4-20557
Term of patent 14 years
U.S. Cl. D14—150



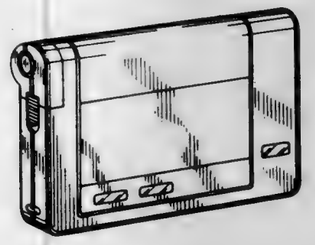
348,460
TAPE PLAYER
Satoshi Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,359
Claims priority, application Japan, Mar. 24, 1992, 4-8263
Term of patent 14 years
U.S. Cl. D14—165



348,461
RADIO
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Dec. 29, 1992, Ser. No. 3,149
Term of patent 14 years
U.S. Cl. D14—189



348,462
PAGER
David W. F. Campbell, Nepean, Canada, assignor to Silcom Research Limited, Kanata, Canada
Filed May 11, 1992, Ser. No. 883,855
Claims priority, application Canada, Nov. 12, 1991, 12-11-91-7
Term of patent 14 years
U.S. Cl. D14—191



348,463
PAGER
William J. Scheid, Coral Springs; Jeffrey S. King, Boynton Beach; Steven F. Fradella, Hypoluxo, and Athens L. Furr, Jr., Lake Worth, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 19, 1993, Ser. No. 5,167
The portion of the term of this patent subsequent to Mar. 8, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—191



348,464
RADIO
Richard F. M. Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Dec. 8, 1992, Ser. No. 2,307
Claims priority, application United Kingdom, Jun. 16, 1992, 2023602
Term of patent 14 years
U.S. Cl. D14—195



348,465
HEADPHONE
Katsumi Yamatogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 741,828, Aug. 7, 1991, Pat. No. Des. 338,010. This application Oct. 13, 1992, Ser. No. 285
Claims priority, application Japan, Mar. 9, 1991, 3-9187
Term of patent 14 years
U.S. Cl. D14—205

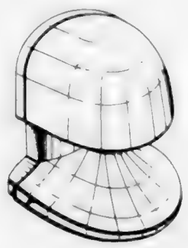


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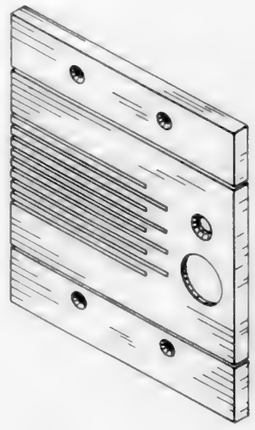
348,466
HEADPHONE
Katsumi Yamatogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 741,828, Aug. 7, 1991, Pat. No. D. 338,010. This application Oct. 13, 1992, Ser. No. 286
Claims priority, application Japan, Mar. 9, 1991, 3-9187
The portion of the term of this patent subsequent to May 31, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—205



348,467
LOUDSPEAKER
Allen Boothroyd, Little Shelford, and Anthony P. Ward, Guildford, both of United Kingdom, assignors to Cambridge Product Design Limited, Cambridge, United Kingdom
Filed Dec. 7, 1992, Ser. No. 2,220
Claims priority, application United Kingdom, Jun. 9, 1992, 2023377
Term of patent 14 years
U.S. Cl. D14—213



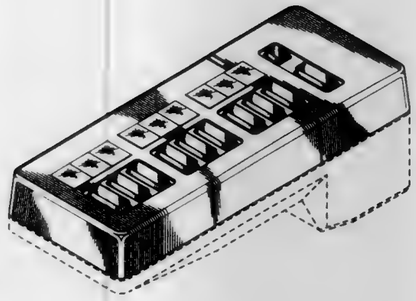
348,468
SPEAKER COVER PANEL
David Wathen, Woodland Hills, Calif., assignor to Harris Corporation, Melbourne, Fla.
Filed Jan. 3, 1992, Ser. No. 816,934
Term of patent 14 years
U.S. Cl. D14—219



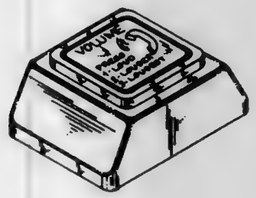
348,469
ELECTRONICS CABINET DOOR
Chris G. Johnson, Briarcliff Manor, N.Y.; John H. Schaffeld, New Vernon, N.J.; Richard J. Schneebeli, Jr., New York, and Gordon E. Sylvester, Jamaica, both of N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 27, 1992, Ser. No. 826,559
Term of patent 14 years
U.S. Cl. D14—240



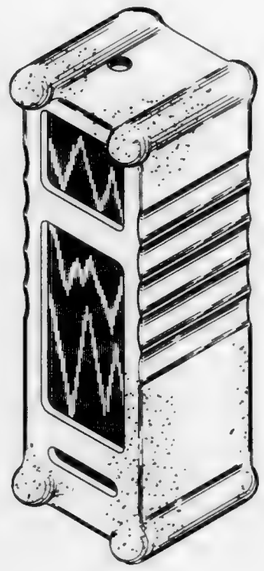
348,470
AUXILIARY TERMINAL FOR USE WITH SECURE TELEPHONE UNIT
Albert L. Nagele, Wilmette, Ill.; James J. Johnson, Chandler, and David T. Gustafson, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 28, 1993, Ser. No. 8,742
Term of patent 14 years
U.S. Cl. D14—241



348,471
PAY TYPE TELEPHONE STATION VOLUME CONTROL PUSH-BUTTON SWITCH
Mark Matheny, Manchester, Conn., assignor to Tek Electronics Manufacturing Corporation, Manchester, Conn.
Filed Apr. 22, 1992, Ser. No. 873,283
Term of patent 14 years
U.S. Cl. D14—247



348,472
CELLULAR PHONE GUARD
Tony J. Cyfko, 1570 Reeves Gate-Unit 8, Oakville, Ontario, Canada L6M-3J3
Filed Oct. 30, 1992, Ser. No. 981
Term of patent 14 years
U.S. Cl. D14—250



348,473
ICE MAKING MOLD
Martin C. Griffin, Sr., 375 Media Luna Borders #1802, Brownsville, Tex. 78520
Filed Aug. 20, 1992, Ser. No. 932,048
Term of patent 14 years
U.S. Cl. D15—90



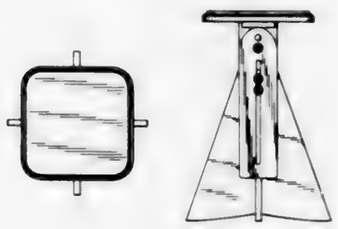
D 348,474
Patent Not Issued For This Number

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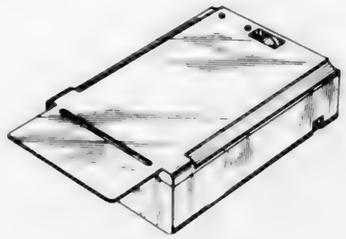
348,475
NECKLACE EYEGLASS HOLDER
Brenda M. W. Kahari, 10 Wavell Rd., Highlands, Harare, Zimbabwe, Zimbabwe
Filed Mar. 3, 1992, Ser. No. 844,429
Term of patent 14 years
U.S. Cl. D3—265



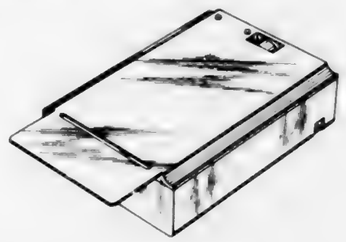
348,476
SNARE DRUM PRACTICE PAD
David O'Connor, 396 Broadway, Bethpage, N.Y. 11714
Filed Nov. 2, 1992, Ser. No. 1,069
Term of patent 14 years
U.S. Cl. D17—22



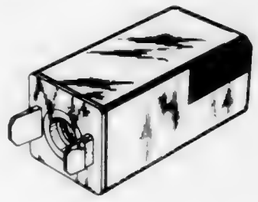
348,477
INK CARTRIDGE FOR PRINTER
Toshihiko Ujita, Yamato, and Noriaki Miyamoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1992, Ser. No. 2,059
Term of patent 14 years
U.S. Cl. D18—56



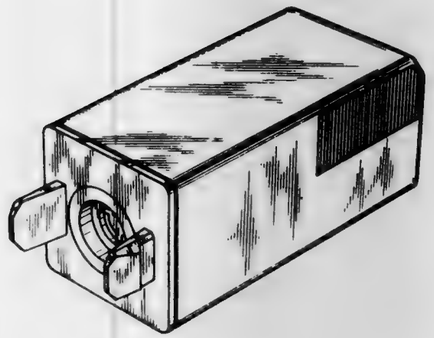
348,478
INK CARTRIDGE FOR PRINTER
Toshihiko Ujita, Yamato, and Noriaki Miyamoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1992, Ser. No. 2,060
Term of patent 14 years
U.S. Cl. D18—56



348,479
INK CARTRIDGE FOR PRINTER
Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Yasuo Kotaki, Yokohama; Kazuhiro Nakazima, Yokohama; Koji Yamakawa, Yokohama; Torachika Ossda, Yokohama; Hidemi Kubota, Komae; Yohei Sato, Yokohama; Keiichiro Tsukuda, Kawasaki; Masanori Takenouchi, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 23, 1992, Ser. No. 2,942
Claims priority, application Japan, Jul. 17, 1992, 4-21466
Term of patent 14 years
U.S. Cl. D18—56



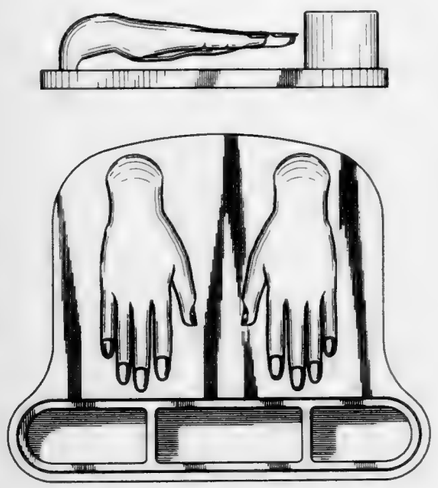
348,480
INK CARTRIDGE FOR PRINTER
Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Yasuo Kotaki, Yokohama; Kazuhiro Nakazima, Yokohama; Yamakawa Koji, Yokohama; Torachika Osada, Yokohama; Hidemi Kubota, Komae; Yohei Sato, Yokohama; Keiichiro Tsukuda, Kawasaki; Masanori Takenouchi, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 23, 1992, Ser. No. 2,943
Claims priority, application Japan, Jul. 17, 1992, 4-21467
Term of patent 14 years
U.S. Cl. D18—56



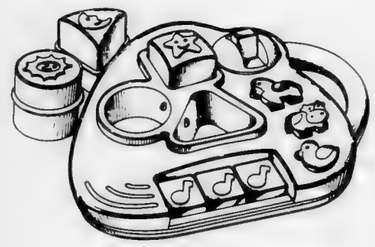
348,481
CALENDAR
Marcia Grant, 15 Miller Hill Dr., LaGrangeville, N.Y. 12540
Filed Feb. 18, 1993, Ser. No. 5,025
Term of patent 14 years
U.S. Cl. D19—21



348,482
COMBINED STAND AND MODEL FOR TEACHING MANICURE
Cynthia A. Cherry, 20602 Broadsky St., Katy, Tex. 77449
Filed Oct. 22, 1992, Ser. No. 680
Term of patent 14 years
U.S. Cl. D19—59

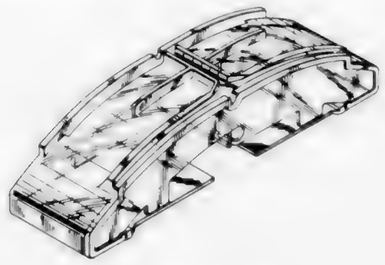


348,483
HOUSING FOR AN ELECTRONIC INSTRUCTIONAL GAME APPARATUS
Chi K. W. Chow, Shatin, and Chung P. C. Lau, West Point, both of Hong Kong, assignors to Vtech Industries, Inc., Wheeling, Ill.
Filed Dec. 29, 1992, Ser. No. 3,059
Term of patent 14 years
U.S. Cl. D19—62

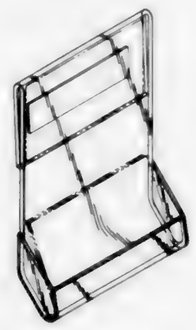


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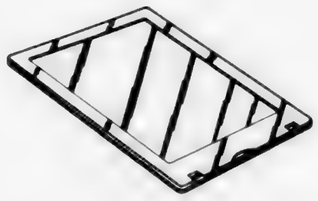
348,484
TAPE DISPENSER
Elmer Blackwell, Woodbury, and Bruce E. Samuelson, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.
Continuation-in-part of Ser. No. 788,230, Nov. 5, 1991, which is a continuation of Ser. No. 625,311, Dec. 10, 1990, Pat. No. 5,086,946. This application Jul. 30, 1992, Ser. No. 923,164
Term of patent 14 years
U.S. Cl. D19—69



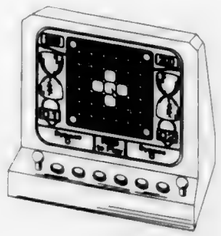
348,485
CARD HOLDER
Brian T. Short, 9921 NE. 116th #10, Kirkland, Wash. 98033
Filed Oct. 2, 1992, Ser. No. 81
Term of patent 14 years
U.S. Cl. D19—90



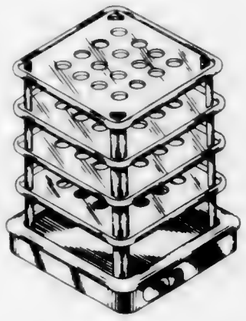
348,486
CARDHOLDER
Morris Fischtein, Downsview, and Ira Carlin, Thornhill, both of Canada, assignors to Pro-Index Corp., Concord, Canada
Filed Nov. 6, 1992, Ser. No. 1,215
Claims priority, application Canada, Jul. 7, 1992, 07-07-92-18
Term of patent 14 years
U.S. Cl. D20—40



348,487
VIDEO GAME CONSOLE
Michael Bahlijanakis, 2655 29th St. Astoria, Queens, N.Y. 11102
Filed Feb. 25, 1993, Ser. No. 5,490
Term of patent 14 years
U.S. Cl. D21—13



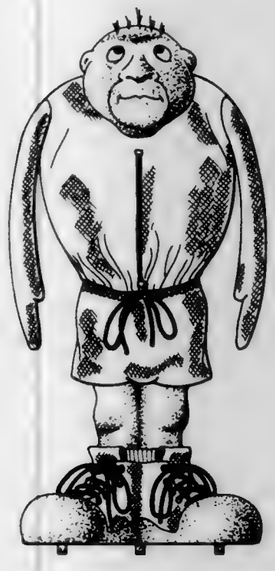
348,488
THREE DIMENSIONAL GAME
Bobby D. Overman, 4975 Woodbrook Ct., Colorado Springs, Colo. 80917
Filed Dec. 21, 1992, Ser. No. 2,577
Term of patent 14 years
U.S. Cl. D21—23



348,489
TOY BABY CARRIAGE
Alain Monneret, Voiteur, France, assignor to Monneret Jouets Societe Anonyme, Lons Le Saunier, France
Filed Jun. 16, 1992, Ser. No. 899,384
Claims priority, application World Int. Prop. O., Dec. 20, 1991, DM/021490
Term of patent 14 years
U.S. Cl. D21—134



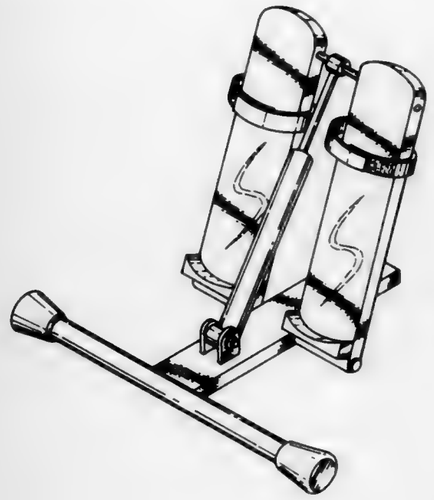
348,490
COMBINED ACTION DOLL AND GAME BALL
Clay Brooks, 2511 Elsinore Ave., Baltimore, Md. 21216
Filed Dec. 27, 1991, Ser. No. 813,403
Term of patent 14 years
U.S. Cl. D21—150



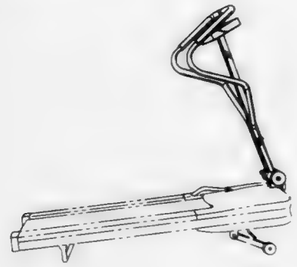
348,491
ABDOMINAL MUSCLE EXERCISER
Michael Diep, 8688 Points Dr. NE., Bellevue, Wash. 98004
Filed Jun. 23, 1992, Ser. No. 903,541
Term of patent 14 years
U.S. Cl. D21—191



348,492
LEG EXERCISER
James Konarski, II, 17435 Leslie, Allen Park, Mich. 48101
Filed Nov. 25, 1992, Ser. No. 1,870
Term of patent 14 years
U.S. Cl. D21—191

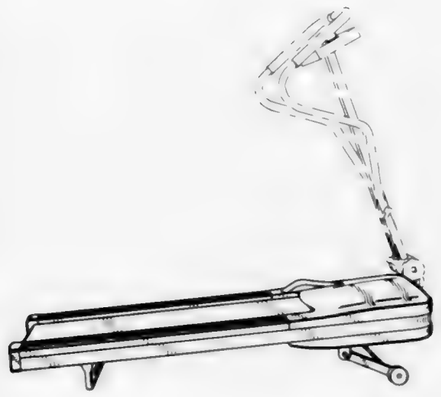


348,493
COMBINED HANDLE AND CONSOLE UNIT FOR AN EXERCISE MACHINE
Kent Ashby, Logan, Utah, assignor to Proform Fitness Products, Inc., Logan, Utah
Continuation-in-part of Ser. No. 954,299, Sep. 30, 1992, abandoned, and a continuation-in-part of Ser. No. 13,637, Feb. 4, 1993, Pat. No. 5,282,776. This application Apr. 8, 1993, Ser. No. 6,865
Term of patent 14 years
U.S. Cl. D21—192

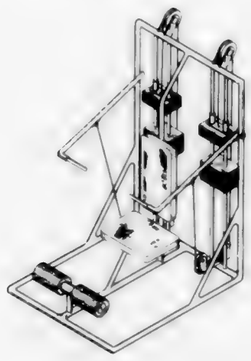


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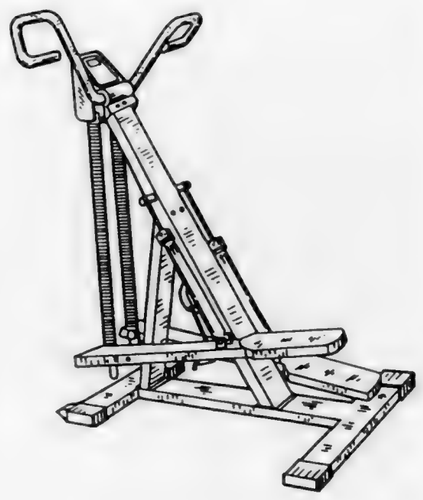
348,494
TREADMILL BASE
Kent Ashby, Logan, Utah, assignor to Proform Fitness Products, Inc., Logan, Utah
Continuation-in-part of Ser. No. 954,299, Sep. 30, 1992, abandoned, and a continuation-in-part of Ser. No. 13,637, Feb. 4, 1993, Pat. No. 5,282,776. This application Apr. 8, 1993, Ser. No. 6,866
Term of patent 14 years
U.S. Cl. D21—192



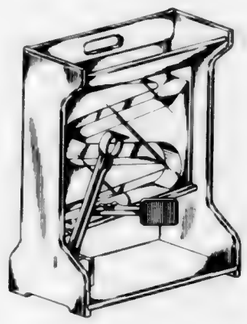
348,495
SHOULDER PRESS EXERCISE MACHINE
Johnny R. McCoy, 2341 Cardinal La., Garland, Tex. 75040
Filed May 28, 1991, Ser. No. 705,890
Term of patent 14 years
U.S. Cl. D21—195



348,496
EXERCISE STEPPING MACHINE
Prakit Lertyaovarit, Montebello, Calif., assignor to Krane Industry Corp., Taipei, Taiwan
Filed Sep. 25, 1992, Ser. No. 951,701
Term of patent 14 years
U.S. Cl. D21—195



348,497
GOLF BALL DISPENSER AND SETTER
Mark L. Tange, 14991 Coutolenc Rd., Magalia, Calif. 95954
Filed Jun. 17, 1992, Ser. No. 900,820
Term of patent 14 years
U.S. Cl. D21—208



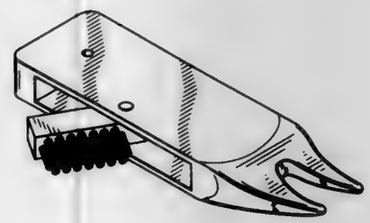
348,498
OFFSET GOLF TEE
David L. Millikes, Box 818, North Truro, Mass. 02652
Filed Dec. 30, 1992, Ser. No. 3,163
Term of patent 14 years
U.S. Cl. D21—208



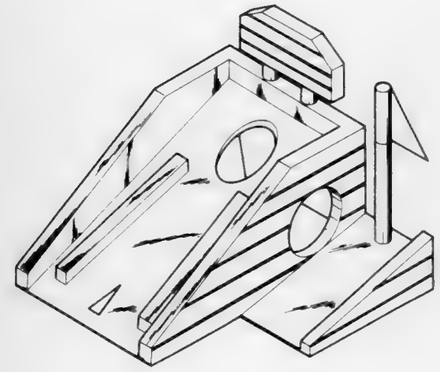
348,499
COMBINED PADDLE AND BAT
Jack G. McAllister, P.O. Box 74, Buffalo, Minn. 55313
Filed Sep. 24, 1992, Ser. No. 948,793
Term of patent 14 years
U.S. Cl. D21—211



348,500
MULTIPURPOSE GOLF TOOL WITH RETRACTABLE BRUSH
Larry R. Mortenson, 615 Brookshire Dr., and Daniel E. Bell, 762 W. 3900 South, both of Riverdale, Utah 84405
Filed Nov. 30, 1992, Ser. No. 2,019
Term of patent 14 years
U.S. Cl. D21—234



348,501
PUTTING PRACTICE DEVICE
Fu Go Wong, 1 Fl., No. 37, Lane 16 Shing Yun St., Nei-Hu, Taipei, Taiwan
Filed Dec. 16, 1992, Ser. No. 2,564
Term of patent 14 years
U.S. Cl. D21—234

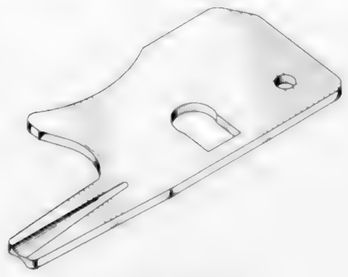


348,502
BOUNCING SWING
Ted J. Webb, Jr., 909 Adeline St., Hattiesburg, Miss. 39401
Continuation of Ser. No. 919,228, Aug. 13, 1992. This application Sep. 21, 1992, Ser. No. 948,954
Term of patent 14 years
U.S. Cl. D21—246

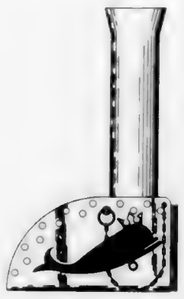


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348,503
TOOL FOR LOADING AND UNLOADING CARTRIDGES FROM A FIREARM MAGAZINE
Gerard A. Claveau, 10799 Hemlock Ave., Hesperia, Calif. 92345
Filed Aug. 3, 1993, Ser. No. 10,628
Term of patent 14 years
U.S. Cl. D22—108



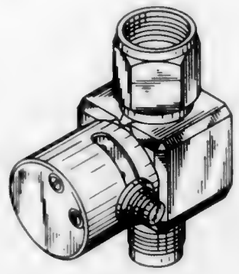
348,504
FISHING ROD HOLDER
W. Helmut Dahmen, 3704 Republic Ave., Racine, Wis. 53405
Continuation-in-part of Ser. No. 268,523, Nov. 8, 1988, abandoned. This application May 16, 1991, Ser. No. 700,917
Term of patent 14 years
U.S. Cl. D22—147



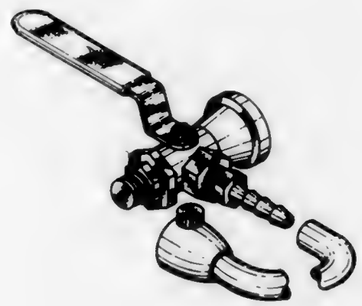
348,505
SHOWER COCK-FITTING FOR KITCHEN SINK
Orlando Bosio, Casaloldo, Italy, assignor to AMFAG S.r.l., Castelgoffredo, Italy
Filed Dec. 16, 1992, Ser. No. 2,589
Claims priority, application Italy, Jun. 22, 1992, MN920 000001
Term of patent 14 years
U.S. Cl. D23—223



348,506
ON-OFF VALVE
Krzysztof Stachowiak, Venice, Calif., assignor to America Safety Flight System, Inc., Glendale, Calif.
Filed Aug. 6, 1991, Ser. No. 741,017
Term of patent 14 years
U.S. Cl. D23—245



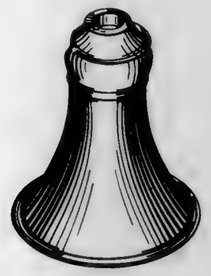
348,507
PROPANE TANK ADAPTER VALVE
Skip M. Plonka, 7 S 065 Suffield CT Unit #106, Westmont, Ill. 60559
Filed Nov. 13, 1992, Ser. No. 1,426
Term of patent 14 years
U.S. Cl. D23—233



348,508
LAVATORY FAUCET
Hollis K. Yost, Santa Monica, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 16, 1992, Ser. No. 914,061
Term of patent 14 years
U.S. Cl. D23—238



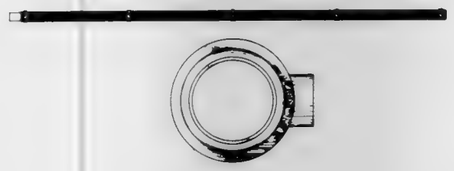
348,509
SKIRT FOR A PLUMBING FITTING
John E. Bollenbacher, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 14, 1993, Ser. No. 3,750
Term of patent 14 years
U.S. Cl. D6—550



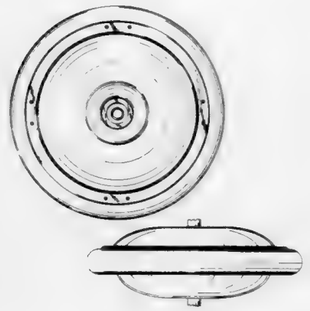
348,510
SPOUT
Adolf Gottwald, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed May 13, 1992, Ser. No. 882,319
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, M 91 08 292.7
Term of patent 14 years
U.S. Cl. D23—257



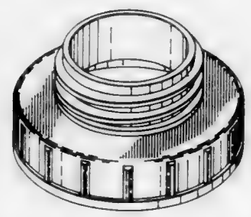
348,511
FLEXIBLE DUCT FOR A VEHICLE AIR CLEANER
Dana D. Denton, 4 Hawthorne, Methuen, Mass. 01844
Filed Jun. 27, 1990, Ser. No. 544,481
Term of patent 14 years
U.S. Cl. D23—266



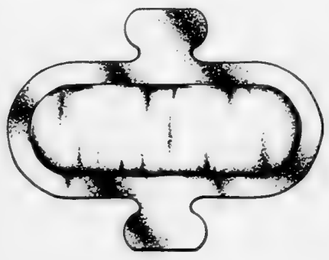
348,512
CEILING FAN MOTOR HOUSING
Herbert W. Markwardt, and Michael A. Markwardt, both of Fort Worth, Tex., assignors to Encon Industries, Inc., Fort Worth, Tex.
Continuation of Ser. No. 716,615, Jun. 17, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,068
Term of patent 14 years
U.S. Cl. D23—411



348,513
BREAST PUMP ADAPTER
Bart Bale, Chagrin Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Feb. 20, 1992, Ser. No. 838,663
Term of patent 14 years
U.S. Cl. D24—109



348,514
SANITARY NAPKIN
Leonard Pearlstein, Gladwyne, and Gerd Cremer, Wayne, both of Pa., assignors to ICD Industries, Inc., Wayne, Pa.
Filed May 22, 1992, Ser. No. 887,025
Term of patent 14 years
U.S. Cl. D24—128

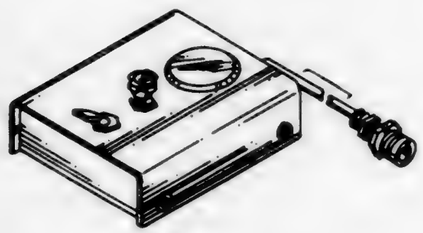


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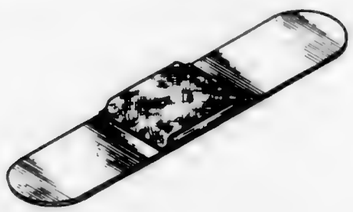
348,515
DENTAL MIRROR
Paul E. Mangione, Bronx, N.Y., assignor to Dental Concepts Inc., Elmsford, N.Y.
Filed Dec. 11, 1992, Ser. No. 2,478
Term of patent 14 years
U.S. Cl. D24—139



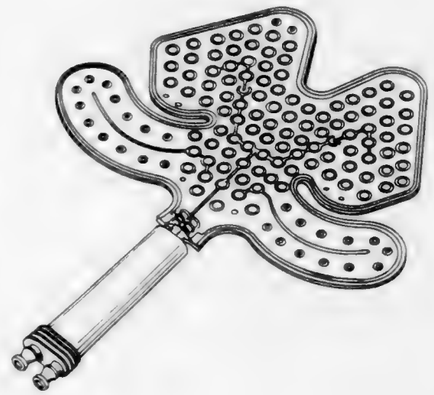
348,516
LUBRICANT PURGING HOUSING FOR A DENTAL HANDPIECE
Craig A. Bechard, Barre, and Ellery E. Maxham, South Burlington, both of Vt., assignors to DMD Network Co., South Burlington, Vt.
Filed Aug. 25, 1992, Ser. No. 934,344
Term of patent 14 years
U.S. Cl. D24—177



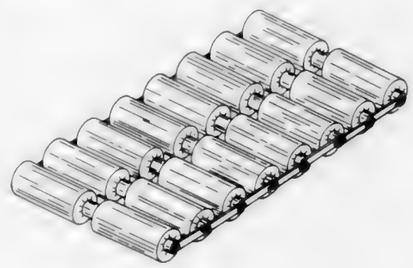
348,517
THERAPEUTIC COOLING BAND
Elizabeth A. McDermott, 8138 Northridge NE, Albuquerque, N. Mex. 87109
Filed Mar. 15, 1993, Ser. No. 5,885
Term of patent 14 years
U.S. Cl. D24—206



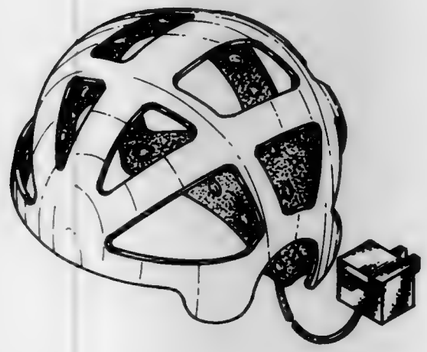
348,518
THERAPEUTIC FLUID CIRCULATION PAD FOR THE BREASTS
Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 851,345, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089, and a continuation-in-part of Ser. No. 906,407, Jul. 1, 1992, which is a continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089. This application Dec. 7, 1992, Ser. No. 2,333
Term of patent 14 years
U.S. Cl. D24—206



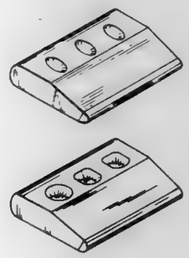
348,519
BACK MASSAGER
David Cagle, 507 Garland St., El Dorado, Ark. 72204
Continuation of Ser. No. 888,860, May 27, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 11,334
Term of patent 14 years
U.S. Cl. D24—211



348,520
THERAPEUTIC APPLIANCE FOR STRESS RELIEF
Owen Wolf, 5400 Alligator Lake Rd., St. Cloud, Fla. 34772
Filed Nov. 20, 1992, Ser. No. 1,696
Term of patent 14 years
U.S. Cl. D24—215



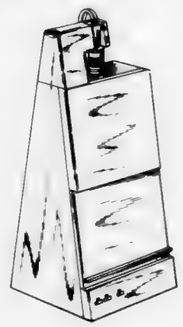
348,521
IMMUNOASSAY UNIT FOR ANALYSIS OF BIOLOGICAL LIQUID
Herbert M. Meyers, New Rochelle, N.Y.; David O. Pressler, Fairfield, Conn.; Richard C. Edstrom, New York, N.Y.; Richard N. Hirst, Teaneck, N.J.; Geraldine A. Pelanek, Webster, and Daniel A. Slater, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 99,836, Sep. 18, 1987, Pat. No. Des. 315,719. This application May 11, 1990, Ser. No. 522,449
The portion of the term of this patent subsequent to Mar. 26, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—223



348,522
PREGNANCY TESTING STICK
Theodorus J. J. Groothuizen, HA Rotterdam, Netherlands, assignor to Chefaro International B.V., Rotterdam, Netherlands
Filed Oct. 10, 1991, Ser. No. 777,895
Claims priority, application Belgium, Apr. 25, 1991, 66505
Term of patent 14 years
U.S. Cl. D24—223

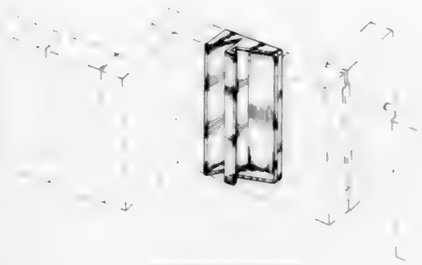


348,523
ELECTRONIC IMAGER FOR BIOLOGICAL SAMPLES
Duke Larsen, Lake Geneva; Robert W. Dunst, Cedarburg; Stephen H. Gorski, Wauwatosa; Thomas C. Driscoll, and Richard K. Vitek, both of Brookfield, all of Wis., assignors to Fotodyne Incorporated, Hartland, Wis.
Filed May 21, 1992, Ser. No. 887,449
Term of patent 14 years
U.S. Cl. D24—233

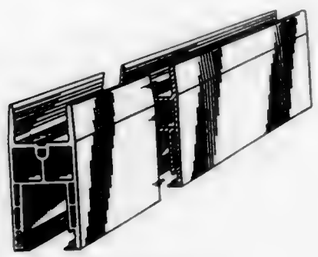


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348,524
SECURITY FENCE PANEL
Anthony M. Young, 4724 Nash St., Chapel Oaks, and Anthony J. Gary, 8720 Ritchboro Rd., Forestville, both of Md. 20747
Filed Jul. 23, 1992, Ser. No. 917,440
Term of patent 14 years
U.S. Cl. D25—38



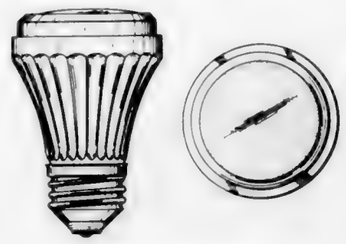
348,525
DOOR HORIZONTAL RAIL EXTRUSION
Raymond Dallaire, and Dominique Dallaire, both of St. David, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed May 11, 1990, Ser. No. 522,847
Claims priority, application United Kingdom, Nov. 11, 1989, 2002404; Nov. 11, 1989, 2002408
Term of patent 14 years
U.S. Cl. D25—123



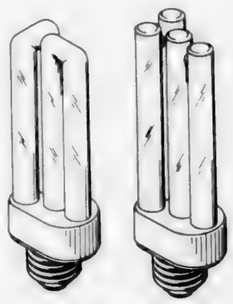
348,526
COMBINED POST AND CAP
Robert C. Nowotny, 913 Love Bridge Rd., Calhoun, Ga. 30701
Filed Dec. 16, 1992, Ser. No. 2,699
Term of patent 14 years
U.S. Cl. D25—126



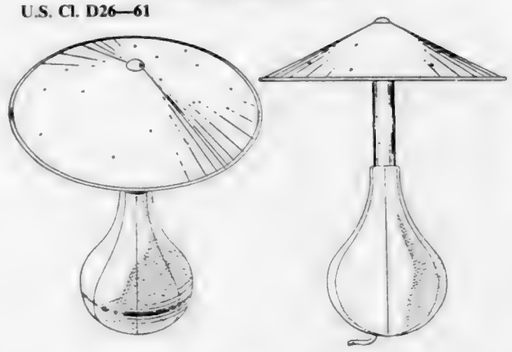
348,527
ELECTRIC LAMP
Joseph P. Gallant, Lexington, Ky., assignor to GTE Products Corporation, Danvers, Conn.
Filed Jul. 7, 1992, Ser. No. 909,934
Term of patent 14 years
U.S. Cl. D26—2



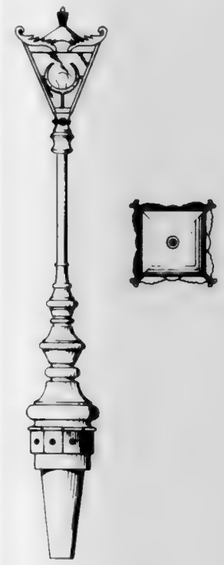
348,528
COMPACT FLUORESCENT LAMP ASSEMBLY
Paul C. DeKleine, and Rick A. Perkins, both of Holland, Mich., assignors to Progressive Technology in Lighting, Inc., Holland, Mich.
Filed May 6, 1992, Ser. No. 880,330
Term of patent 14 years
U.S. Cl. D26—3



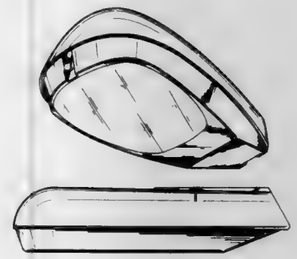
348,529
SELF BALANCED TABLE LAMP
Pablo E. Pardo, San Francisco, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 3, 1993, Ser. No. 5,382
Term of patent 14 years
U.S. Cl. D26—61



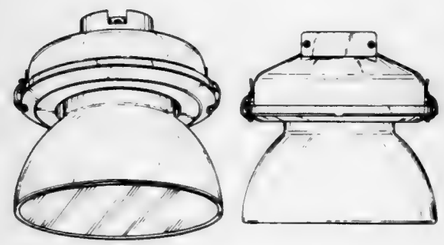
348,530
GARDEN LAMP
Bryan F. Harker, New Bungalow, Deytheur, Llansantffraid, Powys, SY22 6TE, Wales, United Kingdom
Filed Apr. 1, 1992, Ser. No. 861,503
Claims priority, application United Kingdom, Oct. 2, 1991, 2017887
Term of patent 14 years
U.S. Cl. D26—68



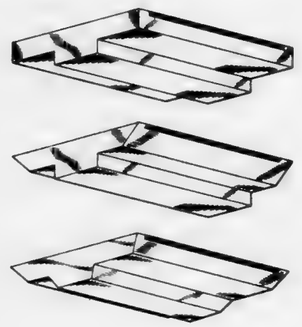
348,531
OUTDOOR ROADWAY LIGHTING FIXTURE
David E. Mehaffey, and Douglas S. Hammond, both of Vicksburg, Miss., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Aug. 11, 1993, Ser. No. 11,702
Term of patent 14 years
U.S. Cl. D26—71



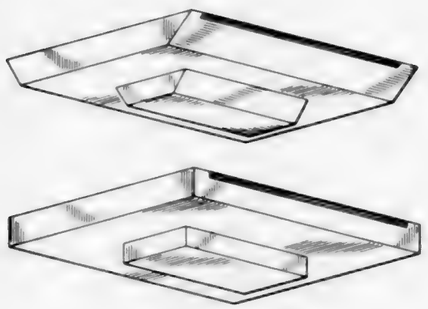
348,532
SUSPENDED LUMINAIRE
William W. Belisle, Newark, Ohio, assignor to Holophane Company, Inc., Newark, Ohio
Filed Mar. 25, 1992, Ser. No. 857,306
The portion of the term of this patent subsequent to Jan. 11, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—85



348,533
INDIRECT LIGHTING FIXTURE
Douglas J. Herst, Ross, and Utkan Salman, Emeryville, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.
Continuation-in-part of Ser. No. 260,358, Oct. 20, 1988, Pat. No. Des. 311,967, and a continuation-in-part of Ser. No. 502,663, Apr. 2, 1990, abandoned, and a continuation-in-part of Ser. No. 555,146, Jul. 19, 1990, abandoned, which is a division of Ser. No. 588,971, Sep. 27, 1990, Pat. No. Des. 341,439. This application Aug. 3, 1993, Ser. No. 11,393
Term of patent 14 years
U.S. Cl. D26—85



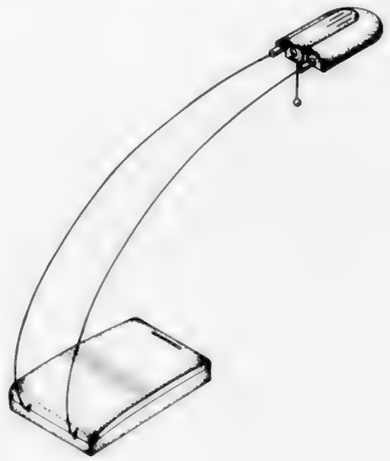
348,534
INDIRECT LIGHTING FIXTURE
Douglas J. Herst, Ross, and Utkan Salman, Emeryville, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.
This is continuation-in-part of Ser. No. 260,358, Oct. 20, 1988, Pat. No. Des. 311,967 which is a continuation-in-part of Ser. No. 502,663, Apr. 2, 1990, now abandoned, which is a continuation-in-part of 555,146, Jul. 19, 1990, now abandoned, which is a division of Ser. No. 588,971, Sep. 27, 1990, Pat. No. Des. 341,439
Term of patent 14 years
U.S. Cl. D26—85



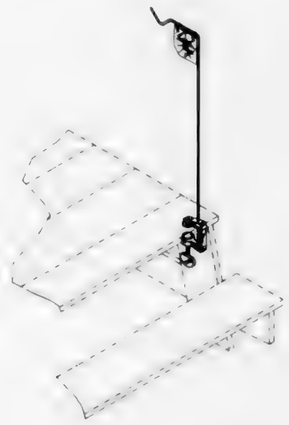
348,535
ILLUMINATED RISING BUBBLE DISPLAY
Kenneth Burnett, Lincolnwood, Ill., assignor to Midwest Tropical, Inc., Lincolnwood, Ill.
Filed May 6, 1992, Ser. No. 880,329
Term of patent 14 years
U.S. Cl. D26—93



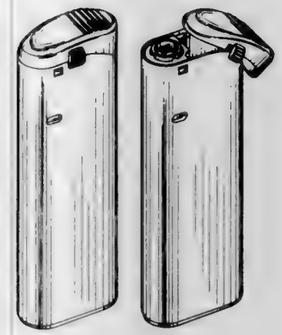
348,536
DESK LAMP
H. T. Huang, Sec. 2, Chung-Sun Road, Su-Lin Taipei, Taiwan
Filed Oct. 26, 1992, Ser. No. 847
Term of patent 14 years
U.S. Cl. D26—107



348,537
LANTERN HOLDER
Michael A. Kotrba, 910 Birdseye Creek Rd., Gold Hill, Oreg. 97525
Filed Apr. 15, 1991, Ser. No. 685,489
Term of patent 14 years
U.S. Cl. D26—138



348,538
LIGHTER
Isao Inoue, Shizuoka, Japan, assignor to Tokai Corporation, Kanagawa, Japan
Filed Jun. 14, 1993, Ser. No. 9,471
Claims priority, application Japan, Dec. 17, 1992, 4-37178
Term of patent 14 years
U.S. Cl. D27—154



348,539
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 12, 1991, Ser. No. 758,159
Term of patent 14 years
U.S. Cl. D28—8.1



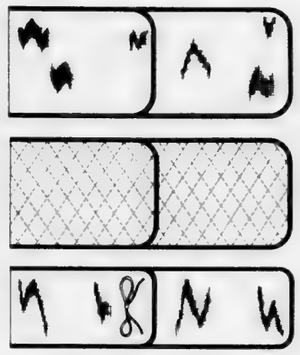
348,540
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 12, 1991, Ser. No. 758,160
Term of patent 14 years
U.S. Cl. D28—8.1



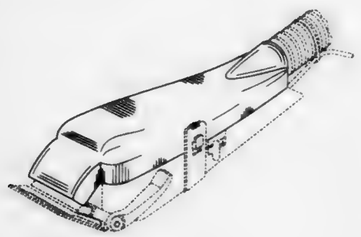
348,541
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 10, 1992, Ser. No. 866,939
Term of patent 14 years
U.S. Cl. D28—8.1



348,542
CURLING IRON HOLDER
John J. Cannella, 126 N. Salem St., Raleigh, N.C. 27502, assignor to John Cannella and Sandra Cannella, both of Apex, N.C.
Filed Jan. 7, 1992, Ser. No. 817,742
Term of patent 14 years
U.S. Cl. D28—38



348,543
VACUUM LID ATTACHMENT FOR HAIR CLIPPERS
Scott A. Melton, Erie, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.
Filed Dec. 21, 1992, Ser. No. 2,838
Term of patent 14 years
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RUMP PROTECTION DEVICE
Jamilla J. Wharton, 3413 E. 34th St., Indianapolis, Ind. 46218
Filed Nov. 15, 1991, Ser. No. 792,756
Term of patent 14 years
U.S. Cl. D29—10



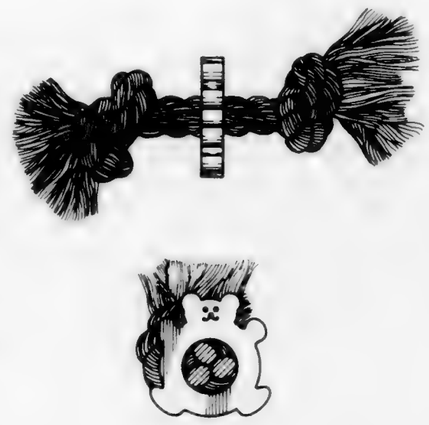
348,545
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Francis R. Egger, Watsonville, Calif., assignor to Specialized Bicycle Components, Inc., Morgan Hill, Calif.
Filed Sep. 13, 1991, Ser. No. 758,969
Term of patent 14 years
U.S. Cl. D29—12



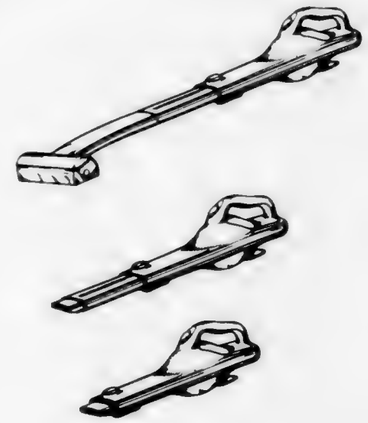
348,546
PLURAL DISCHARGE NIPPLE TYPE POULTRY WATERING ASSEMBLY HAVING AN ELONGATED SUPPORT BAR, HANGER, AND CUP AND KEEPER
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co., Inc., Harrisonburg, Va.
Filed Jun. 11, 1991, Ser. No. 713,334
Term of patent 14 years
U.S. Cl. D30—132



348,547
CHEW TOY FOR DOGS
Anthony O'Rourke, Malibu, Calif., assignor to Booda Products, Inc., Gardena, Calif.
Filed Nov. 24, 1992, Ser. No. 2,042
Term of patent 14 years
U.S. Cl. D30—160



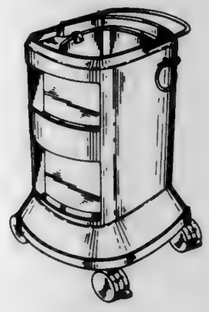
348,548
VACUUM CLEANER
Giovanni Pino, 951 Cherry, 3rd Fl., Grand Rapids, Mich. 49506
Filed Aug. 7, 1992, Ser. No. 927,182
Term of patent 14 years
U.S. Cl. D32—18



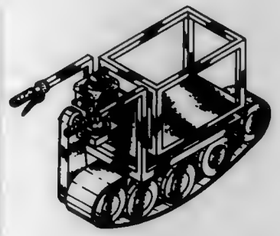
348,549
ELEVATED SHOPPING CART
Antoine Trubiano, Montreal, Canada, assignor to Cari-All Inc., Quebec, Canada
Filed Jan. 25, 1993, Ser. No. 4,011
Term of patent 14 years
U.S. Cl. D34—20



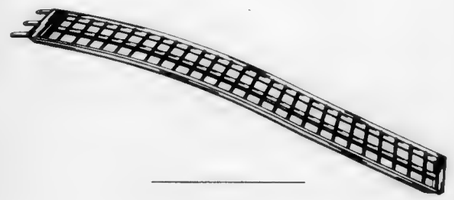
348,550
MOBILE VEHICLE CLEANING ORGANIZER
William H. Cox, 527 W. Windsor Rd., Glendale, Calif. 91204, and Robert Moore, 664 Melrose Dr., Salinas, Calif. 93901
Filed Apr. 7, 1993, Ser. No. 6,867
Term of patent 14 years
U.S. Cl. D34—23



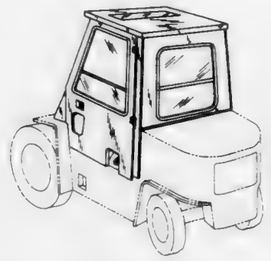
348,551
LOAD CARRIER FOR ROUGH TERRAIN
Steven E. Pratt, 2998 Maywood Ave., Boise, Id. 83704
Filed Mar. 25, 1993, Ser. No. 6,319
Term of patent 14 years
U.S. Cl. D34—28



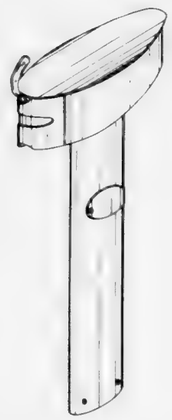
348,552
LOADING RAMP
James D. Woodward, P.O. Box 4, Crane, Mo. 65633, and Wilber W. Woodward, Rte. 1 Box 541, Colwich, Kans. 67030
Filed Nov. 12, 1993, Ser. No. 15,360
Term of patent 14 years
U.S. Cl. D34—32



348,553
VEHICLE CAB
Robert P. Martin, Jr., Cleveland, Ohio, assignor to Martin Sheet Metal, Inc., Cleveland, Ohio
Filed Jan. 21, 1993, Ser. No. 3,877
Term of patent 14 years
U.S. Cl. D34—37



348,554
COMBINED MAIL BOX AND POST
Alvin N. Shapiro, 909 Centennial Rd., Narberth, Pa. 19072, and Jerry Bronstein, 1539 Maple Ave., Paoli, Pa. 19301
Filed May 11, 1993, Ser. No. 8,405
Term of patent 14 years
U.S. Cl. D99—31



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF JULY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

See—
Koksbang, Rene; and , 5,326,545, Cl. 423-62.000.

A. Ahlstrom Corporation: *See*—
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A B Specialty Packaging, Inc.: *See*—
Zuege, John C., 5,326,576, Cl. 426-107.000.

A G Processing Technologies, Inc.: *See*—
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A.L. Hansen Mfg. Co.: *See*—
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Aagaard, Randy G.: *See*—
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ABB Reaktor GmbH: *See*—
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Haller, Hans, 5,327,080, Cl. 324-219.000.

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Acosta, Phyllis J. B.; Grondalski, Richard A.; Liebrecht, Jeffrey W.; and Reynolds, Patricia A., 5,326,569, Cl. 424-440.000.
Brooks, Dee W.; Moore, Jimmie L.; and Rodriques, Karen E., 5,326,787, Cl. 514-507.000.
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Cunningham, David D., 5,326,449, Cl. 204-403.000.
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Kramer, Thomas A.; Lawless, Mike; Kreinick, Stephen J.; and Gjata, John D., 5,326,236, Cl. 417-476.000.
Winn, Martin; De, Biswanath; Zydowsky, Thomas M.; Kerkman, Daniel J.; DeBernardis, John F.; Rosenberg, Saul H.; Shiosaki, Kazumi; Basha, Fatima Z.; Spina, Kenneth P.; von Geldern, Thomas W.; Boyd, Steven; Yamamoto, Diane M.; and Fung, Anthony K. L., 5,326,776, Cl. 514-382.000.

Abdelrazig, Baha E. I.; Gartner, Ellis M.; and Myers, David F., to W. R. Grace & Co.-Conn. Low shrinkage cement composition. 5,326,396, Cl. 106-808.000.

Abdelrazig, Baha E. I.; Gartner, Ellis M.; and Myers, David F., to W. R. Grace & Co.-Conn. Low shrinkage cement composition. 5,326,397, Cl. 106-808.000.

Abe, Isao: *See*—
Yamada, Shigeru; Abe, Isao; and Takahashi, Tsutomu, 5,327,022, Cl. 307-443.000.

Abe, Naoto: *See*—
Saitoh, Kenji; Matsugu, Masakazu; Suda, Shigeyuki; Niwa, Yukichi; Kuroda, Ryo; Nose, Noriyuki; Yoshii, Minoru; Abe, Naoto; and Ohwada, Mitsutoshi, 5,327,221, Cl. 356-355.000.

Abe, Teiichi: *See*—
Hoshino, Ikuya; Matsuura, Tatsuro; Abe, Teiichi; Kimura, Atsushi; and Maekawa, Yukihiro, 5,325,692, Cl. 72-8.000.

Abefelt, Erik O.; Bjenne, Karl A.; and Lundh, Carl P. B., to Telefonaktiebolaget L M Ericsson. Controllable multiplexer for a digital switch. 5,327,422, Cl. 370-63.000.

Abouzahr, Saad M.: *See*—
Gedeon, Dale G.; Segesta, David D.; Abouzahr, Saad M.; Randazzo, Joseph J.; and Ditchfield, Clifton, 5,326,130, Cl. 280-752.000.

Abraham, Robert L.: *See*—
Priven, Michael P.; Abraham, Robert L.; Shackelford, Floyd W.; Moore, Richard E.; Moorman, Thomas P.; Stiles, April D. E.; and Schrock, Jane E., 5,327,559, Cl. 395-700.000.

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Clem, Lyle W., 5,325,852, Cl. 137-91.000.

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Richmond, Robert L.; Richmond, Martin; Aydelotte, Richard; and Blake, Bennet, 5,327,493, Cl. 379-372.000.

Adachi, Naotomo; Kubo, Tetsuya; Kaiwa, Ryoichi; and Kudoh, Michiyoshi, to Matsushita Electric Industrial Co., Ltd. Portable radio having cover releasing mechanism and receive switch which are operable together. 5,327,584, Cl. 455-89.000.

Adair, Edwin L. Steerable sheath for use with selected removable optical catheter. 5,325,845, Cl. 128-4.000.

Adam, Gerard: *See*—
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Adamopoulos, Eleftherios; Kim, Jungihl; Lee, Kang-Wook; Oh, Tae S.; O'Toole, Terrence R.; Purushothaman, Sampath; Ritsko, John J.; Shaw, Jane M.; Viehbeck, Alfred; and Walker, George F., to International Business Machines Corporation. Adhesive layer in multi-level packaging and organic material as a metal diffusion barrier. 5,326,643, Cl. 428-472.200

Adams, Edward R.: *See*—
Wellington, James M.; Miller, Craig M.; and Adams, Edward R., 5,327,288, Cl. 359-606.000.

Adams, Graham L.; and Trach, Guenter, to Motorola, Inc. Assembly and elastomeric seating member for providing a flexable seat for a member. 5,326,161, Cl. 303-119.200

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Adams, Robert E.: *See*—
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Adcock, James L., to Microsoft Corporation. Method for implementing virtual function tables in a compiler for an object-oriented programming language. 5,327,562, Cl. 395-700.000.

Adelman, Judah: *See*—
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Advanced Technology Materials, Inc.: *See*—
Vaartstra, Brian A., 5,326,892, Cl. 556-28.000.

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Konno, Toshio; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji, Tatsumi, Fujiko; Takahashi, Ryusaku; Bonde, Hiroyuki; and Matsumura, Tsutomu, 5,327,229, Cl. 348-742.000.

Taylor, Anthony P.: *See—*
Critchley, Peter; Hagan, Desmond B.; Kirsch, Susan E.; Parrott, David T.; Rawlings, Anthony V.; Scott, Ian R.; and Taylor, Anthony P., 5,326,565, Cl. 424-401.000.

Taylor, Brian B., to Environics Inc. Ozone generator with internal heating means. 5,326,539, Cl. 422-186.300.

Taylor, Charles W.: *See—*
Versaw, William F.; Taylor, Charles W.; and Jordan, Mitchell H., 5,326,234, Cl. 417-393.000.

Taylor, Curtis L.; and Pellinen, Paul A., to Maxon Corporation. Gas-fired radiant burner. 5,326,257, Cl. 431-329.000.

Taylor, Gerald M. Tape dispensers. 5,326,421, Cl. 156-526.000.

Taylor, Jeff: *See—*
Kohut, Michael; Wood, Dana; Wood, Paul; Taylor, Jeff; Reese, Leroy; Tanielian, Aram; Waas, Jaye M.; Waring, Mark; and Carlsen, George, 5,327,182, Cl. 352-27.000.

Taylor, Paul D.: *See—*
Mandella, William L.; Taylor, Paul D.; and Smith, Terry E., 5,326,880, Cl. 548-519.000.

Taylor, Stewart S., to TriQuint Semiconductor, Inc. Circuit for multiplying the value of a capacitor. 5,327,027, Cl. 307-490.000.

Taylor, William R., to Du Pont de Nemours, E. I., and Company. Apparatus for chemically processing toxic materials. 5,326,532, Cl. 422-100.000.

TDK Corporation: *See—*
Ikebe, Masaru; Shiba, Haruo; and Miyazaki, Yukio, 5,326,608, Cl. 428-65.000.

Technic, Inc.: *See—*
Endicott, Duane W.; Gernon, Michael D.; and Yip, Heng K., 5,326,453, Cl. 205-50.000.

Tecle, Berhan, to Du Pont de Nemours, E. I., and Company. Organic vehicle and electronic paste. 5,326,390, Cl. 106-208.000.

Tehrani, Saied N.: *See—*
Goronkin, Herbert; Shen, Jun; and Tehrani, Saied N., 5,326,985, Cl. 257-22.000.

Teijin Limited: *See—*
Fukuda, Masayuki; and Miura, Sadayoshi, 5,326,966, Cl. 235-493.000.

Teijin Seiki Co., Ltd.: *See—*
Tanae, Fumio; and Naito, Shunzo, 5,326,039, Cl. 242-35.50A.

Teisan, K K.: *See—*
Gastinne, Sophie; Venet, Francois; Ha, Bao; and Yamashita, Naohiko, 5,325,674, Cl. 62-38.000.

Teitzel, Robin: *See—*
Allen, Paul; Bohan, Mike; Thomas, Tim; and Teitzel, Robin, 5,327,338, Cl. 346-108.000.

Telectronics Pacing Systems, Inc.: *See—*
Otten, Josephus M., 5,326,448, Cl. 204-402.000.

Telefonaktiebolaget L M Ericsson: *See—*
Uddenfeldt, Jan, and Hermansson, Hans, 5,327,576, Cl. 455-33.200.

Telefonaktiebolaget L M Ericsson: *See—*
Abefelt, Erik O.; Bjenne, Karl A.; and Lundh, Carl P. B., 5,327,422, Cl. 370-63.000.
Nortenius, Bengt A., 5,325,659, Cl. 57-293.000.
Uddenfeldt, Jan-Erik, 5,327,577, Cl. 455-33.200.

Telford, Susan: *See—*
Sherstinsky, Semyon; Harris, Charles C.; Chang, Mei; Du Bois, Dale R.; Roberts, James F.; Telford, Susan; Rose, Ronald L.; Tseng, Meng C.; and Littau, Karl A., 5,326,725, Cl. 437-225.000.

Temple, Jeffrey L. Container support. 5,325,990, Cl. 220-628.000.

Teramura, Kaoru: *See—*
Kojima, Akio; Yamaguchi, Takeo; Yoshikawa, Masao; Shibata, Isamu, and Teramura, Kaoru, 5,326,678, Cl. 430-495.000.

Terata, Shukoh: *See—*
Seki, Yasunari; Sato, Toshihiko; Kumagai, Katuhiro; Maruyama, Hiroshi; Iwata, Yoichi; Takizawa, Tsuyoshi; Maeda, Kenichi; Kuroda, Shigetaka, Chikamatsu, Masataka; Terata, Shukoh, Sawamura, Kazutomo; Uto, Hajime; Aoki, Takuya; and Kobayashi, Makoto, 5,325,664, Cl. 60-276.000.

Terumo Kabushiki Kaisha: *See—*
Yamazaki, Sakae; and Murashita, Takato, 5,326,534, Cl. 422-102.000.

Teruuchi, Kiyohiro: *See—*
Hashimoto, Koji; Teruuchi, Kiyohiro; Habazaki, Hiroki; Kawashima, Asahi, and Asami, Katsuhiko, 5,326,736, Cl. 502-326.000.

Teskey, John F.: *See—*
Forler, Joseph W.; Teskey, John F.; and Landis, Michael D., 5,327,176, Cl. 348-564.000.

Teston Investement Pty. Lt.: *See—*
Martin, Donald A., 5,325,793, Cl. 108-130.000.

Tetra Laval Holdings & Finance S.A.: *See—*
Sizer, Charles E.; Erickson, Terry D.; and Manley, Terrence F., 5,326,542, Cl. 422-291.000.

Tetzlaff, Heribert, Krull, Matthias, Kremer, Gernot; and Porz, Christoph, to Hoechst Aktiengesellschaft. Process for the extractive removal of phospho- and sulfobetaines from acidic reaction solutions. 5,326,906, Cl. 562-11.000.

Texaco Inc.: *See—*
Pasternak, Mordechai; and Morduchowitz, Abraham, 5,326,440, Cl. 204-157.150.
Shong, Robert G.; and Horton, Robert L., 5,326,467, Cl. 208-262.500.

Texas A&M University System, The: *See—*
Soenen, Eric G.; and Geiger, Randall L., 5,327,129, Cl. 341-120.000.
Stubbs, Norris, 5,327,358, Cl. 364-507.000.

Texas Instruments Incorporated: *See—*
Barna, Gabriel G., 5,326,975, Cl. 250-372.000.
Creswick, Howard W., 5,327,234, Cl. 348-399.000.
Frew, Dean L.; Kressley, Mark A.; Wilson, Arthur M.; Miller, Juanita G.; Hecker, Philip E., Jr.; Drumm, James; Johnson, Randall E.; and Elder, Rick, 5,327,327, Cl. 361-784.000.
Golston, Jeremiah; Read, Christopher J.; and Bonneau, Walt, Jr., 5,327,240, Cl. 348-607.000.
Johnson, Douglas A., 5,327,567, Cl. 395-775.000.
Kersh, David V., III; and Norwood, Roger D., 5,327,380, Cl. 365-195.000.
Malhi, Satwinder, 5,326,711, Cl. 437-33.000.
Moslehi, Mehrdad M.; Najm, Habib; and Velo, Lino A., 5,326,170, Cl. 374-2.000.
Popat, Pravin N.; Unterweger, Diethard; Baskin, Gennady; Candelet, Ronald J.; and Tonnies, Gary L., 5,327,318, Cl. 361-55.000.
Reinecke, Peter; Childers, Jimmie D.; Miyaguchi, Hiroshi; and Chung, Moo-Taek, 5,327,541, Cl. 395-400.000.
Sampsell, Jeffrey B.; and Bienstock, Rachelle J., 5,327,286, Cl. 359-561.000.
Summerfelt, Scott R., 5,326,721, Cl. 437-131.000.
Van Aken, Jerry R.; Killebrew, Carrell R., Jr.; Nye, Jeffrey L.; and Guttag, Karl M., 5,327,159, Cl. 345-153.000.
Wei, Che-Chia, 5,326,724, Cl. 437-200.000.

Texter, John, to Eastman Kodak Company. Photographic silver halide element containing microprecipitated methine oxonol filter dye dispersions. 5,326,687, Cl. 430-522.000.

Theodore, N. David; and Carrejo, Juan P., to Motorola, Inc. Transmission electron microscope environmental specimen holder. 5,326,971, Cl. 250-311.000.

Theolier, Albert: *See—*
Benazzi, Eric; Hotier, Gerard; Basset, Jean-Marie; Choplin, Agnes; Theolier, Albert; and Nedez, Christophe, 5,326,928, Cl. 585-820.000.

Theurel, Laurence, Moussavi, Medhi; and Marchon, Jean-Claude, to Commissariat a l'Energie Atomique; and Centre National de la Recherche Scientifique. Organic material usable in a magnetometer and probe for an electron paramagnetic resonance (EPR) magnetometer using said material. 5,327,084, Cl. 324-301.000.

Thiebaud, Francis; and Stingl, Friedrich, to Balzers Aktiengesellschaft. Substrate holding and rotating arrangement for vacuum processes. 5,325,812, Cl. 118-500.000.

Thiessen, David L.: *See—*
Steimle, Lawrence J.; and Thiessen, David L., 5,327,219, Cl. 356-359.000.

Thomas, Andrew J.: *See—*
Dujon, Gregory F.; Parker, Arthur B.; and Thomas, Andrew J., 5,327,514, Cl. 385-115.000.

Thomas, Dennis A.; and Goulait, David J. K., to Procter & Gamble Company, The. Screen printing method for manufacturing a refastenable mechanical fastening system and fastening system produced therefrom. 5,326,415, Cl. 156-244.110.

Thomas, Dennis A.: *See—*
Goulait, David J. K.; and Thomas, Dennis A., 5,325,569, Cl. 24-448.000.

Thomas, Kimberly I., to Conner Peripherals, Inc., Tape format detection system. 5,327,305, Cl. 360-74.500.

Thomas, Ronald L.: *See—*
Fugua, Clark R.; Thomas, Ronald L.; and Gooding, Charles H., 5,326,477, Cl. 210-632.000.

Thomas, Theodore T., Jr.: *See—*
Lee, Ching-Pang; Thomas, Theodore T., Jr.; and Isburgh, Anne M., 5,326,224, Cl. 416-97.00R.

Thomas, Tim: *See—*
Allen, Paul; Bohan, Mike; Thomas, Tim; and Teitzel, Robin, 5,327,338, Cl. 346-108.000.

Thompson, David M.: *See—*
Sculley, Michael J.; Amico, Mark S.; Drinkwater, Wayne D.; and Thompson, David M., 5,327,204, Cl. 355-284.000.

Thompson, Edwin H., to Zander Filter Systems, Inc. Method and apparatus for separating oil and water. 5,326,469, Cl. 210-192.000.

Thompson, Kevin D.: *See—*
Dempsey, Daniel J.; and Thompson, Kevin D., 5,326,025, Cl. 236-11.000.

Thompson, Lloyd E.: *See—*
Ballheimer, Benny; and Thompson, Lloyd E., 5,325,834, Cl. 123-446.000.

Thompson, Michael D., to Xerox Corporation. Masked magnetic brush direct writing for high speed and color printing. 5,327,169, Cl. 346-155.000.

Thompson, Peter W.: *See—*
May, Michael D.; Parsons, Brian J.; Thompson, Peter W.; and Walker, Christopher P. H., 5,327,127, Cl. 341-102.000.

Thompson, Thomas E.; and Westerberg, Eugene R., to A G Processing Technologies, Inc. Pyrometer apparatus and method. 5,326,171, Cl. 374-121.000.

Thomson Consumer Electronics, Inc.: *See—*
Forler, Joseph W.; Teskey, John F.; and Landis, Michael D., 5,327,176, Cl. 348-564.000.

Thomson Consumer Electronics, S.A.: *See—*
Tan, Siew M.; and Oh, Chon S., 5,327,172, Cl. 348-378.000.

Thomson-CSF: *See—*
Rosencher, Emmanuel; and Bois, Philippe, 5,326,984, Cl. 257-21.000.

Thomson, Robert T.: *See—*
Huss, Albin, Jr.; Le, Quang N.; and Thomson, Robert T., 5,326,922, Cl. 585-722.000.

Thoreen, Brian R.: *See—*
Dreikorn, Barry A.; Kaster, Sylvester V.; Kirby, Neil V.; Suhr, Robert G.; and Thoreen, Brian R., 5,326,766, Cl. 514-259.000.

Thorne, Gregory N.: *See—*
Pahl, Larry T.; and Thorne, Gregory N., 5,326,053, Cl. 244-136.000.

Thornfeldt, Carl R., to Dermatologic Research Corporation. Administration of skin medications by use of dicarboxylic acids and derivatives. 5,326,790, Cl. 514-784.000.

Thuecks, Steven J.; Kessler, William I.; and Schommer, Alan J., to Vollrath Company, Inc., The. Product serving apparatus. 5,326,248, Cl. 425-187.000.

Thurkauf, Andrew; and Hutchison, Alan, to Neurogen Corporation. Certain aryl fused pyrrolopyrimidines; a new class of GABA brain receptor ligands. 5,326,868, Cl. 544-250.000.

Thyssen Nordseewerke GmbH: *See—*
Jans, Peter; Rupp, Karl-Heinz; and Hellmann, Jens-Holger, 5,325,803, Cl. 114-40.000.

TI Interlock Limited: *See—*
Dommett, Simon P.; Davies, Peter R.; and Hakon, Ian N., 5,325,949, Cl. 192-70.250.

Tidemann, Dale R.: *See—*
Juntunen, Timothy J.; Tidemann, Dale R.; and Weiler, Joseph E., 5,325,654, Cl. 53-440.000.

Tiefenthal, James L.: *See—*
Hirschi, Richard E.; Karbowski, James P.; Tiefenthal, James L.; and Isaac, Ronald M., 5,325,873, Cl. 128-899.000.

Tilton, Mary; and Lipton, Lenny, to Standish Industries, Inc. Fast switching 270° twisted nematic liquid crystal device and eyewear incorporating the device. 5,327,269, Cl. 359-63.000.

Timber Products, Inc.: *See—*
Boyles, Walter W., 5,326,410, Cl. 156-71.000.

Timken Company, The: *See—*
Russell, Daniel T., 5,325,599, Cl. 33-517.000.

TiNi Alloy Company: *See—*
Johnson, A. David; and Ray, Curtis A., 5,325,880, Cl. 137-1.000.

Tischer, Steven N., to Tischer, Steven N. Precision portable scanning table with attachment apparatus. 5,326,066, Cl. 248-451.000.

Tissot, Pierre: *See—*
Dupont, Guy; Tissot, Pierre; and Manceaux, Joelle, 5,325,781, Cl. 101-487.000.

Tkach, Robert W.: *See—*
Chraplyvy, Andrew R.; Tkach, Robert W.; and Walker, Kenneth L., 5,327,516, Cl. 385-123.000.

Tobias, Stephen M.: *See—*
Carlson, Bret M.; and Tobias, Stephen M., 5,326,204, Cl. 410-143.000.

Tochigi Fuji Sangyo Kabushiki Kaisha: *See—*
Niizawa, Yoshikazu; and Hirota, Isao, 5,326,333, Cl. 475-249.000.

Toda, Shoji: *See—*
Higashii, Takayuki; Toda, Shoji; Minai, Masayoshi; Sekine, Chizu; Tani, Takeshi; and Fujisawa, Koichi, 5,326,871, Cl. 544-298.000.

Todd, Maurice C.: *See—*
Lukhard, Craig R.; Roth, Elwood A.; and Todd, Maurice C., 5,325,770, Cl. 100-3.000.

Togano, Takeshi: *See—*
Asaoka, Masanobu; Takao, Hideaki; Togano, Takeshi; and Kojima, Makoto, 5,326,600, Cl. 428-1.000.

Togashi, Sigekazu; Suesada, Kunio; Sekimoto, Kunio; Oba, Yoshinobu; and Nakayama, Tadashi, to Nippon Hoso Kyokai; and Matsushita Electric Industrial Co., Ltd. Magnetic reproducing apparatus and magnetic recording apparatus with editing function. 5,327,295, Cl. 360-13.000.

Toji, Daijiro: *See—*
Sakaki, Toshiaki; and Toji, Daijiro, 5,326,515, Cl. 264-137.000.

Toji, Shigeo: *See—*
Shindo, Osamu; and Toji, Shigeo, 5,327,191, Cl. 354-402.000.

Tokai Corporation: *See—*
Shike, Tsutomu; Eguchi, Toshihiko; and Saito, Masaki, 5,326,256, Cl. 431-255.000.

Tokai, Masakuni: *See—*
Hara, Tamio; Hamagaki, Manabu; Aoyagi, Katsunobu; Yamada, Takeshi; Ryoji, Makoto; Tokai, Masakuni; and Kajiyama, Yosuke, 5,326,981, Cl. 250-492.210.

Tokai Rubber Industries, Ltd.: *See—*
Hamada, Masaaki, 5,326,324, Cl. 464-180.000.

Tokico Ltd.: *See—*
Rembutsu, Tatsuya, 5,327,058, Cl. 318-568.110.

Tokimatsu, Hiroyuki: *See—*
Yasuda, Kazuo; Tokimatsu, Hiroyuki; Fukuchi, Masakazu, Shirose, Meizo; and Kobayahi, Yoshiaki, 5,325,637, Cl. 51-319.000

Tokin Corporation: *See—*
Gotoh, Noriyuki; Ohtuki, Yasunori; Yamamoto, Naoharu; Sada, Hiroyuki; Kurotwa, Akihiko, and Moriyama, Hiroshi, 5,326,945, Cl. 200-61.45R.

Tokoi, Masaki: *See—*
Ishizu, Atsushi; Tokoi, Masaki, and Seki, Yoshio, 5,327,241, Cl. 348-606.000

Tokumaru, Hisashi: *See—*
Fukushima, Akira; Okada, Takashi; Hashimura, Junji; Umeda, Hiromu; Masumoto, Hisayuki; and Tokumaru, Hisashi, 5,327,290, Cl. 359-692.000

Tokushu Paper Mfg. Co., Ltd.: *See—*
Takagi, Akinobu; Ohtake, Isao; Nakano, Osamu; and Murakami, Toru, 5,325,893, Cl. 138-143.000

Tokyo Parts Industrial Co., Ltd.: *See—*
Sunaga, Sosuke, 5,327,035, Cl. 310-81.000

Tolkoff, M. Joshua: *See—*
Adams, Ronald D.; Embertson, Randy J.; Tolkoff, M. Joshua, Allman, Robert C.; and de Toledo, Fernando A., 5,325,848, Cl. 128-20.000

Tolson, Sidney S., to Ossid Corporation. Weighting/labelling apparatus incorporating improved conveyor and method. 5,326,938, Cl. 177-5.000.

Tom, Glenn M., to Novapure Corporation. In-line detector system for real-time determination of impurity concentration in a flowing gas stream. 5,325,705, Cl. 73-31.030.

Tomaru, Kazuhiko: *See—*
Kishita, Hirofumi; Tomaru, Kazuhiko; Shimamoto, Noboru, Yamaguchi, Kouichi; and Sato, Shinichi, 5,326,611, Cl. 428-78.000.

Tomikawa, Takashi: *See—*
Asada, Eiji; Tomikawa, Takashi; and Futamura, Kenichiro, 5,326,384, Cl. 75-231.000.

Tomita, Nobuaki: *See—*
Aoki, Kei; Nakano, Shinji, and Tomita, Nobuaki, 5,326,827, Cl. 525-337.000.

Tomita, Nobuyuki: *See—*
Kobayashi, Tohru; Tomita, Nobuyuki; Sonohara, Tsunetoshi; Kawada, Hiroshi; Shimachi, Shigeyuki; and Gunbara, Hiroshi, 5,325,634, Cl. 51-105.0GG.

Tonen Corporation: *See—*
Saito, Makoto; Takezawa, Makoto; and Inoue, Hiroshi, 5,326,630, Cl. 428-231.000.
Suzuki, Sadakatsu, Ichiki, Tatsumi; and Ueno, Hiroshi, 5,326,889, Cl. 549-508.000.

Toner, John L.: *See—*
Illig, Carl R., Cooper, Eugene R., Toner, John L.; Upson, Donald A., Douty, Brent D., Caulfield, Thomas J., Bacon, Edward R., Estep, Kimberly G., Josef, Kurt A.; Robinson, Shaughnessy; and Spara, Paul P., 5,326,553, Cl. 424-5.000.

Tonnies, Gary L.: *See—*
Popat, Pravin N.; Unterweger, Diethard; Baskin, Gennady; Candelet, Ronald J.; and Tonnies, Gary L., 5,327,318, Cl. 361-55.000.

Tonon, Thomas. Catalytic combustion. 5,326,252, Cl. 431-2.000.

Tooltek Engineering Corp.: *See—*
Jahani, Hooshang, 5,325,566, Cl. 15-302.000.

Topholm & Westermann ApS: *See—*
Westermann, Soren E., 5,325,872, Cl. 128-897.000.

Toppan Insatsu Kabushiki Kaisha: *See—*
Fukai, Sigeru; Shinozaki, Michio; Ishii, Toshimasa; Omura, Kunio; Sasaki, Hidetomo; Nishimura, Ken; Honma, Nobuaki, Kuroki, Hiroyuki; and Marugame, Tomoyuki, 5,326,179, Cl. 400-120.000.

Toray Industries, Inc.: *See—*
Zenda, Tatsuya; Hayashi, Yutaka, Kitagawa, Motoaki; and Seino, Takashi, 5,326,632, Cl. 428-262.000.

Torishima, Hisashi; Arakawa, Hirokuni; Yamamoto, Ryohei; Nishino, Toyokazu; and Sakai, Chikaaki, to Kurashiki Boseki Kabushiki Kaisha. Serum-free medium for culturing animal cells. 5,326,699, Cl. 435-240.200.

Tornos-Bechler SA: *See—*
Simonin, Jean C.; and Paroz, Cedric, 5,327,352, Cl. 364-474.280.

Totoku Electric Co., Ltd.: *See—*
Yamaguchi, Tadashi; Muramatsu, Masataka; and Katagiri, Naoki, 5,326,935, Cl. 174-120.00R.

Towa Koki Kabushiki Kaisha: *See—*
Iwanaga, Akira, 5,326,403, Cl. 118-429.000.

Towns, Mark C.: *See—*
Pudney, Richard I.; Schriner, Charles R., Stringer, Charles E.; Towns, Mark C.; and Cronce, Gary M., 5,326,007, Cl. 224-321.000.

Toyama, Tadao; and Sakamoto, Atsushi, to Fuji Photo Film Co., Ltd. Method for processing photosensitive copying materials. 5,326,674, Cl. 430-325.000.

Toyoda, Masashi, to Sharp Kabushiki Kaisha. Rotatable-cassette-type feeding device for use in image forming apparatus. 5,326,089, Cl. 271-162.000.

Toyooka, Takehiro: *See—*
Iida, Shigeki; Toyooka, Takehiro; Takiguchi, Yasuyuki; and Enomoto, Takamichi, 5,326,496, Cl. 252-299.010.

Toyota, Hideo; and Kuwahara, Wataru, to Mazda Motor Corporation. Transmission for automotive vehicle. 5,325,739, Cl. 74-606.00R.

Toyota Jidosha Kabushiki Kaisha: *See—*
Itoh, Tokiji, 5,325,663, Cl. 60-274.000.
Kaneko, Kuniya; Wakiyama, Harumichi; and Naito, Tadasi, 5,327,340, Cl. 364-401.000.
Ohori, Harumi; and Monzaki, Shirou, 5,326,158, Cl. 303-3.000.
Sugishima, Sakae, 5,325,908, Cl. 164-341.000.

Trach, Guenter: *See—*
Adams, Graham L.; and Trach, Guenter, 5,326,161, Cl. 303-119.200.

Trackmobile, Inc.: *See—*
Atchley, Randal L.; Merchant, Henry L.; and Lich, Richard L., 5,325,791, Cl. 105-75.000.

Traffic Sensor Corporation: *See—*
Heimann, Kenneth R.; and Chu, Hien T., 5,327,123, Cl. 340-916.000.

Tran, Jimmy C.: *See—*
Naimpally, Saiprasad V.; and Tran, Jimmy C., 5,327,242, Cl. 348-606.000.

Transue, Deborah M.: *See—*
Alpern, Marvin; Cerwin, Robert; O'Toole, Michael; Simons, Teresa M., and Transue, Deborah M., 5,325,987, Cl. 220-409.000.

Travis, Stephen C.: *See—*
Tappel, James G.; Hopper, Christopher J.; and Travis, Stephen C., 5,325,551, Cl. 5-453.000.

Tregear, Geoffrey W.: *See—*
Hudson, Peter J.; Niall, Hugh D.; and Tregear, Geoffrey W., 5,326,694, Cl. 435-69.400.

Tremblay, Johanne: *See—*
Hamet, Pavel; Tremblay, Johanne; Lamberet, Raymond; and Leveille, Jean, 5,326,551, Cl. 424-1.450.

Tretorn AB: *See—*
Sussmann, Reinhold, 5,325,613, Cl. 36-50.100.

TriQuint Semiconductor, Inc.: *See—*
Taylor, Stewart S., 5,327,027, Cl. 307-490.000.

Tropix, Inc.: *See—*
Bronstein, Irena; Edwards, Brooks; and Juo, Rouh-Rong, 5,326,882, Cl. 549-16.000.

Troy, Patrick E., to North American Philips Corporation. Bi-level lighting control system for hid lamps. 5,327,048, Cl. 315-240.000.

True North Log Homes: *See—*
Wrightman, Ronald A., 5,325,645, Cl. 52-233.000.

Truong, Van K., Patrick, Edward H.; and Woodral, David E., to Archive Corporation. Tape drive capstan motor servo system with static friction compensation. 5,327,059, Cl. 318-632.000.

Trus Joist MacMillan: *See—*
Crittenden, Bradley J.; Barnes, Derek, Knudson, Robert M., and Laytner, Frank L., 5,325,954, Cl. 198-382.000.

TRW Inc.: *See—*
Glaser, Peter S.; Calkins, Jeffery A.; and Riggs, Jeffrey M., 5,325,582, Cl. 29-840.000.
Goetz, Allan C.; and Boolos, Timothy L., 5,327,143, Cl. 342-382.000.
Noneman, Mark E.; and Westmont, Clark R., 5,327,136, Cl. 341-159.000.

Tsang, Robert W. K., and Core, Theresa A., to Analog Devices, Inc. Method for fabricating monolithic chip containing integrated circuitry and suspended microstructure. 5,326,726, Cl. 437-228.000.

Tseng, Amy M.: *See—*
Sarkar, Jawed M.; Tseng, Amy M., and Collins, John H., 5,326,479, Cl. 210-719.000.

Tseng, Gwou-Jong: *See—*
Lu, Sidney; and Tseng, Gwou-Jong, 5,326,288, Cl. 439-851.000.

Tseng, Meng C.: *See—*
Sherstinsky, Semyon; Harris, Charles C.; Chang, Mei; Du Bois, Dale R.; Roberts, James F.; Telford, Susan; Rose, Ronald L.; Tseng, Meng C.; and Littau, Karl A., 5,326,725, Cl. 437-225.000.

Tsubaki, Masayuki; Noda, Touru; Ikeya, Nobushige; and Seri, Takuya, to Mitsubishi Paper Mills Limited; and Mitsubishi Kasei Corporation. Photographic support. 5,326,624, Cl. 428-213.000.

Tsubakimoto Chain Co.: *See—*
Yokoi, Satoru; Kai, Toru; and Suzuki, Noboru, 5,327,546, Cl. 395-425.000.

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Tsukamoto, Shin-ichi; Nagaoka, Hitoshi; Usuda, Shinji; Harada, Masatomi; and Tamura, Toshinari, to Yamanouchi Pharmaceutical Co., Ltd. Heterocyclic spiro compounds and methods for preparing the same. Re. 34,653, Cl. 546-16.000.

Usuda, Shinji. *See*—
Tsukamoto, Shin-ichi; Nagaoka, Hitoshi; Usuda, Shinji, Harada, Masatomi; and Tamura, Toshinari, Re. 34,653, Cl. 546-16.000.

Yamanouchi Pharmaceutical Co., Ltd. *See*—
Tsukamoto, Shin-ichi; Nagaoka, Hitoshi; Usuda, Shinji, Harada, Masatomi; and Tamura, Toshinari, Re. 34,653, Cl. 546-16.000.

Yamawaki, Masao, to Mitsubishi Denki Kabushiki Kaisha. Electronic still camera with slow-in, fast-out memory addressing. Re. 34,654, Cl 348-231.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bassi, Dario, to Staubli-Verdol S.A. Mechanism for controlling griffe frame movement. B1 5,103,873, 7-5-94, Cl. 139-59.000.

Blatt, John A. Power operated clamp with externally mounted adjustable clamp arm. B1 4,905,973, 7-5-94, Cl. 269-32.000.

Bostwick, Martin M. *See*—
Kovacic, Theodore J., Kaufman, Richard H., Bostwick, Martin M., Crescenzi, Donald C.; Valls, William H., and Bucaccio, Thomas, B1 5,188,250, Cl. 215-32.000.

Bucaccio, Thomas. *See*—
Kovacic, Theodore J.; Kaufman, Richard H., Bostwick, Martin M., Crescenzi, Donald C., Valls, William H., and Bucaccio, Thomas, B1 5,188,250, Cl. 215-32.000.

Crescenzi, Donald C. *See*—
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M., Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, B1 5,188,250, Cl. 215-32.000.

Hyla, Patrick H. *See*—
Quarfoot, Alan J.; Hyla, Patrick H.; and Patience, Donald, B1 4,909,244, Cl. 602-48.000.

Kaufman, Richard H. *See*—
Kovacic, Theodore J.; Kaufman, Richard H., Bostwick, Martin M., Crescenzi, Donald C.; Valls, William H., and Bucaccio, Thomas, B1 5,188,250, Cl. 215-32.000.

Kendall Company, The: *See*—
Quarfoot, Alan J.; Hyla, Patrick H.; and Patience, Donald, B1 4,909,244, Cl. 602-48.000.

Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H., and Bucaccio, Thomas, to Kraft General Foods, Inc. Plastic beveridge bottle with twist-off closure. B1 5,188,250, 7-5-94, Cl. 215-32.000.

Kraft General Foods, Inc.: *See*—
Kovacic, Theodore J., Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, B1 5,188,250, Cl. 215-32.000.

Patience, Donald: *See*—
Quarfoot, Alan J.; Hyla, Patrick H.; and Patience, Donald, B1 4,909,244, Cl. 602-48.000.

Quarfoot, Alan J.; Hyla, Patrick H.; and Patience, Donald, to Kendall Company, The. Hydrogel wound dressing. B1 4,909,244, 7-5-94, Cl 602-48.000.

Staubli-Verdol S.A.: *See*—
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Valls, William H.: *See*—
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LIST OF DESIGN PATENTEES

Abbott, Cody; Bruns, David; and Huffman, Jan. Multi-use table. 348,360, 7-5-94, Cl. D6-337.000.

Adams, Andre; and Bryant, Griffin. Combined transmitter and receiver for locating lost remote control units. 348,410, 7-5-94, Cl. D10-104.000.

Ady, Roger W. *See*—
Papademetriou, Andronicos; Groves, William R.; Ady, Roger W.; Gorenz, Harold J., Jr.; Richardson, C. Patrick; Soren, Leonid; Esslinger, Hartmut; Harden, Daniel K., and Friesen, Mark B., 348,444, Cl. D14-106.000.

Allen, Charles. Blunt nose knife. 348,380, 7-5-94, Cl. D7-649.000.

America Safety Flight System, Inc.: *See*—
Stachowiak, Krzysztof, 348,506, Cl. D23-245.000.

American Cord and Webbing Co., Inc.: *See*—
Krauss, Mark J., 348,385, Cl. D8-367.000.

AMFAG S.r.l.: *See*—
Bosio, Orlando, 348,505, Cl. D23-223.000.

Apple Computer, Inc.: *See*—
Riley, Raymond W., Shen, David W.; and Peart, Stephen, 348,452, Cl. D14-115.000.
Riley, Raymond W.; and Shen, David W., 348,453, Cl. D14-115.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Nemoto, Masaaki, 348,356, Cl. D3-267.000.

Ashby, Kent, to Proform Fitness Products, Inc. Combined handle and console unit for an exercise machine. 348,493, 7-5-94, Cl. D21-192.000.

Ashby, Kent, to Proform Fitness Products, Inc. Treadmill base. 348,494, 7-5-94, Cl. D21-192.000.

AT&T Bell Laboratories: *See*—
Johnson, Chris G.; Schaffeld, John H.; Schneebeli, Richard J., Jr.; and Sylvester, Gordon E., 348,469, Cl. D14-240.000.

Axxess Entry Technologies: *See*—
Neitzke, William J.; and Hagen, G. Lynn, 348,393, Cl. D9-418.000.

Badger Meter, Inc.: *See*—
Karsten, Lee, 348,384, Cl. D8-363.000.

Bahlijanakis, Michael. Video game console. 348,487, 7-5-94, Cl. D21-13.000.

Bale, Bart, to Lisco, Inc. Breast pump adapter. 348,513, 7-5-94, Cl. D24-109.000.

Bechard, Craig A.; and Maxham, Ellery E., to DMD Network Co. Lubricant purging housing for a dental handpiece. 348,516, 7-5-94, Cl. D24-177.000.

Beecher, Jon, to Starkey Laboratories, Inc. Acoustic environment module. 348,361, 7-5-94, Cl. D6-365.000.

Belisle, William W., to Holophane Company, Inc. Suspended luminaire. 348,532, 7-5-94, Cl. D26-85.000.

Bell, Daniel E. *See*—
Mortenson, Larry R.; and Bell, Daniel E., 348,500, Cl. D21-234.000.

Bertolini, Peter, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Combined jar and cap. 348,395, 7-5-94, Cl. D9-529.000.

Blackwell, Elmer; and Samuelson, Bruce E., to Minnesota Mining and Manufacturing. Tape dispenser. 348,484, 7-5-94, Cl. D19-69.000.

Blackwell, Rebecca H. Visor. 348,349, 7-5-94, Cl. D2-872.000.

Bollenbacher, John E., to Kohler Co. Skirt for a plumbing fitting. 348,509, 7-5-94, Cl. D6-550.000.

Booda Products, Inc.: *See*—
O'Rourke, Anthony, 348,547, Cl. D30-160.000.

Boothroyd, Allen; and Ward, Anthony P., to Cambridge Product Design Limited. Loudspeaker. 348,467, 7-5-94, Cl. D14-213.000.

Bosio, Orlando, to AMFAG S.r.l. Shower cock-fitting for kitchen sink. 348,505, 7-5-94, Cl. D23-223.000.

Breg, Inc.: *See*—
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Bridgestone/Firestone, Inc.: *See*—
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Bronstein, Jerry: *See*—
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Brooks, Clay. Combined action doll and game ball. 348,490, 7-5-94, Cl. D21-150.000.

Brossardt, Ansgar; Muller, Norbert; Munch, Udo; and Zachrai, Jurgen, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Housing for a command panel system used to monitor and control work processes within a designated area. 348,436, 7-5-94, Cl. D14-100.000.

Brown, Michael; Helstab, Edmond J.; Kurtz, Michael; and Johnson, John, to Northern Telecom Limited. Handheld telephone. 348,458, 7-5-94, Cl. D14-138.000.

Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Mirror. 348,358, 7-5-94, Cl. D6-300.000.

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Burnett, Kenneth, to Midwest Tropical, Inc. Illuminated rising bubble display. 348,535, 7-5-94, Cl. D26-93.000.

Cagle, David. Back massager. 348,519, 7-5-94, Cl. D24-211.000.

Cambridge Product Design Limited: *See*—
Boothroyd, Allen; and Ward, Anthony P., 348,467, Cl. D14-213.000.

Campbell, David W. F., to Silcom Research Limited. Pager. 348,462, 7-5-94, Cl. D14-191.000.

Cannella, John: *See*—
Cannella, John J., 348,542, Cl. D28-38.000.

Cannella, John J., to Cannella, John; and Cannella, Sandra. Curling iron holder. 348,542, 7-5-94, Cl. D28-38.000.

Cannella, Sandra: *See*—
Cannella, John J., 348,542, Cl. D28-38.000.

Canon Kabushiki Kaisha: *See*—
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Cari-All Inc.: *See*—
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Carlin, Ira: *See*—
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Carrin, Thomas P.: *See*—
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Central Moloney, Inc.: *See*—
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Cha, Gang H., to Gold Star Co., Ltd. Video cassette recorder. 348,457, 7-5-94, Cl. D14-135.000.

Chan, Raymond, to IDT International Limited. Electronic data organizer. 348,437, 7-5-94, Cl. D14-100.000.

Chefaro International B.V.: *See*—
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Chen, Paul. Wall clock. 348,399, 7-5-94, Cl. D10-22.000.

Chen, Paul P. Wall clock. 348,398, 7-5-94, Cl. D10-21.000.

Chen, Paul P. Wall clock. 348,400, 7-5-94, Cl. D10-22.000.

Cherry, Cynthia A. Combined stand and model for teaching manicure. 348,482, 7-5-94, Cl. D19-59.000.

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Nair, Parameswaran B.; Choudhuri, Kumar S.; Evans, John C.; Hanna, James L.; and Price, James F., 348,440, Cl. D14-105.000.

Chow, Chi K. W.; and Lau, Chung P. C., to Vtech Industries, Inc. Housing for an electronic instructional game apparatus. 348,483, 7-5-94, Cl. D19-62.000.

Claveau, Gerard A. Tool for loading and unloading cartridges from a firearm magazine. 348,503, 7-5-94, Cl. D22-108.000.

Cogburn, Denver L. Combined hanger and pulley for cord. 348,386, 7-5-94, Cl. D8-373.000.

Colgate-Palmolive Company: *See*—
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Cox, William H.; and Moore, Robert. Mobile vehicle cleaning organizer. 348,550, 7-5-94, Cl. D34-23.000.

Crane, Joan T. Cupcake holder. 348,378, 7-5-94, Cl. D7-610.000.

Crary, Michael B., to Quicksilver Express Courier. Console for use in cars or trucks for dispatching messages by interconnected data and radio systems. 348,450, 7-5-94, Cl. D14-114.000.

Crawford, John C., to Colgate-Palmolive Company. Soap bar. 348,539, 7-5-94, Cl. D28-8.100.

Crawford, John C., to Colgate-Palmolive Company. Soap bar. 348,540, 7-5-94, Cl. D28-8.100.

Crawford, John C., to Colgate-Palmolive Company. Soap bar. 348,541, 7-5-94, Cl. D28-8.100.

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Cyll, Kenneth M.; Ekowicki, Robert; and Weymouth, Carl, to GTE Control Devices Incorporated. Recessed lighting thermal protector. 348,434, 7-5-94, Cl. D13-160.000.

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Dallaire, Raymond; and Dallaire, Dominique, to Dallaire Industries Ltd. Door horizontal rail extrusion. 348,525, 7-5-94, Cl. D25-123.000.

Dandurand, Kim A. Knife sharpening cutting board. 348,374, 7-5-94, Cl. D7-698.000.

Davis, Joel K., to GTC Properties, Inc. Alarm clock. 348,397, 7-5-94, Cl. D10-15.000.

DeKleine, Paul C.; and Perkins, Rick A., to Progressive Technology in Lighting, Inc. Compact fluorescent lamp assembly. 348,528, 7-5-94, Cl. D26-3.000.

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Denton, Dana D. Flexible duct for a vehicle air cleaner. 348,511, 7-5-94, Cl. D23-266.000.

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Dexter, Timothy J. Truck bed cargo restraining net. 348,421, 7-5-94, Cl. D12-98.000.

Diep, Michael. Abdominal muscle exerciser. 348,491, 7-5-94, Cl. D21-191.000.

Digital Biometrics, Inc.: *See*—
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Helfer, Farrel B.; Kim, Dong K.; Morgan, John G.; Shemenski, Robert M.; Sinopoli, Italo M.; Jeanpierre, Guy; and Nguyen, Gia V., H1333, Cl. 428-294.000.
Ohno, Shigeru: *See—*
Kuno, Koichi; Yoshida, Tetsuo; Okada, Masahiro; and Ohno, Shigeru, H1336, Cl. 430-522.000.
Okada, Masahiro: *See—*
Kuno, Koichi; Yoshida, Tetsuo; Okada, Masahiro; and Ohno, Shigeru, H1336, Cl. 430-522.000.
Philbeck, Thomas E., Jr.: *See—*
Horton, Melvin S.; and Philbeck, Thomas E., Jr., H1328, Cl. 248-276.000.
Plichta, Edward J.; and Behl, Wishvender K., to United States of America, Army. Method of making a teflon bonded cathode for use in a high temperature cell and high temperature cell including said cathode. H1334, 7-5-94, Cl. 429-103.000.
Plichta, Edward J.; and Behl, Wishvender K., to United States of America, Army. High temperature molten salt thermal cell. H1335, 7-5-94, Cl. 429-199.000.
Rendall, William A.: *See—*
Moir, Michael E.; and Rendall, William A., H1327, Cl. 423-228.000.
Shell Oil Company: *See—*
Chin, Steven S., H1338, Cl. 524-379.000.

Doering, Egon L.; Unger, Phillip E.; and Alsandor, Eugene, H1325, Cl. 48-197.00R

Shemenski, Robert M. *See*—
Helfer, Farrel B.; Kim, Dong K.; Morgan, John G.; Shemenski, Robert M.; Sinopoli, Italo M.; Jeanpierre, Guy; and Nguyen, Gia V., H1333, Cl. 428-294.000

Sinopoli, Italo M. *See*—
Helfer, Farrel B.; Kim, Dong K.; Morgan, John G.; Shemenski, Robert M.; Sinopoli, Italo M.; Jeanpierre, Guy; and Nguyen, Gia V., H1333, Cl. 428-294.000

Skudera, William J., Jr., to United States of America, Army. Wide bandwidth, high resolution circuitry for phase shifted frequency detection. H1331, 7-5-94, Cl. 324-76.230

Unger, Phillip E. *See*—
Doering, Egon L.; Unger, Phillip E.; and Alsandor, Eugene, H1325, Cl. 48-197.00R

United States of America
Air Force. *See*—
Horton, Melvin S.; and Philbeck, Thomas E., Jr., H1328, Cl. 248-276.000

Army. *See*—
Plichta, Edward J.; and Behl, Wishvender K., H1334, Cl. 429-103.000
Plichta, Edward J.; and Behl, Wishvender K., H1335, Cl. 429-199.000
Skudera, William J., Jr., H1331, Cl. 324-76.230

Navy. *See*—
Hoeppel, Ronald E., H1337, Cl. 435-313.000
Lefebvre, Paul J., H1326, Cl. 137-486.000

Williams, Earl G. Method of measuring structural intensities in vibrating plate radiators. H1330, 7-5-94, Cl. 367-8.000

Yetter, Jerry J.; and Broaddus, Charles D. Disposable sanitary garment. H1340, 7-5-94, Cl. 604-376.000

Yoshida, Tetsuo. *See*—
Kuno, Koichi; Yoshida, Tetsuo; Okada, Masahiro; and Ohno, Shigeru, H1336, Cl. 430-522.000

CLASSIFICATION OF PATENTS

ISSUED JULY 5, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 5,325,537
2.5 5,325,538
195.2 5,325,539
209.3 5,325,540
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378 5,325,547
638 5,325,548
679 5,325,549

CLASS 5
89.1 5,325,550
408 5,325,552
453 5,325,551
475 5,325,553
498 5,325,554
500 5,325,555

CLASS 8
94.18 5,326,377
151 5,325,556
182 5,326,378

CLASS 14
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69.5 5,325,558

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302 5,325,566

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530 5,325,570

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276 5,325,572

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897.2 5,325,585
898.062 5,325,586

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216 5,325,590
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254 5,325,592
279.6 5,325,593
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514 5,325,597

CLASS 33
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517 5,325,599

CLASS 34
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589 5,325,606

CLASS 36
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34 R 5,325,612
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97 5,325,614

CLASS 37
455 5,325,615

CLASS 40
299 5,325,616

CLASS 42
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CLASS 43
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114 5,325,625
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CLASS 47
84 5,325,627

CLASS 49
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CLASS 51
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169.7 5,325,644
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309.15 5,325,647
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248 5,326,383

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CLASS 68
12.04 5,325,677

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200 5,325,688
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794 5,325,723
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861.61 5,325,727
861.91 5,325,729
863 5,325,730
863.83 5,325,731
866.5 5,325,734

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483 R 5,325,733
502.2 5,325,735
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594.6 5,325,738
606 R 5,325,739

CLASS 75
231 5,326,384

CLASS 81
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13 5,325,748
142 5,325,749
149 5,325,750

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CLASS 91
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CLASS 95
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CLASS 96
6 5,326,386

CLASS 99
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421 R 5,325,767
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37 5,325,771

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CLASS 132
116 5,325,878

CLASS 134
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CLASS 137
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CLASS 156
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137 5,326,411
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659 1 5,326,431

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47 1 5,326,432

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199 5,326,435

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477 5,325,911

CLASS 165

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104 12 5,325,916

CLASS 166

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CLASS 173

211 5,325,929

CLASS 174

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325 3 5,325,932

CLASS 177

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139 5,326,939

CLASS 178

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211 5,325,935

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CLASS 182

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CLASS 187

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CLASS 188

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294 5,325,944
341 5,325,945

CLASS 192

3 31 5,325,946
54 5,325,947
70 14 5,325,948
70 25 5,325,949
415 5,325,950

CLASS 193

1 5,325,951

CLASS 194

203 5,325,952

CLASS 198

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382 5,325,954
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750 5,325,957

CLASS 200

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61 45 R 5,326,945
144 R 5,326,946
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CLASS 203

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CLASS 204

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157 15 5,326,440
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290 R 5,326,444
305 5,326,446
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402 5,326,448
403 5,326,449
415 5,326,450
416 5,326,451
420 5,326,452

CLASS 205

50 5,326,453
67 5,326,454
77 5,326,455

CLASS 206

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268 5,325,963
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372 5,325,966
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532 5,325,968
546 5,325,969
576 5,325,970

CLASS 208

39 5,326,456
42 5,326,457
89 5,326,462
5,326,463
110 5,326,464
120 5,326,465
5,326,466
262 5 5,326,467

CLASS 209

417 5,325,971
552 5,325,972

CLASS 210

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743 5,326,482

CLASS 211

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60 1 5,325,974
189 5,325,975

CLASS 215

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307 5,325,977

CLASS 219

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121 56 5,326,955
121 69 5,326,956
137 WM 5,326,957
137 31 5,326,958

CLASS 220

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86 2 5,325,979
212 5,325,980
5,325,981
212 5 5,325,982
277 5,325,983
342 5,325,984
378 5,325,985
400 5,325,986
409 5,325,987
411 5,325,988
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739 5,325,991

CLASS 221

63 5,325,992
211 5,325,993

CLASS 222

54 5,325,994
81 5,325,995
133 5,325,996
175 5,325,997
185 5,325,998
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402 1 5,326,002
460 5,326,003

CLASS 223

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CLASS 224

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253 5,326,005
321 5,326,007

CLASS 225

93 5,326,008

CLASS 226

97 5,326,009
172 5,326,010
181 5,326,011

CLASS 227

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176 5,326,013

CLASS 228

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110 1 5,326,014
264 5,326,016

CLASS 229

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109 5,326,021
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214 5,326,024

CLASS 235

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493 5,326,966

CLASS 236

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49 3 5,326,028
51 5,326,027
68 D 5,326,029

CLASS 239

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CLASS 241

74 5,326,038

CLASS 242

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563 5,326,041

CLASS 244

3 280 5,326,049
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134 D 5,326,051
135 A 5,326,052
136 5,326,053
158 R 5,326,054

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231 9 5,326,060
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451 5,326,066
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682 5,326,068

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CLASS 251

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285 5,326,075
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46 006 5,326,486
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321 5,326,499
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CLASS 254

219 5,326,080

CLASS 257

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CLASS 261

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CLASS 264

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225 5,326,521
232 5,326,522
257 5,326,523
294 5,326,524

CLASS 266

44 5,326,081

CLASS 267

64 27 5,326,082
139 5,326,083
221 5,326,084

CLASS 269

20 5,326,085
32 B1 4,905,973
54.5 5,326,086
182 5,326,076

CLASS 270

58 5,326,087

CLASS 271

3 1 5,326,088
10 5,326,091
162 5,326,089
5,326,090
272 5,326,092
306 5,326,093

CLASS 273

1 5 R 5,326,094
32 H 5,326,096
32 R 5,326,095
67 R 5,326,097
73 R 5,326,098
80 2 5,326,099
83 5,326,100
84 R 5,326,101
85 D 5,326,102
118 R 5,326,103
138 A 5,326,104
167 A 5,326,105
167 H 5,326,106
5,326,107
355 5,326,108
411 5,326,109
424 5,326,110

CLASS 275

315 5,326,999

CLASS 277

37 5,326,111
153 5,326,112

CLASS 279

2 09 5,326,113
4 05 5,326,114

CLASS 280

11 19 5,326,115
47 371 5,326,116
79 2 5,326,117
205 5,326,118
226 1 5,326,119
250 1 5,326,120
282 5,326,121
288 4 5,326,122
5,326,124
434 5,326,123
602 5,326,126
632 5,326,127
656 5,326,128
707 5,326,129
728 A 5,326,131
732 5,326,132
735 5,326,133
5,326,146
752 5,326,130
822 5,326,134
850 5,326,135

CLASS 283

58 5,326,136

CLASS 285

55 5,326,137
110 5,326,138
197 5,326,139

CLASS 292

47 5,326,140
66 5,326,141

CLASS 293

115 5,326,142

CLASS 294

1 4 5,326,143
19 1 5,326,144
19 2 5,326,145
162 5,326,147

CLASS 296

190 5,326,148
224 5,326,149

CLASS 297

218 5,326,150
219 1 5,326,151
229 5,326,152
232 5,326,153
411 36 5,326,154
452 38 5,326,155

CLASS 298

24 5,326,156

CLASS 301

110 5 5,326,157

CLASS 303

3 5,326,158
38 5,326,159
113 2 5,326,160
119 2 5,326,161

CLASS 307

10 1 5,327,014
128 5,327,016
243 5,327,017
244 5,327,018
272 1 5,327,019
290 5,327,020
360 5,327,021
443 5,327,022
465 5,327,023
5,327,024
475 5,327,025
482 5,327,026
490 5,327,027
491 5,327,028
5,327,029
498 5,327,030
603 5,327,031

CLASS 310

36 5,327,032
40 MM 5,327,033
67 R 5,327,034
81 5,327,035
89 5,327,036
232 5,327,037
306 5,327,038
313 B 5,327,039
323 5,327,040
328 5,327,041

CLASS 312

265 1 5,326,162

CLASS 313

25 5,327,042
363 5,327,050
407 5,327,043
433 5,327,044
631 5,327,045

CLASS 315

49 5,327,372
52 5,327,046
194 5,327,047
240 5,327,048
248 5,327,049
368 28 5,327,051

CLASS 318

254 5,327,052

5,327,053
255 5,327,054
366 5,327,055
563 5,327,056
568 11 5,327,057
5,327,058
632 5,327,059
640 5,327,060
649 5,327,061
687 5,327,062
696 5,327,063
801 5,327,064

CLASS 320

2 5,327,065
5,327,066
5,327,067
13 5,327,068

CLASS 322

10 5,327,069

CLASS 323

222 5,327,070
299 5,327,071
313 5,327,072
362 5,327,073

CLASS 324

158 1 5,327,074
5,327,075
5,327,076
207 21 5,327,077
207 24 5,327,078
219 5,327,079
5,327,080
230 5,327,081
231 5,327,082
239 5,327,083
301 5,327,084
307 5,327,085
5,327,086
309 5,327,087
5,327,088
345 5,327,089
378 5,327,090
627 5,327,091

CLASS 328

167 5,327,092

CLASS 329

308 5,327,093

CLASS 330

47 5,327,094
75 5,327,095
151 5,327,096
254 5,327,097
5,327,098
5,327,099
255 5,327,100
284 5,327,101
304 5,327,102

CLASS 331

1 A 5,327,103
68 5,327,104
94 1 5,327,105
109 5,327,106

CLASS 333

139 5,327,107
203 5,327,108
206 5,327,109
222 5,327,110
260 5,327,111

CLASS 335

78 5,327,112

CLASS 336

197 5,327,113

CLASS 340

286 06 5,327,114
309 15 5,327,115
443 5,327,116
525 5,327,117
572 5,327,118
629 5,327,119
825 460 5,327,120
825 51 5,327,121
825 7 5,327,122
916 5,327,123

CLASS 341

58 5,327,124
61 5,327,125
101 5,327,126
102 5,327,127
5,327,128
120 5,327,129
133 5,327,130
136 5,327,131
141 5,327,132
143 5,327,133
144 5,327,134
156 5,327,135
159 5,327,136
168 5,327,137
172 5,327,138

CLASS 342

22 5,327,139
25 5,327,140
159 5,327,141
192 5,327,142
382 5,327,143
387 5,327,144
453 5,327,145

CLASS 343

700 MS 5,327,146
5,327,147
5,327,148
720 5,327,149
771 5,327,150
830 5,327,151
853 5,327,152

CLASS 345

5 5,327,153
7 5,327,154
39 5,327,155
113 5,327,156
119 5,327,157
126 5,327,158
153 5,327,159
156 5,327,160
157 5,327,161
161 5,327,162
173 5,327,163
174 5,327,164

CLASS 346

76 PH 5,327,165
5,327,166
108 5,327,167
5,327,338
136 5,327,168
155 5,327,169
160 5,327,170
5,327,339

CLASS 348

8 5,327,230
79 5,327,231
97 5,327,533
100 5,327,247
152 5,327,233
188 5,327,226
223 5,327,171
231 Re 34,654
246 5,327,246
378 5,327,172
399 5,327,234
412 5,327,173
5,327,232
441 5,327,235
468 5,327,174
473 5,327,238
476 5,327,237
489 5,327,227
495 5,327,236
526 5,327,175
564 5,327,176
565 5,327,243
586 5,327,177
594 5,327,244
606 5,327,241
5,327,242
607 5,327,239
5,327,240
647 5,327,228
723 5,327,245
742 5,327,229

CLASS 351

158 5,327,178
161 5,327,179
165 5,327,180
169 5,327,181

CLASS 352

27 5,327,182

CLASS 354

129 5,327,183
195 1 5,327,184
228 5,327,185
266 5,327,186
275 5,327,187
295 5,327,188
319 5,327,189
402 5,327,190
5,327,191
408 5,327,192
435 5,327,193

CLASS 355

85 5,327,194
113 5,327,195
208 5,327,196
213 5,327,197
236 5,327,198
245 5,327,199
274 5,327,200
278 5,327,201
282 5,327,202
283 5,327,203
284 5,327,204
311 5,327,205
5,327,207
313 5,327,206
326 R 5,327,208
327 5,327,209

CLASS 356

218 5,327,210
301 5,327,211
350 5,326,163
5,327,212
5,327,213
5,327,214
5,327,215
351 5,327,216
353 5,327,217
355 5,327,220
5,327,221
356 5,327,218
5,327,222
359 5,327,219
5,327,223
445 5,327,225

CLASS 358

261 4 5,327,248
338 5,327,249
401 5,327,250
404 5,327,251
406 5,327,252
426 5,327,253
5,327,254
445 5,327,256
447 5,327,257
448 5,327,258
5,327,259
5,327,260
449 5,327,261
462 5,327,262
471 5,327,263
515 5,327,264
527 5,327,265

CLASS 359

24 5,327,266
59 5,327,267
5,327,268
63 5,327,269
5,327,270
75 5,327,271
5,327,272
104 5,327,273
107 5,327,274
117 5,327,275
125 5,327,276
140 5,327,277
156 5,327,278
180 5,327,279
216 5,327,280
270 5,327,281
341 5,327,282
434 5,327,283
479 5,327,284
483 5,327,285
561 5,327,286
599 5,327,287
606 5,327,288
634 5,327,289
692 5,327,290
716 5,327,291
827 5,327,292
845 5,327,293
872 5,327,294

CLASS 360

13 5,327,295
15 5,327,296
46 5,327,297
48 5,327,298
5,327,299
51 5,327,300
53 5,327,301
65 5,327,302
67 5,327,303
73 05 5,327,304
74 5 5,327,305
96 5 5,327,306
5,327,307
97 01 5,327,308
99 02 5,327,309
103 5,327,310
5,327,311
106 5,327,312
113 5,327,313
133 5,327,314
137 5,327,315

CLASS 361

55 5,327,318
56 5,327,316
88 5,327,317
118 5,327,319
152 5,327,320
617 5,327,321
681 5,327,322
685 5,327,323
707 5,327,324
760 5,327,325
5,327,326
784 5,327,327

CLASS 362

26 5,327,328
61 5,327,329
5,327,330
176 5,327,331
392 5,327,332

CLASS 363

20 5,327,334
21 5,327,333
39 5,327,335
97 5,327,336
134 5,327,337

CLASS 364

57 5,327,361
401 5,327,340
413 01 5,327,341
419 1 5,327,342
424 01 5,327,343
424 03 5,327,344
424 07 5,327,345
5,327,347
426 02 5,327,346
449 5,327,348
468 5,327,349
474 05 5,327,351
474 09 5,327,353
474 21 5,327,350
474 28 5,327,352
478 5,327,354
483 5,327,355
498 5,327,356
502 5,327,357
507 5,327,358
550 5,327,359
571 07 5,327,360
580 5,327,362
5,327,363
716 5,327,364
717 5,327,365
724 18 5,327,366
726 5,327,367
786 5,327,368
787 5,327,369
822 5,327,370

CLASS 365

1 5,327,371
112 5,327,373
145 5,327,374
149 5,327,375
154 5,327,376
156 5,327,377
185 5,327,378
190 5,327,379
195 5,327,380
200 5,327,381
210 5,327,382
218 5,327,383
5,327,384
5,327,385
221 5,327,386
222 5,327,387
226 5,327,388
230 5,327,390
230 03 5,327,389
233 5,327,391
5,327,392
5,327,393
233 5 5,327,394
238 5 5,327,395

CLASS 366

127 5,326,164
165 5,326,165
5,326,166
247 5,326,167
343 5,326,168
349 5,326,169

CLASS 367

90 5,327,396
103 5,327,397
108 5,327,398
190 5,327,399

CLASS 368

19 5,327,400
37 5,327,401
46 5,327,402
107 5,327,403
201 5,327,404

CLASS 369

32 5,327,406
44 25 5,327,407
44 26 5,327,408
59 5,327,409
44 28 5,327,410
59 5,327,411
75 2 5,327,412
112 5,327,413
116 5,327,414
121 5,327,415
199 5,327,416
219 5,327,417

CLASS 370

58 1 5,327,418
58 2 5,327,419
60 5,327,420
60 1 5,327,421
63 5,327,422
76 5,327,423
82 5,327,429
84 5,327,430
85 1 5,327,425
85 13 5,327,424
5,327,426
85 14 5,327,427
85 5 5,327,431
94 2 5,327,428
95 3 5,327,432
100 1 5,327,433
105 1 5,327,434

CLASS 371

16 1 5,327,435
25 1 5,327,437
37 1 5,327,436
5,327,438
43 5,327,439
5,327,440
5,327,441

CLASS 372

35 5,327,442
36 5,327,443
44 5,327,444
45 5,327,445
61 5,327,446
92 5,327,447
94 5,327,448
95 5,327,449
96 5,327,450
98 5,327,451

CLASS 373

27 5,327,452
74 5,327,453
133 5,327,454

CLASS 374

2 5,326,170
121 5,326,171
126 5,326,172
128 5,326,173
134 5,326,174

CLASS 375

1 5,327,455
10 5,327,457
12 5,327,458
14 5,327,459
5,327,460
27 5,327,461
61 5,327,462
76 5,327,463
99 5,327,464
104 5,327,465
106 5,327,466
107 5,327,467
5,327,468

CLASS 376

272 5,327,469
438 5,327,470
439 5,327,471
5,327,472

CLASS 377

21 5,327,473

CLASS 378

20 5,327,474
34 5,327,475
98 4 5,327,476
168 5,327,477

CLASS 379

40 5,327,478
52 5,327,479
57 5,327,480
58 5,327,481
61 5,327,482
5,327,483
93 5,327,484
95 5,327,485
96 5,327,486
100 5,327,487
201 5,327,488
207 5,327,489
216 5,327,490
265 5,327,491
361 5,327,492
372 5,327,493
387 5,327,494
410 5,327,495

CLASS 380

6 5,327,496
25 5,327,497

CLASS 381

51 5,327,498
68 5,327,499
68 6 5,327,500
96 5,327,504
99 5,327,505
169 5,327,506
183 5,327,507

CLASS 382

7 5,327,508
17 5,327,509
44 5,327,501
56 5,327,502
58 5,327,503
5,327,510

CLASS 383

22 5,326,175
103 5,326,176

CLASS 384

12 5,326,177
192 5,326,178

CLASS 385

1 5,327,511
3 5,327,512
114 5,327,513
115 5,327,514
123 5,327,515
5,327,516
137 5,327,517

CLASS 395

2 2 5,327,518
2 28 5,327,519
5,327,520
2 81 5,327,521
27 5,327,522
95 5,327,523
108 5,327,524
114 5,327,525
115 5,327,526
133 5,327,527
155 5,327,528
5,327,529
162 5,327,530
164 5,327,531
200 5,327,532
5,327,534
275 5,327,535
325 5,327,538
5,327,539
5,327,540
375 5,327,536
5,327,537
5,327,543
400 5,327,541
5,327,542
425 5,327,545
5,327,546
5,327,547
5,327,548
5,327,549
500 5,327,544
575 5,327,550
5,327,551
5,327,552
5,327,553
600 5,327,554
5,327,555
5,327,556
650 5,327,557
5,327,558
700 5,327,559
5,327,560
5,327,561
5,327,562
5,327,563
5,327,564
5,327,565
775 5,327,566
5,327,567
800 5,327,568
5,327,569
5,327,570
5,327,571
5,327,579

CLASS 400

104 5,326,181
120 5,326,179
124 5,326,180
223 5,326,182
279 5,326,183
624 5,326,184

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CLASS 401

88 5,326,185

CLASS 403

378 5,326,186
402 5,326,187

CLASS 404

25 5,326,188

CLASS 405

119 5,326,189
5,326,190
124 5,326,191
258 5,326,192
286 5,326,193

CLASS 406

13 5,326,194

CLASS 407

32 5,326,195

CLASS 408

56 5,326,196
91 5,326,197
161 5,326,198
226 5,326,199

CLASS 409

137 5,326,200
251 5,326,201

CLASS 410

3 5,326,202
110 5,326,203
143 5,326,204

CLASS 411

43 5,326,205
113 5,326,206
357 5,326,207
437 5,326,208

CLASS 412

1 5,326,209

CLASS 414

17 5,326,210
217 5,326,211
347 5,326,212
392 5,326,213
495 5,326,214
563 5,326,215
5,326,216
635 5,326,217
733 5,326,218
797.6 5,326,219

CLASS 415

2.1 5,326,220
191 5,326,221
213.1 5,326,222

CLASS 416

46 5,326,223
97 R 5,326,224
179 5,326,225
243 5,326,226

CLASS 417

48 5,326,227
151 5,326,228
201 5,326,229
218 5,326,230
271 5,326,231
319 5,326,232
350 5,326,233
393 5,326,234
410 R 5,326,235
476 5,326,236
511 5,326,237

CLASS 418

36 5,326,238
88 5,326,239

CLASS 419

23 5,326,525
38 5,326,526

CLASS 420

126 5,326,527
411 5,326,528

CLASS 422

7 5,326,529
22 5,326,530
82.06 5,326,531
100 5,326,532
101 5,326,533
102 5,326,534
5,326,535
111 5,326,536
173 5,326,537
184 5,326,538
186.3 5,326,539
205 5,326,540
254 5,326,541
291 5,326,542
292 5,326,543
295 5,326,544

CLASS 423

62 5,326,545
213.2 Re 34,655
241 5,326,546
349 5,326,547
554 5,326,548
594 5,326,549
652 5,326,550

CLASS 424

1.45 5,326,551
4 5,326,552
5 5,326,553
49 5,326,554
71 5,326,555
73 5,326,556
78.03 5,326,557
85.1 5,326,558
85.2 5,326,559
93.1 5,326,560
94.61 5,326,561
94.64 5,326,562
197.1 5,326,563
401 5,326,564
5,326,565
5,326,566
405 5,326,567
426 5,326,568
440 5,326,569
458 5,326,570
473 5,326,571
484 5,326,572
490 5,326,573

CLASS 425

1 5,326,240
7 5,326,241
78 5,326,242
116 5,326,243
127 5,326,244
131.1 5,326,245
145 5,326,246
185 5,326,247
187 5,326,248
183 5,326,249
541 5,326,250
549 5,326,251

CLASS 426

5 5,326,574
87 5,326,575
107 5,326,576
124 5,326,577
231 5,326,578
417 5,326,579
548 5,326,580
607 5,326,581
613 5,326,582
615 5,326,583

CLASS 427

8 5,326,587
68 5,326,588
79 5,326,589
140 5,326,590
162 5,326,591
163 5,326,585
256 5,326,592
301 5,326,626
307 5,326,593
327 5,326,594
376.2 5,326,595
379 5,326,596
448 5,326,597
473 5,326,598
478 5,326,599
487 5,326,586
491 5,326,584

CLASS 428

1 5,326,600
34.7 5,326,601
34.8 5,326,613
35.7 5,326,602
5,326,603
36.2 5,326,604
40 5,326,605
49 5,326,606
65 5,326,607
5,326,608
76 5,326,609
78 5,326,610
5,326,611
100 5,326,612
107 5,326,614
116 5,326,615
131 5,326,616
136 5,326,617
141 5,326,618
164 5,326,619
195 5,326,620
5,326,621
200 5,326,622
210 5,326,623
213 5,326,624
215 5,326,625
216 5,326,627
222 5,326,628
224 5,326,629
231 5,326,630
256 5,326,631
262 5,326,632
288 5,326,633
314.4 5,326,634
323 5,326,635
5,326,636
336 5,326,637
339 5,326,638
402 5,326,639
403 5,326,640
421 5,326,641
469 5,326,642
472.2 5,326,643
514 5,326,644
552 5,326,645
561 5,326,646
605 5,326,647
610 5,326,648
698 5,326,649

CLASS 429

27 5,326,650
96 5,326,651
127 5,326,652
162 5,326,653
167 5,326,654
178 5,326,655
5,326,656
192 5,326,657
194 5,326,658

CLASS 430

5 5,326,659
19 5,326,660
20 5,326,661
23 5,326,663
49 5,326,664
110 5,326,662
192 5,326,665
201 5,326,666
203 5,326,667
250 5,326,668
283 5,326,669
296 5,326,670
311 5,326,671
322 5,326,672
5,326,673
325 5,326,674
326 5,326,675
338 5,326,676
347 5,326,677
495 5,326,678
5,326,679
517 5,326,686
522 5,326,687
527 5,326,688
530 5,326,689
544 5,326,680
558 5,326,681
5,326,682
596 5,326,683
617 5,326,684

CLASS 431

2 5,326,252
7 5,326,253
115 5,326,254
215 5,326,255
255 5,326,256
329 5,326,257

CLASS 432

5 5,326,258

CLASS 433

8 5,326,259
11 5,326,260
141 5,326,261
197 5,326,262
215 5,326,685
224 5,326,263
5,326,264

CLASS 434

11 5,326,265
15 5,326,268
44 5,326,266
151 5,326,267
338 5,326,269
362 5,326,270

CLASS 435

6 5,326,691
5,326,692
7.24 5,326,696
25 5,326,697
29 5,326,690
42 5,326,693
69.4 5,326,694
70.1 5,326,695
97 5,326,701
129 5,326,702
231 5,326,698
240.2 5,326,699
5,326,700
262.5 5,326,703
280 5,326,705
283 5,326,706

CLASS 436

86 5,326,707
92 5,326,708

CLASS 437

8 5,326,709
31 5,326,710
33 5,326,711
40 5,326,712
41 5,326,713
52 5,326,714
70 5,326,715
89 5,326,718
92 5,326,716
105 5,326,717
119 5,326,719
130 5,326,720
131 5,326,721
186 5,326,722
192 5,326,723
200 5,326,724
225 5,326,725
228 5,326,726
229 5,326,727

CLASS 439

72 5,326,271
86 5,326,272
92 5,326,273
157 5,326,274
189 5,326,275
326 5,326,276
327 5,326,277
404 5,326,278
540 5,326,279
581 5,326,280
607 5,326,281
5,326,282
622 5,326,283
676 5,326,284
717 5,326,285
751 5,326,286
752 5,326,287
851 5,326,288
5,326,289
862 5,326,290

CLASS 440

61 5,326,291
62 5,326,292
76 5,326,293
79 5,326,294
89 5,326,295

CLASS 441

60 5,326,296
89 5,326,297

CLASS 445

24 5,326,298

CLASS 446

46 5,326,299
74 5,326,300
176 5,326,301
288 5,326,302
407 5,326,303

CLASS 449

50 5,326,304

CLASS 450

57 5,326,305

CLASS 452

12 5,326,306
58 5,326,307
80 5,326,308
106 5,326,309
133 5,326,310
184 5,326,311

CLASS 453

57 5,326,312

CLASS 454

18 5,326,313
66 5,326,314
126 5,326,315
187 5,326,316
354 5,326,317
365 5,326,318

CLASS 455

13.1 5,327,572
14 5,327,573
33.2 5,327,574
5,327,575
5,327,576
34.2 5,327,577
5,327,578
35.1 5,327,580
51.2 5,327,581
76 5,327,582
89 5,327,583
5,327,584

CLASS 460

119 5,326,319
149 5,326,320

CLASS 464

2 5,326,321
11 5,326,322
29 5,326,323
180 5,326,324
5,326,325

CLASS 472

118 5,326,326
119 5,326,327
136 5,326,328

CLASS 473

47 5,326,329

CLASS 474

13 5,326,330
144 5,326,331
249 5,326,332

CLASS 475

5,326,333
330 5,326,334

CLASS 476

67 5,326,335

CLASS 477

110 5,325,740

CLASS 482

30 5,326,336
36 5,326,337
51 5,326,338
57 5,326,339
93 5,326,340

CLASS 501

17 5,326,728
54 5,326,729
69 5,326,730
87 5,326,731
90 5,326,732
97 5,326,733

CLASS 502

84 5,326,734
177 5,326,735
326 5,326,736
400 5,326,737
401 5,326,738

CLASS 503

210 5,326,739
227 5,326,740
5,326,741
5,326,742

CLASS 504

235 5,326,743
241 5,326,744

CLASS 505

162 5,326,986
211 5,327,015
220 5,326,745
330 5,326,746
413 5,326,747

CLASS 512

22 5,326,748

CLASS 514

8 5,326,749
17 5,326,751
25 5,326,752
33 5,326,753
42 5,326,754
63 5,326,755
114 5,326,756
152 Re 34,656
167 5,326,757
221 5,326,758
227.5 5,326,759
235.2 5,326,760
235.8 5,326,761
241 5,326,762
249 5,326,763
258 5,326,764
259 5,326,765
5,326,766
269 5,326,767
292 5,326,768
294 5,326,769
314 5,326,770
316 5,326,771
318 5,326,772
336 5,326,773
375 5,326,775
382 5,326,776
383 5,326,777
387 5,326,778
395 5,326,779
398 5,326,780
410 5,326,781
411 5,326,782
452 5,326,783
456 5,326,784
465 5,326,785
467 5,326,786
507 5,326,787
732 5,326,788
784 5,326,790
788 5,326,789

CLASS 521

45 5,326,791

CLASS 522

135 5,326,792

CLASS 523

217 5,326,793
454 5,326,794
5,326,795

CLASS 524

31 5,326,796
59 5,326,797
70 5,326,798
91 5,326,799
94 5,326,800
101 5,326,805
109 5,326,801
119 5,326,802
120 5,326,803
188 5,326,804
361 5,326,774
411 5,326,806
413 5,326,807
457 5,326,808
459 5,326,809
496 5,326,810
505 5,326,811
507 5,326,812
508 5,326,813
555 5,326,814
591 5,326,815
718 5,326,816
813 5,326,853

CLASS 525

64 5,326,817
106 5,326,818
119 5,326,819
123 5,326,820
124 5,326,821
168 5,326,822
276 5,326,823
288 5,326,824
301 5,326,825
326.5 5,326,826
337 5,326,827
346 5,326,828
403 5,326,829
418 5,326,830
437 5,326,831
438 5,326,832
528 5,326,833
534 5,326,834

CLASS 526

64 5,326,835
79 5,326,836
150 5,326,837
187 5,326,838
247 5,326,839
5,326,917
262 5,326,840
292.3 5,326,841
317.1 5,326,842
318.6 5,326,843

CLASS 528

15 5,326,844
28 5,326,845
44 5,326,846
60 5,326,847
190 5,326,848
207 5,326,849
345 5,326,850
388 5,326,851
414 5,326,852
488 5,326,854
498 5,326,855

CLASS 530

324 5,326,860

CLASS 534

14 5,326,856
577 5,326,865
792 5,326,866

CLASS 536

6.4 5,326,867
23.2 5,326,857
5,326,858
23.52 5,326,859
123.1 5,326,864

CLASS 540

200 5,326,863
456 5,326,862
474 5,326,861
575 5,326,870

CLASS 544

209 5,326,869
250 5,326,868
298 5,326,871
300 5,326,872
401 5,326,873

CLASS 546

16 Re 34,653
200 5,326,874
332 5,326,875

CLASS 548

100 5,326,876
263.8 5,326,877
315.1 5,326,878
455 5,326,879
519 5,326,880
521 5,326,881

CLASS 549

16 5,326,882
65 5,326,883
66 5,326,884
229 5,326,885
259 5,326,886
274 5,326,887
458 5,326,888
508 5,326,889

CLASS 556

11 5,326,890
28 5,326,891
5,326,892
414 5,326,893
415 5,326,894
445 5,326,895
466 5,326,896

CLASS 558

260 5,326,897

CLASS 560

17 5,326,898
51 5,326,900
167 5,326,899
221 5,326,901
254 5,326,902
345 5,326,903

CLASS 562

2 5,326,904
8 5,326,905
11 5,326,906
44 5,326,907
561 5,326,908

CLASS 564

4 5,326,909
13 5,326,910
468 5,326,911

CLASS 568

474 5,326,915
492 5,326,916
861 5,326,912

CLASS 570

172 5,326,913
176 5,326,914
177 5,326,918

CLASS 585

241 5,326,919
528 5,326,920
532 5,326,921
722 5,326,922
725 5,326,923
5,326,924
736 5,326,925
738 5,326,926
800 5,326,927
809 5,326,929
820 5,326,928

CLASS 601

34 5,325,849

CLASS 602

48 B1 4,909,244

CLASS 604

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22 5,326,342

CLASS 607

101 5,326,343
122 5,325,870

CLASS 623

2 5,326,370
5,326,371
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3 5,326,344
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6 5,326,347
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5,326,368
23 5,326,376
24 5,326,369
33 5,326,351
38 5,326,352
39 5,326,353
66 5,326,354
5,326,355
5,326,362

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D2—	719	348.348		698	348,374		147	348,415		114	348,450	D20—	40	348,486		223	348,521
	872	348.349	D8—	40	348,381		153	348,416			348,451	D21—	13	348,487			348,522
	957	348,350		70	348,382			348,417		115	348,452		23	348,488		233	348,523
	969	348,351		99	348,383		155	348,418			348,453		134	348,489	D25—	38	348,524
		348,352		363	348,384		170	348,419			348,454		150	348,490		123	348,525
		348,353		367	348,385		218	348,420		121	348,455		191	348,491		126	348,526
	976	348,347		373	348,386	D12—	98	348,421		126	348,456			348,492	D26—	2	348,527
	977	348,354		402	348,387		114	348,422		135	348,457		192	348,493		3	348,528
D3—	218	348,355	D9—	300	348,388		146	348,423		138	348,458			348,494		61	348,529
	265	348,475		319	348,389		147	348,424		150	348,459		195	348,495		68	348,530
	267	348,356		346	348,390		193	348,425		165	348,460			348,496		71	348,531
D4—	199	348,357		415	348,391		321	348,426		189	348,461		208	348,497		85	348,532
D6—	300	348,358			348,392	D13—	107	348,427		191	348,462			348,498			348,533
	328	348,359		418	348,393		108	348,428			348,463		211	348,499			348,534
	337	348,360		425	348,394		129	348,429		195	348,464		234	348,500		93	348,535
	365	348,361		529	348,395		133	348,430		205	348,465			348,501		107	348,536
	381	348,362		575	348,396			348,431			348,466		246	348,502		138	348,537
	434	348,363	D10—	15	348,397		155	348,432		213	348,467	D22—	108	348,503	D27—	154	348,538
	457	348,364		21	348,398		158	348,433		219	348,468		147	348,504	D28—	8.1	348,539
	471	348,365		22	348,399		160	348,434		240	348,469	D23—	223	348,505			348,540
	476	348,366			348,400		168	348,435		241	348,470		233	348,507			348,541
	481	348,367		30	348,401	D14—	100	348,436		247	348,471		238	348,508		38	348,542
	518	348,368		31	348,402			348,437		250	348,472		245	348,506		54	348,543
	525	348,369		32	348,403			348,438	D15—	90	348,473		257	348,510	D29—	10	348,544
	541	348,370		64	348,404		105	348,439	D17—	22	348,476		266	348,511		12	348,545
	550	348,509		70	348,405			348,440	D18—	56	348,477		411	348,512	D30—	132	348,546
	577	348,371		71	348,406		106	348,441			348,478	D24—	109	348,513		160	348,547
	598	348,372		73	348,407			348,442			348,479		128	348,514	D32—	18	348,548
D7—	311	348,373		97	348,408			348,443			348,480		139	348,515	D34—	20	348,549
	402	348,375		104	348,409			348,444			348,481		177	348,516		23	348,550
	510	348,376			348,410		107	348,445	D19—	21	348,482		206	348,517		28	348,551
	538	348,377		113	348,411			348,446		59	348,483			348,518		32	348,552
	610	348,378			348,412			348,447		62	348,484		211	348,519		37	348,553
	631	348,379	D11—	90	348,413		109	348,448		69	348,485		215	348,520	D99—	31	348,554
	649	348,380		121	348,414		113	348,449		90							

CLASSIFICATION OF PLANTS

P—	1	8,813		7.1	8,815		86.3	8,817		88.1	8,819			8,821		100	8,823
		8,814		68.1	8,816		87.12	8,818			8,820		88.8	8,822			8,824

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137—	486	H1326	324—	76.23	H1331	428—	290	H1332		199	H1335						
248—	276	H1328	367—	8	H1330		294	H1333	430—	522	H1336	524—	379	H1338	604—	376	H1340

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PATENTS

01	5,325,717	5,325,901	5,326,512	5,327,145	5,327,138	5,325,597
	5,325,810	5,325,902	5,326,521	5,327,149	5,327,437	5,325,657
	5,326,022	5,325,915	5,326,525	5,327,150	5,327,457	5,325,662
	5,327,433	5,325,918	5,326,531	5,327,152	5,327,515	5,325,804
04	5,325,681	5,325,934	5,326,545	5,327,177	5,327,566	5,325,806
	5,325,784	5,325,967	5,326,562	5,327,178	09 : 5,325,587	5,325,846
	5,326,121	5,325,970	5,326,571	5,327,182	5,325,705	5,325,962
	5,326,414	5,325,980	5,326,577	5,327,201	5,325,773	5,325,971
	5,326,443	5,326,029	5,326,579	5,327,219	5,325,809	5,325,991
	5,326,453	5,326,044	5,326,585	5,327,220	5,325,916	5,326,062
	5,326,751	5,326,050	5,326,590	5,327,243	5,325,975	5,326,095
	5,326,934	5,326,054	5,326,617	5,327,248	5,325,998	5,326,105
	5,326,940	5,326,059	5,326,631	5,327,266	5,326,004	5,326,110
	5,326,971	5,326,063	5,326,633	5,327,303	5,326,013	5,326,175
	5,326,985	5,326,067	5,326,642	5,327,307	5,326,073	5,326,205
	5,327,016	5,326,068	5,326,644	5,327,310	5,326,079	5,326,237
	5,327,055	5,326,108	5,326,653	5,327,311	5,326,181	5,326,264
	5,327,098	5,326,136	5,326,659	5,327,312	5,326,254	5,326,294
	5,327,100	5,326,140	5,326,660	5,327,331	5,326,393	5,326,369
	5,327,213	5,326,147	5,326,685	5,327,341	5,326,539	5,326,448
	5,327,237	5,326,154	5,326,723	5,327,356	5,326,564	5,326,454
	5,327,265	5,326,165	5,326,725	5,327,359	5,326,587	5,326,475
	5,327,404	5,326,166	5,326,738	5,327,364	5,326,754	5,326,505
	5,327,442	5,326,171	5,326,752	5,327,368	5,326,764	5,326,538
05	5,326,797	5,326,174	5,326,814	5,327,375	5,326,802	5,326,651
06	5,325,566	5,326,202	5,326,858	5,327,378	5,326,828	5,326,691
	5,325,582	5,326,203	5,326,885	5,327,381	5,326,863	5,326,942
	5,325,609	5,326,206	5,326,888	5,327,383	5,326,868	5,327,006
	5,325,630	5,326,236	5,326,898	5,327,408	5,326,874	5,327,118
	5,325,642	5,326,253	5,326,910	5,327,415	5,326,884	5,327,120
	5,325,646	5,326,261	5,326,923	5,327,420	5,326,892	5,327,179
	5,325,652	5,326,269	5,326,944	5,327,426	5,326,905	5,327,398
	5,325,653	5,326,276	5,326,970	5,327,440	5,327,061	5,327,480
	5,325,669	5,326,300	5,326,978	5,327,460	5,327,066	5,327,500
	5,325,676	5,326,337	5,326,996	5,327,465	5,327,171	5,327,531
	5,325,685	5,326,341	5,327,005	5,327,485	5,327,181	5,327,545
	5,325,686	5,326,342	5,327,024	5,327,495	5,327,238	5,327,578
	5,325,699	5,326,347	5,327,025	5,327,513	5,327,279	5,327,581
	5,325,707	5,326,348	5,327,028	5,327,529	10 : 5,325,572	13 5,325,549
	5,325,722	5,326,361	5,327,038	5,327,533	5,325,770	5,325,633
	5,325,738	5,326,370	5,327,041	5,327,547	5,325,795	5,325,762
	5,325,769	5,326,371	5,327,053	5,327,549	5,326,390	5,325,791
	5,325,798	5,326,412	5,327,059	5,327,555	5,326,770	5,326,018
	5,325,811	5,326,425	5,327,062	5,327,556	5,326,839	5,326,024
	5,325,841	5,326,426	5,327,065	5,327,563	5,326,865	5,326,066
	5,325,861	5,326,427	5,327,094	08 : 5,325,696	5,326,887	5,326,189
	5,325,862	5,326,429	5,327,095	5,325,816	5,326,914	5,326,190
	5,325,865	5,326,445	5,327,108	5,325,845	5,326,917	5,326,410
	5,325,880	5,326,458	5,327,109	5,325,965	12 : 5,325,538	5,326,433
	5,325,881	5,326,468	5,327,123	5,326,045	5,325,544	5,326,451
	5,325,883	5,326,481	5,327,128	5,326,241	5,325,554	5,326,469
	5,325,886	5,326,492	5,327,136	5,326,327	5,325,558	5,326,522
	5,325,898	5,326,494	5,327,143	5,327,026	5,325,596	5,326,540

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4,909,244
18 5,325,743 5,325,746 5,325,842 5,326,025 5,326,034 5,326,069 5,326,082 5,326,232 5,326,257 5,326,345 5,326,362 5,326,363 5,326,376 5,326,576 5,326,592 5,326,645 5,326,655 5,326,656 5,326,697 5,326,700 5,326,701 5,326,793 5,326,799 5,327,036 5,327,106 5,327,176
19 5,325,579 5,325,656 5,326,156 5,326,314 5,326,947

5,327,308 5,327,496
20 : 5,325,957 5,326,086 5,326,411 5,326,432 5,326,575
21 : 5,325,618 5,325,625 5,325,677 5,325,691 5,325,776 5,325,938 5,326,061 5,326,353 5,327,114
22 : 5,325,547 5,325,588 5,325,805 5,326,547
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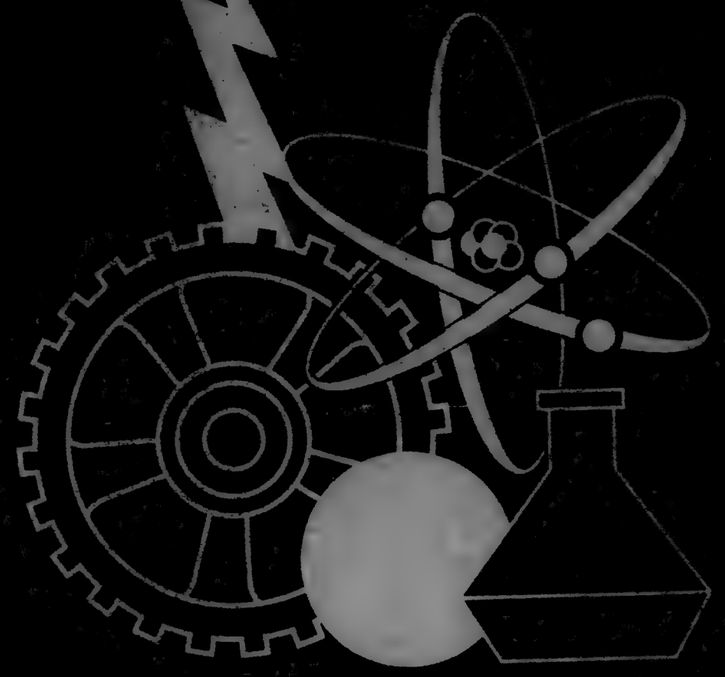
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For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 9, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,029,341 through 5,031,276
Reissue Patents based on the above identified patents.

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Attention is drawn to the patents which were issued on July 7, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,677,694 through 4,679,252
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 5, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,390,995 through 4,392,256
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant.

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been.

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 1, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,327,471	06/228,295	05/04/82
4,327,538	06/248,085	05/04/82
4,327,542	06/252,098	05/04/82
4,327,544	06/260,949	05/04/82
4,327,640	06/224,779	05/04/82
4,327,652	06/273,528	05/04/82
4,327,695	06/219,107	05/04/82
4,327,814	06/253,100	05/04/82
4,327,912	06/218,169	05/04/82
4,327,984	06/287,522	05/04/82
4,327,999	06/221,596	05/04/82
4,328,016	06/216,463	05/04/82
4,328,027	06/254,836	05/04/82
4,328,033	06/259,870	05/04/82
4,328,096	06/261,357	05/04/82
4,328,124	06/228,391	05/04/82
4,328,135	06/233,813	05/04/82
4,328,142	06/225,241	05/04/82
4,328,157	06/245,255	05/04/82
4,328,158	06/245,323	05/04/82
4,328,194	06/273,534	05/04/82
4,328,205	06/230,688	05/04/82
4,328,222	06/225,880	05/04/82
4,328,241	06/284,741	05/04/82
4,328,245	06/234,240	05/04/82
4,328,256	06/271,862	05/04/82
4,328,287	06/227,704	05/04/82
4,328,297	06/248,078	05/04/82
4,328,305	06/223,579	05/04/82
4,328,308	06/254,695	05/04/82
4,328,310	06/254,696	05/04/82
4,328,330	06/260,542	05/04/82
4,328,333	06/257,449	05/04/82
4,328,335	06/216,479	05/04/82
4,328,342	06/257,436	05/04/82
4,328,359	06/233,044	05/04/82
4,328,371	06/216,212	05/04/82
4,328,379	06/252,752	05/04/82
4,328,383	06/224,193	05/04/82
4,328,389	06/236,297	05/04/82
4,584,721	06/476,156	04/29/86
4,584,722	06/493,327	04/29/86
4,584,724	06/737,530	04/29/86
4,584,729	06/602,603	04/29/86
4,584,734	06/703,479	04/29/86
4,584,735	06/658,755	04/29/86
4,584,739	06/609,563	04/29/86
4,584,743	06/778,535	04/29/86
4,584,747	06/773,247	04/29/86
4,584,759	06/701,143	04/29/86
4,584,764	06/709,363	04/29/86
4,584,765	06/605,096	04/29/86
4,584,767	06/631,209	04/29/86
4,584,768	06/627,349	04/29/86
4,584,770	06/754,206	04/29/86
4,584,775	06/661,045	04/29/86
4,584,776	06/531,756	04/29/86
4,584,778	06/768,240	04/29/86
4,584,780	06/664,404	04/29/86

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4,584,781	06/728,525	04/29/86
4,584,787	06/724,302	04/29/86
4,584,788	06/600,017	04/29/86
4,584,789	06/563,529	04/29/86
4,584,792	06/624,534	04/29/86
4,584,794	06/606,962	04/29/86
4,584,795	06/713,819	04/29/86
4,584,802	06/536,506	04/29/86
4,584,805	06/686,988	04/29/86
4,584,807	06/530,900	04/29/86
4,584,810	06/615,556	04/29/86
4,584,811	06/644,624	04/29/86
4,584,812	06/554,538	04/29/86
4,584,820	06/727,202	04/29/86
4,584,821	06/406,293	04/29/86
4,584,823	06/710,421	04/29/86
4,584,825	06/579,125	04/29/86
4,584,826	06/584,823	04/29/86
4,584,830	06/693,624	04/29/86
4,584,832	06/657,875	04/29/86
4,584,836	06/696,223	04/29/86
4,584,846	06/705,531	04/29/86
4,584,848	06/548,328	04/29/86
4,584,850	06/702,720	04/29/86
4,584,856	06/569,920	04/29/86
4,584,865	06/635,901	04/29/86
4,584,866	06/675,002	04/29/86
4,584,876	06/702,280	04/29/86
4,584,877	06/618,332	04/29/86
4,584,878	06/653,450	04/29/86
4,584,880	06/616,581	04/29/86
4,584,887	06/659,474	04/29/86
4,584,890	06/545,846	04/29/86
4,584,897	06/684,774	04/29/86
4,584,903	06/628,525	04/29/86
4,584,912	06/731,021	04/29/86
4,584,913	06/632,030	04/29/86
4,584,914	06/636,625	04/29/86
4,584,920	06/698,626	04/29/86
4,584,927	06/625,768	04/29/86
4,584,930	06/477,910	04/29/86
4,584,935	06/647,130	04/29/86
4,584,936	06/680,485	04/29/86
4,584,941	06/708,713	04/29/86
4,584,943	06/628,751	04/29/86
4,584,949	06/744,173	04/29/86
4,584,950	06/705,228	04/29/86
4,584,951	06/615,114	04/29/86
4,584,953	06/679,214	04/29/86
4,584,956	06/644,127	04/29/86
4,584,965	06/680,511	04/29/86
4,584,967	06/709,214	04/29/86
4,584,970	06/473,566	04/29/86
4,584,976	06/746,708	04/29/86
4,584,979	06/645,077	04/29/86
4,584,984	06/701,410	04/29/86
4,584,986	06/708,061	04/29/86
4,584,987	06/451,870	04/29/86
4,584,989	06/684,150	04/29/86
4,584,992	06/557,835	04/29/86
4,584,996	06/588,691	04/29/86
4,585,002	06/725,950	04/29/86
4,585,004	06/616,054	04/29/86
4,585,012	06/632,727	04/29/86
4,585,019	06/619,310	04/29/86
4,585,022	06/770,002	04/29/86
4,585,025	06/754,239	04/29/86
4,585,033	06/657,169	04/29/86
4,585,038	06/677,863	04/29/86
4,585,039	06/576,190	04/29/86
4,585,045	06/604,513	04/29/86
4,585,046	06/664,220	04/29/86
4,585,053	06/414,440	04/29/86
4,585,058	06/541,746	04/29/86
4,585,059	06/419,723	04/29/86
4,585,061	06/543,091	04/29/86
4,585,063	06/656,012	04/29/86
4,585,067	06/645,575	04/29/86
4,585,070	06/651,637	04/29/86
4,585,071	06/355,100	04/29/86
4,585,073	06/643,879	04/29/86
4,585,076	06/573,748	04/29/86
4,585,078	06/416,284	04/29/86
4,585,080	06/698,085	04/29/86
4,585,082	06/642,123	04/29/86
4,585,083	06/663,948	04/29/86
4,585,084	06/534,501	04/29/86
4,585,086	06/640,967	04/29/86
4,585,088	06/636,391	04/29/86
4,585,089	06/694,401	04/29/86
4,585,092	06/426,741	04/29/86
4,585,095	06/629,674	04/29/86
4,585,098	06/544,605	04/29/86
4,585,099	06/569,777	04/29/86
4,585,104	06/415,765	04/29/86
4,585,114	06/661,296	04/29/86
4,585,116	06/700,429	04/29/86
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4,585,119	06/690,108	04/29/86
4,585,121	06/747,601	04/29/86
4,585,129	06/589,074	04/29/86
4,585,130	06/649,520	04/29/86
4,585,133	06/600,276	04/29/86
4,585,140	06/704,163	04/29/86
4,585,142	06/706,012	04/29/86
4,585,145	06/680,225	04/29/86
4,585,147	06/602,902	04/29/86
4,585,149	06/544,000	04/29/86
4,585,151	06/668,506	04/29/86
4,585,152	06/681,372	04/29/86
4,585,161	06/712,898	04/29/86
4,585,162	06/744,890	04/29/86
4,585,164	06/653,298	04/29/86
4,585,165	06/752,833	04/29/86
4,585,167	06/433,235	04/29/86
4,585,169	06/384,294	04/29/86
4,585,173	06/712,841	04/29/86
4,585,183	06/667,711	04/29/86
4,585,188	06/536,656	04/29/86
4,585,190	06/673,958	04/29/86
4,585,191	06/561,432	04/29/86
4,585,195	06/582,775	04/29/86
4,585,197	06/529,958	04/29/86
4,585,203	06/361,865	04/29/86
4,585,212	06/679,502	04/29/86
4,585,215	06/592,031	04/29/86
4,585,221	06/744,290	04/29/86
4,585,223	06/536,043	04/29/86
4,585,229	06/633,343	04/29/86
4,585,232	06/622,972	04/29/86
4,585,235	06/701,188	04/29/86
4,585,242	06/607,734	04/29/86
4,585,243	06/574,530	04/29/86
4,585,244	06/642,588	04/29/86
4,585,245	06/633,052	04/29/86
4,585,246	06/677,706	04/29/86
4,585,247	06/634,522	04/29/86
4,585,249	06/457,332	04/29/86
4,585,251	06/665,522	04/29/86
4,585,252	06/593,116	04/29/86
4,585,253	06/588,375	04/29/86
4,585,259	06/673,927	04/29/86
4,585,260	06/579,908	04/29/86
4,585,263	06/650,650	04/29/86
4,585,265	06/644,223	04/29/86
4,585,268	06/660,640	04/29/86
4,585,269	06/626,199	04/29/86
4,585,273	06/517,667	04/29/86
4,585,276	06/639,810	04/29/86
4,585,278	06/665,260	04/29/86
4,585,280	06/582,936	04/29/86
4,585,281	06/599,763	04/29/86
4,585,283	06/645,114	04/29/86
4,585,286	06/762,419	04/29/86
4,585,287	06/595,892	04/29/86
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4,585,301	06/726,087	04/29/86
4,585,304	06/529,297	04/29/86
4,585,305	06/457,273	04/29/86
4,585,306	06/667,056	04/29/86
4,585,307	06/574,775	04/29/86
4,585,316	06/556,176	04/29/86
4,585,317	06/438,489	04/29/86
4,585,319	06/555,453	04/29/86
4,585,320	06/680,861	04/29/86
4,585,326	06/598,869	04/29/86
4,585,329	06/552,360	04/29/86
4,585,334	06/682,154	04/29/86
4,585,341	06/508,531	04/29/86
4,585,343	06/548,684	04/29/86
4,585,344	06/556,514	04/29/86
4,585,352	06/546,372	04/29/86
4,585,353	06/593,367	04/29/86
4,585,355	06/685,024	04/29/86
4,585,356	06/595,394	04/29/86
4,585,369	06/675,389	04/29/86
4,585,371	06/643,753	04/29/86
4,585,375	06/578,919	04/29/86
4,585,383	06/657,035	04/29/86
4,585,390	06/616,625	04/29/86
4,585,392	06/561,926	04/29/86
4,585,394	06/705,012	04/29/86
4,585,397	06/740,925	04/29/86
4,585,401	06/578,625	04/29/86
4,585,404	06/724,136	04/29/86
4,585,405	06/706,024	04/29/86
4,585,407	06/538,590	04/29/86
4,585,411	06/627,003	04/29/86
4,585,413	06/687,727	04/29/86
4,585,414	06/693,381	04/29/86
4,585,416	06/602,137	04/29/86
4,585,419	06/673,406	04/29/86
4,585,420	06/653,303	04/29/86
4,585,435	06/615,594	04/29/86
4,585,437	06/632,644	04/29/86
4,585,442	06/634,645	04/29/86
4,585,446	06/590,497	04/29/86
4,585,453	06/468,561	04/29/86
4,585,458	06/524,351	04/29/86
4,585,472	06/729,902	04/29/86
4,585,474	06/621,040	04/29/86
4,585,476	06/642,101	04/29/86
4,585,482	06/614,231	04/29/86
4,585,486	06/629,305	04/29/86
4,585,490	06/657,128	04/29/86
4,585,505	06/546,528	04/29/86
4,585,506	06/558,439	04/29/86
4,585,507	06/718,234	04/29/86
4,585,510	06/416,624	04/29/86
4,585,511	06/516,030	04/29/86
4,585,517	06/696,936	04/29/86
4,585,520	06/485,607	04/29/86
4,585,522	06/319,453	04/29/86
4,585,525	06/536,971	04/29/86
4,585,528	06/594,988	04/29/86
4,585,531	06/752,443	04/29/86
4,585,532	06/727,471	04/29/86
4,585,533	06/725,103	04/29/86
4,585,534	06/489,783	04/29/86
4,585,535	06/710,586	04/29/86
4,585,539	06/541,099	04/29/86
4,585,541	06/669,347	04/29/86
4,585,542	06/691,519	04/29/86
4,585,547	06/650,738	04/29/86
4,585,556	06/725,154	04/29/86
4,585,561	06/721,125	04/29/86
4,585,564	06/620,876	04/29/86
4,585,567	06/712,119	04/29/86
4,585,569	06/685,781	04/29/86
4,585,574	06/324,919	04/29/86
4,585,576	06/602,832	04/29/86
4,585,577	06/560,728	04/29/86
4,585,581	06/655,489	04/29/86
4,585,582	06/709,917	04/29/86
4,585,583	06/380,963	04/29/86
4,585,584	06/721,304	04/29/86
4,585,586	06/612,799	04/29/86
4,585,596	06/648,122	04/29/86
4,585,598	06/572,722	04/29/86
4,585,599	06/659,448	04/29/86
4,585,600	06/675,504	04/29/86
4,585,606	06/655,132	04/29/86
4,585,611	06/472,020	04/29/86
4,585,612	06/501,356	04/29/86
4,585,613	06/509,116	04/29/86
4,585,622	06/463,339	04/29/86
4,585,623	06/722,178	04/29/86
4,585,625	06/772,290	04/29/86
4,585,630	06/710,722	04/29/86
4,585,631	06/694,993	04/29/86
4,585,635	06/645,651	04/29/86
4,585,637	06/624,561	04/29/86
4,585,638	06/631,683	04/29/86
4,585,639	06/684,181	04/29/86
4,585,640	06/672,403	04/29/86
4,585,643	06/739,681	04/29/86
4,585,649	06/685,167	04/29/86
4,585,650	06/432,551	04/29/86
4,585,664	06/600,369	04/29/86
4,585,670	06/688,489	04/29/86
4,585,680	06/490,966	04/29/86
4,585,683	06/676,269	04/29/86
4,585,685	06/690,990	04/29/86
4,585,689	06/658,599	04/29/86
4,585,690	06/668,092	04/29/86
4,585,692	06/621,279	04/29/86
4,585,693	06/684,939	04/29/86
4,585,696	06/614,332	04/29/86
4,585,698	06/669,704	04/29/86
4,585,703	06/550,606	04/29/86
4,585,714	06/749,780	04/29/86
4,585,716	06/764,454	04/29/86
4,585,718	06/705,677	04/29/86
4,585,724	06/671,219	04/29/86
4,585,726	06/628,318	04/29/86
4,585,733	06/607,172	04/29/86
4,585,737	06/665,763	04/29/86
4,585,738	06/529,019	04/29/86
4,585,740	06/491,059	04/29/86
4,585,742	06/561,196	04/29/86
4,585,746	06/625,376	04/29/86
4,585,747	06/625,375	04/29/86
4,585,751	06/748,113	04/29/86
4,585,753	06/683,926	04/29/86
4,585,761	06/265,523	04/29/86
4,585,774	06/432,902	04/29/86
4,585,775	06/650,106	04/29/86
4,585,779	06/685,099	04/29/86
4,585,794	06/694,710	04/29/86
4,585,796	06/518,990	04/29/86
4,585,800	06/612,977	04/29/86
4,585,806	06/680,928	04/29/86
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4,921,875	07/025,580	05/01/90
4,921,885	07/217,777	05/01/90
4,921,889	07/127,238	05/01/90
4,921,901	07/214,780	05/01/90
4,921,902	06/576,250	05/01/90
4,921,912	07/231,665	05/01/90
4,921,921	06/868,368	05/01/90
4,921,925	07/272,481	05/01/90
4,921,927	07/300,461	05/01/90
4,921,934	07/353,202	05/01/90
4,921,935	07/266,502	05/01/90
4,921,939	07/021,359	05/01/90
4,921,944	07/223,792	05/01/90
4,921,946	07/265,729	05/01/90
4,921,973	07/186,177	05/01/90
4,921,974	07/250,646	05/01/90
4,921,979	07/218,263	05/01/90
4,921,983	07/384,923	05/01/90
4,921,985	07/260,634	05/01/90
4,921,990	07/393,082	05/01/90
4,921,991	06/947,980	05/01/90
4,921,993	07/123,822	05/01/90
4,921,998	07/352,073	05/01/90
4,922,001	07/075,761	05/01/90
4,922,003	07/135,764	05/01/90
4,922,010	07/282,024	05/01/90
4,922,013	07/353,613	05/01/90
4,922,014	07/246,802	05/01/90
4,922,025	07/216,612	05/01/90
4,922,031	07/299,476	05/01/90
4,922,032	07/343,272	05/01/90
4,922,044	07/267,058	05/01/90
4,922,054	07/356,186	05/01/90
4,922,055	07/279,614	05/01/90
4,922,056	07/154,574	05/01/90
4,922,057	07/281,442	05/01/90
4,922,060	07/382,416	05/01/90
4,922,064	07/320,702	05/01/90
4,922,071	07/385,394	05/01/90
4,922,080	07/236,769	05/01/90
4,922,084	07/399,266	05/01/90
4,922,088	07/247,391	05/01/90
4,922,090	07/280,788	05/01/90
4,922,094	07/263,608	05/01/90
4,922,095	07/351,147	05/01/90
4,922,107	07/275,002	05/01/90
4,922,121	07/272,440	05/01/90
4,922,126	07/175,496	05/01/90
4,922,131	07/270,619	05/01/90
4,922,140	07/324,865	05/01/90
4,922,142	07/209,909	05/01/90
4,922,143	07/155,718	05/01/90
4,922,147	07/275,852	05/01/90
4,922,152	07/364,543	05/01/90
4,922,154	07/142,015	05/01/90
4,922,163	07/281,138	05/01/90
4,922,171	07/406,969	05/01/90
4,922,177	07/257,989	05/01/90
4,922,185	07/306,301	05/01/90
4,922,187	07/014,401	05/01/90
4,922,188	06/642,741	05/01/90
4,922,189	07/108,369	05/01/90
4,922,190	07/317,012	05/01/90
4,922,194	07/330,545	05/01/90
4,922,198	07/308,095	05/01/90
4,922,199	07/199,384	05/01/90
4,922,211	07/318,969	05/01/90
4,922,215	07/312,604	05/01/90
4,922,223	07/234,587	05/01/90
4,922,225	07/028,677	05/01/90
4,922,226	07/369,860	05/01/90
4,922,227	07/301,871	05/01/90
4,922,231	07/242,939	05/01/90
4,922,233	07/190,323	05/01/90
4,922,235	07/295,715	05/01/90
4,922,242	07/119,618	05/01/90
4,922,255	07/285,879	05/01/90
4,922,262	07/296,565	05/01/90
4,922,277	07/277,082	05/01/90
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Patent Number	Serial Number	Issue Date
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4,922,292	07/342,813	05/01/90
4,922,306	07/165,016	05/01/90
4,922,314	07/270,374	05/01/90
4,922,338	07/317,751	05/01/90
4,922,340	07/293,884	05/01/90
4,922,342	07/173,687	05/01/90
4,922,355	07/361,339	05/01/90
4,922,358	07/213,397	05/01/90
4,922,359	07/206,453	05/01/90
4,922,366	07/193,040	05/01/90
4,922,375	07/293,749	05/01/90
4,922,376	07/335,802	05/01/90
4,922,382	07/242,202	05/01/90
4,922,394	07/261,023	05/01/90
4,922,395	07/296,067	05/01/90
4,922,398	07/175,982	05/01/90
4,922,401	07/355,488	05/01/90
4,922,404	07/323,639	05/01/90
4,922,414	07/078,724	05/01/90
4,922,421	07/270,973	05/01/90
4,922,431	07/271,943	05/01/90
4,922,438	07/122,834	05/01/90
4,922,439	07/281,967	05/01/90
4,922,450	07/106,184	05/01/90
4,922,469	07/347,175	05/01/90
4,922,474	07/190,708	05/01/90
4,922,482	07/226,096	05/01/90
4,922,498	07/285,315	05/01/90
4,922,502	07/212,956	05/01/90
4,922,525	07/374,784	05/01/90
4,922,530	07/348,156	05/01/90
4,922,531	07/359,551	05/01/90
4,922,540	07/202,828	05/01/90
4,922,541	07/390,153	05/01/90
4,922,543	06/916,969	05/01/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,510,697	06/459,366	04/16/85	01/19/83	04/29/94
4,512,763	06/259,971	04/23/85	05/04/81	05/03/94
4,523,039	06/563,013	06/11/85	12/19/83	05/12/94
4,527,826	06/522,745	07/09/85	08/12/83	04/28/94
4,535,954	06/617,103	08/20/85	06/04/84	05/12/94
4,538,052	06/403,389	08/27/85	07/30/82	05/12/94
4,566,137	06/572,529	01/28/86	01/20/84	05/12/94
4,566,183	06/672,444	01/28/86	11/15/84	04/15/94
4,567,008	06/526,494	01/28/86	08/25/83	05/06/94
4,744,227	07/065,517	05/17/88	06/23/87	05/12/94
4,780,044	07/151,846	10/25/88	02/03/88	04/15/94
4,815,676	07/150,915	03/28/89	02/01/88	05/12/94
4,817,328	06/943,684	04/04/89	12/01/86	05/06/94
4,820,165	07/209,334	04/11/89	06/20/88	05/08/94
4,849,750	07/110,664	07/18/89	10/20/87	04/26/94
4,850,899	07/208,463	07/25/89	06/20/88	05/12/94
4,855,183	06/932,138	08/08/89	11/17/86	04/15/94
4,863,315	07/268,031	09/05/89	11/07/88	04/21/94
4,864,597	07/156,909	09/05/89	02/17/88	04/21/94
4,881,487	07/273,580	11/21/89	11/21/88	04/26/94
4,883,272	07/189,103	11/28/89	05/02/88	03/14/94
4,886,503	07/197,143	12/12/89	05/23/88	05/12/94
4,892,479	07/255,495	01/09/90	10/11/88	05/12/94
4,896,793	07/128,943	01/30/90	12/04/87	05/12/94
4,896,972	07/179,436	01/30/90	04/08/88	05/06/94
4,897,568	07/252,499	01/30/90	09/30/88	03/14/94
4,899,849	07/280,124	02/13/90	12/05/88	04/26/94
4,901,864	07/232,733	02/20/90	08/16/88	04/21/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

Re. 33,928, Re. S.N. 08/243,748, May 17, 1994, Cl. 92, FIRE SAFE VALVE ACTUATOR, Billy R. Bruton, et. al., Owner of Record: *Avelson, Inc., Longview, Tex.*, Attorney or Agent: Alfred E. Hall, Ex. Gp.: 3401

4,713,365, Re. S.N. 08/241,114, May 10, 1994, Cl. 503/227, ADHESIVES FOR LAMINATING THERMAL PRINT ELEMENTS, Daniel J. Harrison, Owner of Record: *Eastman Kodak Co., Rochester, N.Y.*, Attorney or Agent: Harold E. Cole, Ex. Gp.: 1508

4,935,790, Re. S.N. 08/242,803, May 13, 1994, Cl. 257, EEPROM MEMORY CELL WITH A SINGLE LEVEL OF POLYSILICON PROGRAMMABLE AND ERASABLE BIT BY BIT, Paolo G. Cappelletti, et. al., Owner of Record: *SGS Microelectronica S.P.A., Catania, Italy*, Attorney or Agent: Kenneth C. Hill, Ex. Gp.: 2502

5,013,736, Re. S.N. 08/225,761, Apr. 5, 1994, Cl. 514/255, AZAAZULENE COMPOUNDS WHICH ARE USEFUL AS ANTIALLERGIC AND ANTIINFLAMMATORY AGENTS, Michiko Nagahara, et. al., Owner of Record: *Kaken Pharmaceutical Co. Ltd., Tokyo, Japan*, Attorney or Agent: Stephen G. Adrion, Ex. Gp.: 1205

5,039,595, Re. S.N. 08/240,166, May 9, 1994, Cl. 430/326, AQUEOUS DEVELOPER SOLUTION HAVING HYDROXY-ALKYL PIPERIDINE FOR POSITIVE-WORKING PHOTORESISTS, Reinhold Schwalm, et. al., Owner of Record: *BASF-Aktiengellschaft, Ludwigshafen, Federal Republic of Germany*, Attorney or Agent: Herbert B. Keil, Ex. Gp.: 1507

5,086,299, Re. S.N. 08/192,104, Feb. 4, 1994, Cl. 341/156, HIGH SPEED ANALOG-TO-DIGITAL CONVERTER USING CELLS WITH BACK-TO-BACK CAPACITORS FOR BOTH ROUGH AND FINE APPROXIMATION, Giulio Frigerio, et. al., Owner of Record: *SGS-Thomson Microelectronics Srl., Milano, Italy*, Attorney or Agent: Robert Groover, Ex. Gp.: 2104

5,109,268, Re. S.N. 08/235,022, Apr. 28, 1994, Cl. 257/74, RF TRANSISTOR PACKAGE AND MOUNTING PAD, Gasper Butera, Owner of Record: *SGS Thomson Microelectronics, Carrolton, Tex.*, Attorney or Agent: Robert Groover, Ex. Gp.: 2508

5,113,255, Re. S.N. 08/241,810, May 12, 1994, Cl. 358/136, MOVING IMAGE SIGNAL AND CODING APPARATUS AND DECODING APPARATUS, Atsushi Nagata, et. al., Owner of Record: *Matsoshita Electric Industrial Co. Ltd., Osaka, Japan*, Attorney or Agent: Henry M. Zykorie, Ex. Gp.: 2602

5,113,333, Re. S.N. 08/240,378, May 11, 1994, Cl. 363/25, MAGNETIC DC-TO-DC CONVERTER, Niann-Gwo L. Ou, Owner of Record: *Intech, L.P., Santa Clara, Calif.*, Attorney or Agent: Edward M. Suden, Esq., Ex. Gp.: 2102

5,130,213, Re. S.N. 08/236,742, Apr. 29, 1994, Cl. 430/004, DEVICE MANUFACTURE INVOLVING LITHOGRAPHIC PROCESSING, Steven David Berger, et. al., Owner of Record: *American Telephone and Telegraph Co., New York, N.Y.*, Attorney or Agent: Margaret A. Burke, Ex. Gp.: 1506

5,130,950, Re. S.N. 08/241,276, May 11, 1994, Cl. 367/34, ULTRASONIC MEASUREMENT APPARATUS, Jacques Orban, et. al., Owner of Record: *Schlumberger Technology Corp., Houston, Tex.*, Attorney or Agent: Gary L. Bush, Ex. Gp.: 2202

5,171,670, Re. S.N. 08/238,236, May 4, 1994, Cl. 435/68.1, RECOMBINANT DNA METHOD FOR PRODUCTION OF PARATHYROID HORMONE, Henry M. Kronenberg, et. al., Owner of Record: *The General Hospital Corp., Washington, D.C.*, Attorney or Agent: Jorge A. Goldstein, Ex. Gp.: 1804

5,245,590, Re. S.N. 08/241,451, May 9, 1994, Cl. 368/18, DISPLAY OF CHANGING MOON ON FACE WATCH, William A. Galison, Owner of Record: *Inventor*, Attorney or Agent: Andrew S. Langsman, Ex. Gp.: 2107

5,263,804, Re. S.N. 08/241,728, May 12, 1994, Cl. 411/82, ADHESIVE ANCHOR, Richard J. Ernst, et. al., Owner of Record: *Illinois Tool Works Inc., Glenview, Ill.*, Attorney or Agent: Gerald Levy, Ex. Gp.: 3508

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,642,317,Reexam. No. 90/003,412, Apr. 29, 1994, Cl. 514/558, PROCESS FOR FEEDING RUMINANT ANIMALS AND COMPOSITION FOR USE THEREIN, Donald L. Palmquist, et. al., Owner of Record: *Ohio Agricultural Research and Development Center, Wooster, Ohio*, Attorney or Agent: Sidney W. Millard, Kremblas, Foster & Millard, Reynoldsburg, Ohio, Ex. Gp.: 1205, Requester: Church & Dwight Co., Inc., Princeton, N.J.

4,755,741, Reexam. No. 90/003,419, Apr. 28, 1994, Cl. 323/289, ADAPTIVE TRANSISTOR DRIVE CIRCUIT, Carl T. Nelson, Owner of Record: *Linear Technology Corp., Milpitas, Calif.*, Attorney or Agent: Mark D. Rowland, c/o Fish & Neave, New York, N.Y., Ex. Gp.: 2102, Requester: Limbach & Limbach, Attn.: Philip A. Girard, San Francisco, Calif.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED MAY 23, 1994
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
40,948	70/040,948	08/18/1903
40,949	70/040,949	08/18/1903
93,064	71/066,280	08/19/1913
93,080	71/068,992	08/19/1913
93,082	71/059,979	08/19/1913
93,128	71/070,159	08/19/1913
93,139	71/066,930	08/19/1913
305,310	71/333,901	08/15/1933
305,326	71/335,941	08/15/1933
305,340	71/335,657	08/15/1933
305,354	71/335,784	08/15/1933
305,355	71/335,749	08/15/1933
305,377	71/336,016	08/15/1933
305,378	71/336,017	08/15/1933
305,390	71/331,891	08/15/1933
305,395	71/332,853	08/15/1933
305,396	71/332,910	08/15/1933
305,404	71/336,919	08/15/1933
305,406	71/336,921	08/15/1933
305,424	71/336,795	08/15/1933
305,425	71/336,794	08/15/1933
305,426	71/336,793	08/15/1933
305,427	71/336,799	08/15/1933
305,428	71/336,798	08/15/1933
305,437	71/336,791	08/15/1933
305,438	71/336,790	08/15/1933
305,445	71/325,315	08/15/1933
305,447	71/324,777	08/15/1933
305,464	71/336,549	08/15/1933
305,466	71/336,541	08/15/1933
305,467	71/336,450	08/15/1933
305,470	71/336,661	08/15/1933
578,715	71/567,482	08/18/1953
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578,730	71/600,938	08/18/1953
578,734	71/604,941	08/18/1953
578,736	71/606,531	08/18/1953
578,752	71/615,412	08/18/1953
578,755	71/617,687	08/18/1953
578,756	71/619,273	08/18/1953
578,759	71/619,763	08/18/1953
578,770	71/621,928	08/18/1953
578,772	71/622,293	08/18/1953
578,775	71/623,695	08/18/1953
578,776	71/624,263	08/18/1953
578,808	71/628,847	08/18/1953
578,809	71/628,873	08/18/1953
578,824	71/631,442	08/18/1953
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578,842	71/634,515	08/18/1953
578,846	71/634,740	08/18/1953
578,862	71/636,460	08/18/1953
578,867	71/636,568	08/18/1953
578,881	71/637,714	08/18/1953
578,904	71/640,036	08/18/1953
578,917	71/618,410	08/18/1953
578,921	71/633,027	08/18/1953
578,923	71/590,365	08/18/1953
578,927	71/598,883	08/18/1953
578,937	71/620,398	08/18/1953
578,939	71/625,986	08/18/1953
578,950	71/630,507	08/18/1953
578,951	71/630,935	08/18/1953
578,957	71/635,686	08/18/1953
954,888	72/399,830	03/13/1973
965,833	72/378,906	08/14/1973
965,836	72/420,158	08/14/1973
965,842	72/404,627	08/14/1973
965,843	72/410,366	08/14/1973
965,846	72/415,250	08/14/1973
965,849	72/434,282	08/14/1973
965,853	72/434,632	08/14/1973
965,854	72/434,771	08/14/1973
965,862	72/379,736	08/14/1973
965,867	72/426,194	08/14/1973
965,868	72/426,890	08/14/1973
965,869	72/427,614	08/14/1973
965,870	72/427,936	08/14/1973
965,872	72/428,514	08/14/1973
965,877	72/431,200	08/14/1973
965,878	72/433,555	08/14/1973
965,879	72/433,577	08/14/1973
965,881	72/437,105	08/14/1973
965,882	72/423,677	08/14/1973
965,887	72/369,135	08/14/1973
965,890	72/418,352	08/14/1973
965,891	72/419,146	08/14/1973
965,895	72/410,807	08/14/1973
965,896	72/413,497	08/14/1973
965,900	72/430,859	08/14/1973
965,902	72/430,883	08/14/1973
965,904	72/434,017	08/14/1973
965,905	72/434,018	08/14/1973
965,906	72/415,266	08/14/1973
965,907	72/415,267	08/14/1973
965,911	72/429,276	08/14/1973
965,916	72/375,605	08/14/1973
965,917	72/410,036	08/14/1973
965,919	72/415,566	08/14/1973
965,922	72/432,547	08/14/1973
965,924	72/405,567	08/14/1973
965,929	72/419,967	08/14/1973
965,931	72/423,594	08/14/1973
965,932	72/424,458	08/14/1973
965,934	72/428,456	08/14/1973
965,939	72/433,849	08/14/1973
965,941	72/434,185	08/14/1973
965,943	72/434,463	08/14/1973
965,948	72/435,254	08/14/1973
965,949	72/435,664	08/14/1973
965,951	72/436,350	08/14/1973
965,956	72/405,198	08/14/1973
965,957	72/408,447	08/14/1973
965,958	72/418,585	08/14/1973
965,959	72/419,658	08/14/1973
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965,966	72/385,235	08/14/1973
965,973	72/412,856	08/14/1973
965,974	72/414,069	08/14/1973
965,975	72/421,055	08/14/1973
965,978	72/426,270	08/14/1973
965,988	72/425,089	08/14/1973
965,995	72/438,974	08/14/1973
965,997	72/355,482	08/14/1973
965,999	72/369,337	08/14/1973
966,001	72/384,625	08/14/1973
966,005	72/409,130	08/14/1973
966,006	72/414,262	08/14/1973
966,016	72/397,864	08/14/1973
966,017	72/402,458	08/14/1973
966,027	72/424,026	08/14/1973
966,029	72/436,983	08/14/1973
966,031	72/419,906	08/14/1973
966,032	72/431,210	08/14/1973
966,033	72/438,860	08/14/1973
966,035	72/438,999	08/14/1973
966,037	72/411,995	08/14/1973
966,040	72/406,897	08/14/1973
966,042	72/420,635	08/14/1973
966,044	72/413,248	08/14/1973
966,047	72/425,720	08/14/1973
966,054	72/417,108	08/14/1973
966,060	72/425,738	08/14/1973
966,061	72/428,562	08/14/1973
966,062	72/428,596	08/14/1973
966,063	72/433,324	08/14/1973
966,064	72/433,325	08/14/1973
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4,619,049
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Nies, Kurz, Bergert & Tamburro
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5,161,484
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COLLAPSIBLE PORTABLE PET REST ATTACHABLE TO A BED
Michael Duane
20 Cedar Court
Sedona, Ariz. 86351
(602) 284-0152

5,246,868
Contact:
INFRARED EMISSION DETECTION
Daniel S. Hodgins
Arnold, White & Durkee
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Austin, Tex. 78701
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5,269,530
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Stevens, Davis, Miller & Mosher
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Alexandria, Va. 22313
(703) 549-7200

5,277,158
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Workman, Nydegger & Jensen
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Salt Lake City, Utah 84111
(801) 533-9800

5,315,896
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Michael V. Stringer
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Boise, Id. 83702
(208) 336-7340

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey For with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is important that patent practitioners complete each survey form no later than the time of response to the Office action being surveyed. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner For Patents

Certificates of Correction Issue of July 12, 1994

B1 4,661,378	D. 342,839	4,784,474	4,990,490
B1 4,686,352	D. 345,424	4,808,997	4,994,819
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D. 335,116	Re. 34,376	4,897,720	5,015,597
D. 335,467	4,253,996	4,900,674	5,015,676
D. 339,567	4,689,215	4,949,291	5,015,883

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5,023,366	5,135,701	5,208,767	5,242,873	5,260,377	5,270,397	5,280,329	5,288,495
5,037,653	5,136,512	5,209,150	5,243,330	5,260,567	5,270,411	5,280,402	5,288,641
5,044,565	5,137,473	5,209,700	5,243,363	5,260,596	5,270,650	5,280,618	5,288,780
5,052,423	5,137,991	5,210,090	5,243,395	5,260,745	5,270,739	5,280,631	5,288,875
5,053,221	5,140,175	5,210,670	5,244,034	5,260,764	5,270,749	5,280,883	5,289,560
5,053,224	5,141,734	5,211,098	5,244,962	5,260,820	5,270,770	5,281,152	5,289,751
5,053,309	5,144,025	5,211,815	5,245,101	5,260,842	5,270,999	5,281,476	5,289,820
5,053,345	5,149,524	5,212,950	5,245,315	5,261,551	5,271,145	5,282,080	5,289,982
5,053,379	5,152,692	5,213,470	5,245,321	5,262,082	5,271,182	5,282,108	5,290,182
5,053,575	5,155,445	5,213,954	5,245,358	5,262,217	5,271,210	5,282,202	5,290,217
5,053,621	5,157,754	5,215,053	5,245,362	5,262,219	5,271,511	5,282,223	5,290,255
5,053,636	5,162,509	5,215,250	5,245,761	5,262,267	5,271,557	5,282,349	5,290,272
5,053,772	5,164,708	5,218,502	5,246,114	5,262,403	5,271,567	5,282,352	5,290,338
5,053,857	5,166,317	5,218,641	5,246,476	5,262,466	5,272,147	5,282,465	5,290,492
5,054,045	5,167,914	5,219,010	5,246,650	5,262,543	5,272,193	5,282,889	5,290,494
5,057,715	5,169,505	5,220,871	5,246,806	5,262,948	5,272,697	5,283,089	5,290,915
5,058,581	5,171,624	5,221,660	5,248,460	5,263,163	5,272,781	5,283,175	5,290,939
5,062,063	5,178,084	5,221,807	5,248,515	5,263,484	5,272,803	5,283,404	5,291,293
5,066,564	5,178,468	5,222,206	5,248,569	5,263,488	5,272,841	5,283,634	5,291,355
5,067,710	5,178,636	5,222,993	5,248,777	5,263,595	5,272,889	5,283,635	5,291,404
5,068,507	5,178,884	5,223,017	5,248,795	5,263,677	5,273,269	5,283,691	5,291,439
5,069,873	5,183,404	5,223,117	5,249,164	5,263,870	5,273,559	5,283,816	5,291,661
5,073,213	5,184,215	5,223,178	5,249,283	5,264,081	5,273,754	5,284,019	5,291,681
5,082,663	5,184,448	5,223,318	5,249,371	5,264,102	5,273,826	5,284,214	5,291,687
5,083,083	5,185,012	5,223,538	5,249,721	5,264,578	5,274,431	5,284,330	5,292,020
5,084,159	5,185,230	5,224,025	5,249,826	5,264,584	5,274,931	5,284,446	5,292,070
5,084,466	5,186,282	5,225,442	5,250,518	5,264,874	5,275,222	5,284,712	5,292,223
5,084,811	5,187,532	5,224,472	5,251,557	5,264,997	5,275,335	5,284,782	5,292,237
5,087,826	5,187,839	5,227,357	5,251,597	5,265,542	5,275,364	5,284,924	5,292,480
5,088,817	5,187,917	5,228,007	5,252,720	5,266,142	5,275,850	5,284,958	5,292,534
5,092,877	5,189,145	5,228,175	5,253,027	5,266,182	5,275,866	5,284,988	5,292,667
5,093,354	5,189,915	5,228,663	5,253,046	5,266,276	5,275,917	5,285,002	5,292,839
5,093,697	5,190,272	5,229,382	5,253,772	5,266,565	5,276,220	5,285,683	5,293,466
5,094,198	5,190,449	5,229,713	5,253,988	5,266,702	5,276,446	5,285,766	5,293,467
5,094,690	5,190,635	5,230,862	5,254,211	5,267,028	5,276,623	5,285,796	5,294,063
5,094,858	5,193,244	5,230,933	5,254,356	5,267,058	5,276,725	5,285,950	5,294,386
5,095,811	5,193,444	5,231,083	5,254,935	5,267,094	5,277,167	5,285,963	5,295,154
5,100,866	5,194,287	5,231,578	5,254,962	5,267,330	5,277,281	5,285,979	5,295,406
5,102,223	5,194,437	5,231,701	5,256,166	5,267,483	5,277,547	5,286,150	5,295,488
5,108,769	5,194,741	5,232,534	5,256,311	5,267,512	5,277,569	5,286,419	5,295,833
5,108,927	5,195,667	5,233,653	5,256,529	5,267,620	5,277,740	5,286,544	5,296,834
5,111,807	5,196,691	5,234,940	5,256,556	5,267,718	5,277,963	5,286,728	5,296,854
5,112,735	5,197,464	5,236,908	5,256,986	5,268,165	5,278,148	5,286,964	5,297,464
5,113,525	5,197,765	5,237,284	5,257,128	5,268,309	5,278,244	5,286,984	5,298,133
5,115,732	5,197,958	5,239,273	5,257,134	5,268,789	5,278,685	5,287,152	5,298,186
5,117,544	5,198,020	5,239,348	5,257,894	5,268,995	5,278,704	5,287,231	5,298,419
5,120,467	5,200,967	5,239,444	5,258,164	5,269,437	5,278,890	5,287,481	5,298,494
5,123,974	5,202,471	5,240,003	5,258,579	5,269,627	5,279,106	5,287,620	5,298,723
5,125,038	5,204,314	5,240,919	5,258,735	5,269,680	5,279,173	5,287,717	5,299,940
5,126,598	5,205,226	5,241,080	5,258,855	5,270,015	5,279,256	5,287,743	5,307,164
5,127,733	5,205,872	5,241,112	5,258,891	5,270,165	5,279,299	5,288,094	
5,129,365	5,207,766	5,241,305	5,259,439	5,270,312	5,279,308	5,288,126	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
May 23-27, 1994

Date Issued	Type of Proceeding	Proceeding or App'n No.[1]	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
5-23	EX	74/277,008	3Com Corp.	2(e)(1)	Refusal Affirmed		"FDDILINK" [computer networking adapters, cabling, connectors, and fiber optic digital communication components and software, all for use in local, enterprise, metropolitan, and global area computer network environments]		No
5-24	EX	74/211,541	Peter T. Amarantos	whether the matter sought to be registered is used as a trademark for the goods recited in the application	Refusal Affirmed		"THE ORIGINAL BUFFALO" [ice cream]		No
5-25	EX (R)	74/126,315	Waltham Corp.	2(d)	Request for Reconsideration Denied		"STERLINGBANK" (and design) [banking services]	"STERLING SAVINGS BANK" (and design) [banking services]	No
5-26	EX	74/077,130	Signature Financial Group, Inc.	whether the matter sought to be registered is used as a trademark for the services recited in the application	Refusal Affirmed		"HANDS" [mutual fund administration and distribution services]		No
5-27	OPP	85,237	Bistream, Inc. v. Harman Kardon Inc.	2(d) (including assertion of a "family" of marks); 2(e)(1)	Opposition Dismissed	"BITSTREAM" [computer software representing typefaces; custom design and consultation services in typography] (and other mark containing the word "BITSTREAM")	"3D BIT STREAM" [compact disc player]		No
5-27	EX	74/233,466	Pacific Coast Feather Co., Inc.	2(d)	Refusal Reversed		"FEATHERLOCK" [fabric for the manufacture of the cover portion of pillows and comforters]	"FEATHERLOCK" (stylized lettering) and "FEATHERLOCK" (and design) [men's and women's shirts]	No

(1) EX = EX PARTE APPEAL, OPP = OPPOSITION; C = CANCELLATION, CU = CONCURRENT USE; (R) = REQ FOR RECONSIDERATION

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	07/26/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	05/20/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/04/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	08/02/93
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SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	12/14/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	06/22/92
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COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	12/02/92
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MECHANICAL EXAMINING GROUPS		
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SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	01/29/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/08/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during June 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....Numbers 4,027,339 to 4,032,988 inclusive
Plant Patents.....4,059 to 4,068

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Condition of Trademark Applications as of June 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/10/93	04/26/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 40, 41, 42	01/06/94	03/14/94
Law Office 5—Mary Sparrow, Managing Atttorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/11/94	02/16/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int Classes 35, 36, 37, 38, 39, 40, 41, 42	01/14/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/29/93	02/03/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/23/93	04/08/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/06/93	02/22/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/24/94	05/03/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/21/94	01/24/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/13/94	04/18/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/27/94	04/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/27/93	03/21/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/30/93	10/20/93
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
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Affidavits Under Sections 8 & 15 (All Classes)	12/27/93	—0—
Renewals (All Classes)	03/14/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

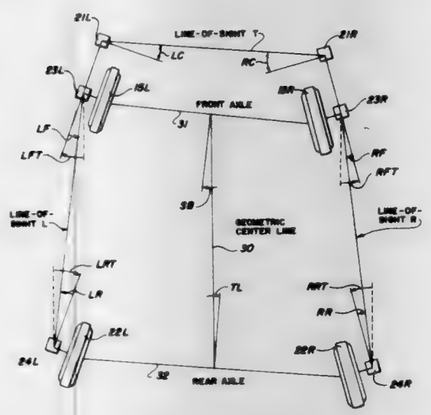
1. ** Assigned to each law office
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REEXAMINATIONS

JULY 12, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 33,144 (2331st)
VEHICLE WHEEL ALIGNMENT APPARATUS
Lee Hunter, Creve Coeur, and Daniel B. January, Bel-Ridge, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.
Reexamination Request No. 90/003,153, Aug. 5, 1993.
Reexamination Certificate for Reissue Patent Re. 33,144, issued Jan. 9, 1990, Ser. No. 443,381, Nov. 22, 1982.
Int. Cl.[5] G01B *11/26, 5/24*
U.S. Cl. 356—152



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** and **6** is confirmed.

5. A wheel alignment measuring apparatus designed for measuring wheel alignment angles of the vehicle having front and rear wheels and comprising:

six angle measuring units,

first and second said angle measuring units adapted for connection respectively to the left and right front wheels of the vehicle and including angle pickup means for measuring and producing signals indicating the total tracking angles of both front wheels,

third and fifth said angle measuring units adapted for connection respectively to the left front wheel and a left rear wheel and including angle pickup means for measuring and producing signals indicating the angles of these wheels,

and fourth and sixth said angle measuring units adapted for connection respectively to the right front wheel and a right rear wheel and including angle pickup means for measuring and producing signals indicating the angles of these wheels,

means rigidly joining the first said angle measuring unit with said third angle measuring unit,

means rigidly joining said second angle measuring unit with said fourth angle measuring unit, and

an electrical circuit means for receiving signals from said angle pickup means and for producing a reading for wheel alignment data from the angles measured by said angle measuring units.

B1 3,826,728 (2332nd)
TRANSPARENT ARTICLE HAVING REDUCED SOLAR RADIATION TRANSMITTANCE AND METHOD OF MAKING SAME
Douglas L. Chambers; Donald C. Carmichael, and Chong T. Wan, all of Columbus, Ohio, assignors to The BOC Group Plc., Windlesham Surrey, England
Reexamination Request No. 90/002,836, Sep. 15, 1992.
Reexamination Certificate for Patent No. 3,826,728, issued Jul. 30, 1974, Ser. No. 253,278, May 15, 1972.
Continuation of Ser. No. 38,962, May 20, 1970, abandoned
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.27

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

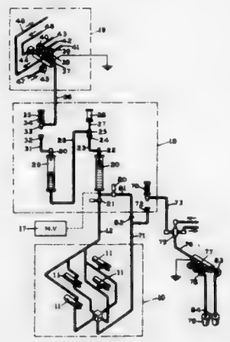
1. A transparent article having reduced solar radiation transmittance and reduced glare, which comprises:

(a) a transparent glass sheet for use as a window pane and the like having a smooth continuous surface; and

(b) a continuous sputter-coated film on said continuous glass sheet to a thickness of from 200 to 400 A. a A., said film being a metal selected from the group consisting of nickel and nicket-base alloys;

(c) said coated glass sheet having a substantially uniform transmittance over the range of 0.75 to 2.0 micross at a level relatively lower than the level of transmittance in the visible range and the transmittance also being substantially uniform in the visible range of 0.4 to 0.75 microns resulting in excellent color fidelity and natural visibility therethrough substantially free from distortion.

B1 4,313,475 (2333rd)
VOLTAGE BLOCK SYSTEM FOR ELECTROSTATIC COATING WITH CONDUCTIVE MATERIALS
Richard F. Wiggins, Fairfield, Conn., assignor to Nordson Corporation, Westlake, Ohio
Reexamination Request No. 90/003,137, Jul. 23, 1993.
Reexamination Certificate for Patent No. 4,313,475, issued Feb. 2, 1982, Ser. No. 163,158, Jun. 26, 1980.
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—18



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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Claim **3** is cancelled.

Claims **1**, **2**, **4** and **8** are determined to be patentable as amended.

Claims **5–7** and **9–11**, dependent on an amended claim, are determined to be patentable.

1. A supply system for furnishing conductive coating materials to an electrostatic coating device, which comprises

(a) a recirculating primary supply of liquid coating material,

(b) a spray device for applying said coating material to a workpiece,

(c) means for imparting a high voltage charge to said spray device,

(d) a sealed coating material vessel communicating with said spray device,

(e) means for periodically replenishing said vessel with coating material from said primary supply,

(f) means for electrically isolating said vessel from said primary supply when said high voltage is applied to said spray device, *said isolating means including first and second coupling elements at least one of which is movable with respect to the other between a position wherein said first and second coupling elements are mechanically coupled to form a substantially closed flow path for the transfer of coating material from said primary supply into said vessel, and a position wherein said first and second coupling elements are uncoupled to electrically isolate said vessel from said primary supply when said high voltage is applied to said spray device, and*

(g) means for placing said sealed vessel under gas pressure to effect displacement of coating fluid to said spray device.

B1 4,425,481 (2334th)

PROGRAMMABLE SIGNAL PROCESSING DEVICE

Stephan Mansgold, Rådavägen 82 G, Mölnlycke, Sweden S-435 00 ; Arne Leijon, Jungmansgatan 57, Göteborg, Sweden S-413 11 , and Björn Israelsson, Uddevallagatan 35, Göteborg, Sweden S-416 70

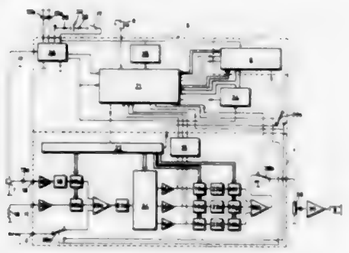
Reexamination Request Nos. 90/002,783, Jul. 10, 1992 and 90/002,519, Nov. 25, 1991 and 90/002,614, Jan. 8, 1992.

Reexamination Certificate for Patent No. 4,425,481, issued Jan. 10, 1984, Ser. No. 368,456, Apr. 14, 1982.

Claims priority, application Sweden, Apr. 16, 1981, 8102466

Int. Cl.[5] **H04R** *25/00*

U.S. Cl. 381—68.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **5** is cancelled.

Claims **1–4** are determined to be patentable as amended.

New claim **6** is added and determined to be patentable.

1. [Programmable signal processing device, mainly intended for persons] *A programmable wearable hearing aid adapted to be used by a person* having impaired hearing [, and of the kind which include] *in a plurality of different sound environments, comprising:*

an electronically controlled signal processor[, characterized by that] *with adequate functions for processing a complex input signal containing information such as speech or music from a sound environment according to a unique signal process;*

a memory [is] arranged to store *at least two sets of digital* information/data [for], *each of said* at least two [unique signal processes adjusted to] *sets of digital information/data being programmed to compensate for said hearing impairment of said person and for a* different *one of said plurality of* sound environments[/listening situations], and [that]

a control unit[, manual or automatic, is arranged] to transmit *one of said at least two sets of digital* information/data[, for one of the unique signal processes,] from the memory to the signal processor, to bring about **171** one] *said unique* signal process adjusted to a particular *one of said different* sound [environment/listening situation] *environments;*

said programmable hearing aid being wearable by said person.

B1 4,589,549 (2335th)

AUDIO CASSETTE PACKAGE

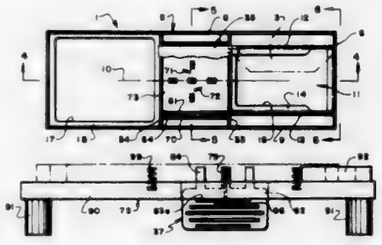
Bruce A. Hehn, N. Canton, Ohio, assignor to Alpha Enterprises, Inc., Canton, Ohio

Reexamination Request No. 90/003,237, Nov. 1, 1993.

Reexamination Certificate for Patent No. 4,589,549, issued May 20, 1986, Ser. No. 590,717, Mar. 19, 1984.

Int. Cl.[5] **B65D** *85/672*

U.S. Cl. 206—387



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **28–31** is confirmed.

Claims **1** and **23** are determined to be patentable as amended.

Claims **2–22** and **24–27**, dependent on an amended claim, are determined to be patentable.

New claim **32** is added and determined to be patentable.

1. A package construction for holding an audio cassette, said construction including:

(a) an integral one-piece plastic housing having a cassette storage compartment formed therein *at one end thereof,* said compartment having an access opening for inserting and removing a cassette into and out of said compartment;

(b) lock means including a slide plate slidably mounted on the housing [and movable] *to move from an unlocked position to a locked position only partially* across the access opening *beyond which the plate is unable to move, said locked position being* [between locked and unlocked positions, respectively,] for releasably securing a cassette in the compartment, said slide plate having at least one lever formedthereon;

(c) projection means formed on the housing for projecting within said housing being located and configured to engage the lever for retaining the slide plate in the [lock] *locked* position to secure a cassette in the storage compartment; [and]

(d) *said cassette storage compartment being defined by a pair of spaced sidewalls, a pair of spaced end walls, a bottom wall, and a flange formed on one of the end walls and extending toward the slide plate and access opening for engaging an edge of the cassette when inserted in said storage compartment for releasably securing the cassette in the compartment in cooperation with the slide plate in the locked position in which the slide plate is adapted to engage an opposite edge of the cassette in the locked position; and*

(e) separate key means engageable with the slide plate lever for moving said lever out of engagement with the projection means enabling the slide plate to be moved from the locked position to the unlocked position for removing a cassette from the storage compartment.

23. A package construction for holding an object, said construction including:

(a) an integral one-piece plastic housing having [a] *an object* storage compartment formed therein *at one end thereof,* said compartment having an access opening for inserting and removing an object into and out of said compartment;

(b) lock means including a slide plate slidably mounted on the housing [and movable] *to move from an unlocked position to a locked position only partially* across [of] the access opening [between locked and unlocked positions, respectively,] *beyond which the plate is unable to move, said locked position being* for releasably securing an object in the compartment, said slide plate having at least one lever formed thereon;

(c) projection means formed on the housing for projecting within said housing being located and configured to engage the lever for retaining the slide plate in the locked position to secure an object in the storage compartment; [and]

(d) *said object storage compartment being defined by a pair of spaced sidewalls, a pair of spaced end walls, abottom wall, and a flange formed on one of the end walls and extending toward the slide plate and access opening for engaging an edge of the object when inserted in said storage compartment for releasably securing the object in the compartment in cooperation with the slide plate in the locked position in which the slide plate is adapted to engage an opposite edge of the object in the locked position; and*

(e) separate key means engageable with the projection means for moving said lever out of engagement with the projection means enabling the slide plate to be moved from the locked position to the unlocked position for removing an object from the compartment.

32. A package construction for holding an audio cassette, said construction including:

(a) an integral one-piece plastic housing having a lock compartment and a cassette storage compartment formed therein, said lock compartment being separated from the storage compartment by a partition, said storage compartment having an access opening for inserting and removing a cassette into and out of said storage compartment;

(b) lock means including a slide plate slidably mounted on the housing and movable across the partition and the access opening when moving between locked and unlocked positions for releasably securing a cassette in the storage compartment, said slide plate having at least one lever formed thereof;

(c) projection means formed on the housing for projecting within said housing being located and configured to engage the lever for retaining the slide plate in the locked position to secure a cassette in the storage compartment; and

(d) separate key means engageable with the slide plate lever for moving said lever out of engagement with the projection means enabling the slide plate to be moved from the locked position to the unlocked position for removing a cassette from the storage compartment.

B1 4,899,563 (2336th)

RE-KEYABLE PIN TUMBLER DRAWER LOCK AND PIN TUMBLER CABINET DOOR LOCK

Frank J. Martin, Seattle, Wash., assignor to Frank J. Martin Company, Seattle, Wash.

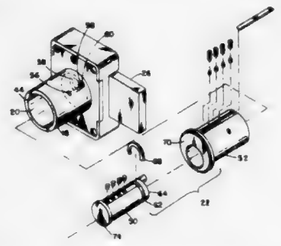
Reexamination Request No. 90/002,340, May 6, 1991.

Reexamination Certificate for Patent No. 4,899,563, issued Feb. 13, 1990, Ser. No. 328,748, Mar. 22, 1989.

Continuation of Ser. No. 40,364, Apr. 17, 1987, abandoned

Int. Cl.[5] **E05B** *27/00*

U.S. Cl. 70—367



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **4** are determined to be patentable as amended.

Claim **3**, dependent on an amended claim, is determined to be patentable.

1. A re-keyable lock, comprising:

a bolt housing including a movable bolt operatively engaged with a rotatable cam mechanism having a rotary guide portion;

a unitary shell having a bolt housing cover connected to the bolt housing, an elongated cylinder housing defining an elongated, unthreaded cylindrical cavity having a forward opening sized to removably receive a cylinder and plug assembly, a rearward opening sized and positioned to receive the guide portion of the cam mechanism to guide rotation of the cam mechanism about a cam rotation axis, and [a radially] *an outwardly* directed, [threaded] circular aperture;

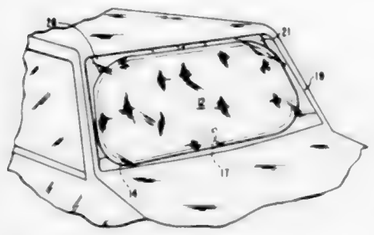
an unthreaded cylinder having a smooth exterior surface, [a radially] *an outwardly* directed threaded bore *for registration with the circular aperture,* a plurality of radially directed, spring-loaded pin tumblers, and an axially directed plug cavity for receipt of a cylinder plug;

a cylinder plug sized for receipt [of] *in* the plug cavity, the cylinder plug having a cam mechanism driver; and

[a] *an externally accessible* set screw threadably engageable with the threaded bore and the [threaded] *circular* aperture [wherein] *so that* the unthreaded cylinder and the cylinder plug can be combined as an assembly which is forwardly removable through the forward opening for replacement of the pin tumblers by removal of the set screw alone so that the cam mechanism remains positively centered about the cam rotation axis and so that when the assembly is reinserted through the forward opening and the threaded bore aligned with the [threaded] *circular* aperture, the cam mechanism is properly engaged with the cam mechanism driver and so that the cylinder is fixed against rotation and longitudinal movement after the set screw is engaged.

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B1 5,024,262 (2337th)
COMPACTLY FOLDABLE AUTOMOBILE SUNSHADE
En L. Huang, 1280 Price St., Pomona, Calif. 91767
Reexamination Request No. 90/003,200, Sep. 20, 1993.
Reexamination Certificate for Patent No. 5,024,262, issued Jun. 18, 1991, Ser. No. 420,936, Oct. 13, 1989.
Int. Cl.[5] B60J *3/00*
U.S. Cl. 160—370.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–14** are cancelled.

New claims **15–28** are added and determined to be patentable.

15. A vehicle sunshade system comprising:
(a) a vehicle window having a surrounding frame internal said vehicle;
(b) a sheet of at least one layer of a flexible first material, said sheet having frontal and rear surfaces, at least one of said surfaces including a material suitable for reflecting light and heat radiation; and,
(c) a single closed loop of a strip of a spring-like second material secured to said sheet throughout an entireperimeter thereof, said spring-like second material having restoring spring forces for bearing against at least a portion of said frame of said vehicle window for maintaining said flexible first material and said spring-like second material in fixed relation adjacent a surface of said vehicle window, wherein said combined flexible first material and said spring-like second material can be (1) deployed in a first, open configuration, said single closed loop being substantially continuously deformable to a predetermined contour of said vehicle window, and, (2) twisted to form at least a pair of seetions, said sections being foldable in layered fashion to form a second, compact configuration for storage.

REISSUES

JULY 12, 1994

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

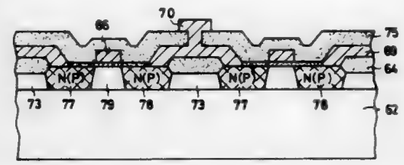
Re. 34,657
CAM ADJUSTMENT DEVICE FOR CASEMENT WINDOW UNIT
Jack C. La See, 308 W. Cedar, Abbotsford, Wis. 54405
Original No. 50,740,752, dated Dec. 24, 1991, Ser. No. 724,587, Jul. 1, 1991. Application for reissue Aug. 6, 1992, Ser. No. 925,620
Int. Cl.[5] E05D *15/30*
U.S. Cl. 49—252 **9 Claims**



8. A track and hinge assembly set for use with a casement window sash unit mounted on the window frame of a building, the window frame including upper and lower horizontal frame members connected by vertical frame members, the track and hinge assembly comprising; similar upper and lower track and hinge assemblies, each track and hinge assembly including an elongate horizontal track each secured to a one of the respective horizontal frame members,
each assembly including a hinge mechanism including first and second pivotally interconnected links, the first link being connected to the sash unit and having one of its ends pivotally and slidably connected to the track, and the second link being connected at one of its ends to the first link; and
an angularly adjustable cam engaging the horizontal track and including an eccentrically mounted post forming an adjustable attachment to the other end of the second link, angular adjustment of the cam offsetting the post with respect to the track to overcome sash sag.

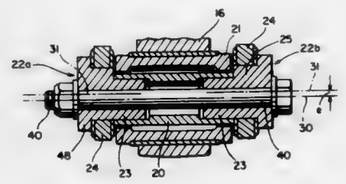
Re. 34,658
SEMICONDUCTOR DEVICE OF NON-SINGLE CRYSTAL-STRUCTURE
Shunpei Yamazaki, Tokyo, and Yujiro Nagata, Ichikawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Original No. 4,581,620, dated Apr. 8, 1986, Ser. No. 278,418, Jun. 29, 1981. Continuation-in-part of Ser. No. 237,609, Feb. 24, 1981, Pat. No. 4,409,134. Application for reissue Jan. 27, 1992, Ser. No. 826,472
Claims priority, application Japan, Jun. 30, 1980, 55-88974
Int. Cl.[5] H01L *29/04, 29/78, 27/14*
U.S. Cl. 257—53 **13 Claims**

1. A semiconductor device comprising:
a substrate and
a non-single crystal semiconductor layer formed on or over the substrate, the non-single crystal semiconductor layer being composed of a first semiconductor region formed primarily of a first semi-amorphous semiconductor and a second semiconductor region (a) formed primarily of a second semi-amorphous semiconductor containing microcrystalline semiconductor more than the first semi-amorphous semiconductor and (b) having a higher degree of conductivity than the first semiconductor region;



wherein the first and second semiconductor regions are laterally arranged side by side on or over the substrate.

Re. 34,659
APPARATUS TO VARY AXLE ORIENTATION
Bruce J. Reilly, 1-5 Campbell Street, Narellan, New South Wales, Australia 2567
Original No. 4,968,055, dated Nov. 6, 1990, Ser. No. 438,987, Nov. 20, 1989. Continuation of Ser. No. 344,482, Apr. 12, 1989, abandoned, which is a continuation of Ser. No. 116,584, Nov. 4, 1987, abandoned. Application for reissue Nov. 3, 1992, Ser. No. 970,856
Claims priority, application Australia, Jul. 28, 1987, PI3385
Int. Cl.[5] B62D *17/00;* **B61F** *5/26*
U.S. Cl. 280—661 **8 Claims**



5. An axle alignment device for a balance beam suspension system, said axle alignment device comprising:
axially extending sleeve means for engagement as a part of a bushing, said axially extending sleeve means having two ends;
a pair of adaptors, each adaptor having a first longitudinally extending part of circular transverse cross-section, said first longitudinally extending part being rotatably mounted within a respective end of said axially extending sleeve means and each adaptor having a second longitudinally extending part of circular transverse cross-section rotatably engageable within a respective beam hanger of an axle saddle bracket associated with said bushing, the longitudinal dimension of said second longitudinally extending part being no more than the thickness of the respective beam hanger;
said second longitudinally extending part of each adaptor being axially eccentric relative to its respective first longitudinally extending part and relative to said axially extending sleeve means; and
a control tension member including a bolt extending axially through both adaptors and said axially extending sleeve, and a nut secured to said bolt to apply a force to each of said adaptors to urge at least one of said second longitudinally extending part of said adaptors and said respective beam hangers into compression against said axially extending sleeve means to form a compressively prestressed unit.

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Re. 34,660

APPARATUS AND METHODS FOR DIGITAL-TO-ANALOG CONVERSION USING MODIFIED LSB SWITCHING

R. Allan Belcher, Swansea, Wales, assignor to Burr-Brown Corporation, Tucson, Ariz.

Original No. 4,890,106, dated Dec. 26, 1989, Ser. No. 108,583, Oct. 13, 1987. Division of Ser. No. 891,785, Jul. 30, 1986, Pat. No. 4,703,308, which is a division of Ser. No. 633,092, Jul. 23, 1984, Pat. No. 4,621,254, which is a continuation-in-part of Ser. No. 630,977, Jul. 16, 1984, abandoned. Application for reissue Dec. 19, 1991, Ser. No. 810,688

Claims priority, application United Kingdom, Jul. 29, 1983, 8320534

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—144 **5 Claims**



1. A method for converting a plurality of digital signals to an analog signal, the method comprising the steps of

(a) applying a most significant m bits of an n-bit digital signal to be converted, to m bits, respectively, of an m-bit digital-to-analog converter having an LSB current switch circuit, and substituting successive values of the n-bit digital signal at a first frequency;

(b) applying a least significant n−m bits of the n-bit digital signal to an interpolation circuit to produce an interpolation signal of the first frequency;

(c) applying the interpolation signal to an input of [an LSB] *a* current switch circuit *responsive to the interpolation signal* additional to the LSB current switch circuit of the m-bit digital-to-analog converter; and

(d) combining an analog output signal produced by the m-bit digital-to-analog converter with an output signal produced by the [LSB] current switch circuit *responsive to the interpolation signal* to produce an analog output signal with n-bit resolution.

Re. 34,661

GEL AND AIR CUSHION ANKLE BRACE

Tracy E. Grim, Broken Arrow, Okla., assignor to Royce Medical Company, Westlake Village, Calif.

Original No. 5,088,478, dated Feb. 18, 1992, Ser. No. 572,843, Aug. 24, 1990. Continuation-in-part of Ser. No. 308,689, Feb. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 192,461, May 10, 1988, Pat. No. 4,869,207. Application for reissue Aug. 25, 1992, Ser. No. 935,013

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—27 **30 Claims**



29. A brace for permitting limited or restricted movement of a portion of the human body which has been subject to minor injury, comprising:

an outer support member conforming to the shape of the portion of the anatomy as to which limited movement is to be permitted;

means for adjustably holding said support member to the body of the user;

at least one gel pad for mounting within said support member and adjacent the anatomy and for cushioning and conforming to the physical configuration of the anatomy of the user;

at least one air bladder mounted adjacent said gel pad and the support member; and

said bladder constituting means for containing air to apply pressure to the selected portion of the anatomy to exert a restraining force to limit movement of the selected portion of the anatomy;

whereby the gel permits full conformation to the anatomy and the use of an air bladder provides additional support.

PLANT PATENTS

GRANTED JULY 12, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,825

FEIJOA VARIETY NAMED OPAL STAR

Kevin Patterson, and Lawrence E. Hedley, both of Auckland, New Zealand, assignors to Horticultural and Food Research Institute of New Zealand Limited, Palmerston North, New Zealand

Filed Nov. 30, 1992, Ser. No. 984,056

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—33.1 **1 Claim**

1. A new and distinct variety of Feijoa substantially as illustrated and described which is characterized by its late season harvest, heavy cropping and moderately compact habit.

8,826

BOUGAINVILLEA HYBRID CV. SUNDANCE

William A. Hatten, Mobile, Ala., assignor to Hatten's Nursery, Inc., Mobile, Ala.

Filed Apr. 30, 1993, Ser. No. 57,279

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—67.7 **1 Claim**

1. A new and distinct variety of Bougainvillea plant as substantially shown and described herein, characterized by its unique combination of floriferous habit, orange colored bracts, which change to empire rose-color as they mature, light and dark green leaf variegation of new growth, and its yellowish stems, peduncles and pedicels.

8,827

BOUGAINVILLEA HYBRID CV. BLUSHING BEAUTY

William A. Hatten, Mobile, Ala., assignor to Hatten's Nursery, Inc., Mobile, Ala.

Filed Apr. 30, 1993, Ser. No. 57,280

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—67.7 **1 Claim**

1. A new and distinct variety of Bougainvillea plant as substantially shown and herein described, characterized by its unique combination of a very floriferous habit, pink-blush flower bracts with a trace of white on each side of a green midrib, the green outer surface of its calyx tubes, and the light and dark green variegation of its foilage.

8,828

ACHILLEA VARIETY CV. ANBLO

Alan H. V. Bloom, Diss, England, assignor to Blooms of Bressingham Ltd., Diss, England

Filed Jun. 9, 1993, Ser. No. 75,176

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct variety of Achillea plant called Anblo as herein illustrated and described.

8,829

CHRYSANTHEMUM PLANT NAMED LIGHT VOLARE

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Apr. 1, 1993, Ser. No. 43,489

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Light Volare, as described and illustrated.

8,830

CHRYSANTHEMUM PLANT NAMED DARK CHERIE

Susan M. Polys, Salinas, Calif., assignor to Yoder Brother, Inc., Barberton, Ohio

Filed May 17, 1993, Ser. No. 62,317

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Dark Cherie, as described and illustrated.

8,831

CHRYSANTHEMUM PLANT NAMED EL PASO

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jul. 26, 1993, Ser. No. 96,520

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct Chrysanthemum plant named El Paso, as described and illustrated.

8,832

DIEFFENBACHIA PLANT NAMED TROPIC MARIANNE

Edwin J. Frazer, Queensland, Australia, assignor to Twyford International, Inc., Santa Paula, Calif.

Filed Aug. 18, 1993, Ser. No. 108,192

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.2 **1 Claim**

1. A new and distinct cultivar of Dieffenbachia plant named Tropic Marianne, as illustrated and described.

8,833

POINSETTIA PLANT 490 MARBLE

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 23, 1993, Ser. No. 96,660

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.1 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its intense dark green foliage, pink and creamy white bicolored bracts, self branching, early flowering and good leaf and bract retention in the consumer environment.

8,834

LILY PLANT: LILIUM 'PINK PARAMOUNT'

Gerardus C. Van der Salm, 35306 NW. Toenjes Rd., Woodland, Wash. 98674

Filed Aug. 24, 1993, Ser. No. 111,641

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinctive variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season; and in particular by its unique completely upfacing flowers with lower pedicels curving sharply upward at a point 5 to 8 cm from the base of the pedicel, and by its medium pink coloration with white-edged green nectaries and with very deep magenta rose papillae on the basal half of each tepal, a combination unique amont Oriental hybrid lilies suited to forcing and to mass commercial cultivation.

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8,835

COLEUS PLANT NAMED HEIDI

Wolfgang W. Schuhman, 7441 Curtiss Ave., Sarasota, Fla. 34231

Filed Mar. 2, 1993, Ser. No. 25,446
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 1 Claim

1. A new and distinct variety of coleus plant substantially as herein shown and described, characterized by its compact, large, and symmetrically domed shape and its deep maroon color.

8,836

CALATHEA PLANT NAMED ROSY

Ann E. Lamb, Lake Placid, Fla., assignor to Twyford International, Inc., Sebring, Fla.

Filed Aug. 23, 1993, Ser. No. 110,720
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 1 Claim

1. A new and distinct cultivar of Calathea plant named Rosy, as illustrated and described.

PATENTS

GRANTED JUL. 12, 1994

ERRATA

For CLASS	See PATENT NO.
51-168	5,327,601
53-331	5,327,697
475-131	5,327,800
601-040	5,327,882
607-096	5,327,886
607-129	5,327,090
135-117	5,327,927
139-001	5,327,939
180-041	5,327,983
181-177	5,328,985
477-185	5,328,006
220-007	5,328,042
296-097	5,328,135
242-541	5,328,136
242-300	5,328,138
249-048	5,328,142
257-088	5,328,154
273-169	5,328,184
273-186	5,328,185
273-187	5,328,186
273-237	5,328,187
273-239	5,328,188
273-292	5,328,189
273-358	5,328,190
273-411	5,328,191
303-009	5,328,251
424-005	5,328,404
464-180	5,328,408
117-079	5,328,548
437-226	5,328,549
427-459	5,328,736
427-569	5,328,737
502-127	5,328,877
514-002	5,328,891
502-001	5,328,894
503-227	5,328,895
504-227	5,328,896
504-270	5,328,897
524-589	5,328,954
424-134	5,328,984

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ERRATA—CONTINUED

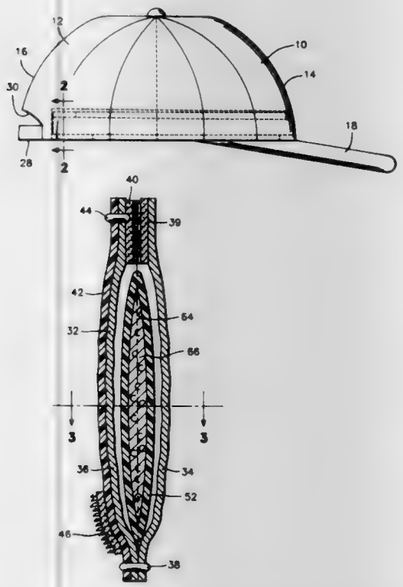
536-109	5,329,004
549-010	5,329,015
549-023	5,329,016
549-040	5,329,017
549-373	5,329,018
548-548	5,329,028
310-313	5,329,208
347-011	5,329,293
347-087	5,329,294
346-153	5,329,307
348-472	5,329,360
348-655	5,329,361
348-228	5,329,362
348-781	5,329,363
348-011	5,329,364
348-469	5,329,365
348-512	5,329,366
348-540	5,329,367
348-701	5,329,368
348-556	5,329,369
348-734	5,329,370
348-738	5,329,371
348-302	5,329,372
360-077	5,329,436
376-352	5,329,571
348-016	5,329,572

PATENTS

GRANTED JULY 12, 1994

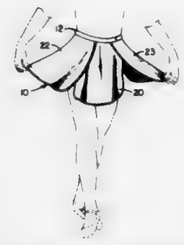
GENERAL AND MECHANICAL

5,327,585
COOL CAP
Edward J. Karlan, 2199 Harrison, Medford, Oreg. 97504
Filed May 5, 1993, Ser. No. 56,868
Int. Cl.[5] A42C *5/02*
U.S. Cl. 2—7 **7 Claims**



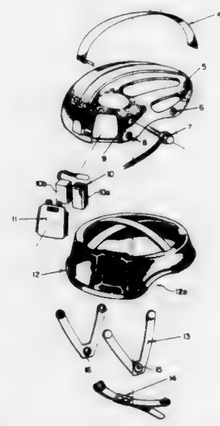
1. A heat-absorbing/radiating hat defining a crown area for disposition over the head of a user and including front and rear sides and a headband area encircling, at least substantially, a lower peripheral portion of said crown area, said headband area defining an upwardly opening channel extending along said lower peripheral portion, an elongated, semi-flat tubular body constructed of flexible, fluid impervious material removably anchored in and extending along said channel, said tubular body including generally flat opposite side panels joined along corresponding longitudinal and end margins thereof with said tubular body partially filled with fluid eutectic material, a plurality of pairs of opposing narrow zones extending transversely of said panels between said longitudinal margins and spaced apart generally equally throughout the length of said tubular body with said opposing zones being internally bonded together to divide the interior of said tubular body into a plurality of separate compartments spaced longitudinally along said tubular body, each of said compartments being partially filled with said fluid eutectic material and said zones defining transverse zones of said semi-flat tubular body along which said body may be folded, slightly, to enable relative angular displacement of compartments of said body disposed on opposite sides of each of said zones, said tubular body extending lengthwise along said headband area throughout said front side and rearwardly along opposite sides of said lower peripheral portion of said crown area toward and terminating forwardly of said rear side, said semi-flat tubular body including opposite end portions and a longitudinal central zone, said central zone being of a vertical extent less than the vertical extent of the opposite end portions of said tubular body.

5,327,586
DANCE SKIRT
Gretchen S. Evans, and Heather M. Reddy, both of Denver, Colo., assignors to Gretchen Storer Evans, Denver, Colo.
Continuation-in-part of Ser. No. 523,430, May 15, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 12,330
Int. Cl.[5] A41D *1/14*
U.S. Cl. 2—211 **17 Claims**



1. A dance skirt as an article of wearing apparel comprising:
a waistband; and
front, opposite side and back panels extending downwardly from said waistband, each said panel independently connected to said waistband for continuous downward extension therefrom and otherwise unconnected to one another, adjacent of said panels disposed in overlapping relation to one another, and each of said panels having downwardly divergent side edges extending into a lower common edge.

5,327,587
ILLUMINATED SAFETY HELMET
Marni Hurwitz, P.O. Box 502, Mountain Side Rd., Mendham, N.J. 07945
Filed May 26, 1993, Ser. No. 67,061
Int. Cl.[5] A42B *3/02;* **F21L** *15/14*
U.S. Cl. 2—422 **1 Claim**



1. An illuminated safety helmet comprising:
a helmet shell;
at least one electroluminescent strip permanently adhered to said helmet shell; and

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a power unit for supplying power to said at least one electroluminescent strip, said power unit being arranged on said helmet shell;

wherein said power unit includes a rechargeable battery and an inverter for converting a DC signal from said rechargeable battery to an AC signal, and wherein said power unit further includes a battery access door;

said helmet shell including a foam protector; and

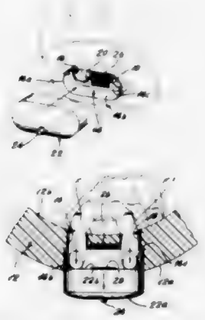
wherein said foam protector includes a recessed pocket for receiving said power unit and said helmet shell includes an opening corresponding to said recessed pocket to provide access to said recessed pocket, and wherein said batter access door snaps into said opening to cover said power unit once said power unit is arranged within said recessed pocket.

5,327,588

SAFETY HELMET FOR CYCLISTS

Louis Garneau, 246 chemin de la Butte, St-Augustin de Desmaures Québec, Canada G3A 2E6

Filed Oct. 18, 1993, Ser. No. 136,941
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—422 **6 Claims**



1. A safety helmet for a cyclist, including:

(a) a shell of arcuate exterior contour, at least the external part of said shell being a hard shell part, the interior part of said shell circumscribing an open enclosure to conformingly fit the head of the cyclist;

(b) a cavity being made into said hard external shell part, and defining a mouth opening exteriorly of said helmet, at least one through-bore being provided to extend through said shell and opening at its exterior end into said cavity and at its interior end into said shell interior open enclosure, said through-bore being diametrically smaller than said cavity and being sized for three through-engagement by a finger from the cyclist;

(c) a light member, releasably engaged into said cavity through said mouth, whereby said cyclist, upon removing his helmet from his head, can access with one finger the interior part of said light member inside said cavity and push said light member outwardly from said cavity; and

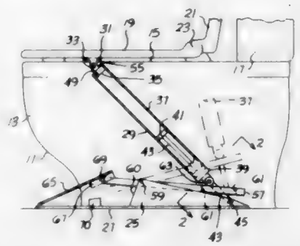
(d) means for releasably anchoring said light member inside said cavity, the latter means being forcibly inactivated by such above-noted pushing action of said finger.

5,327,589

TOILET SEAT RAISING MECHANISM

George Rice, 15802 Mansfield, Detroit, Mich. 48227

Filed Mar. 3, 1993, Ser. No. 25,770
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—246.2 **14 Claims**



1. A mechanism for raising a toilet seat having a rear end, comprising:

an extensible-contractible pneumatic cylinder means having one end thereof adapted to be connected to the floor and the other end thereof adapted to be connected to a toilet seat;

said pneumatic cylinder means comprising:

an elongated cylinder having first and second ends, said first end having connection means adapted to be connected to the toilet seat;

a piston slidable within the cylinder; and

a piston rod having first and second ends, said first end of said rod connected to said piston, said second end of said rod extending from the piston out of said second end of said cylinder and having connection means thereon adapted to be connected to the floor

lever means controlled by a user's foot for exerting a lifting force on said cylinder, whereby said cylinder slides upwardly on said piston to raise the toilet seat; and

a metering orifice in said first end of said cylinder,

whereby when the toilet seat is being lowered, the cylinder slides downwardly on the piston to pressurize the air above the piston, to produce a controlled flow of air out of the cylinder through the metering orifice;

said lever means comprising a slotted bar;

said piston rod extending through a slot in said bar; and

roller means mounted on said second end of said cylinder for rolling engagement on said slotted bar.

5,327,590

AUTOMATIC SWIMMING POOL COVER WITH A DUAL HYDRAULIC DRIVE SYSTEM

Harry J. Last, 1246 Birchwood Dr., Sunnyvale, Calif. 94089

Continuation-in-part of Ser. No. 741,480, Nov. 28, 1991, Pat. No. 5,184,357, which is a continuation-in-part of Ser. No. 494,564, Mar. 16, 1990, Pat. No. 5,067,184, which is a continuation-in-part of Ser. No. 258,000, Oct. 17, 1988, Pat. No. 4,939,798. This application Jul. 16, 1992, Ser. No. 913,796
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.
Int. Cl.[5] E04H *4/10*
U.S. Cl. 4—502 **15 Claims**

1. A hydraulic drive system for extending and retracting swimming pool covers comprising, in combination,

a first reversible hydraulic motor having a drive mechanically coupled for rotating at least one cable reel around which a pair of cables, each coupled to a front side edge of a pool cover, wind and unwind,

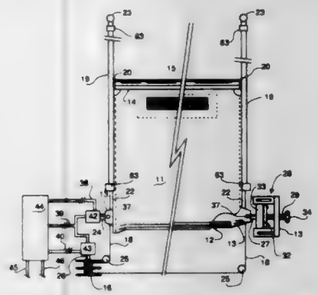
a second reversible hydraulic motor having a drive mechanically coupled for rotating a cover drum around which the pool cover winds and unwinds,

a hydraulic liquid,

a means for pressurizing and circulating the hydraulic liquid through hydraulically coupled elements of the drive system, and

means hydraulically coupling the respective motors and the means for pressurizing and circulating the hydraulic liquid for:

(i) providing a driving torque, via the first motor, for rotating the cable reel to wind the cables around the reel while simultaneously providing a resistive torque,



via the second motor, for resisting unwinding rotation of the cover drum as the cover unwinds and is drawn across covering the pool; and

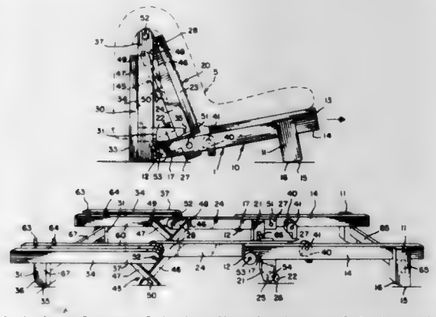
(ii) providing a driving torque, via the second motor for rotating the cover drum to wind the cover around the cover drum, while simultaneously providing a resistive torque, via the first motor, for resisting unwinding rotation of the cable reels to tension the cables and cover as the cover retracts uncovering the pool.

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THREE FRAME CONVERTIBLE FUTON SOFA BED

Robert Fireman, 785 W. End Ave., New York, N.Y. 10025, and Ralph Rosenow, Corinth, Miss., assignors to Robert Fireman, New York, N.Y.

Filed Apr. 19, 1993, Ser. No. 47,998
Int. Cl.[5] A47C *17/17*
U.S. Cl. 5—47 **21 Claims**



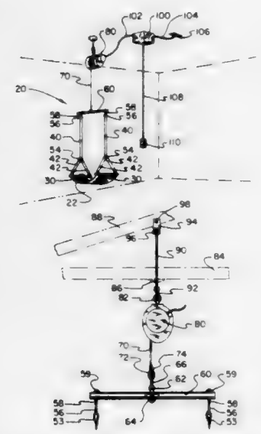
1. A three frame sofa bed recliner having a sofa bed position and a recliner position comprising end frame means; seat frame means; and back frame means, each said frame means having a front portion and a rear portion and side portions, said end frame means' side portions including an extension from said front portion, said back frame means' side portions including an extension from said rear portion and front portion, said seat frame means' side portions including an extension from said rear portion, said end frame means and back frame means and seat frame means' extensions overlapping, said end frame means and back frame means and seat frame means pivotably joined at said respective overlaps, said end frame means including at least two fixed support means, said fixed support means protruding from positions near said rear portion and near each said side portion, said back frame means and seat frame means including at least two fixed support means; at least one said fixed support means protruding from a position near each said side portion and near said respective front portions, said end frame means and back frame means including pivotable support means therebetween, said pivotable support means interfitable between said end frame means and said back frame means, engaging means to interlock said seat frame means and said back frame means, said engaging means on said seat frame means, said engaging means freely movable to override said back frame means' extension portion when said seat frame means is pivoted upward when said back frame means is in a sofa bed position, said engaging means further engagable with said back frame means extension portion when said seat frame means is moved downward interlocking said seat frame means and back frame means, said interlock releasable when said back frame means is moved to a substantially vertical position toward said end frame means, and said end frame's fixed support means engagable with said seat frame means' extension portions when said end frame means is in recliner position.

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STATIONARY PATIENT LIFT

Floyd V. Stump, Box 567, 818 Schopke Rd., Plymouth, Fla. 32768

Filed Jun. 7, 1993, Ser. No. 72,442
Int. Cl.[5] A61G *7/10*
U.S. Cl. 5—81.1 **6 Claims**



1. A new stationary lift for patients comprising:

a patient holding means;

a means for supporting said patient holding means from above, said means for supporting permanently fixable to a stationary and permanent structure;

a means for raising and lowering the patient comprising a winch affixed to a ceiling of said stationary and permanent structure, said winch further including cable means, and further including support means extending through said ceiling and being connected at one end to said winch and being connected at another opposed end to a roof rafter above said ceiling; and

a means for activating the raising and lowering of the patient;

whereby the lift is permanently mounted in a building and a patient can be lifted into and out of bed using the lift,

wherein said patient holding means comprises a sling having first and second opposed ends,

wherein said means for supporting said sling from above

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comprises a support bar, said support bar extending parallel to the longitudinal axis of said sling and being connected to said means for raising and lowering said patient, said support bar being further connected to first and second support straps at opposite ends thereof respectively, said first support strap being connected to a first pair of sling support straps each one of said pair being connected to a corresponding opposed end of a first sling support bar extending orthogonally with respect one end of said sling and said longitudinal axis of said sling support bar, said first sling support bar being connected to said one end of said sling,

said second support strap being connected to a second pair of sling support straps each one of said pair being connected to a corresponding opposed end of a second sling support bar extending orthogonally with respect said other opposed end of said sling and said longitudinal axis of said sling support bar, said second sling support bar being connected to said another opposed end of said sling,

such that said first and second pairs of sling support straps form triangular connections between said first support strap and said first sling support bar, and between said second support strap and said second sling support bar, respectively.

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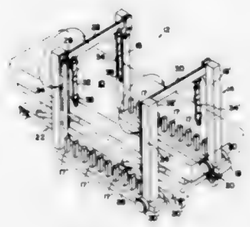
DEVICE FOR SUPPORTING AND POSITIONING PATIENTS

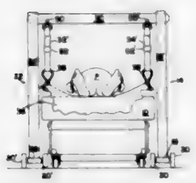
George S. Burnett, 935 Gossett Rd., Spartanburg, S.C. 29307

Continuation of Ser. No. 920,608, Jul. 27, 1992, abandoned. This application Jul. 29, 1993, Ser. No. 100,069

Int. Cl.[5] **A61G** *7/10*

U.S. Cl. 5—85.1 **16 Claims**





1. A device for cooperating with a vertically movable bed for supporting and positioning patients comprising:

a) a first frame adapted to be positioned adjacent a first side of said bed, said first frame comprising a horizontal base having vertical columns extending from said horizontal base;

b) a second frame adapted to be positioned along an opposite side of said bed, said second frame comprising a horizontal base having vertical columns extending from said horizontal base;

c) a cross member extending between and supported by said vertical columns extending from said first and said second frames, said cross-member extending over said bed and over any patient reclining on said bed when said first and second frames are positioned adjacent and on opposite sides of said bed;

d) at least two flexible support elements attached to said cross member;

e) a patient supporting means for extending about a portion of the anatomy of a patient; and

f) connecting means for connecting a portion of said patient supporting means to an end of said flexible support elements for supporting a portion of said patient's anatomy when said bed is vertically lowered.

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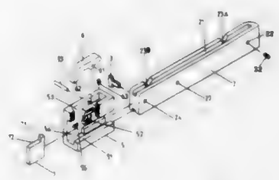
SLIDING RAILS FOR CRIB RAIL

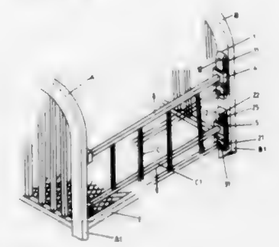
Chin-Yau Sun, 352, Sec. 1, Sha-Tyan Rd., Da-Duu Country, Taichung Country, Taiwan

Filed Apr. 23, 1993, Ser. No. 51,672

Int. Cl.[5] **A47D** *7/02*

U.S. Cl. 5—100 **14 Claims**





1. A crib comprising:

side boards (A,B);

a crib rail (C) to be positioned relative to said side boards;

an upper sliding rail (**1**) and a lower sliding rail (**2**) attached to each side board;

an upper moving member (**4**) and a lower moving member (**5**) for moving said crib rail along said upper sliding rail and said lower sliding rail respectively;

one of said sliding rails comprising:

an upper (**23A**) and a lower (**23B**) locating hole, and

an upper (**25**) and a lower (**3**) arresting block located closer to an end of said sliding rail than said upper and said lower locating hole respectively; and

said moving member moving along said one of said sliding rails comprising:

a control member (**6**) comprising means for retaining (**62**) said moving member in said locating holes;

a movable plate (**7**) having a first position for biasing said retaining means (**62**) in a position (FIG. **3**) in which said retaining means cannot retain said moving member in said locating holes (**23A**, **23B**) and a second position (FIG. **4**) which does not influence said retaining means, said upper arresting block being situated for moving said movable plate from said second position to said first position and said lower arresting block being situated for moving said movable plate from said first position to said second position.

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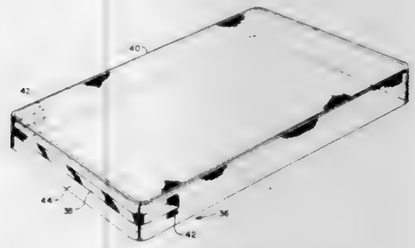
BEDCLOTHES RETAINER DEVICES

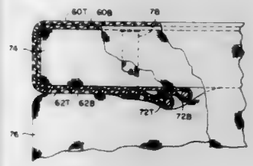
Robert D. Allen, 2704 4th St., NW 2E, Canton, Ohio 44708

Continuation-in-part of Ser. No. 67,024, May 26, 1993, abandoned. This application Nov. 2, 1993, Ser. No. 146,322

Int. Cl.[5] **A47G** *9/04, 9/02*

U.S. Cl. 5—460 **18 Claims**





1. A bedsheet retainer kit to removeably secure bedsheets in position on a mattress positioned on a box spring, said kit comprising:

(A) at least one elongated flexible first band means of sufficient length to transversely encircle a mattress adjacent at least one end thereof;

(B) each said first band means being of such configuration as to apply an inward compressive force upon the mattress at all locations where the band means overlies the mattress when the band is in operative position on the mattress;

(C) each said first band means having a bedsheet engaging means to limit relative movement between the sheet, the band and the mattress;

(D) an open ended second band means having an attachment means on each end which are adapted to be attached to mating attachment means fixedly attached on each side of the box spring near the bottom end thereof, said second band means when mounted in operative position extending around the end of the box spring being adapted to engage a top sheet and retain it in a fixed position relative to the mattress and box springs; and

(F) a top sheet having a pair of slots at one end thereof, said slots defining a flap therebetween which flap is adapted to lie over the foot end of the mattress and box spring when the top sheet is positioned on the mattress and which flap is held against the box spring when the band is positioned around the foot end of the box spring and attached thereto.

7. A bedclothes retainer device in combination with an item of bedclothes of substantially rectangular shape for placement on a mattress positioned on a box spring and forming an assembly therewith, said item of bed clothes having a top edge, a bottom edge and a pair of side edges, the retainer vice comprising:

(A) a retaining flap of flexible sheet material having one edge attached to the item of bedclothes along a transverse line located in relative relationship to the bottom edge of the item of bedclothes and extending from the attached edge in the same direction as the bottom edge, said flap having a transverse elongated pocket extending along the opposite edge of the flap;

(B) an elongated filler member removeably positioned within the pocket to form an elongated transverse rib configuration of greater thickness than the sheet material of the flap;

(C) the retaining flap extending a sufficient distance relative to the bottom edge of the item of bedclothes that when the item of bedclothes is placed in operative position on a mattress, it will extend down over the bottom edge of the mattress and between the mattress and box spring; and

(D) a retaining band extending transversely across the retaining flap and securely mounted on the mattress to bear against the retaining flap and retard movement thereof.

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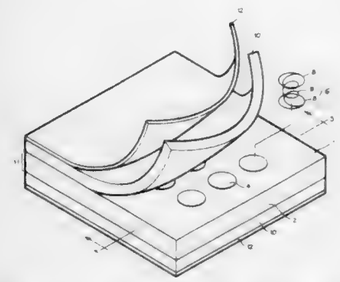
COMBINATION SPRING/FOAM CUSHIONING

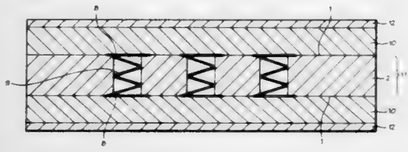
William R. Wallace, Hickory, and James N. Finley, Lenoir, both of N.C., assignors to Hickory Springs Manufacturing Company, Hickory, N.C.

Filed Jul. 29, 1993, Ser. No. 99,061

Int. Cl.[5] **A47C** *27/20, 27/05*

U.S. Cl. 5—475 **3 Claims**





1. A cushioning assembly for seats and the like, comprising:

a foam body having opposed outer surfaces defining a foam thickness therebetween, said foam body being compressibly resilient in the direction of its said foam thickness, said foam body including a plurality of cavities extending in the direction of said foam thickness, each said cavity opening at opposite ends thereof to said opposed outer surfaces of said foam body; and

a plurality of compressibly resilient coil spring units, each said spring unit having at least one helical coil and a pair of end coils affixed to opposite ends of said at least one helical coil, said end coils comprising securing portions, said spring units being contained in said cavities to be imbedded independently of and at spacings from one another within said foam body with each said spring unit oriented for compression in the direction of said foam thickness and with each said securing portion of each said spring unit overlying a respective one of said outer surfaces of said foam body, whereby said foam body and said spring units cooperate to provide resilient cushioning and support in the direction of said foam thickness.

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CONVOLUTED MATTRESS PAD HAVING MULTIPLE PROXIMATE PEAKS
Michael Rothbard, 609 Interchange Dr., Atlanta, Ga. 30336
Filed Jul. 2, 1992, Ser. No. 908,312
Int. Cl.[5] A47C *27/00*
U.S. Cl. 5—481 2 Claims



1. A mattress pad comprising a foam layer having a bottom surface, a convoluted top surface and apertures randomly placed in relation to the convoluted pattern of the top surface, said apertures extending through the foam layer from the top surface to the bottom surface, wherein the convoluted top surface comprises a repeating pattern of peaks and valleys having at least two peaks in proximity to each other without a valley therebetween adjacent the same number of valleys in proximity without a peak therebetween, the distance between proximate peaks being the same as the distance between proximate valleys, such that the mass of the proximate peaks combine to create an additive effect to support the user's body and the proximate valleys allow for increased air flow between the supporting proximate peaks, further comprising three zones, one at approximately the top 1/5 of the length of the top surface and one approximately the next 2/5 of the length in the middle of the top surface, and one at approximately the bottom 2/5 of the top surface wherein the top and bottom zones comprise two proximate peaks adjacent two proximate valleys and the middle zone comprises four proximate peaks adjacent four proximate valleys.

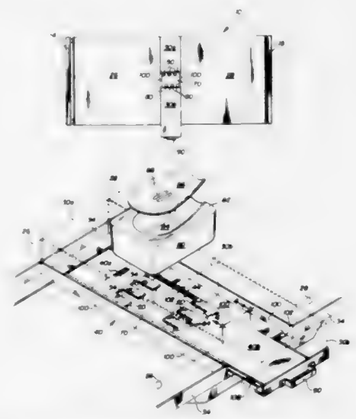
5,327,598
MASSAGE MATTRESS
Yaw T. Liou, P.O. Box 82-144, Taipei, Taiwan
Filed Jul. 2, 1993, Ser. No. 85,087
Int. Cl.[5] A47C *27/14*
U.S. Cl. 5—481 1 Claim

1. A massage mattress comprising:
a body formed of foamed material, having an upper flat surface and a lower flat surface, and provided with a plurality of vertical through holes; and
a plurality of emulsion members each solidified and formed integral with a corresponding one of the vertical through holes of said body, said emulsion members having a top



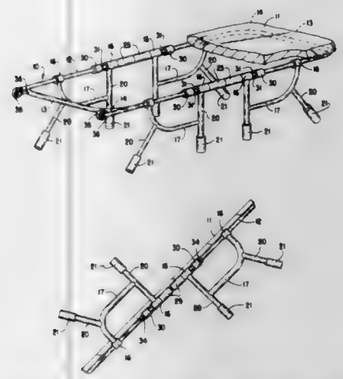
even with the upper flat surface of said body and a bottom even with the lower flat surface of said body.

5,327,599
HOSPITAL BED WITH BED PAN INSERT
James B. Bradley, Jr., 4805 Inverness Dr., Tyler, Tex. 75703
Filed Sep. 13, 1993, Ser. No. 121,152
Int. Cl.[5] A61G *7/02*
U.S. Cl. 5—604 3 Claims



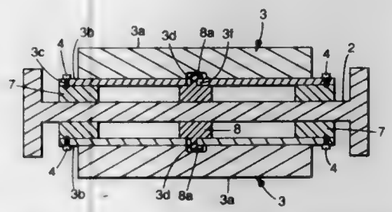
1. A bed for use with a bed pan comprising:
a mattress including a head section, a foot section, and a medial section disposed between said head and foot sections;
a frame for supporting said mattress sections;
a plate disposed within said frame for supporting said mattress medial section, said plate being mounted within said frame for horizontal slidable movement between a closed position in which said mattress sections form a continuous surface for the bed, and an open position transverse of said frame to create a recess in said mattress medial section thereby moving said mattress medial section outwardly of said frame;
said plate includes a plurality of tabs and said frame includes a plurality of mating tabs for receiving said plate tabs to form a continuous surface below said mattress medial section in said plate closed position; and
a bed pan adapted to be disposed within said recess and supported by said plate tabs and said frame tabs when said plate is in said open position.

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PATIENT GURNEY WITH ADJUSTABLE HAND HOLDS
Gilbert C. Hoogendoorn, 600 S. Kiwanis Ave., Apt. 319, Sioux Falls, S. Dak. 57104
Filed Feb. 8, 1993, Ser. No. 14,538
Int. Cl.[5] A61G *1/02*
U.S. Cl. 5—625 5 Claims



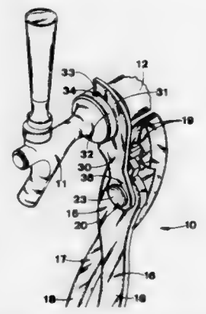
1. A gurney for carrying a patient, comprising a frame, bed means on said frame adapted to receive a patient, said gurney having a head end and a foot end, a first pair of handle means adjacent to but not extending beyond said head end, a second pair of handle means adjacent to but not extending beyond said foot end, each of said handle means being pivotally attached to said frame and each having a hand hold substantially parallel to but substantially laterally spaced from said frame whereby said hand holds can be grasped adjacent said frame, said handle means also including legs extending from said handle means away from said frame, said handle means each being pivotal on said frame from a first position in which said handle hold is above said frame to a second position in which said hand hold is below said frame, said gurney being adapted to be supported by said legs.

5,327,601
SPLIT ABRASIVE ROLL ATTACHMENT SYSTEM
Masashi Nakayama; Naohiro Nagafuchi, both of Kanagawa, and Yoshihiro Fukase, Yamagata, all of Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 5, 1993, Ser. No. 27,083
Claims priority, application Japan, Mar. 9, 1992, 4-050573
Int. Cl.[5] B24B *41/00*
U.S. Cl. 51—168 7 Claims



1. A split abrasive roll for attachment to a rotatable shaft (2), comprising:
(a) at least two abrasive roll members (3) each having an abrasive outer surface (3*a*) and an inner surface, wherein the roll members are adapted to cooperatively form a generally cylindrical split abrasive roll, and said inner surfaces are adapted to form a central shaft receiving portion, said abrasive roll members each having first and second ends (3*b*);
(b) a cooperative engaging member disposed on the inner surface of each of said at least two roll members between said first and second ends;
(c) a cooperative engaging member disposed on the rotatable shaft corresponding to each of said cooperative engaging members disposed on said roll members; and
(d) means for affixing the respective first and second ends of the roll portions to the shaft;
whereby said cooperative engaging members are adapted for reciprocal interengagement to affix a central portion of each of said roll members to the shaft, and said end affixing means are adapted to affix said roll members to the rotatable shaft.

5,327,602
COMBINATION PLIERS AND SPANNER WRENCH
Tracy K. Stenger, Rockford, Ill., assignor to Johnson Enterprises, Inc., Rockford, Ill.
Filed Oct. 19, 1993, Ser. No. 137,914
Int. Cl.[5] B25F *1/00*
U.S. Cl. 7—125 7 Claims



1. A combination tool comprising two members each having an elongated handle and a serrated jaw, pivot means pivotally connecting said members together near said jaws whereby said members define a pair of pliers, and a wrench clamped against one of said members by said pivot means, said pivot means including means for preventing said wrench from turning relative to said one member.

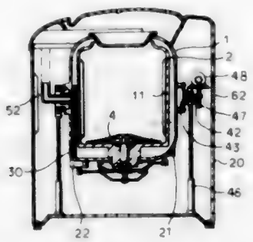
5,327,603
COMBINED PULSATOR AND DRUM TYPE WASHING MACHINE
Yang H. Roh, and Ho C. Kwon, both of Changwon-si, Kyungsangnam-do, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Jul. 16, 1992, Ser. No. 913,726
Claims priority, application Rep. of Korea, Jul. 16, 1991, 12128/1991; Oct. 10, 1991, 16832/1991; Oct. 11, 1991, 17890/1991; May 29, 1992, 9312/1992
Int. Cl.[5] D06F *23/02, 23/04*
U.S. Cl. 8—159 11 Claims

1. A combined pulsator and drum type washing machine comprising:
a washing drum having a plurality of lifters provided on its inner periphery and a pulsator rotatably disposed on its inner bottom;
a washing drum motor for driving said washing drum;
a pulsator motor for driving said pulsator;
a tub surrounding said washing drum;
fixing members each having a bearing shaft for turning said

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tub and secured to the opposite sides of the outer periphery of said tub;

bearing housings for rotatably guiding and supporting said bearing shafts to permit said tub to be turned smoothly;



means for rotating one of said bearing shafts to turn said tub between upright and horizontal positions for selectively washing in one of a plurality of washing modes; and

a power supply control means for controlling rotational directions and driving of said washing drum and said pulsator motor.

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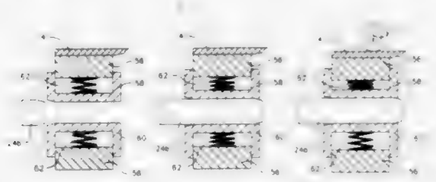
Patent Not Issued For This Number

5,327,605

ENERGY-ABSORBING SPAN LOCK SYSTEM FOR DRAWBRIDGES

Robert L. Cragg, Maple Glen, Pa., assignor to Steward Machine Co., Inc., Birmingham, Ala.

Filed Mar. 31, 1993, Ser. No. 40,420
Int. Cl.[5] E01D *15/08*
U.S. Cl. 14—41 21 Claims



1. For use in combination with a drawbridge having at least one span with a free end structure moveable with respect to a complementary structure, span lock apparatus for releasably interlocking the free end structure with its complementary structure in a manner providing a shear connection therebetween, said apparatus comprising:

a connector mounted on one of the structures, said connector having a shear member extendable and retractable relative to said one structure;

receiver means mounted on the other of the structures for receiving an extended portion of said shear member and for aligning and interlocking the structures when the drawbridge is closed; and

first resilient means mounted on said receiver means for resiliently engaging opposed upper and lower surfaces of said extended portion of said shear member;

whereby shear loads applied to the span are resiliently accommodated.

5,327,606

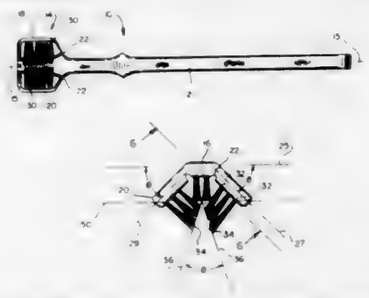
Patent Not Issued For This Number

5,327,607

TOOTHBRUSH FOR CLEANING MULTIPLE SIDES OF TEETH

Eugene C. Wagner, c/o Dental Concepts, 9 North, Elmsford, N.Y. 10523

Continuation-in-part of Ser. No. 890,790, Jun. 1, 1992. This application Jan. 22, 1993, Ser. No. 8,562
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.2 16 Claims



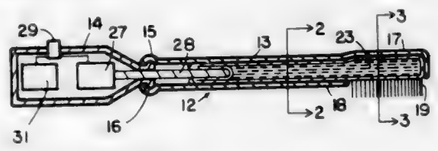
1. An ansate oral prophylactic comprising an elongate handle and an enlarged head, the head being positioned at one end of the handle, the handle and the head being unitarily formed of one piece construction, the head including an elongated spine, the spine having at least one row of bristles projecting therefrom, said at least one row extending in a direction generally along the length of the spine, the spine having a pair of sides extending along the length of the spine, the head having a pair of side panels, each side panel being connected to the spine along a respective side of the spine, each side panel lying within a plane, each side panel including a plurality of rows of bristles, each row of side panel bristles extending in a direction substantially parallel to the direction of said at least one row of spine bristles, the bristles of each side panel row extending substantially perpendicular to the plane within which the respective side panel lies, all of the bristles of each respective side panel having ends which lie substantially within a single plane, the side panel bristle end planes intersecting one another at an acute angle, the ends of the at least one row of spine bristles lying substantially within a single plane, the side panel bristle end planes intersecting one another at the plane of the at least one row of spine bristle ends and the planes within which the respective side panels lie intersecting one another at an angle greater than the angle of intersection of the side panel bristle end planes, such that efficacious cleansing of all accessible tooth surfaces is attainable with a simple back and forth stroke.

5,327,608

MOVING BRISTLE BRUSH

Michael P. Kosakewich, 2500 Newport Dr., Fort Collins, Colo. 80526

Filed Dec. 17, 1992, Ser. No. 992,547
Int. Cl.[5] A61C *15/00*; A46B *13/02*
U.S. Cl. 15—22.1 10 Claims



1. A brush comprising:

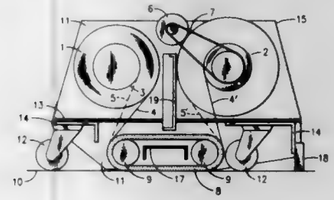
a head portion having bristle support means on which a plurality of bristles are mounted and project transversely away from an exterior surface of said support means, said support means having a convex contour in a first configuration that positions said bristles so as to tilt laterally out with respect to a vertical center line of said support means at a first bristle position, said support means having a concave contour in a second configuration that positions said bristles so as to tilt laterally in with respect to a vertical center line of said support means at a second bristle position and means operating on said support means for moving said support means between said first and second configurations and said bristles back and forth between said first and second bristle positions to provide a brushing action by the movement of said bristles.

5,327,609

MOPSWEEPING APPARATUS WITH CONTINUOUS ACTION

Ulrk F. Bierma, Ijsselstein, and Dirk M. Both, Waddinxveen, both of Netherlands, assignors to Reinhoud B.V., Ijsselstein, Netherlands

PCT No. PCT/NL91/00010, § 371 Date Nov. 25, 1991, § 102(e) Date Nov. 25, 1991, PCT Pub. No. WO91/11134, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 24, 1991, Ser. No. 777,241
Claims priority, application Netherlands, Jan. 24, 1990, 9000184
Int. Cl.[5] A47L *11/29*
U.S. Cl. 15—98 9 Claims



1. Mopsweeping apparatus comprising a housing adapted to be moved over a surface to be cleaned, a cooperating roller pair, carried by said housing, and comprising a first roller and a second roller, a supply of a dust gathering cloth wound on said first roller, said cloth being windable from said first roller to said second roller, means for driving said cooperating roller pair for winding said cloth from said first roller to said second roller, the winding direction of said cloth being in the same direction as the movement of said apparatus over said surface to be cleaned, and a pressing means under which said cloth is retained during movement of said apparatus over a surface to be cleaned, said pressing means comprising two rollers over which an endless flexible belt is carried, said pressing means providing a horizontal contact surface with said surface to be cleaned.

5,327,610

ADJUSTABLE, REMOVABLE, LOCKING HANDLE FOR FLOOR POLISHERS AND THE LIKE

David G. Smith, Nepean, Canada, assignor to Dustbane Products Limited/Les Produits Dustbane Limitee, Ottawa, Canada

Filed Jun. 30, 1992, Ser. No. 906,497
Claims priority, application Canada, Feb. 27, 1992, 2061996
Int. Cl.[5] A47L *11/162*
U.S. Cl. 15—98 7 Claims

1. A releasable clamp for engaging the interior of a cylindrical tube comprising:

(a) an outwardly expandable elongated split ring having open, bevelled ends and having cylindrical side portions for being spread to frictionally engage the interior surfaces of the tube, the split ring being slidably movable longitudinally within the tube when the sides of the split ring are not spread;

(b) wedge means for spreading said sides, said wedge means being slidable within the cylindrical tube and relatively movable with respect to the ends of the split ring to bear against the ends to force the side of the split ring to spread to a tube-engaging position, said wedge means comprising an elongated tube for being slidably received within said cylindrical tube and having an upper bearing surface at one end thereof located adjacent one end of said split ring and means forming a lower bearing surface located adjacent an opposite end of said split ring, said bearing surfaces being bevelled for mating with the bevelled ends of the split ring when in contact therewith; and

(c) actuation means for providing relative movement of said



wedge means with respect to the split ring to cause the sides of the split ring to spread and contract, said actuation means including a rod within said elongated tube and mounted for longitudinal movement with respect to said elongated tube, and lever means for producing longitudinal movement of the rod, said lever means being pivotally mounted in said elongated tube; wherein

one end of said rod is mechanically coupled to said lever means such that actuation of the lever means, without relative rotation of the tubes, produces longitudinal movement of the rod with respect to said elongated tube, the lower bearing surface being secured to said rod and being relatively movable with respect to the split ring towards the upper bearing surface to cause the bearing surfaces to cooperate with the ends of the split ring to force the sides of the split ring outwardly into the spread, tube-engaging position.

5,327,611

HAIR BRUSH

Melvin E. Balster, Minnetonka, and Delton A. Kruschke, Apple Valley, both of Minn., assignors to Mebco Industries, Inc., Shakopee, Minn.

Filed Apr. 2, 1993, Ser. No. 41,753
Int. Cl.[5] H05F *3/00*; A46B *9/08*
U.S. Cl. 15—176.4 13 Claims

1. A hairbrush comprising:

a brush body which includes:

a head having first and second ends and first and second sides which form an open frame and a plurality of ribs which extend between the first and second ends to define a first set of air slots; and

a handle having first and second ends with the first end of the grip attached to the second end of the head; and

a bristle insert which includes:

an open frame with first and second sides and first and second ends;

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a plurality of convex webs extending directly and without intersection between the first and second sides of the open frame, the webs being spaced from one another to define a second set of air slots, the second set of air slots extending directly and without interruption between the first and second sides of the open frame;



a plurality of spaced bristles carried on each of the webs, the bristles extending outward from the webs; and

a connector for mating with the frame of the head to connect the bristle insert to the head.

5,327,612

PLASTIC MOLDED TROWEL HANDLE HAVING FINGERGUARD AND PALM GRIP

Curtis D. Kelsay, Springdale, Ark., assignor to Marshalltown Trowel Company, Marshalltown, Iowa

Filed Mar. 2, 1993, Ser. No. 25,622

Int. Cl.[5] **B05C** *17/10;* **E04F** *21/16*

U.S. Cl. 15—235.4 **26 Claims**



1. A trowel, comprising:

a flat blade;

a shank extending upwardly from the top surface of said blade;

a tang extending from said shank; and

a handle secured to said tang and being disposed above the top surface of said blade, said handle including

(i) an outer grip member formed of a first thermoplastic rubber material and providing a grip surface of a first coefficient of friction with the user's hand;

(ii) an inner core formed of a second more rigid plastic material;

(iii) a protective finger guard formed of said second more rigid plastic material and providing an outer surface having a second coefficient of friction with the user's hand, said finger guard formed integral with said inner core, said finger guard extending downward with respect to said grip surface of said outer grip member and covering the rear portion of said shank for preventing contact between the user's fore finger and said shank when the user grips the handle.

5,327,613

AUTOMOTIVE WIPER APPARATUS WITH COMBINED OPERATION OF SPRAYING AND WIPING

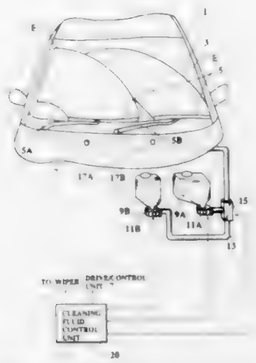
Yoshiro Ohtsu, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 27, 1991, Ser. No. 766,179

Claims priority, application Japan, Sep. 27, 1990, 2-255222

Int. Cl.[5] **B60S** *1/48, 1/46*

U.S. Cl. 15—250.02 **6 Claims**



1. An automotive wiper apparatus comprising:

means for wiping a surface of an object employed in an automobile, said means for wiping including at least one wiper blade having an adjustable depression force;

means for jetting a first cleaning fluid and a second cleaning fluid onto the surface of said object;

means for controlling both the wiping means and the jetting means under two modes of operation such that in a first mode of operation, said jetting means sprays the first cleaning fluid onto the surface of said object and said wiper blade is applied to said surface in a wiping motion under a first depression force;

and wherein under a second mode of operation, said cleaning fluid onto the surface of said object over a predetermined time period, and said wiper blade to be applied to said surface in a wiping motion under a second depression force which is less than said first depression force.

5,327,614

WINDSHIELD CLEANING SYSTEM WITH PIPE AND CONDUCTOR IN WIPER SHAFT

Bruno Egner-Walter, Kaferflugstr. 43, 7100 Heilbronn; Eberhard Pleib, Glockelsberg 8, 7598 Lauf, and Eckhardt Schmid, Heilbronner Str. 62, 7129 Brackenheim, all of Fed. Rep. of Germany

PCT No. PCT/EP90/00347, § 371 Date Jan. 14, 1991, § 102(e) Date Jan. 14, 1991, PCT Pub. No. WO90/10561, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 2, 1990, Ser. No. 613,798

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1989, 3907968

Int. Cl.[5] **B60S** *1/46, 1/34*

U.S. Cl. 15—250.04 **24 Claims**

1. A windshield cleaning system for delivering a washing liquid supplied by a washing liquid supply tube to a windshield of a vehicle so that the windshield may be cleaned by the washing liquid being wiped over the windshield, the windshield cleaning system comprising:

a jet for spraying the washing liquid onto the windshield;

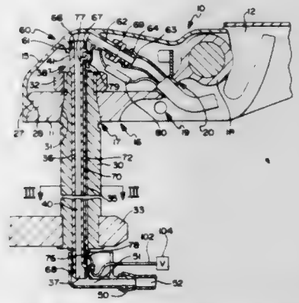
a rotatably mounted shaft with a drive end and a driven end, the shaft having an axial bore, the bore adapted to channel washing liquid passing from the washing liquid supply tube through the bore from the drive end to the driven end of the shaft;

a wiper arm for wiping the washing liquid over the windshield, the wiper arm connected to the driven end of the shaft;

an intermediate piece disposed at the driven end of the shaft for diverting the washing liquid received from the bore of the shaft to the jet, the jet being connected to the intermediate piece;

a heating element disposed on the wiper arm for warming the washing liquid at the jet;

a voltage source connected to the heating element for exciting the heating element;



at lest one electric conductor for heating the washing liquid, the at least one electric conductor disposed within the bore;

a pipe disposed within the bore, the at least one electric conductor carried by the pipe, the pipe extending beyond one of the ends of the shaft to define a first end portion of the pipe;

at least one contact web connected to the conductor and attached to the at least one end portion for detachable connection to a counter contact piece; and

a first counter contact piece detachably electrically connected to the voltage source and the at least one contact web.

5,327,615

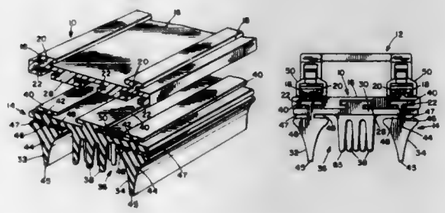
WINDSHIELD WIPER BLADE ASSEMBLY INCLUDING CONICAL CLEANING TIPS

Gerald D. Green, 10236 Avenida de la Cantina, San Diego, Calif. 92129

Filed Feb. 16, 1993, Ser. No. 18,163

Int. Cl.[5] **B60S** *1/28, 1/38*

U.S. Cl. 15—250.40 **16 Claims**



13. A wiper blade member, comprising:

a flat, elongated base portion having a longitudinally axis, opposite side regions extending along the length of the base portion, an upper face and a lower face;

a pair of spaced, elongated, flexible wiper blades depending downwardly parallel to one another from opposite sides of said regions of said lower face of the base portion with a gap between the wiper blades, each wiper blade having a predetermined length in a downwards direction transverse to the longitudinal axis of said base portion;

a plurality of conical cleaning tips of elastomeric material depending downwardly from a central region of the lower face of the base portion between the wiper blades, each cleaning tip having a length less than that of the wiper blades;

the base portion having support means for supporting the blade member on a wiper arm; and

the base portion, tips and blades are formed integrally in one piece from the same material.

5,327,616

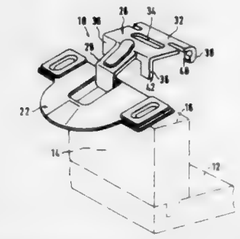
CABINET HINGE

Horst Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Mepla-Werke Lautenschlager GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

Filed Feb. 24, 1993, Ser. No. 22,064

Int. Cl.[5] **E05D** *5/00*

U.S. Cl. 16—382 **8 Claims**



1. A cabinet hinge for hanging a door on a frame member of a carcase of a cabinet, said cabinet having a frame on its front surface, said frame narrowing an opening of the front surface of said cabinet, said frame being formed by frame members reaching inwardly from walls of said cabinet, which is at least partially covered by an inside surface of the door in a closed position, said hinge comprising:

a hinge arm of sheet metal, said hinge arm including a mounting plate at one end of said hinge arm for placement onto a free edge of a frame member of a frame, said free edge facing away from a side wall, and releasably fastened onto said free edge, said mounting plate having a width corresponding to the width of an edge of the frame member said hinge arm coupled by a joint mechanism to a part of the hinge attached to the door, said mounting plate having front and back surfaces onto which is provided at least one tab bent substantially at right angles with respect to said surfaces and onto an exterior flat side of the frame member, and at least one tab bent substantially at right angles with respect to said surfaces and onto an interior flat side of the frame member and having a sharpened or knife-edge like projection extending in a direction toward the first mentioned at least one tab and toward the interior flat side of the frame member so that said door at least partially overlaps the front surface of said frame member in a closed position.

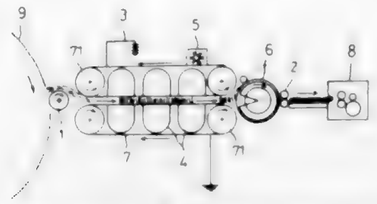
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5,327,617

ELECTROSTATIC OPENING AND SHORT FIBER SEPARATION APPARATUS FOR CARDING MACHINES

S. C. Yao, Taipei, Taiwan, assignor to China Textile T&R Institute, Taipei, Taiwan

Filed Apr. 21, 1993, Ser. No. 49,499
Int. Cl.[5] D01G *1/00*; B03B *7/00*
U.S. Cl. 19—98 1 Claim



1. An electrostatic short fiber separation system for use with a carding machine, comprising:

a stripping roller having a metallic cloth covering and being positioned on one side of a card cylinder of said carding machine, said stripping roller being rotatively driven in a direction coinciding with said card cylinder for removing a web of fibers therefrom, said stripping roller being provided in substitution of a doffer of said carding machine;

conveyor means extending longitudinally from said stripping roller for transport of said web of fibers therefrom, said conveyor means including:

a. a pair of perforate metal screen strips disposed in spaced parallel relation, each of said perforate metal screen strips being drivingly coupled between a respective pair of longitudinally displaced rollers;

b. high voltage means for establishing an electrostatic field between said pair of perforate metal screen strips, said electrostatic field causing long fibers to bridge between said spaced perforate metal screen strips; and,

c. at least three short fiber removal zones disposed in longitudinally spaced relation between each of said pairs of longitudinally displaced rollers, the removal zones including a suction source applying a greater force on the short fibers and dust than a force applied thereto by said electrostatic field for removing short fibers and dust from said web of fibers through each of said perforate metal screen strips;

cage roller means disposed at a distal end of said conveyor means for forming a web of long fibers therefrom; and,

means for forming sliver from said web of long fibers disposed adjacent said cage roller means, the silver forming means including a pair of press rollers for stripping said web of long fibers from said cage roller means.

5,327,618

HOSE CLAMP INCORPORATING TIGHTENING SCREW

Richard Chene, Meanetou sur Cher; Pierre Dupin, Romorantin Lanthenay, and Covello Fabienne, Romorantin, all of France, assignors to Etablissements Caillau, France

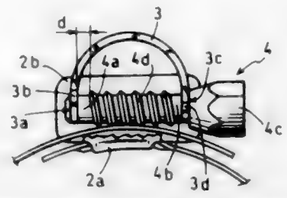
Filed May 19, 1993, Ser. No. 64,757
Claims priority, application France, May 22, 1992, 92 06319
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—274 R 4 Claims

1. A hose clamp including a tightening band, one of the ends of the band forming a rack and the other end of the band affixed to a tightening means, wherein the tightening means includes:

a housing affixed to the band;

a screw having a longitudinal axis, said screw having a tail portion at one end and a head portion at the other end, and mounted in said housing in such a fashion to permit pivotal and axial movement of said screw relative to said housing; and

a curved spring blade having first and second ends mounted in spaced apart relation to said housing, the first end provided with an opening adapted to receive the tail portion of said screw, the second end provided with an opening to



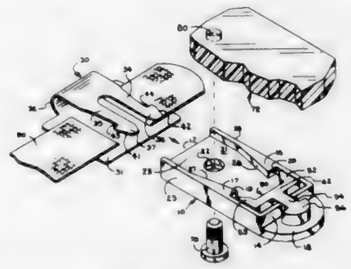
at least partially surround said screw in the vicinity of the head portion thereof, the second end of said spring blade being mounted to said housing to permit relative sliding movement therebetween.

5,327,619

PLUNGER RELEASABLE LATCH

Victor A. Ortega, 3040 Beverly Rd., Camp Hill, Pa. 17011

Continuation-in-part of Ser. No. 814,962, Dec. 26, 1991, abandoned. This application Sep. 22, 1992, Ser. No. 949,341
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—625 7 Claims



1. A latch system which comprises:

a—a receptacle enclosure shell having a means for attachment to a support structure, with an end slit opening and a longitudinally opposite notched end wall, both providing access into a main cavity within said receptacle enclosure shell which contains transversely aligned, inwardly directed, rigid internal ridges with inwardly sloped leading edges terminated by transverse bearing ledges, and

b—a u-shaped frame structure having a pair of parallel legs joined by a semi-circular bend portion, one of said legs having a plurality of spaced apart parallel slots each of said slots having a jagged sawtooth edge, defining a strap receiving belt end attachment means buckle-type and the other leg, containing a protruding tab that extends out to form a pair of integral flexible beams spaced apart a set distance and projecting transverse fins flanked by outwardly sloped surfaces, whereby said transverse fins displace inwardly towards each other during insertion into said receptacle enclosure shell due to contact with said inwardly sloped leading edges of said rigid internal ridges, thereafter engaging said transverse bearing ledges within said main cavity of said receptacle enclosure shell, and

c—a plunger insert containing forked fingers projecting out from a stem support structure at one end, and connected to a slidable shaft that extends out to form a boss section at its longitudinal opposite end, said plunger insert positioned within said receptacle enclosure shell whereby said forked fingers are slideably contained in a lengthwise manner, their tips directed towards said rigid internal ridges inside said main cavity of said receptacle enclosure shell, and said slideable shaft passes through said notched end wall of said receptacle enclosure shell projecting out said boss section, whereupon said plunger insert, when pushed inward by a longitudinally directed external force applied at said boss section causes said forked fingers to slide in a lengthwise direction and impact said outwardly sloped surfaces of said transverse fins projecting from said integral flexible beams, causing an inward displacement of said transverse fins towards each other until they disengage from said transverse bearing ledges of said main cavity, and thereafter, within the same lengthwise in-line motion, said forked fingers displace said transverse fins out towards said end slit opening, thereby releasing said u-shaped frame structure from said receptacle enclosure shell.

5,327,620

FASTENING MEANS FOR CONNECTING A GAITER TO A ROLLER SKATE

Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan

Filed Nov. 26, 1993, Ser. No. 157,329
Int. Cl.[5] A43B *11/00*
U.S. Cl. 24—68 SK 1 Claim



1. A fastening means for connecting a gaiter to a roller skate having a gaiter and a roller skate and the improvements comprising:

said gaiter having at least one aperture at rear portion thereof, a fasten belt having one end secured to a fastener at one side of said gaiter and a free end;

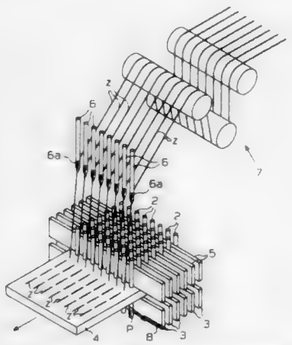
said roller skate having at least one buckle integral to the rear portion of said roller skate, said buckle including a pair of protuberances protruding from the top and the bottom thereof, respectively, adopted to limit movement of said gaiter when said aperture of said gaiter seating thereon, and a hole laterally across the center therein dopted to receive said fasten belt therethrough in a slidable and detachable manner, whereas the position of said gaiter with respect to said roller skate.

5,327,621

METHOD OF PRODUCING FABRIC REINFORCING MATRIX FOR COMPOSITES

Yoshiharu Yasui; Meiji Anahara; Fujio Hori, and Junji Takeuchi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 19, 1993, Ser. No. 34,534
Claims priority, application Japan, Mar. 23, 1992, 4-065158; Mar. 23, 1992, 4-065159
Int. Cl.[5] D03D *13/00*
U.S. Cl. 28—149 9 Claims



1. A method of producing a reinforcing matrix for a composite, comprising the steps of:

locating on a base a plurality of regulating members arranged in rows that extend in a first predetermined direction;

weaving yarns between said regulating members to form a lamination having a plurality of yarn layers on said base, said yarn layers having said yarns arranged in at least two different directions of said lamination;

simultaneously removing said lamination and said regulating members from said base;

collectively forming a plurality of loops corresponding to said plurality of regulating members by collectively replacing said regulating members with a plurality of vertical yarns, each of said vertical yarns forming one of said loops; and

inserting a locking thread into said plurality of loops of said vertical yarns.

5,327,622

HIGHLIGHTED NON-BLENDED CONTINUOUS FILAMENT CARPET YARN

Andrew M. Coons; Leonard C. Vickery; Melvin R. Thompson, and Willis M. King, all of Anderson, S.C., assignors to BASF Corporation, Parsippany, N.J.

Filed Jan. 21, 1993, Ser. No. 7,302
Int. Cl.[5] D02G *1/18*
U.S. Cl. 28—220 7 Claims

1. A process for preparing moresque or berber continuous filament yarn comprising:

(a) supplying a first group of continuous filaments under tension to a first entangling zone where the first group of continuous filaments is impinged with fluid under pressure;

(b) subjecting the first group of continuous filaments to entangling by fluid impingement in the first entangling zone, wherein during said entangling, providing sufficiently high yarn tension and fluid pressure to create harsh nodes in the first group of continuous filaments such that after said subjecting the group has a yarn harshness of at least about 200;

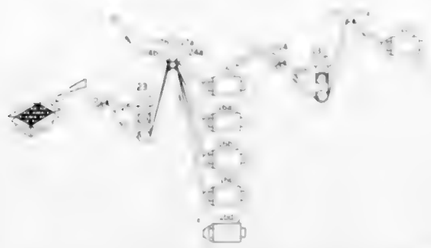
(c) supplying one or more other groups of continuous fila-

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ments which are differentially precolored or dyeable with respect to the first group;

(d) joining the first group and the other groups after said subjecting; and

(e) interlacing under tension and by the action of a fluid the tightly entangled first group with the one or more other



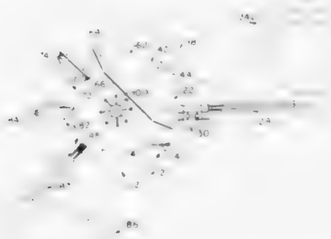
groups of continuous filaments, said interlacing taking place under a yarn tension and fluid pressure sufficient to cohere all groups of continuous filaments without blending the tightly interlaced first group with the one or more other groups such that after said interlacing the finished yarn has node harshness less than 100

5,327,623

SEMI-AUTOMATED BUTTON CLOSING MACHINE

Charles E. Noel, 1563 Paradise Ave., Hamden, Conn. 06514

Filed Jan. 31, 1991, Ser. No. 648,807
Int. Cl.[5] B21F 45/26
U.S. Cl. 29—4 46 Claims



1. A method for orienting two objects relative to one another, comprising:

retaining a first object in a fixed rotational orientation upon retaining means at a first work station;

sensing the placement of the first object upon the retaining means using an optical sensor and providing this information to a microprocessor which controls functions at each work station;

advancing the retaining means to at least one subsequent work station;

placing a second object adjacent the first object at a desired rotational orientation relative to the first object when said information indicates that the first object has been placed upon the retaining means; and

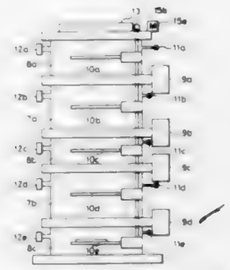
applying suction to the retaining means to retain the first object therein at the first and the at least one subsequent work station.

5,327,624

METHOD FOR FORMING A THIN FILM ON A SEMICONDUCTOR DEVICE USING AN APPARATUS HAVING A LOAD LOCK

Makoto Hirayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 390,287, Aug. 7, 1989, abandoned, and a continuation of Ser. No. 73,172, Jul. 14, 1987, abandoned. This application Dec. 18, 1990, Ser. No. 629,566
Claims priority, application Japan, Jul. 16, 1986, 61-116874
Int. Cl.[5] H01L 21/302, 21/463; C23C 16/00
U.S. Cl. 29—25.01 2 Claims



1. A method for manufacturing semiconductor devices, comprising the steps of:

(a) providing at least one main reaction chamber for receiving at least one semiconductor substrate and an auxiliary chamber in communication with said at least one main reaction chamber;

(b) isolating said at least one main reaction chamber from said auxiliary chamber by moving an isolation structure between an opened condition, wherein said at least one main chamber and said auxiliary chamber communicate with one another, and a closed condition, wherein said at least one main chamber is isolated from said auxiliary chamber;

(c) establishing within said at least one main reaction chamber a reactive atmosphere so as to form at least one thin membrane on said substrate;

(d) establishing an inert atmosphere within said auxiliary chamber when said at least one main reaction chamber and said auxiliary chamber are isolated so that said established inert atmosphere exists within said auxiliary chamber concurrently with said reactive atmosphere established within said reaction chamber according to step (c);

(e) moving said isolation structure from said closed condition and into said opened condition thereof when said inert and reactive atmospheres exist concurrently in said auxiliary and said at least one main reaction chamber, respectively, and then

(f) transferring said substrate from said auxiliary chamber and into said at least one main reaction chamber when said isolation structure is in said opened condition so that said substrate transferred thereinto is not exposed to an undesired external atmospheric condition.

5,327,625

APPARATUS FOR FORMING NANOMETRIC FEATURES ON SURFACES

Harry R. Clark, Jr., Towsend; Gerald W. Iseler, Chelmsford, and Brian S. Ahern, Boxboro, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass. and United States of America, Washington, D.C.

Filed Aug. 13, 1992, Ser. No. 929,341
Int. Cl.[5] B26D 3/06
U.S. Cl. 29—25.01 2 Claims

1. An instrument for forming nanometric features on surfaces of materials comprising:

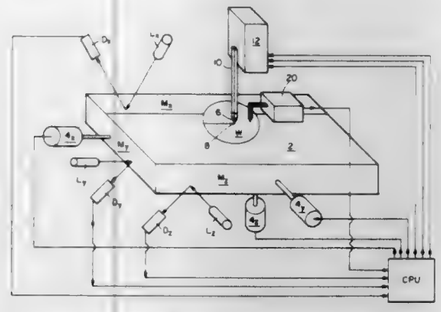
a support for moving a workpiece on X-Y-Z axes;

motor means for imparting movement to the support;

a laser system for sensing movement on the X-Y-Z axes;

a scribing tool of nanometric proportions engagable with the workpiece;

piezoelectric actuating means mounting the tool for movement relative to the workpiece; and



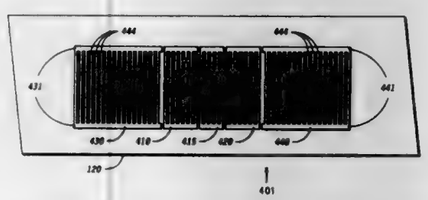
a computer processing unit for receiving signals from the laser system and programmed to control the motor means and the piezoelectric actuating means in closed loops such that the tool imparts nanometric surface features to the workpiece in predefined patterns.

5,327,626

METHOD FOR PROCESSING ROBUST ACOUSTIC REFLECTORS

Frederick Y. Cho, Scottsdale; Thomas S. Hickernell, Tempe, and David Penunuri, Fountain Hills, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 733,933, Jul. 22, 1991, Pat. No. 5,270,606. This application Nov. 16, 1992, Ser. No. 976,749
Int. Cl.[5] H01L 41/22
U.S. Cl. 29—25.35 20 Claims



1. A method for making an acoustic wave device, comprising steps of:

providing an acoustic wave propagating substrate; and

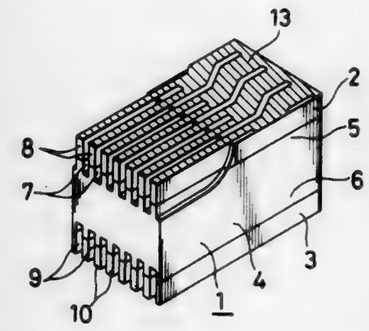
disposing a plurality of reflection elements along the acoustic wave propagating substrate in a direction of acoustic wave propagation, the plurality comprising first reflection elements each having at least a first width and a first reflection coefficient, the first reflection elements alternately disposed with at least second reflection elements each having a second width and a second reflection coefficient, the first and second widths being different and selected as a function of reflection coefficient magnitude to produce cancellation of reflection coefficient changes due to similar changes in the first and second widths.

5,327,627

METHOD OF MANUFACTURING A HIGH-DENSITY PRINT HEAD INCORPORATING PIEZOELECTRIC MEMBERS

Kuniaki Ochiai, and Toshio Miyazawa, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,807
Claims priority, application Japan, Mar. 26, 1992, 4-067991
Int. Cl.[5] H01L 41/22
U.S. Cl. 29—25.35 8 Claims



1. A method of manufacturing a print head for an ink-jet printer, comprising steps of:

forming a main plate by fixedly laminating a first piezoelectric plate polarized in the direction of its thickness, a second piezoelectric plate polarized in the direction of its thickness, a first low-rigidity plate having a rigidity lower than that of the first piezoelectric plate and contiguous with the inner surface of the first piezoelectric plate and a second low-rigidity plate having a rigidity lower than that of the second piezoelectric plate and contiguous with the inner surface of the second piezoelectric plate;

cutting a plurality of parallel first grooves through the first piezoelectric plate into the first low-rigidity plate by grinding at positions determined with reference to a reference position to form a plurality of parallel first walls, each of which has side surfaces exposed to the first grooves;

cutting a plurality of parallel second grooves through the second piezoelectric plate into the second low-rigidity plate by grinding at positions determined with reference to the reference position to form a plurality of parallel second walls, each of which has side surfaces exposed to the second grooves;

forming first electrodes respectively over portions of the side surfaces of the first walls formed of the first piezoelectric plate;

forming second electrodes respectively over portions of the side surfaces of the second walls formed of the second piezoelectric plate;

closely attaching a top plate to the outer surface of the first piezoelectric plate to form first pressure chambers between the first walls;

closely attaching a bottom plate to the outer surface of the second piezoelectric plate to form second pressure chambers between the second walls; and

attaching an orifice plate provided with a plurality of ink jets to the end surface of the main plate so that the ink jets coincide respectively with the first and second pressure chambers.

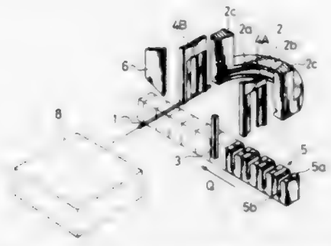
VOL 1164 ISS 2 JL 12 1994 UMI

5,327,628

APPARATUS FOR BENDING AND HOLDING WIRE FOR WIRE END PROCESSING

Teruyuki Gouda, and Toshihiro Inoue, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Jul. 28, 1993, Ser. No. 98,029
Claims priority, application Japan, Jul. 31, 1992, 4-204796
Int. Cl.[5] B23P *23/00*; **B21F** *1/00*; **H01R** *43/00*
U.S. Cl. 29—33 F **8 Claims**



1. An apparatus for bending and holding a wire for wire end processing, comprising:
a wire guide member formed with a curved guide surface along which a wire guide groove is formed;
a wire supplying device disposed at a predetermined distance away from said wire guide member, for supplying the wire to one end of said wire guide groove;
a stopper disposed another predetermined distance away from said wire guide member, for stopping an end of the wire bent along the wire guide groove and fed out from the other end of the wire guide groove;
wire push-in members interposed between said wire guide member and said wire supplying device and between said wire guide member and said stopper, respectively and movable in a direction perpendicular to a wire travel line determined by said wire supplying device and said wire guide member, for removing the wire from said wire guide member; and
a wire holding member for holding the wire removed from said wire guide member at a position away from the wire travel line, said wire holding member being movable after having held the wire.

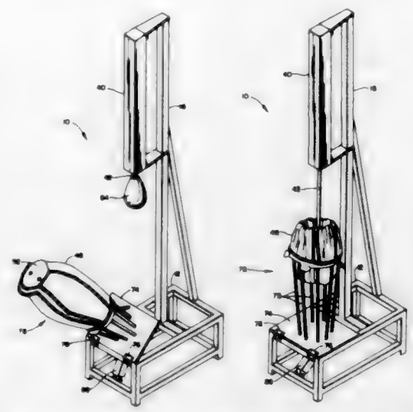
5,327,629

INVERTING SEAT COVERS

Gerald A. Coon, Cridersville; Douglas A. Reinhart, Tiffin, and Lawrence D. Ray, North Baltimore, all of Ohio, assignors to Findlay Industries, Findlay, Ohio

Division of Ser. No. 951,912, Sep. 28, 1992, Pat. No. 5,253,401, which is a continuation-in-part of Ser. No. 791,020, Nov. 12, 1991, Pat. No. 5,180,460. This application Jul. 9, 1993, Ser. No. 88,730
Int. Cl.[5] B68G *7/05*
U.S. Cl. 29—91 **8 Claims**

1. Apparatus for inverting a seat cover which has been sown inside out comprising,
a frame having a piston and cylinder combination mounted thereon, a piston rod extending from said piston, an inverting device secured to one end of the piston rod remote from said piston,
means forming a cage to surround said inverting device when said inverting device has inverted said seat cover,
a mast secured to said frame, said mast including means holding said piston and cylinder combination with said piston rod in alignment with an aperture opening of said cage,
said cage being formed of at least three rods, said rods having similar shape and two ends, said rods being secured to said frame at one ends thereby defining a securing location and extending from said frame toward said inverting device and defining said aperture opening of said cage at the other ends remote to said one ends of said rods, and



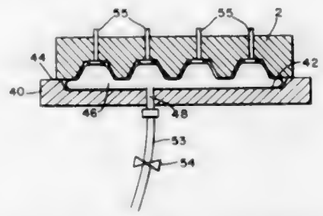
means for reciprocating said inverting device from a position remote from said cage in an aligned path through said aperture into said cage to a location near the securing location where said rods are secured to said frame.

5,327,630

APPARATUS FOR FACILITATING REMOVAL/REPLACEMENT OF SPRINGS OF ENGINE VALVES

Brice Harmand, 600 Front St., #435, San Diego, Calif. 92101-6737

Division of Ser. No. 915,018, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 855,098, Mar. 20, 1992, abandoned. This application Jun. 2, 1993, Ser. No. 71,663
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—216 **16 Claims**



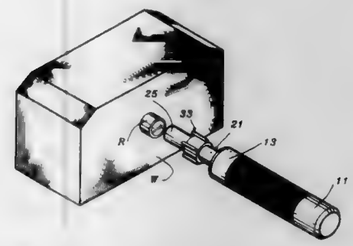
1. An apparatus to facilitate removal/replacement of valve springs from their corresponding valves in a cylinder head having a plurality of valves and a plurality of chambers with one chamber corresponding to at least one of said plurality of valves, said apparatus comprising:
a flat surface for supporting said cylinder head;
a recessed area bisecting at least a portion of said flat surface;
a deformable bladder disposed at least partially within said recessed area having a releasably sealable inlet means for retaining a fluid introduced into said deformable bladder, said deformable bladder having a length which spans said plurality of chambers;
a supply line connected to said deformable bladder through which said fluid is introduced; and
a pumping means for providing pressure whereby said fluid is introduced through said supply line into said deformable bladder;
wherein said cylinder head is disposed on said flat surface with its chambers substantially aligned with said recessed area and said fluid is introduced into said deformable bladder so that it expands to fill said chambers, forcing said plurality of valves outward to facilitate access for removal/replacement of said valve springs.

5,327,631

ROLL PIN PUNCH KIT APPARATUS

George P. Lincavage, 3711 Remington Ave., Pennsauken, N.J. 08110

Filed Jun. 29, 1992, Ser. No. 905,466
Int. Cl.[5] B25B *27/02*
U.S. Cl. 29—271 **2 Claims**



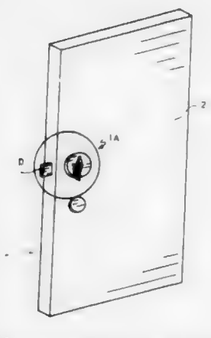
1. A roll pin punch kit apparatus, comprising,
an elongate cylindrical handle, the cylindrical handle having a predetermined handle diameter,
and
the handle including a handle forward wall,
and
an externally threaded shank coaxially aligned relative to the cylindrical handle and extending from and beyond the handle forward wall,
and
a plurality of punch members, each punch member including a punch shank defined by a shank diameter received through the externally threaded shank within the handle,
and
a cap member threadedly receiving the externally threaded shank therewithin for securement of the punch shank within the handle,
and
the externally threaded shank includes a shank bore directed coextensively through the externally threaded shank and extending into the handle coaxially aligned with the externally threaded shank and the handle, with the externally threaded shank bore defined by said shank diameter to complementarily receive the punch shank therewithin,
and
the cap member includes a cap member forward wall, the cap member forward wall including a cylindrical forward wall bore defined by a forward wall bore diameter substantially equal to the shank diameter, and an internally threaded counter bore coaxially aligned and intersecting the forward wall bore extending from the forward wall bore coextensively through the cap member, and a toroidal groove defined by a groove diameter greater than the shank diameter at an interface between the forward wall bore and the internally threaded counter bore, wherein the internally threaded counter bore, the forward wall bore, and the toroidal groove are coaxially aligned relative to the cap member, and a resilient "O" ring received within the toroidal groove,
and
each punch member includes a punch member cylindrical projection extending coaxially of and forwardly of the punch shank, and a tubular alignment sleeve arranged for complementarily receiving the cylindrical projection therethrough for alignment of the cylindrical projection relative to a workpiece,
and
the alignment sleeve includes a sleeve bore coextensively directed through the alignment sleeve equal to a predetermined length and a bore diameter to complementarily receive the cylindrical projection therewithin, and the alignment sleeve including a sleeve rear wall, the sleeve rear wall having a plurality of leg members mounted to the sleeve rear wall extending in a parallel spaced relationship to the alignment sleeve, wherein the leg members are defined by a leg length greater than the predetermined length of the sleeve bore,
and
each leg member includes a plurality of segments, the segments are arranged for threaded inter-engagement relative to one another in a coaxially aligned relationship.

5,327,632

PICK PROOF DEADBOLT CONVERSION KIT

Orel R. Moore, 1162 Riverside Dr., Myrtle Creek, Oreg. 97457

Continuation-in-part of Ser. No. 050,992, Apr. 22, 1993, which is a continuation of Ser. No. 872,318, Apr. 23, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 136,935
Int. Cl.[5] E05B *13/08*
U.S. Cl. 29—401.1 **6 Claims**



1. A method of converting any conventional single cylinder deadbolt lock assembly having at least a key hole on a first face side thereof and a backplate and turnpiece latch on a second side thereof into a pick proof lock by preventing the turnpiece latch from turning once a locking shaft pin in engaged to connect the backplate and turnpiece latch, said method comprising the steps of:
attaching a chain having the locking shaft pin at a first end thereof to the backplate by securing a fastener attached at a second end thereof opposite the first end thereof to a screw located on the backplate;
placing a deadbolt lock of a conventional single cylinder deadbolt lock assembly in a locked position;
drilling a first engaging orifice of a predetermined diameter through the turnpiece latch after placing the deadbolt lock in a locked position;
drilling a second engaging orifice having the predetermined diameter as the first engaging orifice through the backplate after drilling the first engaging orifice through the turnpiece latch so that the first engaging orifice and the second engaging orifice are coaxially aligned;
inserting a first collar having an outer diameter substantially equivalent to the predetermined diameter into the first engaging orifice;
inserting a second collar having an outer diameter substantially equivalent to the predetermined diameter into the second engaging orifice;
wherein the locking shaft pin may be engaged to connect the turnpiece latch and the backplate by placing the locking shaft pin through a first aperture located through the first collar having a diameter substantially equivalent to the outer diameter of the locking shaft pin for providing a

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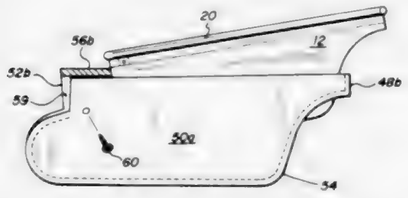
proper fit therethrough, and then placing said locking shaft pin through a second aperture located through the second collar also having a diameter substantially equivalent the outer diameter of the locking shaft pin, thus preventing said turnpiece latch from turning once the deadbolt lock is placed in the locked position.

5,327,633

METHOD OF REPAIRING VEHICLE SUN VISORS

Johnie B. Riddle, Jr., 251 Springbrook Dr., Mansfield, Tex. 76063

Filed Sep. 30, 1991, Ser. No. 769,092
Int. Cl.[5] B23P *6/00*
U.S. Cl. 29—402.08 11 Claims



1. The method of repairing a damaged sun visor of the type that is provided as original equipment by manufacturers of vehicles including automobiles, trucks and recreational vehicles, said sun visor including a structural frame that defines the general shape of the sun visor and further including upholstery that covers the frame, said repairing of the damaged sun visor typically being made necessary as a result of deterioration of the upholstery that covers the frame, comprising the steps of.

a. preparing a front replacement panel for the sun visor, said front panel having a shape that is generally the same as that of the structural frame but being just slightly larger than said structural frame, said front panel being sufficiently stiff as to be essentially self-supporting, and said front panel having an outer surface that is at least as attractive as the sun visor's original upholstery;

b. preparing a back replacement panel for the sun visor, said back panel having a shape that forms essentially a mirror image of the front replacement panel, and said back panel being sufficiently stiff as to be essentially self-supporting, and said back panel having an outer surface that is at least as attractive as the sun visor's original upholstery;

c. positioning the front and back replacement panels together in such a way that their edges are juxtaposed, and the outer surfaces of the respective panels are facing away from one another;

d. affixing the front and back replacement panels to one another along about 50 percent of their juxtaposed edges so as to form a partial envelope that can be slipped over the structural frame while leaving the remainder of the juxtaposed edges loose and unattached;

e. sliding the affixed panels over the structural frame to the extent that the structural frame panel is completely enveloped; and

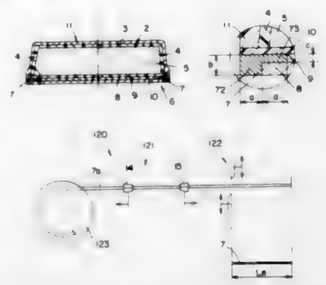
f. affixing to one another at least most of the remaining loose and unattached edges of the front and back panels, whereby the structural frame will be captured by the front and back panels which are affixed over more than 50 percent of their juxtaposed edges.

5,327,634

PROCESS FOR IMPROVING ELASTICITY OF THE EDGE OF A SKI

Yves Gagneux, Annecy le Vieux, France, assignor to Salomon S.A., France

Filed Sep. 4, 1992, Ser. No. 941,222
Claims priority, application France, Sep. 4, 1991, 91 11168
Int. Cl.[5] B21D *53/00, 3/12*
U.S. Cl. 29—428 9 Claims



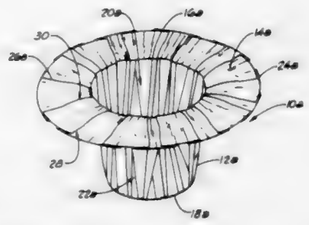
9. Process for the manufacture of a ski comprises providing corrosion-resistant martensitic chrome steel having a configuration serving as a ski edge, exerting traction on said ski edge in a longitudinal direction so as to pre-stretch said ski edge beyond its elastic limit in order to impart to it an irreversible longitudinal deformation, providing a ski and incorporating said pre-stretched ski edge on said ski.

5,327,635

METHOD OF MAKING A FLOWER POT OR FLOWER POT COVER WITH PLEATED SKIRT

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 938,724, Sep. 1, 1992, Pat. No. 5,259,106, which is a continuation of Ser. No. 693,906, May 1, 1991, Pat. No. 5,181,339, which is a division of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, which is a continuation-in-part of Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Apr. 14, 1993, Ser. No. 48,390
Int. Cl.[5] B21D *35/00*
U.S. Cl. 29—469 27 Claims



1. A method for making a flower pot of flower pot cover, comprising:

forming a base having an upper end and a lower end with an object opening extending through the upper end;

forming a skirt connected to the upper end of the base and extending outwardly from the upper end of the base terminating with an outer peripheral surface, the skirt having a plurality of folds extending from about the upper end of the base outwardly toward the outer peripheral surface of the skirt; and

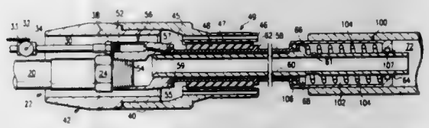
connecting permanently a portion of the folds in the skirt between the upper end of the base and a position spaced a distance from the outer peripheral surface of the skirt toward the upper end of the skirt forming connected folds with said portion having the connected folds extending circumferentially about the skirt and a remaining portion of the folds in the skirt between the outer peripheral surface of the skirt and said portion with the connected folds being substantially free of folds with said remaining portion extending circumferentially about the skirt.

5,327,636

REVERSIBLE IMPACT-OPERATED BORING TOOL

Dirk A. Wilson, Stillwater, Okla., assignor to The Charles Machine Works, Inc., Perry, Okla.

Division of Ser. No. 609,897, Nov. 6, 1990, Pat. No. 5,172,771. This application Dec. 21, 1992, Ser. No. 993,771
Int. Cl.[5] E21B *11/02*
U.S. Cl. 29—525 7 Claims



7. A method for assembling an impact operating boring tool, comprising the steps of:

fixedly attaching an elastomeric material to a steel canister;

fixedly attaching the elastomeric material to an operating fluid supply tube;

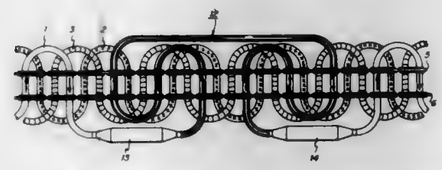
press fitting the steel canister into a tailpiece surrounding the operating fluid supply tube, the tailpiece screwed into a housing having a hollow interior, a striker reciprocal within the hollow interior of the housing with the operating fluid supply tube extending into the interior of the striker, said operating fluid supply tube providing operating fluid pressure for the impacting motion of the striker.

5,327,637

PROCESS FOR REPAIRING THE WINDING OF AN ELECTRICAL LINEAR DRIVE

Otto Breitenbach, Nürnberg, and Hermann Möllmann, Osnabrück, both of Fed. Rep. of Germany, assignors to kabelmetal electro GmbH, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 10,641
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203533
Int. Cl.[5] H02K *15/00*
U.S. Cl. 29—596 5 Claims



1. A process for repairing a winding of an electrical linear drive having three winding strands formed of electrical cables, one of which has a defect therein, that meander in grooves formed in an inductor belonging to an elongated stator, comprising the steps of:

removing a portion of the one cable containing the defect from the grooves of the inductor;

cutting a section of predetermined length of the one cable containing the defect from the winding strand;

replacing the cut section of the one cable with a prefabricated cable of suitable length and shape; and

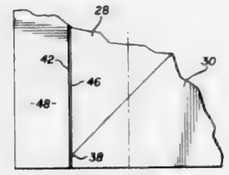
attaching the one cable and the prefabricated cable to the grooves of the inductor.

5,327,638

METHOD OF MAKING A VERTICAL RECORDING HEAD FOR CONTACT AND NEAR CONTACT MAGNETIC RECORDING

William Haines, Longmont, and Michael McNeil, Boulder, both of Colo., assignors to Maxtor Corporation, San Jose, Calif.

Filed Aug. 20, 1993, Ser. No. 109,817
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 16 Claims



1. A method for constructing a transducer core used in a transducer which aligns a magnetic field of a magnetic disk in a direction parallel with a radial axis of the magnetic disk, comprising the steps of:

a) attaching a non-magnetic shoe to a pair of legs of a C shaped magnetic core to create a non-magnetic/magnetic assembly, wherein said non-magnetic/magnetic assembly has a pole surface and a bearing surface;

b) lapping said pole surface of said assembly;

c) applying a magnetic pole material to said pole surface;

d) applying a layer of protective material to said magnetic pole material;

e) forming a notch in said non-magnetic shoe along said bearing surface of said assembly;

f) forming a pole in said pole surface of said assembly; and,

g) lapping said bearing surface.

5,327,639

AUTOMATIC RIVET FEED APPARATUS

Harold R. Wing, Springville, and David Francis, Orem, both of Utah, assignors to Huck International, Inc., Irvine, Calif.

Division of Ser. No. 623,189, Dec. 6, 1990, Pat. No. 5,123,162. This application Oct. 11, 1991, Ser. No. 767,419
Int. Cl.[5] B23P *21/00;* B23Q *7/10*
U.S. Cl. 29—709 9 Claims

1. A tool for setting blind rivets in a work piece comprising:

a nose piece for receiving a mandrel of a rivet;

means, responsive to a triggering signal, for drawing the mandrel into the rivet to set the rivet in the work piece;

means for generating the triggering signal;

a linear rivet carrier, the rivet carrier releasably holding a plurality of rivets each in one of a plurality of preselected, substantially uniformly spaced apart locations;

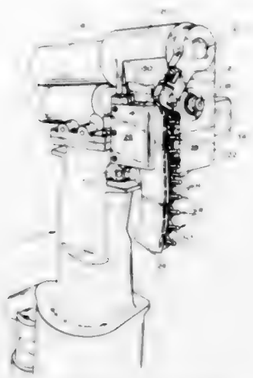
means for sequentially advancing the rivet carrier so that each rivet is in turn advanced to a rivet pick-up point, the rivet pick-up point being offset from the nose piece;

means for frictionally releasably gripping a rivet which is presented at the rivet pick-up point and removing each rivet from the rivet carrier;

means, responsive to an actuating signal, for moving the gripping means between the pick-up point and a nose piece alignment point and for inserting the mandrel of the

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rivet into the nose piece, the moving means having a first position extended to a first linear distance and rotated to a first rotational position in relation to the nose piece, the moving means also having a second position which is extended to a second linear distance and rotated to a second rotational position in relation to the nose piece;



means for generating the actuating signal;

means for mounting, adjacent to the nose piece, the moving means such that rivets can be automatically and repeatedly moved from the pick-up point to the nose piece.

5,327,640

PRESS FOR ASSEMBLING AN ELECTRICAL CONNECTOR TO A PRINTED CIRCUIT BOARD

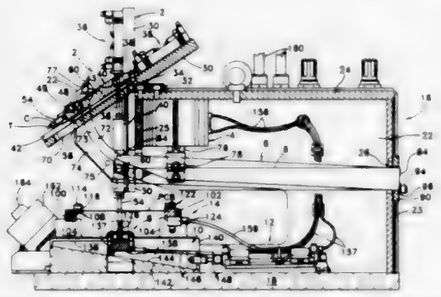
Joop Janssen, Hedel; Aart G. Ban Beem, Sleewijk, and Theodorus J. Van Duin, Overasselt, all of Netherlands, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 9, 1992, Ser. No. 959,019

Claims priority, application United Kingdom, Oct. 31, 1991, 9123138; Oct. 31, 1991, 9123139

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—741 **19 Claims**



1. A press for assembling an electrical connector having tines projecting therefrom, to a printed circuit board, the press comprising a press frame, a press ram, a back-up assembly on the frame for supporting the circuit board positioned beneath the press ram, and a driving member for driving the ram carrying a connector thereon through a working stroke towards the circuit board to force the connector theretowards, thereby forcing the tines of the connector into through-holes provided in the circuit board; the press ram having thereon a socket for receiving the connector, with the tines thereof projecting from the socket said press ram slidably mounted for sliding movement by the driving member through a working stroke of said press ram along a ram support, said ram support pivotally mounted on the frame, said press ram further comprising a cam follower which follows a cam track provided on said frame during pivoting of said ram support while said ram support moving between a connector loading first position in which the socket projects outwardly of the press, and a second position in which the socket projects towards the circuit board when the circuit board is supported by the back-up assembly, the driving member entraining the ram when the ram is in the second position, to drive the ram through the working stroke.

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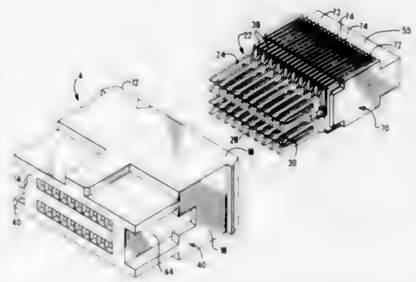
TOOL FOR POSITIONING TERMINALS IN AN ELECTRICAL CONNECTOR

Billy E. Olsson, New Cumberland, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 925,357, Aug. 4, 1992, Pat. No. 5,231,759, which is a division of Ser. No. 716,447, Jun. 17, 1991, Pat. No. 5,157,827, which is a division of Ser. No. 502,941, Mar. 30, 1990, Pat. No. 5,100,342. This application Mar. 16, 1993, Ser. No. 33,682

Int. Cl.[5] B23P *19/00;* **H01R** *43/20*

U.S. Cl. 29—747 **5 Claims**



1 An alignment tool for use in positioning terminals in an electrical connector, the alignment tool comprising:

a rearward surface and a forward surface, and end walls and side walls extending from the rearward surface to the forward surface;

terminal receiving recesses extending toward the rearward surface first to transverse bottom surfaces from the forward surface, and extending there beyond along the side walls, with dividers separating them;

positioning means positioned on the end walls, the positioning means cooperate with the electrical connector to insure that the alignment tool is properly positioned relative to the connector when the alignment tool is moved into cooperation with the connector.

5,327,642

ELECTRICAL CONNECTOR ASSEMBLY AND METHOD THEREFOR

Mark W. Schwartz, Wauconda; Paul J. Moller, Lake Zurich, and Zdravko M. Zakman, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 922,301, Jul. 30, 1992, Pat. No. 5,211,581. This application Apr. 1, 1993, Ser. No. 41,106

Int. Cl.[5] H01B *13/20*

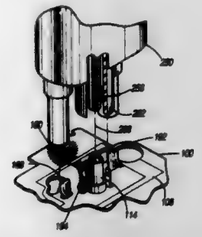
U.S. Cl. 29—828 **16 Claims**

1. A method for connecting an electrical circuit having a portion thereof disposed upon a circuit board to an electrical cable, or, alternately, to a coaxial transmission line, said method comprising the steps of:

forming a first receiving port to extend through the circuit board;

forming a second receiving port to extend through the circuit board at a location spaced-apart from the first receiving port;

positioning a socket member comprised of an electrically-conductive material to extend through the first receiving port to be supported thereat, the socket member for receiving the electrical cable, or, alternately, a coaxial conductor pin of the coaxial transmission line therein, thereby to permit electrical connection of the electrical cable, or, alternately, of the coaxial conductor pin therewith; and



positioning a clip member comprised of an electrically-conductive material to extend through the second receiving port to be supported thereat, the clip member for engaging with a coaxial tube which surrounds the coaxial conductor pin of the coaxial transmission line, thereby to connect electrically the coaxial tube of the coaxial transmission line with the conductive line leading to the second receiving port.

5,327,643

METHOD OF AND APPARATUS FOR WIRING BOARD ASSEMBLIES

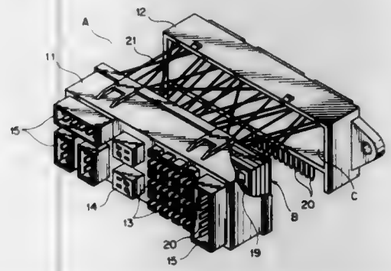
Masami Sakamoto; Eiji Shimochi; Hisashi Sato; Hiroyuki Murakoshi, and Hirokazu Tsuchiya, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 93,623

Claims priority, application Japan, Jul. 28, 1992, 4-201149; Apr. 16, 1993, 5-089876

Int. Cl.[5] H05K *3/36;* **B23P** *19/00*

U.S. Cl. 29—830 **4 Claims**



1. In a method of wiring one or two wiring board assemblies, each of which comprises a plurality of pressure terminals or busbars, each having a press-connection portion formed with a slot, and an insulating substrate that supports the pressure terminals or busbars; the method of wiring the wiring board assemblies by pressing wires into the slots of the press-connection portions on the wiring board assemblies to form a desired circuitry, comprising the steps of:

(a) laying a plurality of wires in parallel to each other between one side of the insulating substrate of the wiring board assembly and the other side or between two wiring board assemblies by operating two or more wire laying heads arranged in parallel;

(b) supporting an intermediate portion of each wire at two points at an appropriate interval to hold the wires outside the supported intermediate portions straight;

(c) moving the wire laying heads in a direction perpendicular to the wire laying direction to position the first row wire on the slots of specified press-connection portions on both sides of the wiring board assembly or on the slots of specified press-connection portions on two wiring board assemblies;

(d) pressing the positioned first row wire into the slots and cutting the wire;

(e) repeating the steps (c) and (d) to press the second to final row wires into the slots of specified press-connection portions on both sides of one wiring board assembly or into slots of specified press-connection portions on two wiring board assemblies and cutting the wires; and

(f) repeating the steps (a) to (e) for the remaining press-connection portions on the wiring board assemblies.

3. A wiring apparatus for wiring board assemblies comprising:

a wire laying plate on which the wiring board assemblies are mouted; and

a plurality of wire laying heads arranged in parallel with each other on the wire laying plate, each wire laying head comprising a pair of front and rear heads that move vertically and parallelly with respect to the wire laying plate;

the front head including, from the front toward the rear, a wire chuck that can be opened and closed, a pressing jig and wire guide pins;

the rear head including, from the front toward the rear, wire guide pins, a pressing jig and a wire cutter, the rear head further including:

a wire holding rod located below the members of the rear head, the wire holding rod moving toward or away from the wire chuck of the front head, the wire holding rod having a wire insertion hole and a wire chuck.

5,327,644

HARNESS MAKING APPARATUS

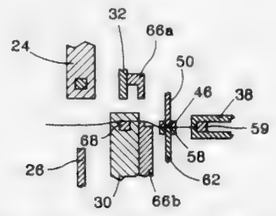
Hiromi Tanaka, Machida, and Shigeru Naka, Kawasaki, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 12, 1993, Ser. No. 60,788

Claims priority, application Japan, May 29, 1992, 4-138774

Int. Cl.[5] H01R *43/04;* **B23P** *23/00*

U.S. Cl. 29—861 **7 Claims**



1. A harness making apparatus for making a harness by connecting to a connector a plurality of electrical wires fed thereto with a predetermined distance from one another, comprising:

a length measurement section for measuring the length of the plurality of electrical wires fed from electrical wire feeders;

an insulation displacing section for insulation displacing the plurality of electrical wires to the connector fed from a connector feeder; and

a fusing section disposed adjacent to said insulation displacing section for fusingly coupling said electrical wires to one another by substantially contacting or positioning the electrical wires adjacent to one another.

5. A method of making an electrical harness comprising the steps of:

terminating leading ends of a plurality of electrical wires to electrical contacts of an electrical connector;

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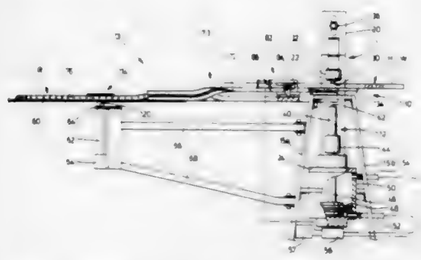
clamping onto the electrical wires adjacent the connector;
measuring a length of the electrical wires; and
securing the wires together at a location spaced from the connector.

5,327,645

TEE-NUT FASTENER FEED MEANS FOR TEE-NUT FASTENER SETTING APPARATUS

Keith G. Bromley, Brownlee Drive, Bradford, Ontario, and Walter H. Leistner, 97 Alamosa Drive, Toronto Ontario, both of Canada

Continuation-in-part of Ser. No. 687,167, Apr. 18, 1991, Pat. No. 5,214,843. This application Apr. 9, 1993, Ser. No. 44,496
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] **B23Q** *7/10*
U.S. Cl. 29—809 **7 Claims**



7. Tee-nut feed apparatus for use with Tee-nut setting apparatus for setting Tee-nuts in a workpiece, a plurality of said Tee-nuts being joined to one another to form a continuous strip of Tee-nuts and being wound into a roll from which they may be progressively unwound, and said setting apparatus having driver means operable to reciprocate to and fro towards and away from a workpiece, said feed apparatus comprising:
a rotatable support table for supporting said roll of Tee-nuts, said rotatable support table being secured on a rotatable arm, and bearing means for said arm whereby said table is rotatable between horizontal and vertical positions, and means for securing a said roll of Tee-nuts to said table;
said table being rotatably operable to permit said roll to progressively unwind said strip of Tee-nuts;
a guide channel for guiding said strip of Tee-nuts along a feed path to said driver means; and,
feed means operable to move said strip along said channel whereby operation of said driver means will separate an endmost Tee-nut from said strip for driving said endmost Tee-nut into said workpiece.

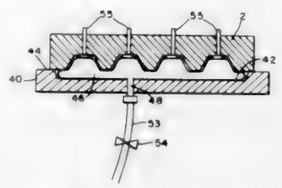
5,327,646

REMOVAL/REPLACEMENT OF ENGINE VALVE SPRINGS

Brice Harmand, 600 Front St. #435, San Diego, Calif. 92101-6737

Continuation of Ser. No. 915,018, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 855,098, Mar. 20, 1992, abandoned. This application Jun. 2, 1993, Ser. No. 71,597
Int. Cl.[5] **B23P** *19/04*
U.S. Cl. 29—888.42 **17 Claims**

1. A method for improving access for removal or replacement of at least one valve spring in a cylinder head having a plurality of chambers with a corresponding plurality of valves when said cylinder head is disassembled from an engine block, the method which comprises:
disposing a deformable bladder within a flat surface, said deformable bladder having a length sufficient to span said plurality of chambers;
placing said cylinder head against said flat surface so that said plurality of chambers is positioned over said deformable bladder; and
filling said deformable bladder with a fluid so that said deformable bladder expands to fill said plurality of chambers



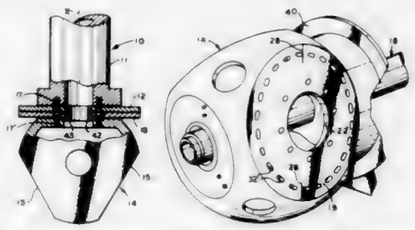
thereby forcing at least one valve within each chamber outward so that said at least one valve is disposed in a position to facilitate removal or replacement of said at least one valve spring.

5,327,647

METHOD FOR SETTING PITCH ON A WINDMILL AIRFOIL

Theodore B. Gurniak, Jenkintown, Pa., assignor to Energy Unlimited, Villanova, Pa.

Continuation of Ser. No. 796,168, Nov. 22, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 108,833
Int. Cl.[5] **B21K** *3/02*; **B23Q** *27/00*; **B64C** *27/80*; **F03D** *11/04*
U.S. Cl. 29—889 **13 Claims**



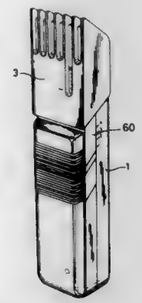
1. A method for setting pitch on a windmill airfoil, said airfoil comprising a rotor blade having a longitudinal axis and a rotor base secured to the rotor blade, the method comprising:
(a) marking a windmill rotor hub having a hub surface for receiving the rotor base with a first reference mark line, said first reference mark line extending along a first plane, said first plane being generally parallel to a plane of rotation of the windmill airfoil in use;
(b) positioning the rotor base of the airfoil along a second plane which extends generally parallel to the hub surface, said rotor base being separate in location and orientation from the first plane such that the second plane substantially completely intersects the longitudinal axis of the rotor blade of the airfoil;
(c) marking a surface of the rotor base with a second reference mark line, said second reference mark line extending substantially parallel to the second plane,
(d) positioning the airfoil relative to the windmill rotor hub so that the rotor base is in substantial engagement with the windmill rotor hub, thereby restricting lateral movement of the airfoil with respect to the rotor hub and allowing rotational movement of the airfoil with respect to the rotor hub;
(e) rotating the airfoil relative to the windmill rotor hub so that the second reference mark line on the surface of the rotor base is aligned with the first reference mark line on the windmill rotor hub, thereby setting the pitch of the airfoil; and
(f) securing the rotor base to the windmill rotor hub with said first and second reference mark lines in alignment with each other.

5,327,648

ELECTRIC HAIR CUTTING APPARATUS

Roland Ullmann, Offenbach, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/DE91/00327, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO91/17024, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 23, 1991, Ser. No. 938,241
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4013436
Int. Cl.[5] **B26B** *19/00, 19/20*
U.S. Cl. 30—43.1 **4 Claims**



1. Hair cutting apparatus comprising casing structure, drive structure in said casing structure, circuitry connected to said drive structure, shearing head structure coupled to said drive structure, said shearing head structure having a forward edge, spaced comb structure adapted to be seated on said shearing head structure for sliding contact with the skin surface to be treated and adjustable relative to said forward edge of said shearing head structure, sliding switch structure coupled to said circuitry for enabling and disabling said drive structure and having "On" "Off" positions and further positions in addition to said "On" and "Off" positions, said spacer comb structure and said sliding switch structure being provided with engageable coupling means for causing said spacer comb structure to move with said sliding switch structure, adjustable preselector slide structure movable between a plurality of positions, and cooperating contact structure on said preselector slide structure and said sliding switch structure and connected to said circuitry such that said drive structure is not energized until said sliding switch structure is in a predetermined position as determined by the position of said preselector slide structure.

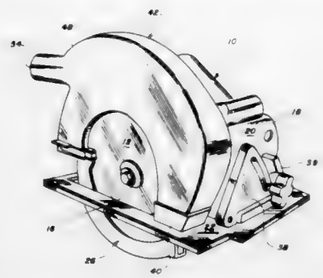
5,327,649

CIRCULAR SAW WITH DUST COLLECTOR

Christopher L. Skinner, 3229 W. Milton Ave., St. Louis, Mo. 63114

Filed Feb. 11, 1993, Ser. No. 16,542
Int. Cl.[5] **B26B** *1/02, 15/00*; **B23D** *45/16*
U.S. Cl. 30—124 **8 Claims**

1. A portable circular saw with a dust collector, said circular saw having a circular blade mounted on a shaft, a motor to rotate the shaft, a motor housing surrounding said motor and through one side of which said shaft projects, a base positioned below the motor housing and attached thereto, said circular blade having a cutting tip and creating an envelope of air moving in the same direction as the circular blade with a part of the circular blade being positioned above said base, an upper blade guard having a front and a back and an inside and an outside, said upper blade guard attached to the motor housing and substantially enclosing said part of the blade positioned above the base, said upper blade guard having a discharge aperture formed in the front thereof,
said dust collector comprising a deflector attached to the front inside of the upper blade guard and angled towards the base, said deflector substantially filling the space inside the front of the upper blade guard and having a slot which straddles the cutting tip and through which the tip of the



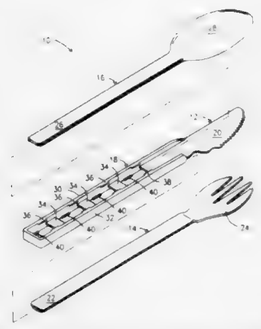
blade passes, said discharge aperture positioned below the deflector such that the envelope of air moving with the circular blade carrying any dust formed by the cutting action of the circular blade is directed out the discharge aperture into a vacuum source connection means attached to said upper blade guard in fluid connection with said discharge aperture.

5,327,650

KNIFE, FORK AND SPOON COMBINATION

Gilbert R. Rojas, P.O. Box 124-1100 Tibas, San Jose, Costa Rica

Filed Oct. 14, 1993, Ser. No. 136,357
Int. Cl.[5] **A47J** *43/28*
U.S. Cl. 30—147 **3 Claims**



1. A combination of knife, fork, and spoon assembly, comprising:
a knife having a handle and a blade;
a fork having a handle and a set of tines;
a spoon having a handle and a dished distal end;
said knife handle including a fork handle-receiving channel and a spoon handle-receiving channel, said channels sharing a common construction;
said knife handle including a pair of elongate, transversely spaced apart, parallel side walls, each of said side walls having a first outermost edge and a second, opposite outermost edge;
said knife handle further including at least one interconnecting wall disposed in interconnecting relation to said side walls, said at least one interconnecting wall being disposed in a plane normal to the plane of said side walls;

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said at least one interconnecting wall disposed in bisecting relation to said side walls, thereby dividing said knife handle into said fork handle-receiving channel and said spoon handle-receiving channel;

each of said handle-receiving channels having an inner part and an outer part;

a plurality of retainers being formed at longitudinally spaced apart intervals along the extent of each of said pair of side walls, said plurality of retainers being disposed on said first and second outermost edges of said side walls and extending toward one another in a plane parallel to the plane of said at least one interconnecting wall;

said outer part of each of said handle-receiving channels having a transverse extent less than a transverse extent of the inner part of each of said handle-receiving channels, due to placement of said plurality of retainers on said first and second outermost edges of said side walls;

an elongate step being formed on opposite edges of said fork handle, said elongate step dividing said fork handle into a broad base having a first transverse extent and a narrow upper part having a second transverse extent less than said first transverse extent;

an elongate step being formed on opposite edges of said spoon handle, said elongate step dividing said spoon handle into a broad base having a first transverse extent and a narrow upper part having a second transverse extent less than said first transverse extent;

said fork handle being selectively slideably received within said fork handle-receiving channel when said broad base of said fork is in alignment with the inner part of said fork handle-receiving channel and when the narrow upper part of said fork is in alignment with the outer part of said fork, handle-receiving channel; and

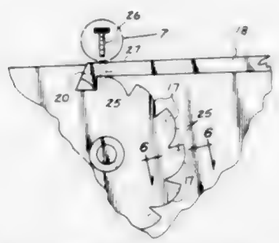
said spoon handle being selectively slideably received within a said spoon handle-receiving channel when said broad base of said spoon is in alignment with the inner part of said spoon handle-receiving channel and when the narrow upper part of said spoon is in alignment with the outer part of said spoon, handle-receiving channel.

5,327,651

FOLDING LOCK KNIFE APPARATUS

Henry E. Favreau, 88 Squannacook Rd., Shirley, Mass. 01464

Filed May 3, 1993, Ser. No. 55,289
Int. Cl.[5] B26B *3/06*
U.S. Cl. 30—161 **2 Claims**



1. A folding lock knife apparatus, comprising,

an elongate handle, the handle having spaced parallel side walls, having a handle cavity therebetween, wherein the handle includes a handle first end including a rear connecting plate at the handle first end within the cavity between the side walls, the handle having a handle second end spaced from the first end, and

the handle second end including a blade axle directed orthogonally between the side walls, having a cutting blade rotatably mounted about the axle, with the cutting blade having a cutting blade first end positioned between the side walls, having an arcuate array of ratchet teeth concentric about the axle, with lock means arranged for engaging the ratchet teeth for selectively securing the handle in one of a plurality of angular orientations relative to the handle, and

the lock means includes a lock lever, the lock lever having a lock lever axle, with the lock lever axle orthogonally oriented relative and between the side walls between the handle first end and the handle second end, with the lock lever having a lock lever first end and a lock lever second end, the lock lever first end including a first end engaging foot for reception between a plurality of said ratchet teeth, and a cam surface at the lock lever second end directed into the cavity between the lock lever axle and the handle first end, and a spring plate fixedly mounted to the rear connecting plate projecting into the cavity for contiguous engagement with the cam surface, and

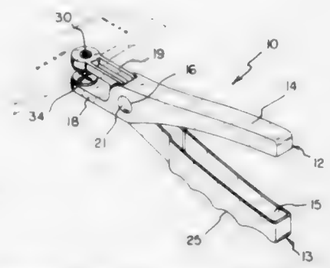
a plurality of threaded bores are directed into the cutting blade first end, wherein an individual of said threaded bores is positioned between adjacent of said ratchet teeth, and the lock lever having a lock rod orthogonally directed through the lock lever in adjacency to the lock lever first end, wherein the lock rod is externally threaded and arranged for reception with one of said threaded bores.

5,327,652

HAND-HELD SEAM NOTCHING APPARATUS

Kellie A. Balback, 104 W. Monroe Ave., New Castle, Del. 19720

Filed Jul. 26, 1993, Ser. No. 96,301
Int. Cl.[5] B26F *1/36*
U.S. Cl. 30—359 **8 Claims**



1. A doubled-armed lever hand-held seam notching apparatus, comprising:

a first arm lever assembly which includes a first handle portion, a first fulcrum portion, and a first jaw portion, said first jaw portion including a first well portion and a first cutter assembly received in said first well portion, said first jaw portion also including a first connector for connecting said first cutter assembly to said first well portion,

a second arm lever assembly which includes a second handle portion, a second fulcrum portion, and a second jaw portion, said second jaw portion including a second well portion and a second cutter assembly received in said second well portion, said second jaw portion also including a second connector for connecting said second cutter assembly to said second well portion, and

a fulcrum member pivotally connected to said first fulcrum portion and said second fulcrum portion, such that when said first handle portion and said second handle portion are moved together, said first jaw portion and said second jaw portion are moved together, and such that, when said first handle portion and said second handle portion are moved apart, said first jaw portion and said second jaw portion are moved apart,

wherein:

said at least said first well portion includes first guide portions,

at least said first cutter assembly includes second guide portions, said first guide portions being complementary to said second guide portions for guiding orientation of said first cutter assembly in said first well portion,

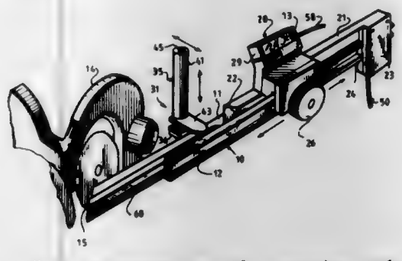
wherein said at least first well portion defines a first cylindrical recess and said at least first cutter assembly comprises a first cylindrical disk adapted to seated in said first cylindrical recess in a selected angular orientation relative to each other.

5,327,653

MITER LINEAR MEASUREMENT GAGE

Robert T. Pistorius, 19 Peak St., Lake Ronkonkoma, N.Y. 11779, and Thomas H. Hoffmann, Augarteenstrasse 16, 7520 Bruchsal, Fed. Rep. of Germany

Filed Aug. 19, 1992, Ser. No. 932,302
Int. Cl.[5] G01B *7/02;* **B26D** *7/28*
U.S. Cl. 33—1 M **10 Claims**



1. A linear measurement gage for measuring workpiece miter lengths and inside dimensions for picture and window frames and the like, comprising:

an elongated gage bed having an upright fence on which a workpiece may be removably mounted abutting said fence;

stop means slidably mounted on said gage bed having a stop which may butt against a workpiece mitered end and whose position may be fixed to fix the position of said workpiece, said stop means having a transverse leg coupled thereto disposed transversely to said gage bed which has an extensible and retractable arm slidably secured thereto;

length scale and scanning means having an incremental linear length scale and a length non-contacting scanning unit for scanning said incremental linear length scale, one of said length scale means and said lengthscanning unit being mounted on said bed and the other being mounted on said stop means, said scanning unit generating length output signals in response to the scanning of said scale;

width scale and scanning means having an incremental linear width scale and a width non-contacting scanning unit for scanning said incremental linear width scale, one of said width scale means and said width scanning unit being mounted on said stop means in a direction transverse to said bed and the other being movably mounted relative thereto, said width scanning unit generating width output signals in response to the scanning of said width scale, said width scale and scanning means including a reference switch for generating a reference signal relative to the position or width being measured;

computer control means for receiving the length and width output signals, and for converting said output signals to a linear measure output signal corresponding to the inside dimension of the workpiece being measured; and

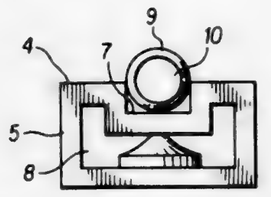
display means for displaying said measured inside dimension of the workpiece coupled to said computer control means.

5,327,654

GUN SIGHT

Joseph S. Parker, P.O. Box 690, Murrells Inlet, S.C. 29576

Continuation of Ser. No. 533,031, Dec. 20, 1989, abandoned. This application Jun. 1, 1993, Ser. No. 69,377
Int. Cl.[5] F41G *1/01, 1/033, 1/10*
U.S. Cl. 33—258 **3 Claims**



1. A gun sight consisting of

a) a front sight comprising a small threaded rod attached to a small tube which adjusts vertically in a front sight base attached to a barrell of a gun;

b) a rear sight comprising

a rear sight base attached to the gun, a top plate which has at its center a small rectangular channel, the width and depth of the channel being dimensioned to match the lower half of the outside circumference of the small tube when the front sight is viewed through the rear sight, and

two side walls which join the rear sight base to the top plate forming an open interior;

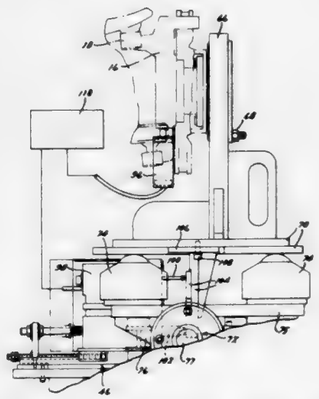
which in combination produces an image of a small open circle sitting in a cross-section of a small open box to assist with the horizontal and vertical alignment of the gun with a target.

5,327,655

METHOD AND APPARATUS FOR VEHICLE ALIGNMENT

David M. Bachesky, Troy; John Gray, Rochester Hills; Dara M. Tomczak, Royal Oak, and Larry Rathgeb, West Bloomfield, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 30, 1992, Ser. No. 956,686
Int. Cl.[5] G01B *5/255*
U.S. Cl. 33—288 **8 Claims**



1. An apparatus for aligning a vehicle having a frame, and a

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plurality of wheel hubs, and a suspension system operatively connecting the wheel hubs to the frame, comprising:

a support frame for supporting a vehicle;

a plurality of positioner assemblies operatively connected to said support frame for moving corresponding wheel hubs of the vehicle to multiple suspension positions;

sensors cooperating with said positioner assemblies for sensing angular relationships between the wheel hubs and the vehicle frame in the multiple suspension positions,

a computer connected to said sensors for calculating vehicle alignment parameters based upon the sensed angular relationship and for displaying whether the vehicle alignment parameters are within preset ranges;

each of said positioner assemblies comprising an alignment head for securement to a corresponding wheel hub, and means for moving said alignment head through a natural geometry of the suspension system travel; and

wherein said moving means comprises at least one bearing plate secured to said alignment head, a plurality of bearing pins to support said bearing plate, a trunnion cooperating with said bearing pins for allowing rotation of said bearing pins, bearing plate and alignment head, and a cylinder having a moveable piston and rod, one end of said cylinder being connected to said support frame and said rod being operative connected to said trunnion.

5,327,656

DEVICE FOR OVERALL DIAMETER MEASUREMENT OF A GROUP OF HAIRS OR FIBERS (ODMOGH)

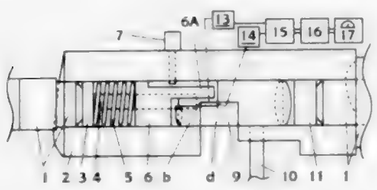
Joseph Nissimov, P.O. Box 1487, Jerusalem 91014, Israel

Filed Sep. 14, 1992, Ser. No. 944,222

Claims priority, application Israel, Mar. 8, 1992, 101174

Int. Cl.[5] A61B *5/107*

U.S. Cl. 33—512 **6 Claims**



1. A device for the measurement of the overall diameters' thickness of a group of adjoining fibers arrayed in a single file, comprising:

(a) a hollow outer cylinder formed with a cutaway trough, said trough extending substantially through and communicating with the interior of said cylinder, said trough extending part way along the radial axis of said cylinder;

(b) a piston located within said cylinder, said piston being slidably independently translatable and rotatable with respect to said cylinder, said piston featuring a cylindrical portion and a substantially half-cylindrical portion, said half-cylindrical portion having a thickness which is significantly less than the depth of the cutaway trough in said hollow cylinder, the boundary between said cylindrical portion and said half-cylindrical portion forming a step;

(c) means for translating said piston;

(d) means for rotating said piston; and

(e) means for measuring the longitudinal position of said piston with respect to said cylinder;

the device characterized in that after a group of fibers is placed in said cutaway trough said piston is rotated so that a functional edge of the half-cylindrical portion of said piston presses the fibers to an opposing functional edge of the bottom of the trough to cause them to be arrayed in a single file, and said piston is translated so that a functional edge of said step of said piston causes the fibers to adjoin one another by pressing them to an opposing functional edge in the wall of the trough.

5,327,657

TOUCH PROBE

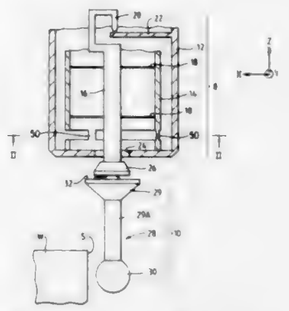
Peter Hajdukiewicz, Wotton-Under-Edge; Graham A. Hellen, Bristol; Peter K. Hellier, North Nibley; John C. Dabbs, Chepstow, and David R. McMurtry, Wotton-Under-Edge, all of United Kingdom, assignors to Renishaw Metrology Ltd., Gloucestershire, United Kingdom

Filed Nov. 9, 1992, Ser. No. 973,747

Claims priority, application United Kingdom, Jul. 11, 1991, 9114945; Nov. 9, 1991, 9123853; Nov. 21, 1991, 9124777; Jul. 22, 1992, 9215512

Int. Cl.[5] G01B *5/03*

U.S. Cl. 33—503 **18 Claims**



1. A coordinate positioning machine having an arm and a table movable relative to each other; a retaining module provided on the arm, having a first set of engagement elements; at least one task module stored within the working area of the machine, said task module having a second set of engagement elements which are releasably engageable with said first set of engagement elements on said retaining module; a magazine having a plurality of storage ports each for storing a said task module; means for magnetically urging said task module into engagement with said storage port in a first direction; wherein said retaining module, said task module and said storage port are configured so that, when said task module is retained in said storage port, the second set of engagement elements on the task module are accessible to the first set of engagement elements on the retaining module from a direction opposite to the first direction, and so that, when first and second elements are engaged, the retaining module may carry the task module away from the storage port in a second direction, transverse to the first direction.

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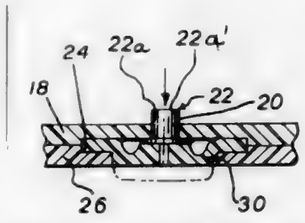
REGISTRATION BOARD ASSEMBLY

Richard Doby, 1730 Lakeview Ave., South Milwaukee, Wis. 53172

Filed Sep. 15, 1992, Ser. No. 945,823

Int. Cl.[5] B41B *11/00*; **G03B** *27/14*

U.S. Cl. 33—621 **8 Claims**



1. A registration board assembly for holding an image in proper alignment, comprising:

a substantially planar layer having at least one aperture therein;

a backing layer adjacent to said planar layer;

a cavity between said planar layer and said backing layer and adjacent to said planar layer aperture;

a register pin having a barrel portion that extends through said aperture and having a base portion disposed in said cavity;

an elastomeric member, disposed in said cavity between said backing layer and said pin, that biases said barrel portion through said aperture and that maintains said base portion in said cavity; and

mounting means for removably mounting said elastomeric member within said cavity.

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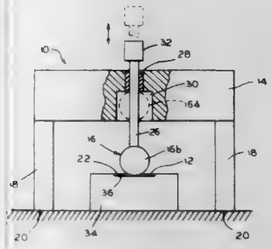
WET FILM THICKNESS GAUGE

Ronald A. Banike, Orland Park, Ill., assignor to R. R. Donnelley & Sons Co., Lisle, Ill.

Filed Dec. 3, 1992, Ser. No. 985,020

Int. Cl.[5] G01B *5/02*

U.S. Cl. 33—834 **24 Claims**



1. An apparatus for measuring wet film thickness on a surface, comprising:

a fixture adapted to be positioned in close proximity to said surface;

gauge means supported by said fixture for movement toward and away therefrom;

means for spacing said fixture at a selected distance from said surface; and

means for moving said gauge means from a first position out of contact with said wet film to a second position penetrating said wet film so as to be in contact with said surface to create a measurable spot of said wet film on said gauge means.

5,327,660

DRUM DRYING OF ACRYLONITRILE PRODUCTION WASTES

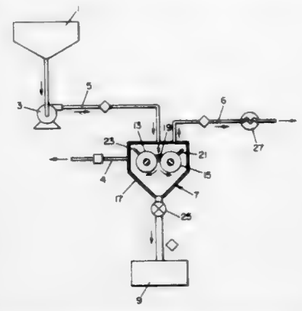
John W. Emory, 18337 Fern Canyon, Strongsville, Ohio 44136

Filed Dec. 10, 1990, Ser. No. 624,833

Int. Cl.[5] F26B *5/06*

U.S. Cl. 34—290 **6 Claims**

1. A process of deliquifying a waste stream containing solid inorganic particulate material and organic polymer contaminants obtained during the production of acrylonitrile to produce a substantially solid waste product comprising feeding the particulate containing waste stream including organic polymer contaminants into a dryer onto the outer surface of at least one heated drum, rotating said drum to facilitate removal of the liquid from said waste stream enabling the organic polymer contaminants present in the waste stream to form a tacky substantially solid material containing the particulate material which adheres to the surface of the drum, and removing the tacky solid material from the surface of the drum to obtain the solid waste product.



5,327,661

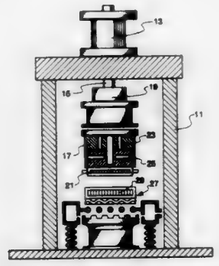
METHOD AND APPARATUS FOR DRYING WEB

David I. Orloff, Atlanta, Ga., assignor to Institute of Paper Science and Technology, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 643,524, Jan. 18, 1991. This application May 20, 1991, Ser. No. 702,841

Int. Cl.[5] F26B *7/00*

U.S. Cl. 34—388 **33 Claims**



1. A method for impulse drying a web of paper to provide a paper product having a predetermined pattern of delaminated paper fibers comprising transporting a paper web through a pair of rolls wherein the surface of at least one of said rolls has been heated to an elevated temperature, said heated roll having a planar surface having a predetermined pattern formed on said surface of a material having a low K value of less than about 3000 $w\sqrt{s}/m^2c$ and having a low porosity, the remainder of said surface having a high K value of greater than about 3000 $w\sqrt{s}/m^2c$.

5,327,662

SHOE, ESPECIALLY AN ATHLETIC, LEISURE OR REHABILITATION SHOE HAVING A CENTRAL CLOSURE

Barry Hallenbeck, Nashua, N.H., assignor to Tretorn AB, Helsingborg, Sweden

Filed May 21, 1993, Ser. No. 63,709

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1992, 9209383

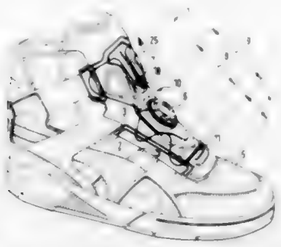
Int. Cl.[5] A43B *11/00*

U.S. Cl. 36—50.1 **20 Claims**

1. A shoe having an upper which is high enough to cover an ankle joint of the foot of a wearer and which is formed of a flexible material at least in side parts thereof, an instep cover covering an instep of the foot, a central rotary closure pro-

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vided on the instep cover, with which at least an instep length of a tightening element can be shortened for closing the shoe and can be extended for opening it, the tightening element being alternately guided between guide elements on each of the side parts and respective guide elements of the instep cover; wherein, in addition to the central rotary closure, a



sliding closure is provided that is engageable and disengageable at least when the length of the tightening element has been shortened by the rotary closure, said sliding closure being coupled with the tightening element and which produces a tightening of the tightening element in one sliding direction and a relaxing of the tightening element in an opposite sliding direction.

5,327,663

SUPINATION CONTROL SOLE AND SHOE

Michael L. Pryce, 6534 Sherborne La., Hudson, Ohio 44236

Filed Mar. 18, 1993, Ser. No. 32,878
Int. Cl.[5] A43B *7/22*; **A61F** *5/14*
U.S. Cl. 36—144 **1 Claim**



1. A corrective foot insole in combination with footwear having a predetermined length and width, and forefoot, midfoot, and heel portions, comprising.

a raised forefoot portion of uniform thickness extending approximately half the width of the footwear such that it extends under the two medial toes, the forefoot portion extending from the front of the footwear to a distance less than the length of the footwear, such that it terminates in front of the heel portion of the footwear, and being substantially the same width throughout its length as said portion under the two medial toes of the wearer; and

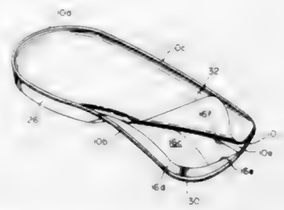
a midfoot portion being of substantially elliptical shape for supporting the metatarsal of the wearer and said midfoot portion of said insole being attached to the upper face of said raised forefoot portion of said insole and extending from the front of said midfoot portion of said footwear to a distance less than the length of the footwear such that it terminates in front of the heel portion.

5,327,664

POSTURAL CONTROL FOOT ORTHOTIC WITH A FOREFOOT POSTING SHIM

Brian A. Rothbart, Bellevue, Wash., assignor to Kathleen Yerratt, Bellevue, Wash.

Continuation-in-part of Ser. No. 816,674, Jan. 3, 1992, abandoned. This application Dec. 21, 1992, Ser. No. 993,671
Int. Cl.[5] A61F *5/14*
U.S. Cl. 36—174 **19 Claims**



17. A functional foot orthotic for correcting varum deformities of the foot of a patient for which the orthotic is prescribed comprising a shell plate formed to the contour of the sole portion of the patient's foot, said shell plate having posterior and anterior ends, and medial and lateral sides, the length of the shell plate being such that the anterior end will be located proximally adjacent to the one-five metatarsal parabola of the patient's foot; and a forefoot posting shim applied to the top surface of the shell plate to provide a forefoot varum post, the forefoot posting shim having front, medial, lateral and posterior edges, and being located at the level of the first-to-third metatarsals, with its anterior and medial peripheral edges conforming to the anterior end and medial side, respectively, of the underlying shell plate; said forefoot posting shim being so constructed and arranged to extend inward from its anterior and medial peripheral edges with the thickest part of said posing shim being at the anterior medial edge thereof so as to provide a top posting shim area sufficient to underlay at least the patient's first metatarsal with the greatest posting elevation being at the anterior medial edge of said orthotic, and to have its lateral and posterior portions tapered from the posting shim area back to the underlying shell plate, whereby said posting shim will accommodate the patient's varum forefoot deformity so as to provide, in combination with said shell plate, a stable forefoot platform for the patient's foot.

5,327,665

ADJUSTABLE QUILTING HOOP APPARATUS

Paul Manning, and Bernice E. Manning, both of 5607 Warren Ave., Norwood, Ohio 45212

Filed Mar. 8, 1993, Ser. No. 27,432
Int. Cl.[5] D05C *01/02*
U.S. Cl. 38—102.2 **2 Claims**

1. A quilting hoop support apparatus, comprising,

a base plate, the base plate including a top wall, wherein the top wall includes a support tube socket fixedly secured to the top wall, and the support tube socket having a first support tube received within the support tube socket in a coaxially aligned relationship, and

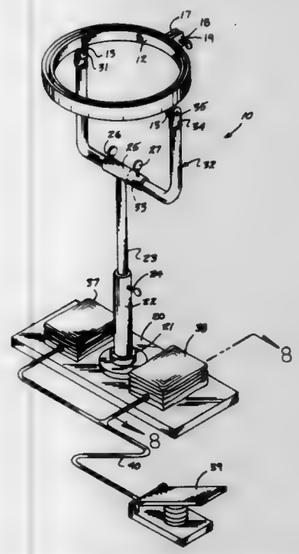
a continuous inner hoop is provided concentric about a predetermined hoop axis, wherein the hoop axis is coaxially aligned with the first support tube and mounting means positioned within the first support tube for projection above the first support tube and arranged for pivotally mounting the inner hoop, and

the mounting means includes a second support tube telescopically received within the first support tube, with the first support tube including a first support tube fastener directed through the first support tube in engagement with the second support tube, and the second support tube including a mounting tube, the mounting tube fixedly and orthogonally mounted to the second support tube,

wherein the second support tube intersects the mounting tube medially thereof, and the mounting tube having a mounting tube first fastener and a mounting tube second fastener directed through the mounting tube on opposed sides of the second support tube, and a first L-shaped positioning tube received within the mounting tube and engaged by the mounting tube first fastener, and a second L-shaped positioning tube received within the mounting tube engaged by the mounting tube second fastener, and

the first L-shaped positioning tube includes a first positioning tube first end portion within the mounting tube, and a first positioning tube second end portion orthogonally oriented relative to the first positioning tube first end portion, and the second positioning tube including a second positioning tube first end received within the mounting tube and engaged by the mounting tube second fastener, with a second positioning tube second end portion orthogonally oriented relative to the second positioning tube first end portion, and

the inner hoop includes an inner hoop first flange and an



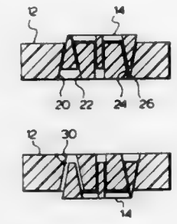
inner hoop second flange, wherein the inner hoop first flange and the inner hoop second flange are arranged in a parallel coextensive relationship relative to one another and parallel to the inner hoop axis, and a discontinuous outer hoop oriented exteriorly of and concentric relative to the inner hoop, wherein the outer hoop includes an outer hoop first end and an outer hoop second end, the outer hoop first end including a first end flange, the outer hoop second end including a second end flange, and a hoop fastener directed through the first end flange and the second end flange to secure the first end flange to the second end flange, and the first positioning tube second end including a first axle directed therethrough and pivotally through the inner hoop first flange, and the second positioning tube second end including a second axle directed through the second positioning tube second end and pivotally directed through the inner hoop second flange, wherein the first axle and the second axle are coaxially aligned relative to one another permitting pivoting of the inner hoop between the first positioning tube and the second positioning tube.

5,327,666

METHOD FOR MAKING A NOVELTY ITEM AND THE NOVELTY ITEM THEREFROM

Domenico DiFranco, 41 Gort Avenue, Etobicoke, Ontario, Canada M9W 3Y7

Filed Dec. 13, 1991, Ser. No. 806,390
Int. Cl.[5] A44B *15/00*
U.S. Cl. 40—634 **4 Claims**



1. A novelty item comprising a solid block of material having a top surface, a bottom surface and a slug having a first end region, a second end region opposite said first end region, and an intermediate region between said first and second end regions, said slug surrounded from said block and adapted to be retained by said block, said item comprising:

said first end region having at least a pair of walls cut at first oblique angles with respect to the top surface of said block,

said second end region having a pair of walls cut at second oblique angles with respect to the top surface of the block,

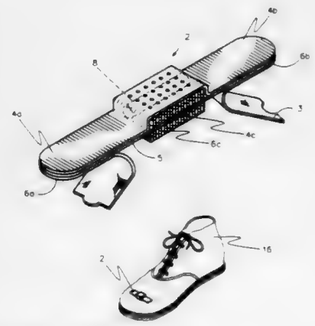
said intermediate region of the slug having walls cut at substantially right angles with respect to the top surface freeing the slug from the block, such that the slug is movable relative to the block, but is unable to be removed from the block.

5,327,667

DEVICE FOR LURING DEER

John C. Fore, 33203 Highway 1019, Denham Springs, La. 70726

Filed Dec. 16, 1993, Ser. No. 167,208
Int. Cl.[5] A01M *31/00*
U.S. Cl. 43—1 **12 Claims**



1. A deer lure, comprising:

(a) a first flexible strip;

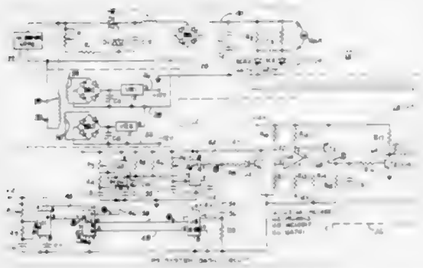
(b) a second flexible strip;

the first strip having first and second ends, and an absorbent middle portion; the second strip having first and second ends, and an absorbent middle portion; the first end of the first strip being attached to the first end of the second strip, and the second end of the first strip being attached to the second end of the second strip;

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(c) a sealed, brittle member disposed between the first and second strips; and
(d) a fragrant liquid disposed in and contained by the sealed, brittle member.

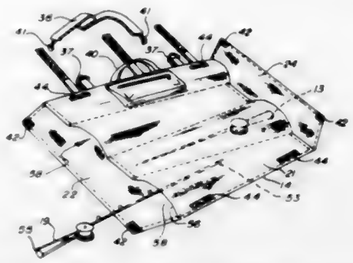
5,327,668
METHOD FOR ELECTROFISHING
Norman G. Sharber, and John P. Sharber, both of Flagstaff, Ariz., assignors to Coffelt Manufacturing, Inc., Flagstaff, Ariz.
Continuation of Ser. No. 882,709, May 14, 1992, abandoned, which is a continuation of Ser. No. 673,400, Mar. 22, 1991, abandoned, which is a division of Ser. No. 446,652, Dec. 6, 1989, Pat. No. 5,111,379. This application Aug. 31, 1993, Ser. No. 114,476
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] A01K *79/02*
U.S. Cl. 43—17.1 **22 Claims**



11. Apparatus for electrofishing, said apparatus comprising in combination:
a) means for stimulating the red muscle tissues of fish to be captured in order to induce electrotaxis, said stimulating means including means for transmitting a packet of high frequency pulses; and
b) means for relaxing any stimulated white muscle tissues in the fish prior to onset of epileptic seizure, said relaxing means including means for repeating the transmission of the packets of high frequency pulses at a low frequency and means for reducing the power level of transmission between each of the transmitted packets of high frequency pulses to zero.

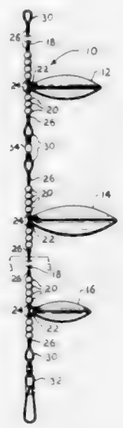
5,327,669
ROD ORGANIZER
Edie Lannan, 2620 Polk St. NE., Minneapolis, Minn. 55418, and David Teigen, 2746 Upland Ct., Plymouth, Minn. 55447
Filed May 11, 1993, Ser. No. 62,808
Int. Cl.[5] A01K *97/08*
U.S. Cl. 43—26 **20 Claims**

1. A fishing rod and reel case for transporting and storing fishing rods with attached reels, the case comprising:
a substantially rectangular body, the body having an upper edge, an inside portion, an outside portion, a first end portion, and a second end portion; the body comprised of flexible material, whereby the case may be rolled up;
a plurality of sequential pockets located on the inside portion of the body, the pockets in the shape of elongate truncated triangles, each pocket extending from the first edge portion to the second edge portion, each pocket having a pocket opening, the pocket opening and pocket sized to permit insertion of a fishing rod with attached reel;
a first flap attached to the first end portion of the body and a second flap attached to the second end portion of the body, whereby the flaps may be folded to the inside portion of the body thus covering the pocket openings; and



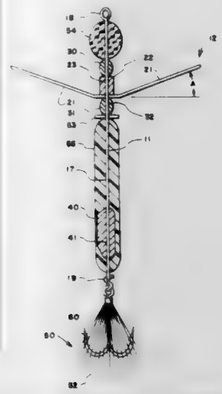
an attachment means for securing the case in a rolled-up position.

5,327,670
TROLLING LURE
Roy D. Tallerico, 730 North, 400 East, Price, Utah 84501
Filed Jun. 4, 1993, Ser. No. 70,976
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.14 **16 Claims**



1. A trolling lure comprising:
a flexible cable leader;
a plurality of spinner elements attached to said leader by clevises, with said clevises spaced apart therealong by swaged sleeves installed along said leader;
each of said spinner elements having a dull and generally non-reflective surface;
said leader further including a plurality of beads strung therealong in groups separating each of said spinner elements;
said clevises attaching said spinner elements to said leader being separated from said groups of said beads by bearings,
wherein each of said spinner elements includes a longitudinal bend having a first side and an opposite second side extending therefrom, each of said first side and said opposite second side having a flat surface and said first side is non-coplanar with said opposite second side, whereby;
said trolling lure is moved through the water and said spinner elements and said beads serve to resemble fish feeding, and thereby serve to attract fish to said trolling lure.

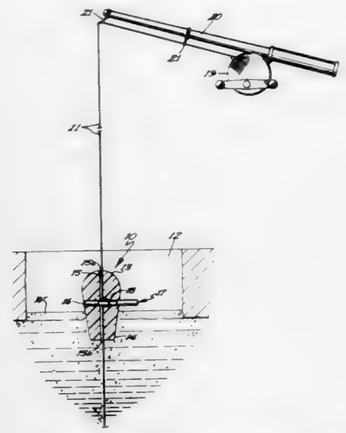
5,327,671
VERTICAL RETRIEVE FISHING LURE
William A. Rosek, Rte. 4, Box 244, Waverly, Va. 23890
Filed Nov. 17, 1993, Ser. No. 153,032
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.17 **9 Claims**



1. A vertical retrieve fishing lure comprising:
a) an elongated stiff wire support having an upper extremity provided with an eyelet and a lower extremity provided with a looped snap member,
b) a spinner unit having 1 to 8 upwardly directed blades radially disposed around a hub element journaled to said wire support,
c) upper and lower bearing members having central bores and rotatively mounted by virtue of said bores on said wire support above and below said spinner unit, respectively,
d) an offset keel shaped elongated weight member affixed securely to said wire support below said lower bearing member,
e) a buoyant head having a centered channel and mounted by virtue of said channel on said wire support above said upper bearing member,
f) a removable upper attractor member configured to embrace said weight member, and
g) a removable lower attractor member and fish hook unit removably held by said looped snap member.

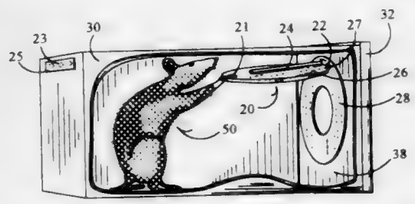
5,327,672
SLIP BOBBER FOR ICE FISHING
Bruce N. Johnson, 8951 Goodrich Rd. #310, Bloomington, Minn. 55437
Filed Nov. 22, 1993, Ser. No. 155,388
Int. Cl.[5] A01K *93/00*
U.S. Cl. 43—44.91 **9 Claims**

1. A slip bobber for use with a fishing line and being especially adaptable for ice fishing,
said slip bobber being formed of a bouyant, generally liquid impervious plastic material and having a symmetrical configuration,
said bobber having an elongate vertical passage therethrough for receiving a fishing line therethrough, said vertical passage having a cross-sectional size to allow the fishing line to move through the passage relative to the bobber,
said bobber having an elongate transverse passage therethrough communicating with said vertical passage,
an elongate locking element extending through said transverse passage and having a length dimension greater than the length dimension of said transverse passage, said locking element having a transverse opening therethrough for receiving the fishing line therethrough, the axis of said transverse opening through the locking element being disposed substantially normal with respect to the longitudinal axis of the locking element, said locking element being shiftable between a locking position and a release position, said transverse opening through the locking element being disposed in aligned relation with a vertical passage when the locking element is in the release position to permit the fishing line to move freely through the



vertical passage, said transverse opening in the locking member being disposed in offset relation to said vertical passage when said locking element is in the locking position for binding the bobber to the fishing line at a selected position to permit a user to select a predetermined fishing depth, said locking element being shifted from the locking position to the release position when the fishing line is subjected to an upward jerking force as the fisherman sets the hook.

5,327,673
MAGNETIC AIR TIGHT ANIMAL TRAP ASSEMBLY
John Paglia, 1680 Narcissa, Blue Bell, Pa. 19422-2505
Filed Jun. 1, 1993, Ser. No. 68,787
Int. Cl.[5] A01M *23/02*
U.S. Cl. 43—61 **20 Claims**

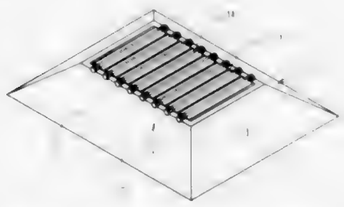


1. A magnetic, air tight, animal trap assembly in combination with an enclosure means comprising,
a magnetic trap door assembly having a magnetic door, a magnetic door adapter, a hinge means, a bait means, an attachement means for attaching said magnetic trap door assembly to said enclosure means, and a door support rod; said enclosure means having an opening to permit entrance by an animal, said opening and said enclosure means sized to the animal being trapped; said magnetic door being flat with projections on its top edge surface to be received by said hinge means, said magnetic door sized to said magnetic door adapter, said magnetic door having

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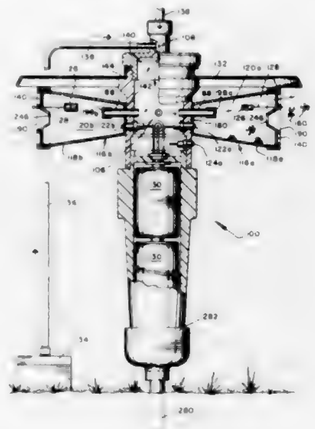
said bait means attached thereto such that with the door open said bait means will be on its upper most surface in front of said door support rod, said magnetic door adapter being flat with an opening to permit entry by an animal and sized to the opening of the enclosure means; said magnetic door adapter having said hinge means and said door support rod attached such that when said magnetic door, having been received by said hinge means, and held open by magnetic attraction to the support rod, is dislodged by an animal and with the force of gravity said magnetic door will pivot from an open position to a closed position in contact with said magnetic door adapter, said magnetic door held open by its magnetic attraction to said door support rod and held closed by its magnetic attraction to said magnetic door adapter, said magnetic door and magnetic door adapter in a closed magnetized position overlapping one another in an air tight seal.

5,327,674
TRAP FOR HARVESTING EARTHWORMS
Timothy R. Powell, R.R. 2, Box 195 A, Williamsport, Ind. 47993
Filed Apr. 8, 1993, Ser. No. 44,653
Int. Cl.[5] A01M *23/10*
U.S. Cl. 43—71 **3 Claims**



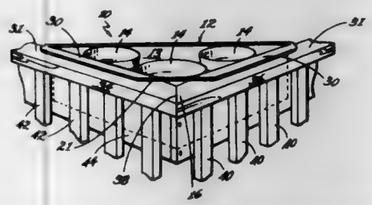
1. A trap for harvesting earthworms comprising:
a trap chamber defined by a base and four inwardly sloped solid sidewalls having inner, outer and top surfaces;
a plurality of horizontally disposed louvers having flattened surfaces, said louvers being pivotally supported on the top surfaces of the inwardly sloped sidewalls, the outer surfaces of the inwardly sloped sidewalls and the flattened surfaces of the louvers being sand-coated to enable effective movement of earthworms up the sidewalls onto the louvers, the into the trap; and each louver having first and second end spindles disposed on opposite top surfaces of the sidewalls, said end spindless having a flattened oval contour when viewed from the side along the axis of the corresponding louver, whereby the associated louver tends to return to a horizontal plane when at rest after rotating from the weight of an earthworm falling into the trap chamber.

5,327,675
USE OF ALKYL CYCLOPENTANONE AND PHENYL ALKANOL DERIVATIVE-CONTAINING COMPOSITIONS FOR REPELLING BLOOD FEEDING ARTHROPODS AND APPARATUS FOR DETERMINING REPELLENCY AND ATTRACTANCY OF SEMIOCHEMICALS AGAINST AND FOR BLOOD FEEDING ARTHROPODS
Jerry F. Butler, Gainesville, Fla.; Craig B. Warren, Rumson, N.J.; Anna B. Marin, Leonardo, N.J.; Braja D. Mookherjee, Holmdel, N.J., and Richard A. Wilson, Westfield, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.
Continuation-in-part of Ser. No. 887,138, May 22, 1992, Pat. No. 5,228,233. This application Jan. 21, 1993, Ser. No. 7,287
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] A01M *1/04*
U.S. Cl. 43—113 **6 Claims**



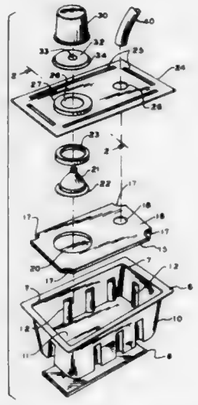
1. A semiochemical field trap for blood feeding arthropods located in a 3-space defined by a vertical "y" axis and horizontal "x" and "z" axes each of which "x" and "z" axis is perpendicular to said "y" axis and each of which "x" and "z" axis is perpendicular to one another comprising:
(1) upright vertically disposed hollow housing means:
(A) having arthropod-impenetrable vertical side wall means defining a vertically disposed inner void;
(B) having an upper terminal end means provided with gas entry means;
(C) having and piercing said side wall means, at least two horizontally-disposed separate sets of apertures including an aperture set S_1 and an aperture set S_2 with aperture set S_1 being vertically distant from, and substantially adjacent to aperture set S_2; with a first set of apertures of aperture sets S_1 and S_2 being gas transmission apertures containing gas transmission means and a second set of apertures of aperture sets S_1 and S_2 having first radiation means sealably inserted therethrough;
(2) horizontally disposed hollow housing means:
(A) having substantially horizontally disposed arthropod-impenetrable side walls defining horizontally disposed inner void means;
(B) having oppositely juxtaposed inner and outer open terminal end means; the inner terminal end means being circumferentially sealably contiguous with a portion of the outer surface of said vertical side wall means of said upright housing means which portion circumscribes a section of said vertical side wall means including at least one aperture of said S_1 and at least one aperture of said S_2, one of said apertures being a gas transmission aperture containing gas transmission means and the other of said apertures having sealably contained therethrough radiation means;
(C) having incorporated into the inner structure thereof, arthropod entrapment means; and
(D) having sustainably releasable insect attractant or repellent semiochemical substance means located within (i) said horizontally disposed inner void means or (ii) said gas transmission means;
(3) gas transmission effecting means for causing conveyance of a gas through said gas entry means, into and through said vertically disposed inner void, through a gas transmission aperture of aperture set S_1 or of aperture set S_2, into and through said horizontally disposed inner void means and into the environment surrounding said field trap;
(4) second radiation means located within said vertically disposed inner void for conveying insect attracting radiation through substantially each of said gas transmission apertures of aperture set S_1 and/or aperture set S_2;
(5) radiation pulsing means connected to said first radiation means and/or said second radiation means causing said first insect attracting radiation and/or said second insect attracting radiation to have a frequency mimicking insect wing beat and/or insect visual sensing frequencies;
(6) at least one power supply means associated with said trap at least energizing said first and second radiation means and said radiation pulsing means;
whereby on engagement of the power supply means with said radiation means and radiation pulsing means and simultaneous activation of said gas transmission effecting means, blood feeding arthropods in the vicinity of said trap are attracted by (i) activated radiation emitted by said first and said second radiation means and (ii) gas emanating from the outer open terminal end means of said horizontally disposed hollow housing means to a location so close to said trap that in the event that an attracting semiochemical in said sustainably releasable substance means is detected and attracts at least one of said arthropods, at least one of said arthropods will enter said horizontally disposed inner void means counter-current to the flow of said emanating gas and will remain permanently entrapped therein.

5,327,676
CORNER POT HOLDER APPARATUS
Paul G. Kosky, 18 Jade Hill Rd., Auburn, Mass. 01501
Filed Nov. 13, 1992, Ser. No. 976,252
Int. Cl.[5] A47G *7/00*
U.S. Cl. 47—39 **7 Claims**



1. A corner pot holder in combination with potted plants and corner railing means comprising:
a) said potted plants being contained in a plurality of plant pots;
b) said corner railing means supporting the corner pot holder in spaced relation above a generally horizontal floor comprising a first railing of generally rectangular configuration and a second railing of generally rectangular configuration joined at a right angle to form said railing corner means;
c) a triangular container body configured as a right triangle including a truncated apex and having an area and depth related to the size of the plant pots comprising:
i) a horizontal base defining a triangular surface supporting said plant pots;
ii) peripheral sidewalls in combination with a horizontal base providing a flower pot planter comprising a first vertical sidewall and a second vertical sidewall joined at a truncation panel adjacent to the truncated apex and a vertical back wall, wherein said vertical sidewalls are positioned in orthogonical relation to the base securely holding a plurality of at least three plant pots with potted plants in a vertical position such that the pots are concealed from view by the container body, the potted plants being plainly visible above the container body and;
iii) support means orienting and supporting the said corner pot holder at the railing corner at the side of the first and second railings, comprising a first horizontal flange and a second horizontal flange each flange extending laterally outward from a top edge of each vertical side wall in orthgonal relationship therewith, thus forming a right angled mounting surface to cooperate with the rectangular configuration of the first and second railings to securely position said corner pot holder at the railing corner in a suspended manner, wherein the container is concealed from view from the outside of the corner by the first and second railings.

5,327,677
PLANT WATERING DEVICE
Efrain Rivera, 22 Lorraine Ter., Boonton, N.J. 07005
Filed Oct. 7, 1992, Ser. No. 957,104
Int. Cl.[5] A47G *7/02*
U.S. Cl. 47—40.5 **15 Claims**



1. A watering device for a stand comprising:
a reservoir having
a cover having a port and mounted on and enclosing said upper opening of said reservoir;
a shelf mounted in said reservoir below said cover and shaped to allow water to bypass said shelf;
a length of tube communicating with said reservoir for supplying water to said reservoir below said shelf;
a valve means reciprocatively mounted between said shelf and said cover for controlling water flow through said port; and
a float attached atop said valve means and above said cover, for floating and operating said valve means to seal said port of said cover, so that water flowing out of said reservoir and into the stand is regulated by the floating and operation of the valve means.

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EXTENDABLE SUPPORT POST FOR POTTED PLANTS

James H. Schweiker, 14415 N. 73rd St., Suite 109A, Scottsdale, Ariz. 85260

Filed Jul. 19, 1993, Ser. No. 93,487
Int. Cl.[5] A01G *9/12*
U.S. Cl. 47—70 4 Claims



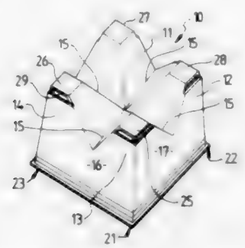
1. An extendable potted plant support and watering device comprising:
two or more hollow tubular interconnected sections one of which is secured to an apertured base member adapted to be placed within a pot for plants to extend laterally of the longitudinal axis of said sections and juxtapositioned to the inside surface of the base of the pot with said sections positioned in a vertical array,
said one of said sections having openings therethrough for providing fluid communication between all of said sections and the interior of the pot,
said sections being interconnected by a coupling, and
said coupling comprising an apertured tab for receiving through the apertures in the tab ties for surrounding the stock of a plant.

5,327,679

PLANT ROOT GROWTH TRAINING DEVICE

David V. Hawthorne, Winston Road, Palmwoods, Queensland, 4555, Australia

Filed Sep. 29, 1992, Ser. No. 953,116
Claims priority, application Australia, Sep. 30, 1991, PK8628
Int. Cl.[5] A01G *23/02*
U.S. Cl. 47—73 4 Claims



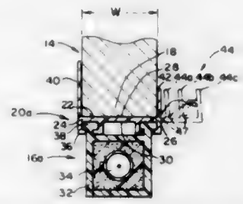
1. A plant root growth training device comprising an open topped container having a bottom wall including water drainage openings and a peripheral wall having an upper peripheral edge, said peripheral wall extending from the bottom wall of the container to the upper peripheral edge and defining a longitudinal passageway extending from the upper peripheral edge and terminating at said water drainage openings in said bottom wall, said passageway including an upper main passageway and a plurality of lower branches, said main passageway having a lower end located in said container between said upper peripheral edge and said bottom wall and said branches extending from the lower end of the main passageway to adjacent the bottom wall of the container, said branches defining a plurality of separate angularly spaced longitudinally extending outwardly tapering passageways, each tapering passageway being defined by the peripheral wall of the container and a pair of v-shaped outwardly diverging walls, with the walls of adjacent tapering passageways intersecting and terminating in angularly spaced radially extending ridges located adjacent the lower end of the main passageway, the ridges and said v-shaped outwardly diverging walls of the tapering passageways providing a plurality of radially extending ridges adjacent the lower end of the main passageway alternating with longitudinally and radially extending valleys terminating adjacent the bottom of the container.

5,327,680

ADJUSTABLE FASTENING DEVICE FOR SECURING A SENSING EDGE TO ANY OF A PLURALITY OF DOORS

Bearge D. Miller, Concordville, Pa., assignor to Miller Edge, Inc., Concordville, Pa.

Filed Apr. 29, 1993, Ser. No. 54,809
Int. Cl.[5] E05F *15/02*
U.S. Cl. 49—27 18 Claims



1. An adjustable fastening device for securing a sensing edge to an edge of a door, said fastening device comprising:
a mounting plate for being attached to a door edge and having first and second lateral ends, said mounting plate including a first surface for being in facing relationship with the door edge and a second surface for being in facing relationship with a sensing edge; and
at least three elongated members spaced from each other and extending from said mounting plate, at least two of said elongated members being selectively detachable from said mounting plate such that an installer can selectively detach at least one of said detachable elongated members from said mounting plate, at least two remaining elongated members being spaced a distance from each other for receiving an edge of a door having a thickness which generally corresponds to the distance, where the adjustable fastening device is adaptable to receive one of a plurality of different thickness door edges facing the first surface.

5,327,681

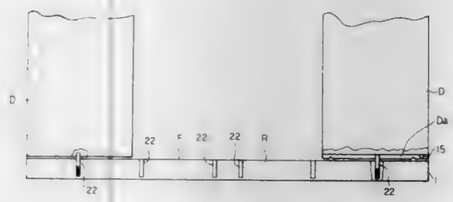
GUIDE RAIL DEVICE FOR HANGING DOORS

Saburo Minami, Osaka, Japan, assignor to Osaka Kanagu Co., Ltd., Osaka, Japan

Filed Jan. 17, 1992, Ser. No. 975,443
Int. Cl.[5] E05D *13/00*
U.S. Cl. 49—411 14 Claims

1. A guide rail for use in guiding a sliding door having an elongated groove formed longitudinally along a bottom end surface thereof and being suspended from an upper rail so as to be slidable between open and closed positions, said guide rail comprising:
a guide rail main body adapted to be embedded in a floor beneath the bottom end surface of the sliding door;
a plurality of guide pieces vertically movably mounted in said guide rail main body for movement between extended positions, in which said guide pieces extend partially

above an upper end of said guide rail main body and are adapted to extend into the elongated groove formed in the bottom end surface of the sliding door, and retracted position, in which said guide pieces are substantially retracted into said guide rail main body;
guide means for guiding said guide pieces to move only linearly vertically between said extended and retracted positions;



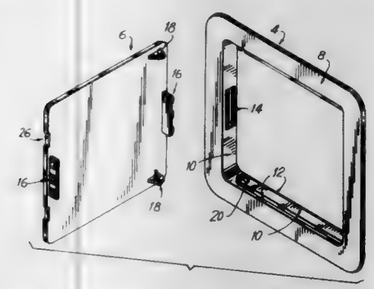
a cam member rotatably mounted in said guide rail main body for rotary movement between a door-open position and a door-closing position; and
coupling means for operatively coupling said cam member to said guide pieces such that said guide pieces are moved to said extended positions when said cam member is rotated to said door-closing position and such that said guide pieces are moved to said retracted positions when said cam member is rotated to said door-open position.

5,327,682

ACCESS PANEL HAVING REMOVABLE DOOR AND RECESSED HINGE

Claudia P. Holtz, Forest Hills, N.Y., assignor to Karp Associates, Inc., Maspeth, N.Y.

Filed Mar. 12, 1993, Ser. No. 30,655
Int. Cl.[5] E06B *3/32*
U.S. Cl. 49—463 5 Claims



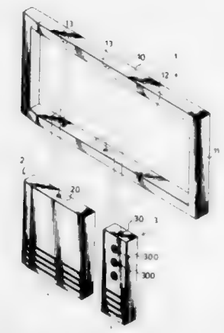
1. In an improved access panel for mounting in a wall and for enabling access to the interior of said wall, said access panel comprising:
a frame comprising an outer face for engaging said wall for preventing movement of said frame in said wall, and an inward facing edge integral with, and substantially perpendicular to, said outer face, said inward facing edge defining an opening for accessing the interior of said wall; and
a press-fit door sized to correspond to said opening and being removably insertable therein;
wherein the improvement comprises:
said inward facing edge further comprising an eccentric cavity for providing a hinge pivot point, said eccentric cavity comprising walls for providing a guide track for allowing movement of said hinge pivot point along said guide track, said walls further comprising a notch disposed therein toward said outer face for enabling removal of said door from said cavity; and
said door further comprising a hinge pivot being alignable with said notch and being movable into and out of said eccentric cavity through said notch in direct response to an applied pressure when said hinge pivot is aligned with said notch, said door being secured in said eccentric cavity absent said applied pressure and said alignment for enabling said pivot point to move along said cavity, said hinge pivot and said eccentric cavity cooperating to form a hinge having a movable pivot point for said secured door in said eccentric cavity, said hinge both allowing opening and closing of said secured door in said frame and removal of said door from said frame.

5,327,683

MODULAR FRONT PANEL OF A COMPUTER HOUSING

Vincent Chu, 6F, No. 493, Chung-Cheng Rd.,, Hsin-Tien City, Taipei Hsien, Taiwan

Filed Jul. 13, 1993, Ser. No. 90,656
Int. Cl.[5] E06B *3/32*
U.S. Cl. 49—463 7 Claims



1. A modular front panel of a computer housing, comprising:
a one-piece panel frame formed as a rectangular looped frame which confines a rectangular opening that includes first, second and third portions;
a rectangular first wall unit fittingly received in said first portion of said rectangular opening;
a rectangular second wall unit formed with a number of function key openings and fittingly received in said second portion of said rectangular opening; and
a retaining means for securing detachably said first and second wall units to said panel frame in said first and second portions of said rectangular opening;
whereby, said third portion of said rectangular opening is allocated for disk drives.

5,327,684

REVERSIBLE DOOR HINGE AND METHOD

Walter Herbst, 86 Salem La., Evanston, Ill. 60203

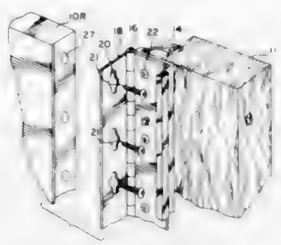
Filed Jan. 13, 1993, Ser. No. 3,627
Int. Cl.[5] E06B *3/00*; E05D *7/02*
U.S. Cl. 49—506 2 Claims

1. A method for mounting a hinge and latch on a door blank to install the same as either a left-hand or right-hand door wherein the door is made up of front and rear members, each of said members having lateral edges for overlapping engagement with its mating opposite member, and said opposite mating members being screwed together by a plurality of screws spaced up and down both lateral edges of the door, the method comprising the steps of mounting, to a lateral door edge, a full length hinge member having a door leaf and a jamb leaf hingedly joined by a knuckle and a door edge trim member secured to the jamb leaf comprising,

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providing the hinge door leaf with a plurality of longitudinally spaced holes thereon with a silhouette of a modified heyhole slot to match the pre-existing screws on one lateral edge of the pre-existing screws on one lateral edge of the door,

relieving the screws holding one lateral edge of the door together thereby defining relieved screws,



thereafter applying the hinge door leaf with the keyhole slots in position over the head and shank of the relieved screws,

and subsequently re-tightening the previously relieved screws and their related hinge door leaf to secure the same firmly to the door,

and then mounting a latch at the opposite side of the hinge and securing the latch interiorly to the door.

5,327,685

ELECTRIC DRILL COMPLETED WITH A SET OF GRINDING EQUIPMENTS

Wan-Li Chang, No. 227, Min-Chuan W. Road, Taipei, Taiwan

Filed May 20, 1993, Ser. No. 63,666
Int. Cl.[5] **B24B** *3/26*; **B25F** *3/00*
U.S. Cl. 51—5 E **5 Claims**



1. An electric drill completed with a set of grinding equipments, comprising:

a housing, within which a rotor, a rotating shaft passing through said rotor with one front end extending out of said housing, and a plurality of transmission gears being provided to cause a chuck outside said housing and secured to the head end of said rotating shaft to drive a drill bit held by said chuck to press and drill a piece of work; said housing extending backward to form a rear compartment to accommodate therein a set of grinding equipments which mainly includes a grinding wheel, a side cover, a cam, a jig holder, and a drill jig;

said grinding wheel being pivotly supported by said rotating shaft on a rear end thereof which backward extends into said rear compartment and being capable of turning along with said rotating shaft so as to grind a drill bit;

said side cover being pivotly connected at a vertical edge thereof to a side opening of said rear compartment such that said side cover closes said rear compartment and can be freely opened outward; said side cover further having an horizontal oblong through hole and an arcuate slot formed thereon at proper positions;

said cam having a through hole formed at an end with larger width such that said through hole corresponds to said horizontal oblong hole on said side cover, and a projected pin provided at the other narrower end of said cam, corresponding to and normal to said arcuate slot on said side cover such that said projected pin may extend into said arcuate slot and slidably moves at a certain angle therein;

said jig holder being a substantially n-shaped frame, having two opposite side walls each of which being provided with a freely adjustable retaining hole in which a head pin projecting toward a center of said retaining hole is provided, and a back wall connecting said two side walls having an internally threaded sleeve horizontally projecting outward therefrom; said sleeve further passing through said through hole on said cam and said oblong hole on said side cover in sequence, permitting said jig holder, said cam, and said side cover to firmly associate with other; and

said drill jig being substantially a tubular member having a central through bore and an adjustable chuck at a front head thereof, and being separately formed near a front and a rear ends thereof two circumferential recesses which, preferably 180 degrees in span, separately engages with said retaining holes of said jig holder;

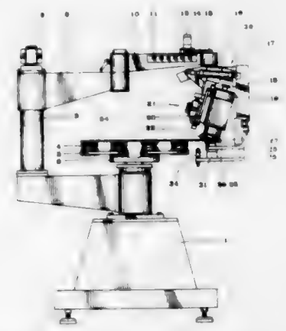
said set of grinding equipments being concealed within said rear compartment of said housing of said electric drill when it is not in use; said side cover thereof being opened outward first when said set of grinding equipments is used to grind a drill bit, then said drill bit to be ground being inserted into said chuck of said drill jig before said electric drill is powered to turn said rotating shaft so that said rotating shaft drives said grinding wheel to turn and grind said drill bit.

5,327,686

CHAMFERING WIDTH MAINTAINING AND GLASS PLATE SHAPE SENSING APPARATUS FOR USE IN A GLASS PLATE CHAMFERING MACHINE

Kyung Park, 305-1109 Jugong #670 Daichi-Dong, Kangnam-Ku, Seoul, Rep. of Korea

Filed Jan. 29, 1992, Ser. No. 827,617
Claims priority, application Rep. of Korea, Apr. 24, 1991, 6619/1991
Int. Cl.[5] **B24B** *51/00, 1/00*
U.S. Cl. 51—165 R **3 Claims**



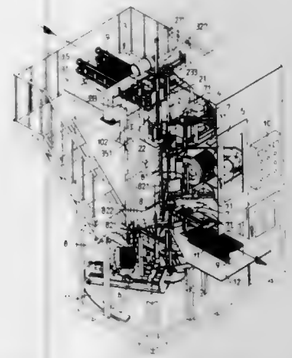
1. A chamfering width maintaining and glass plate shape sensing apparatus for use in a glass plate chamfering machine, including: a horizontal beam **2** extended from a vertical shaft of a body; a vertical beam **3** having a top extending upwardly from an end of said horizontal beam **2**; a first joint beam **9** extending horizontally from the top of said vertical beam **3**; a second joint beam **10** having a top connected to the end of said first joint beam **9**; and a chamfering angle adjusting device **32** suspending from the end of said second joint beam **10**, said apparatus comprising: two sliding plates **25**, **25***a*, installed within a vertical supporting bar **18** suspended from one end of an arcuate rotary support of said chamfering angle adjusting device **32**; two air cylinders **23**, **33** for making said sliding plates **25**, **25***a* slide up and down; two roller supporting bars **26**, **26***a* individually connected to the ends of said sliding plates **25**, **25***a* respectively; a horizontally maintaining roller **34** installed on said roller supporting bar **26***a* in a freely rotatable manner; another horizontally maintaining roller **48** and two function sharing rollers **27**, **27***a* installed on said roller supporting bar **26**; a servomotor **12** for controlling said chamfering angle adjusting device **32** and installed on the top of said second joint beam **10**; and a servomotor controller electrically connected to said servomotor **12** and to a potentiometer **40**.

5,327,687

APPARATUS FOR CONTINUOUSLY GRINDING A CURVED PLATE

Yu-An Hsieh, Kaohsiung City, Taiwan, assignor to Metal Industries Research & Development Centre, Kaohsiung City, Taiwan

Filed Aug. 16, 1993, Ser. No. 107,299
Int. Cl.[5] **B24B** *49/00*
U.S. Cl. 51—165.71 **5 Claims**



1: An apparatus for grinding continuously a curved plate which has a radius of curvature, said apparatus comprising:

a hollow upright casing having a top, a bottom, a first horizontal mounting frame adjacent to said top, a second horizontal mounting frame below said first mounting frame, a third horizontal mounting frame below said second mounting frame, a fourth horizontal mounting frame below said third mounting frame and a fifth horizontal mounting frame below said fourth mounting frame;

a synchronous adjusting mechanism including a worm journalled between said top and bottom;

a feeding device including a carrier plate which is mounted slidably on said first mounting frame and which has a first side adjacent to said worm and a second side opposite to said first side, an inverted U-shaped frame fixed uprightly on said carrier plate, means for retaining said curved plate vertically on said carrier plate and for pushing said curved plate toward said first side of said carrier plate, a first lift device for transferring said curved plate from said first side of said carrier plate to a first predetermined position of said second mounting frame and means for actuating said first lift device;

said feeding device further including a first worm gear which meshes with said worm and a first threaded shaft which has a first end that is connected to said first worm gear and a second end that engages threadedly said U-shaped frame so that said U-shaped frame and said carrier plate can move relative to said worm when said worm is rotated to rotate said first threaded shaft, said first side of said carrier plate being moved so as to be spaced from an axis of said worm by a first predetermined distance which is equal to said radius of curvature of said curved plate;

first and second horizontal transferring devices and a first grinding device mounted on said second mounting frame, said first horizontal transferring device transferring said curved plate from said first predetermined position of said second mounting frame to said first grinding device, said second horizontal transferring device transferring said curved plate from said first grinding device to a second predetermined position of said second mounting frame;

said first grinding device including an elongated first main support which has a first grinding member mounted rotatably thereon, a first secondary support which is mounted slidably on said elongated first main support and which has a first press member mounted rotatably thereon, and a first biasing member which biases said first press member toward said first grinding member and which maintains spacedly said first press member by a first clearance relative to said first grinding member, each of said first grinding member and said first press member having a center that lies on a longitudinal axis of said elongated first main support, said first grinding device further including a second worm gear which meshes with said worm and a second threaded shaft which extends parallel to said longitudinal length of said elongated first main support and which has a first end connected to a center of said second worm gear and a second end which engages threadedly a first mounting block, said elongated first main support being fixed to said first mounting block so that said elongated first main support moves together with said first mounting block along said second threaded shaft when said worm is rotated, said elongated first main support being moved such that a first length is formed between a middle of said first clearance and said axis of said worm, said first length being equal to said first predetermined distance;

means for rotating said first grinding member and said first press member;

said apparatus further including a second lift device fixed between said second and third mounting frames for transferring said curved plate from said second predetermined position of said second mounting frame to a third predetermined position of said third mounting frame;

means for actuating said second lift device;

third and fourth horizontal transferring devices and a second grinding device mounted on said third mounting frame, said third horizontal transferring device transferring said curved plate from said third predetermined position of said third mounting frame to said second grinding device, said fourth horizontal transferring device transferring said curved plate from said second grinding device to a fourth predetermined position of said third mounting frame;

said second grinding device including an elongated second main support that has a second press member mounted rotatably thereon, a second secondary support which is mounted slidably on said second main support and which has a second grinding member that is mounted rotatably thereon and a second biasing member that biases said second grinding member toward said second press member so as to retain spacedly said second grinding member by a second clearance relative to said second press member, each of said second press member and said second grinding member having a center which lies on a longitudinal axis of said second main support, said second grinding device further including a third worm gear which meshes with said worm and a third threaded shaft which extends parallel to said longitudinal length of said second main support and which has a first end that is connected to said third worm gear and a second end that engages a

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second mounting block threadedly, said second main support being fixed to said second mounting block so that said second main support moves together with said second mounting block along said third threaded shaft when said worm is rotated, said second main support being moved so that a second length which is equal to said first predetermined distance is formed between an intermediate point of said second clearance and said axis of said worm;

means for actuating said second press member and said second grinding member;

an impelling mechanism which is mounted on said fourth mounting frame and which includes a fifth horizontal transferring device and a push unit;

means for actuating said push unit;

a chamfering device mounted on said fifth mounting frame;

a third lift device mounted between said third and fifth mounting frames for transferring said curved plate from said fourth predetermined position of said third mounting frame to said chamfering device and for transferring said curved plate from said chamfering device to said fourth mounting frame and from said fourth mounting frame to said third mounting frame;

means for actuating said third lift device;

said chamfering device including a base disc which is fixed on said fifth mounting frame such that said worm extends through a center of said base disc, two elongated support plates, each having a front end pivoted to said base disc adjacent to said worm and a rear end connected detachably to said fifth mounting frame, thereby defining a first predetermined angle between said elongated support plates, said first predetermined angle corresponding to an angle between two distal edges of said curved plate, each of said support plates having a vertical rod support mounted slidably thereon, a holding member mounted slidably on each of said support plates between said vertical rod support and said rear end of each of said support plates, a retractable shaft interconnecting and driving said rod support and said holding member toward and away from each other, a guiding means formed on each of said support plates to permit said vertical rod support and said holding member to travel longitudinally on a respective one of said support plates, said holding member further having a vertical pivot post fixed thereon, a rotatable seat which is pivoted to said vertical pivot post and which has a third grinding member mounted rotatably thereon and means for holding releasably said rotatable seat on said holding member so that said third grinding member forms a second predetermined angle relative to said longitudinal axis of said elongated support plate, said chamfering device further including a load carrying plate extending perpendicularly from said vertical rod supports, said load carrying plate having a support face right below said fourth predetermined position of said third mounting frame, said chamfering device further including two fourth worm gears each of which is meshed with said worm and has a fourth threaded shaft which is parallel to a respective one of said support plates, each of said fourth threaded shaft having a first end connected to a respective said fourth worm gears and a second end connected threadedly to a third mounting block, said third mounting block being fastened to said vertical rod support below said load carrying plate such that said load carrying plate is spaced from said axis of said worm by said first predetermined distance;

means for actuating said third grinding member;

each of said first, second, third, fourth and fifth horizontal transferring devices including a fifth worm gear that meshes with said worm, a fifth threaded shaft that has a first end fixed to a center of said fifth worm gear and a second end, an elongated frame that has a front end adjacent to said worm, said second end of said fifth threaded shaft passing through said front end of said elongated frame, said elongated frame having a rear end which is slidably supported on a respective said mounting frame so that said fifth threaded shaft can pivot about said worm, said elongated frame further having a connecting rod interconnecting said front and rear ends of said elongated frame and which is paralleled to said fifth threaded shaft, first and second clamping members which are mounted slidably on said connecting rod and which cooperatively form a gap therebetween, a connecting member mounted slidably to said connecting rod and connected to said first clamping member, said fifth threaded shaft passing threadedly through said connecting member so that said connecting member can move along said connecting rod when said worm is rotated, and a driving device interconnecting and driving said first and second clamping members toward and away from each other, said connecting member being retained such that a third length is formed between a middle of said gap and said axis of the worm, said third length being equal to said first predetermined distance;

means for actuating each of said first, second, third, fourth and fifth horizontal transferring devices; and

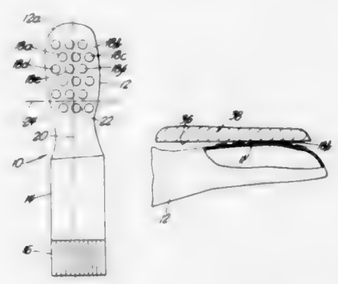
a control unit for actuating and deactuating said retaining and push means of said feeding device, said actuating means of said first, second and third lift devices, said actuating means of said first grinding member and said first press member, said actuating means of said second grinding member and said second press member, said actuating means of said push unit, said actuating means of said third grinding member, said retractable shaft of said chamfering device, said driving device and said actuating means of each of said first, second, third, fourth and fifth horizontal transferring devices in a predetermined sequence.

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ABRADING JACKET FOR HUMAN DIGIT

George E. Norkus, 436 Westminster, Marine City, Mich. 48039-1755

Filed Dec. 4, 1992, Ser. No. 988,075
Int. Cl.[5] B24B *29/00*
U.S. Cl. 51—394 **10 Claims**



1. A jacket fittable on a digit of a human hand for abrading a work piece and enhancing the ability of the digit to tractively grip the work piece, the jacket comprising:

an elongate sleeve defining an opening at one end and being closed at an opposing end;

an elastically deformable, three dimensionally curved region on the jacket;

an elongate, flat, pliable panel extending from the one end;

an array of spaced apart abrasive elements on the curved region, the abrasive elements aligned in rows generally perpendicular to a longitudinal, translational axis of the sleeve, the rows defining therebetween inter row gaps generally perpendicular to the longitudinal axis, the abrasive elements in each of the rows defining intra row gaps therebetween, the rows juxtaposed so that abrasive elements in a first row oppose the intra row gaps in a second row;

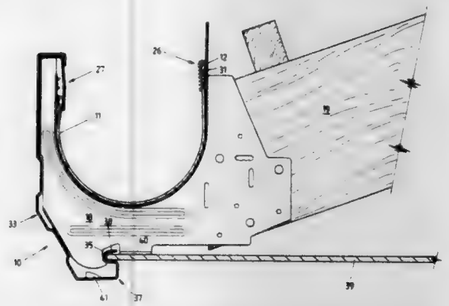
an edge on each of the abrasive elements, the edges spaced from the curved region and disposed at outer peripheries of the abrasive elements.

5,327,689

GUTTER AND IMPROVED GUTTER INSTALLATION SYSTEMS

James M. Jansen, South Australia, Australia, assignor to Stratco Metal Proprietary Limited, Gepps Cross, Australia

Filed Apr. 13, 1992, Ser. No. 867,816
Claims priority, application Australia, Apr. 12, 1991, PK5562
Int. Cl.[5] E04D *13/06*
U.S. Cl. 52—11 **6 Claims**



1. A gutter formed from continuous strip-like material, comprising

a continuously extruded thin strip of polymeric material, said strip formed by an extrusion process with a U-shaped cross-section and being resilient enough to allow said strip to be both flattened and wound onto a roll for storage prior to use, and flexed about its longitudinal axis into a U-shaped cross-section when unwound, and

a plurality of spaced brackets each having a recess in which said flexed strip is supported and each having means for securing said flexed strip within said recess,

said gutter being formed by cutting a required length of said strip, placing said cut length of strip over said brackets, flexing said cut strip so as to locate it within said recess of each said bracket, and securing said cut strip to each of said brackets,

wherein the brackets are adapted for being secured to a structure, wherein said recess in the bracket is substantially U-shaped, and wherein the means for securing said flexed strip within the recess comprise means for securing each longitudinal edge of said flexed strip so that when the brackets are secured to said structure, a longitudinal inner edge of the flexed strip in relation to said structure is held in a position that is higher than an opposing outer longitudinal edge of the flexed strip,

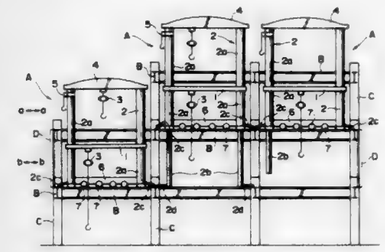
wherein said means for securing the flexed strip further comprises a first means for fixedly securing the inner edge of said flexed strip which is closest to said structure, and a second means for adjustably holding the outer edge of said flexed strip, said second means having a plurality of fixing points to allow the vertical position of the base of the flexed strip to be varied.

5,327,690

ERECTION WORKBENCH FOR CONSTRUCTING A FRAME

Makoto Saito, Tokyo, Japan, assignor to Kajima Corporation, Tokyo, Japan

Filed Oct. 7, 1991, Ser. No. 772,707
Claims priority, application Japan, Oct. 8, 1990, 2-270059; Nov. 30, 1990, 2-334233; Feb. 1, 1991, 3-11960; Jun. 20, 1991, 3-148372
Int. Cl.[5] B66B *9/00*
U.S. Cl. 52—29 **14 Claims**



1. An erection workbench for constructing a building including an erection of a frame by assembling column members and beam members in a vertical direction and a horizontal direction wherein four of said column members constitute a minimum unit of the frame, said erection workbench comprising:

plurality of extension columns provided at an inside area defined by said four columns members forming said minimum unit of said frame, each of said extension columns comprising a fixed column and a column base;

a plurality of support arms provided at lower ends of said fixed column and said column base for connecting said extension column to said beam members;

a workbench affixed horizontally to intermediate positions of said extension columns for executing construction work on said building, said workbench is provided with construction machines including a lifting crane;

a drive mechanism for extending and retracting said column base with respect to said fixed column for changing the vertical position of said erection workbench;

a plurality of tie-beams horizontally attached to lower positions of said fixed columns; and

a plurality of wheels provided at said tie-beams such that said wheels roll on said beam members for changing the horizontal position of said erection workbench.

5,327,691

TRANSFER PAD COVER

Dennis N. Eryou, 8 Ivy Pl., Huntington, N.Y. 11743

Continuation-in-part of Ser. No. 764,446, Sep. 24, 1991, Pat. No. 5,197,240. This application Sep. 21, 1992, Ser. No. 945,661
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] E04B *7/16*
U.S. Cl. 52—66 **9 Claims**

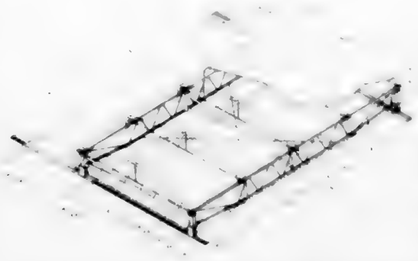
1. A cover for protecting a transfer pad from precipitation, said transfer pad having a raised perimeter, said cover comprising:

a foldable cover frame having a water-proof sheet material secured thereto,

said foldable cover frame extending substantially over the entire surface of said pad when the cover is in a first position, said cover frame having two longitudinal sides, each having a mid-section and two longitudinal ends, said cover frame being foldable along a longitudinal axis, one of said longitudinal sides being pivotally mounted to said pad; and

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level surfaces on said pad, said surfaces being positioned under the longitudinal ends of the other of said longitudinal sides, said other of said sides being movably engaged to said surfaces at said longitudinal ends, said midsection of said other of said sides being raised above said raised



perimeter, whereby said other of said sides may be moved laterally from a position substantially away from said one of said sides to a second position adjacent said one of said sides without engaging said pad, said lateral movement causing said cover to fold

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5,327,692

VERTICAL VIBRATION CONTROL DEVICE

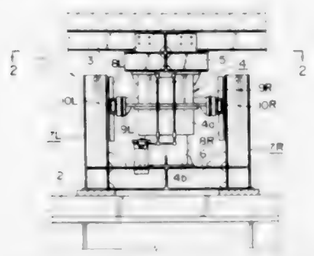
Kenichi Yano, Chofu; Hideo Hayashi, Tokyo; Ryuichi Kamimura, Tokyo; Masamitsu Miyamura, Tokyo; Jun Matsushima, Tokyo; Toru Kasai, Tokyo; Katsuhisa Kanda, Tokyo, and Nobumitsu Funaki, Tokyo, all of Japan, assignors to Kajima Corporation and Yacmo Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 922,176

Claims priority, application Japan, Aug. 1, 1991, 3-193155; Aug. 7, 1991, 3-070543[U]

Int. Cl.[5] **E02D** *27/34*

U.S. Cl. 52—167 RM **6 Claims**



1. In a building having a foundation and a superstructure vertically spaced apart from said foundation, a vertical vibration control device adapted to attenuate vertical vibration in said superstructure comprising: a vertical functioning telescoping air spring positioned between said foundation and said superstructure; means to secure said air spring to said superstructure and to said foundation; and means to maintain vertical alignment and to restrain horizontal deformation of said air spring during vertical seismic impact on said foundation of said building, said telescoping air spring having an outer cylindrical casing and an inner cylindrical casing adapted to telescopically slide within said outer cylindrical casing, one of said cylinders being relatively vertically shiftable and the other of said cylinders being relatively fixed against vertical movement with resect to said superstructure; vertical guide rails secured on opposite sides of said telescoping air spring; and guide blocks secured to and supported by one of said cylinders and slidably secured to said vertical guide rails, said guide blocks being secured to said one of said cylinders with resilient and compressible coupling means, wherein said vertical guide rails and said guide blocks are adapted to permit said telescoping air spring to vibrate vertically and to restrain said telescoping air spring from shifting horizontally

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5,327,693

SEALING DEVICE FOR CONCRETE JOINTS AND PROCESS FOR THE INTRODUCING OF A SEALING MEDIUM INTO SEALING DEVICES

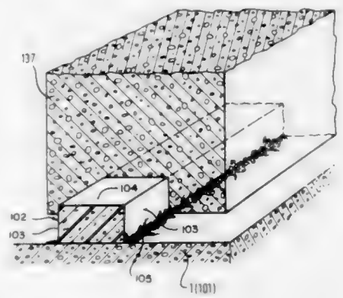
René P. Schmid, Grundstrasse 2, CH-8165 Oberweningen, Switzerland

Division of Ser. No. 578,830, Sep. 5, 1990, Pat. No. 5,249,401. This application Jul. 6, 1993, Ser. No. 85,837

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 8910744[U]

Int. Cl.[5] **E04F** *21/165*

U.S. Cl. 52—396.02 **20 Claims**



1. A sealing device for sealing a joint disposed between two concrete sections, comprising:

sealing means for filling the joint, said sealing means including a sealing medium;

a body for providing a flow path for said sealing medium;

securement means for mounting said body on one of the concrete sections in an area of the joint;

said body consisting of foam means for receiving an injection of said sealing medium, for passage of said sealing medium through said body, and for permitting said sealing medium to emerge from said body into the joint; and

said foam means having open passage pores for conducting said sealing medium into said body, through said body, and out of said body in a flow arrangement.

5,327,694

ORNAMENTAL BUILDING COLUMN

Chris Gamel, West Vancouver; Dana Ramsay, and Alan Burdett, both of North Vancouver, all of Canada, assignors to DCA Architectural Products Ltd., West Vancouver, Canada

Filed Aug. 5, 1991, Ser. No. 740,440

Int. Cl.[5] **E04C** *3/34*; **E04G** *13/02*
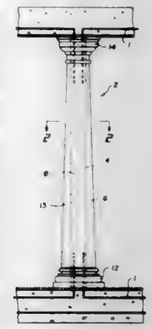
U.S. Cl. 52—727 **9 Claims**

1. An ornamental building structure comprising:

a tubular member having a hollow interior and an exterior surface;

a substantially non-load bearing layer of substantially rigid light-weight synthetic foam applied to said exterior surface and shaped to define an arbitrary ornamental exterior profile of varying radial dimension along at least part of said tubular member;

a thin outer decorative layer applied over said synthetic foam preserving said profile; and



concrete load bearing means extending through said tubular member within said hollow interior.

5,327,695

TAB AND SLOT CONNECTOR MEANS

Michael H. Kelly, Epping, Australia, assignor to John Lysaght (Australia) Limited, Sydney, Australia

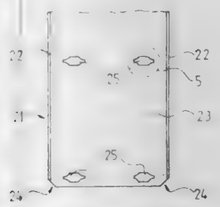
PCT No. PCT/AU90/00571, § 371 Date Jul. 29, 1991, § 102(e) Date Jul. 29, 1991, PCT Pub. No. WO91/08357, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 29, 1990, Ser. No. 730,779

Claims priority, application Australia, Nov. 30, 1989, PJ7636

Int. Cl.[5] **E04C** *3/30*

U.S. Cl. 52—735 **10 Claims**



1. Tab and slot connector means of the kind comprising a tab (**15**) projecting from a first element (**11**) and a slot (**25**) piercing a second element (**21**) to be connected to said first element by insertion of the tab through the slot and subsequent deformation of the tab to prevent its withdrawal from the slot, characterised in that:

(a) the tab tapers from a tab base (**15A**) to a tab tip (**15B**) which is narrower than the tab base; and in that

(b) the slot is defined by two opposed, short, end faces (**26**) and two opposed, elongate side faces, said side faces comprising opposed centre parts (**27**), each at least as long as the width of the tab tip, and opposed flanking parts (**28**) on either side of the centre parts extending from the centre parts to the respective end faces, and in that the spacing between said centre parts is greater than the lengths of the end faces, whereby, in use, the tab tip can be inserted freely between said centre parts and, on its continued insertion, the tab is guided by said flanking parts into alignment with the opposed end faces for snug accommodation of the tab base therebetween.

5,327,696

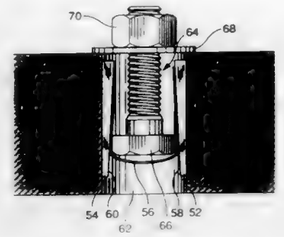
CONCRETE ANCHORING DEVICE AND METHOD

Arlen P. McBride, 4591 S. Main St. Rd., New Castle, Ind. 47362

Filed Feb. 6, 1992, Ser. No. 832,079

Int. Cl.[5] **E04G** *21/00*; **E21D** *20/00*; **F16B** *13/08*

U.S. Cl. 52—745.21 **3 Claims**



1. A method of anchoring a standard bolt head within a pre-drilled hole in concrete, comprising:

providing at least one pair of identical wedge-shaped members aligned in mirror image relationship with their thinnest tapered edges in juxtaposition separated by a distance Y;

adjusting distance Y to be less than the width dimension of the head of the standard bolt to be anchored;

spanning distance Y with adhesive tape and removably adhering the adhesive tape to a substantial portion of the top surfaces of each said pair of identical wedge-shaped members;

positioning each said pair of identical wedge-shaped members over a pre-drilled hole with distance Y centered over the hole and with the adhesive surface of said adhesive tape facing the hole;

centering the bolt head of said adjusting step over distance Y;

forcing the bolt head of said adjusting step into the pre-drilled hole of said positioning step until each said pair of identical wedge-shaped members lie flush against the wall of the pre-drilled hole; and

urging the bolt head of said adjusting step upwardly to anchor the bolt head in the pre-drilled hole of said positioning step.

5,327,697

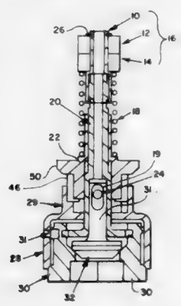
CHUCK FOR CAPPING MACHINE

James V. Kent, Matthews, N.C., assignor to Stolberger Inc., Charlotte, N.C.

Filed Mar. 12, 1993, Ser. No. 30,679

Int. Cl.[5] **B67B** *3/20*; **B65B** *7/28*

U.S. Cl. 53—331.5 **7 Claims**



1. An apparatus for applying a closure element to a container, comprising:

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a rotary vertically reciprocable hollow spindle adapted to be disposed above said container in substantial vertical alignment therewith;
an elongated sleeve rotatably carried within said spindle and protruding therebeneath;
jaw means supported at the lower end of said sleeve and moveable between an open and closed position for receiving and releasing said closure element;
a bell-shaped member disposed around said jaw means including an upstanding hub having an opening through which said sleeve extends;
said hub being cut away to define a first ledge thereon in spaced relation to said bell-shaped member;
said hub being cut away to define a second ledge thereon adjacent to said first ledge and spaced between said first ledge and said bell shaped member;
said hub being cut away to define a third ledge thereon in spaced relation to said bell-shaped member and spaced 180° away from said first ledge;
said hub being cut away to define a fourth ledge thereon adjacent to said third ledge and spaced between said third ledge and said bell-shaped member and spaced 180° away from said second ledge;
coupling means secured to said spindle for maintaining said spindle and said sleeve in substantially coaxial relationship with each other;
said coupling means being provided with downwardly extending projections adapted to be engaged with said first and third ledges;
a pre-torsioned coil spring disposed around said sleeve, and, one end of said spring being affixed to said sleeve and at other end being affixed to said coupling means;
said torsion in said spring tending to rotate said sleeve, said jaw means, and said bell shaped member relative to said coupling means in a direction to maintain said projections on said first and third ledges;
means for vertically reciprocating said spindle in a downward direction carrying said jaw means into engagement with said closure element;
means for thereafter moving said jaw means from said open position to said closed position to firmly grasp said closure element;
means for movement thereafter of said spindle thereby positioning said gripped closure element in engagement with said container;
said means for constantly rotating said spindle thereby rotating said coupling means, said spring, said sleeve, and said jaw means thereby apply said closure element onto said container,
said spindle and said coupling means rotating relative to said sleeve and said jaw means against the torsion in said spring upon the application of said closure element to said container with a predetermined degree of tightness, to move said projections off said first and third ledges and onto said second and forth ledges; and
means responsive to the movement of said projection onto said second and forth ledges for moving said jaw means to said open position, to thereby release said closure element.

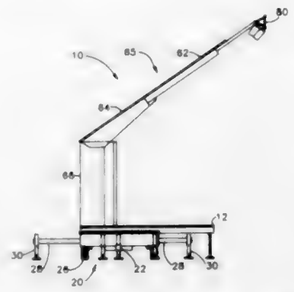
5,327,698

MOBILE ERECTABLE STAGE AND SOUND SHELL

Robert D. Uhl, Louisville, Ky., assignor to Century Industries, Inc., Sellersburg, Ind.

Filed Oct. 14, 1992, Ser. No. 961,086
Int. Cl.[5] E04H *3/10, 3/28*
U.S. Cl. 52—68 **4 Claims**

1. A mobile erectable stage, comprising:
a. a chassis assembly, said chassis assembly having at least one support column extending upwardly therefrom, said at least one support column being of a preselected height; said at least one support column having a pivotally-connected bell crank;
b. a first roof panel, wherein said first roof panel includes a deployable illuminating truss;
c. a first roof panel extender arm connected to said first roof panel and said bell crank; and,



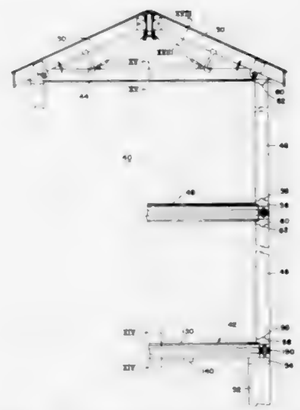
d. means to pivot said bell crank, which, when activated, causes said first roof panel extender arm to move said first roof panel.

5,327,699

MODULAR BUILDING STRUCTURE

James A. Khan, and Aman U. Khan, both of 7086 N. Maple Dr., Coloma, Mich. 49038

Filed Jul. 30, 1991, Ser. No. 738,170
Int. Cl.[5] E04B *7/02*
U.S. Cl. 52—93.2 **29 Claims**



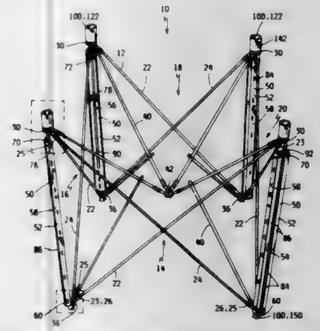
1. A building made from modules that are completely finished prior to delivery to a construction site for assembly at the site to a waterproof structure that is finished inside and out without the use of skilled-trades laborers and with substantially no scrap, said building having at least one horizontal floor, a ceiling above said floor, a generally vertical wall extending between said floor and said ceiling in order to define a perimeter of said building and a roof above said ceiling, comprising:
a vertical wall being defined by an elongated base and a plurality of generally planar wall modules supported on said base, each of said wall modules having an inner surface member finished with interior surface treatment, an outer surface member finished with exterior surface treatment and at least one vertical load bearing conduit stud extending from a bottom portion of said wall module to a top portion of said wall module between said inner and outer surface members in order to transmit the weight of a load above said module to said base and define a vertical passage through that wall module;
wherein each one of said wall modules includes means defining a first camming surface facing upwardly and sloping downwardly toward a central portion of said one of said wall modules and means defining a second camming surface facing downwardly and sloping downwardly away from said central portion and configured to engage said first camming surface of another one of said wall modules in a manner that the weight of said wall modules tends to cause said first and second camming surfaces to pull said wall modules together;
wherein said base and each of said wall modules include mating self-aligning surface portions in order to provide alignment of adjacent wall modules; and
a downwardly extending upper plate that is supported by said wall modules and wherein said upper plate and each of said wall modules include mating self-aligning surface portions in order to provide alignment of adjacent wall modules.

5,327,700

COLLAPSIBLE MODULAR DISPLAY TOWER ASSEMBLY

Gary R. Sorenson, Lakeville, and Philip C. Gerberding, Hopkins, both of Minn., assignors to Skyline Displays, Inc., Burnsville, Minn.

Filed Dec. 5, 1991, Ser. No. 803,157
Int. Cl.[5] E04H *12/18*
U.S. Cl. 52—109 **25 Claims**



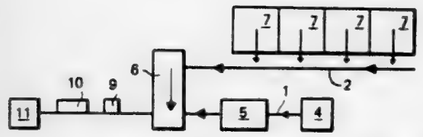
1. A collapsible modular display tower assembly for displaying graphic representations and for attaching display accessories thereto, comprising:
(a) a three-dimensional, collapsible display panel structure having two opposing pairs of upwardly and downwardly directed pivotally-connected links with ends, the ends of one pair being arranged adjacent the ends of the other pair, the structure arranged to form four vertical side faces when erect and an array of links centrally connecting the side faces;
(b) a plurality of upper and lower hub assemblies pivotally connecting the adjacent ends of the links of the side faces that are adjacent;
(c) a plurality of expansible support and attachment braces each brace having two ends each of which is connected to one of the upper and lower opposing hub assemblies; and
(d) releasable hub-connecting means comprised of male and female connectors on the upper and lower hub assemblies for releasably interlocking a multiplicity of display panel structures into a vertical display tower.

5,327,701

APPARATUS FOR INSERTING MATERIAL INTO ENVELOPES

David M. Dronsfield, Loughton, England, assignor to Printed Forms Equipment Limited, Loughton, England

PCT No. PCT/GB91/00105, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO91/11336, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 24, 1991, Ser. No. 915,694
Claims priority, application United Kingdom, Jan. 25, 1990, 9001758
Int. Cl.[5] B65B *59/02*
U.S. Cl. 53—284.3 **11 Claims**



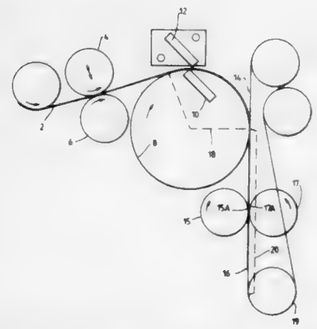
1. An apparatus for inserting material into envelopes, said apparatus comprising;
an insert station,
a mechanism at said input station for inserting the material into the envelopes,
a conveyor for supplying envelopes to said insert station with predetermined spacing between said envelopes,
a drive means commonly driving said conveyor and said insert mechanism, and
a drive device comprising a gear train including selectively disengageable gear wheels, said gear train including gears on an idler shaft movable axially between an engaged and a disengaged position, permitting selective disengagement of said drive means form one of said conveyor and said insert mechanism to permit adjustment of said apparatus to envelopes of different sizes.

5,327,702

WRAPPING ARTICLES

Robert H. Taylor, High Wycombe, England, assignor to Molins plc, Milton Keynes, England

Filed Jul. 31, 1992, Ser. No. 922,853
Claims priority, application United Kingdom, Aug. 1, 1991, 9116608; Aug. 1, 1991, 9116609
Int. Cl.[5] B65B *11/18, 41/00, 61/08*
U.S. Cl. 53—389.3 **16 Claims**



1. A wrapping machine comprising means for feeding a wrapper web at a first speed, a suction conveyor for receiving the web from the feeding means, means for driving the suction conveyor at a second speed which is greater than said first

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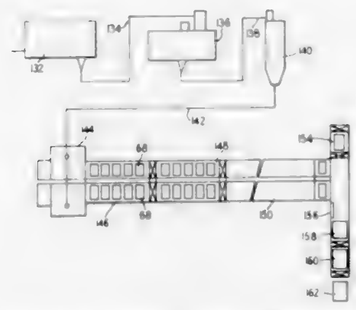
speed, severing means including a first element carried by said suction conveyor and a second element which cooperates with said first element to sever the web into wrapper sections at a predetermined position of said first element, and delivery conveyor means for receiving said severed wrapper sections from the suction conveyor and for conveying them towards a position at which articles are wrapped, said delivery conveyor means including cyclically-operated means synchronised with said severing means for assisting separation of successive wrapper sections from the web after severing by exerting a cyclic pulling force on said wrapper sections.

5,327,703

VACUUM PANEL ASSEMBLY METHOD

Nihat O. Cur, Royalton Township, Berrien County; Richard W. Kruck, Sodus Township, Berrien County, and David B. Kirby, St. Joseph Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 23, 1993, Ser. No. 35,816
Int. Cl.[5] B65B *31/02*; B32B *17/02*
U.S. Cl. 53—434 **24 Claims**



1. A method for assembling a vacuum insulation panel comprising the steps:
1) loading a quantity of microporous powder into a gas permeable pouch;
2) sealing said pouch;
3) heating said powder to a temperature elevated above standard room temperature;
4) removing moisture from said powder;
5) inserting said pouch into a gas impermeable bag while said pouch and powder remain at said elevated temperature;
6) evacuating gases from said powder pouch while it is at said elevated temperature;
7) evacuating gaces from said bag; and
8) sealing said gas evacuated bag with said gas evacuated pouch therein to form a vacuum insulation panel.

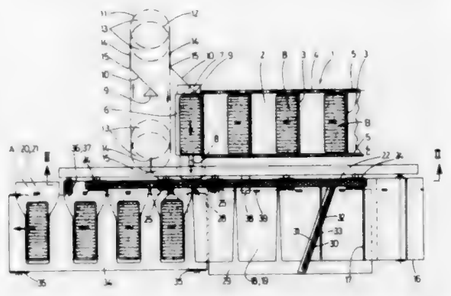
5,327,704

METHOD AND APPARATUS FOR PACKAGING BREAD LOAFS INTO BAGS

Aldert W. Hoekzema, and Gerard Dietz, both of Utrecht, Netherlands, assignors to Jongerius B.V., Netherlands

Filed Oct. 27, 1992, Ser. No. 967,137
Claims priority, application Netherlands, Nov. 15, 1991, 9101904
Int. Cl.[5] B65B *43/26*, *43/12*
U.S. Cl. 53—459 **15 Claims**

1. A method of packaging loaves as these are conveyed in a supply direction to a packaging station where the loaves are fed into bags, comprising the steps of:
conveying loaves, one after another, along a delivery path aligned along the supply direction to the packaging station where a foremost loaf is to be fed into a bag;
while the loaves are being so conveyed, supplying preformed bags connected in a strip to and past the packaging station along a supply path;
halting movement along the supply direction of the foremost loaf when it is at the packaging station;
opening a foremost bag in the strip of bags as the foremost bag arrives at the packaging station at a lateral position with respect to the foremost loaf;
circulating a loaf pusher along a closed path which overlaps a lateral insertion path that leads from the position of the



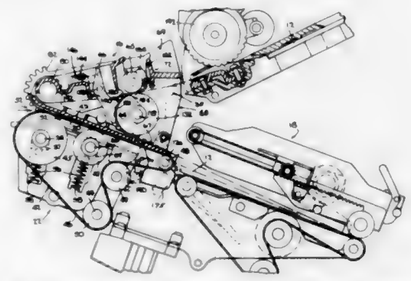
halted foremost loaf to the laterally-spaced opened bag to push the foremost loaf into the foremost opened bag;
during the time that the foremost loaf is laterally pushed into the foremost opened bag, reducing movement of the strip of bags to enable the foremost loaf to be inserted into the opened bag by the circulating loaf pusher; and
resuming movement of the preformed bags after a loaf has been inserted into an opened bag to move the loaf in the bag towards a discharge and bring a new bag to the packaging station while the loaf pusher continues to circulate.

5,327,705

ENVELOPE FLAPPER WITH ADJUSTABLE BLADE

Carlos L. DeFigueiredo, Sandy Hook, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 17, 1992, Ser. No. 914,664
Int. Cl.[5] B65B *43/26*
U.S. Cl. 53—569 **4 Claims**



1. In an apparatus for inserting enclosures into envelopes comprising means for conveying an envelope along a flap unfolding path to an enclosure inserting location, means for unfolding the flap of the envelope as the envelope is conveyed along the flap unfolding path to the enclosure inserting location, means for holding the flap-unfolded envelope open at the enclosure inserting location, and means for moving an enclosure along an enclosure feed path to the held-open envelope and inserting the enclosure into the held-open envelope, wherein the flap unfolding means comprises a plurality of fingers each having a projection thereon for engaging the flap of an envelope moved therepast, and the flap unfolding path includes a gap having a width determined by the distance between the envelope conveying means and the projections of the fingers, an improvement comprising:
a flapper blade adjustably mounted to at least one of the finger projections for positioning said flapper blade to extend a certain distance beyond the projection to adjust the gap width to accommodate different type envelopes.

5,327,707

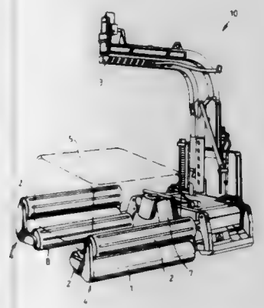
Patent Not Issued For This Number

5,327,706

PACKING MACHINE FOR PACKING BALES OF STRAW FODDER

Knud Skole, Risor, Norway, assignor to Tellefsdal A/S, Fiane, Norway

Filed Nov. 19, 1992, Ser. No. 978,889
Claims priority, application Norway, Nov. 22, 1991, 914583
Int. Cl.[5] S65B *27/12*
U.S. Cl. 53—587 **9 Claims**



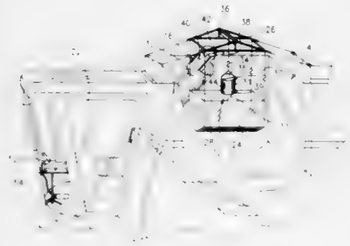
1. A packing machine apparatus for packing a bale of straw fodder of parallelepipedic form, wherein plastic sheeting is disposed in layers or overlapping around said straw fodder bale, comprising:
two drive rollers which are mounted to rotate a parallelepipedic bale of straw fodder around a substantially horizontal axis;
each drive roller having a center axis and being operationally connected to a respective two auxiliary rollers, both of which have outer peripheral surfaces for engaging said fodder bale, each said driver roller and respective two operationally connected auxiliary rollers being mounted in a respective roller unit in such a way that each roller of the respective unit is in a predetermined spaced relationship to the other said rollers of the same said unit, means for rotatably prestressing and mounting each said unit on the center axis of the respective drive roller so as to be revolvable, said roller units being spaced apart when in operation and arranged to turn said bale through 360° around said substantially horizontal axis; and means for applying plastic sheeting upon said bale.

5,327,708

CROP TESTING AND EVALUATION SYSTEM

Steven R. Gerrish, Rte. 5, WH7, Elkhorn, Wis. 53121

Continuation-in-part of Ser. No. 661,345, Feb. 28, 1991, Pat. No. 5,173,079. This application Jun. 20, 1991, Ser. No. 717,285
Int. Cl.[5] A01C *7/00*; A01D *41/00*; A01F *12/00*
U.S. Cl. 56—1 **9 Claims**



1. A method of harvesting and analyzing harvest data in a field of plant hybrids or varieties, which comprises:
(a) harvesting the experimental plots of said plant hybrids or varieties with a combine having a testing and evaluating assembly removably attached thereto, and a computer on line with said assembly,
(b) recording the harvest data obtained from said harvesting of experimental plots,
(c) storing said harvest data in said computer, and
(d) generating reports in said field, wherein said testing and evaluating assembly comprises:
first crop collection means for collecting a first quantity of the crop;
weighing means for determining a weight of the first quantity of crop collected by said first crop collection means and outputting a first signal corresponding to the weight;
an attachment assembly comprising a support frame which is removably attached to the outer perimeter of a crop storage tank and at least two suspension members coupled to said frame, said weighing means and said first crop collection means, such that said first crop collection means is suspended in said crop storage tank; and
processing means for receiving and processing said first signal and determining a quality of the crop based on said first signal.

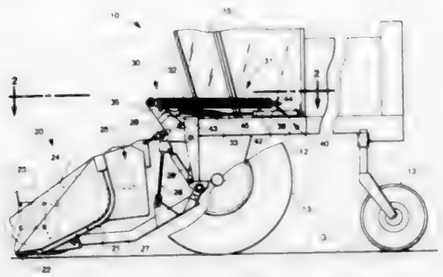
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5,327,709

ADJUSTABLE HEADER FLOTATION MECHANISM

Bryant F. Webb, Ephrata, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Mar. 12, 1993, Ser. No. 30,948
Int. Cl.[5] A01D *47/00*
U.S. Cl. 56—15.8 20 Claims



1. In a harvesting machine having a frame adapted for movement over the ground; a crop harvesting header supported from said frame for generally vertical movement relative thereto; a header lift mechanism interconnecting said header and said frame for selectively raising said header off the ground; and flotation means interconnecting said frame and said header to support at least a portion of the weight of said header from said frame, the improvement comprising:

adjustment means operatively associated with said flotation means for selectively varying the amount of weight of said header to be supported from said frame while said frame is moving over the ground, said adjustment means operating independently of said header lift mechanism.

5,327,710

MULTI-PURPOSE MOWING BLADE FOR DISCHARGE, BAGGING, AND MULCHING

Gerhard Plamper, Valley City, and Daniel Martens, Brooklyn, both of Ohio, assignors to MTD Products Inc., Cleveland, Ohio

Filed Jan. 14, 1993, Ser. No. 4,287
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—255 14 Claims

1. A mower blade for a rotary shaft, said mower blade comprising a mounting section, means to mount said mounting section to the rotating shaft,

a mulching section, said mulching section being located radially outward of said mounting section, said mulching section including a cutting section on the leading edge thereof, said mulching section having a surface behind said cutting section, and said surface of said mulching section being angled downwardly in respect to said leading edge of said mulching section,

an angled tip section, said angled tip section being located radially outward of said mulching section, said angled tip section including a cutting blade along the leading edge thereof, and said angled tip section having a surface, said surface of said angled tip section being angled upwardly in respect to said leading edge of said angled tip section,

said angled tip section having a trailing edge, said trailing edge being located above said cutting section of said mulching section,

said angled tip section including an extreme tip, and said extreme tip being angled upwardly in respect to said



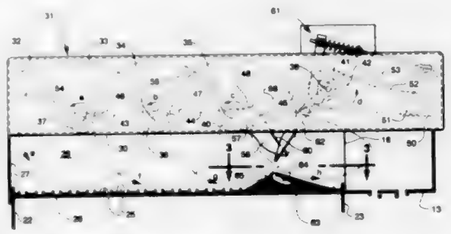
surface of said angled tip section at an acute angle in respect to the longitudinal axis of said mower blade.

5,327,711

BALER FEEDING APPARATUS

Keith E. Bose, and Cecil R. Sudbrack, both of New Holland, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Mar. 31, 1993, Ser. No. 40,966
Int. Cl.[5] B30B *1/00;* A01D *87/08*
U.S. Cl. 56—341 18 Claims



12. In a baler comprising,

a bale case having a crop inlet,

a feed platform adjacent said bale case,

a pickup in front of said platform for lifting crop material to said feed platform,

first feed means for urging crop material across said feed platform toward said bale case,

second feed means, intermediate said first feed means and said bale case, having a set of crop engaging tines for urging crop material across said platform from said first feed means into said crop inlet in said bale case,

drive means connected to said second feed means for driving said set of crop engaging tines through endless paths each having arcuate portions in the vicinity of said feed platform and along which said tines travel in the general direction of said bale case, the paths of said tines passing through said inlet in said bale case, and

said paths of said tines also passing through crop material being urged across said platform by said first feed means,

the improvement comprising

filler means comprising a generally wedge shaped element affixed to said feed platform to fill the space between said

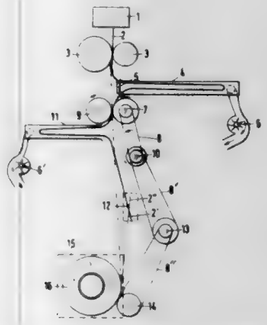
arcuate portions of said endless paths and said feed platform to prevent crop buildup in said space.

5,327,712

METHOD AND APPARATUS FOR INTERMEDIATE YARN STORAGE DURING RENEWED SPUN THREAD JOINING

Harold Dallmann, Winterthur; Martin Werder, Zurich, and Ernst Ott, Flurlingen, all of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Jul. 21, 1992, Ser. No. 917,493
Claims priority, application Switzerland, Jul. 21, 1991, 02224/91
Int. Cl.[5] D01H *15/00, 1/115*
U.S. Cl. 57—22 29 Claims



1. In a textile spinning apparatus comprising a spinning machine wherein a yarn is renewably spun by a spinning mechanism and drawn off at a selected speed for eventual take up on a winding device, and wherein the yarn is guided along a selected path of travel and joined in a joining mechanism with a yarn end retrieved from the yarn winding device, a method for temporarily storing the travelling yarn during the course of the joining operation in first and second suction storage members, the method comprising guiding the travelling yarn past the first suction storage member which is downstream of the spinning mechanism and upstream of the joining mechanism and the second storage member which is downstream of the first storage member and upstream of the joining mechanism after filling the second suction storag member with yarn to a predetermined level braking the travelling yarn at a position between the storage members within the nip of a pair of control rollers such that the travelling yarn is suctionably stored in the first storage member and then subsequently accelerating the travel of the yarn via the control rollers to remove the yarn stored in the first storage member for controlled delivery to the winding device.

5,327,713

TIRE CORD AND TIRE

Yutaka Sakon, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Mar. 5, 1993, Ser. No. 26,596
Claims priority, application Japan, Mar. 9, 1992, 4-086496
Int. Cl.[5] D07B *1/06*
U.S. Cl. 57—213 2 Claims

1. A tire cord comprising

three inner steel monofilaments having a first diameter (dc) and being twisted together to form a core, and

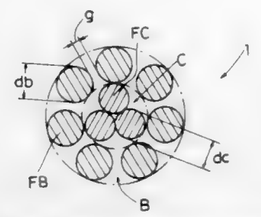
seven outer steel monofilaments having a second diameter (db) and being twisted around the core,

the direction of the twist of the inner steel monofilaments being the same as that of the outer steel monofilaments,

the pitch of the twist of the inner steel monofilaments being different from that of the outer steel monofilaments,

said second diameter (db) being larger than said first diameter (dc),

said first diameter (dc) and said second diameter (db) being in the range of 0.15 to 0.28 mm,



the adjacent outer steel monofilaments being provided therebetween with a gap whose average is at least 0.03 mm.

5,327,714

SYNTHETIC STRING FOR SPORTING APPLICATION

Kenneth A. Stevens, Lansdale, Pa., and David T. Holland, Pennington, N.J., assignors to Prince Manufacturing, Inc., Lawrenceville, N.J.

Filed Jul. 30, 1992, Ser. No. 921,771
Int. Cl.[5] D02G *3/06;* A63B *51/02*
U.S. Cl. 57—230 53 Claims

1. A string for sports applications comprising:

a core composed of at least one material having a first melting point and a first static stiffness;

a protective layer of an abrasion resistant material covering at least a portion of the core to protect the core from wear, the abrasion resistant material having a second melting point and a second static stiffness; and

an outer sheath means for sealing the surfaces of the core and the protective layer,

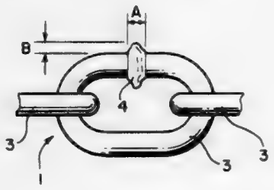
wherein the first melting point is lower than the second melting point and the first static stiffness is higher than the second static stiffness.

5,327,715

ALUMINUM ALLOY CHAIN AND METHOD OF MAKING SAME

Yoshitsugu Hiraguchi, and Kazuyoshi Kaneko, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Jan. 24, 1992, Ser. No. 825,073
Claims priority, application Japan, Jan. 25, 1991, 3-023773
Int. Cl.[5] B21L *3/00*
U.S. Cl. 59—31 1 Claim



1. A method of making an aluminum alloy chain from welded loops of aluminum rod comprising the steps of:

forming linked loops of aluminum alloy rod stock with abutting unconnected ends;

fusion welding the abutting ends of the loops and squeezing and displacing a portion of the fused metal out from between the abutting ends by moving the abutting ends of unfused metal together;

cooling the welded joint with the cooled displaced fused

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metal attached to the welded joint as a circumferential head; and

color anodizing selected welded links at predetermined intervals along the chain, wherein said predetermined intervals correspond to selected periodic increments of equal length

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5,327,716

SYSTEM AND METHOD FOR TAILORING ROTOR TIP BLEED AIR

Rollin G. Giffin, III, and Harvey M. Maclin, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 896,638, Jun. 10, 1992, abandoned.
This application Apr. 29, 1993, Ser. No. 55,944
Int. Cl.[5] F02C 7/18
U.S. Cl. 60—39.02 12 Claims



1. A bleed air tailoring system for extracting pressurized air from a gas turbine engine airflow path in a compressor stage of the engine, the compressor stage including at least one annular array of rotor blades for increasing air pressure in the airflow path and at least one annular array of inner stator vanes for directing air exciting the rotor blades, the airflow path being defined by inner and outer annular casings within which the blades and vanes are positioned, the improvement comprising

separating means for separating the airflow path into a radially outward region of air and a radially inward region of air; and

means for selectively extracting bleed air from said outward region of air;

wherein said separating means comprises an annular splitter extending axially forward into a cutaway portion formed in a radially outer, trailing edge of each of said blades of said at least one annular array of rotor blades for extracting air at a pressure less than the air pressure at the trailing edge of said blades.

5,327,717

PROCESS FOR DRYING COAL FOR MELT-DOWN OR COAL GASIFIERS

Rolf Hauk, Achern, Fed. Rep. of Germany, assignor to Deutsch-Voest-Alpine Industrieanlagenbau GmbH, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 830,652, Feb. 4, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 104,247
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1991, 4103362
Int. Cl.[5] F02B 43/00
U.S. Cl. 60—39.02 1 Claim

1. In connection with a gas turbine power plant coupled to an air separation plant by way of a compressor unit, a process for drying coal having a natural moisture content for supply to a melt-down gasifier or coal gasifier, comprising the steps of:

(a) operating a compressor unit to supply compressed air to a combustion unit of a gas turbine power plant and to an air separation plant;

(b) operating said combustion unit to supply energy for operation of a gas turbine;

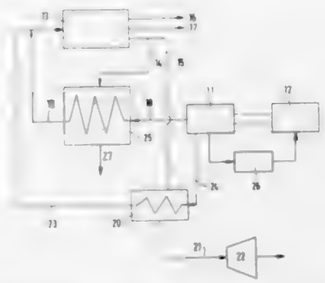
(c) operating said gas turbine to produce energy via flue gases exiting therefrom;

(d) operating a first heat exchanger with the energy from the flue gases;

(e) operating a steam generation unit in connection with said first heat exchanger to produce steam to be used to generate electricity;

(f) operating a second heat exchanger using solely the excess energy generated by the compressor unit;

(g) operating a coal drying unit in connection with said second heat exchanger;



(h) operating said air separation plant to produce a first gas stream of essentially pure nitrogen and a second gas stream;

(i) supplying said essentially pure nitrogen to said coal drying unit as a drying medium, the nitrogen being heated in said second heat exchanger;

(j) operating a third heat exchanger using solely the excess energy generated by the compressor unit;

(k) heating said second gas stream in said third heat exchanger;

(l) passing said heated second gas stream into an expansion turbine to create further excess energy

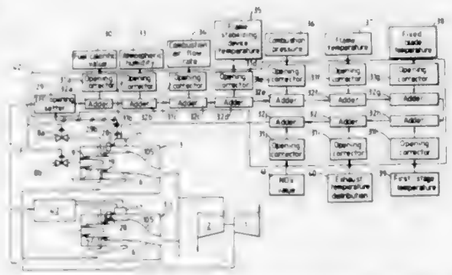
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5,327,718

GAS TURBINE APPARATUS AND METHOD OF CONTROL THEREOF

Naohiko Iwata, Hitachi; Yasuhiko Otawara, Katsuta; Akira Shimura, Hitachi; Nobuyuki Iizuka, Hitachi; Isao Sato, Hitachi; Fumiyuki Hirose, Hitachi; Minoru Takaba, Hitachi; Yasutaka Komatsu, Hitachi; Hiraku Ikeda; Takeshi Iwamiya, both of Katsuta, and Takeshi Ishida, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 933,317
Claims priority, application Japan, Aug. 23, 1991, 3-212367
Int. Cl.[5] F02C 9/00
U.S. Cl. 60—39.03 12 Claims



1. A gas turbine apparatus having a gas turbine, a plurality of

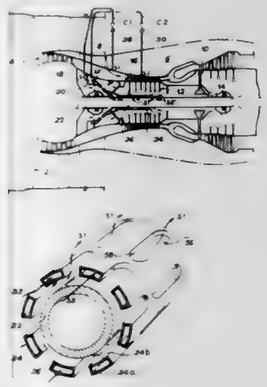
burners for providing combustion gas to drive said turbine, flow control means of each said burner for at least one of fuel and combustion air, and control means for adjusting said flow control means of each said burner individually in dependence on a predetermined combustion characteristic of each respective burner relating at least one of the fuel and combustion air to the burner to change in desired turbine load, wherein said flow control means controls the flow of at least combustion air and comprises a movable member for regulating air flow rate, an electric servo motor mounted on a burner casing and electrically connected to said control means, a transmission mechanism mechanically connected to said servo motor and said movable member for converting rotation of said servo motor into linear motion and transmitting the linear motion to said movable member, and means for detecting the position of said movable member and feeding the detected position back to said control means.

5,327,719

CIRCUIT FOR VENTILATING COMPRESSOR AND TURBINE DISKS

Georges Mazeaud, Yerres, and Claudine L. M. Planquet, Vert Saint Denis, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs D'Avaiation "SNECMA", Paris, France

Filed Apr. 21, 1993, Ser. No. 49,301
Claims priority, application France, Apr. 23, 1992, 92 04984
Int. Cl.[5] F02C 6/18
U.S. Cl. 60—39.07 9 Claims



1. A turbo-engine comprising:

a compressor, a turbine and a transmission shaft connecting the compressor to said turbine, said compressor and said turbine each including a plurality of stages of disks subjected to a thermal gradient, said compressor including a gas vein in which gas circulates from an upstream portion to a downstream portion of the compressor, and

ventilators for ventilating at least some of the stages of said disks so as to limit the thermal gradient of said disks,

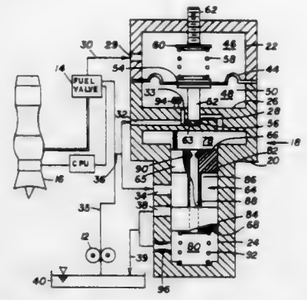
wherein said ventilators include at least a first and second source for obtaining gas from the vein, as well as a control device to independently communicate gas from the first source and gas from the second source to the stages of disks of the compressor and the turbine wherein the control device includes a compartment located upstream of a high pressure stage of said compressor, a gas pipe communicated with said compartment and located outside of and coaxial with the shaft and a cylindrical passage, located between the gas pipe and the shaft, to which gas from the second source is communicated via said compartment.

5,327,720

DIFFERENTIAL PRESSURE REGULATOR VALVE

Hoang V. Tran, Montreal, Canada, assignor to Allied-Signal Inc., Morristown, N.J.

Filed May 3, 1993, Ser. No. 56,640
Int. Cl.[5] F02C 9/26
U.S. Cl. 60—39.281 5 Claims



1. In a fuel supply system having a regulator valve for controlling a supply fluid pressure communicated to a metering valve responsive to an operational pressure differential created between the supply fluid pressure and an operational fluid pressure, said regulator valve being responsive to said operational pressure differential for maintaining said supply fluid pressure within a predetermined fluid pressure range, said regulator valve comprising:

a housing having a cavity therein separated from a bore by wall, said wall having a passageway therein through which said cavity is connected to said bore, said housing having a first port connected to receive said operational fluid pressure, second and third ports connected to receive said supply fluid pressure and fourth and fifth ports connected to a reservoir having a reference fluid pressure substantially equal to the surrounding environment;

first spool means having a diaphragm for separating said cavity into a first chamber and a second chamber and a stem attached to said diaphragm, said first chamber being connected to said first port to receive said operational fluid pressure and said second chamber being connected to said second port to receive said supply fluid pressure;

first resilient means acting on said diaphragm for positioning said stem in said wall to prevent communication of said supply fluid through said passageway;

second spool means located in said bore to define a third chamber and a fourth chamber within said housing, said second spool means having a cylindrical body with first end and a second end, said cylindrical body having a first land and second land separated by a groove, said cylindrical body having a passage for connecting said third chamber with said fourth chamber; and

second resilient means for urging said second spool means toward said third chamber to position said second land and prevent communication of said supply fluid pressure through said fourth port while allowing free communication of said supply fluid pressure from said third port to said groove and through said second port into said second chamber, said diaphragm responding to a change in said operational pressure differential caused by an increase in said supply fluid pressure as presented to said second chamber by overcoming said first resilient means and moving said stem in said wall to allow supply fluid pressure to be communicated through said passageway to said third chamber, said supply fluid pressure present in said third chamber creating a regulator fluid pressure differential with said reference fluid pressure in said fourth chamber, said regulator fluid pressure differential acting on said second spool means to overcome second resilient means

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and move said second land to allow supply fluid to freely flow from said third port to said fourth port through said groove to sequentially lower said supply fluid pressure and reestablish said operational pressure differential across said diaphragm means, said first resilient means opposing said operational fluid pressure differential to again move said stem in said wall to terminate communication of supply fluid pressure though said passageway into said third chamber, said supply fluid pressure present in said third chamber being communicated through said passage in said cylindrical body to said fourth chamber to sequentially reduce said regulator fluid pressure differential and thereafter allow said second resilient means to reposition said second land on said cylindrical body to terminate the flow of supply fluid through said fourth port and thereby maintain said operational fluid pressure differential at a desired level.

5,327,721
EJECTOR RAMJET

Melvin J. Bulman, Folsom, Calif., assignor to Aerojet-General Corporation, Rancho Cordova, Calif.

Continuation of Ser. No. 715,291, Jun. 14, 1991. This application Sep. 24, 1992, Ser. No. 950,869
Int. Cl.[5] F02K *7/12*
U.S. Cl. 60—269 **10 Claims**



1. An ejector ramjet comprising
a propulsion duct having an upstream portion and a downstream portion;
a nozzle being positioned within said propulsion duct for generating a primary fluid jet which induces a secondary fluid to flow from said upstream portion toward said downstream portion of said duct; and
first and second fluid injectors associated with said nozzle for alternately changing the angular direction of said primary fluid jet from first to second directions at a determined oscillation frequency.

5,327,722
STAMP FORMED CONNECTOR FOR ACHIEVING EQUAL LENGTH EXHAUST PIPES

Michael W. Clegg, Toledo, and Ross A. Maag, Ottawa, both of Ohio, assignors to AP Parts Manufacturing Company, Ohio

Filed Aug. 9, 1993, Ser. No. 103,974
Int. Cl.[5] F01N *7/10*
U.S. Cl. 60—323 **6 Claims**

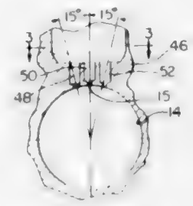


1. An exhaust pipe connector for an exhaust system carrying exhaust gases from an engine to a muffler, said connector comprising first and second plates secured in face-to-face relationship, said plates being formed with channels disposed for defining exhaust passages between the plates, said exhaust passages including a pair of inlet passages and a single outlet passage the inlet passages and said outlet passage converging at a selected location within said connector, each of said inlet passages and said outlet passage between said plates of said connector being curved to achieve a selected routing of exhaust system components and to substantially equalize travel length for exhaust gases travelling to a muffler.

5,327,723
MASTER CYLINDER COMPENSATION PORTS

Keith H. Fulmer, Mishawaka, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 13, 1992, Ser. No. 976,239
Int. Cl.[5] B60T *11/20*; **F15B** *7/10*
U.S. Cl. 60—562 **8 Claims**



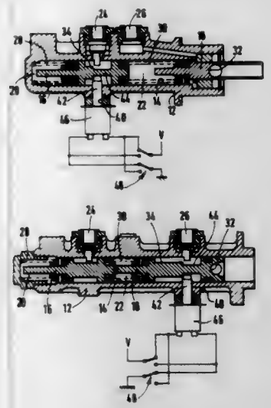
1. In a master cylinder having a housing with a bore therein, first and second pistons located in said bore to define first and second chambers, respectively, said first and second chambers being connected to front and rear brake systems in a vehicle, said housing having first and second compensation ports for connecting said first and second chambers with a reservoir, first and second seals, respectively, retained on said first and second pistons, said first and second pistons responding to an initial input force by moving in said bore to initially move said first seal past first compensation port and said second seal past said second compensation port to thereafter pressurize fluid in said first and second chambers, said pressurizing fluid being supplied to said first and second brake systems to effect a brake application, return spring means for moving said first and second pistons toward a stop on termination of said input force to allow fluid to be communicated from said reservoir to said first and second chambers through said first and second compensation ports to maintain the fluid level in said front and rear brake systems in a full condition, said first and second compensation ports being characterized by a first plurality of openings aligned in a first radial plane and a second plurality of openings aligned in a second radial plane, said first plurality of openings having a first center hole with adjacent first and second holes, said second plurality of openings having a second center hole with adjacent first and second holes, said first and second plurality of openings allowing fluid to rapidly flow into said first and second chambers while said center holes and said first and second holes being of a size which precludes extrusion of said first and second seals into said first and second compensation ports by pressurized fluid to thereafter permit a later input force to immediately develop pressurized fluid for effecting a subsequent brake application.

5,327,724
LOCKABLE MASTER CYLINDER

Pasquale Tribuzio, and Vincenzo Manzo, both of Bendix Altecna S.p.A. - Zona Industriale Casella Postale 27, 70026 Modugno (Bari), Italy

Filed Sep. 21, 1992, Ser. No. 947,636
Claims priority, application Italy, Sep. 30, 1991, 91A000733
Int. Cl.[5] B60T *7/00*
U.S. Cl. 60—568 **9 Claims**

1. A master cylinder, comprising a body having a bore in which slides in leaktight manner at least one piston controllable by a control rod and movable between a rest position and at least one working position and defining at least one pressure chamber connected to an application fluid system, said piston having a peripheral groove, the master cylinder including external means for selectively actuating a finger which enters

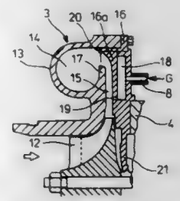


said groove to lock said piston in one of the positions and maintain the one position of the piston when the control rod is in a rest position, the peripheral groove connected to a reservoir of fluid under low pressure and the finger locking said piston in a working position.

5,327,725
EXHAUST GAS RECIRCULATION SYSTEM FOR A TURBOCHARGED ENGINE

Ken Mitsubori, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1993, Ser. No. 106,654
Claims priority, application Japan, Aug. 24, 1992, 4-246061
Int. Cl.[5] F02M *25/07*; **F02D** *21/08*
U.S. Cl. 60—605.2 **2 Claims**

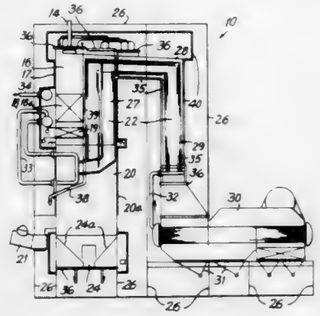


1. In an exhaust gas recirculation system wherein a turbocharger with a turbine and a compressor integrated with each other is mounted on an engine, part of the exhaust gas from the engine being joined back through a circulation passage to a suction system where air from the compressor is supplied to the engine, an improvement comprising an annular chamber in a diffuser defining wall of said compressor, said chamber being connected with an outlet of said circulation passage, and an annular slit on said diffuser defining wall for communicating an inner periphery of said chamber with the diffuser.

5,327,726
STAGED FURNACES FOR FIRING COAL PYROLYSIS GAS AND CHAR

Ernest L. Daman, Westfield; Francis D. Fitzgerald, Phillipsburg, and Robert J. Zoschak, Glen Rock, all of N.J., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed May 22, 1992, Ser. No. 886,893
Int. Cl.[5] F01K *17/00, 23/04*
U.S. Cl. 60—648 **22 Claims**



1. A staged furnace assembly adapted for combustion of coal to produce hot flue gases for heating air and generating steam, comprising:
(a) a first stage furnace having inlet and outlet connections and adapted for combusting a coal-derived pyrolysis gas feed to produce a primary combustion gas effluent;
(b) a high temperature heat exchanger provided within the upper portion of said first-stage furnace, said high temperature heat exchanger containing tubes utilizing heat resistant ceramic surfaces; and
(c) a second stage furnace located adjacent to said first stage furnace and adapted for combusting char to produce a secondary combustion gas, and for mixing the secondary combustion gas with the primary combustion gas from the first-stage furnace, said second stage furnace having an upper conduit connection for discharging the secondary combustion gas and two bottom conduit connections adapted for coal feed and ash withdrawal, respectively, said second stage furnace containing within its upper portion a heat exchanger for preheating pressurized air and a heat exchanger for heating steam, and including conduit connection means extending between said heat exchanger for preheating pressurized air and said high temperature heat exchanger within said first stage furnace.

5,327,727
MICRO-GROOVED HEAT TRANSFER COMBUSTOR WALL

Steven D. Ward, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 5, 1993, Ser. No. 42,953
Int. Cl.[5] F23R *3/16*
U.S. Cl. 60—757 **8 Claims**

1. A combustor for use in a gas turbine engine comprising:
an annular inner liner;
an annular outer liner, said inner liner and said outer liner being operable to be disposed in a hot gas flow of said engine flowing through said combustor, wherein at least one of said inner and outer liners comprises a heat transfer wall;
a longitudinal cross-sectional shape having a longitudinally extending centerline disposed midway between said inner and outer liners;
means for reducing NOx emissions of said combustor and for

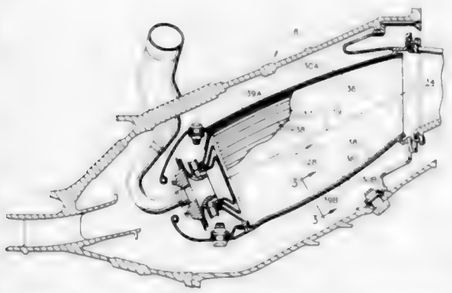
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inhibiting heat transfer from the hot gas flow to said wall, said means for reducing and inhibiting comprising

a portion of said wall which is devoid of film cooling apertures, said portion having a hot surface operable for exposure to the hot gas flow; and

a plurality of longitudinally extending grooves etched in said portion along said hot surface in a first direction substantially parallel to said centerline;

wherein said grooves are sized so as to inhibit heat transfer from the hot gas flow to said hot surface of said wall while reducing NOx emissions of said combustor relative to an otherwise similar combustor having a liner wall portion which includes film cooling apertures for directing cooling air into the otherwise similar combustor,



wherein said grooves form a plurality of longitudinally extending riblets, each of said riblets being disposed between an adjacent pair of said grooves;

wherein said grooves have a depth and a width on the order of magnitude of a predetermined thickness of a laminar sublayer of a turbulent boundary layer along said combustor liner, said depth being defined as the distance between an innermost portion of said groove and an outermost portion of an adjacent one of said riblets as measured in a second direction which is substantially perpendicular to a plane passing through said outermost portion of an adjacent pair of said riblets, said width being defined as the greatest distance between opposing sidewalls of said groove as measured in a third direction which is substantially perpendicular to said second direction and which is substantially parallel to said plane.

5,327,728

METHOD OF DESIGNING A VORTEX TUBE FOR ENERGY SEPARATION

Lev E. Tunkel, Bronx, N.Y., assignor to Universal Vortex, Inc., Robbinville, N.J.

Filed Jun. 3, 1993, Ser. No. 72,230
Int. Cl.[5] F25B *9/02*
U.S. Cl. 62—5 **3 Claims**

3. A method for the design of a vortex tube for energy separation, said vortex tube comprising a long tube with a diameter Do, a diaphragm closing one end of the tube having a hole with diameter d_1 in the center, one or more tangential nozzles with total area F piercing the tube just inside the diaphragm, and a throttling valve at the far end of the tube, the method comprising the step of choosing the relative parameters as follows:

P=pressure ratio=gas pressure ahead of the vortex tube nozzles divided to gas pressure downstream the diaphragm

μ=cold fraction=mass flow of cold gas divided by mass flow of the inlet gas

s=relative area of the nozzles

$$\frac{4F}{\pi Do^2}$$

d=relative diameter of diaphragm=d_1/Do

and wherein P is between 5.0 or less and more than 1.0 and d is between approximately 0.4 and approximately 0.55 and μ is between 0.4 and approximately 0.65, then s is selected to be between 0.08 and approximately 0.12; and

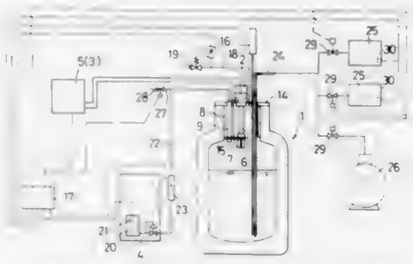
wherein P is between 5.0 and approximately 10.0 and d is between approximately 0.4 and approximately 0.55 and μ is between approximately 0.35 and 0.60, then s is selected to be between approximately 0.06 and 0.08.

5,327,729

SIMPLIFIED APPARATUS FOR PRODUCING LIQUID NITROGEN

Masayoshi Yanai; Etsuji Kawaguchi; Yukiya Sugasaki; Tsuyoshi Kanegae, and Bungo Kondo, all of Moriyama, Japan, assignors to Iwatani Sangyo Kabushiki Kaisha and Iwatani Plantech Corporation, both of Osaka, Japan

Filed Jan. 19, 1993, Ser. No. 5,818
Int. Cl.[5] F25J *1/00*
U.S. Cl. 62—9 **10 Claims**



1. An apparatus for producing liquid nitrogen comprising:

a refrigerant storage vessel composed of an insulated container, said refrigerant storage vessel including an opening formed at an upper end thereof;

an extremely low temperature refrigerator having a cold head associated therewith, said cold head projecting into the opening formed in said refrigerant storage vessel;

means for producing a supply of nitrogen gas including a device for separating nitrogen gas from air, the nitrogen gas being supplied to said refrigerant storage vessel in a gaseous phase such that the nitrogen gas is liquified by a cold heat supplied from said cold head, said device including a product vessel;

a pressure sensing instrument disposed in said product vessel;

a negative pressure sensor connected to within said refrigerant storage vessel; and

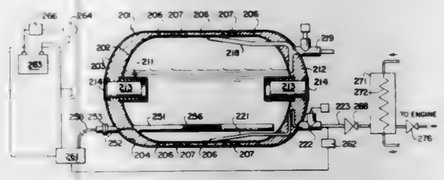
control and indication means, responsive to said pressure sensing instrument and said negative pressure sensor, for interrupting operation of said cold head and providing an alarm upon detection by said pressure sensing instrument that a pressure within said product vessel has lowered to a predetermined pressure or upon detection by said negative pressure sensor that a pressure within said refrigerant storage vessel has lowered below a predetermined negative pressure.

5,327,730

METHOD AND APPARATUS FOR LIQUIFYING NATURAL GAS FOR FUEL FOR VEHICLES AND FUEL TANK FOR USE THEREWITH

Albert H. Myers, Port Angeles, Wash.; Raymond E. Tate, Jr., Los Gatos, Calif.; Harold M. Lee, Los Gatos, Calif., and Dragos Sfinteanu, Los Gatos, Calif., assignors to American Gas & Technology, Inc., San Jose, Calif.

Filed May 12, 1993, Ser. No. 60,269
Int. Cl.[5] F25J *1/00*
U.S. Cl. 62—9 **16 Claims**



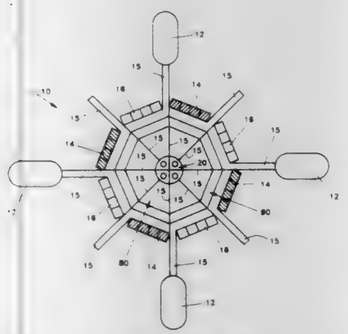
1. A method for liquifying natural gas from natural gas comprising regulating the pressure of the natural gas from a pressure ranging from 0–25 psig, filtering contaminants out of the regulated natural gas, compressing the natural gas to a higher pressure regulating the higher pressure of the compressed natural gas to a predetermined pressure, filtering the compressed natural gas to remove any remaining foreign matter from the compressed natural gas, performing at least a one-stage heat exchange with the compressed natural gas by utilizing a coolant to provide a cooled compressed natural gas, utilizing a Joule Thompson valve to liquify at least a portion of the cooled compressed natural gas, storing the liquified natural gas in a dewar, utilizing the unliquified natural gas passing from the dewar to provide cooling of the natural gas during at least one heat exchange and thereafter recompressing the unliquified natural gas and subjecting the recompressed natural gas to the same steps to liquify an additional portion of the recompressed natural gas.

5,327,731

COLD STORAGE WAREHOUSE WITH CRYOGENIC TEST SITE

Stanley Markiewicz, 842 Shoreview Dr., Henderson, Nev. 89015

Filed Jan. 12, 1993, Ser. No. 10,599
Int. Cl.[5] F17C *1/00*
U.S. Cl. 62—45.1 **28 Claims**



1. A cold storage warehouse comprising:

a) a central cryogenic test site in which subzero research and development may be conducted comprising:

1) an upper section including a control room in which are provided a voltage generator and an electric motor and at least one compressor room adjoining the control room and in which is provided at least a refrigeration compressor,

2) a lower section including at least one cryogenic working area and a closed loop air circulation vent surrounding the cryogenic working area, the closed loop air circulation vent further including an air circulation fan,

3) the refrigeration compressor being operatively connected by a refrigeration tubing to a refrigeration evaporator and a high circulation fan mounted adjacent to the closed loop air circulation vent, and

4) at least one superconductive storage transformer located adjacent the air circulation vent adapted to store at low temperatures electrical current from the voltage generator,

b) at least one storage holding freezer disposed around the central cryogenic test site,

c) at least one storage cooler disposed around the storage holding freezer,

d) at least one shipping dock located adjacent the storage cooler, and

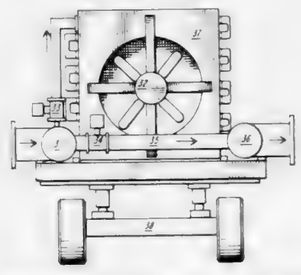
e) at least one food processing plant associated with the shipping dock.

5,327,732

APPARATUS FOR SUPPLYING CRYOGENIC FLUID, NAMELY NITROGEN, TO EXTINGUISH FIRES

Fernando J. N. De Almeida, Linda-A-Velha, Portugal, assignor to Fernando Martins da Silva; Jorge Maria Bello de Sousa Rego and James Edward Risso-Gill, all of Lisboa, Portugal

Filed Apr. 28, 1992, Ser. No. 875,279
Claims priority, application Portugal, Oct. 8, 1991, 99 175
Int. Cl.[5] F17C *9/02*
U.S. Cl. 62—50.2 **3 Claims**



1. A moveable plant for continuously distributing nitrogen to an apparatus that extinguishes fires in oil wells comprising:

(a) a high capacity thermally insulated tank, designed for storing nitrogen in liquid phase at a temperature of about −196° C. and at a maximum pressure of about 405 kPa, said tank having a first nitrogen inlet for filling said tank with nitrogen in liquid phase, a nitrogen inlet for filling said tank with nitrogen in liquid phase at about 600 m^3/h, and a second nitrogen inlet for filling said tank with nitrogen in a gaseous phase to compensate for a decrease in volume of the nitrogen in liquid phase when said nitrogen in liquid phase is discharged;

(b) a pumping unit connected to said tank for pumping liquid nitrogen from said tank, said pumping unit including at least three pumps each having a flow rate of 175 m^3/h with a maximum differential pressure of 1013 kPa, an insulated liquid nitrogen outlet duct, an insulated liquid nitrogen inlet duct, and a probe for sensing the temperature in a temperature range from −200° C. to 30° C.;

(c) a vaporization and mixture regulation unit connected to said pumping unit for receiving nitrogen in gaseous and liquid phases from said pumping unit, said vaporization and regulation unit having a vaporization capacity up to 360,000 m^3/h for liquid nitrogen and including at least interconnection pipes for transferring nitrogen in liquid

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phase from said vaporization and mixture regulation unit to said pumping unit, a heat exchanger to vaporize said nitrogen in liquid phase, a ventilation assembly to speed up and to maintain the vaporization of the said nitrogen in liquid phase and for supplying the heat needed for said vaporization, control valves to increase or reduce the flow rate of nitrogen through the heat exchanger, a phase mixture regulation means formed by said control valves, mixture regulation valves and mixture ejectors, an outlet duct for transferring nitrogen in gaseous phase or a mixture of nitrogen in liquid and gaseous phases where the temperature of said gaseous phase or a mixture of nitrogen in liquid and gaseous phases can vary from −100° C. to +20° C. and its pressure can vary from 588 to 1986 KPa; distribution circuits for connecting said vaporization and mixture regulation unit to a fire extinguishing apparatus;

(d) a power station for powering said plant; and

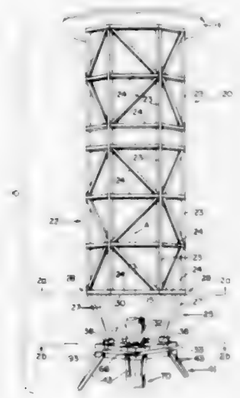
(e) a control and command unit to command and control said plant, said control and command unit including a microprocessor to assure the automatic and sequential operation of the plant; electric control and command circuits and pneumatic control and command circuits comprising pilot circuits for the tank valves, command circuits for the pumping unit, command and control circuits for the vaporization and mixture regulation unit for nitrogen in gaseous and liquid phases and the power station.

5,327,733

SUBSTANTIALLY VIBRATION-FREE SHROUD AND MOUNTING SYSTEM FOR SAMPLE COOLING AND LOW TEMPERATURE SPECTROSCOPY

Punit Boolchand; George H. Lemon, both of Cincinnati, Ohio; Wayne J. Bresser, Park Hills; Raymond N. Enzweiler, Fort Thomas, both of Ky., and Richard L. Harris, Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Filed Mar. 8, 1993, Ser. No. 27,408
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—51.1 **22 Claims**



1. An improved substantially vibration-free mounting system for sample cooling and low temperature precision spectroscopy, wherein a refrigerator mechanism must be mounted adjacent to a cold test chamber, said system comprising:

a first rigid support structure for receiving and supporting the refrigerator mechanism;

a second rigid support structure independently receiving and supporting a shroud having a cold test chamber designed to house test samples on a sample holder therewithin at extremely low temperatures induced by said refrigerator mechanism, said second support structure being physically isolated from said first structure to prevent the transfer of vibrations therebetween, said first and second structures being aligned with one another along a vertical axis;

a gas envelope vibration isolating connection between said refrigerator mechanism and said shroud for providing for thermal communication therebetween;

means connected to said second support structure for preventing transmission of ambient vibrations to said test chamber, said preventing means comprising a plate-like member and vibration damping media at least partially supporting said member; and

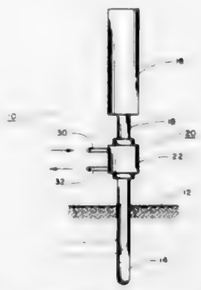
a means for rigidly mounting a spectrometer device to said shroud adjacent said test chamber.

5,327,734

PASSIVE-ACTIVE THERMOSYPHON

Francis D. Haynes, Etna, N.H.; John P. Zarling, Fairbanks, Ak., and William F. Quinn, Hanover, N.H., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 15, 1992, Ser. No. 883,443
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—260 **5 Claims**



1. Apparatus for providing refrigeration for the ground, for seasonal frost or permafrost areas, comprising:

an evaporator section adapted to be installed in the ground;

a condenser section connected to an intermediate section connected in series between said condenser and evaporator sections, said intermediate section connected to a said heat exchanger; wherein

said evaporator section and said condenser section constitute a passive thermosyphon; and

said heat exchanger is provided with incoming and outgoing mechanical refrigeration lines which comprise part of a mechanical refrigeration system said passive thermosyphon said heat exchanger and said mechanical refrigeration system comprise means to refrigerate the ground when the ground temperature is above ambient temperature and to refrigerate the ground supplementary to said passive thermosyphon when the ground temperature is below ambient temperature.

5,327,735

REFRIGERANT RECLAIMING AND RECYCLING SYSTEM WITH EVAPORATOR CHILL BATH

Bobby L. Hatton, Butler County, Mo., assignor to The Youngstown Research & Development Co., Norwalk, Calif.

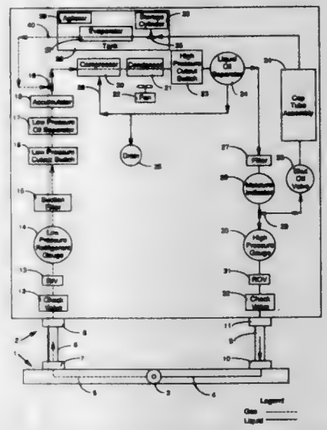
Filed Oct. 28, 1991, Ser. No. 782,987
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **12 Claims**

1. A refrigerant recovery apparatus for recovering compressible refrigerant from a refrigeration system having a high pressure side and a low pressure side comprising:

first fluid carrying line means, a first end of said first line means adapted for fluid communication with the high pressure side of the refrigeration system and a second end of said first line means adapted for fluid communication with a compressor means;

second fluid carrying line means, a first end of said second line means being in fluid communication with said compressor means and a second end of said second line means adapted for fluid communication with an evaporator means and refrigerant storage means;

a thermal barrier means surrounding said evaporator means and said storage means wherein said thermal barrier means further comprises a means to retain at least one of water, air or ice interiorly of said thermal barrier means and exteriorly of said evaporator means, to thereby assist



in reducing the temperature within said evaporator means and said storage means;

third fluid carrying line means, a first end of said third line means adapted for fluid communication with said evaporator means and a second end of said third line means adapted for fluid communication with said first line means; and

fourth fluid carrying line means, a first end of said fourth line means adapted for fluid communication with said second line means downstream of said compressor means and a second end of said fourth line means adapted for fluid communication with the low pressure side of the refrigeration system to re-introduce refrigerant into the refrigeration system.

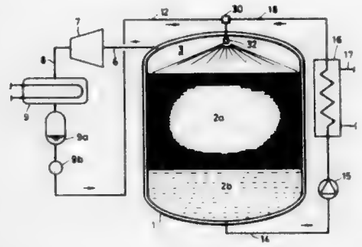
5,327,736

METHOD AND APPARATUS FOR STORING HEAT IN ICE BY USING REFRIGERANT JET

Toshiyuki Hino, Chohu, Japan, assignor to Kajima Corporation, Tokyo, Japan

Division of Ser. No. 974,389, Oct. 23, 1993, Pat. No. 5,218,828, which is a continuation of Ser. No. 737,139, Jul. 29, 1991, abandoned. This application May 5, 1993, Ser. No. 56,870
Claims priority, application Japan, Dec. 28, 1990, 2-409168
Int. Cl.[5] F25D *3/00*
U.S. Cl. 62—330 **6 Claims**

1. An apparatus for storing heat by freezing water with latent heat of evaporation of a hardly-water-soluble refrigerant, comprising a heat-insulating water tank whose inside pressure is kept at P2, said pressure P2 being lower than saturation pressure P0 of a hardly-water-soluble refrigerant at water freezing point (P2<P0); a mixer having a first inlet for receiving the refrigerant in substantially liquid phase, a second inlet for receiving liquid water, and a mixing portion communicating with said first and second inlets, the mixer being adapted to keep inside pressure thereof at P1 that is higher than the saturation pressure P0 of the refrigerant for water freezing point (P1>P0) so as to prevent ice formation and mix the refrigerant and water in liquid phase; and a nozzle disposed within said water tank above a water surface thereof, said nozzle having an inlet opening connected to the mixing portion of the mixer



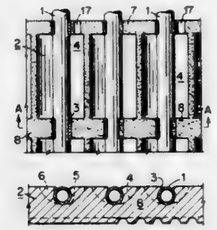
and an outlet opening for jetting liquid from the mixer into a cone-shaped zone while causing a pressure drop from P1 to P2 between the inlet and outlet opening thereof, said zone having a vertex at the nozzle and expanding as it extends downwardly.

5,327,737

METHOD AND APPARATUS FOR HEAT EXCHANGE, WHERE CHANNELS, E.G. TUBES, ARE SECURED IN RECESSES IN HEAT-ISOLATING BOARDS

Bengt V. Eggemar, Torparmors väg 6, S-162 45 Vällingby, Sweden

PCT No. PCT/SE90/00461, § 371 Date Dec. 24, 1991, § 102(e) Date Dec. 24, 1991, PCT Pub. No. WO91/00488, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 27, 1990, Ser. No. 809,473
Claims priority, application Sweden, Jun. 27, 1989, 8902324-6
Int. Cl.[5] F25C *1/00, 3/02;* **A63C** *19/10;* **F28F** *9/00*
U.S. Cl. 62—66 **19 Claims**



1. A heat-exchange method for making artificially frozen ice areas in the form of ice-rinks, comprising: advancing an energy-carrying medium through a channel system comprising hose-like channel parts; providing a base for the frozen ice area comprising at least one pre-fabricated flat slab of heat insulating material with a pair of opposed end edges and with a plurality of parallel, spaced-apart supporting grooves for the channel parts; said supporting grooves being made integral with the slab and having open tops and concave, curvature cross sections, extending along the upper surface of the flat slab between the opposed slab end edges; providing, on the upper surface of the slab, within the supporting grooves, a plurality of locking groove units with locking grooves, structurally integral with the slab and spaced-apart along each supporting groove, the locking grooves of the locking groove units being made with a partially circular cross-section, the upper portion being open and the lower portion being coextensive with the lower most curved surface of the associated supporting groove; extending, disposing, supporting and holding the channel parts in lengths disposed in mutually parallel side-by-side relationship on said at least one pre-fabricated slab of heat-insulating material; and, when disposing the channel

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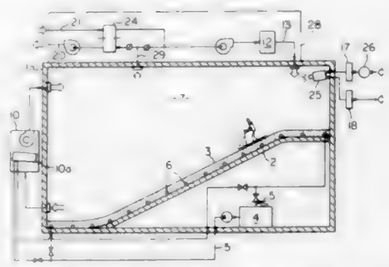
parts on the slab, inserting the lengths of channel parts into the supporting grooves and into the spaced-apart locking grooves associated with the supporting groove formed in said slab, each of said locking groove units having a short length in the direction of extension of the channel part when placed in the locking groove so the locking grooves engage only a minor part of the total length of the channel parts; the open upper part of said supporting grooves being wider than the cross-sectional dimension of the hose-like channel part; making each locking groove unit (**3**) resilient so it is widened against a resilient spring-like biasing force when the channel part (**1**) is inserted and forced into the locking groove, to thereby firmly hold the channel part in the locking groove, axially as well as radially, and forming a water-retaining damming construction between the channel part and the bottom of the associated supporting groove, to thereby provide a sealed fit of the channel part (**1**) along the associated locking groove units and the associated supporting groove; placing moisture-retaining filler material (**9**) selected from material including sand and gravel, around the channel parts and covering the slab; and substantially saturating said filler material with water.

6. A heat-exchanger arrangement for creating artificially frozen ice areas, in the form of ice-rinks, in which an energy-carrying medium is forced along a channel system comprising lengths of mutually adjacent parallel hose-like channel parts, and at least one pre-fabricated slab of heat-insulating material with opposed end edges, having a plurality of concave curvature supporting grooves open along their upper side, extending between two opposed end edges of said slab, for supporting said lengths of channel parts, said slab including a plurality of structurally integral channel-part locking groove units including open upper side locking grooves with a concave inner curvature surface, the axis of the locking grooves extending in the intended direction of the lengths of channel parts, the locking groove units being located in the supporting grooves on said slab and spaced-apart along the supporting grooves, the total of all locking grooves engaging only a minor dimension of the total length of said channel parts, said locking groove units being short in their direction along the length of said supporting grooves; said locking groove units being disposed in associated supporting grooves with the lower portion of the inner surface being coextensive the lower curved surface of the associated supporting grooves; said supporting grooves at their open upper side being wider than the cross-sectional dimension of a said hose-like channel part, and wherein the locking groove units (**3**) have a resilience enabling the locking grooves to be widened against a spring-like bias force when a channel part (**1**) is inserted and forced into the locking groove unit, thereby firmly holding the inserted channel part tight against axially displacement as well as against radial displacement, the lengths of channel parts thereby fitting sealingly in and coextensive with the base of the associated locking grooves and the associated supporting groove units; each said locking groove contour conforming closely to the cross-sectional shape of the associated held channel part, so that a water-retaining damming construction between the channel part, the locking groove units and the associated supporting groove is formed; a moisture-retaining filler material (**9**), selected from a group of material comprising sand and gravel, is placed around the channel parts and covers the entire slab and channel parts; and water is added to said filler material so that the filler material is substantially saturated with water.

5,327,738
METHOD OF FORMING AND MAINTAINING ARTIFICIAL SNOW LAYER

Koji Morioka, and Ko Kasahara, both of Osaka, Japan, assignors to Taikisha Ltd., Tokyo, Japan

Division of Ser. No. 867,033, Apr. 10, 1992, Pat. No. 5,241,830. This application Jun. 16, 1993, Ser. No. 78,008
Claims priority, application Japan, Apr. 11, 1991, 3-78779; May 27, 1991, 3-120738
Int. Cl.[5] F25C *1/12*
U.S. Cl. 62—74 **3 Claims**



1. A method of maintaining an artificial snow layer in an indoor atmosphere, said method comprising the steps of:
(a) maintaining a temperature of said indoor atmosphere above a floor surface below a freezing point of water by an atmosphere refrigerating means;
(b) forming said artificial snow layer by spraying water into said indoor atmosphere and causing said water to freeze and accumulate as ice particles on said floor surface;
(c) after step (b), reducing the work of said atmosphere refrigerating means to no longer maintain the temperature of the indoor atmosphere below the freezing point of water;
(d) operating a floor refrigerating means incorporated at said floor surface to prevent melting of the formed artificial snow layer; and
(e) controlling the humidity of said indoor atmosphere by adjusting a humidity adjusting means to maintain the water vapor pressure of said indoor atmosphere at a value substantially equal to the water vapor pressure at a surface of said artificial snow layer and to prevent water in said indoor atmosphere from coagulating on said surface of said artificial snow layer.

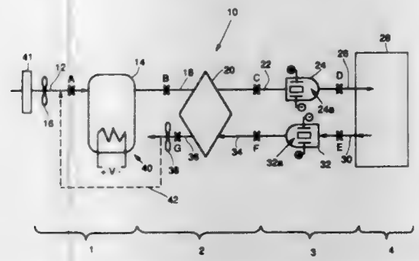
5,327,739
DESICCANT ADSORPTION AIR CONDITIONER FOR AUTOMOBILES

John G. Ingersoll, Topanga, and Linda M. Maxwell, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 10, 1992, Ser. No. 942,896
Int. Cl.[5] F23L *15/02*; **F25D** *17/06*
U.S. Cl. 62—78 **18 Claims**

1. A desiccant adsorption air conditioning system for conditioning the air of a passenger compartment of a vehicle, comprising:
(a) a desiccant chamber containing a quantity of desiccant material for absorbing water;
(b) means for introducing air into said desiccant chamber to produce air having reduced humidity;
(c) means for passing said air having said reduction humidity from said desiccant chamber to a stationary, cross-flow heat exchanger to thereby cool said air;
(d) means for passing said cooled air to a first humidifier provided with water to increase the humidity of said cooled air to a controllable level, said first humidifier including an ultrasonic element to vaporize said water;

(e) means for passing said cooled air having increased humidity into said passenger compartment;
(f) means for exhausting air from said passenger compartment to a second humidifier provided with water to increase the humidity of said exhausted air to saturation, said second humidifier including an ultrasonic element to vaporize said water;

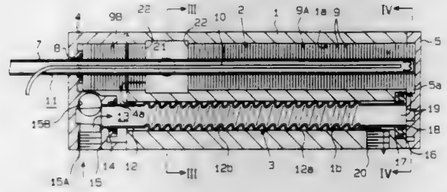


(g) means for passing said exhausted air having increased humidity to said heat exchanger to aid in cooling said air having reduced humidity; and
(h) means for reconditioning said desiccant material to desorb any absorbed water, said means separate from said exhausted air exiting from said passenger compartment.

5,327,740
DEHUMIDIFIER

Yoshinari Ogasawara, Gifu; Masumu Satoh, Kani, and Kazuyoshi Hanazawa, Nagoya, all of Japan, assignors to CKD Corporation, Aichi, Japan

Filed Nov. 9, 1992, Ser. No. 973,771
Claims priority, application Japan, Nov. 18, 1991, 3-302137
Int. Cl.[5] F25D *17/06, 21/00*
U.S. Cl. 62—93 **9 Claims**

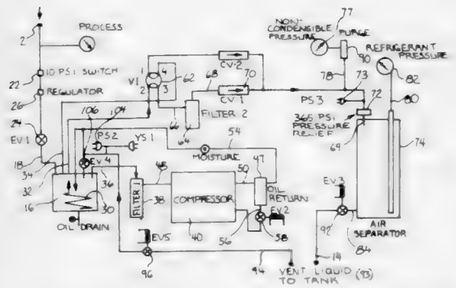


1. A dehumidifier, comprising:
a generally elongated body having a first end and a second end;
a first open ended chamber and a second open ended chamber disposed in parallel to each other along the longitudinal direction of said body, said first and second chambers each having an air inlet and an air outlet;
a first cover and a second cover detachably fitted to said first and second ends of said body, respectively, for covering the open ends of said first and second chambers;
an evaporator disposed in said first chamber;
a pipe disposed in said second chamber and having an internal space and an external space, said pipe dividing said second chamber into a precooling zone corresponding to the internal space of said pipe, and a reheating zone corresponding to the external space of said pipe, said precooling zone and said reheating zone each having an air inlet and an air outlet;
a first path connecting said outlet of said precooling zone with said inlet of said first chamber, said first path being defined between said body and said second cover for introducing the air fed to said precooling zone to said first chamber; and
a second path connecting said outlet of said first chamber with said inlet of said reheating zone, said second path being defined between said body and said first cover for leading the air introduced to said first chamber to said reheating zone;
said body, said covers, said evaporator and said pipe being made of rust proof material; said first chamber having a discharge port for discharging moisture removed from the air by said evaporator; said evaporator including a refrigerant pipe and a plurality of heat exchange fins extending radially outward from the outer periphery of said pipe; and said refrigerant pipe including an intermediate section which does not have heat exchange fins at and near the location of said discharge port.

5,327,741
REFRIGERANT RECOVERY AND PURIFICATION MACHINE

James L. Mason, Niles, and Martin H. Pingel, Galien, both of Mich., assignors to Envirotech Systems, Niles, Mich.

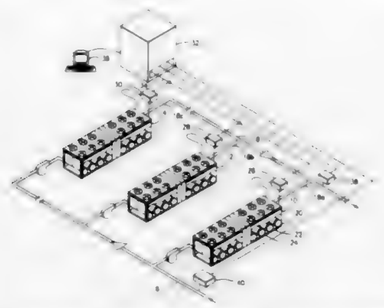
Continuation-in-part of Ser. No. 596,388, Oct. 12, 1990, abandoned. This application Jan. 14, 1992, Ser. No. 820,543
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—149 **6 Claims**



1. A purification and recovery machine for refrigerants, said machine comprising an inlet means for connecting the machine to a source of refrigerant to be purified, means connected to said inlet means for vaporizing refrigerant to be purified, filter means connected to said means for vaporizing for removing solid and liquid impurities from the refrigerant to be purified, separator means connected to said filter means for removing oil from the refrigerant, an air separator tank connected in flow communication to said filter means, said air separator tank including vent means for removing air from the refrigerant, outlet means connected to said air separator tank for draining the refrigerant into a storage reservoir, and compressor means for circulating the refrigerant through said means for vaporizing and said air separator tank into a storage reservoir, said separator means positioned between said compressor means and said means for vaporizing wherein oil from said compressor is removed from said refrigerant, float means positioned in said air separator tank for opening said outlet means when said air separator fills past a predetermined level, said float means including a first buoyant float suspended from a rod and said air separator from said conduit, said first float connected to an outlet valve means positioned along said outlet means wherein said outlet valve means is opened upon refrigerant level in said air separator tank reaching a predetermined level, and a second buoyant float suspended on said rod spaced from said first float, means connecting said second float to said inlet means to shut off said machine upon the second float reaching a predetermined level.

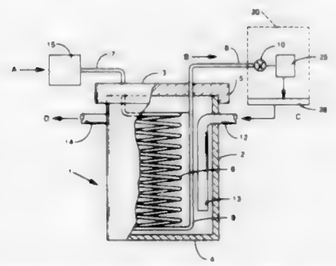
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5,327,742
HIERARCHIAL CONTROL FOR DISCRETE CHILLER UNITS
Paul J. Duff, Lebanon, and Keith G. Michaelsen, Winsted, both of Conn., assignors to Carrier Corporation, Syracuse, N.Y.
Filed May 7, 1993, Ser. No. 57,910
Int. Cl.[5] F25B *7/00*
U.S. Cl. 62—175 **17 Claims**



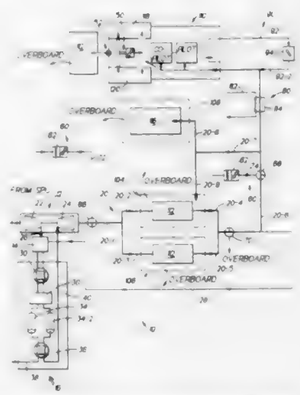
1. A process for selectively adding or dropping stages of compression within discrete chiller units each chiller unit having a dedicated control unit associated therewith for normally adding or dropping stages of compression in the particular chiller unit, said process comprising the steps of:
defining a demand limit on the compression capacity in each respective chiller unit that limits the total compressor capacity that may be activated by the dedicated control unit for that respective chiller unit, each dedicated control unit thereafter independently activating stages of compression subject only to the defined demand limit; and
changing the demand limit on the compression capacity of at least one chiller unit when a desired coolant temperature is not being achieved by the collective compression capacity of all discrete chiller units that have been activated by their respective control units whereby the dedicated control unit for that respective chiller unit may thereafter change the number of stages of compression in that respective chiller unit subject to the new demand limit on the compression capacity for that respective chiller unit.

5,327,743
SUB COOLING CONDENSATE TRAP WITH EASILY REMOVABLE LID
Jed A. Coltrin, Hollidaysburg, Pa., assignor to Enerjed, Inc., Duncansville, Pa.
Continuation-in-part of Ser. No. 963,077, Oct. 19, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 55,501
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—279 **5 Claims**



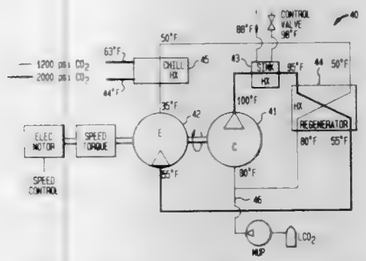
1. Apparatus for countercurrent sub cooling warm refrigerant from a condenser in an air conditioning system with cold condensate water from an evaporator disposed within an enclosure in said air conditioning system, comprising:
a. an elongated container disposed outside the evaporator enclosure and having sidewalls, a bottom wall and a removable lid, said lid is provided with means for easy removal including being fabricated from a pliably material;
b. water inlet and outlet means including first conduit means for connecting said water inlet means to a cold water outlet of a drip pan under the evaporator, and second conduit means connecting said water outlet means to a drain; and
c. an elongated helical heat exchange coil disposed in said container and including third conduit means for connecting an upper end of said coil to a warm refrigerant outlet of the condenser, and fourth conduit means for connecting a lower end of said coil to a control device on an evaporator side of the air conditioning system, whereby warm refrigerant is cooled by cold condensate water in countercurrent flow of refrigerant and water through the apparatus.

5,327,744
INTEGRATED ENVIRONMENTAL CONTROL SYSTEM FOR A HELICOPTER
Robert C. Frawley, Shelton; Thomas Perrotta, Brookfield, and Richard S. Barnard, Monroe, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 18, 1992, Ser. No. 992,392
Int. Cl.[5] F25D *9/00*
U.S. Cl. 62—401 **13 Claims**



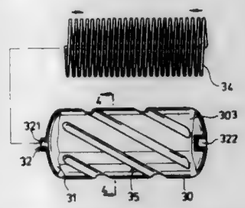
1. An integrated environmental control system for a helicopter having a plurality of mission equipment package bays containing electronic modules, the helicopter having a cockpit that contains electronic modules, comprising:
a refrigerant subsystem operative to provide a highly compressed airflow;
a decontamination subsystem operative to decontaminate and demoisturize said highly compressed airflow from said refrigerant subsystem to provide a super-dry, decontaminated airflow;
said refrigerant subsystem being further operative to super cool said super-dry, decontaminated airflow from said decontamination subsystem to provide a super-cooled, super-dry, decontaminated airflow; and
an airflow distribution network operative to channel said super-cooled, super-dry, decontaminated airflow, in seriatim, to at least one of the plurality of mission equipment package bays and the cockpit for direct cooling of the electronic modules thereof and crew comfort.

5,327,745
MALONE-BRAYTON CYCLE ENGINE/HEAT PUMP
Thomas A. Gilmour, Crownsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 28, 1993, Ser. No. 127,567
Int. Cl.[5] F25D *17/02*
U.S. Cl. 62—467 **14 Claims**



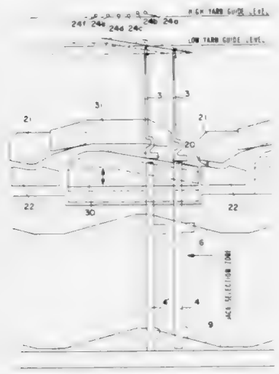
1. A machine having a recirculated heat exchange fluid which is consistently in a liquid phase, said machine including
a compressor means having a first volumetric capacity for compressing said heat exchange fluid,
a heat exchange means for receiving said heat exchange fluid from said compressor,
an expander means having a second volumetric capacity for maintaining pressure in said heat exchange means and for expanding said heat exchange fluid,
wherein said second volumetric capacity is smaller than said first volumetric capacity.

5,327,746
ICE CONTAINER FOR AN ICE-STORAGE TYPE AIR CONDITIONING SYSTEM
Shi-Chin Duh, 7F, No. 480, Sec. 5, Chung-Hsiao E. Rd., Taipei City, Taiwan
Filed Oct. 9, 1992, Ser. No. 958,216
Int. Cl.[5] F28D *20/00*
U.S. Cl. 62—530 **12 Claims**



1. An ice container for an ice-storage type air conditioning system, comprising a sealed plastic housing adapted to contain water therein, and housing having a plurality of parallel elongated helical slots formed uniformly around an outer surface thereof, each of said slots having a bottom wall which is expandable when the water in said housing is frozen to become ice, and which is contractible when the ice in said housing is melted, the bottom walls of said slots being arranged and sized so that said slots can remain in said outer surface of said housing when the water in said outer housing is frozen, thus preventing formation of projections on said outer surface of said housing, the formation of said projections causing substantial volumetric expansion of said outer housing wherein the slots each have a width smaller than a distance between adjacent slots.

5,327,747
DEVICE FOR AXIALLY SHIFTING WITHIN A CIRCULAR KNITTING MACHINE THOSE NEEDLES WHICH HAVE NOT BEEN RAISED BY JACKS
Piero Aria, Florence, Italy, assignor to Savio S.p.A., Pordenone, Italy
Filed Dec. 1, 1992, Ser. No. 983,827
Claims priority, application Italy, Dec. 3, 1991, MI91 A 003239
Int. Cl.[5] D04B *15/32*
U.S. Cl. 66—57 **4 Claims**



1. A circular knitting machine comprising yarn feed stations, needles having butts, a needle selection device, jacks for moving respective needles into operation under control of said needle selection device, and
a device for axially shifting needles not moved into operation by said jacks under control of said needle selection device, into a raised knitting position, a tuck stitch position, or a float position;
said device comprising an axially movable cam, said axially movable cam defining a contour and being movable to three levels corresponding to the knitting position, the tuck stitch position, and the float position, the butts of said needles not moved into operation by said jacks traversing said contour of said axially movable cam, said device being arranged in correspondence with said feed stations of said circular knitting machine, said contour raising said needles not moved into operation by said jacks with a substantial delay with respect to said needles moved into operation by said jacks under control of said needle selection device.

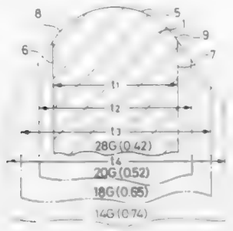
5,327,748
KNITTING NEEDLE FOR KNITTING MACHINE
Toshiro Izumi, and Shunji Takeuchi, both of Hyogo, Japan, assignors to Precision Fukuhara Works, Ltd., Hyogo, Japan
Continuation of Ser. No. 835,738, Feb. 13, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 125,616
Claims priority, application Japan, Feb. 18, 1991, 3-045962
Int. Cl.[5] D04B *35/02*
U.S. Cl. 66—121 **14 Claims**

1. A cam and needle system for a circular knitting machine, comprising:
a cam segment having upper and lower sidewalls that define an undulated recessed needle guiding track having a maximum angle of inclination;
a needle having a longitudinal shaft and a needle butt extending transverse to said shaft, said butt being slidably received within said needle guiding track;
said needle shaft and said butt having substantially the same width;
said butt having two side faces substantially parallel to said

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shaft, two medial faces between said faces and which extend generally transverse to said shaft, and two angled faces extending between said medial face and said side faces;

said angled faces being positioned in close proximity to said sidewalls of said recessed needle guiding track, such that relative motion between said butt and said track causes said angled faces to contact said sidewalls of said track to urge said needle shaft into reciprocating motion; and



said angled faces being inclined at approximately said maximum inclination angle of said needle guiding track so that variations in the width of said butt do not substantially alter the proximity between said angled faces and said track sidewalls, whereby needle breakage and wear are minimized and further whereby said angled faces slide smoothly along said track sidewalls.

5,327,749

CIRCULAR KNITTING MACHINE CREEL

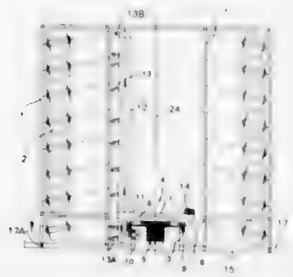
Reiner Junger, Friedberg, Fed. Rep. of Germany, assignor to Ernst Jacobi GmbH, Gersthofen, Fed. Rep. of Germany

Filed Mar. 5, 1993, Ser. No. 26,778

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1992, 9204737[U]

Int. Cl.[5] **D04B** *15/40, 35/30*

U.S. Cl. 66—125 R **28 Claims**



1. A circular knitting machine creel for a plurality of bobbins which are supported in tiers by a circular cylindrical frame having a vertical axis,

a hollow carrier located inside the frame,

a blower having an electrical motor, a fan wheel driven by the electric motor and a blower housing with a suction port and at least one air outlet port, the electric motor being carried by the carrier and the blower housing being pivoted by the carrier for moving on a circular path around the vertical axis,

a first air-blast hose extending parallel and at a distance to the vertical axis, connected to the air outlet port and having a length corresponding to the height of the frame,

a plurality of air nozzles on the air-blast hose which are radially outwardly aligned with respect to the vertical axis, and

a floor group on which the frame is located, which is hollow at the bottom and which communicates with the inside of the carrier in which the suction port is located and

at least one filter being located in a suction duct comprising the floor group and the inside of the carrier.

5,327,750

WARP KNITTING MACHINE, ESPECIALLY CROCHET GALLOON MACHINE

Francisco Speich, Oberfrick, Switzerland, assignor to Textilma AG, Oberfrick, Switzerland

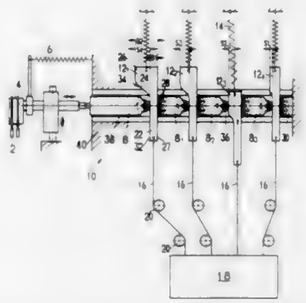
PCT No. PCT/CH91/00278, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO92/13127, PCT Pub. Date Aug. 6, 1992

PCT Filed Dec. 24, 1991, Ser. No. 924,006

Claims priority, application Switzerland, Jan. 24, 1991, 209/91-7

Int. Cl.[5] **D04B** *27/26*

U.S. Cl. 66—207 **16 Claims**



1. A control arrangement for use in a warp knitting machine having at least one guide bar, for controlling a shifting movement of the guide bar, said control arrangement comprising:

a pick-off gear having a plurality of thrust elements arranged one after another;

means for continuously pretensioning the guide bar against said pick-off gear;

a plurality of displacement elements corresponding in number to a number of displacement steps for adjusting shifted positions of the guide bar, said plurality of displacement elements including a plurality of radial cams, respectively, for supporting said plurality of thrust elements;

a device for adjusting said plurality of displacement elements between a basic position and a switched position thereof, said adjusting device comprising a negative Jacquard machine operating by a double-lift method;

a plurality of coupling flexible tension members for connecting said adjusting device with said plurality of displacement elements; and

means for pretensioning said plurality of displacement elements to the basic position thereof.

5,327,751

CLOTHES DRY-CLEANING MACHINE

Gino Biagi, Calderara di Reno, Italy, assignor to Firbimatic S.r.l., Bologna, Italy

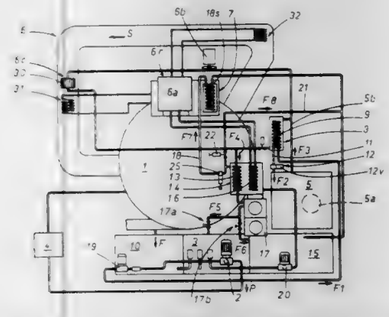
Filed Feb. 17, 1993, Ser. No. 18,792

Claims priority, application Italy, Feb. 18, 1992, BO92A000056

Int. Cl.[5] **D06F** *43/08*

U.S. Cl. 68—18 C **6 Claims**

1. A machine for dry-cleaning clothes comprising: at least one washing barrel having an inlet, an outlet and a door to sealingly close said barrel; first pump means for supplying solvent from at least a first tank, through at least one filter element to said barrel inlet; a distillation chamber being in fluid communication with said barrel outlet, said distillation chamber including means for evaporating by autonomous heating of said solvent; a closed air-circulation drying circuit comprising a refrigerated cooling system having at least one condenser for condensing, by using a refrigerating liquid, the solvent exiting from said barrel, said cooling system being downstream, with respect to the air circulation direction, of a heating system for the drying of said clothes contained in said barrel; a pre-heating condensation chamber of said distilled solvent being coupled to a first cooling circuit for the distilled vapours of the solvent arriving from a second container tank, said solvent being the same as that used in a cycle, at atmospheric temperature, exiting from said barrel, said first circuit supplying said distillation chamber through a first conduit equipped with a first valve means for supplying said distillation chamber in accordance with the quantities already present in said distillation chamber; an inlet of said pre-heating condensation chamber being connected, to said distillation chamber and an outlet of said pre-heating condensation chamber being connected to a second circuit; a cooling chamber of said solvent comprising a



section of said second circuit, said solvent being delivered from a third tank to an inside of said cooling chamber, an outlet of said second circuit being connected to a separation chamber, an outlet of said separation chamber being connected to said first and third tanks and supplying said first and third tanks with said cooled distilled solvent in accordance with the needs of said machine; said cooling chamber further comprising a section of a third through-circuit inside of which a refrigerating liquids flows, said third circuit being part of said cooling circuit; an outlet of said cooling chamber delivering cooling solvent from said cooling chamber, via a second conduit, through a heat-exchanger and through said condenser of said refrigeration cooling system so-as to permit a further cooling of said refrigerating liquid, and said cooling solvent terminating inside said third tank; second valve means being disposed within said second conduit and being controlled to open said second conduit in accordance with a cooling request on the part of said condenser; and second pump means, acting at least on said second and third tanks, for permitting a flow from said second and third tanks of said solvent.

5,327,752

COMPUTER EQUIPMENT LOCK

Gary L. Myers, River Grove, Ill.; Stewart Carl, Palo Alto, and Arthur H. Zarnowitz, Burlingame, both of Calif., assignors to Kensington Microwave Limited, San Mateo, Calif.

Continuation of Ser. No. 891,783, Jun. 1, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 119,314

Int. Cl.[5] **E05B** *69/00*

U.S. Cl. 70—58 **7 Claims**

1. An improved lock construction for use in securing portable devices equipped with lock-accepting ports, said lock comprising, in combination:

an outer shell having forward and rearward ends, said outer shell including receiving means for accepting cable means, said rear end of said outer shell comprising a body portion and a protective rear plate portion,

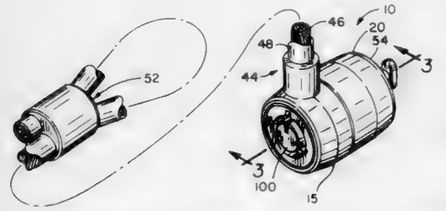
an inner shell housed within said outer shell,

a rotatable driver sleeve telescoped into the forward portion of said inner shell,

a stationary tumbler sleeve disposed rearward of said rotatable driver sleeve in face-to-face relation with the rear end of said rotatable driver sleeve,

a locking spindle extending through, and rotatably mounted in, said stationary tumbler sleeve, said spindle comprising a body portion, a neck portion and a head portion, said head portion engageable with said lock-accepting portion on said device,

anti-rotation extensive means engageable with said lock-accepting port on said device, said extensive means precluding rotational manipulation of the lock following engagement between said spindle and said lock-accepting port,



means for translating rotation of said driver sleeve to said spindle,

driver and tumbler pins slidably mounted in axially extending and angularly spaced holes defined in said stationary tumbler sleeve and said rotatable driver sleeve and normally operable to prevent rotation of said spindle with respect to said stationary tumbler sleeve,

retaining means disposed in face-to-face relation with the rearward end of said tumbler sleeve, said face-to-face relation between said retaining means and said tumbler sleeve maintained by spring means disposed between said retaining means and the rearward portion of said outer shell.

5,327,753

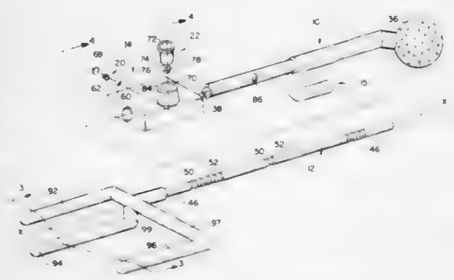
ANTI-THEFT DEVICE FOR A PLURALITY OF VEHICLE STEERING WHEEL CONFIGURATIONS

John M. White, Vienna, Va., assignor to Rally Accessories, Inc., Miami, Fla.

Filed Feb. 8, 1993, Ser. No. 14,732

Int. Cl.[5] **B60R** *25/02*

U.S. Cl. 70—209 **6 Claims**



1. An elongated anti-theft device for attachment to a plurality of vehicle steering wheels having different circumferences

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and different grip diameters, said anti-theft device defining an axis in a longitudinal direction and comprising:

a blocking portion at a first end of said anti-theft device, said blocking portion radially extending substantially beyond said circumferences;

a first engaging portion at a second end of said anti-theft device, said first engaging portion is divided into at least three projections extending substantially away from said blocking portion, said projections are generally parallel and at least two of said projections are positioned at different distances from said axis; and

a second engaging portion interposed between said blocking portion and said first engaging portion, said second engaging portion is bifurcated into a primary branch attached to said blocking portion and a secondary branch extending substantially away from said first engaging portion, said secondary branch is generally parallel and spaced apart with respect to said primary branch.

5,327,754

METHOD AND APPARATUS FOR CONTROLLING THE PASSAGE OF ROLLED STOCK OF LITTLE LONGITUDINAL TENSILE STRENGTH THROUGH A CONTINUOUS ROLLING MILL

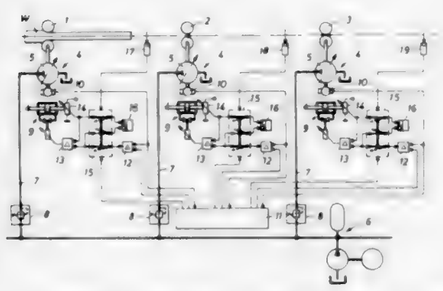
Otto Hein, Steyr, Austria, assignor to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed Nov. 4, 1992, Ser. No. 971,337

Claims priority, application Austria, Nov. 11, 1991, 2222/91

Int. Cl.[5] B21B *1/22, 37/00*

U.S. Cl. 72—14 **6 Claims**



1. A method of controlling a continuous movement under minimal tensile stress of a stock to be rolled through a series of consecutive rolling mill stands comprising a pair of cooperating rolls, which comprises the steps of

(a) driving the rolls of each rolling mill stand by a hydromotor having a rotary speed and a displacement volume, the rotary speed of each hydromotor being controllable by a control adjusting the displacement volume of the hydromotor,

(b) supplying a constant pressure to the hydromotors by a pressure fluid supply system common to all the hydromotors,

(c) controlling the rotary speed of each hydromotor of the consecutive rolling mill stands at a desired rotary speed before an initial section of the stock passes between the rolls of the consecutive rolling mill stands,

(d) passing the initial stock section consecutively between the rolls of the consecutive rolling mill stands, and

(e) when the initial stock section is positioned between each pair of consecutive upstream and downstream rolling mill stands, interrupting control of the rotary speed of the hydromotor of one of the upstream and downstream rolling mill stands between which the initial stock section is positioned, whereby the rotary speed of the hydromotor of at most one of the rolling mill stands through which the initial stock section has passed is controlled at least until the initial stock section has passed through all of the stands.

5,327,755

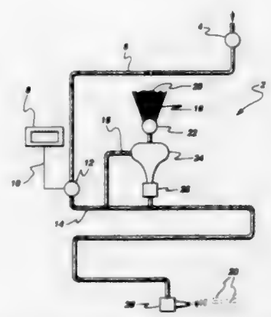
CONSTANT FLOW CONTROL FOR A PRESSURE POT SHOT PEENING MACHINE

Robert A. Thompson, Quaker Street, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 17, 1992, Ser. No. 930,957

Int. Cl.[5] B24C *7/00*

U.S. Cl. 72—53 **3 Claims**



1. A constant flow control device for a pressure pot shot peening system, wherein said device is comprised of:

an air supply means;

an air mass flow controller means operatively connected to said air supply means wherein said air mass flow controller means is further comprised of a choked nozzle flow control;

a pressure pot means operatively connected to said air mass flow controller means; and

a nozzle means operatively connected to said pressure pot means.

5,327,756

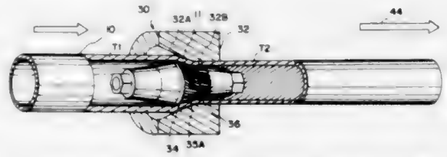
METHOD AND APPARATUS FOR FORMING SPIRAL GROOVES INTERNALLY IN METAL TUBING

Francis J. Fox, 2145 Corporation Blvd., Naples, Fla. 33942

Filed Dec. 31, 1991, Ser. No. 815,031

Int. Cl.[5] B21B *15/00, 13/20*

U.S. Cl. 72—77 **28 Claims**



1. A method of forming spiral grooves on the interior surface of tubing said grooves having a concluding depth and a concluding helix angle comprising:

subjecting the interior surface of the tubing to spinner means provided with groove forming teeth means having teeth crests which engage the tubing surface when the tubing is being reduced in diameter and using only radial forces acting at the crests of the teeth means to form said spiral grooves by continuously increasing a beginning depth to the concluding depth and continuously decreasing a beginning helix angle to the concluding helix angles.

5,327,757

STRAIGHTENING JAWS FOR A STRAIGHTENING DEVICE FOR STRAIGHTENING WIRE

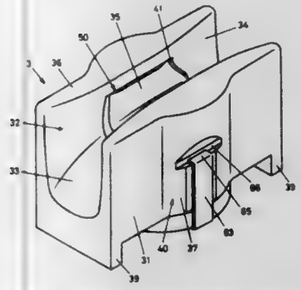
Stephan Wirth, Reitnau, Switzerland, assignor to Pantex Stahl AG, Switzerland

Filed Nov. 23, 1992, Ser. No. 979,522

Claims priority, application Switzerland, Nov. 29, 1991, 3507/91-8

Int. Cl.[5] B21D *3/00;* **B21F** *1/02*

U.S. Cl. 72—79 **20 Claims**



1. Straightening jaws for a straightening device for straightening wire, comprising:

a chuck comprising a first end and a second end, wherein said first end comprises a straightening groove having an intake element and an exit element and a cylindrical opening between the intake element and the exit element that runs perpendicular to the first end; and

a straightening insert inserted into said opening and said straightening insert is held positively on all sides in said chuck with play, wherein said straightening insert has an end with a saddle-shaped straightening indentation that connects said intake element with said exit element.

5,327,758

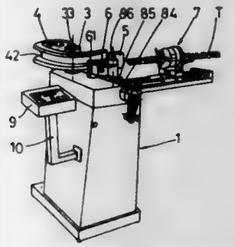
PIPE BENDING MACHINES

Jose M. J. Galan, Estrada Masustegui, 4.-, 48002 Bilbao - Vizcaya, Spain

Filed Jun. 28, 1993, Ser. No. 83,662

Int. Cl.[5] B21D *7/04*

U.S. Cl. 72—149 **5 Claims**



1. An improved pipe bending machine having a general frame with a rotary shaft on which a die is mounted without the die being able to turn with respect to the shaft, which produces the bending of pipes, in conjunction with a top die displaceable in guides on the general frame, the improvement comprising:

a) a die holder shaft which is driven by a motor reducer unit and contains on its perimeter a flat face and several concave faces angularly out of phase, said die holder shaft being coaxially fastened to a part of a reduction gear by matching, said die holder shaft and said part of the reduction gear being locked together by means of a single center bolt;

b) guided displacement of the top die being achieved by a motorized device which includes means for locking said top die in its operating position;

c) a control panel for controlling at least one of rotation of the die, guided displacement of the top die and regulation of the bending angle, said control panel being mounted on a support arm extending from the general frame, and being independent of the general frame; and

d) means for regulation/control of the bending angle which is constituted by a pipe holder head, which includes means for locking in at least one of any angular position in relation to the general frame and in relation to guides integrated with said general frame.

5,327,759

Patent Not Issued For This Number

5,327,760

ROLLER LEVELLER

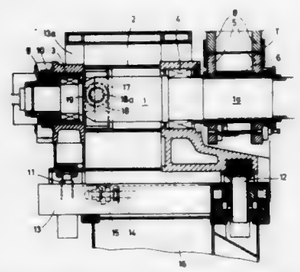
Bruno Böhmer, Erkrath; Erich M ker, Kreuztal; Klemens Bierman, Langenfeld, and Markus Willems, Erkrath, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 13, 1993, Ser. No. 3,717

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1992, 4201072

Int. Cl.[5] B21D *3/02*

U.S. Cl. 72—164 **7 Claims**



1. A roller leveller for beams having a large web depth, comprising:

an upper levelling roller means and a lower levelling roller means;

a carrier shaft for supporting said lower levelling roller means, wherein said carrier shaft has a longitudinal axis, and further wherein said lower levelling roller means are supported on said carrier shaft in a cantilever fashion;

a bearing housing for supporting said carrier shaft;

first and second spaced lifting elements for vertically displacing said bearing housing;

two vertical guides in which said bearing housing is vertically displaceable in opposite direction;

a horizontally displaceable carrier slide for supporting said two vertical guides; and

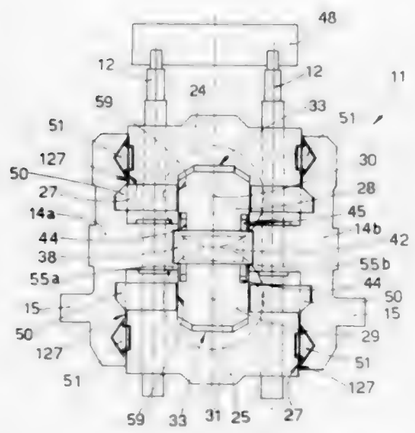
means for pivoting said bearing housing about an inclination adjustment axis extending tranverse to the longitudinal axis of said carrier shaft.

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5,327,761
UNIVERSAL ROLLING MILL STAND

Josef Piasecki, Essen, and Wolfgang Mudersbach, Dinslaken, both of Fed. Rep. of Germany, assignors to Daniele & C. Officine Meccaniche Spa, Buttrio, Italy

Filed Feb. 24, 1993, Ser. No. 21,666
Claims priority, application Italy, Feb. 26, 1992, UD92 A 000022; Jun. 17, 1992, UD92 A 000110
Int. Cl.[5] B21B *13/08*
U.S. Cl. 72—225 12 Claims

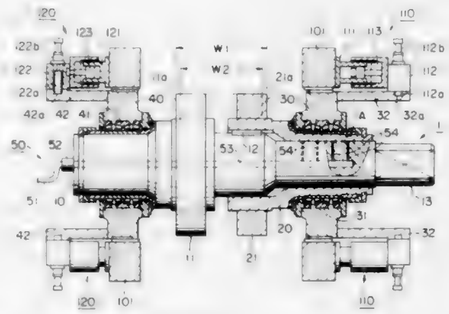


1. A universal rolling mill stand, comprising:
an upper roll and a lower roll each having a horizontal axis, said upper and lower rolls defining a rolling plane therebetween,
a pair of upper chocks and a pair of lower chocks respectively supporting said upper roll and said lower roll;
at least one vertical roll having a vertical rolling axis cooperating with said rolling plane;
at least one positioning and guiding chock for positioning and guiding said at least one vertical roll;
adjustment means including a pressure screw for adjusting a position of said at least one positioning and guide chock;
a base plate;
a pair of standards extending vertically from said base plate spaced from one another in an axial direction of said upper and lower roll; each of said standards comprising a pair of spaced vertically extending housings having intermediate extensions extending horizontally towards one another and delimiting upper and lower first guide surfaces on facing surfaces of said housing respectively above and below said intermediate extensions; an upper support for one of said upper chocks and a lower support for one of said lower chocks extending between said housings, each of said upper and lower supports having opposed second guide surfaces cooperating respectively with said upper and lower first guide surfaces of said housings; a pair of adjustment stay bolts extending vertically through said upper support, said intermediate extension and said lower support for reciprocal vertical positioning of said upper and lower supports; and an intermediate stiffening and positioning housing cooperating with said intermediate extensions; said housings further comprising a guide for said at least one positioning and guiding chock for said at least one vertical roll

5,327,762
ROLLING ROLLER AND ROLLING MILL

Takashi Nagamine; Jun Furukawa; Masayoshi Matsuda; Misao Makinohara, all of Tokyo; Hiroatsu Asari, Kobe; Masatoshi Fukuda, Kobe, and Ryoichi Yamase, Kobe, all of Japan, assignors to NKK Corporation, Tokyo and Kawasaki Jukogyo Kabushiki Kaisha, Kyogo, both of Japan

Continuation of Ser. No. 774,814, Oct. 11, 1991, abandoned.
This application Nov. 2, 1992, Ser. No. 970,656
Claims priority, application Japan, Apr. 17, 1991, 3-114079
Int. Cl.[5] B21B *31/18*
U.S. Cl. 72—247 9 Claims

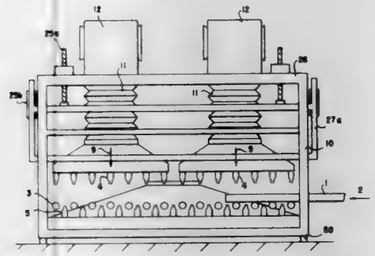


1. A rolling mill, comprising:
a roller shaft;
one sleeve fitted to said roller shaft, said roller shaft and said one sleeve forming an adjustable horizontal roll, a first rolling wheel mounted to said one sleeve and a second rolling wheel associated with said roller shaft, said one sleeve having a first portion tightly fitted to said roller shaft and a second portion having a gap between said second portion and said roller shaft with said first rolling wheel mounted to said second portion;
a mill housing;
chock means for rotatably supporting said adjustable horizontal roll;
adjustment means for adjusting a gap between outer shoulders of said first and second rolling wheels by relatively moving said first and second rolling wheels in either direction of an axis of said roller shaft, said adjustment means mounted to said housing and releasably engaging said chock means; and
hydraulic fluid supply means for injecting fluid between said roller shaft and said first portion of said one sleeve supported by a first chock of said chock means to expand said first portion in a radial direction and release the tightly fitted said first portion from said roller shaft thereby enabling said adjustment means to adjust the gap, wherein an initial gap is set prior to commencing rolling by said adjustment means positioning said first and second rolling wheels as needed and the gap is adjustable during rolling by said adjustment means positioning said first rolling wheel when fluid is injected by said hydraulic fluid supply means

5,327,763
APPARATUS FOR COOLING EXTRUSION PRESS PROFILE SECTIONS

Carl Kramer, and Dirk Menzler, both of Aachen, Fed. Rep. of Germany, assignors to WSP Ingenieurgesellschaft fur Warmetechnik, Aachen, Fed. Rep. of Germany

PCT No. PCT/EP91/01425, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/02316, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 30, 1991, Ser. No. 969,826
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1990, 4024605
Int. Cl.[5] B21C *29/00*
U.S. Cl. 72—257 14 Claims



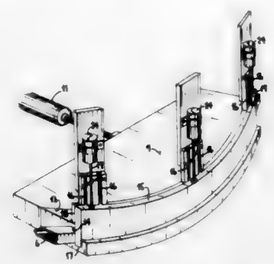
1. An apparatus for cooling an extruded member comprising:
a plurality of rollers for transporting the extruded member through said apparatus, said rollers defining a path for transporting the extruded member in a transport direction;
a plurality of upper air nozzles for impinging cooling air on the extruded member from above the path of the extruded member, said upper air nozzles having a slit-shaped opening extending in a direction transverse to the transport direction of the extruded member, said slit-shaped opening having a first slit width, said upper air nozzles being disposed a first distance from the path of the extruded member;
a plurality of lower air nozzles for impinging cooling air on the extruded member from below the path of the extruded member, said lower air nozzles having a slit-shaped opening extending in a direction transverse to the transport direction of the extruded member, said slit-shaped opening of said lower air nozzles having a second slit width, said second slit width being narrower than said first slit width, said lower air nozzles being disposed a second distance from the path of the extruded member, said second distance being shorter than said first distance, said lower air nozzles further being offset with respect to said upper air nozzles by approximately one-half of a pitch between said rollers measured in the transport direction;
a source of cooling air connected to said upper air nozzles; and
a source of cooling air connected to said lower air nozzles.

5,327,764
APPARATUS AND METHOD FOR THE STRETCH FORMING OF ELONGATED HOLLOW METAL SECTIONS

Robert E. Weykamp, Plum Boro, and Robert P. Evert, Allison Park, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 5, 1993, Ser. No. 42,549
Int. Cl.[5] B21D *11/02, 26/02*
U.S. Cl. 72—296 14 Claims

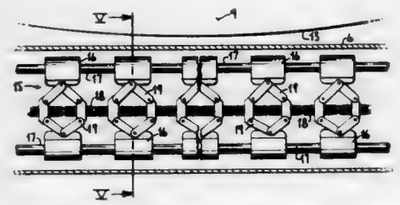
1. Apparatus for the stretch forming of an elongated hollow metal section into a predetermined contour, comprising means to grip the opposed ends of said elongated hollow metal section, a forming die member having a forming die face and a die cavity in said die face adapted to receive at least a portion of said elongated hollow metal section, means to tension said elongated hollow metal section above its elastic limit, and at least one constraining means slidably secured directly to said forming die member and adapted to constrain those exterior surfaces of said portion of said hollow metal section that are adjacent to but not contained in said die cavity during the stretch forming thereof.



5,327,765
INTERNAL ARTICULATED MANDREL FOR THE STRETCH FORMING OF ELONGATED HOLLOW METAL SECTIONS

Robert E. Weykamp, Plum Boro, and Thomas W. Scherf, Bethel Township, Armstrong County, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 5, 1993, Ser. No. 42,728
Int. Cl.[5] B21D *11/02, 9/01*
U.S. Cl. 72—296 10 Claims



5. An expandable and collapsible mandrel for supporting diametrically opposed selected portions of the inner wall surfaces of an elongated hollow tube-like metal section during the reshaping thereof, comprising two diametrically opposed groups of closely spaced support members for contacting the inner wall surfaces, the support members in each group connected to each other with elastomeric spacers and having a common means to move the two groups of closely spaced support members closer together or farther apart from each other, the elastomeric spacers being separate and diametrically opposed relative to the common means.

5,327,766
APPARATUS FOR BENDING METAL WOOD GOLF CLUB HEADS

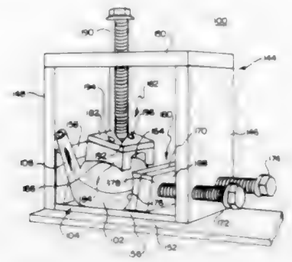
Todd F. Humphreys, Newark, Ohio, assignor to Ralph Maltby Enterprises, Inc., Newark, Ohio

Filed Jan. 4, 1993, Ser. No. 252
Int. Cl.[5] B21D *11/12*
U.S. Cl. 72—316 20 Claims

1. Apparatus for bending a hosel of a metal wood golf club head comprising:
clamping means for gripping a thick bulbous portion of a metal wood golf club head having a hosel which is to be bent to alter the characteristics of a club constructed using the metal wood golf club head;

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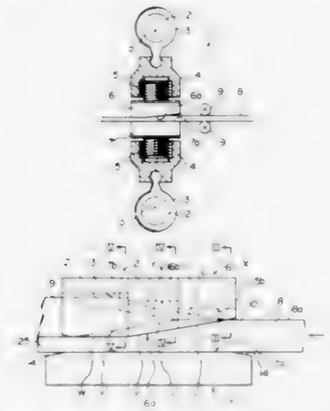
bending bar means for engaging and bending said hosel of said metal wood golf club head, said bending bar means including an adjustable throat for gripping said hosel; and



mar inhibiting means associated with said adjustable throat of said bending bar means for substantially eliminating marring of said metal wood golf club head during hosel bending operations

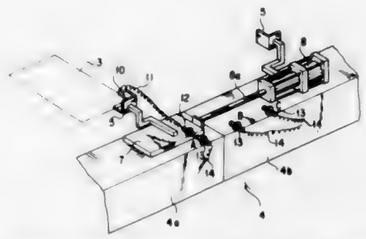
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5,327,767
PRESS WORKING APPARATUS
Shigeki Narishima, Yokosuka, Japan, assignor to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan
Filed Apr. 15, 1993, Ser. No. 46,168
Claims priority, application Japan, Apr. 22, 1992, 4-103257
Int. Cl.[5] B21B *15/00*; **B21D** *13/00, 37/08*
U.S. Cl. 72—338 **13 Claims**



1. A press working apparatus comprising:
a press machine having a pair of press dies for pressing a preheated metal slab having a thickness and being transferred in a feeding direction perpendicular to the thickness;
said press dies being mutually opposing and arranged to press said metal slab in a direction parallel to the thickness of said metal slab;
each said press die having a pressing surface facing a respective surface of said metal slab;
said pressing surface of each said die having a predetermined length extending in said feeding direction of said metal slab;
at least one said pressing surface having a cross section perpendicular to said feeding direction of said metal slab, a shape f said cross section gradually changing along the feeding direction of said metal slab so as to have a predetermined sectional shape for forming said metal slab into a required sectional shape at a leading end of the pressing surfaces in the feeding direction; and
at least one said pressing surface having at least one groove extending in the feeding direction, a depth of the at least one groove gradually increasing in the feeding direction, and a width of the at least one groove gradually decreasing in the feeding direction.

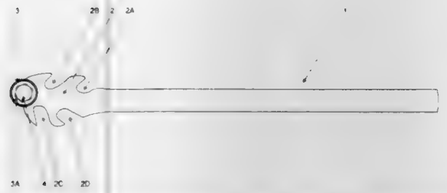
5,327,768
APPARATUS FOR MOUNTING FINGER FOR TRANSFER FEEDER
Hidetoshi Yamashita, Ishikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan
Continuation of Ser. No. 422,789, Oct. 17, 1989, abandoned. This application Sep. 30, 1993, Ser. No. 128,747
Claims priority, application Japan, Oct. 20, 1988, 63-136078
Int. Cl.[5] B21D *43/05*
U.S. Cl. 72—405 **2 Claims**



1. An apparatus for mounting fingers for transfer bars for use in a transfer feeder in a press body with front and rear, left and right uprights, comprising:
a pair of transfer bars for conveying a workpiece, each of said transfer bars being divided into a central bar; and first and second end bars extending from said central bar; said central bar being located between the uprights;
a two-stage tandem cylinder mounted on said central bar;
a moving plate attached to said two-stage tandem cylinder capable of moving between said central bar and one of said first and second end bars by actuation of said two-stage tandem cylinder;
fingers attached to said moving plate for gripping a workpiece and transferring said workpiece to and from a metal mold positioned within said uprights by movement of said pair of transfer bars; and
a moving bolster with said metal mold located between said central bars;
wherein when a metal mold must be exchanged in said press body, said two-stage tandem cylinder retracts said moving plate and its fingers from said end bar to said central bar so that said central bars and moving bolster can be removed from said press body without interference by either of said fingers or said uprights.

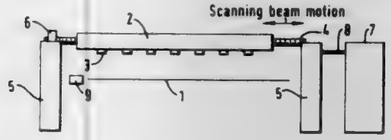
5,327,769
APPARATUS FOR STRAIGHTENING RAIL CAR HANDHOLD SAFETY APPLIANCES
Bobby Price, Rte. 3, Box 44-B, Terry, Miss. 39170
Continuation-in-part of Ser. No. 506,287, Apr. 9, 1990, abandoned. This application Jan. 10, 1992, Ser. No. 819,628
Int. Cl.[5] B21D *3/16*
U.S. Cl. 72—458 **1 Claim**

1. An apparatus for straightening rail car handhold safety appliances comprising:
a handle;
a body having opposite sides attached to one end of said handle, said body having a multiplicity of open ended c-hooks, said c-hooks being open-ended in a direction of said handle and each of said c-hooks being releaseably engageable with a rail car handhold safety appliance; and



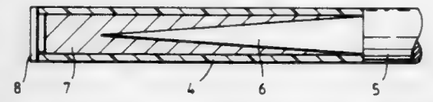
a plurality of rollers attached to said body on said opposite sides thereof, whereby said rollers are in contact with an outer wall of a railcar when a c-hook engages said rail car handhold safety appliance.

5,327,770
APPARATUS FOR SAMPLING A MATERIAL TRAVELLING PAST A SAMPLING REGION
Peter H. Hindle, Hatfield Peverel, England, assignor to Infrared Engineering Limited, Essex, England
Filed Jun. 8, 1992, Ser. No. 895,337
Claims priority, application United Kingdom, Jun. 10, 1991, 9112397
Int. Cl.[5] G01B *11/06*
U.S. Cl. 73—1 J **25 Claims**



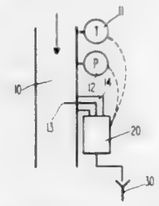
1. Apparatus for sampling a material which travels past a sampling region, the apparatus comprising:
sensing means arranged at spaced intervals with respect to the sampling region, the sensing means having respective sensing zones in the sampling region;
drive means for causing relative periodic movement between the sensing means and the sampling region so that, in a cycle of such movement, there is a periodic overlap of at least the sensing zones of adjacent sensing means in the sampling region due to an overlap of respective scanning paths of the sensing means, the sensing means producing monitoring signals when sensing respective adjacent portions of the material across its width, said monitoring signals representing a characteristic of the material travelling past the sampling region; and
signal processing means for processing values corresponding with the monitoring signals to provide an output for monitoring changes in said characteristics,
said sensing means including at least one primary sensing means which produces comparatively accurate monitoring signals compared with the monitoring signals produced by the other or secondary sensing means, and said signal processing means further including means for storing and comparing the monitoring signals or values corresponding thereto, which are produced where the scanning paths overlap, said processing means processing said signals or values and producing information which is utilised by processing means for calibrating the secondary sensing means with respect to the primary sensing means and the material travelling past the sampling zone.

5,327,771
LOADING PROBE FOR USE IN TESTING TRANSDUCERS
Robert Gentles, Avonbridge, Scotland, assignor to GEC Ferranti Defence Systems Limited, England
Filed Jun. 25, 1992, Ser. No. 904,396
Claims priority, application Australia, Jul. 8, 1991, 80277/91
Int. Cl.[5] H01L *41/22*
U.S. Cl. 73—1 DV **5 Claims**



1. A loading probe for use in testing transducers, comprising an elongated body capable of simulating the normal acoustic impedance presented to a transducer to be tested by the medium in which the transducer is to operate, the main body of the loading probe comprising a tube made from a rigid material, a rod having an elongated convergent portion extending into the interior of the tube so as to define a cavity which has a varying cross section, the cavity housing a core of material having a close match of acoustic impedance with the material of the tube and rod but a higher acoustic loss factor, and means for sealing the cavity.

5,327,772
STEAM QUALITY SENSOR
William C. Fredricks, 325 Stony Hill Rd., Quarryville, Pa. 17566
Filed Mar. 4, 1993, Ser. No. 26,533
Int. Cl.[5] G01N *25/60*; **G01K** *17/00*
U.S. Cl. 73—25.04 **18 Claims**



1. An apparatus for measuring steam quality comprising:
(a) means for establishing a flow of sample steam through a chamber;
(b) means for adding heat to or removing heat from said sample steam within said chamber;
(c) means for detecting superheating or subcooling of said sample steam within said chamber;
(d) means for determining the amount of heat added to or removed from said sample steam within said chamber to produce said superheating or subcooling;
(e) means for determining the rate of steam flow through said chamber; and
(f) means for determining the quality of said sample steam based on the amount of heat required to produce said superheating or subcooling of said sample steam and said rate of flow of said sample steam through said chamber.

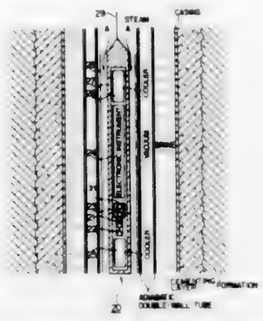
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5,327,773

METHOD AND APPARATUS FOR MEASURING STEAM DENSITY BY NEUTRON METHOD

Tatsuo Nishimura, Tokyo; Michio Katou, Saitama, and Yasuyuki Hashi, Tokyo, all of Japan, assignors to Japan National Oil Corporation, Tokyo, Japan

Filed Feb. 9, 1993, Ser. No. 15,465
Claims priority, application Japan, Mar. 10, 1992, 4-051613
Int. Cl.[5] G01N *31/00*
U.S. Cl. 73—30.01 7 Claims



2. An apparatus for measuring the density of steam within a steam pipe by a neutron method, comprising:

a hollow vessel defining therein a space;

a neutron source disposed within said space of said vessel;

neutron detecting means including first and second neutron detectors disposed in a longitudinal array within said space with said neutron source interposed between said first and second neutron detectors in the longitudinal direction, said second neutron detector being covered with a first thermal neutron shield of cadmium which absorbs thermal neutrons while allowing epithermal neutrons to penetrate therethrough;

signal receiving/density computing means for receiving signals from said first and second neutron detectors for computing the density of the steam on the basis of a cadmium ratio determined from said signals; and

a second thermal neutron shield of cylindrical shape circumferentially encircling said vessel with an annular gap between said second thermal neutron shield and a peripheral surface of said vessel.

5,327,774

METHOD FOR TESTING VENOUS VALVES

Than Nguyen; Aws Nashef, both of Huntington Beach; Amir H. Abolfathi, Laguna Hills; David W. Wieting, and Denis Lee, both of Irvine, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 691,258, Apr. 25, 1991, Pat. No. 5,272,909.
This application Oct. 8, 1993, Ser. No. 133,701
Int. Cl.[5] A61F *2/24*
U.S. Cl. 73—37 10 Claims

1. A method for testing the function of venous valves, said method comprising:

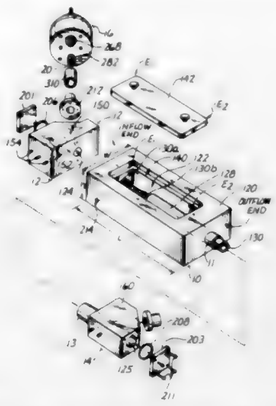
(a) holding a venous valve sample in a substantially fixed position;

(b) fluidly connecting an inflow conduit in relation to said venous valve to pass a flow of liquid through said venous valve;

(c) fluidly connecting an outflow conduit in relation to said venous valve such that liquid passing through said venous valve will then flow through said outflow conduit;

(d) pumping a pulsatile flow of liquid through said inflow conduit to mimic the effect of a physiological muscle pump on venous return in a human being;

(e) creating cyclic variations in pressure on liquid exiting said venous valve through said outflow conduit to mimic



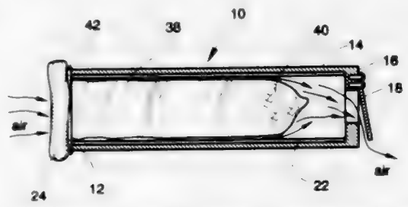
the effect of intrathoracic variations in pressure which occur in a human being during respiration.

5,327,775

CONDOM TESTER AND APPLICATOR

Yefim Epshetsky, San Francisco, Calif., assignor to Yakov Epshteyn, San Francisco, Calif., a part interest

Filed Oct. 27, 1992, Ser. No. 967,290
Int. Cl.[5] G01M *3/02*
U.S. Cl. 73—40 21 Claims



1. A method for testing a condom sheath which has an elastic membrane and a hem ring, comprising:

providing a tester and applicator having an interior chamber with a working surface, an open proximal end, and a distal end, said proximal end containing installing means for sealingly mounting said hem ring, said distal end accommodating valve means for expelling air from said interior chamber;

creating a variable-volume chamber inside said interior chamber of said tester and applicator by inserting said elastic membrane inside said interior chamber and sealingly mounting said hem ring onto said installing means;

testing said condom sheath for possible flaws by expelling air from said variable-volume chamber through said valve means, whereby said elastic membrane distends to expose said possible flaws;

expelling air trapped between said elastic membrane and said working surface of said interior chamber; and

donning said condom sheath onto a penis having a base portion by:

inserting said penis into said condom sheath, said condom sheath being inflatably installed within said interior chamber;

dislodging said hem ring from said installing means and positioning said hem ring around said base portion of said penis;

removing said penis with said condom sheath from said interior chamber; and

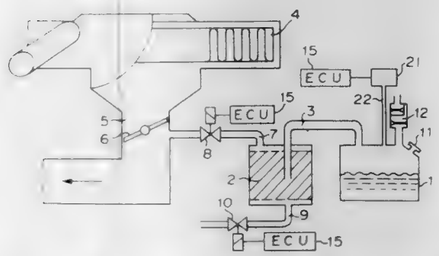
expelling air which may be trapped between said elastic membrane and said penis by inserting a tube between said penis and said condom sheath prior to donning said condom sheath onto said penis.

5,327,776

LEAKAGE DETECTING DEVICE FOR AN AIRTIGHT VESSEL

Katsuaki Yasui, and Akira Yamashita, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,116
Claims priority, application Japan, May 29, 1992, 4-036330[U]
Int. Cl.[5] G01M *3/32*
U.S. Cl. 73—49.2 2 Claims



1. A leakage detecting device for an evaporated fuel gas system of an internal combustion engine, comprising:

a) fuel tank (**1**),

b) an evaporated fuel gas adsorbing canister (**2**) in open communication with an air/vapor space above fuel in the tank,

c) first control valve means (**9, 10**) for communicating one end of the canister with the atmosphere,

d) second control valve means (**7, 8**) for communicating another, opposite end of the canister with a negative pressure air intake (**5**) of the engine,

e) an oxygen sensor (**21**) in open communication with said fuel tank space, and

f) an electronic control unit (**15**) means for:

1) closing the first valve means,

2) temporarily opening the second valve means to draw a partial vacuum in the fuel tank space and the canister, and thereafter closing the second valve means,

3) determining when an increase in the oxygen level in the fuel tank space and the canister over a predetermined time span, as detected by the oxygen sensor, exceeds a predetermined normal value, and in response thereto

4) producing an alarm.

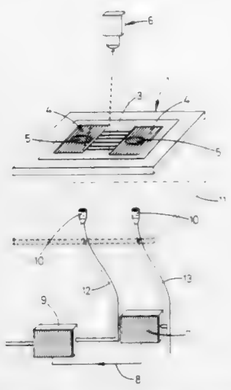
5,327,777

BIORHEOLOGICAL MEASUREMENT

Paul H. Kaye, Kimpton, and Mark Tracey, Mount Pleasant, both of United Kingdom, assignors to University of Hertfordshire, United Kingdom

PCT No. PCT/GB91/00289, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO91/13338, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 22, 1991, Ser. No. 920,589
Claims priority, application United Kingdom, Feb. 24, 1990, 9004219; Jul. 17, 1990, 9004235; Jul. 17, 1990, 9015643
Int. Cl.[5] G01N *11/04*
U.S. Cl. 73—54.06 9 Claims

5. Apparatus for performing biorheological measurements on a suspension of cells, comprising a solid medium (**1,2**) having therein at least one tunnel (**3**) communicating with a reservoir (**4**) for the cell suspension, and means (**9**) for applying a pressure difference between the ends of the tunnel, wherein at least one portion (**204**) of a wall of the tunnel (**3**) is transparent to a range of optical wavelengths for at least a majority of the length of the tunnel, and detector means (**6**) associated with the



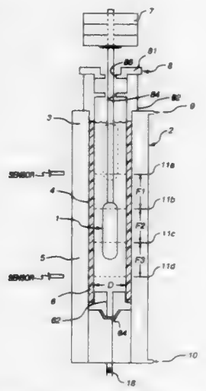
tunnel, responsive to optical information transmitted through the transparent part from within the tunnel, for observing the passage of the cells; the tunnel having at least two portions with different cross-sections, thereby providing different constrictions to the flow of a cell within the tunnel, for comparing the behavior of the cells passing through such portions.

5,327,778

APPARATUS AND METHOD FOR VISCOSITY MEASUREMENTS USING A CONTROLLED NEEDLE VISCOMETER

Noh A. Park, 914 Fillmore Rd., Norristown, Pa. 19403

Filed Feb. 10, 1992, Ser. No. 833,017
Int. Cl.[5] G01N *11/12*
U.S. Cl. 73—54.21 10 Claims



1. An apparatus for determining the viscosity of fluids, comprising:

a vertically oriented sample insert tube for holding fluid whose viscosity is to be determined, said sample insert tube having a cylindrical wall having an internal diameter and a vertical axis;

means operatively associated with said sample insert tube for

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maintaining said sample insert tube at a constant temperature;

a controlled needle received in said sample insert tube for axial movement therein, said controlled needle comprising an elongated cylindrical body having an external diameter and rounded ends and having an upwardly extending guide rod coupled to one of said ends in axial alignment with said body, a weight support associated with said rod, whereby weight may selectively be applied to said controlled needle, said body having a length of at least twice the internal diameter of said sample insert tube and the diameter of said body being equal to or less than 0.95 times the internal diameter of said sample insert tube;

a guide surface operatively associated with said sample insert tube at an upper end thereof and adapted to receive and engage said guide rod, whereby said guide surface and said guide rod maintain said controlled needle coaxial with the vertical axis of said sample insert tube;

markings on said cylindrical wall of said sample insert tube, said markings being spaced by a predetermined distance indicative of distance of fall of said controlled needle within said sample insert tube;

and means operatively associated with said markings for measuring the time of fall of the controlled needle through the predetermined distance.

5,327,779

VAPOR PRESSURE MEASUREMENT BY GAS SATURATION FOR MIXTURE

Robert N. Sanders, and Robin P. McCarthy, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 825,553, Jan. 24, 1992, abandoned. This application Sep. 24, 1992, Ser. No. 951,050

Int. Cl.[5] G01N *7/00*

U.S. Cl. 73—64.45 **13 Claims**



1. An apparatus for determining the vapor pressure of a sampled material comprising:

a) a means of containing and passing an inert gas through said apparatus at a controlled rate,

b) at least one means of controlling and maintaining the temperature of said inert gas and sampled material throughout the apparatus,

c) at least one container housing said sampled material and providing a surface area which allows a means of contacting said inert gas with said sampled material to cause the sampled material to be held as a vapor in the inert gas,

d) a means of collecting the sampled material which has been held as vapor in the inert gas, and

e) a means of determining whether additional sampled material has progressed as vapor beyond the means of collecting the sampled material.

5,327,780

METHOD AND ARRANGEMENT FOR MONITORING THE OPERABILITY OF A HEATER OF AN OXYGEN MEASURING PROBE

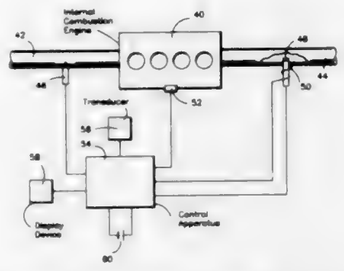
Robert Entenmann, Benningen; Alfred Kratt, Schwieberdingen, and Rudolf Moz, Möglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart

Filed Aug. 26, 1992, Ser. No. 935,188

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1991, 4128385

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—118.1 **6 Claims**



1. A method for monitoring the operability of the heater of an oxygen measuring probe mounted in the exhaust gas channel of an internal combustion engine, the method comprising the following steps for each monitoring of the heater:

making a first measurement of the supply voltage of the probe heater when the probe heater is switched on and making a second measurement of the supply voltage when the probe heater is switched off;

monitoring the difference between said first and second measurements of the supply voltage and, when said difference drops below a pregiven minimum value or exceeds a pregiven maximum value, then

emitting corresponding fault signals and/or reading said signals into a fault memory.

5,327,781

METHOD AND APPARATUS FOR VERIFYING PROPER WIRING OF BRAKE PRESSURE MODULATORS

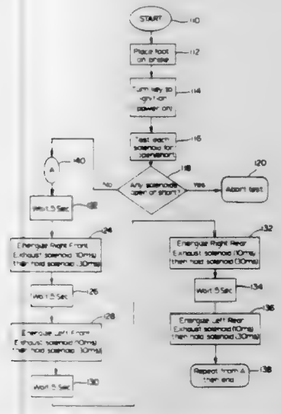
Stephen P. Moran, Avon; Charles E. Ross, Nova, and Ronald E. Squires, Grafton, all of Ohio, assignors to Allied-Signal Inc., Morristown, N.J.

Filed Jul. 30, 1992, Ser. No. 923,030

Int. Cl.[5] G01L *5/28*

U.S. Cl. 73—121 **9 Claims**

1. Method of testing an electronically controlled braking system to assure that exhaust and hold solenoids valves are properly wired, said electronically controlled braking system having an electronic control unit and at least one modulator controlled by said electronic control unit for controlling the braking pressure of at least one of the wheels of the vehicle, said modulator having a hold solenoid valve for controlling communication between said modulator and a pressure source and an exhaust solenoid valve for controlling communication between said modulator and ambient atmosphere, comprising the steps of energizing one of the solenoid valves for a predetermined time period, and energizing the other solenoid valve of said modulator for a predecided time period significantly different from said predetermined time period to permit pressure to exhaust through the exhaust solenoid valve for one of said time periods if the exhaust and hold solenoid valves are properly wired and for the other of said time periods if said exhaust and hold solenoid valves are improperly wired, whereby the noise generated by pressure exhausting through said exhaust solenoid valve for the other time period is significantly different from the noise generated by pressure exhausting through said exhaust solenoid valve for said one time period, thereby alerting of a miswired solenoid valve condition.



5,327,782

AUTOMATIC BRAKE SHOE MEASURING APPARATUS FOR ROLLING STOCK

Hitoshi Sato; Shigetoshi Adachi; Hisao Nishii; Takehiro Yazaki; Osamu Tashiro; Noboru Yumoto; Sumio Kanazawa; Hiroshi Arai, all of Chiyoda, and Makoto Miyake, Komaki, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

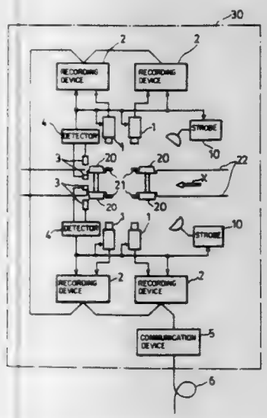
PCT No. PCT/JP92/00397, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO93/05358, PCT Pub. Date Mar. 18, 1993

PCT Filed Mar. 31, 1992, Ser. No. 955,727

Claims priority, application Japan, Sep. 9, 1991, 3-229058

Int. Cl.[5] B61H *11/00;* **G01B** *11/04;* **G01L** *5/28;* **H04N** *7/18*

U.S. Cl. 73—129 **15 Claims**



1. An automatic brake shoe measuring apparatus for a railway vehicle, comprising:

a camera unit including:

monitor camera means for photographing at least one brake shoe on said railway vehicle during travel and for outputting an image signal of said at least one brake shoe;

image memory means connected to said monitor camera means for storing the image signal;

sensor means for detecting the passage of said vehicle over a position on a track and outputting an output signal upon detecting the passage of said vehicle; and

trigger detector means connected to said monitor camera means for receiving the output signal from said sensor means and outputting a trigger signal to activate said monitor camera means; and

an image processing unit connected to said camera unit including;

an extraction means for extracting an image of said at least one brake shoe from the image signal stored in said image memory;

an arithmetic means for determining the thickness of said at least one brake shoe from the image of said at least one brake shoe; and

a display means for displaying the thickness of said at least one brake shoe.

5,327,783

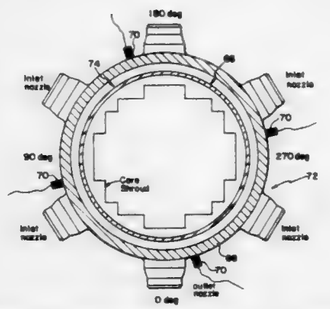
METHOD OF MONITORING HEAT EXCHANGER VIBRATIONS

Man K. Au-Yang, Lynchburg, Va., assignor to B&W Nuclear Technologies, Inc., Lynchburg, Va.

Division of Ser. No. 790,732, Nov. 8, 1991, Pat. No. 5,257,545, which is a continuation-in-part of Ser. No. 622,903, Dec. 6, 1990, abandoned. This application Oct. 21, 1993, Ser. No. 140,376

Int. Cl.[5] G01N *29/10, 29/24*

U.S. Cl. 73—597 **6 Claims**



1. A method of ultrasonically measuring on a quantitative basis the low frequency vibration of vibrating elements inside a heat exchanger containing an ultrasonic conducting medium comprising:

mounting a plurality of ultrasonic transducers and receivers on a face of said heat exchanger to be aligned with said vibrating elements;

emitting an ultrasonic pulse from said transducer aimed at said vibrating elements with a pulse having a wavelength in the conducting medium smaller than the vibration amplitude of said vibrating elements;

reflecting said ultrasonic pulse from said vibrating elements to the ultrasonic receivers within a time period from emission of the pulse to receipt thereof by the receivers which time period is less than the period of vibration of the vibrating elements;

recording the pulse emitting and receiving times to provide a time plot of the position of the vibrating elements against time; and

digitally filtering said recording to provide a display from which the quantitative measurements of the vibrations of said vibrating elements may be made.

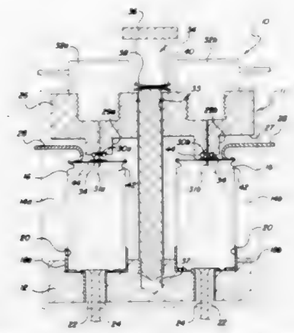
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5,327,784

APPARATUS FOR MEASURING THE PRESSURE INSIDE A RECHARGEABLE ELECTROCHEMICAL CELL

Srinivasan Venkatesan, Southfield; George Burke, Detroit; Ken Laming, Columbus, and Subhash Dhar, Rochester, all of Mich., assignors to Ovonic Battery Company, Inc., Troy, Mich.

Filed Jul. 9, 1992, Ser. No. 910,956
Int. Cl.[5] G01L 7/00
U.S. Cl. 73—714 18 Claims



1. An apparatus for accurately measuring pressure within a rechargeable cell while charge/discharge cycling said cell, said apparatus comprising:

a frame defining at least one cavity;

a fixed brace attached to said frame, said fixed brace configured to releasably secure a rechargeable cell in said at least one cavity;

a movable brace movably fixed to said frame at a position opposite from said fixed brace said movable brace supporting

a hollow needle having a pointed end, said hollow needle protruding from said movable brace and surrounded by a seal; and

a pressure transducer operatively connected with said hollow needle; such that said movable brace can be moved relative to said fixed brace to insert said hollow needle into said rechargeable cell and as said hollow needle is inserted into said rechargeable cell said seal contacts said rechargeable cell to form a hermetic seal, and

electrical connectors in said fixed brace and said moveable brace in contact with terminals on said rechargeable cell to permit charge/discharge cycling of said rechargeable cell while interior pressure measurements are taken via said hollow needle.

5,327,785

PRESSURE SENSOR WITH IMPROVED HEAT DISSIPATION CHARACTERISTICS

D. Joseph Maurer, Jo Daviess County, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 9, 1993, Ser. No. 28,499
Int. Cl.[5] C01L 7/08, 9/06
U.S. Cl. 73—756 15 Claims

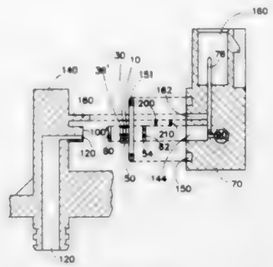
1. A pressure sensor, comprising:

a sensor die having a diaphragm portion, a circuit portion and a contact portion on a first surface of said sensor die, said sensor die having a second side with a cavity formed therein, said cavity being aligned with said diaphragm portion;

an elastomeric member having a cavity portion, a selectively conductive portion and a thermally conductive portion, said thermally conductive portion being electrically insulative;

first means for connecting said diaphragm portion of said first surface in fluid communication with a first pressure port of said housing;

a housing having at lease one electrically conductive lead partially encapsulated therein; and



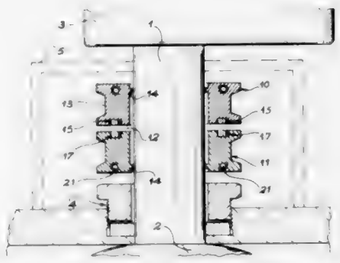
an opening formed in said housing, a portion of said lead being disposed in said opening, said elastomeric member being disposed in contact with said first surface of said sensor die, said cavity portion being disposed in contact with said diaphragm portion, said selectively conductive portion being disposed in contact with said contact portion, said thermally conductive portion being disposed in contact with said circuit portion, said thermally conductive portion being disposed in contact with said lead.

5,327,786

APPARATUS FOR MEASURING AXIAL STRESSES ON A ROD

Jacques Guillet, Sartrouville, and Jean-Louis Charron, Senlis, both of France, assignors to Electricite De France (Service National), France

PCT No. PCT/FR91/00736, § 371 Date Apr. 23, 1992, § 102(e) Date Apr. 23, 1992, PCT Pub. No. WO92/05417, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 18, 1991, Ser. No. 849,050
Claims priority, application France, Sep. 19, 1990, 90 11555
Int. Cl.[5] G01L 1/00
U.S. Cl. 73—779 5 Claims



1. Apparatus for measuring axial stresses on a rod having a diameter, said apparatus comprising:

a first ring and a second ring, each ring composed of a support sector and a clamping sector mutually assembled in a dismantlable manner, said rings each having an internal contact surface for gripping said rod; and

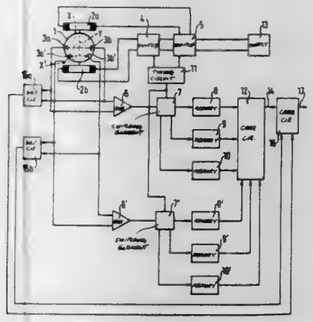
two sensors fixed to the support sector of said first ring at diametrically opposite locations, the sensors being contact-free sensors.

5,327,787

ELECTROMAGNETIC FLOW METER WITH WEIR

Wilfried Kiene, Munden, and Peter Nissen, Rosdorf, both of Fed. Rep. of Germany, assignors to Fischer & Porter Company, Warminster, Pa.

Filed Aug. 17, 1992, Ser. No. 930,983
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1991, 4127694
Int. Cl.[5] G01F 1/00
U.S. Cl. 73—861.12 9 Claims



1. A device to measure the flow of fluid containing electrical charges, said device comprising:

a generally horizontal pipe section having an electrically insulated inner surface and through which fluid flows;

magnet means for generating a magnetic field which extends diametrically of said pipe section;

electrode means responsive to shifts in charges in said fluid which flows through said pipe section and the level of said fluid which flows through said pipe section for sensing the flowrate of said fluid which flows through said pipe section.

a weir positioned downstream of said electrode means and extending across said pipe section for stemming the flow of said fluid which flows through said pipe section;

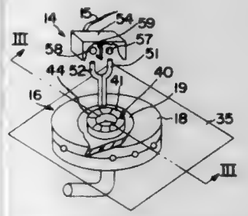
and evaluation circuit means responsive to said electrode means and calibrated by the characteristics of said weir which affect the flow of said fluid which flows through said pipe section for developing an indication of the flowrate of said fluid which flows through said pipe section.

5,327,788

ROTOR OPERATION IN A VORTEX CHAMBER FLOWMETER

David E. Hoppe, 217 Westerly Rd., Weston, Mass. 02193

Filed Jun. 9, 1993, Ser. No. 73,707
Int. Cl.[5] G01F 1/20
U.S. Cl. 73—861.33 7 Claims



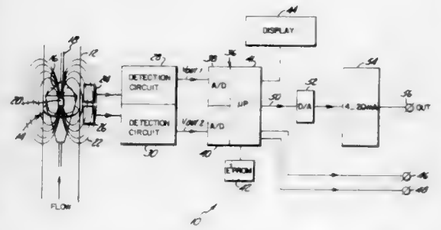
1. A vortex chamber flowmeter comprising housing means having an inlet communicating with a first chamber, a jet ring positioned in said chamber and mounted in a fixed spatial relationship to said housing, said jet ring comprising an internal operating chamber surrounding an axis and having a centerline at an axial midpoint of the internal operating chamber and extending in a radial direction, a bearingless rotor positioned in the internal operating chamber for rotation about the axis, the internal operating chamber having an outlet at an axial end thereof, inlet conduits formed in said jet ring providing fluid communication between the first chamber and the internal operating chamber in a radial direction and providing for tangential fluid flow within the internal operating chamber, said conduits having ports with centerlines defining an effective plane, said flow meter being constructed such that the intersection of said axis with said plane is axially displaced from the intersection of said axis with said internal operating chamber centerline in an axial direction away from the outlet a distance of 1 ½% to 18% of the axial dimension of the internal operating chamber, whereby stability of said rotor is improved.

5,327,789

ELECTROMAGNETIC DETECTION SYSTEM FOR VARIABLE AREA FLOWMETER

Paul J. B. Nijdam, Wageningen, Netherlands, assignor to Rosemount, Inc., Eden Prairie, Minn.

Filed Apr. 3, 1992, Ser. No. 862,900
Int. Cl.[5] G01R 33/025; G01F 1/24
U.S. Cl. 73—861.56 12 Claims



1. A flowmeter for measuring flow of a fluid through a flow passage, comprising:

a displaceable magnet mounted within the flow passage responsive to fluid flow through the flow passage;

sense means proximate the displaceable magnet for detecting a magnetic field emitted by the displaceable magnet and providing a field strength output related to field strength of the magnetic field;

compensation means responsive to an input signal for producing a compensating magnetic field proximate the sense means;

means for applying the input signal to the compensation means based upon the field strength output, whereby a feedback loop is created through the sense means and the compensation means carrying a feedback signal related to displacement of the displaceable magnet; and

output means for producing an output related to fluid flow based upon the feedback signal.

5,327,790

REACTION SENSING TORQUE ACTUATOR

Michael Levin, Franklin Park, N.J., and J. Kenneth Salisbury, Jr., Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

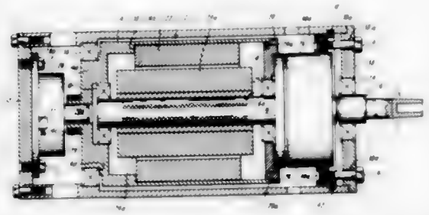
Filed Jun. 19, 1992, Ser. No. 900,663
Int. Cl.[5] G01L 3/02
U.S. Cl. 73—862.325 9 Claims

1. A torque actuator for sensing the torque output of a motor having a rigid housing and an output shaft rotatable about a first axis, comprising

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an outer housing that surrounds the motor housing in a spaced relationship and is grounded,

first and second support means mounted between said outer housing and said motor housing, said first and second support means being mutually spaced along the first axis and constructed and positioned to resist axial and radial moments while allowing only a mutual angular displacement of said motor housing and outer housing about said



first axis in reaction to the actual output torque of said shaft, and

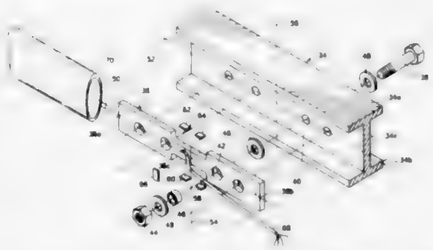
sensor means operatively coupled between said motor housing and said grounded outer housing that converts said angular displacement caused by said reaction toque into a first electrical signal that corresponds to the output torque of the shaft, said sensor means having no moving parts and limiting said mutual angular displacement to a fraction of a degree.

5,327,791

VEHICLE BEAM LOAD MEASURING SYSTEM

Robert R. Walker, 10115 Orangewood Ave., Garden Grove, Calif. 92640

Filed Jan. 16, 1992, Ser. No. 821,710
Int. Cl.[5] G01G *19/00*
U.S. Cl. 73—862.628 **5 Claims**



1. A system for sensing the load carried by a vehicle, comprising:

an elongate load supporting beam having a horizontal upper compression cap, a horizontal lower tension cap, a vertical central web connection the caps, a first neutral axis extending along the web in a longitudinal direction midway between the caps, and a center line extending across the web in a transverse direction equi-distant from a pair of opposite ends of the load supporting beam, the web having a first pair of holes extending therethrough which are centered on the first neutral axis on a first side of the center line and a second pair of holes extending therethrough which are centered on the first neutral axis on a second side of the center line;

an elongate, generally rectangular sensor beam overlying a longitudinally intermediate section of the web of the load supporting beam so that a second neutral axis extends along the sensor beam in the longitudinal direction midway between the caps and is in parallel alignment with the first enthrall axis of the load supporting beam, the sensor beam having a central section with a cross-sectional area less than a cross-sectional area of a pair of first and second opposite end sections, a first pair of holes in the first end section each registered with a corresponding one of the first pair of holes in the web, and a second pair of holes in the second end section each register with a corresponding one of the second pair of holes in the web;

means for releasably securing the first and second opposite end sections of the sensor beam to the web of the load supporting beam, including four bolts each extending through registered holes in the load supporting beam and the sensor beam;

four strain gauges electrically connected in a Wheatstone bridge configuration, a first pair of the strain gauges being secured to an upper edge of the central section of the sensor beam and a second pair of the strain gauges being secured to a lower edge of the central section of the sensor beam; and

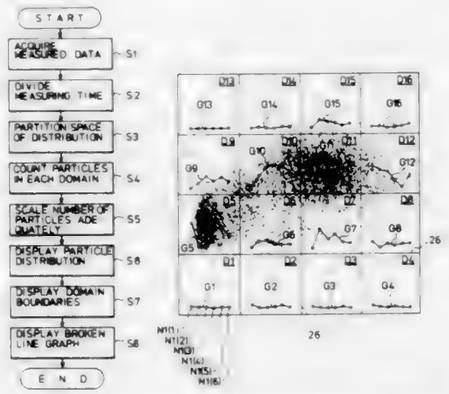
cable means for transmitting an output signal from each of the strain gauges to a signal processor.

5,327,792

METHOD OF DISPLAYING MULTI-DIMENSIONAL DISTRIBUTION OF PARTICLES

Kazuyuki Kanai, Kasai, Japan, assignor to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Jul. 1, 1993, Ser. No. 88,569
Claims priority, application Japan, Jul. 27, 1992, 4-220667
Int. Cl.[5] G01N *15/00, 15/02*
U.S. Cl. 73—865.5 **3 Claims**



1. A method of displaying a multi-dimensional distribution of particles comprising the steps of:

measuring at least two characteristic parameters of each particle for a predetermined measuring time to provide a sequence of measured data consisting of measured values thereof,

dividing said measuring time into a plurality of time intervals,

plotting said measured data in a coordinate space having said characteristic parameters as coordinate axes thereof to form a spatial distribution of the particles,

partitioning said coordinate space into a plurality of domains,

calculating a number of particles which are measured within each said time interval and included in each said domain,

displaying said spatial distribution of the particles and boundaries of said domains, and

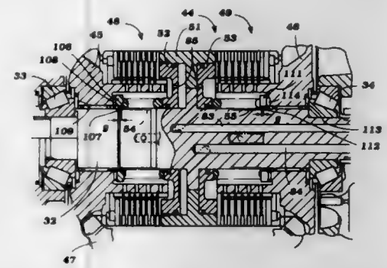
displaying changes in the number of particles included in each said domain along respective time intervals.

5,327,793

THRUST BEARINGS AND BEVEL GEARS ARRANGEMENT OF MARINE PROPULSION UNIT

Kenichi Hayasaka, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 824,992, Jan. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 770,607, Oct. 3, 1991. This application May 18, 1993, Ser. No. 63,372
Claims priority, application Japan, Feb. 5, 1991, 3-35207
Int. Cl.[5] B63H *21/28;* **F16H** *3/14*
U.S. Cl. 74—378 **18 Claims**



1. In a bevel gear transmission for transmitting drive between a first shaft rotatable about a first axis and a second shaft rotatable about a second axis, a first bevel gear on said first shaft, a second bevel gear enmeshed with said first bevel gear and on said second shaft, said first bevel gear being movable axially relative to said first shaft, a thrust bearing engaged with one side of said first bevel gear, and a coil compression spring having wound coils extending around an axis and defining opposite ends adapted to be loaded in compression for providing an expansion force along said axis, said coil encircling said first shaft so that said spring axis is coaxial with said first shaft, one end of said spring being operatively engaged with the other side of said first bevel gear for urging said one side of said first bevel gear axially into engagement with said thrust bearing under the expansion forces of said coil spring.

5,327,794

DEVICE FOR DRIVING A TOOL POSITIONED ON A PIVOTABLE PART

Johannes van den Elshout, Rotterdam, Netherlands, assignor to IHC Holland N.V., Sliedrecht, Netherlands

Filed Dec. 9, 1992, Ser. No. 987,723
Int. Cl.[5] F16H *35/00, 1/14*
U.S. Cl. 74—385 **5 Claims**

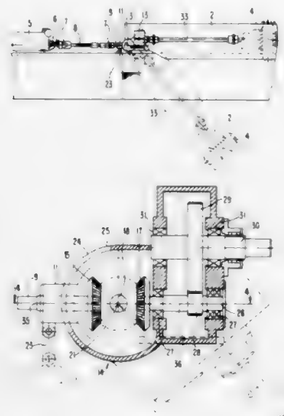
1. A device driving a tool positioned on a pivotable part, said device comprising:

an engine;

coupling means between the engine and the tool, the engine being stationary and having a motor drive shaft with an axis, the extension of the axis of the motor drive shaft crossing a pivot axis of a pivotable part and being perpendicular thereto;

a pivotable transmission shaft, with a transmission axis, being driven by said motor drive shaft by means of a gear transmission, said transmission shaft being rotatably supported by the pivotable part such that said transmission axis crosses and is perpendicular to the pivot axis while the transmission shaft runs substantially parallel to a longitudinal axis of the pivotable part, and upon pivoting remains in a longitudinal plane of the motor drive shaft;

a first transmission wheel mounted on a wheel shaft, the axis of which coincides with the pivot axis of the pivotable part, said first transmission wheel being engaged with a motor drive shaft wheel driven by on the motor drive shaft, and a second transmission wheel mounted on the transmission shaft; and



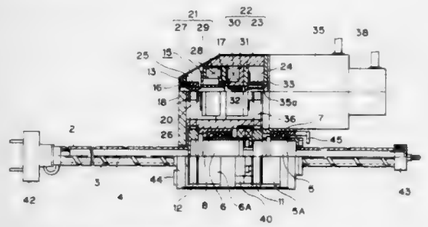
an output shaft driven by said transmission shaft mounted on the pivotable part, running parallel to the transmission shaft, connected to the tool to be driven.

5,327,795

BALL SCREW APPARATUS

Masayuki Katahira, Maebashi, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,709
Claims priority, application Japan, Jan. 7, 1992, 4-000916; Jan. 13, 1992, 4-003966
Int. Cl.[5] F16H *25/20*
U.S. Cl. 74—424.8 B **5 Claims**



1. A ball screw apparatus comprising:

a driving shaft formed with a ball screw groove and ball spline grooves; and

ball screw nut and ball spline nut arranged in side-by-side relationship in the axial direction and thread-attached to said driving shaft, said two nuts being connected to one driving motor to move said driving shaft in the axial direction and rotate said driving shaft about the axial line,

wherein said driving motor and said driving shaft are disposed so that the axial line of an output shaft of said motor is parallel with the axial line of said driving shaft, said ball screw nut is connected directly to said output shaft of said driving motor, said ball spline nut is connected to a rotation transmitting shaft connected via a clutch and a brake to said output shaft of said driving motor, a reduction ratio prescribed from said output shaft of said motor to said ball screw nut is set equal to a reduction ratio prescribed from said output shaft of said motor to said ball spline nut, and a revolving position detector for detecting revolutions of said ball screw nut and said ball spline nut is provided.

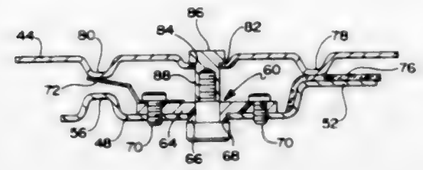
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5,327,796

HORN SWITCH ACTUATED BY ROCKING AIR BAG MODULE

David L. Ernst, Kettering; Maria T. Avila, Vandalia, and David S. Weckesser, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 28, 1992, Ser. No. 997,361
Int. Cl.[5] H01H 9/00; B60R 21/08
U.S. Cl. 74—484 H 14 Claims



1. In a vehicle steering wheel assembly having a central mounting plate, an air bag module including a base plate having spaced peripheral edges, and a horn switch operable to actuate a vehicle horn, means mounting the base plate on the mounting plate, comprising

a pair of spaced posts located centrally between the peripheral edges of the mounting plate which mount the base plate for rocking movement thereon toward the mounting plate,

spring means biasing the plates apart, and

means mounting the horn switch between the plates between the posts and one of said peripheral edges, whereby

rocking movement of the module on the posts to move said one base plate peripheral edge toward the mounting plate operates the horn switch.

5,327,797

VEHICLE PARKING BRAKE CABLE ACTUATING STRUCTURE

David R. Seifrit, Jr., Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jan. 13, 1992, Ser. No. 819,911
Int. Cl.[5] G05G 5/06, 1/14
U.S. Cl. 74—512 2 Claims



1. A vehicle parking brake cable actuating structure comprising a support member, a manually operable brake lever pivotally mounted on the support member, a brake cable connected to the brake lever, the brake lever being pivotable between a cable released position and a cable tensioned position, spring means urging the brake lever to the cable released position, pawl and ratchet means for maintaining the brake lever in the cable tensioned position including ratchet means forming part of the brake lever, the ratchet means including a single ratchet tooth, a bifurcated pawl having first and second pawl tips, a pivot pin mounted on the support member connecting the pawl for pivotal movement relative to the support member between first and second ratchet tooth contacting positions in which the pawl tips are in operative engagement with opposite surfaces of the ratchet tooth, respectively, means connecting the pawl for lateral displacement between first and second end positions relative to the pivot pin, said connecting means including a slot provided in the pawl for receiving the pivot pin, overcenter spring means connected between the support member and the pawl, the overcenter spring means being alternately operable when the pawl is in said end positions for pivotally biasing the pawl in opposite directions relative to the pivot pin toward said first and second ratchet tooth contacting positions, respectively, the overcenter spring means normally having a first overcenter condition pivotally biasing the pawl in said first direction when the brake lever is in the cable released position and the pawl is in said first end position, thereby to effect operative engagement between the first pawl tip and the ratchet tooth on one surface thereof, cam means operable solely when the pawl is in the first end and first ratchet tooth contacting positions and when the brake lever is initially pivoted in the cable tensioning direction for placing the first pawl tip in ratchet tooth contact and for then laterally displacing the pawl toward its second end position whereby the overcenter spring means is activated to a second overcenter condition to pivotally bias the pawl in the other direction toward its second ratchet tooth contacting position, the pawl, upon release of the brake lever in the cable tensioning position and with the pawl in the second end and second ratchet tooth contacting positions being laterally displaced toward the first end position, thereby returning the overcenter spring means to the first overcenter condition, the pawl, when in the first end position and in the second ratchet tooth contacting position upon the application of torque to the pawl in the first direction, being pivoted by the overcenter spring means directly to the first ratchet tooth contacting position completely independent of the cam means, the pawl having an arm extending in a direction away from the first and second pawl tips, a stop pin mounted on the support member operable to contact the arm and limit pivotal movement of the pawl when the pawl is pivoted by the overcenter spring means out of contact with the cam means, the brake lever having a portion extending away from its pivotal terminating in an open end, said open end including a first wall section substantially parallel to and spaced from the support member, the first wall section having a forward marginal edge and a rearward marginal edge, the brake cable being connected to said forward marginal edge, a second wall section extending from the rearward marginal edge towards the support member, said second wall section defining said single ratchet tooth.

5,327,798

ADJUSTABLE BICYCLE STEM

Paul F. Lerch, Jr., P.O. Box 512, McCall, Id. 83638

Filed Nov. 23, 1992, Ser. No. 980,461
Int. Cl.[5] B62K 21/16
U.S. Cl. 74—551.3 2 Claims

1. An adjustable bicycle stem comprising:

a downwardly projecting member (**20**) adapted for insertion into a conventional stem receptacle in a frame of a bicycle, said downwardly projecting member (**20**) being formed to include an adjustment plate (**30**) at an upper end thereof;

a forwardly projecting member (**22**) adapted to hold a bicycle handlebar (**16**) at a forward end thereof, the downwardly and forwardly projecting members (**20, 22**) being coupled for incremental rotational adjustment of the forwardly projecting member (**22**) with respect to the downwardly projecting member (**20**) to thereby enable a rider to incrementally raise or lower the bicycle handlebar (**16**); and

safety stop means for limiting rotational adjustment of the forwardly projecting member (**22**) with respect to the downwardly projecting member (**20**), said safety stop means comprising an arcuate slot (**44**) in said adjustment

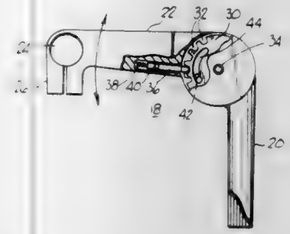


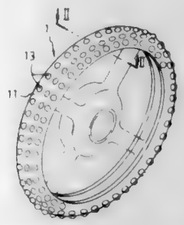
plate (**30**) and a pin (**42**) fixedly positioned on said forwardly projecting member (**22**) for movement within said arcuate slot (**40**).

5,327,799

COVER FOR A STEERING WHEEL OF AN AUTOMOBILE

Ming-Ching Lin, No. 78, An-Hsi Rd., Kaohsiung City, Taiwan

Filed Mar. 1, 1993, Ser. No. 24,372
Int. Cl.[5] B62D 1/06
U.S. Cl. 74—558 3 Claims



1. A cover for a steering wheel of an automobile, including a tire-shaped cover body adapted to be disposed around said steering wheel of said automobile, said cover comprising a plurality of rounded protrusions protruding from the peripheral surface of said tire-shaped body,

said tire-shaped cover body being formed of a first cover layer and a second cover layer, each of said first and second cover layers having an outer surface and an inner surface, said outer surface of said second cover layer being adhered to said inner surface of said first cover layer, said protrusions protruding outwardly from said outer surface of said first cover layer, each of said protrusions being a semicircular bead having a rounded head and two L-shaped legs,

each of said legs extending through said first layer and having an end portion clamped between said first and second layers.

5,327,800

SYSTEM USING VERTICAL EXHAUST PASSAGE FOR MAINTAINING PRIMED CONDITION OF HYDRAULIC CIRCUITS OF AN AUTOMATIC TRANSMISSION

Joseph S. Van Selous, Highland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,606
Int. Cl.[5] F15B 13/044
U.S. Cl. 475—131 17 Claims

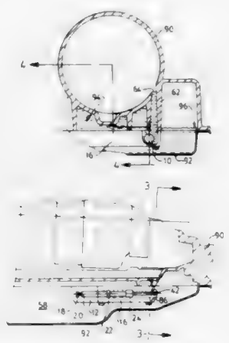
1. A system for pressurizing and venting friction elements of an automatic transmission, comprising:

a source of pressurized fluid;

a sump having a fluid level;

a hydraulically actuated first friction element;

manual valve means having a spool defining several lands moved among various positions within the manual valve means, each position associated with locating one or more of the lands of the spool to produce an hydraulic communication through the manual valve means, a first land



having a relatively small control area for slideably supporting the spool on a valve body, mutually spaced larger lands for alternately connecting and disconnecting the pressure source, exhaust passage means and first friction element; and

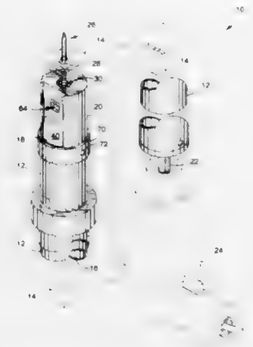
exhaust passage means extending vertically above the sump fluid level and manual valve means, for connecting the manual valve means and first friction element to the sump.

5,327,801

DUCT STRAP TOOL

Jon R. Andreasen, 12210 Cange St., Anchorage, Ak. 99516, and Anthony M. Patsfield, P.O. Box 35, Rescue, Calif. 95672

Filed Feb. 26, 1993, Ser. No. 24,181
Int. Cl.[5] B25B 13/06
U.S. Cl. 81—125 20 Claims



1. An apparatus for installing a strap material for supporting heating, ventilation and air conditioning duct and the like, comprising:

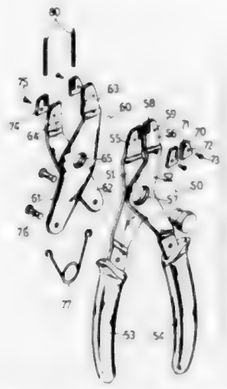
(a) fastener support means for receiving and supporting a screw-type fastener;

(b) a body, said body having first and second ends and an outer surface, said body including a cavity extending coaxially from said first end of said body toward said second end of said body, said fastener support means disposed within said cavity and coupled to said body; and

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(c) strap guide means for guiding a strap material, said strap guide means extending between said first and second ends of said body, said strap guide means recessed from said outer surface of said body toward said cavity.

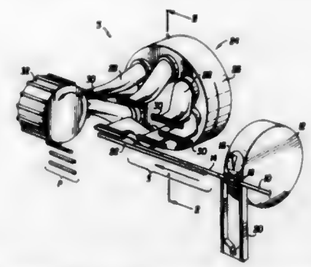
5,327,802
COMBINATION PLIERS
Chin-Yung Yu, No. 5, Chent Te Lane 3, Shu Te Li, South Area, Taichung, Taiwan
Filed May 21, 1993, Ser. No. 65,252
Int. Cl.[5] B25B *1/02*
U.S. Cl. 81—312 **2 Claims**



1. A combination pliers comprising a first pliers body having two blades pivotally connected by a pivot, each blade of said first pliers body having one longer end terminated to a respective insulated grip and an opposite end terminated to a respective jaw, a torsional spring supported between the two blades of said first pliers body near each insulated grip, and a second pliers body having two blades pivotally connected together by said pivot, each blade of said second pliers body having one end terminated to a respective Jaw disposed near the jaws of the blades of said first pliers body and an opposite end respectively connected to either blade of said first pliers body, wherein the jaws of said first pliers body move apart from each other and the jaws of said second pliers body come together as the two insulated grips of said first pliers body are squeezed toward each other; the insulated grips of said first pliers body are returned to their former positions by said torsional spring as the inward pressure is released, causing the jaws of said first pliers body to come together and the jaws of said second pliers body to move apart from each other.

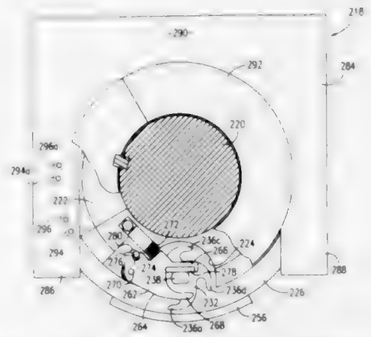
5,327,803
TRANSFER APPARATUS FOR CIGARETTES AND OTHER ROD-SHAPED ARTICLES
C. Fred deMey, III, Belews Creek, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Oct. 19, 1992, Ser. No. 962,762
Int. Cl.[5] B26D *7/06*
U.S. Cl. 83—152 **21 Claims**

1. Apparatus for transferring cigarettes from a serial file of cigarettes to parallel rows of cigarettes comprising:
a main shaft;
a housing rotatably mounted on said shaft;
means for rotating said housing about said shaft;
a plurality of crank arms each having first and second ends, each crank arm being rotatably mounted at said first end to said housing, said crank arm being rotatable relative to said housing such that upon rotation of said housing and said crank arms the second ends of said crank arms define a path of travel;
first belt means connected between said shaft and said crank arms for rotating said crank arms relative to said housing;
a plurality of holder means for picking up the cigarettes in



the serial file and for transferring the cigarettes to parallel rows of cigarettes, each holder means being rotatably mounted to said second end of a respective crank arm; and
second belt means connected between said holder means and said shaft for rotating said holder means relative to said housing.

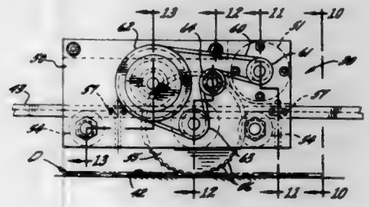
5,327,804
SLOTTER WHEEL MECHANISM HAVING DYNAMICALLY RETRACTABLE SLOTTER BLADES
David E. Creaden, Lawrence, Kans., assignor to Lawrence Paper Company, Lawrence, Kans.
Continuation of Ser. No. 916,610, Jul. 22, 1992, which is a continuation-in-part of Ser. No. 782,523, Oct. 25, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 118,317
Int. Cl.[5] B26D *1/12*; **B31B** *1/14*
U.S. Cl. 83—305 **9 Claims**



9. Slotter wheel apparatus for slotting of box blanks and comprising:
a rotatable body presenting a peripheral margin;
at least one slotter blade presenting a cutting edge;
means operably coupling said blade with said body and including structure for selectively shifting of said blade during rotation of said body between an extended slotting position wherein the blade cutting edge is located outboard of said body peripheral margin for slotting of said blank, and a retracted, blank-clearing position wherein said blade cutting edge will pass said blank without slotting thereof,
said blade shifting structure comprising
a spider presenting a plurality of outwardly extending, circumferentially spaced arms;
means rotatably securing said spider to said body;
a plurality of stationary spider arm-engaging members

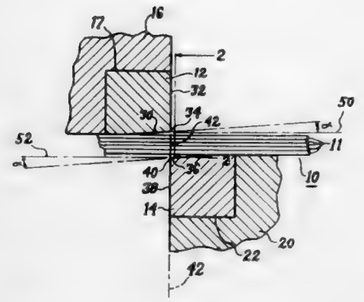
oriented for engaging respective spider arms during rotation of said body;
means for releasably holding said spider at respective rotated positions thereof; and
means operably coupling said spider with said blade for, upon rotation of the spider, effecting corresponding movement of said blade between said extended and retracted positions thereof.

5,327,805
APPARATUS FOR SEVERING CONTINUOUS SHEET MATERIAL
A. N. Reichental, Soughbury, and Alexander Shafir, Watertown, both of Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.
Division of Ser. No. 716,634, Jun. 17, 1991, Pat. No. 5,203,761. This application Jul. 10, 1992, Ser. No. 911,776
Int. Cl.[5] B26D *1/18*
U.S. Cl. 83—471.2 **7 Claims**



1. A cutter for severing continuous sheet material, comprising:
a support table for underlying the sheet material;
a track positioned substantially parallel to said table and sufficiently separated from said table so that the sheet material may pass between said track and said table;
a slot formed in said support table parallel to said track and in close proximity thereto;
a carriage suspended on said track;
a reversible rotary drive motor mounted on said carriage;
a track engagement wheel rotatably mounted on said carriage above said track and driven by said motor for engaging said track and propelling said carriage along said track in reversible translational motion;
a rotary disk blade having a peripheral edge, said blade being suspended from said carriage such that a portion of said edge extends into said slot;
pulleys operatively connected to said motor, said engagement wheel and said disk blade,
a belt drive trained around said pulleys for transmitting power from said drive motor to said engagement wheel and blade, said belt drive causing said wheel and blade to rotate simultaneously in a clockwise direction when said motor rotates in a forward direction, and said belt drive causing said wheel and blade to rotate simultaneously in a counterclockwise direction when said motor is reversed, whereby said edge of said blade facing in the direction of motion of said carriage rotates toward said table and into said slot to sever the sheet material when said carriage moves in either the forward direction or the reverse direction on said track; and
a plurality of nondriven wheels rotatably mounted on said carriage beneath said track for stabilizing said carriage and for maintaining said track engagement wheel in contact with said track.

5,327,806
APPARATUS FOR SHEAR-CUTTING A STACK OF AMORPHOUS STEEL STRIPS
William K. Houser, Greeneville, Tenn., assignor to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 861,122, Mar. 31, 1992, abandoned. This application Apr. 19, 1993, Ser. No. 49,611
Int. Cl.[5] B26D *1/08*
U.S. Cl. 83—636 **6 Claims**



1. Apparatus for shear-cutting a stack of thin amorphous steel sheets along a cutting plane that extends transversely of said stack, comprising:
(a) first and second blades each having a first surface for engaging said stack at one side thereof and a second surface that extends transversely of said first surface and generally parallel to said cutting plane, the first and second surfaces of each blade intersecting at a corner,
(b) means for positioning said blades at the start of a cutting operation so that said corners are positioned at opposite sides of said stack and also on opposite sides of said cutting plane in juxtaposition thereto, and
(c) means for moving one of said blades during a cutting operation so that the corner thereof moves toward the corner of the other blade in a direction parallel to said cutting plane, thereby causing the corners of said blades to shear-cut the stack along said cutting plane, and further characterized by:
(d) said first surface of said one blade being disposed at a predetermined rake angle with respect to a reference plane extending through a point on the corner of said one blade and normal to said cutting plane and to the direction of motion of said one blade,
(e) said first surface of said other blade being disposed at a predetermined rake angle with respect to a reference plane extending through a point on the corner of said other blade and normal to said cutting plane and to the direction of motion of said one blade,
(f) the sum of said rake angles being a negative value of between 5 degrees and 35 degrees, and in which: the rake angle of either of said blades is considered to be negative if said first surface of the blade, in intersecting said second surface thereof at said corner of the blade, is so inclined as to make the corner less sharp than it would be if said first surface were located in said reference plane, and
(g) both of said blades including their surfaces at said corners being of a cemented carbide cutting material that consists essentially of tungsten carbide particles and cobalt particles compacted under high pressure and sintered at a temperature exceeding the melting point of the cobalt, the tungsten carbide particles being, on average, of submicron size before compaction and constituting about 84 percent by weight of the cutting material, and the cobalt particles constituting more than 15 percent and about 16 percent by weight of the cutting material.

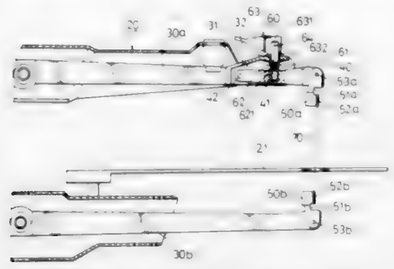
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5,327,807

SCROLL SAW WITH SAW BLADE FASTENING AND TENSION ADJUSTING DEVICE

Chiu-Tsun Chang, Taichung City, Taiwan, assignor to P & F Brother Industrial Corporation, Taichung City, Taiwan

Filed Aug. 20, 1993, Ser. No. 110,049
Int. Cl.[5] B23D *49/04*; **B27B** *19/02*
U.S. Cl. 83—783 **2 Claims**



1. A scroll saw including a generally C-shaped saw frame, a flat worktable, a pair of spaced generally parallel upper and lower arms mounted pivotally on said saw frame, each of said upper and lower arms having a distal end and extending along upper and lower sides of said worktable, a saw blade, and a saw blade fastening and tension adjusting device for securing said saw blade between said upper and lower arms, wherein said saw blade fastening and tension adjusting device comprises:
a channel which opens downwardly and which is formed on said distal end of said upper arm, said channel having a top plate which is formed with a through hole and spaced side plates;
an elongated blade support having an inner end which extends into said channel and which is connected pivotally to said spaced side plates, said blade support having a distal end and a top surface which is formed with a screw hole that is aligned with said through hole in said channel;
an upper blade holder mounted on said distal end of said blade support, and a lower blade holder mounted on said distal end of said lower arm, said upper and lower blade holders holding removably and respectively two ends of said saw blade; and
an adjustment unit including: a compression spring disposed between said top plate of said channel and said top surface of said blade support; a connecting post having a threaded lower end which extends through said through hole in said channel and said compression spring and which engages threadedly said screw hole in said blade support; and a lever having a front portion which is provided with a cam surface that abuts against said top plate of said channel and which is mounted pivotally on said connecting post, said lever being operable to move said connecting post axially and cause said blade support to pivot in order to vary distance between said upper and lower blade holders so as to adjust tension of said saw blade.

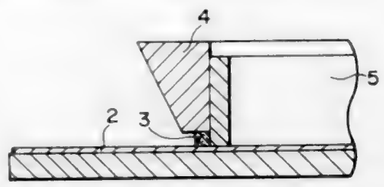
5,327,808

METHOD FOR THE PREPARATION OF A FRAME-SUPPORTED PELLICLE FOR PHOTOLITHOGRAPHY

Yoshihiko Nagata; Yuichi Hamada; Meguru Kashida, and Yoshihiro Kubota, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 63,853
Claims priority, application Japan, May 25, 1992, 4-157534
Int. Cl.[5] B26D *7/10*
U.S. Cl. 83—861 **3 Claims**

1. A process for trimming a pellicle membrane made from a thermoplastic resin supported on a base plate on which the membrane has been formed, and adhesively bonded to a pellicle frame comprising: providing a cutting device consisting of a cutter frame and a cutter element secured within the cutter frame wherein said cutter frame has having the same shape as the pellicle frame and has an inner area of a size substantially equal to an outer area of the pellicle frame so as to surround



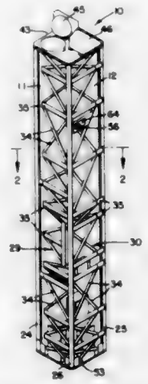
said pellicle frame, and wherein said cutter element is an electrically resistant wire capable of being electrically heated, heating the wire to a temperature higher than the melting point of the thermoplastic resin and contacting the heated wire with portions of the membrane protruding from the pellicle frame.

5,327,809

DUAL PACK CANISTER

Philip L. Matteson, White Bear Lake; Stan P. Bovee, St. Cloud, and Aye Kung, Coon Rapids, all of Minn., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 24, 1993, Ser. No. 36,569
Int. Cl.[5] F41F *3/04*
U.S. Cl. 89—1.817 **10 Claims**



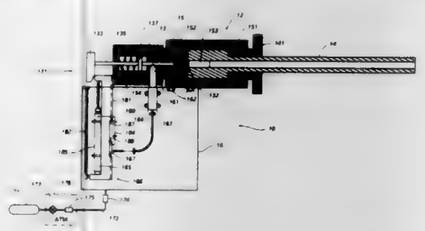
10. A tubular missile holder, comprising:
an outer shell of a stiff material formed in a tubular shape with an inside and outside and a length;
a plurality of shock isolation pads of a soft material with a first side and a second side lining the inside of the outer shell with the first side adjacent to the inside of the outer shell, wherein the shock isolation pads have apertures, creating a honey comb shape; and
an inner lining adjacent to the second side of the shock isolation pad, and wherein the apertures in the shock isolation pads extend from the outer shell to the inner lining.

5,327,810

UNIVERSAL RECEIVER HAVING PNEUMATIC SAFE/ARM/FIRING MECHANISM

Harold W. Sandusky, Laurel, and John M. Kelley, Owings Mills, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1993, Ser. No. 166,397
Int. Cl.[5] F41A *19/08*, *19/55*
U.S. Cl. 89—273 **6 Claims**



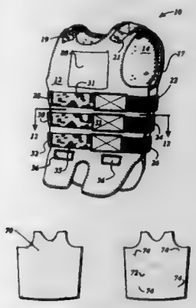
1. A universal receiver for a standard barrel comprising:
a receiver shell having a female-threaded first end and a female-threaded second end;
a barrel clampnut threadably attached to the first end of said receiver shell;
a breech plug assembly, threadably attached to the second end of said receiver shell;
a mounting plate attached to said universal receiver;
a sear assembly, mounted on said mounting plate and further mechanically linked to said breech plug assembly;
a pneumatic safety retract assembly mounted on said mounting plate and engaging in said breech plug assembly; and
a multi-port pheumatic control valve connected to and operating said sear assembly and said pneumatic safety assembly.

5,327,811

LIGHTWEIGHT BALLISTIC PROTECTIVE DEVICE

Allen L. Price, Rising Sun, Md.; Oliver L. North, Bluemont, and Joseph F. Fernandez, Vienna, both of Va., assignors to Guardian Technologies International, Sterling, Va.

Filed Apr. 25, 1991, Ser. No. 691,227
Int. Cl.[5] F41H *1/02*
U.S. Cl. 89—36.05 **6 Claims**



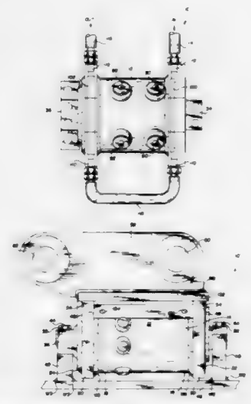
1. A ballistic resistant vest comprising:
a front panel having inner and outer layers defining a front containment pocket,
a rear panel having inner and outer layers defining a rear containment pocket,
a first flexible ballistic protective insert received by said front containment pocket,
a second flexible ballistic protective insert received by said rear containment pocket,
each of said first and second inserts each compromising:
a first package of woven SPECTRA fabric plies,
a second package of woven SPECTRA fabric plies, and
a third package of SPECTRA SHIELD plies, and said third package is sandwiched between said first and second packages;
at least three parallel strips of first elements of a hook and loop fastening system secured to said outer layer of said front panel and said strips being generally parallel to the ground when said vest is worn by a user,
at least three resilient straps each having first and second ends,
first means securing said first ends to said outer layer of said rear panel,
second elements of said hook and loop fastening system at said seconds ends, and said straps having lengths sufficiently long and sufficient in strength to overcome the flexibility of said first and second inserts and to permit said second elements to lock with said strips somewhere along their lengths for purposes of adjustably connecting said front and rear panels together,
second means for securing said first, second and third packages in close face-to-face relationship with one another, and
said plies of said first and second packages individually secured by SPECTRA thread stitching in a quilt pattern along a bias at specific tension with respect to the fabric of said woven plies.

5,327,812

FLUID-POWERED ACTUATOR AND METHOD OF ATTACHING MOUNTING PLATES

Paul P. Weyer, P.O. Box 398, and Dean R. Weyer, 707 Victor, both of Enumclaw, Wash. 98022

Filed May 12, 1993, Ser. No. 60,257
Int. Cl.[5] F01B *31/08*
U.S. Cl. 92—144 **16 Claims**



1. A fluid-powered actuator, comprising:
a body having a longitudinal axis, and first and second ends;
a shaft extending longitudinally and generally coaxially within said body and being supported for rotation relative to said body, said shaft being adapted for coupling to an external device to provide rotational drive thereto;
a piston mounted for reciprocal longitudinal movement within said body in response to selective application of pressurized fluid thereto;
a torque-transmitting member mounted for reciprocal longitudinal movement within said body, said torquetransmit-

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ting member engaging said body and said shaft to translate longitudinal movement of said piston toward one of said body first or second ends into clockwise relative rotational movement between said shaft and said body, and longitudinal movement of said piston toward the other of said body first or second ends into counterclockwise relative rotational movement between said shaft and said body;

a plurality of seals positioned within said body to provide a fluid-tight seal between said body and said shaft and between said piston and at least one of said shaft or said body;

a support member positioned out of said body and fixedly attached to said body;

at least one boom attachment member weldable to said support member while said shaft, piston, torque-transmitting member, and seals are assembled within said body; and

a fluid channel positioned between said support member and said body and sized such that a heat-absorbing fluid passing through said channel will absorb and transport away from said body a sufficient portion of the heat applied to said support member by the welding of said boom attachment member thereto to prevent the heat absorbed by said body from damaging said seals within said body, said channel having an inlet to receive the fluid and an outlet to discharge the heated fluid from said channel.

16. A method of attaching at least one boom attachment member to an assembled fluid-powered actuator by welding, comprising:

providing an assembled actuator having a tubular body with a longitudinal axis, and first and second ends, a shaft extending longitudinally and generally coaxially within said body and being supported for rotation relative to said body, said shaft being adapted for coupling to an external device to provide rotational drive thereto, a piston mounted for reciprocal longitudinal movement within said body in response to selective application of pressurized fluid thereto, a torque-transmitting member mounted for reciprocal longitudinal movement within said body, said torque-transmitting member engaging said body and said shaft to translate longitudinal movement of said piston toward one of said body first or second ends into clockwise relative rotational movement between said shaft and said body, and longitudinal movement of said piston toward the other of said body first or second ends into counterclockwise relative rotational movement between said shaft and said body, and a plurality of seals positioned within said body to provide a fluid-tight seal between said body and said shaft and between said piston and at least one of said shaft or said body;

providing a support men, her positioned out of said body and fixedly attached to said body;

providing a fluid channel positioned between said support member and said body, said channel having an inlet to receive fluid and an outlet to discharge the fluid from said channel;

welding the boom attachment member to said support member while said shaft, piston, torque-transmitting member, and seals are assembled within said body;

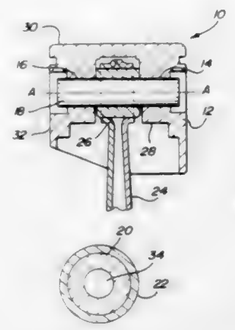
supplying a flow of head-absorbing fluid to said channel while welding the boom attachment member to said support member to absorb and transport away from said body a sufficient portion of the heat applied to said support member by the welding of the boom attachment men, her thereto to prevent the heat absorbed by said body from damaging said seals within said body.

5,327,813

WRIST PIN HAVING A CERAMIC COMPOSITE CORE

George C. DeBell, Plymouth; Richard L. Allor, Livonia, and Ernest D. Stiles, St. Clair Shores, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 12, 1992, Ser. No. 897,631
Int. Cl.[5] F16J 1/14
U.S. Cl. 92—187 13 Claims



1. An engine component assembly comprising:

a piston having a pair of coaxially spaced holes disposed along a longitudinal axis, said holes being diametrically opposed to each other;

a bi-material wrist pin extending between and within said holes, said wrist pin having

a single cylindrical ceramic core of uniform circular cross section along its length disposed coaxially with said longitudinal axis, the core having a matrix and a particulated filler; and

a tubular shell having a length coextensive with the cylindrical core, the shell surrounding and fixedly securing the cylindrical core so that there is no relative motion between the core and the shell, the shell serving as a continuous sleeve and as a compliant layer between the piston and the core so that reasonable binding stresses are accommodated and fatigue is resisted and containing any fracture debris from the ceramic core in the event of failure, said shell rotatably cooperating with the piston within said holes; and

a connecting rod with a piston-connecting end adapted to secure said bi-material wrist pin so that the pin is fixed in relation to the connecting rod and rotates within the holes.

13. A method for making a bi-material wrist pin for rotatably securing a connecting rod to a piston, the wrist pin having a cylindrical ceramic core including a matrix and a particulated filler and a tubular shell which surrounds and fixedly secures the cylindrical ceramic core, the method comprising the steps of:

heating the cylindrical core to a temperature not greater than 600°–700° F.;

forming the tubular shell;

heating the tubular shell to a temperature approximating that of the core to facilitate assembly and to avoid thermal shock when they are juxtaposed;

inserting the cylindrical core into the tubular shell to form a core-shell assembly; and

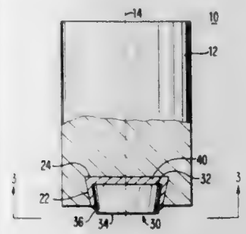
allowing the core-shell assembly to cool to an ambient temperature, thereby shrinking the tubular shell in relation to the cylindrical core so that the core is secured in relation to the shell by an interference pressure fit therebetween and the assembly is formed with a near-net shape such that minimal or no post-forming finishing operations are required.

5,327,814

MECHANICAL ASSEMBLIES AND METHODS OF MAKING SAME

Dennis R. Custer, West Granby, and Donald J. McCarthy, Wethersfield, both of Conn., assignors to Jacobs Brake Technology Corporation, Wilmington, Del.

Filed Mar. 29, 1993, Ser. No. 38,856
Int. Cl.[5] F16J 9/00
U.S. Cl. 92—248 15 Claims



1. A substantially rigid assembly comprising:

first and second members, said first member having a male dovetail-shaped portion positioned in a female dovetail-shaped portion of said second member leaving substantial space between adjacent surfaces of said portion which define the dovetail shapes of said portions; and

a locking member of ductile material filling said space; wherein

said first member has a first end positioned within said female dovetail-shaped portion of said second member and a second end outside said female dovetail-shaped portion and extending beyond the walls of said locking member; and

said locking member is formed by initially positioning said ductile material adjacent to said space and subsequently forcing said ductile material to at least partly flow into said space in order to substantially fill said space and provide a tight dovetail connection between said surfaces of said portions which define the dovetail shapes of said portions of said first and second members, leaving said second end of said first member exposed as a contact surface for contact with elements external to said assembly.

5,327,815

DEVICE FOR USE IN BEVERAGE EXTRACTION MACHINES

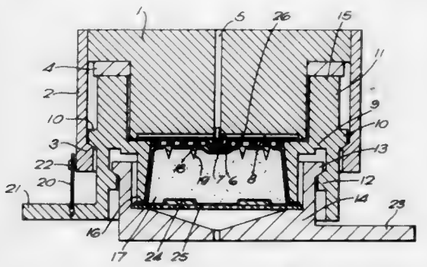
Olivier Fond, Yverdon, and Alfred Yoakim, La Tour-de-Peilz, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Jun. 16, 1992, Ser. No. 899,499
Claims priority, application European Pat. Off., Jul. 5, 1991, 91111212.6
Int. Cl.[5] A47J 31/24
U.S. Cl. 99—295 10 Claims

1. A fixing ring device for use with a water injection coffee extraction apparatus of the type having an extraction head and a tightening ring disposed about the extraction head, wherein the extraction head has a base, a water injection system opening in the base, a peripheral portion which extends longitudinally from the base, a surface portion which extends laterally from the peripheral portion, and a seal positioned adjacent the surface portion and wherein the tightening ring is fitted to the head and has a portion which extends coaxially about and which is displaced away from the head peripheral portion to form a gap which extends between the head peripheral portion and the tightening ring in which the seal is disposed and wherein the tightening ring has ramps which extend into the gap, the fixing ring device comprising:

an annular member in a shape of a ring and having a grill intermediately disposed therein which defines and separates first and second interior portions of the annular member, wherein the annular member has a first interior surface portion which surrounds the first interior portion and which is adapted to be fitted about the peripheral portion of the extraction head and for extending into the gap and to an edge for fitting adjacent the seal and wherein the grill has two opposing surfaces which extend laterally with respect to the first interior surface portion and are connected with the first interior surface portion at a position so that upon the annular member being fitted to the head, the grill has a first surface which is fitted adjacent the extraction head base;

a plurality of projection elements for piercing a cartridge containing a beverage preparation substance and which are positioned to extend from a second surface of the grill



which opposes the first surface in a direction away from the first interior portion;

an annular member outer surface having lugs which extend therefrom for engaging the ramps of the tightening ring to fix the annular member to the extraction head and tightening ring so that upon being fixed, the edge of the annular member is fitted adjacent the seal and so that the first surface of the grill is positioned adjacent the extraction head base; and

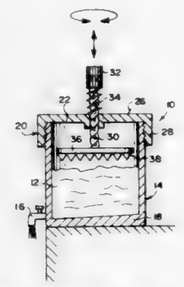
an annular member inner surface portion which surrounds the second interior portion having ramps which extend therefrom for supporting a cartridge holder for, in turn, supporting a cartridge containing a beverage preparation substance for being pierced by the projection elements and for extracting the beverage preparation substance.

5,327,816

FRUIT MILK SHAKE APPARATUS

Jacques DuPont, 532 Southside Ave., Freeport, N.Y. 11520, and George Spector, 233 Broadway, Rm. 3815, New York, N.Y. 10007

Filed May 5, 1992, Ser. No. 878,536
Int. Cl.[5] B01F 7/16
U.S. Cl. 99—348 2 Claims



1. An apparatus for preparing a shake comprising:

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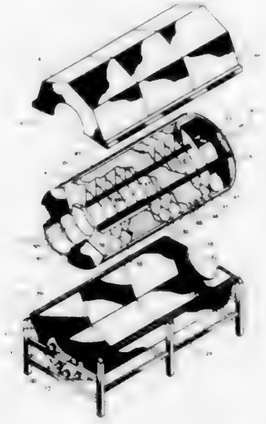
a) a pot in which pulp may be boiled; said pot having external threads on a top portion thereof;
b) a faucet fluidly connected to the side of said pot approximate a bottom portion thereof for draining off boiled pulp fluid;
c) means removably connected to the top of said pot for crushing and rotating the boiled pulp into a smooth substance; wherein said means is a manually operated rotating crusher mechanism which includes
d) a cover that threadably fits onto and over the top of said pot;
e) a spiraled shaft that extends through said cover;
f) an enlarged knurled head that is rotatable and fits on the top end of said spiraled shaft,
g) a compression spring on said spiraled shaft located between said enlarged knurled head and said cover; and
h) a disk mounted transversely at its center to the bottom end of said spiraled shaft, said disk having a plurality of teeth formed on its lower surface, so that when a person presses down on said enlarged knurled head, said spiraled shaft will move down and will rotate to mix and drive said disk rotatably downwardly to crush and mix the boiled pulp into the smooth substance.

5,327,817

FOOD MACHINERY WITH AGITATING FLIGHT AUGER

David R. Zittel, Columbus, Wis., assignor to Lyco Manufacturing, Inc., Columbus, Wis.

Filed Sep. 15, 1993, Ser. No. 121,731
Int. Cl.[5] **A23L** *3/00;* **A23N** *12/00;* **A47J** *37/12;* **F25D** *25/02*
U.S. Cl. 99—348 **12 Claims**



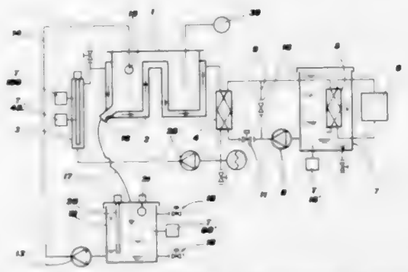
1. A food processing apparatus, comprising:
a) a tank having an inlet end and a discharge end;
b) a perforated cylinder mounted rotatably within the tank so that water contained in the tank will enter the cylinder, the cylinder having an inlet opening near the inlet end of the tank for receiving introduced food product and a discharge opening near the discharge end of the tank where food product which has moved through the cylinder can be discharged therefrom;
c) an auger positioned substantially within the perforated cylinder to rotate with the cylinder, the auger having portions which define a helical surface which extends from a position proximate the tank inlet end to a position proximate the tank outlet end; and
d) portions of the auger which project axially from the helical surface, such that food product conveyed by the rotating auger is engaged by the projecting portions and is thereby agitated in an axial direction as it is conveyed from the tank inlet to the tank outlet.

5,327,818

APPARATUS FOR PREPARING AND DISTRIBUTING FERMENTED DIARY PRODUCTS

Maurizio Olivetti, Via Ugo De Carolis, 101, I-00135 Roma, Italy

Filed May 24, 1993, Ser. No. 66,907
Claims priority, application Italy, May 27, 1992, RM92 A 000389
Int. Cl.[5] **A23G** *9/00;* **A47J** *27/00;* **B01F** *7/16, 15/06*
U.S. Cl. 99—455 **10 Claims**



1. An apparatus for preparing and distributing fermented dairy products comprising
a vat having a lateral wall and a bottom for pasteurizing, maturing and maintaining a product;
a cover adjacent to said lateral wall and to said bottom for controlling the temperature of the product present in the vat;
a first heat-exchange circuit defined by said cover and by said vat, a heat-exchange fluid circulating in said first heat-exchange circuit, said first heat-exchange circuit including a heat generator for the heating of said heat-exchange fluid and including a first heat exchanger for the cooling of said heat-exchange fluid;
a second heat-exchange circuit having a tank, a diathermic liquid circulates in the second heat-exchange circuit, a second heat-exchanger being disposed in said tank, and a refrigeration group connected, in a heat-exchange relationship, to the second heat-exchanger; said second heat-exchange circuit being connected to said first heat-exchanger by a by-pass conduit parallel to the first heat-exchanger, a first on-off valve being connected to the by-pass conduit and having a second on-off valve connected to an inlet of the first heat-exchanger to selectively control the flow of diathermic liquid passing from the second refrigeration circuit;
a cleaning circuit having a cleaning water tub, an inlet, and an outlet communicating respectively with a cleaning water source and a discharge drain, a first conduit placing the washing tub in communication with the inside of the vat, and a second conduit connecting the discharge outlet of the vat to the tub; and
an electronic control system for programming and commanding the preparation and distribution of said product.

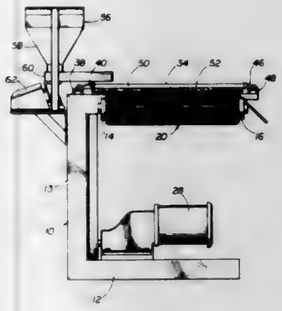
5,327,819

PEANUT BLANCHING PROCESS

James T. Forrest, Jr., Smyrna, Ga., assignor to Seabrook Enterprises, Inc., Atlanta, Ga.

Filed Mar. 9, 1993, Ser. No. 28,382
Int. Cl.[5] **A23N** *5/01*
U.S. Cl. 99—629 **9 Claims**

1. An improved nut blanching device of the type having a frame, an endless belt on the frame, the belt having a nut receiving side and an opposite, parallel nut discharge side along its upper reach, means positioned above the upper reach of the belt for delivering nuts to the nut receiving side of the belt, a drive means connected to the belt and a nut engaging means mounted on the frames above and disposed across the belt,



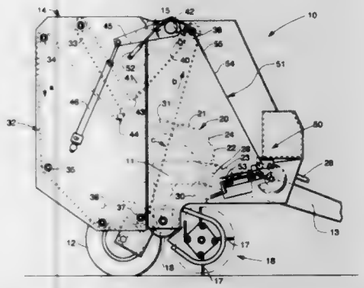
wherein the improvement comprises the nut engaging means having a nut discharge end which is adjacent to and extends beyond the nut discharge side of the belt.

5,327,820

ADJUSTABLE TRIP MECHANISM FOR ROUND BALER

John R. McClure, New Holland; James T. Clevenger, Jr., Lancaster, and William D. Hotaling, New Holland, all of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Jun. 11, 1993, Ser. No. 74,647
Int. Cl.[5] **B65B** *63/04;* **B30B** *5/06*
U.S. Cl. 100—5 **8 Claims**



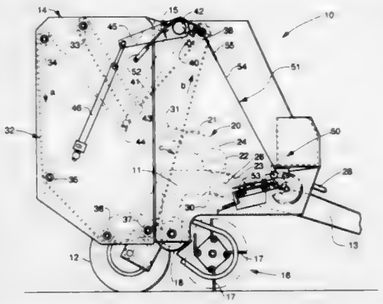
1. In a round baler having a main frame, a tailgate pivotally connected to said main frame, a bale forming chamber defined by inwardly facing surfaces of crop conveying means which includes a plurality of side by side belts trained around a series of transverse guide rolls mounted in said main frame and said tailgate, means for feeding crop material into said chamber, said bale forming chamber expanding from a bale starting position to a completed bale position as crop material is fed into said chamber and conveyed by said conveying means in a generally spiral path, a pair of take up arms rotatably mounted on said main frame, at least one additional transverse guide roll extending between said take up arms and about which additional guide roll said belts are also trained, a pair of levers connected to rotate with said take up arms, said levers have attached thereto resilient means for maintaining tension on said belts by urging said take up arms to the bale starting position as said bale forming chamber expands, apparatus for wrapping a formed bale of crop material with twine, and a system for automatically tripping said wrapping apparatus when the bale formed in said chamber attains a desired size, the improvement comprising
a cable,
means for affixing one end of said cable to the baler to prevent movement during operation and means for resiliently mounting the other end of said cable,
means for moving said other end of said cable from a first position corresponding to said bale starting position of said chamber to a second position corresponding to said desired size of said bale in said chamber,
a sliding member moveable toward and away from a tripping position for automatically tripping said twine wrapping apparatus, and
adjustable means selectively attached to said other end of said cable to engage said sliding member and move it toward said tripping position under conditions where said other end of said cable is moving to said second position.

5,327,821

ROUND BALER TWINE WRAPPER CONTROL MECHANISM

John R. McClure, and John H. Freimuth, both of New Holland, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Jun. 11, 1993, Ser. No. 74,646
Int. Cl.[5] **B65B** *63/04, 5/04*
U.S. Cl. 100—5 **7 Claims**



1. In a round baler having a main frame, a tailgate pivotally connected to said main frame, a bale forming chamber defined by inwardly facing surfaces of crop conveying means which includes a plurality of side by side belts trained around a series of transverse guide rolls mounted in said main frame and said tailgate, means for feeding crop material into said chamber, said bale forming chamber expanding from a bale starting position to a completed bale position as crop material is fed into said chamber and conveyed by said conveying means in a generally spiral path, a pair of take up arms rotatably mounted on said main frame, at least one additional transverse guide roll extending between said take up arms and about which additional guide roll said belts are also trained, a pair of levers connected to rotate with said take up arms, said levers have attached thereto resilient means for maintaining tension on said belts by urging said take up arms to the bale starting position as said bale forming chamber expands, apparatus for wrapping a formed bale of crop material with twine, and a system for automatically tripping said wrapping apparatus when the bale formed in said chamber attains a desired size, the improvement comprising
a cable,
means for affixing one end of said cable to the baler to prevent movement during operation and means for resiliently mounting the other end of said cable,
means extending from one of said pair of levers for operative engagement with said cable to move said other end of said cable from a first position corresponding to said bale starting position of said chamber to a second position corresponding to said desired size of said bale in said chamber, and
means for automatically tripping said twine wrapping appa-

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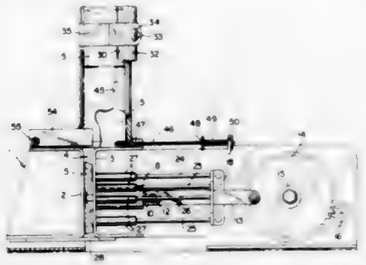
ratus under conditions where said other end of said cable is moved to said second position.

5,327,822

APPARATUS FOR CRUSHING ARTICLES

Richard M. Koenig, 604 E. Lakeview Dr., Whitefish Bay, Wis. 53217

Filed Sep. 23, 1992, Ser. No. 949,896
Int. Cl.[5] B30B *15/30, 9/32*
U.S. Cl. 100—45 10 Claims



1. An apparatus for crushing articles, comprising a frame, a fixed anvil mounted on the frame, a ram mounted for movement on the frame in a direction toward and away from said anvil to crush an article located in a crushing zone between said anvil and said ram, drive means for moving said ram in a direction toward and away from said anvil, chute means to support a stack of articles in end-to-end vertically superimposed relation, said stack including a lowermost article and a second lowermost article, stack control means engaged with the second lowermost article in the stack and movable between an engaging position where said stack control means engages said second lowermost article and a release position, retaining means disposed in said chute means beneath said stack control means and disposed to support the lowermost article in the stack, said retaining means movable between an article supporting position and a release position, means responsive to movement of the ram in a direction away from said anvil for moving said retaining means to the release position, means responsive to movement of the ram in a direction away from said anvil for moving said stack control means to the engaging position, and means responsive to movement of the ram in a direction toward the anvil for moving said stack control means to the release position, said chute means being provided with an opening and said stack control means comprising a door movable in said opening between said engaging and said release positions

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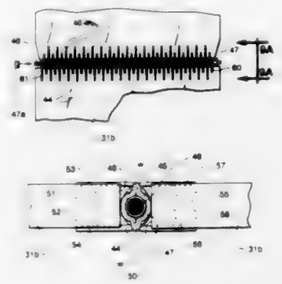
5,327,823

SPLICE FOR ROUND BALER BELTS

James T. Clevenger, Jr., and Irwin D. McIlwain, both of Lancaster, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed May 3, 1993, Ser. No. 56,270
Int. Cl.[5] B30B *5/06, 9/30*
U.S. Cl. 100—88 9 Claims

1. In a round baler having
a frame,
means for providing a bale forming chamber including at least one roll mounted transversely on said frame, and at least one elongated belt having opposing ends secured together to form a continuous band, said belt trained about and supported on said at least one roll to define said chamber,
splice means for securing together said opposing ends of said belt, said splice means comprising a first and a second series of similar side-by-side loops connected to and extending from the respective opposing ends of said belt, and an attaching element extending through said first and second series of loops to maintain said opposing ends of said belt in alignment and close proximity to each other,
drive means for moving said belt in engagement with said at least one roll along a path that defines the outer periphery of said chamber,
means for feeding said crop into said chamber to form a bale under conditions where said belt is moving in engagement with said crop material,
means for discharging said formed bale from said chamber, and



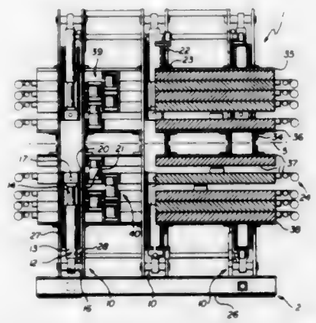
retention means affixed to said attaching element to retain said attaching element in operative relationship to said first and second series of loops, said retention means disposed outwardly of said loops of said splice means, the improvement comprising
said attaching element comprises a rod and said retention means comprises an element that encircles said rod and is crimped on said rod in the vicinity of the end thereof.

5,327,824

MULTISTORY PRESS HAVING INTEGRAL SUPPORT PLATES AND PRESSURE TRANSMITTING SECTIONS

Herbert Wild, Rietberg, Fed. Rep. of Germany, assignor to WM Wild Maschinen GmbH, Rietberg, Fed. Rep. of Germany

PCT No. PCT/EP92/01349, § 371 Date Apr. 12, 1993, § 102(e) Date Apr. 12, 1993, PCT Pub. No. WO92/22403, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 15, 1992, Ser. No. 977,447
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119528
Int. Cl.[5] B30B *7/02*
U.S. Cl. 100—199 15 Claims



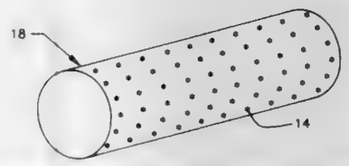
1. A multistory press for pressing boards, comprising:
a press frame having two longitudinally extending sides and a plurality of spaced-apart pairs of supports, said plurality of spaced-apart pairs of supports arranged such that one support of each pair is opposite the other support of each pair along the two sides of the press frame;
a plurality of superimposed press boards arranged between the supports of each pair of said spaced-apart pairs of supports, said plurality of press boards being movable for forming at least one pressure chamber between adjacent press boards of said plurality of superimposed press boards;
a pressure cylinder associated with each support of said plurality of spaced-apart pairs of supports, each pressure cylinder having a cylinder casing fastened to its associated support and a movable cylinder piston; and
a pressure transmitting section associated with each pair of supports of said plurality of spaced-apart pairs of supports, each pressure transmitting section having a first end secured to the movable cylinder pistons associated with its respective pair of supports and a second end operably mounted to the plurality of superimposed press boards for moving said plurality of press boards between open and closed positions for forming the pressure chamber;
wherein each pair of said spaced apart pairs of supports are formed by two integral, spaced apart H-shaped support plates that extend from one side to the other side of the press frame and wherein each respective pressure transmitting section is guided between the two integral H-shaped support plates.

5,327,825

SEAMLESS HOLOGRAPHIC TRANSFER

Harry A. Parker, Murray Hill; Joseph Allocco, Mendham, and John Dixon, Lakehurst, all of N.J., assignors to Transfer Print Foils, Inc., East Brunswick, N.J.

Filed May 12, 1993, Ser. No. 60,796
Int. Cl.[5] B31F *1/07*
U.S. Cl. 101—32 32 Claims



1. A method of making a die for embossing a seamless pattern onto a web of material, said method comprising the steps of:
providing a die having a curved outer surface;
coating said curved outer surface of said die with at least one layer of embossable material;
mounting a stamping shim to a concave-shaped stamping surface of a stamp, said stamping shim conforming to said concave-shaped stamping surface of said stamp and presenting an embossing pattern; and
impressing said embossing pattern of said stamping shim against a portion of said at least one layer of embossable material to form an embossment therein.

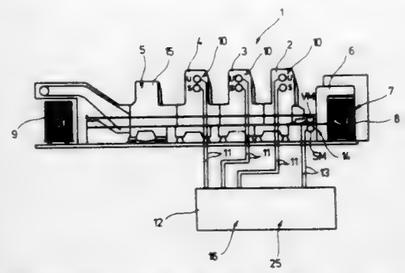
5,327,826

REGISTER ADJUSTMENT DEVICE ON A PRINTING MACHINE WITH A PLURALITY OF PRINTING UNITS AND METHOD OF OPERATING THE DEVICE

Anton Rodi, Leimen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Oct. 9, 1990, Ser. No. 594,730
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1989, 3933666
Int. Cl.[5] B41F *5/06, 33/16*
U.S. Cl. 101—181 11 Claims

1. A sheet printing machine for printing images on sheets having a plurality of register-provided units, a circumferential and a side register in each of said register-provided printing units for performing respective circumferential and side registration in said register-provided printing units; a register-free printing unit having no circumferential and side register; a



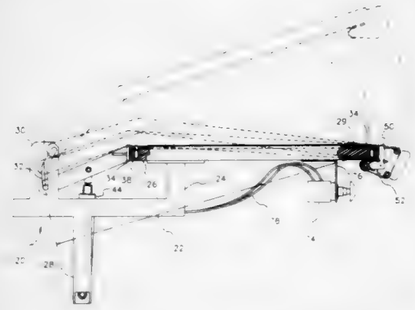
plurality of adjustable front and side lays disposed ahead of at least one of said printing units for aligning the edges of the images; and a control device operatively engaging said circumferential and side registers and said front and side lays for controlling positions of said registers and lays.

5,327,827

AUTOMATED SCREEN PRINTING PALLET AND RETAINING FRAME ASSEMBLY

Orland W. Richardson, Columbus, Ohio, assignor to Columbia Research and Development, Westerville, Ohio

Filed Mar. 25, 1993, Ser. No. 36,911
Int. Cl.[5] B41F *15/34*
U.S. Cl. 101—126 10 Claims



1. A pallet and garment retaining assembly for screen printing apparatus comprising, in combination;
a) a supporting base;
b) a pallet mounted to and extending outwardly from said base and provided with a generally planar upper and lower surface and a peripheral edge, said upper surface configured to receive a layer of material in a generally planar condition for screen printing;
c) a retaining frame including a central opening configured to generally conform to the configuration of said peripheral edge of said pallet, said frame including a downwardly extending vertical leg;
d) a rearward end of said retaining frame being pivotally mounted to said supporting base about a rearwardly disposed hinge axis selectively movable along a vertical and horizontal path when said retaining frame is moved between a raised open position non-engaging said pallet and a lowered closed position wherein said vertical leg of said retaining frame is disposed in close-fitting relationship with said peripheral edge of said pallet to frictionally

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engage a portion of said layer of material disposed between said vertical leg and said peripheral edge;

e) a portion of said vertical leg disposed at a forward end of said retaining frame being conformed to pivotally engage a forward portion of the peripheral edge of said pallet during a selected portion of the path of travel of said retaining frame to form a second hinge axis about which said retaining frame pivots while moving between said open and closed positions; and

f) a linear actuator connected between a rearward portion of said frame and said supporting base and disposed between said first and second hinge axes to drive said frame along its path of travel between said open and closed positions

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5,327,828

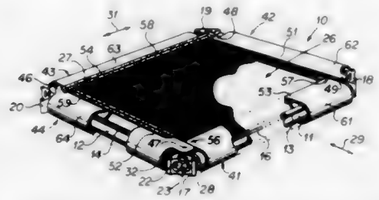
CLAMP AND PROCESS FOR PROTECTING PRINTING SCREENS AND FRAMES

Ervin V. Barocas, 1197 Ragley Hall Rd., Atlanta, Ga. 30319, and Lewis C. McLemore, III, 702 Park St., Port Barre, La. 70577

Continuation-in-part of Ser. No. 761,305, Sep. 17, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,171

Int. Cl.[5] **B41L** *13/02*; **B05C** *17/08*

U.S. Cl. 101—127.1 **18 Claims**



1. A frame protector for protecting and extending the useful life of a printing screen frame, comprising

an expandable clamp for peripherally surrounding, enclosing and extending along a length of a frame member of a printing screen frame;

said clamp having an annular body portion comprising a printing screen frame-engageable clamping member with a resilient bight portion extending at least about 270 degrees, said bight portion being complementary to the contour of the frame member to matingly engage the frame member, said clamping member being in a normally closed biased position for clamping and snap fitting interlocking engagement with said printing screen frame and being expandable to define a mouth for slidably receiving said frame member; and

said clamp having substantially parallel flanges defining screen-engageable lips extending inwardly from said clamping member for engaging, clamping and preventing tearing of a printing screen

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5,327,829

MULTICOLOR PRINTING PRESS WITH FEATURE OF ROTATIONAL PHASE ADJUSTMENT

Masahiko Miyoshi, Ayase; Kiyohisa Asanuma, Kawasaki, and Kazuhiro Soutome, Zama, all of Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Continuation of Ser. No. 889,791, May 28, 1992, abandoned. This application Jun. 8, 1993, Ser. No. 74,004

Claims priority, application Japan, Nov. 15, 1991, 3-354096

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[5] **B41F** *5/06, 5/22, 13/14*

U.S. Cl. 101—177 **4 Claims**

1. A multicolor printing press comprising:

a plurality of printing sections arranged in vertical alignment, a plurality of said printing sections each including:

a pair of plate cylinders respectively carrying printing plates, each of said plate cylinders being separated into axially aligned a first plate cylinder component and a second plate cylinder component for rotation at independently adjustable rotational phases;

a pair of blanket cylinders respectively carrying blankets and associated with said plate cylinders for receiving printing pattern of said printing plates to transfer onto both sides of a printing medium, said blanket cylinders having slightly different finished diameters from that of said plate cylinders;

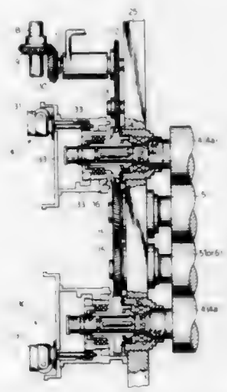
a drive train for driving said plate cylinders and said blanket cylinders in synchronism with each other with maintaining desired phase relationship therebetween, said drive train establishing a path for power transmission so that the driving power is first transmitted to one of said plate cylinders and said blanket cylinders having smaller finished diameter and subsequently to the other;

means, associated with each of said plate cylinders, for adjusting rotational phase of said plate cylinder relative to said printing medium for adjustment of register position of said printing pattern on said printing medium,

wherein said drive gear train comprises:

respective shafts supporting said blanket cylinders;

a pair of engaged first transfer gears rigidly mounted on respective first axial ends of said shafts of said blanket cylinders;



a pair of engaged second transfer gears rigidly mounted on said respective first axial ends of said shafts of said blanket cylinders;

respective shafts supporting said first plate cylinder components;

a pair of first driven gears rigidly mounted on respective axial ends of said shafts of said first plate cylinder components, and said first driven gears engaged with the first transfer gears respectively;

respective shafts supporting said second plate cylinder components;

a pair of second driven gears rigidly mounted on respective axial ends of said shafts of said second plate cylinder components, and said second driven gears engaged with the second transfer gears respectively; p1 an intermediate gear connectable to a power source and engaged with one of the first transfer gears for delivery of driving torque thereto;

said driving power transmission path being established by, transferring driving torque on said one of said first transfer gears to one of said first drive gears and to the other of the transfer gears, transferring driving torque on said other of said first transfer gears to the other of said first driven gears transmitting driving torque on said both of the first transfer gears to the second transfer gears through the shafts of the blanket cylinders, and transferring the driving torque on the second transfer gears to respective of said second driven gears.

5,327,830

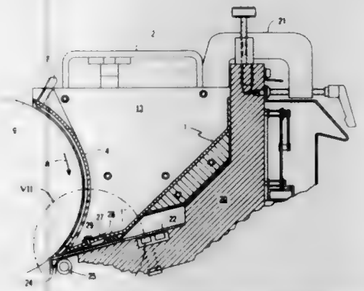
PORTABLE, REMOVABLE AND INSERTABLE INK FOUNTAIN BOX FOR A PRINTING MACHINE

W. Robert Gelinas, Jewitt City, and Craig L. Whipple, Ledyard, both of Conn., assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 897,802, Jun. 12, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 30,646

Int. Cl.[5] **B41F** *31/06, 31/20*; **B41D** *27/08*

U.S. Cl. 101—363 **21 Claims**



1. Portable, removable and insertable ink fountain box (1) for a printing machine, defining an ink reservoir. (13),

wherein the printing machine has

an inker roller (9) and means (S) for supporting the ink fountain box in position, facing the inker roller, and

said fountain box is formed with an open region (11) facing the inker roller so that ink in the fountain box will be applied to the inker roller,

said fountain box comprising

a body (1) defining a back wall;

two side walls (3, 3'), each connected to the body and having forward free edges (12) which are curved to match the curvature of the ink roller (9) and fitting, when in ink application position, against the inker roller (9);

a removable closure cover (4) fitting between the side walls; and

guide means (5) formed on the side walls adjacent the forward free edges (12) thereof, and defining a guide path which is at least approximately parallel to said curved forward edges (12) for guiding the removable closure cover (4) and selectively retaining said cover in position with a lower edge thereof essentially in engagement with a bottom of the body (1), to permit removal of the fountain box without spillage of ink from the ink reservoir (13).

5,327,831

PRINTING PRESS BLANKET CYLINDER ASSEMBLY, MOUNTING AND DISMOUNTING SUBASSEMBLIES AND METHOD OF USING SAME

Louis S. Depa, Downers Grove, and Robert L. Fisher, Chicago, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 722,039, Jun. 27, 1991, Pat. No. 5,188,031. This application Oct. 1, 1992, Ser. No. 915,151

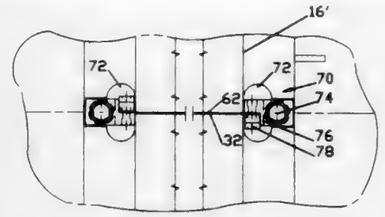
Int. Cl.[5] **B41F** *1/28*

U.S. Cl. 101—401.1 **5 Claims**

3. A method of dismounting a blanket assembly with a mounting member and a substantially cylindrical body from a blanket cylinder with a mounting slot comprising the steps of:

at least partly removing a mounting member from within the mounting slot at least in part by pushing the mounting member from within the slot;

removing the remainder of the blanket assembly from around the blanket cylinder after the mounting member has been at least partly removed from the mounting slot wherein said step of pushing includes the step of actuating



an adjustment member outside of the slot which is linked with an ejector blade to cause the blade to move within the slot.

5,327,832

PRINTING PLATE ADJUSTING ASSEMBLY

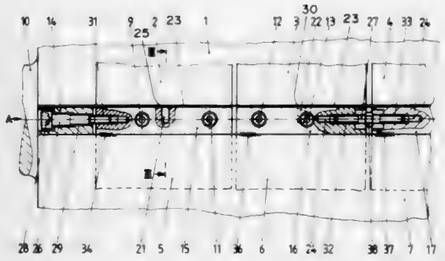
Christian M. M. Fischer, Marktheidenfeld, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 953,871

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1991, 4132805

Int. Cl.[5] **B41F** *1/28*

U.S. Cl. 101—415.1 **2 Claims**



1. A printing plate adjusting assembly usable to effect side register adjustments of a selected one of a plurality of printing plates carried by a plate cylinder, said printing plate adjusting assembly comprising:

an axially extending cylinder groove on a peripheral surface of said plate cylinder;

a plurality of inserted bars selectably axially shiftably positioned within said cylinder groove;

a register pin on at least one of said plurality of inserted bars for engaging an end of a printing plate inserted into a cylinder channel between a side of said cylinder groove and a side of said at least one of said plurality of inserted bars, said register pin being secured in a recess in a side of said at least one of said plurality of inserted bars;

clamping screws for releasably securing each of said plurality of said inserted bars against shifting movement in said cylinder groove, each of said clamping screws passing through an axially elongated slot in its cooperating inserted bar and being received in said cylinder groove; and

means for selectively axially shifting at least one of said plurality of inserted bars in said cylinder groove toward and away from the others of said plurality of inserted bars to effect side register adjustment of said printing plate whose end is engaged by said one of said plurality of inserted bars while the others of said plurality of inserted bars are secured against axial shifting, said axial shifting

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means including a differential screw having a first shank portion with a first thread and a second shank portion with a second thread, said first and second threads being different, said first shank portion being rotatably received in said one of said plurality of inserted bars and said second shank portion being rotatably received in an adjacent one of said plurality of inserted bars, rotation of said differential screw axially shifting said one of said plurality of inserted bars with respect to said others of said plurality of inserted bars which are secured against axial shifting

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5,327,833

MULTIPLE INK ZERO CALIBRATION FOR PRINTING PRESS

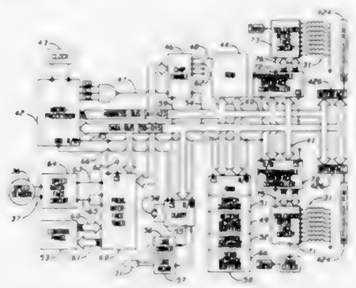
Michael T. Danielson, Roselle, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 732,438, Jul. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 414,790, Sep. 29, 1989, abandoned. This application Oct. 9, 1992, Ser. No. 960,179

The portion of the term of this patent subsequent to Feb. 13, 2007, has been disclaimed.

Int. Cl.[5] **B41F** *7/30*; **B41L** *25/06, 25/02*

U.S. Cl. 101—484 **6 Claims**



1. A method of providing a desired printing quality state for a printing press, the method comprising the steps of: providing an ink rail in a printing press, providing a plurality of ink adjusting modules in at least one page pack of a printing couple in the printing press, each of the ink adjusting modules being provided for adjusting an associated plunger assembly for dispensing ink to the ink rail in the printing press, providing for each ink adjusting module an ink control lever which contacts the plunger assembly to change the ink volume being pumped by the associated plunger assembly to the ink rail, and providing a mechanical stop for the ink control lever and an adjustable ink control rod that contacts the ink control lever;

placing the printing couple in a zero mode;

positioning the ink control lever at the associated mechanical stop;

operating a bidirectional motor in each ink adjusting module to move the ink control lever to a position corresponding to a desired printing quality via the ink module control rod which is connected to the motor and which contacts the control lever; and

for each ink adjusting module, measuring the position of the motor with a potentiometer;

storing the measured position of each motor as position values in a memory, the position values corresponding to the desired printing quality for each of the ink adjusting modules.

5,327,834

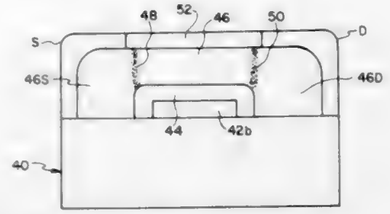
INTEGRATED FIELD-EFFECT INITIATOR

Peter L. C. Atkeson, Elkton, Md., assignor to Thiokol Corporation, Ogden, Utah

Filed May 28, 1992, Ser. No. 889,427

Int. Cl.[5] **F42C** *19/12*

U.S. Cl. 102—202.9 **20 Claims**



1. A semiconductor initiator comprising,

a semiconductor bridge extending between first and second electrical inputs, said bridge having an intermediate region thereof of a first conductivity type and regions at opposite ends of said intermediate region and of opposite conductivity type to define at least first and second PN junctions in said bridge between said first and second electrical inputs; and

a field electrode adjacent to at least said intermediate region and insulated therefrom for providing a electric field in response to a selectively applied voltage sufficient for enhancing the conductivity of said intermediate region

wherein said first conductivity type is n-type and said opposite conductivity type of said regions at the opposite ends of said intermediate region is p-type doped with a p-type dopant at a concentration of about 10^{18} atoms/cm^3.

5,327,835

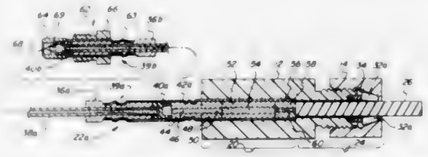
DETONATION DEVICE INCLUDING COUPLING MEANS

Craig F. Adams, Granby, and Richard J. Pebbles, Winchester, both of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Filed Jul. 1, 1993, Ser. No. 85,986

Int. Cl.[5] **F42B** *3/10, 3/16*; **F42C** *19/08*

U.S. Cl. 102—275.11 **12 Claims**



1. A detonation coupling device comprising means for coupling a detonator cap with a detonating cord, the device comprising:

a sleeve member having a longitudinal sleeve bore extending therethrough, the sleeve bore having a cap-receiving portion dimensioned and configured to receive a detonator cap and a cord-receiving portion dimensioned and configured to receive a detonating cord in signal transmission relation to the detonator cap;

a fastener member having a fastener aperture dimensioned and configured to receive therethrough a detonating cord;

sleeve engagement means on the sleeve member and complementary fastener engagement means on the fastener member, the respective engagement means cooperating to secure the fastener member to the sleeve member with the fastener aperture aligned with the cord-receiving portion of the sleeve bore; and

sleeve compression means carried on the sleeve member and complementary fastener compression means carried on the fastener member, the respective compression means cooperating to grip a detonating cord disposed in the cord-receiving portion of the sleeve bore when the fastener member is secured to the sleeve member.

5,327,836

RETURNING SYSTEM FOR RAIL-BORNE TRANSPORTING CARTS WITHOUT SELF-DRIVING MEANS

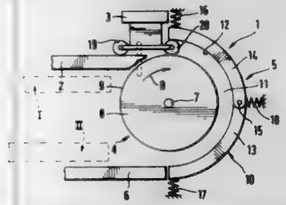
Hubert Christ, and Helmut Pfenning, both of Mainz, Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Oct. 23, 1991, Ser. No. 779,734

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1990, 4033616

Int. Cl.[5] **B65G** *35/06, 47/80*

U.S. Cl. 104—163 **26 Claims**



1. A returning system (1, 1', 1") for transporting carts (3, 3', 3") born on running rails without self-driving means, the transporting carts being moved by a first common main drive system (I, I", III") on a transporting track (2, 2', 2") an auxiliary drive system (4, 4', 4") for transferring the transporting carts (3, 3', 3") to an inverted position by moving the carts over a vertical curve (5, 5', 5") onto an end of a return track (6, 6', 6") located parallel to and under the transporting track, the return track being provided with a second common main drive system (II, II', III"); the auxiliary drive system (4, 4', 4") having an auxiliary drive wheel (8, 8', 8") with a friction surface in juxtaposition with the vertical curve (5, 5', 5") which is driven to be rotatable about a horizontal axis and a contact pressure part (10, 10', 10") arranged concentrically with the auxiliary drive wheel (8, 8', 8"), which contact pressure part (10, 10', 10") engages each of the transporting carts in turn and urges the transporting carts (3, 3', 3") into frictional engagement with the auxiliary drive wheel (8, 8', 8") resulting in a non-positive transfer of the transporting cart over the vertical curve (5, 4', 4").

5,327,837

BOLSTER OF A RAILROAD CAR TRUCK WITH VARYING CROSS-SECTIONAL SHAPE TO PROVIDE LESS TORSIONAL RIGIDITY AT ENDS

Hans B. Weber, Rotonda West, Fla., assignor to National Castings Inc., Lisle, Ill.

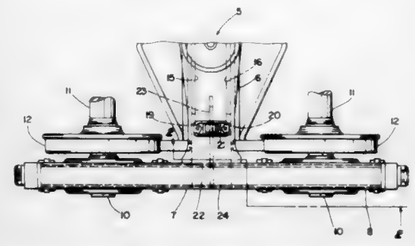
Filed Jun. 15, 1992, Ser. No. 898,711

Int. Cl.[5] **B61F** *5/52*

U.S. Cl. 105—226 **8 Claims**

1. A bolster for connecting the sideframes of a railroad car truck, comprising:

a) a generally hollow, box-like construction between opposing ends of the bolster, the box-like construction having a cross-section which includes: a pair of parallel, flat side plates transversely connected to a flat bottom plate and a flat top plate which is parallel with the bottom plate which is in furthest spaced relation from a mechanism, carried by the bolster, for attachment to a railroad car, the top and bottom plates being coextensive with the length of the bolster which extends at least partially into the sideframes and the flat side plates being parallel throughout their length and having opposing ends which terminate in predetermined spaced relation from adjacent opposing ends of the top and bottom plates and sideframes the box-like construction of the bolster being rigid to resist loads which can cause the bolster to bend; and



b) means integral with the bolster at least between each of the opposing ends of the top and bottom plates and the adjacent ends of the side plates for making the ends of the bolster more flexible than the box-like construction of the bolster, to loads which can cause the bolster to twist, while being rigid enough to resist the loads which can cause the bolster to bend.

5,327,838

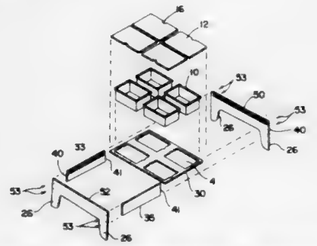
PLAY TABLE WITH SELF-CONTAINED STORAGE

Charles H. Beltman, P.O. Box 6707, Grand Rapids, Mich. 49516

Filed May 12, 1993, Ser. No. 59,982

Int. Cl.[5] **A47B** *85/00*

U.S. Cl. 108—25 **20 Claims**



1. A table for storing articles, the table comprising:

a frame;

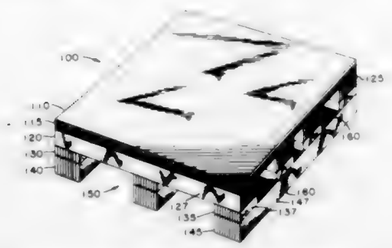
a horizontal work surface defining a plurality of openings, the work surface being supported by said frame;

a plurality of bins removably suspended from said work surface within said openings; and

a plurality of flat removable lids covering said bins, each of said lids associated with one of said bins and dimensioned to completely cover said associated bin when said panel is over said associated bin, said lids further dimensioned to cover substantially all of said work surface and bins when all of said lids are over said bins, said lids generally abutting one another to provide a substantially continuous planar surface, whereby objects resting on said lids can be transferred to a selected bin by removing the lid associated with the selected bin and sweeping the objects across the unselected lids and into the selected bin.

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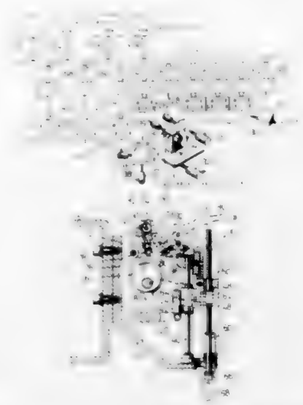
5,327,839
CORRUGATED FIBERBOARD PALLET
Morris A. Herring, and Morris A. Herring, Jr., both of Tucson, Ariz., assignors to Ecological Pallets Limited, Tucson, Ariz.
Continuation of Ser. No. 797,273, Nov. 25, 1991, Pat. No. 5,129,329. This application May 19, 1992, Ser. No. 885,657
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.3 **16 Claims**



1. A corrugated fiberboard pallet, comprising:
a multiple-ply, corrugated fiberboard top member having a uniform upper planar surface and a lower planar surface, corrugations of said multiple-ply top member extending in a first direction;
a plurality of longitudinally extending multiple-ply corrugated fiberboard runners each having an upper planar surface and a lower planar surface, the upper planar surface of each of which being affixed to the lower planar surface of said top member and corrugations of each of which extending in the first direction;
a plurality of homogeneous, multiple-ply corrugated fiberboard supports each having an upper planar surface and a lower planar surface, the upper planar surface of each of which being affixed to the lower planar surface of respective ones of said runners and corrugations of each of which extending in one of the first direction and a direction transverse to the first direction; and
a plurality of longitudinally extending multiple-ply corrugated fiberboard rails each having an upper planar surface and a lower planar surface, the upper planar surface of each of which being affixed to a respective grouping of said supports and corrugations of each of which extending in the direction transverse to the first direction.

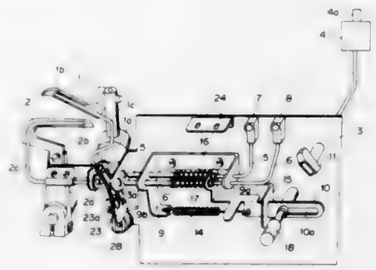
5,327,840
THREAD TAKE-UP LEVER DRIVING DEVICE IN SEWING MACHINE
Ikuo Tajima; Satoru Suzuki, and Youichi Mizuguchi, all of Anjo, Japan, assignors to Tokai Kogyo Mishin Kabushiki Kaisha, Kasugai, Japan
Filed Nov. 17, 1992, Ser. No. 977,841
Claims priority, application Japan, Nov. 18, 1991, 3-330019
Int. Cl.[5] D05B *19/00*; **D05C** *11/00*
U.S. Cl. 112—121.11 **6 Claims**

1. A thread take-up lever driving device in a sewing machine including a needle bar, a shuttle driven by a main shaft and a thread take-up lever vertically reciprocally movable for performing a sewing operation in cooperation with the needle bar and the shuttle, comprising:
a stroke adjusting means for adjusting the magnitude of the vertical stroke of the thread take-up lever; and
control means for controlling said stroke adjusting means to correspond to a pattern of stroke movement of the thread



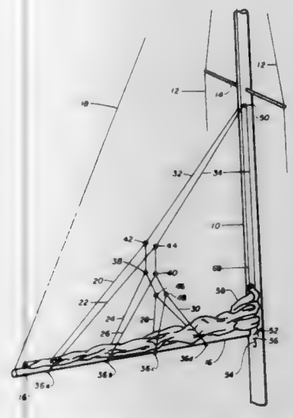
take-up lever, said pattern being determined based on a sewing condition.

5,327,841
THREADING MACHINE OF A SEWING MACHINE AND A THREADING METHOD
Kouichi Sakuma, Yamagata, Japan, assignor to Suzuki Manufacturing, Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 906,299
Claims priority, application Japan, Feb. 24, 1992, 4-036749
Int. Cl.[5] D05B *1/10, 57/06*
U.S. Cl. 112—262.1 **16 Claims**



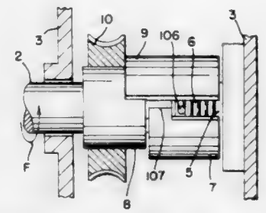
1. A sewing machine comprising:
at least one elongated looper with a thread inlet at one end and a thread outlet at its other end;
an elongated hollow thread guide slidably mounted on the sewing machine and having a thread receiving end for receiving a thread and a distal end for mating with the thread inlet of the one elongated looper;
means for moving said thread guide linearly between an engaged position where said distal end of said thread guide is mated with said thread inlet of the one elongated looper and a disengaged position; and
means for feeding the thread from the said thread receiving end of the thread guide, through said thread guide, through the one looper and out said thread outlet, when said thread guide is located in said engaged position.

5,327,842
SAIL CONTROL SYSTEM
Richard B. Bailey, 330 NW. 22nd Ave., P.O. Box 1153, Camas, Wash. 98607
Filed Jun. 14, 1993, Ser. No. 76,920
Int. Cl.[5] B63H *9/10*
U.S. Cl. 114—105 **20 Claims**



18. A sail control system for use with a boat having a mast, a boom, and a sail slidably supported on said mast so that said sail can be lowered to rest on said boom, said sail control system being an improved lazy jack, intended to keep the lowered sail confined on the boom, and comprising, on each side of the boom:
a single sail restraining line attached at each of its ends to separated points along the length of the boom, said single sail restraining line being of such predetermined length and having its points of attachment so located that when it is in a raised position it forms a restraining means for the lowered sail on the boom, and when it is in a lowered position and stretched out along the boom toward the mast, its bight cannot reach the mast;
a system control line having a sliding contact means at one of its ends, said sliding contact means forming a slidable supporting link for the single sail restraining line, said system control line itself being fed through and supported by a block attached to an elevated point above the boom, with the other end of the system control line terminated at a suitable control point; and
a securing means for holding the single sail restraining line in the lowered position along the boom;
whereby the sail control system may be placed in a raised or lowered position by means of the system control line, and
whereby the system control line in a raised position is a support means for the sail restraining line to form a control system for the lowered sail, and
whereby when the sail control system is in the lowered position, said sail restraining line can be extended toward the mast and held tautly along the boom by said securing means, out of the way of the sail;
wherein the improvement comprises the predetermined length of the sail restraining line, and the selection of the points at which it is fastened to the boom, the system control line as adjusting means to place the sail control system in raised or lowered position, and the securing means to hold said sail control system secured along the boom, so that
the sail control system can be quickly and easily adjusted to a raised or lowered position by means of the system control line, and
the sail control system in the lowered position can be held along the boom, by the securing means, out of the way of the sail and without interfering with covering the sail.

5,327,843
SAFETY DEVICE FOR HELM, THROTTLE AND DIRECTIONAL CONTROLS OF WATER VEHICLES
Giorgio Gai, Genoa, Italy, assignor to Ultraflex S.r.L., Genoa, Italy
Filed May 2, 1991, Ser. No. 694,939
Claims priority, application Italy, May 3, 1990, 12455 A/90
Int. Cl.[5] B63H *25/00*
U.S. Cl. 114—144 R **28 Claims**



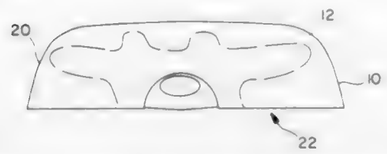
1. A safety device for small craft helm, throttle and directional controls, intended for operation between a rotatable control drive shaft and a rotatable driven shaft of the helm, throttle and directional controls comprising:
a one way mechanical coupling for rotatively coupling the drive shaft and the driven shaft together, said one-way mechanical coupling including a first engaging element rigidly connected to the drive shaft and a second engaging element rigidly connected to the driven shaft, the first and second engaging elements being coaxially mounted and substantially geometrically matched with respect to each other for transmitting motion in a direction of rotation from said drive shaft to said driven shaft;
locking means, interposed and held by resilient force between said first and second engaging elements for preventing rotation from the driven shaft to the drive shaft, said locking means locking the second engaging element connected to the driven shaft and being unlocked by moving the first engaging element connected to the drive shaft against the resilient force;
a coil spring frictionally engaged with a stationary portion of the device;
means associated with said driven shaft and in abutment with ends of said spring for resisting rotation of said drive shaft;
first means associated with said drive shaft and adapted to cooperate with the ends of said spring for at least decreasing the frictional engagement of said spring with said stationary portion; and
second means associated with said drive shaft for rotatively entraining said driven shaft after said first means has released said driven shaft from a locked position.

5,327,844
CLEAT COVER
James R. Kress, 511 W. Tenth St., Erie, Pa. 16502
Filed Sep. 25, 1992, Ser. No. 950,707
Int. Cl.[5] B63B *21/04*
U.S. Cl. 114—218 **1 Claim**

1. A cover for a cleat having a base and two elongated laterally extending arms attached to said base and extending therefrom;
said cover comprising an integral body made of a resilient thermoplastic foam material and having a relatively flat bottom and a central cavity shaped to receive said base of said cleat;
two spaced laterally extending arm cavities are formed in

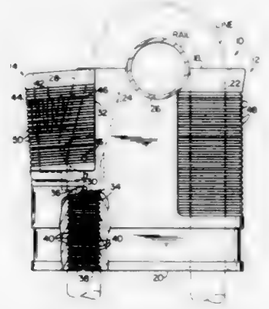
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said cover communicating with said central cavity and adapted to receive said arms of said cleat;
said cover being adapted to be installed on said cleat by inserting one said arm into one said arm cavity;
said cover being adapted to be stretched over the other said arm and inserting said arm into said other arm cavity;



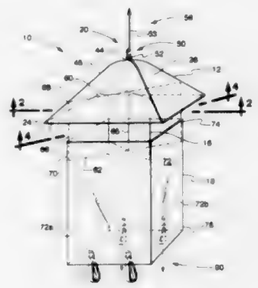
said cover being held onto said cleat by the resiliency of the material of said cover; and
wherein a notch is provided in each side of said cover communicating with said central cavity for receiving a rope which may be wrapped around said cleat.

5,327,845
APPARATUS FOR FASTENING AND ADJUSTING A LINE
Peter Cook, 2930 NE. 19th St., Pompano Beach, Fla. 33062
Filed Nov. 3, 1992, Ser. No. 970,619
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—218 **24 Claims**



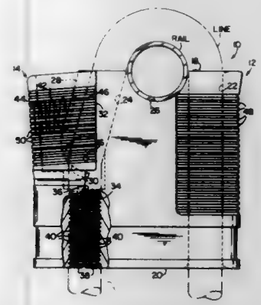
1. An apparatus for fastening a line supporting a fender from a fixture on a vessel, comprising:
a body portion defining a first aperture through the body portion for receiving the line, a second aperture through the body portion and spaced apart from the first aperture for receiving the line after it is passed through the first aperture, and a support surface located between the first and second apertures for engaging a corresponding surface of the fixture to support the body portion against the surface of the fixture, the line between the first and second apertures forming a loop surrounding at least a portion of the fixture to maintain the support surface in engagement with the corresponding surface of the fixture and suspend the line and fender from the fixture;
a lever member defining a line-engaging surface and being pivotally coupled to the body portion and movable into a first position toward an opposing surface defining the second aperture to engage the line received through the second aperture, and movable into a second position away from the opposing surface defining the second aperture to release the line within the second aperture and adjust the position of the fender relative to the fixture; and
a biasing member coupled between the lever member and the body portion normally biasing the line-engaging surface of the lever member into engagement with the line extending through the second passageway to fasten the line to the apparatus and fix the position of the fender relative to the fixture.

5,327,846
WIND SCOOP FOR MARINE CRAFT
Theodore S. Androus, 9313 Old Mansion Rd., Alexandria, Va. 22309
Filed Mar. 3, 1993, Ser. No. 25,779
Int. Cl.[5] B63B *19/06*
U.S. Cl. 114—211 **8 Claims**



1. An adjustable wind scoop for directing a flow of air through an opening in an enclosed space to said space while preventing rain water from entering said opening, the wind scoop including an adjustable top cover, at least one pair of flexible battens, an upper wind catching portion having a predetermined cross-section, a lower wind directing portion having a generally rectangular cross-section, a means for securing the wind scoop over the opening in the enclosed space, and means for erecting the wind scoop over the opening, which means for erecting include means for attaching a means for supporting the wind scoop in an erect position and for adjusting said adjustable top cover, wherein:
a) the top cover comprises a sheet of flexible, waterproof material, shaped as a dome, having a concave underside surface with a generally rectangular base having four corners, and pocket means for receiving the pair of flexible battens extending on the underside surface of the dome along two intersecting diagonals connecting opposite corners, the rectangular base extending beyond the cross-section of the upper wind catching portion of the wind scoop;
b) the means for attaching the means for supporting and for adjusting is located on the top cover at about the point where the two diagonals intersect;
c) the upper wind catching portion having a top and a bottom and being also constructed of a flexible material and having an "X" shaped cross-section defining a center and four ends, the four ends at the top being attached to the underside of the top cover along points on the diagonals, spaced from the corners, the bottom extending at least partially into the lower wind directing portion and attached thereto; and
d) the lower wind directing portion also having a top and a bottom, the means for securing the wind scoop to the opening in the enclosed space being attached to the bottom.

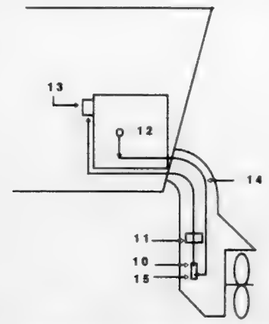
5,327,847
APPARATUS FOR FASTENING AND ADJUSTING A LINE
Peter Cook, 2930 NE. 19th St., Pompano Beach, Fla. 33062
Continuation-in-part of Ser. No. 970,619, Nov. 3, 1992. This application May 14, 1993, Ser. No. 61,448
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—218 **27 Claims**



1. An apparatus for fastening a line, comprising:
a body portion defining at least one passageway extending through the body portion for receiving a line;
a handle portion coupled to the body portion and movable relative to the body portion and defining at least one elongated slot; and
a drive arm pivotally mounted on one end to the body portion and coupled on another end to the handle portion, the drive arm defining a line-engaging surface normally biased toward the passageway to engage a line extending through the passageway, and at least one drive surface received within the at least one elongated slot for movement of the drive surface through the elongated slot in response to movement of the handle portion relative to the body portion to move the drive arm between first and second positions, the drive arm being movable between a first position to one side of the passageway to permit movement of a line through the passageway in response to movement of the handle portion toward the body portion, and a second position at least approximately in the passageway to engage a line extending through the passageway upon movement of the handle portion away from the body portion.

5,327,848
METHOD AND APPARATUS FOR KEEPING SURFACES ORGANISM FREE
John L. Hannon, Jr., 82 Lamarck Dr., Amherst, N.Y. 14226
Filed Mar. 25, 1991, Ser. No. 569,144
Int. Cl.[5] B63B *59/00*
U.S. Cl. 114—222 **5 Claims**

1. An apparatus for supplying power comprising;
a) an engine,
b) a cooling system for the engine, wherein said cooling system includes a jacketed intake pipe,
c) a circulation system for water through the engine, such that the water is heated by contact with the engine,



d) means to recirculate the heated water through the jacketed cooling system and through the intake pipe.

5,327,849
UNDERWATER BREATHING APPARATUS
Harry R. Miller, Trumansburg, N.Y., assignor to Keene Engineering, Inc., Northridge, Calif.
Filed Aug. 18, 1993, Ser. No. 108,337
Int. Cl.[5] B63C *11/46*
U.S. Cl. 114—315 **6 Claims**

1. A floating apparatus for providing pressurized air to a submerged swimmer comprising:
a) flotation means for supporting the apparatus on the surface of the water;
b) compressor housing means mounted on the floatation means, comprising an air trap in the form of an inverted chamber comprising a plurality of sides and a top sealably attached to the sides, a plurality of air vents in the sides of the air trap, below the midline thereof, such that the air in the air trap is uncontaminated by waves or spray, and mounting means for mounting one or more compressors attached to the air trap;
c) battery housing means mounted to the floatation means adjacent to, but not in gas communication with, the compressor housing means, comprising a compartment suitable for housing at least one battery, mounting means for mounting the battery inside the battery housing means, and vent means for venting battery gasses from the inside of the battery housing means to the open air, in a location removed from the air vents of the compressor housing means;

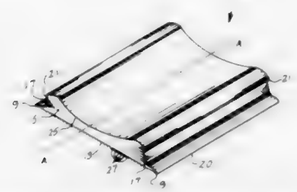
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d) at least one battery, mounted to the mounting means of the battery housing means;

e) at least one electric compressor, mounted to the mounting means of the compressor housing means, electrically connected to a battery in the battery compartment means, having an air inlet in the air trap portion of the compressor housing means, such that the air compressed is not contaminated by water or spray, and an air outlet adapted to supplying air to a submerged diver

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5,327,850
ROADWAY MARKER
Michael W. Sly, Kent; Peter A. Speer, Kirkland, and Harry J. Glutting, Tacoma, all of Wash., assignors to Davidson Plastics Company, Kent, Wash.
Continuation-in-part of Ser. No. 694,873, May 2, 1991, abandoned. This application Jul. 24, 1991, Ser. No. 735,321
Int. Cl.[5] E01F *9/04*
U.S. Cl. 116—63 P **25 Claims**



1. An extruded nonmetallic roadway marker having a planar base area for attachment to a roadway surface and a raised rumble portion, said base area having a plurality of parallel adjacent grooves, said grooves lying parallel to a centerline, said grooves: (i) having an arcuate cross section, (ii) joining one another and (iii) defining sharp teeth, said base area of substantially rectangular shape, said rectangular shape defined in part by two wings located on either side of and lying parallel to said centerline, said wings terminating in gripping edges lying parallel to said centerline, said gripping edges curving downwardly from said base area, said raised rumble portion lying inside of said wings and extending upwardly from said base area, the width of each of said wings being substantially less than the width of said raised rumble portion, said raised rumble portion having two parallel lateral sides and a top area, said raised rumble portion having a constant cross section along a substantial portion of the entire length of said centerline.

5,327,851
ANIMAL SLEEPING BAG
Stephen F. Paré, 6 Skokorat St. Apt. #7, Seymour, Conn. 06483, and Janice M. Paré, 49 Chapel St., Derby, Conn. 06418
Filed May 24, 1993, Ser. No. 65,068
Int. Cl.[5] A01K *13/00*
U.S. Cl. 119—19 **8 Claims**



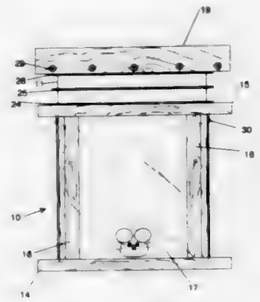
1. An animal sleeping bag comprising:

a body section defining a sleeping compartment of predetermined dimensions to comfortably accommodate an animal, said body section having an open end to provide an access passage into said sleeping compartment; and

a border section defining a continuous border attached along said open end of said body section and reinforcing said access passage, said border section being made of a polyester/cotton material for extra padding around said access passage

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5,327,852
ANIMAL PHOTO STUDIO
Jerry L. Gingrich, 25120 Marion Ave., Punta Gorda, Fla. 33950
Filed Aug. 16, 1993, Ser. No. 106,586
Int. Cl.[5] A01K *1/03*
U.S. Cl. 119—19 **5 Claims**



1. An animal cage for safely transporting and photographing animals comprising:

a circular, black, base, having a top, a vertical side, and a bottom, said side having a plurality of protrusions formed thereon near said top, and a rectangular cutout section formed in said side,

a front frame assembly affixed to said base and enclosing said rectangular cutout section, said assembly having a horizontally sliding glass pane for slidably sealing said cutout section, and

a top frame assembly rotatably mounted on said base between said top and one of said plurality of protrusions, said top frame assembly having a horizontally sliding glass pane for slidably sealing said top.

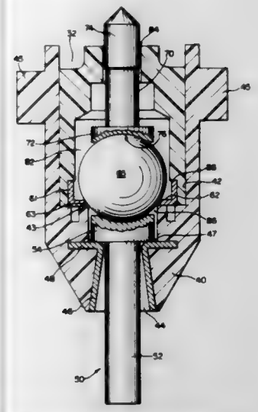
5,327,853
ENCAPSULATED DRINKER
Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.
Filed Dec. 22, 1992, Ser. No. 994,638
Int. Cl.[5] A01K *7/00, 39/02*
U.S. Cl. 119—72.5 **18 Claims**

14. A watering device for fowl and small animals comprising:

a housing with an outlet for passing fluid to said fowl and small animals;

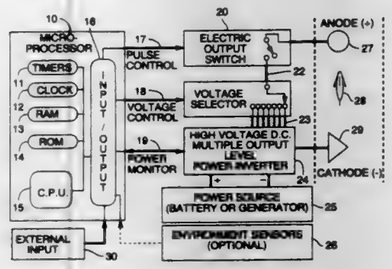
a valve chamber with an inlet for receiving fluid;

valve means including seat means and sealing means disposed in said chamber such that said valve means and said chamber form a self-contained valve assembly that mates with said housing as a single unit; and



means for actuating said valve means so as to allow fluid to flow from said valve chamber to said outlet.

5,327,854
ELECTRIC FISH SHOCKING DEVICES USING PROGRAMMABLE OUTPUT WAVEFORMS
David V. Smith; Lee R. Carstensen, and Mark D. Salzman, all of Vancouver, Wash., assignors to Smith-Root, Inc., Vancouver, Wash.
Filed Jul. 31, 1992, Ser. No. 924,332
Int. Cl.[5] A01K *79/02*
U.S. Cl. 119—220 **20 Claims**



1. An electric fish shocking device comprising:

a power input for receiving a voltage signal;

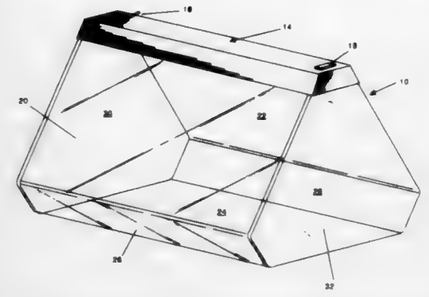
voltage-selection means coupled to the power input for providing a variable voltage output signal, the voltage selection means including a high frequency inverter for converting the voltage signal received from the power input to a higher frequency, and means for rectifying the higher frequency signal, said means including means for increasing the voltage from the power input;

modulation means coupled to the voltage-selection means for modulating the variable voltage output signal to produce an output signal waveform;

controller means coupled to the voltage selection means and to the modulation means for controlling parameters of the output signal waveform, said controller means further including a memory for electronically storing waveform modulation instructions; and

signal-delivery means coupled to the output of said modulation means for delivering the output signal waveform to a body of water.

5,327,855
AQUARIUM
Rodney R. Pritchard, 946 4th Street, Mississauga, Ontario, Canada L5E 1J9 , and Mark B. Eisen, 567 Deloraine Ave., North York, Ontario, Canada M5M 2C5
Filed Jun. 23, 1993, Ser. No. 79,950
Int. Cl.[5] A01K *64/00*
U.S. Cl. 119—267 **8 Claims**



1. An aquarium having a transparent plastic body comprising a bottom integral with generally planar rectangular front and rear faces,

generally vertical plastic ends bonded to side edges of the bottom and front and rear faces such that the body is water-tight,

an opening for access into the aquarium extending between top edges of the front and rear faces, and

a canopy containing a lamp to cover the opening,

wherein the front and rear faces are angled acutely at a sufficient angle relative to the bottom such that when the aquarium is filled with water light inside the aquarium reflects internally off of the rear face and through the front face.

5,327,856
METHOD AND APPARATUS FOR ELECTRICALLY DRIVING ENGINE VALVES
Thaddeus Schroeder, Rochester Hills; Rassem R. Henry, Clinton Township, Macomb County; Bruno P. B. Lequesne, Troy, and Balarama V. Murty, West Bloomfield, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 22, 1992, Ser. No. 994,829
Int. Cl.[5] F01L *9/04*
U.S. Cl. 123—90.11 **6 Claims**

1. An electric valve control for an internal combustion engine comprising:

an intake or exhaust poppet valve having a stem;

a rotary electric motor;

cam means coupled to the stem and operatively driven by the electric motor for reciprocating the valve upon motor rotation to effect a valve open period and a valve closed period;

and wherein the cam means comprises;

inner and outer coaxial cylindrical members;

one of the members being rotatably driven about its axis by the motor and having cam surfaces formed thereon; and

the other of the members being coupled to the valve stem and mounted for axial movement; and

cam follower means on the other of the members for engaging at least one of the cam surfaces; wherein the cam



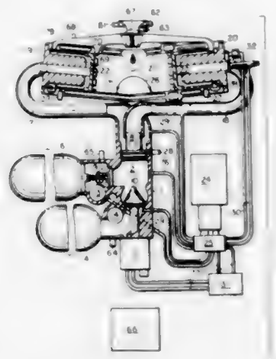
follower is driven axially for valve actuation upon rotation of the one member by the motor.

5,327,857

VEHICULAR DRIVE SYSTEM USING STORED FLUID POWER FOR IMPROVED EFFICIENCY

Roy M. Howell, 115 Meadbrook Rd., Garden City, N.Y. 11530

Filed Aug. 3, 1992, Ser. No. 924,218
Int. Cl.[5] F02B *71/04*
U.S. Cl. 123—46 R 10 Claims



1. A vehicular drive system including an unthrottled internal combustion powered unit having crankless reciprocating piston means pumping hydraulic fluid intermittently into a high pressure accumulator, an accumulator pressure adjustment means, a valve actuating means controlling the pumping rate of the reciprocating piston means high pressure accumulator shut-off valve means for leakage control, an accelerator controlled variable volume hydraulic motor, a low pressure accumulator storing discharge fluid from said hydraulic motor, a sensor/computer/hydraulic processor means for sequencing:

(i) adjustment of fluid pressures in said accumulators in response to ambient atmospheric conditions,

(ii) reciprocation of said reciprocating piston means to achieve synchronization and combustible mixture induction,

(iii) release of a compression initiating valve and provision of an ignition spark,

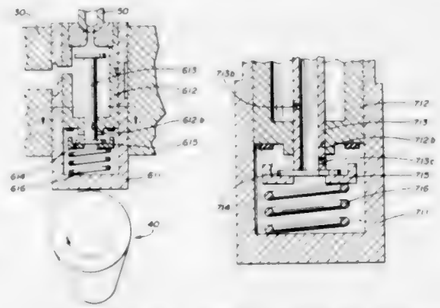
(iv) operation of said shut-off valve means for leakage control and accumulator pressure loss prevention.

5,327,858

FLOW RESTRICTION CONTROLLED VARIABLE ENGINE VALVE SYSTEM

Louis A. Hausknecht, 1011 Sundance Dr., Miaminsburg, Ohio 45342

Continuation-in-part of Ser. No. 951,017, Sep. 25, 1992, Pat. No. 5,233,951. This application Aug. 4, 1993, Ser. No. 102,147
Int. Cl.[5] F01L *1/34, 9/02*
U.S. Cl. 123—90.12 13 Claims



1. Means for variably controlling an operational event of an engine valve in internal combustion engines, comprising:

a) an elongate housing;

b) an elongate sleeve telescoped within said housing in fluid communication with an engine oil pump and having a through opening to a lower portion of said housing;

c) a restrictor control member telescoped within said sleeve and projecting into said opening in said sleeve;

d) a check valve disposed within said housing beneath said sleeve and said restrictor member and movable in response to a movement of an engine cam to move said restrictor control member, close off said opening in said sleeve and open the engine valve; and

e) said restrictor control member including a cylindrical member having a periphery with an axially extending reduced diameter area.

4. Means for variably controlling an operational event of an engine valve in internal combustion engines, comprising:

a) an elongate housing;

b) an elongate sleeve telescoped within said housing in fluid communication with an engine oil pump and having a through opening to a lower portion of said housing;

c) a restrictor control member telescoped within said sleeve and projecting into said opening in said sleeve;

d) a check valve disposed within said housing beneath said sleeve and said restrictor member and movable in response to a movement of an engine cam to move said restrictor control member, close off said opening in said sleeve and open the engine valve; and

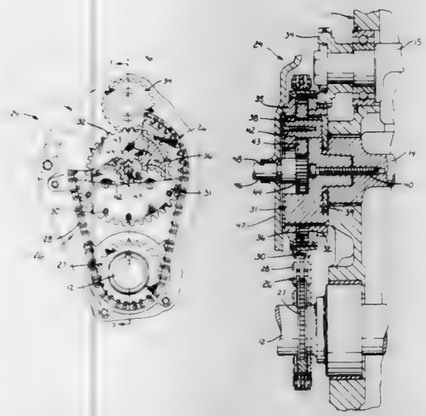
e) said restrictor control member including a hollow cylindrical member having a sidewall with at least two radially extending, axially spaced through ports.

5,327,859

ENGINE TIMING DRIVE WITH FIXED AND VARIABLE PHASING

Ronald J. Pierik, Rochester, and James O. Wilson, Perry, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 9, 1993, Ser. No. 74,439
Int. Cl.[5] F01L *1/04, 1/34*
U.S. Cl. 123—90.17 9 Claims



1. A timing drive for an engine camshaft and an accessory both timed with a driving crankshaft and all having parallel axes wherein the drive provides variable phasing of the camshaft and constant phase driving of the accessory, said timing drive comprising

a drive sprocket drivably connected with the crankshaft for rotation with the crankshaft on the crankshaft axis,

a driven sprocket mounted for rotation on the camshaft axis and drivably connected with the drive sprocket to be driven thereby at a first drive ratio,

a drive gear connected with the driven sprocket for rotation therewith on the camshaft axis,

a driven gear drivably connected with the accessory for rotation on the accessory axis and drivably connected with the drive gear to be driven thereby at a second drive ratio, and

a planetary drive train drivably connected between the driven sprocket and the camshaft for driving the camshaft at a third drive ratio,

the planetary drive train including a ring gear connected with the driven sprocket for rotation therewith on the camshaft axis, a carrier connected with the camshaft for rotation therewith on the camshaft axis, and a plurality of planet gears rotatably supported by the carrier, the planet gears engaging the ring gear to thereby drive the carrier and the camshaft,

the carrier further rotatably supporting the drive gear, the driven sprocket and the ring gear,

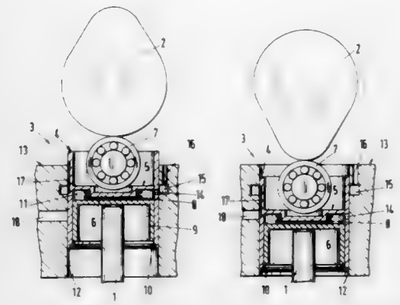
the planetary drive train further including a sun gear coaxial with the ring gear and engaging the planet gears, the rotative position of the sun gear being adjustable to vary the phasing of the camshaft relative to the crankshaft.

5,327,860

HYDRAULIC TAPPET-CLEARANCE COMPENSATING ARRANGEMENT FOR A CAM-CONTROLLED VALVE LIFTER

Hermann Krüger, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 5, 1993, Ser. No. 131,711
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1992, 4234573
Int. Cl.[5] F01L *1/24, 1/14;* F15B *15/24*
U.S. Cl. 123—90.55 7 Claims



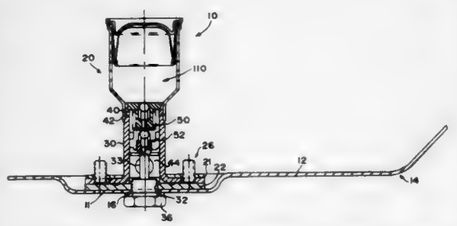
1. A hydraulic tappet-clearance compensating arrangement for a cam-controlled valve lifter comprising an outer cylinder guided for axial displacement in response to operation of a cam, a piston axially displaceable in the outer cylinder, a transverse wall fixed in the outer cylinder forming a cup tappet and providing a hydraulic pressure chamber in conjunction with the piston, a compression spring disposed between the piston and the transverse wall, a reservoir for a hydraulic pressure medium supplied from an external pressure medium supply, a pressure medium control opening in the outer cylinder communicating with the pressure chamber and positioned to communicate with the reservoir only during the base circle phase of the cam, and a channel formed in the outer cylinder and providing communication between the reservoir and the external pressure medium supply only outside the base circle phase of the cam.

5,327,861

AUTOMATIC OIL ADDITIVE INJECTOR

Ronald J. Rogalla; Arnold J. Chesna, both of Melrose Park; James J. Grinsteiner, Union, and Bronislaw B. Florek, Elk Grove Village, all of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Jul. 26, 1993, Ser. No. 97,421
Int. Cl.[5] F01M *9/02*
U.S. Cl. 123—196 S 20 Claims



1. In an internal combustion engine of the type having a quantity of lubricating oil contained therewithin, said lubricating oil requiring replacement at periodic oil service intervals, the improvement wherein said engine further comprises an additive injector, said injector being actuable to release an

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additive dose of predetermined volume to said lubricating oil, said injector having an additive reservoir of a volume sufficiently larger than said dose volume to provide a plurality of doses, and means responsive to a manual activity associated with said oil service intervals for automatically actuating said injector to release said additive dose

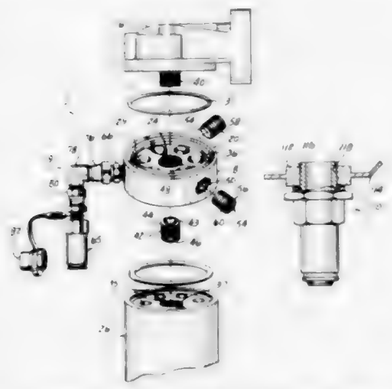
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5,327,862

MULTI-PORT FILTER MOUNTING ADAPTER AND FITTING MOUNTED TO SAME FOR EXPEDITING REMOVAL OF OIL FROM INTERNAL COMBUSTION ENGINE ASSOCIATED THEREWITH AND METHOD FOR ACCOMPLISHING SAME

Ram D. Bedi, Birmingham, Mich., assignor to K.J. Manufacturing Co., Wixom, Mich.

Filed May 28, 1993, Ser. No. 68,973
Int. Cl.[5] F01M *1/00*
U.S. Cl. 123—196 R **1 Claim**



1. A system for changing oil for an internal combustion engine that is adapted for rapid and automatic fluid transfer into and out of the engine from an external source, the internal combustion engine comprising:

an engine block defining a crankcase and an internal lube oil passage system.

an oil filter mounting boss located on said engine block;

an oil filter unit in fluid communication with said internal lube oil passage system;

an oil pan attached to the internal combustion engine in fluid communication with said oil filter unit and said crankcases, said oil pan having a drain opening;

the system for changing oil for the internal combustion engine comprising

a fluid egress assembly; and

a fluid ingress assembly

said fluid egress assembly engageable in the drain opening, said fluid egress assembly comprising

an oil pan adapter portion having an essentially cylindrical body having a first region adapted to sealingly contact the drain plug opening of the oil pan, a second region distal from said first region, and a through bore extending longitudinally through said cylindrical body;

a quick connect nipple portion having an essentially cylindrical body having a first region connected to said second region of said oil pan adapter, said quick connect nipple further having a second region adapted to releasably mate with an externally positionable fluid egress fitting and a through bore extending longitudinally through said cylindrical body;

means for positively closing said fluid egress assembly against fluid egress when said quick connect nipple is disengaged from said externally positionable fluid egress fitting; and

a cap releasably overlaying said quick connect nipple when said nipple is disengaged from said externally positionable fluid egress fitting;

wherein said second region of said oil pan adapter portion further includes a plurality of outwardly oriented threads positioned proximate to an outer distal fluid outlet located therein and said first region of said quick connect nipple portion further includes an inwardly threaded region adapted to matingly engage with outwardly oriented threads of said second region of said oil pan adapter portion;

said fluid ingress assembly comprising:

means interposed between said oil filter mounting boss and said oil filter unit for receiving and conveying fluid into said internal lube oil passage system through said engine crankcase to said oil pan;

wherein said fluid receiving and conveying means is an oil filter mounting adapter, said oil filter mounting adapter comprising:

a sandwich adapter having a first face adapted to sealingly contact a filter mounting boss and communicate with the internal lube oil passage system in the internal combustion engine, a second face adapted to sealingly contact an associated oil filter unit, and an outer wall member disposed between said first and said second faces and perpendicularly attached thereto, said sandwich adapter having at least one oil entry opening in communication with the internal lube oil passage system of the internal combustion engine, at least one oil collection chamber proximate to said engine mounting boss, at least one engine oil exit opening proximate to said oil filter unit, a central through bore extending laterally through said sandwich adapter from said first face to said second face, a plurality of fluid transfer channels extending laterally through said oil collection chamber to said engine oil exit opening, and a plurality of apertures located in spaced annular relationship to one another in said outer wall member, said apertures each defining an associated longitudinal fluid transfer channel, said longitudinal fluid transfer channels each terminating in fluid communication with said one of said lateral fluid transfer channels defined in said sandwich adapter;

a plurality of removable plugs, each removable plug positioned in an associated outer wall aperture;

at least one fluid coupling assembly sealingly positionable in said associated outer wall aperture;

means for connecting said sandwich adapter to said oil filter mounting boss;

means for attaching said oil filter unit in contact with said second face of said sandwich adapter; and

at least one check valve located proximate to and in fluid contact with said fluid coupling assembly;

wherein said fluid coupling assembly of said oil filter mounting comprises:

a connector member having an outer housing and a central fluid conveying conduit located therein, said connector member having a first end and a second end distal thereto, said first end engageable with an associated one of said outer wall apertures;

a second quick connect nipple connected to said second end of said connector member, said second quick connect nipple having an inlet end releasably engageable with a mating quick connect fitting positioned on an externally located fluid delivery device;

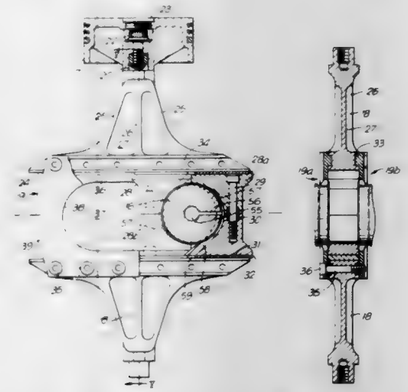
said second quick connect nipple further comprising means for establishing fluid tight closure of said fluid coupling member when said second quick connect nipple is disengaged from said fluid delivery source.

5,327,863

INTERCONNECTING ROTARY AND RECIPROCATING MOTION

Christopher M. Downton, East Sussex, and Geoffrey B. R. Feilden, Gloucestershire, both of United Kingdom, assignors to Collins Motor Corporation Ltd, East Perth, Australia

PCT No. PCT/GB91/00274, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO91/13244, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 21, 1991, Ser. No. 927,517
Claims priority, application United Kingdom, Feb. 21, 1990, 9003952; Aug. 15, 1990, 9017860
Int. Cl.[5] F02B *75/24*
U.S. Cl. 123—197.4 **16 Claims**



1. Apparatus for converting reciprocating motion to rotary motion and vice-versa comprising a reciprocatory assembly guided for reciprocation in a first direction and comprising first and second reciprocating members each terminating in a planar guide surface transverse to the direction of reciprocation, and spacing tie means interconnecting the two reciprocatory members to maintain the guide surfaces parallel, spaced apart and facing each other, a drive block having opposed guide faces each slidably engaged with a respective one of the guide surfaces of the reciprocatory members for travel therealong, and a rotary member mounted for rotation about an axis transverse to the direction of reciprocation and having an eccentric portion rotatably engaged in the drive block, and spacing tie means comprising two pairs of side plates, said pairs being associated respectively one with each end of said guide surfaces, each said side plate having a reentrant providing clearance for said eccentric portion of the rotary member during movement of said rotary member relative to said reciprocating members, securing means securing portions of each said side plate on opposite sides of said reentrant respectively to said reciprocatory members at intervals along said side plate portions, said side plate portions and said reciprocatory members having load-transmitting interfitting depressed and protruding formations therealong.

5,327,864

STRATIFIED-CHARGE INTERNAL COMBUSTION ENGINE WITH FUEL INJECTION AND DUAL IGNITION

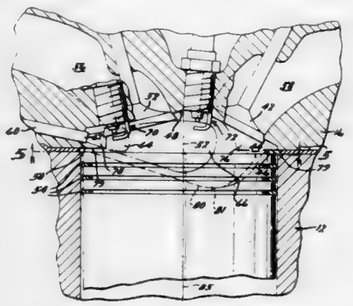
Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 8, 1993, Ser. No. 28,070
Int. Cl.[5] F02B *19/00, 3/00;* **F01F** *3/26;* **F02P** *15/02*
U.S. Cl. 123—260 **22 Claims**

1. In an internal combustion engine having a cylinder with a side wall, a piston movably disposed in said cylinder for reciprocal motion along a central longitudinal axis of said cylinder and a cylinder head secured over said cylinder to form a combustion chamber with said cylinder and piston, the cylinder head defining two intake ports each with an intake valve for selectively allowing air to be admitted into said combustion chamber and two exhaust ports each with an exhaust valve for selectively allowing exhaust gases to exit said combustion chamber, the improvement characterized by:

a fuel injector means for spraying an expanding fuel stream from a nozzle thereof into said combustion chamber from a peripheral section of said combustion chamber substantially spaced from said central axis of said cylinder toward said cylinder side wall at an approximately transverse direction with respect to said central axis of said cylinder;

said piston having a concave recess section with a variable width, said width being relatively narrow in proximity



with said fuel injection means and becoming wider away from said fuel injection means, said concave recess having a variable depth, said depth being relatively shallow in proximity with said fuel injection means and becoming deeper at a point away from said fuel injector means;

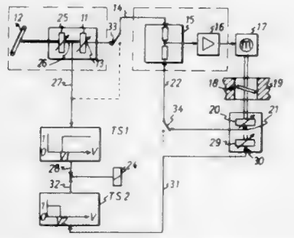
fuel igniter means for sequentially igniting said fuel sprayed into said combustion chamber at two different times with an initial ignition and a second ignition such that said initial ignition occurs after said fuel injector means injects a first amount of fuel into said combustion chamber with said fuel injector means injecting additional fuel into said combustion chamber after said initial ignition occurs and said second ignition occurs after said additional fuel is sprayed into said combustion chamber.

5,327,865

CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE IN A MOTOR VEHICLE

Thomas Riehemann, Buehlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP88/01162, § 371 Date Aug. 15, 1990, § 102(e) Date Aug. 15, 1990, PCT Pub. No. WO90/07054, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 15, 1988, Ser. No. 573,200
Int. Cl.[5] F02D *41/22, 11/10*
U.S. Cl. 123—397 **10 Claims**



1. A control system for an internal combustion engine in a

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motor vehicle for actuating a regulating member in the intake manifold system of the engine in response to driver actuation of a command member, the regulating member being driven by an electromagnetic servomotor and the control system comprising,

first sensor means for responding to the position of the command member to provide a command signal indicative of a desired position;

second sensor means for responding to the actual position of the regulating member to provide a feedback signal indicative of an actual position of said regulating member;

a comparator for responding to both of said signals for controlling an actuating signal for driving the electromagnetic servomotor;

safety means for responding to a substantial disconformity between said desired position of said command member and said actual position of the regulating member to cause a substantial reduction in engine speed under predetermined conditions; and,

said safety means including; third sensor means for responding to the position of the command member to produce a signal; a threshold value switch for providing an output signal when said signal of said third sensor means is equal to or greater than a predetermined voltage (V_1); switch means for responding to the position of the regulating member to provide an output signal when the regulating member is within a predetermined range of positions from and including its engine idling position; and, speed reduction means for reducing the speed of the engine when both said output signal of said threshold value switch and said output signal of said switch means are not present

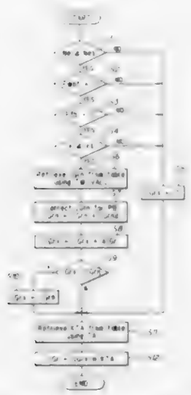
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5,327,866

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Sinichi Kitajima, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,753
Claims priority, application Japan, Dec. 24, 1991, 3-340778
Int. Cl.[5] F02P 5/00
U.S. Cl. 123—406 13 Claims



1. A system for controlling ignition timing of an internal combustion engine having a catalytic converter in an exhaust system thereof and using a gasoline-alcohol blend fuel, said system comprising:

first means for detecting alcohol concentration in the fuel;

second means for detecting a temperature of the engine; and

control means for determining an ignition timing of the engine,

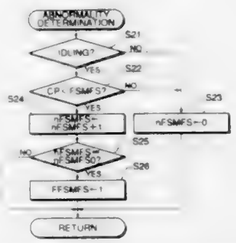
wherein said control means retards the ignition timing in response to the detected alcohol concentration when the detected temperature of the engine is at or below a predetermined temperature.

5,327,867

MISFIRE-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takashi Hisaki; Yuichi Shimasaki; Shigeki Baba; Masaki Kanehiro; Takuji Ishioka; Shigeru Maruyama; Kazuhito Kakimoto; Masataka Chikamatsu; Shukoh Terata, and Kenichi Maeda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 26,055
Claims priority, application Japan, Mar. 13, 1992, 4-089400
Int. Cl.[5] F02P 5/00
U.S. Cl. 123—406 12 Claims



1. In a misfire-detecting system for an internal combustion engine having at least one cylinder, and a spark plug provided in each of said at least one cylinder, said system including engine operating condition-detecting means for detecting values of operating parameters of said engine, signal-generating means for determining ignition timing of said engine, based upon values of operating parameters of said engine detected by said engine operating condition-detecting means for generating an ignition command signal indicative of the determined ignition timing, igniting means responsive to said ignition command signal for generating high voltage for causing generation of sparking voltage across said spark plug for discharging said spark plug, voltage value-detecting means for detecting a value of said sparking voltage generated across said spark plug when said high voltage is generated by said igniting means, comparing means for comparing the detected value of said sparking voltage with a first predetermined reference voltage value, measuring means for measuring a time period over which the detected value of said sparking voltage exceeds said first predetermined reference voltage value, and misfire-determining means for determining that a misfire has occurred in said engine when the measured time period exceeds a predetermined time period value, the improvement comprising:

engine operating condition-determining means for determining whether said engine is in a self-sustaining operation; and

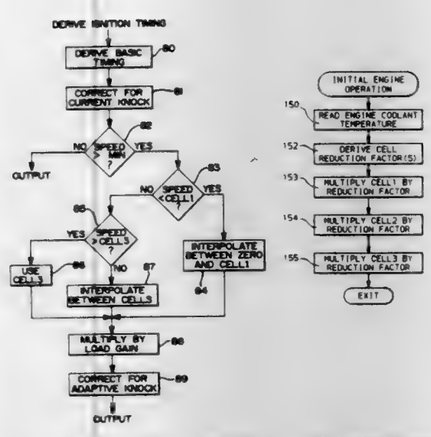
abnormality-determining means for comparing said detected value of said sparking voltage with a second predetermined reference voltage value and for determining whether said misfire-detecting system is abnormal based upon a result of the comparison when said engine operating condition-determining means determines that said engine is in said self-sustaining operation.

5,327,868

VEHICLE IGNITION SYSTEM HAVING ADAPTIVE KNOCK RETARD WITH STARTING TEMPERATURE CORRECTION

Michael R. Witkowski, Waterford; Michael L. Velliky, Fenton; Keith C. Mitchell, Ypsilanti; Kenneth R. Kridner, Holly, and William J. Bolander, Clarkston, all of Mich., assignors to Saturn Corporation, Troy, Mich. and Delco Electronics Corporation, Kokomo, Ind.

Filed Jul. 19, 1993, Ser. No. 92,534
Int. Cl.[5] F02P 5/15
U.S. Cl. 123—421 3 Claims



1. In an ignition timing system for a spark ignited internal combustion engine having a combustion chamber with combustion ignition apparatus and an engine cooling system with a circulating engine coolant, the ignition timing system comprising means for sensing knock in the combustion chamber and determining therefrom a current knock retard, first memory means comprising a plurality of alterable cells referenced to engine speed and effective to maintain contents when the engine is not operating, means for generating ignition timing signals from the current knock retard and the contents of the cells referenced to a current engine speed, and means for updating the alterable cells during periods of warmed up engine operation in response to the knock sensing means, the improvement comprising, in combination:

second memory means for storing a plurality of temperature correction factors based on engine coolant temperature; and

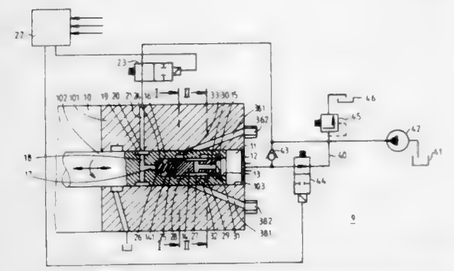
means effective at the initiation of engine operation for (1) sensing engine coolant temperature, (2) deriving a temperature correcting cell modifier value from the temperature correction factors stored in the second memory means on the basis of the sensed engine coolant temperature, and (3) altering the contents of at least one of the cells in a direction to advance the ignition timing based on the derived temperature correcting cell modifier value.

5,327,869

FUEL INJECTION DEVICE FOR SPARK-IGNITION INTERNAL COMBUSTION ENGINES

Helmut Rembold, Stuttgart, and Ernst Linder, Mühlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00518, § 371 Date Mar. 20, 1992, § 102(e) Date Mar. 20, 1992, PCT Pub. No. WO92/01863, PCT Pub. Date Feb. 6, 1992
PCT Filed Jun. 26, 1991, Ser. No. 838,817
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1990, 4023307
Int. Cl.[5] F02M 37/04
U.S. Cl. 123—502 42 Claims



1. A fuel injection device for spark-ignition internal combustion engines, comprising a pump having a pump work space; a distributor having a rotating part which alternately connects a feed line of a pump with injection lines leading to individual cylinders of the internal combustion engine as a function of an angle of rotation; and a reversing valve actuated as a function of a load and a speed of the internal combustion engine, said reversing valve being arranged inside said rotating part of said distributor and having an inlet opening connected with said pump work space of said pump via a connection line which also extends exclusively inside said rotating part of said distributor, said reversing valve having a valve slide and two outlet openings, said valve slide forming a work piston of a hydraulic drive, said work piston being acted upon by a hydraulic fluid at its front side and forming a seal for the respective outlet opening of said reversing valve to be blocked with its side wall.

5,327,870

GLOW PLUG CONTROLLER

Mario P. Boisvert; Thomas P. Kienitz, and Marty M. Zoerner, all of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.

Continuation of Ser. No. 785,462, Oct. 31, 1991, abandoned.
This application Aug. 26, 1993, Ser. No. 112,651
Int. Cl.[5] F02P 19/02
U.S. Cl. 123—145 A 21 Claims

1. A glow plug controller comprising:

a) a generally tubular housing having a wall defining a first chamber and a second chamber communicating with said first chamber, the portion of the outer surface of the wall which defines said first chamber being a threaded portion for threaded engagement in a hole;

b) glow plug controller circuitry including a temperature sensor located within said threaded portion and circuitry for controlling glow plug operation as a function of sensed temperature, said temperature sensor being located within said first chamber, and wherein glow plug controller circuitry is located with said second chamber of said housing; and

c) means for conductively coupling said glow plug controller circuitry to other circuitry external to said housing.

12. A glow plug controller for controlling application of

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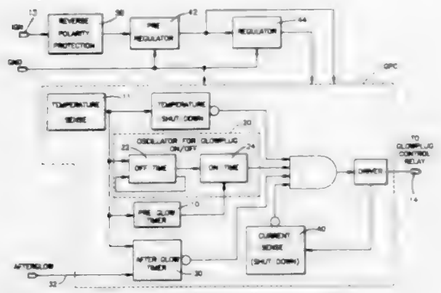
electric power to a glow plug by controlling a glow plug relay coil circuit, said glow plug controller comprising:

a) a temperature sensor;

b) glow plug controller circuitry for controlling application of electric power to the glow plug as a function of sensed temperature;

c) circuitry for detecting a short circuit current in the glow plug relay coil circuit; and

d) circuitry for disabling application of power to said glow plug relay circuit in response to the detection of a short circuit current in said relay coil circuit.



14. A glow plug controller comprising:

a) a temperature sensor;

b) glow plug controller circuitry for controlling application of power to a circuit feeding a glow plug, as a function of sensed temperature, said glow plug controller circuitry being coupled to said temperature sensor and including capacitive impedances, and

c) wherein capacitive impedance in said glow plug controller circuitry is embodied by capacitance multiplier circuitry.

5,327,871

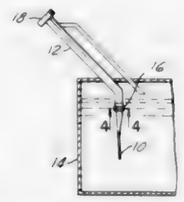
CHECK VALVE FOR INTERNAL COMBUSTION ENGINE FUEL TANK FILLER PIPE

William S. Gryc, Hartland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 28, 1992, Ser. No. 952,089

Int. Cl.[5] F02M *37/04*; **B65B** *3/00*

U.S. Cl. 123—510 **8 Claims**



1. A fuel tank and filler system for an internal combustion engine, comprising:

a fuel tank;

a filler pipe extending into the fuel tank and having an outlet situated within the tank; and

a check valve comprising a collapsible, normally open tube, which is open during all operating conditions, except for the condition in which fuel is attempting to flow up the tube so as to escape from the tank, with said tube being secured around the outlet of the fuel filler pipe within the tank, such that fuel entering the tank will pass through said filler pipe and then through said collapsible tube, with said collapsible tube having sufficient flexibility to collapse upon itself in the event that fuel begins to flow outwardly through the filler pipe, whereby fuel will be prevented from leaving the tank through the filler pipe.

5,327,872

FUEL PRESSURE CONTROL METHOD FOR HIGH PRESSURE DIRECT FUEL INJECTION ENGINE

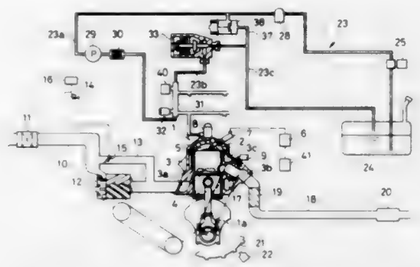
Koji Morikawa, Muashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1993, Ser. No. 127,606

Claims priority, application Japan, Oct. 15, 1992, 4-277502

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—516 **6 Claims**



1. A method for controlling the fuel pressure of a high pressure type direct fuel injection engine having, a fuel injector for injecting a high pressure fuel into a cylinder of said engine, a fuel tank for storing a fuel, a feed pump for pumping up said fuel from said fuel tank and for feeding said fuel to a fuel system, a low pressure fuel regulator for regulating a low fuel pressure in said fuel system, a high pressure fuel pump for producing a high pressure fuel in said fuel system and for supplying said high pressure fuel to said fuel injector, an accumulator for suppressing a fuel pulsation in said fuel system, a high pressure fuel regulator for regulating a high fuel pressure in said fuel system, a fuel pressure sensor for detecting a fuel pressure in said fuel system, an engine temperature sensor for detecting an engine temperature of said engine, and an electronic control unit for controlling said engine and said fuel system, the method comprising the steps of:

detecting said engine temperature by said engine temperature sensor;

detecting said fuel pressure by said fuel pressure sensor;

determining a first specified engine temperature for defining an engine hot condition under which a vapor lock occurs in said fuel system;

judging said engine hot condition from comparing said detected engine temperature with said first specified engine temperature;

determining a first specified fuel pressure at which said fuel pressure in said fuel system is held so as to prevent a generation of said vapor lock;

holding said fuel pressure at said first specified fuel pressure based on said detected fuel pressure for a predetermined time after an engine stop under said hot condition by closing said high pressure fuel regulator so as to prevent said vapor lock in said fuel system;

releasing said fuel pressure held at said first specified fuel pressure after said predetermined time elapses by opening said high pressure fuel regulator so as to avoid an exposure of said fuel system to a high pressure for a long time;

holding said fuel pressure at said first specified fuel pressure until said detected engine temperature goes down below said first specified engine temperature after an engine stop under said hot condition; and

releasing said fuel pressure after said detected engine temperature is below said first specified engine temperature by opening said high pressure fuel regulator.

5,327,873

MALFUNCTION SENSING APPARATUS FOR A FUEL VAPOR CONTROL SYSTEM

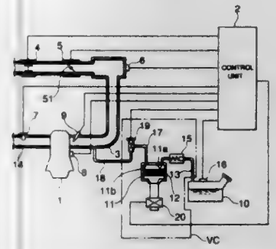
Hirofumi Ohuchi, and Shinya Fujimoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,493

Claims priority, application Japan, Aug. 27, 1992, 4-228795

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **10 Claims**



1. A malfunction sensing apparatus for a fuel vapor control system for an internal combustion engine comprising:

a source of fuel vapor;

a canister containing an adsorbent for adsorbing fuel vapor and having an inlet connected to the source of fuel vapor and an outlet;

a purge control valve connected to the outlet;

a pressure sensor for sensing a pressure of the source of fuel vapor;

malfunction sensing means responsive to the pressure sensor for sensing a malfunction when the purge control valve is open and the pressure sensed by the pressure sensor is above a prescribed value; and

prohibiting means for sensing a rate of change of the pressure sensed by the pressure sensor with the purge control valve closed and prohibiting malfunction sensing by the malfunction sensing means when the rate of change of the pressure exceeds a prescribed rate.

5,327,874

METHOD AND DEVICE FOR PREPARING FUEL-AIR MIXTURE FOR INTERNAL COMBUSTION ENGINE

Alexandr V. Pugachev, ul.Davydova d.3, kv. 101, Moscow 121293, and Vasiliy N. Shatalov, Ryazan, both of U.S.S.R., assignors to Alexandr Vasilievich Pugachev, Ryazan, U.S.S.R.

Filed Jun. 30, 1992, Ser. No. 64,101

Claims priority, application U.S.S.R., Sep. 18, 1991, 5002331; Dec. 12, 1991, 5013677; PCT Int'l Appl., Mar. 26, 1992, PCT/RU92/00058

Int. Cl.[5] F02M *31/00*

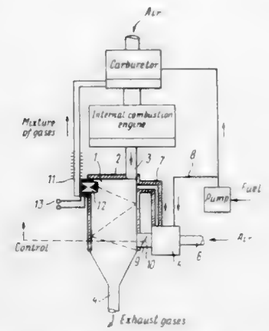
U.S. Cl. 123—545 **11 Claims**

1. A method for preparing a fuel-air mixture for an internal combustion engine comprising the steps of:

establishing two flows of the fuel-air mixture, one of said flows being overrich;

preheating said overrich flow using the exhaust gases of the engine to produce CO and hydrogen containing gases;

additionally heating said overrich flow by passing said flow through a promoter heated above the mixture ignition temperature and bringing said overrich flow into multiple repeated contact with the promoter surface; and



mixing said overrich flow with the other of said flows before being fed to the engine cylinders.

5,327,875

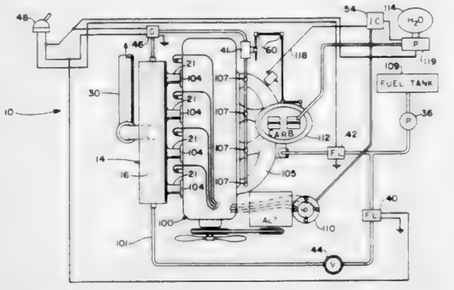
VAPOR ENHANCED CARBURETION SYSTEM

S. Franklin Hall, 3585 Jefferson Rd., Ashtabula, Ohio 44004

Filed Feb. 19, 1993, Ser. No. 19,916

Int. Cl.[5] F02M *31/00*

U.S. Cl. 123—545 **36 Claims**



1. A fuel vaporizing gun for an internal combustion engine, the engine having among other components, exhaust ports for eliminating hot exhaust gases from the engine, a liquid fuel, a fuel line with a fuel lock in said line, and intake ports, said gun positioned near the engine, comprising:

a vapor tube positioned in the fuel line;

a closed vaporizer chamber formed around the tube; said vaporizer chamber connected to exhaust ports of the engine to collect hot exhaust gases and vaporize liquid fuel in the tube by thermal transfer from hot exhaust gases surrounding the tube; and

a means for controlling pressure in the vapor tube, said means for controlling pressure positioned in the fuel line, communicating with said vapor tube, and adapted for regulating liquid fuel injection into the vapor tube;

said means for controlling pressure including means for monitoring pressure in said vapor tube and for maintaining pressure in said vapor tube in a predetermined range in response thereto.

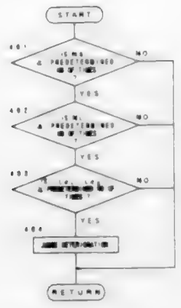
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5,327,876

AIR-FUEL RATIO CONTROL SYSTEM FOR ENGINES

Masaaki Uchida, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Oct. 15, 1992, Ser. No. 961,287
Claims priority, application Japan, Oct. 21, 1991, 3-272888
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—674 **2 Claims**



1. An air-fuel ratio control system for an engine provided with an air-fuel ratio sensor for continuously detecting air-fuel ratio of an air-fuel mixture supplied to the engine over a side range including the theoretical air-fuel ratio, and means for feedback correcting the air-fuel ratio of the air-fuel mixture to a preset target ratio based on the air-fuel ratio detected by said sensor, comprising:

means for setting said target ratio to the theoretical air-fuel ratio,

means for setting said target ratio to an air-fuel ratio other than the theoretical air-fuel ratio,

means for learning a feedback correction amount corrected by said feedback correcting means,

means for computing a learning correction amount based on said learned feedback correction amount,

means for correcting the previous air-fuel ratio of the air-fuel mixture based on said learning correction amount,

means for judging the deterioration of said sensor based on the difference between the learning correction amount when the target ratio is the theoretical air-fuel ratio, and the learning correction amount when the target ratio is the other air-fuel ratio.

5,327,877

DUAL ARROW OVERDRAW SYSTEM

Francis W. Shaw, III, 2044 E. State, Huntington, Ind. 46750

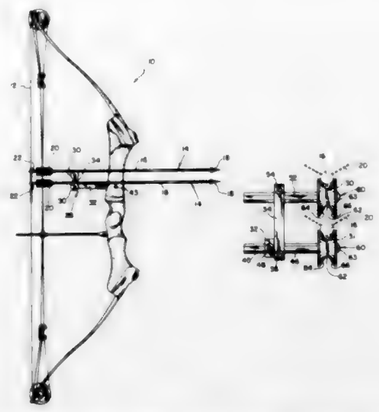
Filed Oct. 27, 1992, Ser. No. 967,006
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—24.1 **18 Claims**

1. A dual arrow draw system for shooting two arrows at once, said system comprising:

an archery bow;

an arrow guide attached to said bow, said guide adapted to guide two arrows at the same time, said guide including two roller members with peripheries spaced apart a distance greater than the diameter of an arrow, each roller member adapted to separately support an arrow in position for simultaneous release, independent from the other roller member.

The following is an Examiner's Statement of Reasons for Allowance: The type of rest shown by Gunter requires a single arrow to be supported by two rollers in cooperation with each other. The type of rest shown by Corley shows an arrow supported by a single roller, but there is no



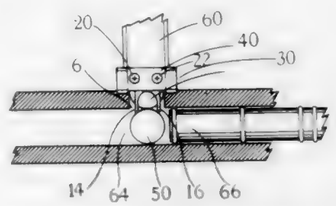
suggestion that a second roller could be added to support an additional arrow simultaneously in shooting position.

5,327,878

DEVICE FOR HOLDING SPHERICAL PROJECTILES

Henry W. P. Wittbrot, Milwaukee, Wis., assignor to Benjamin Sheridan Corp., Racine, Wis.

Continuation of Ser. No. 702,924, May 20, 1991, abandoned. This application Sep. 3, 1992, Ser. No. 939,415
Int. Cl.[5] F41B *11/02*
U.S. Cl. 124—41.1 **2 Claims**



1. Apparatus for releasably securing a spherical projectile in a gaming device, said apparatus comprising: means for defining a round, elongate charging chamber and a storage chamber which provides the projectile through an inlet in the charging chamber; and a holding member secured to said device proximate the inlet, said holding member including first and second resilient prong portions which are elongate and have a width substantially smaller than the radius of the spherical projectile, said prong portions being disposed in substantially parallel relation with one another and having substantially the same shape, said prong portions extending into the charging chamber, transversely to the charging chamber, from one side of the charging chamber to hold the projectile and prevent another projectile from entering the charging chamber.

5,327,879

COOKING APPARATUS WITH SUPPLEMENTAL HEAT SOURCE

Frank A. Ferraro, 104 Garwood Rd., Trumbull, Conn. 06611

Filed Mar. 12, 1993, Ser. No. 30,569
Int. Cl.[5] A47J *37/00*; **F24C** *3/00*
U.S. Cl. 126—41 R **8 Claims**

1. A portable gas barbecue cooking apparatus comprising:

a first heat source comprising an open flame;

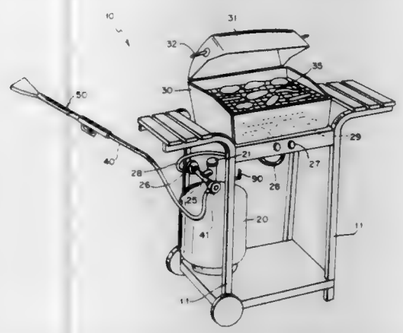
at least one portable supply of combustible gas comprises a gas-supply cutoff valve;

a gas conduit connecting said first heat source with said portable supply of combustible gas;

a grill adapted to support an edible item over said first heat source; and

a hand-held supplemental heat source connected to a portable source of combustible gas with a flexible conduit, said supplemental heat source comprising:

a flame chamber wherein combustible gas is ignited, said flame chamber comprising a gas inlet and a hot gas outlet;



means for regulating the flow of combustible gas into said flame chamber;

means for directing hot gases from said hot gas outlet of said flame chamber directly onto an edible item, said directing means comprising an open gas outlet;

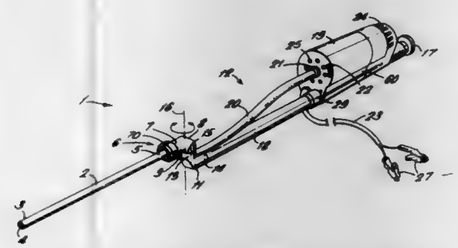
wherein said open gas outlet of said supplemental heat source is selectively movable, both horizontally and vertically, in a region proximate said grill thereby allowing a person cooking to supply hot gases directly to an edible item on said grill.

5,327,880

BORESCOPE

Jennifer M. Harley, and Andrew W. Towch, both of Leigh-on-Sea, United Kingdom, assignors to Keymed (Medical & Industrial Equipment) Ltd., Southend-On-Sea, United Kingdom

Filed Aug. 13, 1992, Ser. No. 929,247
Claims priority, application United Kingdom, Aug. 16, 1991, 9117689.1
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—6 **7 Claims**



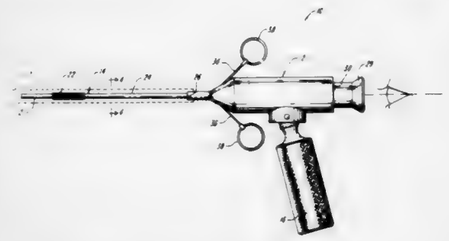
1. A borescope comprising a rigid objective probe connected to a body, an occular assembly pivotally connected to the body so as to be pivotally movable about a pivotal axis extending transversely with respect to the objective probe, and a optical fibre bundle connected to a light source and extending through the probe to illuminate an object presented to the probe, the ocular assembly comprising a housing pivotally connected to the body and cooperating with the body to define a channel through which a flexible portion of the optical fibre bundle extends from the occular assembly into the body whereby pivotal motion of the occular assembly is accommodated by flexure of the optical fibre bundle with the channel, the borescope comprising a tubular pivot member connected to one or other of the body and the housing and defining the pivotal axis and the borescope further comprising an optical system consisting of a series of lenses and mirrors for transferring an image of the object through the probe to an eyepiece of the occular system and defining an optical axis extending through the tubular pivot member coaxially with the pivotal axis, the channel comprising an annular space external to the pivot member and wherein the optical fibre bundle extends through a light guide cable between the light source and the housing, said light guide cable extending from the house at an angle relative to the housing which is invariant with respect to pivotal motion of the objective probe relative to the occular assembly.

5,327,881

FIBEROPTIC INTUBATING STYLET

Christopher M. Greene, Waltham, Mass., assignor to Beth Israel Hospital Association, Boston, Mass.

Filed Feb. 26, 1993, Ser. No. 23,073
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—11 **17 Claims**



1. An intubation assisting device, comprising

a handle means for manipulating the device;

a light source and a power source associated with the device;

a body component, adjacent to the handle means, including at a proximal end thereof an eyepiece and lens system;

an intubation assembly adjacent to the body component and including an elongate stylet having a diameter enabling it to be disposed within an endotracheal tube, the stylet comprising, at a proximal end thereof, a first, semimalleable or flexible portion able to be formed to a desired shape and to retain a desired shape during use, an intermediate, flexible region adjacent and distal to the first portion, and a third, distal, non-flexible portion of the stylet adjacent the flexible region, having disposed therein a lens means for facilitating viewing;

a flexible optical fiber assembly disposed within the intubation assembly and terminating adjacent the lens means;

an illumination fiber assembly disposed within and extending the length of the intubation assembly; and

a guide means for controlling the flexion of the flexible region of the stylet.

5,327,882

CONTINUOUS PASSIVE MOTION DEVICE

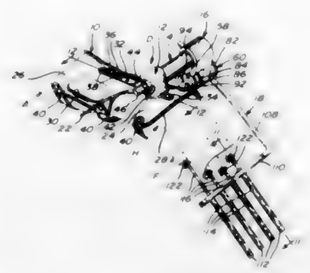
John Saringer, Markham, and Andrew Galbreath, Toronto, both of Canada, assignors to Toronto Medical Corp., Pickering, Canada

Continuation-in-part of Ser. No. 951,020, Sep. 3, 1992, abandoned. This application May 5, 1993, Ser. No. 56,543
Int. Cl.[5] A61H *1/02*
U.S. Cl. 601—40 **10 Claims**

1. A continuous passive motion device for therapy of a

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patient's hand comprising a splint means adapted to be attached to the patient's forearm and hand, an actuator means mounted to said splint means and comprising a motor means for driving a transmission means provided in a housing rotatably mounted to said motor means along a first axis, a digit attachment means extending from said housing and adapted for pivoting relative thereto about a second axis spaced apart from



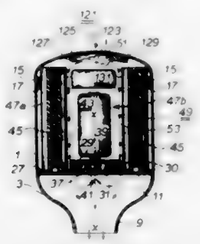
and parallel to said first axis, said digit attachment means being adapted for attachment to at least one of the patient's fingers, said transmission means upon actuation of said motor means causing said digit attachment means to counter-rotate about said second axis and relative to the rotation of said housing about said first axis, whereby said at least one finger is driven along a reciprocal path of motion corresponding at least to a portion of a compound spiral.

5,327,883

APPARATUS FOR AEROSOLIZING POWDERED MEDICINE AND PROCESS AND USING

David R. Williams, San Diego, Calif.; Mark B. Mecikalski, Tucson, Ariz., and David O. Thueson, Poway, Calif., assignors to Dura Pharmaceuticals, Inc., San Diego, Calif.

Filed May 20, 1991, Ser. No. 702,297
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—203.12 **22 Claims**



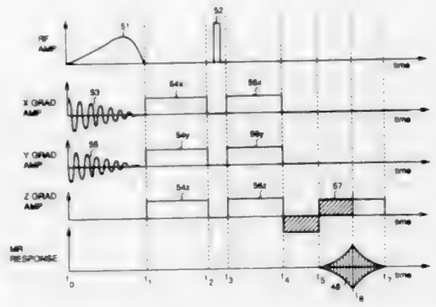
10. A device for delivering inhaled powders comprising:
a housing including a disk-shaped aerosolizing chamber formed by spaced apart flat front and rear walls on either side of a circumferential wall;
a hollow nose/mouthpiece attachable to the housing;
a motor having a shaft, contained within the housing,
an impeller mounted on the motor shaft and eccentrically positioned within the aerosolizing chamber;
means for introducing a powder into the aerosolizing chamber;
means for receiving a first stream of air into the housing and directing it towards the mouthpiece; and
means for diverting a portion of the first stream to form a second stream of air for flowing from the mouthpiece through the aerosolizing chamber and back into the mouthpiece.

5,327,884

HEAT SURGERY SYSTEM MONITORED BY REAL-TIME MAGNETIC RESONANCE TEMPERATURE PROFILING

Christopher J. Hardy, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 38,204, Mar. 26, 1993, abandoned. This application Dec. 8, 1993, Ser. No. 162,921
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **7 Claims**



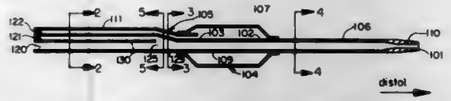
1. A magnetic resonance (MR) pulsed heat system for allowing an operator to selectively heat tissue within a patient comprising:
a) pulsed heat-producing means adapted for concentrating energy at an application point;
b) positioning means for positioning the application point of the pulsed heat-producing means in a specific tissue within the patient so as to create a heated region within the specified tissue;
c) operator responsive control means for enabling said operator to control the positioning means;
d) an MR imaging means comprising:
1. a radiofrequency (RF) transmitter for transmitting an RF excitation pulse and an RF refocussing pulse into said patient;
2. a gradient means for:
i. producing a time-varying magnetic field gradient in an "X" direction and time varying magnetic field gradient in a "Y" direction orthogonal to the "X" direction, both gradients applied simultaneously with the RF excitation pulse exciting longitudinal magnetization of an elongated excitation region in said patient,
ii. applying a first set of diffusion gradients in the "X", "Y" directions and a "Z" direction orthogonal to both the "X" and "Y" directions after excitation of the excitation region and before application of the refocussing pulse,
iii. applying a second set of diffusion gradients in the "X", "Y" and "Z" directions after application of the refocussing pulse, and
iv. applying a readout gradient to the elongated excitation region along a direction for which a temperature-sensitive profile is desired;
3. receiver means for receiving an MR response signal from the elongated excitation region; and
4. computation means for computing a temperature vs. position profile along the readout gradient from the MR response signal from the receiver means, thereby creating a real-time temperature-sensitive MR image of the heated region; and
e) display means for displaying the temperature-sensitive image to said operator.

5,327,885

COMBINATION CATHETER FOR INVASIVE PROBE DELIVERY AND BALLOON DILATION

James M. Griffith, 15251 S. 26th St., Phoenix, Ariz. 85044

Continuation-in-part of Ser. No. 773,037, Oct. 8, 1991, Pat. No. 5,201,315, and Ser. No. 11,335, Jan. 29, 1993, Pat. No. 5,249,580, which is a division of Ser. No. 773,037, Jan. 29, 1993. This application Feb. 16, 1993, Ser. No. 18,058
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 **20 Claims**



1. A method for sequentially imaging and dilating a region of a subject:
using an ultrasound probe, a guidewire, and a catheter, wherein the catheter comprises an elongate, flexible member having a lumen in its distal length; a dilation balloon attached to a proximal portion of the distal length, the outside of the distal length and the balloon being sized for passage into the region of the subject and the lumen having a diameter sized to accept either the guidewire or the ultrasound probe, wherein the lumen splits into a dual lumen proximal of said balloon, the dual lumen comprising a guidewire lumen sized to accept the guidewire and a probe lumen sized to accept the ultrasound probe, the flexible member further comprising a third lumen wherein the third lumen communicates with the balloon, the method comprising the steps of:
advancing the guidewire through the subject until a distal tip of the guidewire is distal of the region of the subject to be imaged;
advancing the catheter along the guidewire until the distal portion has passed into the region to be imaged;
pulling the guidewire proximally while holding the catheter relatively stationary in the distal and proximal directions within the subject, and leaving the distal tip of the guidewire within the wire lumen;
advancing the ultrasound probe tip into the distal lumen portion of the catheter;
preventing the ultrasound probe from extending distally beyond the catheter;
activating the probe to obtain pre-dilation ultrasound images of the region;
retracting the probe into the probe lumen;
advancing the guidewire distally of the catheter tip;
moving the catheter distally until the balloon passes into said region of the subject; and
inflating and then deflating the balloon.

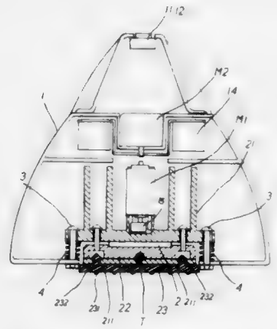
5,327,886

ELECTRONIC MASSAGE DEVICE WITH COLD/HOT COMPRESS FUNCTION

Cheng-pang Chiu, 4th Fl., No. 11, 199 Lane, Section 4, Ren-ay Road, Taipei, Taiwan

Filed Aug. 18, 1992, Ser. No. 931,373
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—96 **1 Claim**

1. An electronic massage device with cold/hot compress function comprising:
a housing;
a first motor disposed in said housing;
an eccentric wheel coupled to said first motor and driven by said first motor in order to generate vibrations;
a second motor disposed in said housing and disposed above said first motor;
an electric fan coupled to said second motor and driven by said second motor in order to exhaust heat generated within said housing;
an upper radiating fin disposed in said housing and located below said first motor and loosely coupled to said housing by at least two bolts;
means disposed between said upper radiating fin and said housing for resiliently biasing said upper radiating fin away from said housing;
a lower radiating fin fixed to said upper radiating fin;
a silicon rubber pad coupled to said lower radiating fin for contacting the users using said electronic massage device, said silicon rubber pad including a bottom surface having a plurality of protuberances formed thereon for contacting and for massaging said users;
a thermoelectric module disposed between said upper radiating fin and said lower radiating fin and having an upper



surface and a lower surface closely contacted with said upper radiating fin and said lower radiating fin, said thermoelectric module generating either lower temperature or high temperature in order to transfer said lower temperature or high temperature to said lower radiating fin and then transfer to said users in order to cool or to heat said users; and
a switch means disposed in said housing for switching and controlling current direction supplied into said thermoelectric module so as to control said thermoelectric module to generate either lower temperature or high temperature;
whereby, said users are massaged by said vibrations generated by said eccentric wheel and transmitted to said silicon rubber pad, and said users are cooled or heated by said lower temperature of said high temperature generated by said thermoelectric module.

5,327,887

CARDIOPULMONARY RESUSCITATION DEVICE

Ludwik Nowakowski, 735, Downing Street, Kingston, Ont., Canada K7M 5N1

Filed Jan. 25, 1993, Ser. No. 8,317
Int. Cl.[5] A61H *31/00*
U.S. Cl. 128—204.21 **10 Claims**

1. An apparatus for administrating cardiopulmonary resuscitation comprising:
a base member for supporting a patient's back;
a chest compression means for administrating chest compression to a patient, said chest compression means having a thumper means and mounting means on said base member means such that a patient's sternum be positioned between said thumper means and said base member means;
drive means for reciprocatingly translating said thumper means toward and away from said base member means for cyclically compressing and releasing the chest of a patient;
ventilation means for providing respirable gas, operatively coupled to said plunger means;

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adjustment means controlling the adjustment of chest compression means and ventilation means;



control means for controlling the operation of the drive means, ventilation means and monitoring a patient's vital signs.

5,327,888

PRECORDIAL ELECTRODE STRIP AND APPARATUS AND METHOD USING THE SAME

Mir A. Imran, Palo Alto, Calif., assignor to Physiometrix, Inc., Sunnyvale, Calif.

Filed Jun. 5, 1992, Ser. No. 893,776
Int. Cl.[5] A61B *5/0402*
U.S. Cl. 128—640 14 Claims



1. In a precordial electrode strip for use on the torso of patients of different sizes, an elongate strip of flexible insulating material, a plurality of precordial electrodes disposed in longitudinally spaced apart positions with respect to said strip so that there are portions of the strip between the electrodes, a plurality of precordial leads carried by the strip, at least one lead being connected to each of said precordial electrodes, and a single connector connected to said precordial leads for making connection to each of said precordial electrodes, said strip being provided with a straight portion, an inclined portion, and another straight portion which is substantially parallel to the first-named straight portion, the precordial electrodes being identified as V1, V2, V3, V4, V5 and V6, the V1 and V2 electrodes being disposed on the first straight portion and the electrodes V3 through V6 being disposed on the second straight portion.

5,327,889

MAPPING AND ABLATION CATHETER WITH INDIVIDUALLY DEPLOYABLE ARMS AND METHOD

Mir A. Imran, Palo Alto, Calif., assignor to Cardiac Pathways Corporation, Sunnyvale, Calif.

Filed Dec. 1, 1992, Ser. No. 983,968
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—642 18 Claims

1. A catheter for mapping a wall forming a chamber in a heart comprising a flexible elongate tubular member having proximal and distal extremities, a deflection tip carries by the distal extremity of the flexible elongate member and having a curved deflecting surface, said flexible elongate member having a plurality of lumens therein extending through the distal extremity of the flexible elongate member and opening onto the curved deflecting surface of the deflection tip, a plurality of arms slidably mounted in said lumens and having distal extremities, each of said arms having a plurality of electrodes spaced-apart longitudinally thereon and means secured to the proximal extremity of the flexible elongate member and coupled to the plurality of arms for moving the distal extremities



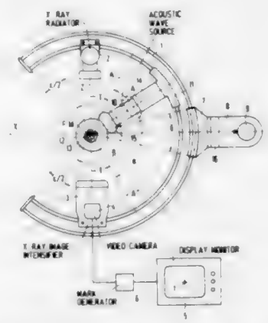
of the arms into engagement with the deflection tip for causing the arms to deflect proximally and outwardly from the deflection tip whereby the plurality of electrodes of each of the arms is moved into engagement with the wall to make measurements of the electrical activity in the wall.

5,327,890

APPARATUS FOR TREATING A PATIENT WITH ACOUSTIC WAVES

Eike Matura, Erlangen, and Hans-Christian Bock, Uttenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich

Filed Sep. 8, 1992, Ser. No. 941,887
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1991, 4130761
Int. Cl.[5] A61B *6/00, 17/22*
U.S. Cl. 128—653.1 7 Claims



1. An apparatus for treating a patient with acoustic waves comprising:

an X-ray locating system including a C-arm partially surrounding a treatment site and an X-ray source and a radiation detector mounted on said C-arm on opposite sides of said treatment site, and C-arm forming a circular arc and having a central axis;

means for holding said C-arm and for rotating said C-arm around said central axis;

a source of acoustic waves which propagate towards said treatment site along an acoustic axis; and

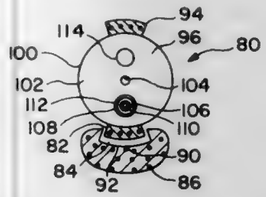
means for mounting said source of acoustic waves on said C-arm for permitting movement of said source of acoustic waves along said C-arm.

5,327,891

CATHETER TRACK AND CATHETER FOR DIAGNOSIS AND TREATMENT

David H. Rammler, 30 Oak Hill Dr., Woodside, Calif. 94062

Filed Jul. 30, 1992, Ser. No. 922,617
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—658 10 Claims



1. A cathether system for diagnosis or therapy of a patient comprising:

(a) a catheter comprising:

(i) an elongate flexible tube, having a first end for introduction into a vessel of a patient;

(ii) an outer surface of said elongated flexible tube having affixed thereto at least two spaced apart vanes defining first lumens, said vanes extending a substantial portion along the length of said flexible tube beginning substantially at said first end;

(b) a track, wherein said track is in a guiding relationship wit one of said vanes, comprising:

(i) a partially rounded conduit having one side defining a chord having a substantially centrally located groove extending the length of said track and shaped for receiving one of said vanes; and

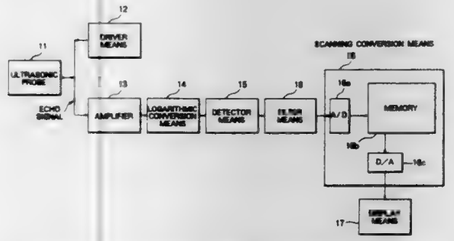
(ii) a second lumen in said conduit.

5,327,892

ULTRASONIC IMAGING SYSTEM

Yasuhiro Nakamura; Hisashi Akiyama, both of Yokohama, and Satoshi Akaishi, Fujisawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 28, 1993, Ser. No. 68,172
Claims priority, application Japan, Jun. 30, 1992, 4-172308
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.07 4 Claims



1. An ultrasonic imaging system comprising:

(a) an ultrasonic probe for transmitting and receiving an ultrasonic wave;

(b) driver means for driving said ultrasonic probe;

(c) detector means for detecting an echo signal of a single passband received by said ultrasonic probe to generate a detection signal;

(d) filter means for receiving and passing said detection signal therethrough and having a plurality of passbands which have respective flat frequency response characteristics, wherein respective gains of the plurality of passbands are set to decrease toward higher frequency passbands;

(e) scanning conversion means for converting the detection signal, which has passed through said filter means, to a display signal; and

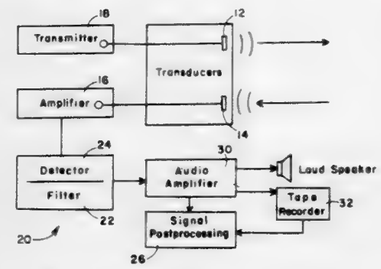
(f) display means for displaying thereon the display signal converted by said scanning conversion means in the form of a tomographic image.

5,327,893

DETECTION OF CHOLESTEROL DEPOSITS IN ARTERIES

Michael Savic, Ballston Lake, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Oct. 19, 1992, Ser. No. 962,777
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.08 14 Claims



1. A method of diagnosing arterial stenosis comprising:

detecting an acoustic signal from an artery;

digitizing the acoustic signal to form a digital signal on which computational analysis can be performed; and

subjecting the digital signal to pattern recognition analysis to distinguish digital signals of an artery with stenosis from digital signals of a normal artery;

the digital signal containing a plurality of features each in a multidimensional feature space, the pattern recognition analysis comprising the steps of:

selecting features which are dominant for stenosis, from the digital signal;

projecting each selected featured in its multidimensional feature space into a selected direction for increasing discrimination between digital signals of arteries having stenosis and digital signal of arteries without stenosis; and

classifying the projected features to discriminate between projected features of arteries having stenosis from projected features of arteries without stenosis.

5,327,894

WALL FILTER USING CIRCULAR CONVOLUTION FOR A COLOR FLOW IMAGING SYSTEM

Lewis J. Thomas, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

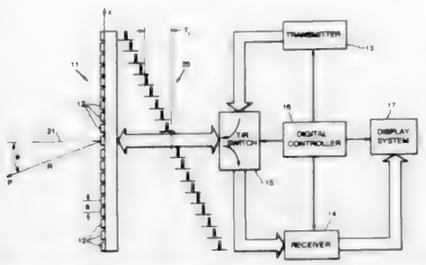
Filed Mar. 1, 1993, Ser. No. 24,009
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—661.08 20 Claims

1. In an ultrasonic imaging system which includes a receiver for demodulating an ultrasonic echo signal received from an ultrasonic transducer to produce a set of baseband echo signal samples, and further includes a display system, a color flow processor comprising:

a mixer for shifting frequency of the set of baseband echo signal samples produced by said receiver such that wall signal components in said set of baseband echo signal samples are at essentially D.C.;

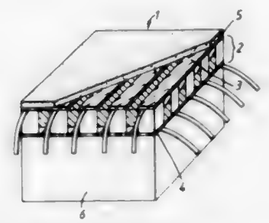
a circular convolution filter for filtering out signal compo-

nents in the set of shifted baseband echo signal samples from said mixer which have a frequency near D.C.;
an autocorrelation estimator for indicating the mean frequency of the set of filtered, shifted baseband echo signal samples provided by the circular convolution filter; and



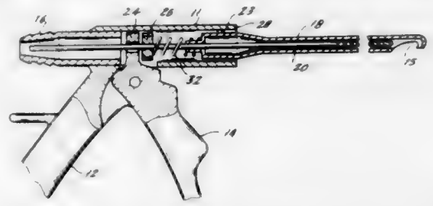
chrominance control means responsive to the autocorrelation estimator for controlling color of a display on said display system.

5,327,895
ULTRASONIC PROBE AND ULTRASONIC DIAGNOSING SYSTEM USING ULTRASONIC PROBE
Shinichi Hashimoto; Shiroh Saitoh, and Mamoru Izumi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Jun. 19, 1992, Ser. No. 901,107
Claims priority, application Japan, Jul. 10, 1991, 3-170114
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—662.03 **22 Claims**



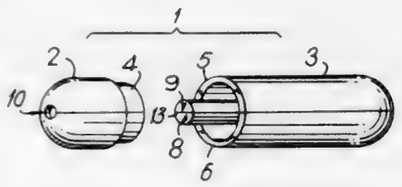
21. An ultrasonic probe comprising:
a vibrator member comprising a plurality of spaced member elements of a piezoelectric material arranged in a matrix, each of said elements having front and back opposing surfaces;
first electrode means disposed on the front surfaces of said spaced member elements;
second electrode means disposed on the back surfaces of said spaced member elements;
a plurality of spacer segments disposed between adjacent ones of said spaced member elements, said segments being formed o a high molecular weight material having an acoustic impedance less than that of the piezoelectric material;
each of said first and second electrode means including a plurality of strip electrodes electrically interconnecting respective member elements in an array of parallel rows, the direction of the row array defined by said electrodes of said first electrode means being orthogonal to the row array direction defined by said electrodes of said second electrode means, wherein the thickness of said spacer segments in the front-back direction is between about 1/10–½ that of said spaced member elements, and further wherein those of said spacer segments disposed between member elements interconnected by said first electrode means are positioned adjacent the front surfaces of the respective member elements and those of said spacer segments disposed between member elements interconnected by said second electrode means are positioned adjacent the back surfaces of the respective member elements.

5,327,896
SUCTION DOWNBITER
Reinhold Schmieding, Naples, Fla., assignor to Arthrex, Inc., Naples, Fla.
Filed Jun. 30, 1993, Ser. No. 83,470
Int. Cl.[5] A61B *17/32, 10/00*
U.S. Cl. 128—753 **6 Claims**



1. A surgical instrument for the simultaneous resection and aspiration of tissue, comprising:
a hollow handpiece having opposed front and back ends, an inner surface of the front end of said handpiece including a plurality of projections;
an elongated hollow barrel removably received in the front end of said handpiece, said barrel comprising a wall with a distal aperture, the wall of said barrel at said distal aperture defining a first fixed cutting edge, said barrel including a plurality of L-shaped slots disposed on a proximal end thereof, said slots cooperating with said projections to secure said barrel in said handpiece;
an elongated hollow rod movably disposed in said barrel, said hollow rod having a second cutting edge at a distal end thereof, said first and second cutting edges cooperating to cut the tissue; and
a suction connection disposed on the back end of said handpiece adapted to be connected to a suction source for aspirating the resected tissue from the instrument.

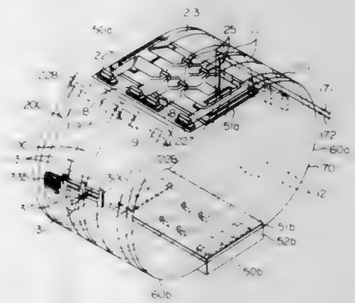
5,327,897
MULTIFUNCTION COLLECTING DEVICE FOR BODY FLUIDS
John A. Andresen, New Canaan, Conn., assignor to Microbyx Corp., New Canaan, Conn.
Continuation of Ser. No. 818,637, Jan. 6, 1992, Pat. No. 5,247,941. This application Apr. 13, 1993, Ser. No. 47,583
Int. Cl.[5] A61B *5/14, 10/00;* **A61F** *13/20*
U.S. Cl. 128—762 **4 Claims**



1. A device made of a biocompatible material for collecting a body fluid in a body cavity, comprising means for inserting said device into said body cavity, said means comprising,
an exterior portion,

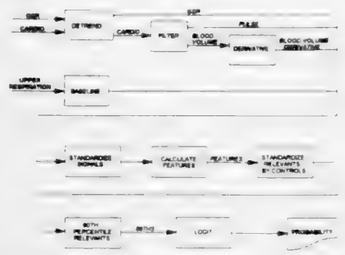
an interior portion said device further comprising, said interior portion comprising,
a single passage connecting said interior portion to said exterior portion of said device, the body fluid flowing through said passage into said interior portion from said exterior portion,
a first hollow retaining compartment for collecting a sample of body fluid when the device is situated in a body cavity, and
a second hollow retaining compartment for collecting a second sample of body fluid when the device is situated in the body cavity, said second hollow retaining compartment being structured and arranged to collect body fluid having similar characteristics as that collected in said first hollow retaining compartment, said single passage connecting said first and second hollow retaining compartments to said exterior portion of said device, and
retaining means situated in each of said first and second retaining compartments, at least a portion of the body fluid passed through said passage and into said interior portion and thereafter collected in said first and second retaining compartments being retained on said retaining means, the body fluid being simultaneously passed from said interior portion and separately collected in both of said first and second retaining compartments and prepared for subsequent separate and different analyses of the collected body fluid from each of said first and second retaining compartments.

5,327,898
SIGNAL RECEIVING COIL DEVICE FOR MRI APPARATUS
Hitoshi Yoshino, and Hiroyuki Takeuchi, both of Kashiwa, Japan, assignors to Hitachi Medical Corp., Tokyo, Japan
Filed Jul. 2, 1992, Ser. No. 908,176
Claims priority, application Japan, Oct. 11, 1991, 3-290380; Dec. 13, 1991, 3-351360
Int. Cl.[5] A61B *5/055;* **G01R** *33/20*
U.S. Cl. 128—653.5 **11 Claims**



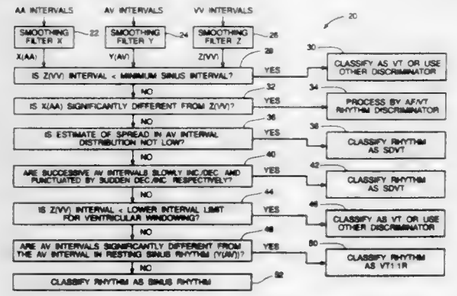
1. A signal receiving coil device for an MRI apparatus, to be fitted to a patient for detecting nuclear magnetic resonance signals, comprising:
a coil holding member including at least one flexible section and at least one rigid section, each flexible and rigid section being disposed sequentially and alternately in a predetermined direction;
a first coil unit disposed on said coil holding member, and having a first signal receiving direction; and
a second coil unit disposed on said coil holding member, and having a second signal receiving direction crossing substantially orthogonally said first signal receiving direction of said first coil unit.

5,327,899
POLYGRAPH AUTOMATED SCORING SYSTEMS
John C. Harris, Gaithersburg, and Dale E. Olsen, Columbia, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.
Filed Jan. 22, 1993, Ser. No. 6,916
Int. Cl.[5] A61B *5/0205*
U.S. Cl. 128—671 **36 Claims**



1. A method for automatically scoring by computer a polygraph test comprised of a plurality of relevant and control questions, the polygraph test generating a plurality of digitized physiological signals, the method comprising the steps of:
transforming the digitized signals into a plurality of fundamental signals;
standardizing the fundamental signals;
extracting a plurality of features from the standardized fundamental signals at each question;
standardizing the features for all relevant questions against the features for all control questions;
determining an 80th percentile value of each standardized relevant feature; and
combining the 80th percentile values to produce a probability of deception.

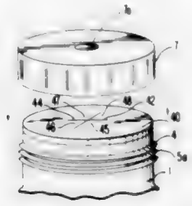
5,327,900
APPARATUS AND METHOD FOR DISCRIMINATING BETWEEN HEART RHYTHMS WITH SIMILAR ATRIAL AND VENTRICULAR RATES
David Mason, Lane Cove; David Bassin, Coogee; Anthony Murphy, Leechhardt; and Anthony C. Stephens, Willoughby, all of Australia, assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.
Filed Apr. 28, 1992, Ser. No. 875,161
Claims priority, application Australia, Nov. 1, 1991, 9243
Int. Cl.[5] A61B *5/0464*
U.S. Cl. 128—705 **18 Claims**



1. An implantable medical device for monitoring and classifying cardiac rhythms of a patient's heart, comprising:
means for sensing atrial and ventricular events of the heart;
means for measuring intervals "AV" between atrial and ventricular contractions of the heart;
means for measuring and storing "AVnsr", the AV internal

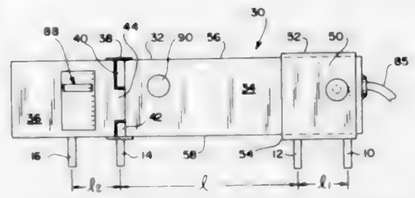
of the patient's heart rhythm during resting normal sinus rhythm thereof;
means for classifying said rhythms based on the timing of said sensed events;
said classifying means including means for discriminating between tachycardias of physiological origin and tachycardias of pathological origin having overlapping ventricular rates, each of said tachycardia's having similar atrial and ventricular rates and each of said tachycardias having ventricular-ventricular intervals which are less than a predetermined minimum normal sinus interval, said discriminating means including means for forming an interval timing window having a first predetermined threshold shorter than said AVnse interval and a second predetermined threshold longer than said AVnsr interval;
said classifying means including mean for classifying as pathological origin those of said tachycardias in which the Av intervals fall outside of said interval timing window; and
said device further including means for utilizing the results of said classifying means.

5,327,901
APPARATUS FOR COLLECTING AND STORING HUMAN BREATH SAMPLES
Jacques J. Delente, Kensington, Md., assignor to Martek Biosciences Corporation, Columbia, Md.
Continuation-in-part of Ser. No. 702,022, May 17, 1991, Pat. No. 5,211,181. This application Apr. 27, 1993, Ser. No. 52,621
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] A61B *5/097*
U.S. Cl. 128—730 **6 Claims**



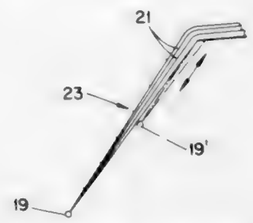
1. A breath sample collection apparatus for collecting and storing a human breath sample for analysis of the constituent components thereof, comprising.
(a) an elongated, rigid hollow tubular container having an elongated chamber therein, one end of said container being closed and an opposite end thereof having and inlet portion forming an opening to the interior of said chamber;
(b) a hollow breath delivery means for delivering a breath sample from a subject's mouth, said breath delivery means being insertable into said chamber through said inlet portion to deliver to said chamber a breath sample expelled from said subject's mouth, said chamber having a volume which is substantially less than the volume of a breath sample normally expelled by a human whereby said expulsion of said breath purges said chamber of an initial portion of said breath through said inlet portion leaving only primarily an alveolar portion of the expelled breath;
(c) a first closure means secured over the opening of said inlet portion for closing and lightly sealing said opening of said inlet portion, said first closure means being formed of a flexible sealing element having at least one slit therein forming flexible flap portions lightly sealing said inlet portion of said chamber, said flexible flap portions accommodating the insertion and removal of said breath delivery means and forming a space around said delivery means when the same is inserted which is sufficient to permit the purging expulsion of said initial portion of said breath; and
(d) a second closure means for forming a positive seal of said inlet portion over said first closure means.

5,327,902
APPARATUS FOR USE IN NERVE CONDUCTION STUDIES
Roger D. Lemmen, 1241 Heather Dr., Holland, Mich. 49423
Filed May 14, 1993, Ser. No. 61,798
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—734 **29 Claims**



1. A hand held fixture for use in nerve conduction studies, said fixture comprising:
an elongated body having a first portion, a second portion, an upper edge and a lower edge;
a first pair of electrodes mounted on the lower edge of said body adjacent an end of said first portion, one of said electrodes being a reference electrode and the other of said electrodes being a recording electrode;
a second pair of electrodes fixed to said body on the lower edge thereof, one of said second pair of electrodes being a cathode and the other of said electrodes of said second pair being an anode, said anode being fixed to said second portion of said body; and
adjustment means on said body for adjustably mounting said recording electrode and said cathode with respect to each other so that a distance "1" between the recording electrode and cathode may be changed and fixed for the type of nerve conduction study being performed.

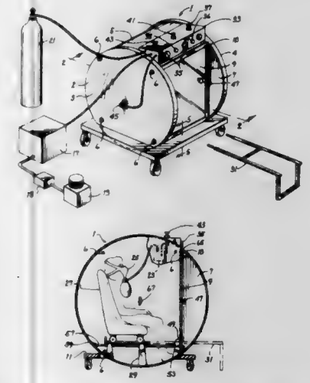
5,327,903
APPARATUS FOR DIAGNOSING PERIODONTITIS
Sven Lindskog, Stockholm, and Leif Blomlöf, Lidingö, both of Sweden, assignors to Biora AB and Bioapatite AB, both of Malmö , Sweden
PCT No. PCT/SE91/00062, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO91/11141, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 28, 1991, Ser. No. 910,148
Claims priority, application Sweden, Jan. 29, 1990, 9000305-4
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—736 **4 Claims**



1. A process for diagnosing an inflammatory condition related to periodontitis based on conditions around a periodonal pocket, comprising the steps of:
a) measuring a distance between the bottom and the mouth a periodontal pocket;

b) measuring a temperature difference between the bottom and the mouth of the periodontal pocket; and
c) determining the degree and development of the periodontitis based on the measurements taken under step a) and step b).

5,327,904
HYPERBARIC OXYGEN CHAMBER, METHOD, AND DOOR ASSEMBLY THEREFOR
James E. Hannum, 2118 "B" Acama, Anaheim, Calif. 92802
Filed Jan. 17, 1992, Ser. No. 822,303
Int. Cl.[5] A61G *10/00*; **A62B** *31/00, 18/02*
U.S. Cl. 128—205.26 **3 Claims**



1. A hyperbaric oxygen chamber, comprising:
two pressure vessel heads having a cylindrical lip;
a cylindrical wall connecting said heads, said wall secured to the interior of said lips to reinforce said wall;
two segmental plates bent along their straight edges to form a flange, each of said plates secured to the interior surface of one of said lips, said bends giving added rigidity to said plates, said plates and said wall comprising an entry to said chamber;
a sealing surface around the inside periphery of said entry; and
an inwardly opening door that seals against said surface, said chamber is pressurized with air to a level of two atmospheres and including means for delivering pure oxygen to a patient within said chamber, said chamber fitting through a single door opening in a direction perpendicular to the axis of said wall, said chamber also comprising:
a guide rod;
two supports supporting the ends of said guide rod secured to said wall;
a first bracket secured to the interior surface of said door, and having a portion which extends horizontally outward from said door;
a second bracket, pivotably secured against said horizontally extending portion of said first bracket, having a portion which extends downward and is slideably mounted on said guide rod;
a track extending along said entry; and
a guide secured to said door for sliding within said track.

5,327,905
BIPLANAR DEFLECTABLE CATHETER FOR ARRHYTHMOGENIC TISSUE ABLATION
Boaz Avitall, 4868 N. Ardmore Ave., Milwaukee, Wis. 53217
Continuation-in-part of Ser. No. 909,867, Jul. 7, 1992, which is a continuation-in-part of Ser. No. 835,553, Feb. 14, 1992, abandoned. This application Dec. 11, 1992, Ser. No. 989,804
Int. Cl.[5] H61B *5/00*
U.S. Cl. 128—772 **32 Claims**



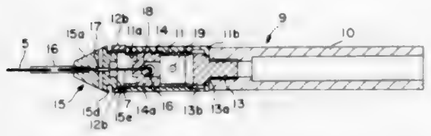
1. A catheter comprising:
(a) a flexible, tubular distal catheter section extending a main catheter tube and describing a distal catheter lumen and having a working distal tip area to be precisely controlled and including a distal tip;
(b) a single multi-function manipulation control means for manipulative control of the distal tip area and having a distal end anchored at or near the distal tip of the distal catheter section and operable in a manner such that the application of controlled longitudinal tension to the multi-function manipulation control means produces a corresponding controlled longitudinal bending of the distal tip area and the controlled application of rotational torque to the multi-function deflection control means produces a corresponding controlled radial deflection of the distal tip area in a plane substantially parallel to a direction of the applied rotational torque; and
(c) wherein the combined application of longitudinal tension and rotational torque to the control element provides three-dimensional manipulative control of the working distal tip section.

5,327,906
STEERABLE STYLET HANDLE
Brian L. Fideler, Columbia Heights, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 28, 1993, Ser. No. 55,947
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **7 Claims**

1. Medical apparatus for insertion into the body of a patient, said apparatus comprising:
an elongated body and a longitudinally displaceable control wire mounted therein;
a grip having a proximal end adapted to be held in the palm of one hand of an operator, and having a distal end,
slide guiding means located at the distal end of the grip, a proximal end of said elongated body mounted to said guiding means;
a control slide connected to a proximal end of said control wire and mounted for sliding movement relative to said guiding means;
a slide actuating member connected with said slide and

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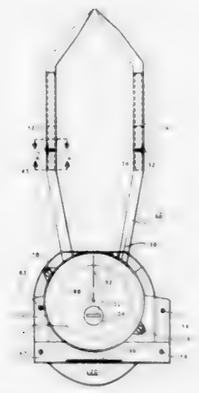
mounted at the distal end of said grip for actuation by the operators' hand to produce longitudinal movement of said slide relative to said guiding means whereby longitudinal movement of said control wire is produced with respect to said elongated body; and



a tip member, fixedly mounted to said proximal end of said elongated body member and removably mounted to said guiding means; and

wherein said slide is slidably mounted with respect to said guiding means such that after removal of said tip member from said guiding means, said slide may be withdrawn from said guiding means.

5,327,907
BIOMECHANICAL MEASUREMENT TOOL
Peter Fischer, 230 Ashbury St., San Francisco, Calif. 94117
Filed Dec. 1, 1992, Ser. No. 984,026
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 **7 Claims**



1. A biomechanical measuring device enabling placement of the human digits of an examiner on body points of a patient being measured, said device comprising:

a central housing;

two measuring arms pivotally mounted to said housing at one end and extending away from said housing at a distal end, said arms mounted for pivotal movement with respect to a center line through said housing;

means interconnecting said arms at said housing for indication of the distance between the distal ends of said arms during towards and away movement at said distal ends of said arms with respect to said housing; and,

means at the ends of said arms distal of said housing for enabling palpation by the digits of said examiner at said arms on a measuring point at said body points to be measured to permit palpation insuring accurate measurement

5,327,908
SURGICAL APPARATUS FOR MEASURING BODY TISSUE
Stephen W. Gerry, Bethel, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 8, 1993, Ser. No. 2,061
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 **26 Claims**



1. Apparatus for approximating jaw structure of surgical instrumentation for measuring body tissue comprising:

an endoscopic section having a distal and a proximal end;

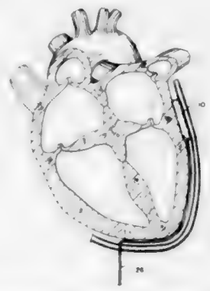
first jaw structure couplable to said distal end of said endoscopic section;

second jaw structure disposed in spaced relation to and pivotally connected with said first jaw structure, said first and second jaw structure being interconnected for substantially capturing tissue therebetween;

means for approximating said first and second jaw structure, said means for approximating including an actuation member positioned adjacent a proximal end of said endoscopic section; and

measuring means for indicating movement of said first and second jaw structures wherein said actuation member remotely actuates said jaw structures to permit working interaction between said first and said second jaw structures, the interaction resulting in registration of at least one measurement on said measuring means.

5,327,909
EPICARDIAL DEFIBRILLATOR LEAD
Joseph C. Kiser, Excelsior, and James D. Madison, White Bear Lake, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.
Filed Apr. 26, 1991, Ser. No. 691,987
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—129 **2 Claims**



1. A cardiac defibrillator lead for insertion through a small incision or percutaneous in the pericardial wall of a heart comprising:

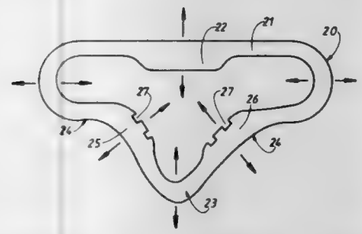
a. a first insulating member outer surface;

b. a second insulating member outer surface spaced apart from said first insulating member outer surface and including a defibrillator electrode on said second insulating member outer surface;

c. an electrical lead connected to said electrode; and,

d. inflation means between said insulating member outer surfaces for extending said outer surfaces outward after insertion of said cardiac defibrillator lead.

5,327,910
THERAPEUTIC DEVICE FOR MALE SEXUAL DYSFUNCTION
Darcy L. Flynn, Bluewater Beach, Australia, assignor to S & T No 27 Pty Ltd, Australia
PCT No. PCT/AU90/00272, § 371 Date Dec. 27, 1991, § 102(e) Date Dec. 27, 1991, PCT Pub. No. WO91/00073, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 27, 1990, Ser. No. 778,961
Claims priority, application Australia, Jun. 29, 1989, 37146/89; Jun. 29, 1989, 37147/89
Int. Cl.[5] A61F *6/02, 5/00*
U.S. Cl. 128—842 **14 Claims**



1. A therapeutic device for the treatment of male sexual dysfunction, the device comprising a body to be positioned around the base of the penis, the body including:

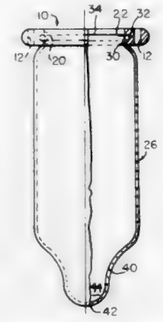
a first substantially rigid portion for, when the body is deformed so that the first portion exerts inward pressure, constricting blood flow through the penis veins, while permitting blood flow through the blood vessels under the penile skin,

a second substantially rigid portion opposed to said first portion for, when the body is deformed so that said second portion exerts inward pressure, constricting the urethra while permitting blood flow through the blood vessels under the skin,

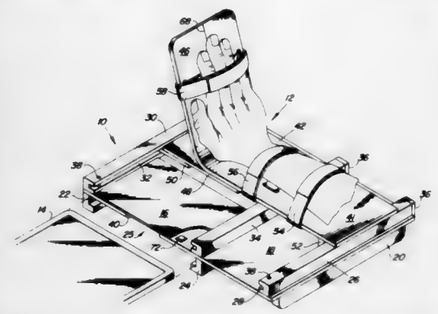
and at least one malleable or deformable portion, interconnecting the first and second portions, for, when said malleable or deformable portion is deformed so as to exert inward pressure, constricting the blood flow through the penile arteries while permitting blood flow through the blood vessels under the penile skin.

5,327,911
UNIVERSAL CONTRACEPTIVE AND PROPHYLACTIC DEVICE
Pao C. Pien, 1105 Marbelle Club, 840 S. Collier Blvd., Marco Island, Fla. 33937
Filed Apr. 5, 1993, Ser. No. 42,536
Int. Cl.[5] A61F *6/04*
U.S. Cl. 128—844 **7 Claims**

1. A universal contraceptive and prophylactic device comprising condom support means of annular configuration and including an inwardly opening groove formed on the inner periphery thereof, means for securing said support means in place on a person's body, condom means comprising an elongate tubular sheath formed of thin, flexible fluid impermeable material, said condom means having a closed end and an open end and being sized to fit loosely about an erect male organ, the open end of said condom means including a rim disposed within said groove for supporting the condom means on said support means, said condom means including a main portion of a given diameter, said condom means having a reduced diameter at said open end adjacent said rim to form a shoulder and neck configuration.



5,327,912
X-RAY POSER
Mitchell R. Mally, 4315 Washington St., Davenport, Iowa 52806
Filed Jul. 24, 1992, Ser. No. 919,307
Int. Cl.[5] A61F *5/04*
U.S. Cl. 128—878 **13 Claims**



1. A device for positioning and holding a patient's joint for radiographic comprising:

a stationary platform including a generally horizontal base plate having an upper and a lower surface,

a pair of slide bars extending upwardly from the upper surface of said base plate,

said slide bars being parallel to each other and each having a horizontal groove formed therein,

said horizontal grooves opening toward each other;

a carriage including a pair of slide rails received in and slidable along said horizontal grooves to slidably mount said carriage on said stationary platform,

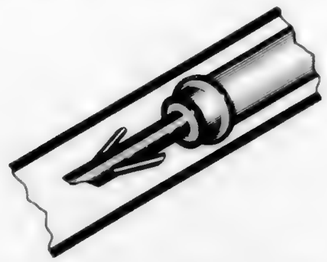
said carriage having a longitudinal axis and being elongated in its longitudinal direction, said slide bars being mounted on said base plate such that they extend perpendicular to the longitudinal axis of said carriage such that the carriage slides normal to its longitudinal axis,

said carriage including a horizontal section that includes restraining mechanism adapted to restrain a portion of a patient's extremity adjacent a joint, and

an inclined section, formed integral and rigid with said horizontal section, including restraining mechanism adapted to restrain another portion of a patient's extremity on the other side of said joint such that said portions of the patient's extremity are restrained at a selected fixed angle.

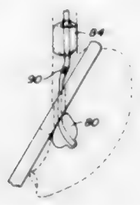
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5,327,913
PERCUTANEUS CARDIOMYOPLASTY METHOD
Syde A. Taheri, 1275 Delaware Ave., Buffalo, N.Y. 14209
Filed Mar. 25, 1992, Ser. No. 857,172
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 10 Claims



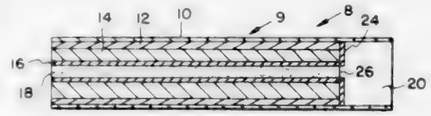
1. A method of performing a surgical procedure for the reinforcement of a defective organ in a subject which comprises:
i) partitioning the subject's omentum without severing omentum blood supply;
ii) transferring the partitioned omentum to the vicinity of the defective organ while preserving its blood supply;
iii) utilizing the partitioned omentum as a blood supply for a muscle segment; and
iv) utilizing the muscle segment as a patch to reinforce the defective organ.

5,327,914
METHOD AND DEVICES FOR USE IN SURGICAL GASTROPLASTIC PROCEDURE
Leonard M. Shlain, 40 Century Dr., Mill Valley, Calif. 94941
Filed Sep. 2, 1992, Ser. No. 939,211
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 10 Claims



1. A method for performing laparoscopic gastroplasty on a patient, said method comprising:
percutaneously introducing a plurality of trocars through the patient's abdominal wall;
visualizing the patient's stomach using a laparoscope disposed in one of the trocars;
manipulating the stomach to expose the lesser curvature, anterior, and posterior walls of the stomach to the laparoscope;
dissecting the stomach from the peritoneum along a line dividing the stomach into a proximal pouch adjacent the esophagus and a distal region;
introducing a stapling device having a fastening head including a pair of opposed jaws with stapling surfaces through another of the trocars, said fastening head defining an aperture at the junction of the opposed jaws;
positioning the stapling device so that the jaws lie along the dissected line with the aperture aligned beneath the esophagus;
introducing a nasogastric tube into the stomach so that it passes through the aperture;
inflating a first balloon on the nasogastric tube distally of the aperture and a second balloon on the nasogastric tube in the esophagus, to seal the proximal pouch in the stomach;
introducing a measured volume of fluid into the proximal pouch through the nasogastric tube until the pouch is filled;
repositioning the fastening head and reintroducing fluid until the position of the fastening head provides a preselected fluid volume upon filling; and
stapling the stomach along a line defined by the fastening head at its final position, with a passage between the proximal pouch and distal region of the stomach being defined by the aperture.

5,327,915
SMOKING ARTICLE
Harry Porenski, Bonaire, Ga., and Russell R. Plotner, Louisville, Ky., assignors to Brown & Williamson Tobacco Corp., Louisville, Ky.
Filed Nov. 13, 1992, Ser. No. 976,065
Int. Cl.[5] A24D *1/18, 3/04*
U.S. Cl. 131—194 14 Claims



1. A smoking article comprising:
a smoking section, a mouthpiece section axially aligned with said smoking section and, a smoke impermeable partition disposed between said smoking section and said mouthpiece;
said smoking section comprising a first insulating tube including an aerosol generating composition therein, a second insulating tube circumscribing said first insulating tube, a fuel tube circumscribing said second insulating tube, and a wrapping material circumscribing said fuel tube;
said smoke impermeable partition including flow-through means between said aerosol generating composition and said mouthpiece.

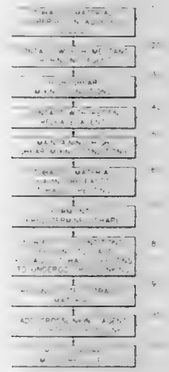
5,327,916
FILTER TIP CAGARETTE
David H. Jones, Leigh-on-Sea, and Jerzy Kijowski, Billericay, both of England, assignors to Rothmans International Services Limited, United Kingdom
Filed Sep. 17, 1992, Ser. No. 945,942
Claims priority, application United Kingdom, Oct. 23, 1991, 9122448
Int. Cl.[5] A24D *1/04, 3/00*
U.S. Cl. 131—331 19 Claims



1. A filter tip cigarette comprising a rod of smoking material having an inner wrapper of sidestream reducing paper containing carbon as part of its total filler content and an outer overwrapping cigarette paper, and a ventilated filter tip of low efficiency having a high pressure drop of more than 60 mmWG

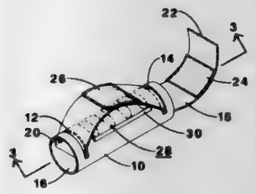
which provides a mainstream CO/"tar" ratio of 1.0 or less in conjunction with the filter ventilation.

5,327,917
METHOD FOR PROVIDING A RECONSTITUTED TOBACCO MATERIAL
Aju N. Lekwauwa, and Walter R. D. Young, Jr., both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Continuation-in-part of Ser. No. 800,679, Nov. 27, 1991, which is a continuation-in-part of Ser. No. 567,519, Aug. 15, 1990, Pat. No. 5,101,839. This application Aug. 17, 1992, Ser. No. 931,249
Int. Cl.[5] A24B *3/14, 15/24*
U.S. Cl. 131—370 33 Claims



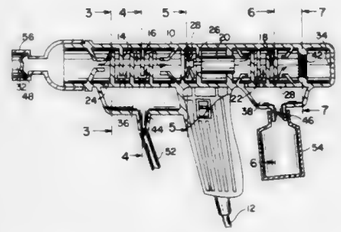
1. A method of providing a tobacco material having released tobacco pectins, the method comprising the steps of:
(a) contacting tobacco material dispersed in a liquid having an aqueous character with a humectant or binding agent or both under high shear mixing conditions at a temperature of at least about 35° C. to provide a mixture and
(b) contacting the mixture of step (a) with a pectin release agent while maintaining the high shear mixing conditions and a temperature of at least about 35° C. to provide a tobacco material having released tobacco pectins.

5,327,918
MANICURING AID FOR INFANTS AND TODDLERS
Christopher O. Stewart, and Karen Surprise-Mansfield, both of 222 Kearny St., Suite 500, San Francisco, Calif. 94108
Filed Mar. 27, 1992, Ser. No. 859,065
Int. Cl.[5] A45D *29/00*
U.S. Cl. 132—73 2 Claims



1. A manicuring aid for controlling the finger movement of infants and toddlers to facilitate trimming said infants' and toddlers' fingernails, comprising: a cylindrical barrel, said barrel being made of a resilient, pliable, plastic material, said barrel having a cavity and opposite ends which are open so as to permit access to said cavity, said barrel having a longitudinal axis, a plurality of substantially parallel finger grooves, and a plurality of fingertip support ledges, said finger grooves extending between and normal to said ledges, an elastic cloth strap, and a plurality of slots cut into said cylindrical barrel on opposite sides of said finger grooves.

5,327,919
WATER EXTRACTION DEVICE
John F. Hanlon, 618 Greentree La., Jeffersonville, Pa. 19403
Filed Jun. 10, 1992, Ser. No. 896,677
Int. Cl.[5] A45D *19/18*
U.S. Cl. 132—270 8 Claims



1. A water extraction device for use in conjunction with cylindrical hair styling accessories, wherein said cylindrical hair styling accessories are disposed in a person's hair and are at least partially surrounded by wet hair, the water extraction device comprising:
a hand-held, generally portable housing having an interior channel extending between an inlet and an outlet, the inlet defining a shroud dimensioned for closely encompassing a one of the cylindrical hair styling accessories, the outlet exhausting to a local atmosphere that generally surrounds the housing;
an electric motor mounted to said housing and a driven fan rotatably mounted within the channel at an intermediate station between the inlet and outlet, the motor and fan operably connected for driving the fan for producing a flow of an air-water mixture through the channel from the inlet to the outlet and producing a substantial vacuum at the inlet, the motor being interconnectable with an external power supply by a flexible line cord;
water separator means associated with the channel between the inlet and outlet for decreasing the water content in the air-water mixture;
the water separator means includes baffles extending partly across the channel to provide surfaces to which water can attach, said baffles being located between the inlet and the intermediate station for decreasing the water content in the flow of the air-water mixture to a selected level for passage across the intermediate station;
the electric motor is mounted within a moisture-proof enclosure within the channel; and,
said baffles decreasing the water content in the flow of the air-water mixture to a selected amount suitable for passage across the moisture-proof enclosure.

5,327,920
AUTOMATED APPARATUS AND VAPOR/IMMERSION CLEANING METHOD FOR SOILED PARTS
Donald R. Gerard; William J. Hook; Charles A. Pennington, and Robert J. Richardson, II, all of Bowling Green, Ky., assignors to Detrex Corporation, Southfield, Mich.
Filed Feb. 23, 1993, Ser. No. 21,423
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—57 R 3 Claims

3. An open top apparatus for removing soil from solid parts comprising:
(1) a housing having a floor and four upstanding walls and an open top.
(2) side by side rinse and cleaner tanks in said housing on said floor and separated by a common wall terminating at its

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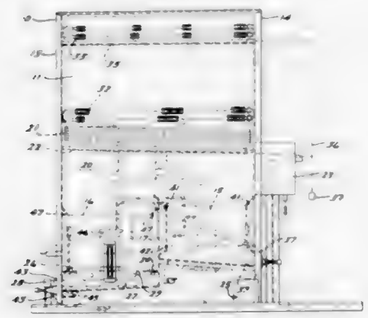
upper end in a dam adapted to accommodate transfer over said dam of rinse and cleaner liquids from one tank to the other tank,

(3) vapor space overlying said rinse and said cleaner tanks located between the top of said rinse and cleaner tanks and the level of condenser coils mounted on said walls above said tanks for condensing rinse vapors into distillates and trough means beneath said coils for collecting same and for transferring said condensed distillates into said rinse tank,

(4) said cleaner tank having heater means adapted to boil LVTC liquids in said tank and microprocessor controlled pump, piping, and valve means for pumping said LVTC liquids from said tank through said piping and said valves and back into said tank to agitate said LVTC liquids in said tank,

(5) said rinse tank having microprocessor controlled pump, piping, and valve means for pumping HVTR liquids from said tank through said piping and said valves and back into said HVTR liquids, and,

(6) microprocessor controlled means for positioning a cover layer of LVTC liquid from said cleaner tank on top of HVTR liquid in said rinse tank of a preselected thickness, said means comprising pump, piping and valve means associated with said rinse tank actuatable by said microprocessor to pump HVTR liquid from the lower portion of said rinse tank into said cleaner tank at a location near the bottom surface thereof in sufficient quantity to cause



LVTC liquid to rise and cascade over said dam and form a cover layer of LVTC liquid on top surface of said HVTR liquid, and sensor means located on said rinse tank for sensing the preset top level of said cover layer of said LVTC liquid connected to microprocessor means for de-energizing said pump to terminate transfer of said HVTR liquid into the lower portion of said cleaner tank,

(7) microprocessor controlled means for removing said cover layer of LVTC liquid atop said HVTR liquid in said rinse tank, said means comprising means energizing said heater means in said cleaner tank to boiling to distill HVTR vapors into said vapor space and means for condensing and collecting said distillate and delivering same into said rinse tank to raise the level of rinse liquid and cause the LVTC liquid in said cover layer to cascade into said cleaner tank, and means for sensing the HVTR liquid level at the top of said dam and initiating agitation of said HVTR liquid to said rinse tank, and

(8) microprocessor controlled means for automatically introducing make-up HVTR liquid into said rinse tank prior to initiating the removal of said LVTC liquid cover layer in accordance with (7) which comprises sensor means located in said rinse tank at the preselected low level of the top surface of said LVTC liquid cover layer connected to said microprocessor for signalling the absence of said LVTC cover layer at said low level and microprocessor activation of pump means for pumping sufficient make-up HVTR liquid into said rinse tank to raise the level of the top surface of said LVTC layer to the preset level of the top surface of said layer formed pursuant to step (6)

5,327,921

PROCESSING VESSEL FOR A WAFER WASHING SYSTEM

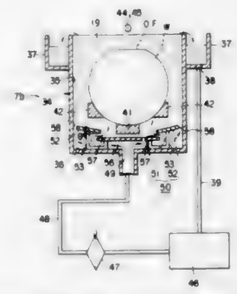
Shouri Mokuo, Saga; Kenji Yokomizo, Oonojo, and Osamu Tanaka, Tosu, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Saga Limited, Tosu, both of Japan

Filed Mar. 4, 1993, Ser. No. 26,016

Claims priority, application Japan, Mar. 5, 1992, 4-83215; Mar. 16, 1992, 4-90250

Int. Cl.[5] B08B *3/04*

U.S. Cl. 134—182 **10 Claims**



1. A processing vessel for use in a washing apparatus for washing a plurality of substrates in a washing solution, comprising:

a washing solution supply mechanism for supplying the washing solution to wash the substrate;

a main vessel portion including at least one inlet formed in a bottom portion of the main vessel, the inlet communicating with the washing-solution supply mechanism;

a boat for holding the substrates, which are to be washed, in a center area of the main vessel; and

a flow control assembly arranged between the inlet and the substrates, wherein the flow control assembly comprises:

a scattering plate for scattering the washing solution, which is introduced from the inlet, in a horizontal direction, and

at least one pair of side plates provided at both sides of the scattering plate, the side plates and the scattering plate defining introduction flow passage for permitting most of the washing solution to flow into spaces between the substrates.

5,327,922

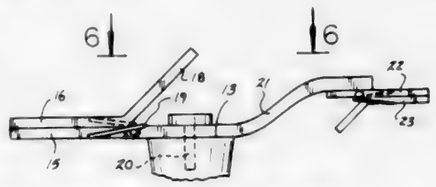
HOLD DOWN CLIP APPARATUS

Lawrence J. Deroche, 176 High St., P.O. Box 53, Dunstable, Mass. 01827

Filed Apr. 12, 1993, Ser. No. 44,751

Int. Cl.[5] E04H *15/62*

U.S. Cl. 135—118 **2 Claims**



1. A hold down clip apparatus, comprising,

an elongate conical body symmetrically oriented about a body axis, wherein the conical body includes a lowermost body apex, an annular top wall, and

a plurality of rows of rigid anchor legs are fixedly mounted to the body projecting exteriorly of the body and canted upwardly from the body projecting towards a predetermined plane containing said top wall, and

a clip member mounted to said top wall, and

the clip member includes a fixed jaw plate fixedly mounted to the top wall projecting beyond the top wall, and a movable jaw plate pivotally mounted about a pivot axle to the fixed jaw plate, and a spring member biasing the movable jaw plate towards the fixed jaw plate, with the fixed jaw plate coextensive with the movable jaw plate, and

a fixed jaw plate extension plate extending diametrically relative to the top wall extending beyond the top wall, and wherein the extension plate includes a further clip member mounted to a bottom surface of the extension plate permitting accommodation of the extension plate as a step plate for receiving force from an individual to direct the conical body into a support surface.

5,327,923

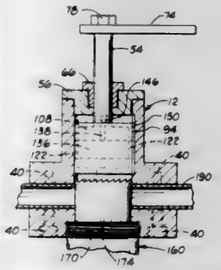
VALVE FOR INSTALLATION ON A PRESSURIZED FLUID FLOW LINE

Louis P. Eischen, 1725 NW. 29th St., Oklahoma City, Okla. 73106, and Ken Winders, 1554 Willow Dr., Choctaw, Okla. 73020

Filed Feb. 12, 1993, Ser. No. 16,919

Int. Cl.[5] F16K *43/00;* **F16L** *41/04;* **B23B** *41/08*

U.S. Cl. 137—15 **18 Claims**



14. A method of installing a valve on a pressurized fluid flow line, the steps of the method comprising;

providing a valve having a first body portion and a second body portion defining therebetween a channel adapted to receive a section of a fluid flow line, the first body portion having a first bore containing a valve cartridge and communicating with the channel, the valve also having a valve cap receiving a portion of said valve cartridge and covering the first bore in a fluid-tight seal, and the second body portion having a second bore opposing the first bore and communicating with the channel;

securing the first and second body portions together with a fluid flow line in the channel therebetween;

attaching a cutting tool having a rotary cutter to the second body portion in fluid-tight engagement with the second bore;

rotating and extending the rotary cutter through the second bore to cut out the portion of the fluid flow line between the second bore and the first bore;

withdrawing the rotary cutter form the channel;

moving the valve cartridge through the first bore into an operating position wherein the valve cartridge extends across the channel in fluid-tight engagement with the fluid flow line;

actuating the valve cartridge portion to position the valve cartridge into a shut-off position wherein the valve cartridge prevents fluid flow therethrough;

removing the cutting tool and the cut-out portion of the fluid flow line from the second bore; and

securing a valve plug within the second bore to seal the second bore against fluid leakage;

wherein the valve cartridge in the operating position is movable in response to actuation of the valve cartridge portion between an open position wherein the valve cartridge allows fluid flow therethrough and a shut-off position wherein the valve cartridge prevents fluid flow therethrough.

5,327,924

ABANDONMENT OF A BRANCH MAIN

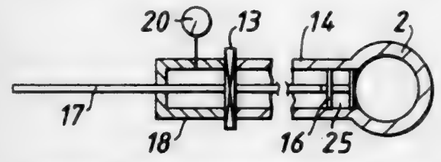
Anthony D. Elgar, Mitcham; Brian T. Sales, Dorking, and Adrian S. Parkes, Burgess Hill, all of United Kingdom, assignors to British Gas PLC, London, United Kingdom

Continuation of Ser. No. 757,212, Sep. 10, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 86,458

Claims priority, application United Kingdom, Sep. 12, 1990, 9019905.0

Int. Cl.[5] F16L *55/10*

U.S. Cl. 137—15 **7 Claims**



1. A method for abandoning a branch main joined to a fluid-carrying spine main, the method comprising the steps of exposing a portion of the branch main in preparation for abandonment, gaining access to the bore of the branch main at an access point and then permanently blocking the bore of the branch main at a blockage point closer to the junction than to the access point by positioning at the blockage point a plug having a sealant which, upon curing, adheres the plug to an internal wall of the branch main, wherein before access is gained, but subsequent to the exposing step, an aperture is made in the wall of the branch main upstream of said access point and the bore of the branch main it temporarily blocked upstream of the access point by introducing a blocking means into the bore of the branch main through the aperture in the wall of the branch main.

5,327,925

VALVE SERVICE BOX AND METHOD OF MAKING

Thomas L. Ortel, 76 Tremont, Kenmore, N.Y. 14217

Filed Dec. 14, 1993, Ser. No. 166,727

Int. Cl.[5] F16L *55/18, 9/00*

U.S. Cl. 137—15 **8 Claims**

1. A method of making a valve service box for a service pipe shut-off valve assembly disposed below the surface of the ground, the valve assembly being secured at either end to inlet and outlet service pipes; said method comprising the follow steps:

providing a plastic service valve housing having a bell portion provided with opposed recesses, the recesses extending upwardly from the rim at the bottom of the bell portion, the plastic service valve housing also having an upper cylindrical smooth wall bore;

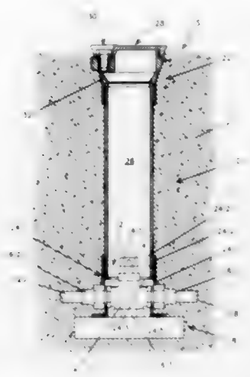
providing a length of plastic pipe of uniform diameter which may be securely bonded to the upper cylindrical smooth wall bore of the plastic service valve housing by a conventional solvent welding process in a fluid tight manner;

providing a cover box assembly including a plastic cover housing having a lower cylindrical smooth wall bore adapted to receive an end of the plastic pipe which may be

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secured thereto by a conventional solvent welding process in a fluid tight manner;

cutting the length of plastic pipe so that it will be of the desired length between the surface of the ground and the service valve housing when properly positioned about the shut-off valve below the surface of the ground;



bonding one end of the length of pipe within the upper cylindrical smooth wall bore of the service valve assembly; and

bonding the lower cylindrical smooth wall bore of the plastic cover housing to the upper end of the plastic pipe to form a valve service box.

5,327,926

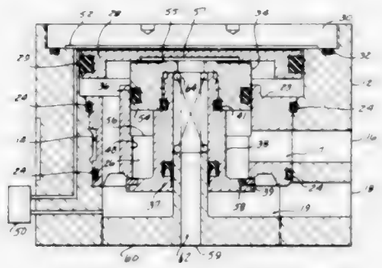
FLOW REGULATOR

Joseph A. DuLac, Grosse Pointe, and Timothy E. Wheeler, Mt. Clemens, both of Mich., assignors to John A. Blatt, Grosse Pointe Farms, Mich.

Filed Dec. 28, 1992, Ser. No. 997,677

Int. Cl.[5] G05D *16/10*

U.S. Cl. 137—116.3 **7 Claims**



1. A pneumatic pressure regulator for providing a constant predetermined pressure of a pneumatic medium from a constant or varying input pressure comprising:

a first housing including a first cylindrical bore of longitudinal varying radii, an inlet port and an outlet port;

a second housing complementary in shape to an inner surface of said first bore including sealing means for an airtight seal between said first and second housings and a second cylindrical bore sharing a common axis with said first cylindrical bore;

first piston means located within said second bore including a first member and a second member threadably received on said first member, each said member including ridges complementary in shape to ridges located on said second housing for providing limited captive reciprocal movement of said first piston means with respect to said second housing and sealing means for an airtight seal between said first and second members and between said first piston means and said second housing;

a first passage communicating said inlet port with said second bore;

a second passage communicating said outlet port with said second bore;

said first piston means further including a ledge sealingly received on said second bore for communicating said first passage with said second passage when said first piston is engaged as a result said outlet pressure being less than said predetermined pressure;

second piston means complementary in shape with said first bore including sealing means for an airtight seal between said second piston means and a surface of said first bore;

circular ridge means forming a seat located on said first member for flush contact of said second piston means on said seat, said second piston means including seat sealing means for an airtight seal between said first piston means and said second piston means;

a third passage connecting a vent port through said first member and said second member with said seat sealing means, said third passage sealed off from said second passage when said seat is in contact with said seat seal;

a first housing cap for covering said first end of said first bore where said second piston means is located, said first cap including sealing means for providing in airtight seal between said first cap and said first housing;

chamber means formed by excess space between said first housing cap and said second piston means;

a second housing cap covering a second end of said first bore, said second cap including sealing means for providing an airtight seal between said second cap and said first housing, and mating means defining said vent port and said third passage, for mating fit with a portion of said second member; and

regulator means for communicating said second passage with said chamber means when said outlet pressure is less than said predetermined pressure, said regulator means releasing pressure from said first passage into said chamber means to longitudinally move said second piston means, thereby separating said ledge of said first piston means from said second housing, releasing pressure from said inlet port and thus raising said outlet pressure up to said predetermined pressure;

when said outlet pressure exceeds said predetermined pressure, said second passage communicates with said third passage by separating said seat of said first piston means from said seat seal of said second piston means as a result of increased pressure and thus releasing excess outlet pressure above said predetermined pressure through said vent port.

5,327,927

TENTS FOR SCREENING THE SUNLIGHT

Sei-Yoon Oh, Seoul, Rep. of Korea, assignor to Korea Tarpaulin, Inc., Seoul, Rep. of Korea

Filed Jun. 26, 1992, Ser. No. 919,496

Claims priority, application Rep. of Korea, Apr. 29, 1992, 1992-7195

Int. Cl.[5] A45F *3/00*

U.S. Cl. 135—117 **3 Claims**

1. A tent for screening the sunlight comprising:

a main sheet for screening the downwardly radiating sunlight;

a plurality of front and rear tent poles for causing said main sheet to maintain its suspended shape, each said tent pole comprising a plurality of pipes which are linearly connected to each other;

a plurality of ropes for being stretched to impart a tensile force to the main sheet;

a pole support for supporting said tent poles as well as dispersing the vertical force generated in the poles, said pole support comprising integrally a base, a pair of pole support pipes joined in V-shape to receive lower ends of said poles;

a cross-shaped stiffening arrangement formed integral to said base and said pole support pipes to reinforce same; and



a detachable side sheet having a plurality of connection hooks which are hooked in corresponding holes formed at predetermined positions of the poles supported by the pole support to selectively intercept the sunlight through the space between the poles.

5,327,928

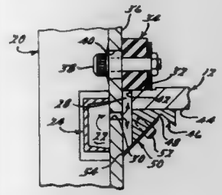
AIR SEAL VALVE

Brian D. Thomason, Mesa, Ariz., assignor to Salem Engelhard, South Lyon, Mich.

Filed Jul. 6, 1993, Ser. No. 87,658

Int. Cl.[5] F16K *1/22*

U.S. Cl. 137—246.22 **2 Claims**



1. An air seal valve comprising:

a right circular cylindrical valve body;

a rotatable support shaft extending diametrically of said valve body;

a circular valve blade on said shaft;

an annular primary valve seat on a radially inner surface of said valve body having a radially extending seating face;

an annular primary valve face on said valve blade engageable with the radially extending seating face on said primary valve seat;

a cylindrical secondary valve seat on the radially inner surface of said valve body axially spaced from said primary valve seat and having a cylindrical secondary seating face;

a secondary valve on said valve blade axially spaced from said primary valve and of annular truncated conical configuration having a circular radially outer seating edge engageable with the cylindrical secondary seating face on said secondary valve seat;

a fresh air plenum disposed between said primary and secondary valve seats; and

means for conducting fresh air under pressure to said plenum.

5,327,929

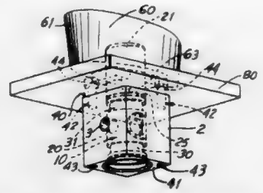
PLUG VALVE

Sergio Radossi, Cresskill, N.J., assignor to Hoke Incorporated, Cresskill, N.J.

Division of Ser. No. 751,525, Aug. 29, 1991, Pat. No. 5,188,144. This application Nov. 6, 1992, Ser. No. 972,941

Int. Cl.[5] F16K *43/00, 11/085*

U.S. Cl. 137—315 **3 Claims**



1. A plug valve body comprising an inlet and an outlet, said body having a plug-receiving opening therein intersecting said inlet and outlet, said valve body having top and bottom faces through which the plug-receiving opening extends, means to base mount the valve body, said base mounting means comprising means to permit the valve body to be attached to a support surface from the bottom of the valve body, said top face having means to panel mount the valve body, said panel mounting means comprising means to permit the valve body to be attached to and depend from a support surface from the top of the valve body, said means comprising screw openings in the top and bottom faces of the valve body in order to receive screws whereby the valve body may be attached to a support surface either from the bottom and the top position to give the valve plug body versatility depending on the installation requirements at the valve plug body site.

5,327,930

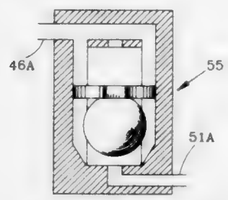
NUCLEAR REACTOR LOCKING PISTON DRIVE SYSTEM AND VALVE ASSEMBLY

Joseph S. Miller, Zachary, and John J. Lynch, Baton Rouge, both of La., assignors to Gulf States Utilities Company

Filed Nov. 6, 1992, Ser. No. 972,614

Int. Cl.[5] F16K *43/00*

U.S. Cl. 137—329.3 **6 Claims**



1. In a check valve assembly including a housing, a fluid flow path through said housing, a plurality of fluid passages selectively communicating with another through said fluid flow path, and a valve seat defined on said housing, the improvement comprising: a spherical valve head disposed within said housing and moveable between a first position wherein said valve head is sealingly secured relative to said valve seat, and a second position wherein said valve is disposed away from said valve seat and a plurality of said fluid passages are in fluid communication through said fluid flow path, said spherical valve head including resisting means exteriorly defined thereon for resisting movement of said valve head between said first and second positions, said spherical valve head further defining at least one fluid flow path adjacent and resisting means and in selective fluid communication with each of said fluid passages, said spherical valve head further including

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extensions projecting outwardly away from the spherical valve head toward the valve housing.

5,327,931
FLUSH VALVE LEAKAGE PREVENTION AND DETECTION DEVICE
Galen E. Royalty, Silver Spring, and Gerald S. Gelfeld, Rockville, both of Md., assignors to Waterguard, Inc., Rockville, Md.
Continuation-in-part of Ser. No. 830,302, Jan. 31, 1992, Pat. No. 5,232,011. This application Aug. 2, 1993, Ser. No. 101,258
Int. Cl.[5] F16K *31/20, 33/00*
U.S. Cl. 137—410 **20 Claims**



1. A flush valve leakage prevention and detection device for use in a toilet tank having a flush lever movable to flush the toilet tank and a float controlled water inlet valve assembly operated by a float lever comprising

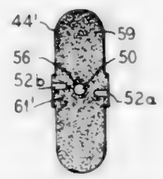
hood means for being assembled to the water inlet valve assembly and including opposing side walls for being disposed on opposite sides of the float lever and extending in the same direction as the float lever;

a latch including a locking section for holding the float lever in a raised position corresponding to a closed position for the water inlet valve assembly and a control section supported on the flush lever and movable with the flush lever to pivot said latch to release said locking section from the float lever in response to movement of the flush lever to flush the toilet tank whereby the float lever is allowed to move to a lowered position corresponding to an open position for the water inlet valve assembly; and

means for pivotally mounting said latch on said hood means with said locking section disposed between said side walls transverse to the float lever and said control section disposed transverse to the flush lever

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5,327,932
VALVE RESTRAINT ENHANCEMENT
Roy J. Rozek, Plymouth, Wis., assignor to Thomas Industries Inc., Sheboygan, Wis.
Filed Apr. 19, 1993, Ser. No. 47,831
Int. Cl.[5] F16K *15/16*
U.S. Cl. 137—512.15 **14 Claims**

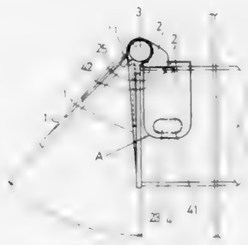


1. A valve restraint for use in a flapper valve assembly having at least one flapper valve within a corresponding plurality of recessed portions of a valve plate wherein the recessed portions have a plurality of fixed guides, comprising:

a substantially smooth outer surface facing away from the recessed portion of the valve plate;

an arcuate inner surface having an irregularity which contacts the flapper valve during use of the assembly wherein the irregularity is formed by irregularly and randomly texturing the inner surface.

5,327,933
CHECK VALVE OF FUEL TANK
Tatuzi Ishikawa, and Kyokuichi Sato, both of Soja, Japan, assignors to OM Industrial Co., Ltd., Okayama, Japan
Filed Sep. 28, 1993, Ser. No. 127,815
Int. Cl.[5] F16K *15/03*
U.S. Cl. 137—527.6 **3 Claims**



1. A check valve of a fuel tank comprising:

a valve plate having joints on one peripheral side;

a valve support integrally formed with holders for the valve plate, said valve support being of a semicylindrical shape having an inner diameter which is substantially equal to an outer diameter of a pipe to which the valve support is attached, said valve support being attached to said associated pipe by engaging projections and grooves or a plurality of projections and their receiving holes which are formed at least on end portions of the valve support on both sides and on said associated pipe; and

a connecting pin inserted through the joints and the holders, said connecting pin including a flange head portion which is formed on one end thereof and has a larger diameter than pin receiving holes and a slot which is formed on the other end and extends along the axial center, said connecting pin being integrally formed with a retaining portion whose distal end portion has a smaller diameter than the pin receiving holes, which diameter gradually increases toward the flange head portion until it is larger than that of the pin receiving holes, so that the connecting pin serves as a hinge of the valve plate.

5,327,934
AUTOMOTIVE FUEL TANK PRESSURE CONTROL VALVE
Robert H. Thompson, Redford, Mich., assignor to Ford Motor Copany, Dearborn, Mich.
Filed Jun. 7, 1993, Ser. No. 72,637
Int. Cl.[5] F02M *33/02*
U.S. Cl. 137—588 **19 Claims**

1. A valve for controlling the pressure of fuel vapor within the fuel tank of an automobile having a filler pipe, said valve connected to a fuel vapor handling apparatus, said valve comprising

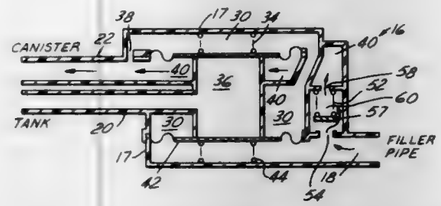
a valve body,

conduit means for delivering said fuel vapor to said valve from said fuel tank,

routing means within said valve body for directing flow of said fuel vapor through said valve with said routing means sensitive to ambient pressure in said filler pipe,

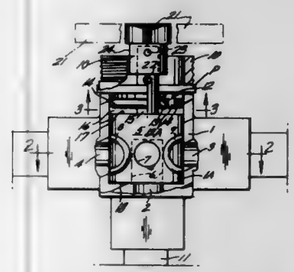
sensing means for directing ambient pressure of said filler pipe to said valve to aid said routing means in controlling fuel vapor flow through said valve,

duct means for conveying said fuel vapor from said valve to said fuel vapor handling apparatus, and



bypass means for conveying fuel vapor between said filler pipe and said fuel vapor handling apparatus when said routing means fails to rout fuel vapor from said fuel tank through said valve to said fuel vapor handling apparatus.

5,327,935
THREE-WAY VALVE WITH PRESSURE BALANCED PLUG MEMBER
Prentiss C. Hicks, 7350 SW. Landmark La., Tigard, Oreg. 97224, and Thomas E. Ray, 22151 SW. Ferguson Rd., Beavercreek, Oreg. 97004
Filed Mar. 8, 1993, Ser. No. 27,755
Int. Cl.[5] F16K *11/08*
U.S. Cl. 137—625.41 **1 Claim**



1. A three-way plug valve for use in a high pressure system and having a pressure balanced plug member and comprising,

a valve body having an internal wall defining a chamber, side walls defining side ports and an end wall defining a port,

a rotatable cylindrical plug member housed in said chamber and defining a central bore in communication with said end wall port and a radially directed passageway terminating at the plug member outer periphery for selective direct communication with said side ports, a first end wall and a second end wall oppositely disposed on said plug member,

a stem on said plug member projecting from said first end wall surface,

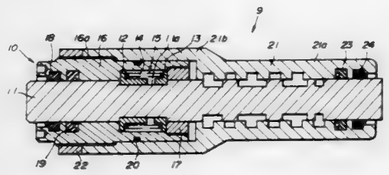
a control member on said stem,

seal means in said chamber of the housing and offset from said first end wall of the plug member to define a space therewith in which pressure may be confined to exert a force on said plug member to balance pressure applied in an opposite direction on said second wall of the plug member, and

said seal means comprises multiple circular seals, a retainer disposed about said stem, said multiple seals in place on said retainer one each for engagement with said stem and said internal wall of the valve body to confine pressure in said space for purposes of balancing forces acting on said second end wall,

said valve body including pins confining said retainer against axial displacement.

5,327,936
SPOOL VALVE WITH SELF-CENTERING MECHANISM
Hisao Takayanagi, Saitama, Japan, assignor to Kabushiki Kaisha Showa Seisakusho, Gyoda, Japan
Filed Dec. 30, 1992, Ser. No. 998,837
Claims priority, application Japan, Jan. 10, 1992, 4-004402[U]
Int. Cl.[5] F16K *27/04;* **F15B** *13/04;* **B62D** *5/087*
U.S. Cl. 137—625.69 **6 Claims**



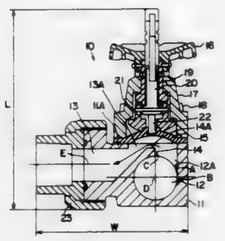
1. A spool valve comprising:

a valve case;

a spool assembly axially movably disposed in said valve case, said spool assembly comprising a spool, a guide sleeve fitted over said spool and threaded in said valve case, and a mechanism retained jointly by said spool and said guide sleeve for holding said spool in a neutral position with respect to said valve case;

a lock nut threaded over said guide sleeve and pressed against an axial end of said valve case, and stopper means threadedly fastened to said guide sleeve for axially retaining said mechanism in said spool and said guide sleeve.

5,327,937
BRANCHED VALVE
Shigenobu Kato, Yorii, and Yasuo Yamabe, Kawagoe, both of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jan. 6, 1993, Ser. No. 1,729
Int. Cl.[5] F16K *7/14*
U.S. Cl. 137—863 **2 Claims**



1. A branched valve, comprising:

a main flow passage and a branch flow passage provided in a main body;

a weir provided between said main flow passage and said branch flow passage;

a valve disc which can contact with and come off from said weir and which selectively connects and disconnects said main flow passage and said branch flow passage; and

wherein an outer wall of a branch flow exit of said main flow passage rises vertically from an outer wall of said main flow passage, and a side wall of said weir is located on the center line of said main flow passage.

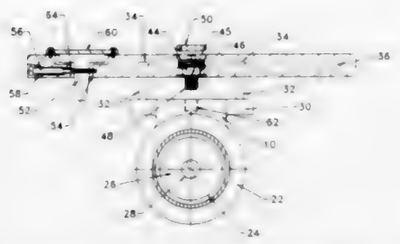
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5,327,938

ADJUSTABLE ORIFICE FITTING CARRIER FOR A PIPELINE ORIFICE FITTING

Dreu E. Crane, Broken Arrow, Okla., assignor to Crane Manufacturing, Inc., Tulsa, Okla.

Filed Nov. 20, 1992, Ser. No. 990,172
Int. Cl.[5] F15D *1/02*
U.S. Cl. 138—44 5 Claims



1. An adjustable orifice fitting carrier assembly for an orifice fitting having an receptacle and interposed in a pipeline, which carrier assembly comprises:

a) a carrier body receivable in said receptacle of said fitting to hold a flat circular orifice disk having a center orifice therethrough, said orifice disk perpendicular to the flow through said pipeline;

b) a carrier holding plate receivable in said receptacle and in communication with sad carrier body;

c) means to move said carrier body and said orifice disk in a first direction with respect to said holding plate in a first direction across the diameter of said pipeline, said means including at least one pin extending from said carrier body, each said pin receivable in a recess in said holding plate, and screw means extending from said carrier holding plate and in communication with said body so that adjustment of said screw means will move said carrier body and said orifice disk; and

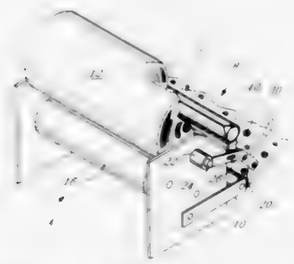
d) means to move said carrier body and said orifice disk by moving said holding plate with respect to said orifice fitting in a second direction across the diameter of said pipeline, perpendicular to said first direction, in order to concentrically align said center orifice with the axis of said pipeline.

5,327,939

LOOM TAKE-UP WITH WEDGE DOFFER

F. Eddie Burgess, 135 Hester Store Rd., Easley, S.C. 29640

Filed May 5, 1993, Ser. No. 57,153
Int. Cl.[5] D03D *49/20*
U.S. Cl. 139—1 R 13 Claims



1. Doffing and take-up apparatus for a loom including a pair of driven spaced and aligned drive rolls supporting at least one cloth roll therebetween, said drive rolls act to rotate the cloth roll so as to wind cloth delivered from said loom thereon, said apparatus comprising:

a pair of support arms pivotally carried on opposed ends of one of said pair of drive rolls;

a support rod means mounted with and interconnecting said support arms, said rod being spaced from said one drive roll;

a wedge carried by said support rod in a non-rotating manner, said wedge being capable of longitudinal movement relative said support rod whereby;

with said wedge located relative to said one drive roll and said cloth roll, an edge of said wedge is positioned in the nip between said cloth roll and said one drive roll so that continued rotation of said one drive roll and said cloth roll draws said wedge between said one drive roll and said cloth roll lifting and doffing said cloth roll from said take up

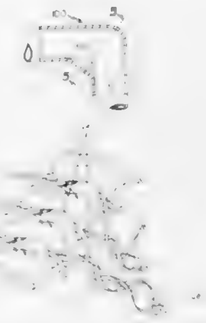
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5,327,940

MECHANISM TO REDUCE TURNING LOSSES IN ANGLED CONDUITS

Walter M. Presz, Jr., Wilbraham, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 847,838, Mar. 9, 1992, abandoned. This application May 4, 1992, Ser. No. 878,257
Int. Cl.[5] F15D *1/04*
U.S. Cl. 138—39 5 Claims



1. A conduit for carrying a fluid in a downstream direction, said conduit having an internal surface defining an internal flow passage including a bend therein which changes the direction of flow, said internal surface of the bend having an inner corner surface over which fluid within said conduit flows as it travels around the bend, said inner corner surface including means to generate large scale vortices and produce a flow variation which disrupts fluid flow in a separation region immediately downstream of said inner corner surface, said means comprising a plurality of adjoining, alternating troughs and ridges extending in the fluid flow direction around the bend and defining a convoluted surface.

5,327,941

CASCADE ORIFICIAL RESISTIVE DEVICE

Nicholas Bitsakis, Portsmouth, and James Cassidy, Wakefield, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1992, Ser. No. 899,520
Int. Cl.[5] F15D *1/02*
U.S. Cl. 138—42 11 Claims

1. A device for throttling a fluid flow while minimizing acoustic noise and internal vibrations which comprises:

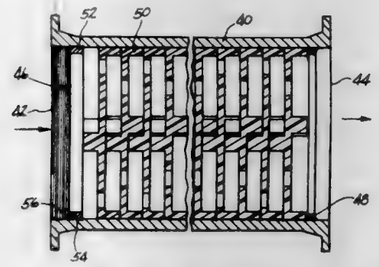
a hollow body having a fluid inlet, a fluid outlet and a fluid passageway therebetween;

at least two perforated plates mounted in said fluid passageways for throttling a flow of fluid through said passageway;

said at least two plates being arranged so that orifices in a first plate are selectively misaligned with respect to orifices in a second adjacent plate;

each said plate being formed from an elastomeric material;

means for joining said first and second plates together so that said orifices in said first plate are selectively misaligned with respect to said orifices in said second plate;



said joining means comprising an integrally formed, partially cylindrical key member located centrally on one of said plates and a mating wedge shaped key member located centrally on the other of said plates;

said partially cylindrical key member having first and second surfaces defining a first angle therebetween;

said wedge shaped kay member having third and fourth surfaces defining a second angle which is substantially equal to said first angle; and

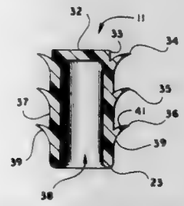
said kay members forming a substantially cylindrical configuration when mated.

5,327,942

SEALING PLUG FOR APERTURES

Robert D. Black, Douglasville, Ga., assignor to Trebor Corporation, Forest Park, Ga.

Continuation-in-part of Ser. No. 717,323, Jun. 18, 1991, abandoned. This application May 11, 1992, Ser. No. 881,206
Int. Cl.[5] F16L *55/11*
U.S. Cl. 138—89 2 Claims



1. A sealing plug for insertion and placement in a drilled hole wherein the plug is maintained in firm engagement with the side walls of the hole, a sealing plug comprising:

a resilient elongated tubular plug having a proximal end and a distal end, the proximal end and the distal end being interconnected by a tubular side wall of the plug, the distal end having an aperture therein in communication with an interior hollow cavity located in the tubular plug, the proximal end having an uninterrupted planar top surface and lying in a single plane, which plane terminates in a depending side wall, the depending side wall having a first predetermined diameter, the tubular side wall of the plug having a second predetermined diameter, the diameter of the planar top surface side wall being less than the second predetermined diameter of the tubular side wall,

sealing means located between the proximal end and the distal end, the sealing means projecting outwardly from the tubular side wall for engagement with the side walls of the hole,

the sealing means comprising three outwardly projecting sealing ribs,

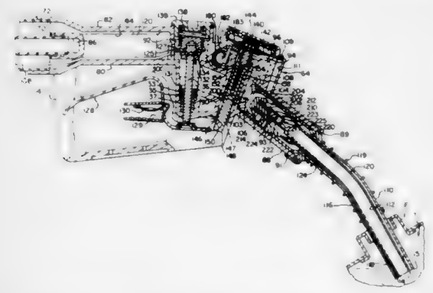
each of the sealing ribs comprising an outwardly projecting flange, the flange forming a re-entrant surface with the tubular side wall flaring upwardly and outwardly away from the tubular side wall, each sealing rib further comprising an upper surface and a lower surface, the upper surface flaring upwardly in a consistent curvature and outwardly from the tubular side wall, the lower surface flaring from a point tangent with the tubular side wall upwardly and outwardly in a consistent curvature and intercepting the upper surface at an acute angle to form an apex with the upper surface of the rib.

5,327,943

MULTI-PURPOSE NOZZLE WITH LIQUID PICKUP

Dennis J. Strock, Woodridge, and Harry B. Hartman, Sugar Grove, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 664,327, Mar. 4, 1991, Pat. No. 5,289,856. This application Apr. 9, 1992, Ser. No. 865,839
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] B67D *5/378*
U.S. Cl. 141—59 10 Claims



1. A vapor recovery nozzle, comprising:

spout means for dispensing liquid volatilizable hydrocarbon fuel into a fill opening of a tank;

vapor collection means for collecting volatilized hydrocarbon vapors emitted from said tank concurrently during said dispensing, said vapor collection means including passage means for passing said vapors to a vapor return line, and at least some of said vapors condensing to form condensate, wherein said vapor collection means includes a vapor inlet positioned in proximity to said spout means;

condensate withdrawal means for substantially removing said condensate in said vapor return line so as to substantially minimize blockage of vapors passing through said vapor return line; and

automatic shutoff means for stopping the dispensing of fuel when said fuel enters said vapor inlet, wherein said automatic shutoff means includes a liquid sensing tube disposed along said spout means, within said passage means and extending to a position adjacent said vapor inlet.

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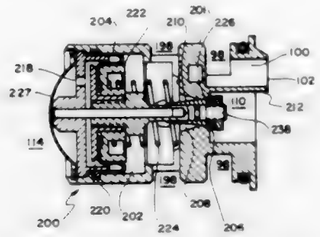
APPARATUS FOR CONTROLLING FUEL VAPOR FLOW

James W. Healy, Hollis, N.H., assignor to Healy Systems, Inc., Hudson, N.H.

Continuation-in-part of Ser. No. 706,807, May 29, 1991, Pat. No. 5,174,346. This application Sep. 16, 1992, Ser. No. 946,409

Int. Cl.[5] **B67D** *5/378*

U.S. Cl. 141—59 **10 Claims**



1. In a fuel dispensing nozzle for delivering fuel into a fuel tank by way of a fill pipe, said nozzle comprising

a nozzle body,

a spout housing,

a spout extending from said spout housing,

a fuel conduit defined by said nozzle and leading to said spout,

a vapor conduit defined by said nozzle, said vapor conduit associated with said spout for withdrawing displaced vapors from the fuel tank being filled and transporting them to a remote vapor collection system, and

a fuel valve for controlling flow of fuel through said fuel conduit,

the improvement wherein

said fuel dispensing nozzle further comprises

a vapor regulator valve in said vapor conduit operable in response to a predetermined first vapor pressure condition in said nozzle body, said vapor regulator valve comprising a diaphragm mounted in said nozzle with a first surface facing said vapor conduit, said diaphragm blocking said vapor conduit in a first position and not blocking said vapor conduit in a second position, and biasing means urging said diaphragm to said second position, said diaphragm having a second surface facing a chamber, said nozzle further defining a vent linking said chamber with the ambient exterior of said nozzle, and

vapor flow controlling means comprising

a vapor flow control valve element disposed for movement within said vapor conduit relative to a valve seat defined by said conduit, a vapor flow orifice between said vapor flow control valve element and said valve seat having an area variable with the position of said vapor flow control valve element, and

vapor flow control valve element positioning means comprising sealing means associated with said vapor flow control valve element, said sealing means having at least one surface exposed to fuel pressure in said fuel conduit.

5,327,945

FUEL DISPENSING SPOUT

W. Dwain Simpson, Wilton, and James H. Pyle, Weston, both of Conn., assignors to Saber Equipment Corporation, Stratford, Conn.

Filed Aug. 11, 1993, Ser. No. 105,858

Int. Cl.[5] **F16L** *9/00*

U.S. Cl. 141—59 **10 Claims**

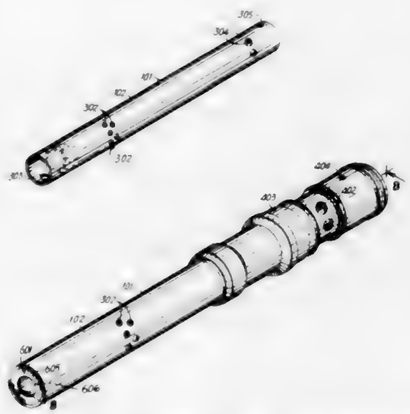
1. An integrally extruded fuel dispensing spout assembly having a forward end and a rearward end comprising:

a longitudinally extending inner member defining a passageway for carrying fuel from said rearward end to said forward end;

a longitudinally extending outer member disposed about said inner member and defining a space therebetween;

a plurality of longitudinally extending ribs defining a plurality of channels in said space;

said plurality of channels including at least one continuous longitudinal channel being used in detecting when fuel dispensation has reached a desired level, and at least a second continuous longitudinal channel being adapted for recovering fuel vapor at said forward end and carrying said recovered fuel vapor to a fuel storage compartment;



said outer member including at least one opening formed therein proximate said forward end and in communication with said at least one channel;

said outer member including at least a second opening formed therein proximate said forward and rearward of said at least one opening and in communication with said at least a second channel; and

said at least a second opening not being in communication with said at least one channel and said at least one opening not being in communication with said at least a second channel.

5,327,946

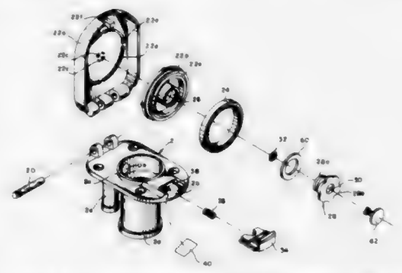
FUEL FILLING AND VENTING DEVICE WITH SURGE PROTECTOR

Frederick M. Perkins, Ft. Lauderdale, Fla., assignor to Perko, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 32,943, Mar. 17, 1993, Pat. No. 5,275,213, which is a continuation-in-part of Ser. No. 8,344, Jan. 22, 1993, abandoned. This application Aug. 31, 1993, Ser. No. 113,686

Int. Cl.[5] **B65B** *31/06*

U.S. Cl. 141—59 **11 Claims**



1. Liquid fuel tank filling and venting apparatus, comprising:

(a) a housing containing:

(1) a chamber;

(2) fuel inlet and fuel outlet openings in communication with, and arranged above and below, said chamber, respectively; and

(3) a fuel tank vent opening in communication with said chamber, each of said fuel outlet and fuel vent openings being adapted for separate connection with the fuel tank;

(4) said fuel outlet and fuel vent openings being so arranged relative to said fuel inlet opening that during the filling of the tank, the tank is vented by, and excess fuel is returned to, said chamber via said fuel vent opening;

(b) closure means operable between closed and open positions relative to said housing for closing and opening said fuel inlet opening, respectively, said closure means containing means defining a vent passageway for continuously affording communication between said chamber and atmosphere when said closure means is in the closed position; and

(c) normally-open surge protector means for closing said vent passageway upon the occurrence of a fuel surge in said chamber.

5,327,947

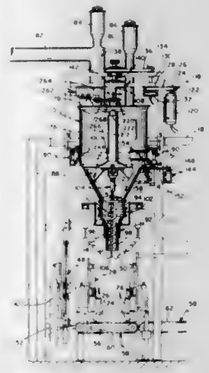
VERTICAL AUGER TYPE BAG FILLER HAVING A VIBRATING BOWL WITH INVERTED VENTING CONE AND ROTATING AGITATOR ASSEMBLY

Harold R. McGregor, 216 South Grove, Owatonna, Minn. 55060

Continuation-in-part of Ser. No. 270,845, Nov. 14, 1988, Pat. No. 4,944,334, and a continuation-in-part of Ser. No. 559,629, Jul. 30, 1990, Pat. No. 5,042,539. This application Aug. 27, 1990, Ser. No. 573,554

Int. Cl.[5] **B65B** *1/08, 1/12, 1/20*

U.S. Cl. 141—71 **36 Claims**



1. A container filling machine for filling a product into a container, said container filling machine comprising:

a hopper, said hopper having a top, a bottom peripheral edge, and an interior region to contain the product;

an auger bowl, said auger bowl being connected to and disposed generally beneath said hopper adjacent said bottom peripheral edge thereof such that the product within said hopper may be transferred downwardly into said auger bowl, said auger bowl having an interior and an outlet through which the product is transferred from said auger bowl;

a vibrator assembly, said vibrator assembly being operatively connected to said auger bowl and capable of selectively vibrating said auger bowl;

a fill tube assembly, said fill tube assembly being connected to and disposed generally beneath said auger bowl and having a portion communicating with said outlet such that the product within the auger bowl may be transferred downwardly into said fill tube assembly from said auger bowl;

an auger shaft assembly, said auger shaft assembly being oriented in a generally vertical direction and extending downwardly from a top end disposed adjacent to or above said interior region of said hopper to a lower end disposed at least partially within said fill tube assembly, said auger shaft assembly being mounted for rotational movement about an axis of rotation oriented in a generally vertical direction, said auger shaft assembly further having a section of flighting, said section of flighting being disposed at least partially within said fill tube assembly;

a venting assembly disposed at least partially within said hopper and said auger bowl, said venting assembly having a flow passage means communicating between said interior of said auger bowl and a vent discharge for removing gases de-aerated from the product within said auger bowl; and

an agitator assembly disposed at least partially within said auger bowl, at least a portion of said agitator assembly being mounted for rotation within said auger bowl and capable of moving the product therein.

5,327,948

SUPPLY SYSTEM

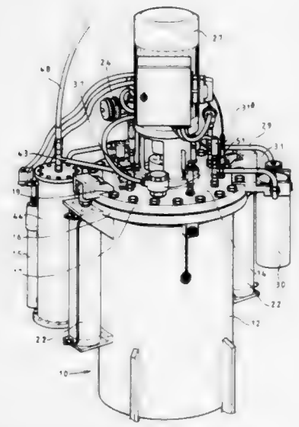
John J. Blakemore, Aldridge, United Kingdom, assignor to Rojac (Patterns Division) Limited, Birmingham, England

Filed Feb. 25, 1993, Ser. No. 22,281

Claims priority, application United Kingdom, Feb. 26, 1992, 9204071; Dec. 19, 1992, 9226519

Int. Cl.[5] **B67D** *1/16*

U.S. Cl. 141—86 **16 Claims**



1. A supply system for liquids comprising:

a storage tank for containing a supply of liquid to be dispensed;

an opening in said storage tank;

a lid having an outer side and an underside and movably mounted for movement relative to said tank between a closed position wherein said underside of said lid engages said opening for sealing said tank and an open position wherein said lid is in relative spaced relation with respect to said opening so that the interior of said tank and said underside of said lid are accessible; and

a pump mounted on said underside of said lid for pumping liquid in said storage tank to associated dispensing equipment outside of said storage tank, so that in use said lid sealingly closes said opening in said storage tank and said

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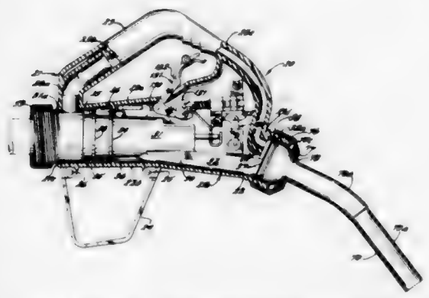
pump is housed within said interior of said storage tank and any leakage from said pump remains in said storage tank.

5,327,949

FUEL DISPENSING NOZZLE

Kenneth W. Dotson; Stewart Mac Harmon, both of Raleigh; Francis B. Weeks, Apex; Chih-Kun J. Shih, Cary, and John L. Johnson, Raleigh, all of N.C., assignors to Emco Wheaton, Inc., Cary, N.C.

Filed Oct. 19, 1992, Ser. No. 963,581
Int. Cl.[5] B65B *1/30, 3/28, 57/06, 57/14*
U.S. Cl. 141—206 21 Claims



1. A fuel dispensing nozzle characterized by improved user friendliness comprising:

(a) a main body portion having a fuel passageway extending from an ingress end of the main body portion to an egress end thereof substantially along the longitudinal axis of said body portion, the ingress end of said main body portion being adapted to be connected to a hose for delivering fuel from a pump to said nozzle, said main body portion having top and bottom portions substantially parallel to said fuel passageway,

(b) a spout carried by the egress end of said main body portion and extending outwardly and downwardly therefrom, said spout including a fuel dispensing passageway extending therethrough and being communicatively connected to said fuel passageway in said main body portion for dispensing fuel into a vehicle fuel tank,

(c) main valve means mounted in said main body portion for controlling the flow of fuel through the fuel passageway in said main body portion,

(d) handle means carried by the top portion of said main body portion and extending outwardly and upwardly therefrom and having a grasping portion spaced upwardly from said main body portion, and

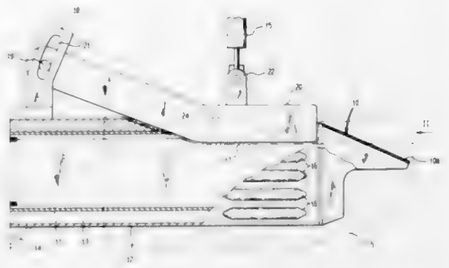
(e) main valve actuating means mounted on said main body portion and operatively connected to said main valve means for opening said main valve means to dispense fuel through said nozzle, said main valve actuating means including trigger means extending upwardly through the top portion of said main body portion toward said grasping portion of said handle means for ready access to a user holding said nozzle by said handle means, whereby said nozzle may be readily grasped by a user while the nozzle is disposed on a dispensing pump and manipulated to dispense fuel into a vehicle fuel tank without the hand of the user coming into contact with the main body portion of the nozzle.

5,327,950

APPARATUS FOR FILLING VALVED SACKS

Alois Combrink, Oelde, Fed. Rep. of Germany, assignor to Haver & Boecker, Oelde, Fed. Rep. of Germany

Filed Oct. 12, 1993, Ser. No. 134,966
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1992, 4235469
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—315 20 Claims



1. Apparatus for filling a valved sack, comprising:

at least one filling pipe in fluid communication with a feed unit and having one end for receiving the valve of a valved sack, said filling pipe defining a filling axis and including at least one elongated slot-like recess extending in the axial direction defined by said filling axis over a defined area; and

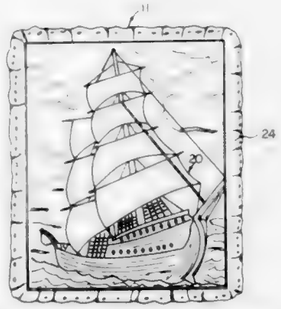
clamping means movably mounted relative to said filling pipe for engagement in said recess and application of a tension force onto the valve of the valved sack during a filling operation so as to tense and enable the valve to closely bear along its entire length against the outer surface of said filling pipe.

5,327,951

WOODBURNING PICTURE METHOD

Clarisse Y. Pickle, and Tivis T. Pickle, both of North Fork Manor Apts. 209 B-6 401 Elizabeth St., Saltville, Va. 24370

Filed Feb. 14, 1992, Ser. No. 835,312
Int. Cl.[5] B27M *1/00*; B31F *1/07*
U.S. Cl. 144—358 1 Claim



1. A woodburning picture method, comprising the steps of:

providing a base plate, the base plate including a top surface spaced from a bottom surface, and a continuous side wall extending coextensively between the top wall and the bottom surface, and

providing a writing instrument, and manually directing the writing instrument about the top surface to impart a picture outline on the top surface, and

providing a woodburning tool, and manually directing the woodburning tool to superimpose the woodburning tool along and coextensive with the picture outline to burningly direct inscribed lines coextensively with the picture outline, and

providing a paint brush, and directing the paint brush within the inscribed lines and exteriorly of the inscribed lines on the top surface to impart variously colored panels within the inscribed lines and exteriorly of the inscribed lines to completely direct a painted surface coextensively with the top surface of the base plate, and

a flexible lace fabric framework is secured continuously to the side wall, and

the step of directing communicating bores coextensively between the top surface and the bottom surface, and positioning an illumination bulb within each of said communicating bores, each illumination bulb is positioned adjacent the top surface, and directing electrically conductive wires in electrical communication with each illumination bulb and directing the conductive wires through the bores and mounted to the bottom surface of the base plate, and providing batteries and positioning the batteries fixedly to the bottom surface and positioning a switch in electrical communication between the batteries and the illumination bulbs to permit selective illumination of the illumination bulbs, and

providing a spirit level, and wherein the continuous side wall includes a side wall top surface and positioning the spirit level on the top surface and directing fasteners through the spirit level and securing the spirit level to the side wall top surface.

5,327,952

PNEUMATIC TIRE HAVING IMPROVED WET TRACTION

William E. Glover, Akron; John S. Attinello, Hartville, and Samuel P. Landers, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 666,811, Mar. 8, 1991. This application Oct. 2, 1992, Ser. No. 955,961
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R 4 Claims



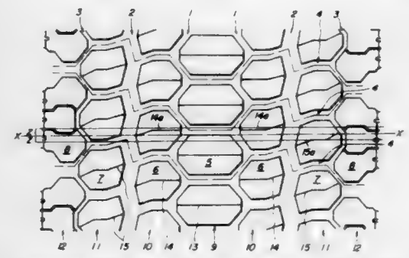
1. A pneumatic tire for use on paved surfaces having an aspect ratio of 0.35 to 0.80 comprising a pair of annular beads, carcass plies wrapped around said annular beads, a directional tread having circumferential grooves and lateral grooves disposed over said carcass plies in a crown area of said tire, and sidewalls disposed between said tread and said beads, wherein said tread is directional and has a footprint net-to-gross ratio of 50% to 70% and two annular aqua channels having a total width of about 10% to 33% of total treadwidth based on the footprint of the tire and a depth of 78% to 100% of total tread depth and a curvate U-shape, and wherein lateral grooves intersect circumferential grooves between said annular aqua channel and said shoulder, intersections of circumferential grooves and lateral grooves defining lugs, and wherein the total length of said lateral grooves is substantially longer than the width of said tread and wherein said tread has a contour approximating a logarithmic spiral from the equatorial plane of the tire to its shoulder, and wherein a rib having a width comprising 0.5 to 1.5 times the aquachannel depth separates said two aqua channels.

5,327,953

PNEUMATIC TIRES WITH REDUCED SIDE DEPTH AT DEFINED LOCATIONS

Yasufumi Ichiki, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 914,526
Claims priority, application Japan, Jul. 19, 1991, 3-203688
Int. Cl.[5] B60C *11/12*
U.S. Cl. 152—209 R 4 Claims



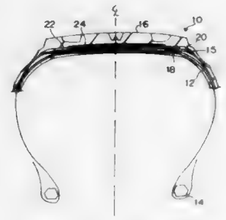
1. A pneumatic tire comprising a plurality of tire tread segments formed by a sector mold having 8–16 arc-shaped segments corresponding to said tire tread segments, each of said tire tread segments comprising a plurality of island rows that are defined in a surface of the tread of the tire, each row being composed of blocks separated from each other in the circumferential direction of the tire at a given internal, at least one of the island rows having sipes of substantially the same shape formed therein and being located at a given interval and having a periodicity in the circumferential direction, wherein a depth of a sipe located near an edge of each of the tire tread segments is shallower than that of all other sipes of similar shape and configuration located at other positions on the tire tread segment.

5,327,954

CUT-RESISTANT HEAVY-DUTY RADIAL TIRE

Yoichi Nakamura, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 91,185
Claims priority, application Japan, Jul. 24, 1992, 4-198047
Int. Cl.[5] B60C *9/18, 9/20*
U.S. Cl. 152—527 16 Claims



1. A heavy-duty radial tire comprising:

a carcass formed of a single layer of steel cord;

at least four belts formed from steel cords and bearing most of stress of said tire;

wherein said carcass and said at least four belts are disposed so as to cross each other, further comprising

an outer side belt layer of two belt layers of different cord diameters which are defined by said at least four belts being divided into said two belt layers, said outer side belt layer being a belt layer of said two belt layers which is disposed at an outer circumferential side of said tire in a radial direction of said tire; and

an inner side belt layer disposed further toward an inner circumferential side of said tire in the radial direction of said tire than said outer side belt layer;

wherein said at least four belts are provided such that,

when a belt cord diameter of said outer side belt layer is Φ out, an average value of absolute values of belt cord angles, which are defined by an equatorial plane of said tire, of said outer side belt layers is α out, a belt cord diameter of said inner side belt layer is Φ in, and an average value of absolute values of belt cord angles, which are defined by the equatorial plane of said tire, of said inner side belt layers is α in,

a difference between belt cord angles of respective belts of said outer side belt layers is less than or equal to 5°, and a difference between belt cord angles of respective belts of said inner side belt layers is less than or equal to 5°, and $1 < \Phi\text{ out}/\Phi\text{ in} \leqq 2.5$, and $\alpha\text{ in} - \alpha\text{ out} \geqq 5°$, and $(\alpha\text{ out} + \alpha\text{ in})/2 \leqq 23°$.

5,327,955

PROCESS FOR COMBINED CASTING AND HEAT TREATMENT

Jay Easwaran, Portage, Mich., assignor to The Board of Trustees of Western Michigan University, Kalamazoo, Mich.

Filed May 4, 1993, Ser. No. 57,693
Int. Cl.[5] B22C *9/04*; B22D *27/04*
U.S. Cl. 164—516 **12 Claims**

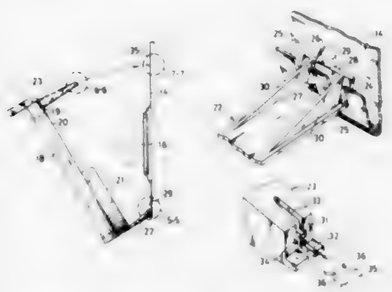
1. A method of producing a cast metal part comprising the steps of forming a pattern for a metal part out of a heat-vaporizable material; forming a ceramic shell around said pattern; forming a bed of a heated particulate medium around said ceramic shell; vaporizing the pattern to form a mold; introducing molten metal into said mold; holding said bed at an elevated temperature for an amount of time necessary to form desired microstructures while solidifying the molten metal; and removing said solidified molten metal from said mold as a cast metal part having the desired microstructures.

5,327,956

CONDENSER FAN ORIFICE FOR ROOM AIR CONDITIONER

Theodore S. Bolton, and Werner Adomeit, both of Liverpool, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 5, 1993, Ser. No. 27,056
Int. Cl.[5] F24F *1/02*
U.S. Cl. 165—121 **9 Claims**



1. Condenser fan mounting arrangement for a room air conditioner in which a condenser fan is situated to direct air out through a condenser coil, in which a partition formed as a generally flat plate supports a fan motor for said condenser fan, and in which a condenser fan orifice member is formed of an orifice plate with an orifice opening therein disposed circumferentially surrounding said fan so that said fan directs said air through said opening; comprising the improvement wherein said orifice member includes at least one lower support arm unitarily formed with said support plate below said orifice opening and extending to said partition, and at least one upper support post formed unitarily with said orifice plate and extending to said partition; and said partition includes upper tab means formed integrally thereon above said fan motor for engaging and interlocking with upper cooperating means on a tip of said at least one-support post, and a lower engaging member formed integrally with said partition below said fan motor for engaging a lower cooperating means disposed at a tip of said at least one lower support arm;

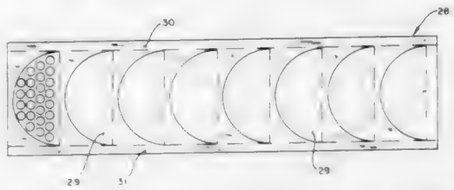
such that said condenser fan orifice member is installed without additional fasteners by engaging the lower cooperating means of said at least one lower support member with said lower engaging member of said partition, and rocking said orifice member towards said partition until said upper tab means enter engagement with said upper cooperating means on said at least one upper post.

5,327,957

INTEGRAL HEAT EXCHANGER

Joseph B. Killebrew, Byrnes Mill, Mo., assignor to Enfab, Inc., House Springs, Mo.

Continuation-in-part of Ser. No. 926,944, Aug. 10, 1992, Pat. No. 5,217,066. This application Jun. 3, 1993, Ser. No. 72,166
Int. Cl.[5] F28E *9/22*
U.S. Cl. 165—161 **3 Claims**



1. For use in a heat exchanger formed having an outer shell, a plate means integrally formed having a series of aligned tube supporting means therein, provided for supporting a series of tubes within the heat exchanger, said tube supporting means being bent into perpendicularity with respect to the plate means from which they are formed, said tube supporting means also forming baffling for the heat exchanger, and side rails provided along the longitudinal sides of the said plate means, which when bent into perpendicularity, provides means for supporting a series of heat exchange tubes within the heat exchanger, said side rails, tube supporting means, and plate means, all being integrally formed as a single component from a single sheet of metallic material.

5,327,958

STACKED-PLATE HEAT EXCHANGER

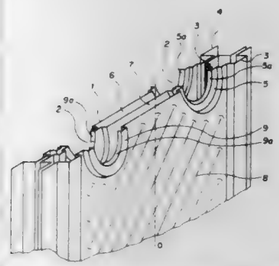
Vaclav Machata, Hlinsko; Karel Hubacek; Edmund Neubauer, both of Chotebor; Karel Tvrdy, Havl. Brod.; Jaromir Tecl, Chotebor; Zdenek Matejka, Bilek, and Tomas Zvolanek, Chotebor, all of Czechoslovakia, assignors to Tenez A.S., Chotebor, Switzerland

Filed Jun. 22, 1993, Ser. No. 81,648
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1992, 4223321
Int. Cl.[5] F28D *9/00*
U.S. Cl. 165—167 **14 Claims**

1. In a stacked-plate heat exchanger, wherein several corru-

gated and generally rectangular plates, each of which including a midplane having undulations formed therein, are stacked and welded together to be sealed off from the environment, and having hollow spaces formed between the plates and intake-and-outlet openings at the corners, with alternating spaces being occupied by one of two fluids which exchange heat, the improvement comprising:

a lateral flange (**4**) at the periphery of the plates and surrounding a lateral ridge (**3**), the lateral flange being parallel to the midplane and lying in a plane defined by crests of the undulations on one side of the midplane, and the lateral ridge being parallel to the midplane and lying in a plane defined by crests of the undulations on the other side of the midplane;



wherein the intake-and-outlet openings (**2**) provided in each plate for one of the fluids are surrounded by annular ridges (**9**) in substantially the same plane as the lateral ridge, and the outlet-and-intake openings for the other fluid are surrounded by annular ridges (**5**) in substantially the same plane as the lateral flange;

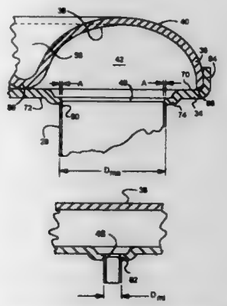
adjacent plates being welded together along the lateral ridges and along the annular ridges, or cylindrical flanges (**5***a*, **9***a*) adjacent thereto, to produce a subassembly, and adjacent subassemblies being welded along abutting lateral flanges and along abutting annular ridges, or their adjacent cylindrical flanges.

5,327,959

HEADER FOR AN EVAPORATOR

Z. Philip Saperstein, Lake Bluff, Ill.; Gregory G. Hughes, Milwaukee, Wis.; Dan R. DeRosia, and Dennis G. Granetzke, both of Racine, Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Filed Sep. 18, 1992, Ser. No. 919,211
Int. Cl.[5] F28F *9/16*; F28D *1/053*
U.S. Cl. 165—173 **11 Claims**



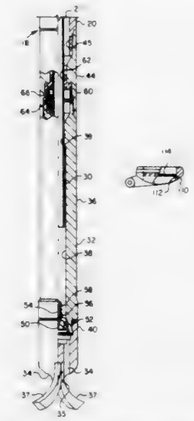
10. The heat exchanger of claim 9 wherein said dimples are elongated, said tube receiving openings are elongated slots and said tubes are flattened tubes.

5,327,960

GRAVEL PACK INSTALLATIONS FOR WELLS

H. Mitchell Cornette, Houston; John V. Salerni, Kingwood, and Robert K. Bethel, Houston, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 24, 1992, Ser. No. 980,823
Int. Cl.[5] E21B *43/04, 43/08, 34/06*
U.S. Cl. 166—51 **12 Claims**



1. In a gravel pack screen assembly including an elongated gravel pack screen, a member connected to a distal end of said gravel pack screen including a flow passage formed therein and spaced-apart one-way valves interposed in said flow passage, said one-way valves being operable to permit fluid flow in a direction out of a distal end of said member through said flow passage and to substantially prevent the flow of fluid and entrained solids into the interior of said gravel pack screen, and one of said one-way valves is intermediate said gravel pack screen and the other of said one-way valves and includes a closure member having means operable to permit fluid flow through said closure member but to prevent solids flow through said closure member in its closed position whereby, in the event of failure of said other of said one-way valves, a gravel plug may accumulate in said flow passage to filter fluid flow through said flow passage and into the interior of said gravel pack screen.

5,327,961

DRIVE HEAD FOR DOWNHOLE ROTARY PUMP

Robert A. R. Mills, 8903 Baylor Cr. SW, Calgary AB, T2V 3N5, Canada

Filed Sep. 25, 1992, Ser. No. 950,959
Int. Cl.[5] F04B *47/04*
U.S. Cl. 166—68.5 **17 Claims**

1. A drive head for a downhole rotary pump operated by a drive string rotatable in a production string, comprising

a rotatable drive shaft having an axis and an axial bore for receiving a portion of the drive string;

mount means for rotatably supporting the drive shaft on an coaxial with a wellhead assembly, the drive shaft being rotatable around the axis;

drive means for rotating the drive shaft relative to the mount means;

means for transmitting torque from the drive shaft to the portion of the drive string; and

means for centering the portion of the drive string in the drive shaft,

the means for transmitting torque and the means for center-

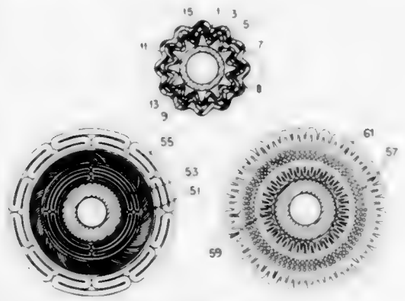
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ing being combined in a clamping means integral with the drive shaft for concentrically clamping the portion of the



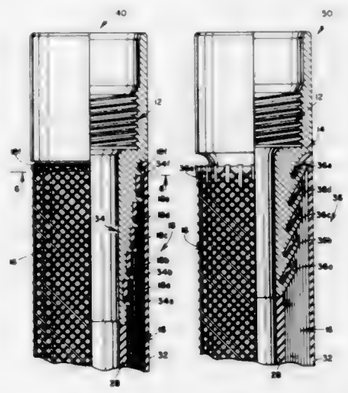
drive string in the drive shaft and to permit transmission of torque from the drive shaft to the drive string.

5,327,962
WELL PACKER
Philip F. Head, 6 Leith Mansions, Grantully Road, London W9 1LQ, United Kingdom
Filed Aug. 6, 1992, Ser. No. 926,869
Claims priority, application United Kingdom, Aug. 16, 1991, 9117683.4
Int. Cl.[5] E21B *33/127*
U.S. Cl. 166—187 **12 Claims**



1. An inflatable packer comprising:
an expandable elongated sleeve extending along a longitudinal axis, said sleeve being formed with at least one circumferentially expandable portion formed with: at least one annular first layer of an elastomeric resin having outer and inner circumferences, and
two barrier annular layers coaxial with the first layer, each of the barrier layers lying against a respective one of the inner and outer circumferences of the first layer, said barrier layers being of material relatively inert to the corrosive fluids present in a well and selected from the group consisting of metals, fluoroplastics and polyphenylene sulphide, said sleeve being formed with an inner bore, said portion being expandable from a deflated condition to an inflated condition to form a seal upon building up of pressure in the bore, each barrier layer being impermeable and preventing contact between the respective circumference of the first layer and the corrosive fluids present in the well in the inflated condition position of said portion; and
spreading means for enabling each barrier layer to spread from a respective initial configuration upon building up the pressure in the bore, each barrier layer being contractable substantially to the respective initial configuration upon reduction of the pressure in the bore.

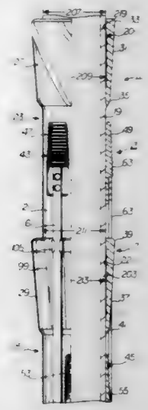
5,327,963
TUBULAR COUPLING DEVICE
James C. Vance, Sr., Sedalia, and Roy G. Quinlan, Littleton, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.
Filed Oct. 30, 1991, Ser. No. 784,837
Int. Cl.[5] E21B *33/127*
U.S. Cl. 166—187 **18 Claims**



1. A coupling device adapted for attachment to an elastomeric tubular body having integral looped reinforcement fibers as part of a tubular assembly, said device comprising:
a coupling member;
a stem connected to said coupling member;
said stem having at least one annular depression disposed thereabout for receiving a portion of said reinforcement fiber loops within; and
ring means for constrictively retaining said reinforcement fiber loops within said annular depression and said elastomeric tubular body in sealing engagement with said stem, when connected therewith, by interposition within loops of said looped reinforcement fibers to limit axial movement of said reinforcement fibers and said elastomeric tubular body relative to said stem.

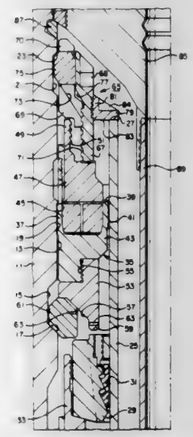
5,327,964
LINER HANGER APPARATUS
John A. O'Donnell, Cypress, and Richard W. Wilson, The Woodlands, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.
Division of Ser. No. 858,100, Mar. 26, 1992. This application Mar. 1, 1993, Ser. No. 24,552
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—208 **29 Claims**

1. A liner hanger apparatus, for use in a subterranean wellbore, comprising:
a tubular body defining a generally cylindrical exterior surface;
a gripping assembly disposed circumferentially about at least a portion of said generally cylindrical exterior surface of said tubular body, operable in a plurality of operating modes including a radially-reduced running mode of operation and a radially-enlarged gripping mode of operation, wherein, in switching between said running and gripping modes of operation, said tubular body is axially displaced relative to at least a portion of said gripping assembly; and
wherein said gripping assembly includes at least one ring-shaped component which is secured to said tubular body by a thermally-set non-screwed, shrink-fit coupling between an interior surface of said at least one ring-shaped



component and a portion of said generally cylindrical exterior surface of said tubular body.

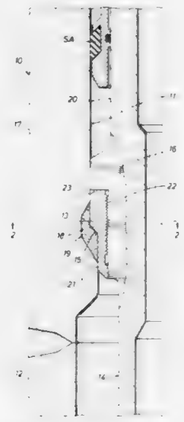
5,327,965
WELLHEAD COMPLETION SYSTEM
Garry R. Stephen, Aberdeen, Scotland; Dale B. Marietta, Singapore, Singapore; Norman Brammer, Aberdeen, Scotland; Casimir J. Fritsche, Gassin, France; Lawrence A. Eckert, Houston, Tex., and Allan C. Sharp, Aberdeen, Scotland, assignors to ABB Vetco Gray Inc., Houston, Tex.
Filed Apr. 1, 1993, Ser. No. 41,120
Int. Cl.[5] E21B *33/04*
U.S. Cl. 166—208 **15 Claims**



1. In a well having a wellhead housing having a bore with a cylindrical bore wall, an annular groove formed in the bore wall which defines an upward facing load shoulder, a tubular member extending coaxially within the bore and having a cylindrical exterior tubular member wall spaced inward from the bore wall, an improved apparatus for sealing between the tubular member wall and the bore wall, comprising in combination:
a seal;

means for allowing the seal to be lowered into the bore around the tubular member;
a split load ring;
carrying means at a lower end of the seal for carrying the load ring with the seal as it lowered into the bore around the tubular member, and for moving the load ring outward into engagement with the load shoulder to lock the seal to the wellhead housing; and
energizing means for deforming the seal into engagement with the bore wall and tubular member wall.

5,327,966
WELLHEAD EQUIPMENT
Larry E. Reimert, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.
Filed May 26, 1993, Ser. No. 67,749
Int. Cl.[5] E21B *33/04*
U.S. Cl. 166—208 **12 Claims**



1. Wellhead equipment, comprising
a housing disposable at the upper end of a well and having a bore therethrough, and
a tubular hanger connectible to the upper end of a pipe string and lowerable into a landed position within the bore of the housing for suspending the pipe string within the well,
said housing including a main body of a first material having an internal cavity thereabout and a weld body of a second material having a considerably greater yield strength than that of the first formed integrally with the main body within the cavity to provide an upwardly facing seat in the housing bore, and
said hanger including a main body of a first material and a ring of a second material having a considerably greater yield strength than that of the first material and carried by the main body in position to provide a downwardly facing shoulder engageable with the seat to support the hanger therefrom.

5,327,967
UTILIZATION OF PHOSPHITE SALTS AS NUTRIENTS FOR SUBTERRANEAN MICROBIAL PROCESSES
Gary E. Jenneman, and J. Bennett Clark, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 22, 1992, Ser. No. 994,860
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—246 **9 Claims**

1. A process for sustaining microbial activity in subterranean formations which comprises introducing as a microbial nutri-

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ent a phosphate salt into said subterranean formations which are deficient in phosphate salt.

5,327,968

UTILIZING DRILLING FLUID IN WELL CEMENTING OPERATIONS

David D. Onan, Lawton; Dralen T. Terry, Duncan; Patty L. Totten, Duncan; Bobby G. Brake, Duncan, and Bobby J. King, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 30, 1992, Ser. No. 998,279
Int. Cl.[5] F21B *33/14*
U.S. Cl. 166—293 20 Claims

1. A method of cementing a well with a cementing composition utilizing a portion of the drilling fluid used to drill the well as a component in the cementing composition comprising the steps of:

forming a set-activated cementing composition comprising water, particulate condensed silica fume consisting of particles having diameters less than about 1 micrometer suspended in said water in a weight ratio of condensed silica fume to water in the range of from about 1:2 to about 1.5:1, a dispersing agent for facilitating the dispersal of said silica fume particles in said water and maintaining said particles in suspension therein, a set-activator selected from the group consisting of calcium hydroxide, magnesium oxide and mixtures thereof, a set delaying additive for increasing the time in which said composition sets after said set-activator is combined therewith and a portion of said drilling fluid in an amount whereby the weight ratio of said drilling fluid to the other components of said cementing composition is in the range of from about 1:10 to about 1:3;

introducing the resulting cementing composition into said well; and

permitting said cementing composition to set into a hard mass in said well.

5,327,969

METHOD OF PREVENTING GAS MIGRATION DURING PRIMARY WELL CEMENTING

Fred L. Sabins, and David L. Sutton, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 30, 1993, Ser. No. 55,167
Int. Cl.[5] E21B *33/16, 47/06, 47/10*
U.S. Cl. 166—250 20 Claims

1. A method of cementing a string of pipe in a well bore which penetrates a gas formation while preventing gas migration in the well bore, both the pipe and well bore being substantially filled with drilling fluid, comprising the steps of:

(a) displacing a cement slurry downwardly through said pipe and upwardly into the annulus between said pipe and the walls of said well bore while maintaining sufficient hydrostatic pressure on said gas formation to prevent the entry of gas therefrom into said well bore;

(b) determining the initial surface pressure in said pipe after said cement slurry is displaced into said annulus in accordance with step (a);

(c) displacing additional cement slurry into said annulus as is necessary to make up for losses in said surface pressure due to cement slurry gel strength development and volume reduction and to maintain said surface pressure substantially equal to said initial surface pressure determined in accordance with step (b) thereby preventing the entry of gas from said gas formation into said well bore until said cement slurry in said annulus develops a predetermined gel strength sufficient by itself to prevent the migration of said gas; and then

(d) allowing said cement slurry to set into a hard impermeable mass in said annulus.

5,327,970

METHOD FOR GRAVEL PACKING OF WELLS

Robert W. McQueen, Houston; Alan D. Peters, Midland; Charles D. Ebinger, Houston, and Thomas A. Huddle, Katy, all of Tex., assignors to Penetrator's, Inc., Houston, Tex.

Filed Feb. 19, 1993, Ser. No. 19,660
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—278 4 Claims



1. A method of providing a gravel packed cavity in the earth in an area adjacent a well bore comprising the steps of:

(a) moving a nozzle housing outwardly from said well bore while simultaneously ejecting a high pressure fluid jet forwardly in the direction of movement of said nozzle housing to cut a path for the nozzle housing through the formation; and

(b) ejecting high pressure fluid jet from said nozzle housing in a direction having a component substantially perpendicular to said path of movement while continuing to eject said forwardly directed jet to create a bulbous shaped cavity in the formation which increases in transverse dimension up to a given maximum in proportion to distance from the well bore; and

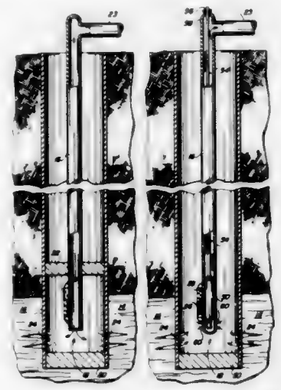
(c) filling said bulbous shaped cavity with a gravel packing slurry including a hardening bonding constituent.

5,327,971

PRESSURE RECORDER CARRIER AND METHOD OF USE

Charles F. Garbutt, and David E. Ellwood, both of Midland, Tex., assignors to Marathon Oil Company, Findlay, Ohio

Filed Oct. 19, 1992, Ser. No. 962,767
Int. Cl.[5] E21B *47/00*
U.S. Cl. 166—250 7 Claims



1. A method of collecting bottom-hole pressure data in a well in which a fracture stimulation operation is being carried out, comprising:

attaching a pressure recorder carrier to the outer surface of a portion of a tubing string intended to extend into the bottom-hole region of the well;

providing fluid communication means between the exterior and interior of the pressure recorder carrier so as to expose the interior of the carrier to pressure in the bottom-hole region;

placing a pressure recorder in the carrier;

introducing the tubing string into the bottom-hole region of the well adjacent a zone of interest;

providing a packer through which the tubing string extends, the packer sealing the annulus between the tubing string and the sidewall of the well above the zone of interest;

causing proppant particles and treatment fluid to flow downwardly through the tubing string and into the zone of interest; and

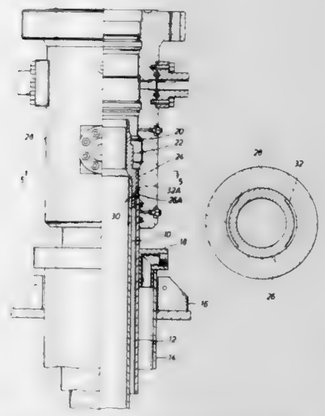
collecting bottom-hole pressure data with the pressure recorder.

5,327,972

WELLHEAD SYSTEM

David H. Theiss, Houston, and Joseph H. Hynes, Sugar Land, both of Tex., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 25, 1992, Ser. No. 951,487
Int. Cl.[5] E21B *23/02*
U.S. Cl. 166—208 18 Claims



1. A wellhead system for supporting a plurality of casings in an oil or gas well, comprising:

a wellhead housing,

a casing hanger,

a means for selectively supporting said casing hanger within said wellhead housing,

said selective supporting means allowing said casing hanger to pass through said wellhead housing in a first orientation, and

said selective supporting means allowing said casing hanger to be supported within said wellhead housing in a second orientation,

wherein said selective supporting means includes:

a shoulder within said wellhead housing having a plurality of circumferentially spaced support shoulder arcs,

a shoulder on said casing hanger having a plurality of circumferentially spaced support shoulder arcs,

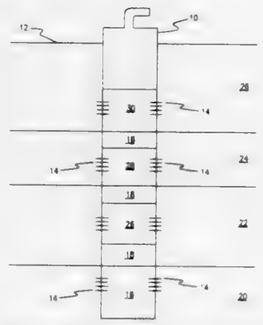
whereby said support shoulder arcs within said wellhead housing and said support shoulder arcs on said casing hanger cooperate to allow said casing hanger to pass through said wellhead housing in said first orientation.

5,327,973

METHOD FOR VARIABLE DENSITY ACIDIZING

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 22, 1992, Ser. No. 994,852
Int. Cl.[5] E21B *43/27*
U.S. Cl. 166—307 22 Claims



13. A method for acidizing a formation where variable density acids are utilized comprising:

a) loading via a wellbore all productive intervals of the formation with a low density non-reactive fluid which fluid is compatible with the composition of the formation;

b) injecting a first stage acid into the wellbore which acid has a density greater than the non-reactive fluid and is sufficient in density to flow to the bottom of the wellbore so as to be in fluid communication with a lower productive interval of the formation;

c) injecting thereafter a low density spacer or non-reactive fluid into the wellbore which spacer has a density less than the first stage acid;

d) injecting next a second stage acid into the wellbore which acid has a density less than the first stage acid spacer injected in step c) which precludes liquid acids from mixing with each other as the second stage acid enters a productive interval above the interval in step b); and

e) overflushing all intervals of the formation with a non-reactive fluid that has a density greater than any of the previously injected acid stages or spacers thereby forcing them into the intervals and cleaning out the wellbore.

5,327,974

METHOD AND APPARATUS FOR REMOVING DEBRIS FROM A WELLBORE

Joseph F. Donovan, Spring, Tex., and Michael J. Naquin, Youngsville, La., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Oct. 13, 1992, Ser. No. 959,626
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—311 21 Claims

1. A tool for removing, at least in part, debris from a wellbore, comprising:

an elongated body;

means on said body for increasing velocity of fluids flowing into the wellbore by providing a restrictive flowpath which causes the increased velocity of the fluid to carry off debris away from said body; and

auxiliary fluid feed means for introducing an auxiliary fluid

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adjacent said means for increasing velocity, to further increase velocity of the flowing fluid through said means



for increasing velocity, as an assist to carrying off debris away from said body and out of the wellbore

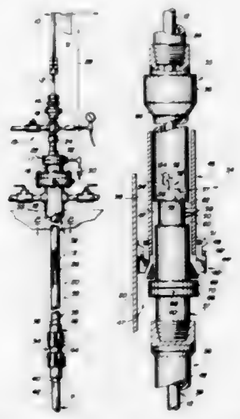
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5,327,975

TUBING ANCHOR CATCHER WITH ROTATING MANDREL

John L. Land, Hobbs, N. Mex., assignor to Rotating Production Systems, Inc., Hobbs, N. Mex.

Continuation-in-part of Ser. No. 682,499, Apr. 8, 1991, Pat. No. 5,139,090. This application May 28, 1992, Ser. No. 889,569
Int. Cl.[5] E21B *17/046*
U.S. Cl. 166—369 **18 Claims**



1. In a wellbore having a rod string actuated downhole pump for producing fluid up a tubing string to the surface of the ground, a wellhead at the top of the wellbore, an anchor device by which the lower end of the tubing string is anchored to the lower end of the wellbore to place the tubing string in tension; the method of reducing wear between the rod string and the interior wall of the tubing string; comprising the steps of:

connecting the upper end of the tubing string to a tubing rotator means;

rotatably mounting a mandrel within a downhole anchor device and connecting the lower end of the tubing string to said mandrel of said anchor device; and,

using said anchor device for placing a lower force on the downhole end of the tubing string to thereby place the tubing string in tension

7. In a production unit for a cased wellbore having a wellhead and a rod string connected to actuate a downhole pump for producing fluid up through a tubing string to the surface of the ground, the tubing string having an upper end and a lower end, the combination with said production unit of apparatus for rotating the tubing string respective to the rod string while holding the tubing string in tension;

said apparatus includes an upper mandrel attached to the upper end of the tubing string, a tubing rotator by which said mandrel is rotatably supported from the wellhead; a downhole tubing anchor device connected to the lower end of the tubing string by which a lower end of the tubing string is held in tension at a location downhole in the borehole while concurrently rotatably anchored to the casing string;

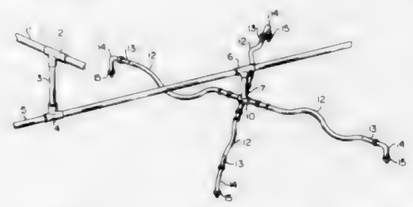
said downhole tubing anchor device has a hollow lower mandrel that is connected to form a continuation of the tubing string; said anchor device includes a barrel, extensible slip means mounted on said barrel for radial movement respective to the barrel and mandrel; said barrel is concentrically arranged about said mandrel and the mandrel in mounted for axial movement therewithin, bearing means by which said mandrel rotatably engages said barrel and thereby transfer loads from the string into the slips and then into the casing wall; means responsive to axial movement of the mandrel respective to the barrel for extending said slips into engagement with a casing wall and thereby releasably attach the lower end of the tubing string to the well casing whereby the rotating tubing string can be placed in tension between said upper tubing rotator and said anchor device.

5,327,976

METHOD OF INSTALLING PIPES FOR SPRINKLER HEAD MOUNTING, AND SPRINKLER-HEAD MOUNTING PIPING ARRANGEMENT

Takamasa Hattori, 218-315 Ogaito Oazu Kumatori-cho, Sennan-gun, Osaka-fu, Japan

Continuation of Ser. No. 607,317, Oct. 31, 1990, abandoned. This application Oct. 21, 1993, Ser. No. 140,818
Claims priority, application Japan, Apr. 23, 1990, 2-106950
Int. Cl.[5] A62C *35/68*
U.S. Cl. 169—43 **5 Claims**



1. A method of installing pipes for sprinkler head mounting which comprises:

connecting a plurality of auxiliary water-supply pipes to a fire-water main supply pipe with spacing from each other;

connecting a plurality of joints to said auxiliary water-supply pipes with spacing from each other through an inlet port formed substantially centrally of each of said joints, each of said joints further having at least four outlet ports formed radially and horizontally on an outer periphery of said joints and extending in at least four different radial directions;

connecting a sprinkler head to each of said four outlet ports of each said plurality of joints through a flexible joint pipe in such a manner as to radially dispose said sprinkler heads at predetermined positions, using flexibility of said flexible joint pipe.

3. A sprinkler head mounting piping arrangement for connecting sprinkler heads to auxiliary water-supply pipes connected to a fire-water main supply pipe with spacing from each other comprising:

a plurality of joints connected to said auxiliary water-supply pipes with spacing from each other through an inlet port formed substantially centrally of each of said joints,

each of said joints further having at least four outlet ports radially and horizontally formed on an outer periphery thereof and extending in at least four different radial directions,

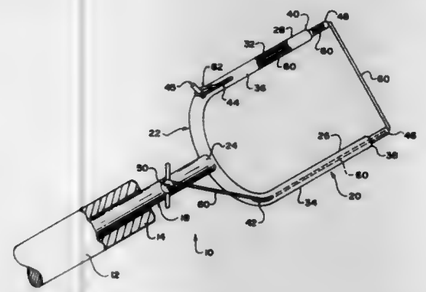
each of said sprinkler heads connected to each of said four outlet ports of said joints through a flexible joint pipe in such a manner as to radially dispose said sprinkler heads at predetermined positions, using flexibility of said flexible joint pipe.

5,327,977

WEEDER WITH HOLLOW TINES

Anthony Lukashuk, R.R. #3, Comp. 7, site 35, Prince George, British Columbia, Canada V2N 2J1

Filed Dec. 14, 1992, Ser. No. 990,266
Int. Cl.[5] A01B *1/00*
U.S. Cl. 172—376 **8 Claims**



1. A cultivator comprising:

a handle having a lower end;

a tool member connected to the lower end of the handle, the tool member having first and second spaced-apart tines, each of the tines having an outer tip and being tubular with a longitudinal interior hollow extending to the tip, each of the having an inner portion and an outer portion adjacent the tip, the outer portion being thinner and harder than the inner portion, the outer portion being a tubular insert telescopically received within the inner portion and having an outer opening;

a flexible member extending from the hollows of the tines and between the tips thereof, the flexible member extending through the outer openings of the tubular inserts; and

means for securing the flexible member in tension between the tips of the tines.

5,327,978

EXTENDABLE LATCHABLE DRAFT LINK

Ronald D. Bremner, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 27, 1993, Ser. No. 9,610
Int. Cl.[5] B60D *1/00;* **A01B** *59/06*
U.S. Cl. 172—439 **13 Claims**

1. A telescoping link assembly having a hollow first link, a second link slidably received by a channel in the first link and latching means for releasably holding the second link in a retracted position with respect to the first link, wherein:

the first link has a pocket formed therein adjacent to the channel;

a plate is mounted in the pocket, the plate being pivotal from a release position wherein the plate is substantially received in the pocket to a locking position wherein at least a portion of the plate projects into the channel;

a resilient member is biased to urge the plate towards its locking position;

the second link has a shoulder surface formed therein, the



shoulder surface being engageable with the plate to releasably hold the second link in the retracted position;

a bore extends through a wall of the first link, the bore being aligned with a central portion of the pocket; and

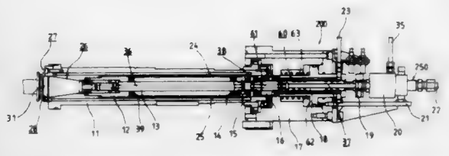
a post is fixed to a central portion of the plate and is loosely received by the bore, the post being engageable with the wall of the second bore to limit pivoting the plate.

5,327,979

COOLANT THROUGH SPINDLE DEVICE

Chen-Chung Du; Zhi-Ming Chen; Shao-Yu Hsu; Cheng-Chang Lin, and Tsann-Huei Chang, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 22, 1993, Ser. No. 145,140
Int. Cl.[5] B25D *17/22*
U.S. Cl. 173—74 **4 Claims**



1. A coolant through spindle device for use in a machine tool, said device comprising:

an elongated hollow cylindrical spindle having a front end with a tapper hole formed thereof for receiving and holding a tool holder therein and an opposite rear end;

a pull rod disposed inside said spindle, having a central passage for pressurized air and a second passage for the coolant;

a belleville spring biasing said pull rod away from the front end of said spindle;

a switching collar fit between an inside surface of said spindle and said pull rod;

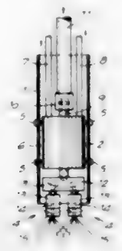
a hydraulic cylinder disposed in the proximity of the rear end of said spindle and engageable with said pull rod for moving said pull rod against said belleville spring to install or release a cutting tool from said spindle;

a connecting rod having a front end secured to said pull rod and a rear end connecting to a rotating joint member;

said rotating joint member having a coolant inlet port to allow the coolant to enter a passage formed inside said connecting rod therethrough, said coolant being further conducted toward said switching collar through the second passage inside said pull rod to be switched to deep holes formed in the cylindrical wall of said spindle to be sprayed to the cutting tool from nozzle holes formed on said tool holder.

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5,327,980
DRILL HEAD
Marc J. M. Smet, Kasteelstraat 29, 2400 Mol, Belgium
Filed Oct. 15, 1991, Ser. No. 775,606
Claims priority, application Belgium, Oct. 15, 1990, 09000972
Int. Cl.[5] E21B *7/18*
U.S. Cl. 175—21 11 Claims



1. A drill head for making a hole in the ground, the drill head comprising:
a mantle;
a spraying device carrier mounted inside the mantle so that it can rotate;
a motor installed inside the mantle for driving the spraying device carrier;
two turbo-jets each being eccentrically mounted on the spraying device carrier; and
a first pipe line for supplying fluid to the turbo-jets.

5,327,981
GROUND WATER SAMPLING DEVICE
Michael A. Morgan, Baton Rouge, La., assignor to GDC Engineering, Inc., Baton Rouge, La.
Filed Sep. 21, 1992, Ser. No. 948,126
Int. Cl.[5] E21B *49/08*
U.S. Cl. 175—21 6 Claims



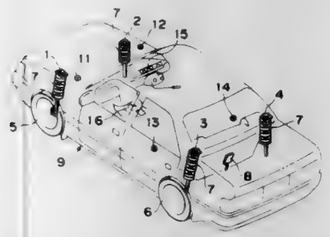
1. A device for collecting a sample of a fluid in a stratum, comprising
(a) a casing;
(b) a drive cone adapted for penetrating the stratum;
(c) a screen having an interior, said screen adapted to allow passage of the fluid from the stratum to the interior when said screen is exposed to the fluid, said screen being fixedly attached to or adapted for fixed attachment to said drive cone, and said screen adapted to be removably placed inside said casing;
(d) means for removably attaching said drive cone or said screen to said casing, wherein the force of said attaching means suffices to hold said screen fully within said casing when said device descends into the stratum, but wherein the force of said attaching means is insufficient to hold said screen fully within said casing when said casing is pulled upward through the stratum, whereby following such upward pulling of said casing said screen is withdrawn from said casing and is exposed to the stratum and to any fluid in the stratum; and
(e) means for holding said screen to said casing after said screen has been withdrawn from said casing, the force of said holding means being sufficient to pull said screen and said drive cone upward through the stratum when said casing is pulled upward through the stratum;
wherein the diameter of said drive cone is substantially the same as the diameter of said casing, permitting the device to be raised or lowered within the stratum after said screen has been exposed to the stratum and permitting the device to be used to collect a sample of fluid at a different depth within the stratum, without the necessity of first removing the device from the stratum.

5,327,982
DRILL STRING JAR APPARATUS
Wilson J. Trahan, and Rayford J. Simon, both of Carencro, La., assignors to Raytec, Inc., Scott, La.
Continuation-in-part of Ser. No. 622,924, Dec. 6, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 959,561
Int. Cl.[5] E21B *31/107*
U.S. Cl. 175—304 14 Claims



1. A drill string jar apparatus comprising:
a) an elongated tool body positionable within a drill string and having an upper end, a lower end, an interior wall, an exterior wall, a bore, and a longitudinal axis;
b) a latch mandrel moveable within the bore of the tool body, between a first neutral position, and a fired-up position or a fired-down position, the latch mandrel having a body having an exterior wall;
c) a substantially continuous channel having angulated walls and formed in the interior wall of the tool body, the angulated walls being angulated with respect to the longitudinal axis of the tool body;
d) latching means on the exterior wall of the latch mandrel body for latching into the channel of the tool body when the latch mandrel is in the neutral position, the latching means comprising a substantially continuous raised shoulder portion on the exterior wall of the latch mandrel body for engaging the channel when the latch mandrel is in the neutral position;
e) constriction means on the latch mandrel for allowing the latch mandrel body to move inwardly sufficiently to disengage the latching means from the channel in the tool body and thus allow the latch mandrel to move upward or downward from the channel within the bore of the tool body depending on the direction of the force imparted on the mandrel;
f) an upper pull shaft attached to the upper end of the latch mandrel for pulling the latch mandrel out of the neutral position into the fired-up position when force is imparted in an upward direction; and
g) a down shaft below the latch mandrel for making contact with the lower end of the tool body when force is applied in a downward direction to unlatch the mandrel from the tool in the neutral position,
wherein the force necessary to move the latch mandrel from the neutral position is a factor of the angulation of the walls of the channel when the shoulder portion is engaged with the channel while the tool is in the neutral position.

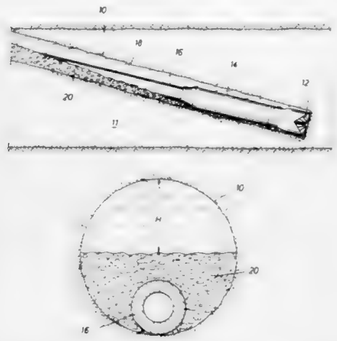
5,327,983
SUSPENSION SYSTEM FOR VEHICLE
Tohru Yoshioka; Tetsuro Butsuen, and Yasunori Yamamoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Feb. 11, 1992, Ser. No. 833,931
Claims priority, application Japan, Feb. 14, 1991, 3-20782
Int. Cl.[5] B60G *17/00*
U.S. Cl. 180—41 7 Claims



1. A suspension system for a vehicle comprising:
shock absorbers, each of said shock absorbers provided so as to be associated with one wheel of the vehicle and between sprung parts and unsprung parts of the vehicle,
step motors for changing damping force characteristics of one of the shock absorbers in steps by open loop control, and
control means for outputting control signals to the step motors every predetermined time interval so as to make the damping force characteristics of said shock absorbers harder.

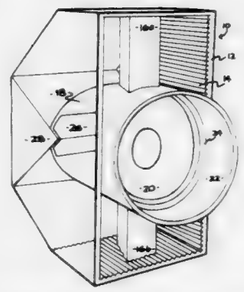
5,327,984
METHOD OF CONTROLLING CUTTINGS ACCUMULATION IN HIGH-ANGLE WELLS
Marco Rasi, Houston, and Eugene A. Sikirica, Katy, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.
Filed Mar. 17, 1993, Ser. No. 32,808
Int. Cl.[5] E21B *7/00*
U.S. Cl. 175—61 12 Claims

1. A method of calculating the equilibrium distance, H, across an open region above a bed of solids in a high-angle wellbore comprising:
selecting values of drilling variables, the drilling variables comprising drilling fluid rheology, drilling fluid density, flow rate of drilling fluid, size of cuttings and density of cuttings;
assuming a value of the dimension, H;
calculating a hydraulic radius and relative roughness of the bed surface;
calculating a generalized Reynolds number for flow in the open region above the bed to determine flow regime;
determining a friction factor dependent on the generalized Reynolds number and flow regime;
using the friction factor to calculate the shear stress at the surface of the bed;
calculating a particle Reynolds Number for a shear velocity corresponding to the shear stress at the surface of the bed;
determining a critical shear stress for erosion of the bed corresponding to the calculated particle Reynolds Number and comparing the shear stress at the surface of the bed to the critical shear stress; and



iterating on the value of H until the shear stress at the surface of the bed and the critical shear stress for erosion are within a selected differential value to determine the equilibrium distance across the open region above the bed of solids.

5,327,985
ACOUSTICAL TRANSDUCER ENCLOSURE
Louis Porzilli, 164 W. Shore Trail, Sparta, N.J. 07871
Filed Dec. 2, 1991, Ser. No. 801,381
The portion of the term of this patent subsequent to Sep. 12, 2010, has been disclaimed.
Int. Cl.[5] G10K *11/00*
U.S. Cl. 181—177 17 Claims



1. An acoustical transducer enclosure comprising:
a. a multisided enclosure, said multisided enclosure having at least five sides, said at least five sides being a first side, a second side, a third side, a fourth side and at least one back side; said first side, said second side, said third side and said fourth side being affixed to one another to form an enclosure, said enclosure having an interior area and an exterior area;
b. a cylindrical hollow tube, said cylindrical hollow tube having a first end and a second end;
c. transducer means;
d. forward wave guides, said forward wave guides lining said interior area of said enclosure;
e. forward baffles, said forward baffles extending at right angles to said first side and said third side;
f. a rear wave form vent, said rear wave form vent being

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located on a horizontal plane with said speaker means, at said first end of said cylindrical hollow tube;

g. a rear back pressure booster baffle, said rear back pressure booster baffle being at said first end of said cylindrical hollow tube;

h. a wave splitter, said wave splitter being located proximate said first end of said cylindrical hollow tube

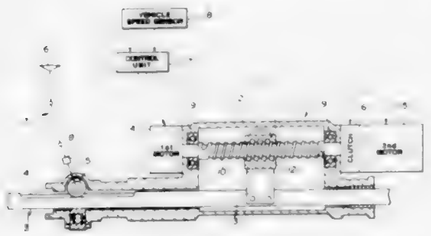
i. a pair of forward baffles, said forward baffles being at right angles to said first side and said second side.

5,327,986

ELECTRIC MOTOR DRIVE-TYPE POWER STEERING SYSTEM

Norihiro Saita, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Jan. 29, 1993, Ser. No. 10,809
Claims priority, application Japan, Feb. 4, 1992, 4-3721[U]
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 **5 Claims**



1. A power steering system for a vehicle comprising:

a steering gear;

a first motor constantly connected to said steering gear for supplying thereto a steering assist force;

a second motor for supplying a steering assist force to said steering gear;

an electromagnetic clutch interposed between said second motor and said steering gear for providing selective driving connection therebetween;

sensor means for detecting a vehicle speed and producing a signal representative thereof;

control means for controlling the operations of said first and second motors and the engagement and disengagement of said electromagnetic clutch on the basis of the signal from said vehicle speed sensor,

said control means having means for causing both of said first and second motors to be put into action when the vehicle speed is lower than a predetermined value and for causing only said first motor to be put into action when the vehicle speed is higher than said predetermined value.

5,327,987

HIGH EFFICIENCY HYBRID CAR WITH GASOLINE ENGINE, AND ELECTRIC BATTERY POWERED MOTOR

Fawzy T. Abdelmalek, 12807 Willowyck Dr., St. Louis, Mo. 63146

Continuation-in-part of Ser. No. 862,502, Apr. 2, 1992. This application May 26, 1992, Ser. No. 887,876
Int. Cl.[5] B60K *6/04;* **F01K** *23/10*
U.S. Cl. 180—65.2 **6 Claims**

1. In combination with a hybrid car having an internal combustion engine for front wheel axle drive, and a battery powered motor for a rear wheel axle drive, wherein the improvement allows the waste heat energy usually rejected in the radiator, and the waste heat energy usually rejected in the exhaust gas stream, to be recovered and utilized to actuate a hermetically sealed gas expander having a common drive shaft driving a direct current electric generator, the improvement which comprises:

an internal combustion engine having recirculating cooling fluid jacket;

a liquid cooling fluid;

an internal combustion engine cooling fluid circulating pump;

a temperature controlled three-way flow control modulating valve;

a forced ambient air cooled radiator, having an electric motor driven fan;

a heat exchanger adapted to exchange heat between said internal combustion engine exhaust gas stream, and said engine cooling fluid, to effect cooling of said exhaust gas stream and heating of said engine cooling fluid;

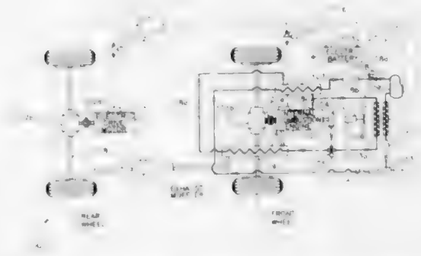
means to interconnect said cooling fluid jacket, said circulating pump, said flow control valve, said cooling fluid air radiator, and said exhaust gas heat exchanger in a closed circuit,

an evaporative power fluid;

a heat exchanger adapted to exchange heat between said evaporative power fluid and said liquid cooling fluid;

a hermetically sealed gas expander assembly adapted to expand said power fluid vapor, said gas expander has a common power shaft to drive a D.C. electric generator adapted to produce electric power;

means for regulating the pressure of the relatively high pressure vapor of said power fluid flowing from said heat exchanger and directing it to the inlet of said hermetically sealed gas expander;



a condenser adapted to exchange heat energy between the expanded vapor of said power fluid, and the ambient cooling air to affect cooling and condensing said power fluid vapor;

means for directing the expanded vapor of said power fluid flowing from said expander outlet to said condenser inlet;

a liquid receiver;

a hermetically sealed liquid pump adapted to substantially pressurize the condensate of said power fluid,

a one way non-return valve;

means for directing the relatively low pressure vapor condensate of the power fluid flowing from said condenser into said liquid receiver, to the intake of said pump;

means for directing said pressurized vapor condensate of said power fluid flowing from said pump through said non-return valve to said heat exchanger, to substantially heat and evaporate said power fluid;

a direct current electric storage battery;

an electric volt regulator controller;

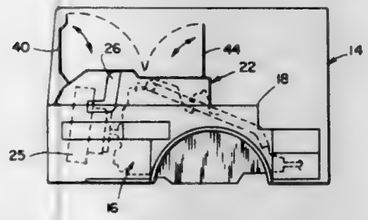
a solid state programmable control unit adapted to select and operate said internal combustion engine, or said electric motor drive for the best mode of operation, said controller accepts and evaluates the value of analog electric signals for the battery charge, and the vehicle speed; and produces digital signals to affect selection of drive mode, said control unit includes an electronic inverter to convert the direct current to a variable cycle alternating current for A.C. electric motor speed control.

5,327,988

TRUCK HAVING CAB WITH FULL ACCESS ENGINE ENCLOSURE

Kenneth C. Lenz, Hudsonville, and Daniel J. VanAlten, Grand Rapids, both of Mich., assignors to HME, Inc., Wyoming, Mich.

Filed Sep. 22, 1992, Ser. No. 949,791
Int. Cl.[5] B62D *33/06*
U.S. Cl. 180—89.18 **12 Claims**



1. A truck comprising:

a longitudinally extending chassis;

an engine having routine maintenance points and supported on said chassis;

a cab enclosing said engine and having a floor disposed generally above said chassis, said floor defining a floor opening, said engine extending through said opening;

two seats mounted to said floor of said cab and transversely spaced from one another across said floor opening;

an engine enclosure housing affixed to said floor and surrounding said floor opening, said enclosure housing having sidewalls defining an upwardly directed enclosure opening, said enclosure opening being located and of sufficient size to allow access to said routine maintenance points of said engine; and

door means hingedly affixed to said enclosure housing about a generally horizontal axis for opening and closing said enclosure opening, whereby said door means may be opened by moving said door means upwardly about said generally horizontal axis and said maintenance points of said engine may be accessed through said enclosure opening without the necessity for moving either of said seats.

5,327,989

FOUR-WHEELED BUGGY

Hitoshi Furuhashi; Akio Handa; Toru Iiizumi, all of Saitama; Hisahiro Komori, Tokyo; Kozo Yamada, Saitama; Hiroyuki Kido, Saitama; Yutaka Murata, Saitama, and Tatsuo Masuda, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 855,501
Claims priority, application Japan, Mar. 20, 1991, 3-081975; Mar. 20, 1991, 3-081976; Mar. 20, 1991, 3-081977
Int. Cl.[5] B60K *17/344*
U.S. Cl. 180—248 **15 Claims**

8. A four-wheeled buggy comprising:

a pair of right and left main frames extending substantially in parallel with respect to each other along a central longitudinal axis of a vehicle;

a pair of right and left front wheels operatively supported on a front end of each of said main frames;

a pair of right and left rear wheels operatively supported on a rear end of each of said main frames;

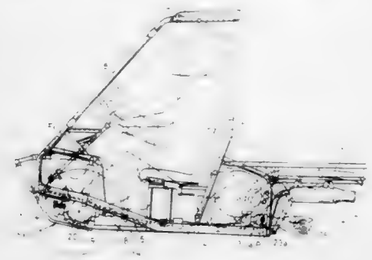
a power unit for driving the vehicle being operatively mounted on said main frames;

a front wheel steering device being disposed adjacent to the front ends of said main frames;

a seat being arranged at approximately a middle portion of said main frames so as to enable an operator to utilize the vehicle in a sitting posture;

a space disposed between said main frames being defined substantially equal in dimension to lateral width of said seat;

each of said main frames having an angled forward section, said angled forward section being defined as a section of each main frame extending from said front end thereof to a point corresponding to said middle portion thereof where said seat is supported, said main frame having a bend located vertically beneath said seat at said point corresponding to the middle portion; each of said angled forward sections being positioned at said front end thereof above a front wheel axle such that said front wheel axle supports said angled forward section; and



each of said main frames having a rearward section, said rearward section being defined as a section of each main frame extending from said point corresponding to said middle portion thereof to said rear end thereof, said rearward section of said main frames extending substantially horizontally to carry said power unit thereon, the pair of said rear wheels being suspended at each lateral side of and in the vicinity of said power unit;

said rearward sections of said main frames being adapted to define a lowermost height of the vehicle relative to the ground;

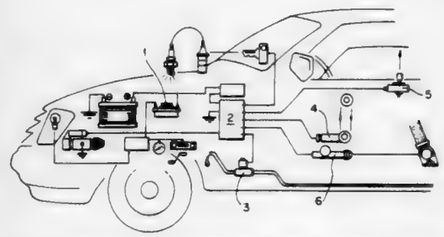
said power unit being an internal combustion engine in which a crankshaft extends substantially in parallel with a central longitudinal axis of the vehicle.

5,327,990

INTEGRAL AUTOMATIC SYSTEM FOR PROTECTION AND RESCUE OF OCCUPANTS IN CRASHED AUTOMOBILES

Albert B. Busquets, Matilde Diez 12, 08006-Barcelona, Spain

Continuation of Ser. No. 800,883, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 524,542, May 16, 1990, abandoned. This application Jan. 13, 1993, Ser. No. 5,860
Claims priority, application Spain, May 16, 1989, 8901647
Int. Cl.[5] B60K *28/00;* **B60R** *21/00*
U.S. Cl. 180—271 **2 Claims**



1. In an automobile having one or more security systems, including seat belts, air bags and an anti-skid braking system, and having a plurality of electrically controllable devices which are in predetermined states of operation during normal use of an automobile, which predetermined states may be

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hazardous to the occupants of the automobile upon the occurrence of an accident, including electric window drives, door locks, fuel valve, seat belt locks which are in circuit with the battery of the automobile, an improved system to increase the safety and facilitate the prompt rescue of automobile occupants which comprises an impact-operated sensing and electrical disconnector means mounted on said automobile; and a single, master central control unit mounted on said automobile;

said impact-operated disconnector means and said single, master central control unit being in circuit with said battery, said central control unit also being in circuit with said plurality of electrically controllable devices; and

said system being characterized in that the occurrence of a crash will cause the impact sensing and disconnector means to activate the central control unit and initiate the distribution of a series of commands in a progressive manner after a predetermined delay to at least more than one of said plurality of electrically controllable devices to cancel at least part of said predetermined states of said at least more than one of said plurality of electrically controllable devices to enhance the safety of and facilitate the rescue of the automobile occupants following impact.

5,327,991

EXHAUST GAS PURIFYING APPARATUS AND METHOD FOR A HYBRID CAR

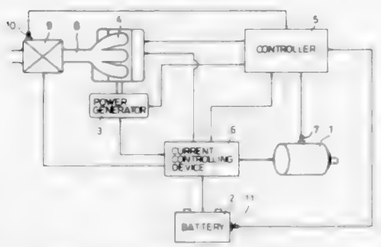
Masato Yoshida, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,469

Claims priority, application Japan, Sep. 3, 1991, 3-070359[U]

Int. Cl.[5] B60K *13/04*

U.S. Cl. 180—65.4 **12 Claims**



1. An exhaust gas purifying apparatus for a hybrid car, comprising:

an electric motor for driving said hybrid car;

a battery for supplying electric power to said electric motor;

a power generator for charging said battery;

an internal-combustion engine for driving said power generator;

a catalyst provided in an exhaust pipe of said internal-combustion engine for purifying exhaust gas;

heating means for heating said catalyst to enhance its catalytic action; and

control means for controlling operation of said heating means and said internal-combustion engine and for actuating said engine after said catalyst is heated by said heating means to an activating temperature at which said catalyst is sufficiently activated.

5,327,992

METHOD FOR CONTROLLING A HYBRID DRIVE WHICH DRIVES A VEHICLE

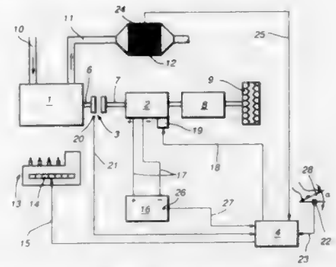
Wolf Boll, Weinstadt, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Apr. 28, 1993, Ser. No. 53,262

Claims priority, application Fed. Rep. of Germany, May 28, 1992, 4217668

Int. Cl.[5] B60K *6/04*

U.S. Cl. 180—65.2 **16 Claims**



1. Method for controlling a hybrid drive that drives a vehicle, the hybrid drive including an internal combustion engine and at least one electric motor which can be driven via an electrical energy source, the method comprising the steps:

switching the electric motor over to a generator mode when a present requirement to generate electric energy is present;

operating the internal combustion engine substantially at a torque corresponding to ideal operation of the internal combustion engine with respect to at least one of efficiency and exhaust gas behavior when the internal combustion engine is in operating ranges in which an amount of torque to be output by the internal combustion engine for overcoming instantaneous tractive resistances lies below a torque corresponding to the ideal operation of the internal combustion engine; and

using a differential torque between the torque corresponding to the ideal operation and the torque to be output by the internal combustion engine for overcoming the instantaneous tractive resistances to drive the electric motor operated as a generator;

wherein the internal combustion engine is a diesel engine which is coupled to a soot filter via an exhaust gas line, and further comprising the step of controlling the amount of torque taken up by the electric motor operating in the generator mode such that, as a function of operating parameters, exhaust gas temperatures are reached which causes automatic burning off of the soot filter.

5,327,993

DEER STAND APPARATUS

Craige A. Stark, Sr., Rte. 6, Box 204, Beaumont, Tex. 77705

Filed Aug. 13, 1992, Ser. No. 929,121

Int. Cl.[5] A01M *31/02*

U.S. Cl. 182—179 **4 Claims**

1. A deer stand apparatus, comprising,

a U-shaped first frame spaced from and parallel in confronting relationship relative to a U-shaped second frame, each arranged coextensive relative to one another, and

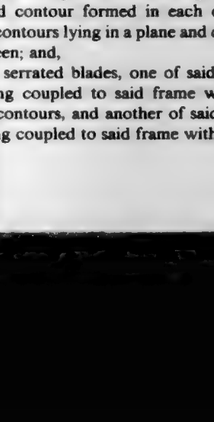
a platform plate orthogonally mounted to the first frame and the second frame. and

a fabric orthogonally secured about the platform plate extending upwardly thereof and selectively secured to the platform plate, and

a canopy is arranged overlying the fabric wall, and

the first frame includes a first frame top leg, and the second frame includes a second frame top leg, with the first frame top leg and the second frame top leg arranged in a parallel and coextensive relationship relative to one another, with the first frame including a first frame front leg, and a first frame rear leg extending below the first frame top leg, the second frame includes a second frame front leg and a second frame rear leg extending downwardly relative to the second frame top leg, and

the first frame top leg and the second frame top leg each include a plurality of fastener rods fixedly and orthogonally mounted to the respective first frame top leg and the second frame top leg, the platform plate includes a perimeter edge, with a plurality of first apertures directed orthogonally through the platform plate in adjacency to the



perimeter edge, and a plurality of second apertures directed orthogonally through the platform plate spaced from the first apertures directed interiorly of the platform plate, and each of said fastener rods is received through one of said second apertures, and an individual fastener nut is secured to each of said fastener rods above the platform plate, with the first frame top leg and the second frame top leg arranged below and in contiguous relationship relative to the platform plate, and a plurality of mounting rods are provided, with each of said mounting rods directed through one of said first apertures, and the fabric wall is secured to the mounting rods.

5,327,994

TREE SEAT

Michael P. Smith, 19 Maple St., Canisteo, N.Y. 14823-1354

Filed Aug. 5, 1993, Ser. No. 102,292

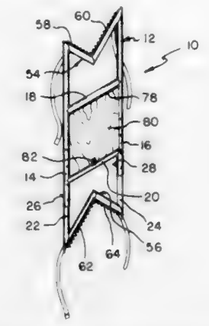
Int. Cl.[5] A01M *31/02*

U.S. Cl. 182—187 **12 Claims**

1. A new tree seat comprising:

a substantially rectangular frame having opposed ends with a V-shaped contour formed in each of said ends, said V-shaped contours lying in a plane and defining a distance therebetween; and,

two pairs of serrated blades, one of said pairs of serrated blades being coupled to said frame within one of said V-shaped contours, and another of said pairs of serrated blades being coupled to said frame within another of said V-shaped contours, each of said pairs of serrated blades being arranged to form an angle between each serrated



blade, and means for changing said distance between said V-shaped contours.

5,327,995

METHOD OF LUBRICATION BETWEEN TWO SLIDING MEMBERS

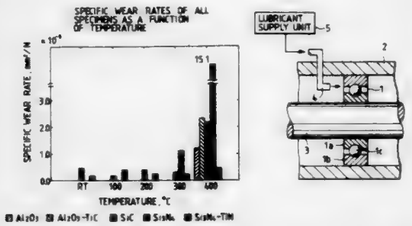
Hideaki Ishii; Kazuhisa Kitamura; Hiroaki Takebayashi, and Kouichi Yamauchi, all of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jun. 4, 1992, Ser. No. 892,905

Claims priority, application Japan, Sep. 12, 1991, 3-232924

Int. Cl.[5] F16C *17/00, 21/00*

U.S. Cl. 184—5 **5 Claims**



1. A method of lubricating two sliding members, at least one of which is made of a ceramic material, comprising the following steps which occur at an ambient temperature between 200° and 400° degrees centigrade:

burning a hydrocarbon fuel to form soot comprised of a mixture of particulate carbon and organic and inorganic components;

and supplying said soot between said two sliding members.

5. A mechanism for lubricating a bearing, said bearing being formed of a heat-resistant material and positioned in a hot atmosphere in a temperature range between 200° through 400° degrees centigrade, said mechanism including a lubricant supply nozzle through which a lubricant, composed of a solution that burns in said hot atmosphere to produce a soot comprised of a mixture of particulate carbon and organic and inorganic components, is ejected toward the bearing.

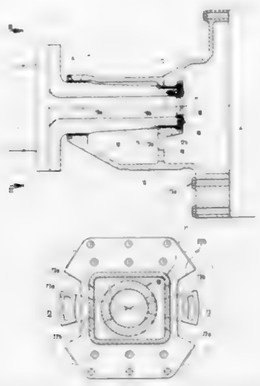
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CENTRAL SWIVEL JOINT FOR OPTIMIZING GROUND ADAPTATION OF FRONT MACHINERY OF FARM TRACTORS

Heribert Möller, Sachsen, Fed. Rep. of Germany, assignor to MAN Nutzfahrzeuge AG, Munich, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,368
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211110
Int. Cl.[5] F16C *17/00*
U.S. Cl. 184—5 **2 Claims**



1. A central swivel joint for optimizing ground adaptation of front machinery of farm tractors, said central swivel joint comprised of:

a central beam and a support beam rigidly connected to one another to form a constructive unitary part;

a support comprising a friction bearing, said support beam supported in said friction bearing;

said friction bearing comprised of a floating bearing and a stationary bearing and, for lubrication purposes, connected to a lubrication system of a motor of the farm tractor for lubrication;

said central beam having two rotary abutments at an end facing said support beam, said rotary abutments having radial symmetry relative to an axis of rotation of said support beam; and

said support having fixed abutments arranged with radial symmetry relative to said axis of rotation of said support beam and coordinated with said rotary abutments.

5,327,997

LUBRICATION MANAGEMENT SYSTEM

Robert V. Nash, Jr., St. Charles, and Bruce E. Meyer, Joliet, both of Ill., assignors to Temprite, Inc., West Chicago, Ill.

Filed Jan. 22, 1993, Ser. No. 7,470
Int. Cl.[5] F01M *1/18, 11/10*
U.S. Cl. 184—6.4 **26 Claims**

1. A lubrication management system comprising:

a lubricant sump containing a quantity of liquid lubricant subject to fluctuation;

a sensor reactive to the quantity of lubricant within the lubricant sump to produce an electrical signal representative of the lubricant quantity, the sensor including;

a. a float member supported by and substantially submerged within the lubricant within a sensor housing in fluid communication with the lubricant sump, the float member further comprising a nonmetallic float portion and a magnetically conductive element operably connected thereto and depending therefrom;

b. a tubular configuration disposed about the depending magnetically conductive element in fluid communication with the sensor housing such that the magnetically conductive element is centered therein and restrained from lateral motion;

c. the magnetically conductive element operably connected to the float member being vertically displaceable in accordance with fluctuations in the lubricant quantity; and

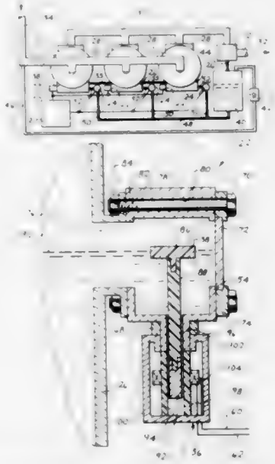
d. electromagnetic means disposed about the magnetically conductive element and the tubular configuration to provide a signal indicative of the motion of the float member; and

circuitry for receiving the signal and comparing the signal to a predetermined set point from which comparison the circuitry generates an output indicative of the lubricant quantity within the sump.

26. A method for managing a lubrication system comprising the steps of

providing a lubricant sump with a quantity of liquid lubricant subject to fluctuation;

sensing the lubricant level through a sensor having a float element and magnetically conductive element supported by and substantially submerged within the lubricant, the float member being capable of rising or falling from a



neutral position relative the lubricant sump in accordance with the fluctuations,

the magnetically conductive element being concentrically disposed within a tubular configuration, the tubular configuration allowing vertical motion of the magnetically conductive element in response to the fluctuations and restraining the magnetically conductive element from lateral motion;

generating a signal within an electromagnetic configuration representative of the position of the magnetically conductive element relative the neutral position;

receiving the signal through circuitry capable of comparing the signal to an adjustable predetermined set point corresponding to the neutral position; and

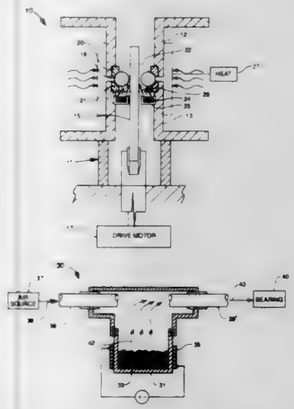
determining an output from the circuitry, the output capable of providing additional lubricant to the sump through energization of a solenoid valve placed in selective lubricant communication between the sump and a remote reservoir for replenishing the quantity of lubricant when the signal indicates that the magnetically conductive element has moved below the adjustable predetermined set point.

5,327,998

LUBRICATION BY SUBLIMATION

Lewis Rosado, West Carrollton; Nelson H. Forster, Dayton, and Christopher J. Klenke, South Vienna, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 18, 1992, Ser. No. 946,710
Int. Cl.[5] F16N *7/30;* **F01M** *5/00*
U.S. Cl. 184—55.1 **11 Claims**



1. A method for lubricating a bearing surface of a movable machine part, comprising the steps of:

(a) providing a source of solid lubricant;

(b) sublimating said solid lubricant to form a lubricant vapor; and

(c) conducting said lubricant vapor to said bearing surface for condensation of said solid lubricant thereon.

9. A system for lubricating a bearing surface of a movable machine part, comprising:

(a) a source of solid lubricant;

(b) means in operative thermal contact with said source for heating said source to sublimate said solid lubricant to form a lubricant vapor from said solid lubricant;

(c) a source of vaporous carrier medium; and

(d) conduit means for combining said lubricant vapor and said carrier medium and conducting said lubricant vapor and carrier medium into contact with said bearing surface for condensation thereon of aid solid lubricant.

5,327,999

BRAKE LEVER FOR AN S-CAM AUTOMOTIVE DRUM BRAKE

Åke Nelander, Bunkeflostrand, Sweden, assignor to Haldex AB, Sweden

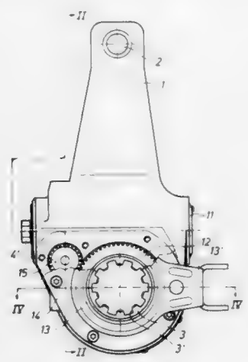
Filed Nov. 17, 1993, Ser. No. 153,918
Claims priority, application Sweden, Nov. 18, 1992, 9203455-2
Int. Cl.[5] F16D *65/52*
U.S. Cl. 188—79.55 **2 Claims**

1. A brake lever for attachment to a splined S-cam shaft of an automotive drum brake and connection to a brake cylinder push rod, including

a worm wheel (**3**), rotatably mounted in a housing (**1**) of the brake lever and having internal splines (**3'**) for cooperation with the S-cam shaft, and a worm screw (**4**), rotatable in the housing perpendicularly to the worm wheel and meshing therewith, and

a control arrangement (**13, 12, 15, 16, 18**) for transmitting a control movement from a reference point (**13'**) to a clutch wheel (**6**), which is rotatable on the worm screw (**4**), depending on the angular movement of the brake lever, and which forms a clutch (**8**) with the worm screw (**4**) normally held engaged by a strong compression spring (**9**),

the control arrangement including a control disc (**12**), which is rotatable coaxially with the worm wheel (**3**) and is connected to a control ring (**13**) having a control arm (**13'**) for establishing the reference point by being attached to a fixed part of a vehicle chassis, a pinion (**15**) meshing with the toothed periphery of the control disc (**12**), a carrier wheel (**16**) and a control screw (**18**), the latter two parts being coaxial with the pinion and the last mentioned part



being in tooth engagement with the clutch wheel (**6**), wherein the axis of the worm screw (**4**) is perpendicular to the axis of the pinion (**15**), carrier wheel (**16**) and control screw (**18**),

characterized in that the carrier wheel (**16**) can be turned or has a lost motion relative to the pinion (**15**) corresponding to a desired slack or control distance for the brake lever and is angularly biassed by a torsion spring (**17**) in a direction corresponding to brake application and in that a toothed one-way clutch (**19**) is formed between the carrier wheel (**16**) and the control screw (**18**).

5,328,000

FOOT ACTUATED WHEEL BRAKE

Bryce G. Rutter, St. Louis County, and James D. Houseman, St. Charles County, both of Mo., assignors to SAF-T-LOC, Inc., Corpus Christi, Tex.

Continuation of Ser. No. 783,817, Oct. 29, 1991, abandoned.
This application Nov. 23, 1992, Ser. No. 980,096
Int. Cl.[5] B60B *33/00;* **B62B** *5/04*
U.S. Cl. 188—1.12 **9 Claims**

1. A wheel brake comprising:

a yoke depending from a lower end of a leg support and including a pair of generally parallel downwardly extending arms, said arms being joined to one another at an upper end thereof by a substantially horizontally directed upper wall, a portion of the upper wall being downwardly angularly offset from the upper wall adjacent one end thereof;

a wheel rotatably mounted on an axle extending between the generally parallel arms of said yoke;

an angularly offset inner wall section attached to said generally parallel arms along one side of said yoke in generally parallel and spaced relationship to the downwardly angularly offset portion of the upper wall of said yoke;

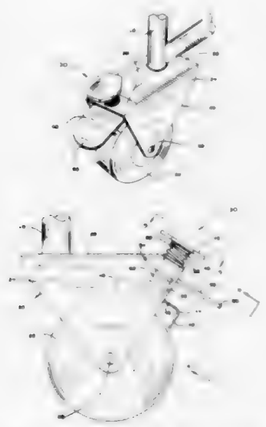
a stop pedal including a lock shaft extending through and slidably mounted with respect to said angularly offset upper wall portion and inner wall section, the stop pedal mounted to an upper end of said lock shaft above said angularly offset upper wall portion and a brake shoe mounted to a lower end of said lock shaft below said angularly offset inner wall section, said stop pedal adapted

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to be depressed to move said brake shoe into braking engagement with said wheel;

a binding/release pedal having an opening for slidably mounting same on said lock shaft between said angularly offset upper wall portion and inner wall section, the dimensional tolerances between the opening in said binding/release pedal and said lock shaft being such as to enable said binding/release pedal to grip and bind or permit slidable movement relative to said lock shaft depending on the angular position of said binding/release pedal, said binding/release pedal having an inner end adapted to contact an undersurface of said yoke upper wall, said binding/release pedal further having an outer free end for depressible engagement and release of said binding/release pedal from said lock shaft;

return spring means mounted on said lock shaft between said stop pedal and the angularly offset upper wall portion of



said yoke to resiliently bias said stop pedal in an upper position where said brake shoe is spaced from said wheel.

binding/release spring means mounted on said lock shaft between said binding/release pedal and said angularly offset inner wall section, said binding/release spring means being expanded when said stop pedal is depressed to move said binding/release pedal to an upper predetermined angular offset position for binding engagement with said lock shaft in order to maintain said stop pedal in a depressed position while urging said brake shoe in braking engagement with said wheel, said binding/release spring means being disengaged from said lock shaft upon depression of the outer free end of said binding/release pedal to move said binding/release pedal to a lower release position relative to said lock shaft and enable the return spring means to move the stop pedal to its upper position for subsequent re-engagement by a user.

5,328,001

SIDE PULL BICYCLE BRAKE WITH DIFFERENTIAL SPRING RELEASE AND PIVOTAL STOPPER STRUCTURE

Kunihiko Yoshikawa, Saitama, Japan, assignor to Yoshikawa Mfg. Co., Ltd., Saitama, Japan

Continuation of Ser. No. 808,764, Dec. 17, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,187

Claims priority, application Japan, Jul. 4, 1991, 3-190529; Jul. 15, 1991, 3-200108

Int. Cl.[5] B62L *3/02*

U.S. Cl. 188—24.22 **4 Claims**

1. A braking device for a two-wheeler comprising left and right arms pivotally attached to a frame of the two-wheeler, each of said arms having a distal end portion and a brake shoe mounted on said distal end portion, a spring mounted on said device for energizing the arms to move said arms in a brake releasing direction from an actuated state, wherein one of said arms is more strongly energized by said spring than the other of said arms, a stopper being provided to restrict the extent of the movement of said one of said arms towards said brake releasing direction so that, when said one of said arms is set back to said brake releasing direction, said one of said arms is stopped by said stopper from further movement thereof before



the setting-back movement of said other of said arms is completed, said left and right arms comprising a Y-shaped arm and a C-shaped arm, each said arm being superposingly positioned and pivotally attached to said frame of the two-wheeler by means of a center bolt and each arm having an end which ends are positioned one above the other on the same side of said center bolt and each being connected to a brake wire to form a side-pull type brake, said stopper having a proximal end portion held in a spring holder which is fixed to said center bolt pivotally securing said pair of arms.

5,328,002

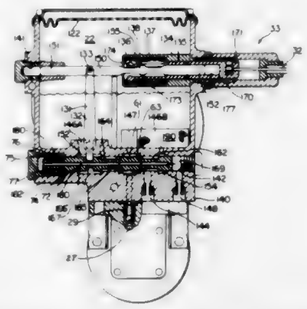
APPLY AND RELEASE HYDRAULIC PARKING VALVE

Alistair G. Taig, Edwardsburg, Mich., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 7, 1992, Ser. No. 986,310

Int. Cl.[5] G05G *1/04*

U.S. Cl. 188—67 **3 Claims**



1. A push-pull control, comprising a sleeve member having an interior longitudinal opening with first and second axially spaced apart recess means located therein, a control actuator located slidably within the longitudinal opening and comprising a plurality of axially extending arms with knob members located at respective ends thereof, the knob members disposed within the first recess means, and a control rod having a ball member disposed between said arms and adjacent the knob members thereof, so that displacement of the control actuator effects movement of the knob members out of the first recess means and radially inwardly to grip the ball member and move the ball member and control rod to a displaced position where the knob member expand radially outwardly into the second recess means and release the ball member such that a return movement of the ball member and control rod to an initial at-rest position will not effect displacement of the control actuator from the displaced position.

5,328,003

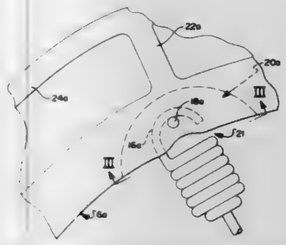
BRAKE SPRING RETENTION SYSTEM FOR A CAST BRAKE SHOE

Jay D. White, Galesburg, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 28, 1992, Ser. No. 952,030

Int. Cl.[5] F16D *51/22*

U.S. Cl. 188—250 F **6 Claims**



1. A brake spring retention system for a drum brake comprising:

a brake shoe fabricated casting a metal material and having a single rib section, said brake shoe having a friction surface for generating a braking force, said rib section located on the opposite side of said brake shoe as said friction surface and having a spring slot formed therein, said spring slot having an opening facing in a direction opposite to said friction surface;

a brake drum for frictionally reacting signal said friction surface;

a spring retention pin secured in said rib section transverse to said slot;

a brake spring having a spring hook for anchoring said brake spring to said brake shoe where said spring hook engages said spring retention pin thereby applying a force tending to retract said brake shoe friction surface away from said brake drum; and

wherein said spring slot extends from slightly above said spring retention pin to slightly below said spring retention pin sufficiently to permit installation and removal of said spring hook.

5,328,004

BYPASS VALVE ASSEMBLY FOR A HYDRAULIC DAMPER

Wayne V. Fannin, Xenia, and James M. Pees, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1992, Ser. No. 933,276

Int. Cl.[5] F16F *9/348*

U.S. Cl. 188—318 **17 Claims**

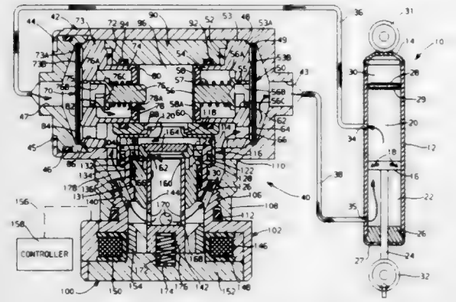
4. An adjustable hydraulic damper comprising:

(a) a fluid-filled cylinder divided into first and second fluid chambers by a valved, reciprocating piston;

(b) first conduit means connected to the first fluid chamber;

(c) second conduit means connected to the second fluid chamber;

(d) bypass valve means having first port means connected to the first conduit, second port means connected to the second conduit means, first pressure responsive means including inlet means to admit fluid from the first port means and outlet means to direct fluid to the first port means, wherein the outlet means of the first pressure responsive means includes deflectable disks, second pressure responsive means including inlet means to admit fluid from the second port means and outlet means to direct fluid to the second port means, and controllable valve means for receiving fluid from the first and second pressure responsive means and directing such fluid to the outlet means of the first and second pressure responsive means.



5,328,005

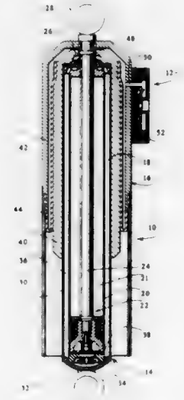
VALVE IN AN AIR SHOCK ABSORBER

Charles A. Van Breemen, Glen Ellyn, Ill., assignor to Gabriel Ride Control Products, Inc., Carol Stream, Ill.

Filed Dec. 18, 1992, Ser. No. 992,839

Int. Cl.[5] F16F *9/43*

U.S. Cl. 188—322.21 **18 Claims**



1. In an air shock absorber adapted to be connected between the sprung mass and the unsprung mass of a vehicle including a tubular member defining a cylindrical chamber, a piston slidably mounted within said cylindrical chamber, a piston rod extending from one side of said piston outwardly from one end of said tubular member, closure means on said one end of said tubular member closing the one end of said tubular member and slidably sealingly engaging said piston rod, end closure means on the opposite end of said tubular member, connecting means for connecting said shock absorber operably between said masses, an inner cylindrical wall positioned outwardly from said tubular member, an outer cylindrical wall spaced outwardly from and surrounding said inner cylindrical wall, a folded rolling sleeve mounted between said inner and outer cylindrical walls and defining therewith an air chamber, and a valve mechanism for introducing pressurized air into said air

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chamber, the improvement wherein said valve mechanism comprises

a) a valve body having a cavity, and having a orifice therethrough in communication with the air chamber;

b) a valve cover positioned on the valve body, the valve cover having a port therethrough in communication with a source of pressurized air, and an exhaust seat surrounding the port;

c) a support disposed within the cavity of the valve body, the support having a passage therethrough in fluid communication with the port when the air pressure from the source of pressurized air is greater than the air pressure within the air chamber; and

d) a flexible diaphragm positioned on the support, the diaphragm adapted to engage the exhaust seat when the air pressure in the source of pressurized air is greater than the air pressure within the air chamber, adapted to unseat from the exhaust seat when the air pressure inside the air chamber is greater than the air pressure from the source of pressurized air and exceeds a pre-selected minimum pressure, and adapted to engage the exhaust seat when the pressure inside the air chamber reaches the pre-selected pressure

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5,328,006

TRACTION CONTROL SYSTEM FOR MOTOR VEHICLE

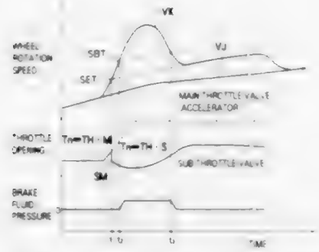
Toshiaki Tsuyama, Higashi-Hiroshima; Toru Onaka, Hiroshima; Kazutoshi Nobumoto, Hiroshima, and Makoto Kawamura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 21, 1991, Ser. No. 718,962

Claims priority, application Japan, Jun. 21, 1990, 2-163061

Int. Cl.[5] B60K *41/20*

U.S. Cl. 477—185 **7 Claims**



1. A traction control system for a motor vehicle, having driving wheels and driven wheels, comprising

means for detecting a speed of each of the driving wheels of the vehicle;

means for detecting a speed of each of the driven wheels of the vehicle;

means for calculating a slip value of the driving wheels based on the speeds of the driving and driven wheels detected;

traction control means for controlling the driving wheels so that the slip value of each driving wheel approaches a predetermined desired slip value when the slip value of each driving wheel is greater than the predetermined desired slip value; and

estimating means for estimating a friction coefficient of a road surface which is employed when the predetermined desired slip value is determined;

said estimating means (a) calculating an acceleration of at least one of the driven wheels based on a speed difference between the speed of the at least one of the driven wheels detected currently and the speed of the at least one of the driven wheels detected a second predetermined time period before a first predetermined time period has passed after the slip value of each driving wheel becomes greater than the predetermined desired slip value which is determined by employing a previously estimated friction coefficient of the road surface, (b) calculating an acceleration of the at least one of the driven wheel based on a speed difference between the speed of the at least one of the driven wheels detected currently and the speed of the at least one of the driven wheels detected a third predetermined time period after the first predetermined time period has passed, the third predetermined time period being greater than the second predetermined time period, and (c) estimating the friction coefficient of the road surface by using the calculated acceleration of the at least one of the driven wheels.

5,328,007

REVERSE ROTATION PREVENTING DEVICE

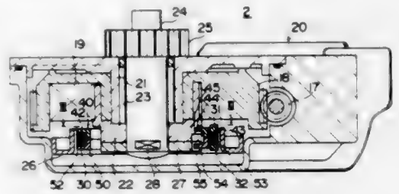
Takashi Yokozuka; Yoshikazu Takahashi, both of Kiryu, and Masao Yoshida, Gunma, all of Japan, assignors to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Filed Dec. 10, 1992, Ser. No. 988,753

Claims priority, application Japan, Dec. 17, 1991, 3-110552[U]

Int. Cl.[5] F16D *51/04*

U.S. Cl. 192—8 C **12 Claims**



1. A reverse rotation preventing device, comprising:

a coil spring having a central axis and formed of a number of windings of spring material so as to have a generally cylindrical outer periphery and a generally cylindrical inner periphery and so as to have a starting end winding defining an input side of said spring providing a first end face and a terminating end winding defining an output side of said spring providing a second end face, said first and second end faces facing in opposite directions axially of said spring, said coil spring having a first engaging pawl at said starting end winding and a second engaging pawl at said terminating end winding;

a fixed ring arranged coaxially with said coil spring and having an internal periphery disposed in proximity to and surrounding said outer periphery of said coil spring;

an input coupling arranged coaxially with said coil spring and rotatable in a driving direction by a driving force from a driving source, said input coupling having an engageable portion;

an output coupling arranged coaxially with said spring, supported rotatably and having an output shaft fixed thereto, said output coupling having an engageable portion;

an output reinforcing ring on said input side of said spring covering said first end face of said spring in the direction axially thereof and having an internal periphery;

an input reinforcing ring on said output side of said spring covering said second end face of said spring in the direction axially thereof and having an internal periphery;

an engageable pawl formed on said internal periphery of said input reinforcing ring so as to extend radially inwardly from said internal periphery of said input reinforcing ring for engagement with said engageable portion of said input coupling;

an engageable pawl formed on said internal periphery of said output reinforcing ring so as to extend radially inwardly from said internal periphery of said output reinforcing ring for engagement with said engageable portion of said output coupling;

each of said first and second engaging pawls of said coil spring having been formed by bending a portion of the spring material of the respective one of said starting winding and terminating winding along a bend line extending radially of said spring so that said portion extends in the axial direction of said spring;

said input reinforcing ring having an engaging recess for engaging the one of said engaging pawls on the starting winding of said coil spring, so as to operate said spring in the direction of decreasing spring diameter; and

said output reinforcing ring having an engaging recess for engaging the one of said engaging pawls on the terminating winding of said coil spring, so as to operate said spring in the direction of increasing spring diameter.

5,328,008

ROTATING DRUM IN AUTOMATIC TRANSMISSION

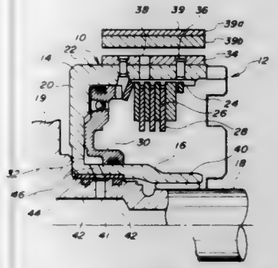
Kazuhito Sano, Shizuoka, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Apr. 24, 1992, Ser. No. 872,982

Claims priority, application Japan, May 7, 1991, 3-131821

Int. Cl.[5] F16D *67/04*

U.S. Cl. 192—17 R **7 Claims**



1. A rotating drum in an automatic transmission, comprising:

a drum body rotatably supported on a shaft, said drum main body being formed of an aluminum alloy; and

a frictionally sliding member fixedly secured on an outer peripheral surface of said drum main body, said frictionally sliding member being formed of steel and being slidingly contactable with a brake band disposed around said drum main body.

5,328,009

ENGINE STARTER DRIVE SHAFT LUBRICATOR

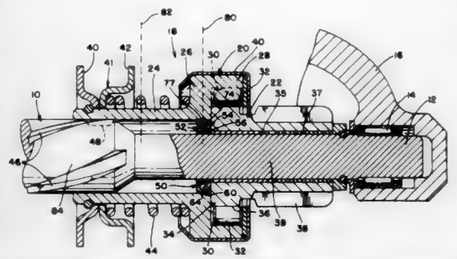
James L. Whitehurst, Hartford City; Victor L. Kelley, Chesterfield, and Brian W. Harris, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1993, Ser. No. 3,044

Int. Cl.[5] F02N *15/06;* **F16N** *7/12*

U.S. Cl. 192—42 **6 Claims**

5. A lubricator that is adapted to be press fitted to an internal surface of a tubular portion of a driving clutch member of an overrun clutch for lubricating a drive shaft of engine starting apparatus comprising, a housing comprised of first and second parts, said first part having an annular outer axially extending annular wall, the outer surface of said outer axially extending annular wall adapted to be press fitted in said driving clutch member, said second part having an annular wall, means for securing said second part to said first part comprising internal locking arms on one of said parts that engages the other part, and an annular lubricating wick located inside one of said parts and between inner surfaces of said parts, said wick having an annular internal surface that is adapted to engage a drive shaft



of engine starting apparatus to apply lubricant to said drive shaft.

5,328,010

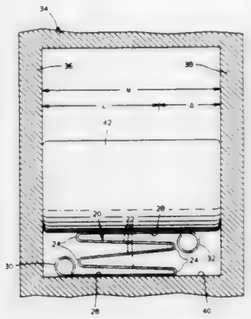
OVERRUNNING ROLLER CLUTCH WITH IMPROVED SELF PROTECTING SPRING

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1993, Ser. No. 136,434

Int. Cl.[5] F16D *41/07*

U.S. Cl. 192—45 **3 Claims**



1. In an overrunning roller clutch of the type in which each of a plurality of rollers located in cage pockets of predetermined width has a roller length substantially equal to said pocket width and travels back and forth over a normal path during clutch operation, but is subject to disturbing forces that can move said roller back toward the base of said pocket beyond said normal path, an accordion type roller energizing spring, comprising,

a series of flat leaves with front and rear end leaves and intermediate leaves between, and with each of said intermediate leaves being joined to an adjacent leaf at a resilient pleat having a minimum thickness creating an inherent spring solid height beyond which said spring should not be compressed, each of said intermediate leaves having a length less than said predetermined width, at least one of said front and rear end leaves having an integrally formed terminal stop flange extending beyond said intermediate spring leaf length and with a height substantially equal to said spring solid height and a width less than half of the differential between said pocket width and said intermediate leaf length,

whereby, as said roller travels during normal clutch operation, said stop flange clears said pleats, and when said roller moves back in response to said disturbing forces, said stop flange engages between said roller and pocket

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base, thereby preventing said pleats from over compressing.

5,328,011

CLUTCH ASSEMBLY FOR CHAIN-DRIVEN CART

Charles Brister, Rt. 3, Box 18-P Ellis Rd., Amite, La. 70422, and J. H. Brister, P.O. Box 275, Roseland, La. 70456

Filed Mar. 19, 1993, Ser. No. 33,872
Int. Cl.[5] F16D *13/64, 13/72*
U.S. Cl. 192—113.36 13 Claims



1. A centrifugal, shaft-driven clutch apparatus comprising:

a) an engine shaft for providing rotary power, the shaft having a free end portion, an open ended shaft bore that communicates with the free end portion, and a longitudinally extending key slot;

b) a centrifugal clutch assembly that includes a clutch bushing member having a bushing member bore for affixing the bushing member to the shaft;

c) the bushing member having an outer surface;

d) the clutch assembly including a clutch housing member with an internal clutch housing bore, and the clutch housing member rotatably mounts upon the clutch bushing member at the clutch housing internal bore;

e) the housing having an external surface with a sprocket thereon for driving a chain that is connected to the sprocket;

f) a first port that extends radially through the engine shaft between the shaft bore and the bushing member bore for transmitting lubricant from the shaft bore to the clutch bushing member and wherein the first port extends through the shaft bore and to the key slot;

g) a second port that extends through the bushing member from the bushing member bore to the bushing member outer surface for permitting lubricant to flow from the first port through the key slot to the second port;

h) channel means, forming a communication between the first and second ports, for transmitting lubricant between the first and second ports; and

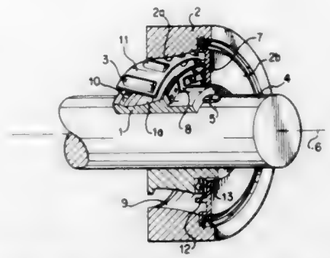
i) a fitting that has an inlet for receiving lubricant, the fitting have a channel for transmitting lubricant to the shaft bore.

5,328,012

ROLLING-CONTACT BEARING TYPE CLUTCH

Nobuo Takata, 87, Kurotani 5-chome, Yao-shi, Osaka, Japan

PCT No. PCT/JP91/01409, § 371 Date Jun. 26, 1992, § 102(e) Date Jun. 26, 1992, PCT Pub. No. WO92/09820, PCT Pub. Date Jun. 11, 1992
PCT Filed Oct. 16, 1991, Ser. No. 863,305
Claims priority, application Japan, Nov. 21, 1990, 2-316613
Int. Cl.[5] F16D *41/06*
U.S. Cl. 192—45 2 Claims



1. A rolling-contact bearing type clutch comprising an inner rotation body, an outer rotation body, a plurality of intermediate rotation bodies, and energizing means;

said inner rotation body having an inner raceway surface of a mono-hyperboloid of revolution about one axis line;

said outer rotation body having an outer raceway surface of a mono-hyperboloid of revolution about said axis line;

said inner and outer raceway surfaces facing each other to form a combination of raceways;

said intermediate rotation bodies each having a cylindrical rolling surface and being distributed in a circumferential direction of said raceways with their center axes slanting at a predetermined angle to a section including the same axis for said inner and outer rotation bodies, the surface of each intermediate rotation body being in line contact with said inner and outer raceway surfaces;

said energizing means energizing either said inner rotation body or said outer rotation body in the axis line direction to narrow the gap of said raceways;

said inner rotation body and said outer rotation body respectively having annular members at far ends of the bodies, which face each other in said axis line, to bring the movement of said intermediate rotation bodies in said axis line direction to a stop; and

a retainer for retaining said intermediate rotation bodies so that they cannot contact one another, said retainer extending axially beyond end faces of said intermediate rotation bodies, said annular members being positioned so that they can contact the end faces of said intermediate rotation bodies.

5,328,013

LIMITATION OF THE LENGTH OF ROWS OF SUPERMARKET TROLLEYS

Peter Fuchs, Jahnstrasse 7, W-7300 Karlsruhe 1, Fed. Rep. of Germany

Filed Nov. 19, 1992, Ser. No. 978,224
Int. Cl.[5] G07F *7/06*
U.S. Cl. 194—213 19 Claims

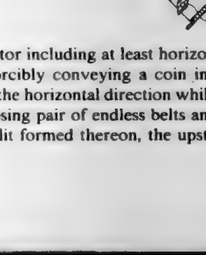
1. A device for confining shopping carts (**10**) which are pushed together in a row between lateral guide elements (**11A, 11B**), the lateral guide elements (**11A, 11B**) defining a cart storage area, which has a connecting location (**K**), said device comprising:

a plurality of coin deposit systems (**20**) each mounted on a respective cart (**10**); and

control and locking means (**30, 40 50**) mounted on the carts (**10**) and on at least one guide element (**11A, 11B**) for connecting a first cart (**10**) to a second cart (**10**) which is already in the cart storage area when the first cart (**10**) moves past the connecting location (**K0** and into the cart storage area, wherein

said control and locking means (**30, 40 50**) comprise at least one magnet (**30**) which produces a magnetic field (M) and a plurality of locking elements (**40, 50**) each associated with a respective coin deposit system (**20**);

each said locking element (**40, 50**) is movable between a locking position for retaining a coin previously deposited in the associated coin deposit system (**20**) and a release position for releasing a coin previously deposited in the associated coin deposit system (**20**); and



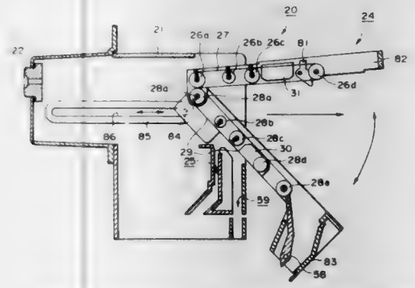
each said locking element (**40, 50**) is mounted to move through the magnetic field (M) produced by said magnet (**30**) when the cart (**10**) on which an associated coin deposit system (**20**) is mounted moves past the connecting location (**K**), and each said locking element (**40, 50**) is responsive to the magnetic field (M) for movement between the locking and release positions and for movement to the release position only when the cart (**10**) on which the associated coin deposit system (**20**) is mounted moves past the connecting location (**K**) and into the cart storage area.

5,328,014

COIN SELECTOR

Kenji Nishiumi, Hannou; Kenji Nakajima, Ogose, and Mitsugu Mikami, Kwagoe, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Tokyo, Japan

Division of Ser. No. 741,912, Aug. 8, 1991, Pat. No. 5,236,339.
This application Apr. 27, 1993, Ser. No. 52,732
Claims priority, application Japan, Aug. 14, 1990, 2-85763[U]
Int. Cl.[5] G07F *1/00*
U.S. Cl. 194—343 7 Claims



1. A coin selector including at least horizontal coin conveying means for forcibly conveying a coin inserted through a coin insert slit in the horizontal direction while said coin is held between an opposing pair of endless belts and a cover having said coin insert slit formed thereon, the upstream side of said horizontal coin conveying means being covered with said cover, wherein;

a hole is formed on the bottom surface of said cover,

a liquid collecting portion is arranged downward of said hole so as to allow a liquid to be collected therein and then discharged to the outside therefrom,

said liquid which has been received through said coin insert slit is discharged outside of a housing of said coin selector via said hole and said liquid collecting portion,

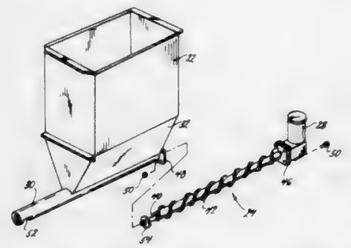
said horizontal coin conveying means is slidably arranged in the housing of the coin selector, and the space defined by said opposing pair of endless belts is enlarged by turnably opening said opposing pair of endless belts about their one end.

5,328,015

AUGER ASSEMBLY FOR FEED BIN

Joseph A. Volk, Jr., 380 Hackmann, Creve Coeur, Mo. 63141, and James B. Hickman, Route 1, Box 151F, Carrollton, Ala. 35447

Filed May 10, 1991, Ser. No. 698,308
Int. Cl.[5] B65G *33/00, 13/02*
U.S. Cl. 198—548 14 Claims



1. A feed bin for holding a quantity of dry material in bulk form, said feed bin having a generally horizontally oriented discharge tube extending inwardly therefrom to dump its contents through a discharge opening and into a hopper therefor, and an auger including an auger flight extending through said discharge tube and in communication with the interior of said feed bin for controllably feeding said dry material out of said feed bin, through said discharge tube, and out of said discharge opening, said auger including a drive motor, and an end bearing mounted to said auger flight at said end opposite said drive motor, said auger thereby being one assembly comprised of said drive motor, auger flight, and end bearing adapted for insertion through said discharge tube, and means for mounting said auger to said discharge tube so that said auger assembly may be readily installed or removed as a one-piece assembly from said discharge tube.

5,328,016

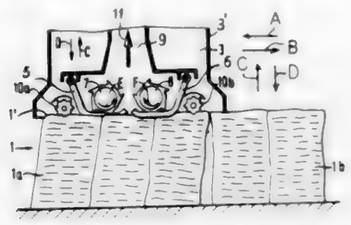
METHOD AND APPARATUS FOR PLACING FIBER BALES IN READINESS FOR REMOVING FIBER TUFTS THEREFROM

Ferdinand Leifeld, Kempen; Josef Temburg, Jüchen, and Ulrich Vollrath, Neuss, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Continuation of Ser. No. 936,702, Aug. 28, 1992, abandoned.
This application Sep. 15, 1993, Ser. No. 120,848
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1991, 4128471; May 6, 1992, 4214934
Int. Cl.[5] B65G *47/00*
U.S. Cl. 198—345.1 8 Claims

1. A method of placing fiber bales into readiness for removing fiber tufts therefrom by a travelling bale opener, comprising the following consecutive steps;

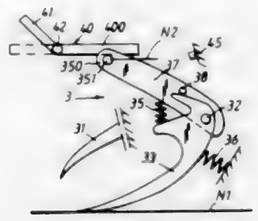
(a) depositing an initial fiber bale in an operational range of the bale opener at an angle of inclination to the vertical;
(b) moving a bale-supporting device into engagement with the initial fiber bale for stabilizing the initial fiber bale in the inclined position thereof;
(c) depositing an additional fiber bale next and in engagement with the initial fiber bale such that the initial and



additional fiber bales form a bale series; said additional fiber bale being deposited at an angle of inclination greater than the angle of inclination of said initial bale as viewed codirectionally with the angle of inclination of the initial bale; the angle of inclination of the additional bale being at least 90° to the horizontal; and
(d) moving the bale-supporting device out of engagement with the initial fiber bale

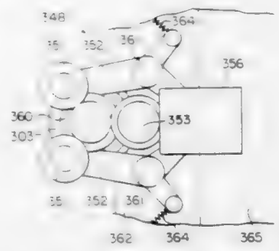
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5,328,017
GRIPPER CONVEYOR II
Bo Carlen, Sollentuna, Sweden, assignor to Idab-Wamac AB, Eksjo, Sweden
Filed Mar. 16, 1993, Ser. No. 31,981
Claims priority, application Sweden, Mar. 16, 1992, 9200798-8
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—365 **8 Claims**



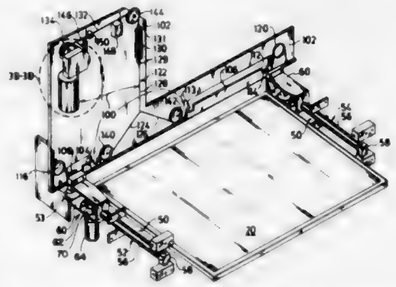
1. A gripper conveyor comprising a moving conveyor chain (**1**) which is provided with grippers (**3**) each of which includes a fixed clamping jaw (**31**), a pivotal clamping jaw (**33**) and a spring means (**36**) which permanently biases the gripper towards a closed position, and an opening mechanism (**6**, **41**, **42**, **68**) which functions to open selected grippers (**3**) while the conveyor chain (**1**) is moving, wherein the pivotal jaw (**33**) of the gripper (**3**) is connected to a manoeuvering arm (**37**) which is actuable by the opening mechanism, characterized in that the manoeuvering arm (**37**) is mounted for limited pivotal movement in relation to the movable clamping jaw (**33**); in that an end-position means (**45**; **371**) is arranged to define a pivot end-position of the manoeuvering arm in a direction away from the movable clamping jaw; and in that the conveyor also includes a biasing means (**35**) which is weaker than the spring means (**36**) and which functions to bias the manoeuvering arm (**37**) in a direction towards its end position.

5,328,018
TRANSFER DEVICE INCLUDING A ROTATING MECHANISM FOR ROTATING A CONTAINER
Masaru Hoshino, and Tsutoo Yamada, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 582,833, Dec. 3, 1990. This application Mar. 3, 1993, Ser. No. 25,799
Int. Cl.[5] B65G *47/00*
U.S. Cl. 198—379 **3 Claims**



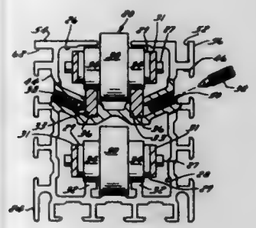
1. A rotating mechanism for rotating a container arranged in a vertical direction comprising:
a pair of freely rotatable rollers and one driving roller which hold a flanged portion of a mouth portion of a container at three portions;
a pair of roller support rods which support at one end the rotatable rollers and which can be bilaterally freely opened and closed for embracing the flanged portion of the mouth portion of the container at three portions;
a mechanism for bilaterally opening and closing the pair of roller support rods; and
a mechanism for driving the driving roller,
wherein the pair of freely rotatable rollers and the driving roller are provided with neck-in portions that hold the flanged portion of the mouth portion of the container at three portions so as to rotatably position the container in the vertical direction, and
wherein each roller support rod is secured to a spring for forcing the roller support rod to close.

5,328,019
AUTOLOADER FOR CASSETTES AND/OR PALLET
John C. Boutet, Rochester; Roger S. Brahm, Canandaigua; Darryl D. DeWolff, Rochester, and Jeffrey J. Yaskow, Williamson, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 25, 1992, Ser. No. 981,719
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—624 **26 Claims**



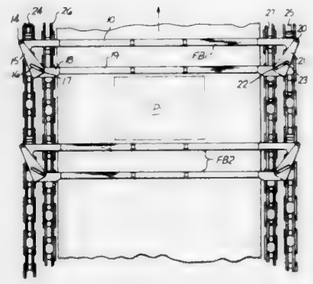
1. A mechanism for conveying a generally flat rectangular rigid article from a support surface, comprising:
a first pinch roller having a central axis about which the first pinch roller rotates, said first pinch roller being pivotally mounted to said mechanism about a first substantially vertical axis, said first pinch roller having an upper section and a lower section, said upper section having a substantially cylindrical upper drive surface and said lower section having a generally tapered lower support drive surface which extends radially outward from and below the cylindrical upper drive surface;
a second pinch roller having a central axis about which the second pinch roller rotates, said second pinch roller being pivotally mounted to said mechanism about a second substantially vertical axis, said second pinch roller having an upper section and a lower section, said upper section having a substantially cylindrical upper drive surface and said lower section having a generally tapered lower support drive surface which extends radially outward from and below the cylindrical upper drive surface;
means for moving said first and second pinch rollers from a spaced rest position toward each other so as to engage a cassette therebetween with a predetermined amount of biasing force; and
means for rotating said first and second pinch rollers about their respective axis so as to move said cassette from and/or on to said support surface.

5,328,020
CONVEYOR FRAME WITH REMOVABLE TRACKS
Robert T. Clopton, Magnolia, Ky., assignor to Tekno, Inc., Cave City, Ky.
Continuation-in-part of Ser. No. 968,584, Oct. 29, 1992. This application Aug. 18, 1993, Ser. No. 108,326
Int. Cl.[5] B65G *17/24*
U.S. Cl. 198—779 **8 Claims**



1. A conveyor frame for a chain-driven conveyor, comprising:
an elongated frame member having an exterior side and an interior side and defining elongated upper and lower chambers, said upper chamber defining a top opening and defining a pair of parallel, upwardly-opening, rail-receiving slots lying in said upper chamber below said top opening;
a pair of elongated rail members having a substantially rectangular cross-section, said rail members being received in said respective upwardly-opening slots and projecting upwardly out of said slots, said rail members being adapted to serve as a support surface for the rollers of a roller chain;
wherein said rail members can be installed on said elongated frame member and removed from said elongated frame member by lifting them up out of said rail-receiving slots and passing them through said top opening.

5,328,021
ADJUSTABLE FLIGHT BARS FOR PACKAGING MACHINE
Rodney K. Calvert, Dunwoody; Alton J. Fishback, Austell, and George R. Vanhorne, Atlanta, all of Ga., assignors to The Mead Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 5,349, Jan. 19, 1993, abandoned. This application Aug. 19, 1993, Ser. No. 108,918
Int. Cl.[5] B65G *47/86*
U.S. Cl. 198—803.11 **13 Claims**



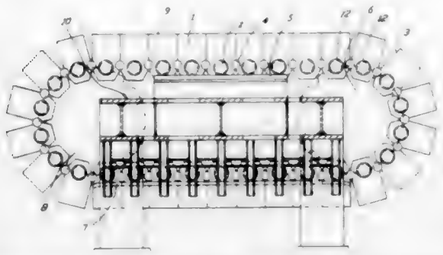
13. A system including flight bars for advancing packages in sequence along a predetermined path each of said flight bars having a leading component and a trailing component, a first pair of spaced apart endless driving elements interconnected with each of said leading components and a second pair of spaced apart endless driving elements interconnected with each of said trailing components, said first and said second pairs of endless driving elements being movable in synchronism so as to impart movement to packages along said predetermined path, means for imparting controlled relative movement to said first and said second pairs of endless driving elements so as to vary the distance between the trailing component of a flight bar and the leading component of an immediately succeeding flight bar thereby to render the system adaptable for advancing packages of different horizontal dimensions in the direction of movement of the flight bars along said predetermined path, and means for interconnecting said leading and trailing components with each other to limit relative movement therebetween within a predetermined range.

5,328,022
EQUIPMENT FOR CONTINUOUSLY MOVING HEAVY LOADS
Gianluigi Reis, Via Vettabbia, 6, 20122 Milan, and Giorgio Massocco, Salita Sant'Anna, 97, 15033 Casal Monferrato, both of Italy
PCT No. PCT/IT91/00069, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO92/02440, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 1, 1991, Ser. No. 852,168
Claims priority, application Italy, Aug. 2, 1990, 311 A/90
Int. Cl.[5] B65G *23/06*
U.S. Cl. 198—834 **4 Claims**

1. Equipment for the continuous movement of heavy loads comprising a support structure, sliding means on the support structure, a traction cog-wheel having teeth and a return cog-wheel having teeth carried on the support structure, said cog-wheels each being rotatable about a generally horizontal axis, a chain comprising base elements for supporting heavy loads linked to one another by hinges, said base elements having generally vertical interface surfaces, said chain passing over said traction cog-wheel and said return cog-wheel, support structure and moving wheels cooperating with the sliding means and supporting the chain, the support and moving wheels being slotted for receiving the teeth of the traction

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cog-wheel and the return cog-wheel, the load carried by the base elements being transferred to the support structure and



moving wheels by means of the interaction between the adjacent generally vertical interface surfaces of the base elements.

5,328,023

CONVEYOR BELT FOR PIPE CONVEYOR

Rainer Hinkelmann; Ulrike Sander, and Helmut Begemann, all of Hamburg, Fed. Rep. of Germany, assignors to Conrad Scholtz GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 25, 1993, Ser. No. 37,039

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212824

Int. Cl.[5] B65G *15/34*

U.S. Cl. 198—847 **9 Claims**



1. A conveyor belt constructed of a material having rubber-like characteristics and defining longitudinally-extending side edge regions and a running side and a supporting side and being constructed for use as a pipe conveyor wherein said side edge regions are disposed in overlapping position, said belt further including a plurality of steel ropes embedded therein as tension barriers, said ropes being of like construction and having a high elongation of more than 0.3% measured at from 2 to 20% of their nominal strength, and said ropes being disposed in equally spaced-apart positions in said belt across the full width of said belt.

5,328,024

TWO-PIECE BOTTLE CARRIER

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jul. 14, 1993, Ser. No. 91,546

Int. Cl.[5] B65D *75/28*

U.S. Cl. 206—158 **29 Claims**

1. A carrier package containing bottles, each bottle having a neck portion which includes an outwardly projecting shoulder, comprising:

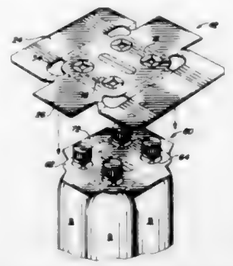
an upper support panel overlying and engaging a lower support panel;

the support panels containing aligned openings through which the necks of the bottles extend;

a plurality of support tabs connected to the upper support panel by fold lines extending along portions of the periphery of each bottle opening, the support tabs having

side panels connected to the upper support panel by first fold lines, the side panels having end portions;

end panels connected to the upper support panel by second fold lines; and



gusset panels connected to the adjacent side and end panels by fold lines, the gusset panels and the end portions of the side panels underlying and being adhered to the end panels.

5,328,025

CONTAINERIZATION SYSTEM FOR AGROCHEMICALS AND THE LIKE

Leonard E. Hodakowski; Chi-Yu R. Chen; Samuel T. Gouge, all of Raleigh, and Paul J. Weber, Durham, all of N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 818,110, Jan. 8, 1992, Pat. No. 5,248,038, which is a continuation-in-part of Ser. No. 554,615, Jul. 18, 1990, Pat. No. 5,080,226. This application Apr. 28, 1993, Ser. No. 54,327

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] B65D *85/82*

U.S. Cl. 206—205 **53 Claims**

1. A containerization system for holding and securing hazardous chemical compounds which comprises a water soluble or water dispersible bag which completely encloses a water soluble or water dispersible gel, said gel comprising an hazardous chemical compound, wherein said gel possesses non-flowability characteristics to substantially prevent persistent flow or leakage of the hazardous chemical compound from the bag in the event the bag develops pinholes.

5,328,026

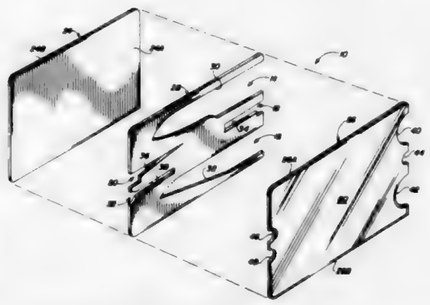
FLAT MULTIPLE TOOL HOLDER

Chris M. Newman, 13315 E. 25th St., Spokane, Wash. 99216

Filed Jun. 11, 1993, Ser. No. 75,639

Int. Cl.[5] A45C *11/00*; **B65D** *69/00*

U.S. Cl. 206—234 **20 Claims**



1. A flat multiple tool holder, comprising:

(a) a generally flat card-like substrate having an interior and a plurality of end edges; and

(b) means defining a plurality of separate pockets in the interior of said substrate, each of said pockets being open at one of said end edges of said substrate, each of said pockets being shaped to match a profile of a given one of a plurality of different tools to be stored in said pockets of said substrate.

5,328,027

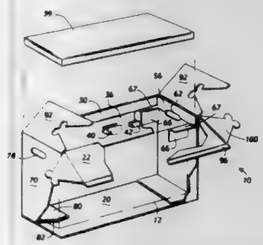
CORRUGATED PAPERBOARD CONTAINER

Gene Hollar, Houston, and John Schafer, Laredo, both of Tex., assignors to Titon Industries, Inc., Atlanta, Ga.

Filed Jul. 29, 1993, Ser. No. 99,934

Int. Cl.[5] B65D *81/02*

U.S. Cl. 206—320 **10 Claims**



1. A corrugated paperboard container for holding tank and lid for a water closet, comprising:

a body folded together from a blank of corrugated paperboard scored to provide a first side wall, a bottom, a second side wall, and a top;

the first side wall including an offset flange foldably attached to an end edge and a support panel for holding a lid of a tank foldably attached to the offset flange, a pair of inner end walls foldably attached to each of the side edges of the first side wall, the inner end walls each defining a first opening for a handgrip;

the second side wall including a pair of outer end walls foldably attached to opposite side edges of the second side wall, the outer end walls defining a second opening that aligns with the first opening, a bottom support panel foldably attached to a first end of each outer end wall;

the top foldably attached to an edge of the second side wall and including a pair of elongated flaps foldably attached to opposite side edges of the top, a distal end of each flap defining a tab with outwardly extending ears for insertion into the first and the second openings to lock the folded blank together,

whereby the body forms by folding the outer end walls and the bottom support panels inwardly with the second side wall folded upwardly from the bottom, folding the inner end walls inwardly with the first side wall folded upwardly from the bottom so that the inner end walls contact an inner surface of the outer end walls, the body closed and locked together by folding the top and inserting the ears into the openings in the end walls.

4. A corrugated paperboard container for holding articles, comprising:

a body folded together from a blank of corrugated paperboard scored to provide a first side wall, a bottom, a second side wall, and a top;

an inner end wall foldably attached to each side edge of the first side wall and defining a first opening in an upper portion of the inner end wall;

an outer end wall foldably attached to each side edge of the second side wall and defining a second opening in an upper portion of the outer end wall, an inner surface of the outer end wall contacting an outer surface of a respective one of the inner end walls when the container is folded together;

a support panel disposed in an upper portion of the body and extending from the first side wall for separating an upper portion of the body from a lower portion;

a bottom support panel extending from a lower end of each outer end wall and contacting the bottom for spacing an article from the bottom, a bottom edge of a respective one of the inner end walls sitting on the bottom support panel; and

a flap foldably attached to each side edge of the top and including a pair of ears at the distal end of the flap for inserting into the aligned first and second openings for locking the body together,

whereby the body, being folded together, can be opened and reclosed by removing and inserting the ears in the openings.

8. A corrugated paperboard container for holding articles, comprising:

a body folded together from a blank of corrugated paperboard scored to provide a first side wall, a bottom, a second side wall, and a top;

an inner end wall foldably attached to each side edge of the first side wall and defining a first opening in an upper portion of the inner end wall;

an upper support panel that extends inwardly from an upper edge of each inner end wall, the upper support panel including a T-shaped slot extending inwardly from an outer edge to define a pair of arms and flaps that fold along a score with the arms for receiving an upper portion of an article in the container for resisting movement during shipping and handling;

an outer end wall foldably attached to each side edge of the second side wall and defining a second opening in an upper portion of the outer end wall, an inner surface of the outer end wall contacting an outer surface of a respective one of the inner end walls when the container is folded together;

a bottom support panel extending from a lower end of each outer end wall and contacting the bottom for spacing an article from the bottom, a bottom edge of a respective one of the inner end walls sitting on the bottom support panel; and

a flap foldably attached to each side edge of the top and including a pair of ears at the distal end of the flap for inserting into the aligned first and second openings for locking the body together,

whereby the body, being folded together, can be opened and reclosed by removing and inserting the ears in the openings.

5,328,028

HAZARDOUS WASTE DISPOSAL METHOD AND DRUM ASSEMBLY

James A. Hale, Red Bank; Jean Sawyer, Westfield; John A. Plunkett, Wyckoff, and Lou A. Marinaccio, Highlands, all of N.J., assignors to Greif Bors. Corporation, Delaware, Ohio

Continuation of Ser. No. 2,121, Jan. 7, 1993, abandoned, which is a continuation of Ser. No. 675,130, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 397,541, Aug. 22, 1989, abandoned. This application Aug. 18, 1993, Ser. No. 108,927

Int. Cl.[5] B65D *83/10*

U.S. Cl. 206—366 **16 Claims**

1. A waste drum assembly for the collection, shipping and disposal of medical waste comprising:

a) a drum body having an interior and a tubular side wall having an upper end and being of predetermined length, a closed bottom and an open top, the top having a top edge defining in plan, a predetermined shaped peripheral outline;

b) a removable top having a peripheral outline generally approximating the outline of the top edge and being removably mounted on the top of the drum body to close the drum body top, the removable top having an access opening therein for providing access to the interior of the drum body;

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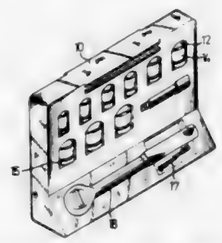
c) a sealing member on the removable top closing the access opening in the removable top and being shiftable from a closed position at which it closes the access opening and an open position at which it opens the access opening wherein the sealing member is part of a flap hingedly connected to the removable top so that the sealing member pivots between its open and closed position, and wherein the flap is frangible so that the sealing member is adapted to be removed from the removable top and be placed in the drum body interior for disposal with the medical waste.



d) an insert having a peripheral outline generally approximating the outline of the top edge and being removably mounted on the top of the drum body and being interposed between the removable top and the top edge and adapted to close off the interior of the drum body;

e) whereby when the insert is removed medical waste is adapted to be inserted into the interior of the drum body through the access opening upon shifting the sealing means to its open position and when the insert is mounted on top of the drum body medical waste is adapted to be enclosed within the drum body interior for shipping and disposal.

5,328,029
TOOL HOLDER WITH CAVITIES FOR SOCKETS
Jessie Chow, No. 18, Hou Juan Road, Taichung, Taiwan
Filed Jul. 12, 1993, Ser. No. 89,938
Int. Cl.[5] B65D *85/28*
U.S. Cl. 206—378 **3 Claims**



1. A holder for mounting a plurality of different-sized generally-cylindrical socket members therein, the socket members adapted for interchangeable coaction with a socket wrench, the holder comprising:

a body having opposite first and second planar surfaces;

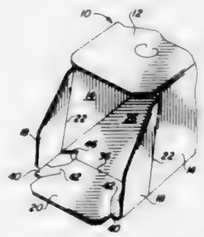
a plurality of different-sized cavities formed through the body, with each of the cavities generally cubic in shape and each of the cavities having opposite margins, each of the cavities defining an opening in the first planar surface and an opening in the second planar surface, and each of the cavities corresponding in size to snugly receive one of the socket members therein;

each of the socket members removably retainable in its corresponding cavity;

the body including in each cavity pairs of lip projections extending from the opposite margins at both the first and the second planar surfaces with all of the lips extending into its respective cavity to retain its corresponding socket member therein;

each of the openings in the first planar surface and in the second planar surface sized to pass its corresponding socket member, whereby the socket members are removable from either its corresponding opening in the first planar surface or its corresponding opening in the second planar surface.

5,328,030
SLEEVE-TYPE CARRIER
Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Apr. 8, 1993, Ser. No. 45,453
Int. Cl.[5] B65D *71/36*
U.S. Cl. 206—429 **15 Claims**



1. A sleeve-type carrier for packaging a plurality of articles, comprising:

top and bottom panels connected to side panels along fold lines to form a sleeve configuration;

an end panel at each end of the sleeve;

each end panel being comprised of dust flaps extending transversely from the side panels and an end panel flap, the dust flaps having upper and lower edges and a free end connecting the upper and lower edges, the end panel flap being connected by a fold line to either the top or bottom panel, the end panel flap fold line having a length less than the width of the associated top or bottom panel;

the end panel flap overlying the dust flaps and being adhered thereto; and

the end panel flap being connected on either side thereof to a first portion of either the upper or lower edge of the adjacent dust flap by a tab, said first edge portion being spaced from the associated side panel by a second portion of said upper or lower edge, said second edge portion comprising an edge of a cutout extending between said dust flap and the end panel flap, the tab being connected to said upper or lower first edge portion by a first tab fold line and to the end panel flap by a second tab fold line, said first tab fold line being substantially parallel to the top and bottom panels and said second fold line extending at an angle thereto.

10. A blank for forming a sleeve-type carrier for packaging a plurality of articles, comprising:

a first top or bottom panel section connected by fold lines to side panel sections on either side thereof and a second top or bottom panel section connected by a fold line to one of the side panels, the top, bottom and side panel sections being adapted to be folded along the fold lines to form a sleeve configuration;

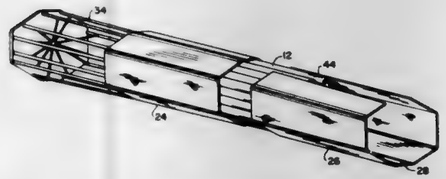
an end panel flap connected to each end of the first top or bottom panel section by a fold line having a length less than the width of the associated top or bottom panel;

dust flaps extending from each end of the side panel sections and terminating in free ends, the dust flaps having edges spaced from the end panel flaps;

each end panel flap being connected on either side thereof to a first portion of the spaced edge of an adjacent dust flap by a tab, said first edge portion being spaced from the associated side panel section by a second portion of said upper or lower edge, said second edge portion comprising an edge of a cutout extending between said dust flap and the end panel flap, the tab being connected to said first spaced edge portion by a first tab fold line and to the end panel flap by a second tab fold line, said first tab fold line being substantially parallel to the fold lines connecting the side panels to the top and bottom panels and said second fold line extending at an angle thereto;

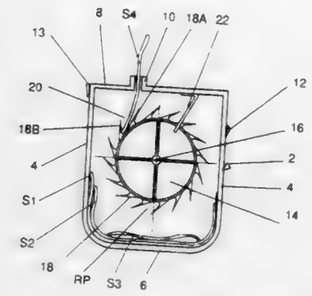
the end panel flaps being adapted to overlie the dust flaps of a carrier formed from the blank.

5,328,031
METHOD OF PACKAGING AN EFFICIENT STRAND PACKAGE WITH HEXAGONAL CROSS SECTION
Ivo G. Hendriks, Overpelt, Belgium, assignor to Teepak, Inc., Westbrook, Ill.
Continuation-in-part of Ser. No. 907,007, Jul. 1, 1992, Pat. No. 5,228,572, which is a continuation-in-part of Ser. No. 696,436, May 6, 1991, Pat. No. 5,137,153. This application Oct. 27, 1992, Ser. No. 966,961
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—443 **5 Claims**



1. A method for packaging shirred essentially cylindrically shaped food causing strands in a particular configuration; wherein, in the configuration, each strand has a strand diameter D, said strands being oriented such that central longitudinal axes of the strands are parallel; external surfaces of the strands contact external surfaces of adjacent strands; ends of the strands terminate in approximately the same plane; said plane being perpendicular to the longitudinal axes of the strands, lines passing perpendicularly through the central axes of strands located proximate the external surface of the configuration intersect to form a hexagon; and strands internally within the configuration encompassed by adjacent strands contact six adjacent strands; and the sides of the hexagon have side lengths such that said lengths vary by less than one D from each other, said configuration consisting essentially of number of rows n of strands, where n is an odd number of rows and row number $(n/2)+\frac{1}{2}$ contains one strand less than row number $(n/2)-\frac{1}{2}$; said method comprising sequentially depositing individual strands into a holder, which, when filled, holds the strands in said configuration; providing a tubular resilient plastic film having a stretched diameter large enough to accommodate the configuration and having a shrunken diameter small enough to tightly engage the external surfaces of strands located proximate the external surface of the configuration; inserting the configuration of strands into the tubular resilient plastic film when the film is stretched and shrinking the film to tightly secure the strands in said configuration.

5,328,032
FLEXIBLE SHEET STORAGE DEVICE
Eliyahu Gedalovitz, Rehovot, Israel, assignor to Scitex Corporation, Herzlia Bet., Israel
Filed Jan. 11, 1993, Ser. No. 3,046
Claims priority, application Israel, Mar. 13, 1992, 101215
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—455 **20 Claims**



1. A flexible sheet storage device, comprising:

a container including a top wall formed with an inlet slot for inserting sheets to be stored, and further including bottom and side walls for receiving the sheets inserted through said inlet slot;

a holder located within said container to releasably receive the leading edge of each sheet as it is inserted via said slot into the container;

an angularly displaceable mounting for said holder effective to angularly displace the holder, and the leading edge of a sheet held by the holder, a sufficient angular distance until the leading edge of an inserted sheet passes the trailing edge of any previously inserted sheets before the holder releases the leading edge of the inserted sheet and permits the inserted sheet to fall by gravity on top of previously inserted sheets;

and a fixed stop engageable with the leading edge of a sheet held by said holder after the sheet has been displaced said sufficient angular distance, for stripping the sheet from the holder.

11. A flexible sheet storage device, comprising:

a container including a top wall formed with an inlet slot for inserting sheets to be stored, and further including bottom and side walls for receiving the sheets inserted through said inlet slot;

a holder located within said container to releasably receive the leading edge of each sheet as it is inserted via said slot into the container;

and an angularly displaceable mounting for said holder effective to angularly displace the holder, and the leading edge of a sheet held by the holder, a sufficient angular distance until the leading edge of an inserted sheet passes the trailing edge of any previously inserted sheets before the holder releases the leading edge of the inserted sheet and permits the inserted sheet to fall by gravity on top of previously inserted sheets;

said holder comprising a guide member formed with a pair of projections spaced from each other in the direction in which the guide member is angularly displaced by said mounting, to define, between said projections, a recess for receiving and for releasably holding the leading edge of each inserted sheet;

said guide member including at least one toothed disc formed with a plurality of teeth around its circumference; said angularly displaceable mounting being a rotary mounting for said guide member.

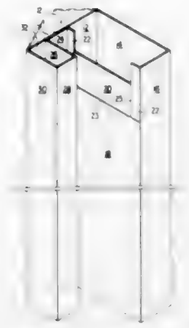
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5,328,033

INSERT FOR BICYCLE SHIPPING CONTAINER

Michael J. Ptaschinski, Beaver Dam, Wis., assignor to International Paper Company, Purchase, N.Y.

Filed Aug. 19, 1993, Ser. No. 108,969
Int. Cl.[5] B65D *81/02, 85/68*
U.S. Cl. 206—586 9 Claims



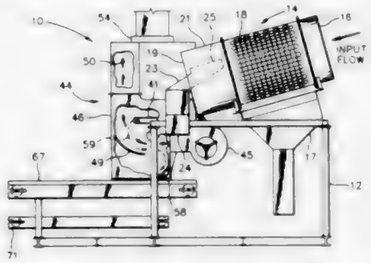
1. A unitary, generally rectangular blank of corrugated paperboard adapted to be folded into an insert for a bicycle shipping container, the blank having left and right and upper and lower free edges and provided with a plurality of vertically extending and spaced fold lines to thereby define nine generally rectangular panels having their longitudinal axes extending vertically, the fourth panel from said left edge of said blank having a horizontal fold line extending between said third and said fifth panels, a pair of vertically extending cut lines above said horizontal fold line to thereby define a flap, the fifth panel from the left being provided on one of its surfaces with an adhesive over at least a portion of its surface.

5,328,034

MACHINE AND METHOD FOR SEPARATING RECYCLABLE MATTER

Robert M. Davis, Bonita, Calif., assignor to CP Manufacturing, San Diego, Calif.

Filed Aug. 14, 1992, Ser. No. 930,739
Int. Cl.[5] B07B *9/00*
U.S. Cl. 209—31 12 Claims



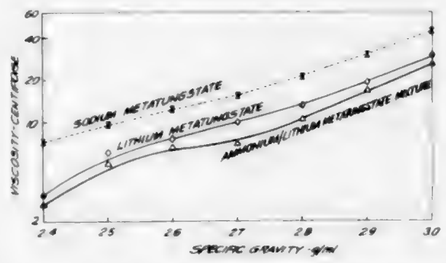
1. A machine for separating recyclable matter, comprising:
a frame;
a trommel means mounted to rotate on the frame, the trommel means having an input opening and an output opening for conducting a flow of recyclable matter from the input to the output opening;
an annulus on the trommel means substantially at the output opening;
a rotatable magnetic means coupled to the annulus to rotate with the trommel means for extracting magnetic material from the flow of recyclable matter in the trommel means in response to rotation of the trommel means;
a means for generating a high-velocity stream of air;
air separator means coupled to the means and mounted on the frame adjacent the output opening of the trommel means for:
receiving the flow of recyclable matter; and
in response to the high-velocity stream of air, separating the flow of recyclable matter into a first material stream including relatively lightweight articles and a second material stream including relatively heavier articles;
the air separator means providing the second material stream in a substantially downward direction;
a baffle means in the air separator means for;
directing the high-velocity stream of air upwardly into the air separator means; and
reducing the downward velocity of the second material stream;
a first collection area;
a first conveyor means mounted on the frame adjacent the air separator to receive the first material stream for conveying the relatively lightweight articles to the first collection area;
a second collection area; and
a second conveyor means mounted on the frame adjacent the baffle means to receive the second material stream for conveying the relatively heavier articles to the second collection area.

5,328,035

LITHIUM METATUNGSTATE

Willem P. C. Duyvesteyn, San Jose; Houyuan Liu, Sunnyvale; Nicholas L. Labao, San Jose, and Purusotam L. Shrestha, Sunnyvale, all of Calif., assignors to BHP Minerals International Inc., Reno, Nev.

Division of Ser. No. 720,915, Jun. 25, 1991, Pat. No. 5,178,848.
This application Oct. 13, 1992, Ser. No. 53,492
Int. Cl.[5] B03B *5/60*
U.S. Cl. 209—173 7 Claims



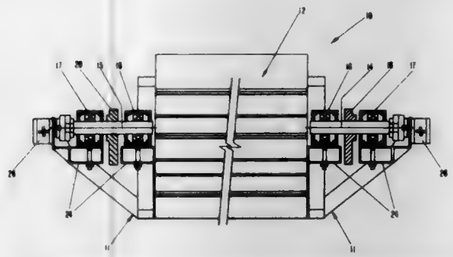
1. A process for separating minerals from a mixture of minerals having different densities which comprises comminuting the mixture of minerals to liberate the minerals; slurrying comminuted minerals with an aqueous solution of lithium metatungstate, the concentration of lithium tungstate in said aqueous solution being selected to provide a density between the densities of the minerals being separated so that minerals having a density greater than said solution will sink and minerals having a density less than said solution will float; and separately recovering minerals which float and which sink.

5,328,036

VIBRATORY SCREENING APPARATUS

Patrick J. Douglas, 2 Schools Lane, Santon, Douglas, Isle of Man, United Kingdom

Filed Dec. 10, 1992, Ser. No. 989,212
Claims priority, application United Kingdom, May 28, 1992, 9211300; Aug. 28, 1992, 9218414
Int. Cl.[5] B07B *1/44*
U.S. Cl. 209—366.5 10 Claims



1. A vibratory screening apparatus which comprises a frame having a pair of opposed screen frame sides, at least one screen mounted on the pair of opposed screen frame sides, and a shaft-driven vibratory mechanism coupled with at least one screen in order to impact vibration energy thereto so as to assist the screening operation, said mechanism comprising:
a) a first stubshaft and a second stubshaft, the first stubshaft extending outwardly from one of the pair of opposed screen frame sides, and the second stubshaft extending outwardly from the opposing frame side of the pair of opposed screen frame sides;
b) a first pair of bearing housings supporting the first stubshaft, the first pair of bearing housings mounted on the frame side from which the first stubshaft extends outwardly, and the first pair of bearing housings being spaced apart from each other;
c) a second pair of bearing housings supporting the second stubshaft, the second pair of bearing housings mounted on the frame side from which the second stubshaft extends outwardly, and the second pair of bearing housings being spaced apart from each other;
d) a first counterweight mounted on the first stubshaft in the space between the first pair of bearing housings, said first counterweight being rotatable with the first stubshaft in order to apply vibration energy to the first stubshaft and therefrom to at least one screen via the bearing housings and the frame sides;
e) a second counterweight mounted on the first stubshaft in the space between the second pair of bearing housings, said second counterweight being rotatable with the second stubshaft in order to apply vibration energy to the second stubshaft and therefrom to at least one screen via the bearing housings and the frame sides; and
f) drive means coupled with each stubshaft for applying rotary motion thereto.

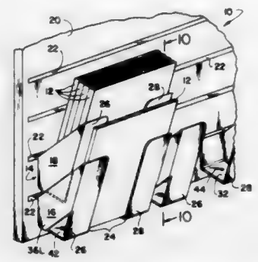
5,328,037

MAGAZINE DISPLAY RACK

Glenn Fujii, 1648-D Locust Ave., Bohemia, N.Y. 11716

Filed Jun. 8, 1993, Ser. No. 73,053
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—55 1 Claim

1. A magazine display rack of a type for displaying magazines in an operative arrangement of vertically spaced apart tiers consisting of at least a first lower tier and a second upper tier, said display rack comprising a planar support having plural vertically spaced apart horizontally oriented slots, plural cooperating pairs of support brackets slidably disposed in said slots having compartments for supporting opposite bottom corners of magazines disposed for display in spanning relation between each said cooperating support bracket pair such that positions of sliding movement of said cooperating bracket pairs are adapted to be selected to correspond to the width of said magazine in said display position therebetween, and each bracket pair having an operative arrangement of a rear wall, bottom wall, front wall and side wall bounding therebetween said compartment into which a magazine bottom corner is projected, each side wall having an upper angularly oriented



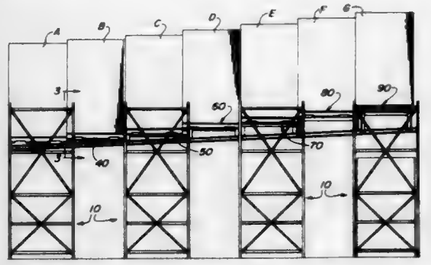
edge in spanning relation between said rear wall and front wall and a triangular notch at the juncture of said front wall and bottom wall such that in said vertically spaced apart tiers said bracket side walls are in the same vertical plane with the upper angular oriented edge length portion adjacent the front wall of a first lower tier bracket projected into a triangular notch of a second upper tier bracket, whereby all side walls of said brackets are in vertical alignment with each other to contribute to an enhanced appearance in said magazine display rack.

5,328,038

STORAGE RACK SYSTEMS

Donald R. Allen, Frenchtown, N.J., assignor to Frazier Industrial Company, Long Valley, N.J.

Filed Feb. 10, 1993, Ser. No. 15,792
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—151 17 Claims



1. In a storage rack for supporting pallet loads at least seven pallets deep having a framework providing a plurality of storage bays which is defined by a plurality of vertical uprights and horizontal shelf beams, each of said storage bays comprising:
a plurality of carts,
track means extending along the depth of said storage bay at the same level for supporting said cart means for movement along said tracks from forward positions to back positions thereof,
said plurality of carts including:
a first cart whose back position is located three pallets deep from the entry end of the storage bay,
a second cart whose back position is located four pallets deep from the entry end of the storage bay,
a third cart whose back position is located five pallets deep from the entry end of the storage bay,

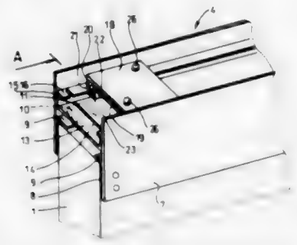
a fourth cart whose back position is located six pallets deep from the entry end of the storage bay, and
a fifth cart whose back position is located seven pallets deep from the entry end of the storage bay,
said tracks of said track means each being mounted on the storage bay framework so as to be on the same level and to be inclined forwardly toward the entry end of the storage bay, whereby said cart are supported so that they tend to roll along said track means toward the entry end of the storage bay.

5,328,039

DEVICE FOR HOOKING DECORATION OR SIMILAR ELEMENTS ONTO ALL TYPES OF SHELF-UNITS

Bernard Heimendinger, Montmorency, France, assignor to Fapec, France

Filed Jun. 18, 1992, Ser. No. 900,357
Claims priority, application France, Jun. 21, 1991, 91 07635
Int. Cl.[5] F16B *5/02*; **A47F** *10/02*; **F16M** *11/00*
U.S. Cl. 211—183 **5 Claims**



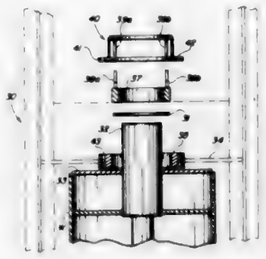
1. Device for hooking decoration elements on all types of shelf units and including:
(a) a shelf unit having a vertical wall having an upper longitudinal edge;
(b) two identical half-rails applied opposite each other with each against said upper longitudinal edge of said vertical wall of said shelf unit;
(c) one horizontal central element disposed between said two half-rails and presenting at a higher level two horizontal lateral return movements;
(d) means for securing said central element to said half-rails to constitute a support unit;
(e) said central element including means to adjust the spacing of said rails inside a horizontal plane and ensure the clamping of said upper longitudinal edge between said half-rails;
(f) at least one support member slidingly mounted along said central element, said support member comprising two superimposed central portions and additional means for ensuring its guiding and securing along said horizontal central element, said additional means including horizontal longitudinal edges of said superimposed central portions, the horizontal longitudinal edges of first of said central portions pressing the upper face of said horizontal lateral return movements of said horizontal central element and the horizontal longitudinal edges of the second of said central portions being close to the lower face of said horizontal lateral return movements of the horizontal central element;
(g) clamping means for clamping said additional means of said support member on the horizontal lateral return movements of said central element; and
(h) means for hooking said decoration elements and integral with said support element.

5,328,040

THRUST-CENTERING CRANE AND METHOD

William D. Morrow, 16350 Park Ten Pl., Ste. 202, Houston, Tex. 77084

Continuation of Ser. No. 676,090, Mar. 27, 1991, abandoned.
This application Dec. 23, 1992, Ser. No. 995,956
Int. Cl.[5] B06C *23/84*
U.S. Cl. 212—253 **15 Claims**



1. A thrust-centering pedestal-mounted crane, comprising:
support means including a vertical kingpost;
a center pin extending upwardly from said kingpost, said center pin having a lesser circumference than the kingpost circumference;
upper works revolvable around said kingpost;
boom means supported by said upper works;
said upper works including gantry means, said gantry means including gantry vertical members;
cross-structure means fixedly attached to said gantry means;
a bearing retainer attached to said cross-structure means;
a thrust bearing supported on said kingpost;
a bearing carrier, said bearing carrier intermediate said center pin and said bearing retainer;
said bearing carrier supported on said thrust bearing;
a radial bearing intermediate said bearing carrier and said center pin;
first alignment means attached to said bearing carrier;
second alignment means attached to said bearing retainer;
said second alignment means supported on said first alignment means;
the interface of said second alignment means and said first alignment means limited to a predetermined area near the horizontal center of said kingpost; and
said bearing retainer, cross-structure means, gantry means and upper works revolvably supported on said kingpost by said second alignment means.

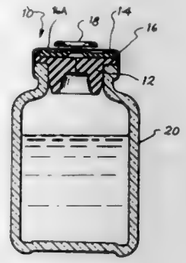
5,328,041

TWO PIECE STOPPER FOR BLUNT FLUID CONNECTOR

William J. Hook, Gurnee, and Mark E. Larkin, Lindenhurst, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 30, 1993, Ser. No. 85,697
Int. Cl.[5] B65D *39/00, 41/20*
U.S. Cl. 215—247 **8 Claims**

1. A two-piece stopper assembly constructed and arranged to seal an open end of a container, the stopper assembly comprising:
an inner elastomeric stopper member having
a radially outward extending annular flange portion,
an axially inward extending hollow plug portion, and
a radially inward extending pre-pierced diaphragm portion,
the radially extending annular flange portion constructed and arranged to axially abut the open end of the container,
the axially extending plug portion depending from the annular flange portion and constructed and arranged to sealingly engage the interior of the open end of the container, and
the pre-pierced diaphragm portion constructed and arranged to close the center opening of the annular flange portion;



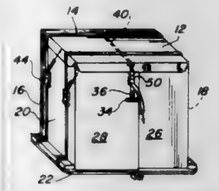
an outer stopper member having
a center target area having a reduced diaphragm thickness, and
means for sealingly securing the outer stopper member to the inner stopper member.

5,328,042

FLAT STORABLE CONTAINER

Jeff H. Heise, Wheaton, Ill., assignor to Ockerlund Industries Inc., Forest Park, Ill.

Filed May 20, 1993, Ser. No. 64,957
Int. Cl.[5] B65D *5/02*
U.S. Cl. 220—7 **16 Claims**



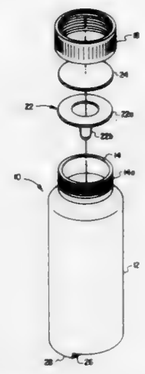
1. A flat-storable container which comprises a bottom deck; a pair of opposed sidewalls positioned on said bottom deck to permit said sidewalls to lie flat against the deck in a folded position, and to stand in perpendicular relation thereto in a container-forming position; said sidewalls each carrying a pair of opposed, foldable side flaps which are proportioned to be unfolded into the container-forming position to each engage the side flap of the opposed sidewall, wherein sets of said engaging side flaps define lateral container walls extending between ends of said opposed sidewalls, to define with said deck an open-top, rectangular container; a container lid; and means for holding said lid on the container and for holding said engaging side flaps together, said means for holding said lid on the container comprising a strap carried by said lid and having opposed ends, said strap extending under said lid over the entire width of said lid and extending through first slots on opposed sides of said lid for connection at said strap ends outside of said lid with side flap retaining straps when the sidewalls are in said container-forming position.

5,328,043

BABY BOTTLE WITH SEALING DISK HOLDER

Sharon Ray, 4617 Olympia, Mesquite, Tex. 75150

Continuation of Ser. No. 795,767, Nov. 21, 1991, abandoned.
This application Aug. 20, 1993, Ser. No. 109,696
Int. Cl.[5] A61J *9/08*; **B65D** *23/12*
U.S. Cl. 215—6 **10 Claims**



1. A bottle comprising:
a hollow cylinder;
a mouth formed at one end of said cylinder for permitting the ingress and egress of liquids into and from said cylinder, respectively, and for receiving sealing means for preventing said ingress and egress when said bottle is not in use;
a first base member disposed at the other end of said cylinder to close off said other end to permit said liquid to be contained in said cylinder, an arcuate portion of said cylinder extending beyond said base member; and
an additional base member rigidly fixed to and encompassing said extended, arcuate cylinder portion and said first base member a housing of sufficient size to removably receive said sealing means in a friction fit to retain and store said sealing means.

5,328,044

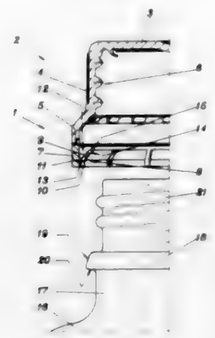
CONTAINER CLOSURE WITH ORIGINALITY RING

Dirk Röhrs, Undenheim; Stefan Kreuzberger, Lorch am Rhein, and Heino Deussen, Eltville am Rhein, all of Fed. Rep. of Germany, assignors to Stella Kunststofftechnik GmbH, Eltville a. Rhein, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 6,464
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1992, 4201997
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 **11 Claims**

1. A closure cap (**2**) for a container (**16**) having an annular bead (**18**), said closure cap having a free circumferential rim and having at its free circumferential rim a break-away originality ring (**7**) with upper and lower edges, said originality ring being provided with retaining elements which cooperate with the annular bead (**18**) of the container (**16**), characterized in that the retaining elements comprise a plurality of individual rockers (**8**) each with a first leg (**9**) and a second leg (**10**) which are angularly connected to each other at a common fulcrum joint which is connected solely to the originality ring (**7**) by an elastic web (**11**) disposed intermediate the upper and lower

edges of said originality ring, said first leg (**9**) pointing obliquely inward relative to the closure cap (**2**) and said second



leg **910**) pointing down, and said second leg (**10**) being disposed at an obtuse angle with respect to said first leg (**9**).

5,328,045

LID DEVICE FOR WIDE-MOUTHED CONTAINER AND METHOD FOR MAKING THE SAME

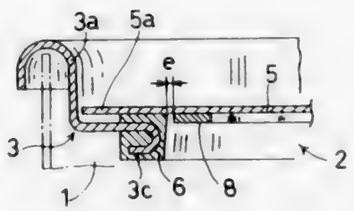
Yoshiaki Yoshida, Nara, Japan, assignor to Tenryu Chemical Industry Co., Ltd., Nara, Japan

Filed Apr. 20, 1992, Ser. No. 870,868

Claims priority, application Japan, Apr. 22, 1991, 3-027573[U]; Jun. 28, 1991, 3-158615; Jun. 28, 1991, 3-158952; Aug. 2, 1991, 3-194538

Int. Cl.[5] **B65D** *51/18*

U.S. Cl. 220—254 **12 Claims**



1. A lid device for a wide-mouthed container comprising:

a metallic lid body fittable to an open mouth of the container, the lid body having a bent inner margin defining an opening of a predetermined shape;

a molded resinous rim member extending entirely along and enclosing the bent inner margin of the lid body;

a closure film means attached to the rim member to close the opening of the lid body; and

a resinous reinforcing member attached to the closure film means, the reinforcing member being separate from the rim member but having a periphery located adjacent to the rim member, the closure film means extending beyond the periphery of the reinforcing member.

5,328,046

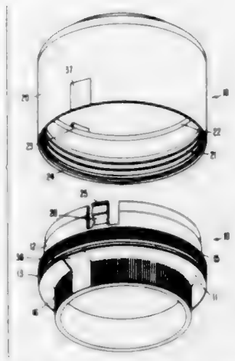
SELF-LOCKING, TAMPER-EVIDENT PACKAGE

Kevin A. Kutz, Elkridge, and Steven E. Parto, Westminster, both of Md., assignors to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

Filed Aug. 20, 1992, Ser. No. 932,531

Int. Cl.[5] **B65D** *41/32*

U.S. Cl. 220—266 **10 Claims**



1. A self-locking, tamper evident package comprising a lid portion and a base portion;

(a) said lid portion comprising a hollow, generally cylindrical shaped member closed at a top end, having an interior surface disposed with thread means for connecting to said base portion, a retaining rim, and at least one ramp shaped ratchet tooth;

(b) said base portion comprising a circular platform with a grip extending orthogonally from a bottom side and a sidewall extending orthogonally from a top side defining a hollow cylindrical cavity, said sidewall having thread means disposed on an exterior surface for engaging said lid portion thread means; and

(c) at least one radially flexible, circumferentially frangible vertical breakaway tab forming a section of the base sidewall, such that said lid portion, when completely threaded to said base portion, engages said at least one breakaway tab over the retaining rim and behind the at least one ramp shaped ratchet tooth, thereby locking said lid and base portions, such that the disassembly of the lid portion from the base portion will result in a relative twisting motion of the at least one tab against a back surface of the at least one ratchet tooth thereby permanently and visibly shearing said at least one tab off from the base sidewall.

5,328,047

DOUBLE LOCKING PAIL AND COVER FOR REGULATED MATERIALS

Arthur H. Smith, East Brunswick, N.J., assignor to North America Packaging Corporation, Bala Cynwyd, Pa.

Continuation of Ser. No. 817,064, Jan. 6, 1992, abandoned. This application Oct. 30, 1992, Ser. No. 969,399

Int. Cl.[5] **B65D** *41/16*

U.S. Cl. 220—307 **4 Claims**

1. A receptacle assembly comprising an open top container and a cover (**20**) threfore, said cover having top (**21***b*) and lower edges (**9**) and a periphery thereabout, said assembly comprising:

a. a container having a bottom; and a side wall integrally connected to the bottom and extending upwardly from said bottom and terminating in a container wall top portion;

b. said cover periphery having a first inner peripheral wall

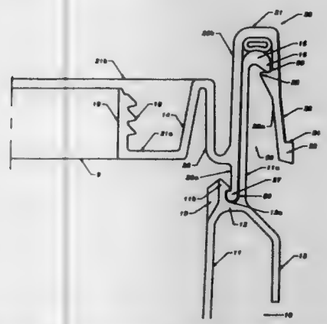
(**26**) extending downwardly from said top edge (**21***b*) for a selected distance and then extending radially outwardly and upwardly away from said first cover wall (**26**) for a selected distance to form a second integrally connected wall;

c. said second cover wall having an upper portion (**26***b*) and a lower portion (**26***a*);

d. said upper portion (**26***b*) of said second cover wall extending radially away from the first cover wall (**26**) to form a top segment (**21**);

e. a third cover wall integrally connected with, and extending downwardly from the top segment (**21**), said third cover wall including locking means (**28**) extending radially toward said second cover wall (**26***b*);

f. said container wall top portion (**11**) having an upper extension (**11***a*) terminating in a locking means (**16**) for locking



engagement with said cover locking means (**28**), whereby said locking engagement of said container locking means (**16**) and said cover locking means (**28**) forms a first locking assembly;

g. said container top wall portion having a tower portion with a shoulder (**12**) and an upwardly opening depression (**12***a*) formed in the shoulder;

h. said shoulder also including an upwardly extending lock member radially inwardly of said upper extension comprising a radially outwardly extending element having a portion (**11***b*) extending over part of said depression to form a locking channel ring (**80**);

i. said second cover wall lower portion (**26***a*) terminating in a substantially J-shaped locking tip (**27**) which fits into locking engagement with said ring (**80**) to form a second locking assembly.

5,328,048

TOTE BOX

Eric D. Stein, Tega Cay, S.C., assignor to Otto Industries, Inc., Charlotte, N.C.

Filed Feb. 8, 1993, Ser. No. 14,663

Int. Cl.[5] **B65D** *43/14*

U.S. Cl. 220—334 **7 Claims**

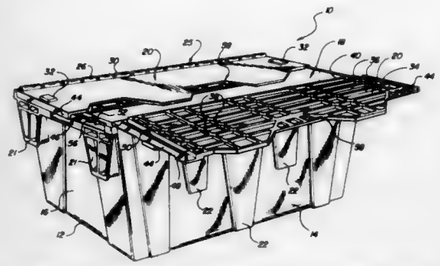
1. A container (**10**) comprising;

a base (**12**) defining the bottom of the container (**10**), a pair of sidewalls (**14**) and a pair of end walls (**16**) extending upwardly from said base (**12**) to define an interior (**18**) of said container (**10**);

a lid (**20**) hingedly connected to the upper portion of a sidewall (**14**) of said container (**10**) along one edge of said lid (**20**) and moveable between a closed position barring access to the interior (**18**) of said container (**10**) and an open position where access to the interior (**18**) of the container (**10**) is not barred;

at least one of said sidewalls (**14**) including offset portions (**22**) extending along the vertical expanse of the interior of said sidewall (**14**) and in spaced parallel relation with respect to each other, at least one of said offset portions (**22**) terminating at its upper end so as to form a shelf (**24**) on the interior of said sidewall (**14**);

said lid (**20**) including a force distributing rib (**40**) extending in spaced parallel relation to the hinged edge of said lid (**20**) along a portion of the length of said lid (**20**) and downwardly from the underside of said lid (**20**) when said



lid (**20**) is in the closed position such that said rib (**40**) is in adjacent abutting relation to the interior of said sidewall (**14**) above said shelf (**24**) and such that the distal end (**42**) of said rib (**40**) is in contact with said shelf (**24**) to distribute loads placed on said container (**10**) through said sidewall (**14**) to the base (**12**) of said container (**10**) .

5,328,049

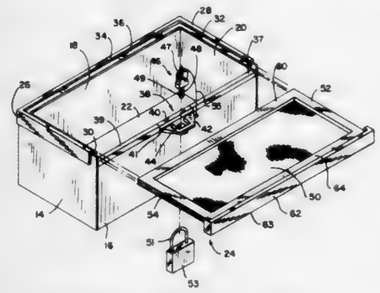
VIVARIUM

Gerald R. Ritzow, Franklin, Wis., assignor to All-Glass Aquarium Co., Inc., Franklin, Wis.

Filed Apr. 23, 1993, Ser. No. 52,476

Int. Cl.[5] **B65D** *43/12*

U.S. Cl. 220—345 **4 Claims**



1. A vivarium having an interior, comprising:

a tank having a plurality of side walls and a base, each side wall having an upper edge opposite to the base;

a cover;

a pair of guide tracks extending generally parallel along the upper edge of a first and a second of the side walls for receiving the cover in a horizontal sliding relation, the cover slidable between a first open position to allow access to the interior of the vivarium and a second closed position so as to prevent access to the interior of the vivarium; and

means for maintaining the cover in the closed position:

wherein the means for maintaining the cover in the closed position is comprised of:

a stop attached to an edge of the cover in a plane perpendicular to the guide tracks; and

a clip hanging over an edge of a third of the side walls and between the guide tracks, said stop being retainable in said clip;

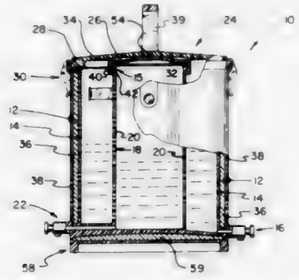
wherein the clip is further comprised of a hanging member

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affixed to the third of the side walls and a downward sloping ramp extending away from the third of the side walls on which the clip is hung, the hanging member and the ramp defining a recess for receipt of the stop when the cover is in the closed position;

wherein the clip is further comprised of an aperture extending downwardly through the ramp of the clip for receipt of a locking pin such that the locking pin prevents the removal of the stop from the recess when the locking pin engages the clip.

5,328,050
DUAL NESTED LIQUID CONTAINER
Donnie L. Hyatt, 331 W. Jonesville Rd., Bowdon, Ga. 30108
Filed May 24, 1993, Ser. No. 66,591
Int. Cl.[5] B67D *5/56*
U.S. Cl. 220—506 **11 Claims**



1. A new and improved dual nested liquid container, comprising:

an outer container assembly including an outer vessel and an outer dispensing valve assembly which projects outward from said outer vessel,

an inner container assembly nested within said outer vessel, said inner container assembly including an inner vessel and an inner dispensing valve assembly which projects outward from said inner container assembly and outward from said outer vessel,

a lid assembly which includes an inner lid portion and an outer lid portion, said inner lid portion providing coverage for said inner vessel and said outer lid portion providing coverage for said outer vessel, said inner lid portion being nested within said outer lid portion,

outer connector assembly means, connected between said outer container assembly and said outer lid portion, for removably connecting said outer lid portion to said outer container assembly, and

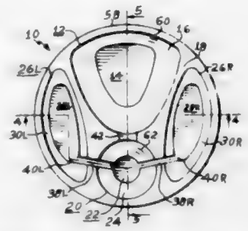
inner connector assembly means, connected between said inner container assembly and said inner lid portion, for removably connecting said inner lid portion to said inner container assembly,

wherein said inner lid portion includes an inner vent hole for venting said inner container assembly when liquid is dispensed from said inner container assembly through said inner dispensing valve assembly,

wherein said outer lid portion includes a first outer vent hole for venting said outer container assembly when liquid is dispensed from said outer container assembly through said outer dispensing valve assembly, and

wherein said outer lid portion includes a second outer vent hole, in registration with said inner vent hole, for venting said inner container assembly when liquid is dispensed from said inner container assembly through said inner dispensing valve assembly.

5,328,051
FOOD SERVING DEVICE
Wayne R. Potter, and Karen A. Chassé, both of 8229 60th St. Cir. E. #512, Sarasota, Fla. 34243
Continuation-in-part of Ser. No. 946,882, Sep. 17, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 109,406
Int. Cl.[5] B65D *7/00*
U.S. Cl. 220—575 **18 Claims**



1. A bowl that separates dry food from liquid until just prior to consumption, comprising:

a first compartment for retaining dry food;

a second compartment for retaining food and liquid;

an upstanding wall for separating said first compartment from said second compartment;

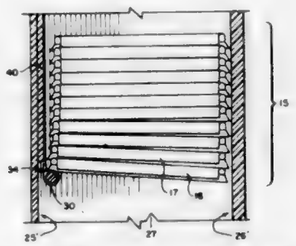
a third compartment for retaining liquid;

a first liquid transfer means for providing fluid communication between said second compartment and said third compartment; and

said third compartment being elevated with respect to said second compartment so that liquid in said third compartment flows without assist through said first liquid transfer means under the influence of gravity into said second compartment;

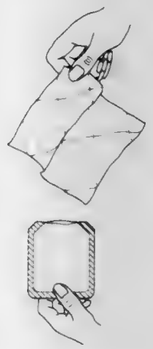
whereby dry food in said first compartment remains dry until it is moved over said upstanding wall into said second compartment where it is mixed briefly with liquid in said second compartment just prior to its consumption with liquid.

5,328,052
EASY LID DISPENSER
Mark A. Kizilos, Los Angeles, Calif., assignor to Ezalid, Santa Monica, Calif.
Filed Jul. 6, 1993, Ser. No. 86,301
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—42 **4 Claims**



1. A lid dispenser for serially dispensing lids from a vertical coaxial stack of nested lids comprising, an elongated container having an open dispensing end, and a rotatable dispensing rod near said open dispensing end and positioned underneath and to one side of said coaxial stack of nested lids said rotatable dispensing rod having an elongated cylindrical portion, a lip portion extending tangentially outward from a surface thereof, and a turning means affixed to one end of said dispensing rod, said one end extending from one of two opposite sides of said elongated container the arrangement of the stack of nested lids and the rotatable dispensing rod being such that as the rod rotates the lip portion of the rod engages one side of the lower most lid of the stack and pushes the lower most lid against an inner side of the container and then simultaneously pushes the lower most lid downwardly into the dispensing end of the container whereby the lower most lid is separated from the remainder of the stack.

5,328,053
PACKAGES FOR SINGLE-USE FOLDED TOWELS WHICH PROVIDE FOR UNFOLDING OF THE TOWEL UPON REMOVAL FROM THE PACKAGE
Charles D. Cook, Fairfield, and Charles J. Berg, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 22, 1993, Ser. No. 35,346
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—63 **10 Claims**



1. A flexible package for dispensing a folded sheet, said package comprising:

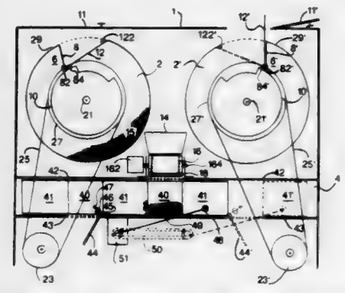
(a) at least one folded sheet, said sheet being first folded longitudinally to define a predetermined folded width and a first predetermined folded thickness and then folded laterally to define a predetermined folded length and a second predetermined folded thickness such that said sheet has longitudinal folds generally parallel to its length and lateral folds generally parallel to its width, said longitudinal folds and said lateral folds being generally orthogonal to one another, said second folded thickness being greater than said first folded thickness, said sheet further having a grasping portion for grasping by a consumer, said grasping portion extending lengthwise beyond a remainder of said sheet;

(b) a package formed of a thin, flexible material, said package entirely surrounding and containing said sheet, said package further having a front side and a back side, said package further having two opposing side edges, a bottom edge, and a dispensing edge opposing said bottom edge, each of said edges joining said front side and said back side, said dispensing edge being adapted to be opened by a consumer for access to said sheet, said dispensing edge and said grasping portion of said sheet being adjacent to one another; and

(c) said dispensing edge being designed such that when said dispensing edge is opened by said consumer, an elongated opening having a length which is shorter than said bottom edge is formed, said elongated opening defining a minor dimension parallel to said first folded thickness and a major dimension parallel to said folded width, said major dimension of said elongated opening having a maximum length which is between about 0.5 and about 0.9 times said folded width at the time of opening said dispensing edge;

whereby when said consumer opens said dispensing edge and forms said opening, said grasping portion is presented for grasping, and whereby grasping said grasping portion and withdrawing said sheet from said package through said dispensing edge automatically causes said longitudinal folds and said lateral folds of said sheet to substantially unfold.

5,328,054
AUTOMATIC PORTIONING AND WEIGHING ARRANGEMENT
Rudolf Hoeberigs, Knokke-Heist, Belgium, assignor to Jean M. M. Hoeberigs, Netherlands
PCT No. PCT/BE91/00055, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992
PCT Filed Aug. 2, 1991, Ser. No. 778,150
Claims priority, application Belgium, Aug. 7, 1990, 09000774
Int. Cl.[5] G01G *13/00*
U.S. Cl. 222—77 **5 Claims**



1. An automatic portioning and weighing arrangement for loose products, said arrangement comprising:

a collecting capacity for collecting loose products;

an outer jacket;

at least one cylindrical store drum which is rotatable about a central axis thereof and disposed substantially horizontally within said outer jacket;

an eccentric axle disposed substantially parallel to said central axis of said cylindrical store drum;

a delivery valve pivotally connected at one end thereof to said eccentric axle so as to be pivotally movable thereabout between collection and delivery positions;

a filing valve which is also pivotally connected at one end thereof to said eccentric axle so as to be pivotally movable thereabout between operative and filling positions; wherein

said store drum includes a portioning capacity extending substantially over a complete length of said store drum, said portioning capacity being defined collectively by a part of said outer jacket and said delivery valve when in said collection position thereof;

said arrangement further comprises a cam which actuates said delivery valve in response to rotation of said store drum to cause said delivery valve to pivotally move from said collection position into said delivery position against said filling valve in said operative position thereof to allow said products in said portioning capacity to be discharged therefrom; and wherein

said filling valve is pivotally movable from said operative position into said filling position against said delivery valve in said collection position to thereby allow loose product to be introduced into said store drum.

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5,328,055

REFILLABLE LIQUID DISPENSER WITH DIAMOND-SHAPED INNER PLIANT BLADDER

John R. Battle, 11306 W. Pool Ct., Crystal River, Citrus County, Fla. 32629

Filed Nov. 27, 1992, Ser. No. 982,449
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—83.5 24 Claims



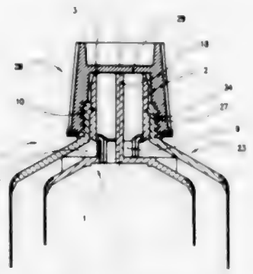
1. A refillable liquid container comprising an outer rigid hollow housing including an upper neck having an opening formed therein, a cap to selectively seal said opening and a replaceable inner pliant liquid bladder including an upper bladder portion comprising a flexible diamond shaped upper end that intersects a reduced upper end of said lower bladder portion of said replaceable inner pliant liquid bladder disposed within said upper neck and a lower bladder portion disposed within said outer rigid hollow housing, said cap being secured to said upper neck such that said replaceable inner pliant liquid bladder is held in place therebetween.

5,328,056

TUBE AND DISTRIBUTOR INCORPORATING THE LATTER FOR STORING AND DISTRIBUTING TWO CREAMY OR PASTY PRODUCTS

Bernard Schneider, and Michel Rebeyrolle, both of Sainte Menehould, France, assignors to Cebal S.A., Clichy, France

Filed Mar. 15, 1993, Ser. No. 31,499
Claims priority, application France, Mar. 16, 1992, 92 03326
Int. Cl.[5] B65D *35/22*
U.S. Cl. 222—94 16 Claims



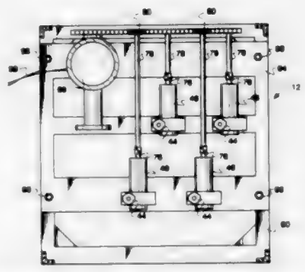
1. A distributor including a tube (1) having a neck (2) with a distribution orifice (3), said neck (2) being followed by a shoulder (4) defining an interior for a product to be dispensed, and a flexible skirt (5), said neck (2), above the said skirt (5), having at least one through side window (9), the neck (2) having annular external fixing means (10, 30), wherein said neck (2) comprises two chambers (6, 7) sealed with respect to one another up to said distribution orifice (3), the first (6) of said chambers having an external wall (14) connected to said shoulder (4) by a recessed collar portion (15) having a thickness below 0.6 mm, so as to prevent shrinkage deformations during the moulding of said tube (1), said first chamber being communicated with the interior (8) of the skirt (5) of said tube (1) by said recessed collar portion, and the second chamber (7) communicating with said at least one through side window (9), located at the base of the neck (2) and above said shoulder (4), said shoulder forming the bottom of the second chamber (7).

5,328,057

PAINT DISPENSER APPARATUS

Leendert Hellenberg, Warmond, and Johannes H. Mink, Voorhout, both of Netherlands, assignors to Fluid Management Limited Partnership, Wheeling, Ill.

Filed Mar. 25, 1993, Ser. No. 36,416
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—135 14 Claims



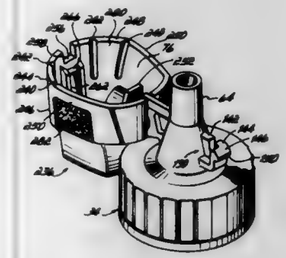
1. Apparatus for dispensing material into a container, comprising:
a housing;
a plurality of material storage containers in said housing;
a plurality of pumps coupled to respective ones of said material storage containers;
at least one motor for driving said pumps;
dispense valves in said housing for controlling a flow of material therethrough in response to user-defined control commands;
a dispense head for directing material into the container;
a plurality of conduit means coupling said pump means to said dispense valves and coupling said dispense valves to said dispense head;
control means for generating control commands in response to user-defined control commands, located in said housing and coupled to said dispense valves so as to control the flow of material through the dispense head and into the container;
said at least one motor and said plurality of pumps mounted on a common skid; and
means for removably mounting the skid to the housing.

5,328,058

DROPPER BOTTLE ASSEMBLY WITH SQUEEZE CAP

Richard A. Leoncavallo, Pittsford; Ravinder C. Mehra, Fairport, and Gregory R. Phillips, Geneva, all of N.Y., assignors to Nalge Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 841,840, Feb. 26, 1992, Pat. No. 5,246,145, which is a continuation of Ser. No. 804,171, Dec. 9, 1991, Pat. No. D. 338,830, which is a continuation-in-part of Ser. No. 708,442, May 31, 1991, abandoned, said Ser. No. 841,840, is a continuation-in-part of Ser. No. 708,442, May 31, 1991, which is a continuation-in-part of Ser. No. 518,465, May 3, 1990, abandoned. This application Sep. 8, 1993, Ser. No. 117,628
Int. Cl.[5] B65D *47/18*
U.S. Cl. 222—153 41 Claims



1. A dropper bottle assembly comprising:
a bottle;
a dispensing closure having a base adapted to be secured to the bottle, the dispensing closure further having an elongated dropper spout extending from the base to a distal spout opening;
a squeeze cap having side and front wall portions defining a cavity sized to receive the spout therein, the cap being hinged to the closure with the cap being pivotable between a closed position wherein the spout is within the cap cavity and an open position wherein the spout opening is exposed;
a seal associated with the cap for closing off the spout opening in the closed position of the cap;
a first locking element on the closure;
a second locking element associated with the cap front wall portion, the first and second locking elements being positioned to lockingly engage one another as the cap pivots from the open to the closed position; and
zones of flexibility formed in at least the cap side wall portions and positioned relative the front wall portion such that pressure on the cap side wall portions causes the front wall portion to flex outwardly of the cap to release the first and second locking elements from one another so as to allow the cap to pivot to the open position.

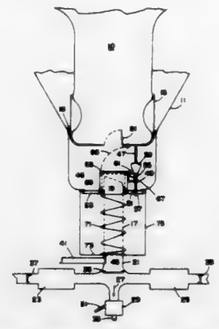
5,328,059

SEALED BOTTLE WATER SYSTEM

Gary J. Campbell, 6480 10th Ave., Blanchard, Mich. 49310

Filed Jul. 1, 1992, Ser. No. 906,398
Int. Cl.[5] B67D *5/58*
U.S. Cl. 222—189 31 Claims

1. A sealed bottled water dispenser comprising:
a bottle guide for receiving the closed neck of an inverted water supply bottle;
a tubular probe positioned at the bottom of said bottle guide for penetrating a cap on a water bottle and for conveying water from said bottle;
a delivery conduit, said delivery conduit having a first end connected to said tubular probe and a second end for delivering water from said water bottle;
at least one dispensing valve for controlling the flow of water from said delivery conduit;
a first check valve for said delivery conduit, said first check valve allowing water to drain from a water supply bottle while preventing air from entering a water supply bottle through said dispensing valve; and



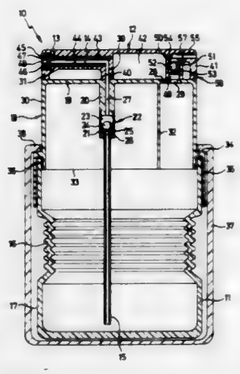
an air filter means connected to said delivery conduit for supplying filtered air to a water supply bottle as water leaves a supply bottle.

5,328,060

PACK FOR FREE-FLOWING FILLER

Jens-Heinrich Kersten, Kamen-Heeren; Detlef Schmitz, Lunen, and Peter Runte, Unna-Hemmerde, all of Fed. Rep. of Germany, assignors to Perfect-Valois Ventil GmbH, Dortmund-Wickede, Fed. Rep. of Germany

Filed May 21, 1993, Ser. No. 65,614
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—209 12 Claims



1. A pack having a handpump for dispensing free-flowing filler, having a filler container on which there is movably disposed, for the actuation of the pump, a dispensing head, which is provided with an outlet opening linked by a product duct and a lifting tube to the interior of the filler container, wherein a compression spring element forms an integral component part of the filler container and is effective, with a view to stretching the said container, in the longitudinal direction of the latter;
a carrier for the dispensing head is mounted in a sealtight manner onto the opening of the filler container and is provided with a headplate on whose underside there is disposed, eccentrically to the principal axis of the filler container, a lifting tube nipple to which the upper end of the lifting tube is connected and whose product duct extends through the headplate;
assigned to the lifting tube nipple is a dispensing valve,

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which is open whenever the pressure in the filler container lies above the pressure of the external atmosphere;

the headplate is provided with a pass-through opening for operating air and with a pass-through opening for ventilating air, which are disposed eccentrically to the principal axis of the filler container;

the dispensing head is disposed in a sealtight manner on the top side of the carrier, but so as to be rotatable between a closed position and an open position, and exhibits on its underside an inlet connecting socket with a product duct which, in the dispensing position of the dispensing head, is aligned with the product duct of the lifting tube nipple and which extends from the upper end of the inlet connecting socket radially outwards up to a dispensing opening in a contacting surface of the dispensing head;

an operating air duct in the dispensing head extends parallel to the radial product duct up to its dispensing opening;

a nozzle exhibits an outlet opening and is mounted onto the dispensing opening of the dispensing head, the nozzle being provided on its rear side with a centrifugal chamber, into which the operating air duct opens out and which is connected to the outlet opening of the nozzle;

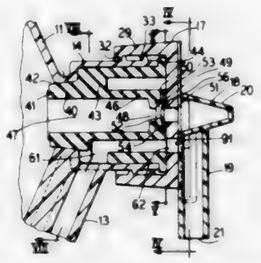
a ventilation duct in the dispensing head is aligned with the ventilation opening in the headplate of the carrier in the operating position of the dispensing head and is provided with a ventilation valve, which is open in the event of underpressure in the filler container.

5,328,061

SLIDING DISPENSING CAP AND DISPENSING STOPPER

Jeffrey M. Libit, 13244 Circulo Largo Ct., NE., Albuquerque, N. Mex. 87112, and Sidney Libit, Long Boat Key, Fla., assignors to Jeffrey M. Libit, Albuquerque, N. Mex.

Filed Nov. 18, 1992, Ser. No. 978,406
Int. Cl.[5] **B65D** *37/00*
U.S. Cl. 222—212 **2 Claims**



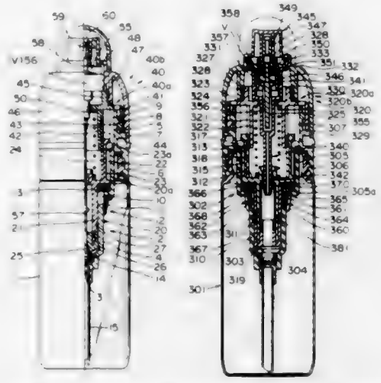
1. A bottle for dispensing a product comprising, a flexible bottle with a neck portion, a flexible tube integrally formed with the bottle and with a first end connected to a bottom portion of the bottle and a second end connected to said neck portion, a stopper received in said neck portion and formed with a first opening which communicates with said second end of said flexible tube, a dispenser cap connected to said bottle above said stopper and formed with a second opening which communicates with said first opening in said stopper which communicates with said second end of said tube, a slide with a dispensing nozzle moveably connected to said dispenser cap and formed with a third opening which can be moved to communicate with said second opening in said dispenser cap to dispense said product, and a one-way valve mounted in said bottle which prevents product and air from passing therethrough when said bottle is compressed by a user and which allows air to pass into said bottle when said user releases said bottle, wherein said one-way valve is mounted in said stopper, said stopper including a fourth opening formed therethrough and said one-way valve mounted in said opening, wherein said one way valve is mounted in a valve chamber formed in said fourth opening of said stopper, wherein said one-way valve comprises a disc mounted in said valve chamber, and a valve seat formed in said valve chamber such that said disc seats against said valve seat when said flexible bottle is compressed, said disc including flexible legs attached thereto to bias it toward said valve seat, wherein a fifth opening is formed in said dispenser cap which is aligned with said fourth opening formed through said stopper, and said slide with said dispensing nozzle is slidable mounted in said dispenser cap such that it can be moved to a non-dispensing position such that said third opening does not communicate with said second opening in said dispenser cap, and an air passage is formed between said slide and said fifth opening through the dispenser cap so that air can pass into said bottle through said one-way valve when said user releases said bottle.

5,328,062

LIQUID JET BLOWER

Tatsuo Tubaki; Yoshiyuki Kakuta, and Takao Kishi, all of Tokyo, Japan, assignors to Yoshino Kogyosho, Co., Ltd., Tokyo, Japan

Division of Ser. No. 741,416, Aug. 1, 1991, Pat. No. 5,240,153. This application Jun. 17, 1993, Ser. No. 77,394
Claims priority, application Japan, Dec. 28, 1989, 1-152460[U]; Dec. 28, 1989, 1-152462[U]
Int. Cl.[5] **B67D** *5/40*
U.S. Cl. 222—385 **2 Claims**



1. A liquid jet blower comprising a container, a main tube arranged in said container, a tubular cap fit onto said main tube, a sliding tube fit onto said main tube and vertically and slidingly movable by rotating said tubular cap, a pressure chamber defined by a first cylinder constituted by a lower portion of said main tube and a lower portion of said sliding tube, a valve box rigidly fitted to the inside of an upper portion of said tubular cap and kept in communication with said pressure chamber, and an actuator projecting upward from said valve box through a top wall of said tubular cap, the blower further comprising:

a pipe member having an upper edge fitted into a groove formed on the periphery of a lower surface of said top wall, said pipe member having an upper portion defining a second cylinder used as said valve box and a pipe section projecting downward from an inwardly flanged bottom of said second cylinder, said pipe section providing a path for communicating the inside of said second cylinder and said pressure chamber;

a third cylinder loosely fitted in said second cylinder below the actuator and provided with a stem standing upward from said third cylinder by a shoulder section;

said actuator comprises an upwardly urged push-down head having a nozzle, in communication with said pressure chamber through a liquid suction path, and an inner tube tightly fitted to an outer surface of an upper portion of said stem, wherein liquid in said pressure chamber is blown through said liquid suction path and out of said nozzle by pushing down said actuator;

a tubular valve body airtightly slidably arranged around the outer surface of said stem between said third cylinder and said inner tube between said shoulder section and the lower surface of said top wall of said tubular cap, said tubular valve body being slidingly moved downward when pushed by said inner tube and upward when pushed by said shoulder section, said tubular valve body having an outer peripheral surface in close contact with an inner peripheral surface of said second cylinder;

a piston member fitted into said third cylinder and provided with a rod section having a conduit projecting downward into said pipe section; and

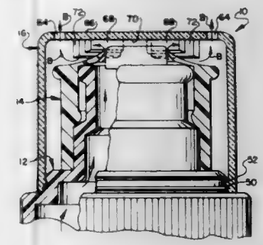
a discharge valve hole arranged at a bottom of said stem.

5,328,063

VENTING CLOSURE CAP

James M. Beck, Carol Stream, and Terry E. Kubitz, Cary, both of Ill., assignors to Creative Packaging Corp., Buffalo Grove, Ill.

Filed Jun. 10, 1993, Ser. No. 74,917
Int. Cl.[5] **B67D** *5/06*
U.S. Cl. 222—524 **11 Claims**



8. A closure cap which can be manipulated to dispense container contents and enables venting of any excess pressure which may build up within the container when the closure is in a fully closed position, comprising:

a central upstanding post having a first substantially cylindrical imperforate peripheral wall portion, a second reduced diameter substantially cylindrical imperforate peripheral wall portion positioned on top of said first wall portion and having a top surface, and a peripheral shoulder portion connecting said first and second wall portions together, said shoulder portion including at least one opening to said post top surface for metering the contents to be dispensed;

a cap body reciprocally mounted on and about the periphery of said central post and having an aperture whose inner periphery cooperates with said peripheral wall of said second wall portion to provide a closed position and a plurality of dispensing positions for dispensing the contents at a plurality of different rates as said cap body is moved on said post away from said closed position; and

venting means for enabling any excess pressure from within the container to exhaust between said top surface of said peripheral wall and said inner periphery of said cap body to the exterior of the container upon reaching a predetermined pressure within the container when the cap is positioned in said fully closed position.

5,328,064

MULTI-STEPPED SUBMERGED NOZZLE FOR CONTINUOUS CASTING

Yasutoshi Nanba; Kozo Kanamaru, and Yukinobu Kurashina, all of Iwaki, Japan, assignors to Shinagawa Refractories Co., Ltd., Japan

PCT No. PCT/JP91/00589, § 371 Date Oct. 21, 1992, § 102(e) Date Oct. 21, 1992, PCT Pub. No. WO91/17008, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 30, 1991, Ser. No. 934,496
Claims priority, application Japan, May 8, 1990, 2-47390
Int. Cl.[5] **B22D** *41/50, 41/54*
U.S. Cl. 222—607 **6 Claims**



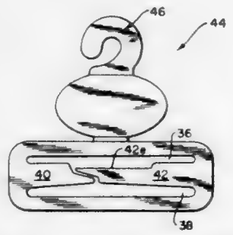
1. A multi-stepped submerged nozzle for continuous casting comprised of a molten steel pouring hole having a main pipe with an inside diameter d and a molten steel pouring outlet at the bottom of the nozzle characterized in that a plurality of steps having inside diameters d_1-d_n are provided in the molten steel pouring hole, the dimension of the inside diameters of said steps to the inside diameter d of the main pipe is $d_1>d_2>d_3 \ldots d_n>d$, and the inside diameter d of the main pipe is provided in the respective spaces between said steps d_1-d_n.

5,328,065

GARMENT HANGER

Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B&G Plastics, Inc., Newark, N.J.

Filed Mar. 30, 1993, Ser. No. 39,864
Int. Cl.[5] **A47G** *25/74, 25/14*
U.S. Cl. 223—85 **11 Claims**



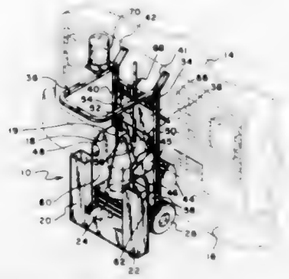
1. A garment hanger comprised of an upstanding integral plastic body having a hook portion and a main body portion depending from said hook portion, said main body portion defining first and second horizontally extending openings therethrough with a first upper continuous course of said main body portion upwardly bounding said first opening and a second lower continuous course of said main body portion lowerly bounding said second opening, said main body portion supporting first and second horizontally extending arms respectively lowerly bounding said first opening and upwardly bounding said second opening, said first and second arms having respective free ends which overlap horizontally and are

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disposed at respective different location horizontally of said hanger so as to be in mutually interfering disposition vertically of said hanger

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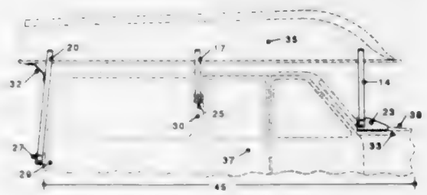
5,328,066
CART DEVICE AND METHOD
Louis W. Cappuccio, 16 Mill Run Dr., and William J. Santora, 980 S. 2nd Rd., both of Hammonton, N.J. 08037
Filed Jul. 25, 1991, Ser. No. 735,863
Int. Cl.[5] B60R *9/06*
U.S. Cl. 224—42.03 R **20 Claims**



1. A cart device comprising:
(a) support means attachable to an outside portion of a motor vehicle to releasably support a detachable cart off the ground on the outside of the motor vehicle, the support means comprising:
(i) mounting means to provide a vertically upward bearing surface and means to prevent an engaging means on the cart from slipping horizontally off the bearing surface, and
(ii) means to releasably interlock the cart to the support means and prevent vertically upward movement of the cart in relation to the mounting means, and
(b) the cart comprising:
(i) a body comprising a platform,
(ii) at least two wheels rotatably attached to the body, wherein the wheels are positioned to allow the body to be moved on the wheels,
(iii) leveraging means comprising a lever member comprising a lower section, the lever member being pivotally attached at a median portion thereof to the body to provide leverage to lift the cart upwardly off the ground to the support means, and
(iv) said engaging means being attached proximate the lower section of the lever member to demountably engage into and be supported by the mounting means.

5,328,067
PASSENGER TRUCK BOAT CARRIER
Louis M. Lalush, 180 Overbrook Dr., Folsom, Calif. 95630
Filed Jul. 12, 1993, Ser. No. 89,882
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—42.45 R **1 Claim**

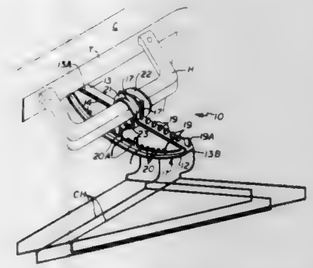
1. An article carrier frame adapted to be mounted on a vehicle having a pair of front fenders each having a flange thereon concealed by a vehicle hood when said hood is in a closed position, first and second door jambs which are concealed by respective first and second vehicle doors when said doors are in a closed position and a rear door jamb which is concealed by a rear door when said rear door is in a closed position, comprising:
a forward carrier frame having a first forward upright member having first and second end portions and a second forward upright member having first and second end portions, a first forward mounting bracket connected to said first end portion of said first forward upright member, a second forward mounting bracket connected to said first end portion of said second forward upright member and a forward horizontal member connecting said second end portions of said first and second forward upright members wherein said first forward mounting bracket is mounted to one of said flanges with a first forward mounting means and said second forward mounting bracket is mounted to the other of said flanges with a second forward mounting means such that when said forward frame is mounted to said vehicle, said first and second forward mounting means are concealed by said vehicle hood when said hood is in said closed position;
a central carrier frame having a first central upright member having first and second end portions and a second central upright member having first and second end portions, a first central mounting bracket connected to said first end portion of said first central upright member, a second central mounting bracket connected to said first end portion of said second central upright member and a central horizontal member connecting said second end portions of said first and second central upright members wherein said first central mounting bracket is mounted to said first door jamb with a first central mounting means and said second central mounting bracket is mounted to said sec-



ond door jamb with a second central mounting means such that when said central carrier frame is mounted to said vehicle, said first and second central mounting means are respectively concealed by said first and second vehicle doors when said first and second doors are in said closed position; and
a rear carrier frame having a first rear upright member having first and second end portions and a second rear upright member having first and second end portions, a first rear mounting bracket connected to said first end portion of said first rear upright member, a second rear mounting bracket connected to said first end portion of said second rear upright member and a rear horizontal member connecting said second end portions of said first and second rear upright members wherein said first and second rear mounting brackets are mounted to said rear door jamb with respective first and second rear mounting means such that when said rear carrier frame is mounted to said vehicle, said first and second rear mounting means are concealed by said rear door when said rear door is in said closed position whereby an article to be carried on said carrier frame extends over and is secured to at least two of said horizontal members and is thereby carried by said frame.

5,328,068
AUTOMOBILE CLOTHES HANGER BRACKET
Brian P. Shannon, 7159 Neff, Houston, Tex. 77074
Filed Dec. 14, 1992, Ser. No. 992,253
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—42.46 A **9 Claims**

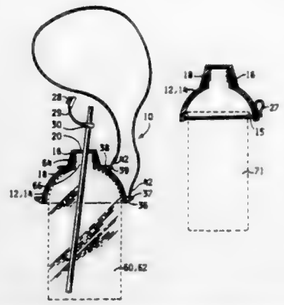
1. A removable clothes hanger bracket for installation on the longitudinal hand grip portion of a grab handle in the interior of a vehicle to receive and support a plurality of conventional clothes hanger, having garments thereon comprising;
a longitudinal rack member having an elongate generally straight top portion with opposite ends and an arcuate lower portion therebelow extending between the opposite ends of said straight portion defining an open reclining D-shaped configuration and a plurality of spaced hanger-receiving elements thereon for removably receiving and supporting a plurality of clothes hangers, and
a pair of generally C-shaped curved hook members pivotally connected at their bottom ends to said rack member top portion intermediate the opposite ends thereof in laterally spaced apart and opposed facing relation and pivotal between an open position spread apart to receive the longitudinal hand grip portion of the grab handle and a closed position with the laterally spaced C-shaped portions overlapped and substantially encircling the longitudinal hand grip portion of the grab handle,



said rack member being suspended by said overlapped hook members in a generally horizontal orientation centered beneath said grab handle with the longitudinal axis of said rack member perpendicular to the longitudinal axis of the longitudinal hand grip portion of the grab handle and the opposed ends of said rack member extending laterally to each side thereof, and
said laterally spaced hook members in the overlapped and encircled position being laterally spaced apart a sufficient distance to distribute the garment weight supported by said rack member substantially along the length of the longitudinal hand grip portion of the grab handle when supported on the grip handle, and to prevent said rack member from twisting relative to the longitudinal axis of the grip handle.

5,328,069
VERSATILE BEVERAGE CONTAINER COVER
Bahram Cohanfard, 815 S. Wooster St., #201, Los Angeles, Calif. 90035
Continuation-in-part of Ser. No. 695,968, May 6, 1991, Pat. No. 5,167,354. This application Sep. 3, 1992, Ser. No. 939,996
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] B65D *47/12*
U.S. Cl. 224—148 **19 Claims**

18. A versatile beverage container cover and sipping assembly designed to replace the standard lid of a conventional beverage container, said assembly comprising:
a container cover including means for removably attaching the cover to the opened beverage dispensing end of the container, wherein the container consists of a bottle having at its upper terminal end a circular collar that includes means for attaching said cover to the bottle, wherein said container cover has a downwardly extending dome like shape that substantially follows the upper contour of said bottle container;
said means for removably attaching said cover to the bottle being located toward the top of said dome;
said container cover further comprising a securing means that is located on the lower perimeter of said cover and that is for securing said cover to the top of another type of beverage container; and
said container cover further having a bore therethrough that is located toward the top of said dome for providing a



channel through which the contents of said container may be selectively withdrawn.

5,328,070
ARTICLE SUPPORTING DEVICE FOR USE AS BODY-SUPPORTED TRAY ASSEMBLY
Dan Lavi, 3/21 Eilat St., 47280, Ramat Hasharon, Israel
Filed Jun. 26, 1991, Ser. No. 721,071
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—270 **11 Claims**

1. An article supporting device including a tray having mounting means for mounting the tray on the body of a person with a side of the tray engageable with the front side of the person's body at about the waistline; characterized in that said mounting means comprises:
a crossbar having one end secured to the tray and the opposite end spaced from the tray to permit the device to be applied from the side to the person's body;
said crossbar being located to engage the lower part of the person's back when the device is mounted on the person's body.

5,328,071
ROLL PAPER CUTTING APPARATUS
Ryoji Aihara, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 28, 1992, Ser. No. 967,441
Claims priority, application Japan, Nov. 14, 1991, 3-298709
Int. Cl.[5] B26D *1/02;* **B41J** *11/70;* **B65D** *85/671*
U.S. Cl. 225—91 **2 Claims**

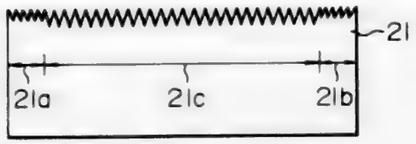
1. A roll paper cutting apparatus comprising:
a paper cutter having a cutting surface;
at least one bite tooth, having a first geometric shape, disposed on at least one end portion of said cutting surface; and
a plurality of cut teeth, each of said cut teeth having a second geometric shape which is different from said first geometric shape, said plurality of cut teeth being disposed only on a region of said cutting surface distinct from said at least

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one end portion on which said at least one bite tooth is disposed, none of said cut teeth being located on said at least one end portion of said cutting surface,

said at least one bite tooth and said cut teeth being located along a straight line, wherein

said at least one bite tooth is formed in such a manner that an



angle between a line perpendicular to a row of said cut teeth and a first surface contour line of said at least one bite tooth is smaller than an angle between a second surface contour line of said at least one bite tooth and said perpendicular line, and

said at least one bite tooth has a smaller pitch than pitches of said cut teeth.

5,328,072

DEVICE FOR LOCATING THE EDGES OF MOVING WEBS

Gerd Ruessmann, Heidenheim, and Helmut Lieberg, Schongau, both of Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

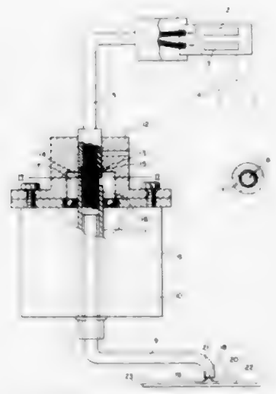
PCT No. PCT/EP88/00882, § 371 Date Jun. 16, 1989, § 102(e) Date Jun. 16, 1989, PCT Pub. No. WO89/03357, PCT Pub. Date Apr. 20, 1989

PCT Filed Oct. 5, 1988, Ser. No. 377,846

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1987, 3735202

Int. Cl.[5] **B65H** *23/02*; **G02B** *5/14*

U.S. Cl. 226—15 **2 Claims**



1. Device for determining the location of an edge of a moving web, comprising:

a photoelectric relay having adjacent the web edge a signal output emitting a light signal, and a signal input, the signal output and the signal input being connected with the photoelectric relay through an optical fiber bundle, said optical fiber bundle containing sending fibers and receiving fibers in a concentric arrangement; and

a rotary drive which continuously moves the signal output and signal input along a trajectory which intersects the web edge at least twice, said drive including a continuous hollow shaft through which extends the optical fiber bundle which is connected with the photoelectric relay, and wherein the shaft of the drive includes a scanning arm mounted thereto through which extends the optical fiber bundle, said drive having a drive axis and said scanning arm having a free end on which there are provided the signal output and the signal input, the signal output having a light emission surface perpendicular to the drive axis.

5,328,073

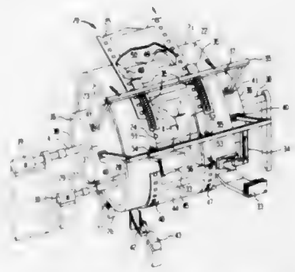
FILM REGISTRATION AND IRONING GATE ASSEMBLY

Douglas L. Blanding, Rochester; Matthew M. Branca, Victor; James C. Foote, Jr., York, and Jeffrey C. Weller, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,689

Int. Cl.[5] **G03B** *1/22*; **B65H** *23/04*

U.S. Cl. 226—27 **23 Claims**



1. A film registration and ironing gate assembly, for positioning longitudinally successive, uniform rectangular frames bounded between a pair of parallel rows of equidistant, uniform rectangular edge perforations of common cross sectional size, on a strip film, each perforation in one row being transversely aligned with a corresponding perforation in the other row, said gate assembly comprising:

a gate member having a front face and a rear face with a rectangular, focal positioning location, the positioning location being complemental to an image frame of the strip film and having longitudinally extending first and second transverse sides and transversely extending third and fourth longitudinal sides, and the front face having film perforation seating, and first and second surfaces correspondingly extending longitudinally along the first and second transverse sides;

registration means comprising first and second pins of smaller cross sectional size than the film perforations and disposed perpendicular to the surfaces in fixed alignment with a reference line extending transversely from a first point on the first surface to a second point on the second surface, and at a fixed longitudinal location adjacent one longitudinal side of the positioning location, and corresponding to the positioning of a pair of transversely aligned film perforations on the surfaces at the first and second points, the pins being arranged for entry into the perforations;

force applying means for engaging the film at a third point spaced longitudinally from the second point for moving the film in a direction oblique to the reference line, upon entry of the pins into the perforations, to produce a resultant force on the perforation at the first point and on the perforation at the second point for registering precisely a film frame with the positioning location by the pins; and

longitudinally extending ironing and clamping means adjacent the front face and having a proximate end adjacent one longitudinal side of the positioning location and a distal end adjacent the other longitudinal side thereof, and

arranged for moving from a retracted position progressively toward the surfaces for incrementally increasing contact with the film in a direction from the proximate end to the distal end to iron the film in such direction and clamp against the surfaces the film perforations adjacent the positioning location for maintaining the frame in precise focal position at the positioning location.

5,328,074

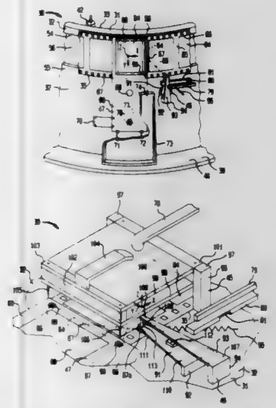
FILM REGISTRATION GATE ASSEMBLY

Douglass L. Blanding, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,837

Int. Cl.[5] **B65H** *20/18*

U.S. Cl. 226—55 **21 Claims**



1. A film registration assembly, for positioning at a positioning location longitudinally successive, uniform rectangular image frames on a strip film bounded between a pair of parallel rows of equidistant, uniform rectangular edge perforations of common cross sectional size, each perforation in one row being transversely aligned with a corresponding perforation in the other row, said assembly comprising:

a focal positioning location member having a front face and a rear face with the positioning location being complemental to an image frame of the strip film and having longitudinally extending first and second transverse sides and transversely extending third and fourth longitudinal sides, and the front face having film perforation seating, and film frame focal positioning, first and second surfaces correspondingly extending longitudinally along the first and second transverse sides;

registration means comprising first and second pins of smaller cross sectional size than the film perforations and disposed perpendicular to the surfaces in fixed alignment with a reference line extending transversely from a first point on the first surface to a second point on the second surface, and at a fixed longitudinal location adjacent one longitudinal side of the positioning location, and corresponding to the positioning of a pair of transversely aligned film perforations on the surfaces at the first and second points, the pins being arranged for entry into the perforations; and

force applying means for engaging the film at a position corresponding to at least a third point on the second surface spaced longitudinally from the second point for moving the film under a force in a direction oblique to the reference line, upon entry of the pins into the perforations, to produce a resultant force on the perforation at the first point and on the perforation at the second point for registering precisely a film frame with the aperture by the pins.

5,328,075

MANUAL STAPLE GUN

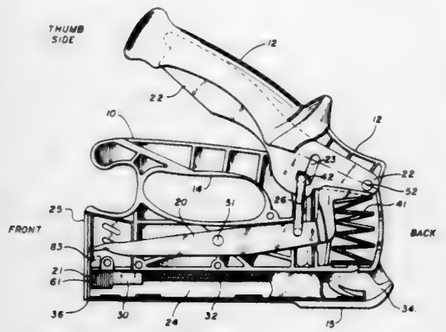
Joel S. Marks, Los Angeles, Calif., assignor to Worktools, Inc., Chatsworth, Calif.

Continuation of Ser. No. 772,536, Oct. 7, 1991, Pat. No. 5,165,587. This application Oct. 5, 1992, Ser. No. 957,213

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] **B25C** *5/11*

U.S. Cl. 227—132 **8 Claims**



1. A fastening tool comprising:

a housing;

a first lever pivoted within and essentially along the length of said housing, and having first and second ends;

a plunger oriented to engage fasteners in order to expel them from said housing, said plunger pivotally connected to said first lever near the first end thereof;

a second lever pivoted with respect to said housing at a first end;

linking means releasably connecting said first lever to said second lever, said linking means having a first position such that movement of said second lever towards said housing is transferred to said first lever near the second end thereof, and a second position such that said first lever and said second lever are free to move independently of each other;

said linking means further comprising an L shaped slot in said second lever having short and long legs, said slot slidably receiving a linking member connecting motion of said second lever to said first lever, said first position of a linkage means being when said linking member occupies the short leg of said L shaped slot, said second position being when said linking member occupies the long leg of said L shaped slot, said slot enabling rapid de-linkage of the first lever from the second lever near a particular angular position of the second lever relative to said housing,

a first spring located adjacent to said first lever such that said first spring is deflected from its rest state as said second lever is moved towards said housing;

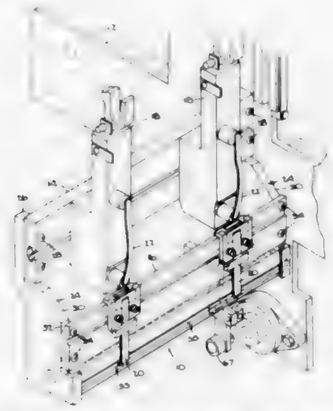
a release point of said linking means which causes said linking means to move from said first position to said second position, said release point located at a point such that said second end of said second lever is substantially adjacent to said housing, release of said linking means allowing said first spring to return to its rest state;

a channel through which fasteners are fed, said plunger raised above said channel sufficiently to permit a fastener to move beneath said plunger when said second end of said second lever is nearly substantially adjacent to said housing while said linking means is in said first position, said plunger forced through said channel by said first lever and said first spring once said linking means moved from said first position to said second position;

VOL 1164 ISS 2 JL 12 1994 UMI

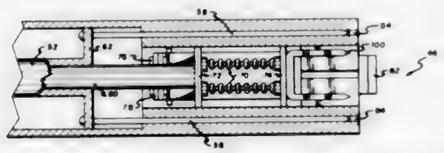
said plunger defining a plane of motion of said plunger as said plunger is alternately raised and lowered;
a hand grip opening comprising a region substantially immediately above said plunger.

5,328,076
STABILIZED CLINCHER FOR STITCHER
Kenneth W. Lowell, Bristol, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Oct. 4, 1993, Ser. No. 130,806
Int. Cl.[5] B27F *7/17*
U.S. Cl. 227—155 **5 Claims**



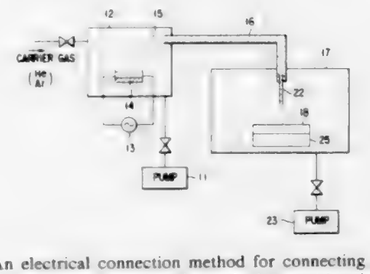
1. Apparatus for stapling documents, comprising:
a pair of side plates;
a stitch head mounting bar secured to said side plates;
a clincher mounting bar secured to said side plates;
a stitch head mounted on said stitch head mounting bar;
a clincher mounted on said clincher mounting bar;
a pair of fixture plates secured to said side plates;
a clincher actuating bar slidingly engaging said pair of fixture plates;
a shaft seated in the fixture plates;
a clincher actuating arm rotatably mounted on said shaft and engaging said clincher actuating bar; and
means for rotating said clincher actuating arm whereby said clincher is moved up into clinching position and down away from said clinching position.

5,328,077
METHOD AND APPARATUS FOR TREATING FEMALE URINARY INCONTINENCE
Ek-Seng Lou, 2296 Opitz Blvd., Woodbridge, Va. 22191
Filed Nov. 19, 1992, Ser. No. 978,886
Int. Cl.[5] A61B *17/068*
U.S. Cl. 227—175 **15 Claims**



1. A surgical stapling device for stapling a pelvic floor to a pubic bone when treating female urinary incontinence, said stapling device comprising:
a) a stapling head including:
1) a pair of target pins for anchoring said stapling head and the pelvic floor to the pubic bone,
2) a discharge chamber for receiving a staple to be discharged from said stapling head,
3) a staple discharge mechanism for discharging a staple from said stapling head into said pelvic floor and further into said pubic bone;
b) a handle including:
1) a push rod extending through said handle for advancing said target pins forward so as to extend said target pins from said stapling head,
2) a first, small trigger means extending from said handle for actuating a staple loading mechanism, and
3) a second, large trigger means extending from said handle for actuating said staple discharge mechanism; and
c) an elongated member extending from said stapling head to said handle, said elongated member providing passage for said push rod and including:
an actuation rod for connecting said second, large trigger means to said staple discharging mechanism.

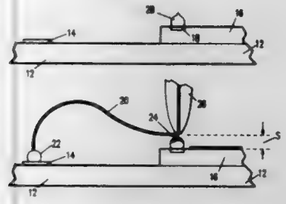
5,328,078
CONNECTION METHOD AND CONNECTION DEVICE FOR ELECTRICAL CONNECTION OF SMALL PORTIONS
Katsuya Okumura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 813,670, Dec. 27, 1991, abandoned. This application Oct. 6, 1993, Ser. No. 132,211
Claims priority, application Japan, Jan. 9, 1991, 3-062764
Int. Cl.[5] H01L *21/60;* **B23K** *31/02*
U.S. Cl. 228—179.1 **15 Claims**



1. An electrical connection method for connecting a first portion and a second portion, the method comprising the steps of:
forming fine metal particles by vaporizing a metal in a first chamber and cooling the vaporized metal;
carrying the fine metal particles i a carrier gas to a second chamber;
positioning the first portion near or in contact with the second portion within the second chamber; and
spraying the fine metal particles on said first and second portions to electrically connect the first and second portions.

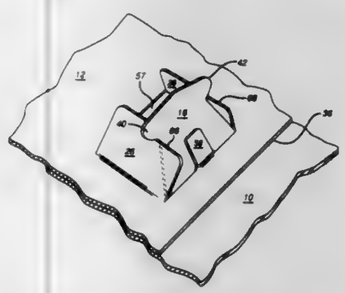
5,328,079
METHOD OF AND ARRANGEMENT FOR BOND WIRE CONNECTING TOGETHER CERTAIN INTEGRATED CIRCUIT COMPONENTS
Ranjan J. Mathew; Arnold Smith, and Luu T. Nguyen, all of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Mar. 19, 1993, Ser. No. 34,683
Int. Cl.[5] H01R *43/02;* **H01L** *21/60*
U.S. Cl. 228—180.5 **9 Claims**

1. In the manufacture of an electronic device including an electrically conductive lead forming part of a substrate or leadframe, and a die having a die bond pad, a method of electrically connecting said electrically conducting lead to said die bond pad, comprising the steps of:
(a) forming an electrically conductive bump on said die bond pad; and
(b) using a thermosonic or thermocompression ball bonding



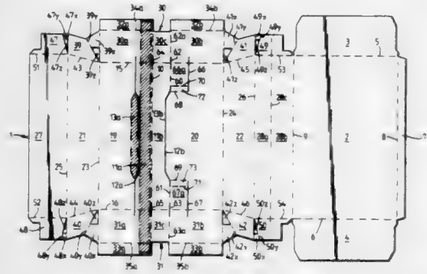
tool, connecting an electrically conductive bonding wire between said electrically conductive lead and said die bond pad by first ball bonding the free end of the bonding wire to said electrically conductive lead and thereafter stitch bonding an opposite end of the bonding wire to the electrically conductive bump on the die pad.

5,328,080
PANEL INTERLOCKING ARRANGEMENT FOR WRAPAROUND CARRIER
John M. Holley, Jr., Lawrenceville, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Feb. 8, 1993, Ser. No. 14,899
Int. Cl.[5] B65D *5/02*
U.S. Cl. 229—40 **13 Claims**



1. An arrangement for interlocking first and second panels overlapping each other in face contacting relation, said first and second panels defining planes along which said first and second panels respectively extend, said arrangement comprising:
a locking tab struck from said first panel, said locking tab being foldably joined at a trailing end edge thereof to said first panel and extending along a notional line to a leading end edge, said locking tab having opposite side edges extending between said leading and trailing end edges and a lateral projection protruding form one of said side edges;
a retaining tab struck form and foldably joined to said second panel, said retaining tab defining at least a part of a locking aperture in said second panel; and
a biasing tab struck in part from a corner of said retaining tab and foldably joined to said second panel along a transverse edge of said locking aperture, said biasing tab projecting from said transverse edge in a direction parallel to said notional line,
said locking tab being folded out of the plane of said first panel into said locking aperture and being disposed in a position where said locking tab is inclined to said second panel, said retaining tab being folded out of the plane of said second panel into a position where said retaining tab is engaged at a free end edge thereof with said lateral projection of said locking tab, said biasing tab being folded out of the plane of said second panel into a position where said biasing tab leans against said locking tab, thereby biasing said locking tab against said retaining tab to hold said locking and retaining tabs in a mutually bracing and engaged condition.

5,328,081
MULTI-UNIT CARTON WITH INTEGRAL HANDLE
Alain Saulas, Chateauroux, France, assignor to The Mead Corporation, Dayton, Ohio
Continuation of Ser. No. 909,517, Jul. 6, 1992, abandoned. This application Mar. 23, 1993, Ser. No. 34,637
Int. Cl.[5] B65D *5/46*
U.S. Cl. 229—117.12 **14 Claims**



1. A carton having a two-ply strap handle and formed from a blank, said blank comprising a first panel and a pair of second panels hinged to said first panel respectively along a pair of spaced generally parallel transverse fold lines, said first panel including first and second carton wall-forming portions and first and second handle-forming strips extending between said transverse fold lines, said handle-forming strips being hinged together along a longitudinal fold line extending between said transverse fold lines whereby said handle-forming strips are foldable about said longitudinal fold line to form a two-ply strap handle extending between said second panels, said first and second wall-forming portions and said first and second handle-forming strips being disposed in the sequence of said first wall-forming portion, said first handle-forming strip, said second handle-forming strip and said second wall-forming portion, each of said second panels including first, second and third mutually foldably interconnected sections hinged along a respective one of said transverse fold lines to said first wall-forming portion, said handle-forming strip and said second handle-forming strip, respectively.

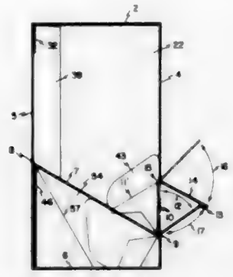
5,328,082
APPARATUS FOR DISPENSING MOISTURE-SENSITIVE UNIT DOSE PACKAGES
Barbara L. Fritz, Burnsville; Elizabeth J. Gladfelter, Falcon Heights, and Tina O. Outlaw, Inver Grove Heights, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.
Division of Ser. No. 756,458, Sep. 9, 1991, Pat. No. 5,249,737. This application May 5, 1993, Ser. No. 58,158
Int. Cl.[5] B65D *5/36*
U.S. Cl. 229—122.1 **15 Claims**

1. A dispenser and container for moisture-sensitive packages, comprising:
(a) front, rear and side container walls interconnected along parallel fold liens and defining an open ended enclosure, there being a total of at least three container walls;
(b) flap elements forming a closure for an upper end and a lower end of said open ended enclosure, thereby forming an enclosed volume;
(c) a drawer structure, the drawer structure being elevated above the lower end of the container, the drawer structure

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including an inclined ramp, the entire ramp being spaced above a bottom surface of the container, the ramp being integral with and pivotable with respect to a front drawer wall of the drawer structure;

(d) an aperture, the aperture being formed within the front wall of the container, the aperture being located adjacent to the drawer structure and a lower portion of the ramp; and



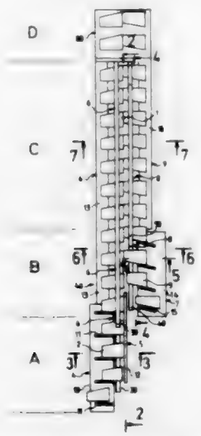
(e) an aperture cover, the aperture cover being defined by a transverse score line in the front wall of the container, such that the aperture cover is foldable relative to the front wall by folding the cover along the transverse score line, the cover being capable of substantially obstructing the aperture.

5,328,083

INSTALLATION FOR THE CONTINUOUS BUTT JOINING AND WELDING OF AT LEAST TWO SHEET BLANKS BY MEANS OF A LASER BEAM

Gilles Peru; Francis Sauvage, both of Dunkerque; Yvon Le Roy, Le Doulieu, and Charles Sion, Camphin-en-Carembault, all of France, assignors to Sollac, Puteaux, France

Filed Jul. 27, 1993, Ser. No. 97,027
Claims priority, application France, Aug. 14, 1992, 92 10055
Int. Cl.[5] B23K *26/02, 37/047*
U.S. Cl. 228—5.7 **25 Claims**



1. Installation for the continuous butt joining and welding of edges of at least two sheet blanks by means of a laser beam, characterized in that said installation comprises in combination:

a first zone for positioning a first sheet blank of said at least two sheet blanks to be welded comprising in combination:

a device for feeding said first sheet blank longitudinally of said installation toward said laser beam and including means for supporting and longitudinally positioning said sheet blank in a horizontal reference plane and movable horizontally in a direction toward said laser beam,

means for laterally positioning an edge to be welded of said first sheet blank on an axis of said laser beam,

means for maintaining a longitudinal and lateral relative positioning of said first sheet blank,

and means for maintaining said edge to be welded of said first sheet blank on said axis of said laser beam;

a second zone for making a butt joint between edges of said at least two sheet blanks to be welded and comprising in combination:

longitudinal means for supporting said first sheet blank in a horizontal reference plane,

means for maintaining a longitudinal and lateral relative positioning of said first sheet blank,

means for maintaining said edge to be welded of said first sheet blank on said axis of said laser beam,

a device for feeding a second sheet blank of said at least two sheet blanks and including longitudinal means for supporting said second sheet blank in a horizontal reference plane and positioning an edge to be welded of said second sheet blank against said edge to be welded of said first sheet blank and horizontally movable in synchronism with said means for maintaining said longitudinal and lateral relative positioning of said first sheet blank,

and means for maintaining a longitudinal and lateral relative positioning of said second sheet blank;

a third zone for guiding, transferring and welding said edges of said first and second sheet blanks, comprising in combination:

longitudinal means for supporting said first and second sheet blanks in a horizontal reference plane,

means for maintaining a longitudinal and lateral relative positioning of said first and second sheet blanks and horizontally movable,

means for maintaining said edge to be welded of said first sheet blank on said axis of said laser beam,

means for producing a lateral pressure between said edges to be welded of said first and second sheet blanks,

and a laser beam welding unit;

a fourth zone for discharging the welded first and second sheet blanks, comprising longitudinal means for supporting said welded sheet blanks and means for removing said welded sheet blanks.

5,328,084

ALUMINUM HEAT EXCHANGER BRAZE FURNACE

Gary A. Halstead, and Brian L. Barten, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 4, 1992, Ser. No. 878,242
Int. Cl.[5] B23K *1/00*
U.S. Cl. 228—18 **1 Claim**

1. A muffle furnace assembly for brazing heat exchanger workparts, said assembly comprising:

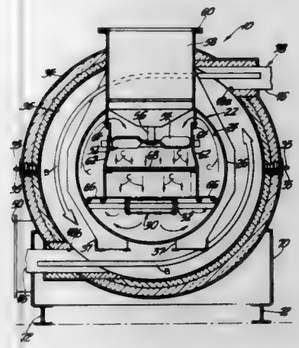
cylindrical muffle means extending along a central axis for establishing an isolated internal braze zone containing a braze conducive atmosphere;

conveyor means for conveying a workpart longitudinally of said axis through said braze zone;

an outer shell spaced outwardly from said muffle means for forming an interstitial cavity disposed concentrically about said muffle means;

radiation inducer means for forcibly circulating high temperature fluid within said interstitial cavity and heating said muffle means to emit radiant heat energy rapidly and evenly into said braze zone; and

a high temperature fluid inlet extending through said outer shell and openly communicating with said interstitial



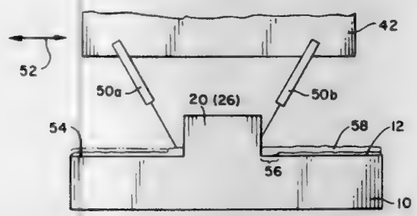
cavity along an inlet path generally tangential to said interstitial cavity.

5,328,085

APPARATUS FOR APPLYING FLUX

Bradley N. Stoops, and Melaney S. Stoops, both of Bay Village, Ohio, assignors to Precision Dispensing Equipment, Inc., Bay Village, Ohio

Filed Aug. 18, 1992, Ser. No. 931,786
Int. Cl.[5] B23K *37/00*
U.S. Cl. 228—33 **19 Claims**



1. A dispensing apparatus for applying flux to a surface such as a printed circuit board (PCB), the apparatus comprising:

a dispensing head that applies a non-atomized stream of flux to form a layer of flux on the surface;

means for advancing the dispensing head relative to the surface at a high rate of speed during the flux application; and

the dispensing head being tilted relative to the surface for laying flux at an angle substantially less than orthogonal thereto to limit shadowing.

5,328,086

MECHANISM AND METHOD FOR REMOVING TWISTS IN A TUBE FORMING MACHINE

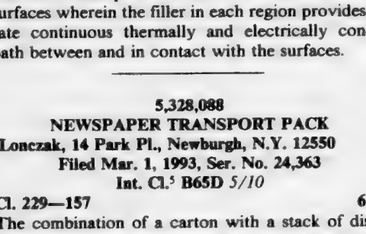
Bertie F. Hall, Jr., Ann Arbor, Mich., assignor to Hoskins Manufacturing Co., Detroit, Mich.

Filed Aug. 20, 1993, Ser. No. 110,092
Int. Cl.[5] B21C *37/04*
U.S. Cl. 228—146 **20 Claims**

11. A method for counteracting a twist in a rolled metal strip being formed into a tube by a tube forming machine, said tube forming machine having a seam guide for aligning the parallel edges of the metal strip with a seam welder, said method comprising the steps of:

disposing at least one pair of edge engaging rolls, mounted on a frame, between parallel edges of the rolled metal strip, each edge engaging roll being oriented to engage the rolled metal strip parallel to a respective one of said parallel edges; and

rotating said frame about an axis concentric with the rolled



metal strip to engage one of said pair of edge engaging rolls with said respective one edge to counteract a twist in the rolled metal strip and to align said parallel edges with said seam guide.

5,328,087

THERMALLY AND ELECTRICALLY CONDUCTIVE ADHESIVE MATERIAL AND METHOD OF BONDING WITH SAME

Richard D. Nelson; Thomas P. Dolbear, and Robert W. Froehlich, all of Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Mar. 29, 1993, Ser. No. 38,420
Int. Cl.[5] H01L *21/58*
U.S. Cl. 228—175 **68 Claims**

1. A method of bonding two surfaces with a thermally and electrically conductive adhesive material, comprising the steps of:

(a) providing an unhardened adhesive;

(b) providing a filler containing a liquid metal;

(c) randomly dispersing the filler into the unhardened adhesive;

(d) contacting the unhardened adhesive to the surfaces;

(e) contacting separate spaced regions of the dispersed filler in non-solidified state to the surfaces before the completion of step (f), each of said regions contacting both surfaces without contacting other of said regions; and

(f) transforming the unhardened adhesive into a harder adhesive which provides a mechanical bond between the surfaces wherein the filler in each region provides a separate continuous thermally and electrically conductive path between and in contact with the surfaces.

5,328,088

NEWSPAPER TRANSPORT PACK

John Lonczak, 14 Park Pl., Newburgh, N.Y. 12550

Filed Mar. 1, 1993, Ser. No. 24,363
Int. Cl.[5] B65D *5/10*
U.S. Cl. 229—157 **6 Claims**

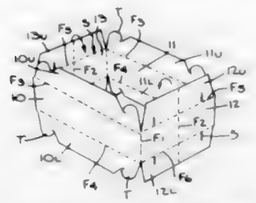
1. The combination of a carton with a stack of discarded newspapers to create a transport pack, comprising:

(a) a pair of side walls having relatively narrow upper and lower foldable long flaps provided with corner latching tongues;

(b) a pair of end walls at right angles to the side walls having relatively narrow upper and lower foldable short flaps provided with end slots into which are insertable the

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latching tongues, whereby to put the carton in a loading state, to receive newspapers the lower short flaps are folded in and the lower long flaps are folded thereover, the latching tongues of the lower long flaps then being inserted in the end slots of the lower short flaps to create a bottom ledge surrounding a rectangular window on which the stack of newspapers is piled, and to put the



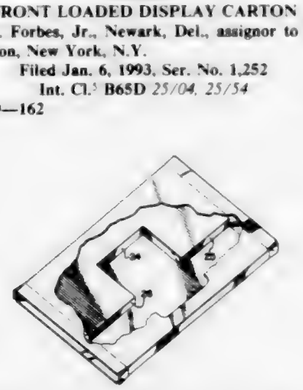
carton in a pack state, the upper short flaps are folded in and the upper long flaps are folded thereover, the latching tongues of the upper long flaps then being inserted in the end slots of the upper short flaps to create a cover ledge surrounding a rectangular window and locking the stack within the carton, the carton having rectangular dimensions that are substantially equal to those of the newspapers received therein.

5,328,089

FRONT LOADED DISPLAY CARTON

Hampton E. Forbes, Jr., Newark, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 6, 1993, Ser. No. 1,252
Int. Cl.[5] B65D *25/04, 25/54*
U.S. Cl. 229—162 **8 Claims**



1. A collapsible front loaded display carton having opposed, front and rear panels of substantially equal length joined to opposed side wall panels of substantially equal length, said panels being arranged in the form of a sleeve with end closure flaps foldably attached to each end, a window opening cut from said front panel and an extension panel attached to one of said sidewall panels, said extension panel being secured interiorly of the carton to form a product capturing pocket beneath the front panel window, said extension panel being cut and scored to provide a T-shaped section the entirety of which is adhered to the interior of one of said front or rear panels and a U-shaped section the entirety of which is adhered to the interior of one of said front or rear panels.

5,328,090

STITCHLESS PAPERBOARD BREADTRAY

Allan T. Hanlon, 18 S. Maple Ave., Maple Shade, N.J. 08052

Filed Sep. 21, 1993, Ser. No. 124,263
Int. Cl.[5] B65D *5/22, 5/30*
U.S. Cl. 229—171 **8 Claims**

1. A blank (**10**) for forming a carton (**3**) with four reinforced corners comprising:

said blank being substantially rectangular and having four corners;

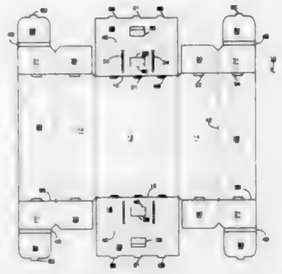
a rectangular section (**12**) for forming a bottom and having a pair of opposing first bottom boundaries and a pair of opposing second bottom boundaries;

a pair of opposing first side sections (**14**) and a pair of opposing second side sections (**18**) operably arranged for forming sidewalls perpendicular to said bottom section (**12**), each one of said first side sections (**14**) having a first side boundary hingedly connected to one of said first bottom boundaries thereby defining one first hinging line of two first hinging lines (**13**) and each one of said second side sections having a second side boundary hingedly connected to one of said second bottom boundaries respectively to define one second hinging line of two second hinging lines (**15**);

a pair of first reinforcing sections, each one of said first reinforcing sections (**22**) having a third boundary hingedly connected to neighboring one of said first side sections (**14**) opposite said first side boundary thereby defining one of two third hinging lines (**42**) respectively;

a pair of second reinforcing sections, each one of said second reinforcing sections (**26**) having a fourth boundary double hingedly connected to a neighboring one of said second side sections (**18**) opposite said second side boundary thereby defining one of two fourth double hinging lines (**43**) respectively;

four side flaps, each one of said side flaps joined to an end



boundary of a neighboring one of said first side sections (**14**) along a hinging line (**15**) that is an extension of one of said second hinging lines respectively (**15**);

four reinforcing flaps, each one of said reinforcing flaps joined to an end boundary of a neighboring one of said first reinforcing sections (**14**) along a hinging line (**15**) that is an extension of one of said second hinging lines respectively (**15**);

each one of said reinforcing flaps having an edge hingedly joined to one of said side flaps and each one of said side flaps having an edge hingedly joined to and edge of one of said reinforcing flaps;

four hook flaps (**32**), each one of said hook flaps located in one of said corners of said blank respectively, each said hook flap having a boundary double hingedly joined to a boundary of one of said reinforcing flaps forming a double hinging line that is an extension of one of said fourth double hinging line (**43**);

each said second side section (**18**) having two first slots (**34**), each said first slot (**34**) oriented perpendicular to a neighboring one of said second hinge lines; (**15**);

each one of said first slots (**34**) operably arranged to permit a neighboring one of said hook flaps (**32**) extending from a neighboring one of said first reinforcing sections (**22**) to be folded outwardly over a neighboring one of said first side sections (**14**) and be inserted through said each one of said first slots and be captured between said neighboring one of said second side sections and said neighboring one of said reinforcing sections, said neighboring one of said

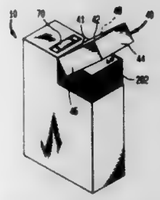
reinforcing sections being (**26**) folded inwardly over said neighboring one of said second side sections.

5,328,091

FLIP-TOP CARTON FOR POWDERED DETERGENT

Richard J. Koss, Iselin, N.J., assignor to Accurate Box Company, Inc., Paterson, N.J.

Continuation-in-part of Ser. No. 806,715, Dec. 12, 1991, Pat. No. 5,222,660. This application Nov. 17, 1992, Ser. No. 977,770
Int. Cl.[5] B65D *5/54, 5/56*
U.S. Cl. 229—231 **12 Claims**



1. A method of making a box blank which is adapted to form a carton, said method comprising the steps of:

a. providing a first layer of foldable material and a second layer of foldable material;

b. connecting said first layer to said second layer such that at least one separable section is provided at which said first and second layers can be readily separated from one another when the carton is in assembled form, such connection being established by:

i. applying a non-adherent tape to at least the first layer in said separable section;

ii. applying an adhesive to substantially all areas of at least the first layer;

c. forming a plurality of fold lines in said first and second layers to thereby define a plurality of panels; and

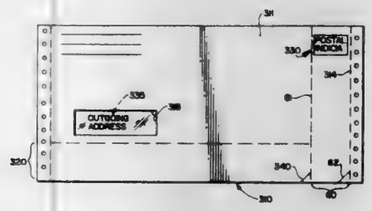
d. forming separation means to facilitate the separation of at least a portion of said second layer from said first layer when the carton is in assembled form such that said separable section can be moved to form an opening in the carton, said opening to be defined by at least a portion of said first layer.

5,328,092

REUSEABLE MAILER MEETING POSTAL REQUIREMENTS

Jerry E. File, Mundelein Lake, Ill., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 932,955, Aug. 21, 1992, Pat. No. 5,282,568. This application Sep. 24, 1993, Ser. No. 126,191
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—306 **4 Claims**



1. A reusable mailer type business form useable in an initial mailing configuration addressed to an outgoing addressee, having top, bottom and first and second sides edges and in a reply mailing configuration addressed to a reply addressee, comprising:

a front opaque ply having a cutout, having top, bottom and first and second sides edges and a first removable strip at the bottom thereof including a top perforation line, said cutout being adjacent, and above, said first removable strip top perforation line;

a rear opaque ply of substantially the same size as said front ply having a rear face and a front face, having top, bottom and first and second sides edges and a fold line adjacent the bottom thereof substantially coincident with said top perforation line of said front ply, a flap portion defined between said fold line and the bottom of said rear ply;

address indicia indicating the reply address for the reply addressee printed on said rear face of said flap portion of said rear ply, said address indicia upside down when viewing the rear opaque ply right-side up;

flap adhesive disposed on said front face of said rear ply flap portion;

at least one insert ply having outgoing address information thereon visible through said cutout when said mailer is in said initial mailing configuration; and

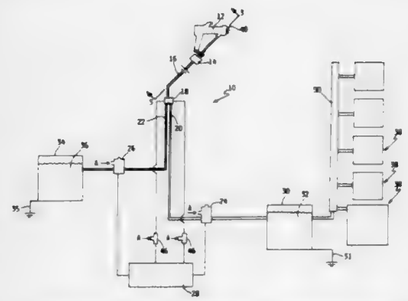
a second removable strip formed in said front and rear plies adjacent the right side of said front ply, including a perforation line in each of said front and rear plies extending between the tops and bottoms thereof, said front ply having outgoing postage indicia thereon in second removable strip.

5,328,093

WATER-BASED PLURAL COMPONENT SPRAY PAINTING SYSTEM

Ann Feitel, St. Louis Park, Minn., assignor to Graco Inc., Golden Valley, Minn.

Filed Jul. 28, 1993, Ser. No. 98,801
Int. Cl.[5] B05B *5/16*
U.S. Cl. 239—3 **59 Claims**



1. A water-based plural component system comprising:

a. an electrostatic spray gun having an electrically-charged tip for dispensing a homogeneous mixture of an electrically more-conductive component and an electrically less-conductive component;

b. a means for mixing said electrically more-conductive component and said electrically less-conductive component, said means for mixing being in fluid-flow relation to said electrostatic spray gun;

c. a first conduit connected in fluid-flow relation to said means for mixing, said first conduit confining alternating portions of said electrically more-conductive component and said electrically less-conductive component;

d. a means for alternating portions of said electrically more-conductive component and said electrically less-conductive component connected in fluid-flow relation to said first conduit;

e. a second conduit connected in fluid-flow relation to said means for alternating, said second conduit confining said electrically less-conductive component;

f. a third conduit connected in fluid-flow relation to said

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means for alternating, said third conduit confining said electrically more-conductive component;

g. a first means for regulating connected in fluid-flow relation to said second conduit;

h. a second means for regulating connected in fluid-flow relation to said third conduit;

i. a means for control connected to said first means for regulating and said second means for regulating;

j. a first storage facility having an electrical connection to ground holding said electrically less-conductive component, said first storage facility connected in fluid-flow relation to said second conduit; and

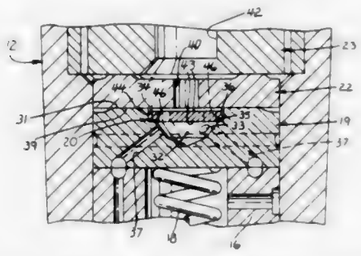
k. a second storage facility having an electrical connection to ground holding said electrically more-conductive component, said second storage facility connected in fluid-flow relation to said third conduit.

5,328,094

FUEL INJECTOR AND CHECK VALVE

Michael B. Goetzke, Orland Park; Rodney J. Bormann, Roselle, and Richard W. Tupek, Naperville, all of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1993, Ser. No. 16,878
Int. Cl.[5] F02M *47/06*
U.S. Cl. 239—88 **20 Claims**



1. A check valve for use in a high pressure unit fuel injector having a member with a central fuel delivery opening to be intermittently supplied with high pressure fuel and a flat valve seat surrounding the opening, a valve cage seated against the member and including a recess adjacent the valve seat, the recess including an annular ledge facing the valve seat, the ledge being centered on and having an inner diameter substantially larger than the delivery opening, an inwardly facing annular rim surrounding the ledge, ad a delivery chamber inward of the ledge for receiving fuel delivered from the delivery opening, said check valve comprising

a disk receivable in the recess and having

opposite first and second flat faces alternately seatable against the valve seat and the ledge respectively,

an outer edge receivable in opposed relation to the rim and having limited radial clearance therefrom when centered in the recess, and

a plurality of holes through the disk between the flat faces, the holes being located wholly outward of a circle of diameter equal tot he sum of the diameter of the delivery opening at the valve seat and the radial clearance of the centered disk, and each hole being located wholly inward of the outer edge of the disk,

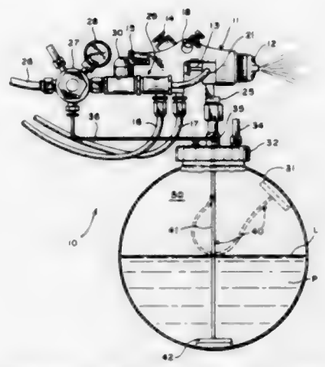
said holes forming at least a portion of the total flow area of flow passages extending between the opposite faces of the disk within a diameter equal to that of the inner diameter of the ledge.

5,328,095

SELF-CONTAINED SPRAY GUN APPARATUS WITH SPHERICAL PAINT CUP

Thomas A. Wickenhaver, West Babylon, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 8, 1993, Ser. No. 44,207
Int. Cl.[5] B05B *9/04, 7/24, 15/02*
U.S. Cl. 239—113 **15 Claims**



1. A self-contained paint spraying system, comprising:

a paint spray gun for spraying paint, said spray gun having a spray nozzle, paint inlet means, means for connecting the gun with a source of air under pressure, and control means for controlling flow of air and paint through the gun;

a spherically shaped paint cup attached directly to said paint inlet means for holding paint to be supplied to the gun, whereby said paint cup moves in unison with said gun; and

a flexible paint pick-up connected to the paint inlet means and extending into the paint cup into proximity with an inner surface of the spherical wall thereof, said paint pick-up having means for maintaining it in contact with the inner surface of the cup and for automatically positioning it at the lowest point in the cup as the gun and attached cup are moved through different orientations, whereby the paint pick-up remains immersed in paint regardless of the position of the gun and cup.

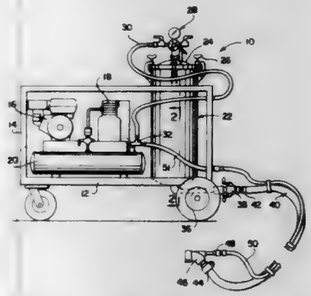
5,328,096

SPRAY APPARATUS AND METHOD OF OPERATION FOR SPRAYING HEAVY VISCOUS MATERIAL

Sylvan M. Stenge, and Robert Mitchell, both of Sacramento County, Calif., assignors to Xlent Equipment Co., Carmichael, Calif.

Filed May 12, 1993, Ser. No. 60,748
Int. Cl.[5] B08B *9/04*; **B05B** *15/02*
U.S. Cl. 239—123 **3 Claims**

1. Spray apparatus for spraying heavy viscous material comprising the combination of a pressure tank having a reservoir chamber for containing a supply of said material which has an upper surface, said chamber having a lower end which includes an outlet port, means for supplying pressurized air within the chamber for acting downwardly against said upper surface of the supply of material and for forcing the material out of the chamber through the outlet port with said upper surface of the supply of material moving downwardly as material is forced out of the outlet port, follower plate means within the chamber, the follower plate means having a lower end for floating over said upper surface of the supply of material, said follower plate means moving within the chamber from an upper position to a lower position responsive to downward movement of the upper surface of the supply of material, stopper means carried by said follower plate means for moving into occluding relationship with said outlet port responsive to movement of the follower plate to said lower position for shutting off material flow through said outlet port, a hose having an inlet end, an outlet end and inner cylindrical wall, means for selectively coupling said inlet end of the hose with said outlet port of the reservoir chamber for directing material being forced out of the outlet port through the cylindrical wall of the hose toward said outlet end, an air valve adapted for connection with source of pressurized air, means for selectively coupling said air valve with said inlet end of the hose, and a yielding cleaning element having a cross sectional size which spans across said inner cylindrical wall of the hose with the cleaning element being insertable into said inner end of the hose and being forced through the hose responsive to air pressure directed into the inlet end from the air valve and said source of pressurized air whereby the cleaning element moves through said inner cylindrical wall toward said outlet end and pushes residue material out of the hose.



5,328,097

ROTOR NOZZLE FOR A HIGH-PRESSURE CLEANING DEVICE

Johann G. Wesch, Berglen, and Gerhard Dellert, Backnang, both of Fed. Rep. of Germany, assignors to Alfred Karcher GmbH & Co., Winnenden, Fed. Rep. of Germany

PCT No. PCT/EP91/00714, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO91/16989, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 15, 1991, Ser. No. 940,957
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4013446
Int. Cl.[5] B05B *3/06, 3/08*
U.S. Cl. 239—243 **12 Claims**

1. A rotor nozzle for a high-pressure cleaning device comprising:

a casing having a pot-shaped recess in a front wall thereof, said recess surrounding a central opening in said front wall;

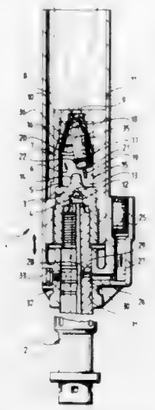
a nozzle body having a bore extending therethrough, said nozzle body being supported at a spherical end thereof in said pot-shaped recess and extending in a longitudinal direction along a portion of said casing, an outside diameter of said nozzle body being smaller than an inside diameter of said casing and having a bearing surface thereon;

an inlet opening tangentially into said casing, for causing a liquid introduced into said casing therefrom to rotate about a longitudinal axis of the casing, thereby rotating said nozzle body with said bearing surface bearing on an inside wall of said casing with the longitudinal direction of said nozzle body being oriented at an incline with respect to the longitudinal axis of said casing;

a stationary nozzle body adjacent to said casing; and

means for selectively coupling said liquid to said stationary nozzle;

wherein said bearing surface of said nozzle body consists of a friction material having a coefficient of friction that is



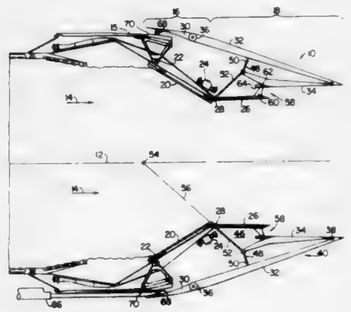
>0.25 in relation to a material forming said inside wall of said casing.

5,328,098

THRUST VECTORING EJECTOR NOZZLE

W. Kevin Barcza, Stuart, and Larry E. Anders, West Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 9, 1993, Ser. No. 89,351
Int. Cl.[5] F02K *1/02*
U.S. Cl. 239—265.35 **8 Claims**



1. An axisymmetric thrust vectoring ejector nozzle comprising:

a plurality of convergent flaps, each flap disposed adjacent to other convergent flaps;

a plurality of divergent flaps;

a universal joint connecting each divergent flap to the aft end of a convergent flap;

a unison ring disposed coaxially with said plurality of convergent flaps;

a plurality of external flaps hinged to said unison ring;

a plurality of ejector flaps, each having the aft end hinged to the aft end of one of said plurality of external flaps;

a scissors linkage from the forward end of each ejector flap to each adjacent external flap;

a spaced slider connection between each of said divergent flaps and a corresponding ejector flap; and

a plurality of support links, each support link connecting the

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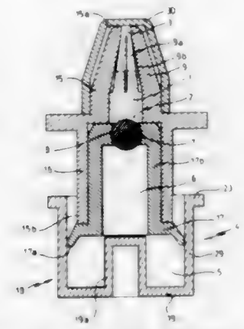
forward end of each said ejector flap and the aft end of each said convergent flap.

5,328,099

COMPRESSED GAS DEVICE FOR SPRAYING A SINGLE DOSE OF A FLUID SUBSTANCE IN FINELY DIVIDED FORM

Ludovic Petit, Amfreville la Campagne; Philippe Solignac, and Pascal Bruna, both of Rouen, all of France, assignors to Etablissements Valois, Le Neubourg, France

Filed Jun. 16, 1993, Ser. No. 77,059
Claims priority, application France, Jun. 16, 1992, 92 07250
Int. Cl.[5] B05B *7/24*
U.S. Cl. 239—372 **22 Claims**



1. A compressed gas device for spraying a single dose of a fluid substance in finely divided form, the device comprising:
- a tank (**1**, **101**) containing said single dose, said tank having an inlet orifice (**2**, **102**) for compressed gas and an outlet orifice (**3**, **103**);
- manually-actuated gas compression means (**4**, **104**), said gas compression means (**4**, **104**) comprising a supply of gas (**5**, **105**) communicating with the inlet orifice (**2**, **102**) of the tank (**1**, **101**) via an intermediate channel (**6**, **16**) said intermediate channel including a length of narrowed section (**7**, **107**), said length of narrowed section being closed in sealed manner by a plug (**8**, **103**) which is held in said length of narrowed section so that when the pressure of the gas contained in the supply of gas (**5**, **105**) reaches a predetermined threshold, said plug (**8**, **103**) is expelled from said length of narrowed section (**7**, **107**) towards the tank (**1**, **101**) of substance, thereby opening said intermediate channel (**6**, **106**);
- the device including means (**9**, **10**, **11**, **112**) for limiting the displacement of the plug (**8**, **13**) towards the outlet orifice of the tank of said substance, thereby defining an abutment position for the plug;
- the device being characterized in that said means (**9**, **10**, **11**, **112**) for limiting displacement of the plug include means (**9***c*, **10***a*, **11***a*, **112***a*) for guaranteeing that the compressed gas can continue to flow when the plug is in its abutment position.

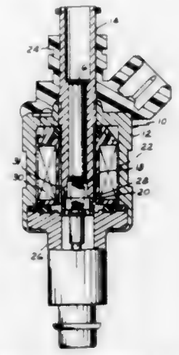
5,328,100

MODIFIED ARMATURE FOR LOW NOISE INJECTOR

John S. Bergstrom, Williamsburg, and Russell J. Wakeman, Newport News, both of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Sep. 22, 1992, Ser. No. 949,173
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] F16K *31/06*
U.S. Cl. 239—585.4 **4 Claims**

1. A solenoid-operated fuel injector comprising a housing forming an enclosure which contains a solenoid coil that is selectively energized by electric current to operate the fuel injector, an inlet connector tube that extends into said solenoid coil to convey liquid fuel into said enclosure, an outlet via which fuel is injected from said enclosure, a valve mechanism that is disposed within said enclosure between said inlet connector tube and said outlet and that is operated by said solenoid coil acting through a spring-biased armature to open and close a flow path through said enclosure between said inlet connector tube and said outlet, said inlet connector tube forming a portion of a magnetic circuit path that directs magnetic flux across a working gap that is disposed within said enclosure



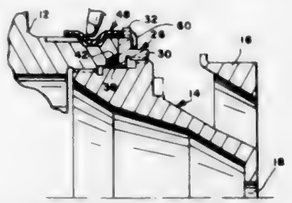
between an end of said inlet connector tube and an end of said armature wherein said end of said armature causes impact forces to be exerted axially on said inlet connector tube end during the opening and closing of said flow path, characterized in that: impact-attenuating means are provided to attenuate the effect of such impact forces, and said impact-attenuating means comprises on said armature a circumferential groove that attenuates the effect of such impact forces in comparison to the effect of such impact forces in the absence of said groove; and said circumferential groove extends around an outside diameter of said armature spaced from said end of said armature leaving a radial flange at said end of said armature.

5,328,101

GAS TURBINE FUEL NOZZLE SEAL

Jonathan Munshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1993, Ser. No. 112,313
Int. Cl.[5] F02C *7/22*; **B05B** *15/06*
U.S. Cl. 239—600 **13 Claims**



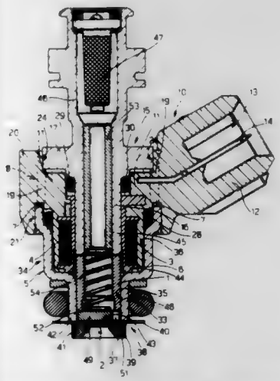
1. A fuel nozzle for a gas turbine comprising:
- an annular nozzle body having a forward end with interior and exterior surfaces;
- a gas tip having a forward fuel discharge end and a rearward mounting end, the rearward mounting end at least partially receivable in said forward end of said nozzle body;
- a resilient seal inserted between said nozzle body and said gas tip;
- a seal ring mounted on said rearward mounting end of said gas tip, adapted to axially compress said resilient seal when the seal ring is engaged with said nozzle body; and means on said exterior surface of said nozzle body for locking said seal ring to said gas tip.

5,328,102

ELECTROMAGNETIC FUEL METERING AND ATOMIZING VALVE

Rudolf Babitzka, Savigno; Marcello Cristiani, Imola, and Gianni Fargnoli, Anzola Emilia, all of Italy, assignors to Weber S.r.l., Turin, Italy

Filed Aug. 5, 1993, Ser. No. 102,489
Claims priority, application Italy, Aug. 7, 1992, TO92A 000691
Int. Cl.[5] B05B *1/00*
U.S. Cl. 239—585.4 **15 Claims**



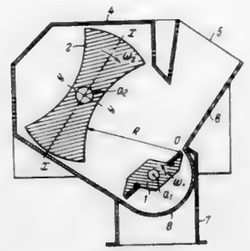
1. An electromagnetic fuel metering and atomizing valve for a fuel supply device, comprising a plunger (**1**) for controlling fuel flow through a fuel injection orifice (**2**); said plunger (**1**) being activated by a core (**3**) energized by an annular electromagnet (**4**); characterized by the fact that it comprises:
- a first tubular body (**5**) formed by means of permanent deformation and having a wall (**6**) of substantially constant thickness; a top portion (**8**) of said wall (**6**) presenting at least one pair of openings (**7**);
- a second annular body (**10**) incorporating said electromagnet (**4**), and which presents a pair of radial projections (**11**), and a block (**12**) forming a seat (**13**) for an electric connecting element (**14**) connected to said electromagnet (**4**); said block (**12**) projecting from one of said projections (**11**), and each said projection (**11**) being inserted inside a respective opening (**7**) in said first body (**5**);
- a third body (**15**) defining an axial sleeve (**16**) designed to fit inside said electromagnet (**4**) for forming said core (**3**); and an annular collar (**17**) projecting radially from said sleeve (**16**) and designed to fit inside said top portion (**8**) of said wall (**6**) of said first body (**5**) and over said second body (**10**);
- means (**18**) for securing said third body (**15**) in a predetermined axial position in relation to said first body (**5**).

5,328,103

PROCESS FOR IMPACT CRUSHING OF ROCK AND ORE LUMPS AND AN APPARATUS FOR PERFORMING SAME

Evarest B. Komarovsky, ulitsa Lermontova, 24, kv. 94, Yakutsk, U.S.S.R.

Filed Aug. 5, 1992, Ser. No. 926,163
Int. Cl.[5] B02C *13/20*
U.S. Cl. 241—5 **12 Claims**



1. A process for crushing rock and ore lumps comprising the steps of:
- a) guiding a rock lump to a first rotor or first set of rotors,
- b) rotating the first rotor or first set of rotors so as to impart a primary impact force P_1 to the lump whereby to break the lump into a plurality of resultant pieces and propel the resultant pieces to a second rotor or second set of rotors with a velocity having a magnitude and direction defined by a velocity vector V_1 and with a momentum M_1,
- c) rotating the second rotor or second set of rotors so as to impart a secondary impact force P_2 to the resultant pieces whereby to break the resultant pieces into smaller pieces and propel the smaller pieces with a velocity having a magnitude and direction defined by a velocity vector V_2 and with a momentum M_2,
- d) aligning and synchronizing the rotation of the first and second rotors such that they cooperate to impart the primary impact force P_1 to the lump and the secondary impact force P_2 to the resultant pieces with the velocity vector V_1 imparted to said resultant pieces by the primary impact force P_1 and the velocity vector V_2 of the secondary impact force P_2 lying on a line passing through the center of mass of the resultant pieces and smaller pieces respectively and with the ratio of the momentum M_2 of the smaller pieces to the momentum M_1 of the resultant pieces lying within the range of about 0.3 to 70.0 with said momentum M_1 having a minimum value of about 180 kgm/sec.

5,328,104

PROCESS FOR RECYCLING CONTAMINATED DRUMS

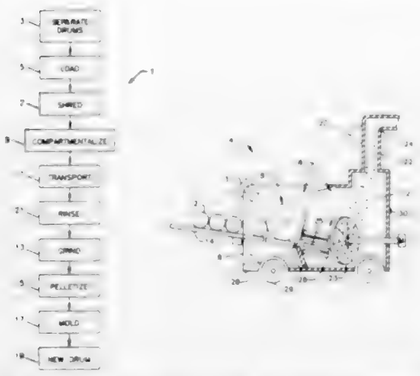
William Lima, Monmouth Beach; Earl V. Lind, Brick, and Philip D. Bartlett, Holmdel, all of N.J., assignors to Russell-Stanley Corporation, Red Bank, N.J.

Continuation of Ser. No. 824,056, Jan. 23, 1992, abandoned. This application May 18, 1993, Ser. No. 63,636
Int. Cl.[5] B02C *19/12*, *21/02*
U.S. Cl. 241—24 **16 Claims**

1. A process for shredding, transporting and reconstructing plastic containers in which materials were stored comprising the steps of:
- (a) placing temporarily a mobile means for shredding the containers and a mobile means for storing the shredded material at a location where the plastic containers are stored;
- (b) separating the containers based upon polymer type and color;
- (c) loading the separated containers into the mobile means for shredding the containers;

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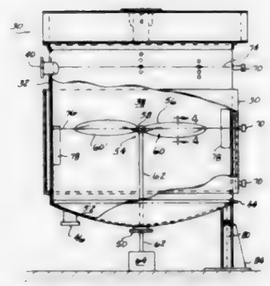
(d) shredding the separated containers;
(e) loading the shreddings into one of a plurality of storage compartments in the mobile means for storing the shredded material that is designated for the particular type of polymer and color;



(f) transporting the mobile means for storing the shredded material to a remote location; and
(g) reconstructing the separated and shredded material into containers at the remote location.

5,328,105
TRANSPORTABLE PROCESSING UNIT CAPABLE OF RECEIVING VARIOUS CHEMICAL MATERIALS TO PRODUCE AN ESSENTIALLY HOMOGENEOUS ADMIXTURE THEREOF

Donald G. Sims, Washington, and Norman Foster, Bloomfield Hills, both of Mich., assignors to Nortru, Inc., Detroit, Mich.
Filed Feb. 20, 1992, Ser. No. 839,267
Int. Cl.[5] B02C *23/00*
U.S. Cl. 241—46.17 **7 Claims**

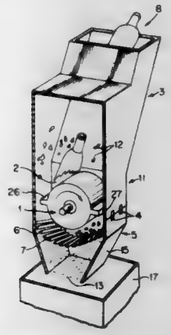


1. A transportable processing unit for producing a pumpable, essentially homogeneous admixed liquid material having a viscosity between about 500 and about 3000 cps, the processing unit comprising:
a unitary movable base member;
a closed mixing and shearing vessel mounted on said base member, said closed mixing and shearing vessel having at least one entry port for receipt of feedstock material, at least one inlet port for receipt of intermediate process material, an exit port for removal of intermediate and final process material, and a cleanout port for removal of non-suspendable solid material, said cleanout port located at an elevation lower than said exit port, said vessel including:
(a) a cylindrical side wall having an inner wall surface and an outer wall surface;
(b) a bottom wall member sealingly attached to said cylindrical side wall;
(c) an upper wall member sealingly attached to said cylindrical side wall at a position opposed to said bottom wall member, such that said cylindrical side wall, said bottom wall member, and said upper wall member define an interior mixing area;
(d) at least one rotary blade unit oriented essentially perpendicular to said cylindrical side wall, positioned in said mixing vessel interior at a height sufficient to create an upper turbulent region and a lower settlement region below said rotary blade unit proximate to said bottom wall member of said mixing vessel, wherein said exit port is positioned to be in fluid communication with the turbulent region and said cleanout port is positioned in the settlement region, said rotary blade unit having a central pivot head and a plurality of attached individual blades extending radially outward therefrom and rotating therearound, and a drive shaft having a first end perpendicularly attached to said pivot head;
means for imparting rotational movement to said rotary blade unit in engagement with a second end of said drive shaft, said rotational movement imparting means mounted on said moveable base member outside of said mixing vessel;
a conduit for conveying intermediate and final process material away from said mixing vessel, said conduit having a first end connected to said mixing vessel exit port;
at least one particle sizing device mounted on said moveable base member, said particle sizing device having an inlet in fluid communication with a second end of said process material conveying conduit and at least one diverter outlet, said diverter outlet having a first branch in fluid communication with said intermediate process material inlet port of said mixing vessels in said exterior wall of said mixing vessel and a second branch adapted to discharge process material away from said movable base member; and
at least one process material recirculation device mounted on said moveable base member and located in fluid communication with said process material conveying conduit, said process material recirculation device capable of conveying process material containing suspended solids in an amount between about 20% and about 80% by total composition weight through a circuit defined by said mixing vessel, said process material conveying conduit, said particle sizing device, and said first branch of said diverter outlet.

5,328,106
GLASS GRINDING MACHINE

Jerrell J. Griffin, Jr., Honolulu, Hi., assignor to J. J. Griffin Environmental, Inc., Honolulu, Hi.
Filed Aug. 24, 1993, Ser. No. 111,224
Int. Cl.[5] B02C *19/12*
U.S. Cl. 241—99 **2 Claims**

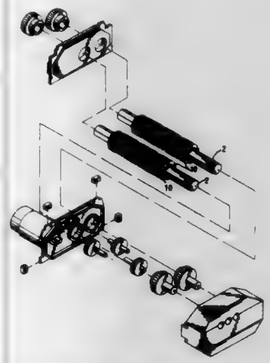
1. A glass grinding machine comprising:
a) a housing, including an upper glass feeding section, a grinding chamber and a lower grate section, together with an inclined glass feeding chute supported in said housing upper glass feeding section above said grinding chamber;
b) a grinding rotor, rotatably supported within said housing grinding chamber, by means of a transverse axis extending through the grinding chamber into bearing supports at each end, said grinding rotor having a plurality of radially extending grinding blades;
c) a grinding grate supported within said housing grate section beneath and apart from said grinding rotor, said grinding grate including a plurality of spaced apart blades disposed in arcuate and complemental array with respect to said rotor radially extending grinding blades configured so as to define an oblique grinding surface with respect to the periphery of said rotor being approximately 45° with respect to the periphery of said rotor, and said blades being spaced apart approximately ⅛", said grinding grate further including an outlet funnel extending downwardly and away from said grinding grate together with a glass particle receiving container supported beneath said outlet funnel;



d) a rotor drive operably connected to said rotor, so as to rotate said rotor at such speed as to break glassware upon contact with said rotor and urge broken glass through said grinding gate, and
e) a glass container holding tray affixed to the exterior of said housing adjacent said inclined glass feeding chute.

5,328,107
PAPER SHREDDING ROLLER FOR A PAPER SHREDDER

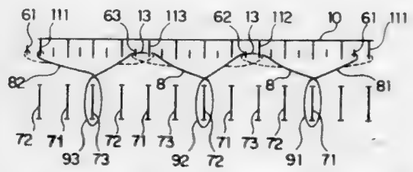
Shao-Nong Tsai, 4F, No. 208, Sec. 1, Wen-Hua Rd., Yung-Ho City, Taiwan
Filed May 18, 1993, Ser. No. 62,612
Int. Cl.[5] B02C *18/06*
U.S. Cl. 241—295 **5 Claims**



1. A paper shredding roller, comprising:
a rotatable knife shaft which has a polygonal cross-section;
a plurality of circular knives provided on said knife shaft, each of said circular knives having a polygonal central through hole that corresponds with the cross-section of said knife shaft so as to permit said knife shaft to extend fittingly therethrough, each of said circular knives being provided with a number of equiangularly spaced unidirectional cutting elements, the number of said cutting elements being unequal to a number of sides of said knife shaft, said cutting knives being provided on said knife shaft in such a manner that said cutting elements of each said circular knife are displaced angularly by a predetermined angle from corresponding cutting elements of an adjacent said circular knife so that said cutting elements of each said circular knife are displaced angularly by a predetermined angle from corresponding cutting elements of an adjacent said circular knife so that said cutting elements of said circular knives are arranged in a number of helical rows that extend along said rotatable knife shaft; and
a circular spacer provided on said knife shaft between every two adjacent said circular knives;
wherein each of said cutting elements includes a cutting groove formed on a periphery of said circular knife and provided with a leading edge and a lagging edge, said cutting groove having a depth that increases gradually from said leading edge to said lagging edge and a groove bottom formed at said lagging edge thereof, each of said cutting elements further including a cutting edge formed at said cutting groove, said cutting edge having a sloping portion which extends from said leading edge to said groove bottom of said cutting groove and a substantially U-shaped curve portion which extends from said groove bottom of said cutting groove to the periphery of said circular knife.

5,328,108
METHOD FOR WINDING COILS ON A Y-CONNECTION ARMATURE FOR MINIATURE MOTORS

Kunitake Murai, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Chiba, Japan
Filed Dec. 23, 1991, Ser. No. 812,709
Claims priority, application Japan, Dec. 25, 1990, 2-413714
Int. Cl.[5] H02K *15/09*
U.S. Cl. 242—7.03 **4 Claims**



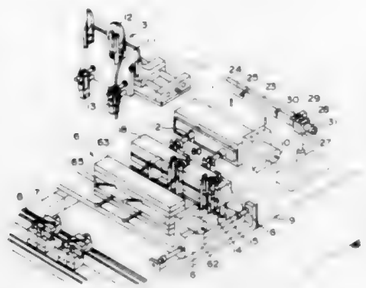
1. A method for winding coils on a Y-connection armature for miniature motors, the motor including an armature iron core of a multi-pole construction, a commutator and a common terminal plate, each of said commutator and said common terminal plate being disposed in a mutually insulated state on an insulating cylinder fixedly fitted to an armature shaft, the method comprising the steps of:
winding a plurality of coils on said armature iron core;
connecting lead wires of the coils to tongues of the commutator and the common terminal plate; extending ends of lead wires wound on coils, other than the last coil, across a predetermined commutator tongue and a tongue of said common terminal plate adjacent to said commutator tongue without being cut; connecting said lead wire to said tongues of said commutator and said common terminal plate; and subsequently cutting the lead wire disposed across said commutator tongue and said common terminal plate.

5,328,109

COIL WINDING DEVICE HAVING A TURRET ROTATABLE BETWEEN A WINDING POSITION AND A TAPING POSITION

Yoshikazu Takahashi, Toda, Japan, assignor to Nittoku Engineering Kabushiki Kaisha, Saitama, Japan

Filed Oct. 19, 1992, Ser. No. 963,147
Int. Cl.[5] H01F *41/08*; H02K *15/09*
U.S. Cl. 242—7.08 **2 Claims**



1. A coil winding device comprising:
a turret having spindle means for rotating a bobbin;
winding unit means, positioned adjacent the turret, for winding a wire on the rotating bobbin, said winding unit means being provided with change-over means for changing over the wire to be wound on the bobbin;
said winding unit means comprising a nozzle bar, nozzle means provided on said nozzle bar for supplying the wire, clamp means provided on said nozzle bar for holding an end of the wire, and nozzle displacement means for supporting the nozzle bar and moving it in three dimensions;
taping unit means, positioned adjacent the turret, for taping the wire wound on the bobbin;
said turret being provided with displacement means for moving said spindle means between the winding unit means and the taping unit means;
said winding unit means and taping unit means being disposed on either side of said turret;
said displacement means comprising rotary actuator means for rotating the turret through approximately 180 degrees such that the turret holds the spindle means in either a position facing the winding unit means or a position facing the taping unit means.

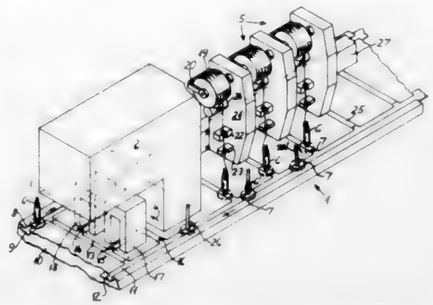
5,328,110

AUTOMATIC MULTI-STATION TEXTILE STRAND HANDLING MACHINE

Ulrich Wirtz; Helmuth Hensen, both of Monchengladbach; Helmut Kohlen, Erkelenz; Paul Surkamp, Kempen; Hans Grecksch, and Dietmar Engelhardt, both of Monchengladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Continuation of Ser. No. 679,629, Apr. 3, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 96,641
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1990, 4011220
Int. Cl.[5] B65H *54/00*; D01H *9/14*
U.S. Cl. 242—18 R **8 Claims**

1. An automatic textile strand handling machine comprising a plurality of work stations arranged adjacent one another, each said work station having respective operation devices for performing strand handling operations with respect to a strand bobbin, means for transporting strand bobbins relative to said work stations, housing means occupying a predetermined plan area at one end of said work stations for enclosing supply means for supplying common operational power inputs to said operating devices of all said work stations, said housing means comprising at least one passageway for transport of strand bobbins through the plan area occupied by said housing means, and at least one means for performing a strand processing



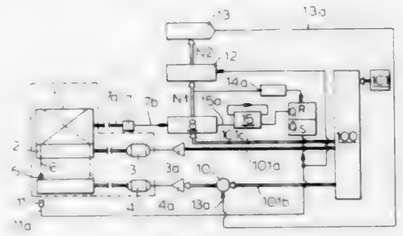
operation with resect to the strands of strand bobbins, said bobbin processing means being arranged within the plan area occupied by said housing means for operation on strand bobbins transported through said at least one passageway.

5,328,111

METHOD FOR CONTROLLING THE POSITION OF THE INVERSION POINT OF THE YARN, PARTICULARLY FOR SPOOLING MACHINES, AND CORRESPONDING EQUIPMENT

Luciano Franzolini, Milan, Italy, assignor to Fadis S.p.A., Solbiate Arno, Italy

Filed Sep. 24, 1992, Ser. No. 950,875
Claims priority, application Italy, Sep. 24, 1991, MI91 A-002547
Int. Cl.[5] B65H *54/38*
U.S. Cl. 242—18.1 **10 Claims**



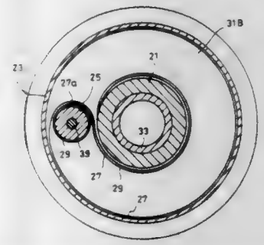
1. A method of controlling an inversion point of yarn in a spooling machine, the method comprising the steps of:
(a) generating in a control unit a set of operating parameters including a spool speed, a yarn-guide speed and a binary number representing a correction of the inversion point;
(b) transmitting a first signal to a first servo mechanism from the control unit representing said spool speed, thereby actuating a spool motor rotating a spool at a selected speed;
(c) transmitting a control signal to a second servo mechanism, thereby actuating a guide driving motor of a thread guide, the thread guide traveling in a cycle defined by back and forth motion to and from an initial position of the thread guide, each of subsequent cycles having, at an instant of inversion of the travel of the thread guide, a respective inversion point of the guide which defines a start of a respective subsequent cycle;
(d) detecting a start of cycle signal at a start point of a current cycle and transmitting the start of cycle signal as an enabling signal to a temporary storage device;
(e) detecting angular positions of said spool and producing a second signal representing an angular position of said spool throughout each cycle at an output of an encoder;
(f) transmitting the second signal to a counter generating a sequence of a binary numbers (N1) directly representing the angular position of the spool;
(g) storing in said storage device a value of the binary number in said counter representing the angular position of the spool at the point of transmission of said start of cycle signal to said storage device;
(h) generating a continuous signal corresponding to the value stored in said storage device in a digital/analog converter emitting a corresponding voltage signal representing a positioning error during each cycle;
(i) sending the voltage signal to an adder for combining the voltage signal with a reference signal from the control unit representing said yarn guide speed to generate a control signal for correcting the second servo mechanism and the guide driving motor;
(j) applying said start of cycle signal to a set input of a flip flop device, thereby setting the flip-flop device; and
(k) setting a reset input of the flip-flop device at a selected angular position of the spool and transmitting from said flip-flop device at least in part through a pulse generator to said counter an increment determined by said binary number representing said correction of the inversion point, whereby said inversion point is shifted from cycle to cycle.

5,328,112

TRANSMISSION APPARATUS BETWEEN TWO RELATIVELY ROTATING MEMBERS

Ken Obata, Tokyo, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 994,206
Claims priority, application Japan, Dec. 24, 1991, 3-111557[U]
Int. Cl.[5] B65H *75/00*; G05G *11/00*
U.S. Cl. 242—388 **4 Claims**



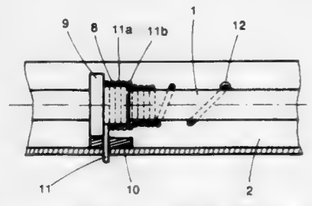
1. A transmission apparatus arranged between two relatively rotating members, comprising:
an inner case;
an outer case, said inner and outer cases being arranged to be rotatable relative to each other and disposed coaxially with respect to each other;
a transmission cable having inner and outer ends fixed to said inner and outer cases, respectively;
a planet roll arranged for rotation between said inner and outer cases and for revolution around said inner case, said transmission cable being wound around said inner case in a given direction, and said transmission cable extending from said inner case to said outer case via said planet roll, and said transmission cable also extending along said outer case in a direction opposite to the given direction in which the transmission cable is wound around said inner case, said transmission cable having an intermediate portion which extends along said planet roll and which has a U-turn portion at which the extending direction of said transmission cable is reversed; and
slack preventing means for preventing said transmission cable from slackening as said inner and outer cases rotate relative to each other;
said slack preventing means comprising a guide tape having inner and outer ends fixed to said inner case and to said planet roll, respectively;
an inner end portion of said guide tape, along with said inner end portion of said transmission cable, being wound around said inner case such that said guide tape is outside of said transmission cable;
an intermediate portion of said guide tape extending along said planet roll; and
an outer end portion of said guide tape being wound around said planet roll in a direction opposite to a direction in which said inner end portion of said guide tape is wound around said inner case.

5,328,113

DEVICE FOR WINDING THE SUSPENSION CORD OF A BLIND

Jean de Chevron Villette, Annecy le Vieux; Jean-Michel Perache, Sallanches, and Marc Quezel, Passy, all of France, assignors to Somfy, France

Filed Jan. 21, 1993, Ser. No. 6,652
Claims priority, application France, Jan. 30, 1992, 92 01036
Int. Cl.[5] B65H *54/02*; A47H *3/00*
U.S. Cl. 242—388 **11 Claims**



1. A device for winding at least one suspension cord of a blind comprising a winding drum (1), one end of said suspension cord (**11**) attached to said winding drum, an auxiliary drum means on said winding drum for ensuring that the cord is wound in even turns without overlapping, said auxiliary drum means having a smooth drum portion (**8**;**8'**) having a diameter which is greater than the diameter of the winding drum (**1**) and located at a distance from the cord end, a shoulder means (**9'**;**9''**) on one end of said auxiliary drum means for moving successive cord windings axially away from the shoulder means and onto the auxiliary drum means as the cord windings are formed, and guide means (**10**) for guiding the cord to be wound onto the shoulder means so that successive cord windings are formed on the auxiliary drum means and are pushed off the opposite end of the auxiliary drum means onto the winding drum under the effect of the shoulder means on the cord.

5,328,114

DEVICE FOR REMOVING ADHESIVE TAPE FROM A REEL OF STRIP MATERIAL

Fulvio Boldrini, Ferrara, and Antonio Gamberini, Bologna, both of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

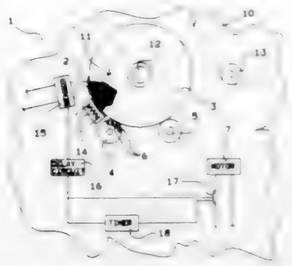
Continuation of Ser. No. 673,740, Mar. 22, 1991, abandoned. This application Dec. 8, 1992, Ser. No. 987,585
Claims priority, application Italy, Mar. 27, 1990, 3413-A/90
Int. Cl.[5] B65H *16/00*
U.S. Cl. 242—562 **13 Claims**

1. A device for removing adhesive tape from a roll of wound strip material, the adhesive tape being affixed to a portion of a peripheral surface of the roll by thermoplastic adhesive material, the device comprising:
support means for the roll, the roll being mounted on said support means to be rotatable about an axis;

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drive means for rotating the roll about said axis in a strip material take-up direction in which the strip material is taken up onto the roll;

at least one fixed heating element close to said peripheral surface; and



adhesive tape removing means arranged at a first location in relation to the roll, and adapted to remove said tape from said peripheral surface after the adhesive material is plasticized by heat from the heating element and with the reel rotating in said strip material take up direction.

5,328,115

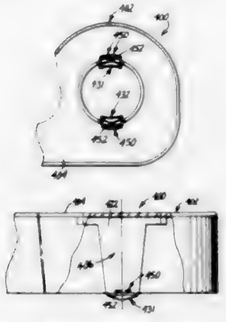
REFILLABLE TAPE DISPENSER WITH HUB

Bruce E. Samuelson, Stillwater; Carol L.-E. Smith, Maple Grove; Gary A. Albrecht, New Brighton, and Winston E. Pagel, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 589,067, Sep. 27, 1990, Pat. No. 5,083,717. This application Jul. 23, 1991, Ser. No. 734,517

Int. Cl.[5] B65H *19/00*

U.S. Cl. 242—588.6 **8 Claims**



7. A refillable tape dispenser comprising:

a housing including a side wall, and

a hub having a longitudinal axis defining an axial direction, inner and outer surfaces, a first end fixed to said side wall, said hub comprising:

first and second opposed flexible portions having distal ends remote from said side wall, said first and second opposed flexible portions projecting axially from said side wall, said flexible portions having axially extending side surfaces,

a retaining lug at the distal end of each of said flexible portions, the retaining lugs having remote ends spaced axially from said flexible portions, and

ribs at the distal end of each of said flexible portions which project radially outward of said flexible portions and have axially extending arcuate bearing surfaces.

5,328,116

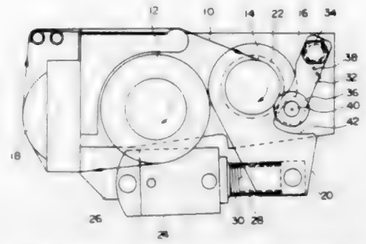
REGULATED LENGTH TAKE-UP DEVICE

Toru Hishinuma, Tokyo, Japan, assignor to Nikka Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 897,427

Int. Cl.[5] B65H *18/12*

U.S. Cl. 242—543 **9 Claims**



1. A regulated length take-up device for continually taking up a regulated length of sheet material around a take-up roll, comprising:

a rotating lever disposed on the take-up roll by means of a one-way clutch,

take-up driving means, pivotably connected to the rotating lever, for rotating the take-up roll,

a sensor lever positioned adjacent the take-up roll along a tangential direction of the take-up roll and pivoted about a pivot point according to variations in a take-up diameter of the take-up roll, and

stroke constraint means for controlling a take-up stroke of the rotating lever in response to the variations in the take-up roll diameter so that the regulated length is kept constant, the stroke constraint means comprising:

a stopper attached to the sensor lever and extending in an axial direction of the take-up roll, and

a cam curvature portion of the rotating lever,

wherein the stopper prevents the rotating lever from rotating in a restoring direction in response to a stationary holding force, and

a shape of the cam curvature portion is selected to transfer the stationary holding force applied to the rotating lever to the sensor lever through the stopper in a direction extending toward the pivot point, such that substantially no force is applied by the rotating lever to the sensor lever in a direction toward the take-up roll.

5,328,117

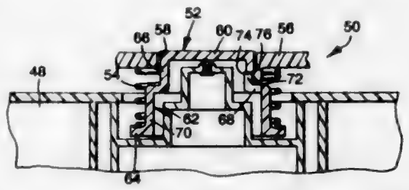
REEL PRESSURE BUTTON FOR TAPE REELS

Vincent P. Teuber, and Robert L. Hanson, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 624,876, Dec. 3, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 898,378

Int. Cl.[5] G11B *23/037, 23/027;* **B65H** *75/02*

U.S. Cl. 242—578.3 **11 Claims**



1. A reel pressure button assembly for applying pressure to a tape reel in a tape cassette housing having a cassette housing portion, the reel pressure button assembly comprising:

a reel pressure button formed as an integral, one-piece member and including a flange and adapted to engage the tape reel, the reel pressure button having an uppermost horizontal portion which contacts the tape reel and a body portion extending downwardly from the uppermost horizontal portion and terminating in the flange; and

means including the tape reel and the cassette housing portion for securing the reel pressure button to the cassette housing portion, wherein the reel pressure button assembly is sized to prevent any part of the reel pressure button assembly from being removed from the tape cassette housing without disassembling the tape cassette housing even if the securing means fails.

5,328,118

SEAT BELT RETRACTOR WITH PRETENSIONER

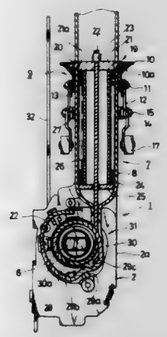
Osamu Tokugawa; Katsuo Takiura; Katsuyasu Ono; Shinobu Mogi; Toshifumi Taguchi; Osamu Kawai, and Tatsuo Tada, all of Kanagawa, Japan, assignors to NSK Ltd., Japan

Filed Jan. 26, 1993, Ser. No. 8,968

Claims priority, application Japan, Jan. 27, 1992, 4-007256[U]

Int. Cl.[5] B60R *22/46*

U.S. Cl. 242—374 **10 Claims**



1. A seat belt retractor having a pretensioner for bringing one end of a cable into engagement with a take-up spindle of the retractor in the event of a vehicular emergency whereby driving the cable at an opposite end thereof causes the take-up spindle to rotate in such a direction as to eliminate slack in a webbing, which comprises:

a retractor base;

a cylinder mounted on the base;

a piston connected to the opposite end of the wire and disposed within the cylinder movably under the guidance of the cylinder;

a resilient member biasing the piston in such a direction that the cable is pulled; and

a trigger unit for holding the piston at a predetermined position against the biasing force of the resilient member, said holding of the piston being released responsive to an acceleration of at least a predetermined value, wherein the trigger unit comprises:

a groove formed in an outer peripheral side wall of the piston;

a pair of lock holes formed in an opposing relationship in a side wall of the cylinder;

lock balls inserted in the lock holes, respectively, and normally maintained in engagement with the groove;

a ring-shaped casing for holding the lock balls;

an inertia element movable upon sensing the acceleration; and

a link mechanism for moving the casing along the length of the cylinder responsive to a movement of the inertia element.

5,328,119

TENSION REDUCER

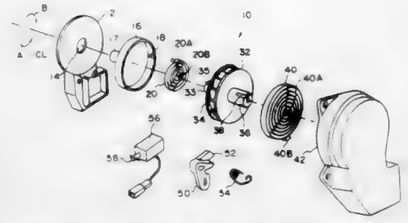
Hironori Sasaki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seiskusho, Aichi, Japan

Filed Mar. 2, 1993, Ser. No. 25,237

Claims priority, application Japan, Mar. 2, 1992, 4-010156[U]

Int. Cl.[5] B60R *22/44*

U.S. Cl. 242—372 **4 Claims**



1. A tension reducer used in a webbing retractor for winding webbing in layers on a winding shaft, said tension reducer comprising:

a weak flat coil spring having an urging force, said weak flat coil spring having an inner and outer ends, said outer end connected to said winding shaft,

a strong flat coil spring having a greater urging force than said weak flat coil spring,

a connecting member connected to said inner end of said weak flat coil spring, said connecting member being disposed between said weak flat coil spring and said strong flat coil spring so as to be connected in series with said weak flat coil spring and said strong flat coil spring, and said connecting member disposed such that it is rotatable, the rotation of said connecting member being in a webbing winding direction and being stopped at a predetermined point in time after said webbing has been drawn from said winding shaft when a passenger puts on said webbing, and said urging force of said weak flat coil spring being released as said weak flat coil spring unwinds from said outer end after the rotation of said connecting member has stopped, and

a substantially cylindrical adapter having an axial portion connected to said winding shaft so that said adapter rotates together with said winding shaft, said outer end of said weak flat coil spring being connected to an outer circumference of said adaptor.

5,328,120

SAFETY BELT RETRACTOR

Johannes Schmid, Schwäbisch Gmünd-Hussenhofen, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Mar. 9, 1993, Ser. No. 28,376

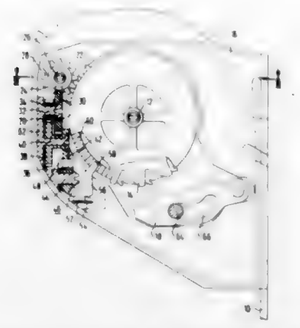
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1992, 4207579

Int. Cl.[5] B60R *22/34*

U.S. Cl. 242—382.4 **7 Claims**

1. A safety belt retractor for vehicles, comprising a frame, a reel rotatably mounted in said frame for coiling and uncoiling of belt webbing, a blocking mechanism for blocking rotation of said reel, a control disc mounted for limited relative rotation with respect to said reel, a gear wheel connected to said reel for joint rotation, said control disc carrying peripheral control teeth, and a blocking arm being pivotally mounted for movement between a first position engaged with said control teeth to stop rotation of said control disc and a second position disengaged from said control teeth, relative rotation between said reel and said control disc causing said blocking mechanism to be activated, and wherein said blocking arm is driven be-

tween its first and second positions by rotation of said gear wheel through a reduction gear, said reduction gear comprising a worm wheel and said blocking arm being pivotally mounted with respect to said frame.



5,328,121

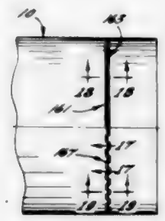
TEXTILE CORE HAVING IMPROVED START-UP GROOVE

Tony F. Rummage, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Continuation-in-part of Ser. No. 893,408, Jun. 3, 1992, Pat. No. 5,211,354. This application Jan. 28, 1993, Ser. No. 10,647

Int. Cl.[5] B65H *75/28*

U.S. Cl. 242—125.1 **14 Claims**



1. A textile core comprising an elongate tubular body for supporting a yarn package and comprising:

a substantially circumferential groove for gripping an incoming yarn line for windup on said core, said groove being formed in at least a portion of the periphery of said tubular body adjacent at least one end thereof;

said groove having a generally V-shaped cross-section including an open top, a closed bottom and two sidewalls disposed on opposite sides of a center line extending radially into said tubular body, at least a first longitudinal portion of said groove having a first compound sidewall defined in longitudinal cross-section by a plurality of alternating tongue and notch sections extending along said first sidewall, said tongue and notch sections being substantially rectangularly shaped in top plan view, each of said tongue sections comprising a front wall which forms a portion of said first sidewall of said groove and extends substantially linearly from the top to the bottom of the groove, each of said tongue sections additionally comprising at least one sidewall extending substantially transversely into said groove for engaging said incoming yarn line.

5,328,122

HANDLE FOR FISHING REEL

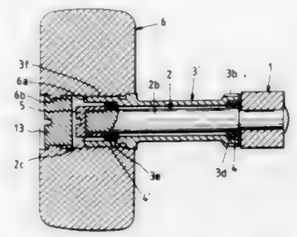
Akira Yamaguchi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 925,757

Claims priority, application Japan, Aug. 23, 1991, 3-074709[U]

Int. Cl.[5] A01K *89/00*

U.S. Cl. 242—283 **9 Claims**



1. A handle for a fishing reel, comprising:

a handle arm;

a support shaft protruding on a side face of said handle arm;

a hollow shaft part having a handle knob threadingly disposed thereon, and an axial hole passing therethrough, said axial hole having a first section and a second section having a diameter greater than said first section;

plug means threadingly disposed within said axial hole at said second section for closing said axial hole;

support means for rotatably and removably supporting said hollow shaft part onto said handle arm through said support shaft.

5,328,123

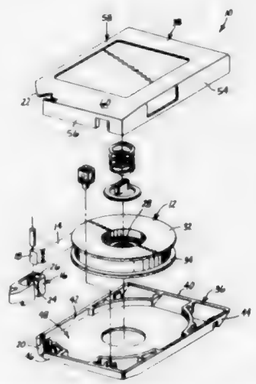
SINGLE REEL CARTRIDGE WITH DECREASED BASE SINK

Curtis G. LeNoue; Navnit C. Patel; Saurin J. Shah; Steven J. Fischer, all of Wahpeton, N. Dak., and Steven E. Krabbenhoft, Breckenridge, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 756,069, Sep. 6, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 993,966

Int. Cl.[5] G11B *33/00*

U.S. Cl. 242—348.3 **13 Claims**



1. A molded cartridge housing component for use in a single reel tape cartridge insertable into a tape drive apparatus, the cartridge housing component comprising:

a rear wall;

two opposing side walls;

a front wall;

a substantially rectangular major wall connecting the rear, front, and side walls, wherein the major wall has an inner surface and an outer surface;

a strengthening rib formed on and extending from the inner surface of the major wall, wherein the strengthening rib divides the major wall into first and second portions and the thickness of the first portion is equal to the thickness of the second portion;

wherein the inner surface of the second portion of the major wall has a groove extending along at least part of the length of the strengthening rib.

5,328,124

APPARATUS CAPABLE OF LOADING A PLURALITY OF CASSETTES

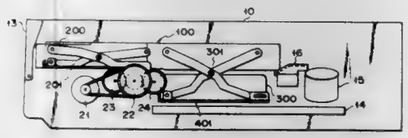
Yuzo Tsuchiya; Hiroshi Suzumura, both of Fukaya; Naoki Eguchi, Kumagaya; Masayuki Hirano, Fukaya; Yoshiharu Imaoka, Fukaya; Kimihiko Nakamura, Fukaya, and Mitsuru Kohara, Kumagaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 9, 1992, Ser. No. 847,693

Claims priority, application Japan, Mar. 11, 1991, 3-45206; Mar. 27, 1991, 3-63410; Mar. 27, 1991, 3-63412; Mar. 27, 1991, 3-63526

Int. Cl.[5] G11B *23/04*

U.S. Cl. 242—337 **23 Claims**



1. An apparatus capable of loading a plurality of cassettes, comprising:

a housing incorporating a tape driving section;

a cassette carrying unit capable of carrying a plurality of cassettes while being located inside said housing, for conveying the cassettes to a position from which the conveyed cassette can be loaded in said tape driving section;

a motor mounted at a fixed position in said housing, for moving said cassette carrying unit;

a rotary member mounted at a fixed position in said housing so as to be rotated interlocking with said motor; and

pulse generating means, interlocking with the rotation of said rotary member, for generating pulses in number corresponding to a rotational speed of said rotary member to generate data for determining a moving distance of said cassette carrying unit.

5,328,125

VCR DECK TAPE LOADING MECHANISM

Hong J. Jin, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 23, 1992, Ser. No. 996,413

Claims priority, application Rep. of Korea, Dec. 24, 1991, 1991-24278

Int. Cl.[5] G11B *23/04*

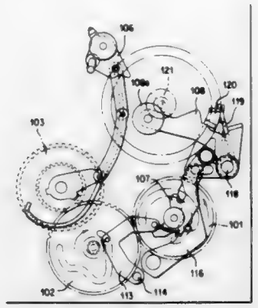
U.S. Cl. 242—335 **18 Claims**

1. A VCR deck tape loading mechanism on a main base of a VCR, comprising:

(a) a loading motor;

(b) pinch lever driving means for driving, responsive to a first gear, a pinch lever via a pinch roller to a loading position, said pinch lever driving means and said first gear driven by said loading motor;

(c) take up arm driving means for driving, responsive to a second gear, a take up arm via a take up roller on a path to guide said pinch lever, said take up arm driving means moving in response to the movement of said pinch lever driving means and said second gear, said first gear engaging and rotating said second gear; and



(d) slant base driving means for driving a slant base along a rail formed on the main base, and having a latching tip guiding said take up arm and preventing deviation of said take up arm from the path.

5,328,126

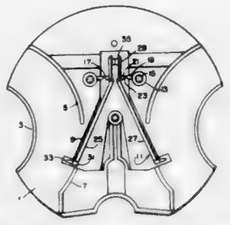
CASSETTE BRAKE RELEASE

Paul J. Gelardi; David A. Capotosto; James R. Dussault, all of Kennebunkport, and Michael Raymond, Biddeford, all of Me., assignors to LCV Associates, Kennebunkport, Me.

Filed Feb. 8, 1993, Ser. No. 14,699

Int. Cl.[5] G11B *23/087*

U.S. Cl. 242—343.2 **15 Claims**



1. A video cassette reel brake comprising first and second spaced parallel pins integrally molded with a base of a cassette, first and second living hinges connected respectively to the pins, the first and second living hinges having first parts fixed to the pins and having second parts connected to the first parts for relatively rotating thereon about thin intermediate parts which form the living hinges with first and second spaced parallel axes, first and second brake levers, each having first and second oppositely extending arms connected medially to the second parts for respectively rotating the levers about the first and second axes of the first and second living hinges, the first arms of the levers having outwardly extending teeth at distal ends thereof for engaging reels in braking relationship, the second arms of the levers having distal ends thereof, and a brake release actuator which extends between the second arms, the first and second levers and the first and second hinges being formed in a condition which engages the teeth with reels, the brake release actuator having first and second legs joined together medially by an intermediate living hinge and the legs being joined to the second arms respectively by third and fourth living hinges, the intermediate and third and fourth living hinges being aligned on axes parallel to a base surface of the cassette for moving the intermediate hinge upwardly as a brake release member contacts and moves the intermediate hinge, for moving the third and fourth hinges outwardly as the

VOL 1164 ISS 2 JL 12 1994 UMI

intermediate hinge moves upwardly, for rotating distal portions of the second arms outwardly around the first and second hinges and rotating distal portions of the first arms inwardly and for withdrawing brake teeth from the reels upon the upward movement of the intermediate hinge and the outward movement of the third and fourth hinges.

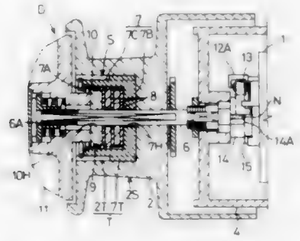
6. A reel brake release mechanism for a video cassette comprising first and second brake levers, central mounting hinges connected to the levers, the levers having first brake arms with outward extending grippers at distal ends thereof, and second actuator arms extending oppositely from the brake arms, and a hinged actuator connected between the second arms, the hinged actuator having first and second actuator legs, a central connection connecting proximal portions of the legs, and hinges connecting distal portions of the legs to the second actuator arms for rotating the second arms outwardly and the first arms and grippers inwardly away from reels as the central connection of the actuator is moved in a direction transverse to the levers.

5,328,127

SPINNING REEL HAVING A SEALED FRONT DRAG MECHANISM

Osamu Yoshikawa, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Continuation of Ser. No. 726,795, Jul. 8, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 107,177
Claims priority, application Japan, Jul. 19, 1990, 2-77365[U]
Int. Cl.[5] A01K *89/027*
U.S. Cl. 242—246 **3 Claims**



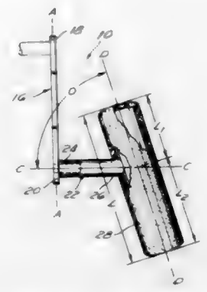
1. A drag mechanism of a spinning reel comprising:
a spool rotatably mounted on a spool shaft, a hollowed spool portion being defined on one side of said spool;
a cylindrical member substantially housed in said hollowed spool portion, said cylindrical member being rotatable coaxially and integrally with said spool, said cylindrical member having a chamber comprising an interior side wall substantially parallel to said axis of said spool shaft and a bottom wall normal to said axis;
friction means, in contact with said bottom wall, for applying a braking force to relative rotation between said spool and said spool shaft, said friction means being axially movably supported on said spool shaft;
a closing disc for closing said chamber, said closing disc being in contact with said friction means and being axially movably supported on said spool shaft, said closing disc having a first seal member in contact with said interior side wall;
an adjuster member provided on an end portion of said spool shaft, said adjuster member adjusting a pressure force of said closing disc and said friction means against said bottom wall of said cylindrical member by being axially displaced with respect to said spool shaft.

5,328,128

ARTICULATED FISHING REEL HANDLE ASSEMBLY

Brooks Morris, 32232 Azores Dr., Dana Point, Calif. 92639

Continuation of Ser. No. 794,133, Nov. 14, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 50,525
Int. Cl.[5] A01K *89/00*
U.S. Cl. 242—283 **9 Claims**



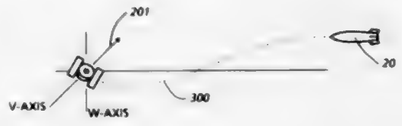
1. An articulated fishing reel handle assembly for attachment to a fishing reel, comprising:
an elongate crank arm defining a first axis extending longitudinally therethrough and having a first end and a second end, said first end being rigidly connected to said reel in a manner wherein said first axis extends at approximately a 90 degree angle relative a second axis defined by and extending axially through said reel;
an elongate bearing member defining a third axis extending longitudinally therethrough and having a proximal end and a distal end, said proximal end being rotatably connected to said second end in a manner wherein said third axis extends at approximately a 90 degree angle relative said first axis and in substantially parallel relation to said second axis; and
an elongate reel handle sized to extend along the palmar surface of a user's hand when grasped thereby and defining a fourth axis extending longitudinally therethrough, said reel handle having upper and lower portions and being rigidly connected to the distal end of said bearing member such that said fourth axis extends through said upper portion at an acute angle relative said third axis and through said lower portion at an obtuse angle relative said third axis.

5,328,129

GUIDANCE METHOD FOR UNTHROTTLED, SOLID-FUEL DIVERT MOTORS

Roger L. Gray, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 17, 1993, Ser. No. 77,798
Int. Cl.[5] F41G *7/00*
U.S. Cl. 244—3.15 **10 Claims**



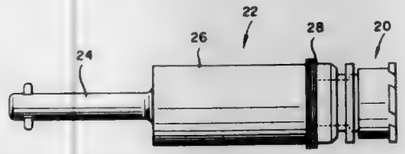
4. A method of guiding an in-flight vehicle, having a single solid-fuel divert motor, toward an intercept with a target comprising the steps of: acquiring locational data on said target using a sensing device mounted on said vehicle to establish a relative position vector between said vehicle and said target; selecting a trajectory for said vehicle that is offset from a collision course with said target, said offset being in a plane perpendicular to said relative position vector and having a magnitude based on the capability of said divert motor to divert said trajectory of the vehicle; burning said divert motor to develop thrust; and directing said thrust parallel to said plane to reduce said offset and cause said trajectory of the vehicle to spiral around said relative position vector.

5,328,130

STABILIZER FOR A CANNON PROJECTILE

Stewart Gilman, Wharton, and Anthony Farina, Hackettstown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1993, Ser. No. 32
Int. Cl.[5] F42B *10/26*
U.S. Cl. 244—3.23 **9 Claims**



1. A supersonic projectile, to be fired from a non-rifled tube, comprising a stabilizer to impart an accuracy enhancing, stabilizing spin, during flight, said projectile comprising:
a nose section and a stabilizer coaxially connected thereto,
said nose section having a longitudinal axis, a forward end and a cylindrical aft end, and the largest diameter thereof being slightly smaller in diameter than the inner diameter of the non-rifled tube of the cannon, an obturator ring mounted on an aft portion of the nose section;
said stabilizer consisting of a one piece solid metal element and being cylindrical and having first and second unequal diameters defining at least two coaxial first and second adjacent sections, said first section of said stabilizer being connected to the aft end of the nose section of the projectile and having a diameter smaller than the diameter of said largest diameter of the nose section, said second section, located at an aft end of the stabilizer having a diameter substantially equal to said largest diameter of the nose section, said second section defining a circumferential periphery and a plurality of angled slots circumferentially spaced apart on the periphery, said slots being defined by opposing spaced apart parallel flat side walls, said side walls being angled relative to the longitudinal axis, whereby air striking such walls during flight forces said spin to be imparted to said projectile.

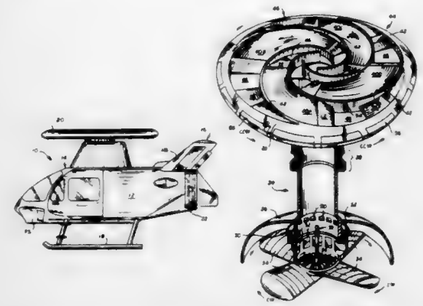
5,328,131

VECTOR ROTARY WING ENSEMBLE

Vincent Fodera, 405 Pumpkin Way, and Steven A. Black, 161 Coventry Dr., both of Henderson, Nev. 89015

PCT No. PCT/US92/04592, § 371 Date Jun. 12, 1993, § 102(e) Date Jun. 12, 1993, PCT Pub. No. WO93/24367, PCT Pub. Date Sep. 12, 1993
PCT Filed Jun. 4, 1992, Ser. No. 84,261
Int. Cl.[5] B64C *29/00, 39/06*
U.S. Cl. 244—12.2 **20 Claims**

1. A system for producing lift comprising:
(a) an upper rotating assembly of dense solidity ratio having a plurality of spirally-shaped lifting surfaces formed within a like plurality of radially disposed spiral guide elements;
(b) lower rotating elements including a set of rotary wings arranged to rotate coaxially around a duct fan;
(c) said lifting surfaces and said guide elements bounded at their outer extremities by a deflector rim forming the outer circumference of a unitary, disk-shaped upper rotating assembly, the inner extremities of said guide elements terminating at a central opening in said upper rotating assembly;
(d) an essentially vertical cylindrical shaft having its upper opening adjacent said central opening and first and second lower openings, said first lower opening housing said duct fan;



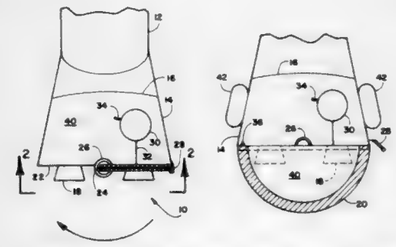
(e) a shroud affixed near the lower extremity of said shaft, said shroud having a diameter greater than that of said shaft and less than that of said deflector rim; and
(f) said upper rotating assembly and lower rotating elements arranged to be coaxially rotatably mounted to and driven in first and second directions, respectively, around the relatively stationary vertical shaft and its affixed shroud.

5,328,132

ENGINE PROTECTION SYSTEM FOR RECOVERABLE ROCKET BOOSTER

Jerry A. Shelby, Jr., Huntsville, Ala., assignor to General Dynamics Corporation, Space Systems Division, San Diego, Calif.

Filed Apr. 28, 1993, Ser. No. 53,281
Int. Cl.[5] B64D *29/00*
U.S. Cl. 244—53 R **20 Claims**



1. In a liquid rocket booster for a space vehicle that has a turbopump driven rocket engine and a parachute system which permits a controlled descent of the liquid rocket booster in a generally nose down attitude as it nears the earth for recovery in a salt water body after separation at a predetermined time from the space vehicle, which salt water body can cause impact damage and corrosion damage to the rocket engine, the improvement which comprises:
inflatable water impermeable bag means secured in a deflated state to at least a portion of the lower outer perimeter of a skirt surrounding components of the rocket engine including the nozzles;
spring means in its normal state urging the bag means to a deployed state;
actuable locking means to lock the bag means in a deflated state and in a deployed state; and
actuable gas pressure means which is actuated when the lock means has released the bag means from its deflated state so

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that said spring means is permitted to urge the bag means from its state to a deployed state which permits the bag to sealingly extend against the full perimeter of the skirt and to be inflated by gas pressure from the gas pressure means thereby precluding entry of salt water into the rocket engine after the liquid rocket booster has landed in a salt water body.

5,328,133

SYSTEM FOR CARRYING EQUIPMENT AND/OR A WORKMAN TO A HIGH VOLTAGE LINE OR INSTALLATIONS

Marc Charest, 7515, rue Marisa, Brossard, P. Québec, Canada J4Y 1J8 , and Sylvain Allard, 2828 Polo Drive, St-Lazarre, P. Québec, Canada J0P 1V0

Filed Jul. 30, 1993, Ser. No. 99,691
Int. Cl.[5] B64D *9/00*
U.S. Cl. 244—118.1 **15 Claims**



1. A system for carrying equipment, material and a worker, and placing them on a high voltage line or installations by means of a helicopter, to effect operations thereon, said system comprising:

elongated support means made of electrically insulating material, said elongated support means extending from both sides and away from the body of said helicopter, along a horizontal transverse axis thereof,

at least one bucket for said equipment, material and worker, said bucket having hooking means formed on one side thereof for connection with said support means,

engaging means provided at the ends of said support means for removably attaching said at least one bucket on said one side thereof at least at one end of said support means, by connection of said engaging means with said hooking means, and,

means enabling said bucket to be maintained in substantially vertical position while attached at said one end of said support means, and aligned with said horizontal axis so as to enable said bucket to be in vision line of a helicopter pilot, when said bucket is in vicinity of or fixed at one end of said support means.

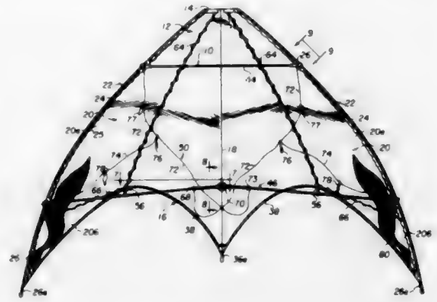
5,328,134

DUAL-LINE OR QUAD-LINE CONTROLLED KITE

Thomas C. Powers, 208 Ramblewood Dr., 1-D, Fairfield, Ohio 45014

Filed Aug. 17, 1993, Ser. No. 109,041
Int. Cl.[5] B64C *31/06*
U.S. Cl. 244—155 A **12 Claims**

1. A kite assembly comprising the combination of a frame and a sail of fabric sheet material, said frame and said sail defining a substantially delta shape having a narrow front end and a wide trailing end, a central keel and a pair of wings one each on the opposed sides of said keel, said wings having leading edges defined, respectively, by first and second seams each closed at the narrow end of said delta shape and open at its opposite end, stitching closing said seams to form said leading edges, said frame being defined, in part, by a resilient side strut received in each of the respective seams, each strut having an exposed end extending freely through the open end of a respective seam and beyond the wide end of said delta shape, first and second flexible lines within the respective seams, each line being sewn to said sheet material by a line of stitching extending along at least a portion of the length of said seam whereby said line is anchored to said sheet material along said



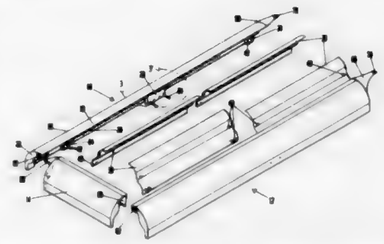
portion substantially parallel to said seam, one end of each of said lines emerging from a seam at its open end, and means for anchoring said line securely to the exposed end of a side strut following tensioning of said line until said sheet material along a leasing edge is pulled taut along said strut.

5,328,135

SUN VISOR FOR MOTOR VEHICLE

Thurman Moore, 1920 Heliotrope Dr., Santa Ana, Calif. 92706

Continuation-in-part of Ser. No. 674,894, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 475,913, Feb. 6, 1990, Pat. No. 5,040,839. This application Aug. 21, 1992, Ser. No. 934,001
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.4 **11 Claims**



1. The combination of sun screens and holders therefor and a sun visor, for use in a motor vehicle having a forward facing windshield surrounded by a frame and having a sun visor post attached thereto, and a passenger compartment including side and rear windows which includes:

a. at least one sun screen holder for mounting within the passenger compartment along the roof line thereof, immediately above a selected one of said side and rear windows,

b. a window sun screen of flexible, thin film plastic having a thickness from 1 to 5 mils of sufficient width and length dimensions to span said selected window;

c. a roller bar rotationally supported within said holder and extending coextensively with the span of said selected window, with said sun screen rolled thereon, and including hand wheel means fixeldy secured to said roller bar for manual lowering and raising of said sun screen between a window covering position and a withdrawn position;

d. bracket means projecting from a forward end of said holder including a slot to receive said sun visor post, and

means along the length of said holder for attachment to said vehicle; and

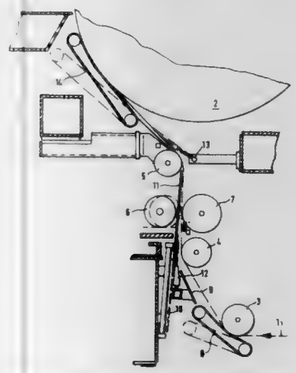
e. a sun visor supported by a first pivotal support post adapted to be permanently secured to the inside upper edge frame surrounding a windshield of a motor vehicle having a side window, said first pivotal support post having an orthogonal arm, said sun visor including a first flat, elongated panel to extend to approximately the midpoint of said windshield pivotally secured about said orthogonal arm of said first pivotal support post, a second pivotal support post secured to said first panel beneath and adjacent to said first pivotal support post and having a panel orthogonal arm which extends coextensively along the bottom edge of said first panel, and a second flat elongated panel pivotally secured about said panel orthogonal arm of said second pivotal support post by a tubular sleeve secured along the upper edge of said second panel, with said sleeve being slidably received over the orthogonal arm of said second pivotal support post, thereby permitting the sliding extension of said second panel from said second pivotal support post, whereby said second panel can be unfolded to a position extending beneath and along the bottom edge of said first panel, or can be pivoted to a second position at a right angle to said first panel and can be slidably extended in either position, whereby said second panel may be placed beside, and slidably extended along, the side window of said car while said first panel remains beside the windshield of said motor vehicle.

5,328,136

METHOD AND DEVICE FOR POSITIONING THE BEGINNING OF A WEB OF MATERIAL, ESPECIALLY A WEB OF PAPER, AGAINST THE ROLL OF A WINDER FROM BELOW

Georg Müller, Neuss, and Heinz Hofferberth, Düsseldorf, both of Fed. Rep. of Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 368,470, Jun. 19, 1989, abandoned. This application Apr. 25, 1991, Ser. No. 692,807
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1988, 3820846
Int. Cl.[5] B65H *18/08, 20/14*
U.S. Cl. 242—541.3 **6 Claims**



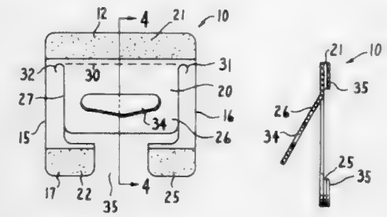
1. In a web winding apparatus including a winder roll, and means for positioning the beginning of a web of material against said roll, said means including an upright plate-shaped web-positioning mechanism and a supply of compressed air to convey the beginning of a web against said mechanism, the improvement which comprises an upright baffle that extends over part of the operating width of said roll, and at least one flat-jet nozzle with several air-emergence openings that parallel the baffle and open upward, the openings being about 0.5 to 1 mm away from the baffle, whereby the compressed air passes in an essentially laminar flow up along the surface of and essentially parallel with the surface of the baffle.

5,328,137

DISPLAY HANGER

Thomas R. Miller, South Haven Township, Van Buren County, Mich., and Brian Bresser, Cincinnati, Ohio, assignors to Do-It Corporation, South Haven, Mich.

Filed Oct. 14, 1992, Ser. No. 961,266
Int. Cl.[5] E04G *5/06*
U.S. Cl. 248—223.4 **8 Claims**



1. A hanger comprising:

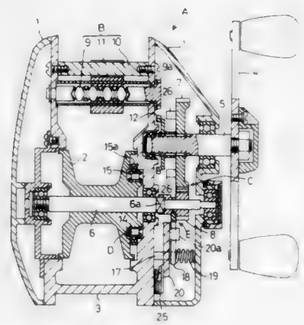
a flat, flexible sheet having a plurality of bonding sections located adjacent to opposite edges of said sheet, a top section, a bottom section, two side sections and an intermediate section bounded by and coplanar with said top, bottom and side sections, said intermediate section comprising a centrally located fold-up portion defined by a cut-line and a fold-line in said intermediate section, said fold-up portion being rotatable about said fold-line between an initial position at which said fold-up portion is provided below said fold-line and a second position at which an upper portion of said fold-up portion is provided above said fold-line, said upper portion of said fold-up portion comprising means for supporting said hanger and said bottom section of said flat, flexible sheet having a gap provided therein which extends throughout the height of said bottom section to said cut-line.

5,328,138

FISHING REEL WITH ONE-WAY CLUTCH

Noboru Sakaguchi, Tondabayashi, Japan, assignor to Shimano Inc., Osaka, Japan

Continuation of Ser. No. 707,089, May 29, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 22,866
Claims priority, application Japan, Jun. 20, 1990, 2-65263[U]
Int. Cl.[5] A01K *89/033*
U.S. Cl. 242—300 **8 Claims**



1. A fishing reel comprising:

a reel body;

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a spool supported by said reel body and rotatable for taking up a fishing line;

a transmission mechanism including a handle shaft, a spool shaft rotatable in unison with said spool, a drive gear, and a pinion gear for transmitting drive to said spool in a direction for taking up a fishing line; and

a one-way clutch including an inner race, an outer race, a plurality of rollers located between said inner and outer races, a plurality of engaged portions mounted on said outer race, and an engaging element mounted on said reel body;

said inner race being secured to said spool,

said engaging element being urged toward the engaged portions by an elastic member,

wherein said one-way clutch is not mounted on any member of said transmission mechanism, said one-way clutch is operable to engage said engaging element mounted on the reel body with said engaged portion to completely prevent rotation of said outer race, thereby preventing said spool from rotating in a fishing line feed-out direction.

5,328,139

WALL ARTICLE HANGING DEVICE

Renny H. Barnes, 8146 Crestridge Rd., Fairfax Station, Va. 22039

Filed Nov. 9, 1992, Ser. No. 973,853
Int. Cl.[5] A47F *7/14*
U.S. Cl. 248—475.1 **8 Claims**



1. A wall article hanging device for attaching an article to a wall surface comprising:

a) an elongated plate having an uppermost and a lower edge;

b) means integrally formed and extending outwardly from said plate for rigidly and flushly attaching said elongated plate to a rear surface of said article; and

c) at least a pair of spaced first prongs integrally formed at opposite ends of the elongated plate and extending outwardly from said elongated plate, each said first prong having an upper and a lower planar face, said upper and lower planar faces decreasing in width from said elongated plate to a terminating tip, said tip being angled downwardly towards said lower edge such that each said lower planar face forms an acute angle with respect to a transverse section of said elongated plate, said first prongs in opposing relationship with said means for rigid and flush attachment and designed for penetration of and attachment to said wall.

5,328,140

DEVICE FOR HANGING FRAMES

Yin H. Wong, 158 Jalan Dato Sulaiman Century Garden, Johor Bahru West Malaysia 80250, Malaysia

Filed Aug. 10, 1992, Ser. No. 926,411
Claims priority, application United Kingdom, Aug. 8, 1991, 9117169; Mar. 16, 1992, 9205668
Int. Cl.[5] A47G *1/16*
U.S. Cl. 248—493 **6 Claims**

1. A device for interposing between a picture frame having a wire or string affixed and a vertical surface having a protuberance with a head so as to suspend said picture frame from said protuberance, said device comprising a body having an upper portion and a lower portion, said upper portion comprising a hole which is generally triangular in shape with converging edges meeting at an apex extending in a vertical direction, said hole being shaped and dimensioned so that said head of said protuberance passes through said hole and said protuberance is received between said converging edges and as a consequence of the weight of the frame said head is received in said apex at a vertical position where it will not pass back through



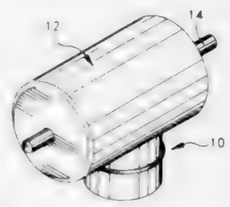
said hole, and said lower portion of said device comprising a projection comprising a rectangular block secured to the body providing a support surface extending in a direction generally perpendicular to the direction of the convergence of the edges of the hole and said support surface providing a substantial area of contact with said string or wire so as to support said string or wire in a plane displaced from the plane of said hole.

5,328,141

SAG COMPENSATED VIBRATION ISOLATION MOUNT

Stuart C. Dickinson, Bristol, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1993, Ser. No. 100,798
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—550 **16 Claims**



1. A vibration isolation mount comprising:

a visco-elastic body element having opposite first and second ends, a predetermined height and a predetermined perimeter;

at least one band means extending around said body element intermediate said opposite ends, said band means having a length substantially equal to said predetermined perimeter; and

means for decreasing the length of said band means responsive to a predetermined temperature increase so as to forcibly compress said body element.

5,328,142

CONCRETE COLUMN FORMING TUBE

Emile E. A. J. Weekers, CX Bunde, Netherlands, assignor to Sonoco Products Company, Hartsville, S.C.

Filed Jul. 17, 1992, Ser. No. 916,207
Int. Cl.[5] B28B *7/06, 7/30, 7/34*
U.S. Cl. 249—48 **6 Claims**

1. A concrete column forming member which is lightweight and readily collapsible into a generally flat condition to facilitate storage and shipment, and which has sufficient strength alone, without any surrounding support, to support a column of concrete poured therein, and comprising

at least one layer of flexible sheet material which is wound to form a flexible multi-layer wall cylindrical tube to support a column of concrete alone without any surrounding support, with said wall being between about 0.5 to 3 mm and substantially impervious to the passage of water, with



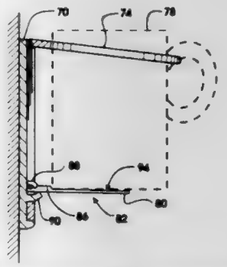
the total thickness of the multi-layer wall being sufficiently thin to impart flexibility to the wall and to permit the tube to be readily collapsed into a generally flat condition, and with said tube having a diameter of at least about 150 mm.

5,328,143

BEVERAGE CONTAINER HOLDING APPARATUS WITH PROMOTIONAL DISPLAY

Douglas Koorey, 1945 Station Rd., Valley City, Ohio 44280, and Patricia Burgess Barry, North Olmsted, Ohio, assignors to Douglas Koorey, Valley City, Ohio

Continuation-in-part of Ser. No. 881,385, May 11, 1992, Pat. No. Des. 337,028, which is a continuation of Ser. No. 756,675, Nov. 9, 1991, Pat. No. 5,139,222. This application Jun. 8, 1993, Ser. No. 74,066
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—311.2 **20 Claims**



1. A retractable apparatus for holding beverage cups and cans, said apparatus attached by attaching means to a supporting surface, said supporting surface extending in a generally vertical direction, said apparatus comprising:

a body, said body comprising first display means for displaying visible promotional material;

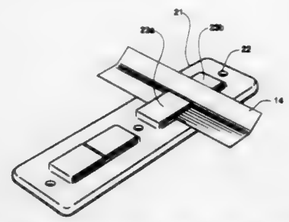
at least one movable member mounting on said body, said first movable member movable between a first position and a second position, said first movable member including aperture means therethrough for generally surrounding a circumferentially extending wall of a cup or can positioned in an upright condition in said aperture means when said movable member is in the first position, wherein in the second position of said movable member said first display means is visible through said aperture means.

5,328,144

TAMPER-PROOF TICKET HOLDER

Richard E. Donovan, Downington, Pa., assignor to Donovan Associates Inc., Exton, Pa.

Filed Jan. 25, 1993, Ser. No. 8,653
Int. Cl.[5] A44B *11/25*
U.S. Cl. 248—316.7 **3 Claims**



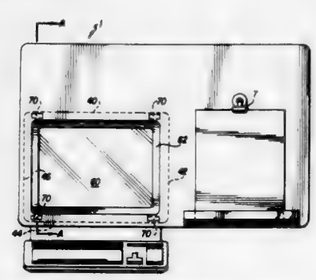
1. A ticket holder comprising a flat body of sheet material having a substantially rectangular opening in said flat sheet; said opening having two opposed transverse sides at each end of its length; two opposed fingers projecting toward each other from the two opposed transverse sides of said opening, each finger terminating in an outer edge and disposed in a plane above the plane of said opening; the outer edges of said fingers being positioned so as to enable one to depress at least one of said fingers to admit said ticket and to hold said ticket tightly between the outer edges of said opposed fingers; and means for mounting said ticket holder on the back of a seat of a railway car.

5,328,145

MOUNTING BOARD FOR VIDEO DISPLAY SCREEN HOUSING

Donald R. Charapich, 10332 Colony Park Dr., Fairfax, Va. 22032

Filed Mar. 19, 1993, Ser. No. 34,773
Int. Cl.[5] B41J *11/02*
U.S. Cl. 248—442.2 **27 Claims**



1. A mounting board for a video display screen contained in a housing having a front face surrounding the display screen, the front face being defined by a top surface, a bottom surface and first and second side surfaces, the mounting board comprising:

a planar sheet of material having an outer perimeter and an opening in one portion of the planar sheet within the outer perimeter, the opening extending through the planar sheet and having a perimeter shaped substantially correspondingly to a shape of the display screen;

stabilizers for attaching the planar sheet to the front face of the housing to mount the planar sheet on the front face of the housing, the stabilizers extending between the planar sheet and the front face of the housing;

the planar sheet including at least one other portion integral with and adjacent to the one portion having the opening,

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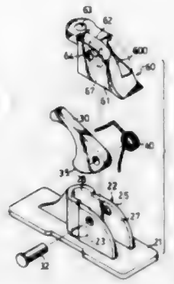
the at least one other portion extending generally parallel to a plane of the front face in a direction away from at least one of the top surface, bottom surface and the first and second side surfaces when the planar sheet is mounted on the front face of the housing.

5,328,146

CLAMPING DEVICE FOR MOLD BOARDS

Tai-Yuan Lin, No. 15, Lane 191, Sec. 1, Tung Shan Rd., Tai-chung, Taiwan

Filed Feb. 2, 1993, Ser. No. 12,429
Int. Cl.[5] E04G *17/00*
U.S. Cl. 249—219.1 **2 Claims**



1. A clamping device for clamping mold boards together comprising a base including a hole formed in a middle portion thereof, a bracket extended upward therefrom and including a pair of wall members having a space formed therebetween, a chamber communicated with said space and aligned with said hole of said base, a lever having a lower end pivotally coupled between said wall members and an upper end engageable with said bracket, means for biasing said upper end of said bracket to engage with said bracket, said lever including a plurality of teeth formed on said lower end and located within said chamber, and a cover engaged on said bracket for enclosing said bracket and including an upper surface having an opening formed therein on one end of said cover for extending therethrough of said upper end of said lever, said cover having a slit formed along a longitudinal direction of said upper surface and in communication with said opening, whereby, said upper end of said lever is engageable in said slit of said cover, said lower end of said lever is pivotally supported between said wall members by a pin, said cover including a panel extended downwardly therefrom for contacting said bracket wall members, said panel having an aperture formed therethrough for insert of said pin for retaining said cover in place.

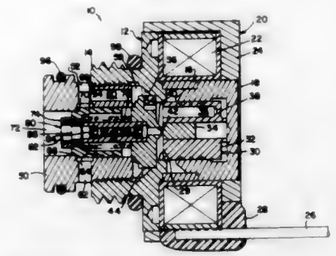
5,328,147

TWO STAGE PRESSURE CONTROL VALVE

Thomas J. Stobbs, Brookfield, Wis., assignor to Applied Power Inc., Butler, Wis.

Filed Jun. 17, 1993, Ser. No. 79,182
Int. Cl.[5] F16K *31/40, 31/383*
U.S. Cl. 251—30.02 **18 Claims**

1. In a two stage pressure control valve of the type having a fluid inlet, a fluid outlet, a valve seat between said inlet and outlet, a poppet movable toward and away from said seat to vary the cross-sectional area of a passageway from said inlet to said outlet, the position of said poppet being dependent in part upon the difference in pressure between a fluid pressure at said inlet which exerts a force on said poppet in one axial direction and a control pressure produced by a fluid flow from said inlet in a chamber which varies in volume as said poppet moves axially, said control pressure exerting a force on said poppet in an axial direction opposite from said one axial direction, said control pressure being controlled by an electromagnetic coil which can be variably energized to move an armature so as to vary a variable restriction downstream from said control pressure so as to vary said control pressure, an improvement wherein said variable restriction is formed by said armature and a valve seat, said armature having an axially facing surface



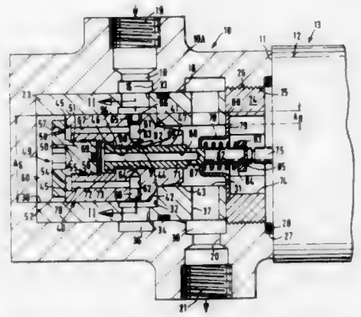
which is movable toward or away from said valve seat to vary said variable restriction and said chamber is in communication with said variable restriction through at least one orifice upstream of said variable restriction.

5,328,148

CONTROL DEVICE FOR HYDRAULIC PISTON/CYLINDER UNIT

Sandau Hartmut, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00748, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO92/07194, PCT Pub. Date Apr. 30, 1992
PCT Filed Sep. 21, 1991, Ser. No. 971,751
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1990, 4032078
Int. Cl.[5] F16K *31/363*
U.S. Cl. 251—30.04 **9 Claims**



1. A control device for a hydraulic work cylinder, comprising a housing having an inlet and an outlet, and a valve seat; a shut-off valve having a valve body cooperating with said valve seat of said housing and having a further valve seat, said valve body having an obtuse-angled cone which passes into a fine-control cone, and a transition provided between said cones and being rounded; a pilot valve member arranged in said valve body and cooperating with said further valve seat of said valve body under the action of a spring force, said housing and said valve body forming therebetween a pressure chamber so that said valve body under the action of a pressure in said pressure chamber is pressed against said valve seat of said housing, said pilot valve member having a valve member part and a plurality of pilot portions arranged in series; two throttles arranged in series so that said pressure chamber communicates with said inlet of said housing through said throttles and said pilot valve

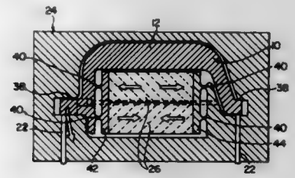
member is located between said throttles, said pilot valve member being arranged so that pressure forces acting on said pilot valve member are compensated, said pressure chamber being connected with said outlet of said housing through said pilot valve member and a passage which opens by said pilot valve member.

5,328,149

APPARATUS FOR OPERATING A VALVE ELEMENT

Martin Reuter, Dachau, Fed. Rep. of Germany, assignor to Marco Systemanalyse und Entwicklung GmbH, Dachau, Fed. Rep. of Germany

Filed Jun. 18, 1993, Ser. No. 79,446
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1992, 4220177
Int. Cl.[5] F16K *11/02*
U.S. Cl. 251—129.06 **7 Claims**



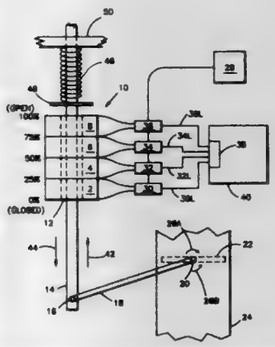
1. An apparatus for operating a valve element comprised of a base, a pivotally journalled operating lever opposite the base and a drive device which is secured to the base and engages the operating lever, at least one of the ends of the operating lever having an effect on the valve element, characterized in that the drive device includes two piezo-electric transistors which are constrained with a nonparallel orientation between the base and the operating lever such that they are moveable relative to the base and the operating lever about an axis parallel to the pivoting or rocking axis of the operating lever.

5,328,150

DIGITAL DAMPER ACTUATOR

Alfonso C. Guntiva, Champaign, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 1, 1993, Ser. No. 114,278
Int. Cl.[5] F16K *31/02*
U.S. Cl. 251—129.1 **9 Claims**



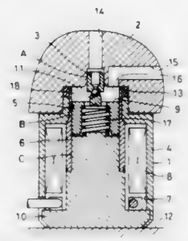
1. Apparatus for regulating the amount of air flow through an air duct comprising:
at least four electrically energizable magnetic coils effecting actuator incremental movements;
a shaft having a portion thereof slidably fitted within the bore of said coils and movable therealong in response to energization/de-energization of said coils;
a damper positionable within said air duct coupled to said shaft;
means responsive directly to digital signals from a control computer to energize/de-energize said coils;
whereby said damper is selectively positioned within said air duct in response to the movement of said shaft to thereby regulate the amount of air flow through said air duct.

5,328,151

SOLENOID VALVE

Koichi Hashida, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 5, 1993, Ser. No. 26,803
Claims priority, application Japan, Mar. 6, 1992, 4-049872
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.15 **3 Claims**



1. A solenoid valve, comprising:
a housing having an inner periphery and a pressure fluid passage, said pressure fluid passage having an inner end;
a valve seat fixed to said housing at the inner end of said pressure fluid passage, said valve seat having a passage extending therethrough;
a frame having a protruding end having a top end face, another end and an inner periphery;
a sleeve fixedly mounted to the inner periphery of said frame, said sleeve having an outer periphery;
an armature slidably mounted in said sleeve;
a valve body integral with said armature for opening and closing said passage extending through said valve seat;
a coil mounted in said frame for moving said armature to open and close said passage extending through said valve seat;
a yoke mounted in said coil and closing the other end of said frame, wherein said yoke, said frame and said armature define a magnetic circuit, and wherein the protruding end of said frame is disposed between the inner periphery of said housing and the outer periphery of said sleeve and has an outer diameter substantially equal to the diameter of the inner periphery of said housing and an inner diameter substantially equal to the outer diameter of said sleeve, such that a gap is defined by the inner periphery of said housing, the outer periphery of said sleeve and said top end face of said protruding end of said frame; and
a seal fitted in said gap.

5,328,152

FLUID CONTROL VALVE UNIT

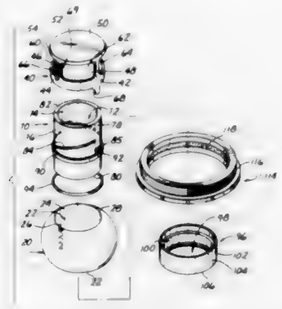
Steven T. Castle, Tahoe, Calif., assignor to Bruce Industries, Inc., Dayton, Nev.

Filed Jun. 29, 1992, Ser. No. 905,911
Int. Cl.[5] F16K *31/528;* **B60H** *1/34*
U.S. Cl. 251—229 **20 Claims**

1. A fluid control valve unit for variably controlling the discharge of fluid from a fluid source, comprising:
a housing having a wall defining a cavity extending axially therethrough;

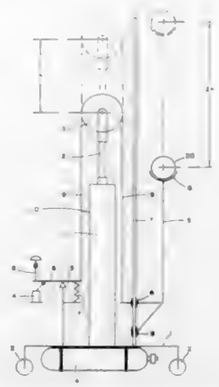
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an axially moveable and nonrotatable closure member received for progressive axial and nonrotating movement in said cavity between a closed position and a flow position;
said closure member including a sealing portion for engagement with said housing to prevent flow of fluid therebetween, an actuation portion for effecting axial movement thereof, and an aperture portion for passage of fluid;
said closure member being rotatably fixed in said cavity and being axially movable with respect thereto;
a rotatable and axially non-moveable actuator member in fluid communication with said closure member received for progressive rotating and nonaxial movement in said cavity and including an end extending out of said housing;
said actuator member having an outer peripheral surface and being located between said closure member and said housing whereby said closure member travels axially over the outer peripheral surface said actuator member during movement between the closed position and the flow position;
said actuator member being axially fixed in said cavity and being rotatable with respect thereto; said actuator member including cam means on said outer peripheral surface for engaging said actuation portion and operative upon rotation of said actuator member to effect progressive axial movement of said closure member towards and away from the closed position to permit flow of an amount of fluid related to the location of said aperture portion relative to said housing; and
a portion of said closure member overlying a portion of said actuator in all positions of said valve unit.



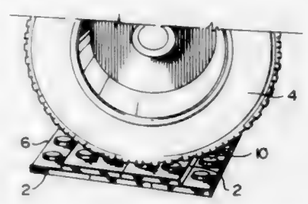
5,328,153
PNEUMATIC APPARATUS FOR LIFTING AND LOWERING
Valery Levinson, Karmiel, Israel, assignor to The State of Israel, Ministry of Defence, Rafael Armament Development Authority, Tel-Aviv, Israel
Filed Jul. 20, 1992, Ser. No. 916,946
Claims priority, application Israel, Jul. 26, 1991, 98975
Int. Cl.[5] B66F *7/20*
U.S. Cl. 254—2 R **5 Claims**

1. A mobile pneumatic apparatus serving as an auxiliary for manually lifting and lowering heavy objects comprising:
i) a trolley having mounted thereon a vertically reciprocable carriage for holding said heavy object;
ii) a vertically reciprocable pneumatic piston linked to a source of pressurized gas having an upward emerging piston rod carrying an idler pulley;
iii) a valve means assembly for controlling the gas flow in and out of said pneumatic piston and including a manually operable valve member for controlling backflow of pressurized gas from said pneumatic piston;
iv) sensor means responsive to the total weight of the carriage and cooperating with said carriage for actuation of said valve means assembly for the purpose of lifting such that the lifting force of the said pneumatic piston is always smaller by a predetermined amount from the total weight of the carriage; and



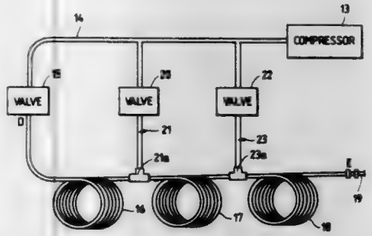
v) hauling means linking said carriage via said pulley to said sensor means.

5,328,154
MULTI-TIERED SYSTEM OF LEVELLER UNITS
Warren J. Blatz; David J. King, and Gordon G. Wilson, all of Calgary, Canada, assignors to Tri-Lynx Corporation Ltd., Galgary, Canada
Filed Sep. 18, 1992, Ser. No. 947,220
Int. Cl.[5] E02C *3/00*
U.S. Cl. 254—88 **18 Claims**



1. A wheel supporting leveller unit for recreational vehicles or any other vehicles to engage with other similar units to lift and support a wheel of a recreational vehicle or any other vehicle for lifting and levelling that vehicle, the unit comprising a planar body with upper and lower surfaces circumscribed by edges, pins upwardly extending from spaced locations on the upper surface, and pin-engaging pockets of contours to matably receive corresponding pins of other similar units formed in appropriate locations in the lower surface, the pins being slightly smaller than their corresponding pockets on said other units so as to provide association between the units by means of a loose engagement between certain of the pins of one unit and certain of the recesses of another one or more similar units, said pins having an octahedral shape in transverse cross-section and said body being composed of a discontinuous webbing containing a plurality of apertures extending between said upper and lower surfaces, said webbing providing lightweight strength and support of the units, said webbing being such as to form a plurality of similar triangles having a common central apex within each octahedral pin.

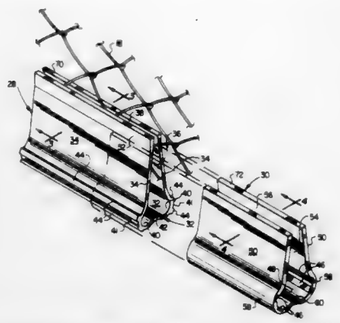
5,328,155
METHOD AND APPARATUS FOR LAYING AND COLLECTING A WIRE
Hiroaki Sano, Kanagawa; Kuni Hayashi, Tokyo; Yoshiaki Terasawa, and Shigeru Tanaka, both of Kanagawa, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Division of Ser. No. 944,307, Sep. 14, 1992, Pat. No. 5,263,686, which is a division of Ser. No. 563,757, Aug. 7, 1990, Pat. No. 5,163,657. This application Sep. 16, 1993, Ser. No. 121,426
Claims priority, application Japan, Aug. 7, 1989, 1-204227; Mar. 22, 1990, 2-72723
Int. Cl.[5] B65H *59/00*
U.S. Cl. 254—134.4 **1 Claim**



1. A wire laying apparatus comprising:
a first carrier member;
a second carrier member having one end connected to the first carrier member;
a communication wire disposed within the second carrier member;
a compressor means for supplying a fluid under pressure connected to a second end of the second carrier member whereby the fluid supplied by the compressor means serves to move the communication wire from the second carrier member to the first carrier member;
a pressure header connected to the compressor means and two branch tubes connected between the pressure header and the first carrier member, each branch tube having a branch tube valve disposed therein whereby each branch tube can be selectively opened and closed in operational co-operation with the movement of the communication wire;
at least one additional second carrier member with each additional second carrier member being serially disposed between the compressor means and the first carrier member and being provided with a communication wire disposed therein, further, each additional second carrier member being provided with a branch tube including a branch tube valve disposed between each additional second carrier member and the first carrier member whereby each branch tube can be selectively opened and closed in operational co-operation with the movement of teach of the communication wires.

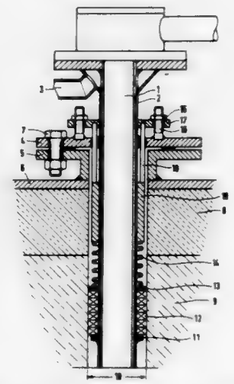
5,328,156
SELF-ATTACHING FENCE TRIM GUARD
Edward J. Hoke, 1407 Woodoak Dr., Richardson, Tex. 75082
Filed Sep. 21, 1992, Ser. No. 948,176
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—32 **23 Claims**

1. A self attaching fence trim edge protector installable on a pre-existing fence, comprising:
an elongated shaped resilient plastic body member formed by extrusion;
the body member having an interior surface and an exterior surface and a closed bottom and inwardly angled upstanding opposed side portions extending from the bottom and terminating in an open narrow neck portion adapted for gripping the bottom edge portion of a fence so that the bottom edge of a fence can be inserted into the neck with the side portions spread apart in gripping engagement with the fence to hold the body member in position without fasteners, and



a short extruded coupler member for covering said exterior surfaces of the joint between abutting ends of adjacent body members and extending along said closed bottoms.

5,328,157
METHOD AND AN APPARATUS FOR SEALING TUYERES IN THE SURROUNDING REFRACTORY LINING
Paul-Gerhard Mantey, Sulzbach-Rosenberg, Fed. Rep. of Germany, assignor to Klockner CRA Patent GmbH, Duisburg, Fed. Rep. of Germany
Filed Apr. 16, 1993, Ser. No. 47,187
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1992, 4213007
Int. Cl.[5] C21C *5/48*
U.S. Cl. 266—47 **13 Claims**



1. A method for sealing feed systems, wherein the feed systems are formed of metal and include tuyères and feed pipes for injecting media into metallurgical reaction vessels, wherein the feed systems penetrate a vessel lining formed of a refractory material, sad method comprising the steps of:
providing sealing means of elastically or plastically deformable material;
providing at least one of pneumatic, hydraulic, and mechanical means disposed to cooperate with aid sealing means;
installing said sealing means in a gap between the feed systems and the refractory material surroundings said feed systems such that said sealing means prevents a backflow

of media, wherein the sealing means is disposed upon an outer peripheral surface of the feed systems;

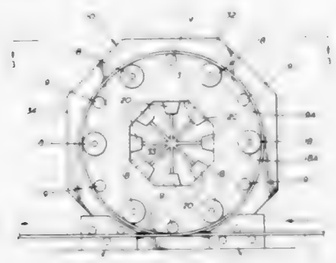
applying pressure directly to said sealing means with said at least one of sad pneumatic, hydraulic, and mechanical means in a direction of a longitudinal axis of the feed systems, to radially expand the sealing means to sealingly engage the feed systems and the refractory material surrounding the feed systems, wherein said pressure is applied in a constant and adjustable manner such that a position of the feed systems with respect to the refractory material remains unchanged.

5,328,158

APPARATUS FOR CONTINUOUS HEAT TREATING ADVANCING CONTINUOUSLY FORMED PIPE IN A RESTRICTED SPACE

Philip C. Lewis, Houston, and William M. Zernick, Sugar Land, both of Tex., assignors to Southwestern Pipe, Inc., Houston, Tex.

Filed Mar. 3, 1992, Ser. No. 845,213
Int. Cl.[5] C21D *9/54*
U.S. Cl. 266—103 **9 Claims**



1. An apparatus for continuously heat treating advancing continuously formed pipe in a restricted space and for minimal deformation of said pipe during said heat treatment comprising;

a pipe feeding means;

a series of powered rollers spaced apart in a circle of sufficient size within said heat chamber for tangential and non-deforming contact with said pipe for driving said pipe through said heat chamber for heat treatment;

a heat chamber for housing said series of powered rollers;

a heater means for providing heat to said heat chamber and said pipe;

a first deforming means for deforming said pipe just sufficiently into a curve for following said series of powered rollers upon said pipes advancing into said heat chamber and for directing said pipe to transverse across said rollers as said pipe is advanced around said rollers;

an second deforming means for receiving and deforming said pipe just sufficiently as it exits from said series of powered rollers into a substantially straight line; and

a take up means for receiving said pipe as it comes from said exit second deforming means.

5,328,159

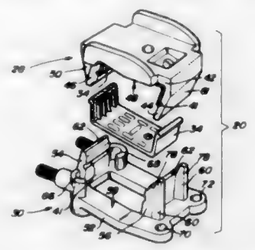
AXLE HOUSING ATTACHMENT ASSEMBLY

Ted J. Kaufman, Ossian; David G. Moses, Decatur, both of Ind., and Edward E. Stuart, Payne, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Aug. 18, 1992, Ser. No. 931,916
Int. Cl.[5] B60G *11/10*
U.S. Cl. 267—52 **10 Claims**

1. A mounting assembly for securing an axle housing to a suspension on a vehicle frame, said axle housing extending along a longitudinal axis, said mounting assembly comprising:

an upper bracket and a lower bracket spaced about the longitudinal axis, said upper bracket having a base, a first side wall, and a second side wall laterally spaced from said first side wall, said first side wall and said second side wall extending outwardly away from said base and forming a channel, said lower bracket having a base, a third side wall, and a fourth side wall laterally spaced from said third side wall, said third side wall and said fourth side wall extending outwardly away from said base and forming a channel, each said side walls having a ledge at the outermost portion away from each said base;



clamping means for tightening said upper and lower brackets around the axle housing; and

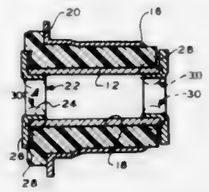
non-metal flexible couplings disposed in said upper and lower brackets, each said side wall of each said channel including a longitudinally extending recess, a portion of each said coupling being inserted into a respective said recess to maintain said coupling therein during assembly, said portion of each said coupling maintaining each said coupling within a respective said bracket prior to contact of said coupling with said axle housing.

5,328,160

RUBBER-METAL BUSHING

Ronald J. McLaughlin, Maumee, Ohio, assignor to The Pullman Company, Lebanon, N.J.

Continuation of Ser. No. 666,235, Mar. 8, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,113
Int. Cl.[5] F16F *1/38*
U.S. Cl. 267—141.3 **9 Claims**



1. An improved bushing for bearing column loads including an inner metal tube surrounded by an elastomer cylinder and a flanged ferrule press-fit into the metal tube at one tube end, the flange of the ferrule overlying a selected portion of an end surface of the elastomer cylinder, wherein the improvement therewith comprises:

the tube having a cylindrical wall defining a longitudinal axis along which said column loads are borne and a seam extending in the tube wall parallel to the axis; and

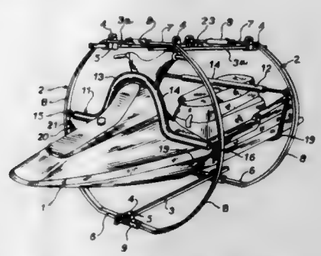
an adhesive at the interface of the metal tube and the ferrule.

5,328,161

ROTATABLE REPAIR APPARATUS

Andrew G. Stuck, 2627 Birchwood Ave., Appleton, Wis. 54914

Continuation of Ser. No. 783,576, Oct. 28, 1991, abandoned.
This application Jun. 21, 1993, Ser. No. 80,676
Int. Cl.[5] B25B *1/00*
U.S. Cl. 269—17 **9 Claims**



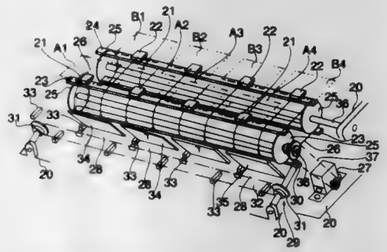
1. An apparatus for servicing a watercraft having an upper surface and a lower hull, comprising a pair of rings disposed in spaced parallel relation, a plurality of longitudinal adjustable connecting member connecting said rings together, each ring having a first flat portion and a second flat portion located diametrically opposite the first flat portion, the first flat portions of said rings lying in a first common plane and the second flat portions of the rings lying in a second common plane, a rigid support connected to each ring, each rigid support being secured to circumferentially spaced portions of the respective ring and disposed generally parallel to said flat portions, said supports disposed to engage the upper surface of said watercraft, and adjustable flexible clamping means connected to each ring and disposed to engage the hull of the watercraft and clamp the watercraft against said rigid supports, each clamping means being secured to circumferentially spaced locations on the respective ring, at least one of said rigid supports having a recess, said recess having an open side disposed to receive the upper surface of the watercraft and facing the corresponding flexible clamping means, said rings being manually rotatable from a first position where said first flat portions are engaged with a supporting surface and said watercraft is upright to a second position where the second flat portions are engaged with said surface and said watercraft is inverted.

5,328,162

COLLATOR WITH MULTIPLE ROWS OF FEEDERS

Koji Oishi, Kyoto, Japan, assignor to Horizon International Inc., Shiga, Japan

Filed Nov. 3, 1992, Ser. No. 971,047
Claims priority, application Japan, Nov. 5, 1991, 3-350560
Int. Cl.[5] B65H *39/04*
U.S. Cl. 270—58 **4 Claims**



1. A collator comprising:

a plurality of rows of sheet loading stations for receiving a supply of sheets to be collated, said plurality of rows of sheet loading stations being arranged in parallel arrangement with respect to one another;

a sheet receiving and transferring line having a plurality of sheet receiving stations aligned for receiving sheets from said sheet loading stations, said sheet receiving and transferring line being arranged in parallel arrangement with each of said row of sheet loading stations;

sheet feeding means providing for repeatedly feeding sheets together from each said row of sheet loading stations to said plurality of sheet receiving stations on said sheet receiving and transferring line, said sheet feeding means comprising a pair of shafts, one of said shafts disposed under an outermost row of sheet loading stations in parallel therewith, the other of said shafts disposed immediately in front of said sheet receiving and transferring line in parallel therewith, each of said shafts being provided with a first chain wheel at one of its ends; a pair of first endless chains extending between said pair of shafts through said first chain wheels; a motor for driving one of said shaft pairs through a drive belt; a plurality of connecting members extending between said pair of first endless chains, said plurality of connecting members being arranged at appropriate spaces; a plurality of clip means connected to each of said connecting members for picking out sheets together from the corresponding row of sheet loading stations so as to deliver the sheets to said sheet receiving stations on said sheet receiving and transferring line; sheet delivering means arranged for said each sheet loading station, said sheet delivering means being provided for delivering sheets one by one from said sheet loading station to said clip means;

means for transferring sheets received at said sheet receiving stations on said sheet receiving and transferring line to the respective next sheet receiving station on said sheet receiving and transferring line in order to receive sheets fed from another row of sheet loading stations according to a predetermined collation sequence;

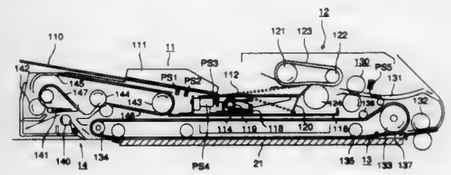
means for operatively interconnecting the sheet feeding operation of said sheet feeding means with the sheet transferring operation of said means for transferring sheets received at said sheet receiving stations on said sheet receiving and transferring line to the respective next sheet receiving stations on said sheet receiving and transferring line.

5,328,163

RECORDING SHEET FEEDING DEVICE

Yasushi Yamada, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 966,709
Claims priority, application Japan, Nov. 7, 1991, 3-291537; Nov. 7, 1991, 3-291538; Nov. 7, 1991, 3-291539
Int. Cl.[5] B65H *5/00*
U.S. Cl. 271—10 **32 Claims**



1. A sheet feeding device having a tray on which a plurality of sheets are stacked in a stack, feeding means for feeding said sheets stacked in said stack by contact therewith, separation means provided downstream of said feeding means in a downstream feeding direction, for separating said stacked sheets, one by one, from said stack, and at least one pair of conveyance rollers provided downstream of said separation means, in said

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downstream feeding direction, for conveying each of said separated sheets, said sheet feeding device further comprising:

(a) size detection means for detecting a size of said sheets in said stack, and for generating a size detection output signal indicative of the detected size of said sheets in said stack;

(b) pressing means for adjustably pressing said sheets in said stack so that a contact pressure between said feeding means and said sheets in said stack is adjustable based on said output signal from said size detection means;

(c) sheet edge detecting means provided downstream of said separation means, in said downstream feeding direction, for detecting an edge portion of each of said separated sheets;

(d) first and second driving means for driving said feeding means, said pressing means and said at least one pair of conveyance rollers;

(e) control means for controlling said first and second driving means; and

(f) a table including a plurality of variable and selectable pressure forces that are appliable by said pressing means and which are set in said table in accordance with said output signal of said size detection means; and wherein

said control means controls at least one of said first and second driving means to vary at least one of a speed of said feeding means, a pressure provided by said pressing means and a movement of said at least one pair of conveyance rollers based on a value set in said table that is selected based on said size detection output signal from said size detection means.

5,328,164

SHEET FEEDING DEVICE

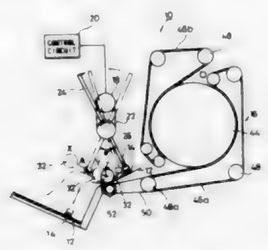
Norikazu Soga, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 800,111, Nov. 29, 1991. This application Jan. 12, 1993, Ser. No. 3,477

Claims priority, application Japan, Dec. 14, 1990, 2-402469; Dec. 14, 1990, 2-402471

Int. Cl.[5] B65H *3/08*

U.S. Cl. 271—12 **6 Claims**



1. A sheet feeding device for feeding sheets, one by one, from a stack of sheets, said device comprising:

a sheet separating means for attracting and holding an uppermost sheet of a stack of sheets, thereby taking out said uppermost sheet from the stacked sheets, said sheets separating means being swingable at a given angular range;

a delivering means for receiving said uppermost sheet from said sheet separating means and for delivering said uppermost sheet to a succeeding station;

a drive source for swinging said sheet separating means; and

a controlling means for swinging said sheet separating means at, a first angular velocity through a first angle and subsequently at a second angular velocity, which is lower than said first angular velocity, for delivering said uppermost sheet to said delivering means.

5,328,165

DEVICE FOR THE TAKE-UP OF PLANE SHEETS WITH PEEL-OFF BY TURBULENT AIR FLOW

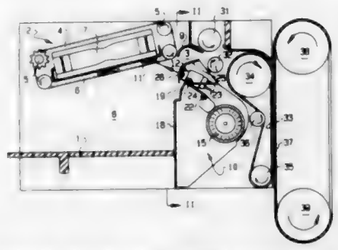
Guy Martin, Rue des Alisiers 4, Flémalle, Belgium 4400

PCT No. PCT/BE89/00012, § 371 Date Oct. 16, 1991, § 102(e) Date Oct. 16, 1991, PCT Pub. No. WO90/11240, PCT Pub. Date Oct. 4, 1990

PCT Filed Mar. 17, 1989, Ser. No. 768,400

Int. Cl.[5] B65H *3/14*

U.S. Cl. 271—98 **10 Claims**



1. A device for the take-up of pane sheets from a stack of sheets arranged on a feed table (**1**) including in combination, a sheet take-up device (**2**) and a peel-off device (**10**), said peel-off device comprising:

an air-flow generator (**15**),

guide means (A, B) movable between a first position for directing a turbulent air flow produced by said generator (**15**) onto at least one side of the sheet stack and a second position,

a sheet-presence detector having a field of detection and mounted above the feed table (**1**) for generating a detection signal (D), and

a control device (**14**) being responsive to said detection signal (D) for moving said guide means, wherein the control device (**14**) compares the value of the detection signal (D) with at least one reference value (R) representing the thickness of a sheet of material to determine whether a sheet is present in said field of detection of the sheet-presence detector (**11**), and generates in response to said comparison a first control signal (CD1) for moving said guide means (A, B) to position said guide means in said first position to direct the turbulent air flow on the sheet stack when there is no sheet present in the field of detection of the detector (**11**).

5,328,166

RECORDING PAPER SIZE DISCRIMINATING STRUCTURE

Satoshi Hokamura, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,187

Claims priority, application Japan, Aug. 27, 1991, 3-296728

Int. Cl.[5] B65H *1/00*

U.S. Cl. 271—171 **9 Claims**



1. A recording paper size discriminating structure for discriminating a recording paper size of recording papers which are accommodated in a recording paper cassette, the recording paper cassette being detachably attached to an imaging apparatus, the recording paper cassette including opposed side edges, a front edge, and a rear edge, the opposed side edges and the front and rear edges defining a periphery of said recording paper cassette, and wherein the recording papers are cut in a predetermined size, said recording paper size discriminating structure comprising:

means for identifying said accommodated recording papers, said means for identifying being provided on and within the periphery of the recording paper cassette; and

detecting means for contacting and detecting said means for identifying, said detecting means being disposed on said imaging apparatus and within the periphery of the recording paper cassette, when the recording paper cassette is attached to the imaging apparatus.

5,328,167

SHEET FEED APPARATUS

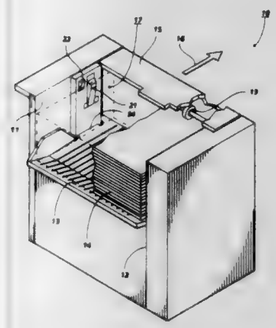
Nicholas Frank, London, United Kingdom, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 3, 1992, Ser. No. 940,139

Claims priority, application United Kingdom, Sep. 11, 1991, 9119479

Int. Cl.[5] B65H *9/12*

U.S. Cl. 271—241 **10 Claims**



1. A sheet feeding apparatus, comprising:

means for supporting a stack of sheets;

a registration edge;

means for advancing outermost sheets from the stack thereof;

means for applying a force on the stack of sheets to urge the stack of sheets against said registration edge, said force applying means comprising a plurality of force applying elements; and

means, responsive to the stack of sheets being of a preselected thickness, for reducing the force exerted by said applying means on the stack of sheets to prevent buckling thereof by disengaging at least one of said force applying elements.

5,328,168

HIERARCHY OF JAM CLEARANCE OPTIONS INCLUDING SINGLE ZONE CLEARANCE

Elizabeth D. Fox, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 12, 1993, Ser. No. 45,288

Int. Cl.[5] B65H *7/06*

U.S. Cl. 271—259 **21 Claims**

1. In an image processing apparatus for producing images on copy sheets, the apparatus including a copy sheet path defined by a plurality of copy sheet clearance zones, a copy sheet drive, and a controller for directing the image processing apparatus, the controller tracking the movement of the copy sheets along the copy sheet path by reference to the clearance zones, the clearance zones being the zones of access for removal of copy sheets from the copy sheet path, the method of recovery from a jam of a first copy sheet in a first clearance zone comprising the steps of:

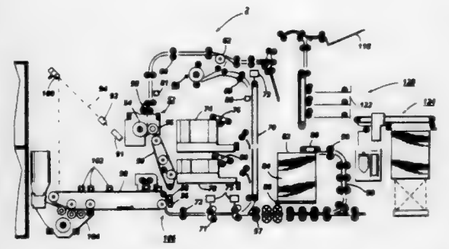
determining the stopped position of the first copy sheet;

estimating the stopping position of the first copy sheet, if not jammed, during a machine cycle down;

specifying the stopping position of a second copy sheet, the second copy sheet trailing the first copy sheet in the copy sheet path;

calculating the position of the trail edge for the second copy sheet;

comparing the lead edge of the second copy sheet to the first clearance zone;



comparing the trail edge of the second copy sheet to the first clearance zone;

if the trail edge of the second copy sheet is within the first clearance zone, then immediately shutting down the machine for accessing the first and the second copy sheets from the first clearance zone; and

if the trail edge of the second copy sheet is within a second clearance zone, then calculating a time period to continue machine operation to drive the second copy sheet along the copy sheet path for access from the first clearance zone.

5,328,169

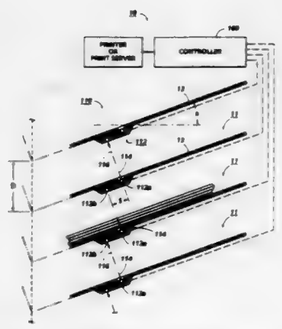
MAILBOX OR SORTER BIN USE SENSING SYSTEM

Barry P. Mandel, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 5, 1993, Ser. No. 57,069

Int. Cl.[5] B65H *39/10*

U.S. Cl. 271—290 **6 Claims**



1. In a multi-bin sheet collecting system for a reproduction apparatus, in which printed sheets may be directed to selected bins of an array of said bins for job separation, sorting, and/or user mailboxing, to stack on a tray member in said selected bin, the improvement wherein the removal of printed sheet from individual said bins may be sensed to indicate the availability of

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individual bins for the direction of further printed sheets therein, comprising:

one individual integral optical transmitter/receiver unit mounted in one aperture in each said bin tray member, in an area of said tray member to be overlaid by sheets stacked thereon;

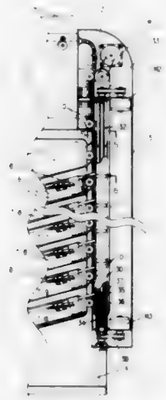
each said integral optical transmitter/receiver unit having a light transmitting element for transmitting a first light beam in a first direction towards another said optical transmitter/receiver unit in a next adjacent said bin of said array in said first direction;

each said integral optical transmitter/receiver unit also having a light beam receiving element for receiving a second light beam from another said optical transmitter receiver unit in another next adjacent said bin of said array;

said light beam receiving element generating an electrical bin empty signal in response to receiving said second light beam unless said second light beam is blocked by sheets in said tray member of said another next adjacent bin;

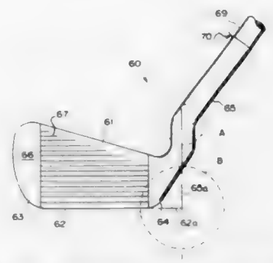
and a controller operatively connected to said integral optical transmitter/receiver units to indicate which said bins are empty and available in response to said respective electrical bin empty signals and to indicate which said bins have unremoved printed sheets therein and are unavailable in response to the absence of said respective electrical bin empty signals.

5,328,170
LOCKED DRAWER SORTER
Peter M. Coombs, Tustin, and Bradford Billings, Lake Forest, both of Calif., assignors to Gradco (Japan) Ltd., Tokyo, Japan
Filed Mar. 10, 1992, Ser. No. 849,223
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—297 **2 Claims**



1. A sorter for use with a sheet printing machine comprising:
a housing, a plurality of sorter trays disposed in said housing in longitudinally extended vertically spaced relation, sheet feeding means for directing sheets to said trays to form sets of sheets, said trays being slidably supported in said housing to be partially removed from said housing, means normally locking said trays in said housing against sliding movement, and means selectively operable to release the locking means for one of said trays while the rest of said trays remain locked by said locking means, said sheet feeding means including a deflector at each tray normally permitting travel of a sheet past the trays, each said deflector being individually shiftable to a position to direct a sheet into a selected tray, and including actuator means for selectively shifting one of said deflectors to said position directing a sheet to a tray, said means to release the locking means for one of said trays being incorporated in said actuator means for independent operation to release the locking means or to shift one of said deflectors.

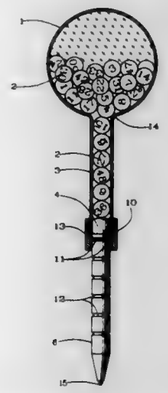
5,328,171
IRON OR WOOD GOLF CLUB
Tatsuya Saito, 4-21-4 Seijo, Setagaya-ku, Tokyo, Japan
Filed Mar. 17, 1993, Ser. No. 32,118
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] A63B *53/02*
U.S. Cl. 273—80 C **17 Claims**



16. A golf club of other than a putter, comprising:
(a) a club head, including a striking surface having a horizontal leading edge, and having a heel member at an end of the striking surface;
(b) a hosel member, including a first hosel portion and a second hosel portion formed integrally with each other; the first hosel portion being connected to an end of the heel member remote from the striking surface and extending from the end of the heel member in an upward direction so as to define a predetermined angle with the leading edge; the second hosel portion being bent toward a horizontal direction relative to the first hosel portion, so that the second hosel portion extends from the first hosel portion at an obtuse angle relative to the first hosel portion; and
(c) a straight shaft member secured to, axially aligned with, and extending away from the second hosel portion.

5,328,172
COMBINATION GAME OF CHANCE SELECTION DEVICE AND WRITING PEN
Manfred Jagiella, 4026 Devonshire Dr., Marietta, Ga. 30066
Filed May 20, 1993, Ser. No. 64,976
Int. Cl.[5] A63F *7/04, 9/04;* **B43K** *29/00*
U.S. Cl. 273—144 B **3 Claims**

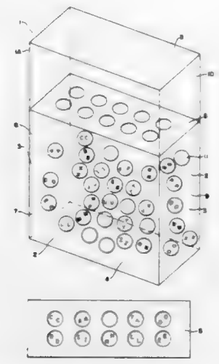
1. A lottery number selector comprising:
a container having an internal periphery sized and shaped to contain a desired plurality of solid objects, the container having an exit aperture therein sized to dispense the solid objects therethrough,
a desired plurality of solid objects having substantially equal dimensions and density contained in the container,
at least one symbol inscribed visibly on an outside surface of each of the solid objects positioned in the container,
a receiver tube with an inside periphery having a tube entrance at a proximal end in communication with the exit aperture in the inside periphery of the container,
a size and shape of the tube entrance designed for fall of solid objects one-at-a-time from the container into the receiver tube with the receiver tube positioned in a downward attitude in relation to the container,
a distal end of the receiver tube with an exit restriction designed to prevent exit of any solid objects received in the receiver tube from the container,
a size and shape of the inside periphery of the receiver tube to receive a predetermined number of the solid objects linearly from the container,
a wall of the receiver tube that is sufficiently transparent for visual detection of the symbol on the outside surface of each solid object that enters the receiver tube from the container,
a control sleeve attachable rigidly to an outside periphery of the distal end of the receiver tube and having a ring section of the control sleeve extended a desired distance beyond the distal end of the receiver tube,
an inside periphery of the ring section of the control sleeve sized and shaped to receive a control shaft,



a control shaft attachable to the exit restriction and sized and shaped to fit in sliding contact with the inside periphery of the control sleeve and with the inside periphery of the receiver tube,
a sleeve ring groove in the inside periphery of the control sleeve,
a plurality of shaft ring grooves in the outside periphery of the control shaft separated at increments that are equal to a width of the solid objects, and
a control ring having an outside periphery attachable to the sleeve ring groove and having a double-wedged inside periphery engageable with the shaft ring grooves.

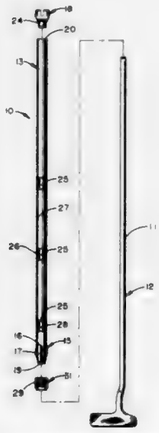
5,328,173
DEVICE FOR THE RANDOM SELECTION OF LETTERS AND GAME UTILIZING SAME
Leon M. Stern, P.O. Box 1301, McAfee, N.J. 07428
Filed Jun. 25, 1993, Ser. No. 83,107
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—144 B **17 Claims**

1. A device for the random selection of letters, which comprises:
a container which has a closed top end and a closed bottom end, wherein said container has an inner chamber, and further wherein said top end is transparent;
a plate which is located within said inner chamber and which divides said inner chamber into a lower chamber and an upper chamber, wherein said plate has a plurality of holes therethrough;
a fluid which is located within said inner chamber; and
a plurality of balls which have letters thereon which are submerged in said fluid, wherein said balls are one of composed of and filled with one of a substance, gas and air which has a specific gravity which is lower than the specific gravity of said fluid, and further wherein said balls have a diameter which is larger than the diameter of each of said plurality of holes, and further wherein one of said



balls partially enters each of said holes in said plate when said device is placed upright.

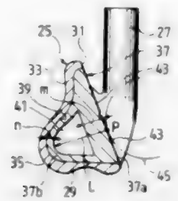
5,328,174
EXTENSIBLE GOLFING DEVICE AND BALL RETRIEVER
Robert P. Reeder, 1302 Barksdale Rd., Newark, Del. 19711
Filed Jun. 1, 1993, Ser. No. 69,437
Int. Cl.[5] A63B *53/12, 53/16*
U.S. Cl. 273—162 E **5 Claims**



1. An extendible shaft apparatus for golf clubs comprising:
(a) a shaft of a golf club slidingly enclosed within a tubular handle member;
(b) a gripping means, on one end of the tubular handle member, to releasably grip the shaft of the golf club; and
(c) at least one shaft guide and alignment bushing having an outside surface, intimately engaging an inner wall of the tubular handle member, and an inside surface slidingly engaging the shaft of the golf club.

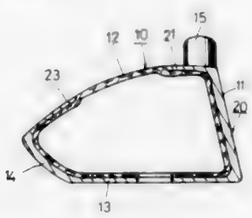
VOL 1164 ISS 2 JL 12 1994 UMI

5,328,175
GOLD CLUB HEAD
Magoichi Yamada, Tokyo, Japan, assignor to Daiwa Golf Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 47,282
Claims priority, application Japan, Apr. 27, 1992, 4-27586
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—167 H 11 Claims



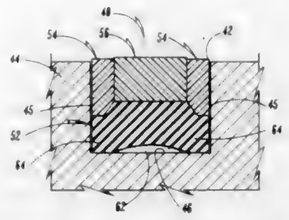
1. A golf club head comprising:
a main body made of a first material and formed with a recess, and a face portion defining an open end of said recess; and
a face plate made of a second material more elastic than said first material and formed with a closed air-chamber embedded therein, wherein said face plate is securely received in said recess and defines a ball hitting surface, and wherein said face portion circumscribes said ball hitting surface.

5,328,176
COMPOSITE GOLF HEAD
Kun-Nan Lo, No. 33, Hsiang-Ho Rd., Li-Lin Tsun, Tan-Tzu Hsiang, Taichung Hsien, Taiwan
Filed Jun. 10, 1993, Ser. No. 74,937
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—167 H 2 Claims



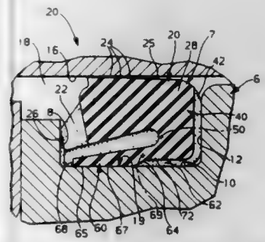
1. A Composite golf head comprising:
a head portion which is made of a carbon fiber composite material, said head portion having a front face, a rear face opposed to said front face, a partially exposed top face, and a bottom face opposed to said top face; and
an exposed metal reinforcing plate fixed to said front face, said metal reinforcing plate having an upper extension fixed to a first part of said top portion, and a lower extension fixed to and wrapping around said bottom face and said rear face and extending to a second part of said top face, the second part of said top face being spaced from and opposed to the first part of said top face.

5,328,177
CONTAMINANT RESISTANT PISTON SEAL WITH ENERGIZED BACKUP SCRAPERS
Paul D. Lair, 1232 Summer Cir., Okoboji, Iowa 51355, and Paul D. Parker, 2009 NW. 10th St., Ankeny, Iowa 50021
Continuation of Ser. No. 868,974, Apr. 16, 1992, abandoned.
This application Sep. 24, 1993, Ser. No. 126,678
Int. Cl.[5] F16J 9/06
U.S. Cl. 277—1 11 Claims



1. A contamination resistant cylinder and piston assembly comprising,
a piston movable in a cylinder having a cylinder wall and a central longitudinal axis, said piston including an annular groove facing said cylinder wall, said groove having opposite side walls and an interconnecting bottom wall,
a contamination resistant seal assembly positioned in said groove and having a free state, a preloaded state, and a pressure loaded state and comprising,
a load ring on the bottom wall of said groove and having a radial inner surface and an outer surface and opposite side walls, said bottom wall of said annular groove and said radial inner surface defining a recess therebetween in said free state,
said outer surface including a center surface portion spaced radially outwardly from oppositely disposed feet,
said feet including ramp surfaces which slope towards each other and towards said center surface portion,
said ramp surfaces at their ends opposite said center surface intersect step surfaces which are parallel to said central longitudinal axis and extend to said opposite side walls,
a seal ring mounted on the center surface portion of the outer surface,
a pair of backup rings radially supported on said oppositely disposed feet and ramp surfaces, said backup rings having a cylindrical radial outer surface parallel to said longitudinal axis, inner and outer side walls, and an inner surface for mating with said feet and ramp surfaces,
said piston assembly being in said free state before being assembled into said cylinder, and said piston assembly after said seal ring, load ring, and backup rings are positioned thereon having a combined diameter which is greater than said cylinder,
wherein said preloaded state occurs upon assembly of said piston assembly into said cylinder to put said seal ring in sealed engagement with said cylinder wall and creates a radially compressive force directed toward said load ring center surface portion; said load ring being axially constrained by said piston groove such that said load ring radial inner surface responds by moving into said recess and toward said bottom wall; said force also causing said feet to move radially outward and said backup ring mating surfaces supported thereon to move along said ramp surfaces toward said center surface portion and radially outwardly toward said cylinder wall into contamination scraping engagement with the same, and
wherein said pressure loaded state occurs when said piston assembly is exposed to lateral fluid pressure within the cylinder wall and said pressure acts on said outer side wall of one of said backup rings to further force the same up said ramp surfaces toward said center surface portion and outwardly into contamination scraping engagement with said cylinder wall.

5,328,178
BRAKE MASTER CYLINDER SEAL
David L. Nies, Beavercreek, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 14, 1992, Ser. No. 960,643
Int. Cl.[5] F16J 15/32
U.S. Cl. 277—205 1 Claim

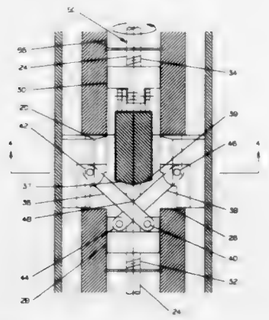


1. A ring seal for sealing a movable master cylinder piston in a bore of a master cylinder housing, the ring seal dividing the bore into first and second chambers, the ring seal being fitted within a generally rectangular groove of the piston, the groove having front and rear walls joined by a floor, the ring seal preventing fluid communication from the first chamber to the second chamber up to and including high pressure differentials and allowing fluid communication from the second chamber to the first chamber under very low pressure differentials, the seal comprising:
a thick radially outer annular lip for sealing engagement with the master cylinder bore having a front end and a rear end, the front end extending toward the first chamber, the radially outer annular lip having a series of transverse slots along its front end to allow fluid communication between inner and outer sides of the radially outer annular lip when the radially outer annular lip is contacting the front wall of the groove;
a mid-body portion integrally joined to the radially outer annular lip rear end extending generally parallel with the piston groove rear wall having a series of flow paths along its side adjacent the rear groove wall; and
a thin radially inner annular lip with front and rear ends, the rear end being integrally joined with the mid-body portion and the radially inner annular lip having a series of flow paths aligned with the flow paths of the mid-body portion terminating at a position forward of the mid-body portion along the radially inner annular lip's inner surface which is adjacent to the groove floor, and the radially inner annular lip having a length shorter than that of the radially outer annular lip with the front end spaced away from the front groove wall, the radially inner annular lip front end having a diameter smaller than the radially inner annular lip rear end with an interference fit with the groove floor, the radially inner annular lip having a center of bending with the mid-body forward of a center of bending of the radially outer annular lip with the mid-body and the radially inner annular lip being far more responsive to pressure differentials between the first and second pressure chamber than the radially outer annular lip.

5,328,179
FURNISH COMPOSITION
Joel Muse, Kent; Dane K. Parker, Massillon, and Robert F. Roberts, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 559,129, Jul. 27, 1990, Pat. No. 5,074,963.
This application Nov. 4, 1991, Ser. No. 787,181
Int. Cl.[5] B65D 53/00; F02F 11/00; F16J 15/00; D21H 11/00
U.S. Cl. 277—227 10 Claims

1. A furnish composition which is comprised of (a) at least one rubber having pendant blocked isocyanate groups bound thereto wherein said rubber is comprised of repeat units which are derived from one or more diene monomers, (b) at least one water insoluble compound which contains at least 2 Zerewitinoff active hydrogens, (c) at least one fiber, and (d) water.

5,328,180
RIGID CLAMP
Gilbert L. Benavides, and Jack D. Burt, both of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.
Filed Apr. 16, 1993, Ser. No. 49,683
Int. Cl.[5] B23B 31/40
U.S. Cl. 279—2.16 32 Claims



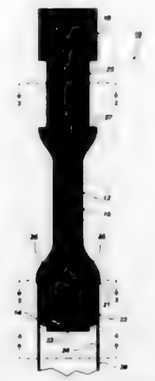
1. An apparatus for selective fixation of an object to another comprising:
a housing;
at least two shoes movably mounted to said housing;
drive means mounted to said housing further comprising:
at least one driver;
at least one shaft operably connected to said driver;
at least one linkage connecting said shaft to said shoe for selective movement of said shoe from a retracted position to an extended position for selective contact with the object; and
lost motion means for allowing said driver to move one of said shoes after contact by another of said shoes with the object prevents its further movement.

5,328,181
LOW ENERGY TRANSFER MANDREL AND PROCESS FOR USING MANDREL
Alan B. Mistrater; Stanley J. Pietrzykowski; Alfred O. Klein, all of Rochester; Loren E. Hendrix, Webster; Mark Petropoulos, Ontario; Paul L. Jacobs, Webster; Gary A. Batt, Fairport; Eugene A. Swain, Webster, and Alexander A. Antonelli, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 23, 1992, Ser. No. 996,227
Int. Cl.[5] B23B 31/40
U.S. Cl. 279—2.17 13 Claims

1. A mandrel for transporting hollow electrostatographic drums comprising an elongated arm having a first end and a second end, an expandable disk shaped member supported at said first end and means supported at said second end to expand

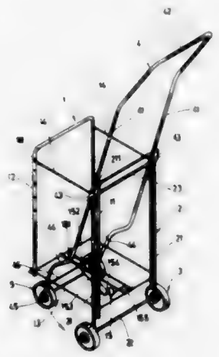
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said expandable disk, said mandrel arm comprising an elongated body having an imaginary axis and at least three fins extending substantially radially from said body, each of said fins having an alignment shoulder adjacent said first end



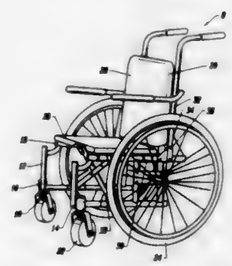
adapted to receive an end of a hollow cylinder and to coaxially align said cylinder with said elongated arm, said elongated body and said fins occupying less than about 25 percent of the internal cross-sectional area of said cylinder and at least.

5,328,182
TROLLEY CLIMBABLE ON STAIRCASE
Ya-Hua Kuo, P.O. Box 55-1670, Taipei, Taiwan
Filed Jul. 12, 1993, Ser. No. 89,589
Int. Cl.[5] B62B *5/02*
U.S. Cl. 280—5.32 **1 Claim**



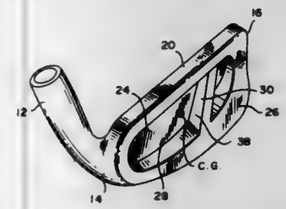
1. A trolley comprising:
a basket generally parallelpiped shaped and comprised of a rear grating secured to a rear frame, a front grating, a bottom grating and two side gratings, having a pair of rear wheels rotatably mounted on a lower portion of the rear frame and having a guiding plate secured on the bottom grating and generally sloping rearwardly downwardly recessed with a lowest groove in the guiding plate; and
a handle means pivotally secured to the rear frame having a pair of front wheels rotatably mounted on a lowermost portion of the handle means, and having a bottom supporting rod formed on a lower portion said handle means and operatively biased to retract the front wheels rearwardly towards the rear wheels to engage the lowest groove in said guiding plate for moving a gravity center of the basket rearwardly to approximate a person carrying the trolley adapted for safely climbing a staircase; said rear frame secured with the basket including a rear axle transversely secured on a lower portion of the rear frame passing through two side bars of the rear frame for rotatably mounting the pair of rear wheels on the rear axle, each said side bar having an upper inclined portion formed on an upper portion of each said side bar for resting the handle means when folding the handle means towards the rear frame, having a pivot rod transversely formed on an upper portion of the rear frame for pivotally connecting the handle means by means of a fulcrum lug secured with the handle means;
said handle means including: two straight bar portions parallelly disposed on two opposite sides of the basket having a U-shaped handle formed on an upper portion of each straight bar portion for connecting the two straight bar portions for pushing or pulling the trolley, each said straight bar portion having said fulcrum lug secured thereon for pivotally securing the straight bar portion to an upper portion of each said side bar of the rear frame, a front axle transversely secured on a lowermost portion of the handle means for rotatably mounting said pair of front wheels on the front axle, and the bottom supporting rod transversely formed on a lower portion of the handle means above the front axle for slidably engaging the guiding plate formed on a bottom portion of the bottom grating of the basket; and said guiding plate including a front plate portion secured to a front portion of the bottom grating of the basket, a front groove recessed in between the front plate portion and a sloping portion with the sloping portion inclined rearwardly downwardly from the front plate portion towards said pair of rear wheels mounted on said rear frame, said lowest groove recessed in said lowermost portion of the sloping portion of the guiding plate adjacent to the rear wheels, and a rear plate portion secured to a rear portion of the bottom grating of the basket.

5,328,183
FOLDING WHEELCHAIR FRAME
David M. Counts, Fresno, Calif., assignor to Quickie Designs Inc., Fresno, Calif.
Filed Nov. 5, 1992, Ser. No. 972,128
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—42 **24 Claims**



1. A foldable frame for a lightweight wheelchair comprising:
(a) a pair of side frame assemblies each having a substantially horizontally oriented upper side frame member extending for attachment of a seat assembly directly thereto; and
(b) a scissors-type cross bracing assembly mounted between said side frame assemblies for movement of said side frame assemblies between a deployed position and a collapsed position, said cross bracing assembly including a pair of cross bracing members pivotally coupled to each other intermediate opposite ends of said cross bracing members by cross bracing pivot means, and said cross bracing members each being pivotally coupled proximate upper ends thereof by a frame pivot assembly to the upper side frame members for vertical displacement of said upper ends relative to the upper side frame members and each being pivotally coupled proximate lower ends thereof to a remainder of said side frame assemblies, and at least one of said cross bracing members being formed for cooperative interengagement with one of: (i) an upper member of said side frame assemblies and (ii) a frame pivot assembly to secure said cross bracing members in a weight-supporting condition in said deployed position.

5,328,184
IRON TYPE GOLF CLUB HEAD WITH IMPROVED WEIGHT CONFIGURATION
Anthony J. Antonious, 7738 Calle Facile, Sarasota, Fla. 34238
Continuation of Ser. No. 647,971, Jan. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 290,903, Dec. 28, 1988, Pat. No. Des. 320,056, and Ser. No. 419836, Oct. 11, 1989, Pat. No. Des. 327,308. This application Sep. 1, 1992, Ser. No. 938,670
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169 **26 Claims**



1. An iron type golf club head for hitting a ball along an intended line of flight, said iron type golf club head comprising:
a hosel, a heel, a toe, a ball striking face, a rear wall opposite said ball striking face, an upper surface including a top ridge, a lower surface including a sole, a center of gravity centrally located relative to said ball striking face, a peripheral masslocated on said rear wall at an outer extremity of said club head, said peripheral mass and said rear wall defining a centrally located cavity formed within said peripheral mass; and
a single weight member formed on and attached solely to said rear wall within said cavity, said weight member consisting essentially of a single back bar mass extending between an edge of said peripheral mass located adjacent said lower surface and an edge of said peripheral mass located adjacent said upper surface, said back bar mass being sized to provide a significant mass at its point of location to enhance the energy transfer of a golf ball being struck during the execution of a golf stroke, and said entire back bar mass being offset and completely spaced from the club head's center of gravity.

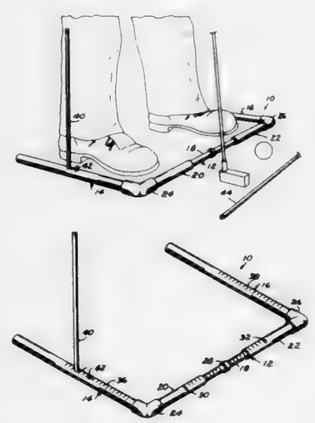
5,328,185
GOLF PUTTER
Harry J. Finnigan, 1236 Mariana Ct., and Thomas A. Murphy, 875 S. Heathwood Dr., both of Marco Island, Fla. 33937
Filed Jan. 29, 1993, Ser. No. 11,167
Int. Cl.[5] A63B *69/36, 53/16*
U.S. Cl. 273—186.2 **11 Claims**

1. A golf putter, comprising:
(a) a club head having a ball-striking face formed thereon,
(b) shaft means for moving said club head to strike a golf ball, said shaft means having a lower end affixed to said club head, said shaft means extending upwardly from said club head and terminating in an upper end which is to be held in a fulcrum-anchor position against the front of a golfer's body by one of the golfer's hands and,
(c) shaft grip section means positioned intermediate said upper and lower ends of said shaft means, said shaft grip section means extending backwardly away from and substantially transverse to a plane defined by said ball-striking



face of said club head, said shaft grip section means being positioned along the length of said shaft means a predetermined distance from said upper end of said shaft means so that with said upper end of said shaft means held against the upper front portion of a golfer's body with the head of one arm, the golfer's other arm may be fully extended to grip said shaft grip section.

5,328,186
GOLFER'S STANCE GUIDE
Richard A. Hanson, and Gregory S. Petree, both of P.O. Box 5043, Shawnee, Okla. 74801
Filed Jun. 7, 1993, Ser. No. 73,361
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187 R **2 Claims**

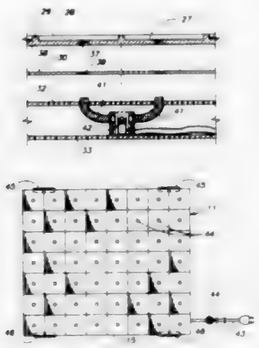


1. A golf stance guide, comprising:
an inverted U-shaped tubular member having a telescopically extensible straight bight portion and parallel legs and adapted to be disposed on a playing surface and having the spacing between its legs substantially equal with the width of a golfer's shoulders for defining the optimum spacing of a golfer's feed and respective end portions of the bight portion adjacent the toes of a golfer's shoes and oriented substantially parallel with a desired target line,
said bight portion including:
a center member;

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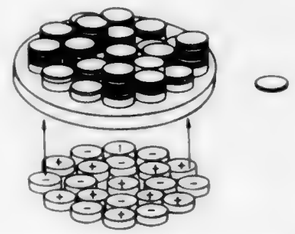
end members telescopically receiving respective end portions of the center member; and,
elbows removably connecting the end members with the respective said legs.

5,328,187
CHESS GAME APPARATUS
Laura S. De Marchi, Pedernera 1407, San Luis, Argentina 5700
Filed Mar. 8, 1993, Ser. No. 27,649
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—237 **1 Claim**



1. A chess game apparatus, comprising,
a first chess board, a second chess board, and a third chess board, wherein the first chess board is arranged in a spaced relationship relative to the second chess board and to the third chess board, with the second chess board spaced from the first chess board and the third chess board, wherein the first chess board includes a first board first end spaced from a first board second end, the second chess board having a second board first end and second board second end, the third chess board having a third board first end spaced from a third board second end, with a predetermined number of parallel rows extending from each first end to each second end of each respective chess board,
and
each of the rows having a predetermined number of spaces, and
the first chess board having first game tokens of a first coloration, the second chess board having second tokens of a second coloration, the third board having third tokens of a third coloration, wherein the tokens are arranged for movement among the first chess board, the second chess board, and the third chess board for movement from one of the first ends to a further one of the first ends of an adjacent game board of said first, second, and third game boards, and the tokens arranged for movement from each second end of said first board second end, said second board second end, and said third board second end to a further second end of an adjacent game board of said first, second, and third game boards,
and
each token includes a token base, each token base having a base bottom wall, and each base bottom wall including a ferromagnet member mounted therewithin, and each chess board of said first, second, and third chess boards including a transparent top wall, a ferrous metallic web positioned below each transparent bottom wall, and a housing positioned below the ferrous web, with the tokens arranged for magnetic adherence to each ferrous web of each game board,
and
each game board first end includes first magnets of a first polarity, and each game board second end includes second magnets of a second polarity to permit magnetic adherence of the first, second, and third game boards together in a random pattern,
and
each game board housing includes a plurality of illumination housings, each illumination housing includes a plurality of fiber optic cables extending from the game board housing through the ferrous web, and each transparent top wall including a top wall recess directed into each transparent top wall to receive one of the fiber optic cables therein, and each fiber optic cable to indicate individual spaces of each game board.

5,328,188
MAGNETIC BOARD GAME
Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081
Continuation-in-part of Ser. No. 765,542, Sep. 25, 1991, Pat. No. 5,209,486. This application May 11, 1993, Ser. No. 60,593
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—239 **6 Claims**

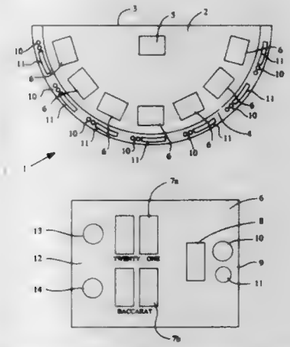


2. A game for two or more players comprising:
a game board of magnetic field permeable material having a surface area and a plurality of adjacent areas defined on said surface, each of said areas having a scoring value associated therewith;
a plurality of magnets each disposed under one of said areas;
a plurality of magnetic game pieces each having different indicia for each player; and
means to propel one of said plurality of magnetic game piece by a player toward said game board such that in a first mode said magnetic game piece is attracted by magnetic attraction to one of said areas and positions itself over the magnet beneath said area and in a second mode said magnetic game piece is attached by magnetic attraction to a magnetic game piece previously positioned over one of said areas with said magnetic game pieces stackable on one another by magnetic attraction wherein the player having the most magnetic game pieces stacked over the areas with the highest scoring values being the winner of the game.

5,328,189
METHOD AND APPARATUS OF PLAYING A NEW CASINO GAME
Mehrdad M. Malek, 1306 Daviswood Dr., McLean, Va. 22102
Continuation-in-part of Ser. No. 16,308, Feb. 11, 1993, Pat. No. 5,265,882. This application Jun. 24, 1993, Ser. No. 80,871
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—292 **18 Claims**

11. A method of simultaneously playing Twenty-One and Baccarat wherein a player plays against a dealer and other players, comprising:

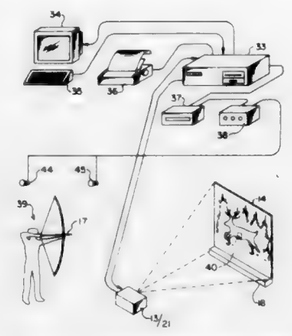
each player making a first bet against the dealer to be eligible to play one hand in each of the two games;
the dealer dealing a first card face-up to each player and one card face-down to the dealer;
at least one player making second bets against other players based on the first card received from the dealer;
the dealer dealing three additional cards face-down to each of the players and to the dealer;
each player and the dealer assembling their dealt cards such that two cards are assembled for Twenty-One and two cards are assembled for Baccarat;
at least one player making a third bet;
the dealer dealing a fifth card to said at least one player making a third bet;



the dealer comparing each of his assembled groups of cards to corresponding groups of cards of each player, wherein the fifth card is appropriately summed with each two sets of cards for Twenty-One and Baccarat, paying each player having a winning round compared to the corresponding hand of the dealer, and collecting bets from each player having a losing round compared to the corresponding hand of the dealer; and
the dealer comparing the assembled groups of cards of each player, wherein the fifth card is not summed with each two sets of cards for Twenty-One and Baccarat, to settle any second bets made among the players.

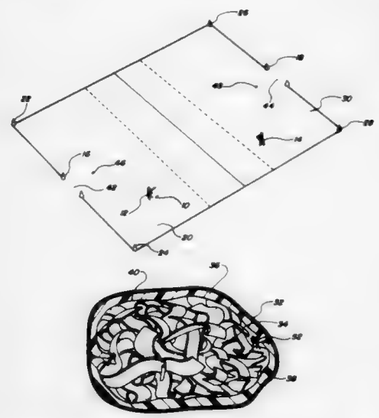
5,328,190
METHOD AND APPARATUS ENABLING ARCHERY PRACTICE
Peter J. Dart, Boulder, Colo., and Howard F. Hall, Albuquerque, N. Mex., assignors to Dart International, Inc., Englewood, Colo.
Filed Aug. 4, 1992, Ser. No. 926,539
Int. Cl.[5] F41J *9/14, 5/14;* **A63B** *71/00*
U.S. Cl. 273—358 **25 Claims**

1. A method providing archery practice simulating an animal hunt, comprising the steps of;
providing a video disk containing a plurality of scenes of animals in a natural environment,
providing a vertical screen whose size simulates an area normally viewed by an archer during an animal hunt, said screen comprising a plurality of pixel areas arranged in a plurality of horizontal rows and vertical columns,
providing a video projector spaced from one side of said screen,
coupling said projector to said video disk and using said projector to project at least one of said hunting scenes onto said one side of said screen,
providing a continuous full screen field of light of a spectrum that is not visible to a human, said field of light being spaced from but in close proximity to said one side of said screen,
providing an arrow that is capable of reflecting light of said spectrum as the arrow penetrates said field of light,
providing a detector that is sensitive to light of said spectrum and is not sensitive to a projected hunting scene, said detector being positioned to receive light reflected from an arrow as said arrow penetrates said field of light, and to then generate a signal corresponding to a pixel area of said



screen, certain of which pixels areas contain indicia of light reflection from an arrow,
freezing said hunting scene on said screen upon said detector detecting light reflection from an arrow, and
coordinating said frozen hunting scene to the signal from said detector and thereby projecting a hit zone image on said screen to indicate a point of arrow impact thereon.

5,328,191
GAME PROJECTILE AND METHOD OF PLAYING A GAME
Douglas W. Taylor, Jr., 3319 Oak Knoll, Brighton, Mich. 48116
Filed Jun. 30, 1993, Ser. No. 85,753
Int. Cl.[5] A63B *37/06, 37/12, 71/02*
U.S. Cl. 273—411 **25 Claims**



1. A game projectile comprising:
an energy dissipative core having an irregular shape, said core formed from a plurality of material strips;
a pliant moisture-resistant, cover enclosing said core to form an irregularly-shaped inner body; and
a pliant, substantially puncture-resistant, exterior casing enveloping said body, said exterior casing and cover loosely enveloping said core preventing said projectile

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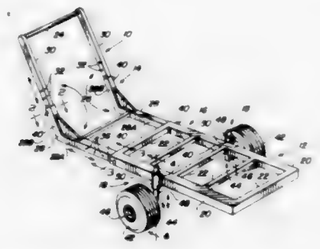
from rolling when impacted wherein said game projectile has a weight in a range from 2 to 8 pounds.

5,328,192

MANUAL PULL-TYPE CARRIER FOR TRANSPORTING A LARGE GAME CARCASS

John R. Thompson, Rte. 2, Box 214, Scammon, Kans. 66773

Filed Mar. 18, 1993, Ser. No. 33,487
Int. Cl.[5] B62B *1/12*
U.S. Cl. 280—47.24 **11 Claims**



1. A manual pull-type carrier, comprising:
(a) a carriage including an elongated load-carrying bed and means for movably supporting said load-carrying bed above the ground to undergo movement across the ground; and
(b) an adjustable towing handle assembly including a front handle and a structure interconnecting said handle to said load-carrying bed of said carriage and being adjustable relative to said front handle and said load-carrying bed for changing both the length and the height of said towing handle assembly relative to said load-carrying bed;
(c) said interconnecting structure including
(i) a pair of angled side braces adjustably telescopably connected to a front end of said load-carrying bed for changing the overall length of said carrier to support animal carcasses of different lengths thereon, and
(ii) a pair of extension members supporting said front handle and adjustably telescopably supported by said angled side braces for changing the overall height of said handle to fit hunters of different heights towing said carriage;
(d) each of said angled side braces including
(i) an elongated rear portion adjustably telescopably connected to said front end of said load-carrying bed, and
(ii) an elongated front portion attached at a rear end to a forward end of said rear portion so as to extend at an angle forwardly and upwardly from said rear portion, said expansion member being adjustable telescopably mounted to front end of a corresponding one of aid front portion.

5,328,193

SCOOTING AND COASTING GOLF CART TRICYCLE

James A. Shiew, P.O. Box 3134, Buena Vista, Colo. 81211

Filed Dec. 16, 1992, Ser. No. 990,898
Int. Cl.[5] B62D *3/02, 3/12*
U.S. Cl. 280—87.041 **16 Claims**

1. A scooting and coasting golf cart tricycle, comprising:
(a) a frame having a main portion and a front portion rotatably mounted to said main portion;
(b) a center front wheel mounted to said front portion of said frame by means of a front spindle;
(c) means connected to said front portion for steering said front wheel, said steering means including a pair of right and left handlebars mounted to said front portion of said frame;
(d) an elongated towing handle pivotally mounted to opposite ends of said front spindle;
(e) a pair of right and left back wheels mounted at opposite sides of said main portion of said frame for rotation about a generally horizontally rotational axis; and
(f) a platform supported between said back wheels and spaced below said horizontal rotational axis of said back wheels;
(g) said main portion of said frame including upper and lower rear structures located at said opposite sides thereof, said upper rear structures of said main portion of



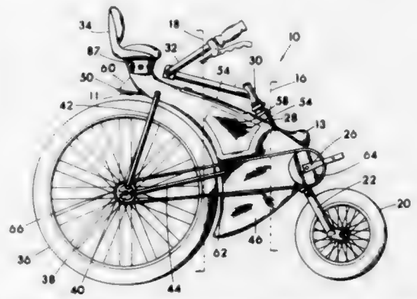
said frame having upper ends extending above said right and left back wheels and lower ends defining said horizontal axis and mounting said right and left back wheels at said opposite sides of said main portion of said frame to undergo rotation about said horizontal rotational axis, said lower rear structures of said main portion of said frame being located between said back wheels and supporting said platform between said back wheels and spaced below said horizontal rotational axis of said back wheels so as to provide a center of gravity of said platform below said horizontal rotational axis.

5,328,194

SEMI-RECUMBENT BICYCLE WITH ITEM STORAGE COMPARTMENT

Clive E. Buckler, N. 2607 Magnolia St., Spokane, Wash. 99207

Filed Jul. 20, 1992, Ser. No. 915,521
Int. Cl.[5] B62J *7/02*
U.S. Cl. 280—202 **7 Claims**



1. A bicycle on which a rider sits in a semi-recumbent position while riding said bicycle, and which includes an elongated substantially hollow main frame member having at least one substantially large accessible item storage compartment therein, said bicycle comprising:
a front wheel support and steering assemblage retaining a rotatably connected front wheel and a rotatably connected steering stem, a handlebar connected to an upper portion of said steering stem, said front wheel support and steering assemblage including means whereby movement

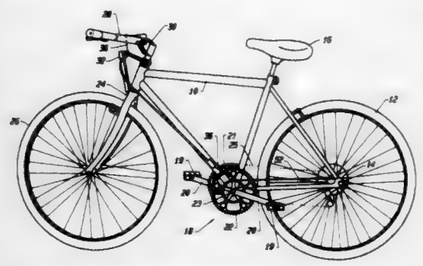
in said handlebar by the rider equates to sideways movement in said front wheel for steering of said bicycle;
said main frame member having a relatively narrow forward portion and an oppositely disposed rearward portion, and further having a wide intermediate portion positioned between said narrow forward portion and said rearward portion;
at least said wide intermediate portion of said main frame member being substantially wider than said narrow forward portion of said main frame;
said front wheel support and steering assemblage connected to said narrow forward portion of said main frame member;
said main frame member having at least one large hollow area positioned in said wide intermediate portion to serve as said item storage compartment;
an access opening through an exterior wall of said main frame member into said item storage compartment;
a movable door placed over said access opening;
a latching means connected cooperatively between said door and said main frame member so as to render said door releasibly closed over said access opening;
a seat with back rest connected to said rearward portion of said main frame member;
a rotatable rear wheel having an axle supported in axle drop-out plates, said axle drop-out plates connected to and supported by axle drop-out plate support means, said axle drop-out plate support means connected to said main frame member;
said rear wheel positioned in elevation below said seat and generally rearward of said wide intermediate portion of said main frame member;
said rear wheel including at least one rear sprocket connected to rotate with said rear wheel;
said item storage compartment within said wide intermediate portion positioned generally between said front and rear wheels so as to position any cargo and the weight thereof within said item storage compartment generally centrally between said front and rear wheels to maintain a generally centrallized weight distribution;
a manual powering assembly providing means to allow powering of said bicycle by the rider's legs with the rider sitting on said seat in the semi-recumbent position, said powering assembly comprising a bottom bracket assembly connected to said narrow forward portion adjacent the connection of said front wheel support and steering assemblage to said narrow forward portion of said main frame member,
said bottom bracket assembly supporting two oppositely disposed rotatable crank arms each having a foot pedal attached thereto, said rotatable crank arms and said foot pedals positioned in the area of said narrow forward portion of said main frame member, said narrow forward portion of said main frame member being sufficient in area relative to a rotational path of said rotatable crank arms and said foot pedals so as to provide clearance for the rider's feet whiling pedaling;
at least one front sprocket connected to rotate with rotation of said crank arms, said front sprocket connected by a drive chain to said rear sprocket to provide means for rotating said rear wheel with rotation of said crank arms;
said bottom bracket assembly with said crank arms and said pedals positioned in elevation generally above said front wheel and below said seat, and substantially forward of said seat so that the rider's upper legs extend forward above said wide intermediate portion of said main frame member and then the rider's lower legs angle somewhat down to said pedals whereat the rider's lower legs straddle said narrow forward portion of said main frame member in approaching said pedals.

5,328,195

BICYCLE HAVING ARM ASSISTED DRIVE

Graham Sommer, 104 Peter Coutts Ct., Stanford, Calif. 94305, and Jason Quintana, Los Gatos, Calif., assignors to Graham Sommer, Stanford, Calif.

Filed Jul. 13, 1993, Ser. No. 91,097
Int. Cl.[5] B62M *1/12*
U.S. Cl. 280—233 **9 Claims**



1. A dual drive bicycle comprising
a support frame,
a fork member rotatably supported in said support frame,
a front wheel mounted to said fork member,
a rear wheel including a chain sprocket wheel,
a crank mechanism including foot pedals rotatably mounted on said support frame and including a first drive sprocket wheel and a second drive sprocket wheel,
a chain linking said chain sprocket wheel of said rear wheel and said first drive sprocket wheel,
a drive mechanism for said second drive sprocket wheel including a ratchet means for pivotal engagement with said second drive sprocket wheel, a free wheel in mechanism including a hub, said ratchet means including a pivot link having one end attached to said hub and an opposite end engaging said second drive sprocket wheel when said hub is driven in one direction, and a drive line coupled to said ratchet means for driving said ratchet means and said second drive sprocket wheel,
a handlebar movably attached to said fork member, said handlebar being pivotally attached to said fork member with a pivotal axis of said handlebar being parallel to a rotation axis of said front wheel, and
means attaching said drive line to said handlebar whereby movement of said handlebar linearly moves said drive line and drives said drive mechanism.

5,328,196

WHEEL SUSPENSION SYSTEM FOR BICYCLE

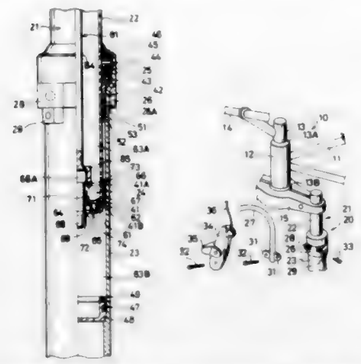
Toshio Ohma, Shizuoka, Japan, assignor to Showa Manufacturing Co., Ltd., Gyoda, Japan

Filed Mar. 12, 1992, Ser. No. 850,429
Claims priority, application Japan, Mar. 20, 1991, 3-80442; Mar. 20, 1991, 3-80443; Mar. 20, 1991, 3-80444
Int. Cl.[5] B62K *25/08*
U.S. Cl. 280—276 **5 Claims**

1. A wheel suspension system for a bicycle comprising:
a pair of left and right sliding tubes secured to a steering bracket which is rotatably supported in a front portion of a body frame of the bicycle;
a pair of left and right cylindrical fork legs supporting a front wheel and slidably receiving a corresponding one of said sliding tubes;
a pair of shock absorber assemblies respectively disposed between associated sliding tubes and said fork legs;
a pair of cross member holders externally mounted on outer peripheries of upper portions of each of said fork legs; and
a cross member providing a predetermined torsional strength and coupled to said cross member holders wherein an upper end of each fork leg has an increased

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diameter section, the transition between two diameters defining a shoulder, each cross member holder abuttingly mounted on said shoulder, the space between an outer



circumference of each sliding tube and an inner surface of the increased diameter section of each fork leg defining a seal receiving compartment, and a retainer ring for receiving each cross member holder on the respective fork leg.

5,328,197

LOAD DISTRIBUTORY AND ARTICULATING SYSTEM IN ALL TERRAIN VEHICLE OF A TRACTION AND TERRAIN

Lasse Karilainen, and Markku Karilainen, both of Karhunkatu 10 A, SF-33530 Tampere, Finland

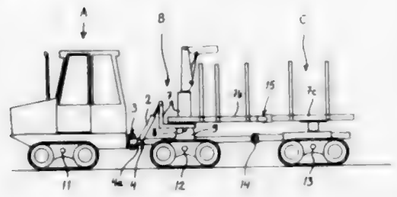
PCT No. PCT/FI89/00171, § 371 Date Mar. 12, 1991, § 102(e) Date Mar. 12, 1991, PCT Pub. No. WO90/02681, PCT Pub. Date Mar. 22, 1990

PCT Filed Sep. 11, 1989, Ser. No. 663,882

Claims priority, application Finland, Sep. 12, 1988, 884173

Int. Cl.[5] B62D *63/00*

U.S. Cl. 280—406.1 **6 Claims**



1. A load distributing and articulating system in an all terrain vehicle of a tractor and a trailer along a longitudinal axis, the trailer having a trailer body with a load section thereon, which comprises:

(i) a first pivot for articulating rotation between the tractor and the trailer in a vertical plane perpendicular to the longitudinal axis, about the longitudinal axis;

(ii) a second pivot for articulating rotation between the trailer body and the load section, in a vertical plane along the longitudinal axis about an axis perpendicular to the longitudinal axis;

(iii) at least two variable length actuator disposed between the tractor and the load section for controlling the rotation about said first and second pivots;

(iv) an adjustable controller having a plurality of positions, for varying the lengths of said variable length actuators together, and for allowing a variation of the lengths of said variable length actuators independently of each other; and

(v) means for preventing said adjustable controller from varying the lengths of said variable length actuators, and for enabling variation of the lengths of said variable length actuators.

5,328,198

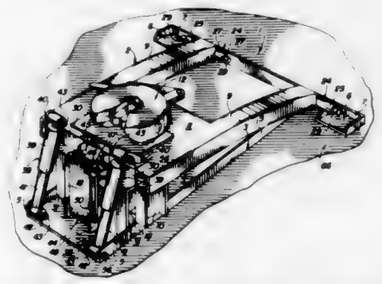
FLUID AND TENSION BAND-OPERATED HITCH ADAPTOR

Andy B. Adams, 501 Bres St., Monroe, La. 71201

Continuation-in-part of Ser. No. 698,284, May 10, 1991, abandoned, and a continuation-in-part of Ser. No. 691,995, Apr. 26, 1991, abandoned. This application Jan. 6, 1992, Ser. No. 817,317

Int. Cl.[5] B62D *53/06*

U.S. Cl. 280—439 **8 Claims**



1. A fluid and tension band-operated hitch adapter for removably coupling a trailer to a towing vehicle, comprising plate means fixedly mounted on the towing vehicle; a frame hingedly mounted on said plate means; and air bag mounted between said frame and said plate means; at least one first shock absorber mounted on said frame and said plate means rearwardly of said air bag; a tension band mounted on said frame and said plate means rearwardly of said air bag; and hitch means carried by said frame for receiving the trailer and absorbing the coupling load of the trailer and said frame, whereby said air bag, said shock absorber and said tension band operate in concert to cushion the road shock of the towing vehicle and the trailer responsive to pivoting of said frame with respect to said plate means and the towing vehicle.

5,328,199

VEHICLE ALIGNMENT ASSISTANCE DEVICE

Reginald G. Howe, Brook House Coombe Lane, Ascot, Berkshire, England SL5 7DQ

PCT No. PCT/GB91/01445, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO92/03303, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 28, 1991, Ser. No. 979,873

Claims priority, application United Kingdom, Aug. 28, 1990, 9018778.2

Int. Cl.[5] B60D *1/36*; **B60Q** *1/00*

U.S. Cl. 280—477 **18 Claims**

1. A vehicle alignment assistance device for a towing vehicle and a trailer, said towing vehicle having a front end, a rear end, a rear window and a towing ball at said rear end, and said trailer having a front end and a rear end, there being at the front end thereof a towing socket to be attached to said towing ball, said device comprising a

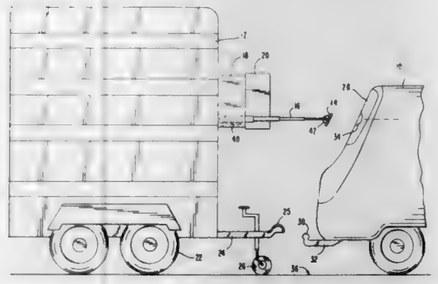
a sighting mark adapted to be located on said rear window of said towing vehicle in a first predetermined relationship with said towing ball,

a box adapted to be secured to the front end of said trailer,

a target-carrying member having an aft end located in said box and a forward end that can be extended from said box,

a target mounted on the forward end of said target-carrying member to be located in a second predetermined relationship with said towing socket,

said first and second predetermined relationships being such as to enable said target to come into contact with said rear



window when said towing ball is under said towing socket, said target-carrying member being extendable and contractible in length and mounted in said box so as to be retractable into an inoperative storage position within said box.

5,328,200

SKI OR OTHER MACHINE OR BOARD FOR SLIDING OVER SNOW, WITH SCORED SOLE

Jean-Luc Pelizzari, Coublevie, France, assignor to Skis Rossignol SA, Voiron, France

Filed Nov. 19, 1992, Ser. No. 979,046

Claims priority, application France, Nov. 19, 1991, 91 14525

Int. Cl.[5] A63C *5/044*

U.S. Cl. 280—609 **22 Claims**



1. A machine or board for sliding over snow, such as a ski or the like, comprising at least one slide sole provided with a plurality of scores extending into the slide sole, each of said scores having a substantially constant width and a centerline substantially oriented in a longitudinal direction of the machine or board, the centerline of each of said scores having a plurality of undulations extending transversely to the longitudinal direction to form an undulated pattern.

5,328,201

FRONT JAW

Helmut Wladar, Vienna, Austria, assignor to HTM Sport- und Freizeitgeraete Aktiengesellschaft, Schwechat, Austria

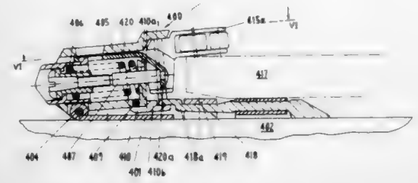
Division of Ser. No. 499,387, Jun. 6, 1990, Pat. No. 5,205,575. This application Dec. 18, 1992, Ser. No. 993,118

Claims priority, application Austria, Oct. 7, 1988, A 2480/88

Int. Cl.[5] A63C *9/08*

U.S. Cl. 280—625 **7 Claims**

1. In a front jaw adapted to be mounted on an upper surface of a ski, said front jaw having a housing with two pivotally supported, laterally spaced, two arm toggle levers thereon, each toggle lever having a long lever arm and a short lever arm, said toggle levers each being supported so that the long lever arm thereof is movable laterally outwardly against a force of a release spring housed in said housing, and a pull rod extending through said housing, the improvement wherein an intermediate lever is pivotally supported for movement about a first pivot axis provided on the upper surface of the ski adjacent a lower rear area of said housing, wherein said two short lever arms of said toggle levers are each loaded by said release spring in said housing acting through said pull rod on the angular intermediate lever, wherein a movably supported pedal mounted adjacent said housing is provided beneath a toe portion of a ski shoe, said intermediate lever being pivotal



about said first pivot axle by a pivoting of said pedal by the ski shoe, and wherein means on said intermediate lever is provided directly engaging said short arms of said toggle levers on a side thereof to cause said long arms of the toggle levers to swing laterally outwardly when said intermediate lever is moved by operation of said pedal.

5,328,202

APPARATUS FOR CONTROLLING DAMPING COEFFICIENT FOR VEHICULAR SHOCK ABSORBER

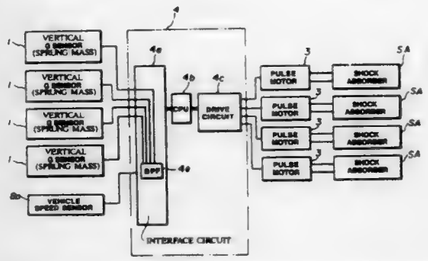
Shinobu Kakizaki, Atsugi, Japan, assignor to Atsugi Unisia Corporation, Japan

Filed Dec. 9, 1992, Ser. No. 988,193

Claims priority, application Japan, Dec. 19, 1991, 3-336769

Int. Cl.[5] B60G *17/08*

U.S. Cl. 280—707 **10 Claims**



1. An apparatus for controlling damping coefficients for vehicular shock absorbers, comprising:

a) a plurality of shock absorbers, each shock absorber being interposed between a sprung mass and an unsprung mass of a vehicle;

b) damping coefficient changing means for varying the damping coefficients of each shock absorber at at least one stroke direction with respect to a piston of the corresponding shock absorber in response to an input control signal;

c) vehicle body behavior detecting means for detecting vehicle body vertical accelerations, for deriving vehicle body vertical speeds from said vertical accelerations, and for outputting signals representing said vertical speeds;

d) filtering means for filtering the output signals from said vehicle body behavior detecting means so as to pass only signal components which fall in a predetermined frequency band from among the output signals outputted from said vehicle body behavior detecting means;

e) damping coefficient controlling means for producing the

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control signal to the damping coefficient changing means so as to control the damping coefficients of the respective shock absorbers via said damping coefficient changing means on the basis of the signals passed through said filtering means;

f) vehicle speed detecting means for detecting a vehicle speed; and

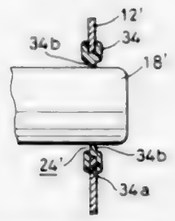
g) cut-off frequency controlling means for variably setting a cut-off frequency of the filtering means to a frequency varied in accordance with the detected vehicle speed.

5,328,203

INFLATOR MOUNTING STRUCTURE FOR A PASSENGER'S AIR BAG SYSTEM

Yoshiyuki Baba, and Masato Tagawa, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,808
Claims priority, application Japan, Mar. 30, 1992, 4-074096
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—728 A **2 Claims**



1. An inflator mounting structure for a passenger's air bag system, comprising:

an inflator having a cylindrical body portion, a gas producing agent retained in the body portion, and fixing means attached to one side of the body portion,

a retainer for retaining the inflator therein, said retainer having first and second side walls situated opposite to each other, a first opening formed in the first side wall for allowing the fixing means of the inflator to pass therethrough so that the inflator is fixed to the first side wall of the retainer by the fixing means, and a second opening formed in the second side wall opposite to the first opening, said second opening having a size greater than that of the body portion of the inflator, and

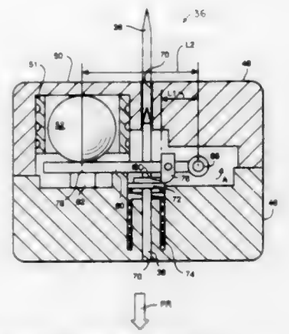
a circular bushing made of at least one of a resin and rubber and having a heat softening property so that the bushing is softened by heat due to fire near the inflator, said circular bushing having a bifurcated portion with a groove at an outer periphery thereof so that the second side wall of the retainer is inserted in the groove to securely hold the circular bushing therein, and a lip extending inwardly toward a center of the circular bushing from the bifurcated portion, said lip being tapered toward the center of the circular bushing and having a shape of trapezoid in cross section and an inner size substantially the same as an outer diameter of the cylindrical body portion of the inflator so that the circular bushing closely contacts and supports the cylindrical body portion of the inflator, and in case of fire, allows gas of the inflator to exhaust from an inside of the retainer to an outside through a portion between the cylindrical body portion of the inflator and the lip.

5,328,204

ACCELERATION SENSOR

Teruhiko Kawaguchi, and Teruhiko Koide, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Aichi, Japan

Filed May 18, 1993, Ser. No. 62,566
Claims priority, application Japan, May 19, 1992, 4-32956[U]; Oct. 12, 1992, 4-70947[U]
Int. Cl.[5] B60R *21/32*
U.S. Cl. 280—734 **19 Claims**



1. An acceleration sensor comprising:

an inertial mass disposed to inertially move when a vehicle suddenly decelerates;

a trigger lever, a longitudinal direction portion of said trigger lever abutting a portion of a peripheral surface of said inertial mass at a side in a direction of inertial movement of said inertial mass, said trigger lever being pushed by said peripheral surface due to inertial movement of said inertial mass so as to rotate around a fulcrum from a first position to a second position, said trigger lever being provided with a trigger means which is located at a position separated by a predetermined distance from said fulcrum and at a position which is different from a position at which said trigger lever abuts said inertial mass;

an actuating member which is movable from a non-actuating position at which an occupant protection device is not actuated to an actuating position at which said actuating member actuates the occupant protection device, said actuating member having an engaging member, and when said trigger lever is at said first position, said engaging member engaging with said trigger means so as to restrain said actuating member at said non-actuating position, and when said trigger lever is moved to said second position, said actuating member being released from engagement of said trigger means to move to said actuating position; and

urging means disposed to urge said actuating member at said non-actuating position in a direction of said actuating position, and to urge said trigger lever to apply urging force to said inertial mass in a direction opposite to the direction of inertial movement of said inertial mass for retaining said inertial mass at a non-actuating position during said engagement of said engaging member and said trigger means when said actuating member is at said non-actuating position.

5,328,205

COMBINATION SKI POLE AND HAND STRAP

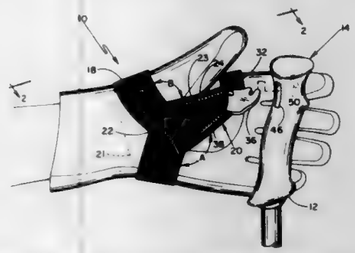
David W. Bacharach, 2643 Marquette Dr., St. Cloud, Minn. 56301

Filed Aug. 12, 1993, Ser. No. 105,604
Int. Cl.[5] A63C *11/00*
U.S. Cl. 280—822 **18 Claims**

1. A device for a skier comprising, in combination:

(a) a ski pole having a ground engaging member at one end and a hand grip proximate the other end, said hand grip having a forward surface area and a first fastening means disposed at a rear surface area located generally 180° opposite said forward surface area; and

(b) a wrist band adapted to be disposed around the skier's wrist, and an elongated palm strap fastened at a first and second end to said wrist band, wherein said palm strap is adapted to extend from the first end and traverse a palm of the skier at a predetermined angle to a midsection of the



palm strap disposed between the skier's thumb and index finger, and then across a back of the skier's hand to said wrist band at said second end, wherein said wrist band extends each side of said palm strap first end to define a pair of obtuse angles in relation to said palm strap such that said wrist band is non-linear and forms an inverted V-shape over the skier's palm, said strap further including a second fastening means disposed proximate the midsection thereof for selectively securing said palm strap to said ski pole first fastening means.

5,328,206

BOARD BOOK WITH EASILY-TURNED PAGES

Katherine J. Scott, 33 Whippoorwill Way, Belle Mead, N.J. 08502

Filed Feb. 23, 1993, Ser. No. 21,198
Int. Cl.[5] B42D *1/00*
U.S. Cl. 281—38 **10 Claims**



1. A board book comprising:

a plurality of stiff pages, each of said pages having a first and a second relatively flat surface on opposite sides thereof, and peripheral edge which at least partially surrounds said first and second relatively flat surfaces; and,

at least one spacer means coupled to at least one first relatively flat surface, said spacer means located substantially completely inside of said peripheral edge,

wherein said spacer means produces a gap between adjacent pages that runs substantially the length of said peripheral edge of said page in order to facilitate the turning of said page from any point along said peripheral edge.

5,328,207

AUTOGRAPHED PHOTOGRAPH AND METHOD

William M. Hannah, 2720 N. 68th St., Suite 5-499, Scottsdale, Ariz. 85257

Filed Nov. 25, 1991, Ser. No. 797,362
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—77 **4 Claims**



1. An autographed memento comprising:

a base member having an outer surface;

a separate signature sheet attached to the base members outer surface;

said signature sheet having a front surface and a rear surface;

said front surface having an original signature of a person related to said base member; and

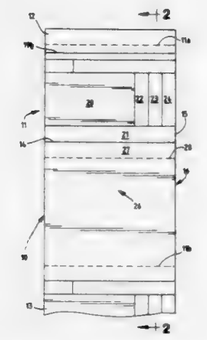
said rear surface having an adhesive layer which joins said sheet to said base member wherein the memento is an autographed photograph; the person is a celebrity; and the base member is a photograph of the celebrity.

5,328,208

PHARMACY FORM AND METHOD

Ronald R. Garrison, Batavia, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Filed Jul. 19, 1993, Ser. No. 93,271
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—105 **4 Claims**



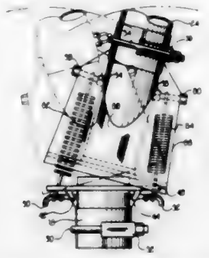
1. A pharmacy form comprising a unitary, elongated sheet having a transverse diecut intermediate the ends thereof defining a label part and an information part in co-planar relation, printed label and information indicia on one face of said sheet and pressure sensitive adhesive on the other face of said sheet extending over said label part and a specified distance onto said information part, and a release liner covering said adhesive whereby said label part and information part are maintained in co-planar relation, said label part having a portion to be applied to a drug container and said information part has a portion corresponding to said spaced distance to be pasted to a bag for said container, said information part being equipped with a

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line of transverse weakness spaced from said portion to be pasted for detachment from said portion.

5,328,209
VEHICLE EXHAUST STACK JOINT YIELDABLE IN ALL DIRECTIONS

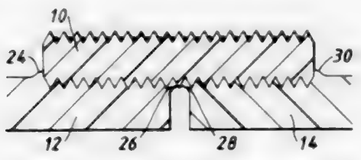
Steve D. Cromwell, Rte. 6, Box 328, Savannah, Tenn. 38372
Filed Jul. 20, 1993, Ser. No. 93,667
Int. Cl.[5] F16L *27/02*
U.S. Cl. 285—1 **8 Claims**



1. A yieldable joint for enabling a vertical exhaust stack of a vehicle to lean in any direction with respect to vertical or a direction of travel of said vehicle comprising:
a lower cylindrical member having a top end and a bottom end; a pair of pivot rods mounted in parallel relationship on opposite sides of said top end of said lower member, said pivot rods having a length greater than the diameter of said lower member; a first pair of spring mounting brackets affixed to opposite sides of said lower member;
an upper cylindrical member having a top end and a bottom end; a pair of open-sided pivot sockets mounted in parallel relationship on opposite sides of said bottom end of said upper member, said pivot sockets being positioned to ride on said pivot rods when said lower and upper members are positioned in vertical axial alignment and said pivot sockets being slightly longer than said pivot rods; a second pair of spring mounting brackets affixed to opposite sides of said upper member in vertical alignment with said first pair of spring mounting brackets;
a pair of springs connected between said first and second pairs of spring mounting brackets for holding said lower and upper members in a vertically aligned position and for biasing said members toward said vertically aligned position.

5,328,210
POLYOLEFIN COUPLER FOR JOINING POLYOLEFIN PIPES

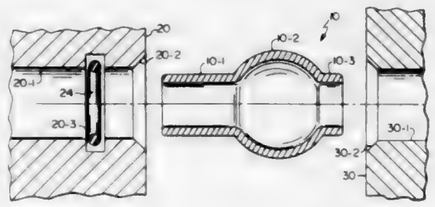
Trevor G. Stafford, and Lindsay Ewing, both of Whitley Bay, United Kingdom, assignors to British Gas plc, London, United Kingdom
Filed Apr. 24, 1992, Ser. No. 873,270
Claims priority, application United Kingdom, Apr. 24, 1991, 9109123
Int. Cl.[5] F16L *47/02*
U.S. Cl. 285—21 **7 Claims**



1. A coupler joining pipes of non-cross-linked polyolefin material comprising an open-ended hollow body of non-conductive cross-linked polyolefin material, said hollow body having an inner surface extending between the open ends and having a heat shrink memory capability which has been radially expanded so that before heating said coupler inner surface; has a first least inner diameter which accommodates outer surfaces of said pipes with a clearance and after heating said coupler has shrunk and said inner surface has a second least inner diameter which is less than said first least inner diameter and which is less than an outer diameter of said pipes, and said inner surface which has said second least inner diameter has entered said outer surfaces of said pipes and has formed a welded joint with the polyolefin material of each said pipe underlying said outer surfaces and said outer surfaces exhibiting upset of said polyolefin material of said pipes.

5,328,211
CRUSH TUBE FLUID CONNECTION

Russell G. Lewis, Manlius, and Howard H. Fraser, Jr., Lafayette, both of N.Y., assignors to Carrier Cororation, Syracuse, N.Y.
Filed Nov. 12, 1992, Ser. No. 974,542
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—23 **4 Claims**

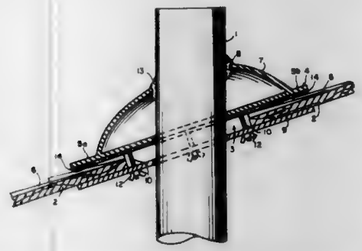


1. A fluid communication assembly comprising:
a first member having a first bore with a chamfer defining an entrance to said first bore;
a second member having a second bore with a chamfer defining an entrance to said second bore;
a thin walled metal crush tube having first and second tubular portions loosely received in said first and second bores when said first and second bores are nominally coaxial and with a hollow spherical portion therebetween, said hollow spherical portion initially engaging said chamfers in said first and second members in annular line contacts and subsequently deformed into fluid tight area engagement over the surface of said chamfers in said first and second members;
means fore relatively moving said first and second members whereby said fluid tight area engagement is obtained between said crush tube and said first and second members.

5,328,212
INTERIORLY INSTALLABLE ROOF MOUNT

Walter Kosik, Jr., 6 Craven Terr., Derry, N.H. 03038, and Ronald E. Sousa, 9 Balckstone Cir., Pelham, N.H. 03076
Filed Apr. 30, 1993, Ser. No. 55,677
Int. Cl.[5] E04D *13/00*
U.S. Cl. 285—42 **10 Claims**

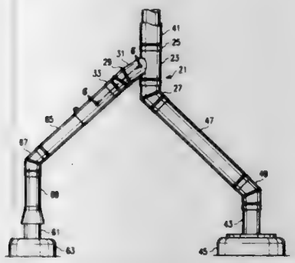
1. A weight-bearing roof mount for supporting a vertically disposed tubular member on an inclined roof of a building having courses of shingles thereon and in which the tubular member extends roof through an opening in the roof that is larger than the tubular member, said mounting being disposable on the exterior of the roof wholly from within the building, said roof mount comprising:
an upper flashing having a peripheral flange with dimensions larger than said opening whereby said upper flashing covers completely said opening, said upper flashing being adapted to be slipped through said opening from the inside of said building to be fitted on the outside of said roof, said upper flashing having a roof-engaging side that engages said shingles and an exterior side, said upper flashing being of sufficient length to enable it to be disposed beneath one of the courses of shingles above said opening;
a tubular member receiving aperture disposed within said upper flashing, said aperture being arranged to receive said tubular member;
means to seal any spaces between said aperture and the exterior of said tubular member;



a lower flange means having a central opening to receive said tubular member, said lower flange means being arranged to be disposed within said building and to engage the interior of said roof;
fastener means to fasten said peripheral flange to said lower flange said fastener means being tightenable from the interior of said building whereby to clamp said peripheral flange against said roof;
gasketing means disposed between said peripheral flange and said shingles and being compressible between said shingles and said peripheral flange whereby to prevent the flow of fluids into the interior of said building from said roof.

5,328,213
ADJUSTABLE PIPE FITTING

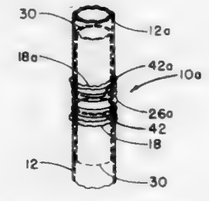
James T. Barth, Plano, Tex., assignor to Eljer Industries, Inc., Dallas, Tex.
Filed Dec. 8, 1992, Ser. No. 986,791
Int. Cl.[5] F16L *21/00*
U.S. Cl. 285—138 **4 Claims**



1. An adjustable pipe fitting for connecting misaligned pipes, comprising:
a main conduit having first and second main segments, each of which has concentric inner and outer tubular members, said main conduit having a rotatable joint intermediate its ends, the plane of rotation of said joint being at an oblique angle to the longitudinal axis of the main conduit so that the second end of said conduit can be rotated from a position where the longitudinal axes of the two main segments are aligned to positions where they intersect at oblique angles; and
a branch conduit having first, second and third branch segments, each of which has concentric inner and outer tubular members, the first branch segment having a proximal end connected to the first main segment of the main conduit, the first branch segment extending from the first segment of the main conduit at an oblique angle relative thereto and towards the second segment of the main conduit, said first and second segments being joined together by a first rotatable joint and said second and third branch segments being joint together by a second rotatable joint, the plane of rotation of the first rotatable joint being at an oblique angle to the longitudinal axis of the branch conduit and to the plane of rotation of the second rotatable joint so that said second and third branch segments may be rotated relative to each other and to said first branch segment from a position where the longitudinal axes of said first, second, and third branch segments are aligned to positions where the longitudinal axes of said first, second and third branch segments form oblique angles with each other.

5,328,214
SPRING PIPE CONNECTOR

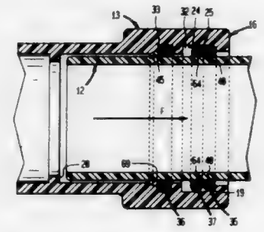
James K. Denny, 1034 Triangle Rd., Ashland City, Tenn. 37015
Filed Jun. 7, 1993, Ser. No. 72,062
Int. Cl.[5] F16L *21/00*
U.S. Cl. 285—235 **3 Claims**



1. A pipe spring connector comprising two sections of axially aligned pipe, said pipes having outer surfaces and terminating in ends which face each other and are axially spaced from each other and having as the sole link between them a single coiled spring by itself touching nothing along its length except a weld at each end thereof joining said spring ends directly to said outer surface of said ends of said respective two sections of pipes.

5,328,215
PIPE JOINT ASSEMBLY

Wilfred J. Grenier, Rutland, Mass., assignor to Rovac Corporation, Rochdale, Mass.
Filed Sep. 14, 1992, Ser. No. 944,373
Int. Cl.[5] F16L *39/00, 21/06*
U.S. Cl. 285—318 **23 Claims**



1. A coupling assembly comprising:
a first tubular member;
a rigid receiving tubular member defining an opening

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adapted to receive said first tubular member, said receiving tubular member having an inner portion defining an inner bore dimensioned to receive one end of said first tubular member and an outer portion defining an internal annular cavity intersecting said inner bore and projecting radially outwardly therefrom, said annular cavity comprising an annular tapered wall portion tapered radially inwardly and projecting longitudinally toward said opening;

an annular sealing member disposed in said annular cavity and dimensioned to be engaged between said first tubular member and said receiving tubular member; and

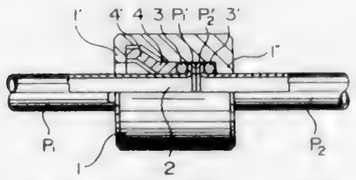
a split lock ring formed from a length of spring material having a substantially circular transverse cross-section and disposed in said annular cavity between said annular sealing member and said opening, said lock ring having an outer circumferential surface portion adapted to engage said tapered wall portion and an inner circumferential surface portion adapted to engage an external wall portion of said first tubular member, said lock ring being adapted to expand circumferentially into said annular cavity during insertion of said first tubular member into said receiving tubular member and to be compressed between said tapered wall portion and said external wall portion in response to relative longitudinal separating movement between said first tubular member and said receiving tubular member, and said inner circumferential surface portion defining circumferentially extending knife edge means for penetrating said external wall portion so as to prevent longitudinal movement of said first tubular member relative to said receiving tubular member; and wherein said receiving tubular member further defines an annular divider means projecting radially into said cavity between said sealing member and said split lock ring, and said tapered wall portion terminates with a radially inwardly directed integrally formed rim defining a shoulder stop portion at an outer end of said receiving tubular member, and said shoulder stop portion is adapted to engage said lock ring in response to said separating movement.

5,328,216

THIN PIPE CONNECTING JOINT

Yuji Miyauchi, Tagata, and Katsushi Umezawa, Numazu, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Mar. 10, 1993, Ser. No. 28,993
Claims priority, application Japan, Mar. 11, 1992, 4-087646
Int. Cl.[5] F16L *37/12*
U.S. Cl. 285—319 **9 Claims**



1. A thin pipe connecting joint for connecting first and second pipes, said pipes including engagement walls formed at respective ends thereof, said engagement walls being configured for abutting engagement with each other, first and second elastic seal ring members assembled around said first and second pipes respectively and adjacent the respective engagement walls thereof, said joint comprising:

a generally tubular socket member mounted over said first pipe such that said first seal ring member is intermediate said socket member and said engagement wall of said first pipe and said socket member having a cross-sectional dimension less than the cross-sectional dimension of said engagement wall on said first pipe and of said first seal, said socket member including a plurality of tongue walls protruding radially outwardly from said first pipe and away from the engagement wall thereof; and

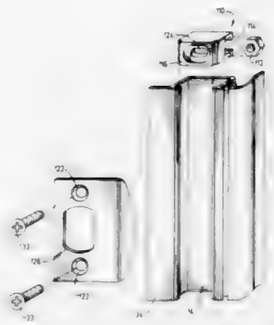
a joint body having opposed first and second ends and an assembly hole defining an interior surface extending therebetween, said second end of said joint body including an inwardly extending retaining wall having a cross-sectional dimension less than the cross-sectional dimension of said engagement wall on said second pipe and of said second seal and engaged around portions of said second pipe such that the second seal ring member is intermediate the engagement wall of the second pipe and the retaining wall at the second end of the joint body and sealingly engages said second pipe and said interior surface, the first end of said joint body surrounding said first pipe and said first seal ring such that said first seal ring sealingly engages said first pipe and said interior surface and said first end being configured to engage the tongue walls of the socket body such that the engagement walls of the pipes are held in abutting engagement with one another between the socket member and the retaining wall at the second end of said joint body.

5,328,217

LOCKING ASTRAGAL

Vernard W. Sanders, Port Hueneme, Calif., assignor to Pemko Manufacturing Company, Ventura, Calif.

Division of Ser. No. 878,336, Apr. 30, 1992. This application May 14, 1993, Ser. No. 62,011
Int. Cl.[5] E05B *15/02*
U.S. Cl. 292—341.19 **3 Claims**



1. A method for adjusting the position of a strike plate on an astragal fastened to an inactive leaf of a double doorway, the astragal comprising an elongated casing having a channel extending therethrough, the channel defining side walls, the strike plate having an aperture for receiving a bolt coupled to an active leaf of the double doorway, the method comprising the steps of:

sliding a nut into a slot extending through a block, the nut and block assembly forming a captive nut, the nut being retained within the slot by edge ridges;

inserting at least one captive nut substantially between the side walls of the channel extending through the astragal;

positioning the strike plate over the channel, the strike plate having at least one screw located about the aperture, the screw being positioned over the captive nut so that the screw can mate with the nut;

adjusting the position of the strike plate and aperture to receive the bolt from the active leaf of the double doorway; and

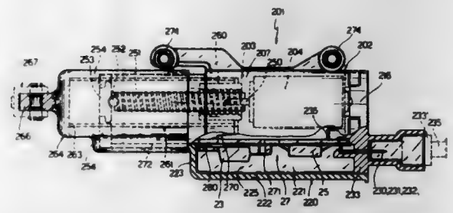
securing the screw in the nut such that the strike plate is rigidly fixed in place.

5,328,218

ELECTRIC LOCK ACTUATOR DEVICE

Enzo Brusasco, Torin, and Giuseppe Boero, Candiolo, both of Italy, assignors to Roltra-Morse, S.P.A., Cascine Vica-Rivoli, Italy

PCT No. PCT/IT90/00020, § 371 Date Sep. 9, 1991, § 102(e) Date Sep. 9, 1991, PCT Pub. No. WO90/10774, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 6, 1990, Ser. No. 752,483
Claims priority, application Italy, Mar. 7, 1989, 52923-9[U]
Int. Cl.[5] E05C *21/00;* **F16H** *57/02*
U.S. Cl. 292—201 **11 Claims**



1. An electric lock actuator device (**201**) comprising an electric motor (**204**) and a displacement actuator element (**264**) displaceable with respect to a frame (**202**) of said device under the action of said motor (**204**), for locking and releasing a lock in a vehicle, including a specific electronic unit (**27**) for controlling said electric motor (**204**), said electronic unit (**27**) comprising a plurality of components (**23, 25**) connected to a printed circuit (**271**) and housed in a portion (**220**) of said frame (**202**) which is integral with a portion (**207**) of the frame (**202**) housing said electric motor (**204**), characterized in that said frame (**202**) has a pair of mutually facing grooves (**229**) formed therein and in that said printed circuit (**271**) has its lateral edges engaged within said facing grooves (**229**); wherein said portion (**220**) of the frame (**202**) housing said electronic unit (**27**) is laterally adjacent to said portion (**207**) of the frame housing said electric motor (**204**) and is separated therefrom by said printed circuit (**271**); and wherein said printed circuit (**271**) has a first face looking toward said portion (**207**) housing said electric motor (**204**), said first face carrying means (**270**) to determine variation of at least one electrical signal in dependence on at least one limit position of said displacement actuator element (**264**), and a second opposite face looking toward said portion (**220**) housing said electronic unit (**27**), said second opposite face carrying said components (**23, 25**).

5,328,219

VEHICLE CLOSURE LATCH

Jeffrey L. Konchan, Shelby Twp.; Alfred L. Portelli, Waterford, and Rita M. Paulik, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 24, 1992, Ser. No. 996,816
Int. Cl.[5] E05C *3/16*
U.S. Cl. 292—216 **27 Claims**

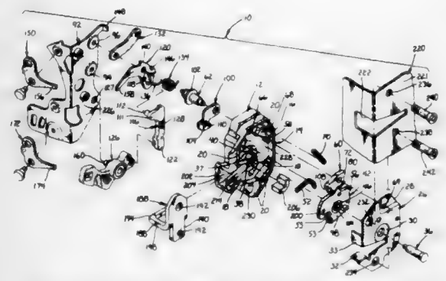
1. A vehicle closure latch for mounting on a vehicle closure so as to engage and retain a striker mounted on a vehicle body when the vehicle closure is closed, the vehicle closure latch comprising:

a housing having a cover plate and a back plate;

a ratchet pivotably mounted in the housing behind the cover plate for movement between a latched position and an unlatched position; the ratchet having a latching tooth and a throat for receiving a striker;

a pawl pivotably mounted in the housing behind the cover plate for movement between an engaged position and a releasing position, the pawl having a pawl tooth that engages the latching tooth of the ratchet to hold the ratchet in the latched position; and

means for securing the vehicle closure latch to a vehicle closure consisting of first and second series of aligned bolt holes extending through the cover plate, the housing and the back plate.

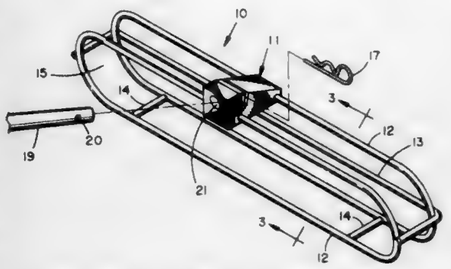


5,328,220

BALL RETRIEVER

Bob D. McPherson, 15330 Mueck Rd., Needville, Tex. 77461

Filed Mar. 11, 1993, Ser. No. 29,716
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 **2 Claims**



1. A ball retriever for retrieving a ball comprising:

(a) a handle receiving member having a handle receiving bore capable of accepting one end of an extendible handle;

(b) at least two parallely disposed horizontally elongated substantially ellipsoidal ball barriers attached to the handle receiving member, each of said ball barriers being one continuous loop of substantially rigid material, the loop having oppositely arcuately curved ends, each of said ball barriers integrally extending through, and internally and fixedly intersecting with, said handle receiving member;

(c) at least one ball restraining member attached to at least one ball barrier, said restraining member having ends unconnected to each other;

(d) at least two ball barrier support members connecting the ball barriers;

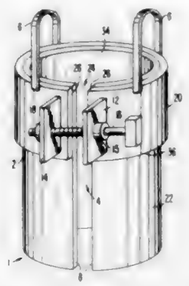
(e) a ball receiving chamber, formed by the ball barriers, the barrier support members and the ball restraining member, said ball receiving chamber having an elongated ellipsoidal ball receiving port, encircled by a first ball barrier located nearest the handle, said first ball barrier forming the rim of said port; and

(f) a handle lock means, having a pin groove on the handle receiving member cut perpendicularly to the longitudinal axis of the handle receiving bore and extending downward into the handle receiving member, said handle lock means also having a substantially U-shaped pin, one side of said pin slidingly and removably inserted along said pin groove and through a pin port in the extendible handle when said handle is fully inserted into the handle receiving

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bore, releasably locking the extendible handle to the handle receiver.

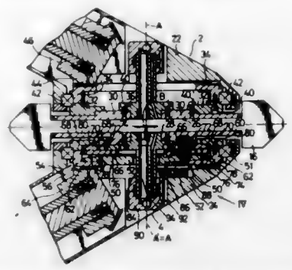
5,328,221
CORE PULLER FOR PULLING TEST CORES
Thomas D. Richardson, Jr., Cleveland, Ohio, assignor to G. R. Osterland Company, Cleveland, Ohio
Filed Jun. 30, 1992, Ser. No. 906,361
Int. Cl.[5] A01B *1/00*
U.S. Cl. 294—50.7 **7 Claims**



1. A core puller for pulling a core surrounded by a space, comprising:
a first split shell including a first split portion and confronting ends;
at least one handle attached to the first shell; and
a tightening device for moving the confronting ends of the first shell towards each other, the tightening device being located on an upper part of the first shell, the tightening device comprising:
two brackets attached to the upper part of the first shell, one bracket on each side of the first split portion, each bracket having a hole formed therein; and
a clamping screw and a nut, the clamping screw being fitted through the holes in the brackets, the nut being threaded on one end of the clamping screw, whereby the confronting ends of the first shell are moved towards each other by advancing the nut on the clamping screw;
wherein a lower part of the first shell is free from external obstructions thereby allowing insertion of the lower part into the space.

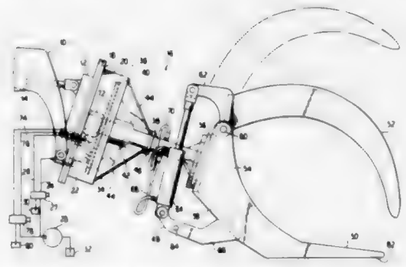
5,328,222
TRANSMISSION COUPLING FOR A MANIPULATOR HEAD
Franco Sartorio; Bruno Ballesio, and Stefano Vergano, all of Turin, Italy, assignors to Amada Company, Limited, Japan
PCT No. PCT/JP90/01656, § 371 Date Aug. 14, 1991, § 102(e) Date Aug. 14, 1991, PCT Pub. No. WO91/08871, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 19, 1990, Ser. No. 743,300
Claims priority, application Italy, Dec. 19, 1989, 68128 A/89; Dec. 19, 1989, 68129 A/89
Int. Cl.[5] B25J *15/00*
U.S. Cl. 294—86.4 **13 Claims**

1. A transmission coupling for a manipulator head, comprising:
a support body connected to the manipulator head;
an intermediate transmission member slidable on the support body along a first line;
an attachment member slidable on the intermediate member along a second line perpendicular to the first line, and pivotable relative to the support body about at least two mutually-perpendicular axes substantially parallel to the plane defined by the first and second lines; and
resilient means for keeping the attachment member in a predetermined position relative to the support body in the



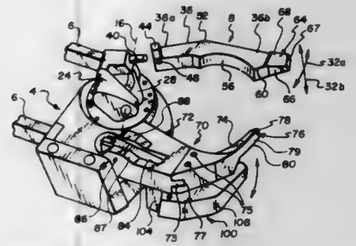
absense of external forces acting on the attachment member.

5,328,223
END GRAPPLE FOR NURSERIES
Lewis R. Maggio, R.R. 2, Box 56, Morocco, Ind. 47963
Filed Jan. 12, 1993, Ser. No. 3,280
Int. Cl.[5] B66C *1/42*
U.S. Cl. 294—86.41 **10 Claims**



1. An end grapple for a loader tractor having a hydraulic drive, comprising:
a rotation drive housing having means for supporting attachment to a loader of the loader tractor;
a rotation shaft extending from said rotation drive housing, said rotation shaft having a longitudinal bore connected to the hydraulic drive for carrying hydraulic fluid;
means for rotating said rotation shaft, including:
a hydraulic motor connected to the hydraulic drive,
a first sprocket mounted on a drive shaft of said hydraulic motor,
a second sprocket mounted on said rotation shaft, and
a drive chain connected said first and second sprockets;
a grapple head mounted to an end of said rotation shaft, said grapple head including:
a base plate mounted transversely on said end of said rotation shaft;
first and second grip plates mounted on opposite sides of said base plate and perpendicular thereto, said first and second grip plates each having a finger extending outwardly from one end of said base plate;
a pivot shaft mounted extending between said grip plates at another end of said base plate and parallel to said base plate;
a pivotable grip finger mounted for pivoting movement on said pivot shaft toward a position between said fingers of said first and second grip plates;
a bracket mounted extending from said pivotable grip finger;
a hydraulic cylinder connected between said bracket and said base plate, said hydraulic cylinder having a connection to said longitudinal bore in said rotation shaft to receive hydraulic fluid pressure and thereby pivot and pivotable grip finger toward said fingers of said first and second grip plates; and
means for pivoting said pivotable grip finger away from said fingers of said first and second grip plates.

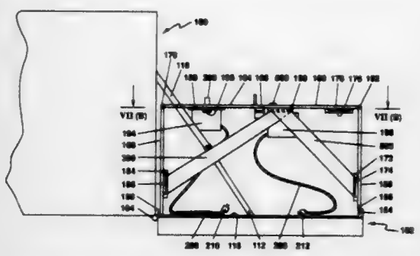
5,328,224
ROBOTIC GRASPING APPARATUS
Stephen C. Jacobsen, and Fraser Smith, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah
Continuation of Ser. No. 963,831, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 563,399, Aug. 6, 1990, Pat. No. 5,172,951. This application May 7, 1993, Ser. No. 58,690
Int. Cl.[5] B25J *15/10*
U.S. Cl. 294—104 **12 Claims**



1. Grasping apparatus comprising
a fixed finger having a base section, a narrowed middle section extending outwardly from the base section, and a curved end section which extends outwardly and upwardly from the middle section to terminate in a tip having first and second lateral sides, an outermost side, and an end,
an elongate moveable thumb having a fixed end mounted in the base of the finger to pivot about a first axis which extends laterally of the long axis of the thumb, and to rotate about a second axis extending generally perpendicular to the base of the finger and being generally coaxial with the rotation of the thumb when the thumb is extended, and a free end selectively moveable to a position in contact with the end of said tip and to a position in contact with the lateral sides of said tip, wherein said free end has first and second lateral sides, a bottom side, and a distal surface,
wherein the bottom side of the free end of the thumb, and the end of said tip are formed with conformable contact surfaces, and
wherein the distal surface of the free end of the thumb and the surface of the outermost side of the tip of the finger form a continuous unbroken surface when the bottom side of the thumb and the end of the tip are in contact.

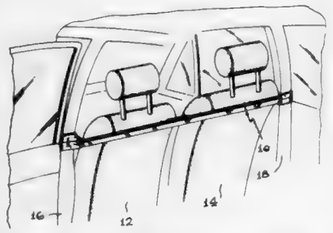
5,328,225
SYSTEM MOUNTABLE TO A TAILGATE OF A PICK-UP TRUCK TO IMPROVE THE UTILITY THEREOF
William E. Melching, Novi; David M. Glorio, Okemos, and Joseph S. Sareny, Jr., Northville, all of Mich., assignors to Nissan Research and Development, Inc., Farmington Hills, Mich.
Filed Jun. 25, 1992, Ser. No. 904,079
Int. Cl.[5] B60P *9/00;* **B62D** *33/03*
U.S. Cl. 296—26 **18 Claims**

1. A system mountable to a tailgate of a pick-up truck to increase the utility thereof, comprising:
a first plate having first and second longitudinal edges, pivotably mounted at said first edge to pivot along a distal edge of an inside face of the tailgate, the first plate having first brace-engagement means for engaging with a first brace to be braced thereby at a predetermined first angle with respect to the inside face of the tailgate;
a second plate having third and fourth longitudinal edges, pivotably connected at said third edge to said second edge, said second plate having second and third brace-engagement means for respectively engaging with corresponding second and third braces to be braced thereby at a predetermined second angle with respect to the inside face of the tailgate;
a third plate having fifth and sixth longitudinal edges, pivotably connected at said fifth edge to said fourth edge;



a fourth plate having seventh and eighth longitudinal edges, pivotably connected at said seventh edge to said sixth edge, said fourth plate having fourth brace-engagement means for engaging with a fourth brace to be braced thereby at a predetermined third angle with respect to the tailgate; and
a plurality of braces, comprising at least said first, second, third and fourth braces, for selectively and detachably engaging at least one of said first, second, third and fourth brace-engagement means to brace said connected first through fourth plates in a predetermined disposition with respect to each other and to the inside face of the tailgate.

5,328,226
SUPPORT STRAP FOR FRONT SEATS OF CARS
Donald E. Thomas, 6606 Matilija Ave., Van Nuys, Calif. 91405
Filed Dec. 7, 1992, Ser. No. 986,558
Int. Cl.[5] B60R *21/10*
U.S. Cl. 296—68.1 **20 Claims**

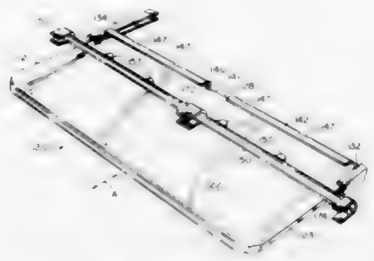


1. A support strap for the front seats of four-door automobiles having left and right door posts adjacent such front seats, said support strap comprising:
a central strap portion to be positioned across the automobile adjacent to and behind the back of such front seats at an elevation below and adjacent to the top of the seat backs, and
left and right attachment means on said support strap, said left attachment means being for attachment to the left door post at a position adjacent to and an elevation below the top of the front seat backs, said right attachment means being for attachment to the right door post at a position adjacent to and an elevation below the top of the front seat

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backs so that the top of said seat is restrained against rearward motion caused by impact on the automobile from the rear.

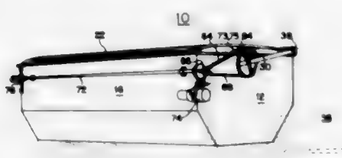
5,328,227
EXTENDABLE PIVOTED VISOR PANEL
Ralph A. Pax, Jr., and Scott T. Williams, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.
Filed Sep. 27, 1993, Ser. No. 127,755
Int. Cl.[5] B60J 3/02
U.S. Cl. 296—97.8 20 Claims



1. A visor system for a vehicle comprising:
guide means for mounting to a vehicle above a vehicle headliner for movably receiving a visor panel for movement between a stored position behind the headliner and a use position extended from the headliner;
a visor panel including pivot rod engaging means, said panel coupled to said guide means for movement between stored and use positions;
a pivot rod including means for mounting said pivot rod to a vehicle and near an exit end of said guide means to be engaged by said pivot rod engaging means when said visor panel is extended; and
one of said visor panel and pivot rod including torque control means for controlling the rotational adjustment of said visor once extended from a stored position

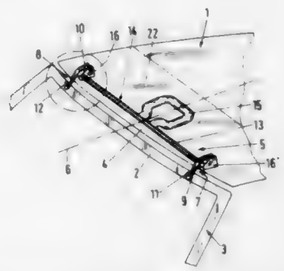
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5,328,228
COVER FOR TRUCK BED AND CARGO
Michael J. Klassen, 2092 S. 2900 W., Aberdeen, Id. 83210
Filed Apr. 6, 1993, Ser. No. 44,218
Int. Cl.[5] B60J 11/00
U.S. Cl. 296—98 5 Claims



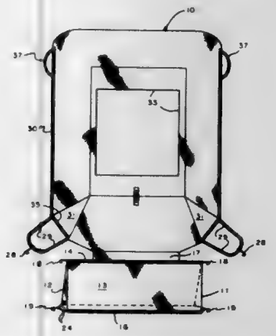
1. A cover for use with a truck bed and a power mechanism, the truck bed having a first side and an opposing second side, and a third side and an opposing fourth side, with each side having a top edge, the cover comprising:
a lever assembly including an arcuate member having an outer arcuate edge and a center, and an arm attached to and extending out in substantially coplanar relationship from the arcuate member, the arm having a cantilevered end extending out past the outer arcuate edge,
an attachment means for rotatably attaching the lever assembly to the first side of the truck bed so that the lever assembly lies in, and rotates bidirectionally around the arcuate member center in a plane parallel to the first side of the truck bed, and so that the cantilevered end reaches above the top edge of the first side of the truck bed,
an elongated roller having opposing first and second ends and a hollow pocket inside the roller, the first end being rotatably attached to the cantilevered end of the arm and the second for reaching toward the second side of the truck bed, so that the roller is positioned generally horizontally across and above the truck bed,
a tarp for extension and retraction from over the truck bed, the tarp having an anchor end attached to the third side of the truck bed and an opposing roll-up end attached to the roller,
a flexible connector comprising
a first section being attached at an anchor end to the arcuate member, extending in a first direction to removably and circumferentially contact the outer arcuate edge, and having a pull end, and
a second section being attached at an anchor end to the arcuate member, extending in a second direction to removably and circumferentially contact the outer arcuate edge, and having a pull end,
a drive means for cooperating with and being energized by the power mechanism, the drive means extending into the plane of the lever assembly and contacting the pull ends of the flexible connector first and second sections for pulling the first section and letting out the second section to rotate the arcuate member in the first direction and for pulling the second section and letting out the first section to rotate the arcuate member in the second direction, for bidirectionally swinging the cantilevered end of the arm above the top edge of the truck bed first side and the roller above the truck bed,
a coiled spring located inside the hollow pocket of the roller for biasing the roller to rotate in a roll-up direction, for keeping the tarp taut when extended across the truck bed, for rolling up the tarp around the roller when the lever assembly swings to retract the tarp, and for keeping the tarp tightly rolled when in the retracted position,
a spring-arm securing means for securing the outer end of the coiled spring to the cantilevered end of the arm, and
a spring-roller securing means for securing the inner end of the coiled spring to the roller.

5,328,229
CLOSING APPARATUS FOR A FOLDING ROOF OF CONVERTIBLES
Armin Brandt, Harsewinkel, and Wolfgang Richter, Wallenhorst, both of Fed. Rep. of Germany, assignors to Wilhelm Karmann GmbH, Osnabrück, Fed. Rep. of Germany
Filed Mar. 5, 1993, Ser. No. 26,709
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1992, 9203285
Int. Cl.[5] B60J 7/08
U.S. Cl. 296—121 8 Claims



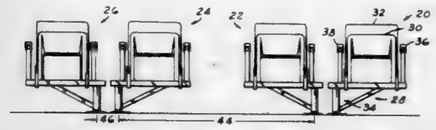
1. A closing apparatus for a folding roof of a convertible vehicle having a windshield frame, said closing apparatus comprising:
first and second anchoring brackets secured in spaced relation to said windshield frame;
first and second locking organ means for engaging said first and second anchoring brackets, respectively, when said folding roof is in a closed position, said first and second locking organ means being connected with said roof;
connecting element means for connecting said first and second locking organ means and for imparting a synchronous swivelling motion to said first and second locking organ means;
operating handle means, substantially centrally connected with said connecting element means, for controlling said connecting element means to impart said synchronous swivelling motion;
first and second holding body means for pivotally connecting said first and second locking organ means to said roof, said first and second holding body means being pivotally connected to said folding roof, said connecting element means including opposite ends connected with said first and second holding body means, respectively;
each of said holding body means has a substantially U-shaped cross-sectional configuration including:
an inner supporting leg substantially parallel and spaced from a central vertical plane of the vehicle, said inner supporting leg being connected with one said end of said connecting element means,
an outer supporting leg substantially parallel and spaced apart from said inner supporting leg, and
stay bolt means for pivotally connecting said outer supporting leg to the folding roof;
said stay bolt means and said connecting element means having a common swivel axis in end regions containing said first and second holding body means.

5,328,230
CAR COVER AND ANCHORING ASSEMBLY
Donald B. Curchod, 345 Eleanor Dr., Woodside, Calif. 94062
Continuation-in-part of Ser. No. 766,327, Sep. 26, 1991, Pat. No. 5,188,417. This application Feb. 24, 1993, Ser. No. 22,046
Int. Cl.[5] B60J 7/20
U.S. Cl. 296—136 17 Claims



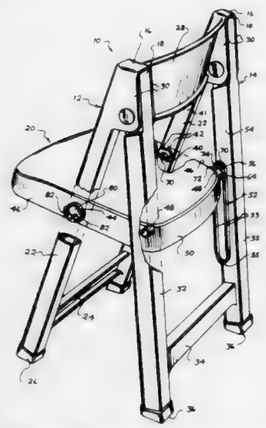
1. A protective vehicle cover comprising a sheet of strong, flexible, pliant material sufficient to overlay a substantial portion of the front windshield, rear windshield, and the side windows of a vehicle to be covered, said sheet carrying a storage unit at one end thereof, said storage unit being anchored within a compartment of said vehicle, said compartment having a closure moveable between open and closed positions, said sheet being disposed to be clamped between said closure and the body of said vehicle when said closure is in its closed position;
wherein said storage unit comprises a pair of panels joined together along a forward edge of each, one of said panels being movable between a first and a second position with respect to the other said panel to form an open space therebetween for receiving said cover to be stored therein.

5,328,231
EQUAL ACCESS SEATING
David W. Raymond, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Feb. 21, 1991, Ser. No. 658,918
Int. Cl.[5] A47C 3/18
U.S. Cl. 297—13 27 Claims



1. A compactible seating apparatus of the type which yields way to accommodate an individual in a wheelchair, comprising:
a seat bottom pivotal about a first axis;
a seat back pivotal about said first axis;
a cantilever beam connected to said seat bottom and seat back;
a support stanchion pivotally attached to said cantilever beam, and
wherein said cantilever beam is adapted to pivot in relation to said stanchion about a second axis, said second axis being generally perpendicular to said first axis and displaced from said seat bottom and said seat back,
wherein when said cantilever beam is pivoted about said second axis from a use position to a store position, said seating apparatus yields way to accommodate an individual in said wheelchair.

5,328,232
FOLDABLE PLASTIC CHAIR
Steven P. Whitehead, Elgin, Ill., assignor to Suncast Corporation, Batavia, Ill.
Filed Jun. 17, 1992, Ser. No. 900,157
Int. Cl.[5] A47C 4/00
U.S. Cl. 297—58 10 Claims



1. A foldable chair, comprising:
a seat having a front end, a rear end and opposite lateral

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sides, with apertures provided in the lateral sides approximately midway between the front end and rear end, and pivot pins extending outward from the lateral sides at the rear end of the seat;

a front leg pair having spaced integral left and right legs both having inwardly extending projections pivotably received within the apertures in the lateral sides of the seat to support the seat for pivotal movement between the left and right legs of the front leg pair;

a rear leg pair having spaced integral left and right legs both having inwardly extending channels with upper and lower ends which receive therein the pivot pins extending from opposite lateral sides of the seat for pivotally and slidably supporting rear of the seat between the left and right legs of the rear leg pair;

the rear leg pair and front leg pair being pivotally interconnected with one another above the seat with the pivot pins sliding to the upper end of the channel upon pivoting apart of the front and rear leg pairs as the seat approaches its generally horizontal seating position; and

the channel being of generally uniform width comprising front and rear channel sidewalls between which the pivot pin slides from the lower end of the channel when the seat is raised, to the upper end of the channel when the seat is lowered, the channel further comprising ramps extending inwardly from the opposite front channel sidewalls and rear channel sidewalls at the upper end of the channel for camming engagement of the pivot pins thereat to secure the pivot pins at the upper end of the respective channels to secure the seat in its generally horizontal seating position; and

the upper end of the channel reinforced with at least one vertically extending reinforcing member thereat to provide additional structure support to the upper end of the channel to allow the chair to withstand increased seat loading without structural failure.

5,328,233

COMBINATION CHILD'S SEAT AND ARMREST FOR A VEHICLE

Warren E. Maule, 345 Ford Ave., Highland Park, Mich. 48203

Continuation of Ser. No. 715,503, Jun. 14, 1991, abandoned. This application Nov. 3, 1992, Ser. No. 970,968

Int. Cl.[5] A47C *13/00*

U.S. Cl. 297—115 **10 Claims**



1. A combination vehicle seat and child's support and armrest assembly, said seat having a back and a base, said combination comprising:

said armrest assembly having an upper portion and a lower portion, said upper portion having a top side and a bottom side, said bottom side of said upper portion having a rear surface and an adjacent intermediate surface;

said upper portion being selectively movable from a lowered downfolded position to a raised position;

said bottom side of said upper portion further including a protruding chest support, said rear surface of said bottom side of said upper portion being provided on said protruding chest support, said rear surface comprising a chest-contacting region for contacting the chest of a child-passenger, whereby the chest of the child-passenger's body is supported by said chest-contacting region when said upper portion is in said raised position;

said upper portion having an inconstant width between said top side and said bottom side, the width between said top side and said rear surface being greater than the width between said top side and said adjacent intermediate surface.

5,328,234

ROTATABLE SEAT FOR VEHICLES

Roger P. Daniel, Dearborn; Timothy G. Laske, and John M. Maddox, both of Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 20, 1992, Ser. No. 979,717

Int. Cl.[5] B60N *2/42*

U.S. Cl. 297—216.16 **20 Claims**



1. A rotatable seat for an occupant of a vehicle, comprising:

a generally horizontal seat portion;

a generally upright back portion; and

means for rotating at least either one of said seat portion and said back portion about a vertical axis in reaction to an impact from a side of a vehicle to place said rotatable seat between the occupant and an intruding side of the vehicle.

5,328,235

PAWL AND RATCHET ASSEMBLY

Jonathan R. Saul, LaSalle; Karl J. Komorowski, Petersburg; Larry P. LaPointe, Temperance, and Edwin J. Shoemaker, Monroe, all of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Filed Jan. 31, 1992, Ser. No. 826,691

Int. Cl.[5] A47C *3/02*

U.S. Cl. 297—270 **36 Claims**

1. A rocking chair comprising:

a base;

a chair frame supported for rocking movement on said base;

a drive mechanism suspended from said chair frame;

a leg rest assembly suspended from said drive mechanism for movement between a retracted position and an extended position in response to actuation of said drive mechanism;

actuation means for permitting a seat occupant to selectively actuate said drive mechanism;

a ratchet sector secured to said chair frame and having ratchet teeth formed thereon;

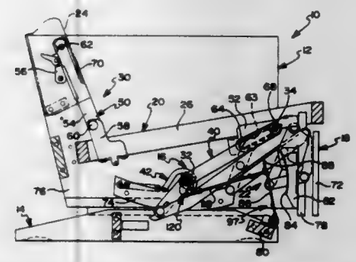
a pawl member secured to said base for pivotable movement between a first position lockingly engaging said ratchet teeth wherein said chair frame is releasably locked in a

rearwardly tilted position, and a second position released from said ratchet teeth for permitting unrestricted rocking movement of said chair frame;

spring means for normally biasing said pawl member toward said first position, said spring means adapted to exert an engagement force on said pawl member for maintaining locked engagement with said ratchet teeth when said pawl member is in said first position;

a first member supported on said drive means and having aperture means formed therein; and

a release member having a first end coupled to said pawl member and a second end retained within said aperture



means of said first member, said release member adapted to pull said pawl member to said second position when said drive mechanism is actuated for moving said leg rest assembly to said retracted position, said spring means being operable to urge said pawl member to said first position when said drive mechanism is actuated for moving said leg rest assembly to said extended position such that said release member is slidably movable within said aperture means for inhibiting said release member from exerting a biasing force on said pawl member whereby said release member is maintained in an unloaded condition.

5,328,236

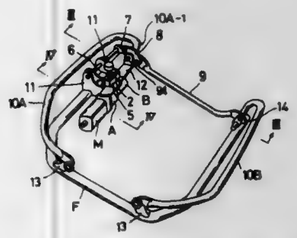
SIDE SUPPORT DEVICE IN SEAT BACK OF AN AUTOMOTIVE SEAT

Yoshihiro Mizushima, and Akira Aoki, both of Akishima, Japan, assignors to Tachi-S Col. Ltd., Akishima, Japan

Filed Sep. 29, 1992, Ser. No. 953,657

Int. Cl.[5] A47C *3/00*

U.S. Cl. 297—284.9 **4 Claims**



1. A side support device in a seat back of an automotive seat, comprising:

a seat back frame having a pair of lateral frame sections;

a pair of side support frames, each being rotatably mounted on one of said pair of lateral frame sections of said seat back frame;

a drive mechanism disposed at one of said pair of lateral frame sections of said seat back frame, said drive mechanism including:

a motor;

a lead screw connected operatively with an output shaft of said motor, said lead screw being so disposed as to extend generally vertically relative to said one of said pair of lateral frame sections;

a nut member in a threaded engagement with said lead screw, said nut member having a pin provided therewith;

an arm means having two ends, wherein one end is engaged with said pin of said nut member;

a first bracket fixed on said one of said pair of lateral frame sections,

a shaft which is rotatably supported on said first bracket, wherein another end of said arm means is fixed to said shaft;

a link means having a base end fixed to a free end of said shaft;

a second bracket fixed on said one of said pair of lateral frame sections;

an actuator plate which is rotatably supported on said second bracket, said actuator plate having one end portion coupled operatively to a free end of said link means, and having another opposite end portion to which one end of one of said pair of side support frames is fixed;

a connecting rod extended between said pair of side support frames, said connecting rod having one end pivotally connected to another end portion of said actuator plate and having another end operatively connected to another of said pair of side support frames; and

wherein operation of said motor causes both said pair of side support frames to be moved inwardly toward or outward away from each other.

5,328,237

SHOCK ABSORBER FOR A BACK REST OF A CHAIR

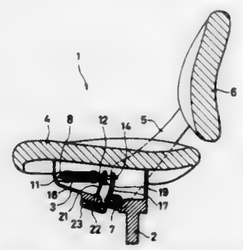
Tomoshige Yamaguchi, Yokosuka, and Nobuaki Nasu, Yokohama, both of Japan, assignors to Okamura Corporation, Japan

Filed Jun. 26, 1992, Ser. No. 905,039

Claims priority, application Japan, Jun. 26, 1991, 3-180480

Int. Cl.[5] A47C *1/032*

U.S. Cl. 297—304 **6 Claims**



1. A shock absorber operable for properly absorbing shock caused when a user sits on a chair and then reclines against a back rest of said chair, said back rest including a pair of support arms for turnably supporting said back rest at upper ends thereof, lower ends of said support arms being pivotally held by a first transversely extending shaft at a rear end part of a base frame fixedly mounted on an upper end of a foot column for said chair, comprising:

a mounting frame having a front end which is turnably supported by a second transversely extending shaft fixedly secured to said base frame, said second transversely extending shaft extending through said mounting frame;

a pair of spring mounting rods comprising an elongated U-shaped spring mounting rod having parallel straight portions, said spring mounting rods having front ends which are received in said mounting frame while slidably extending through a rear wall of said mounting frame in a longitudinal direction, said front ends of said spring mounting rods being fixedly secured to a spring support

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portion slidably arranged on said mounting frame, said spring mounting rods further having rear ends which are connected to each other via an engagement portion bridged therebetween;

a pair of compression springs mounted on said spring mounting rods in said mounting frame between said spring support portion and said read wall of said mounting frame;

an engagement piece adapted to turn about said first transversely extending shaft together with said support arms, said engagement piece being slidably engaged with said engagement portion bridged between the rear ends of said spring mounting rods;

a guide member slidably bridged between said spring mounting rods at the rear ends of the spring mounting rods outside of said rear wall of said mounting frame, said guide member having a nut which is threadedly engaged with an adjustment bolt and is turnably arranged in said guide member to turn about a third transversely extending shaft which extends through said guide member; and

a handle fixedly secured to an outer end of said adjustment bolt, said handle being located outside of said base frame to rotate said adjustment bolt with user's fingers.

5,328,238

LAYABLE SEAT

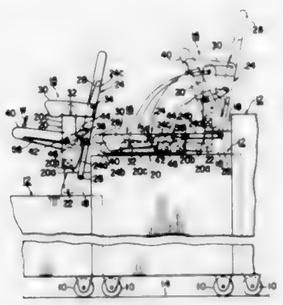
Ryokichi Yamazaki, Tokyo, Japan, assignor to Kotobuki Corporation, Japan

Filed Oct. 27, 1992, Ser. No. 967,098

Claims priority, application Japan, Oct. 31, 1991, 3-089809

Int. Cl.[5] **A47C** *1/12*

U.S. Cl. 297—332 **8 Claims**



1. A layable seat comprising:

supporting leg means which is adapted to be mounted on a floor surface to be pivotable between a raised position where the leg means is raised from the floor surface and a horizontally laid position where the leg means is horizontally laid along the floor surface;

a seat member which is mounted on said supporting leg means to be pivotable between a horizontal position where the seat member extends substantially horizontally from said supporting leg means located at the raised position and a folded position where the seat member is raised substantially vertically to extend along said supporting leg means located at the raised position;

urging means which is mounted on said supporting leg means and urges said seat member to a half-folded position between the horizontal and folded positions; and

forcible moving means which is mounted on said supporting leg means and forcibly moves said seat member from the half-folded position to the folded position against an urging force of said urging means in response to the pivotal movement of said supporting leg means from the raised position to the horizontally laid position.

5,328,239

FLIP-UP TYPE SEAT

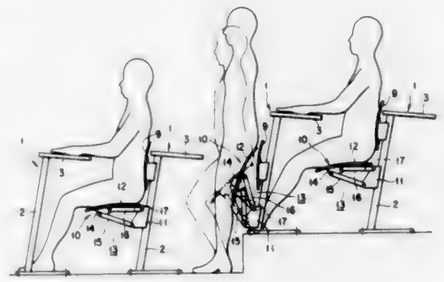
Ryokichi Yamazaki, Tokyo, Japan, assignor to Kotobuki Corporation, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 896,931

Claims priority, application Japan, Jun. 13, 1991, 3-142090

Int. Cl.[5] **A47C** *1/121*

U.S. Cl. 297—333 **1 Claim**



1. A flip-up type seat comprising:

a seat member support;

a seat member, a cross-section of which in back and forth directions of said flip-up type seat has such a shape that a center portion of said seat member projects from both end portions of said seat member; and

a seat member coupling means interposed between said seat member support and said seat member to couple said seat member to said seat member support in such a way that said seat member can be freely moved between a seated position where said seat member is kept substantially horizontal with the projected center portion being projected upward and a flipped-up position where said member is kept substantially vertical with the projected center portion being projected forward, said seat member coupling means causing a rear end of said member to be moved up and down in the vertical direction and a front end thereof forward and backward in the horizontal direction when said seat member is moved between the seated position and the flipped-up position;

said seat member coupling means including a bracket fixed to said seat member support, link means constructed by two arms arranged vertically with respect to each other, both ends of each of which being pivotably connected to said bracket and to said seat member, the connecting points of said two arms on said bracket being separated from each other in a vertical direction when said seat member is located in both the seated and flipped-up positions, and those on said seat member being separated from each other in the vertical direction when said seat member is located in the flipped-up position and being separated from each other in the vertical and back and forth directions when said seat member is located in the seated position, and said seat member coupling means further including means, provided at the connecting point of the upper arm of the link means on said bracket, for urging the upper arm upward to move said seat member from said seated position to said flipped-up position.

5,328,240

SUPPORT FOR A SEAT INCLUDING A PEDESTAL ADAPTED TO RECEIVE A VERTICALLY INCLINED COLUMN

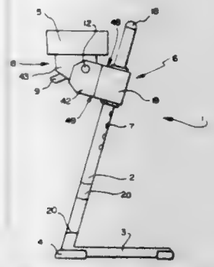
Konrad Neumuller, Burgthann, Fed. Rep. of Germany, assignor to Sifa Sitzbabrik GmbH, Sulzbach-Rosenberg, Fed. Rep. of Germany

Filed Jun. 2, 1992, Ser. No. 892,206

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1991, 4118013

Int. Cl.[5] **A47C** *3/00*

U.S. Cl. 297—338 **10 Claims**



1. Vertically adjustable seat with means to permit adjustment of the horizontal inclination of the seat and partial rotation thereof, comprising a pedestal base, a support column of two tubing pieces connected to the pedestal base, a seat supporting member fastened to the support column, and a seat unit fixed to the seat supporting member, the seat supporting member and the seat unit being vertically adjustably positionable along the support column, the seat unit being adjustable in inclination, characterized in that the seat unit (**5**) is fastened onto said seat supporting member (**8**), in that the seat supporting member (**8**) is swivellably mounted between two forward projecting arms (**42**) of a click-stop unit (**6**) being slidable along the support column (**2**) and lockable on the support column at selected positions thereon, and in that the click-stop unit (**6**) has detent latches (**11**) engagable with detent holes (**7**) on the support column (**2**), the seat supporting member (**8**) being U-shaped and having downward pointing arms (**43**), and in that the seat supporting member (**8**) is mounted on a shaft (**12**) fixed in an upper section of the click-stop unit between the arms (**42**) thereof, in which arrangement the shaft (**12**) projects through slotted holes (**44**) located in the arms (**43**) of the seat supporting member, the seat supporting member being movable along these slotted holes (**44**), and in that the arms (**43**) of the seat supporting member (**8**) have adjustment notches in lower sections thereof, which are capable of being engaged in and disengaged from a detent means (**14**) fixed in a lower section of the arms (**42**) of the click-stop unit (**6**) and in accordance with the movement of the seat supporting member (**8**) in the slotted holes (**44**).

5,328,241

SEAT RECLINER PAWL WITH ABBREVIATED TEETH

Syed Haider, Northville, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Jun. 7, 1993, Ser. No. 71,856

Int. Cl.[5] **B60N** *2/22*

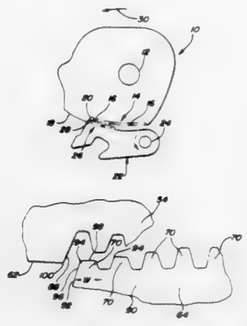
U.S. Cl. 297—367 **6 Claims**

1. A locking pawl for a vehicle seat assembly recliner for locking engagement with a moving member having a plurality of teeth and being movable relative to said pawl, said pawl comprising:

a generally planar body;

means for mounting said body for rotation about an axis generally normal to the plane of said body;

a peripheral edge portion of said planar body having an array of pawl teeth having engagement surfaces which are all commonly engagable with said teeth of said moving member to hold said moving member in place, a portion of said pawl teeth, at one end of said array, having the engagement surfaces of a shorter height than the engagement surfaces of the remainder of said teeth.



5,328,242

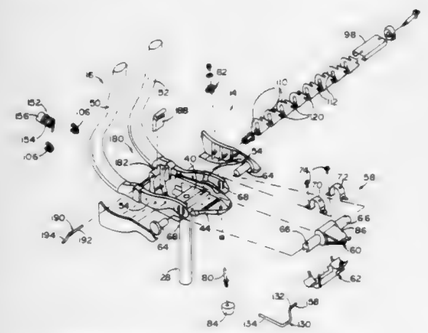
CHAIR WITH BACK LOCK

James P. Steffens, Hopkins, and Russell T. Holdredge, Alto, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Mar. 18, 1992, Ser. No. 852,306

Int. Cl.[5] **B60N** *2/02*

U.S. Cl. 297—374 **25 Claims**



1. An adjustable chair, comprising:

a base;

a back;

control means connecting the back to the base for allowing the back to tilt about an axis between a fully upright position and a fully inclined position;

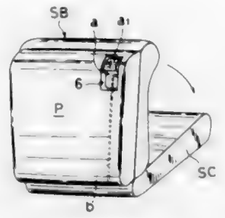
a seat having a forward portion pivoted to the base;

adjustment means connecting a rearward portion of the seat to the base for allowing selective adjustment and locking of the angle of the seat relative to said base while allowing tilting of the back between the upright and inclined positions, said adjustment means including a plurality of seat locking plates connected to said seat; and

a back lock mechanism on said back and separate from said adjustment means for engaging said locking plates and locking the back at a locked position relative to said base to prevent rearward tilting of the back and wherein the angular position of the back in the locked position is set relative to the angular position of the seat.

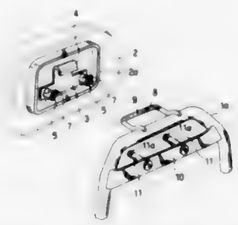
VOL 1164 ISS 2 JL 12 1994 UMI

5,328,243
ARRANGEMENT OF AN UNLOCKING KNOB IN AUTOMATIVE SEAT
Masami Akiyama, Akishima, Japan, assignor to Tachi-S Co. Ltd, Akishima, Japan
Filed Sep. 29, 1992, Ser. No. 953,929
Claims priority, application Japan, Sep. 13, 1991, 3-82470[U]
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—378.12 **7 Claims**



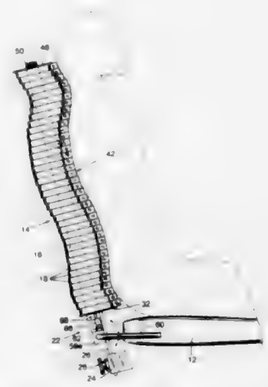
1. An arrangement of an unlocking knob in an automotive seat, adapted to be associated with a lock means and operating through a rod, and said rod is operated via said unlocking knob, wherein a free end portion of said rod is so formed as to define therein a raised portion integrally extended from a base rod portion of said rod, and a horizontally expanded hook-like latch portion continuous from said raised portion, wherein said unlocking knob includes a securing portion which has, formed therein, a recessed groove of a shape generally identical to that of said horizontally expanded hook-like latch portion of said rod, said recessed groove including a means for defining a sloped upper edge sloped downwardly from an upper plane of said groove to a lower plane of a base bottom portion of said unlocking knob, and wherein said free end portion of said rod is latchingly secured into said securing portion of said unlocking knob, such that said horizontally expanded hook-like latch portion of said rod rides on said sloped upper edge defining means and then falls fit in said groove.

5,328,244
HEADREST DEVICE
Masao Ishihara; Tetsuo Saito, and Atsushi Inoue, all of Akishima, Japan, assignors to Tachi-S Co. Ltd., Tokyo, Japan
Filed Nov. 19, 1991, Ser. No. 794,403
Claims priority, application Japan, Aug. 30, 1990, 2-229154
Int. Cl.[5] A47C *7/38*
U.S. Cl. 297—391 **6 Claims**



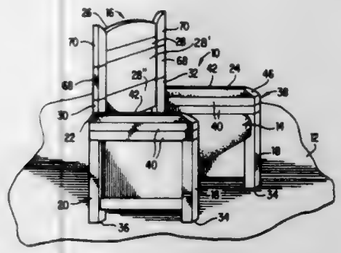
1. A headrest device, which is equipped at an upper end part of a seat back of a high back seat and disposed on a frontal surface thereof, comprising:
a headrest body formed independently of said seat back;
a first engagement means provided at one of said seat back and headrest body, said first engagement means being formed by a bracket fixed to a headrest frame of said headrest body and including an upper inverted U-shaped hook-like male engagement section formed integrally with an upper end part of said bracket and a lower engagement means; and
a second engagement means positioned on another of said seat back and headrest body, said second engagement means including an upper U-shaped wire forming a male engagement means, to which upper U-shaped wire, said inverted U-shaped hook-like male engagement section of said first engagement means is to be hookingly engaged, and a lower engagement means which is securely engaged with said lower engagement means of said first engagement means;
wherein one of said two lower engagement means respectively of said first and second engagement means comprises a pair of spaced-apart sleeves each including a notched groove formed therein, in which notched groove, a snap spring is resiliently fitted, while the other of said two lower engagement means comprises a pair of stoppers, each engageable into the respective said pair of spaced apart sleeves and securely engaged thereto by said snap spring,
wherein said headrest body is assembled with said seat back by causing said inverted U-shaped hook-like male engagement section of said first engagement means to be hookingly engaged with said upper U-shaped wire, and causing said lower engagement means of said first engagement means to be securely engaged with said lower engagement means of said second engagement means, respectively.

5,328,245
CHAIR HAVING ADJUSTABLE BACK SUPPORT
Thomas J. Marks, Portland, and Daniel F. Rohrer, Powell Butte, both of Oreg., assignors to Thomas J. Marks, Portland, Oreg.
Filed Oct. 30, 1992, Ser. No. 969,031
Int. Cl.[5] A47C *3/20*
U.S. Cl. 297—284.3 **6 Claims**



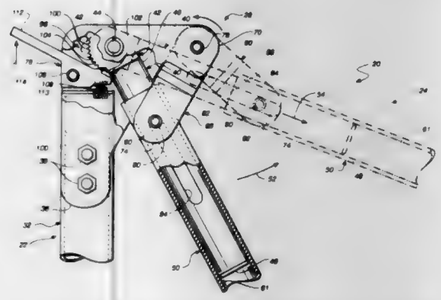
1. A chair having an adjustable back support, comprising:
a seat;
a support bar extending upwardly from said seat;
a plurality of segments received on said support bar wherein each segment defines a slot for receiving the support bar, said slot being elongated to allow the segment to slide in a forward direction; and a locking mechanism actuable from a first position in which said segments are movable in a forward direction to a second position in which said segments are held stationary.

5,328,246
DIMENSIONALLY ADJUSTABLE CHAIR
Joel L. Sereboff, 2215 Millridge Rd., Owings Mills, Md. 21117
Filed Jul. 27, 1992, Ser. No. 919,237
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—411.36 **16 Claims**



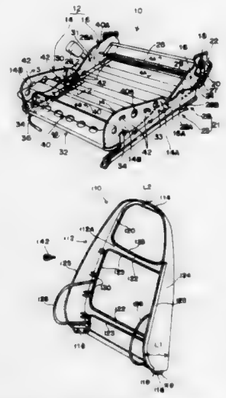
1. A dimensionally adjustable chair comprising:
(a) a seat portion;
(b) a back portion for contiguously interfacing with a user's back;
(c) a pair of chair front legs, each having a lower surface for interfacing with a base surface;
(d) a pair of chair rear legs each having a lower surface for interfacing with said base surface;
(e) a pair of arm rest members, one of said arm rest members releasably secured to a first pair of said front and rear legs and the other of said arm rest members releasably secured to a second pair of said front and rear legs; and
(f) means for adjusting the height of said pair of said arm rest members with respect to an upper surface of each of said front and rear legs, said adjustment means being releasably coupled to said arm rest members and said front and rear legs, said means for adjusting the height of said pair of said arm rest members including at least one intermediate chair arm member insertable between and releasably secured to at least one of said arm rest members and one of said first or second pair of said front and rear legs.

5,328,247
EXTENDABLE LEG REST ASSEMBLY FOR A WHEELCHAIR
Terrence F. Lovins, Fresno, Calif., assignor to Quickie Designs Inc., Fresno, Calif.
Filed Apr. 29, 1992, Ser. No. 875,736
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—423.3 **17 Claims**



1. An expandable elevating leg rest assembly for a wheelchair comprising:
mounting means for mounting said leg rest assembly to said wheelchair;
an expandable strut assembly pivotally mounted to said mounting means for pivotal movement about a first pivotal axis proximate a distal end thereof between a lowered position and a raised position, said strut assembly including an extension member mounted for movement in a radial direction with respect to said first pivotal axis;
a footrest device carried by said extension member;
link means pivotally mounted proximate one end to said mounting means and pivotally mounted proximate an opposite end to said extension member, said link means being pivotally mounted to said mounting means at a location spaced relative to said first pivotal axis in a direction producing movement of said extension member in a direction away from said first pivotal axis to extend said extension member radially in response to pivotal movement of said strut assembly from said lowered position to said raised position;
a ratchet mechanism coupled between and in axial alignment with both a distal end of said mounting means and said distal end of said strut assembly for releasably retaining said strut assembly at any one of a plurality of positions between said lowered position and said raised position; and
cover means extending substantially over and shielding access to said ratchet mechanism;, the pivotal mounting of said strut assembly to said mounting means, and at least a portion of said link means.

5,328,248
SEAT FRAME FOR A VEHICLE
Kunio Nishiyama, Sosono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Jul. 21, 1992, Ser. No. 915,613
Claims priority, application Japan, Jul. 23, 1991, 3-182435; Jul. 23, 1991, 3-182436
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.56 **21 Claims**



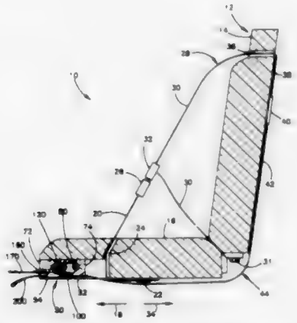
1. A seat frame for a vehicle comprising:
a front-lower arm;
a rear-lower arm, which is formed of a material having greater tensile strength and compressive strength than said front-lower arm, said rear-lower arm being overlaid with said front-lower arm so as to be fixed jointly to said front-lower arm;
a seat back frame, which is integrally cast-formed and is fixed to said rear-lower arm so as to support an occupant; and,
a woven spring member, which is formed of elastic fibers and is secured to said seat back frame,
wherein said seat back frame comprises:

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a vertical wall portion, which extends along a periphery of said seat back frame;
a plurality of spring-mounting members which are disposed inside said vertical wall portion so as to engage with said woven spring member; and
a reinforcing member, which connects said vertical wall portion and each of said spring-mounting members for reinforcing the spring-mounting members,
a hole, which is used to mount said woven spring member on said seat back frame, being provided in said reinforcing member between said vertical wall portion and each of said spring-mounting members

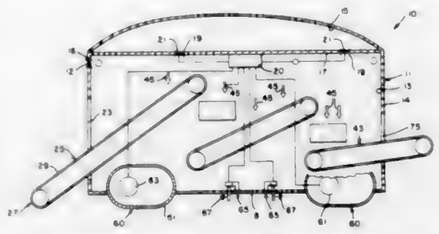
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5,328,249
SEAT BELT SYSTEM
Keith R. Ball, New Baltimore, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Oct. 20, 1992, Ser. No. 963,377
Int. Cl.[5] A44B *19/00*
U.S. Cl. 297—483 **14 Claims**



1. A seat belt retraining apparatus for restraining movement of a child in a child seat, said apparatus comprising:
a shoulder belt webbing extensible across a shoulder of a child seated in the child seat to restrain movement of the child relative to the child seat;
an adjust belt connected with said shoulder belt webbing and being movable to adjust said shoulder belt webbing; and
means for blocking movement of said adjust belt to block adjustment of said shoulder belt webbing and for enabling movement of said adjust belt to enable adjustment of said shoulder belt webbing, said means for blocking and for enabling comprising an adjuster associated with said adjust belt, said adjuster having a locked condition blocking movement of said adjust belt to block adjustment of said shoulder belt webbing and a release condition enabling movement of said adjust belt to enable adjustment of said shoulder belt webbing, said adjuster comprising:
a base for connection with the child seat;
clamping means for clamping said adjust belt to block movement of said adjust belt, said clamping means comprising a slide bar around which said adjust belt extends and which is slidable on said base between a clamping position blocking movement of said adjust belt and a release position enabling movement of said adjust belt; and
a pull tab connected with said slide bar for movement with said slide bar, said pull tab being manually movable to move said slide bar from the clamping position to the release position to enable movement of said adjust belt.

5,328,250
SELF-PROPELLED UNDERSEA NODULE MINING SYSTEM
Ronald Upright, 5408 Brookwood SE., Kentwood, Mich. 49508
Filed Mar. 11, 1993, Ser. No. 29,714
Int. Cl.[5] E21C *45/00*; **E02F** *3/00*
U.S. Cl. 299—8 **14 Claims**

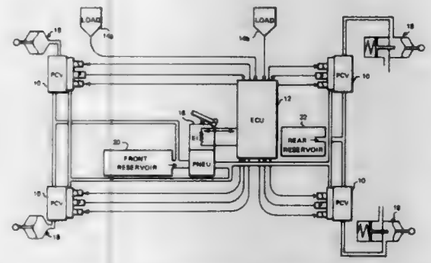


1. A self-propelled undersea nodule mining system, comprising:
a) a mining machine including an upper sub-chamber containing pressurized gas and a lower sub-chamber separated from said upper sub-chamber by a partition;
b) said lower sub-chamber including conveyor means for conveying sea bed materials into said lower sub-chamber, said conveyor means including a first conveyor extending outside said machine through a wall opening thereof and at least one further conveyor within said lower sub-chamber and receiving said materials from said first conveyor;
c) valve means in said partition for controlling fluid connection between said upper sub-chamber and lower sub-chamber;
d) spraying means for spraying fluid on said materials as they are conveyed on said at least one further conveyor;
e) motive means for moving said machine within a sea; and
f) computer means for controlling operation of said conveyor means, said valve means, said spraying means and said motive means;
g) whereby said computer means may control said valve means to control admission of gas to said lower sub-chamber to thereby adjust buoyancy of said machine, said admission of gas creating a gas bubble within said lower sub-chamber exposing at least a portion of said at least one further conveyor to said gas, said computer means controllably activating said spraying means so that sediment is cleaned from nodules, said buoyancy being adjusted to controllably suspend said machine slightly above a sea bed, said computer means controlling said conveyor means to cause said sea bed materials to be conveyed into said lower sub-chamber and to be sprayed therein, said computer means controlling said motive means to controllably adjust position and orientation of said machine with respect to said sea bed.

5,328,251
ELECTRONIC BRAKING SYSTEM
Malcolm Brearley, West Midlands, England, assignor to Lucas industries public limited company, Solihull, England
Continuation of Ser. No. 921,113, Jul. 29, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 150,234
Claims priority, application United Kingdom, Aug. 6, 1991, 9116952.4
Int. Cl.[5] B60T *13/28*
U.S. Cl. 303—9 **11 Claims**

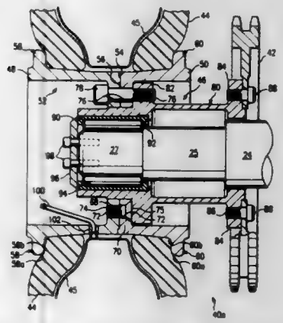
1. An electronic braking system for wheeled vehicles comprising:
first means for generating first electrical signals responsive to driver braking demands;
a main source of braking pressure;

a source of back-up braking pressure;
an electronic controller which produces, in response to driver braking demands established via said first means, second electronic signals for controlling the braking pressures applied to the vehicle wheels from said main source of braking pressure;
second means for establishing whether the vehicle is being braked and has come to rest;
third means for establishing whether the prevailing driver's braking demand is above a predetermined threshold;



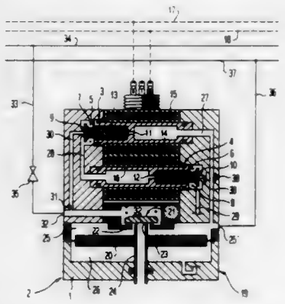
fourth means for switching over from said main source of braking pressure to said back-up pressure source at selected occasions when it is determined by said second means that the vehicle is being braked and has come to rest, provided that it is also determined by said third means that the prevailing driver's braking demand is above said predetermined threshold; and
fifth means for then performing a test on the braking pressures generated by the braking system while it is energized by the back-up source and generating a warning signal if the back-up source is found to be faulty.

5,328,252
QUICK CHANGE WHEEL AND DRIVE ASSEMBLY FOR PASSENGER BOARDING BRIDGES
James E. Thompson, Garland, Tex., assignor to Trinity Industries, Inc., Dallas, Tex.
Filed Aug. 31, 1992, Ser. No. 938,369
Int. Cl.[5] B60B *3/14*
U.S. Cl. 301—64.4 **19 Claims**



1. A wheel assembly for use with a passenger boarding bridge comprising:
a wheel rim with means, including a first set of bolts, for mounting a tire on the wheel rim;
the wheel rim having an inner wheel rim segment and an outer wheel rim segment with the inner wheel rim and the outer wheel rim disposed axially with respect to each other;
means, including the first set of bolts, for securing the outer wheel rim segment with the inner wheel rim segment;
a wheel hub with means for attaching the wheel hub to an axle;
means, including a second set of bolts, for releasably attaching the wheel rim to the wheel hub;
the first set of bolts and the second set of bolts disposed radially adjacent to each other on the wheel rim; and
the wheel rim and the wheel hub cooperating with each other to prevent access to the first set of bolts when the wheel rim is attached to the wheel hub and to provide means for preventing removal of the tire from the wheel rim until after the wheel rim has been removed from the wheel hub.

5,328,253
ELECTROPNEUMATIC CONTROL SYSTEM FOR COMPRESSED AIR BRAKES OF RAIL CARS
Bernd Goritz, and Erich Huber, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse AG, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 822,875, Jan. 21, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,115
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1991, 4101613
Int. Cl.[5] B60T *13/68*
U.S. Cl. 303—36 **7 Claims**



1. Electropneumatic control system for the pressure in a main air pipe (37) of compressed air brakes of rail cars, with one inlet solenoid valve and one outlet solenoid valve (3 and 4) both constituted as a 3/2-way valve with a secondary valve part (13 or 14) that is connected non-parallel to a respective tight shutoff valve part (9 or 10) and acts at least as a restrictor in the closed state, said inlet and outlet solenoid valves having said tight shutoff valve parts (9 and 10) arranged in pneumatic connections from a main reservoir pipe (34) to a control chamber (26) and from said control chamber (26) to atmosphere via a brake nozzle (38'), said control chamber (26) being attached to said main air pipe (37) via a connection comprising a passage monitoring element (11, 12), whereby, when said inlet solenoid valve and said outlet solenoid valve are closed, said control chamber and a main air pipe chamber are under the same pressure, and with a relay valve (19) having a piston (20) pressurized by pressure in said control chamber (26) against pressure in said main air pipe (37), in order to actuate a two-way valve (21) comprising an inlet valve (22) and outlet valve (23), said inlet valve (22), open in said control chamber (26) only under prevalent pressure, being arranged in a connection from said main reservoir pipe (34) to said main air pipe (37); and the outlet valve (23), open in said main air pipe (37) only under prevalent pressure, being arranged in a connection from said main air pipe (37) to atmosphere, said secondary valve parts (13 and 14) being connected in series between said control chamber (26) and said main air pipe (37), so that these

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remain unaffected by the volumes in the main air pipe during pressure control processes in the control chamber (26).

5,328,254

METHOD AND SYSTEM FOR CONTROLLING BRAKE PRESSURE UNDER LOW MU BRAKING SURFACE CONDITIONS IN A VEHICULAR ABS

Richard J. Youngblood, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 29, 1992, Ser. No. 875,996
Int. Cl.[5] B60T *8/58*
U.S. Cl. 303—100 **8 Claims**



1. In a vehicle, a method for controlling a brake pressure rise rate under low Mu braking surface conditions in a vehicular ABS, including an ABS valve to control the brake pressure rise rate, the method comprising the steps of:

monitoring the speed of the vehicle wheels;

generating a vehicle reference speed based on the highest wheel speed of the vehicle;

decreasing the value of the vehicle reference speed over time;

determining when the speed of one of the wheels is greater than the vehicle reference speed after the step of decreasing;

correcting the vehicle reference speed when the speed of the one of the wheels is greater than the vehicle reference speed; and

limiting the brake pressure rise rate when the speed of the one of the wheels is greater than the vehicle reference speed by a predetermined amount.

5,328,255

WHEEL SLIP CONTROL SYSTEM

Thomas Isella, Markgröningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP90/01556, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO91/04891, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 13, 1990, Ser. No. 846,998
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1989, 3933653
Int. Cl.[5] B60T *8/24*
U.S. Cl. 303—103 **3 Claims**

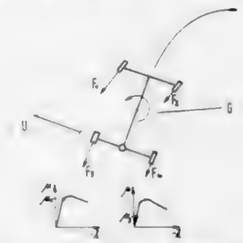
1. An antilocking brake control system for a vehicle having wheels, consisting of:

sensing means (1 to 4) for determining a vehicle wheel speed of each of said vehicle wheels and for producing vehicle wheel speed signals for each of said wheels according to said vehicle wheel speeds;

means (12) for producing a vehicle speed signal (V_{Ref}) characteristic of a vehicle speed connected to said sensing means for said wheels to receive vehicle wheel speed signals and to determine said vehicle speed from said vehicle wheel speeds;

means (13, 14) for determining wheel slip values for said wheels from said vehicle wheel speed signals and said vehicle speed signal, said means for determining wheel slip values being connected to said sensing means (1 to 4) for said wheels and said means for producing a vehicle speed signal (12) to receive said vehicle speed signal therefrom;

comparison means (15, 16) for comparing said wheel slip value at each of said wheels with a wheel slip value limit, said comparison means being connected with said means (13, 14) for determining wheel slip values to receive said wheel slip values therefrom;



means for varying a braking force at each of said wheels and hence a wheel slip value at each of said wheels within said wheel slip value limit;

curvilinear vehicle motion detection means (20) for detecting a curvilinear vehicle motion and for producing a curvilinear vehicle motion signal; and

a brake control system (17) connected to said curvilinear vehicle motion detection means to receive said curvilinear vehicle motion signal and to means (19) for generating a recognition signal when said vehicle speed is greater than one of said vehicle wheel speeds, and containing means for setting said wheel slip value limit of said comparision means according to said curvilinear vehicle motion signal, and said recognition signal so that, when curvilinear motion of said vehicle and said recognition signal are detected, the wheel slip value limits for wheels on different sides of the vehicle are set to different values in such a way that a yawing moment is created so as to counteract a tendency to oversteer or understeer.

5,328,256

ANTI-SKID BRAKE CONTROL DEVICE

Kenji Ohta; Shigeru Horikoski; Kousaku Shimada, and Hayato Sugawara, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co. Ltd., Katsuta, both of Japan

Filed Sep. 9, 1992, Ser. No. 942,209
Claims priority, application Japan, Sep. 9, 1991, 3-227833
Int. Cl.[5] B60T *8/58*
U.S. Cl. 303—11 **3 Claims**

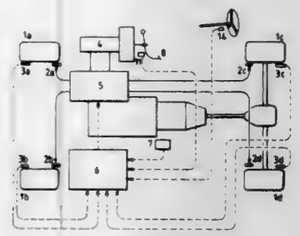
1. An anti-skid brake control device comprising,

means for detecting the respective velocities of a plurality of wheels of a motor vehicle;

means for detecting yaw angular acceleration of the motor vehicle;

means for detecting steering angle speed of a steering wheel of the motor vehicle to determine a target yaw angular acceleration;

target slip rate setting means for setting target slip rates individually for the respective wheels based upon the detected yaw angular acceleration and the determined target yaw angular acceleration, said target slip rate setting means including means for varying the set value of the target slip rate dependent upon at least one of a value of motor vehicle body velocity and a predetermined lapse of time after a yaw moment is generated; and



means for controlling pressures of braking fluid for the respective wheels so as to follow slip rates of the respective wheels determined on the basis of the respective wheel velocities detected by said wheel velocity detecting means and the varied set target slip rates for the respective wheels.

5,328,257

HYDRAULIC BRAKE ACTUATOR

Masahiro Tsukamoto, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 23, 1992, Ser. No. 872,857
Claims priority, application Japan, Apr. 24, 1991, 3-119100
Int. Cl.[5] B60T *8/42*
U.S. Cl. 303—115.2 **5 Claims**

1. A hydraulic brake actuator for use in an automobile brake system which includes a master cylinder to be operated by a driver and a wheel cylinder connected to the master cylinder through a hydraulic circuit for applying a braking force to a wheel, said brake actuator being interposed in said hydraulic circuit and comprising:

a control cylinder means having a first chamber connected to said master cylinder, a second chamber which is connected to said wheel cylinder and which can be selectively connected to said master cylinder and disconnected therefrom, and an axially displaceable piston accommodated in said chambers for changing respective volumes of said chambers;

a piston driver means for causing an axial displacement of said piston;

an accumulator means connected to said first chamber; and

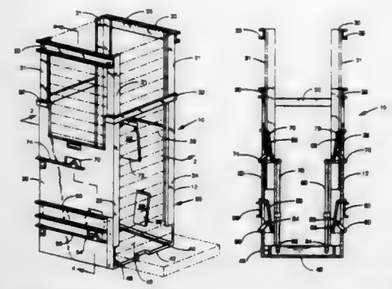
a valve means having an inlet port connected to said master cylinder, and an outlet port connected to said second chamber, said valve means being operatively connected to said piston so as to be opened or closed in response to the displacement of said piston.

5,328,258

PIZZA BOX STORAGE AND DISPENSING ASSEMBLY

Guy G. Scalise, 22 Oakland Sq., Pittsburgh, Pa. 15213

Filed Sep. 8, 1992, Ser. No. 941,729
Int. Cl.[5] A47F *1/00*
U.S. Cl. 312—42 **8 Claims**



1. A pizza box storage and dispensing assembly, comprising:

an upright, hollow enclosure of generally rectangular cross-section having an interconnected back section, sidewalls, front section, an upper end, and a lower end;

said back section, sidewalls, and front section of said enclosure being sized and shaped such that pizza boxes of predetermined rectangular or square sizes may be slidably received within said enclosures;

said front section of said enclosure defining a dispensing opening at the lower end of said enclosure dimensioned to permit grasping and withdrawal of a single pizza box therethrough;

a generally planar plate member fixed between lower portions of said sidewalls extending at an inclination from the lower end of said dispensing opening upwardly and rearwardly to a lower portion of said back section; and

restraining means disposed inwardly at a generally horizontal plane through an intermediate portion of at least one of said sidewalls and responsive to the weight of a lowermost pizza box on said plate member for urging a force on pizza boxes above said lowermost pizza box for restraining downward movement of pizza boxes above the said horizontal plane and for releasing the restraining force upon withdrawal of said lowermost pizza box from said enclosure;

said restraining means including paddle members pivotally supported by the sidewalls, and interconnected rod members operative with said paddle members, wherein a section of each rod member is overlying and parallel to the surface of said plate member for engagement by said lowermost pizza box to transmit a force through said rod members to urge said paddle members inwardly of said sidewalls such that upon withdrawal of said lowermost pizza box from said enclosure said force is removed and said paddle members are urged toward said sidewalls

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5,328,259

LOCKABLE HANGING FILE FOLDER

L. Charles Meriaux, 650 S. Westlake Blvd.- Ste. 104, Westlake Village, Calif. 91362

Filed Aug. 10, 1993, Ser. No. 103,720
Int. Cl.[5] B42F *15/00*
U.S. Cl. 312—184 **5 Claims**

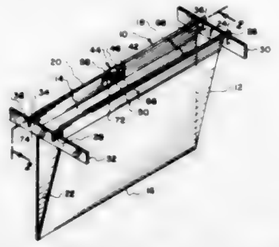
3. In combination with a hanging file folder, said hanging file folder being suspended in a V-formation between a pair of parallel and evenly spaced apart supporting rails, said file folder terminating in a pair of elongated upper ends which are supported by hook members at each end thereof on said rails, the improvement comprising:

a locking mechanism mounted in conjunction with one of said upper ends, said locking mechanism being movable

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between a locked position and an unlocked position, with said locking mechanism in said locked position the said upper end that has said locking mechanism is fixedly positioned to said rails, with said locking mechanism in said unlocked position said file folder being readily movable on said rails;

said locking mechanism being manually movable between said locked position and said unlocked position; and



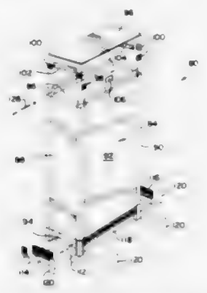
said locking mechanism including a pair of rods, said rods being movable in a somewhat longitudinally aligned position relative to each other, one of said rods being movable into tight contact with one of said rails and the other of said rods being movable into tight contact with the remaining said rail.

5,328,260

MODULAR FURNITURE SYSTEM WITH WIRE MANAGEMENT

Jean Beirise, Cincinnati, Ohio, assignor to Herman Miller, Inc., Zeeland, Mich.

Filed May 7, 1991, Ser. No. 696,510
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—223.6 **20 Claims**



1. An office furniture system comprised of:

a plurality of like-sized furniture modules each module including:

first and second generally flat sides that can be positioned to face similar generally flat sides of adjacent like-sized furniture modules so as to form a linear course of furniture modules said first and said second flat sides each having an aperture located therein;

and further in which each furniture module in said course includes:

a cabinet portion; and

an open passageway located therewithin extending from said first flat side to said second flat side and located vertically adjacent to said cabinet portion, said open passageway alignable with at least one passageway in an adjacent like-sized furniture module so as to provide for an open passageway extending through said course via the apertures located in facing flat sides of adjacent modules for the distribution of cabling through, between and among said plurality of like-sized furniture modules;

an optional insert panel adapted to cover the aperture in one of said flat sides to close off said passageway when said one flat side serves as a terminus of said linear course of furniture modules; and

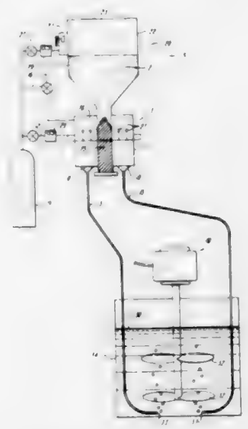
one or more fastening apparatus for mechanically fastening adjacent like-sized furniture modules to each other.

5,328,261

METHOD AND APPARATUS FOR DISSOLVING POWDER IN A LIQUID

John M. Castano, 106 Kay St., Newport, R.I. 02840, assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 4, 1993, Ser. No. 130,942
Int. Cl.[5] B01F *13/02, 11/00*
U.S. Cl. 366—102 **16 Claims**



1. An apparatus for dissolving powder into a liquid, comprising:

a powder supply device, coupled to a powder and air mixing chamber, for providing a flow of said powder to be dissolved into a liquid, to said powder and air mixing chamber;

a pressurized air source, coupled to at least one pressurized air inlet of said powder and air mixing chamber, for supplying pressurized air to said powder and air mixing chamber through said at least one pressurized air inlet, for mixing said powder with said pressurized air for providing a powder and air mixture, and for pressurizing said powder and air mixing chamber;

a powder and liquid mixing tank including a quantity of said liquid into which said powder is to be dissolved, said quantity of said liquid in said mixing tank defining a liquid surface region;

at least one powder and air mixture supply line, coupled between said pressurized powder and air mixing chamber and a bottom region of said powder and liquid mixing tank, for supplying, under pressure, said powder and air mixture to said bottom region of said powder and liquid mixing tank, below said surface region of said liquid; and

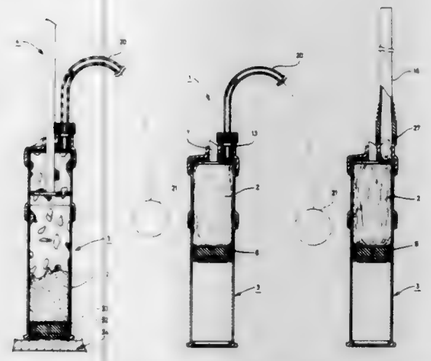
a variable speed mechanical agitator, disposed in said liquid in said powder and liquid mixing tank, for agitating said liquid in said mixing tank while said powder and air mixture is supplied to said bottom region of said powder and liquid mixing tank, to provide generally uniform distribution and dissolution of said powder in said liquid.

5,328,262

METHOD FOR PRODUCING REDUCED POROSITY BONE CEMENT

Lars Å. A. Lidgren, and Lars G. Dahl, both of Lund, Sweden, assignors to Mit AB, Sjobo, Sweden

Filed Feb. 3, 1993, Ser. No. 13,074
Claims priority, application Sweden, Feb. 7, 1992, 9200360
Int. Cl.[5] B01F *13/06*
U.S. Cl. 366—139 **9 Claims**



1. A method for producing bone cement by mixing components forming a part thereof, said method comprising the steps of (1) mixing said components under vacuum in a mixing space of a mixing device, whereby clumps of bone cement adhere to an inner wall surface of said mixing space, and (2) collecting said clumps of bone cement in said mixing space close to a discharge opening which is adapted to discharge bone cement from said mixing space, wherein said collecting step includes the steps of (a) exposing said bone cement in said mixing space to vacuum, and (b) moving a piston through said mixing space towards said discharge opening to collect said bone cement near said discharge opening, thereby providing vacuum in those pores in said bone cement which are formed during collection of the bone cement clumps, whereby said pores formed in said bone cement are reduced in size when said bone cement is ultimately subjected to atmospheric pressure after collection.

5,328,263

APPARATUS FOR MIXING INGREDIENTS IN A RECEPTACLE

Jim L. Neilson, 9205 Lime Crest Ct., Elk Grove, Calif. 95624

Filed Apr. 5, 1993, Ser. No. 42,519
Int. Cl.[5] B01F *7/32*
U.S. Cl. 366—254 **6 Claims**

1. Apparatus for mixing ingredients, said apparatus comprising, in combination:

a support selectively releasably supporting a receptacle having a bottom and side wall defining an interior and an opening communicating with said interior;

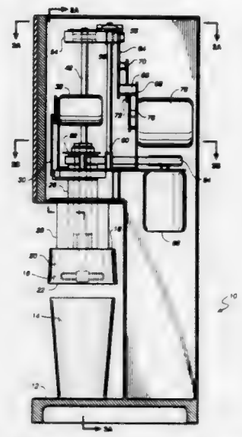
a lid having a top wall defining an aperture and a side wall extending downwardly from said top wall and defining a lid recess communicating with said aperture, said top wall positionable over a receptacle supported by said support;

lid placement means connected to said support for moving said lid relative to said support from an elevated position wherein said lid is not in engagement with said receptacle to a lower position wherein said lid positively engages and seals said receptacle to substantially close the opening of said receptacle and wherein said recess is disposed above the receptacle interior and in communication therewith;

a mixer shaft supported by said support and extending through the lid aperture, said mixer shaft and said placement means being separately and independently supported by said support and said mixer shaft being both axially and rotatably movable relative to said lid, to said support and to said receptacle and having a lower end;

a mixer head connected to said shaft lower end under said lid top wall;

transport means connected to said support for transporting said mixer shaft and mixer head downwardly within said receptacle after said lid has engaged said receptacle from a first position wherein the mixer head is disposed within said lid recess and above the receptacle interior to a second position wherein the mixer head is within the receptacle interior and closely adjacent to the receptacle bottom and for subsequently transporting said mixer shaft and mixer head from said second position to said first position; and



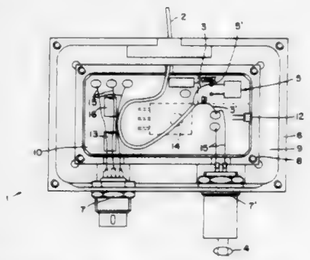
rotating means including a drive motor fixedly connected to said support for rotating said mixer shaft and mixer head within said receptacle during transport of said mixer head between said first and second positions and while said mixer shaft moves axially through said lid aperture.

5,328,264

COMPENSATION DEVICE FOR THE COLD JUNCTION OF A THERMOCOUPLE

Patrick Krencker, Bischheim, and Jean-Luc Weishaar, Schoenenbourg, both of France, assignors to Sadis Bruker Spectrospin, Societe Anonyme de Diffusion de L'Instrumentation Scientifique, Bruker Spectrospin, Wissembourg, France

Filed Feb. 19, 1993, Ser. No. 21,749
Claims priority, application France, Feb. 21, 1992, 92 02199
Int. Cl.[5] G01K *7/12, 7/14*
U.S. Cl. 374—182 **7 Claims**



1. Compensation device for the cold junction of a thermo-

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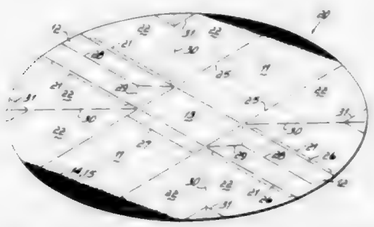
couple, comprising a thermostatically controlled interface casing (**1**), receiving directly wires (**3**, **3'**) of said thermocouple (**2**) and ensuring the interconnection of said wires with an extension cord (**4**), said interface casing (**1**) containing a cold junction compensation circuit (**5**) for the cold junction of said thermocouple (**2**), said compensation circuit (**5**) having an error signal generator, dependent directly on the temperature variation at a contact point (**5'**) of the thermocouple (**2**) in a printed circuit (**10**) and superposed on a measurement signal emitted by the thermocouple (**2**), said generator being adjusted as a function of the internal temperature of the thermostatically controlled internal casing (**8**) and as a function of the type of thermocouple (**2**).

5,328,265

COMBINATION BAG AND NAPKIN

Nina Clooney, 230 E. Broadway, #505, Salt Lake City, Utah 84111

Filed Oct. 15, 1992, Ser. No. 961,151
Int. Cl.[5] **B65D** *30/20*
U.S. Cl. 383—4 **16 Claims**



1. A bag convertible to a flat napkin, said bag being formed from a planar sheet by manipulating a plurality of folds in said sheet, said bag having a bottom, opposing first and second sides, opposing first and second faces, and each said face contiguous to said bottom and adjoining said sides; and

said plurality of folds including a pair of face folds equally spaced from and parallel to a first centerline of said sheet, said face folds defining edges of said first and second face and said bottom, a pair of side folds equally spaced from and parallel to a second centerline of said sheet, said side folds being perpendicular to said face folds and defining edges of said first and second side and said bottom, four flap folds each extending from and intersection of said side and said face folds to the periphery of said sheet, a pleat fold bisecting each said side and parallel to said side folds, said plurality of folds further including at least one bottom flap fold disposed on a face and extending solely between and perpendicular to said face folds, said bottom flap fold, pleat folds and said side folds permitting said bag to lay flat in an unopened configuration, and a tuck fold extending from each said flap fold to the periphery of said sheet permitting said sheet to be neatly folded into said bag configuration.

5,328,266

EXTENSIBLE HANDLE BAG APPARATUS

Tommy L. Davis, Chicago, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Jun. 17, 1992, Ser. No. 900,941
Int. Cl.[5] **B65D** *33/06*
U.S. Cl. 383—14 **14 Claims**

1. An extensible handle bag apparatus, capable of fabrication on high-speed bag manufacturing equipment, having handle elements which can be maintained in either a wholly unobtrusive unextended retracted position within a bag article, or in an extended deployed position for facilitating comfort to an individual's hands when utilizing the handle elements, as well as for providing substantial load carrying handle capabilities to said apparatus, thereby reducing the likelihood of severing the handle elements from the bag apparatus when it is being used to carry a load of articles, said extensible handle bag apparatus comprising:

bag means for operably housing and supporting said load of articles,

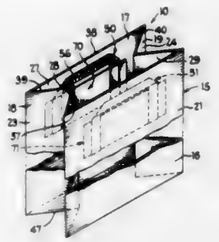
said bag means having a front panel and an opposing back panel, each having substantially planar exterior surfaces, and substantially planar interior surfaces opposite said exterior surface, and defining an interior region,

each of said front and back panels having an uppermost substantially linear top peripheral edge defining an aperture for enabling the passage of said articles into said interior region, and a substantially sealed bottom end for precluding the inadvertent release of said articles positioned within said interior region; and

a pair of handle means for facilitating carrying of said bag means,

each of said handle means being constructed from an extensible and substantially non-retractable material with one of said pair of handle means operable attached to the substantially planar interior surfaces of each of said front and back panels respectively, each of said handle means being capable of yielding in at least a direction which allows said material to be substantially linearly extensible toward and into a fully deployed substantially elongated inverted U-shaped load carrying position,

each of said unextended handle means having a gripping member having a top peripheral edge, opposite ends and two leg members emanating from the opposite ends of said



gripping member, so as to be in substantially parallel relationship therewith, so as to minimize the thickness of said pair of handle means, to in turn, reduce protrusion of said pair of handle means during said high speed manufacture of said extensible handle bag apparatus,

said pair of handle means being operably and wholly positioned adjacent to and below said uppermost substantially linear top peripheral edge of at least said front panel and said back panel in a substantially retracted position below said uppermost substantially linear top peripheral edge of said bag means prior to said handle means yielding in said at least a direction which allows said material to be extensible,

said pair of handle means each having a substantially inverted U-shaped orientation when in said substantially retracted position, wherein said top peripheral edge of said gripping members are positioned above each corresponding leg member, in a position more proximate than said leg members to said top peripheral edge of said bag means,

said pair of handle means being capable of linear extensibility from said substantially retracted U-shaped orientation below said uppermost substantially linear top peripheral edge of said bag means to said fully deployed substantially elongated inverted U-shaped load carrying position as a function of the direction of extensibility of the material, with said gripping member positioned above said uppermost substantially linear top peripheral edge of said bag means and, in turn, said handle means being substantially

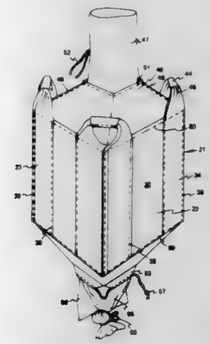
maintained in a substantially elongated inverted U-shaped configuration after said deployment.

5,328,267

BULK CONTAINERS

Christopher C. Cuddy, Baneshane, Midleton, County Cork, Ireland, and Thomas Noor, Hugelstrasse 9, D-6940 Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 758,920, Sep. 11, 1991, Pat. No. 5,222,812. This application Jun. 23, 1993, Ser. No. 82,127
Claims priority, application Ireland, Sep. 11, 1990, 3294/90; Aug. 16, 1991, 2914/91
Int. Cl.[5] **B65D** *30/10, 33/10*
U.S. Cl. 383—17 **8 Claims**



1. A bulk container of flexible fabric having a substantially rectangular base and four walls with four corners at the junctions of the walls; and four substantially vertical interior bridging panels extending between adjacent walls across the corners, wherein:

each wall comprises a wall center panel and two corner panels; and wherein

the four bridging panels and the four wall center panels are formed of a single integral main piece of fabric; and

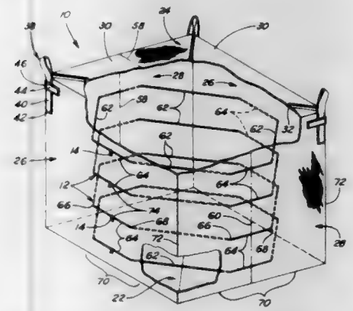
wherein each corner is formed by two adjacent corner panels attached to the main piece of fabric at the junctions between the bridging panels and the wall center panels.

5,328,268

BULK BAG WITH RESTRAINER

Lee Lafleur, Manistee, Mich., assignor to Custom Packaging Systems, Inc., Manistee, Mich.

Filed Oct. 30, 1992, Ser. No. 969,741
Int. Cl.[5] **B65D** *33/02*
U.S. Cl. 383—119 **38 Claims**



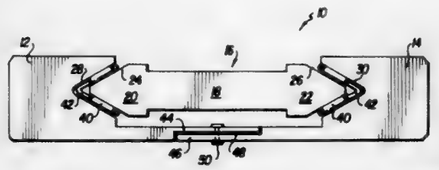
1. A bulk bag comprising, a pair of end walls and at least two pair of side walls constructed and arranged so that the sidewalls of each pair are in generally opposed relation and all the sidewalls extend between the end walls, all the sidewalls being of a flexible material, each sidewall having side edges and a central region between its side edges and at least two closed loops of cord which have first portions within the bag which when the bag is expanded and filled extend obliquely between a pair of adjacent sidewalls and second portions connected with said pair of adjacent sidewalls in said central regions thereof so that when the bag is expanded and filled the loops of cord restrain and substantially retard the sidewalls from bowing and bulging outwardly from a generally planar configuration.

5,328,269

METHOD OF AND APPARATUS FOR PRELOADING AN ANTI-FRICTION BEARING

Frank V. Mutolo, Morrisville, and Fausto G. Mariazzi, Feasterville, both of Pa., assignors to Ina Linear Technik, Inc., Bensalem, Pa.

Filed Feb. 4, 1993, Ser. No. 13,407
Int. Cl.[5] **F16C** *29/12, 33/64, 43/04;* **B21D** *53/10*
U.S. Cl. 384—57 **26 Claims**



1. A preload bearing having a pair of races with rolling members positioned therebetween which is assembled and preloaded within a predetermined preload range during manufacture by the process of:

(a) fitting the rolling members within the raceways of the races in rolling relationship therebetween;

(b) translating one race member relative to the opposing race member in an operational direction of travel;

(c) measuring a bearing preload between said race members and comparing said measurement with the predetermined preload;

(d) applying a compressive force to at least one of said race members if the measured preload is not within the predetermined preload range;

(e) repeating steps (b)–(d) if necessary until the measured preload is within said predetermined range; and

(f) securing the race members in registered orientation to maintain the measured preload.

11. A method of assembling an anti-friction bearing having a preload within a predetermined range, said bearing including a plurality of rolling members, and a pair of race members having raceways in opposing relationship for retaining said rolling members, comprising the steps of:

(a) fitting the rolling members within the raceways in rolling relationship therebetween;

(b) translating one race member relative to the opposing race member in an operational direction of travel;

(c) measuring a bearing preload between said race members and comparing said measurement with the predetermined preload;

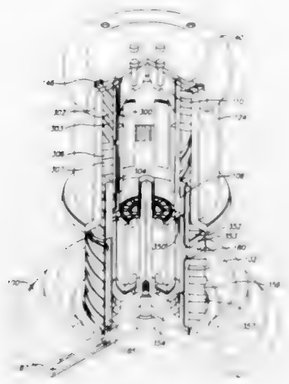
(d) applying a compressive force to at least one of said race members if the measured preload is not within the predetermined preload range;

(e) repeating steps (b)–(d) if necessary until the measured preload is within said predetermined range; and

(f) securing the race members in registered orientation to maintain the measured preload.

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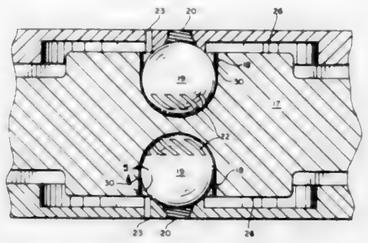
5,328,270
HYDRODYNAMIC PUMP
Roy P. Crawford, Saratoga; Mats Engwall, Hollister; Larry J. Gilliland, Morgan Hill; Karl Gong, and Michel P. Robert, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 25, 1993, Ser. No. 38,579
Int. Cl.[5] F16C *32/06*
U.S. Cl. 384—100 12 Claims



1. A pump comprising:
a first cylinder having a fluid bearing inner surface;
a second cylinder positioned coaxially within the first cylinder and attached to a base, the second cylinder having a fluid bearing inner surface and a fluid bearing outer surface, the fluid bearing outer surface having at least one dynamic pressure generating groove;
a shaft positioned coaxially within the second cylinder, the shaft having a fluid bearing outer surface having at least one dynamic pressure generating groove;
a clamp for attaching the shaft to the first cylinder;
means for rotating the shaft so as to form a first hydrodynamic fluid bearing between the first cylinder and the second cylinder and a second hydrodynamic fluid bearing between the second cylinder and the shaft;
an inlet for a lubricating fluid; and
a passage in the body of the second cylinder extending from the fluid bearing outer surface of the second cylinder to the base wherein dynamic pressure in the first hydrodynamic fluid bearing pumps the lubricating fluid through the passage.

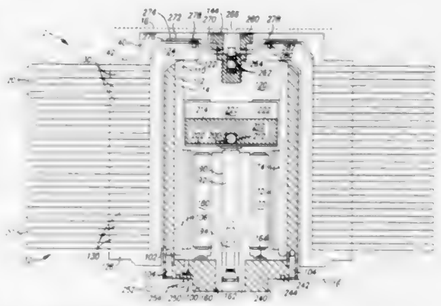
5,328,271
HYDRODYNAMIC SPINDLE BEARING FOR ULTRA-SLIM DISK STORAGE UNIT
Forrest D. Titcomb, Colorado Springs, Colo., assignor to Maxtor Corporation, San Jose, Calif.
Filed May 6, 1992, Ser. No. 881,739
Int. Cl.[5] F16C *32/06*; G02B *26/10*
U.S. Cl. 384—108 34 Claims

1. A hydrodynamic bearing assembly for a rigid-disk recording unit comprising:
a base;
a cover secured to said base, creating a cavity therebetween;
a hub disposed within said cavity supporting an annular rigid-disk, said rigid-disk providing a recording medium for storage of information thereon;
bearing means for permitting rotational movement of said hub within said cavity along a longitudinal axis, said bearing means comprising a pair of balls disposed within a pair of sockets aligned with said longitudinal axis on opposite sides of said hub, said sockets having a spherical section for receiving a hemisphere of said balls and a cylindrical section extending beyond said hemisphere, either of said pair of sockets or said pair of balls being affixed to said hub, with the other of said pair being respectively affixed to said base and said cover;



said assembly further comprising a space disposed between each socket and its associated ball, said space being filled with a liquid lubricant such that a meniscus is formed between each of said balls and said cylindrical section of each of said sockets.

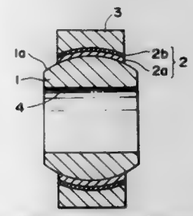
5,328,272
SPINDLE SYSTEM FOR A DISK DRIVE
Norman G. Ainslie, Anacortes, Wash.; David W. Albrecht, San Jose, Calif.; James W. Berberich, San Jose, Calif.; Daniel W. Chapman, San Jose, Calif.; Mats A. Engwall, Hollister, Calif.; Richard E. Mach, Los Gatos, Calif., and Zack D. Reynolds, San Jose, Calif., assignors to International Business Machines, Armonk, N.Y.
Filed Dec. 23, 1991, Ser. No. 813,311
Int. Cl.[5] F16C *17/10*
U.S. Cl. 384—112 54 Claims



1. A spindle system comprising:
a first bearing member having an inner cylindrical fluid bearing surface;
a second bearing member located within the first bearing member, the second bearing member having an outer cylindrical fluid bearing surface corresponding to the fluid bearing surface of the first bearing member;
a first thrust member located within the second bearing member, the first thrust member having a fluid bearing surface;
a second thrust member located within and connected to the second bearing member, the second thrust member having a fluid bearing surface corresponding to the fluid bearing surface of the first thrust member; and
a pivoting connector for connecting the first thrust member to the first bearing member such that the first thrust member is allowed to pivot about a point along a central axis of the second bearing member such that the position of the first thrust member may adjust in order to maintain the

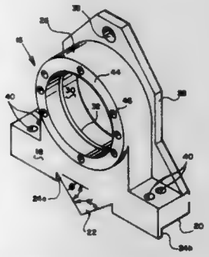
fluid bearing between the fluid bearing surfaces of the first and second thrust members.

5,328,273
SPHERICALLY SLIDING BEARING UNIT HAVING A MULTI-LAYER LINER AND ITS MANUFACTURING METHOD
Toshihiko Nonaka, Kamakura, and Kohei Yuasa, Gifu, both of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan
Filed Jul. 9, 1992, Ser. No. 910,940
Claims priority, application Japan, Jul. 12, 1991, 3-197300
Int. Cl.[5] F16C *23/04*
U.S. Cl. 384—206 4 Claims



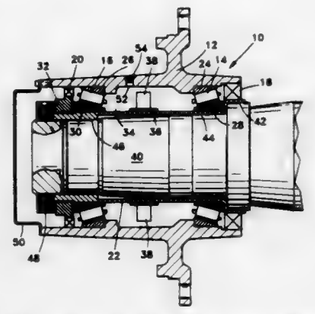
1. A spherically sliding bearing unit comprising:
an inner member having a first spherical surface;
an outer member having a second spherical surface located opposite to and spaced apart from said first spherical surface; and
a liner fixedly attached to said second spherical surface of said outer member, said liner including an outer layer comprised of a metal and fixedly attached to said second spherical surface and an inner layer comprised of a sheet of woven filaments, at least some of which are comprised of a resin and slidably contractable with said first spherical surface of said inner member.

5,328,274
LIQUID RING VACUUM PUMP-COMPRESSOR WITH SELF ALIGNING REMOVABLE BEARING BRACKET
T. Michael Wallace, and Charles H. Wunner, both of Charlotte, N.C., assignors to Vooner Vacuum Pumps, Inc., Charlotte, N.C.
Filed Jun. 26, 1992, Ser. No. 904,987
Int. Cl.[5] F16C *35/00*
U.S. Cl. 384—428 9 Claims



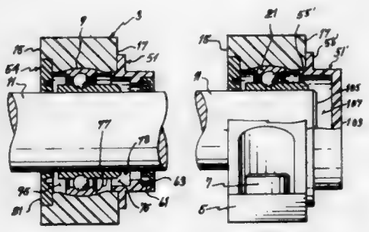
1. A bearing housing for a liquid ring vacuum pump or compressor apparatus, comprising:
a base;
a cylindrical unitary housing upstanding from said base adapted to receive and journal a shaft therein, said cylindrical housing having a cylindrical bore with a horizontally oriented axis;
said base having a pair of spaced horizontal coplanar bearing surfaces and a central v-shaped projection therebetween extending downwardly with the apex of the projection parallel to the axis of the cylindrical housing, for engaging a mating groove in a bearing housing support.

5,328,275
UNITIZED WHEEL HUB AND BEARING ASSEMBLY
Laurence B. Winn, Longview, and Mark N. Gold, Hallsville, both of Tex., assignors to Stemco Inc., Longview, Tex.
Filed May 6, 1993, Ser. No. 58,343
Int. Cl.[5] F16C *19/38*
U.S. Cl. 384—472 10 Claims



1. A unitary wheel hub and sealed bearing assembly comprising:
(a) a wheel hub,
(b) a pair of bearings,
(c) at least one seal, and
(d) a unitary mounting sleeve,
said bearing and seal elements securely held between said wheel hub and said mounting sleeve,
said at least one seal being an axially inner seal and
said assembly so configured as to be handled and installed on a vehicle axle as a unit and to be held in position by retaining means which engage an outer end of such a vehicle axle.

5,328,276
BEARING MOUNTING FOR SHAFTS
Michel Linteau, 674 Lauzon, Ste-Dorothée, Laval, Québec, Canada H7X 2X1
Filed Nov. 12, 1992, Ser. No. 974,507
Int. Cl.[5] F16C *33/72, 33/76, 23/08*
U.S. Cl. 384—477 14 Claims



1. A self aligning sealed bearing assembly for a rotating shaft, including a housing made of synthetic resin, consisting of a one piece bearing support member and at least one removable seal cover and at least one non-metallic seal, the bearing support member including mounting means for mounting the housing to a supporting surface, the bearing support member having a cavity for receiving an outer race of a bearing insert, a bore defined in the bearing support member concentric with

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the cavity in the bearing housing and extending through the support member from one side face to the other side face to accommodate the rotating shaft, the side faces being parallel, the at least one removable seal cover being mounted to one of the side faces and defining a closed sealed chamber adjacent the bearing insert from the one of the side faces and means including said at least one non-metallic seal on at least the other side face to completely seal the bearing assembly.

5,328,277

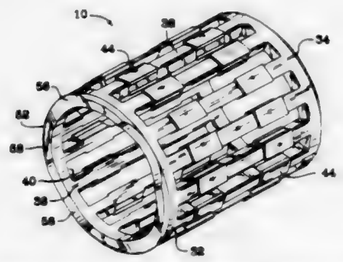
CAGE FOR ROLLER BEARINGS

David R. Moulton, North Canton, Conn., assignor to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 96,352, Jul. 23, 1993, abandoned, which is a continuation of Ser. No. 950,616, Sep. 24, 1992, abandoned. This application Nov. 4, 1993, Ser. No. 151,442

Int. Cl.[5] **F16C** *33/46, 33/10*

U.S. Cl. 384—572 **19 Claims**



1. A one-piece polymer bearing cage for a roller bearing, the bearing cage comprising:

first and second annular end rims axially spaced along a common axis, the end rims having axially outward surfaces defining the axial length of the bearing cage and being made of a polymer; and

cross bars connecting the end rims such that pockets are formed between the end rims and the cross bars for retaining the rollers, the cross bars being made of the same polymer as the end rims;

wherein the axial length of each of the end rims varies along its circumference such that a piloting end surface of the bearing cage is provided at a longer end rim portion and such that a recessed end surface of the bearing cage is provided at a shorter end rim portion circumferentially spaced from the longer end rim portion for facilitating passage of lubricant to the rollers.

5,328,278

PRINTING APPARATUS FOR PRINTING DATA BASED ON INPUT PROGRAM

Masatoshi Kokubo, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 23, 1993, Ser. No. 51,563

Claims priority, application Japan, Jul. 28, 1992, 4-201432

Int. Cl.[5] **B41J** *29/38*

U.S. Cl. 400—74 **20 Claims**

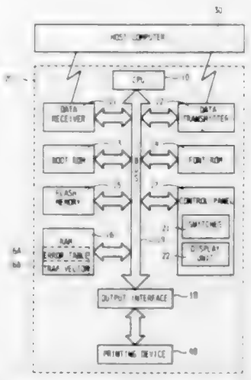
1. A printing apparatus for receiving data output by an external device and for performing printing based on the received data, the printing apparatus comprising:

reception means for receiving a control program and a check program, the control program defining the manner by means of a plurality of control commands in which the printing apparatus is to operate, the check program verifying the performance of the control program;

storage means for storing the received control program and check program;

processing means for reading from the storage means the control program and the check program so as to control the printing apparatus based on the control program after executing the check program;

working memory means for storing data used for control of the printing apparatus by said processing means; and



informing means for informing an operator of the result of the check on the control program performed in accordance with the check program.

5,328,279

DOT MATRIX PRINTER HEAD

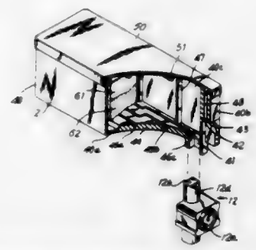
Takashi Suzuki; Masanao Matsuzawa, and Yoshinori Miyazawa, all of Shiojiri, Japan, assignors to Seiko Epson Corporation, Nagano, Japan

Continuation of Ser. No. 612,010, Nov. 9, 1990, Pat. No. 5,156,471, which is a continuation of Ser. No. 401,539, Aug. 31, 1989, Pat. No. 4,969,759, which is a continuation of Ser. No. 161,216, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 35,251, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 873,871, Jun. 12, 1986, abandoned, which is a continuation of Ser. No. 659,816, Oct. 11, 1984, abandoned. This application Oct. 16, 1992, Ser. No. 962,959

The portion of the term of this patent subsequent to Nov. 13, 2007, has been disclaimed.

Int. Cl.[5] **B41J** *2/305*

U.S. Cl. 400—124 **10 Claims**



1. A dot matrix printer head comprising:

an ink-supply tank formed with an ink-supply delivery port;

an ink absorbing member formed of a porous material mounted within said ink-supply tank, said ink absorbing member carrying substantially all of the ink said ink-supply tank is designed to carry;

a printing means for applying ink at an exit point thereof in a dot form to effect printing; and

ink guide means extending from the ink supply delivery port to the printing means for delivering ink to said printing means, said ink guide means and said printing means having at least one capillary ink path communicating between said ink-supply delivery port and said exit point of said printing means, said capillary ink path including a plurality of adjacent segments all of which are entirely free of an ink absorbing material, each adjacent pair of such segments along said capillary ink path being dimensioned so that the segment of said pair of adjacent segments closer to said ink-supply delivery port will apply a lower capillary force to the ink in said capillary ink path than the segment of said pair of adjacent segments closer to said exit point of said printing means, whereby the capillary force on the ink in said capillary ink path increases between the ink-supply delivery port and said exit point of said printing means.

5,328,280

PRINTER HAVING MEANS FOR SWITCHING MEDIUM FEED PATH FROM SHEET FEED PATH TO WEB FEED PATH OR VICE VERSA

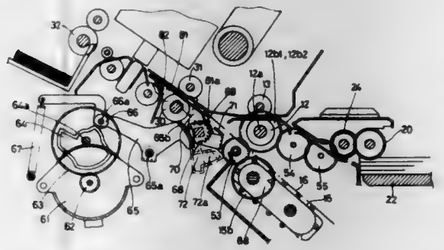
Noritsugu Ito, Chita, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 26, 1992, Ser. No. 966,341

Claims priority, application Japan, Oct. 31, 1991, 3-286670

Int. Cl.[5] **B41J** *11/00*

U.S. Cl. 400—596 **13 Claims**



1. A printer comprising:

a printing portion for printing on a recording medium;

sheet feeding means for feeding a cut sheet as said recording medium along a sheet feed path, said sheet feeding means comprising a sheet supply portion from which said cut sheet is separately inserted into said sheet feed path, and a sheet driving device that partially defines said sheet feed path, said sheet driving device including means for moving said cut sheet in a selected one of a forward direction from said sheet supply portion toward said printing portion, and a reverse direction from said printing portion toward said sheet supply portion;

web feeding means for feeding a web as said recording medium along a web feed path, said web feeding means comprising a web supply portion from which said web is supplied, said web feed path extending between said web supply portion and said printing portion; and

path switching means, disposed upstream of said printing portion as viewed in said forward direction, and including means for switching a feed path of said recording medium, from one of said sheet feed path and said web feed path to the other of said sheet feed path and web feed path, said path switching means further including means for guiding said cut sheet to be fed back along said sheet feed path from said printing portion to said sheet supply portion when said cut sheet is moved in said reverse direction by said sheet driving device;

wherein said sheet feed path includes a first portion between said sheet supply portion and said path switching means, and a second portion between said path switching means and said printing portion, said first and second portions being bent with respect to each other at said path switching means.

5,328,281

RECORDING MEDIUM FEED MECHANISM FOR A PRINTER AND METHOD OF MEDIUM FEED CONTROL

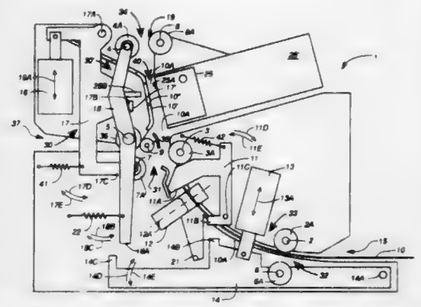
Hiroshi Narita; Naoki Asai, and Yoshikazu Itoh, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 507,319, Apr. 10, 1990, Pat. No. 5,149,217. This application Sep. 18, 1992, Ser. No. 947,229

Claims priority, application Japan, Jun. 26, 1992, 4-169320

Int. Cl.[5] **B41J** *11/48*

U.S. Cl. 400—605 **10 Claims**



1. A printer having a printer section and means for transport of at least two different types of media from two different inlets into the printer for transport along a pathway and through an entrance to the printer section and exit from the printer section to an outlet, comprising

a first recording medium transport section disposed in said pathway adjacent to one of said inlets and comprising a first drive roller and a first corresponding pressure roller,

a second recording medium transport section disposed in said pathway immediately prior to the entrance of said printer section and comprising a second drive roller and a second corresponding pressure roller,

a third recording medium transport section disposed in said pathway immediately after the exit of said printer section and comprising a third drive roller and a third corresponding pressure roller,

said first, second and third drive rollers being driven in common from a single power source,

a first opening/closing mechanism in operative engagement with said first transport section for selectively opening and closing said first drive and pressure roller for engagement of the recording medium to transport the recording medium through said first transport section,

a second opening/closing mechanism in operative engagement with said second transport section for selectively opening and closing said second drive and pressure rollers for engagement of the recording medium to transport the recording medium through said second transport section,

a third opening/closing mechanism arranged at and in operative engagement with said third transport section for selectively opening and closing said third drive and pressure rollers for engagement of the recording medium to transport the recording medium through said third transport section,

one of said second and third transport section providing for continuous engagement with said recording medium adjacent both the entrance and exit to said printer section to permit the accurate printing of data in the margins at the leading edge to the trailing edge of recording medium and

said first opening/closing mechanism being in operative engagement with said third opening/closing mechanism such that said third opening/closing mechanism closes to engage the recording medium when said first opening/closing mechanism is opened to disengage with the recording medium.

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5,328,282

COMBINED MASCARA BOTTLE AND APPLICATOR

Jacqueline W. Charrier, Hunt Valley, Md., and Mark P. McNally, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 21, 1993, Ser. No. 6,563
Int. Cl.[5] A45D *34/00, 40/00*
U.S. Cl. 401—4 12 Claims



1. A combined package comprising:
(a) a container for housing a liquid having a base and an opening, said opening having an interior surface and an exterior surface, said exterior surface having closure receiving means thereon;
(b) an applicator having a proximal end and a distal end, said proximal end having a handle attached thereto, said handle having an interior surface and an exterior surface, said interior surface having means for securing said applicator to said closure receiving means of said container, said applicator including:
(i) a hollow shaft having a longitudinal axis extending from said handle toward said distal end; and
(ii) a rod reciprocal within said hollow shaft having a proximal end and a distal end, said distal end having a brush affixed thereto, said rod having flexible means positioned between said proximal end and said distal end, said rod having a first position and a second position, when said handle of said applicator is secured to said container said rod reciprocates to said first position extending said flexible means beyond said hollow shaft such that said brush is substantially non-aligned with said longitudinal axis of said hollow shaft, said brush stirring the liquid housed in said container as said handle of said applicator is secured to said container, upon removal of said applicator from said container said rod reciprocates to said second position such that said flexible means retracts within said hollow shaft thereby substantially aligning said brush with said longitudinal axis of said hollow shaft.

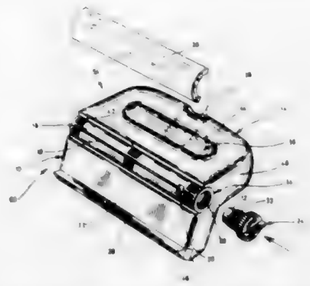
5,328,283

MULTI-FUNCTION GLASS CLEANING APPARATUS

Jacques Viens, 1486 Bellemare, Roxton Pond, Québec, Canada J0E 1Z0

Filed Nov. 29, 1993, Ser. No. 158,532
Int. Cl.[5] A47L *1/08*
U.S. Cl. 401—23 20 Claims

1. A multi-function glass cleaning apparatus, comprising:
a container having an opening closable by a plug, two principal opposite faces and two side walls, for receiving and storing a cleaning fluid;
a handle formed integrally with said container and defining a hand grasping portion, said hand grasping portion being transverse to said side walls;
a first support member formed integrally with said container on one of the faces thereof, for supporting a scraping element, said first support member being parallel to said hand grasping portion and having a trough extending lengthwise thereof, said trough being in communication with said container via a small aperture;
a second support member formed integrally with said container, for supporting a wiper, said second support member being parallel to said hand grasping portion and said first support member;
means for opening and closing said aperture so as to control the rate of feed of said cleaning fluid from said container through said aperture to said scraping element;
first securing means for securing said scraping element to said first support member;



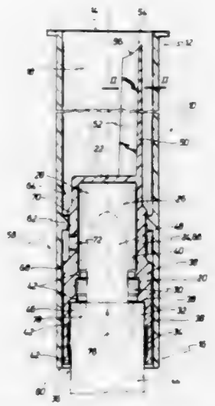
second securing means for securing said wiper to said second support member;
whereby, when said apparatus is being used, said cleaning fluid contained in said container can exit said container through said aperture at a selected rate of feed and flow through said trough to wet said scraping element evenly.

5,328,284

REFILLING CONTAINER FOR REFILLING A WRITING, PAINTING OR DRAWING IMPLEMENT

Gerhard Moeck, Kirchehrenbach, and Peter Krueckel, Heroldsberg, both of Fed. Rep. of Germany, assignors to Schwan-STABILO Schwanhaeusser GmbH & Co., Nuremberg, Fed. Rep. of Germany

PCT No. PCT/DE91/00663, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO92/04195, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 20, 1991, Ser. No. 971,973
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1990, 9012534; Dec. 12, 1990, 9016777; Dec. 13, 1990, 9016837
Int. Cl.[5] B43K *11/00*
U.S. Cl. 401—119 7 Claims



1. A refilling device for refilling a writing, painting or drawing implement, a cosmetic applicator implement or the like, which comprises:
a casing;

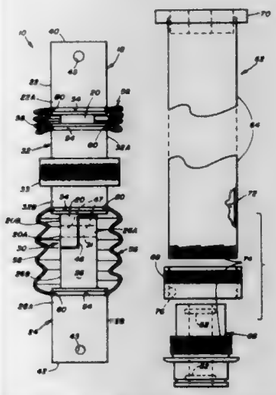
an implement to be refilling including an applicator member which projects out of the casing and which has a capillary conveying action for a fluid of relatively low viscosity, wherein the casing adjoins the applicator member;
a reservoir for the fluid which is in fluid communication with the applicator member;
a vent passage in the vicinity of the applicator member;
a refilling container having a neck portion thereof;
a plug element which projects into the refilling container in the neck portion;
wherein, the implement to be refilled can be inserted with the applicator member and the casing portion into the plug element such that a sealing is made between the neck portion of the refilling container, the plug element and said casing portion and a fluid communication is made through the vent passage between the refilling container and the reservoir in the implement;
wherein the plug element is in the form of a cap-like closure plug having an end portion, with the closure plug oriented into the refilling container and which is slidably displaceable between a rest position sealing off the refilling container and a refilling position providing a fluid communication between the interior of the refilling container and a receiving space in the closure plug, which is open at one side, wherein the closure plug is provided for accommodating the applicator member and at the same time for sealingly receiving a portion of the casing of the implement to be refilled, said casing portion being adjacent to the applicator member and having said vent passage;
wherein the receiving space is of a configuration which enlarges towards said open side, with the receiving space comprising an axial succession of spaces which are of a configuration which enlarge in a step-wise manner, starting from the end portion of the closure plug, with stepped transitional portions between adjacent spaces and with each stepped transitional portion provided as a contact or pressure surface for a portion of the casing of the implement, which portion is adjacent to the applicator member of the implement to be refilled.

5,328,285

ARTICULATED GEAR SHIFT LEVER JOINT ASSEMBLY

Gary L. Grubbs; Sheila A. Grubbs, both of 104 S. First St., Canton, Kans. 67428, and Delores Grubbs, 1312 S. Chestnut, McPherson, Kans. 67460

Filed Sep. 29, 1992, Ser. No. 953,497
Int. Cl.[5] G05G *9/00*
U.S. Cl. 403—66 19 Claims



1. An articulated joint assembly for connecting between upper and lower lever sections of a gear shift lever, said assembly comprising:
(a) an upper joint member having adjacent axially-extending inner and outer portions, said outer portion being adapted for connecting to an upper section of a gear shift lever;
(b) a lower joint member having adjacent axially-extending inner and outer portions, said outer portion being adapted for connecting to a lower section of the gear shift lever;
(c) means connecting a lower end of said inner portion of said upper joint member and an upper end of inner portion of said lower joint member so as to form a pivotal joint between the upper and lower joint members;
(d) an annular collar having spaced opposite upper and lower ends and a central bore extending between said opposite ends, said annular collar being mounted over said inner portions of said upper and lower joint members and slidable between said outer portions of said upper and lower joint members for movement between a lower position in which the annular collar locks the shift lever at an erected condition and an upper position in which the annular collar unlocks and releases the shift lever for converting the shift lever from the erected condition to a folded condition; and
(e) means mounted adjacent opposite upper and lower ends of said annular collar for engaging said inner portions of said upper and lower joint members so as to provide a substantially tight sliding fit between said annular collar and said upper and lower joint members as said annular collar is slidably moved between said upper and lower positions.

17. An articulated joint assembly for connecting between upper and lower lever sections of a gear shift lever, said assembly comprising:
(a) an upper joint member having adjacent axially-extending outer and inner portions, said inner portion being smaller in cross-sectional size than said outer portion, said outer portion being adapted for connecting to an upper section of a gear shift lever;
(b) a lower joint member having adjacent axially-extending outer and inner portions, said inner portion being smaller in cross-sectional size than said outer portion, said outer portion being adapted for connecting to a lower section of the gear shift lever;
(c) means connecting a lower end of said inner portion of said upper joint member and an upper end of said inner portion of said lower joint member so as to form a pivotal joint between said upper and lower joint members;
(d) an annular collar having spaced opposite upper and lower ends and a central bore extending between said opposite ends, said bore being larger in cross-sectional size than said cross-sectional sizes of said inner portions of said upper and lower joint members and being smaller in cross-sectional size than said cross-sectional sizes of said outer portions of said upper and lower joint member so as to mount said annular collar over said inner portions of said upper and lower joint members for slidable movement therealong being limited by engagement of said opposite upper and lower ends of said annular collar respectively with said outer portions of said upper and lower joint members upon respectively reaching a lower locking position adjacent to said outer portion of said lower joint member and an upper unlocking position adjacent to said outer portion of said upper joint member, said annular collar in said lower locking position being disposed over said pivotal joint so as to prevent converting of the upper lever section from an erected condition to a folded condition relative to a lower lever section, said annular collar in said upper unlocking position being displaced above said pivotal joint so as to permit converting of the upper lever section from the erected condition to the folded condition relative to the lower lever section;
(e) annular attaching means defined about said annular collar; and
(f) a tubular extension member having a hollow interior being larger in cross-sectional size than said annular collar and said outer portion of said upper joint member so as to

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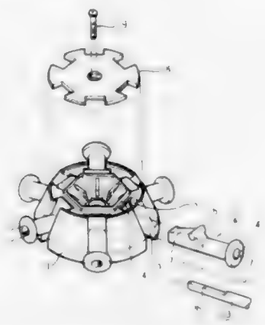
permit said tubular extension member to be inserted over said annular collar and said outer portion of said upper joint member, said tubular extension member having annular attaching means defined at one end being matable with said annular attaching means on said annular collar for attaching said tubular extension member to said annular collar, said tubular extension member having a hand grip defined at an opposite end thereof.

5,328,286

TENT FRAME BINDING DEVICE

Yong K. Lee, Kyoungki-do, Rep. of Korea, assignor to Bae Jin Corporation, Seoul, Rep. of Korea

Filed Dec. 9, 1992, Ser. No. 988,207
Claims priority, application Rep. of Korea, Apr. 2, 1992, 5399/1992; Jul. 3, 1992, 12204/1992
Int. Cl.[5] E04H *15/36*
U.S. Cl. 403—218 **3 Claims**



1. A tent frame binding device including a binding body (**1**), a plurality of slots (**3**) formed around said binding body (**1**), and a plurality of frame member fastening parts (**2**) for being joined into said slots (**3**),

the device further comprising:

a pair of fastening recesses (**5**) formed on side walls of each of said slots (**3**), said recesses (**5**) being open upwardly;

an inclined engaging step (**4**) formed on an upper portion of a rear portion (**S**) of said slot (**3**);

a supporting shaft (**6**) formed on a top of said frame member fastening part (**2**), said supporting shaft (**6**) projecting to left and right of said frame member fastening part (**2**);

an inclined portion (**7**) formed on said frame member fastening part (**2**) at a rear of said supporting shaft (**6**) so as for said inclined portion (**7**) to be coupled with said inclined engaging step (**4**); and

a securing plate (**8**) for fastening to a top of said binding body (**1**),

whereby inserting said frame member fastening part (**2**) into said slots (**3**), and fastening said securing plate (**8**) to the top of said binding body (**1**) by driving a bolt (**9**) through said securing plate (**8**) into said binding body (**1**).

5,328,287

RIGID INTERSECTION CONNECTION

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Division of Ser. No. 855,194, Mar. 20, 1992, Pat. No. 5,259,685. This application Sep. 10, 1993, Ser. No. 119,611
Int. Cl.[5] E04B *1/00*
U.S. Cl. 403—231 **1 Claim**

1. A rigid intersection connection in a structure comprising:

a. a first elongated wood X structural member having first outer facing, second outer facing, third inner facing, and fourth inner facing sides;

b. a first elongated wood Y structural member intersecting said first elongated wood X structural member and having first outer facing, seat and second inner facing sides;

c. a first elongated wood structural member intersecting said first elongated wood X and Y structural members and having first outer facing, seat and second inner facing sides;

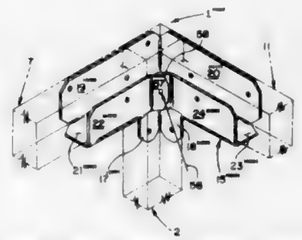
d. a first rigid connector constructed from a single planar blank sheet of sheet metal folded along straight bend lines forming first and second planar angular members intergrally joined along and diverging from a common bend line for holding said intersecting first elongated wood X, Y, and Z structural members in a rigid embrace having:

(1). an XY outer support side member dimensioned for registration with a portion of said first outer facing side of said elongated wood X structural member;

(2). an XZ outer support side member disposed at an angle to said XY outer support side member and integrally connected thereto along said common bend line a substantial portion thereof and angularly diverging away therefrom and dimensioned for registration with a portion of said second outer facing side of said elongated wood X structural member;

(3). a YX outer side member integrally connected in the same plane to said XY outer support side member and dimensioned for registration with a portion of said first outer facing side of said first elongated wood Y structural member;

(4). said XY outer support side member and said YX outer side member forming said first planar angular member;



(5). a ZX outer side member integrally connected in the same plane to said XZ outer support side member and dimensioned for registration with a portion of said first outer facing side of said elongated wood Z structural member;

(6). said XZ outer support side member and said ZX outer side member forming said second planar angular member;

(7). a Y seat member integrally connected to said YX outer side member and dimensioned for registration with a portion of said seat side of said first elongated wood Y structural member;

(8). a Y inner side member integrally connected to said Y seat member and dimensioned for registration with a portion of said second inner facing side of said elongated wood Y structural member;

(9). a Z seat member integrally connected to said ZX outer side member and dimensioned for registration with a portion of said seat side of said first elongated wood Z structural member;

(10). a Z inner side member integrally connected to said Z seat member and dimensioned for registration with a portion of said second inner facing side of said elongated wood Z structural member;

e. first fastener means attaching said XY outer support side member to said first outer facing side of said first elongated wood X structural member;

f. second fastener means attaching said YX outer side member to said first outer facing side of said first elongated wood Y structural member;

g. third fastener means attaching said Y inner side member to said second inner facing side of said elongated wood Y structural member;

h. fourth fastener means attaching said ZX outer side member to said first outer facing side of said elongated wood Z structural member;

i. fifth fastener means attaching said Z inner side member to said second inner facing side of said first elongated wood Z structural member;

j. sixth fastener means attaching said XZ outer support side member to said second outer facing side of said first elongated wood X structural member;

k. said first elongated wood structural member extends above and below said intersection of said first elongated wood Y structural member and said first elongated wood Z structural member;

l. means interlocking said Y inner side member and said Z inner side member wherein said first rigid connector encapsulates said first elongated wood X structural member;

m. a Y side extension overlap integrally connected to said Y inner side member at an angle;

n. a Z side extension overlap integrally connected to said Z inner side member at an angle and disposed in overlapping registration with said Y side extension overlap; and

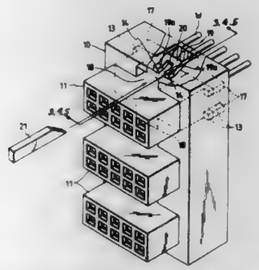
o. seventh fastener means piercing said Y and Z side extension overlaps and inserted into said first elongated wood X structural member.

5,328,288

HOUSING BLOCK-RETAINING CONSTRUCTION

Satoki Masuda, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,021
Claims priority, application Japan, Oct. 24, 1991, 3-087210[U]
Int. Cl.[5] H01R *13/627;* **B25G** *3/18*
U.S. Cl. 403—329 **3 Claims**



1. A housing block-retaining construction comprising:

a housing block having terminal receiving chambers for respectively receiving terminals each having an electric wire connected thereto;

a housing holder having an insertion opening defined at least by upper and lower inner wall surfaces for receiving said housing block, said housing holder retaining said housing block inserted in said insertion opening; and

a cantilevered flexible retaining lance provided at an inlet side of said insertion opening of said housing holder, said lance normally projecting into said insertion opening for retaining said housing block therein,

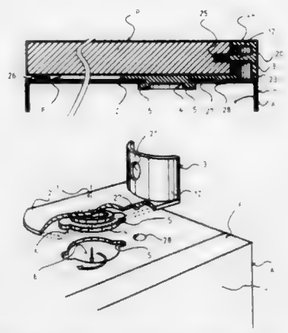
wherein a notch, in which a distal end of a release tool is engageable, is formed in a distal end portion of said retaining lance, a retaining projection for engagement with said retaining lance is provided on said housing block, and a recess aligned with said notch for allowing said release tool to pass therethrough is formed in that portion of said retaining projection corresponding to said notch.

5,328,289

SYSTEM FOR POSITIONING AND RETAINING AN ARTICLE OF MODULAR FURNITURE

Philippe Fussler, Strasbourg, France, assignor to Steelcase Strafor (S.A.), Strasbourg, France

Filed Nov. 20, 1992, Ser. No. 979,336
Claims priority, application European Pat. Off., Nov. 21, 1991, 91440097.3
Int. Cl.[5] A47B *13/00*
U.S. Cl. 403—332 **4 Claims**



1. A system for positioning and retaining in place an article of modular furniture upon the upper face of a rest block, the article of modular furniture being in the form of a slab having an external edge provided with a concave recess therein and a hole extending inwardly at the center of the concave recess, and the upper face of the rest block being provided with a recess therein, said system comprising:

an intermediate piece having a horizontal plate with upper and lower faces and opposed ends and an arcuate heel extending upwardly from said upper face perpendicular to said plate at one end thereof, said lower face of said plate including locking means for locking said plate into the recess in the upper face of the rest block, and said heel having the shape and dimensions of the recess provided in the external edge of the slab and having a hole therethrough positioned to align with the hole in the concave recess in the external edge of the slab;

a fastener including a locking stud and a head, said head having a vertical planar part and a horizontal part having the shape of a segment of a circle, said vertical planar part having the same height and width as the concave recess in the external edge of the slab, and said segment-shaped part being complementary in shape to the concave recess in the external edge of the slab, and said stud extending perpendicularly from said vertical planar part and being configured to pass through said hole in said heel of said intermediate piece and the hole in the concave recess in the external edge of the slab, whereby said fastener fully closes the concave recess in the external edge of the slab when said stud is forced into said holes.

5,328,290

COUPLING ARRANGEMENT FOR CYLINDRICAL MEMBERS

Armando N. Plastina, Santa Cruz, Calif., assignor to Bel-Art Products, Inc., Pequannock, N.J.

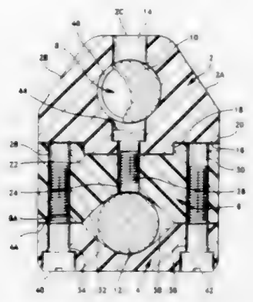
Filed Apr. 14, 1993, Ser. No. 46,844
Int. Cl.[5] B25G *3/36*
U.S. Cl. 403—391 **7 Claims**

1. A coupling arrangement for coupling one cylindrical member in one plane to an other cylindrical member in an other plane parallel to the one plane, comprising:

a first end member;

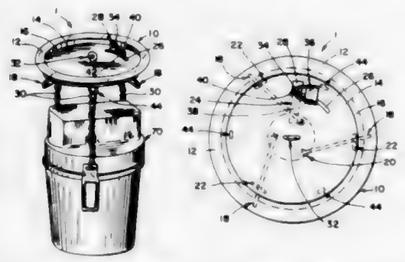
a second end member;

a center member disposed between the first and second end members;
the first end member having a transversely extending hole which accepts the one cylindrical member of a finite diameter;
the center and second end members cooperating to provide a transversely extending opening for accepting the other cylindrical member of varying diameters, whereby the one and the other cylindrical members are coupled together;



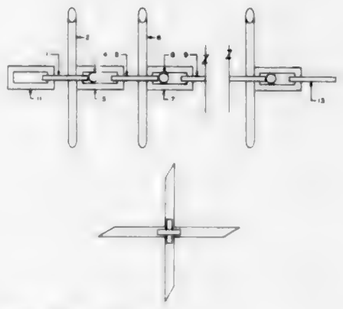
the first and second end members and the center member being in a common plane; and
the first end member being angularly displaceable in the common plane, whereby the transversely extending hole accepts the one cylindrical member when said one cylindrical member is displaced in the one plane relative to the other cylindrical member in the other plane parallel to the one plane.

5,328,291
LOCKING MANHOLE INSERT
Robert S. Wisniewski, 3167 Bristol, N.W., Walker, Mich. 49504
Filed Sep. 24, 1992, Ser. No. 949,996
Int. Cl.[5] E02D *29/12*
U.S. Cl. 404—2 **11 Claims**



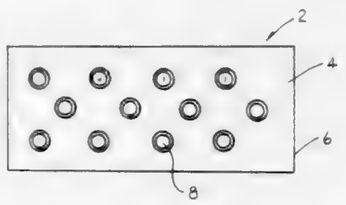
1. A locking manhole insert to be installed within a manhole opening and under a manhole cover, said insert comprising:
a circular body including a peripheral lip adapted to rest in the manhole opening, said body being substantially unapertured with the exception of a locking handle slot, said lip defining a plane, said body having an upper side and an underside, said body including a circumferential wall and a floor, said floor being disc-shaped and having a diameter smaller than the diameter of the manhole cover, said circumferential wall extending axially upward from said floor, said lip extending radially outward from the top edge of said circumferential wall and having an exterior diameter substantially identical to a diameter of the manhole cover;
a locking mechanism on said underside of said body for selectively locking said body within the manhole opening, said locking mechanism including an actuating handle extending through said lot to be accessible from said upper side of said body, said handle being movable between a locked position and an unlocked position;
securing means for securing said actuating handle in the locked position; and
suspension means secured to said underside of said body for suspending apparatus from said body,
said body, said locking mechanism, and said securing means located below said plane defined by said lip, whereby said insert does not interfere with the installation of the manhole cover in the manhole opening over said insert.

5,328,292
TRAFFIC BARRIER CHAIN
Francis R. Williams, P.O. Box 550, Canon City, Colo. 81215
Filed Mar. 11, 1993, Ser. No. 29,721
Int. Cl.[5] E01F *15/00*
U.S. Cl. 404—6 **3 Claims**



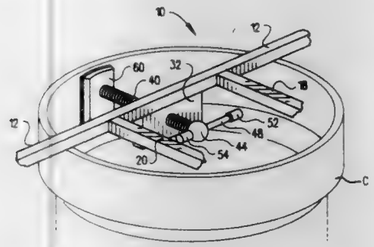
1. A traffic barrier comprising:
a chain means comprising of a series of interconnected links having openings therethrough with each link passing through the opening of each adjacent link, said links being pivotable relative to each other;
an elongated rod means extending through the opening of at least a plurality of adjacent links of said chain means, said rod means being fixedly attached to said links at approximately a mid-point of said rods means and;
said rod means having each end configured as a sharpened point whereby said points are capable of puncturing vehicle tires.

5,328,293
TACTILE TILE
Robert F. Keefe, Burlington, Canada, assignor to Keefe-Dickson Corporation Inc., Burlington, Canada
Filed Dec. 4, 1991, Ser. No. 802,318
Int. Cl.[5] E01F *9/00*
U.S. Cl. 404—9 **20 Claims**



1. In a tactile tile having a flat plate with a plurality of raised areas, said plate and raised areas comprised of polyurethane, wherein said polyurethane has a taber abrasion resistance of less than 500 milligrams per ten thousand cycles based on ASTM method D with a H-18 wheel.

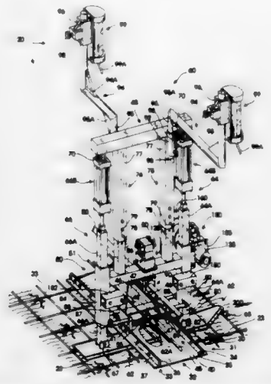
5,328,294
MANHOLE CASTING SETTING FIXTURE
Rex Miller, 5149 Kipp Way, Carmichael, Calif. 95608
Filed Nov. 1, 1991, Ser. No. 786,456
Int. Cl.[5] E02D *29/14*; B22C *9/24*
U.S. Cl. 404—25 **16 Claims**



1. A manhole casting setting fixture, comprising:
a pair of elongated spaced substantially parallel frame rails;
a plurality of spaced substantially parallel struts extending substantially transversely between and secured to said frame rails;
a plurality of handles disposed on upper surfaces at opposite ends of said frame rails to facilitate manual transportation and positioning of said fixture;
a pair of clamping blocks secured substantially centrally in juxtaposed relation to bottom surfaces of said frame rails;
a pair of lead screws extending through substantially coaxial threaded apertures in said clamping blocks;
a pair of arcuate clamping jaws rotatably secured on inner ends of said lead screws between said frame rails and said clamping blocks, each of said clamping jaws having a concave cylindrical outer surface dimensioned for engagement with a cylindrical inner side wall of a manhole casting;
and
a pair of handles secured to outer ends of said lead screws for moving said clamping jaws independently into clamping engagement with a manhole casting and to allow lateral positioning of said manhole casting between said frame rails.

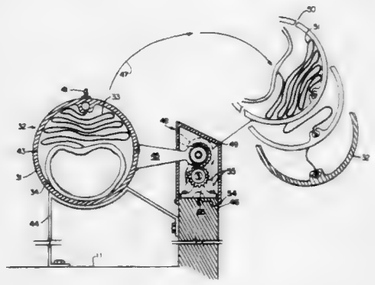
5,328,295
TORSIONAL AUTOMATIC GRADE CONTROL SYSTEM FOR CONCRETE FINISHING
J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corporation, Paragould, Ark.
Continuation-in-part of Ser. No. 903,936, Jun. 26, 1992, Pat. No. 5,288,166. This application Nov. 5, 1993, Ser. No. 147,302
Int. Cl.[5] E01C *19/40*
U.S. Cl. 404—84.1 **19 Claims**

1. A laser-operated, automatic grade control device for striking-off, leveling, finishing, surfacing or treating plastic concrete with or without forms, said device comprising:
an elongated concrete finishing mechanism adapted to be deployed in physical contact with said concrete for treating same, said finishing mechanism comprising a front, a rear, a longitudinal axis and a pair of spaced-apart ends;
stanchion means disposed at each end of said finishing mechanism for supporting the device, said stanchion means comprising a stanchion extending upwardly adjacent said front and a stanchion extending upwardly adjacent said rear;
means for dynamically coupling said finishing mechanism to said stanchion means;
means supporting said device for enabling it to be moved over the concrete to be treated, said support means oriented generally perpendicularly to said finishing mechanism;
displacement means at each end of said finishing mechanism for independently vertically displacing each end of said finishing mechanism;
laser means maintained at a fixed elevation for providing a reference level; and,



control means for independently controlling extension and retraction of each of said displacement means responsive to said laser means, thereby orienting the finishing mechanism up and down relative to said concrete and torsionally relative to said longitudinal axis to provide a level concrete surface in response to independent elongation or contraction of said displacement means.

5,328,296
OIL SPILL CONTAINMENT SYSTEM
Donald H. Lahar, 97 White Rock Hill Rd., Bow, N.H. 03301, and Scott B. Lahar, 24 Branch, Londonderry Turnpike East, Bow, N.H. 03301
Continuation-in-part of Ser. No. 505,836, Apr. 6, 1990, abandoned. This application Jun. 6, 1991, Ser. No. 711,141
Int. Cl.[5] E02B *15/06*
U.S. Cl. 405—68 **40 Claims**



1. In an improved oil spill containment system, that includes an inflatable collar and depending apron having an upper and lower edge carried by a vessel for entraining an oil spill originating therefrom, wherein the inflatable collar and depending apron when deployed form a continuous circular oil containment apparatus surrounding the vessel, means for inflating the collar once deployed to maintain the upper edge of the depending apron at the surface of the oil spill in a vertical orientation

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extending downward from the collar, the collar and apron being constructed of a plurality of interconnected segments of uniform length, means for weighting down and anchoring the lower edge of the apron to maintain the positioning of the collar and apron once inflated and deployed in the water, means for removing the entrained oil spill from the surface of the surrounding water, and means for storing the oil retrieved wherein the improvement comprises:

means for storing the oil containment apparatus on board the vessel, said storing means being inboard the vessel's gunnel and being able to protect its contents from physical damage and environmental degradation, and said storing means comprising a cylindrical structure formed into two longitudinally mating and sealable halves, the half closest to the deck being secured to support members that are rotatably affixed to the gunnel and the other half being attached to the apparatus;

means for controllably rotatably raising the oil containment apparatus from said storing means and moving the apparatus into position on the outboard side of the gunnel in preparation for deployment while imparting momentum thereto;

means for functionally lengthening and increasing the oil spill containment apparatus, said lengthening means increases the peripheral dimension of the apparatus as it is raised from the deck and moved out over the outboard side of the gunnel;

means for predeterminally controlling the inflation of the plurality of interconnected segments, during the full deployment cycle, from the onboard stored position to floating in the oil spill; and

means for anchoring the plurality of interconnected segments, said anchoring means being flexibly attached to the lower edge of the aprons of each interconnected segment and keeping each of the aprons in a vertical orientation extending from the surface of the oil spill downward throughout its length.

5,328,297

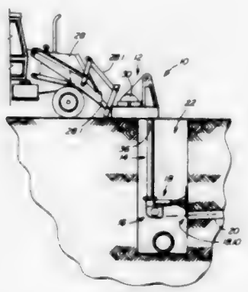
TRENCHLESS REPLACEMENT OF SMALLER DIAMETER LATERAL PIPE SECTIONS

Reginald G. Handford, Calgary, Canada, assignor to Trenchless Replacement Systems Ltd., Calgary, Canada

Filed Apr. 9, 1993, Ser. No. 44,617

Int. Cl.[5] F16L *1/028*

U.S. Cl. 405—184 **16 Claims**



1. Apparatus for the trenchless replacement of a pipe, comprising:

an above-ground frame section for location above a service pit exposing one end of an underground pipe section to be replaced;

an extendable leg member on said above-ground frame section for extending into said service pit;

a support member on said extendable leg member for supporting said leg member against the inside of said service pit;

a cable guide member on said leg member for guiding a pipe pulling cable long said leg member and which guide member is connected to said leg member through connection means which is swiveable about the longitudinal axis of the leg member; and

a winch on said above-ground frame section for exerting a pulling force on said pulling cable.

5,328,298

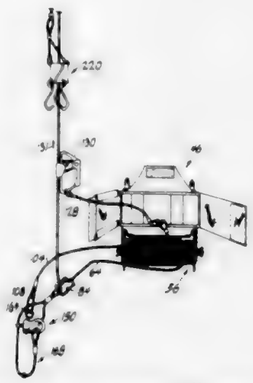
SAFE ASCENT/DECOMPRESSION DEVICE

Anthony N. Maffatone, 68 Elizabeth St., Bloomingdale, N.J. 07043

Filed Jul. 7, 1993, Ser. No. 88,209

Int. Cl.[5] B63B *21/52*

U.S. Cl. 405—185 **18 Claims**



1. An ascent/decompression device for use in diving with an inflatable lift bag, said device comprising:

pack means for securing said ascent/decompression device on a diving harness worn by a diver;

a reel having a decompression line wound thereabout, said reel being mounted for rotation to said pack means, and said decompression line having a free end connected to the inflatable lift bag;

a cable;

releasable cable securement means for releasably securing said cable about a ship wreck;

first release clip means for receiving said decompression line and for limiting a rate of ascent of said lift bag connected to said decompression line, said first release clip means being connected to one of said cable and said releasable cable securement means; and

ascender means for grabbing onto and moving along said decompression line, said ascender means including direction limiting means for limiting a direction of movement of said ascender means along said decompression line, said ascender means being connected to one of said pack means and said harness.

5,328,299

JIG FOR CONSTRUCTING PILES FROM CONCRETE OR SIMILAR MATERIAL IN THE GROUND

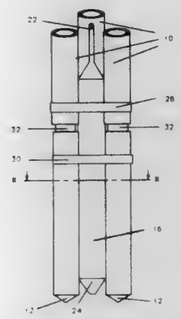
Wilhelm S. Degen, Sennhuettenstrasse 12, 8810 Horgen, Switzerland, and Alexander Degen, Hassenham 8, 8255 Schwindegg, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 979,701

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138443

Int. Cl.[5] E02D *5/18*

U.S. Cl. 405—240 **9 Claims**



1. A jig for constructing structures of concrete or similar hardenable grout material in the ground comprising:

a plurality of spaced, substantially parallel pipes having lower ends with closed conical tips and adapted to be vibrated by a vibrating apparatus,

a longitudinally extending displacement casing in the space between said vibrated pipes, said displacement casing having a longitudinally extending arcuate recess for each of said vibrated pipes and matingly receiving a said vibrated pipe therein, said displacement casing having a lower end having a downwardly directed conical configuration with a downwardly directed opening,

a securing device extending about said vibrated pipes and confining said vibrated pipes in their respective recesses in said displacement casing,

a material delivery pipe for hardenable material extending through said casing and having a lower end adjacent said downwardly directed conical configuration of said displacement casing, and

a downwardly directed opening in said lower end of said delivery pipe,

whereby said pipes and said displacement casing may readily penetrate the ground and hardenable material in said conical configuration of said displacement casing may prevent entry of soil into said displacement casing.

5,328,300

ANCHORING MEANS FOR ANCHORING BY MEANS OF A BONDING MASS IN A DRILLED HOLE IN A CONCRETE PART

Artur Fischer, Tumlingen/Waldachtal, and Wilfried Weber, Schopfloch/Unteriflingen, both of Fed. Rep. of Germany, assignors to fischerwerke, Artur Fischer GmbH & Co. KG, Waldachtal, Fed. Rep. of Germany

PCT No. PCT/EP93/01095, § 371 Date Aug. 25, 1993, § 102(e) Date Aug. 25, 1993

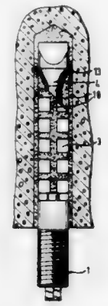
PCT Filed May 5, 1993, Ser. No. 108,634

Claims priority, application Fed. Rep. of Germany, May 18, 1992, 4216214; Jul. 3, 1992, 4221853

Int. Cl.[5] E21D *20/02*

U.S. Cl. 405—259.6 **11 Claims**

1. An anchoring device for anchoring by a bonding mass in a drilled hole in a concrete part or the like, the anchoring device comprising a threaded bolt having an end facing a drilled hole and being provided with an expansion cone widening out to said end; an anchoring sleeve surrounding said threaded bolt and expandable by said expansion cone; a head part provided with a wedge-like point and following said expansion cone so as to form at the same time a stop shoulder, said threaded bolt starting from a smallest diameter of said



expansion cone having a portion of reduced diameter which extends over a part of a length of said threaded bolt, said anchoring sleeve being arranged on said portion and extending from said stop shoulder of said head part to an end of said portion and is composed of plastic material, said anchoring sleeve having also an outer surface which is provided with longitudinal grooves.

5,328,301

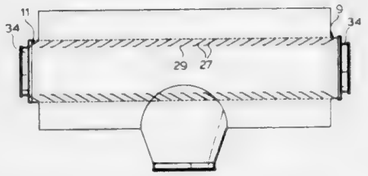
AIR RETURN FOR VENTURI SYSTEM

Frank V. Oirschot, 47 Algonquian Drive, Chatham, Ontario, Canada N7M 5Y2

Filed Jan. 19, 1993, Ser. No. 5,986

Int. Cl.[5] B65G *53/60*

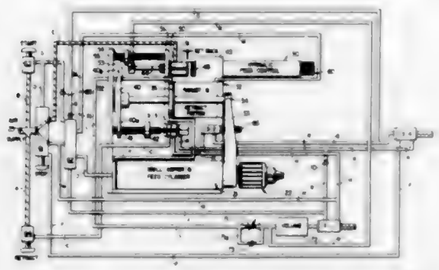
U.S. Cl. 406—171 **6 Claims**



1. An air return unit for use in a venturi system controlled by a blower operated air induction device, said air return unit comprising a housing having first and second ends which open into said housing, a product flow retention centrally through said housing, with baffle means interiorly of said product flow region, said product flow region being surrounded by an air draw region and being separated from said air draw region by a perforate divider, said baffle means comprising a plurality of baffle members along the length of said air return unit with openings between said baffle members from said product flow region to said air draw region, said housing further including an air draw opening from said air draw region to be coupled to an induction device air return line said baffle means inhibiting product which flow through said product flow region from being drawn onto and blocking air draw through said perforate divider.

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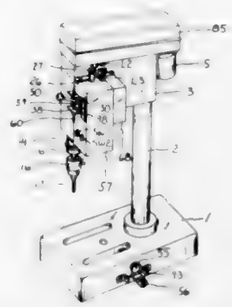
5,328,302
AIR FEED PECK DRILL
Richard E. Eckman, Houston, Tex., assignor to Indresco, Inc., Dallas, Tex.
Filed Feb. 6, 1992, Ser. No. 831,821
Int. Cl.[5] B23B *47/22*
U.S. Cl. 408—17 **19 Claims**



1. A pneumatic peck drill operable in repetitive cycles including a rapid advance phase to a set back distance from a workpiece, a drilling phase, and a retract phase, comprising:
(a) drill motor for rotating, advancing, and retracting a drill bit chuck through said cycles;
(b) pneumatic means for advancing and retracting said drill motor;
(c) drilling phase control means connected with said drill motor for limiting the drilling phase of said motor to a predetermined drill depth;
(d) retract phase control means operable with said drill motor for controlling the retract phase of each peck cycle;
(e) peck cycle control means connected with said pneumatic means for terminating each drilling phase and controlling the rate of said repetitive peck cycles;
(f) hydraulic feed control means including a damping cylinder having a piston rod operable with said drill motor to limit the advance of said drill motor in said drilling phase to an adjustable predetermined rate; and
(g) set back control means comprising a brake operable with said feed control means for limiting said feed control means during said retract phase to a predetermined set back distance whereby said drilling phase during each peck cycle begins at a predetermined position before a bit carried by said chuck engages a workpiece.

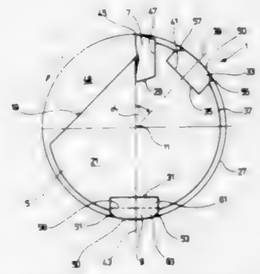
5,328,303
AUTOMATIC SPINDLE MOVING DEVICE FOR TAPPING/DRILLING MACHINE
Kwan S. Jang, 146 Sam-dong (5th Woosung Apt. Bldg. 102, 190 520), Euiwang-shi, Kyeonggi-do, Rep. of Korea
Filed Sep. 11, 1992, Ser. No. 943,816
Claims priority, application Rep. of Korea, Sep. 27, 1991, 91-16832
Int. Cl.[5] B23B *41/00*
U.S. Cl. 408—14 **2 Claims**

1. An automatic spindle moving device for a tapping/drilling machine, including: a drill head portion A for revolving by receiving power from a motor; a vertically movable tube **14** inserted into the front portion of said drill head A in such a manner as to move up and down within it; a spindle **6** coaxially installed within said vertically movable tube **14**; a depth adjusting rod **22** passing through a vertically elongate slot **4** formed on a side of a drill head **3**; and an adjusting bolt **24** threadably secured to a threaded portion **23** of the other end of said depth adjusting rod **22**, said adjusting bolt **24** having a cone **25** on the lower end thereof,
said device further comprising:
a worm **8** formed on said spindle **6** in an elongate form in the lengthwise direction thereof;
horizontal shafts **10** passing through two vertically elongate slots **15**, said slots **15** being symmetrically and oppositely formed on said vertically movable tube **14**;
worm wheels **9** fitted to said horizontal shafts **10** in such a manner as to mesh with said worm **8**;
an oscillating plate **41** having a hanger hole **42**, said hanger hole **42** being for receiving a branch rod **51** of a manual handle **50**;



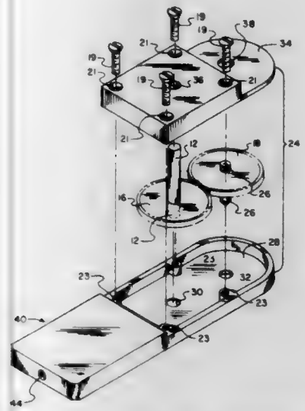
an actuation bar **34** for being moved up and down together with a wing piece **35**, said wing piece **35** having a lining **36**; and
a drum hub **18** coaxially fitted to said horizontal shaft **10**, and for being pressed by said lining **36**, thereby producing a braking effect, and forming a drum braking means.

5,328,304
REAMER
Dieter Kress, Aalen, and Friedrich Häberle, Lauchheim, both of Fed. Rep. of Germany, assignors to Mapal Fabrik für Prazisionswerkzeuge Dr. Kress KG, Aalen, Fed. Rep. of Germany
Filed Jan. 21, 1993, Ser. No. 7,289
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 4202751
Int. Cl.[5] B23B *41/16, 51/00*
U.S. Cl. 408—83 **20 Claims**



1. A reamer, comprising a base body having a circumferential wall; a cutting tip mounted in said circumferential wall; and at least one guide bead mounted in said circumferential wall and extending in a longitudinal direction of said base body, said at least one guide bead having a metal body, and a continuous diamond padding provided on said metal body and defining a contact surface of said bead.

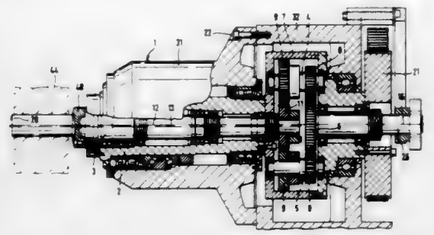
5,328,305
OFFSET DRIVE COUNTERSINK APPARATUS
Robert J. Kozel, 76 Elm St., Upton, Mass. 05168
Filed Jul. 26, 1993, Ser. No. 96,302
Int. Cl.[5] B23B *47/02*
U.S. Cl. 408—124 **9 Claims**



1. A new and improved offset drive countersink apparatus for connection to a rotary drive source, said apparatus comprising:
a first driven rotating member for connecting to the rotary drive source, said first driven rotating member rotating around a first longitudinal axis,
a first gear connected to said first driven rotating member, said first gear driven by said first driven rotating member and rotating around said first longitudinal axis, and said first gear lying in a first plane,
a second gear meshed with said first gear, said second gear driven by said first gear and lying in said first plane, said second gear rotating around a second longitudinal axis, wherein said first longitudinal axis and said second longitudinal axis are offset from each other by a predetermined offset distance in said first plane,
a housing receiving said first gear and said second gear and supporting said first gear and said second gear in said first plane,
a countersink tool connected to said second gear, said countersink tool driven by said second gear and rotating around said second longitudinal axis at said predetermined offset distance offset from said first driven rotating member, and
wherein said countersink tool is connected to said second gear with bearings.

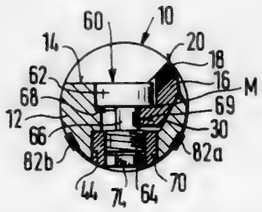
5,328,306
TOOL SPINDLE, IN PARTICULAR BORING SPINDLE
Karl Rehm, Mindelheim, and Markus Grob, Bad Wörishofen, both of Fed. Rep. of Germany, assignors to Grob-Werke GmbH & Co. KG, Mindelheim, Fed. Rep. of Germany
Filed Apr. 2, 1993, Ser. No. 42,599
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1992, 4210898
Int. Cl.[5] B23B *41/04*
U.S. Cl. 408—125 **19 Claims**

19. A tool for producing or machining surfaces of elliptical cross-section, comprising:
a central support means;
a sleeve rotatably mounted on said central support means and having an axis of rotation;
a tool carrier rotatably mounted on said sleeve so that said sleeve supports said tool carrier and said tool carrier has an axis of rotation extending in parallel spaced relationship to said axis of rotation of said sleeve; and



drive means adapted for rotating said sleeve and said tool carrier at the same rotational speed in opposite directions for elliptical boring and machining.

5,328,307
CUTTING TOOL FOR WORKING THE INTERIOR AND EXTERIOR CONTOURS OF WORKPIECES
Heiner Fees, Bietigheim-Bissingen, and Manfred Goetz, Schwabach, both of Fed. Rep. of Germany, assignors to MAPAL Fabrik fur Prazisionswerkzeuge Dr. Kress KG, Aalen, Fed. Rep. of Germany
PCT No. PCT/DE90/00651, § 371 Date Feb. 24, 1993, § 102(e) Date Feb. 24, 1993, PCT Pub. No. WO91/03245, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 25, 1990, Ser. No. 977,439
Int. Cl.[5] B23C *5/24*
U.S. Cl. 408—173 **10 Claims**

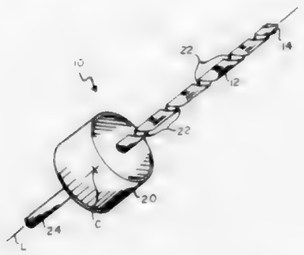


1. A cutting tool for working the interior and exterior contours of workpieces, with said tool comprising at least one cutting plate exchangeably fastened to a basic tool body and being adjustable radially to the tool axis by means of an adjustment screw, while being clampable by clamping means to a supporting shoulder of the basic tool body that absorbs the working pressure, and wherein, for radial adjustment of the cutting plate, the adjustment screw simultaneously constitutes a clamping means for clamping the cutting plate tightly to the supporting shoulder of the basic tool body and has the following features:
(a) the adjustment screw is disposed at an acute angle relative to the supporting shoulder of the basic tool body and engages in a clamping nut which is rotatably mounted on the basic tool body but is axially supported in one direction;
(b) the adjustment screw is provided with an axial clamping shoulder facing the vertex of the acute angle and urged against an axial counter-shoulder facing the opening of the angle on the cutting plate in contact with the supporting shoulder; and
(c) the adjustment screw is provided with a longitudinal section that is arranged eccentric to the screw axis while its eccentric circumferential face forms a radial clamping shoulder which presses against a radial counter-shoulder

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extending parallel to the screw axis on the cutting plate lying against the supporting shoulder.

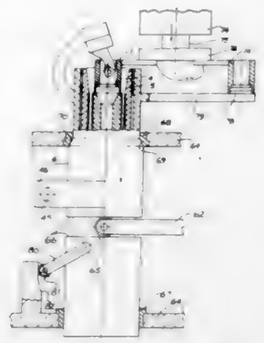
5,328,308
GYRO-STABILIZED TOOL BIT AND WIDE MOUTH TOOL BIT MOUNTING CHUCK
Andrew L. Ducker, III, 9604 NW. 28th St., Coral Springs, Fla. 33065, and Andrew L. Ducker, Jr., Rte. 6, Box 686, Mooresville, N.C. 28115
Continuation-in-part of Ser. No. 998,389, Dec. 30, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 55,984
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—226 **31 Claims**



1. A tool bit comprising:
a shaft portion having a mounting end for insertion into a bit receiving opening of a chuck, having a working end and having an average radius and a longitudinal axis,
a flywheel portion, between said mounting end and said working end, having an average radius greater than said average radius of said shaft portion and greater than the average radius of said receiving opening of said chuck, and having a center of gravity, said flywheel portion being positioned relative to said shaft portion such that said flywheel portion center of gravity is located substantially on said shaft portion longitudinal axis,
said shaft portion, said mounting end and said flywheel portion being elements of a single monolithic structure.

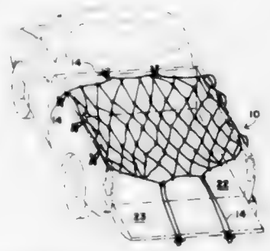
5,328,309
SLOTTING MACHINES
Arthur E. Bishop, Greenwich, and David W. Scott, Ruse, both of Australia, assignors to A E Bishop & Associates Pty Limited, North Ryde, Australia
Filed Aug. 6, 1993, Ser. No. 50,329
Claims priority, application Australia, Nov. 23, 1990, PK3520
Int. Cl.[5] B23D *5/00*
U.S. Cl. 409—307 **5 Claims**

1. A machine for machining blind-ended slots longitudinally disposed within the bore of a sleeve, comprising a work holding spindle indexable about a rotational axis, said spindle incorporating a work holding chuck for holding said sleeve, a cutting tool mounted on a cutting spindle, the axis of said cutting spindle being offset from and at right angles to the rotational axis of said work holding spindle, means of supporting said cutting spindle for angular reciprocation, infeed means to permit said cutting tool to execute a succession of progressively deeper cutting and subsequent return strokes in relation to said bore of said sleeve, whereby after a series of indexations of said work holding spindle, said blind-ended slots are machined in a sleeve characterized in the provision of means slideably supporting said work holding spindle for movement along an axis parallel to said rotational axis of said work holding spindle and, means acting to disable said infeed means after said machining of all said slots is completed, and means to slide said work holding spindle axially relative to said cutting spin-



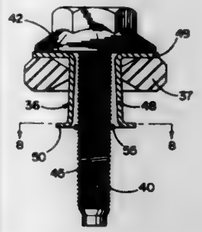
dle a distance such that said cutting tool is radially and axially clear of said bore.

5,328,310
CARGO RESTRAINING TONNEAU NET
William R. Lockney, Rte. 5, Box 121-H, DeFuniak Springs, Fla. 32433
Filed Jan. 4, 1993, Ser. No. 386
Int. Cl.[5] B61D *45/00;* **B60P** *7/04;* **D04G** *1/00*
U.S. Cl. 410—97 **2 Claims**



1. A compliant net having the ability to undergo reversible distortions in shape and adapted for use with a pickup truck bed having tie-down means, said net having a substantially elongated rectangular perimeter and comprised of a single continuous low-friction rope formed into a multitude of non-jamming interlaced junctures comprised of an overhand knot, said junctures being aligned in a series of parallel rows orthogonally disposed to said perimeter, adjacent rows of said series being staggered such that the adjacent junctures of three successive rows are disposed in a diamond-shaped locus, said junctures being formed by the continuous sequential formation of overhand knots which slideably embrace the portion of rope intervening between overhand knots of the next adjacent row, said rope doubling back at said perimeter for repetitive formation of said junctures, said perimeter having appendage loops which facilitate attachment to said tie-down
means, said loops being continuous extensions of said rope emergent from jamming knots formed in said perimeter.

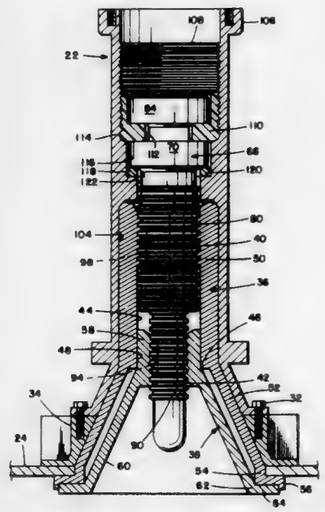
5,328,311
FASTENER ASSEMBLY WITH AXIALLY SLIDABLE SLEEVE AND FLOATING RETAINER
Rudolph E. Knohl, Bartlett, Ill., assignor to Elco Industries, Inc., Rockford, Ill.
Continuation-in-part of Ser. No. 952,594, Sep. 28, 1992, Pat. No. 5,244,325. This application Aug. 30, 1993, Ser. No. 114,319
Int. Cl.[5] F16B *21/18, 39/00*
U.S. Cl. 411—353 **6 Claims**



1. A fastener comprising an elongated shank having an upper end with an enlarged driving head and having a lower tip end, said head having a lower side, said shank having a threaded section defined by a helical thread extending along said shank, said thread having upper and lower ends and having a predetermined major diameter, a sleeve having upper and lower ends, the inner diameter of said sleeve adjacent the upper end thereof being less than the inner diameter of said sleeve adjacent the second end thereof and being greater than the major diameter of said thread whereby said sleeve may be slipped onto said shank from the tip end thereof and slipped upwardly along said threaded section to a fully installed position in which the upper end of said sleeve engages the lower side of said head, said sleeve having a pre-installed position in which the upper end of said sleeve is spaced downwardly from the lower side of said head, the lower end of said thread being disposed no lower than the lower end of said sleeve when said sleeve is in said pre-installed position, and a resiliently yieldable retainer extending at least partially around the threaded section of said shank, said retainer fitting between two adjacent turns of said thread when said sleeve is in said pre-installed position and fitting between two different adjacent turns of said thread when said sleeve is in said fully installed position, said retainer being located nearer to the upper end of said thread when said sleeve is in said fully installed position than when said sleeve is in said pre-installed position, said retainer having an inner diameter and an outer diameter, the inner and outer diameters of said retainer being less than and greater than, respectively, the major diameter of said thread, the outer diameter of said retainer being less than the inner diameter of said sleeve adjacent the lower end thereof and greater than the inner diameter of said sleeve adjacent the upper end thereof whereby said sleeve is free to slide back and forth on said shank but is captivated against slipping downwardly off of said shank by virtue of the upper end of said sleeve engaging said retainer, the interior of said sleeve adjacent the upper end thereof being sized and shaped to compress said retainer radially inwardly against said threaded section and thereby prevent said retainer from being pulled downwardly off of said threaded section by a downward axial force exerted on said sleeve.

5,328,312
DUAL LOAD-PATH FASTENER
Timothy D. Driscoll, Mountain View, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.
Filed Dec. 22, 1992, Ser. No. 994,790
Int. Cl.[5] F16B *35/00*
U.S. Cl. 411—366 **14 Claims**

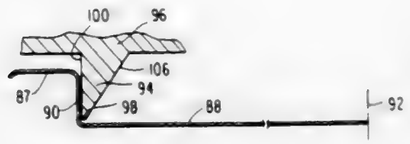
1. A fastener for securing to supporting structure a component having an attachment bore extending therethrough, said fastener comprising:
first spindle means having a longitudinal axis receivable in the attachment bore of the component and fixed to the supporting structure, said first spindle means having a longitudinally extending coaxial first threaded bore therethrough and a coaxial smooth counterbore;
second spindle means having a longitudinal axis coaxial with said first spindle means and fixed to the supporting structure and slidably engaged with the counterbore of said first spindle means, said second spindle means having a longitudinally extending, axially align&d, second threaded bore therethrough;
a first bolt having a longitudinal axis coaxial with said first and second spindle means having a longitudinally extending smooth throughbore and including:
a first head having a multifaceted recess therein;
a first end distant from said first head; and
a threaded shank intermediate said first head and said first end, said threaded shank being threadedly engaged with the first threaded bore in said first spindle means, said first



bolt being rotatable in one direction about said longitudinal axis to advance said first head toward the supporting structure and rotatable in the opposite direction to retract said first head from the supporting structure;
a second bolt slidably received through the throughbore in said first bolt and including:
a second head having a multifaceted recess therein;
a second end distant from said second head;
a multifaceted driver intermediate said second head and said second end operably engageable with the multifaceted recess in said first bolt; and
an externally threaded shank intermediate said driver and said second end, said externally threaded shank being threadedly engaged with said second spindle means;
said first head being engageable with the component for drawing the component toward the supporting structure upon rotation of said first bolt in said one direction;
whereby upon fracture, alternatively, of said first bolt between said first head and said first end and of said second bolt between said driver and said second end, rotation of said first head in said one direction continues to advance said first head toward the supporting structure.

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5,328,313
CONVENIENCE-FEATURE END CLOSURE FOR CONTAINER BODY WITH NON-CYLINDRICAL SIDEWALL
William T. Saunders, Weirton, W. Va., assignor to Weirton Steel Corporation, Weirton, W. Va.
Division of Ser. No. 535,413, Jun. 8, 1990, Pat. No. 5,217,134. This application Nov. 13, 1992, Ser. No. 976,188
Int. Cl.[5] B21D *51/44*
U.S. Cl. 413—17 **4 Claims**



1. Method for fabricating a convenience-feature, non-circular sheet metal end closure structure so as to provide an opening for a non-cylindrical container enabling substantially unobstructed removal of solid-pack container contents, comprising

providing a substantially-planar, unitary, flat-rolled sheet metal blank,

said sheet metal blank having a preselected cut edge periphery to enable forming an end closure structure of desired non-circular configuration in plan view,

said non-circular end closure structure configuration being selected from the group consisting of square, rectangular, oblong, elliptical and pear-shaped so as to have a major dimensional axis centrally located in plan view dividing the end closure into mirror-image halves on opposite sides of said axis,

said non-circular end closure structure configuration corresponding to the non-cylindrical container body configuration for use with said end closure,

said non-cylindrical container body having a centrally located vertical axis with container side walls symmetrically disposed with relation to said centrally located vertical axis as viewed in a plane perpendicularly transverse to said vertical axis;

orienting said blank for feed into a conversion and forming press to enable preselected location of means for forming a rivet symmetrically along said major dimension axis for securing an elongated, longitudinally-rigid, convenience-feature opener to said endwall structure with the central longitudinal axis of said opener coincident with said major dimensional axis of said non-circular configuration end closure structure;

forming chime seam metal about the periphery of said sheet metal blank for securing said end closure structure to said non-cylindrical container body side wall so as to determine an exterior public side and an interior product side for said end closure structure, while

countersinking an endwall panel in said blank,

said endwall panel, as countersunk, being disposed axially inwardly toward the interior product side of said end closure with relation to said chime seam metal, providing an axially oriented chuck wall extending between said chime seam metal and said countersunk endwall panel;

orienting endwall panel sheet metal where contiguous to said chuck wall to be in substantially right angled relationship with said chuck wall when viewed in cross section in a plane which includes the centrally located vertical axis for the non-cylindrical container body to which said end closure structure is to be secured;

scoring said countersunk endwall panel contiguous at a portion to said chuck wall about its entire perimeter to provide a peripheral scoreline of decreased sheet metal thickness in said countersunk panel endwall which defines a full-panel unobstructed opening for solid-pack removal of container contents;

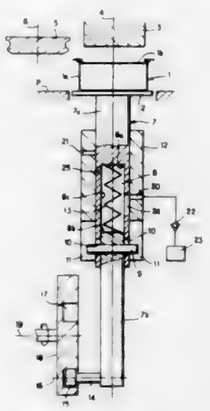
providing said elongated longitudinally-rigid opener with longitudinal axis;

said opener having a working end and a handle end at its longitudinally opposite ends;

securing said opener to said countersunk endwall panel by forming a rivet in said countersunk endwall panel which secures said opener to said panel with said longitudinal axis of the opener coincident with said major dimensional axis of said end closure structure, with

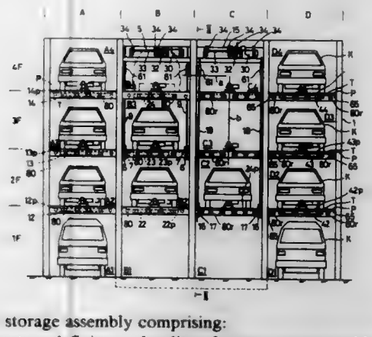
said working end of said opener being located, contiguous to the location where said major dimensional axis of said end closure structure intersects said chuck wall, so as to enable a chuck wall support tooling to provide backing support contiguous to said chuck wall about said entire perimeter for purposes of forming a chime seam between said end closure structure and said container body sidewall, while providing a recess in said tooling contiguous to said major dimension axis location for receiving said working end of the opener during formation of said chime seam.

5,328,314
DEVICE FOR CLOSING FOOD CANS AT A HIGH RATE
Jean-Charles Marchadour, Saint Jean Trolimon, France, assignor to Hema Technologies, Quimper, France
Filed Mar. 29, 1993, Ser. No. 38,527
Claims priority, application France, Mar. 31, 1992, 92 03907
Int. Cl.[5] B21D *51/32*
U.S. Cl. 413—37 **8 Claims**



1. A device enabling the lid of a food can to be crimped in place, the device comprising a crimping head and a compression stand for supporting the body of a food can on which a lid has been placed, and for pressing said lid onto the body of the can by urging the can against a fixed mandrel with a determined force throughout the crimping operation, a telescopic rod comprising first and second elements capable of sliding relative to each other and extending along an axis perpendicular to a support surface provided by the compression stand, the compression stand being fixed to an end of said first element, a spring urging said first and second elements apart from each other, said second element being coupled to drive means suitable for imparting longitudinal reciprocating translation motion to said second element between two defined extreme positions, namely a rest position at a distance from the above-specified mandrel and a working position causing the mandrel to hold the lid down on the body of the can against thrust imparted via said spring, the first element of the rod, and the compression stand, so that said rod has a stroke towards the mandrel, wherein the telescopic rod is provided with means for mutual temporary locking together of said first and second elements of said rod, which means keep said first and second elements stationary relative to each other in a relative position where the spring is in a state of determined prestress, with this taking place during a major portion of said stroke of said rod towards the mandrel, and then, shortly before the end of said stroke, releasing said second element relative to said first element, causing said first element to press the lid against the body of the can solely under the effect of the force developed by the spring under said prestress.

5,328,315
MULTISTORY MULTICOLUMN STORING INSTALLATION
Masatoshi Sakamoto, Ebina, and Mitunori Oshita, Kure, both of Japan, assignors to Ebisu Engineering Kabushiki Kaisha, Kanagawa, Japan
Filed Aug. 11, 1992, Ser. No. 929,896
Claims priority, application Japan, Dec. 3, 1991, 3-319293
Int. Cl.[5] E04H *6/12*
U.S. Cl. 414—236 **17 Claims**



1. A storage assembly comprising:

a structure defining a plurality of storage spaces, said structure configured to have first, second, and third columns wherein said second column is adjacent said first column, said third column is adjacent said second column, said columns are arranged to have a base level and at least two storage levels that are vertically spaced from said base level, and said storage spaces are located on said storage levels of said first and second columns;

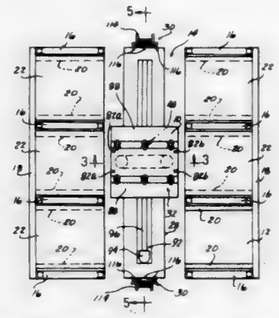
a plurality of pallets disposed in said structure for holding articles to be held in said storage spaces, each said pallet being constructed to hold articles in an individual one of said storage spaces;

a horizontal transport mechanism for laterally moving said pallets between said columns, wherein said horizontal transport mechanism is capable of simultaneously moving all of said pallets located in one column to an adjacent column, thereby clearing a column of pallets so that it may be used to vertically move pallets;

a first lift mechanism attached to said structure for vertically moving a pallet positioned in said third column between said base level and a position adjacent a storage space in said second column; and

a second lift mechanism attached to said structure for moving a pallet through said second column between said base level and a position adjacent said storage spaces in said first and third columns.

5,328,316
AUTOMATIC STORAGE AND RETRIEVAL SYSTEM HAVING AN EXTENDIBLE BIN EXTRACTION MECHANISM WITH POP-UP TABS
Christopher J. Hoffmann, 857 Colonial Ct., Birmingham, Mich. 48009
Filed Aug. 4, 1992, Ser. No. 925,561
Int. Cl.[5] B65G *1/04*
U.S. Cl. 414—280 **20 Claims**



1. A storage and retrieval system including storage compartments having spaced bin support means, the storage compartments arranged in at least one row for storing a plurality of bins arranged in spaced fashion, each bin having a sidewall and a bottom joined to one another by an edge, the system comprising:

bin manipulator means for transporting a selected bin in movement along a desired path disposed in at least one of two perpendicular axes of a vertical plane, said bin manipulating means including extractor means for extracting the selected bin from a selected storage compartment, said extractor means extendible from a retracted position along a first axis to an extended position beneath and between said spaced bin support means of said selected storage compartment, and pop-up tab means carried by said extractor means and retractably extendible from said extractor means when said extractor means is in the extended position for engaging a remote sidewall adjacent said edge of the selected bin to move said selected bin from said selected storage compartment onto said bin manipulator means as said extractor means moves from said extended position to said retracted position.

5,328,317
STICK FEEDER
Mituhalu Masui, and Kouzou Ohta, both of Shizuoka, Japan, assignors to Tenryu Technics Co., Ltd., Shizuoka, Japan
Filed Jun. 8, 1992, Ser. No. 895,263
Claims priority, application Japan, Jun. 13, 1991, 3-142052
Int. Cl.[5] B65B *21/02*
U.S. Cl. 414—403 **5 Claims**

1. A stick feeder, comprising:

an elongated stick for housing and carrying a series of workpieces;

a holding block for receiving and holding the workpieces sequentially discharged from the stick, a workpiece holding portion of said holding block being adjustable in a direction perpendicular to a feeding direction of said workpieces; and

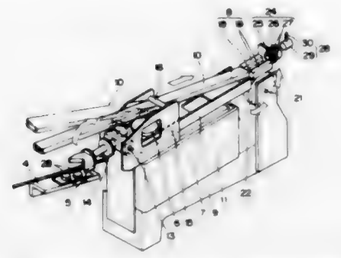
a holder mounted adjacent said holding block,

a stop member for stopping the workpieces fed from the stick to the holding block mounted detachably to said holder, a mounting position of said stop member with respect to the holder being changeable so that a stopping position of the workpieces can be adjusted at the work-

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piece holding member in accordance with the change of the mounting position,

said holder comprising an axial insertion hole, a slot open to an outer periphery of the holder and extending in the axial direction of the insertion hole, said slot communicating with said insertion hole, with at least one end thereof being open; and a plurality of radial slots open to the outer periphery of the holder and communicating with said insertion hole and with said axial slot, said radial slots being spaced axially along said axial slot: and



said stop member comprising a stop portion adapted to be inserted into said insertion hole and to protrude toward said stick; an arm protruding radially from an outer peripheral surface of said stop portion and selectively insertable into and engagable with one of said radial slots through said axial slot;

the mounting position of said stop member to said holder thus being variable to vary the stop position of the workpieces.

5,328,318

DISPENSING APPARATUS

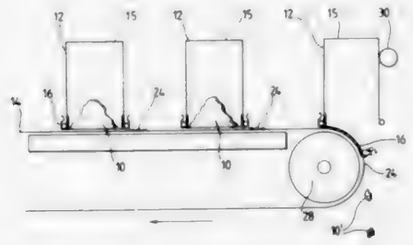
John R. Fyson, and Edward Charles T. S. Glover, both of London, Great Britain, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 10, 1993, Ser. No. 50,407

Claims priority, application United Kingdom, Sep. 24, 1991, 9120348.9

Int. Cl.[5] B65B *21/02, 69/00*

U.S. Cl. 414—411 **6 Claims**



6. Storage means (**12**, **14**, **15**, **16**) for storing predetermined amounts of material (**10**) comprising a continuous web (**14**) and a plurality of vessels (**12**, **15**, **16**) attached to the web (**14**), each of said vessels (**12**, **15**, **16**) comprising a body portion (**15**) and a cap portion (**16**), said cap portion being secured to said web and receiving said body portion, and means being provided for detaching said body portion from said cap portion.

5,328,319

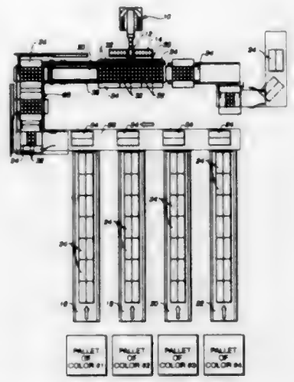
ROBOTIC SYSTEM FOR MIXING AND PACKING ARTICLES

Saadat Fadaie, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

Filed Sep. 14, 1992, Ser. No. 944,351

Int. Cl.[5] B65B *5/06*

U.S. Cl. 414—416 **2 Claims**



1. Apparatus for transferring articles between a first location and a second location, said apparatus comprising, in combination:

robot means including a movable robotic arm; and

article engaging means operatively associated with said movable robotic arm and movable therewith for engaging a plurality of articles and transferring the plurality of articles from a first location to a second location, said article engaging means including a fixture attached to said movable robotic arm and movable therewith, a plurality of clamping elements movably connected to said fixture to selectively clamp articles, means for moving said clamping elements relative to said fixture between a clamping position and a non-clamping position, and means for biasing articles clamped by said clamping elements in a direction away from said clamping elements to urge said biased articles out of engagement with said clamping elements when said clamping elements are moved from said clamping position to said non-clamping position by said means for moving said clamping elements, said means for biasing said articles including a plurality of follower elements engageable with said articles, said follower elements being mounted for slidable movement relative to said fixture and operable under the influence of gravity to bias articles clamped by said clamping elements in a direction away from said fixture.

5,328,320

APPARATUS FOR LIFTING A HEAVY LOAD WITH RESPECT TO THE BED OF A TRUCK

J. Thomas Farrow, 1413 British, Grand Prairie, Tex. 75050, and Roy L. Chandler, Arlington, Tex., assignors to J. Thomas Farrow, Grand Prairie, Tex.

Filed Nov. 22, 1991, Ser. No. 797,501

Int. Cl.[5] B60P *1/00*

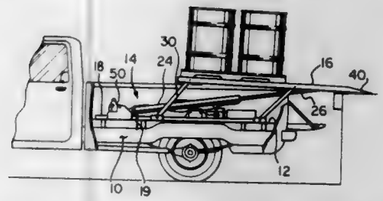
U.S. Cl. 414—495 **15 Claims**

1. An apparatus adapted for attachment to a truck, the truck having a front and a rear and a longitudinal axis therebetween, and having two sides designated as right and left sides, and the truck having a frame and a bed secured to the frame near the rear of the truck, and the apparatus being adapted for attachment to the frame on top of the bed for the purpose of lifting a heavy load with respect to the bed, comprising:

a. a generally planar base adapted for attachment to the frame of a truck in the vicinity of the truck's bed;

b. a platform positioned above and connected to the base with a pair of four-bar linkages, and one of said pair of linkages being associated with each of the two sides of the truck, and each of said linkages including at least one set of rotatable and approximately parallel legs, and said platform having a first, low position at which it is in close proximity to the base, and said platform having a second, high position at which it is appreciably higher than the base;

c. a double-acting hydraulic cylinder having a barrel and an extensible rod, and the hydraulic cylinder having first and second ends and a longitudinal axis between said two ends, and the hydraulic cylinder being functionally anchored at its first end to the base and connected at its second end to the platform, and the platform being connected to the base in such a way that extension of the rod will cause the platform to be raised with respect to the base;



d. a bell crank having two arms with pendant and distal portions, and having a central region that lies between the pendant portions of the two arms, and the bell crank being pivotaly connected to the base through a pivot pin that passes through the bell crank's central region, and the bell crank also being pivotaly connected at the distal portion of one arm to the first end of the hydraulic cylinder, and the bell crank's other arm being configured to apply an upwardly supporting force on the platform only when the platform is near its first, low position, and the platform being in load-supporting contact with said other arm of the bell crank only when the platform is near its first, low position; and

e. means for selectively pressurizing the hydraulic cylinder to cause extension and retraction of the rod.

5,328,321

MULTI-STAGE MAST FOR A FORKLIFT TRUCK

Carol Moffett, and James McAdam, both of Monaghan, Ireland, assignors to Moffett Research and Development Limited, Ireland

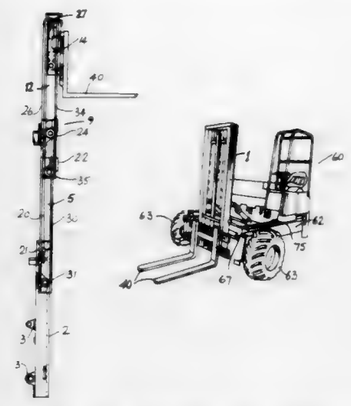
Filed Jul. 29, 1992, Ser. No. 921,899

Claims priority, application Ireland, Sep. 5, 1991, 3122/91; Sep. 5, 1991, 3123/91

Int. Cl.[5] B66F *9/08*

U.S. Cl. 414—631 **18 Claims**

1. A double-acting multi-stage mast for a forklift truck, comprising a three-stage telescopic mast having an outer mast section, a middle mast section, and an inner mast section, the outer mast section for attachment to the truck, the middle mast section slidably mounted on the outer mast section, a ram means extending between the middle mast section and the outer mast section for sliding the middle mast section on the outer mast section, the inner mast section slidably mounted on the middle mast section, an inner mast section lifting chain extending between the outer mast section and a lower end of the inner mast section passing over an associated first guide on the middle mast section, the first guide being at an upper end of the middle mast section, a fork carriage slidably mounted on the inner mast section, a fork carriage lifting chain extending between the middle mast section and the fork carriage passing over a second guide on the inner mast section, the second guide being adjacent an upper end of the inner mast section, an inner mast section lowering chain extending between the outer mast section and a lower end of the inner mast section passing over a third guide on the middle mast section, the third guide being



adjacent a lower end of the middle mast section, and a fork carriage lowering chain extending between the middle mast section and the fork carriage passing over a fourth guide on the inner mast section adjacent the lower end of the middle mast section.

5,328,322

METHOD AND DEVICE FOR LOADING STACKS OF SHEET MATERIAL INTO A PACKAGING MACHINE FEEDING UNIT

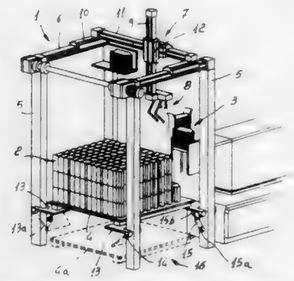
Armando Neri, Bologna, Italy, assignor to G.D. S.p.A., Bologna, Italy

Continuation of Ser. No. 701,892, May 17, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 4,769

Claims priority, application Italy, May 28, 1990, 3523 A/90

Int. Cl.[5] B65G *61/00*

U.S. Cl. 414—786 **3 Claims**



1. Method for feeding stacks of sheet material to a packaging machine having a feeding station and a feeding unit near said feeding station, wherein the method comprises operative cycles each including the steps of;

a) transferring a filled first pallet means, filled with said stacks of sheet material, from a storage unit, at a remote distance from said feeding unit, to an elevated receiving station of said feeding unit and supporting said first pallet means on retractable support means in said elevated receiving station;

b) successively transferring individual stacks of sheet mate-

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rial from said filled first pallet means in said elevated receiving station to said feeding station;

c) during said step of successive transferring of individual stacks to said feeding station, transferring an empty pallet means present on a removal station of said feeding unit located below said elevated receiving station, to an accumulation station,

d) when said filled first pallet means is completely emptied by said step of successively transferring said individual stacks to said feeding station, thereby to become an emptied first pallet means, retracting said retractable support means, thereby causing said emptied first pallet means to freely fall selectively from said elevated receiving station of said feeding unit onto said removal station and

e) repeating the above recited operative cycle.

5,328,323

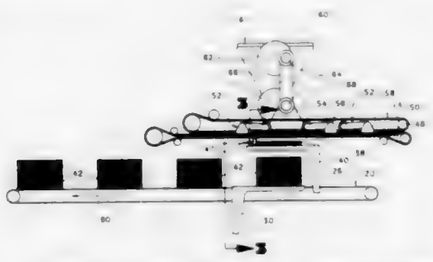
STACK MAKING MACHINE

Robert E. Molison, Hanover, Pa., assignor to Elsner Engineering Works, Inc., Hanover, Pa.

Filed Nov. 3, 1992, Ser. No. 965,962

Int. Cl.[5] B65H *31/30*

U.S. Cl. 414—790.4 **16 Claims**



1. Apparatus for receiving individual web segments and placing the segments in stacks, the apparatus comprising

a) an infeed conveyor having a first pair of spaced apart and parallel first infeed conveyor belts for feeding a succession of web segments downstream to an orbital pusher;

b) an orbital pusher located adjacent to the infeed conveyor between first and second drive means and repetitively movable from above the infeed conveyor down between and below the first infeed conveyor belts to push successive segments fed along the infeed conveyor down between the infeed conveyor belts and below the infeed conveyor so that the segments fall onto a pair of stack support members to form a stack of web segments;

c) a discharge conveyor located below the orbital pusher and extending in the same direction as the infeed conveyor for receiving stacks of web segments from a pair of stack support members and moving the stacks away from the stack support members, the discharge conveyor including a central discharge conveyor belt located below the infeed conveyor belts;

d) two like pairs of stack support members, each pair of stack support members including a first member located on one side of the infeed conveyor and extending a distance along the infeed conveyor and a second member located on the opposite side of the infeed conveyor across from the first member and extending a distance along the infeed conveyor, each said first and second stack support member having an upstream end and a downstream end relative to the infeed conveyor;

e) first drive means joined to the upstream ends of a first pair of stack support members for simultaneously and repetitively moving the first pair of stack support members around two like stacking paths located on opposite sides of the conveyors, the paths each starting at a first position located below an infeed conveyor belt and the orbital pusher, extending down and away from the infeed conveyor belt to one side of the discharge conveyor belt, outwardly away from the discharge conveyor belt and then back up to the first position, the first pair of stack support members being spaced apart when moved down to place stacks of web segments supported on the first pair of members on the central discharge conveyor belt;

f) second drive means joined to the downstream ends of a second pair of stack support members for simultaneously and repetitively moving the second pair of stack support members around the paths 180 degrees out of phase with said first pair of stack support members to place stacks of web segments supported on the second pair of stack support members on the central discharge conveyor belt; and

g) said first drive means being located upstream of both pairs of stack support members relative to the infeed conveyor and said second drive means being located downstream of both pairs of stack support members relative to the infeed conveyor whereby a stacking area below the pusher and between the conveyors is unobstructed by said drive means.

5,328,324

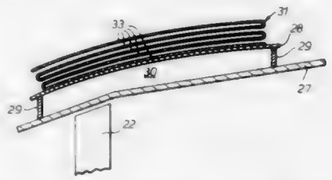
AEROFOIL BLADE CONTAINMENT

Alec G. Dodd, Ambergate, England, assignor to Rolls-Royce plc, London, United Kingdom

Filed Oct. 20, 1992, Ser. No. 963,756

Int. Cl.[5] F04D *29/40*

U.S. Cl. 415—9 **6 Claims**



1. An aerofoil blade containment structure comprising a continuous woven sleeve disposed circumferentially about a gas turbine engine casing enclosing rotor aerofoil blades, said woven sleeve being formed of a plurality of interconnected sleeves connected in end-to-end relationship, wherein said woven sleeve is folded to define a plurality of interconnected secondary sleeves arranged in concentric superposed relationship with each other, said sleeve being woven from fibers that are capable both of withstanding the operational temperatures externally of such a gas turbine engine casing without suffering significant thermal degradation and of containing any failed rotor aerofoil released from within said casing radially inwardly of said sleeve.

5,328,325

PERIPHERAL PUMP, PARTICULARLY FOR DELIVERING FUEL FROM A STORAGE TANK TO THE INTERNAL COMBUSTION ENGINE OF A MOTOR VEHICLE

Willi Strohl, Beilstein, Fed. Rep. of Germany; Loren Smith, Westland, and Jaihind-Singh Sumal, Bloomfield, both of Mich., assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

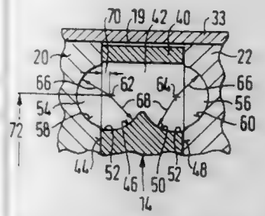
PCT No. PCT/DE91/00443, § 371 Date Dec. 24, 1992, § 102(e) Date Dec. 24, 1992, PCT Pub. No. WO92/00457, PCT Pub. Date Jan. 9, 1992

PCT Filed May 27, 1991, Ser. No. 966,034

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1990, 4020521

Int. Cl.[5] F04D *5/00*

U.S. Cl. 415—55.1 **9 Claims**



1. A peripheral pump comprising a wall bounding a pump chamber and provided with a substantially annular delivery port with a base having a circular segment with a center; a circular cylindrical impeller revolving in said pump chamber and having two end faces with at least one of said end faces provided with rim of blades disposed at intervals along a circumference of the impeller so that a groove-like gap is formed between two adjacent blades, said groove-like gap having a base, as seen in a longitudinal section through the pump, having a circular segment with a center substantially coincident with said center of said circular segment of said delivery port, said center of said circular segments being located within a contour of said impeller.

5,328,326

IMPULSE TURBINE WITH A DRUM ROTOR, AND IMPROVEMENTS TO SUCH TURBINES

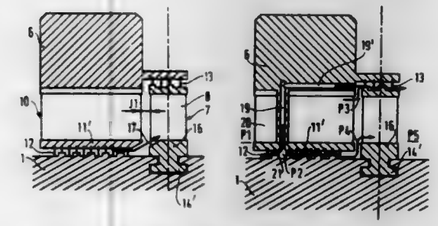
Jean-Pierre Gros, Villemomble, and Guillaume Verschaeve, St. Jean de Braye, both of France, assignors to GEC Alsthom SA, Paris, France

Filed Apr. 17, 1992, Ser. No. 870,683

Claims priority, application France, Apr. 19, 1991, 91 04855

Int. Cl.[5] F01D *1/10*

U.S. Cl. 415—115 **4 Claims**



1. In an impulse steam turbine comprising a rotor and a stator having a plurality of stages each constituted by a diaphragm with stationary blading followed by moving blading comprising moving blades that rotate with the rotor, the improvement wherein said rotor is devoid of disks, said moving blades are mounted directly on the rotor, wherein said stationary blading provides more that 85% of the pressure drop at the base of each stage and having an inner hoop at the base of each stage around the rotor, and said impulse steam turbine further including means for effecting leakage at the base of the diaphragm and means for injecting said leakage substantially axially into the main flow of steam, and wherein said means for injecting said leakage are constituted by an oblique gap between chamfered roots of said moving blades and chamfered facing ends of said inner hoop of the diaphragm.

3. An impulse steam turbine comprising a rotor and a stator having a plurality of stages, each stage constituted by a diaphragm with stationary blading followed by moving blading comprising moving blades rotating with the rotor, the improvement wherein said rotor is devoid of disks, said moving blades have roots mounted directly on the rotor, and wherein said stationary blading provides more than 85% of the pressure drop at the base of each stage and having an inner hoop at the base of each stage, around the rotor, wherein the base of the diaphragm includes a first sealing gland comprising a plurality chambers in series, the tips of the moving blades include a second sealing gland, and wherein the stationary blades and the diaphragm of the steam turbine are provided with holes which open to and suck leakage steam from a first chamber of the first sealing gland in the leakage flow direction through said first sealing gland, at the base of the diaphragm and inject said steam axially into an inlet of the second sealing gland for the moving blades.

5,328,327

STATOR FOR DIRECTING THE INLET OF AIR INSIDE A TURBO-ENGINE AND METHOD FOR MOUNTING A VANE OF SAID STATOR

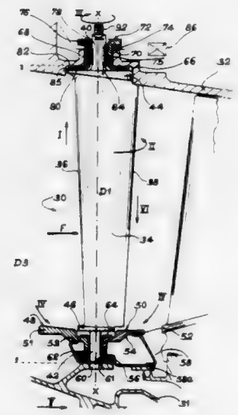
Jacky Naudet, Bondoufle, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.-M.A.", Paris, France

Filed Nov. 30, 1992, Ser. No. 983,231

Claims priority, application France, Dec. 11, 1991, 91 15334

Int. Cl.[5] F01D *9/02*

U.S. Cl. 415—160 **12 Claims**



1. A stator for directing the inlet of air inside a turbo-engine, said stator comprising:

a set of vanes located radially inside an air intake channel between an internal ferrule and a radially external casing, each vane being provided with an internal pivot and an external pivot respectively integral with internal and external extremities thereof, said internal and external pivots defining the radial axis of the vane,

the external casing being provided with at least one bore for

receiving the external pivot of each said vane, wherein the internal ferrule includes at least one bore for receiving and having embedding therein one of said internal pivots,

the external casing including a mechanism for radial positioning and locking of at least one of said vanes so as to keep the radial extremity of the internal pivot of said vane in one of said at least one bore provided in the internal ferrule when the vane is mounted in the stator wherein the external casing has a housing for receiving the external extremity of the vane, the bore receiving the external pivot opens inside said housing and wherein the distance between the external extremity of the vane and the radial extremity of the internal pivot is less than the distance between the bottom of said housing and the face of the internal ferrule directed towards the inside of the air intake channel.

5,328,328

SEALING DEVICE BETWEEN BLADE STAGES AND A ROTARY DRUM, PARTICULARLY FOR PREVENTING LEAKS AROUND THE STAGES OF STRAIGHTENER BLADES

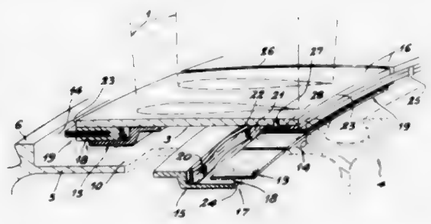
Jean-Louis Charbonnel, Le Mee sur Seine; Jean-Christophe M. J. M. Cordier, Melun; Corrine G. Delahaye, Mormant; Jean-Claude L. Delonge, Corbeil Essonnes; Guy F. P. Dusserre-Telmon, Sivry Courtry; Jean-Pierre Galivel, Savigny le Temple; Laurent Gille, Melun; Jacky S. Naudet, Bondoufle; Didier M. L. Nouveau, Dammarie les Lys; Thierry H. M. Tassin, Brunoy, and Gérard R. E. R. Vermont, Coubert, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed May 21, 1993, Ser. No. 64,431

Claims priority, application France, May 27, 1992, 92 06475

Int. Cl.[5] F01D *11/00*

U.S. Cl. 415—173.7 **9 Claims**



1. A device constituted by blade stages in an annular gas flow path and a drum partly defining the path and rotating with respect to the blades about an axis coinciding with a longitudinal direction of the path, the blade stages being terminated by rings which are flush in circular reinforcements of the drum defined by two transverse faces, wherein the rings carry two circular slots, each of the slots housing a seal, each respective slot being open towards a respective transverse face and being out of the slots and pressing them against the transverse faces.

5,328,329

FAN BLADE WIDTH EXTENDER

Robert C. Monroe, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Jul. 6, 1993, Ser. No. 86,293

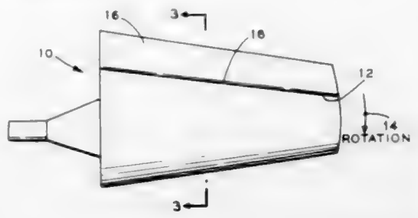
Int. Cl.[5] F04D *29/38*

U.S. Cl. 416—62 **8 Claims**

1. A fan blade width extender comprising:

(a) an elongated fan blade having a tip, a tapering or constantly narrowing cross-section along its length toward said tip, and a trailing edge, said narrowing cross-section having a curved or non-linear central axis;

(b) elongated extension means for extending the width of the fan blade, said extension means having a constant or non-tapering cross-section and being secured along said trailing edge of the fan blade and being constructed of an extruded plastic material; and



(c) connecting means for rigidly and fixedly securing said elongated extension means along said trailing edge of the fan blade.

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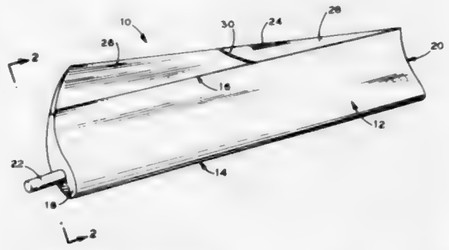
EXTRUDED ALUMINUM FAN BLADE

Robert C. Monroe, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Aug. 2, 1993, Ser. No. 100,847

Int. Cl.[5] F04D *29/38*

U.S. Cl. 416—62 **12 Claims**



1. A fan blade comprising:

(a) a body having a tip and an end opposite said tip, said body also having a leading edge and a trailing edge between said tip and said end;

(b) non-adjustable multiple fin means rigidly affixed to said trailing edge of said body at a preset angle for directing air flow across said body, said fin means comprising at least two fin portions with a first fin portion extending at a first angle outwardly from said trailing edge along a first length of the fan blade and being integral with the fan blade and with a second fin portion extending at a second angle outwardly from said trailing edge along a second length of the fan blade and being integral with the blade, said second fin portion configured with the same curvature as said length of the fan blade.

5,328,331

TURBINE AIRFOIL WITH DOUBLE SHELL OUTER WALL

Ronald S. Bunker, Cincinnati, and Thomas T. Wallace, Maineville, both of Ohio, assignors to General Efectric Company, Cincinnati, Ohio

Filed Jun. 28, 1993, Ser. No. 82,114

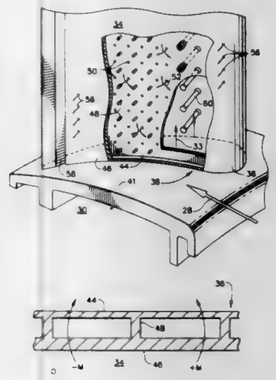
Int. Cl.[5] F01D *5/18*

U.S. Cl. 416—96 R **12 Claims**

1. A coolable airfoil for use and exposure in a hot gas flow of a gas turbine engine, said coolable airfoil comprising:

a hollow body section including a chordwise extending leading edge section operably connected to a pressure side and a suction side of the airfoil,

a one-piece integrally formed double shell outer wall surrounding at least one radially extending cavity and extending chordwise through said leading edge section, pressure side, and suction side,



said outer wall comprising an inner shell and an outer shell integrally formed with tying elements therebetween of the same material as said shells, and

said tying elements operably constructed to space apart said shells and mechanically and thermally tie said shells together.

5,328,332

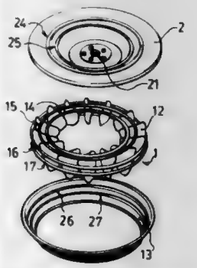
WHEEL FAN OF RANGE HOOD

Swea T. Chiang, No. 410, Chung Sun Road, She Koou Tsuen, Shern Gang Shiang, Taichung Hsien, Taiwan

Filed May 25, 1993, Ser. No. 66,370

Int. Cl.[5] F04D *29/30*

U.S. Cl. 416—186 R **3 Claims**



1. A wheel fan of a range hood comprising:

blades:

a top plate with a concave, bowl-like shape;

and a bottom ring; wherein

means for locating the top plate relative to the blades are provided, the locating means comprising one or more convex rings provided on the blades, the location of the rings corresponding to one or more channels in said top plate.

3. A wheel fan of a range hood comprising:

blades;

a top plate with a concave, bowl-like shape;

and a bottom ring; wherein

means for locating the bottom ring relative to the blades are provided, the locating means comprising one or more convex rings provided on the blades, the location of the rings corresponding to one or more channels in said bottom ring.

5,328,333

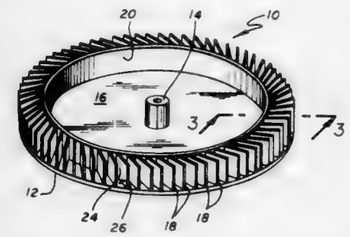
ROTATING THRUST-PRODUCING APPARATUS

Steven P. Quinn, 1198 Navigator Dr., #53, Ventura, Calif. 93001

Filed Feb. 25, 1993, Ser. No. 22,507

Int. Cl.[5] B63H *1/16*

U.S. Cl. 416—193 R **13 Claims**



1. A method for producing thrust in a rotatable circular foil, the steps comprising:

providing the circular foil with a circular plate having a plurality of spaced-apart fins on an upper face thereof, which fins occupy an entire peripheral portion of the plate;

rotating the plate to discharge fluid from a space between adjacent fins radially away from a center portion of the foil; and

preventing fluid disposed adjacent to the circular plate and radially inwardly of the fins, from flowing radially outwardly and into the spaces between the fins as the foil is rotated, such that fluid is discharged from the spaces between the fins at a rate faster than the fluid can be replenished to create a deficit of fluid molecules at the upper face of the circular plate while a lower face of the circular plate remains at its original pressure, resulting in an imbalance of fluid pressure acting on opposite faces of the circular foil to cause the circular foil to move in the direction of the deficit.

5,328,334

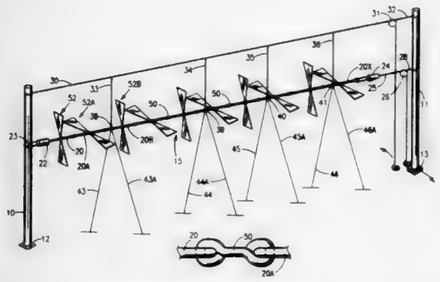
WIND LINE POWER SYSTEM

Richard W. McCauley, Box 19A, Shushan, N.Y. 12873

Filed May 3, 1993, Ser. No. 55,278

Int. Cl.[5] F03D *11/00*

U.S. Cl. 416—196 A **11 Claims**



1. A wind line power system comprising

a) a series of rigid rods arranged end-to-end,

b) connector means joining adjacent pairs of rods in the

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series permitting both relative angular movement and transmission of axial torque between the joined rods,

c) propeller means extending laterally from at least some of the rods for converting wind force vectors substantially parallel to the rods into cumulative unidirectional axial torque on all of the rods,

d) driven power input means axially rotatably supporting an end rod at one end of the series, and

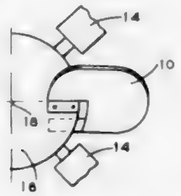
e) end bearing means axially rotatably supporting an end rod at the opposite end of the series.

5,328,335

STATIC EFFICIENCY ENHANCER FOR AXIAL FANS

Robert C. Monroe, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Aug. 23, 1993, Ser. No. 109,888
Int. Cl.[5] F01D *5/12*
U.S. Cl. 416—203 **2 Claims**



1. A static efficiency enhancer for an axial fan having a hub and a plurality of blades extending radially outward from the hub, the fan having a static pressure, the enhancer comprising:

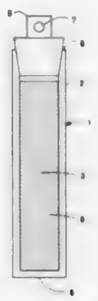
a plurality of airfoils connected to and around the hub and extending outwardly therefrom to provide additional air velocity at the periphery of the hub, each airfoil being positioned between a pair of blades, the airfoils extending outwardly from the hub to about 25% to 30% of the fan diameter for achieving an increase in the static pressure of the fan ranging from 5% to 10%.

5,328,336

GETTER CAPSULE

Jeffert J. Nowobilski, Orchard Park, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 9, 1992, Ser. No. 987,876
Int. Cl.[5] F04B *37/04*
U.S. Cl. 417—48 **17 Claims**



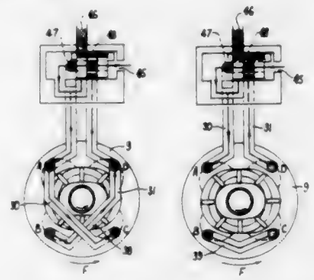
1. A getter capsule capable of being installed in a vacuum system, said getter capsule comprising a container having at least one interior cavity and getter particles placed within said at least one interior cavity of the container, the container comprising at least one enclosure wall defining said at least one interior cavity, at least one opening providing access into said at least one interior cavity and at least one closing means covering or closing said at least one opening, thus maintaining said getter particles within said at least one interior cavity, wherein said at least one enclosure wall or said at least one closing means is porous and is constructed with a material comprising sintered particles.

5,328,337

GUIDED VANES HYDRAULIC POWER SYSTEM

Norbert J. Kunta, 68 Ronald St., Devonport, Tasmania 7310, Australia

PCT No. PCT/AU90/00354, § 371 Date Feb. 15, 1993, § 102(e) Date Feb. 15, 1993, PCT Pub. No. WO92/03636, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 17, 1990, Ser. No. 969,197
Int. Cl.[5] F01C *1/344;* **F04C** *2/344, 18/344*
U.S. Cl. 417—310 **18 Claims**



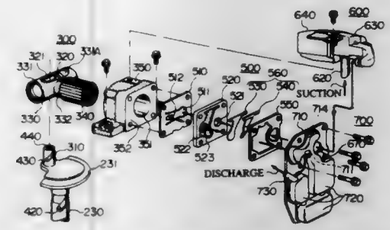
1. A hydraulic power system comprising a stator having a central cavity with a wall of non-circular cylindrical shape, and defining two cavity ends, a rotor rotatably mounted in said cavity, a plurality of slots formed in said rotor, said slots being evenly spaced around the periphery of the rotor and said slots extending radially inwards from the periphery of the rotor, a vane located in each of said slots, said vanes being slidable in said slots between outwards and inwards positions, said vanes having an outer edge arranged to be in contact with said wall, guide means being fixed relative to said stator for positively displacing said vanes as said rotor rotates in use, said guide means being arranged to keep said outer surface of said vanes in sliding contact with said wall during said rotation, and at least two fluid passages extending into said cavity through which operating fluid can be introduced into and removed from said cavity, said power system have a selector valve for selectively altering the direction of operating fluid flow through said power system, said selector valve having a valve chamber, a fluid inlet thereto and a fluid outlet therefrom, a pair of ports between said fluid inlet and said fluid outlet in communication with said valve chamber, said fluid ports being connected to one of said fluid passages, and a valve member movable in said valve chamber relative to said fluid inlet and said fluid outlet between first and second positions, where with said valve member in said first position fluid is directed by said valve member from said fluid inlet into one of said ports, and fluid from the other of said ports is directed by said valve member to said fluid outlet, and in said second positions fluid is directed by said valve member in the reverse direction through said ports.

5,328,338

HERMETICALLY SEALED ELECTRIC MOTOR COMPRESSOR

Yutaka Hirano; Hirokazu Kawakami, both of Ohta; Ryuji Watanabe; Kiyoshi Tanaka, both of Ohra, and Hiroshi Takagi, Isesaki, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 1, 1993, Ser. No. 22,696
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—312 **5 Claims**



1. A hermetically sealed electric motor compressor, comprising:

a hermetically sealed casing housing a reciprocating compressor unit having a discharge port for compressing a working fluid,

a valve assembly for opening and closing said discharge port including a reed valve assembly comprising

a reed valve and a valve backer mounted behind the reed valve,

a valve seat with a recess including first and second recesses, said second recess receiving said reed valve assembly and said first recess corresponding to the figures of fulcrums of said reed valve,

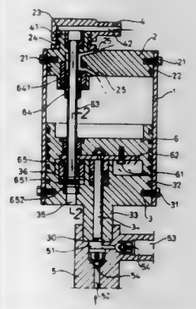
an elastic gasket having tongue shaped ribs, said reed valve and said valve backer being temporarily held within said recess of the valve seat by being pushed via the ribs of said gasket within said first recess and being subassembled as said reed valve assembly.

5,328,339

PUMP DRIVEN BY AIR PRESSURE

Huey-Jeng Jong, 28-5, Sheh Dou Road, Zen Yea Village, Sheh Tou Shian, Jang Hwa Hsien, Taiwan

Filed Sep. 27, 1993, Ser. No. 126,622
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—403 **1 Claim**



1. A pump driven by air pressure for pumping a liquid comprising:

an elongate cylinder, a piston which moves reciprocally up and down between two ends of said cylinder, and a piston rod attached longitudinally to said piston for movement therewith;

an upper cylinder cap fixed to one end of said cylinder, said upper cylinder having (a) an upper through hole in communication with the air pressure, (b) a valve chamber located about said upper through hole, (c) an upper exhaust passageway which communicates said valve chamber with ambient atmosphere, and (d) a lower feed passageway which communicates said valve chamber with an interior of said cylinder below said upper cylinder cap;

a lower cylinder cap fixed with the other end of said cylinder, said lower cylinder having (a) a lower piston rod hole in which said piston rod reciprocates, (b) a lower through hole, (c) an upper feed passageway which communicates said lower through hole to an interior of said cylinder above said lower cylinder cap and (d) a lower exhaust passageway which communicates said lower through hole with ambient atmosphere;

a tubular rod which extends between said upper through hole and said lower through hole and slidingly through said piston, said tubular rod being movable between a first position and a second position and including an upper end in communication with the air pressure;

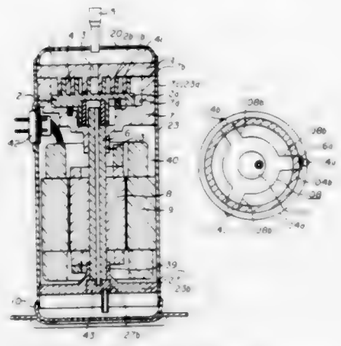
an upper valve member attached to said tubular rod and located in said valve chamber so that in the first position an upper aperture in said tubular rod communicates the air pressure in said tubular rod through said valve chamber with said lower feed passageway to cause said piston to move away from said upper cap while communication through said valve chamber between said lower feed passageway and said upper exhaust passageway is blocked and so that in the second position communication is established through said valve passageway between said lower intake passageway and said upper exhaust passageway while said upper aperture is blocked, and said upper valve member including a portion which is engaged by said piston as said piston moves toward said upper valve member to move said tubular rod from the second position to the first position;

a lower valve member attached to said tubular rod and located in said lower through hole so that in the first position a lower blocked end of said tubular rod does not block communication between said upper feed passageway and said lower exhaust passageway and so that in the second position a lower aperture in said tubular rod above said blocked end communicates the air pressure in said tubular rod to said upper feed passageway to move said piston away from said lower cap while communication between said upper feed passageway and said lower exhaust passageway is blocked by said lower blocked end, and said lower valve member including a portion which is engaged by said piston as said piston moves toward said lower valve member to move said tubular rod from the first position to the second position; and

a valve base attached to said lower cylinder cap, said valve base having (a) a working chamber in communication with said lower piston rod hole, (b) a liquid inlet hole, (c) a liquid outlet hole, (d) an inlet one-way valve provided between said liquid inlet hole and said chamber, and (e) an outlet one-way valve provided between said chamber and said liquid outlet hole such that (a) as said piston rod moves away from said lower cap with said piston, liquid is drawn into said chamber through said liquid inlet hole and said inlet one-way valve and (b) as said piston rod moves toward said lower cap with said piston, liquid in said chamber is expelled therefrom through said outlet one-way valve and said liquid outlet hole.

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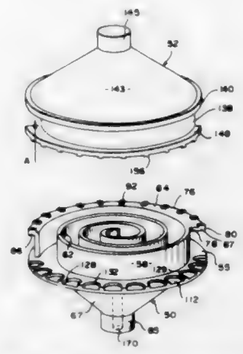
5,328,340
SCROLL TYPE COMPRESSOR, HAVING WELDED END SHELLS AND SHAFT SUBFRAME
Shoichiro Hara, Amagasaki, and Motokazu Ukioka, Shizuoka, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 956,295, Oct. 5, 1992, Pat. No. 5,228,196, which is a division of Ser. No. 770,931, Oct. 4, 1991, Pat. No. 5,215,451. This application May 5, 1993, Ser. No. 56,871
Claims priority, application Japan, Oct. 4, 1990, 2-267194; Oct. 5, 1990, 2-267990; Dec. 14, 1990, 2-402326
Int. Cl.[5] F04C *18/04*; B23K *9/007*
U.S. Cl. 418—55.1 **1 Claim**



1. A scroll type compressor comprising:
a hermetic shell which is constituted by a cylindrical center shell, and dish-shaped end shells closing both ends of the center shell and fixed to the center shell by continuously welding the end shells to the center shell at their circumference;
a fixed scroll and an orbiting scroll which are housed in the hermetic shell, and which gradually compresses an inspired refrigerant gas in a compression chamber formed by combining scroll wraps, and discharges the compressed gas;
a main shaft rotated by an electric motor to drive the orbiting scroll;
a frame having a peripheral portion fixed to the center shell, and supporting the main shaft at one of its ends; and
a subframe having a peripheral portion fixed to the center shell by spot welding, and supporting the main shaft at its other end;
wherein the welding starting point of the continuous welding for fixing the end shells to the center shell is arranged to be in the same position when viewed in the axial direction on the circumference of the center shell as one of the welding points of the spot welding for fixing the subframe to the center shell.

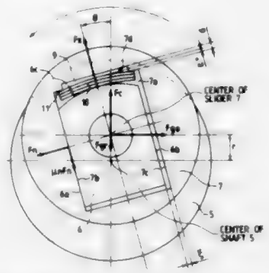
5,328,341
SYNCHRONIZER ASSEMBLY FOR A SCROLL FLUID DEVICE
Ronald J. Forni, Lexington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.
Filed Jul. 22, 1993, Ser. No. 95,842
Int. Cl.[5] F01C *1/04*; F16D *3/04*
U.S. Cl. 418—55.3 **19 Claims**

1. A scroll fluid device comprising:
at least one pair of axially extending spiral wraps each having first and second axially spaced end portions, said wraps being meshed and defining at least one chamber between them that moves radially between an inlet zone and an outlet zone when one wrap is orbited along a circular path about an orbit center relative to the other wrap;
at least one pair of wrap support members, each of said wrap support members being secured to and supporting the first end portion of a respective wrap with the second end portion of each respective wrap defining a scroll flank, at least one of said wrap support members being adapted to be rotated so as to enable relative orbital motion of the wraps relative to each other about an orbit radius; and
synchronizer means arranged to prevent relative rotation



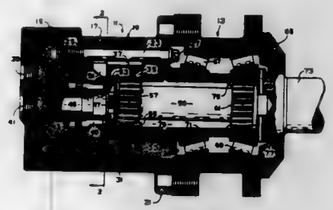
between said wraps while accommodating their relative orbital motion, said synchronizer means including a plurality of first synchronizer elements associated with the scroll flank of one of said wraps and a plurality of second synchronizer elements associated with the wrap support member of the other of said wraps, said plurality of first synchronizer elements comprising a first set of spaced, axially extending teeth and said plurality of second synchronizer elements comprising a first set of spaced, axially extending grooves, said teeth and grooves being interdigitated.

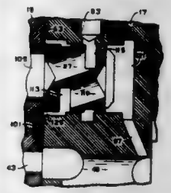
5,328,342
SCROLL COMPRESSOR WITH SLIDER CONTACTING AN ELASTIC MEMBER
Minoru Ishii; Masahiko Oide; Masahiro Sugihara, all of Tokyo, and Masaaki Sugawa, Wakayama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 5, 1993, Ser. No. 708
Claims priority, application Japan, Jan. 10, 1992, 4-002978
Int. Cl.[5] F04C *18/04*
U.S. Cl. 418—55.5 **8 Claims**



1. A scroll compressor comprising:
a pair of a fixed scroll and an orbiting scroll for forming a compression chamber, spiral bodies of both scrolls being respectively projected from a base plate, both said scrolls being eccentric with each other by a phase difference of 180 degrees;
an orbiting bearing provided on a counter-compression chamber side of said orbiting scroll;
a slider fitted to a slider fitting shaft at one end of a main shaft in such a way that said slider is slidable within a surface perpendicular to an axis of said main shaft but not rotatable therearound, said slider being fitted in said orbiting bearing, wherein a sliding direction of said slider is inclined toward an eccentric direction of said orbiting scroll by a predetermined amount in a rotational direction around said main shaft;
a recess provided on a groove end side in said eccentric direction of said slider; and
an elastic member inserted in said recess between the groove end side in said eccentric direction and said slider fitting shaft;
wherein said slider fitting shaft is formed in an arcuate configuration as long as the contact surface between said elastic member and said slider fitting shaft is concerned, and wherein spiral bodies of said fixed scroll and said orbiting scroll both are made to radially contact each other in said eccentric and counter-eccentric directions of said orbiting scroll after said elastic member is deformed by a predetermined amount.

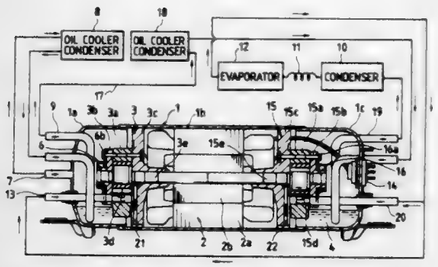
5,328,343
ROTARY FLUID PRESSURE DEVICE AND IMPROVED SHUTTLE ARRANGEMENT THEREFOR
Marvin Bernstrom, Eden Prairie; Marvin Flaschenriem, Prior Lake; Oliver Johnson, Chaska, and Sohan Uppal, Bloomington, all of Minn., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 9, 1993, Ser. No. 73,838
Int. Cl.[5] F04C *3/00*
U.S. Cl. 418—61.3 **10 Claims**





1. A rotary fluid pressure device of the type including housing means defining a first fluid port and a second fluid port; a rotary fluid displacement mechanism including an internally-toothed member and an externally-toothed member eccentrically disposed within said internally-toothed member for relative orbital and rotational movement therebetween; the teeth of said members interengaging to define expanding and contracting fluid volume chambers in response to said orbital and rotational movement; valve means cooperating with said housing means to define a main fluid path operable to provide fluid communication between said first fluid port and said second fluid port through said fluid displacement mechanism; input-output shaft means and means operable to transmit torque between said externally-toothed member and said input-output shaft means; said valve means including a stationary valve member comprising a plate-like member disposed immediately adjacent said internally- and externally-toothed members and having a sealing surface disposed adjacent thereto; said stationary valve member having an axially opposite balancing surface disposed to be subject to fluid pressure in a pressure balancing chamber cooperatively defined by said housing means and said stationary valve member; shuttle valve means operable to communicate fluid pressure from said main fluid path to said pressure balancing chamber; characterized by:
(a) said stationary valve member defining a shuttle bore disposed axially adjacent said pressure balancing chamber, and in open fluid communication therewith;
(b) a shuttle valve member slidably disposed in said shuttle bore, and cooperating therewith to define first and second chambers disposed on axially opposite ends of said shuttle valve member;
(c) said stationary valve member defining a lubrication passage communicating with said shuttle bore axially intermediate said first and second chambers;
(d) first passage means providing fluid communication between said first fluid port and said first chamber, and second passage means providing fluid communication between said second fluid port and said second chamber;
(e) said shuttle valve member being configured such that:
(i) when said first fluid port contains high pressure, said shuttle valve member is biased to a first position, in which said shuttle valve member provides fluid communication between said first chamber and said pressure balancing chamber, and between said second passage means and said lubrication passage and
(ii) when said second fluid port contains high pressure, said shuttle valve member is biased to a second position in which said shuttle valve member provides fluid communication between said second chamber and said pressure balancing chamber, and between said first passage means and said lubrication passage.

5,328,344
ENCLOSED TYPE ROTARY COMPRESSOR
Koichi Sato, and Susumu Kawaguchi, both of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 30, 1993, Ser. No. 54,093
Claims priority, application Japan, Jun. 22, 1992, 4-162775
Int. Cl.[5] F01C *21/06*
U.S. Cl. 418—85 **6 Claims**



1. An enclosed type rotary compressor comprising:
an electrically driving element;
two compressing elements for compressing refrigerant gas, said compressing elements being located at opposite ends of said electrically driving element;
an enclosed vessel for accommodating said electrically driving element, compressing elements and a lubricant oil; and
first and second oil cooler pipes for cooling said lubricant oil stored in said enclosed vessel;
wherein said refrigerant gas discharged from one of said compressing elements passes through a first heat ex-

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changer to enter said first oil cooler pipe, said refrigerant gas discharged from said first oil cooler pipe passes through a second heat exchanger to enter a second oil cooler pipe, and said refrigerant gas discharged from said second oil cooler pipe flows into a refrigerant circuit.

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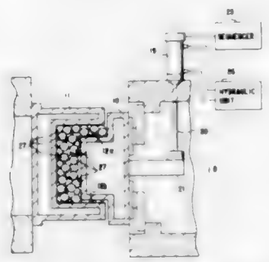
EXPANSION MOLDING APPARATUS

Ken Yamamoto; Masaru Harao, both of Koga, and Hideo Takamatsu, Ibaraki, all of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Continuation-in-part of Ser. No. 772,089, Oct. 7, 1991, Pat. No. 5,198,163. This application Dec. 17, 1992, Ser. No. 992,222

Int. Cl.[5] B29C *67/22*

U.S. Cl. 425—4 R **4 Claims**



1. An expansion molding apparatus for producing molded articles of expandable thermoplastic resin beads, comprising

a movable mold and a fixed mold, said molds being placed in a first position to form a cavity having at least one circumference section where a distance in an orthogonal direction between opposed surfaces of said movable mold and surfaces of said fixed mold is not greater than twice a diameter of the expandable thermoplastic resin beads, said molds being movable relative to each other in a closing direction and movable in orthogonal directions relative to said closing direction such that said distance can be varied; and

moving means for moving one of said movable and fixed molds relative to another of said movable and fixed molds from said first position in at least one direction orthogonal to said closing direction within said cavity so that said distance in said at least one circumference section is greater than the diameter of said expandable thermoplastic resin beads.

5,328,346

INJECTION MOLDING MACHINE

Joseph Kodric, 77 Frith Road, Downsview, Ontario, Canada M3N 1G5

Filed Oct. 8, 1992, Ser. No. 960,605

Claims priority, application United Kingdom, Oct. 8, 1991, 9121309

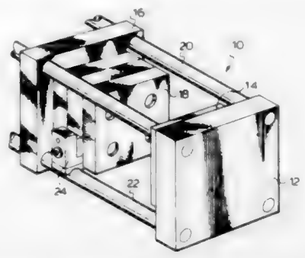
Int. Cl.[5] B29C *45/00*

U.S. Cl. 425—107 **20 Claims**

1. A device for use with an injection molding machine comprising a stationary mold part and a moveable mold part mounted on a platen for sliding movement on upper and lower horizontal rails into and out of mold cavity-forming relationship with said stationary mold part for compensating for a bending force on platen bearings produced by the moveable mold part, which comprises:

a body member for mounting to the moveable mold part,

cam means mounted in said body member for applying a camming action to the moveable mold part when the body member is mounted to the moveable mold part, and



a slide member mounted to said body member for mounting said body member in sliding relation to the lower horizontal rails.

5,328,347

DEVICE FOR INTRODUCING A PLASTIC MATERIAL INTO A MOULD CAVITY

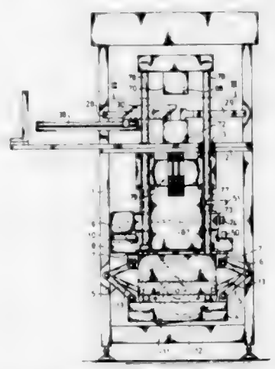
Gerardus J. M. Ten Vaarwerk, Beek, Netherlands, assignor to AMCO Hi-Tech B.V., Netherlands

Filed Sep. 16, 1992, Ser. No. 945,808

Claims priority, application Netherlands, Sep. 16, 1991, 9101558

Int. Cl.[5] B29C *45/02, 45/76, 45/84*

U.S. Cl. 425—116 **20 Claims**



2. A device for introducing a plastic material into a mould after a mould cavity of said mould has been closed, said device comprising:

a frame construction;

a carriage which is displaceable relative to said mould, in which said carriage is mounted displaceably on said frame construction, said carriage comprising two supports which are displaceable with respect to one another, a first support being mounted displaceably on said frame construction and a second support;

a press plunger attached to said second support of said carriage such that said press plunger is displaceable relative to said mould, said press plunger configured to be displaceable relative to said carriage;

a first drive configured to move said carriage relative to said mould to carry out a first movement of said press plunger with a large stroke at a controlled speed and at relatively low pressure, wherein said first drive is a mechanical drive;

a second drive configured to move said press plunger relative to said carriage to carry out a second movement of said press plunger with a smaller stroke at a relatively higher pressure, wherein said second drive comprises a pneumatic jack device and a control for said pneumatic jack device; and

a safety coupling comprising securing means for said supports of said carriage, which said securing means are designed to provide a fixed connection between said supports up to a certain force on said supports and to disengage said supports when this force is exceeded.

5,328,348

CONTROL SYSTEM FOR CONTINUOUS VULCANIZATION LINE FOR MANUFACTURING SPONGE RUBBER PRODUCT

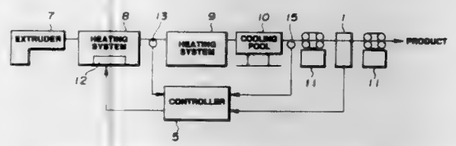
Takanori Kawamura, Chiba, and Kibatsu Shinohara, Kanagawa, both of Japan, assignors to Kinugawa Rubber Ind. Co., Ltd., Chiba, Japan

Filed Mar. 23, 1992, Ser. No. 855,073

Claims priority, application Japan, Mar. 29, 1991, 3-066179

Int. Cl.[5] B29C *35/10*

U.S. Cl. 425—140 **8 Claims**



1. A control system for automatically controlling a continuous vulcanization line for sponge rubber materials comprising:

an extruder for pre-forming said sponge rubber material;

a primary heating means arranged downstream of said extruder for primary heating of the pre-formed sponge rubber material;

a secondary heating means for finally heating the sponge rubber material downstream of said primary heating means;

sensor means for monitoring a controlled variable correlating to an outside dimension of a sponge rubber product produced by said continuous vulcanization line;

discrimination means for determining whether said controlled variable is within a predetermined criterion defined by designated upper and lower limits of an acceptable sponge rubber product;

arithmetic means for deriving an offset amount of said controlled variable, offsetting from said criterion, to generate an offset amount indicative signal;

said primary heating means including a microwave generating means for internally heating said sponge rubber material; and

control means for controlling an output power of, microwave generated by said microwave generating means, in response to said offset amount indicative signal, such that the output power of said microwave generating means is increased to increasingly compensate an expansion ratio of the pre-formed sponge rubber material when the controlled variable is less than said lower limit and that the output power of said microwave generating means is decreased to decreasingly compensate said expansion ratio when the controlled variable exceeds said upper limit.

5,328,349

PROCESS FOR PRODUCING MULTICOLORED, SLUSH SKINS, AND MOLD AND SEPARATING DEVICE FOR EXECUTING THE PROCESS

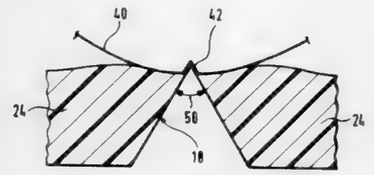
Jürgen Minke, Lindwedel; Roland Wolff, Seelze; Axel Bruder, Burgwedel, and Werner Wagner, Bad Nenndorf, all of Fed. Rep. of Germany, assignors to Benecke-Kaliko AG, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 873,224, Apr. 24, 1992, abandoned, which is a division of Ser. No. 755,365, Sep. 6, 1991, Pat. No. 5,262,108. This application Jun. 15, 1993, Ser. No. 76,699

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029254

Int. Cl.[5] B29C *39/12*

U.S. Cl. 425—289 **9 Claims**



1. A mold comprising:

a mold face having color zones delimited from each other on the mold face by separation fins;

a powder pan which contains at least two different colored powders so as to not intermix;

coupling means to couple the mold and the powder pan during a powder-slush process;

means for rotating the mold to distribute and deposit the powder onto substantially an entire surface of the mold including all color zones; and

cutting means for cutting a slush skin extending over a different color zone, the cutting means being slidably contactable with the separation fins in a direction of the longer axis of the separation fins.

5,328,350

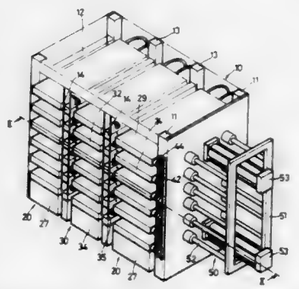
THERMOPLASTICS MOLDING AND FORM SETTING DEVICE

Chen-Kuo Chu, No. 65,Lane 921,San Feng Rd., Feng Yuan, Taichung Hsien, Taiwan

Filed Jan. 22, 1993, Ser. No. 8,348

Int. Cl.[5] B29C *43/04, 33/34*

U.S. Cl. 425—451 **6 Claims**



1. A thermoplastics molding device comprising:

a casing having two opposite front posts and two opposite rear posts at four corners thereof, and two intermediate posts spaced between said rear posts;

two rows of vertically spaced cross bars, each of said rows

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of said crossbars connecting one of said front post to the respective nearest rear post;

two rows of forward horizontal suspension arms, each of said rows of said suspension arms connected to a respective one of said intermediate posts at different elevations and disposed in parallel with said vertically spaced cross bars respectively;

two molding chambers bilaterally defined between each of said rows of said forward horizontal suspension arms and the respective nearest now of said vertically spaced cross bars;

a form setting chamber defined between said rows of forward horizontal suspension arms;

short horizontal supports respectively fastened to said cross bars and said suspension arms and bilaterally projected into the molding chambers and the form setting chamber;

a plurality of mold carriers, each being supported on respective sort horizontal supports in said molding chambers and said form setting chamber at different elevations, each mold carrier having horizontally lugs at two opposite sides releasably supported above the respective horizontal support;

drive means respectively disposed in said molding chambers and said form setting chamber at the bottom and controlled to move the mold carriers in each of said molding chamber toward a top stop for permitting them to be closely attached to a stack; and

shifting means controlled to move molding dies from the mold carriers in a selected one of said molding chambers to the mold carriers in said form setting chamber.

5,328,351

DEVICE FOR BLOWMOLDING OF PLASTIC

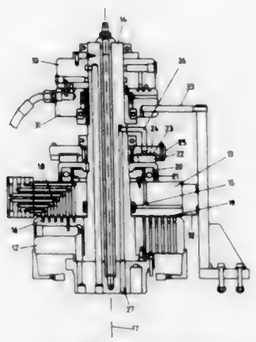
Olaf Schönebeck, Hansdorf, Fed. Rep. of Germany, assignor to Krupp Corpoplast Maschinenbau GmbH, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 874,058, Apr. 24, 1992. This application Jul. 24, 1992, Ser. No. 920,622

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 4113874

Int. Cl.[5] B29C *49/58, 49/64*

U.S. Cl. 425—526 **18 Claims**



1. A device for blow forming thermoplastic material containing a heating device for the tempering of preforms and a blow device for receiving said tempered preforms from said heating device and for blow molding the preforms into a container, said blow device including a rotating wheel carrying at least one blow molding station, a carrier disk rotatably supported in said blow device and a preloadable control disk for controlling said blow station, wherein said carrier disk and said control disk cooperating to supply fluid under pressure to said blow molding station, said control disk including a surface having a plurality of grooves to which pressurized fluid is supplied, said carrier disk including a surface having a plurality of grooves, preloading means for urging said carrier disk surface into sealing engagement with said control disk surface with respective ones of said carrier disk grooves being in sealed fluid communication with selected ones of said control disk grooves whereby fluid at different pressures may be supplied to said blow molding station, said preloading means comprising at least one pneumatic spring supported on said device and operative to urge said carrier disk surface into sealing relationship with said control disk surface, and said pneumatic spring is connected to a pressure relief device allowing pressure free maintenance.

5,328,352

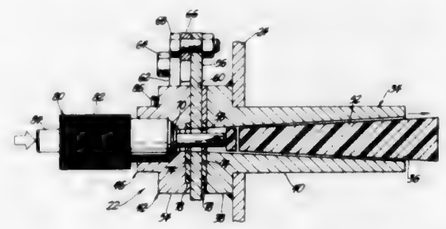
SPRUE AND VALVE ASSEMBLY FOR DELIVERING A CURABLE LIQUID MATERIAL TO A MOLD CAVITY

William D. Pierce, 1635 S. Coats, Oxford, Mich. 48671

Filed Mar. 3, 1992, Ser. No. 845,167

Int. Cl.[5] B29C *45/23*

U.S. Cl. 425—562 **14 Claims**



1. A sprue and valve assembly (**22**) for delivering a curable liquid material to a mold cavity (**26**) and thereafter easily cleaned of a cured residual core (**52**) remaining from the liquid material, said assembly (**22**) comprising: sprue means (**34**) defining an elongated flow passage (**36**) for transferring the curable liquid material in a downstream direction toward a mold cavity (**26**); connector means (**46**) for releasably connecting a supply line (**18**) of the liquid material to said sprue means (**34**) at an upstream location; valve means (**42**) surrounding said flow passage (**36**) and disposed downstream of said connector means (**46**) for selectively preventing flow of the liquid material through said flow passage (**36**), said valve means (**42**) including a valve body (**54**) and a closure element (**56**) moveable within said valve body (**54**) to an open position surrounding said flow passage (**36**) and to a closed position blocking said flow passage (**36**); and said flow passage (**36**) having a taper enlarging in the downstream direction for effecting convenient removal of the cured residual core (**52**), said taper of said flow passage (**46**) having a uniformly changing cross section; and ejector means (**80**) for forcefully ejecting the cured residual core (**52**) through said flow passage (**36**) and through said closure element (**56**) in a downstream direction away form said connector means (**46**).

5,328,353

MARINE OIL POLLUTION FIRE FENCE

Alexander J. Keenan, Anchorage, Ak., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 18, 1993, Ser. No. 33,216

Int. Cl.[5] F23D *14/00*

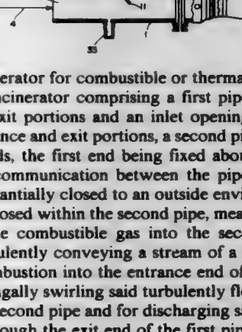
U.S. Cl. 431—2 **6 Claims**

1. A device for igniting oil floating on the surface of a body of water comprising:

a buoyant member comprising a support for a combustion fuel conduit;

a combustion fuel conduit mounted on said buoyant member and having a fuel dispensing nozzle end disposed in proximity to the surface of a body of water and oil floating thereon when said device is deployed in said body of water;

an ignitor for igniting fuel emanating from said nozzle to form a pilot flame for igniting said oil floating on said body of water; and



a source of fluid combustion fuel comprising a negatively buoyant fuel tank depending from said buoyant member below said surface of said body of water and connected to said buoyant member.

5,328,354

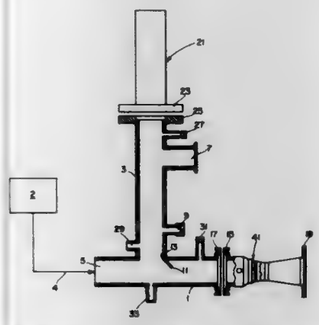
INCINERATOR WITH AUXILIARY GAS EVACUATION SYSTEM

Kevin D. McGrath, Lehighton, and Sivaramasubramanian Ramachandran, Warrington, Pa., assignors to MG Industries, Malvern, Pa.

Filed Mar. 23, 1993, Ser. No. 35,654

Int. Cl.[5] F23D *14/00*

U.S. Cl. 431—5 **10 Claims**



1. In an incinerator for combustible or thermally-decomposable gas, the incinerator comprising a first pipe having open entrance and exit portions and an inlet opening disposed between the entrance and exit portions, a second pipe having first and second ends, the first end being fixed about said inlet to provide fluid communication between the pipes, the second end being substantially closed to an outside environment, ignition means disposed within the second pipe, means for conveying at least one combustible gas into the second pipe, and means for turbulently conveying a stream of a gas capable of supporting combustion into the entrance end of the first pipe, and for centrifugally swirling said turbulently flowing gas into and out of the second pipe and for discharging said turbulently flowing gas through the exit end of the first pipe, the exit end of the first pipe being connected to a conduit having means for drawing gas through the first pipe,

the improvement comprising a source of compressed gas, and means for introducing compressed gas from the source into said first pipe, wherein the compressed gas comprises means for propelling gases through the first pipe in the event said gas-drawing means becomes inoperative.

5,328,355

COMBUSTOR AND COMBUSTION APPARATUS

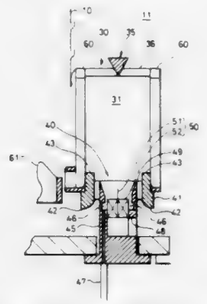
Hironobu Kobayashi, Katsuta; Shigeru Azuhata, Hitachi; Masayuki Taniguchi, Katsuta; Tadayoshi Murakami, Hitachi; Kiyoshi Narato, Ibaraki; Michio Kuroda, and Satoshi Tsukahara, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 765,835

Claims priority, application Japan, Sep. 26, 1991, 2-256404

Int. Cl.[5] F23D *23/00, 11/40, 11/44*

U.S. Cl. 431—10 **13 Claims**



1. A combustor including a premixing type combustion burner having an evaporation chamber for ejecting a premixture from a downstream end of said evaporation chamber, said premixture being produced by premixing combustion air from an upstream direction and a liquid fuel evaporated in said combustion air, said combustor further comprising:

a means for forming a swirling flow of the combustion air in said evaporating chamber;

a means for forming a straightly running flow of the combustion air, flowing in a downstream direction, around swirling flow;

a means for supplying said liquid fuel to a boundary between said swirling flow and said straightly running flow; and

a means provided over a swirling flow of said premixture, being positioned slightly downstream from an end of said evaporation chamber, for forming a circulating flow of a combustion gas produced from the combustion of a premixture ejected from said premixing type combustion burner.

5,328,356

GAS BURNER SYSTEM

Eric Hawkinson, Mt. Pleasant, Iowa, assignor to Heatilator, Inc., Mt. Pleasant, Iowa

Filed Dec. 11, 1992, Ser. No. 989,168

Int. Cl.[5] F23Q *2/32*

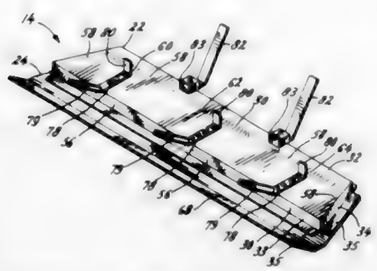
U.S. Cl. 431—125 **20 Claims**

1. A gas burner pan for supporting logs in a gas fireplace comprising:

a gas tight shell having a gas inlet for receiving gas, a top panel for supporting the logs thereon and having a plurality of gas ports disposed therein for producing flames, the shell defining a burner plenum subjacent the gas ports and in communication with the gas inlet for receiving gas

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therein and distributing the gas to the gas ports and means within said shell for defining at least one dead air space



substantially free of gas for minimizing the volume of the burner plenum

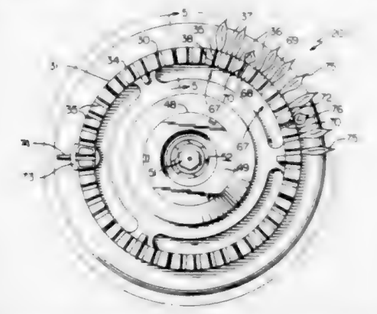
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5,328,357

BURNER CONSTRUCTION AND METHOD OF MAKING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 16, 1992, Ser. No. 976,486
Int. Cl.[5] F23Q *3/00*
U.S. Cl. 431—266 **20 Claims**



1. In a burner construction comprising a burner body means having a chamber means therein and having opposed end means one of which is open to said chamber means and the other of which has means for interconnecting a source of fuel to said chamber means, and a removable cap means closing said one end means of said body means, said burner construction having main port means interconnecting said chamber means to the exterior of said burner construction and through which said fuel can issue to burn externally to said burner construction, one of said body means and said cap means having an annular surface means interrupted by a plurality of radially disposed main groove means that are spaced apart by land means of said annular surface means and that define a generally repeating pattern of a set of a certain number of said main groove means and said land means separated from the next adjacent set of said certain number of said main groove means and said land means by one of said land means that is not part of said sets and that has an annular length that is longer than the annular length of any one of said land means of said sets separated thereby, the other of said body means and said cap means having an annular surface means cooperating with said annular surface means that has said main groove means therein to close said main groove means on one end thereof whereby said main groove means define said main port means, each said land means having a free end surface means that faces said annular surface means of the other of said body means and said cap means, the improvement wherein said free end surface means of said land means that are not part of said sets each has a small radially disposed groove means therein that leads from said chamber means to the exterior of said burner construction and that is closed on one end thereof by said annular surface means of said other of said body means and said cap means to provide small carry-over flame means between said sets of main groove means adjacent that respective land means that is not part of said sets, each said small groove means having an inner end and an outer end, said outer end of each said small groove means being wider than said inner end thereof.

11 In a method of making a burner construction comprising a burner body means having a chamber means therein and having opposed end means one of which is open to said chamber means and the other of which has means for interconnecting a source of fuel to said chamber means, and a removable cap means closing said one end means of said body means, said burner construction having main port means interconnecting said chamber means to the exterior of said burner construction and through which said fuel can issue to burn externally to said burner construction, one of said body means and said cap means having an annular surface means interrupted by a plurality of radially disposed main groove means that are spaced apart by land means of said annular surface means and that define a generally repeating pattern of a set of a certain number of said main groove means and said land means separated from the next adjacent set of said certain number of said main groove means and said land means by one of said land means that is not part of said sets and that has an annular length that is longer than the annular length of any one of said land means of said sets separated thereby, the other of said body means and said cap means having an annular surface means cooperating with said annular surface means that has said main groove means therein to close said main groove means on one end thereof whereby said main groove means define said main port means, each said land means having a free end surface means that faces said annular surface means of the other of said body means and said cap means, the improvement comprising the steps of forming said free end surface means of said land means that are not part of said sets to each have a small radially disposed groove means therein that leads from said chamber means to the exterior of said burner construction and that is closed on one end thereof by said annular surface means of said other of said body means and said cap means to provide small carry-over flame means between said sets of main groove means adjacent that respective land means that is not part of said sets, forming each said small groove means to have an inner end and an outer end, and forming said outer end of each said small groove means to be wider than said inner end thereof.

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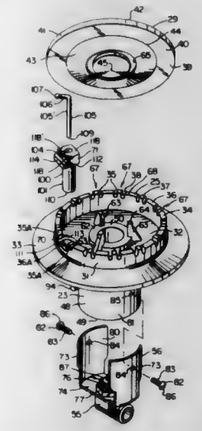
BURNER CONSTRUCTION AND METHOD OF MAKING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 942,424, Sep. 9, 1992, abandoned, which is a division of Ser. No. 795,106, Nov. 20, 1991, abandoned, which is a division of Ser. No. 710,657, Jun. 5, 1991, Pat. No. 5,083,915, which is a division of Ser. No. 508,799, Apr. 12, 1990, Pat. No. 5,040,970. This application Nov. 2, 1993, Ser. No. 147,662
The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.
Int. Cl.[5] F23Q *3/00*
U.S. Cl. 431—266 **6 Claims**

1. In a burner construction comprising a burner body means having a chamber means therein and having opposed end means one of which is open to said chamber means and the other of which has means for interconnecting a source of fuel to said chamber means, and a removable cap means closing said one end means of said body means, said burner construction having port means interconnecting said chamber means to the exterior of said burner construction and through which said fuel can issue to burn externally to said burner construc-

tion, the improvement wherein said body means has an annular surface means interrupted by a plurality of radially disposed groove means that are spaced apart by land means of said annular surface means and that define a generally repeating pattern of a set of a certain number of said groove means and said land means separated from the next adjacent set of said certain number of said groove means and said land means by one of said land means that is not part of said sets and that has an annular length that is longer than the annular length of any one of said land means of said sets separated thereby and



wherein said cap means has an annular surface means cooperating with said annular surface means that has said groove means therein to close said groove means on one end thereof whereby said groove means define said port means, said annular surface means that has said groove means therein having an igniter receiving slot means therein, the slot means causing a side of a groove means at opposite ends of said slot means to be deleted and an igniter assembly having a part thereof disposed in said slot means and defining a missing side of each of the two of said groove means that are respectively disposed on opposite sides of said igniter assembly.

5,328,359

IGNITION STAGE FOR A HIGH TEMPERATURE COMBUSTOR

William B. Retallick, West Chester, Pa., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 19, 1992, Ser. No. 885,456
Int. Cl.[5] B01J *32/00;* **B21D** *53/00*
U.S. Cl. 431—326 **6 Claims**



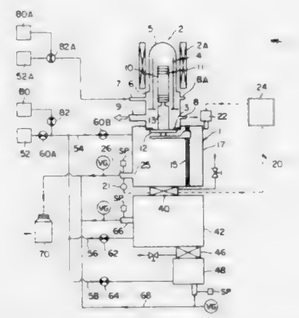
1. A catalytic reactor made from two strips of metal, each strip having two sides, at least one strip having bands on both sides that are coated with catalyst, the bands being staggered such that everywhere on the strip one side or the other is coated with catalyst, and nowhere along the strip are both sides coated with catalyst, the strips being wound into a spiral to define a plurality of turns, each strip having means for maintaining at least a portion of the strip spaced apart from the other strip.

5,328,360

HEAT-TREATING APPARATUS

Osamu Yokokawa, Kanagawa, Japan, assignor to Tokyo Election Sagami Kabushiki Kaisha, Kanagawa, Japan

Division of Ser. No. 858,002, Mar. 26, 1992, Pat. No. 5,271,732. This application Sep. 22, 1993, Ser. No. 124,547
Claims priority, application Japan, Apr. 3, 1991, 3-98132; Apr. 3, 1991, 3-98133
Int. Cl.[5] F27D *3/12*
U.S. Cl. 432—250 **4 Claims**



1. A heat-treating apparatus having a heat-treating portion performing a required heat treating to a plural number of objects to be treated mounted on a heat-treating boat, a vacuum exhaust system creating a vaccuum inside said heat-treating portion, and a load lock chamber filled with an inert gas and for transporting said object to be treated into and out of said heat-treating portion, comprising:

oxygen concentration detecting means for detecting an oxygen concentration inside said load lock chamber;

door lock means provided in a vicinity of a maintenance door of said load lock chamber and which regulates opening and closing of a maintenance; and

door lock control means which releases a lock of said door lock means when said oxygen concentration detecting means has detected a required oxygen concentration.

5,328,361

ORTHODONTIC PLIER-TYPE LIGATURE CUTTERS

Al Ezcurra, South Pasadena, Calif., assignor to Ormco Corporation, Glendora, Calif.

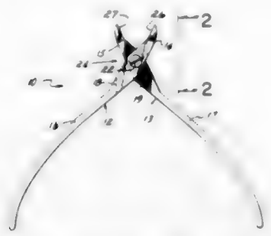
Filed May 7, 1993, Ser. No. 60,206
Int. Cl.[5] A61C *3/00, 3/14, 3/16*
U.S. Cl. 433—4 **3 Claims**

1. An orthodontic plier-type cutter for cutting portions of orthodontic metal appliances comprising:

a pair of plier halves made of ATS-34 stainless steel having a hardness of at least about RC 57, each of said plier halves being of one piece construction, having an elongated handle section at one end, a cutting jaw section at the other end, and a pivot section located therebetween with a pivot axis passing therethrough, each of said plier halves having a width measured perpendicular to its length and to said pivot axis which increases gradually from its handle section to its pivot section and from its cutting jaw section to its pivot section; and

connecting means for connecting the pivot sections of said

pair of plier halves together for pivotal motion about said pivot axis such that relative movement of said handle



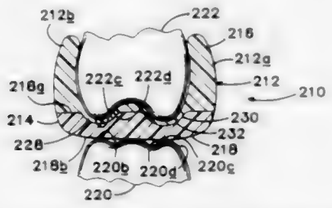
sections toward each other causes relative movement of said cutting jaw sections toward each other.

5,328,362

SOFT RESILIENT INTEROCCLUSAL DENTAL APPLIANCE, METHOD OF FORMING SAME AND COMPOSITION FOR SAME

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Filed Mar. 11, 1992, Ser. No. 849,467
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—6 **22 Claims**



1. A soft, persistently resilient interocclusal dental appliance, comprising:

a body made from an injectable, curable composition, with the composition including a polymer component consisting essentially of butyl methacrylate polymer, a monomer component consisting essentially of butyl methacrylate monomer and an effective amount of polymerizing agent.

5,328,363

PACKAGED DENTAL ARTICLE

Bruce E. Chester, Irvine; Kenneth E. Hoevel, Monrovia, both of Calif.; Dwight W. Jacobs, River Falls, Wis.; Lawrence G. Brusby, Glendora, Calif., and Evangelos G. Georgakis, Altaloma, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 826,225, Jan. 22, 1992, which is a continuation-in-part of Ser. No. 740,003, Aug. 2, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 52,334
Int. Cl.[5] A61C *3/00*; **A61B** *19/02*
U.S. Cl. 433—9 **21 Claims**

1. An article comprising:

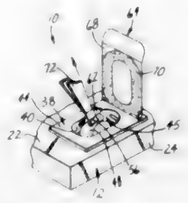
a container having a substrate and a well;

a dental appliance received in said well of said container, said dental appliance having an exterior surface;

an adhesive on said exterior surface;

a flexible film having a first section and a second section spaced from said first section, said first section including a low adhesion surface in contact with said adhesive; and

means for securing said second section to said substrate while said first section is substantially free of direct connection to said substrate such that said first section is



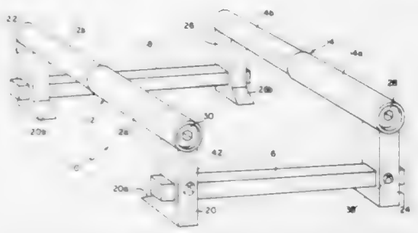
movable away from said substrate during release of said adhesive from said film.

5,328,364

DENTAL CLAMP

Walter A. Doyle, 3284 Paris Pike, Lexington, Ky. 40511

Filed Oct. 15, 1993, Ser. No. 136,364
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—18 **20 Claims**



1. Apparatus for maintaining first and second teeth fixed relative to one another, said apparatus comprising:

first and second clamp members respectively engaging distal, opposed, end portions of said first and second teeth, wherein each clamp member includes first and second elongated arms coupled together in a telescoping manner and spaced, opposed teeth engaging elements for engaging proximal, opposed portions of said first and second teeth, each of said clamp members further including tightening means for drawing said first and second elongated arms together and positioning said engaging elements in tight-fitting engagement with said first and second teeth;

at least one side arm disposed adjacent a first lateral portion of said first and second teeth; and

coupling means for securely attaching said at least one side arm to said first and second clamp members and maintaining said clamp members in fixed relation, wherein the distance between said first and second clamp members may be fixed in accordance with the size and shape of said first and second teeth.

5,328,365

SYSTEM AND METHOD FOR ENDOSCOPIC SUBGINGIVAL DENTAL PROCEDURES

Bennett Jacoby, 24102 Hollyoak, Apt. K, Laguna Hills, Calif. 92656

Continuation of Ser. No. 816,307, Dec. 26, 1991, Pat. No. 5,230,621. This application Apr. 9, 1993, Ser. No. 45,397
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] A61C *1/00*
U.S. Cl. 433—29 **21 Claims**

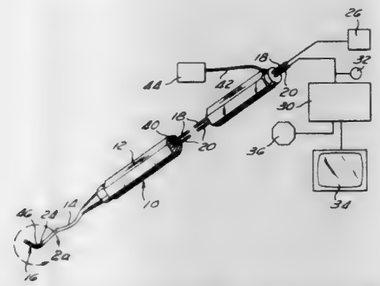
1. A system for endoscopic viewing of the subgingival anatomy without surgical incision of the gingiva, said system comprising:

a) a subgingival endoscopic dental probe device insertable between non-incised free gingiva and an adjacent tooth, said probe device comprising:

i) an elongate handpiece sized and configured to be grasped by the human hand, said handpiece having a proximal end and a distal end;

ii) a probe member attached to and extending from the distal end of said handpiece, of said probe member having a distal end sized as to be insertable between the intact non-incised free gingiva and an adjacent subgingival tooth surface;

iii) a light transmitting pathway extending longitudinally through said probe member and terminating distally in at least one light outlet port at the distal end of said probe member;



iv) an optical image transmitting pathway extending longitudinally through said probe member and terminating distally in an optical image receiving port at the distal end of said probe member;

b) a light source connectable to said light transmitting pathway to pass light, in a proximal direction, through said light transmitting pathway and out of the light outlet port located at the distal end of said probe member;

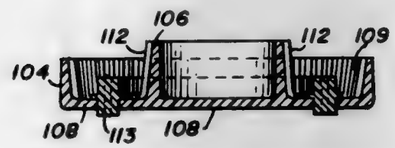
c) an optical image receiving and displaying apparatus connected to the optical image transmitting pathway of said probe member to receive and display an optical image from the optical image receiving port located at the distal end of said probe member.

5,328,366

DENTAL CAST TRAY SUBASSEMBLY

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Filed Jun. 17, 1993, Ser. No. 80,066
Int. Cl.[5] A61C *19/00, 11/00*
U.S. Cl. 433—34 **19 Claims**



1. A dental cast tray subassembly for forming a dental cast model and for mounting to a dental articulator, the subassembly comprising:

a tray with an outer jaw-shaped periphery with a pair of sidewalls integral with a bottom wall to form a convex canal for receiving a quantity of mold material for forming a dental cast model;

release means engaged within the tray and about said bottom wall to interface with and adhere to said mold material to release a cured dental cast model from the tray, the release means comprising an elongated continuous slot along said bottom wall with a series of laterally projecting contiguous openings aligned along the length of said continuous slot and an elongate continuous spinal column of a length coinciding with the length of said slot and further comprising a string of interconnected keys with each key projecting laterally and configured of a shape to fit within and interface with one of said contiguous openings; and

registration means within at least one of said sidewalls and about an interior periphery of said canal to interface with said mold material and to register a position of a cured dental cast model.

5,328,367

METHOD AND APPARATUS FOR APPLYING GUTTA PERCHA TO A CARRIER

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Filed Apr. 14, 1993, Ser. No. 48,432
Int. Cl.[5] A61G *5/02*
U.S. Cl. 433—81 **23 Claims**



1. A method of applying gutta percha to a carrier comprising the following steps:

(a) inserting a cannula which is pre-filled with gutta percha into a barrel cavity provided in a barrel of a syringe-type device so that a lower open end of the cannula is adjacent a dispensing end of the syringe-type device;

(b) heating the gutta percha in order to thermally increase the plasticity of the normally viscous gutta percha, which step can be accomplished either before or after (a);

(c) inserting the carrier into the lower open end of the cannula; and

(d) pushing the carrier and gutta percha out the lower open end by means of a plunger movably provided in the barrel cavity.

5,328,368

DENTAL CURE LIGHT COVER

Thomas A. Lansing, St. Paul, Minn., and Paul W. Kuehn, Eau Claire, Wis., assignors to Pinnacle Products, St. Paul, Minn.

Filed Apr. 20, 1992, Ser. No. 871,271
Int. Cl.[5] A61C *3/00, 1/16*
U.S. Cl. 433—116 **5 Claims**

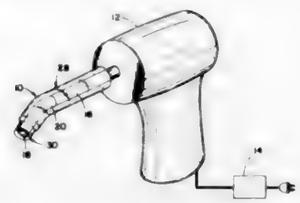
1. A disposable single use protective cover apparatus for a dental cure light of the type having an approximately cylindrical distal light probe, said light probe having a nominal diameter, comprising:

an elongate transparent polymeric substantially tubular sheath member having an effective diameter larger than said light source nominal diameter, and having a predetermined first length;

a distal cover member, having a diameter smaller than said

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nominal light source diameter, and having a predetermined second length, forming a tubular distal cover member; and



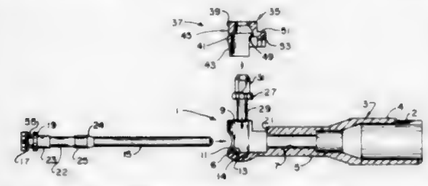
whereby, said tubular distal cover member is deformed into conformity with said distal light source by stretching said tubular distal cover member over said distal light probe.

5,328,369

DENTAL PROPHYLAXIS ANGLE

Ronald L. Bailey, Harvester, Mo., assignor to Young Dental Manufacturing Company, Earth City, Mo.

Continuation-in-part of Ser. No. 613,366, Nov. 15, 1990, Pat. No. 5,156,547. This application Oct. 19, 1992, Ser. No. 963,132
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] A61C *3/06*
U.S. Cl. 433—125 **18 Claims**



1. A plastic, disposable, dental contra-angle comprising:
a body having a sleeve with an open rear end, a head, and a neck between the sleeve and the head, a first axial bore in the sleeve and neck, the first axial bore including a bend of from 10° to 30°, a second axial bore in the head, said first and second bores communicating with each other at an intersection and being at an angle with respect to each other;
a one-piece drive gear including a gear and a flexible shaft, said shaft including a hollow portion, said shaft extending rotatably from the open rear end of said sleeve through said first bore; and
a driven gear rotatably mounted in said head bore and operatively connected to said drive gear, said driven gear including means for retaining a dental bit.

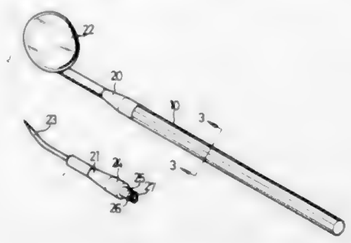
5,328,370

DENTAL TOOL ASSEMBLY

Shih-Chieh Chen, No. 3, Lane 68, Liou Yang East Street, Taichung, Taiwan

Filed Sep. 1, 1993, Ser. No. 115,311
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—147 **1 Claim**

1. A dental tool assembly comprising a rod including an open end, a first engaging means provided in said open end, at least one tool including a stub engageable in said open end, a second engaging means provided on said stub of said at least one tool and engageable with said first engaging means, whereby said at least one tool is disposable when said at least one tool is disengaged from said rod, said first engaging means including a pair of stops oppositely provided in said open end, a third engaging means provided on each of said stops, said second engaging means including an extension extended from said stub and a block fixed to said extension, said block including a fourth engaging means provided thereon, said fourth engaging means engageable with said third engaging means when said block is engaged inward of said stops and is rotated



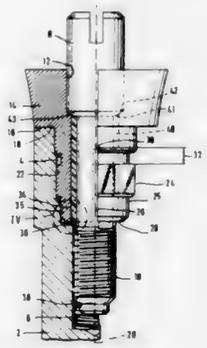
relative to said stops, said third engaging means including two protrusions, said fourth engaging means including two cusps formed on said block and facing toward said stub, said cusps engageable between said protrusions when said block is rotated relative to said stops.

5,328,371

DENTAL IMPLANT

Walter Hund, Oberkirch-Stadelhofen, and Freimut Vizethum, Schwetzingen, both of Fed. Rep. of Germany, assignors to Friatec Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Oct. 15, 1993, Ser. No. 136,367
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1992, 4235801
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **12 Claims**



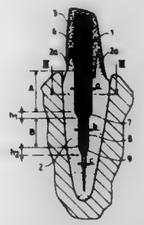
1. A dental implant comprising:
an implant body having root and crown ends and which can be anchored in a patient's jawbone;
a superstructure portion having a free end which can be inserted at least partially into a recess in the crown end of the implant body; and
a holding screw extending through said superstructure portion and engaging mating threads in said recess of said implant body for fastening the superstructure portion to the implant body; wherein said recess is provided with at least one first contact surface; and wherein said superstructure portion is provided with
an associated second contact surface for each first contact surface; and with
at least one slot extending from said free end to the vicinity of said second contact surface(s); and with
a smaller diameter portion disposed radially inwardly of said second contact surface(s); and wherein a cam member is associated with said holding screw such that when the holding screw is screwed into the implant body, the cam member engages said smaller diameter portion and radially spreads said superstructure portion in such a way that said second contact surface(s) are urged against the associated first contact surface(s), whereby said superstructure portion is secured against rotation relative to said implant body.

5,328,372

PHYSIOLOGICAL DENTAL SECURING PEG OF COMPOSITE MATERIAL AND METHOD OF MANUFACTURE THEREOF

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PCT No. PCT/FR90/00831, § 371 Date May 13, 1992, § 102(e) Date May 13, 1992, PCT Pub. No. WO91/07142, PCT Pub. Date May 30, 1991
PCT Filed Nov. 20, 1990, Ser. No. 856,209
Claims priority, application France, Nov. 20, 1989, 89 15194
Int. Cl.[5] A61C *5/08*
U.S. Cl. 433—220 **16 Claims**



1. A crown-root reconstituting system for a tooth including a root having a root denture with a modulus of elasticity of 18 GPa, comprising:
a physiological dental securing peg (1) of a composite material, said peg (1) including an element of revolution formed from a wick of high strength fibers (5) embedded in a resin (4) forming an epoxy resin matrix, said fibers (5) being parallel to one another, elongated in the axial direction of said peg (1), continuous from one end of said peg to the other end thereof, in the central part of said peg;
a crown reconstituting material (3) adapted to be placed between peg (1) and said sound dentine walls (2*a*); and
means for providing a transverse modulus of elasticity on the order of magnitude of the average of that of dentine in the amount of 18 GPa which is very close to the modulus of elasticity of the root denture and a longitudinal compression-tensile strength of 440 MPa and a shear strength of 170 MPa which is greater than corresponding average values for dentine wherein all of said fibers are equally tensioned and pre-stressed.

5,328,373

METHOD AND APPARATUS FOR TEACHING READING

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Filed Mar. 30, 1993, Ser. No. 40,152
Int. Cl.[5] G09B *1/16, 1/34, 1/40, 1/00*
U.S. Cl. 434—172 **19 Claims**

1. An aid for teaching reading to students, comprising:
sound letters having a shape and appearance of standard English alphabet letters, each sound letter corresponding to a single sound most commonly associated with a particular alphabetic letter or combination of alphabetic letters of said standard alphabet, each said sound letter characterized as having a front, a back, a top, a bottom, a left side and a right side, said sound letters adapted for arrangement in a visually associated, juxtaposed relationship to form combinations of said sound letters, said combinations symbolizing words so that students are able to read said combinations of said sound letters phonetically, said sound letters further comprising:
nine pairs of consonant sound letters, each said pair of consonant sound letters matched according to similarity in pronunciation, each said pair of consonant sound letters corresponding to a pair of voiced and unvoiced consonant sounds, said nine pairs of consonant sound letters comprising:
a first pair of consonant sound letters, comprising:
a sound letter B, said sound letter B having a shape and general appearance of an upper case alphabetic letter B, said sound letter B symbolizing a voiced consonant sound associated with the alphabetic letter B in the word BAD; and
a sound letter P, said sound letter P having a shape and general appearance of an upper case alphabetic letter P, said sound letter P symbolizing an unvoiced sound associated with the alphabetic letter P in the word PAD;
a second pair of consonant sound letters, comprising:
a sound letter D, said sound letter D having a shape and general appearance of an upper case alphabetic letter D, said sound letter D symbolizing a voiced consonant sound associated with the alphabetic letter D in the word DAD; and
a sound letter T, said sound letter T having a shape and general appearance of an upper case alphabetic letter T, said sound letter T symbolizing an unvoiced consonant sound associated with the alphabetic letter T in the word TAD;
a third pair of consonant sound letters, comprising:
a sound letter G, said sound letter G having a shape and general appearance of an upper case alphabetic letter G, said sound letter G symbolizing a voiced consonant sound associated with the letter G in the word GAB; and
a sound letter K, said sound letter K having a shape and general appearance of an upper case alphabetic letter K, said sound letter K symbolizing an unvoiced consonant sound associated with the alphabetic letter K in the word KATE, Q in the word QUAKE, and C in the word CAKE;
a fourth pair of consonant sound letters, comprising:
a sound letter J, said sound letter J having a shape and general appearance of an upper case alphabetic letter J, said sound letter J symbolizing a voiced consonant sound associated with the alphabetic letter J in the word JAM; and



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a sound letter CH, said sound letter CH having a shape and general appearance of an upper case alphabetic letter C joined to an upper case alphabetic letter H, said sound letter CH symbolizing an unvoiced consonant sound associated with a combination of the alphabetic letter C and the alphabetic letter H in the word CHEER;

a fifth pair of consonant sound letters, comprising:

a sound letter TH-bar, said sound letter TH-bar having a general appearance of an upper case alphabetic letter T joined to an upper case alphabetic letter H, said sound letter TH-bar characterized as having an upper portion and a lower portion, said sound letter TH-bar further comprising a third indicia located in said sound letter TH-bar's lower portion, said sound letter TH-bar symbolizing a voiced consonant sound associated with a combination of the alphabetic letter T and the alphabetic letter H in the word THEN; and

a sound letter TH, said sound letter TH having a shape and general appearance of an upper case alphabetic letter T joined to an upper case alphabetic letter H, said sound letter TH symbolizing an unvoiced consonant sound associated with a combination of the alphabetic letter T and the alphabetic letter H in the word THIN;

a sixth pair of consonant sound letters, comprising:

a sound letter V, said sound letter V having a shape and general appearance of an upper case alphabetic letter V, said sound letter V symbolizing a voiced consonant sound associated with the alphabetic letter V in the word VAN; and

a sound letter F, said sound letter F having a shape and general appearance of an upper case alphabetic letter F, said sound letter F symbolizing an unvoiced consonant sound associated with the alphabetic letter F in the word FAN;

a seventh pair of consonant sound letters, comprising:

a sound letter W, said sound letter W having a shape and general appearance of an upper case alphabetic letter W, said sound letter W symbolizing a voiced consonant sound associated with the alphabetic letter W in the word WET; and

a sound letter WH, said sound letter WH having a shape and general appearance of an upper case alphabetic letter W joined to an upper can alphabetic letter H, said sound letter WH symbolizing an unvoiced consonant sound associated with a combination of the alphabetic letter W and the alphabetic letter H in the word WHET;

an eighth pair of consonant sound letters, comprising:

a sound letter Z, said sound letter Z having a shape and general appearance of an upper case alphabetic letter Z, said sound letter Z symbolizing a voiced consonant sound associated with the alphabetic letter Z in the word ZIP; and

a sound letter S, said sound letter S having a shape and general appearance of an upper case alphabetic letter S, said letter S symbolizing an unvoiced consonant sound associated with the alphabetic letter S in the word SIP; and

a ninth pair of consonant sound letters, comprising:

a sound letter ZH, said sound letter ZH having a shape and general appearance of an upper case alphabetic letter Z joined to an upper case alphabetic letter H, said sound letter ZH symbolizing a voiced consonant sound associated with a combination of the alphabetic letter Z and the alphabetic letter H in the word ZHIVAGO, said voiced consonant sound symbolized by the sound letter ZH more commonly found in words such as "azure", "collision", "mirage", "equation", "treasure" and "casual"; and

a sound letter SH, said sound letter SH having a shape and general appearance of an upper case alphabetic letter S joined to an upper case alphabetic letter H, said sound letter SH symbolizing an unvoiced

consonant sound associated with a combination of the alphabetic letter S

and the alphabetic letter H in the word SHIN;

nasal consonant sound letters, comprising:

a sound letter M, said sound letter M having a general appearance of an upper case alphabetic letter M, said sound letter M symbolizing a nasal consonant sound associated with the alphabetic letter M in the word MAP;

a sound letter N, said sound letter N having a shape and general appearance of an upper case alphabetic letter N, said sound letter N symbolizing a nasal consonant sound associated with the alphabetic letter N in the word NAP; and

a sound letter NG, said sound letter NG having a shape and general appearance of an upper case alphabetic letter N joined to an upper case alphabetic letter G, said sound letter NG symbolizing a nasal consonant sound associated with a combination of the alphabetic letter N and the alphabetic letter G in the word SING;

residual consonant sound letters corresponding to less restricted, more free-flowing consonant sounds associated with the alphabetic letters H, L, R, and Y, when said alphabetic letters H, L, R, and Y are used at the beginning of words and syllables, said residual consonant sound letters comprising:

a sound letter H, said residual consonant sound letter H having a shape and general appearance of an upper case alphabetic letter H, said residual consonant sound letter H symbolizing a sound associated with the alphabetic letter H in the word HIP;

a sound letter L, said sound letter L having a shape and general appearance of an upper case alphabetic letter L, said sound letter L symbolizing a sound associated with the alphabetic letter L in the word LIP;

a sound letter R, said sound letter R having a shape and general appearance of an upper case alphabetic letter R, said sound letter R symbolizing a sound associated with the alphabetic letter R in the word RIP; and

a sound letter Y, said sound letter Y having a shape and general appearance of an upper case alphabetic letter Y, said sound letter Y symbolizing a sound associated with the alphabetic letter Y in the word YIP; and

standard short vowel sound letters corresponding to short vowel sounds of alphabetic letters A, E, I, O, and U, said standard short vowel sound letters consisting of:

a sound letter A, said sound letter A having a shape and general appearance of an upper case alphabetic letter A, said sound letter A symbolizing a sound associated with the alphabetic letter A in the word BAD;

a sound letter E, said sound letter E having a shape and general appearance of an upper case alphabetic letter E, said sound letter E symbolizing a sound associated with the alphabetic letter E in the word BED;

a sound letter I, said sound letter I having a shape and general appearance of an upper case alphabetic letter I, said sound letter I symbolizing a sound associated with the alphabetic letter I in the word BID;

a sound letter O, said sound letter O having a shape and general appearance of an upper case alphabetic letter O, said sound letter O symbolizing a sound associated with the alphabetic letter O in the word BOB; and

a sound letter U, said sound letter U having a shape and general appearance of an upper case alphabetic letter U, said sound letter U symbolizing a sound associated with the alphabetic letter U in the word BUD;

a first indicia of each said sound letter's top; and

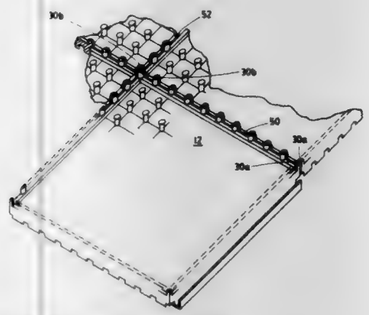
a second indicia of each said sound letter's back so that the top and back of each said sound letter are readily determinable by the student.

5,328,374

GEOMETRY BOARD

George R. Stevens, Barrie, Canada, assignor to 158973 Canada Inc., Barrie, Canada

Filed Feb. 4, 1993, Ser. No. 13,370
Int. Cl.[5] G09B *23/04*
U.S. Cl. 434—211 **16 Claims**



1. A geometry board comprising:

a polygonal board having a top face;

a plurality of spaced apart posts permanently affixed to and arranged across the top face;

first and second walls which extend downwardly of first and second adjacent edges of the board, respectively, wherein the first wall extends laterally outwardly and upwardly to form a trough for receipt of the second wall of another board for assembly of a pair of the boards in side-by-side relationship with the first edge of a first or the pair of boards adjacent and coextensive with the second edge of a second of the pair of boards; and wherein

the posts include edge pegs arranged along the first and second edges of the board such that when the pair of boards are arranged in the side-by-side relationship, pairs of first and second of the edge pegs of the first and second boards, respectively, are located in side-by-side relationship with each other such that each of the pairs of edge pegs acts as a single post.

5,328,375

FIRE FIGHTING TRAINER AND APPARATUS INCLUDING A FLAME GENERATING MEANS

William Rogers, Hopatcong; James J. Erast, Livingston; Steven Williamson, Haledon, and Domnick J. Musto, Middlesex, all of N.J., assignors to Symtron Systems, Inc., Fair Lawn, N.J.

Division of Ser. No. 873,965, Apr. 24, 1992, Pat. No. 5,233,869, which is a continuation of Ser. No. 625,210, Dec. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 387,348, Aug. 9, 1989, Pat. No. 4,983,124, which is a continuation-in-part of Ser. No. 238,453, Aug. 30, 1988, Pat. No. 4,861,270. This application Jun. 18, 1993, Ser. No. 80,469
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—226 **2 Claims**

1. A fire fighting trainer comprising:

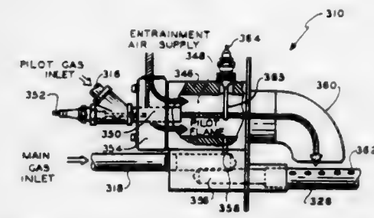
one or more chambers having respective contents including items chosen from a group of items including furniture and fixtures and equipment;

a smoke generating means having a plurality of outlets disposed in the respective chambers;

a flame generating means having a plurality of outlets disposed in the respective chambers; and

a sensing and control means having a plurality of sensor assemblies disposed in the respective chambers and each sensor assembly connecting to a main control panel, wherein

each said sensor assembly includes a plurality of sensors and each said sensor is capable of sensing and reporting a particular extinguishing agent,



recording and control means for controlling the operation of the trainer and recording the results, and

a flame generating means for the fire fighting trainer comprising:

a propane gas inlet pressure controller;

conduit means connecting to the propane gas inlet pressure controller;

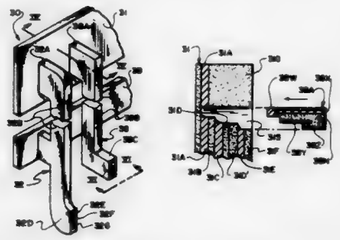
a gas line to each chamber from the conduit means; control means for each chamber connecting to the gas line; and a burner inside each chamber connecting to the control means.

5,328,376

PATTERNED LAMINAR ELECTRICAL INTERCONNECTION

Frederick A. West, 507 Forrest Ct., Crestview, Fla. 32536

Continuation-in-part of Ser. No. 475,578, Feb. 6, 1990, Pat. No. 5,201,974, and a continuation-in-part of Ser. No. 549,876, Jul. 6, 1990, and a continuation-in-part of Ser. No. 33,722, Apr. 3, 1987, Pat. No. 4,790,438. This application Apr. 12, 1993, Ser. No. 45,924
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—65 **15 Claims**



1. Laminate of a plurality of patterned electrically conductive laminae bonded face-to-face, comprising

individual patterned electrically conductive laminae,

each lamina having non-conductive portions and conductive portions mutually contiguous side-by-side,

some conductive portions as well as the non-conductive portions thereof being substantially homogeneous electrically the thickness of the lamina from face-to-face

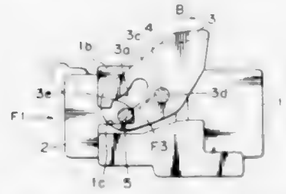
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thereof and substantially continuous from one end of the lamina to another end thereof,

the plurality of face-to-face bonded laminae together being configured as a substantially three-dimensional conductor of electrical signals from end-to-end and adapted at one end to fit into an opening in electrical receptacle means and thereby to interconnect electrically a portion of each lamina to circuit means within the receptacle

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5,328,377
LEVER TYPE CONNECTOR
Masashi Saito, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Jun. 18, 1993, Ser. No. 78,120
Claims priority, application Japan, Jul. 13, 1992, 4-048814[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—157 **3 Claims**



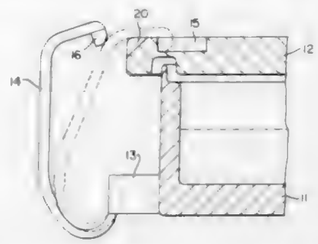
1. A lever type connector comprising: a first connector and a second connector to be connected with each other, in which a lever is rotatably supported by a pair of supporting shafts on the first connector; a pair of guide pins which engage each of a pair of guide grooves formed on the lever, said pair of guide pins projecting from the second connector; the lever being rotated in a predetermined engaging direction to move the second connector into the first connector so as to connect the first and second connectors with each other or in a direction opposite to the predetermined engaging direction to move the second connector away from the first connector so as to disconnect the first and second connectors from each other due to the engagement between the guide pins and the guide grooves, and a pair of projections being formed on each of the guide grooves of the lever, said pair of projections converting rotation of the lever in said direction opposite to the predetermined engaging direction when the guide pins are brought into contact with each of the projections when the male connector is held at a temporary engaging position thereof.

5,328,378
DEVICE FOR TRANSFERRING A SIGNAL BETWEEN TWO END POINTS WHICH ARE MOVABLE RELATIVE TO EACH OTHER
Dan Persson, Alingsas, Sweden; Friedrich Schauer, Heroldsberg, Fed. Rep. of Germany; Wolfgang Chille, Oberasbach, Fed. Rep. of Germany, and Andreas Neuner, Nürnberg, Fed. Rep. of Germany, assignors to kabelmetal electro GmbH, Hanover, Fed. Rep. of Germany and Autoliv Development AB, Vägarda, Sweden
Filed Mar. 29, 1993, Ser. No. 39,950
Int. Cl.[5] H01R *39/02*
U.S. Cl. 439—164 **12 Claims**

1. A device for transferring a signal between two end points between which a coiled conductor is arranged, the device comprising:

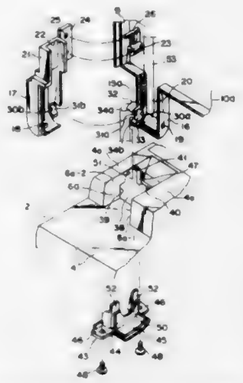
a substantially circular cassette enclosing said conductor, said end points permitting attachment of extending conductors at the two end points, the length of said conductor being substantially greater than the distance between said two points, and at least one of the two end points being movable relative to the other, the cassette comprising a stationary stator and a rotor rotatable relative to the stator;

a holding element connected to a first part of said cassette, said holding element being activatable under spring force to act, in an assembled position of said cassette, on a second part of said cassette to hold the two parts fixed in a predetermined position relative to each other; and



wherein said holding element can be loosened by a rotation of said rotor against said spring force so that, in an operating position of the cassette, said holding element is separated with clearance space from said second part of said cassette.

5,328,379
PORTABLE APPARATUS HAVING CABLE ELECTRICALLY CONNECTING DISPLAY UNIT AND BASE UNIT
Takaichi Kobayashi, Itsukaichi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 819,806, Jan. 13, 1992, Pat. No. 5,238,421, which is a continuation of Ser. No. 542,061, Jun. 22, 1990, Pat. No. 5,090,913. This application May 19, 1993, Ser. No. 63,332
Claims priority, application Japan, Jun. 23, 1989, 1-162224
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[5] G06F *1/00*
U.S. Cl. 439—165 **4 Claims**



1. A portable electronic apparatus comprising:

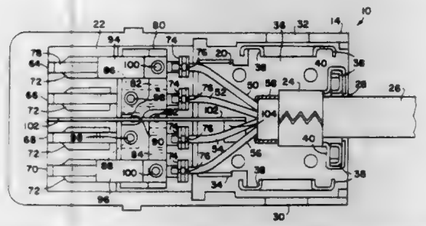
a display unit including a flat panel display and a leg portion having a cable guide path;

a base unit including a printed circuit board and a receiving portion for receiving the leg portion, the receiving portion including a bottom opening and a side opening;

a cable including a first end portion electrically coupled to the printed circuit board and a second end portion electrically coupled to the flat panel display to electrically couple the flat panel display to the printed circuit board, the cable passing through the side opening and the cable guide path; and

a cover fixed to the receiving portion and covering the bottom opening, the cover including a curved upper surface facing the leg portion.

5,328,380
ELECTRICAL CONNECTOR
William V. Carney, Oyster Bay, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.
Continuation-in-part of Ser. No. 904,705, Jun. 26, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 31,199
Int. Cl.[5] H01R *13/658*
U.S. Cl. 439—188 **26 Claims**



1. An electrical connector for minimizing crosstalk between pairs of conductors which carry different electrical signals therein, said connector comprising:

a housing having a cable receiving region and a connection region,

a clamp located in said cable receiving region for clamping the outer casing of a cable to said housing,

a plurality of electrically conductive connector elements extending from said cable receiving region to said connection region and positioned in side by side relationship,

said connector elements each having a formation, in said cable receiving region, for making positive electrical contact with a wire from within said cable,

said connector elements also each having a contact formation, in said connection region, for making pressure contact with a connector element of a mating connector, and

an electrically conductive shield extending between adjacent said connector elements and extending from a location near said clamp to the contact formations of said connector elements and having a surface which extends over substantially the entire mutually projected area of said adjacent connector elements.

5,328,381
CONNECTOR MODULE HAVING SIX DEGREES OF FREEDOM
Douglas G. Seymour; Ronald E. Thomas, both of Warren, and James C. Humphrey, Russell, all of Pa., assignors to Osram Sylvania Inc., Danvers, Mass.
Filed May 16, 1991, Ser. No. 700,977
Int. Cl.[5] H01R *13/64*
U.S. Cl. 439—247 **20 Claims**

1. A connector module for connecting electrical and electronic wiring, comprising:

a male header having at least one male connection element; and

a female receptacle assembly having at least one female connection element for mating with the male connection element of said male header to provide a wiring connection, said female receptacle assembly joining with said male header to provide said mating of male and female connection elements, said female receptacle assembly further including:

a) a receptacle member;

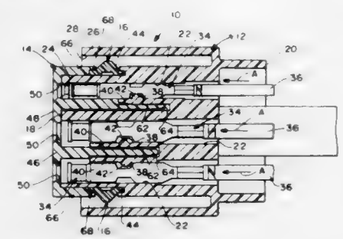
b) a floating housing disposed about, and receiving said receptacle member therein, said receptacle member movable within said floating housing in dimensional and rotational axes in order to adjust its position with re-



spect to said male header, whereby said male header will adjustably join with said female receptacle assembly; and

c) locking means supported by said floating housing for locking an adjusted receptacle member position within said floating housing.

5,328,382
ELECTRICAL CONNECTOR WITH EXTERNAL SEAL AND INTERNAL TERMINAL RETAINING MEANS
Jeffrey J. Pawlicki, Downers Grove, Ill., assignor to Molex Incorporated, Lisle, Ill.
Filed Apr. 13, 1993, Ser. No. 47,593
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—273 **4 Claims**



1. An electrical connector, comprising:

a dielectric housing having a plug portion surrounded by a shroud portion defining a peripheral recess therebetween, the plug portion having a front mating end and a rear end with a plurality of internal passageways extending therethrough, a plurality of resilient latch arms having projections projecting into the passageways, and receptacle means adjacent the resilient latch arms;

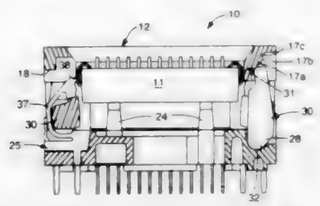
a plurality of terminals in the passageways and engageable by the projections of the latch arms;

a peripheral seal including a central section of a predetermined size, edges extending laterally from opposite sides of the central section, one of the edges located in a recess extending about the periphery of said plug portion;

a terminal locking and seal retaining member mountable to the front end of the housing and including a plate portion defining a mating face of the connector, lock means insertable into the receptacles in the housing for limiting movement of the resilient latch arms and thereby maintaining the projections in latching engagement with the terminals, and peripheral flange means extending substantially about the plug portion and having a recess extending about its periphery to accommodate the other edge of the seal, whereby both edges of the seal are maintained in their respective recesses.

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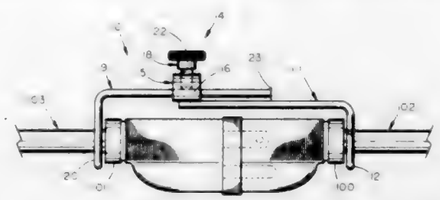
5,328,383
TOP-LOADED SOCKET FOR INTEGRATED CIRCUIT DEVICE
John A. Savant, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 16, 1992, Ser. No. 992,852
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—266 **8 Claims**



1. A socket assembly for use with an integrated circuit device having a plurality of contact points arranged along at least one side of the device, said assembly comprising:
a socket body having a generally rectangular configuration and means along at least one side for receiving a plurality of contact elements,
a plurality of generally planar contact elements disposed in spaced parallel relationship along said at least one side of said body, each contact element comprising a connecting portion for making connection with an external electronic member, anchor means for anchoring each said contact element to said body, contacting means for making resilient pressure contact with a said integrated circuit device, and a cover movable in relationship to said body for affording the movement of said contacting means from a first normal unflexed position to an open position for receiving a said integrated circuit device an to an operative position in pressure electrical contact with a said integrated circuit device, and
a cam member, comprising a bar, having cam follower means at each end of the bar, and an upper face to engage the contact elements and provide considerable mechanical advantage for retracting the contacting means, said cam member being positioned along said at least one side of said body and supported by said body for engaging said contact elements and retracting said contact elements to urge said contacting means thereof from a normal position to an open position, and
said cover having cam surfaces for cooperatively engaging said cam follower means on said cam member for moving said cam member and contact elements to said open position upon movement of said cover toward said body and to release said contact elements upon movement thereof in a direction away from said body, wherein said cam surface s have an irregularity affording an abrupt change in the force necessary to move said cover toward said body, whereby the operator knows when the contact elements have moved to said open position.

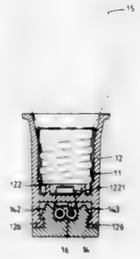
5,328,384
EXTENSION CORD RETAINING DEVICE
Jess W. Magnuson, 13552 Brett Harte Dr., Lakeside, Calif. 92040
Filed Jul. 15, 1993, Ser. No. 91,296
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—369 **2 Claims**

1. An apparatus for detachably holding the ends of two cords together comprising:
(a) a first retaining rod;
(b) a first cord retaining hook on one end of the first retaining rod;
(c) a securing clamp attached to the first retaining rod comprising:
a rod receiving member;
a rod receiving channel member in the rod receiving member; and
a clamping screw threadingly engaged within the threaded clamping channel;
(d) a second retaining rod slidingly engaged within the



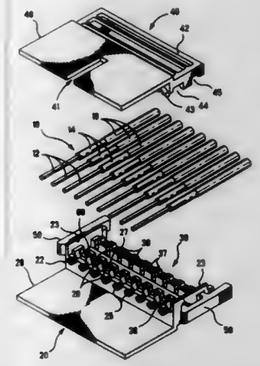
securing clamp and releasingly engaged with the clamping screw;
(e) a second cord retaining hook on a first end of the second retaining rod; and
(f) retaining means for preventing the second retaining rod from disengaging with the securing clamp, comprising a splayed tip at a second end of the second retaining rod.

5,328,385
LAMP SOCKET
Tseng-Fan Cheu, No. 24, Shing Shye Street, Hsinchu City, Taiwan
Filed Aug. 4, 1993, Ser. No. 101,732
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—425 **1 Claim**



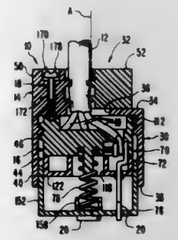
1. A lamp socket comprising:
a socket shell, said socket shell comprising an inside annular flange upstanding from a horizontal bottom wall thereof and spaced from a vertical side rib thereof, a bottom flange projected downwards from said horizontal bottom wall, a first slot through said horizontal bottom wall between said inside annular flange and said vertical said rib, a second slot through said horizontal bottom wall within said inside annular flange;
a socket cap fastened to said socket shell at the bottom, said socket cap comprising an elongated block having two parallel grooves along the length to carry a neutral wire and a hot wire, and two opposite hooks separated by said elongated block and hooked on said bottom flange of said socket shell;
a ring contact fastened inside said socket shell to hold the ring contact of a lamp bulb, said ring contact comprising a notched tip inserted through said first slot and pierced into said neutral wire to make an eletric contact; and
a tip contact having one end inserted through said second slot and disposed in contact with the top contact of said lamp bulb, and an opposite end pierced into said hot wire to make an electric contact.

5,328,386
WIRE ORGANIZER FOR BALLAST CONNECTOR
Robert H. Frantz, R.D. 1, Box 1182, Newville, Pa. 17241, and Michael A. McCaffrey, 108 Nagle St., Harrisburg, Pa. 17104
Filed Jun. 8, 1993, Ser. No. 73,856
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—465 **16 Claims**



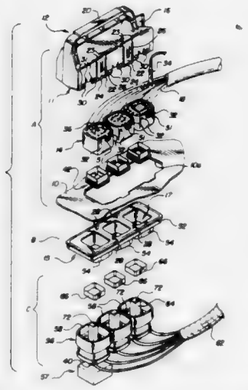
1. A wire organizer for bundling a plurality of discrete insulated wires in a cabled configuration for mass insertion in a discrete-wire-terminating connector, said wires being stripped to expose a length of conductor, the wire organizer comprising:
a lower housing assembly having a first wire yoke formed with an array of notches spaced thereacross each for seating a corresponding one of said wires, and a pair of flanking teeth protruding into said notch for gripping the conductor of said wire on opposing sides; and
an upper housing assembly to mate with said lower housing assembly and cover said first wire support bracket, thereby capturing said plurality of wires in their respective notches.

5,328,387
LOCKABLE COVER FOR ELECTRICAL CONNECTOR
Ernest G. Hoffman, Middlefield, Conn., assignor to Hubbell Incorporated, Orange, Conn.
Continuation of Ser. No. 11,731, Feb. 1, 1993, abandoned. This application Nov. 1, 1993, Ser. No. 144,586
Int. Cl.[5] H01R *13/502*
U.S. Cl. 439—469 **30 Claims**



1. An electrical connector, the combination comprising:
a retainer body having first and second oppositely facing ends with a longitudinal coupling axis extending therebetween, at least two curved blade contacts extending axially from said first end, and an external thread thereon;
a cover having first and second ends with a longitudinal coupling axis extending therebetween, an aperture adapted to receive an electrical cable therethrough for electrical connection to said curved blade contacts, and a longitudinally extending bore with an internal thread thereon threadedly engaged with said external thread on said retainer body via rotation of said cover relative to said retainer body in a first direction;
a passageway located in one of said cover and retainer body and having internal threads thereon; and
locking means, coupled to one of said retainer body and said cover and extending longitudinally between said second end of said retainer and said cover, for resisting rotation of said cover relative to said retainer body in a second direction opposite said first direction,
said locking means comprising a locking member coupled to one of said cover and retainer body and having external threads threadedly engaged with said internal threads on said passageway, and a locking surface coupled to the other of said cover and retainer body and engaged with said locking member.

5,328,388
MODULAR ELECTRICAL CONNECTOR
Robert E. Fust, Milford, and Seiji Kozono, Farmington Hills, both of Mich., assignors to Yazaki Corporation, Tokyo, Japan
Filed May 28, 1993, Ser. No. 69,972
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—544 **20 Claims**

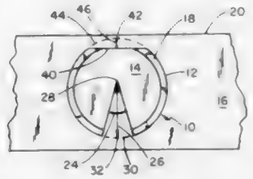


1. A modular connector for establishing multiple electrical circuit connections through an opening in a vehicle body panel comprising:
a frame member having opposite sides and mountable to the panel in surrounding and sealing relationship to said opening; said frame providing a plurality of connector module apertures;
a cover means securable to one side of said frame; said cover means providing a plurality of connector module receptacles corresponding to and registrable with said connector module apertures;
at least one female connector module providing multiple electrical circuit terminals therethrough and mountable in a receptacle of said cover to register with a frame opening;
at least one male connector module providing multiple electrical circuit terminals therethrough and registrable with a frame opening on the opposite side thereof from said female connector module; and

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a means for securing said female connector module to said male connector module.

5,328,389
INTERCONNECTION RETENTION DEVICE
Mark E. Lewis, Mansfield, Mass., and David W. Mendenhall, Greenville, R.I., assignors to Augat Inc., Mansfield, Mass.
Filed Jul. 1, 1993, Ser. No. 86,588
Int. Cl.[5] H01R *13/60*
U.S. Cl. 439—567 **19 Claims**



1. A retention element disposed on a mounting portion of a member to be retained, comprising

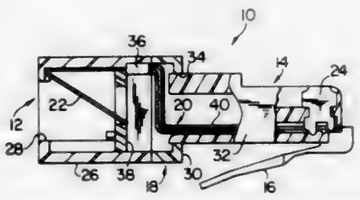
a shaft portion having an attachment end disposed on said mounting portion, an insertion end disposed at an end distal to said attachment end, and a longitudinal axis extending between said attachment end and said insertion end;

the shaft portion having outer dimensions greater than or equal to that of a cooperative cavity in a mounting surface;

a wedge-shaped groove formed in a first side of an outer surface of said cylindrical shaft portion parallel to said longitudinal axis; and

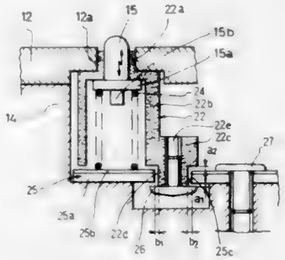
an expansion region having a surface formed in a second side of said outer surface of said cylindrical shaft portion parallel to said longitudinal axis and opposite to said first side.

5,328,390
MODULAR TELECOMMUNICATION JACK ADAPTER
James J. Johnston, Newington, Conn., and Joseph Carswell, Morganton, N.C., assignors to Hubbell Incorporated, Orange, Conn.
Filed Sep. 1, 1992, Ser. No. 938,711
Int. Cl.[5] H01R *25/00*
U.S. Cl. 439—638 **14 Claims**



1. A modular telecommunication jack adapter comprising an adapter body having a front part defining at least one forwardly open telecommunication plug receptacle and a back part defining a rearwardly projecting telecommunication plug, an array of wire contact members disposed within said adapter, each of said wire contact members consisting of a continuous length of resilient solid spring wire extending through said adapter from said front part to said back part and having a rearwardly bent forward end portion defining a moveable contact supported in cantilever position within said front part and spring biased to a contacting position, each of said wire contact members having an annealed rear end portion substantially softer than said forward end portion thereof and supported within said telecommunications plug, an in-line array of stationary contacts supported in parallel relation to each other on said back part, each one of said stationary contacts being attached in incising engagement to an associated one of the annealed rear end portions, and means for releasably retaining said adapter in connected arrangement with a mating telephone jack and including a latch member supported on said back part for movement between latching and releasing positions and biased toward said latching position.

5,328,391
CONTACT PIN SUBASSEMBLY
Isao Soshi, and Tatsuhide Takebayashi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 755,453, Sep. 5, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,074
Claims priority, application Japan, Sep. 10, 1990, 2-93972[U]
Int. Cl.[5] H01R *13/24*
U.S. Cl. 439—700 **18 Claims**



1. A contact pin subassembly comprising:

a plurality of contact pins;

a self contained, insulative contact pin holder which holds said contact pins and which is provided with a plurality of insulation ring portions within which the associated contact pins are slidably fitted;

springs which are held in said contact pin holder to bias said contact pins outwardly from said insulation ring portions; and,

an electrical circuit board provided on the contact pin holder to electrically connect the contact pins through the springs;

wherein said subassembly is capable of being independently assembled, the springs are inserted between the contact pins held by the contact pin holder, and the circuit board to bias the contact pins against the circuit board, the contact pin holder includes a shaft portion projecting toward the circuit board and the circuit board has an insertion hold which has a diameter larger than the shaft portion, so that the shaft portion can be loosely fitted in the insertion hole, and the shaft portion is provided with a threaded hole in which a set screw is screwed through the insertion hole.

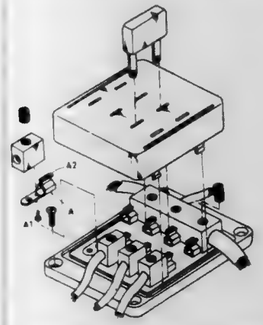
5,328,392
FUSE CLIP ASSEMBLY
Kuang-Ts'an Lin, and Shih-Tzung Liang, both of No. 253, Yeou Herng Street, Taoyuan City, Taiwan
Filed Mar. 2, 1993, Ser. No. 24,958
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—833 **1 Claim**

1. A junction box assembly comprising:

a housing having a base member and a cover member adapted to attach to said base member;

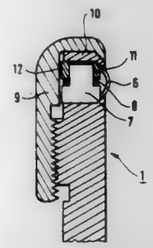
a plurality of retaining members affixed to an upper surface of said base member, each said retaining member comprising a pair of substantially parallel, spaced apart sidewalls extending upwardly from said base member and a rear wall extending upwardly from said base member and connecting said pair of sidewalls;

a plurality of fuse clips mounted in respective retaining members of said base member, each said fuse flip having a pair of clamping portions in opposed relationship to releasably and grippingly receive a prong of a fuse; and,



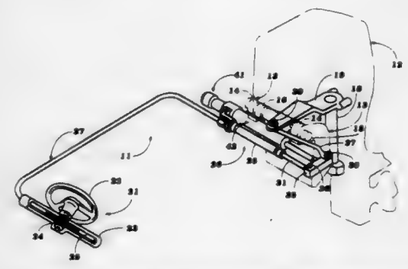
a plurality of fixing blocks mounted to a respective one of said fuse flips, each said fixing block having a first opening for receiving a conductor cable therein, and a second threaded opening for receiving a bolt therein for securing said conductor cable in said fixing block, whereby said first pair of sidewalls of said retaining members limit an elastic deformation of said clamping portions of said fuse clips when said fuse is inserted into said junction box.

5,328,393
ANNULAR ELECTRICAL CONTACT SYSTEM, IN PARTICULAR FOR A CIRCUIT-BREAKER
Michel Perret, Bourgoin-Jallieu, and Renaud David, Villeurbanne, both of France, assignors to GEC Alsthom T & D SA, Paris, France
Filed Mar. 5, 1993, Ser. No. 27,067
Claims priority, application France, Mar. 6, 1992, 92 02725
Int. Cl.[5] H01R *13/187*
U.S. Cl. 439—843 **6 Claims**



1. An electrical contact system, in particular for a circuit-breaker, for establishing electrical contact between the respective ends of two conductive tubes by fitting them together so that the end of the one tube is inserted into the end of the other tube, one of the tubes including a cavity at its end, the cavity having a radial opening facing the other tube over at least a portion of the periphery of the tube, a conductive component being held in said cavity, which component is in part deformable radially relative to the tube, the conductive component coming into contact with the bottom of the cavity, and projecting out from the radial opening in the cavity, in which system the radial opening in the cavity faces the other tube and extends over the entire periphery of the tube, and the conductive component is a clip ring held in said cavity, said clip ring being circular in overall plan shape and including a plurality of circumferentially spaced radial curves extending in alternate radial directions in the plane of said circular clip, with one series of radial curves coming into contact with the bottom of the cavity, and another series of radial curves projecting radially out from the cavity for resilient contact with the periphery of the tube lacking said cavity during insertion of one tube into the other tube.

5,328,394
STEERING SYSTEM FOR MARINE PROPULSION UNIT
Akihiro Onoue, and Masahiro Matsumoto, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Apr. 2, 1993, Ser. No. 42,123
Claims priority, application Japan, Apr. 23, 1992, 4-129391
Int. Cl.[5] B63H *25/02*
U.S. Cl. 440—61 **28 Claims**



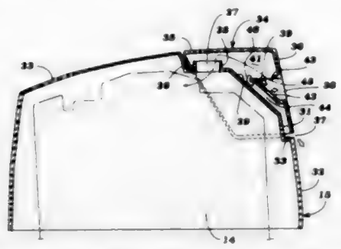
1. A hydraulic steering mechanism for a marine propulsion unit supported for steering movement about an axis and having a steering element, a hydraulic motor operably coupled to said steering element for providing a hydraulic assist for said steering, a remote steering operator for operator actuation, a flexible actuator operably connecting said steering operator to said steering element for steering thereof, a hydraulic control valve for selectively applying fluid pressure to said hydraulic motor, said control valve including a control valve element, actuating means operatively connected at one end to said flexible actuator and at another end to said control valve element for operating said control valve element upon the exertion of a force to said flexible actuator, and means for controlling the movement of said actuating means so that said actuating means only move in the direction of movement of said control valve element.

5,328,395
COWLING STRUCTURE FOR MARINE PROPULSION ENGINE
Hiroshi Oishi, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed May 28, 1993, Ser. No. 69,974
Claims priority, application Japan, Jun. 30, 1992, 4-194714
Int. Cl.[5] B63H *21/24*
U.S. Cl. 440—77 **25 Claims**

1. A cowling arrangement for the power head of an outboard motor for protecting an enclosed internal combustion engine from water while permitting adequate air flow from the atmosphere to the engine for combustion, said cowling including means forming an upwardly facing air outlet duct communicating with the interior of said cowling for supplying air to the engine and surrounded by a surface having a downwardly sloping portion, a further portion of said cowling have a part extending in confronting relation to said air outlet duct and defining with said surrounding surface an air cavity, means defining an air inlet opening communicating said cavity with the atmosphere for atmosphere air flow into said cavity, and means defining a water drain separate from said air inlet open-

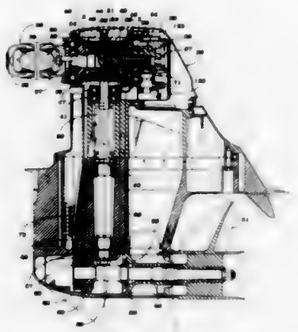
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ing and communicating a lower area of said downwardly sloping portion directly with the atmosphere externally of said



cowling for draining of water from said cavity to the atmosphere and away from said air outlet duct.

5,328,396
POWER TRANSMISSION SYSTEM FOR AN INBOARD/OUTBOARD MOTOR
Kenichi Hayasaka, Hamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Oct. 3, 1991, Ser. No. 770,607
Claims priority, application Japan, Oct. 3, 1990, 2-263713
Int. Cl.[5] B63H *23/06*
U.S. Cl. 440—86 **18 Claims**



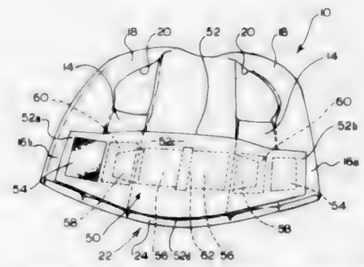
14. A stern drive unit for a marine propulsion comprised of a housing assembly mounted on the stern of an associated watercraft for tilting movement about a generally horizontally extending transverse axis and for steering movement about a generally vertically extending steering axis, an input shaft journalled for rotation about a generally horizontal longitudinal axis in an upper portion of said housing assembly, universal joint means at the forward end of said input shaft for driving said input shaft from a watercraft mounted engine and accommodating the trim and steering movement of said housing assembly, a drive shaft journalled in said housing assembly for rotation about a generally vertically extending axis, propulsion means at the lower portion of said housing assembly for propelling an associated watercraft, transmission means for driving said drive shaft from said input shaft and said propulsion means from said drive shaft, said transmission means including at least a pair of intermeshing gears and a hydraulicly operated clutch, a hydraulic pump driven by said input shaft for circulating hydraulic fluid, and valve means within said housing assembly for selectively communicating the fluid circulated by said pump with said hydraulic clutch for actuating said clutch and with said gears for lubricating said gears.

5,328,397
SURF FIN FIXING SYSTEM
Brian A. Whitty, Sydney, Australia, assignor to Fin Control Systems Pty. Limited, New South Wales, Australia
Filed Mar. 3, 1993, Ser. No. 25,656
Claims priority, application Australia, Mar. 9, 1992, PL6973; Nov. 2, 1992, PL5626
Int. Cl.[5] B63G *41/00*
U.S. Cl. 441—79 **12 Claims**



1. A surf craft including a body with a fixing element embedded therein, the fixing element being of material of greater strength than that of the surf craft body and having a fixing aperture therein, said body having a region near said fixing element, a fin attached to the surf craft with an end surface of the fin abutting against the surface of the body in the region of the fixing element, the fin having a coplanar integrally formed fixing formation extending from said end surface and engaged within the aperture of the fixing element, the fixing element including releasable engagement means for locking the fixing formation within said aperture, said releasable engagement means releasably engaging said fixing formation at a location inside said aperture.

5,328,398
WATER SKI VEST HAVING AN INTEGRAL LUMBAR COMPRESSION BELT
Martin G. Aubrey, 100 McWaine La., Cary, N.C. 27513
Filed Nov. 3, 1993, Ser. No. 145,153
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—106 **8 Claims**



8. A water ski vest with an inner integral compression belt for providing support to a subject wearing the water ski vest comprising:

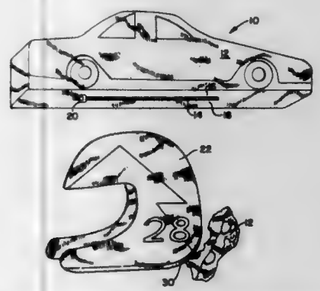
a) a water ski vest having a back, a pair of sides, an openable front, and an exterior and interior surface;

b) an integral compression belt secured to the inside of the water ski vest and including a main section and a pair of fastenable open ends;

c) means for attaching a portion of the central section of the compression belt to the back of the water ski vest such that a portion of the compression belt and particularly the opposed ends remain free of attachment to the water ski vest; and

d) the compression belt being flexible, pliable and elastic substantially throughout such that a substantial portion of the compression belt can be stretched with respect to the water ski vest and secured around the subject wearing the water ski vest.

5,328,399
TOY ALTERABLE BETWEEN TWO DIFFERENT SHAPES
Christopher A. Reynolds, Wilton, Conn., assignor to Environmental Preservation, Inc., Southport, Conn.
Filed Mar. 12, 1993, Ser. No. 30,642
Int. Cl.[5] A63H *33/00;* **A42B** *1/20*
U.S. Cl. 446—27 **10 Claims**



1. A toy transformable from a first shape to a second shape and vice versa, comprising:

a pliable first portion formed to assume a shape of a projectile used by persons engaging in an athletic activity, said first portion having indicia thereon representative of said projectile and defining an internal hollow and an aperture providing access to said internal hollow;

a pliable second portion formed to assume a shape of an article worn on the head of a person who engages in said athletic activity during engagement therein, said second portion being positionable within said internal hollow and being extractable from said internal hollow through said aperture, wherein upon extraction of said second portion from said internal hollow said second portion is manipulable to assume said second shape and wherein said toy is adapted to be worn on the head of a person when in said second shape, wherein said athletic activity is football, said first shape is that of a football and said second shape is that of a football helmet.

5,328,400
DOLL WITH WRAP AROUND FASHIONS
Sidney Bass, Los Angeles, Calif., assignor to Universal Product Innovations, Inc., Carson, Calif.
Filed Jul. 20, 1993, Ser. No. 95,143
Int. Cl.[5] A63H *3/00*
U.S. Cl. 446—98 **20 Claims**



1. The invention which comprises in combination:

a doll having a torso of predetermined height,

first spool means, said spool means being mounted for rotation about an axis;

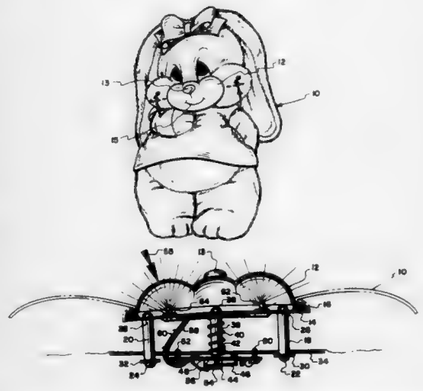
a length of garment material wound about said spool, said material containing at least one section along the length thereof that simulates a garment responsive to being wrapped about a doll torso;

turntable means, having an axis of rotation;

doll mounting means for fixedly coupling said doll in upstanding position on said turntable means for essentially co-axial rotation therewith;

fastener means for attaching an end of said spooled garment material to said doll torso; whereby rotation of said turntable means unspools at least a portion of said spooled material from said spool and winds at least a portion of said material about said doll torso.

5,328,401
BLUSHING TOY
Robert A. DeMars, 23 221 Ladrillo Ave., Woodland Hills, Calif. 91367
Filed Mar. 23, 1992, Ser. No. 856,359
Int. Cl.[5] A63H *3/00*
U.S. Cl. 446—295 **2 Claims**



1. In combination with a hand-holdable childrens toy, said toy having an exterior surface, an appearance altering apparatus giving the appearance of blushing, said appearance altering apparatus comprising:

an electrical light circuit mounted in said toy, said circuit including light means and a battery, said battery to cause activation of said light means, said circuit to cause said light means to slowly dim after said activation;

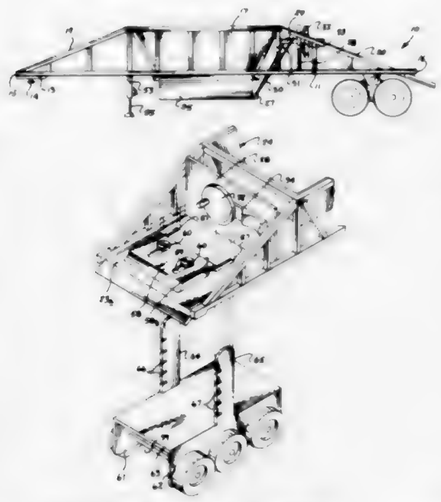
an actuating plate mounted on said exterior surface, said actuating plate to be contacted manually by the child, said actuating plate being connected to said circuit, upon said actuating plate being manually contacted and then released, said light means being activated;

said actuating plate being moveable on said exterior surface, movement of said actuating plate causes said light means to be activated; and

said actuating plate being translucent, said light means being located interiorly of said actuating plate, whereby activation of said light means shines through said translucent actuating plate.

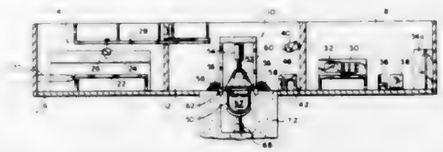
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5,328,402
TOY DUMP TRAILER APPARATUS
Jon D. Hallford, 101 S. 10th St., Lamar, Colo. 81052
Filed Jul. 30, 1993, Ser. No. 99,468
Int. Cl.[5] A63H *17/05*
U.S. Cl. 446—427 6 Claims



1. A toy dump trailer apparatus, comprising,
a trailer assembly having a first end spaced from a second end, with a first base leg and a second base leg coextensive of the trailer from the first end to the second end, and
a mounting plate secured to the first base leg and the second base leg adjacent the first end, with the mounting plate including a mounting boss projecting from the mounting plate, and
a central first leg and a central second leg arranged in a parallel relationship relative to one another spaced above the first base leg and the second base leg respectively, with the central first leg and the central second leg spaced apart a predetermined spacing mounting a hopper between the central first leg, the central second leg, and the first base leg and the second base leg, the hopper including a hopper floor having a first door and a second door, the hopper having a first side wall and a second side wall, wherein the first door is hingedly mounted to the first side wall, the second door hingedly mounted to the second side wall, and
a floor plate fixedly mounted to the first base leg and the second base leg between the hopper and the second end, with the floor plate having an axle mounting plate fixedly secured to the floor plate spaced from the second end, and a winding axle rotatably directed through the axle mounting plate, with the winding axle including a winding wheel positioned in adjacency to the axle mounting plate and fixedly secured to the winding axle, with the first door having a first lug, the second door having a second lug, a first winding cable directed from the winding axle to the first lug, and a second winding cable directed from the winding axle to the second lug permitting winding of the first winding cable and the second winding cable about the winding axle permitting securement of the first door and the second door to the hopper.

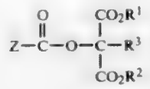
5,328,403
APPARATUS FOR TENDERIZING MEAT
John B. Long, 988 Blvd. of the Arts, No. 212, Sarasota, Fla. 34236
Division of Ser. No. 898,589, Jun. 15, 1992, Pat. No. 5,273,766.
This application Sep. 3, 1993, Ser. No. 115,566
Int. Cl.[5] A22C *9/00*
U.S. Cl. 452—141 13 Claims



1. In an apparatus for tenderizing meat by means of an explosive charge, comprising a liquid and meat holding tank, means for supporting an explosive charge within said tank, and cover means for said tank, the improvement comprising
doubling means for effecting a substantial doubling of a shock wave created by explosion of said explosive charge which passes through the meat and is then reflected to pass through the meat a second time in an opposite direction, said doubling means comprising support means in the form of a shock reflecting wall for supporting said meat located substantially equidistant from the locus of the explosive charge.

5,328,404
METHOD OF X-RAY IMAGING USING IODINATED AROMATIC PROPANEDIOATES
Edward R. Bacon, East Greenbush, N.Y., assignor to Sterling Winthrop Inc., New York, N.Y.
Division of Ser. No. 38,371, Mar. 29, 1993, Pat. No. 5,264,610.
This application Nov. 4, 1993, Ser. No. 148,112
Int. Cl.[5] C07C *229/40*
U.S. Cl. 424—5 6 Claims

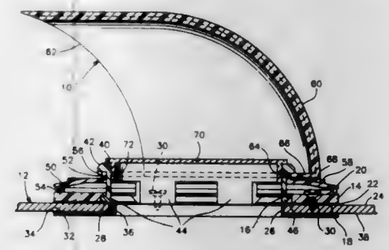
1. A method for medical x-ray diagnostic imaging which comprises administering to the body of a mammal a contrast effective amount of an x-ray contrast composition comprising a compound having the structure



wherein
(Z)—COO is the residue of an iodinated aromatic acid;
R^1 and R^2 are independently alkyl, fluoroalkyl, cycloalkyl, aryl, or aralkyl; and
R^3 is H, alkyl, fluoroalkyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, cyano, sulfonate, carboxamido, sulfonamido, CO_2-alkyl, CO_2-aryl, or CO_2-aralkyl.

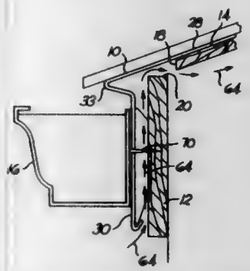
5,328,405
VENTILATOR WITH DECK MOUNT
Frank R. Jarnot, P.O. Box 3494, Lantana, Fla. 33465
Filed Jan. 22, 1993, Ser. No. 7,106
Int. Cl.[5] F24F *7/00*
U.S. Cl. 454—78 7 Claims

3. A vent structure incorporating an annular assembly defining a central opening therethrough and including first and second sides, said assembly being adapted to be secured to a surface having a central opening formed therethrough with said first side at least substantially sealed relative to said surface, said second side defining an inner peripheral, circumferential and radially outwardly opening groove, a hollow scoop member constructed of stiff, but slightly resilient material and defining inlet and outlet portions opening outwardly in relatively angulated directions, said outlet portion defining a generally semiannular inturned flange extending generally 180° about said outlet portion and opening, generally, in the direction in which said inlet portion opens, said annular assembly including a circumferential rib radially outwardly of said groove and at least generally concentric therewith and projecting axially slightly outwardly from said second side, said



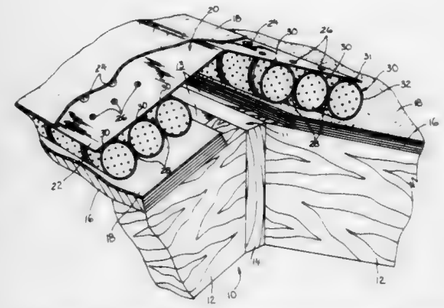
scoop member being displacable, generally in said direction in which said inlet portion opens, relative to said annular assembly and radially of said groove for releasable engagement of said flange in said groove and rotatable support of said scoop member from said annular assembly, the side of said outlet portion opposite said direction in which said inlet portion opens including at least one short tab member removably snap engaged over said rib to a position immediately inward thereof.

5,328,406
FASCIA VENTILATOR AND DRIP EDGE
John S. Morris, Jr., 524 Cass St., Monroe, Mich. 48161, and Hayse Keeling, 24344 Ecorse Rd., Taylor, Mich. 48180
Filed May 18, 1993, Ser. No. 63,089
Int. Cl.[5] F24F *7/02*
U.S. Cl. 454—260 12 Claims



1. A two-piece facia ventilator for a building having a vertical wall structure, an inclined roof structure extending outwardly from the wall structure, and an opening beneath the roof structure and above the vertical wall structure, the ventilator comprising:
an elongated one-piece planar outer panel including an elongated upper panel section for disposition on the inclined roof structure, a planar lower section suited for attachment to the vertical wall structure in a horizontally-spaced position, and a bend connecting the upper panel section to the lower panel section, the lower panel section having a lower edge;
lip structure integrally carried on the lower panel section;
a baffle member having means engageable with the lip structure for retaining the baffle member on the lower panel section between the lower panel section and the vertical wall structure, the baffle member having a pair of spaced baffle walls extending parallel to the lower panel section and providing passage means for directing air flow upwardly from the lower edge of the lower panel section, and including structure between said parallel baffle walls for retaining the lower panel section in a spaced position with respect to the vertical wall;
whereby, air can pass upwardly between the lower panel section and the vertical wall structure toward the opening above the vertical wall structure.

5,328,407
ROOF RIDGE VENT WITH TUBULAR BAFFLES
Gary L. Sells, 16250 Petro Dr., Mishawaka, Ind. 46544
Filed Oct. 12, 1993, Ser. No. 133,847
Int. Cl.[5] F24F *7/02*
U.S. Cl. 454—365 12 Claims



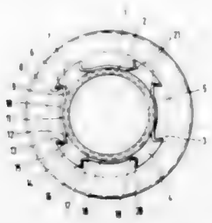
1. A vent for a roof, said vent constituting means for allowing air flow through a vent opening in said roof at its ridge, said vent comprising:
a cover plate overlying said vent opening,
tubular baffle means paralleling said vent opening and positioned between said cover plate and said roof adjacent said vent opening for spacing said cover from said vent opening, and
fasteners extending through said cover plate into said roof to secure said cover plate and said baffle means to said roof ridge.

5,328,408
SHAFT ABSORBER
Franz J. Wolf, Bad Soden-Salmünster; Manfred Thesenvitz, Schlüchtern; Martin Mohr, Brachttal-Udenhain, and Joachim Schneider, Bad Soden-Salmünster, all of Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmünster, Fed. Rep. of Germany
Filed Jun. 30, 1992, Ser. No. 906,590
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1991, 4121746
Int. Cl.[5] F16F *15/12*
U.S. Cl. 464—180 9 Claims

1. A shaft absorber, comprising three concentrically arranged rings including an outer inertia ring, an inner hub ring, and a segmented elastomer ring extending therebetween and including axially extending connecting links connecting the inertia ring with the hub ring, wherein said connecting links have an outer circumferentially extending outer surface and a circumferentially extending inner surface and a pair of sides respectively connecting said inner and outer surfaces, each said side including (1) a radially inwardly extending first side portion which respectively extends from opposite ends of said outer surface in a converging direction towards each other and (2) a radially inwardly extending second side portion respectively intersecting the first side portions and extending radially

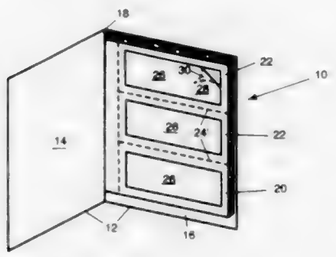
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inwardly in a diverging direction away from each other to intersect said inner surface, said first and second side portions resulting in substantially each connecting link having an hour-glass configuration in axial cross-section, wherein said first and second side portions, in operative positions, are formed without attachment surfaces, substantially each connecting link



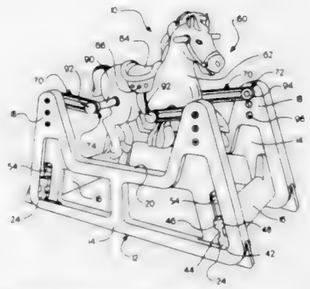
being fixed to an outer surface area of the inner hub by means of at least one of a compound material joint and a positive joint at said inner circumferentially extending surface, and being fixed to the inertia ring at the outer circumferentially extending surface through one of the segmented elastomer ring and a compound material joint and a positive joint.

5,328,409
NOTE CADDY
Steven J. Marquardt, 9153 Sawyer Brown Rd., Nashville, Tenn. 37221
Filed Nov. 1, 1993, Ser. No. 146,691
Int. Cl.[5] B42D *1/00*
U.S. Cl. 462—17 **4 Claims**



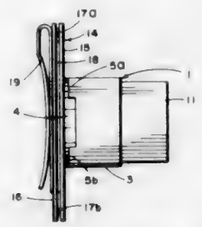
1. A note caddy including:
a. a binder with at least one support flap;
b. multiple carrier sheets;
c. said multiple carrier sheets having multiple edges;
d. said carrier sheets being bound along at least one of their edges and to said support flap to form a spine of the note caddy;
e. each carrier sheet having a first line of perforated scoring running substantially parallel to said spine and adjacent thereto whereby the sheet may be torn along the first line of perforated scoring and removed from the note caddy;
f. at least one second line of perforated scoring running perpendicular to the first line of perforated scoring, said second line of perforated scoring dividing said carrier sheets into two or more sections;
g. note panels;
h. said note panels having a front and back surface;
i. the front surface of each of said note panels constituting a note surface onto which the user may scribe notes relating to a particular topic;
j. the back surface of each of said note panels having an adhesive coating creating an adhesive surface which will adhere the panels to the carrier sheets;
k. a panel adhered to each section; and
l. said carrier sheets treated with means whereby the panels may be removed from the carrier sheets with the adhesive surface in tact so that the panels may be relocated to a transfer page dedicated to the subject matter of the notes taken on each individual panel.

5,328,410
TOY RIDING APPARATUS
James D. Amburgey, Richardson, and Peter C. Hill, Dallas, both of Tex., assignors to Today's Kids, Inc., Boonesville, Ark.
Filed Feb. 5, 1993, Ser. No. 14,373
Int. Cl.[5] A63K *1/00*
U.S. Cl. 472—99 **18 Claims**



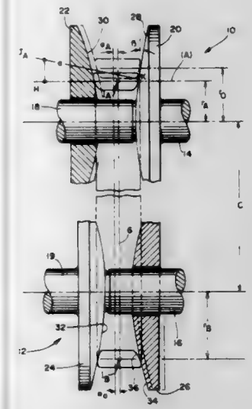
1. A toy riding apparatus, comprising:
a base, said base including a plurality of support posts extending upwardly therefrom;
a rider support device; and
a plurality of elastomeric suspension bands, each of said bands being connected between said rider support device and one of said plurality of support posts such that said rider support device is suspended from said support posts by said bands.

5,328,411
BILLIARD CUE CHALK HOLDER
Robert P. Thornton, II, 220 W. Country Circle Dr., Daytona Beach, Fla. 32124
Filed Nov. 1, 1993, Ser. No. 144,329
Int. Cl.[5] A63D *15/00*
U.S. Cl. 473—36 **8 Claims**



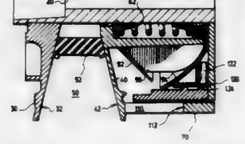
1. A billiard cue chalk holder having a shape of chalk block to be held in said holder; said holder having a bottom wall, a side wall having a predetermined height, and an open top into which a chalk block is to be inserted;
a magnet offixed to said bottom wall whereby said holder may be attached to a metal surface;
an attachment clip secured to a first metal plate, and a second metal plate permanently secured to said first metal plate in a substantially parallel and spaced apart relationship to define a cavity therebetween;
at billiard tool stored within said cavity; said second metal plate abutting said magnet and attaching said attachment clip to said bottom wall of said chalk holder, said attachment clip serving to attach said chalk holder to a persons garment.

5,328,412
APPARATUS AND METHOD FOR GENERATING A VARIABLE PULLEY SHEAVE PROFILE
Metin M. Duram, Elmhurst, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Oct. 21, 1992, Ser. No. 964,422
Int. Cl.[5] F16H *55/56*
U.S. Cl. 474—8 **9 Claims**



1. A method of constructing sheaves for a continuously variable pulley transmission comprising:
a. providing a variable first pulley operatively disposed on a first shaft;
b. providing a variable second pulley operatively disposed on a second shaft parallel to the first shaft;
c. providing a chain belt to interconnect the first and second variable pulleys and to define a center line of the chain, the chain belt has a plurality of crown faced contact blocks that are flexibly interconnected to define articulation points therebetween, the articulation points along the first and second pulleys define pitch-lines, the first pulley has an effective radius defined by the radial distance between the axis of the first shaft and the articulation points along the first pulley, and the second pulley has an effective radius defined by the radial distance between the axis of the second shaft and the articulation points along the second pulley; and
d. providing a drive ratio control means to control the effective radii of the first and second pulleys, wherein each of the first and second variable pulleys have sheaves that include an inner face profile curve constructed according to the following steps:
i. providing a first arc defining an inner face profile of the first variable pulley,
ii. determining the relationship between the axial displacement and the radial displacement of one of the contact blocks corresponding to movement of the contact block resulting from a change in the effective radius of the first variable pulley,
iii. determining the locus of points through which a contact point of the contact block moves as the effective radius of the first pulley is changed and the contact block changes in the radial position and follows the first inner face,
iv. superimposing the determined axial displacement for the locus of points to provide a second locus of points, and
v. providing a series of second arcs with each defined by one of the second locus of points, and providing an envelope of the series of arcs thereby defining a second inner face profile of the second variable pulley so that the center line of the chain remains substantially perpendicular to the axis of the first and second shafts when the pulleys are varied.

5,328,413
DRIVING PULLEY
Jean Robert, Drummondville, Canada, assignor to Powerbloc IBC Canada Inc., Drummondville, Canada
Filed Jun. 28, 1993, Ser. No. 83,362
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—13 **11 Claims**



1. A driving pulley for a variable speed transmission, said driving pulley comprising:
a shaft having two ends;
two coaxial flanges located on said shaft, each flange having an inner conical wall facing the other for providing therebetween a V-shaped groove for a trapezoidal belt exerting substantially a radial force and a tangential force on the inner conical walls upon application of a torque on said shaft and rotation thereof, one of said flanges, hereinafter called "fixed flange", being rigidly attached at one end of said shaft and transmitting substantially the half of the torque, the other flange, hereinafter called "movable flange" being slidably and rotatably mounted on said shaft, said movable flange transmitting substantially the half of the torque;
first biasing means for generating a biasing torque opposed to the corresponding half of the torque;
second biasing means for generating an axial biasing force urging said movable flange away from said fixed flange;
centrifugal means for generating an axial moving force opposed to the axial biasing force and urging said movable flange towards said fixed flange, the axial moving force being a function of the rotation speed of said driving pulley; and
means for limiting sliding and rotating movements of said movable flange within predetermined limits with respect to said shaft and for imposing a specific mechanical behaviour to said movable flange.

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5,328,414

ELECTROMECHANICAL BICYCLE TRANSMISSION

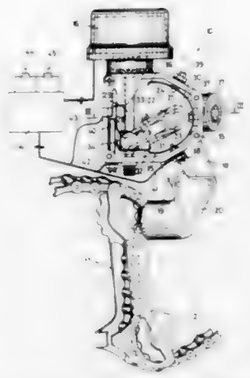
Amedeo Ancarani Restelli, Cernusco Lombardone, Italy, assignor to Societa Italiano Cantene Calibrate Regina S.P.A., Milan, Italy

Filed Nov. 6, 1992, Ser. No. 972,928

Claims priority, application Italy, Nov. 18, 1991, MI 91 A 003068

Int. Cl.[5] F16H *59/00*

U.S. Cl. 474—80 **23 Claims**



1. An electromechanical transmission for bicycles of the type comprising a sprocket change mechanism moving to engage a motion transmission chain opposite a predetermined sprocket of a plurality of coaxial sprockets of different diameters characterized in that it comprises an electric motor controlling through a first rigid mechanism a first element connected through preloaded yielding means to a second moving element of the sprocket change mechanism through another rigid mechanism for movement thereof between end positions corresponding to engagement of the chain with the first and last sprockets of the plurality.

5,328,415

AUTOTENSIONER

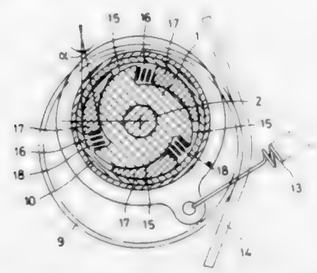
Katsumi Furutani, Iwata; Ken Yamamoto, Shizuoka, and Satoshi Kitano, Hamakita, all of Japan, assignors to NTN Corporation, Osaka, Japan

Filed May 28, 1993, Ser. No. 68,548

Claims priority, application Japan, May 29, 1992, 4-138493; Aug. 28, 1992, 4-060729[U]

Int. Cl.[5] F16H *7/10*

U.S. Cl. 474—112 **7 Claims**



1. An autotensioner comprising a fixed shaft, a pulley support supported on said fixed shaft so as to be pivotable around said fixed shaft, a pulley supported on said pulley support, a tension imparting means for pivoting said pulley support in such a direction as to impart tension to a belt, one of said pulley support and said fixed shaft having a cylindrical portion arranged coaxially with the other, the other being formed with cam surfaces at such a position that wedge-shaped spaces are defined between said cam surfaces and said cylindrical portion, said wedge-shaped spaces being narrower in a direction in which said pulley support pivots to slacken the belt, friction members each mounted in said respective wedge-shaped spaces and having a shape substantially complementary to the shape of said wedge-shaped spaces, and spring members each mounted in said respective wedge-shaped spaces for biasing said friction members into the narrower area of said each wedge-shaped space.

5,328,416

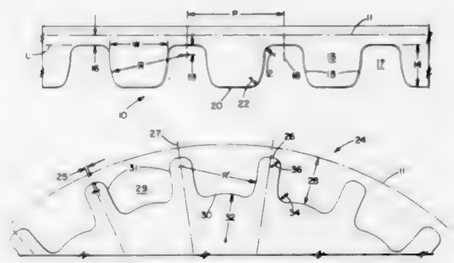
SYNCHRONOUS DRIVE BELT

Michael J. W. Gregg, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 876,992, May 1, 1992, Pat. No. 5,254,049. This application Jul. 19, 1993, Ser. No. 93,849

Int. Cl.[5] F16H *7/02*

U.S. Cl. 474—153 **2 Claims**



1. In combination (A) an endless synchronous drive belt comprised of a resilient elastomer, reinforced with one or more reinforcing members extending along and thereby defining a pitch line, with a succession of identical teeth, each having a tooth depth, uniformly spaced apart by their pitch P and having fore and aft flank surfaces, the space between adjacent teeth defining a land area having a centerline and lying below a land line L and a tooth root radius which inscribes a 90° arc which forms the transition between the land line and a tangent to the flank surface perpendicular to the land line and has its center in said land area, the distance between said land line L and said pitch line defining a pitch line differential, wherein each said flank surface is shaped in longitudinal cross-section as an arc of a circle with a radius R having its center located in said land area no further than said centerline away from its opposed flank and below said land line from a distance equal to said tooth root radius up to one half said tooth depth; and (B) a pulley having a plurality of identical peripheral belt-engaging teeth defining between themselves pulley cavities, each pulley cavity having a fore and an aft flank surface shaped in cross-section as the arc of a circle with a radius R' having its center located within the pulley tooth no further than a radial centerline of said pulley tooth away from the opposed cavity flank and radially inward from the pulley tooth tip, a distance equal to or greater than the belt tooth root radius, wherein R' is equal to or greater than R.

5,328,417

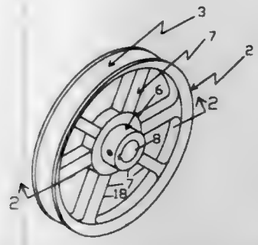
CAST DISK AND METHOD OF MANUFACTURING THE SAME

Roger T. Cline; George B. Day, Jr., both of Maysville, and Wilford R. Shaw, Tollesboro, all of Ky., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 873,775, Apr. 27, 1992, Pat. No. 5,251,682. This application Jul. 14, 1993, Ser. No. 92,247

Int. Cl.[5] F16H *7/00*

U.S. Cl. 474—179 **11 Claims**



1. An improved cast power transmission disk including a peripheral rim shaped to provide at least one motion transmission unit therein, a centrally disposed shaft receiving hub and an intermediately disposed disk body integrally and radially positioned between said rim and said shaft receiving hub comprising:

an integral power transmission disk formed from a pair of faced mold sections to include preselectively chamfered areas and preselectively material reinforced areas, said disk having a mold parting plane along one face of said integral disk body with said body and major portions of said integral hub and rim falling as a major disk portion on one side of said mold parting plane and the remaining minor portion of said hub and said rim integral with said body falling as a minor disk portion on the opposite side of said parting plane; at least said major portion of said cast disk on one side of said mold parting plane being sized and shaped to serve as a first chuckable portion so that said minor disk portion of said cast disk can be readily chucked and machine finished at preselected locations.

5,328,418

STEPLESS HYDROMECHANICAL MECHANISM WITH MULTIPLE POWER-TRANSMISSION PATHS, MORE PARTICULARLY FOR MOTOR VEHICLES

Michael Meyerle, Kiefernweg 9, D-7996 Meckenbeuren, Fed. Rep. of Germany

Continuation of Ser. No. 920,171, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 758,488, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 551,055, Jul. 11, 1990, abandoned, which is a continuation of Ser. No. 481,796, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 277,450, Nov. 28, 1988, abandoned, which is a continuation of Ser. No. 906,826, Sep. 12, 1986, abandoned. This application Oct. 14, 1993, Ser. No. 135,759

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1985, 3533191; Jul. 1, 1989, 3622045

Int. Cl.[5] F16H *47/04*

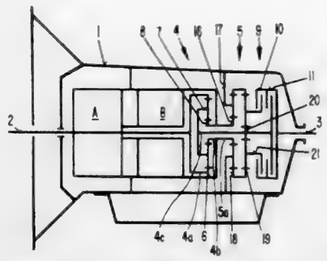
U.S. Cl. 475—81 **25 Claims**

1. A stepless hydromechanical transmission having a power input shaft, a power output shaft and a multiple path power transmission mechanism for transmitting power in at least two hydrostatic-mechanical forward shift ranges from said input shaft to said output shaft, said power transmission mechanism comprising:

a hydrostatic drive unit, said hydrostatic drive unit comprising a variable speed drive section which is drivingly connected to said power input shaft and a driven section having a hydrostatic power outlet shaft;

a compounding summation planetary gear unit having at least five shafts and comprising first and second summation planetary gearing sections that are continuously drivingly interconnected by at least two shafts,

said summation planetary gear unit having a first shaft that is in continuous driving connection with said power input shaft and a second shaft that is in continuous driving connection with said hydrostatic power output shaft,



said hydrostatic power outlet shaft being in continuous driving connection with both of the summation planetary gearing sections,

said mechanism being arranged such that in the initial starting stages of the first of said forward shift ranges said first and second shafts rotate in the same direction, and in a later stage of said first shift range said first and second shafts rotate in opposite directions.

5,328,419

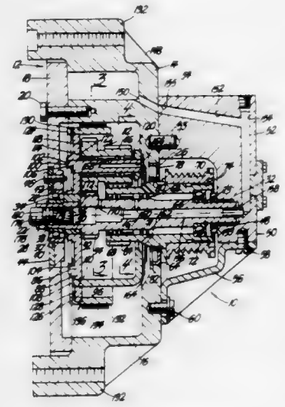
TWO-SPEED ALTERNATOR DRIVE

Dennis M. Motl, Ithaca, and Theodore M. Joslin, Dryden, both of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Apr. 10, 1992, Ser. No. 866,712

Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—324 **13 Claims**



1. A two-speed transmission comprising a transmission housing having a front wall, a rear wall and a central axis passing through the front wall and the rear wall; a first shaft with an axis that is concentric with the central axis, a bearing rotatably supporting a rear portion of the first shaft on the rear wall, a bearing rotatably supporting a front portion of the first shaft on the front wall, a sun gear on the first shaft and connector means on the rear portion of the first shaft for connecting the first

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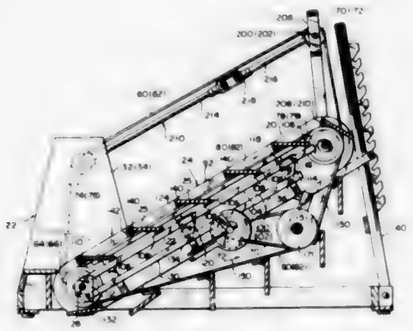
shaft to a torque transmission means; a tubular second shaft with a central bore that is concentric with the central axis of the transmission housing and has the first shaft passing through the central bore, bearing means rotatably supporting the tubular second shaft on the first shaft, a sun gear on the tubular second shaft, drive means on the tubular second shaft for connecting the tubular second shaft to torque transmission means, and a one way clutch mounted between the first shaft and the tubular second shaft and operable to permit relative rotation between the first shaft and the tubular second shaft in one direction and to prevent relative rotation in another direction; a planet gear carrier, with at least one attached compound planet gear support shaft, rotatably supported in the transmission housing for rotation about the central axis; a compound planet rotatably supported by the compound planet gear support shaft and having a first integral planet gear in mesh with the sun gear on the tubular second shaft and a second integral planet gear in mesh with the sun gear on the first shaft; and brake means mounted in the transmission housing operable to prevent rotation between the transmission housing and the planet gear carrier when the brake is engaged and operable to permit rotation of the planet gear carrier when the brake is released.

5,328,420

STAIR STEP EXERCISE MACHINE

Temple W. Allen, P.O. Box 6497, 10-2-2 Peterborg St., St. Thomas, V.I. 00801

Filed Jul. 19, 1993, Ser. No. 93,023
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—52 **10 Claims**



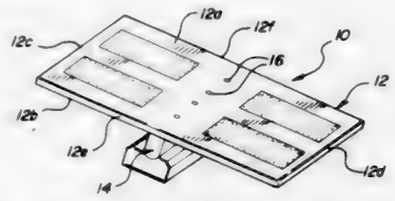
1. A stair step-type exerciser comprising:
a stationary frame having horizontally and vertically extending components;
a stair carriage having a plurality of treads mounted thereon and being movable with respect thereto, the stair carriage being movable with respect to the frame at one end and supported with respect to the frame at the other end, wherein an angle of the carriage with respect to the frame is selected; wherein the treads are mounted on cogged belts trained around sprockets mounted between side plates the cogged belts at one end and engage leveling means at the other end which leveling means keeps the treads horizontal regardless of the angle of the carriage with respect to the frame.

5,328,421

CLOSED KINETIC CHAIN EXERCISE DEVICE AND METHOD

Charles G. Stanalajczo, 2215 Winston, Sterling Heights, Mich. 48310

Filed Oct. 12, 1993, Ser. No. 135,456
Int. Cl.[5] A63B *23/04*
U.S. Cl. 482—34 **7 Claims**



1. A closed kinetic chain exerciser device comprising:
a platform having an upper surface and a lower surface;
a pivot plate support having a length substantially equal to the distance between the front and rear edges of said platform and including a semi-circular recess therein for supporting said distal end of said pivot plate during opposite tilting movement of said platform;
a cross-member on said pivot plate support and an opening in said pivot plate for receiving said cross-member for preventing fore and aft movement of said platform with respect to said pivot plate support for preventing separation therebetween along the length thereof during tilting movement of said platform;
a pivot plate connected to said lower surface;
first and second friction surfaces on said upper surface having a coefficient of friction greater than that of said upper surface; said first friction surface located on said upper surface solely on one side of said pivot plate; said second friction surface located on said upper surface solely on a side of said pivot plate opposite to said one side; said first and second friction surfaces having dimensions including a side-to-side length and a front-to-rear width that will frictionally engage the feet of a user positioned at stabilized locations on opposite sides of said pivot plate; said dimensions extending throughout substantially the full planar extend of said upper surface whereby said stabilized locations can be varied to produce a closed kinetic chain exercising of one of a plurality of selected lower extremity joints.

5,328,422

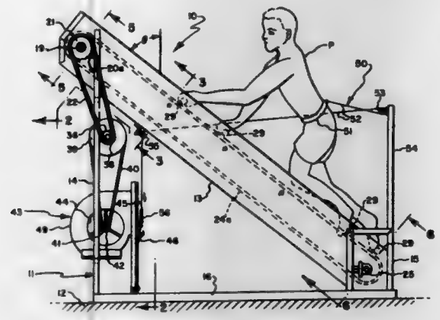
LADDER-CLIMBING EXERCISE DEVICE

Steven M. Nichols, 6664 Boston State Rd., Hamburg, N.Y. 14075

Filed Jul. 30, 1993, Ser. No. 100,628
Int. Cl.[5] A63B *23/06*
U.S. Cl. 482—52 **10 Claims**

1. An exercise device to enable a person to simulate the climbing of a ladder by presentment of an endless series of rungs while remaining in a substantially fixed spatial position, comprising:
a frame;
a pair of transversely-spaced endless members journalled on said frame, said members having parallel flight portions;
a plurality of rungs having their opposite marginal end portions mounted on said respective members at longitudinally-spaced locations therealong;
resistance means for providing a variable resistance to free movement of said members; and

control means including a cord attached to said person and operatively arranged to vary the resistance provided by



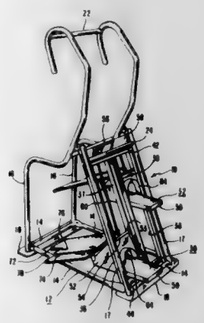
said resistance means as a function of the position of a person relative to said flight portions.

5,328,423

UNDERWATER STAIR CLIMBING EXERCISE APPARATUS

Shalom Y. Abboudi, 126 N. 9th Ave., Highland Park, N.J. 08904, and Robert Adley, 18 Mendingwall Cir., Madison, Conn. 06443

Filed Aug. 21, 1992, Ser. No. 934,007
Int. Cl.[5] A63B *21/008, 22/04*
U.S. Cl. 482—53 **7 Claims**



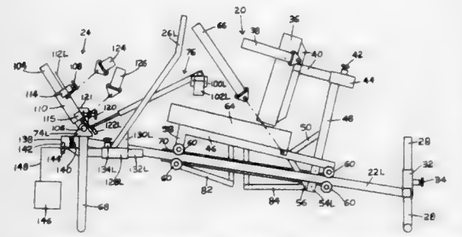
1. An exercise stair-like device for use within a body of water comprising two parallel adjacent tracks inclined from the vertical, the two tracks having a lower end and an upper end with the lower end of the parallel tracks being intended to rest on the bottom of the body of water and the upper end of the parallel tracks extending above the bottom, two steps and guide means one step per track, said steps being reciprocally movable along adjacent paths defined by said tracks, means interconnecting said two steps, upon movement of one of said steps downwardly in response to a force exerted thereon by a user of the device, the other of said steps is moved upwardly, and a flap means mounted on each of said steps and extending laterally therefrom, each of said flap means having a surface disposed generally perpendicular to the direction of movements of said steps, whereby in use of said device within a body of water, the water provides resistance to movements of said flaps along said direction and a corresponding resistance to movements of said steps along said direction.

5,328,424

UPPER AND LOWER BODY EXERCISER THAT CAN BE USED BY PEOPLE WITH LOWER BODY PARALYSIS

Bruce C. Greco, 6187 Paseo Rio Verde, Anaheim, Calif. 92807

Filed Mar. 19, 1993, Ser. No. 33,813
Int. Cl.[5] A63B *69/06*
U.S. Cl. 482—73 **12 Claims**



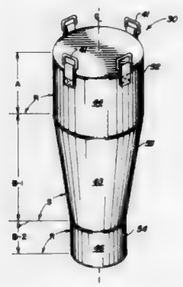
1. A method of exercise for a human comprising the steps of:
(a) producing an arm motion in which the distance between the hands and chest of the human increases and decreases,
(b) producing a leg motion in which the distance between the ankles and the hips of the human increases and decreases,
(c) providing a means for connecting said arm motion to said leg motion so that said arm motion causes said leg motion,
(d) providing a means for resisting said arm motion and said leg motion, and
(e) providing an exercise device with a means for holding the feet of the human so that contraction of the gastrocnemius muscle at one phase of the exercise and contraction of the tibialis anterior muscle at another phase of the exercise contributes to overcoming said means for resisting.

5,328,425

MARTIAL ARTS STRIKE AND KICK BAG

Mark H. Knighton, 715 E. 3rd St., Mesa, Ariz. 85203, and Mark M. Nuetzman, 1737 N. Old Colony, Mesa, Ariz. 85201

Filed Sep. 30, 1991, Ser. No. 768,027
Int. Cl.[5] A63B *69/20, 69/24*
U.S. Cl. 482—87 **2 Claims**



1. A martial arts training bag suitable for striking by a person practicing a martial art, said bag comprising:
(a) a first upper, generally cylindrical section having a top surface and a bottom edge, said first upper section being generally representative of the head and shoulder region of an opponent's body;
(b) a second section coupled to the bottom edge of said first section in a non-abrupt transition, said second section having a generally conical surface configuration terminating at a lower edge, said second section being axially

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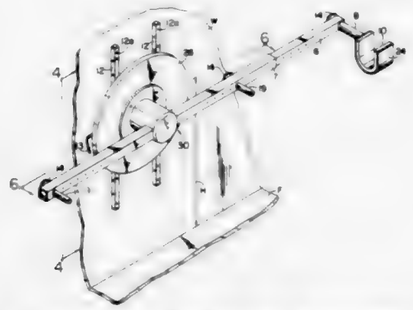
aligned with said first section, said second section tapering downwardly and inwardly at an angle of approximately 30° with respect to the axis of the bag and being generally representative of the torso region of an opponent whereby striking blows to said second section will generally be imparted at 90° with respect to the surface of the section;

(c) suspension means coupled to said bag for suspending the bag in a position to be struck;

(d) said second section having an axial length approximately at least one and one-half that of said first section; and

(e) a third generally cylindrical section axially aligned with said first and second sections and being coupled to the lower edge of said second section in a non-abrupt transition, said third section being generally representative of the hip-to-knee region of an opponent, said third section having an axial length less than that of said first section.

5,328,426
LEG STRETCHER
Keith Vendette, 147 Jessica Dr., East Hartford, Conn. 06118
Filed Aug. 20, 1992, Ser. No. 932,751
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—91 **4 Claims**



1. A device for stretching one's leg, said device comprising an elongated beam, an ankle retaining cuff adjacent one end of said beam, means pivotably supporting said beam for arcuate movement of said cuff in a vertical plane, at least one hand grip on said beam, said means pivotably supporting said beam including a hub assembly adjustably mounting said hub assembly to a wall adapted for providing a range of heights in order to accommodate users of various leg lengths, said beam having a second end opposite said one end, said second end provided opposite said one end relative said pivot axis, said at least one hand grip being provided on said second end and a means provided on said elongated beam between said hub assembly and said one end, for accepting a second hand grip.

5,328,427
SKATING/SKIING SIMULATOR WITH ERGOMETRIC INPUT-RESPONSIVE RESISTANCE
Robert H. Sleamaker, P.O. Box 1064, Williston, Vt. 05495
Filed Nov. 15, 1993, Ser. No. 151,861
Int. Cl.[5] A63B *69/18, 22/00*
U.S. Cl. 482—71 **20 Claims**

1. A skating/skiing simulator with ergometric variable input-responsive resistance comprising:

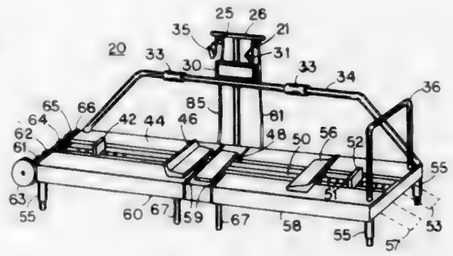
a monorail mounted horizontally and supported in a middle portion by middle supports and at each of two ends of the monorail by telescoping end supports;

a pair of foot pads each attached atop a roller carriage with rollers rolling along the monorail;

a rotatable shaft attached to one of the end supports perpendicular to the monorail, wherein an ergometric input-responsive variable resistance means is attached to the rotatable shaft;

a first cable wound around the rotatable shaft extends from the rotatable shaft over a pulley at the opposite end support and back to the foot pad adjacent to the rotatable shaft;

a second cable wound around the rotatable shaft extends from the rotatable shaft to the other foot pad;

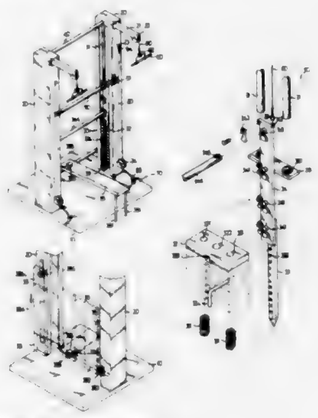


wherein both cables are wound around spring-loaded retractable one-way clutch drivers around the rotating shaft so that the cables rewind after being pulled;

a detachable front hand rail with sliding hand grips mounted along a front side of the monorail;

a performance monitor mounted on the front hand rail which performance monitor indicates user work output information sensed, interpreted, and displayed by an electronic microprocessor.

5,328,428
MULTI-PURPOSE EXERCISER
Shih-Pin Huang, 4th Fl., No. 9, Lane 228, An Kang Rd., Taipei, Taiwan
Filed Jun. 2, 1993, Ser. No. 70,661
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—98 **16 Claims**



1. An exerciser comprising:

a weighted base (**10**);

a pair of spaced vertical beams (**20**);

a resistance assembly (**30**) mounted in each said vertical beam (**20**); and

a bench means comprising:

a supporting bar having a first end pivoted to one of said vertical beams and a second end, a bracket (**353**) being mounted to the other vertical beam (**20**) to support said second end of said supporting bar when said bench means is in use; and

a bench (**35**) having first and second ends, a leg means (**351**) being pivotally connected to said first end of said bench, a socket (**356**) being mounted to said second end of said bench (**35**) to receive and be slidable along said supporting bar (**352**), and a pivotal block (**355**) mounted between said bench (**35**) and said socket (**356**) to allow a pivotal movement therebetween.

6. An exerciser comprising:

a weighted base (**10**);

a pair of spaced vertical beams (**20**);

a vertical plate (**34**) mounted in each said vertical beam (**20**) with an insert rod (**33**) connected to a lower end thereof, said insert rod (**33**) having a plurality of vertically spaced holes (**332**) therein;

two spaced vertical rods (**31**) extending in each said vertical beam (**20**), each said vertical rod (**31**) having a spring (**311**) mounted to a lower end thereof;

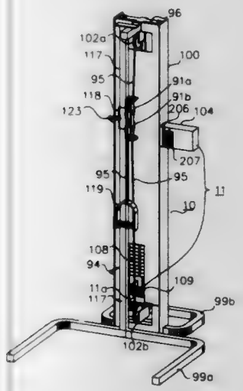
a plurality of weights (**32**) mounted above said springs (**311**), each said weight (**32**) having a central through hole (**322**) through which said insert rod (**33**) passes, two side through holes (**321**) through which said vertical rods (**31**) pass, and an insert hole (**323**) formed in a middle thereof, a pin (**324**) being inserted through one of said insert holes (**323**) to engage with one of the associated aligned holes (**332**) in said insert rod (**33**);

said plate having a front side, said front side of said plate having a plurality of pegs (**341**) spaced in a vertical direction;

a lifting bar (**344**) having two ends and being removably mounted to two horizontally aligned said pegs (**341**) respectively provided on said plates (**34**) in said vertical beams (**20**); and

means for releasably mounting said two ends of said lifting bar to said pegs (**341**) of said plates (**34**).

5,328,429
ASYMMETRIC FORCE APPLICATOR ATTACHMENT FOR WEIGHT STACK TYPE EXERCISE MACHINES
Richard J. Potash; Robert L. Potash, both of Dedham; Wojciech J. Krawiec, Waltham, and Stephen K. Burns, Durham, all of Mass., assignors to Computer Sports Medicine, Inc., Waltham, Mass.
Filed May 20, 1993, Ser. No. 65,589
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—99 **18 Claims**



18. In a weight stack type exercise machine having a weight stack and lifting means for manually raising and lowering the stack, the improvement comprising:

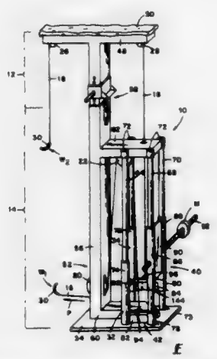
a drive motor;

eccentric force control means including said motor coupled to said lifting means for subjecting said lifting means to a force, in addition of the force exerted on said lifting means by said weight stack, which varies in accordance with the torque generated by said motor;

sensing means or determining the direction of movement of said weights tack; and

a microcontroller coupled to said sensing means and said motor for varying the torque generated by said motor in accordance with an eccentric force input signal and the output of said sensing means, to cause said eccentric force control means to subject said lifting means to a predetermined force, corresponding to said eccentric force input signal, when the stack is moving down, said predetermined force being in addition to the force exerted on said ifting means by said weight stack.

5,328,430
MULTIPLE STATION WEIGHT SYSTEM
Larry W. Vittone, and Suzanne R. Vittone, both of Rte. 2, Box 23, Ollis Rd., Oliver Springs, Tenn. 37840
Filed Sep. 24, 1992, Ser. No. 950,186
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—102 **13 Claims**



1. An exercise machine which comprises a frame, resistance means connected to said frame including weight means resistably movable along a resistance path in response to application of a force thereto, first user-applied force means connected to said frame and positioned for enabling a user to engage and apply a first force to said resistance means by moving said first force means a desired distance along a first exercise path to provide resisted movement of said weight means along said resistance path for a distance which corresponds substantially to the distance that the first force means is moved along the first exercise path, second user-applied force means connected to said frame for enabling a user to engage and apply a second force to said resistance means by moving said second force means along a second exercise path to provide resisted movement of said weight means along said resistance path for a distance which corresponds substantially to the distance that the second force means is moved along the second exercise path, wherein said first and second user-applied force means are independently selectably engageable with said resistance means so that either may be employed by the user to engage and apply a force to move said weight means along said resistance path with the other of said first or second user-applied force means remaining substantially at rest and disengaged from said resistance means.

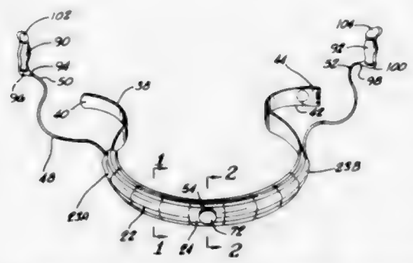
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5,328,431
EXERCISE BAR
Donald E. Winslow, 7846 Pine Trace Dr., Sarasota, Fla. 34243
Filed Aug. 5, 1993, Ser. No. 102,266
Int. Cl.[5] A63B *21/075*
U.S. Cl. 482—106 3 Claims



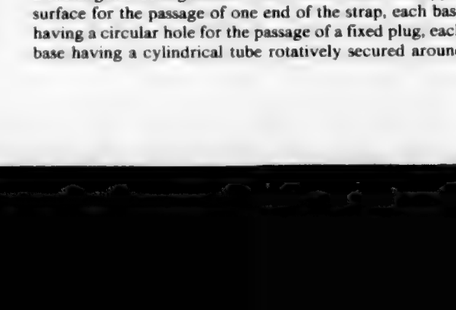
1. An exercise bar, including:
a cylindrical center piece including threads at the ends thereof;
cylindrical left and right end pieces, said end pieces each including threads at both ends thereof for selective engagement with said center piece;
said end pieces each including an external recessed handgrip located off center on each end piece, whereby reversing said end pieces relative to said center piece changes the distance between said handgrips; and
end caps removably threaded to the outer ends of said end pieces.

5,328,432
RECIPROCATING VARIABLE ISOTONIC RESISTANCE UPPER EXTREMITY AND UPPER TORSO EXERCISER
Ned Gvoich, Beamsville, Canada, assignor to Kordun, Ltd., Studio City, Calif.
Filed Oct. 18, 1993, Ser. No. 138,796
Int. Cl.[5] A63B *21/018*
U.S. Cl. 482—118 5 Claims



1. A reciprocating variable isotonic resistance upper extremity and upper torso exerciser comprising:
a plurality of removable and flexible housings having a channel and a bore interiorly said housing being slidingly mounted on a waist encircling belt; a means for buckling said belt;
a flexible inelastic rope having a length and right and left ends;
a plurality of guide tubes mounted in said bores of said housings, said members slidably retaining said rope, leaving said right and left ends extending therefrom in the anterior direction;
a resistance means being mounted in one of said bores of one of said housing, which contacts and slidable rope to impart a resistance thereon, further including: notched guide means having a threaded orifice in a outward facing wall thereof, a threaded thumb screw engaging therein, a U-shaped metal shoe having flanges at its left and right ends whereby said shoe is docked in a lumen of said notched guide with one of said flanges interlocking with one of said notches of said guide means to retain said shoe in place during use, whereby a turning of said crew adjust the friction load bom on said rope; and
handles attached to a left and a right end of said rope, whereby, during use, a user may reciprocally pull said left and right handles against a resistance provided by said means for providing a resistance.

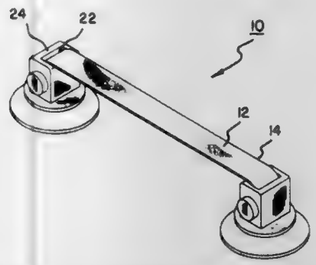
5,328,433
PROGRESSIVE ABDOMINAL EXERCISE DEVICE
Jerald A. Berman, 20 Jones Rd., Warwick, N.Y. 10990
Filed Jul. 29, 1993, Ser. No. 98,773
Int. Cl.[5] A63B *21/02, 21/04*
U.S. Cl. 482—122 5 Claims



5. An exercise apparatus for effecting adjustable force and muscle contraction isometric exercises, said apparatus comprising an elongated assembly having opposite end portions and intermediate length portion disposed between said end portions, one of said end portions including first anchor means for anchoring to a first movable body part of a user and said second end portion including second anchor means adapted to be anchored stationary relative to a second body part of the user, said intermediate length portion including spring means connecting said end portions offering yieldable resistance to increases in the spacial relation of said end portions, and adjustment means operable in a first mode of adjustment to simultaneously adjust the effective static length of said intermediate length portion and the force required to increase the effective length thereof and further operable in a second mode of operation thereof to adjust the force required to increase the effective length of said intermediate length portion independent of adjustment of the static length thereof.

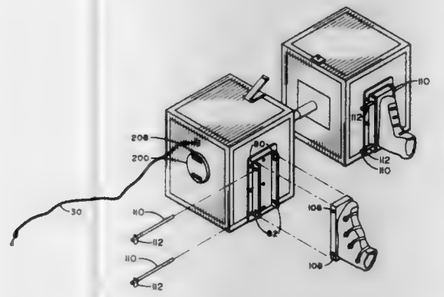
5,328,434
APPARATUS TO AID IN PERFORMING SIT-UPS
Kevin Carroll, P.O. Box 531390, Birmingham, Ala. 35253-1390
Filed Oct. 18, 1993, Ser. No. 137,407
Int. Cl.[5] A63B *26/00*
U.S. Cl. 482—140 5 Claims

1. A new and improved apparatus as an aid while performing bent knee sit-ups, comprising, in combination:
a strap of flexible material adapted to extend and be positioned over the ankles of a person doing bent knee sit-ups, when in a deployed orientation, but adapted to be rolled up when in a storage orientation;
a pair of assemblies, each assembly having a hollow base in a rectangular configuration with a slot within the upper surface for the passage of one end of the strap, each base having a circular hole for the passage of a fixed plug, each base having a cylindrical tube rotatively secured around the plug with a coil spring secured at one end of the plug and secured at the other end to the interior of the tube, and with one end of the strap secured to the exterior surface of the tube wherein the ends of the strap may be coiled about the tube when the coil spring is released and the assemblies are in close proximity to each other when in a storage



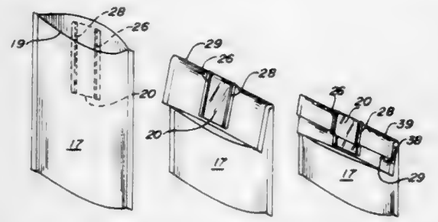
orientation, but wherein the assemblies may be spread apart to extend the strap to the deployed orientation with the springs coiled in a tension state; and
suction cups secured to the faces of the bases opposite from the slots to secure the bases in a fixed position and the coil springs in tension with the strap extended for operation and use.

5,328,435
STOMACH MUSCLE BUILDER
Jesse L. Ricks, 322 54th St., Newport News, Va. 23607
Filed Nov. 29, 1993, Ser. No. 158,428
Int. Cl.[5] A63B *23/00*
U.S. Cl. 482—140 11 Claims



1. An apparatus to assist a user in building stomach muscles by performing situps on a horizontal surface with said apparatus, said apparatus comprising:
(a) first and second anchoring means, each of said anchoring means having a front surface, a top surface, a bottom surface, an adjacent side surface, and an outer side surface disposed opposite said adjacent side surface;
(b) spacing means to position said first and second anchoring means at a selected distance apart; and
(c) attaching means disposed on the front surface of each of said anchoring means, said attaching means for releasably attaching first and second feet of the user to the outer working surface of said first and second anchoring means, respectively, to hold said first and second feet of said user relatively immobile, and to hold said first and second feet in a selected foot position which is selected from a first position wherein said first and second feet are disposed in a substantially horizontal plane, and from a second position wherein said first and second feet are disposed in a substantially vertical plane; said attaching means comprising first and second vertical channel shaped members mounted to said front surfaces of said first and second anchoring means, respectively, said vertical channel shaped members having vertical side walls; and first and second shoes having, respectively, first and second upper portion attached to first and second lower slide portions, said slide portions being releasably engageable with said vertical side walls to position said feet in the selected foot position.

5,328,436
DEADFOLD RECLOSURE STICKER METHOD
Brian D. Larsen, and Lloyd Tinklenberg, both of Worthington, Minn., assignors to Bedford Industries, Inc., Worthington, Minn.
Division of Ser. No. 789,980, Nov. 12, 1991, Pat. No. 5,215,797.
This application Sep. 4, 1992, Ser. No. 941,158
Int. Cl.[5] B31B *1/84*
U.S. Cl. 493—213 4 Claims



1. The method of forming a reclosable open mouth of a flexible bag, comprising:
(a) providing an article comprising a flexible backing liner having a low adhesion surface and a flexible deadfold reclosure sticker having a pressure-sensitive adhesive layer forming a base surface releasably adhered to said low adhesion surface and having an opposite surface formed by an outer layer structure including printed advertising material, said deadfold reclosure sticker comprising a laminate of pliable layers having a total thickness less than 7 mils and at least two deadfold wires having a thickness at least twice as great as said laminate, said wires being in spaced parallel alignment and permanently embedded along their length in said laminate by a non-tacky hot-melt bonding adhesive with the ends of said wires exposed to view, said flexible backing liner having a structural feature for easy removal of it, said article having a first dimension parallel to said wires and a second dimension transverse to said wires, said first dimension being greater than said second dimension, said first dimension being at least 5 cm and said second dimension being ah least 3 cm,
(b) removing the flexible backing liner from said article to expose the pressure-sensitive adhesive surface thereof,
(c) flattening the mouth of said bag to place opposing side walls of said mouth in substantial contact, and
(d) applying hand pressure on said deadfold reclosure sticker to adhesively fix it by its pressure-sensitive adhesive surface on a side wall surface of said bag at a location bordering the mouth of said bag and with the deadfold wires of said sticker extending perpendicular to the mouth of said bag.

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PAPER WEB FOLDER WITH LATERALLY SHIFTABLE FORMERS

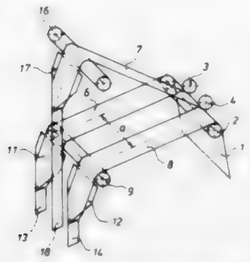
Edgar Mayländer, Estenfeld; Günther O. Eckert, and Burkard O. Herbert, both of Würzburg, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Feb. 11, 1993, Ser. No. 16,271

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204254

Int. Cl.[5] **B65H** *45/28, 45/22;* **B41F** *13/58*

U.S. Cl. 493—357 **7 Claims**



1. A paper web folding assembly usable to longitudinally fold a paper web into a plurality of partial paper web width ribbons, said paper web folding assembly comprising:

means for receiving a full width paper web moving in a direction of travel from an impression cylinder;

means for slitting said full width paper web longitudinally in said direction of travel selectively into two or three equal partial paper width webs;

first and second paper web formers and folding rollers positioned on a first level and adapted to receive two of said partial paper width webs;

means supporting said first and second paper web formers and folding rollers for concurrent shifting of said first and second paper web formers and folding rollers laterally toward and away from a centerline of said direction of travel of said full width paper web in accordance with the number of partial paper width webs into which the full width paper web is selectively slit; and

a third paper web former and folding rollers positioned on a second level to receive a third one of said partial paper width webs when said full width paper web is selectively slit into three equal partial paper width webs.

5,328,438

SYSTEM AND METHOD FOR MANUFACTURING SEALED PACKAGES

H. W. Crowley, Newton, Mass., assignor to Roll Systems, Inc., Burlington, Mass.

Division of Ser. No. 702,829, May 20, 1991, Pat. No. 5,213,560. This application Apr. 8, 1993, Ser. No. 44,972

Int. Cl.[5] **B31B** *1/24, 1/62*

U.S. Cl. 493—187 **10 Claims**

1. A method for constructing one-piece mailers comprising:

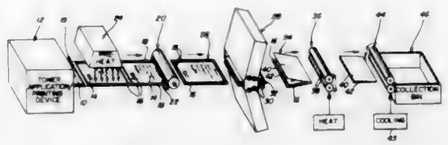
applying printing toner to at least one edge of a face of a substantially rectangular printable sheet;

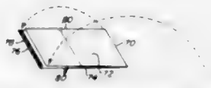
softening the toner so that it can adhere to another surface of the sheet;

folding the sheet so that an edge of the sheet opposite the edge having toner thereon is brought into substantial proximity with the edge having toner thereon, the edge having toner extending further than the opposing edge in a folded orientation so as to form a first folded sheet;

folding the first folded sheet along a line substantially parallel to the edge having toner so that the edge having toner is brought into overlapping alignment with an opposing parallel edge of the first folded sheet so as to form a second folded sheet having four folded sections therein; and

sealing the toner so that the edge having toner is sealed to the opposing overlapping edge to form a sealed package, wherein the sealing includes heating the toner to soften





the toner and applying pressure to the edge having toner, and the areas of the sheet remote from the edge having toner and from the opposing parallel edge being substantially free of heat; and

cooling the opposing parallel edge so that the edge having toner adheres to the opposing parallel edge.

5,328,439

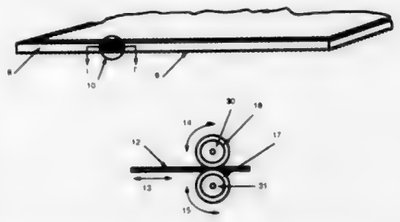
SAFETY FRINGE FOR PAPER

Robert M. Goldberg, 120 Orleans La., Jericho, N.Y. 11753

Filed Jan. 14, 1993, Ser. No. 4,296

Int. Cl.[5] **B31D** *1/00*

U.S. Cl. 493—467 **12 Claims**



12. A method for treating the edge of paper products to reduce the possibility of such products tearing the skin and injuring people, comprising the steps of:

a) moving the paper past a treatment position, and

b) at said treatment position, treating the edge of the paper to weaken the structural strength thereof along the edge of the paper as it passes by said position,

whereby, the edge of the paper so treated does not have the mechanical strength to support the sharp edge of the paper, and, so weakened, it is less likely to pierce or cut the skin of a person coming into contact with the paper.

5,328,440

CENTRIFUGE BUCKET AND METHOD OF USE

Hung-Lung Chen, Highlands Ranch; Hiemi K. Haines, Englewood, and Sidney R. Smith, Lakewood, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 817,566, Jan. 7, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,686

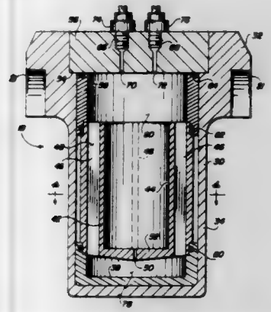
Int. Cl.[5] **B04B** *7/08, 11/00*

U.S. Cl. 494—10 **16 Claims**

1. In a centrifuge having a rotary shaft, bucket support means connected to the shaft and a plurality of buckets mounted on the support means so as to be substantially perpendicular to the shaft during rotation thereof in a centrifuging operation, each bucket including an inner end and an outer end, the inner end being closer to the rotary shaft during rotation thereof than the outer end, the improvement comprising:

first and second liquid collection chambers in each bucket, the first chamber being adjacent the inner end of the bucket and the second chamber being adjacent the outer end of the bucket;

sample core support means between the first and second collection chambers, the interior of the sample core support means being in fluid communication with the collection chambers; and



a liquid passageway, separate from the interior of the sample core support means, connecting the first and second collection chambers;

whereby liquid expelled from a sample core in a centrifuge operation by a fluid of greater specific gravity than that of the expelled liquid will flow through said liquid passageway and collect in the first chamber, and liquid expelled form the sample core by a fluid of lesser specific gravity than that of the expelled liquid will collect in the second chamber.

5,328,441

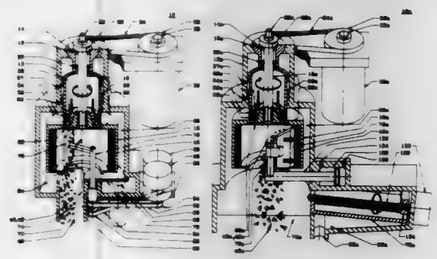
IMPERFORATE BOWL CENTRIFUGAL SEPARATOR WITH SOLIDS GATE

Robert B. Carr, Dedham, Mass., assignor to Carr Engineering Associates, Inc., Easton, Mass.

Continuation of Ser. No. 803,475, Dec. 4, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 95,034

Int. Cl.[5] **B04B** *11/08, 9/12*

U.S. Cl. 494—58 **5 Claims**



1. An imperforate centrifugal separator for separating a feed material into centrate and solids, comprising:

an imperforate separator bowl having an inlet for the feed material and an outlet for the centrate and solids;

a stationary housing for rotatably mounting said bowl, said housing having a chamber surrounding said bowl;

a discharge port in said housing for allowing solids that are transferred from said bowl to said chamber to exit from said housing;

said centrate being transferred from said bowl to said chamber through said outlet;

means for transferring said solids from said bowl to said discharge port through said outlet;

means for removing said centrate transferred from said outlet from said chamber; and

a gate mechanism mounted to said housing having a closed position for closing said discharge port during removal of said centrate from said chamber and having an open position for opening said discharge port after substantially all of said centrate has been removed from said chamber to allow removal of said solids.

5,328,442

SYSTEM AND METHOD FOR STIMULATING A HEART HAVING UNDERGONE CARDIAC MYOPLASTY USING A SINGLE-CHAMBER PACEMAKER

Paul A. Levine, Santa Clarita, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 20, 1992, Ser. No. 979,502

Int. Cl.[5] **A61N** *1/36*

U.S. Cl. 600—17 **21 Claims**



1. A stimulation system for stimulating translocated muscle tissue in a patient having cardiac myoplasty, comprising:

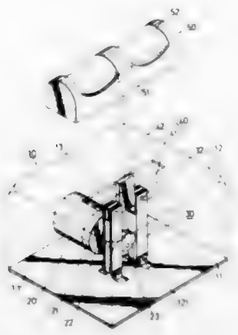
an implantable pulse generator having means for sensing cardiac signals and pulse generating means for synchronously triggering a stimulus in response thereto, the implantable pulse generator having a bipolar output channel with first and second output terminals, the sensing means being coupled to the first and second output terminals so that cardiac signals are sensed therebetween, the pulse generating means being coupled to the first and second output terminals so that the first and second output terminals act as a cathode and an anode, respectively; and

delivery means having a first distal electrode for contact with a first tissue location and a second distal electrode for contact with a second, widely-spaced, tissue location, the first and second distal electrode in electrical contact with the first and second output terminals, respectively, for sensing cardiac signals at the first tissue location and delivering the stimulus generated by the pulse generator to the second, widely-spaced, tissue location, the first tissue location including translocated muscle tissue, the second, widely-spaced, tissue location including ventricular tissue;

whereby the delivery means enables the implantable pulse generator to sense cardiac signals originating in the ventricles and to synchronously trigger the translocated muscle tissue, at the widely-spaced tissue location, to contract.

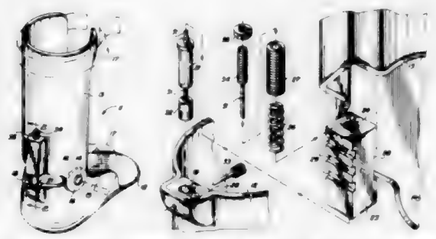
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5,328,443
MASSAGE APPARATUS
Wen-Pin Lee, 6F, No. 361, Min-Chuan Rd., Taichung City, Taiwan
Filed Jul. 8, 1992, Ser. No. 910,645
Int. Cl.[5] A61H *7/00*
U.S. Cl. 601—92 **3 Claims**



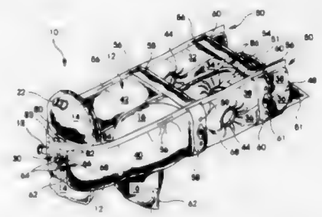
1. A massage apparatus, comprising:
a casing having a bottom and a top with an elongated opening;
an elongated support means for supporting a body part to be massaged which extends movably above said casing and is aligned with said elongated opening of said casing, said elongated support means having a concave face for providing a continuous massaging effect on a section of the body part positioned thereon;
a pair of spaced upright rods pivotally mounted on said bottom of said casing;
a substantially inverted T-shaped frame having two lateral arms pivoted on upper ends of said upright rods and an intermediate arm upwardly extending from said two lateral arms and projecting through said elongated opening to connect with said elongated support means, said T-shaped frame in cooperation with said upright rods providing a wavy traveling path of said elongated support means; and
a driving unit provided in said casing and having means for moving said upright rods so as to swing to and fro about said pivot points within a predetermined angle in said casing.

5,328,444
ORTHOTIC DEVICE FOR LIMITING LIMB MOTION AT A JOINT
Stacey A. Whiteside, 6810 S. Carney Ave., Tempe, Ariz. 85283
Filed Feb. 11, 1993, Ser. No. 16,306
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—16 **8 Claims**



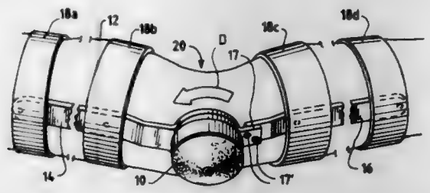
1. An orthotic device for a limb joint, said device comprising first and second members adapted, respectively, to be attached to portions of the anatomy on opposite sides of the joint, a pivotal connection between said first and second members, said pivotal connection having an axis substantially corresponding to an axis of motion of the joint, an abutment carried by said first member, an adjustable arresting member carried by said second member and engagable with said abutment for arresting pivotal movement between said first and second members in one direction about the pivotal axis, means carried by said second member for adjusting said arresting member, and means for adjustably limiting pivotal movement between said first and second members in the opposite direction about the pivotal axis, said limiting means comprising an elongated member engagable with said first and second members, said elongated member comprising flexible.

5,328,445
INFLATABLE FOOT CUSHION
James G. Spahn, Indianapolis, and Steven P. Langley, Martinsville, both of Ind., assignors to EHOB, Inc., Indianapolis, Ind.
Filed Jan. 15, 1993, Ser. No. 5,901
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—13 **12 Claims**



1. An inflatable foot cushion to reduce the force amplifications upon the foot when the body is in the supine position, comprising:
a substantially boat-shaped, inflatable first cushion having a first end, a second end, and including a plurality of substantially pillow-shaped compartments in fluid communication together that define the sides and bottom of said first cushion, and further including a through space between the first end and the bottom compartments of said first cushion;
a substantially pillow-shaped, inflatable second cushion that is separable and removably interconnected together with the first end of said first cushion between said first end and said through space;
a substantially pillow-shaped, inflatable third cushion pivotally attached to the bottom compartments of said first cushion closest to said through space, said third cushion being pivotal between a first position in which said third cushion and the bottom compartments of said first cushion are positioned together in a vertical stack, and a second position in which said third cushion and the bottom compartments of said first cushion are positioned together in substantially planar alignment and in which said third cushion substantially covers said through space, and a third position in which said third cushion is tucked into said through space and is positioned between said second cushion and the bottom compartments of said first cushion;
a valve means on said first, second and third cushions to allow inflation of each to a desired internal pressure; and
strap means to adjustably secure said first cushion non-circumferentially about a foot and lower leg when the heel of a foot is positioned over said through space.

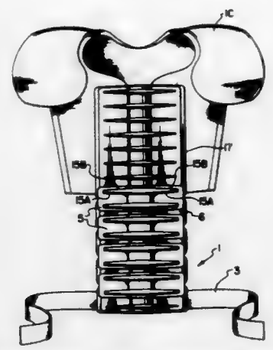
5,328,446
ORTHOPEDIC JOINT AND METHOD FOR TREATING A CONTRACTURE
William P. Bunnell, 1590 Edge Hill La., Redlands, Calif. 91373; James K. Rasmusson, Birmingham, Mich., and Steven R. Lamb, Pleasanton, Calif., assignors to Becker Orthopedic Appliance Company, Troy, Mich. and William P. Bunnell, Redlands, Calif.
Filed Oct. 29, 1992, Ser. No. 968,542
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—16 **6 Claims**



1. An orthopedic device for treating a patient who is unable to flex and extend a jointed limb through its normal range of movement about the patient's joint, comprising:
first and second sidearms;
a journal having one end projecting from said first sidearm;
a clutch housing mounted to said second sidearm;
a cylindrical roller clutch disposed within said clutch housing and having concentric inner and outer races, said outer race being fixed to said journal housing, said inner race being rotatable in a single direction relative to said outer race and defining a concentric cylindrical aperture, wherein said journal is disposed in said cylindrical aperture for free rotation therein, and wherein said inner race includes at least one notch;
a flange attached to said projecting end of said journal, said flange having a width greater than said cylindrical aperture to maintain said journal within said circular aperture, wherein at least a portion of said flange is adjacent to said inner race; and
at least one pin depending from said flange portion for selective engagement with said notch in said inner race, wherein said engagement couples said journal via said flange to said inner race to prevent relative rotational movement between said journal and said inner race so that first and second sidearms are moveable relative to each other in only a single direction.

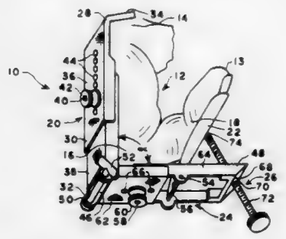
5,328,447
SPINE PROTECTOR
Frank A. Kapounek, Munster Hamlet, and Christopher R. P. Withnall, Ottawa, both of Canada, assignors to Med-Eng Systems, Inc., Ottawa, Canada
Filed Mar. 11, 1993, Ser. No. 29,632
Int. Cl.[5] A61F *5/04*
U.S. Cl. 602—19 **11 Claims**

1. A flexible spine protector for use with protective clothing, sports related activity or any other activity benefiting from spinal protection comprising:
a plurality of elongate substantially rectangular rigid support members and a plurality of resilient elongate substantially rectangular underpads;
said support members being comprised of a plurality of upper support members and lower support members;
each of said upper members being adapted to fit over two adjacent lower support members in mating relationship;
said lower support members being mounted on said underpads;
said underpads and support members being adapted in operation to lie perpendicular to the longitudinal axis of the spine;
said upper support members being spaced apart from adjacent upper support members;
said lower support members mounted on said underpads being space apart from adjacent lower support members mounted on said pads;



said support members being connected to one another in matingly overlapping relationship by a fastening means;
said support members further including a concave central recess on the underside thereof; and
said recess being adapted to lie directly over the vertebrae of the wearer, when in use.

5,328,448
FINGER JOINT THERAPY APPARATUS
Richard O. Gray, Sr., 3625 Saratoga, Downers Grove, Ill. 60515
Filed Mar. 16, 1993, Ser. No. 33,258
Int. Cl.[5] A61F *5/00;* **A63B** *23/16*
U.S. Cl. 602—22 **12 Claims**



1. An apparatus for bending the proximal interphalangeal and distal interphalangeal joints of a finger of a human hand, said apparatus comprising:
a first member having a turned end portion for engaging the metacarpal phalangeal joint of the finger;
a second member movable with respect to said first member for engaging a surface of the finger between the distal interphalangeal joint and the tip of the finger; and
pressure means for exerting pressure against said second member to cause said second member to move toward said first member for bending the proximal interphalangeal and distal interphalangeal joints of the finger between said first and second members, and causing said turned end portion and said second member to retain said apparatus on the hand.

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5,328,449

WOUND DRESSING FOR THE HANDS

Warren L. Andrews, Chicago, and C. Robert Hammett, Palatine, both of Ill., assignors to Wells LaMont, Niles, Ill.

Filed Nov. 19, 1992, Ser. No. 978,556
Int. Cl.[5] A61F *13/00, 15/00*; A61L *13/00*
U.S. Cl. 602—42 **11 Claims**



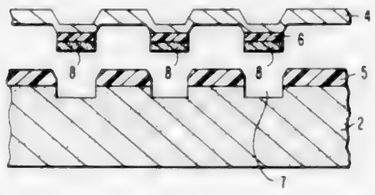
1. A medical glove for covering a wound, lesion, burn or similar injury to a hand comprising a back portion, a palm portion, and thumb and finger portions; said glove having adjustable opening and closure means enabling easy insertion and removal of said hand, adjustable fitting of said glove to said hand, and easy inspection or treatment of said hand without requiring removal of said glove; said glove further comprising a material having at least three layers comprising:
(a) a first inner layer adapted to be adjacent to said hand comprising a porous polyethylene film which is non-adherent to said wound and which enables moisture to be wicked away from said hand;
(b) a second middle layer comprising an absorbent material for absorbing the moisture from said first layer; and
(c) a third outer layer comprising a flexible, waterproof, breathable material which protects the hand from exposure to contaminants from the outer atmosphere while preventing leakage of moisture from said hand.

5,328,450

ABSORBENT DEVICES AND PRECURSORS THEREFOR

Mark F. Smith, Sheering, and Patrick L. Blott, Bishops Stortford, both of United Kingdom, assignors to Smith & Nephew plc, United Kingdom

Continuation of Ser. No. 681,528, May 7, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 127,427
Claims priority, application United Kingdom, Mar. 16, 1989, 8906100
Int. Cl.[5] A61F *13/00, 15/00, 13/15*; A61L *15/00*
U.S. Cl. 602—59 **20 Claims**



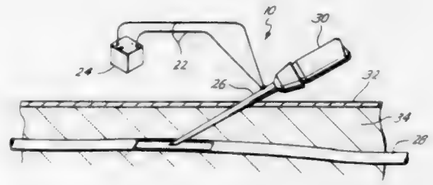
1. An absorbent device which comprises a contoured polymer film having opposed sides, an absorbent layer having a surface thereof attached to one said side and a carrier material attached to the other said side, said carrier material and said contoured polymer film forming a laminate having impressed in said carrier material and contoured polymer film a pattern of raised areas and depressed areas therebetween, said contoured polymer film and said carrier material being attached to each other such that upon separation of one from the other the depressed areas of the contoured polymer film remain adhered to the carrier material leaving behind on said surface of said absorbent layer an apertured film comprising the raised areas of said contoured polymer film, said surface having a plurality of depressions which communicate directly with the apertures in said apertured film, said depressions being free of film.

5,328,451

IONTOPHORETIC DEVICE AND METHOD FOR KILLING BACTERIA AND OTHER MICROBES

Charles P. Davis, and Michael M. Warren, both of Galveston, Tex., assignors to Board of Regents, the University of Texas System, Austin, Tex.

Filed Aug. 15, 1991, Ser. No. 745,592
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **26 Claims**



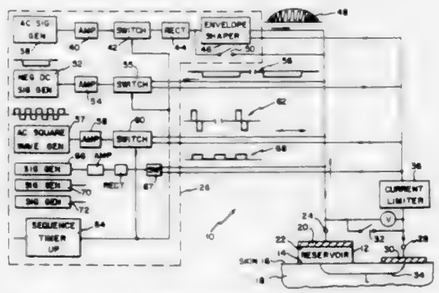
1. An apparatus for killing microbes in a conductive medium, comprising:
a positive and a negative electrode spaced apart from one another and placeable in a conductive medium, each positive and negative electrode being formed from an element including carbon;
an intermittent current source connected to said positive and negative electrodes; and
means for activating said source in periodic reverse polarity for generating antimicrobial agents from inorganic salts within said conductive medium.

5,328,452

MULTI-SIGNAL ELECTRICAL TRANSDERMAL DRUG APPLICATION

Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.

Continuation of Ser. No. 873,442, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 349,996, May 10, 1989, Pat. No. 5,135,478. This application Feb. 25, 1993, Ser. No. 23,483
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **12 Claims**



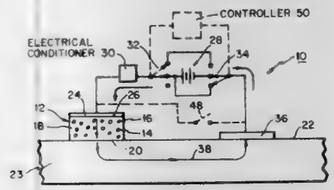
1. A transdermal applicator for delivering at least one drug through the skin to the blood circulation system of a patient over an extended period of time comprising:
a drug reservoir for containing at least one drug and having means for attachment to the skin of a patient and making an electrical connection therewith at an interface between the reservoir and the skin of the patient,
means connected to said reservoir including a source of variable electrical potential for effecting delivery of said drug transdermally into the blood of the patient when the applicator is in use, said source having one electrical terminal electrically connected to said reservoir spaced from said interface and a second terminal positionable on the surface of the skin of the patient spaced from said interface and in circuit with said interface when said applicator is in use, means in said source of variable electrical potential for cyclically generating a complex composite pulse signal applied to said one terminal, said reservoir and through said interface when said second terminal is in electrical contact with the skin of the patient, said complex composite pulse signal comprising a sequence of pulsed direct current pulses of different waveforms, amplitudes, frequencies and repetition rates, and timing means for applying the complex composite pulse signal as a composite total waveform formed by a plurality of signals with selected sequences of different time intervals of waveform components effective to develop and maintain current flow including current flow within blood capillaries of the patient in a desired same direction of current flow.

5,328,453

METHOD FOR ENHANCING TRANSDERMAL DRUG DELIVERY OF ELECTRICAL DRUG APPLICATORS

Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.

Continuation of Ser. No. 287,348, Dec. 21, 1988, Pat. No. 5,088,977. This application Feb. 12, 1992, Ser. No. 834,686
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **23 Claims**



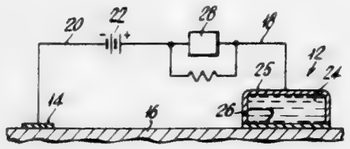
1. A method of enhancing delivery of at least one drug to the bloodstream of a patient over an extended period of time comprising:
providing a transdermal drug applicator comprising an electrical circuit operable in different operational cycles and having reservoir means containing one or more drugs at least one of which is a therapeutic drug to be applied to the bloodstream of a patient through the skin, a source of DC potential and a return electrode forming an electrical circuit return electrode when the reservoir means and the electrode are applied to the skin of the patient and interface therewith,
applying the transdermal drug applicator with said reservoir means and the return electrode to the skin of the patient and interfacing therewith,
operating the electrical circuit in different operational cycles to effect application of the therapeutic drug or drugs into the bloodstream of the patient through the skin by electrokinetic processes in dependence upon the drug to be administered to the patient, and
alternately or concurrently with said operational cycles operating the electrical circuit maintaining the negative surface charge density of the blood vessel walls and blood of the patient at least in a region where the transdermal drug applicator is applied to the skin of the patient.

5,328,454

PULSATING TRANSDERMAL DRUG DELIVERY SYSTEM

Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.

Continuation of Ser. No. 598,803, Oct. 15, 1990, which is a division of Ser. No. 323,109, Mar. 13, 1989, abandoned, which is a division of Ser. No. 55,518, May 18, 1987, abandoned. This application Apr. 7, 1992, Ser. No. 864,644
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **17 Claims**



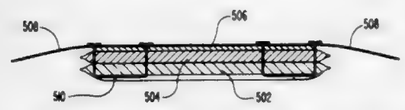
1. An electrolytic transdermal patch for delivering to the bloodstream of a patient different types of drugs comprising:
(a) means defining a reservoir for containing a drug of said types of drugs and positioned in use in contact with the skin of the patient,
(b) an electrical source of power
(c) an electrical circuit having an electrode positioned in use in contact with the skin of the patient and electrically connecting the electrode, power source and said reservoir, and
(d) means in said electrical circuit for causing periodic variation of current applied to said reservoir by said source of power in a pulsed mode in rhythms similar to the natural delivery of the body compounds released by the natural activity of a patient for stimulating the activity of naturally released compounds, or in pulsed mode rhythms applied more often than the natural activity rhythms of the body for inhibiting the release of the body compounds when the type drug is similar to a body compound.

5,328,455

REHYDRATABLE PRODUCT AND METHOD OF PREPARATION THEREOF

Lindsay B. Llyod, West Jordan; Jon E. Beck, and Tomasz J. Petelenz, both of Salt Lake City, all of Utah, assignors to Iomed, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 627,714, Dec. 14, 1990, Pat. No. 5,236,412, which is a continuation-in-part of Ser. No. 382,939, Jul. 21, 1989, Pat. No. 5,087,242. This application Mar. 29, 1993, Ser. No. 38,798
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **14 Claims**



1. A bioelectrode for iontophoretically delivering medicament into the skin or tissue of a person or animal comprising:

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a hydratable element for absorbing ionized medicament solution when placed in contact therewith,

said hydratable element comprising a horizontally positioned layer of a lightly crosslinked dry hydrogel stacked with a horizontally positioned layer of a highly crosslinked dry hydrogel;

a conductive element mounted adjacent to the hydratable element for receiving an electrical current to produce an electrical field and cause ionized medicament to move from the hydratable element into the skin or tissue on which the bioelectrode is placed; and

means for securing the hydratable element to the conductive element.

5,328,456

IRRIGATION AND ASPIRATION APPARATUS

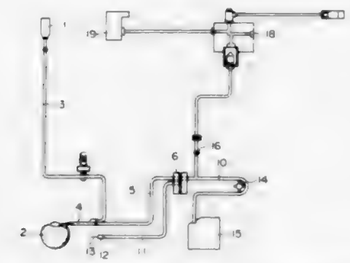
Masayuki Horiguchi, Ichinomiya, and Hideo Oda, Gamagori, both of Japan, assignors to Nidek Co., Ltd., Aichi, Japan

Continuation of Ser. No. 789,498, Nov. 8, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,292

Claims priority, application Japan, Nov. 13, 1990, 2-306434

Int. Cl.[5] A61B *17/20*

U.S. Cl. 604—22 **5 Claims**



1. An irrigation and aspiration apparatus for ophthalmic use comprising:

an irrigation fluid source capable of adjusting a flow;

an irrigation handpiece connected with said fluid source through an irrigation tube and infusing an irrigation fluid into a patient's eye;

plural aspiration handpieces for aspirating a waste fluid in the patient's eye, one of said aspiration handpieces sharing one handpiece with said irrigation handpiece by being provided with aspirating means;

a selector coupling having plural inlets and one outlet and said selector coupling selecting one of the plural aspiration handpieces by changing an inlet's position into a position communicated straight with said outlet, said plural inlets being connected with aspiration tubes connected with said aspiration handpieces, and said outlet being connected with a second aspiration tube leading waste fluid to a predetermined place; and

means for generating irrigating pressure, which irrigates the waste fluid in the patient's eye.

5,328,457

Patent Not Issued For This Number

5,328,458

INSUFFLATION APPARATUS

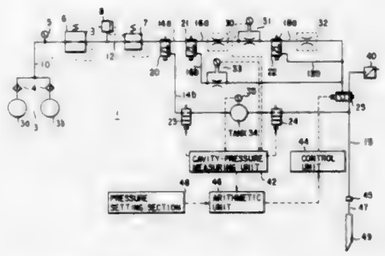
Naomi Sekino, Tokyo; Kenji Noda, Sagamihara; Yutaka Yanagawa, Tokyo; Takeo Usui, Tokyo; Kouji Tanikawa, Tokyo; Kazuhiro Takahashi, Tokyo, and Shiro Bito, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 984,306

Claims priority, application Japan, Dec. 3, 1991, 3-318910; Dec. 5, 1991, 3-322002; May 29, 1992, 4-139434; May 29, 1992, 4-139451

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—23 **18 Claims**



1. An insufflation apparatus comprising:

a gas supply source filled with gas;

a gas insufflating pipe through which gas in the gas supply source is insufflated into a cavity of a human body;

a gas supply pipe through which gas supplied from the gas supply source is fed into the gas insufflating pipe;

a switch valve for opening and closing the gas supply pipe;

cavity pressure measuring means arranged in the gas supply pipe for measuring pressure in the body cavity;

pressure setting means for setting an intended pressure in the body cavity;

arithmetic means for calculating a difference of a value measured by the cavity pressure measuring means relative to a value of pressure set by the pressure setting means; and

control means for changing the duty cycle, during different periods in which the switch valve is opened and closed, on the basis of values calculated by the arithmetic means.

5,328,459

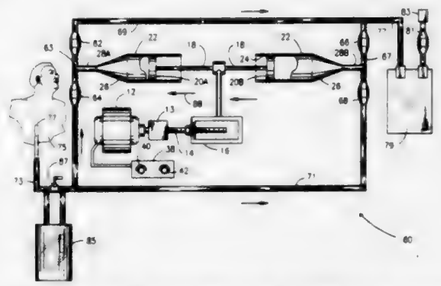
APPARATUS AND METHOD FOR DISPENSING AND ASPIRATING HIGH VISCOSITY MATERIALS

Aldo A. Laghi, 13 Meridian La., Ballston Lake, N.Y. 12019

Filed May 6, 1993, Ser. No. 58,507

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—35 **11 Claims**



1. An apparatus for dispensing and aspirating high viscosity materials, comprising:

a pair of cartridges disposed in axial alignment with one another, each of said cartridges having an open proximal end and a nozzle formed in its distal end;

each cartridge of said pair of cartridges containing a thixotropic material;

said cartridges disposed with their respective open proximal ends in facing relation to one another and with their respective nozzles pointing away from one another;

a pair of movably mounted plungers, each plunger of said pair of plungers being disposed in alignment with an associated cartridge of said pair of cartridges and being reciprocal therewithin;

means for preventing radial expansion of each cartridge o f said pair of cartridges as said plunger drives high viscosity material through their respective nozzles;

said means for preventing radial expansion including a non-expandable metallic sleeve member that ensleeves each cartridge of said pair of cartridges in closely spaced relation thereto;

a common plunger rod for interconnecting said plunger

means for imparting a reciprocating linear motion to said plunger rod so that each plunger oscillates within its associated cartridge when said apparatus is operating;

a drain bag for collecting aerosols of the type produced during a liposuction process;

a vacuum canister for collecting fatty material of the type produced during a liposuction process;

a fluid-carrying line means extending from a patient to said vacuum canister, from said vacuum canister to said apparatus, and from said apparatus to said drain bag so that liquid and gaseous fluid flows through said line means when said plungers are reciprocating within their associated cartridges;

a plurality of one-way valves disposed at predetermined positions in said line means for allowing air flow through said line means in a first direction, said first direction being from said patient toward said vacuum canister and toward said drain bag, said plurality of one-way valves preventing flow of fatty deposits and aerosols into said cartridges, and for blocking air flow through said line in a second direction opposite to said first direction; and

control means for controlling said apparatus;

whereby a liposuction procedure is performed by said apparatus.

5,328,460

IMPLANTABLE MEDICATION INFUSION PUMP INCLUDING SELF-CONTAINED ACOUSTIC FAULT DETECTION APPARATUS

Peter C. Lord, Valencia; John R. Schultz, Burbank, and David G. Powell, South Pasadena, all of Calif., assignors to Pacesetter Infusion, Ltd., Sylmar, Calif.

Continuation of Ser. No. 718,709, Jun. 21, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 77,889

Int. Cl.[5] A61M *5/20*

U.S. Cl. 604—67 **35 Claims**

1. An implantable medication infusion pump including apparatus for diagnosing a system malfunction, comprising:

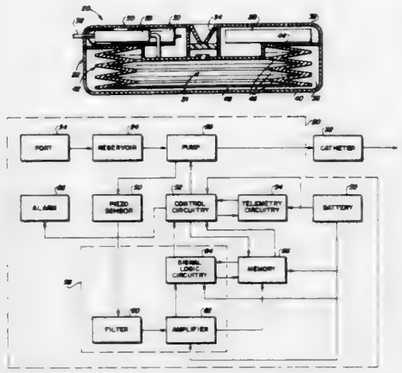
a reservoir for containing a fluid medication;

means for transferring said fluid medication from said reservoir to a location outside said implantable medication infusion pump;

means located in said implantable medication infusion pump adjacent to said transferring means for generating electrical signals proportional to acoustic signals generated by said transferring means;

means for processing said electrical signals to produce processed electrical signals;

logic means for utilizing a characteristic related to the relative amplitude of said processed electrical signals to determine the operational condition of the implanted medication infusion pump, said logic means providing a first informational signal if said processed electrical signals are greater than or equal to a first predetermined value, said logic means providing a second informational signal if said processed electrical signals are smaller than or equal to a second predetermined value, said second predetermined



value being smaller than said first predetermined value; and

means for providing an informational signal if said logic means determines the existence of a system malfunction.

5,328,461

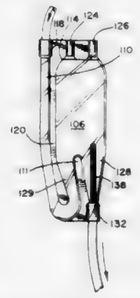
BLOW MOLDED VENOUS DRIP CHAMBER FOR HEMODIALYSIS

David S. Utterberg, 1080 Chestnut St., San Francisco, Calif. 94109

Filed Apr. 30, 1992, Ser. No. 876,041

Int. Cl.[5] A61M *5/14*

U.S. Cl. 604—80 **20 Claims**



1. A blow-molded plastic blood chamber for hemodialysis, said chamber defining a first access port adjacent a first end which is an inlet blood port, an outlet blood port at an opposed chamber end, and a tubular plastic filter positioned in close-fitting relation within said outlet port to project into said chamber, in which an indentation is defined within said outlet port, said tubular plastic filter defining an outer end portion that carries a radially outwardly projecting, annular flange proportioned to slidingly pass through said outlet blood tube connecting port and engaging said indentation to limit inward travel of said filter to a predetermined, innermost position, plus means for retaining said filter in said position.

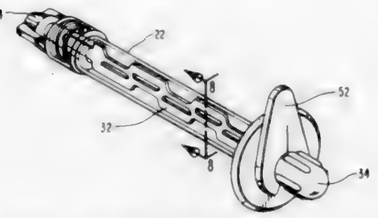
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5,328,462

METHODS AND APPARATUS FOR MIXING AND DISPENSING MULTI-PART COMPOSITIONS

Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Filed Sep. 3, 1993, Ser. No. 117,217
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—82 **20 Claims**



1. A system for mixing and dispensing multi-component compositions, said system comprising:

a syringe barrel for receiving multiple components to be mixed;

mixing means for mixing said components within the syringe barrel, said mixing means including

an elongate paddle member for insertion into said syringe barrel and

means for rotating said paddle member within the syringe barrel so as to effect mixing of components contained therein;

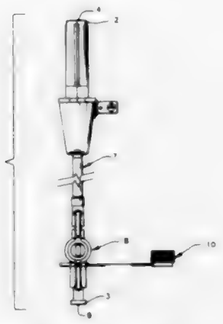
scraper means for removing said components from the surface of the paddle member so as to retain the components within the syringe barrel upon removal of the paddle member after mixing is completed.

5,328,463

CONTRAST MEDIA AND FLUID INTRODUCTION SYSTEM

Thomas J. Barton, and Robbin L. Murdoch, both of Glens Falls, N.Y., assignors to Namic U.S.A. Corporation, Glens Falls, N.Y.

Filed Sep. 18, 1992, Ser. No. 947,660
Int. Cl.[5] A61M *3/00*
U.S. Cl. 604—83 **6 Claims**



1. An apparatus for supplying a fluid to a patient comprising:

(a) a main supply means including a longitudinal fluid conduit having a distal end and a proximal end,

a first fluid inlet means at said proximal end adapted for fluid communication with a fluid source,

a first fluid outlet means at said distal end adapted for fluid communication with a syringe means and adapted to form a substantially fluid tight seal with a protective cap, and

a first fluid control means between said first fluid inlet means and said first fluid outlet means for regulating fluid flow between said first fluid inlet means and said first fluid outlet means; and

(b) a fluid administration means including a longitudinal fluid conduit having a distal end and a proximal end,

a second fluid inlet means at said proximal end of said fluid administration means adapted for fluid communication with the syringe means,

a second fluid outlet means at said distal end of said fluid administration means adapted for fluid communication with a means for the delivery of fluid to a patient,

a second fluid control means between said second fluid inlet means and said second fluid outlet means for regulating the flow of fluid between said second fluid inlet means and said second fluid outlet means and for regulating the flow of air in to and out of said fluid administration means, and

an air filtering means in fluid communication with said second fluid control means; and

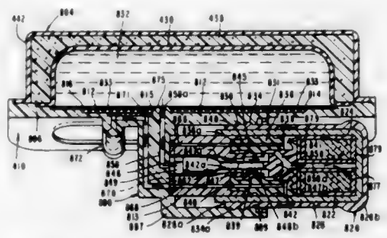
(c) a syringe means adapted for fluid communication with said first fluid outlet means and said second fluid inlet means.

5,328,464

CLOSED DRUG DELIVERY SYSTEM

Marshall S. Kriesel, Saint Paul, and Thomas Thompson, Richfield, both of Minn., assignors to Science Incorporated, Bloomington, Minn.

Continuation-in-part of Ser. No. 870,553, Apr. 17, 1992, which is a continuation-in-part of Ser. No. 513,917, Apr. 24, 1990, Pat. No. 5,122,116. This application Mar. 19, 1993, Ser. No. 34,908
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—83 **30 Claims**



1. An apparatus for use in infusing fluids into a patient at a controlled rate, said apparatus comprising:

(a) a container assembly including:

(i) a container having a fluid flow passageway and walls defining an internal chamber in communication with said fluid passageway;

(ii) adding means disposed within said chamber for adding an additive to fluid flowing through said chamber, said adding means comprising an additive and an additive presentation means for presenting said additive to the fluid; and

(b) an infusion device comprising a housing having first and second portions, said first portion including coupling means for coupling said container assembly with said first portion of said housing, said coupling means having a first passageway adapted to communicate with said fluid flow passageway of said container, said second portion of said housing comprising:

(i) a base having a fluid outlet and first and second fluid passageways formed therein, said first passageway being in communication with said first passageway of said coupling means and said second passageway being in communication with said fluid outlet; and p2 (ii) a

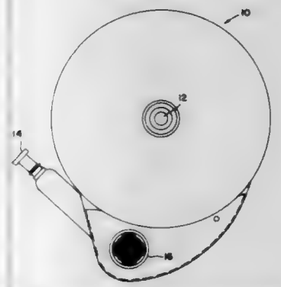
thin, generally planar distendable membrane constructed of an elastic material, said membrane overlying and cooperating with said base to define a reservoir for containing a fluid, said reservoir being in communication with said first and second passageways of said base, said membrane being distendable by fluid introduced into said chamber under pressure and having a tendency to return to a substantially less distended configuration, whereby the fluid contained within said reservoir will be urged to flow selectively into said first and second passageways of said base.

5,328,465

APPARATUS AND METHOD FOR LIMITING ACCESS TO SEPTUM

Paul S. Kratoska, Brooklyn Park; Larry D. Kuecker, Coon Rapids, and Douglas O. Hankner, New Brighton, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 30, 1992, Ser. No. 969,599
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—93 **12 Claims**



1. Apparatus for limiting percutaneous access by needle to a septum in a device implanted in a body, comprising:

a screen member covering the septum, the screen member having a plurality of openings, said openings being of a predetermined size, and screen member further having an outlet surface and an inner surface and wherein said openings taper inwardly from said outer surface to said inner surface, such that said openings are larger at said outer surface than at said inner surface and that needles larger than said predetermined size will not pass through said screen member and penetrate the septum, and

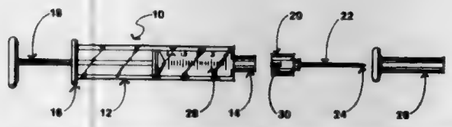
means for fixing said screen member in position covering the septum.

5,328,466

SYRINGE AND NEEDLE ASSEMBLY

Kristine E. Demark, 700 Gawain Rd., Plymouth Meeting, Pa. 19462

Filed Jul. 15, 1993, Ser. No. 92,503
Int. Cl.[5] A61M *11/00, 5/00, 5/32*
U.S. Cl. 604—93 **9 Claims**



5. A hypodermic needle assembly for attaching to a syringe, said syringe having a volumetric scale imprinted on its side, comprising:

a needle with a beveled tip end, said beveled tip facing in at least one lateral direction;

a needle hub end opposite said beveled tip end, said hub end adapted to engage with said syringe; and

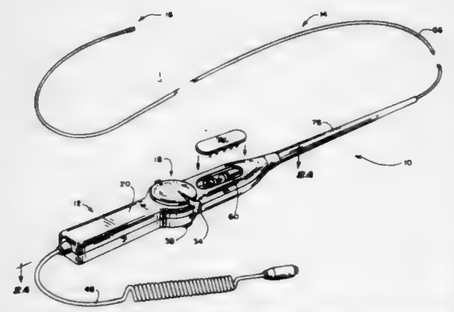
a means on said needle assembly facing said at least one lateral direction for aligning said beveled tip with said volumetric scale.

5,328,467

CATHETER HAVING A TORQUE TRANSMITTING SLEEVE

Stuart D. Edwards, Los Altos, and Russell B. Thompson, San Leandro, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Nov. 8, 1991, Ser. No. 790,205
Int. Cl.[5] A61B *5/04*
U.S. Cl. 604—95 **4 Claims**



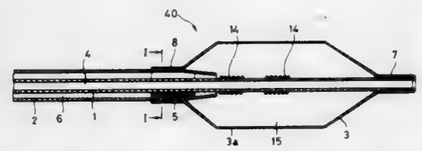
1. A catheter comprising a handle and a guide tube enclosing an interior bore, the guide tube including an array of slots subtending the tube along its length to impart flexibility, the guide tube having a proximal end and a distal end, the improvement comprising an elongated tapered sleeve joining the proximal end of the guide tube to the handle, said sleeve extending from the handle and frictionally, with a tight interference fit, gripping a portion of the guide tube beyond the handle for transmitting torque applied at the handle to the distal end of the guide tube.

5,328,468

BALLOON FOR BLOOD VESSEL-DILATING CATHETER

Takashi Kaneko; Akira Mochizuki, and Toshinobu Ishida, all of Kanagawa, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,033
Claims priority, application Japan, Oct. 8, 1991, 3-289106
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **9 Claims**



1. A balloon for use with a blood vessel-dilating catheter having an inflation lumen and a second lumen, said catheter having a balloon with a proximal end fixed liquid-tightly to an outer surface of said catheter and a distal end fixed liquid-tightly to the distal end of said catheter, wherein the improvement comprises the balloon being fabricated from a biaxially oriented film of an aromatic polyamide or an alloy thereof, said aromatic polyamide having a polymerization degree of approximately 50 to 5,000 and an average molecular weight of ap-

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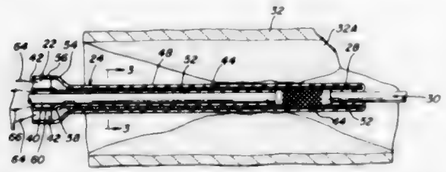
proximately 3,000 to 100,000, said balloon having a calculated modulus of elasticity of from 70 to 190 kg/mm.

5,328,469

HYBRID BALLOON ANGIOPLASTY CATHETER AND METHODS OF USE

Roger Coletti, 506 Long Dr., Wyckoff, N.J. 07481

Filed Mar. 19, 1993, Ser. No. 33,916
Int. Cl.[5] A61M *29/00, 5/178*
U.S. Cl. 604—96 **32 Claims**



1. A dilatation instrument comprising a catheter member, fluid pressure means, and expandable balloon means, said catheter being an elongated member having a first and second lumens extending longitudinally therethrough, said balloon means comprising a cylindrical outer wall and a cylindrical inner wall disposed within said outer wall, said inner wall having a central passageway extending therethrough communicating with said first lumen of said catheter member and through which a guide wire may be extended, said fluid pressure means being coupled to at least one of said lumens for controlling the position of said inner wall of said balloon means to move said inner wall to a collapsed and an uncollapsed state, said inner wall when in said collapsed state frictionally engaging said guide wire to prevent relative movement between said guide wire and said catheter member, said inner wall when in said uncollapsed state disengaging from said guide wire to enable relative movement between said guide wire and said catheter member, said coupling of said fluid pressure means to at least one of said lumens also controlling the position of said outer wall by moving said outer wall to a neutral state, a collapsed state, and an expanded state, said outer wall when in said collapsed state having a cross-sectional area smaller than the cross-sectional area of said catheter member, said outer wall when in said expanded state having a cross-sectional area substantially greater than the cross-sectional area of said catheter, said outer wall when in said neutral state having a cross-sectional area greater than when in said collapsed state but less than when in said expanded state.

5,328,470

TREATMENT OF DISEASES BY SITE-SPECIFIC INSTILLATION OF CELLS OR SITE-SPECIFIC TRANSFORMATION OF CELLS AND KITS THEREFOR

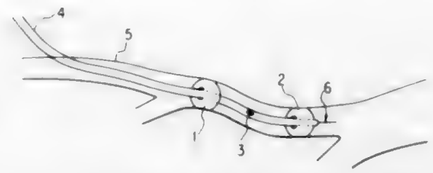
Elizabeth G. Nabel, and Gary J. Nabel, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 724,509, Jun. 28, 1991, which is a continuation-in-part of Ser. No. 331,336, Mar. 31, 1989, abandoned. This application Jul. 26, 1991, Ser. No. 741,244
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—101 **10 Claims**

1. A kit for treating a disease in a patient in need thereof, comprising a catheter and a physiologically acceptable solution, wherein:

(i) said catheter is adapted for insertion into a blood vessel and comprises a main catheter body having a balloon element, adapted to be inserted in said blood vessel and being expansible against the walls of said vessel so as to hold said main catheter body in place, and means carried by said main catheter body for delivering said solution into said blood vessel;

(ii) said physiologically acceptable solution comprises DNA and at least one member selected from the group consisting of heparin, poly-L-lysine, polybrene, dextransulfate, a polycationic material, and bivalent antibodies.



5,328,471

METHOD AND APPARATUS FOR TREATMENT OF FOCAL DISEASE IN HOLLOW TUBULAR ORGANS AND OTHER TISSUE LUMENS

Marvin J. Slepian, Cleveland Heights, Ohio, assignor to Endoluminal Therapeutics, Inc., Tucson, Ariz.

Continuation of Ser. No. 14,043, Feb. 5, 1993, abandoned, which is a continuation of Ser. No. 869,907, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 759,048, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 485,287, Feb. 26, 1990, abandoned. This application Aug. 4, 1993, Ser. No. 101,966
Int. Cl.[5] A61M *25/00, 29/00*
U.S. Cl. 604—101 **13 Claims**



1. A method for providing localized therapy with a therapeutic agent to a diseased region in a tissue lumen, comprising:

(a) introducing a catheter into the tissue lumen, said catheter comprising first and second expansile members and means for supplying the therapeutic agent into a space between said first and second expansile members and said catheter being positioned such that said first and second expansile members are disposed on opposite sides of the diseased;

(b) expanding the expansile members to occlude the diseased region of the tissue lumen;

(c) washing the occluded region to remove body fluid;

(d) introducing therapeutic agent to the washed occluded diseased region via said means for supplying therapeutic agent;

(e) disrupting the diseased region of the tissue lumen to loosen diseased tissue after introduction of the therapeutic agent;

(f) allowing the catheter to remain in place for a therapeutically effective period of time;

(g) contracting the expansible member; and

(h) removing the catheter.

5,328,472

CATHETER WITH FLEXIBLE SIDE PORT ENTRY

Thomas A. Steinke, San Diego; Leonard F. Briggs, Chula Vista, and Garry E. Rupp, San Diego, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jul. 27, 1992, Ser. No. 919,672
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—102 **12 Claims**

1. A catheter comprising:

a spring coil shaft and having an inflation lumen;

a side port;

a distal and proximal end;

a balloon located generally at the distal end of the shaft, the balloon having a distal end and a proximal end; and



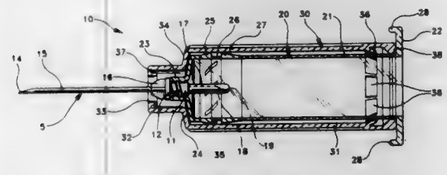
a guidewire lumen extending from the spring coil shaft distal end to the side port, said guidewire lumen adapted to receive a guidewire in a sliding fit, wherein the distal end of the balloon is sealed to the inflation lumen.

5,328,473

DISPOSABLE NEEDLE HOLDER

Zev Fayngold, Livingston, and Sam Zhadanov, Metuchen, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 28, 1993, Ser. No. 54,570
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **16 Claims**



1. A needle holder assembly comprising:

a sleeve having a main portion with an opening at a proximal end of said sleeve and a neck portion at a distal end of said sleeve that is connected to said main portion;

a needle holder slidably received within said sleeve through said opening for movement from a retracted position where a needle held in said needle holder extends through said neck portion of said sleeve, to an extended position where the needle is contained within said sleeve;

means for permanently locking said needle holder within said sleeve at said extended position, said locking means comprising:

a segmented annular projection having a plurality of flexible segments extending from an interior wall of said sleeve about said proximal end of said sleeve, each flexible segment being angled towards a distal end of said assembly to expand when under pressure; and

a groove in a proximal end of said needle holder for receiving said plurality of flexible segments when said needle holder is in said extended position to permanently lock said needle holder and said sleeve together and prevent movement of said needle holder within said sleeve in both the proximal and distal directions because of the expansion of each angled flexible segment within said groove: and

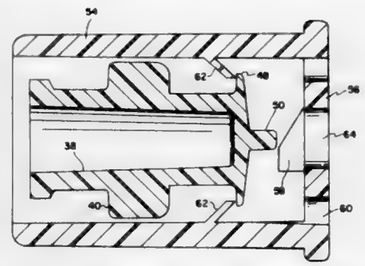
means for smoothly releasing said needle holder from said retracted position and permitting said needle holder to slide towards said extended position.

5,328,474

TAMPER RESISTANT SYRINGE CAP

Kenneth Raines, Bethlehem, Pa., assignor to B. Braun Medical Inc., Bethlehem, Pa.

Continuation of Ser. No. 867,458, Apr. 13, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 118,682
Int. Cl.[5] A61M *5/00, 5/32;* **A61B** *19/00;* **B65D** *55/02*
U.S. Cl. 604—110 **13 Claims**



1. A tamper-resistant closure for a medical injection device having a protruding outlet and a first threaded connector, said closure comprising

a cap having both a blind bore sized to receive and seat tightly against said outlet, to prevent material from entering or being withdrawn from the injection device, and a threaded portion for mating with said first threaded connector, so that the cap can be screwed onto the injection device by turning the cap in a predetermined direction relative to the injection device, and

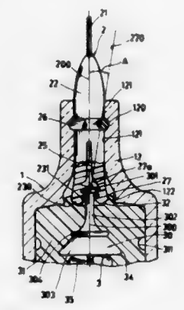
a shield entirely enveloping the cap, and having a loose fit thereon that cannot unscrew the cap, so that the cap cannot be removed from the injection device while the shield is in place, said shield having an internal surface and at least one internal, frangible tang protruding therefrom diagonally toward the cap and diagonally away from the injection device, so that the shield can be pressed onto the cap once the cap has been installed on the injection device, but cannot thereafter be pulled off without breaking the tang and thus providing an indication of tampering, said cap further having a protrusion for engaging said tang.

5,328,475

SIMPLIFIED SAFETY SYRINGE WITH RETRACTABLE SELF-BIASED NEEDLE

Long-Hsiung Chen, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (104), Taiwan

Filed Dec. 16, 1993, Ser. No. 167,012
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—110 **5 Claims**



1. A safety syringe comprising:

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a syringe means including a syringe cylinder having a hollow bore portion for filling liquid medicine therein, and a sleeve portion formed on a front portion of said syringe means having a central opening formed through the sleeve portion, a syringe axis longitudinally defined in a central portion of said syringe means;

a needle device including a hollow needle portion fixed on a shank portion held in said sleeve portion of said syringe means having at least a biasing socket generally conical shaped recessed in a rear needle portion of said needle device having a longitudinal conical axis obliquely deviating an acute angle from a needle axis which is longitudinally defined in a central portion of said needle device and is aligned with the syringe axis of said syringe; and

a plunger means including a plunger slidably held in said syringe cylinder for boosting liquid medicine in said cylinder for injection through said needle device, and a coupling member embedded in said plunger having an arrow head portion formed at a front end of said coupling member operatively forcibly inserted in said biasing socket to couple the arrowhead portion with the needle device to store a resilient restoring energy of the rear needle portion of said needle device after finishing an injection, and upon retraction of the plunger and the needle device coupled to said plunger into said syringe cylinder, said needle device will be automatically restored and obliquely biased to prevent outwardly re-protruding of said needle device from said syringe means.

5,328,476

ONE-TIME USE HYPODERMIC SYRINGE APPARATUS AND OPERATION THEREOF

James K. Bidwell, 1088 Bishop St., Suite 1224, Honolulu, Hi. 96813

Filed Aug. 23, 1993, Ser. No. 110,792
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **4 Claims**



1. A one-time use hypodermic syringe apparatus, comprising:

a casing, having a needle portion attached at a forward end thereof, for accommodating therein medication to be extracted through said needle; and

a plunger accommodated within said casing and movable along a length of said casing,

wherein said casing comprises first lock means, and said plunger comprises a second lock means for interacting with said first lock means of said casing for preventing, at a first position of the plunger relative to said casing, the plunger from being inserted or reinserted into said casing and for preventing, at a second position of the plunger relative to said casing, the plunger from being withdrawn relative to the casing,

wherein said second lock means of said plunger comprises a first set of grooves on a first face of said plunger, and a second set of grooves on a second face of said plunger, wherein said first face and second face are directed perpendicular from each other,

wherein said first set of grooves of said plunger includes stepped portions substantially facing towards a front end portion of said syringe apparatus, said front end portion of said syringe apparatus containing said needle portion of said casing, and

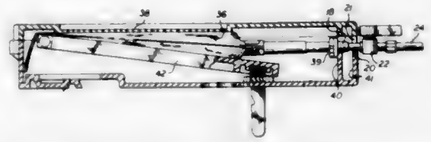
wherein said second set of groves includes stepped portions substantially facing towards a rear end portion of said syringe apparatus, said rear end portion of said syringe apparatus containing a pusher portion of said plunger.

5,328,477

LIQUID INFUSION SYSTEM

Phillip M. Sitko, 4894 Mooncrest Dr., Corona, Calif. 91720

Filed Jun. 21, 1993, Ser. No. 80,087
Int. Cl.[5] A61M *5/20*
U.S. Cl. 604—134 **3 Claims**



1. A liquid infusion system comprising:

a flexible, flat, collapsible bag for storing liquid and an outlet tube for communicating with said bag, valve means to control liquid outflow through said outlet tube;

a rigid housing enclosing said bag with said outlet tube projecting outwardly therefrom and having a slot formed therein;

a spring biased rigid pivotal plate pivotally mounted and positioned within said housing and exerting pressure on said bag tending to urge said bag toward a flat collapsed position and to channel liquid through said outlet when liquid is present in said bag, said pivot plate being planar in configuration and having a slot formed therein;

spring members positioned in wells formed in said hosing and said plate, said spring members exerting a force against said plate, said pivotal plate slot being formed intermediate said plate wells; and

a pre-loading arm having an interior end extending into said housing and releasably connected to said housing intermediate said interior end, said arm being connected to said housing in a first position and disconnected from said housing in a second position, said arm being attached to said pivot plate, said pre-loading arm compressing said springs and minimizing said plate from exerting a force against said bag when said pre-loading arm is in said first position, and enabling said springs to exert a force against said pivot plate and, hence, said bag when said pre-loading arm is in said second position, said pre-loading arm containing a transverse horizontal rod at the interior end thereof which is connected to said slot formed in said pressure plate, said arm containing at least one notch releasably locking said pre-loading arm in said housing slot.

5,328,478

LAPAROSCOPIC IRRIGATION BOTTLE PUMP

William P. McVay, Doylestown, Pa., assignor to Advanced Surgical Products, Inc., Miami, Fla.

Filed Feb. 20, 1992, Ser. No. 837,929
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—147 **8 Claims**

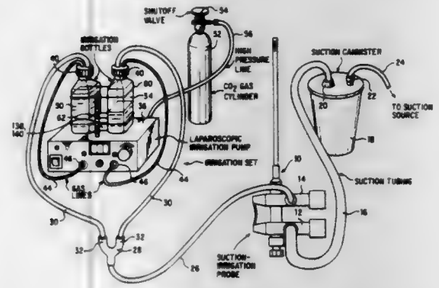
1. A laparoscopic irrigation pump for controlling gas under pressure driving irrigation solution from a container comprising:

first means for monitoring a source of gas under pressure and responsive to the gas pressure falling below a predetermined value to indicate same,

second means for introducing gas under pressure into a container containing irrigation solution for driving the irrigation solution out of the container,

third means for monitoring liquid level of irrigation solution in the container, detecting when the level falls to a predetermined value and responsive thereto terminating flow of the irrigation solution out of the container, and

fourth means for receiving gas under pressure from the source, delivering gas to the second means and controlling the level of gas pressure delivery to the second means for introduction into the container for driving the irrigation solution out of the container, said fourth means including a pressure regulator for acting on gas from the source to adjust positive and negative deviations of the gas pressure



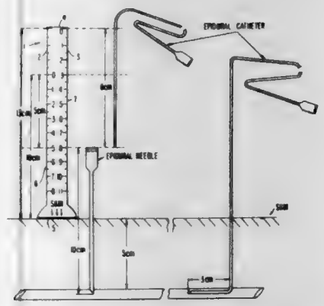
to a predetermined level, a stepping motor connected to drive the regulator, a pressure transducer for sensing deviations of gas pressure on the output side of the pressure regulator correlated with said predetermined level of gas pressure and for converting same into corresponding electrical signals, control means acting responsive to said electric signals for controlling said stepping motor to restore the gas pressure on the output side of the pressure regulator to said predetermined level of gas pressure.

5,328,479

SET FOR CONTINUOUS EPIDURAL ANESTHESIA

Simon Gurmarnik, 38 Garrison Rd., #1, Brooklyne, Mass. 02146

Division of Ser. No. 985,853, Dec. 4, 1992, Pat. No. 5,257,972.
This application May 21, 1993, Ser. No. 64,213
The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—158 **1 Claim**



1. A set for a continuous epidural anesthesia, comprising an epidural catheter for performing epidural anesthesia: and

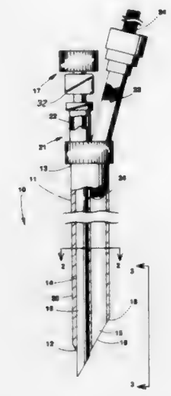
a device for determining a required length of said epidural catheter for administering epidural anesthesia and including an epidural needle insertable prior to administration of anesthesia into an epidural space and an element for determining the required length of said epidural catheter, said element being formed as a ruler and having two opposite sides, a shorter scale provided on one of said sides and having a length substantially corresponding to a length of said epidural needle, and a longer scale provided on the other of said sides and being longer than said shorter scale by a length corresponding to a required length of said epidural catheter inside said epidural space, so that when said epidural needle is inserted in the epidural space and said ruler is placed against a skin parallel to said epidural needle, then when said epidural catheter is placed parallel to said ruler extending from a hub of said epidural needle along said longer scale, its length between the hub of said epidural needle and a beginning of said longer scale corresponds to a required length of said epidural catheter to be inserted into a patient said shorter scale having a length of substantially 10 cm, while said longer scale has a length of substantially 13 cm.

5,328,480

VASCULAR WIRE GUIODE INTRODUCER AND METHOD OF USE

Richard J. Melker, Gainesville, Fla., and Frank J. Fischer, Jr., Bloomington, Ind., assignors to Cook Incorporated, Bloomington, Ind.

Filed Oct. 9, 1992, Ser. No. 959,287
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 **10 Claims**



1. A vascular wire guide introducer comprising:

a tubular member having a distal end, a proximal end, and first and second adjacent lumens extending longitudinally therein, and a cylindrical outer surface with a uniform outer diameter, said tubular member also having a tapered outer surface extending proximally from said distal end and centered with respect to said first lumen, said second lumen having an opening in said tapered outer surface.

5,328,481

METHOD FOR INJECTING VISCOUS FLUID INTO THE EYE TO LIFT RETINAL MEMBRANE

Carl C. T. Wang, Oakland, Calif., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

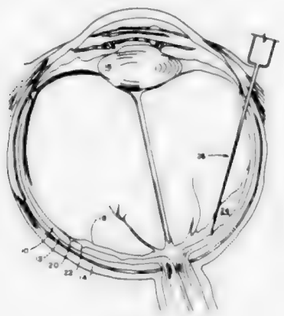
Division of Ser. No. 363,983, Jun. 9, 1989, Pat. No. 5,066,276, which is a continuation-in-part of Ser. No. 209,503, Jun. 21, 1988, abandoned. This application Sep. 16, 1991, Ser. No. 760,647
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 **4 Claims**

1. A method of injecting a viscous material into an eye between a membrane and a retina using a pneumatic unit driv-

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ing a syringe with a needle having a tip and which stores said viscous material, said syringe connected to a pneumatic output port on said pneumatic unit, said pneumatic unit having a variable pressure control, a variable timer control, an injection control switch, a pressure control switch, and a mode select switch for selecting between a continuous mode where injection of said viscous material is continuous between the time when said injection control switch is activated and when said injection control switch is deactivated and a one-shot mode where injection of said viscous material occurs for a variable, fixed interval set by said variable timer control and is performed using a pneumatic pulse to drive said syringe, said pneumatic pulse commencing when said injection control switch is activated and ending at the end of the interval set by said variable timer control, comprising the steps of:

setting a pressure using said variable pressure control and observing the flow rate of said viscous material from the needle tip of said syringe during a sample injection outside





said eye by activating said injection control switch to apply pneumatic pressure to said pneumatic output port and manipulating said variable pressure control until a desired flow rate has been achieved;

selecting the one-shot mode using said mode select switch and setting the desired time interval for said pneumatic pulse at said pneumatic output port generated during said one-shot mode by doing a sample injection outside the eye by activating said injection control switch a plurality of times to generate a plurality of pneumatic pulses at said pneumatic output port and manipulating said variable timer control to adjust the time duration of each pneumatic pulse until the desired time duration is found;

placing the needle tip at the location in the eye where the injection is to be made and activating said injection control switch; and

repeating the step next above at a plurality of other locations if necessary.

5,328,482

CATHETER WITH AUTOMATIC NEEDLE GUARD

Richard C. Sircom, Darmouth; Youssef M. Youssef, Ottawa, and Robert S. Solomon, Toronto, all of Canada, assignors to Sero-Guard Corporation, Ottawa, Canada

Continuation-in-part of Ser. No. 309,305, Feb. 1, 1989, abandoned. This application Mar. 20, 1991, Ser. No. 672,651

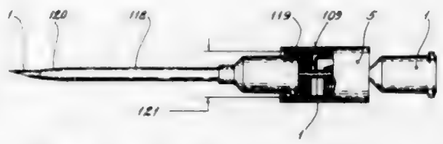
Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—164 **18 Claims**

1. In combination with a catheter/needle assembly, said assembly including a catheter with a hub and an insertion needle of constant diameter having a base and tip, a needle tip protecting device for covering the tip of the needle after separation of the needle from the catheter, said protecting device comprising:

(a) a body mounted on and slidingly supported by the insertion needle and positioned between the catheter hub and needle base;

(b) coupling means associated with said body, said body being coupled to the catheter hub through said coupling means before advancement of the protecting device to the



needle tip and being detachable from said catheter hub upon separation of the insertion needle from the catheter; and

(c) needle engagement means for automatically, nonremovably, directly engaging the protective device with the outer surface of the needle against further removal of the protecting device from the needle when such device is moved to a position where it encloses the needle tip.

5,328,483

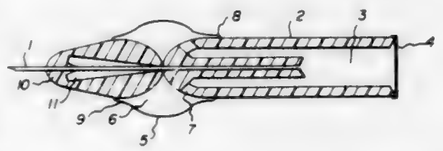
INTRADERMAL INJECTION DEVICE WITH MEDICATION AND NEEDLE GUARD

Richard M. Jacoby, 9951 N. Heather Dr., Castle Rock, Colo. 80104

Filed Feb. 27, 1992, Ser. No. 843,282

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—185 **6 Claims**



1. An intradermal or hypodermic injection device comprised of:

a chamber within a hollow hub attached to a hollow hypodermic needle means, said chamber being sealed at a back end by a seal attached to said hub means;

a flexible elastic bulb attached at one end to said hub and enveloping all but a exposed tip end of said needle means to form a reservoir means for holding a prepackaged dose of medication, which reservoir means communicates with the chamber of said needle means and said hub, through a communicating passage in said hub, the contents of said reservoir means dispensed by way of said communicating passage to said chamber of said hub through said hollow needle means by action of squeezing of said bulb;

a needle guard, attached to the leading edge of said bulb, perforated by the exposed tip end of said needle means in the undischarged state of the device, which needle guard slides over the tip end of said needle means deployed by the same squeezing action used to dispense the medication of said reservoir means.

5,328,484

NON-REUSABLE SYRINGE FOR MEDICAL PURPOSES

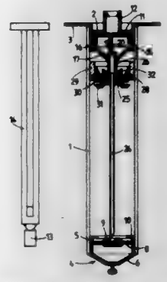
Brice Somers, 1, Chemin de al Sapiniére, 1253 Vandoeuvres, and Eric Hauf, 55, Avenue de Rumine, 1005 Lausanne, both of Switzerland

Filed Jul. 30, 1993, Ser. No. 99,597

Claims priority, application Switzerland, Aug. 12, 1992, 2527/92; Jan. 28, 1993, 242/93

Int. Cl.[5] A61M *5/32, 5/00*

U.S. Cl. 604—195 **12 Claims**



1. A syringe for medical use comprising a watertight cylindrical body, a plunger movable linearly inside the body, a needle also movable linearly inside the body and relatively to the plunger, wherein before the syringe is used, the needle is located for protection inside the watertight cylindrical body; an elastomeric plug which can be perforated by the needle and that closes a distal end of the syringe; the plunger being movable to a first position in which the plunger has advanced the needle to a position in which the needle has penetrated said plug and is extended to a position of use, snap on coupling means non-releasably engageable between the plunger and the needle upon movement of the plunger to a second position beyond said first position in the direction of said advance of the needle, and a member within the syringe which has lesser resistance to compression when wet than when dry and which when dry limits movement of the plunger to said first position and which when wet permits movement of the plunger to said second position.

5,328,485

DISPOSABLE SYRINGE WITH NEEDLE COVER

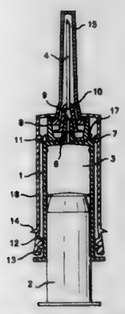
Saul Moreno; Jaime L. Szapiro, and Leonardo Szames, all of Tabare 1641, Buenos Aires, Argentina

Filed Aug. 13, 1993, Ser. No. 106,389

Claims priority, application Argentina, Aug. 20, 1992, 323,024

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **5 Claims**



1. A disposable syringe with needle cover of the type comprising, in combination, a straight axis cylindrical main hollow body, shiftably and tightly housing a plunger passing through the lower open end thereof, while from the center of the opposed end a conical and coaxial hollow nozzle projects, the inner conduit of which communicates to the interior of the needle coupling means, wherein, between said coaxial hollow nozzle of the main hollow body and the needle coupling means there is a coaxial insert having a standard plugging cone at its central region; said insert being housed in the interior of a hollow, shiftable and coaxial hollow needle cover, having a length longer than the needle plus its coupling means, and of a length greater than that of the main body; said needle cover having a wholly opened lower end as well as means for being removably retained with respect of the main body and means for retaining the coaxial insert, wherein said coaxial hollow nozzle of the main cylindrical body is surrounded by an annular wall, the inner surface of which is conical, a peripheral cavity being defined with respect to said nozzle, the size of which is slightly smaller than the peripheral annular portion defined around the plugging cone of the coaxial insert.

5,328,486

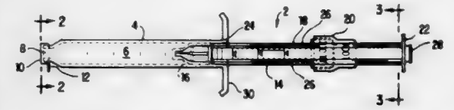
SYRINGE FOR DISPENSING MULTIPLE DOSAGES

Keith F. Woodruff, Mountainside, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Nov. 19, 1991, Ser. No. 796,046

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—208 **15 Claims**



1. In a syringe including a container for storing material to be discharged therefrom, a plunger mounted behind said container and having a forward end adapted to be received within a rear opening in said container for selective movement thereof relative to said container for discharging material from said container, and means for measuring the quantity of material to be discharged from said container, the improvement comprising:

said means for measuring including a scale calibrated to correspond to the quantity of material within said container, means for selectively moving said scale relative to said container conjointly with said plunger, and means for selectively moving said scale relative to said plunger,

said scale comprising an endless loop mounted for selective rotation about a supporting element fixedly mounted relative to said plunger.

5,328,487

INTRAVENOUS TUBE MOUNTING AND CONTROL APPARATUS

Jovanka Starchevich, 138 Sullivan St., New York, N.Y. 10012

Filed Sep. 23, 1992, Ser. No. 949,148

Int. Cl.[5] A61M *5/00*

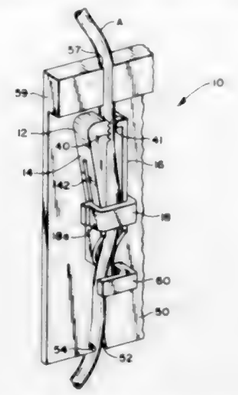
U.S. Cl. 604—246 **21 Claims**

1. An apparatus for engaging at least one associated intravenous tube used in the delivery of medication or nutrient to a patient, which comprises:

a first generally U-shaped member having first and second generally straight elongated legs, each of said legs having inner and outer faces, said inner faces being disposed in opposed relation, said first leg being movable between a first position in which the respective inner faces of said first and second legs are disposed in spaced relation and a second position in which the respective inner faces of said first and second legs are closer than in said first position, said inner faces being disposed in said first position with a space sufficient to allow insertion of the associated intra-

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venous tube between said legs, said inner faces being dimensioned and configured to engage the sides of the associated intravenous tube in said second position, a second generally U-shaped member engaging said legs



along said outer faces thereof, said second generally U-shaped member being slidable in an axial direction along said legs, whereby said first leg is shiftable between said first position and said second position.

5,328,488

LASER LIGHT IRRADIATION APPARATUS FOR MEDICAL TREATMENT

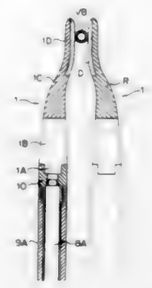
Norio Daikuzono, Chiba, Japan, assignor to S.L.T. Japan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/00447, § 371 Date Sep. 12, 1991, § 102(e) Date Sep. 12, 1991, PCT Pub. No. WO91/10404, PCT Pub. Date Jul. 25, 1991
PCT Filed Mar. 31, 1990, Ser. No. 761,892
Claims priority, application Japan, Jan. 22, 1990, 2-12347
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—16 **15 Claims**

1. A laser light irradiation system for use in a medical treatment, said system comprising:

a laser light generator;

transmission means for transmitting laser light from the generator;



a first probe formed of a laser light transmissive material for receiving laser light from said transmission means and for emitting laser light from a light emitting surface of the first probe; and

a second probe formed of a laser light transmissive material, said second probe comprising a base portion having an axis along which said base portion receives laser light from said transmission means, an intermediate portion inclined with respect to the exis of said base portion in a direction extending toward the first probe, and a distal portion which includes a light emitting surface and which has an axis parallel to but offset from the axis of said base portion, the light emitting surface of the first probe emitting at least some laser light toward the second probe and the light emitting surface of the second probe emitting at least some laser light toward the first probe, wherein:

the light emitting surface of the first probe is projected non-axially toward the light emitting surface of the second probe, and the light emitting surface of the second probe is projected non-axially toward the light emitting surface of the first probe; and

the first probe and the second probe are moveable with respect to each other such that an operator may move the first probe and the second probe into and out of physical contact with each other during said medical treatment.

5,328,489

NON-AQUEOUS LIQUID BLEACH CONTAINING 40-70% PERBORATE MONOHYDRATE IN A NONIONIC SURFACTANT

Hans-Josef Beaujean, Hilden; Karl Schwadtke, Leverkusen, and Erich Holz, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 30,306
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1990, 4030850
Int. Cl.[5] C11D *1/66, 3/39;* **D06L** *3/02, 3/16*
U.S. Cl. 8—111 **12 Claims**

1. A substantially non-aqueous composition in the form of a paste, said composition consisting essentially of from 50 to 65% by weight of perborate monohydrate in a liquid medium consisting essentially of the addition products of 2 to 7 mols of ethylene oxide and C_{12}–C_{18} saturated alcohols.

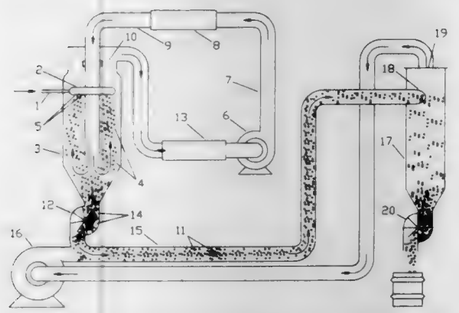
12. The process of cleaning laundry comprising providing a wash liquor and adding to said wash liquor a bleaching effective amount of the composition of claim 1 and contacting soiled laundry with said wash liquor.

5,328,490

CALCIUM CHLORIDE SALT MANUFACTURING PROCESS

Lucas James, 2829 W. Prion Lake Rd., Lake Charles, La. 70605

Division of Ser. No. 2,062, Jan. 8, 1993. This application Aug. 30, 1993, Ser. No. 113,338
Int. Cl.[5] C22B *1/14*
U.S. Cl. 23—313 R **3 Claims**



1. A process of producing calcium chloride granules from a solution of calcium chloride and water comprising;

a. introducing droplets of calcium chloride and water solution into an enclosed chamber, said chamber having an upper and lower portion, said droplets being introduced into said upper chamber;

b. introducing a current of hot, dry gas into said chamber, said current of hot, dry gas flowing from said lower portion of said chamber to said upper portion of said chamber;

c. adjusting the flow of said current of hot, dry gas so as to suspend said droplets in said current of hot, dry gas at a controlled rate of fall for sufficient time so as to remove said water from said droplets through evaporation, said calcium chloride within said droplets thereby forming said granules; and

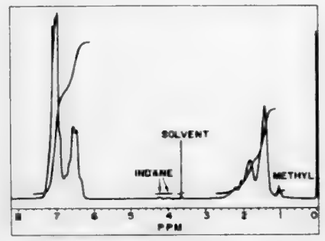
d. removing said granules from said chamber without opening said chamber.

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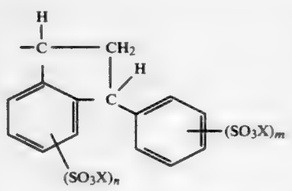
METHOD FOR DISPERSING AND STABILIZING A COAL/WATER SLURRY USING A POLYSTYRENESULFONATE

Junichi Yamada, Narashino; Mituo Sugiyama, Tokyo, and Tadashi Iihara, Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 721,944
Claims priority, application Japan, Jun. 29, 1990, 2-172065
Int. Cl.[5] C10L *5/00*
U.S. Cl. 44—280 **9 Claims**



1. A method for dispersing and stabilizing a coal-water slurry by mixing coal with water in the presence of an effective amount of a polystyrenesulfonic acid having a weight-average molecular weight in the range of 2,000 to 100,000 or a salt thereof, wherein at least 70% of the terminals of the polymer chains have an indane ring of the formula (I):



(I)

wherein X represents a cation selected from the group consisting of a hydrogen, alkali metals, alkaline earth metals, ammonium and organic amines, and n and m each represent 0 or an integer of at least 1.

5,328,492

FILTRATION APPARATUS

James F. Zievers, LaGrange; Peter Aguilar, Forest View, and Paul Eggerstedt, Plainfield, all of Ill., assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Filed Feb. 18, 1993, Ser. No. 18,831
Int. Cl.[5] B01D *46/04*
U.S. Cl. 55—302 **12 Claims**

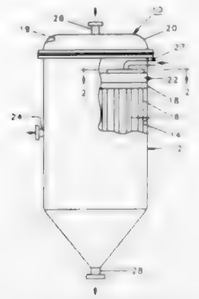
1. A gas flow resistance device for resisting the flow of gas from the downstream side of a plurality of filter elements connected between a gas inlet and a gas outlet, comprising in combination

a body formed of a refractory material,

a first plurality of parallel, narrow passageways extending through said body, and

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a first porous safety shield mounted across one end of said first plurality of parallel narrow passageways for preventing solid particles from travelling between said filter elements and said gas outlet.

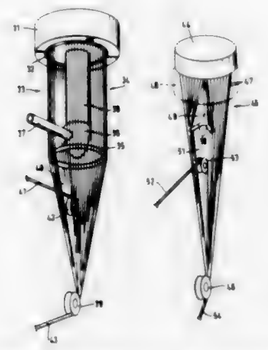


5,328,493

APPARATUS FOR MANUFACTURING A GLASS AND ORGANIC COMPOSITE STRAND, INCLUDING A BLOWING DEVICE

Giordano Roncato; Robert Fedorowsky, both of Aix Les Bains; Philippe Boissonnat, Barby, and Dominique Loubinoux, Chambery, all of France, assignors to Vetrotex France, Chambery, France

Filed Mar. 17, 1992, Ser. No. 852,874
Claims priority, application France, Mar. 19, 1991, 91 03274
Int. Cl.[5] C03B *37/02*
U.S. Cl. 65—1 **2 Claims**



1. In an apparatus for implementing the process of manufacturing a composite strand, composed of continuous filaments of glass and of organic thermoplastic material, and comprising at least one die (**10**), to which glass is supplied by simple gravity feed, and which is heated by Joule effect, and which is perforated at the bottom with a plurality of orifices (**11**), at lest one device (**14**) for coating the glass filaments (**12**), and at least one device (**15**) for combining said glass filaments into at least one strand (**16, 41**), at least one drawing head (**18, 31**), which is cylindrical and equipped with an annular die plate (**32**) having a vertical centerline and perforated with a plurality of orifices on part of its surface to define at least one drawing head segment devoid of orifices, and which is supplied with molten organic thermoplastic material under pressure and which is associated with a blowing device (**22, 38**) and from which the organic filaments are drawn along predetermined paths from the orifices of the die plate to form at least one layer of filaments converging along said paths toward a common point of convergence so as to define at lest part of an outer periphery of an area lying between the die plate and the point of convergence, a guiding component (**25, 42**) for guiding the glass strand or strands (**16, 41**) through said outer periphery and into said area, an assembly device **24, 39** for assembling the organic filaments and the glass strand or strands together, and a conveying device (**28**) for conveying the organic filaments and the glass strand for strands through said assembly device, the improvement wherein:

(a) the orifices are distributed into one or more groups;

(b) the blowing device (**22, 38**) is mounted below the drawing head (**18, 31**) and along its vertical centerline; and

(c) the guiding component (**25, 42**) for guiding said glass strand is a pulley situated at least partially within said area and in alignment with the drawing head segment which is devoid of orifices.

2. In an apparatus for implementing the process of manufacturing a composite strand, composed of continuous filaments of glass and of organic thermoplastic material, and comprising at least one die (**10**), to which glass is supplied by simple gravity feed, and which is heated by joule effect and which is perforated at the bottom with a plurality of orifices (**11**), at least one device (**14**) for coating the glass filaments (**12**), and at least one device (**15**) for combining said glass filaments into at least one strand (**16, 52**), at least one drawing head (**44**), which is supplied with molten organic thermoplastic material under pressure and which is associated with a blowing device (**48**) and from which the organic filaments are drawn along predetermined paths from a plurality of spaced orifices in a die plate of the at least one drawing head to form at least one layer of filaments converging so as to define at least part of an outer periphery of an area lying between the die plate and the point of convergence, a guiding component (**53**) for guiding the glass strand or strands (**16, 52**) through said outer periphery and into said area, an assembly device (**46**) for assembling the organic filaments and the glass strand or strands together, and a conveying device (**28**) for conveying the organic filaments and the glass strand or strands through said assembly device, the improvement wherein:

(a) the at least one drawing head (**44**) is cylindrical and said die plate is annular and perforated with a plurality of said orifices defining a complete circle;

(b) the blowing device (**48**) is cylindrical and is mounted vertically at the periphery of the drawing head and in surrounding relation to the organic filaments being formed;

(c) a deflecting device (**49, 50**) is positioned in engagement with some of the organic filaments (**47**) for deflecting them to define a passage; and

(d) the guiding component (**53**) for guiding the glass strand or strands (**52**) is a pulley situated at least partially within said area and in alignment with the deflecting device and said passage.

5,328,494

METHOD OF FORMING A PREFORM BY PRECOATING GLASS FIBERS PRIOR TO CHOPPING AND PREFORMING

Josh Kelman, Dover, N.H., and Robert Hames, York, Me., assignors to Davidson Textron Inc., Dover, N.H.

Filed Apr. 8, 1992, Ser. No. 865,295
Int. Cl.[5] C03C *25/02;* **C03B** *23/20*
U.S. Cl. 65—60.1 **1 Claim**

1. A process of manufacturing a preform comprising the steps of:

providing an unchopped glass fiber roving from a supply source, into a tank, through cooling air from a cooling source and to a chopper, said unchopped glass fiber roving is continuously and axially moved along its length;

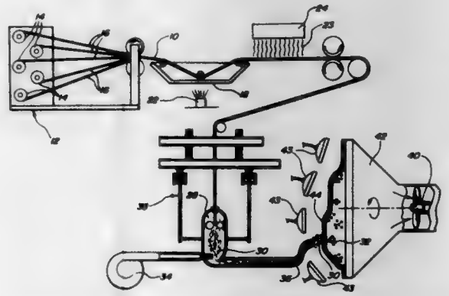
coating the unchopped glass fiber roving with a curable liquid binder material along its length as it axially moves into a tank of liquified thermoplastic binder and submerging the roving in the binder and subsequently withdrawing said roving from said tank;

solidifying the curable liquid binder material coating on said unchopped glass fiber roving as it axially moves through said cooling air;

thereafter chopping the binder coated glass fiber roving into binder coated chopped fibers as it axially moves through said chopper;

providing a gaseous flow and a preform screen;

combining said binder coated chopped fibers with said gaseous flow and directing said chopper fibers from said chopper and said gaseous flow against the preform screen for depositing the binder coated chopped fibers onto the preform screen;



retaining said binder coated chopped fibers on said preform screen to form a preform shaped to the form of said preform screen; and

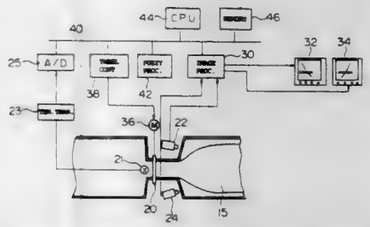
curing said preform by applying heat to said binder coated chopped fibers to tackify said binder material on said binder coated chopped fibers after deposition of said binder coated chopped fibers onto said preform screen, thereafter cooling said binder coated chopped fibers to solidify said binder material to bind the binder coated chopped fibers together to form a cured preform on said preform screen.

5,328,495

FLOAT-BATH RIBBON-WIDTH CONTROL METHOD AND SYSTEM

Masaharu Okafuji; Junichi Noguchi, both of Ichihara, and Tomizo Otsuki, Osaka, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/01276, § 371 Date Apr. 13, 1992, § 102(e) Date Apr. 13, 1992, PCT Pub. No. WO92/05120, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 25, 1991, Ser. No. 847,093
Claims priority, application Japan, Sep. 26, 1990, 2-256683; Sep. 24, 1991, 3-243066
Int. Cl.[5] C03B *18/04;* **G06F** *15/46*
U.S. Cl. 65—99.5 **8 Claims**



1. In a glass manufacturing system in which molten glass, having a temperature, flows from a canal into a float bath, said float bath having first and second sides, at a rate determined by a tweel, to produce a ribbon of molten glass, which ribbon has first and second edges that define a width, a method for controlling the width of the glass ribbon in the float bath to maintain the width of the ribbon at a substantially constant value by raising and lowering the tweel to adjust the flow of the molten glass into said float bath, characterized in that the tweel is controlled through fuzzy inference using predetermined control variables including:

deviation of the first edge of the ribbon from a first desired position relative to the first side of the float bath,

deviation of the second edge of the ribbon from a second desired position relative to the second side of the float bath, and

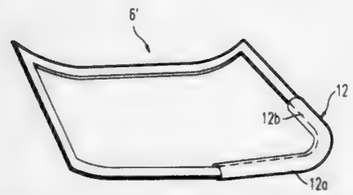
the temperature of the molten glass in the canal.

5,328,496

APPARATUS INCLUDING MOLD HAVING COVERING FOR ANNULAR BENDING/TEMPERING MOLDS

Jean-Luc Lesage, and Thierry Franco, both of Compiegne, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Jun. 1, 1992, Ser. No. 890,782
Claims priority, application France, May 30, 1991, 91 06494
Int. Cl.[5] C03B *23/023, 27/044*
U.S. Cl. 65—268 **25 Claims**



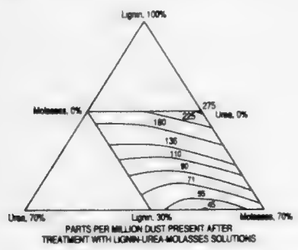
22. A fabric covering mounted on an annular mold member and configured to cover an annular upper surface of the annular mold member in a mold serving as a support for products during bending and tempering, wherein the fabric covering has a density characteristic which increases at least from a radially inner periphery of the annular mold member toward a radially outer periphery of the annular mold member wherein said fabric covering further has an air permeability characteristic which increases from the radially inner periphery of the annular mold member to the radially outer periphery of the annular mold member, and wherein the fabric covering comprises a refractory metallic fiber covering having fibers taken from the group consisting of stainless steel and nickel/chrome alloy.

5,328,497

PARTICULATE FERTILIZER DUST CONTROL

Scott Hazlett, Sumner, Wash., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Jan. 21, 1992, Ser. No. 823,569
Int. Cl.[5] C05C *9/00;* **C05G** *3/10*
U.S. Cl. 71—28 **14 Claims**



1. A composition for reducing fugitive dust in solid particu-

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late fertilizers consisting essentially of an aqueous solution of a mixture of lignosulfonate, sugar, and urea wherein the lignosulfonate is within the range of about 10% to about 40% by weight of total solids in the composition, wherein the sugar is within the range of about 10% to about 80% by weight of total solids of the composition and wherein the urea is within the range of about 10% to about 50% by weight of total solids of the composition.

5,328,498

PLANT SUBSTRATE AND USE THEREOF

Rüdiger Lang, Vlotho, Fed. Rep. of Germany; Jürgen Tönne, Cyr en Val, France, and Klaus Czempik, Verden/Aller, Fed. Rep. of Germany, assignors to Effem GmbH, Verden/Aller, Fed. Rep. of Germany

Division of Ser. No. 466,302, Jun. 12, 1990, Pat. No. 5,175,131. This application Sep. 23, 1992, Ser. No. 950,404

Claims priority, application PCT Int'l Appl., Aug. 12, 1988, PCT/DE88/00491

Int. Cl.[5] C05G *3/02, 3/10*

U.S. Cl. 71—64.07 **7 Claims**

1. A plant substrate, comprising 20 to 100% of a granulate selected from the group consisting of foamed clays, slightly fired ceramic materials and mixtures thereof, the granulate being sprayed with a solution of an active substance selected from the group consisting of nutrients, fertilizers, pesticides and combinations of these, and then covered with a covering solution which first hardens but then loosens up under the action of water, root juices or both, wherein the covering solution is a waterglass solution that has previously been reacted with lime, chalk or gypsum.

5,328,499

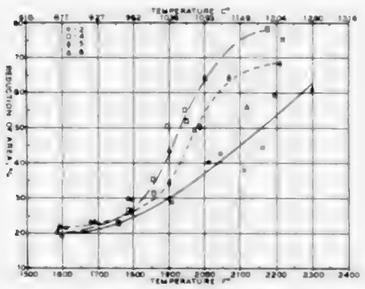
MECHANICALLY ALLOYED NICKEL-BASE COMPOSITION HAVING IMPROVED HOT FORMABILITY CHARACTERISTICS

Jon M. Poole; Sarwan K. Mannan, both of Barboursville, and Howard W. Sizek, Huntington, all of W. Va., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Filed Apr. 28, 1993, Ser. No. 54,517

Int. Cl.[5] C22C *30/00*

U.S. Cl. 75—255 **14 Claims**



12. A mechanically alloyed composition of matter consisting essentially of in weight percent of about 30–40% chromium, about 5–25% cobalt, about 0.5–10% iron, about 0.2–0.6% aluminum, about 0.3–1.2% titanium, up to about 0.15% carbon, about 0.2–1% of yttria in a yttria-containing oxidic phase, up to about 0.7% oxygen inclusive of the oxygen in yttria, up to about 0.3% nitrogen with the proviso that the weight of said titanium is at least about 1.5 times the weight of nitrogen, up to about 0.4% zirconium, up to about 1% hafnium, up to about 1% silicon, up to about 2% manganese, up to about 0.05% boron, a carbide former selected from the group consisting of tantalum and niobium in a range at least 1.3% to about 5%, up to about 1% molybdenum, up to about 1% tungsten, up to about 1% rhenium, up to about 1% total yttrium and lanthanides provided that the total of hafnium, silicon, manganese, boron, niobium, tantalum, molybdenum, tungsten, rhenium, yttrium and the lanthanides does not exceed about 10%, the balance of the composition being essentially nickel.

5,328,500

METHOD FOR PRODUCING METAL POWDERS

Robert J. Beltz, 743 Main St.; Joseph D. Dankoff, R.D. #5, Box 19, both of Latrobe, Pa. 15650, and Melvin L. McClellan, 111 Corbin Ave., Beaver Falls, Pa. 15202

Filed Jun. 22, 1992, Ser. No. 901,875

Int. Cl.[5] B22F *1/00*

U.S. Cl. 75—343 **23 Claims**



1. A method for making a high alloy metal composite powder from a base iron powder, a substance containing carbon in a combined form, and at least one alloying component, said method comprising the steps of:

a) pretreating, separately from said base iron powder, said at least one alloying component to substantially remove oxygen and substantially remove free-carbon from the at least one alloying component prior to milling said at least one alloying component, the free-carbon comprising carbon in a form other than a combined form; and

b) milling, subsequent to said pretreating, said base iron powder, said substance containing carbon and said at least one pretreated alloying component for a period of time sufficient to embed said at least one pretreated alloying component in said base iron powder to produce an intermediate milled product.

5,328,501

PROCESS FOR THE PRODUCTION OF METAL PRODUCTS B9 COMBINED MECHANICAL ACTIVATION AND CHEMICAL REDUCTION

Paul G. McCormick, South Perth, and Graham B. Schaffer, Subiaco, both of Australia, assignors to The University of Western Australia, Australia

PCT No. PCT/AU89/00550, § 371 Date Aug. 19, 1991, § 102(e) Date Aug. 19, 1991, PCT Pub. No. WO90/07012, PCT Pub. Date Jun. 28, 1990

PCT Filed Dec. 21, 1989, Ser. No. 689,253

Claims priority, application Australia, Dec. 22, 1988, PJ2092/88

Int. Cl.[5] C22C *1/04*

U.S. Cl. 75—352 **45 Claims**

1. A process for the production of a metal product comprising subjecting a mixture of at least one reducible metal compound and at least one solid or liquid reducing agent to mechanical activation, said reducing agent being capable of reducing said reducible metal compound whereby the reducible metal compound is reduced by the reducing agent to provide the metal product.

5,328,502

METHOD FOR CONTROLLING AND REGULATING THE PRIMARY NUCLEATION OF IRON MELTS

Stig L. Bäckerud, Bloomfield Hills, Mich., assignor to Sinter-Cast AB, Stockholm, Sweden

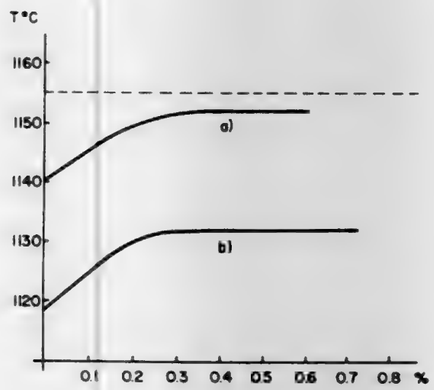
PCT No. PCT/SE91/00144, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. W091/13176, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 25, 1991, Ser. No. 923,902

Claims priority, application Sweden, Feb. 26, 1990, 9000678-4

Int. Cl.[5] C21C *1/08;* C22C *33/08*

U.S. Cl. 75—377 **11 Claims**



1. A method for controlling solidification of cast iron from a melt having an intrinsic crystallisation ability, by determining and modifying that ability, said method comprising the steps of:

(a) providing a sampling vessel having at least one thermoelement and containing a calibrated quantity of an inoculating agent based on FeSi and sufficient to produce a maximum inoculating effect in a given-quantity sample of a base iron melt.

(b) obtaining said given-quantity sample and placing said sampling vessel in thermic equilibrium with said given-quantity sample prior to commencement of solidification of said sample;

(c) allowing said sample to solidify in said vessel while recording temperature changes of said sample per unit time as sensed by said at least one thermoelement;

(d) from the temperature changes sensed and recorded in step (c), determining;

the difference between the minimum temperature in an undercooling phase present in said solidifying sample,

the maximum temperature in an eutectic reaction phase present in said solidifying sample, and

the eutectic equilibrium temperature T_e of said solidifying sample; and

(e) adding to said base melt thermodynamically stable particles of at least one spinel, oxide or oxysulphide of at least one element selected from the group consisting of magnesium, aluminium, potassium, zirconium, strontium, titanium and a rare earth metal, when the difference between the eutectic equilibrium temperature and the minimum temperature in the undercooling phase, as determined in step (d), exceeds 10° K. and the difference between the eutectic equilibrium temperature and the maximum temperature in the eutectic reaction phase, as determined in step (d) exceeds 5° K.

5,328,503

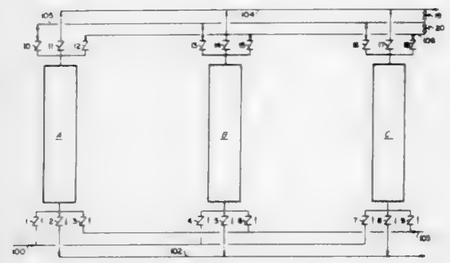
ADSORPTION PROCESS WITH MIXED REPRESSURIZATION AND PURGE/EQUALIZATION

Ravi Kumar, Allentown; Tarik Naheiri, Bath, and Charles F. Watson, Orefield, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 976,878, Nov. 16, 1992, abandoned. This application Mar. 25, 1993, Ser. No. 37,070

Int. Cl.[5] B01D *53/04*

U.S. Cl. 95—101 **45 Claims**



1. A process for selectively separating a more strongly adsorbable component from a less strongly adsorbable component of a feed gas mixture in a plurality of adsorption beds containing an adsorbent selective for the more strongly adsorbable component, comprising the steps of:

(a) introducing a feed gas mixture at high pressure containing said more strongly adsorbable component and said less strongly adsorbable component into an inlet of a first adsorption bed containing said adsorbent selectivel for the more strongly adsorbable component and adsorbing the more strongly adsorbable component on the adsorbent while the less strongly adsorbable component passes through said first bed unadsorbed until the adsorption front of the more strongly adsorbable component approaches an outlet of said first bed and terminating the introduction of the feed gas mixture;

(b) following the termination of the introduction of the feed gas mixture into said first bed and without any intervening steps, cocurrently depressurizing said first bed to a lower pressure to remove said gas mixture from said first bed and passing said gas mixture to an outlet of a second bed of said plurality of adsorption beds at lower pressure to countercurrently purge said more strongly adsorbable component from said second bed;

(c) countercurrently evacuating said first bed under vacuum conditions to further remove said more strongly adsorbable component at the lowest pressure;

(d) countercurrently purging said first bed with cocurrently depressurizing gas mixture from a bed of said plurality of adsorption beds undergoing step (b) to remove additional more strongly adsorbable component from said first bed;

(e) repressurizing said first bed with less strongly adsorbable component from a bed of said plurality of adsorption beds currently undergoing step (a) and with feed gas mixture; and

(f) performing steps (a) through (e) in each of said plurality of adsorption beds in a phased sequence.

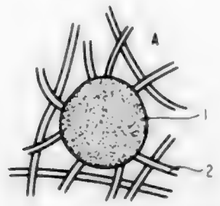
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5,328,504

IMAGE RECORDING INK

Hiroyuki Ohnishi, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 564,483, Aug. 9, 1990, abandoned. This application Feb. 7, 1992, Ser. No. 831,653
Claims priority, application Japan, Aug. 9, 1989, 1-206551; Aug. 11, 1989, 1-208863; Jul. 23, 1990, 2-194240
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—20 D 12 Claims



1. An image recording ink composition having good re-dispersibility for use in a printer for recording letters and images with a liquid ink, consisting essentially of water, a water-insoluble component and a water-soluble resin, said water-insoluble component being a pigment having an average particle diameter of not more than 0.2 μm, wherein aggregates formed in the ink composition are re-dispersed upon contact with water.

5,328,505

CATIONIC AQUEOUS BITUMINOUS AGGREGATE SLURRIES FOR HOT CLIMATES

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 961,658, Oct. 16, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 122,004
The portion of the term of this patent subsequent to Jun. 14, 2011, has been disclaimed.
Int. Cl.[5] C08L *95/00*
U.S. Cl. 106—277 10 Claims

1. An improved paving slurry seal mixture of a cationic aqueous bituminous emulsion and mineral aggregate capable of being worked comprising a mineral aggregate of a grade passing through a No. 4 seive and at least 80% retained on 200 mesh, mixing water, and from about 10% to about 20%, by weight of the aggregate, of an oil-in-water emulsion of a pH of 1-7 and comprised of from about 30% to about 80% bitumen, by weight of the emulsion, from about 0.1% to about 10% of a cation active emulsifier, based on the weight of the emulsion, and water to make up 100% of the emulsion, wherein the improvement comprises, as the cation active emulsifier, a blend of (1) the product of the reaction of a C_8–C_{15} alkylphenol with from 15 to 100 moles ethylene oxide and (2) the condensate product of the reaction of a polyamine with a member of the group consisting of kraft lignin and maleinized kraft lignin.

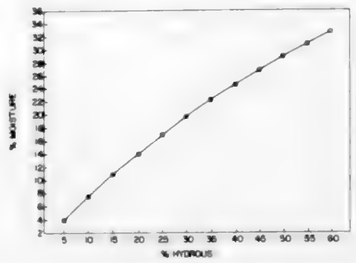
5,328,506

PIGMENT PRODUCTS IN AN AGGLOMERATED FORM AND USE THEREOF IN BULK SHIPMENTS

Russell R. Crumbley, Macon; James T. Palmer, McIntyre, both of Ga.; Raymond G. Downey, Middletown, N.J.; Mitchell J. Willis, Macon, Ga., and Michael Pavol, Bridgewater, N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Oct. 1, 1992, Ser. No. 955,544
Int. Cl.[5] C04B *14/00*
U.S. Cl. 106—416 21 Claims

1. Kneaded dough-like agglomerates comprising at least one powdered hydrophilic pigment, said agglomerates containing from 1 to 30% by weight of water, having an average size in excess of 325 mesh (U.S. Standard) and being substantially free from dust, said agglomerates being sufficiently compact to resist breakdown to dust during shipment but being capable of



being dispersed in water when agitated therein using conventional pigment makedown equipment.

5,328,507

LIGHT WEIGHT CEMENTITIOUS FORMULATIONS

David A. Crocker, Grand Prairie, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

Filed Sep. 23, 1992, Ser. No. 949,905
Int. Cl.[5] C04B *16/08, 7/32*
U.S. Cl. 106—672 55 Claims

1. A light weight cementitious composition comprising a dry mixture of:

a) a hydraulic cement component in said dry mixture comprising a first masonry cement constituent selected from the class consisting of Type S cement, Type M cement and Type N cement, a second cement constituent selected from the class consisting of Type K cement and a pozzolan containing cement, and a third cement constituent having high early strength characteristics relative to said first and second constituents, each of said first and second constituent being present in an amount less than the amount of said third constituent; and

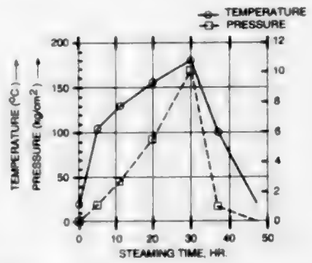
b) an aggregate component in said dry mixture comprising a lightweight aggregate present in an amount to provide a bulk density of said dry mixture of no more than about 100 pounds per cubic foot.

5,328,508

METHOD FOR RAPID HYDRATION OF CEMENT AND IMPROVED CONCRETE

Tung D. Lin, Wilmette, Ill., assignor to Lintek International, Inc., Wilmette, Ill.

Filed Mar. 18, 1993, Ser. No. 33,575
Int. Cl.[5] C04B *7/00*
U.S. Cl. 106—723 17 Claims



1. A method for making concrete from an initially dry mixture including portland cement, a fine aggregate, and a coarse aggregate, which method comprises the steps of:

introducing steam into the mixture, which steam contains less than 1% by weight of liquid phase water;

maintaining the steam in contact with the mixture approximately at saturation conditions for a time effective to hydrate substantially all of the cement; and

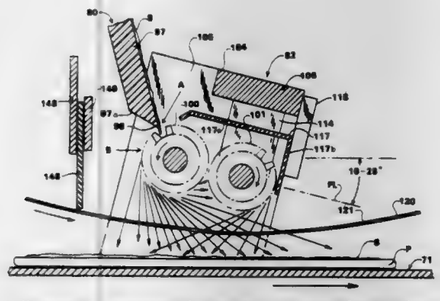
injecting air into contact with the mixture and with the steam, while the steam is being maintained in contact with the mixture, so as to make concrete having a compressive strength of at least about 69,000 kN/m^2.

5,328,509

VISCOUS FLUID DISPENSING APPARATUS

James A. Essex, Columbus, Ohio, assignor to J. E. Grote Company, Inc., Blacklick, Ohio

Filed Nov. 12, 1991, Ser. No. 790,557
Int. Cl.[5] B05C *5/00*
U.S. Cl. 118—24 24 Claims



1. Dispensing apparatus for placing a viscous fluid to form a uniformly distributed layer of substantially constant thickness on an upwardly facing surface of an article being displaced through the apparatus along a longitudinal path in a horizontal direction comprising:

an elongated fluid feedplate having a longitudinal axis extending parallel to the longitudinal path of the article having an upwardly facing surface disposed in a relatively steeply inclined relationship over which viscous fluid received on said feedplate surface flows in a downward direction along the longitudinal axis of said plate in a sheet-form layer at a predetermined rate of flow, said feedplate having an upper end portion for receiving of the viscous fluid thereon and a lower end portion terminating in a transversely extending, horizontally disposed bottom end edge from which the fluid is discharged,

fluid feed means for application of a viscous fluid in a continuous stream onto said feedplate's upper end portion in a substantially uniformly distributed layer extending transversely across a predetermined width of said feedplate, and

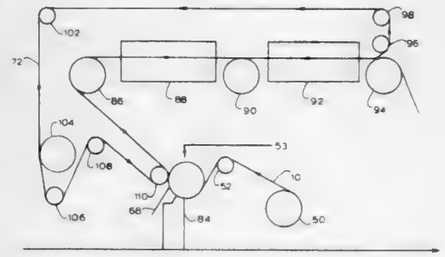
a first elongated, fluid-distribution roller of cylindrical configuration revolved at a predetermined speed and supported in horizontal, transversely extending relationship to said feedplate at its discharge end in underlying and parallel relationship to said discharge end edge for receiving of fluid discharging from said feedplate onto upwardly facing surface portions of said roller, said roller having a plurality of radially outward extending projections formed thereon in relatively spaced apart relationship and distributed around the periphery thereof in a predetermined pattern over at least the axial length of said roller receiving the fluid discharged thereon whereby fluid received from the discharge end edge of said feedplate is collected by said roller and its projections and carried around the circular path of movement of said projections to positions where said projections are directed in a generally downward direction and gravity, with the aid of centrifugal force, causes the fluid to be discharged from said roller and its projections and deposited onto the surface of said article to be coated with said fluid when the article is displaced under said roller.

5,328,510

APPARATUS FOR MAKING PAPER AND PAPERBOARD HAVING ENHANCED GLOSS

Leroy C. Hofmann, Saddle River, N.J.; Robert W. Hicks, Warwiek, and Jasper H. Field, Goshen, both of N.Y., assignors to International Paper Company, Purchase, N.Y.

Continuation of Ser. No. 713,473, Jun. 7, 1991, which is a division of Ser. No. 480,434, Feb. 15, 1990, Pat. No. 5,064,692.
This application Oct. 23, 1992, Ser. No. 965,559
Int. Cl.[5] B06C *11/02;* D21H *19/00*
U.S. Cl. 118—101 24 Claims



1. An apparatus for producing a paper product having a surface with enhanced gloss, comprising:

an uncoated release film having a smooth surface;

means for applying a continuous layer of deformable coating material on a moving substrate prior to being brought into contact with said uncoated release film;

means for solidifying said layer of deformable coating material, said solidifying means having a zone in which the solidification occurs;

means for placing said substrate with said layer of coating material applied thereon within said zone; and

means for contacting said layer of coating material with said smooth surface of said release film while said layer of coating material is within said zone, said release film being brought into contact with said layer of coating material at a location at which said layer of coating material is being carried by said moving substrate;

wherein said smooth surface of said release film has a gloss which is substantially equal to or greater than 99%, is substantially free of defects, has on-adhering and release characteristics, and has a film-coating contact angle which is equal to or greater than 87 degrees, said smooth surface of said release film imparting a gloss of at least 90% to the surface of said solidified layer of coating material.

5,328,511

COATING DEVICE HAVING TWO SEPARATE COLLECTION TROUGHS CONNECTED TO EACH OTHER

Rudolf Beisswanger, Steinheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 948,401
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131131
Int. Cl.[5] B05C *1/08*
U.S. Cl. 118—203 18 Claims

1. A device for applying a coating composition to the surface of a fiber web passing by the device, the device comprising:

a rotatable application roll having a feed position located on an outer surface of the roll, a film of coating composition being delivered to the outer surface of the roll at the feed position, the roll having a delivery position located on the

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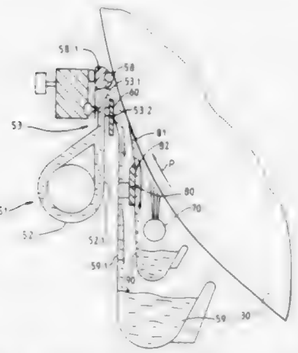
outer surface of the roll downstream from the feed position in a rotation direction of the roll, the application roll delivering the coating composition to the fiber web at the delivery position;

a nozzle applicator for delivering the film of coating composition to the application roll surface at the feed position, the applicator comprising:

a nozzle chamber for receiving coating composition, an outlet nozzle extending from the chamber and located at the feed position for delivering the coating composition to the surface of the application roll at the feed position, the nozzle being defined by two spaced apart lips;

one of the nozzle lips being a leading lip located downstream from the feed position in the direction of roll rotation, the leading lip having a first free end which supports a metering doctor that cooperates with the surface of the application roll to form an outlet slot for creating a metered film of coating composition on the application roll;

the other nozzle lip being a trailing lip located upstream from the feed position in the direction of roll rotation, the trailing lip having a second free end that is spaced away from the surface of the application roll and forms an overflow slot between the second free end of the



trailing lip and the application roll for receiving an excess stream of the coating composition passing from the nozzle chamber through the nozzle;

an overflow trough placed at an outlet side of the overflow slot to receive the excess stream of coating composition from the overflow slot;

a cleaning device for cleaning the outer surface of the roll, the cleaning device located upstream from the feed position in the rotation direction of the application roll and between the delivery position and the feed position, the cleaning device comprising;

a scraper comprising a scraper blade having a blade edge for cooperating with the roll surface at a location upstream from the nozzle in the rotation direction of the application roll;

a liquid source for applying liquid to the surface of the roll at a location upstream from the scraper in the rotation direction of the application roll; and

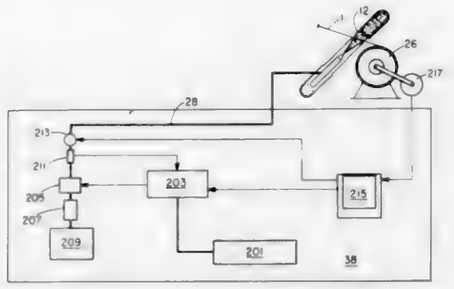
a liquid collection trough arranged along the surface of the application roll at a location upstream from the scraper blade in the rotation direction of the application roll, the scraper blade being arranged relative to the liquid collection trough to direct liquid scraped by the scraper from the application roll into the liquid collection trough, wherein the liquid collection trough is connected directly to the overflow trough.

5,328,512

CHAMBERED SPRAY-APPLICATION SYSTEM

Michael L. Steelman, Madison, and William J. Taylor, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 27, 1992, Ser. No. 920,705
Int. Cl.[5] B05B *12/00*
U.S. Cl. 118—674 **8 Claims**



1. A chambered spray-application system, said system comprising:

a housing having an inlet and an outlet, said inlet and outlet being positioned on opposite sides of said housing;

a means for supplying a virgin fiber such that said fiber enters and exits said housing via said inlet and outlet, respectively;

a variable pressure gas source;

a reservoir for holding at least one liquid therein;

a bobbin positioned to accept thereon the fiber exiting said housing; and

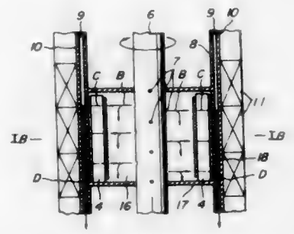
an airbrush having a spray nozzle at one end thereof, said airbrush being located within said housing and being coupled in parallel to said pressure source and said reservoir by a plurality of hoses and being adapted for receiving a liquid from said reservoir and spraying the received liquid onto the fiber in response to pressurized gas input from said source to accomplish the coating of the fiber with liquid as the fiber travels through said housing toward said bobbin.

5,328,513

APPARATUS FOR PRODUCING DIES FOR EXTRUDING CERAMIC HONEYCOMB BODIES

Kazuo Suzuki, Inazawa; Kenji Arai, Nagoya, and Hiroshi Ueda, Tokyo, all of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 855,860, Mar. 23, 1992, Pat. No. 5,256,449.
This application Jul. 8, 1993, Ser. No. 86,873
Claims priority, application Japan, Mar. 25, 1991, 3-082998
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—715 **3 Claims**



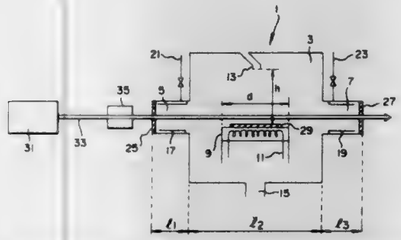
1. A device for producing dies for extruding ceramic honeycomb structural bodies, by chemical vapor deposition, comprising a chamber for treating at least two die members by the chemical vapor deposition, a raw material gas inlet pipe arranged rotatable in the center of the chamber, the die members having a plurality of ceramic batch supplying holes and a plurality of extrusion grooves communicated with the ceramic batch supplying holes, a number of raw material gas discharge holes provided on the raw material gas inlet pipe and facing the die members, a circumferential side wall arranged in the inner side of the chamber, and at least one raw material gas outlet hole provided on the circumferential side wall solely behind each of the die members.

5,328,514

DEVICE FOR FORMING FILM BY PHOTO-CHEMICAL VAPOR DEPOSITION

Naoki Inoue, Higashiosaka; Haruyuki Nakaoka, Kishiwada; Hideki Azuma, Nishinomiya; Shigeru Morikawa, Yokohama, and Takashi Kobayashi, Kawanishi, all of Japan, assignors to Osaka Gas Company Limited, Japan

Filed Dec. 19, 1991, Ser. No. 809,915
Claims priority, application Japan, Dec. 21, 1990, 2-418142
Int. Cl.[5] C23C *16/48*
U.S. Cl. 118—722 **4 Claims**



1. A film-forming apparatus for performing a photo-chemical vapor deposition method which is adapted to photo-chemically activate a mixture of a reactant and diluent gas to form a film on the substrate surface, the apparatus being characterized in that:

(1) the length l_1 of a tubular light inlet, the length l_2 of a film-forming chamber and the length l_3 of a tubular light outlet are in the ratio of 2–6:10:2–6,

(2) means is provided for spraying an inactive gas other than the reactant directly tot he light-permeable materials constituting the light-incoming window at the light inlet and the light-outgoing window at the light outlet,

(3) the diameter (d) of a substrate holder in the film-forming chamber and the distance (h) between the substrate holder and a nozzle for feeding the mixture of a reactant and a gas for dilution into the film-forming chamber are in the ratio of 1:1–2,

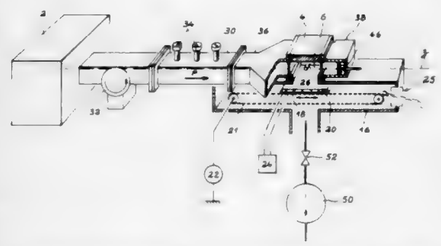
(4) means for providing an incident light beam through said light incoming window and said light outgoing window, said tubular light inlet and the tubular light outlet each having walls forming a concentric double tubing structure with gaps between the walls, said tubular light inlet and said tubular light outlet extending parallel to and concentric with said incident light beam so that the inactive gas is uniformly supplied through the gaps between the walls in the double tubing structure to the light-incoming window and to the light-outgoing window.

5,328,515

CHEMICAL TREATMENT PLASMA APPARATUS FOR FORMING A RIBBON-LIKE PLASMA

Yannick Chouan, Louannec; Michel Le Contellec, Lannion; François Morin, Lannion, and Serge Saada, Lannion, all of France, assignors to France Telecom Etablissement Autonome de Droit Public, France

Filed May 3, 1993, Ser. No. 57,055
Claims priority, application France, May 7, 1992, 92 05629
Int. Cl.[5] H01L *21/00*; C23C *16/00*
U.S. Cl. 118—723 ME **11 Claims**



1. Chemical treatment plasma apparatus having a high frequency electromagnetic wave source, a sealed plasma enclosure equipped with gas supply means for forming the plasma, means for coupling the source to the plasma enclosure, means for pumping the plasma enclosure and at least one sample holder, wherein the plasma enclosure is of a non-radiating nature and is shaped like a rectangular parallelepiped with first and second dielectric material faces parallel to a first direction and a third face provided with a rectangular opening oriented in the first direction in order to form a ribbon-like plasma, said opening linking the plasma enclosure and a treatment enclosure in which is housed the sample holder, the coupling means comprising a first rectangular linear waveguide oriented in a second direction perpendicular to the first and second faces, a horn for coupling the first guide to the plasma enclosure via the first face and whose rectangular cross-section widens in the first direction from the first guide towards the plasma enclosure, and a second rectangular linear waveguide oriented in the second direction and located on the side of the plasma enclosure opposite to that of the first guide, said second guide being provided with a short-circuit for said electromagnetic waves.

5,328,516

MODULAR PLASMA GUN ASSEMBLY FOR COATING THE INNER SURFACES OF HOLLOW SPACES AND CAVITIES

Markus Dietiker, Aarau, Switzerland, assignor to Plasma-Technik AG, Wohlen, Switzerland

Filed Aug. 13, 1993, Ser. No. 106,132
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1992, 4228064
Int. Cl.[5] C23C *4/12*
U.S. Cl. 118—723 DC **30 Claims**

1. A plasma gun assembly particularly for applying a coating to the inner surfaces of hollow spaces and cavities, comprising:

a plasma gun head member;

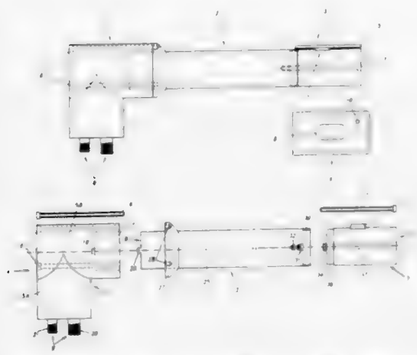
a plasma gun shaft member;

a connector member adapted to be connected to means for supplying electric energy, to means for supplying a cooling medium and for removing the cooling medium therefrom, to means for supplying plasma gas, and to means for supplying coating material;

first feeding means for conducting said electric energy from said connector member to said plasma gun head member, second feeding means for conducting said cooling medium from said connector member to said plasma gun head member and back to said connector member, third feeding

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means for conducting said plasma gas from said connector member to said plasma gun head member, and fourth feeding means for conducting said coating material from said connector member to said plasma gun head member; said connector member, said plasma gun shaft member and said plasma gun head member being connected to each other along a longitudinal axis, said axis constituting a longitudinal central axis of the plasma gun assembly;



said connector member, said plasma gun shaft member and said plasma gun head member being designed as individually exchangeable modules which can be removed, exchanged and assembled by the operator of the plasma gun assembly;

said first, second, third and fourth feeding means all being located and extending in the interiors of said connector member, of said plasma gun shaft member and of said plasma gun head member.

5,328,517

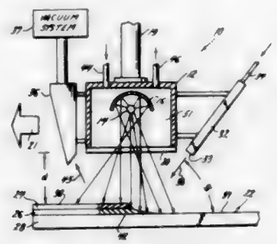
METHOD AND SYSTEM FOR REMOVING A COATING FROM A SUBSTRATE USING RADIANT ENERGY AND A PARTICLE STREAM

Michael C. Cates, Solana Beach; Richard R. Hamm, San Diego, both of Calif.; Michael W. Lewis, Wichita, Kans., and Wayne N. Schmitz, St. Louis, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.; Maxwell Laboratories, Inc., San Diego, Calif. and Cold Jet, Inc., Loveland, Ohio

Filed Dec. 24, 1991, Ser. No. 813,872

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—7 **61 Claims**



1. A method of removing material from a structure having a substrate covered with at least one layer of material, the method comprising the steps of:

irradiating a portion of the material with radiant energy to heat the material sufficiently to break molecular bonds in the material and impinging the structure with a particle stream of frozen gas particles sufficiently close to the irradiating step to cool the substrate, maintaining the substrate at a temperature substantially below the temperature of the heated material, the particle stream also acting to remove the heated material from the substrate.

5,328,518

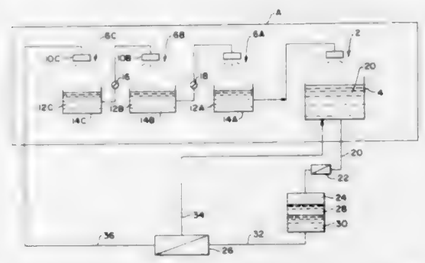
METHOD FOR SEPARATING COMPONENTS OF LIQUIDS IN INDUSTRIAL PROCESS

C. Richard Hamilton, Arvada, and Eric L. Sweeney, Lakewood, both of Colo., assignors to Golden Technologies Company, Inc., Golden, Colo.

Continuation-in-part of Ser. No. 849,424, Dec. 6, 1991. This application Jun. 10, 1992, Ser. No. 896,210

Int. Cl.[5] B08B *3/08*; **B01D** *17/02*; **C11D** *7/24*; **C23G** *5/024*

U.S. Cl. 134—10 **28 Claims**



1. A method for cleaning contaminated articles, comprising:

(a) contacting a contaminated article, such article made of a material selected from the group consisting of metal, ceramic, fiberglass, plastic and wood, with a first wash solution comprising water and a terpene to produce a first waste solution;

(b) rinsing said contacted article from step (a) with water;

(c) filtering a stream from said first waste solution to separate water from said terpene.

5,328,519

SOLAR CELLS

Soichiro Kawakami, Hikone, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

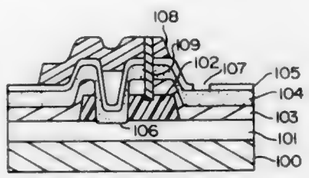
PCT No. PCT/JP91/00603, § 371 Date Jan. 6, 1992, § 102(e) Date Jan. 6, 1992, PCT Pub. No. WO91/17572, PCT Pub. Date Nov. 14, 1991

PCT Filed May 7, 1991, Ser. No. 778,889

Claims priority, application Japan, May 7, 1990, 2-115825

Int. Cl.[5] H01L *31/05*

U.S. Cl. 136—244 **11 Claims**



1. A solar cell comprising a plurality of photovolatic elements serially electrically connected with each other on a common conductive substrate, each of said photovolatic elements comprising a first insulating layer, a first electrode layer, a semiconductor layer, and a second electrode layer laminated in this order on said common conductive substrate, and each pair of adjacent photovolatic elements being electrically serially connected, by electrically connecting the first electrode layer of one adjacent photovolatic element to the second electrode layer of the other adjacent photovolatic element, characterized in that a second insulating layer is disposed between said first insulating layer and the end portion of said first electrode layer and a second insulating layer is disposed between the region of said first electrode layer serving to perform said serial electrical connection and said first insulating layer.

5,328,520

SOLAR CELL WITH LOW RESISTANCE LINEAR ELECTRODE

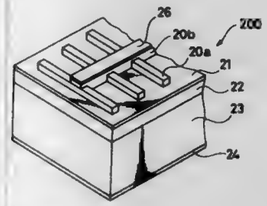
Takushi Itagaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 948,441

Claims priority, application Japan, Feb. 24, 1992, 4-075308

Int. Cl.[5] H01L *31/06, 31/0224*

U.S. Cl. 136—256 **6 Claims**



1. A solar cell comprising:

an active layer comprising one of microcrystalline silicon and amorphous silicon and including at least a p type layer and an n type layer; and

electrodes for extracting current generated in said active layer, wherein one of said electrodes is disposed on said active layer and comprises a linear metallic pattern having a width less than 100 microns and comprising a metallic material having a melting point below 200° C. and a resistivity of the order of $10^{-6}\Omega$-cm.

5,328,521

KINETIC SOLDER PASTE COMPOSITION

Roupen L. Keusseyan, Raleigh, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 8, 1993, Ser. No. 28,482

Int. Cl.[5] B23K *35/34*

U.S. Cl. 148—22 **10 Claims**

1. A solder paste composition comprising:

(a) 4–96% by weight finely divided particles of eutectic or pseudo-eutectic metal alloy or mixtures;

(b) 96–4% by weight finely divided particles of a metal additive consisting of pure metal, mixtures or alloys thereof having a melting point of at least 30° C. greater than the metal alloy in (a); and

(c) an organic medium.

5,328,522

SOLDER PASTES

Michael W. Sowa, Indianapolis, Ind., and Richard D. Jenkinson, Fort Meyer, Fla., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 839,581, Feb. 21, 1992, Pat. No. 5,272,007. This application Dec. 2, 1993, Ser. No. 161,873

Int. Cl.[5] B23K *35/34*

U.S. Cl. 148—23 **10 Claims**

1. A solder paste comprising

(i) a flux and

(ii) a coated solder powder comprising solder particles coated with parylene in an amount of from about 0.001 to about 0.5 weight percent based on the total weight of the coated solder powder and effective to inhibit oxidation of the solder particles in the solder paste without substantially inhibiting reflow characteristics of the coated solder powder, said parylene having a melting point lower than said solder particles.

5,328,523

COMPOSITE MULTILAYER MAGNETIC MATERIAL AND ITS PRODUCTION PROCESS

Jean-Marie Fontaine, Limours, and Arnaud Varoquaux, Bines Sur Yvette, both of France, assignors to Commissariat A L'Energie Atomique, France

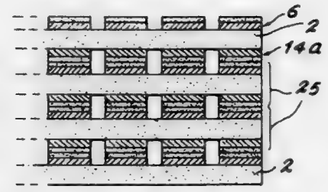
PCT No. PCT/FR90/00855, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO91/08577, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 27, 1990, Ser. No. 853,735

Claims priority, application France, Nov. 28, 1989, 89 15616

Int. Cl.[5] C21D *1/04*

U.S. Cl. 148—108 **15 Claims**



1. Process for the production of a composite magnetic material in the form of sheets (**25**) having at least 50 integral sheets, consisting of forming each sheet by passing a mechanically strong and thermally stable polymer support film (**2**) having a thickness below 10 μm into a deposition enclosure in which there is a vacuum with a residual pressure of $<10^{-5}$ Pa and by continuously depositing on at least one of the faces (**4, 16**) of the moving film a coating (**6, 14**) with a thickness of 300 nm to 10 μm of an amorphous ferromagnetic compound and assembling the sheets obtained to form a stack of sheets (**25**), the density d and magnetic permeability μ of the composite magnetic material being such that $5 \leqq \mu/d \leqq 100$.

5,328,524

PROCESS FOR THE SURFACE OXIDATION OF A PART COMPOSED OF PASSIVATABLE METAL, AND FUEL ASSEMBLY ELEMENTS COMPOSED OF METAL ALLOY COVERED WITH A PROTECTIVE OXIDE LAYER

Dominique Hertz, Tassin-la-Demi-Lune, France, assignor to Framatome, Courbevoie, France and Cogema, Velizy Villacoublay, France

Filed Oct. 3, 1990, Ser. No. 592,327

Claims priority, application France, Oct. 3, 1989, 89 12920

Int. Cl.[5] C23C *8/36*

U.S. Cl. 148—241 **6 Claims**

1. Process for surface oxidation of at least one zone of a part composed of a metal or alloy based on a metal of the group consisting of zirconium and hafnium, said process comprising the steps of

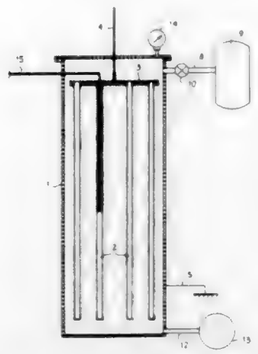
(a) placing said part inside an enclosure and heating said part to a temperature of 350° to 1050° C.;

(b) activating a gas comprising oxygen with means selected from the group consisting of an electric plasma and a microwave so as to create chemical elements activated in said gas in a zone situated outside said enclosure containing said part;

(c) introducing said activated gas in said enclosure;

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(d) regulating a pressure of said activated gas in said enclosure at a level between 5 to 500 Torr; and



(e) maintaining said gas in contact with the heated part for 5 to 25 hours.

5,328,525

METHOD AND COMPOSITION FOR TREATMENT OF METALS

Edward M. Musingo, Roslyn; Bruce V. Haberle, Fogelsville, and Philip D. Deck, Ardsley, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 5, 1993, Ser. No. 765
Int. Cl.[5] C23C *22/44*
U.S. Cl. 148—247 **6 Claims**

1. An aqueous acidic solution which is effective in forming a dried in place non chromate conversion coating on a surface of Galvalume aluminum or alloys thereof consisting essentially of:

(a) From about 10 to 60% by weight of a polymer selected from the group consisting of polyacrylic acid and copolymers and homopolymers thereof;

(b) From about 0.2 to 20 weight percent molybdate and

(c) From about 10 to 60% by weight dihydro-hexafluo acid.

5,328,526

METHOD FOR ZINC-PHOSPHATING METAL SURFACE

Masahiro Jo, Osaka; Yasutake Mino, Hyogo, and Tamotsu Sobata, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 31, 1993, Ser. No. 40,964
Claims priority, application Japan, Apr. 3, 1992, 4-082507; Feb. 23, 1993, 5-033773
Int. Cl.[5] C23C *22/12*
U.S. Cl. 148—260 **8 Claims**

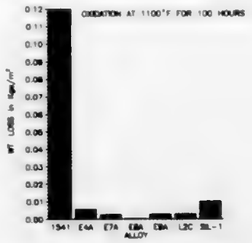
1. A method for zinc-phosphating a metal surface, comprising forming a zinc phosphate coating film on a metal surface by bringing the metal surface into contact with an acidic zinc-phosphating solution containing a zinc ion in a concentration of 0.1 to 2.0 g/l, a phosphate ion in a concentration of 5 to 40 g/l, a lanthanum compound in a concentration of 0.001 to 3 g/l in terms of a lanthanum metal, and a phosphating accelerator.

5,328,527

IRON ALUMINUM BASED ENGINE INTAKE VALVES AND METHOD OF MAKING THEREOF

Mohan Kurup, Richmond Hts.; Roger R. Wills, Solon, and Mark S. Scherer, Mentor, all of Ohio, assignors to TRW Inc., Lyndhirst, Ohio

Filed Dec. 15, 1992, Ser. No. 990,424
Int. Cl.[5] C22C *38/06*; C21D *1/06*
U.S. Cl. 148—318 **43 Claims**



38. An internal combustion engine valve having an iron aluminide composition,

a) 76.05–90.15 weight percent iron;

b) 9–13.3 weight percent aluminum;

c) 0.05–0.35 weight percent carbon;

d) 0.05–3 weight percent of a refractory metal and/or 0.3–1.5 weight percent titanium.

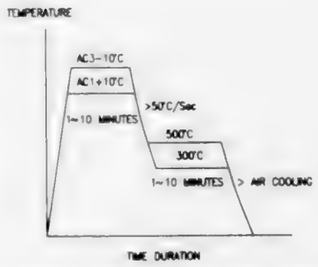
and a disordered structure for improved high temperature properties.

5,328,528

PROCESS FOR MANUFACTURING COLD-ROLLED STEEL SHEETS WITH HIGH-STRENGTH, AND HIGH-DUCTILITY AND ITS NAMED ARTICLE

Huang-Chuan Chen, Kaohsiung, Taiwan, assignor to China Steel Corporation, Taiwan

Filed Mar. 16, 1993, Ser. No. 33,236
Int. Cl.[5] C22C *38/12*; C21D *8/00*
U.S. Cl. 148—320 **2 Claims**



1. A cold-rolled steel sheet consisting essentially of: 0.08%–0.25% carbon by weight, 0.3%–2.0% silicon by weight, 0.6%–1.8% manganese by weight, 0.01%–0.10% niobium by weight, 0.01%–0.08% aluminium by weight, substantial iron, and unnoticed impurities and having a microstructure with at least 8% retained austenite by volume fraction.

5,328,529

HIGH STRENGTH AUSTENITIC STAINLESS STEEL HAVING EXCELLENT GALLING RESISTANCE

James N. Cordea, West Chester; William J. Scumacher, Monroe, both of Ohio; Harshad V. Sheth, Rancho Palos Verdes, Calif., and Mark J. Gore, West Chester, Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Mar. 25, 1993, Ser. No. 36,790
Int. Cl.[5] C22C *38/34, 38/46*
U.S. Cl. 148—327 **10 Claims**

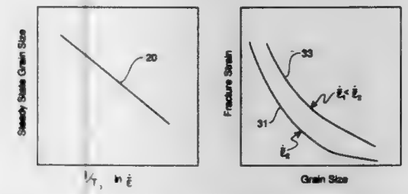
1. An austenitic stainless steel having a 0.2% yield strength of at least 690 N/mm^2 (100 ksi), a magnetic permeability not greater than 1.004 at 500 oersteds, acceptable intergranular corrosion resistance as measured by ASTM A-262 Practice E and a resistance to galling up to a stress level of at least 138 N/mm^2 (20 ksi) when self mated, said steel consisting essentially of, in weight percent, from greater than 0.05% to about 0.10% carbon, greater than 16% to about 22% manganese, about 12.5% to about 17% chromium, about 1.5% to about 5% nickel, about 0.2% to about 0.4% nitrogen, about 0.2% to about 0.7% vanadium, about 1% maximum copper, about 1% maximum molybdenum, greater than 2% to about 4% silicon, about 0.5% maximum phosphorus, about 0.03% maximum sulfur and balance essentially iron.

5,328,530

HOT FORGING OF COARSE GRAIN ALLOYS

Sheldon L. Semiatin, Dayton, Ohio, and Paul A. McQuay, Tokyo, Japan, assignors to The United States of America as represented by the Secretary of the Air Force, D.C.

Filed Jun. 7, 1993, Ser. No. 74,099
Int. Cl.[5] C22F *1/00*; C22C *14/00*
U.S. Cl. 148—559 **2 Claims**



1. A method for forging a coarse grain material to enhance hot workability and to refine microstructure of said material, comprising the steps of:

(a) providing a billet of coarse grain material;

(b) heating said billet to a temperature of at least 60 percent of the melting temperature of said material in °K.;

(c) deforming said billet at a first strain rate in the range of about 1×10^{-3} to 3×10^{-3} in/in/sec and to effect a first increment of dynamic recrystallization and grain refinement without fracture in said material; and

(d) thereafter deforming said billet at a second strain rate in the range of about 0.025 to 0.1 in/in/sec to effect a further degree of dynamic recrystallization and grain refinement without fracture in said material.

5,328,531

PROCESS FOR THE MANUFACTURE OF COMPONENTS IN TREATED STEEL

Jacques Gautier, 4, boulevard des Loges, F-78300 Poissy, France

Continuation of Ser. No. 870,802, Apr. 17, 1992, abandoned, which is a continuation of Ser. No. 746,289, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 549,161, Jul. 6, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 984,275
Claims priority, application France, Jul. 7, 1989, 89 09189
Int. Cl.[5] C21D *9/00*
U.S. Cl. 148—580 **10 Claims**

1. A method of manufacturing spring components from untreated alloy steel material containing 0.48 to 0.59% C, about 0.70 to 1.10% Cr, 0.70 to 0.90% Mn and 0.15 to 0.35% Si, comprising the steps of:

heating the steel material at a temperature above its transition point, thus austenizing the steel material,

following said austenizing heating, isothermally quenching the steel material in a fluidized bed bath at a temperature above its martensite point, thus giving the steel material a bainitic structure, and

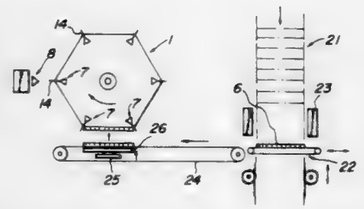
without lowering the temperature substantially below said quenching temperature, mechanically forming the steel material to give it the final shape of the components.

5,328,532

METHOD OF FORMING PLY MEMBER

Toshio Azuma, Higashiyamato, and Masataka Minakawa, Kodaira, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 805,983, Dec. 12, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 84,321
Claims priority, application Japan, Dec. 28, 1990, 2-418080
Int. Cl.[5] B29D *30/06*
U.S. Cl. 156—134 **3 Claims**



1. A method of forming a ply member by successively attaching a plurality of belt-shaped members of a constant length to an entire circumference of a forming drum and by butt-joining side edges of the belt-shaped members adjacent circumferentially of the forming drum, comprising steps of:

forming each of the belt-shaped members to have a width equal to an integer, multiple of π;

successively attaching these belt-shaped members one by one onto a forming drum having an outer circumferential length of an integer multiple of said width and of π inches so that side edges of the belt-shaped members are arranged in parallel with the axis of the forming drum; and

forcing the adjacent side edges of the belt-shaped members closer together in circumferential directions of the forming drum to butt-join the faces of the side edges with each other, wherein the forming drum is a polygonal cylindrical forming drum, one side of the polygon having a length of an integer multiple of πinches, and the belt-shaped members are attached to flat surfaces of the forming drum one by one.

5,328,533

BEAD APEX APPLYING METHOD AND DEVICE

Osamu Yasuno; Kouji Tsukamoto; Toshikazu Okada; Yukihisa Tanaka, and Yoshiaki Nakajima, all of Aichi, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kyogo, Japan

PCT No. PCT/JP90/00183, § 371 Date Oct. 15, 1991, § 102(e) Date Oct. 15, 1991, PCT Pub. No. WO91/12127, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 15, 1990, Ser. No. 768,760
Int. Cl.[5] B29D *30/48*
U.S. Cl. 156—136 **5 Claims**

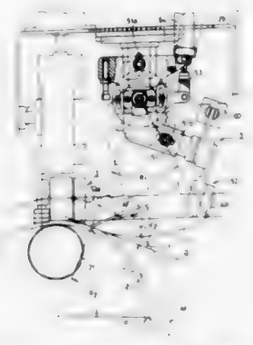
1. A bead apex applying method comprising the steps of:

supporting a bead ring by an inner peripheral surface thereof for circumferential rotation, feeding a leading end portion of the apex and pressing said apex against an outer peripheral surface of said bead ring in order to support said apex

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substantially along a tangent of a periphery of said bead ring, rotating said bead ring circumferentially in order to successively apply portions of said apex following said leading end portion to said bead ring with said rotating, stopping said rotating of said bead ring at a predetermined angular position of said rotating and applying, clamping a trailing portion of said apex and cutting said apex to a predetermined length, resuming rotation of said bead ring and swinging said trailing end portion along an arc toward said bead ring, while maintaining said clamping, and performing said applying in synchronism with said rotating so as to bring a trailing end surface of said apex in conformity with and against a leading end surface thereof to form a butt joint.

5. An apex applying device having a bead ring supporting means for supporting said bead ring, said bead ring supporting



means having a rotational driving means for rotating said bead ring circumferentially, an apex feeding means for feeding an apex to a peripheral surface of said bead ring, rotational driving means rotating said bead ring in order to successively apply said apex to said bead ring, means for cutting said apex to a predetermined length and applying said predetermined length of apex to said bead ring, and further comprising:

a chucking means for clamping a trailing end portion of the apex, said chucking means being swingable along a circular arc between a position adjacent a forepart of said apex feeding mechanism, when said apex feeding mechanism is in a retreating position, and a joint position to which a leading end portion of said apex moves with said bead ring during said rotating of said bead ring, so as to bring a trailing end surface of said apex in conformity with and against a leading end surface thereof to form a butt joint of said apex.

5,328,534

COMPOSITE INCLUDING AN INORGANIC IMAGE AND METHOD OF TRANSFERRING SUCH AN IMAGE

Clyde D. Calhoun, Stillwater, and David C. Koskenmaki, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 650,475, Feb. 4, 1991, Pat. No. 5,219,655, which is a division of Ser. No. 300,334, Jan. 23, 1989, Pat. No. 5,017,255. This application Feb. 22, 1993, Ser. No. 21,155

Int. Cl.[5] **B29C** *41/02*

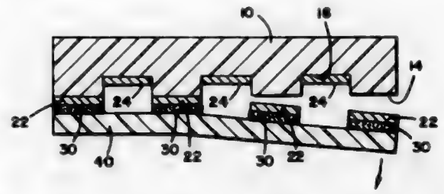
U.S. Cl. 156—150 **5 Claims**

1. A method of making an image transfer tape comprising the steps of:

a) providing an embossed substrate including a relief surface having a pattern formed therein; said relief surface having a raised surface portion and a recessed surface portion;

b) depositing an image layer onto said raised surface portion, wherein a bond of strength X is formed between said image layer and said raised surface portion;

c) providing a layer of adhesive over at least said image layer wherein said adhesive is adapted to form a bond with a transfer substrate having a bond of strength Y between said transfer substrate and said image layer, wherein Y is greater than X; and



d) contacting said layer of adhesive with a release liner, to form a transfer tape which will transfer the image layer to a transfer substrate upon removal of the release liner, contacting said transfer substrate with said adhesive layer and then separating the transfer tape and the transfer substrate.

5,328,535

WET PRINTED DECAL ON POROUS SURFACES SUCH AS CANVAS

Louis A. Blanco, Eastchester, N.Y., assignor to Commercial Decal, Inc., Mt. Vernon, N.Y.

Division of Ser. No. 703,902, May 22, 1991, Pat. No. 5,229,201. This application Nov. 23, 1992, Ser. No. 980,386

Int. Cl.[5] **B32B** *5/16, 7/14, 27/14;* **B44C** *1/165*

U.S. Cl. 156—155 **29 Claims**

1. A method for applying a decalcomania to a porous surface, wherein said porous surface is selected from the group consisting of textiles, wood and MASONITE, comprising applying a bonding agent to said porous surface, providing a decalcomania comprising a backing sheet, including a water-soluble coating thereon, a first coating layer disposed on said backing sheet, the coating layer containing an absorbent component and an absorbent medium and applied by a screen printing technique, a design layer comprising at least one pigment disposed on said first coating layer, and a second coating layer disposed on said design layer, removing said backing sheet from said decalcomania by applying water to said decalcomania so as to dissolve said water-soluble coating and separate said backing sheet from said first coating layer and the remainder of said decalcomania, and applying said decalcomania including said first coating layer to said bonding agent in a single step with said first coating layer in contact with said bonding agent, whereby at least a portion of said first coating layer is absorbed into said porous surface.

5,328,536

PROCESS FOR PRODUCING A MULTILAYERED FILM COMPOSITE FROM COEXTRUDED PLASTIC FILM WEBS

Sabine Rohleder, Weiterstadt, and Jochen Coutandin, Langenlonsheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 789,030, Nov. 9, 1991, abandoned. This application Oct. 22, 1993, Ser. No. 139,887

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1990, 4035872

Int. Cl.[5] **B29C** *31/00*

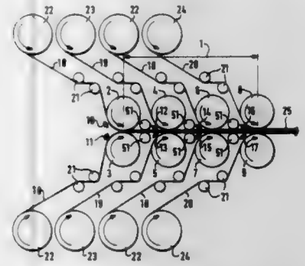
U.S. Cl. 156—229 **12 Claims**

1. A process for producing a multilayered film composite from coextruded plastic film webs, which are provided on at least one side with a sealing layer, by sealing under heat and pressure application, comprising the steps of:

providing at least one of biaxially stretched, monoaxially

stretched, and unstretched thermoplastic, coextruded plastic film webs;

applying heat to each of the plastic film webs in two steps first by heating each film web before entering a plane sealing zone in order to influence the mechanical properties of the individual film webs and to incipiently melt the sealing layers of the plastic film webs before they are brought together and second by guiding each film web along said plane sealing zone which is heated by compression rolls arranged along the plane sealing zone;



feeding the plastic film webs separately and at a distance from one another into said plane sealing zone;

building up the film composite by continuously additively layering individual moving plastic film webs onto a moving first plane plastic film web, the building up continuing until a given final thickness is reached; and

sealing the film webs by exerting pressure on each film web at its point of entry into the plane sealing zone, whereby the plastic film webs are bonded together.

5,328,537

METHOD FOR MANUFACTURING SCREEN PRINTING PLATE

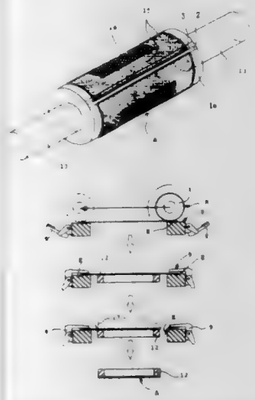
Tatsuo Shigeta, Chiba, Japan, assignor to Think Laboratory Co., Ltd., Chiba, Japan

Filed Apr. 15, 1992, Ser. No. 869,543

Claims priority, application Japan, Dec. 11, 1991, 3-351600; Dec. 20, 1991, 3-355811

Int. Cl.[5] **B32B** *31/00;* **G03F** *7/12*

U.S. Cl. 156—233 **5 Claims**



1. A method for manufacturing screen printing plates comprising the steps of:

providing a first non-plating area at both ends of a roll and a second non-plating area at a surface of said roll along a lengthwise direction with a predetermined width;

fastening metal tape on the roll so that an edge of said metal tape is along an edge of said second non-plating area;

coating a photosensitive film on said roll;

supporting said roll at both ends and rotating said roll at a predetermined speed;

scanning a multiple number of laser beams arranged in a prescribed manner in the lengthwise direction of said roll while said laser beams are driven by electronic data which is preset so that desired halftone points of a negative halftone image are exposed on said roll apart from said first non-plating area and said metal tape;

developing said negative halftone image;

plating said roll bearing said developed image so that a screen printing plate comprised of said negative halftone image and a foil section is formed by a plating metal; and

removing said screen printing plate made of said plating metal from said roll by tearing up said metal tape.

2. A method for providing screen printing plates on a frame comprising the steps of:

applying adhesive material on a surrounding edge of a roll on which a screen printing plate is formed, and said screen printing plate being easily peeled off from said roll;

rolling said roll with said screen printing plate on a frame apparatus and unrolling said screen printing plate as a flat sheet so that said screen printing plate is fastened on said frame apparatus by said adhesive material in a stretched condition;

sticking said screen printing plate on a printing frame on which an adhesive agent is applied; and

cutting off an exceed portion where a foil section of said screen printing plate extends beyond the outer edge of said printing frame.

3. A method for providing screen printing plates on a frame comprising the steps of:

applying adhesive material on a surface of a frame apparatus;

rolling a roll on said frame apparatus, and a screen printing plate being formed on a circumference of said roll, and said screen printing plate being easily peeled off from said roll;

unrolling said screen printing plate as a flat sheet so that said screen printing plate is fastened on said frame apparatus by said adhesive material in a stretched condition;

sticking said screen printing plate on a printing frame on which an adhesive agent is applied; and

cutting off an exceed portion where a foil section of said screen printing plate extends beyond an outer edge of said printing frame.

5,328,538

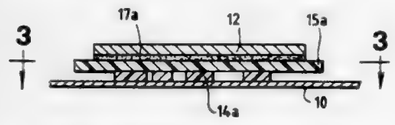
LABELING DEVICE AND METHOD

Ronald R. Garrison, Batavia, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Filed Aug. 9, 1993, Ser. No. 104,175

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—249 **1 Claim**



1. In a method of utilizing a label device, the steps of providing a label device comprising a paper layer having upper and lower faces, said upper face being equipped with first variable printed indicia, a release coating on said paper layer upper face over said printed indicia, a pressure sensitive adhesive coating over said release coating, a label over said adhesive coating concealing said first indicia, said label having a lower face

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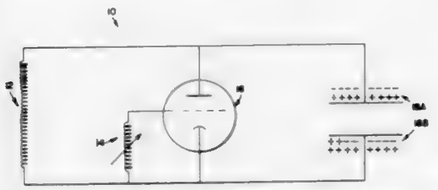
engaging said adhesive coating and an exposed upper face, providing second printed indicia on said exposed upper face of said label identical with said first indicia, affixing said paper layer lower face to a surface, removing said label from said paper layer to reveal said concealed first indicia so as to permit verification of the identity of said first and second indicia as part of a transaction and terminating said transaction when said first and second indicia are not identical.

5,328,539

RADIO FREQUENCY HEATING OF THERMOPLASTIC RECEPTOR COMPOSITIONS

Norman J. Sato, Maple Grove, Minn., assignor to H. B. Fuller Licensing & Financing Inc., Wilmington, Del.

Continuation of Ser. No. 853,262, Mar. 18, 1992, abandoned, which is a division of Ser. No. 619,084, Nov. 28, 1990, abandoned. This application Dec. 31, 1992, Ser. No. 784
Int. Cl.[5] B05D *3/02*
U.S. Cl. 156—275.5 **22 Claims**



1. A method of applying a thermoplastic composition, said method comprising the steps of:

(a) applying radio signals having a frequency of about 3 to 35 MHz at a voltage ranging from about 1000 to 50,000 volts and an average current ranging from about 0.05 amps to 5 amps to a composition comprising a major portion of thermoplastic and a receptor, said receptor having a dissipation factor of about 0.1 or greater and dielectric constant of at least about 0.1 or greater, said receptor selected from the group consisting of an alkali or alkaline earth metal sulfate salt, aluminum trihydrate, a quaternary ammonium salt, a phosphonate compounds, a phosphate compound, a polystyrene sulfonate sodium salt, or mixtures thereof;

(b) applying said composition to a first substrate and applying a second substrate to said composition;

(c) placing the first and second composition-laden substrates adjacent two plates and applying radio signals through said plates to the composition deposited between the first and second substrates; and

(d) dissipating the radio signals received by the receptor as thermal energy in an amount effective to form said composition to a thermoplastic bond between said first and second substrates.

5,328,540

MECHANIZED LAY UP ASSEMBLY LINE FOR COMPOSITE STRUCTURES

Colin G. Clayton, torrance, and Frank R. Chang, Cerritos, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Mar. 6, 1992, Ser. No. 847,518
Int. Cl.[5] B29C *65/00*
U.S. Cl. 156—285 **23 Claims**

11. An assembly line for layup and debulking of composite structures comprising,

a vacuum operated work station including

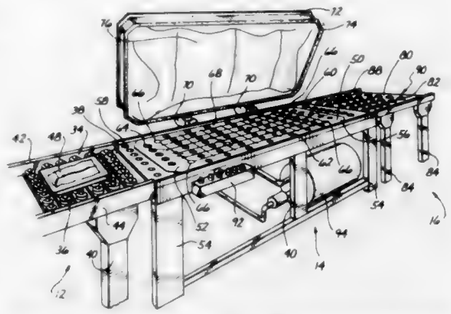
a work table having an upper support surface and a plurality of spaced openings therein;

a plurality of caged rollers each disposed for movement within one of said plurality of openings;

means for retracting and elevating said rollers between a lowered position in which said rollers are retracted beneath said support surface and an elevated position at which said rollers extend above said support surface for lifting and supporting;

a workpiece for movement across said rollers;

seal means operatively connected between each of said caged rollers and said respective opening or maintaining vacuum tight seal therebetween throughout the range of motion of said rollers between said retracted and elevated positions;



debulking means including a diaphragm and seal for establishing a vacuum tight debulking chamber over said support surface and rollers;

a delivery station positioned on one side of said work station and including a plurality of rollers having upper apexes defining a delivery support surface;

a dispatch station positioned on another side of said work station and including a plurality of roller means having species defining a dispatch support surface;

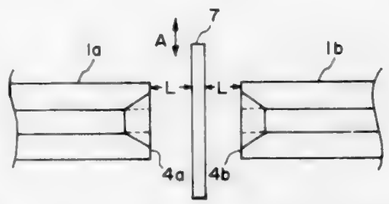
said delivery and dispatch support surfaces being continuous with said work station transfer surface.

5,328,541

METHOD OF WELDING TUBULAR PRODUCTS OF POLYARYLENE SULFIDE AND WELDED TUBULAR STRUCTURE

Satoshi Usui; Kouichi Kodama; Yoichiro Yamanobe, and Ken Kashiwadate, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 987,593
Claims priority, application Japan, Dec. 11, 1991, 3-350911; Oct. 13, 1992, 4-299131
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—304.2 **7 Claims**



1. A method of welding tubular products of polyarylene sulfide, comprising the steps of:

providing a pair of tubular products of polyarylene sulfide having end faces to be welded to each other, the polyarylene sulfide showing a melting initiation temperature and a melting heat-absorption peak temperature,

heating the end faces by a hot plate in no contact with the end faces, and

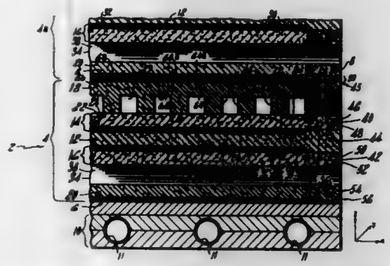
abutting the end faces under pressure when the end faces are at a surface temperature for abutting which is at least 10° C. above the melting initiation temperature and is not exceeding the melting heat-absorption peak temperature, respectively, of the polyarylene sulfide, thereby forming a weld.

5,328,542

METHOD OF MANUFACTURING A LAMINATED FUEL CELL COMPONENT WITH AN INTERNAL FLUID IMPERMEABLE BARRIER

Albert P. Grasso, Vernon; Robert P. Roche, Cheshire, both of Conn., and Ronald G. Martin, Monson, Mass., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Filed Dec. 26, 1991, Ser. No. 813,471
Int. Cl.[5] C09J *7/00*
U.S. Cl. 156—313 **2 Claims**



1. A method of manufacturing a composite plateshaped fuel cell component, comprising the steps of:

forming an assembly including at least two electrically conductive porous plates and a sheet-shaped sealant body coextensively sandwiched between said porous plates and including two coextensive layers each of a different sealant material one of which is initially flowable at a relatively low first temperature but eventually solidifies as an elastomer and thereafter remains solid even when heated to a relatively high second temperature, while the other of sad sealant materials is substantially solid at said first temperature but becomes flowable at said second temperature, wherein at least one of said sealant materials is a fluoroelastomer;

pressing said porous plates toward one another initially at said first temperature so that the other sealant material, being solid at said first temperature, causes the one sealant material to flow into and completely fill and solidify in the pores of a sealed region extending to a predetermined distance into one of said porous plates; and

subsequently pressing said porous plates toward one another at said second temperature so that the one sealant material, having solidified by then, causes the other sealant material that is flowable at said second temperature to flow into and completely fill the pores of another sealed region extending to a predetermined distance into the other of said porous plates.

5,328,543

BORDER GUIDE

Thomas G. Campagna, 3 Wayside La., Selden, N.Y. 11784, assignor to Thomas G. Campagna, Selden, N.Y.

Filed Oct. 21, 1991, Ser. No. 763,284
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—574 **1 Claim**

1. A method of applying rolled border paper to the ceiling line of walls comprising the steps of:

a) providing a border paper guide including

a circular panel at the bottom side of which is mounted a extension pole;

a cylindrical housing mounted to the upper side of the circular panel at the periphery of said upper side, said housing having at least one slot running perpendicular to the circular panel; and

a shaft mounted to the center of the upper side of the circular panel, said shaft running substantially the length of the cylindrical housing along the axis of the housing;



b) placing rolled border paper around said shaft and within said housing;

c) suspending the border paper roll within said housing to the ceiling line of a wall by resting said extension pole against the floor; and

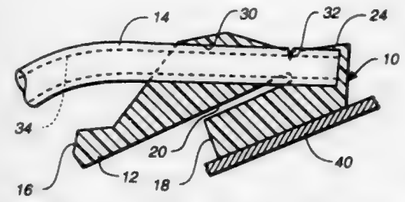
d) applying border paper payed out from said slot of said housing to the ceiling line of a wall using both hands.

5,328,544

SYSTEM FOR APPLYING ADHESIVE TO SHEET MATERIAL

Lawrence E. Weinert, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

Filed Apr. 21, 1993, Ser. No. 49,397
Int. Cl.[5] B43M *11/00*
U.S. Cl. 156—578 **10 Claims**



1. Apparatus for applying adhesive to sheet material, said apparatus comprising, in combination:

adhesive applicator means having a contact surface engageable with said sheet material and defining a slit at said contact surface, said adhesive applicator means selectively having either a first configuration wherein said slit is closed or a second configuration wherein said slit is open;

passageway defining means defining a passageway extending between a source of adhesive and said slit; and

actuator means in operative association with said adhesive applicator system to change said adhesive applicator system from said first configuration to said second configuration for delivering adhesive from said passageway to said contact surface through said open slit, said adhesive applicator means including a holder element defining an opening at said contact surface and a hollow flexible element mounted on said holder element, said slit being formed in

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said hollow flexible element, and said slit being closely adjacent to and in at least partial registry with said opening, said holder element including a first holder element segment and a second holder element segment, said holder element segments being pivotal relative to each other about a predetermined pivot axis, said hollow flexible element having separate sections thereof fixedly mounted on each of said holder element segments, and relative pivotal movement between said holder element segments operable to bend said hollow flexible element to selectively open or close said slit.

5,328,545

DEVICE FOR OVERLAPPING WELDING OF FOIL EDGES

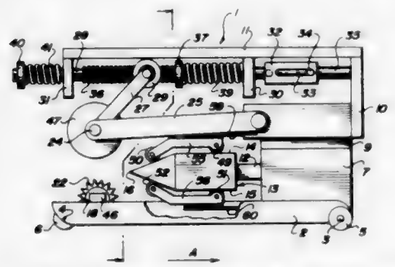
Renald Kaminski, An der Friedenberg 2, W-5130 Geilenkirchen, Fed. Rep. of Germany

Filed Aug. 20, 1992, Ser. No. 932,202

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1991, 9110487

Int. Cl.[5] B30B *5/02*

U.S. Cl. 156—583.1 **17 Claims**



1. A device for welding overlapping edges of a material, comprising:

a heater;

first and second oppositely disposed and spaced contact rollers located downstream of said heater for pressing therebetween overlapping edges of material to be heated by said heater; and

an adjustment assembly for selectively adjusting and setting an initial distance between said first contact roller and said second contact roller, said adjustment assembly comprising a rotatable spindle operatively associated with said first contact roller, a motor, connecting means operably connecting said motor to said spindle for causing rotation thereof and for permitting said spindle to move in a first direction, and a bias means operatively associated with said and cooperating with said connecting means for maintaining substantially constant pressure on said first roller independent of said initial distance.

5,328,546

PHOTO RESIST FILM APPLICATION MECHANISM

William A. Brady, Lake Worth; See A. Chan, Coral Springs, both of Fla.; Norbert Freisitzer, Hyde Park; Rolf G. Meinert, Wappingers Falls, both of N.Y.; Prakash Nahata, Coral Springs, Fla.; Julius J. Perlini, Boynton Beach, Fla.; Mario G. M. Tavares, Pompano Beach, Fla., and Douglas A. West, Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 3, 1992, Ser. No. 862,701

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

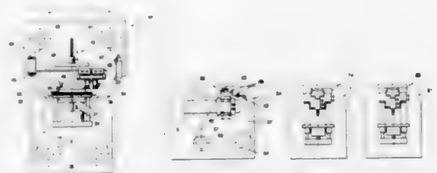
Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—584 **2 Claims**

1. An automatic laminator for laminating onto semiconductor wafers a photoresist laminating material, the laminating material being packaged in sheets between a protective bottom and top sheet, the automatic laminator comprising:

a transport tape transport assembly for moving a transport tape into registration with;

a) a punching assembly for punching a decal of laminating material and for transferring the material to the transport tape,



b) a peeler assembly for removing a protective layer from the lamination material,

c) a laminating assembly for laminating a wafer to the lamination material, wherein the transport tape is fixed in the transport tape transport assembly during the complete lamination cycle, and

d) a separating assembly for removing the laminated wafer from the transport tape.

5,328,547

DEVICE FOR SEPARATING THE LEADING END OF A NEW STRIP FROM THE TRAILING END OF A DEPLETED STRIP DURING RENEWAL OF THE SUPPLY OF STRIP MATERIAL TO A MANUFACTURING MACHINE

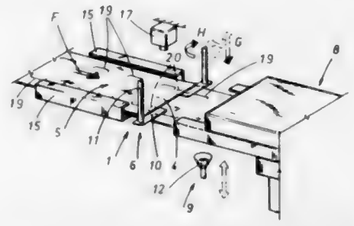
Fulvio Boldrini, Ferrara, and Antonio Gamberini, Bologna, both of Italy, assignors to G.D. S.p.A., Bologna, Italy

Filed Apr. 7, 1993, Ser. No. 43,836

Claims priority, application Italy, Apr. 7, 1992, BO92 A 000121

Int. Cl.[5] B32B *35/00*

U.S. Cl. 156—584 **5 Claims**



1. A device for separating the leading end of a new strip from the trailing end of a depleted strip during the renewal of a supply of strip material to a manufacturing machine, designed to operate in association with a changer device comprising feed means, means by which to cut the strip material and means by which the trailing end of the depleted strip is taken up and distanced, before reaching the cutting means, from a position in which the leading end of the new strip and the trailing end of the depleted strip are overlapped, wherein the separation is accomplished through the agency of detachment means stationed and operating between the feed means and the cutting means of the changer device and capable of movement between an at-rest position, outside the compass of the trajectory described by the strip material, and an operating position of insertion between the leading end of the new strip and the trailing end of the depleted strip, with the strips in motion, in such a way as to distance the two ends one from the other.

5,328,548

METHOD OF SYNTHESIZING SINGLE DIAMOND CRYSTALS OF HIGH THERMAL CONDUCTIVITY

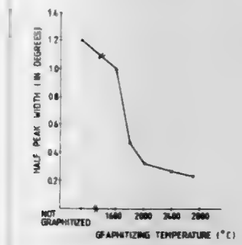
Kazuwo Tsuji, and Takeru Nakashima, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 741,655, Aug. 7, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 995,935

Claims priority, application Japan, Aug. 9, 1990, 2-211014

Int. Cl.[5] C30B *29/04*

U.S. Cl. 117—79 **5 Claims**



1. A method of synthesizing single diamond crystals comprising the steps of:

a) separating carbon containing 99.9 atomic % C-12 from at least one of carbon monoxide and methane;

b) making amorphous carbon of at least 99.9 atomic % C-12 from the separated carbon of step a);

c) graphitizing said amorphous carbon of at least 99.9 atomic % carbon-12 in an inert gas atmosphere, at a temperature of at least 1800° C. to form a crystalline carbon;

d) pressing said crystalline carbon to form a carbon compact with a density of from 1.2 to 2.2 g/cm^3;

e) placing said compact in an ultra high pressure apparatus with a diamond seed crystal and a metal solvent, wherein said metal solvent is comprised of 1 to 5 wt % of Al, Zr or Ti and is positioned between said compact and said seed crystal; and

f) exerting ultra high pressure on said compact solvent and seed crystal while generating a temperature difference between an area of said compact and an area of said seed crystal, whereby carbon from said compact dissolves into said metal solvent and moves to said seed crystal to form at least one single diamond crystal on said seed crystal,

wherein, said single diamond crystal has a thermal conductivity of at least 28.0 W/cm·K.

5,328,549

METHOD OF PRODUCING SHEETS OF CRYSTALLINE MATERIAL AND DEVICES MADE THEREFROM

Carl O. Bozler, Sudbury; John C. C. Fan, Chestnut Hill, and Robert W. McClelland, Weymouth, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 128,637, Dec. 4, 1987, abandoned, which is a division of Ser. No. 251,214, Apr. 6, 1981, Pat. No. 4,727,047, which is a continuation-in-part of Ser. No. 138,891, Apr. 10, 1980, abandoned. This application Mar. 3, 1992, Ser. No. 845,006

Int. Cl.[5] C30B *25/04*

U.S. Cl. 437—226 **18 Claims**

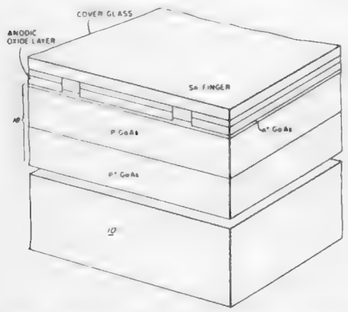
1. A method of producing a sheet of crystalline material by growth on a substrate through apertures in a growth mask on the substrate comprising the combination of steps of:

selecting a thickness for the sheet of single crystal material to be grown;

forming the crystal growth mask on a crystallization substrate to produce parallel slits in the mask which establish unmasked areas of the substrate, the orientation of the parallel slits with respect to the crystal orientation of the crystallization substrate being correlated with the thickness and chosen to provide a selected ratio of lateral-to-vertical growth rates during deposition of crystalline material;

depositing crystalline material on the substrate areas exposed at the slits under conditions which enable lateral growth of crystalline material over the mask;

continuing lateral overgrowth of the single crystal material



over the mask until a sheet of the crystalline material has been formed;

fabricating an electronic device in the single crystal sheet;

bonding the single crystal sheet with the electronic device to a second substrate with an adhesive; and

removing the single crystal sheet with the electronic device from the crystallization substrate.

5,328,550

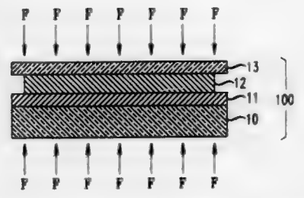
THINNING A DIAMOND BODY BY MEANS OF MOLTEN RARE-EARTH-CONTAINING ALLOYS

John E. Graebner, New York, N.Y.; Sungho Jin, Millington, and Mark T. McCormack, Summit, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 2, 1992, Ser. No. 955,634

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—628 **22 Claims**



1. A method of removing a thickness of material from a diamond body having at least one face, including the steps of

(a) maintaining at least a portion of the face in direct physical contact with a molten or partially molten metallic alloy of one or more than one rare earth metal and one or more than one metallic impurity that reduces the melting point of the rare earth metal, the alloy either having the property of dissolving carbon or containing carbon and having the property of dissolving carbon; and

(b) maintaining, during step a, the molten or partially molten alloy within a temperature range, whereby a thickness of the body located at the portion of the face thereof is removed.

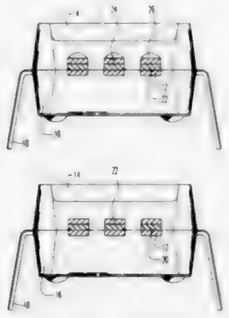
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5,328,551
METHOD OF MAKING HIGH OUTPUT STRAIN GAGE
John Kovacich, Wauwatosa, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed Oct. 28, 1992, Ser. No. 967,645
Int. Cl.[5] C23F *1/00*; G01L *1/00*
U.S. Cl. 156—630 7 Claims



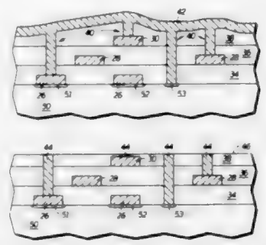
1. A method of making high output strain gages comprising:
(a) providing a substrate or base of plastic material;
(b) providing a thin foil of material consisting essentially of an alloy of tungsten and platinum (PtW) and adhesively bonding the foil to the substrate with a chemically inert adhesive;
(c) applying heat and pressure to said adhesive bonding;
(d) applying a photoresist coating to said foil;
(e) masking said photoresist to a desired gage pattern and exposing the unmasked portion;
(f) developing the unmasked photoresist and forming a gage pattern on said foil of said photoresist; and,
(g) wet etching said foil with a mixture of nitric acid, hydrochloric acid, and water and forming a gage pattern with bonding pads in said adhesive and said substrate;
(h) attaching electrical leads to said bonding pads.

5,328,552
LEADFRAME PROCESSING FOR MOLDED PACKAGE ARRANGEMENTS
Albert M. Benzoni, Lower Macungie Township, Lehigh County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Mar. 30, 1993, Ser. No. 40,235
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—630 4 Claims



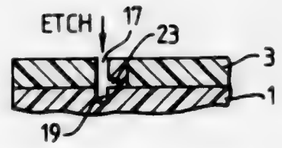
1. A method of processing a leadframe including wirebond sites for use in a molded package, the method comprising the steps of:
a) providing a leadframe including sites for the location of wirebonds;
b) selectively plating the wirebond sites with a suitable contact material;
c) covering the plated contact material of step b) with a layer of protective material;
d) performing a molding process to form said molded package; and
e) subsequent to the molding process of step d), etching said wirebond sites with a suitable etchant for removing the protective material and exposing the underlying contact material.

5,328,553
METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING A PLANAR SURFACE
Stephen S. Poon, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.
Filed Feb. 2, 1993, Ser. No. 12,177
Int. Cl.[5] H01L *21/44*
U.S. Cl. 156—636 12 Claims



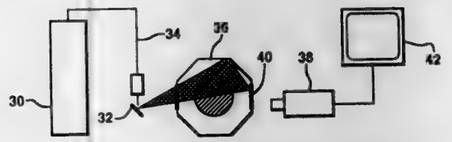
1. A method for fabricating a semiconductor device comprising the steps of:
providing a substrate having a patterned first conductive layer thereon;
forming an insulating layer overlying the first conductive layer;
forming an opening in the insulating layer exposing a portion of the first conductive layer;
forming a second conductive layer overlying the insulating layer and within the opening; and
simultaneously removing the second conductive layer that lies over the insulating layer and removing a surface portion of the insulating layer to form a planar surface,
wherein the step of simultaneous removal is performed such that the removal rates of the second conductive layer and the insulating layer are substantially the same, and
wherein the step of simultaneous removal is carried out by chemical-mechanical polishing using a non-selective slurry comprising aluminum nitride and alumina particles suspended in deionized water.

5,328,554
FABRICATION PROCESS FOR NARROW GROOVE
Simon G. Ingram, Cambridge, England, assignor to GEC-Marconi Limited, England
Filed Nov. 24, 1992, Ser. No. 980,656
Claims priority, application United Kingdom, Dec. 13, 1991, 9126533
Int. Cl.[5] H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/00*
U.S. Cl. 156—643 10 Claims



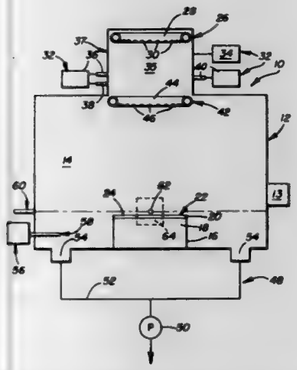
4. A process for producing a narrow groove in a layer of a first material, the process comprising the steps of: forming a relatively wide groove in said layer of first material; depositing over a major surface of said layer of first material and on to a side wall of said relatively wide groove a layer of a second material by evaporating said second material at an oblique angle to said major surface such that the other surfaces of said relatively wide groove are left substantially free of said second material, the thickness of said layer of second material being equal to the required narrow groove width; filling the remainder of the relatively wide groove with a third material; and selectively removing said second material to produce said narrow groove between said first and third materials without significantly removing said first and third materials.

5,328,555
REDUCING PARTICULATE CONTAMINATION DURING SEMICONDUCTOR DEVICE PROCESSING
Anand Gupta, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.
Filed Nov. 24, 1992, Ser. No. 980,828
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 7 Claims



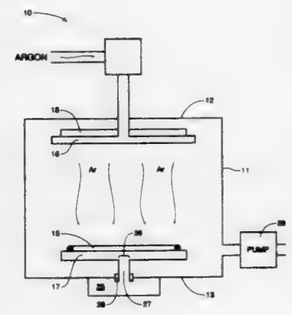
1. A method of removing particles from the surface of a substrate to be processed in a vacuum chamber comprising the following steps in sequence;
a) lifting loosely adhered particles from the surface of said substrate by turning on a plasma from an inert plasma precursor gas, and
b) increasing the flow of said inert plasma precursor gas to sweep the lifted particles beyond the surface of said substrate.

5,328,556
WAFER FABRICATION
Sheldon L. Matlow, San Jose, Calif., assignor to Nace Technology, Inc., San Jose, Calif.
Filed Dec. 31, 1992, Ser. No. 999,209
Int. Cl.[5] H01L *21/306*; B44C *1/22*; B05D *3/06*; B08B *3/12*
U.S. Cl. 156—643 34 Claims



13. A method of producing a radical species which can carry out a chemical reaction adjacent the surface of a substrate, comprising:
mounting a substrate in a sealed chamber at a target position therein with a surface region of the substrate oriented in a selected direction;
introducing a first vaporous chemical to the chamber with the first vaporous chemical flowing toward the surface region of the substrate;
generating a first radical species from the first vaporous chemical at a position in the chamber intermediate the place of introduction of the vaporous chemical and the surface region of the substrate without producing significant amounts of ionized species with the first radical species flowing toward the surface region of the substrate; and
evacuating the chamber at a rate sufficient for maintaining a pressure within the chamber of 10^{-7} Torr or below during the introduction of the first vaporous chemical.

5,328,557
PLASMA TREATMENT OF O-RINGS
Guy T. Blalock, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
Filed Jan. 7, 1993, Ser. No. 1,478
Int. Cl.[5] B05D *5/00*
U.S. Cl. 156—643 14 Claims



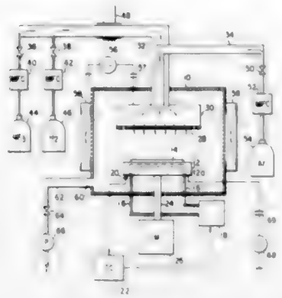
1. A process for preventing excess surface adhesion in an O-ring, said process comprising the steps of:
disposing an O-ring in a chamber;
providing an atmosphere in said chamber by flowing at least one gas;
exciting said atmosphere to form a plasma; and
removing residue from said chamber through a pump.

5,328,558
METHOD FOR ETCHING AN SiO_2 FILM
Kouhei Kawamura, Yamanashi, Japan, assignor to Tokyo Electron Limited, Tokyo and Yasuhiro Horiike, Hiroshima, both of Japan
Filed Mar. 25, 1993, Ser. No. 36,846
Claims priority, application Japan, Mar. 25, 1992, 4-98895
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 11 Claims

8. A method for etching an SiO_2 film on a semiconductor wafer, comprising the steps of:
positioning the semiconductor wafer in a process chamber;
evacuating the process chamber to a vacuum state;
introducing into the process chamber a mixture of a first gas containing fluorine and second gas containing hydrogen;
making the mixture into plasma of low energy in the process chamber;
supplying activated species of fluorine and hydrogen in the plasma onto the wafer to allow the species to be adsorbed in and on the SiO_2 film, a mixed ratio in the activated

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species being so set as not to effect etching of the SiO_2 film under a chemical action.



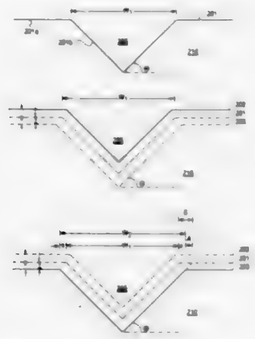
irradiating the adsorbed activated species with ions in the plasma to excite the activated species and etching the SiO_2 film.

5,328,559

GROOVE WIDTH TRIMMING

John J. Jerman, Palo Alto, Calif., assignor to IC Sensors, Inc., Milpitas, Calif.

Filed Sep. 8, 1992, Ser. No. 941,997
Int. Cl.[5] H01L *21/306*; **B44C** *1/22*; **C03C** *15/00*
U.S. Cl. 156—647 **32 Claims**



1. A method for forming a groove in a substrate, comprising:
forming a groove in the substrate extending from a principal surface of the substrate;
measuring a width of the groove; and
then oxidizing an exposed portion of a surface of the substrate in the groove to a predetermined thickness.

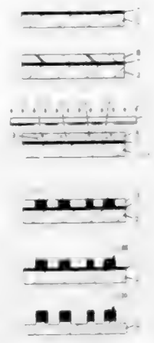
5,328,560

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Tetsuro Hanawa, and Maria Op de Beeck, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1993, Ser. No. 68,133
Claims priority, application Japan, Jun. 9, 1992, 4-149391
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—661.1 **15 Claims**

1. A method of manufacturing a semiconductor device, comprising the steps of:
forming an underlying film of an organic substance having the properties of sublimation, photo absorption, and insolubility in an organic solvent on a semiconductor substrate;
applying resist on said underlying film;
selectively irradiating light to said resist;
developing said resist for forming a resist pattern; and



etching said semiconductor substrate with said resist pattern used as a mask.

5,328,561

MICROETCHANT FOR COPPER SURFACES AND PROCESSES FOR USING SAME

Raymond A. Letize, West Haven; William J. DeCesare, Wolcott, and Lucia Justice, Waterbury, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed Jul. 10, 1992, Ser. No. 911,407
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—666 **11 Claims**

1. A process for microetching a copper surface to remove copper therefrom and produce a remaining copper surface which is microroughened, comprising contacting said copper surface with a composition comprising the combination, in an aqueous solution, of components comprising a source of cupric ion, ammonium hydroxide and/or a source of ammonium ion, and a chelator for cupric ion other than ammonia selected from the group consisting of monoethanolamine, ehtylenediamine tetraacetic acid, salts of ethylenediamine tetraacetic acid, and mixtures thereof, said contacting beign at a composition temperature of from 85° F. to 130° F., and for a time, and at conditions, effective to achieve such microroughening.

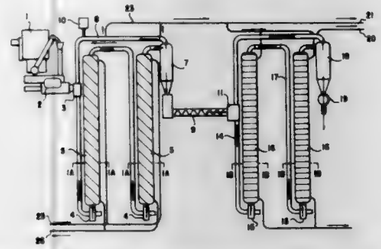
5,328,562

PROCESS FOR PREPARING A HYDROLYSED LINGNOCELLULOSIC MATERIAL

Andrew J. Rafferty, Christchurch, and Kenneth E. Scott, Rangiora, both of New Zealand, assignors to Convertch Group Limited, Rangiora, New Zealand

Filed May 9, 1990, Ser. No. 520,198
Claims priority, application New Zealand, May 11, 1989, 229080
Int. Cl.[5] D21B *1/12*
U.S. Cl. 162—21 **20 Claims**

1. A process for the production of substantially dry, hydrolyzed lignocellulosic material from a source thereof which comprises:
providing and maintaining a primary hydrolysis reaction zone at a temperature and a pressure sufficient to cause and support the hydrolysis of lignocellulosic material therein;
providing saturated steam at said temperature and pressure in said primary hydrolysis zone;
feeding hydrolyzable lignocellulosic material to said primary hydrolysis zone and bringing said lignocellulosic material to said hydrolysis conditions therein;
hydrolyzing said lignocellulosic material in said primary hydrolysis zone by contact with said saturated steam at a sufficient residence time to form a stream comprising steam and hydrolysis products;
bringing said stream to an outlet of said primary hydrolysis zone;
separating substantially hydrolyzed products of said lignocellulose from steam at said outlet, and feeding heated hydrolysis products, substantially separated from steam, to a secondary zone;
maintaining said secondary zone at a pressure lower than the pressure in said primary zone;



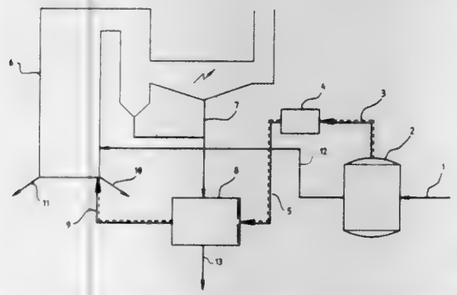
providing superheated steam bled from said primary zone in said secondary zone at a temperature and a pressure sufficient to dry said hydrolysis products;
allowing said heated hydrolysis products to flash upon introduction into said lower pressure secondary zone, in effective contact with said superheated steam, whereby reducing the water content of said hydrolysis products and increasing the water content of said superheated steam; and
recovering dried hydrolysis products of said lignocellulose material.

5,328,563

METHOD OF TREATING MATERIAL CONTAINING SODIUM SULPHATE AND/OR SODIUM CARBONATE IN A PULP MILL

Kaj Henricson, Kotka, and Anja Klarin, Espoo, both of Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Sep. 11, 1992, Ser. No. 943,234
Claims priority, application Finland, Sep. 27, 1991, 914586
Int. Cl.[5] D21C *11/04*
U.S. Cl. 162—30.1 **11 Claims**



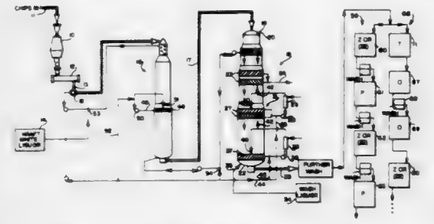
1. A method of treating a cellulose pulp mill ash containing sodium sulphate and/or sodium carbonate to produce pulp cooking chemical, in a pulp mill containing a recovery boiler, comprising the step of:
(a) bringing cellulose pulp mill ash containing sodium sulphate and/or sodium carbonate, the ash selected from the group consisting essentially of fly ash from the recovery boiler and by-product from a chlorine dioxide production plant, into contact with a sulphurous gas, selected from the group consisting essentially of hydrocarbons and hydrogen sulphide, in a contactor located outside of the recovery boiler to produce sodium sulphide.

5,328,564

MODIFIED DIGESTION OF PAPER PULP FOLLOWED BY OZONE BLEACHING

Jian E. Jiang; Brian F. Greenwood, and Joseph R. Phillips, all of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 583,043, Sep. 17, 1990. This application Feb. 18, 1992, Ser. No. 836,585
Int. Cl.[5] D21C *3/02, 9/153, 9/16, 11/00*
U.S. Cl. 162—38 **12 Claims**



1. A method of continuously kraft pulping and then bleached comminuted cellulosic fibrous material using an upright digester having top, bottom, and central portions, consisting essentially of the steps of:
(a) passing comminuted cellulosic fibrous material entrained in kraft white liquor into the top of the digester;
(b) extracting black liquor from at least one screen between the top and bottom of the digester;
(c) at a first portion of the digester withdrawing and recirculating liquid in a first recirculation loop;
(d) adding kraft white liquor to said first recirculation loop;
(e) adjacent the bottom of the digester withdrawing and recirculating liquid in a second, wash, recirculation loop;
(f) withdrawing kraft pulp from the bottom of the digester, steps (a)–(e) being practiced to produce pulp having a Kappa Number of about 20 or below;
(g) adding kraft white liquor to the second recirculation loop, the liquor recirculated into the digester in part passing upwardly therein countercurrent to the material flow, the amount of white liquor added in the second recirculation loop being sufficient to increase the viscosity and strength properties of the pulp produced compared to the practice of the same method with the same material, Kappa Number, and other parameters only without step (g); and
(h) without prior oxygen delignification ozone bleaching the kraft pulp from step (f) with an ozone dosage of less than 1.0% on pulp by weight, to produce a chlorine-free bleached pulp with brightness of about 90 CPPA or greater.

5,328,565

TISSUE PAPER HAVING LARGE SCALE, AESTHETICALLY DISCERNIBLE PATTERNS

David M. Rasch; Thomas A. Hensler, and Dean J. Daniels, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 718,452, Jun. 19, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 33,713
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] D21H *15/02*
U.S. Cl. 162—113 **9 Claims**

1. A single lamina cellulosic fibrous structure having at least three visually discernible regions, said cellulosic fibrous structure comprising:

a background matrix having a first value of an optically intensive property;

a nonembossed first annular region having a second value of the optically intensive property, said second value being substantially different than said first value of the optically intensive property of said background matrix;

a nonembossed second annular region having a third value of the optically intensive property, said third value being



substantially different than said second value of the optically intensive property of said first annular region, said second annular region being disposed substantially within said first annular region; and

a nonembossed third region having a value of the optically intensive property substantially different than said third value of the optically intensive property of said second annular region, said third region being disposed substantially within said second annular region.

5,328,566

PROCESS FOR PRODUCING INORGANIC FIBER-BASED PREPREG SHEET AND PROCESS FOR PRODUCING INSULATING LAMINATE

Hidekuni Yokoyama, Minami-Shinozaki; Setuo Toyoshima, Tokyo, and Takamasa Ibaraki, Minami-Shinozaki, all of Japan, assignors to Honshu Paper Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,985

Claims priority, application Japan, Jan. 22, 1991, 3-006011

Int. Cl.[5] D21H *13/36*

U.S. Cl. 162—152 **12 Claims**

1. A method for producing an inorganic fiber-based prepreg sheet, which comprises:

forming into a sheet a slurry containing 35–80% by weight of a phenolic resin powder of 0.01–100 μm in average particle diameter and 65–20% by weight of an inorganic fiber of a total amount of a phenolic resin powder/inorganic fiber combination and containing a nonionic high-molecular fixing agent; and

applying to the sheet formed a silane coupling agent.

5,328,567

PROCESS FOR MAKING A PAPER BASED PRODUCT CONTAINING A BINDER

Homan B. Kinsley, Jr., Powhatan, Va., assignor to Custom Papers Group Inc., Richmond, Va.

Filed Feb. 10, 1992, Ser. No. 833,165

Int. Cl.[5] D21H *17/10*

U.S. Cl. 162—158 **33 Claims**

1. A process for making a paper based product which comprises

(i) preparing a slurry comprised of a cellulosic pulp, a peel strength enhancing amount of a particulate binder that would be sticky at the drying temperature, and a release effecting amount of an emulsion comprised of lecithin and a fatty acid or derivative thereof, with the amount of lecithin being sufficient to provide a stable emulsion with the fatty acid or derivative thereof;

(ii) draining the liquid from the slurry to form a web; and

(iii) drying the web.

5,328,568

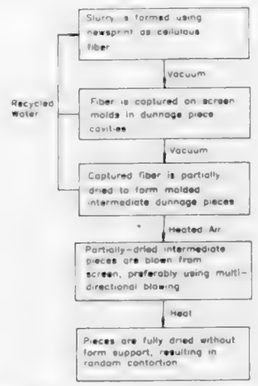
METHOD AND APPARATUS FOR MANUFACTURE OF FREE-FLOWING DUNNAGE OF MOLDED PULP

Jack E. Pregont, Janesville, Wis., assignor to Pulptech Corporation, Janesville, Wis.

Continuation of Ser. No. 800,281, Nov. 29, 1991, Pat. No. 5,230,943. This application Nov. 20, 1992, Ser. No. 979,799

Int. Cl.[5] D21J *1/06*

U.S. Cl. 162—226 **18 Claims**



1. A method for manufacture of a free-flowing dunnage comprising:

mixing pulp fibers with water to form a water-based pulp-stock slurry;

capturing damp pulp fibers from the slurry onto a dish-shaped screen;

partially drying the pulp fibers on the screen to form individual dish-shaped intermediate pieces;

form-free removing of the partially-dried intermediate pieces from the screen; and

thereafter drying the intermediate pieces free of form support;

thereby to form random dish-shaped dunnage pieces which resist nesting with each other.

5,328,569

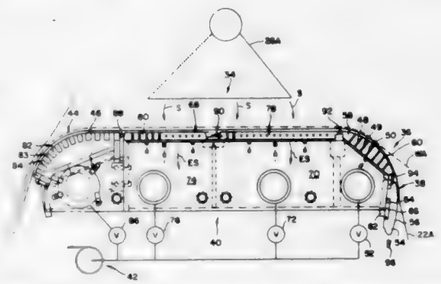
CURVED SUCTION BOX APPARATUS IN A PAPERMAKING MACHINE PRESS SECTION

Dennis C. Cronin, Rockton, Ill., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Jun. 26, 1992, Ser. No. 905,256

Int. Cl.[5] D21F *1/52*

U.S. Cl. 162—306 **14 Claims**



1. In a papermaking machine press section, a curved pick-up

suction box apparatus for guiding a web towards a nip of a nip press, said apparatus comprising:

initial shoe means disposed upstream relative to the nip, said shoe means defining a convex surface for guiding the web;

a box means disposed downstream relative to said initial shoe means for guiding the web from said initial shoe means, said box means being connected to a partial vacuum means;

said initial shoe means including:

a solid shoe having an initial curved surface for guiding the web;

a further shoe disposed downstream relative to said solid shoe, said further shoe having a further curved surface, said further curved surface defining a plurality of perforations which extend from said further curved surface to a variable source of partial vacuum such that the web is drawn towards said further curved surface;

said box means including:

a perforate surface which is connected to a partial vacuum means such that the web is drawn towards said perforate surface during movement of the web past said perforate surface;

a first compartment disposed adjacent to said initial shoe means, said first compartment being connected to a first source of partial vacuum of said partial vacuum means for drawing the web towards said perforate surface;

a second compartment disposed downstream relative to said first compartment, said second compartment being connected to a second source of partial vacuum of said partial vacuum means for assisting in drawing the web towards said perforate surface;

said perforate surface further including:

an upstream perforate closure which cooperates with said first compartment; and

a downstream perforate closure which cooperates with said second compartment, the box means being arranged for permitting the application of a differential vacuum level to said upstream closure relative to said downstream closure.

5,328,570

HYDRAULIC SUPPORT DEVICE IN A PAPER MAKING MACHINE

Robert Wolf, Herbrechtingen, and Christian Schiel, Heidenheim, both of Fed. Rep. of Germany, assignors to J. M. Voith, Fed. Rep. of Germany

PCT No. PCT/EP91/00558, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO91/14825, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 861,847

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1990, 4009628

Int. Cl.[5] D21F *1/02, 1/54*

U.S. Cl. 162—336 **17 Claims**

1. A hydraulic support device in a paper making machine in combination with and for supporting a first beam and a second beam, wherein the beams extend parallel to each other, each of the beams having two opposite ends, and further comprising means for coupling the beams to each other at each of their respective two opposite ends and without the beams being coupled at locations along the beams which are between their opposite ends, the device comprising:

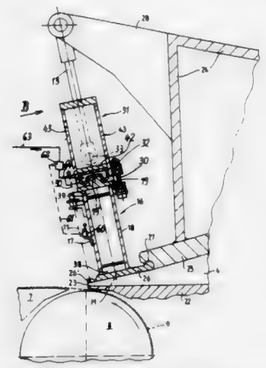
the first beam having a first contact surface extending over the length of the first beam and facing toward the second beam;

the second beam having a second contact surface extending over the length of the second beam and facing toward the first beam;

pressure cushion means between and contacting the first and the second contact surfaces for supporting the second beam on the first beam, the pressure cushion means having pressure fluid therein, the pressure of which is variable but which is uniform over the length of the pressure cushion means along the contact surfaces;

means for controllably varying the pressure in the pressure cushion means during operation of the support device; and

in the width direction across the first beam and the pressure cushion means, the second contact surface has a width substantially equal to a total width of the pressure cushion means, the first contact surface has a width less than the total width of the pressure cushion means, the first contact surface being so shaped and the first beam at its region next to the contact surface and in the width direction



being so shaped as to define a free space on each side in the width direction of the first contact surface into which each space extends a part of the pressure cushion means that is beyond the width of the first contact surface.

9. In combination, a paper making machine headbox and the hydraulic support device of claim 1;

the headbox comprising first and second flow guide walls which define an outlet slot for pulp and the first wall being movable toward and away from the second wall;

the first beam of the hydraulic support device being part of the first wall of the head box.

5,328,571

PROCESS FOR PREPARING PERFLUORINATED BROMOALKANES, OR PERFLUORINATED BROMOALKANES CONTAINING ETHER GROUPS

Hans Millauer, Eschborn, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Gebäude, Fed. Rep. of Germany

Filed Sep. 9, 1993, Ser. No. 119,332

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1992, 4231744

Int. Cl.[5] C25B *3/08*

U.S. Cl. 204—81 **15 Claims**

1. A process for preparing perfluorinated bromoalkanes of the formula

$$X—(CF_2)_p—Br \qquad (I),$$

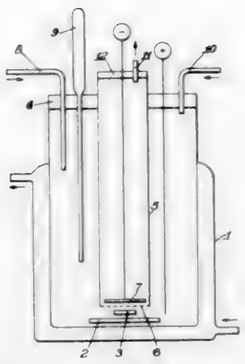
in which X is hydrogen or fluorine and p is an integer from 2 to 10, or perfluorinated bromoalkanes which contain ether groups, of the formula

$$CF_3—CF_2—CF_2—O—(\underset{\displaystyle CF_3}{\underset{|}{CF}}—CF_2—O)_q—\underset{\displaystyle CF_3}{\underset{|}{CF}}—Br, \qquad (Ia)$$

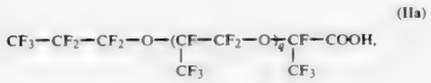
in which q is zero or an integer from 1 to 4, which comprises subjecting a perfluorinated alkanecarboxylic acid of the formula

$$X—(CF_2)_p—COOH \qquad (II),$$

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in which X is hydrogen or fluorine and p is an integer from 2 to 10, or an alkanecarboxylic acid which contains ether groups, of the formula



(IIa)

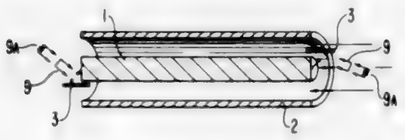
in which q is zero or an integer from ! to 4, to electrolytic decarboxylation in an aqueous electrolyte in the presence of bromine and an aliphatic nitrile.

5,328,572

DUAL SYSTEM USING THREE ELECTRODES TO TREAT FLUID

Jack K. Ibbott, 17-7, Nishiazabu 4-chome, Minato-ku, Tokyo 106, Japan

Filed Feb. 20, 1991, Ser. No. 657,813
Int. Cl.[5] C02F *1/46, 5/00*
U.S. Cl. 204—150 **19 Claims**



13. A method of treating electrically conductive fluid in which the fluid so treated will inhibit a compound to which the fluid is exposed from dissolving into the fluid, said method comprising:

providing a positive electrode of electrically conductive material;

providing a negative electrode of electrically conductive material that is spaced apart and electrically isolated from the electrically conductive material of said positive electrode, and which has an electrochemical potential that is different from that of the electrically conductive material of said positive electrode;

providing a third electrode of electrically conductive material having an electrochemical potential substantially the same as that of the principle element of the compound which the fluid is to be treated for, the electrically conductive material of the third electrode being electrically connected to the electrically conductive material of said positive electrode and electrically isolated from the electrically conductive material of said negative electrode; and

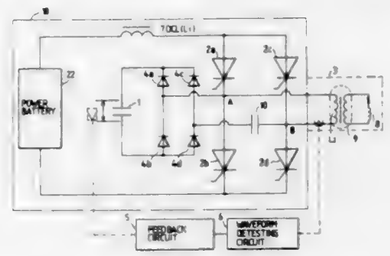
causing a body of the fluid to flow over said electrodes so as to establish an electroconductive connection of said positive and said negative electrodes only through the body of fluid thereby causing ionization of the fluid, and so as to cause metal ions of the electrically conductive material of said third electrode to be released into the fluid thereby inhibiting the release of the compound into the fluid.

5,328,573

METHOD FOR ELECTROCHEMICALLY ROUGHENING A SURFACE OF A METAL PLATE

Seiji Kawasumi, and Akio Uesugi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 5, 1992, Ser. No. 971,575
Claims priority, application Japan, Nov. 5, 1991, 3-315246
Int. Cl.[5] C25F *3/02*
U.S. Cl. 204—129.4 **5 Claims**



1. A method for electrochemically roughening a surface of metal plate comprising the steps of:

providing the metal plate;

contacting said plate with an electrolytic solution;

applying to said plate through adjacent electrodes and said solution an alternating current generated by a power source circuit containing a rectifying coil having an inductance at least ten times greater than an inductance of a load on said power source circuit.

5,328,574

WATER TREATMENT PROCESS FOR ELECTROLYSIS, IN PARTICULAR FOR WATER DECARBONIZATION, AND APPARATUS FOR CARRYING OUT THIS PROCESS

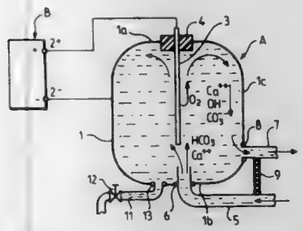
Dominique Mercier, Résidence le Lac - Esc. 1.-4, rue Georges Millandy, 92360 Meudon-la-Foret, France

PCT No. PCT/FR91/00725, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO92/05116, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 13, 1991, Ser. No. 30,135
Claims priority, application France, Sep. 14, 1990, 90 11413
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—149 **24 Claims**

13. A process for water treatment by electrolysis, particularly for decarbonizing water in a tank forming a cathode, using the cathode as a reference potential which remains substantially constant, in which an electric current is passed through water by ionic conduction between an anode (3) and the cathode (1) connected, respectively, to positive (2+) and negative (2−) poles of an electric control device (B) comprising the steps of:

selecting a metal for the cathode (1) whose redox potential constitutes a reference potential which remains substantially constant to the water during the electrolysis, and is greater than the effective reduction threshold of the water

for preventing the reduction of this water and during electrolysis the OH^- ions required for nucleation of calcium carbonate are produced exclusively from the dissolved oxygen in the water.

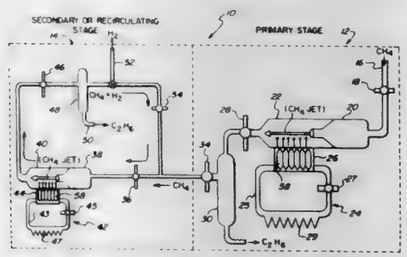


5,328,575

PHOTOCHEMICAL PROCESS AND SYTEM FOR PERFORMING A PHOTOCHEMICAL PROCESS

Allen R. Geiger, Las Cruces, N. Mex., assignor to LaSen, Inc., Las Cruces, N. Mex.

Filed Aug. 6, 1992, Ser. No. 926,227
Int. Cl.[5] C07C *2/00, 4/00*
U.S. Cl. 204—157.15 **20 Claims**



1. A method for performing a photochemical reaction comprising the following steps:

introducing a first molecular substance into a chamber;

tuning the outlet of at least one optical parametric oscillator/laser to at least one absorption band of the first molecular substance; and

directing the at least one portion of the output of the optical parametric oscillator laser tuned to the absorption band of the first molecular substance into the chamber to dissociate the first molecular substance.

5,328,576

GAS PLASMA TREATMENT FOR WATER AND OIL PROOFING OF FABRICS AND PAPER

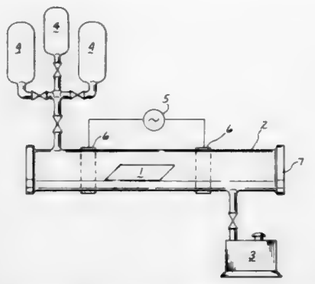
Georgy Z. Paskalov; Svetlana A. Krapivina, and Alexander K. Filippov, all of St. Petersburg, U.S.S.R., assignors to Plasma Plus, Los Angeles, Calif.

Filed Apr. 6, 1992, Ser. No. 864,431
Int. Cl.[5] H05F *3/00*
U.S. Cl. 204—164 **7 Claims**

7. A method for imparting water and oil repellent surface properties to materials including textile fabrics and paper products comprising the steps of:

first exposing said materials to a low pressure plasma comprising of an inorganic gas including water vapor at a concentration of between 0.05 to 0.5%, at a pressure of 0.01–10 Torr, at an input power generator frequency of 1 to 40 MHz with specific discharge power of 0.003 to 3.0 Wt/cm3, for a pretreatment time ranging from 3.0 seconds to 60 seconds; and

then exposing said materials to a low temperature plasma of methane gas at a pressure of between 0.01 and 10 Torr, input power generator frequency of 1–40 MHz at a specific discharge power of 0.003 to 3.0 Wt/cm3 for a treatment time of 30 seconds to 3600 seconds.

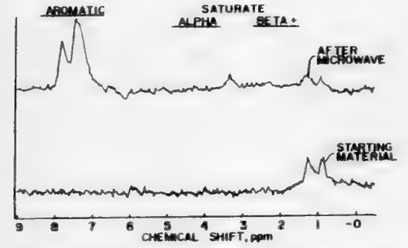


5,328,577

UPGRADING OF LOW VALUE HYDROCARBONS USING A HYDROGEN DONOR AND MICROWAVE RADIATION

William J. Murphy, Brights Grove, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 457,603, Dec. 27, 1989, Pat. No. 5,181,998. This application Dec. 4, 1992, Ser. No. 985,782
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] C07C *4/00*
U.S. Cl. 204—168 **10 Claims**



1. A method for upgrading a low value hydrocarbon which comprises:

(a) introducing into a reaction zone containing at least one plasma initiator capable of initiating an electric discharge in an electromagnetic field a feed stream, wherein said feed stream contains

(1) a hydrogen donor with the proviso that if the hydrogen donor is not molecular hydrogen, then molecular hydrogen is added in an amount sufficient to maintain activity of the plasma initiator,

(2) from about 0.02 to about 20 wt% water, based on the feed stream, and

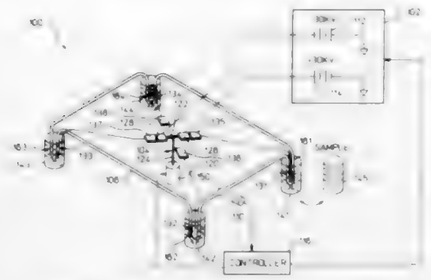
(3) low value hydrocarbon;

(b) subjecting the reaction zone to microwave radiation having a frequency of at least 0.3 GHz thereby initiating an electric discharge; and

(c) cracking the hydrogen donor in the presence of the electric discharge thereby upgrading at least a portion of the low value hydrocarbon.

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5,328,578
CAPILLARY ELECTROPHORESIS WITH TRACKING SEPARATION FIELD
Gary B. Gordon, Saratoga, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 15, 1993, Ser. No. 77,576
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 13 Claims



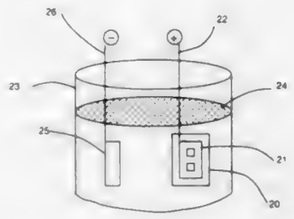
1. A capillary electrophoresis system comprising:
capillary means for defining a separation path having a downstream direction, said separation path including at least three electrode points, said electrode points including an intermediate electrode point;
power supply means for supplying a voltage differential;
distributor means for selectively routing said voltage differential to pairs of said electrode points, said distributor means having at least two conditions including
a first condition in which said voltage potential is applied between said intermediate electrode point and another of said electrode points so that a sample component migrates downstream toward said intermediate electrode point, and
a second condition in which, before said sample component reaches said intermediate electrode point, said voltage differential can be applied between two of said electrode points other than said intermediate electrode point so that said sample component migrates downstream past said intermediate electrode point, said distributor means being electrically coupled to said power supply means and to said capillary means; and
rate determination means for determining the migration rate of a sample component, said rate determination means including a controller coupled to said distributor so that said controller commands said distributor means to switch said voltage differential between pairs of said electrode points at times determined as a function of said migration rate so that said sample component migrates continuously in a downstream direction.

13. A method of separating sample components as recited in claim 12 further comprising detecting when said first sample component passes a detection point along said separation loop, and determining the timing of the switching of iterated step d as a function of this migration rate.

5,328,579
METHOD FOR FORMING A PAINT FILM
Takahisa Kasukawa; Teiji Katayama; Ichiro Tabuchi; Mitsuharu Morino; Hiroshi Inoue, and Toshio Ohkoshi, all of Kanagawa, Japan, assignors to Kansai Paint Co., Ltd., Kanagawa, Japan
Division of Ser. No. 742,420, Aug. 8, 1991, Pat. No. 5,229,210. This application Jan. 25, 1993, Ser. No. 970,021
Int. Cl.[5] C25D *13/12*
U.S. Cl. 204—181.1 19 Claims

1. A method for forming a multilayer paint film comprising the steps of forming an uncured film on a substrate with a cationically electrodepositable paint on a substrate, further coating an aqueous paint on the uncured film of the electrodeposited film in a wet-on-wet manner, and then curing with heating the both films,
wherein (i) the electrodeposited film of the cationically electrodepositable paint has a film weight reduction after curing with heating of 10% by weight or less, the cationically electrodepositable paint comprising
(A) a resin having hydroxyl groups and cationic groups, and
(D) a blocked polyisocyanate compound being blocked with a blocking agent having a molecular weight of 130 or less as principal components;
wherein (ii) the aqueous paint is composed mainly of
(a) a polyester resin optionally modified with a urethane and having an acid value within the range of 10 to 100 and a hydroxyl value within the range of 20 to 3000; and
(b) a water-soluble or -dispersible amino resin having an imino group.

5,328,580
ELECTRODEPOSITION METHOD OF APPLYING ENCAPSULATED LIQUID CRYSTAL MATERIAL TO ELECTRODES
Robert H. Reamey, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Continuation of Ser. No. 865,435, Apr. 9, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 105,658
Int. Cl.[5] C25D *13/04, 13/08*
U.S. Cl. 204—181.1 16 Claims

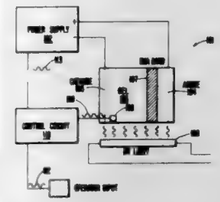


1. A method of applying encapsulated liquid crystal material to an electrode material, comprising the steps of:
providing a substrate having an electrode pattern thereon;
placing the substrate and the electrode pattern in contact with an electrodeposition medium comprising a liquid crystal composition, a containment medium or precursor therefor, and optionally a carrier medium; and
depositing encapsulated liquid crystal material comprising discrete volumes of the liquid crystal composition encapsulated, dispersed, embedded, or otherwise contained in the containment medium onto the electrode pattern or selected portions thereof by applying a voltage to the electrode pattern or selected portions thereof; the encapsulated liquid crystal structure being capable of switching from a highly light scattering state to a highly non-scattering and substantially transparent state upon the application of a sufficient electric field.

5,328,581
ELECTROPHORESIS TEMPERATURE FEEDBACK CONTROLLER
Joseph Sorge, La Jolla, Calif., assignor to Stratagene, La Jolla, Calif.
Filed Jan. 18, 1991, Ser. No. 643,398
Int. Cl.[5] G01N *27/26, 27/447*; B01D *57/02*
U.S. Cl. 204—182.8 21 Claims

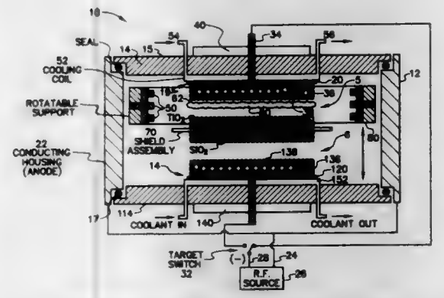
7. An electrophoresis method for separating charged chemical substances, comprising the steps of
applying an electrical potential to a mixture of said charged chemical substances;
sensing a temperature of said mixture; and

altering said electrical potential in response to said temperature;



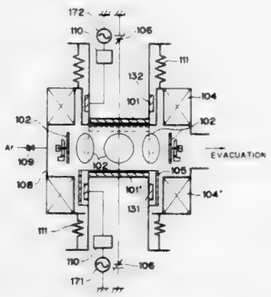
wherein said step of sensing a temperature occurs at predetermined times.

5,328,582
OFF-AXIS MAGNETRON SPUTTER DEPOSITION OF MIRRORS
Barrett E. Cole, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 4, 1992, Ser. No. 986,834
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.12 21 Claims



1. An off-axis magnetron sputtering device for use in the construction of mirrors by sputtering a combination of alternating layers of material on a substrate surface a substrate, comprising:
an air tight sputtering chamber capable of maintaining gas at a pressure required to establish a discharge having a substantially cylindrical outer wall and a first and a second cover perpendicular to a central axis of said cylindrical outer wall;
a first cathode assembly disposed within said chamber in close proximity to said first cover, said first cathode assembly having a first target material on a first target surface of said first cathode assembly, said first target surface opposite said first cover, and perpendicular to said central axis;
a second cathode assembly disposed within said chamber in close proximity to said second cover of said chamber having a second target material on a second target surface of said second cathode assembly, said second target surface being opposite said second cover and parallel to said first target surface;
a sputter shield disposed between said first cathode assembly and said second cathode assembly, said sputter shield having said first target material on a surface facing said first cathode assembly and said second target material on a surface facing said second cathode assembly;
a first magnet assembly situated behind said first cathode assembly and opposite said first target surface, said magnet assembly having lines of magnetic force that leave said first target surface and return to said first target surface;
a second magnet assembly situated behind said second cathode assembly and opposite said target surface, said second magnet assembly having lines of magnetic force that leave said second target surface and return to said second target surface;
a switchable radio frequency source having one contact connected to said chamber and a second contact switchably connected to either said first cathode assembly or said second cathode assembly; and
substrate handling means for holding a plurality of substrates in an orientation such that the substrate surface to be coated is parallel with said central axis and such that a radial vector normal to said substrate surface perpendicularly intersects said central axis, said substrate handling means for causing the substrates to be rotated about said cathode assemblies, said substrate handling means also for positioning said substrates in one of a plurality of positions, a first position being such that a radial vector normal to said substrate surface perpendicularly intersects said central axis between said first cathode assembly and said sputtering shield, and a second position being such that a radial vector normal to said substrate surface perpendicularly intersects said central axis between said second cathode assembly and said sputtering shield.

5,328,583
SPUTTERING APPARATUS AND PROCESS FOR FORMING LAMINATION FILM EMPLOYING THE APPARATUS
Makoto Kameyama, Funabashi, and Kenji Ando, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1992, Ser. No. 971,063
Claims priority, application Japan, Nov. 5, 1991, 3-315267; Nov. 5, 1991, 3-315268; Nov. 18, 1991, 3-301720; Nov. 19, 1991, 3-302890
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.12 15 Claims



1. A sputtering apparatus comprising at least one pair of first sputtering targets arranged in counterposition about a center axis; a second sputtering target provided substantially on a concentric circle having the same center axis as the first sputtering targets; and a substrate holder for holding a substrate to be coated with particles of target materials emitted from the first sputtering targets and the second sputtering target, which is provided substantially on another concentric circle having a diameter larger than that of the concentric circle of the second sputtering target.

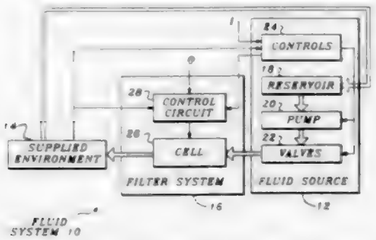
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PASSIVE CIRCULATION IN ELECTROLYTIC FLUID TREATMENT SYSTEMS

Robert K. Erickson, Belmont, Calif., and Michael D. Hanrahan, Snohomish, Wash., assignors to Water Regeneration Systems, Inc., Belmont, Calif.

Filed Jun. 19, 1992, Ser. No. 901,599
Int. Cl.[5] C25B *15/02, 15/08;* **C25D** *21/06;* **B01D** *21/24*
U.S. Cl. 204—229 **33 Claims**



9. A system for filtering a fluid, said system comprising:
storage means for receiving the fluid; and
passive filtration and circulation means for filtering the fluid and for producing a gradient in the fluid that induces circulation of the fluid in said storage means, wherein said passive filtration and circulation means comprises at least one pair of electrodes exposed to the fluid in said storage means.

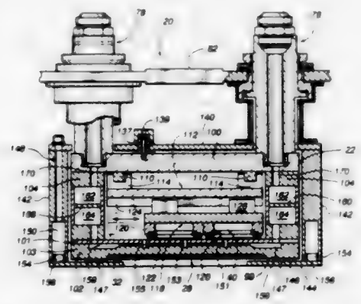
10. The system of claim **9**, further comprising sensing means for producing an output including information regarding the receipt of fluid by said storage means and control means for controllably supplying electrical energy to said pair of electrodes.

5,328,585

LINEAR PLANAR-MAGNETRON SPUTTERING APPARATUS WITH RECIPROCATING MAGNET-ARRAY

David E. Stevenson, Northfield, Minn., and Geoffrey H. Humberstone, Holland, Mich., assignors to Photran Corporation, Lakeville, Minn.

Filed Dec. 11, 1992, Ser. No. 989,078
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.2 **9 Claims**



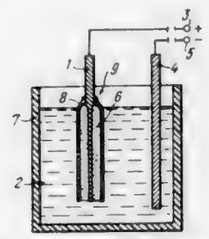
1. A linear planar-magnetron sputtering apparatus, comprising:
A rectangular box-shaped cathode body having a length and a width;
said cathode body including a flat, rectangular base and a flat, rectangular target-supporting member, said base and said target-supporting member attached to and spaced apart by first and second side-walls, and first and second end-walls, and said base, said target supporting member and said side and end-walls forming an enclosure within said cathode body;
magnetic means within said enclosure for defining an elongated sputtering-zone extending along the length of said-target-supporting member, said magnetic means including a magnet array attached to a flux-return plate;
said target-supporting member arranged to support on an outer surface thereof a target material to be sputtered, said target material in contact with a predetermined rectangular target area of said outer surface;
magnet-moving means for providing reciprocal motion of said magnetic means in at both lateral and longitudinal directions relative to said cathode body;
said magnet-moving means including spaced-apart parallel longitudinal-drive rails attached to said rectangular base and extending in a direction along the length of said cathode body, a magnet-array suspension-platform slidably mounted on said longitudinal drive rails, said suspension-platform having spaced-apart, parallel, lateral-drive rails extending in a direction across the width of said cathode body, and said magnet-array slidably mounted on said lateral-drive rails;
at least one rotatable longitudinal-drive shaft having first cam means attached thereto, said first cam means slidably engaging first cam-follower means attached to said suspension platform, and at least one rotatable lateral-drive shaft, said lateral-drive shaft having second cam means attached thereto said second cam means slidably engaging second cam-follower means attached to said flux-return plate;
target cooling means within said target-supporting member for cooling a target during sputtering;
side-wall cooling means within said side-walls, and end-wall cooling means within said end-walls for cooling said side-walls and said end-walls respectively during sputtering; and
means for mounting said cathode body in a vacuum chamber under vacuum, with said magnet-array and said reciprocal motion providing means at atmospheric pressure.

5,328,586

PROCESS FOR THE MANUFACTURE OF LEAD-ACID BATTERY ELECTRODE AND LEAD-ACID STORAGE BATTERY

Mikhail B. Konovalov; Vladislav N. Demin, and Oleg N. Demin, all of Kursk, Russian Federation, assignors to Gorodskoi Studenchesko-Molodezhny Tsentr "Praktika", Kursk, Russian Federation

Filed Oct. 22, 1992, Ser. No. 964,627
Claims priority, application U.S.S.R., Oct. 22, 1991, 5006061; Dec. 10, 1991, 5016449; Russian Federation, Mar. 2, 1992, 5038415; Apr. 2, 1992, 5035595
Int. Cl.[5] H01M *4/16*
U.S. Cl. 205—63 **13 Claims**



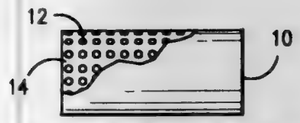
1. A process for the manufacture of an electrode for a lead-acid storage battery comprising passing electric current through a current-conductive backing of lead immersed in electrolyte and connected to a positive terminal of a power supply, and oxidizing the lead to form a layer of active material on the surface of said current-conductive backing as a result of electrochemical reaction, said active material consisting essentially of PbO_2,
wherein said process comprises the following steps:
arranging a current-conductive backing of lead between layers of corrosion-resistant porous material, which during active material formation on the current-conductive backing create pressure on a surface of the formed layer of active material ranging from 0.005 to 6.5 MPa; and
carrying out electrochemical treatment until the active material thickness reaches 0.3 mm to 5 mm.

5,328,587

METHOD OF MAKING MACHINE-ENGRAVED SEAMLESS TUBE

Willi Fenske, Richmond, Va., assignor to IR International, Inc., Sandston, Va.

Filed Nov. 16, 1992, Ser. No. 976,849
Int. Cl.[5] C25D *1/08, 7/04;* **B23P** *9/02;* **C23F** *1/02*
U.S. Cl. 205—73 **22 Claims**



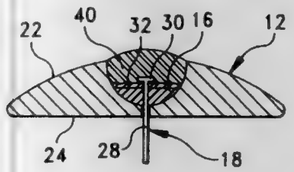
1. A method of making a perforated tubular member having a relatively thin tubular wall of metal which is perforated by an array of radial, inwardly-tapered apertures, said method comprising the steps of:
Supporting a metallic tube on a mandrel;
machine engraving funnel-shaped holes through said metallic tube, said machine engraving comprising repeated knurling steps, each said knurling step followed by an etching step to remove metal from selected locations on the knurled metal tube to form said funnel-shaped holes therein; and,
removing the thusly-machine-engraved tube from said mandrel whereby accurately-dimensioned, funnel-shaped holes are formed in the tubular member without requiring separating agents, multiple-layer deposition, slitting, recurving, or rewelding.

5,328,588

METHOD OF INLAYING METALS IN NON-CONDUCTIVE MATERIALS

Samuel Hopkins, P.O. Box 644, Carolina, R.I. 02812

Filed Mar. 19, 1993, Ser. No. 34,478
Int. Cl.[5] C25D *5/02*
U.S. Cl. 205—120 **15 Claims**



1. A method of inlaying metal into a non-conductive material comprising the steps of:
forming a recessed area in a surface of said non-conductive material;
depositing a layer of adhesive throughout said recessed area;
positioning a cathode in said adhesive;
depositing a metallic base in said adhesive throughout said recessed area, said metallic base electrically communicating with said cathode; and
immersing said non-conductive article in an electrolytic solution wherein metal is built up in said recessed area by electrolysis.

5,328,589

FUNCTIONAL FLUID ADDITIVES FOR ACID COPPER ELECTROPLATING BATHS

Sylvia Martin, Shelby Township, Macomb County, Mich., assignor to Enthone-OMI, Inc., Warren, Mich.

Filed Dec. 23, 1992, Ser. No. 996,095
Int. Cl.[5] C25D *3/38*
U.S. Cl. 205—296 **21 Claims**

1. An improved high acid/low copper electroplating bath for plating of copper onto substrates comprising:
from about 13 to about 45 g/l copper ions; from about 45 to about 262 g/l of an acid with effective amounts of a bath soluble multi-functional polymer said polymer comprising at least three distinct ether groups linked in said polymer wherein one of the ether linkages is derived from an alcohol, a bisphenol A or an epoxy and also comprising propoxy and ethoxy groups said multi-functional polymers providing improved leveling over surface imperfections, improved adhesion and improved plating in low density current areas.

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HYDROCRACKING PROCESS USING A CATALYST CONTAINING ZEOLITE BETA AND A LAYERED MAGNESIUM SILICATE

Mario L. Occelli, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 27, 1992, Ser. No. 843,984
Int. Cl.[5] C10G *47/00*
U.S. Cl. 208—111 **36 Claims**

1. A hydrocracking process which comprises contacting a hydrocarbon feedstock with a catalyst devoid of an intercalated clay under hydrocracking conditions in the presence of hydrogen so as to produce a product of lower average boiling point, said catalyst comprising one or more hydrogenation components in combination with a support comprising zeolite Beta in a form catalytically active for cracking hydrocarbons, and a layered magnesium silicate.

5,328,591

MECHANICAL SHATTERING OF ASPHALTENES IN FCC RISER

Michael F. Raterman, Doylestown, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 13, 1992, Ser. No. 960,347
Int. Cl.[5] C10G *47/00, 11/00*
U.S. Cl. 208—113 **18 Claims**

1. A dual feed injection catalytic cracking process for converting a relatively light feed containing at least 90 wt % distillable hydrocarbons and a heavier resid feed containing at least 10 wt % hydrocarbons boiling above 1000° F. and complex, disruptable species selected from the group of stacked asphaltene molecules and stacked porphyrins, to catalytically cracked products including at least 40 LV % C5 to 400° F. gasoline having an octane number of at least 90.0 RONCL in a single riser reactor having a base and an upper outlet comprising;
a. pressurizing said resid feed by mixing therewith sufficient compressed vapor selected from the group consisting of steam, hydrogen, and normally gaseous hydrocarbons, to produce a pressurized resid feed of a resid/vapor mixture having a pressure above 200 psig;
b. mechanically disrupting said pressurized resid feed by discharging said resid through a high pressure drop nozzle into an expansion chamber operating at a pressure of 1 to 100 psig, with a delta P across said nozzle of at least 200

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psi, and an exit velocity above 300 fps to produce mechanically disrupted feed;

c. thermally treating said disrupted feed in said expansion chamber at a temperature above 700° F. for 0.01 to 1.0 seconds to thermally crack said mechanically disrupted feed to produce a mechanically disrupted and thermally cracked resid feed in an expansion region at a pressure of 1 to 100 psig,

d. discharging said mechanically disrupted and thermally cracked resid from said expansion region into a base section of a riser catalytic cracking reactor having said base section and an upper outlet section, said riser reactor operating at a pressure below said expansion region;

e. charging a stream of hot, regenerated cracking catalyst from a catalyst regenerator to said base section of said riser reactor and thermally and catalytically cracking said resid in a resid cracking zone in a lower portion of said riser by contact with said hot, regenerated cracking catalyst;

f. charging said relatively light feed to said riser reactor at a location downstream of said resid cracking zone;

g. catalytically cracking said relatively light feed and said, mechanically disrupted and thermally cracked resid feed in said riser reactor at catalytic cracking conditions including a cat:feed weight ratio of a least 4:1, a catalyst and combined vaporized feed initial mixture temperature of 950° to 1100° F., to produce a discharged mixture of catalytically cracked products and spent cracking catalyst which are discharged from said outlet of said riser reactor;

h. separating said discharged mixture of catalytically cracked products and spent cracking catalyst into a cracked product rich vapor phase, which is withdrawn as a product, and a spent catalyst rich phase;

i. stripping said spent catalyst in a stripping means at stripping conditions to produce stripped catalyst;

j. regenerating said stripped catalyst in a catalyst regeneration means operating at catalyst regeneration conditions to produce hot regenerated cracking catalyst which is recycled to the base of said riser reactor

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FCC REACTOR WITH TUBE SHEET SEPARATION

Brian W. Hedrick, Rolling Meadows, Ill., assignor to UOP, Des Plaines, Ill.

Filed Dec. 24, 1992, Ser. No. 996,266

Int. Cl.[5] C10G *11/00*

U.S. Cl. 208—113 **12 Claims**



1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock, said process comprising:

a) passing said FCC feedstock and generated catalyst particles to a reactor riser and transporting said catalyst and feedstock upwardly through said riser thereby converting said feedstock to product vapors and producing spent catalyst particles by the deposition of coke on said regenerated catalyst particles;

b) discharging a first mixture of spent particles and product vapors from a discharge end of said riser upwardly into a dilute phase of a disengaging zone at least partially contained within a reactor vessel;

c) passing catalyst out of said disengaging zone to a stripping zone and contacting catalyst in said stripping zone with a stripping fluid stream;

d) collecting a separated stream comprising catalyst particles having a particle size ranging from 25 to 100 μm and at least a portion of said product vapors from said dilute phase of said disengaging zone said separated stream having a catalyst loading ranging from to 0.05 to 0.2 lbs/ft.$_3$ and passing said separated stream to a separation chamber contained within said reaction vessel;

e) dividing said separated stream in said separation chamber into a plurality of separator inlet streams and passing said separator inlet streams into a plurality of centrfugal separators each having an inlet in said chamber and a vapor outlet and a catalyst outlet communicating with the outside of said chamber;

f) transporting catalyst from the catalyst outlets of said centrifugal separators into said stripping zone; and,

g) collecting a vapor product stream from the vapor outlets of said centrifugal separators.

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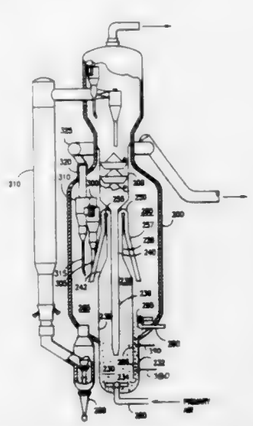
MULTI-STAGE REGENERATION OF CATALYST WITH TRAPPED CO COMBUSTION PROMOTER

Hartley Owen, Worton, Md., and Paul H. Schipper, Doylestown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1992, Ser. No. 997,747

Int. Cl.[5] C10G *11/00*

U.S. Cl. 208—113 **11 Claims**



1. A fluidized catalytic cracking process wherein a heavy hydrocarbon feed comprising hydrocarbons having a boiling point above about 650° F. is catalytically cracked to lighter products comprising the steps of:

catalytically cracking said feed in a catalytic cracking zone operating at catalytic cracking conditions by mixing, in the base of a riser reactor, a heavy crackable feed with a source of hot regenerated catalytic cracking catalyst having an average particle size within the range of about 40 to 100 microns diameter withdrawn from a catalyst regenerator, and cracking said feed in said riser reactor to produce catalytically cracked products and spent catalyst which are discharged from the top of the riser into a

catalyst disengaging zone wherein cracked products are separated from spent catalyst

separating cracked products from spent catalyst in said catalyst disengaging zone to produce a cracked product vapor phase which is recovered as a product and a spent catalyst phase which is discharged from said disengaging zone into a catalyst stripper contiguous with and beneath said disengaging zone;

steam stripping said spent catalyst with stripping steam in said stripping zone to produce a stripper vapor comprising cracked products and stripping steam which is removed from said stripping zone as a product and a stripped catalyst phase comprising stripped catalyst having a temperature is discharged into a vertical standpipe beneath said stripping zone;

discharging stripped catalyst from said standpipe into a coke combustor catalyst regeneration zone contiguous with and beneath said stripping zone operating at catalyst regeneration conditions including a temperature above 1100° F., a superficial vapor velocity above 3 feet per second and sufficient to maintain at least turbulent or fast fluidized bed conditions to produce at least partially regenerated catalyst and flue gas containing CO and CO_2;

afterburning within said coke combustor CO to CO_2 by contacting within said coke combustor said CO containing flue gas with a trapped CO combustion promoter disposed on particles having an average particle diameter of at least 250 microns and sufficiently large to have settling characteristics within said coke combustor so that the average residence time of said trapped CO combustion promoter is at least an order of magnitude larger than a residence time of said conventional FCC catalyst;

discharging upwardly from said coke combustor a dilute phase mixture of flue gas and at least partially regenerated FCC catalyst into a superimposed dilute phase transport riser mounted above said coke combustor;

discharging from said dilute phase transport riser at least partially regenerated FCC catalyst and flue gas containing less than 2.0 mole % CO;

separating said discharged FCC catalyst from flue gas and collecting said discharged FCC catalyst in a dense phase fluidized bed encompassing at least a portion of said coke combustor;

withdrawing regenerated catalyst from said dense phase fluidized bed and charging same to said base of said riser reactor.

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MAGNETIC SEPARATION OF OLD FROM NEW CRACKING CATALYST BY MEANS OF HEAVY RARE EARTH "MAGNETIC HOOKS"

William P. Hettinger, Russell, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 601,834, Oct. 22, 1990, Pat. No. 5,171,424. This application Dec. 7, 1992, Ser. No. 986,234

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

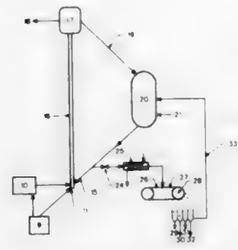
Int. Cl.[5] C10G *11/04, 11/18*

U.S. Cl. 208—121 **39 Claims**

1. A hydrocarbon catalytic cracking process which utilizes magnetic separation for removal of older cracking catalyst in a fluid bed conversion system, said process comprising:

a. Continuous or periodic addition of a paramagnetic active heavy rare earth containing compound to the circulating catalyst so as to accumulate heavy rare earth on individual catalyst particles as a function of the time that the particle has been in the unit;

b. Separating particles containing higher concentrations of paramagnetic heavy rare earth with higher magnetic properties by magnetic means;



c. Returning lower concentration heavy rare earth-containing catalyst particles of higher activity back to the system.

5,328,595

REFORMING NAPHTHA WITH LARGE-PORE ZEOLITES

Andrew Rainis, Walnut Creek, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Continuation of Ser. No. 645,939, Jan. 25, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 970,975

Int. Cl.[5] C10G *35/06*

U.S. Cl. 208—138 **26 Claims**

1. A catalytic reforming process which comprises contacting a hydrocarbonaceous feedstock under catalytic reforming conditions with a composition comprising a large-pore zeolite having a pore size greater than 6 and less than 8 angstroms, a Group VIII metal component, and a Group IA or Group IIA metal cation wherein the molar ratio of framework aluminum to Group IA or Group IIA metal cations is between about 1.0 and 2.2.

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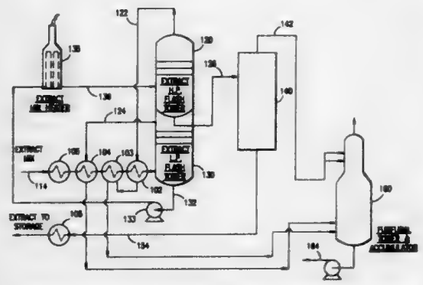
LUBRICATING OIL REFINING PROCESS

Douglas J. Gammie, II, Fairless Hills, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 27, 1993, Ser. No. 52,963

Int. Cl.[5] C10G *21/28, 7/08, 21/20;* **B01D** *3/06*

U.S. Cl. 208—321 **15 Claims**



1. A process for removal of an aromatic rich fraction from a lubricating oil stock fraction comprising:

furfural extraction of said oil chargestock in a furfural aromatics extraction means operating at furfural extraction conditions to dissolve said aromatic rich fraction in furfural to produce a raffinate phase containing lubricating oil stock and a furfural extract phase containing said aromatics rich fraction;

heating said furfural extract phase at a pressure less than about 50 psig by indirect heat exchange with a higher

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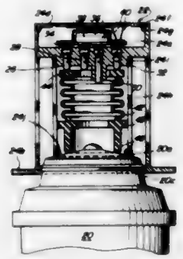
pressure vaporized furfural stream to produce heated extract;
flashing said heated extract in a low pressure flash vessel operating at a pressure less than 50 psig to produce a low pressure furfural vapor phase and a low pressure flash liquid phase containing furfural solvent and aromatics which is removed from said vessel;
heating, and simultaneously vaporizing, at least a portion of said low pressure flash liquid phase by indirect heat exchange in a thin-film evaporator to produce an aromatic rich liquid phase product with a reduced furfural content and vaporized furfural; and
cooling and condensing said vaporized furfural to produce liquid furfural; and
recycling said liquid furfural to said liquid/liquid aromatics extraction means.

5,328,597

ELECTRONIC MONITORING UNIT FOR MONITORING NUMBER OF USES OF CARTRIDGE

Norton K. Boldt, Jr., El Toro, and Kaj A. Johnson, Livermore, both of Calif., assignors to The Clorox Corporation, Oakland, Calif.

Filed Jul. 27, 1992, Ser. No. 920,413
Int. Cl.[5] B01D *35/143*; **B67D** *5/22*
U.S. Cl. 210—87 **30 Claims**



1. In a self contained electronic monitoring unit for monitoring and informing a user of the status of a cartridge designed to be used for a predetermined number of fills of a liquid container, the combination comprising:
signaling means for providing at least first and second distinct human detectable output signals;
use monitoring means for monitoring each use of a cartridge including liquid sensing means for sensing the presence of liquid during each time a container associated is filled with the cartridge and a pre-programmed integrated circuit responsive to the liquid sensing means for recording each use of the cartridge and for monitoring the occurrence, the imminent occurrence and the non-imminent occurrence of a predetermined number of uses, the monitoring means being arranged to provide outputs indicative that the predetermined number of uses has occurred, is imminent and is non-imminent, and for selectively operating the signaling means, the integrated circuit being programmed:
a) to operate the signaling means to provide the first output signal when the output of the use monitoring means is indicative of the non-imminent occurrence of the predetermined number of uses to thereby inform the user that the device is operational and that the end of the useful life thereof is non imminent
b) to operate the signaling means to provide the second output signal when the output of the use monitoring means is indicative of the imminent occurrence of the predetermined number of uses to thereby inform the user that the device is operational but that the end of the useful life thereof is imminent; and
c) to operate the signaling means to provide neither the first nor the second signal when the output of the use monitoring means is indicative of the occurrence of the predetermined number of uses to thereby inform the user that the useful life of the device has ended.

2. The invention of claim 1 wherein the predetermined number of uses constitutes a first preset number of uses of the cartridge and the imminent occurrence of the predetermined number of uses constitutes a second preset number of uses, the integrated circuit including a counter for recording each use of the cartridge and for providing an output representative of the number of times that the cartridge has been used and wherein the integrated circuit is programmed to operate the signaling means only during each use of the cartridge.

3. The invention of claim 2 wherein the use monitoring means includes a volatile memory for storing the output of the counter and signals representative of the first and second preset numbers.

4. The invention of claim 3 wherein the unit is arranged to be releasably secured to the cartridge and includes a self contained battery for providing power to the integrated circuit and the signaling means and wherein the integrated circuit is further programmed so that one portion thereof is connected to the battery prior to the first use of the cartridge and the remaining portions are connected to the battery upon the occurrence of the first use of the cartridge.

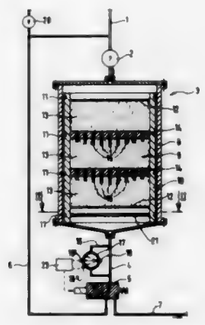
5. The invention of claim 4 wherein the cartridge is a water filter cartridge designed for filtering a given quantity of water during each use.

5,328,598

DEVICE FOR FILTERING CONTAMINATED WATER WITH MEANS TO MONITOR RESIDUAL CONTAMINATION

Volkhard Löhrl, Bottighofen, Switzerland, and Andreas Gehringer, Constance, Fed. Rep. of Germany, assignors to Firma Fluid Team Automationstechnik GmbH, Fed. Rep. of Germany

PCT No. PCT/EP90/01957, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO91/08036, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 16, 1990, Ser. No. 859,317
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1989, 3939502
Int. Cl.[5] B01D *21/32*
U.S. Cl. 210—93 **3 Claims**



1. Apparatus for filtration of water which is contaminated by oil or oil containing substances and may contain air bubbles, comprising:
a filter zone with an inlet and an outlet enabling contaminated water to flow though the filter zone, the filter zone having an absorption capacity for retaining oil contaminants by adsorption , the filter zone thereby preventing a substantial passage of the oil contaminants from the inlet to the outlet until the adsorption capacity has been reached;
an inlet line through which the contaminated water is provided to the inlet of the filter zone;
a circulation line connected between the outlet and the inlet of the filter zone;
a discharge line connectable to the outlet of the filter zone;
a circulation valve between the outlet of the filter zone and the discharge line and the circulation line, said circulation valve being switchable between a throughflow position in which the outlet of the filter zone is connected to the discharge line, and a circulating position in which the outlet of the filter zone is connected to the circulation line;
a pump having a suction side and a pressure side, the suction side being connected to the inlet line and the circulation line, the pressure side being connected to the inlet of the filter zone, said pump feeding water from the inlet line to the inlet of the filter zone in a throughflow operation or from the outlet of the filter zone to the inlet thereof in a circulatory operation in dependence on the position of the circulation valve; and
means for monitoring the contamination of the water, the means for monitoring including a light emitter arranged to pass a light beam through the water at the outlet of the filter zone, and a light sensor adapted for activation by the light beam and generating an output signal having a signal level dependent on light intensities incident on the light sensor, said light intensities being a measure of light scattering caused by light scattering particles including oil particles and air bubbles in the water, the signal level changing as a function of both the quantity of oil particles and the quantity of air bubbles;
means for determining an exceeding of a threshold value of the light scattering and a lowering of the light scattering below the threshold value based on the output signal;
means, responsive to the determining means, for changing the circulation valve from the throughflow position to the circulation position upon the exceeding of the threshold value of the light scattering, and for changing the circulation valve back to the throughflow position upon the lowering of the light scattering beneath the threshold value;
means for monitoring a reduction in the light scattering occurring when the valve is in the circulation position to a substantial reduction of the light scattering indicative of air bubbles, and a negligible reduction of the light scattering indicating that the adsorption capacity of the filter zone has been reached and substantial quantities of the oil particles are passing the filter zone and that a renewal or regeneration of the filter zone is necessary.

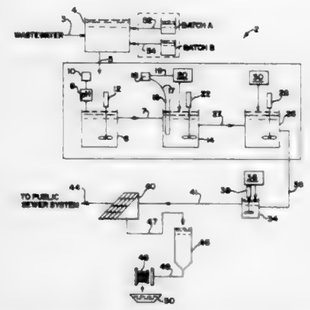
5,328,599

SYSTEM USING SULFIDE ION-SELECTIVE ELECTRODES FOR CONTROL OF CHEMICAL FEED OF ORGANIC SULFIDE PRODUCTS FOR METAL ION PRECIPITATION FROM WASTE WATER

Kristine S. Siefert, Crete; Pek L. Choo, Naperville, and Wayne M. Carlson, Batavia, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Mar. 8, 1993, Ser. No. 27,692
Int. Cl.[5] C02F *1/54*
U.S. Cl. 210—96.1 **8 Claims**

1. A system for the chemical precipitation and removal of metals from waste water comprising
a sump for continuously receiving waste water containing dissolved metals therein, said sump having an inlet and an outlet line;
a neutralization tank having an inlet line coupled to the outlet line of said sump for receiving the waste water, said neutralization tank having a pH monitor disposed therein and a control unit coupled to the pH monitor for continuously controlling the pH of the waste water, said neutralization tank having an outlet line;
a precipitation tank having an inlet line coupled to the outlet line of said neutralization tank for continuously receiving the waste water having a controlled pH, said precipitation tank having an outlet line;
a precipitant feed unit for continuously feeding an organic sulfide chemical precipitant into said precipitation tank; means including a sulfide electrode and a reference electrode disposed in said precipitation tank for continuously measuring an electrochemical potential therebetween;
a controller unit responsive to the measured electrochemical potential and being connected to said precipitant feed unit for automatically controlling the chemical precipitant fed



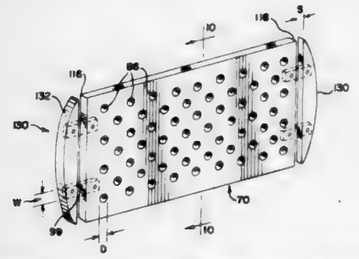
into said precipitation tank to maintain the electrochemical potential in a predetermined range, wherein said controller unit is programmed with a first setpoint value corresponding to a precipitant underfeed condition which defines an upper end of the predetermined range of the electrochemical potential and with a second setpoint value corresponding to a precipitant overfeed condition which defines a lower end of the predetermined range of the electrochemical potential; and a clarifier for continuously receiving wastewater from said precipitating tank and for continuously removing a sludge containing said metals from a clear effluent.

5,328,600

COOLING TOWER STRAINER TANK AND SCREEN

Robert E. Cates, Arnold; William H. Smith, Baltimore; Edward N. Schinner, Highland; Katherine K. Flamm, Baltimore, and Vladimir Kaplan, Silver Spring, all of Md., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.

Division of Ser. No. 738,567, Jul. 31, 1991, Pat. No. 5,232,636.
This application Apr. 12, 1993, Ser. No. 46,655
Int. Cl.[5] B01D *35/147*
U.S. Cl. 210—130 **9 Claims**



1. A strainer tank for a cooling tower apparatus, said strainer tank comprising:
a housing defining an enclosure with an inner wall and a longitudinal axis, an input port, at least one output port, a first end and a second end, at least one of said first and second housing ends being open;

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means for providing a slot in said enclosure, said slot means mounted on said inner wall,

at least one end cap mountable, respectively, on said at least one open housing end to seal said enclosure,

each of said at least one end caps having an internal surface communicating with said enclosure and being outwardly curved from said enclosure with a first radius of curvature;

a strainer screen having a plurality of apertures, aid screen mountable in said enclosure in said slot between said input port and output ports, said screen cooperating with said housing to define a fluid input section and a fluid output section in said enclosure, said screen operable to entrap entrained particulates in a fluid communicating through said enclosure and aid apertures,

said strainer screen having a first face, a second face, a first edge and a second edge, said first and second screen edges in proximity to said housing first and second ends, respectively, and at least one of said first and second screen edges in proximity to said end cap internal surface;

at least one semi-elliptical breakaway baffle with a curved outer edge and a chordal edge, said baffle outer edge having a second radius of curvature generally concentric with said first radius of curvature;

means for coupling said at least one baffle at said chordal edge to an adjacent one of said first and second screen edges, said coupling means operable to fracture at a predetermined fluid pressure on one of said screen first and second faces to rotate said baffle at said endcap to open fluid communication past said screen and relieve said fluid pressure in said enclosure

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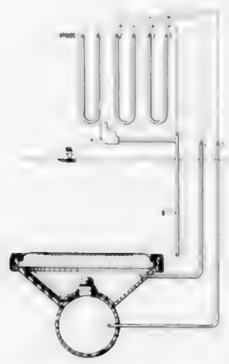
APPARATUS FOR IN PLACE GAS CLEANING OF DIFFUSION ELEMENTS

Frank L. Schmidt, Port Washington; Lloyd Ewing, Milwaukee, and David T. Redmon, Racine, all of Wis., assignors to Water Pollution Control Corporation, Brown Deer, Wis.

Continuation of Ser. No. 781,869, Sep. 30, 1985, now Re. 33,177, Ser. No. 698,973, Feb. 6, 1985, Pat. No. 4,889,620, Ser. No. 426,041, Sep. 28, 1982, abandoned, and Ser. No. 203,834, Nov. 4, 1990, Pat. No. 4,382,867, and a continuation-in-part of Ser. No. 191,974, Sep. 29, 1980, abandoned, said Ser. No. 698,973, is a continuation of Ser. No. 426,041, Sep. 29, 1980, which is a division of Ser. No. 203,834, Sep. 29, 1980, which is a continuation-in-part of Ser. No. 191,974, Sep. 29, 1980. This application Oct. 12, 1989, Ser. No. 420,245

Int. Cl.[5] B08B *3/00, 5/00;* **C02F** *3/20*

U.S. Cl. 210—137 **38 Claims**



1. Liquid treatment apparatus comprising:

A. a natural or man-made liquid impound having a bottom surface,

B. a network of generally horizontal treating gas supply pipes supported in said impound above said bottom surface,

C. a plurality of diffusers comprising plenums mounted on said pipes at elevated positions relative to said surface an supporting a plurality of area-release diffusion elements above said surface in communication with the network to direct treating gas through the elements into the liquid.

D. a cleaning gas source in communication with the plenums to pass cleaning gas through the elements and clean them,

E. a plurality of flow regulating means connected with said cleaning gas source and with said plenums for regulating the flow of cleaning gas or both treating gas and cleaning gas to said plenums, said flow regulating means being sized or adjusted to deliver the gas or gases at a substantially similar rate to each of said elements, and

F. retaining and sealing means, positioned at the peripheries of the respective elements, for effectively securing said elements in gas-tight relationship with their respective plenums and preventing escape of treating and cleaning gas from said plenums, except through said elements.

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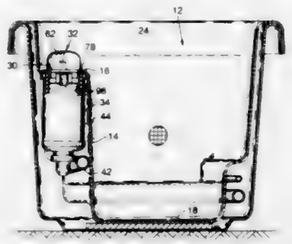
WATER SKIMMER

Loren C. Brooks, Monmouth, Oreg., assignor to Marquis Corp., Independence, Oreg.

Filed Oct. 13, 1992, Ser. No. 959,350

Int. Cl.[5] B01D *35/00*

U.S. Cl. 210—169 **8 Claims**



1. In combination with an installation having a floor and upright side walls extending up from the floor defining a hollow water-holding interior for the installation,

a skimmer positioned within said interior at an elevation above said floor for draining surface water from water held within said interior,

said skimmer comprising a dome with a base and a cap, and the dome arching upwardly extending from said base to said cap,

a mounting for the dome securing the dome in a fixed position within said interior,

an opening for the flow of surface water into the dome, and said opening extending from adjacent the base to adjacent the cap of the dome, and

a skimmer outlet for draining water out from the base of the skimmer, a filter housing mounted below said base, and a source of suction connected to said housing.

5,328,603

LIGNOCELLULOSIC AND CELLULOSIC BEADS FOR USE IN AFFINITY AND IMMUNOAFFINITY CHROMATOGRAPHY OF HIGH MOLECULAR WEIGHT PROTEINS

William H. Velander; Jeffrey A. Kaster, and Wolfgang G. Glasser, all of Blacksburg, Va., assignors to The Center for Innovative Technology, Herndon, Va.

Continuation-in-part of Ser. No. 496,314, Mar. 20, 1990, abandoned. This application Aug. 19, 1992, Ser. No. 932,710

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **8 Claims**



6. A chromatography support, comprising:

highly porous cellulose beads which contain when saturated with water a content of cellulose between about 1% to 7% by weight, and a particle size greater than about 0.3 mm;

said cellulose imparting to said beads sufficient strength to avoid crushing when used in chromatographic separation at linear flow rates above 20 cm/min in a 15 cm high bed, wherein said support is a bioaffinity support, active sites on said cellulose; bioaffinity ligands attached to said active sites, said bioaffinity ligands having molecular weights ranging up to about 500,000 said ligands having specific molecular recognition sites thereon to selectively attract and bind specific bioaffinants having molecular weights ranging up to about 500,000; and the pores of said porous beads being of sufficient size to allow the attachment of said ligands to said active sites on said cellulose without altering the capability of said molecular recognition sites in said ligands to selectively attract and bind specific bioaffinants and being sufficiently porous to allow molecules with molecular weights ranging from 5,000 to 5,000,000 to have access to their interiors.

5,328,604

FILTER SYSTEM HAVING BOTTOM MANIFOLD AND MEANS FOR CAUSING FILTER ROTATION

Mordeki Drori, 6400 Center St., Suite A#201, Mentor, Ohio 44060

Continuation of Ser. No. 695,896, May 6, 1991, abandoned, which is a division of Ser. No. 420,387, Oct. 12, 1989, Pat. No. 5,112,481, which is a continuation of Ser. No. 245,783, Sep. 16, 1988, Pat. No. 4,923,601. This application Apr. 5, 1993, Ser. No. 43,596

Claims priority, application Israel, Sep. 18, 1987, 83950; Feb. 24, 1988, 85543; Aug. 2, 1988, 87308

Int. Cl.[5] B01D *35/00, 29/96*

U.S. Cl. 210—232 **24 Claims**

22. A fluid filter, comprising:

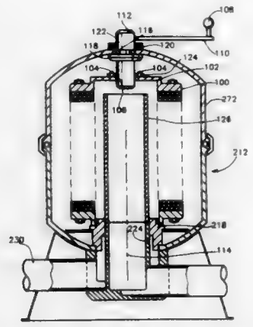
a housing having a bottom wall with an aperture therein;

filter means for filtering the fluid, located within said housing and separating an upstream space containing incoming non-filtered fluid from a downstream space containing outgoing filtered fluid;

an external inlet, outlet and drain manifold, disposed below said housing and having a neck portion passing through said aperture in the bottom wall of said housing, said manifold sealingly engaging the bottom wall of said housing about the aperture therein; and

collar means threadedly engaging said neck portion of said manifold which extends into said housing for holding said manifold in sealing engagement with said housing;

wherein said manifold has inlet and drain means in fluid communication with said upstream space through said bottom aperture, for passing incoming non-filtered fluid



into the upstream space of said housing and for draining non-filtered fluid from said upstream space, when necessary, and outlet means in fluid communication with said downstream space through said bottom aperture, for passing outgoing filtered fluid out of the downstream space of said housing through said bottom aperture.

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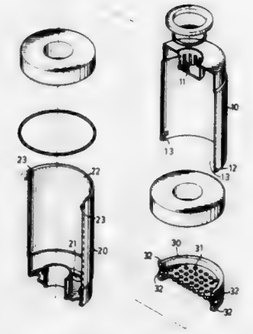
FILTER MODULE

John H. J. Lin, No. 7, Ching Cheng 7th St., Taichung, Taiwan

Filed Jul. 7, 1993, Ser. No. 88,913

Int. Cl.[5] B01D *24/06, 27/14, 35/30*

U.S. Cl. 210—232 **2 Claims**



1. A filtering module comprising:

a housing having a first housing section containing a first fluid inlet, a first fluid outlet, and a first filter medium contained therebetween;

a second housing section containing a second fluid inlet, a second fluid outlet, and a second filter medium contained therebetween;

each said filter medium being different from each other; and

connecting member means for serially and for releasably connecting said first and second housing sections at said first fluid outlet and said second fluid inlet and for causing fluid flow through said first fluid outlet to flow into said second fluid inlet; wherein a fluid flow path is defined from said first fluid inlet to said second fluid outlet;

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said connecting member means having a filtering mesh that extends across said fluid flow path between said first and second housing sections;

said first and second housing sections having a plurality of L-shaped recesses and said connecting member means including correspondingly formed L-shaped protrusions on an outer periphery thereof to be fittingly received in associated said L-shaped recesses.

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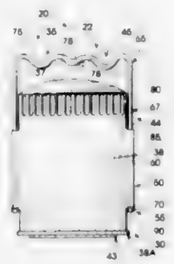
SPIN ON OIL FILTER WITH EXTENDIBLE HANDLE

Travis Warren, Rte. 1, Box 380, Hattiville, Ark. 72063; John R. Byrum, Rte. 1, Box 273, Dover, Ark. 72837, and Thomas A. Ramsey, Rte. 1, Box 380, Hattiville, Ark. 72063

Filed Apr. 8, 1993, Ser. No. 44,017

Int. Cl.[5] B01D *27/08*

U.S. Cl. 210—238 **12 Claims**



5. A spin on oil filter comprising:

a generally tubular body having a sidewall, a closed top portion at one end, a threaded aperture at the other end, an oil inlet, and an oil outlet, a fluid flow path established through a filter element disposed within said body between said inlet and said outlet;

a pair of elongated, tubular, radially spaced apart sleeves integrally formed exteriorly on the sidewall of said body;

a retractable, external handle that can be manually gripped and twisted for filter installation and removal, said handle comprising:

a pair of rigid, spaced apart, elongated legs frictionally, slidably captivated within said sleeves;

a finger receptive, serpentine grip integrally extending between said legs for firm, comfortable grasping by a user; and

stops on said legs for limiting displacement of said handle.

5,328,607

OIL SPILL CONTAINMENT AND RECOVERY SYSTEM

Wyman T. Soule, 5055 Avenue de Sol, Laguna Hills, Calif. 92653

Filed Jul. 23, 1992, Ser. No. 919,778

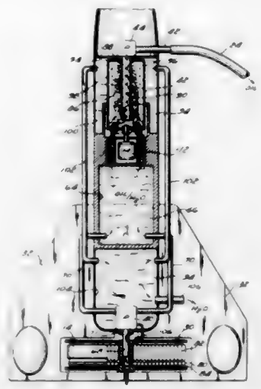
Int. Cl.[5] E02B *15/04*

U.S. Cl. 210—242.3 **7 Claims**

1. A separator assembly for separating water from oil, the separator assembly comprising:

a) an elongate vertical housing having a plurality of fins with floats extending therefrom forming means for maintaining said housing in a generally upright position when said housing is disposed in water;

b) a centrifuge disposed within said housing for separating an oil/water mixture into oil and water; and



c) a pump disposed within said housing connected to an inlet of said centrifuge for pumping the oil/water mixture into said centrifuge.

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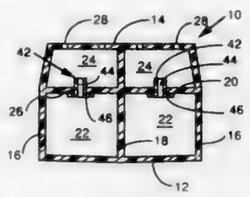
MUTLI-LATERAL FILTER UNDERDRAIN BLOCK

Eugen O. Bergmann, Butler County; Marvin A. Brown, Allegheny County, and Beverly Richard P., Butler County, all of Pa., assignors to The F.B. Leopold Co., Inc., Zelienople, Pa.

Filed May 27, 1992, Ser. No. 889,176

Int. Cl.[5] B01D *24/12, 24/22*

U.S. Cl. 210—274 **14 Claims**



1. In a filter system for distributing a backwash fluid uniformly throughout a bed of granular media, including:

a distributor positioned beneath and supporting said media, said distributor having a plurality of walls defining a primary horizontal conduit and a secondary horizontal conduit, at least one of said walls containing metering orifices that connect said primary conduit to said secondary conduit; and

a backwash fluid inlet for said primary conduit;

the improvement comprising:

at least one baffle positioned within said primary conduit to facilitate uniform flow of backwash fluid from said primary conduit through said metering orifices into said secondary conduit, said baffle comprising at least one flange positioned within said primary conduit normal to a fluid flow direction therein, said flange contiguous with at least one of the walls which define said primary conduit.

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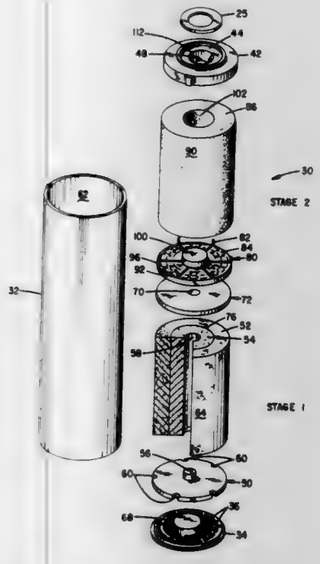
MULTI-STAGE RADIAL FLOW FILTRATION SYSTEM

Jon H. Magnusson, and Kristofer J. Magnusson, both of 117 Wild Wood Beach Rd., Mahtomedi, Minn. 55115

Filed Nov. 16, 1992, Ser. No. 977,077

Int. Cl.[5] B01D *24/00*

U.S. Cl. 210—314 **21 Claims**



1. A filtration system comprising:

(a) manifold means for distributing a liquid and including a headpiece coupled to pressurized inlet and outlet liquid conveying conduits, a cover, and means for detachably sealing said cover to said headpiece to form a cavity between said cover and said headpiece in communication with liquid flow through said conduits; and

(b) filter means mounted within said cavity for removing contaminants from liquid passing through said cavity comprising;

(1) a liquid impermeable housing including a tubular body secured between an inlet end cap and an outlet end cap, wherein the inlet end cap includes an inlet port in flow communication with the cavity, wherein said outlet end cap includes an outlet port and means for sealing said outlet port in flow communication to said outlet liquid conduit;

(2) a cast carbonaceous first filter element having a longitudinal first bore, first means for longitudinally displacing said first filter element from said inlet end cap, for defining a first annular cavity between said tubular body and said first filter element, and for directing flow from said inlet port to said first cavity and such that flow radially passes from said first cavity to said first bore; and

(3) a second filter element having a longitudinal second bore in flow communication with said outlet port, second means for longitudinally displacing said first filter element from said second filter element, for defining a second annular cavity between said tubular body and said second filter element, and for directing flow from said first bore to said second cavity and such that flow radially passes from said second cavity to said second bore and thereby to said outlet port.

5,328,610

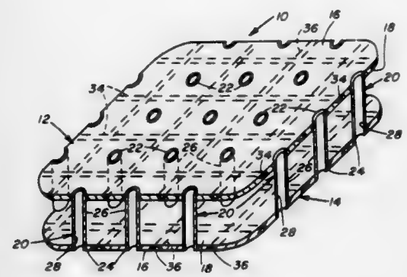
SELF-SUPPORTED LOW PRESSURE DROP HOLLOW FIBER MEMBRANE PANEL AND CONTACTOR MODULE

Jan Rogut, Boulder, Colo., assignor to Integrated Process Technologies, Boulder, Colo.

Filed Jun. 15, 1993, Ser. No. 77,675

Int. Cl.[5] B01D *63/02*

U.S. Cl. 210—321.8 **45 Claims**



12. A hollow fiber membrane panel, comprising:

(a) a pair of layers of textile material, each of said layers of textile material being formed of interwoven strands of material and defining a supporting substrate;

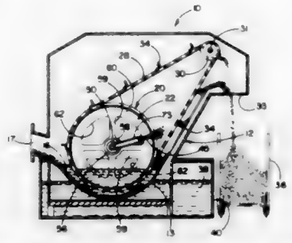
(b) a pair of layers of non-permeable material each encapsulating separately one of said supporting substrates defined by said layer of textile material, each of said non-permeable material layers having opposite external and internal sides;

(c) a layer of filler material disposed between said interior sides of said layers of non-permeable material and said layers of textile material encapsulated by said layers of non-permeable material, said layer of filler material supporting said layers of non-permeable material with said respective layers of textile material encapsulated therein in a spaced relationship to one another so as to define a flow channel therebetween, said filler material being permeable to fluid flow through said flow channel; and

(d) a multiplicity of hollow fibers of permeable material extending between and in generally transverse relationship to said layers of non-permeable material and textile material and said layer of filler material disposed between said layers of non-permeable material and textile material, each of said hollow fibers having a pair of spaced opposite end portions extending between said interwoven strands of said layers of textile material and an elongated portion extending between and interconnecting said opposite end portions, said opposite end portions of said hollow fibers being encapsulated by said respective layers of non-permeable material between said interwoven strands of said layers of textile material and open at said external sides thereof, said elongated portions of said hollow fibers having elongated internal bores providing flow communication between said open opposite end portions of said hollow fibers, said elongated portions of said hollow fibers extending through said layer of filler material and between said internal sides of said respective layers of non-permeable material and across said flow channel therebetween transversely to the direction of flow through said channel, the lengths of said elongated portions of said hollow fibers being substantially less than each of the length and width dimensions of said layers of non-permeable material.

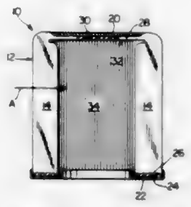
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5,328,611
FILTERING APPARATUS WITH ROTATABLE FILTER DRUM
Thomas W. Lenhart, Rockton, Ill., assignor to Barnes International, Inc., Rockford, Ill.
Filed Jun. 26, 1992, Ser. No. 905,002
Int. Cl.[5] B01D *33/06, 35/16*
U.S. Cl. 210—393 **4 Claims**



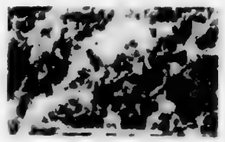
1. Apparatus for filtering dirty liquid, said apparatus comprising a reservoir adapted to contain a pool of dirty liquid and defined at least in part by a pair of laterally spaced walls, a generally cylindrical drum located within said reservoir and at least partially immersed in said pool, said drum comprising a pair of laterally spaced end walls and further comprising an annular filter element located between said end walls, dirty liquid in said pool being filtered upon flowing through said element and into said drum, outlet openings in one end wall of said drum and the adjacent wall of said reservoir for discharging filtered liquid from said drum, means for rotatably supporting said drum, said means comprising a rotationally stationary shaft-like member extending between and fixed relative to the walls of said reservoir and further comprising bearings located between said member and the end walls of said drum and journaling said drum for rotation on said member, means for rotating said drum on said member, and seal means coacting between said one end wall of said drum and said adjacent wall of said reservoir for preventing liquid from flowing between said pool and said outlet openings, said seal means comprising a rotationally stationary sleeve projecting into said reservoir from said adjacent wall of said reservoir, and a yieldable annular sealing gasket on the outer periphery of said sleeve and resiliently engaging said one end wall of said drum around an annular area located radially outwardly of said outlet openings.

5,328,612
THIMBLE-SHAPED LIQUID FILTER
James W. Martin, Rehobeth, Mass.; Gerard P. Bernadyn, Coventry, R.I.; Donald L. Gagnon, Pawtucket, R.I., and Russell A. Swanson, Barrington, R.I., assignors to Allied-Signal Inc., Morristown, N.J.
Filed Nov. 16, 1992, Ser. No. 976,785
Int. Cl.[5] B01D *27/06*
U.S. Cl. 210—493.2 **6 Claims**



4. Liquid filter element comprising a circumferentially extending array of pleated filtering media defining radially tapering pleats, each of said pleats having opposite ends, each of said pleats being divided into an end section between one end of the pleat and a point between the ends of the pleats and an end portion between said point and the other end of said pleat, the end section of each of said pleats being folded inwardly with respect to said array and being secured to the end sections of adjacent pleats to form a rigidified link extending substantially transversely with respect to said array to thereby strengthen said array against radial inward collapse in response to liquid pressure acting on said array, said end sections of the pleats being crushed against one another to form said link, said media being impregnated with a thermally responsive resin, the resin in said end sections being cured to secure each end section to adjacent end sections to thereby form said rigidified link, said one ends of said pleats cooperating with one another to define an opening coaxial with said array, a plug closing said opening, said plug being a deformable, sealing material that is cured into a rigid state, the one end of said pleats being embedded into said plug.

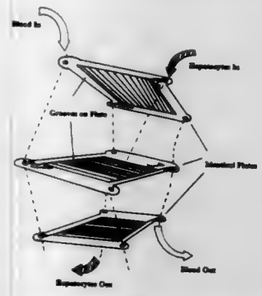
5,328,613
POLYMER MEMBRANES FOR SEPARATION PROCESSES
George H. Beall; Kishor P. Gadkaree, both of Big Flats; Thomas P. Grandi, Elmira, and Candace J. Quinn, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Division of Ser. No. 808,814, Dec. 17, 1992, Pat. No. 5,183,607.
This application Jan. 21, 1993, Ser. No. 6,964
Int. Cl.[5] B01D *71/06, 71/64, 71/68*
U.S. Cl. 210—500.27 **9 Claims**



1. A semi-permeable microporous polymer body having a pore volume of at least about 50 volume percent and a mean pore diameter in the range of about 0.1–10 microns which is composed at least predominantly of a high-temperature polymer selected from the group consisting of polyether ketones, poly(aryl ether) ketones, polyether-ether ketones, liquid crystal polymers, polysulfones, polyether imides, and mixtures, copolymers, or other combinations thereof, said body being made by a method comprising
(i) melt-mixing a batch mixture comprising the high-temperature polymer and a finely divided leachable glass to form a two-phase glass-polymer blend comprising a continuous polymer network and an intercommunicating glass phase;
(ii) forming the blend into a glass-polymer body of a selected shape; and
(iii) leaching the intercommunicating glass phase from the glass-polymer body without disruption of the continuous polymer network.

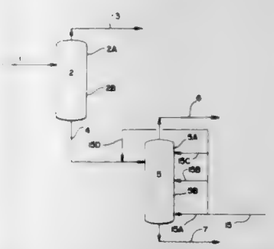
5,328,614
METHODS AND APPARATI FOR REMOVING PROTEIN-BOUND MOLECULES FROM BODY FLUIDS
Kenneth N. Matsumura, 2107 Dwight Way, Berkeley, Calif. 94704
Continuation-in-part of Ser. No. 274,028, Nov. 21, 1988, Pat. No. 5,078,885, which is a continuation-in-part of Ser. No. 499,877, Jun. 1, 1983, abandoned, which is a continuation-in-part of Ser. No. 209,282, Nov. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 40,892, May 21, 1979, abandoned. This application Jan. 3, 1992, Ser. No. 816,652
Int. Cl.[5] B01D *61/24*
U.S. Cl. 210—632 **7 Claims**

1. The method of treating body fluid comprising: placing said body fluid proximate the surface of hepatocytes, said hepatocyte treatment of said body fluid being made to occur across a layer of albumin concentration substantially greater



than the concentration of albumin in said body fluid, said albumin layer being less than 3 microns.

5,328,615
ALKYL CARBONATE RECOVERY PROCESS
Michael A. Pacheco, Naperville, Ill., and Franklin D. Darrington, Munster, Ind., assignors to Amoco Corporation, Chicago, Ill.
Filed Jan. 29, 1993, Ser. No. 10,774
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—634 **20 Claims**

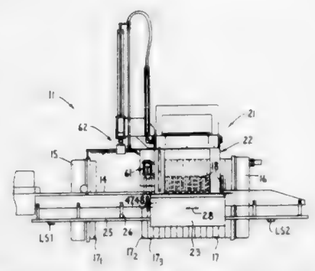


15. A process for separating alkyl carbonate from a feedstock comprising at least one alkyl carbonate, at least one alkanol, and at least 0.10 percent by weight water comprising:
fractionating said feedstock by distillation extraction into an overhead product comprising alkyl carbonate and water and a bottoms product comprising a substantial fraction of alkanol and water utilizing an extractive distillation solvent selective for extracting alkanol relative to alkyl carbonate comprising water in an amount sufficient to separate a substantial fraction of said alkanol from said feedstock; and
extracting alkyl carbonate from said overhead product comprising alkyl carbonate and water in a liquid-liquid extraction step comprising an extraction solvent selective for extracting alkyl carbonate relative to water in an amount sufficient to extract a substantial amount of said alkyl carbonate from said feedstock, said extraction solvent comprising substantially hydrocarbon boiling at a temperature ranging from about 50° F. to about 700° F. at atmospheric pressure and having a specific gravity ranging from about 0.60 to about 1.00.

5,328,616
METHODS AND APPARATUS FOR TREATING ELECTROLESS PLATING BATHS
Nicholas M. Martyak, Ballwin; Bruce F. Monzyk, Maryland Heights, and Henry H. Chien, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Continuation of Ser. No. 979,580, Nov. 20, 1992, abandoned. This application Mar. 9, 1993, Ser. No. 29,942
Int. Cl.[5] B01D *6/04*
U.S. Cl. 210—638 **27 Claims**

1. A method for removing formate ions from aqueous solutions comprising dissolved metal associated with polyvalent counterions and/or chelants, comprising:
(a) conducting said solution as a feed stream to a membrane filtration unit which is selectively permeable to monovalent anionic species, wherein said solution is under sufficient pressure in contact with said membrane unit to provide a permeate stream and a residual stream wherein the concentration of formate ions is essentially the same in the feed, permeate and residual streams and the concentration of metal ions is lower in the permeate stream and higher in the residual stream, and
(b) conducting said permeate stream to an ion exchange unit containing (i) a chelating ion exchange resin capable of removing metal ions from a solution in which said metal ions are complexed a chelant having a binding energy on the order of the binding energy of copper tartrate or (ii) an anion exchange resin capable of removing metal chelant complexes from a solution in which said metal ions are complexed with a chelant having a binding energy on the order of the binding energy of copper EDTA, thereby providing a permeate stream essentially depleted of metal ions.

5,328,617
AIR-ASSIST DISCHARGE OF FILTER PRESS CAKE
Joel D. De Haan; Daniel De Haan; Gregory De Haan, all of Zeeland; David J. Spyker, Holland; David P. Mc Leod, Muskegon, and Wesley G. Koops, Holland, all of Mich., assignors to JWI, Inc., Holland, Mich.
Filed Sep. 28, 1992, Ser. No. 952,236
Int. Cl.[5] B01D *25/32*
U.S. Cl. 210—768 **18 Claims**



1. In a filter press including a frame having a pair of horizontally elongate and generally parallel side rails which extend lengthwise of the press and are sidewardly spaced apart, a first head structure stationarily mounted adjacent one end of said rails, a second head structure mounted on said rails for movement toward and away from said first head structure for respective closing and opening of said press, a plurality of filter plates movably disposed in generally side-by-side relationship to define a horizontally extending stack between said first and second head structures when said press is closed, each said filter plate mounting thereon a respective filter member which is independent of the filter members mounted on the other filter plates, said filter plates extending transversely between and being slidably supported on said side rails, each movable filter plate having parts which project outwardly from oppo-

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site vertical side edges thereof, and a shifter assembly for effecting shifting of individual said filter plates along the side rails toward the second head structure when said second head structure is in an open position, the improvement wherein said shifter assembly comprises:

a shifter housing having a pair of opposite housing parts which are disposed on opposite sides of the press so that each said housing part is disposed adjacent a respective one of said side rails, said housing parts being supported for movement lengthwise along the press on an elongate guide structure which is fixed relative to and extends generally longitudinally parallel with and along a respective one of said side rails, said shifter housing also including a bridging part which extends transversely of said press and rigidly joins said housing parts together;

drive means mounted on only one of said housing parts for linearly drivingly moving said housing lengthwise of said press generally along and parallel to said side rails, said drive means including a drive motor mounted on said one housing part and drivingly coupled to a driving member which is drivingly engaged with an elongate reaction member which is fixed relative to the respective side rail and extends lengthwise therealong;

a plate sensing structure mounted on said housing for sensing an endmost said filter plate as associated with the closed stack of filter plates which projects horizontally away from said first head structure for stopping said drive means upon sensing said endmost plate;

a plate shifter mechanism mounted on each said housing part and cooperating with the projecting part on a respective side of the endmost filter plate of the closed stack for effecting slidable shifting of the endmost plate along the side rails away from the closed stack toward the opened second head structure so as to position the shifted plate in an open position wherein it faces but is spaced a selected distance from the next endmost plate of the closed stack, whereby said first-mentioned and said next endmost plates are spaced apart so as to define a vertically extending clearance gap therebetween to permit downward discharge of filtrate from opposed faces thereof;

plate bumping means mounting on said housing and cooperating solely with the endmost plate of the closed stack for imposing a bumping force onto the endmost plate of said closed stack in a direction generally transverse with respect to said side rails to effect loosening of filtrate adhered to the respective filter plate;

a discharge assist mechanism mounted on said housing for simultaneously directing pressurized streams of air against opposed faces of said first-mentioned and said next endmost plates when said first-mentioned endmost plate is in said open position and said next endmost plate is still in contact with the closed stack to assist in discharging filtrate from the opposed faces thereof, said mechanism including an air discharge head assembly which is insertable into said gap and movable therein transversely of said press for simultaneously directing pressurized streams of air against the opposed faces of the two plates defining said gap, said mechanism including a driving device connected to said air discharge head assembly for effecting cyclic movement thereof into and out of said gap; and

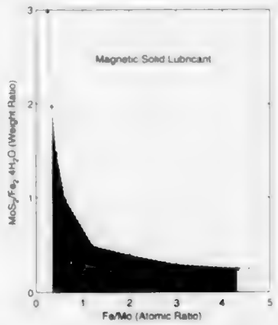
control means for (1) automatically stopping said shifter housing mechanism after said sensing structure senses the endmost plate of said stack and stops said drive means, (2) for thereafter activating said bumping means for effecting transverse bumping of solely the endmost filter plate of the closed stack, (3) for thereafter activating the driving device of said air discharge assist mechanism for causing the air discharge head assembly to move into the gap between the adjacent opened plates to discharge pressurized airstreams against the opposed faces thereof to assist in dislodging sticky filtrate therefrom, (4) for thereafter moving the air discharge head assembly out of the gap, (5) for then activating the shifter mechanism to shift the endmost plate of the stack into an open position, and (6) for thereafter automatically reactivating said drive means to forwardly advance the shifter housing toward the next endmost plate of said closed stack, and then repeating the aforementioned steps.

5,328,618

MAGNETIC LUBRICANTS

Bijan K. Miremadi, Coquitlam; Stanley R. Morrison, Burnaby, and Konrad Colbow, West Vancouver, all of Canada, assignors to 410261 B.C. Ltd., West Vancouver, Canada

Filed Aug. 3, 1992, Ser. No. 923,569
Int. Cl.[5] C04B *35/00*
U.S. Cl. 252—30 **25 Claims**



1. A lubricant having the formula:

X.Y

wherein X is a layered material with a graphite-like structure having unsaturated bonds at edges of particles thereof and Y is a magnetic inclusion between layers of X, Y having a magnetic field.

5,328,619

OIL ADDITIVE CONCENTRATES AND LUBRICANTS OF ENHANCED PERFORMANCE CAPABILITIES

Gregory S. Conary, Columbia, Ill., assignor to Ethyl Petroleum Additives, Inc., St. Louis, Mo.

Filed Jun. 21, 1991, Ser. No. 718,788
Int. Cl.[5] C10M *139/00, 133/00*
U.S. Cl. 252—32.5 **48 Claims**

1. In the formation of an additive concentrate comprising (i) at least one oil-soluble, acidic organic additive selected from the group consisting of (a) one or more hydrocarbyl phosphoric acids, (b) one or more carboxylic acids, and (c) a combination of (a) and (b), and (ii) at least one oil-soluble ashless boronated dispersant, and wherein said additive concentrate would have a pH below 6, the improvement which comprises including in said concentrate one or more oil-soluble amines in an amount such that the pH of the finished concentrate as formed falls in the range of about 6.0 to about 7.0, and introducing the boronated dispersant into the concentrate when the pH of the concentrate being formed is at least about 6.0, each said pH being determined in accordance with the method described in the specification hereof.

5,328,620

OIL ADDITIVE PACKAGE USEFUL IN DIESEL ENGINE AND TRANSMISSION LUBRICANTS

David E. Ripple, Kirtland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

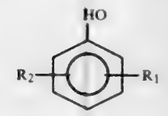
Filed Dec. 21, 1992, Ser. No. 995,605
Int. Cl.[5] C10M *137/10, 141/10*
U.S. Cl. 252—32.7 E **79 Claims**

1. A lubricating composition which comprises

I. a major amount of an oil of lubricating viscosity and

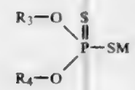
II. a minor amount of an additive comprising

(A) neutral or basic calcium or magnesium salts of a sulfurized phenol formed by reacting a calcium or magnesium metal base with a sulfurized phenol which is formed by reacting elemental sulfur with a phenol of the following formula:



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, and alkyl groups containing from 1 to about 20 carbon atoms, provided that R_1 and R_2 may not both be hydrogen;

(B) one or more metal salts of a dithiophosphoric acid of the following formula:



wherein R_3 and R_4 are independently selected from the group consisting of alkyl groups of 3 to about 18 carbon atoms, aryl groups, and alkyl substituted aryl groups (considered as aryl groups for the purpose of determining the ratio of aryl to alkyl groups) having one or more alkyl substituents containing a total of 1 to 18 carbon atoms, and the metal (M) is selected from the group consisting of Group I metals, Group II metals, tin, molybdenum, manganese, and zinc, provided that the level of phosphorous in the final oil composition is in the range of about 0.05 to about 0.20 percent by weight in the composition, and further provided that the ratio between aryl groups and alkyl groups in the dithiophosphoric acid salt is between 0 and about 3; and

(C) an ashless dispersant selected from the group consisting of

(C-1) the reaction product of a hydrocarbyl substituted succinic acylating agent with an amine characterized by the presence within its structure of at least one H—N< group wherein said substituted succinic acylating agent consists of substituent groups and succinic groups wherein the substituent groups are derived from a polyalkene, said polyalkene being characterized by a Mn value of about 750 to about 5000 and an Mw/Mn value of about 1.5 to about 4, said acylating agents being further characterized by the presence within their structure of an average of at least 1.0 succinic groups for each equivalent weight of substituent groups,

(C-2) a mannich dispersant,

(C-3) an ester dispersant,

(C-4) a mixture of C-1, C-2, or C-3,

(D) a calcium or magnesium neutral or overbased sulfonate detergent, or mixtures thereof, and

(E) a manganese carboxylate provided that the TBN contributed by the dispersant is between 0 and about 1.5 and the sulfated ash is 1.5 to 3%.

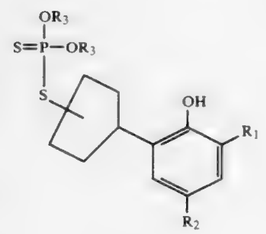
5,328,621

DITHIOPHOSPHATES AS ANTIWEAR ADDITIVES

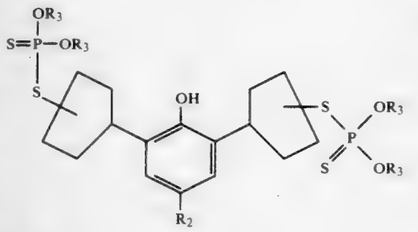
Hugo Camenzind, Bern, and Paul Dubs, Marly, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 21, 1993, Ser. No. 140,573
Claims priority, application Switzerland, Oct. 30, 1992, 3388/92
Int. Cl.[5] C10M *137/04*
U.S. Cl. 252—46.6 **9 Claims**

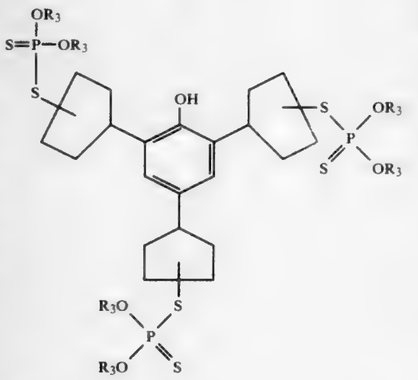
1. A compound of formula I, II or III



(I)



(II)



(III)

wherein

R_1 is hydrogen, C_1–C_{20}alkyl or C_5–C_7cycloalkyl,

R_2 is hydrogen, C_1–C_{20}alkyl or C_5–C_7cycloalkyl, and

R_3 is C_1–C_{18}alkyl or C_3–C_{18}alkenyl.

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5,328,622

OIL SOLUBLE DISPERSANT ADDITIVES MODIFIED WITH MONOEPOXY MONOUNSATURATED COMPOUNDS

Jacob Emert, Brooklyn, N.Y.; Antonio Gutierrez, Mercerville, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 303,682, Jan. 30, 1989, abandoned. This application Jan. 5, 1993, Ser. No. 2,527

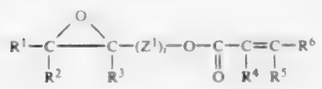
Int. Cl.[5] C10M *157/04*

U.S. Cl. 252—46.7 33 Claims

1. An adduct useful as a dispersant additive to oleaginous compositions comprising cross-linked or chain-coupled reaction products of

(1) at least one nitrogen-containing ashless dispersant which comprises an imide-containing reaction product of long chain hydrocarbyl polymer substituted with at least one monounsaturated mono- or dicarboxylic-acid-producing moiety; and

(2) at least one monoepoxide monounsaturated linking reactant comprising at least one compound of the formula



wherein i is 0 to 1; wherein R^1, R^2, R^3, R^5 and R^6 are the same or different and are H, unsubstituted hydrocarbyl or substituted hydrocarbyl with the proviso that the reactivity of any chosen substituent group with the oxirane moieties of said linking reactant is less than or equal to the reactivity of said oxirane moieties with the nitrogen atoms of said nitrogen-containing ashless dispersant during said cross-linking reaction; wherein Z^1 is substituted or unsubstituted divalent hydrocarbon radical; and R^4 comprises H, Z^4H or an electron withdrawing moiety wherein Z^4 is substituted or unsubstituted divalent hydrocarbyl radical.

5,328,623

COMPOSITIONS CONTAINING N-HETEROCYCLIC PHOSPHONATES WHICH CONTAIN 6 RING MEMBERS

Peter Nesvadba, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 10, 1992, Ser. No. 928,245

Claims priority, application Switzerland, Aug. 16, 1991, 2430/91

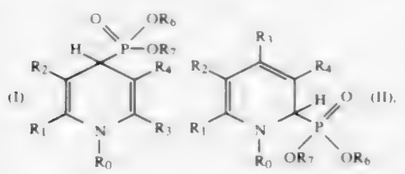
Int. Cl.[5] C10M *137/12*

U.S. Cl. 252—49.9 13 Claims

1. A composition comprising

A) a natral, semi-synthetic or synthetic polymer which is susceptible to thermal, oxidative and/or light-induced degradation, and

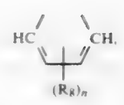
B) at least one compound of formula I and/or II,



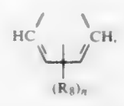
wherein

R_0 is hydrogen, C_1–C_{12}alkyl, C_5–C_{12}cycloalkyl, C_2–C_{12}alkenyl, phenyl-C_1–C_4alkyl, —CO—R_5 or —CO—OR_5,

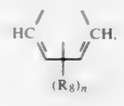
R_1 is hydrogen, methyl, ethyl or R_1 together with R_2 are



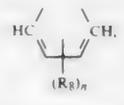
R_2 is hydrogen, methyl, ethyl or R_2 together with R_1 are



R_3 is hydrogen, methyl, ethyl or R_3 together with R_4 are



R_4 is hydrogen, methyl, ethyl or R_4 together with R_3 are



R_5 is C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, phenyl-C_1–C_4alkyl or phenyl,

R_6 and R_7 are each independently of the other hydrogen, C_1–C_{12}alkyl, C_5–C_{12}cycloalkyl, phenyl or phenyl-C_1–C_4alkyl,

R_8 is C_1–C_4alkyl, and

n is 0, 1 or 2, with the proviso that, in formula II, R_3 is not hydrogen.

5,328,624

STABILIZED GRAFTED ETHYLENE COPOLYMER ADDITIVE USEFUL IN OIL COMPOSITIONS

David Y. Chung, Edison, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 954,420, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 546,068, Jun. 29, 1990, abandoned, which is a continuation of Ser. No. 288,625, Dec. 22, 1988, abandoned, which is a continuation of Ser. No. 63,148, Jun. 16, 1987, abandoned. This application Aug. 30, 1993, Ser. No. 114,124

Int. Cl.[5] C10M *133/58, 133/56;* C08F *267/04, 265/02*

U.S. Cl. 252—51.5 A 22 Claims

1. An oil soluble additive consisting essentially of reaction product of:

(i) preformed reactive nitrogen containing grafted ethylene copolymer consisting essentially of reaction product of

(a) oil soluble grafted ethylene copolymer comprising from about 15 to 90 wt. % ethylene and about 10 to 85 wt. % of at least one C_3 to C_{28} alpha-olefin, having a number average molecular weight of from about 700 to about 500,000, and grafted with ethylenically unsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhydride group, and

(b) at least one polyamine having at least two primary amine groups, and

(ii) an amount effective to retard viscosity increase over time of a lubricating oil composition containing said additive, of at least one C_{12} to C_{16} aliphatic hydrocarbyl substituted succinic anhydride, wherein from about 0.5 to about 1.0 moles of said polyamine (b) per mole of said grafted ethylene copolymer component (a) have been reacted at a temperature of from about 100° to about 250° C. prior to the reaction of said preformed reactive nitrogen containing ethylene copolymer reactant (i) with said aliphatic hydrocarbyl substituted succinic anhydride (ii).

5,328,625

LUBRICANT COMPOSITIONS COMPRISING TRIAZOLE-DERIVED ACID-ESTERS OR ESTER-AMIDE-AMINE SALTS AS ANTIWEAR ADDITIVES

Liehpao O. Farng, Lawrenceville; Andrew G. Horodysky, Cherry Hill; Ronald J. Poole, and John R. Donofrio, both of Mullica Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 8, 1992, Ser. No. 986,655

Int. Cl.[5] C10M *129/72, 133/16*

U.S. Cl. 252—51.5 R 12 Claims

1. An improved lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor multifunctional antiwear, load-carrying/EP, and copper corrosion inhibiting proportion of an additive product of reaction prepared by reacting (1) a triazole or hydrocarbyl substituted triazole with a hydrocarbyl oxide to form a triazole-derived alcohol and thereafter (2) reacting said triazole-derived alcohol with a hydrocarbyl carboxylic anhydride or its acid equivalent selected from succinic or phthalic anhydrides or hydrocarbyl substituted succinic or phthalic anhydrides or their acid equivalents to produce substituted hydrocarbyl carboxylic acidester derivatives and (3) converting said acid-ester derivatives to their corresponding diester, amide-ester salts by reaction with amine, hydroxy or hydroxyamine compounds and wherein the reactions are carried out at temperatures varying from ambient to about 250° C. under ambient or autogenous pressures, in molar ratios of reactants varying from equimolar to more than molar to less than molar for times sufficient to obtain the desired additive product of reaction.

5,328,626

N-ETHYL HYDROXAMIC ACID CHELANTS

Bruce F. Monzyk, Maryland Heights, Mo., assignor to Met-Tech Systems, Ltd., Burlington, Canada

Continuation-in-part of Ser. No. 732,989, Jul. 19, 1991, Pat. No. 5,174,917. This application May 29, 1992, Ser. No. 890,882

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] C09K *3/00;* C22B *3/00;* C21B *3/00*

U.S. Cl. 252—60 4 Claims

1. An organic metal extractant solution comprising a kerosense solvent and at least 50 weight percen N-ethyl alkanohydroxamic acid wherein said solution has a kinematic viscosity at 23° C. of less than 20 mm^2/s, wherein said alkyl group is a straight chain alkyl group of 8 to 10 carbon atoms, or a branched alkyl group of 8 to 18 carbon atoms, provided said alkyl group is not cyclic.

5,328,627

FIRE RESISTANT HYDRAULIC FLUIDS

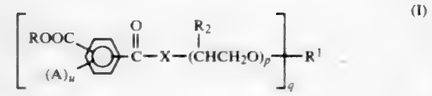
Joseph M. Bohen, King of Prussia, and Paul Tubbs, Philadelphia, both of Pa., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 258,267, Oct. 14, 1988, abandoned. This application Apr. 12, 1990, Ser. No. 508,744

Int. Cl.[5] C09K *5/00*

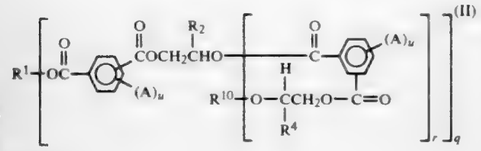
U.S. Cl. 252—79 26 Claims

1. A hydraulic fluid composition comprising a fire-resistant imparting or improving effective amount of a halophthalate ester of the formula:



(I)

or



(II)

wherein:

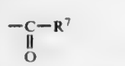
(a) the rings can have all possible arrangements;

(b) R is substituted or unsubstituted C_{1-30} alkyl, hydroxy C_{2-20} alkyl, polyhydroxy C_{3-10}-alkyl, or



where R^2 and R^8 are as defined below, and b is 1 to 50;

(c) R^1 is H, branched or linear substituted or unsubstituted C_{1-30} alkyl or unsaturated C_{2-22} alkyl, or



and R^7 is as defined below,

(d) R^2 is, independently, H or CH_3;

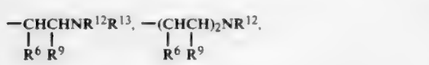
(e) R^3 and R^4 are, independently, H, C_{1-18} alkyl, halogen substituted C_{1-18} alkyl, —OH, —OR^5, or



(f) R^5 is C_{1-22} alkyl;

(g) R^6 is H or C_{1-22} alkyl;

(h) R^7 is C_{1-18} alkyl, polyhydroxy C_{3-12} alkyl,

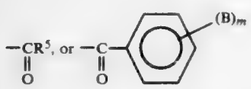


or —$(CHCN)_3N$;

(i) R^8 is branched or linear substituted or unsubstituted C_{1-18} alkyl;

(j) R^9 is H or C_{1-22} alkyl;

(k) R^{10} is H,



where B and m are defined below;

(l) R^{12} is H or C_{1-22} alkyl;

(m) R^{13} is H or C_{1-22} alkyl;

(n) A is Cl or Br;

(o) B is halogen, OR^5, or

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$$-\overset{O}{\overset{\|}{C}}-R^5.$$

(p) X is O or NH;
(q) m is 1 to 5;
(r) p is 0 or an integer of 1 to 50;
(s) q is an integer of 1 to 6;
(t) r is from more than 0.1 to 50; and
(u) is 1 to 4
wherein the hydraulic fluid is one or more of:
(A) mineral oils;
(B) poly-α-olefins;
(E) esters of dibasic acids;
(G) polyol esters;
(J) organohalides other than esters of a halogen substituted aromatic acid.

5,328,628

DETERGENT COMPOSITIONS CONTAINING LIPOSOMES AND PROCESS THEREFOR

Gerald L. Hart, Surbiton; Anjum F. Ahmed, Virginia Water, both of United Kingdom, and Ursula K. Charaf, Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Division of Ser. No. 578,913, Sep. 6, 1990, abandoned. This application Aug. 26, 1992, Ser. No. 935,688
Int. Cl.[5] A61K *9/127*; **C11D** *1/37, 17/08*
U.S. Cl. 252—91 **18 Claims**

1. A method of making a detergent composition containing liposomes and anionic surfactants which lyse liposomes which method comprises the steps of

(I) preparing a stabilized aqueous liposome suspension by adding from about 0.1% to 40% by weight based upon the total weight of the stabilized aqueous liposome suspension of at least one surfactant selected from the group consisting of fatty alkyl sulfosuccinates where the fatty alkyl group contains from 8 to 22 carbons atoms, fatty acylamino polyglycol ether sulfates where the fatty acyl group contains from 8 to 22 carbon atoms, fatty alkyl amine oxides where the fatty alkyl group contains from 7 to 26 carbon atoms, fatty alkyl phosphate esters where the fatty alkyl group contains from 8 to 22 carbon atoms, and N-acyl amino acid salts or salts of N-acyl derivatives of hydrolyzed proteins of up to about 2,500 daltons in weight average molecular weight where the acyl portion is derived from a carboxylic acid having from 8 to 22 carbon atoms per molecule to an aqueous liposome suspension containing from about 0.1% to 50% by volume of liposomes based upon the volume of the total aqueous liposome suspension and the ratio of the liposomes to the surfactant present being in a ratio of no greater than 30 parts by volume of liposomes to 1 part by weight of surfactant; and

(II) Adding to the stabilized aqueous liposome suspension of step (I) from about 0.1 to 35% by weight of the total detergent composition of at least one anionic surfactant which is known to lyse liposomes to form an aqueous detergent composition containing liposomes wherein the liposomes are observable in the detergent composition for at least 48 hours after storage at 22° C.

6. A stabilized detergent composition containing liposomes formed by the method of claim 1.

5,328,629

PROCESS FOR PRODUCING A SYNTHETIC DETERGENT SOAP BASE FROM N-ACYL SARCOSINE

Joseph J. Crudden, Hudson, N.H., assignor to Hampshire Chemical Corp., Lexington, Mass.

Continuation of Ser. No. 670,800, Mar. 18, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 906,004
Int. Cl.[5] C11D *1/04, 1/10, 9/30, 13/00*
U.S. Cl. 252—117 **7 Claims**

1. A method of producing synthetic detergent soap base consisting essentially of using, as the solvent, an N-acyl sarcosine selected from the group consisting of lauroyl sarcosine, cocoyl sarcosine, myristoyl sarcosine and oleoyl sarcosine, by dissolving a fatty acid in said solvent consisting of said N-acyl sarcosine at an elevated temperature and neutralizing the acid mixture with alkali at a temperature sufficient to maintain fluidity, to a pH of from about 4.5 to about 9.5.

5,328,630

LIQUID DETERGENT COMPOSITION BASED ON N-ACYLAMINO ACID POTASSIUM SALT

Toshio Nozaki, Chiba; Masayo Kawaguchi, Wakayama, and Hiroshi Watanabe, Chiba, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Dec. 3, 1992, Ser. No. 985,197
Claims priority, application Japan, Dec. 4, 1991, 3-320690
Int. Cl.[5] C11D *1/37, 1/10, 3/33*
U.S. Cl. 252—117 **5 Claims**

1. A liquid detergent composition having a pH value ranging from 6 to 8 and consisting essentially of the following components (A), (B) and (C):

(A) an N-acylamino acid salt represented by formula (1):

$$R^1CONH(CH_2)_nCOOK \quad (1)$$

wherein R^1CO represents a straight-chain acyl group having 10 to 16 carbon atoms, n is a number of 1 or 2 and K is potassium;

(B) a water soluble anionic surfactant selected from the group consisting of an alkylsulfuric acid salt, a polyoxyethylene alkyl ether sulfuric acid salt, an amidoamino acid salt, an N-acylmethyltaurine salt, a polyoxyethylene alkysulfosuccinic acid salt, an N-acylmethyl-β-alanine salt, an N-acylsarcosine salt and an acylglutamic acid salt; and

(C) water,

wherein a weight ratio of said Component (A) to said Component (B) is from 3/1 to ¼ and wherein said component (A) is contained in an amount ranging from 3 to 20% by weight and said component (B) is contained in an amount ranging from 2 to 20% by weight.

5,328,631

POLYAMINOACIDS AS BUILDERS FOR FORMULATIONS OF DETERGENTS

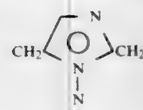
Annick Du Vosel; Franco Francalanci, and Paola Maggiorotti, all of Novara, Italy, assignors to S.R.L. Montedipe, Milan, Italy

Filed Apr. 26, 1991, Ser. No. 691,877
Claims priority, application Italy, Apr. 26, 1990, 20145 A/90
Int. Cl.[5] C11D *3/08, 3/386, 3/384*
U.S. Cl. 252—174.23 **3 Claims**

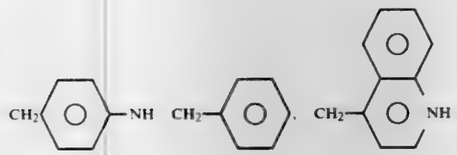
1. A detergent formulation containing 10 to 40% by weight of at least one surface active agent, from 5 to 50% of weight of at least one sodium aluminosilicate, from 0.5 to 70% by weight of at least one additive chosen from neutral salts, enzymes, bleaching agents, stabilizers, anti-foaming agents, perfumes, bactericides and from 5 to 50% by weight of a builder or cobuilder which is at least one polyamino acid chosen from those having the formula:

$$+NH-CH-(CH_2)_m-CO\rightarrow_n Y$$
$$\quad\quad R$$

in which m can be 1 or 2; n is between 100 and 2000; R is a radical chosen from: H, CH_3, COY, CH_2COY, CH_2CH_2COY, $CH_2CH_2CH_2NHC{=}(NH_2)NH$ CH_2SH, $CH_2CH_2CH(OH)CH_2NH_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)CH_2CH_3$, $CH_2CH_2CH_2CH_2NH_2$, $CH_2CH_2SCH_3$,



CH_2OH, $CH(OH)CH_3$, $CH(CH_3)_2$,



wherein Y can be:

—OZ wherein Z represents H or a C_1–C_{15} alkyl radical; or

—NZZ' wherein Z and Z' are the same or different from one another, and represent H or a C_1–C_{15} alkyl radical.

5,328,632

LOW PH MILD PERSONAL CLEANSING BAR WITH LATHERING MILD SYNTHETIC SURFACTANT AND MAGNESIUM SOAP

Bruce L. Redd; Eddie C. Walker, both of Cincinnati; Robet E. Hare, Winchester; Donald A. Niederbaumer, Cincinnati; James C. Dunbar, West Chester, and Theresa A. Bakken, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 887,570, May 18, 1992, Pat. No. 5,204,014, which is a continuation of Ser. No. 668,578, Mar. 13, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,345
Int. Cl.[5] C11D *3/20, 3/46, 13/18, 17/06*
U.S. Cl. 252—174 **1 Claim**

1. A flake composition useful for preparing a mild personal cleansing bar comprising:

(A) from about 20% to about 50% lathering mild synthetic surfactant and from about 5% to about 50% of magnesium fatty acid soap; wherein the ratio of said lathering mild synthetic surfactant to said soap is from about 5:1 to about 0.4:1; wherein said lathering mild synthetic surfactant consists essentially of C_{12} to C_{14} alkyl chains and

(B) from about 5% to about 40% non-soil-load diluent synthetic surfactant wherein said non-soil-load diluent synthetic surfactant consists essentially of C_{16} to C_{22} alkyl chains; and

(C) from about 5% to about 20% of a wax;

wherein said fatty acid soap is made from fatty acid having a titer of 40–75 and an Iodine Value of from zero to 15.

5,328,633

EXTENDED-RELEASE PLAQUE PREVENTING AND DISSOLVING COMPOSITIONS

Michael A. Hasting; Geoffrey A. Lindsay, both of Ridgecrest, Calif., and Michael A. Gustavson, Southworth, Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 4, 1990, Ser. No. 519,063
Int. Cl.[5] C02F *5/10*
U.S. Cl. 252—181 **9 Claims**

1. An extended-release composition for removing and preventing plaque formation, comprising:

50% weight %–95 weight % benign acidic agent; and

5 weight %–50 weight % extended-release binder,

wherein said benign acidic agent is comprised of one or more carbon based acids chosen from the group consisting of citric acid, tartaric acid, and polyacrylic acid, and

wherein said extended release binder is comprised of poly-(ethylene glycol) and poly(ethylene oxide).

5,328,634

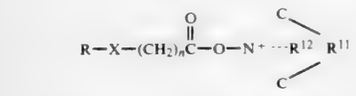
ACYLOXYNITROGEN PERACID PRECURSORS

Alfred G. Zielske, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

Division of Ser. No. 542,233, Jun. 21, 1990, Pat. No. 5,087,385. This application Jan. 13, 1992, Ser. No. 820,426
Int. Cl.[5] C01B *15/00, 3/00*; **C11D** *1/58*
U.S. Cl. 252—186.27 **10 Claims**

1. A bleaching composition comprising:

(a) a peracid precursor having the general structure:



wherein R is selected from the group consisting of straight and branch chain $C_{1\text{-}20}$ alkyl and cycloalkyl; n is an integer from 1 to 6; X is selected from the group consisting of methylene and oxygen; R^{11} is selected from the group consisting of straight and branch chain $C_{1\text{-}20}$ alkyl, aryl, alkylaryl, and completes a heterocycle; and R^{12} is selected from the group consisting of nothing, $C_{1\text{-}20}$ alkyl, aryl, and alkylaryl; and

(b) a bleach effective amount of a source of hydrogen peroxide.

5,328,635

Patent Not Issued For This Number

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RUBBER VULCANIZATION SYSTEM CONTAINING BIS-(2,5-POLYTHIO-1,3,4-THIADIAZOLE), BISMALEIMIDE AND SULFENAMIDE

Neil A. Maly, Tallmadge; Richard M. D'Sidocky, Ravenna, and Lewis T. Lukich, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

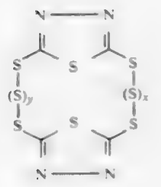
Division of Ser. No. 935,699, Aug. 26, 1992, Pat. No. 5,262,488. This application Jul. 12, 1993, Ser. No. 89,535

Int. Cl.[5] **C08K** *5/46*

U.S. Cl. 252—182.17 **9 Claims**

1. A rubber vulcanization composition comprising:

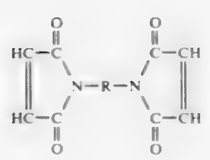
(a) from about **2** to about **15** weight percent of bis- (2,5-polythio-1,3,4-thiadiazole) consisting of the formula:



(I)

wherein the sum of x and y is from 1 to 16 and x and y are independently selected from 0 and integers of from 1 to 8;

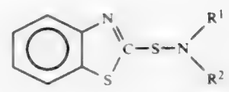
(b) from about **15** to about **50** weight percent of a bismaleimide compound of the general formula:



(II)

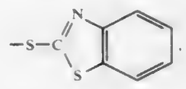
wherein **R** is divalent and is selected from the group consisting of acyclic aliphatic groups having from about 2 to 16 carbon atoms, cyclic aliphatic groups having from about 5 to 20 carbon atom, aromatic group having from about 6 to 18 carbon atoms, and alkylaromatic groups having from about 7 to 24 carbon atoms and wherein these divalent groups may contain a hetero atom selected from O, N and S;

(c) from about **15** to about **45** weight percent of a sulfenamide compound of the general formula:



(III)

wherein R^1 is selected from the group consisting of hydrogen, acyclic aliphatic groups having from about 1 to 10 carbon atoms, and cyclic aliphatic groups having from about 5 to 10 carbon atoms; and R^2 is selected from the group consisting of cyclic aliphatic groups having from about 5 to 10 carbon atoms and mercaptobenzothiazolyl groups of the formula.



and

(d) from about 20 to about 55 weight percent of sulfur, a sulfur donor and mixtures thereof.

5,328,637

ALKINYL-DERIVATIVES AND THEIR USE IN LIQUID CRYSTALLINE MIXTURES

Richard Buchecker, Zurich, and Martin Schadt, Seltisberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

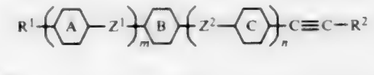
Filed Feb. 18, 1992, Ser. No. 837,512

Claims priority, application Switzerland, Feb. 25, 1991, 557/91

Int. Cl.[5] **C09K** *19/06, 19/34, 19/30;* **G02G** *1/13*

U.S. Cl. 252—299.60 **14 Claims**

1. A compound of the formula



wherein

rings A and C each individually are trans-1,4-cyclohexylene, 1,4-phenylene, trans-1,3-dioxane-2,5-diyl, pyridine-2,5-diyl or pyrimidine-2,5-diyl, provided that not more than one of rings A and C is pyridine-2,5-diyl or pyrimidine-2,5-diyl, wherein the position of the nitrogen atom in the pyridine-2,5-diyl ring and pyrimidine-2,5-diyl, respectively, is directed only in the direction of the triple bond —C≡C—,

ring B is 2,3-difluoro-substituted 1,4-phenylene,

Z^1 or Z^2 is a single covalent bond and Z^2 or Z^1, respectively, is a single covalent bond, ethylene, oxymethylene or methyleneoxy, m and n are each a number 0 to 2, and the sum m+n is 1 or 2,

R^1 is C_{1-10}-alkyl, C_{2-9}-alkoxyalkyl or C_{1-9}-alkoxy and

R^2 is C_{1-10}-alkyl,

with the proviso that two 1,4-phenylene rings are linked with each other only by a single covalent bond.

5,328,638

OPTICALLY ACTIVE ESTERS OF 5-ETHYL- AND 5-VINYL-1,3-DIOXOLANE-4-CARBOXYLIC ACID, THEIR USE AS DOPING SUBSTANCES IN LIQUID CRYSTAL MIXTURES AND THE LIQUID CRYSTAL MIXTURES CONTAINING THE NEW ESTERS

Ingrid Müller, Hofheim am Taunus; Hans-Rolf Dübal, Königstein/Taunus; Claus Escher, Mühltal; Wolfgang Hemmerling, Sulzbach; Gerhard Illian, Frankfurt am Main; Mikio Murakami, Königstein/Taunus; Dieter Ohlendorf, Liederbach, and Rainer Wingen, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 410,949, Sep. 22, 1989, abandoned. This application May 12, 1992, Ser. No. 881,520

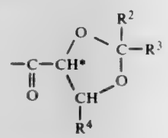
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1988, 3832503

Int. Cl.[5] **C09K** *19/34*

U.S. Cl. 252—299.61 **3 Claims**

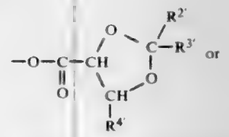
1. A method for increasing spontaneous polarization of a liquid crystal mixture, which comprises adding an optically active 1,3-dioxolane-4-carboxylic ester of the formula (V) to the mixture

(V)



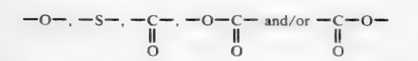
in which the symbols have the following meaning:

R^1 is



(Va)

a straight-chain or branched alkyl radical having 1 to 16 carbon atoms or a straight-chain or branched alkenyl radical having 2 to 16 carbon atoms, it being possible for these radicals themselves to contain asymmetric carbon atoms, in which one or more non-adjacent —CH_2— groups can be replaced by



one or more H can be replaced by F, Cl, Br or CN,

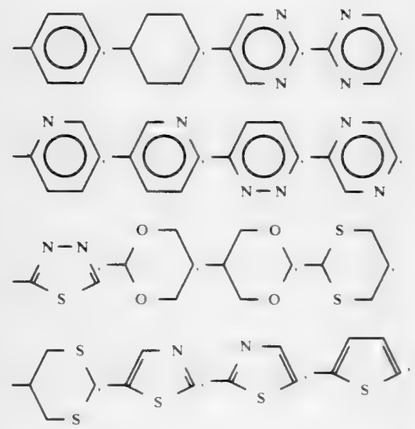
R^2, $R^{2'}$, R^3 and $R^{3'}$ are each H or an alkyl radical having 1 to 10 carbon atoms, in which one or more H can be replaced by F, or R^2 and R^3 or $R^{2'}$ and $R^{3'}$ together with the C(2) atom of the dioxolane ring form a cyclopentane, cyclohexane or cycloheptane ring,

R^4, $R^{4'}$ are vinyl or ethyl, or, if R^1 is a radical of the formula (Va), H or an alkyl radical having 1 to 10 or an alkenyl radical having 2 to 10 carbon atoms, with the proviso that at least one radical R^4, $R^{4'}$ is vinyl or ethyl,

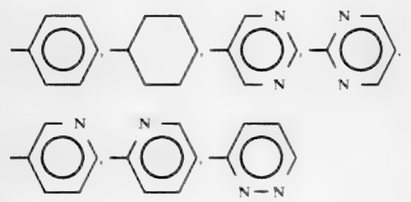
j and l are zero, 1 or 2,

k and m are zero or 1,

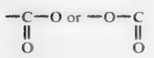
n is zero, 1 or 2, with the following proviso: if j and/or l are zero, k is zero; if n is zero, m is zero; the sum j+l+n is at least 2 and at most 3, $-A^1-$ and $-A^2-$ are



$-A^3-$ is



$-M^1-$ and $-M^2-$ are



and X is O.

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5,328,639

FLUOROALKANE DERIVATIVE, ITS COMPOSITION AND LIQUID CRYSTAL DEVICE USING THE SAME

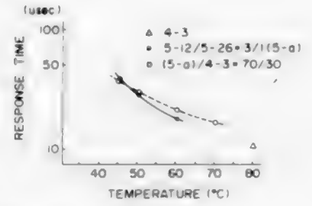
Hiroyuki Nohira, Urawa; Masanao Kamei, Annaka; Shinichi Nakamura, Urawa; Kazuharu Katagiri, Tama; Masahiro Terada, Atsugi; Masataka Yamashita, Hiratsuka; Yoko Yamada, Atsugi; Kenji Shinjo, Atsugi; Takashi Iwaki, Atsugi; Chieko Hioki, Kawasaki; Akio Yoshida, Chigasaki, and Toshiharu Uchimi, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 403,046, Sep. 1, 1989, abandoned, which is a continuation of Ser. No. 118,889, Nov. 10, 1987, abandoned. This application Dec. 31, 1992, Ser. No. 999,556

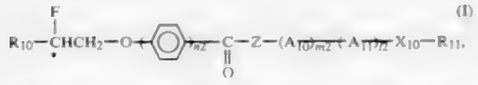
Claims priority, application Japan, Nov. 10, 1986, 61-267044; Jan. 12, 1987, 62-5827; Jan. 12, 1987, 62-5829; Oct. 26, 1987, 62-271118

Int. Cl.[5] **C09K** *19/34, 19/20;* **C07D** *239/02;* **C07C** *69/76*

U.S. Cl. 252—299.61 **9 Claims**



1. A fluoroalkane derivative represented by the formula (I):

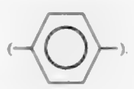


(I)

wherein R_{10} denotes an alkyl group having 1–16 carbon atoms; C^* denotes an optically active asymmetric carbon atom; R_{11} denotes an alkyl group having 1–16 carbon atoms; Z denotes —O— or —S—; X_{10} denotes a single bond, —O—, or



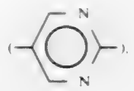
A_{10} and A_{11} denote a phenylene group



a cyclohexylene group



or a pyrimidinyulene group



n2 is 1 or 2; l2 and m2 are 0 or a positive integer satisfying the relation l2+m2=1 or 2.

5,328,640

FERROELECTRIC CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING SAME

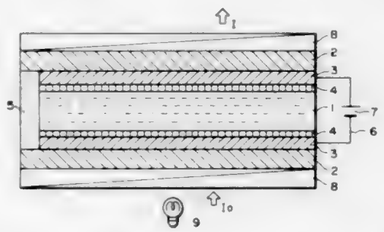
Kenji Shinjo, Atsugi; Takao Takiguchi, Tokyo; Hiroyuki Kitayama, Sagamihara; Kazuharu Katagiri, Tokyo; Masahiro Terada, Atsugi; Takeshi Togano, Yokohama; Masataka Yamashita, Hiratsuka; Takashi Iwaki, Isehara, and Shosei Mori, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 370,985, Jun. 23, 1989, abandoned. This application Mar. 30, 1993, Ser. No. 40,392

Claims priority, application Japan, Jun. 24, 1988, 63-157675; Jul. 13, 1988, 63-175784; Jun. 9, 1989, 1-147993

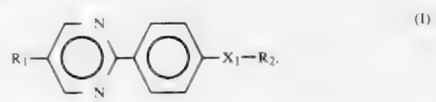
Int. Cl.[5] **C09K** *19/34;* **G02F** *1/13*

U.S. Cl. 252—299.61 **7 Claims**



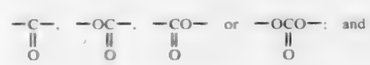
1. A ferroelectric chiral smectic liquid crystal composition, comprising:

at least one compound represented by the following formula (I):



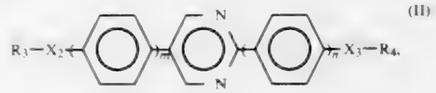
(I)

wherein R_1 may be optically active and denotes a linear or branched alkyl group having 1–18 carbon atoms denotes a linear alkyl group, wherein the sum of carbon atoms shown by the substituent $-(CH_2)_n-CH(CH_3)R_2$ is 5 to 18; R_2 and X_1 denotes a single bond, —O—,



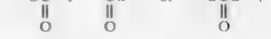
and

at least one compound represented by the following formula (II):



(II)

wherein R_3 and R_4 denote a linear or branched alkyl group having 1–18 carbon atoms; X_2 and X_3 denote a single bond, —O—,



and m and n are 0, 1 or 2 with proviso that m+n=2 or more.

5,328,641

LIQUID CRYSTAL COMPOUND

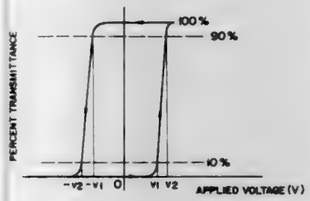
Yoshihiko Aihara; Tadaaki Isozaki; Hioyuki Mogamiya; Yuvraj Negi, and Toru Ooide, all of Tokyo, Japan, assignors to Showa Shell Sekiyu Kabushiki Kaisha

Division of Ser. No. 713,143, Jun. 11, 1991, Pat. No. 5,207,947, which is a continuation-in-part of Ser. No. 592,683, Oct. 3, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 959,660

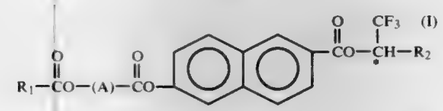
Claims priority, application Japan, Oct. 6, 1989, 1-261804; Nov. 21, 1989, 1-302569; Nov. 29, 1989, 1-309709; Dec. 12, 1989, 1-321829; Dec. 27, 1989, 1-339482; Jan. 22, 1990, 2-12005; Jan. 22, 1990, 2-12006; Jul. 9, 1990, 2-181186; Nov. 20, 1990, 2-315142

Int. Cl.[5] **C09K** *19/32, 19/52;* **C07C** *69/76*

U.S. Cl. 252—299.62 **3 Claims**



1. Liquid crystal compound having the formula (I):



(I)

wherein R1 is a C_5 to C_{18} alkyl group and R_2 is a C_6 to C_{16} alkyl group and (A) is a 1,4-phenylene group or a 2,6-naphthylene group, which has $S^*(3)$ phase where the liquid crystal compound exhibits optically tristable states, and * indicates an asymmetric carbon.

5,328,642

LIQUID-CRYSTALLINE MEDIUM

Bernhard Rieger, Yokohama, Japan; Volker Reiffenrath, Rossdorf, and Reinhard Hittich, Modautal, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP91/01037, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992, PCT Pub. No. WO91/19772, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 5, 1991, Ser. No. 828,947

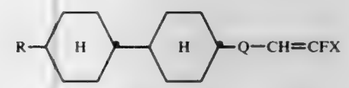
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1990, 4018651

Int. Cl.[5] **C09K** *19/30, 19/12;* **G02F** *1/13*

U.S. Cl. 252—299.63 **8 Claims**

1. A liquid crystalline medium based on a mixture of polar compounds having positive dielectric anisotropy, comprising:

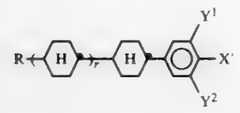
one or more compounds of the formula I



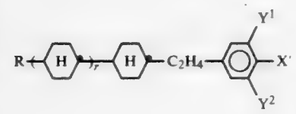
I

in which Q is alkylene having 1 to 5 carbon atoms or a single bond, X is H or F, and R is alkyl, oxaalkyl, fluoroalkyl or alkenyl, in each case having 1 to 7 carbon atoms,

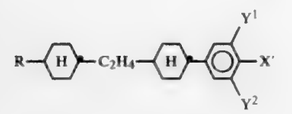
one or more compounds selected from the formulae II to VIII



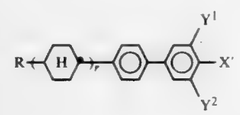
II



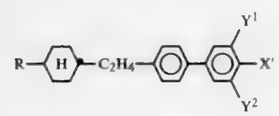
III



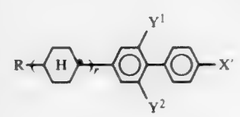
IV



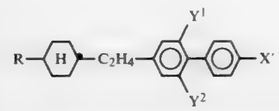
V



VI



VII



VIII

in which R is independently as defined above,

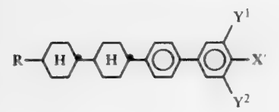
X' is F, Cl, CF_3, OCF_3 or $OCHF_2$,

Y^1 is H or F,

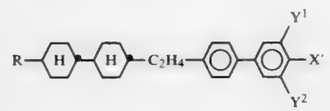
Y^2 is H or F, and

r is 0 or 1, and

one or more compounds of the formulae IX to XII:



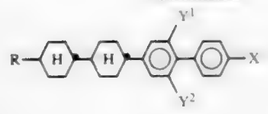
IX



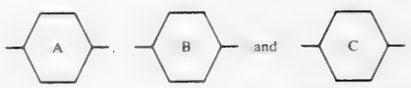
X

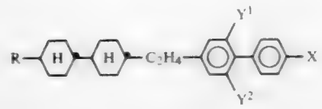
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-continued



XI





XII

are p-phenylene groups; the carbon atoms with the asterisk (*) denote asymmetric carbon atoms.

in which R, X', Y^1 and Y^2 are each, independently of one another, as defined above

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5,328,643

OPTICALLY ACTIVE COMPOUNDS, LIQUID CRYSTAL COMPOSITION CONTAINING SAID COMPOUNDS, AND LIQUID CRYSTAL OPTICAL MODULATOR USING SAID COMPOSITION

Yuka Sudo, Kasama; Katsumi Kondo; Teruo Kitamura, both of Katsuta; Koichi Matsumura, Ibaraki; Mitsuru Kawada, Amagasaki, and Yoshihiro Sugihara, Toyonaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka and Hitachi, Ltd., Tokyo, both of Japan

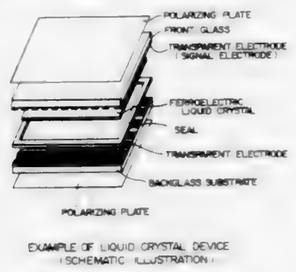
Continuation of Ser. No. 382,385, Jul. 20, 1989, abandoned. This application Feb. 26, 1992, Ser. No. 841,467

Claims priority, application Japan, Jul. 20, 1988, 63-179029

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

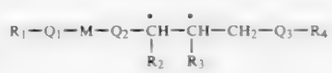
Int. Cl.[5] **C09K** *19/12, 19/20;* **C07C** *69/76, 41/00*

U.S. Cl. 252—299.65 **15 Claims**



EXAMPLE OF LIQUID CRYSTAL DEVICE (SCHEMATIC ILLUSTRATION)

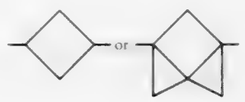
1. An optically active compound exhibiting a chiral smectic C phase represented by the general formula I:



wherein R_1 is an alkyl group of 3–14 carbon atoms; R_2 and R_3, which may be the same or different, are independently a lower alkyl group of 1–3 carbon atoms; R_4 is an alkyl group of 1–10 carbon atoms; Q_1 is a single bond or an ether group; Q_2 is an ether group or a carboxylic acid ester group and Q_3 is an ether group; M is



X and Y are independently a single bond, a carboxylic acid ester group or a methyleneoxy group and



in such a manner that oxygen atoms are not linked directly to one another.

5,328,644

NEMATIC LIQUID CRYSTAL MIXTURES AND FLUORINATED CHLOROTERPHENYLS

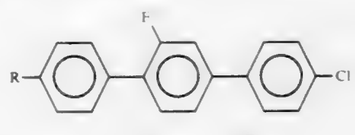
Mark Goulding, Poole; Simon Greenfield; David Coates, both of Dorset, and Robert Clemitson, Poole, all of Great Britain, assignors to Merck Patent Gesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 973,914

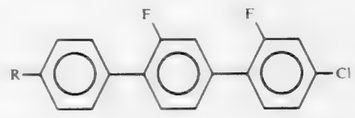
Int. Cl.[5] **C09K** *19/12, 19/52;* **C07C** *25/00*

U.S. Cl. 252—299.66 **10 Claims**

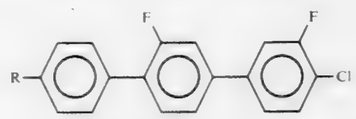
1. A nematic liquid crystal mixture having a positive dielectric anisotropy $\Delta\epsilon$ of at least one fluorinated chloroterphenyl compound of formula I, Ia1, Ia2 or Ia3:



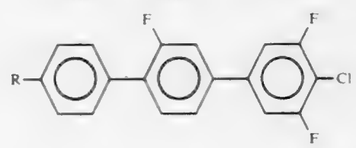
I



Ia1



Ia2



Ia3

wherein

R is an alkyl or alkenyl radical having up to 15 C atoms, said radical being unsubstituted or substituted by halogen, one or more CH_2 groups in the radical optionally being replaced, in each case independently of one another, by —O—,

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5,328,645

GEL PROMOTERS FOR SILICA SOLS

Chia-Cheng Lin, Hampton Township, Allegheny County, and John D. Basil, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 4, 1989, Ser. No. 293,405

Int. Cl.[5] **B01J** *13/00*

U.S. Cl. 252—315.6 **8 Claims**

1. A method of making an alkoxysilane composition comprising the steps of:

a. dissolving in an organic solvent an alkoxysilane of the general formula $Si(OR)_4$ wherein R is a low molecular weight alkyl group;

b. partially hydrolyzing said alkoxysilane in the presence of an acid catalyst to form an acidic sol; and

c. adding to said acidic sol an alkaline component selected from the group consisting of amino-functional silane, buffered organic amine, base-catalyzed silica sol, alkaline colloidal silica sol, and anion exchange resin in hydroxide form which accelerates gelation of said acidic sol to form a gel.

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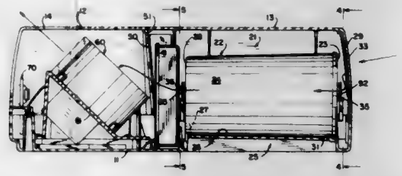
AIR FLOW CONTROL SYSTEM WITH REPLACEABLE CARTRIDGE

John D. Bryson, Milwaukee, and John D. Bryson, Jr., Pewaukee, both of Wis., assignors to Vaportek, Inc., Sussex, Wis.

Filed Oct. 15, 1993, Ser. No. 137,655

Int. Cl.[5] **B01F** *3/04*

U.S. Cl. 261—52 **16 Claims**



1. An air treatment system of the type having a portable cartridge with a cylindrical canister, having a liquid-containing and liquid-permeable air treatment element disposed in the canister, and the canister having walls, including opposite end walls, that are impermeable to liquid from the air treatment element, wherein the air treatment system further comprises:

the canister having an inlet port and outlet port located in the opposite end walls of the canister;

a cradle for supporting the cylindrical canister in a lying-down position substantially parallel to an external supporting surface for the air treatment system;

a housing cover for the air treatment system that can be moved between a closed position and an open position to expose the cradle for removal and replacement of the canister thereon; and

an air flow control mechanism having a pair of arms spaced longitudinally relative to the canister and crossing the inlet and outlet ports, respectively, the pair of arms being pivotable around an axis substantially parallel to a longitudinal axis of the canister to move between a first position simultaneously closing the inlet and outlet ports to a second position simultaneously opening the inlet and outlet ports.

5,328,647

PROCESS TO SEAL STRUCTURAL JOINTS

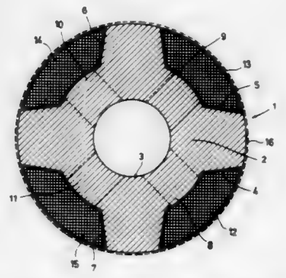
Kunibert Koob, Alpen, Fed. Rep. of Germany, assignor to BBZ Betonbau-Zubehör-Handelsgesellschaft mbH, Willich, Fed. Rep. of Germany

Filed Jul. 13, 1992, Ser. No. 912,178

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123067

Int. Cl.[5] **E04B** *1/16;* **E04G** *21/04, 23/02;* **B32B** *35/00*

U.S. Cl. 264—34 **10 Claims**



1. A process for sealing a structural joint by use of an injection hose including a substantially liquid-impermeable elongated base body enveloping a passage channel and having distributed over the length thereof a plurality of openable and closeable exit openings extending from said passage channel through said base body, said process comprising:

injecting a hardenable injection liquid under positive pressure through said passage channel, thereby opening said exit openings, and then through the thus opened said exit openings into said joint and thereby sealing said joint;

before the thus injected said injection liquid hardens, applying negative pressure to said passage channel to thereby withdraw from said passage channel injection liquid remaining therein, and thereby causing said exit openings to close and preventing injection liquid in said joint from entering into or returning through said exit openings; and then

injecting additional injection liquid, under positive pressure greater than said positive pressure at which said injection liquid is first injected, through said passage channel, thereby again opening said exit openings, and then through the thus reopened said exit openings into said joint, thereby further sealing said joint with said additional injection liquid.

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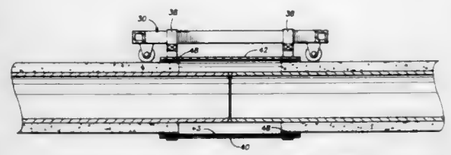
METHOD OF USING A COMPOSITE JOINT INFILL SYSTEM

James H. McBrien, Houston; Richard L. Wyke, Missouri City, and David C. Dressel, Friendswood, all of Tex., assignors to Foam Enterprises, Inc., Minneapolis, Minn.

Filed Aug. 14, 1991, Ser. No. 744,882

Int. Cl.[5] **B29C** *67/22, 65/00*

U.S. Cl. 264—35 **7 Claims**



1. A method for forming a joint infill at the juncture of sequential lengths of concrete coated pipe welded together end

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to end with a gap between the concrete coatings which comprises

enclosing the gap with a mold having a top opening,

filling the mold with a particulate filler material,

then injecting into the mold a mixture of unreacted liquid components of a rapid setting elastomeric polymer,

allowing the components of the polymer to react until the polymer sets up, and

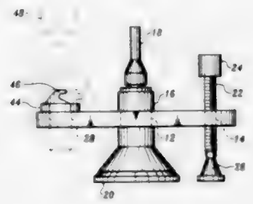
removing the mold.

5,328,649

APPARATUS AND METHOD FOR REPAIRING GLASS WINDSHIELD OR THE LIKE

Joyce D. Newsome, 311 W. Main, Monroe, Wash. 98272

Filed Oct. 26, 1992, Ser. No. 966,452
Int. Cl.[5] B32B *35/00*
U.S. Cl. 264—36 **2 Claims**



1. Apparatus for use in repairing breaks in glass bodies comprising

a. a bridge having a slot disposed therein, said bridge having a flange positioned over said slot;

b. attachment means disposed within said bridge, said attachment means having a fastening surface which contacts a glass body to be repaired;

c. levelling means disposed within said bridge for levelling said bridge with respect to said glass body to be repaired;

d. position indicating means adapted to fit within said slot in said bridge, and to contact a break in said glass body at a predetermined point, thereby allowing accurate positioning of said bridge over said glass body to be repaired; said position indicating means having a flange connected thereto for mating engagement with said flange positioned over said slot of said bridge thereby fixing said position indicating means when said position indicating means is disposed within said slot and rotated;

e. resin injecting means adapted to fit within said slot in said bridge after said position indicating means has allowed accurate positioning of said bridge and has been removed from said slot in said bridge, said resin injecting means injecting resin into said break in said glass body, said resin injecting means having a flange connected thereto for mating engagement with said flange positioned over said slot of said bridge thereby fixing said resin injecting means when said resin injecting means is disposed within said slot.

2. A method for repairing breaks in glass bodies comprising

a. aligning a repair bridge having an open slot disposed therein adjacent to a break in a glass body to be repaired, said bridge having a flange positioned over said slot;

b. inserting position indicating means into said slot of said repair bridge, said position indicating means contacting said break in said glass body at a predetermined point; said position indicating means having a flange connected thereto for mating engagement with said flange of said bridge;

c. locking said position indicating means to said bridge by rotating said position indicating means so as to cause mating engagement of said flange of said bridge and said flange of said position indicating means;

d. levelling said bridge using levelling means attached to said bridge;

e. fastening said bridge to said glass body using fastening means attached to said bridge;

f. removing said position indicating means from said slot of said bridge;

g. inserting resin injecting means into said slot of said bridge; said resin injecting means having a flange connected thereto for mating engagement with said flange of said bridge;

h. locking said resin injecting means to said bridge by rotating said resin injecting means so as to cause mating engagement of said flange of said bridge and said flange of said resin injecting means; and

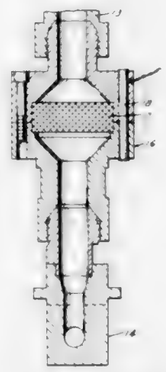
i. injecting means from said resin injecting means into said break in said glass body to repair said break.

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METHOD OF DISTRIBUTING PIGMENTS IN COMPRESSION MOLDED PRODUCTS

Keith W. Ingram, Portage, and Timothy W. Miller, Sturgis, both of Mich., assignors to Owens Illinois Closure Inc., Toledo, Ohio

Filed Oct. 8, 1991, Ser. No. 773,167
Int. Cl.[5] B29C *43/00*
U.S. Cl. 264—45.3 **13 Claims**



3. In a method of compression molding a closure having a base wall and peripheral skirt with internal threads wherein a thermoplastic resin is mixed with additives including a particle pigment additive, a melt is extruded through a nozzle, cut into individual pellets, each pellet is deposited into the cavity of a mold which is then closed to compression mold a closure, the improvement comprising

adding a blowing agent to the resin prior to extrusion,

controlling the temperature of said melt such that the blowing agent is activated just prior to extrusion of the melt from the nozzle,

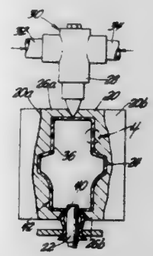
the amount of blowing agent being sufficient to randomize the particle pigment additive such that gaseous bubbles are formed in the extruded melt in an amount sufficient to substantially reduce blemishes normally occurring in compression molding of resins containing particle pigment additive and in an amount not so great that the gaseous bubbles will not be substantially expelled from the melt during the compression molding to form the closure.

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METHOD FOR MANUFACTURING AN AUTOMOBILE TRIM COMPONENT BY BLOW MOLDING AND INJECTION MOLDING

Michael J. Gallagher, Hampton, and Douglas Nobbs, Dover, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed Mar. 5, 1993, Ser. No. 26,773
Int. Cl.[5] B29C *67/22, 49/04*
U.S. Cl. 264—46.1 **7 Claims**



1. A method of making an interior trim component for an automotive vehicle, the method including the steps of:

extruding a coextruded parison of multilayer unfoamed and foamable materials by extruding the unfoamed and foamable materials adjacent one another simultaneously and thereafter blow molding the coextruded parison to form a shaped article,

sectioning the shaped article into at least two separate skins,

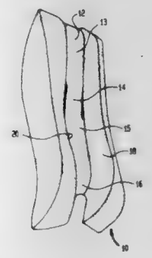
molding and adhering a rigid core resin layer to at least one of said separate skins with foam material interposed between the core resin layer and the unfoamed material producing a structural shell, and wherein the molding step includes placing a skin in an injection mold and injection molding the rigid core resin layer to produce the shell.

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METHOD FOR MAKING A FOAMED GOAL PAD FOR HOCKEY

Paul W. Thomson, Merion, Pa., assignor to Protective Athletic Designs, Inc., Merion Station, Pa.

Filed Jun. 19, 1992, Ser. No. 901,079
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—51 **8 Claims**



1. A method for making a protective leg pad, comprising the steps of:

a. providing a mold having an elongate and generally semi-cylindrical raised ridge substantially anatomically matching and coextensive with the contour of the front and sides of a full human leg from the knee to the ankle, said mold being constructed and arranged to form a leg pad having a leg portion for covering and protecting the front and sides of the lower portion of a human leg from the knee to the ankle, wherein the mold further comprises an ankle and foot ridge constructed and arranged to form a protective leg pad having an ankle and foot portion which is at a relatively sharp angle with respect to the leg portion, the ankle and foot portion being integral with the leg portion and having an ankle groove coextensive with the leg groove for receiving the ankle and at least a portion of the foot;

b. charging the mold with a synthetic foam material;

c. at least partially curing the material in the mold; and

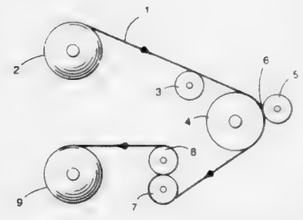
d. removing the at least partially cured material from the mold.

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PROCESS OF MAKING HEAT-SEALABLE ORIENTED WEB

Patrick D. Hyde, Mendota Heights, and Andrew J. Ouderkirk, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 15, 1993, Ser. No. 47,807
Int. Cl.[5] B29C *59/02, 59/04*
U.S. Cl. 264—284 **17 Claims**



1. A process for forming a heat sealable surface layer or region on an oriented film or film layer of crystalline or semi-crystalline polymer comprising the steps of:

(a) providing an oriented film or film layer of a crystalline or semi-crystalline polymer.

(b) contacting at least a region of one outer surface of said oriented film or film layer with a heated textured surface at a temperature above the melting point of said oriented polymer for a time sufficient to treat a layer of said film to a thickness of no greater than 15 microns and at a pressure sufficient to ensure substantially continuous contact between the film and the heated textured surface.

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ORIENTATION OF NEVER-DRIED MOLECULAR COMPOSITE FILMS

Thuan P. Dixit, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 5, 1992, Ser. No. 956,536
Int. Cl.[5] B29C *55/02, 55/12*
U.S. Cl. 264—289.3 **8 Claims**

1. A process to make an improved film that contains either: (a) a molecular composite of lyotropic liquid crystalline polymer and thermoplastic polymer, or (b) a block copolymer having blocks of lyotropic liquid crystalline polymer and blocks of thermoplastic polymer, said process comprising the steps of:

(1) contacting a dope film, that contains a solvent and the molecular composite or block copolymer, with a washing fluid under conditions such that substantially all of the solvent is removed from the film;

(2) stretching the wet, never-dried film from Step (1) at least 10 percent in at least one direction; and

(3) drying the film from Step (2).

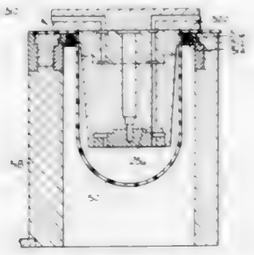
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METHOD AND APPARATUS FOR THE MANUFACTURE OF SHAPED PRODUCTS OF BIAXIALLY ORIENTED POLYMERIC MATERIAL

John K. Fortin, Boulder, Colo., assignor to Fortex, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 674,761, Mar. 25, 1991, Pat. No. 5,198,176, which is a continuation-in-part of Ser. No. 489,809, Mar. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 320,699, Mar. 8, 1989, abandoned. This application Mar. 25, 1992, Ser. No. 857,631
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] B29C *51/06, 51/18, 51/42*
U.S. Cl. 264—544 11 Claims



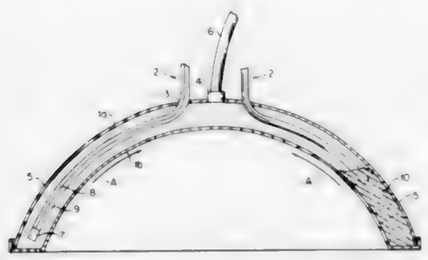
1. A method for producing a biaxially oriented, thermoplastic, unitary, open-ended container shaped article having transparent sidewalls and a fully translucent rim, wherein there is a clear and distinct demarcation between said transparent sidewalls and said translucent rim, comprising:
forming a biaxially oriented container-shaped intermediate having an unoriented crystallizable rim portion; and
simultaneously crystallizing said rim portion and heat shrinking said intermediate onto a male form, wherein said unoriented rim thermoplastic is prevented from pulling into the sidewalls of said heat shrunk article.

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METHOD FOR VACUUM MOLDING OF LARGE OBJECTS OF SYNTHETIC RESIN

Dag Thulin, 19, avenue Hoche, F-75008 Paris, France

PCT No. PCT/SE91/00390, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO91/18725, PCT Pub. Date Dec. 12, 1991
PCT Filed Dec. 12, 1991, Ser. No. 952,842
Claims priority, application Sweden, Jun. 8, 1990, 9002066
Int. Cl.[5] B29C *39/00*; B28B *5/00*
U.S. Cl. 264—571 15 Claims



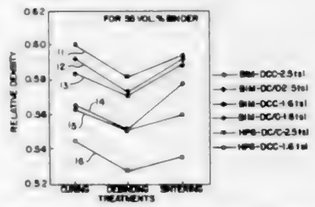
1. A method for vacuum molding of large objects of synthetic resin in a dismountable mold, said method comprising the steps of:
introducing a synthetic resin made up of a monomer and a hardening agent into a cavity within a dismountable mold, said cavity being under a vacuum, wherein said monomer and hardening agent are introduced into the cavity in at least at one position, said at least one position situated initially in a lower portion of said cavity; and
successively moving said at least one position upward at such a speed that said at least one position is located just below a surface of said monomer and hardening agent as they are introduced into said cavity and their level rises within said cavity.

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METHOD OF MOLDING METAL PARTICLES

Ihab L. Kamel, Drexel Hill; Alan Lawley, Wynnewood, both of Pa., and Myung-Ho Kim, Kyung-Nam, Rep. of Korea, assignors to Drexel University, Philadelphia, Pa.

Filed Feb. 26, 1992, Ser. No. 841,682
Int. Cl.[5] B22F *3/12*
U.S. Cl. 419—36 22 Claims



1. A method for molding metal particles, comprising the steps of:
a. mixing metal particles with a polyorganic acid to form a generally flowable mixture, said polyorganic acid having the general formula:

$$R-\overset{O}{\overset{\|}{C}}-OH,$$

wherein R is a long chain polymer having organic groups selected from aliphatic and aromatic, and said polyorganic acid being one which will chemically react with said metal particles;
b. transferring said flowable mixture to a mold before the chemical reaction between said metal particles and said polyorganic acid proceeds so far as to substantially increase the viscosity of said flowable mixture;
c. applying pressure to said flowable mixture in said mold to form a preform;
d. heating said preform to a first temperature to vaporize substantially all of the non-organic components of the reacted polyorganic acid from said preform; and
e. heating said preform to a second temperature greater than said first temperature to sinter said metal particles.

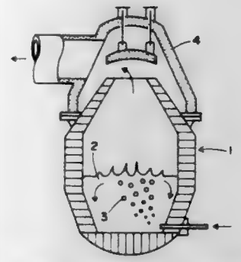
5,328,658

METHOD OF REFINING CHROMIUM-CONTAINING STEEL

Osamu Egawa; Yoshihiro Naito, and Hitoshi Sakuma, all of Shibukawa, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 4, 1993, Ser. No. 101,730
Int. Cl.[5] C21C *7/10, 5/34*
U.S. Cl. 420—71 5 Claims

1. A method of refining chromium-containing steel by blowing gas into the molten steel in a refining vessel through a tuyere installed at the bottom of the vessel for decarburization, comprising: blowing mixed gas of a non-oxidizing gas and oxygen under atmospheric pressure until the carbon concentration in the molten steel decreases to 0.15% (by weight) or less, and after the carbon concentration decreased below this value, adding a reducing agent in an amount equal to or less of the theoretical amount necessary for reducing chromium oxides in the molten steel, decreasing the pressure in the refining vessel to 150–20 Torr, and using only the non-oxidizing gas as the blown gas in an amount of 0.2–0.5 Nm^3/min. per ton-steel under vacuum.



5,328,659

SUPERALLOY HEAT TREATMENT FOR PROMOTING CRACK GROWTH RESISTANCE

Thomas D. Tillman; John M. Robertson, and Arthur R. Cox, all of Jupiter, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 434,654, Oct. 15, 1982, abandoned. This application May 10, 1985, Ser. No. 733,446
Int. Cl.[5] C22C *19/05*
U.S. Cl. 420—448 7 Claims

6. A heat treated superalloy article consisting essentially of 12.4% chromium, 18.5% cobalt, 4.3% titanium, 5.0% aluminum, 3.2% molybdenum, 0.07% carbon, 0.8% vanadium, 0.06% zirconium, 0.02% boron, balance nickel, having a grain size of 20–90 microns, and containing a triplex distribution of gamma prime particles with about 6% by volume having a size of about 2–4 microns, about 40% by volume having a size of about 0.7–0.9 microns and about 54% by volume having a size of less than about 0.2 micron.

7. A superalloy article heat treated according to claim 1.

5,328,660

LEAD-FREE, HIGH TEMPERATURE, TIN BASED MULTI-COMPONENT SOLDER

Stephen G. Gonya; James K. Lake, both of Endicott, N.Y.; Randy C. Long, Friendsville, Pa., and Roger N. Wild, Owego, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1993, Ser. No. 79,111
Int. Cl.[5] C22C *13/00*
U.S. Cl. 420—562 1 Claim

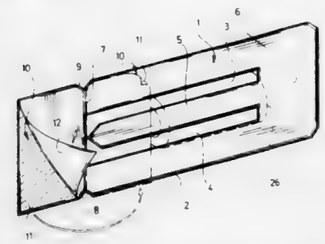
1. A high solidus temperature, high service temperature, high strength multi-component solder alloy consisting essentially of 78.4 weight percent Sn, 2.0 weight % Ag, 9.8 weight % Bi, and 9.8 weight % In.

5,328,661

SEAL FOR A STERILIZING CONTAINER

Wolfgang Taschner, Tuttlingen, Fed. Rep. of Germany, assignor to Aesculap AG, Tuttlingen, Fed. Rep. of Germany

PCT No. PCT/EP91/01265, § 371 Date Mar. 5, 1992, § 102(e) Date Mar. 5, 1992, PCT Pub. No. WO92/01480, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 6, 1991, Ser. No. 838,427
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1990, 4022952
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—56 5 Claims



1. In combination:
a sterilizing container having a lower part, a cover sealingly placeable on said lower part and a closure means for securing said cover on said lower part, and
a seal constructed and arranged to secure said closure means in a closed position, said seal comprising:
an insert element extending from a connector member and having a free end insertable into a loop of said closure means; and
a contact adhesive on a region of said connector member adjacent to said free end, said region being foldable along a fold line onto said free end to enable said contact adhesive to form an unreleasable seal between said contact adhesive region and the free end of said insert element that is inserted into and extends beyond said loop;
wherein said insert element is separated along a length thereof from said connector member by two parallel slits that extend to said fold line and are connected with one another in a region between said free end and said fold line.

5,328,662

INSTALLATION FOR CARRYING OUT SEVERAL SUCCESSIVE CHEMICAL REACTIONS IN THE SAME CONTAINER

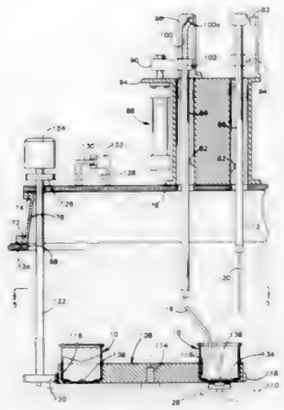
Gilbert Ringot, Querqueville, and Pierre Digard, Touvlaville, both of France, assignors to Cogema-Compagne Generale Des Matieres Nucleaires, France

Filed Sep. 9, 1992, Ser. No. 942,295
Claims priority, application France, Sep. 10, 1991, 91 11144
Int. Cl.[5] G01N *35/00*
U.S. Cl. 422—63 12 Claims

1. Apparatus for performing several successive chemical reactions within a single container, comprising:
a working station adapted to receive the container,
at least two chemical reactant arrival tubes, each tube having a first end issuing above the working station and an opposite, second end immersed in a distribution drum containing a chemical reactant,
control means for moving the first end of each tube between an upper, inactive position and a lower, reactant injection position,
cam means for displacing the first end of at least one of said tubes in a lateral direction with respect to said container upon actuation of said control means such that the first end is placed in the container when the said at least one

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tube is in the lower, reactant injection position, and is laterally displaced by the cam means with respect to the



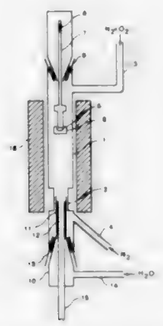
container upon movement of the said at least one tube toward the upper, inactive position by the control means.

5,328,663

APPARATUS FOR THE TRAPPING OF REACTION PRODUCTS

Woodfin V. Ligon, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 7, 1993, Ser. No. 57,907
Int. Cl.[5] G01N *31/12*
U.S. Cl. 422—78 **16 Claims**



1. Apparatus for trapping reaction products, said apparatus comprising:

(I) a vertical external tube having an upper and lower end and having a region of decreased diameter;

(II) heat-resistant sample-containing means for holding a decomposition sample above said region of decreased diameter, said sample-containing means being sealably connected to the upper end of said external tube;

(III) sample displacement means for moving said sample vertically in said external tube in locations above said region of decreased diameter;

(IV) heating means for heating said external tube including said region of decreased diameter, and said sample-containing means to a sample decomposition temperature;

(V) first gas inlet means for supplying a first gas to the upper end of said external tube;

(VI) second gas inlet means for supplying an inert shield gas to the lower end of said external tube below said region of decreased diameter; and

(VII) trapping means for trapping reaction products, comprising:

(A) an outer tube having an inner surface and sealably connected to the lower end of said external tube, and an upper end of said outer tube being located in said region of decreased diameter;

(B) an inner concentric tube in said outer tube, an upper end of said inner tube being at a lower level than that of said outer tube;

(C) water supply means providing an upward-moving stream of flush water in said outer tube at a flow rate sufficient to maintain contact with substantially the entire inner surface of said outer tube and then to flow into said inner tube;

(D) a collection vessel communicating with the lower end of said inner tube; and

(E) vacuum means attached to said collection vessel to receive said first and shield gases.

5,328,664

PREPACKAGED FLUID TEST SYSTEM FOR DETERMINING LEVELS OF A SUBSTANCE

Jacques Ponsy, Ancien Chemin de Saint Privat, 34150 Arboras, France

Filed Sep. 24, 1992, Ser. No. 950,874
Claims priority, application France, Sep. 24, 1991, 91 12272
Int. Cl.[5] G01N *31/22, 21/29*
U.S. Cl. 422—84 **7 Claims**



1. A device for determining the level of a predetermined substance in a predetermined volume of a fluid, the device comprising:

an inner tube having a pair of ends;

a mass in the inner tube of a material that changes properties when exposed to the substance in the fluid, whereby when the fluid passes through the mass the material changes by producing a color change;

an outer protective tube surrounding the inner tube and having an open end juxtaposed with one of the ends of the inner tube;

a frangible seal sheet covering the open outer-tube end;

a test element having a pair of ends one of which has means for piercing through the frangible sheet and means for frictionally fitting an inner diameter of the test element with an outer diameter of the inner tube; and

a balloon mounted on the other end of the test element,

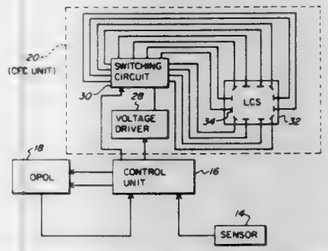
whereby upon engagement of the fitting means of the test member with the inner tube, the piercing means simultaneously cuts the fringible seal sheet allowing the inner tube to be pulled back out from the outer tube.

5,328,665

METHOD AND APPARATUS FOR CONTROLLING A COMBUSTION PROCESS

Allen R. Geiger, Las Cruces, N. Mex., assignor to LaSen, Inc, Las Cruces, N. Mex.

Filed Aug. 25, 1992, Ser. No. 935,530
Int. Cl.[5] F02P *23/00*
U.S. Cl. 422—105 **31 Claims**



1. An apparatus for controlling a combustion process comprising:

a laser source including an output coupled to at least one combustion chamber for directing radiating into the at least one combustion chamber to induce molecular excitation of a fuel mixture prior to ignition of the fuel mixture within the combustion chamber; and

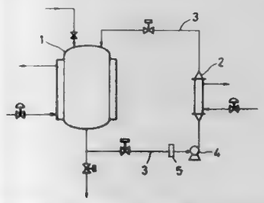
a control unit coupled to the laser source and controlling an output of the laser source to emit at least one predetermined wavelength of radiation within an absorption band of at least one molecule of the fuel mixture which induces a piurality of the at least one molecules into a state of rotational and vibrational excitation prior to ignition of the fuel mixture.

5,328,666

POLYMERIZING APPARATUS

Tadashi Amano, Kamisu, and Shuji Ohnishi, Hasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1993, Ser. No. 4,567
Claims priority, application Japan, Jan. 14, 1992, 4-024420
Int. Cl.[5] B01J *8/00*
U.S. Cl. 422—138 **8 Claims**



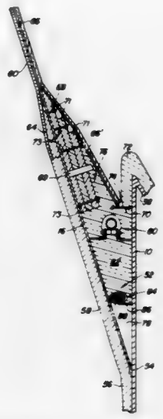
1. In a polymerizing apparatus which comprises a polymerization vessel for polymerization which is carried out in an aqueous medium and a circulating line comprising a heat exchanger installed outside said polymerization vessel and a circulating pipeline extending from said polymerization vessel and returning to said polymerization vessel through said heat exchanger, the improvement comprising a strainer installed in the course of said circulating pipeline, wherein said circulating pipeline extends from a bottom of the polymerization vessel to an inlet of said heat exchanger, and wherein said strainer is installed in the course between the bottom of said polymerization vessel and the inlet of said heat exchanger, further wherein said strainer comprises a filter having smooth surfaces with openings attached to the inside of said strainer.

5,328,667

ATTACHMENT FOR SECURING HIGH TEMPERATURE INTERNALS TO REFRACTORY LINED PRESSURE VESSELS

Daniel R. Johnson, Schaumburg, Ill., assignor to UOP, Des Plaines, Ill.

Filed Aug. 3, 1992, Ser. No. 923,773
Int. Cl.[5] B01J *8/18;* **F27B** *15/00*
U.S. Cl. 422—143 **10 Claims**



1. A vessel and partition for containing particulate material comprising:

(a) a vessel wall that extends upwardly;

(b) a partition extending upwardly wherein a portion of said partition is fixed to a circumferential section of the inside of said vessel wall;

(c) a chamber having an annular form at least partially defined by a portion of the inside of said vessel wall and the outside of said partition; and

(d) means located at the top of said chamber for blocking the entry of particulate material into said chamber and for permitting gas flow into said chamber, said means comprising a sheet of gas permeable flexible mesh extending circumferentially about the top of said chamber with one side fixed with respect to said vessel wall and an opposite side fixed with respect to said partition.

5,328,668

SYNTHESIS OF SEMICONDUCTOR GRADE TUNGSTEN HEXAFLUORIDE

Bruce J. Sabacky, Westminster, and Robert E. Doane, Springs, both of Colo., assignors to Bandgap Chemical Corporation, Longmont, Colo.

Division of Ser. No. 476,232, Feb. 7, 1990. This application May 24, 1990, Ser. No. 528,716
The portion of the term of this patent subsequent to Oct. 12, 2009, has been disclaimed.
Int. Cl.[5] F28D *7/00*
U.S. Cl. 422—235 **1 Claim**

1. A closed reactor system particularly adapted for reacting metallic tungsten with fluorine, comprising: a reservoir for holding liquid tungsten hexafluoride; a vaporizer for vaporizing liquid tungsten hexafluoride from said reservoir; heat supply means for supplying heat to said vaporizer; a pump for mixing gaseous fluorine with tungsten hexafluoride vapor; fluorine supply means coupled to said pump; reactor means for containing particular tungsten for reaction with fluorine delivered thereto from said pump; cooler means for cooling gaseous products from said reactor; condenser means coupled to said cooler means, means leading from said condenser means to said

reservoir; product collector means for collect liquid tungsten hexafluoride overflowing said reservoir; and bypass means



between said condenser and said pump to bypass said reservoir and said vaporizer with non-condensable gases from said condenser

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5,328,669

EXTRACTION OF PRECIOUS METALS FROM ORES AND OTHER PRECIOUS METAL CONTAINING MATERIALS USING HALOGEN SALTS

Kenneth N. Han, and Xinghui Meng, both of Rapid City, S. Dak., assignors to South Dakota School of Mines and Technology, Rapid City, S. Dak.

Filed Jan. 26, 1993, Ser. No. 9,177

The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.

Int. Cl.[5] **C01G** *3/14*

U.S. Cl. 423—32 **22 Claims**

1. A method for the extraction of precious metals by a leaching process comprising the steps of:

I. charging to a reaction zone:

A. precious-metal bearing materials; and

B. water, either a halide, an elemental halogen or a mixture thereof, and ammonium ions as a leaching solution to form a charged reaction zone;

II. heating the charged reaction zone to a temperature of about 50° C. to about 300° C. under oxidizing conditions at a pressure of from about 30 psig to about 1300 psig for a time sufficient to leach the precious metals from the precious-metal ore thereby producing a slurry containing a precious-metal-ion-solution;

III. separating the precious-metal-ion-solution from the slurry; and

IV. recovering the precious metals from the precious-metal-ion-solution.

5,328,670

METHOD OF TREATING NICKEL-CONTAINING ETCHING WASTE FLUID

Teruhiko Hirabayashi; Yoshiyuki Imagire; Toshiaki Kurihara; Eiichi Akiyoshi, and Ryoichi Maekawa, all of Tokyo, Japan, assignors to Nittetu Chemical Engineering, Ltd., Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Mar. 20, 1992, Ser. No. 854,565

Claims priority, application Japan, Mar. 22, 1991, 3-130771; Mar. 22, 1991, 3-130772; Dec. 20, 1991, 3-361104

Int. Cl.[5] **C01G** *49/10, 53/09*

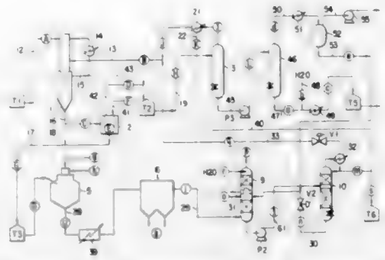
U.S. Cl. 423—140 **9 Claims**

1. A method of regenerating an etching waste fluid containing $NiCl_2$, $FeCl_3$, and $FeCl_2$ and being obtained by etching Ni or an Ni alloy with an etching solution comprising an aqueous solution of $FeCl_3$, comprising the steps of:

(a) dissolving HCl gas in the etching waste fluid at a temperature range of 20° C. to 50° C. to thereby form $NiCl_2$ and $FeCl_2$ crystals;

(a1) separating out the $NiCl_2$ and $FeCl_2$ crystals from the etching waste fluid thereby producing a mother liquor;

(b) distilling the mother liquor at atmospheric pressure to reduce an HCl concentration in the mother liquor; and



(c) distilling, at a reduced pressure, the mother liquor concentrated in step b to further reduce the HCl concentration, thereby obtaining an aqueous solution containing $FeCl_3$.

5,328,671

HEAT AND MASS TRANSFER

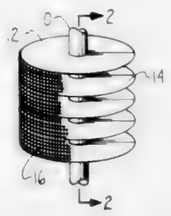
Uwe Rockenfeller, Boulder City, Nev., assignor to Rocky Research, Boulder City, Nev.

Continuation-in-part of Ser. No. 320,562, Mar. 8, 1989, abandoned. This application Aug. 14, 1992, Ser. No. 931,036

The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.

Int. Cl.[5] **C01B** *17/04;* **C01C** *1/02*

U.S. Cl. 423—210 **29 Claims**



1. A method of increasing reaction rates in a chemisorption reaction process in which a polar gas is repeatedly alternately absorbed and desorbed on a complex compound formed by adsorbing said polar gas on a metal salt, said complex compound capable of having a first density if allowed to expand without restriction during said adsorption, said method comprising:

controlling the volumetric expansion of said complex compound formed during at least the initial adsorption reaction of said polar gas on said metal salt to form at least a partially structurally immobilized, self-supporting, coherent, reaction product mass having a second density and capable of increased reaction rates in which the number of moles of gaseous reactant adsorbed and/or desorbed per mole of said salt, per hour, is increased as compared to a complex compound formed without controlling said volumetric expansion and carrying out said chemisorption reaction process using said complex compound having said second density at said increased reaction rates.

5,328,672

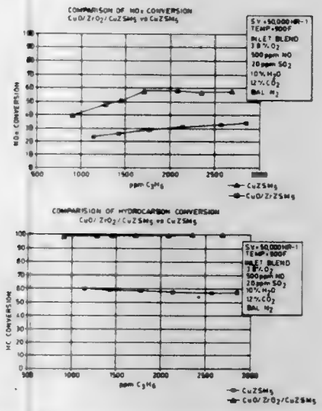
METHOD FOR PURIFICATION OF LEAN-BURN ENGINE EXHAUST GAS

Clifford Montreuil, Dearborn; Haren S. Gandhi, Farmington Hills, and Mohinder S. Chattha, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 753,780, Sep. 3, 1991, Pat. No. 5,155,077. This application Apr. 27, 1992, Ser. No. 874,315

Int. Cl.[5] **B01D** *47/00;* **B01J** *8/02;* **C01B** *21/00, 31/18*

U.S. Cl. 423—212 **2 Claims**



1. A method of treating automotive exhaust gases to remove NO_x, CO, and HC, comprising:

(i) operating an internal combustion engine to produce an exhaust gas having a NO_x, CO, and no less than 1500 ppm HC content;

(ii) exposing a dual-phase catalyst to substantially the entire through-flow of said exhaust as at a space velocity 20–60 K hr^{-1} to obtain NO_x conversion efficiency of at least 50% and an HC conversion efficiency of at least 98%, said dual phase catalyst comprising a first phase consisting of copper containing zirconium oxide, and the second phase consisting of a zeolite that is ion-exchanged with copper, said first phase having zirconia present in an amount of 0.1–20% by weight of the catalyst and ion-exchanged copper being present in said second phase in an amount of at least 3% up to a maximum determined by the SiO_2/Al_2O_3 ratio of the zeolite.

5,328,673

PROCESS FOR REMOVAL OF NO_x AND SO_x OXIDES FROM WASTE GASES WITH CHLORIC ACID

Jerry J. Kaczar, Cleveland, Tenn.; Steven A. Iacoviello, Naugatuck, Conn., and Budd L. Duncan, Athens, Tenn., assignors to Olin Corporation, Stamford, Conn.

Filed Nov. 23, 1992, Ser. No. 980,075

Int. Cl.[5] **C01B** *21/00, 17/00*

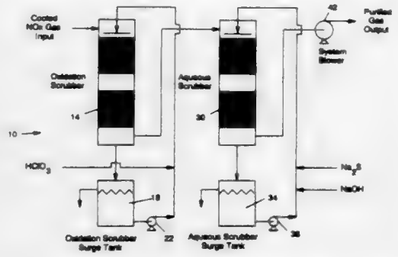
U.S. Cl. 423—235 **17 Claims**

1. A process for removing either NO_X oxides, or SO_X oxides or mixtures thereof from a gaseous stream comprising:

(a) contacting a gaseous stream containing either NO_X oxides, or SO_X oxides or mixtures thereof in an oxidizing scrubber with an aqueous oxidation solution consisting essentially of chloric acid or a mixture of chloric acid and alkali metal chlorate at about 0° C. to about 100° C. for sufficient time to oxidize any oxidizable species of said NO_X oxides and SO_X oxides, said chloric acid feed concentration being from about 0.05% to about 50% by weight of said aqueous oxidization solution and said aqueous oxidation solution being substantially free of other cationic and anionic impurities;

(b) separating said oxidized gaseous stream from said aqueous oxidation solution which contains nitric acid, sulfuric acid or mixtures thereof found from said oxidation of said oxidizable NO_X and SO_X oxides;

(c) contacting said oxidized gaseous stream in an aqueous scrubber with an aqueous solution selected from the group consisting of water, an aqueous solution of an alkaline



compound or an aqueous solution of a sulfur-based reducing agent for sufficient time to remove substantially all of the NO_X oxides, SO_X oxides or mixtures thereof from said oxidized gaseous stream; and

(d) separating said oxidized gaseous stream which is substantially free of said NO_X oxides, SO_X oxides or mixtures thereof from said aqueous solution.

5,328,674

COMBUSTION GAS DESULFURIZATION METHOD

Gérard Martin, Rueil Malmaison, and Jean-Louis Bouju, Luzarches, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison and Babcock Entreprise, La Courneuve, both of France

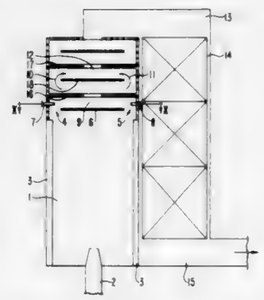
PCT No. PCT/FR91/00914, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO92/09356, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 19, 1991, Ser. No. 915,697

Claims priority, application France, Nov. 27, 1990, 90 14918

Int. Cl.[5] **B01J** *8/00;* **C01B** *17/00*

U.S. Cl. 423—244.07 **8 Claims**



1. A process for desulfurizing combustion gas wherein solid particles of a desulfurizing agent are injected into a combustion gas and wherein said desulfurizing agent comprises oxides, hydroxides or carbonates of alkaline earth metals, said process comprising the following stages:

(a) fractionating a stream of the combustion gas into at least two gas streams;

(b) introducing solid particles of the desulfurizing agent into each one of the at least two streams;

(c) directing streams containing particles of the desulfurizing agent suspended in the combustion gas resulting from

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stage (b) towards one another, in order to cause meeting of the streams and mixing thereof in a mixing zone;
(d) discharging a resulting mixture of gas and of particles of the desulfurizing agent from said mixing zone to another zone;
(e) fractionating the discharged mixture in said another zone into at least two additional streams, each additional stream being formed by combustion gas and particles of the desulfurizing agent;
(f) directing the streams resulting from stage (e) towards one another in order to cause the meeting of the streams and mixing thereof; and
(g) fractionating the mixture resulting from stage (f) into a gas, at least partially desulfurized, and into sulfur-enriched particles of said desulfurizing agent; the size of the particles of the desulfurizing agent ranging from 1 to 100 micrometers, the rate of flow of the streams meeting in stage (c) ranging from 10 to 80 m/s and the combustion gas resulting from combustion of a sulfur-containing fuel.

5,328,675

TRANSITION-METAL-ALUMINOSILICATE HYDROCARBON CONVERSION CATALYSTS HAVING AN L TYPE STRUCTURE, ECR-22-D

David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 746,263, Aug. 15, 1991, Pat. No. 5,185,138, which is a continuation of Ser. No. 554,627, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 281,862, Dec. 5, 1988, abandoned, which is a continuation of Ser. No. 14,206, Feb. 4, 1987, abandoned, which is a continuation of Ser. No. 763,650, Aug. 8, 1985, abandoned. This application Feb. 1, 1993, Ser. No. 11,913

The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.

Int. Cl.[5] **C01B** *33/26*

U.S. Cl. 423—328.2 **21 Claims**

1. A crystalline microporous transition-metal-aluminosilicate having a structure substantially isostructural with L aluminosilicate zeolite and wherein a portion of Ni, Co, Zn or mixtures thereof is in the tetrahedral position of the transition-metal-aluminosilicate.

5,328,676

CONVERSION OF FULLERENES TO DIAMOND

Dieter M. Gruen, 1324 59th St., Downers Grove, Ill. 60515

Continuation of Ser. No. 797,590, Nov. 25, 1991, Pat. No. 5,209,916. This application Dec. 22, 1992, Ser. No. 995,456

Int. Cl.[5] **C01B** *31/06*

U.S. Cl. 423—446 **3 Claims**

1. A method of forming synthetic hydrogen defect free diamond film on a substrate surface having an initial coating selected from the group consisting of fullerene and diamond, comprising the steps of:
(a) supplying a source of fullerenes with each fullerene molecule consisting of carbon-carbon bonds;
(b) creating a vapor of said fullerenes with each fullerene molecule consisting of carbon-carbon bonds from said source of fullerenes;
(c) providing energy to fullerene molecules in said vapor of fullerenes capable of forming fullerene ions with each of said fullerene molecules consisting of carbon-carbon bonds;
(d) energizing said fullerene ions to energies of at least about 250 eV sufficient to enable fragmentation of said fullerene ions consisting of carbon-carbon bonds;
(e) contacting said energized fullerene ions consisting of carbon-carbon bonds with said coating substrate surface; and
(f) continuing said steps (a)–(e) to grow said hydrogen defect free diamond film on said coated substrate surface.

5,328,677

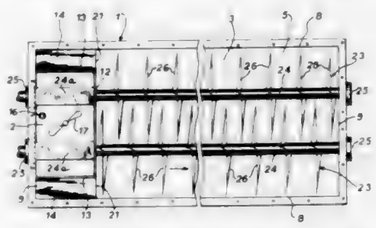
RECOVERY OF SULFIDES FROM TANNERY WASTE LIQUOR

Richard G. Waite, Shorewood, and Paul R. Erickson, Glendale, both of Wis., assignors to PVL Limited Partnership I, Milwaukee, Wis.

Filed Jun. 17, 1992, Ser. No. 900,055

Int. Cl.[5] **C01B** *17/32, 17/22;* **C14C** *1/08;* **C02F** *1/20*

U.S. Cl. 423—560 **22 Claims**



1. A process for treating waste sulfide liquor from a hide tanning operation, comprising the step of introducing a waste sulfide liquor containing lime into a closed vessel, adjusting the pH of the liquor in a first zone of said vessel to a value less than 5.5, discharging the liquor from said first zone to a second zone of said vessel, engaging the liquor in said second zone with a plurality of rotating conveyor discs to agitate and advance said liquor in a downstream direction in said second zone and effect release of hydrogen sulfide gas, maintaining the liquor in said second zone at a level beneath the upper extremities of said discs so that the upper portions of the discs are exposed, drawing a vacuum in said vessel to draw said hydrogen sulfide gas from said second zone to a third zone of said vessel, contacting the hydrogen sulfide gas in said third zone with an aqueous sodium hydroxide solution to form sodium sulfhydrate and/or sodium sulfide, and discharging the sodium sulfhydrate and/or sodium sulfide from said third zone.

5,328,678

COMPOSITION AND METHOD OF USE FOR LIPOSOME ENCAPSULATED COMPOUNDS FOR NEUTRON CAPTURE TUMOR THERAPY

Gary Fujii, Torrance; Paul G. Schmidt, San Marino, and Ronald C. Gamble, Altadena, all of Calif., assignors to Vestar, Inc., San Dimas, Calif.

Continuation of Ser. No. 414,589, Sep. 26, 1989, abandoned, which is a continuation of Ser. No. 116,764, Nov. 4, 1987, abandoned. This application Dec. 28, 1992, Ser. No. 998,886

Int. Cl.[5] **A61K** *43/00, 9/133*

U.S. Cl. 424—1.21 **16 Claims**

1. Neutron capture therapy agents to deliver a compound to a tumor, comprising small unilamellar liposomes having an average diameter of from about 30 to about 200 nm, said liposomes encapsulating a compound at a concentration of greater than 250 mM, said compound containing an element which has a large neutron cross-section and is capable of forming an isotope which emits an alpha particle from within said liposomes when bombarded with neutrons, which liposomes are stable against leakage and destruction.

5,328,679

METHODS FOR TECHNETIUM/RHENIUM LABELING OF PROTEINS

Hans J. Hansen, Mystic Island; Gary L. Griffiths, Morristown, and Anastasia Lentine-Jones, Clinton, all of N.J., assignors to Immunomedics, Inc., Warren, N.J.

Continuation-in-part of Ser. No. 408,241, Sep. 18, 1989, abandoned, Ser. No. 392,280, Aug. 10, 1989, Pat. No. 5,128,119, Ser. No. 364,373, Jun. 12, 1989, abandoned, and Ser. No. 176,421, Apr. 1, 1988, Pat. No. 5,061,641. This application Sep. 17, 1991, Ser. No. 760,466

Int. Cl.[5] **A61K** *49/02, 43/00, 39/395;* **C07K** *15/28*

U.S. Cl. 424—1.49 **33 Claims**

1. A method for radiolabeling a protein with the Tc-99m radioisotope of technetium, comprising the steps of contacting a solution of about 0.1–5 mg/ml of an antibody or antibody fragment containing a plurality of adjacent free sulfhydryl groups with about 0.5–25 μg/ml of stannous ions under an inert gas atmosphere, storage of the reduced antibody or antibody fragment under oxygen-free conditions, and then reacting with Tc-99m-radiopertechnetate, in the absence of a transchelator, and recovering radiolabeled protein.

9. A method for radiolabeling a protein with substantially carrier-free Re-188 perrhenate, comprising the steps of contacting a solution of about 1–20 mg/ml of an antibody or antibody fragment containing a plurality of adjacent free sulfhydryl groups with about 100–10,000 μg/ml of stannous ions under an inert gas atmosphere, storage of the reduced antibody or antibody fragment under oxygen-free conditions, and then with about 10–500 mCi of substantially carrier-free Re-188, and recovering radiolabeling protein.

5,328,680

CONTRAST MEDIA COMPRISING A NON-IONIC CONTRAST AGENT WITH LOW LEVELS OF SODIUM & CALCIUM IONS

Torsten Almen; Lars Baath, both of Malmö , Sweden; Per Jynge, Trondheim, and Audun N. Oksendal, Oslo, both of Norway, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/EP91/00425, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/13636, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 7, 1991, Ser. No. 923,926

Claims priority, application European Pat. Off., Sep. 3, 1990, 90200580.0; United Kingdom, Sep. 14, 1990, 9020091.6

Int. Cl.[5] **A61K** *49/04*

U.S. Cl. 424—5 **12 Claims**

1. A contrast medium composition comprising a physiologically tolerable aqueous carrier medium with dissolved therein: a non-ionic contrast agent; a physiologically tolerable sodium compound providing a sodium ion concentration of 15 to 75 mM Na; a physiologically tolerable calcium salt providing a calcium ion concentration of 0.05 to 0.8 mM Ca; and optionally also at least one salt selected from physiologically tolerable potassium and magnesium salts, the total concentration of said 2 mM K; wherein the ratio of sodium to calcium ions is greater than 55.

5,328,681

COMPOSITION COMPRISING MAGNETIC METAL OXIDE ULTRAFINE PARTICLES AND DERIVATIZED POLYSACCHARIDES

Kyoji Kito, Nagoya; Hideo Nagae, Kasugai; Masakatsu Hasegawa, Nagoya; Yoshio Ito, Nagoya; Akihiro Mizutani, Nagoya; Kimio Hirose, Gifu; Yasuji Yamashita, Nagoya; Nahoko Tozawa, Seto; Keiko Yamada, Ogaki; Masahiro Ohgai, Nagoya, and Shusaburo Hokukoku, Kani, all of Japan, assignors to Meito Sangyo Kabushiki Kaisha, Nagoya, Japan

PCT No. PCT/JP92/00031, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO92/12735, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 17, 1992, Ser. No. 934,637

Claims priority, application Japan, Jan. 19, 1991, 3-019512

Int. Cl.[5] **A61B** *5/055;* **A61K** *37/10, 31/715*

U.S. Cl. 424—9 **21 Claims**

1. A composition containing magnetic metal oxide ultrafine particles, which comprises
(A) an aqueous sol of a complex of the magnetic metal oxide ultrafine particles with at least one polysaccharide derivative selected from the group consisting of carboxy polysaccharides and carboxyalkyl ethers of polysaccharides; and
(B) a water-soluble monocarboxylic acid having no more than 10 carbon atoms.

5,328,682

MOUTHWASH

John H. Pullen; Rabinder Singh, and Kathryn A. Phillips, all of Nottinghamshire, England, assignors to Boots Company plc, England

PCT No. PCT/EP91/01986, § 371 Date Apr. 21, 1993, § 102(e) Date Apr. 21, 1993, PCT Pub. No. WO92/07547, PCT Pub. Date May 14, 1992

PCT Filed Oct. 19, 1991, Ser. No. 39,392

Int. Cl.[5] **A61K** *7/16*

U.S. Cl. 424—49 **23 Claims**

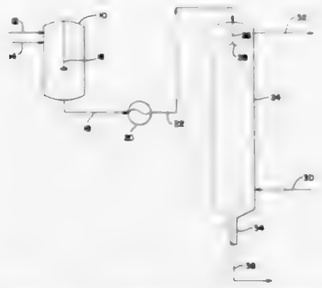
1. An abrasive mouthwash composition which comprises
a) 0.1 to 50% by weight of dentally acceptable abrasive;
b) 0.01 to 5% by weight of synthetic or natural clay;
c) 0.1 to 5% by weight of surfactant; and
d) at least 45% of a liquid carrier,
in the form of a pourable suspension having a viscosity (Brookfield) of 1–2000 cps,
said liquid carrier having an emulsion or micro-emulsion of levels of flavoring agents having a high flavor impact, and containing at least 5% by weight water, at least 5 percent by weight of humectant selected from the group consisting of glycerin, sorbitol, propylene glycol, polyethylene glycol and mixtures thereof, up to 5% by weight silicone oil, up to 35% by weight of alcohol, said clay suspending agent maintaining said solid abrasive particles in a substantially physically stable pourable mouthwash during storage, without over-thickening, said pourable abrasive mouthwash having a mildly abrasive action on the teeth when rinsed around in the mouth, when used with or without a toothbrush, or as a pre- or post-brushing rinse with the toothbrush, said abrasive in said composition having an radioactive dentine abrasion value (RDA) of about 30 to 200.

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5,328,683
WATER REPELLENT AND METHOD OF PREPARATION
Asao Harashima, Tokyo, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan
Division of Ser. No. 19,413, Feb. 18, 1993. This application Jul. 6, 1993, Ser. No. 85,809
Claims priority, application Japan, Feb. 28, 1992, 4-079050
Int. Cl.[5] A61K *7/021*
U.S. Cl. 424—63 **4 Claims**

1. A cosmetic foundation comprising a wax, a liquid paraffin, a dimethylpolysiloxane, and a water repellent powder made by (i) mixing a powdered material with an organic solvent solution of a triorganosiloxy silicic acid having the formula $(R_3SiO_{1/8})_2nSiO_2$ in which R is a monovalent hydrocarbon radical selected from the group consisting of alkyl, aryl, and alkenyl; and n is an integer having a value of one to five; the triorganosiloxy silicic acid being present in an amount of from 0.1 to 20 parts by weight per one hundred parts by weight of the powdered material; the triorganosiloxy silicic acid being prepared by reacting water glass and a hexaorganodisilizane with heating in an aromatic solvent/water mixture followed by extractive drying; and (ii) removing the solvent.

5,328,684
FLAVORING, FRAGANCE, SKIN TEXTURIZING AND DEODORANT MATERIALS AND METHOD OF MAKING SAME
Robert D. Morgan, and Peter A. Blagdon, both of Paris, Ill., assignors to Morgan Food Products, Inc., Paris, Ill.
Division of Ser. No. 297,402, Jan. 17, 1989, Pat. No. 5,223,260. This application Feb. 26, 1993, Ser. No. 24,192
Int. Cl.[5] A61K *7/02, 7/035*
U.S. Cl. 424—69 **10 Claims**



1. A method of manufacturing an encapsulated fragrance material consisting essentially of the steps of:
a. melting a water soluble, nonharmful carrier material selected from the group consisting of polyethylene glycol and polyoxyalkene glycols having an average molecular weight of between about 4,000 and about 15,000, which carrier is solid at room temperature;
b. dispersing within the melted carrier, formed in step a, a fragrance to produce a dispersed melt;
c. transporting said dispersed melt to a nozzle positioned within a chamber and spraying said dispersed melt through said nozzle, said chamber being cooled by flowing a non-reactive gas therethrough, the temperature of said gas, as said gas enters said chamber, being less than the melting temperature of said carrier;
d. solidifying said dispersed melt by contacting said dispersed melt with said gas flowing through said chamber; and
e. recovering the solid fragrance material formed by step d.

5,328,685
CLEAR CONDITIONING COMPOSITION
Ben Janchitraponvej, Niles; William J. Brown, Flossmoor, and Patricia Lee, Chicago, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.
Filed Mar. 30, 1993, Ser. No. 40,116
Int. Cl.[5] A61K *7/075*
U.S. Cl. 424—71 **19 Claims**

1. A clear hair conditioning composition comprising:
(a) about 0.4% to about 15% by weight of an amidoamine salt, wherein the amidoamine salt comprises:
(i) an amidoamine compound having a general structure:



or a mixture thereof, wherein R_1 is a fatty acid chain containing from about 11 to about 21 carbon atoms; R_2 is an alkylene group containing from two to about four carbon atoms; R_3 is hydrogen, a methyl group, an ethyl group or a hydroxyalkylene group containing from one to about three carbon atoms; R_4 is a methyl group, an ethyl group or a hydroxyalkylene group containing from one to about three carbon atoms; and Y is an organic heterocyclic nitrogen-containing moiety, and
(ii) a sufficient amount of a suitable acid to neutralize the amidoamine compound and provide a composition pH of about 4 to about 7;
(b) about 0.1% to about 5% by weight of a silicone compound having at least one quaternary ammonium moiety; and
(c) an aqueous carrier,
wherein the amidoamine compound is present in a sufficient amount to provide a clear composition, and
wherein the amidoamine compound and the silicone compound are present in a weight ratio of amidoamine compound to silicone compound of at least about 2.8 to 1.

5,328,686
TREATMENT OF ACNE OR OF PSEUDOFOLLICULITIS BARBAE
Douglas Shander, 16112 Howard Landing Dr., Gaithersburg, Md. 20878; F. Eugene Harrington, 652 Fearrington Post, Fearrington Village, N.C. 27312, and Mary C. Whitmore, 1 Vista Ave., Lynchburg, Va. 24503
Filed Oct. 30, 1991, Ser. No. 785,032
Int. Cl.[5] A61K *7/00, 31/13*
U.S. Cl. 424—73 **4 Claims**

1. The process of treating acne in a patient, which comprises applying to an affected area of skin of a patient suffering from acne a composition comprising a non-toxic pharmacologically acceptable vehicle and an inhibitor of the enzyme ornithine decarboxylase in an amount effective to treat acne.

5,328,687
BIOCOMPATIBLE MONOMER AND POLYMER COMPOSITIONS
Jeffrey C. Leung, and Jeffrey G. Clark, both of Raleigh, N.C., assignors to Tri-Point Medical L.P., Raleigh, N.C.
Filed Mar. 31, 1993, Ser. No. 40,618
Int. Cl.[5] A61K *31/74, 9/14;* **C08F** *120/44, 222/34*
U.S. Cl. 424—78.35 **16 Claims**

1. A biocompatible monomer composition, comprising:
A. at least one monomer of the formula:

$$CHR{=}CXY \qquad (I)$$

wherein X and Y are each strong electron withdrawing groups, and R is H or, provided that X and Y are both cyano groups, a C_1–C_4 alkyl group; and
B. an effective amount of at least one biocompatible agent effective to reduce active formaldehyde concentration levels.

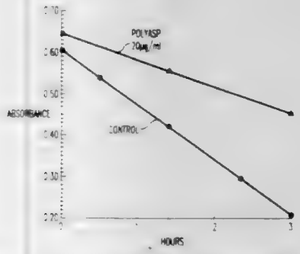
5,328,688
RECOMBINANT HERPES SIMPLEX VIRUSES VACCINES AND METHODS
Bernard Roizman, Chicago, Ill., assignor to Arch Development Corporation, Chicago, Ill.
Filed Sep. 10, 1990, Ser. No. 579,834
Int. Cl.[5] A61K *39/12;* **C12P** *21/06;* **C12N** *15/00;* **C07H** *15/12*
U.S. Cl. 424—205.1 **45 Claims**

1. A recombinant herpes simplex virus genome consisting essentially of an otherwise virulent herpes simplex virus genome rendered avirulent only by the lack of an ICP34.5 gene encoding an active gene product.

5,328,689
INDUCTION OF SETTLEMENT AND METAMORPHOSIS IN *CRASSOSTREA VIRGINICA* BY MELANIN-SYNTHESIZING BACTERIA AND AMMONIA, AND METABOLIC PRODUCTS OF SAID BACTERIA
Ronald M. Weiner, Rockville; Rita R. Colwell, Bethesda; Dale B. Bonar, Gambrills, all of Md.; Steven L. Coon, Falls Church, Va., and Marianne Walsh, Crofton, Md., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.
Continuation of Ser. No. 716,026, Jun. 14, 1991, abandoned, which is a division of Ser. No. 185,647, Apr. 25, 1988, Pat. No. 5,047,344, which is a continuation-in-part of Ser. No. 567,023, Dec. 30, 1983, Pat. No. 4,740,466. This application Mar. 8, 1993, Ser. No. 27,923
Int. Cl.[5] A01K *61/00, 35/00, 37/00;* **C12P** *19/04*
U.S. Cl. 424—115 **3 Claims**

1. A cement produced by melanin-synthesizing bacteria of the genus Shewanella or Alteromonas comprising a polysaccharide adhesive viscous exopolymer (PAVE) recovered as a metabolic product of said bacteria.

5,328,690
POLYAMINO ACID DISPERSANTS
C. Steven Sikes, Mobile, Ala., assignor to University of South Alabama, Mobile, Ala.
Filed Feb. 21, 1991, Ser. No. 658,659
Int. Cl.[5] A61K *7/06*
U.S. Cl. 424—401 **9 Claims**



1. A method of stabilizing an aqueous mineral suspension, comprising adding at least one compound having formula (I) or (II) to said suspension:

$$\text{poly } (X)_n \text{ poly } (Y)_m \qquad (I)$$

where
each X independently is aspartic acid, glutamic acid, phosphoserine, phosphohomoserine, phosphotyrosine, or phosphothreonine,
each Y independently is alanine, leucine, isoleucine, valine, glycine or other nonpolar, amino acid residues,
n is 2 to 60,
m is 2 to 60, and
$n+m$ is ≥ 5,
and wherein poly $(X)_n$ may contain up to 10% of the Y residues and poly $(Y)_m$ may contain up to 10% of the X residues, and salts thereof; and

$$\text{poly } (X')_a \text{ poly } (Y')_b \qquad (II)$$

where each X′ independently is aspartate, glutamate, glutamine, asparagine, or anionic derivatives of these amino acids, or phosphoserine,
each Y′ independently is a phosphorylated amino acid such as phosphoserine, phosphohomoserine, phosphotyrosine, phosphothreonine, phosphoglutamine, phosphoasparagine or mixtures of these residues,
a is 2 to 150,
b is 1 to 3, and
$a+b$ is ≥ 5, and
salts of these peptide, in an amount such that the concentration of said at least one compound is 0.01 to 800 μg/ml; wherein said salts of said compounds of formula (I) and (II) contain, as counterions, ions selected from the group consisting of sodium, potassium, calcium, magnesium, zinc, aluminum, nickel, copper, p-toluenesulfonate, acetate, and mixtures thereof; and wherein said suspension contains at least one mineral selected from the group consisting of iron oxides, kaolin, calcium carbonate, calcium phosphate, alumina hydrate, aluminum flake, antimony oxide, asbestos, barium metaborate, barytes, bismuth oxychloride, blanc fixe, bone black, bronze powders, cadmium sulfide, cadmium oranges, cadmium reds, calcium carbonates, calcium molybdate, calcium plumbate, calcium silicate, carbon black, chrome green, chrome orange, chrome yellows, chromium oxide greens, cobalt blue, copper chromite black, cuprous oxide, gloss white, graphite, iron blue, lamp black, basic lead carbonate, dibasic lead phosphite, basic lead silicate, basic lead sulfate, lithipone, manganese violet, Mercadium orange, Mercadium red, mercuric oxides, mica, molybdate orange, nepheline syenite, nickel titanate, novaculite, pumice, red lead, satin white, siennas, silicas, sodium alumino silicate, strontium chromate, strontium molybdate, talc, titanium dioxide, ultramarine blue, ultramarine violet, umbers, vermilion, wollastonite, zinc chromates, zinc dust, zinc ferrite, zinc molybdate, basic zinc molybdate, zinc oxide, zinc phosphate, zinc sulfide, zinc yellow, zircon, and zirconium oxide.

5,328,691
FATTY ACID COMPOSITIONS
David F. Horrobin, Guildford, England, and Yung-Sheng Huang, Kentville, Canada, assignors to Efamol Holdings PLC, Surrey, England
Filed Jun. 1, 1992, Ser. No. 891,037
Claims priority, application United Kingdom, Jun. 3, 1991, 9111900
Int. Cl.[5] A61K *31/20, 9/14, 47/12;* **A61N** *37/06*
U.S. Cl. 424—401 **10 Claims**

1. A natural or synthetic glycerol oil comprising at least 20% by weight of di-linoleoyl-mono-gamma-linolenyl-glycerol.

5,328,692
NEW LIQUID DENTIFRICE COMPOSITION
Dominique Dana, Le Mas du Cade Quartier des Plaine, 83440 Tanneron, France
Continuation of Ser. No. 651,736, Feb. 7, 1991, abandoned, which is a continuation of Ser. No. 461,179, Jan. 5, 1990, abandoned. This application Oct. 29, 1992, Ser. No. 968,234
Claims priority, application France, May 30, 1988, 88 07325
Int. Cl.[5] A61K *7/16, 7/18, 7/28*
U.S. Cl. 424—401 **10 Claims**

1. Liquid dentifrice composition which can be applied to the

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teeth in the form of a spray and which can be ingested, charaterized in that it comprises as basic ingredients:

a) at least one antiseptic and antimicrobial agent which is an enxymatic complex,

b) at least one agent acting against tartar,

c) at least one non-cariogenic sugar,

d) at least one fluorine source,

and including a coloring agent, a perfume, an astringent, and a filmogen and shining agent, said composition also including sufficient water to form an aqueous solution, and which is contained in pressurized form in a container provided with a propellant gas under pressure or system for pumping the liquid, as well as spray nozzle means for expelling said solution as a spray mist or nebulized jet as a multitude of liquid droplet particles.

5,328,693

N-ALLYL-LACTAMS AS CRYSTALLIZATION INHIBITORS

Heinz-Otto Horstmann, Bergisch Gladbach, and Klaus Wangermann, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 688,181, Apr. 19, 1991, abandoned. This application Jun. 4, 1992, Ser. No. 893,968

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4013523

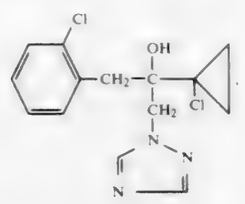
Int. Cl.[5] **A01N** *25/00, 43/64*

U.S. Cl. 424—405 **8 Claims**



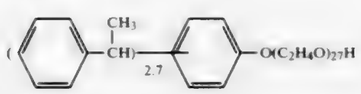
1. A sprayable retarded-crystallizing composition comprising water and, by weight, 13 parts of

A) 1-(2-chlorophenyl)-2-(1-chloro-cycloprop-1-yl)-3-(1,2,4-triazol-1-yl)-propan-2-ol of the formula

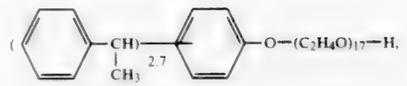


B) about 40 parts of N-(n-dodecyl)-caprolactam or N-(n-octyl)-pyrrolidone,

C) about 4 parts of emulsifier of the average composition of the formula



D) about 4 parts of emulsifier of the average composition of the formula



E) about 4 parts of 4-(n-dodecyl)-phenylsulphonic acid (2-hydroxyethyl)-ammonium salt or 10 parts of di-butyl adipate,

F) 8 parts of nonylphenol polyglycol ether having an average of 15 oxyethylene units per molecule and

G) 17 to 27 parts of N-methyl-pyrrolidone.

5,328,694

STABLE INJECTABLE SOLUTION OF FACTOR VIII

Horst Schwinn, Marburg, Fed. Rep. of Germany, assignor to Octapharma AG, Glarus, Switzerland

Filed Jul. 20, 1992, Ser. No. 916,644

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1990, 4001451

Int. Cl.[5] **A61K** *35/14, 37/04, 31/715;* **C07K** *3/02*

U.S. Cl. 424—423 **14 Claims**

1. A stable, injectable solution, characterized in that it contains factor VIII suitable for the treatment of hemophilia in humans in need there natural or synthetic disaccharides in a concentration of from 0.1 to 0.65 mol/1 and one or more amino acids in concentrations of from 0.1 to 1.0 mol/1.

5,328,695

MUSCLE MORPHOGENIC PROTEIN AND USE THEREOF

Paul A. Lucas; Henry E. Young, both of Macon, Ga., and Cato T. Laurenchin, Somerville, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 742,264, Aug. 7, 1991, abandoned, and a continuation-in-part of Ser. No. 810,324, Dec. 19, 1991, abandoned, and a continuation-in-part of Ser. No. 61,294, Jun. 19, 1987, Pat. No. 4,888,176, which is a continuation-in-part of Ser. No. 892,809, Aug. 1, 1986, Pat. No. 4,757,128, which is a continuation-in-part of Ser. No. 613,001, May 21, 1984, Pat. No. 4,906,474, said Ser. No. 742,264, is a continuation of Ser. No. 313,953, Feb. 22, 1989, abandoned, said Ser. No. 810,324, is a continuation of Ser. No. 690,042, Apr. 23, 1991, abandoned, which is a continuation of Ser. No. 361,222, Jun. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 613,001, Jun. 5, 1989, which is a continuation of Ser. No. 477,710, Mar. 22, 1983, abandoned. This application Feb. 11, 1992, Ser. No. 835,727

Int. Cl.[5] **A61K** *37/02, 37/12;* **A61F** *2/08;* **C07K** *15/28*

U.S. Cl. 424—426 **10 Claims**

1. A protein isolate comprising one or more water soluble proteins isolated from mammalian bone, wherein the protein isolate selectively stimulates stem cell myogenic lineage commitment and differentiation into myotubes and multinucleated structures in vitro and in vivo, contains proteins having molecular weights between 50,000 and 200,000 daltons, does not bind to DEAE in urea at pH 6.0, and binds to a cation exchange column at pH 6.0.

5,328,696

DEVICES USING SILICONE PRESSURE SENSITIVE ADHESIVES CONTAINING ORGANIC WAX

Ross A. Noel, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 22, 1991, Ser. No. 733,567

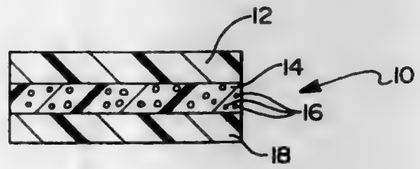
Int. Cl.[5] **A61F** *13/00*

U.S. Cl. 424—449 **10 Claims**

1. A matrix transdermal drug delivery device for a bioactive agent, comprising:

(a) a backing substrate;

(b) an adhesive matrix atop at least portions of said backing substrate, said adhesive matrix formed of a non-flammable, hot-melt, silicone pressure sensitive adhesive composition having tackiness and adhesiveness containing (i) between about 30 and about 70 percent by weight of a benzene-soluble resinous copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of triorganosiloxy units of the formula $R_3SiO_{\frac{1}{2}}$ and tetra functional siloxy units of the formula $SiO_{4/2}$ in a ratio of about 0.6 to 0.9 triorganosiloxy units for each tetra functional siloxy unit present in the copolymer, wherein each R is a monovalent organic radical independently selected from the group consisting of hydrocarbon radicals of from 1 to 6 inclusive carbon atoms; (ii) between about 22 and about 60 percent by weight of a polydimethylsiloxane fluid; and (iii) between about 1.0 and about 25 percent by



weight of an organic wax, all weight percents being based on total composition weight, said wax having a melting point of between about 30° C. and about 150° C., and said organic wax decreasing the dynamic viscosity of the resultant hot-melt silicone pressure sensitive adhesive at temperatures ranging up to about 200° C., and said silicone pressure sensitive adhesive composition including ingredients selected from the group consisting of drugs, excipients, co-solvents, enhancers, and mixtures thereof where the silicone pressure sensitive adhesive composition is compatible with said drugs, excipients, co-solvents and enhancers wherein the silicone pressure sensitive adhesive composition has a tack value between about 50 and 800 g/cm^2 measured using a probe tack tester at a speed of 0.5 cm/second with a 0.5 second dwell time; and

(c) a release liner contacted on the adhesive matrix.

5,328,697

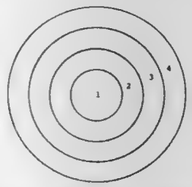
COMPOSITIONS AND PROCESSES FOR THE SUSTAINED RELEASE OF DRUGS

Siva N. Raman, St. Louis, Mo.; Matthew W. Gray, and Rodger L. Smith, both of Terre Haute, Ind., assignors to Mallinckrodt Veterinary, Inc., Mundelein, Ill.

Filed Feb. 10, 1992, Ser. No. 833,197

Int. Cl.[5] **A61K** *9/38, 9/42, 37/36*

U.S. Cl. 424—477 **3 Claims**



1. A composition for the sustained release of somatotropin which comprises a tablet comprised of a combination of somatotropin and a suitable excipient, a primary-coating layer comprising glycine and a secondary-coating layer comprising a wax mixture wherein said primary-coating layer is interposed between said tablet and said secondary-coating layer.

5,328,698

METHOD FOR RENDERING A SUBSTRATE SURFACE ANTITHROMBOGENIC AND/OR ANTI-INFECTIVE

Fidelis C. Onwumere, Miamisburg; Donald D. Solomon, Spring Valley, and Stanley C. Wells, Dayton, all of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 6, 1990, Ser. No. 563,653

Int. Cl.[5] **A61K** *47/30*

U.S. Cl. 424—486 **12 Claims**

1. A method for applying a temperature sensitive bioactive agent to the surface of a shaped polymeric substrate comprising:

(a) combining a matrix polymer having a melting point of about 100° C. or lower with a bioactive agent having a thermal decomposition point above said melting point, said matrix polymer being selected from the group consisting of ethylene acrylic acid copolymer, polycaprolactone, polyethylene adipate, polybutylene adipate, polyethylene azeleate and polyethylene methacrylic acid ionomer;

(b) melt compounding said matrix polymer and bioactive agent within the temperature range between said melting point and said decomposition point to give a homogeneous composition; and

(c) extrusion coating said composition onto the surface of a shaped polymeric substrate at a temperature within said range.

5,328,699

Patent Not Issued For This Number

5,328,700

Patent Not Issued For This Number

5,328,701

TISSUE IRRIGATION SOLUTION

John E. Richmond, Doylestown, Pa., and Bernard E. McCarey, Atlanta, Ga., assignors to Peregrine Surgical Ltd., Doylestown, Pa.

Filed Sep. 10, 1992, Ser. No. 943,434

Int. Cl.[5] **A61K** *33/00, 33/10*

U.S. Cl. 424—680 **14 Claims**

1. A tissue irrigation solution for treating the eye consisting essentially of:

sodium	120–160 mM
potassium	4–10 mM
calcium	0.5–3.0 mM
magnesium	0.5–3.0 mM
chloride	100–130 mM
bicarbonate	20–50 mM
sulfate	0.5–3.0 mM
at least one member of the citric acid cycle selected from the group	2.0–10.0 mM

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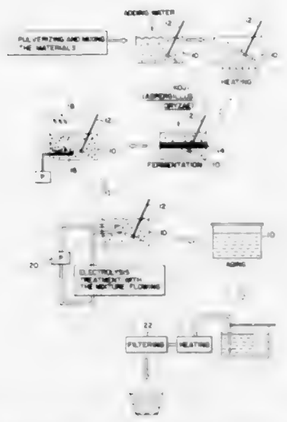
-continued

consisting of citric acid, cis-aconitic acid, isocitric acid, α-ketoglutaric acid, succinic acid, fumaric acid, malic acid, and oxaloacetic acid, and deprotinated derivatives and salts thereof and mixtures of said members, deprotinated derivatives and salts thereof; and	
zwitterionic compound	15-30 mM.

5,328,702
METHOD FOR PREPARING A SOLUTION CONTAINING WATER-SOLUBLE MINERALS

Makoto Hatto, 19-7-408, Kitasuna 5-Chome Koto-ku, Tokyo 136, and Masakazu Saito, 169-1, Nishicho, Ryoshinden Sokashi, Saitama 340, both of Japan, assignors to Keiji Takagi, Gunma; Makoto Hatto, Tokyo and Masakazu Saito, Saitama, all of Japan

PCT No. PCT/JP91/01468, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO92/07796, PCT Pub. Date May 14, 1992
PCT Filed Oct. 28, 1991, Ser. No. 853,767
Claims priority, application Japan, Oct. 30, 1990, 2-290869
Int. Cl.[5] A23L *2/00*
U.S. Cl. 426—18 **3 Claims**

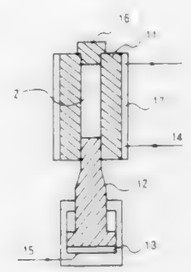


1. A method for preparing a solution containing water-soluble minerals comprising the steps of pulverizing and mixing at a predetermined ratio to support fermentation, starch or cereal, seed having water-soluble mineral contents and egg shell, adding water to form an aqueous mixture and agitating the same while heating to approximately 80° C. to form a viscous mixture, fermenting the mixture by adding koji to the mixture, and aging the fermented mixture to cause the water-soluble mineral contents in the seed to be dissolved into the aqueous mixture and filtering the resultant fermented and aged mixture to obtain the solution of water-soluble minerals.

5,328,703
METHOD FOR TREATING FRUIT JUICE WITH HIGH PRESSURE

Yoshihiro Nakagawa, Saitama; Shinya Ochiai, Ibaraki, and Masayuki Taniguchi, Tokyo, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 766,096, Sep. 27, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 49,666
Claims priority, application Japan, Oct. 12, 1990, 2-274723
Int. Cl.[5] A23L *2/02*
U.S. Cl. 426—52 **4 Claims**

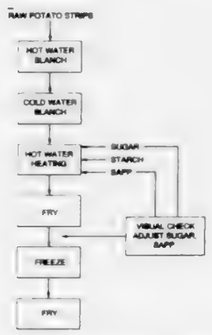


1. A method for treating fruit juice with high pressure comprising the steps of:
keeping natural fruit juice in a colloidal suspension by adding a proteolytic enzyme into said natural fruit juice containing pectin and at least a pectinolytic enzyme so that the proteolytic enzyme decomposes the pectinolytic enzyme, the proteolytic enzyme being selected from a group consisting of pepsin, cathepsin D and rennin, the colloidal suspension being a result of an interaction between pectin and fiber components; and
compressing said natural fruit juice with high pressure in excess of 2,000 atm after the proteolytic enzyme has been added to the natural fruit juice.

5,328,704
PROCESS OF MAKING AND COOKING FRENCH FRIED POTATOES

Avron Ritch, 5 Valleyview Crescent, Edmonton, Alberta, Canada T5R 5S5

Filed May 13, 1992, Ser. No. 882,513
Int. Cl.[5] A23L *1/216*
U.S. Cl. 426—102 **9 Claims**



1. A method for the preparation of microwavable french fried potatoes from potato strips, the potato strips having a top surface layer, the method comprising the steps of:
treating the potato strips in a hot water solution containing starch to form a starch layer in the top surface layer of the potato strips;

parfrying the potato strips a first time in hot oil;
freezing the potato strips for a first time;
processing the potato strips no more than so that after processing, the potato strips contain at least 60% by weight of water; and
storing the potato strips.

5,328,705
COOKED FOOD PRODUCT PACKAGE

Darrell L. Wilhoit, Joliet, Ill., and Vincent J. Dudenhoeffer, Centerville, Iowa, assignors to Viskase Corporation, Chicago, Ill.

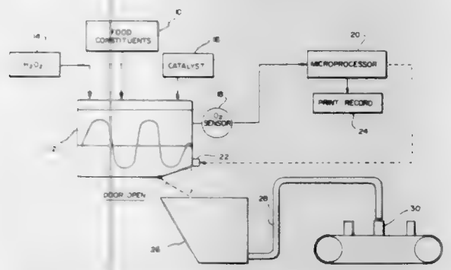
Filed Apr. 23, 1992, Ser. No. 872,873
Int. Cl.[5] B29C *71/04;* **B32B** *27/00;* **B65D** *85/00*
U.S. Cl. 426—113 **18 Claims**

1. A cooked food product package comprising a cook-in film encasing an in situ aqueous medium-cooked meat product, said film having an ethylene vinyl acetate-containing inner surface in adhering relation to said cooked meat product, said film inner surface having been irradiated and treated by corona discharge.

5,328,706
FOOD MANUFACTURING PROCESS UTILIZING HYDROGEN PEROXIDE FOR MICROBIAL CONTROL

Felix W. Endico, 440 E. 86th St., New York, N.Y. 10028

Filed Apr. 29, 1993, Ser. No. 55,526
Int. Cl.[5] A23L *3/00;* **G01N** *33/00*
U.S. Cl. 426—231 **7 Claims**

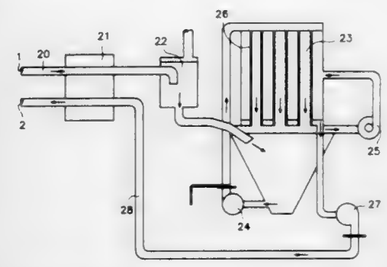


1. A food manufacturing process for semi-viscous and viscous food products utilizing hydrogen peroxide for microbial control including the steps of:
(a) preparing a selected combination of food constituents having a moisture component;
(b) mixing the food constituents for a predetermined duration;
(c) adding a metered quantity of hydrogen peroxide to the food constituents for oxidatively reacting to remove microorganisms;
(d) reducing the moisture component of the food constituents in correspondence with the moisture gain upon decomposition of the hydrogen peroxide;
(e) introducing a catalyst during the processing sequence for accelerating the oxidative reaction time;
(f) monitoring the hydrogen peroxide attrition rate by sensing the presence of oxygen within the food constituents;
(g) discharging the processed food constituents after completion of the oxidative reaction; and
(h) adjusting at least one of the hydrogen peroxide metering rate, the catalyst introduction rate, the food discharge flow rate, the food mixing rate, and the duration of food mixing time by microprocessor control means responsive to the sensed oxygen content wherein the discharged processed food constituents do not contain residual hydrogen peroxide.

5,328,707
RECOVERY OF WASTE LIQUID FROM PRODUCTION OF RICE LIQUOR

Rey-Chein Chang, and Jyh-Feng Hwang, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 1, 1992, Ser. No. 907,292
Int. Cl.[5] A23K *1/06;* **B01D** *1/18*
U.S. Cl. 426—271 **2 Claims**



1. A process for recovering as a dry product waste liquid that is produced from distillation of fermented liquor in the production of rice liquor and contains 3.0–3.5 wt. % total soluble solid, 4.5–5.5 wt. % total suspension solid, 92 wt. % water, and <0.9 wt. % alcohol, said process comprising:
filtering said waste liquid;
concentrating said filtered waste liquid in an evaporating concentrator to produce a concentrated waste liquid with a water content of 70–80 wt. %;
adding a suitable amount of a chelating agent to said concentrated waste liquid for preventing clinging of solid powder on the wall of a spray dryer, said chelating agent consisting of magnesium hydroxide; and
drying said concentrated waste liquid in said spray dryer to produce a dry product.

5,328,708
ROAST GROUND COFFEE WITH DEFATTED SPENT COFFEE GROUNDS

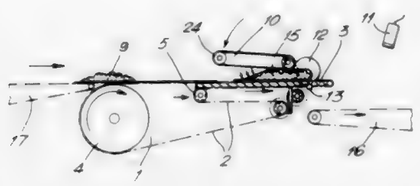
George P. Rizzi, and Roger W. Gutwein, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 809,367, Dec. 18, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 947,857
Int. Cl.[5] A23F *5/00*
U.S. Cl. 426—388 **8 Claims**

1. A process for making defatted spent coffee grounds that can be used as selective adsorbents in reducing burnt coffee aromas and bitter coffee flavors in brewed coffee when combined with roast ground coffee beans, which process comprises the steps of:
(a) obtaining spent coffee grounds having a soluble coffee solids content of less than about 1% by weight;
(b) contacting the spent coffee grounds with a single phase lipophilic solvent or series of single phase solvents, to produce defatted spent coffee grounds containing not more than about 2% lipids, said solvent or series of solvents being selected from the group consisting of ethanol, miscible mixtures of ethanol and water, miscible mixtures of chloroform, methanol and water, ethanol followed by ethyl acetate followed by water, and miscible mixtures of ethanol and water followed by miscible mixtures of ethyl acetate and water followed by water; then
(c) separating the grounds of step (b) from the solvent; and
(d) removing residual solvent from the separated grounds.

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5,328,709
FOLDED ARTICLE PREPARATION FROM PLASTIC MATERIAL SHEETS
Hans K. Larsen, Aestorp, Sweden, assignor to Nestec S.A., Vevey, Switzerland
Filed Feb. 12, 1993, Ser. No. 17,028
Claims priority, application European Pat. Off., Mar. 6, 1992, 92103810.5
Int. Cl.[5] A21D *6/00*; A21C *9/00*
U.S. Cl. 426—502 **20 Claims**



1. A conveyor apparatus for preparing folded articles comprising:
a first conveyor having a conveying belt run for conveying a sheet of foldable plastic material and having a downstream run end which is reciprocable for extending the run for a distance from a retracted position to an extended position to extend a length of the run and for retraced position;
a second conveyor having a conveyor belt run for conveying a sheet of foldable plastic material from an upstream belt run end towards a downstream run end;
means attached to the second conveyor for positioning and pivoting the second conveyor so that the second conveyor is rotatable from a first position, wherein the first and second conveyor conveying belt runs are in a longitudinal end-to-end conveying run relation for conveying a sheet of a foldable material from the first conveyor conveying belt run to the second conveyor conveying belt run, to a second position above the first conveyor conveying belt run so that at the second position, the second conveyor is, with respect to the first position, substantially inverted and so that the second conveyor conveying belt run is spaced a distance away from the first conveyor conveying belt run; and
means for rotating the second conveyor about the pivoting means.

5,328,710
READY TO SERVE FROZEN DESSERT FOR SOFT SERVE DISPENSING
Michael J. Malone, and Joyce G. Sage, both of Houston, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 882,729, May 14, 1992, Pat. No. 5,256,436. This application Apr. 5, 1993, Ser. No. 42,964
Int. Cl.[5] A23G *9/02*
U.S. Cl. 426—565 **20 Claims**

1. A frozen dessert composition comprising at least about 0.1 weight percent lecithin, at least about 0.15 weight percent pectin, and at least about 0.1 weight percent of a gum selected from the group consisting of xanthan gum and locust bean gum, wherein the composition has a lactose content according to the following formula (I):

$$((\Sigma IL)/C) \leqq 9.0 \quad (I)$$

wherein
I = weight percentage of mix ingredient;
L = weight percentage lactose in that mix ingredient; and
C = weight percentage of free water in the mix, and wherein the composition has a dextrose content according to the following formula (II):

$$((\Sigma ID)/C) \leqq 6.5 \quad (II)$$

wherein
I = weight percentage of mix ingredient;
D = weight percentage dextrose in that mix ingredient; and
C = weight percentage of free water in the mix, and wherein the composition has a molar solute concentration according to the following formula (III):

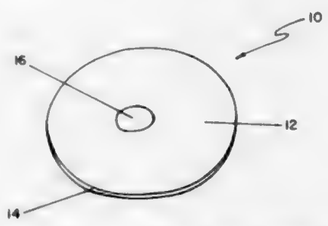
$$MC = -0.1514T_{max} + 0.03027T_{min} - 0.04177F + 3.675 \quad (III)$$

wherein
MC = molar solute concentration (mol/weight percentage of free water);
T_{max} = maximum dispensing temperature (° F.);
T_{min} = minimum dispensing temperature (° F.); and
F = weight percentage of fat content of the mix.

5,328,711
SHELF-STABLE GELLED CONFECTIONS
Edward C. Coleman, New Fairfield, and Noel E. Anderson, Brookfield, both of Conn., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Apr. 27, 1993, Ser. No. 53,586
Int. Cl.[5] A23G *3/00*; A23L *1/0562*
U.S. Cl. 426—576 **6 Claims**

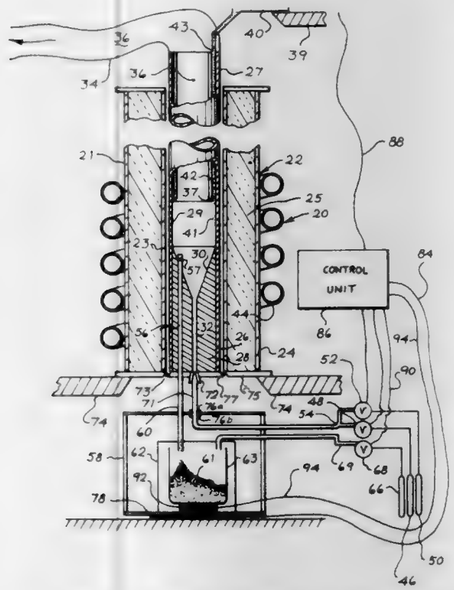
1. A room-temperature stable, gelled, gelatin confection having a solids content of from 63 to 72%, an Aw of 0.65 to 0.85, and a pH of from 2.0 to 4.6, said confection being comprised of 3 to 9% gelatin, 20 to 40% water, 30 to 45% corn syrup, 12 to 30% sucrose, 2 to 6% humectant and 0.5 to 4% food acid.

5,328,712
METHOD OF MAKING A BONE-IN MEAT PRODUCT
Michael F. Stevison, Gallatin; Dave Stevison, Portland, and John P. White, Gallatin, all of Tenn., assignors to Stevison Ham Company, Portland, Tenn.
Filed Feb. 24, 1993, Ser. No. 22,014
Int. Cl.[5] A23L *1/31*
U.S. Cl. 426—641 **9 Claims**



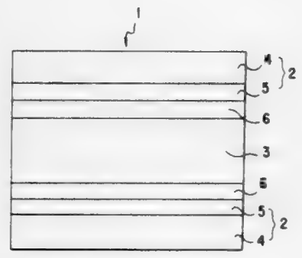
1. A method of making a bone-in meat product from fat, muscle, and bone separated from a butchered animal comprising the steps of:
a. stuffing into a casing an aggregation of said separated muscle and fat concentrically around a linear section of said bone; and
b. drawing said casing against said aggregation to form an approximately cylindrically shaped meat product with said bone disposed longitudinally along the approximate center of said shaped meat product.

5,328,713
PRECISE REGULATION OF FLUIDIZED BED WEIGHT IN PYROLYTICALLY COATING SUBSTRATES
Michael R. Emken, Austin; James A. Accuntius, Georgetown, and David S. Wilde, Austin, all of Tex., assignors to Carbon Implants, Inc., Austin, Tex.
Filed Mar. 16, 1993, Ser. No. 32,627
Int. Cl.[5] C23C *16/52*
U.S. Cl. 427—8 **20 Claims**

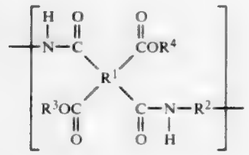


1. A method of carefully controlling the deposition of a substance onto a substrate while being levitated in a fluidized bed of particles, said deposition being carried out in an enclosure through which a gaseous atmosphere is caused to flow upward, which method comprises
(a) establishing a bed of particles in fluidized condition in said enclosure with at least one substrate to be coated being levitated within said fluidized bed, said levitation being effected by the upward flow of said gaseous atmosphere,
(b) heating said particles and said substrate to an operating temperature and including a pyrolytically-decomposable component within said gaseous atmosphere such that pyrolysis of said component occurs to cause a pyrolytic substance to be deposited at said operating temperature upon said substrate and upon said particles, both of which are being levitated,
(c) withdrawing particles from said bed in a controlled manner,
(d) adding feed particles to said bed in a controlled manner, which feed particles have an average size that is less than the average size of the particles being withdrawn,
(e) monitoring the weight of said bed to determine changes in the weight of said bed over a period of time, and
(f) altering either the rate at which particles are withdrawn from said bed or the rate at which particles are added to said bed or both in response to said determined weight changes so as to precisely regulate deposition rate over time and thereby produce a precise pyrolytic coating upon said substrate being coated.

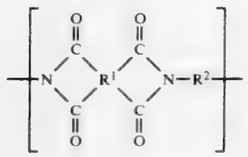
5,328,714
METHOD FOR MANUFACTURING LIQUID CRYSTAL ORIENTATION FILM
Yasushi Nakajima, Hachioji; Makoto Murata, and Masakazu Uekita, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka and Casio Computer Co. Ltd. JP, Tokyo, both of Japan
PCT No. PCT/JP92/00801, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO93/00604, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 24, 1992, Ser. No. 969,155
Claims priority, application Japan, Jun. 24, 1991, 3-180253
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—58 **2 Claims**



1. A method for manufacturing a liquid crystal orientation film which comprises preparing a thin film by laminating a monomolecular film to a substrate having an electrode formed thereon, said monomolecular film being formed by spreading on a water surface an amphiphilic high molecular material having the repeating unit



wherein R^1 is a tetravalent group containing at least two carbon atoms, R^2 is a divalent group containing at least two carbon atoms; and each of R^3 and R^4 is hydrogen or an aliphatic, an alicyclic or an aromatic monovalent group having 1–30 carbon atoms or a combination thereof, which may be substituted by a halogen atom, a nitro group, an amino group, a cyano group, a methoxy group or an acetoxy group, and both R^3 and R^4 are not hydrogen; and
partially imidizing the thin film to form polyimide units of the formula



wherein R^1 and R^2 are the same as above and the number of monovalent groups having 12–30 carbon atoms remaining in the imidized film is 1.5–0.8 groups per repeating unit.

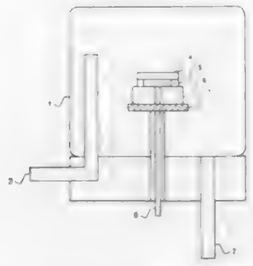
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5,328,715

PROCESS FOR MAKING METALLIZED VIAS IN DIAMOND SUBSTRATES

Charles D. Iacovangelo, Schenectady; Elihu C. Jerabek, Glenmont; Ronald H. Wilson, Schenectady, and Peter C. Schaefer, Saratoga Springs, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 11, 1993, Ser. No. 16,367
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—97 11 Claims



1. A process for creating a metallized aperture in a diamond substrate comprising the steps of

(a) providing a diamond substrate having one or more apertures, the surface of said diamond within said apertures being substantially free of contaminants;

b) filling said apertures by low pressure chemical vapor deposition with tungsten

5,328,716

METHOD OF MAKING A COATED ABRASIVE ARTICLE CONTAINING A CONDUCTIVE BACKING

Scott J. Buchanan, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 11, 1992, Ser. No. 928,845
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—121 17 Claims

1. A method of making a coated abrasive article having a reduced tendency to accumulate static electric charge during the abrading of a workpiece, said method comprising the steps of:

(a) providing a coated abrasive article comprising a backing having a front surface bearing an abrasive layer and a porous back surface;

(b) impregnating said porous back surface so as to penetrate at least 0.005 mm into the thickness of said backing with an impregnating composition comprising a plurality of electrically conductive particles dispersed in a liquid vehicle to provide on removal of at least a portion of said liquid, a sufficient amount of said electrically conductive particles in said backing such that said coated abrasive article has a reduced tendency to accumulate static electric charge during said abrading, said impregnating composition being essentially free of binder adhesive; and

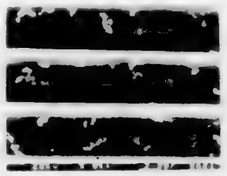
(c) at least partially removing a sufficient amount of liquid to provide said coated abrasive article.

5,328,717

METHOD OF MAKING A SALT-DOPED METAL-COATED ARTICLE HAVING AN EVANESCENT ELECTROMAGNETIC DETECTION SIGNATURE

Ward C. Stevens, New Fairfield; Edward A. Sturm, New Milford, and Bruce C. Roman, Danbury, all of Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Division of Ser. No. 448,252, Dec. 11, 1989, Pat. No. 5,034,274.
This application Jul. 22, 1991, Ser. No. 734,199
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—126.2 3 Claims



1. A method of forming an evanescent conductive coating on a non-conductive substrate, comprising:

(a) depositing on the substrate a sub-micron thickness of oxidizable metal, to form an oxidizable-coated substrate; and

(b) providing on an exterior surface of the oxidizable metal-coated substrate from about 0.005% to about 25% by weight, based on the weight of oxidizable metal in the oxidizable metal coating, of a salt which is effective to accelerate the rate of oxidation of the oxidizable metal coating under oxidation conditions therefor, to yield a salt-doped, oxidizable metal-coated substrate;

wherein the salt is provided on the oxidizable metal-coated substrate by contacting of the oxidizable metal-coated substrate with a solvent solution of salt, to form a salt solution-coated, oxidizable metal-coated substrate, and drying the salt solution-coated, oxidizable metal-coated substrate to remove the solvent from the salt solution, to yield the salt-doped, oxidizable metal-coated substrate article; and

wherein the salt-solution comprises a solvent selected from the group consisting of alkanolic solvents and anhydrous solvents.

5,328,718

PRODUCTION OF BARIUM TITANATE THIN FILMS

Yoshio Abe, Kyoto; Yukio Hamaji, Nagaokakyo, and Yukio Sakabe, Kyoto, all of Japan, assignors to Myrata Mfg., Co., Ltd., Japan

Filed Oct. 30, 1992, Ser. No. 969,027
Claims priority, application Japan, Nov. 1, 1991, 3-315497
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—126.3 5 Claims

1. A method for producing a thin film of barium titanate on a substrate, comprising the step of immersing a substrate in an aqueous solution containing barium ions and alkanolamine-modified titanium alkoxide under reaction conditions such that heterogeneous nucleation of barium titanate takes place on the substrate.

5,328,719

METHOD OF USING IMPROVED INTUMESCENCE CARRIERS FOR FIREPROOF GLASSES

Wulf von Bonin, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 30, 1993, Ser. No. 99,897
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1992, 4226044
Int. Cl.[5] C09K *21/02*
U.S. Cl. 427—165 5 Claims

1. The method of fireproofing laminated glass constructions, which comprises filling or coating said laminated glass constructions with an intumescence carrier wherein said intumescence carrier is the reaction product of

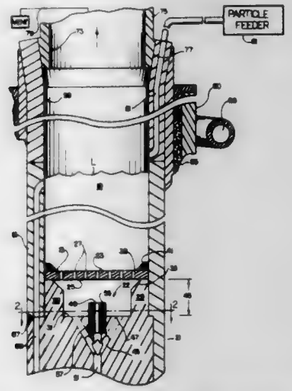
1. 1 mol of an aluminum compound selected from the group consisting of aluminum oxides, aluminum-oxide hydrates, aluminum hydroxides, and aluminum carbonates, with
2. 2 to 5 mol of a phosphorous-containing acid selected from the group consisting of orthophosphoric acid, metaphosphoric acid, pyrophosphoric acid, polyphosphoric acid, phosphonic acid, and phosphinic acid,
3. 2–9 mol of a boric acid, and
4. 2 to 9 mol of an alkanolamine.

5,328,720

COATING-FLUIDIZING GAS SUPPLY SYSTEM AND METHOD FOR FLAT BOTTOM COATER

Michael R. Emken, and Billie F. Hightower, both of Austin, Tex., assignors to Carbon Implants, Inc., Austin, Tex.

Filed Oct. 23, 1992, Ser. No. 965,727
Int. Cl.[5] C23C *16/26*
U.S. Cl. 427—213 3 Claims



3. A method of coating an object with pyrolytic carbon in a fluidized bed of minute particles, which method comprises

providing a generally circular cylindrical coating zone,

providing a generally circular porous plate at the bottom of said coating zone, said plate having a plurality of spaced apart straight holes extending vertically therethrough which have diameters not greater than about 0.2 inch,

supplying said zone with a bed of minute particles and at least one object to be coated with pyrocarbon,

providing a gas injection chamber below said circular plate;

supplying a coating-fluidizing gas mixture to said injection chamber which gas mixture contains a hydrocarbon component and an inert gas component, and

dividing said gas mixture supply at a location near the bottom of said injection chamber and directing a central vertical stream and a plurality of circumferentially uniformly spaced apart individual angular streams of said coating-fluidizing gas mixture from nozzles within said injection chamber to impinge substantially uniformly across the area of the undersurface of said circular plate, which angular streams surround and are spaced equal radial distances from said central vertical stream and are each oriented at an angle of between about 30° and about 60° to the vertical, said nozzles being located a selected distance below said plate so that said gas mixture has a cooling effect upon the surfaces of said plate including the surface boundaries of said holes while flowing upward through said straight vertical holes thereby maintaining said plate surfaces at a temperature below the temperature where substantial decomposition of said hydrocarbon component occurs to prevent clogging of said vertical holes with pyrocarbon and assure that coating of said object with pyrocarbon proceeds uniformly over an operating period of longer than about one hour.

5,328,721

PROCESS FOR MANUFACTURING SODIUM CARBONATE PERHYDRATE PARTICLES AND COATING THEM WITH SODIUM BOROSILICATE

Basil A. Guiliano; William A. Hills, both of Lawrenceville, and Charles V. Juelke, Belle Mead, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 30, 1992, Ser. No. 922,712
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] B05D *7/24*; C01B *15/10*
U.S. Cl. 427—213 15 Claims

1. A process for preparing a coated sodium carbonate perhydrate stable in detergent formulations comprising

(a) preparing sodium carbonate perhydrate by the steps of:

(i) uniformly distributing an aqueous hydrogen peroxide solution containing about 50% to about 75% by weight hydrogen peroxide, and an effective amount of 1-hydroxyethylidene-1,1-diphosphonic acid to provide a concentration of about 0.5% to 10% by weight in step (a) (iii) onto a substantially dry particulate reaction mixture, the reaction mixture initially consisting essentially of anhydrous sodium carbonate with a pore volume of at least 0.29 ml/g,

(ii) concurrently balancing the heat of hydration and heat of perhydration of the sodium carbonate in the reaction mixture with the heat of evaporation of water and adding sufficient sensible heat to maintain the reaction mixture between 50° C. and 80° C. and to maintain the reaction mixture substantially dry by evaporating water added as the aqueous hydrogen peroxide solution, and

(iii) withdrawing at least a portion of the reaction mixture as a particulate sodium carbonate perhydrate containing about 12% to about 14% active oxygen, and about 0.5% to about 10% 1-hydroxyethylidene-1,1-diphosphonic acid, and

(b) coating sodium carbonate perhydrate particles withdrawn in step (a) (iii) by the steps of:

(i) suspending the particles of sodium carbonate perhydrate in a gas stream thereby substantially eliminating solid-solid contact between the particles,

(ii) contacting the suspended particles with a plurality of fine drops of an aqueous solution of sodium borosilicate, the sodium borosilicate consisting essentially of a mixture of from 25 to 75 parts by weight sodium silicate and from 75 to 25 parts by weight sodium metaborate to provide a SiO_2:B_2O_3 weight ratio of from 1:1 to 2:1, and

(iii) concomitantly evaporating substantially all the water added by the aqueous sodium borosilicate solution at a sufficient rate to avoid moistening or hydrating the suspended particles, to provide thereby a coated sodium carbonate perhydrate containing from about 3% to about 10% coating by weight, the coated particles having a bulk density of from 800 to 1,050 kg/m^3 and containing from 10.5% to about 14% by weight active oxygen, the coated particles being capable of releasing substantially all of the active oxygen into water within two minutes.

5,328,722

METAL CHEMICAL VAPOR DEPOSITION PROCESS USING A SHADOW RING

Steve Ghanayem, Sunnyvale, and Virendra Rana, Los Gatos, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Nov. 6, 1992, Ser. No. 972,674

The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.

Int. Cl.[5] C23C *15/04*

U.S. Cl. 427—250 25 Claims

1. An improved process for depositing a layer of material on a substrate in a deposition chamber using a shadow ring to engage an outer edge of a front surface of the substrate to inhibit deposition of said layer of material on a backside of said substrate comprising:

a) depositing a barrier layer on all of said front surface of said substrate while said shadow ring and said substrate are spaced apart;

b) then engaging the shadow ring with said outer edge of said front surface of said substrate to inhibit flow of deposition gases toward said backside of said substrate; and

c) then depositing said layer of material on said front surface of the substrate not engaged by said shadow ring;

whereby said deposition of said barrier layer over all of said front surface of said substrate will shield materials beneath said barrier layer on said front surface of said beneath the shadow ring from reaction with one or more of said deposition gases used in said deposition of said layer of material.

5,328,723

MASKING MEMBER

Seinosuke Horiki; Reiji Makino, and Kuninori Ito, all of Nagoya, Japan, assignors to Nagoya Oilchemical Co., Ltd., Aichi, Japan

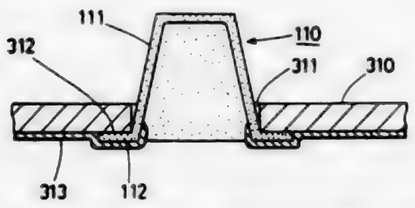
Continuation of Ser. No. 418,264, Oct. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 101,689, Sep. 28, 1987, abandoned. This application Nov. 4, 1991, Ser. No. 785,914

Claims priority, application Japan, Sep. 30, 1986, 61-149582; Sep. 30, 1986, 61-149584; Sep. 30, 1986, 61-149587; Mar. 27, 1987, 62-046075; Apr. 15, 1987, 62-056988

The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.

Int. Cl.[5] B05D *1/32*

U.S. Cl. 427—272 1 Claim



1. A method for the surface treatment of an article wherein said article has an opening so as to protect the opening of said article while said article is undergoing surface treatment which comprises inserting a plug-type masking member into the opening of said article, said plug-type masking member consisting of a plug-form inserting part made up of a circular bottom and a truncated conically shaped side wall portion wherein the maximum diameter of said plug-form inserting part of said masking member is larger than the opening of said article and wherein the minimum diameter of said plug-form inserting part of said masking member is smaller than the opening, the truncated conically shaped wall portions of said plug-form inserting part extending upwardly and outwardly from the perimeter of said bottom provided with an outwardly extending flange formed around the outside at about the upper end of said wall portion of said plug-form inserting part of said masking member, said masking member being vacuum formed thermoplastic foam, effecting surface treatment of said article with said masking member inserted in said opening and removing said masking member from the opening of said article upon completion of said surface treatment, thereby leaving the opening of said article substantially unaffected by said surface treatment and protected therefrom.

5,328,724

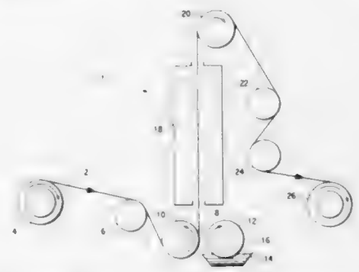
SOLUTION COATING PROCESS FOR PACKAGING FILM

Gedeon I. Deak, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 2, 1993, Ser. No. 113,982

Int. Cl.[5] B05D *7/02*

U.S. Cl. 427—391 5 Claims



1. A process for solution coating a substrate with an ethylene/vinyl alcohol copolymer (EVOH) barrier, comprising the steps of:

(1) agitating a coating solution consisting essentially of

(A) about 7 to about 20 wt % ethylene/vinyl alcohol copolymer having copolymerized ethylene content from about 20 to about 55 mole %; and

(B) a complementary amount to total to 100 wt % of a solvent consisting essentially of about 10 to about 70 wt % water; and a complementary amount to total 100 wt % of tetrahydrofuran;

at a temperature within the range of about 55°–100° C. until a clear solution is obtained;

(2) coating at least one surface of the substrate with the coating solution; and

(3) removing the solvent, whereby a dry ethylene/vinyl alcohol copolymer coating on the at least one surface is produced.

5,328,725

METHOD OF COATING AUTOMOBILE BODY WITH CHIPPING-RESISTING PAINT

Noboru Sato, and Hirofumi Kono, both of Suzuka, Japan, assignors to Honda Motor Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 771,989, Oct. 9, 1991. This application Jul. 20, 1993, Ser. No. 93,887

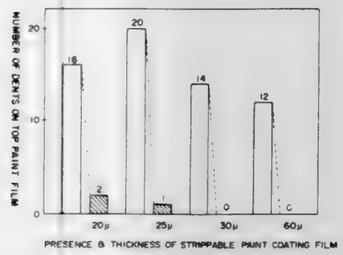
Int. Cl.[5] B05D *3/00;* B65B *33/04*

U.S. Cl. 427—156 1 Claim

1. A method of coating an automobile body with a chipping-resisting paint, comprising the steps of:

applying and drying to a painted surface of an automobile body a chipping-resisting paint comprising 10 to 20 parts of urethane lacquer and, as a solvent, 60 to 75 parts of isopropyl alcohol, 7 to 12 parts of toluene and 7 to 10 parts of ethyl acetate, to produce a dry film having a thickness of at least 30 μm;

stripping the applied and dried film of said chipping-resisting paint; and repeating the applying and drying steps to produce a second dry film of said chipping-resisting paint



on said painted surface, said film having a dry thickness of at least 30 μm.

5,328,726

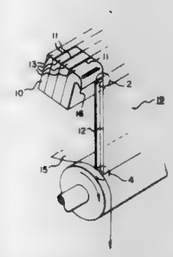
CURTAIN COATING METHOD AND APPARATUS USING DUAL WIRE EDGE GUIDES

Thomas C. Reiter, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1992, Ser. No. 979,504

Int. Cl.[5] B05D *1/30;* B05C *5/00*

U.S. Cl. 427—420 25 Claims



1. A method of curtain coating a support with one layer of a liquid coating composition comprising:

moving a support along a path through a coating zone;

forming one or more layers of coating liquids to form a liquid coating composition;

forming a free falling curtain from said liquid coating composition within said coating zone which extends transversely to said path and impinges on said moving support;

laterally guiding said falling curtain by edge guides each of said edge guides having two or more wires extending from a point of formation of the falling curtain to the support, said two or more wires spaced apart a distance approximately equal to a thickness of the falling curtain; and

providing a flushing means which contacts an edge region of said falling curtain and said two or more wires.

5,328,727

FLASH THERMAL TRANSFER METHOD AND FLASH THERMAL TRANSFER APPARATUS FOR PRACTICING THE METHOD

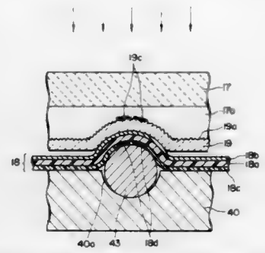
Yukio Kashio, Tokyo, and Yasuo Genba, Akigawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 675,047, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 366,732, Jun. 15, 1989, abandoned. This application Aug. 10, 1992, Ser. No. 927,794

Claims priority, application Japan, Jun. 17, 1988, 63-148167; Aug. 23, 1988, 63-207324; Oct. 31, 1988, 63-273351; Oct. 31, 1988, 63-273354

Int. Cl.[5] B05D *3/06;* B44C *1/165;* B32B *31/00;* H01M *6/04*

U.S. Cl. 427—595 6 Claims



6. A flash thermal transfer method, comprising the steps of:

providing an object having a non-planar deformed surface;

providing sheets one of which has a thickness of about 10 to 80 μm and has an ink image made of material including carbon powder and binder, and another one of which has a thickness of about 5 to 50 μm and includes a hot-melt ink layer to be transferred to said object and layer means for preventing infrared rays from impinging on said hot-melt ink layer;

providing a light-transmissive cushion member made of a foamed plastic;

providing a light-transmissive hard plate;

arranging said sheet including the hot-melt ink layer thereon, said sheet with the ink image thereon, said cushion member and said hard plate in that order on said object;

pushing said sheets, said cushion member and said hard plate for bringing said sheets into tight contact with said object; and

causing a flash lamp to radiate infrared rays from above said hard plate while keeping said cushion member compressed,

whereby only portions of said hot-melt ink layer corresponding to said ink image are melted and are transferred onto said object.

5,328,728

PROCESS FOR MANUFACTURING LIQUID CRYSTAL DEVICE SUBSTRATES

Thomas J. Swirbel, Davie; Melanie Williams, Deerfield Beach, and Robert J. Mulligan, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1992, Ser. No. 993,535

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—600 3 Claims

1. A process for manufacturing a device for containing a liquid crystal material between two spaced electrodes, comprising:

providing a substrate having a first surface;

forming a plurality of spacers distributed on the substrate first surface by:

applying to the first surface an admixture comprising:

spacers, comprising polymeric spheres;

a liquid comprising:

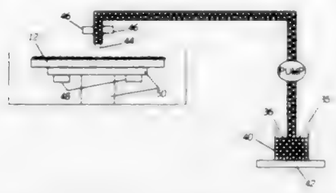
VOL 1164 ISS 2 JL 12 1994 UMI

one or more alcohols selected from the group consisting of methanol, ethanol, or propanol; and

a dispersant, comprising 2,2,4-trimethyl 1,3 pentanediol;

the spacers dispersed in the liquid while agitating a reservoir of the admixture with ultrasonics to maintain a uniform dispersion of the spacers in the liquid;

spinning the substrate while applying the admixture;



applying ultrasonics to the substrate while applying the admixture; and

applying ultrasonics at the point of application of the admixture onto the first surface while applying the admixture; and

evaporating, at ambient temperature, the liquid from the first surface, leaving a plurality of spacers distributed on the substrate first surface

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5,328,729

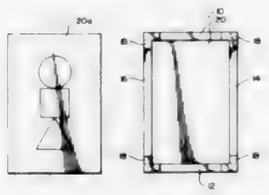
CUT-TO-FIT, PEEL AND STICK POSTER FRAME

Edward R. Lamonte, Jr., 1653 Andis Rd., Burlington, Wash. 98233

Filed Oct. 8, 1992, Ser. No. 958,177

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—14 **12 Claims**





1. A method of providing poster with a perimeter mounting frame, said method comprising:

a. providing a poster having a front display surface, a back surface, first and second end edge portions, and first and second side edge portions;

b. providing first and second end struts, each having an adhesive surface, said first and second end struts having lengthwise dimensions such as to extend substantially entirely along said first and second end edge ortions, respectively;

c. placing said first end strut with its adhesive surface against said first end edge portion of the poster to cause said first end strut to adhere to said first end portion;

d. placing said second end strut with its adhesive surface against said second end edge portion of the poster to cause said second end strut to adhere to said second end portions with both end portions of the first end strut being free to move relative to the end portions of the second end strut;

e. providing first and second side struts, each having an adhesive surface, and each having end edges substantially perpendicular to a lengthwise axis of each of said first and second side struts.

f. positioning said first side strut between first end portions of said first and second end struts so that said first side strut extends along said first side portion of the poster, with the adhesive portion of the first side strut facing the first side edge portion of the poster, and with the end edges of the first side strut abutting against adjacent end side surface portions of said first and second end struts, which end side surface portions are substantially parallel to lengthwise axes of said first and second end struts, said first side strut having a lengthwise dimension at least equal to a distance between the adjacent end side surface portions of the first and second end struts in a manner that said first side strut extends the first side portion of the poster to its full length dimension, with said first side strut adhering to said first side portion of the poster;

g. positioning said second side strut between second end portions of said first and second end struts so that said second side strut extends along said second side portion of the poster, with the adhesive portion of the second side strut facing the second side edge portion of the poster, and with the end edges of the second strut abutting against adjacent side end surface portions of said first and second end struts, which end side surface portions are substantially parallel to lengthwise axes of said first and second end struts, said second side strut having a lengthwise dimension at least equal to a distance between the adjacent end side surface portions of the first and second end struts, in a manner that said second side strut extens the second side portion of the poster to its full length dimension, with said second side strut adhering to said first side portion of the poster.

5,328,730

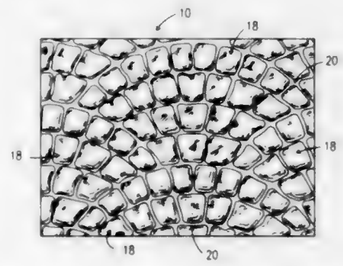
REPLICATED STONE SURFACE

Michael Lowe, 2634 Firestone Dr., Pinellas County, Clearwater, Fla. 34621

Division of Ser. No. 699,207, May 13, 1991, Pat. No. 5,167,991. This application Sep. 1, 1992, Ser. No. 938,203

Int. Cl.[5] B44F *9/04*

U.S. Cl. 428—15 **4 Claims**



1. A thin layered replicated stone surface with coloration and texture of natural stone surface with coloration and texture of natural stone comprising a plurality of simulated stones separated by simulated group lines formed by a layer of polymer mortar of less than one quarter inch in thickness adhered to a substrate such as concrete slab with a pigment embedded on the surface of said plurality of simulated stones and said simulated intervening grout lines and sealed with an acrylic polymer sealer to form a wear bearing surface to protect said replicated stone surface from the environment.

5,328,731

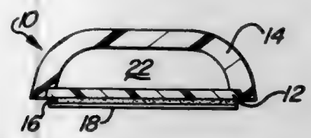
PLASTIC HEAT SET MOLDING

Robert A. Zoller, Bay Village, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Nov. 28, 1990, Ser. No. 619,126

Int. Cl.[5] B60R *13/04*

U.S. Cl. 428—31 **22 Claims**



18. A trim strip formed by

providing a mold;

pouring a desired amount of a liquid heat settable resin elastomer material into said mold, wherein said heat settable resin elastomer material is a platisol;

heating said mold containing said desired amount of heat settable material to cure said heat settable resin elastomer material;

applying a backing member to said heat set material;

bonding said backing member to said heat set material; and

thereby forming a trim strip at low pressure from said heat settable material and backing member.

5,328,732

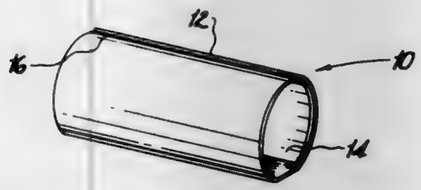
CYLINDRICAL PACKAGE STUFFING MATERIAL

Douglas J. Renna, 131 Munro Blvd., Valley Stream, N.Y. 11581

Filed Mar. 12, 1993, Ser. No. 30,776

Int. Cl.[5] B29D *22/00*

U.S. Cl. 428—34.2 **3 Claims**



1. Package stuffing material comprising a plurality of hollow bodies adapted to fill a volume greater than the sum of their individual volumes, each body comprising a strip of shape retaining paper stock material rolled into a cylinder having its outer end adhered adjacent its longitudinal edge to the outer surface of the cylinder and having its inner end freely extending along the inner wall of said cylinder so as to be circumferential slidable therealong to place its free inner longitudinal edge in engagement with the inner wall on application of a radial force to the cylinder.

5,328,733

SHIRRED FIBROUS CASING ARTICLE AND METHOD

Jeffery A. Oxley, Naperville, Ill., assignor to Viskase Corporation, Chicago, Ill.

Filed Mar. 30, 1992, Ser. No. 859,783

Int. Cl.[5] A22C *13/00*

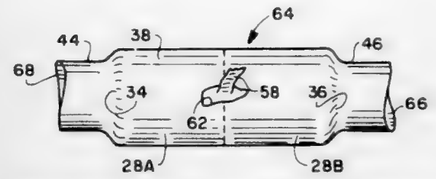
U.S. Cl. 428—348 **11 Claims**

1. A shirred fibrous casing article comprising:

a) at least two distinct axially aligned shirred portions of fibrous casing having adjacent ends and each shirred portion having a moisture content of about 20% to about 30% of total casing weight;

b) a splice joining said adjacent ends of said axially aligned shirred portions to form one continuous shirred stick having a continuous outer surface, opposite ends, and an internal bore opening through said opposite ends;

c) a retainer disposed about and in pressing engagement with the outer surface of said shirred stick including at least a portion of said opposite ends and said retainer providing direct access to a bore opening through at least one of said opposite ends;



d) window means in said retainer in the region of said splice which exposes a portion of the surface of said shirred stick; and

e) a flag associated with said splice and extending through said window means.

5,328,734

COMPOSITION AND PROCESS FOR REDUCING THE ADHESIVE NATURE OF ETHYLENE/ALPHA-OLEFINS COPOLYMERS

Brigitte Morese-Seguela, Hinges, and Urbain Coudevylle, Salome, both of France, assignors to Sofrapocommerciale, Courbevoie, France

PCT No. PCT/FR90/00225, § 371 Date Jan. 28, 1991, § 102(e) Date Jan. 28, 1991, PCT Pub. No. WO90/12064, PCT Pub. Date Oct. 18, 1990

PCT Filed Mar. 30, 1990, Ser. No. 613,835

Claims priority, application France, Apr. 6, 1989, 89 04528

Int. Cl.[5] C08L *23/08, 23/16, 23/10;* **C08J** *3/12*

U.S. Cl. 428—36.92 **17 Claims**

1. A process for reducing the adhesive nature and for increasing the crush resistance of granules of a partially-crystalline ethylene/alpha-olefin copolymer of ethylene and at least one alpha-olefin, said ethylene/alpha-olefin copolymer having a density between 0.865 and 0.900 g/cm^3 and exhibiting no Mooney viscosity, comprising forming said granules from a composition consisting essentially of an intimate ethylene polymer and propylene polymer blend consisting of said ethylene/alpha-olefin copolymer and at least one nonatactic propylene polymer having a melt index of between 35 and 200 dg/minute in a proportion of from 22 to 50 parts by weight per 100 parts by weight of said ethylene/alpha-olefin copolymer.

5,328,735

PROCESS FOR PRODUCING FIXING ROLLER

Hiroshi Okazaki; Masaya Nishi, and Chiaki Kato, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 29, 1992, Ser. No. 921,096

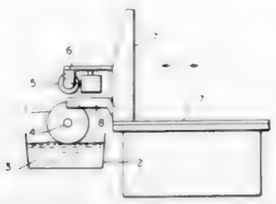
Int. Cl.[5] B05D *1/28*

U.S. Cl. 427—428 **7 Claims**

1. A process for producing a fixing roller comprising coating a fluorine resin dispersion onto a cylindrical core by using a transfer coating apparatus comprising a transfer roller having an axial width equipped with a fluorine resin dispersion temperature controller, a coating pan containing a fluorine resin dispersion, a driving system for revolving the core, and a core carrying mechanism for shifting the core, comprising the steps of bringing said core close to said transfer roller at a gap allowing said core to pick up said fluorine resin dispersion, the fluorine resin dispersion having been picked up from the coating pan by said transfer roller across its entire axial width and

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after an amount of the fluorine resin dispersion is transferred onto the core, widening said gap between the core and the transfer roller by shifting the core away from the transfer roller to thereby separate the core from the transfer roller,



said coating apparatus further comprising a plate on both sides of said transfer roller for preventing the fluorine resin dispersion in contact with both ends of an effective coating width of the core from migrating to the inside of the effective coating width while said gap is widened.

5,328,736

APPARATUS AND PROCESS FOR IMPREGNATING FIBERS WITH AN AEROSOL OF ELECTROSTATICALLY CHARGED POLYMER POWDER PARTICLES

Alain Charles, Champigny/Marne, and Emile Morel, Paris, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

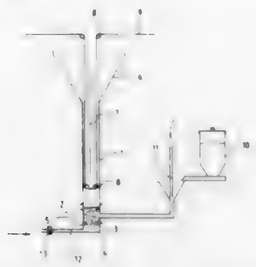
PCT No. PCT/FR91/00207, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO91/14044, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 14, 1991, Ser. No. 934,455

Claims priority, application France, Mar. 15, 1990, 90 03346

Int. Cl.[5] B05D *1/06*; **B05B** *5/14*

U.S. Cl. 427—459 **8 Claims**



1. A continuous process for impregnating fibers with polymer powder particles wherein said fibers are passed through an aerosol of said polymer powder particles, said process comprising the steps of:

passing said polymer powder aerosol through a fluidized bed of charging particles contained in an earthed fluidization vessel;

supplying said polymer powder particles into said aerosol at a rate which is substantially equal to a rate at which said polymer powder particles are impregnated in said fibers, said earthed fluidization vessel and said charging particles electrostatically charging said polymer powder particles of said aerosol;

passing said fibers through said polymer powder aerosol in a chamber connected to said earthed fluidization vessel after said polymer powder aerosol has passed through said fluidized bed; and

continuously reintroducing into said aerosol during said supplying step any polymer powder which was not impregnated into said fibers, said continuous reintroducing step being conducted independently of said supplying step.

5,328,737

METHOD OF FORMING FILM BY PLASMA CVD

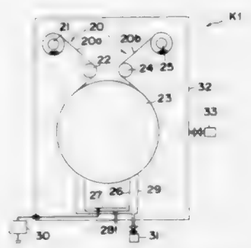
Kiyoshi Takahashi, Ibaraki; Mikio Murai, Hirakata; Masaru Odagiri, Kawanishi; Hideyuki Ueda, Takatsuki; Yukikazu Ohchi, Kadoma, and Tatsuya Hiwatashi, Kumamoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 29, 1993, Ser. No. 38,297

Claims priority, application Japan, Mar. 30, 1992, 4-072056

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—569 **11 Claims**



1. A method of forming a film on a substrate by plasma CVD, comprising the steps of:

providing a discharge tube in a vacuum chamber;

providing a partition wall around the discharge tube so as to define a space therebetween;

evacuating the space between the discharge tube and the partition wall;

providing the substrate at a position confronting the discharge tube; and

effecting plasma discharge in the discharge tube to form a film on the substrate.

5,328,738

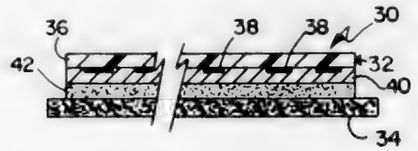
METALLIZED LABEL

Barron G. McKillip, Grand Rapids, Mich., and Donald P. Klein, Dell Rapids, S. Dak., assignors to CCL Label, Inc., Grand Rapids, Mich.

Filed Jan. 11, 1993, Ser. No. 2,593

Int. Cl.[5] B32B *7/12*, *15/04*

U.S. Cl. 428—40 **7 Claims**



1. A label comprising:

a translucent base sheet having a front surface and a rear surface;

graphic printing directly engaging said base sheet and forming at least one viewing area; and

a metallic layer directly engaging said rear surface of said base sheet and said printing, said metallic layer being viewable through said base sheet and said viewing area, whereby the need for a cover sheet or varnish coating to protect said printing is eliminated.

5. A label comprising:

a translucent base sheet having a front surface and a rear surface;

graphic printing directly on and engaging said rear surface of said base sheet and forming at least one viewing area, whereby neither a protective sheet nor a varnish coating is required to protect said printing;

a metallic layer directly on and engaging said rear surface of said base sheet and said printing, whereby said metallic layer is visible from the front of said base sheet through said at least one viewing area; and

adhesive directly on said metallic layer opposite said base sheet.

5,328,739

CONSTRUCTION BOARD

Lars Heselius, and Esko Brunila, both of Pargas, Finland, assignors to Oy Partek AB, Pargas, Finland

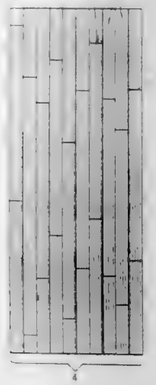
PCT No. PCT/FI89/00233, § 371 Date Aug. 16, 1991, § 102(e) Date Aug. 16, 1991, PCT Pub. No. WO90/07038, PCT Pub. Date Jun. 28, 1990

PCT Filed Dec. 15, 1989, Ser. No. 690,907

Claims priority, application Finland, Dec. 16, 1988, 885849

Int. Cl.[5] B32B *3/00*, *3/10*, *3/14*, *3/16*

U.S. Cl. 428—53 **5 Claims**



1. In a longitudinally extending lamella board (1) having opposed maim surfaces and constructed of a plurality of side by side lamellas (4) of binder fixed mineral wool fibres having a first fibre orientation and defining a core for a sandwich element having a surface layer of sheet material on both main surfaces, the lamellas (4) extending in the longitudinal direction of the board and the first fibre orientation of the lamellas forming essentially a right angle to the main surfaces of the board, the improvement wherein the lamellas (4) consist of longitudinally aligned lamella pieces (2) having opposing end surfaces and being shorter than half of the length of the lamella board (1), the opposing end surfaces of aligned lamella pieces (2) forming a joint (3); and none of the joints being disposed immediately next to one end of the lamella board when the board is used as a one-field board with supports at the ends, or immediately next to a support when the board is used as a multi-field board with intermediate supports; and wherein none of the joints (3) is disposed closer to a support of the lamella board (1) than a length a, when $a = L/1.9\,n$, wherein L equals the length of the lamella board when the board is used as a one-field board, and L equals the distance between intermediate supports when the board is used as a multi-field board, and n equals the number of laterally adjacent lamellas (4) in the lamella board.

5,328,740

MAGNETO-OPTICAL RECORDING MEDIUM AND METHOD FOR PROCESSING THE SURFACE

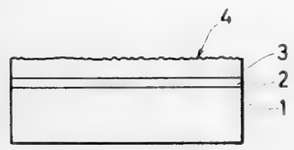
Junichiro Nakayama, Nara; Yoshiteru Murakami, Nishinomiya; Hiroyuki Katayama, Nara, and Kenji Ohta, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1991, Ser. No. 650,283

Claims priority, application Japan, Feb. 6, 1990, 2-26477

Int. Cl.[5] B32B *3/02*, *3/10*; **G11B** *5/66*

U.S. Cl. 428—64 **4 Claims**



1. A magneto-optical recording medium comprising

a disk substrate,

a magneto-optical recording layer formed on said substrate, and

a protective layer formed on said recording layer,

wherein physical protrusions and recessions, form a texture on a surface of said protective layer and the shapes of the physical protrusions and recessions vary at each radial location on the magneto-optical medium, whereby a floating force given to a floating type magnetic head from the magneto-optical recording medium through an air layer becomes substantially the same both in areas near the center of the magneto-optical recording medium and in areas near the periphery thereof,

wherein the protrusions and recessions forming the texture on the protective layer surface are aligned in a direction which crosses the rotating direction of the recording medium at a substantially right angle in areas near the center of the recording medium and is substantially parallel with the rotating direction in areas near the periphery thereof.

5,328,741

OPTICAL RECORDING MEDIUM

Shuichi Yanagisawa; Tatsuro Sakai; Satoru Tanaka; Takashi Chuman; Yasushi Araki, and Fumio Matsui, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

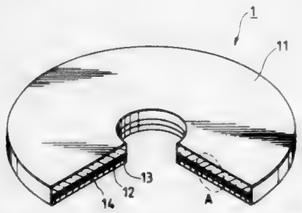
Filed Dec. 17, 1991, Ser. No. 808,617

Claims priority, application Japan, Jun. 25, 1991, 3-153385

The portion of the term of this patent subsequent to Jul. 5, 2011, has been disclaimed.

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **8 Claims**



1. An optical recording medium comprising a light-transparent substrate, a light-absorbing layer having a thickness of about 30 to 900 nm disposed on said substrate, and a light-reflecting layer disposed on said light-absorbing layer,

wherein said light-absorbing layer contains a first cyanine

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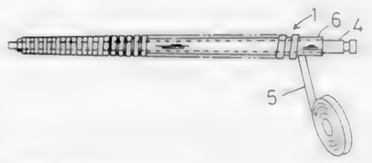
dye and a second cyanine dye, and said first cyanine dye has a light absorption band in a wavelength region of recording or reproducing light, and said second cyanine dye has light absorption band in wavelength range shorter than said first cyanine dye and has smaller light absorption in said wavelength region of recording or reproducing light, and said second cyanine dye is present in said light-absorbing layer in an amount greater than said first cyanine dye, and wherein said first cyanine dye and said second cyanine dye are present in said light absorbing layer in a weight ratio range of 1:1.5 to 1:3, respectively, and wherein information is recorded or reproduced in said light-absorbing layer in a wavelength region of about 780–830 nm.

5,328,742

ROD AND METHOD OF MANUFACTURING SAME

Takayuki Tukihara, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jun. 3, 1992, Ser. No. 893,005
Claims priority, application Japan, Jun. 5, 1991, 3-133913
Int. Cl.[5] A01K *87/00*
U.S. Cl. 428—105 4 Claims



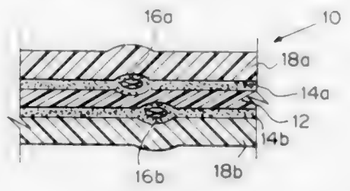
1. A fishing rod comprising:
an inner layer formed of a prepreg sheet including reinforcing fibers oriented in one direction and having a width extending over an entire length of the rod; and
an outer layer formed of a prepreg tape including reinforcing fibers oriented in a direction different from said reinforcing fibers oriented in one direction and having a width less than the length of the rod, said prepreg tape being continuously wound over the entire length of the rod;
wherein said prepreg tape is wound with a variable winding distance so as to have adjacent winds partly overlapping each other in a tip end region of the rod to conceal and minimize possibility of damage done to the inner layer, and axially spaced from each other in a butt end region of the rod to avoid an increase in rigidity and loss of flexibility.

5,328,743

REINFORCED SHRINK WRAP

Lyndell K. Wynne, Kingwood, and Dennis J. Olheiser, Missouri City, both of Tex., assignors to Reef Industries, Inc., Houston, Tex.

Filed Aug. 21, 1992, Ser. No. 933,407
Int. Cl.[5] B32B *5/12*
U.S. Cl. 428—105 23 Claims



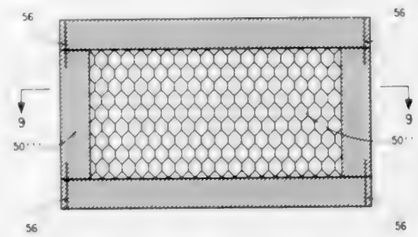
1. A multilayered laminated reinforced shrink wrap comprising:
at least one layer of shrink film of highly irradiated polyethylene;
reinforcing filamentous grids on either side of the shrink film;
said reinforcing filamentous grids embedded in a flexible adhesive layer; and
two polyolefin film layers adhered to said adhesive layers as the outer surface of the shrink wrap.

5,328,744

PANEL HAVING A CORE WITH THERMOPLASTIC RESIN FACINGS

Christine M. Kaufmann, Boothwyn, Pa.; Dale L. Murschell, Woodstown, N.J.; Dennis A. Nollen, Newark, Del.; Anthony R. Saracino, and Joseph D. Trentacosta, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 9, 1990, Ser. No. 592,179
Int. Cl.[5] B32B *3/12*
U.S. Cl. 428—116 5 Claims



1. A panel comprising: a core member in the form of a honeycomb structure of aramid paper and thermoplastic resin sheet material reinforced with a fiber selected from the group consisting of aramid, carbon and glass bonded to both sides of said core member to form facings therefor, the thermoplastic resin being between 30 to about 65 weight percent of each said facing, said honeycomb structure having a plurality of adjoining cells formed of continuous upstanding walls, said walls being folded at each end in the same direction to increase the surface area of said honeycomb structure contacting each said facing, the peel strength between each facing and the core of the panel being greater than 10 lbs./3" sample.

5,328,745

POLYESTER FILMS FOR MAGNETIC RECORDING MEDIUM

Hideshi Kurihara; Masahito Satoh; Tsuyoshi Nagai, all of Sagamihara; Sadayoshi Miura, Yamato, and Toshifumi Osawa, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

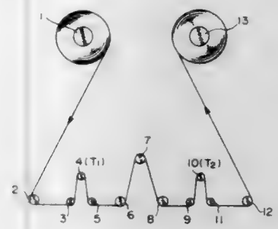
Filed Dec. 23, 1992, Ser. No. 996,172
Claims priority, application Japan, Dec. 25, 1991, 3-356456; Jan. 23, 1992, 4-010089
Int. Cl.[5] G11B *5/64, 5/704;* B32B *5/16*
U.S. Cl. 428—141 11 Claims

1. A polyester film for use in a magnetic recording medium characterized in that a continuous thin film which contains a resin as a matrix and acts as a primer layer for a magnetic layer is coated on one surface of a support film composed of a polyester, and the surface of the continuous thin film has (A) small protuberances each containing particles with an average particle size of less than 0.06 micrometer as a nucleus and having a height of 13 nm or less, (B) large protuberances each containing particles with an average particle size of 0.06 micrometer or more as a nucleus and having a height of 30 nm or less, and (C) micro-protuberances composed of a matrix resin alone, the numbers, per mm^2 of the film, of these protuberances satisfying the formulas,

$An = 1.0 \times 10^4 - 1.0 \times 10^8/mm^2$,

$Bn = 0 - 4 \times 10^4/mm^2$, and

$Cn \geqq 4.0 \times 10^6/mm^2$



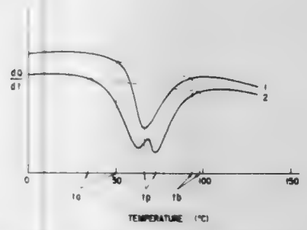
wherein An is the number of the small protuberances, Bn is the number of the large protuberances, and Cn is the number of the microprotuberances, the fine surface roughness Ra[5] of the continuous thin film portion composed of the matrix resin alone being 1.10 nm or less, and the surface roughness Ra of the overall continuous thin film being 1 to 10 nm.

5,328,746

THERMAL TRANSFER RECORDING MEDIUM

Tetsuo Okuyama, Yokohama; Nanao Nakamura; Satoshi Takayama, both of Kawasaki; Noriaki Sato, and Tadayuki Nakamura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 5, 1992, Ser. No. 894,739
Claims priority, application Japan, Jun. 7, 1991, 3-136309
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 25 Claims



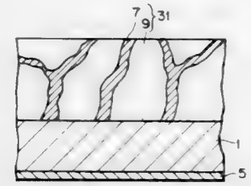
1. A thermal transfer recording medium comprising:
a base sheet; and
a hot-melt ink layer, formed on said base sheet, containing a colorant and a hot-melt material, which is selectively heated, melted, and transferred to a transfer medium,
wherein said hot-melt material has a melting point Tm of 70° to 90° C., a magnitude complex modulus of 10^6 Pa to 10^7 Pa at 100° C., and a pour point Tp of not less than 150° C.

5,328,747

THERMAL IMAGE TRANSFER RECORDING MEDIUM

Youji Ide, Mishima, and Keiichi Shiokawa, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 643,479, Jan. 22, 1991, Pat. No. 5,238,726. This application Jul. 14, 1992, Ser. No. 913,067
Claims priority, application Japan, Jan. 22, 1990, 2-12349; Apr. 2, 1990, 2-87711; Sep. 14, 1990, 2-244269
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 28 Claims



1. A thermal image transfer recording medium comprising a support, and a thermofusible ink layer formed thereon, said thermofusible ink layer comprising a resin matrix and a thermofusible ink, at least one of said resin matrix or said thermofusible ink containing a repelling-property-imparting material such that said reins matrix and said thermofusible ink repel each other.

5,328,748

RECORDING MATERIAL FOR THE INK JET PROCESS

Horst Westfal, Belm, Fed. Rep. of Germany, assignor to Felix Schoeller, Jr. and Papierfabrik GmbH & Co. KG, Osnabruck, Fed. Rep. of Germany

Filed Oct. 26, 1992, Ser. No. 966,717
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135388
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 16 Claims

1. A recording material for an ink jet process comprising a support material with a dried ink absorbing layer applied as an aqueous coating thereon, said ink absorbing layer containing a hydrophilic binder and an oxidized polyethylene, said oxidized polyethylene being present in the ink absorbing layer aqueous coating as a cationic active emulsified oxidized polyethylene.

5,328,749

RESIN-COATED PAPER

Touru Noda, and Hiroshi Matsuda, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,183
Claims priority, application Japan, Jan. 27, 1992, 4-011907
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—195 24 Claims

1. A resin-coated paper using as substrate a base paper comprising natural pulp, one side of said base paper being coated with a resin A, wherein said base paper has unevenness in thickness in machine direction (unevenness index) Rpy as specified below of not more than 140 mV, said resin A comprises a polyethylene-based resin and a random polypropylene-based resin which is obtained by randomly copolymerizing ethylene and propylene and has an ethylene content of 1 to 10 mol %, the ratio by weight of said polyethylene-based resin to said random polypropylene-based resin is in the range of 1:99–30:70, and said composition has been subjected to at least one round of kneading:
unevenness index Rpy: a value (unit: mV) determined in the following way: A sample is let run between a pair of spherical tracers, and by using a film thickness meter

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which measures the variation of thickness of the sample as an electrical signal through an electrical micrometer, the variation of thickness of the sample in the machine direction is measured by scanning the sample in the machine direction at a constant rate of 1.5 m/min, under the condition that the sensitivity range of the electrical micrometer is ± 15 μm/± 3V, and the hanning window and FFT is applied to the electrical signal to obtain the power spectrum (unit: mV^2) by FFT analyzer, and the obtained power value is integrated from 2 to 25 Hz, multiplied by $\frac{1}{2}$ and then raised to the one-half power.

5,328,750
FLEXIBLE PRINTED CIRCUITS

Albert W. Morgan, Wilbraham; James P. Brozek, Chicopee, both of Mass.; James D. Capistran, Suffield, Conn., and Michael T. O'Connor, Jr., Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 468,509, Jan. 22, 1990, Pat. No. 5,075,037, which is a division of Ser. No. 320,914, Mar. 7, 1989, Pat. No. 4,910,072, and a continuation of Ser. No. 928,499, Nov. 7, 1986, abandoned. This application Dec. 19, 1991, Ser. No. 812,245

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—209 **5 Claims**

1. A printed circuit comprising oxidation resistant, electrolessly-deposited copper circuitry on a flexible film substrate wherein said copper is deposited on a activated ink coating prepared by heating a wet ink comprising a polymer and a Group 1B or 8 compound which is adapted to drying at room temperature to a catalytically inert ink.

5,328,751
CERAMIC CIRCUIT BOARD WITH A CURVED LEAD TERMINAL

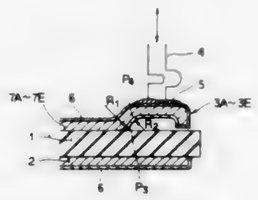
Hiroshi Komorita; Nobuyuki Mizunoya, both of Yokohama; Kazuo Matsumura, Kawasaki; Kazuo Ikeda, Yokohama; Takayuki Naba, Kawasaki, and Tadashi Tanaka, Matsudo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 10, 1992, Ser. No. 911,713

Claims priority, application Japan, Jul. 12, 1991, 3-172814; Nov. 11, 1991, 3-294568; Nov. 26, 1991, 3-310979; Jun. 22, 1992, 4-162677

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—209 **11 Claims**



1. A ceramic circuit board comprising:
a ceramic base board;
a metal circuit plate integrally bonded onto a surface of the ceramic base board; and
a terminal connecting port formed by bending a part of the metal circuit plate for connecting a terminal of a module, the terminal connecting port being formed so that the terminal connecting port is raised from the surface of the ceramic base board, and a radius of curvature of the bent portion provided on the terminal connecting port is set to 0.2 mm or more.

5,328,752
SUBSTRATE FOR PRINTED CIRCUIT BOARDS USING PHOTOCURABLE RESIN AND PROCESS FOR PRODUCING THE SAME

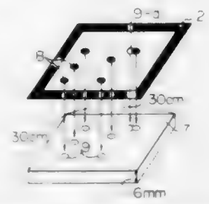
Keita Miyazato, Fukushima, Japan, assignor to Nitto Boseki Co., Ltd., Fukushima, Japan

Continuation-in-part of Ser. No. 700,716, May 15, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 948,334

Claims priority, application Japan, May 15, 1990, 2-124698

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—209 **8 Claims**



1. A substrate for use in a printed circuit board having holes in predetermined positions and which are arranged in a predetermined manner, said substrate being comprised solely of laminated thin layers made of a photocurable resin of the same material; said laminated thin layers each being produced by introducing a photo-curable resin into a vessel; providing a masking means above and proximate to the resin surface; irradiating planar light through the masking means to cure the exposed part of said photo-curable resin to form a first formed thin layer of cured resin; shifting the first formed thin layer in the vertical direction to a position which allows the photo-curable resin to cover the first formed thin layer; irradiating planar light through the masking means to cure the exposed part of said photo-curable resin covering the first formed layer to laminate another thin layer of said photo-curable resin onto the first formed thin layer, and successively repeating the procedures of shifting, covering and curing.

5,328,753
GLASS SHEETS HAVING PAINTED EXTERIOR SURFACES

Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 30, 1992, Ser. No. 968,912

Int. Cl.[5] **B32B** *17/00*; **C03B** *23/035*

U.S. Cl. 428—210 **5 Claims**

1. A painted glass sheet, comprising:
A) a sheet of glass, having an exterior surface;
B) a layer of metal-containing ceramic paint comprising ceramic frit, pigment, a vehicle, and metal powder fused to at least a portion of the exterior surface of the glass sheet, wherein said metal powder is prepared from the group of metals consisting of zinc, aluminum, tin, antimony, lead, cadmium, chromium, cobalt, copper, manganese, iron, silicon, titanium, tungsten, bismuth, and mixtures and alloys thereof; and
C) a layer of organic paint adhered to the layer of metal-containing ceramic paint.

5,328,754
THERMOSENSITIVE IMAGE TRANSFER INK SHEET

Takeshi Yuyama, Shizuoka; Keishi Taniguchi, Susono, and Shigeyuki Harada, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 16,957

Claims priority, application Japan, Feb. 13, 1992, 4-026812; Nov. 27, 1992, 4-318960

Int. Cl.[5] **B41M** *5/26*

U.S. Cl. 428—212 **15 Claims**

1. A thermosensitive image transfer ink sheet comprising:
a support, and
a thermofusible coloring layer formed on said support, comprising a coloring agent, an epoxy resin, a mercapto-group-containing compound serving as an epoxy resin crosslinking agent, and a tertiary amine or a salt thereof serving as a crosslinking reaction promoting agent.

5,328,755
POLYMERIC FILM

Paul D. A. Mills, Darlington; Anton R. Olek, Guisborough, both of England, and Junaid A. Siddioui, Richmond, Va., assignors to Imperial Chemical Industries PLC, London, England

Filed May 15, 1992, Ser. No. 883,872

Claims priority, application United Kingdom, May 16, 1991, 9110590.8

Int. Cl.[5] **B32B** *27/08, 5/16*

U.S. Cl. 428—215 **10 Claims**

1. A polymeric film consisting essentially of an unfilled primary layer of a synthetic film-forming polymeric material having on at least one surface thereof a secondary layer consisting essentially of a synthetic film-forming polymeric material including, based upon the weight of the polymer in the secondary layer, (a) 50 to 1000 ppm of glass particles having a volume distributed median particle diameter of 1.0 to 7.0 μm, and (b) 200 to 2000 ppm of silica particles having an average primary particle size of 0.01 to 0.09 μm.

5,328,756
TEMPERATURE SENSITIVE CIRCUIT BREAKING ELEMENT

Robin E. Wright, Inver Grove Heights, and William V. Balsimo, Afton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 31, 1992, Ser. No. 829,764

Int. Cl.[5] **B32B** *7/02*

U.S. Cl. 428—220 **17 Claims**

1. An electrically conductive composite article comprising a polytetrafluoroethylene fibril matrix having enmeshed therein
(a) electrically conductive metal-containing particles, and
(b) electrically nonconductive, energy expandable hollow polymeric particles, said composite article having a resistivity of less than about 1000 Ω.cm prior to expansion of said energy expandable particles and greater than about 10^5 Ω. cm after expansion of said energy expandable particles.

5,328,757
PAPER MACHINE CLOTHING

Maryann C. Kenney, Foxboro; Sandra K. Barlow, Blackstone, and Ludmilla Konopasek, Medfield, all of Mass., assignors to Albany International Corp., Albany, N.Y.

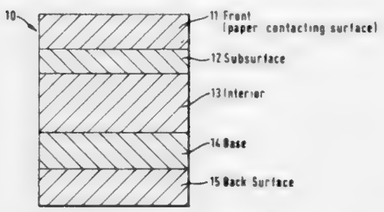
Filed Dec. 7, 1992, Ser. No. 987,375

Claims priority, application United Kingdom, Dec. 5, 1991, 9125889.7

Int. Cl.[5] **B32B** *7/00*

U.S. Cl. 428—247 **23 Claims**

1. An article of paper machine clothing for use in high temperature applications, said applications being those in which a paper machine press roll temperature is greater than 140° C., said article comprising:
a paper-contacting surface layer adapted in use to contact a forming paper sheet while said forming paper sheet is in contact with a press roll, said paper-contacting surface layer being a fiber layer acting as a thermal barrier to protect said article of paper machine clothing and providing properties of sheet release;
a re-wet resisting sub-layer within said article of paper machine clothing and not in contact with said forming paper sheet, said re-wet resisting sub-layer providing resistance to re-wet of the forming paper sheet;
a base layer structure; and



at least one intermediate layer disposed between said paper-contacting surface layer and said base layer structure; said paper-contacting surface layer, said re-wet resisting sub-layer, said base layer structure and said at least one intermediate layer being joined to one another to form an integral structure;
said thermal barrier being provided so that said at least one intermediate layer may include materials not otherwise suited for high temperature applications.

5,328,758
PARTICLE-LOADED NONWOVEN FIBROUS ARTICLE FOR SEPARATIONS AND PURIFICATIONS

Craig G. Markell, White Bear Township, Ramsey County; Donald F. Hagen, Woodbury; Paul E. Hansen, Lake Elmo, and Nicholas R. Baumann, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 776,098, Oct. 11, 1991, abandoned. This application Aug. 14, 1992, Ser. No. 929,985

Int. Cl.[5] **D04H** *1/08*

U.S. Cl. 428—281 **22 Claims**

1. A particle loaded, porous, fibrous, at least one of at least one of compressed or fused, article comprising
a) a thermoplastic nonwoven fibrous polymeric web, and
b) sorptive particles enmeshed in said web,
wherein said particle loaded fibrous article has been compressed or fused by at least one of calendering, heating, and applying pressure to provide said article with controlled porosity and a Gurley number of at least four seconds, and wherein said article is useful in separation science.

5,328,759
PROCESS FOR MAKING A HYDRAULICALLY NEEDLED SUPERABSORBENT COMPOSITE MATERIAL AND ARTICLE THEREOF

Ann L. McCormack, Cumming; Fred R. Radwanski, Roswell, and Cherie H. Everhart, Alpharetta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 1, 1991, Ser. No. 786,437

Int. Cl.[5] **B32B** *5/16*

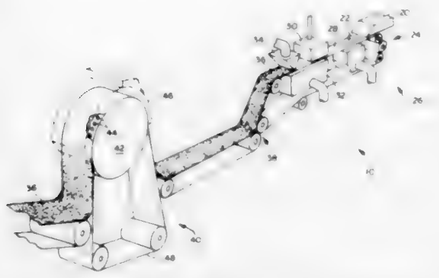
U.S. Cl. 428—283 **27 Claims**

1. A process of making a hydraulically needled superabsorbent composite material, said process comprising the steps of:
providing a nonwoven fibrous web;
hydraulically needling the nonwoven web so that its vertical wicking properties are adapted to be at least about 10 percent greater than an identical nonwoven web which has not been hydraulically needled; and

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introducing dry superabsorbent materials into intimate bonding contact with at least one surface of said hydraulically needled nonwoven fibrous web to form a hydraulically needled superabsorbent composite material.

16. A hydraulically needled superabsorbent nonwoven composite material produced by the process of claim **1**, said nonwoven composite material comprising:



a nonwoven fibrous web which has been hydraulically needled so that its vertical wicking properties are adapted to be at least about 10 percent greater than an identical nonwoven web which has not been hydraulically needled; and

superabsorbent materials joined in intimate bonding contact to at least one surface of said hydraulically needled nonwoven fibrous web

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5,328,760

MICROPOROUS MEMBRANE FROM COLD-ROLLED PRECUSOR FILM

Gunilla E. Gillberg-LaForce, Summit, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 294,332, Jan. 9, 1989, abandoned. This application Dec. 2, 1992, Ser. No. 984,711

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—315.5 **11 Claims**



1. A microporous film comprising a thermoplastic, semicrystalline polymer, said film having an average pore size of from about 10 to about 100 nanometers and having a thickness of from about 3 to about 10 mils.

5,328,761

DIAMOND-COATED HARD MATERIAL, THROWAWAY INSERT AND A PROCESS FOR THE PRODUCTION THEREOF

Naoya Omori, and Toshio Nomura, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

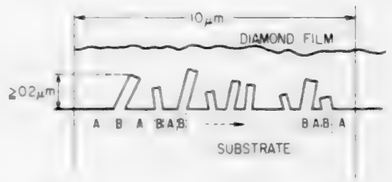
PCT No. PCT/JP91/01359, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO92/05904, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 4, 1991, Ser. No. 910,094

Claims priority, application Japan, Oct. 5, 1990, 2-269214; Feb. 18, 1991, 3-023495; Feb. 18, 1991, 3-023496

Int. Cl.[5] **B23B** *27/14*

U.S. Cl. 428—336 **16 Claims**



1. A diamond-coated hard material comprising a sintered body consisting of Si_3N_4 as a predominant component, at least a part of the sintered body having a sintered surface at least a part of which is coated with diamond.

5,328,762

READILY ADHESIVE POLYESTER FILM AND PROCESS FOR PREPARATION THEREOF

Teruo Takahashi, Hachioji; Sadayoshi Miura, Yamato, and Tamaki Kanai, Machida, all of Japan, assignors to Teijin Limited, Osaka, Japan

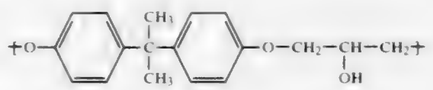
Filed Apr. 10, 1991, Ser. No. 682,956

Claims priority, application Japan, Apr. 11, 1990, 2-94159

Int. Cl.[5] **C09J** *7/02*

U.S. Cl. 428—355 **4 Claims**

1. A readily adhesive polyester film comprising a polyester film having provided on at least one surface thereof a thin layer readily adhesive to magnetic paints containing a self-emulsifiable type aqueous phenoxy resin which contains 3×10^{-5} to 3×10^{-3} eq/g of self-emulsifiable functional group, said aqueous phenoxy resin being a linear polymer containing as the main component a repeating unit of the following formula



5,328,763

SPRAY POWDER FOR HARDFACING AND PART WITH HARDFACING

Charles J. Terry, Fallon, Nev., assignor to Kennametal Inc., Latrobe, Pa.

Filed Feb. 3, 1993, Ser. No. 12,709

Int. Cl.[5] **B22F** *1/00, 7/06*

U.S. Cl. 428—559 **20 Claims**

1. A sintered spray powder for application as a corrosion-resistant hardfacing on a substrate, the sintered powder consisting essentially of:

WC in an amount between about 75 and about 90 weight percent of the sintered powder;

Mo in an amount of between about 1.6 and about 7.5 weight percent of the sintered powder;

Fe in an amount of between 0 and about 2 weight percent of the sintered powder;

C, other than C combined in WC, in an amount of between 0 and about 0.03 weight percent of the sintered powder;

Cr in an amount of between 0 and about 4.4 weight percent of the sintered powder;

Mn in an amount of between 0 and about 0.25 weight percent of the sintered powder;

Co in an amount of between 0 and about 0.63 weight percent of the sintered powder;

Si in an amount of between 0 and about 0.25 weight percent of the sintered powder;

W, other than W combined in WC, in an amount of between 0 and about 1.4 weight percent of the sintered powder; and

the balance nickel, wherein at least about 3.4 weight percent of the sintered powder is nickel.

8. A sintered spray powder consisting essentially of:

about 80 weight percent of tungsten carbide;

between about 3.2 and about 6 weight percent Mo;

between 0 and about 1.6 weight percent Fe;

between 0 and about 0.0024 weight percent C, other than C combined in WC;

between 0 and about 3.5 weight percent Cr;

between 0 and about 0.2 weight percent manganese;

between 0 and about 0.5 weight percent cobalt;

between 0 and about 0.2 weight percent Si;

between 0 and about 1.06 weight percent tungsten metal, other than tungsten combined in WC; and

the balance nickel wherein at least about 6.8 weight percent of the powder is nickel.

10. A sintered spray powder consisting essentially of:

about 88 weight percent of tungsten carbide;

between about 1.9 and about 3.6 weight percent Mo;

between 0 and about 1 weight percent Fe;

between 0 and about 0.015 weight percent C, other than C combined in WC;

between 0 and about 2.1 weight percent Cr;

between 0 and about 0.12 weight percent manganese;

between 0 and about 0.3 weight percent cobalt;

between 0 and about 0.12 weight percent Si;

between 0 and about 0.64 weight percent tungsten metal, other than tungsten combined in WC; and

and balance nickel wherein at least about 4.1 weight percent of the powder is nickel.

5,328,764

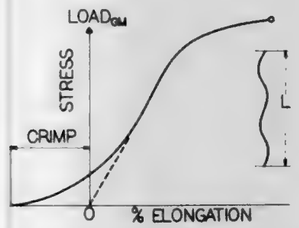
LINEAR CARBONACEOUS FIBER WITH IMPROVED ELONGABILITY

Francis P. McCullough, Jr., Lake Jackson; R. Vernon Snelgrove, Damon, both of Tex., and Bhuvenesh C. Goswami, Clemson, S.C., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 430,762, Nov. 1, 1989, abandoned. This application Apr. 30, 1992, Ser. No. 876,275

Int. Cl.[5] **D02G** *3/00*

U.S. Cl. 428—364 **7 Claims**



1. A non-flammable linear non-graphitic carbonaceous polymeric fiber having improved elongability and processability which comprises a non-graphitic heat treated irreversibly set linear stabilized polyacrylonitrile based fiber having an LOI greater than 40, said fiber having an elongability of about 2.5 to 9% and a pseudoelongability of about zero.

5,328,765

ORGANIC POLYMERS HAVING A MODIFIED SURFACE AND PROCESS THEREFOR

Norman S. Anderson, and Albert L. Promislow, both of Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 532,048, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 344,724, Apr. 28, 1989. This application Sep. 28, 1992, Ser. No. 951,147

Int. Cl.[5] **D02G** *3/00*

U.S. Cl. 428—364 **10 Claims**

1. A solid organic polymer containing on its surface a reaction product of a halohydroxy organic compound having primary halogen and hydroxyl functionalities, and a halohydrin value of less than or equal to 1.7% and an epoxy value of less than or equal to 0.36% and a cationic compound of an acid having a $pK_a > 2.5$.

5,328,766

STAIN-RESISTANT, LIGHTFAST POLYAMIDE TEXTILE PRODUCTS AND WOOLEN GOODS AND COMPOSITIONS AND PROCESSES THEREFOR

Richard D. Smith, Opelika, Ala., assignor to West Point Pepperell, Inc., West Point, Ga.

Continuation of Ser. No. 847,412, Feb. 28, 1992, abandoned, which is a continuation of Ser. No. 543,997, Jun. 26, 1990, abandoned. This application Dec. 4, 1992, Ser. No. 989,485

Int. Cl.[5] **B32B** *33/00*

U.S. Cl. 428—378 **21 Claims**

1. A treated fibrous polyamide substrate with resistance to staining by acid colorants and superior lightfastness durable against alkaline washing comprising a fibrous polyamide substrate coated with a formulation comprising a) a partially sulfonated novolak resin, b) polymethacrylic acid, copolymers of methacrylic acid, or combinations of said polymethacrylic acid and said copolymers of methacrylic acid, and c) a water-soluble aluminum compound.

5,328,767

RESIN COMPOSITION AND MULTI-LAYER STRUCTURAL MATERIAL THEREFROM

Yasuaki Miki; Shoji Takano, both of Yokohama; Junichi Goto, Kawasaki, and Takayuki Ota, Sagamihara, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 868,654

Claims priority, application Japan, Apr. 15, 1991, 3-82485; Mar. 9, 1992, 4-50846

Int. Cl.[5] **B32B** *27/08, 27/32, 27/34, 27/36*

U.S. Cl. 428—423.7 **12 Claims**

1. A multi-layer structural material, comprising:

i) a layer consisting of a resin composition consisting of a polyester having amide bonds in the main polymer chain and a polyolefin modified with carboxylic acid groups or derivatives thereof; and

ii) a layer of an aromatic ring-containing polyester resin or of a polyolefin resin adjacent to the layer of the resin composition.

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5,328,768

DURABLE WATER REPELLANT GLASS SURFACE

George B. Goodwin, Mars, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 589,235, Sep. 28, 1990, which is a continuation-in-part of Ser. No. 503,587, Apr. 3, 1990, Pat. No. 4,983,459. This application Nov. 29, 1991, Ser. No. 799,807

Int. Cl.[5] B32B *9/00*; B05D *3/02*

U.S. Cl. 428—428 20 Claims

1. An article comprising a glass substrate at least a portion of the surface of which is treated with:

a. first a silica primer layer; and

b. second a perfluoroalkyl alkyl silane layer over the silica primer layer.

5,328,769

GOLD(I) MERCAPTOCARBOXYLIC ACID ESTERS, METHOD OF THEIR PREPARATION AND USE

Marion Lotze, Hammersbach, and Hans Mehner, Frankfurt, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 807,210, Dec. 16, 1991, Pat. No. 5,235,079. This application May 20, 1993, Ser. No. 63,773

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1990, 4040446

Int. Cl.[5] B32B *15/00, 17/06*

U.S. Cl. 428—434 17 Claims

1. A method of gilding solid bases, comprising applying a gold preparation comprising at least one gold (I) mercaptocarboxylic acid ester onto said solid base, wherein said gold (I) mercaptocarboxylic acid ester has the formula

$$Au-S-X-\underset{\underset{O}{\|}}{C}-O-Z \quad (I)$$

in which X is an alkylene group and Z an alkyl group, wherein X is a C_1- to C_3 alkylene group and Z is selected from the group consisting of tricyclo(5,2,1,$0^{2,6}$)decane-8- or -9-yl and tricyclo(5,2,1,$0^{2,6}$)decyl-3- or -4-methyl.

5,328,770

POLYESTER COMPOSITION, PROCESS FOR PREPARING SAME, AND FILM FORMED USING SAME

Minoru Yoshida, Mishima; Masaru Suzuki, Ito; Masahiro Kimura, Ohtsu, and Toshihiro Sasaki, Susono, all of Japan, assignors to Toray Industries, Inc., Japan

Division of Ser. No. 918,375, Jul. 23, 1992, abandoned. This application May 5, 1993, Ser. No. 58,966

Int. Cl.[5] B32B *27/36*

U.S. Cl. 428—480 18 Claims

1. A biaxially oriented polyester film formed by using a polyester composition comprising (A) an aromatic polyester resin having copolymerized therein, a compound containing at least one sulfonic acid group or sulfonic acid metal salt group and (B) substantially uniformly monodispersed crosslinked polymer particles, wherein the amount of the compound containing at least one sulfonic acid group or sulfonic acid metal salt group copolymerized in aromatic polyester (A) is in the range of 0.1 to 10 parts by weight based on 100 parts by weight of carboxylic acid components of said aromatic polyester.

5,328,771

THERMAL FUSION TYPE DONOR FILM CAPABLE OF IMPARTING GRADATION

Yoshikazu Mizobuchi, Madison, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

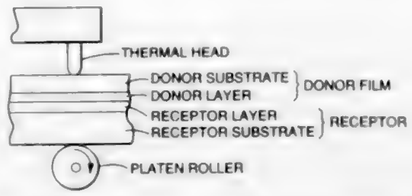
Filed Apr. 22, 1993, Ser. No. 52,127

Claims priority, application Japan, May 25, 1992, 4-156177

Int. Cl.[5] B41M *5/26*

U.S. Cl. 428—483 7 Claims

1. A thermal donor film comprising a film substrate and a donor layer on said film substrate, said donor layer comprising a terpolymer produced by polymerization of a reactive composition of 25 to 45% by weight of acrylonitrile, 35 to 55% by



weight of n-butyl acrylate, and 10 to 30% by weight of 2-hydroxyethyl methacrylate, and a coloring material.

5,328,772

MULTILAYER SLIDING MATERIAL FOR HIGH-SPEED ENGINE AND METHOD OF PRODUCING SAME

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Motomu Wada, Owariasahi; Koichi Yamamoto; Hideo Ishikawa, both of Komaki; Youji Nagai, Nagoya, and Kenji Sakai, Ichinomiya, all of Japan, assignors to Daido Metal Company, Nagoya, Japan

Filed Feb. 12, 1992, Ser. No. 834,085

Claims priority, application Japan, Feb. 20, 1991, 3-026314

Int. Cl.[5] B22F *7/04*

U.S. Cl. 428—548 10 Claims

1. A multilayer sliding material for a high-speed rotation shaft, comprising a four-layer structure having a steel back metal, a plating layer of copper or copper base alloy bonded to the steel back metal, a Cu-Pb bearing alloy layer bonded to the plating layer, and an overlay of a lead base alloy bonded to the bearing alloy layer, the steel back metal having not less than 155 of Vickers hardness and not less than 42 kgf/mm^2 of 0.2% yield strength, the Cu-Pb bearing alloy layer having not less than 0.25 cal/cm.s.° C. of thermal conductivity, not less than 75 of Vickers hardness and not less than 18 kgf/mm^2 of tensile strength, the lead base alloy consisting of 2–8 wt % of Sn and 3–11 wt % of In and the balance Pb and incidental impurities and having more than 250° C. of melting start temperature.

5,328,773

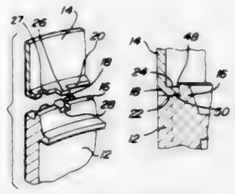
ARTICLE OF MANUFACTURING USING A POWDERED METAL COMPONENT

Norm Scott, St. Thomas, Canada, assignor to ICM/Krebsoge, Livonia, Mich.

Filed Sep. 3, 1992, Ser. No. 940,037

Int. Cl.[5] B25G *3/28*

U.S. Cl. 428—553 14 Claims



1. An article of manufacture comprising

a first part constructed of powdered metal, said first part having a lip which extends outwardly from one end of said first part,

a second part having a first side, a second side and an opening extending between said sides of said second part,

said opening being dimensioned so that, with said first side of said second part in abutment with said end of said first part, said lip extends through said opening and outwardly from said second side of said second part,

said first and second parts being mechanically secured together by deforming said lip so that a portion of said lip overlies and entraps an edge portion of said second part between said lip portion and said end of said first part.

5,328,774

MONOLITHIC METAL HONEYCOMB BODY WITH VARYING NUMBER OF CHANNELS

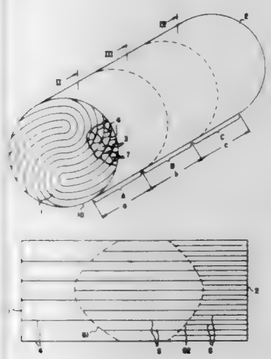
Wolfgang Maus, and Helmut Swars, both of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Emitec Gesellschaft für Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 27,735

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1990, 4024942

Int. Cl.[5] B01J *35/04*; F01N *3/28*

U.S. Cl. 428—593 26 Claims



1. A honeycomb body, comprising:

leading and trailing end surfaces being mutually spaced apart in a given flow direction;

subsections disposed in succession in said given flow direction between said end surfaces;

sheet-metal layers at least some of which having structures forming channels therebetween extending approximately in said given flow direction through which a fluid can flow;

said channels having dimensions determined by said structures of said sheet-metal layers;

each of said subsections having a different number of said channels per unit of cross-sectional area and said channels having cross-sectional areas differing in each of said subsections;

said sheet-metal layers including some at least substantially smooth layers having spacings therebetween and extending from said leading to said trailing end surfaces giving the honeycomb body a monolithic form, and said sheet-metal layers including different numbers of other sheet-metal layers filling said spacings in each of said subsections.

5,328,775

MOLDABLE MIXTURE FOR USE IN THE MANUFACTURING OF PRECIOUS METAL ARTICLES

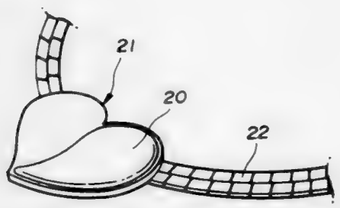
Koji Hoshino, Saitama; Masaki Morikawa, Hyogo; Tohru Kohno, Saitama; Koshiro Ueda, Saitama, and Masaki Miyakawa, Saitama, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 701869, May 17, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 978,507

Claims priority, application Japan, May 18, 1990, 2-128447; Jul. 6, 1990, 2-178753; Sep. 11, 1990, 2-241014; Sep. 11, 1990, 2-241015; Sep. 11, 1990, 2-241016; Sep. 11, 1990, 2-241017; Sep. 11, 1990, 2-241018; Oct. 9, 1990, 2-270938; Oct. 9, 1990, 2-270939

Int. Cl.[5] B22F *1/00*

U.S. Cl. 428—560 12 Claims



1. A moldable mixture for use in the manufacture of a precious metal article, containing 50 to 90% by weight of a precious metal powder, 0.8 to 8% by weight of a cellulose binder mixed with said precious metal powder, 0.03 to 3% by weight of a surface-active agent and 0.1 to 3% by weight of an adhesion preventing agent.

5,328,776

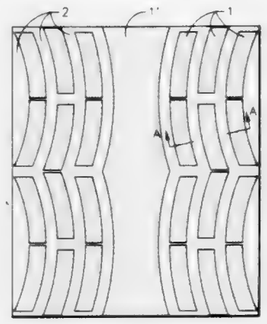
ABRASION AND IMPACT RESISTANT COMPOSITE CASTINGS AND WEAR RESISTANT SURFACE PROVIDED THEREWITH

Michail Garber, 1249 E. 18 St., Brooklyn, N.Y. 11230; Boris Amusin, 40 Ocean Parkway #2D, Brooklyn, N.Y. 11218, and Kunsoo Kim, 1018 Palisade Ave. #P6, Fort Lee, N.J. 07024

Filed Jan. 4, 1993, Ser. No. 377

Int. Cl.[5] B32B *5/00*; B02C *1/02*

U.S. Cl. 428—614 15 Claims



2. A composite casting for wear resistant surface, comprising a base composed of a ductile material; and a plurality of substantially curved elongated wear resistant elements embedded in said base, said elongated wear resistant elements being spaced from one another in a transverse direction by distances and being interrupted in a longitudinal direction by transverse cutouts so that the ductile material of said base fills said dis-

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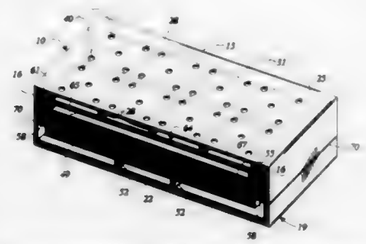
tances between said elongated wear resistant elements and also fills said cuts in said elongated wear resistant elements.

5,328,777

CATHODE COVER FOR METAL-AIR CELL

R. Dennis Bentz, and Christopher S. Pedicini, both of Marietta, Ga., assignors to AER Energy Resources, Inc., Atlanta, Ga.

Filed Jul. 14, 1992, Ser. No. 913,287
Int. Cl.[5] H01M *12/06*
U.S. Cl. 429—27 **22 Claims**



1. A cathode cover for a metal-air cell of the type having an air cathode positioned along an external surface of a cell case, comprising:

a mask member defining a plurality of openings therethrough; and

wall means extending from the mask member to the case for positioning the mask member at a distance spaced apart from the air cathode so as to form a plurality of discrete, unobstructed air chambers extending between the mask member and the air cathode and across substantially the entire air cathode;

the mask member including at least about 3 of the openings per square inch of the air cathode;

the openings providing between about 0.001 and about 0.01 square inches of total open area per square inch of the air cathode; and

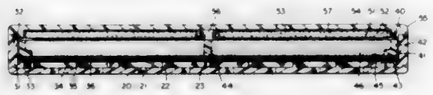
the air chambers having at least about 0.033 cubic inches of unobstructed volume per square inch of the air cathode.

5,328,778

METAL-AIR CELLS COMPRISING COLLAPSIBLE FOAM MEMBERS AND MEANS FOR MINIMIZING INTERNAL PRESSURE BUILDUP

Glenn Woodruff, Atlanta, and Ronald A. Putt, Marrieta, both of Ga., assignors to Matsi, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 809,196, Dec. 16, 1991, abandoned. This application Aug. 10, 1993, Ser. No. 105,354
Int. Cl.[5] H01M *2/12. 12/06*
U.S. Cl. 429—27 **20 Claims**



1. A prismatic zinc-air cell comprising:

a prismatic container having one or more oxygen access openings;

an air cathode disposed in the container in gaseous communication with the oxygen access openings thereby permitting access of oxygen to the air cathode;

a separator having a first side in electrolytic communication with the air cathode,

a zinc anode including an electrolyte and disposed in the container in electrolytic communication with a second side of the separator, the separator isolating the air cathode and the zinc anode from direct electrical contact and allowing passage of electrolyte therebetween;

an expansion space within the container adjacent to the zinc anode and accommodating expansion of the zinc anode during discharge of the cell;

a foam member generally occupying the expansion space and tending to oppose movement of the zinc anode away from the separator and to collapse upon expansion of the zinc anode during discharge; and

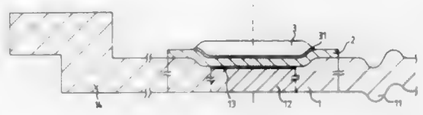
one or more vent openings disposed in the container in gaseous communication with the expansion space to minimize pressure increase within the container as the foam member collapses during discharge of the cell.

5,328,779

FUEL CELL BATTERY AND SOLID ELECTROLYTE FUEL CELLS THEREFORE

Helmut Tannenberger, Le Chateau de St. Croix, and Heiko Gruner, Beinwil a. See, both of Switzerland, assignors to Medicoat AG, Niederrohrdorf, Switzerland

PCT No. PCT/EP90/02175, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/11829, PCT Pub. Date Aug. 8, 1991
PCT Filed Dec. 13, 1990, Ser. No. 927,427
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1990, 4002951
Int. Cl.[5] H01M *8/12*
U.S. Cl. 429—32 **22 Claims**



1. A fuel cell for a fuel cell battery, comprising:

an active cell element comprised of a support electrode, a counterelectrode, and an electrolyte layer positioned between the support electrode and the counterelectrode,

wherein the support electrode supports the active cell element and includes an edge region, a spring-loaded region, and a porous region provided between the edge region and the spring-loaded region, the support electrode being composed of a metallic substance and the edge region, porous region and spring-loaded region of the support electrode being composed of the same metallic substance, and wherein the support electrode has a thickness effective to provide a transverse electrical conductivity which is effective to produce a uniform electrochemical reaction homogeneously distributed over the electrolyte layer,

wherein the spring-loaded region mechanically decouples the active cell element of the fuel cell for a fuel cell battery from frame structure thereby protecting the electrolyte layer from thermally induced mechanical stresses produced by differing coefficients of expansion of materials,

wherein the counterelectrode is porous and composed of a metallic substance, and

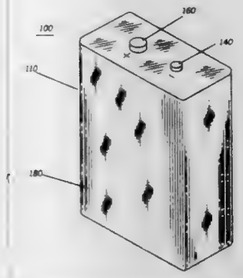
wherein the electrolyte layer is gastight and is composed of an oxide.

5,328,780

METHOD FOR CONTROLLING CORROSION ON A BATTERY WITH FRACTIONALLY SIZED TERMINALS

Venus D. Desai, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 4,206, Jan. 13, 1993, abandoned, which is a continuation of Ser. No. 807,361, Dec. 16, 1991, abandoned. This application Nov. 10, 1993, Ser. No. 150,562
Int. Cl.[5] H01M *2/10, 2/30*
U.S. Cl. 429—65 **11 Claims**



1. A method for controlling corrosion on the terminals of a battery cell used in a corrosive environment, comprising:

providing a battery cell having positive and negative electrical terminals that are electrically connected, the positive terminal having an exposed surface area between 1.1 and about 10 times greater than the exposed surface area of the negative terminal; and

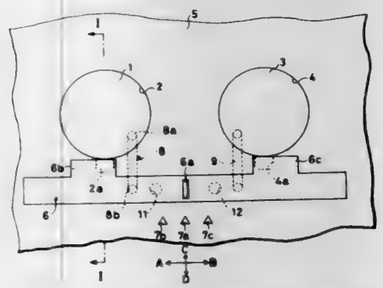
placing the battery cell in the corrosive environment, such that the positive and negative terminals are exposed to the corrosive environment.

5,328,781

BATTERY STORAGE MECHANISM FOR ELECTRONIC DEVICE

Noriyuki Mikake, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1993, Ser. No. 141,566
Claims priority, application Japan, Nov. 2, 1992, 4-294535
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—97 **10 Claims**



1. A battery storage mechanism for an electronic device comprising:

a plurality of battery storage sections, arranged in a main body of said electronic device, for holding batteries;

a plurality of cut sections, formed attached to said battery storage sections, for assisting a removal of the battery from said battery storage section;

a switch member which is movable in the vicinity of said battery storage sections, covers at least one of said cut sections when moved within a moving range, and uncovers a desired cut section by changing a position where said switch member stops; and

lock means included in each of said battery storage sections, wherein said lock means locks said switch member when said battery storage section does not store a battery, and

wherein, when said battery storage section stores a battery, said battery comes into contact with said lock means and changes the position of said lock means to unlock said switch member.

5,328,782

TREATED POROUS CARBON BLACK CATHODE AND LITHIUM BASED, NONAQUEOUS ELECTROLYTE CELL INCLUDING SAID TREATED CATHODE

Michael Binder, Brooklyn, N.Y.; Robert J. Mammone, So. Plainfield, and William L. Wade, Jr., Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 13, 1992, Ser. No. 959,597
Int. Cl.[5] H01M *2/12*
U.S. Cl. 429—101 **10 Claims**

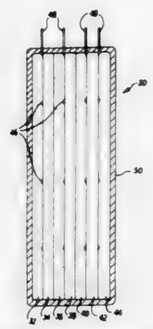
1. A lithium/sulfur dioxide cell including a porous carbon black cathode of about 90 percent carbon black and about 10 percent Teflon ® wherein the cathode is plasma gas treated with a gas plasma selected from the group consisting of O_2, NH_3 and GF_4/O_2 for about 4 minutes at a pressure of about 20 to 250 mTorr and at room temperature prior to inclusion of the cathode in the cell.

5,328,783

ELECTRIC CELLS WITH SELF-SUPPORTING POROUS CERAMIC PLATE

Philip J. White, Stoke-on-Trent, England, assignor to Portmeirion Potteries Limited, United Kingdom

PCT No. PCT/GB91/00280, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/13471, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 22, 1991, Ser. No. 927,622
Claims priority, application United Kingdom, Feb. 24, 1990, 9004224
Int. Cl.[5] H01M *4/72*
U.S. Cl. 429—233 **19 Claims**



1. An electric cell comprising a self supporting porous member in which a liquid electrolyte is absorbed; a first material comprising an anode in contact with the member; a second material comprising a cathode in contact with the member; and electrical conductors positioned on the porous member and extending through the cell in contact respectively with either the first or second materials.

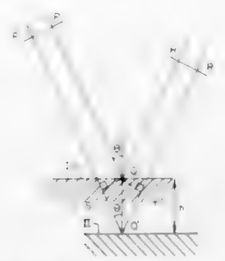
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5,328,784

REFLECTION MASK, METHOD OF PRODUCING MASK AND METHOD OF FORMING PATTERN USING THE MASK

Hiroshi Fukuda, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,126
Claims priority, application Japan, Sep. 10, 1990, 2-236959
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 **15 Claims**



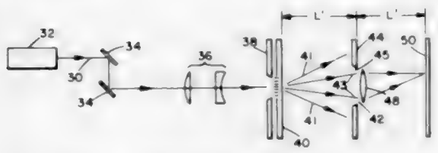
1. A reflection mask used for optically forming patterns, comprising:
- a plurality of optically reflective surfaces for reflecting at least one of ultraviolet rays and X-rays of a wavelength, said reflective surfaces having different levels to change the phase relationship between rays respectively reflected by said reflective surfaces of different levels;
- wherein said reflective surfaces each consist of a multilayer mirror; and
- wherein the different levels between adjacent ones of said reflective surfaces correspond to one-half the period of the multilayer of the multilayer mirror.

5,328,785

HIGH POWER PHASE MASKS FOR IMAGING SYSTEMS

Adlai H. Smith, San Diego, and Robert O. Hunter, Jr., Rancho Santa Fe, both of Calif., assignors to Litel Instruments, San Diego, Calif.

Filed Feb. 10, 1992, Ser. No. 833,939
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 **5 Claims**



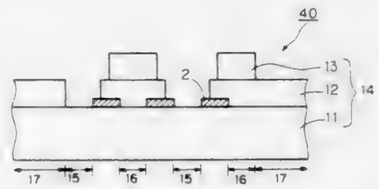
1. A method for modulating a laser beam for selectively etching material from a workpiece, said method which comprises:
- selecting a plate of refractive material transmissive at a wavelength of said laser beam, said plate having a transmissive area greater than an area of a cross-section of said laser beam;
- forming at least one first region comprising a binary phase grating with a first grating depth which scatters all incident light which impinges upon said at least one first region at a high angle to avoid said workpiece;
- forming at least one second region comprising a binary phase grating having a random arrangement of non-overlapping regions with a second grating depth the same as said first grating depth; and
- scanning said laser beam over said plate to cover said transmissive area of said plate so that said scanned laser beam is transmitted through said plate so that a portion of said scanned laser beam impinging upon said first region is deflected away from said workpiece and a second portion of said scanned laser beam impinging upon said second region is diffracted toward said workpiece wherein material is etched from at least one portion of said workpiece illuminated by said laser beam transmitted through said second region.

5,328,786

PHOTOMASK AND METHOD OF MANUFACTURING THE SAME

Junji Miyazaki, and Hitoshi Nagata, both if Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1991, Ser. No. 760,383
Claims priority, application Japan, Oct. 9, 1990, 2-272635
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 **23 Claims**



1. A photomask having a plurality of light-blocking regions arranged in parallel on a transparent member; the transparent member comprising:
- (a) first and second phase regions alternately disposed along the direction of arrays of the light-blocking regions, with each of the light-blocking regions interposing between them, and
- (b) a third phase region disposed adjacent to the first and second phase regions;
- the relations in phase between the first and second phase regions being arranged that the lights transmitted by the first and second phase regions have a phase difference enough to cancel with each other because of the interference; and the relations in phase of the third phase region to the first and second phase regions being arranged that the phase difference between the lights transmitted by the first and third phase regions, and the phase difference between the lights transmitted by the second and third phase regions are about a half of the phase difference between the lights transmitted by the first and second phase regions.

5,328,787

METHOD FOR ASSESSING AND CONTROLLING THE SENSITOMETRIC CHARACTERISTICS OF PHOTOGRAPHIC PRODUCTS

James D. Clifford, Rochester, N.Y., and Raymond J. Robbins, Hurstbridge, Australia, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 24, 1993, Ser. No. 66,827
Int. Cl.[5] G03C 5/00, 7/00, 1/46
U.S. Cl. 430—30 **11 Claims**

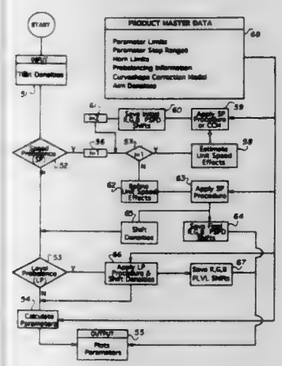
1. A method for controlling a process for making a photographic film or paper product, comprising the steps of:
- determining for the process and the product a set of control variables, CV_i to CV_n, for each of which a change of a known magnitude will produce a corresponding change in the density response of the product in one or more of three primary colors to exposure over a range of exposure steps;
- removing a sample from a production batch of the product;
- measuring the density response in three primary colors to exposure of the sample over the range of exposure steps;

- determining for each density response the deviation of the sample from an aim response for that color for the product;
- transforming the deviations or responses or both into sensitometric quality indicator parameters representing color radial error R, average density error D and contrast mismatch error M, wherein R is determined from data points entered within a closed elliptical curve in a color density balance plane with trilinear coordinates;
- transforming the aim response for at least one primary color into tolerance limit values for the quality indicator parameters, thereby defining boundaries of acceptable sensitometric quality of the product;
- determining a root mean square error HT of the density responses in accordance with the following expression:

$$HT^2=\{[\Sigma_i(r/L)_i^2]/AXG^2+[\Sigma_i(g/L)_i^2]/AXG^2+[\Sigma_i(b/L)_i^2]/AXB^2\}/3\Sigma_i(1/L_i)^2,$$

where Σ_i is the summation over the relevant step range; r_i, g_i and b_i are density errors on exposure step i; L_i is the tolerance limit value of the ith step; AXG is the length in density units of the green axis of the closed elliptical curve; and AXB is the length in density units of the semi-major blue axis of the closed elliptical curve;

- determining a root mean square DT of exposure stepwise values of D within a predetermined exposure step range, in accordance with the following expression:



$$DT=[\Sigma_i(D_i/L_i)^2/\Sigma_i(1/L_i)^2]^{\frac{1}{2}}$$

where D_i is the value of D at the ith step;

- determining a root mean square RT of exposure stepwise values of R within a predetermined exposure step range, in accordance with the following expression:

$$RT=[\Sigma_i(R_i/L_i)^2/\Sigma_i(1/L_i)^2]^{\frac{1}{2}}$$

where R_i is the value of R at the ith step;

- determining a weighted contrast mismatch MT, in accordance with the following expression:

$$MT^2=\{\Sigma_i[CM_i/L_i^*]^2\}/\Sigma_i[1/L_i^*]^2,$$

where CM_i is the contrast mismatch for the ith contrast step interval; and L_i^* is the tolerance limit value in the center of the contrast step interval beginning with the ith exposure step;

- determining a square root CT of the sum of the squares of total contrast errors over all colors, in accordance with the following expression:

$$CT^2=WTCE_R^2+WTCE_G^2+(AXG/AXB)^2(WTCE_B^2),$$

where each WTCE is determined in accordance with the following expression:

$$WTCE^2=\{\Sigma_i[CE_i/L_i^*]^2\}/\Sigma_i[1/L_i^*]^2,$$

where CE is the average contrast error for each color in percent over an n-step interval beginning with the ith step;

- defining a quality objective function F, in accordance with the following expression:

$$F=f_1[HT/w_1]^2+f_2[DT/w_2]^2+f_3[RT/w_3]^2+f_4[MT/w_4]^2+f_5[CT/w_5]^2,$$

where f_1 to f_5 are weighting factors and w_1 to w_5 are normalizing factors;

- using the changes to the set of control variables and the corresponding changes to the density responses to determine the magnitudes of the control variables for minimization of the value of the quality objective function; and
- adjusting the magnitudes of the control variables to achieve the minimization and control the said process for making a photographic film or paper product.

5,328,788

ORGANIC PHOTOCONDUCTIVE MATERIAL FOR ELECTROPHOTOGRAPHY AND METHOD FOR MAKING THE SAME

Atsushi Omote, Kawasaki; Sohji Tsuchiya, Tsukui, and Mutsuaki Murakami, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 25, 1991, Ser. No. 735,724
Claims priority, application Japan, Jul. 26, 1990, 2-200534; Jul. 27, 1990, 2-199402
The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.
Int. Cl.[5] G03G 5/047
U.S. Cl. 430—57 **23 Claims**

1. A method for making an organic photoconductive material which comprises:
- (a) dissolving at least a part of X-type and/or τ-type metal-free phthalocyanine in a solution of a resin binder comprising a vinylphenol polymer in a solvent capable of dissolving at least a part of X-type and/or τ-type metal-free phthalocyanine;
- (b) applying the resultant solution onto a conductive support; and
- (c) drying the applied mixture to form a photosensitive layer on the conductive support.

5,328,789

ELECTROPHOTOGRAPHIC ORGANIC PHOTOCONDUCTOR

Hideo Nakamori, and Masashi Tanaka, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 20, 1993, Ser. No. 64,705
Claims priority, application Japan, May 25, 1992, 4-132840
Int. Cl.[5] G03G 5/047, 5/09
U.S. Cl. 430—58 **18 Claims**

1. An electrophotographic organic photoconductor comprising a conductive substrate and an organic photosensitive layer formed on the conductive substrate,
- wherein the organic photosensitive layer is made of a resin composition including a charge generation material, a hole transport material, electron transport materials and a binding resin,
- the electron transport materials including a diphenoquinone derivative A and a diphenoquinone derivative B having a larger absolute value for reduction potential than that of the diphenoquinone derivative A, and the diphenoquinone derivative B is included in the proportion of 3 to 50 wt % on the basis of the total weight of the electron transport materials;

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the hole transport material having an ionization potential of 5.3 to 5.6 eV.

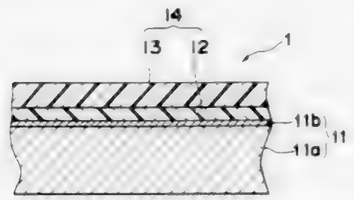
13. An electrophotographic organic photoconductor according to claim **1**, wherein the organic photosensitive layer is a multilayer comprising a charge generation layer and an electron transport layer.

5,328,790

PHOTORECEPTOR FOR USE IN CONTACT CHARGING METHOD AND IMAGE FORMING APPARATUS EMPLOYING SAID PHOTORECEPTOR

Masaki Asano, Amagasaki; Shuji Iino, Hirakata; Akihito Ikegawa, Sakai, and Izumi Osawa, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1992, Ser. No. 949,433
Claims priority, application Japan, Sep. 25, 1991, 3-243893
Int. Cl.[5] G03G *15/04*
U.S. Cl. 430—65 **7 Claims**



4. A photoreceptor as defined in claim **1**, wherein said alumite is subjected to a sealing treatment.

5,328,791

DRY TYPE DEVELOPER UTILIZED IN IMAGE RECORDING APPARATUS

Mitsuru Ohta, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 8, 1992, Ser. No. 986,802
Claims priority, application Japan, Dec. 10, 1991, 3-325893
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—106 **20 Claims**

1. A dry type developer including colored particles for use in an image recording apparatus of the type having means for supporting a recording medium thereon; developer providing means for storing the developer charged with one polarity therein; an aperture electrode comprising an insulator, a control electrode formed on one side of the insulator and an aperture penetrating the control electrode and the insulator; and a control device for selectively applying a voltage with a reverse polarity to the control electrode in response to which the charged developer is passed through the aperture and directed to a recording medium supported on the support means when a voltage is applied to the control electrode from the control device, wherein

an average particle size of the particles calculated based on volume of the particle is less than 17.0 μm and

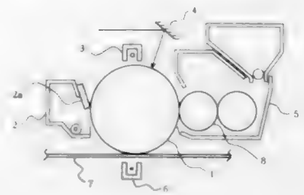
a ratio of both an average particle size of the particles calculated based on volume of the particle and an average particle size of the particles calculated based on number of the particle, lies in a range of from 1.00 to 1.50.

5,328,792

NON-MAGNETIC ONE-COMPONENT DEVELOPER AND DEVELOPMENT PROCESS

Kazunori Shigemori, Tokyo; Katsuhiro Hasegawa, and Jun Saito, both of Kawasaki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,397
Claims priority, application Japan, Jul. 24, 1991, 3-207605; Jun. 26, 1992, 4-193183
Int. Cl.[5] G03G *9/083*
U.S. Cl. 430—106.6 **4 Claims**



1. A non-magnetic one-component developer suitable for use in a development process in which a development roll for bearing a developer layer charged to the same polarity as the electric charge of a latent image formed on a photosensitive drum is disposed in a relation opposite to a photosensitive drum, and the remaining developer adhered to a non-latent-image area on the photosensitive drum is attracted toward the development roll at the same time as the development of a latent image on the photosensitive drum to remove the remaining developer, thereby cleaning the photosensitive drum, characterized in that the non-magnetic one-component developer comprises a binder resin and a colorant, and has the following physical properties:

(a) the volume-average particle diameter (dv) ranging from 5 to 15 μm;

(b) the ratio (dv/dn) of the volume-average particle diameter (dv) to the number-average particle diameter (dn) ranging from 1.00 to 1.40;

(c) the quotient (Sc/Sr) obtained by dividing the area (Sc) of a circle supposing the absolute maximum length of a particle is a diameter by the real projected area (Sr) of the particle ranging from 1.00 to 1.30;

(d) the product (AxdnxD) of the specific surface area (A) (m^2/g) as measured in accordance with the BET method, the number-average particle diameter (dn) (μm) and the true specific gravity (D) ranging from 5 to 10; and

(e) the ratio (Q/A) of the charge level (Q) (μc/g) to the specific surface area (A) ranging from 80 to 150,

said non-magnetic one-component developer being substantially spherical from the conditions of (c) and (d).

5,328,793

MAGNETIC PARTICLES FOR MAGNETIC TONER

Hiromitsu Misawa; Kazuo Fujioka; Eiichi Kurita, all of Hiroshima; Yasuhiko Fujii, Ohtake, and Yoji Okano, Hiroshima, all of Japan, assignors to Toda Kogyo Corporation, Hiroshima, Japan

Filed Oct. 13, 1992, Ser. No. 959,907
Claims priority, application Japan, Oct. 30, 1991, 3-311799
Int. Cl.[5] G03G *9/083*
U.S. Cl. 430—106.6 **11 Claims**

1. Magnetic particles for a magnetic toner comprising particulate magnetic particles containing iron as the main ingredient and having an oil absorption of not more than 24 ml/100 g and a degree of compaction of not less than 56, and a low-molecular weight binder resin having a weight-average molecular weight of not more than 150,000.

5,328,794

FLUORINE-CONTAINING GRAFT COPOLYMER AND TONER USING THE SAME

Tsubuko Kazuo; Shinichi Kuramoto, both of Numazu; Kazuhiko Umemura, Susono; Toshihiko Takahashi, Numazu, and Hidemi Uematsu, Fuji, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 505,845, Apr. 6, 1990, abandoned. This application Mar. 16, 1993, Ser. No. 31,952
Claims priority, application Japan, Apr. 12, 1989, 1-092107; May 10, 1989, 1-115117
Int. Cl.[5] G03G *9/08*; **C08F** *265/04*
U.S. Cl. 430—109 **7 Claims**

1. A dry-type toner comprising a coloring agent, and a resin component which comprises a fluorine-containing graft copolymer prepared by a step (i) of polymerizing a monomer having formula (I) and an unsaturated carboxylic acid or an acrylic monomer having a glycidyl group to obtain a copolymer.



(I)

wherein R represents —H or —CH_3 group; and A represents —$COOC_nH_{2n+1}$ or OC_nH_{2n+1}, in which n is an integer of 6 to 20; a step (ii) of esterifying the resulting copolymer by using a monomer having a glycidyl group in the case where a constituting monomer of said copolymer is an unsaturated carboxylic acid, or by using an unsaturated carboxylic acid in the case where a constituting monomer of said copolymer is an acrylic monomer having a glycidyl group; and a step (iii) of graft-polymerizing a monomer selected from the group consisting of a monomer having fluoroalkyl acrylate and a monomer having fluoroalkyl methacrylate on said esterified copolymer.

6. A wet-type developer comprising (a) a toner component which comprises a coloring agent and a resin component which comprises a fluorine-containing graft copolymer prepared by a step (i) of polymerizing a monomer having formula (I) and an unsaturated carboxylic acid or an acrylic monomer having a glycidyl group to obtain a copolymer,



(I)

wherein R represents —H or —CH_3 group; and A represents —$COOC_nH_{2n+1}$ or OC_nH_{2n+1}, in which n is an integer of 6 to 20; a step (ii) of esterifying the resulting copolymer by using a monomer having a glycidyl group in the case where a constituting monomer of said copolymer is an unsaturated carboxylic acid, or by using an unsaturated carboxylic acid in the case where a constituting monomer of said copolymer is an acrylic monomer having a glycidyl group; and a step (iii) of graft-polymerizing a monomer selected from the group consisting of a monomer having fluoroalkyl acrylate and a monomer having fluoroalkyl methacrylate on said esterified copolymer; and (b) a carrier liquid.

5,328,795

TONERS FOR USE IN ELECTROPHOTOGRAPHY AND PRODUCTION THEREOF

Jiro Yamashiro; Harushi Nagami; Takashi Miki, and Mitsuhiro Uchino, all of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Filed Mar. 29, 1990, Ser. No. 501,136
Claims priority, application Japan, Mar. 29, 1989, 1-79392; Mar. 29, 1989, 1-79393; Mar. 29, 1989, 1-79394; Mar. 29, 1989, 1-79395; Mar. 29, 1989, 1-79396; Mar. 29, 1989, 1-79397
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—137 **7 Claims**

1. A method of producing a deformed toner particles for use in electrophotography which comprises: suspending a radical polymerizable liquid monomer containing particles of a colorant and a charge controlling agent in water; suspension polymerizing the monomer to provide spherical polymer particles composed of a matrix of the polymer and the colorant and charge controlling agent dispersed therein and having a diameter of 1–30 μm; and treating the suspension containing the polymer particles at temperatures in the range of ±10° C. of the glass transition temperature of the matrix forming the polymer particles with a wet type agitation mill, thereby to provide dislike toner particles having a diameter of 3–30 μm, a thickness of 1–15 μm and a flatness of not more than 0.5, the flatness of the dislike toner particles being defined as a ratio of average thickness to average diameter of the particles, or oval toner particles having a major axis of 3–30 μm in length, a minor axis of 1–25 μm in length and a flatness of not more than 0.5, the flatness of the oval toner particles being defined as a ratio of twice the average thickness to the sum of length of average major axis and length of average minor axis, or a mixture of these.

5,328,796

DIAZO TYPE RECORDING MATERIAL UTILIZING MICROENCAPSULATED DIAZO COMPOUND, A COUPLER AND A HYDROXYPHENYLSULFONE DERIVATIVE

Akihiro Shimomura; Taketatsu Sugiyama; Makoto Ohno, and Toshiharu Tanaka, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1993, Ser. No. 53,381
Claims priority, application Japan, Apr. 28, 1992, 4-135787
Int. Cl.[5] G03C *1/58, 1/91*
U.S. Cl. 430—138 **13 Claims**

1. A recording material, comprising a support and a recording layer located on said support, said recording layer comprising a photosensitive diazo compound, a hydroxyphenylsulfone deriative and a coupling compound, wherein said photosensitive diazo compound, said hydroxyphenylsulfone derivative and said coupling compound are each present in an amount whereby said coupling compound forms a color upon reaction with said diazo compound and occurrence of background stains in said recording material is substantially prevented, and wherein said diazo compound is encapsulated in microcapsules.

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5,328,797

PROCESS FOR PRODUCING A NEGATIVE-WORKING LITHOGRAPHIC PRINTING FORM UTILIZING SOLVENT MIXTURE OF MONO-(C_1-C_4) ALKYL ETHER OF DIETHYLENE GLYCOL AND A SOLVENT HAVING BOILING POINT BETWEEN 50° AND 150° C.

Rudolf Neubauer, Oestrich-Winkel; Roman Keiper, Heidenrod; Siegfried Nuernberger, Eltville-Martinstal, and Sabine Pilger, Bacharach-Steeg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 616,940, Nov. 21, 1990, abandoned. This application Dec. 23, 1992, Ser. No. 994,445

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1989, 3938788

Int. Cl.[5] G03C *1/74*

U.S. Cl. 430—169 **8 Claims**

1. A process for producing a negative-working photosensitive lithographic printing form comprising the steps of

(a) providing a solvent mixture consisting essentially of, in admixture,

(i) from about 10 to 50% by weight of at least one mono-(C_1-C_4)alkyl either of diethylene glycol, and

(ii) at lest one organic solvent having a boiling point between about 50 and 150° C.,

(b) dissolving a negative-working photosensitive mixture which contains a negative-working photosensitive diazonium salt polycondensation product in an amount sufficient to cause a layer of the mixture to become insoluble when it is exposed to actinic radiation and a polymeric binder which is insoluble in water but soluble in aqueous alkaline solution in said solvent mixture, said binder being present in an amount sufficient to form a uniform layer of the mixture on a substrate,

(c) applying said photosensitive mixture dissolved in said solvent mixture to a base to form a layer, and

(d) drying said layer wherein said diazonium salt polycondensation product comprises

(i) units derived form condensable compounds selected from the group consisting of aromatic amines, phenols, phenol ethers, aromatic thioethers, aromatic hydrocarbons, aromatic heterocyclics and organic acid amides, and

(ii) units derived from compounds of the formula $(R^8—R^9—)_pR^{10}—N_2X$, where

X is the anion of the diazonium compound,

p is an integer from 1 to 3,

R^8 is an aromatic radical containing at least one position capable of condensation with an active carbonyl compound,

R^{10} is a phenylene group,

R^9 is a single bond or one of the groups:

$—(CH_2)_q—NR^{11}—$,

$—O—(CH_2)_r—NR^{11}—$,

$—S—(CH_2)_r—NR^{11}—$,

$—S—(CH_2CO—NR^{11}—$,

$—O—R^{12}—O—$,

—O—

—S—or

$—CO—NR^{11}—$

wherein

q is a number from 0 to 5,

r is a number from 2 to 5,

R^{11} is hydrogen, an alkyl group containing 1 to 5 carbon atoms, an aralkyl group containing 7 to 12 carbon atoms or an aryl group containing 6 to 12 carbon atoms, and

R^{12} is an arylene group containing 6 to 12 carbon atoms.

5,328,798

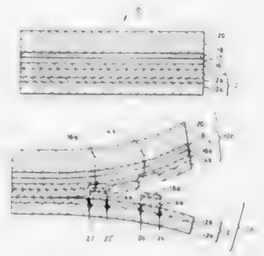
LAMINAR THERMAL IMAGING MEDIUM CONTAINING PHOTOHARDENABLE ADHESIVE LAYER AND POLYMERIC ELASTIC AND NON-BRITTLE BARRIER LAYER

Kenneth J. McCarthy, Duxbury, and Robert J. Pusateri, Rochester, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 798,899, Nov. 27, 1991, Pat. No. 5,229,247. This application May 5, 1993, Ser. No. 57,613

Int. Cl.[5] G03F *7/09, 7/34;* **G03C** *1/805*

U.S. Cl. 430—200 **20 Claims**



1. A laminar thermal imaging medium comprising an image-forming substance confined between a pair of sheets, said laminar medium comprising in order:

a first sheet transparent to said image-forming radiation and having at least a surface zone or layer of polymeric material heat-activatable upon subjection of said thermal imaging medium to brief and intense radiation;

a layer of porous or particulate image-forming substance having cohesivity in excess of its adhesivity for said polymeric heat-activatable layer;

a release layer to facilitate separation of the thermal imaging medium into first and second images, each in said porous or particulate image-forming substance, upon subjection of the thermal imaging medium to brief and intense radiation and separation of the respective sheets of the medium;

a polymeric elastic and non-brittle layer;

a photohardenable adhesive layer comprising a macromolecular organic binder and a photopolymerizable ethylenically unsaturated monomer, said layer being hardenable to a layer of sufficient hardness to provide a durable base for an image thereon in said porous or particulate image-forming substance; and

a second sheet adhesively bonded to said laminar thermal imaging medium by said photohardenable adhesive layer;

said polymeric elastic and non-brittle layer having resistance to diffusion therethrough to said release layer of said photopolymerizable ethylenically unsaturated monomer of said photohardenable adhesive layer;

said imaging medium being imageable upon subjection to said brief and intense radiation and being capable of absorbing said radiation and of converting said radiation to heat sufficient in intensity to activate said heat-activatable polymeric material for attachment of said porous or particulate image-forming substance firmly to said first sheet in areas of exposure to said radiation, said polymeric material upon being heated and subsequently cooled being effective to attach said porous or particulate image-forming substance in said areas to or through an intermediate layer to said first sheet.

5,328,799

THERMOGRAPHIC AND PHOTOTHERMOGRAPHIC IMAGING MATERIALS

James R. Freedman, Newton Centre; Stephen R. Sofen, Lexington, and Kent M. Young, Carlisle, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 923,858, Jul. 31, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 79,146

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—200 **38 Claims**

1. A heat-processed color image-recording material comprising

(a) a support carrying in one or more layers a dye-providing material capable of releasing a diffusible dye upon cleavage in the presence of silver ions and/or a soluble silver complex, a thermal solvent, an organic silver salt oxidizing material, and a binder and,

(b) on the same or a second support an image-receiving layer capable of receiving the diffusible dye released from said dye-providing material,

said image-recording material additionally includes an auxiliary ligand capable of complexing with the silver ions of said silver salt oxidizing material, said ligand dissolving sufficient silver salt oxidizing material to provide a total concentration of mobile silver species greater than or equal to twice the concentration obtained in the absence of the auxiliary ligand.

5,328,800

COLOR IMAGE FORMING METHOD USING SILVER HALIDE, REDUCING AGENT, POLYMERIZABLE COMPOUND AND COLORANT

Hiroaki Yokoya; Keiji Takeda; Osami Tanabe, and Katsuji Kitatani, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

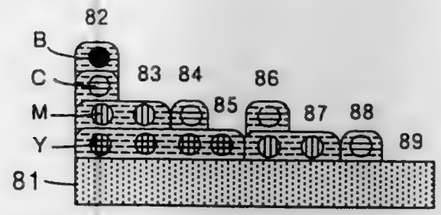
Filed May 6, 1992, Ser. No. 879,835

Claims priority, application Japan, May 7, 1991, 3-131790

The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.

Int. Cl.[5] G03C *5/54;* **G03F** *7/26*

U.S. Cl. 430—203 **2 Claims**



1. An image forming method comprising the steps of (A), (1), (2), (3) and (4):

(A) laminating on an image receiving material a light-sensitive material, which comprises a support, a light-sensitive layer and a polymerizable layer in this order, said light-sensitive layer containing silver halide, said polymerizable layer containing an ethylenically unsaturated polymerizable compound or/and a cross-linkable polymer and a colorant, and a reducing agent being contained in the light-sensitive layer or the polymerizable layer;

(1) imagewise exposing to light the light-sensitive layer;

(2) heating the layers at a temperature in the range of 70° to 200° C. for 1 to 180 seconds to harden the ethylenically unsaturated polymerizable compound or/and the cross-linkable polymer within the exposed area or, in the alternative, within the unexposed area;

(3) peeling the image receiving material from the light-sensitive material to transfer the unhardened area to the image receiving material whereby a color image is formed on the image receiving material; and

(4) repeating the steps (A) and (1) to (3) using light-sensitive materials each having a color different from each other, to form a multicolor image on the image receiving material,

wherein (A) is prior to (2), (1) is prior to (2), and (2) is prior to (3).

5,328,801

PHOTOGRAPHIC MATERIAL AND METHOD FOR FORMING AN IMAGE

Shoji Yasuda; Kazunobu Katoh, and Hisashi Okamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 6, 1992, Ser. No. 846,926

Claims priority, application Japan, Mar. 11, 1991, 3-069466

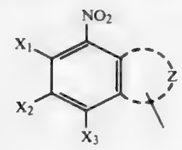
Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 **7 Claims**

1. A method for forming an image, which comprises processing with a developer having a pH value of 9 to 12 and comprising 0.2 mol/liter or more of a sulfite, an imagewise exposed silver halide photographic materiəl comprising a compound represented by formula (I):

$$ED—(Time)_t—(Link)_s—Het \quad (I)$$

wherein ED represents a group which undergoes a reaction with an oxidation product of a developing agent to release $(Time)_t$-$(Link)_s$-Het; Time represents a divalent group which releases $(Link)_s$-Het after being released from ED; Link represents a divalent group containing at least one hetero atom, and the Link is connected to ED-$(Time)_t$ via one of the hetero atoms; t and s each represents an integer of 0 or 1; and Het represents a group represented by formula (II):



(II)

wherein X_1, X_2 and X_3 each represents a hydrogen atom, a halogen atom or a monovalent group; and Z represents an atomic group required to form a 5- to 6-membered nitrogen-containing heterocyclic group, with the proviso that when the group represented by formula (II) is a nitroindazolyl group-containing compound, it is a 4-nitroindazolyl group-containing compound.

5,328,802

OPTICAL RECORDING MEDIUM

Shuichi Yanagisawa; Tatsuro Sakai; Takashi Chuman; Yasushi Araki, and Fumio Matsui, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 24, 1991, Ser. No. 690,487

Claims priority, application Japan, Oct. 4, 1990, 2-267281

Int. Cl.[5] G03C *1/72*

U.S. Cl. 430—273 **3 Claims**

1. An optical recording medium which can be applied to a compact disc comprising:

a light transmissive substrate having a thickness of 1.0 to 1.5 mm;

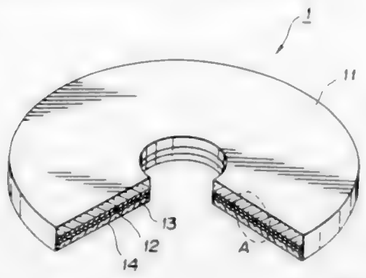
a light absorption layer provided on the light transmissive substrate and having a thickness of 20 to 2000 nm;

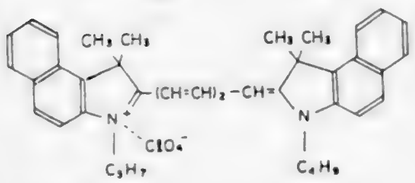
a light reflecting layer provided on the light absorption layer and having a thickness of 0.02 to 2.0 μm;

a protective layer provided on the light reflecting layer and having a thickness of 0.1 to 100 μm; and

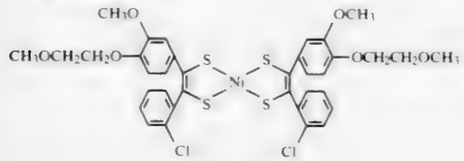
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said light absorption layer containing a cyanine dye;





and a quencher



5,328,803

PHOTOPOLYMERIZABLE COMPOSITION

Sadao Fujikura; Masayuki Iwasaki, and Yuichi Wakata, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 11, 1991, Ser. No. 757,755

Claims priority, application Japan, Sep. 13, 1990, 2-242977; Sep. 4, 1991, 3-224379

Int. Cl.[5] G03C *1/68*

U.S. Cl. 430—281 **3 Claims**

1. A photopolymerizable composition developable with an alkali aqueous solution which comprises:

(1) a carboxyl group-containing high polymer binder having the weight-average molecular weight of 5,000 to 2,000,000 in the amount of 40 to 90% by weight;

(2) a photopolymerizable monomer in the amount of 10 to 60% by weight;

(3) a photopolymerization initiator system comprising a lophine dimer in the amount of 0.1 to 20% by weight; and

(4) at least one compound selected from the group consisting of compound represented by the general formulae (I), (II) and (III) in the amount of 0.1 to 10% by weight:

wherein R^1 to R^{10} may be either the same or different and each represents H, NR^{11}_2, OR^{11}, SR^{11}, $COOR^{11}$, CN a halogen atom, NO_2, CHO, SO_3R^{11}, $R^{11}CONHNH$, $R^{11}SO_2NH$, an aryl group having 6 to 10 carbon atoms, an alkyl group having 1 to 10 carbon atoms, an aminoalkyl group having 1 to 10 carbon atoms, a hydroxyalkyl group having 1 to 10 carbon atoms, a carboxyalkyl group having 1 to 10 carbon atoms, an aralkyl group having 7 to 20 carbon atoms or a monophorino group; Y represents an alkylene group having 1 to 10 carbon atoms, an arylene group having 6 to 12 carbon atoms or an aralkylene group having 7 to 25 carbon atoms which may be substituted by NR^{11}_2, OR^{11}, SR^{11}, $COOR^{11}$, CN, a halogen atom, NO_2, CHO, SO_3R^{11}, $R^{11}CONHNH$, $R^{11}SO_2NH$, or a monophorino group, and which may contain between two carbon atoms a bivalent intervenient group of pyperadine residue, COO, NR^{11}, SO_2, SO_2NR^{11}, O, S, $CONR^{11}$, CONHCO or $COONR^{11}$;

wherein R^{11} represents H, an alkyl group having 1 to 10 carbon atoms or an aryl group having 6 to 10 carbon atoms.

5,328,804

IMAGE PRODUCING ELEMENT CONTAINING A PHOTOPOLYMERIZABLE MONOMER

Wolfgang Podszun, Cologne; Michael Müller, Bergisch Gladbach, both of Fed. Rep. of Germany, and Herman Uytterhoeven, Bonheiden, Belgium, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

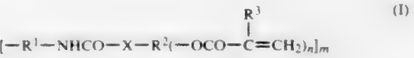
Filed Aug. 20, 1992, Ser. No. 932,963

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1991, 4129284

Int. Cl.[5] G03F *7/031;* **G03C** *1/805*

U.S. Cl. 430—283 **18 Claims**

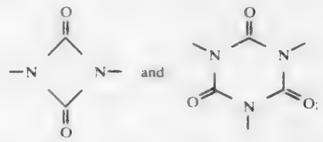
1. Image producing element having a layer of photopolymerisable composition applied to a layer support, characterised by a photopolymerisable content of at least one monomer corresponding to the following formula



$$A[-R^1-NHCO-X-R^2(-OCO-\overset{R^3}{\overset{|}{C}}=CH_2)_n]_m \qquad (I)$$

wherein

A denotes a double-bonded or triple-bonded condensed urea group selected from the group consisting of



and

X denotes —O— or —NR— in which R=C_1-C_{12}-alkyl;

R^1 denotes a double-bonded hydrocarbon group having 2 to 25 carbon atoms;

R^2 denotes a triple-bonded to six-bonded linear or branched hydrocarbon group with 2 to 18 carbon atoms optionally interrupted by up to 3 O-atoms;

R^3 denotes H or methyl;

n denotes an integer from 2 to 5; and

m stands for 2 or 3.

5,328,805

AQUEOUS DEVELOPABLE PHOTOSENSITIVE POLYURETHANE-(METH)ACRYLATE

Truc-Chi T. Huynh-Tran, Burtonsville, Md., and Ronald J. Kumpfmiller, Marietta, Ga., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Aug. 28, 1992, Ser. No. 924,264

Int. Cl.[5] G03F *7/00*

U.S. Cl. 430—284 **15 Claims**

1. Printing plate comprising a substrate and a layer of UV-curable composition thereon, where the composition comprises, in parts by weight,

Photopolymer, about 50–100;

Reactive diluent, 0 to about 25;

Photoinitiator, about 0.1–10;

wherein the photopolymer comprises G—R—R^1—G, where

R comprises B or E, or mixtures thereof; and F;

A is $-CH_2CH_2-$, $-CH_2CH(CH_3)-$, $-CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH(CH_3)-$, or $-CH_2CH(CH_3)CH_2-$;

B is; ,

D is, or —R—O—and has a number average molecular weight of about 600–6000;

E is [—NH—C(:O)—O—D—R^8—O—C(:O)—NH—R^1—];

F is [—R^1—NH—C(:O)—O—R^4—R^5—R^6—O—C(:O)NH—],

G is CH_2=C(R^9)—C(:O)—O—R^8—O—C(:O)—NH—;

R^1 is a divalent aromatic, aliphatic, or cycloaliphatic group containing 2–20 carbons;

R^2 is a divalent aliphatic, cycloaliphatic, or alpharyl group of 2–20 carbons;

R^3 is a divalent aliphatic, cycloaliphatic, aryl, or alpharyl group of 1–20 carbons;

R^4 and R^6 are the same or different alkylene groups with 1–6 carbons; or R^4 can be $-(CH_2CH_2O)_dCH_2CH_2-$, provided R^6 is $-(CH_2CH_2O)_eCH_2CH_2-$, where d and e are each 0–9 and d+e=3–15;

R^5 is —N(R^7)—, —N N—, or —(Ph)—;

R^7 is an alkyl group with 1–6 carbons;

R^8 is 1–7 carbon alkylene;

R^9 is H or methyl;

A—O)$_b$ has a number average molecular weight of about 650°–7000°.

5,328,806

POSITIVE IMAGE FORMATION UTILIZING RADIATION SENSITIVE MIXTURE CONTAINING DIMERIC OR TRIMERIC SESAMOL/ALDEHYDE CONDENSATION PRODUCTS AS SENSITIVITY ENHANCERS

Medhat A. Toukhy, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Division of Ser. No. 11,565, Feb. 1, 1993, Pat. No. 5,275,911.

This application Oct. 12, 1993, Ser. No. 134,448

Int. Cl.[5] G03F *7/30, 7/023*

U.S. Cl. 430—296 **6 Claims**

1. The process of developing an image-wise exposed photoresist-coated substrate comprising:

(a) coating said substrate with a radiation-sensitive composition useful as a photoresist, said composition comprising an admixture in a solvent of: at least one alkali-soluble binder resin, at least one photoactive compound and an effective sensitivity enhancing amount of at least one dimeric or trimeric unit formed by the condensation reaction of an aldehyde with sesamol; the amount of said binder resin being about 60 to 95% by weight, the amount of said photoactive component being about 5% to about 40% by weight, based on the total solids content of said radiation-sensitive composition;

(b) subjecting said coating on said substrate to an image-wise exposure of radiant light energy; and

(c) subjecting said image-wise exposed coated substrate to a developing solution to remove the image-wise exposed areas and form a positive image-wise pattern in the coating.

5,328,807

METHOD OF FORMING A PATTERN

Toshihiko Tanaka; Norio Hasegawa, both of Tokyo; Toshiaki Yamanaka, Iruma; Akira Imai, Kokubunji; Hiroshi Shiraishi; Takumi Ueno, both of Hachiohji, and Hiroshi Fukuda, Kokubunji, all of Japan, assignors to Hitichi, Ltd., Tokyo, Japan

Filed Jun. 7, 1991, Ser. No. 711,954

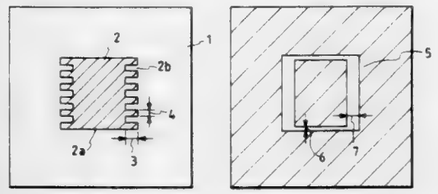
Claims priority, application Japan, Jun. 11, 1990, 2-149998; Sep. 12, 1990, 2-239825

Int. Cl.[5] G03C *5/00;* **G03F** *9/00*

U.S. Cl. 430—311 **16 Claims**

1. A method of forming a pattern by irradiating light through a reticle onto a photoresist film via a reduction projection printing system to form a predetermined pattern on said photoresist film, wherein said reticle comprises an optically transparent plate, a phase shifter, and a phase shifter pattern, the phase shifter and the phase shifter pattern each having a predetermined shape and being disposed on said plate, said phase shifter and said phase shifter pattern being formed from a single transparent film disposed on said plate such that a material of which said phase shifter is made is the same as a material of which said phase shifter pattern is made and a thickness of said phase shifter is the same as a thickness of said phase shifter pattern, the phase of light after passing through a bare portion of said plate on which said phase shifter or said phase shifter pattern is not disposed and the phase of light after passing through said phase shifter or said phase shifter pattern being different from each other by 180°±10°, and wherein the size of the phase shifter pattern is less than the resolution of said reduction projection printing system.

13. A method of forming a pattern by irradiating light through a reticle onto a photoresist film via a reduction projection printing system to from a predetermined pattern on said photoresist film, wherein said reticle comprises an optically transparent plate, a phase shifter, and a phase shifter pattern,



the phase shifter and the phase shifter pattern each having a predetermined shape and being disposed on said plate, a material of which said phase shifter is made being the same as a material of which said phase shifter pattern is made and a thickness of said phase shifter being the same as a thickness of said phase shifter pattern, the phase of light after passing through a bare portion of said plate on which said phase shifter or said phase shifter pattern is not disposed and the phase of light after passing through said phase shifter or said phase shifter pattern being different from each other by 180°±10°, and wherein the size of the phase shifter pattern is less than the resolution of said reduction projection printing system;

wherein the phase shifter and the phase shifter pattern are each formed from a coating layer formed by coating the plate with a spin on glass containing an acid generator and a residual silanol group.

5,328,808

METHOD FOR MANUFACTURING EDGE EMISSION TYPE ELECTROLUMINESCENT DEVICE ARRAYS

Koichiro Sakamoto, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

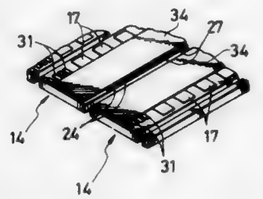
Continuation of Ser. No. 509,763, Apr. 17, 1990, abandoned. This application Aug. 6, 1992, Ser. No. 925,289

Claims priority, application Japan, Apr. 17, 1989, 1-97084

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] G03F *7/26;* **H05B** *33/10*

U.S. Cl. 430—313 **7 Claims**



1. A method for manufacturing edge emission type electro-

luminescent (EL) device arrays, said method comprising the steps of:

forming a conductive layer on a substrate;

etching said conductive layer to produce a plurality of block electrodes each conductive to a predetermined number of edge emission type EL devices;

depositing an EL device layer and an upper electrode layer onto said block electrodes;

patterning said EL device layer and upper electrode layer into a plurality of distinctly divided edge emission type EL devices;

providing a transparent protective film over the entire surface of said substrate containing said edge emission type EL devices;

etching said protective film to form terminals through exposure of the edges of said block electrodes and to make contact holes reaching said upper electrode layer of said edge emission type EL devices;

forming a conductive layer covering said contact holes; and

etching said conductive layer to form a plurality of common electrodes conducting to predetermined edge emission type EL devices of each block.

5,328,809

PATTERNING OF SEMICONDUCTIVE POLYMERS

Andrew Holmes; Donal D. Bradley; Richard H. Friend; Arno Kraft; Paul Burn, and Adam Brown, all of Cambridge, United Kingdom, assignors to Cambridge Display Technology Limited, Cambridge, United Kingdom

Filed Aug. 22, 1991, Ser. No. 748,795

Claims priority, application United Kingdom, Aug. 24, 1990, 9018698

Int. Cl.[5] **B05D** *1/32*; **G03C** *5/00*

U.S. Cl. 430—321 **25 Claims**

25. A method of forming in a semiconductive conjugated polymer at least a first region and a second region having different optical properties from one another, said method comprising:

(a) forming a layer of a precursor polymer, wherein the precursor polymer comprises a poly(arylene-1,2-ethanediyl) polymer, wherein a proportion of the ethane groups are substituted with a modifier group whose susceptibility to eliminating is increased in the presence of acid;

(b) generating in the layer of a precursor polymer the first region having a first optical property and the second region having a second optical property, wherein said step of generating the first region comprises:

(i) applying a protective coating in a pattern to a portion of the surface of the layer of the precursor polymer to form a precursor polymer with a coated and uncoated region, wherein the step of applying a protective coating further comprises:

(A) applying a layer of photoresist to the coated region;

(B) activating the layer of photoresist to form a photoresist protect and unprotected coating;

(C) removing the unprotected coating; and

(D) removing the remaining photoresist;

(ii) applying acid to the uncoated region; and

(iii) heating the precursor polymer sufficiently to generate the first region

wherein the step of generating the second region comprises:

(iv) contacting the layer of precursor polymer in the second region with the same acid as was used in the step of contacting the first region, but in lower concentration.

5,328,810

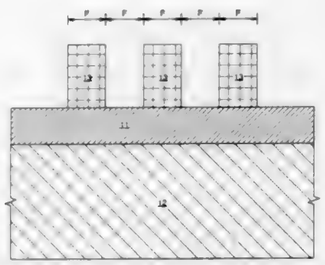
METHOD FOR REDUCING, BY A FACTOR OR 2^{-N}, THE MINIMUM MASKING PITCH OF A PHOTOLITHOGRAPHIC PROCESS

Tyler A. Lowrey; Randal W. Chance, and David A. Cathey, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 519,992, May 7, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 981,976

Int. Cl.[5] **G03C** *5/00*

U.S. Cl. 430—313 **32 Claims**



1. A method for manufacturing an integrated circuit, comprising the following sequence of steps:

(a) forming a primary mask strip, said mask strip having a first feature width;

(b) transforming the primary mask strip into a mandrel strip, said mandrel strip having substantially vertical sidewalls and a second feature width that is less than said first feature width;

(c) forming stringer strips on the sidewalls of said mandrel strip, each of said stringer strips having a third feature width; and

(d) removing the mandrel strip from between the stringer strips.

5,328,811

METHOD OF PRINTING AN IMAGE ON A SUBSTRATE PARTICULARLY USEFUL FOR PRODUCING PRINTED CIRCUIT BOARDS

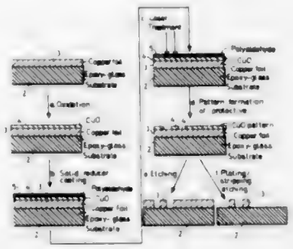
Mordechai Brestel, Rehovot, Israel, assignor to Orbotech Ltd., Yaune, Israel

Filed Jun. 24, 1992, Ser. No. 903,396

Claims priority, application Israel, Jun. 28, 1991, 98660

Int. Cl.[5] **G03C** *5/00*

U.S. Cl. 430—325 **28 Claims**



1. A method of printing an image on a substrate by applying to the substrate a film which is chemically activated by heat, and scanning the film by a beam of infrared radiation according to the image to be printed to chemically activate the film by heat and thereby to produce a pattern in the film according to the image scanned; characterized in: utilizing, in said film, a first reagent having a high absorbence of infrared radiation and capable of undergoing redox reaction when heated in the presence of a second reagent; and scanning said film by said beam while said second reagent is present with the film, to produce said redox reaction between said two reagents.

5,328,812

METHOD OF FORMING A SILVER/HALIDE COLOR IMAGE USING A PARTICULAR ACYLACETAMIDE YELLOW COUPLER AND PARTICULAR COLOR DEVELOPERS

Akimitsu Haijima, and Masato Taniguchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

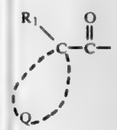
Filed Feb. 18, 1993, Ser. No. 19,305

Claims priority, application Japan, Feb. 18, 1992, 4-060992

Int. Cl.[5] **G03C** *7/46, 5/18, 1/08, 7/26*

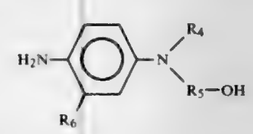
U.S. Cl. 430—388 **13 Claims**

1. A dye image-forming method comprising color developing an image wise exposed silver halide color photographic material comprising a support having thereon at least one silver halide emulsion layer containing 60 mol % or more of silver bromide and containing at least one acylacetamide yellow coupler having an acyl group represented by the following formula (YI)



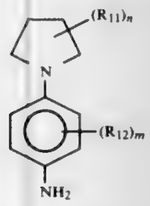
Formula (YI)

wherein R_1 represents a monovalent group; Q represents a group of atoms necessary to form a 3- to 5-membered hydrocarbon ring or a 3- to 5-membered heterocyclic ring having therein at least one hetero atom selected from N, O, S and P together with C; provided that R_1 is not a hydrogen atom and is not combined with Q to form a ring; with a developing solution containing at least one of the aromatic primary amine color developing agents represented by the following Formula (D) or (E):



Formula (D)

wherein R_4 represents a linear or branched alkyl group having 1 to 6 atoms or a linear or branched hydroxyalkyl group having 3 to 6 carbon atoms; R_5 represents a linear or branched alkylene group having 3 to 6 carbon atoms or a linear or branched hydroxyalkylene group having 3 to 6 carbon atoms; R_6 represents a hydrogen atom, a linear or branched alkyl group having 1 to 4 carbon atoms or a linear or branched alkoxy group having 1 to 4 carbon atoms;



Formula (E)

wherein R_{11} represents a halogen atom, an alkyl group, an aryl group, a heterocyclic group, a cyano group, a nitro group, a hydroxyl group, a carboxyl group, an alkoxy group, an aryloxy group, an acylamino group, an alkylamino group, an anilino group, a ureido group, a sulfamoylamino group, an alkylthio group, an arylthio group, an alkoxycarbonylamino group, a sulfonamide group, a carbamoyl group, a sulfamoyl group, a sulfonyl group, an alkoxycarbonyl group, a heterocyclicoxy group, an azo group, an acyloxy group, a carbamoyloxy group, a silyl group, a silyloxy group, an aryloxycarbonylamino group, an imide group, a heterocyclicthio group, a sulfinyl group, a phosphonyl group, an aryloxycarbonyl group, or an acyl group; n represent 0 or an integer of 1 to 8, provided that when n is 2 or more, the R_{11} may be the same or different; R_{12} represents a halogen atom, an alkyl group, an aryl group, a heterocyclic group, a cyano group, a nitro group, a hydroxyl group, a carboxyl group, an alkoxy group, an aryloxy group, an acylamino group, an alkylamino group, an anilino group, a ureido group, a sulfamoylamino group, an alkylthio group, an arylthio group, an alkoxycarbonylamino group, a sulfonamide group, a carbamoyl group, a sulfamoyl group, a sulfonyl group, an alkoxycarbonyl group, a heterocyclicoxy group, an azo group, an acyloxy group, a carbamoyloxy group, a silyl group, a silyloxy group, an aryloxycarbonylamino group, an imide group, a heterocyclicthio group, a sulfinyl group, a phosphonyl group, an aryloxycarbonyl group, or an acyl group; and m represents 0 or an integer of 1 to 4, provided that when m is 2 or more, the R_{12} may be the same or different from each other and may form a ring.

5,328,813

METHOD FOR THE PREPARATION OF OPTICAL RECORDING MEDIA CONTAINING OVERCOAT

Andrew J. G. Strandjord; Steven P. Webb, both of Midland, Mich., and Floyd E. Woodard, Los Altos, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 30, 1992, Ser. No. 906,905

Int. Cl.[5] **G11B** *7/26*

U.S. Cl. 430—321 **6 Claims**

1. A method for producing an optical storage medium comprising:

a. sputter-depositing a laser recordable thin reflective layer of reflective metal onto at least one surface of a substrate, and

b. sputter-depositing over the thin laser recordable reflective layer an overcoating layer comprising one or more transparent inorganic materials selected from the group consisting of a nitride or oxynitride of Zr, Hf and Ta to a reflectivity at 830 nm of from 40 to 80%, and

c. sputter depositing a second overcoating layer consisting of silicon carbohydride over the first overcoating layer.

5,328,814

METHOD OF MAKING FLOWABLE ALKALINE THIOSULFATE/ALKALINE SULFITE AND THE PRODUCT THEREOF

Hongzoon Kim, Boonton, and Charles J. Pfeiffer, Wayne, both of N.J., assignors to Fuji Hunt Photographic Chemicals, Inc., Paramus, N.J.

Division of Ser. No. 828,672, Jan. 31, 1992, Pat. No. 5,270,154. This application Sep. 10, 1993, Ser. No. 118,593

Int. Cl.[5] **G03C** *5/38*

U.S. Cl. 430—458 **25 Claims**

1. A flowable powdered mixture comprising (a) a member selected from the group consisting of a hygroscopic alkaline thiosulfate, a hygroscopic alkaline sulfite, and a mixture thereof, and (b) a dry alkali metal arylsulfonate formaldehyde in an amount from about 0.05 to 10%, by weight, of said mixture which is effective to provide flowability to the mixture.

5,328,815

METHOD OF PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

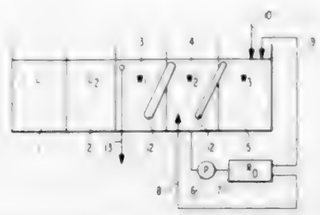
Hiroshi Hayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 642,953, Jan. 18, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 47,049

Claims priority, application Japan, Jan. 19, 1990, 2-8495

Int. Cl.[5] G03C *11/00*

U.S. Cl. 430—463 **11 Claims**



1. A method of processing a silver halide color photographic material comprising the steps of

(1) developing in a color developing bath an image-wise exposed silver halide color photographic material containing a hydrophilic colloid in a total amount of from 3.5 to 6.0 g/m^2 and having an alkali consumption of from 2.2 mmol/m^2 to 3.0 mmol/m^2, said silver halide color photographic material comprising

(a) a support;

(b) two or three silver halide emulsion layers on at least one side of said support, said two or three silver halide emulsion layers each containing

(i) silver halide emulsions being sensitive to different wavelength bands from one another, said silver halide emulsions containing at least 90 mol % silver chloride, and

(ii) oil soluble couplers that form dyes on coupling with oxidized primary amine color developing agent in an amount of 0.1 to 1.0 mol per mol of silver halide contained in the same layer; and

(2) washing in a water washing bath said developed color photographic material for 10 to 45 seconds where water from said washing step is treated with reverse osmosis membrane and reused in said washing step, wherein alkali consumption is the amount of potassium hydroxide, in mmol units, needed to change the pH of a liquid containing the coated layers of a 1 m^2 portion of the photographic material dispersed in 100 ml of water from 6.0 to 10.0.

5,328,816

PROCESS FOR PRODUCING OPTICAL RECORDING MEDIUM

Miki Tamura, Yokohama; Hiroyuki Sugata, Yamato; Osamu Kanome, Kawasaki; Yukitoshi Okubo, Yohohama; Mizuho Hiraoka, Kawasaki, and Masataka Yashima, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 752,980, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 405,211, Sep. 11, 1989, abandoned. This application Jul. 9, 1992, Ser. No. 908,815

Claims priority, application Japan, Sep. 13, 1988, 63-227617; Nov. 15, 1988, 63-286742; Nov. 15, 1988, 63-286743

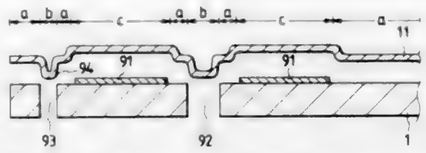
Int. Cl.[5] B29D *12/00*

U.S. Cl. 430—495 **6 Claims**

6. A process for producing a plurality of airsandwich type information recording media comprising a substrate sheet, a recording layer and a protective sheet, said process comprising the steps of:

providing a rectangular substrate sheet having a plurality of preformats corresponding to a plurality of respective information recording media on a surface of the substrate sheet, having alignment marks at a plurality of corners of said substrate sheet, and having a recording layer on the surface of said substrate sheet;

providing a protective sheet having alignment marks which overlap said alignment marks of the substrate sheet, and having a plurality of recesses for forming respective air gaps between the protective sheet and the recording layer of each individual information recording media within a recording region;



overlapping said alignment marks of the substrate sheet with the alignment marks of the protective sheet and laminating the protective sheet on the substrate sheet;

fixing said protective sheet and said substrate sheet at a portion corresponding to a periphery of each individual information recording media after the overlapping and laminating step; and

cutting a resulting laminate comprising the protective sheet and the substrate sheet into a plurality of individual information recording media.

5,328,817

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hajime Nakagawa, and Yasuhiro Yoshioka, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 20, 1992, Ser. No. 870,928

Claims priority, application Japan, Apr. 20, 1991, 3-116892

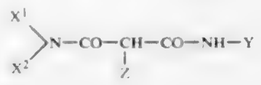
The portion of the term of this patent subsequent to Mar. 12, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/46*

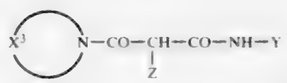
U.S. Cl. 430—503 **18 Claims**

1. A silver halide color photographic material having on a base at least one cyan color-forming silver halide emulsion layer, at least one magenta color-forming silver halide emulsion layer, and at least one yellow color-forming silver halide emulsion layer, which comprises, in said yellow color forming silver halide emulsion layer, at least one nondiffusible yellow coupler represented by the following formulas (1) or (2), and, in said cyan color forming silver halide emulsion layer, at least one cyan coupler represented by the following formula (C):

Formula (1)

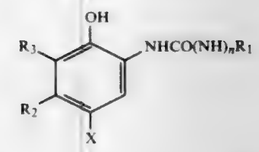


Formula (2)



wherein X^1 and X^2 each represent an alkyl group, an aryl group, or a heterocyclic group, X^3 represents an organic residue required to form a nitrogen-containing heterocyclic group together with >N—, Y represents an aryl group or a heterocyclic group, and Z represents a group capable of being released upon a coupling reaction of the coupler represented by said formula with the oxidized product of a developing agent,

Formula (C)



wherein R_1 represents an alkyl group, an aryl group, or a heterocyclyc group, R_2 represents an alkyl group having 2 or more carbon atoms, R_3 represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a carbonamido group, or a ureido group, X represents a hydrogen atom or a group capable of being released upon a coupling reaction of the coupler represented by said formula with the oxidized product of a developing agent, and n is an integer of 0 or 1.

5,328,818

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroshi Fukuzawa; Kohzaburoh Yamada; Keiji Mihayashi; Koji Tamoto; Shigeru Shibayama; Minoru Sato, and Kiyoshi Nakazyo, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 17, 1992, Ser. No. 945,933

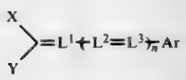
Claims priority, application Japan, Sep. 18, 1991, 3-265534; Apr. 20, 1992, 4-125388

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—505 **11 Claims**

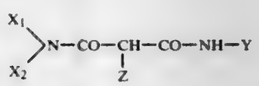
1. A silver halide color photographic light-sensitive material comprising at least one red-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer, at least one blue-sensitive silver halide emulsion layer, and at least one non-light-sensitive layer, formed on a support, wherein the photographic light-sensitive material contains a dispersion of a dye represented by formula (I), wherein said dispersion is prepared by an oil-in-water dispersion method using a water-insoluble, high-boiling organic solvent and said dye, and wherein a color-sensitive silver halide emulsion layer or a non-light-sensitive layer contains at least one yellow coupler represented by formula (1) or formula (2) and/or at least one acylacetamide yellow coupler having an acyl group represented by formula (Y):

Formula (I)

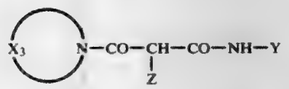


where X and Y each represents an electron attractive group, or when coupled with each other, XY represents an acidic nucleus, Ar represents a phenyl group or a heterocyclic group, L^1, L^2, and L^3 each represents a methine group, and n represents 0, 1, or 2,

Formula (1)

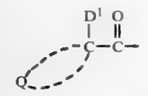


Formula (2)



where X_1 and X_2 each represents an alkyl group, an aryl group, or a heterocyclic group, X_3 represents an organic group which forms a nitrogen-containing heterocyclic group together with >N—, Y represents an aryl group or a heterocyclic group, and Z represents a group which is split off when a coupler represented by formula (1) or (2) reacts with an oxidized form of a developing agent,

Formula (Y)



where D^1 represents a monovalent group, and Q represents a non-metallic atomic group required to form, together with the C, a 3- to 5-membered hydrocarbon ring or a 3- to 5-membered heterocyclic ring containing at least one heteroatom selected from the group consisting of N, S, O and P in its ring, provided that D^1 does not represent a hydrogen atom, and further provided that D^1 does not couple with Q to form a ring.

5,328,819

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING ISOMETHINE DYES

Shigeru Ohno; Yukio Miyaki, and Shigeru Yamazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 12, 1992, Ser. No. 928,433

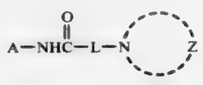
Claims priority, application Japan, Aug. 15, 1991, 3-228527

Int. Cl.[5] G03C *1/84*

U.S. Cl. 430—522 **4 Claims**

1. A silver halide photographic material comprising a support having on at least one side thereof at least one silver halide photographic emulsion layer, wherein said silver halide emulsion layer has a covering power of at least 60, and wherein a dye of the following general formula (I) is contained in said silver halide emulsion layer or in another hydrophilic layer, or in both of said layers, in an amount of 1×10^{-7} to 1×10^{-4} mol/m^2:

(I)



wherein A represents a dye residue formed by removing one hydrogen atom from an indophenol or indoaniline dye; L represents a divalent bonding group; and Z represents anon-metallic atomic group required for forming a three-membered to eight-membered heterocyclic ring together with N, provided that a carbonyl group is not directly bonded to N in the heterocyclic ring.

5,328,820

SILVER HALIDE PHOTOGRAPHIC EMULSIONS SENSITIZED IN THE PRESENCE OF ORGANIC DISULFIDES AND SULFINATES

Roger L. Klaus, Rochester, and Patricia A. Leonard, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,539

Int. Cl.[5] G03C *1/34*

U.S. Cl. 430—569 **24 Claims**

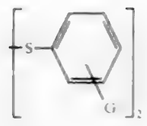
1. A method of making a negative photographic silver halide emulsion comprising:

precipitating and sensitizing a silver halide emulsion; and

simultaneously adding to the silver halide emulsion after precipitation and before or during spectral/chemical sensitization an antifogging amount of a disulfide compound represented by Formula I or II and an antifogging amount of a sulfinate or seleninate compound represented by Formula III:

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1164
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2
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1994
UMI

(Formula I)



where

G independently is hydrogen, hydroxy, $-SO_3M$ or $-NR^1R^2$;

M is hydrogen, or an alkaline earth, alkylammonium or arylammonium cation;

R^1 is hydrogen, or an alkyl or aryl group

R^2 is hydrogen, O=C—R^3, or O=C—N—R^4R^5; and

R^3, R^4, and R^5 are independently hydrogen, or hydroxy, or an unsubstituted alkyl, or aryl group, or a fluoroalkyl, fluoroaryl, alkylthioether, or arylthioether group, or a carboxyalkyl, carboxyaryl, alkylthioether, sulfoalkyl, or sulfoaryl group or the free acid, alkaline earth salt to alkylammonium or arylammonium salt thereof;

(Formula II)



where Z is a group containing 3 to 10 carbon or hetero atoms and R^6 is an alkyl or aryl group of 2 to 10 carbon atoms, or the free acid, alkaline earth salt, arylammonium or alkylammonium salt of the aforementioned groups; and

$R^7—XO_2—M$ Formula III

where R^7 is a aliphatic, aromatic, or heterocyclic group; X is sulfur or selenium; and M is a cation.

5,328,821

COLD AND CRYO-PRESERVATION METHODS FOR HUMAN TISSUE SLICES

Robyn Fisher, 15555 N. Oracle Rd., Tucson, Ariz. 85737, and Klaus Brendel, 3231 N. Manor Dr., Tucson, Ariz. 85715

Filed Dec. 12, 1991, Ser. No. 806,047

Int. Cl.[5] A01N *1/02;* **C12N** *5/00, 1/04*

U.S. Cl. 435—1 **7 Claims**

1. A method for the cold preservation of organ tissue comprising storing said tissue in an aqueous preservation solution comprising:

1–5 mM glucose; 30–120 mM gluconate; 30–120 mM saccharate; 25–30 mM potassium phosphate(monobasic); 1–3 mM sodium succinate; 3–6 mM magnesium sulfate; 1–3 mM magnesium chloride; 1–3 mM potassium bicarbonate; 2–4 mM fructose; 3–6 mM glutathione; 2–10 mM ascorbic acid; 3–5 mM adenosine and micromolar amounts of deferoxamine mesylate and gentamicin or penicillin.

5,328,822

APPARATUS AND METHOD FOR SEDIMENTATION BASED BLOOD ANALYSIS

David K. McKinney; Milton E. Fuller, and Berry V. Carone, all of Reno, Nev., assignors to Solid State Farms, Inc., Reno, Nev.

Filed Apr. 23, 1990, Ser. No. 512,845

Int. Cl.[5] C12Q *1/00;* **C12M** *1/00;* **G01J** *1/20;* **G01N** *33/48*

U.S. Cl. 435—4 **30 Claims**

1. In a process for sensing the settling of erythrocyte cells including the steps of, settling erythrocyte cells of a test specimen of blood in a settling tube, sensing a characteristic of said specimen indicative of the location of a separation boundary between said erythrocyte cells and plasma fluid in said specimen, said sensing occurring at a position proximate to said separation boundary and said characteristic changing with erythrocyte settling, and sampling the sensed characteristic periodically to provide data useful in determining the position of said separation boundary during settling, the improvement in said process comprising:

said step of sensing a characteristic of said specimen being accomplished by irradiating said specimen with irradiation having a wavelength in at least one of the visible and infrared ranges, and sensing changes in the reflectivity of said specimen to said irradiation at a sensing rate greater than the rate of occurrence of changes in said reflectivity; and

said step of sampling said sensed characteristic occurring in response to sensing of said reflectivity at times determined by the occurrence of a change in said sensed reflectivity.

5,328,823

ENZYME-BASED BIOSENSORS FOR DETECTING NOBLE GASES

Kevin C. Spencer, Hinsdale, and Christine E. Boisrobert, Chicago, both of Ill., assignors to American Air Liquide, Walnut Creek, Calif.

Filed Nov. 27, 1992, Ser. No. 982,500

Int. Cl.[5] C12Q *1/00;* **G01N** *21/00*

U.S. Cl. 435—4 **22 Claims**

1. A method of detecting at least one noble gas with an enzyme-based sensor having at least one enzyme therein and having a membrane therefor which is at least semi-permeable to said at least one noble gas, which comprises:

a) permeating said at least one noble gas through said membrane;

b) contacting at least one enzyme in said sensor with an amount of said at least one noble gas sufficient to change an activity of said at least one enzyme; and

c) detecting the change in the activity of said at least one enzyme; and

wherein said at least one noble gas is selected from the group consisting of xenon, krypton, argon and neon.

5,328,824

METHODS OF USING LABELED NUCLEOTIDES

David C. Ward, Guilford, Conn.; Pennina R. Langer, Monsey, N.Y., and Alexander A. Waldrop, III, Charlottesville, Va., assignors to Yale University, New Haven, Conn.

Division of Ser. No. 496,915, May 23, 1983, Pat. No. 4,711,955, which is a continuation of Ser. No. 255,223, Apr. 17, 1981, abandoned. This application Dec. 8, 1987, Ser. No. 130,070

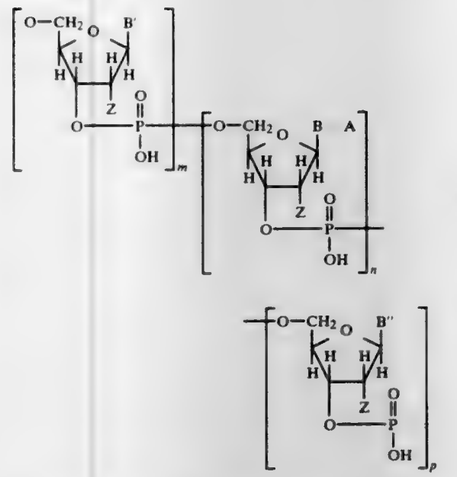
The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **42 Claims**

1. A method of detecting the presence or absence of a nucleic acid in a sample which comprises the steps of

(a) contacting under hybridizable conditions said sample with at least one compound comprising the structure:



wherein each of B′ and B″ represents a purine, 7-deazapurine, or pyrimidine moiety covalently bonded to the $C^{1'}$-position of the sugar moiety, provided that whenever B′ or B″ is purine or 7-deazapurine, the sugar moiety is attached at the N^9-position of the purine or 7-deazapurine, and whenever B′ or B″ is pyrimidine the sugar moiety is attached at the N^1-position of the pyrimidine;

wherein B represents 7-deazapurine or pyrimidine moiety covalently bonded to the $C^{1'}$-position of the sugar moiety, provided that whenever B is 7-deazapurine, the sugar moiety is attached at the N^9-position of the 7-deazapurine, and whenever B is pyrimidine the sugar moiety is attached at the N^1-position of the pyrimidine;

wherein A comprises at least three carbon atoms and represents at least one component of a signalling moiety capable of producing a detectable signal;

wherein B and A are covalently attached directly or indirectly through a linkage group, said linkage group not interfering substantially with the characteristic ability of said compound to hybridize with said nucleic acid or of A to be detected;

wherein if B is 7-deazapurine, A is attached to the 7-position thereof, and if B is pyrimidine, A is attached to the 5-position thereof;

wherein m, n and p are integers, provided that m and p are not simultaneously 0 and provided further n is never 0; and

wherein z represents H— or HO—; and

(b) detecting said compound or compounds so as to detect said nucleic acid.

5,328,825

NUCLEIC ACID PROBE, TEST KIT AND DIAGNOSTIC AND PURIFICATION METHODS

Harold C. Warren, III, Rush; John B. Findlay, Rochester, and Marlene M. King, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 471,168, Jan. 26, 1990, abandoned. This application Mar. 6, 1992, Ser. No. 847,447

Int. Cl.[5] C12Q *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **19 Claims**

1. A water-insoluble nucleic acid probe comprising an oligonucleotide which is attached to a water-insoluble particle through a linking group which is a chemically modified protein or a chemically modified carbohydrate having a pI of about 6 or less,

said chemically modified protein having been derived from a protein having pendant amino groups which have been chemically modified with an acrylating, alkylating or sulfonylating agent to provide carboxylic acid groups for covalent reaction with said oligonucleotide, and said chemically modified carbohydrate having been modified to have pendant carboxylic acid groups, and said chemically modified protein or chemically modified carbohydrate being covalently attached to said particle surface which is substantially free of other proteins or carbohydrates.

8. A method for the detection of a target nucleic acid comprising:

A. contacting a test sample suspected of containing a target nucleic acid with a water-insoluble nucleic acid probe comprising an oligonucleotide which is attached to a water-insoluble particle through a linking group which is a chemically modified protein or a chemically modified carbohydrate having a pI of about 6 or less,

said chemically modified protein having been derived from a protein having pendant amino groups which have been chemically modified with an acylating, alkylating or sulfonylating agent to provide carboxylic acid groups for covalent reaction with said oligonucleotide, and said chemically modified carbohydrate having been modified to have pendant carboxylic acid groups, and said chemically modified protein or chemically modified carbohydrate being covalently attached to said particle surface which is substantially free of other proteins or carbohydrates,

said oligonucleotide being complementary and specific to said target nucleic acid,

said contacting being carried out under hybridization conditions so that hybridization of said target nucleic acid and said oligonucleotide is achieved to form a water-insoluble hybridization product, and

B. detecting said hybridized product as an indication of the presence of said target nucleic acid in said test sample.

5,328,826

IMMUNOCHEMICAL DETECTION OF HUMAN UTERINE ENDOMETRIAL CANCER CELL

Shiro Nozawa, 2-7-21-101, Motoazabu, Minato-ku, Tokyo, Japan; Katsumi Tsukazaki, Yamato, and Motoko Kawamoto, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd. and Shiro Nozawa, both of Tokyo, Japan

Filed Mar. 23, 1992, Ser. No. 855,880

Claims priority, application Japan, Mar. 22, 1991, 3-059135

Int. Cl.[5] G01N *33/574, 33/53*

U.S. Cl. 435—6 **12 Claims**

1. A method of screening for the presence of endometrial cancer cells in an endometrial cell specimen, comprising the steps of

(a) preparing an endometrial cell specimen by collecting endometrial cells from the cavity of the uterus,

(b) immobilizing a predetermined amount of said specimen on two or more reaction areas on one or more carriers,

(c) contacting one of said reaction areas with a monoclonal antibody labelled with a labelling agent, wherein said monoclonal antibody specifically binds an endometrial cancer associated antigen,

(d) contacting another of said reaction areas with an antibody B labelled with a labelling agent, wherein said antibody B specifically binds a substance A which is present in human cells in a substantially constant amount,

(e) washing said reaction areas to remove unbound labelled monoclonal antibody and unbound labelled antibody B, and

(f) measuring a signal intensity y of bound said labelled monoclonal antibody as a measure of the level of endometrial cancer associated antigen and measuring a signal intensity x of bound said labelled antibody B as a measure of the level of substance A,

(g) wherein an elevated level of the endometrial cancer

associated antigen relative to the level of substance A is associated with the presence of endometrial cancer cells in the endometrial cell specimen.

5,328,827

SPECIFIC DNA MOLECULAR PROBES FOR BOS-TYPE MALE GENOME

Colin Bishop, Neuilly-sur-Seine; Corinne Cotinot, Villejuif; Marc Fellous, Paris; Marek Kirszenbaum, Jouy-en-Josas, and Marcel Vaiman, Paris, all of France, assignors to Institut National de la Recherche Agronomique - INRA; Institut Pasteur and Commissariat a l'Energie Atomique, all of Paris, France

Continuation of Ser. No. 477,855, Apr. 24, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 995,932

Claims priority, application France, Aug. 27, 1987, 87 11975

Int. Cl.[5] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04, 21/02*

U.S. Cl. 435—6 **6 Claims**

1. A synthetic oligonucleotide selected from the group consisting of a 49 base sequence of nucleotides of formula (A) below:

5' (A)

ATCAGTGCAGGGACCGAGATGTGCTCC

3'

AAGGAGTGTTTATCGGCTGCTT

and fragments thereof consisting of 17 or more consecutive bases of sequence A.

5,328,828

COMPOSITIONS AND METHODS FOR DETERMINING THE PRESENCE OF AMPHETAMINES IN A SAMPLE SUSPECTED OF CONTAINING AMPHETAMINE AND/OR METHAMPHETAMINE

Mae W. Hu, Los Altos Hills; Cheng-I Lin, San Jose, both of Calif.; Chen-jung Hsu, Elkhart, Ind.; James V. Freeman, San Jose, Calif.; Marcel Pirio, San Jose, Calif., and Edwin F. Ullman, Atherton, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 290,487, Dec. 23, 1988, Pat. No. 5,135,863. This application Jul. 20, 1992, Ser. No. 916,568

Int. Cl.[5] G01N *33/536, 33/537, 33/542*

U.S. Cl. 435—7.9 **12 Claims**

4. A method for the assay of amphetamines in a sample suspected of containing amphetamine and/or methamphetamine which comprises

A) combining in aqueous medium (a) said sample; (b) two conjugates wherein in one conjugate an enzyme is conjugated to a ligand analogue of amphetamine and in the other conjugate said enzyme is conjugated to a ligand analogue of methamphetamine; and (c) an antibody to amphetamine and an antibody to methamphetamine wherein at least one of said antibodies is a monoclonal antibody and each of said antibodies is moderately cross-reactive with that conjugate which binds more strongly with the other antibody under conditions allowing said antibodies to bind to said conjugates;

B) with or without separating the bound or unbound conjugates from the medium obtained from step A, contacting the conjugates obtained from step A with any necessary components of a signal producing system wherein a signal is produced that is related to the presence of amphetamines in said sample; and

C) determining the signal and correlating the signal to the presence of amphetamine and/or methamphetamine in the sample.

5,328,829

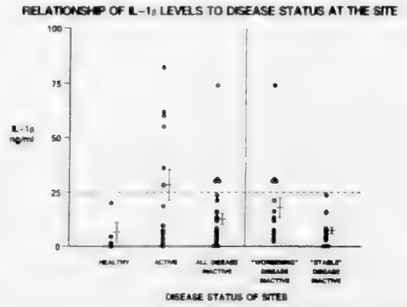
METHOD OF DETERMINING SITES OF ACTIVE PERIODONTAL DISEASE

Philip Stashenko, Norfolk, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Jul. 5, 1990, Ser. No. 548,093

Int. Cl.[5] G01N *33/53, 33/535*

U.S. Cl. 435—7.9 **9 Claims**



1. A method for the determination of periodontal disease active sites in the oral cavity of a patient, which method comprises:

a) determining the concentration of interleukin 1 beta (IL-1b) of a sample taken from a site in the oral cavity; and

(b) identifying the site as an active periodontal disease site when the concentration of interleukin 1 beta (IL-1b) is greater than about 25 ng/ml.

5,328,830

POTASSIUM CHANNEL MODULATORS

Ronald A. Janis, Orange, and Frederick J. Hoffman, Jr., Madison, both of Conn., assignors to Miles Inc., West Haven, Conn.

Filed Sep. 8, 1992, Ser. No. 941,004

Int. Cl.[5] G01N *33/567*

U.S. Cl. 435—7.21 **5 Claims**

1. A method for identifying compounds capable of specific binding to K^+ channels sensitive to tritiated (+)-N-(2-ethoxyphenyl)-N'-(1,2,2-trimethyl propyl)-2-nitroethene-1,1-diamine ([^{3}H]CMPD-I), said method comprising the following steps:

(a) preparing a culture of a selected rat insulinoma (RIN) cell line;

(b) adding [^{3}H]CMPD-I;

(c) introducing a test compound; and

(d) determining inhibition of specific binding of [^{3}H]CMPD-I by said test compound, wherein inhibition indicates the capacity of said test compound to specifically bind to said K^+ channels sensitive to [^{3}H]CMPD-I.

5,328,831

SUBSTRATE COMPOSITION FOR SOLID PHASE UREASE IMMUNOASSAY

Thomas N. Stewart, Durham; Glenn P. Vonk, Fuquay-Varina, and James P. Mapes, Raleigh, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 528,526, May 25, 1990, Pat. No. 5,139,934. This application Mar. 16, 1992, Ser. No. 851,602

Int. Cl.[5] B12Q *1/58;* **C12Q** *1/00;* **C12N** *9/96*

U.S. Cl. 435—12 **8 Claims**

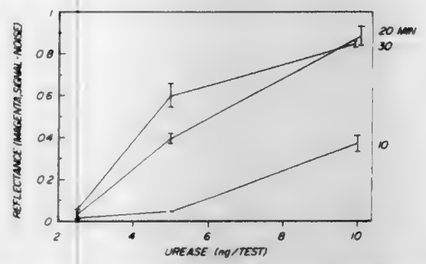
1. A urease substrate composition comprising;

a) a first component selected from the group consisting of urea, substituted ureas and simple amides;

b) a second component selected from the group consisting of indoxyl, indoxyl butyrate, sodium ascorbate and ascorbic acid, and;

c) optionally a tetrazolium salt;

wherein the composition has an acidic pH which prevents reduction of the tetrazolium salt by the second component, if the tetrazolium salt is present, and wherein the first and second



components are present in amounts such that cleavage of the first component by urease increases the pH and allows the second component to reduce the tetrazolium salt if present to an insoluble formazan.

5,328,832

METHOD OF DETERMINING LIPASE ACTIVITY USING A TRANSPARENT STABLE AQUEOUS SOLUTION OF TRIGLYCERIDE SUBSTRATE

Iyoko Miki, Funabashi; Hiroyuki Tsubota, Chiba; Toshio Tsuchiko, and Hisashi Ochi, both of Funabashi, all of Japan, assignors to Iatron Laboratories, Inc., Tokyo, Japan

Division of Ser. No. 225,345, Jul. 28, 1988, Pat. No. 5,082,769. This application Sep. 25, 1991, Ser. No. 766,436

Claims priority, application Japan, Apr. 15, 1988, 63-91688

Int. Cl.[5] C12Q *1/44*

U.S. Cl. 435—19 **2 Claims**

2. A method of determining human pancreatic lipase in a sample, comprising the steps of:

(1) placing the sample in contact with a transparent aqueous solution containing a triglyceride as substrate in the presence of a compound which accerates lipase activity and hydrolyzes the triglyceride, thus liberating fatty acids; and

(2) measuring the amount of the liberated fatty acids,

wherein the transparent aqueous solution containing the triglyceride has been prepared by the steps of:

(a) adding the triglyceride to an aqueous solution containing a nonionic surfactant to form a mixture;

(b) heating the mixture to or above the cloud point temperature of the nonionic surfactant containing aqueous solution while stirring the mixture;

(c) cooling the mixture to a temperature below the cloud point while stirring to form a transparent solution;

(d) lyophilizing the transparent solution in the presence of an excipient or stabilizer selected from the consisting of sucrose, raffinose, lactose, dextran, carboxymethyl cellulose, FICOLL®, albumin, glycine and combinations thereof; and

(e) dissolving the lyophilizate in an aqueous solution.

5,328,833

DEVICE AND PROCEDURE FOR IDENTIFYING PATHOGENIC MICROORGANISMS

William W. Ayres, Box 305, Chalk Hill Rd., Chalk Hill, Pa. 15421, and John Duda, 130 Creek Rd., Brownsville, Pa. 15417

Filed Apr. 4, 1991, Ser. No. 680,426

Int. Cl.[5] C12Q *1/14, 1/02, 1/18, 1/04*

U.S. Cl. 435—36 **2 Claims**

1. A procedure for differentiating and identifying the suspended microorganism *Staphylococcus aureus* which comprises placing Alphazurine A dye disposed on an absorbent member into a contact with a culture of said suspected microorganism and observing the presence or absence of inhibition of growth of the microorganism, the presence of said growth inhibition being a positive indication of *Staphylococcus aureus.*

5,328,834

METHOD FOR PREPARING IMMUNOGLOBULIN FRAGMENTS

That T. Ngo, Irvine, and Harish P. M. Kumar, El Toro, both of Calif., assignors to UniSyn Technologies, Inc., Tustin, Calif.

Filed Sep. 8, 1989, Ser. No. 404,992

Int. Cl.[5] C12P *21/00*

U.S. Cl. 435—68.1 **11 Claims**

1. A method for preparation of immunoglobulin fragments by specific fragmentation of immunoglobulins, comprising:

treating a solution of said immunoglobulins with a protease soluble in said solution so as to achieve substantially complete fragmentation of said immunoglobulins;

complexing said protease with a complexing agent to form a protease complex;

separating said protease complex from said immunoglobulin fragments; and

inactivating said protease prior to said complexing to ensure that said complexing agent is not digested by said protease;

wherein said protease is papain and said inactivating is effected by addition of a papain inhibitor.

5,328,835

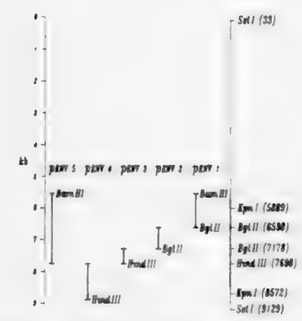
EXPRESSION OF IMMUNOLOGICALLY REACTIVE HIV ENVELOPE PROTEINS

Suan M. Watanabe; Wesley L. Cosand; Susan McArdle, and Bruce M. Travis, all of King, Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 602,890, Oct. 24, 1990, abandoned, which is a continuation of Ser. No. 721,237, Apr. 8, 1985, abandoned. This application Aug. 24, 1992, Ser. No. 933,980

Int. Cl.[5] C12N *15/49, 15/63, 15/71;* **C12P** *21/02*

U.S. Cl. 435—69.3 **17 Claims**



13. A method for preparing proteins which are immunologically reactive with antibodies to LAV, comprising:

introducing into a bacterial host cell a recombinant plasmid capable of replication in bacterial host cells, said plasmid including procaryotic transcriptional and translational signals for expression, followed in reading phase by a DNA sequence comprising a portion of the env region of the LAV genome, said portion coding for a protein which is immunologically reactive with antibodies to LAV and said portion corresponding to a DNA sequence selected from the group consisting of pENV-1, pENV-2, pENV-3, pENV-4 and pENV-5;

incubating said bacterial host in an appropriate culture medium allowing expression of said protein; and

isolating the protein product of said sequence from said bacterial host.

5,328,836

PLASMIDS CONTAINING DNA ENCODING THE AMINO ACID SEQUENCE OF TCF-II AND USE THEREOF

Nobuyuki Shima, Oyama; Kanji Higashio, Kawagoe; Masaya Nagao, Kyoto; Fumiko Oogaki, Utsunomiya; Hiroaki Takaoka, and Eisuke Tsuda, both of Shimotsuga, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

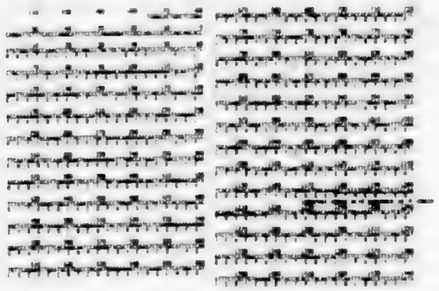
PCT No. PCT/JP91/00942, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992, PCT Pub. No. WO92/01053, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 15, 1991, Ser. No. 838,410

Claims priority, application Japan, Jul. 13, 1990, 2-185852

Int. Cl.[5] C12P *21/02*

U.S. Cl. 435—69.4 **5 Claims**



1. A plasmid comprising a DNA encoding the amino acid sequence of TCF-II, wherein said DNA has a sequence shown in FIG. 1 (SEQ ID NO:2).

5,328,837

HEPATOCYTE GROWTH FACTOR PROTEASE DOMAIN VARIANTS

Paul J. Godowski, Pacifica; Natalie A. Lokker, San Francisco, and Melanie R. Mark, San Jose, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed May 18, 1992, Ser. No. 885,971

Int. Cl.[5] C12P *21/06;* **A61K** *37/36*

U.S. Cl. 435—69.4 **21 Claims**

1. An isolated nucleotide molecule encoding a hepatocyte growth factor (HGF) variant having an amino acid alteration at a site within the protease domain of HGF, said variant retaining substantially full receptor binding affinity of the corresponding wild-type HGF and being substantially devoid of HGF biological activity.

5,328,838

METHOD FOR IDENTIFYING AND/OR ISOLATING GENES WHICH CODE FOR MEMBRANE RECEPTORS

Gabriella Galli, and Rafaele Matteoni, both of Rome, Italy, assignors to Enichem Partecipazioni S.p.A., Milan, Italy

Filed Sep. 6, 1991, Ser. No. 755,744

Claims priority, application Italy, Sep. 7, 1990, 21402 A/90

Int. Cl.[5] C12N *15/10*

U.S. Cl. 435—172.3 **4 Claims**

1. A method for identifying and/or isolating DNA encoding G-coupled membrane receptors, comprising:

preparing a vector encoding a membrane receptor which naturally occurs coupled to a G-protein;

transforming *E. coli* cells using said vector;

adsorbing bacterial colonies derived from said transformed bacterial cells on a filter of nitrocellulose;

incubating said colonies on said filter with a labeled ligand;

identifying those colonies containing said DNA by their ability to bind said ligand;

and, optionally, isolating said DNA.

5,328,839

OXIDO REDUCTASE ENZYME SYSTEM OBTAINED FROM *P. CHRYSOGENUM*

Yair Aharonowitz, Hod Hasharon, Israel; Lucia H. M. van der Voort, NS Delft, Netherlands; Gerald Cohen, Hod-Hasharon, Israel; Roelof A. L. Bovenberg, ZD Rotterdam, Netherlands; Rachel Schreiber, Herzelia, Israel; Anat Argaman, Kibutz Horshim, Israel; Yossef Av-Gay, Yahud, Israel; Helena M. Nan, SK Den Haag; Alfred Kattevilder, ZW Delft, both of Netherlands; Harriet Palissa, and Henk van Liempt, both of Berlin, Fed. Rep. of Germany, assignors to Gist-Brocades, MA Delft, Netherlands

PCT No. PCT/NL91/00101, § 371 Date Mar. 24, 1992, § 102(e) Date Mar. 24, 1992, PCT Pub. No. WO91/19788, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 18, 1991, Ser. No. 820,688

Claims priority, application European Pat. Off., Jun. 18, 1990, 90201598.1

Int. Cl.[5] C12N *9/06, 9/02, 1/14*

U.S. Cl. 435—191 **4 Claims**

1. An oxido reductase system from *Penicillium chrysogenum*, comprising in isolated form as first and second components two polypeptides, a high molecular weight (HMW) polypeptide with a molecular weight of about 36 kDa and a low molecular weight (LMW) polypeptide with a molecular weight of about 12 kDa, wherein said oxide reductase system reduces disulfide compounds in the presence of a reduced electron carrier.

5,328,840

METHOD FOR PREPARING TARGETED CARRIER ERYTHROCYTES

Barry S. Coller, Dix Hills, N.Y., assignor to The Research Foundation of the State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 611,164, Nov. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 394,018, Aug. 15, 1989, abandoned. This application Nov. 12, 1991, Ser. No. 790,851

Int. Cl.[5] C12N *5/00, 11/08;* **A61K** *37/02, 37/00*

U.S. Cl. 435—240.2 **20 Claims**



1. A method for preparing a targeted carrier erythrocyte comprising

(a) causing an erythrocyte to release its intracellular contents;

(b) introducing a material into the erythrocyte produced in step (a);

(c) substantially resealing the membrane of the erythrocyte produced in step (b);

(d) conjugating a polyfunctional biocompatible molecule to the erythrocyte such that a covalent bond is formed between a first functional group on the polyfunctional biocompatible molecule and the erythrocyte; and

(e) binding the polyfunctional biocompatible molecule to a polypeptide having the formula

$$R_1\text{-Arg-Gly-Asp-}R_2$$

such that a covalent bond is formed between a second functional group of the polyfunctional biocompatible molecule and the polypeptide, in which R_1 represents an amino acid or a sequence of more than one amino acid; and R_2 represents OH, an amino acid or the amide thereof, or a sequence of more than one amino acid;

in which the targeted carrier thrombo-erythrocyte is characterized by the ability to bind to platelets.

5,328,841

METHODS FOR ISOLATING EG III CELLULASE COMPONENT AND EG III CELLULASE IN POLYETHYLENE GLYCOL USING INORGANIC SALT AND POLYETHYLENE GLYCOL

Jeffrey D. Lorch, Hudson, Wis.; Kathleen A. Clarkson, San Francisco, Calif.; Edmund Larenas, San Carlos, Calif.; Benjamin S. Bower, San Francisco, Calif., and Geoffrey L. Weiss, San Francisco, Calif., assignors to Genencor International, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 707,647, May 30, 1991, which is a continuation-in-part of Ser. No. 668,640, Mar. 13, 1991, which is a continuation-in-part of Ser. No. 593,919, Oct. 5, 1990, abandoned, and a continuation-in-part of Ser. No. 770,049, Oct. 4, 1991. This application Apr. 3, 1992, Ser. No. 862,846

Int. Cl.[5] C12N *9/42, 1/18, 1/00*

U.S. Cl. 435—209 **9 Claims**

1. A method for isolating EG III cellulase component substantially free of other cellulase proteins from an aqueous mixture containing cellulase proteins which method comprises

i- adding an inorganic salt and polyethylene glycol having a molecular weight of from about 5,000 to 10,000 to the aqueous mixture of cellulase proteins under conditions to create a two-phase system wherein substantially all of the cellulase proteins, other than EG III, are retained in an EG III-poor aqueous phase and the EG III cellulase component is retained in an EG III-rich polyethylene glycol phase,

ii- separating the polyethylene glycol, EG III-rich phase from the aqueous, EG-III poor phase and collecting said EG III-rich polyethylene glycol phase that is substantially free of other cellulase proteins in said aqueous mixture and

iii- separating the EG III from the polyethylene glycol EG III-rich phase and collecting the EG III component.

5,328,842

COMPOUNDS, VECTORS AND METHODS FOR EXPRESSING HUMAN, CYTOSOLIC PHOSPHOLIPASE A_2

Xue-Chiou C. Chiou, Greenwood; JoAnn Hoskins, Indianapolis; Ruth M. Kramer, Indianapolis; John D. Sharp, Indianapolis, and Donald L. White, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 686,558, Apr. 17, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,508

Int. Cl.[5] C12N *15/55, 15/70, 15/85*

U.S. Cl. 435—240.2 **21 Claims**

1. A gene consisting essentially of a recombinant DNA sequence that encodes a protein having the amino acid sequence of SEQ ID NO:2.

5,328,843

METHOD FOR ALLOCATING CELLS AND CELL ALLOCATION DEVICE

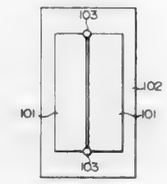
Jun Fukuda, 1-7-409, Hiroo-4-chome, Shibuya-ku, Tokyo; Hideo Kawaguchi; Takejiro Ushiroda, both of Saitama; Norio Shimizu, Sayama, and Kazuo Sato, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Jun Fukuda, Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 660,875

Claims priority, application Japan, Feb. 27, 1990, 2-44560

Int. Cl.[5] C12N *5/06;* **C12M** *3/00*

U.S. Cl. 435—240.23 **48 Claims**



1. A method for allocating cells on a cell culture substrate comprising the steps of:

providing a cell culture substrate;

providing a cell allocation device, including a plate material having a first slit of a construction such that a cell suspension precipitates into the first slit by capillary action and to a first zone on the cell culture substrate;

providing a cell suspension, containing the cells to be cultured, to the cell allocation device;

allowing the cells suspended in the cell suspension to allocatingly precipitate to the first zone via the first slit; and

withdrawing said device;

wherein a slit is defined as an aperture having first and second linear coplanar dimensions, the first dimension being substantially longer than the second dimension.

5,328,844

CULTURE MEDIA FOR MAMMALIAN CELLS

George E. Moore, Conifer, Colo., assignor to University of Colorado Foundation, Inc., Boulder, Colo.

Continuation of Ser. No. 521,083, May 9, 1990, abandoned. This application Jun. 24, 1992, Ser. No. 902,804

Int. Cl.[5] C12N *1/00, 5/00, 5/06*

U.S. Cl. 435—240.31 **9 Claims**

1. A culture medium for establishing, growing and maintaining mammalian cells consisting essentially of the composition of the composition COF 1769 as defined in Table 1.

5,328,845

FUNGAL NEGATIVE MICROORGANISM CAPABLE OF PRODUCING HIGH LEVELS OF BETA-CAROTENE

Mark Finkelstein, Ft. Collins, Colo.; Chien-Chang Huang, Taipei, Taiwan; Graham S. Byng, Woodinville, Wash.; Bi-Ru Tsau, Taipei Hsien, Taiwan, and Jeanette Leach, Boulder, Colo., assignors to Universal Foods Corporation, Milwaukee, Wis.

Filed Mar. 27, 1992, Ser. No. 858,147

Int. Cl.[5] C12N *1/14*

U.S. Cl. 435—254.1 **22 Claims**

1. A beta-carotene-containing biomass produced by a method comprising:

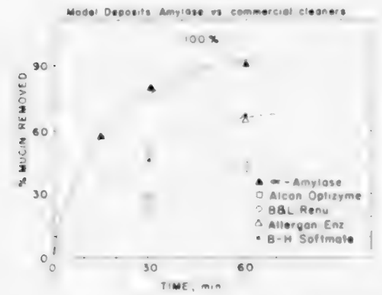
(a) culturing in an effective production fermentation medium a negative Blakeslea microorganism selected from the group consisting of *Blakeslea trispora* PF17-12 (ATCC No. 74146), *Blakeslea trispora* PF17-13 (ATCC No. 74147), and mutants thereof which are capable of producing at least about the same levels of beta-carotene as *Blakeslea trispora* PF17-12 (ATCC No. 74146) and *Blakeslea trispora* PF17-13 (ATCC No. 74147) respectively; and

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(b) separating the microorganism from the medium to form a beta-carotene-containing biomass

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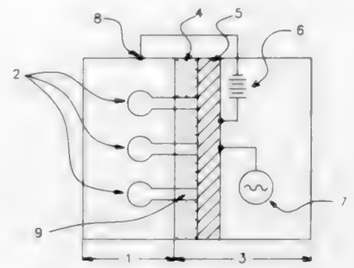
5,328,846
METHOD FOR REMOVING EXOGENOUS DEPOSITS FROM HYDROPHILIC CONTACT LENSES
Frederick C. Wedler, State College, Pa., assignor to The Penn State Research Foundation, University Park, Pa.
Continuation of Ser. No. 821,726, Jan. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 721,057, Jun. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 389,037, Aug. 3, 1989, abandoned. This application Oct. 18, 1993, Ser. No. 138,884
Int. Cl.[5] **C12S** *1/00*; **D06M** *16/00*; **C12N** *9/28*; **C11D** *1/00*
U.S. Cl. 435—264 **6 Claims**



1. A method for removing mucin and mucin-containing deposits from a contact lens, which method comprises:
providing a contact lens cleaning solution comprising a buffering agent, a mucin degrading enzyme and calcium ions in an amount sufficient to maintain said enzyme's stability, said mucin-degrading enzyme consisting of alpha-amylase from *Bacillus licheniformis*, in an effective amount sufficient to remove a mucin or mucin-containing deposit from a contact lens;
placing a contact lens having a mucin or mucin-containing deposit in contact with said cleaning solution at or near room temperature; and
allowing a sufficient period of time to elapse to allow for said removal.

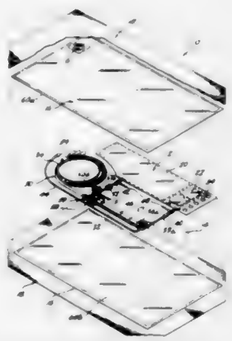
5,328,847
THIN MEMBRANE SENSOR WITH BIOCHEMICAL SWITCH
George D. Case, 17780 SW. Wright St., Aloha, Oreg. 97007, and Jennings F. Worley, III, 3500 Swarthmore Rd., Durham, N.C. 27713
Continuation-in-part of Ser. No. 481,213, Feb. 20, 1990, abandoned. This application Nov. 18, 1991, Ser. No. 794,734
Int. Cl.[5] **C12M** *1/34*, *1/40*; **G01N** *30/96*; **C25F** *7/00*
U.S. Cl. 435—291 **23 Claims**

1. An electrochemical biosensor capable of signalling the presence of a target agent, comprising
a. a biochemical switch comprising a hydrophilic film layer containing a recognition biomolecule, the recognition biomolecule having an ion channel blocker and a recognition moiety capable of specifically binding with a target agent,
b. a hydrophobic gate membrane comprised of membrane material and ion channel gate material, in contact with the biochemical switch, and
c. a measuring device comprising a conductive measuring electrode in contact with the gate membrane, and means for measuring a current surge between the biochemical



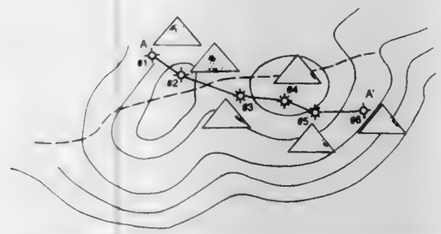
switch and the measuring electrode in response to exposure to a target agent.

5,328,848
METHOD FOR HYDRATING AND CALIBRATING A STERILIZABLE FIBER-OPTIC CATHETER
Conrad T. O. Fong, Redmond; Mohamed R. Ali Elmesai, Bellevue, and Bruce Q. Fieggen, Snohomish, all of Wash., assignors to Abbott Laboratories, Abbott Park, Ill.
Continuation-in-part of Ser. No. 324,187, Apr. 14, 1989, abandoned, which is a division of Ser. No. 224,425, Jul. 25, 1988, Pat. No. 4,863,016. This application Aug. 8, 1991, Ser. No. 742,627
Int. Cl.[5] **G01N** *31/00*
U.S. Cl. 436—11 **12 Claims**



4. A method of equilibrating and calibrating a sensor component membrane and monitoring instrumentation of a fiber-optic catheter useful for measuring at least one analyte other than chloride in a blood sample comprising the steps of:
contacting the sensor component membrane with a first aliquot of an aqueous buffer solution containing chloride at a level substantially equal to the level found in said blood, for a period of time sufficient to equilibrate said sensor component membrane so that an ionic gradient is prevented from forming across the sensor component membrane when the sensor component membrane is contacted with a blood sample;
exposing a second aliquot of the aqueous buffer solution to a controlled gaseous atmosphere to achieve a controlled calibration point value;
contacting the sensor component membrane with the second aliquot of the aqueous buffer solution at the controlled calibration point value; and,
contacting the sensor component membrane with the blood sample and determining that an ionic gradient does not form across the sensor component membrane.

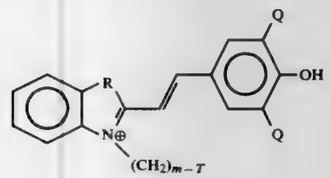
5,328,849
INCLUSION COMPOSITION MAPPING OF EARTH'S SUBSURFACE USING COLLECTIVE FLUID INCLUSION VOLATILE COMPOSITIONS
Michael P. Smith, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.
Continuation of Ser. No. 398,342, Aug. 24, 1989, abandoned. This application May 19, 1992, Ser. No. 888,394
Int. Cl.[5] **G01N** *33/24*
U.S. Cl. 436—32 **30 Claims**



1. A method of exploring the earth's subsurface for indicia of oil and gas comprising:
selecting gas as a function of location in the earth's subsurface a plurality of sedimentary rock samples spanning a region of interest in the earth's subsurface;
obtaining chemical compositions of fluid-inclusion-derived gases essentially excluding effect of adsorbed and pore system non-fluid-inclusion derived gases for a plurality of collective fluid inclusion volatiles samples from the plurality of sedimentary rock samples, the chemical compositions being characterized by data scatter and the plurality of sedimentary rock samples being a sufficient plurality for identifying trends in variation in chemical composition in the region of interest in the earth's subsurface notwithstanding said data scatter; and
producing a map of the earth's subsurface representing variation in chemical composition of fluid inclusions between samples, wherein the variation in chemical composition is displayed as a function of areal location in the earth, and for each areal location variation is shown as a function of depth in the earth.

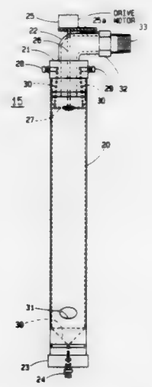
5,328,850
MEROCYANINE PROTEIN ERROR INDICATORS
Paul F. Corey, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.
Division of Ser. No. 710,955, Jun. 6, 1991, Pat. No. 5,264,589. This application Dec. 14, 1992, Ser. No. 989,716
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] **G01N** *33/00*
U.S. Cl. 436—86 **15 Claims**

1. An analytical test strip for the detection of protein in a liquid sample comprising an absorbent carrier impregnated with the merocyanine protein error indicator compound:



wherein:
m is an integer from 1 to 6;
Q is —Br, —I, or Cl;
R is S, Se, O, or $C(C_nH_{2n+1})_2$, wherein:
n is an integer from 1 to 6; and
T is $-SO_3\ominus$ or —H.

5,328,851
HIGH-THROUGHPUT LIQUID-ABSORPTION PRECONCENTRATOR SAMPLING METHODS
Solomon Zaromb, 95706 William Dr., Hinsdale, Ill. 60521
Division of Ser. No. 499,602, Mar. 26, 1990, Pat. No. 5,173,264, which is a continuation-in-part of Ser. No. 330,654, Mar. 30, 1989, Pat. No. 4,912,051, and a continuation-in-part of Ser. No. 330,655, Mar. 30, 1989, Pat. No. 4,977,095. This application Dec. 18, 1992, Ser. No. 993,080
Int. Cl.[5] **G01N** *1/18*, *35/08*
U.S. Cl. 436—178 **19 Claims**



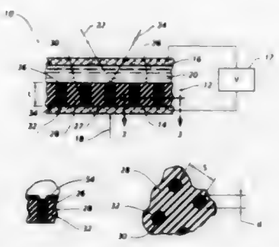
1. A method for preconcentrating an analyte in a gaseous medium comprising the steps of:
providing a length of wettable material within an inner wall surface of a container,
wetting one part of the wettable material with an analyte-sorbing liquid so that the liquid moves toward one end of the wettable material for wetting substantially the length thereof,
flowing the gaseous medium through an inlet opening into the container, over the liquid that is wetting said material in direct contact therewith for trapping and preconcentrating traces of analyte in the sorbing liquid, and collecting from the one end of the wettable material the sorbing liquid containing the preconcentrated traces of analyte,
limiting any dry surfaces within or connected to said container that the gaseous medium may encounter before contacting the liquid to a negligibly small area, or maintaining the dry surfaces at a temperature at which adsorption of the analyte is negligibly low, and
detecting said analyte, preconcentrated within said sorbing liquid by an analyte detection means, producing a signal indicative of the presence of said analyte, wherein the volume of sorbing liquid is reduced by allowing the liquid to collect within a portion of the container and to partially evaporate.

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5,328,852
ANALYTICAL ASSAY
John J. Blackwood, Needham, and Shai Inbar, Brookline, both of Mass., assignors to PB Diagnostic Systems, Inc., Westwood, Mass.
Continuation-in-part of Ser. No. 533,163, Jun. 4, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 962,461
Int. Cl.[5] G01N *33/543, 33/558*
U.S. Cl. 436—518 17 Claims

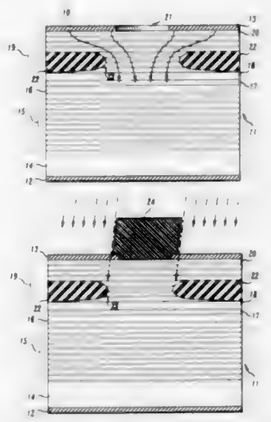
1. A method for determining an analyte in a sample fluid consisting essentially of
(a) irradiating a region of an assay element including a signal generating species with electromagnetic radiation to obtain a first optical signal prior to applying any sample fluid to said assay element;
(b) correcting said first optical signal for relative humidity and/or temperature variations with an equation which utilizes temperature, relative humidity and time as variables to determine a basic dry reading, D_o;
(c) applying a sample fluid to said assay element;
(d) allowing analyte in said sample fluid to react with said signal generating species;
(e) irradiating said assay element in the same region and with the same electromagnetic radiation utilized in step (a) to obtain a second optical reading; and
(f) determining the amount of analyte in said sample fluid as a function of said basic dry reading and said second optical reading.

5,328,853
METHOD OF MAKING A PHOTODETECTOR ARRAY HAVING HIGH PIXEL DENSITY
Carmen I. Huber, Silver Spring, Md.; Tito E. Huber, Brooklyn, N.Y.; Tak-Kin Chu, Bethesda, Md., and Nicholas Caviris, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 18, 1993, Ser. No. 77,806
Int. Cl.[5] H01L *31/18*
U.S. Cl. 437—3 2 Claims



1. A method of making a photodetector device which includes an electrically insulating matrix having a plurality of pins made of a photoconducting semiconductor embedded in channels formed in the matrix to provide a pixel density substantially exceeding 1,000,000 per square centimeter, comprising the steps of: heating the photoconducting semiconductor to a molten state; injecting said photoconducting semiconductor in the molten state into the channels of the matrix; cooling the matrix to solidify the injected photoconducting semiconductor into the pins; chemically etching the pins at an interface surface of the matrix to form spaces in the channels between the pins and said interface surface; and filling said spaces in the channels with light reflecting material.

5,328,854
FABRICATION OF ELECTRONIC DEVICES WITH AN INTERNAL WINDOW
Daryoosh Vakhshoori, Scotch Plains; James D. Wynn, Plainfield, and George J. Zydzik, Columbia, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Mar. 31, 1993, Ser. No. 40,797
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—24 11 Claims

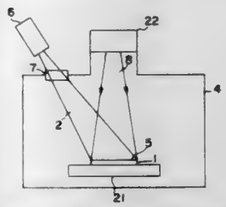


1. A method of manufacturing electronic devices having internal windows in an insulating, ion implanted region, the device including a semiconductor structure and a top and a bottom metal electrode to the structure, which comprises:
depositing on the top surface of the top electrode a photoresist layer in a thickness sufficient to prevent implantation ions from reaching semiconductor material underlying the top electrode, patterning the photoresist layer, and implanting proton ions into said semiconductor material, forming an insulating region with a centrally located window, wherein
said photoresist layer is patterned by angle etching with reactive ion etching (RIE) to produce a masking pattern side walls of which are inclined a preselected angle with respect to a normal to said top surface and which are parallel each to another, and
said implanting of the ions is conducted at an angle directed parallel to the side walls of the photoresist pattern.

5,328,855
FORMATION OF SEMICONDUCTOR DIAMOND
Makoto Kitabatake, Nara; Masahiro Deguchi, Hirakata, and Takashi Hirao, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jul. 24, 1992, Ser. No. 918,961
Claims priority, application Japan, Jul. 25, 1991, 3-186079; Jan. 30, 1992, 4-014614; Jan. 30, 1992, 4-014615; Feb. 13, 1992, 4-026483
Int. Cl.[5] H01L *21/265, 21/268*
U.S. Cl. 437—25 14 Claims

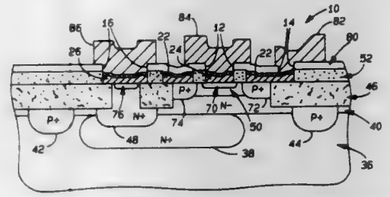
1. Method for formation of semiconductor diamond comprising
irradiating diamond crystal with light having irradiation density of more than 0.1 W/cm^2 and less than 100 W/cm^2,

and keeping the temperature of the diamond crystal during light irradiation at 300° C. or less,



annihilating defects in said diamond crystals, to form said semiconductor diamond.

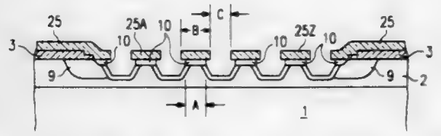
5,328,856
METHOD FOR PRODUCING BIPOLAR TRANSISTORS HAVING POLYSILICON CONTACTED TERMINALS
Michael D. Lammert, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Aug. 27, 1992, Ser. No. 937,329
Int. Cl.[5] H01L *21/265, 29/70*
U.S. Cl. 437—31 19 Claims



1. A method of fabricating a transistor comprising the steps of:
providing a substrate;
providing a semiconductor collector layer positioned relative to the substrate;
providing a semiconductor base layer positioned relative to the semiconductor collector layer;
providing a polysilicon layer positioned relative to the semiconductor base layer;
providing a planarization layer in contact with the polysilicon layer opposite to the substrate; and
etching the polysilicon layer and the planarization layer to define at least a polysilicon emitter contact region and a polysilicon base contact region.

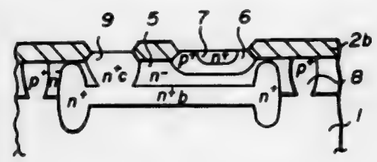
5,328,857
METHOD OF FORMING A BILEVEL, SELF ALIGNED, LOW BASE RESISTANCE SEMICONDUCTOR STRUCTURE
William P. Inhauser, Ambler, Pa., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Sep. 25, 1992, Ser. No. 951,162
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 5 Claims

1. A method of manufacturing a vertically diffused semiconductor device, said method comprising the steps of:
a) providing a semiconductor wafer which includes a surface region of a first conductivity type;
b) providing an insulating layer over a portion of said surface region;
c) introducing a dopant to a further portion of said surface region;
d) covering selected areas of said further portion of said surface region, wherein each of said selected areas is covered with a respective one of a plurality of insulating layer portions;
e) etching said surface region to remove still further portions of said surface region to create a plurality of recesses in said surface region wherein a portion of each of said insulating portions extends above a portion of a respective one of said plurality of recesses so that said plurality of insulating layer portions form a plurality of windows;
f) introducing through said extending portion of each of said insulating portions and through said plurality of windows



a first conductivity dopant to form a plurality of base regions in said surface region; and
g) introducing a second conductivity dopant opposite in conductivity to said first conductivity dopant exclusively through said plurality of windows to form a plurality of emitter regions, each of said emitter regions positionally corresponding to a respective one of said plurality of windows and positionally aligned relative to a respective one of said plurality of base regions, in order to form a vertically diffused semiconductor device.

5,328,858
METHOD FOR PRODUCING THE BIPOLAR TRANSISTOR
Satoshi Hikida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 5, 1992, Ser. No. 956,865
Claims priority, application Japan, Oct. 7, 1991, 3-258859
Int. Cl.[5] H01L *21/265, 29/70*
U.S. Cl. 437—31 6 Claims



1. A method for producing a semiconductor device, comprising the steps of:
forming an insulating film at a surface of a semiconductor substrate of a first conductive type;
forming an opening in the insulating film by removing a portion thereof where a buried layer of a second conductive type is to be formed;
depositing an insulating glass containing phosphorus at a high concentration on the semiconductor substrate so as to cover the insulating film;
anisotropically etching the insulating glass to leave the insulating glass only on a side wall of the opening; and
implanting an impurity of a second conductive type into the semiconductor substrate through the opening and then affecting thermal treatment.

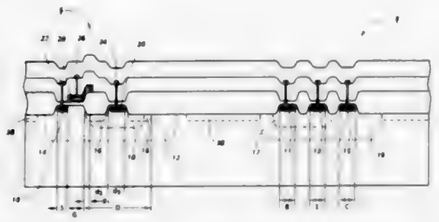
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5,328,859

METHOD OF MAKING HIGH VOLTAGE PNP BIPOLAR TRANSISTOR IN CMOS

Tuan A. Vo, Hawthorne, and Mohamad M. Mojaradi, Los Angeles, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 357
Int. Cl.[5] H01L *21/265, 29/70*
U.S. Cl. 437—31 **2 Claims**



1. The method of forming a high voltage bipolar transistor comprising an n-well, a p+ emitter and an n+ base at the surface of a p-type silicon substrate and located within said well, and a p-field at the surface of said substrate circularly surrounding said emitter and separating said emitter from said base, comprising the steps of:

growing an oxide layer on the surface of said substrate,

depositing a nitride layer on said oxide layer,

using a first mask to etch away the nitride, to expose said oxide layer, except for two areas to form emitter and base nitride areas where the nitride remains,

second masking to form an n-well exposed area overlapping and slightly larger than said emitter and base nitride areas,

first implanting an n-well below said n-well area,

third masking all of the surface of said substrate except for the area between said two nitride areas,

second implanting in said area between said two nitride areas to form a p-field drift region to increase the breakdown voltage of the base to emitter junction,

removing all of said nitride,

fourth masking off all areas of said transistor except for said emitter area,

third implanting to form a p+ emitter,

fifth masking off all areas of said transistor except for said base area, and

fourth implanting to form an n+ base.

5,328,860

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

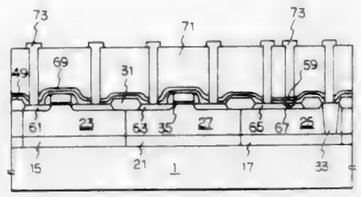
Yong J. Lee, Chungcheongnam-do; Duk M. Yi, Cheongju-city; Young O. Kim, Kyungki-do, and Gyu C. Kim, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Division of Ser. No. 880,212, May 8, 1992, Pat. No. 5,278,084. This application Apr. 15, 1993, Ser. No. 46,282
Claims priority, application Rep. of Korea, May 9, 1991, 91-7496; Jul. 20, 1991, 91-12536
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **5 Claims**

1. A method for forming spacers adjacent to sidewalls of a gate electrode of a first MOS transistor formed in a semiconductor well region of a first conductivity type formed in a semiconductor substrate of a second conductivity type, comprising the steps of:

forming an oxide layer over said gate and said semiconductor well region;

partially removing said oxide layer by using a dry etching process, to thereby leave a residual oxide layer over said gate and said semiconductor well region; and,



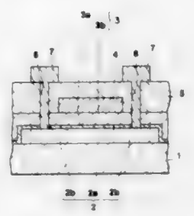
removing said residual oxide layer by using a wet etching process, to thereby form spacers adjacent to said sidewalls of said gate.

5,328,861

METHOD FOR FORMING THIN FILM TRANSISTOR

Tatsuya Miyakawa, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 968,382
Claims priority, application Japan, Nov. 25, 1991, 3-334596
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **9 Claims**



1. A method for manufacturing a thin film transistor comprising the steps of:

forming a polysilicon semiconductor layer having a source region, a drain region, and a channel region, on an insulating substrate;

directly depositing a two-layer gate insulating film on said polysilicon semiconductor layer, said two-layer gate insulating film having:

a silicon oxide layer formed on said channel region of said polysilicon semiconductor layer by a sputtering process; and

a silicon nitride layer formed on said silicon oxide layer by a plasma CVD process, said silicon nitride layer having a thickness that is greater than a thickness of said silicon oxide layer; and then

forming a gate electrode on said silicon nitride layer; and

forming a source electrode and a drain electrode on said source region and said drain region of said polysilicon semiconductor layer, respectively.

5,328,862

METHOD OF MAKING METAL OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR

Jung S. Goo, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Apr. 22, 1993, Ser. No. 52,092
Claims priority, application Rep. of Korea, Jun. 12, 1992, 10235/1992
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **12 Claims**

1. A method of making a metal oxide semiconductor filed effect transistor comprising the steps of:

forming a field region in a substrate of a first conductivity type to define the field region and an active region;

forming a gate insulating film on the active region;

implanting an impurity in the active region to control a threshold voltage;

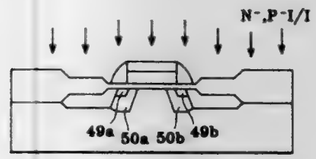
forming a polysilicon film on the whole surface of the gate substrate;

etching the polysilicon film and the gate insulating film to form a gate electrode on the active region;

forming an insulating film on the whole surface of the substrate;

anisotropically etching the insulating film with RIE method to form sidewall spacers at side surfaces of the gate electrode and the gate insulating film;

implanting a high concentration impurity of a second conductivity type in the active region between the field region and the sidewall spacers to form high concentration source/drain regions of a second conductivity type, by self-aligning with the sidewall spacers as a mask;



forming a thick insulating film and a gate cap insulating film;

removing the insulating film for sidewall spacers; and

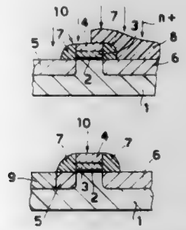
implanting a low concentration impurity of a second conductivity type and a low concentration impurity of a first conductivity type self-aligning with the thick insulating film and the gate electrode as a mask, to form low concentration source/drain regions of a second conductivity type coming into contact with high concentration source/drain region in the active region and to form a low concentration impurity region of a first conductivity type enclosing low concentration source/drain regions of the second conductivity type in the active region.

5,328,863

PROCESS FOR MANUFACTURING A ROM CELL WITH LOW DRAIN CAPACITANCE

Paolo Cappelletti, Seveso; Silvia Lucherini, Milan, and Bruno Vajana, Bergamo, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianz, Italy

Filed Mar. 13, 1991, Ser. No. 668,873
Claims priority, application Italy, Mar. 15, 1990, 1969 A/90
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **32 Claims**



1. A process for the fabrication of a ROM memory cell having a low drain capacitance, comprising the steps of:

(a) forming a gate complex on each part of a p-type substrate of semiconductor material where a cell's channel region is to be located;

(b) effecting n− implantation of said substrate in multiple regions which are adjacent to one of said channel regions and are not covered by any portion of said gate complex, to form n-type source and drain regions, said source and drain and channel regions of said cells defining a plurality of bitlines;

(c) after said step (b), masking said drain region and adjacent parts of said gate complex, and

(d) after said step (c), effecting n+ implantation outside of the thus masked area for the creation of an area having n+ doping in a portion of said source region which is laterally separated from said channel region; and

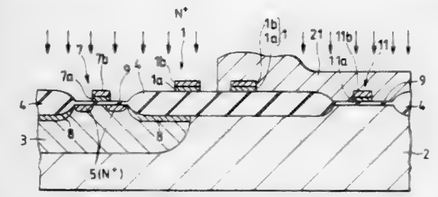
(e) implanting P-type dopants into said gate complex over selected ones of said channel regions, as defined by a masking layer, with an energy sufficiently to penetrate said gate complex thereover; whereby said selected ones of said channel regions have a resultingly elevated threshold voltage.

5,328,864

METHOD OF DOPING GATE ELECTRODES DISCRETELY WITH EITHER P-TYPE OR N-TYPE IMPURITIES TO FORM DISCRETE SEMICONDUCTOR REGIONS

Keiichi Yoshizumi, Kokubunji, and Satoshi Kudo, Maebashi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 509,445, Apr. 16, 1990, Pat. No. 5,032,537. This application May 13, 1991, Ser. No. 699,024
Claims priority, application Japan, Apr. 28, 1989, 1-111373
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—57 **7 Claims**



1. A method of manufacturing a semiconductor device on a semiconductor substrate having a first insulating film on a first semiconductor region of P-type and a second semiconductor region of N-type formed on said semiconductor substrate, comprising the steps of:

(a) forming a first conductor layer comprising a laminate film including a polysilicon layer and a silicide layer thereon, said first conductive layer extending continuously from said first semiconductor region to said first insulating film, said first conductive layer having first end portion on said first insulating film;

(b) forming a second conductive layer comprising a laminate film including a polysilicon layer and a silicide layer thereon, said second conductive layer extending continuously from said second semiconductor region to said first insulating film, said second conductive layer having a first end portion on said first insulating film, wherein said first end portion of said second conductive layer is adjacent to and opposing said first end portion of said first conductive layer;

(c) forming a first mask layer over at least a part of said second semiconductor region, with an end portion thereof formed between said first end portion of said first conductive layer and said first end portion of said second conductive layer, said end portion of said first mask layer being formed over said first insulating film;

(d) introducing first impurities of the N-type into said first semiconductor region which is not covered with said first

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mask layer, thereby to form third semiconductor regions as in self-alignment manner with said first conductive layer;

(e) forming a second mask layer over at least a portion of said first semiconductor region, with an end portion thereof formed between said first end portion of said first conductive layer and said first end portion of said second conductive layer, said end portion of said second mask layer being formed over said first insulating film; and

(f) introducing second impurities of P-type into said second semiconductor region which is not covered with said second mask layer, thereby to form fourth semiconductor regions in self-alignment manner with said second conductive layer.

5,328,865

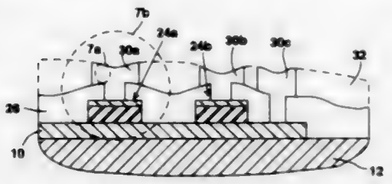
METHOD FOR MAKING CUSP-FREE ANTI-FUSE STRUCTURES

William J. Boardman, San Jose; David P. Chan, San Ramon; Kuang-Yeh Chang, Los Gatos; Calvin T. Gabriel, Pacifica; Vivek Jain, Milpitas, and Subhash R. Nariani, San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 755,259, Sep. 4, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,084

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—60 **11 Claims**



1. A method for making an anti-fuse structure, the method comprising the steps of:

forming a conductive base layer having at least one substantially planar surface portion;

forming an anti-fuse layer over at least said planar surface portion of said conductive base layer such that a lower surface portion of said anti-fuse layer that is in contact with said planar surface portion of said conductive base layer is also substantially planar;

patterning said anti-fuse layer to form an anti-fuse island including said lower surface portion, such that said lower surface portion of said anti-fuse island contacts essentially only said substantially planar surface portion of said conductive base layer;

forming an insulating layer over said anti-fuse island;

forming a via hole through said insulating layer to said anti-fuse island;

forming a conductive connection layer over said insulating layer and within said via hole;

and

patterning said conductive connection layer to form a conductive contact to said anti-fuse island through said via hole;

whereby said anti-fuse island comprises a substantially cusp-free anti-fuse structure within said via hole.

5,328,866

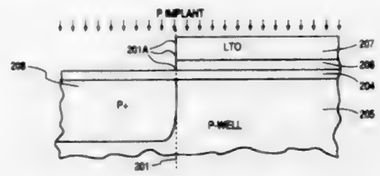
LOW TEMPERATURE OXIDE LAYER OVER FIELD IMPLANT MASK

Mike F. Chang, Cupertino; David G. Grasso, San Jose, and Jun-Wei Chen, Saratoga, all of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Filed Sep. 21, 1992, Ser. No. 949,288

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—70 **15 Claims**



1. A method, comprising the steps of:

forming a nitride layer over a first oxide layer, said first oxide layer being disposed over a surface of a semiconductor material;

forming a second oxide layer over said nitride layer, said second oxide layer being disposed over a first region of said semiconductor material, said second oxide layer not being disposed over a second region of said semiconductor material;

using said second oxide layer as at least part of an implant mask such that dopant ions are implanted into said second region of said semiconductor material through said first oxide layer and such that substantially no dopant ions are implanted into said first region of said semiconductor material;

removing said second oxide layer such that said nitride layer is disposed over said first region of said semiconductor material but not over said second region of said semiconductor material; and

thermally growing a thick oxide in said second region of said semiconductor material after said removing step.

5,328,867

PEROXIDE CLEAN BEFORE BURIED CONTACT POLYSILICON DEPOSITION

Sun-Chieh Chien, Taipei, and Yu-Ju Liu, Hsin-Chu City, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 7, 1993, Ser. No. 57,881

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—191 **31 Claims**

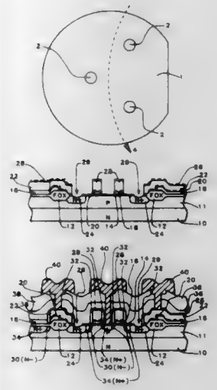
1. The method of removing water spots from the surface of an integrated circuit comprising:

providing a thin layer of native oxide on the surface of said integrated circuit;

etching away said thin native oxide layer;

rinsing and drying said surface after said etching away of said native oxide layer whereby water spots are formed on the surface of said integrated circuit as a result of said rinsing and drying; and

H_2O_2 cleaning of said surface to remove said water spots whereby a uniform second thin layer of native oxide is



formed on the surface of said integrated circuit as a result of said H_2O_2 cleaning process.

5,328,868

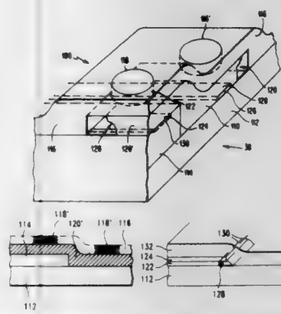
METHOD OF FORMING METAL CONNECTIONS

Richard A. Conti, Mount Kisco; Kenneth DeVries, Hopewell Junction, and James F. White, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 820,506, Jan. 14, 1992, abandoned. This application Dec. 10, 1992, Ser. No. 989,742

Int. Cl.[5] H01L *21/44, 21/48*

U.S. Cl. 437—203 **8 Claims**



1. A method of forming a metal interconnection extending between at least two interconnection points including the steps of

forming a cavity between a surface and a protective layer formed over said surface, and

depositing metal in said cavity conforming to a portion of an interior surface of said cavity and extending through said cavity between said at least two interconnection points.

5,328,869

Patent Not Issued For This Number

5,328,870

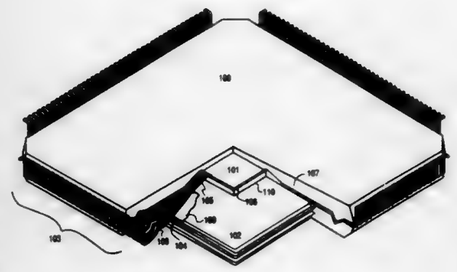
METHOD FOR FORMING PLASTIC MOLDED PACKAGE WITH HEAT SINK FOR INTEGRATED CIRCUIT DEVICES

Robert C. Marrs, Scottsdale, Ariz., assignor to Amkor Electronics, Inc., Santa Clara, Calif.

Division of Ser. No. 822,297, Jan. 17, 1992, abandoned. This application Nov. 9, 1992, Ser. No. 973,354

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—216 **21 Claims**



1. A method for encapsulating in encapsulant an assembly comprising a semiconductor die, an integrated circuit with a plurality of electrically conductive bond pads being formed on a first surface of the die, a heat sink, a second surface of the die being attached to a first surface of the heat sink, a plurality of electrically conductive leads, an inner end of each of the leads attached to the first surface of the heat sink with a dielectric adhesive material such that each lead extends outwardly form the heat sink, and a plurality of bond wires, each bond wire connecting one of the leads to one of the bond pads on the die, the method comprising the steps of:

disposing the assembly in a mold cavity so that the combined thickness of the heat sink and the dielectric adhesive material is greater than the depth of the corresponding section of the mold cavity;

restraining an outer portion of the leadframe, the outer portion being outside the mold cavity;

closing the mold cavity so that the leads exert a force that

holds a second surface of the heat sink, the second surface being opposite the first surface, against a corresponding surface of the mold cavity; and

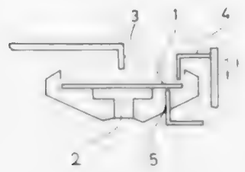
transferring the encapsulant into the mold cavity while the force is being imparted to the heat sin, thereby to ensure a tight seal between the second surface of the heat sink and the corresponding surface of the mold cavity so as to prevent the encapsulant from penetrating between these two surfaces.

5,328,871

MANUFACTURING PROCESS FOR SEMICONDUCTOR DEVICE

Makoto Tanigawa, Kitakatsuragi, and Shingo Okazaki, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 11, 1992, Ser. No. 833,907
Claims priority, application Japan, Feb. 18, 1991, 3-023509
Int. Cl.[5] H01L *21/31*
U.S. Cl. 437—231 7 Claims



1. A manufacturing process for a semiconductor device comprising the steps of: spin-coating by a Spin-on method a solution for forming a SOG film on a top surface of a wafer having a device formed on the surface to form a coating of the SOG film forming solute thereon, wherein the solute is an inorganic silanol compound, an organic silanol compound or a mixture thereof; treating with a liquid applied to the film on said top surface by an edge rinse means located above said top surface of the wafer which is able to dissolve the solute for forming the SOG film at at least a peripheral edge part of the wafer which part is held by claws of a dry etching system at a later stage of wafer processing, thereby removing a coating of the SOG film forming solute at said peripheral part; and then baking the wafer to complete a SOG film.

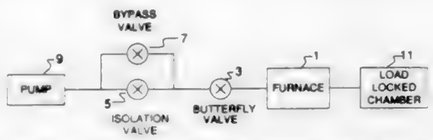
5,328,872

METHOD OF INTEGRATED CIRCUIT MANUFACTURING USING DEPOSITED OXIDE

Ajit S. Manocha, Allentown, Pa.; Virendra V. S. Rana, South Whitehall Township, Lehigh County; James F. Roberts, and Ankineedu Velaga, both of Allentown, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1989, Ser. No. 459,167
Int. Cl.[5] H01L *21/02*
U.S. Cl. 437—235 1 Claim

1. A method of integrated circuit manufacture comprising the step of depositing a dielectric on wafers in a furnace by chemical vapor deposition, said dielectric comprising BPTEOS, comprising the further step of preventing the deposition of unwanted chemically generated particles on said dielectric in the deposition furnace, said preventing is by using



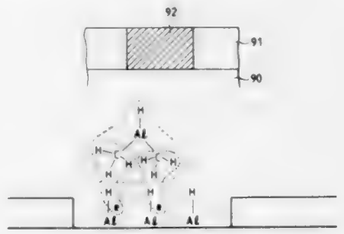
a load locked chamber when wafers are loaded or unloaded from the furnace.

5,328,873

PROCESS FOR FORMING DEPOSITED FILM BY USE OF ALKYL ALUMINUM HYDRIDE

Nobuo Mikoshiba; Kazuo Tsubouchi, and Kazuya Masu, all of Sendai, Japan, assignors to Canon Kubushiki Kaisha, Tokyo, Japan

Division of Ser. No. 578,672, Sep. 7, 1990, Pat. No. 5,179,042. This application Jun. 23, 1992, Ser. No. 902,829
Claims priority, application Japan, Sep. 9, 1989, 1-233924; Sep. 9, 1989, 1-233926; Jan. 16, 1990, 2-6557; Jan. 16, 1990, 2-6558
Int. Cl.[5] H01L *21/285*
U.S. Cl. 437—187 8 Claims



1. A process for deposition comprising:

providing a silicon substrate having a crystal orientation of (**100**) plane in a space for film formation;

introducing a gas of an alkyl aluminum hydride and hydrogen gas into the space for film formation; and

forming monocrystalline aluminum having a crystal orientation of (**111**) plane on the substrate surface of (**100**) plane.

5,328,874

ZINC SULFOPHOSPHATE GLASSES

George H. Beall, Big Flats, and Joseph E. Pierson, Painted Post, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 18, 1993, Ser. No. 136,893
Int. Cl.[5] C03C *3/16*
U.S. Cl. 501—45 5 Claims

1. A glass exhibiting a transition temperature below about 300°, a working temperature below about 400° and exhibiting excellent resistance to attack by water and mild aqueous alkaline solutions, the glass consisting essentially, expressed in terms of mole percent on the oxide basis, of 15–35% P_2O_5, 1–25% SO_3, 30–55% ZnO, 0–25% R_2O, wherein R_2O is selected from the group consisting of 0–25% Li_2O, 0–25% Na_2O, and 0–25% K_2O, and up to a total of 15% of optional ingredients in the indicated proportions selected from the group consisting of 0–10% Al_2O_3, 0–10% MgO, 0–10% CaO, 0–10% SrO, 0–10% BaO, 0–10% MnO, 0–10% transition metal oxides and 0–15% Cl + F, as analyzed in weight percent.

5,328,875

CUBIC BORON NITRIDE-BASE SINTERED CERAMICS FOR CUTTING TOOL

Fumihiro Ueda; Itsurou Tazima, and Masayuki Yageta, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,505
Int. Cl.[5] C04B *35/52, 35/56*
U.S. Cl. 501—87 1 Claim

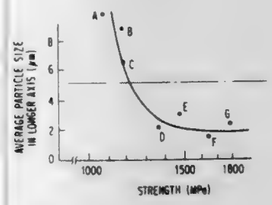
1. A cubic boron nitride-based sintered ceramic for cutting tools comprising a bonding phase, a dispersed phase, and unavoidable impurities, wherein said dispersed phase comprises cubic boron nitride, said bonding phase is 20–48% by volume of a decomposed reaction phase derived by the reaction of cubic crystal boron nitride and one or more of $Ti_{2-3}AlC$, $Ti_{2-3}AlN$, and $Ti_{2-3}AlCN$ including oxygen, said decomposed reaction phase comprising one or more of TiC, TiN, TiCN and one or more of Al_2O_3 and AlN, and TiB_2, and wherein the crystal grain size in the bonding phase and in the dispersed phase is less than 1 micron.

5,328,876

HIGH STRENGTH SILICON NITRIDE SINTERED BODY AND PROCESS FOR PRODUCING SAME

Takao Nishioka; Akira Kuibira; Kenji Matsunuma; Yoshishige Takano; Matsuo Higuchi; Masaaki Honda, and Masaya Miyake, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 459,398, Dec. 29, 1989, Pat. No. 5,234,642. This application Dec. 23, 1992, Ser. No. 995,703
Claims priority, application Japan, May 22, 1989, 1-129356; May 22, 1989, 1-129357
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—97 2 Claims



1. A high-strength silicon nitride sintered body having a flexural strength of 130 kg/mm^2 or higher and a Weibull modulus of 15 or more, which consists essentially of not less than 90% by weight of a single crystalline phase of silicon aluminum oxynitride of the formula $Si_{6-z}Al_2O_zN_{8-z}$, where z is a number of from 0 to 4.2, which silicon aluminum oxynitride comprises crystals having an average longer diameter of from 2 to 5 μm and an aspect ratio of from 5 to 10, said crystalline phase constituting a network structure in the sintered body, the balance being a crystalline or amorphous glassy phase comprising one or more oxides or oxynitrides of a rare earth metal, a group 3A metal, a group 2A metal or Si, wherein said sintered body contains not more than 500 ppm of one or more metallic elements selected from the group consisting of Cr, Co, Hf, Fe, Mo, Ni, Nb, Ti, W, and Zr, wherein said high-strength silicone nitride sintered body is formed from silicon nitride powder having an average particle size of not more than 0.5 μm.

5,328,877

SOLID ALKENE POLYMERIZATION CATALYST COMPONENTS AND PROCESS FOR THEIR PREPARATION

John C. Chadwick; Alan Villena, and Ronald P. C. Van Gaalen, all of CM Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 892,714, May 5, 1992, Pat. No. 5,225,385, which is a continuation of Ser. No. 595,628, Oct. 9, 1990, abandoned, which is a continuation of Ser. No. 387,264, Jul. 31, 1989, abandoned. This application Jan. 19, 1993, Ser. No. 5,956
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—127 14 Claims

1. A process for preparing a solid catalyst component which comprises:

a) halogenating, in the presence of an electron donor, a magnesium compound of the formula $MgRR'nCO_2$ wherein R is alkoxy or aryloxy, R' is halogen, alkoxy or an aryloxy group and n is a number from 0 to 2, with a halide of tetravalent titanium,

b) contacting said halogenated product with a halide of tetravalent titanium,

c) contacting the resulting product with $TiCl_3OAr$ where Ar is dihalophenyl or dialkoxyphenyl and

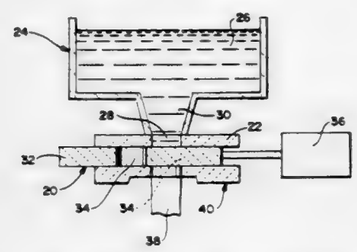
d) recovering the solid product from the reaction mixture.

5,328,878

ALUMINUM NITRIDE REFRACTORY MATERIALS AND METHODS FOR MAKING THE SAME

Jack A. Kuszyk, Newark, Del., and John P. Biel, Jr., Elkton, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 717,553, Jun. 19, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 938,318
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—96 15 Claims



1. An article comprising at least one refractory ceramic composite body for handling molten fluids, said article selected from the group consisting of a furnace lining, a slide gate, a subentry nozzle, a ladle shroud and a tundish, and wherein said refractory ceramic composite body comprises:

from about 20 vol. % to about 70 vol. % of a filler material comprising at least one material selected from the group consisting of aluminum oxide, magnesium oxide and titanium diboride; and

an aluminum nitride matrix embedding at least a portion of said filler material.

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5,328,879

BINDING AND PLASTICIZING AGENT FOR PREPARING CARBON-CONTAINING, REFRACTORY, CERAMIC MATERIALS AND MATERIAL PREPARED THEREWITH

Gunnar Kloss, Mülheim-Kärlich, and Christian Weidemüller, Neuwied, both of Fed. Rep. of Germany, assignors to Veitscher-Magnesitwerke-Actien-Gesellschaft, Austria

Filed Mar. 8, 1993, Ser. No. 27,043

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1992, 4207248

Int. Cl.[5] C04B *35/52*

U.S. Cl. 501—100 **13 Claims**

1. Binding and plasticizing agent for preparing carbon-containing, refractory materials from a mixture of:

(a) 0.1 to 90 parts by weight of a liquid, curable synthetic resin,

(b) 0.1 to 70 parts by weight of a liquid inorganic phosphate material, and

(c) 0.1 to 30 parts by weight of a composition selected from the group consisting of a liquid anionic surface-active agent, a liquid nonionic surface-active agent, an organic base, and combinations thereof, wherein the sum of the components through (c) shall always be 100.

5,328,880

FLUIDITY OF SLURRIES OF KAOLIN CLAY USING TETRAALKYLAMMONIUM COMPOUNDS

Jordan K. Lampert, Metuchen; Richard A. Slepetys, Brick, and Thomas Dombrowski, Fanwood, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Oct. 19, 1993, Ser. No. 139,297

Int. Cl.[5] C09K *7/06*

U.S. Cl. 501—148 **17 Claims**

3. A process for reducing the low shear viscosity of kaolin clay contaminated with at least one impurity having an expandable lattice which comprises contacting an aqueous slurry of said kaolin clay with a tetraalkyl ammonium compound in which the cation has alkyl chain lengths of 8 carbon atoms or less, thereby forming a thickened slurry, dewatering said thickened slurry, washing the resulting dewatered clay and recovering the washed clay.

5,328,881

POLYMERIZATION CATALYST AND PROCESS

Margie F. Jackson, Ochelata; Ronald D. Knudsen, and Joseph S. Shveima, both of Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 808,128, Dec. 16, 1991, Pat. No. 5,198,512. This application Oct. 19, 1992, Ser. No. 962,564

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] B01J *21/16, 31/00*

U.S. Cl. 502—80 **14 Claims**

1. A composition of matter comprising a catalytic mixture resulting from contacting:

at least one pyridine compound having the formula



wherein each R is independently selected from the group consisting of hydrogen and —COOH, provided that at least one R group is a —COOH group;

at least one organo-nickel compound wherein the nickel is in the zero valence state before formation of the active nickel component; and

at least one clay compound wherein the weight ratio of said clay compound to said nickel is from about 1 to about 400.

5,328,882

NICKEL CATALYST ACTIVE IN ETHYLENE HOMO AND COPOLYMERIZATION

Giuseppe Braca, Pisa; Anna M. Raspolli Galletti, Titignano Navacchio; Stefano Pinori, Pontedera, and Glauco Sbrana, Pisa, all of Italy, assignors to Enichem S.P.A., Milan, Italy

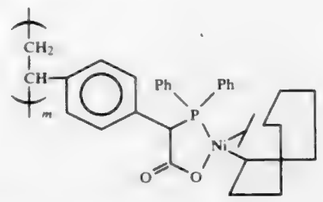
Filed Feb. 25, 1993, Ser. No. 22,162

Claims priority, application Italy, Feb. 26, 1992, MI92 A 000415

Int. Cl.[5] B01J *31/06, 31/22*

U.S. Cl. 502—155 **8 Claims**

1. A nickel complex catalyst bound to a polystyrene support, which is active in ethylene homopolymerization or ethylene copolymerization with another unsaturated monomer, having n unsubstituted styrene monomer units and m substituted styrene monomer units, the substituted styrene monomer units defined by the formula:



in which Ph is phenyl, and m and n are numbers dependent on the molecular weight of the polystyrene, the ratio n/m being between 1/1 and 100/1.

5,328,883

HYDROCARBON CONVERSION

Don M. Washecheck, Naperville; Mark K. Barr, Wheaton; George A. Huff, Jr., Naperville; Mark P. Kaminsky, Winfield; Mark S. Kleefisch, and Victor K. Shum, both of Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 775,209, Oct. 11, 1991, Pat. No. 5,196,634. This application Feb. 4, 1993, Ser. No. 13,574

Int. Cl.[5] B01J *23/00*

U.S. Cl. 502—303 **8 Claims**

1. A composition which comprises an intimately mixed, mixed oxide of:

a) at least one cationic species of a naturally occurring Group IIIB element;

b) at least one cationic species of a Group IIA metal selected from the group consisting of magnesium, calcium, strontium and barium; and

c) a cationic species of aluminum.

5,328,884

PRESSURE SENSITIVE MANIFOLD SHEET CONTAINING COLOR DEVELOPER COMPOSITION

Masato Tanaka, Nishinomiya; Tomoharu Shiozaki, Amagasaki; Shigeru Oda, and Toranosuke Saito, both of Ibaraki, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan and Sanko Kaihatsu Kagaku Kenkyusho, Osaka, Japan

Division of Ser. No. 679,690, Apr. 1, 1991, Pat. No. 5,250,108. This application Mar. 8, 1993, Ser. No. 27,987

Claims priority, application Japan, Mar. 30, 1990, 2-86684; Jul. 31, 1990, 2-204677; Dec. 27, 1990, 2-408432

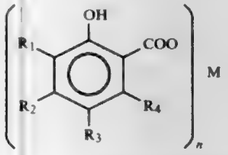
Int. Cl.[5] B41M *5/155*

U.S. Cl. 503—209 **4 Claims**

1. A pressure sensitive manifold sheet comprising a substrate

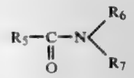
having applied thereto a coating composition containing a color developer comprising a nucleus-substituted salicylic acid salt represented by the Formula (1) given below and at least one amide compound selected from the group consisting of N,N-dibutyltoluenesulfonamide, N,N-dioctylbenzenesulfonamide, N,N-dioctylmethanesulfonamide, N-octylxylenesulfonamide, N-(toluenesulfonyl)morpholine and the compounds represented by the Formula (2) given below

Formula (1)



wherein R_1, R_2, R_3 and R_4 are each a hydrogen atom, halogen atom, alkyl having 1 to 15 carbon atoms, cycloalkyl, phenyl, nucleus-substituted phenyl, aralkyl or nucleus-substituted aralkyl and two of R_1, R_2, R_3 and R_4 adjacent to each other may be combined to form a ring, n is an integer of at least 1, and M is a polyvalent metal atom,

Formula (2)



wherein R_5 is alkyl having 1 to 17 carbon atoms or alkenyl having 2 to 17 carbon atoms, R_6 and R_7 are each alkyl having 1 to 8 carbon atoms or cyclohexyl.

5,328,885

TRANSFER RECORDING MEDIUM

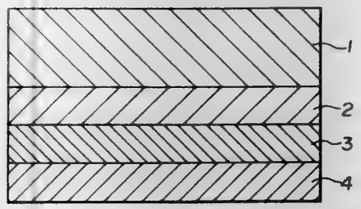
Yosei Chosa; Masato Yoshida, both of Tokyo; Takayuki Yokoyama, Yokohama, and Hirokatsu Shimada, Machida, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo and Minolta Camera Kabushiki Kaisha, Osaka, both of Japan

Filed Oct. 29, 1992, Ser. No. 968,527

Claims priority, application Japan, Oct. 31, 1991, 3-285297

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **9 Claims**



1. A transfer recording medium in which at least one light-heat conversion layer containing a light-heat conversion agent and one ink layer containing a sublimating dye are coated in order on one side of a base film, or at least one ink layer containing both light-heat conversion agent and sublimating dye is coated on one side of a base film, characterized in that at least one layer preventing heat produced by the light-heat conversion agent from being absorbed by the base film is further formed on the base film.

5,328,886

THERMAL TRANSFER PRINTING

Roy Bradbury, 31 Lincoln Road, St. Helens, Merseyside WA10 3JW, and Alan Butters, 17 Mowlands, Capel St. Mary, Ipswich, Suffolk IP9 2XB, both of England

Filed Dec. 4, 1992, Ser. No. 985,936

Claims priority, application United Kingdom, Dec. 9, 1991, 9126112.3

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **6 Claims**

6. A dye diffusion thermal transfer printing process which comprises contacting a transfer sheet comprising a coating comprising a dye of Formula (1) according to any one of claims 1 to 5 with a receiver sheet so that the coating is in contact with the receiver sheet, and selectively applying heat to discrete areas on the reverse side of the transfer sheet whereby dye on the opposite side of the sheet to the heated areas is transferred to the receiver sheet.

5,328,887

THERMALLY TRANSFERABLE FLUORESCENT COMPOUNDS

Wilhelmus Janssens, Aarschot, and Luc J. Vanmaele, Lochristi, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 26, 1992, Ser. No. 935,163

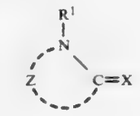
Claims priority, application European Pat. Off., Sep. 10, 1991, 91202298.5

Int. Cl.[5] B41M *5/035, 5/38*

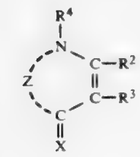
U.S. Cl. 503—227 **10 Claims**

10. A process of forming a thermal transfer image comprising image-wise heating a donor element, and transferring an image to a receiving element comprising a support and an image-receiving layer to form said thermal transfer image, wherein said donor element comprises a support having on one side thereof a thermally transferable fluorescent heterocyclic compound dispersed in a polymeric binder, said fluorescent compound corresponding to one of the following general formulae (A) and (B):

(A)



(B)



wherein:

R^1 represents a hydrocarbon group or a substituted hydrocarbon group;

R^2 represents hydrogen, a hydrocarbon group, a substituted hydrocarbon group, a carboxylic acid group, an ester group, a nitro group, a carbamoyl group, a substituted carbamoyl group, an amino group or a substituted amino group;

R^3 represents hydrogen, a hydrocarbon group or a substituted hydrocarbon group, a carboxylic acid group, an ester group, a carbamoyl group or a substituted carbamoyl group;

R^4 represents hydrogen or a hydrocarbon group or a substituted hydrocarbon group;

X represents an electronegative substituent with respect to the carbon atom to which it is attached; and

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Z represents the atoms necessary to close a quinoline nucleus or such a nucleus in substituted form.

5,328,888

THERMAL TRANSFER IMAGE-RECEIVING SHEET

Ryohei Takiguchi; Hitoshi Saito, and Masumi Nishizawa, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Nov. 13, 1992, Ser. No. 974,738
Claims priority, application Japan, Nov. 18, 1991, 3-328307; Dec. 16, 1991, 3-351811; Feb. 6, 1992, 4-054129; Mar. 4, 1992, 4-081456; Apr. 15, 1992, 4-119873; Sep. 25, 1992, 4-279247
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 5 Claims

1. A thermal transfer image-receiving sheet comprising a substrate and a dye-receiving layer formed on at least one surface of the substrate sheet, wherein a layer comprising an ultraviolet absorber is interposed between the substrate sheet and the dye-receiving layer.

5,328,889

DRY, WATER-SOLUBLE, SUBSTITUTED PHENOXY AND/OR BENZOIC ACID HERBICIDES AND METHOD OF PREPARING SAME

John L. Van Haften, Leawood, and Roger P. Cahoy, Overland Park, both of Kans., assignors to PBI-Gordon Corporation, Kansas City, Mo.

Continuation-in-part of Ser. No. 911,757, Jul. 10, 1992, abandoned. This application Aug. 10, 1992, Ser. No. 928,132
The portion of the term of this patent subsequent to Aug. 16, 2008, has been disclaimed.
Int. Cl.[5] A01N *25/12, 33/06, 37/38, 37/40*
U.S. Cl. 504—116 20 Claims

1. A dry, water-soluble substituted phenoxy and/or benzoic acid herbicide powder composition consisting essentially of:

a dry blended admixture of

a first quantity of dry, powder particles of a substantially solid herbicidal agent selected from the group consisting of substituted herbicidally active phenoxy acids and substituted herbicidally active benzoic acids, which alone are not readily soluble in water, and

a second quantity of dry, solid, powder particles selected from the group consisting of trisodium phosphate and tripotassium phosphate as a solubilization medium for the herbicidal agent,

said first and second quantities of the herbicidal agent and the solubilization medium being the predominate constituents of the composition,

there being from about 0.6 mole to about 1.15 mole of solubilization medium for each mole of herbicidal agent,

said herbicidal agent and the solubilization medium having been dry blended in powdered form without changing the physical state of the particles to retain the discrete particulate character of each of said first and second quantities of said particles, and in the absence of chemical reaction between said herbicidal agent and said solubilization medium to form a relatively uniform dry mixture thereof,

there being a sufficient quantity of the phosphate medium in the dry blended mixture in relationship to the quantity of herbicidal agent combined therewith such that the dry blended powder mixture will dissolve in water during preparation of a herbicidal solution therefrom that contains an adequate proportion of the herbicidal agent to provide from about 0.1 to about 2½% by weight of the active herbicidal agent in the herbicidal solution.

5,328,890

PROCESS FOR PRODUCING MOLDED BODIES FROM PRECURSORS OF HIGH-TEMPERATURE SUPERCONDUCTORS

Eberhard Preisler, and Joachim Bock, both of Erfstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 739,883, Aug. 2, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,824
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1990, 4026017
Int. Cl.[5] H01L *39/12;* B29C *33/76*
U.S. Cl. 505—450 4 Claims

1. A process for producing geometrically complicated molded bodies made from precursors of high-temperature superconductors based on the oxides of bismuth, strontium, calcium and copper, which comprises heating a mixture of said oxides to temperatures of 870° to 1000° C. to form a homogeneous melt; casting the homogeneous melt in geometrically appropriately shaped molds made of a material containing silicon dioxide and having a melting point of at least 1000° C.; allowing the homogeneous melt to solidify in said molds with the resultant formation of molded bodies; and treating the molds containing said molded bodies with hydrofluoric acid containing 5 to 30% by weight of HF at temperatures of 20° to 90° C. until the molds are dissolved, wherein a layer of fluorides of strontium and calcium is formed on the surface of the molded bodies, whereby the molded bodies are virtually not attacked by said acid.

5,328,891

INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN AND PHARMACEUTICAL COMPOSITIONS

Robert C. Baxter, Glebe, Australia, and William I. Wood, San Mateo, Calif., assignors to Genentech, Inc., S. San Francisco, Calif. and Central Sydney Area Health Service, Camperdown, Australia

Division of Ser. No. 171,623, Mar. 22, 1988, Pat. No. 5,258,287. This application Jan. 13, 1993, Ser. No. 3,710
Int. Cl.[5] A61K *37/00;* C07K *13/00*
U.S. Cl. 514—2 8 Claims

1. Human insulin-like growth factor binding protein that is unaccompanied by any glycosylation, and that comprises the amino acid sequence of the mature protein shown in FIG. 3.

5,328,892

OXIDE SUPERCONDUCTOR COMPOSITION AND A PROCESS FOR THE PRODUCTION THEREOF

Takashi Manako; Yuichi Shimakawa, and Yoshimi Kubo, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 27, 1989, Ser. No. 413,237
Claims priority, application Japan, Sep. 28, 1988, 63-245064; Nov. 7, 1988, 63-281909
Int. Cl.[5] C01F *11/02;* C01G *3/02;* H01L *39/12*
U.S. Cl. 505—120 18 Claims

1. An oxide superconductor composition consisting essentially of thallium (Tl), strontium (Sr), yttrium (Y) and copper (Cu) in a form of an oxide; a ratio of these elements being represented by a formula

$$TlSr_2(Sr_{n-x}Y_x)Cu_{n+1}O_{5+2n} \quad (I)$$

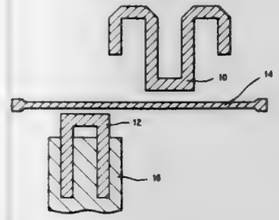
wherein n=1 or 2 and x is in a range of $0.1 \leqq x \leqq n$.

5,328,893

SUPERCONDUCTING DEVICES HAVING A VARIABLE CONDUCTIVITY DEVICE FOR INTRODUCING ENERGY LOSS

Jonathan Z. Sun, Goleta; Robert B. Hammond, and Douglas J. Scalapino, both of Santa Barbara, all of Calif., assignors to Superconductor Technologies, Inc., Santa Barbara, Calif.

Filed Jun. 24, 1991, Ser. No. 719,736
Int. Cl.[5] H01L *39/00;* H01P *1/201*
U.S. Cl. 505—210 11 Claims



1. An active superconducting device comprising:

a passive superconductive device for receiving a current from a current source which generates an electromagnetic field adjacent the passive superconductive device, and

a variable conductivity device said variable conductivity device being separate from the passive superconductive device, the variable conductivity device being located within the electromagnetic field of the passive superconductive device, said variable conductivity device introducing a variable energy loss to the electromagnetic field from the superconductive device.

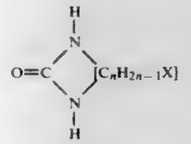
5,328,894

FOOD-PRESERVING AGENT

Hidechika Wakabayashi; Yasuo Sugihara; Akira Hosomi, and Futoshi Nakaya, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 846,177
Claims priority, application Japan, Mar. 22, 1991, 3-083586
Int. Cl.[5] B01J *20/22;* A23B *4/00*
U.S. Cl. 502—1 2 Claims

1. A food-preserving agent comprising a substance capable of removing oxygen from air and a compound of the formula



wherein n is an integer of 2 to 4 and X is H or CH_3.

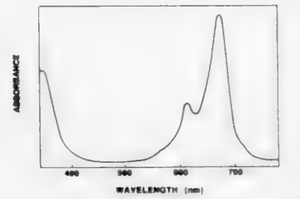
5,328,895

INK RIBBON FOR THERMAL TRANSFER

Kengo Ito, and Hideki Hirano, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 913,968
Claims priority, application Japan, Jul. 19, 1991, 3-203752
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 2 Claims

1. An ink ribbon for thermal transfer comprising: an anion dye and hydrophobic polymer in which the paired ion of the anion dye is exchanged for a hydrophobic organic cation, and wherein the anion dye is phthalocyanine and the content of the



anion dye in the total quantity of said anion dye and said hydrophobic polymer is 10 to 90% by weight.

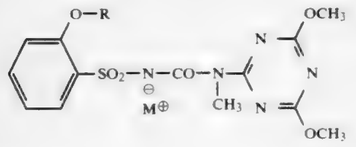
5,328,896

PREPARING HERBICIDAL SULPHONYLUREA SALTS

Hans-Jochem Riebel; Christa Fest, both of Wuppertal; Rolf Kirsten, Monheim; Joachim Kluth, Langenfeld; Klaus-Helmut Müller, Düsseldorf; Dieter Feucht, Monheim; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 852,611, Mar. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 626,363, Dec. 12, 1990, abandoned. This application Apr. 9, 1993, Ser. No. 46,106
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1989, 3941790; Jun. 8, 1990, 4018349
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Int. Cl.[5] A01N *43/66;* C07D *251/42*
U.S. Cl. 504—227 7 Claims

1. A sulphonylurea salt of the formula



in which

R is CF_3 or CHF_2, and

$M^{\oplus}$ is $Na^{\oplus}$ or $K^{\oplus}$.

5,328,897

HERBICIDAL 2-(2-BENZOXAZOLYL-OXY)-ACETAMIDES

Heinz Förster, Wuppertal; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 956,127
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1991, 4133673
The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.
Int. Cl.[5] C07D *263/58*
U.S. Cl. 504—270 7 Claims

7. The method according to claim 6, wherein such compound is 2-(6-chloro-benzoxazol-2-yl-oxy)-N-isopropyl-N-(3-methyl-phenyl)-acetamide.

VOL 1164 ISS 2 JL 12 1994 UMI

5,328,898

FACTOR XIIIA FIBRIN BINDING FRAGMENTS

Charles S. Greenberg, Chapel Hill, N.C., assignor to Duke University, Durham, N.C.

Filed Jun. 22, 1990, Ser. No. 543,116

Int. Cl.[5] **C12N** *15/54*; **A61K** *37/52, 37/00*; **C07K** *13/00*

U.S. Cl. 514—12 **18 Claims**

1. An isolated and purified fibrin-binding peptide selected from the group consisting of:

(a) isolated peptides consisting essentially of the amino acid sequence of the Blood Coagulation Factor XIIIA fragment which spans amino acids number 72 to 230 shown in FIG. 1C;

(b) peptides which are fragments of the Factor XIIIA fragment of (a) above, which include in said fragment the sequence (i) NKLIVRRGQSFYVQIDFSRPYDPRRD or (ii) DDAVYLDNEKEREEYVLNDIGVIFYGEVNDIKTRSWSYGQF, and which retain the capability of said fragment of binding to fibrin; and

(c) peptides which bind to fibrin, which have the amino acid sequence of any of the foregoing peptides, and which have (i) up to about ten additional amino acid residues attached to the N-terminal end, (ii) up to about ten additional amino acid residues attached to the C-terminal end, or (iii) both up to about ten additional amino acid residues attached to the N-terminal end and up to about ten additional amino acid residues attached to the C-terminal end, and which retain the activity of the foregoing peptides of binding to fibrin.

5,328,899

NPY PEPTIDE ANALOGS

Jaroslav H. Boublik, Elwood, Australia; Jean E. F. Rivier, La Jolla; Marvin R. Brown, Del Mar, both of Calif., and Neal A. Scott, Atlanta, Ga., assignors to The Salk Institute for Biological Studies, San Diego and The Regents of the University of California, Oakland, both of Calif.

Continuation-in-part of Ser. No. 503,198, Mar. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 219,596, Jul. 15, 1988, Pat. No. 5,026,685. This application May 12, 1992, Ser. No. 882,923

The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.

Int. Cl.[5] **A61K** *37/02*; **C07K** *7/08, 7/10*

U.S. Cl. 514—13 **19 Claims**

1. A method for lowering the blood pressure of a mammal, which method comprises administering to said mammal an effective amount of a peptide or a nontoxic salt thereof, having one of the following formulae:

(a) H-ala-Arg-Tyr-Xaa$_{21}$-Xaa$_{22}$-Ala-Leu-Arg-His-Xaa$_{27}$-Ile-Xaa$_{29}$-Xaa$_{30}$-Xaa$_{31}$-Xaa$_{32}$-Arg-Xaa$_{34}$-Xaa$_{35}$-Xaa$_{36}$-NH_2 wherein Xaa$_{21}$ is Tyr or D-Tyr; Xaa$_{22}$ is Ser or D-Ser; Xaa$_{27}$ is Tyr or D-Tyr; Xaa$_{29}$ is Asn or D-Asn; Xaa$_{30}$ is Leu or D-Leu; Xaa$_{31}$ is Ile or D-Ile; Xaa$_{32}$ is Thr or D-Thr; Xaa$_{34}$ is Gln or D-Gln; Xaa$_{35}$ is Arg or D-Arg; and Xaa$_{36}$ is Tyr or D-Tyr; and wherein one D-isomer is present from among Xaa$_{21}$, Xaa$_{22}$, Xaa$_{27}$, Xaa$_{29}$, Xaa$_{30}$, Xaa$_{31}$, Xaa$_{32}$, Xaa$_{34}$, Xaa$_{35}$, and Xaa$_{36}$; or

(b) H-Ser-Arg-Tyr-Xaa$_{21}$-Xaa$_{22}$-Ser-Leu-Arg-His-Xaa$_{27}$-Leu-Xaa$_{29}$-Xaa$_{30}$-Xaa$_{31}$-Xaa$_{32}$-Arg-Xaa$_{34}$-Xaa$_{35}$-Xaa$_{36}$-NH_2, wherein Xaa$_{21}$ is Tyr or D-Tyr; Xaa$_{22}$ is Ala or D-Ala; Xaa$_{27}$ is Tyr or D-Tyr; Xaa$_{29}$ is Asn or D-Asn; Xaa$_{30}$ is Leu or D-Leu; Xaa$_{31}$ is Val or D-Val; Xaa$_{32}$ is Thr or D-Thr; Xaa$_{34}$ is Gln or D-Gln; Xaa$_{35}$ is Arg or D-Arg; and Xaa$_{36}$ is Tyr or D-Tyr; and wherein one D-isomer is present from among Xaa$_{21}$, Xaa$_{22}$, Xaa$_{27}$, Xaa$_{29}$, Xaa$_{30}$, Xaa$_{31}$, Xaa$_{32}$, Xaa$_{34}$, Xaa$_{35}$ and Xaa$_{36}$.

5,328,900

ANTI-THROMBOTIC PEPTIDE AND PSEUDOPEPTIDE DERIVATIVES

Scott I. Klein, Audubon, and Bruce F. Molino, Hatfield, both of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

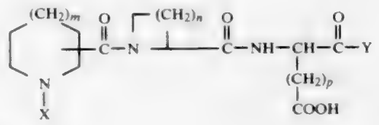
Continuation of Ser. No. 724,675, Jul. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 505,286, Apr. 5, 1990, Pat. No. 5,064,814. This application Oct. 15, 1992, Ser. No. 961,216

The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.

Int. Cl.[5] **A61K** *37/02*; **C07K** *5/00*

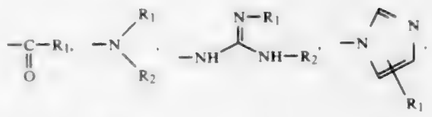
U.S. Cl. 514—18 **16 Claims**

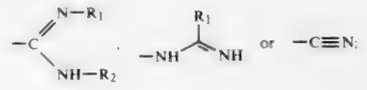
1. A compound of the formula



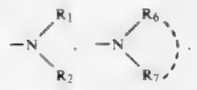
wherein:

X is H, amidino,

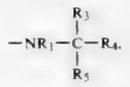




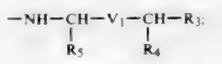
Y is —OR$_1$,



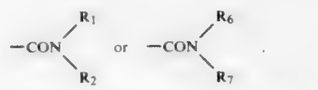
a D- or L-amino acid or its corresponding carboximide, a synthetic amino acid of the formula



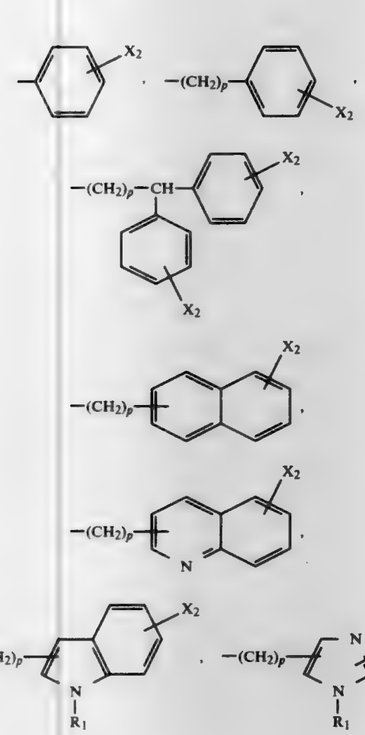
a dipeptide or a dipeptide isostere of the formula

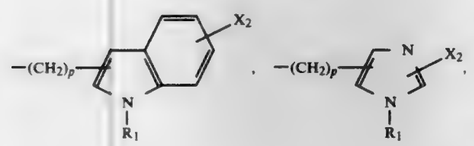


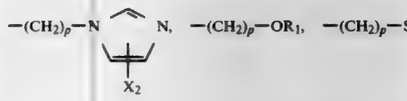
R$_1$ and R$_2$ are independently H, alkyl, aryl, aralkyl, or allyl; R$_3$ is H, —CO_2H, —CO_2R_1, —$CONH_2$,

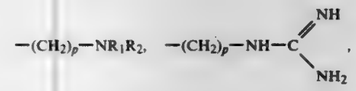


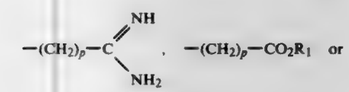
R$_4$ and R$_5$ are independently H, alkyl, cycloalkyl, cycloalkylmethyl,

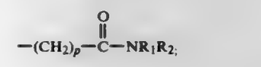






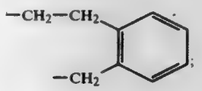




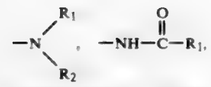


p is 0 to 8;

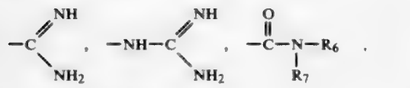
R$_6$ and R$_7$ form a ring with the nitrogen to which they are attached and are —$(CH_2)_4$—, $(CH_2)_5$—, —$(CH_2)_6$—, —$CH_2CH_2OCH_2CH_2$—, —$CH_2CH_2NR_1CH_2$— or



X$_2$ is H, Cl, Br, F, —OR_1, —NO_2,



p1 —SR_1, C_1–C_5 alkyl, phenyl, —CO_2R_1,

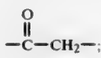


—CF_3 or —$NHSO_2R_1$;

V_1 is



—$(CH_2)_n$—, —CH=CH—, —CH_2—NH—, —CH_2—O—, —CH_2—S— or



m is 0, 1 or 2;

n is 0, 1, 2 or 3; and

p is 0, 1, 2 or 3; or

pharmaceutically acceptable salts thereof.

5,328,901

BIS-ARYLPHOSPHATE ESTER ANTAGONISTS OF PLATELET ACTIVATING FACTOR

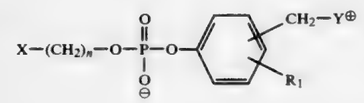
Allan Wissner, Ardsley; Kenneth Green, Yorktown Heights, both of N.Y., and Robert E. Schaub, Upper Saddle River, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 923,412, Jul. 31, 1992, Pat. No. 5,231,091, which is a division of Ser. No. 599,580, Oct. 18, 1990, Pat. No. 5,147,864, which is a division of Ser. No. 286,193, Dec. 19, 1988, Pat. No. 4,983,592. This application Jun. 1, 1993, Ser. No. 69,638

Int. Cl.[5] **A61K** *31/675*

U.S. Cl. 514—82 **10 Claims**

1. A method of treating a malady selected from the group consisting of asthma, anaphylactic and septic shock, adult respiratory distress, transplant rejection, thrombosis, stroke and cardiac anaphylaxis in a mammal which comprises administering to the mammal an effective amount of a compound of the formula:



wherein:

X is a phenyl or naphthyl ring optionally substituted in any position with one to five substituents on the phenyl group and one to seven substituents to the naphthyl group of:

(i) —R_2, wherein R_2 is C_1–C_{25} alkyl, C_1–C_{25} alkenyl, C_1–C_{25} alkoxy, C_1–C_{25} thioalkyl, C_1–C_{25} alkenyloxy, phenyl, phenoxy, substituted phenyl or substituted phenoxy wherein the substituents are C_1–C_{20} alkyl, C_1–C_{20} alkoxy, halogen or trifluoromethyl;

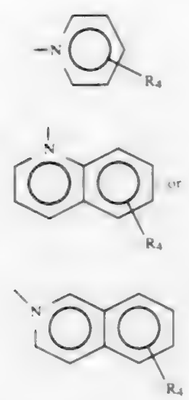
(ii) hydrogen halogen, trifluoromethyl, cyano and nitro;

(iii) —CO_2R_3, —$CONHR_3$, —CHO, $OCONHR_3$, and —$NHCOR_3$

wherein R_3 is C_1–C_{25} alkyl, C_1–C_{25} alkenyl, phenyl or substituted phenyl wherein the substituents are C_1–C_{20} alkyl, C_1–C_{20} alkoxy, halogen or trifluoromethyl;

R_1 is one or more substituents of the aromatic ring which may be in any position and are hydrogen, C_1–C_5 alkyl, C_1–C_5 alkoxy or halogen;

—CH_2—Y is a single substituent or the aromatic ring which may occupy any position wherein Y is



wherein R_4 represents one or more substituents of the heterocyclic ring which may occupy a non-hetero atom position and is C_1–C_5 alkyl, C_1–C_5 alkoxy or hydrogen and; n is the integer 0 to 1

5,328,902

7-(SUBSTITUTED)-9-[(SUBSTITUTED GLYCYL)AMIDO]-6-DEMETHYL-6-DEOXYTETRACYCLINES

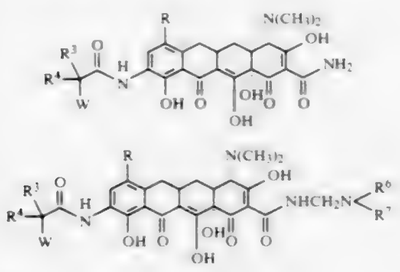
Phaik-Eng Sum, Pomona; Ving J. Lee, Monsey, both of N.Y., and Raymond T. Testa, Cedar Grove, N.J., assignors to American Cyanamid Co., Wayne, N.J.

Filed Aug. 13, 1992, Ser. No. 928,589

Int. Cl.[5] **C07D** *221/02, 221/08, 207/04, 207/30, 207/18;* **A61K** *31/65*

U.S. Cl. 514—152 **8 Claims**

1. A compound of the formula:



wherein:

R is a halogen selected from bromine, chlorine, fluorine and iodine; or R = —NR^1R^2 and R^1 and R^2 is selected from methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl and R^2 is selected from methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl, 1,1-dimethylethyl with the proviso that when R = —NR^1R^2 and R^1 = hydrogen, R^2 = methyl, ethyl, n-propyl, 1-methyl-ethyl, n-butyl, 1-methylpropyl, 2-methylpropyl or 1,1-dimethylethyl; and when R^1 = methyl or ethyl, R^2 = methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl or 2-methylpropyl; and when R^1 = n-propyl, R^2 = n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl or 2-methylpropyl; and when R^1 = 1-methylethyl, R^2 = n-butyl, 1-methylpropyl or 2-methylpropyl; and when R^1 = n-butyl, R^2 = n-butyl, 1-methylpropyl or 2-methylpropyl; and when R^1 = 1-methylpropyl, R^2 = 2-methylpropyl; R^3 is selected from hydrogen; straight or branched (C_4–C_8)alkly group selected from butyl, isobutyl, pentyl, hexyl, heptyl and octyl; α-mercapto(C_1–C_4)alkyl group selected from mercaptomethyl, α-mercaptoethyl, α-mercapto-1-methylethyl and α-mercaptopropyl; α-hydroxy(C_1–C_4) alkyl group selected from hydroxymethyl, α-hydroxyethyl, α-hydroxy-1-methylethyl and α-hydroxypropyl; carboxyl(C_1–C_8)alkyl group; (C_6–C_{10})aryl group selected from phenyl, αnaphthyl and β-naphthyl; substituted (C_6–C_{10})aryl group with substitution selected from hydroxy, halogen, (C_1–C_4) alkoxy, trihalo(C_1–C_3)alkyl, nitro, amino, cyano, (C_1–C_4)alkoxycarbonyl, (C_1–C_3)alkylamino and carboxy; (C_7–C_9)aralkyl group selected from benzyl, 1-phenylethyl, 2-phenylethyl and phenylpropyl; substituted (C_7–C_9)aralkyl group with substitution selected from halo, (C_1–C_4)alkyl, nitro, hydroxy, amino, mono- or di-substituted (C_1–C_4)alkylamino, (C_1–C_4)alkoxy, (C_1–C_4)akkylsulfonyl, cyano and carboxy; R^4 is selected from hydrogen and (C_1–C_6)alkyl selected from methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl and hexyl; when R^3 does not equal R^4 the stereo-chemistry of the carbon bearing the substituent W maybe be either the racemate (DL) or the individual enatiomers (L or D);

W is selected from hydroxylamino; (C_7–C_{12}) straight or branched alkyl monosubstituted amino group with substitution selected from heptyl, octyl, nonyl, decyl, undecyl, dodecyl and the diastereomers and enantiomers of said branched alkyl monosubstituted amino group; (C_1–C_4) straight or branched fluoroalkylamino group selected from trifluoromethylamino, 2,2,2-trifluoroethylamino, 3,3,3-trifluoropropylamino, 3,3,3,2,2-pentafluoropropylamino, 2,2-difluoropropylamino, 4,4,4-trifluorobutylamino and 3,3,-difluorobutylamino; (C_3–C_8)cycloalkyl monosubsituted amino group with substitution selected from cyclopropyl, trans-1,2-dimethylcyclopropyl, cis-1,2-dimethylcyclo- propyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, bicyclo[2.2.1-]hept-2-yl, bicyclo[2.2.2]oct-2-yl and the diastereomers and enatiomers of said (C_3–C_8-cycloalkyl monosubstituted amino group; [(C_4–C_{10})cycloalkyl]alkyl monosubstituted amino group with substitution selected from (cyclopropylmethyl, (cyclopropyl)ethyl, (cyclobutyl)methyl, (trans-2-methylcyclopropyl)methyl, and (cis-2-methylcyclobutyl)methyl; (C_3–C_{10})alkenyl and alkynyl monosubstituted amino group with substitution selected from allyl, 3-butenyl, 2-butenyl (cis or trans), 2-pentenyl, propynyl, 4-octenyl, 2,3-dimethyl- 2-butenyl, 3-methyl-2-butenyl, 2-cyclopentenyl and 2-cyclohexenyl; (C_6–C_{10})aryl monosubstituted amino group with substitution selected from phenyl and naphthyl; (C_7–C_{10})aralkylamino group selected from benzylamino, 2-phenylethylamino, 1-phenylethylamino, 2-(naphthyl)-methylamino, 1-(naphthylmethylamino and phenylpropylamino; substituted (C_6–C_{10})aryl monosubsituted amino group with substitution for the (C_6–C_{10})aryl group selected from (C_1–C_5)acyl, (C_1–C_5-)acylamino, (C_1–C_4)alkyl, mono or disubstituted (C_1–C_8-)alkylamino, (C_1–C_4)alkoxy, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkylsulfonyl, amino, carboxy, cyano, halogen, hydroxy, nitro and trihalo(C_1–C_3)alkyl; straight or branched symmetrical disubstituted (C_6–C_{14})alkylamino group with substitution selected from dibutyl, diisobutyl, di-s-butyl, dipentyl, diisopentyl, di-s-pentyl, dihexyl, diisohexyl and di-s-hexyl; symmetrical disubstituted (C_6–C_{14}-)cycloalkylamino group with substitution selected from

dicyclopropyl, dicyclobutyl, dicyclopentyl, di(dicyclopropyl)methyl, dicyclohexyl and dicycloheptyl; straight or branched unsymmetrical disubstituted (C_3–C_{14})alkylamino group wherein the total number of carbons in the substitution is no more than 14; unsymmetrical disubstituted (C_4–C_{14})cycloalkylamino group wherein the total number of carbons in the substitution is no more than 14; (C_2–C_8)azacycloalkyl and substituted (C_2–C_8)azacycloalkyl group selected from 4-methylpiperidine 4-hydroxypiperidine, 4-(hydroxymethyl)piperidine, 4-(aminomethyl)piperidine, cis-3,4-dimethylpyrrolidinyl, trans-3,4-dimethylpyrrolidinyl, 2-azabicyclo [2.1.1.]hex2-yl, 5azabicyclo[2.1.1]hex-5-6l, 2-azabicylco[2.2.l]hept-2-yl, 7-azabicyclo[2.2.1]-hept-7-yl, 2-azabicyclo[2.2.2]oct-2-yl and the diastereomers and enantiomers of said (C_2–C_8-)azacycloalkyl and substituted (C_2–C_8)azacycloalkyl group; substituted 1-azaoxacycloalkyl group selected from 2-(C_1–C_3)alkylmorpholinyl, 3-(C_1–C_3)alkylisoxazolidinyl, tetrahydrooxazinyl and 3,4-dihydrooxazinyl; [l,n]-diazacycloalkyl and substituted [l,n]-diazacycloalkyl group selected from piperazinyl, 2-(C_1–C_3)alkylpiperazinyl, 4-(C_1–C_3)alkyl- piperazinyl, 2,4-dimethylpiperazinyl, 4-(C_1–C_4)alkoxypiperazinyl, 4-(C_6–C_{10})aryloxypiperazinyl, 4-hydroxypiperazinyl, 2,5-diazabicyclo[2.2.1]hept-2-yl, 2,5-diaza-5-methylbicyclo[2.2.1]hept-2-yl, 2,3-diaza-3-methylbicyclo[2.2.2.]oct-2-yl, 2,5-diaza-5,7-dimethylbicyclo[2.2.2]oct-2yl and the diastereomers or enantiomers of said [l,n]-diazacycloalkyl and substituted [l,n]diazacycloalkyl group; 1-azathiacycloalkyl and substituted 1-azathiacycloalkyl group selected from thiomorpholinyl, 2-(C_1–C_3)alkylthiomorpholinyl and 3-(C_3–C_6-)cycloalkylthiomorpholinyl; N-azolyl and substituted N-azolyl group selected from 1-imidazolyl, 2-(C_1–C_3)alkyl-1-imidazolyl, 3-(C_1–C_3)alkyl-1-imidazolyl, 1-pyrrolyl, 2-(C_1–C_3)-alkyl-1-pyrrolyl, 3-(C_1–C_3)alkyl-1-pyrrolyl, 1-pyrazolyl, 3-(C_1–C_3)alkyl-1-pyrazolyl, indolyl, 1-(1,2,3-triazolyl), 4-(C_1–C_3)alkyl-1(1,2,3-triazolyl), 5-(C_1–C_3)alkyl-1(1,2,3-triazolyl), 4-(1,2,4-triazolyl, 1-tetrazolyl, 2-tetrazolyl an benzimidazolyl; (heterocycle)amino group and substituted (heterocycle) amino said heterocycle selected from 2- or 3-furanyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 5-pyridazinyl, 2-pyrazinyl, 2-(imidazolyl), (benzimidazolyl), and (benzothiazolyl) and substitution selected from straight or branched (C_1–C_6)alkyl; (heterocycle)methylamino group selected from 2- or 3-furylmethylamino, 2- or 3-thienylmethylamino, 2-, 3- or 4-pyridylmethylamino, 2- or 5-pyridazinylmethylamino, 2-pyrazinylmethylamino, 2-(imidazolyl)methylamino, (benzimidazolyl)methylamino, and (benzothiazolyl)methylamino ; and substituted (heterocycle)methylamino group as defined hereinabove with substitution selected from straight or branched (C_1–C_6)alkyl; carboxy(C_2–C_4-)alkylamino group selected from aminoacetic acid, α-aminopropionic acid, β-aminopropionic acid, α-butyric acid, β-aminobutyric acid and the enantiomers of said carboxy(C_2–C_4)alkylamino group; 1,1,-di-substituted hydrazino group selected from 1,1-dimethylhydrazino, N-aminopiperidinyl, 1,1-diethylhydrazino, and N-aminopyrrolidinyl; (C_1–C_4)alkoxyamino group selected from methoxyamino, ethoxyamino, n-propoxyamino, 1-emthylethoxyamino, n-butoxyamino, 2-methylpropoxyamino and 1,1-dimethylethoxyamio; (C_3–C_8)cycloalkoxyamino group selected from cyclopropoxyamio, trans-1,2-dimethylcyclopropoxyamino, cis-1,2-dimethylcyclopropoxyamino, cyclobutoxyamino, cyclopentoxyamino, cyclohexoxyamino, cycloheptoxyamino, cyclooctoxyamino, bicyclo[2.2.1]hept-2-yloxyamino, bicyclo[2.2.2]oct-2-yloxy amino and the diastereomers and enantiomers of said (C_3–C_8)cycloalkoxyamino group; (C_6–C_{10})aryloxyamino group selected from phenoxyamino, 1-naphthyloxyamino and 2-naphthyloxyamino; (C_7–C_{11})arylalkoxyamino group selected from benzyloxy amino, 2-phenylethoxyamino, 1-phenylethoxyamino, 2-(naphthyl)-methoxyamino, 1-(naphthyl)methoxyamino and phenylpropoxyamino; [βor γ-(C_1–C_3)acylamido]alkylamino group selected from 2-(formamido)ethylamino, 2-(acetamido)ethylamino, 2-(propionylamido)ethylamino, 2-(acetamido)propylamino, 2-(formamido)propylamino and the enantiomers of said [βor γ-(C_1–C_3)acylamido]alkylamino group; βor γ-(C_1–C_3)alkoxyalkylamino group selected from 2-methoxyethylamino, 2-ethoxyethylamino, 2,2-diethoxyethylamino, 2-methoxypropylamino, 3-methoxypropylamino. 3-ethoxypropylamino, 3,3-diethoxypropylamino and the enantiomers of said β or γ-(C_1–C_3)-alkoxyalkylamino group; β, γ, or δ (C_2–C_4)hydroxyalkylamino group selected from 2-hydroxyethylamino, 2-hydroxypropylamino, 3-hydroxypropylamino and 4-hydroxybutylamino;

or R^3 and W taken together are selected from —$(CH_2)_n)R^5$-)N—, n = 3–4, and —$CH_2CH(OH)CH_2(R^5)$N— wherein R^5 is selected from hydrogen and (C_1–C_3)acyl, the acyl selected from formyl, acetyl, propionyl and (C_2–C_3)haloacyl selected from chloroacetyl, bromoacetyl, trifluoroacetyl, 3,3,3-trifluoropropionyl and 2,3,2-trifluoropropionyl;

R^6 is selected from hydrogen; straight or branched (C_1–C_3)alkyl group selected from emthyl, ethyl, n-propyl or 1-methylethyl; (C_6–C_{10})aryl group selected from phenyl, α-naphthyl or β-naphthyl; (C_7–C_9)aralkyl group selected from benzyl, 1-phenylethyl, 2-phenylethyl or phenylpropyl; a heterocycle grup selected from a five membered aromatic or saturated ring with one N, O, S or Se heteroatom optionally having abenzo orpyrido ring fused thereto selected from pyrrolyl, N-methylindolyl, indolyl, 2-pyrrolindinyl, 3-pyrrolidinyl, 2-pyrrolinyl, tetrahydrofuranyl, furanyl, benzofuranyl, tetrahydrothienyl, thienyl, benzothienyl or selenazolyl, or a five membered aromatic ring with two N, O, S or Se heteroatoms optionally having a benzo or pyrido ring fused thereto selected from imidazolyl, pyrazolyl, benzimidazolyl, oxazolyl, benzoxazolyl, indazolyl, thiazolyl, benzothiazolyl, 3-alkyl-3H-imidazo[4,5-b]pyridyl or pyridylimidazolyl, or a five membered saturated ring with one or two N, O, S or Se heteroatoms and an adjacent appended O heteroatom selected from γ-butyrolactam, γ-butyrolactone, imidazolidinone or N-aminoimidazolidinone, or a six membered aromatic ring with one to three N heteroatoms selected from pyridyl, pyridazinyl, pyrazinyl, sym-triazinyl, unsymtriazinyl, pyrimidinyl or (C_1–C_3) alkylthiopyridazinyl, or a six membered saturated ring with one or two N, O, S or Se heteroatoms and an adjacent appended O heteroatom selected from 2,3-dioxo-1-piperazinyl, 4-ethyl-2,3-dioxo-1-piperazinyl, 4-methyl-2,3-dioxo-1-piperazinyl, 4-cyclopropyl-2-dioxo-1-piperazinyl, 2-dioxomorpholinyl, 2-dioxothiomorpholinyl; or —(CH_2)-$_m$$COOR^8$ where m = 0–4 and R^8 is selected from hydrogen; straight or branched (C_1–C_3)alkyl group selected from methyl, ethyl, n-propyl or 1-methylethyl; or (C_6–C_{10})aryl group selected from phenyl, α-naphthyl, or β-naphthyl; R^7 is selected from hydrogen; straight or branched (C_1–C_3)alkyl group selected from methyl, ethyl, n-propyl or 1-methylethyl; (C_6–C_{10})aryl group selected from phenyl, β-naphthyl or β-naphthyl; (C_7–C_9)aralkyl group selected from benzyl, 1-phenylethyl, 2-phenylethyl or phenylpropyl; a heterocycle group selected from a five membered aromatic or saturated ring with one N, O, S or Se heteroatom optionally having a benzo or pyrido ring fused thereto selected from pyrroly, N-methylindolyl, indolyl, 2-pyrrolidinyl, 3-pyrrolindinyl, 2-pyrrolinyl, tetrahydrofuranyl, furanyl, benzofuranyl, tetrahydrothienyl, thienyl, benzothienyl or selenazolyl, or a five membered aromatic ring with two N, O, S or Se heteroatoms optionally having a benzo or pyrido ring fused thereto selected from imidazolyl, pyrazolyl, benzimidazolyl, oxazolyl, benzoxazolyl, indazolyl, thiazolyl, benzothiazolyl, 3-alkyl-3H-imidazo[4,5-b]pyridyl or pyridylimidazolyl, or a five membered saturated ring with one or two N, O, S or Se heteroatoms and an adjacent appended O heteroatom selected from γ-butyrolactam, γ-butyrolactone,

imidazolidinone or A-aminoimidazolidinone, or a six membered aromatic ring with one to three N heteroatoms selected from pyridyl, pyridazinyl, pyrazinyl, sym-triazinyl, unsymtriazinyl, pyrimidinyl or (C_1-C_3)alkylthiopyridazinyl, or a six membered saturated ring with one or two N, O, S or Se heteroatoms and an adjacent appended O heteroatom selected from 2,3-dioxo-1-piperazinyl, 4-ethyl-2,3-dioxo-1-piperazinyl, 4-methyl-2,3-dioxo-1-piperazinyl, 4-cyclopropyl-2-dioxo-1-piperazinyl, 2-dioxomorpholinyl, 2-dioxothiomorpholinyl; or $-(CH_2)_m COOR^8$ where m=0-4 and R^8 is selected from hydrogen; straight or branched (C_1-C_3)alkyl selected from methyl, ethyl, n-propyl or 1-methylethyl; or (C_6-C_{10})aryl selected from phenyl, α-naphthyl or β-naphthyl; with the proviso that R^6 and R^7 cannot both be hydrogen; or R^6 and R^7 taken together are $-(CH_2)_2B(CH_2)_2-$, wherein B is selected from $(CH_2)q$ and q=0-1, —HN, $-N(C_1-C_3)$alkyl straight or branched, $-N(C_1-C_4)$alkoxy, oxygen, sulfur or substituted congeners selected from (L or D)proline, ethyl(L or D)prolinate, morpholine, pyrrolidine or piperidine; and the pharmacologically acceptable organic and inorganic salts or metal complexes.

5,328,903

COMPOSITION FOR SOLID PHARMACEUTICAL PREPARATIONS CONTAINING VITAMIN D3 DERIVATIVE

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Continuation of Ser. No. 691,352, Apr. 25, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 16,576

Claims priority, application Japan, Apr. 28, 1990, 2-112269

Int. Cl.[5] A61K *31/595, 31/58, 9/36*

U.S. Cl. 514—168 **1 Claim**

1. A granule consisting essentially of:

(A) a main component of 26, 26, 26, 27, 27, 27-hexafluoro-1α25- dihydroxycholecalciferol;

(B) an excipient of 65 to 95% by weight selected from the group consisting of mannitol and sugar;

(C) a degradative agent of 5 to 30% by weight of hydroxypropyl cellulose having a low degree of substitution; and

(D) a binder of 1 to 30% by weight selected from the group consisting of polyvinyl pyrrolidone and hydroxymethyl cellulose.

5,328,904

2-PHENANTHRIDINYL CARBAPENEM ANTIBACTERIAL AGENTS

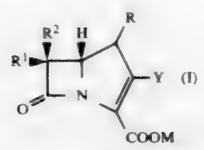
Frank P. DiNinno, Old Bridge; Mark L. Greenlee, Rahway; Thomas A. Rano, Somerville, all of N.J., and Wendy Lee, Chicago, Ill., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 27, 1993, Ser. No. 9,622

Int. Cl.[5] C07D *487/00;* **A01N** *43/00;* **A61K** *31/395*

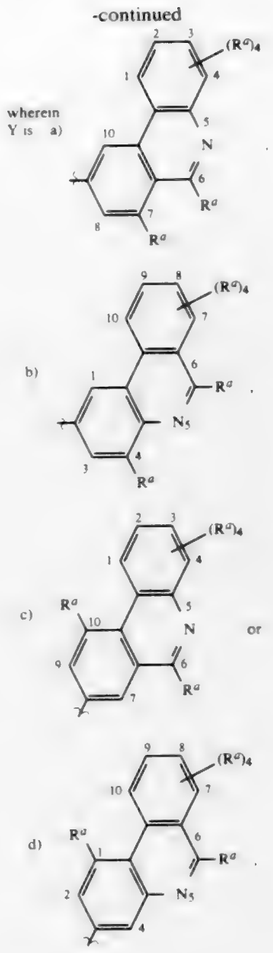
U.S. Cl. 514—210 **16 Claims**

1. A compound of the formula:



(I)

-continued



wherein Y is a), b), c), or d)

R is H or CH_3;

R^1 and R^2 are independently H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2—, or $(CH_3)_2C(F)$—;

R^a are independently selected from the group consisting of hydrogen and the radicals set out below, provided that not more than four R^a radicals are other than hydrogen:

a) a trifluoromethyl group: $-CF_3$;

b) a halogen atom: —Br, —Cl, —F, or —I;

c) C_1-C_4 alkoxy radical: $-OC_{1-4}$ alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^1 is a member selected from the group consisting of —OH, $-OCH_3$, —CN, $-C(O)NH_2$, $-OC(O)NH_2$, CHO, $-OC(O)N(CH_3)_2$, $-SO_2NH_2$, $-SO_2N(CH_3)_2$, $-SOCH_3$, $-SO_2CH_3$, —F, $-CF_3$, $-COOM^a$, where M^a is hydrogen, alkali metal, methyl or phenyl, tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above, and $-SO_3M^b$, where M^b is hydrogen or an alkali metal;

d) a hydroxy group: —OH;

e) a carbonyloxy radical: $-O(C=O)R^s$, where

R^s is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;

f) a carbamoyloxy radical: $-O(C=O)N(R^y)R^z$ where

R^y and R^z are independently H, C_{1-4} alkyl, optionally mono-substituted by R^q as defined above, together a 3- to 5-membered alkylidene radical to form a ring, optionally substituted with R^q as defined above, or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or $-S(O)_2-$ to form a ring, where the ring is optionally mono-substituted with Rq as defined above;

g) a sulfur radical: $-S(O)_n-R^s$ where n=0-2, and R^s is defined above;

h) a sulfamoyl group: $-SO_2N(R^y)R^z$ where R^y and R^z are as defined above;

i) azido: N_3

j) a formamido group: $-N(R^t)(C=O)H$, where

R^t is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

k) a $(C_1-C_4$ alkyl)carbonylamino radical: $-N(R^t)(C=O)C_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

l) a $(C_1-C_4$ alkoxy) carbonylamino radical: $-N(R^t)(C=O)OC_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

m) a ureido group: $-N(R^t)(C=)N(R^y)R^z$ where R^t, R^y and R^z are as defined above;

n) a sulfonamido group: $-N(R^t)SO_2R^s$, where R^s and R^t are as defined above;

o) a cyano group: —CN;

p) a formyl or acetalized formyl radical: —(C=O)H or $-CH(OCH_3)_2$;

q) $(C_1-C_4$ alkyl)carbonyl radical wherein the carbonyl is acetalized: $-C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

r) carbonyl radical: $-(C=O)R^s$, where R^s is as defined above;

s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1-C_4 alkyl group: $-(C=NOR^z)R^y$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

t) a $(C_1-C_4$ alkoxy)carbonyl radical: $-(C=O)OC_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

u) a carbamoyl radical: $-(C=O)N(R^y)R^z$ where R^y and R^z are as defined above;

v) an N-hydroxycarbamoyl or $N(C_1-C_4$ alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1-C_4 alkyl group: $-(C=O)-N(OR^y)R^z$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

w) a thiocarbamoyl group: $-(C=S)N(R^y)(R^z)$ where R^y and R^z are as defined above;

x) carboxyl: $-COOM^b$, where M^b is as defied above;

y) thiocyanate: —SNC;

z) trifluoromethylthio: $-SCF_3$;

aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1-C_4 alkyl optionally substituted by R^q as defined above;

ab) an anionic function selected from the group consisting of: phosphono $[P=O(OM^b)_2]$; alkylposphono $\{P=O(OM^b)-[O(C_1-C_4$ alkyl)]$\}$; alkylphosphinyl $[P=(OM^b)-(C_1-C_4$alkyl)]; phosphoramido $[P=(OM^b)N(R^y)R^z$ and $P=O(OM^b)NHR^x]$; sulfino (SO_2M^b); sulfo (SO_3M^b); acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N(R^y)R^z$, $SO_2NM^bCON(R^y)R^z$; and SO_2NM^bCN, where

R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^y and R^z are as defined above;

ac) C_5-C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or $N(C_1-C_4$ alkyl) and in which one additional carbon atom may be replaced by NH or $N(C_1-C_4$ alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in te ring;

ad) C_2-C_4 alkenyl radical, optionally mono-substituted by one of the substituents a) to ac) above and phenyl which is optionally substituted by R^q as defined above;

ae) C_2-C_4 alkynyl radical, optionally mono-substituted by one of the substituents a) to ac) above;

af) C_1-C_4 alkyl radical;

ag) C_1-C_4 alkyl mono-substituted by one of the substituents a)-ac) above;

ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— an NR^t, where R^t is as defined above, and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents a) to ag) above; and

M is selected from:

i) hydrogen;

ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group; or

iii) an alkali metal or other pharmaceutically acceptable cation.

5,328,905

8,9-ANELLATED-1,2,3,4-TETRAHYDRO-β-CARBOLINE DERIVATIVES

Derk Hamminga; Ineke van Wijngaarden, and Johannes W. C. M. Jansen, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

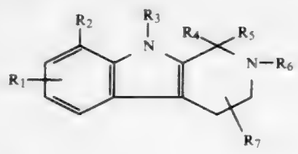
Division of Ser. No. 428,481, Oct. 30, 1989, Pat. No. 5,100,884, which is a continuation of Ser. No. 219,362, Jul. 15, 1988, abandoned. This application Dec. 23, 1991, Ser. No. 812,286

Claims priority, application Netherlands, Jul. 20, 1987, 8701709

Int. Cl.[5] C07D *487/12, 487/14;* **A61K** *31/55*

U.S. Cl. 514—214 **3 Claims**

1. A compound of formula 1:



(1)

wherein

R_1 is straight or branched alkyl having 1-4 C-atoms, halogen or trifluoromethyl;

R_2+R_3 together with the carbon atom and the nitrogen atom to which they are linked, and the intermediate carbon atom, form a heterocyclic 7-membered ring, which may be substituted with 1 or 2 alkyl groups having 1-2 C-atoms;

R_4 is hydrogen, straight or branched alkyl having 1-4 C-

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atoms, trifluoromethyl, alkenyl or halogenated alkenyl having 2–4 C-atoms, cycloalkyl having 3–6 C-atoms, phenyl, benzyl, tolyl or methoxyphenyl in which groups the phenyl ring may be halogenated;

R_5, R_6 and R_7 are hydrogen; and pharmaceutically acceptable salts and prodrugs thereof

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5,328,906

0-(3-AMINO-2-HYDROXYPROPYL)-HYDROXIMIC ACID HALIDES AND PROCESS FOR PREPARING THE SAME

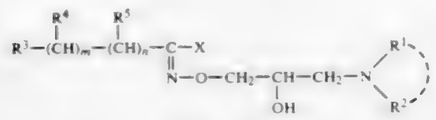
Peter L. Nagy; Bela Balazs; Maria Boross; Jeno Szilbereky; Gizella Zsila; Lajos Abraham; Gyorgy Blasko; Bela Gachalyi; Attila Almasi, and Gabor Nemet, all of Budapest, Hungary, assignors to Biorex Kutato-Fejleszto KFT, Budapest, Hungary

Continuation-in-part of Ser. No. 906,402, Jul. 1, 1992, Pat. No. 5,296,606, which is a division of Ser. No. 499,318, Jun. 28, 1990, Pat. No. 5,147,879. This application Jun. 7, 1993, Ser. No. 72,765

Int. Cl.[5] **A61K** *31/47;* **C07D** *401/12, 413/12, 471/06*

U.S. Cl. 514—235.5 **3 Claims**

1. Hydroximic acid derivatives of formula (I)



and the salts thereof wherein

X is selected from the group consisting of fluoro, chloro, bromo and iodo, R^1 and R^2 when taken together with the nitrogen to which these are attached form a heterocyclic ring selected from morpholinyl, piperazinyl or tetrahydroisoquinolinyl groups,

R^3 is hydrogen, phenyl, naphthyl or optionally substituted with one or more halo or alkoxy,

R^4 is hydrogen or phenyl,

R^5 is hydrogen or phenyl,

m is 0, 1 or 2 and

n is 0, 1 or 4.

5,328,907

4-ISOXAZOLECARBOXAMIDE DERIVATIVES

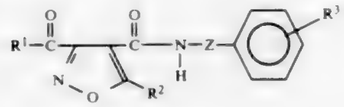
John W. Patterson, Mountain View, and Bruce H. Devens, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 631,181, Dec. 19, 1990, Pat. No. 5,108,999, which is a division of Ser. No. 474,430, Feb. 2, 1990, Pat. No. 5,001,124. This application Jan. 8, 1992, Ser. No. 818,185

Int. Cl.[5] **A61K** *31/535, 31/42*

U.S. Cl. 514—236.8 **1 Claim**

1. A method for treating an allograft rejection in a mammal, wherein the method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of formula (I):



(I)

wherein

R^1 is $—OR^4$ (where R^4 is hydrogen, lower alkyl, lower hydroxyalkyl, phenyl, phenyl-lower-alkyl, or $—(CH_2)_nY$ where n is an integer from 1 to 4 and Y is morpholino, $—SR^5$, $—C(O)OR^5$, $—C(O)N(R^6)_2$, $—N(R^6)_2$ or $—N^+(R^6)_3X^-$, in which R^5 is lower alkyl, each R^6 is independently selected from hydrogen or lower alkyl, and X is halogen)

or $—SR^7$ (where R^7 is lower alkyl, phenyl-lower-alkyl, or $—(CH_2)_nW$ where W is $—N(R^6)_2$ or $—N^+(R^6)_3X^-$, and n, R^6 and X are as previously defined);

R^2 is lower alkyl, phenyl or phenyl-lower-alkyl;

R^3 is halo, hydroxy, lower alkyl, lower alkoxy, lower haloalkyl, lower haloalkoxy, or $—C(O)OR^5$ where R^5 is as previously defined; and

Z is a bond, 2,5-thienyl or 2,5-furanyl; or a pharmaceutically acceptable salt thereof.

5,328,908

ANTIMICROBIAL QUINOLONE THIOUREAS

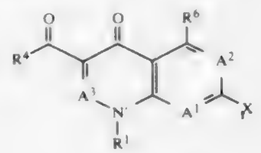
Thomas P. Demuth, Jr., Norwich, and Ronald E. White, South Plymouth, both of N.Y., assignors to Procter & Gamble Pharmaceuticals, Inc., Norwich, N.Y.

Continuation-in-part of Ser. No. 416,645, Oct. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 261,948, Oct. 24, 1988, abandoned. This application Apr. 20, 1990, Ser. No. 513,368

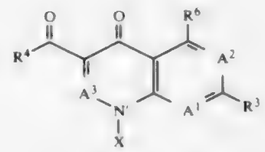
Int. Cl.[5] **C07D** *501/20, 501/30;* **A61K** *31/495*

U.S. Cl. 514—254 **26 Claims**

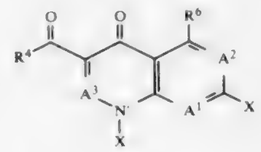
1. Thiourea-containing compounds having one of the following structures:



(I)



(II)



(III)

wherein

(A)

(1) X is the thiourea-containing moiety $—R^{1\text{-}5}—N(R^{16})(R^{17})$ or $—R^{15}—R^{18}—N(R^{19})(R^{17})$, where

(a)

(i) R^{15} is nil; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(ii) R^{16} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; or

(iii) when X is $R^{15}—N(R^{16})(R^{17})$, R^{16} and R^{15} may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the nitrogen atom to which R^{15} and R^{16} are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(b) R^{17} is $—C(=S)—NR^{20}R^{21}$, where R^{20} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and R^{21} is R^{20} or $N(R^{20})(R^{20})$; or R^{20} and R^{21}, together with the nitrogen to which they are bonded, form a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(c)

(i) R^{18} is C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(ii) R^{19} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; or

(iii) R^{18} and R^{19} may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the nitrogen atom to which R^{18} and R^{19} are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(2) A^1 is $C(R^7)$; where

(a) R^7 is hydrogen, hydroxy, alkoxy, nitro, cyano, halogen, C_1–C_8 alkyl; or $N(R^8)(R^9)$, and

(b) R^8 and R^9 are, independently, R^{8a}, where R^{8a} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; or R^8 and R^9 together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle that includes the nitrogen atom to which they are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(3) A^2 is $C(R^2)$; where R^2 is hydrogen or halogen;

(4) A^3 is $C(R^5)$; where R^5 is hydrogen;

(5) R^1 is hydrogen; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; alkoxy; hydroxy; C_2–C_8 alkenyl; arylalkyl; or $N(R^8)(R^9)$; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(6) R^3 is hydrogen; halogen; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(7) R^4 is hydroxy; and

(8) R^6 is hydrogen, C_1–C_8 alkyl, halogen, nitro, $N(R^8)(R^9)$, or $S(R^{8a})$;

(B) and where

(1) R^1 and R^7 may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N′ and A^1, wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(2) R^2 and R^3 may together comprise $—O—(CH_2)_n—O—$, where n is from 1 to 4;

(3) R^4 and R^5 may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the carbon atoms to which R^4 and R^5 are bonded and the carbon atom to which said carbon atoms are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(4) R^1 and R^5 may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N′) and the adjacent carbon to which R^5 is bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

and pharmaceutically-acceptable salts and biohydrolyzable esters thereof, and hydrates thereof.

5,328,909

CYCLOPROPENONE DERIVATIVES

Ryoichi Ando, Machida; Yasuhiro Morinaka, Tsuchiura; Chizuko Takahashi, Yokohama; Yoshikuni Tamao, Machida, and Akihiro Tobe, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

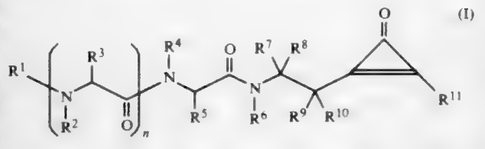
Filed Jun. 25, 1992, Ser. No. 905,544

Claims priority, application Japan, Jun. 25, 1991, 3-153500; Oct. 24, 1991, 3-277904; Dec. 24, 1991, 3-341497; Jun. 5, 1992, 4-146024

Int. Cl.[5] **A61K** *31/16, 31/165;* **C07C** *237/20, 237/22*

U.S. Cl. 514—256 **9 Claims**

1. A cyclopropenone derivative of general formula (I):



(I)

wherein R^1 is hydrogen, $R^{12}—CO—$, $R^{12}—O—CO—$, $R^{12}—NH—CO—$ or $R^{12}—SO_2—$(in which R^{12} is C_1–C_{20} alkyl optionally substituted by one or more substituents selected from the consisting of C_3–C_{15} cycloalkyl group, optionally substituted C_6–C_{14} aryl, optionally substituted C_3–C_{15} cycloalkyloxy, optionally substituted C_6–C_{14} aryloxy, optionally substituted C_6–C_{14} arylthio, optionally substituted C_6–C_{14} arylsulfonyl, optionally substituted C_7–C_{20} aralkyloxy, optionally substituted heterocyclic, oxo, hydroxyl, C_1–C_{10} alkoxycarbonyl and carboxyl; C_3–C_{15} cycloalkyl; optionally substituted C_6–C_{14} aryl or optionally substituted heterocyclic; R^2, R^4 and R^6 each is independently hydrogen or C_1–C_{10} alkyl optionally substituted by C_1–C_5 alkoxy or by C_1–C_5 alkylthio; R^3, R^5 and R^7 each is independently hydrogen, C_1–C_{20} alkyl optionally substituted by C_3–C_{10} cycloalkyl, C_3–C_{10} cycloalkyl or optionally substituted C_7–C_{20} aralkyl; R^8 is hydrogen or C_1–C_{20} alkyl; R^7 and R^8 taken together may form C_3–C_{15} cycloalkyl; R^9 is hydroxy or C_2–C_{20} acyloxy; R^{10} is hydrogen; or R^9 and R^{10} taken together may form oxo; R^{11} is hydrogen, C_1–C_{20} alkyl optionally substituted by C_3–C_{15} cycloalkyl, C_3–C_{15} cycloalkyl, C_2–C_{20} alkenyl, optionally substituted C_6–C_{14} aryl, optionally substituted C_7–C_{20} aralkyl, optionally substituted heterocyclic or $—C(R^{13})(R^{14})—OH$ (in which R^{13} and R^{14} each is independently hydrogen, C_1–C_{20} alkyl, optionally substituted C_7–C_{20} aralkyl or optionally substituted C_6–C_{14} aryl, or R^{13} and R^{14} taken together may form C_3–C_{15} cycloalkyl); and n is 0 or 1 or a pharmaceutically acceptable salt thereof.

5,328,910

SINO-ATRIAL NODE MODULATING PYRROLOPYRIMIDINES

Rodney B. Hargreaves, Poynton, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Oct. 17, 1991, Ser. No. 777,982

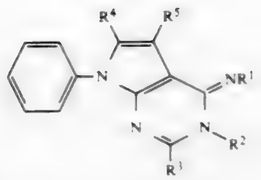
Claims priority, application United Kingdom, Oct. 18, 1990, 9022644.0

Int. Cl.[5] **A61K** *31/505;* **C07D** *487/02*

U.S. Cl. 514—258 **10 Claims**

1. A compound of formula I or a pharmaceutically-acceptable salt thereof,

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I

wherein:

R^1 is hydrogen, (1–8C)alkyl or phenyl(1–4C)alkyl;

R^2 is (1–6C)alkyl, (3–6C)cycloalkyl or (3–6C)cycloalkyl(1–4C)alkyl;

R^3 is hydrogen, (1–6C)alkyl, phenyl (1–4C)alkyl, (3–6C)cycloalkyl, (3–6C)cycloalkyl(1–4C)alkyl, phenyl or (3–6C)alkenyl;

R^4 and R^5 are independently selected from hydrogen and (1–6C)alkyl; and wherein the phenyl ring shown in formula I and/or one or more of said phenyl moieties recited as R^1 or R^3 [or benzene moieties] may optionally be unsubstituted or substituted by one or more substituts independently selected from halogeno, (1–4C)alkyl, (3–6C)alkenyl, (1–4C)alkoxy, cyano, trifluoromethyl, mitro, carboxy, (1–4C)alkylamino, dialkylamino of up to six carbon atoms, (1–4C)alkythion, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl and (1–4C)alkylenedioxy;

but excluding the compound in which R^1, R^3, R^4 and R^5 are each methyl, the phenyl ring is unsubstituted and R^2 is ethyl, and its pharmaceutically-acceptable salts.

5,328,911

BIPHENYLMETHANE DERIVATIVE AND PHARMACOLOGICAL USE

Kazutoshi Miyake; Masayuki Matsukura; Naoki Yoneda, all of Ibaraki; Osamu Hiroshima, Chiba; Nobuyuki Mori, Ibaraki; Hiroki Ishihara, Ibaraki; Takashi Musha, Ibaraki; Toshiyuki Matsuoka, Ibaraki; Sachiyuki Hamano, Tokyo, and Norio Minami, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

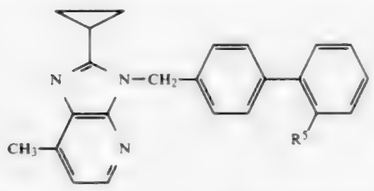
Filed Sep. 13, 1990, Ser. No. 583,025

Claims priority, application Japan, Sep. 29, 1989, 1-251761; Dec. 27, 1989, 1-336640

Int. Cl.[5] C07D *471/04;* **A61K** *31/435*

U.S. Cl. 514—303 **9 Claims**

1. A biphenylmethane derivative having the formula:



wherein R^5 is —COOH or a C_1–C_6 alkyl ester thereof; or a pharmacologically acceptable salt thereof.

5,328,912

CERTAIN AZACYCLOALKYL IMIDAZOPYRIMIDINES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Pamela Albaugh, Clinton, Conn., assignor to Neurogen Corporation, Branford, Conn.

PCT No. PCT/US91/04254, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993

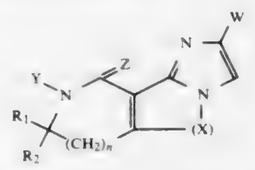
Continuation of Ser. No. 557,577, Jul. 24, 1990, Pat. No. 5,095,015. This PCT application Jun. 24, 1991, Ser. No. 971,765

The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.

Int. Cl.[5] A61K *31/55, 31/505;* **C07D** *515/00, 239/00*

U.S. Cl. 514—267 **34 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable non-toxic salts thereof wherein

Z is H_2, oxygen or sulfur;

R_1 and R_2 are hydrogen or straight chain or branched lower alkyl having 1–6 carbon atoms;

X is



with the proviso that when X is



T is oxygen or sulfur, and when X is



R_3 is hydrogen, halogen, arloxy, alkoxy having 1–6 carbon atoms or $OCOR_5$ where R_5 is hydrogen, straight or branched chain alkyl having 1–6 carbon atoms, alkoxy having 1–6 carbon atoms, or dialkylamino where each alkyl has 1–6 carbon atoms, and R_4 is H, lower alkyl having 1–6 carbon atoms or COR_6 where R_6 is hydrogen, straight or branched chain alkyl having 1–6 carbon atoms, alkoxy having 1–6 carbon atoms or dialkylamino where each alkyl has 1–6 carbon atoms;

W is

phenyl, 2- or 3-thienyl or 2-, 3-, or 4-pyridyl;

or phenyl, 2- or 3-thienyl or 2-, 3-, or 4-pyridyl, each of which is mono or disubstituted with halogen, lower alkyl, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

Y is

i) hydrogen, phenyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 4(5)-imidazolyl, 2-pyrimidinyl, or 1-indanyl;

ii) phenyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 4(5)-imidazolyl, or 2-pyrimidinyl, each of which is mono or disubstituted with halogen, lower alkyl having 1–6 carbon atoms, lower alkoxy having 1–6 carbon atoms, or alkoxylalkyl where the alkoxy portion is straight or branched chain alkoxy having 1–6 carbon atoms and the alkyl portion is straight or branched chain alkyl having 1–6 carbon atoms;

iii) straight or branched chain alkyl having 1–6 carbon atoms;

iv) straight or branched chain alkyl having 1–6 carbon atoms, wherein each alkyl is substituted with the groups of ii;

v) cycloalkyl having 3–10 carbon atoms, cycloalkyl alkyl where the cycloalkyl portion has 3–7 carbon atoms and the alkyl portion has 1–6 carbon atoms;

vi) aminoalkyl where the alkyl portion is straight or branched chain alkyl having 1–6 carbon atoms, or mono or dialkyl aminoalkyl where each alkyl is a straight or branched chain alkyl having 1–6 carbon atoms; or

vii) COR_7 or SO_2R_7 where

R_7 is straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 4(5)-imidazolyl, or 2-pyrimidinyl; or

R_7 is phenyl, 2- or 3-thienyl, 2-, 3- or 4-pyridyl, 2- or 4(5)-imidazolyl, or 2-pyrimidinyl each of which may be mono or disubstituted with halogen, lower alkyl having 1–6 carbon atoms, straight or branched alkoxy having 1–6 carbon atoms, or alkoxyalkyl where the alkoxy portion is straight or branched chain alkoxy having 1–6 carbon atoms and the alkyl portion is straight or branched chain alkyl having 1–6 carbon atoms; and

n is 0, 1, or 2.

5,328,913

MINOXIDIL ANALOGS AS INHIBITORS OF CELL PROLIFERATION AND LYSYL HYDROXYLASE

Saood Murad, and Sheldon R. Pinnell, both of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Dec. 11, 1992, Ser. No. 987,952

Int. Cl.[5] A61K *31/505*

U.S. Cl. 514—275 **13 Claims**

1. A method of treating a fibrotic condition comprising administering to a patient suffering from said condition an amount of a minoxidil derivative bearing a hydroxy group on the piperidino moiety thereof sufficient to effect said treatment.

5,328,914

USE OF PYRIMIDINE 3-OXIDE DERIVATIVES FOR SLOWING DOWN HAIR LOSS AND TOPICAL COMPOSITIONS USED

Michel Hocquaux, Paris; Jacqueline Dumats, Villepinte, and Jean B. Galey, Paris, all of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR91/00596, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/01437, PCT Pub. Date Feb. 6, 1992

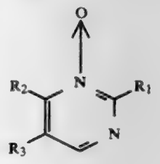
PCT Filed Jul. 19, 1991, Ser. No. 956,507

Claims priority, application Luxembourg, Jul. 20, 1990, 87766

Int. Cl.[5] A61K *7/06, 31/505;* **A01N** *43/54*

U.S. Cl. 514—310 **19 Claims**

1. Composition intended for topical application, characterized in that it contains, in a physiologically acceptable medium appropriate for a topical application, at least one compound corresponding to the formula (I):



in which:

R_1 denotes a methyl or NHR group in which R_4 denotes a C_1–C_4 alkyl group or hydrogen;

R_2 denotes hydrogen or a group NHR_4 in which R_4 has the same meaning as above; R_2 may also denote methyl when R_1 denotes methyl; when R_1 denotes NH_2, R_2 cannot be hydrogen;

R_3 may denote a hydrogen atom or a C_1–C_4 alkyl group which may optionally carry:

a group OR_5 in which R_5 denotes a C_1–C_4 alkyl group,

a benzene nucleus which is optionally substituted by one or more C_1–C_4 alkoxy groups;

R_3 may also denote a halogen atom or a nitro or amino group;

and the physiologically acceptable acid addition salts.

5,328,915

ARTHROPODICIDAL AMIDRAZONE UREAS

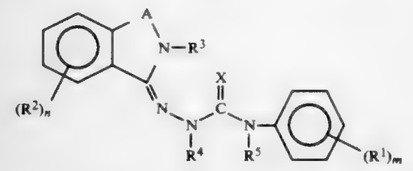
Jeffrey K. Long, Wilmington; Patrick D. Lowder, New Castle, and Thomas M. Stevenson, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 17, 1992, Ser. No. 946,988

Int. Cl.[5] A01N *43/42, 43/54;* **C07D** *279/10, 239/72*

U.S. Cl. 514—310 **6 Claims**

1. A compound of the formula



I

wherein:

A is selected from the group O, SO_2, C(O), CH_2, CH_2CH_2, CH=CH, and OCH_2, wherein each hydrogen attached to a ring carbon can be optionally replaced with a substituent independently selected from the group halogen, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_6 haloalkyl, C_3–C_6 halocycloalkyl, C_4–C_7 cycloalkylalkyl, C_2–C_4 alkoxycarbonyl and phenyl, wherein phenyl can be optionally substituted with 1 to 3 substituents independently selected from W;

X is selected from the group O and S;

R^1 and R^2 are independently selected from the group H, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_3–C_6 cycloalkyl, C_3–C_6 halocycloalkyl, C_4–C_7 cycloalkylalkyl, C_4–C_7 halocycloalkylalkyl, C_2–C_6 alkenyl, C_2–C_6 haloalkenyl, C_2–C_6 alkynyl, C_2–C_6 haloalkynyl, C_2–C_6 alkoxyalkyl, C_1–C_6 alkylthio, C_2–C_6 alkylthioalkyl, C_1–C_6 nitroalkyl, C_2–C_6 cyanoalkyl, C_3–C_8 alkoxycarbonylalkyl, halogen, CN, NO_2, N_3, SCN, OR^6, SR^6, $S(O)R^6$, $S(O)_2R^6$, $N(R^7)R^8$, $C(O)R^6$, $C(O)OR^6$, $C(O)N(R^7)R^8$, $OC(O)R^6$, $OC(O)OR^6$, $OC(O)N(R^7)R^8$, $N(R^9)C(O)R^7$, $N(R^9)C(O)N(R^7)R^8$, $OS(O)_2R^7$, $N(R^8)S(O)_2R^7$; and phenyl or benzyl each optionally substituted with 1 to 3 substituents independently selected from W; when m is 2, R^1 is optionally taken together as OCH_2O, OCH_2CH_2O or CH_2CH_2O to form a 5- or 6-membered fused ring, each carbon optionally substituted with 1 or 2 substituents independently selected from the group halogen and methyl; when n is 2, R^2 is optionally taken together as OCH_2O, OCH_2CH_2O or CH_2CH_2O to form a 5- or 6-membered fused ring, each carbon optionally substituted with 1 or 2 substituents independently selected from the group halogen and methyl;

R^3 is selected from the group H, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_6 alkylcarbonyl and C_2–C_6 alkoxycarbonyl; C_1–C_6 alkyl substituted with a group selected from CN, NO_2, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 alkylthio and C_2–C_4 alkoxycarbonyl; and phenyl and benzyl each

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optionally substituted with 1 to 3 substituents independently selected from W;

R^4 and R^5 are independently selected from the group H, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_3–C_6 cycloalkyl, C_3–C_6 halocycloalkyl, C_4–C_7 cycloalkylalkyl, C_4–C_7 halocycloalkylalkyl, C_2–C_6 alkoxyalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, CHO, C_2–C_6 alkylcarbonyl, C_2–C_6 alkoxycarbonyl, $C(O)R^{18}$, $C(O)OR^{18}$, C_1–C_6 alkylthio, C_1–C_6 haloalkylthio, phenylthio, $R^{11}OC(O)N(R^{12})S$–, $R^{13}(R^{14})NS$–, $N{=}C(R^{15})R^{16}$, OR^6, and $N(R^{15})R^{16}$; C_1–C_6 alkyl substituted with a group selected from CN, NO_2, C_1–C_4 haloalkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_2–C_4 alkylcarbonyl and C_2–C_4 alkoxycarbonyl; and phenyl and benzyl each optionally substituted with 1 to 3 substituents independently selected from W;

R^6 and R^7 are selected from the group H, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_4–C_7 cycloalkylalkyl, C_4–C_7 halocycloalkylalkyl, C_2–C_6 alkenyl, C_2–C_6 halolalkenyl, C_2–C_6 alkynyl, C_2–C_6 haloalkynyl, C_2–C_6 alkoxyalkyl, C_2–C_6 alkylthioalkyl, C_1–C_6 nitroalkyl, C_2–C_6 cyanoalkyl, C_3–C_8 alkoxycarbonylalkyl, C_3–C_6 cycloalkyl and C_3–C_6 halocycloalkyl; and phenyl and benzyl each optionally substituted with 1 to 3 substituents independently selected from W;

R^8 and R^9 are independently selected from the group H, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl; or when R^7 and R^8 are attached to the same atom they can optionally be taken together as $-CH_2CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2CH_2-$ or $-C_2CH_2OCH_2CH_2-$;

R^{11} is C_1–C_6 alkyl;

R_{12} is C_1–C_4 alkyl;

R^{13} and R^{14} are independently C_1–C_4 alkyl; or

R^{13} and R^{14} can be taken together as $-CH_2CH_2CH_2CH_2C-H_2-$ or $-CH_2CH_2OCH_2CH_2-$;

R^{15} is selected from the group H, C_1–C_4 alkyl and $C(O)R^{17}$;

R^{16} is selected from the group H, C_1–C_4 alkyl, C_1–C_4 haloalkyl; and phenyl optionally substituted with 1 to 3 substituents independently selected from W; or

R^{15} and R^{16} can be taken together as $-CH_2CH_2CH_2-$, $-CH_2CH_2CH_2CH_2-$ or $-CH_2CH_2CH_2CH_2-$;

R^{17} is selected from the group H, C_1–C_6alkyl, C_1–C_6alkoxy, C_1–C_6 haloalkyl, C_2–C_6 alkenyl, C_2–C_6 haloalkenyl, C_2–C_6 alkynyl, C_3–C_6 haloalkynyl, C_2–C_6 alkoxyalkyl, C_2–C_6 alkylthioalkyl, C_1–C_6 nitroalkyl, C_2–C_6 cyanoalkyl; C_3–C_8 alkoxycarbonylalkyl, C_3–C_6 cycloalkyl, C_3–C_6 halocycloalkyl; and phenyl and benzyl each optionally substituted with 1 to 3 substituents independently selected from W;

R^{18} is phenyl optional substituted with 1 to 3 substituents independently selected from W;

W is selected from the group halogen, CN, $N(R^7)R^8$, NO_2, C_1–C_2 alkyl, C_1–C_2 haloalkyl, C_1–C_2 alkoxy, C_1–C_2 haloalkoxy, C_1–C_2 alkylthio, C_1–C_2 haloalkylthio, C_1–C_2 alkylsulfonyl and C_1–C_2 haloalkylsulfonyl;

m is 1 to 3; and

n is 1 or 2.

5,328,916

HETEROCYCLIC COMPOUNDS USEFUL FOR INHIBITION OF RENIN

Peter Raddatz, Seeheim; Claus J. Schmitges, Gross-Umstadt, and Klaus-Otto Minck, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed May 2, 1991, Ser. No. 694,617

Claims priority, application Fed. Rep. of Germany, May 5, 1990, 4014421

Int. Cl.[5] **C07D** *211/18, 401/12*

U.S. Cl. 514—318 **27 Claims**

1. A compound of the formula I

$$X{-}W{-}CR^1R^2{-}CO{-}Y{-}NR^3{-}CHR^4{-}CR^5{-}CH_2{-}(CR^6R^7)_r{-}Z{-}Het \quad I$$

wherein

X is R^8, $R^8{-}O{-}C_mH_{2m}{-}CO{-}$, $R^8{-}C_mH_{2m}{-}O{-}CO{-}$, $R^8{-}C_mH_{2m}{-}CO{-}$, $R^8{-}SO_2{-}$, $R^9R^{10}N{-}C_mH_{2m}{-}CO{-}$, $R^{11}{-}NH{-}C(=NH){-}NH{-}C_mH_{2m}{-}CO{-}$, $R^9OOC{-}C_mH_{2m}{-}CO{-}$, $R^9O_3S{-}C_mH_{2m}{-}CO{-}$, $R^9{-}O{-}(CH_2CH_2O)_n{-}C_mH_{2m}{-}CO{-}$ or $A_3N^{\oplus}{-}C_mH_{2m}{-}CO{-}An^{\ominus}$;

W is O, NH, CH_2 or S;

Y is 0 or 1 amino acid residue selected from Abu, Ada, Ala, βAla, Arg, Asn, Asp, Bia, Cal, Cys, S—A—Cys, Dab, Gln, Glu, Gly, His, N(im)-A-His, Hph, Ile, Leu, tert.-Leu, Lys, Mal, Met, αNal, βNal, Nbg, Nle, Nva, Orn, Phe, Pia, Pro, Pya, Ser, Thr, Tia, Tic, Tiz, Trp, Tyr or Val;

Z is O, S, SO or SO_2;

R^1, R^3, R^6, R^7, R^9 and R^{10} are each independently H or A;

R^2, R^4 and R^8 are each independently H, A, Ar, Ar-alkyl, Het, Het-alkyl, unsubstituted cycloalkyl having 3–7 C atoms, cycloalkyl having 3–7 C atoms substituted by A, AO, Hal, or combinations thereof, cycloalkylalkyl having 4–11 C atoms, bicycloalkyl or tricycloalkyl each having 7–14 C atoms, or bicycloalkylalkyl or tricycloalkylalkyl each having 8–18 C atoms;

R^5 is (H, OH), (H, NH_2) or =O;

$R^9R^{10}N$ can also be pyrrolidino, piperidino, morpholino or piperazino group, in each case being unsubstituted or substituted by A, OH, NH_2, NHA, NA_2, NHAc, NH—CO—C_xH_{2x}—O—R^{11}, NH—CO—O—C_xH_{2x}—R^{11}, hydroxyalkyl, COOH, COOA, $CONH_2$, aminoalkyl, HANalkyl, A_2N-alkyl, $A_3N^{\oplus}$-alkyl $An^{\ominus}$, NH—CO—NH_2, NH—CO—NHA, guanidinyl or guanidinylalkyl;

R^{11} is H, A, Ar-alkyl or CN;

m and x are each 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10;

n is 1, 2, 3, 4 or 5;

r is 0, 1, 2 or 3;

Ar is phenyl which is unsubstituted or substituted by A, OA, Hal, CF_3, OH, NO_2, hydroxyalkyl, NH_2, NHA, NA_2, NHAc, NH—SO_2—A, SA, SO—A, SO_2—A, SO_2NH_2, SO_2NHA, COOH, COOA, $CONH_2$, CN, aminoalkyl, HAN-alkyl, A_2N—alkyl, $A_3N^{\oplus}$—alkyl $An^{\ominus}$, guanidinylalkyl, or combinations thereof, or is unsubstituted naphthyl;

Het ia pyridyl, pyrimidinyl, 1,2,4-triazolyl, 5-methyl-1,3,4-thiadiazol-2-yl, 1-methyl-tetrazol-5-yl, 2,5-dihydro-2-furanon-4-yl, thiazolyl, or 1-methyl-4-hydroxymethylimidazol-2-yl;

Hal is F, Cl, Br or I;

Ac is A—CO—, Ar—CO—, Ar—alkyl—CO— or A—NH—CO—;

$An^{\ominus}$ is an anion, which can also be absent if, in its place, a carboxyl group contained in the compound of the formula I is in the form of a carboxylate anion;

-alkyl- is an alkylene group having 1–8 C atoms; and

A is alkyl having 1–8 C atoms;

wherein one or more —NH—CO— groups can be replaced by one or more —NA—CO— groups; or a physiologically acceptable salt thereof.

5,328,917

PIPERIDINE COMPOUNDS FOR TREATING ANOXIA, CEREBRAL ISCHEMIA MIGRAINE OR EPILEPSY

Palle Jakobsen, Vaerlose; Anders Kanstrup, Virum, and Jane M. Lundbeck, Glostrup, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

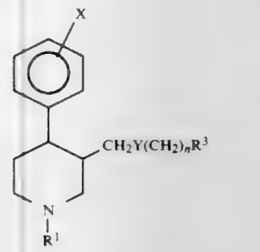
Continuation of Ser. No. 728,930, Jul. 12, 1991. This application May 20, 1993, Ser. No. 65,513

Claims priority, application Denmark, Jul. 18, 1990, DK1724/90; Jan. 24, 1991, DK0117/91

Int. Cl.[5] **C07D** *211/26;* **A61K** *31/445*

U.S. Cl. 514—331 **10 Claims**

1. A compound of formula I



wherein

R^3 is 3,4-methylenedioxyphenyl, phenyl or naphthyl, each of which may be optionally substituted with halogen, amino, amino which is substituted with one or two C_{1-6}-alkyl groups, C_{1-6}alkoxy, cyano, trifluoromethyl, C_{2-6}-alkenyl, C_{1-6}-alkyl, C_{3-5}-alkylene, trifluoromethoxy, hydroxy or C_{1-4}-alkyl substituted with hydroxy;

n is 0, 1, 2, 3 or 4;

R^1 is hydrogen, straight or branched C_{1-8}-alkyl, C_{1-8}-alkoxy-C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{2-6}-alkenyl, C_{4-8}-cycloalkylalkyl, acetyl or C_{2-6}-alkynyl; and

Y is NR wherein R is hydrogen or C_{1-5}-alkyl;

X is halogen, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, C_{1-6}-alkoxy, cyano, mono- or poly- halogenated C_{1-6}-alkyl, hydroxy or hydrogen; or a pharmaceutically acceptable salt thereof.

5,328,918

SUBSTITUTED PYRIDINYLAMINO 1H-INDAZOLES

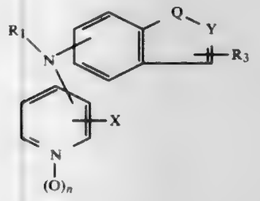
Richard C. Effland; Joseph T. Klein, both of Bridgewater, and Lawrence L. Martin, Lebanon, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 925,822, Aug. 7, 1992, Pat. No. 5,246,947, which is a division of Ser. No. 764,031, Sep. 23, 1991, Pat. No. 5,185,350. This application Mar. 25, 1993, Ser. No. 38,317

Int. Cl.[5] **C07D** *401/12;* **A61K** *31/44*

U.S. Cl. 514—338 **5 Claims**

1. A compound of the formula



wherein

Q is N or NR_2;

Y is N or NR_2;

R_1 is hydrogen, loweralkyl, loweralkynyl, loweralkenyl, arylloweralkyl, loweralkoxycarbonylaminoloweralkylcarbonyl, arylloweralkoxycarbonylaminoloweralkylcarbonyl, aminoloweralkylcarbonyl, loweralkoxycarbonyl or acyl; the term "aryl" in each occurrence signifying a phenyl group substituted with 0, 1 or 2 substituents each of which being independently loweralkyl, loweralkoxy, halogen or trifluoromethyl; the term "acyl" in each occurrence signifying a substituent of the formula



loweralkyl-C—, loweralkynyl-C—,

-continued

(I)

loweralkenyl-C—, aryl-C—, or arylloweralkyl-C—

R_2 is hydrogen or loweralky;

R_3 is hydrogen or loweralkyl;

X is hydrogen, loweralkyl or halogen; and

n is 0 or 1; or a pharmaceutically acceptable acid addition salt thereof.

5,328,919

PIVALOYLOXYMETHYL 2-ETHOXY-1-[[2′-(1H-TETRAZOL-5-YL) BIPHENYL-4-YL] BENZIMIDAZOLE-7-CARBOXYLATE OR A PHARMACEUTICALLY ACCEPTABLE SALT THEREOF AND COMPOSITIONS AND METHOD OF PHARMACEUTICAL USE THEREOF

Takehiko Naka, Kobe; Kohei Nishikawa, Kyoto, and Takeshi Kato, Higashiosaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 687,238, Apr. 18, 1991, Pat. No. 5,196,444. This application Jan. 5, 1993, Ser. No. 997,703

Claims priority, application Japan, Apr. 27, 1990, 2-113148; May 30, 1990, 2-141942; Aug. 6, 1990, 2-208662; Oct. 1, 1990, 2-264579; Dec. 24, 1990, 2-413679

Int. Cl.[5] **C07P** *257/04;* **A61K** *31/41*

U.S. Cl. 514—381 **3 Claims**

3. A method for antagonizing angiotensin II in a mammal which comprises administering a therapeutically effective amount of pivaloyloxymethyl 2-ethoxy-1-[[2′-(1H-tetrazol-5-yl)biphenyl-4-yl]methyl]benzimidazole-7-carboxylate or a pharmaceutically acceptable salt thereof.

5,328,920

SUBSTITUTED (PYRIDINYLAMINO)-INDOLES

Richard C. Effland; Joseph T. Klein, both of Bridgewater; Lawrence L. Martin, Lebanon; Gregory M. Shutske, Flemington; Kevin J. Kapples, Little York, all of N.J., and John D. Tomer, IV, Perkasie, Pa., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

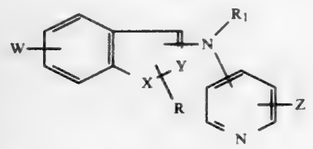
Continuation-in-part of Ser. No. 688,964, Apr. 17, 1991, Pat. No. 5,177,088. This application Oct. 21, 1992, Ser. No. 964,546

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] **C07D** *401/12;* **A61K** *31/44*

U.S. Cl. 514—339 **11 Claims**

1. A compound of the formula,

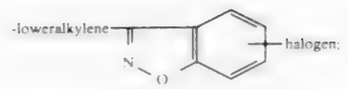


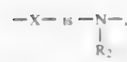
where

R is hydrogen, loweralkyl, carboxyl or loweralkoxycarbonyl;

R_1 is hydrogen, loweralkyl, loweralkenyl, loweralkynyl, arylloweralkyl, cycloalkylloweralkyl, loweralkoxyloweralkyl, hydroxyloweralkyl, aminoloweralkyl, mono- or di-loweralkylaminoloweralkyl, formyl, loweralkylcarbonyl, aminoloweralkylcarbonyl, loweralkoxycarbonyl, mono- or di-aryl-substituted loweralkyl, arylcarbonylloweralkyl, aryloxylloweralkyl,

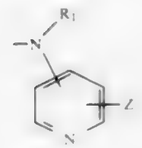
VOL 1164 ISS 2 JL 12 1994 UMI



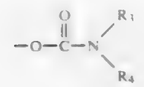


R_2 being hydrogen, loweralkyl or loweralkylcarbonyl;

—Y= is —CH=, provided that the hydrogen atom of the group —CH= may be replaced by either the group R or the group



W is hydrogen, halogen, hydroxy, loweralkoxy, aryl-loweralkoxy, nitro, trifluoromethyl or



where R_3 is hydrogen, loweralkyl or aryloweralkyl; and R_4 is loweralkyl or aryloweralkyl; and

Z is hydrogen, halogen, loweralkyl, nitro or amino; the term cycloalkyl signifying a cycloalkyl group of 3 to 8 carbon atoms, and the term aryl in each occurrence signifying a phenyl group substituted with 0, 1 or 2 substituents each of which being independently loweralkyl, loweralkoxy, loweralkylcarbonyl, halogen, or trifluoromethyl, or a pharmaceutically acceptable acid addition salt thereof.

5,328,921

ARYL PYRIDINIUM COMPOUNDS WHICH ARE USEFUL IN TREATING SHOCK

Michael P. Trova, Salisbury Mills, and Allan Wissner, Ardsley, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 738,961, Aug. 1, 1991, Pat. No. 5,208,247. This application Oct. 30, 1992, Ser. No. 968,900

Int. Cl.[5] C07D *213/56;* **A61K** *31/435*

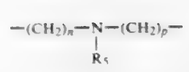
U.S. Cl. 514—358 **18 Claims**

10. A method of treating anaphylactic and septic shock in a mammal which comprises administering to said mammal an effective amount of a compound of

(I)

wherein

(A) X is a divalent radical of:



wherein p is the integer 0, 1, 2, or 3; n is the integer 0, 1, or 2; R_6 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_1–C_6 alkylamino, C_1–C_6 alkoxy, phenyl, aminophenyl, substituted phenyl or substituted aminophenyl and the substituents are of one or more of the following C_1–C_4 alkyl, C_1C_4 alkoxy, halogen or trifluoromethyl, R_7 is C_1–C_{25} alkyl, C_2–C_{25} alkenyl, phenyl or substituted phenyl and the substituents are C_1–C_{20} alkyl, C_1–C_{20} alkoxy, halogen or trifluoromethyl; R_5 is —COR_6 or —SO_2R_7 wherein R_6 and R_7 are as previously described above

(B) R_1 is one or more substituents of the aromatic ring which may be the same or different and is

(i) C_1–C_{25} alkyl, C_2–C_{25} alkenyl, C_1–C_{25} alkoxy, C_2–C_{25} alkenyloxy, C_1–C_{25} thioalkyl, phenyl, phenoxy, substituted phenyl or substituted phenoxy wherein the substituents are C_1–C_{20} alkyl, C_1–C_{20} alkoxy, halogen, or trifluoromethyl;

(ii) halogen, trifluoromethyl, cyano, or nitro;

(iii) —CO_2R_7, —$CONHR_7$, or —$NHCOR_7$ wherein R_7 is as previously described above;

(C) the moiety R_2 is one or more substituents of the pyridinium ring which may be in any position and are hydrogen, C_1–C_5 alkyl, C_1–C_5 alkoxy, or halogen;

(D) the heterocycle is bonded to the x-group at optionally the 2, 3, or 4 position

(E) the group R_3 is C_1–C_8 alkyl, C_1–C_8 halogen substituted alkyl, benzyl, hydrogen, or N-oxide; and

(F) $Z^{\ominus}$ represents a pharmacologically acceptable anion.

5,328,922

INDOLE UREAS AS 5 HT RECEPTOR ANTAGONIST

Ian T. Forbes, and Roger T. Martin, both of Harlow, Great Britain, assignors to Beecham Group p.l.c., United Kingdom

PCT No. PCT/GB91/01553, § 371 Date May 11, 1993, § 102(e) Date May 11, 1993, PCT Pub. No. WO92/05170, PCT Pub. Date Apr. 2, 1992

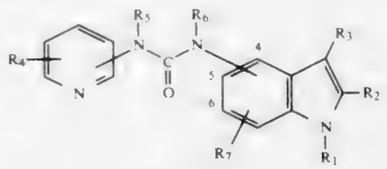
PCT Filed Sep. 11, 1991, Ser. No. 30,103

Claims priority, application United Kingdom, Sep. 13, 1990, 9020030; Mar. 22, 1991, 9106079; Mar. 22, 1991, 9106092; Mar. 22, 1991, 9106094

Int. Cl.[5] A61K *31/44;* **C07D** *401/12*

U.S. Cl. 514—339 **8 Claims**

1. A compound of Formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein:

R_1, R_2 and R_3 are independently hydrogen or C_{1-6} alkyl;

R_4 is hydrogen, C_{1-6} alkyl, halogen, hydroxy or NR_8R_9 where R_8 and

R_9 are independently hydrogen or C_{1-6} alkyl;

R_5 and R_6 are independently hydrogen or C_{1-6} alkyl; and

R_7 is hydrogen, C_{1-6} alkyl or halogen; and wherein the urea moiety is attached at the 4-, 5- or 6-position of the indole ring.

5,328,923

HETEROCYCLIC COMPOUNDS AND USE

Per Sauerberg, Valby, and Preben H. Olesen, Copenhagen NV, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Aug. 13, 1991, Ser. No. 744,150

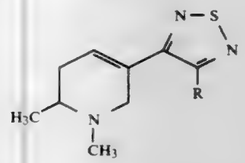
Claims priority, application Denmark, Aug. 21, 1990, 1984/90

The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.

Int. Cl.[5] C07D *417/04;* **A61K** *31/44*

U.S. Cl. 514—340 **8 Claims**

1. A compound of formula I



(I)

wherein

R is —OR^5 or —SR^5, wherein R^5 is straight or branched C_{4-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, or straight or branched C_{1-15}-alkyl which is substituted with cyano or a phenyl group wherein the phenyl group is optionally substituted with CN; or a pharmaceutically acceptable salt thereof.

5,328,924

HETEROCYCLIC COMPOUNDS AND THEIR USE

Per Sauerberg, Valby, and Preben H. Olesen, Copenhagen, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Aug. 14, 1991, Ser. No. 745,033

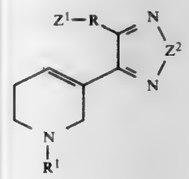
Claims priority, application Denmark, Aug. 21, 1990, 1983/90

The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.

Int. Cl.[5] C07D *417/04;* **A61K** *31/44*

U.S. Cl. 514—340 **10 Claims**

1. A compound of formula I



(I)

wherein

Z^1 is oxygen or sulphur;

Z^2 is sulphur;

R is R^2, —R^2—Z^3—R^3, —R^2—CO—R^3, —R^2—CO_2—R^3, —R^2—O_2C—R^3, —R^2—CONH—R^3 or —R^2—NH-CO—R^3, wherein Z^3 is oxygen or sulphur and R^2 and R^3 independently are straight or branched C_{1-15}-alkyl substituted with halogen, OH, CN or one or two phenyl, phenoxy, benzoyl or benzyloxycarbonyl groups wherein each aromatic group is optionally substituted with halogen, CN or C_{1-4}-alkyl; and

R^1 is H, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl or straight or branched C_{2-5}-alkynyl; or a pharmaceutically-acceptable salt thereof.

5,328,925

PIPERIDINE COMPOUNDS AND THEIR USE

Per Sauerberg, Sondervangsalle, and Preben H. Olesen, Kobenhavn, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 482,272, Feb. 20, 1990, Pat. No. 5,041,455, which is a continuation-in-part of Ser. No. 401,370, Aug. 31, 1989, Pat. No. 5,03,345. This application Aug. 15, 1991, Ser. No. 746,104

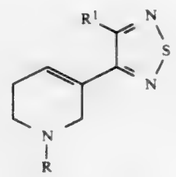
Claims priority, application Denmark, Feb. 22, 1989, 0825/89; May 12, 1989, 2315/89

The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.

Int. Cl.[5] C07D *417/04;* **A61K** *31/44*

U.S. Cl. 514—342 **8 Claims**

1. A compound of formula I



(I)

wherein

R is H, C_{1-3}-alkyl, C_{3-4}-cycloalkyl, C_{2-4}-alkenyl or C_{2-4}-alkynyl; and

R^1 is H, —C_{1-3}-alkyl-C_{3-5}-cycloalkyl, —OH, OC_{2-4}-alkenyl, —OC_{2-4}-alkynyl, —OC_{3-5}-cycloalkyl or —OC_{1-3}-alkyl-C_{3-5}-cycloalkyl; or a pharmaceutically acceptable salt thereof.

5,328,926

SYNERGISTIC COMBINATIONS OF IODOPROPARGYL COMPOUNDS WITH 1,2-BENZISOTHIAZOLIN-3-ONE IN CONTROLLING FUNGAL AND BACTERIAL GROWTH IN AQUEOUS FLUIDS

David Oppong, Memphis, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Continuation of Ser. No. 788,890, Nov. 7, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,812

Int. Cl.[5] A01N *43/80, 47/10*

U.S. Cl. 514—372 **19 Claims**

1. A microbicidal composition comprising (a) iodopropargyl carbamate and (b) 1,2-benzisothiazolin-3-one, wherein said composition contains an amount of (a) and (b) synergistically effective to control or reduce the growth of at least one microorganism.

5,328,927

HETERCYCLIC COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Richard T. Lewis, Harlow; Kevin J. Merchant, and Angus M. MacLeod, both of Bishops Stortford, all of United Kingdom, assignors to Merck Sharpe & Dohme, Ltd., Hertfordshire, England

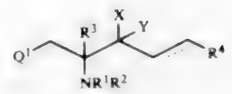
Filed Feb. 24, 1993, Ser. No. 21,826

Claims priority, application United Kingdom, Mar. 3, 1992, 9204577.2; Mar. 31, 1992, 9207053.1; May 27, 1992, 9211192.1

Int. Cl.[5] A61K *31/405, 31/34;* **C07D** *209/16, 209/10*

U.S. Cl. 514—415 **13 Claims**

1. A compound of formula (I):



(I)

wherein

Q^1 is a heterocyclic group selected from unsubstituted or substituted indolyl, benzothiophenyl and benzofuranyl, said substituents selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, SR^a, SOR^a, SO_2R^a, OR^a, NR^aR^b, NR^aCOR^b, NR^aCOOR^b, $COOR^a$ or $CONR^aR^b$, where R^a and R^b are defined below:

the dotted line represents an optional covalent bond;

one of X and Y represents H and the other of X and Y represents hydroxy or C_{1-6}alkoxy, or X and Y together form a group =O or $=NOR^5$ where R^5 is selected from H and C_{1-6}alkyl;

R^1 and R^2 are each independently selected from H; C_{1-6}alkyl optionally substituted by hydroxy, cyano, COR^c, CO_2R^c, $CONR^cR^d$, or NR^cR^d (where R^c and R^d are each independently selected from H, C_{1-6}alkyl and phenyl (C_{0-4}alkyl) optionally substituted in the phenyl ring by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl); phenyl (C_{1-4}alkyl) (optionally substituted in the phenyl ring by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl); COR^c; CO_2R^c; $CONR^cR^d$; COC_{1-6}alkylNR^cR^d; $CONR^cCOOR^d$; and SO_2R^c; where R^c and R^d are as above defined;

R^3 is selected from H, C_{1-6}alkyl and C_{2-6}alkenyl; and

R^4 is phenyl optionally substituted by 1, 2, or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, OR^a, SR^a, SOR^a, NR^aR^b, NR^aCOR^b, $NR^aCO_2R^b$, CO_2R^a and $CONR^aR^b$, where R^a and R^b are independently selected from H, C_{1-6}alkyl, phenyl and trifluoromethyl; or a pharmaceutically acceptable salt thereof.

5,328,928

N-ACYLATED ARYLPYRROLES USEFUL AS INSECTICIDAL, AGENTS

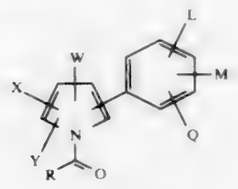
Roger W. Addor, Pennington, N.J.; Stephen F. Donovan; Robert E. Diehl, both of Yardley, Pa., and Kenneth A. Kremer, Lawrenceville, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 763,715, Sep. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 522,299, May 11, 1990, abandoned. This application Jun. 22, 1993, Ser. No. 80,886

Int. Cl.[5] A61K *31/40;* **C07D** *207/34, 207/337*

U.S. Cl. 514—423 **17 Claims**

1. An N-acylated arylpyrrole compound represented by the structural formula I:



(I)

wherein

X is F, Cl, Br, I or CF_3;

Y is F, Cl, Br, I or CF_3;

W is CN or NO_2;

L is H, F, Cl or Br;

M and Q are each independently H, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, cyano, F, Cl, Br, I, nitro, CF_3, R_1CF_2Z, R_2CO or NR_3R_4;

and when M and Q are attached to adjacent carbon atoms in the phenyl ring and taken with the carbon atoms to which they are attached, they may form a ring in which MQ represents the structure:

Z is S(o)n or O;

R_1 is H, F, CHF_2, CHFCl or CF_3;

R_2 is C_1–C_3 alkyl, C_1–C_3 alkoxy or NR_3R_4;

R_3 is H or C_1–C_3 alkyl;

R_4 is H, C_1–C_3 alkyl or R_5CO;

R_5 is H or C_1–C_3 alkyl;

n is an integer of 0, 1 or 2; and

R is phenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups, one C_5–C_{12} alkyl group, one to two C_1–C_4 alkoxy groups, or one phenoxy, C_1–C_4 alkylthio, trialkylsilyl, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, carbo-C_1–C_4-alkoxy, carboxy, CF_3, CN, NO_2, di(C_1–C_4 alkyl)amino or C_1–C_4 alkanoylamino;

1- or 2-naphthyl;

2-, 3- or 4-pyridyl optionally substituted with one to three halogen atoms; or

a heteroaromatic 5-membered ring containing an oxygen, nitrogen, or a sulfur atom optionally substituted with one to three halogen atoms.

5,328,929

ISOLATION AND STRUCTURE OF SPONGISTATIN 2, SPONGISTATIN 3, SPONGISTATIN 4 AND SPONGISTATIN 6

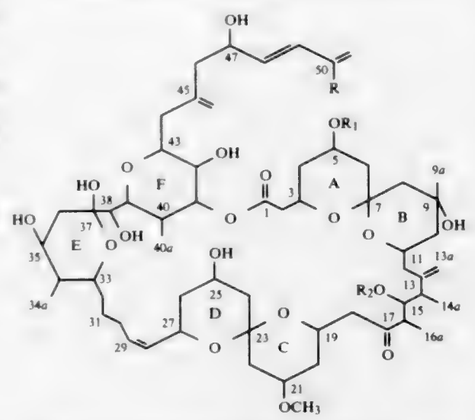
George R. Pettit, Paradise Valley; Zbigniew A. Cichacz, and Cherry L. Herald, both of Tempe, all of Ariz., assignors to Arizona Board of Regents, Tempe, Ariz.

Filed Jul. 2, 1993, Ser. No. 86,668

Int. Cl.[5] C01D *307/77;* **A01N** *43/12*

U.S. Cl. 514—462 **9 Claims**

1. A composition of matter having the following structure:



wherein R is selected from the group consisting of Cl and H,

R_1 is selected from the group consisting of H and $COCH_3$,

R_2 is selected from the group consisting of H and $COCH_3$,

provided that if R=Cl, then R_1 and R_2 are not both $COCH_3$.

5,328,930

TREATMENT OF MICROSPORIDIAL AND ACANTHAMOEBA KERATOCONJUNCTIVITIS WITH TOPICAL FUMAGILLIN

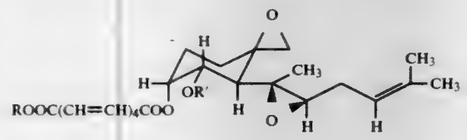
Louis A. Wilson, Marietta, Ga., assignor to Emory University, Atlanta, Ga.

Filed Mar. 1, 1993, Ser. No. 24,718

Int. Cl.[5] A01N *43/20*

U.S. Cl. 514—475 **24 Claims**

1. A method for the treatment of microsporidial keratoconjunctivitis that includes the topical administration of an effective amount of a compound of the formula:



wherein

R is hydrogen; alkyl; phenyl or benzyl, optionally substituted with halogen, C_1 to C_4 alkyl or C_1 to C_4 alkoxy, or a mixture thereof; and

R′ is hydrogen; alkyl; phenyl or benzyl, optionally substituted with halogen, C_1 to C_4 alkyl or C_1 to C_4 alkoxy, or a mixture thereof; or C(O)R″ wherein R″ is straight, branched, or cyclic C_1 to C_{10} alkyl, alkoxyalkyl, aralkyl including benzyl, aryloxyalkyl; phenyl or benzyl, optionally substituted with halogen, C_1 to C_4 alkyl or C_1 to C_4 alkoxy, or a mixture thereof; sulfonate ester, the mono, di or triphosphate ester, trityl or monomethoxytrityl; trialkylsilyl, or diphenylmethylsilyl.

5,328,931

N-ALKYLATED 1,4-DIHYDROPYRIDINEDICARBOXYLIC ACID ESTERS

Bruno Rosen, Wülfrath; Siegfried Zaiss; Hartmund Wollweber, both of Wuppertal, and Maarten de Jonge, Overath-Steinenbrück; Hans-Georg Dellweg, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

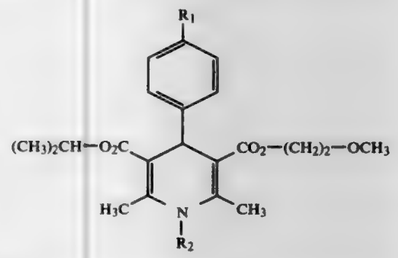
Filed Jul. 21, 1992, Ser. No. 917,565

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125271

Int. Cl.[5] C07D *213/55;* **A61K** *31/455*

U.S. Cl. 514—356 **11 Claims**

1. N-Alkylated 1,4-dihydropyridinedicarboxylic acid esters of the general formula



(I)

in which

R^1 represents trifluoromethoxy, cyano, fluorine, chlorine or trifluoromethyl,

R^2 represents methyl, ethyl or cyclopropyl,

with the proviso that R^1 must not represent trifluoromethyl if R^2 denotes methyl; or a salt thereof.

5,328,932

BISAMIDINE DERIVATIVES AS THROMBIN INHIBITORS

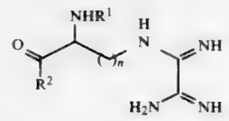
Neelakantan Balasubramanian, Bristol, and William Teh-Wei Han, Cheshire, both of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 995,481, Dec. 23, 1992, Pat. No. 5,248,673. This application Jun. 17, 1993, Ser. No. 78,373

Int. Cl.[5] A61K *31/24, 31/195;* **C07C** *317/12, 317/14*

U.S. Cl. 514—510 **4 Claims**

1. A compound having the Formula



wherein

R_1 is dimethylaminonaphthalenesulfonyl, p-toluene sulfonyl or 2-naphthylene sulfonylglycine;

R^2 is carboxylic acid, N-substituted amino acid esters wherein the substituents are C_1–C_5 alkyl; and

n is 1–5;

and their salts and hydrates thereof.

5,328,933

CYCLOPENTANE HEPTENYLNITRO AND HEPTANYLNITRO-2-ALIPHATIC OR ARYL ALIPHATIC DERIVATIVES AND HOMOLOGUES

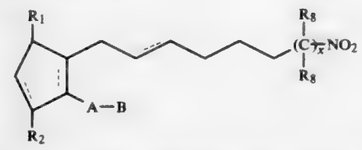
Ming F. Chan, San Diego, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Oct. 28, 1992, Ser. No. 967,603

Int. Cl.[5] C07C *205/03;* **A01K** *31/557*

U.S. Cl. 514—727 **24 Claims**

1. A method of treating ocular hypertension which comprises administering an effective amount of a compound represented by the formula VI



wherein X is an integer from one to three and R_8 is selected from the group consisting of hydrogen and C_1–C_3 alkyl, the dashed bonds represent a single bond or a double bond which can be in the cis or trans configuration, A is an alkylene or alkenylene radical having from two to seven carbon atoms, which radical may be substituted with one or more hydroxy, oxo, alkyloxy or alkylcarboxy groups containing 1 to 10 carbon atoms in the alkyl moieties, B is a methyl radical or a cycloalkyl radical having from three to seven carbon atoms, or an aryl radical selected from the group consisting of aryl and monoheteroaryl radicals having from 4 to 10 carbon atoms wherein the heteroatom is selected from the group consisting of nitrogen, oxygen and sulfur atoms, any of the groups defining B may be substituted by radicals from the group consisting of halo, nitro, amino, thiol, hydroxy, alkyloxy and alkylcarboxy containing 1 to 10 carbon atoms in the alkyl moieties, and R_1 and R_2 are independently selected from the group consisting of hydryl, hydroxy and 1–20 carbon alkyl ester derivatives thereof, or a pharmaceutically acceptable salt thereof.

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5,328,934

RECYCLING CELLULOSE ESTERS FROM THE WASTE FROM CIGARETTE MANUFACTURE

David A. Schiraldi, Charlotte, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 27, 1992, Ser. No. 967,088
Int. Cl.[5] C08J *11/02, 11/04, 11/06, 11/08*
U.S. Cl. 521—40 8 Claims

1. A process for recycling the waste from the manufacture of filtered cigarettes, said process comprising the steps of:
providing a waste stream from the manufacture of filtered cigarettes, the waste stream including tobacco, cellulose acetate polymer, and paper;
separating a substantial portion of the cellulose acetate polymer from the waste stream; and
contacting the cellulose acetate polymer with a sufficient volume of fluid to extract contaminants therefrom; the fluid being under pressure and temperature conditions such that the fluid is a supercritical or near supercritical fluid.

5,328,935

METHOD OF MAKIG A SUPERABSORBENT POLYMER FOAM

Dean Van Phan, West Chester, and Paul D. Trokhan, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 26, 1993, Ser. No. 37,803
Int. Cl.[5] C08J *9/20, 9/28*
U.S. Cl. 521—64 21 Claims

1. A method of making an open-celled superabsorbent polymer foam, the method comprising the steps of:
(I) forming a reaction mixture comprising:
(a) a substantially water-soluble unsaturated monomer comprising neutralized carboxyl groups;
(b) a substantially water-soluble internal crosslinking agent capable of reacting with said monomer to form a superabsorbent polymer material; and
(c) a solvent selected from the group consisting of water, a substantially water-soluble solvent, and mixtures thereof;
(II) dispersing a substantially water-insoluble blowing agent in said reaction mixture to form a dispersion of particles of said blowing agent in said reaction mixture, said blowing agent having a vaporization temperature at a pressure of 1 atmosphere in the range of about −20° C. to about 100° C.;
(III) stabilizing said dispersion to form a stable dispersion of said blowing agent particles in said reaction mixture;
(IV) expanding said blowing agent particles to form an expanded structure, wherein said expansion step comprises: (a) increasing the temperature of said stable dispersion to a temperature which is greater than or equal to the vaporization temperature of said blowing agent, less than or equal to the activation temperature of said reaction mixture, and less than the vaporization temperature of said solvent; and/or (b) decreasing the pressure on said stable dispersion;
(V) reacting said monomer and said internal crosslinking agent to form a superabsorbent polymer material; and
(VI) controlling said dispersion step (II), said stabilization step (III), said expansion step (IV) and said reaction step (V) to form a superabsorbent polymer foam comprising a plurality of mutually connected struts of said superabsorbent polymer material to form open cells such that the foam has:
(a) a surface area to mass ratio of at least about 0.2 m^2/g;
(b) an average cell size of less than about 100 microns; and
(c) a density of less than about 0.5 g/cm^3.

5,328,936

POLYMERIZATION PROCESS FOR MAKING POROUS POLYMERIC PARTICLES

Paul J. Leifholtz, Bensalem, and Thomas E. Meteyer, Gwynedd Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 1, 1993, Ser. No. 12,082
Int. Cl.[5] C08J *9/28;* C08F *2/20, 8/36*
U.S. Cl. 521—65 27 Claims

1. A process for making porous polymeric particles, comprising:
suspending a discontinuous organic phase in a continuous aqueous phase;
said organic phase comprising:
an ethylenically unsaturated monomer;
a water soluble phase extender selected from the group consisting of water, methanol, ethanol, n-propanol, 2-propanol, tert-butanol and acetone; and
a surfactant in an amount effective to solubilize the water soluble phase extender in the monomer; and
said aqueous phase comprising diffusion barrier means dispersed in the aqueous phase, for limiting mass transfer of the phase extender from the organic phase to the aqueous phase; and
polymerizing the ethylenically unsaturated monomer to form the porous polymer particles.

5,328,937

FOAM BASED CORK SUBSTITUTE

Lawrence A. Cascino, South Bend, Ind., assignor to Gaska Tape, Inc., South Bend, Ind.

Filed Apr. 14, 1993, Ser. No. 47,506
Int. Cl.[5] C08J *9/30*
U.S. Cl. 521—73 12 Claims

1. A foam layer comprising:
100–120 parts by weight of a foamable vinyl chloride resin;
40–50 parts by weight of a phthalate plasticizer;
35–50 parts by weight of ceramic fibers of a length between 5 microns–30 microns and a thickness of between 0.5 microns–10 microns; and
a blowing agent wherein said foam layer is possessed of strength and recovery properties similar to those of natural cork.

5,328,938

ON-SITE GENERATION OF POLYURETHANE FOAM USING AN HCFC AS A SOLE BLOWING AGENT

Todd W. Wishneski, Cheshire, and Wade T. Petroskey, North Haven, both of Conn., assignors to BASF Corporation, Parsippany, N.J.

Division of Ser. No. 24,881, Mar. 1, 1993. This application Jul. 26, 1993, Ser. No. 96,503
Int. Cl.[5] C08J *9/14*
U.S. Cl. 521—78 10 Claims

1. A process for producing, by means of a portable foaming apparatus having a static mixer, a polyurethane foam comprising reacting a reaction mixture comprised of a polyol, an organic isocyanate, a foaming/frothing agent, and a reaction catalyst, said reaction mixture being reacted in said portable foaming apparatus comprised of
a) a first supply tank for supplying isocyanate reactant,
b) a second supply tank for supplying other polyurethane foam forming reactants,
c) a nitrogen pressure tank having a valved outlet in communication with inlets to the first and second supply tanks,
d) a static mixer having one outlet and two inlets communicating via conduits with outlets on the first and second supply tanks, and
e) adjustable flow control units interposed in the conduits linking the supply tanks with the static mixer,
wherein monochlorodifluoromethane is used as the sole foaming/frothing agent in said reaction mixture, said polyol comprises a polyether polyol having an average of between four and eight active hydrogens per molecule and a hydroxyl number ranging from about 300 to about 700, with the proviso that said polyether polyol contains no polyoxyalkylated glycerine having an OH number of from about 200 to about 300, in order to produce an essentially closed-cell rigid or semi-rigid polyurethane foam.

5,328,939

RIGID MATERIALS HAVING HIGH SURFACE AREA AND LOW DENSITY

Tammy Smith, Belle Mead, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Apr. 27, 1993, Ser. No. 54,114
Int. Cl.[5] C08B *37/08*
U.S. Cl. 521—187 7 Claims

1. A crosslinked porous body comprising a nitrogen-containing polymer crosslinked with an anionic salt solution and further crosslinked with a covalent-crosslinking agent selected from the group consisting of dialdehydes, aromatic dihalides, formaldehyde, epichlorohydrin, imididates, disulfonyl chlorides, diacid halides, aliphatic dihalides, bisepoxides, diesters, diazides, carbodiimides, aromatic and aliphatic diisocyanates, aromatic and aliphatic diisothiocyanates, aromatic bis-azido compounds, 1-fluoro-2-nitro-4-azidobenzene, p-azidophenacyl bromide, N-(azidonitrophenyl)-γ-aminobutyrate hydroxysuccinimide ester, genipin, butene-3,4-oxide, pentafluorobenzaldehyde, chlorobenzaldehyde, fluorobenzaldehyde, and mixtures thereof, wherein said porous body has an apparent bulk density of equal to or less than about 0.6 g/cm^3 and a surface area of at least 5 m^2/g.

5,328,940

RADIATION-CURABLE COMPOSITIONS CONTAINING HYDROXY-TERMINATED POLYURETHANES AND AN EPOXY COMPOUND

David J. Zimmer, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jul. 20, 1992, Ser. No. 917,566
Int. Cl.[5] C08F *2/50;* C09J *163/00, 175/06, 175/08*
U.S. Cl. 522—31 18 Claims

1. A radiation-curable composition comprising an epoxy compound, a hydroxy-terminated polyurethane and a photoinitiator wherein the hydroxy-terminated polyurethane is prepared by the reaction of at least one compound selected from the group consisting of polyesters and polyethers having a molecular weight of about 300 to about 10,000 and having at least two hydroxy groups with less than molar amounts of a low molecular weight diisocyanate in a molar ratio of hydroxy group to isocyanate group ranging from about 1.01:1.00 to 3:1.

5,328,941

ORGANOPOLYSILOXANE COMPOSITION FOR THE FORMATION OF A CURED RELEASE FILM

Masushi Hayashi, Saitama; Nobuo Kaiya, and Shosaku Sasaki, both of Chiba, all of Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 81,044
Claims priority, application Japan, Jun. 29, 1992, 4-194879
Int. Cl.[5] C08F *2/50;* C08G *77/28*
U.S. Cl. 522—33 9 Claims

1. An organopolysiloxane composition for the formation of a cured release film wherein said organopolysiloxane composition comprises
(A) 100 weight parts of an organopolysiloxane that contains in each molecule at least 2 higher alkenyl groups represented by the formula

$$H_2C{=}CH{-}(CH_2)_n{-}$$

wherein n has a value of 2 to 8,
(B) 1 to 500 weight parts of an organopolysiloxane that contains at least 2 mercaptoalkyl groups in each molecule,
(C) 20 to 300 weight parts of an organopolysiloxane selected from the group consisting of organopolysiloxanes that contain in each molecule 1 higher alkenyl group with the general formula

$$H_2C{=}CH{-}(CH_2)_n{-}$$

wherein n=2 to 8 and organopolysiloxanes that contain 1 mercaptoalkyl group in each molecule, and
(D) 0.1 to 50 weight parts of a photosensitizer.

5,328,942

SEED FILM COMPOSITIONS

Ikbal A. Akhtar, Watertown, and Harold R. Sisken, Cheshire, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Continuation-in-part of Ser. No. 732,844, Jul. 19, 1991, abandoned. This application Jul. 21, 1992, Ser. No. 918,724
Int. Cl.[5] C08L *1/00, 1/26;* A61K *9/16;* A01C *1/06*
U.S. Cl. 524—35 10 Claims

1. A composition comprising:
a cellulosic polymer;
a polyalkylene oxide polymer plasticizer having a viscosity average molecular weight of at least about 150,000; and
a glycol.

5,328,943

ASPHALT COMPOSITIONS FOR PAVEMENT

Masao Isobe, and Yoshio Aizawa, both of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 918,822
Claims priority, application Japan, Jul. 24, 1991, 3-207366
Int. Cl.[5] C08L *95/00*
U.S. Cl. 524—70 7 Claims

1. An asphalt composition for pavement which comprises:
(a) 82% to 96% by weight of an asphalt;
(b) 3% to 12% by weight of a Component (A) selected from the group consisting of a styrene-butadiene block copolymer, a styrene-isoprene block copolymer and a styrene-butadiene rubber; and
(c) 1% to 6% by weight of a Component (B) which is a low molecular weight polypropylene having an average molecular weight of 500–10,000, a melting point of 80° C. to 170° C., and a 160° C. viscosity of less than 500 cp.

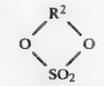
5,328,944

CYANOACRYLATE ADHESIVES WITH IMPROVED CURED THERMAL PROPERTIES

Shabbir Attarwala, West Hartford, and Philip T. Klemarczyk, Collinsville, both of Conn., assignors to Loctite Corporation, Hartford, Conn.

Filed Jul. 14, 1992, Ser. No. 913,139
Int. Cl.[5] C08K *5/45, 5/41, 5/42*
U.S. Cl. 524—83 21 Claims

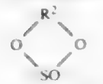
1. In a cyanoacrylate monomer adhesive formulation the improvement wherein the formulation includes an effective amount for enhancing the thermal resistance of the cured polymer of a sulfur containing compound of the formula:

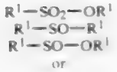


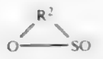
$$R^1O{-}SO{-}OR^1$$

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-continued







where R^1 and R^2 are, respectively, monovalent and divalent hydrocarbon groups which may be optionally substituted with halogen, NO_2, oxo (=O), CN, alkoxy, hydroxy, acyloxy or SO_2 or interrupted by one or more ether oxygen atoms.

8. A formulation as in claim 1 wherein said sulfur-containing compound is a cyclic sultinate

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5,328,945

RESIN COMPOSITION OF POLYPHENYLENE ETHER AND POLYAMIDE

Yasumasa Norisue, Hiratsuka; Goro Shimaoka, Yokkaichi, and Hideo Uno, Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 989,827

Claims priority, application Japan, Dec. 17, 1991, 3-353226

Int. Cl.[5] C08K *5/09*; **C08F** *283/08*; **C08G** *63/48*

U.S. Cl. 524—399 **17 Claims**

1. A polyphenylene ether/polyamide resin composition comprising:

(A) polyphenylene ether modified with an unsaturated carboxylic acid having (a) an ethylenically unsaturated double bond and (b) either a carboxyl group or an acid anhydride group in the molecule,

(B) 6,6-nylon, and

(C) 6-nylon,

whereas on the basis of a total amount of the components (A), (B) and (C), the amount of the component (A) is 20 to 70% by weight; the total amount of the components (B) and (C) is 30 to 80% by weight; and the amount of the component (C) per 100 parts by weight of the component (B) is 10 to 100 parts by weight, and wherein the 6-nylon as used in component (C) has a relative viscosity (η_r) in the range of from 2.2 to 3.0.

5,328,946

SOLVENTS FOR TETRAFLUOROETHYLENE POLYMERS

William H. Tuminello, Newark, and Robert J. Cavanaugh, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 751,481, Aug. 19, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 936,449

Int. Cl.[5] C08J *5/02*

U.S. Cl. 524—462 **13 Claims**

1. A composition, comprising, a solution of a polymer containing tetrafluoroethylene units dissolved in a solvent which is a perfluorinated cycloalkane provided that:

said solvent may be substituted with one or more perfluoroalkyl and perfluoroalkylene groups, but the total number of carbon atoms in said perfluoroalkyl and perfluoroalkylene groups is less than the total number of ring carbon atoms in said solvent;

the critical temperature of said solvent is above 340° C.; and the melting point of said polymer is about 250° C. or more.

5,328,947

TWO-PART ADHESIVE

Koichi Taguchi; Kinpei Iwata, and Hideki Matsudo, all of Shibukawa, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,137

Claims priority, application Japan, Dec. 27, 1991, 3-359238

Int. Cl.[5] C09J *1/00, 4/02, 4/06, 175/04*

U.S. Cl. 524—850 **12 Claims**

1. A two-part adhesive consisting of a first liquid comprising 100 parts by weight of at least one polymerizable vinyl monomer and from 0.1 to 20 parts by weight of an organic peroxide and a second liquid comprising 100 parts by weight of at least one polymerizable vinyl monomer and from 0.05 to 15 parts by weight of a reducing agent, wherein either one or both of the first and second liquids contain from 0.4 to 5% by weight of water, and the content of water is more than 0.2% by weight based on the total amount of the first and second liquids wherein at least one of the polymerizable vinyl monomers in each of the first and second liquids is a (meth)acrylate.

5,328,948

STABILIZATION OF HALOPOLYMERS WITH IONOMERS

Chii-Shu Chen, Parsippany, N.J., and L. Lawrence Chapoy, Lesa, Italy, assignors to Ausimont, U.S.A., Inc., Morristown, N.J.

Filed Sep. 23, 1992, Ser. No. 948,599

Int. Cl.[5] C08K *5/09, 5/42, 5/3415*

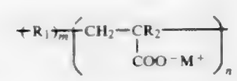
U.S. Cl. 524—94 **23 Claims**

1. A composition comprising:

an ethylene/chlorotrifluoroethylene copolymer; and

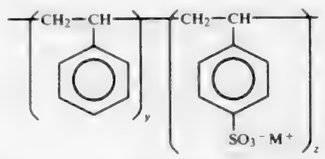
an effective stabilizing amount of (a) an ionomer selected from the group consisting of:

(i) a salt of an acrylic acid-containing polymer having the following structural formula:



, wherein R_1 is an alkyl group having from 2 to 4 carbon atoms, R_2 is hydrogen or methyl, m is from about 10 to about 4,000, n is from about 5 to about 2,000 and M+ is a metal cation; and

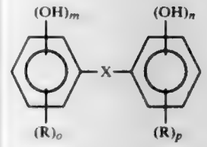
(ii) a sulfonated polystyrene having the following structural formula:



wherein y is from about 2 to about 2,000, and z is from 1 to about 1,000; and M+ is a metal cation; and

(b) an effective stabilizing amount of at least one compound selected from the group consisting of:

(i) a transesterification reaction product obtained from an organic polyhydric phenol selected from the group consisting of 1,1,3-tri-(2-methyl-4-hydroxy-5-tert-butyl phenyl) butane, and a phenol of the formula:



, wherein X is selected from the group consisting of oxygen, sulfur, alkylene, alicyclidene, arylidene, and mixed alkylene-arylidene and alkylene-alicyclidene groups, wherein the aliphatic or cycloaliphatic portion of the molecule may be a straight or a branched chain, having from 1 to about 18 carbon atoms, and wherein each R may be the same or difference, and each R is independently selected from the group consisting of hydrogen and alkyl, straight or branched chain, and having from 1 to about 18 carbon atoms; and wherein m and n are integers from 1 to 5, and o and p are integers from 0 to 4, with the proviso that the sums of M+o and n+p may not exceed 5, and an organic phosphite triester free from phenolic hydroxyl groups, having up to about 60 carbon atoms obtained by transesterification of the phenol and phosphite at an elevated temperature sufficient to form a homogeneous mixture;

(ii) a thioester;

(iii) a phosphite;

(iv) dibutyl maleate;

(v) n-phenylmaleimide;

(vi) acenaphthylene;

(vii) sodium formate;

(viii) N,N-metaphenylene dimaleimide;

(ix) 9,10-dihydroanthracene;

(x) triallyl cyanurate;

(xi) triallyl isocyanurate; and

(xii) hindered phenolic antioxidants.

5,328,949

SILICA REINFORCED RUBBER COMPOSITION FIELD

Paul H. Sandstrom, Tallmadge; Richard G. Bauer, Kent; Donald J. Burlett, Wadsworth, and Mark S. Sinsky, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 79,190, Jun. 18, 1993, abandoned. This application Dec. 2, 1993, Ser. No. 160,648

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—262 **10 Claims**

1. A rubber composition comprised of (A) 100 parts by weight of at least one diene-based elastomer, (B) about 5 to about 90 phr particulate silica, (C) about zero to about 80 phr carbon black, and (D) a silica coupler selected from (i) dithiodipropionic acid or from (ii) a combination of about 95 to about 25 weight percent dithiodipropionic acid and, correspondingly, about 5 to about 75 weight percent bis- (3-triethoxysilylpropyl) tetrasulfide; wherein the weight ratio of said silica coupler to silica is in a range of about 0.01/1 to about 0.2/1; wherein the weight ratio of silica to carbon black, where the rubber composition contains carbon black, is at least about 0.1/1 and wherein the total of silica and carbon black, where the rubber composition contains carbon black, is in a range of about 30 to about 120.

5,328,950

POLYPROPYLENE RESIN COMPOSITIONS

Sachio Yokote; Yoichi Kawai, and Masaki Misumi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

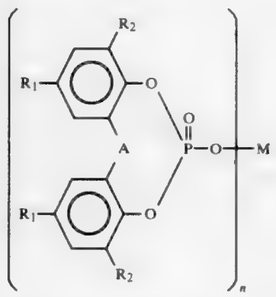
Division of Ser. No. 655,353, Feb. 22, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 24,858

Claims priority, application Japan, Jul. 11, 1989, 1-177024

Int. Cl.[5] C08K *5/52*

U.S. Cl. 524—141 **3 Claims**

1. A molded product which is irradiated with radiant rays for sterilization and which accommodates aqueous solutions, said molded product being made from a polypropylene resin composition comprising 100 parts by weight of a polypropylene resin, 0.01 to 1.0 part by weight of a metal diarylphosphate represented by the following general (I):



wherein R_1 and R_2 each represents a hydrogen atom or an alkyl group; M represents an alkali metal or an alkaline earth metal; n is an integer of 1 or 2; and A represents an alkylidene group; and 0.001 to 1.0 part by weight of a hydroxide of an alkali metal, a hydroxide of an alkaline earth metal or aluminum hydroxide, wherein said polypropylene resin composition inhibits the formation of floating matter in an extract obtained by immersing the polypropylene resin composition in hot water and cooling the extract and wherein the polypropylene resin composition upon irradiation with radiant rays for sterilization resists a reduction in pH of an extract obtained in a promoted hot water-extraction test.

5,328,951

ADDITIVE FOR INCREASING THE SURFACE ENERGY OF MOLDING AND EXTRUSION GRADE POLYETHYLENE

Eric S. Gardiner, Westtown, N.Y., assignor to Arizona Chemical Company, Panama City, Fla.

Continuation of Ser. No. 829,981, Feb. 3, 1992, Pat. No. 5,240,985, which is a continuation of Ser. No. 583,571, Sep. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 415,626, Oct. 2, 1989, abandoned. This application Jul. 1, 1993, Ser. No. 86,619

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—287 **5 Claims**

1. A composition for increasing surface energy of a polyolefin, said composition having the structure:

$$RA(CHR^2)[CH_2]_nA)_mR^1$$

wherein R and R^1 are selected from the group consisting of the alkyl, aryl, alkylaryl, acyl and arylacyl derivatives of an aliphatic or aliphatic/aromatic mono-acid with a molecular weight of from about 150 to about 500 Daltons, A is an ester group, R^2 is selected from the group consisting of H, CH_3 and C_2H_5, n is from 0 to 3 and m is from 2 to 20, wherein the

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composition is blended with the polyolefin in the range of from about 0.5% to about 10% based on the weight of the entire composition to form a polyolefinic material with an increased surface energy

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5,328,952

MULTI-STAGE POLYMER LATEX CEMENT MODIFIER AND PROCESS OF MAKING

John G. Brodnyan, Langhorne; Shang-Jaw Chiou, Lower Gwynedd, and Mark P. de Grandpre, North Wales, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 14, 1992, Ser. No. 837,196

Int. Cl.[5] C08F *2/22, 265/02;* C08K *5/10;* C04B *24/06*

U.S. Cl. 525—301 10 Claims

1. A multi-stage polymer composition produced by a two-stage sequential aqueous emulsion polymerization method comprising

a) forming in a first stage a mixture of monomers comprising from about 90 to about 100 percent of an alkyl acrylate or methacrylate and from about 0 to 10 percent of a carboxylic acid,

b) polymerizing the mixture to form the insoluble polymer,

c) forming in a second stage a mixture of monomers comprising from about 40 to 80 percent of an alkyl acrylate or methacrylate and from about 5 to 60 percent of a carboxylic acid and from about 5 to 60 percent of a hydroxyalkyl ester of a carboxylic acid,

d) adding the second-stage monomers mixture to the polymerized first stage monomers, and

e) polymerizing the second stage monomers to form a soluble polymer wherein the weight ratio of the insoluble polymer is from about 90–99 and the weight ratio of the soluble polymer is from about 1–10 as a percentage of the final polymer

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5,328,953

RUBBER COMPOSITIONS WITH ALKOXYALKANOIC ACID HAVING IMPROVED PROCESSABILITY VULCANISATE PROPERTIES

Eric R. Lynch, Brussels, Belgium, assignor to Monsanto Europe S.A./N.V., Brussels, Belgium

Continuation of Ser. No. 796,503, Nov. 22, 1991, abandoned. This application Sep. 11, 1992, Ser. No. 942,881

Claims priority, application European Pat. Off., Nov. 28, 1990, 90870234.3

Int. Cl.[5] C08C *19/20*

U.S. Cl. 525—332.7 4 Claims

1. A rubber composition comprising an unvulcanised rubber polymer, sulfur or a sulfur donor, a benzothiazole-2-sulphenamide accelerator, and, as an agent for modifying rubber properties (RMA) an alkyloxy alkanoic acid or salt having the formula

$$R^1—O—(CR^3R^4)_x—CO_2R^2$$

where R^1 represents a straight-chain alkyl group containing from 10 to 20 carbon atoms, R^2 represents hydrogen, or an equivalent of zinc, each of R^3 and R^4 represents independently hydrogen or an alkyl group, having from 1 to 22 carbon atoms and x has a value of from 1 to 10.

5,328,954

ENCRUSTING AND BACTERIAL RESISTANT COATINGS FOR MEDICAL APPLICATIONS

Shantha Sarangapani, Walpole, Mass., assignor to ICET, Inc., Norwood, Mass.

Filed Apr. 16, 1993, Ser. No. 48,489

Int. Cl.[5] C08L *75/00*

U.S. Cl. 524—589 28 Claims

1. A coating for polymeric products used in medical applications, said coating comprising:

a reaction product formed by a covalent linkage of a hydrophilic polyurethane pre-polymer and aminopolycarboxylic acid

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5,328,955

COLLAGEN-POLYMER CONJUGATES

Woonza Rhee, Palo Alto; Donald G. Wallace, Menlo Park, both of Calif.; Alan S. Michaels, Boston, Mass.; Ramon A. Burns, Jr., Fremont, Calif.; Louis Fries, Los Altos, Calif.; Frank DeLustro, Belmont, Calif., and Hanne Bentz, Newark, Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Jul. 30, 1992, Ser. No. 922,541

Int. Cl.[5] C08G *63/48;* A61F *13/00, 2/00*

U.S. Cl. 525—54.1 25 Claims

1. A conjugate comprising collagen chemically conjugated by an ether bond to a synthetic nonimmunogenic hydrophilic polymer

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5,328,956

PROPYLENE (CO)POLYMER AND PROCESS FOR THE PREPARATION OF THE SAME

Yoshihiro Hasebe; Takayuki Amiya, both of Wakayama, and Yutaka Yasuda, Osaka, all of Japan, assignors to Kao Corporation, Tokyo, Japan

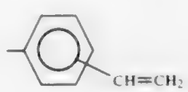
Filed Nov. 4, 1991, Ser. No. 787,215

Claims priority, application Japan, Nov. 13, 1990, 2-307791; Dec. 28, 1990, 2-409124

Int. Cl.[5] C08G *63/91;* C08F *236/20, 8/18, 4/68*

U.S. Cl. 525—64 16 Claims

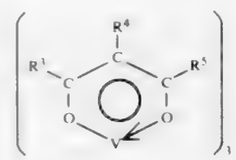
1. A process for the preparation of a propylene (co)polymer having a polymerizable group represented by the following general formula



(I)

at one terminal thereof, comprising the steps of:

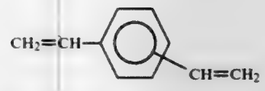
(a) (co)polymerizing propylene in the presence of polymerization catalysts comprising a catalyst component (x) containing a vanadium compound represented by the general formula (III):



(III)

wherein R^3 to R^5 each represents a hydrogen atom or a hydrocarbyl group having 1 to 8 carbon atoms, except a case wherein the three groups are simultaneously hydrogen atoms, and an organometallic compound (y) having a metal of a Group I, II or III of the periodic table to form a propylene (co)polymer having a reactive terminal;

(b) reacting the propylene (co)polymer having a reactive terminal of step (a) with an aromatic divinyl compound represented by the following general formula (IV):



(IV)

wherein the relative position of the two substituents on the benzene ring may be any of the o-, m- and p-positions; and (c) reacting the resulting propylene (co)polymer of step (b) with a proton donor or a halogen molecule.

5,328,957

POLYURETHANE-ACRYLIC INTERPENETRATING POLYMER NETWORK ACOUSTIC DAMPING MATERIAL

Usman A. Sorathia, Arnold, and Timothy L. Dapp, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1991, Ser. No. 758,972

Int. Cl.[5] C08F *8/30*

U.S. Cl. 525—123 8 Claims

1. An improved acoustic damping material, comprising:

an interpenetrating polymer network having a soft polymer component made of polyurethane and a hard polymer component made of an acrylic polymer in a predetermined ratio of soft polymer component to hard polymer component such that the soft polymer component content is from about 50 to about 90 percent by weight and the hard polymer component content is from about 50 to about 10 percent by weight;

wherein said polyurethane is made by polymerization of an aromatic diisocyanate and a polyalkylene ether glycol in the presence of 1,4-butanediol and 1,1,1-trimethylol propane, said aromatic diisocyanate being selected from the group consisting of 4,4'-diphenylmethane diisocyanate, 2,4-toluene diisocyanate, 2,6-toluene diisocyanate, and any mixture thereof, and said polyalkylene ether glycol being selected from the group consisting of polyethylene ether glycol, polypropylene ether glycol, and polytetramethylene ether glycol, said polytetramethylene ether glycol having a molecular weight between about 650 and about 2000; and

wherein said acrylic polymer is made by polymerization of the alkyl ester of an ethylenically unsaturated carboxylic acid and the alkylene diester of an ethylenically unsaturated carboxylic acid in the presence of dimethyl aniline and benzoyl peroxide, said ethylenically unsaturated carboxylic acid being selected from the group consisting of acrylic acid and methacrylic acid, said alkyl ester being selected from the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, and amyl ester, and said alkylene diester being selected from the group consisting of ethylene, propylene, and tetramethylene glycol diester.

5,328,958

THERMOPLASTIC RESINS BASED ON VINYL AROMATIC/VINYL PHOSPHONIC ACID COPOLYMERS AND AMINE-TERMINATED POLYMERS

Shao-Hua Guo, and Roger A. Grey, both of West Chester, Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Filed May 25, 1993, Ser. No. 67,496

Int. Cl.[5] C08F *20/70*

U.S. Cl. 525—187 21 Claims

1. A thermoplastic resin composition comprising the reaction product of:

(a) a copolymer of a vinyl aromatic monomer and a vinyl phosphonic acid monomer; and

(b) an amine-terminated polymer having a glass-transition temperature less than about 0° C. in an amount effective to impart flexibility to the resin;

wherein the reaction product contains one or more ammonium linkages.

5,328,959

GOLF BALL COVER COMPOSITIONS

Michael J. Sullivan, Chicopee, Mass., assignor to Lisco, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 865,212, Apr. 8, 1992, which is a continuation-in-part of Ser. No. 559,177, Jul. 27, 1990, Pat. No. 5,120,791. This application Jul. 9, 1992, Ser. No. 911,157

The portion of the term of this patent subsequent to Dec. 5, 2006, has been disclaimed.

Int. Cl.[5] A63B *37/12;* C08K *3/14, 3/30;* C08L *33/02*

U.S. Cl. 525—196 12 Claims

1. A golf ball comprising a core and a cover, wherein said cover comprises:

from about 90 to about 70 percent by weight of at least one hard ionomer, wherein said hard ionomer is a lithium, sodium or zinc salt of the copolymer of an olefin having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, and wherein said hard ionomer has a hardness greater than 50 on the Shore D scale and a flexural modulus of from about 15,000 to about 70,000 psi; and,

from about 10 to about 30 percent by weight of at least one soft ionomer, wherein said soft ionomer is a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, methacrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms, and wherein said soft ionomer has a hardness from about 20 to about 40 on the Shore D scale and a flexural modulus of from about 2,000 to 10,000 psi.

5,328,960

OIL SOLUBLE IONIC GRAFT COPOLYMERS

Frederick C. Loveless, Yardley, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 16, 1992, Ser. No. 945,466

Int. Cl.[5] C08L *23/32*

U.S. Cl. 525—203 9 Claims

1. An oil soluble ionic graft copolymer comprising

5 to 35 weight percent polyvinylpyridine consisting essentially of vinylpyridine and

65 to 95 weight percent a sulfonated polyisobutylene or salts thereof,

wherein the sulfonated polyisobutylene is sulfonated only once at most on each molecule and wherein the copolymer is characterized by a molar ratio of nitrogen, provided by said polyvinylpyridine, to sulfur, provided by said sulfonated polyisobutylene or salts thereof, which ranges from 20:1 to 1:1 wherein the sulfonated polyisobutylene contains 0.85 to 1.0 double bonds per molecule, and each molecule is sulfonated once at most.

5,328,961

ELECTRICALLY CONDUCTIVE POLYTHIOPHENECARBONYL POLYMER NETWORKS

Giuseppe Rossi, Dearborn; Susan M. Ward, Ann Arbor; Henk van Oene, Westland, and Joseph W. Holubka, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,708

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] C08F *28/06*

U.S. Cl. 525—206 12 Claims

1. An electrically conductive polythiophenecarbonyl polymer network comprising conjugated crosslinking between polythiophenecarbonyl polymer segments.

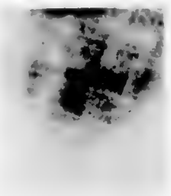
5,328,962
HIGH HEAT ACRYLICS

Jyi-Sheng J. Shen, Covina, Calif., assignor to ICI Acrylics, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 929,460, Aug. 12, 1992, which is a continuation of Ser. No. 679,742, Apr. 3, 1991, abandoned, which is a division of Ser. No. 322,615, Mar. 13, 1989, Pat. No. 5,073,615. This application Feb. 19, 1993, Ser. No. 20,294

Int. Cl.[5] **C08L** *33/06*

U.S. Cl. 525—228 **8 Claims**



1. A polymer blend comprising about 1 to 99% by weight of an acrylate-maleimide polymer and up to 99% by weight of poly (methyl methacrylate) polymer, whereby

the blend has optical properties substantially equal to the optical properties of conventional poly (methyl methacrylate); and

is miscible.

5,328,963
SULFUR VULCANIZED RUBBER COMPOUNDS CONTAINING MALEAMIC ACID

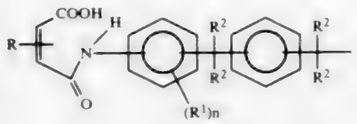
Joel Muse, Hudson; Paul H. Sandstrom, and Lawson G. Wideman, both of Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

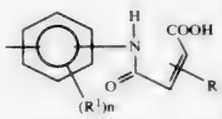
Division of Ser. No. 774,426, Oct. 10, 1991, Pat. No. 5,278,242. This application May 20, 1993, Ser. No. 63,816

Int. Cl.[5] **C08F** *265/10*; **C08G** *73/10*

U.S. Cl. 525—282 **5 Claims**

1. A sulfur vulcanized rubber compound comprising a sulfur vulcanized rubber, from about 0.1 to about 10.0 phr of a maleamic acid of the formula:





wherein R and R^1 are individually selected from the group of radicals consisting of hydrogen, an alkyl having 1 to 4 carbon atoms or a halogen; R^2 is selected from the group of radicals consisting of 1 to 12 carbon atoms and n has a value of from zero to 4.

5,328,964

Patent Not Issued For This Number

5,328,965
CURABLE ORGANOSILICONE COMPOSITION

Ryuzo Mikami, and Tadashi Okawa, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 34,338

Int. Cl.[5] **C08L** *83/10*; **C09D** *183/10*; **C09J** *7/04*

U.S. Cl. 525—446 **5 Claims**

1. A curable organosilicon composition comprised of

(A) polyorganosiloxane-grafted polyester, wherein said polyester contains aliphatically unsaturated groups,

(B) organopolysiloxane that contains at least 3 silicon-bonded hydrogen atoms in each molecule, and

(C) hydrosilylation-reaction catalyst.

5,328,966
CURABLE RESIN COMPOSITION

Hisayuki Nagaoka, Ohta, Japan, assignor to Toshiba Silicone Co., Ltd., Japan

Filed Jul. 17, 1989, Ser. No. 380,824

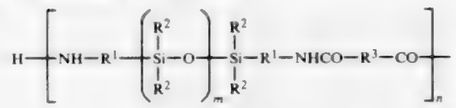
Claims priority, application Japan, Jul. 28, 1988, 63-188962

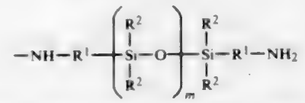
Int. Cl.[5] **C08F** *283/00*; **C08G** *77/00*; **C08L** *63/00*

U.S. Cl. 525—476 **3 Claims**

1. A curable resin composition comprising:

(a) 100 parts by weight of a siloxane-amide block copolymer represented by the formula:





where R^1 represents a substituted or unsubstituted divalent hydrocarbon group; each R^2 may be the same or different substituted or unsubstituted monovalent hydrocarbon group; R^3 represents a substituted or unsubstituted divalent aromatic hydrocarbon group; and m and n each represent a number of 1 or more;

(b) from 1 to 100 parts by weight of a crosslinking agent containing 2 or more epoxy groups; and

(c) up to 15 parts by weight of a curing catalyst.

5,328,967

Patent Not Issued For This Number

5,328,968
DERIVATIZATION OF ARYLENE SULFIDE POLYMERS

Dirk M. Sutherlin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 485,008, Feb. 26, 1990, Pat. No. 5,180,796. This application Nov. 13, 1992, Ser. No. 976,128

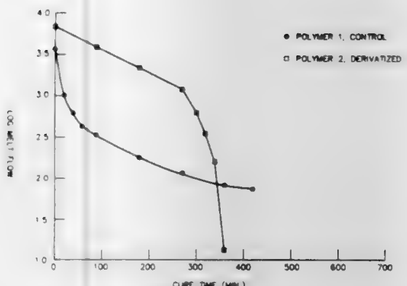
Int. Cl.[5] **C08G** *79/04*

U.S. Cl. 525—537 **13 Claims**

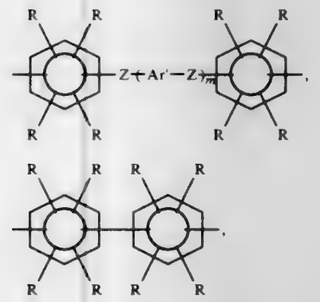
1. A process for the end-group derivatization of an arylene sulfide polymer comprising contacting:

(a) an arylene sulfide polymer which is characterized by the repeating unit —Ar—S— wherein Ar is selected from the group consisting of

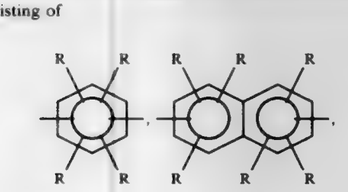




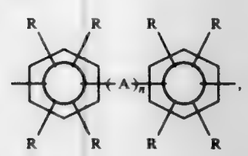
-continued



wherein Ar' is a divalent radical selected from the group consisting of



and



Z is selected from the group consisting of $—SO_2—$ and —CO—, m is 0 or 1, n is 0 or 1, A is selected from the group consisting of oxygen, sulfur, sulfonyl, and CR_2, wherein each R is selected from the group consisting of hydrogen and alkyl radicals having 1 to about 4 carbon atoms, the total number of carbon atoms in all of the R groups in the molecule being 0 to about 12,

(b) a compound having the formula



wherein R' is selected from the group consisting of an alkyl radical having 1 to about 17 carbon atoms, an aryl radical having 6 to about 16 carbon atoms, and combinations thereof, and X is selected from the group consisting of chlorine and bromine, and

(c) a solvent wherein said solvent is stable in the presence of said compound and said arylene sulfide polymer is soluble in said solvent, wherein said contacting is performed at an elevated temperature.

5,328,969
PROCESS FOR THE PREPARATION OF A HIGH MOLECULAR WEIGHT OLEFIN POLYMER

Andreas Winter, Glashütten/Taunus; Jürgen Rohrmann; Volker Dolle, both of Kelkheim, and Frank Küber, Oberursel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengellschaft, Frankfurt, Fed. Rep. of Germany

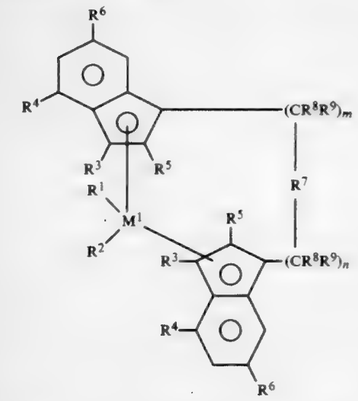
Filed Nov. 24, 1992, Ser. No. 980,643

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139596

Int. Cl.[5] **C08F** *4/64*

U.S. Cl. 526—127 **7 Claims**

1. A process for the preparation of an olefin polymer by polymerization or copolymerization of an olefin of the formula $R^a—CH=CH—R^b$, in which R^a and R^b are identical or different and are a hydrogen atom or a hydrocarbon radical having 1 to 14 carbon atoms, or R^a and R^b, with the atoms joining them, can form a ring, at a temperature of from −60° to 200° C., under a pressure of 0.5 to 100 bar, in solution, in suspension or in the gas phase, in the presence of a catalyst which is formed from a metallocene as the transition metal compound and a cocatalyst, which comprises using as the metallocene a compound of the formula I



(I)

in which

M^1 is a metal of group IVb of the periodic table,

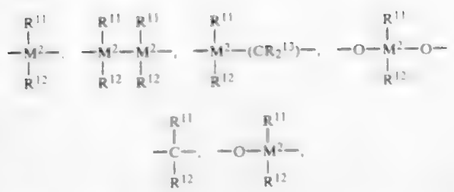
R^1 and R^2 are identical or different and are a hydrogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group or a halogen atom,

the radicals R^3 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, which can be halogenated, a C_6–C_{10}-aryl group, which can be halogenated, or a $—NR_2^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, in which R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^4 to R^6 are identical or different and have the meaning given for R^3, with the proviso that R^4 and R^6 are not hydrogen,

R^7 is

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$=BR^{11}$, $=AlR^{11}$, —Ge—, —Sn—, —O—, —S—, =SO, $=SO_2$, $=NR^{11}$, =CO, $=PR^{11}$ or =P (O) R^{11}

in which

R^{11}, R^{12} and R^{13} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-fluoroalkyl group, a C_6–C_{10}-aryl group, a C_6–C_{10}-fluoroaryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10}-alkenyl group, a C_7—C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group or a C_7–C_{40}-alkylaryl group, or R^{11} and R^{12}, or R^{11} and R^{13}, in each case with the atoms joining them, form a ring,

M^2 is silicon, germanium or tin,

R^8 and R^9 are identical or different and have the meaning given for R^{11} and

m and n are identical or different and are zero, 1 or 2, m plus n being zero, 1 or 2.

5,328,970

LIVING POLYMERIZATION METHOD

Shohei Inoue, Tokyo; Takuzo Aida, Kashiwa; Masakatsu Kuroki; Tsuyoshi Watanabe, both of Tokyo, and Chicara Kawamura, Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

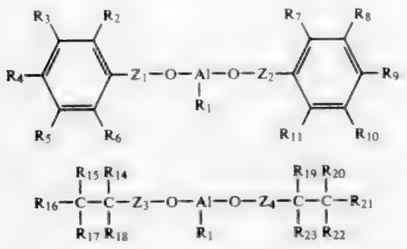
Filed Apr. 21, 1992, Ser. No. 871,699

Claims priority, application Japan, Apr. 22, 1991, 3-116539

Int. Cl.[5] C08F *4/44, 4/06, 4/52, 4/00, 124/00, 120/12*

U.S. Cl. 526—161 **18 Claims**

1. A living polymerization method for polymerizing at least one monomer selected from the group consisting of (meth)acrylic acid esters, epoxides and lactones using a metal porphyrin complex as a polymerization initiator, wherein said metal porphyrin complex has a central metal site occupied by a metal selected from the group consisting of magnesium, aluminum, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, ruthenium, rhodium, palladium and cadmium, and said living polymerization is performed using as a cocatalyst at least one organic aluminum compound selected from the group consisting of compounds represented by general formulae (I) and (II) below:



(I)

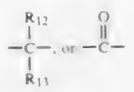
(II)

wherein R_1 represents a halogen atom, a C_1–C_8 alkyl group, a C_1–C_8 haloalkyl group, a C_2–C_8 alkenyl group, a C_6–C_{14} aryl group or a C_7–C_{20} aralkyl group;

R_2, R_4, R_6, R_7, R_9 and R_{11} independently represent a hydrogen atom, a halogen atom, a C_1–C_{20} alkyl group, C_1–C_{20} alkoxy group, or a C_6–C_{14} aryl group;

R_3, R_5, R_8 and R_{10} independently represent a hydrogen atom, or a halogen atom;

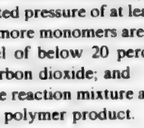
Z_1 and Z_2 independently represent a simple chemical bond,



where, R_{12} and R_{13} independently represent a hydrogen atom, a C_1–C_{20} alkyl group or a C_6–C_{14} aryl group;

R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, R_{19}, R_{20}, R_{22} and R_{23} independently represent a hydrogen atom, a halogen atom, a C_1–C_{20} alkyl group, or a C_1–C_{20} alkoxy group; and

Z_3 and Z_4 independently represent chemical bond,



where, R_{12} and R_{13} have the same meanings as defined above.

5,328,971

COPOLYMERS OF EPOXYBUTADIENE AND MALEIMIDES

Richard W. Blevins, Rochester, and S. Richard Turner, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 998,489, Dec. 30, 1992, Pat. No. 5,302,680. This application Jan. 10, 1994, Ser. No. 179,282

Int. Cl.[5] C08F *2/06, 4/04, 4/34, 222/40, 224/00*

U.S. Cl. 526—209 **3 Claims**

1. A process for the preparation of a coplymer comprising polymerized repeating monomeric units of (a) 3,4-epoxy-1-butene and (b) a maleimide, which process comprises:

contacting (i) a butadiene monoepoxide reactant having up to about 12 carbon atoms with (ii) a maleimide reactant having up to about 24 carbon atoms;

said process being conducted in the presence of a free radical initiator at a temperature from about −10° C. to about 180° C.

5,328,972

PROCESS FOR PREPARING LOW MOLECULAR WEIGHT POLYMERS

Emmanuel A. Dada, Bensalem; Willie Lau, Ambler; Richard F. Merritt, Fort Washington, all of Pa.; Yi H. Paik, Princeton, N.J., and Graham Swift, Blue Bell, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 28, 1992, Ser. No. 952,386

Int. Cl.[5] C08F *4/34, 4/28, 20/06, 22/06, 22/02*

U.S. Cl. 526—227 **17 Claims**

1. A process for preparing polymers having weight average molecular weights below 5,000 comprising:

(a) forming a reaction mixture of one or more polymerizable monomers, and a free-radical initiator in supercritical carbon dioxide at an elevated temperature of at least 200° C. and an elevated pressure of at least about 3,500 psi such that the one or more monomers are present in the reaction mixture at level of below 20 percent by weight of the supercritical carbon dioxide; and

(b) maintaining the reaction mixture at said elevated temperature to form a polymer product.

5,328,973

RADIATION-SENSITIVE MIXTURE WITH A POLYMERIC BINDER CONTAINING UNITS OF α,β-UNSATURATED CARBOXAMIDES

Horst Roeschert, Ober-Hilbersheim; Georg Pawlowski, Wiesbaden, and Klaus-Juergen Przybilla, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

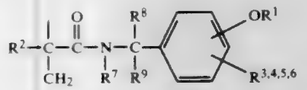
Filed Jul. 31, 1992, Ser. No. 922,507

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126409

Int. Cl.[5] C08F *20/60, 24/00, 30/08*

U.S. Cl. 526—262 **21 Claims**

1. A polymer comprising units of the formula (I)



(I)

in which

R^1 is an acid-labile protecting group,

R^2 is (C_1–C_4)-alkyl, halogenated-(C_1–C_4)-alkyl, halogen, CN, or hydrogen,

$R^{3,4,5,6}$ independently of one another are aliphatic, araliphatic or aromatic radicals each independently having 1 to 20 carbon atoms and each being unsubstituted or halogen substituted, halogen, hydroxyl or hydrogen,

R^7 is a hydrogen atom or a (C_1–C_4)-alkyl group, and

R^8 and R^9 are identical or different and are hydrogen, a (C_1–C_6)-alkyl group or a (C_6–C_{10}) aryl group.

18. A polymer as claimed in claim **1**, which further contains polymerized maleimide units.

5,328,974

PLATINUM CATALYST AND A CURABLE ORGANOPOLYSILOXANE COMPOSITION CONTAINING SAID PLATINUM CATALYST

Richard McAfee; James R. Adkins, and John C. Getson, all of Adrian, Mich., assignors to Wacker Silicones Corporation, Adrian, Mich.

Filed May 6, 1993, Ser. No. 58,339

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 **10 Claims**

1. A composition which is curable at an elevated temperature which comprises (a) an organopolysiloxane having an average of at least two silicon-bonded aliphatically unsaturated monovalent hydrocarbon radicals per molecule, (b) an orgnohydrogenpolysiloxane having at least two silicon-bonded hydrogen atoms per molecule, (c) a platinum catalyst, which is obtained by reacting a platinum halide with an organic compound having at least one —C≡C—group per molecule and (d) optionally, a filler.

5,328,975

ULTRAVIOLET RADIATION ABSORBING COATING

Michael E. Hanson, Harmar Township, Allegheny County; Robert M. Hunia, Kittanning, and Chia-Cheng Lin, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1993, Ser. No. 42,184

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—29 **18 Claims**

1. A coating composition for the absorption of ultraviolet radiation comprising the hydrolytic condensation polymerization reaction product of an organoalkoxysilane of the general formula

$$R_xSi(OR')_{4-x}$$

wherein R is an organic radical, R' is a low molecular weight alkyl radical and x is less than 4 and may be zero, and a titanium alkoxide or colloidal titania, wherein the molar ratio of titania to silica in the reaction product is from 0.1 to 0.5 and the absorbance of the coating at 320 nanometers is at least 0.5 per micron of coating thickness.

5,328,976

CARBON-CONTAINING BLACK GLASS MONOLITHS

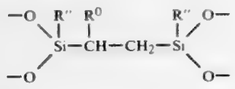
Roger Y. Leung, Schaumburg; Stephen T. Gonczy, Mount Prospect; Ming S. Shum, Des Plaines, and Joseph J. Zupancic, Bensenville, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 2,049, Jan. 9, 1987, Pat. No. 5,242,866. This application Dec. 23, 1991, Ser. No. 816,269

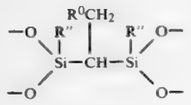
Int. Cl.[5] C08G *77/12*

U.S. Cl. 528—31 **2 Claims**

1. A polymer precursor to a black glass ceramic containing the moieties



or



where

R^o is an alkyl group having 1 to 18 carbon atoms

R'' is H, an alkyl group having 1 to 20 carbon atoms, or an alkene having 2 to 20 carbon atoms.

5,328,977

POLYMERIZATION CATALYST FOR THE PREPARATION OF POLY(ISOCYANATES)

Aaron D. Meltzer, Pittsburgh; Gary W. Munko, Coraopolis, and Harald Pielartzik, Pittsburgh, all of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Nov. 12, 1993, Ser. No. 151,227

Int. Cl.[5] C08G *18/22*

U.S. Cl. 528—56 **7 Claims**

1. In the process of preparing nylon-1 by the polymerization of isocyanates, the improvement comprising using a catalyst conforming to

$$(X)_nMe(OR)_m$$

where Me is titanium or zirconium, X is chlorine or bromine atom, R is an aliphatic radical having 1 to 20 carbon atoms and where the sum of m+n is 4 with the proviso that where Me is titanium n is 1 or 2, and where Me is zirconium n is 1–4.

5,328,978

TRIAZINE/FORMALDEHYDE RESIN

Manfred Schön, Rodgau; Jürgen Ott, Bad Vilbel; Uwe Kubillus, and Elif Tas, both of Weisbaden, all of Fed. Rep. of Germany, assignors to Cassella AG, Frankfurt, Fed. Rep. of Germany

Filed Oct. 28, 1993, Ser. No. 142,006

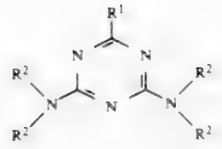
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1992, 4237515

Int. Cl.[5] C08G *12/30*

U.S. Cl. 528—254 **5 Claims**

1. Triazine/formaldehyde resin, comprising a compound of the general formula I

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I

wherein

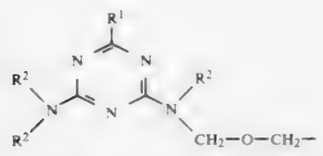
R^1 denotes di-(C_1–C_6)-alkylamino, dicyclohexylamino, diphenylamino, morpholino, piperidino or pyrrolidino,

and the four substituents of R^2 are selected from the groups consisting of

a) which denotes hydrogen,

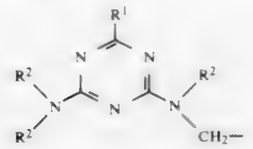
b) which denotes R^3OCH_2-, wherein R^3 denotes hydrogen or (C_1–C_4)-alkyl, and

c) which denotes a radical of the general formula II



II

and/or a radical of the general formula III



III

wherein R^1 and R^2 have the abovementioned meanings; and wherein the four substituents of R^2 from formula (I) consist of

0 to 3 substituents from group a);

1 to 4 substituents from group b); and

0 to 4 substituents from group c).

5,328,979

THERMOPLASTIC COPOLYIMIDES AND COMPOSITES THEREFROM

Frank Harris, and Patricia A. Gabori, both of Akron, Ohio, assignors to The University of Akron, Akron, Ohio

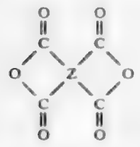
Filed Nov. 16, 1992, Ser. No. 976,484

Int. Cl.[5] C08G *69/26, 73/10*

U.S. Cl. 528—353 **18 Claims**

1. A process for improving the melt processibility of a thermoplastic copolyimide comprising the steps of:

(a) reacting one or more of dianhydrides of formula (I)



(I)

where Z is a tetravalent organic radical selected from the group consisting of a carbocyclic-aromatic containing radical and a hetero-cyclic aromatic containing radical where each anhydride group is located on an aromatic ring with the carbonyl units in an ortho orientation relative to one another;

(b) adding at least one first diamine of formula (II) wherein the first diamine has a basicity constant of less than 10^{-10},

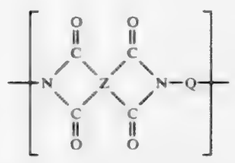
$$H_2N—Q—NH_2 \quad (II)$$

and at least one second diamine of formula (III) wherein the second diamine has a basicity constant of at least 10^{-10},

$$H_2N—Q'—NH_2 \quad (III)$$

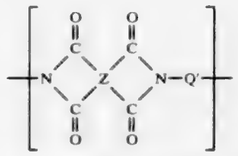
where Q is divalent organic radical selected independently from the group consisting of a carbocyclic aliphatic radical, a carbocyclic aromatic containing radical, and a heterocyclic containing radical, the term carbocyclic aromatic containing radical and heterocyclic aromatic containing radical used to define Q includes any radical which has the anhydride groups attached to one or more aromatic ring(s) and has the amine groups attached to one or more aromatic ring(s), and where Q' is an electron-deficient divalent heterocyclic group having a 5- or a 6-membered ring containing from 1–3 heteroatoms, at least one of the heteroatoms being nitrogen and further wherein a first diamine is capable of a transimidization reaction upon incorporation into the polyimide backbone, and wherein a second diamine is not capable of undergoing a transimidization reaction upon incorporation into the polyimide backbone, the first diamine being added in an amount of about 1–50 mole percent in relation to the second diamine; and

(c) forming from about 1–50 mole percent of a thermoplastic polyimide of repeating unit formula (IV),



(IV)

a balance of the thermoplastic polyimide of repeating unit formula (V),



(V)

the thermoplastic polyimide being melt processible at a pressure less than or equal to 250 psi, and capable of undergoing transimidization in the melt allowing for enhanced melt flow and the rearrangement of repeat unit sequences along the polymer backbone.

5,328,980

METHOD OF PREPARING POLY(ARYLENE SULFIDE) POLYMERS, POLYMERS AND POLYMER BLENDS

Owen H. Decker, Reading, Pa., and Michael C. Yu, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 3, 1992, Ser. No. 984,814

Int. Cl.[5] C08G *75/02*

U.S. Cl. 528—388 **15 Claims**

1. A process for producing arylene sulfide polymers comprising:

contacting an initiator compound, a halothiophenol compound, a polar organic compound, and a base at polymerization conditions;

wherein said initiator compound is represented by the formula $XR(RS)_nY$, where R is a divalent hydrocarbon radical selected from the group consisting of arylene, alkyl-substituted arylene, cycloalkyl substituted arylene, and aryl substituted arylene radicals having 6 to 24 carbon atoms; n is 1–5; X is a halogen selected from the group consisting of fluorine, chlorine, bromine, and iodine; and Y is $—NH_2$;

wherein said halothiophenol is represented by the formula XR'SH, where R' is a divalent hydrocarbon radical selected from the group consisting of arylene, alkyl-substituted arylene, cycloalkyl substituted arylene, and aryl substituted arylene radicals having 6 to 24 carbon atoms and X is a halogen selected from the group consisting of fluorine, chlorine, bromine, and iodine; and

said base is selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, and mixtures thereof.

5,328,981

RECOVERY OF POLY(ARYLENE SULFIDE KETONE) AND POLY(ARYLENE SULFIDE DIKETONE) RESINS

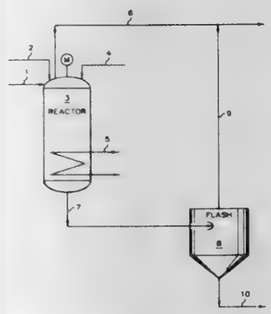
Afif M. Nesheiwat, 292-G Main St., Madison, N.J. 07940, and Jon F. Geibel, 2600 Mountain Rd., Bartlesville, Okla. 74003

Division of Ser. No. 459,011, Dec. 29, 1989, Pat. No. 5,091,509.

This application Nov. 19, 1991, Ser. No. 794,768

Int. Cl.[5] C08G *2/00*; C08F *6/00*; C08J *3/00*

U.S. Cl. 528—481 **20 Claims**



1. A process for preparing a particulate polymeric resin, having associated therewith improved handling, comprising the steps of:

(a) preparing in an enclosed first vessel a first slurry, wherein the solid component of said first slurry comprises a first particulate resin selected from the group consisting of poly(arylene sulfide ketone) and poly(arylene sulfide diketone) resins, and wherein the liquid component of said first slurry a polar organic compound;

(b) substantially liquifying said first particulate resin contained in said first slurry to form a first mixture which comprises said substantially liquified resin and said polar organic compound; and

(c) flashing said first mixture into a second vessel, wherein the internal pressure of said second vessel is substantially lower than that of said first enclosed vessel containing said heated first mixture, thereby removing a portion of said polar organic compound therefrom and simultaneously solidifying said substantially liquified resin to form a second particulate resin, wherein the handling of said second particulate resin is superior to the handling of said first particulate resin.

5,328,982

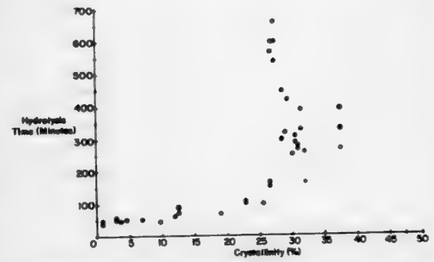
DEPOLYMERIZATION OF SUBSTANTIALLY AMORPHOUS POLYESTERS

George W. Tindall, Kingsport; Randall L. Perry, Bluff City, and Art T. Spaugh, Jr., Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 2, 1992, Ser. No. 970,220

Int. Cl.[5] C08J *3/00*

U.S. Cl. 528—488 **16 Claims**



1. A process for the conversion of polyesters to their monomeric components comprising contacting a substantially amorphous polyethylene terephthalate having a crystallinity of no greater than 25% with a mixture of (a) at least one alcohol or glycol; (b) at least one polar aprotic solvent; and (c) at least one alkoxide or hydroxide for a sufficient time to convert at least a portion of said polyester to it's monomeric components; wherein said alcohol or glycol, said polar aprotic solvent, and said alkoxide or hydroxide are compatible, bringing at least a portion of said alkoxide or hydroxide into solution in the solvent mixture.

5,328,983

PROCESS FOR PURIFYING BROMINATED POLYSTYRENE

Nicolai A. Favstritsky, Lafayette; William R. Fielding; John L. Sands, both of West Lafayette, all of Ind., and Robert J. Stahl, Holland, Mich., assignors to Great Lakes Chemical Corporation, W. Lafayette, Ind.

Continuation of Ser. No. 494,302, Mar. 16, 1990, abandoned.

This application Mar. 2, 1992, Ser. No. 844,478

Int. Cl.[5] C08F *6/14*

U.S. Cl. 528—490 **19 Claims**

1. A process for reducing the amount of impurities in styrenic homo-polymers or co-polymers that have been brominated, and having an organic bromine content of up to approximately 76 percent by weight, said polymers including as occluded impurities at least one of halogens in aliphatic positions on the polymer backbone and elemental halogen, said process comprising the steps of:

a. combining said brominated polymers with an aqueous non-solvent to form a slurry;

b. reacting the at least one of halogens in aliphatic positions on the polymer backbone and elemental halogen occluded impurities in said brominated polymers while in the slurry with a halogen-reducing agent for a sufficient time and at a sufficient temperature to reduce the at least one of aliphatic halogen compounds and elemental halogen occluded impurities to ionic halogen materials; and

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c. separating the ionic halogen materials from the brominated polymers.

5,328,984

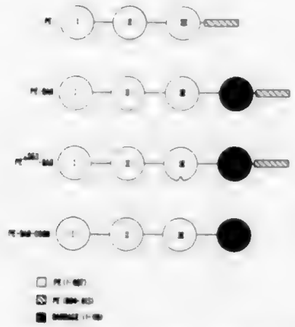
RECOMBINANT CHIMERIC PROTEINS DELIVERABLE ACROSS CELLULAR MEMBRANES INTO CYTOSOL OF TARGET CELLS

Ira H. Pastan, Potomac; Prior Trevor, Bethesda; David J. Fitzgerald, Silver Spring; Waldemar Debinski, Gaithersburg, and Clay Siegall, Silver Springs, all of Md., assignors to The United States as represented by the Department of Health & Human Services, Bethesda, Md.

Filed Mar. 4, 1991, Ser. No. 663,455

Int. Cl.[5] C07K *13/00, 15/04;* **A61K** *37/02*

U.S. Cl. 424—134.1 **13 Claims**



1. A chimeric protein of which a portion is translocated across a cellular membrane into the cytosol of target cells, the chimeric protein comprising, linked together at least (1) a first segment comprising a foreign protein desired to be introduced into the cytosol of the target cells, (2) a second segment from Domain II of Pseudomonas exotoxin having a translocation function which delivers the foreign protein across the cellular membrane into the cytosol of the target cells, and (3) a third segment which binds the chimeric protein to the target cells, the foreign protein being otherwise impermeable to the target cells and heterologous to the second segment.

5,328,985

RECOMBINANT STREPTAVIDIN-PROTEIN CHIMERAS USEFUL FOR CONJUGATION OF MOLECULES IN THE IMMUNE SYSTEM

Takeshi Sano, Albany, and Charles R. Cantor, Berkeley, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jul. 12, 1991, Ser. No. 729,460

Int. Cl.[5] C07K *3/00;* **C07H** *21/04;* **A61K** *35/14;* **C12Q** *1/00*

U.S. Cl. 530—350 **1 Claim**

1. A purified recombinant streptavidin Protein A chimeric protein having a biotin-binding moiety and an antibody-binding moiety:

wherein said biotin-binding moiety of the chimeric protein binds specifically to one biotin molecule and the antibody-binding moiety of the chimeric protein binds specifically to one or two antibody molecules per subunit of said chimeric protein;

wherein a molecular mass of said chimeric protein is 31.4 kDa;

wherein said chimeric protein consists of 289 amino acids of which 12 are lysines, 3 are histidines, 7 are arginines, 7 are asparagines, 14 are aspartic acids, 33 are threonines, 22 are serines, 23 are glutamic acids, 14 are glutamines, 10 are prolines, 23 are glycines, 33 are alanines, 12 are valines, 4 are methionines, 9 are isoleucines, 21 are leucines, 9 are tyrosines, 10 are phenylalanines and 6 are tryptophanes; and

wherein said chimeric protein is purified to at least 95% homogeneity by a denaturation-renaturation process followed by absorption on IgG Sepharose affinity column and by absorption on 2-iminobiotin agarose column;

wherein said denaturation-renaturation process is achieved by dialyzing the protein against guanidine hydrochloride and by subsequent removal of guanidine hydrochloride by dialysis;

wherein said protein is expressed from lysogen BL21(DE3) (pLysS) transformed with an expression vector pTSAPA-2 using a T7 RNA polymerase gene placed under the lac UV5 promoter;

wherein said expression vector pTSAPA-2 is constructed by inserting a part of the protein A gene into a polylinker sequence attached to the streptavidin gene; and

wherein said part of the protein A inserted into a polylinker sequence represents coding sequences S, E, D and A of the protein A gene;

wherein said coding sequences are flanked by the Φ10 promoter and TΦ transcriptional terminator.

5,328,986

SMOOTH MUSCLE MITOGEN

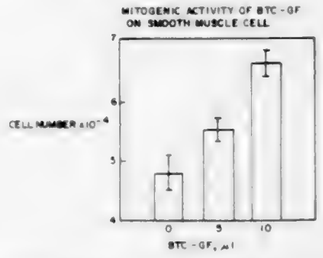
Moses J. Folkman, Brookline, and Yuen Shing, Randolph, both of Mass., assignors to Children's Medical Center Corporation

Continuation-in-part of Ser. No. 766,354, Sep. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 604,778, Oct. 26, 1990, Pat. No. 5,229,493. This application Feb. 10, 1992, Ser. No. 832,845

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] C07K *3/20, 15/06*

U.S. Cl. 530—350 **5 Claims**



1. A substantially pure mammalian BTC-GF protein having the following characteristics:

a) the protein has a molecular weight of about 32,000 on SDS-PAGE;

b) the protein is stable when exposed to 10 mM dithiothreitol; and

c) the protein stimulates the proliferation of smooth muscle cells.

5,328,987

IGA FC RECEPTORS

Charles R. Maliszewski, Seattle, Wash., assignor to Immunex Corporation, Seattle, Wash.

Division of Ser. No. 548,059, Jul. 5, 1990, Pat. No. 5,198,342. This application Nov. 4, 1992, Ser. No. 971,092

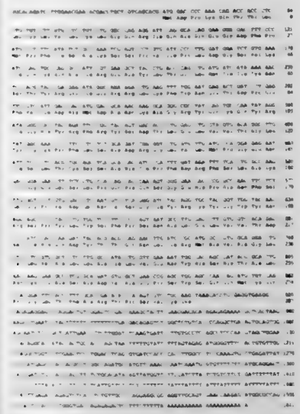
Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—350 **5 Claims**

1. An isolated, substantially homogeneous, biologically active mammalian IgA Fc receptor, wherein the receptor is encoded by an isolated DNA selected from the group consisting of:

(a) cDNA clones having a nucleotide sequence derived from the coding region of SEQ ID NO:1:

(b) isolated DNA capable of hybridization to a clone of (a) under moderately stringent conditions and which encode biologically active IgA Fc receptor protein; and



(c) isolated DNA which is degenerate as a result of the genetic code to the DNA defined in (a) or (b) and which encodes biologically active IgA Fc receptor protein.

5,328,988

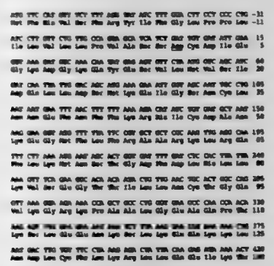
INTERLEUKIN-7

Anthony E. Namen; Raymond G. Goodwin; Stephen D. Lupton, and Diane Y. Mochizuki, all of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation of Ser. No. 511,438, Apr. 13, 1990, abandoned, which is a division of Ser. No. 255,209, Oct. 7, 1989, Pat. No. 4,965,195, and a continuation-in-part of Ser. No. 113,566, Oct. 26, 1987, abandoned. This application Oct. 6, 1992, Ser. No. 957,649

Int. Cl.[5] C07K *13/00;* **A61K** *37/02*

U.S. Cl. 530—351 **4 Claims**



1. Essentially homogeneous purified interleukin-7 (IL-7) wherein the purified IL-7 displays the ability to induce proliferation of bone marrow-derived pre-B cells; wherein a native glycosylated full length mature form of said IL-7 has a molecular weight of about 25,000 daltons as determined by SDS-PAGE; wherein the N-terminus of the mature form of the IL-7 protein comprises an amino acid sequence selected from Asp-Cys-Asp-Ile-Glu-Gly-Lys-Asp- and Glu-Cys-His-Ile-Lys-Asp-Lys-Glu.

5,328,989

PURIFICATION OF HUMAN INTERLEUKIN-10 FROM A CELL CULTURE MEDIUM

Gary Vellekamp, Glen Ridge; Susan Cannon-Carlson, Wayne, and John Tang, Livingston, all of N.J., assignors to Schering-Plough, Kenilworth, N.J.

Filed Mar. 5, 1993, Ser. No. 26,942

Int. Cl.[5] C07K *3/02, 3/20, 3/22, 15/06*

U.S. Cl. 530—351 **17 Claims**

1. A method for purifying Interleukin-10 (IL-10) from a cell culture medium comprising:

(a) subjecting the culture medium containing IL-10 to cation exchange chromatography thereby obtaining fractions containing IL-10;

(b) subjecting the IL-10-containing fractions from step (a) to anion exchange chromatography thereby obtaining fractions containing IL-10;

(c) subjecting the IL-10-containing fractions from step (b) to hydroxyapatite chromatography thereby obtaining fractions containing a single isolated dimer of IL-10.

5,328,990

ISOLATION OF MACROPHAGE MIGRATION INHIBITION FACTOR FROM OCULAR LENS

Graeme J. Wistow, Silver Spring, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 26, 1991, Ser. No. 691,191

Int. Cl.[5] C07K *3/02*

U.S. Cl. 530—351 **9 Claims**

1. A method for obtaining Macrophage Migration Inhibition Factor (MIF) which comprises:

homogenizing ocular lens in an aqueous solution to form a homogenate;

separating a soluble extract containing MIF and an insoluble membrane fraction from said homogenate; and

recovering purified MIF, having a molecular weight of 10–12 kDa, as determined by SDS polyacrylamide gel electrophoresis, from said soluble extract.

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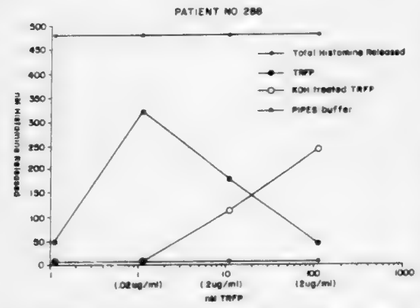
PREPARATION OF ALKALI-MODIFIED CAT DANDER ALLERGEN (FEL D I) FOR IMMUNOTHERAPEUTIC PURPOSES

Mei-chang Kuo, Winchester, Mass., assignor to Immulogic Pharmaceutical Corp., Waltham, Mass.

Continuation-in-part of Ser. No. 431,565, Nov. 3, 1989, abandoned. This application Feb. 28, 1991, Ser. No. 662,193

Int. Cl.[5] A61K *39/35, 37/02;* **C07K** *13/00;* **C12P** *21/02*

U.S. Cl. 530—403 **11 Claims**



1. A modified Fel d I, substantially free of other cat proteins, which is capable of stimulating T cells from a cat allergic individual and which interacts with human immunoglobulin E from a cat allergic individual to a lesser extent than does un-

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modified, affinity purified Fel d I, said modified Fel d I prepared by treating purified Fel d I with mild alkali.

5,328,992

METAL COMPLEXES OF POLYETHYLENE GLYCOL CARBAMATE DERIVATIVES OF DESFERRIOXAMINE B

Heinrich Peter, Binningen, and Theophile Moerker, Fullinsdorf, both of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

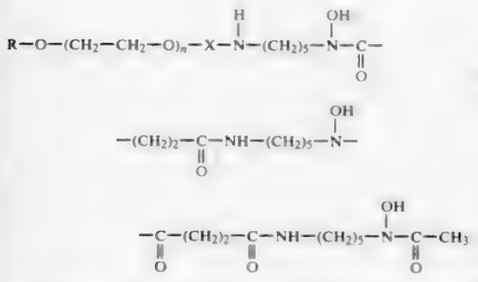
Division of Ser. No. 221,860, Jul. 20, 1988, Pat. No. 5,185,368. This application Oct. 27, 1992, Ser. No. 967,097

Claims priority, application Switzerland, Jul. 23, 1987, 2794/87-6

Int. Cl.[5] **A61K** *31/00*

U.S. Cl. 534—16 **6 Claims**

1. A complex of a metal ion and a compound of the formula



in which R is alkyl having up to 4 carbon atoms, n has an average value of at least 9, X is a radical of the formula —C(=O)—(NH—SO_2)$_m$— in which m is 0 or 1, and, if m is 1, the carbonyl group may be bonded to the oxygen atom or to the nitrogen atom, wherein the metal ion is selected from the group consisting of paramagnetic transition metals and metals of main group 3 of the Periodic Table.

6. A pharmaceutical preparation for diagnostic purposes comprising a complex according to claim **1**.

5,328,993

CATIONIC TRIAZATRIMETHINE DYESTUFFS

Hauke Fürstenwerth, Leverkusen; Karl-Heinrich Lange, Burscheid; Roderich Raue, Leverkusen, and Alfred Brack, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

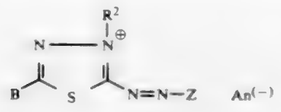
Filed Apr. 15, 1993, Ser. No. 47,327

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1992, 4242429

Int. Cl.[5] **C09B** *26/06;* **D06P** *1/41, 3/76;* **C08K** *5/46*

U.S. Cl. 534—551 **12 Claims**

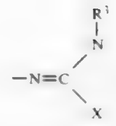
1. A triazatrimethine dyestuff of the formula (I)



(I)

wherein

Z represents a radical of the formula



wherein

R^3 represents hydrogen or an alkyl, alkenyl or aralkyl radical and

X represents the remaining members of a five-membered, optionally substituted and optionally fused partly unsaturated heterocyclic ring which contains one to three hereto atoms selected from the group consisting of oxygen, sulphur and nitrogen,

B represents alkylmercapto, arylmercapto or a radical of the formula



wherein

R denotes hydrogen or an alkyl, alkenyl, acyl, cycloalkyl, aryl, aralkyl, amino, alkylamino, dialkylamino, arylamino, aralkylamino or heterocyclic radical and

R^1 denotes hydrogen or an alkyl, alkenyl or aralkyl radical, or

R and R^1 together with the nitrogen atom to which they are attached form a heterocyclic ring,

R_2 represents hydrogen or an alkyl, alkenyl, alkinyl or aralkyl radical and

$An^{(-)}$ represents an anion,

and wherein the cyclic and acyclic radicals can contain nonionic substituents and/or a carboxyl group.

5,328,994

AZINONEUTROMETHINES

Horst Berneth, Leverkusen, and Karin Hassenrück, Düsseldorf, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

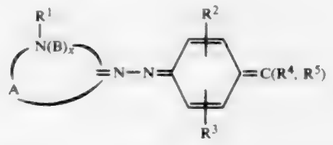
Filed Feb. 19, 1993, Ser. No. 19,503

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1992, 4205632

Int. Cl.[5] **C09B** *29/048, 69/06*

U.S. Cl. 534—607 **4 Claims**

1. Azinoneutromethines of the formula (I)



(I)

in which

R^1 represents C_1- to C_{22}-alkyl, C_4- to C_{10}-cycloalkyl, C_7- to C_{14}-aralkyl, C_6- to C_{10}-aryl, or a heterocyclic radical which is optionally bonded via C_1- to C_2-alkylene and contains 1 to 4 nitrogen, oxygen and/or sulphur atoms and 4 to 12 C atoms, it being possible for all these radicals optionally to be substituted,

R^2 and R^3 independently of one another represent hydrogen, halogen, hydroxyl, cyano, C_1- to C_8-alkyl, C_1- to C_8-alkoxy, C_4- to C_{10}-cycloalkoxy, C_7- to C_{14}-aralkyloxy or C_1- to C_{20}-acylamino,

R^4 and R^5 independently of one another represent cyano, C_1- to C_8-alkoxycarbonyl, C_4- to C_7-cycloalkoxycarbonyl, C_6- to C_{10}-aryloxycarbonyl, aminocarbonyl, mono-C_1- to C_8-alkylaminocarbonyl, di-C_1- to C_8-alkylaminocarbonyl, C_6- to C_{10}-arylaminocarbonyl, aminocarbonyl which is substituted by heterocyclic radicals which contain 5 to 7 atoms and contain N, S and/or O or phenyl which is substituted by cyano and/or nitro, or

R^4 and R^5, together with the C atom in between, represent a ring which contains 5 or 6 atoms, optionally contains up to 2 nitrogen and/or oxygen atoms and is optionally substituted by cyano, halogen, C_1- to C_4-alkyl or C_6- to C_{10}-aryl, and

A complements the ring in which it is located to form a 5- to 7-membered aromatic or quasiaromatic ring which is optionally benzo- or naphtho-fused, optionally contains a further nitrogen, oxygen or sulphur atom, and is optionally substituted by cyano, nitro, C_1- to C_4-alkyl, C_7- to C_{12}-aralkyl, C_6- to C_{10}-aryl, C_1- to C_4-alkoxy, a 5- to 6-membered ring which is optionally bonded via C_1- to C_2-alkylene and contains up to 2 N, S and/or O atoms, C_1- to C_4-alkylthio, C_6- to C_{10}-arylthio, amino, mono- or di-C_1- to C_8-alkylamino, C_4- to C_8-cycloalkyl-C_1- to C_4-alkylamino, C_7- to C_{12}-aryl-C_1- to C_4-alkylamino, mono- or di-C_6- to C_{10}-arylamino, pyrrolidino, piperidino, morpholino or C_1- to C_6-acylamino,

represents $CR^B{=}CH$, where R^B=hydrogen or C_1- to C_6-alkyl, and

x represents zero or 1.

5,328,995

AZO DYES CONTAINING TRIAZINE MIDDLE COMPONENTS AND A 1,4-PHENYLENE-2,5-DISUBSTITUTED COUPLING COMPONENT

Rudolf Schaulin, Riehen, and Urs Lauk, Zurich, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

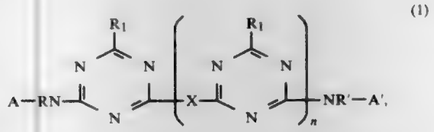
Continuation of Ser. No. 722,590, Jun. 27, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 9,427

Claims priority, application Switzerland, Jul. 2, 1990, 2195/90

Int. Cl.[5] **C09B** *62/09, 43/16;* **D06P** *3/62, 3/04*

U.S. Cl. 534—797 **15 Claims**

1. A compound of the formula



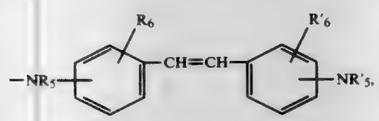
(1)

where

R and R′ are each independently of the other hydrogen or C_1–C_4alkyl,

R_1 is chlorine, hydroxyl-substituted (in the alkyl moiety) N-mono- or N,N-di-C_1–C_4alkylamino, or morpholino,

X is a bridge member of the formula

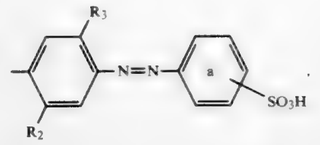


(4c)

where R_5 and R'_5 are each independently of the other hydrogen or C_1–C_4alkyl and R_6 and R'_6 are each independently of the other hydrogen, sulfo, methyl, methoxy or chlorine,

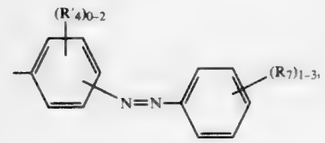
n is 0 or 1,

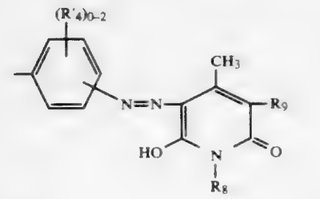
A is a radical of the formula



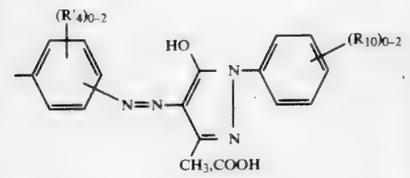
(2)

where R_2 and R_3 are each independently of the other C_1–C_4alkyl, C_1–C_4alkoxy or unsubstituted or hydroxyl-substituted (in the alkyl moiety) C_2–C_4alkanoylamino and the phenyl radical (a) contains no further substituents or is further substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, hydroxyl, carboxyl, unsubstituted or hydroxyl-substituted C_2–C_4alkanoylamino or unsubstituted or sulfo-, C_1–C_4alkyl-, C_1–C_4alkoxy-, halogen- or hydroxyl-substituted 1- or 2-napthylazo or phenylazo, A′ has the meaning A or is a radical of the formula





or



where

$(R'_4)_{0-2}$ represents from 0 to 2 identical or different radicals selected from the group consisting of methyl, methoxy, sulfo, chlorine, hydroxyl and carboxyl,

$(R_7)_{1-3}$ represents from 1 to 3 identical or different substituents selected from the group consisting of sulfo, methyl, methoxy, chlorine and o-, m- or p-sulfophenylazo,

R_8 is hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy-C_1–C_4alkyl,

R_9 is sulfomethyl, cyano or carbamoyl, and

$(R_{10})_{0-2}$ represents from 0 to 2 identical or different radicals selected from the group consisting of methyl, methoxy, sulfo, hydroxyl, amino, acetylamino and hydroxyacetylamino.

5,328,996

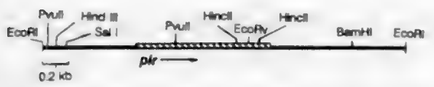
BACTERIAL PLASMIN RECEPTORS AS FIBRINOLYTIC AGENTS

Michael D. P. Boyle, Whitehouse, Ohio; Richard Lottenberg, Gainesville, Fla.; Christopher Broder, Rockville, Md., and Gregory Von Mering, Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 524,411, May 16, 1990, Pat. No. 5,237,050, which is a continuation-in-part of Ser. No. 330,849, Mar. 29, 1989, abandoned. This application Aug. 10, 1992, Ser. No. 928,462

Int. Cl.[5] C07H *17/00*

U.S. Cl. 536—23.1 **2 Claims**



1. Isolated DNA, encoding a plasmin receptor having a molecular weight of about 41 kD, said plasmin receptor consisting essentially of the amino acid sequence set forth in SEQ. ID NO. 2.

5,328,997

PROCESSES FOR MAKING PROTEINS HAVING ANTICOAGULANT PROPERTIES

George P. Vlasuk, Lansdale; Lloyd H. Waxman, Ottsville; Victor M. Garsky, Blue Bell, and Michael P. Neeper, Wayne, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 876,825, Apr. 29, 1992, Pat. No. 5,239,058, which is a continuation-in-part of Ser. No. 498,307, Mar. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 404,033, Sep. 7, 1989, abandoned. This application Apr. 28, 1993, Ser. No. 54,761

Int. Cl.[5] C12P *21/06;* **C12N** *1/22;* **C07H** *15/12*

U.S. Cl. 536—23.5 **4 Claims**

1. A gene which is a DNA molecule which codes for a protein having the sequence:

NH_2—Tyr—Asn—Arg—Leu—Cys—Ile—Lys—Pro—AA^9—

Asp—Trp—Ile—Asp—Glu—Cys—Asp—

Ser—Asn—Glu—Gly—Gly—Glu—AA^{23}—Ala—Tyr—Phe—

AA^{27}—Asn—Gly—Lys—Gly—Gly—Cys—

Asp—Ser—Phe—Trp—Ile—Cys—Pro—Glu—Asp—His—

Thr—Gly—Ala—Asp—Tyr—Tyr—Ser—

Ser—Tyr—AA^{53}—Asp—Cys—Phe—Asn—Ala—Cys—

Ile—COOH

wherein

AA^9 is Arg or Asn

AA^{23} is Arg or Asn

AA^{27} is Arg or Asn, and

AA^{53} is Arg or Asn.

5,328,998

PROMOTER SCREENING VECTOR, STREPTOMYCES PROMOTERS FOUND THEREWITH, AND THE ISOLATION AND USE THEREOF

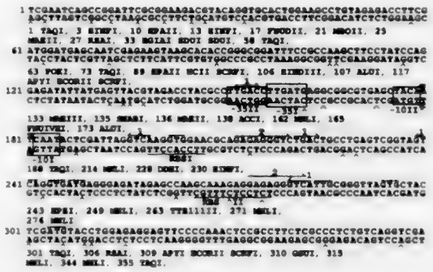
Gabriele Labes, and Wolfgang Wohlleben, both of Bielefeld, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 7, 1992, Ser. No. 925,920

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126415

Int. Cl.[5] C07H *21/04;* **C12N** *15/76, 15/74*

U.S. Cl. 536—24.1 **2 Claims**



1. The p14 promoter as set forth in SEQ ID NO: 1.

5,328,999

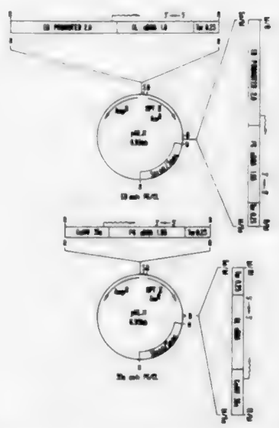
ENDO-1,4-β-GLUCANASE GENES AND THEIR USE IN PLANTS

Alan B. Bennett, Davis; Robert L. Fischer, El Cerrito; Coralie Lashbrook, Dixon, all of Calif., and James Giovannoni, Ithaca, N.Y., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 511,417, Apr. 20, 1990, Pat. No. 5,168,064. This application Apr. 18, 1991, Ser. No. 687,466

Int. Cl.[5] C07H *15/12;* **C12N** *15/00, 5/00, 9/42*

U.S. Cl. 536—24.5 **7 Claims**



1. An expression cassette comprising a plant promoter sequence operably linked to a DNA subsequence of at least 20 base pairs derived from a DNA sequence encoding tomato a endo-1,4-β-glucanase, the DNA subsequence being linked to the promoter sequence in the opposite orientation for expression.

5,329,000

PURIFICATION OF DNA WITH SILICON TETRAHYDRAZIDE

Daniel L. Woodard, Raleigh, and Adriann J. Howard, Durham, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 31, 1991, Ser. No. 785,837

Int. Cl.[5] C07H *1/06, 21/00, 21/02, 21/04*

U.S. Cl. 536—25.4 **6 Claims**

1. A process for purifying DNA which comprises:

a) providing a silicon tetrahydrazide compound produced by reacting silicon tetrachloride with hydrazine to completion;

b) binding the DNA to the silicon tetrahydrazide compound; and

c) recovering the DNA from the silicon tetrahydrazide by eluting in TE buffer, TAE buffer, or TBE buffer or by heating the silicon tetrahydrazide compound with the bound DNA in water.

5,329,001

SUBSTANTIALLY ANHYDROUS CRYSTALLINE CEFADROXIL AND METHOD FOR PRODUCING IT

Leonardo Marsili, Segrate, Italy, assignor to Rifar S.R.L., Milan, Italy

Continuation of Ser. No. 427,982, Oct. 30, 1989, abandoned, which is a continuation of Ser. No. 63,870, Jun. 19, 1987, abandoned. This application Jan. 27, 1992, Ser. No. 825,737

Int. Cl.[5] A61K *31/545;* **C07D** *501/22*

U.S. Cl. 540—230 **6 Claims**

1. A crystalline cefadroxyl compound having a water content of from about 0.8% to about 3.9% and having the following X-ray diffraction data:

Spacing d(A)	Relative Intensity
10.42	21
8.54	100
7.06	34
6.38	15
6.05	22
5.84	25
5.12	16
4.79	26
4.58	21
4.35	44
4.26	21
4.18	24
4.02	34
3.90	11
3.78	12
3.52	9
3.46	17
3.27	8
3.18	14
3.12	22
2.93	15
2.89	18
2.82	16
2.61	12
2.55	10
2.52	7
2.35	9
2.30	9
2.18	8
2.13	7
2.08	7

5,329,002

ANTIBACTERIAL CEPHALOSPORIN COMPOUNDS

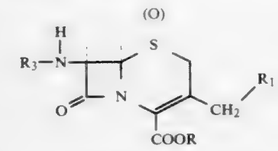
Harry A. Albrecht, Towaco; Dennis D. Keith, Montclair; Chung-Chen Wei, Cedar Knolls; Manfred Weigele, North Caldwell, and Roxana Yang, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 197,944, May 24, 1988, abandoned, which is a continuation-in-part of Ser. No. 175,471, Mar. 31, 1988, abandoned. This application Jul. 6, 1990, Ser. No. 549,674

Int. Cl.[5] C07D *501/14;* **A61K** *31/545*

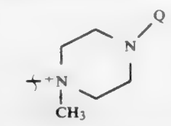
U.S. Cl. 540—222 **29 Claims**

1. A compound of formula



I

wherein R is hydrogen or a carboxylic acid-protecting group; R_1 is a piperazinium group of formula



wherein Q represents a substituted quinolonyl or naphthyridonyl group and the piperazine nucleus may be unsubstituted or substituted with one or more lower alkyl groups; R_2 is selected from the group consisting of hydrogen, lower alkoxy, lower alkylthio and amido; R_3 is an acyl group; and m is 0, 1 or 2;

or a corresponding readily hydrolyzable ester, pharmaceutically acceptable salt or hydrate thereof.

5,329,003

PROCESS FOR THE PREPARATION OF URETDIONE GROUP CONTAINING POLYISOCYANATES

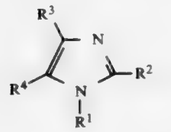
Bernd Bruchmann, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 564,225, Aug. 8, 1990, abandoned. This application Jul. 30, 1992, Ser. No. 922,296

Int. Cl.[5] C07D *229/00*

U.S. Cl. 540—202 **12 Claims**

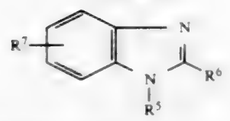
1. A process for the preparation of uretdione group containing polyisocyanates, comprising reacting monomeric aromatic diisocyanates selected from the group consisting of 1,5-naphthalenediisocyanate, 1,4-phenylenediisocyanate, 4,4'-diphenyldiisocyanate, polymethylenepolyphenylenepolyisocyanate, 2,4- and 2,6-toluenediisocyanate, 2,2'-, 2,4'-, and 4,4'-diphenylmethane diisocyanate, and mixtures thereof in the presence of a catalyst wherein imidazoles or benzimidazoles having general structural formulas I or II are used as said catalysts;



I

VOL 1164 ISS 2 JL 12 1994 UMI

-continued



or mixtures thereof are used as said catalysts, whereby R^1 and R^5 independently are C_1- to C16- alkyl groups; alkenyl or alkynyl groups having 2 to 16 carbon atoms; aryl groups; alkylaryl or aralkyl groups, whereby the alkyl groups can have from 1 to 10 carbon atoms, amino groups; hydroxyl groups or mercapto groups; aminoalkyl groups; alkylamino groups; alkoxy groups; oxyalkyl, alkylthio groups or thioalkyl groups having C_1- to C16-alkyl groups or halogen atoms, R^2, R^3, R^4, R^6, or R^7 have the same meaning as R^1 and R^5 or are nitro groups and R^3, R^4 can be hydrogen provided that R^1 is not alkyl, alkenyl or alkynyl;

with the proviso that the following compounds are excluded:

1-allyl-2-methylimidazole,
1,2-dimethylimidazole,
1-methylimidazole and
1-butylimidazole,

wherein the reaction product contains less than about 2 weight percent isocyanurates.

5,329,004

METHOD OF MANUFACTURING CIGARETTES USING HIGH AMYLOPECTIN STARCH PHOSPHATE MATERIAL AS AN ADHESIVE

James L. Eden, East Milestone, N.J., and John W. Walker, Lane Cove, Australia, assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 806,568, Dec. 12, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 974,844

Int. Cl.[5] **C08B** *31/02, 33/02, 35/02;* **C09J** *4/00*

U.S. Cl. 536—109 **12 Claims**

1. In the method of manufacturing cigarettes wherein a cigarette rod is formed by wrapping tobacco in a paper tube which is bonded along one longitudinal edge with a side seam adhesive and an optional filter is formed having several adhesive bonds including a center-line adhesive bond where the filter material is attached to plug wrap paper, an overlap adhesive bond where the paper is wrapped around the filter plug and attached to itself in an overlapping manner and a tipping adhesive bond where the filter plug is attached to the cigarette rod by wrapping another paper around the plug and overlapping it with an aligned cigarette rod, the improvement comprising applying as the adhesive in at least one of the side seam, center-line, overlap and tipping bonds, a liquid starch phosphate adhesive composition consisting essentially of a phosphorylated starch material having from about 0.38 to 1.0% of bound phosphate, the starting starch material being a fluidity or converted cereal starch having an amylopectin content of about 90% or more by weight, the final starch phosphate composition prepared by steam injection cooking the phosphorylated starch at a high temperature and pressure, the adhesive having a solids content of greater than 25%.

5,329,005

SOLUBLE ANIONIC POLYMERIZATION INITIATORS AND PREPARATION THEREOF

David F. Lawson, Uniontown, Ohio; Koichi Morita; Yoichi Ozawa, both of Ogawahigashimachi, Japan; Mark L. Stayer, Jr., Mogadore, Ohio, and Ryota Fujio, Akigawa, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 955,582

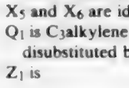
Int. Cl.[5] **C07D** *487/08, 295/00;* **C08F** *4/48*

U.S. Cl. 540—450 **5 Claims**

1. A hydrocarbon solvent soluble, anionic polymerization initiator for the preparation of a polymer having reduced hysteresis characteristics, comprising: a lithio amine having the general formula

AL$_1$

where A is selected from the group consisting of cyclic amine radicals having the general formula



where R_2 is selected from the group consisting of an alkylene group having from about 6 to about 8 methylene groups.

5,329,006

CHROMOGENIC LACTAM COMPOUNDS, THEIR PREPARATION AND THEIR USE

Hans Baumann, Oberwil, and Ian J. Fletcher, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

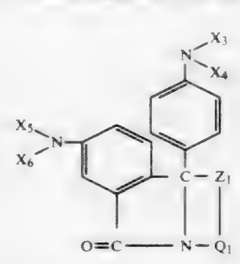
Filed Sep. 6, 1991, Ser. No. 755,717

Claims priority, application Switzerland, Sep. 14, 1990, 2989/90-7; Jun. 13, 1991, 1759/91-3

Int. Cl.[5] **C07D** *487/04, 487/10*

U.S. Cl. 544—252 **4 Claims**

1. A lactam compound of the formula



(2)

in which

X_3 and X_4 are identical lower alkyl or phenyl radicals; or X_3 and X_4, together with the nitrogen atom to which they are bonded, are pyrrolidine;

X_5 and X_6 are identical lower alkyl or phenyl radicals;

Q_1 is C_3alkylene which is unsubstituted, monosubstituted or disubstituted by C_1–C_4alkyl, phenyl or C_5–C_6spiroalkyl;

Z_1 is



and

R_1 is hydrogen, phenyl, benzyl, C_1–C_4alkyl, cyano-C_1–C_4alkyl, C_1–C_4alkylcarbonyl, N-C_1–C_4alkylcarbamoyl, or N-phenylcarbamoyl which is unsubstituted or substituted by halogen, nitro, trifluoromethyl, lower alkyl or lower alkoxy.

5,329,007

SELECTIVE ADENOSINE RECEPTOR AGENTS

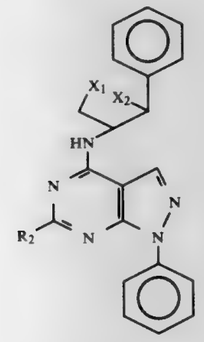
Norton P. Peet, Cincinnati, and Nelsen L. Lentz, West Chester, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 954,178, Sep. 30, 1992, Pat. No. 5,256,650, which is a continuation-in-part of Ser. No. 873,660, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 734,024, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 551,686, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 329,919, Mar. 29, 1989, abandoned. This application Jul. 29, 1993, Ser. No. 99,023

Int. Cl.[5] **C07D** *487/06, 473/30;* **C07H** *19/06*

U.S. Cl. 544—262 **2 Claims**

1. A compound according to the formula:



wherein

R_2 is hydrogen, lower alkyl of from 1 to 4 carbon atoms, or lower alkoxy of from 1 to 4 carbon atoms;

X_1 and X_2 are each independently either hydrogen or hydroxy;

with the proviso that X_1 and X_2 cannot both be hydrogen.

5,329,008

SYNTHESIS OF A 3,4-DIHYDROXY-1-CYCLOPENTANYLPURINONE

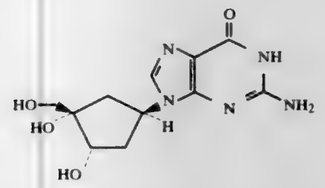
John J. Partridge, Chapel Hill, and Brian L. Bray, Graham, both of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Filed Apr. 7, 1993, Ser. No. 44,339

Int. Cl.[5] **C07D** *473/18;* **C07B** *35/08*

U.S. Cl. 544—276 **13 Claims**

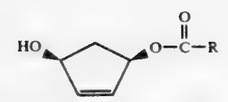
1. A method of synthesizing a triol of the following formula (I):



(I)

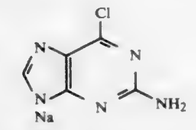
or an acid- or base-addition salt thereof, which comprises the steps of:

i) reacting a cyclopentene of the following formula (II):



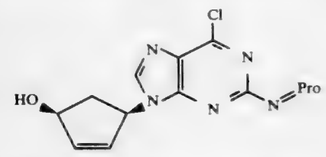
(II)

wherein R is C_{1-6}alkyl or OC_{1-6}alkyl, with a purine of the following formula (III):



(III)

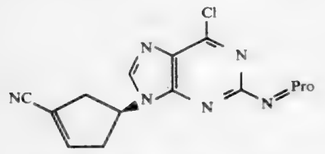
to yield an alcohol of the following formula (V):



(V)

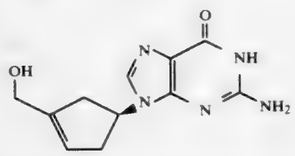
wherein Pro is an amino protecting group,

ii) cyanating the alcohol of formula (V) to yield the cyanide of the following formula (VIII):



(VIII)

iii) deprotecting, hydrolyzing, and then reducing the cyanide of formula (VIII) to yield the monoalcohol of the following formula (X):



(X)

iv) performing a cis-dihydroxylation on the monoalcohol of formula (X) to produce the triol of formula (I).

5,329,009

SELECTIVE PHENYLATION OF 5-HYDROXY-β-CARBOLINE DERIVATIVES

Gregor Haffer; Helmut Börner; Klaus Nickisch, and Julius Deutsch, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 19, 1992, Ser. No. 854,827

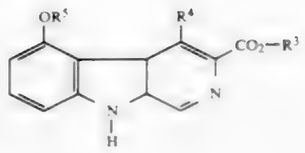
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1991, 4109342

Int. Cl.[5] **C07D** *471/04*

U.S. Cl. 546—86 **10 Claims**

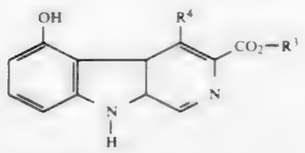
1. In a process for the production of a compound of formula I

VOL 1164 ISS 2 JL 12 1994 UMI



(I)

in which
R^3 is C_{1-6} alkyl,
R^4 is hydrogen, C_{1-4} alkyl or C_{1-4} alkoxy-C_{1-2}-alkyl and
R^5 is a phenyl radical optionally substituted 1–2 times,
said process comprising reacting a compound of formula II



(II)

in which
R^3 and R^4 have the above-named meaning, with a compound of formula III,

R^5—F (III)

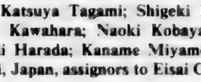
in which R^5 is defined as above, in the presence of a base, the improvement wherein water is added during the reaction in an amount sufficient to suppress the formation of undesired byproducts.

5,329,010
QUINONE DERIVATIVES

Yasushi Okamoto; Katsuya Tagami; Shigeki Hibi; Hirotoshi Numata; Tetsuya Kawahara; Naoki Kobayashi; Masanobu Shinoda; Koukichi Harada; Kaname Miyamoto, and Koichi Abe, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

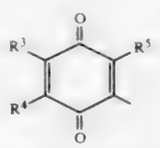
Filed Feb. 25, 1992, Ser. No. 840,862
Claims priority, application Japan, Mar. 11, 1991, 3-044709; Jul. 18, 1991, 3-178161
Int. Cl.[5] **C07D** *213/50, 233/64*
U.S. Cl. 546—342 **28 Claims**

1. A quinone derivative represented by the following general formula (I) or a pharmacologically acceptable salt thereof:

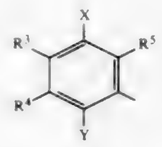


(I)

wherein A stands for a group represented by the formula:



wherein R^3, R^4 and R^5 are the same or different from each other and each stand for a hydrogen atom, a hydroxyl group, a lower alkyl group, a lower alkoxy group, an alkoxyalkyl group, an alkoxyalkoxy group, a cycloalkylalkoxy group, a thiol group or a thioalkyl group, with the proviso that R^3 and R^4 are not simultaneously each a lower alkoxy group, or a group represented by the formula:



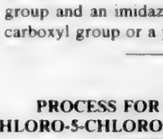
wherein R^3, R^4 and R^5 are the same or different from each other and each stand for a hydrogen atom, a hydroxyl group, a lower alkyl group, a lower alkoxy group, an alkoxyalkyl group, an alkoxyalkoxy group, a cycloalkylalkoxy group, a thiol group or a thioalkyl group, with the proviso that R^3 and R^4 are not simultaneously each a lower alkoxy group; X and Y are the same or different from each other and each stand for a hydroxyl group or a protected hydroxyl group; R^1 stands for a heteroarylalkyl group selected from the group consisting of a pyridylalkyl group and an imidazolylalkyl group; and B stands for a carboxyl group or a protected carboxyl group.

5,329,011
PROCESS FOR THE PREPARATION OF 2-CHLORO-5-CHLOROMETHYL-PYRIDINE, AND NEW INTERMEDIATES

Klaus Jelich, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

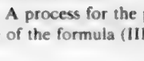
Division of Ser. No. 801,318, Dec. 2, 1991, Pat. No. 5,233,043, which is a division of Ser. No. 759,702, Sep. 11, 1991, Pat. No. 5,116,993, which is a division of Ser. No. 504,783, Apr. 4, 1990, abandoned. This application Jun. 7, 1993, Ser. No. 73,006
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1989, 3912964
Int. Cl.[5] **C07D** *213/26, 213/61*
U.S. Cl. 546—346 **1 Claim**

1. A process for the preparation of a 3-dichloromethylpyridine of the formula (III)



(III)

comprising reacting a 3-methylpyridine, of the formula (V),



(V)

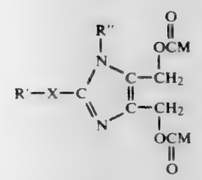
with elemental chlorine in the presence of an organic acid at a temperature between 0° C. and 100° C. in the presence of an inorganic acid and also in the presence of a free-radical initiation selected from the group consisting of azo-bis-iso-butyronitrile, benzoyl peroxide and tert.-butyl perbenzoate.

5,329,012
BIS(ACYLOXMETHYL)IMIDAZOLE COMPOUNDS

Wayne K. Anderson, Williamsville, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Oct. 29, 1987, Ser. No. 114,695
Int. Cl.[5] **C07D** *233/90, 233/64*
U.S. Cl. 548—318.5 **45 Claims**

1. A compound of the formula:



wherein M is



or R; each R, R', and R'' are independently selected from hydrogen and Z substituted or unsubstituted hydrocarbon containing from 1–12 carbon atoms and selected from alkyl, cycloalkyl, cycloalkenyl, alkenyl, aryl, and heterocyclic ring wherein each hetero atom is selected from oxygen, nitrogen, sulfur or silicon; provided that



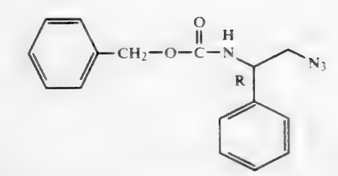
further comprises a Z substituted or unsubstituted heterocyclic ring of 1–12 carbon atoms, and R' and R'', combined through the imidazole ring, further comprises a Z substituted or unsubstituted heterocyclic ring of 1–12 carbon atoms wherein said aryl is selected from the aromatic residue of benzene, naphthalene, pyridine, pyrimidine, quinoline, thiophene, indole, phenanthrene, and anthracene and said heterocyclic ring is selected from the group consisting of piperidinyl, pyrrolyl, pyrrolizinyl, pyridyl, imidazolyl, furyl, morpholinyl, piperazyl, thiazolyl, thiomorpholinyl, tetrahydoquinolinyl, oxazolyl, azepinyl, indoxyl, and indolizinyl; wherein S is selected from at least one of oxygen, sulfur, nitrogen and alkylenyl of 1–12 carbon atoms, provided further that silicon is not directly attached to oxygen, sulfur or nitrogen and R' is not hydrogen when X is oxygen or sulfur; and, Z is selected from hydrogen, nitro, nitrile, alkyl, haloalkyl, alkenyl, carboxylic acid, carboxylic acid ester, carboxylic acid amide, ether, thioether, hydroxyl, acylated hydroxyl, sulfonylamide, sulfonylurea, sulfoxide, sulfone, Z substituted and unsubstituted amine or mixtures thereof, provided each Z contains no more than 12 carbon atoms.

5,329,013
PROCESS FOR THE PREPARATION OF TRICYCLO-[3.3.1.1^{3,7}]DEC-2-YL-[R-(R*,R*)]-3-(1H-INDOL-3-YLMETHYL)-3-METHYL-4,9-DIOXO-7,11-DIPHENYL-10-OXA-2,5,8-TRIAZAUNDECANATE

Wolfgang Herrmann, Freiburg; Klaus Steiner, Waldkirch, and Hans-Joachim Witzke, Nimburg, all of Fed. Rep. of Germany, assignors to Gödecke Aktiengesellschaft, Berlin, Fed. Rep. of Germany

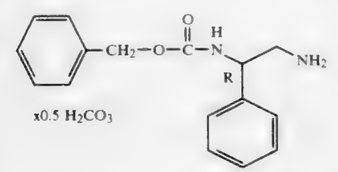
Filed Oct. 26, 1992, Ser. No. 966,217
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137490
Int. Cl.[5] **C07D** *209/26;* **C07C** *271/20*
U.S. Cl. 548—496 **2 Claims**

1. Process for the preparation of tricyclo [3.3.1.1^{3,7}]dec-2-yl-[R-(R*,R*)]-3-(1H-indol-3-ylmethyl)-3-methyl-4,9-dioxo-7,11-diphenyl-10-oxa-2,5,8-triazaundecanate, which consists of hydrogenation of N-[(benzyloxy)-carbonyl]-(R)-β-amino-1-azido-2-phenylethane of formula



(VI)

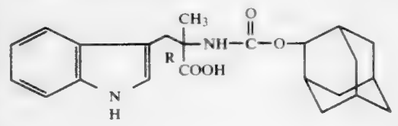
in ethyl acetate in the presence of a Raney nickel catalyst and reacting VI with gaseous or solid carbon dioxide to form N$^{\beta}$-[(benzyloxy)-carbonyl]-(R)-β-amino-2-phenylethylamine carbonate of formula



(VIII)

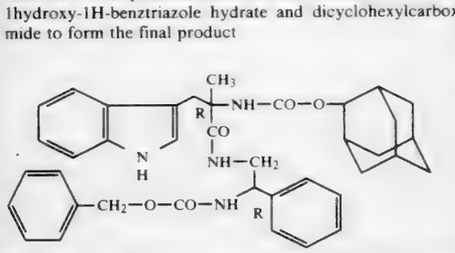
x0.5 H_2CO_3

which precipitates out of solution VIII and is reacted directly in stoichiometric amount with N-[(2-adamantyloxy)carbonyl]-α-methyl-R-tryptophane of the formula



(III)

dissolved in ethyl acetate and mixed at about 20° C. with 1hydroxy-1H-benztriazole hydrate and dicyclohexylcarboximide to form the final product



I

and converting, if desired, to a pharmaceutically acceptable salt.

5,329,014
METHOD FOR RECOVERING OPTICALLY ACTIVE TRYPTOPHAN

Toru Shinohara, and Masaru Otani, both of Saga, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,446
Claims priority, application Japan, Aug. 1, 1990, 2-204388
The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.
Int. Cl.[5] **C07D** *209/20;* **C12P** *13/22*
U.S. Cl. 548—498 **6 Claims**

1. A method for recovering optically active tryptophan from a fermentation broth comprising optically active tryptophan, which comprises:

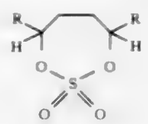
(i) removing cells from said fermentation broth comprising optically active tryptophan to obtain a cell-free fermentation broth comprising optically active tryptophan and proteins;

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(ii) adding (a) hydrochloric acid or (b) a mixture of hydrochloric acid and an inorganic salt containing chloride ion to said cell-free fermentation broth obtained in step (i) to precipitate and separate optically active tryptophan hydrochloride from said cell-free fermentation broth and to obtain separated optically active tryptophan hydrochloride;
(iii) dissolving said separated optically active tryptophan hydrochloride, to obtain a solution comprising said optically active tryptophan hydrochloride;
(iv) subjecting said solution comprising said optically active tryptophan hydrochloride to concurrent neutralization crystallization by simultaneously adding said solution of optically active tryptophan hydrochloride and an alkali solution, into a crystallizer while maintaining the pH in a range of from 3 to 8; and
(v) isolating optically active tryptophan crystals thereof.

5,329,015
CHIRAL PHOSPHOLANES VIA CHIRAL 1,4-DIOL CYCLIC SULFATES
Mark J. Burk, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 725,121, Jul. 2, 1991, Pat. No. 5,171,892. This application Jul. 27, 1992, Ser. No. 978,215
Int. Cl.[5] C07D *327/10*
U.S. Cl. 549—10 **6 Claims**

1. A chiral cyclic sulfate compound of formula I

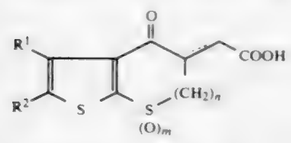


I

wherein:
R is a radical comprising alkyl, fluoroalkyl or perfluoroalkyl, each containing up to about 8 carbon atoms; and aralkyl;
provided that when R is methyl, the compound has a high degree of enantiomeric purity.

5,329,016
INTERMEDIATES FOR THE PREPARATION OF PHARMACEUTICAL THIOPHENE COMPOUNDS
Tohru Nakao; Yasuto Morimoto; Shuzo Takehara, all of Oita, and Hiroshi Tanaka, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan
Division of Ser. No. 605,301, Oct. 30, 1990, Pat. No. 5,175,162. This application Jul. 30, 1992, Ser. No. 921,725
Claims priority, application Japan, Oct. 31, 1989, 1-285495; Dec. 15, 1989, 1-326839; Mar. 20, 1990, 2-71582
Int. Cl.[5] C07D *409/04*
U.S. Cl. 549—23 **2 Claims**

1. A thiophene compound of the formula:

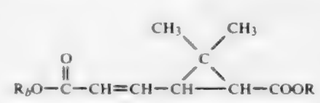


(II)

wherein R^1 is hydrogen, nitro, amino, halogen or C_{1-4} alkyl; R^2 is hydrogen, nitro, amino, halogen, C_{1-4} alkyl, C_{1-4} haloalkyl, acyl which is selected from the group consisting of acetyl, propionyl, butyryl, isobutyryl, pivaloyl, phenylacetyl, 3-phenyl-propionyl, 2-phenylpropionyl, benzoyl, 1-naphthoyl, 2-naphthoyl, nicotinoyl, isonicotinoyl, 2-thenoyl, 3-thenoyl, 2-furoyl, 3-furoyl, and the aforementioned acyl which is substituted on the aromatic ring by one substituent selected from the group consisting of halogen, hydroxy, amino, nitro, cyano, C_{1-4} alkyl, C_{1-4} alkoxy and carboxyl, C_{2-5} alkoxycarbonyl, C_{1-4} alkoxy-C_{1-4} alkyl, aryloxy-C_{1-4} alkyl, acyloxy-C_{1-4} alkyl which is selected from the group consisting of acetoxymethyl, propionyloxymethyl, 1- or 2-acetoxyethyl, 1- or 2-propionyloxyethyl, 3-acetoxypropyl, 3-propionyloxypropyl, benzoyloxymethyl, 2-benzoyloxyethyl, 3-benzoyloxypropyl, 4-benzoyloxybutyl, hydroxy-C_{1-4} alkyl, acyloxy-C_{2-5} alkanoyl which is selected from the group consisting of acetoxyacetyl, 3-acetoxypropionyl, 4-acetoxybutyryl, benzoyloxyacetyl, 3-benzoyloxypropionyl and 4-benzoyloxybutyryl, C_{1-4} alkoxy-C_{2-5} alkanoyl, hydroxy-C_{2-5} alkanoyl, aryloxy-C_{2-5} alkanoyl or C_{2-5} haloalkanoyl;
m is 0, 1 or 2;
n is 2; and
the bond represented by ⚌ is a single bond or a double bond.

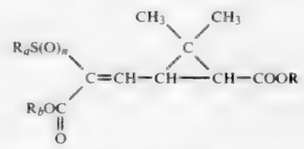
5,329,017
VINYLSULFONE NOR-PYRETHRIC COMPOUNDS
Didier Babin, Montigny; Jean-Pierre Demoute, Neuilly Plaisance, and Jean Tessier, Vincennes, all of France, assignors to Roussel-UCLAF, France
Continuation of Ser. No. 499,016, Mar. 26, 1990, abandoned, which is a division of Ser. No. 356,747, May 24, 1989, abandoned. This application Apr. 22, 1993, Ser. No. 51,177
Claims priority, application France, May 25, 1988, 88 06934
Int. Cl.[5] C07D *327/04*
U.S. Cl. 549—40 **7 Claims**

1. A process for the preparation of a compound of the formula



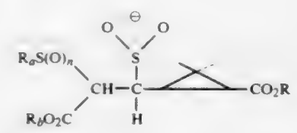
V

comprising reacting a compound of all possible stereoisomers and mixtures thereof of vinylsulfone nor-pyrethric compounds of the formula



I

wherein R_a is selected from the group consisting of tert.-butyl and phenyl substituted in position 2 and/or 6 with a functional group, n is 0, 1 or 2, R_b is tert.-butyl and R is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and the residue of an alcohol used in pyrethrinoid products with the reducing agent capable of producing SO_2^- to obtain the formula



IV

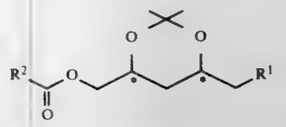
in which R_a, R_b and R have the above definitions which is isolated, if desired, or is decomposed spontaneously to give the corresponding compound of the formula



in which R_b and R retain the above definition.

5,329,018
OPTICALLY ACTIVE 1-5-DISUBSTITUTED-2,4-O-ISOPROPYLIDENE-2,4-DIHYDROXYPENTANE AND A PROCESS FOR PRODUCING THE SAME
Kazutoshi Miyazawa; Teruyo Sugiura; Yasuyuki Koizumi, and Naoyuki Yoshida, all of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan
Filed Jun. 4, 1993, Ser. No. 70,985
Claims priority, application Japan, Jun. 10, 1992, 4-176235
Int. Cl.[5] C07D *319/06*
U.S. Cl. 549—373 **6 Claims**

1. An optically active erythro-1-alkanoyloxy-2,4-O-isopropylidene-2,4-dihydroxy-5-substituted pentane expressed by the formula

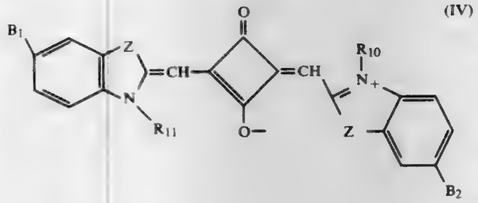


(1)

wherein R^1 represents a halogen atom or cyano group and R^2 represents an alkyl group of 1 to 6 carbon atoms.

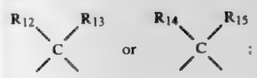
5,329,019
SQUARAINE DYE COMPOUNDS
John Pease, Los Altos; Thomas L. Tarnowski, San Francisco; Donald Berger, San Jose; Chiu C. Chang, Sunnyvale, all of Calif., and Chun-Hua Chuang, Akron, Ohio, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Continuation of Ser. No. 714,964, Jun. 13, 1991, which is a division of Ser. No. 300,996, Jan. 23, 1989, Pat. No. 5,039,818, which is a division of Ser. No. 834,168, Feb. 27, 1986, Pat. No. 4,830,786. This application Apr. 27, 1992, Ser. No. 874,659
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] C07D *403/08*
U.S. Cl. 548—455 **2 Claims**

1. A compound of the formula

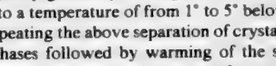


(IV)

wherein:
Z is independently



R_{12}, R_{13}, R_{14}, and R_{15} are independently hydrogen, alkyl (1 to 4 carbon atoms),
R_{10} and R_{11} are



in R_{21} is hydrogen, or alkyl (1 to 4 carbon atoms) and v is 0 to 5 and
β_1 and β_2 are independently hydrogen or alkoxy (1 to 4 carbon atoms).

5,329,020
PREPARATION OF POLYSUCCINIMIDE
Dennis J. Kalota, Fenton, and David A. Martin, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 5, 1993, Ser. No. 132,022
Int. Cl.[5] C07D *207/40*
U.S. Cl. 548—520 **17 Claims**

1. A process for the production of polysuccinimide by the thermal condensation of aspartic acid at elevated temperatures which comprises contacting the aspartic acid with a gas containing a catalytic amount of carbon dioxide.

5,329,021
PROCESS FOR THE PRODUCTION OF PURE VINYL PYRROLIDONE
Jeffrey M. Cohen, Fanwood, and Russell B. Biss, Wayne, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.
Filed Feb. 4, 1993, Ser. No. 81,947
Int. Cl.[5] C07D *207/267*
U.S. Cl. 548—543 **6 Claims**

1. A process for purifying N-vinylpyrrolidone which comprises: rectifying a first crude N-vinylpyrrolidone solution by gradually reducing the temperature of the solution to between about 1° and about 5° below its freezing point in a first crystallization zone so as to form a solid N-vinyl-pyrrolidone crystalline phase and a liquid residue phase; separating said liquid residue phase from said crystalline phase; gradually warming the separated crystals to form a liquid melt having a higher N-vinyl-pyrrolidone concentration than said first crude solution and subjecting said liquid melt to from 1 to 3 additional recrystallization stages by gradually cooling the melted crystals from each stage to a temperature of from 1° to 5° below its freezing point and repeating the above separation of crystalline and liquid residue phases followed by warming of the separated crystals between each crystallization stage to form a melt and recovering N-vinylpyrrolidone melt from the final crystallization stage as the product of the process.

5,329,022
PROCESS FOR THE SYNTHESIS OF CITRACONIMIDES
Auke G. Talma, Bathmen; Hendrika P. M. Hooft, Soest, and Anna G. van de Bovenkamp-Bouwman, Nijkerk, all of Netherlands, assignors to Akzo America Inc., Chicago, Ill.
Filed Jan. 16, 1992, Ser. No. 821,377
Claims priority, application European Pat. Off., Jan. 16, 1991, 91200076.7
Int. Cl.[5] C07D *207/44, 403/02, 403/06*
U.S. Cl. 548—545 **9 Claims**

1. A process for the preparation of citraconimides which comprises reacting citraconic anhydride with 0.5–2.0 equivalents of at least one primary amine salt to form a citraconimide.

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5,329,023

METHOD OF PREPARING OPTICALLY ACTIVE ALCOHOLS WHICH CONSIST SUBSTANTIALLY OR ENTIRELY OF ONE ENANTIOMER

Johannes Brussee, and Arne Van Der Gen, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Continuation of Ser. No. 560,233, Jul. 25, 1990, abandoned, which is a continuation of Ser. No. 287,031, Dec. 21, 1988, abandoned. This application Jun. 15, 1992, Ser. No. 899,026

Claims priority, application Netherlands, Dec. 24, 1987, 8703131

Int. Cl.[5] C07C *209/48*

U.S. Cl. 549—443 **7 Claims**

1. A method of preparing optically active alcohols which consist substantially (at least 75% enantiomeric excess) or entirely of one enantiomer of formula (4)



(4)

wherein R is phenyl, 1,2,5,6-tetrahydrophenyl, furan or benzodioxole, said R groups being substituted with one or more groups X, wherein X is a hydroxy, alkoxy(1–5 C), alkyl(1–5 C)carbonyloxy, amino, alkyl(1–5 C)carbonylamino, alkyl(1–5 C)sulphonyl, nitro, alkyl(1–5 C)suphonylamino, alkyl(1–5 C)carbonyl, halogen, cyano, alkyl(1–5 C)or cycloalkyl(5–12 C),or wherein R is a saturated or unsaturated straight or branched alkyl group having up to 30 C-atoms which may optionally be substituted with halogen, alkoxy(1–5 C), alkylthio(1–5 C),phenyl or phenoxy which may optionally be substituted with one or more groups X, and

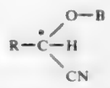
A is selected from the group consisting of $—CH_2NH_2$, $—CHR_1—NH_2$ and —CO—R_1, wherein R_1 is alkyl (1–8 C), alkenyl(up to 8 C), phenyl or aralkyl(up to 10 C), comprising

a) protecting the hydroxyl group of an optically active cyanohydrin of formula (1)



(1)

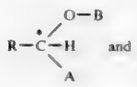
by reacting with a suitable base giving an optically active protected cyanohydrin of formula (2)



(2)

wherein B is a group protecting the hydroxy group which is a radical of the formula —Si—$R_1R_2R_3$, R_1 being as defined above, R_2 and R_3 independently of each other being alkyl(1–8 C), alkenyl (up to 8 C), phenyl or aralkyl(up to 10 C);

b) reacting the nitrile group of the protected cyanohydrin of formula (2) with a suitable base reagent giving an optically active compound of formula (3)



(3)

and

c) removing the protecting group B.

5,329,024

EPOXIDATION OF OLEFINS VIA CERTAIN MANGANESE COMPLEXES

Sharon H. Jureller, Haworth; Judith L. Kerschner, Ridgewood, and Robert Humphreys, Oradell, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Mar. 30, 1993, Ser. No. 40,316

Int. Cl.[5] C07D *301/06, 301/12, 301/14*

U.S. Cl. 549—531 **13 Claims**

1. A method of epoxidizing olefins comprising contacting an olefin with a source of oxygen and a manganese complex wherein a manganese atom is coordinated to a nitrogen-containing ligand such that there is a ratio of the manganese atom to coordinated nitrogen atoms in an amount of 1:3, and recovering subsequent thereto an epoxidized olefin.

5,329,025

3-AZIDO COMPOUND

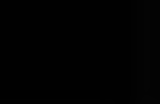
Chi-Huey Wong; Richard L. Pederson, and Yi-Fong Wang, all of College Station, Tex., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 247,276, Sep. 21, 1988, abandoned. This application Apr. 2, 1992, Ser. No. 862,157

Int. Cl.[5] C07C *247/02, 247/00, 205/05, 207/00*

U.S. Cl. 552—10 **2 Claims**

1. A compound having the following stereospecific structure:



wherein R is N_3.

5,329,026

PROCESS FOR PREPARATION OF 2-SUBSTITUTED 1,4-NAPHTHOQUINONE

Noboru Sugishima; Noriaki Ikeda; Yasushi Fujii, all of Himeji; Ryuji Aoki, Hyogo, and Yumi Hatta, Himeji, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1990, Ser. No. 618,941

Claims priority, application Japan, Nov. 28, 1989, 1-306660; Feb. 28, 1990, 2-45530

Int. Cl.[5] C07C *50/18*

U.S. Cl. 552—208 **13 Claims**

1. A process for preparation of a 2-substituted-1,4-naphthoquinone which comprises oxidizing a 2-substituted naphthalene to obtain reaction products comprising a 2-substituted-1,4-naphthoquinone and a 6-substituted-1,4-naphthoquinone; adding a diene compound to the reaction products and heating the mixture to a temperature of from 50° to 200° C. to form a Diels-Alder reaction adduct between the diene compound and the 6-substituted-1,4-naphthoquinone in the reaction products; and separating the 2-substituted-1,4-naphthoquinone from the adduct.

5,329,027

OXIDATIVE DEHALOGENATION PROCESS FOR THE PRODUCTION OF PERCHLORINATED QUINONES

Gabriel Gojon-Zorrilla, Nuevo Leon; Ignacio Villanueva-Fierro, Mexicali, and Antonio Hinojosa-Martinez, Monterrey, all of Mexico, assignors to Grupo Cydsa, S.A. de C.V., Nuevo Leon, Mexico

Filed Nov. 24, 1992, Ser. No. 980,405

Int. Cl.[5] C07C *50/24*

U.S. Cl. 552—308 **13 Claims**

1. An improved process for the production of perchlorinated quinones by oxidative dehalogenation comprising the steps of:

a) providing a stoichiometric mixture consisting of sulfur trioxide, sulfuric acid and at least one aromatic compound containing one or more unsaturated carbon-rings therein;

b) reacting with the mixture at least a stoichiometric quantity of chlorine by slowly adding the chlorine to the mixture; and

c) recovering the produced perchlorinated quinone from the reacted mixture.

5,329,028

CARBOHYDRATE-DIRECTED CROSS-LINKING REAGENTS

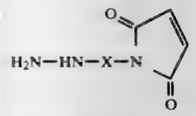
Avi J. Ashkenazi; Steven M. Chamow, both of San Mateo, Calif., and Timothy P. Kogan, Sugar Land, Tex., assignors to Genentech, Inc., San Francisco, Calif.

Filed Aug. 5, 1992, Ser. No. 926,077

Int. Cl.[5] C07D *207/452*

U.S. Cl. 548—548 **13 Claims**

1. A heterobifunctional compound of formula (I)



wherein X is an aliphatic hydrocarbon spacer of 6 to about 25 carbon atoms or is ocmposed of an aliphatic hydrocarbon chain and an alicyclic or aromatic moiety having a total numer of 6 to about 25 carbon atoms and has the residue of a reactive group capable of reacting with hydrazide or a hydrazide derivative linked directly to the hydrazide terminus of the molecule, or a salt thereof.

5,329,029

PHOSPHATIDYLALKANOLAMINE DERIVATIVES AND THEIR USE IN GENERATING PHOSPHOLIPID CONJUGATES

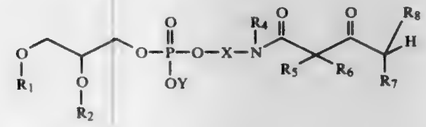
Barbara Y. Wan, 83 Willow St., Tewksbury, Mass. 01876

Filed Nov. 5, 1992, Ser. No. 972,361

Int. Cl.[5] C07F *9/10*

U.S. Cl. 554—80 **3 Claims**

1. An N-substituted phosphatidylalkanolamine of the general formula:



wherein

R_1, R_2independently represent alkyl, alkenyl, alkynyl, aryl, arylalkyl, or $C(O)R_3$, wherein R_3 represents alkyl, alkenyl, alkynyl, aryl, or arylalkyl;

R_4represents H, alkyl or aryl;

R_5, R_6 independently represent H, or alkyl;

R_7, R_8 independently represent H, or alkyl;

X represents alkyl, alkenyl or arylalkyl; and

Y represents a cationic moiety including H^+, alkali earth metal ions or ammonium ions.

5,329,030

PROCESS FOR THE PRODUCTION OF CONCENTRATED AQUEOUS DISPERSIONS OF α-SULFOFATTY ACIDE MONO- AND/OR DISALT

Gilbert Schenker, Erkrath; Thomas Engels, Frechen; Wolfgang Poly, Duesseldorf, and Ansgar Behler, Bottrop, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/02072, § 371 Date May 11, 1993, § 102(e) Date May 11, 1993, PCT Pub. No. WO92/08695, PCT Pub. Date May 29, 1992

PCT Filed Nov. 4, 1991, Ser. No. 50,302

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1990, 4035935

Int. Cl.[5] C07B *45/00*

U.S. Cl. 554—98 **13 Claims**

1. A process for the production of concentrated mono- and disalt dispersions of α-sulfofatty acids having improved flow properties, comprising sulfonating saturated fatty acids or fatty acid mixtures, and neutralizing the sulfonated fatty acids or fatty acid mixtures with an aqueous base solution in the presence of a surfactant containing at least one hydrophobic organic radical and at least one hydrophilic group which is either liquid in bulk or in the form of a flowable aqueous solution or paste at a temperature of from 60° C. to 90° C.

5,329,031

METALLOCENE AND PROCESS FOR PRODUCING POLYOLEFIN USING THE SAME

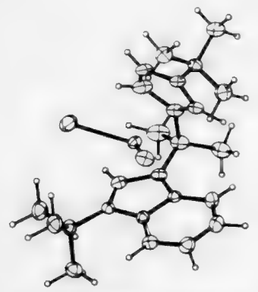
Shigenobu Miyake; Nobuyuki Kibino; Takashi Monoi; Hiroyuki Ohira, and Shintaro Inazawa, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 982,894

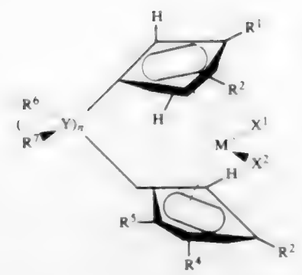
Claims priority, application Japan, Nov. 28, 1991, 3-314978; Dec. 3, 1991, 3-319275; May 7, 1992, 4-114985; Sep. 4, 1992, 4-237393

Int. Cl.[5] C07F *7/02*

U.S. Cl. 556—12 **7 Claims**



1. A metallocene represented by formula (I) and its enantiomer:



(I)

wherein M represents a transition metal selected from Ti, Zr, and Hf, X^1 and X^2, which may be the same or different each represents a hydrogen atom, a hydrocarbon group containing from 1 to 10 carbon atoms, an alkylsilyl group, an arylsilyl group, or a halogen atom; R^1, R2, R^3, R^6, and R^7 each represents a hydrogen atom, a hydrocarbon group containing from 1 to 10 carbon atoms, an alkylsilyl group, or an arylsilyl group, provided that either one of R^1 and R^2 is not a hydrogen atom; R^4 and R^5 each represents a hydrocarbon group containing from 1 to 10 carbon atoms, an alkylsilyl group, or an arylsilyl group, or they are connected together to form a ring; Y represents a carbon atom, a silicon atom, or a germanium atom; and n represents an integer of from 1 to 3.

5,329,032

POLYMETHYLALUMINOXANE OF ENHANCED SOLUTION STABILITY

Nam H. Tran, Houston; Dennis L. Deavenport, Seabrook, both of Tex.; Dennis B. Malpass, Peekskill, N.Y., and Connie S. Rabbit, Pasadena, Tex., assignors to Akzo Chemicals Inc., Chicago, Ill.

Filed Mar. 18, 1992, Ser. No. 853,466

Int. Cl.[5] C07F *5/06*

U.S. Cl. 556—179 **9 Claims**

1. A polymethylaluminoxane composition, normally prone to precipitation from organic solvent over time, which is dissolved in organic solvent and which shows increased solution storage stability, said polymethylaluminoxane comprising moieties derived from a organic compound containing at least one electron-rich heteroatom and at least one hydrocarbyl group, the presence of such moieties from the organic compound being effective to enhance the solvent storage stability of the composition comprising the dissolved polymethylaluminoxane and solvent.

5,329,033

PROCESS FOR THE PREPARATION OF AN OLEFIN POLYMER

Walter Spaleck, Liederbach; Jürgen Rohrmann, Kelkheim, and Martin Antberg, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

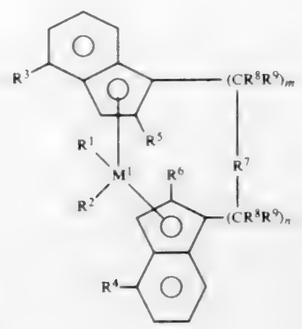
Division of Ser. No. 934,573, Aug. 24, 1992, Pat. No. 5,278,264. This application Oct. 25, 1993, Ser. No. 142,512

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1991, 4128238

Int. Cl.[5] C07F *7/28, 9/00, 11/00*

U.S. Cl. 556—53 **4 Claims**

1. A metallocene compound of the formula I



(I)

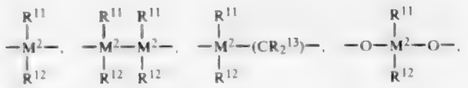
in which

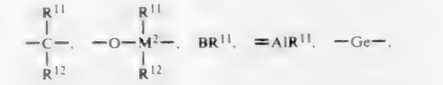
M^1 is a metal of group IVb, Vb or VIb of the Periodic Table,

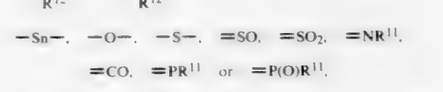
R^1 and R^2 are identical or different and are hydrogen, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group or a halogen atom,

R^3 and R^4 are identical or different and are a halogen atom, a C_1–C_{10}-alkyl group, which can be halogenated, a C_6–C_{10}-aryl group or an $—NR_2^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, in which R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^5 and R^6 are identical or different and have the meaning mentioned for R^3 and R^4, are additionally can also be hydrogen,







BR^{11}, AlR^{11}, —Ge—, —Sn—, —O—, —S—, =SO, $=SO_2$, $=NR^{11}$, =CO, $=PR^{11}$ or $=P(O)R^{11}$,

in which

R^{11}, R^{12} and R^{13} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-fluoroalkyl group, a C_6–C_{10}-aryl group, a C_6–C_{10}-fluoroaryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group or a C_7–C_{40}-alkylaryl group, or R^{11} and R^{12} or R^{11} and R^{13} in each case form a ring with the atoms joining them, or R^{11} or R^{12} with R^8 or R^9 in each case form a ring together with atoms joining them,

M^2 is silicon, germanium or tin,

R^8 and R^9 are identical or different and have the meaning mentioned for R^{11} and

m and n are identical or different and are zero, 1 or 2, m plus n being zero 1 or 2.

5,329,034

SILANOL COMPOUNDS, POLYMERIZABLE MONOMERS AND POLYMERS HAVING MESOGENIC GROUPS

Yu Nagase, and Yuriko Takamura, both of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

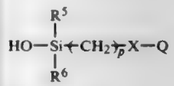
Division of Ser. No. 736,624, Jul. 26, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 28,621

Claims priority, application Japan, Aug. 9, 1990, 2-209325; Aug. 9, 1990, 2-209326; Mar. 13, 1991, 3-072050; Mar. 13, 1991, 3-072051

Int. Cl.[5] C07F *7/08, 7/10, 7/18*

U.S. Cl. 556—415 **7 Claims**

1. A silanol compound having a mesogenic group, of the following formula (III):



(III)

wherein each of R^5 and R^6 which may be the same or different, is an alkyl group or a phenyl group, X is a single bond, an oxygen atom, or a group of the formula —COO—or —OCO—, Q is a mesogenic group, and p is an integer of from 2 to 20.

5,329,035

PROCESS FOR PRODUCING 2,3-DISUBSTITUTED-4-SUBSTITUTED CYCLOPENTANONES, ENANTIOMORPHS, OR MIXTURES THEREOF

Ryoji Noyori, Nisshin; Masaaki Suzuki, Nagoya; Toshio Tanaka, Hino, and Seizi Kurozumi, Kokubunji, all of Japan, assignors to Teijin Limited, Osaka, Japan

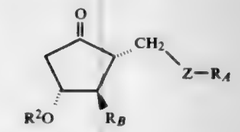
Continuation-in-part of Ser. No. 728,053, Jul. 8, 1991, which is a continuation of Ser. No. 377,751, Jul. 7, 1989, abandoned, which is a continuation of Ser. No. 231,669, Aug. 12, 1988, abandoned, which is a continuation of Ser. No. 784,598, Oct. 4, 1985, abandoned. This application Mar. 29, 1993, Ser. No. 38,066

Claims priority, application Japan, Oct. 8, 1984, 59-209629; Nov. 9, 1984, 59-235307; Feb. 18, 1985, 60-028430

Int. Cl.[5] C07C *405/00;* **C07F** *7/18*

U.S. Cl. 556—441 **18 Claims**

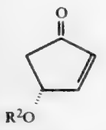
1. A process for producing a 2,3-disubstituted-4-substituted cyclopentanone represented by the formula



(6)

R^2 represents a tri(C_1–C_7) hydrocarbon silyl group or R^2O represents an acetal linkage, R_B represents a substituted or unsubstituted C_2–C_{10} alkyl or alkenyl group, Z represents an ethylene, trans-vinylene, or cis-vinylene, group, and R_A represents a substituted or unsubstituted C_1–C_6 alkyl group, an enantiomorph thereof, or a mixture of these in an arbitrary ratio, which comprises

(A) subjecting a 4-substituted-2-cyclopentenone represented by the following formula



(1)

wherein R^2 is as defined above,

an enantiomorph thereof, or a mixture of these in an arbitrary ratio, and an organocopper compound formed from an organolithium compound represented by the following formula

$$R_B—Li \quad (2)$$

wherein R_B is as defined above,

and a copper compound represented by the following formula

$$Cu—Q \quad (3)$$

wherein Q represents a halogen atom, a cyano group, a phenylthio group or a 1-pentynyl group, to conjugate addition-reaction, and thereafter,

(B) reacting the resulting enolate intermediate with a halide represented by the following formula

$$X—CH_2—Z—R_A \quad (5)$$

wherein Z and R_A are as defined above, and X represents a halogen atom or a tosyl group, in the presence of an organotin compound represented by the following formula

$$R_3BnY \quad (4)$$

wherein R's are identical or different and each represents a phenyl group or a halogen atom provided that two or three R's cannot be halogen atoms at the same time, and Y represents a halogen atom.

5,329,036

(ALPHA, OMEGA)PHENYLETHYNYL SILOXANE MONOMERS, OLIGOMERS, AND POLYMERS THEREOF

Thomas K. Dougherty, Playa Del Rey, and William E. Elias, El Segundo, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

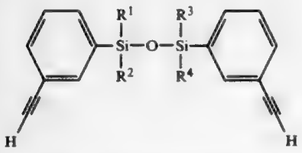
Filed Sep. 2, 1992, Ser. No. 939,326

Int. Cl.[5] C08F *7/08*

U.S. Cl. 556—453 **4 Claims**

1. An acetylene-terminated siloxane monomer having Formula A

Formula A



where R^1 and R^2 are independently C_1 to C_6 alkyl, phenyl, or phenyl substituted with one or more C_1 to C_6 alkyl or halogen groups.

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5,329,037

INCORPORATION OF FUNCTIONAL GROUPS IN POLYMERS

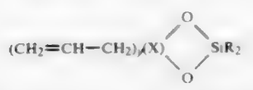
Andrew J. Sivak, Edgewood Borough, and Leonard A. Cullo, Hempfield Township, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 532,850, Apr. 16, 1990, which is a continuation-in-part of Ser. No. 257,895, Oct. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 47,960, May 8, 1987, abandoned. This application Apr. 23, 1993, Ser. No. 21,488

Int. Cl.[5] C07F *7/08, 7/18*

U.S. Cl. 556—464 1 Claim

1. A compound of the formula



where y is 1 or 2, (X) is a connecting hydrocarbyl fragment other than an unsaturated non-cyclic hydrocarbyl, and other than an unsaturated cyclic non-aromatic hydrocarbyl, having from 1 to about 20 carbon atoms, each R is independently selected from alkyl, alkoxy, alicyclic, aryloxy, alkaryl and aryl groups having from 1 to about 20 carbon atoms, provided that the total of carbon atoms in all R's together with all carbons directly attached to the carbon in X connected to an 0 is at least 5, and with the proviso as above.

5,329,038

PROCESS FOR HYDROGENATION OF CHLOROSILANE

Kirk M. Chadwick, Barry, United Kingdom; Roland L. Halm, Madison, Ind., and Brian R. Keyes, Corpus Christi, Tex., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 29, 1993, Ser. No. 175,324

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—474 22 Claims

1. A process for the hydrogenation of chlorosilanes, the process comprising contacting a chlorosilane described by formula

$$R_aH_bSiCl_{4-a-b}$$

where each R is independently selected from a group consisting of alkyls comprising one to six carbon atoms, a=0, 1, 2, or 3; b=0, 1, 2, or 3; and a+b=0, 1, 2, or 3; with aluminum and a hydrogen source selected from a group consisting of hydrogen gas and gaseous hydrogen chloride in the presence of a catalyst selected from a group consisting of copper and copper compounds, tin and tin compounds, zinc and zinc compounds, and mixtures thereof, and recovering a hydrosilane resulting from the exchange of one or more of the chlorine atoms of the chlorosilane by hydrogen.

5,329,039

ORGANOSILICON COMPOUND

Hideyoshi Yanagisawa, Matsuida, and Masaaki Yamaya, Annaka, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 786,018, Oct. 31, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 50,826

Claims priority, application Japan, Nov. 1, 1990, 2-296933

Int. Cl.[5] C07F *7/18*

U.S. Cl. 556—485 1 Claim

1. 10-Bromodecyl trimethoxy silane.

5,329,040

PROCESS FOR THE CONTINUOUS PREPARATION OF AMINOARYL OR AMINOALKYL β-SULFATOETHYL SULFONES

Lothar Schmitt, Königstein/Taunus, and Rüdiger Berthold, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 21, 1992, Ser. No. 871,341

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1991, 4113147

Int. Cl.[5] C07C *309/69, 315/04, 309/64*

U.S. Cl. 558—29 14 Claims

10. A process for the continuous preparation of an aminoaryl or aminoalkyl β-sulfatoethyl sulfone from the corresponding β-hydroxyethylsulfone or an acylated derivative thereof, comprising the steps of:

providing a mechanically generated fluidized bed of the amino-aryl or aminoalkyl β-hydroxyethylsulfone end product in granulized form by recycling a portion of granules of the product produced by said process into a mechanically stirred zone wherein the fluidized bed containing said granules is maintained and wherein the temperature of the fluidized bed is in the range of about 100° to 200 ° C.,

providing a reaction mixture comprising the β-hydroxylsulfone corresponding to said end product or an acylated derivative thereof which, under the conditions in the mechanically stirred zone, splits off an acid which is volatile at the temperature of the fluidized bed, and sulfuric acid; wherein the β-hydroxylsulfone or acylated derivative thereof and the sulfuric acid is mixed in a molar ratio of about 1:1 to about 1:1.15; and

introducing said reaction mixture into said fluidized bed, and carrying out the preparation of said end product substantially in said fluidized bed and whereby the heat exchange is carried out indirectly via a reactor housing

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5,329,041

TRISUBSTITUTED BENZOIC ACID INTERMEDIATES

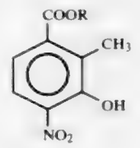
Nhan H. Nguyen, Hercules, Calif., assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 809,567, Dec. 17, 1991, abandoned, which is a division of Ser. No. 641,206, Jan. 15, 1991, Pat. No. 5,110,979. This application Jun. 10, 1993, Ser. No. 75,006

Int. Cl.[5] C07C *205/00*

U.S. Cl. 560—23 2 Claims

1. A compound having the structural formula



wherein R is C_1–C_4 alkyl.

5,329,042

CYCLOHEXENE DERIVATIVE AND METHOD OF PRODUCING THE SAME

Junichi Haruta; Kazuhiko Sakuma; Akihiro Yasuda; Katsuyoshi Hara, and Itsuo Uchida, all of Yokohama, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

PCT No. PCT/JP92/00537, § 371 Date Dec. 24, 1992, § 102(e) Date Dec. 24, 1992, PCT Pub. No. WO92/19582, PCT Pub. Date Nov. 12, 1992

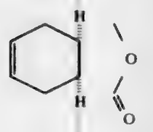
PCT Filed Apr. 24, 1992, Ser. No. 955,757

Claims priority, application Japan, Apr. 26, 1991, 3-188377; Apr. 26, 1991, 3-188378

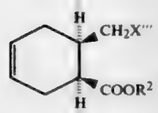
Int. Cl.[5] C07C *205/00*

U.S. Cl. 560—125 17 Claims

1. A method of producing a (1S, 6R)-6-halomethyl-1-carboxycyclohex-3-ene derivative represented by formula (X') below, comprising reacting (3aR, 7aS)-1,3,3a,4,7,7a-hexahydroisobenzofuran-1-one represented by formula (IX) with a halogenating agent in an inert solvent, followed by treating using a lower alcohol represented by R^2OH or water,



(IX)



(X')

where R^2 is a hydrogen atom or a lower alkyl group, and X''' represents a halogen atom.

5,329,043

METHOD OF PREPARING METHACROLEIN AND/OR METHACRYLIC ACID

Ikuya Matsuura, Toyama, and Yukio Aoki, Hyogo, both of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed May 26, 1993, Ser. No. 67,067

Claims priority, application Japan, May 29, 1992, 4-138615

Int. Cl.[5] C07C *51/16*

U.S. Cl. 562—534 16 Claims

1. A method of preparing methacrolein and/or methacrylic acid by catalyst gas phase oxidation of isobutane in the presence of a catalyst, wherein said catalyst is a catalyst containing divanadyl pyrophosphate and represented by general formula (1)

$$P_aV_bX_cY_dZ_eO_x \quad (1)$$

wherein P, V, and O represent phosphorus, vanadium and oxygen, respectively; X represents at least one element selected from the group consisting of cobalt and nickel; Y represents at least one element selected from the group consisting of niobium, tantalum, manganese, iron, copper, zinc, lanthanum, neodymium, samarium, cerium, zirconium, chromium, magnesium, tungsten, tin, hafnium, uranium, indium, cadmium, molybdenum, antimony, bismuth, rhodium, silver and sulfur; Z represents at least one element selected from the group consisting of potassium, rubidium, cesium and thallium; a, b, c, d, e, and x represent atomic ratios, respectively, provided that when a is 1, b is 0.2 to 2, c is 0.01 to 5, d is 0 to 5, and e is 0 to 2, and x represents number of oxygen atoms necessary for satisfying atomic valences of respective component elements.

5,329,044

GLUCARIC ACID MONOAMIDES AND THEIR USE TO PREPARE POLY(GLUCARAMIDES)

Donald E. Kiely, 2521 Chatwood Rd., Birmingham, Ala. 35226, and Liang Chen, 206 Vail Ave. #217, Birmingham, Ala. 35209

Filed Aug. 12, 1992, Ser. No. 928,007

Int. Cl.[5] C07C *229/00*

U.S. Cl. 562—564 4 Claims

1. A process for preparing N-aminohydrocarbylglucaramidate or N-aminoheterohydrocarbyleneglucaramidate alkali metal salts which comprises reacting an alkali metal salt of a glucaromonolactone with a diprimary amine in which the amino nitrogens are attached to aliphatic carbon atoms in a polar organic solvent.

5,329,045

PROCESS FOR DEODORISING A MERCAPTO ACID BY EXTRACTING MALODOROUS COMPOUNDS THEREFROM WITH CARBON DIOXIDE

Michel Dedieu, Maisons Laffitte; Herve Burgaud, Dammartin en Goele; Eric LaPoirie, Villemomble; Véronique Gurfein, Le Plessis Robinson, and Gérard Malle, Villiers-Sur-Morin, all of France, assignors to L'Oreal, Paris, France

Filed Apr. 12, 1993, Ser. No. 45,140

Claims priority, application France, Oct. 15, 1992, 92 12345

Int. Cl.[5] C07C *51/42*

U.S. Cl. 562—593 13 Claims

1. A process for deodorizing a mercapto acid by extraction of a greater part of malodorous decomposition products contained therein, said process comprising treating said mercapto acid with carbon dioxide at a temperature and pressure so as to maintain said carbon dioxide essentially outside a supercritical region bounded by a temperature of 31° C. and a pressure of 73.8×10^5 Pascals, said mercapto acid having the formula:

$$HS—A—COOH \quad (I)$$

wherein

A represents

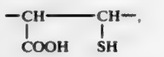
(i)—$(CH_2)_n$—wherein n is an integer ranging from 1 to 4,

(ii)



wherein R represents linear or branched C_1–C_3 alkyl, or

(iii)



said mercapto acid optionally being in the form of a solution in a polar solvent and said carbon dioxide being in gaseous, liquid or solid form.

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5,329,046

BISCATIONIC ACID AMIDE AND IMIDE DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Hans-Tobias Macholdt, Darmstadt; Siegfried Schiessler, Bad Soden am Taunus; Jörg Gitzel, Hattersheim am Main, and Erwin Dietz, Kelkheim/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/02199, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO91/09835, PCT Pub. Date Jul. 11, 1991

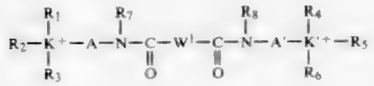
PCT Filed Dec. 17, 1990, Ser. No. 867,185

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1989, 3943047; Sep. 5, 1990, 4028121

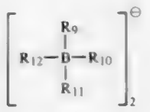
Int. Cl.[5] C07F *5/02*

U.S. Cl. 564—8 6 Claims

1. Biscationic acid amide or imide derivatives of the general formula I



I



in which R_1 to R_8 independently of one another are in each case a hydrogen atom or in each case a substituted or unsubstituted aliphatic group, which can be interrupted by hetero atoms, and in the case where R_1 and R_2, or R_4 or R_5 form a double bond to K or K', there is no R_3 or R_6 substituent, and in which A and A' and W^1 as a divalent bridge member independently of one another are in each case a substituted or unsubstituted aliphatic or aromatic bridge member which can be interrupted by hetero atoms, or W^1 is a direct bond, and K and K' are in each case a nitrogen atom, and the radicals R_9 to R_{12} independently of one another are aliphatic, cycloaliphatic, aromatic or araliphatic radicals, in which the aliphatic, cycloaliphatic, aromatic and araliphatic radicals can be substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or aryl radicals, or halogen atoms, and mixtures of these compounds and mixed crystals with mixed anions and/or cations.

5,329,047

AROMATIC ALLYL AMINE THERMOSETTING RESIN COMPOSITION

Shigeki Naitoh; Yasuhisa Saito; Yasuhiro Hirano; Kazuo Takebe; Kunimasa Kamio, and Youichi Ueda, all of Ibaraki, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

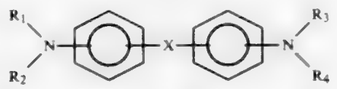
Division of Ser. No. 464,228, Jan. 12, 1990, Pat. No. 5,109,087. This application Dec. 13, 1991, Ser. No. 806,328

Claims priority, application Japan, Jan. 12, 1989, 1-6894; Mar. 23, 1989, 1-73054; Jun. 22, 1989, 1-162099; Jun. 23, 1989, 1-161292

Int. Cl.[5] C07C *217/90*

U.S. Cl. 564—430 4 Claims

1. An aromatic allylamine compound represented by the following formula:



wherein X is —O— or —S—, and R_1, R_2, R_3 and R_4 each is an allyl group or a hydrogen atom, provided that at least one of R_1, R_2, R_3 and R_4 is an allyl group.

5,329,048

PROCESS OF PREPARING TETRAAMINO INTERMEDIATES

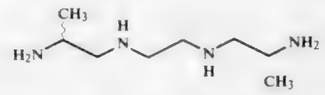
Jung-Hui Sun, Hockessin, Del., assignor to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 805,044, Dec. 11, 1991, Pat. No. 5,206,249, which is a continuation-in-part of Ser. No. 676,061, Mar. 27, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 25,633

Int. Cl.[5] C07C *209/50*

U.S. Cl. 564—488 1 Claim

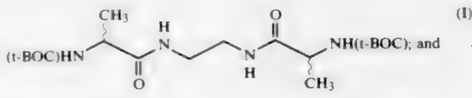
1. A method for preparing a compound of the formula:



IV

said method comprising:

(a) reacting t-BOC-alanine with 1,1' carbonyldiimidazole followed by reaction with ethylenediamine to yield a compound of the formula:



(I)

(b) removing the t-BOC group of (I) with mineral acid followed by reduction of the dihydrochloride salt with diborane in refluxing tetrahydrofuran followed by neutralization of the acid salt with sodium ethoxide to yield a compound of the formula (IV).

5,329,049

PROCESS FOR THE PREPARATION OF SUBSTITUTED INDANONES

Laurent Weisse, Oberursel, and Heinz Strutz, Usingen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

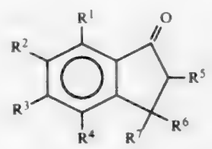
Filed Apr. 27, 1993, Ser. No. 53,716

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1992, 4213939

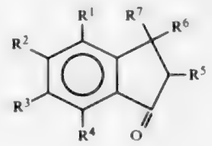
Int. Cl.[5] C07C *45/45*

U.S. Cl. 568—319 5 Claims

1. A process for the preparation of a compound of the formula III or the isomer thereof of the formula IIIa



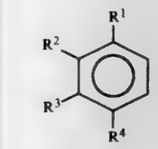
(III)



(IIIa)

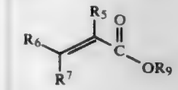
in which

R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are identical or different and are hydrogen, (C_1–C_{20})-alkyl, (C_6–C_{14})aryl, (C_1–C_{10})alkoxy, (C_2–C_{10})alkenyl, (C_7–C_{20})arylalkyl, (C_7–C_{20})alkylaryl, (C_6–C_{10})aryloxy, (C_1–C_{10})fluoroalkyl, (C_6–C_{10})haloaryl, (C_2–C_{10})alkynyl, an —SiR^8_3 radical in which R^8 is (C_1–C_{10})alkyl, or are a halogen atom or a heteroaromatic radical having 5 or 6 ring members which may contain one or more heteroatoms, or the adjacent radicals R^1–R^7, together with the atoms connecting them, form one or more substituted or unsubstituted rings, which comprises reacting a compound of the formula I



(I)

with a compound of the formula II



(II)

in which R^9 is straight-chain (C_1–C_{20})alkyl, and R^1 to R^7 are as defined above, in liquid, anhydrous hydrogen fluoride.

5,329,050

PROCESS FOR THE PREPARATION OF SUBSTITUTED INDANONES, AND THEIR USE

Laurent Weisse, Oberursel; Jürgen Rohrmann, Kelkheim; Frank Küber, Oberursel, and Heinz Strutz, Usingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

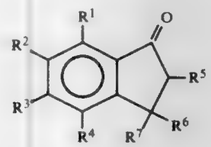
Filed Apr. 27, 1993, Ser. No. 53,835

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1992, 4213940

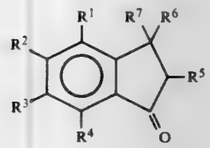
Int. Cl.[5] C07C *45/45*

U.S. Cl. 568—319 6 Claims

1. A process for the preparation of a compound of the formula IV or the isomer thereof of the formula IVa



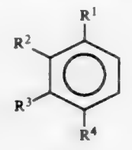
(IV)



(IVa)

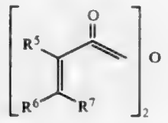
in which

R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are identical or different and are hydrogen, (C_1–C_{20})-alkyl, (C_6–C_{14})aryl, (C_1–C_{10})alkoxy, (C_2–C_{10})alkenyl, (C_7–C_{20})arylalkyl, (C_7–C_{20})alkylaryl, (C_6–C_{10})aryloxy, (C_1–C_{10})fluoroalkyl, (C_6–C_{10}) haloaryl, (C_2–C_{10})alkynyl, an —SIR^8_3 radical in which R^8 is (C_1–C_{10})alkyl, or are a halogen atom or a heteroaromatic radical having 5 or 6 ring members which may contain one or more heteroatoms, or the adjacent radicals R^1–R^4, together with the atoms connecting them, form one or more substituted or unsubstituted rings, which comprises reacting a compound of the formula I



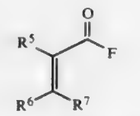
(I)

with a compound of the formula II



(II)

or with a compound of the formula (III)



(III)

in which R^1–R^7 are as defined above, in liquid, anhydrous hydrogen fluoride.

5,329,051

ETHER RECOVERY

John H. Eason, Katy, Tex., and Joseph Klepac, Krotz Springs, La., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 30, 1992, Ser. No. 998,706

Int. Cl.[5] C07C *41/34, 41/38*

U.S. Cl. 568—699 7 Claims

1. A process for separating an etherification reaction effluent stream containing a tertiary alkyl ether, unreacted alcohol, hydrocarbons comprising unreacted isoolefins, and other hydrocarbons, said process comprising:

(a) passing said etherification reaction effluent stream to a first separation zone which comprises a first extraction column, and a first fractionator;

(b) separating said etherification reaction effluent stream in said first separation zone under conditions which provide a first stream comprising a mixture of said hydrocarbons and said alcohol which is withdrawn from the overhead of said first fractionator, a second stream comprising a product stream of said tertiary alkyl ether which is withdrawn from the bottom of said first fractionator, and a third stream comprising a water/alcohol mixture which is withdrawn from the bottom of said first extractor;

(c) passing said first stream to a second separation zone which comprises a second extraction column, and a stripper column;

(d) separating said first stream in said second separation zone under conditions which provide a fourth stream comprising stabilized hydrocarbons which is withdrawn from the bottom of said stripper, and a fifth stream comprising a water/alcohol mixture which is withdrawn from the bottom of said second extractor; and

(e) combining said fifth stream and said third stream to form a sixth stream and passing said sixth stream to a second fractionator which yields a seventh stream comprising alcohol which is withdrawn from the overhead of said second fractionator.

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5,329,052

PINANES

Bernard Auger, Peymeinade, France; Jerzy A. Bajgrowicz, Zurich, Switzerland, and Edouard Giraudi, Cruseilles, France, assignors to Givaudan-Roure Corporation, Clifton, N.J.

PCT No. PCT/EP92/02754, § 371 Date Aug. 5, 1992, § 102(e) Date Aug. 5, 1992, PCT Pub. No. WO93/11094, PCT Pub. Date Jun. 10, 1993

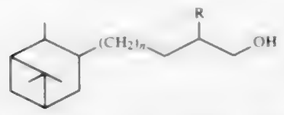
PCT Filed Nov. 28, 1992, Ser. No. 104,035

Claims priority, application Switzerland, Dec. 5, 1991, 3571/91; Sep. 11, 1992, 2868/92

Int. Cl.[5] C07C *33/05, 33/16, 31/137;* A61K *7/46*

U.S. Cl. 568—822 14 Claims

1. A compound of the formula



in which R represent H, or C_1–C_4 alkyl, n represent 0 or 1 and the notation ⎯ represents a single or double bond

5,329,053

PROCESS FOR THE MANUFACTURE OF KNOWN ODORANTS

Daniel Helmlinger, Dübendorf, Switzerland, assignor to Givaudan-Roure Corporation, Clifton, N.J.

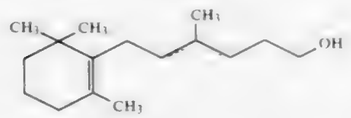
Filed Aug. 25, 1993, Ser. No. 111,694

Claims priority, application Switzerland, Sep. 3, 1992, 2770/92

Int. Cl.[5] C07C *33/14*

U.S. Cl. 568—824 8 Claims

1. A process for the manufacture of 6-(2',6',6'-trimethyl-cyclohex-1'-en-1'-yl)-4-methyl-hex-3-en-1-ol, -4-en-1-ol, or mixtures thereof, having the formula



wherein one of the bonds ⎯ denotes a single bond and the other denotes a double bond,

said process comprising an initial reducing step in which E,E-6-(2',6',6'-trimethyl-cyclohex-1'-en-1'-yl)-4-methyl-hexa-2,4-dien-1-al is reduced using a reducing agent which is selected from the group consisting of (a) lithium aluminium hydride, (b) sodium dithionite in the presence of sodium bicarbonate in aqueous solution and of a phase transfer catalyst, (c) sodium borohydride, and (d) sodium bis(2-methoxyethoxy)aluminium dihydride.

5,329,054

DECARBOXYLATION PROCESS

Kevin J. Theriot; Niomi L. Krzystowczyk; Yueh-Dong Chen; Edward A. Burt, and Lawrence H. Shepherd, Jr., all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Jul. 19, 1993, Ser. No. 93,166

Int. Cl.[5] C07C *17/24, 17/33, 25/13, 25/02*

U.S. Cl. 570—142 11 Claims

1. A process for the decarboxylation of an activated carboxylic acid or ester, said process comprising reacting said acid or ester with an alkanolamine reagent so as to remove the carboxylic acid or ester group from said acid or ester and replace said carboxylic acid or ester group with hydrogen, said carboxylic acid or ester being continuously or incrementally added to said alkanolamine reagent over a period of time such that said alkanolamine reagent remains in molar excess to said carboxylic acid or ester in the reaction mixture, and the decarboxylated product and carbon dioxide being continually removed as a vapor from the reaction mixture.

5,329,055

METHOD OF SUPPRESSING MIST FORMATION FROM OIL-CONTAINING FUNCTIONAL FLUIDS

Harold E. Bachman, Summit, and Chung K. Shih, Scotch Plains, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 717,433, Jun. 19, 1991, Pat. No. 5,227,551. This application May 14, 1993, Ser. No. 61,899

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[5] C10M *143/06*

U.S. Cl. 585—12 20 Claims

1. In a process for suppressing mist formation from a single use lubricating oil, the improvement which comprises:

admixing with the lubricating oil from about 0.0001 to 0.04 weight percent of a copolymer prepared by copolymerizing at least one alpha-monoolefin selected from propylene and butene-1 with at least one additional alpha-monoolefin having from 5 to about 20 carbon atoms, said copolymer having a viscosity average molecular weight of from about 100,000 to about 20 million.

5,329,056

PREPARATION OF SUBSTITUTED CYCLOPENTADIENES

Stephen E. Belmont, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Filed Jan. 19, 1993, Ser. No. 5,746

Int. Cl.[5] C07C *1/20, 1/207*

U.S. Cl. 585—358 3 Claims

1. A process for preparing a substituted cyclopentadiene said process comprising the steps of (a) reacting a vinyl ketone with a vinyl organometallic compound to form a divinyl tertiary alcohol and (b) dehydrating/cyclizing said alcohol to form said substituted cyclopentadiene in the presence of an acidic cation exchange resin, wherein (a) said vinyl ketone has the formula $HCR^1{=}CR^2C(O)R^3$, wherein R^1 is hydrogen or C_1 to C_{30} alkyl and R^2 and R^3 are independently C_1 to C_{30} alkyl, (b) said vinyl organometallic compound has the formula $HCR^5{=}CR^4M$, wherein R^4 is C_1 to C_{30} alkyl, R^5 is hydrogen or C_1 to C_{30} alkyl and M is Li, Na or MgX, where X is halogen, and (c) at least one of R^1 and R^5 is hydrogen.

5,329,057

PROCESS FOR THE CYCLODIMERIZATION OF 1,3-BUTADIENES TO 4-VINYLCYCLOHEXENES

Ronald W. Diesen; Kenneth A. Burdett; Ravi S. Dixit, and Stanley S. T. King, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 688,808, Apr. 19, 1991, Pat. No. 5,196,621. This application Sep. 30, 1992, Ser. No. 954,710

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] C07C *2/50*

U.S. Cl. 585—366 22 Claims

1. A process for the cyclodimerization of 1,3-butadiene or substituted 1,3-butadiene to 4-vinylcyclohexene or a substituted derivative thereof, the process comprising contacting 1,3-butadiene or a substituted 1,3-butadiene with a catalytic amount of a copper(I)-aluminosilicate zeolite wherein the zeolite is selected from the group consisting of faujasites, mordenite, zeolite L, zeolite Ω, and zeolite beta, and wherein the zeolite has a framework silica to alumina molar ratio of at least about 15, the catalyst being prepared by:

I) impregnating the aluminosilicate zeolite with a solution of a copper(II) salt, calcining the copper(II)-impregnated zeolite under conditions sufficient to remove the anion of the copper(II) salt, and reducing the calcined copper(II)-impregnated zeolite under conditions such that a portion of the copper (II) ions are converted to copper(I); or

II) heating a solid mixture containing a copper salt and the aluminosilicate zeolite in the absence of liquid solvent; or

III) contacting vapors of a copper salt with the aluminosilicate zeolite;

the contacting of the butadiene and the copper(I)-zeolite occurring under reaction conditions such that 4-vinylcyclohexene or a substituted derivative thereof is formed.

5,329,058

PROCESS FOR PRODUCING ALKENYLBENZENE

Keizo Shimada, Iwakuni; Koji Sumitani, Koganei; Seiji Itoh, Iwakuni, and Kazuhiro Sato, Matsuyama, all of Japan, assignors to Teijin Limied, Osaka, Japan

Filed Oct. 23, 1992, Ser. No. 949,471

Claims priority, application Japan, Apr. 25, 1990, 2-107659; Apr. 25, 1990, 2-107660; Dec. 18, 1991, 3-353178

Int. Cl.[5] C07C *2/58*

U.S. Cl. 585—452 11 Claims

1. In a process for producing an alkenylbenzene by the reaction of an alkylbenzene having 8 or more carbon atoms and a conjugated diolefin, the improvement in which the reaction is performed in the presence of a catalyst obtained by dispersing (a) metallic sodium and (b) compound selected from the group consisting of potassium carbonate, potassium hydrogen carbonate, potassium sodium carbonate, potassium hydroxide and mixtures thereof in the presence of (c) an aromatic hydrocarbon having at least a substituent with a double bond.

5,329,059

ALKYLAROMATIC DISPROPORTIONATION

David O. Marler, Deptford, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Jul. 6, 1993, Ser. No. 86,256

Int. Cl.[5] C07C *5/52*

U.S. Cl. 585—475 19 Claims

1. A process for converting feedstock comprising an alkylaromatic compound, the alkyl group of said alkylaromatic compound having from 1 to about 6 carbon atoms, to conversion product which comprises contacting said feedstock comprising said alkylaromatic compound under disproportionation conditions with catalyst comprising an active form of synthetic porous crystalline MCM-49.

5,329,060

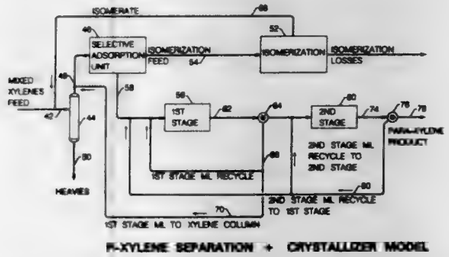
INTEGRATED SELECTIVE ADSORPTION AND CRYSTALLIZATION PROCESS FOR PARA-XYLENE RECOVERY

John D. Swift, Hindhead Surrey, England, assignor to UOP, Des Plaines, Ill.

Filed Apr. 1, 1993, Ser. No. 41,375

Int. Cl.[5] C07C *7/00, 7/14, 7/12, 5/22*

U.S. Cl. 585—805 22 Claims



PARAXYLENE SEPARATION + CRYSTALLIZER MODEL

1. A process for the production of a substantially pure para-xylene isomer from a mixed xylene feedstock comprising ortho-, meta- and para-xylene isomers and ethylbenzene which process comprises the steps of:

(a) introducing at least a portion of said feedstock into a selective adsorption zone to produce a para-xylene-enriched stream and a para-xylene-depleted stream;

(b) passing at least a portion of said para-xylene-depleted stream to an isomerization zone containing an isomerization catalyst at conditions sufficient to produce an isomerate comprising an equilibrium xylene mixture;

(c) recycling at least a portion of said isomerate stream to said selective adsorption zone;

(d) passing at least a portion of said para-xylene-enriched stream to a crystallization zone to produce a para-xylene product stream and a mother liquor stream; and

(e) recycling at least a portion of said mother liquor to said selective adsorption zone.

5,329,061

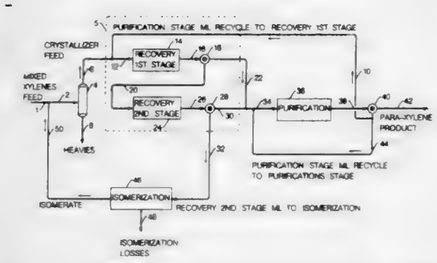
CRYSTALLIZATION PROCESS FOR PARA-XYLENE RECOVERY USING TWO-STAGE RECOVERY SECTION

John D. Swift, Hindhead, England, assignor to UOP, Des Plaines, Ill.

Filed Jun. 1, 1993, Ser. No. 69,320

Int. Cl.[5] C07C *7/00, 7/14*

U.S. Cl. 585—805 17 Claims



14. A crystallization process for producing para-xylene crystals from a mixed xylene feedstock which process comprises the steps of:

(a) passing at least a portion of said feedstock to a crystallization recovery section comprising:

(i) a first stage recovery section which produces first stage recovery section para-xylene crystals and first stage recovery section mother liquor at a temperature of about −35° C. to −50° C.; and

(ii) a second stage recovery section which produces second stage recovery section para-xylene crystals and second stage recovery section mother liquor at a temperature of about −55° C. to −75° C.;

(b) feeding at least a portion of said first stage recovery section mother liquor to said second stage crystallization recovery section;

(c) passing at least a portion of said second stage recovery section mother liquor to a xylene isomerization zone containing an isomerization catalyst at conditions sufficient to produce an isomerate comprising an equilibrium xylene mixture and passing a recycle stream comprising said isomerate to said crystallization recovery section;

(d) passing a purification feed stream comprising said first and second stage recovery section para-xylene crystals to a crystallization purification section to produce a purification section effluent stream comprising para-xylene crystals and purification section mother liquor;

(e) separating said purification section effluent stream into purification mother liquor and para-xylene product crystals; and

(f) passing at least a portion of said purification section mother liquor to said crystallization recovery section.

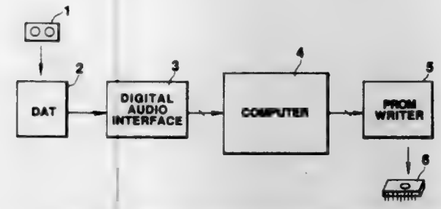
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5,329,062

METHOD OF RECORDING/REPRODUCING WAVEFORM AND APPARATUS FOR REPRODUCING WAVEFORM

Youji Kaneko, Kokubunji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1991, Ser. No. 732,508
Claims priority, application Japan, Jul. 31, 1990, 2-201358; Jul. 31, 1990, 2-201359; Jul. 31, 1990, 2-201360
Int. Cl.[5] G10H *7/02*
U.S. Cl. 84—603 **19 Claims**



1. A method of recording/reproducing a waveform, comprising the steps of:
providing a waveform data array representing an audio signal;
determining a constant scaling ratio, which is not changed from generation start to generation end of the waveform, in dependence on a magnitude of a variation of the waveform data array;
forming a scaled data array from the waveform data array on the basis of said scaling ratio;
forming a scaled difference data array from the scaled data array;
storing the scaled difference data array;
storing expansion ratio data representing an expansion ratio associated with the scaling ratio; and
reproducing a waveform data array from the stored scaled difference data array on the basis of the stored expansion ratio data.

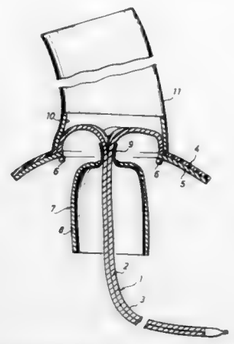
5,329,063

LINER ASSEMBLY FOR LINING BRANCH PIPES AND A METHOD FOR MANUFACTURING THE LINER ASSEMBLY

Shigeru Endoh, Kasukabe, Japan, assignor to Get, Inc., Ibaraki, Japan

Filed May 29, 1992, Ser. No. 890,200
Claims priority, application Japan, May 31, 1991, 3-156095
Int. Cl.[5] F16L *55/16*
U.S. Cl. 138—98 **6 Claims**

1. A lining assembly for lining the inner wall of a branch pipe branching out from a main pipe, comprising:
a flexible tubular resin-impregnated liner having one end externally reversed to form a collar and having a length consistent with the length of the branch pipe, said collar being warped and hardened to have a curvature same as that of an inner wall of the main pipe;
a first hermetic film covering an external wall of the tubular liner;
a second hermetic film covering an external wall of the tubular liner;
a detachable resilient tube consisting of a tubular reinforcement material and a third hermetic film covering an internal wall of said tubular reinforcement material, an upper end portion of said third hermetic film being free of the reinforcement material and detachably adhered to said second hermetic film covering the external wall of the flexible tubular resin-impregnated liner near the collar and said detachable resilient tube enclosing a sufficient length of said flexible tubular film-covered liner which is in the vicinity of the collar to support that part of the liner to be erect; and



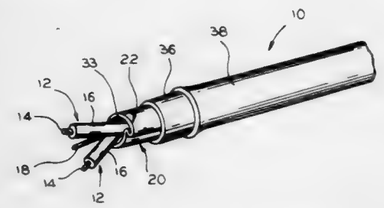
an annular resin-absorbent flat felt with which said collar is backed.

5,329,064

SUPERIOR SHIELD CABLE

Thomas G. Tash, and William A. King, both of Richmond, Ind., assignors to Belden Wire & Cable Company, Richmond, Ind.

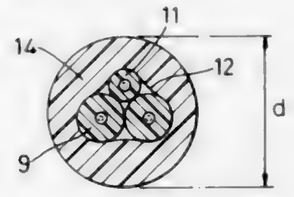
Filed Oct. 2, 1992, Ser. No. 955,517
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 **10 Claims**



1. A braided cable having outwardly successive layers comprising:
a core comprising a transmission medium, said transmission medium being an insulated conductor;
a shielding tape surrounding said core and extending concentrically within and parallel to the length of said cable, said shielding tape having a first edge and an oppositely located second edge, said first and second edge overlapping by inwardly curving towards one another, said shielding tape further comprising at least one layer of aluminum material and a second layer of polyolefin or polyester material;
a cable braid longitudinally surrounding said shielding tape; and
an outer jacket longitudinally surrounding said cable braid.

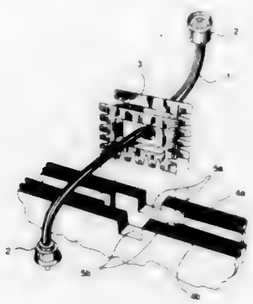
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5,329,065
ELECTRICAL CABLE
Derek Marney, Kirkheaton, and David Hardy, Wakefield, both of United Kingdom, assignors to Litetronics (U.K.) Ltd., United Kingdom
PCT No. PCT/GB91/00956, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/00592, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 14, 1991, Ser. No. 962,809
Claims priority, application United Kingdom, Jun. 23, 1990, 9014024
Int. Cl.[5] H01B 7/00
U.S. Cl. 174—128.1 5 Claims



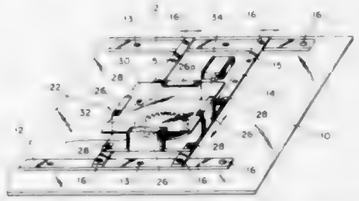
1. A multi-core electrical cable comprising a moulded-on outer sheath, at least two separately insulated inner core cables and a separately insulated earth cable, at least one of the inner core cables has a high tension conducting core with an overall cross-sectional area of at least 1 mm^2 and an insulating sheath which is approximately 1.8 mm thick, and wherein said earth cable has a conducting core with an overall cross-sectional area of at least 1 mm^2 and an insulating sheath which is approximately 0.65 mm thick.

5,329,066
SCREENED COAXIAL CABLE THROUGH-LET
Kjell O. Hansson, Sollentuna, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Sep. 25, 1992, Ser. No. 950,663
Claims priority, application Sweden, Sep. 27, 1991, 9102821
Int. Cl.[5] H01B 17/26
U.S. Cl. 174—151 3 Claims



1. A coaxial cable through-let for screening signals transmitted between two adjacent, screened spaces, comprising a coaxial cable provided with a screen, a strippable sheath covering the screen, and electrical contact devices at each end thereof for signal transmission, and a screening plate which surrounds the cable and which is positioned between the two spaces in recesses provided in mutually opposing side-walls thereof, wherein the screening plate has two substantially identical plate-halves, each of which includes a flat, rectangular plate having resilient tongues provided along three sides thereof, and a centrally positioned hollow having a height corresponding to half the distance between the spaces and a coaxial cable opening provided centrally in the hollow, the two plate-halves being soldered together at their mutually facing hollows and also in the openings at the coaxial cable screen at a part thereof from which the cable sheath has been stripped.

5,329,067
STRUCTURE FOR FIXING OPTICAL CABLE HOLDING BOX TO PRINTED CIRCUIT BOARD
Hiroyuki Abe; Masatomo Ohta; Masahiro Haga; Shigeki Yamaji, and Shin Watanabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jun. 10, 1993, Ser. No. 74,661
Claims priority, application Japan, Jun. 15, 1992, 4-154673
Int. Cl.[5] H05K 1/18, 7/02
U.S. Cl. 174—260 2 Claims

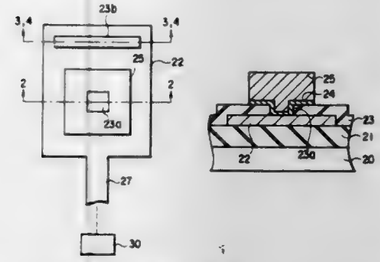


1. A structure for fixing an optical cable holding box to a printed circuit board comprising:
a printed circuit board;
a pair of extended first metal plates fixed to said printed circuit board in the vicinity of its upper and lower edge portions along said upper and lower edges, said first metal plate having a plurality of screw holes formed therein at equal spaces;
a pair of extended second metal plates fixed to said pair of first metal plates such that they are extended between the first metal plates and spaced apart from each other, said second metal plate having a plurality of screw holes formed therein at equal spaces;
a plurality of first screws for removably fixing said second metal plates to said first metal plates;
an optical cable holding box fixed to said pair of second metal plates; and
a plurality of second screws for removably fixing said optical cable holding box to said second metal plates.

5,329,068
SEMICONDUCTOR DEVICE
Seiichi Hirata, Yokosuka, and Akito Yoshida, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 9, 1993, Ser. No. 73,510
Claims priority, application Japan, Jun. 10, 1992, 4-150798
Int. Cl.[5] H05L 1/02
U.S. Cl. 174—261 6 Claims

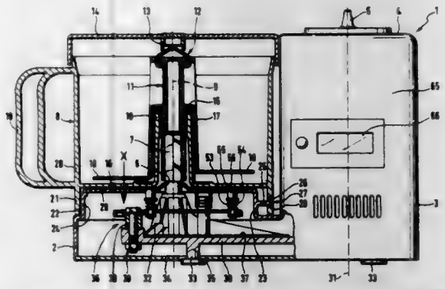
1. A semiconductor device comprising:
a semiconductor substrate having a positive element formed thereon;
a first insulating film formed on the semiconductor substrate;
an electrode pad formed on the first insulating film and electrically connected to the positive element;
a second insulating film on the electrode pad, the second insulating film having a first opening; and

a bump extending within the first opening and overlying the second insulating film;



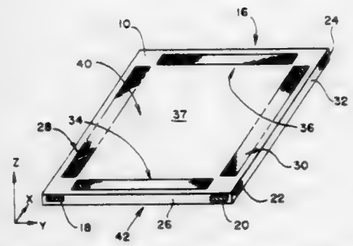
the second insulating film including a second opening, the electrode pad being exposed through the second opening.

5,329,069
KITCHEN APPLIANCE WITH WEIGHING DEVICE
Klaus Amsel, Oberursel; Albrecht Weller, Steinbach, and Klaus Kötterheinrich, Mühlheim, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Mar. 12, 1993, Ser. No. 30,566
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1992, 4208368
Int. Cl.[5] G01G 19/52
U.S. Cl. 177—245 11 Claims



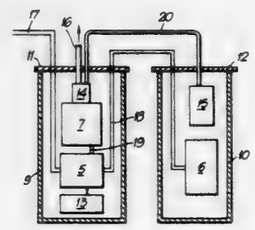
1. A kitchen appliance (1) with an appliance base (2), a vessel (8) seatable thereon for processing food, and with a weighing device (36) incorporating a force-detecting element (39) and capable of determining and indicating the weight of food contained in the vessel (8), with the vessel (8) being carried during weighing by the force-detecting element (39) of the weighing device (36) which is in turn connected with the appliance base (2), characterized in that at least one bearing element (53) vertically slidable against the force of a biased spring (54) is provided between the force-detecting element (39) and the vessel (8), that the vessel (8) rests on the bearing element (53) during weighing while being adapted to be latched with the appliance base (2) for operation of the kitchen appliance (1), that the force-detecting element of the weighing device (36) is comprised of a bending beam (39) fastened to the appliance base (2) and having at least one strain gauge (41, 42) fitted thereto, and that the signal of the strain gauge (41, 42) is evaluated by an electronic circuitry and indicated on a display device (66).

5,329,070
TOUCH PANEL FOR AN ACOUSTIC TOUCH POSITION SENSOR
Terence J. Knowles, Hanover Park, Ill., assignor to Carroll Touch Inc., Round Rock, Tex.
Continuation of Ser. No. 820,517, Jan. 14, 1992, Pat. No. 5,243,148, which is a continuation-in-part of Ser. No. 615,030, Nov. 16, 1990, Pat. No. 5,177,327. This application Feb. 16, 1993, Ser. No. 17,827
Int. Cl.[5] G08C 21/00
U.S. Cl. 178—18 34 Claims



1. A touch panel for use in a touch position sensor having at least one transducer mounted on said touch panel to impart a shear wave of a given wavelength for propagation in said touch panel, comprising:
a touch substrate capable of supporting shear waves for propagation therein;
a back plate; and
a substantially nonshear wave coupling adhesive disposed between said substrate and said back plate, said adhesive bonding said touch substrate to said back plate and substantially preventing shear waves propagating in said touch substrate from being coupled to said back plate.

5,329,071
METHOD AND DEVICE FOR OPERATION OF EQUIPMENT INSTALLED IN MARINE SEISMIC TOWS
Odd O. Vatne, Oslo; Hans Cappelen, Blommenholm, and Oyvind Sorbotten, Haugesund, all of Norway, assignors to Geco AS, Stavanger, Norway
Filed Mar. 17, 1993, Ser. No. 32,098
Claims priority, application Norway, Mar. 24, 1992, 921154
Int. Cl.[5] G01V 1/38
U.S. Cl. 181—110 8 Claims

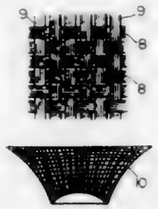


1. A device for operating equipment provided in marine, seismic tows remote from a towing vessel and towed by towing cables, said equipment including at least one of adjusting mechanisms for deflectors on said towing cables, devices for lowering and raising seismic guns, devices for use in tailbuoys in streamers, and electronic equipment, comprising;
first sealed chamber means on said towing cable;
second sealed chamber means on said towing cable separate and sealed from said first chamber means;

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low voltage chargeable power means in said first chamber means;
charging means in said second chamber means operatively connected by electrical conduit means to said low voltage power means for charging said low voltage power means;
electrically powered equipment operating means in said second chamber means electrically connected to said low voltage power means for operation thereby;
control means in said second chamber means electrically connected to said charging means and equipment operating means for controlling operations of said means in said second chamber means and thereby controlling operation of said equipment; and
central control means on said vessel for transmitting control signals to said control means in said second chamber means.

5,329,072
ACOUSTIC DIAPHRAGM
Tomoyuki Kageyama, and Kunio Suzuki, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Filed May 22, 1992, Ser. No. 888,546
Claims priority, application Japan, May 23, 1991, 3-118900; May 23, 1991, 3-118901; May 24, 1991, 3-120472
Int. Cl.[5] G10K *13/00*
U.S. Cl. 181—167 **7 Claims**



1. An acoustic diaphragm comprising a combined textile formed into a shape with a curved surface, wherein said combined textile comprises weft elements interwoven with warp elements, the weft elements being comprised of sliced slit wood and the ward elements being comprised of synthetic fiber.

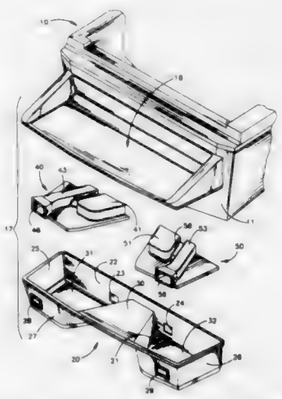
5,329,073
SOUND ABSORBING DEVICE FOR SOUND INSULATION WALL
Yutaka Shono, Tokyo; Masahito Watanabe, Hyogo; Kohei Yamamoto, and Naoyuki Furuta, both of Tokyo, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan
Filed Jul. 21, 1993, Ser. No. 89,529
Claims priority, application Japan, Feb. 9, 1993, 5-044512
Int. Cl.[5] G10K *11/00*
U.S. Cl. 181—210 **9 Claims**

1. A sound absorbing device for a sound insulation wall, comprising:
a sound absorbing body having a large longitudinal dimension, comprising an outer perforated plate, an inner plate, and a sound absorbing material interposed between the outer perforated plate and the inner plate, and comprising continuous portions of a bottom wall portion extending generally vertically, a hood portion laterally bulging from a top of the bottom wall portion to assume a generally semi-circular cross-section, and a top wall portion extending from the hood portion crossing a plane of the inner plate of the bottom wall portion to assume a gentle convex cross-section;



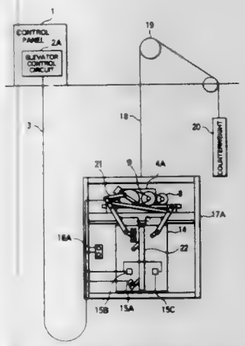
a fixing member provided on a lower portion of the bottom wall portion, for fixation to a sound insulation wall; and
a cap for closing an end face of the top wall portion.

5,329,074
MARINE ENGINE EXHAUST MUFFLER
John E. Alexander, Monroeville, Ind., assignor to Porter, Incorporated, Decatur, Ind.
Filed Jun. 4, 1993, Ser. No. 72,146
Int. Cl.[5] F01N *7/00*
U.S. Cl. 181—235 **6 Claims**



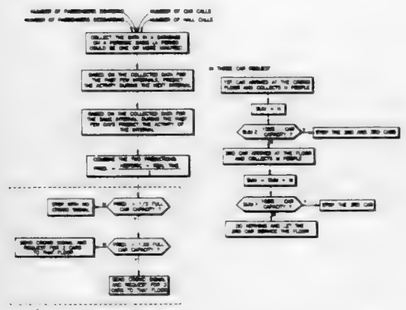
1. An outboard exhaust muffler for a powerboat having a transom and at least one exhaust pipe extending through the transoms and through which exhaust gas is emitted comprising:
a housing extending laterally across the boat and rearwardly from the transom to define an interior space adapted to be partially filled with water:
said housing having a floor located below the water line, opposed end walls, a front wall located adjacent the transom with at least one opening formed therein communicating with said exhaust pipe, and a rear wall having at least one exhaust port formed therein;
means secured to the top of said housing for covering said interior spaces; and
at least one insert located in said interior space and secured to said floor, said front wall and said rear wall;
said insert having a domed portion that defines with said floor, an enclosed muffling chamber communicating with said exhaust pipe, a bulged portion that defines an expansion chamber communicating with said exhaust port and a passage located below the water line communicating between said chambers;
whereby exhaust gas entering said muffling chamber is forced through said water filled passage into said expansion chamber and exits said exhaust port.

5,329,075
ELEVATOR DOOR CONTROL APPARATUS
Terumi Hirabayashi; Masanori Tawada, and Toshiyuki Kodera, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 953,023
Claims priority, application Japan, Oct. 16, 1991, 3-267651
Int. Cl.[5] B66B *13/26*
U.S. Cl. 187—104 **4 Claims**



1. An elevator door control apparatus comprising:
at least one door safety device for detecting whether elevator doors are safe;
an elevator control circuit for outputting a door-open/close command; and
a door control circuit for controlling the opening/closing of doors on the basis of a door-open/close command issued from the elevator control circuit and for outputting a door reversal request to the elevator control circuit upon reception of the operation signal of the door safety device while the doors are being closed on the basis of a door-close command speed pattern from the elevator control circuit, for switching the door speed command pattern to a brake pattern from the door-close command speed pattern, for thereafter switching the door speed command pattern from the brake pattern to the door-open command speed pattern when the door-open command is received from the elevator control circuit and for generating a constant speed door-close command speed pattern when a door-open command is not generated by said elevator control circuit within a predetermined time period beginning when the door speed command pattern is changed from the door-close command speed pattern to the brake pattern and ending when the doors reach a predetermined low speed.

5,329,076
ELEVATOR CAR DISPATCHER HAVING ARTIFICIALLY INTELLIGENT SUPERVISOR FOR CROWDS
Nader Kameli, Cromwell, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Filed Jul. 24, 1992, Ser. No. 919,470
Int. Cl.[5] B66D *1/18*
U.S. Cl. 187—127 **3 Claims**



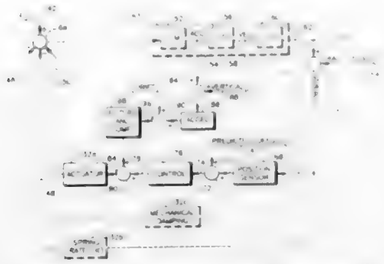
1. A method for dispatching elevator cars, comprising:
predicting a crowd size at a predetermined floor for a predetermined time interval;
comparing the predicted crowed size with a first crowd size threshold equal to $\frac{1}{2}$ of a full capacity of an elevator car;
comparing the predicted crowd size with a second crowd size threshold if the predicted crowd size exceeds the first crowd size threshold, the second crowd size threshold being greater than the first crowd size threshold;
generating a crowd signal for the predetermined floor if the crowd size exceeds the first crowd size threshold;
receiving a hall call signal for the predetermined floor;
assigning at least three elevator cars to be predetermined floor responsive to the hall call signal only after said crowd signal generating step and only if the predicted crowd size is greater than the first crowd size threshold and the second crowd size threshold;
monitoring a number of passengers collected by one of the at least three elevator cars at the predetermined floor, and then canceling the assignment of the at least second and third elevator cars to the predetermined floor if the number of passengers collected at the predetermined floor by the one of the elevator cars is at least equal to 100% of a full capacity of the one car.

5,329,077
ELEVATOR RIDE QUALITY
Clement A. Skalski, Avon, and Randall K. Roberts, Amston, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Continuation of Ser. No. 782,222, Oct. 24, 1991, abandoned.
This application Feb. 16, 1993, Ser. No. 31,084
Int. Cl.[5] B66B *3/00, 7/02*
U.S. Cl. 187—133 **6 Claims**

1. A control for guiding an elevator vertically along a rail by controlling an actuable horizontal suspension, comprising:
a learned rail characteristic control, responsive to a vertical position signal having a magnitude indicative of a vertical position of said elevator along said rail, for providing a learned rail characteristic signal having a magnitude indicative of a force offset at said vertical position; and
a feedback control, responsive to said force offset signal and responsive to a sensed signal having a magnitude indicative of a force exerted against said elevator, for providing an actuating signal for actuating said actuable horizontal

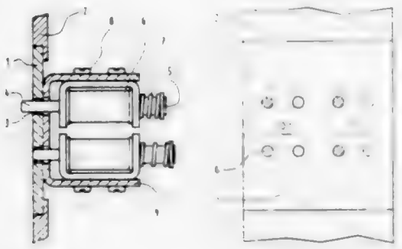
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suspension to counter said force, wherein said learned rail characteristic signal indicative of force offset is provided



by multiplying a stored predicted horizontal position signal by a spring rate.

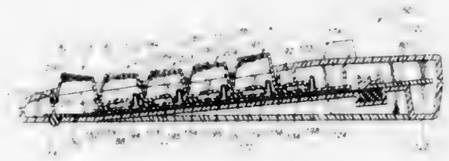
5,329,078
ELEVATOR CAR POSITION INDICATOR FOR USE BY VISUALLY IMPAIRED PERSONS
Gordon E. Gustafson, Verona, N.J., assignor to Inventio AG, Hergiswil, Switzerland
Filed Sep. 17, 1992, Ser. No. 946,880
Int. Cl.[5] B66B *3/02*, G08B *1/00*
U.S. Cl. 187—136 **4 Claims**



1. A car position indicator arranged in a face plate at a car control station for indicating a momentary position of an elevator car with respect to floors served by the car, the car being connected to an elevator control having an output for generating floor address signals representing the floors to a coding circuit having an input connected with the elevator control output and having a plurality of outputs each representing one of the floors, comprising:
a plurality of slidable indicating pins arranged in a braille configuration and extending through apertures formed in a face plate of an elevator car control station;
a plurality of electromagnets attached to the face plate, each of said electromagnets having an armature connected to one of said indicating pins and having a control connection for receiving electrical power to excite said electromagnet; and
a control circuit having a plurality of inputs connected with a plurality of outputs of a coding circuit connected to an elevator control, each of said inputs for receiving a signal representing a floor number of a separate floor served by an elevator associated with the elevator control, said control circuit having a plurality of outputs each being connected with at least one of said control connections for exciting said electromagnets, said control circuit including a plurality of tri-state buffers each having an activating terminal connected with one of said inputs of said control circuit, said tri-state buffers each having an input terminal connected to a voltage source input line and each having an output terminal connected to at least one of said control circuit outputs whereby a signal generated at one of said control signal circuit inputs is transformed into a corresponding floor number in braille represented by at least an associated one of said indicating pins being extended from the face plate by excitation of said associated electromagnet by said control circuit and wherein for an indication of floor numbers from zero through a maximum of nineteen, said plurality of indicating pins includes a first group of four of said indicating pins and a second group of four of said indicating pins, said control circuit outputs representing floor numbers zero through nine being connected to excite said electromagnets associated with said first group of indicating pins, said control circuit outputs representing a units digit of two digit floor numbers from ten through a maximum of nineteen being connected to excite said electromagnets associated with said second group of indicating pins, and including another tri-state buffer having an output terminal connected to said output terminals of said tri-state buffers which control said indicating pins representing the floor number one and a tens digit of the floor number ten, an input terminal connected to said output terminals of said tri-state buffers associated with the floor numbers eleven and above and an activating terminal connected to said control circuit inputs representing the floor numbers eleven and above

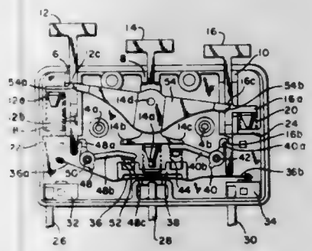
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5,329,079
COMPUTER KEYBOARD WITH IMPROVED CANTILEVER SWITCH DESIGN
George P. English, Coeur d'Alene, Id., and Theodore D. Clark, Spokane, Wash., assignors to Key Tronic Corporation, Spokane, Wash.
Continuation-in-part of Ser. No. 931,691, Aug. 18, 1992. This application Feb. 12, 1993, Ser. No. 17,466
Int. Cl.[5] H01H *13/70*
U.S. Cl. 200—5 A **13 Claims**



1. A computer keyboard comprising:
a support plate;
a first mounting strip secured to the support plate, the first mounting strip having a front edge and a back edge;
a first row of first cantilevered keys, individual first cantilevered keys having at least one elongated member with one end flexibly attached to the first mounting strip adjacent the back edge and the other end coupled to a key cap, the first cantilevered keys extending from the back edge of the first mounting strip above and across the first mounting strip and beyond the front edge of the first mounting strip;
a second mounting strip secured to the support plate, the second mounting strip having a front edge and a back edge;
a second row of second cantilevered keys, individual second cantilevered keys having at least one elongated member with one end flexibly attached to the second mounting strip adjacent the back edge and the other end coupled to a key cap, the second cantilevered keys extending from the back edge of the second mounting strip above and across the second mounting strip and beyond the front edge of the second mounting strip to overlap a portion of the first cantilevered key; and
upstop means for establishing an upward travel stop position of the second cantilevered keys, the upstop means comprising complementary first and second interlocking components, the first interlocking components being provided on the first mounting strip and the second interlocking components being provided on individual second cantilevered keys.

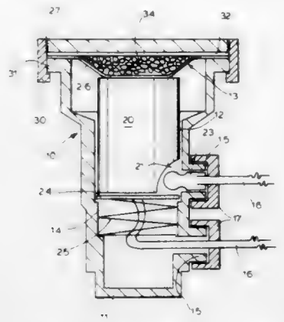
5,329,080
PUSHBUTTON SELECTOR SWITCH
Anthony E. Pierce, Glasgow; William S. Ferguson, Russellville, and Darrell W. Sullivan, Bowling Green, all of Ky., assignors to Eaton Corporation, Cleveland, Ohio
Filed Apr. 23, 1993, Ser. No. 52,443
Int. Cl.[5] H01H *9/20*
U.S. Cl. 200—5 B **5 Claims**



1. A pushbutton selector switch comprising:
an insulating switch housing;
a pair of normally open contact sets in said housing;
a pair of pushbuttons mounted for linear reciprocal movement in said housing, each pushbutton individually depressible to operate a respective one of said pair of normally open contact sets to a closed condition;
at least one latch member mounted for rotational movement in said housing and biased against a respective one of said pair of pushbuttons, said latch member being operable to latch said respective one of said pair of pushbuttons in a depressed position to retain said respective contact set closed, said latch member having a lever arm projecting radially therefrom; and
a release pushbutton mounted for linear reciprocal movement in said housing intermediate said pair of pushbuttons depressible to engage a distal end of said lever arm and rotate said latch member to release said respective one of said pair of pushbuttons.

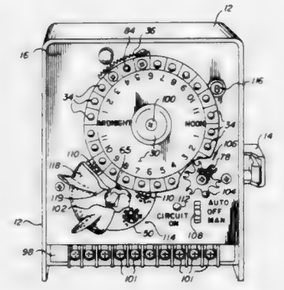
5,329,081
MOISTURE SENSOR AND SWITCH
Michael J. Jones, Perth, Australia, assignor to Morningside Holdings Pty. Ltd. and Kingsbrook Investments Pty. Ltd., Western Australia, Australia
Filed Jan. 15, 1993, Ser. No. 2,347
Claims priority, application Australia, Jan. 17, 1992, PL0444
Int. Cl.[5] H01H *35/00*
U.S. Cl. 200—61.04 **11 Claims**

1. Soil moisture sensor apparatus including:
a housing having an axial bore therein and open at one end;
a water impervious flexible membrane closing said bore;
a water permeable end cap secured to said bore about said open end and defining a chamber between said membrane and said end cap;
a water swellable composition filling said chamber;
a piston axially slidably located within said bore and biased axially towards said membrane, and
a pair of electrical contacts, one of said contacts being fixed to said housing and the other of said contacts being movable by said piston between electrical contact and non-contact positions with the one contact, said moving contact not being fixed to said piston and passage of said piston beyond the point of engagement with said moving



contact causing said fixed contact to tilt the moving contact to provide a wiping action between the contacts.

5,329,082
IRRIGATION SYSTEM TIMER CONTROL
Myrl J. Saarem, Carson City, Nev., assignor to James Hardie Irrigation, Laguna Niguel, Calif.
Continuation of Ser. No. 797,048, Nov. 25, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 977,139
Int. Cl.[5] H01H *43/10*
U.S. Cl. 200—38 D **5 Claims**



1. An electric controller including: a housing; a mounting plate extending across said housing and dividing said housing into a forward compartment and a rear compartment; an electric motor mounted on the rear side of said mounting plate to be positioned in said rear compartment and having a drive shaft extending through said mounting plate; a time dial coupled to said drive shaft to be rotated thereby, said time dial being positioned on the forward side of said mounting plate in said forward compartment; a gear segment attached to the peripheral edge of said time dial; a printed circuit board mounted on the rear side of said mounting plate and positioned in said rear compartment; a terminal strip mounted on one edge of said printed circuit board having a plurality of electric terminals mounted thereon; a plurality of printed circuit conductors formed on said printed circuit board respectively connected to said electric terminals on said terminal strip and extending from said terminal strip to establish electric contact with respective ones of said electric terminals; a rotary distribution switch mounted on the rear side of said mounting plate adjacent to said printed circuit board and having a drive shaft extending through said mounting plate; a gear coaxially mounted on said rotary switch drive shaft in position to be engaged by said gear segment and to be rotated thereby during a predetermined portion of each rotation of said time dial; said printed circuit conductors extending from said terminal strip

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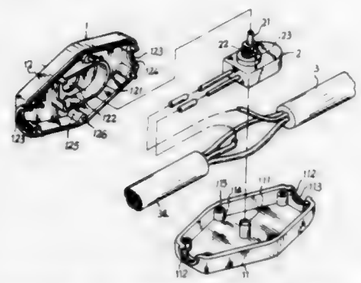
and defining a corresponding plurality of fixed contacts for said rotary switch at the respective distal ends thereof arranged in a circle and connected through said printed circuit conductors to respective ones of said terminals on said terminal strip, said rotary distribution switch having a movable contact member mounted on said rotary switch drive shaft to be rotated thereby and positioned to engage said fixed contacts successively on said printed circuit board as said distribution is rotated.

5,329,083

ON-LINE SWITCH HAVING WATER-PROOF PROTECTION

Shih-Wang Lai, P.O. Box 55-1670, Teipei, Taiwan

Filed Nov. 30, 1992, Ser. No. 983,382
Int. Cl.[5] H01H *13/06*
U.S. Cl. 200—302.2 **3 Claims**



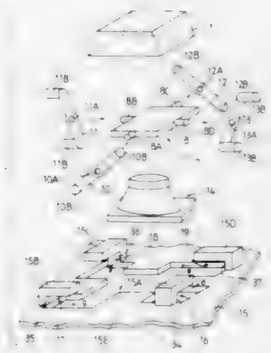
1. An on-line switch comprising: a switch housing, a push-button switching means encased in the housing adapted for depressibly switching on or off a power supply which extends through said switching means, said switching means being adapted to be connected between an input cord and an output cord of a power source, a protective cover shielding an outer circumferential surface of the switch housing for waterproofing the switch housing and being adapted for protecting the cords connected to the switching means, and a sealing cap formed as a telescopic bellows secured with the push-button switching means for sealing a push button held in the switching means in the switch housing for waterproofing the switch; said switch housing including: a lower half shell having a central protrusion formed on a central portion of the lower half shell, two lower semi-holes respectively formed in two opposite end portions of the lower shell, each lower semi-hole having a plurality of corrugated teeth formed therein, and a plurality of lower stems, each lower stem having a pin hole recessed in the lower stem; and an upper half shell having a plurality of upper stems each upper stem having a pin protruding downwardly and engageable with each said pin hole of each said lower stem for combining the upper half shell with the lower half shell for assembling the switch housing, a button socket formed in the upper half shell for embedding the push-button switching means in the button socket, a button hole formed in a central portion of the upper half shell for protruding the push button of the switching means upwardly and outwardly from the housing, and a pair of upper semi-holes respectively formed in two opposite end portions of the upper shell, each upper semi-hole having a plurality of corrugated teeth formed therein, said pair of upper semi-holes being combinable with the pair of lower semi-holes of the lower shell, said pairs being adapted for respectively clamping the input cord and the output cord in the semi-holes to have the cords bitten by the corrugated teeth formed in the semi-holes for firmly securing the input and output cords to the switch housing; and said push-button switching means including: the push button reciprocatively held in a button holder engageably embedded in the button socket in the housing and retained on the central protrusion of the lower shell with the push button normally protruding upwardly outwardly from the button hole of the housing to be operatively depressed for switching on or off power supply through the input cord and the output cord of the power source.

5,329,084

KEYSWITCH ASSEMBLY

Makoto Watanabe, Nagoya, and Isao Mochizuki, Kaizu, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 18, 1993, Ser. No. 33,348
Claims priority, application Japan, Mar. 30, 1992, 4-026464[U]
Int. Cl.[5] H01H *3/12*
U.S. Cl. 200—344 **20 Claims**



1. A keyswitch assembly comprising:

a key having four upper guide groove portions, each upper guide groove portion comprising horizontal stop means for limiting horizontal longitudinal movement and horizontal lateral movement of said key;

a holding member comprising a plate with a central opening therein and four lower guide portions corresponding to said upper guide portions, each lower guide groove portion comprising horizontal stop means for limiting horizontal longitudinal movement and horizontal lateral movement of said key;

support means for supporting said key in a first rest position and a second depressed position, comprising four elongated support members, each with an upper end, a lower end and an outer side surface, and a vertical stop means for resisting vertical movement of said key, each of said upper ends being slidingly engaged with one of said upper guide groove portions and each of said lower ends being slidingly engaged with one of said lower guide groove portions; and

switching means for causing switching action comprising an electrical contact disposed over said opening of said holding member and under said support means, wherein said support means compresses said switching means to cause said electrical contact to make an electrical connection in said second depressed position.

5,329,085

TEMPERATURE SELF REGULATING HEATERS AND SOLDERING IRONS

Mark J. Cowell, San Carlos, and Steven A. Daniel, Fremont, both of Calif., assignors to Metcal, Inc., Menlo Park, Calif.

Filed Aug. 5, 1992, Ser. No. 925,029
Int. Cl.[5] H05B *6/14*
U.S. Cl. 219—616 **15 Claims**

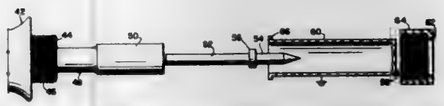
15. A coilless Curie point temperature self regulating soldering iron cartridge adapted to be used with a handle having an induction coil therein, said cartridge comprising;

a heatable tip,

a ferromagnetic material of a desired Curie point disposed on said cartridge rearwardly of said tip,

means disposed on said cartridge to insure alignment of said ferromagnetic material with an induction coil in the handle for energizing said ferromagnetic material to cause its temperature to approach its Curie temperature sufficiently to reduce heating, and

means disposed on said cartridge to permit said cartridge to be securely maintained in alignment with the induction coil.

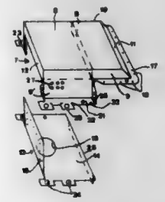


5,329,086

WAVEGUIDE FOR MICROWAVE OVENS

Michel G. De Matteis, Cambes-en-Plaine, and Charles V. L. Patard, Ouistreham, both of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

Filed Feb. 20, 1992, Ser. No. 838,087
Claims priority, application France, Feb. 22, 1991, 91 02132
Int. Cl.[5] H05B *6/64*
U.S. Cl. 219—756 **4 Claims**



1. In a waveguide adapted to be mounted on a wall (**1**) of a cooking chamber of a microwave oven between an antenna (**2**) of a magnetron (**3**) with which the oven is equipped and an opening (**5**) provided in the wall (**1**), and having a metallic housing of generally tubular shape of substantially rectangular cross-section formed from a cover (**7**) with an upper elongated wall (**8**) of which a forward region extends above the wall (**1**) and of which a rear region extends above the magnetron (**3**), two longitudinal side walls (**9** and **10**), two transverse forward (**11**) and rear (**12**) walls, and a base (**13**) having a bottom wall (**14**) traversed by a passage hole (**16**) for the antenna (**2**) and open opposite the opening (**5**) to permit exit of waves; the improvement:

wherein the cover (**7**) is formed of a single piece obtained by stamping and bending of a metal sheet;

wherein the transverse forward wall (**11**) and portions of the two longitudinal side walls (**9** and **10**) adjacent the forward region of the upper elongated wall (**8**) bear respectively a bent edge (**17**) bent to a first portion (**18**) of a flat peripheral edge of the stamped cover (**7**) and having first securement means (**19**) with the wall (**1**);

wherein the portions of the two longitudinal side walls (**9** and **10**) adjacent the rear region of the upper elongated wall (**8**) include, respectively, in their planes prolongations (**9'** and **10'**) obtained by deflection and first bending of a second portion (**20**) of the flat peripheral edge of the stamped cover (**7**), each free edge of said prolongations (**9'** and **10'**) comprising:

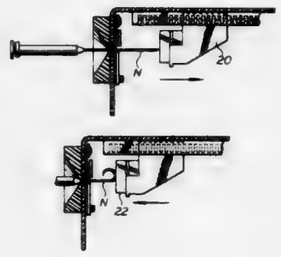
a flange (**21**) which is obtained by a second bending and extends in a plane parallel to the bent edge (**17**), and which includes second securement means (**22**) with the bottom wall (**14**) as well as connection means (**23**) with the magnetron (**3**).

5,329,087

SYRINGE NEEDLE DESTRUCTION METHOD AND APPARATUS

Brad A. Kohl, 325 Skyline Pkwy., Athens, Ga. 30606; Douglas L. Armstrong, Atlanta; Byron L. Boylston, Woodstock; Keith G. Savas, Marietta; Mark G. Deveau, Stone Mountain, and Scott Sadow, Woodstock, all of Ga., assignors to Brad A. Kohl, Athens, Ga.

Filed Jun. 7, 1993, Ser. No. 72,901
Int. Cl.[5] A61G *12/00;* **A61L** *11/00;* **B23K** *11/22*
U.S. Cl. 219—68 **19 Claims**



8. A syringe needle destruction apparatus comprising:

means for receiving and containing a needle portion of a syringe;

means for measuring the length of the needle portion;

means for establishing a voltage across said needle portion; and

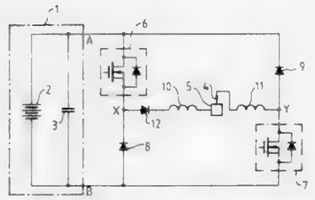
means for controlling and varying said means for establishing a voltage as a function of needle length measured by said measuring means.

5,329,088

ELECTRICAL DISCHARGE POWER SUPPLY CIRCUIT

Toshiyuki Kaitani, and Toshiharu Adachi, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1992, Ser. No. 909,981
Claims priority, application Japan, Mar. 6, 1992, 4-049621
Int. Cl.[5] B23H *1/02*
U.S. Cl. 219—69.18 **19 Claims**



1. An electrical discharge machining power supply circuit comprising:

a power supply circuit comprising only a single direct-current power source;

a first circuit, connected in parallel with said power supply circuit, and comprising a first switching device and a first rectifying device connected in series with said first switching device, said first circuit having a first connection point between said first switching device and said first rectifying device;

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a second circuit, connected in parallel with said first circuit, and comprising a second switching device and a second rectifying device connected in series with said second switching device, said second circuit having a second connection point between said second switching device and said second rectifying device;

an electrical discharge machining electrode and a workpiece which are in series between said first connection point and said second connection point, said first and second switching devices being controlled such that an electrical discharge is generated between said electrode and the workpiece; and

first circuit means comprising a first circuit device, connected between said workpiece and said first connection point, for preventing an excessive voltage, generated in wiring inductance between said first and second connection points during switching of said first and second switching devices, from damaging at least said first switching device.

5,329,089

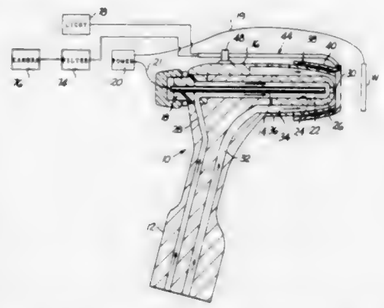
PLASMA ARC WELDING WELD IMAGING

William F. McGee, Decatur, and Daniel J. Rybicki, Huntsville, both of Ala., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 29, 1993, Ser. No. 98,918

Int. Cl.[5] B23K *10/02, 9/095*

U.S. Cl. 219—121.45 **5 Claims**



1. Plasma arc welding apparatus comprising a torch including a housing for supporting an axially extending annular nozzle body having an orifice at a front end, a plenum chamber formed within the nozzle body, an axially extending electrode disposed within said chamber spaced rearwardly of said orifice, means for supplying electricity to said electrode to form an arc exiting through said orifice, means for supplying an inert gas to said chamber for exiting said orifice with said arc for impinging at a weld site on a workpiece spaced from said orifice, an annular transparent shield cup having a mounting portion fastened to said housing and a free end disposed about said nozzle body, a guide tube extending externally of said housing, said tube having a free end adjacent to and directed toward a portion of said shield cup at a location for viewing said arc and weld site through said shield cup, first and second assemblies of optical fiber bundles disposed within said guide tube, each of said first and second assemblies having one end adjacent said free end and a second end, light generating means for applying light to said second end of said first of said assemblies for transmission of said light to said free end for illuminating said weld site, a lens disposed within said tube for forming images of said weld site on said one end of said second of said assemblies for transmission to the second end of said second assembly, and means for receiving and displaying aid images from the second end of said second assembly.

5,329,090

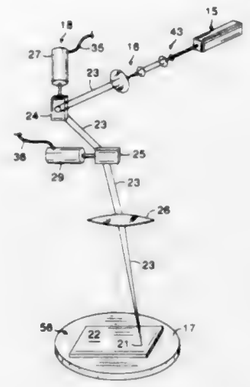
WRITING ON SILICON WAFERS

Michael Woelki, Stow, Mass., and James H. Scaroni, Somis, Calif., assignors to A B Lasers, Inc., Acton, Mass.

Filed Apr. 9, 1993, Ser. No. 45,618

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.68 **8 Claims**



1. Apparatus for making readable marking on silicon wafers comprising

a manipulator for moving a silicon wafer to a writing position,

a marking radiation source,

optical elements defining an optical beam path for radiation from said marking radiation source to a focus point at a surface of a silicon wafer positioned in said writing position,

a beam mover, and

a controller,

said marking radiation source including a Nd:YAG laser, a diode laser effective in energizing said Nd:YAG laser, and an optical switch responding to pulse control signals from said controller to initiate an output pulse of radiation from said marking laser,

said beam mover being effective in response to position control signals from said controller to move said focus point over said surface of a silicon wafer positioned in said writing position,

said controller including

a stored font storing therein specification of elements of a macrogrid defining each character of an alphabet,

an input device for receiving signals defining a legend to be written on a wafer,

means for combining said signals defining a legend and signals from said stored font to define elements of a macrogrid representing said legend,

stored signals specifying on a microgrid a plurality of elements defining a cluster, said microgrid subdividing elements of said macrogrid,

means for generating and applying to said beam mover position control signals that move said focus point along a route passing through every said specified microgrid element of every said specified macrogrid element of said legend and for generating and applying to said marking radiation source pulse control signals coordinated with said position control signals to initiate an output pulse of radiation while said focus point is in each said specified microgrid element of every said specified macrogrid element of said legend.

5,329,091

WELD MONITORING DEVICE

Norbert Bissinger, Goeppingen, Fed. Rep. of Germany, assignor to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

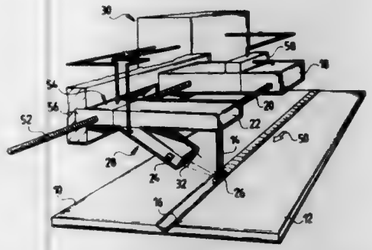
PCT No. PCT/EP91/00046, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO91/11289, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 15, 1991, Ser. No. 768,625

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1990, 4002627

Int. Cl.[5] B23K *26/02*

U.S. Cl. 219—121.83 **17 Claims**



1. A weld monitoring device comprising an optical detection device for detecting a light emission of a welding plasma and generating a signal corresponding to an ultraviolet emission portion thereof and also comprising an analyzing device for processing this signal, said device having a plurality of analyzing members for ascertaining those interruptions in the ultraviolet emission exceeding a different predeterminable length of time for each individual analyzing member, each analyzing member including means for reporting each interruption exceeding its respective predeterminable length of time to a storage member, each storage member retaining the reported interruptions for a subsequent read out.

5,329,092

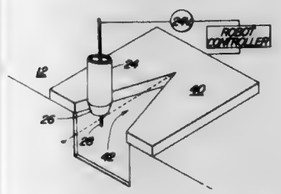
TOOLS FOR MANUFACTURING ROBOTS

Charles D. Weaver, and Lawrence B. Howell, both of Davenport, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 27, 1991, Ser. No. 799,498

Int. Cl.[5] B23K *9/12*

U.S. Cl. 219—124.34 **1 Claim**



1. A torch alignment monitor for a welding robot, the welding robot is provided with a welding wire that projects from the welding robot, the monitor comprising:

an alignment gauging block mounted in a fixed location relative to the welding robot, the gauging block is provided with a V-shaped notch having electrically conductive sidewalls, the electrically conductive sidewalls are electrically connected to the welding robot, the welding wire is programmed to pass through the V-shaped notch on a periodic basis and not touch the sidewalls of the alignment gauging block; and

means for transmitting a sensing electrical signal through the welding wire as it passes through the V-shaped notch, if the welding wire contacts the electrically conductive sidewalls of the gauging block as it passes through the V-shaped notch a circuit is completed whereby the electrical signal is transmitted to the welding robot indicating the welding wire is misaligned.

5,329,093

BURN-IN APPARATUS FOR SEMICONDUCTOR INTEGRATED DEVICE

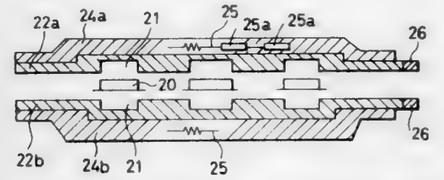
Nobuhiro Okano, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 13, 1992, Ser. No. 911,687

Claims priority, application Japan, Aug. 29, 1991, 3-218743

Int. Cl.[5] H05B *1/00*

U.S. Cl. 219—209 **12 Claims**



1. A portable burn-in apparatus for testing electronic components comprising:

first and second boards each having a plurality of sockets that receive the electronic components, each electronic component being sandwiched between an opposing pair of sockets wherein one socket of said pair of sockets is one of said plurality of sockets in said first board and a second socket of said pair of sockets is one of said plurality of sockets in said second board;

accommodating means for accommodating said boards with the electronic components to maintain said electronic components in a predetermined thermal condition, said accommodating means includes first and second portions each having a heater, and said boards being within said first and second portions; and

connection means for connecting said electronic components to a power supply.

5,329,094

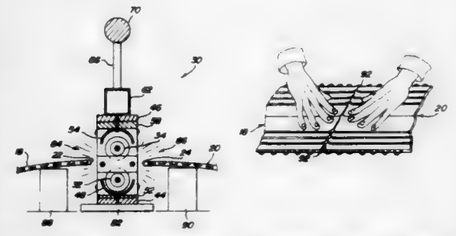
PORTABLE RADIANT HEATER FOR PERFORMING SPLICES IN WATERSTOP

Paul R. Murphy, Grosse Pointe Farms, and Paul A. Kepler, Mt. Clemens, both of Mich., assignors to Paul Murphy Plastics Company, Roseville, Mich.

Filed Aug. 24, 1992, Ser. No. 933,754

Int. Cl.[5] H05B *3/02;* **B27G** *11/02;* **B31F** *5/04;* **B32B** *31/00*

U.S. Cl. 219—243 **4 Claims**



1. A method of performing a butt-type splice to join the edges of first and second end sections of waterstops, comprising:

providing a portable radiant heating device having a frame

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defining open regions on either side thereof, an elongated quartz heating element mounted in the frame and having a length greater than the width of said waterstop sections, and heat deflection means for directing heat generated by the heating element outwardly through said open regions to thereby create first and second external heating zones adjacent to said open regions on either side of said frame;

energizing the heating element in the heating device to radiate heat into said first and second external heating zones;

positioning said first and second waterstop end sections in said first and second external heating zones respectively such that said end sections are subjected to said radiated heat without contacting said heating device;

maintaining said end sections in said heating zones for a time period sufficient to soften said end sections and initiate melting of the edges thereof;

removing said end sections from said heating zones;

joining said end sections together so that the respective edges thereof fuse together and form a bead along the seam between said two sections; and

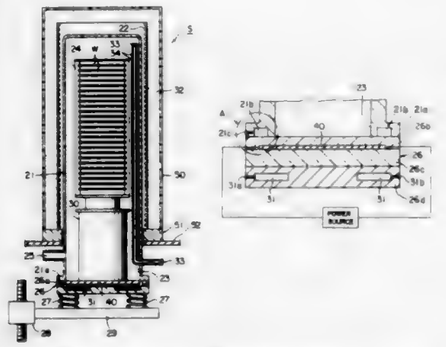
holding said two end sections together until the end sections cool sufficiently to harden the bead formed along the seam.

5,329,095

THERMAL TREATMENT APPARATUS UTILIZING HEATED LID

Wataru Okase, Sagamihara, Japan, assignor to Tokyo Electron Kabushiki Kaisha, Tokyo and Tokyo Electron Tohoku Kabushiki Kaisha, Iwate, both of Japan

Filed Apr. 9, 1993, Ser. No. 44,463
Claims priority, application Japan, Apr. 9, 1992, 4-088976
Int. Cl.[5] H01L *21/205*
U.S. Cl. 219—390 **22 Claims**



1. A thermal treatment apparatus comprising:

a reaction vessel having an opening portion through which a holder for supporting objects to be treated can be inserted, said reaction vessel being constructed for performing a thermal treatment on objects to be treated, using a reaction gas that is introduced thereto;

a lid body for closing said opening portion of said reaction vessel and for maintaining contents thereto airtight;

a heating portion provided in such a manner as to surround said reaction vessel;

a heating device provided in said lid body for heating inner wall surfaces of a portion of said reaction vessel proximal said lid body, and

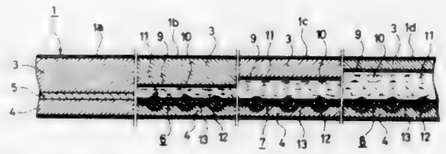
means adjacent said lid body for defining a circulation path circulating a heating gas, thereby preventing reaction products from adhering to said inner wall surfaces.

5,329,096

HEAT STORAGE MAT

Mitsulu Suematsu, Urawa, Japan, assignor to Toa Giken Co., Ltd., Saitama and Asset Enterprise Co., Ltd., Tokyo, both of Japan

Filed Aug. 27, 1993, Ser. No. 112,799
Claims priority, application Japan, Apr. 9, 1993, 5-017743[U]
Int. Cl.[5] F24H *7/00*
U.S. Cl. 219—528 **7 Claims**



1. An elongated heat storage mat for supporting thereon a human body with a head of the human body resting on one end portion of the mat, said heat storage mat comprising:

a plurality of substantially flat heating elements arranged in a row in a longitudinal direction of said mat, each of said heating elements including a flat bag filled with a latent heat storage agent and an electric heater unit disposed on an underside of said flat bag for heating said latent heat storage agent, the quantities of said latent heat storage agents associated with the respective heating elements increasing successively in a direction from said one end portion to an opposite end portion of said mat;

a plurality of heat insulating cushions each disposed on an upper surface of a corresponding one of said bags, said heat insulating cushions have thicknesses which vary in inverse proportion to the quantities of said latent heat storage agents of the respective bags; and

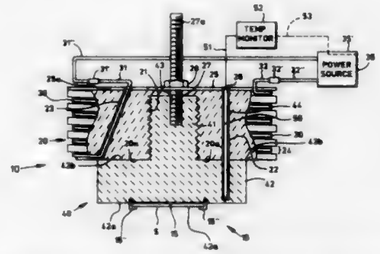
a bag-like cover holding therein said heating elements and said heat insulating cushions.

5,329,097

COMPACT SUBSTRATE HEATER FOR USE IN AN OXIDIZING ATMOSPHERE

Thomas E. Jones, Spring Valley; Wayne C. McGinnis, San Diego, and J. Scott Briggs, Carlsbad, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1993, Ser. No. 63,970
Int. Cl.[5] H01L *21/20;* **H05B** *3/00*
U.S. Cl. 219—530 **10 Claims**



1. A substrate heater for growing at least one thin film on a substrate in an oxidizing atmosphere comprising:

a heating element fabricated from a material having resistive properties to provide sufficient heat to reach a desired operating temperature to assure said growing said at least one thin film on said substrate;

a main body portion provided with a surface to mount said heating element thereon, said main body portion being fabricated from a material having the properties of being electrically insulating and of having a high thermal conductivity to assure a thermal conduction of said sufficient heat; and

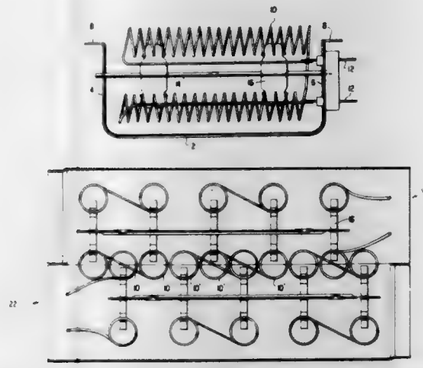
a substrate holder portion fabricated from a material having a high thermal conductivity property to assure a uniform said thermal conduction of said sufficient heat from said main body portion to said substrate holder, said substrate holder being shaped and disposed to accommodate at least a part of said main body portion in a contiguously abutting relationship and further being shaped to provide a flat substrate holder surface on which said substrate is affixed in a contiguously abutting relationship to assure the direct said uniform said thermal conduction of said sufficient heat therebetween thereby permitting said growing said at least one thin film on said substrate.

5,329,098

OPEN COIL HEATER FOR EFFICIENT TRANSPORT

H. Keith Howard, and Jimmy L. Sherrill, both of Cookeville, Tenn., assignors to Adams Industries, Inc., Cookeville, Tenn.

Filed Sep. 11, 1992, Ser. No. 943,868
Int. Cl.[5] F24H *3/04;* **H05B** *3/02;* **F26B** *11/04*
U.S. Cl. 219—532 **6 Claims**



1. A heater comprising a channel formed by opposed sidewalls and a bottom wall for directing air flow in a first direction and an electric heater element comprising a coil extending across said channel in a second direction transverse to said first direction for heating air flowing in said channel, wherein at least a portion of said electric heater element extends above said sidewalls, a distance that the heater extends above the sidewalls is only sufficient to allow two of said heaters to be packed together in face-to-face relationship with the coils of both heaters nested together.

5,329,099

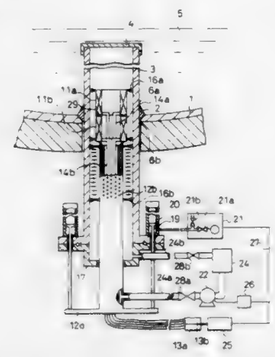
METHOD OF MAINTAINING HOUSING OF REACTOR PRESSURE VESSEL AND HEAT TREATMENT EQUIPMENT THEREFOR

Kunio Enomoto, Ibaraki; Masahiro Otaka, Hitachi; Kunio Hasegawa, Katsuta; Makoto Hayashi, Hitachi; Shinji Sakata, Katsuta; Hideyo Saito; Koichi Kurosawa, both of Hitachi; Takashi Saito, Katsuta; Yoshinori Karatsu, Takahagi, and Motoya Ito, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1991, Ser. No. 704,289
Claims priority, application Japan, May 24, 1990, 2-134803
Int. Cl.[5] B23K *13/01*
U.S. Cl. 219—604 **22 Claims**

6. A heat treatment equipment for heat-treating a hollow housing member of a reactor pressure vessel, wherein said hollow housing member penetrating an end bracket of said reactor pressure vessel and being secured to said end bracket by a circumferential weld at an intermediate portion of said hollow housing member, said heat treatment equipment comprising:

a plurality of induction heating coils which are inserted into said hollow housing member and vertically disposed to form two stages to cover a vertical region of a heat affected zone disposed adjacent to said circumferential weld, wherein each of said plurality of induction heating coils independently includes means for adjusting a heating value; and



a nozzle hole portion which is inserted into said hollow housing member and is distributed in a region corresponding to said heat affected zone, wherein said nozzle hole portion includes nozzle holes which are formed in a hollow pipe member, said plurality of induction heating coils is fastened in series to an upper portion of said hollow pipe member, said hollow pipe member providing a water passage to said nozzle holes and connected to cooling water supply means, and said hollow pipe member and said heating coil are supported by a lifting drive device for movement thereof within said hollow housing member.

5,329,100

CIRCUIT FOR COMPENSATING FOR OUTPUT OF HIGH FREQUENCY INDUCTION HEATING COOKER

Min K. Lee, Kyungsangnam-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Feb. 10, 1993, Ser. No. 16,016
Claims priority, application Rep. of Korea, Feb. 11, 1992, 1937/1992
Int. Cl.[5] H05B *6/12*
U.S. Cl. 219—626 **4 Claims**

1. A circuit for compensating for the output of a high frequency induction heating cooker, comprising:

rectifying means for rectifying an external AC input power into a DC power and applying the DC power to a working coil;

input current detecting means for generating a voltage proportional to a current of the AC input power;

output regulation signal generating means, responsive to the input current detecting means, for comparing the generated voltage from said input current detecting means with an output regulation voltage which is regulated by the user and for generating an output regulation signal in accordance with the compared result;

start driving means, responsive to the input current detecting means, for comparing the detected voltage from said input current detecting means with a predetermined cooker discrimination reference voltage and generating a start drive voltage in accordance with the compared result;

triangular wave generating means, responsive to said work-

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ing coil, for being triggered in response to a driven state of said work coil to generate a triangular wave signal;

switching means for start-driving said working coil in response to the start drive voltage from said start driving means, comparing the output regulation signal from said output regulation signal generating means with the triangular wave signal from said triangular wave generating means and switching the driving of said working coil in accordance with the compared result;



voltage detecting means for detecting a voltage being applied from said rectifying means to said working coil and inversion-amplifying the detected voltage;

output control means for generating output regulation data according to a user's selection; and

voltage dividing means for dividing an output voltage from said voltage detecting means according to the output regulation data from said output control means and outputting the divided voltage as the output regulation voltage to said output regulation signal generating means.

5,329,101

INDUCTION HEATING APPARATUS WITH HINGED SUPPORT AND FILTERED AIR COOLING

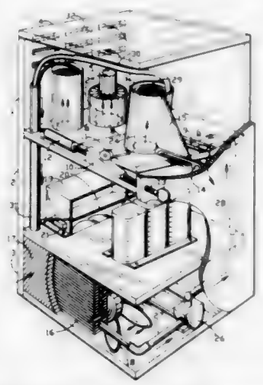
Glynn A. Ellis, Long Eaton, Great Britain, assignor to Razedge Limited, Nottingham, Great Britain

Filed Sep. 21, 1992, Ser. No. 948,007

Claims priority, application United Kingdom, Sep. 19, 1991, 9120053

Int. Cl.[5] **H05b** *6/04*

U.S. Cl. 219—632 **13 Claims**



1. An induction heating apparatus comprising a housing containing a platform, a radio frequency current generating valve fixed to the platform, a table hinged for tilting displacement with respect to the platform, an impedance matching transformer fixed to the table having an electrical input coupled to the current generating valve, a heating element fixed to an output of the transformer for coupled movement with the transformer and table, a guide movable with respect to the housing, and a follower coupled to the table and engaging the guide so that movement of the guide is translated into tilting displacement of the table.

5,329,102

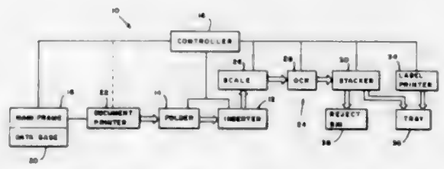
METHOD AND APPARATUS FOR PREPARING VALIDATED MAIL TRAY LABELS

Ronald P. Sansone, Weston, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 9, 1990, Ser. No. 594,515

Int. Cl.[5] **G06F** *15/20*

U.S. Cl. 235—375 **16 Claims**



1. A system for providing labels for a mail tray to give destination and content information relative to mail pieces places in the mail tray, the combination comprising:

a controller having a mail list, mailing information, and postal regulation information stored in the memory thereof,

an inserting machine in communication with said controller for placing inserts into envelopes to form mail pieces under control of said control,

a first printer for printing documents,

a second printer in communication with said controller for printing labels based upon said mail list and mailing information,

a scale in communication with said controller and downstream from said inserter for weighing mail pieces prepared by said inserter and for communicating the weight to said controller whereby said controller determines the amount of postage required, compares the measured weight with weight calculated by mailing and insert information received from said inserter.

5,329,103

LASER BEAM SCANNER WITH LOW COST DITHERER MECHANISM

Joseph F. Rando, Los Altos, Calif., assignor to Spectra-Physics, San Jose, Calif.

Filed Oct. 30, 1991, Ser. No. 784,771

Int. Cl.[5] **G02B** *26/08;* **G06K** *7/01, 7/10*

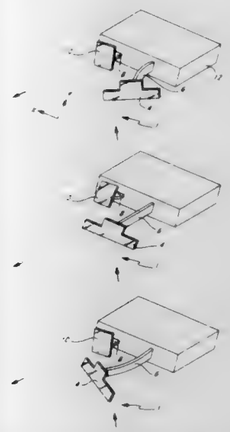
U.S. Cl. 235—462 **27 Claims**

1. A bar code scanner for scanning a bar code comprising:

at least one laser light source including a beam forming means for producing a focused laser beam;

a scan generator means comprising first and second resonant mechanical systems oscillating in a sine wave at substantially 90 degrees out of phase with each other, said first and second resonant mechanical systems being alternately activated for scanning during the substantially linear portion of said sine wave oscillation;

collection means for collecting light reflected from said bar code being scanned;



electronic detection means responsive to said collected light for processing and decoding information from said collected light.

5,329,104

AUTOMATICALLY IDENTIFYING DECODE APPARATUS

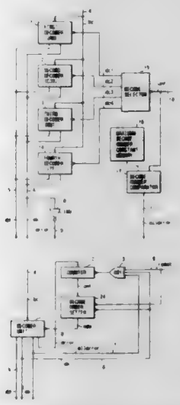
Junichi Ouchi, and Kazuo Hasegawa, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,334

Claims priority, application Japan, Mar. 10, 1992, 4-051759

Int. Cl.[5] **G06K** *7/10*

U.S. Cl. 235—462 **2 Claims**



1. An automatically identifying decode apparatus a decoder unit and a counter, wherein:

said decoder unit further comprises a plurality of decoders each for decoding digital data of a certain type among a plurality of different digital-data types and a decoder selector for sequentially selecting one of said decoders;

said counter is used for sequentially advancing a process of selecting said decoders of said decoder unit;

bar code data is supplied directly to said decoders of said decoder unit;

one of said decoders successfully decoding said digital data outputs decoded data; and

a selected decoder failing to decode said digital data transmits an error signal to said counter, requesting said counter to advance said process of selecting said decoders by one decoder; wherein said apparatus further comprises:

a decode selection order switching means between said decoder unit and said counter for selecting either a value presently output by said counter or a value output by said counter in a previous successful decoding operation; and

a decoded-data comparing means on the output side of said decoder unit for comparing decoded data presently output by said decoder unit to decoded data output by said decoder unit in a previous successful decoding operation.

5,329,105

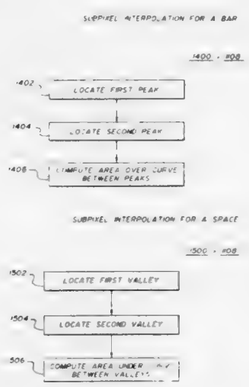
METHOD AND APPARATUS FOR DETERMINING THE WIDTH OF ELEMENTS OF BAR CODE SYMBOLS

Mihael Klancnik, Brookfield, and Luis Figarella, Waterbury, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Aug. 10, 1992, Ser. No. 927,905

Int. Cl.[5] **G06K** *7/10*

U.S. Cl. 235—463 **24 Claims**



1. A method for decoding a bar code symbol, comprising the steps of:

(a) receiving a signal representative of said symbol;

(b) searching said signal in one dimension to locate two points corresponding to an element of said symbol;

(c) computing a value representative of the signal energy between said two points;

(d) determining the width of said element in accordance with said value ; and

(e) determining at least one deviation associated with said element.

5,329,106

HANDLE-LESS BAR CODE SCANNING SYSTEM

L. Michael Hone; Vincent T. La Manna, both of Webster, and Harold McGuire, Ontario, all of N.Y., assignors to PSC, Inc., Webster, N.Y.

Filed Oct. 2, 1992, Ser. No. 955,571

Int. Cl.[5] **G06K** *7/10*

U.S. Cl. 235—472 **5 Claims**

1. A handle-less bar code scanning system which comprises a scanner unit having a case with side, top and bottom walls, said case having a window facing outwardly from one of said walls which is a side wall of said case, said side walls being spaced to define a region of width and length commensurate with an operator's hand on the surface thereof above the palm

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and between the wrist and fingers of said hand, so that said scanner unit can be located in said region, an arm unit having a case of length and width commensurate with the forearm of the operator, said arm unit having top and bottom walls, means for removably attaching said arm unit to said forearm with said bottom wall facing said forearm, said arm unit having cable passageways along said bottom wall, first and second connectors facing each other for receiving connectors on first and



second cables, means on said arm unit for providing a manual data entry keypad having keys and also providing a display panel on said top wall of said arm unit, said keypad including keys adjacent to said display panel, a terminal unit adapted to be carried by the operator, and said first and second cables captured in said passageways and connecting said arm unit to said scanner and said terminal unit respectively, via said connectors.

5,329,107

DYNAMICALLY VARIABLE MACHINE READABLE BINARY CODE AND METHOD FOR READING AND PRODUCING THEREOF

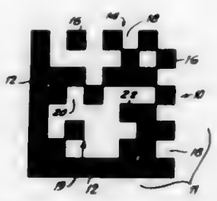
Dennis G. Priddy, Safety Harbor, and Robert S. Cymbalski, Clearwater, both of Fla., assignors to International Data Matrix, Inc., Clearwater, Fla.

Continuation of Ser. No. 627,080, Dec. 13, 1990, Pat. No. 5,126,542, which is a continuation of Ser. No. 513,362, Apr. 24, 1990, Pat. No. 5,053,609, which is a continuation of Ser. No. 190,205, May 5, 1988, Pat. No. 4,939,354. This application Jun. 30, 1992, Ser. No. 907,769

The portion of the term of this patent subsequent to Jul. 30, 1990, has been disclaimed.

Int. Cl.[5] G06K *7/14, 19/06*

U.S. Cl. 235—494 **14 Claims**



1. A dynamically variable machine optically readable binary code comprising data in a plurality of data cells forming a matrix having a perimeter, said matrix having a variable number of data cells, said perimeter including density indicia for determining the density of data contained within the matrix, said density indicia being disposed in said perimeter and indicating said density independently of the positioning of said data cells contained in the matrix.

5,329,108

MAP WITH INDEXES FOR A GEOGRAPHICAL INFORMATION SYSTEM AND SYSTEM FOR APPLYING SAME

Jacques Lamoure, Meudon, France, assignor to Cherloc, La Roche Sur Yon, France

Filed Nov. 20, 1992, Ser. No. 979,690

Claims priority, application France, Nov. 22, 1991, 91 14415

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—494 **11 Claims**



1. Map bearing a graphic representation of cartographic information, said representation being divided into a large number of elementary areas, each of said areas having an index associated therewith, each index including a group of dots placed on the map in the vicinity of the associated elementary area and constituting a specific code for said area, the indexes as a whole forming a location frame covering said graphic representation and being superimposed thereupon, each group of dots being readable by optical reading means cooperating with a data processing system comprising a data medium addressable by means of said indexes and containing information specific to the associated areas.

5,329,109

PHOTOELECTRIC CONVERTING DEVICE HAVING A PLURALITY OF MONITORING MEANS FOR DETECTING POINT OF FOCUS WITH HIGH PRECISION FOR FOCUSING AREA LYING OVER A PLURALITY OF BLOCKS

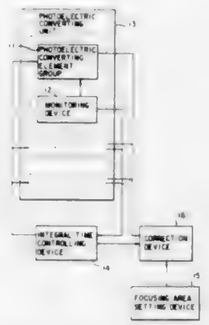
Shinichi Kodama, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 72,474

Claims priority, application Japan, Jun. 8, 1992, 4-147583

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.2 **33 Claims**



1. A point-of-focus detection device comprising:
an array of charge storage type photoelectric converting elements for converting an amount of light into an electrical signal;
a plurality of monitoring means respectively disposed for a plurality of photoelectric converting element groups which are obtained by dividing said photoelectric converting elements of said photoelectric converting element array, outputs of said monitoring means respectively representing average amounts of lights respectively received by said photoelectric converting element groups;
a plurality of storage interruption means for comparing the outputs of said plurality of monitoring means with a preset value and interrupting the charge storage operation of that of said photoelectric converting element groups whose output has reached the preset value;
storage means for storing charge storage time for the photoelectric converting element group when the charge storage operation is interrupted by said storage interruption means and storing the outputs of said monitoring means for said photoelectric converting element groups when limit time has elapsed after the charge storage operation of said photoelectric converting element was started;
focusing area setting means for setting a focusing area used for detecting the point of focus in a desired position on an image plane;
correction means for correcting the outputs of said photoelectric converting elements according to the monitoring time or monitor outputs when the focusing area set by said focusing area setting means lies over at least two of said photoelectric converting element groups; and
point-of-focus detection means for detecting the point of focus of an area set by said focusing area setting means by use of the outputs of said photoelectric converting elements which are corrected by said correction means.

5,329,110

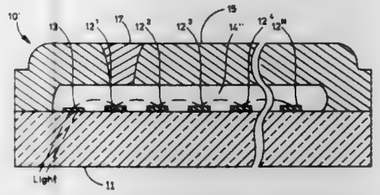
METHOD OF FABRICATING A MICROELECTRONIC PHOTOMULTIPLER DEVICE WITH INTEGRATED CIRCUITRY

Randy L. Shimabukuro, and Stephen D. Russell, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 908,692, Jul. 1, 1992, Pat. No. 5,264,693. This application Nov. 22, 1993, Ser. No. 156,192

Int. Cl.[5] H01J *39/06*

U.S. Cl. 250—207 **7 Claims**



1. A method of fabricating a microelectronic photomultiplier device with an integrated circuitry responsive to an external at least one impinging wavelength:
providing a transparent insulating substrate being adapted to provide compatible associated integrated circuitry to optionally allow logic, control and power circuitry to be integrated with the microelectronic photomultiplier device;
depositing substantially planar dynodes and one substantially planar anode in a juxtaposed arrangement on said transparent insulating substrate;
depositing a substantially planar photocathode adjacent said substantially planar dynodes on said transparent insulating substrate, said substantially planar photocathode having the property to generate a representative electron emission in response to said at least one impinging wavelength;
depositing a volume of sacrificial material sufficient to cover said substantially planar dynodes, said substantially planar anode and said substantially planar photocathode;
depositing a polysilicon cap over the sacrificial material volume;
providing a hole through said polysilicon cap to be in communication with the sacrificial material volume;
introducing an etchant having the property to etch-away said sacrificial material and further having the property not to etch away the materials of said polysilicon cap, said substantially planar dynodes, said substantially planar anode and said substantially planar photocathode;
etching-away said sacrificial material volume to produce a cavity inside said polysilicon cap containing said substantially planar dynodes, said substantially planar anode and said substantially planar photocathode;
evacuating any gas that may have been in said cavity to produce an evacuated cavity; and
sealing said hole in said polysilicon cap in a vacuum thereby forming an evacuated cavity-chamber in said polysilicon cap containing said substantially planar dynodes, said substantially planar anode and said substantially planar photocathode to thereby provide said microelectronic photomultiplier device.

5,329,111

IMAGE READER WITH ADJUSTABLE CONTRAST RANGE

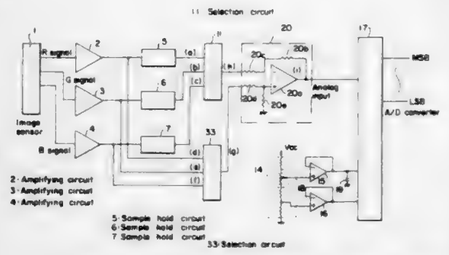
Shinya Sonoda, Yamashina; Atsushi Noda; Hiroki Tabata, both of Takatsuki; Masashi Sugimoto, Kawanishi, and Junji Hiraishi, Yawata, all of Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Jun. 26, 1992, Ser. No. 904,053

Claims priority, application Japan, Jun. 27, 1991, 3-182917; Jun. 27, 1991, 3-182918

Int. Cl.[5] H01J *40/14;* **H04N** *3/14*

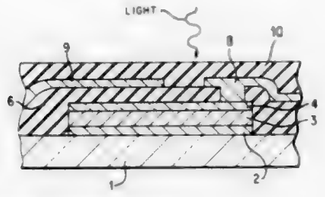
U.S. Cl. 250—208.1 **8 Claims**



1. An image reader for reading a picture signal in analog form and outputting said picture signal in digital form, comprising:
a first voltage generating circuit generating a first voltage for setting an upper limit of the contrast in said picture signal;
a second voltage generating circuit generating a second voltage for setting a lower limit of the contrast in said picture signal; and
an A/D converter receiving an input analog signal of said picture signal and outputting a digital signal in a range bounded by said first and second voltages,
wherein at least one of said voltages respectively generated by said first and second voltage generating circuits is variable.

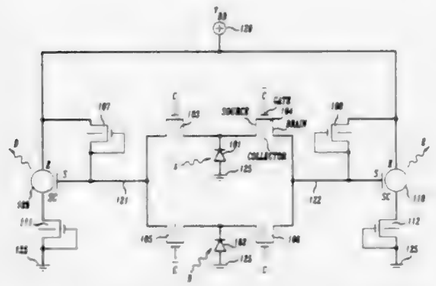
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5,329,112
MULTI-CAPACITANCE PHOTODIODE IMAGE SENSOR
Akira Mihara, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1992, Ser. No. 977,171
Claims priority, application Japan, Dec. 6, 1991, 3-348511
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—208.1 13 Claims



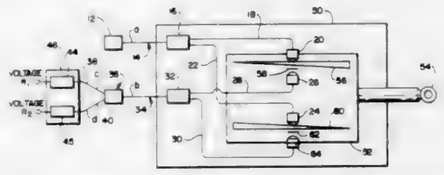
1. An image sensor comprising:
a substrate;
a first conducting layer formed on the substrate;
a photodiode formed on the substrate and the first conducting layer;
a second conducting layer formed on the substrate and the photodiode layer so as to overlap the first conducting layer, thereby forming a first capacitor;
an insulating layer formed on the substrate, the first conducting layer, the photodiode layer and the second conducting layer; and
a third conducting layer formed on the insulating layer so as to overlap at least one of the first and second conducting layers, thereby forming a second capacitor, wherein the first capacitor, the second capacitor and the photodiode layer are connected in parallel.

5,329,113
OPTOELECTRONIC SWITCHING NODE
Geoffrey W. Taylor, Holmdel, and Timothy A. Vang, Tinton Falls, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 10, 1993, Ser. No. 75,087
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—214 LS 10 Claims



1. In an optoelectronic switching array, the combination comprising an inversion channel laser having emitter, sub-collector and source terminals, power source means for coupling an operating potential between said emitter and sub-collector terminals of said inversion channel laser, a photodetector having a first terminal connected to a reference potential and a second terminal which provides a current when light impinges on said photodetector, means for coupling the current generated by said photodetector to the source terminal of said inversion channel laser, and an impedance means coupled to said source terminal for absorbing a portion of the current from said photodetector whereby a shut-off current is drawn from said source terminal when said photodetector is not generating current due to impinging light.

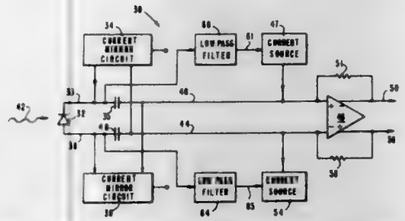
5,329,114
ACTUATOR WITH AN OPTICAL POSITION SENSOR USING LINEAR ATTENUATORS
Christopher V. Fields, Riviera Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 31, 1992, Ser. No. 997,721
Int. Cl.[5] H01J 40/14; G01D 5/34
U.S. Cl. 250—214 PR 19 Claims



1. An actuator comprising sensor means for indicating the position of an object constrained to move in one dimension between first and second positions, characterized by:
light source means for illuminating a first point and a second point with equal intensity light comprising a first frequency and a second frequency different from the first frequency, the first and second frequencies having about equal intensity;
first attenuation means for illuminating with variable intensity a third point with light originating from the first point, the intensity of the illumination at the third point linearly decreasing with a change of position of the object in a first direction;
second attenuation means for illuminating with variable intensity a fourth point with light originating from the second point, the intensity of the illumination at the fourth point linearly decreasing with a change of position of the object in a second direction opposite the first direction and in synchronism with an increase in illumination at the third point;
receiver means for providing a first signal indicative of the intensity of light of the first frequency illuminating the third point and a second signal indicative of the intensity of light of the second frequency illuminating the fourth point; and
processing means for providing a third signal indicative of the position of the object as a function of the first and second signal.

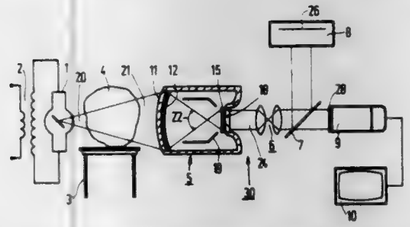
5,329,115
OPTICAL RECEIVER CIRCUIT
Peter Jean-Woo Lim, Mohegan Lake, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 29, 1993, Ser. No. 55,482
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—214 R 11 Claims

1. An optical receiver circuit for receiving optical signals comprising:
a photodetector having a first and second terminal,
said first terminal coupled through a first capacitor to a first input of a transimpedance amplifier,
said second terminal coupled through a second capacitor to a second input of said transimpedance amplifier,
first means for detecting the voltage on said first terminal and for supplying a first current in response thereto to said first terminal and for supplying a first mirror current, substantially equal to said first current, to said second input.
second means for detecting the voltage on said second terminal and for removing a second current in response thereto from said second terminal and for removing a second mirror current, substantially equal to said second current, from said first input,
third means for detecting the average voltage on said first terminal and for supplying a third current in response to



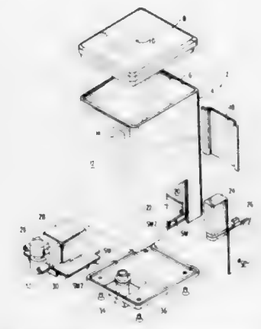
the average voltage on said first terminal to said first input, and
fourth means for detecting the average voltage on said second terminal and for removing a fourth current in response to the average voltage on said second terminal from said second input.

5,329,116
X-RAY EXAMINATION APPARATUS INCLUDING AN X-RAY IMAGE INTENSIFIER HAVING AN IMPROVED EXIT SECTION
Johannes K. E. Colditz; Willem H. Diemer; Laurens H. J. Jonk; Engelbertus Rongen; Johannes W. J. M. Scheuermann, all of Heerlen, Netherlands; Henricus M. De Vrieze, Eindhoven, and August L. H. Simons, Heerlen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 13, 1992, Ser. No. 959,815
Claims priority, application European Pat. Off., Oct. 10, 1991, 91202637.4
Int. Cl.[5] H01V 40/14
U.S. Cl. 250—214 VT 14 Claims



1. An X-ray examination apparatus comprising an X-ray image intensifier tube, including an exit window means which has a curvature on an outer side and an exit screen optically coupled to an inner side, and a light-optical image transfer system outside said image intensifier tube at a position, spaced from said exit window means, for receiving light output from said exit screen via said exit window means, wherein said exit screen, exit window means and light-optical image transfer system together are an exit section that is operative to form the light output from said exit screen into a substantially aberration-free image-carrying light beam.

5,329,117
DEVICE FOR DISPENSING PREDETERMINED DOSAGES OF FLOWABLE MATERIAL
Yuval Galili, and Yiftach Hexter, both of Kvutzat Geva, Israel, assignors to Baccarat Mitkanei Pikud Pneumatiyim le Automatzia Kvutzat Geva, Kvutzat Geva, Israel
Filed Jan. 13, 1993, Ser. No. 3,805
Claims priority, application Israel, Jan. 16, 1992, 100.684
Int. Cl.[5] G01V 9/04
U.S. Cl. 250—221 5 Claims



1. A dosing dispenser for flowable material, comprising:
a container having a material introducing aperture and an outlet, through which material freely discharges by gravity only;
electrically operated valve means having an open state and a closed state and including a nozzle coupled to said outlet, for controlling the passage of material therethrough;
electromagnetic radiation emitter means located in close proximity to said nozzle, for emitting a controlled radiation beam in the vicinity of said nozzle;
electromagnetic radiation detector means located adjacent to said emitter means and responsive to radiation emitted from said emitter means and reflected by a body placed along the emitted radiation path;
said emitter and detector means being affixed in a radiation directing and shielding housing, for determining the directivity of the emitted and reflected radiation;
said electronic control circuit for controlling said valve means in response to detected radiation reflected by the body placed along the emitted radiation path;
said control circuit includes means for adjusting the period of time which said valve means is kept in its open state for allowing free passage of material through said nozzle, thereby controlling the amount of material to be discharged, and further includes switch means associated with said detector means for adjusting the detection sensitivity of reflected radiation.

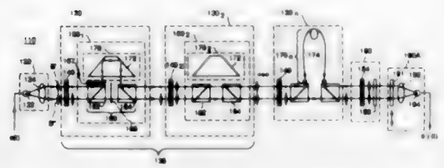
5,329,118
OPTICAL TRANSVERSAL FILTER
Nabeel A. Riza, 69 Westbury Ct., Clifton Park, N.Y. 12065
Filed Dec. 23, 1992, Ser. No. 996,203
Int. Cl.[5] H01J 5/16
U.S. Cl. 250—227.12 26 Claims

1. An optical transversal filter for processing an electromagnetic input signal comprising:
a light source adapted to generate a plurality of optical signals modulated in correspondence with said input signal;
a plurality of optical time delay units optically coupled in a cascade, said cascade being optically coupled to said light source and adapted to differentially time delay selected ones of said plurality of optical signals passing therethrough;

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an optical trimmer device optically coupled to the last of said optical time delay units in said cascade; and

a filter output assembly coupled to said optical trimmer device, said filter output assembly being adapted to convert the sum of the plurality of processed optical signals to a corresponding filtered electrical signal;



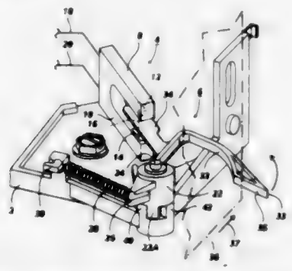
each of said optical time delay units comprising a spatial light modulator (SLM) having an array of liquid crystal pixels disposed such that respective ones of said optical signals pass through respective pixels.

5,329,119

ROTARY SWITCH ACTUATOR FOR DETECTING THE PRESENCE OF A SHEET OR THE LIKE WITH A HUB MEMBER HAVING INCLINED SURFACE SEGMENTS

Craig R. Swartz, Webster; Raymond P. Mileski, Fairport, and John L. Havranek, Williamson, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 23, 1993, Ser. No. 51,712
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—229 **4 Claims**



1. A rotary switch actuator comprising:

an actuator arm pivotably mounted to a substrate for movement between a reset position and a switch activated position, a hub member mounted for rotation on a pivot member fixed in position on said substrate, the improvement wherein the bottom surface of said hub member has at least two inclined surface segments which mate with inclined surfaces protruding upward from the substrate.

5,329,120

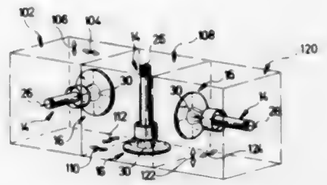
REDUNDANT OPTICAL DEFLECTION SENSOR HAVING SEPARATE MASSES

Friedrich Drissler, Stuttgart, Fed. Rep. of Germany, assignor to Stribel GmbH, Frickenhausen, Fed. Rep. of Germany

Filed Nov. 23, 1990, Ser. No. 617,523
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1989, 3939150; Jul. 5, 1990, 4021455
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.1 **51 Claims**

1. Sensor comprising an emitting element emitting a bundle of light rays in a direction of propagation, said bundle of light rays having transversely to its direction of propagation a distribution of intensity which varies over its cross-section, a receiving element receiving said bundle of light rays and having at least one receiving surface for said bundle of light rays, said emitting element being so arranged relative to said receiving element that when said sensor is acted upon, said emitting element is movable relative to said receiving element in a direction of deflection transversely to said direction of propagation of said bundle of light rays, and an evaluating device generating an output signal of said sensor, wherein:

in each deflection position, a receiving surface is illuminated by only a partial bundle of rays of said bundle of light rays in said direction of deflection,



said receiving element generates for said receiving surface an integral intensity signal corresponding to the total intensity impinging upon this receiving surface, and

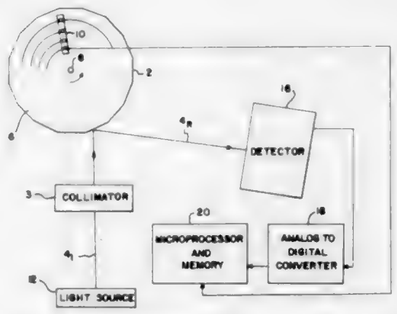
said evaluating device detects said intensity signal and determines the deflection with a processor taking into account the size of said intensity signal and a predetermined set of parameters based on said distribution of intensity in said bundle of light rays and on the size and position of said receiving surface.

5,329,121

ROTARY ENCODING DEVICE WITH POLYGONAL REFLECTOR AND CENTROID DETECTION

Douglas B. Leviton, Dunkirk, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 25, 1993, Ser. No. 22,219
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.13 **17 Claims**



1. A high resolution device for encoding the angular displacement of a rotating shaft about its axis of rotation comprising:

a polygonal mirror having a plurality of facets thereon affixed to said shaft;

a light beam having an invariant spatial distribution directed towards said facets;

said facets of said polygonal mirror each reflecting in turn said light beam such that a light spot having an invariant spatial distribution is projected on a plurality of pixels on a position sensitive detector means;

an analog-to-digital converter means connected to said detector means for reading an output from said plurality of pixels upon which said light spot is projected;

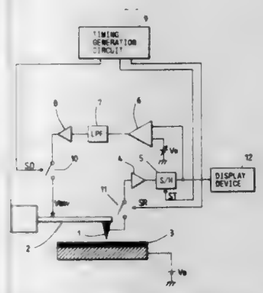
processing and memory means connected to said analog-to-digital converter means to hold and manipulate data provided by said analog-to-digital converter means on the position of said spot and to compute the angular displacement of said shaft about its axis of rotation based upon a computation of the centroid of the light spot distribution upon said plurality of pixels upon which said light spot is projected.

5,329,122

INFORMATION PROCESSING APPARATUS AND SCANNING TUNNEL MICROSCOPE

Kunihiro Sakai, Isehara; Katsunori Hatanaka, Yokohama; Takahiro Oguchi, Ebina; Akihiko Yamano, and Shunichi Shido, both of Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,399
Claims priority, application Japan, Aug. 29, 1991, 3-242324; Sep. 24, 1991, 3-273288; Jun. 30, 1992, 4-173331
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—306 **8 Claims**



1. An information processing apparatus for effecting a recording and/or reproduction of information on a recording medium by using a probe electrode, including:

means for displacing said probe electrode relative to said medium;

means for applying an electrical current to said displacing means to control said displacing means;

means for detecting a minute signal obtained from a physical phenomenon occurring between said probe electrode and said medium; and

means for cutting off the electrical current between said displacing means and said applying means as long as the minute signal is detected by said detecting means.

5,329,123

METHOD AND A DEVICE FOR PREVENTING OPTICAL CROSSTALK BETWEEN LIQUID SCINTILLATION SAMPLES DEPOSITED ON TRANSCULCENT SAMPLE PLATES

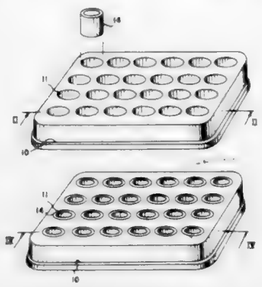
Timo Oikari, Turku; Kauko Lehtinen, Raisio; Järnström, Pargas, and Tapio Yrjönen, Turku, all of Finland, assignors to Wallac Oy, Turku, Finland

Filed Sep. 23, 1992, Ser. No. 948,603
Int. Cl.[5] G01T *1/204*
U.S. Cl. 250—362 **10 Claims**

1. A method for counting scintillation samples with a liquid scintillation counter comprising the steps of:

providing a sample plate having a plurality of sample wells for containing said scintillation samples,

positioning into each of said sample wells to be investigated a tube having an outer diameter equal to or slightly less than an inner diameter of said sample well, said tube made of material impermeable for scintillation light generated



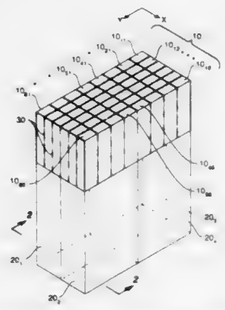
by said scintillation samples, said tube thereby preventing optical crosstalk between adjacent sample wells, and counting said samples with said liquid scintillation counter.

5,329,124

RADIATION DETECTOR

Seiichi Yamamoto, and Tsunekazu Matsuyama, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jan. 26, 1993, Ser. No. 9,117
Claims priority, application Japan, Mar. 31, 1992, 4-108972
Int. Cl.[5] G01T *1/202*
U.S. Cl. 250—367 **18 Claims**



1. In a radiation detector comprising a larger plural number of scintillators arranged closely and two-dimensionally together and a smaller plural number of photomultiplier tubes optically connected to said scintillators, the improvement wherein an optically reflective material is deposited directly upon and firmly attached to a plurality of specified mutually separated regions distributed evenly throughout on mutually opposite boundary surfaces between mutually adjacent pairs of said scintillators and the total of areas on said boundary surfaces covered by said reflective material varies according to the order in which said scintillators are arranged.

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5,329,125

DEVICE FOR CORPUSCULAR-OPTICAL EXAMINATION AND/OR PROCESSING OF MATERIAL SAMPLES

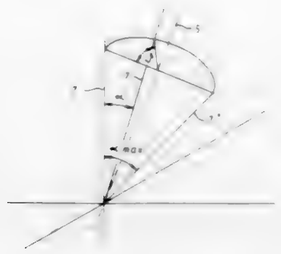
Hans-Peter Feuerbaum, Munich, Fed. Rep. of Germany, assignor to ICT Integrated Circuit Testing Gesellschaft fur Halbleiterpruftechnik, mbH, Fed. Rep. of Germany

Filed Nov. 10, 1992, Ser. No. 974,267

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 4140710

Int. Cl.[5] H01J *37/20*

U.S. Cl. 250—442.11 **5 Claims**



1. In a device for corpuscular-optical examination and processing of material samples, said device comprising a corpuscular-optical column for producing a corpuscular beam, a table system which mounts the material sample including a displacement mechanism by which the material sample can be displaced in at least two axes (x, y) which are at right angles to each other, the improvement wherein

the column and table system are rotatable relative to one another about a first axis of rotation which is at a first selected angle from the axis that is perpendicular to the plane formed by the x and y axes, said angle being no greater than 45°;

said first axis of rotation passes through the place to be examined or to be processed on the material sample; and

the column being aligned so that its optical axis intersects said first axis of rotation at the place to be examined or to be processed on the material sample at a second angle equal in magnitude to said first selected angle and the rotation of the column about the first axis of rotation forms a conical surface centered about said first axis of rotation.

5,329,126

APPARATUS AND PROCESS FOR VACUUM-HOLDING AN OBJECT

Mitsuaki Amemiya, Isehara, and Shunichi Uzawa, Tokyo, both of Japan, assignors to Canon Kabuhiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 854,402, Mar. 19, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 95,484

Claims priority, application Japan, Mar. 22, 1991, 3-081140

Int. Cl.[5] G01N *21/00*

U.S. Cl. 250—453.11 **26 Claims**

1. A process for holding an object on an object holding unit the temperature of which is controlled, said process comprising:

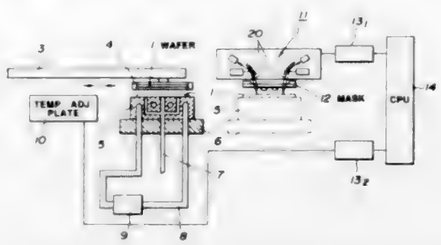
a first holding step of holding the object on the object holding unit in a first position, said object holding unit being set to a first predetermined temperature;

a process strain measuring step of measuring a process strain of the object held on the object holding unit in the first position;

a detecting step of detecting whether or not the measured process strain falls within a tolerance;

a hold releasing step of releasing the hold of the object held on the object holding unit when the measured process strain falls out of the tolerance;

a temperature setting step of setting the temperature of the released object to a second predetermined temperature in a second position based on the measured process strain, the second position being different from the first position; and



a second holding step of holding the object on the object holding unit, the temperature of the object being set to the second predetermined temperature.

5,329,127

METHOD FOR THE IDENTIFICATION OF PLASTICS

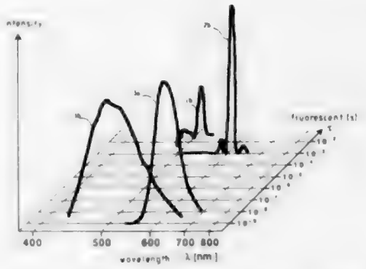
Arno Becker, Krefeld; Klaus Luttermann, Lohmar; Uwe Claussen, Leverkusen; Peter Orth, Köln; Ludger Heiliger, and Aziz E. Sayed, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 12, 1993, Ser. No. 44,731

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1992, 4213323

Int. Cl.[5] G01N *21/64*; **C08J** *3/20*

U.S. Cl. 250—459.1 **14 Claims**



1. A method of identifying different plastics comprising the following steps:

a) providing each plastic with a plurality of fluorescent marker materials wherein said plurality of fluorescent marker materials contains at least one marker material that has a duration of fluorescence which differs from the duration of fluorescence of the other marker materials and further wherein each plastic is provided with a different combination of said fluorescent marker materials;

b) exposing the plastics to a source of radiation which will cause the marker materials to fluoresce;

c) measuring the fluorescence patterns of the plastics after exposure to the radiation in step b); and

d) identifying each plastic by the different durations of fluorescence exhibited in the fluorescence patterns measured in step c).

5,329,128

METHOD AND APPARATUS FOR RECORDING INFORMATION FROM A SLIDABLE SHEET OF A RIM CASSETTE

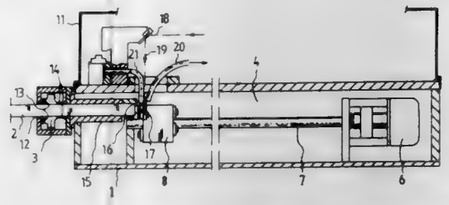
Ilmari Kinanen, Espoo; Matti Rantanen, Kirkkonummi, and Pertti Sormunen, Vantaa, all of Finland, assignors to Berggren OY AB, Helsinki, Finland

PCT No. PCT/FI91/00230, § 371 Date Dec. 29, 1992, § 102(e) Date Dec. 29, 1992, PCT Pub. No. WO92/02849, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 29, 1991, Ser. No. 965,414

Int. Cl.[5] G03B *42/02*

U.S. Cl. 250—584 **8 Claims**



1. A method for reading the information on a tuned slidable sheet of a reusable image media cassette with the use of a separate reading device comprising the steps of:

inserting a cassette with a tuned slidable sheet into a casing in a reading device;

engaging one end of said slidable sheet to a pulling device travelling linearly back and forth;

moving said slidable sheet with said pulling device to draw said slidable sheet out of said cassette in a direction of movement;

focusing a light beam on said slidable sheet at a stationary reading position on a path of travel of said slidable sheet, said light beam reading information from said sliding sheet;

reversing the direction of movement of said slidable sheet and returning said slidable sheet back into said cassette; and

emptying said slidable sheet of the information during its return movement at a stationary emptying position on the path of travel of said slidable sheet.

5,329,129

ELECTRON SHOWER APPARATUS INCLUDING FILAMENT CURRENT CONTROL

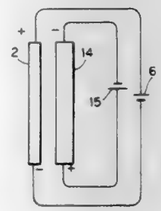
Kazuhiro Shono; Naomitsu Fujishita; Kazuhiko Noguchi; Takahisa Nagayama, and Shigeo Sasaki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 849,238

Claims priority, application Japan, Mar. 13, 1991, 3-47175; Dec. 25, 1991, 3-342911

Int. Cl.[5] H01J *37/04*

U.S. Cl. 250—492.2 **10 Claims**



1. An electron shower apparatus for irradiating a sample with thermoelectrons from first and second filaments respectively, comprising:

first filament current control means for controlling the quantity of filament current for use in heating said first filament;

second filament current control means for controlling the quantity of filament current for use in heating said second filament; and

control state measuring means for measuring a control state which is the quantity of electron shower current or an electrification distribution of said sample,

said first and second filament current control means decreasing or eliminating magnetic fields generated by said first and second filaments respectively, at least one of said first and second filament current control means performing control to irradiate said sample constantly with said thermoelectrons; and

said first and second filament current control means pulsing said first and second filament currents and controlling duty cycles of pulses of said first and second filament currents or the quantity of filament current as a function of said control state.

5,329,130

CHARGED PARTICLE BEAM EXPOSURE METHOD AND APPARATUS

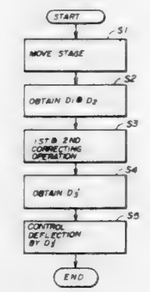
Junichi Kai; Hiroshi Yasuda, both of Kawasaki; Kazutaka Taki, Shimizu, and Mitsuhiro Nakano, Kasugai, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 4, 1992, Ser. No. 924,638

Claims priority, application Japan, Aug. 6, 1991, 3-196809

Int. Cl.[5] H01J *37/302*

U.S. Cl. 250—492.22 **12 Claims**



1. A charged particle beam exposure method for drawing a pattern on a substrate which is carried on a continuously moving stage by deflecting a charged particle beam by a deflector means depending on the pattern which is to be drawn, said charged particle beam exposure method comprising the steps of:

(*a*) moving the stage in a direction parallel to an axis of a coordinate system of the substrate;

(*b*) generating a first deflection data D_1 in a coordinate system of the stage by obtaining a position coordinate of a reference position of a pattern region which includes the pattern which is to be drawn relative to a target position of the stage, and for obtaining a second deflection data D_2 in the coordinate system of the substrate describing a position coordinate of the pattern which is to be drawn from the reference position of the pattern region to which the pattern belongs;

(*c*) carrying out with respect to the first deflection data D_1 a first correcting operation which includes correction of a pattern distortion inherent to a charged particle beam exposure apparatus, and for carrying out the first correcting operation and a second correcting operation with

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respect to the second deflection data D_2 after making a coordinate conversion to the coordinate system of the stage, said second correcting operation correcting a rotation error component relative to the stage caused by the movement of the substrate,

(*d*) obtaining a third deflection data D_3' which describes a position coordinate of the pattern which is to be drawn from the present position of the stage by adding a corrected first deflection data D_1' and a corrected second deflection data D_2' which are obtained in said step (*c*); and

(*e*) controlling the deflector means based on the third deflection data D_3'.

5,329,131

OPTO-ELECTRONIC COUPLER HAVING IMPROVED MOISTURE PROTECTIVE HOUSING

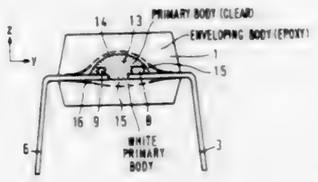
Jacob Wijdenes, Eindhoven, and Antonius L. M. Gieben, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1992, Ser. No. 871,459

Claims priority, application European Pat. Off., May 17, 1991, 91201193.9

Int. Cl.[5] **G02B** *27/00*

U.S. Cl. 250—551 **4 Claims**



1. An opto-electronic coupler comprising an optical transmitter and an optical receiver which are secured to separate connection conductors and which are electrically connected to one or more further connection conductors by contact wires, the optical transmitter, the optical receiver, the contact wires and parts of the separate and further connection conductors being embedded in a primary enveloping body which is embedded in a secondary, nontransparent enveloping body, characterized in that the interface between the primary enveloping body and the secondary enveloping body comprises at least one first zone in which the primary and the secondary enveloping bodies are adhesively interconnected, and in that the interface comprises at least one second zone in which the primary and the secondary enveloping bodies are interconnected nonadhesively.

5,329,132

POSITIONING DEVICE WITH LINEAR SCANNING AND ANGLED CODE LINES

Leo Van de Pas, Antwerp, and Rudi Vanhoutte, Brecht, both of Belgium, assignors to Elektriciteit voor Goederenbehandeling Marine en Industrie, in her verkort Egemin, naamloze vennootschap, Schoten, Belgium

Filed Jan. 11, 1993, Ser. No. 2,806

Claims priority, application Belgium, Jan. 22, 1992, 09200060

Int. Cl.[5] **G01N** *21/86*

U.S. Cl. 250—560 **23 Claims**

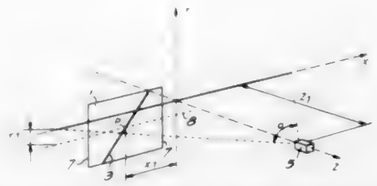
1. A positioning device comprising:

(A) a linear scanning device for scanning in a single linear scanning direction;

(B) at least one support having:

(1) at least one contrasting code line provided thereon including a useful part directed at an angle other than 0° and 90° with respect to the scanning direction, and

(2) at least one extra line forming a reference line and forming an angle other than 0° and 90° with the code line; and



(C) wherein the scanning device outputs a signal representative of the relative position of the code line and the reference line.

5,329,133

METHOD OF AUTOMATICALLY DETERMINING FLAWS OF AN OBJECT OF EXAMINATION

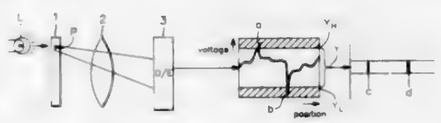
Kenji Uesugi, Yotsukaido, and Michihiro Shimada, Nagoya, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00299, § 371 Date Mar. 20, 1992, § 102(e) Date Mar. 20, 1992, PCT Pub. No. WO92/15864, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 6, 1991, Ser. No. 842,182

Int. Cl.[5] **G01N** *21/88*

U.S. Cl. 250—562 **6 Claims**



1. A method of automatically determining flaws of an object under examination by transmitting rays of light through the object to detect flaws on and in the object on a one by one basis, the method comprising the steps of:

adjusting a depth of observation in three stages of identifying the focal length of a detected flaw on the basis of light intensity of transmitted light, deeper than the focal length and shallower than the focal length and converting the intensity of transmitted light into a corresponding electric signal for each stage by photoelectric conversion means,

selecting portions of the generated signal that are found outside a predetermined range of intensity as flaw signals, and

comparing each of the flaw signals with a number of digitized flaw patterns prepared from various flaws that have been detected in advance.

5,329,134

SUPERLUMINESCENT DIODE HAVING A QUANTUM WELL AND CAVITY LENGTH DEPENDENT THRESHOLD CURRENT

Charles B. Morrison, Brewster, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1992, Ser. No. 819,548

Int. Cl.[5] **H01L** *33/00*

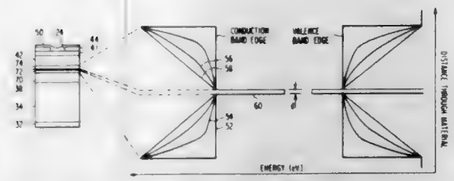
U.S. Cl. 257—14 **12 Claims**

1. A superluminescent semiconductor diode including:

an active region positioned between two semiconductor cladding layers, and

a waveguide positioned adjacent said active region and

having an axis and termination means for limiting internal reflection at ends of said waveguide,



said active region including a layer having a thickness on the order of a carrier deBroglie wavelength.

5,329,135

LIGHT EMITTING DEVICE FOR ACHIEVING HIGH LUMINOUS EFFICIENCY AND HIGH SATURATION LEVEL OF LIGHT OUTPUT

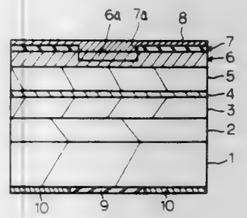
Tomoji Terakado, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 907,689, Jul. 2, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 140,816

Claims priority, application Japan, Jul. 3, 1991, 3-163061

Int. Cl.[5] **H01L** *29/00, 33/00, 31/12;* **H01S** *3/18*

U.S. Cl. 257—17 **6 Claims**



1. A light emitting device, comprising:

a) a substrate formed of indium phosphide of a first conductivity type;

b) a first clad layer formed on said substrate and of indium phosphide of said first conductivity type;

c) a luminescent layer formed on said first clad layer, and having a luminescent film of indium gallium arsenic phosphide compound semiconductor;

d) a strained barrier layer formed on said luminescent layer and of indium aluminum arsenide of a second conductivity type expressed by the molecular formula of $In_{1-x}Al_xAs$ where x ranges between 0.48 and 1.00, said second conductivity type being opposite to said first conductivity type, said strained barrier layer being formed separately from said luminescent layer; and

e) a second clad layer formed on said strained barrier layer and of indium phosphide of said second conductivity type.

5,329,136

VOLTAGE-TUNABLE PHOTODETECTOR

Keith W. Goossen, Aberdeen, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 30, 1993, Ser. No. 56,374

Int. Cl.[5] **H01L** *27/14*

U.S. Cl. 257—17 **23 Claims**

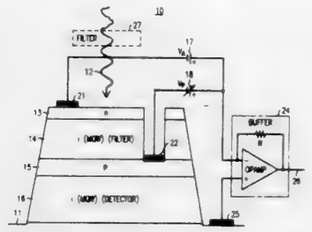
1. A tunable monolithic integrated photodetector for determining a wavelength of incident light, comprising:

a filter means for receiving and filtering the incident light, said filter means comprising an intrinsic first multiple quantum well material having first and second filter surfaces;

a detector means for receiving light from said filter means and for exhibiting a peak photocurrent when the incident light exhibits a selected wavelength, said detector means comprising an intrinsic second multiple quantum well material having first and second detector surfaces;

a variable voltage source with variable voltage positive and negative terminals, said variable voltage negative terminal being connected to said second filter surface and to said first detectors surface, said variable voltage source being adapted to apply a variable bias between said variable voltage positive and negative terminals, said variable bias being capable of adjustment for tuning and specifying the selected wavelength; and

a fixed voltage source with fixed voltage positive and negative terminals, said fixed voltage negative terminal being connected to said first filter surface, said fixed voltage



positive terminal being connected to said variable voltage positive terminal, said fixed and variable voltage sources and said filter means together forming a series circuit loop for permitting substantially resistance free current flow through said filter means and said fixed and variable voltage sources, said fixed voltage source applying a fixed bias between said fixed voltage positive and negative terminals for causing said filter means to absorb light wavelengths shorter than the selected wavelength to thereby enhance the detectability of the peak photocurrent in said detector means,

whereby the wavelength of the incident light is identified by monitoring said detector means for the peak photocurrent while said variable bias is adjusted.

5,329,137

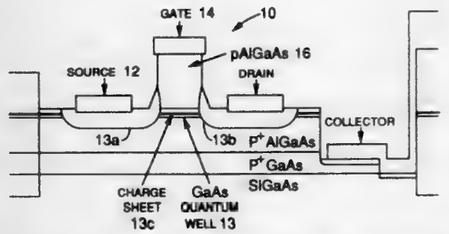
INTEGRATED TOTAL INTERNAL REFLECTION OPTICAL SWITCH UTILIZING CHARGE STORAGE IN A QUANTUM WELL

Geoffrey W. Taylor, Holmdel, and Tim Vang, Belmar, both of N.J., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 731,591, Jul. 17, 1991, abandoned. This application May 21, 1993, Ser. No. 66,322

Int. Cl.[5] **H01L** *27/14, 31/00*

U.S. Cl. 257—21 **3 Claims**



1. A total internal reflection optical switch comprising a heterojunction transistor having a self-aligned ion implanted source, an ohmic gate, a mesa, and three self-aligned waveguides, said waveguides being defined with the same photo-

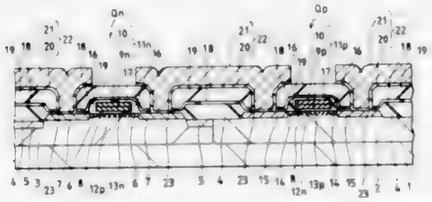
lithographic mask as the ohmic gate to insure precise alignment, a single quantum well under the ohmic gate, the single quantum well being comprised of undoped, narrow bandgap material bound on both sides by two regions of p-doped, wide bandgap material, both of said p-doped regions have symmetrically graded bandgaps, being most narrow next to the quantum well and increasing out to a wide and constant value away from the quantum well, a highly n-doped and totally depleted charge sheet in the wide bandgap material, very near the gate side of the quantum well heterojunction, said charge sheet inducing a voltage controllable inversion channel within the quantum well, said three waveguides comprising a single input port and two output ports, said two output ports comprising a straight through optical path and a reflection optical path, a source of optical energy applied to said single input port, the energy from said source of optical energy being directed into and out of the region under the ohmic gate by said waveguides, a total internal reflection being created in said switch which routes the optical energy to said reflection optical path by inducing a change in refractive index under the ohmic gate by means of a voltage applied between the ohmic gate and the source electrode.

5,329,138

SHORT CHANNEL CMOS DEVICE CAPABLE OF HIGH PERFORMANCE AT LOW VOLTAGE

Shinichiroo Mitani, Tokorozawa; Kenichi Kikushima, Ohme, and Fumio Ootsuka, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,248
Claims priority, application Japan, Jul. 29, 1991, 3-188470
Int. Cl.[5] H01L *29/804, 29/792, 29/78*
U.S. Cl. 257—42 **8 Claims**



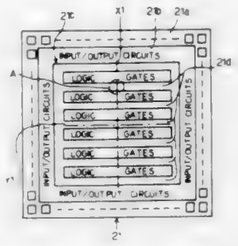
1. A semiconductor integrated circuit device including a CMOSFET having an enhancement type n-channel MISFET and an enhancement type p-channel MISFET formed over a semiconductor substrate, comprising:
- a p-type first semiconductor region and an n-type second semiconductor region formed in the surface of said semiconductor substrate;
- a first gate electrode formed over said first semiconductor region through a first gate insulating film and comprised of an n-type polycrystalline silicon layer, and a second gate electrode formed over said second semiconductor region through a second gate insulating film and comprised of a p-type polycrystalline silicon layer;
- n-type third and fourth semiconductor regions positioned at the two ends of said first gate electrode and formed in said first semiconductor region, and p-type fifth and sixth semiconductor regions positioned at the two ends of said second gate electrode and formed in said second semiconductor region;
- a p-type seventh semiconductor region formed in said first semiconductor region and between said third and fourth semiconductor regions, and an n-type eighth semiconductor region formed in said second semiconductor region and between said fifth and sixth semiconductor regions, wherein said seventh and eighth semiconductor regions are more heavily doped than said first and second semiconductor regions; and
- an n-type ninth semiconductor region formed in said first semiconductor region and between said third and fourth semiconductor regions, and a p-type tenth semiconductor region formed in said second semiconductor region and between said fifth and sixth semiconductor regions, wherein said ninth semiconductor region is formed in the surface of said semiconductor substrate and in a shallower position than said seventh semiconductor region to comprise a pn junction together with said seventh semiconductor region, wherein the tenth semiconductor region is formed in the surface of said semiconductor substrate and in a shallower position than said eighth semiconductor region to comprise a pn junction together with said eighth semiconductor region, and wherein each of said n-channel MISFET and said p-channel MISFET has a gate length of 0.2 μm or less.

5,329,139

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE ANALYZABLE BY USING LASER BEAM INDUCING CURRENT

Masaru Sanada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 29, 1993, Ser. No. 38,607
Claims priority, application Japan, Apr. 2, 1992, 4-080151
Int. Cl.[5] H01L *27/02, 23/48*
U.S. Cl. 257—48 **4 Claims**



1. A semiconductor integrated circuit device fabricated on a single semiconductor substrate of one conductivity type having a major surface, said device comprising:
- a) circuit components formed in a first area assigned thereto in said major surface;
- b) a multilayer wiring structure provided over said major surface, and having wiring strips extending over a second area defined in said major surface and selectively coupled with said circuit components;
- c) a plurality of impurity regions of the opposite conductivity type formed in said second area and selectively connected with said wiring strips, an optical radiation being radiated through said wiring strips and onto said plurality of impurity regions for producing carriers; and
- d) at least one terminal electrically connected with one of said wiring strips so that said carriers are detectable through said one of said wiring strips and one of said circuit components.

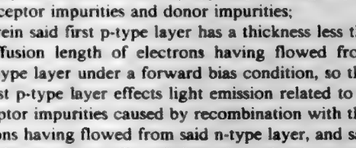
5,329,140

THIN FILM TRANSISTOR AND ITS PRODUCTION METHOD

Kenji Sera, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 30, 1992, Ser. No. 954,309
Claims priority, application Japan, Oct. 1, 1991, 3-253276
Int. Cl.[5] H01L *45/00, 29/00*
U.S. Cl. 257—66 **4 Claims**

1. A thin film transistor comprising
- a source region and a drain region formed of an electroconductive film on an substrate at aninterval;
- a first insulating film formed on said substrate so as to cover said source region and said drain region and having a first contact hole on said source region and a second contact hole on said drain region;
- a semiconductor film formed on said first insulating film so as to be connected through said first contact hole and said second contact hole formed in said first insulating film respectively to said source region and said drain region;
- a second insulating film formed on said semiconductor film; and



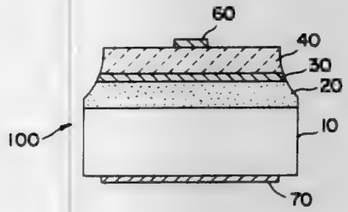
- a gate electrode formed of an electroconductive film on said second insulating film so as not to be overlapped with said first contact hole and said second contact hole;
- wherein in the space between each end of said gate electrode and the corresponding one of said first contact hole and said second contact hole, there exists said first insulating film between said semiconductor film and said source region and said drain region.

5,329,141

LIGHT EMITTING DIODE

Akira Suzuki; Yoshihisa Fujii, both of Nara; Hajime Saito, Tenri; Katsuki Furukawa, Sakai, and Yoshimitsu Tajima, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1992, Ser. No. 968,973
Claims priority, application Japan, Oct. 31, 1991, 3-286741
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—103 **14 Claims**



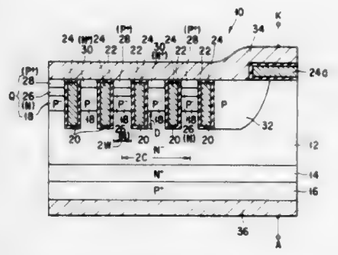
1. A light emitting diode of silicon carbide having a p-n junction, comprising:
- an n-type layer of silicon carbide doped with donor impurities;
- a first p-type layer of silicon carbide formed on the n-type layer, said first p-type layer being doped with acceptor impurities; and
- a second p-type layer of silicon carbide formed on the first p-type layer, said second p-type layer being doped with acceptor impurities and donor impurities;
- wherein said first p-type layer has a thickness less than the diffusion length of electrons having flowed from said n-type layer under a forward bias condition, so that said first p-type layer effects light emission related to the acceptor impurities caused by recombination with the electrons having flowed from said n-type layer, and said second p-type layer effects light emission by donor-acceptor pairs caused by recombination with the electrons having flowed from said n-type layer.

5,329,142

SELF TURN-OFF INSULATED-GATE POWER SEMICONDUCTOR DEVICE WITH INJECTION-ENHANCED TRANSISTOR STRUCTURE

Mitsuhiko Kitagawa, Tokyo, and Ichiro Omura, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 7, 1992, Ser. No. 925,870
Claims priority, application Japan, Aug. 8, 1991, 3-199343; Dec. 20, 1991, 3-354303
Int. Cl.[5] H01L *21/36, 21/74*
U.S. Cl. 257—139 **24 Claims**



1. A semiconductor device comprising:
- a first semiconductive layer serving as a base layer with a trench defined therein having a wall;
- a second semiconductive layer serving as a first current-carrying channel region connected to said base layer for allowing first type electrical carriers to be injected into said base layer;
- a third semiconductive layer serving as a second current-carrying channel region allowing second type electrical carriers to be injected into said base layer mostly through the second channel region to cause a conduction modulation to occur therein;
- a fourth semiconductive layer serving as a carrier drain layer causing carriers of said first type located in said base layer to move externally out of said base layer; and
- injection enhancer means for locally controlling a flow capability of the first type carriers in a portion of said base layer adjacent to the wall of said trench in order to thereby increase an ability to inject the second type carriers into said base layer.

5,329,143

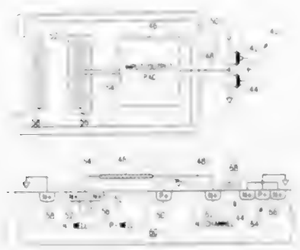
ESD PROTECTION CIRCUIT

Tsiu C. Chan, Carrollton, and David S. Culver, The Colony, both of Tex., assignors to SGS Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 711,549, Jun. 5, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 991,702
Int. Cl.[5] H01L *29/78, 27/02*
U.S. Cl. 257—173 **17 Claims**

1. An electrostatic discharge protection circuit for a semiconductor integrated circuit, comprising:
- an input/output bonding pad;
- an output driver connected to said bonding pad;
- a bipolar transistor connected to said bonding pad, wherein a high voltage on said bonding pad causes said bipolar transistor to turn on and shunt current from said bonding pad to ground; and
- a heavily doped guard ring partially surrounding said bipo-

lar transistor, wherein said guard ring has a gap located adjacent an emitter of said bipolar transistor, and wherein



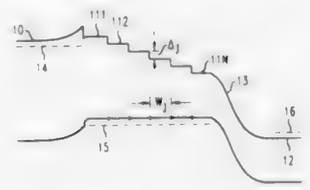
the gap is positioned to control a voltage at which said bipolar transistor turns on.

5,329,144

HETEROJUNCTION BIPOLAR TRANSISTOR WITH A SPECIFIC GRADED BASE STRUCTURE

Serge Luryi, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 23, 1993, Ser. No. 52,352
Int. Cl.[5] **H01L** *31/072, 31/109, 27/082*
U.S. Cl. 257—197 **7 Claims**



1. An article comprising a heterojunction bipolar transistor comprising first, second and third semiconductor regions, to be referred to as emitter, base and collector, respectively, and further comprising means for electrically contacting said emitter, base and collector, respectively, the base being intermediate the emitter and collector and having a width W_B, the emitter and collector each comprising semiconductor material of a first conductivity type, the base comprising material of a second conductivity type that differs from the first conductivity type and having a base bandgap; CHARACTERIZED IN THAT

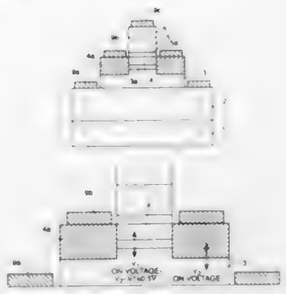
the base is selected such that the base bandgap comprises N(N≧2) regions (designated 1st, 2nd, . . . , j-th, . . . , Nth) of substantially constant bandgap width, with a substantially step wise change (Δ_j) in bandgap width between the j-th region and the (j+1)-th region, the bandgap width decreasing monotonically, without increasing anywhere, in the direction from emitter towards collector, with $\Delta_j > kT$, where k is Boltzmann's constant and T is an absolute transistor operating temperature, and furthermore, $\Delta_j > \Delta_{inelastic}$, where $\Delta_{inelastic}$ is an inelastic minority carrier scattering threshold energy associated with the material of the j'th region.

5,329,145

HETEROJUNCTION BIPOLAR TRANSISTOR AND ITS INTEGRATION METHOD

Atsushi Nakagawa, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 5, 1992, Ser. No. 925,965
Claims priority, application Japan, Oct. 15, 1991, 3-265879
Int. Cl.[5] **H01L** *29/72, 29/205*
U.S. Cl. 257—198 **13 Claims**



1. A heterojunction bipolar transistor comprising:
(a) an InP substrate and
(b) a collector or emitter layer of p type $In_xAl_{1-x}As$ lattice matched to the InP substrate,
(c) a base layer of n type $In_xGa_{1-x}As$
(d) an emitter or collector layer of p type $In_xAl_{1-x}As$ lattice matched to the InP substrate,
said collector or emitter layer of p type $In_xAl_{1-x}As$, said base layer of n type $In_xGa_{1-x}As$ and said emitter or collector layer of p type $In_xAl_{1-x}As$ being formed in an epitaxial layered structure on said InP substrate, said heterojuntion bipolar transistor further comprising:
(e) an external base region comprising an n type In_x-$Ga_{1-x}As$ layer contiguous to said base layer of n type $In_xGa_{1-x}As$ and an n type $In_xAl_{1-x}As$ layer contiguous to said emitter or collector layer of p type $In_xAl_{1-x}As$, said n type $In_xAl_{1-x}As$ layer being formed by introduction of an n type impurity into said p type $In_xAl_{1-x}As$ layer beneath said base layer and resulting conversion of the conductivity type of the $In_xAl_{1-x}As$ layer from p type to n type

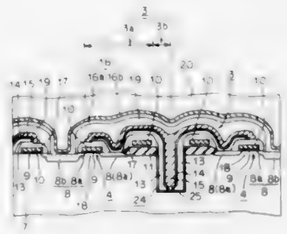
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5,329,146

DRAM HAVING TRENCH TYPE CAPACITOR EXTENDING THROUGH FIELD OXIDE

Shinya Soeda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,632
Claims priority, application Japan, Dec. 25, 1991, 3-343117
Int. Cl.[5] **H01L** *29/68, 29/06*
U.S. Cl. 257—303 **4 Claims**



1. A dynamic random access memory device, comprising:

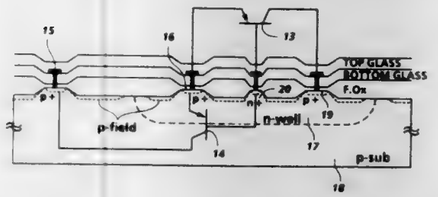
a semiconductor substrate having a main surface;
an isolation insulating layer formed on the main surface of said semiconductor substrate, said isolation insulating layer having an upper surface and a lower surface, said lower surface of said isolation insulating layer being in contact with said main surface of said semiconductor substrate;
first and second impurity regions formed on the main surface and extending into said semiconductor substrate and isolated from each other by said isolation insulating layer;
a groove part extending into said isolation insulating layer and said semiconductor substrate and having inner lateral surfaces and a bottom surface;
an insulating layer having a smaller thickness than said isolation insulating layer, formed on said inner lateral surfaces and said bottom surfaces of said groove part and extending over said top surface of said isolation insulating layer, said insulating layer having a top surface and a bottom surface, said bottom surface of said insulating layer being in contact with said inner lateral surfaces and said bottom surface of said groove part,
a first lower electrode having a first portion connected to said first impurity region and extending on the surface of said isolation insulating layer, and a second portion extending into said groove part in contact with said top surface of said insulating layer;
a second lower electrode having a third portion connected to said second impurity region and extending on the surface of said isolation insulating layer, and a fourth portion extending into said groove part in contact with said top surface of said insulating layer and isolated from said second portion of said first lower electrode;
a first dielectric layer formed on the surface of said first lower electrode;
a second dielectric layer formed on the surface of said second lower electrode and isolated from said first dielectric layer; and
an upper electrode formed in a single layer and formed on the surfaces of said first and second dielectric layers.

5,329,147

HIGH VOLTAGE INTEGRATED FLYBACK CIRCUIT IN 2 μM CMOS

Tuan A. Vo, Hawthorne; Mohamad M. Mojaradi, and Aram Nahidipour, both of Los Angeles, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 359
Int. Cl.[5] **H01L** *27/02, 29/72*
U.S. Cl. 257—378 **2 Claims**



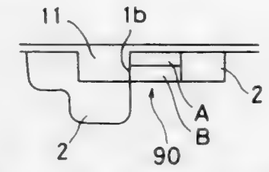
1. A circuit comprising a bipolar transistor having an emitter, base and collector, for clamping the drain of a field effect transistor having a drain, to a positive voltage comprising:
an n-well in a p-substrate,
a p+ area in said n-well which forms the field effect transistor drain and the bipolar transistor emitter,
a first n+ area in said n-well which forms the bipolar transistor base,
a second p+ area in said n-well which forms the bipolar transistor collector, and
said collector coupled to said positive voltage.

5,329,148

SEMICONDUCTOR DEVICE AND PREPARING METHOD THEREFOR

Hitoshi Aoki, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1991, Ser. No. 785,073
Claims priority, application Japan, Nov. 20, 1990, 2-316608
Int. Cl.[5] **H01L** *27/10, 29/06;* **G11C** *17/00*
U.S. Cl. 257—390 **11 Claims**



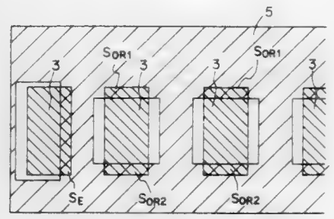
1. A memory cell array providing a plurality of memory cells which comprises:
a semiconductive substrate having thereon a plurality of source/drain regions arranged parallel to each other;
a plurality of gate electrodes which extend perpendicularly to and above the source/drain regions through a gate oxide film; and
a channel region formed in the semiconductor substrate between source/drain regions and just below the gate electrode;
wherein a memory cell of the array is formed at a crossing of a pair of the source/drain regions and one of the gate electrodes, either source/drain region of the memory cell having a side which is spaced from an upper surface of the substrate to form an offsetting stepped portion between the source/drain region and the channel region, and the offsetting stepped portion is filled up with an insulating film for filling up the stepped portion, so that the specific source/drain region provided with the offsetting stepped portion is disposed with respect to the corresponding gate electrode through the offsetting stepped portion and the gate electrode extends over the pair of the source/drain regions and over the offsetting stepped portion.

5,329,149

IMAGE SENSOR WITH NON-LIGHT-TRANSMISSIVE LAYER HAVING PHOTOSENSING WINDOWS

Yukito Kawahara; Satoshi Machida; Hiroshi Mukainakano; Masahiro Yokomichi, and Masato Higashi, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Oct. 11, 1991, Ser. No. 775,824
Claims priority, application Japan, Oct. 12, 1990, 2-273527; Nov. 26, 1990, 2-321839
Int. Cl.[5] **H01L** *27/14, 29/78*
U.S. Cl. 257—435 **15 Claims**



1. An image sensor head comprising a plurality of image sensors linearly mounted on a base plate along a main scanning direction of the image sensor, the image sensors each comprising:

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a semiconductor substrate having a first conductivity type;
a plurality of photo-sensing elements each comprising an impurity diffusion layer having an opposite conductivity type to that of the first conductivity type, the photo-sensing elements being arrayed linearly in a surface of the semiconductor substrate;
a transparent insulating film formed on the photo-sensing elements and the exposed surface of the semiconductor substrate; and
an untransmittable layer formed on the transparent insulating film and having photo-sensing windows which overlay the photo-sensing elements and partially overlap each of the photo-sensing elements, wherein the shapes of first and last photo-sensing windows in an array direction are different from the shapes of the rest of the photo-sensing windows.

5,329,150

SEMICONDUCTOR PHOTODETECTOR DEVICES WITH PAIRS OF MONOATOMIC LAYERS SEPARATED BY INTRINSIC LAYERS

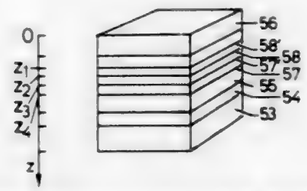
Erdmann Schubert; Klaus Ploog, both of Stuttgart, and Albrecht Fischer, Löchgau, all of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Division of Ser. No. 722,589, Jun. 27, 1991, Pat. No. 5,216,260, which is a continuation of Ser. No. 636,017, Jan. 4, 1991, Pat. No. 5,060,234, which is a division of Ser. No. 413,911, Sep. 28, 1989, abandoned, which is a division of Ser. No. 798,053, Nov. 14, 1985, Pat. No. 4,882,609. This application Feb. 8, 1993, Ser. No. 14,980

Claims priority, application European Pat. Off., Nov. 19, 1984, 84113987.6

Int. Cl.[5] **H01L** *31/00, 31/075*

U.S. Cl. 257—458 **2 Claims**



1. An epitaxial semiconductor device in the form of a semiconductor light wave detector, said device comprising a first layer (**53**) of a highly doped n-type semiconducting substrate, a second layer (**54**) of a highly doped n-type semiconducting material, a third layer (**55**) of a distinct intrinsic semiconducting material and a fourth layer (**56**) of a highly doped n-type semiconducting material similar to said second layer (**54**), with first and second electrical connections being provided to said fourth layer and to at least one of said first and second layers; wherein a plurality of pairs of Dirac-delta doped monoatomic layers (**57**, **57'**, **58**, **58'**) are provided in said third intrinsic layer (**55**), with the first Dirac-delta doped monatomic layer (**57**; **58**) of each pair (**57**, **57'**; **58**, **58'**) comrising a monoatomic layer of donors, and with the second Dirac-delta doped monoatomic layer (**57**, **58'**) of each pair (**57**, **57'**; **58**, **58'**) comprising a monoatomic layer of acceptors positioned parallel to and spaced apart from the associated first Dirac-delta doped layer (**57**; **58**) on the side thereof facing said fourth layer (**56**).

5,329,151

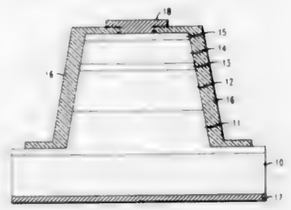
SEMICONDUCTOR DIODE

Yoginder Anand, Chelmsford, Mass., and Roger J. Malik, Warren, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 9, 1993, Ser. No. 45,849

Int. Cl.[5] **H01L** *29/167, 29/207, 29/227*

U.S. Cl. 257—498 **10 Claims**



1. An article comprising a GaAs-based semiconductor diode comprising:
a) a first and a second planar semiconductor region, with each of the first and second regions comprising n-doped semiconductor material;
b) a p-doped planar third semiconductor region between said first and second regions, said third region being of thickness t; and
c) means for electrically contacting said first and second regions such that an electrical bias can be applied between said first and second regions; wherein
d) t is selected such that, at room temperature and with zero applied bias, said third semiconductor region is substantially depleted of holes; and wherein the dopant in the third semiconductor region essentially is carbon.

5,329,152

ABLATIVE ETCH RESISTANT COATING FOR LASER PERSONALIZATION OF INTEGRATED CIRCUITS

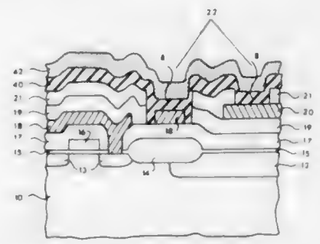
Meir I. Janai; Zvi Orbach, both of Haifa; Alon Kapel, Givat Ela, and Sharon Zehavi, Haifa, all of Israel, assignors to Quick Technologies Ltd., Haifa, Israel

Continuation-in-part of Ser. No. 368,161, Jun. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 117,580, Nov. 6, 1987, abandoned. This application Jan. 24, 1992, Ser. No. 825,358

Claims priority, application Israel, Nov. 26, 1986, 80790

Int. Cl.[5] **H01L** *27/02*

U.S. Cl. 257—529 **17 Claims**



12. A semiconductor device comprising:
a first patterned metal layer;
an insulation layer formed over the first metal layer;
a second patterned metal layer formed over the insulation layer;
said first and second patterned metal layers being formed with selectably removable regions,
said insulation layer being formed with apertures overlying at least some of the selectably removable regions, and
there being formed over the selectably removable regions an ablative multi-layer dielectric coating comprising a dielectric layer and thereover a layer of laser energy absorbing material comprising amorphous silicon.

5,329,153

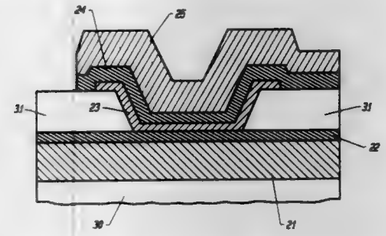
ANTIFUSE WITH NONSTOICHIOMETRIC TIN LAYER AND METHOD OF MANUFACTURE THEREOF

Pankaj Dixit, San Jose, Calif., assignor to Crosspoint Solutions, Inc., Santa Clara, Calif.

Filed Apr. 10, 1992, Ser. No. 866,037

Int. Cl.[5] **H01L** *27/02*

U.S. Cl. 257—530 **13 Claims**



1. In an integrated circuit an antifuse comprising first and second conducting lines;
a semiconductor layer between said first and second conducting lines; and
a barrier metal layer of TiN between said semiconductor layer and said first conducting layer, said TiN layer being of nonstoichiometric composition;
whereby the probability of said antifuse having a desired resistance when said antifuse is programmed is enhanced.

5,329,154

COMPOUND SEMICONDUCTOR INTEGRATED CIRCUIT HAVING IMPROVED ELECTRODE BONDING ARRANGEMENTS

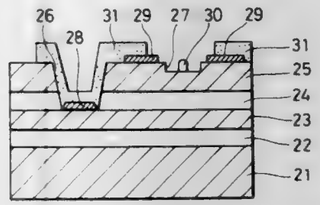
Yoshihiro Kishita; Toshikazu Fukuda, and Yuji Minami, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1993, Ser. No. 32,278

Claims priority, application Japan, Mar. 17, 1992, 4-060374; Apr. 15, 1992, 4-095031

Int. Cl.[5] **H01L** *29/784, 31/0224*

U.S. Cl. 257—532 **4 Claims**



1. A compound semiconductor integrated circuit, comprising:
a compound semiconductor substrate;
a buffer layer having a high resistivity which is formed on said substrate;
an active layer formed on said buffer layer;
an ohmic electrode which is formed on an exposed surface portion of said substrate, the exposed surface portion being formed by opening a hole through said buffer layer and said active layer;
device electrodes formed on said active layer; and
a wiring metal layer which connects said ohmic electrode with at least one of said device electrodes, wherein said substrate is made of n^+ type GaAs, said buffer layer is made of un-doped GaAs, and said active layer is made of n type GaAs.

5,329,155

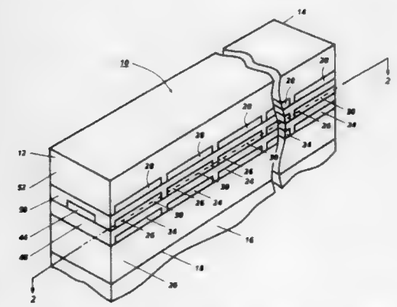
THIN FILM INTEGRATED CIRCUIT RESISTOR

Guillermo Lao, Hawthorne; Dale Sumida, Los Angeles; Anh K. Hoang-Le, Huntington Park; Mohamad Mojaradi, Los Angeles, and Tuan A. Vo, Hawthorne, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 24, 1990, Ser. No. 513,697

Int. Cl.[5] **H01L** *27/01, 23/64;* **H01C** *1/06*

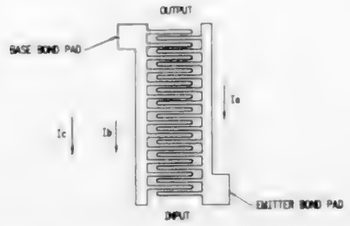
U.S. Cl. 257—538 **4 Claims**



1. An integrated circuit resistor capable of remaining substantially linear over a large range of applied voltages, comprising:
a. a substrate;
b. passivation layer means;
c. thin film resistance means;
d. shield means; and
e. said substrate, said passivation layer means, said resistance means and said shield means being arranged relative to each other in such a manner and said resistance means and said shield means being electrically connected in such a manner to maintain said resistance means substantially linear over a large range of applied voltages, wherein:
said resistance means includes at least two resistive blocks which are electrically connected in series, said shield means includes at least two shields, one for each resistive block, and each of said shields is electrically connected to its associated resistive block,
each shield includes a first conductive layer means, a second conductive layer means, and a third conductive layer means, said first conductive layer means being positioned between said substrate and said second conductive layer means, and said second conductive layer means being positioned between said first conductive layer means and said third conductive layer means,
said passivation layer means includes a first passivation layer, a second passivation layer, and a third passivation layer, said first passivation layer being positioned between and in contact with said substrate and each of said first conductive layer means, said said second passivation layer being positioned between and in contact with said first conductive layer means and said second conductive layer means, and said third passivation layer being positioned between and in contact with said second conductive layer means and said third conductive layer means,
and each of said resistive blocks being coplanar with its associated shield second conductive layer means and located between and in contact with said second and third passivation layers.

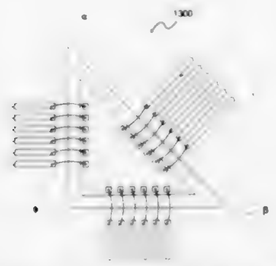
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5,329,156
FEED BUS FOR RF POWER TRANSISTORS
Howard D. Bartlow, Wilsonville, Oreg., assignor to Spectrian, Inc., Mountain View, Calif.
Filed Dec. 22, 1992, Ser. No. 994,745
Int. Cl.[5] H01L *29/72*
U.S. Cl. 257—579 9 Claims



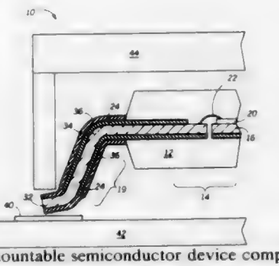
1. An RF power transistor structure comprising a semiconductor body having a first (collector/drain) region and a second (emitter/source) region separated by a third (base/channel) region, a feed bus structure on one surface of said semiconductor body for feeding said second region and controlling said second region, said feed bus structure being configured so that third region current and second region current in said feed structure tend to flow parallel to each other and parallel to first region current and in the same direction to thereby enhance negative mutual coupling therebetween and reduce positive mutual coupling therebetween.

5,329,157
SEMICONDUCTOR PACKAGING TECHNIQUE YIELDING INCREASED INNER LEAD COUNT FOR A GIVEN DIE-RECEIVING AREA
Michael D. Rosotker, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Continuation-in-part of Ser. No. 916,328, Jul. 17, 1992. This application Aug. 21, 1992, Ser. No. 933,430
Int. Cl.[5] H01L *29/40*
U.S. Cl. 257—666 18 Claims



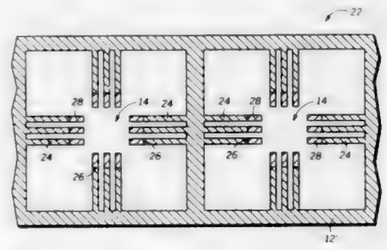
1. A patterned layer of conductive lines defining a die-receiving area for packaging a semiconductor die, comprising:
a plurality of conductive lines, said conductive lines having inner ends;
the inner ends of said conductive lines defining a certain non-square die-receiving area for mounting a semiconductive die;
wherein:
the geometric configuration formed by the inner ends of the conductive lines define a triangular shaped die-receiving area, said die-receiving area having angles alpha, beta, and phi;
the die-receiving area is a right isosceles triangle; and
the angles alpha, beta and phi are 45°, 45°, and 90°, respectively.

5,329,158
SURFACE MOUNTABLE SEMICONDUCTOR DEVICE HAVING SELF LOADED SOLDER JOINTS
Paul T. Lin, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.
Continuation of Ser. No. 498,157, Mar. 23, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 964,488
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 16 Claims



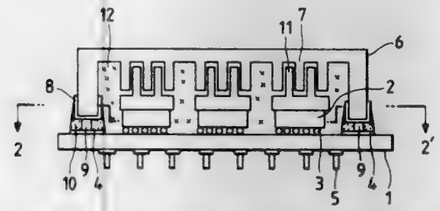
5. A surface mountable semiconductor device comprising:
a package body having a series of outer leads comprising a core of solder wettable material and an overlying layer of solder de-wettable material,
each of the leads having a substrate mounting end where the core is exposed by the solder de-wettable material and a superior portion adjacent to the package body; and
a solder paste directly overlying and in intimate contact with the solder de-wettable coating and connected to the exposed core at the substrate mounting end, such that
the solder paste on the leads can flow from the superior portion to the substrate mounting end during a solder flow operation and bond the exposed core at the substrate mounting end to a substrate.

5,329,159
SEMICONDUCTOR DEVICE EMPLOYING AN ALUMINUM CLAD LEADFRAME
Paul T. Lin, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 3, 1993, Ser. No. 100,943
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 11 Claims



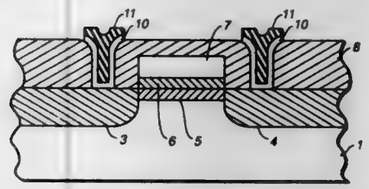
1. A clad leadframe comprising:
a plurality of leads arranged in a quad configuration composed of a first metal layer having a thickness substantially in a range of 0.10 to 0.15 millimeter, the plurality of leads having proximal ends to a central cavity for accommodating a semiconductor die; and
a plurality of bonding posts composed of a second metal layer having a thickness substantially in a range of 0.05 to 0.15 millimeter which is clad on one surface of the first metal layer, wherein the plurality of bonding posts extends beyond the proximal ends of the plurality of leads of the first metal layer toward the central cavity.

5,329,160
SEMICONDUCTOR PACKAGE WITH METALIZED PORTIONS
Shinya Miura; Kouzou Kanda, and Mitsugu Shirai, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 11, 1992, Ser. No. 833,677
Claims priority, application Japan, Mar. 1, 1991, 3-035850
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—710 5 Claims



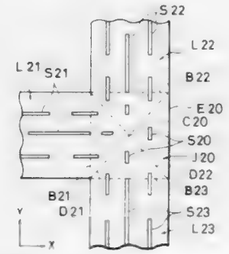
1. A semiconductor package comprising an electronic part on a substrate and a cover brazed to the substrate to seal the electronic part, said cover having inner and outer side surfaces, characterized in that a joint surface of said cover that is opposed to the substrate and portions of the outer and inner side surfaces of said cover which are in the vicinity of said joint surface have metallized portions of a high solder wettability, said joint surface being defined as a surface of said cover that fixedly contacts said substrate, wherein the height dimension of the metallized portions formed on said inner side surfaces is greater than that of the metallized portions formed on said outer side surfaces.

5,329,161
MOLYBDENUM BORIDE BARRIER LAYERS BETWEEN ALUMINUM AND SILICON AT CONTACT POINTS IN SEMICONDUCTOR DEVICES
Landon Vines, San Antonio; John Cain, Schertz; Chang-Ou Lee, San Antonio; Sigmund Koenigseder, San Antonio, and Felix Fujishiro, San Antonio, all of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Jul. 22, 1992, Ser. No. 918,728
Int. Cl.[5] H01L *23/48, 23/52, 29/40, 29/76*
U.S. Cl. 257—764 8 Claims



1. A semiconductor device comprising:
(a) a silicon substrate;
(b) a plurality of aluminum wires placed over the substrate and vertically spaced apart from each other and the substrate by insulating layers wherein the wires are in electrical contact with the substrate at a plurality of contact points; and
(c) a conductive molybdenum boride barrier layer placed between and in physical contact with the substrate and the aluminum wires at the contact points so that the substrate and the aluminum wires are in electrical contact with each other wherein said molybdenum boride barrier layer comprises a composition represented by the formula MoB_x where x has a value of from about 1.0 to about 2.0.

5,329,162
SEMICONDUCTOR DEVICE HAVING A CONDUCTOR LAYER PROVIDED OVER A SEMICONDUCTOR SUBSTRATE
Mitsuru Nadaoka, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1992, Ser. No. 899,853
Claims priority, application Japan, Jun. 21, 1991, 3-150485
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—774 8 Claims



1. A semiconductive device having a semiconductor substrate and a conductor layer provided over the semiconductor substrate;
wherein said conductor layer comprises a first linear part extending in a first direction and provided with slits extending in said first direction, a second linear part extending in a second direction at an angle with said first direction and provided with slits extending in said second direction, and a junction part formed where said first and second linear parts are connected and provided with slits shorter than the slits in said first and second linear parts;
wherein said junction part is defined as a part which forms an extension of said first linear part and also forms an extension of said second linear part;
wherein said junction part has a center at the intersection of diagonal lines of said junction part, the slits in a triangular region whose vertexes are ends of a boundary line between one of said first and second linear parts and said junction part and the center of said junction part, extend in the direction in which said one of the first and second linear parts extend; and
wherein said junction part has an edge forming an extension of an edge of one of said first and second linear parts, the slits in a triangular region whose vertexes are ends of said edge of said junction part and the center of said junction part extend in the direction parallel with said edge.

5,329,163
AUTO-SWITCH FOR POWER WINDOW
Hiroshi Satoh, Sakado; Noboru Kamiya, Hasuda; Toru Tanaka, Konosu; Sadayoshi Oshima, Kitamoto, and Minoru Mohri, Tokorozawa, all of Japan, assignors to Toyo Denso Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 724,453, Jul. 3, 1991, abandoned, which is a continuation of Ser. No. 368,386, Jun. 14, 1989, abandoned. This application Dec. 12, 1991, Ser. No. 809,203
Int. Cl.[5] H01H *21/50*
U.S. Cl. 307—10.1 14 Claims

1. An auto-switch for use in a power window comprising:
an operating knob supported by a shaft so as to swing freely, said operating knob to change over a window motor

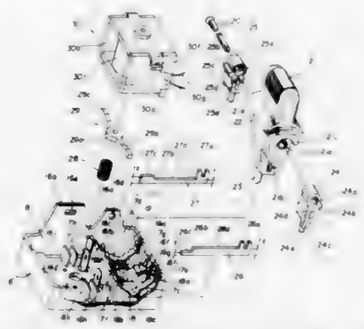
VOL 1164 ISS 2 JL 12 1994 UMI

between forward rotation and reverse rotation depending on a direction of swing of the operating knob from a neutral position to enable a window to move down or up, the operating knob having clockwise and counter-clockwise located manual positions respectively, for rotating the window motor only while the operating knob is manually provided with an angle of swing within a predetermined value, and said operating knob also having an auto-position at least when pivoted clockwise for permitting the window motor to rotate continuously even if the operating knob is not manually pivoted when the angle of swing exceeds the predetermined value;

a first swing member and a second swing member supported coaxially on opposite sides of the operating knob in a direction of the shaft and which are swingable together with or separately from the operating knob;

engaging means for selectively engaging either one of the first and second swing members with the operating knob depending on a direction of swing thereof when the operating knob is swung either to one of the manual positions and the auto-position, and then swinging a selected swing member in a same direction as the operating knob, and thereafter enabling the operating knob to be returned alone to the neutral position, with a selected swing member left in a swinging condition;

a first swing contact plate and a second swing contact plate, each having a generally V-shape, and mounted in parallel



with each other to enable each of the swing members during movement to be brought into sliding contact therewith, the first and second swing contact plates being inclined opposite to each other when the operating knob and each of the swing members are located at neutral positions, when either one of the swing members is engaged with and swing together with the operating knob during pivoting of the operating knob, only the swing contact plate, with which a sliding member engaged with the operating knob is brought into sliding contact, is inclined reversely;

a pair of fulcrum electrodes, each supporting an intermediate portion of each of the swing contact plates and being connected to each terminal of both poles of the window motor;

a normally-open movable contact and a normally-closed movable contact provided on both ends of each of the swing contact plates;

a first fixed contact located on a power supply side, said first fixed contact provided in opposed relationship to said normally-open movable contact of each swing contact plate and arranged to come into contact with the swing contact plate when a corresponding swing contact plate is inclined reversely;

a second fixed contact located on a ground side, said second fixed contact provided in opposed relationship to said normally closed movable contact of each swing contact plate;

locking means for mechanically holding the swing member in the swinging condition which is engaged with an swung together with the operating knobs by an engaging means when the operating knob is pivoted to the auto-position, the locking means comprising said sliding member connected to one of the swing members and slidably movable rectilinearly together with the swing member which is engaged therewith, a locking arm provided adjacent to said first and second swing contact plates, said locking arm extending in a direction at right angles to said sliding member and engageable with an engaging portion formed on the sliding member, a solenoid provided adjacent said operating knob, said solenoid for urging the locking arm in a direction to engage the locking arm with the sliding member, and a resilient member for biasing the locking arm in a direction to disengage the locking arm from the sliding member; and

returning means for automatically returning the operating knob and each of the swing members from the swing positions to neutral positions, wherein during auto-operation, the normally-open movable contact of a corresponding swing contact plate is held mechanically in a closed condition.

5,329,164

SAFETY CIRCUIT FOR A FUEL SUPPLY SYSTEM

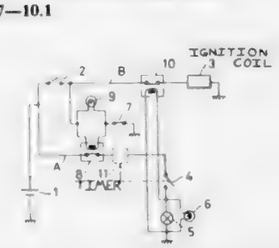
Shiro Saito, Yabuzuka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1992, Ser. No. 929,536

Claims priority, application Japan, Aug. 30, 1991, 3-077087[U]

Int. Cl.[5] **B60K** *28/00*

U.S. Cl. 307—10.1 **12 Claims**



1. A safety circuit for a fuel supply system of a motor vehicle which fuel supply system includes a fuel tank, air breather pipe connected to the fuel tank, a solenoid valve interposed in the air breather pipe and a fuel flap, said safety circuit including:

a solenoid for opening and closing the solenoid valve;

an ignition coil driving circuit connected from a power source to an ignition coil via a key switch for igniting an air-fuel mixture to start an engine;

a fuel flap switch operatively connected to the fuel flap such that said fuel flap switch is closed when the fuel flap is open and such that said fuel flap switch is open when the fuel flap is closed;

a solenoid driving circuit for driving said solenoid, said solenoid driving circuit connected to the power source and a ground via said solenoid and said fuel flap switch;

a boost switch connected from said key switch such that said boost switch is closed when the engine is stopped;

a first relay interposed between the power source and said fuel flap switch in said solenoid driving circuit for prohibiting current flow through said first relay when both said boost switch and said key switch are closed;

a second relay interposed between said key switch and the ignition coil in said ignition coil driving circuit, said second relay prohibiting current flow to the ignition coil when said fuel flap switch is closed and said first relay is closed.

5,329,165

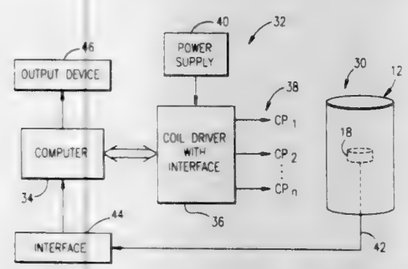
SELECTIVELY SWITCHABLE SUPERCONDUCTING ELECTROMAGNETIC SHIELD

Yi-Han Kao, Williamsville, N.Y., and Kai W. Wong, Lawrence, Kans., assignors to Midwest Superconductivity, Inc., Lawrence, Kans.

Filed May 26, 1992, Ser. No. 887,859

Int. Cl.[5] **H01F** *7/00*

U.S. Cl. 307—91 **25 Claims**



1. Apparatus for selectively shielding a zone from external fields comprising magnetic, electric or electromagnetic fields, said apparatus comprising:

a multiply-connected body formed of superconducting material having characteristic critical temperature and critical shielding current density values, said body being disposed about said zone and operable at a temperature below the critical temperature of the material for shielding said zone from said fields; and

means for selectively lowering the critical shielding current density of a portion of said body to a level permitting entrance of external fields through said portion, while leaving the critical shielding current density of another portion of said body at a higher, field-shielding level.

5,329,166

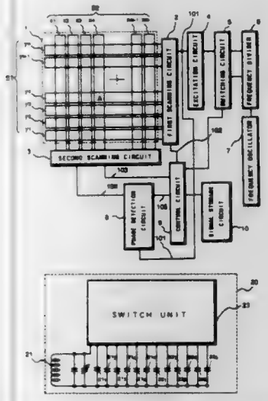
COORDINATE READING SYSTEM FOR DETECTING OPERATION STATES OF NUMEROUS SWITCHES

Mitsuo Sakamaki, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Dec. 22, 1992, Ser. No. 994,647

Int. Cl.[5] **G06K** *11/00*

U.S. Cl. 307—129 **6 Claims**



1. A coordinate reading system having a coordinate reading system body and a coordinate indicator comprising: the coordinate reading system body including

a first group of sense lines having a plurality of sense lines,

a second group of sense lines having a plurality of sense lines,

an excitation means for outputting a plurality of frequencies as excitation signals,

a selecting means for obtaining an excitation signal among the excitation signals outputted from the excitation means and supplying the obtained excitation signal to the first group of sense lines,

a phase detection means for detecting a phase contrast between the excitation signal and an induced signal induced on the second group of sense lines and corresponding to the obtained excitation signal, and

a switch identifying means for identifying one or more pressed switches among switches provided on the coordinate indicator from a phase contrast signal outputted by the phase detection means or from the phase contrast signal and information based on the excitation signal; and

the coordinate indicator including

a resonant means including one or more resonant circuits capable of resonating with one of the excitation signals corresponding to a plurality of the frequencies respectively,

a means including a plurality of devices for modifying resonant frequencies of the resonant means by being connected thereto, and

a switching means including a plurality of switches for connecting at least one of the devices to the resonant means.

5,329,167

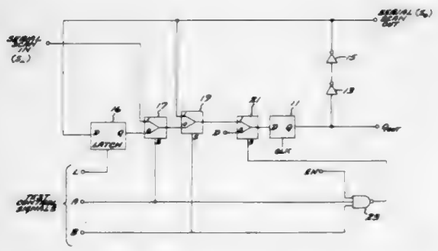
TEST FLIP-FLOP WITH AN AUXILLARY LATCH ENABLING TWO (2) BITS OF STORAGE

William D. Farwell, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 25, 1992, Ser. No. 950,520

Int. Cl.[5] **H03K** *3/037;* **H04B** *17/00;* **G01R** *31/00;* **G11C** *29/00*

U.S. Cl. 307—289 **6 Claims**



1. A scan flip-flop cell for receiving a serial scan input and a data input, and for providing a serial scan output and a data output, comprising:

a flip-flop having an input and an output, wherein said flip-flop output provides the data output of the scan flip-flop cell;

delay means for providing a delayed replica of the output of said flip-flop, said delayed replica comprising the serial scan output of the scan flip-flop cell;

latching means responsive to said delayed replica of the flip-flop output for selectively latching said delayed replica pursuant to a latch control signal;

first selection means responsive to the serial scan input to the scan flip-flop cell, the output of said latching means, and said delayed replica of the flip-flop output for providing an output which is a replica of (a) the serial scan input, (b) said latch output, or (c) said replica of the flip-flop output as selected by first and second control signals;

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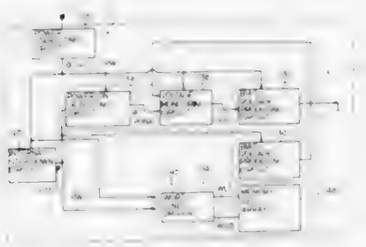
second selection means responsive to the data input for the scan flip-flop cell and the output of said first selection means for providing an output which is a replica of (a) the first selection means output or (b) the data input to the scan flip-flop cell as selected by a third control signal, the output of said second selection means being provided to the input of said flip-flop such that the input to said flip-flop is selected by said first, second, and third control signals.

5,329,168

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE EQUIPPED WITH SUBSTRATE BIASING SYSTEM SELECTIVELY POWERED FROM INTERNAL AND EXTERNAL POWER SOURCES

Tadahiko Sugibayashi; Yasuji Koshikawa, and Takahiro Hara, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,142
Claims priority, application Japan, Dec. 27, 1991, 3-359816
Int. Cl.[5] H03K *3/01;* **H01L** *25/00;* **G11C** *7/00*
U.S. Cl. 307—296.1 **12 Claims**



1. A semiconductor integrated circuit device fabricated on a semiconductor substrate, comprising:

a) an internal circuit;

b) a power supply system having a means for distributing an external power voltage supplied from the outside of said semiconductor integrated circuit device, and an internal step-down circuit operative to produce an internal power voltage from said external power voltage and to regulate said internal power voltage to a predetermined reference level internally produced; and

c) a substrate bias system operative to bias said semiconductor substrate to a certain level with a bias voltage, and having a first bias voltage producing circuit for producing said bias voltage from said external power voltage and a second bias voltage producing circuit for producing said bias voltage from said internal power voltage, and first bias voltage producing circuit being activated before said internal power voltage level reaches said predetermined reference level.

5,329,169

VOLTAGE DROPPING CIRCUIT FOR SEMICONDUCTOR DEVICE

Makoto Ihara, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1992, Ser. No. 936,349
Claims priority, application Japan, Aug. 28, 1991, 3-217583
Int. Cl.[5] G05F *3/02*
U.S. Cl. 307—296.3 **8 Claims**

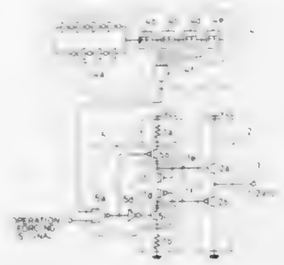
1. A voltage dropping circuit mounted on a semiconductor device for controlling a voltage supplied to a DRAM, comprising:

a control unit for producing for a predetermined period a reference voltage set to one half of a supply voltage connected thereto with a bias circuit comprising first and second resistors having equal values and first and second transistors;

an output unit for outputting to the DRAM a predetermined voltage having a value half of said supply voltage by level shifting said reference voltage produced by said control unit with an output circuit comprising first and second complementary transistors;

a timer circuit for generating a driving pulse which becomes an active signal intermittently; and

a switching circuit for utilizing said driving pulse from said



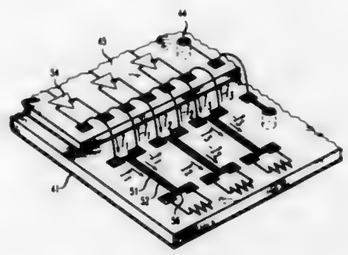
timer circuit to switch said supply voltage supplied to said control unit, said switching circuit simultaneously suspends said control unit and said output unit when said driving pulse fails to provide said active signal to hold a high impedance and cut said predetermined voltage supplied to the DRAM, and when said output unit supplied said predetermined voltage to the DRAM, said switching circuit intermittently switch said control unit with said driving pulse transmitted from said timer circuit to decrease the power consumed by said control unit, said output unit and the DRAM.

5,329,170

BALANCED CIRCUITRY FOR REDUCING INDUCTIVE NOISE OF EXTERNAL CHIP INTERCONNECTIONS

Attilio J. Rainal, Morristown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 841,139, Feb. 25, 1992, abandoned.
This application Dec. 13, 1993, Ser. No. 166,342
Int. Cl.[5] H01L *25/00;* **H03B** *1/00*
U.S. Cl. 307—303.1 **8 Claims**



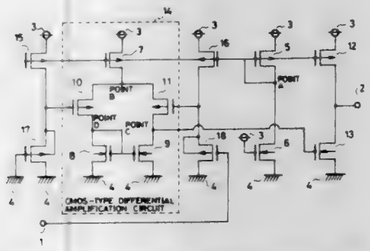
1. An apparatus including A) an integrated circuit with a first multiplicity of electrical drivers with an associated multiplicity of signal outputs leads and electrical interconnects from said multiplicity of output leads wherein said interconnects are external to said integrated circuit and provide electrical communication from said multiplicity of output leads to elements external to said integrated circuit, and B) further including an electrical ground conducting path from said external element to said integrated circuit characterized in that at least 20% of potential error due to noise induced in said ground path by changes in an electrical signal present in at least one of said multiplicity of output leads wherein said noise is compensated for by the presence of a sufficient number of associated secondary leads each corresponding to one of said output leads and said first drivers to transmit a compensating signal on said secondary leads such that the noise induced in said ground path from said compensating signal compensates for said noise introduced by said signal in said output leads.

5,329,171

ZERO CROSS DETECTION CIRCUIT

Yoshihiro Shimizu, and Kazuo Hayashi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1992, Ser. No. 902,132
Claims priority, application Japan, Jun. 25, 1991, 3-180327
Int. Cl.[5] H03K *5/153*
U.S. Cl. 307—354 **1 Claim**



1. A zero cross detection circuit for detecting zero cross-over points of AC input signals comprising:

a first CMOS circuit for providing a constant gate voltage;

a CMOS differential amplification circuit operated by a single power source, said amplification circuit including first and second differential signal inputs responsive to the input signals exceeding a first residual voltage;

first CMOS voltage shift means including a first current source transistor having a first terminal coupled to a first terminal of said power source, a second terminal coupled to a first node, and a gate coupled to receive said constant gate voltage and a first source follower transistor circuit having a first terminal coupled to said first node, a second terminal coupled to a ground terminal of the single power source, and a gate coupled to receive said AC signals having said zero cross-over points and with said first node coupled to the first differential input of said differential amplifier circuit, said first CMOS voltage shift mean shifting the voltage of said zero cross-over points to be detected to be greater than or equal to the residual voltage value of said differential amplification circuit; and

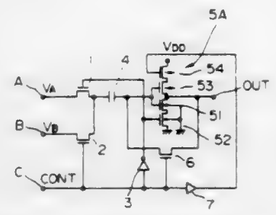
second voltage shift means including a second current source transistor having a first terminal coupled to the first terminal of said power source, a second terminal coupled to a second node, and a gate coupled to receive said constant gate voltage and a second source follower transistor circuit having a first terminal coupled to said second node, a second terminal coupled to said ground terminal of the single power source, and a gate coupled to said ground terminal of the single power source, said second voltage shift means shifting the voltage level at said ground terminal of said single power source by a level equal to the shift of said zero cross-over points of the input AC signals and with said second node coupled to the second differential input of said differential amplifier circuit.

5,329,172

CHOPPING TYPE COMPARATOR WITH CLOCKED INVERTER

Takayuki Kohdaka, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 6, 1992, Ser. No. 972,588
Claims priority, application Japan, Nov. 8, 1991, 3-293434
Int. Cl.[5] H03K *5/24*
U.S. Cl. 307—355 **6 Claims**



1. A chopping type comparator comprising:

a pair of first and second analog switches switchable alternatively with each other between a conductive state and a nonconductive state by a control signal, the first and second analog switches having respective one ends receptive of two input signals to be compared with one another, and respective other ends connected together to form a common junction node;

a capacitor having one end coupled to the common junction node of the first and second analog switches;

a clocked inverter having at least four FETs and being changeable between an active state and an inactive state by the control signal, one of the FETs being switchable between a conductive state and a nonconductive state by the control signal and a second of the FETS concurrently switching with said one of the FETS between the conductive state and the nonconductive state by the control signal, the clocked inverter having an output terminal and an input terminal connected to another end of the capacitor, the clocked inverter being in the active state when one of the first and second analog switches is switched to the conductive state and being in the inactive state when the other of the first and second switches is in the conductive state; and

a third analog switch coupled between the input and output terminals of the clocked inverter and being switchable to a conductive state by the control signal when said one of the first and second analog switches is placed in the conductive state, such that during the inactive state of the clocked inverter a current flow through the clocked inverter is substantially eliminated.

5,329,173

SIGNAL DETECTING CIRCUIT APPARATUS

Daisuke Murakami; Kenji Kibayashi; Isao Matsumoto; Hideki Yoshida; Mitsuaki Nishie; Satoshi Takahashi, and Katsumi Uesaka, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

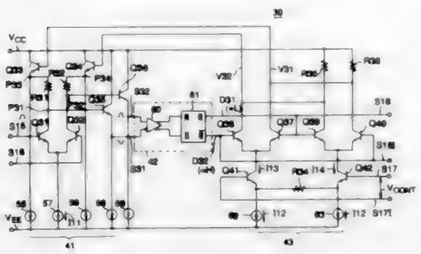
Filed Mar. 26, 1993, Ser. No. 37,646
Claims priority, application Japan, Mar. 31, 1992, 4-106006
Int. Cl.[5] H03K *5/22, 5/153*
U.S. Cl. 307—355 **5 Claims**

1. A signal input judging apparatus for judging an input of input signal to a receiver by inputting a peak level of receiving signals sequentially detected via an amplifier and a peak hold circuit to a comparison means and by outputting a comparison result of said peak level and a threshold value as a signal input detection signal, comprising:

hysteresis adjusting means for supplying a predetermined level to said comparison means as a threshold value adjusting signal, and simultaneously supplying a hysteresis

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adjusting signal corresponding to said threshold value adjusting signal, and for setting a reference signal level of said threshold value and hysteresis range: wherein;



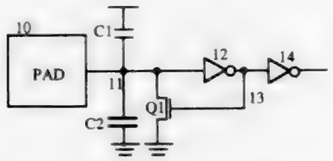
said hysteresis adjusting means have an identical characteristic with said amplifier and peak hold circuit.

5,329,174

CIRCUIT FOR FORCING KNOWN VOLTAGE ON UNCONNECTED PADS OF AN INTEGRATED CIRCUIT

David Chiang, Saratoga, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Oct. 23, 1992, Ser. No. 965,636
Int. Cl.[5] H03K *17/16, 3/26*
U.S. Cl. 307—443 **11 Claims**



1. A circuit for forcing a terminal of an integrated circuit to a known voltage, comprising:
- a buffer having its input terminal connected to the integrated circuit terminal; and
- a feedback device connected between the integrated circuit terminal and an output terminal of the buffer, said feedback device drawing a small current below a predetermined level wherein an external driver driving the terminal overpowers the feedback device.

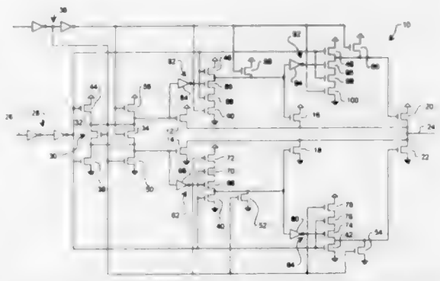
5,329,175

REDUCED NOISE, LOW POWER, HIGH SPEED OUTPUT BUFFER

Craig M. Peterson, Austin, Tex., assignor to Advanced Micro Devices, Inc., Austin, Tex.

Filed Nov. 13, 1992, Ser. No. 976,264
Int. Cl.[5] H03K *19/003, 19/0948*
U.S. Cl. 307—443 **12 Claims**

1. An output buffer circuit comprising:
- first, second and third pull-up transistors connected in parallel between a first power supply and an output terminal;
- first, second and third pull-down transistors connected in parallel between a first power supply and an output terminal;
- feed forward circuit means for turning off said first, second and third pull-up transistors at substantially the same time as said first pull-down transistor is turned on;
- first pull-down delay means for delaying turn on of said second pull-down transistor with respect to turn on of said first-pull-down transistor, said first pull-down delay means comprises:
  - a first inverter circuit coupled between a gate terminal of said first pull-down transistor and a gate terminal of a first stacked transistor;
  - said first stacked transistor is placed in series with a second and third stacked transistors, wherein said first, second and third stacked transistors are coupled between the gate terminal of said second pull-down transistor and said first power supply;
  - said second stacked transistor is adapted to receive a digital input signal;
  - said third stacked transistor is adapted to receive output from a tri state means;
- second pull-down delay means for delaying turn on of said third pull-down transistor with respect to turn on of said



second pull-down transistor, said second pull-down means comprises:
- a second inverter circuit coupled between a gate terminal of said second pull-down transistor and a gate terminal of a fourth stacked transistor;
- said fourth stacked transistor is placed in series with a fifth and sixth stacked transistors wherein said fourth, fifth and sixth stacked transistors are coupled between the gate terminal of said third pull-down transistor and said first power supply;
- said fifth stacked transistor is adapted to receive a digital input signal; and
- said sixth stacked transistor is adapted to receive output from a tri state means.

5,329,176

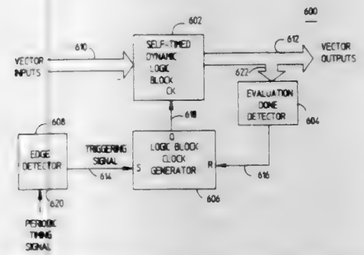
SELF-TIMED CLOCKING SYSTEM AND METHOD FOR SELF-TIMED DYNAMIC LOGIC CIRCUITS

Robert H. Miller, Jr., Loveland; Jeffry D. Yetter; Glenn T. Colon-Bonet, both of Ft. Collins, and Robert J. Martin, Timnath, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 886,000, May 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 684,720, Apr. 12, 1991, Pat. No. 5,208,490. This application Sep. 29, 1993, Ser. No. 137,902
Int. Cl.[5] H03K *19/017*
U.S. Cl. 307—443 **29 Claims**

1. A system for enhancing the speed of logic evaluations through a series of cascaded self-timed dynamic logic gates, the system comprising:
- a logic block having cascaded dynamic logic gates which are precharged in parallel and which can collectively perform self-timed logic evaluations on vector inputs to derive a vector output;
- an evaluation done detector monitoring the output of said logic block and configured to determine when said vector output is valid;
- a logic block clock generator for outputting a clock signal which is set to a first logic level by a triggering signal and reset to a second logic level by said evaluation done detector, said logic block clock generator adapted to provide

said clock signal to said logic block, said clock signal first logic level defining respective precharge periods, and said



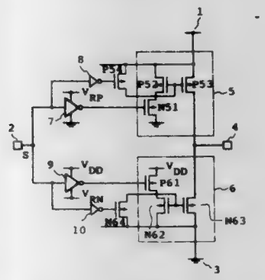
clock signal second logic level defining respective evaluation periods for said self-timed logic evaluations in said logic block.

5,329,177

OUTPUT CIRCUIT INCLUDING CURRENT MIRROR CIRCUITS

Nobutaka Nagai, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,566
Claims priority, application Japan, Apr. 27, 1992, 4-107200
Int. Cl.[5] H03K *17/16, 19/20*
U.S. Cl. 307—451 **6 Claims**



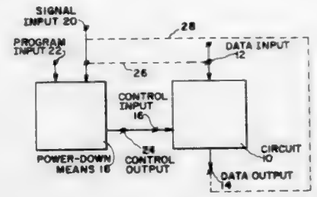
1. An output circuit in a semiconductor integrated circuit comprising:
- an input terminal for receiving input signals controlling output circuits;
- an output terminal for delivering output signals driving a load device being connected to said output terminal;
- high and low voltage supply lines for supplying high and low voltage driving said output circuit;
- a first current mirror circuit on its output stage including a single transistor being connected between said high voltage supply line and said output terminal;
- a second current mirror circuit on its output stage including a single transistor being connected between said low voltage supply line and said output terminal;
- a first logic circuit being connected between said input terminal and said first current mirror circuit for receiving input signals from said input terminal for a subsequent controlling of said first current mirror circuit; and
- a second logic circuit being connected between said input terminal and said second current mirror circuit for receiving input signals from said input terminal for a subsequent controlling of said second current mirror circuit.

5,329,178

INTEGRATED CIRCUIT DEVICE WITH USER-PROGRAMMABLE CONDITIONAL POWER-DOWN MEANS

Edward A. Burton, Lindon, Utah, assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 27, 1991, Ser. No. 799,499
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 **18 Claims**



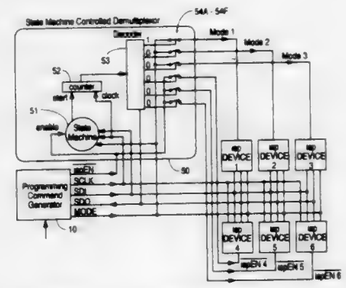
2. An integrated circuit device comprising, a circuit and power-down means for disabling the circuit, wherein the power-down means is operative to reversibly disable the circuit in response to at least one input signal supplied to the power-down means, and wherein the power-down means is user-programmable such that its response to a specific state of the input signal is specified by the user of the device.

5,329,179

ARRANGEMENT FOR PARALLEL PROGRAMMING OF IN-SYSTEM PROGRAMMABLE IC LOGICAL DEVICES

Howard Tang, San Jose, Calif., and Cyrus Tsui, Vancouver, Wash., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Filed Oct. 5, 1992, Ser. No. 957,311
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **6 Claims**



1. An arrangement for programming a plurality of programmable logic devices comprising:
- a programming command generator;
- a plurality of programmable logic devices; and
- a device selector for forming a connection between individual ones of said programmable logic devices and said programming command generator so as to allow said individual ones of said logic devices to be programmed by said programming command generator;
- wherein said device selector comprises a state machine-controlled demultiplexor.

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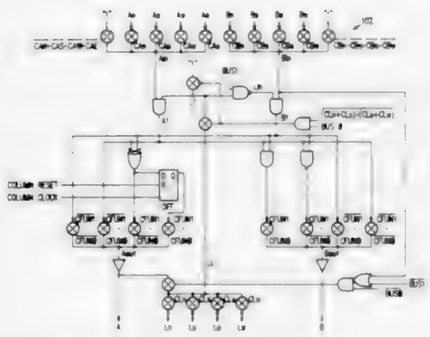
FLEXIBLE HIGH IMPEDANCE CONTROL IN A COLE CELL IN A CONFIGURABLE LOGIC ARRAY

Sanjay Popli, Sunnyvale; Scott Pickett, Los Gatos, and David Hawley, Belmont, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 752,282, Aug. 29, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,347

Int. Cl.[5] **H03K** *19/177*

U.S. Cl. 307—465 **2 Claims**



1. A configurable logic array operable in a configuration mode and in a normal operating mode, the configurable logic array comprising:

a plurality of individually configurable logic cells arranged in a matrix that includes a plurality of horizontal rows of logic cells and a plurality of vertical columns of logic cells, each of the configurable logic cells being responsive to configuration data provided to said configurable logic cell when the configurable logic array is in the configuration mode to configure said configurable logic cell to perform a selected logic function when the configurable logic array is in the normal operating mode;

at least one horizontally aligned local bus running between adjacent rows of configurable logic cells, the configurable logic cells in said adjacent rows being selectively connectable to said at least one horizontally aligned bus;

at least one vertically aligned local bus running between adjacent columns of configurable logic cells, the configurable logic cells in said adjacent columns being selectively connectable to said at least one vertically aligned local bus;

wherein the configurable logic cells include a high impedance bus driver having an output node for providing the selective connectability to the at least one horizontally aligned local bus and/or the at least one vertically aligned local bus associated with said configurable logic cell, said high impedance bus driver being responsive to a control signal applied to an input of said configurable logic cell for placing the output node of said high impedance bus driver in a high impedance state when the configurable logic array is in the normal operating mode;

whereby said high impedance bus driver is utilizable for placing the at least one horizontally aligned local bus and/or the at least one vertically aligned local bus in the high impedance state when the output node of said high impedance bus driver is connected to the at least one horizontally aligned local bus and/or the at least one vertically aligned local bus, respectively.

5,329,181

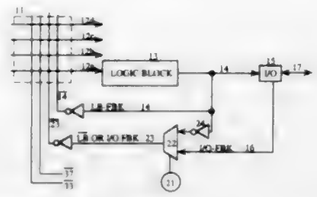
COMPLEMENTARY MACROCELL FEEDBACK CIRCUIT

David J. Ridgeway, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Mar. 5, 1993, Ser. No. 27,211

Int. Cl.[5] **H03K** *19/177*

U.S. Cl. 307—465 **4 Claims**



1. A feedback circuit comprising:

a first line (**14**) for providing a logic block output signal;

a second line (**16**) for providing a second signal;

means (**24**) for generating the complement of said logic block output signal;

a third line (**23**); and

means (**22**) for providing on said third line a selected one of said complement of said logic block output signal and said second signal;

an interconnect structure (**11**); and

means (**19**) for programmably connecting said first line and said third line to said interconnect structure.

5,329,182

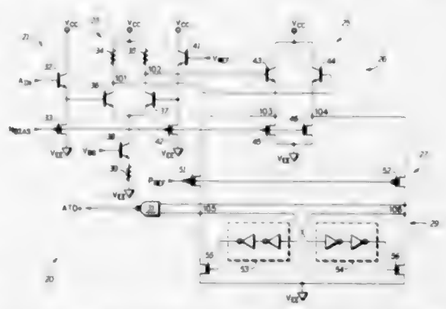
ATD PULSE GENERATOR CIRCUIT WITH ECL TO CMOS LEVEL CONVERSION

Ruey J. Yu, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 12, 1992, Ser. No. 928,389

Int. Cl.[5] **H03K** *19/0175;* **G11C** *8/00*

U.S. Cl. 307—475 **18 Claims**



1. A circuit for receiving an ECL level input signal and for providing a CMOS level output pulse, comprising:

input means for receiving the ECL level signal, and in response, providing first and second complementary signals;

a first MOS transistor having a first current electrode for receiving said first complementary signal, a control electrode for receiving a reference voltage, and a second current electrode for providing a first CMOS level output signal;

a second MOS transistor having a first current electrode for receiving said second complementary signal, a control electrode for receiving said reference voltage, and a second current electrode for providing a second CMOS level output signal;

first delay means having a first terminal coupled to said second current electrode of said first MOS transistor, and a second terminal;

second delay means having a first terminal coupled to said second current electrode of said second MOS transistor, and a second terminal;

first current source means, coupled to said second current electrode of said first MOS transistor and to said second terminal of said second delay means, for providing a current for said first MOS transistor a predetermined time after said second CMOS level output signal is received;

second current source means, coupled to said second current electrode of said second MOS transistor and to said second terminal of said first delay means, for providing a current for said second MOS transistor said predetermined time after said first CMOS level output signal is received; and

logic means for providing a CMOS level output pulse in response to receiving said first and second CMOS level output signals, a duration of said output pulse being determined by said predetermined time.

5,329,183

ECL-CMOS LEVEL CONVERTER CIRCUIT

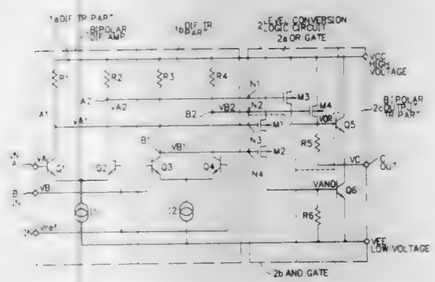
Yukio Tamegaya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,818

Claims priority, application Japan, Sep. 12, 1991, 3-232709

Int. Cl.[5] **H03K** *19/0175, 19/082, 19/094*

U.S. Cl. 307—475 **5 Claims**



4. An ECL-CMOS level converter circuit comprising:

a first differential amplifier circuit which receives a first input signal having ECL voltage levels and a first reference voltage, the first differential amplifier circuit amplifying the first input signal and outputting first and second differential output nodal point signals responsive to the first input signal, the first and second differential output nodal point signals having mutually opposite phases and varying between first voltage levels;

a second differential amplifier circuit which receives a second input signal having ECL voltage levels and a second reference voltage, the second differential amplifier circuit amplifying the second input signal and outputting third and fourth differential output nodal point signals responsive to the second input signal, the third and fourth differential output nodal point signals having mutually opposite phases and varying between the first voltage levels; and

a level conversion logic circuit for converting the differential output nodal point signals to an output signal varying between voltage levels differing from the first voltage levels of the differential output nodal point signals, the level conversion logic circuit including:

first MOS logic gate means having first and second MOSFETs coupled between a high voltage power source and an output terminal, the first MOSFET having a gate receiving the second differential output nodal point signal and the second MOSFET having a gate receiving the fourth differential output nodal point signal,

second MOS logic gate means having third and fourth channel MOSFETs coupled between the high voltage power source and a low voltage power source, the third MOSFET having a gate receiving the third differential output nodal point signal, and the fourth MOSFET having a gate receiving the third differential output nodal point signal, wherein the first, second, third, and fourth MOSFETs have a channel type that is the same,

a high voltage side bipolar transistor having a base receiving a logical output voltage of the first MOS logic gate means, a collector connected to the high voltage power source, and an emitter connected to the output terminal, and

a low voltage side bipolar transistor having a base receiving a logical output voltage of the second MOS logic gate means, a collector connected to the output terminal, and an emitter connected to the low voltage power source.

5,329,184

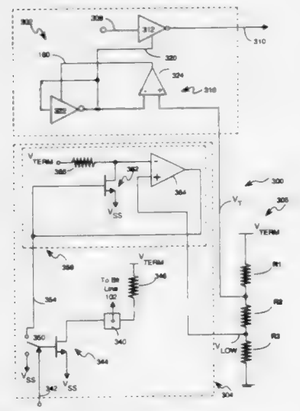
METHOD AND APPARATUS FOR FEEDBACK CONTROL OF I/O CHARACTERISTICS OF DIGITAL INTERFACE CIRCUITS

Thomas P. Redfern, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 5, 1992, Ser. No. 972,134

Int. Cl.[5] **H03K** *3/01, 9/092*

U.S. Cl. 307—475 **9 Claims**



6. A transceiver network comprising:

a receiver circuit, said receiver circuit including:

a CMOS input inverter that provides output signals in response to input signals in accordance with a first transfer characteristic governed by a first reference voltage, and

first compensation means for adjusting said first reference voltage, including a first CMOS compensation inverter having an output governed by said first reference voltage, and first feedback loop means connected between said first compensation gate's output and said CMOS input inverter for varying said first reference voltage until said first compensation gate generates a predefined output signal; and

a driver circuit, said driver circuit including:

an first MOS gate having a first current transfer characteristic governed by a gate control voltage, and

second compensation means for adjusting said gate control voltage, including a second MOS gate having a current transfer characteristic proportional to said first

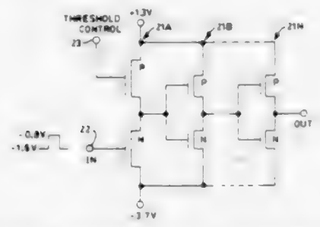
VOL 1164 ISS 2 JL 12 1994 UMI

current transfer characteristic, and second feedback loop means connected between said second MOS gate and said first MOS gate for varying said gate control voltage until current flowing through said second MOS gate matches a supply current provided to said first MOS gate.

5,329,185
CMOS LOGIC CIRCUITRY PROVIDING IMPROVED OPERATING SPEED

Michael Cooperman, Framingham, and Phillip Andrade, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 19, 1993, Ser. No. 35,127
Int. Cl.[5] H03K *19/094*
U.S. Cl. 307—475 **5 Claims**



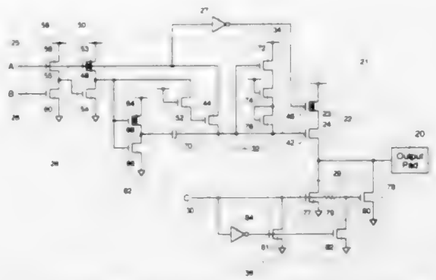
1. Electrical circuitry providing a compatible interface between emitter coupled logic levels and CMOS logic levels including:
first and second inverter circuits, each inverter circuit comprising a complementary pair of MOS transistors connected in series between a first voltage source and a second voltage source to provide compatibility between emitter coupled logic and CMOS logic levels;
an input connection connected to the gate on one of the MOS transistors of the first inverter for receiving input signals of the range of emitter coupled logic signals;
a control connection connected to the gate of the other of the MOS transistors of the first inverter circuit;
the juncture of the MOS transistors of the first inverter circuit being connected to the gates of the MOS transistors of the second inverter circuit; and
said MOS transistors of the first inverter circuit being larger than the MOS transistors of the same type of the second inverter circuit thereby providing greater drive capability to compensate for the relatively small range of emitter coupled logic input signals applied to the first inverter circuit.

5,329,186
CMOS BOOTSTRAPPED OUTPUT DRIVER METHOD AND CIRCUIT

Glen Hush, and Mark R. Thomann, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 619,164, Nov. 28, 1990, Pat. No. 5,128,563. This application Jun. 5, 1992, Ser. No. 893,879
The portion of the term of this patent subsequent to May 7, 2009, has been disclaimed.
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—482 **13 Claims**

1. An output driver circuit, comprising:
a) an output node;
b) a supply node, connectable to a supply potential;
c) an initial switching device operatively interposed between said supply node and said output node;
d) a bootstrap circuit for providing a bootstrap potential having at least two incremental potentials, said initial switching device responsive, at a control input, to said incremental potentials, such that a potential of said output node is capable of being driven toward the supply potential when said initial switching device is actuated by said bootstrap potential, a bootstrap current through said initial switching device having at least two incremental currents corresponding to said two incremental potentials; and

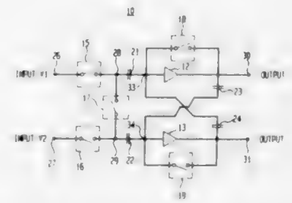


e) a series switching device serially connected to said initial switching device and in electrical communication with said supply node, said series switching device being actuated in conjunction with said initial switching device being actuated in order to drive said potential of said output node toward the supply potential when said supply node is coupled to the supply potential.

5,329,187
HIGH SPEED DIFFERENTIAL COMPARATOR

Finbarr J. Crispie, Sunnyvale, and Geert P. Rosseel, Stanford, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 720,082, Jun. 24, 1991. This application Feb. 17, 1993, Ser. No. 18,619
Int. Cl.[5] H03K *5/24, 3/02*
U.S. Cl. 307—494 **14 Claims**

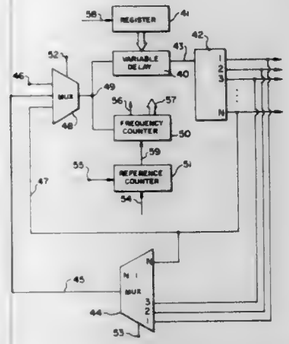


1. A combination comprising:
first and second capacitors each having first and second plates;
means for selectively applying a first signal (V1) to the first plate of the first capacitor;
means for selectively applying second signal (V2) to the first plate of the second capacitor;
means for placing a first D.C. voltage level on the second plate of the first capacitor and a second D.C. voltage level on the second plate of the second capacitor; and
means for selectively shorting the first plates of the first and second capacitors together for combining said V1 and said V2 and producing a combined voltage (Vc) at the first plates of said first and second capacitors which has a value between V1 and V2, when V1 and V2 have different values, and for producing a voltage (Vc−V1) at the second plate of the first capacitor and a voltage (Vc−V2) at the second plate of the second capacitor, thereby producing A.C. signals of opposite polarity at the second plates of the first and second capacitors.

5,329,188
CLOCK PULSE MEASURING AND DESKEWING SYSTEM AND PROCESS

Mark R. Sikkink, Chippewa Falls; Kenneth A. Van Goor, Fall Creek; Gregory R. Edlund, Eau Clare, and Arthur H. Orth, River Falls, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Filed Dec. 9, 1991, Ser. No. 803,926
Int. Cl.[5] H03K *5/19;* **G01R** *19/12*
U.S. Cl. 307—517 **23 Claims**

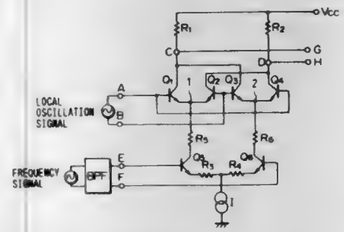


1. Apparatus for determining the delay of a pulse delivering circuit for delivering clock pulses from a source to a device which utilizes the clock pulses comprising
means selectively operable for establishing a closed loop circuit including the pulse delivering circuit;
means for introducing at least one pulse into said established closed loop circuit such that said introduced pulse recirculates through said closed loop circuit; and
means for determining the length of time for said introduced pulse to recirculate through said closed loop circuit.

5,329,189
MIXER CIRCUIT

Susumu Ushida, and Sadao Igarashi, both of Souma, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 679,456, Apr. 2, 1991, abandoned. This application Jul. 17, 1992, Ser. No. 916,798
Claims priority, application Japan, May 10, 1990, 2-120976
Int. Cl.[5] G06G *7/00;* **H03B** *19/00*
U.S. Cl. 307—529 **2 Claims**

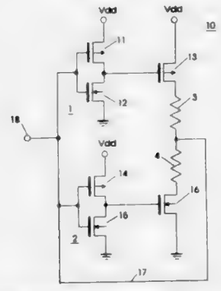


1. A mixer circuit, comprising:
a differential amplifier comprising a pair of transistors, each transistor of said pair of transistors comprising a collector;
a double balanced mixer comprising a first pair of transistors and a second pair of transistors, each transistor of said first and second pairs of transistors comprising an emitter;
a first impedance element interposed between a junction between the emitters of said first pair of transistors of said double balanced mixer and the collector of one of said pair of transistors of said differential amplifier; and
a second impedance element interposed between a junction between the emitters of said second pair of transistors of said double balanced mixer and the collector of the other of said pair of transistors of said differential amplifier.

5,329,190
TERMINATION CIRCUIT

Ryo Igarashi, Moriyama, and Tatsuo Morikawa, Shiga, both of Japan, assignors to International Business Machines Corp, Armonk, N.Y.

Filed Jul. 20, 1992, Ser. No. 916,920
Claims priority, application Japan, Jan. 31, 1992, 016246
Int. Cl.[5] H01P *1/22;* **H03K** *5/153*
U.S. Cl. 307—540 **12 Claims**



1. A termination circuit comprising:
an output stage having an output node connected to a far end of a transmission line for terminating the far end of said transmission line with an impedance substantially equal to the characteristic impedance of said transmission line, said output stage having a first transistor connected to a first potential and a second transistor connected to a second potential, each of said first and second transistors having a control electrode,
a first inverter connected between the far end of said transmission line and the control electrode of said first transistor for driving said first transistor in response to a signal at the far end of said transmission line, and
a second inverter connected between the far end of said transmission line and the control electrode of said second transistor for driving said second transistor in response to the signal at the far end of said transmission line, said second inverter having input/output characteristics different from the input/output characteristics of said first inverter.

5,329,191
INTEGRATED DYNAMIC AMPLITUDE LIMITER INDEPENDENT OF THE SUPPLY VOLTAGE

Pertti J. Korhonen, and Kalle J. T. Korhonen, both of Oulu, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Continuation of Ser. No. 579,815, Sep. 4, 1990, abandoned. This application Sep. 11, 1992, Ser. No. 944,018
Claims priority, application Finland, Sep. 19, 1989, 894435
Int. Cl.[5] H03K *5/08, 5/02*
U.S. Cl. 307—540 **4 Claims**

1. Amplitude limiter circuitry for limiting the amplitude of an input signal to provide a limited output which is limited to a predetermined level, the amplitude circuitry comprising:
a dynamic automatic gain control (AGC) amplifier block (1) which receives the input signal and having an AGC amplifier with gain for producing an output voltage based on said gain;
a level clipper block (3) including a clipper amplifier means

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with gain for making a comparison of the output voltage of the AGC amplifier block with respective voltages defining higher and lower limiting levels and producing the limited output based on the comparison and said gain of said clipper amplifier means;

a limiting level forming circuit block (2) responsive to a supply voltage (Vdd) and a virtual ground voltage (Vdd/2) for forming a band-gap reference voltage



(Vbgref), the limiting level forming circuit block including high and lower amplifier means which have gain for forming said higher and lower limiting levels based on the band-gap reference voltage (Vbgref) and being independent of the supply voltage (Vdd); and

switched capacitor means for setting the gains of the AGC amplifier and, the clipper and the high and low amplifier means.

5,329,192

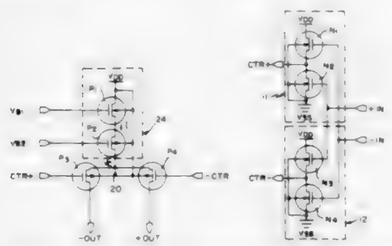
HIGH SPEED CMOS CURRENT SWITCHING CIRCUIT

Tien-Yu Wu, Hsin-Chu, and Yung-Peng Hwung, Taipei, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation of Ser. No. 642,970, Jan. 17, 1991. This application Feb. 25, 1993, Ser. No. 23,169

Int. Cl.[5] H03K *17/687, 5/153*

U.S. Cl. 307—576 **2 Claims**



1. A switching circuit for receiving differential input signals and transmitting output signals to respective output terminals in response thereto comprising:

current steering switch means comprising two MOS transistors, each having a source terminal, the source terminals of both said transistors being connected to define a current input node, a drain terminal, each drain terminal of said transistors being connected to a respective one of said output terminals, and a gate terminal;

current source means connected to said current input node;

means defining a power supply node for connection to a power supply and a ground node corresponding to circuit ground;

a pair of buffer means for generating control signals, each of said control signals is being conveyed to respective one of said gate terminals of said MOS transistors for controlling said respective one of said MOS transistors, each buffer means including a pull-up MOS transistor having a drain terminal connected to said power supply node and a source terminal, and a pull-down MOS transistor having a source terminal connected to said ground node and a drain terminal directly connected to the source terminal of said pull-up MOS transistor, the pull-up and pull-down transistors being of the same conductivity type, each of the differential input signals being coupled to and controlling the gate of the pull-up MOS transistor of one said buffer means and the gate of the pull-down MOS transistor of the other of said buffer means, the control signals generated by said buffer means having a fast fall time and slow rise time.

5,329,193

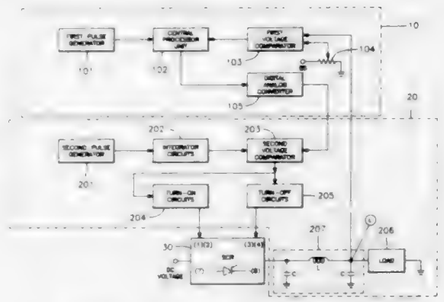
COMPUTER CONTROLLER

Chao-Cheng Lu, No. 4-4, Alley 27, Lane 143 Chun Kung Road, Taipei, Taiwan 11614

Filed Nov. 12, 1992, Ser. No. 974,533

Int. Cl.[5] H03K *17/28, 5/24*

U.S. Cl. 307—592 **3 Claims**



1. A computer controller comprising a computer unit, a control unit, a SCR controller, a π type filter and a load, said π type filter having a first node connected to said SCR controller and a second node connected to the load, said SCR controller being connected to the control unit, wherein said computer unit comprises a first pulse generator, a central processing unit connected to an output from said first pulse generator, a first voltage comparator comparing an output from said π type filter with a standard voltage at input terminals and having an output connected to said central processing unit, a digital analog converter connected to an output from said central processing unit; and wherein said control unit comprises a second pulse generator, an integrator circuit connected to an output from said second pulse generator, a second voltage comparator connected to an output from said integrator circuit and also connected to an output from said digital analog converter, a turn-on circuit connected to an output from said second voltage comparator and a turn-off circuit also connected to said output from the second voltage comparator; said π type filter being an inductance-capacitance controlled to convert a square wave voltage to a DC voltage; said load having load characteristics such as resistance, inductance, capacitance and battery.

5,329,194

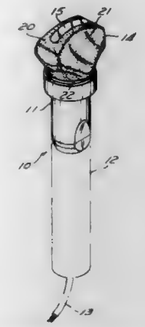
ULTRASONIC PERIPHERAL VASCULAR PROBE ASSEMBLY

Julian Dow, San Clemente; Paul F. Meyers, San Juan Capistrano, and Michael Waddell, San Clemente, all of Calif., assignors to Capistrano Labs, Inc., San Clemente, Calif.

Filed Nov. 23, 1992, Ser. No. 980,583

Int. Cl.[5] H02K *33/00*

U.S. Cl. 310—17 **11 Claims**



1. A reciprocating drive motor comprising:

(a) a stator having two arms;

(b) at least one coil associated with said stator so as to induce a magnetic field therein;

(c) an armature disposed intermediate the two arms of said stator, said armature having north and south magnetic poles;

(d) at least one biasing member disposed within said armature, said biasing member biasing said armature in a generally centered position; and

(e) wherein the coil(s) of said stator are energizable to produce a magnetic field of a first polarity so as to cause said armature to rotate to a first position and are also energizable to produce a magnetic field of a second polarity so as to cause said armature to rotate to a second position, movement of the armature back and forth between its first and second positions defining reciprocation thereof.

5,329,195

SENSOR MOTOR

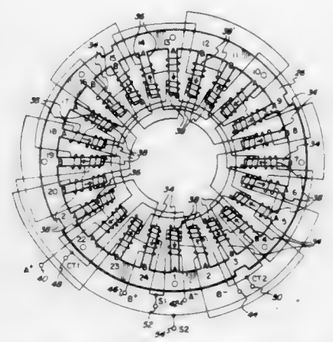
Ralph W. Horber, Marshfield, and Hung D. Vu, Pembroke, both of Mass., assignors to Seiberco Incorporated, Braintree, Mass.

Filed Nov. 2, 1992, Ser. No. 970,049

Int. Cl.[5] H02K *11/00*

U.S. Cl. 310—68 B **18 Claims**

1. In a polyphase, direct current electric motor or the like, the combination comprising: a stator o f magnetic material comprising a generally cylindrical body portion and a multiplicity of at least eight identical pole elements extending radially from said body portion at locations spaced thereabout, and a sensor coil and a phase coil wound about each of said pole elements, said sensor coils being arranged as equal-number sets of at least four series-connected coils, with said coils of a first set being wound on a first set of associated pole elements and said coils of a second set being wound on a second set of associated pole elements, said pole elements of sad first and second sets alternating in positions about said body portion of said stator, each of said sets of stator coils and associated pole elements being subdivided into equal-number subsets of at least two coils and pole elements; sensor means having at least two electrical circuit legs, one of said circuit legs being connected to said first set of coils, at a first junction between said subsets thereof, and the other of said two circuit legs being connected to said second set of coils, at a second junction between said subsets thereof, said first and second sets of coils adapting said associated pole elements to function as sensor pole elements, providing at least two sensor channels for the generation of signals indicative of angular orientation of a rotor assembled with said stator, said signals constituting averaged values of electrical effects produced simultaneously upon a plurality of pole elements; and power supply means connected to said phase coils for providing at least two phases of current, said supply means having one circuit portion connecting a first group of said phase coils wound about a first group of said pole



elements in series for energization by one phase of current, and having another circuit portion connecting a second group of said phase coils wound about a second group of said pole elements in series for energization by a second phase of current, said one and another circuit portions of said supply means, so connected, adapting said pole elements to function as first and second phase torque pole elements, respectively, the total number of sad pole elements on said body portion divided by the number of phases provided by said power supply means being an even number.

5,329,196

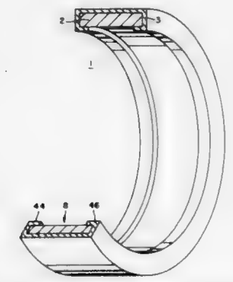
METAL WRAPPED NON-METALLIC MAGNETIC COMPONENT FOR USE ABOUT A ROTOR OR A SHAFT AND METHOD OF MAKING THE SAME

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Division of Ser. No. 758,907, Sep. 11, 1991, Pat. No. 5,224,259. This application May 10, 1993, Ser. No. 58,862

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **4 Claims**



1. A metal wrapped non-metallic component useable about a rotor or a shaft comprising:

a strip of sheet metal having its ends welded together to form a cylinder of sheet metal, said cylinder having first and second axial ends removed therefrom; a channel defined by an inner diameter of a central cylindrical portion of the

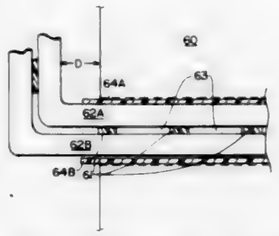
VOL 1164 ISS 2 JL 12 1994 UMI

cylinder, said axial ends, and first and second flanges integrally formed from said axial ends; and a magnetic component being secured within the channel, wherein the flanges are folded about sides of the magnetic component to contact an inner surface of the magnetic component.

5,329,197
GENERATOR ROTOR WINDING WITH TWO COILS PER SLOT

Henry W. Kudlacik, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,329
Int. Cl.[5] H02K *3/00*
U.S. Cl. 310—198 **7 Claims**



1. Rotor winding apparatus for use in a dynamoelectric machine including a rotor having axially extending slots for receiving conductive windings, said slots including insulating slot armor elements along axially directed sidewalls of said slots, said rotor winding apparatus comprising;

a first winding in each of said rotor slots, said winding including a stack of conductors, each of said conductors having substantially equal cross sectional areas and with insulation between each adjacent conductor, said first winding being positioned adjacent one of said insulating armor elements on a first sidewall of said slots;

a second winding in each of said rotor slots, said winding including a stack of conductors, each of said conductors having substantially equal cross sectional areas and with insulation between each adjacent conductor, said second winding being positioned adjacent another one of said insulating armor elements on a second sidewall of said slots;

a plurality of insulating spacers between said first and second windings in each of said slots, said spacers being distributed axially along each said slot such that said spacers and said first and second windings form radial ventilation passages, and

said rotor slots include subslots positioned below said windings for providing coolant gas flow to said radial ventilation passages so that said coolant gas flow directly contacts said conductors for enhanced heat transfer from said conductors to the coolant has flow.

5,329,198
SLIP RING OR COMMUTATOR MOTOR

Helmut Schmidt, and Kurt Schmidt, both of Reichenberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, München, Fed. Rep. of Germany

Filed Jan. 10, 1992, Ser. No. 793,410
Claims priority, application European Pat. Off., Aug. 31, 1989, 89116123.4; Fed. Rep. of Germany, Aug. 31, 1989, 8910428; Aug. 8, 1990, 9011574
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—247 **26 Claims**

1. A brush assembly, for use in one of a slip ring motor having a slip ring rotating about an axis and a commutator motor having a commutator rotating about an axis, comprising:

a brush including:

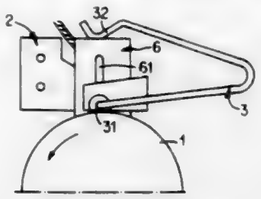
a stator side;

a top surface; and

a bottom surface, and

being pivotable about an axis parallel to the one of the commutator's axis and the slip ring's axis;

a brush compression spring, exerting a force pressing the brush's bottom surface against an edge surface of the one of the commutator and the slip ring and being pivotable



about an axis parallel to the one of the commutator's rotation axis and the slip ring's rotation axis;

a guide pin; and

a brush housing holding the guide pin and at least partially embracing the brush wherein the brush includes a slot open to an edge surface of the commutator and running in the direction of the force exerted by the brush compression spring, wherein

said guide pin is sized to be inserted into said slot.

5,329,199
ROTOR ASSEMBLY WITH MOLDED FANS AND METHOD FOR MAKING THE SAME

Steven J. Yockey, Farmington Hills; Gregory A. Ritchie, Ypsilanti; Joseph E. Saval, Romulus, and Eric D. Bramson, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 23, 1992, Ser. No. 980,048
Int. Cl.[5] H02K *1/22, 15/02, 1/04*
U.S. Cl. 310—263 **17 Claims**



1. A molded rotor assembly for a vehicle alternator, the rotor assembly comprising:

an elongated rotor shaft having a longitudinal axis;

first and second pole pieces axially aligned along and spacedly mounted on the rotor shaft to define a region between the pole pieces, each pole piece having an outboard axial face;

a coil wire having a plurality of turns cooperatively held in the region between the pole pieces, the coil wire having a pair of free ends;

a pair of slip rings mounted to the rotor shaft and connected to a pair of terminals, each terminal attaching to a respective free end of the coil wire to form a pair of respective connections; and

a molded component including a molded fan integrally molded to at least one of the outboard axial faces, the molded fan having a plurality of circumaxially spaced blades;

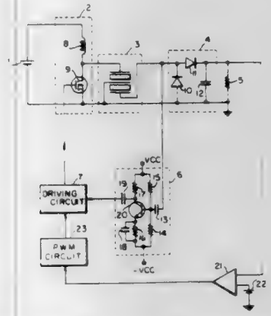
the molded component further including a molded insert integrally molded to at least one of the pole pieces in the region between the pole pieces and integrally molded with the fan to anchor the fan to the pole piece;

wherein the molded component encapsulates at least one of the connections thereby providing structural support to the connection to prevent failure of the connection during high speed rotation of the rotor assembly and to protect the connection from corrosion.

5,329,200
PIEZOELECTRIC TRANSFORMER CONVERTER FOR POWER USE

Toshiyuki Zaitsu, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Jul. 19, 1993, Ser. No. 93,009
Claims priority, application Japan, Jul. 17, 1992, 4-190557; May 14, 1993, 5-112772
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—316 **3 Claims**



1. A piezoelectric transformer converter for power use comprising

switching means that generates an alternating current signal by switching an inputted direct current voltage;

a power-use piezoelectric transformer that generates and transmits a piezoelectric vibration in accordance with said alternating current signal and then converts and outputs the voltage of said alternating current signal;

rectification-smoothing means that rectifies and smooths the alternating current output from the power-use piezoelectric transformer;

phase inversion-amplification means that inverts the phase of and amplifies said alternating current output of said power-use piezoelectric transformer; and

driving means that generates a pulse signal that drive said switching means in accordance with the output signal from the phase inversion-amplification means.

5,329,201
VIBRATION DRIVEN MOTOR

Takayuki Shirasaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

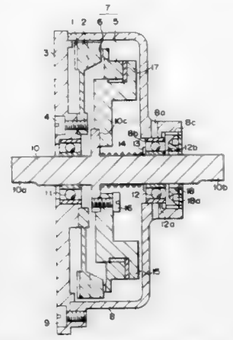
Filed Nov. 24, 1992, Ser. No. 980,780
Claims priority, application Japan, Nov. 29, 1991, 3-316454
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **11 Claims**

1. A vibration driven motor comprising;

a vibration member having a contact surface and for generating a vibration therein in response to a signal applied thereto; and

a contact ember having a contact surface which is in contact with the contact surface of said vibration member, said vibration causing relative movement between the vibration member and the contact member, and

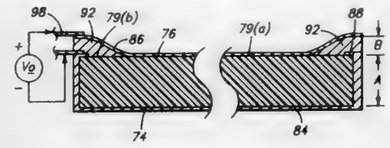
the contact surface of said contact member having a composite resin layer having a Rockwell hardness (H_RM) of 80 to 110, and the contact surface of said vibration member being formed of a multi-layered film of an intermetallic compound of nickel having a Vickers hardness (Hv) of 800 to 1,200.



5,329,202
LARGE AREA ULTRASONIC TRANSDUCER

George F. Garlick, and Todd F. Garlick, both of Kennewick, Wash., assignors to Advanced Imaging Systems, Richland, Wash.

Filed Nov. 22, 1991, Ser. No. 796,466
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—334 **22 Claims**



1. An improved ultrasonic transducer for generating planar ultrasonic waves with reduced edge effect interference, comprising:

a) a thin piezoelectric wafer body having parallel front and back surfaces extending to peripheral front and back edges interconnected by a peripheral surface;

b) a front electrode layer covering the front surface;

c) a back electrode layer covering the back surface;

d) a voltage reduction layer composed of a non-piezoelectric dielectric material interposed between the back surface of the piezoelectric wafer and the back electrode coating along the periphery of the back edge to reduce the effective voltage applied to the piezoelectric wafer adjacent the peripheral surface and thereby reduce the generation of adverse edge effect ultrasonic waves;

e) electrode connector tabs separately affixed to the electrode layers for enabling an oscillating electrical voltage to be applied between the front and rear electrode coatings of the piezoelectric wafer to generate ultrasonic plane waves from the front surface while minimizing the generation of interfering edge effect ultrasonic waves from peripheral surface; and

f) wherein the voltage reduction layer has a varying thickness to progressively reduce the voltage applied to the back surface to a minimum adjacent the back edge.

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5,329,203

FLAT COLD CATHODE FLUORESCENT LAMP WITH IMPROVED LUMINANCE

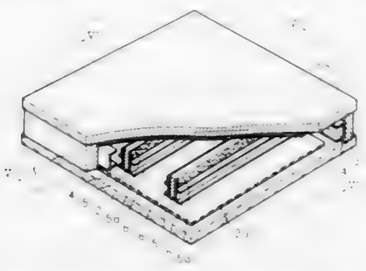
Eui-seon Jeong, Kyunggi, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed May 14, 1992, Ser. No. 882,974

Claims priority, application Rep. of Korea, Sep. 25, 1991, 91-15710

Int. Cl.[5] **H01J** *1/62*

U.S. Cl. 313—491 **6 Claims**



1. A flat cold cathode fluorescent lamp comprising:

a front plate having a phosphor layer on an inner surface thereof;

a rear plate having a phosphor layer on an inner surface thereof;

spacers placed between said front and rear plates for their support;

side plates provided between said front and rear plates disposed at the periphery of said front plate and said rear plate, said side plates having opposing inner surfaces; and

main electrodes placed lengthwise on the opposing inner surface of said side plates and perpendicular to said spacers,

wherein a phosphor layer is formed on an upper side of each of said spacers in contact with the phosphor layer of said front plate and an auxiliary electrode is provided lengthwise on each lower side of said spacer.

5,329,204

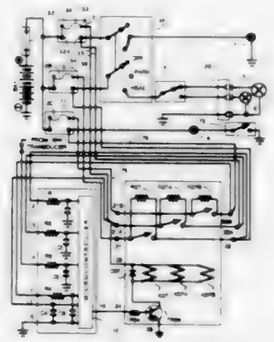
ATTACHMENT FOR AUTOMATIC LIGHT SWITCHING

Tom L. Ricca, 1413 Wyandotte Rd., Columbus, Ohio 43212

Filed Mar. 9, 1992, Ser. No. 849,109

Int. Cl.[5] **B60Q** *1/34*

U.S. Cl. 315—82 **13 Claims**



1. An attachment for automatic light switching on a vehicle that has as existing equipment the following:

(a) a battery with one polarity connected to said vehicle metal chassis defined as ground potential and the other polarity defined as high potential,

(b) basic lights comprising a set of head lights electrically connected preferably in parallel and a set of park lights electrically connected preferably in parallel;

(c) an enabling system, also called the ignition system, for the user of said vehicle to enable or disable the mechanical powering means of said vehicle which, when enabled, would move said whole vehicle a predetermined way when a predetermined electromechanical action is met;

(d) a path energizing said set of head lights when closed, a path energizing said set of park lights when closed, and a path energizing said ignition system when closed, each of said paths being connected in series with said battery;

(e) a light switch having a plurality of electrical terminals thereon and three positions operating in conventional manners: an OFF position that by itself would interrupt both the closed path that energizes said sets of head lights and the closed path that energizes said sets of park lights, a PARK position that by itself would close the path that energizes said set of park lights, and a HEAD position that by itself would close both the path that energizes said set of head lights and the path that energizes said set of park lights; and

(f) an ignition switch having a plurality of electrical terminals thereon, a STOP mode that would interrupt the enabling electrical connections of said ignition system, and a RUN mode that would close said enabling electrical connections;

said attachment for automatic light switching comprising, in combination.

(a) a control block including a suitable number of electrical pins, having each practically infinite internal electrical resistance, assigned by programming as sensing input means to gather at predetermined intervals of time the logical states of devices electrically connected thereto; a suitable number of electrical pins assigned by programming as controlled output means to actuate, when energized, other devices electrically connected thereto; and logical processing means including memory means preprogrammed to decide when to energize and when to de-energize said controlled output means according to the combinations and sequences of the logical states of devices electrically connected to said sensing input means;

(b) controlled switch means having a predetermined number of pairs of contact terminals and electrically connected to and actuatable by said controlled output means for changing the electrical resistance through each of all said pairs of contact terminals of said controlled switch means from a practically infinite value to a practically zero value, and vice versa;

(c) powering means using preferably said battery to energize said control block and eventually to energize said controlled switch means on actuation from said control block;

(d) a light switch transducer means for providing on demand from said control block, the logical state of at least one of said three positions of said light switch, said light switch transducer means including electrical transducer means providing two logical states out of the energizing and de-energizing of each particular one of a predetermined number of closed paths electrically interruptible by a particular one of said three positions of said light switch, said electrical transducer means being made by electrically connecting each of the two electrical terminals of a sensing resistor of predetermined electrical resistance to each of the two electrical contact terminals of the particular pair of contact terminals of said controlled switch means which is electrically connected in series with said particular one of a predetermined number of closed paths electrically interruptible by a particular one of said three positions of said light switch and then sensing with an electrical connection to said sensing input means of said control block, the change in voltage, with respect to said ground potential, at a predetermined one of said two

electrical terminals of said sensing resistor; said change in voltage being caused by the closing and interrupting of said particular one of said three positions of said light switch and said change in voltage being sensed only when the resistance through said particular pair of contact terminals of said controlled switch means is made into a practically infinite value;

(e) an ignition switch transducer means for providing the logical state, presence or absence, of the STOP mode of said ignition switch;

(f) electrical wire insert means, each interrupting and creating each of pairs of insulated electrical terminals in series in each of a predetermined number of closed paths of said basic lights, anywhere on each of said closed paths of said basic lights;

(g) electrical wire interrupting means connected to a predetermined number of said pairs of insulated electrical terminals of said insert means as well as to a predetermined number of said pairs of contact terminals of said controlled switch means to allow each pair of contact terminals of said controlled switch means to be inserted in series with each of said predetermined number of energizing closed paths of said basic lights at convenient locations, said convenient locations being predetermined for said vehicle, and not restricted electrically to a single definite location with respect to said battery, said light switch, and said basic lights; and

(h) electrical wire signaling means connected to said transducer means of said light and ignition switches as well as to said sensing input means to provide to said logical processing means the combinations and sequences of the logical states of said light and ignition switches, said transducer means of said light and ignition switches being predetermined to be the most convenient on said vehicle.

5,329,205

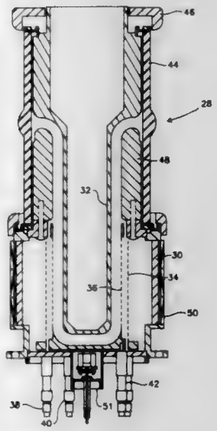
HIGH VOLTAGE CROSSED-FIELD PLASMA SWITCH

Dan M. Goebel, Tarzana; Robert L. Poeschel, Thousand Oaks, and Ronnie M. Watkins, Agoura, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 19, 1992, Ser. No. 901,353

Int. Cl.[5] **H01J** *7/24*

U.S. Cl. 315—111.21 **30 Claims**



1. A plasma switch, comprising:

a vacuum housing,

a generally cylindrical cold cathode within said housing providing a source of secondary electrons, said cathode including a plurality of generally axially-directed corrugations around its interior surface,

a generally cylindrical anode disposed inwardly of the cathode and extending axially beyond the limit of said cathode,

a generally cylindrical source grid disposed between said anode and cathode,

means for introducing an ionizable gas into the space between the cathode and source grid, said cathode and source grid maintaining a plasma therebetween in response to a predetermined voltage differential between them,

a generally cylindrical control gird disposed between said source grid and anode for selectively enabling and terminating a plasma path between the cathode and anode, and thereby closing and opening the switch, in response to control voltage signals applied to the control grid,

a magnet means configuring the plasma to a predetermined area between the cathode and anode, said magnet means producing a magnetic field that traps secondary electrons from the cathode and, together with a radial electric field, causes said electrons to travel in cycloidal orbits, and

a generally cylindrical Paschen shield extending from said cathode adjacent to but spaced from a portion of said anode which extends beyond said cathode, said Paschen shield terminating in a first curved surface, the extended portion of said anode describing a second curved surface that is approximately concentric with and spaced from said first curved surface, the shapes of said curved surfaces and the spacing between then being selected to establish a voltage stress at said first curved surface within the approximate range of 90–150 kV/cm in response to a 100 kV differential between said anode and Paschen shield.

5,329,206

AUTOMATIC HEADLAMP DIMMER HAVING IMPROVED SIGNAL DISCRIMINATION AND SIGNAL PROCESSING

Kenneth G. Slotkowski, Westland; Paul A. Michaels, Livonia; Harold R. Macks, Detroit, and Henry J. Ewald, Livonia, all of Mich., assignors to Lectron Products, Inc., Rochester Hills and Ford Motor Company, Dearborn, both of Mich.

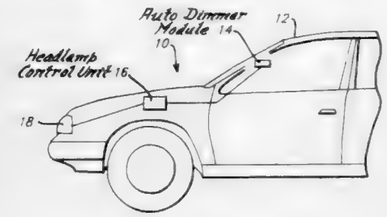
Division of Ser. No. 696,162, May 6, 1991, Pat. No. 5,182,502.

This application Oct. 30, 1992, Ser. No. 969,039

The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.

Int. Cl.[5] **H05B** *41/36*; **B60Q** *1/14*

U.S. Cl. 315—159 **15 Claims**



1. An automatic headlamp dimmer system for a vehicle having high and low beam headlamps including a light sensor for producing an electrical light signal in response to incoming light, an amplifier for amplifying said light signal, and a controller for transmitting a switch signal for causing said headlamps to switch between high beam and low beam modes, said controller comprising:

means for detecting when the level of said light signal crosses a threshold;

means for generating said switch signal a predetermined period of time after said light signal crosses said threshold;

means for detecting periodicity in said light signal crossing said threshold; and

means for blocking the generation of said switch signal when

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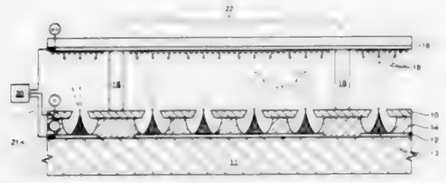
said periodicity is present, whereby said headlamps will not switch between high and low beams.

5,329,207

FIELD EMISSION STRUCTURES PRODUCED ON MACRO-GRAIN POLYSILICON SUBSTRATES

David A. Cathey; J. Brett Rolfson; Tyler A. Lowrey, and Trung T. Doan, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 13, 1992, Ser. No. 883,629
Int. Cl.[5] H01J *1/30*
U.S. Cl. 315—169.1 20 Claims



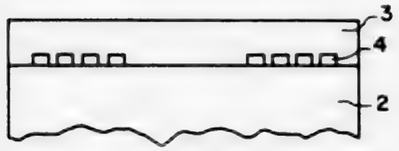
1. A baseplate for use in a flat panel display, said baseplate comprising:
- a semiconductor substrate said substrate being a relatively thick macro-grain polycrystalline substrate, said substrate being a first side and a second side;
- a conductive layer being disposed superjacent said first side of said substrate;
- at least one insulating layer being disposed superjacent said conductive layer, said insulating layer having a plurality of spaces disposed therein;
- an anode grid being disposed superjacent said insulating layer, said anode grip having a plurality of cavities disposed therein, said cavities having a shape, said anode grid being disposed on said insulating layer such that said spaces of said insulating layer are contiguous with said cavities in said anode grid;
- a plurality of cathode tips being disposed superjacent said conductive layer, said cathode tips extending through said spaces in said insulating layer to a point in said cavities of said anode grid such that a voltage differential between sand anode grid and one of said cathode tips will cause electrons to be emitted from said cathode tip; and
- a power source, said power source providing said voltage differential between said anode grip and said cathode tips.

5,329,208

SURFACE ACOUSTIC WAVE DEVICE AND METHOD FOR PRODUCING THE SAME

Takahiro Imai; Hideaki Nakahata; Akihiro Hachigo, and Naoji Fujimori, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 5, 1992, Ser. No. 894,598
Claims priority, application Japan, Jun. 5, 1991, 3-134239
Int. Cl.[5] H01L *41/18*
U.S. Cl. 310—313 R 6 Claims



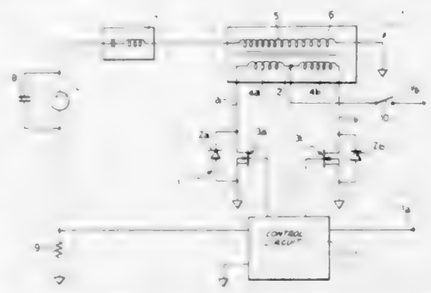
1. A surface acoustic wave device comprising a diamond layer, a piezoelectric layer and a comb-like electrode, wherein said piezoelectric layer and said comb-like electrode are formed on a surface of said diamond layer, said surface having been in contact with a substrate used in the formation of said diamond layer by a vapor phase growth method, resulting in said surface having a surface roughness of 0.1 μm or less.

5,329,209

SELF-OSCILLATING CIRCUIT FOR DRIVING A GAS DISCHARGE LAMP, PARTICULARLY FOR USE ON BOARD A MOTOR VEHICLE

Andrea Nepote, Turin, Italy, assignor to Marelli Autronica S.p.A., Milan, Italy

Filed Nov. 23, 1992, Ser. No. 980,589
Claims priority, application Italy, Dec. 11, 1991, TO91-1A000964
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—209 R 2 Claims



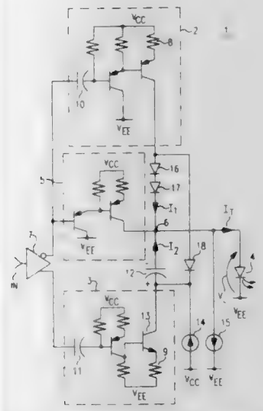
1. A self-oscillating circuit for driving a gas discharge lamp particularly for use on board a motor vehicle, comprising
- an inverter with first and second circuit branches connectable to a DC voltage source and comprising respective electronic switch means in series with respective primary windings; the primary windings of said first and second circuit branches being inductively coupled to the same secondary winding connected to the lamp;
- an impedance variable as a function of the frequency, connected in series with the lamp;
- control circuit means operable to render said electronic switch means alternately conductive in such a way that an alternating voltage develops across the terminals of the secondary winding; said control circuit means having a control input intended to receive a control signal operable to cause a variation in the frequency of the alternating voltage in such a way as to cause a corresponding variation of the impedance and a consequent variation in the current flowing through the lamp;
- a current sensor resistor connected in series with the lamp and connected to said control circuit means;
- said control circuit means including first signal treatment means connected to said resistor and operable to provide at its output a square wave signal at the same frequency as the signal developed across the terminals of this resistor;
- said control circuit means further including a single capacitor, operable to provide a triangular wave signal in phase with the square wave signal and
- comparison and processing circuit means operable to generate first and second logic control signals capable of rendering the electronic switch means of said first and second circuit branches conductive in a manner which depends on the comparison of the triangular wave signal with a reference level which is variable in dependence on the control signal.

5,329,210

HIGH-SPEED DRIVER FOR AN LED COMMUNICATION SYSTEM OR THE LIKE

Lisa A. Peterson, Brecknock Township, Berks County, and Stefan A. Siegel, Upper Macungie Township, Lehigh County, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 13, 1991, Ser. No. 791,828
Int. Cl.[5] H05B *41/16*
U.S. Cl. 315—246 11 Claims



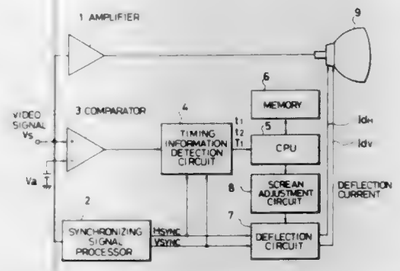
1. A driver for an LED or the like having an active region for producing light from recombinant carriers therein, the driver having a means for providing a ON current of a first polarity and an OFF current to the LED in response to an input, pulse characterized by:
- a differentiator, responsive to the input pulse for providing a predetermined amount of charge in a turn-off pulse of current to the LED when the LED is to be turned off, the turn-off pulse of current having a polarity opposite the first polarity;
- wherein the amount charge is sufficient to sweep substantially all of the carriers from the LED active region.

5,329,211

CRT DISPLAY UNIT

Kazuyoshi Sasaki, Hitachi, and Kikuo Tomita, Hitachiohta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,382
Claims priority, application Japan, Feb. 17, 1992, 4-029544
Int. Cl.[5] H01J *29/56*
U.S. Cl. 315—371 6 Claims



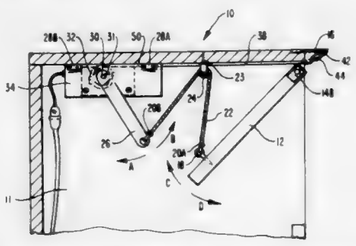
1. A CRT display unit, comprising:
- a cathode ray tube including an electron gun for irradiating an electron beam to a tube surface in accordance with an input video signal;
- a horizontal deflection coil and vertical deflection coil provided with said cathode ray tube;
- a horizontal deflection circuit for horizontally scanning said electron beam by flowing a sawtooth reflection current to said horizontal deflection coil in synchronism with the horizontal synchronizing signal contained in said video signal;
- a vertical deflection circuit for vertically scanning said electron beam by flowing a sawtooth deflection-current to said vertical deflection cell in synchronism with the vertical synchronizing signal contained in said video signal;
- a comparator for detecting the rising-up and falling-down of a set-up voltage superimposed upon said video signal;
- arithmetic operation means for detecting the display period of a picture corresponding to a horizontal scanning line based upon a signal output from said comparator as well as detecting the relative positional relationship on a time axis between said detected display period and said horizontal synchronizing signal; and
- picture adjustment means for correcting the amplitude of said horizontal deflection current so that said display detected by said arithmetic operation means period coincides with a predetermined reference display period and correcting the level and one of the phases of said horizontal deflection current so that the relative positional relationship on a time axis detected by said arithmetic means between said detected display period and said horizontal synchronizing signal coincides with a predetermined reference relative positional relationship.

5,329,212

WASTE RECEPTACLE DOOR OPENER

Michael J. Feigleson, P.O. Box 907, Centerville, Utah 84014

Filed Mar. 8, 1993, Ser. No. 27,889
Int. Cl.[5] B65D *43/00*
U.S. Cl. 318—16 7 Claims



1. An automated door opener for a waste receptacle having an opening and a door hingedly mounted in said opening, the door being oriented in a vertical orientation with a hinge at an upper portion of the door to thereby be pulled by gravitational forces into a closed position unless held in an open position, the door being configurated to open inwardly into the waste receptacle, comprising:
- infrared sensor means for sensing the presence of a person within a predetermined proximity to the waste receptacle, said infrared sensor means comprising an infrared transmitter for transmitting a detection signal add an infrared receiver for receiving said detection signal;
- electronic controlling means for controlling opening and closing of said automated door opener;
- cable means attached to said door for pulling said door inwardly into said waste receptacle, said cable means comprising a cable;
- arm assembly means attached to said cable for pulling said cable, said arm assembly means comprising a length of rigid material attached to a drive shaft of said motor;
- motor means attacned to said arm assembly means in re-

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sponse to said infrared sensor means, said motor means rotating said arm assembly means through an arc, said arm assembly means pulling said cable and thereby opening said door upon proximity of the person to said waste receptacle; and

housing means for housing said electronic controlling means within fire resistant confinements.

5,329,213

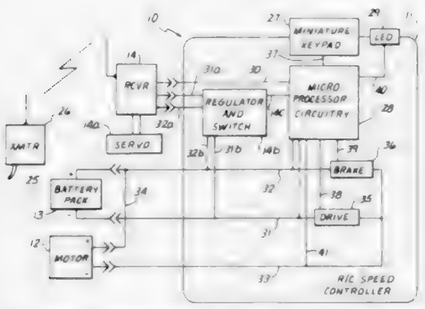
METHOD OF TURNING OFF THE RECEIVER OF A RADIO CONTROLLED MODEL

Kevin R. Orton, 940 Calle Negocio, San Clemente, Calif. 92672, and Noel W. Lovisa, 3-41 Garden St., Mundingburra, Townsville 4810, State of Queensland, Australia

Continuation-in-part of Ser. No. 61,918, May 14, 1993, abandoned, which is a continuation of Ser. No. 948,661, Sep. 22, 1992, Pat. No. 5,216,337, which is a continuation of Ser. No. 783,279, Oct. 28, 1991, abandoned. This application Nov. 23, 1993, Ser. No. 157,508

Int. Cl.[5] H02P *3/00*

U.S. Cl. 318—16 **4 Claims**



1. A method of turning off the receiver of a radio controlled model, comprising:

providing a speed controller with control circuitry for receiving setpoint information from a receiver that represents manipulation of a throttle trigger on a transmitter unit and for automatically turning the receiver off upon the occurrence of a predefined pattern of setpoint information;

monitoring the throttle trigger setpoint information with the control circuitry;

detecting with the control circuitry the occurrence of the predefined pattern of the throttle trigger setpoint information; and

turning off power to the receiver with the control circuitry upon the occurrence of the predefined pattern of throttle trigger setpoint information;

wherein the predefined pattern of throttle trigger setpoint information includes throttle trigger setpoint information corresponding to a full brake signal for a predefined period of time substantially greater than usually occurs in normal radio controlled model operation, followed by a cessation of the throttle trigger setpoint information corresponding to the transmitter unit being turned off.

5,329,214

MOTOR DRIVE CIRCUIT

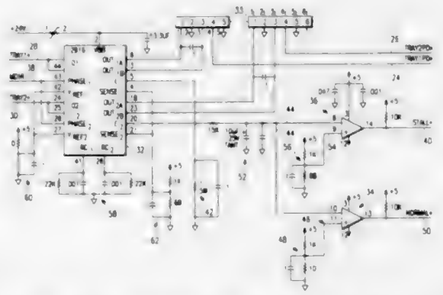
Ralph K. Williamson, Spring; Michael J. Dougherty, Houston, and Phillip M. O'Hara, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Aug. 28, 1992, Ser. No. 937,967

Int. Cl.[5] H02P *7/00, 7/67*

U.S. Cl. 318—434 **8 Claims**

7. An electronic drive circuit for monitoring and controlling a direct current (DC) motor, comprising:



means for determining a motor current sense voltage for said DC motor;

a motor driver integrated circuit, said motor driver integrated circuit including means for electronic storage of data, for automatic execution of computer programs, and for input/output transfer of various electronic signals used for control of said DC motor;

a low voltage comparator circuit electrically connected to said motor driver integrated circuit, said low voltage comparator circuit comparing said motor current sense voltage to a first threshold fixed reference voltage, said motor current sense voltage exceeding said first threshold fixed reference voltage when said DC motor is operating normally;

a high voltage comparator circuit electrically connected to said motor driver integrated circuit, said high voltage comparator circuit comparing said motor current sense voltage to a second threshold fixed reference voltage, said motor current sense voltage exceeding said second threshold fixed reference voltage when said DC motor is stalled; and

means for relieving excess torque of said DC motor in response to said motor current sense voltage exceeding said second threshold fixed reference voltage.

8. An electronic drive circuit for monitoring and controlling a direct current (DC) motor, comprising:

a motor driver integrated circuit, said motor driver integrated circuit including means for electronic storage of data, for automatic execution of computer programs, and for input/output transfer of various electronic signals used for control of said DC motor;

a motor voltage sensing circuit electrically connected to said motor driver integrated circuit, said motor voltage sensing circuit determining an operating voltage for said DC motor;

a first voltage comparator circuit electrically connected to said motor driver integrated circuit, said first voltage comparator circuit comparing said operating voltage to a first threshold voltage, said operating voltage exceeding said first threshold voltage when said DC motor is operating in a first state;

a second voltage comparator circuit electrically connected to said motor driver integrated circuit, said second voltage comparator circuit comparing said operating voltage to a second threshold voltage, said operating voltage exceeding said second threshold voltage when said DC motor is operating in a second state; and

means for modifying operating of said DC motor in response to said operating voltage exceeding said second threshold voltage.

5,329,215

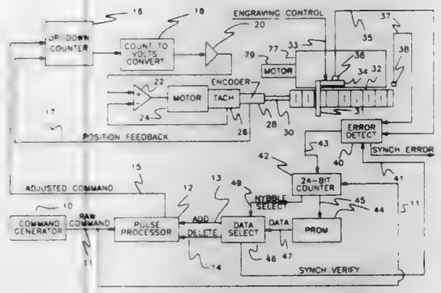
APPARATUS AND METHOD FOR DRIVING A LEADSCREW

John W. Fraser, Dayton, and Curtis Woods, Centerville, both of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

Filed Feb. 25, 1993, Ser. No. 23,060

Int. Cl.[5] G05D *3/18*

U.S. Cl. 318—603 **17 Claims**



1. Apparatus for driving a leadscrew comprising:

means for receiving a raw command signal in the form of a sequence of command pulses indicating a sequence of commanded incremental changes in the net rotational position of said leadscrew,

a pulse processor connected for receiving incremental correction signals related to pitch errors in said leadscrew and causing corresponding adjustment of said sequence of command pulses,

a drive motor connected for receiving said sequence of command pulses, adjusted as aforesaid, and rotating said leadscrew in correspondence therewith,

a position counter for generating a position count corresponding to the commanded rotational position of said leadscrew, and

memory means connected for addressing by said position count and responding thereto by reading out said incremental correction signals.

16. Method of driving a leadscrew comprising the steps of:

(1) measuring the advance of said leadscrew for a series of net angular rotations thereof,

(2) for each said measured advance, calculating an associated linearized net angular rotation,

(3) tabulating a series of incremental corrections having a running total corresponding to differences between said net angular rotations and the associated linearized net angular rotations,

(4) generating an angular position reference signal corresponding to a sequence of desired angular positions of said leadscrew,

(5) generating a feedback signal corresponding to a sequence of actual angular positions of said leadscrew,

(6) generating a position error signal corresponding to differences between said reference signal and said feedback signal,

(7) adjusting said position error signal in accordance with said incremental corrections, and

(8) rotating said leadscrew in accordance with adjusted values of said position error signal.

5,329,216

MULTI-SHAFT DRIVING APPARATUS AND FLUID ROTARY APPARATUS

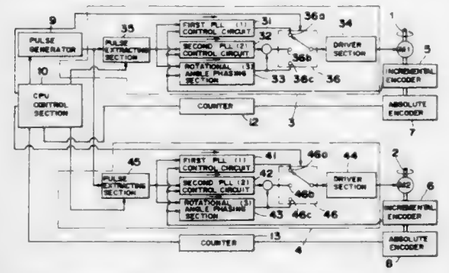
Mikio Hasegawa, Neyagawa, and Teruo Maruyama, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 843,849, Feb. 28, 1992, abandoned. This application Jun. 1, 1993, Ser. No. 70,038

Claims priority, application Japan, Mar. 4, 1991, 3-037223

Int. Cl.[5] H02P *1/56;* **F04B** *41/06*

U.S. Cl. 318—654 **3 Claims**



1. A multi-shaft driving apparatus comprising:

a plurality of motors each for rotating one of a plurality of shafts to be synchronously rotated;

an encoder, providing for each motor, for detecting a rotational state of the shafts;

a pulse generator for generating a pulse signal for rotating the shafts; and

a motor control circuit, provided for each motor, for inputting the pulse signal from the pulse generator and a pulse signal detected by the encoder and used as a feedback signal to control the synchronization of the shafts, the motor control circuit having a PLL controller for performing a PLL control operation and a rotational angle phasing controller for performing a rotational angle phasing operation;

wherein in the motor control circuit:

a rotational angle phasing control loop is generated to perform the rotational angle phasing operation by the rotational angle phasing controller so as to synchronously rotate the shafts at a rise time or a fall time, and

a steady control loop is generated to perform the PLL control operation by the PLL controller at a steady state after the rise time and before the fall time.

5,329,217

COMPENSATED FEEDFORWARD VOLTAGE FOR A PWM AC MOTOR DRIVE

Russel J. Kerkman, and David Leggate, both of Milwaukee County, Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Dec. 30, 1992, Ser. No. 999,512

Int. Cl.[5] H02P *5/40*

U.S. Cl. 318—811 **7 Claims**

1. In an AC motor drive having a PWM inverter which controls motor armature current in response to a sine wave voltage command and is operationally characterized by an operating point and an effective gain, the improvement comprising:

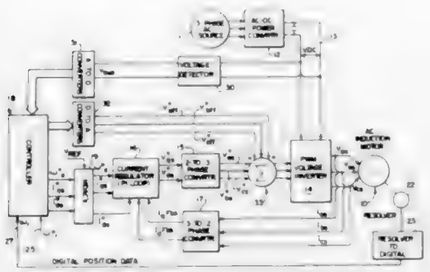
means for producing a feedforward voltage which is proportional to the voltage command applied to the PWM inverter;

means for determining the operating point of the PWM inverter when it is operating within a pulse dropping region in which the PWM inverter gain drops below its nominal gain;

means for producing a compensation factor value which

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comprises an addressable compensation factor table including a plurality of compensation factor values which have been generated off-line as functions of different modulation index values and means for reading a compensation factor entry value therefrom by reading out a value from an address location determined as a function of the PWM inverter operating point; and



a multiplier for magnifying the value of the feedforward voltage by the compensation factor providing a compensated sinusoidal voltage command to the PWM inverter that substantially maintains the effective gain of the PWM inverter at its nominal value throughout its pulse dropping region of operation.

5,329,218

METHOD OF CHARGING A BATTERY

Sten Å. O. Rydborn, Klöxhultsvägen 21, S-34300 Älmhult, Sweden

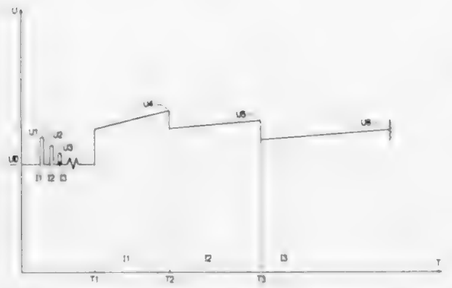
PCT No. PCT/SE91/00368, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/19343, PCT Pub. Date Dec. 12, 1991

PCT Filed May 24, 1991, Ser. No. 952,828

Claims priority, application Sweden, May 28, 1990, 9001900-1

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—21 **3 Claims**



1. A method of charging a battery containing a number of cells, comprising connecting a battery to a battery charger; passing a plurality of brief current pulses through the battery; measuring the voltage drop due to cables, terminals, and the inner resistances of the battery formed by the battery cells, during the plurality of brief current pulses; storing the value of the measured voltage drop established for each one of the current pulses in a memory; and passing currents of substantially the same magnitude as each respective current pulse successively through the battery, each one of said last-named currents continuing for a length of time such that the voltage measured across the battery corresponds to the maximum permitted terminal voltage of the battery plus the established and stored voltage drop for the corresponding current pulse.

5,329,219

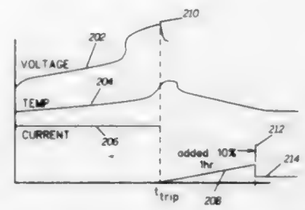
METHOD AND APPARATUS FOR CHARGING A BATTERY

Scott M. Garrett, Boca Raton, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 28, 1993, Ser. No. 53,288

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—22 **12 Claims**



1. A method for charging a battery with a battery charger, comprising the steps of:

(a) charging the battery using a first charge rate;

(b) determining if the battery has reached a predetermined charge level;

(c) charging the battery using an inverse taper charge rate which is increasing at a predetermined slope after the battery has reached the predetermined charge level; and

(d) charging the battery at a fixed charge rate which is lower than the first charge rate after performing step (c).

5,329,220

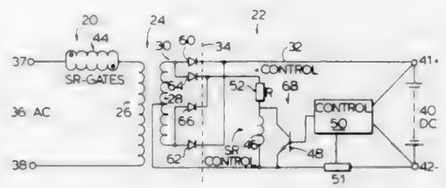
SHUNT CONTROL

Alfred M. Hase, 6 Manorwood Dr., Scarborough, Ontario, Canada

Continuation of Ser. No. 277,204, Nov. 29, 1988, abandoned. This application Sep. 17, 1990, Ser. No. 583,095

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—23 **13 Claims**



1. A solid state battery charging circuit having a shunt regulating control circuit, comprising:

AC power input means:

an isolating transformer, having a primary input side and a secondary output side, with said input side connected to said AC power input means, and said output side having a first terminal, a second terminal, and a third terminal, wherein said third terminal is a centre tap terminal between said first and second terminals;

a controllable synchronous switch means having a control coil, and arranged for regulating the amount of power that is input to a battery being charged by said battery charging circuit, said switch means being located on either the primary side or the secondary side of said isolating transformer;

said control coil being connected in a conductive string across the secondary side of said isolating transformer;

a pair of DC output terminals, a first one of which is connected through full wave rectifying means to said first and second terminals of said transformer output, and the other of which is connected to said centre tap terminal;

said full wave rectifying means comprising a first pair of main diodes, wherein said main diodes also preclude back current flow from a battery connected to said pair of DC output terminals;

shunt means connected in parallel to said control coil for controlling the amount of DC current flowing to said control coil;

control circuit means connected across said pair of DC output terminals to determine the output status of said full wave rectifying means, and changes thereof, and to generate control signals therefor; said control circuit means being powered from a battery connected to said pair of DC output terminals;

auxiliary full wave rectifying means including a pair of auxiliary diodes, comprising a first auxiliary diode and a second auxiliary diode, with said first auxiliary diode having its positive terminal connected in constantly conductive relation to said first output terminal of said isolating transformer, and its negative terminal connected in conductive relation to said control coil; and said second auxiliary diode having its positive terminal connected in constantly conductive relation to said second output terminal of said isolating transformer, and its negative terminal connected in conductive relation to the negative terminal of said first auxiliary diode;

whereby an auxiliary full wave DC voltage is produced to provide DC power for said control coil, and said shunt means, irrespective of the state of the charge of the battery being charged; and whereby reverse current flow from said battery through said control coil, when said AC power input means is not delivering power to said battery charging circuit, is precluded.

5,329,221

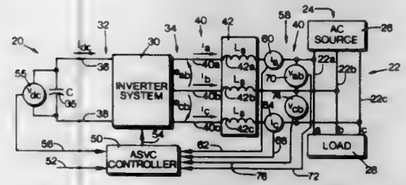
ADVANCED STATIC VAR COMPENSATOR CONTROL SYSTEM

Colin D. Schauder, Murrysville, Pa., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Aug. 12, 1992, Ser. No. 928,971

Int. Cl.[5] G05F *1/70*

U.S. Cl. 323—207 **22 Claims**



1. An advanced static VAR compensator system for coupling to an AC power line for compensating reactive power losses of the line, the control system comprising:

a voltage sourced inverter having a DC side and an AC side for coupling to the line, the inverter responsive to an inverter phase angle control signal for drawing a selected magnitude of reactive power from the line;

a series inductance coupled to the AC side of the inverter for coupling the inverter to the line;

a voltage supporting device coupled to the DC side of the inverter;

a DC voltage sensor apparatus for monitoring a DC voltage across the voltage supporting device;

an AC parameter sensor apparatus coupled between the inverter and the line for monitoring an electrical characteristic, including AC current, therebetween; and

a controller responsive simultaneously to the monitored AC current and DC voltage for generating an instantaneous reactive current signal and for generating in response thereto the inverter phase angle control signal.

5,329,222

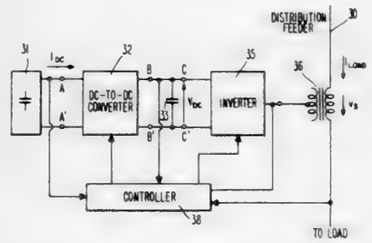
APPARATUS AND METHOD FOR DYNAMIC VOLTAGE RESTORATION OF UTILITY DISTRIBUTION NETWORKS

Laszlo Gyugyi, Penn Hills Township, Allegheny County; Colin D. Schauder, Murrysville; Charles W. Edwards, Monroeville, and Miklos Sarkozi, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 30, 1992, Ser. No. 983,492

Int. Cl.[5] G05F *1/70*

U.S. Cl. 323—207 **18 Claims**



1. A system for compensating for disturbances in a power distribution lien by inserting a signal carrying real power into said lien when a disturbance occurs, said line receiving utility power at a source voltage from a source end and delivering power at a load voltage to one or more loads at a load end, said system comprising:

an energy storage element for storing energy;

a voltage generator operatively connected to said storage element, for dynamically generating a signal for injection into said line so as to correct for disturbances to the voltage signal from said source end;

an injection circuit for injecting said dynamic injection signal into said line between said source end and said load end; and

a controller for controlling said voltage generator as a function of real power delivered to said line by said injection circuit, whereby said injected signal is controlled to dynamically correct the voltage signal delivered at the load end and deliver real power to said line, so as to reduce the effect of disturbances on the line.

5,329,223

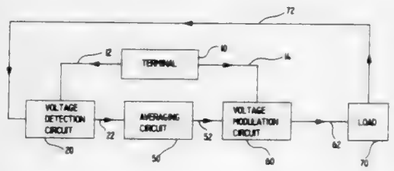
IDEAL VOLTAGE CONTROLLER FOR CONSERVING ENERGY IN INDUCTIVE LOADS

Chris A. Riggio, Boulder, Colo., assignor to Green Technologies, Inc., Boulder, Colo.

Filed Jun. 26, 1992, Ser. No. 905,288

Int. Cl.[5] G05F *1/455*

U.S. Cl. 323—246 **17 Claims**



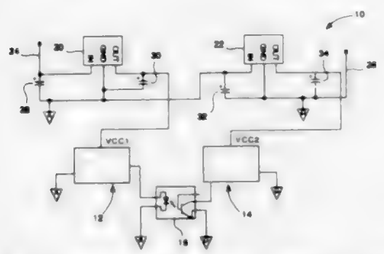
1. A method for controlling the voltage applied to an inductive load, comprising the steps of:

receiving an AC line voltage;

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generating an operating AC voltage from the AC line voltage;
applying said operating AC voltage across the inductive load;
generating an electronic measured signal which is a function of the magnitude of said operating AC voltage;
generating an average signal representative of the average value of said electronic measured signal;
modifying said operating AC voltage in response to said average signal by reducing the magnitude of said operating AC voltage below the line voltage for a portion of each AC voltage half-cycle, each portion beginning when the current through the inductive load is substantially zero, the length of said portion being determined by said average signal.

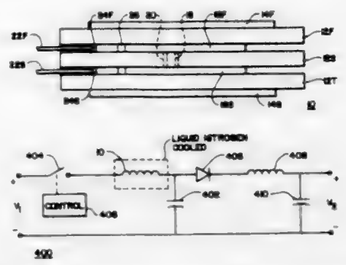
5,329,224
AUTOMOTIVE VOLTAGE REGULATOR CIRCUIT INCLUDING SERIAL VOLTAGE REGULATORS
Henry Lai, Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 20, 1993, Ser. No. 138,107
Int. Cl.[5] G05F *1/40*; **B60L** *1/00*
U.S. Cl. 323—270 **3 Claims**



1. In an automotive vehicle having a battery, a voltage regulator circuit for supplying a predetermined voltage to first and second optically connected and electrically separated digital electronic circuits, the voltage regulator circuit comprising:
a first linear regulator having input, output and ground terminals, the input terminal being adapted to be connected to the battery, the ground terminal providing a ground for the first electronic circuit and the output terminal being adapted for connection to the first electronic circuit for supplying the predetermined voltage to the first electronic circuit; and
a second linear regulator having input, output and ground terminals, the input terminal of the second linear regulator being serially connected to the ground terminal of the first linear regulator, the ground terminal of the second linear regulator providing a ground for the second electronic circuit and a return for the battery and the output terminal of the second linear regulator being adapted for connection to the second electronic circuit for supplying the predetermined voltage to the second electronic circuit.

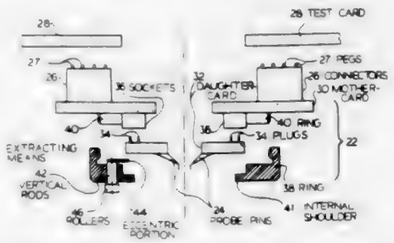
5,329,225
THIN FILM SUPERCONDUCTOR INDUCTOR WITH SHIELD FOR HIGH FREQUENCY RESONANT CIRCUIT
Waseem A. Roshen, Clifton Park; Antonio A. Mogro-Campero, Schenectady; James W. Bray, Schenectady, and Charles S. Korman, Schenectady, all of N.Y., assignors to General Electric Co., East Windsor, N.J.
Filed Nov. 2, 1992, Ser. No. 970,515
Int. Cl.[5] H01F *7/22*
U.S. Cl. 323—360 **14 Claims**

1. An inductor comprising: a conductive first outer layer; a conductive second outer layer; a first inner layer in between said first and second outer layers, said first inner layer having a magnetic field establishing first active conductor portion separated from both of said first and second outer layers, said first active conductor portion being made of superconductor material which has a critical temperature greater than 30° K.;



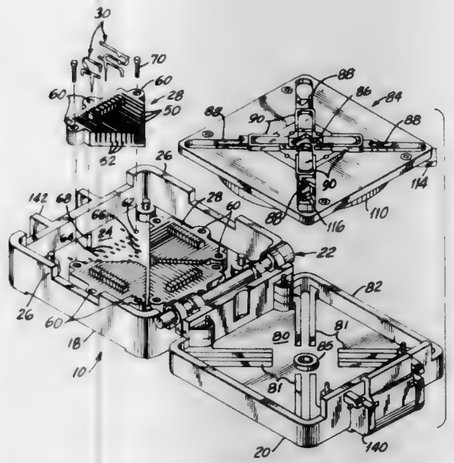
first and second external inductor leads; and wherein there is a continuous conductor path from said first lead to said second lead, said first active conductor portion being a part of said continuous conductor path.

5,329,226
PROBE CARD FOR TESTING INTEGRATED CIRCUIT CHIPS
René Monnet, Seyssinet-Pariset, and Maurice Perrin, Saint Etienne de Crossey, both of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France
Filed Jun. 10, 1992, Ser. No. 895,890
Claims priority, application France, Jun. 11, 1991, 91 07477
Int. Cl.[5] G01R *31/02, 1/073*; **H05K** *7/16*
U.S. Cl. 324—158.1 **23 Claims**



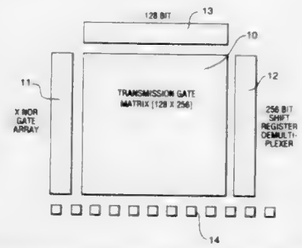
1. A maintaining ring for releasably maintaining a circular removable daughtercard (**32**) plugged into a base mothercard (**30**) of an integrated circuit probe card, comprising:
threaded means for engaging a mating threading fixed to said base mothercard (**30**);
a bottom portion including a cylindric recess for accommodating said removable daughtercard (**32**), said recess coaxial with the threaded means and having a depth substantially equal to a thickness of said removable daughtercard (**32**);
a plurality of vertical traversing rods (**42**) positioned adjacent said recess, each rod comprising an engaging means for engaging the daughtercard to release the daughtercard from the mothercard, and manipulating means for moving said engaging means between a first position, wherein said engaging means at least partially covers the recess thereby maintaining said daughtercard (**32**) in the recess, and a second position wherein said engaging means does not maintain said daughtercard in the recess.

5,329,227
TEST SOCKET ASSEMBLY FOR TESTING LCC PACKAGES OF BOTH RECTANGULAR AND SQUARE CONFIGURATION
William Y. Sinclair, Frenchtown, N.J., assignor to Aries Electronics, Inc., Frenchtown, N.J.
Filed May 18, 1993, Ser. No. 63,528
Int. Cl.[5] G01R *1/04*
U.S. Cl. 324—158.1 **17 Claims**



1. A universal LCC test socket assembly for making solderless electrical connections between the contacting leads of an LCC packaged IC and a testing device for testing the electrical characteristics of the LCC, said LCC test socket assembly comprising:
a dielectric base member including a planar bottom wall having a plurality of pin receiving through-apertures and a plurality of stabilizing pin mounting holes;
a plurality of spaced apart contact assemblies mounted on said dielectric base member, each contact assembly including a plurality of parallel slots and apertures aligned with said plurality of pin receiving through-apertures and stabilizing pin mounting holes disposed in said base member;
a plurality of electrical connectors, each of which is disposed in a slot in one of said contact assemblies, each said electrical connector including a contact pin portion and a stabilizing pin portion, with the contact pin portion extending through an aperture in said contact assembly and through a pin receiving through-aperture in the base member for electrical connection to the testing device, while the stabilizing pin portion thereof extends through an aperture in a contact assembly and is disposed in a stabilizing pin mounting hole in the base member;
a dielectric top member connected to said base member and including a planar top wall; and
a dog plate securing means mounted on said planar top wall of the top member for temporarily securing said LCC packaged IC to said top member whereby, with an LCC disposed in said dog plate securing means and with the top member being juxtaposed to said base member such that the respective top wall and planar bottom wall are in opposed relationship, the contacting leads of the LCC engage the plurality of electric connectors for establishing electrical connection between the LCC and the testing device.

5,329,228
TEST CHIP FOR SEMICONDUCTOR FAULT ANALYSIS
Alain Comeau, Bromont, Canada, assignor to Mitel Corporation, Ontario, Canada
PCT No. PCT/CA90/00416, § 371 Date Jul. 23, 1992, § 102(e) Date Jul. 23, 1992, PCT Pub. No. WO91/08585, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 26, 1990, Ser. No. 910,029
Claims priority, application Canada, Dec. 1, 1989, 2004436
Int. Cl.[5] G01R *15/12*
U.S. Cl. 324—765 **17 Claims**



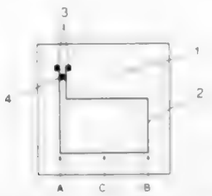
1. A semiconductor test chip for use in semiconductor fabrication fault analysis of CMOS Integrated Circuits, characterized in that it comprises an n×m array of transmission gate cells arranged such that within a given row respective strips of conductive material of a first type form common source and drain electrodes for the transistors of the row, the sources and drain of each row being independent, and within a column strips of conductive material of a second type form common gate electrodes such that each column of transistors can be turned on independently; input means for selectively applying a predetermined binary bit pattern to inputs of the rows of transmission gate cells, multiplexer means including output transmission gates connected to respective outputs of the rows of said array for selectively addressing the output of each row of transmission gate cells; means for selectively turning on each column of transmission gate cells; a center-pulled operational amplifier connected to the outputs of said output transmission gate cells; and means for coding the output of said operational amplifier according a three-level logic scheme having logic states **0**, **1**, **X**, where **0** represents an output voltage in a first predetermined range, **X** represents an output voltage in a second predetermined range, and **1** represents an output voltage in a third predetermined range.

5,329,229
MAGNETIC FIELD DETECTION COILS WITH SUPERCONDUCTING WIRING PATTERN ON FLEXIBLE FILM
Norio Chiba; Satoru Yabe; Akikazu Odawara, and Satoshi Nakayama, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan
Filed Jul. 15, 1992, Ser. No. 914,894
Claims priority, application Japan, Jul. 25, 1991, 3-186495; Jun. 17, 1992, 4-157764
Int. Cl.[5] G01R *33/035, 33/022*; **H01F** *5/08, 27/28*
U.S. Cl. 324—248 **10 Claims**

1. Superconducting detection coils for a superconducting quantum interference device, comprising: a flexible printed wiring film capable of being shaped into a cylinder; a superconducting wiring pattern formed on the flexible printed wiring film and having a generally U-shaped wiring portion for forming at least a pair of upper and lower circular wiring patterns when the flexible printed wiring film is shaped into a cylinder, the generally U-shaped wiring portion having two leg portions interconnected by a base portion, each leg portion having opposed ends which are brought into overlapping relation to form a circular wiring pattern when the printed wiring film is

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formed into a cylinder shape; and electrode patterns connected to the substantially U-shaped wiring pattern for coupling the



circular wiring patterns to at least one superconducting quantum interference device

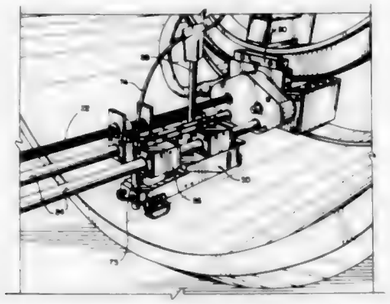
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5,329,230

CARRIAGE FOR EDDY CURRENT PROBE HAVING CONTACT BALL ENGAGEMENT BETWEEN CARRIAGE AND TRANSLATION MEANS

John R. M. Viertl, Niskayuna, N.Y., and Fred R. Burkhardt, Jr., Chesterfield, Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 15, 1991, Ser. No. 729,725
Int. Cl.[5] G01N *27/72*; G01R *33/12*
U.S. Cl. 324—262 **5 Claims**



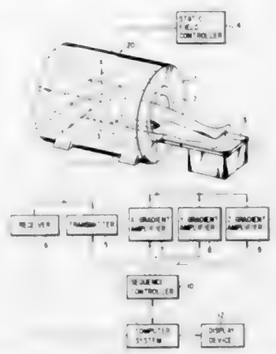
1. An apparatus for monitoring eddy currents comprising:
an eddy current probe having at least one current carrying coil;
a carriage body on which said probe is mounted and in slidable contact with a surface of a stationary cylindrical body such that said probe is held a constant distance from said surface;
a translation means for moving said carriage body and eddy current probe along a scan line across said surface, said scan line being parallel to the axis of said cylindrical body, and
coupling means for coupling said carriage to said translation means for moving said carriage and said probe along a predetermined probe path parallel to said axis, wherein said coupling means allows relative movement between said carriage and translation means such that said probe does not veer from said predetermined scan line, said coupling means comprising a carriage plate fixed to said translation means, and slidably and pivotably contacting said carriage body,
wherein said carriage plate having relative movement with respect to said carriage body and said carriage plate includes bracketing side panels having slots or post slidably engaging posts or slots on at least two sides of said carriage body.

5,329,231

MAGNETIC RESONANCE IMAGING APPARATUS

Jun-ichi Hatta, Ootawara, and Yoshio Machida, Tochigi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Apr. 14, 1993, Ser. No. 48,462
Claims priority, application Japan, Apr. 14, 1992, 4-094263
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **17 Claims**



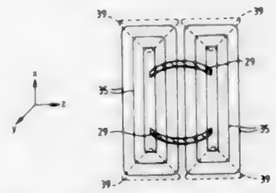
1. A magnetic resonance imaging apparatus comprising:
saturation means for selectively saturating spins outside an imaging region; and
high-speed imaging means for acquiring a magnetic resonance signal in the imaging region by using a nonselective excitation pulse while the spins outside the imaging region are saturated, said high-speed imaging means executing a pulse sequence in which an operation (1) of applying a non-selective excitation pulse, an operation (2) of applying a phase encoding gradient field, and an operation (3) of generating a magnetic resonance signal by inverting a readout gradient field are repeated while an amplitude of the phase encoding gradient field is changed.

5,329,232

MAGNETIC RESONANCE METHODS AND APPARATUS

David J. Gilderdale, Newton Abbot, England, assignor to Picker International, Ltd., Chelmsford, United Kingdom

Filed Sep. 9, 1992, Ser. No. 942,630
Claims priority, application United Kingdom, Sep. 13, 1991, 9119574
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 **14 Claims**



1. A magnetic resonance apparatus including an r.f. coil arrangement for detecting and exciting magnetic resonance in a body in use of the apparatus, the coil arrangement comprising a first coil of cylindrical form and two saddle coils conforming substantially to a surface of the first coil and disposed on opposite sides of the first coil substantially in register, said first coil and saddle coils connected to one of an r.f. receiver and an r.f. transmitter during the respective detection or excitation of magnetic resonance, said first coil and saddle coils arranged

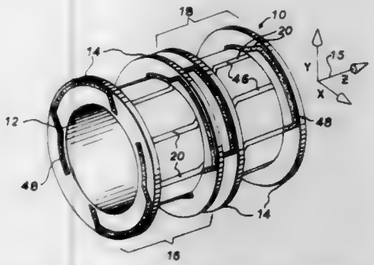
relative to each other such that magnetic resonance signal blind spots respectively associated with one of the first coil and saddle coils operating independently are eliminated.

5,329,233

CYLINDRICAL LOCAL COIL FOR NUCLEAR MAGNETIC RESONANCE IMAGING

Cecil E. Hayes, Seattle, Wash., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 10, 1992, Ser. No. 988,542
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 **12 Claims**



1. A local volume coil for receiving NMR signals from an imaging volume, the NMR signals having a rotating transverse component about a longitudinal axis, the coil comprising:
a tubular, generally cylindrical form having a first axis passing through the imaging volume and parallel to the longitudinal axis so as to surround the imaging volume;
a first quadrature coil attached to the form to follow a first line of circumference of the form and so as to be sensitive to the rotating transverse component of the NMR signal along a first pair of quadrature axes from a first volume being part of the imaging volume; and
a second quadrature coil attached to the form to follow a second line of circumference of the form, the second quadrature coil overlapping with the first quadrature coil so that the first and second quadrature coils are electromagnetically isolated from each other so that current flowing through the first quadrature coil is substantially not induced by current flowing in the second quadrature coil, wherein the second quadrature coil is sensitive to the rotating transverse component of the NMR signal along a second pair of quadrature axes from a second volume of the imaging volume displaced longitudinally from the first volume of the imaging volume.

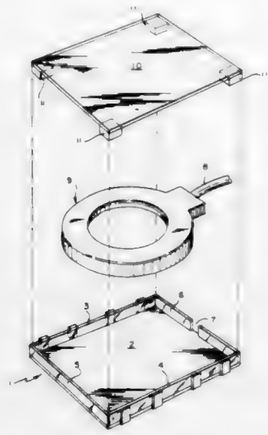
5,329,234

SURFACE COIL HOLDER FOR MAGNETIC RESONANCE IMAGING

Edward M. Burton, 3540 Bermuda Dr., Birmingham, Ala. 35210

Filed Jan. 28, 1993, Ser. No. 10,059
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **3 Claims**

2. A surface coil holder for magnetic resonance imaging comprising, a clear rectangular box having a bottom wall, a pair of side walls, a pair of end walls, and a removable rectangular top, a conventional surface coil contained in said box, an opening in one of the end walls of the box through which the surface coil cable extends for connection to a magnetic resonance imaging scanner, a foot integral with each corner of the top and depending therefrom, each foot being received within the four corners of the box and frictionally held therein, said box being dimensioned to contain a conventional 5" surface coil; and an insert adapted to be mounted in said box, said insert comprising a rectangular sheet of clear material supported on the bottom wall of said box, the peripheral edges of the insert engaging the side and end walls of the box, said rectangular sheet having a cut-out portion configured to the corresponding dimension of a conventional 3" surface coil, adapted to be inserted into said cut-out, whereby the holder is adapted to



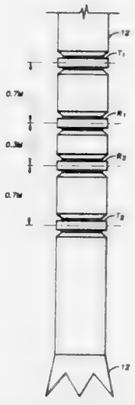
selectively contain a conventional 5" surface coil without the insert being in the box or a conventional 3" surface coil with the insert being in the box.

5,329,235

METHOD FOR PROCESSING SIGNALS FROM AN MWD ELECTROMAGNETIC RESISTIVITY LOGGING TOOL

Qiang Zhou; Donald J. Hilliker, both of Houston, and David F. Norwood, Nassau Bay, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Nov. 2, 1992, Ser. No. 970,093
Int. Cl.[5] G01V *3/38, 3/18*
U.S. Cl. 324—338 **9 Claims**



1. A method for enhancing the vertical resolution of the impulse of a propagated wave resistivity tool positioned in a borehole that is drilled through a formation of interest, said tool including a transmitter antenna and two spaced-apart receiving antennas that are disposed remotely from said transmitter antenna, comprising the steps of:
(a) measuring, over a preselected interval in said borehole, the phase difference between the voltages induced in said spaced-apart receiving antennas by an electromagnetic

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wave transmitted through said formation from said transmitter antenna;

(b) adaptively deconvolving said phase difference measurements, the step of adaptively deconvolving including the steps of

(i) predefining a plurality of phase impulse responses for a corresponding plurality of formation conductivities within a range of values expected to be encountered in said borehole,

(ii) deriving a plurality of exemplary deconvolution filters from said impulse responses,

(iii) averaging the phase measurements over a spatial interval corresponding to the current formation volume in which said tool is located and to which said tool is responsive, thereby to define an average background phase,

(iv) computing a new deconvolution filter appropriate to said average background phase by interpolating between said plurality of exemplary deconvolution filters,

(v) with the aid of said new deconvolution filter, deconvolving said phase measurements for said current formation volume.

5,329,236

APPARATUS FOR ESTIMATING CHARGED AND POLARIZED STATES OF FUNCTIONAL GROUPS IN A SOLUTION

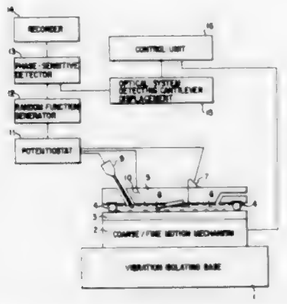
Nobuhiro Gemma, Yokohama, and Takashi Ishino, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 31, 1992, Ser. No. 922,787

Claims priority, application Japan, Jul. 31, 1991, 3-191946; Feb. 7, 1992, 4-022583

Int. Cl.[5] G01N *27/60*

U.S. Cl. 324—453 **12 Claims**



1. An apparatus for detecting an electrostatic force in a solution having a sample and a cantilever placed in the solution and designed to detect a force acting between the sample and a tip on the end of the cantilever, comprising:

a cantilever having a end portion whose surface is made of a conductive material;

means for applying a voltage to the conductive material on the cantilever end portion; and

means for controlling the voltage applied to the conductive material on the cantilever end portion.

5,329,237

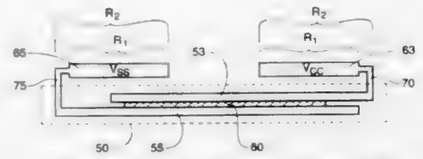
METHOD AND SYSTEM FOR DECOUPLING INOPERATIVE PASSIVE ELEMENTS ON A SEMICONDUCTOR CHIP

Andrew Horch, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Feb. 12, 1993, Ser. No. 16,910

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—501 **26 Claims**



1. A method for decoupling inoperative elements on a semiconductor chip comprising the steps of:

providing said semiconductor chip having a plurality of redundant passive elements, each of said elements coupled to a bus by means of a link, said bus associated with a predetermined voltage;

testing each of said elements for operability, said testing generating a signal identifying which of said elements are inoperable; and

decoupling each of said inoperable elements externally from said bus in response to said signal.

5,329,238

ARRANGEMENT FOR FAULT MONITORING AN ELECTRIC CONSUMER IN A MOTOR VEHICLE TO DETECT SHORT CIRCUITS AND INTERRUPTIONS IN THE REGION OF THE CONSUMER

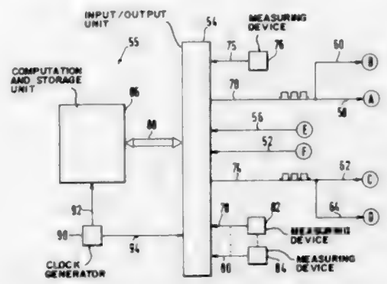
Michael Hofsäss, Vaihingen/Enz; Martin Rutz, Schwieberdingen, and Harald Schweren, Korntal-Münchingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart

Filed Jul. 31, 1992, Ser. No. 922,750

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125302

Int. Cl.[5] G01R *31/08*

U.S. Cl. 324—522 **10 Claims**



2. An arrangement for fault monitoring an electric consumer in a motor vehicle, the electric consumer having a first phase of operation wherein the consumer is not driven and a second phase of operation wherein the consumer is driven, the arrangement comprising:

voltage supply means for supplying voltage to the consumer whereby potentials having potential values are present in the region of the consumer wherein the potentials shift when a fault is present;

drive means for actuating the electric consumer thereby defining the driven phase of said consumer;

computer and storage means for generating a pulse-shaped control signal for said drive means;

voltage detection means for detecting the potential values in the region of said consumer in both said non-driven phase and said driven phase thereof;

means for transmitting the detected potential values to said computer and storage means during both of said phases; and,

said computer and storage means being adapted to form a first limit value when said consumer is in the non-driven phase and a second limit value when said consumer is in the driven phase and being further adapted to compare the detected potential values to corresponding one of said limit values in dependence upon the phase of operation of said consumer thereby enabling a fault to be detecting also in said non-driven phase because of said shift in said potential values.

5,329,239

CIRCUIT FOR MEASURING A CAPACITANCE DURING CONSTANT CHARGING AND DISCHARGING PERIODS

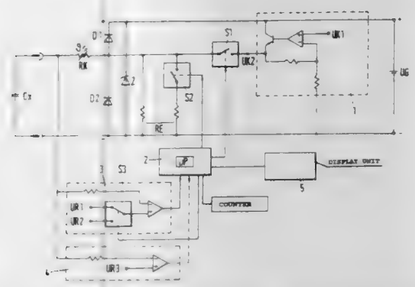
Robert Kindermann; Klaus Styhler, and Herbert Ziegler, all of Nürnberg, Fed. Rep. of Germany, assignors to ABB Patent GmbH, Mannheim, Fed. Rep. of Germany

Filed May 20, 1992, Ser. No. 886,506

Claims priority, application Fed. Rep. of Germany, May 24, 1991, 4116961

Int. Cl.[5] G01R *27/26*

U.S. Cl. 324—678 **12 Claims**



12. A measuring circuit for measuring a capacitance according to the discharge method, comprising:

a measuring circuit input;

a constant voltage source for charging a capacitor to be measured at said measuring circuit input;

discharge resistor with a known resistance being connected to the capacitor and through which the capacitor discharges;

at least one switch connected between the capacitor and said constant voltage source;

a flow control being connected to said at least one switch for controlling said at least one switch;

a comparator connected to the capacitor;

a counter connected to said comparator for counting clock pulses during a discharge;

a current limiting resistor means connected to said measuring circuit input in series with the capacitor; and

monitoring means connected to the capacitor.

5,329,240

APPARATUS FOR MEASURING CLOCK PULSE DELAY IN ONE OR MORE CIRCUITS

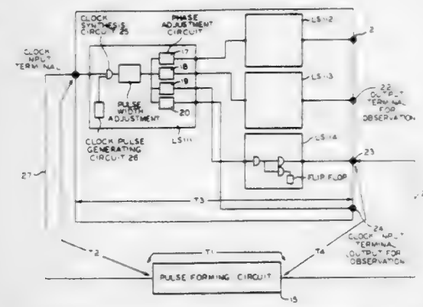
Katsuhisa Kubota, Kawasaki; Kunitoshi Yamamoto, Yokohama, and Kazuharu Nakano, Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 778,798, Oct. 17, 1991, abandoned. This application May 20, 1993, Ser. No. 64,948

Claims priority, application Japan, Oct. 20, 1990, 2-282621

Int. Cl.[5] H03K *5/13*

U.S. Cl. 328—155 **8 Claims**



1. A clock adjustment circuit for measuring a delay of a measured circuit comprising:

a pulse forming circuit for generating a clock pulse,

a phase adjusting circuit supplied with said clock pulse at its input terminal, said phase adjusting circuit distributing said supplied clock pulse to a plurality of LSIs in a measured circuit and adjusting the phases of respective LSI clock pulses which are distributed to said LSIs;

a selected one of said LSIs operating in response to said distributed clock pulse supplied from said phase adjusting circuit, said LSI executing an operation by providing an output signal responsive to said distributed clock pulse;

trigger means for outputting a signal as a trigger out of a rise edge or a fall edge of a signal received from said selected LSI depending on whether or not an inverse logic of said clock pulse is generated when said LSI operation is executed;

feedback means for receiving said output signal from said trigger means, and supplying said output signal to an input terminal of said pulse forming circuit; and

means for measuring the delay of said measured circuit receiving said distributed clock pulse by measuring an oscillation generated by said clock pulse generated by said pulse forming circuit, and said output signal of said trigger means.

5,329,241

PULSED SYNCHROTRON SOURCE

Michael F. Reusch, 7 Windsor Dr., Princeton Junction, N.J. 08550

Filed Apr. 10, 1992, Ser. No. 866,981

Int. Cl.[5] H05H *7/04*

U.S. Cl. 328—235 **8 Claims**

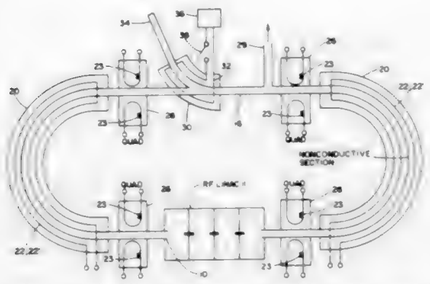
1. A pulsed synchrotron configured as a closed ring and comprising:

parallel spaced straight conduits for containing electron flow therein;

a plurality of arcuate pulsed bending electromagnets positioned between the straight conduits such that the total bending angle of the bending electromagnets is 360 degrees, and containing therein passages communicating with the straight conduits to guide arcuate electron flow through the bending magnets;

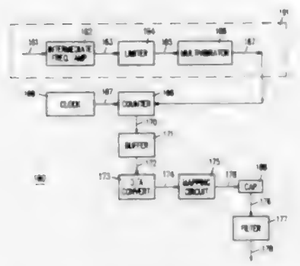
VOL
1164
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at least one RF cavity interposed along the ring for synchronous acceleration of the electrons flowing within the ring;
means for introducing low-energy electrons into the ring;
means for providing DC power across coils of the electromagnets;



means of subsequently applying a power pulse across the coils of the electromagnets for contributing in quickly raising energy of the electrons as the RF cavity continues to accelerate the electrons to a vicinity of synchronous energy.

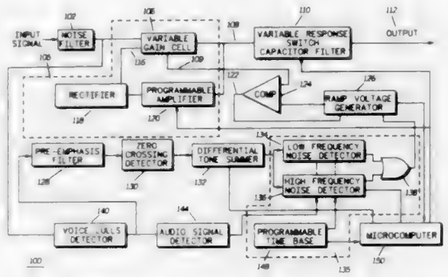
5,329,242
METHOD AND APPARATUS FOR SIGNAL DEMODULATION USING TIME-INTERVALS
Glen A. Myers, 279 Laureles Grade Rd., Salinas, Calif. 93908
Filed Oct. 22, 1992, Ser. No. 965,588
Int. Cl.[5] H03D *3/00*; H04L *27/14*
U.S. Cl. 329—300 **33 Claims**



1. A method for recovering a message signal from a carrier signal, said method comprising the following steps in the sequence set forth:
receiving said carrier signal;
detecting zero-crossings of said carrier signal;
determining time intervals between successive said zero-crossings; and
mapping to recover said message signal from said carrier signal with said time intervals.

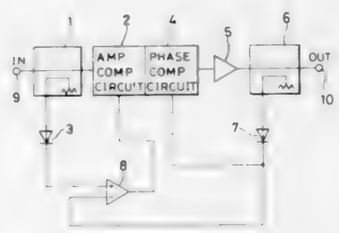
5,329,243
NOISE ADAPTIVE AUTOMATIC GAIN CONTROL CIRCUIT
Wan F. Tay, Singapore, Singapore, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 17, 1992, Ser. No. 946,138
Int. Cl.[5] H03G *3/34*
U.S. Cl. 330—136 **8 Claims**

1. A communication device, comprising:
a transmitter having an audio port;
a noise adaptive automatic gain control circuit coupled to the audio port of the transmitter, the automatic gain control circuit comprising:
an automatic gain control amplifier for automatically adjusting the gain of the circuit in response to the level of an input signal;
voice lull detector means for sensing peaks in the input signal which exceed a predetermined threshold in order to detect short pauses in the utterance of a word the voice lull detector means including;



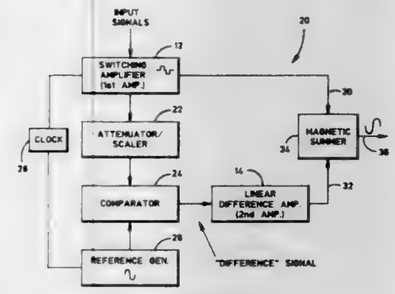
an active attenuator;
an amplifier coupled to the active attenuator, and having an output;
a feedback circuit having a threshold detector for coupling the output of the amplifier to the active attenuator;
means for substantially maintaining the gain of the automatic gain control amplifier during the short pauses to prevent excessive amplification of the short pauses.

5,329,244
LINEAR COMPENSATING CIRCUIT
Noriyuki Fujita, and Masahiko Tanaka, both of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Jul. 31, 1992, Ser. No. 923,323
Claims priority, application Japan, Jul. 31, 1991, 3-214371
Int. Cl.[5] H03F *1/26*
U.S. Cl. 330—149 **16 Claims**



1. A linear compensating circuit for maintaining a linearity of an input-output characteristic of an amplifying means comprising:
first level detection means for detecting a level of an input signal to be inputted to said amplifying means;
second level detection means for detecting a level of an output signal to be outputted from said amplifying means;
amplitude compensating means for controlling an amplitude of said input signal in accordance with a difference between a signal level detected by said first detection means and a signal level detected by said second detection means to improve said linearity of said input-output characteristic of said amplifying means; and
phase compensating means for controlling a phase of said input signal in accordance with a level of an output signal detected by said second level detection means wherein at least one of said input and output signals is provided through a branching circuit, said branching circuit being effective for controlling said level of said input signal and said level of said output signal associated, respectively, with said first level detection means and said second level detection means.

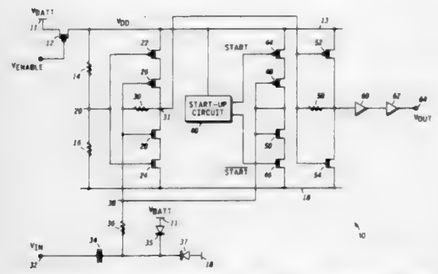
5,329,245
HYBRID HIGH POWER AMPLIFIER
Russell E. Hammond, La Jolla, and Leopold J. Johnson, Valley Center, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 28, 1993, Ser. No. 86,079
Int. Cl.[5] H03F *3/217*
U.S. Cl. 330—251 **24 Claims**



1. An amplifier apparatus comprising:
a first amplifier for producing a high efficiency waveform of a first shape;
a reference waveform generator for producing a reference waveform of a second shape different than said first shape;
a clock for synchronizing said high efficiency waveform and said reference waveform;
a comparator for comparing said high efficiency waveform to g said reference waveform to produce a difference waveform that is formed from a mathematical difference between said high efficiency waveform and said reference waveform;
a second amplifier for amplifying said difference waveform to produce an amplified difference waveform; and
a summer for summing said amplified difference waveform and said high efficiency waveform to produce an amplified waveform of a shape substantially similar to said reference waveform.

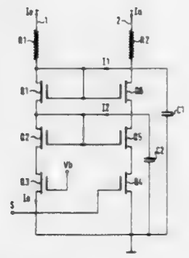
5,329,246
CIRCUIT AND METHOD OF SETTING A BIAS POINT FOR A SINGLE-ENDED AMPLIIFIER DURING POWER-UP
John K. Mahabadi, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 25, 1993, Ser. No. 140,950
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—267 **10 Claims**

1. An amplifier circuit having an input responsive to an input signal for providing an output signal, comprising:
first means for generating first and second control signals upon detecting a first power supply potential below a predetermined threshold, said first and second control signals having opposite phase; and
second means responsive to said first and second control signals for establishing a bias potential at the input of the amplifier, said second means including,
(a) a first transistor having a gate, a source and a drain, said source receiving said first power supply potential, said gate receiving said first control signal,
(b) a second transistor having a gate, a source and a drain, said source being coupled to said drain of said first transistor, said gate and drain being coupled together to the input of the amplifier circuit for establishing said bias potential,



(c) a third transistor having a gate, a source and a drain, said gate and drain being coupled together to the input of the amplifier circuit, and
(d) a fourth transistor having a gate, a source and a drain, said drain being coupled to said source of said third transistor, said gate receiving said second control signal from said first means, said source receiving a second power supply potential.

5,329,247
SWITCHABLE MOS CURRENT MIRROR
Erich Bayer, Ergolding, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Fed. Rep. of Germany
Filed Jan. 5, 1993, Ser. No. 949
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4201155
Int. Cl.[5] H03F *3/16*
U.S. Cl. 330—288 **8 Claims**



1. A switchable current mirror circuit comprising:
an input current branch;
an output current branch arranged in parallel relation to said input current branch;
a plurality of first field-effect transistors disposed in said input current branch;
a plurality of second field-effect transistors disposed in said output current branch;
each of said field-effect transistors including spaced drain and source electrodes defining a drain-source path and a gate electrode overlying the drain and source electrodes;
the drain-source paths of the first field-effect transistors disposed in said input current branch being connected in series;

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the drain-source paths of the second field-effect transistors disposed in said input current branch being connected in series;

each of the gate electrodes of said first field-effect transistors being connected to a drain electrode thereof and to a corresponding gate electrode of a respective second field-effect transistors;

a circuit section including

a third and a fourth field-effect transistor, each of said third and said fourth field-effect transistors having spaced drain and source electrodes defining a drain-source path and a gate electrode overlying the drain and source electrodes;

an operating voltage terminal,

a control terminal,

one of said source electrode and said gate electrode of said third field-effect transistor being connected to said operating voltage terminal, and

the gate electrode of said fourth field-effect transistor being connected to said control terminal,

the drain-source paths of said third and fourth field-effect transistors being connected to each other and connecting the input current branch and the output current branch together; and

a plurality of charge storage capacitors corresponding in number to the plurality of first field-effect transistors, each of said capacitors being respectively connected to the gate electrode of the first field-effect transistor corresponding thereto.

5,329,248

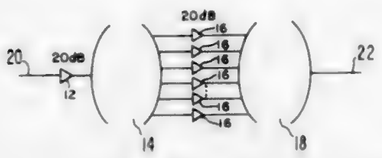
POWER DIVIDER/COMBINER HAVING WIDE-ANGLE MICROWAVE LENSES

Jamaledin Izadian, San Jose, Calif., assignor to Loral Aerospace Corp., New York, N.Y.

Continuation-in-part of Ser. No. 806,083, Dec. 11, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,178

Int. Cl.[5] H03F *3/68*

U.S. Cl. 330—295 **21 Claims**



1. An apparatus for amplifying a microwave source signal, said apparatus comprising:

an input port for receiving and transmitting microwave signals;

a divider having an input and a plurality of outputs for dividing a signal into a plurality of signals equal in amplitude and phase, the input of the divider coupled to the input port;

a plurality of dividing ports, each of said dividing ports coupled to a respective output of the divider;

a plurality of amplifier modules, each amplifier module having an input and an output, the input of each amplifier module coupled to a respective dividing port;

a plurality of combining ports, each of said combining ports coupled to the output of a respective amplifier module;

a combiner having a plurality of inputs and an output for combining a plurality of signals into a larger amplitude signal, each input of the combiner coupled to a respective combining port; and

an output port for receiving and transmitting microwave signals, said output port coupled to the output of the combiner; wherein

the divider and combiner are formed by a top section, a central section and a bottom section, the combiner being formed between the top section and the central section, the divider being formed between the central section and the bottom section, and wherein the top, central and bottom sections are aligned with respect to each other.

5,329,249

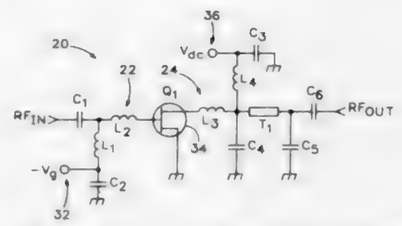
HIGH EFFICIENCY RF POWER AMPLIFIER

Stephen C. Cripps, Sunnyvale, Calif., assignor to Pacific Monolithics, Inc., Sunnyvale, Calif.

Filed Oct. 13, 1993, Ser. No. 136,310

Int. Cl.[5] H03F *3/191*

U.S. Cl. 330—302 **5 Claims**



1. A high efficiency power amplifier system for amplifying radio frequency (RF) signals from a signal source at a fundamental frequency and coupling the amplified signal to a load, comprising:

an active device having an output terminal and a maximum output current through the output terminal;

means for supplying DC power at a supply voltage to the active device;

means for operating the active device with a quiescent current closer to the maximum output current than to zero current; and

an output network for coupling the active device to the load, and having a low impedance to ground at a fundamental frequency and a high impedance to ground lower than an open circuit impedance at at least the second harmonic frequency, whereby the peak voltage on the output terminal is greater than two times the supply voltage.

5,329,250

DOUBLE PHASE LOCKED LOOP CIRCUIT

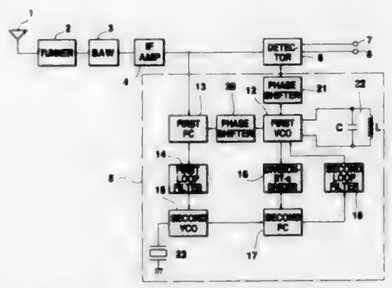
Hideo Imaizumi, Gunma, and Yoshiaki Takahashi, Ohta, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 11, 1993, Ser. No. 16,247

Claims priority, application Japan, Feb. 25, 1992, 4-037759; Jun. 26, 1992, 4-169184

Int. Cl.[5] H03L *7/00*

U.S. Cl. 331—2 **14 Claims**



1. A PLL circuit comprising:

a first VCO (voltage controlled oscillator) which oscillates at substantially the same frequency as an input signal;

a first phase comparator which compares a phase of an oscillation output signal from said first VCO with a phase of said input signal for outputting a signal for a phase difference therebetween;

a first loop filter for smoothing the output signal of said first phase comparator;

a second VCO whose oscillation frequency is changed in response to an output signal of said first loop filter, said second VCO having a high frequency selectivity compared with said first VCO and oscillating at a frequency lower than said first VCO;

a dividing circuit which divides the oscillation output signal of said first VCO for generating substantially the same low frequency signal as said second VCO;

a second phase comparator which compares a phase of said dividing circuit with a phase of an oscillation output signal of said second VCO for outputting a signal for a phase difference therebetween; and

a second loop filter for smoothing an output signal of said second phase comparator and feeding a signal to control the oscillation frequency of said first VCO into said first VCO.

5,329,251

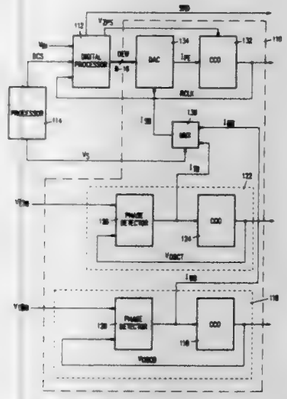
MULTIPLE BIASING PHASE-LOCK-LOOPS CONTROLLING CENTER FREQUENCY OF PHASE-LOCK-LOOP CLOCK RECOVERY CIRCUIT

William D. Llewellyn, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 28, 1993, Ser. No. 55,137

Int. Cl.[5] H03L *7/07*

U.S. Cl. 331—2 **23 Claims**



1. A recovered clock circuit for generating a recovered clock signal having a plurality of selectable center frequencies, the recovered clock circuit being connectable with a digital signal processor (DSP) to form a phase-lock-loop (PLL), the DSP generating a digital error word in response to a phase difference between the recovered clock signal and timing data extracted by the DSP from an input data signal, the recovered clock circuit comprising:

first biasing PLL means for generating a first biasing signal having a magnitude that is a function of the frequency of a first clock signal;

second biasing PLL means for generating a second biasing signal having a magnitude that is a function of the frequency of a second clock signal;

multiplexor means for passing either the first biasing signal or the second biasing signal as a selected bias signal in response to a select signal;

primary controlled oscillator means for generating the recovered clock signal in response to a phase error signal, the center frequency of the recovered clock signal being a function of the magnitude of the phase error signal; and

multiplying digital-to-analog converter means for generating the phase error signal by modifying the selected bias signal with the digital error word;

whereby the center frequency of the recovered clock signal is principally determined by the selected bias signal, and

whereby the phase of the recovered clock signal is adjusted so as to reduce any phase difference between the recovered clock signal and the timing data.

5,329,252

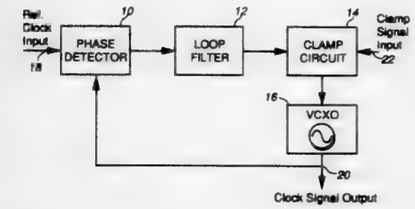
SLEW-RATE LIMITED VOLTAGE CONTROLLED OSCILLATOR CONTROL VOLTAGE CLAMP CIRCUIT

Claude L. Major, Gloucester, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 5, 1992, Ser. No. 980,378

Int. Cl.[5] H03L *7/08, 7/085, 7/14*

U.S. Cl. 331—15 **16 Claims**



1. A clamp circuit for use in a phase-locked loop clock circuit, the phase-locked loop including a phase detector with inputs for reference clock signal and oscillator signal, a loop filter with an input connected to the phase detector, and a voltage-controlled oscillator with an output connected to the phase detector, the clamping circuit connected between an output of the loop filter and an input of the voltage-controlled oscillator, said clamping circuit including:

a bypass circuit for connecting the loop filter to the input of the voltage-controlled oscillator;

resistor-capacitor time constant means for providing a time constant varying potential;

first clamping means for clamping the input of the voltage-controlled oscillator to the time constant varying potential; and

control means, responsive to a clamping signal for selectively disabling the bypass circuit and enabling the first clamping means;

whereby the resistor-capacitor time constant means slew-rate controls the potential applied to the voltage-controlled oscillator.

5,329,253

FREQUENCY SYNTHESIS USING FREQUENCY CONTROLLED CARRIER MODULATED WITH PLL FEEDBACK SIGNAL

Masaki Ichihara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 968,151

Claims priority, application Japan, Oct. 25, 1991, 3-280004

Int. Cl.[5] H03L *7/18*

U.S. Cl. 331—17 **10 Claims**

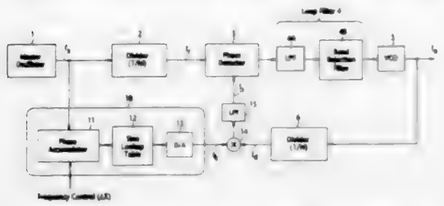
1. A frequency synthesizer comprising:

a divide-by-M frequency divider for receiving an externally generated reference clock signal of constant frequency and producing a frequency-divided reference clock signal;

a phase detector having a reference input for receiving said frequency-divided reference clock signal, a feedback input, and a phase detector output;

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a loop filter having an input coupled to said phase detector output, and a loop filter output;
a voltage controlled oscillator having an input coupled to said loop filter output, and an oscillator output for providing a synthesizer output signal,
a divide-by-N frequency divider connected to said oscillator output for producing a frequency-divided synthesizer output signal;
a direct digital synthesizer (DDS) having a clock input for receiving said externally generated reference clock signal,



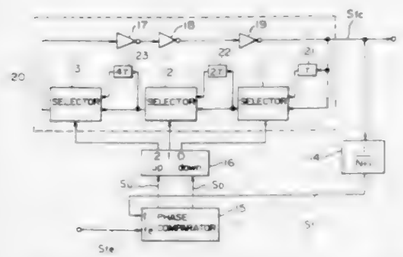
a frequency control input for receiving externally generated phase data, and a DDS output; and
differential detector means having a first input for receiving the frequency-divided synthesizer output signal from the divide-by-N frequency divider, a second input coupled to said DDS output for producing a differential signal indicative of a frequency difference between signals at said first and second inputs, and a differential detector output coupled to the feedback input of the phase detector for providing the differential signal thereto.

5,329,254

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING CLOCK SIGNAL GENERATOR

Chiaki Takano, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 4, 1992, Ser. No. 924,515
Claims priority, application Japan, Aug. 9, 1991, 3-224766
Int. Cl.[5] H03B *5/00;* **H03L** *7/099*
U.S. Cl. 331—34 **4 Claims**



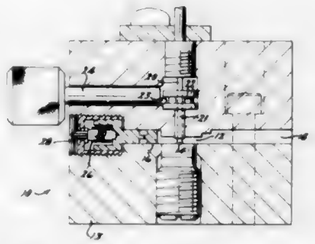
1. A semiconductor integrated circuit having a clock signal generator comprising:
a ring oscillator having a plurality of selectively operable switches connected in series and a plurality of delay units connected with said switches for providing variable oscillating frequencies determined by a sum of the delay times provided by said delay units;
a divider for dividing the oscillation frequency given from said ring oscillator by a specified number;
a phase comparator for comparing the frequency of the output signal given from said divider with the frequency of the external clock signal given from the outside;
an up-down counter for controlling the oscillation frequency of said ring oscillator by operating said switches, based on the comparison result from said phase comparator; and
means for operating said switches in response to operation of said up-down counter.

5,329,255

THERMALLY COMPENSATING MICROWAVE CAVITY

James R. Hayes, Torrance; Steve R. Kasten, Carson, and George J. Purden, Gardena, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 4, 1992, Ser. No. 940,580
Int. Cl.[5] H03B *5/04, 5/18, 7/12, 7/14*
U.S. Cl. 331—96 **16 Claims**



1. A thermally compensating microwave cavity for compensating microwaves passing through said microwave cavity such that a compensated microwave signal is emitted from said cavity, said microwave cavity comprising:
a) at least one member defining a broad bandwidth microwave cavity;
b) generating means for generating microwaves within said microwave cavity such that a first portion of said microwaves, traveling in one direction from said generating means, form a broad bandwidth signal that passes through said microwave cavity;
c) reflecting means for reflecting a second portion of said microwaves, traveling in another direction from said generating means, such that said second portion of microwaves is reflected to combine with and compensate said broadband signal formed by said first portion; and
d) temperature dependent displacing means having a generally hollow expandable member with a fluid material disposed therein that expands and contracts as a result of temperature change, said expandable member operable for causing said reflecting means and said generating means to move relative to one another, as said fluid material expands and contracts, to compensate for changes in said broad bandwidth signal occurring as a result of said temperature change.

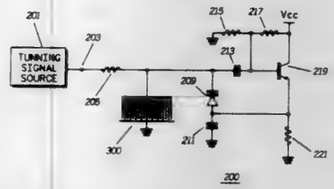
5,329,256

TUNABLE OSCILLATOR HAVING A NON-REFLECTIVE SAW RESONATOR

Robert J. Higgins, Jr., Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1993, Ser. No. 85,524
Int. Cl.[5] H03B *5/32*
U.S. Cl. 331—107 A **23 Claims**

1. A tunable oscillator circuit for providing an output frequency, comprising:
a non-reflective, self-resonant SAW resonator including:
a piezoelectric substrate; and
a SAW transducer portion disposed on said piezoelectric substrate having at least one pair of electrodes with interdigitated open-ended fingers, wherein surface acoustic waves emanating from said SAW transducer are not reflected; and



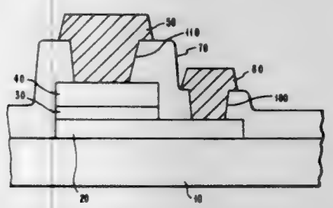
capacitive tuning means coupled across said resonator for tuning said output frequency.

5,329,257

SIGE TRANSFERRED ELECTRON DEVICE AND OSCILLATOR USING SAME

Khaled E. Ismail, Cairo, Egypt, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1993, Ser. No. 56,153
Int. Cl.[5] H01L *27/26;* **H03B** *9/12*
U.S. Cl. 331—107 G **10 Claims**



1. An integrated transferred electron device, comprising:
a three layer Si_xGe_{1-x} structure formed on a silicon substrate wherein a first Si_xGe_{1-x} layer is interposed between said silicon substrate and a second Si_xGe_{1-x} layer, said first Si_xGe_{1-x} layer having an N-type doping concentration of approximately at least 10 times greater than said second Si_xGe_{1-x} layer and having a first electrical contact connected thereto, said second Si_xGe_{1-x} layer is interposed between said first Si_xGe_{1-x} layer and a third Si_xGe_{1-x} layer, said third Si_xGe_{1-x} layer having an N-type doping concentration of approximately at least 10 times greater than said second Si_xGe_{1-x} layer and having a second electrical contact connected thereto.

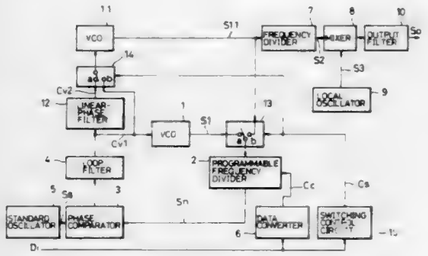
5,329,258

MULTILEVEL FSK MODULATOR HAVING PHASE LOCKED LOOP WITH CONTROLLED TRANSIENT RESPONSE

Takashi Matsuura, Tokyo, Japan, assignor to Nec Corporation, Japan

Filed Jun. 16, 1993, Ser. No. 77,723
Claims priority, application Japan, Jun. 26, 1992, 4-168107
Int. Cl.[5] H04L *27/12*
U.S. Cl. 332—100 **5 Claims**

1. A multilevel FSK modulator comprising:
a phase-locked feedback circuit that outputs, as a control voltage signal for a voltage-controlled oscillator means constituting a phase-locked loop, a signal produced by inputting the output signal of the voltage-controlled oscillator means, producing a frequency-divided signal by frequency-dividing the output signal of the voltage- controlled oscillator means by a scale factor corresponding to an inputted multilevel code and producing and smoothing the signal corresponding to the phase difference between the frequency-divided signal and a standard signal;
a first and a second voltage-controlled oscillator means each having identical characteristics;
filter means that inputs said control voltage signal and outputs a signal having a prescribed transient response characteristic;
switching control means that detects changes of said multilevel code, and when-the multilevel code changes, outputs a first switching control signal during a prescribed period following the change and outputs a second switching control signal during the period other than said prescribed period; and
switching means that during the time the first switching control signal is being outputted, connects the first voltage-controlled oscillator means to the phase-locked feedback circuit in order to form a phase lock loop and connects the output of the filter means to the control voltage input of the second voltage-controlled oscillator means, and during the time that the second switching control signal is being outputted, breaks both the connection between the output of the filter means and the control voltage input of the second voltage-controlled oscillator means and the connection between the first voltage-controlled oscillator means and the phase-locked feedback circuit, and connects the second voltage-controlled oscillator means to the phase lock feedback circuit in order to form a phase-locked loop.

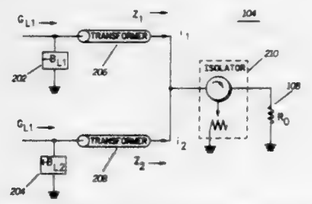


5,329,259

EFFICIENT AMPLITUDE/PHASE MODULATION AMPLIFIER

Robert E. Stengel, Ft. Lauderdale, and Charles A. Backof, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 11, 1993, Ser. No. 986,823
Int. Cl.[5] H04L *27/36*
U.S. Cl. 332—103 **13 Claims**

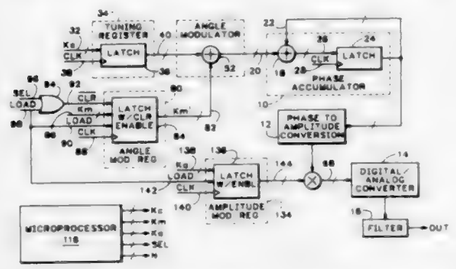


1. An amplitude/phase modulation amplifier circuit coupled to a load, comprising:
first amplifier for amplifying a first phase modulated signal to produce a first amplified signal;
second amplifier for amplifying a second phase modulated signal to produce a second amplified signal;
a combiner for combining the first and the second amplified

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signals with minimum reflection to produce a high efficiency amplified amplitude/phase modulated signal; and
an isolator coupled to the combiner for maximizing efficiency.

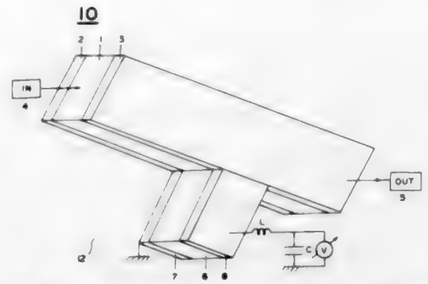
5,329,260
NUMERICALLY-CONTROLLED MODULATED OSCILLATOR AND MODULATION METHOD
Dwight D. Poplin, Salem, Oreg., assignor to II Morrow Inc., Salem, Oreg.
Filed Jul. 17, 1992, Ser. No. 916,190
Int. Cl.[5] H03C *3/00, 5/00*
U.S. Cl. 332—119 **18 Claims**



1. An apparatus for synthesizing a waveform having a selected type of modulation, comprising:
(a) first means, having a first input for receiving a first number representative of a change in phase of a waveform to be modulated and a second input for receiving a second number representative of a change in phase of said waveform to be modulated in response to a modulation signal, for producing periodically a third number representative of an arithmetic combination of said first number and said second number;
(b) second means, responsive to said third number, for producing periodically a fourth number, each consecutive fourth number being the sum of the next preceding fourth number and the current said third number; and
(c) third means, responsive to a fifth number and a modulation timing signal, for selectively producing as said second number, for a selected time interval, said fifth number, upon the occurrence of a predetermined state of said modulation timing signal.

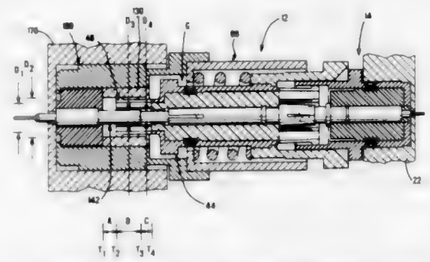
5,329,261
FERROELECTRIC RF LIMITER
Satyendranath Das, 5415 Connecticut Ave. NW, #132, Washington, D.C. 20015
Filed May 27, 1993, Ser. No. 70,738
Int. Cl.[5] H01P *1/22*
U.S. Cl. 333—17.2 **10 Claims**

1. A ferroelectric RF limiter having an input, output, a ground plane and comprising of:
a first body of a solid dielectric material, with a conductive coating on its top and bottom surfaces having a length of one wavelength at the operating frequency of the limiter and, forming a main transmission line;
a second body of a solid ferroelectric material, with a conductive coating on its top and bottom surfaces, having a length of one or more half wavelength(s) at the operating frequency of the limiter and, having a permittivity that is a function of an electric field in which it is immersed forming a branch or stub line and connected one half wavelength, at the operating frequency of the limiter, from one end of the main transmission line;
a first RF transmission means for coupling RF energy into said body;
a second RF transmission means for coupling RF energy from said body;
means for applying a d.c. bias electric field to adjust its initial operating point;



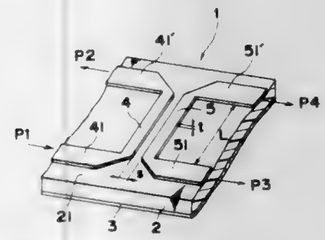
said conductive coatings being made of a film of a single crystal high Tc superconductor material; and
means for keeping the limiter at the high superconducting Tc.

5,329,262
FIXED RF CONNECTOR HAVING INTERNAL FLOATING MEMBERS WITH IMPEDANCE COMPENSATION
Robert L. Fisher, Jr., Palmyra, Pa., assignor to The Whitaker Corporation, Wilmington, Del.
Continuation of Ser. No. 720,123, Jun. 24, 1991, abandoned.
This application Dec. 9, 1992, Ser. No. 989,457
Int. Cl.[5] H01P *1/04;* **H03H** *7/38*
U.S. Cl. 333—33 **19 Claims**



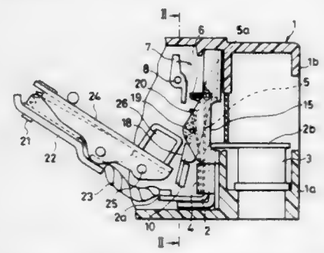
1. A coaxial connection within a connector assembly adapted to be mated at a mating face with a mating coaxial connector in a coaxial circuit having a nominal impedance, the coaxial connection comprising a pin terminal and a socket terminal where the pin terminal includes a pin contact section and a body section and is mounted by a dielectric body coaxially within an outer conductor, and where said socket terminal includes a socket contact section and is held within an outer conductive sleeve by way of a dielectric sleeve, the outer conductive sleeve including a conductive shroud section having a leading end coaxially engaged with and within said outer conductor with the conductive shroud and the outer conductor defining an outer conductive inner surface coextending along the mated pin and socket terminals, said pin terminal being coaxially positioned within said outer conductive inner surface and extending into said socket contact section, all defining a coaxial connection within a connector assembly, said coaxial connection characterized in that;
said pin terminal and said dielectric body and said outer conductor define a first subassembly, and said socket terminal and said dielectric sleeve and said conductive sleeve define a second subassembly, and said second subassembly is axially movable relative to said first subassembly upon said connector assembly being mated with a mating coaxial connector at said mating face, such that leading ends of said socket terminal and said conductive sleeve are movable axially with respect to said pin terminal and said outer conductor at an internal mated interface to respective particular axial positions ultimately resulting from relative movement of said first and second subassemblies upon mating of the connector assembly with the mating coaxial connector;
said pin terminal includes therealong an intermediate section between said pin contact section and said body section, said intermediate section and said pin contact section having different respective diameters defining at least one change in diameter axially located between said dielectric body and said socket contact section and within said conductive shroud section, and at least one change in diameter is defined along the outer conductive inner surface effected at said leading end of said conductive shroud section; and
said at least one change in diameter of said pin terminal and said at least one change in diameter of said outer conductive inner surface being located to be staggered axially from each other at all possible particular ultimate axial positions;
said staggered changes in diameter defining various regions of mismatched impedances intermediate said dielectric body and said dielectric sleeve, said regions having respective lengths and axial limits which are defined by axial locations of intersections of all said changes in diameter of said pin terminal and said outer conductive inner surface with said axial locations of said intersections defining transition positions between said regions,
whereby said diameters and said axial limits have respective dimensions and locations such that said regions create certain characteristic impedances respectively differing from each other and from the nominal impedance of the coaxial circuit completed by the mating of the connector assembly with the mating coaxial connector during signal transmission therealong in such a way as to effect a total impedance substantially equal to said nominal impedance irrespective of said ultimate axial position of said pin terminal with respect to that of said socket terminal resulting from mating of the connector assembly with a mating coaxial connector, thereby preventing power loss.

5,329,263
DIRECTIONAL COUPLER WHEREIN THICKNESS OF COUPLING LINES IS SMALLER THAN THE SHIK DEPTH
Kazuaki Minami, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan
Filed Jan. 12, 1993, Ser. No. 3,444
Claims priority, application Japan, Jan. 16, 1992, 4-005497
Int. Cl.[5] H01P *5/18*
U.S. Cl. 333—116 **20 Claims**



1. An electric coupler comprising:
a dielectric substrate having a top surface;
a grounding conductor covering a bottom surface of said substrate; and
a mutually parallel pair of coupling lines less than a quarter-wavelength long made of microstrip lines formed on said top surface, said coupling lines being separated from each other by a predetermined distance, said coupling lines being of thickness smaller than the skin depth thereof associated with classical skin effect corresponding to a working frequency at which said electric coupler can function as a directional coupler.

5,329,264
CIRCUIT BREAKER WITH OVERCURRENT TRIPPING DEVICE
Haruhisa Toda, and Takafumi Kondo, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 25, 1993, Ser. No. 43,469
Claims priority, application Japan, Jun. 4, 1992, 4-144227
Int. Cl.[5] H01H *75/12*
U.S. Cl. 335—35 **4 Claims**



1. A circuit breaker with an overcurrent tripping device comprising:
a conductor, an end thereof being connected to a moving contact mechanism and another end being connected to a terminal member;
a fixed core provided in the vicinity of said conductor for generating a magnetic attraction force responding to a current value flowing on said conductor;
a holder having a bimetal which contacts said conductor and warps responding to a current flowing on said conductor for driving a trip member; and
an operation arm rotatably borne on said holder and having a moving core on an end thereof which opposes a face of said fixed core, an action part provided on another end of said arm for driving said trip member when said operation arm is rotated in a predetermined direction, and a stopper part for contacting said holder for maintaining a predetermined gap between said fixed core and said moving core when said stopper part contacts said holder.

5,329,265
INTERMEDIATE SUPPORT RELAY FOR USE PARTICULARLY IN MOTOR VEHICLES
Guido Guidi, Frosinone, and Alberto Petrone, Collegno, both of Italy, assignors to Bitron "A" S.p.A., Cantalupa, Italy
Filed Mar. 31, 1993, Ser. No. 40,489
Claims priority, application Italy, May 20, 1992, TO 92 A 000434
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 **4 Claims**

1. A relay, particularly for use in an automotive vehicle, comprising:
a stable ferromagnetic core;
an excitation coil surrounding said core;
a movable assembly comprising a swingable ferromagnetic armature juxtaposed with an end of said core, and a leaf spring secured at an anchor point to said armature and

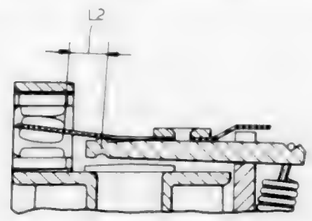
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having an end extending away from said anchor point to project beyond an end of said armature;

a coil return spring acting in tension on an opposite end of said armature in a sense tending to swing said armature into a position forming an air gap of maximum width between said core and said armature;

an exchange contact on said end of said leaf spring;

a closure contact juxtaposed with said exchange contact and engaged thereby upon energization of said coil drawing said armature toward said core, and an opening contact juxtaposed with said exchange contact and engaged thereby upon deenergization of said coil and swinging by said spring of said armature away from said core; and



an intermediate support element for said leaf spring formed by indenting a cavity in said armature to produce a bump thereon located substantially midway between said point and said exchange contact and in continuous contact with said leaf spring at least while said exchange contact is in engagement with said opening contact and during displacement of said armature toward said core, said intermediate support element being of such height and at such distance from said point that the leaf spring is under prestress prior to closure against said closure and opening contacts.

5,329,266

MAGNET ASSEMBLY

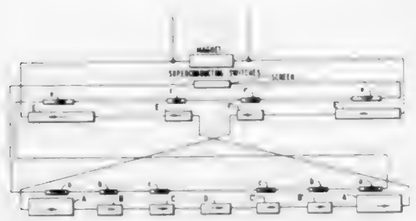
Leonhard Soeldner, Schwaig, Fed. Rep. of Germany, and Francis Davies, Oxford, Great Britain, assignors to Oxford Magnet Technology Ltd., Oxford, United Kingdom and Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 17, 1991, Ser. No. 731,260

Claims priority, application United Kingdom, Jul. 24, 1990, 9016184

Int. Cl.[5] H01F *7/22*

U.S. Cl. 335—216 **5 Claims**



1. A magnet assembly comprising:

a first superconducting coil means for generating a second magnetic field, said

a second superconducting coil means for generating a second magnetic field, said second superconducting coil means being electrically connected in series with said first superconducting coil means, and said first and second superconducting coil means each generating magnetic fields having corresponding components of substantially the same order of magnitude;

said first and second superconducting coil means being disposed for generating, in combination, a resultant, homogeneous magnetic filed having a total magnetic flux in a working volume, and so that said second magnetic field substantially opposes said first magnetic field externally of said working volume; and

a plurality of screening coil means, each having a number of turns which is small with respect top the number of turns of said first and second superconducting coil means, electrically connected in series and forming a closed loop for interacting with said first and second superconducting coil means for maintaining said total magnetic flux of said resultant magnetic field at a substantially unchanging level in said working volume and having substantially no effect on the homogeneity of said resultant magnetic field in said working volume.

5,329,267

MAGNET ASSEMBLY AND A VOICE COIL MOTOR USING SUCH MAGNET ASSEMBLY

Minoru Endoh, Kumagaya, and Koichi Oda, Ageo, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,609

Claims priority, application Japan, Mar. 13, 1992, 4-089604

Int. Cl.[5] H01F *7/02, 7/08;* **G01B** *7/00*

U.S. Cl. 335—222 **6 Claims**



1. A magnet assembly for controlling magnetic flux density comprising:

two units of circular arc cross-sectioned magnet pieces, each unit having a first portion including a first end, a center portion, a second portion including a second end, an inner surface, and an outer surface, the two units abutted to each other at the first end of each unit, one unit having a direction of magnetization from the inner surface toward the outer surface of the unit, the other unit having a direction of magnetization from the outer surface toward the inner surface of the unit, each unit having a magnetic flux density higher in the first portion than that of the center and second portion.

5,329,268

TRANSFORMER VARIABLE POWER

Clarence W. McQueen, 110 Sitting Bull Dr., P.O. Box 781, Hailey, Id. 83333

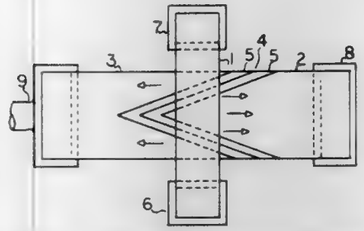
Filed Oct. 9, 1992, Ser. No. 958,725

Int. Cl.[5] H01F *21/06*

U.S. Cl. 336—119 **3 Claims**

1. A variable power transformer comprising: a primary core generally of a rectangular, toroidal shape with parallel sides and with primary windings wound in opposition on each end of said core, and a secondary core of a generally rectangular, toroidal shape with a secondary winding on one end of said secondary core with said secondary core comprising two

halves separated by a non-magnetic material and constructed so as to slide through the primary core at an angle to the plane



of the primary core constantantly maintaining contact with said primary core.

5,329,269

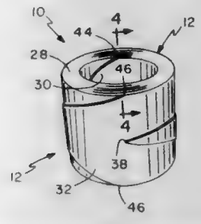
SINGLE CORE TRIAXIAL FLUX-GATE MAGNETOMETER

William S. Watson, 3026 Aspen Ct., Eau Claire, Wis. 54703

Continuation-in-part of Ser. No. 565,794, Aug. 10, 1990. This application Oct. 25, 1991, Ser. No. 782,488

Int. Cl.[5] H01F *27/24*

U.S. Cl. 336—213 **17 Claims**



1. A flux-gate magnetometer core which may be electrically excited to induce a magnetic field, said flux-gate magnetometer core comprising:

a strip of a magnetically permeable material wrapped to form a toroid, said toroid having an inner circumference, an outer circumference, and a radial axis, said strip including a center portion having a pair of opposing ends and at least one longitudinal edge, a first tapered segment extending from and connected to a first end of said pair of opposing ends of said strip, said first tapered segment having at least one first tapered edge extending at a first angle relative to said at least one longitudinal edge from a first junction between said longitudinal edge and said tapered edge of said first tapered segment to a first endpoint, said first tapered segment having a first length being substantially equal to a first integer multiple of said inner circumference of the core, and a second tapered segment extending from and connected to a second end of the pair of opposing ends of said strip, said second tapered segment having at least one second tapered edge extending at a second angle relative to said at least one longitudinal edge from a second junction between said longitudinal edge and said tapered edge of said second tapered segment to a second endpoint, said second tapered segment having a second length being substantially equal to a second integer multiple of said outer circumference of the core, said first junction being substantially aligned with said second endpoint in a first vertical plane intersecting said radial axis, and said second junction being substantially aligned with said first endpoint in a second vertical plane intersecting said radial axis,

whereby an induced magnetic field leaking from a first point along the first tapered edge and from a second point along the second tapered edge within a common vertical plane intersecting both the radial axis of the core and said first and second points will be substantially uniform and symmetrical about the flux-gate magnetometer core.

5,329,270

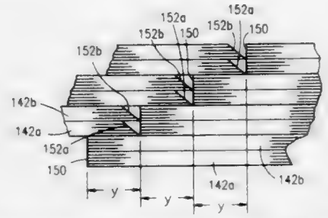
TRANSFORMER CORE COMPRISING GROUPS OF AMORPHOUS STEEL STRIPS WRAPPED ABOUT THE CORE WINDOW

David R. Freeman, Hickory, N.C., assignor to General Electric Company, Malvern, Pa.

Filed Jun. 26, 1992, Ser. No. 904,746

Int. Cl.[5] H01F *27/24, 41/02*

U.S. Cl. 336—213 **6 Claims**



1. A transformer core comprising a window and superposed, staggered groups of amorphous steel strip wrapped about the window, each group comprising an inner section and an outer section disposed in superposed relationship, and each section comprising many thin layers of superposed amorphous steel strip, the core being further characterized by:

(a) each of the layers in a section having transversely-extending edges at opposite ends of the section and a length dimension measured between the transversely-extending edges at opposite ends of the section,

(b) the layers in the inner section of a group having substantially equal lengths and the layers in the outer section of said group having substantially equal lengths of a greater value than the lengths of the layers in the inner section,

(c) at one end of each group the transversely-extending edges of all the layers in said group being substantially aligned and forming a smooth edge at said one end of said group,

(d) at the other end of each group (i) the transversely-extending edges of the layers in said inner section being disposed to form a beveled edge for said inner section, (ii) the transversely-extending edges of the layers in said outer section being disposed to form a beveled edge for said outer section, and (iii) the beveled edge of said outer section overlapping the beveled edge of said inner section.

5,329,271

SEMICONDUCTOR STRAIN SENSOR

Hajime Inuzuka, Nishio; Tsuyoshi Nakagawa, Gifu, and Kunihiko Hara, Nukata, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 4, 1992, Ser. No. 878,429

Claims priority, application Japan, May 7, 1991, 3-101652

Int. Cl.[5] G01L *1/22*

U.S. Cl. 338—4 **17 Claims**

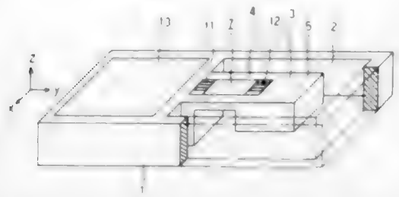
1. A semiconductor strain sensor, comprising:

a silicon substrate having a deformable portion which is deformed when stress is applied thereto;

a strain resistive element formed on said deformable portion, said strain resistive element having at least a first layer and a second layer which form a heterojunction therebetween, said first layer being doped with impurities so to form a two-dimensional carrier gas layer in said second layer near said heterojunction, and said two-dimensional carrier gas layer having carriers originating from said impurities; and

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at least two electrodes for detecting change of resistance of said strain resistance element in accordance with said



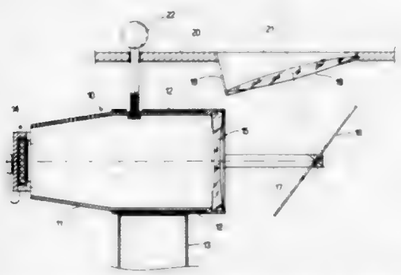
stress, said electrodes electrically contacting said two-dimensional carrier gas layer.

5,329,272

HEAD-UP DISPLAY DEVICE FOR THE DISPLAY OF DATA ABOARD AUTOMOBILES

Liberto Massarelli, Vasto, and Vito L. Giordano, Bellaria, both of Italy, assignors to Societa Italiana Vetro - SIV- S.p.A., San Salvo CH, Italy

Filed Sep. 18, 1991, Ser. No. 761,449
Claims priority, application Italy, Sep. 20, 1990, 48291 A/90
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—461 **18 Claims**



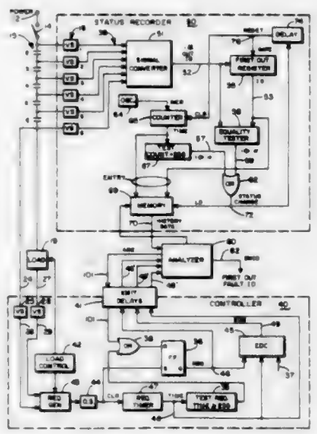
1. In an automobile, a head-up display device for displaying data on the windshield of the automobile, said display device comprising: image forming means for generating visual information transmitted along a first optical path that extends transversely of the vehicle substantially parallel to the lengthwise dimension of the windshield; a first optical refractive element situated in said first optical path so as to refract the visual information generated by said image forming means; a reflector having a nil optical power situated in said first optical path downstream of said first optical refractive element with respect to the direction in which the visual information is transmitted in the device so as to receive the visual information refracted by said first optical refractive element, said reflector oriented at substantially 45° to said first optical path so as to reflect visual information impinging thereon along a second optical path that subtends an angle of approximately 90° with said first optical path; a second optical refractive element situated in said second optical path so as to refract the visual information reflected by said reflector; and said reflector being so oriented relative to the windshield of the automobile that said second optical path intersects said windshield at such an angle and location that visual information traveling along said second optical path and refracted by said second optical refractive element reflects at the inner surface of said windshield within the field of vision of a driver whereby the driver can concurrently observe at the surface of the windshield a combination of the panorama in front of the automobile and the visual information generated by said image forming means; a structure fixing said image forming means, said first optical refractive element and said reflector to one another so as to together constitute an integrated unit, said structure including a tubular structure to which said image forming means and said first optical refractive element are mounted, and a shaft extending from and parallel to said tubular element and supporting said reflector thereon at an angle of substantially 45° relative to the longitudinal axis of the shaft, said tubular structure having a longitudinal axis coincident with said first optical path; and a seat fixed relative to the automobile and supporting said tubular element for rotation about the longitudinal axis thereof wherein said unit is rotatably supported in the device about an axis coincident with said first optical path such that the location of the visual image at the surface of the windshield is adjustable by rotating said unit.

5,329,273

SYSTEM CONTROLLER AND REMOTE FAULT ANNUNCIATOR WITH COOPERATIVE STORAGE, SHARING, AND PRESENTATION OF FAULT DATA

Paul B. Patton, Rockford, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Jun. 3, 1992, Ser. No. 893,167
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—517 **17 Claims**



1. A status recorder for recording a status history of a plurality of interlock switches each having a pair of contacts, said contacts connected by a plurality of conductors to form a series circuit of interlock switches in a preselected sequence, said series circuit for connection to pass current from a power source to a load and having a first out status value representing the conductive status of the switches, and including a plurality of voltage sensors each associated with an interlock switch, and each voltage sensor connected to a conductor connected to the interlock switch with which the voltage sensor is associated and providing a status signal having a first state responsive to presence of power voltage on the conductor to which it is connected and a second state otherwise, and further comprising

a) signal selector means receiving the status signals for providing a selector signal encoding the first out status value of the interlock switches;

b) a first out register receiving the selector signal and a status change signal, recording as its contents information encoded in the selector signal responsive to the status change signal, and providing a first out register signal encoding the contents of the first out register,

c) an oscillator issuing a clock signal having level changes at preset intervals;

d) a counter storing a time stamp value, receiving the clock signal, changing the time stamp value by a predetermined

amount responsive to each level change in the clock signal, and providing a time stamp signal encoding the time stamp value;

e) status change sensing means receiving the selector signal and the first out register signal for comparing the information encoded in the selector signal and the first out register signal, and responsive to disagreement therebetween, providing the status change signal; and

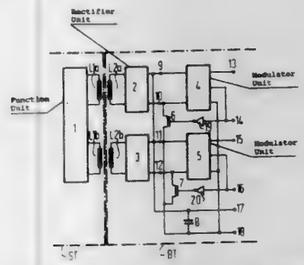
f) a memory receiving the status change signal, the first out register signal, and the time stamp signal, for sequentially recording responsive to each status change signal, a history entry comprising the information encoded in the first out register signal and the time stamp value encoded in the time stamp signal, and for providing a history signal encoding recorded history entries.

5,329,274

APPARATUS FOR CONTACTLESS DATA AND ENERGY TRANSMISSION AND METHOD FOR OPERATING SUCH AN APPARATUS

Günter Donig, Ottobrunn; Bruno Scheckel, Ebersberg; Karl-Reinhard Schön, Munich, and Robert Reiner, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 870,879
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 91106337
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.340 **6 Claims**



1. An apparatus for contactless data and energy transmission, comprising:

a stationary part having means for transmitting and receiving data and means for generating energy;

a movable part having first and second rectifier means each with a first and a second output and first and second modulators each being connected downstream of a respective one of said first and second rectifier means;

a first coil connected to said means for transmitting and receiving data in said stationary part;

a second coil connected to said means for generating energy in said stationary part;

third and fourth coils each being connected to a respective one of said first and second rectifier means in said movable part;

said first and second coils in said stationary part being arbitrarily associated with said third and fourth coils in said movable part so as to form a pair of coils for energy transmission from said stationary part to said movable part and a pair of coils for data transmission between said movable part and said stationary part, data being transmitted from said movable part to said stationary part by a load variation at one of said third and fourth coils of said movable part not being used for energy transmission;

controllable semiconductor elements each having a load path;

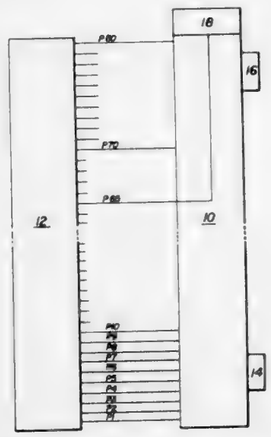
a charge capacitor having first and second terminals at which an unregulated operating voltage can be picked up; said first terminal of said capacitor being connected with each of said first output terminals of said first and second rectifier means and said second terminal of said capacitor being connected with each of said second output terminals of said first and second rectifier means via said load path of said controllable semiconductor elements.

5,329,275

MODULAR VIDEO SUBSYSTEM PARTITIONING INTERFACE

Gary Solomon, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 720,024, Jun. 24, 1991, abandoned.
This application Mar. 3, 1993, Ser. No. 25,826
Int. Cl.[5] H05K *7/06*
U.S. Cl. 340—825.22 **20 Claims**



1. A video screen control card that connects at least one type of video screen to a computer system, wherein the interface between the control card and system comprises;

at least one pin that provides access to a signal generated by the control card, which indicates to the system that the control card accepts memory in 16 bits;

at least one pin that provides access to a signal generated by the control card, which indicates to the system that the card accepts I/O in 16 bits;

at least one pin that provides access to a high byte enable signal generated by the system;

at least one pin that provides access to a direct memory access enable signal generated by the system;

at least one pin that provides access to an I/O ready signal generated by the control card;

at least one pin that provides access to a system reset signal generated by the system;

at least one pin that provides access to an I/O write strobe signal generated by the system;

at least one pin that provides access to an I/O read strobe signal generated by the system;

at least one pin that provides access to a memory read strobe signal generated by the system;

at least one pin that provides access to a memory write strobe signal generated by the system;

at least one pin that provides access to a memory refresh signal generated by the system;

at least one pin that provides access to a system clock signal generated by the system;

at least one pin that provides access to a high byte data bus;

at least one pin that provides access to a low byte data bus;

at least one pin that provides access to at least one unlatched address bit signal generated by the system;

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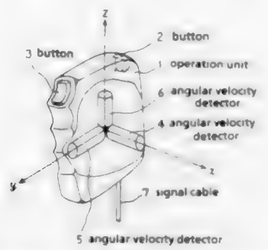
at least one pin that provides access to at least one latched address bit signal generated by the system;
at least one pin that provides access to a clock signal generated by the system for said unlatched address bit;
at least one pin that provides access to an active display signal generated by the control card that indicates which screen type is operatively connected to the system;
at least one pin that provides access to a signal generated by the system that request memory addresses in the control card memory;
at least one pin that provides access to a monitor control powerdown signal generated by the system;
at least one pin that provides access to a power supply from the system having a first predetermined voltage;
at least one pin that provides access to a power supply from the system having a second predetermined voltage;
at least one pin that provides access to a power supply from the system having a third predetermined voltage;
at least one pin that provides access to a power supply from the system having a fourth predetermined voltage; and,
at least one pin that provides access to ground.

5,329,276

MULTIDIMENSIONAL SIGNAL INPUT DEVICE

Tsukamitsu Hirabayashi, Iruma, Japan, assignor to Kabushiki Kaisha Yaskawa Denki, Fukuoka, Japan

PCT No. PCT/JP91/01735, § 371 Date Jun. 29, 1992, § 102(e) Date Jun. 29, 1992, PCT Pub. No. WO92/11594, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 19, 1990, Ser. No. 867,091
Claims priority, application Japan, Dec. 19, 1990, 2-412300
Int. Cl.[5] G08C *19/06*; G09G *3/02*
U.S. Cl. 340—870.31 **6 Claims**



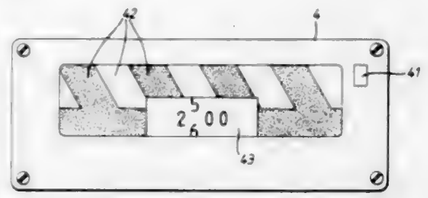
1. A multidimensional signal input device comprising:
an operation unit including:
a plurality of angular velocity detector means, on orthogonal axes, each for detecting an angular velocity of said operation unit, and
operation buttons on an outer surface thereof,
voltage-to-frequency converter means, connected to outputs of said angular velocity detector means, each for producing a converted output,
sign detection circuits connected in parallel with said voltage-to-frequency converter means, each for determining a direction of said angular velocity,
gate circuit means for validating or invalidating a count of converted outputs of said voltage-to-frequency converter means in response to a command timing from said operation buttons, and
counter circuit means, connected to said gate circuit means, for producing a count output corresponding to said command timing and supplying said count output to a control device for producing movement in response thereto.

5,329,277

DISPLAYS AND DISPLAY SYSTEMS

Keith G. Dougan, and Peter F. O'Sullivan, both of Cheltenham, England, assignors to Smiths Industries Public Limited Company, London, England

Continuation of Ser. No. 799,839, Dec. 2, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 78,064
Claims priority, application United Kingdom, Dec. 5, 1990, 9026451
Int. Cl.[5] G01C *23/00*
U.S. Cl. 340—971 **1 Claim**



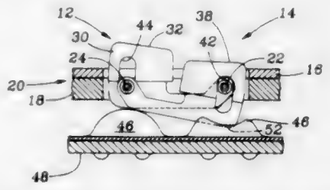
1. An aircraft display system comprising a visual display unit mounted in the glareshield of an aircraft and including an array of electrically-energizable elements, a processing unit, means for providing a first signal to said processing unit representative of aircraft attitude, means for providing a second signal to said processing unit representative of distance-to-go of the aircraft from a point on a runway to the end of the runway, said processing unit being responsive to said first and second signals to provide a display driver signal to said display unit after the aircraft has landed to cause said array of elements to produce an alphanumeric representation taking the form of symbols moving horizontally in a direction and at a rate dependent on displacement of the aircraft from a runway centerline and a simultaneous numerical representation of said distance-to-go, said alphanumeric representation being in one color on a contrasting background when the variable value of information being displayed is in a predetermined range, and the color of at least one of the alphanumeric representation and the contrasting background being changed when the variable value of information being displayed falls outside said predetermined range so that a viewer's attention is drawn to the display unit as a whole by said change in color.

5,329,278

PIVOTING ELECTRONIC KEYBOARD KEYS

Michael L. Dombroski, 321 N. Lincoln St., Bay City, Mich. 48708

Filed Oct. 24, 1991, Ser. No. 782,064
Int. Cl.[5] H01H *23/00*
U.S. Cl. 341—20 **15 Claims**



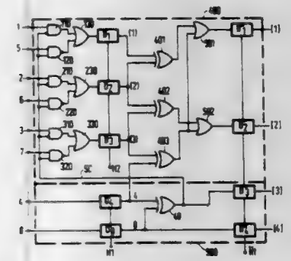
1. A key assembly for a keyboard or the like comprising a first key; a second key spaced from and adjacent said first key, said first and second keys occupying positions on opposite sides of a plane passing between said first and second keys, said first and second keys being sufficiently close to one another as to be bridged by a single finger of a person's hand; means mounting said first key for rocking movements between first and second positions and independently of said second key about a first axis underlying said second key; means mounting said second key for rocking movements between first and second positions and independently of said first key about a second axis underlying said first key; first operating means responsive to rocking movements of said first key; and second operating means responsive to rocking movements of said second key.

5,329,279

METHOD OF TRANSCODING DATA FROM A THERMOMETRIC CODE, DECODER AND CONVERTER APPLYING THIS METHOD

Stéphane Barbu, and Laurent LePailleur, both of Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 18, 1992, Ser. No. 947,665
Claims priority, application France, Sep. 20, 1991, 91 11645; Sep. 20, 1991, 91 11644
Int. Cl.[5] H03M *7/14*
U.S. Cl. 341—50 **20 Claims**



1. A method of transcoding data expressed in digital words of like number of bits according to a thermometric type coding, successive values of which can be represented in the form of a first matrix, each row of which is a digital word, the method comprising: deriving an intermediate coding defined, on the one hand, by a second matrix which is extracted from the first matrix and one dimension of which is a sub-multiple of a dimension of the first matrix, and on the other hand, by a third matrix the columns of which are particular columns of the first matrix, juxtapositioning, row by row, the second and third matrices so as to preserve all of the information present in the thermometric starting code.

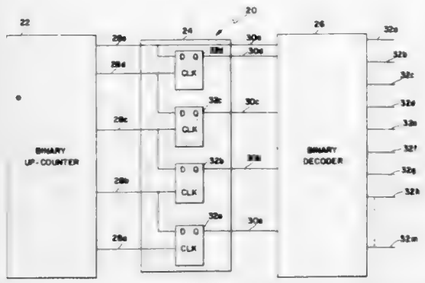
5,329,280

ADJACENT CODE SYSTEM

Stephen Amuro, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1992, Ser. No. 905,949
Int. Cl.[5] H03M *7/16*
U.S. Cl. 341—96 **8 Claims**

1. An adjacent code system comprising:
a binary counter having a plurality of outputs for providing binary counter bit output signals;
an adjacent code encoder including a plurality of flip-flop devices, each of said plurality of flip-flop devices having inputs connected to receive signals from selected outputs of said binary counter, each of said flip-flop devices having an output for providing a signal that is a portion of an adjacent code signal, said flip-flop outputs together with the most significant bit output from said binary counter providing adjacent code signals; and
a binary decoder having inputs to which said adjacent code signals are connected and said binary decoder having a plurality of outputs with each of said outputs providing a signal in response to a different binary counter bit output signal than any other of said outputs.

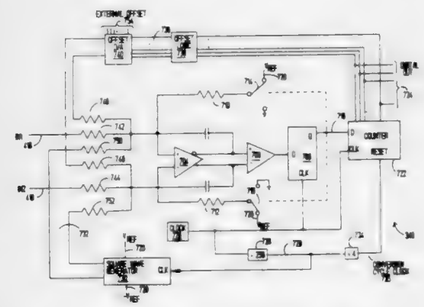


5,329,281

ANALOG TO DIGITAL CONVERTER WITH AUTORANGING OFFSET

Richard A. Baumgartner, Palo Alto, Calif.; Charles E. Moore, Loveland, Colo., and Earl C. Herleikson, Yamhill, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 876,611, Apr. 30, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 52,859
Int. Cl.[5] H03M *1/06*
U.S. Cl. 341—139 **4 Claims**



1. An analog to digital conversion circuit comprising:
summation means for generating a sum of an analog signal input and an analog offset input;
analog to digital converter means, connected to the summation means, for converting the sum to a digital signal output; and
offset means, connected to the digital signal output and receiving a predetermined threshold and a predetermined number, for generating the analog offset input,
wherein the offset means generates the analog offset input if the digital signal output exceeds the predetermined threshold for the predetermined number of consecutive conversions of the analog to digital converter means.

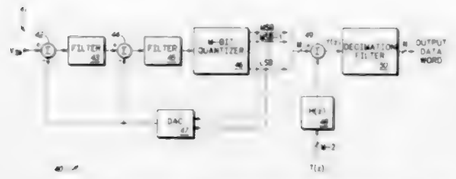
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5,329,282

MULTI-BIT SIGMA-DELTA ANALOG-TO-DIGITAL CONVERTER WITH REDUCED SENSITIVITY TO DAC NONLINEARITIES

H. Spence Jackson, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1992, Ser. No. 844,050
Int. Cl.[5] H03M *3/04*
U.S. Cl. 341—143 12 Claims



1. A multi-bit sigma-delta analog-to-digital converter with improved performance comprising:

a sigma-delta modulator including a quantizer and a digital-to-analog converter, for receiving an analog input signal and for providing a digitized signal having a plurality of bits ordered from a most significant bit, to a second most significant bit, to at least one lower-order bit including a least significant bit, said digital-to-analog converter receiving a plurality of feedback bits including said most significant bit and one of said at least one lower-order bit and providing a feedback signal of the sigma-delta modulator in response thereto;

a prefilter coupled to said sigma-delta modulator, for receiving said plurality of bits of said digitized signal except for said plurality of feedback bits, and performing a predetermined transfer function thereon to provide a pre-filtered signal;

a summing device coupled to said quantizer and to said prefilter, having a positive input terminal for receiving said digitized signal, a negative input terminal for receiving said pre-filtered signal, and an output; and

a decimation filter coupled to said summing device, having an input coupled to said output of said second summing device, and an output for providing a digital output of the analog-to-digital converter.

5,329,283

SYNTHETIC APERTURE RADAR DIGITAL SIGNAL PROCESSOR

John E. Smith, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Apr. 28, 1993, Ser. No. 53,195
Int. Cl.[5] G06F *7/38*
U.S. Cl. 342—25 12 Claims



1. A digital signal processor to be used in conjunction with an addressable memory device, the processor comprising:

an arithmetic unit having first and second data inputs and first and second reference inputs, the arithmetic unit including:

an I-channel datapath and a Q-channel datapath, each datapath including a multiplier/accumulator, a multiplier and an adder, the inputs to each multiplier/accumulator being derived from said data inputs and said first reference input, the inputs to each multiplier being derived from the output of the multiplier/accumulator for that channel and said second reference input, the inputs to each adder being derived from the output of the multiplier for that channel and said data inputs, the outputs of said adders being combined to form a result;

a control unit including at least one address generator operative to generate an address to said memory device, enabling said memory to provide a reference or a data input to said arithmetic unit; and

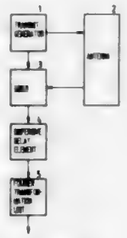
a user-programmable control sequencer connected to the address generator, the arithmetic unit and the memory, the sequencer being operative to coordinate and control the functioning of the arithmetic unit and cause the address generator to generate an address for said memory.

5,329,284

RADAR APPARATUS

Albert Groenenboom, and Bernard J. Reits, both of Hengelo, Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed May 6, 1993, Ser. No. 57,468
Claims priority, application Netherlands, May 12, 1992, 9200837
Int. Cl.[5] G01S *13/08*
U.S. Cl. 342—132 22 Claims



1. A radar apparatus comprising:

a transmitter means for generating a transmitter pulse modulated at a predetermined frequency sweep rate and a reference signal modulated at the predetermined frequency sweep rate;

an antenna means for radiating the generated transmitter pulse and reference signal and for receiving reflected transmitter pulse and reference signals;

a receiver means comprising a mixer stage for receiving the reflected transmitter pulse and reference signals from the antenna means and for generating a heterodyne signal from the received reflected transmitter pulse and reference signals;

a dispersive delay element for receiving the heterodyne signal from the receiver means and for frequency-dependent delaying the heterodyne signal; and

a Fourier transformation means comprising:

a correction means having a weighting means for transforming the delayed heterodyne signal output by the dispersive delay element for correcting distortion of the delayed heterodyne signal to generate a corrected heterodyne signal; and

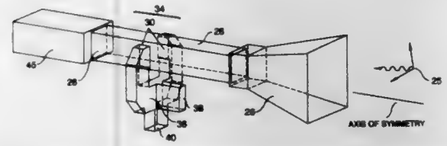
Fourier transforming means for Fourier transforming the corrected heterodyne signal.

5,329,285

DUALLY POLARIZED MONOPULSE FEED USING AN ORTHOGONAL POLARIZATION COUPLER IN A MULTIMODE WAVEGUIDE

Jay H. McCandless, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 18, 1991, Ser. No. 732,399
Int. Cl.[5] G01S *13/44*
U.S. Cl. 342—153 12 Claims



1. A dually polarized monopulse feed system for processing radar signal information from a target so the target may be identified and tracked, the system comprising:

a symmetrical multimode input waveguide;

a coupler to process vertical modes of signal wave polarizations;

a monopulse comparator to process horizontal modes of signal wave polarizations;

means for rejecting and terminating selected modes of signal wave polarizations; and

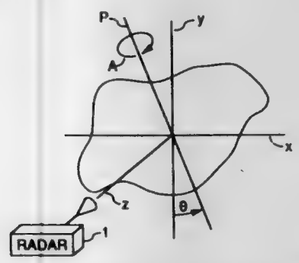
a back short for reflecting selected modes of signal wave polarizations.

5,329,286

METHOD FOR TWO DIMENSIONAL DOPPLER IMAGING OF RADAR TARGETS

Uve H. W. Lammers, Chelmsford, and Richard A. Marr, N. Billerica, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1993, Ser. No. 86,078
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—165 13 Claims



1. A method of radar imaging a planar target with a radar transmitter and receiver, said radar transmitter transmitting a beam originating from a position spaced from a target plane, said radar receiver receiving return signals from said target, said radar imaging method comprising the steps of:

transmitting said beam toward said target to illuminate said target, said target being centered on the axis of said beam;

precessing said target relative to said beam axis by causing the normal to the target plane to describe the conical surface of a cone around the beam axis with the apex of the cone at the point where the beam axis intersects the target plane; and

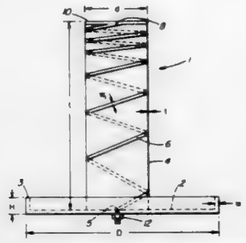
processing said return signals from said target to develop a two dimensional image thereof.

5,329,287

END LOADED HELIX ANTENNA

Peter C. Strickland, Kanata, Canada, assignor to CAL Corporation, Ottawa, Canada

Filed Jun. 4, 1992, Ser. No. 893,525
Claims priority, application Canada, Feb. 24, 1992, 2061743-8
Int. Cl.[5] H01Q *11/08*
U.S. Cl. 343—752 12 Claims



1. In a helical antenna of the type having a ground plane; a hollow dielectric support tube with an end fixed to said ground plane and a free end, said support tube extending normal to said ground plane; and an antenna element with a feed end, a number of windings about the periphery of said support tube, and a free end arranged at said free end of said support tube, said antenna being for operation in the axial mode, the improvement comprising:

an electrically conductive member for placement over said free end of said support tube, said member being electrically connected to said free end of said antenna element; and

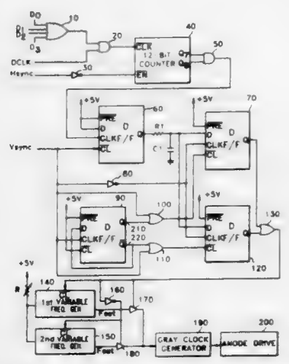
said conductive member being a concavely shaped disc, with a central portion of said disc projecting into said dielectric support tube.

5,329,288

FLAT-PANEL DISPLAY DEVICE

Sang-cheol Kim, Kyunggi, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Jan. 15, 1992, Ser. No. 820,976
Claims priority, application Rep. of Korea, Sep. 28, 1991, 91-17019
Int. Cl.[5] G09G *3/10*
U.S. Cl. 345—63 6 Claims



1. A flat-panel display device having first and second electrodes for displaying n×m pixel data, comprising:

a first driver for driving the first electrodes responsive to a first signal;

means for controlling the number of pixels to determine

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whether or not the number of turned-on pixels in one row among m rows is at least equal to a predetermined number, said means for counting including:

first logic means for determining whether any bit of pixel data is on,

second logic means for generating a counter clock signal responsive to the output of said first logic means and a data clock signal,

a counter for counting the number of pixels in the on state utilizing the output of said second logic means, and

third logic means for determining whether the predetermined number of pixels in the on state has been counted;

means for generating a first frequency signal in response to first preselected outputs of said counting means, said means for generating a first frequency signal including:

a first D-type positive-edge-triggered flip-flop having a clock signal port connected to said third logic means, a preset signal port, a data input port, and a clear signal port which receives a second signal,

delaying means for delaying the output of said first D-type positive-edge-triggered flip-flop,

a second D-type positive-edge-triggered flip-flop having a data input port connected to said delaying means to receive the output signal of said delaying means, and a clock signal port for receiving an inverted second signal; and

means for generating a first frequency in response to an output signal from said second D-type positive-edge-triggered flip-flop;

means for generating a second frequency signal in response to second preselected outputs of said counting means; and

means for varying the on-time of the first electrodes in response to the first and second frequency signals.

5,329,289

DATA PROCESSOR WITH ROTATABLE DISPLAY

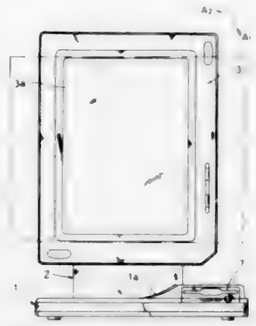
Kohichiro Sakamoto, Sakai; Yoshiyuki Murashima, Yamatotakada; Hiroshi Nishida, Tenri, and Yukihiro Shibata, Souraku, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 22, 1992, Ser. No. 874,980

Claims priority, application Japan, Apr. 26, 1991, 3-097458; Apr. 26, 1991, 3-097466

Int. Cl.[5] G09G *5/00, 5/32, 5/38*

U.S. Cl. 345—126 **5 Claims**



1. A data processor with a rotatable display comprising:

a display including a rectangular display surface and rotatable to both a vertically elongated position and a laterally elongated position,

control means for setting onscreen display data displayed by the display to either a vertically elongated format or a laterally elongated format,

wherein the control means stores a current onscreen display format when the data processor is deactivated, and displays data in the stored current onscreen display format on the display when the data processor is later activated, and

a base for supporting the display with the top surface of the base having a curved portion located to accommodate rotation of the display, wherein a corner of the display which passes adjacent to the curved base portion when the display is rotated is beveled.

5,329,290

MONITOR CONTROL CIRCUIT

Stefan Schwarz, Berg, and Ian Cartwright, Stockdorf, both of Fed. Rep. of Germany, assignors to SPEA Software AG, Starnberg, Fed. Rep. of Germany

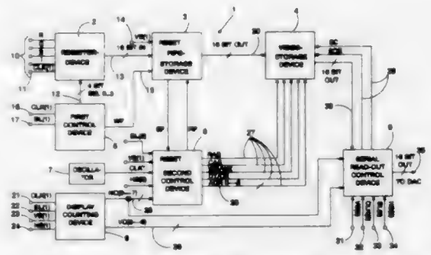
PCT No. PCT/EP90/00466, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO90/13886, PCT Pub. Date Nov. 15, 1990

PCT Filed Mar. 21, 1990, Ser. No. 773,920

Claims priority, application Fed. Rep. of Germany, May 12, 1989, 3915562

Int. Cl.[5] G09G *5/12*

U.S. Cl. 345—132 **20 Claims**



1. A monitor control circuit for driving a monitor, which operates at a second pixel frequency, on the basis of a digital image signal with a first pixel frequency, comprising:

a first storage device (3) into which the image signal can be read with a frequency dependent on the first pixel frequency by means of a first control device (5), and

a video storage device (4) in effective connection with the output of the first storage device (3),

characterized in that a first storage device is a fifo storage device (3), and that a second control device (6) is connected to the video storage device (4) and the fifo storage device (3) and is adapted to be used for reading data words of the digital image signal from the fifo storage device (3) and for writing them into the video storage device (4) in such a manner that the reading of the data words from the fifo storage device (3) is interrupted when data words are being read from the video storage device (4), whereby the number of data words stored in the fifo storage device (3) which can be re-stored in the video storage device (4) can vary.

5,329,291

CATHODE RAY TUBE OPTICAL FILTER DEVICE WITH CURSOR POINTING FUNCTION

Ming-Der Chen, Tainan Hsien, Taiwan, assignor to Liang Ying Co., Ltd., Tainan, Taiwan

Filed Aug. 18, 1993, Ser. No. 107,642

Int. Cl.[5] G09G *1/00*

U.S. Cl. 345—157 **3 Claims**

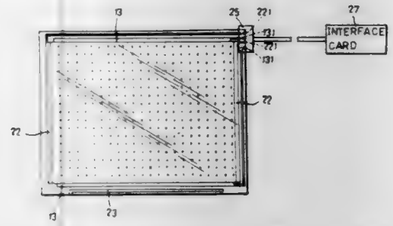
1. A crt optical filter device to be installed on a computer monitor of a computer and capable of controlling movement of a cursor on a screen of the computer monitor, said crt optical filter device comprising:

a first transparent plastic sheet having an inner surface

formed with a transparent first conductive circuit layer and a pair of first conductors;

a transparent glass panel having an outer surface disposed adjacent to said inner surface of said first transparent plastic sheet and an inner surface to be disposed adjacent to the screen of the computer monitor, said outer surface of said glass panel being provided with a transparent second conductive circuit layer, a pair of second conductors, and a grounded static conductor;

one of said inner surface of said first transparent plastic sheet and said outer surface of said glass panel being further provided with a plurality of spacers which are made of an insulative material and which space apart said first and second conductive circuit layers; and



an interface card connected electrically to said first and second conductors and to be connected electrically to the computer, said interface card receiving analog X and Y signals that correspond to a selected part of said first transparent plastic sheet from said first and second conductors when a portion of said first conductive circuit layer contacts and connects electrically with a portion of said second conductive circuit layer due to application of pressure on said selected part of said first transparent plastic sheet, said interface card processing said analog X and Y signals into corresponding digital signals for controlling the computer to move the cursor on the screen of the computer monitor so as to coincide with said selected part of said first transparent plastic sheet and for controlling the computer to accomplish predetermined functions.

5,329,292

DISPLAY CONTROLLER FOR A FLAT DISPLAY APPARATUS

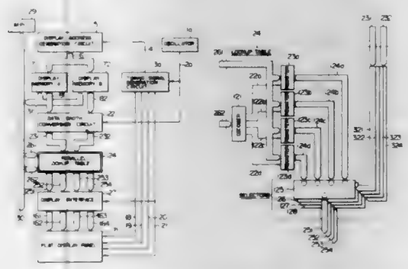
Kiyokazu Nishioka, Odawara; Masahiro Jinushi, and Nobuo Tsuchiya, both of Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video & Information System, Inc., Yokohama, both of Japan

Filed Nov. 25, 1991, Ser. No. 796,678

Claims priority, application Japan, Nov. 30, 1990, 2-328891

Int. Cl.[5] G09G *1/28*

U.S. Cl. 345—199 **11 Claims**



1. A display controller for a flat display apparatus comprising:

a display address generation circuit which generates display addresses sequentially;

a display memory which stores pixel display data and reads out said pixel display data in response to a display address provided by said display address generation circuit;

a parallel lookup table which converts pixel display data read out of said display memory into color designating data for a respective pixels with a data format to be output to a display device; and

a flat display device which displays an image made up of a plurality of pixels from the data provided by said parallel lookup table;

wherein said parallel lookup table comprises:

a plurality of lookup table devices including n memory devices (where n is an integer greater than one) each for storing color pixel designating information; and

m selectors (where m is an integer greater than one), each connected to said n memory devices independently, for receiving n pieces of color pixel designating information stored in said n memory devices and for outputting m pieces of color pixel designating information for m pixels simultaneously by each selector selecting one from said n pieces of color pixel designating information according to said pixel display data read out of said display memory,

wherein said m pieces of color pixel information corresponds to display data to be displayed on said flat display apparatus of an adjacent m pixels.

5,329,293

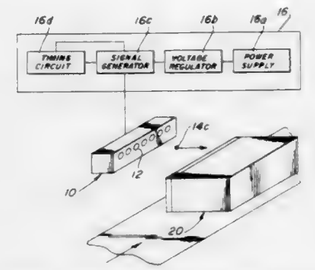
METHODS AND APPARATUS FOR PREVENTING CLOGGING IN INK JET PRINTERS

Stephen Liker, Newtown, Conn., assignor to Trident, Brookfield, Conn.

Filed Apr. 15, 1991, Ser. No. 685,533

Int. Cl.[5] G01D *9/00, 15/18*

U.S. Cl. 347—11 **27 Claims**



19. A method of operating an ink jet printer having at least one nozzle for ejecting ink droplets in response to a sequence of control signals that comprises firing signals and sub-firing signals of controlled amplitude, said method

generating a sequence of control signals at a frequency which is effective to prevent clogging of the nozzle;

generating firing signals having amplitudes which are effective to prevent clogging of the nozzle and to eject ink droplets; and

generating sub-firing signals having amplitudes which are effective to prevent clogging of the nozzle yet which are ineffective to eject ink droplets, said generation of sub-firing signals commencing after a predetermined quiescent interval following generation of a sequence of firing signals and terminating upon generation of a subsequent firing signal.

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5,329,294
USER REFILLABLE INK JET CARTRIDGE AND METHOD FOR MAKING SAID CARTRIDGE

Susan P. Ontawar, Vernon, and Fred Keen, Tenafly, both of N.J., assignors to Repeat-O-Type Mfg. Co., Inc., Wayne, N.J.

Continuation-in-part of Ser. No. 950,782, Sep. 24, 1992, abandoned. This application Nov. 12, 1992, Ser. No. 975,388
Int. Cl.[5] B41J *2/175*
U.S. Cl. 397—87 **24 Claims**

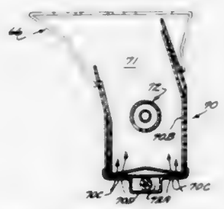


1. A method for making a user refillable ink jet cartridge, said cartridge having a top portion and a base portion, said top portion having a first hole and a second hole, said first hole in said top portion being sealed in a first configuration with a plug, said base portion having a vent hole, said cartridge containing at least one bladder for being inflated with air to above atmospheric pressure, said bladder having an opening which is confluent with said second hole in said top portion, said method comprising the steps of:
sealing said vent hole in said base portion of said cartridge;
creating a second configuration for said first hole in said top portion of said cartridge by removing said plug and thereby unsealing said first hole; and,
replenishing ink within said cartridge by injecting ink through said first hole which is now in said second, unsealed configuration due to the removal of said plug.

5,329,295
PRINT ZONE HEATER SCREEN FOR THERMAL INK-JET PRINTER

Todd R. Medin, Escondido, and Brent W. Richtsmeier, San Diego, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1992, Ser. No. 876,942
Int. Cl.[5] B41J *2/01*
U.S. Cl. 346—25 **18 Claims**

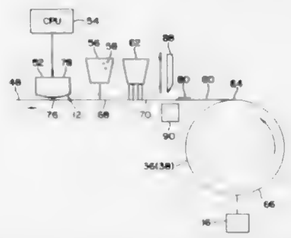


1. An ink-jet printer for printing onto a print medium in a heated printed environment, comprising:
a printhead for printing on a print medium, said printhead comprising a plurality of ink-jet nozzles disposed above a print zone for ejecting droplets of ink onto a surface of the medium in a controlled fashion;
means for advancing the print medium along a print advancement direction to said print zone beneath said printhead during print operations;
print heater means for heating said medium to cause accelerated drying of ink deposited on said medium, said heater means comprising a heat source disposed beneath said medium at said print zone;
heater screen member disposed at said print zone for supporting said print medium at said print zone and for permitting convective and radiant heat transfer from said heat source to said medium, said screen member comprising an opening pattern defined in a screen surface, said opening pattern partially defined by a series of webs arranged so as to contact and support said print medium and so as not to catch a leading edge of the print medium being advanced to and away from the print zone.

5,329,296
IMAGING SYSTEM FOR A PRINTING PRESS

Kevin W. Orth, Des Plaines; Walter J. Pelczarski, Downers Grove, and Garry F. Tupek, Naperville, all of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 845,297, Mar. 2, 1992. This application Jun. 10, 1993, Ser. No. 74,903
Int. Cl.[5] G11B *9/00*
U.S. Cl. 346—74.2 **13 Claims**



1. An imaging system for a printing press, comprising:
an imaging device having an outer surface;
a magnetically addressable film;
means for passing the film adjacent the outer surface of the imaging device;
means for writing magnetic information adjacent the outer surface of the imaging device onto the film;
means for passing a magnetic particulate material onto a surface of the film to form an image from the particulate material; and
means for bonding the particulate material onto the film, including a print cylinder having an outer surface, means for placing a segment of the film onto the outer surface of the print cylinder, and including means for severing the segments from the film.

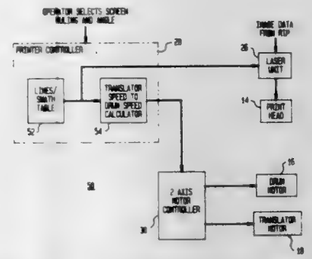
5,329,297
PROOF PRINTER CAPABLE OF PRINTING WITH VARIOUS SWATH WIDTHS

Kurt M. Sanger, Rochester; Thomas A. Mackin, Hamlin; Michael E Schultz, Rochester; Thomas J. DeClerck, Pittsford; Scott L. Auer, Webster, and Michael J. O'Brien, Farmington, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,029
Int. Cl.[5] G01D *15/10*; **H04N** *1/21*
U.S. Cl. 346—76 L **4 Claims**

1. Apparatus for printing an image on a receiver with multiple writing lines which are generated substantially simultaneously, said apparatus comprising:

a plurality of image transfer sources;
means for causing a relative movement between the sources and a receiver;
said image sources arranged to produce multiple writing lines formed of a plurality of incremental dots, said incremental dots forming half-tone image dots which produce a half-tone image wherein the fundamental harmonic of the number of lines in the swath beat against natural frequencies appearing in the subject of the image,
means for selecting a number of adjacent sources from said plurality of image transfer sources, to generate an image;
said means for selecting the particular number of image

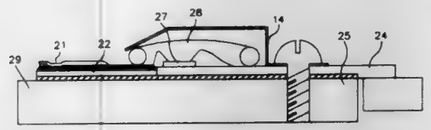


transfer sources comprising a look-up table in which a plurality of particular numbers of the image transfer sources are tabulated against particular half-tone dot patterns;
calculator means for calculating the speed of the relative movement between said sources and said receiver; and
means operative in response to said calculator means for adjusting the speed of the relative movement between said selected image transfer source and the receiver whereby the fundamental harmonic of the number of lines in the swath that beat against natural frequencies appearing in the subject of the image generate a beat frequency that is substantially invisible to the human eye.

5,329,298
THERMAL PRINT HEAD

Eun-Tak Hong; Hong-Geun Yang, both of Seoul, and Bae-Won Lee, Suwon, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 28, 1992, Ser. No. 920,642
Claims priority, application Rep. of Korea, Aug. 19, 1991, 14268/1991
Int. Cl.[5] B41J *2/335*
U.S. Cl. 346—76 PH **5 Claims**

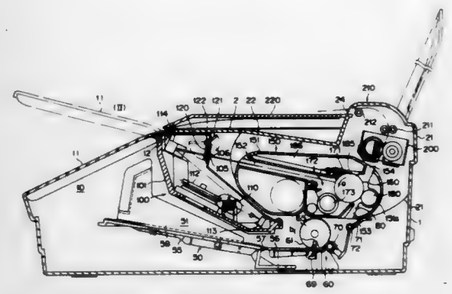


1. A thermal print head, comprising:
a substrate;
a heating element mounted on said substrate;
a printed circuit board;
a driving integrated circuit mounted on said printed circuit board and connected to said substrate and said printed circuit board by conducting wires;
a resinoid material covering said driving integrated circuit and said conducting wires;
a boat performing as a first heat sink with said substrate and said printed circuit board mounted on said boat;
a second heat sink, wherein said boat mounted on said second heat sink.

5,329,299
LASER BEAM PRINTER

Isamu Odagiri, Yokohama; Takayuki Ogawa, Kawasaki; Tatsuya Eguchi, Toyohashi; Norio Tamada, Tondabayashi, and Katsunari Oda, Tokyo, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 20, 1991, Ser. No. 795,017
Claims priority, application Japan, Nov. 23, 1990, 2-319602
Int. Cl.[5] B41J *2/435*
U.S. Cl. 316—108 **10 Claims**

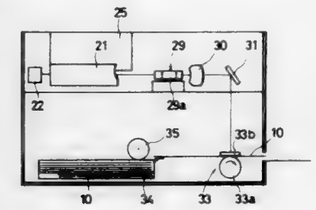


1. A laser beam printer comprising:
a printer body;
said printer body having a front side, said front side being the side of the printer at which an operator is intended to be during operation of the printer;
a first block and a second block which are set in the printer body, one of the blocks being displaceable from a set position;
a light source, disposed in the first block, for radiating a laser beam modulated in accordance with image data; and
optical member means for guiding the laser beam radiated from the light source out of the first block and into the second block so that the laser beam travels from a front side of the printer body toward a rear side of the printer body.

5,329,300
RECORDING PAPER AND RECORDING APPARATUS USING SAME

Masataka Nishiyama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 934,403
Claims priority, application Japan, Aug. 30, 1991, 3-246895; Aug. 30, 1991, 3-246896; Aug. 30, 1991, 3-246897
Int. Cl.[5] H04N *1/21*; **B41J** *2/435*
U.S. Cl. 346—108 **6 Claims**



1. A printer comprising:
a recording paper which includes a color varying layer which normally exhibits a predetermined color, and a substrate layer having a color different from that of the color varying layer, said color varying layer being made

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up of a mixture of an ammonium salt of an organic boron compound and grains of IR 820B cyanine dye;

a paper feeding mechanism which feeds the recording paper;

a light source which emits a laser beam having a specific wavelength; and,

a beam scanner which modulates the laser beam in accordance with predetermined printing data and scans the recording paper with the laser beam while the paper is being moved by the paper feeding mechanism, wherein said predetermined color disappears when a laser beam of specific wavelength is incident thereon

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5,329,301

DEVICE FOR CLAMPING SHEET-SHAPED RECORDING MATERIAL

Ralf Baizeit, Preetz, and Bernd Lassen, Moenkeberg, both of Fed. Rep. of Germany, assignors to Linotype-Hell AG, Kiel, Fed. Rep. of Germany

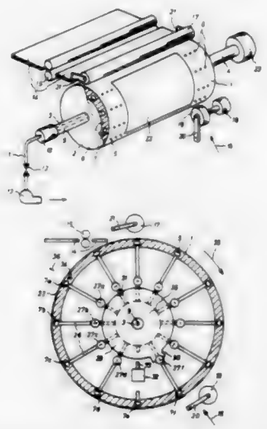
PCT No. PCT/DE90/00888, § 371 Date Apr. 30, 1992, § 102(e) Date Apr. 30, 1992, PCT Pub. No. WO91/07842, PCT Pub. Date May 30, 1991

PCT Filed Nov. 17, 1990, Ser. No. 852,123

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1989, 3938480

Int. Cl.[5] G01D *15/24*

U.S. Cl. 346—134 **22 Claims**



1. A device for clamping sheet-shaped recording material onto a recording drum of a reproduction device, comprising:

suction holes in a generated surface of the recording drum, said suction holes being arranged in suction hole rows which proceed substantially axially with respect to an axis of the recording drum;

separate suction channels isolated from each other in the recording drum proceeding substantially axially with respect to the drum axis, each suction channel being arranged to connect the suction holes of a respective suction hole row to one another;

a vacuum chamber in the recording drum which is in communication with a stationary vacuum pump;

individual respective distributor lines between the vacuum chamber and the individual suction channels;

controllable valve means in the distributor lines for selective connection and separation of the individual channels to and from the vacuum chamber; and

control means arranged in a region of the recording drum for control based on sensing rotational movement and position of the recording drum for automatic, successive opening and/or closing of the controllable valve means during clamping and/or unclamping the recording material, the controllable valve means being automatically controlled by the control means such that during clamping of the recording material, first a suction hole row lying in a starting region of the recording material is charged with vacuum, and thereafter with increasing wrap of the recording material around the recording drum, further suction hole rows are then successively connected to the vacuum chamber and charged with vacuum, and wherein cut-in of further suction hole rows is interrupted in accordance with a respective circumferential length of the recording material at a region of a suction hole row lying in an end region of said recording material.

5,329,302

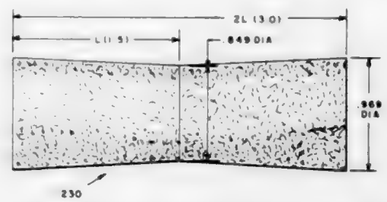
TAPERED PLATEN ROLLER FOR THERMAL PRINTER

Ronald L. Fogle, Springboro, and Larry D. Strausburg, Waynesville, both of Ohio, assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 6, 1992, Ser. No. 950,361

Int. Cl.[5] B41J *11/04*

U.S. Cl. 346—136 **8 Claims**



1. An improved platen roller for a thermal printing apparatus, the printing apparatus having a registration wall, a print deck, a thermal print head mounted to the registration wall and extending over the deck to define a print station, a platen roller support assembly for supporting the platen roller parallel to the thermal print head and causing the platen roller to bias an envelope against the thermal print head and causing the envelope to traverse the thermal print head during a print cycle of the thermal printing apparatus, the platen roller improvement comprising:

said platen roller is comprises of a 25 to 35 durometer unitary cellular urethane and having

a first end section of conical configuration with an outer end of radius "R+h" and an inner end of radius "R" where "R" is less than "R+h", and having a surface taper angle "A" of between −2.0° degrees and −3.0° degrees, and having a axial length of "L" wherein

$$h = L * \text{tangent}(|A|)$$

and;

axial length L is equal to or greater than 1.0 inches.

5,329,303

COMPACT CHART RECORDER

Thomas Gill, Anaheim, Calif., assignor to Transit Services, Inc., Long Beach, Calif.

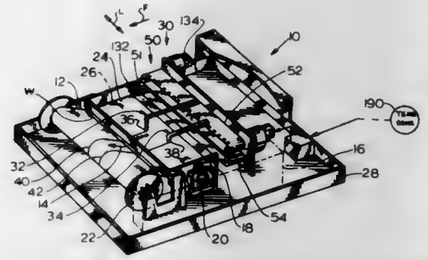
Filed Dec. 5, 1991, Ser. No. 803,161

Int. Cl.[5] G01D *15/16*

U.S. Cl. 346—140.1 **9 Claims**

1. A low cost pressure-markable chart recorder that includes a housing, a marking station with a platen on said housing, a pressure markable chart strip having a width and having a length extending along a chart path between supply and takeup stations past said platen, with said chart path extending in a longitudinal direction at said platen, and a transport which is mounted on said housing and which moves said chart strip along said path, characterized by:

said marking station includes a first belt with a portion extending in a lateral direction parallel to said width of said chart strip, a first stylus with a forward stylus portion that includes a marking part that is spaced in said longitudinal direction from said belt and that presses in a downward direction toward a portion of said chart strip that lies on said platen and with a rear stylus portion lying generally rearward of said forward portion, said rear stylus portion coupled to a part of said belt portion, and a belt-moving mechanism that moves said belt part in said lateral direction to thereby move said stylus in said lateral direction across at least part of the width of said chart strip;



said marking station includes a first slider coupled to said belt part and to said rear stylus portion;

said housing includes a first lateral guide that guides said first slider in movement along said lateral direction and that resists pivoting of said guide and thereby also said stylus about an axis extending in said lateral direction to thereby keep said stylus marking part pressed toward said platen, said lateral guide engaging said first slider at locations spaced apart along said longitudinal direction.

5,329,304

REMAINING INK DETECTING DEVICE AND INK JET HEAD CARTRIDGE

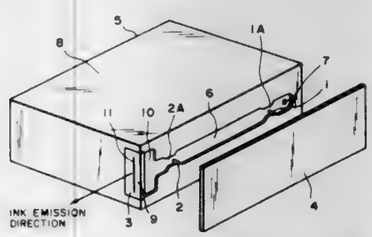
Ryoichi Koizumi, and Asao Saito, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 668,690, Mar. 7, 1991, abandoned, which is a continuation of Ser. No. 439,865, Nov. 21, 1989, abandoned. This application Mar. 16, 1992, Ser. No. 851,129

Claims priority, application Japan, Nov. 22, 1988, 63-293627; Nov. 8, 1989, 1-288736

Int. Cl.[5] B41J *2/175*

U.S. Cl. 347—7 **23 Claims**



1. A device for detecting a quantity of remaining ink, comprising:

first and second electrodes provided in an ink supply passage which connects an ink tank for storing an ink to a recording head for emitting the ink; and

a detection means for detecting a resistance between said first and second electrodes,

wherein said second of said electrode is provided in said ink supply passage in an area relatively close to said recording head, whereas said first of said electrode is provided in said ink supply passage in an area relatively far from said recording head with said second of said electrodes therebetween, and wherein said second of said electrodes is maintained at a same potential as that of a substrate which constitutes said recording head and on which emission energy generating elements driven to emit the ink are disposed, whereas said first of said electrodes is maintained at a potential different from that of said second of said electrode so as to allow an amount of remaining ink to be detected by the measurement of changes in the resistance between said first and second electrodes.

5,329,305

APPARATUS EMPLOYING INK FOR INK-JET RECORDING

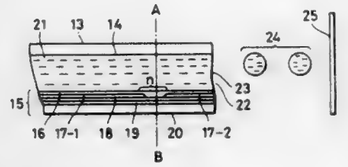
Kyouko Fukushima, Yokohama; Koromo Shirota, Inagi, and Shouji Koike, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 666,076, Mar. 7, 1991, Pat. No. 5,151,128. This application Jun. 30, 1992, Ser. No. 906,653

Claims priority, application Japan, Mar. 9, 1990, 2-058763; Jan. 23, 1991, 3-006384

Int. Cl.[5] G01D *15/16*

U.S. Cl. 347—95 **11 Claims**



1. A recording unit comprising an ink container portion that holds an ink and a head portion for ejecting the ink in the form of an ink droplet,

wherein said ink comprises

(i) a coloring agent in an amount ranging from 0.2 to 20 wt. % based on the total weight of the ink,

(ii) a liquid carrier medium comprising a mixture of water in an amount ranging from 50 to 95 wt. % based on the total weight of the ink and a water-soluble organic solvent in an amount ranging from 2 to 50 wt. % based on the total weight of the ink, and

(iii) an alkyl ether of a polyoxyethylene-polyoxypropylene random polymer having the following general formula [I]:

R1—(X)—O—R2

Wherein R1 and R2 each is a hydrogen atom or an alkyl group, with the proviso that they cannot both be a hydrogen atom, and X is a random polymer of (OC_2H_4) and (OC_3H_6) units with a degree of polymerization of 5-32, wherein the (OC_2H_4) units are in a larger proportion than the (OC_3H_6) units, and wherein said alkyl ether is in an amount ranging from 0.01 to 50 wt. % based on the total weight of the ink, said ink having a surface tension ranging from 30 to 68 dyne/cm at 25° C., and a viscosity of 15 cP or less.

5,329,306

WASTE INK SEPARATOR FOR INK JET PRINTER MAINTENANCE SYSTEM

Michael Carlotta, Sodus, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1992, Ser. No. 974,764

Int. Cl.[5] B41J *2/175*

U.S. Cl. 349—90 **6 Claims**

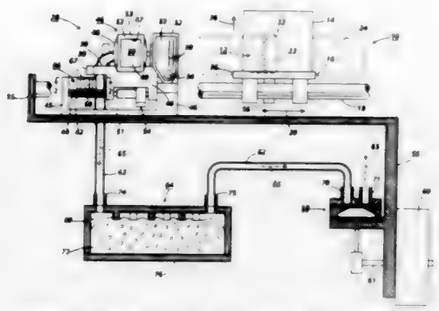
1. A waste ink separator for use in an ink jet printer maintenance station, comprising:

a rigid chamber body having sidewalls surrounding and

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extending from a top wall, the top wall having an inlet and an outlet and an interior surface with a plurality of ribs thereon;

a flexible bottom floor being sealably attached to the sidewalls and having a material providing a high moisture



vapor transfer rate for the transfer of moisture therethrough and evaporization therefrom; and

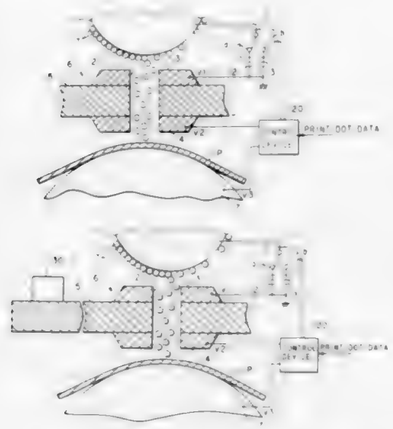
a foam material being placed in the separator and sandwiched between the bottom floor and ribs of the top wall, so that the ribs produce a flow path from the inlet to the outlet.

5,329,307

IMAGE FORMING APPARATUS AND METHOD OF CONTROLLING IMAGE FORMING APPARATUS

Osamu Takemura, Hyogo; Masaaki Yukawa; Shinji Koga, both of Osaka, and Takahiko Kimura, Ixoma, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Continuation-in-part of Ser. No. 884,146, May 18, 1992, abandoned. This application Feb. 12, 1993, Ser. No. 17,448
Claims priority, application Japan, May 21, 1991, 3-145373
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—153.1 **9 Claims**



1. In an image forming apparatus comprising a developer supplying roller for supplying to a predetermined print position, a developer charged to a predetermined polarity, and a print head provided in the print position and having electrode pairs which are respectively provided with developer passing holes, each electrode pair comprising a first electrode and a second electrode connecting with each other and adapted such that said developer passing holes are opened and closed by control of an electric field generated between said first and second electrodes on the basis of print dot data sent in synchronization with a predetermined print clock signal, the image forming apparatus comprising:

first means for generating said electric field such that said developer is attracted from said developer supplying roller to said first electrode between said developer supplying roller and said first electrode at a time when the print dot data is sent in synchronism with said print clock signal; and

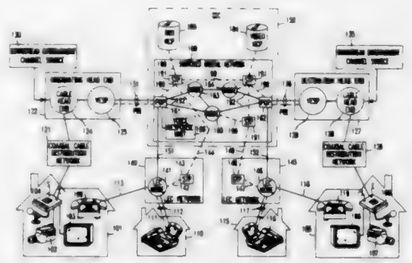
second means for generating said electric field such that said developer is attracted from said first electrode to said developer supplying roller between said developer supplying roller and said first electrode at a time when the print dot data is not sent in synchronism with said print clock signal.

5,329,308

BIDIRECTIONAL VIDEO TELEPHONY BETWEEN CABLE TELEVISION AND SWITCHED TELEPHONE SYSTEMS

Walter P. Binns, Upper Montclair; Nuri R. Dagdeviren, Red Bank; Khashayar Mohammadi, Middletown; Andreas C. Papanicolaou, Lincroft; Deirdre T. H. Ryan, Westfield, and Cheng D. Yu, Scotch Plains, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 29, 1992, Ser. No. 921,881
Int. Cl.[5] H04N *7/14*; **H04M** *11/00*
U.S. Cl. 348—14 **27 Claims**



1. A system for establishing a video telephone call, said system comprising:

originating means for communicating a video telephone signal from an originating video telephone location to a first point of presence,

a switched digital telephone network for routing said signal from said first point of presence to a second point of presence, and

destination means for communicating said video telephone signal from said second point of presence to a destination video telephone location,

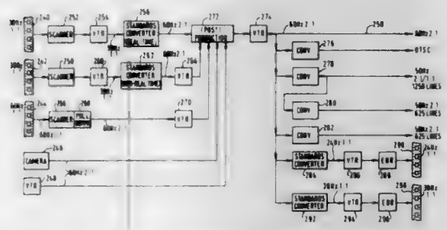
one of said originating and destination means comprising a cable television distribution network and the other of said originating and destination means comprising a facility other than a cable television distribution network.

5,329,309

METHOD OF INTEGRATING FORMAT MATERIAL AND AN INTERLACE SCAN FORMAT SIGNAL

Martin R. Dorricott, Basingstoke; Clive H. Gillard, Chineham; John W. Richards, Stockbridge, all of United Kingdom; Tsuneo Morita, Tokyo, Japan; James J. Galt, Glendale, Calif.; Morgan W. A. David, Farnham, United Kingdom; James E. Burns, and Shima R. Varsani, both of Basingstoke, United Kingdom, assignors to Sony United Kingdom Limited, Staines, United Kingdom

Division of Ser. No. 789,754, Nov. 8, 1991. This application Jul. 19, 1993, Ser. No. 94,781
Claims priority, application United Kingdom, Nov. 15, 1990, 9024816; Nov. 15, 1990, 9024817; Nov. 15, 1990, 9024818; Nov. 15, 1990, 9024825; Nov. 15, 1990, 9024826; Nov. 15, 1990, 9024827; Nov. 15, 1990, 9024828; Nov. 15, 1990, 9024829; Nov. 15, 1990, 9024835; Nov. 15, 1990, 9024836; Nov. 15, 1990, 9024837; Nov. 15, 1990, 9024838
Int. Cl.[5] H04N *7/01*
U.S. Cl. 348—97 **16 Claims**



1. A method of integrating input 30 frame/s format material and a 60 field/s 2:1 interlace scan format digital video signal to produce an output 60 field/s 2:1 interlace scan format digital video signal, comprising the steps of:

(a) producing from the input 30 frame/s format material a 30 frame/s progressive scan format digital video signal;

(b) converting the 30 frame/s progressive scan format digital signal to a 60 field/s 2:1 interlace scan format digital video signal; and

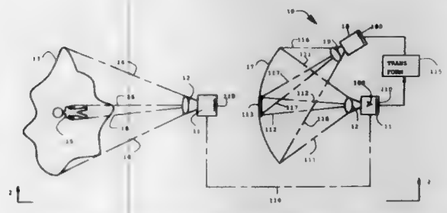
(c) combining the converted signal with the input 60 field/s interlace scan format digital video signal to produce a combined digital video signal.

5,329,310

METHOD AND APPARATUS FOR CONTROLLING DISTORTION OF A PROJECTED IMAGE

Gordon E. Liljegren, Burbank; William G. Redmann, Simi Valley, and Scott F. Watson, Glendale, all of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed Jun. 30, 1992, Ser. No. 907,108
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—147 **152 Claims**



1. A method of displaying an image of a subject on a display surface having a display surface shape and a display surface position, for observation from a viewpoint having a viewpoint position at which said display surface subtends a first field of view, said displayed image having a controlled amount of distortion, said method comprising the steps of:

recording source image visual data for said image by transforming source visual data of said subject through a first distorting transformation process with respect to a recording point at which said subject subtends a second field of view which is at least partially contained within said first field of view at said recording point;

transforming said recorded source image visual data through an intermediate transformation process to produce target image visual data; and

playing back said target image visual data from a playback point having a playback point position at which said display surface subtends a third field of view and such that said subject image subtends at said viewpoint a fourth field of view at least partially contained within said first field of view of said viewpoint, through a second distorting transformation process; wherein:

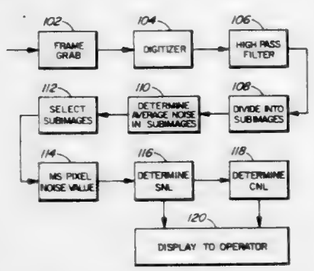
said first and second distorting transformation processes, and said intermediate transformation process are selected so that said second and fourth fields of view are substantially identical, thereby causing said controlled amount of distortion.

5,329,311

SYSTEM FOR DETERMINING NOISE CONTENT OF A VIDEO SIGNAL IN THE DISCLOSURE

Rabab K. Ward, and Qin Zhang, both of Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed May 11, 1993, Ser. No. 59,378
Int. Cl.[5] H04N *17/00, 17/02*
U.S. Cl. 348—180 **15 Claims**



1. A method of determining the noise content of a video signal comprising digitizing a frame of said video signal to provide a digitized signal, subjecting said digitized signal to a high pass filter to remove the majority of said signal representing picture information in said frame and provide a filtered image, subdividing said filtered image into a plurality of subimages, determining noise signal in each of said subimages, selecting a selected number of subimages having the lowest noise signals, determining the signal-to-noise ratio based on the average noise in said selected number of subimages.

5,329,312

DC LEVEL CONTROL CIRCUITRY FOR CCD IMAGES

David M. Boisvert, Rochester; Michael J. Gaboury, Spencerport, and Gregory O. Moberg, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 17, 1992, Ser. No. 931,245
Int. Cl.[5] H04N *5/18*
U.S. Cl. 348—256 **13 Claims**

5. An analog signal processor (ASP) comprising:

a first section for receiving pixel image signals from a CCD unit, the first section having circuit means for correlated double sampling of the pixel image signals, and for differ-

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entially sampling and holding values of the pixel signals and of a first reference voltage as respective stored analog voltages;

a second section for receiving the stored analog voltages, the second section having amplifier means for differentially combining the stored analog voltages and for providing an output signal, the second section having an adjustable gain control and having a feedback signal input for adjusting a d.c. zero dark level of the output signal;

a third section for receiving an output signal from the second section and for providing an output signal at low impedance;



a fourth section being adapted to receive an output signal and to apply a compensating signal to the feedback signal input of the second section;

the fourth section having feedback means for referencing the zero level of the output signal against a second reference voltage and for adjusting the compensating signal by servo action to maintain a desired balance between the second reference voltage and the zero dark level such that the pixel image signals can be accurately sampled over a wide range of sample rates, the gain of the second section is adjustable and the zero dark level of the output signal is determined independently of the gain; and

the four sections of the ASP being adapted to be implemented as a single integrated circuit

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5,329,313

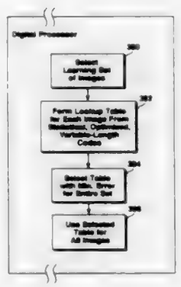
METHOD AND APPARATUS FOR REAL TIME COMPRESSION AND DECOMPRESSION OF A DIGITAL MOTION VIDEO SIGNAL USING A FIXED HUFFMAN TABLE

Michael Keith, Holland, Pa., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 901,499, Jun. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 861,227, Apr. 1, 1992, Pat. No. 5,325,126. This application Oct. 1, 1993, Ser. No. 131,017

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—422 **46 Claims**



1. A method for forming in real time a compressed digital video signal representative of a plurality of compressed digital video images from an analog video signal representative of a plurality of uncompressed digital video images, said compressed digital signal being formed from a bitstream representing a plurality of encoded digital video images, said plurality of uncompressed digital video images being formed from arrays of pixels representing a plurality of motion video images, comprising the steps of:

(a) selecting a training set formed of a plurality of video training images;

(b) determining a set of variable-length codes in accordance with said training set and forming a single fixed lookup table in accordance with said set of variable-length codes;

(c) converting said analog video signal to said plurality of uncompressed digital video images;

(d) selecting a plurality of pixels from said plurality of uncompressed digital video images for compression;

(e) determining a plurality of locations within said single fixed lookup table by applying information representative of said plurality of pixels to said single fixed lookup table; and

(f) converting information representative of said plurality of locations into said bitstream and forming said compressed digital video signal representative of said plurality of compressed digital video images from said bitstream.

5,329,314

METHOD AND APPARATUS FOR VIDEO SIGNAL INTERPOLATION AND PROGRESSIVE SCAN CONVERSION

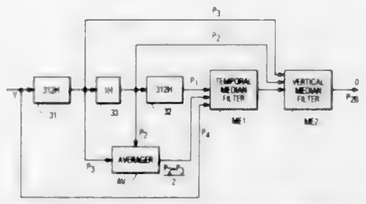
Carlos Correa, VS-Schwenningen, and John Stolte, VS-Tannheim, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 45,485

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1992, 4211955

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—448 **12 Claims**



1. A method for interpolating a video input signal, comprising the steps of:

forming a vertically interpolated signal from said video input signal;

applying said vertically interpolated signal, a field delayed signal and a field advanced signal to respective inputs of a first median filter for forming a first median filtered signal; and

applying said first median filtered signal, a line delayed signal and a line advanced signal to respective inputs of a second median filter for producing an interpolated video output signal subjected to double median filtering.

5,329,315

SPECIAL EFFECT GENERATOR HAVING PLURAL PROCESSORS SELECTIVELY CONNECTED AND ADDING TO A SIGNAL PROCESSED THEREBY AN ID SIGNAL REPRESENTING THE CONNECTING STATUS OF THE PROCESSORS

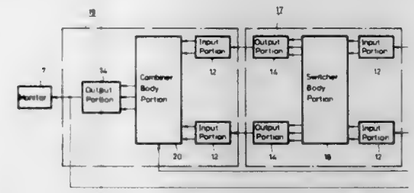
Katsuakira Moriwake; Shinichi Fukushima, and Toshihiro Shiraishi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

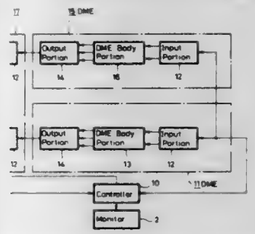
Filed Apr. 6, 1993, Ser. No. 42,768

Claims priority, application Japan, Apr. 10, 1992, 4-091205

Int. Cl.[5] H04N *9/74*

U.S. Cl. 348—578 **6 Claims**





3. A special effect generating apparatus for generating video specific effects comprising:

a plurality of processing units being connected to each other, each of said processing units having processing means for processing an input video signal according to a control signal, identification signal generating means for generating an identification signal which identifies said processing unit or a condition of said processing unit, adding means for adding said identification signal to a predetermined portion of an output video signal from said processing means and detecting means for detecting said identification signal in an output video signal from upstream processing units; and

monitoring means for monitoring a connecting status among said plurality of processing units or a condition of said processing units according to said identification signal detected by said detecting means.

5,329,316

CONTOUR COMPENSATOR FOR VIDEO IMAGE HAVING OVERLAPPING INFORMATION

Koo-ho Kang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-Do, Rep. of Korea

Filed Apr. 29, 1992, Ser. No. 875,439

Claims priority, application Rep. of Korea, Dec. 27, 1991, 91-24671

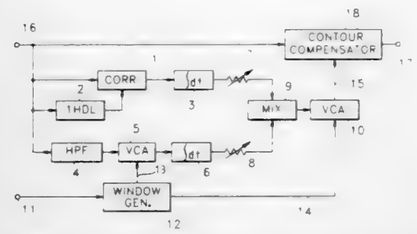
Int. Cl.[5] H04N *5/208*

U.S. Cl. 348—625 **8 Claims**

5. A contour compensator comprising:

compensator means for adding preshoot or overshoot to a transitional portion of a video signal to improve the resolution of a picture,

window signal generator means for generating a window signal corresponding to a portion of the picture in which additional information overlaps the picture, said window signal controlling the amount of preshoot or overshoot



added to the transitional portion of the video signal in which the additional information overlaps the picture.

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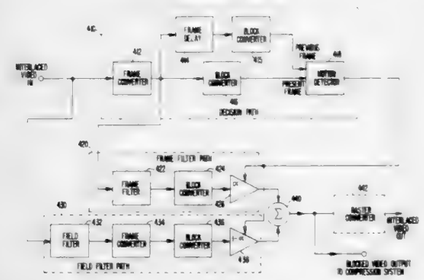
ADAPTIVE FIELD/FRAME FILTER FOR INTERLACED VIDEO SIGNALS

Saiprasad V. Naimpally, Langhorne, Pa., and Hee-Yong Kim, Plainsboro, N.J., assignors to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Sep. 30, 1992, Ser. No. 954,283

Int. Cl.[5] H04N *7/12, 5/12*

U.S. Cl. 348—620 **8 Claims**



1. A motion adaptive video signal filtering system suitable for filtering an interlaced video signal in which a frame of video information is represented by first and second interlaced fields and each of said fields includes a plurality of lines of pixel values, said system comprising:

field filtering means for processing corresponding ones of said pixel values on each of a plurality of successive lines of one of said fields to generate a field filtered video signal;

frame conversion means for combining successive pairs of said first and second interlaced fields to generate successive frames of said video signal;

frame filtering means for processing corresponding ones of said pixel values on each of a plurality of successive lines of one of the frames to generate a frame filtered video signal;

motion detection means, responsive to differences in successive ones of the frames provided by the frame conversion means, for selectively combining the field filtered video signal and the frame filtered video signal to generate an output signal.

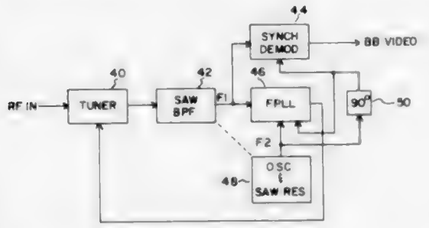
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5,329,318
METHOD FOR OPTIMIZING IMAGE MOTION ESTIMATION
Michael Keith, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Filed May 13, 1993, Ser. No. 61,717
Int. Cl.[5] H04N *7/00*
U.S. Cl. 348—699 **16 Claims**

1. A method for estimating image motion in a video processing system having a test image, a plurality of candidate images, difference determining means for determining a difference between images, and duration determining means for determining the duration of the image motion estimation process of steps (a), (b), and (c) below, comprising the steps of:
(a) selecting a candidate image of said plurality of candidate images;
(b) determining a difference between said test image and said selected candidate image;
(c) estimating said image motion in accordance with the determining of step (b);
(d) determining the duration of the image motion estimation process of steps (a), (b), and (c) above, by said duration determining means; and,
(e) repeating step (c) in accordance with the duration determination of step (d).

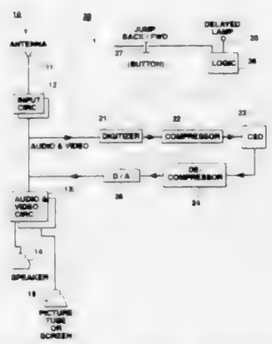
5,329,319
STABILIZED FREQUENCY AND PHASE LOCKED LOOP WITH SAW DEVICES ON COMMON SUBSTRATE
Gary J. Sgrignoli, Mt. Prospect, Ill., assignor to Zenith Electronics Corporation
Continuation of Ser. No. 658,168, Feb. 20, 1991, abandoned. This application Oct. 27, 1992, Ser. No. 967,957
Int. Cl.[5] H04N *5/50*
U.S. Cl. 348—733 **3 Claims**



1. A television signal receiver comprising:
tuning means for converting a received RF signal to an IF signal of substantially 45 MHz;
IF SAW bandpass filter means, having a predetermined frequency response characteristic, for processing said IF signal;
means including oscillator means and a SAW resonator for generating a reference signal, said oscillator means having an output that is an even integer multiple of the IF signal frequency, and including dividing means for producing said IF signal frequency from said output;
means for synchronously demodulating said IF signal responsive to said reference signal and developing a control signal for application to said tuning means for locking said IF signal to said reference signal; and
said IF SAW bandpass filter means and said SAW resonator being fabricated on a common substrate whereby the frequency of said IF signal tracks variations in said predetermined frequency response characteristic.

2. A television receiver comprising tuner means for converting a received RF signal to an IF signal of substantially 45 Mhz;
a SAW bandpass filter having a predetermined frequency response characteristic for processing said IF signal;
oscillator means, including a SAW resonator, for developing a reference signal;
frequency and phase locked loop means coupled to said oscillating means and to said SAW bandpass filter for developing a control voltage for said tuning means;
synchronous demodulator means coupled to said SAW bandpass filter and to said oscillator means for developing a baseband video signal from said IF signal; and
said SAW bandpass filter and said SAW resonator being formed on the same lithium niobate substrate and further including;
means for minimizing crosstalk between said SAW bandpass filter and said SAW resonator, said crosstalk minimizing means comprises a pattern of ink on said substrate individually surrounding said SAW bandpass filter and aid SAW resonator, whereby changes in temperature and frequency of said SAW bandpass filter or said SAW resonator have minimal effect on their tracking.

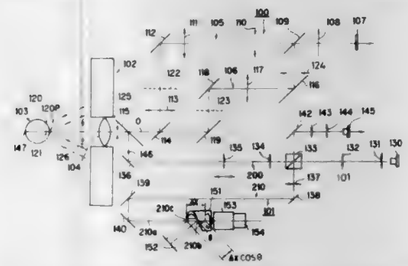
5,329,320
TV RECEIVER AND BUFFER SYSTEM THEREFOR
Aharon Yifrach, 19 Ayalon Street, 78616 Ashkelon, Israel
Filed Dec. 3, 1992, Ser. No. 985,049
Int. Cl.[5] H04N *5/60*
U.S. Cl. 348—738 **16 Claims**



1. A buffer system for TV receivers having processing circuitry outputting audio and video analog signals to audio and video circuits for reproduction as sounds and pictures, said buffer system comprising:
an analog-to-digital converter for converting the analog audio and video signals outputted by said processing circuitry to digital audio and video signals;
an electronic compressor for compressing the digital output of the analog-to-digital converter into a much smaller volume of digital information;
a digital cyclic storage device connected to said compressor for continuously storing in digital form the compressed audio and video signals last outputted thereby over a predetermined time interval;
an electronic decompressor for expanding the compressed signals stored in the cyclic storage device;
a control circuit including a mode selector effective to control said buffer system to select:
(a) a Normal-Viewing Mode, wherein the audio and video circuits are connected to receive the audio and video signals from the processing circuitry in a real-time manner, while the cyclic storage device continuously stores the compressed audio and video signals last outputted by the compressor over a predetermined time interval;
or (b) at least one other mode wherein the audio and video circuits are connected to receive via said decompressor the signals previously stored in the cyclic storage device; said at least one other mode including a Delayed Viewing Mode, wherein the audio and video circuits are connected to receive the audio and video signals in a delayed-time manner from the processing circuitry via said cyclic storage device;
and a digital-to-analog converter for reconverting to analog form the signals received by the audio and video circuits from said cyclic storage device, via the decompressor.

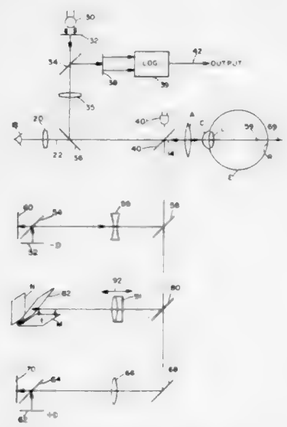
9. A TV receiver comprising:
input circuits connected to an antenna outputting audio and video signals;
audio and video circuits for reproducing the audio and video signals in the form of sounds and pictures;
and a buffer system including:
an analog-to-digital converter for converting the audio and video analog signals outputted by said audio and video circuits to digital audio and video signals;
an electronic compressor for compressing the digital output of the analog-to-digital converter into a much smaller volume of digital information;
a digital cyclic storage device connected to the compressor for continuously storing the compressed audio and video signals last outputted thereby over a predetermined time interval;
an electronic decompressor for expanding the compressed signals stored in the cyclic storage device;
a control circuit including a mode selector effective to control said buffer system to select:
(a) a Normal-Viewing Mode, wherein the audio and video circuits are connected to receive the audio and video signals from the processing circuit in a real-time manner, while the cyclic storage device continuously stores the compressed audio and video signals last outputted by the compressor over a predetermined time interval;
or (b) at least one other mode wherein the audio and video circuits are connected to receive via said decompressor the signals previously stored in the cyclic storage device; said at least one other mode including a Delayed Viewing Mode, wherein the audio and video circuits are connected to receive the audio and video signals in a delayed-time manner from the processing circuitry via said cyclic storage device;
and a digital-to-analog converter for reconverting to analog form the signals received by the audio and video circuits from said cyclic storage device, via the decompressor.

5,329,321
INTRAOCULAR LENGTH MEASURING INSTRUMENT WITH ROTARY OPTICAL PATH LENGTH VARIATOR
Hiroshi Koizumi, Tokyo, Japan, assignor to Kabushiki Kaisha TOPCON, Tokyo, Japan
Filed Mar. 18, 1993, Ser. No. 33,549
Claims priority, application Japan, Mar. 19, 1992, 4-063048
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—205 **10 Claims**



1. An intraocular length measuring instrument including:
a light source having a short coherent length;
a beam splitter for forming a measuring optical path via the interior of an eye to be tested and a reference optical path within said instrument, and guiding a beam of light from said light source to both said measuring optical path and said reference optical path;
a first light receiving means for interfering light reflected by an intraocular object to be measured after passing along said measuring optical path with light coming through said reference optical path and receiving a resultant interference light;
an intraocular object position measuring means for finding an optical path difference from the reference optical path and the measuring optical path according to a peak position of a signal coming from said first light receiving means and an optical path length of the reference optical path;
a light irradiating optical means for irradiating a light beam to the cornea of said eye to be tested;
a light receiving optical means for introducing a reflected light from said cornea to a second light receiving means; and
a corneal position measuring means for finding a position of said cornea from an output of said second light receiving means;
a rotatable optical path length variable means for varying the optical path length of the reference optical path in accordance with an angle of rotation; and
a rotary means for rotating the optical path length variable means to vary the optical path length of the reference optical path sequentially.

5,329,322
PALM SIZE AUTOREFRACTOR AND FUNDUS TOPOGRAPHICAL MAPPING INSTRUMENT
Don R. Yancey, P.O. Box 362, Hilo, Hi. 96721
Filed May 26, 1992, Ser. No. 888,166
Int. Cl.[5] A61B *3/10, 3/00*
U.S. Cl. 351—211 **14 Claims**



1. An autorefractor for determining the departure in gross sphere for the eye of a refracted patient from an emmetropia prescription comprising in combination:
an optical path for interrogating an eye for prescription, said eye having a retina, a cornea and a lens:
first means for projecting a first image along said optical path to the retina of said eye having a gross sphere with a preselected positive dioptric value relative to said emmetropia prescription;
first detector means for receiving said first image from said optical path reflected from the retina of said eye and

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generating a first signal proportional to an intensity of said first image;

second means for projecting a second image to said optical path to the retina of said eye having a gross sphere with a preselected negative dioptric value relative to said emmetropia prescription;

second detector means for receiving said second image from said optical path reflected from the retina of said eye and generating a second signal proportional to an intensity of said second image; and

comparison means for receiving said first and second signals for indicating a relative intensity of said first and second images and generating a signal proportional to the gross sphere of said eye.

5,329,323

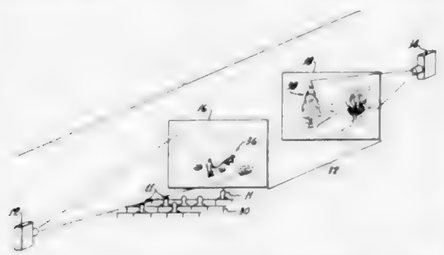
APPARATUS AND METHOD FOR PRODUCING 3-DIMENSIONAL IMAGES

Kevin Biles, 13364 Beach Ave., Marina del Rey, Calif. 90292

Filed Mar. 25, 1992, Ser. No. 857,235

Int. Cl.[5] G03B *21/00*

U.S. Cl. 353—10 **21 Claims**



16. A dual-screen apparatus for producing an apparent three-dimensional image when, with respect to a viewer of said apparatus, a foreground image is projected from the front of said apparatus onto the front surface of a first of said dual screens simultaneously with projection of a background image from the rear of said apparatus onto a rear surface of a second of said dual screens, said apparatus comprising:

a perforate thin-film first screen having a front and a rear surface with respect to said viewer, said first screen having a film thickness of about 0.010 inch or less, a perforation ratio in the range of from 35 percent to 50 percent perforate, with perforations of from about 2 mm to about 4 mm size, and from about 10 to about 14 perforations per square centimeter;

a second screen spaced behind and substantially parallel with said first screen, said second screen having a front and a rear surface with respect to said viewer, and absorbance in the range substantially of from 90 percent to 95 percent with respect to light incident on said front surface of said second screen, and a transmissibility substantially of from 90 percent to 95 percent with respect to light incident on said rear surface of said second screen, said second screen having a reflectance of substantially 10 percent or less with respect to light incident on said front surface of said second screen;

whereby said first screen in correspondence with said perforation ratio reflects to said viewer a sufficient portion of said foreground image and transmits the remainder of said foreground image to said second screen, said second screen absorbing substantially 90 percent or more of said transmitted foreground image with no more than 10 percent of said transmitted foreground image being reflected by said second screen toward the rear surface of said first screen, and said first screen transmitting a correspondingly reduced part of said reflected foreground image to said viewer so that "ghosting" of said foreground image is prevented; and said rear screen transmits 90 percent or more of the background image toward said front screen which transmits a portion of said background image to said viewer in correspondence with said perforation ratio.

5,329,324

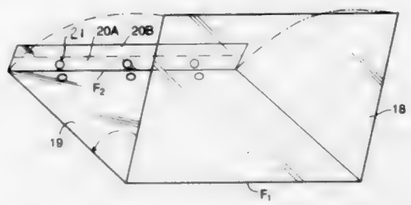
TRANSPARENCY PROTECTOR

Thomas A. Candido, Hauppauge, N.Y., assignor to Enbee Plastics, Inc., Long Island City, N.Y.

Continuation-in-part of Ser. No. 25,619, Mar. 3, 1993. This application Oct. 18, 1993, Ser. No. 137,427

Int. Cl.[5] G03B *21/11*

U.S. Cl. 353—120 **8 Claims**



1. A protector adapted to accommodate a transparency so that it may be used with an overhead optical projector to cast an image carried by the transparency onto a viewing screen, the protector comprising an open-ended rectangular sleeve formed of transparent synthetic plastic film material of high strength whose dimensions are appropriate to those of the transparency, said sleeve having a front panel folded at a first fold line over a rear panel of the same length to form a folder to receive the transparency whose inner edge is then adjacent the first fold line, said rear panel having a greater width than the width of the front panel and having a second fold line which defines a flap extending beyond the front panel, said flap being folded over the rear panel, said flap having a section adjacent the second fold line that is bonded to the rear panel to define a margin in which holes are punched so that the protector can be stored in a ring binder or other file, and a parallel section defining a locking pocket which receives the outer edge of the transparency and the corresponding edge of the front panel whereby the transparency is locked in the sleeve.

5,329,325

SYNCHRONIZED ZOOM ELECTRONIC CAMERA SYSTEM

Larry D. McClellan, New Hope; Denis L. Larson, Andover; Rolf D. Ingersoll, Minnetonka; Jerome W. Lindenfelser, Brooklyn Park, and Roger M. Johnson, Minneapolis, all of Minn., assignors to Photo Control Corporation, Minneapolis, Minn.

Filed Jul. 16, 1993, Ser. No. 93,534

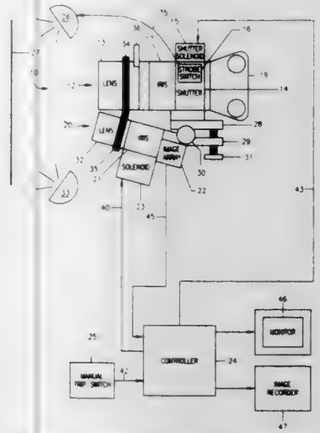
Int. Cl.[5] G03B *29/00, 1/18;* **H04N** *5/225, 9/64*

U.S. Cl. 354—76 **5 Claims**

4. The camera system of claim **1** wherein said

said first photo camera zoom lens coupling means is a photo camera zoom gear attached to said photo camera zoom lens;

said electronic camera zoom lens coupling means is an electronic camera zoom gear attached to said electronic camera zoom lens, which is coupled to said photo camera zoom gear.



5,329,326

CAMERA WITH MOTOR FOR DRIVING FLASH MECHANISM AND EXPOSURE-PREPARATORY MECHANISM

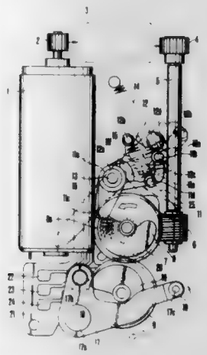
Shousuke Haraguchi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 654,028, Feb. 12, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 19,919

Claims priority, application Japan, Feb. 14, 1990, 2-034460

Int. Cl.[5] G03B *15/03, 9/64, 19/12*

U.S. Cl. 354—149.1 **15 Claims**



1. A camera comprising:

(a) a motor;

(b) a flash mechanism, which performs multiple, repeatable operations that are driven by an output of said motor;

(c) an exposure-preparatory operation mechanism which operates during a period from generation of a signal for starting release of exposure;

(d) a clutch mechanism for transmitting the output of said motor to said flash mechanism during an operation of said motor in a first direction and to transmit the output of said motor to said exposure-preparatory operation mechanism during an operation of said motor in a second direction;

(e) first detecting means for detecting an operational state of said flash mechanism;

(f) second detecting means for detecting an operational state of said exposure-preparatory operation mechanism; and

(g) controlling means for controlling driving of said motor in response to outputs from said first and second detecting means.

5,329,327

BUILT-IN FLASH SYSTEM

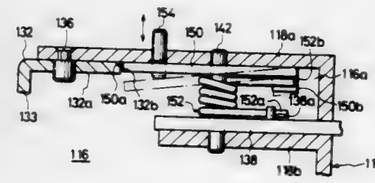
Akihiro Arai, and Tetsuji Shono, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 626,230, Dec. 11, 1990, abandoned, which is a continuation of Ser. No. 490,001, Mar. 7, 1990, abandoned, which is a division of Ser. No. 306,436, Feb. 3, 1989, Pat. No. 4,920,368, which is a continuation of Ser. No. 143,488, Jan. 13, 1988, abandoned. This application May 7, 1991, Ser. No. 700,033

Claims priority, application Japan, Jan. 13, 1987, 62-5815; Jan. 13, 1987, 62-5816; Jan. 13, 1987, 62-5817; Feb. 6, 1987, 62-16209; Feb. 9, 1987, 62-27898; Feb. 9, 1987, 62-27899

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—149.11 **6 Claims**



1. In a built-in flash pop-up device in which a flash is provided in a housing chamber provided above a penta-prism in a body of a camera so as to be movable between a housing position and a projecting position by turning operation of a turning lever:

a lock mechanism for locking said built-in flash pop-up device characterized in that a lock lever, having an engagement surface arranged to engage a stoppage surface of said turning lever when said flash is moved to said flash-housing position, is pivotally mounted to said housing chamber, and in that said lock lever is arranged to be moved in the axial direction of a shaft of said turning lever so as to disengage said engagement surface of said lock lever from said stoppage surface of said turning lever.

5,329,328

CAMERA

Shosuke Haraguchi; Masaharu Kawamura, and Hideki Morishima, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 305,706, Feb. 3, 1989, Pat. No. 5,070,349. This application Aug. 8, 1990, Ser. No. 564,133

Claims priority, application Japan, Feb. 8, 1988, 63-028191; Feb. 8, 1988, 63-028192; Feb. 8, 1988, 63-028193

Int. Cl.[5] G03B *1/12*

U.S. Cl. 354—152 **18 Claims**

1. A camera comprising:

(a) a motor;

(b) a first planetary gear which revolves on the basis of an output rotation of said motor;

(c) a second planetary gear which revolves on the basis of the output rotation of said motor;

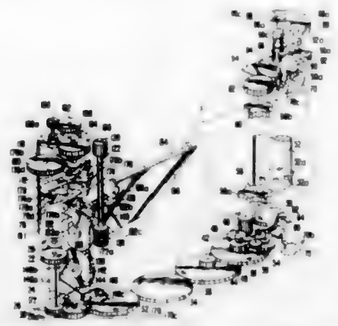
(d) a first camera operating mechanism which engages with said first planetary gear by the revolution of said planetary gear caused by a rotation of said motor in a first direction;

(e) a second camera operating mechanism which engages with said second planetary gear by the revolution of said

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second planetary gear caused by the rotation of said motor in the first direction; and

(f) selection means for selectively preventing the revolution of either of said first and second planetary gears, said



selection means selectively permitting the operation of either of said first and second camera operating mechanisms during the rotation of said motor in the first direction.

5,329,329

ZOOM LENS BARREL UNIT WITH LENS GROUP MOVING MEANS AND MOVEMENT GUIDING MEANS AXIALLY JUXTAPOSED TO ENHANCE BARREL COMPACTNESS

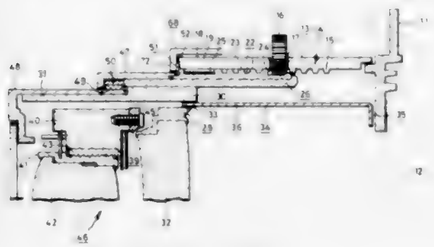
Mitsuru Fukushima; Noriyoshi Fujimori, and Nobuo Komatsu, all of Suwa, Japan, assignors to Chinon Kabushiki Kaisha, Suwa, Japan

Filed Mar. 30, 1992, Ser. No. 860,409

Claims priority, application Japan, Jul. 8, 1991, 3-166965; Jul. 11, 1991, 3-171315

Int. Cl.[5] **G02B** *15/14*

U.S. Cl. 354—195.12 **1 Claim**



1. A zoom lens barrel unit comprising:

a fixed barrel member;

at least first and second lens groups;

a cam ring concentrically disposed inside said fixed barrel member;

a plurality of cam grooves in said cam ring for guiding said at least two lens groups;

moving means positioned between said fixed barrel member and said cam ring for moving said cam ring linearly in each of opposite directions along an optical axis about which said cam ring is rotatable and when said cam ring is rotated;

a linear movement guiding plate disposed within said cam ring parallel to the optical axis and fixed at an end thereof to said fixed barrel member, said linear movement guiding plate being juxtaposed longitudinally with the said cam ring moving means;

a rear lens group moving member concentrically disposed inside said cam ring and supporting a rear lens group, said rear lens group moving member being movable in the optical axis direction, said linear movement guiding plate having a length which corresponds to a distance range in which the rear lens group moving means can move;

said rear lens group moving member including a plurality of guide pins received through a set of rear lens group cam grooves of said cam ring whereby said rear lens group moving member is caused to move responsive to rotative/linear movement of said cam ring, said rear lens group moving member carrying catch structure, said linear movement guiding plate extending through the catch structure in the optical axial direction whereby the linear movement guiding plate restrains rotation of the rear lens group moving member about the optical axis, and a plurality of linear movement guiding grooves formed in said rear lens group moving member in the optical axial direction; and

a front lens group moving member concentrically disposed inside said rear lens group moving member and supporting a front lens group;

said front lens group moving member including a plurality of guide pins received in said plurality of linear movement guiding grooves of said rear lens group moving member and a set of front lens group cam grooves in said cam ring.

5,329,330

FILM UNIT WITH A PHOTOGRAPHIC LENS

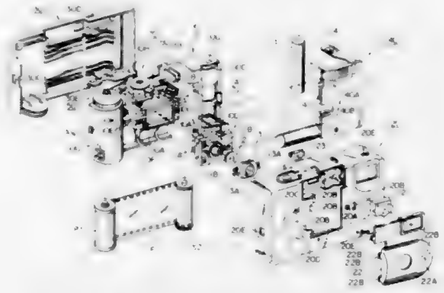
Zeniti Sakai; Kazuo Todo; Takao Tsuda, and Hiroshi Kibayashi, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 3,133

Claims priority, application Japan, Jan. 31, 1992, 4-16937

Int. Cl.[5] **G03B** *17/02*

U.S. Cl. 354—288 **7 Claims**



1. A lens-fitted photographic film unit comprising:

(a) a body having a scroll chamber including a first spool, a film magazine chamber including a film magazine having a second spool therein, and a film-winding knob;

(b) a photographic lens provided in said body;

(c) an unexposed roll of film in said film magazine, said roll of film being wound from said film magazine to said first spool in said scroll chamber for ready exposure, wherein each frame of said roll of film is sequentially wound on said second spool of said film magazine by use of said film-winding knob each time a frame is exposed; and

(d) a rear cover for covering a rear side of said body, said rear cover having:

first and second side edge portions; and top and bottom edge portions; and

a groove provided at an intermediate portion between said first and second side edge portions, said groove being perpendicular to said top and bottom edge portions, and said groove enabling said rear cover to be folded at said groove to at least partially open said body to provide access to said magazine; and

wherein said rear cover has at least three releasable hook portions which releasably engage said rear cover with different sides of said body, and wherein, when at least one of said hook portions is released, after all frames of said roll of film have been exposed and said roll of film is wound on said second spool of said film magazine, said roll of film in said magazine can be taken out of said film magazine chamber by folding said rear cover at said groove.

5,329,331

POST-PROCESSING APPARATUS WITH SOLUTION'S TEMPERATURE DETECTOR

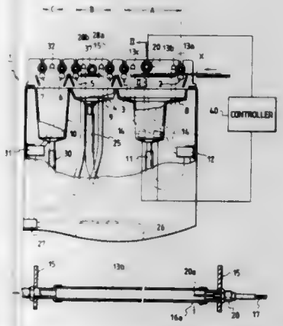
Nobuyoshi Hatori, and Toshio Koike, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,398

Claims priority, application Japan, Jan. 17, 1992, 4-005431

Int. Cl.[5] **G03D** *13/00, 5/04*

U.S. Cl. 354—299 **4 Claims**



1. A post-processing apparatus in which a photosensitive layer in a non-image area of an organic photoconductive master plate that has been prepared on a platemaker through the steps of exposure, development and fixing is washed off to prepare a master plate having image of printing quality formed thereon, said apparatus comprising:

a swelling/wetting section for rendering said photosensitive layer in said non-image area swollen and wet;

a stripping section for stripping and removing said photosensitive layer;

a cleaning section for washing said photosensitive layer with water;

solution receiving tanks for receiving processing solution respectively in association with said swelling/wetting section, said stripping section, and said cleaning section;

spray pipes provided along a width of said master plate for spraying said processing solution from said solution receiving tanks respectively associated with said swelling/wetting section, said stripping section and said cleaning section;

detection means for detecting a temperature of said processing solution, said detection means including a temperature sensing head which is provided in a rear end portion of a fluid passageway of said spray pipe through which said processing solution is to be sprayed from said swelling/wetting section;

an outlet for injecting said processing solution toward said master plate, said detection means being positioned at said outlet so as to detect a temperature of said processing solution as the processing solution is injected toward said master plate, said outlet being bored in a wall of said rear end portion of said spray pipe which is faced with said temperature sensing head of said detection means;

heater means for heating said processing solution, said heater means being provided in said solution receiving tank of said swelling/wetting section; and

control means for controlling said heater means according to an output signal from said detection means to keep the temperature of said processing solution constant.

5,329,332

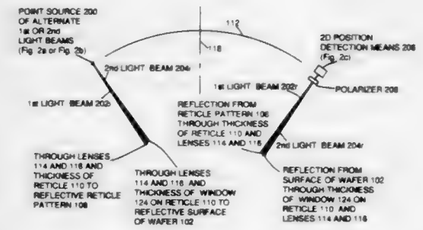
SYSTEM FOR ACHIEVING A PARALLEL RELATIONSHIP BETWEEN SURFACES OF WAFER AND RETICLE OF HALF-FIELD DYSON STEPPER

David A. Markle, Saratoga; Gerald J. Alonzo, and Hwan J. Jeong, both of Los Altos, all of Calif., assignors to Ultratech Stepper, Inc.

Filed Dec. 21, 1992, Ser. No. 994,238

Int. Cl.[5] **G03B** *27/42*

U.S. Cl. 355—53 **13 Claims**



1. In a microlithographic stepper employing unit magnification optics for imaging a reflective pattern disposed on a surface of a reticle onto a reflective surface of a wafer; the combination therewith comprising:

tilt-sensing means including a source of radiation separately reflected from said reflective pattern disposed on said surface of said reticle and from said reflective surface of said wafer for independently sensing the angular position of said surface of said reticle and the angular position of said surface of said wafer to determine thereby whether or not said surface of said reticle and said surface of said wafer are substantially parallel to one another.

5,329,333

EXPOSURE APPARATUS AND METHOD

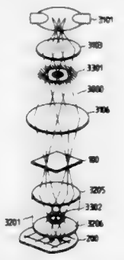
Minori Noguchi; Yukio Kenbo, both of Yokohama; Yoshitada Oshida, Fujisawa; Masataka Shiba; Yasuhiro Yoshitaka, both of Yokohama, and Makoto Murayama, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 846,158

Claims priority, application Japan, Mar. 5, 1991, 3-038387; Mar. 25, 1991, 3-059944; Oct. 7, 1991, 3-258868; Nov. 29, 1991, 3-315976

Int. Cl.[5] **G03B** *27/42, 27/72*

U.S. Cl. 355—53 **48 Claims**



1. An exposure apparatus comprising illuminating means for

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illuminating a mask with light, and imaging means for imaging light one of transmitted through and reflected from the illuminated mask onto a substrate, at least the imaging means including means for at least partially inhibiting transmission of light, wherein the light transmission inhibiting means includes a spatial filter having a first portion for transmitting light, a second portion for transmitting light and surrounding the first portion, and at least one third portion disposed between the first and second portions for at least partially inhibiting transmission of light

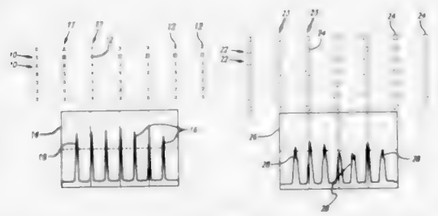
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5,329,334

INTEGRATED CIRCUIT TEST RETICLE AND ALIGNMENT MARK OPTIMIZATION METHOD

Randy Yim, Pleasanten, and Christopher Neville, Sunnyvale, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 2, 1993, Ser. No. 25,202
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 **22 Claims**



1. A test reticle for use in alignment of integrated circuit process layers, said test reticle comprising:
a plurality of alignment mark groups, each of said groups including a particular type of alignment mark in one or more predetermined sizes; and
registration means incorporating one or more registration structures.

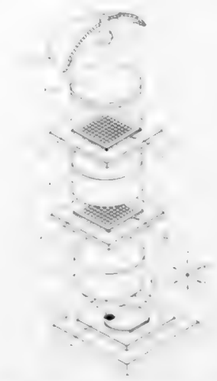
5,329,335

METHOD AND APPARATUS FOR PROJECTION EXPOSURE

Toshio Wada; Hiroyuki Inoue, and Kouhei Eguchi, all of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,319
Claims priority, application Japan, Mar. 17, 1992, 4-091872; Mar. 17, 1992, 4-091873
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—53 **15 Claims**

1. A projection exposure method comprising the steps:
projecting patterns of first and second photo mask elements by a light including a coherent component onto a substrate, each photo mask element having a pattern of a single-layer structure of one of the phase shift film and the light shielding film said substrate being disposed at a predetermined position such that an optical synthesized pattern of the two patterns is formed on said substrate; and
controlling a phase of at least one of a first light portion, which projects the pattern of said first photo mask element onto said substrate, and a second light portion, which projects the pattern of said second photo mask element onto said substrate, so that said first light portion



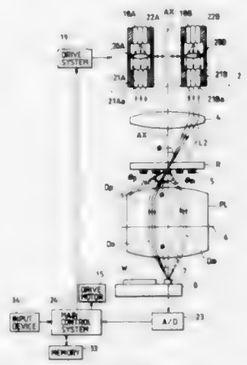
and said second light portion have a predetermined phase difference therebetween.

5,329,336

EXPOSURE METHOD AND APPARATUS

Kazuhiro Hirano, and Masahiro Nei, both of Kawasaki, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 83,566
Claims priority, application Japan, Jul. 6, 1992, 4-201895; Dec. 14, 1992, 4-332745
Int. Cl.[5] G03B *27/42, 27/74, 27/80*
U.S. Cl. 355—53 **14 Claims**



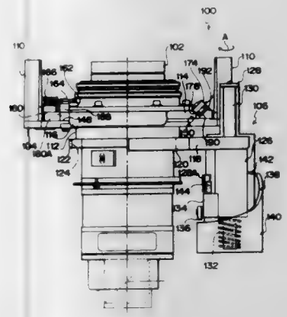
1. An exposure apparatus comprising:
an illumination optical system for radiating illumination light into a mask so as to expose a pattern of said mask on a photosensitive substrate;
photoelectric detection means for photoelectrically detecting at least some light components of the illumination light;
input means for inputting information associated with an incident angle range of the illumination light incident on a light-receiving surface of said photoelectric detection means; and
measurement means for correcting a level of an output signal from said photoelectric detection means in accordance with the input information, and measuring an intensity of the illumination light incident on said photoelectric detection means.

5,329,337

LENS LOADING APPARATUS

Takashi Yamamoto; Nobuo Watasa, and Yoshio Ozawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 17, 1992, Ser. No. 977,795
Claims priority, application Japan, Nov. 22, 1991, 3-307902
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—55 **20 Claims**



1. A lens loading apparatus for inserting and loading a lens held by a holding member into a lens loading unit disposed in a central portion of a substantially horizontally-disposed support plate so as to reach a predetermined position from a horizontally-extending one end, comprising:
a first reference surface provided at an upper surface of said support plate along the insertion direction of said lens, said first reference surface being used to place said holding member thereon;
a second reference surface provided at said support plate along said lens insertion direction, said second reference surface being brought into abutment against one end surface of said holding member, which extends along said lens insertion direction; and
a first pressing member provided at a rear end, in said lens insertion direction, of said second reference surface, for bringing said holding member into abutment against said second reference surface so as to guide the same in a desired direction and for pressing said holding member against said second reference surface.

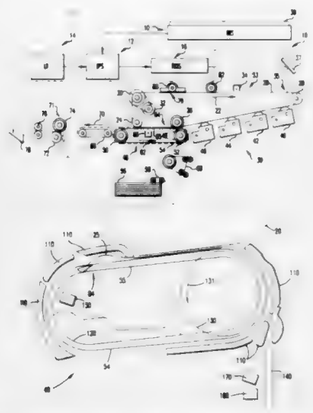
5,329,338

OPTICAL TRANSPARENCY DETECTION AND DISCRIMINATION IN AN ELECTRONIC REPROGRAPHIC PRINTING SYSTEM

Eric A. Merz; Jacqueline L. Holmes, both of Rochester, and Kenneth G. Christy, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 6, 1991, Ser. No. 755,987
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—207 **16 Claims**

1. An apparatus for detecting a transparent copy sheet, comprising:
(a) means for moving a transparent copy sheet about a circuitous path, the circuitous path having a first portion thereof in which the position of the transparent copy sheet is loosely controlled, the first angle of intersection of the surface of the copy sheet with a fixed axis varying as the copy sheet moves about the circuitous path; and
(b) a diffuse reflective sensor disposed adjacent the first portion of the path, said sensor having an optical axis and being capable of detecting a transparent copy sheet for any intersection angle within a predetermined range, the alignment of said optical axis relative to the copy sheet being selected to maximize the length of the copy sheet



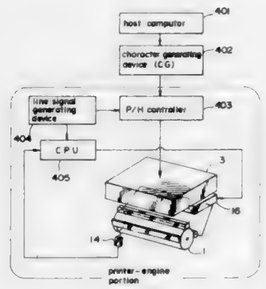
passing through said optical axis for which said intersection angle is within said predetermined range.

5,329,339

LASER BEAM PRINTER CAPABLE OF FORMING LINE IMAGES HAVING STABLE IMAGE WIDTH

Masashi Sakamoto, Toyohashi; Masaki Takahashi, Tokyo, and Keizo Nishiguchi, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 27, 1992, Ser. No. 936,893
Claims priority, application Japan, Aug. 29, 1991, 3-218175
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **2 Claims**



1. A laser beam printer comprising:
forming means for electrostatically forming a latent image on a surface of a photosensitive member by a laser beam;
developing means for developing said electrostatic latent image formed on the surface of the photosensitive member;
applying means for applying a bias voltage to said developing means;
control means for controlling the forming means so as to form at least one latent reference line image on the surface of the photosensitive member and further controlling the developing means so as to develop said latent reference line image to make a developed reference line image;
detecting means for detecting a width of said developed reference line image, said detecting means including a photoemitter element, a photoreceptor element and a slit;
counting means for counting the time during which the

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developed reference line image passes through the slit to determine the width of the developed reference line image;

storing means for storing a reference image width in a memory;

comparing means for comparing the detected image width with the reference image width; and

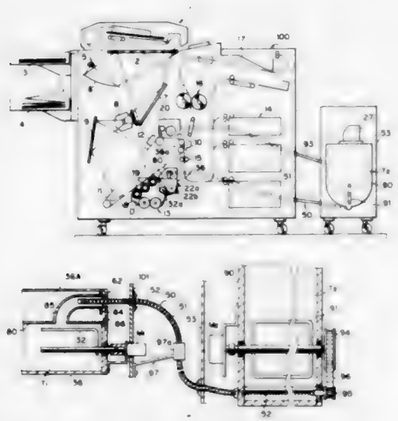
varying means for varying a value of the bias voltage applied to the developing means in accordance with the difference between the reference image width and the detected image width.

5,329,340

IMAGE FORMING APPARATUS

Yutaka Fukuchi, and Kazuhiro Andoh, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,787
Claims priority, application Japan, Jan. 23, 1992, 4-031275
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—246 **16 Claims**



1. An image forming apparatus comprising:

an image carrier for electrostatically forming a latent image thereon;

a developing device for developing the latent image to produce a corresponding toner image;

a first toner container for storing toner to be supplied to said developing device;

a second toner container for storing toner to be supplemented to said first toner container;

conveying means for conveying the toner from said second toner container to said first toner container;

at least one sensor for sensing an amount of the toner remaining in said first toner container; and

drive control means for controllably driving said conveying means to supplement the toner from said second toner container to said first toner container when said at least one sensor senses an absence of the toner;

said conveying means including:

a conveyor member, rotated by said drive control means, for the conveying of the toner;

a flexible tube, surrounding said conveyor member, for guiding the toner being conveyed by said conveyor member; and

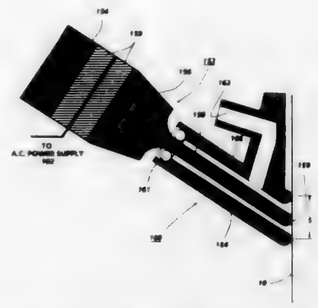
a holder member holding said tube, at least part of said holder member being made of an elastic material.

5,329,341

OPTIMIZED VIBRATORY SYSTEMS IN ELECTROPHOTOGRAPHIC DEVICES

William J. Nowak, Webster; David B. Montfort, Penfield, and Ronald E. Stokes, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 6, 1993, Ser. No. 102,928
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—273 **10 Claims**



1. An electrophotographic device for reproducing an image includes:

means for forming a toner-developed latent image on a charge retentive surface of an imaging member;

means for transferring toner from the charge retentive surface to a surface of a receiving member;

means for enhancing toner release from the charge retentive surface, including

a resonator in contact with and applying vibratory energy to the imaging member at a location at which toner release is desired;

means for coupling the imaging member to the resonator;

a driving signal source electrically coupled to said resonator, and producing a driving signal selected to drive the resonator at a frequency f_r;

said imaging member and said coupling means together defining a system having a first and second belt resonant frequency (f_{b1} and f_{b2}, respectively) when excited by the resonator; and

said resonator operating frequency selected so that

$$f_r \sim (f_{b1} + f_{b2})/2$$

5,329,342

IMAGE FIXING APPARATUS

Masanari Shirai, Chigasaki; Kazuo Kagiura, Tokyo; Hiroyoshi Maruyama, Yokohama; Masashi Ohashi, Tokyo; Tatsuya Shiratori, Kawasaki; Naomasa Kimura, and Yoshikuni Toyama, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 703,709, May 21, 1991, abandoned, which is a continuation of Ser. No. 314,798, Feb. 24, 1989, abandoned. This application May 24, 1993, Ser. No. 65,021
Claims priority, application Japan, Feb. 29, 1988, 63-46885
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **4 Claims**

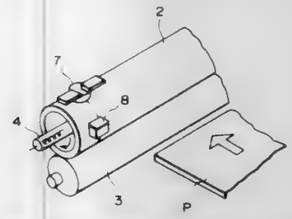
1. An image fixing apparatus comprising:

a rotatable heating member having a heating source;

a single temperature detecting member for detecting a temperature of a surface of said rotatable heating member to maintain a predetermined temperature by controlling power supply to said heating source; and

an overheating preventing member for stopping power supply to the heating source upon overheating of said heating member.

wherein said temperature detecting member and overheating preventing member are provided to said rotable heating member outside a supporting member passing region,



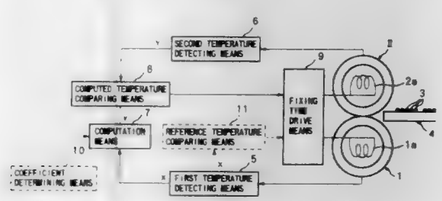
and wherein said heating source has a heat distribution which is higher adjacent said temperature detecting member and said overheating preventing member than adjacent the supporting member passing region.

5,329,343

TEMPERATURE CONTROL METHOD AND FIXING APPARATUS

Hideo Saito, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 14, 1992, Ser. No. 883,459
Claims priority, application Japan, May 14, 1991, 3-137066
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—290 **29 Claims**



1. A temperature control method for a fixing apparatus including a first roll having first heating means, and a second roll arranged to abut against said first roll and having second heating means, for thermally fixing a toner image onto a recording sheet fed from an image forming device, the method comprising

an image fixing mode executed in an imaging operation of said image forming device, said image fixing mode comprising the steps of:

computing a target surface temperature y required for said second roll to reproduce a predetermined fixing property from a measured temperature X of said first roll;

a computed temperature comparing step of comparing said target surface temperature y and a measured temperature Y of said second roll; and

a fixing time control step of driving said first heating means or said second heating means on the basis of the result of comparison.

5,329,344

LUBRICATION OF A DETONING ROLL

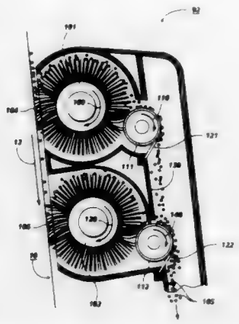
Dennis G. Gerbasi; Bruce E. Thayer, both of Webster, and Clark V. Lange, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1993, Ser. No. 143,705
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—301 **26 Claims**

1. A method for lubricating a second detoning roll, of a cleaning brush system, having a first and a second detoning roll, rotatingly engaged with a first brush and a second brush, respectively, the brushes being engaged with a surface, comprising:

removing toner particles from the surface with the brushes;

attracting said toner particles from the first brush with the first detoning roll;



removing said toner particles from the first detoning roll; and

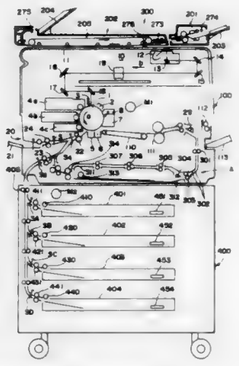
moving said toner particles toward the second detoning roll to lubricate the second detoning roll.

5,329,345

COPYING APPARATUS WITH AUTOMATIC DOCUMENT HANDLING DEVICE

Kentaro Nagatani, Toyohashi; Tomokazu Kato, Toyokawa; Keiichi Nomura, Amagasaki; Yoshiaki Takano, Toyohashi; Syuzi Maruta, Toyokawa; Kazuhiro Araki, and Takashi Noda, both of Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 16, 1992, Ser. No. 962,633
Claims priority, application Japan, Oct. 18, 1991, 3-271322
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—316 **7 Claims**



1. A copying machine comprising:

automatic document handling device including a document tray, first transport means and second transport means, said first transport means feeding original documents placed on said document tray to a predetermined position located between said document tray and an image reading position and said second transport means further feeding original documents fed to the predetermined position by the first transport means to the image reading position;

detecting means for detecting the presence of original documents placed on the document tray;

feeding means for feeding a copy paper to a fixed position within a copy paper feeding path before the original document is fed to the image reading position by the second transport means;

first control means for controlling the feeding means so as to feed the copy paper corresponding to a third original document when the presence of said third original document disposed on the document tray is detected by said detecting means; and

second control means for controlling said detecting means in order to detect the presence of the third original document disposed on the document tray after a second original document has been fed from said document tray to the predetermined position via said first transport means during the copying operation for a first original document fed to the image reading position via said second transport means.

5,329,346

MULTI-COLOR IMAGE FORMING SYSTEM

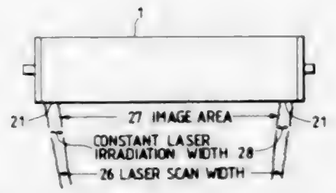
Hiroyuki Suzuki, Machida, and Kenichiro Waki, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 946,568

Claims priority, application Japan, Sep. 20, 1991, 3-268969; Oct. 18, 1991, 3-298123

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 R **11 Claims**



1. A color image forming apparatus, comprising:

an image carrier;

reading means for reading and for inputting color information for each color of a color original;

first latent image forming means for forming a latent image on the image carrier in accordance with color information corresponding to a black color input by said reading means;

first developing means for developing the latent image formed by said first latent image forming means using a black color developer;

second latent image forming means for forming a latent image on the image carrier of a color different from a black color in accordance with color information input by said reading means; and

second developing means for developing the latent image formed by said second latent image forming means using a color developer different from a black color,

wherein a second image area formed on the image carrier by said second latent image forming means and said second developing means is smaller than a first image area formed on the image carrier by said first latent image forming means and said first developing means.

5,329,347

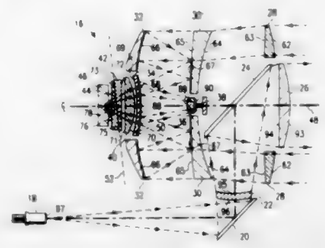
MULTIFUNCTION COAXIAL OBJECTIVE SYSTEM FOR A RANGEFINDER

Robert E. Wallace, Garland, and Wayne E. Isbell, Dallas, both of Tex., assignors to Varo Inc., Garland, Tex.

Filed Sep. 16, 1992, Ser. No. 945,743

Int. Cl.[5] G01C *3/08;* **H01J** *31/50;* **G02B** *21/06*

U.S. Cl. 356—5 **33 Claims**



1. An improved optical catadioptric lens system for a rangefinder suitable for use as part of a night vision goggles system, comprising:

a transmitter optical system having an optical axis;

a receiver optical system having an optical axis;

an image intensifier; and

a viewing optical system adapted for receiving an image from the image intensifier, the viewing optical system having an optical axis, wherein the optical axes of the transmitter optical system, the receiver optical system, and the viewing optical system are coaxial in object space.

5,329,348

METHOD OF IDENTIFYING A PARTICULAR OPTICAL CABLE OUT OF A NUMBER OF SIMILAR OPTICAL CABLES

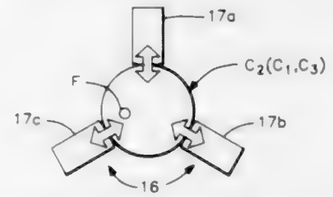
Hijiri Nimura, Ichihara; Akira Fujisaki, Ichikawa; Kazunori Nakamura, and Haruki Ohgoshi, both of Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 955,367

Claims priority, application Japan, Oct. 4, 1991, 3-284148

Int. Cl.[5] G01N *21/84, 21/21*

U.S. Cl. 356—73.1 **6 Claims**



1. A method of identifying a particular optical cable out of a number of similar optical cables laid along a same route of installation comprising steps of sequentially applying an external signal at an intermediate point of each of the optical cables on a one by one basis by a signal applying means while transmitting an optical signal from a signal transmitting means to a signal receiving/detecting means by way of a particular optical fiber in each of the optical cables and detecting by the signal receiving/detecting means any fluctuation of the optical signal transmitted through the particular optical cable caused by the photoelastic effect when an external signal is applied to the particular cable, characterized in that a plurality of external signals are sequentially applied at respective spots on the outer peripheral surface of each of the optical cables.

5,329,349

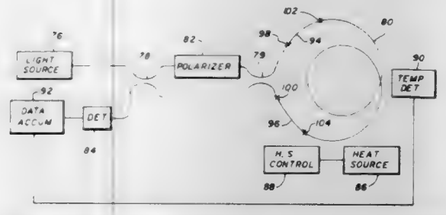
METHOD FOR TUNING FIBER OPTIC SENSOR COILS

Ralph A. Patterson, Moorpark, and John D. Wilde, Woodland Hills, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 10, 1993, Ser. No. 58,123

Int. Cl.[5] G01N *21/84;* **G01C** *19/64*

U.S. Cl. 356—73.1 **16 Claims**



1. A method for tuning a sensor coil of the type that includes an optical fiber of known length arranged into a winding pattern, said method comprising the steps of:

a) adjusting one end of said wound coil by a known amount with respect to the other end so that the length of fiber between the midpoint of said winding pattern and one end differs from that between said center and the other end by said amount; then

b) attaching said adjusted coil to test apparatus arranged so that the performance of said coil in an interferometer may be ascertained; then

c) observing the performance of said adjusted coil in said apparatus; then

d) repeating steps a through c until an acceptable level of bias error is observed; and then

e) removing said adjusted coil from said test apparatus.

5,329,350

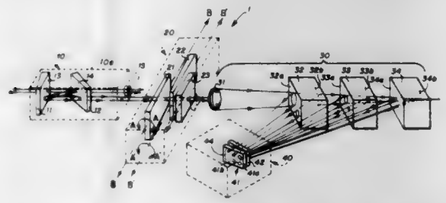
MEASURING LASER BEAM PARAMETERS USING NON-DISTORTING ATTENUATION AND MULTIPLE SIMULTANEOUS SAMPLES

David L. Wright, Redwood City, and John M. Fleischer, San Jose, both of Calif., assignors to Photon, Inc., Santa Clara, Calif.

Filed May 21, 1992, Ser. No. 887,369

Int. Cl.[5] G01J *1/42*

U.S. Cl. 356—218 **32 Claims**



1. An optical system for the non-distorting attenuation of a light beam while preserving the relative light intensities across the beam to permit accurate measurements of the light beam profile comprising in operative combination:

a) a first attenuation means disposed along a beam optical pathway for non-absorbingly attenuating a high power beam to a lower power level sufficient to avoid thermal distortion of the beam profile upon subsequent attenuation in an absorbing media and without angular deviation of said beam as it passes through said first attenuation deviation of said beam as it passes through said first attenuation means and wherein a polarization characteristic of said beam remains substantially unchanged after attenuation;

b) a second attenuation means disposed adjacent to and down stream of said first attenuation means for absorbingly attenuating the non-absorbingly attenuated beam received from said first attenuation means;

c) an optical lens assembly disposed adjacent to and down stream of said second attenuation means and including a positive lens means and a plurality of beam-splitters oriented in series with said positive lens means, said positive lens means for focusing the attenuated beam received from said second attenuation means into said plurality of beam-splitters such that portions of said beam are reflectively redirected from selective surfaces of each of said beam-splitters for simultaneous collection of said beam portions at a common measurement plane; and

d) whereby each of said first attenuation means, said second attenuation means and said lens assembly having optical surfaces selectively tilted so that fringe and interference effects between successive optical surfaces are eliminated.

5,329,351

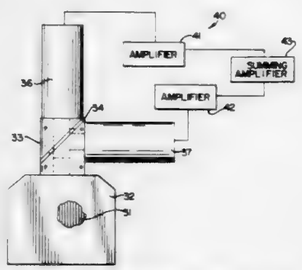
PARTICLE DETECTION SYSTEM WITH COINCIDENT DETECTION

Lee D. Clementi, Lake Wylie, S.C., assignor to Estek Corporation, Charlotte, N.C.

Filed Nov. 24, 1992, Ser. No. 980,684

Int. Cl.[5] G01N *21/88*

U.S. Cl. 356—237 **25 Claims**



1. A system for detecting particles or flaws on a surface of an article, comprising:

a source of light directed against a surface of an article; and

a detector for detecting light scattered from the article and indicative of the presence of particles or flaws thereon, said detector including a light collector positioned for receiving and collecting light scattered from the surface of the article , means cooperating with said collector for splitting a beam of the collected light into first and second like light components each representative of the beam of the collected light, first and second photodetectors positioned for receiving respectively the first and second like light components, and means for combining the output signals from said first and second photodetectors to form a combined output signal.

5,329,352

SPECTROSCOPICALLY CORRELATED LIGHT SCANNING MICROSCOPY

Wolfgang Jacobsen, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 2, 1992, Ser. No. 862,094

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4111903

Int. Cl.[5] G01J *3/02, 3/44*

U.S. Cl. 356—301 **11 Claims**

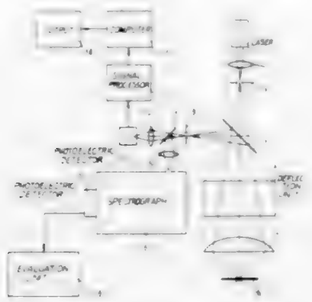
1. A process for producing image data for a sample, comprising the steps of:

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a scanning a sample region with a confocal scanning light microscope to produce image data representing location and total light intensity of light reflected from each of a plurality of individual image elements;

b using a portion of the light reflected from each image element in a spectrometer to produce data for each image element representing reflected light intensity as a function of wavelength;

c. dividing the total light intensity into a plurality of value ranges;



d correlating the data representing the light intensity as a function of wavelength for the plurality of image elements with the plurality of value ranges to produce a single mean spectrum for each value range for the entire spectra of all image elements which have a total light intensity in one such value range; and

e storing the location of each image element, the total light intensity thereof, a number corresponding to the value range the image element belongs to and the mean spectra of the plurality of value ranges in memory

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5,329,353

HIGH SENSITIVE MULTI-WAVELENGTH SPECTRAL ANALYZER

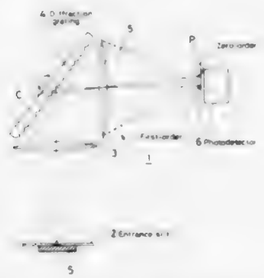
Tsutomu Ichimura; Toshiyuki Nogoshi, and Fumio Inaba, all of Sendai, Japan, assignors to Research Development Corp. of Japan, Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 832,475

Claims priority, application Japan, Feb. 7, 1991, 3-015628

Int. Cl.[5] **G01J** *3/28*

U.S. Cl. 356—328 **12 Claims**



1. A high sensitive multi-wavelength spectral analyzer for spectral detection of extremely weak emission of bioluminescence or chemiluminescence comprising:

a spectroscope including an optical system that limits incident light, a collimator lens disposed such that a focal point of said collimator lens is coincident with an end of said optical system, to convert light emerging from said end into parallel rays, a reflection diffraction grating that diffracts the parallel rays from said collimator lens to produce spectra, and an imaging lens that focuses the parallel rays diffracted by said reflection diffraction grating on an image plane thereof to form a spectral image; and

a high sensitivity photodetector selected from the group consisting of a one-dimensional photodetector and a two-dimensional photodetector, the high sensitivity photodetector disposed on the image plane of said imaging lens such that an observation wavelength region is within a detecting surface thereof;

wherein said imaging lens and said high sensitivity photodetector are disposed such that the optical axis of said imaging lens is coincident with a bisecting angle of a short wavelength-side diffraction angle and a long wavelength-side diffraction angle of the observation wavelength region and said optical axis is substantially coincident with a center of the detecting surface of said photodetector; and

said reflection diffraction grating is a blazed diffraction grating, and said collimator lens has a larger diameter than that of said imaging lens,

means for taking out as a spectral image —first-order diffracted light for minimizing the loss of incident light to a larger extent than that to which stray light is minimized, said taking out means comprising said collimator lens, said blazed diffraction grating and said imaging lens

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5,329,354

ALIGNMENT APPARATUS FOR USE IN EXPOSURE SYSTEM FOR OPTICALLY TRANSFERRING PATTERN ONTO OBJECT

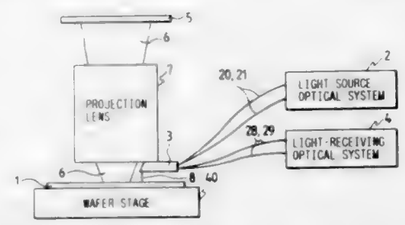
Masaki Yamamoto, Tokyo; Keishi Kubo, Osaka; Takeo Satoh, Kawasaki; Ushio Sangawa, Kawasaki, and Hiroyuki Takeuchi, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 22, 1992, Ser. No. 872,216

Claims priority, application Japan, Apr. 24, 1991, 3-094427; Jan. 30, 1992, 4-015525; Jan. 30, 1992, 4-015526

Int. Cl.[5] **G01B** *9/02, 11/00*

U.S. Cl. 356—349 **25 Claims**



1. An alignment apparatus for aligning an object at a predetermined position to project exposure light onto said object through a projection lens positioned above said object, comprising:

a light source optical system for emitting coherent alignment light, the light source optical system being positioned at a distance away from an object;

a first optical system for leading said alignment light emitted from said light source optical system toward said object through a first flexible light guide passage while bypassing a projection lens;

a positional deviation detecting optical system placed between said projection lens and said object for projecting said coherent alignment light directed through said first flexible light guide passage of said first optical system onto an alignment mark formed on said object to transform said coherent alignment light to beat light in which positional deviation information of said object is included, and detecting said beat light;

a second optical system for leading said beat light detected in said positional deviation detecting optical system away from said object through a second flexible light guide passage while bypassing said projection lens;

a light-receiving optical system positioned at a distance from said object for receiving said beat light lead through said second flexible light guide passage of said second optic system to detect an amount of the positional deviation of said object included in said beat light; and

moving means for moving said object on the basis of the positional deviation amount detected by said light-receiving optical system to align said object at the predetermined position.

5,329,355

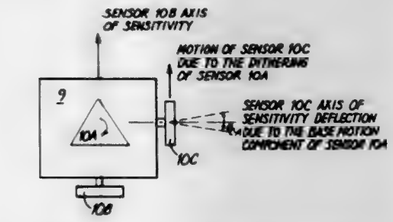
DITHER STRIPPER TO LEAVE BASE MOTION

Joseph E. Killpatrick, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 9, 1991, Ser. No. 803,849

Int. Cl.[5] **H01L** *41/08*

U.S. Cl. 356—350 **16 Claims**



1. An angular rotation sensing system for sensing rotational motion about a primary axis with respect to a base compliantly mountable to a supporting means, said angular rotation sensing system capable of providing a sensing system output signal indicative of angular rotation, said sensing system comprising:

an angular motion sensor capable of providing a sensor output signal indicative of angular rotation about a primary axis;

angular motion sensor mounting means for mounting said angular motion sensor to said base having compliance so that said angular motion sensor can be rotationally oscillated;

an oscillation means capable of producing a first torque acting on said angular motion sensor with respect to said base resulting in a second torque on said angular motion sensor acting in a direction opposite said first torque causing both said angular motion sensor and said base to rotationally oscillate, said sensor output signal indicative of angular rotation having an inertial component due to any inertial rotation of said angular motion sensor about said primary axis and an oscillation component due to said rotational oscillation of said angular motion sensor, said oscillation component further includes a base motion contribution and an angular motion sensor motion contribution;

an estimation means for providing an estimated value of said base motion contribution; and

stripping means for determining said angular motion sensor contribution from both said oscillation component and said estimated value, said stripping means providing said sensing system output signal with said base motion contribution therein having removed said angular motion sensor motion contribution.

5,329,356

INTERFEROMETER HEAD AND INTERFEROMETER ARRANGEMENT WITH RIGID SUPPORT STRUCTURE

Werner Tabarelli, Landstrasse 152, FL-9494 Schaan/Liechtenstein, Austria, and René Lazecki, Buchs, Switzerland, assignors to Werner Tabarelli, Schaan Liechtenstein, Austria

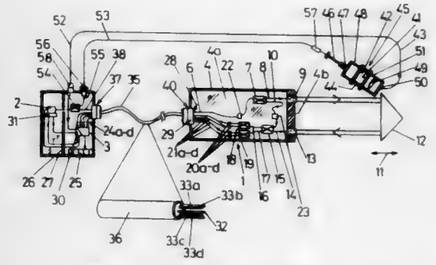
PCT No. PCT/AT90/00102, § 371 Date Aug. 11, 1992, § 102(e) Date Aug. 11, 1992, PCT Pub. No. WO91/09271, PCT Pub. Date Jun. 27, 1991

PCT Filed Oct. 18, 1990, Ser. No. 861,825

Claims priority, application Austria, Dec. 13, 1989, A 2829/89

Int. Cl.[5] **G01B** *11/02*

U.S. Cl. 356—358 **46 Claims**



1. An interferometer head comprising a support body to which there are rigidly connected a beam splitter for spatially dividing laser light into a measuring beam and a reference beam and at least one recombination device at which a respective reference beam which is guided by way of a reference section extending in the interferometer head and a respective measuring beam or measuring beam component which is guided by way of a movable measuring mirror of a reflecting measuring surface interfere, forming at least one optical interference signal, characterized in that the interferometer head has a coupling-out lens which is connected to the support body of the interferometer head, for coupling-out of the measuring beam guided in the interferometer head in at least one light waveguide on to a measuring section which is disposed outside the interferometer head, that the interferometer head further has at least one coupling-in lens connected to the support body for coupling-in of the measuring beam or measuring beam component which is returning from the measuring section after reflection at a measuring mirror arranged outside the interferometer head or at a reflecting surface, into a respective light waveguide, and that light waveguides are provided for guidance of a reference beam or beams and the parts of the measuring beam which extend in the interferometer head, which light waveguides are rigidly connected to the support body of the interferometer head.

5,329,357

SPECTROSCOPIC ELLIPSOMETRY APPARATUS INCLUDING AN OPTICAL FIBER

Franck Bernoux, Paris, and Jean-Louis Stehle, Colombes, both of France, assignors to Sopra-Societe De Production Et De Recherches Appliquees, Bois-Colombes, France

Continuation of Ser. No. 668,394, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 22,408, Mar. 6, 1987, abandoned. This application Apr. 21, 1993, Ser. No. 50,766

Claims priority, application France, Mar. 6, 1986, 86 03188

Int. Cl.[5] **G01N** *21/21*

U.S. Cl. 356—369 **15 Claims**

1. Spectroscopic ellipsometry apparatus, comprising

a light source;

a first optical system including a polarizer for illuminating a sample with a beam of polarized light at a sloping incidence;

a second optical system including an analyzer for picking up

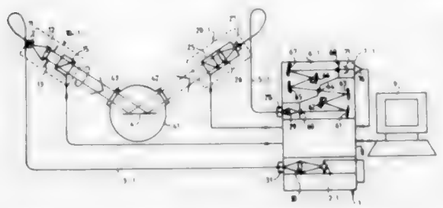
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the light reflected from the sample, said second optical system having an outlet;

a photodetector mounted at said outlet of said second optical system;

one of the two polarizing members constituted by the polarizer and by the analyzer being subjected to rotation at a known speed;

means for permitting spectrum selection of the incident light or for permitting spectrum analysis of the reflected light; and



control and processing electronic means for measuring the amplitude of the radiation received by the photodetector as a function of the angle of polarization in order to deduce information concerning the surface state of the sample;

said apparatus including the improvement of one first multimode optical fiber disposed between the optical system subjected to rotating polarization and its associated light source or photodetector as the case may be and a second optical fiber between the other optical system and its associated photodetector or light source as the case may be.

5,329,358

DEVICE FOR OPTICALLY MEASURING THE HEIGHT OF A SURFACE

Joseph L. Horijon, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1992, Ser. No. 827,192

Claims priority, application Netherlands, Feb. 6, 1991, 9100205

Int. Cl.[5] G01B *11/24*

U.S. Cl. 356—375 **9 Claims**



1. A device for optically measuring the height of a surface of an object, which device comprises a radiation source unit for generating a radiation beam and for forming an essentially stationary radiation spot on the surface by means of said beam, means for selecting a reflected beam from the radiation reflected on the surface in the radiation spot, and a first position-sensitive radiation detection system arranged in the radiation path of the reflected beam, characterized in that a beam splitter for splitting-off a sub-beam is arranged in the radiation path of the reflected beam and in that a second position-sensitive radiation detection system whose optical distance to the beam splitter differs from the optical distance between the first position-sensitive radiation detection system and the beam splitter is arranged in the radiation path of said sub-beam, both position-sensitive radiation detection systems being for determining the location of the same characteristic point of the radiation distribution on each detection system, the combination of both systems being indicative of the height of the surface.

5,329,359

PARTS MOUNTING INSPECTION METHOD

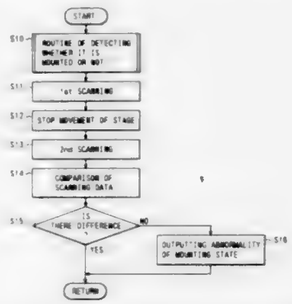
Jin Tachikawa, Hino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,699

Claims priority, application Japan, May 17, 1991, 3-112815; Apr. 21, 1992, 4-100979

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—398 **3 Claims**



1. An inspection method for inspecting posture of parts mounted on a circuit board, said method comprising the steps of:

providing moving means for moving a stage holding the circuit board, a light source for irradiating the parts with a laser beam, an optical system path for irradiating the parts with the laser beam from the light source, a signal output path for outputting a reference signal by the laser beam from the light source, and processing means for processing a signal from each of the optical system path and the signal output path;

obtaining reference signals A and B at first and second positions, respectively, of the parts;

holding the parts in the first position and irradiating the optical system path and the signal output path with the laser beam to detect a signal from each path, and outputting from the processing means a first phase difference signal, corresponding to the first position, of output from each path;

moving the parts to the second position by the moving means;

holding the parts in the second position and irradiating the optical system path and the signal output path with the laser beam to detect a signal from each path, and outputting from the processing means a second phase difference signal, corresponding to the second position, of output from each path; and

determining the posture of the parts by comparison of the reference signals A and B, and the first phase difference signal in the first position and the second phase difference signal in the second position, the determination being made using a comparison signal which is a phase difference of the reference signals A and B in the first and second positions and a difference between the first and second phase difference signals in the first and second positions.

5,329,360

MULTIPLEXING AND DEMULTIPLEXING IMAGE DATA

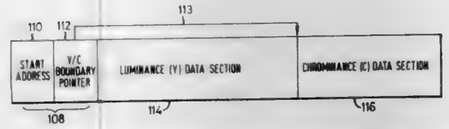
Clive H. Gillard, Basingstoke, and James H. Wilkinson, Tadley, both of United Kingdom, assignors to Sony United Kingdom Limited, Staines, United Kingdom

Filed Jan. 27, 1993, Ser. No. 9,669

Claims priority, application United Kingdom, Feb. 28, 1992, 9204312

Int. Cl.[5] H04N *11/04*

U.S. Cl. 348—472 **25 Claims**



1. Image data multiplexing apparatus comprising: means for receiving digital luminance and chrominance data of a representation of an image, and means for multiplexing the received digital luminance and chrominance data into multiplexed data blocks of a predetermined length, said means for multiplexing being operable to form multiplexed data blocks, each of said multiplexed data blocks including:

(i) a luminance data section comprising luminance data from a portion of said representation;

(ii) a chrominance data section comprising chrominance data from said portion of said representation;

(iii) a portion address indicative of a position in said representation of said portion; and

(iv) a block offset pointer indicative of a position in said multiplexed data block of a boundary between said luminance data section and said chrominance data section.

5,329,361

WHITE BALANCE CONTROL WHEREIN VALVES OF CONTROL SIGNALS ARE FIXED OR CONVERGED WITHIN A RENEWABLE, VARIABLE REGION

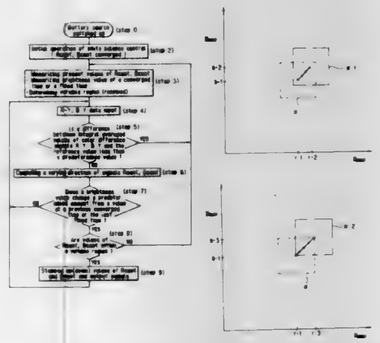
Seiichi Matsui; Yoshio Nakane, and Kenji Saito, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 31, 1992, Ser. No. 922,488

Claims priority, application Japan, Sep. 4, 1991, 3-224435; Sep. 4, 1991, 3-224439

Int. Cl.[5] H04N *9/73*

U.S. Cl. 348—655 **4 Claims**



1. A device for controlling white balance control signals comprising:

white balance control means for controlling white balance by controlling an amplification degree of a red elementary color signal and a blue elementary color signal or red-, green-, and blue- elementary color signals;

matrixing color means for outputting first and second color difference signals by processing elementary color signals white balance controlled by said white balance control means;

processing means for detecting a brightness of an object simultaneously with transmitting white balance control signals to said white balance control means, wherein said white balance control means is actuated in order to equalize integral averaged values of said first and second color difference signals, and reference values and predetermined integral averaged values for each first and second color difference signal are set as said reference values when an averaged color of all colors in a picture becomes an achromatic color at a reference color temperature; and

controlling means for stepping up and down values of said white balance control signals after a battery source is turned on and values of said white balance control signals converge in a condition that said values of said white balance control signals are varied within a variable region of which a center point is the previous converged value or a value of a previous fixed time, when said difference between the integral averaged values for said first and second color difference signals and said reference values are more than predetermined values and a present brightness value is changed by more than a predetermined brightness value with respect to a value of a brightness at said previous fixed time or a brightness at a previous fixed time;

wherein said values of said white balance control signals are fixed while said step up and down values of said white balance control signals become a boundary value or said values of said white balance control signals are fixed or converged within said variable region, and said variable region is renewed to a new variable region of which a center point is present fixed values or present converged values.

5,329,362

COLOR VIDEO CAMERA USING COMMON WHITE BALANCE CONTROL CIRCUITRY IN NEGATIVE AND POSTIVE IMAGE PHOTOIMAGING MODES

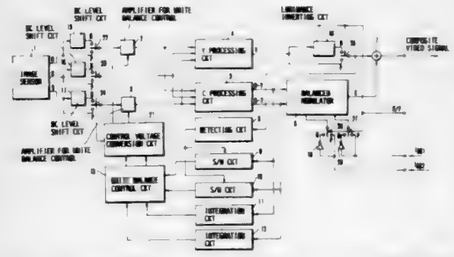
Kan Takaiwa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 875,595, Apr. 28, 1992, abandoned, which is a continuation of Ser. No. 516,568, Apr. 30, 1990, abandoned. This application Apr. 5, 1993, Ser. No. 42,453

Claims priority, application Japan, May 12, 1989, 1-117201; May 12, 1989, 1-117202; May 12, 1989, 1-117203

Int. Cl.[5] H04N *9/73, 9/04, 9/11*

U.S. Cl. 348—228 **31 Claims**



19. An image pickup apparatus which has a positive mode and a negative mode, comprising:

(a) image sensing means for sensing an image of an object to form color image signals;

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(b) level shifting means for operating on and shifting DC levels of the color signals to cancel a color component corresponding to a color of a film base in the negative mode; and

(c) white balance control means for controlling white balance of said color signals based on the color signal levels adjusted by a level adjusting means.

5,329,363

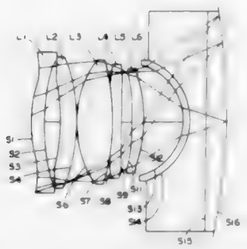
PROJECTION LENS SYSTEMS HAVING REDUCED SPHEROCHROMATISM

Jacob Moskovich, Cincinnati, Ohio, assignor to U. S. Precision Lens Incorporated, Cincinnati, Ohio

Filed Jun. 15, 1993, Ser. No. 77,418

Int. Cl.[5] H04N *9/31*

U.S. Cl. 348—781 **35 Claims**



1. A projection lens system for use with a cathode ray tube comprising in order from the system's image side:

(a) a first lens unit comprising in order from the lens system's image side:

(i) a first lens element having a positive power on axis and at least one aspheric surface which causes said positive power to become negative in the vicinity of the lens element's clear aperture; and

(ii) a second lens element of weak optical power;

(b) a second lens unit which comprises a third lens element which provides the majority of the lens system's positive optical power, the dispersion of the first lens element being greater than the dispersion of the third lens element and being greater than the dispersion of all other lens elements, if any, of the second lens unit; and

(c) a third lens unit of negative power which is associated with the cathode ray tube during use of the lens system and which provides most of the correction for the field curvature of the lens system.

5,329,364

METHOD FOR REDUCING HRC MODE RECEPTION TIME IN CABLE TELEVISION

Nam H. Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyonggi-do, Rep. of Korea

Filed Feb. 26, 1993, Ser. No. 23,970

Claims priority, application Rep. of Korea, Feb. 29, 1992, 92-3378

Int. Cl.[5] H04N *7/10, 5/50*

U.S. Cl. 348—11 **12 Claims**

1. In a video signal receiver without a CATV mode selection switch, a method for reducing HRC mode reception time comprising:

an initial step comprising transmitting to a tuner a modulation frequency corresponding to a selected channel and determining the presence of a video synchronizing signal using a system control microprocessor when a channel has been selected;

a first normal signal reception step, executed when the synchronizing signal is detected in said initial step and an output state of an AFT port is high, comprising monitoring the AFT port while stepwise increasing the modulation frequency either until an increased portion reaches a given limit, or until the output state of the AFT port changes to low, and, as soon as the output state of the AFT port changes to low, stopping the stepwise increase of modulation frequency and commencing reception of normal signals broadcast in standard mode;

a second normal signal reception step, executed when the synchronizing signal is detected in said initial step and the output state of the AFT port is low, comprising monitoring the AFT port while stepwise decreasing the modulation frequency either until a decreased portion reaches a given limit, or until the output state of the AFT port changes to high, and, as soon as the output state of the AFT port changes to high, stopping the stepwise decrease of modulation frequency and commencing reception of normal signals broadcast in standard mode;

a third normal signal reception step, executed when the synchronizing signal is not detected in said initial step and the output state of the AFT port is high, comprising transmitting an adjusted modulation frequency, monitoring the AFT port while stepwise increasing the adjusted modulation frequency either until the increased portion reaches a given limit or until the output state of the AFT port changes to low, and, as soon as the output state of the AFT port changes to low, stopping the stepwise increase of the adjusted modulation frequency and commencing reception of normal signals broadcast in HRC mode; and



a fourth normal signal reception step, executed when the synchronizing signal is not detected in said initial step, and the output state of the AFT port is low, comprising transmitting the adjusted modulation frequency, monitoring the AFT port while stepwise decreasing the adjusted modulation frequency either until the decreased portion reaches a given limit or until the output state of the AFT port changes to high, and, as soon as the output state of the AFT port changes to high, stopping the stepwise decrease of the adjusted modulation frequency and commencing reception of normal signals broadcast in HRC mode.

5,329,365

METHOD AND APPARATUS FOR PROVIDING COMPRESSED NON-INTERLACED SCANNED VIDEO SIGNAL

Kamil M. Uz, Plainsboro, N.J., assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Jul. 7, 1993, Ser. No. 88,475

Int. Cl.[5] H04N *7/04, 7/12*

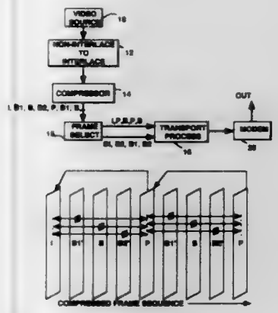
U.S. Cl. 348—469 **6 Claims**

1. Apparatus for providing non-interlaced scanned compressed video signal comprising:

a source of non-interlaced scanned 1:1 NHz video signal (N a predetermined image rate);

a preprocessor, responsive to said non-interlaced scanned video signal, for generating a 2:1 NHz interlaced scanned video signal wherein respective frames of said interlaced scanned video signal include first and second fields, each first field being derived from a respective non-interlaced scanned image and the second field of a frame being derived from an adjacent non-interlaced scanned image;

a compressor of the type for compressing frames of video signal according to intraframe I, predictive P, and bidirectional predictive B compression processes, and responsive to said 2:1 NHz interlaced scanned video signal for providing compressed frames of video signal such that an odd number, greater than one, of bidirectionally B compressed



frames occur between intraframe I and predictive P compressed frames;

selector means for selecting I, P and second occurring and alternate B compressed frames (between I and P or P and P compressed frames) to form a 2:1 (N/2)Hz primary compressed interlaced scanned video signal, and for selecting intervening B compressed frames to form a secondary compressed signal; and

means for conditioning said primary and secondary compressed signals for transmission.

5,329,366

TIME BASE CORRECTOR FOR VIDEO SIGNAL

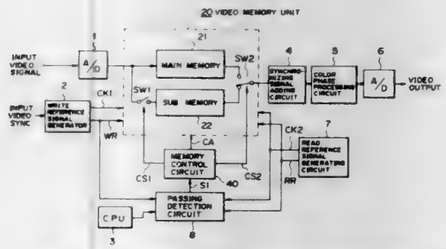
Kazuo Kuroda, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,482

Claims priority, application Japan, Dec. 19, 1991, 3-337210

Int. Cl.[5] H04N *5/907*

U.S. Cl. 348—572 **7 Claims**



1. A time base corrector for a video signal comprising:

a main memory having a storage capacity of at least one field of video signal;

a sub memory having a storage capacity of at least one field of video signal;

write means for writing said video signal into at least one of the main memory and the sub memory in synchronism with a write reference signal which corresponds to a frequency of said input video signal;

read means for selectively reading out the written video signal from said main memory and the sub memory in synchronism with a read reference signal having a fixed frequency;

passing detection means for generating a passing detection signal on the basis of the frequency difference between the write reference signal and the read reference signal by comparing a read reset signal received from said read means with a write reset signal received from said write means; and

memory control means for controlling reading of the video signal written in the main memory and the sub memory in accordance with said passing detection signal, wherein said memory control means permits said write means to write the video signal into the sub memory in response to receipt of the passing detection signal, and permits said read means to read out the written video signal from the main memory when a passing is not detected and from the sub memory for one field after receipt of a passing detection signal when the passing is detected.

5,329,367

HORIZONTAL BLANKING

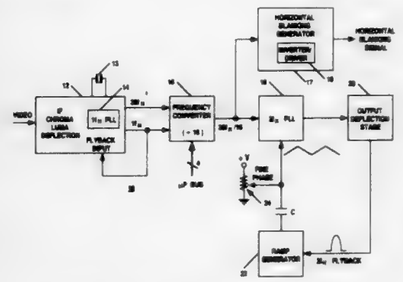
Ronald E. Fernsler, and Walter Truskalo, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 939,859, Sep. 2, 1992, Pat. No. 5,223,931, which is a continuation of Ser. No. 499,249, Mar. 26, 1990, abandoned. This application Nov. 24, 1992, Ser. No. 980,811

Claims priority, application United Kingdom, Dec. 13, 1991, 9126550.4

Int. Cl.[5] H04N *3/24, 5/04*

U.S. Cl. 348—540 **16 Claims**



1. An apparatus, comprising:

a first phase locked loop operable at a horizontal synchronizing frequency f_H and synchronized to a horizontal synchronizing component of a video signal;

an f_H to nf_H converter for deriving an nf_H timing signal from at least one output of said first phase loop, where n is an integer;

a second phase locked loop, synchronized with said nf_H timing signal, for generating an nf_H scan synchronizing signal for synchronizing a deflection stage operating at nf_H; and,

means responsive to said nf_H timing signal and operable to generate a blanking signal for disabling an electron beam during horizontal retrace intervals of said deflection stage.

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IMAGE TRACKING SYSTEM AND TECHNIQUE

Elozor Plotke, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 562,504, Aug. 2, 1990, abandoned. This application Jan. 11, 1993, Ser. No. 2,517
Int. Cl.[5] H04N *5/14, 7/18,* G06F *15/336*
U.S. Cl. 348—701 20 Claims



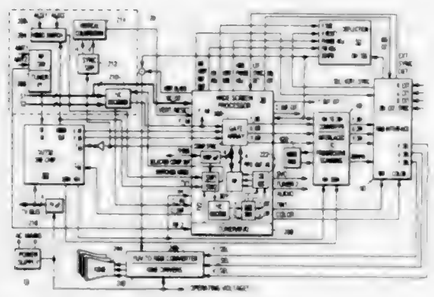
1. An image motion tracking system for use with an image detector having an array of elements in the x and y directions, comprising:
first means for creating a first frequency domain representation of a reference frame of image data;
second means for creating a second frequency domain representation of an input frame of image data;
processing means for detecting changes in phase of said frequency domain representation of said reference frame relative to said frequency domain representation of said input frame to discern a displacement of at least a portion of said input frame relative to at least a portion of said reference frame, said processing means generating at least one output signal indicative of said displacement; and
compensation means, responsive to said at least one output signal, for providing compensation for said displacement of said input frame relative to said reference frame.

5,329,369

ASYMMETRIC PICTURE COMPRESSION

Donald H. Willis, and Barth A. Canfield, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

PCT No. PCT/US91/03733, § 371 Date Nov. 9, 1992, § 102(e) Date Nov. 9, 1992, PCT Pub. No. WO91/19384, PCT Pub. Date Dec. 12, 1991
PCT Filed May 29, 1991, Ser. No. 946,346
Claims priority, application United Kingdom, Jun. 1, 1990, 9012326
Int. Cl.[5] H04N *5/262, 9/74, 3/223*
U.S. Cl. 348—556 29 Claims



1. A television apparatus, comprising:
video display means having a first format display ratio of width to height;
means for receiving a first video signal representing a first picture;
means for receiving a second video signal representing a second picture having a second ratio of width to height different than said first ratio;
means for changing said ratio of width to height of said second picture; and,
means for combining a portion of said first picture with a portion of said changed second picture for simultaneous display of said first and second picture portions.

5,329,370

REMOTE CONTROL SYSTEM AND METHOD FOR CABLE TELEVISION SYSTEM

Lauren F. Yazolino, 100 Meadow View Rd., Orinda, Calif. 94563, and Ming S. Leung, 6540 Edgemoore Way, San Jose, Calif. 95129

Filed Jul. 13, 1993, Ser. No. 90,507
Int. Cl.[5] H04N *5/60*
U.S. Cl. 548—734 10 Claims



1. Cable television apparatus, comprising:
a television signal converter including:
a frequency channel converter that receives a multiplicity of television signals in different frequency bands and outputs any selected one of said multiplicity of television signals on a predefined frequency band;
a first sensor for receiving wireless command signals;
a first controller coupled to the frequency channel converter and said second sensor, said second controller responding only to a first predefined set of wireless commands, said first controller responding to wireless converter channel selection commands by selecting one of said multiplicity of television signals to be output by said frequency channel converter,
a television having:
an on/off switch for turning the television on and off;
a tuner coupled to an input signal port;
a second sensor for receiving wireless command signals;
a second controller coupled to the on/off switch, tuner and sensor, said second controller responding only to a second predefined set of wireless commands received by said sensor that are distinct from said first predefined set of wireless commands, said second controller responding to wireless on/off commands received by said sensor by toggling said on/off switch, said controller further responding to wireless TV channel selection commands received by said sensor by sending corresponding channel selection signals to said tuner;
a remote control transmitter including:
a user interface for selecting user commands from a predefined set of user commands;
a memory table storing for each command in said predefined set of user commands at least one wireless command to transmit in response to selection of said each command; and
a transmitter coupled to said user interface and said memory table that responds to on/off user commands by transmitting said wireless on/off command signal and transmitting a predefined one of said wireless converter channel selection commands that selects a predefined one of said multiplicity of television signals to be output by said frequency channel converter; and that responds to channel selection user commands by transmitting corresponding wireless converter channel selection commands;
whereby both said television and said television signal converter respond to wireless commands from said remote control transmitter.

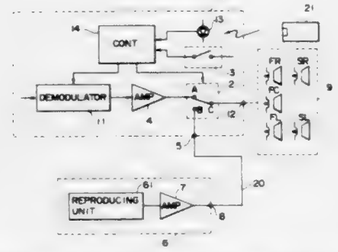
6. Cable television apparatus, comprising:
a television having:
an on/off switch for turning the television on and off;
a tuner coupled to an input signal port;
a first sensor for receiving wireless command signals;
a first controller coupled to the on/off switch, tuner and sensor, said first controller responding only to wireless commands received by said sensor having a first predefined signal format, said first controller responding to wireless on/off commands received by said sensor having said first predefined signal format by toggling said on/off switch, said controller further responding to wireless TV channel selection commands received by said sensor having said first predefined signal format by sending corresponding channel selection signals to said tuner;
a television signal converter including:
a frequency channel converter that receives a multiplicity of television signals in different frequency bands and outputs any selected one of said multiplicity of television signals on a predefined frequency band;
a second sensor for receiving wireless command signals;
a second controller coupled to the frequency channel converter and said second sensor, said second controller responding only to wireless commands received by said second sensor having a second predefined signal format which is distinct from said first predefined signal format, said second controller responding to wireless converter channel selection commands having said second predefined signal format by selecting one of said multiplicity of television signals to be output by said frequency channel converter; and
a remote control transmitter including:
a user interface for selecting user commands from a predefined set of user commands;
a memory table storing for each command in said predefined set of user commands at least one wireless command to transmit in response to selection of said each command, said memory table storing, for each wireless command, data representing (A) which of said first and second signal formats to use when transmitting said wireless command and (B) said wireless command; and
a transmitter coupled to said user interface and said memory table that responds to on/off user commands by transmitting said wireless on/off command signal having said first predefined signal format and transmitting a predefined one of said wireless converter channel selection commands having said second predefined signal format so as to select a predefined one of said multiplicity of television signals to be output by said frequency channel converter; and that responds to channel selection user commands by transmitting corresponding wireless converter channel selection commands having said second predefined signal format;
whereby both said television and said television signal converter respond to wireless commands from said remote control transmitter.

5,329,371

LOUDSPEAKER SYSTEM AUTOMATICALLY SWITCHED BETWEEN VIDEO AND AUDIO UNITS

Shigemi Ueno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 988,178
Claims priority, application Japan, Dec. 13, 1991, 3-351894; Nov. 4, 1992, 4-319346
Int. Cl.[5] H04N *5/268*
U.S. Cl. 348—738 10 Claims



1. A television receiver including a demodulator for demodulating a received audio signal, said television receiver comprising:
amplifier means for amplifying a demodulated audio signal from said demodulator;
an external input terminal for receiving a second audio signal;
selecting means for selecting one of the output audio signal from said amplifier means and the second audio signal through said input terminal; and
electric power control means for controlling a supply of electric power to said demodulator and said amplifier means and for controlling said selecting means to exchange receipt of the second audio signal from said input terminal for the output signal from said amplifier means when said amplifier means is supplied with the electric power.

6. An acoustic sound reproducing system comprising:
an audio signal reproducing apparatus;
a television receiver including a demodulator for demodulating a received audio signal, selecting means, and electric power control means, said television receiver being connected to said audio signal reproducing apparatus, said selecting means exchanging the receipt of an output signal from said audio signal reproducing apparatus for an output signal of said demodulator when said electric power control means supplies power to said demodulator; and
a speaker connected to said television receiver, said speaker being supplied with an output signal from said selecting means.

5,329,372

PHOTOELECTRIC CONVERSION DEVICE

Tsutomu Nakamura, Ina, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

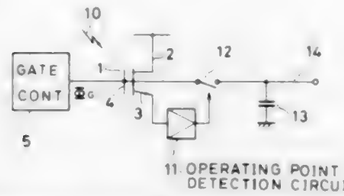
Filed May 10, 1991, Ser. No. 698,223
Claims priority, application Japan, May 16, 1990, 2-124272
Int. Cl.[5] H04N *3/14*
U.S. Cl. 348—302 7 Claims

1. A photoelectric conversion device consisting of one Charge Modulation Device as a photoelectric transducer with an amplifying function which has a region for integrating electric charges produced by light therein and a control gate electrode capacity-coupled to said region, comprising:
a control circuit for applying a control signal having a monotonously rising or falling portion to the control gate electrode of said photoelectric transducer,
an operating point detection circuit for receiving an output

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signal from said source electrode of said photoelectric transducer and inverting an output state thereof depending on a level of said output signal, and

a sample/hold circuit controlled by an output of said operating point detection circuit to hold a signal level of said



control signal applied to the control gate electrode of said photoelectric transducer as developed when the output state of said operating point detection circuit is inverted, wherein the signal held by said sample/hold circuit is read out as a photoelectrically converted output

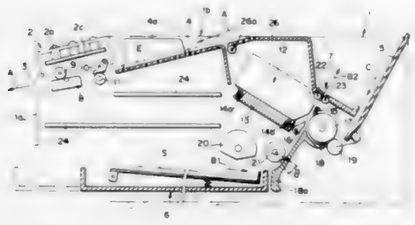
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5,329,373

FACSIMILE APPARATUS HAVING ORIGINAL DOCUMENT AND RECORDING MEDIUM CONVEYING SYSTEMS

Toshiyuki Hayashi, Yokohama; Toshiyuki Takano, Kawasaki, and Hiroshi Ogushi, Shiroi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,418
Claims priority, application Japan, Aug. 30, 1991, 3-219829
Int. Cl.[5] H04N *1/23;* **G01D** *15/00*
U.S. Cl. 358—296 **12 Claims**



1. An apparatus for use in a facsimile apparatus comprising:

a main body having an outer surface;

a recording unit including a serial recording type ink-jet recording head, the recording unit being arranged in a portion of said main body;

an original reader arranged in an upper portion of said main body;

an original insertion port for receiving an original, said original insertion port being formed in an upper surface of said main body;

a sheet discharge port for discharging a recording sheet, said sheet discharge port being formed in the upper surface of said main body;

an original discharge port for discharging the original, said original discharge port being formed in a front surface of said main body;

a sheet insertion port for receiving the recording sheet, said sheet insertion port being formed in a lower front surface of said main body;

means for defining an original convey path for conveying the original from said original insertion port formed in the upper surface of the main body to said original discharge port formed in the front surface of the main body through a reading area adjacent said original reader; and

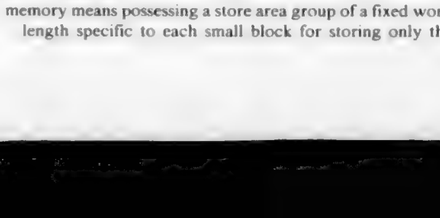
means for defining a recording sheet convey path for conveying the recording sheet from said sheet insertion port formed in the lower front surface of the main body to said sheet discharge port formed in the upper surface of the main body through a recording area adjacent said recording unit, wherein an upstream portion of said means for defining said recording sheet convey path is arranged substantially horizontally, and said means for defining said recording sheet convey path is inclined halfway toward said sheet discharge port through said recording area.

5,329,374

RECORDING AND/OR REPRODUCING APPARATUS WITH PEAKING FREQUENCY DEPENDENT ON ASPECT RATIO

Tadashi Ezaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,002
Claims priority, application Japan, Dec. 26, 1991, 3-345105
Int. Cl.[5] H04N *5/78*
U.S. Cl. 358—310 **2 Claims**



1. A recording and/or reproducing apparatus for recording and reproducing a first video signal having a first aspect ratio and a second video signal having a second aspect ratio higher than the first aspect ratio, comprising:

reproducing means for reproducing one of said first and second video signals as a reproduced video signal;

means for detecting a brightness signal of the reproduced video signal;

reproducing and detecting means for reproducing and detecting aspect ratio information of the reproduced video signal; and

peaking means for adding an overshoot or a ringing to the detected brightness signal with a predetermined peaking frequency, said peaking means being capable of changing over the peaking frequency in accordance with the aspect ratio information from said reproducing and detecting means.

5,329,375

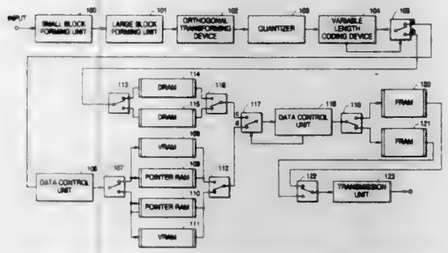
INFORMATION RECORDING/REPRODUCING APPARATUS

Tatsuro Juri, Osaka, and Masaru Nakahama, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 24, 1992, Ser. No. 840,755
Claims priority, application Japan, Feb. 26, 1991, 3-030563
Int. Cl.[5] H04N *7/133*
U.S. Cl. 358—343 **12 Claims**

8. An information recording/reproducing apparatus for recording variable length code data in a specific format, comprising small block forming means for collecting sample values of input signals and forming small blocks in every m×n pixels, orthogonal transforming means for orthogonally transforming in every small block, quantizing means for quantizing orthogonal components obtained by the orthogonal transforming means, and variable length coding means for coding the output of the quantizing means into variable length code data, which further comprises:

memory means possessing a store area group of a fixed word length specific to each small block for storing only the variable length code data of small blocks, and store areas common to all small blocks for storing the variable length



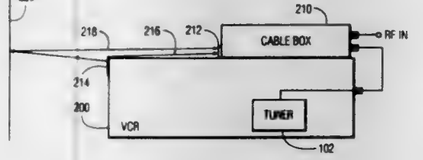
code data not stored in the store areas of the fixed word length.

5,329,376

VCR CONTROL OF A CABLE CONVERTER UNIT WITH ACTIVE SIGNAL DETECTION

Sung Jo Kim, Fishers; Alfred J. Schick, and John H. Furrey, both of Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Division of Ser. No. 807,472, Dec. 13, 1991, Pat. No. 5,303,063.
This application Dec. 3, 1993, Ser. No. 160,759
Int. Cl.[5] H04N *5/50, 5/76*
U.S. Cl. 358—335 **5 Claims**



1. A videocassette recorder, comprising:

a television signal input terminal, for receiving a television signal;

control means for generating a control signal;

means, coupled to said control means, for entering data in response to operation by a user; and

means coupled to said control means for transmitting a remote control signal for controlling an external source of said television signal; and

means for detecting an active television signal, said detecting means receiving said television signal, and in response to the detection of a predetermined characteristic of said television signal generates a signal indicative of an active television signal and applies said indicative signal to said control means;

said control means in response to data entered by said user generates said remote control signals and applies said remote control signals to said remote control signal transmitting means and monitors said indicative signal as a feedback signal.

5,329,377

FACSIMILE COMMUNICATING AID

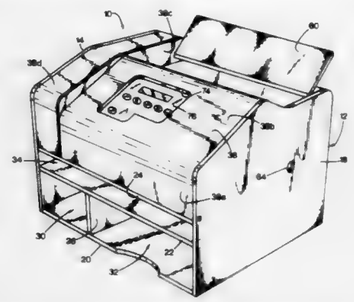
Stephen A. Gregg, Portland, Oreg., assignor to Ethix Corporation, Beaverton, Oreg.

Filed Sep. 14, 1992, Ser. No. 944,886
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—400 **22 Claims**

1. A device for assisting users to operate a facsimile machine which has an enclosing case, a document infeed, a document outfeed, and a series of control elements which are normally accessible and to be manually pressed by a user to operate the machine, said device comprising

a housing for receiving such a facsimile machine therein, and

keying elements mounted on said housing in positions to



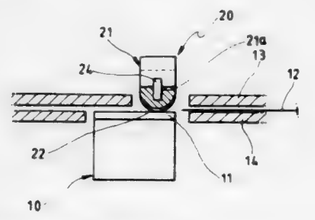
overlie control elements on a facsimile machine received in the housing, said keying elements having simplified indicia of machine function thereon and being shiftable between nonactuating positions spaced from the control elements of the facsimile machine and actuating positions contacting selected control elements to produce desired function of the facsimile machine.

5,329,378

FACSIMILE DEVICE WITH A WHITE LEVEL CONTROLLER

Hyo-jin Lee, Anyang-city, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 18, 1992, Ser. No. 978,385
Int. Cl.[5] H04N *1/00, 1/40*
U.S. Cl. 358—406 **18 Claims**



1. A facsimile device comprising:

a reading device for reading a source document;

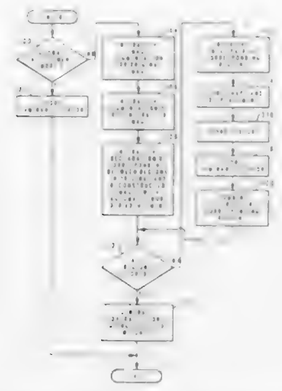
a glass plate disposed above said reading device;

a white level controller located above an upper portion of said glass plate, said white level controller having a white reflection surface for providing a white level indicative of a white level of the source document when read by said reading device; and

support means comprising guide grooves and a guide member coupled to said support means, said guide member having guide tabs engaged with said guide grooves to enable said guide member to be movable up and down, for maintaining said white reflection surface with a non-rotating orientation toward said glass plate while enabling a bottom portion of said guide member to be in contact with the glass plate due to said guide member's own weight.

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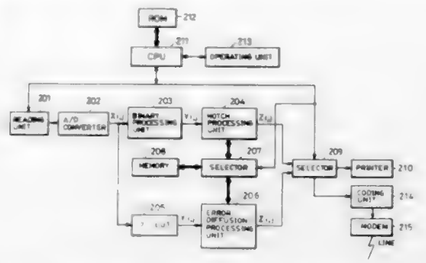
5,329,379
SYSTEM AND METHOD OF MEASURING FIDELITY OF DECOMPRESSED VIDEO SIGNALS AND IMAGES
Arturo A. Rodriguez, Belmont, Calif.; Mark A. Pietras, Boynton Beach, Fla., and Andres J. Saenz, Belmont, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 22, 1992, Ser. No. 965,649
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—433 20 Claims



1. A method of quantitatively measuring fidelity of a reproduced image to an original image, the method comprising the steps of:
capturing and digitizing the original image;
compressing the original image into a compressed data representation;
decompressing the compressed data representation to produce the reproduced image;
responsive to user selection, establishing a global assessment mode or a local assessment mode;
in the global assessment mode, determining luminance fidelity of the reproduced image to the original image and determining color fidelity over first and second color difference values of the reproduced image to the original image;
in the local assessment mode and responsive to user selection, segmenting the reproduced image and the original image and establishing corresponding pairs of segments having one segment each from the reproduced image and the original image; and
in the local assessment mode, scoring fidelity of segments of the reproduced image by comparing corresponding pairs of segments from the reproduced image and original image in color, luminance, shape and displacement.

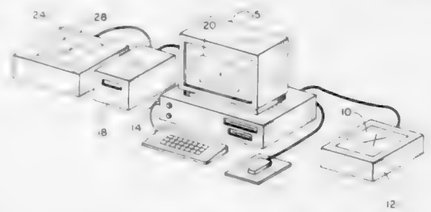
5,329,380
IMAGE PROCESSING MACHINE
Shinichi Ishida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1992, Ser. No. 823,473
Claims priority, application Japan, Jan. 28, 1991, 3-008501
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 15 Claims

1. An image processing apparatus comprising:
inputting means for inputting image data;
first image processing means including binary-processing means for processing the image data provided by said inputting means into binary data by using a predetermined threshold and smoothing means for smoothing out the binary data provided by said binary-processing means;
second image processing means for processing the image data provided by said inputting means into binary data by using binary processing in which an error between input image data and the binary data is compensated for; and



selecting means for selecting either output from said first image processing means or output from said second image processing means.

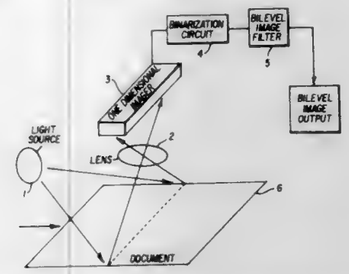
5,329,381
AUTOMATIC ENGRAVING METHOD AND APPARATUS
John H. Payne, 3401 - 75th Ave. North, Brooklyn Park, Minn. 55443
Filed Feb. 20, 1992, Ser. No. 839,403
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 15 Claims



1. A method of automatic engraving comprising the steps of:
(a) scanning an image to create a database of image points;
(b) logarithmically correcting each point of the image;
(c) performing edge detection on the image database to produce an edge detection image database;
(d) performing a raster-to-vector conversion of the edge detection image database to generate a vector database; and
(e) converting the vector database to a vector engraving file.

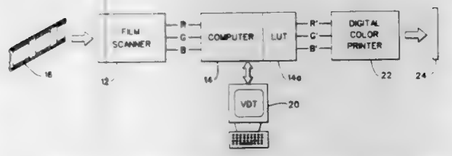
5,329,382
IMAGE SCANNER
Kikuo Mita, Yokohama, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 11, 1991, Ser. No. 805,692
Claims priority, application Japan, Mar. 4, 1991, 3-037637
Int. Cl.[5] H04N *1/38*
U.S. Cl. 358—464 3 Claims

1. An image scanner wherein images on a document are scanned, the scanned images are converted to electrical signals by imager means, the electrical signals are converted to bilevel signals by a binarization circuit, and the bilevel signals are output as bilevel images with pattern elements in vertical, horizontal and diagonal radial directions, the improvement comprising:
a bilevel image filter that, with respect tot he patterns comprising the bilevel images, separately counts the number of continuous pattern elements in vertical, horizontal and diagonal radial directions from a specific point, compares the count of continuous pattern elements in each direction



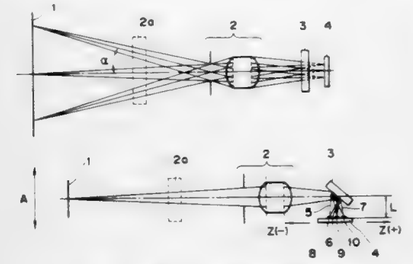
with a predetermined reference value, and erase patterns in each direction which are below the reference value.

5,329,383
METHOD AND APPARATUS FOR PRODUCING COLOR INTERNEGATIVES WITH A DIGITAL PRINTER
Robert P. Collette, Pavilion, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 6, 1993, Ser. No. 43,232
Int. Cl.[5] H04N *1/46*; G03F *3/10*
U.S. Cl. 358—500 9 Claims



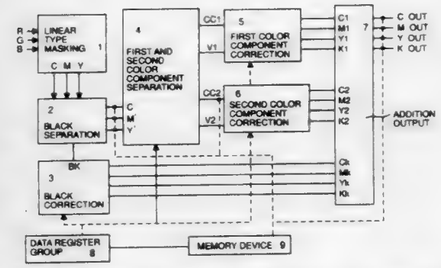
1. A method of producing an image from first digital image data in a system employing a digital image printer to print a complement of the image onto a non-photographic recording medium for subsequent use in photographically reproducing said image on a photographic print medium, the method comprising the steps of:
processing said first digital image data to derive second digital data representative of a complement of said image and incorporating in the second digital data a modified orange mask value for reproduction of said image on the photographic medium, said modified orange mask value being less by a predetermined amount than a full orange mask value required for desired reproduction of the image on the photographic print medium;
operating said printer in accordance with said second digital data to cause said printer to print said complement image onto said non-photographic medium with said modified orange mask value; and
illuminating said photographic print medium with the complement image on said non-photographic medium with illumination compensated to introduce an orange mask effect corresponding to said predetermined amount of orange mask value absent in said second digital data.

5,329,384
COLOR IMAGE READING APPARATUS WITH VOLUME HOLOGRAM
Michitaka Setani, Kawasaki, and Naosato Taniguchi, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 782,647, Oct. 25, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 43,582
Claims priority, application Japan, Oct. 26, 1990, 2-290358
Int. Cl.[5] H04N *9/04*
U.S. Cl. 358—514 14 Claims



1. A color image reading apparatus comprising:
a plurality of line sensors formed by arranging a plurality of one-dimensional sensor arrays on a single substrate;
a focusing optical system for focusing an object on said sensors; and
a volume hologram, arranged in an optical path between said focusing optical system and said sensors, for color-separating light from the object into a plurality of color components and guiding the plurality of color components to corresponding ones of said one-dimensional sensor arrays.

5,329,385
COLOR CORRECTION DEVICE HAVING A COLOR CONVERSION FUNCTION
Koji Washio, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 954,046
Claims priority, application Japan, Oct. 2, 1991, 3-255350; Mar. 23, 1992, 4-064894
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—515 14 Claims



1. An apparatus for producing CMYK color component signals, which correspond to cyan, magenta, yellow, and black color components, respectively, for each pixel from RGB color component signals, which correspond to red, green, and blue color components, respectively and are photoelectrically obtained for each pixel by an image scanner from an original image, and for changing the CMYK color component signals to CoMoYoKo recording color component signals, wherein each of the signals represents a density level of the corresponding color component, the apparatus comprising:

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means for inputting a specified color to be changed, color component ratio of the specified color, an output color to which the specified color is to be changed, and color component ratio of the output color;

means for converting the RGB color component signals for each pixel into CMY color component signals;

first separating means for extracting black sub-components from the CMY color components to form a black color from the CMY color component signals sub-component signals corresponding to the black sub-components, and further outputting C'M'Y' color component signals corresponding to the CMY color components remaining after the black sub-components are extracted, wherein at least one of the C'M'Y' signals has a signal level of zero;

second separating means for separating the C'M'Y' color component signals into first color sub-component signals and second color sub-component signals in such manner that the second separating means

determines a representative color for the second color sub-component signals that is a complimentary color of the zero-level color component signal of the C'M'Y' color component signals for each pixel,

judges whether the color of the representative color is the specified color and provides the representative color with the color component ratio of the specified color when the color of the representative color is judged to be the specified color,

extracts color sub-components from the C'M'Y' color components to form the representative color after judging has occurred,

outputs signals, which correspond to the color sub-components of the representative color, as the second color sub-component signals, and

outputs C''M''Y'' color component signals, which correspond to the color components still remaining after the color sub-components of the representative color have been extracted, as the first color sub-component signals;

means for correcting the black color sub-component signals, the first color sub-component signals, and the second color sub-component signals, respectively, wherein correction is in accordance with the color component ratio of the output color when the color of the representative color is judged to be the specified color; and

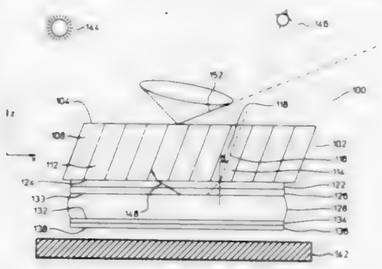
means for adding the corrected black color sub-component signals, the corrected first color sub-component signals, and the corrected second color sub-component signals so as to form the CoMoYoKo recording color component signals.

5,329,386

FIBER-OPTIC FACEPLATE WITH TILTED FIBERS

Henryk Birecki, and Laurence M. Hubby, Jr., both of Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 13, 1993, Ser. No. 46,539
Int. Cl.[5] G02F *1/1335, 1/1333;* G02B *6/00*
U.S. Cl. 359—42 **12 Claims**



1. A visual image display comprising:

a liquid crystal layer having a front surface and a contrast ratio that depends on the viewing direction from the front surface;

a first polarizer, having a front surface, located adjacent to the front surface of the liquid crystal layer; and

an optical fiber faceplate having a front surface and a plurality of substantially parallel optical fibers, the faceplate located adjacent to the front surface of the first polarizer, each fiber having an axis which forms an oblique angle with the normal to the front surface of the liquid crystal layer, the oblique angles of all the fibers being substantially equal to a typical oblique angle;

wherein:

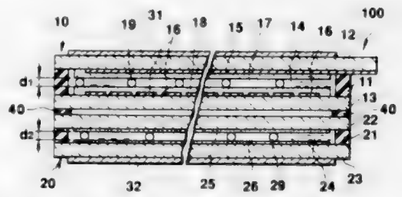
the typical oblique angle is selected according to the directional dependency of the contrast ratio of the liquid crystal layer to substantially maximize the contrast ratio of the liquid crystal layer to improve the contrast ratio of the display.

5,329,387

LIQUID CRYSTAL DISPLAY DEVICE WITH DISPLAY AND COMPENSATION CELLS SEPARATED BY DISTANCE LARGER THAN DEPTH OF FOCUS OF OPTICAL ENLARGER

Masaki Yanagisawa, Tokyo; Tsuyoshi Suzuki, Hamura, and Kazuhiro Sakai, Fussa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 792,798
Claims priority, application Japan, Nov. 27, 1990, 2-124782[U]; Dec. 27, 1990, 2-407110
Int. Cl.[5] G02F *1/133, 1/1335*
U.S. Cl. 359—53 **3 Claims**



1. A display apparatus for enlarging an image formed by a liquid crystal device and for displaying the enlarged image, comprising:

a light source for emitting a light;

a display liquid crystal cell arranged in an optical path of light emitted from said light source, said display liquid crystal cell including:

first and second substrates arranged to oppose each other through a predetermined gap;

electrodes respectively formed on opposing surfaces of said first and second substrates, said electrodes being substantially perpendicular to each other and opposing each other;

alignment films subjected to alignment processing formed to cover said electrodes so as to align liquid crystal molecules in a predetermined direction; and

a first liquid crystal material sealed between said first and second substrates by a seal member, and being twisted within a range of 180° to 270° in a first twist direction, said first liquid crystal material having a refractive index anisotropy Δn_1 of said first liquid crystal material which is not less than 0.18 and a product $\Delta n_1 \cdot d_1$ of the refractive index anisotropy Δn_1 and a layer thickness d_1 of said material which is not less than 0.7 μm, and wherein a signal corresponding to image data on a desired motion image is supplied to a region between said opposing electrodes;

a composition liquid crystal cell arranged in the optical path of the light emitted from said light source, for optically compensating for the light transmitted through said display liquid crystal cell, said compensation liquid crystal cell including:

third and fourth substrates arranged to oppose each other through a predetermined gap;

alignment films for aligning liquid crystal molecules in a predetermined direction respectively formed on opposing surfaces of said third and fourth substrates, and wherein one of said alignment films which is adjacent to one of said first and second substrates is subjected to alignment processing in a direction substantially perpendicular to the alignment processing direction of said alignment film of said adjacent substrate; and

a second liquid crystal material sealed between said third and fourth substrates and being twisted in a second twist direction opposite to the first twist direction at substantially the same twist angle as that of said first liquid crystal material, said second liquid crystal material having a product $\Delta n_2 \cdot d_2$ of a refractive index anisotropy Δn_2 and a layer thickness d_2 of said second liquid crystal material which is smaller than the product $\Delta n_1 \cdot d_1$ of said first liquid crystal material;

first and second polarizing plates arranged at positions to sandwich said first, second, third and fourth substrates such hat polarization axes of said first and second polarizing plates are substantially perpendicular to each other; and

optical means for enlarging an image formed by said display liquid crystal cell; and

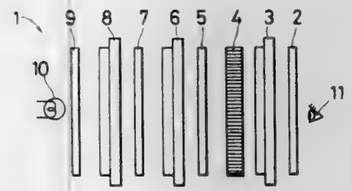
means for holding said display liquid crystal cell and said compensation liquid crystal cell such that said display liquid crystal cell and said compensation liquid crystal cell are separated from each other by a distance larger than a depth of focus of said optical means.

5,329,388

LIQUID CRYSTAL DISPLAY EMPLOYING LIGHT GUIDE PLATE BETWEEN CELLS

Toshiyuki Yoshimizu, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1992, Ser. No. 911,696
Claims priority, application Japan, Jul. 15, 1991, 3-173976
Int. Cl.[5] G02F *1/1335, 1/133*
U.S. Cl. 359—53 **15 Claims**



1. A liquid crystal display system comprising:

a first polarizer, a first liquid crystal display cell, a second polarizer, a second liquid crystal display cell, a third polarizer, a third liquid crystal display cell, and a fourth polarizer, stacked in this order, each of the liquid crystal display cells including a liquid crystal layer interposed between two substrates; and

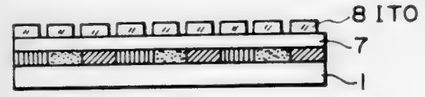
an optical member interposed between the first liquid crystal display cell and the second liquid crystal display cell, including a plurality of optical fibers arranged in close proximity and in parallel, with their light transmitting direction perpendicular to display surfaces of the plurality of liquid crystal display cells, the entire optical member being molded into a flat panel shape, wherein the optical member transmits light only in a direction substantially perpendicular to the display surfaces of the liquid crystal display cells.

5,329,389

LIQUID CRYSTAL DEVICE

Naoya Nishida, Hadano; Masaaki Suzuki, Yokohama, and Toshifumi Yoshioka, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 970,784, Nov. 3, 1992, Pat. No. 5,278,683, which is a division of Ser. No. 728,707, Jul. 11, 1991, Pat. No. 5,185,059. This application Nov. 8, 1993, Ser. No. 148,335
Claims priority, application Japan, Jul. 18, 1990, 2-187936
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—66 **5 Claims**



1. A liquid crystal device, comprising:

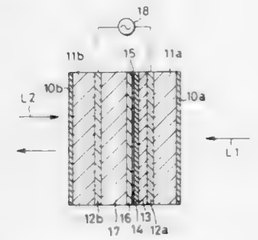
a pair of oppositely disposed substrates and a liquid crystal disposed between the substrates, one of the substrates further comprising in the order named (i) a color filter layer comprising a photosensitive polyamide resin having a colorant dispersed therein, (ii) a protective layer comprising a photosensitive polyamide resin, (iii) an indium-tin oxide film, and (iv) an alignment control film.

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LIQUID CRYSTAL DISPLAY ELEMENT OF OPTICAL WRITING TYPE WITH LIGHT ABSORBING LAYER INCLUDING INORGANIC PIGMENT AND LEVELING LAYER

Sayuri Fujiwara, and Akitsugu Hatano, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 22, 1992, Ser. No. 887,738
Claims priority, application Japan, May 23, 1991, 3-118821
Int. Cl.[5] G02F *1/135, 1/1335*
U.S. Cl. 359—67 **16 Claims**



1. A liquid crystal display element of optical writing type, comprising:

a first transparent substrate;

a first transparent electrode layer formed on said first transparent substrate;

a photoconductive layer formed on said first transparent electrode layer;

a light absorbing layer formed on said photoconductive layer, said layer being formed of pigment dispersed in an organic material;

a leveling layer formed on said light absorbing layer, said leveling layer being not more than 1.5 μm in thickness;

a dielectric layer formed on said light absorbing layer;

a second transparent substrate;

a second transparent electrode layer formed on said second transparent substrate; and

a liquid crystal layer sealed between said second transparent electrode layer and said dielectric layer;

wherein said pigment contained in said light absorbing layer

is inorganic pigment having a larger resistivity than $10^{11}\Omega$ cm

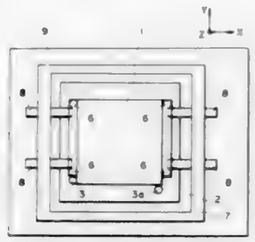
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5,329,391

PROCESS FOR FIXING LIQUID CRYSTAL PANEL TO FIXING PLATE USING HEIGHT REGULATING PINS WHICH ARE REMOVED AFTER CURING ADHESIVE

Takao Miyamoto, Chigasaki, and Hisao Tajima, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,541
Claims priority, application Japan, May 20, 1992, 4-151256
Int. Cl.[5] G02F *1/1333, 1/1335, 1/1339*
U.S. Cl. 359—83 **4 Claims**



1. A process for producing a liquid crystal panel unit including a liquid crystal panel and a fixing plate for fixing the liquid crystal panel, comprising

(a) providing in advance a plurality of height-regulating pins onto the fixing plate, and

(b) fixing the liquid crystal panel at a prescribed position on the fixing plate through

a first stage of moving and rotating one of the liquid crystal panel and the fixing plate relative to the other to effect alignment between the liquid crystal panel and the fixing plate in a planar direction parallel to the fixing plate,

a second stage of moving one of the liquid crystal panel and the fixing plate relative to the other in a direction normal to the fixing plate, thereby to effect adhesion with an adhesive between the liquid crystal panel and the fixing plate with a spacing controlled by the height-regulating pins, and

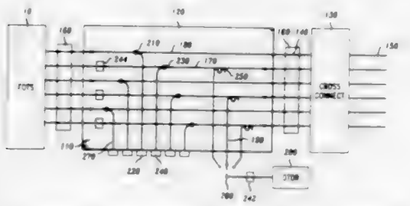
a third stage, after curing of the adhesive, of removing the height-regulating pins between the liquid crystal panel and the fixing plate.

5,329,392

OPTICAL COMMUNICATION SYSTEM WITH MULTIPLE FIBER MONITORING

Leonard G. Cohen, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 19, 1993, Ser. No. 33,912
Int. Cl.[5] H04J *14/02*
U.S. Cl. 359—124 **7 Claims**



1. An optical communication network which comprises:

a) a fiber-optic terminal system (hereafter, FOTS) situated at a central office or remote terminal, the FOTS adapted for transmitting signals into, or receiving signals from, a multiplicity of optical waveguiding bodies situated within the central office or remote terminal, the signals having one or more signal wavelengths;

b) means for interconnecting the multiplicity of optical waveguiding bodies with a corresponding multiplicity of optical fibers situated substantially outside of the central office or remote terminal;

c) means for optically coupling the FOTS to the multiplicity of waveguiding bodies; and

d) an OTDR transmitter for transmitting, into at least some of the optical waveguiding bodies, OTDR signals at one or more monitor wavelengths different from the signal wavelengths;

CHARACTERIZED IN THAT the optical coupling means comprise:

e) a substrate body having a substantially planar principal surface, a longitudinal direction defined parallel to the surface, and a normal direction defined perpendicular to the surface;

f) a multiplicity of longitudinally extending, planar, main optical waveguides formed on the surface, each said main waveguide optically coupled at one end to the FOTS and optically coupled at the other end to one of the waveguiding bodies;

g) a multiplicity of planar monitor waveguides formed on the surface for transmitting OTDR signals from the OTDR transmitter to at least some of the main waveguides; and

h) a multiplicity of wavelength-division multiplexers formed on the surface, each multiplexer adapted for optically coupling a corresponding monitor waveguide to a corresponding main waveguide with respect to monitor wavelengths but not with respect to signal wavelengths

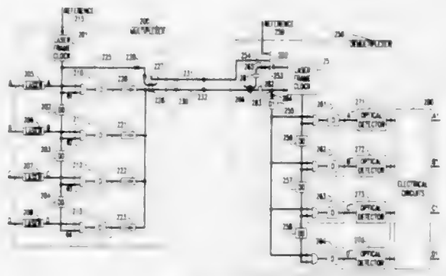
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5,329,393

OPTICAL NYQUIST RATE MULTIPLEXER AND DEMULTIPLEXER

Alan Huang, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 15, 1992, Ser. No. 961,599
Int. Cl.[5] H04J *14/00*
U.S. Cl. 359—135 **24 Claims**



1. Optical multiplexer apparatus for multiplexing a plurality of electrical digital input signals, comprising

means for receiving and converting said electrical digital input signals into corresponding optical digital input signals and

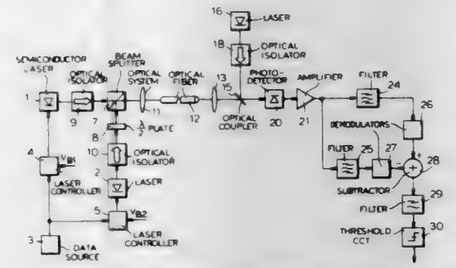
all optical circuit means for generating optical digital signals samples by cyclically sampling said optical digital input signals at a sample rate which at least equals the Nyquist rate for each corresponding electrical input signal and for generating and outputting a multiplexed optical digital output signal formed from the optical digital signal samples.

5,329,394

FREQUENCY MODULATION COHERENT OPTICAL COMMUNICATIONS SYSTEM WITH CONTINUOUS POLARIZATION SCRAMBLING

Riccardo Calvani, Pino Torinese; Renato Caponi, and Giuseppe Marone, both of Turin, all of Italy, assignors to CSELT-Centro Studi E Laboratori Telecomunicationi S.p.A., Turin, Italy

Filed May 15, 1992, Ser. No. 883,836
Claims priority, application Italy, Jul. 4, 1991, TO 91 A 00519
Int. Cl.[5] H04B *10/00, 10/04*
U.S. Cl. 359—156 **3 Claims**



1. A method of polarization scrambling in an optical signal transmission system in which optical signals are modulated by a binary digital information signal and undergo heterodyne coherent demodulation, said method comprising the steps of:

(a) frequency modulating of linearly polarized radiation by a binary digital information signal, so that the two sources emit radiations at a first and a second frequency and at a third and a fourth frequency, respectively, in correspondence with a first and a second logic level of the information signal, the third and fourth frequencies differing from the first and the second frequencies by an amount at least equal to an inverse of a bit period in the binary signal;

(b) rendering states of polarization of the radiations emitted by the two sources orthogonal in correspondence with each bit of the information signal; and

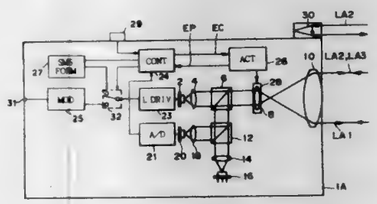
(c) combining the two orthogonally polarized radiations to send on a transmission line in the form of an optical fiber, for each of said bits, a signal comprising two orthogonally-polarized components at the first and the third frequency and at the second and the fourth frequency, respectively, whereby a linear polarization is obtained with a polarization plane rotating by at least 360° in a bit period.

5,329,395

OPTICAL ATMOSPHERIC COMMUNICATION SYSTEM

Kazuo Endo, and Yujiro Ito, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Dec. 23, 1992, Ser. No. 996,053
Claims priority, application Japan, Dec. 28, 1991, 3-360444
Int. Cl.[5] H04B *10/10*
U.S. Cl. 359—159 **4 Claims**



1. An optical atmospheric communication apparatus having first and second terminals remotely located from each other for transmitting an optical beam between transmitting means and receiving means having an optical beam reflector for reflecting a received optical beam to an opposite direction, said transmitting means comprising:

light source means for generating an optical beam;

beam scanning means for scanning the optical beam so as to change the projecting direction of the optical beam;

means for receiving the optical beam reflected from said optical beam reflector;

means for detecting a quantity of the optical beam incident to said receiving means in each projecting direction; and

means for determining a suitable projecting direction of the optical beam in accordance with an output signal of said detecting means, in which said determining means determine the suitable projecting direction by a following function,

$$X_W = \frac{\iint_S xP(x, y)\,dx\,dy}{\iint_S xP(x, y)\,dx\,dy} \quad (1)$$

$$Y_W = \frac{\iint_S yP(x, y)\,dx\,dy}{\iint_S P(x, y)\,dx\,dy} \quad (2)$$

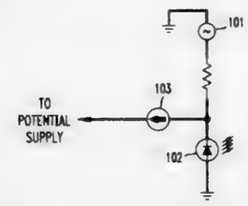
(here, X_W, Y_W) is a centroid and P(x, y) is an optical quantity of the received light beam).

5,329,396

REDUCTION OF STIMULATED BRILLOUIN SCATTERING IN A FIBER OPTIC TRANSMISSION SYSTEM

Daniel A. Fishman, Lakewood; Jonathan A. Nagel, Freehold, both of N.J., and Yong-Kwan Park, Wescosville, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 28, 1992, Ser. No. 967,649
Int. Cl.[5] H04B *10/12*
U.S. Cl. 359—173 **5 Claims**



1. A method for suppressing stimulated Brillouin scattering in an optical transmission system in which an information encoded optical signal originates from an optical source and is transmitted via an optical fiber to at least one optical receiver having a fixed bandwith of sensitivity, wherein:

said information encoded optical signal is frequency modulated, supplemental to and independent of any other modulation performed upon said optical signal for purposes of encoding information, so as to effectively increase the linewidth of said information encoded optical signal prior to transmission via said optical fiber, the frequency of said supplemental modulation being outside said fixed bandwidth of optical receiver sensitivity.

5,329,397

ACOUSTO-OPTIC TUNABLE FILTER

I-Cheng Chang, 879 Payne Ct., Sunnyvale, Calif. 94087

Filed Aug. 4, 1992, Ser. No. 884,911
Int. Cl.[5] G02F *1/33*
U.S. Cl. 359—308 **8 Claims**

1. An acousto-optic tunable filter for diffracting incident light from a first polarization to a second polarization within a passband of optical wavelength, said filter comprising an

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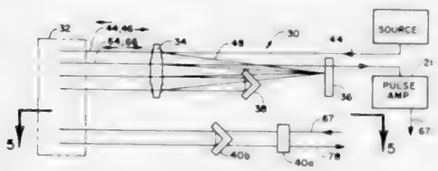
acoustically anisotropic optically birefringent crystal, means for passing the incident light beam through said crystal along a selected axis, means for exciting an acoustic wave in said crystal comprising an acoustical transducer bonded to a selected surface of said crystal, means for directing the acoustic wave so that the phase velocity of the acoustic wave is noncollinear with the incident light and the group velocity of the



acoustic wave is substantially collinear with the incident light, means for varying the frequency of the acoustic wave to select the center wavelength of the optical passband, means for coupling out the diffracted light comprising an internal mirror coated on the back surface of said acoustical transducer and means for separating the diffracted light from the incident light

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5,329,398
SINGLE GRATING LASER PULSE STRETCHER AND COMPRESSOR
Ming Lai, Mission Viejo, and Shui T. Lai, Encinitas, both of Calif., assignors to Novatec Laser Systems, Inc., Carlsbad, Calif.
Filed Nov. 5, 1992, Ser. No. 972,169
Int. Cl.[5] G02B *27/44, 5/04*; H01S *3/10*
U.S. Cl. 359—566 **16 Claims**



13. A combined laser pulse stretcher and compressor device comprising:

a laser source generating a pulsed laser beam with predetermined spectral content and predetermined temporal pulse width;

a single optical diffraction grating element;

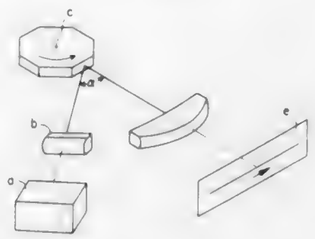
a laser pulse stretcher means for temporally stretching pulses of said pulsed laser beam; and

a laser pulse compressor means for temporally compressing pulses of said pulsed laser beam,

such that said single optical diffraction grating element is used in both the laser pulse stretcher means and the laser pulse compressor means to control the temporal stretching and compressing of the pulses of said pulsed laser beam,

wherein a predetermined spectral frequency of said pulsed laser beam can be changed to a second predetermined spectral frequency and said laser pulse stretcher means and said laser pulse compressor means can be adapted to said second predetermined spectral frequency by repositioning said single optical diffraction grating element.

5,329,399
ONE-PIECE FΘ-DEC SCANNING LENS
Leit Ho, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Jun. 2, 1993, Ser. No. 71,312
Claims priority, application China, Mar. 12, 1993, 82101878
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—662 **3 Claims**



1. A one-piece fΘ-DEC scanning lens which is adapted to be used to focus a light beam on an image surface, said light emitted by a light source and being reflected by a polygon mirror scanner to scan on a plane, wherein the scanning plane is defined as a plane scanned by said light beam while the secondary scanning plane is defined as a plane perpendicular to said scanning plane;

furthermore, said one-piece fΘ-DEC scanning lens having a first surface and a second surface, while said first surface is near the light beam reflecting point of said polygon mirror scanner, and said first surface and said second surface are in accordance with the following equation:

$$Z = (Cx\,X^2 + Cy\,Y^2)/\{1 + SQRT[1 - (1 + Kx)\,Cx^2\,X^2 - (1 + Ky)\,Cy^2\,Y^2\} + \Sigma\,An\,[(1 - An')\,X^2 + (1 + An')\,Y^2]$$

wherein,

the origins of coordinates are defined as the apexes of said first surface and said second surface respectively, and the coordinates have X, Y, and Z axes which are perpendicular to each other, while said scanning plane is defined as YZ plane, and said secondary scanning plane is defined as XZ plane, wherein the concave surface of said first surface and said second surface are facing the light beam reflecting point of said polygon mirror scanner;

X, Y, and Z are coordinates of the X, Y, Z axes respectively;

Cx and Cy are the curvatures of the curved surfaces wherein the curve apexes are in XZ plane and YZ plane respectively;

Kx and Ky are the conic coefficients in XZ plane and YZ plane respectively;

An and An' are the 2n order rotational symmetry coefficients and 2n order non-rotational symmetry coefficients respectively;

whereby following criteria are satisfied:

(1) $0.27 \leqq fx/fy \leqq 0.35$

(2) $|R_{1y}| > |R_{2y}|$

(3) $0.3 < R_{2x}/R_{2y} < 0.6$, $R_{1x}/R_{1y} \leqq 0$

wherein,

fx represents the focal length in XZ plane;

fy represents the focal length in YZ plane;

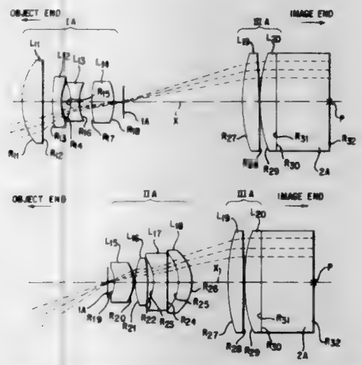
R_{1y} represents the radius of curvature of said first surface in YZ plane where the center of curvature on the same side as the incidence light beam is defined as a negative value;

R_{2y} represents the radius of curvature of said second surface in YZ plane where the center of curvature on the same side as the incidence light beam is defined as a negative value;

R_{1x} represents the radius of curvature of said first surface in XZ plane;

R_{2x} represents the radius of curvature of said second surface in XZ plane.

5,329,400
FOCAL LENGTH CHANGEABLE LENS
Hitoshi Miyano, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitame, Japan
Filed Jan. 25, 1993, Ser. No. 8,807
Claims priority, application Japan, Jan. 24, 1992, 4-011434
Int. Cl.[5] G02B *15/04*
U.S. Cl. 359—673 **6 Claims**



1. A focal length changeable lens system with its exit pupil located at a long distance for use with an on-chip micro-lens equipped solid-state imaging device, whose focal length is changeable between a long focal length and a short focal length, said lens system comprising:

a first lens group having a positive power, said first lens group being movable into an optical axis of the lens system for the long focal length and out of the optical axis for the short focal length;

a second lens group having a positive power and disposed on the image end of the lens system relative to said first lens group, said second lens group being movable into the optical axis for the short focal length and out of the optical axis for the long focal length;

an aperture stop fixedly disposed in the optical axis between said first lens group and said second lens group; and

a third lens group having a positive power, said third lens group being fixedly disposed between said second lens group and the on-chip micro-lens equipped solid-state imaging device in the optical axis so as to place its object focal point near said aperture stop.

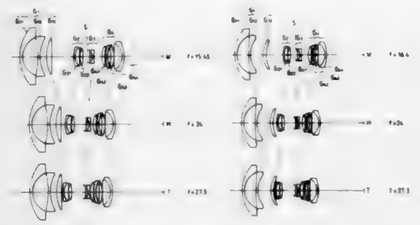
5,329,401
SUPER WIDE ANGLE ZOOM LENS
Haruo Sato, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 814,424, Dec. 30, 1991, abandoned. This application Sep. 2, 1993, Ser. No. 115,668
Claims priority, application Japan, Jan. 11, 1991, 3-2284; Jan. 11, 1991, 3-2285
Int. Cl.[5] G02B *15/14, 13/18*
U.S. Cl. 359—686 **42 Claims**

1. A super wide angle zoom lens comprising:

a front group exhibiting a negative refracting power and including, sequentially from an object, a first lens element having a negative refracting power, a second lens element having a negative refracting power and a third lens element having a positive refracting power, at least one surface of the lens element of said front group being aspherical; and

a rear group having a positive refracting power, disposed closer to the image side than said front group, the rear group including a lens group disposed closest to said front group side;

wherein when variable power operation is performed from the wide angle end side to the telephoto end side, at least one of said front group and said lens group disposed closest to said front group side in said rear group moves to

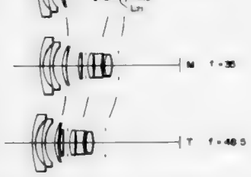


reduce air space on the optical axis between said front group and said rear group, and wherein said front group is constructed to satisfy the following condition:

$$(300/fw) \leqq |f_1| \leqq (680/fw)$$

where f_1 is the focal distance of said front group, and fw is the focal distance of the whole system at the wide angle end.

5,329,402
WIDE-ANGLE ZOOM LENS
Haruo Sato, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Mar. 1, 1993, Ser. No. 24,068
Claims priority, application Japan, Mar. 5, 1992, 4-047445
Int. Cl.[5] G02B *15/14, 3/02*
U.S. Cl. 359—691 **29 Claims**



1. A wide-angle zoom lens, sequentially from an object, comprising:

a first lens group having negative refracting power on the whole and constructed of two pieces of negative meniscus lenses with their convex surfaces toward the object, at least any one of said lenses being formed with an aspherical surface, and a positive lens with a convex surface toward the object; and

a second lens group having positive refracting power on the whole and constructed of a plurality of lenses,

wherein said first and second lens groups move along the optical axis to alter a space therebetween for variable power and are constructed to further satisfy the following conditions:

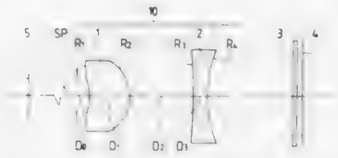
$$0.65 < |f_1|/(f_W \cdot f_T)^{\frac{1}{2}} < 1.1$$

$$0.9 < f_2/|f_1| < 1.1$$

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where
f_1 : the focal length of said first lens group,
f_2 : the focal length of said second lens group,
f_W : the focal length of the whole system at the wide-angle, and
f_T : the focal length of the whole system at the telephoto end.

5,329,403
IMAGE READING LENS
Motomu Fukasawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 1, 1993, Ser. No. 69,852
Claims priority, application Japan, Jun. 9, 1992, 4-176278
Int. Cl.[5] G02B *13/18*
U.S. Cl. 359—717 **6 Claims**



1. An image reading lens comprising, in succession from the object side, a stop, a meniscus-shaped positive first lens having its convex surface at the image plane side, and a negative second lens having its concave surface at the image plane side, the both lens surfaces of said first lens and at least one lens surface of said second lens each comprising an aspherical surface, the shape of the object side aspherical surface of said first lens being formed so as to be inside a reference spherical surface.

5,329,404
LASER BEAM EXPANDER: 5X
Paul N. Robb, Santa Clara, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Nov. 20, 1992, Ser. No. 979,015
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[5] G02B *9/34*
U.S. Cl. 359—771 **3 Claims**

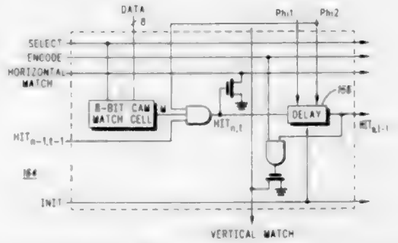


3. A laser beam expander comprising four lens elements configured and positioned with respect to each other along an optic axis according to a design form specified as follows.

Surface No	Radius (mm)	Thickness (mm)	N_d	V_d	Material
1	−5.8219	2.0000	1.788310	47.394	LAF21
2	−10.1785	67.7952			Air
3	180.8825	3.0000	1.788310	47.394	LAF21
4	47.5947	0.5200			Air
5	40.6509	2.0000	1.698951	30.067	SF15
6	50.2010	0.2540			Air
7	99.8816	3.9700	1.528554	76.960	PK51
8	−25.5475	10.0000			Air

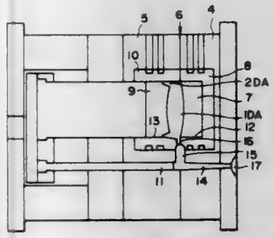
where the surfaces of the lens elements are numbered consecutively from left to right along the optic axis, and where N_d is the index of refraction at the wavelength of the sodium d spectral line and V_d is the Abbe number at the same wavelength.

5,329,405
ASSOCIATIVE CAM APPARATUS AND METHOD FOR VARIABLE LENGTH STRING MATCHING
Brian Ta-Cheng Hou, Freehold, N.J.; Craig D. Cohen, Merrick, N.Y.; James A. Pasco-Anderson, Needham, and Michael Gutman, Newton, both of Mass., assignors to Codex Corporation, Mansfield, Mass.
Continuation of Ser. No. 299,759, Jan. 23, 1989, abandoned. This application Nov. 13, 1992, Ser. No. 976,298
Int. Cl.[5] G06F *7/00*
U.S. Cl. 395—800 **16 Claims**



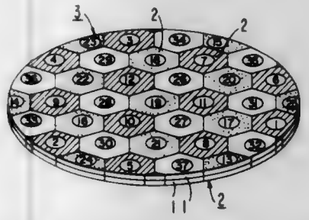
1. Apparatus for finding, within a stored first sequence of data elements, a longest string of stored data elements that matches a string of a second sequence of given data elements, comprising:
storage for storing said first sequence of data elements,
comparison circuitry for comparing a single data element of said second sequence with multiple data elements of said first sequence, and for issuing match signals when matches are found, and
control circuitry for causing said comparison circuitry to operate iteratively, each iteration comprising a simultaneous comparison of a data element of said second sequence with the stored multiple data elements, said control circuitry being responsive to said match signals for determining the longest string of said stored data elements that matches a string of said second sequence immediately when the match occurs, based on when an iteration does not result in issuance of a match signal by said comparision circuitry,
wherein each of a plurality of cells includes at least the storage and the comparison circuitry, the cells are associated by signals between adjacent cells, the cells are provided in parallel each iteration with the data element of the second sequence for comparison and wherein said storage comprises locations each for holding one of said data elements of said first sequence,
said comparison circuitry comprises a series of comparators each in a different respective one of said cells for comparing one of said data elements of said first sequence with a given data element of said second sequence and for issuing a match signal when a match is found, and
delay circuitry for storing said match signal issued by a said comparator temporarily each in a different respective one of said cells for use in a next iteration on the next data element in said second sequence.

5,329,406
PLASTIC OPTICAL ELEMENTS AND A MOLDING MOLD THEREFOR
Hiroshi Nakanishi, Tokyo; Yoshito Matsuoka, Utsunomiya; Yoichi Shibata, Tochigi; Toshiaki Magome, Mooka, and Takashi Ubagai, Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 30, 1992, Ser. No. 921,641
Claims priority, application Japan, Jul. 31, 1991, 3-213152
Int. Cl.[5] G02B *7/02*
U.S. Cl. 359—811 **8 Claims**



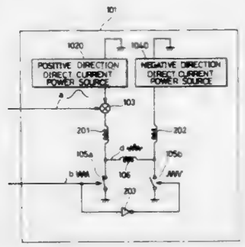
1. An optical element molded with molten plastic resin, which is injected into a cavity within a mold and then cooled and solidified, said optical element comprising:
an optical face; and
a projection extending away from said optical face,
wherein said projection comprises means for being formed at a groove-like resin injection portion which is provided within the mold and which is provided along a parting face of the mold and which continues to the cavity.

5,329,407
REFLECTOR DEVICE
Aki Sasaki, and Izumi Mikami, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 710,797, Jun. 5, 1991, abandoned. This application May 4, 1992, Ser. No. 877,729
Claims priority, application Japan, Aug. 15, 1990, 2-215510; Nov. 26, 1990, 2-324244; Feb. 5, 1991, 3-35270
Int. Cl.[5] G02B *5/08*
U.S. Cl. 359—849 **3 Claims**



1. A reflector device comprising a reflector in which three or more stacks are arranged in a preselected pattern based on the magnitudes of the coefficients of linear expansion of each of said individual stacks and bonded to one another, whereby thermal distortion of said reflector is limited by the form of said preselected pattern based on the magnitudes of the coefficients of linear expansion of said individual stacks, a plurality of actuators arranged on the back surface of said reflector to apply a force to said reflector; a temperature measurement means provided on or in the vicinity of said reflector to measure a temperature of said reflector, a memory means for storing a predetermined temperature when said reflector presents a predetermined shape and for storing a correcting force value for the forces to be applied to each of said actuators in order to correct said reflector to said predetermined shape when a difference in temperature between said predetermined temperature and the temperature of said reflector is 1° C., a calculation means for calculating a difference in temperature between the temperature from said temperature measurement means and said predetermined temperature from said memory means and calculating a correcting force command value specifying the magnitude of the correcting forces to be applied to each of said actuators with respect to said temperature difference based on the correcting force value from said memory means, and a control means for supplying the correcting force command value from said calculation means to the corresponding actuator to drive said actuator.

5,329,408
MAGNETIC FIELD MODULATION MAGNET-OPTICAL RECORDING APPARATUS IN WHICH AN FM MODULATOR AND A MAGNETIC HEAD DRIVING CIRCUIT ARE USED IN COMMON
Hiroshi Fuji, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 8, 1992, Ser. No. 910,758
Claims priority, application Japan, Jul. 10, 1991, 3-169894; Feb. 28, 1992, 4-043639
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—59 **14 Claims**



1. A magnetic field modulation magnet-optical recording apparatus having magnetic head means for applying to a magnet-optical recording medium a magnetic field modulated according to information to be recorded, and which forms a magnet-optical recording mark having the direction of magnetization specified in binary on said magnet-optical recording medium comprising:
AM modulation means for AM modulating a first recording signal having a first frequency based on a second recording signal having a second frequency lower than said first frequency, and then providing an AM modulation signal,
magnetic head driving means for converting the current value of said provided AM modulation signal into a current value appropriate for generation of said magnetic field by said magnetic head means, and providing a magnetic head driving current of said appropriate current value to said magnetic head means,
wherein the mark length of said magnet-optical recording mark is FM modulated based on at least said second recording signal.

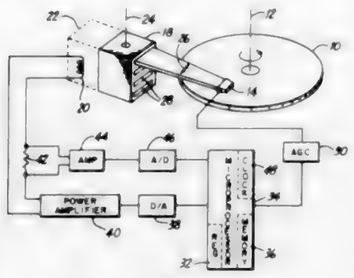
5,329,409
CORRECTION OF CURRENT FEEDBACK OFFSET FOR DISC DRIVE SERVO SYSTEMS
Randall D. Hampshire, Edmond, Okla., assignor to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Jul. 24, 1991, Ser. No. 734,938
Int. Cl.[5] G11B *5/596, 15/46*
U.S. Cl. 360—77.02 **23 Claims**

1. In a disc drive having power means responsive to a feedback signal for providing actuator current to an actuator, the actuator being operable in response to the actuator current to accelerate and decelerate a transducer, and a sensor responsive

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to the actuator current for deriving the feedback signal representative of the magnitude of the actuator current, the method of compensating for offset comprising

operating the actuator in a manner designed to move the transducer at a predetermined constant speed in a first direction;



operating the actuator in a manner designed to move the transducer at the same constant speed in a second direction opposite the first direction;

determining first and second actual speeds at which the transducer moves in the respective first and second directions; and

altering said signal feedback if the first and second actual speeds differ by more than a predetermined difference

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5,329,410

A DEVICE FOR PREVENTING AN UNLOADED COMPACT CASSETTE ADAPTER FROM BEING INSERTED INTO A VTR

Tadashi Iwamoto, Yotsukaidou, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

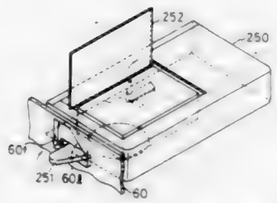
PCT No. PCT/JP91/00418, § 371 Date Dec. 2, 1991, § 102(e) Date Dec. 2, 1991, PCT Pub. No. WO91/15849, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 29, 1991, Ser. No. 777,518

Claims priority, application Japan, Mar. 31, 1990, 2-82958

Int. Cl.[5] G11B *5/008*

U.S. Cl. 360—94 **1 Claim**



1. A cassette setting device, for loading a first tape cassette and a second tape cassette, said second tape cassette being of smaller dimensions than the dimensions of the first tape cassette, comprising:

a cabinet for housing therein a tape drive section at which the first tape cassette and the second tape cassette may be placed;

a tray arranged in the cabinet and having a first position where the tray is projected form a front side of the cabinet and a second position where the tray is set at the tape drive section in the cabinet;

a carriage system for carrying the tray between the first and the second position;

a cassette adapter in which the second tape cassette may be housed, said tray having means for receiving one of the first cassette and the cassette adapter, the cassette adapter including an unloaded cassette detecting lever to detect whether or not the second tape cassette has been housed in the cassette adapter;

a lever detecting means, arranged at the ray, for detecting the unloaded cassette detecting lever, of the cassette adapter, to prevent the tray from being moved from the first to the second position when the unloaded cassette detecting lever is detected, wherein the lever detecting means comprises a through-hole formed in a side wall of the tray, said through-hole having a slope that increases from a front side of the tray toward a rear side of the tray so as to guide the unloaded cassette detecting layer; and

a control means, associated with the lever detecting means, for reversing the carriage system so as to project the tray to the first position when the unloaded cassette detecting lever is detected.

5,329,411

CASSETTE LOADING APPARATUS WITH REDUCED SPACE REQUIREMENT FOR LOADING A MAGNETIC RECORDING CASSETTE INTO A CASSETTE PLAYING OR RECORDING APPARATUS

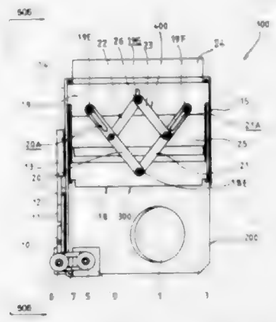
Ming-Che Chiu; Chyi-Fwu Chiou, and Wen-Don Lin, all of Chutung Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Chutung Hsinchu, Taiwan

Filed Dec. 4, 1992, Ser. No. 986,128

The portion of the term of this patent subsequent to Feb. 24, 2011, has been disclaimed.

Int. Cl.[5] G11B *15/675, 15/60*

U.S. Cl. 360—96.5 **2 Claims**



1. A cassette loading mechanism for loading a magnetic recording cassette which is removably disposed within a cassette holder into a cassette playing apparatus which comprises a playing deck having a bottom member with a cassette driving means for driving reel hubs of the cassette on which a magnetic recording medium is wound and signal sensing means which reads a magnetic signal from the magnetic recording medium travelling therethrough, a first side plate and a second side plate substantially perpendicularly mounted on said bottom member to define therebetween a space for receiving therein the cassette holder, each of said side plates defining thereon a first pair of shaped slots and a second pair of shaped slots, both opposite to each other, a mechanical transmission system being provided to transmit torque from a torque source to said cassette loading mechanism, said mechanical transmission system comprising at least a gear rotatably mounted on said first side plate with a radial slot formed on a web thereof, said cassette loading mechanism comprising:

a movable member which is a plate-like member fit into said playing deck in such a way to oppose the bottom member with a first side panel and a second side panel thereof respectively adjacent to said first side plate and said second side plate in such a way to be movable relative to said first and second side plates, said side panels being substantially normal to said movable member, each of said side panels comprising a hole formed thereon, directly opposite to each other, each of said side panels further comprising a side pin formed thereon, directly opposing each other, said movable member further comprising an elongated slot extending normal to an axis running through said side pins of the side panels thereof and located substantially midway between the side panels thereof, a pair of top pins being formed on said movable member in symmetry with respect to said elongated slot;

a stationary member which is a plate-like member fit into said playing deck in such a way to define a gap with said movable member and has a first wing and a second wing thereof respectively fit over said first side plate and said second side plate in such a way to be movable relative to said first and second side plates, said wings being substantially perpendicular to said stationary member and extending in a direction parallel with said stationary member and each said wings having a slot formed thereon, each of said wings further comprising a side pivot pin formed thereon opposite-to each other, a top pivot pin being formed on said stationary member substantially midway between said wings;

said cassette holder comprising a first lateral side and a second lateral side on each of which a first side rod and a second side rod are formed respectively opposite to each other, said first side rods respectively extending through the slots formed on the wings of said stationary member and then penetrating through the holes formed on the side panels of said movable member and eventually received in said first shaped slots formed on said side plates, the side pins of said movable member being received in the slots of said wings to maintain said movable member at substantially the same plane with said stationary member, said second side rods extending through the slots of the wings of said stationary and then penetrating through the second shaped slots, the second side rod of the first lateral side further extending into the radial slot of said gear so that when said gear rotates, the second side rod of said first lateral side of the cassette holder is driven by said radial slot to move within the second shaped slot formed on said first side plate;

said first side plate comprising a hole formed thereon to rotatably receive therein the first side pivot pin of said stationary member and said second side plate comprising a hole formed thereon to rotatably receive therein the second side pivot pin of said stationary member to allow said stationary member to be rotatable with respect to said playing deck about a pivot axis defined by said side pivot pins;

a four bar linkage, which is disposed between said movable member and said stationary member, comprising two long links pivotally connected at a first pivot point with the top pivot pin of said stationary member and two short links pivotally connected at a second pivot point with a pivot, said pivot being partially received in the elongated slot formed on said movable member to be guided thereby, the two short links being pivotally connected to the two long links at a third and a fourth pivot points to form a parallelogram structure, each of the long links comprising a slot to receive therein and guide one of the top pins of said movable member so that when said cassette holder is moved at the first lateral side thereof, the movement is substantially transmitted to the second lateral side thereof by said four bar linkage; and

a first linking bar connected between the second side rod of said first side plate and the slot formed on the first wing of said stationary member, and a second linking bar connected between the second side rod of said second side plate and the slot formed on the second wing of said stationary member, each of said linking bar having a first end pivotally secured by one of said second side rods and a second end rotatably and movably received in one of the slots of said wings.

5,329,412

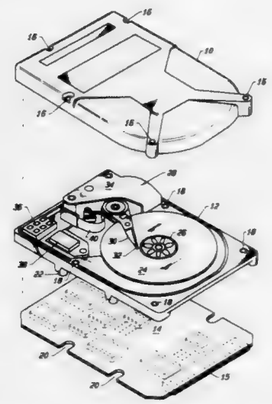
TWO AND ONE HALF INCH DIAMETER DISK DRIVE HAVING 0.6 INCH HEIGHT

Frederick M. Stefansky, Longmont, Colo., assignor to Conner Peripherals, Inc., San Jose, Calif.

Continuation of Ser. No. 661,065, Feb. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,788, Jun. 11, 1990, abandoned. This application Aug. 24, 1993, Ser. No. 111,286

Int. Cl.[5] G11B *5/012*

U.S. Cl. 360—97.01 **13 Claims**



1. A disk drive having a length, a width, and a height, comprising:

a base,

a cover configured to mate with said base and define a chamber having a controlled environment, said cover having a length and a width, and a convex cross section over the width of the cover extending outwardly from said base thereby enhancing the strength of said cover and said controlled environment to atmospheric pressure changes,

said base and cover conforming to a form factor in which the length of the drive is approximately the width of a three and one-half inch drive, the width is approximately one-half of the length of a three and one-half inch drive, and the height is approximately 0.60 inch,

a single-disk magnetic storage medium rotatably positioned in said chamber,

a spin motor mounted to said base and having a spindle for rotatably supporting said single disk storage medium,

actuator means including a rotary voice coil motor mounted to said base, a plurality of suspensions extending from and driven by said rotary voice coil motor, and a plurality of pick-up heads with each head mounted to an end portion of an extension for movement across a surface of the storage medium for recording and accessing data magnetically stored on the surface,

latch means for securing said suspensions and heads over a non-data region of the storage medium, and

circuit means for controlling said actuator means in recording and accessing data.

13. A disk drive comprising:

a base,

a cover configured to mate with said base and define a chamber having a controlled environment,

said base and cover conforming to a form factor in which the length of the drive is approximately the width of a three and one-half inch drive, the width is approximately one-half of the length of a three and one-half inch drive, and the height is approximately 0.60 inch,

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a single-disk magnetic storage medium rotatably positioned in said chamber;

a spin motor mounted to said base and having a spindle for rotatably supporting said single disk storage medium;

actuator means for positioning a plurality of suspensions having mounted thereon a plurality of read/write heads across a surface of the storage medium for recording and accessing data magnetically stored on the surface, said actuator means including an inner crash stop and an outer crash stop for limiting the travel of said suspensions and said pick-up heads across the surface of said single disk magnetic storage medium, said inner crash stop including a latch body and a magnet housed in said latch body, said actuator means further including a crash stop arm and a latch plate for engaging said latch body, said latch plate comprising magnetically permeable material for magnetic attraction by said magnet, and further including a grommet on which said latch plate is mounted and means for fastening said grommet on said crash stop arm; and

circuit means for controlling said actuator means in recording and accessing data

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5,329,413

MAGNETORESISTANCE SENSOR MAGNETICALLY COUPLED WITH HIGH-COERCIVE FORCE FILM AT TWO END REGIONS

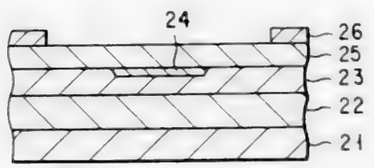
Reiko Kondoh; Hitoshi Iwasaki, both of Yokohama; Junichi Akiyama, Kawasaki; Yuichi Obsawa, and Toshihiko Ohta, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 5, 1993, Ser. No. 712

Claims priority, application Japan, Jan. 10, 1992, 4-003140; Mar. 31, 1992, 4-076774

Int. Cl.[5] G11B *5/39*

U.S. Cl. 360—113 **14 Claims**



1. A magnetoresistance sensor for detecting a magnetic field on the basis of a change in electric resistance of a magnetoresistance layer, comprising a substrate, said magnetoresistance layer, a high-coercive-force film for stabilizing magnetization of said magnetoresistance layer, and an electrical conductive layer formed on said magnetoresistance layer or said high-coercive-force film,

wherein said magnetoresistance layer and said high-coercive-force film are stacked on each other such that said layers are magnetically coupled to each other at two end regions thereof with an exchange coupling force higher than that at a remaining region

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5,329,414

PROTECTIVE RELAY INTERFACE

Edward J. Kratt, III, Montville, and David H. Quam, Stanhope, both of N.J., assignors to RFL Electronics Inc., Boonton, N.J.

Filed Mar. 6, 1992, Ser. No. 846,868

Int. Cl.[5] H02H *3/00*

U.S. Cl. 361—64 **5 Claims**

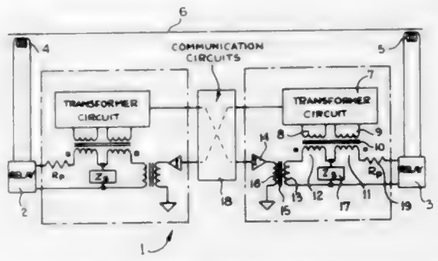
1. A protective relay communication interface to interface a local relay to a communication link with a remote relay, which interface comprises:

a communication input for connection to the communication link and by means of which a remote signal indicative of the current sensed at the remote relay is input to the interface;

a communication output for connection to the communication link and by means of which a local signal representative of the current sensed at the local relay is output from the interface to the communication link;

a local relay port for connection of a local relay to the interface and by means of which remote signals are output to the local relay and local signals are input to the interface from the local relay;

an output transformer comprising primary windings formed



from at least two sets of mutually opposed windings; and secondary windings connected to said communication output;

a first signal path formed, at least in part, by some of said sets of primary windings such that a local signal is coupled to said secondary windings; and

a second signal path between said communication input and local relay port formed, at least in part, by said sets of mutually opposed windings such that at least two mutually cancelling fields of flux are induced by the remote signal which induce substantially no current in said secondary windings.

5,329,415

CLUTCH-BRAKE DRIVE CONTROL FOR PRESS MACHINE

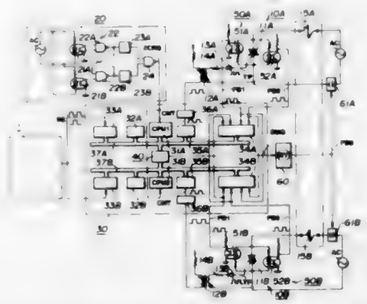
Yasuhiko Oyamada, Sagamihara, Japan, assignor to Aida Engineering Ltd., Japan

Filed Apr. 20, 1992, Ser. No. 871,080

Claims priority, application Japan, Apr. 26, 1991, 3-96827; May 9, 1991, 3-103049; May 10, 1991, 3-105682

Int. Cl.[5] H02H *3/28*

U.S. Cl. 361—86 **10 Claims**



1. An apparatus for drive control of a clutch-brake for a press machine by turning a solenoid valve on and off, comprising:

a solenoid driving circuit, in which a solenoid of said solenoid valve, an AC power supply and a semiconductor device for opening or closing said AC power supply are connected in series;

running command pulse signal generation means for generating a running command pulse signal synchronized with said AC power supply, said running command pulse signal indicative of an ON-OFF condition of a running button;

zero-cross synchronized pulse signal generating means for generating a zero-cross synchronized pulse signal synchronized with a zero-cross point of said AC power supply;

drive control signal generating means for generating a drive control signal and outputting the drive control signal to said semiconductor element under the condition that said running command pulse signal is recognized as valid through comparison of synchronization of said running command pulse signal and said zero-cross synchronized pulse signal;

synchronizing signal generating means for generating synchronized signals synchronized with the AC power supply in case said semiconductor element is in an OFF condition; and

fault detecting means for detecting a fault of said semiconductor element from the combination of an output condition of said synchronized signals and said drive control signal, and for forcibly cutting off said AC power supply of said solenoid driving circuit when the fault is detected.

5,329,416

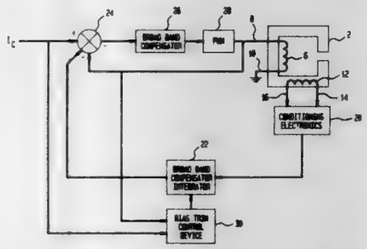
ACTIVE BROADBAND MAGNETIC FLUX RATE FEEDBACK SENSING ARRANGEMENT

Randall K. Ushiyama, Torrance, Calif.; Michael K. Scruggs, Pompton Plains, N.J.; Eric C. Mathisen, Brooklyn, N.Y., and Eric Hahn, Woodcliff Lake, N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jul. 6, 1993, Ser. No. 86,579

Int. Cl.[5] G01R *33/02*

U.S. Cl. 361—146 **10 Claims**



1. An active broadband magnetic flux rate feedback sensing arrangement, comprising:

a magnetic circuit including a rotor and a stator, the stator carrying a drive coil and a sensor coil;

the stator and rotor cooperatively arranged so that a signal is induced in the sensor coil and the sensor coil provides a signal proportional to the rate of change of flux in the magnetic circuit;

means connected to the sensor coil for processing the flux rate of change signal therefrom and for providing a processed flux rate of change signal;

means for providing a command signal;

means connected to the processing means and to the command signal means for combining the processed flux rate of change signal and the command signal and for providing a combined signal;

compensating means connected to the combining means for applying broadband compensation to the combined signal and for providing a compensated combined signal;

modulating means connected to the compensating means for modulating the compensated combined signal and for providing a modulated compensated combined signal;

the drive coil connected to the modulating means for being energized by the modulated signal therefrom; and

the modulating means connected to the combining means for applying the modulated compensated combined signal thereto, whereby the modulated compensated combined signal is combined with the command signal and the processed flux rate of change signal for providing the combined signal.

5,329,417

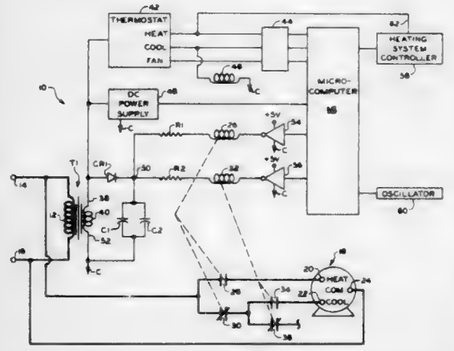
RELAY CONTROL CIRCUIT AND METHOD OF OPERATING SAME

David I. Kniepkamp, Fairview Heights, Ill.; Dwain F. Moore, Allegan County, Mich.; Bartholomew L. Toth, Crestwood, and Bradley C. Zikes, St. Louis County, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 16, 1991, Ser. No. 730,470

Int. Cl.[5] H05B *1/02*

U.S. Cl. 361—185 **4 Claims**



1. In an electrical circuit including a relay having a coil and a set of contacts which contacts control the application of electrical power from an AC power source to an electrical load, an improved method of operating the relay wherein the improvement comprises:

establishing upon an initial demand for operation of the relay coil to effect a change in state of the contacts from one state to another, a time in the sine wave of the AC power source at which said relay coil is so operated;

upon the next demand for said operation of said relay coil, shifting said time by a predetermined time increment from said time relating to said initial demand; and

upon each subsequent demand for said operation of said relay coil, shifting said time by said predetermined time increment from said time relating to the demand immediately previous to the instant demand.

5,329,418

3-D COMMUNICATION AND INTERCONNECT TECHNIQUE FOR INCREASED NUMBER OF COMPUTATIONAL MODULES IN LARGE-SCALE ELECTRONIC EQUIPMENT

Notoru Tanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 18, 1992, Ser. No. 978,505

Claims priority, application Japan, Nov. 18, 1991, 3-301475

Int. Cl.[5] H05H *7/20*

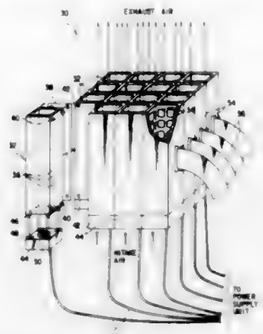
U.S. Cl. 361—695 **17 Claims**

1. A circuit board packaging structure comprising:

a plurality of pipe-shaped circuit units each of which has two opposite first and second openings, an inner surface which permits electric circuit components to be mounted

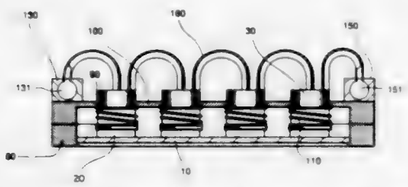
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thereon and has wiring patterns for providing electrical interconnection therebetween, and an outer surface; and connecting means provided on the outer surface of said pipe-shaped circuit units and electrically connected to said



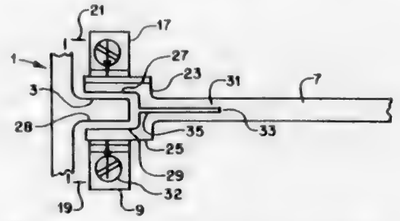
wiring patterns, for permitting each of said pipe-shaped circuit units to be coupled together in rows and columns and electrically interconnected to a corresponding one of said pipe-shaped circuit units associated therewith by area-contact on the outer surface thereof.

5,329,419
INTEGRATED CIRCUIT PACKAGE HAVING A COOLING MECHANISM
Kazuhiko Umezawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 21, 1992, Ser. No. 964,028
Claims priority, application Japan, Oct. 21, 1991, 3-272631
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—699 **8 Claims**



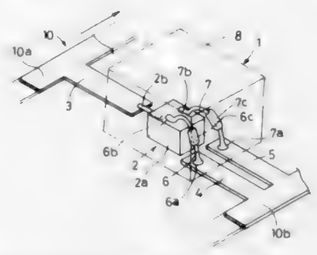
1. An integrated circuit package having a cooling mechanism, comprising:
a printed wiring board;
a plurality of integrated circuit chips disposed on said printed wiring board;
cooling means disposed corresponding to said integrated circuit chips for cooling said integrated circuit chips using impinging jet of liquid coolant, wherein said cooling means comprises
a cooling plate in contact with the top face of a respective integrated circuit chip,
a cylinder-shaped housing with an end fixed to said cooling plate,
a nozzle inserted into said housing to impinge said liquid coolant to substantially the center of said cooling plate, and
a drain tube disposed to drain said liquid coolant from said housing;
holding means in fixed relationship to said printed wiring board for positioning and holding said cooling means corresponding to said integrated circuit chips, wherein said holding means has positioning holes to hold said cooling means with top parts of said cooling means projecting at positions corresponding to said integrated circuit chips; and
pressing means to press said cooling means against said integrated circuit chips with force of a predetermined level.

5,329,420
SLOTTED TUNING FORK THERMAL INTERFACE
Frank E. Altoz, 311 Stonewall Rd., Catonsville, Md. 21228
Filed Feb. 28, 1990, Ser. No. 486,673
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—709 **30 Claims**



1. Thermal heat sink interface apparatus comprising:
(a) heat dissipating means together with a flat heat conductive tab member extending therefrom;
(b) a heat sink having a heat generating electrical device thereon, said heat sink having a pair of flat parallel, resilient prongs including first and second inner surfaces facing each other and separated from each other by a distance slightly greater than the thickness of said tab member to form a clearance gap; and
(c) clamping means for squeezing said prongs together to produce a good thermal contact between the first and second inner surfaces of said prongs and said tab member.

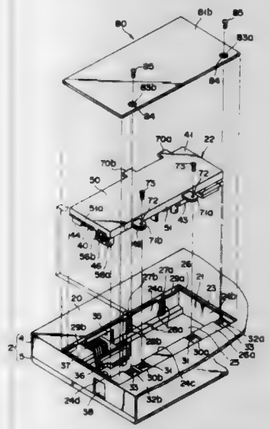
5,329,421
SOLID ELECTROLYTIC CAPACITOR
Chojiro Kuriyama, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Apr. 2, 1993, Ser. No. 41,972
Claims priority, application Japan, Apr. 7, 1992, 4-085354
Int. Cl.[5] H01G *1/10*
U.S. Cl. 361—534 **10 Claims**



1. A solid electrolytic capacitor comprising:
a capacitor element including a chip body and an anode wire projecting from the chip body;
an anode lead electrically connected to the anode wire;
a cathode lead paired with the anode lead;
a temperature fuse wire connecting electrically between the chip body and the cathode lead; and
a resin package enclosing the capacitor element, part of the anode lead, part of the cathode lead, and the temperature fuse wire; wherein the capacitor further comprises:
an auxiliary lead separate from the anode and cathode leads; and

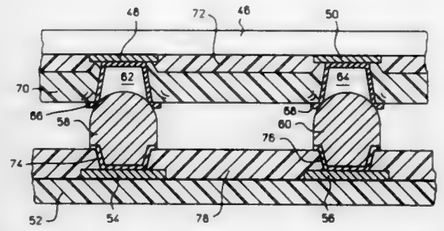
an overcurrent use wire for electrically connecting the auxiliary lead to one of the chip body and the anode lead within the resin package.

5,329,422
PORTABLE ELECTRONIC APPARATUS HAVING OPTIONAL COMPONENTS IN A SHIELDED RECESS FOR FUNCTION EXPANSION
Katumaru Sasaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 783,971, Oct. 29, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 53,805
Claims priority, application Japan, Nov. 30, 1990, 2-340285
Int. Cl.[5] H05K *9/00, 7/06;* **G06F** *1/16*
U.S. Cl. 361—686 **19 Claims**



1. A portable electronic apparatus comprising:
a base unit having a peripheral surface, the base unit including a holding recess having interior walls, the interior walls being covered with a conductive layer for electromagnetic shielding;
an optional component unit for function expansion being mounted in the holding recess, the optional component unit including a printed circuit board having a conductive circuit pattern and circuit parts electrically connected to the conductive circuit pattern;
a non-conductive board support mounted within the holding recess supporting the printed circuit board, the support comprising:
a base wall portion covering the printed circuit board on a side of the circuit board adjacent an opening of the holding recess; and
side walls continuous with the base wall disposed between the printed circuit board and the interior walls; and
a conductive cover removably attached to the base unit and covering the opening so that the optional component unit is concealed within the holding recess, the cover being electrically connected to the conductive layer and, cooperating with the conductive layer, surrounding the optional component unit to provide a conductive shield.

5,329,423
COMPRESSIVE BUMP-AND-SOCKET INTERCONNECTION SCHEME FOR INTEGRATED CIRCUITS
Kenneth D. Scholz, 4150 Willmar Dr., Palo Alto, Calif. 94306
Filed Apr. 13, 1993, Ser. No. 46,334
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **17 Claims**



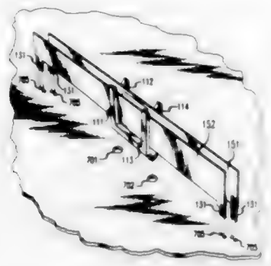
9. An electrically and mechanically interconnected assembly comprising,
a substrate having a first pattern of contact sites on a first surface of said substrate,
an integrated circuit chip having a second pattern of input-/output pads on an active side of said integrated circuit chip, said second pattern being aligned with said first pattern,
demountable means for electrically connecting said contact sites to said input/output pads, said demountable means including a bump-and-socket arrangement wherein a first one of said first and second patterns has electrically conductive raised bumps and wherein a second one of said first and second patterns has depressions to receive said raised bumps therein, said raised bumps being friction fit to said depressions, and
depression means for maintaining said raised bumps within said depressions, said depression means for maintaining providing force to press said raised bumps into said depressions, said depression means for maintaining being disposed to apply said force to at least one of a surface opposite said first surface of said substrate and to a surface opposite to said active side of said integrated circuit chip, wherein said substrate and said integrated circuit chip are pressed together,
said raised bumps having a geometry to limit the entry of said raised bumps into said depressions, said raised bumps thereby being spaced apart from the bottoms of said depressions.

5,329,424
BUSBAR HOLDER FOR SECURING BUSBARS TO A PCB
Jayesh R. Patel, Garland, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 1, 1993, Ser. No. 115,951
Int. Cl.[5] H01R *9/00*
U.S. Cl. 361—775 **9 Claims**

1. A printed circuit board assembly comprising:
a printed circuit board having receptacles suitable for accepting the engaging prongs of attachments to the board;
a conducting busbar electrically connected to conducting paths of the printed circuit board;
a busbar holder of an insulative and flexible material including:
a supporting base;
first and second engaging prongs attached to the supporting base and operative for engaging the receptacles and securing the busbar holder to the printed circuit board;
first, second, third, and fourth securing prongs attached to the supporting base and extending vertically from the supporting base and having catch hooks at their end oppo-

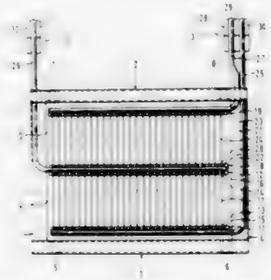
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site the end attached to the supporting base, the attachments to the base being at corners of the supporting base;
a support wall extending vertically from and attached to the supporting base and located intermediate the first and



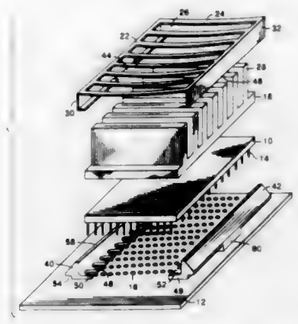
second securing prongs and the third and fourth securing prongs;
a busbar inserted between the support wall and the first and third securing prongs and held in place by their respective catch hooks.

5,329,425
COOLING SYSTEM
Francois J. C. Leyssens, Mortsel, and Hendrikus M. J. Rombouts, Zoersel, both of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands
Filed Jan. 30, 1992, Ser. No. 829,358
Claims priority, application European Pat. Off., Feb. 25, 1991, 91200392.8
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—701 **3 Claims**



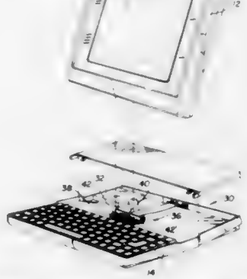
1. A cooling system for a plurality of circuit boards, each circuit board having a substantially planar thermally conductive thermal sink having longitudinal sides and being in thermal contact with a plurality of electronic components dissipating heat, said cooling system including:
a heat exchanger for delivering heat to a cooling medium; and
a flat box-shaped heat pipe for transferring heat from thermal sinks to said heat exchanger, at least a first part of said heat pipe for thermally contacting longitudinal sides of thermal sinks of circuit boards;
wherein grooves are provided in thermal contact with said flat box-shaped heat pipe, for receiving longitudinal sides of thermal sinks of circuit boards; and
wherein said grooves are provided in said box-shaped heat pipe.

5,329,426
CLIP-ON HEAT SINK
Angelo Villani, Shrewsbury, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Mar. 22, 1993, Ser. No. 34,995
Int. Cl.[5] H04K *7/20*
U.S. Cl. 361—719 **11 Claims**



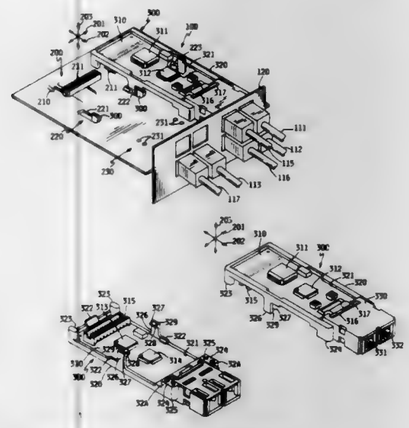
10. An apparatus as in claim 1, wherein said substrate is a printed wiring board.

5,329,427
MODULAR COMPUTER SYSTEM HAVING AN IMPROVED DOCKING ASSEMBLY
Per Hogdahl, Palm Beach Gardens, Fla., assignor to Tusk, Incorporated, Palm Beach Gardens, Fla.
Continuation of Ser. No. 739,808, Aug. 2, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,807
Int. Cl.[5] H05J *5/00*
U.S. Cl. 361—730 **2 Claims**



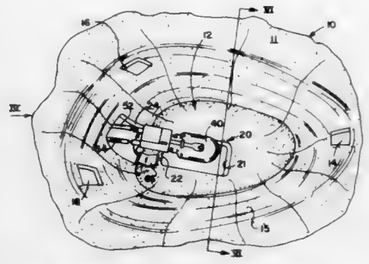
1. An improved apparatus for coupling a tiltable computer display having a display means to a base unit, for controlling a viewing angle of said display means, said improved apparatus comprising:
a mounting area formed integrally along one edge of said tiltable computer display, the mounting area including a first electrical connector means coupled to said display means and a plurality of support apertures;
a support flange pivotally mounted to said base unit with a plurality of brackets, said support flange including a second electrical connector for interfacing with said first electrical connector for electrically coupling said display means to said base unit, said support flange further including a plurality of support posts for engaging said support apertures; and
a control means coupled between said support flange and said plurality of brackets for controlling the angular relationship of said support flange with respect to said base unit.

5,329,428
HIGH-DENSITY PACKAGING FOR MULTIPLE REMOVABLE ELECTRONICS SUBASSEMBLIES
Timothy R. Block; David P. Gaio, and Ronald L. Soderstrom, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 21, 1993, Ser. No. 80,275
Int. Cl.[5] H01R *23/68*
U.S. Cl. 361—785 **12 Claims**



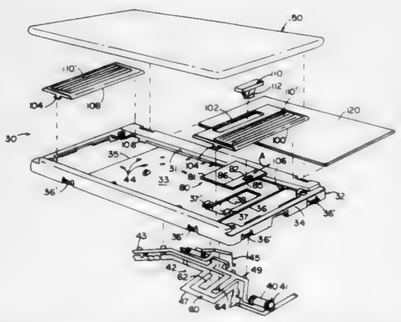
1. An electronics assembly, comprising:
a base card positioned in a base plane and having at least one row of elongated slots each having an axis in a first direction, said slots being spaced across said base card in a second direction, and having a plurality of electrical base-card connectors mounted thereon;
a plurality of smaller subassemblies removably mounted on said base card, each said unit subassembly being positioned in a plane parallel to said base card, and having
a circuit card carrying a plurality of electronic circuits,
a connector for mating with one of said base-card connectors,
a pair of substantially straight side edges extending in a direction transverse to said second direction,
at least two spaced-apart feet projecting from said subassembly and resting on said base,
at least two spaced-apart hooks projecting from respective ones of said side edges of said subassembly, each of said hooks engaging a different one of said slots so as to cause said feet to exert pressure upon said base card, and each of said, hooks being located at a different position along its respective side edge, so that each of said hooks engages its respective slot at a location along said respective slot such that adjacent hooks of two different ones of said subassemblies engage the same slot at different locations along the axis of said same slot.

5,329,429
VEHICLE LIGHT
Larry E. Mathias, Hudsonville, and Jason M. Hathaway, Holland, both of Mich., assignors to Prince Corporation, Holland, Mich.
Filed Oct. 22, 1992, Ser. No. 964,930
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—74 **12 Claims**



1. A lamp assembly for a vehicle comprising:
a vehicle panel for mounting to a vehicle, said panel having a surface facing the interior of the vehicle, said panel formed to integrally include a depression formed in said surface, said depression having a floor and curved sidewalls, a plurality of spaced lens receiving mounting slots formed in said panel at the periphery of said depression, said depression including a pair of spaced apertures, with one of said apertures formed in the floor thereof and the other of said apertures formed in said sidewall, said panel further including a bridge extending between said apertures;
a lamp socket including clip means for attaching said socket to said bridge for positioning a lamp fitted in said socket with said depression of said panel; and
lens means including tab means extending into said mounting slots for snap mounting said lens means to said vehicle panel.

5,329,430
LIGHT CONTROL CIRCUIT FOR VANITY MIRROR ASSEMBLY AND METHOD OF MANUFACTURING
Michael L. Lanser, and Paul T. Vander Kuyl, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.
Filed May 5, 1992, Ser. No. 879,207
Int. Cl.[5] B60R *1/12*
U.S. Cl. 362—83.1 **16 Claims**



1. An illuminated vanity mirror assembly including a variable resistance circuit for providing a dimming control comprising:
a conductive electrical circuit substrate having an insulating

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layer of material and a resistance layer of material on at least one side of said substrate with said layer of insulating material being in direct contact with said substrate and said layer of resistance material overlaying said insulating layer and having an end extending beyond said insulating layer and in contact with said substrate;

electrical contact means for selectively engaging said resistance material;

means for mounting said substrate and said contact means for movement relative to each other to provide a variable resistance to said contact means; and

means for electrically coupling said contact means to lamp means associated with a vanity mirror for selectively varying the intensity of light from said lamp means.

5,329,431

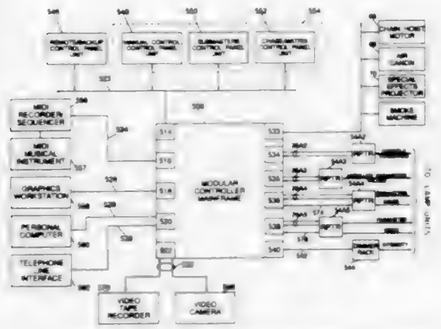
COMPUTER CONTROLLED LIGHTING SYSTEM WITH MODULAR CONTROL RESOURCES

Brooks W. Taylor, and Thomas E. Walsh, both of Dallas, Tex., assignors to Vari-Lite, Inc., Dallas, Tex.

Continuation of Ser. No. 988,821, Dec. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 898,385, Jun. 9, 1992, Pat. No. 5,209,560, which is a continuation of Ser. No. 766,029, Sep. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 555,946, Jul. 19, 1990, abandoned, which is a continuation of Ser. No. 249,225, Sep. 22, 1988, Pat. No. 4,980,806, which is a continuation of Ser. No. 120,743, Nov. 12, 1987, abandoned, which is a continuation of Ser. No. 887,178, Jul. 17, 1986, abandoned. This application Sep. 14, 1993, Ser. No. 122,355

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—85 **55 Claims**



1. A controller for a lighting system adapted to control a plurality of multiple parameter lamp units, said controller comprising:

A. a primary control system having

(1) source interface processors for receiving parameter-controlling inputs; and

(2) a central processing system cooperating with said source interface processors for encoding said inputs into system control commands for exercising control over said lighting system;

B. a plurality of supplementary control units coupled to one or more of said source interface processors of said primary control system for entering parameter-controlling inputs; and

C. one or more of said source interface processors further comprising translating means for translating said parameter controlling inputs to meet requirements of said primary control system.

5,329,432

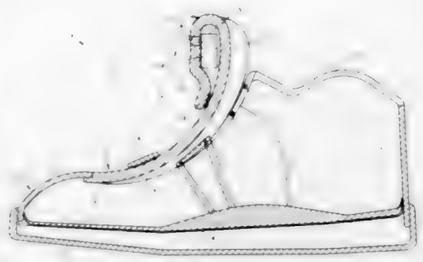
LUMINAIRE-PROVIDED FOOTWEAR

Todd A. Bland, 4301 Abbott Rd., Lincoln, Nebr. 68516

Filed Mar. 29, 1993, Ser. No. 38,894

Int. Cl.[5] A43B *23/26;* **F21L** *15/08*

U.S. Cl. 362—103 **3 Claims**



1. Footwear for male and/or female persons and conventionally comprising: a generally horizontal outersole extending between a frontal upright toe and a rearward upright heel, a generally horizontal innersole attached to said toe and heel and overlying said outersole, a hollow vamp attached to and extending upwardly from said toe and also extending upwardly rearwardly therefrom to terminate at a footwear throat that overlies a rearward portion of said innersole whereby the wearer's instep might be inserted through said throat and into said vamp, said vamp being topically provided with a centrally-slotted portion therealong, and a flexible tongue attached to a forward portion of and located along said vamp centrally-slotted portion and said tongue having a lofty rearward-portion including a folded portion located adjacent an upper rearward-portion for said tongue, the improvement of:

a frontally beaming luminaire system carried by said footwear and comprising a forwardly beaming incandescent lamp portion carried within said folded portion of said tongue, said folded portion having an aperture therein, said system further comprising within said folded portion a chemical storage power source for said lamp portion of said luminaire system.

5,329,433

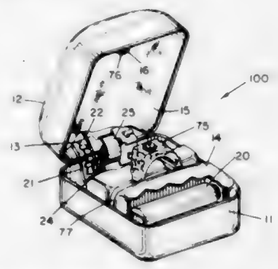
LIGHTED JEWELRY BOX

David L. Geeting, 1690 El Dorado Dr., Thousand Oaks, 91362, and Jeffrey P. Main, 4240 N. Lost Hills Rd. #2805, Agoura Hills, both of Calif. 91301

Filed Jun. 1, 1993, Ser. No. 69,509

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—154 **11 Claims**



1. A lighted box comprisng,

a bottom section,

a top section,

hinge means connecting said bottom section with said top section,

said hinge formed of electrically conductive material,

a miniature lamp located within said top section for selectively illuminating at least said bottom section,

power source means contained in said bottom section,

first conductor means connected from said miniature lamp to said power source means,

second conductor means connected from said miniature lamp to said hinge means,

third conductor means connected from power source means and disposed adjacent to said hinge means in a non-conductive manner, and

a spring clip means connected to said hinge means whereby when said top section is pivoted to an open position to allow access to the inside of the box, said spring clip means is stretched to contact said third conductor and complete an electrical circuit path between said lamp and said power source.

5,329,434

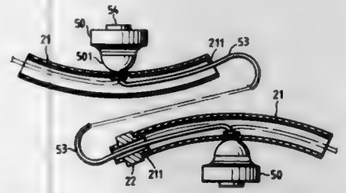
MODULAR ANGULAR/CURVATURE LIGHT FIXTURE ASSEMBLY

Richard Hong, 11576 49'ER Cir., Gold River, Calif. 95670

Filed Jul. 7, 1993, Ser. No. 88,862

Int. Cl.[5] F21V *1/00*

U.S. Cl. 362—238 **5 Claims**



1. A modular angular/curvature light fixture assembly comprising a plurality of tubular fixture sections each of which has an opening formed through a wall thereof, a plurality of coupling units interconnecting said tubular fixture sections in such a manner that any adjacent pair of said tubular fixture sections are coupled together by one of said coupling units, an electrical cord unit extending through said tubular fixture sections and adapted to be connected to an electric power supply, and a plurality of illumination units mounted removably on some of said tubular fixture sections and electrically connected to said electrical cord unit in such a manner that said electrical cord unit extends through corresponding ones of said openings, each of said illumination units including a bowl-like shield with a central hole formed through a central portion thereof, a tubular bolt having an externally threaded stem extending through said central hole of said shield and one of said openings, and a nut engaged threadably with said stem of said bolt and positioned in one of said tubular fixture sections so as to retain said illumination unit on said tubular fixture section.

5,329,435

APPARATUS FOR PRODUCING LIGHT DISTRIBUTIONS

Kevin P. McGuire, Rochester, N.Y., assignor to Tailored Lighting Company, Inc., Pittsford, N.Y.

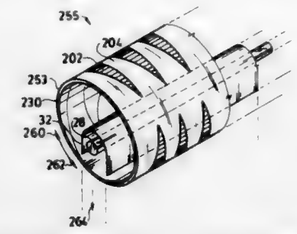
Continuation-in-part of Ser. No. 10,616, Jan. 28, 1993. This application Apr. 22, 1993, Ser. No. 52,199

Int. Cl.[5] F21V *9/00*

U.S. Cl. 362—293 **14 Claims**

1. A apparatus for continuously producing at least two spectrally different light distributions possessing substantially the same irradiance, wherein said apparatus is comprised of a light source for providing light and a adjustable, opto-mechanical filter means for attenuating light from said light source, wherein said adjustable, opto-mechanical filter means is comprised of:

(a) a substantially circular composite filter comprised of a substrate with a top surface and a bottom surface and,



contiguous with at least one of said top surface and said bottom surface a first coating of color conversion filter material and a second coating of neutral density filter material; and

(b) means for rotating said circular composite filter.

5,329,436

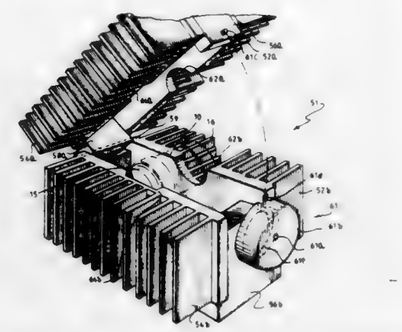
REMOVABLE HEAT SINK FOR XENON ARC LAMP PACKAGES

David Chiu, 252 Indian Head Rd., Kings Park, N.Y. 11754

Filed Oct. 4, 1993, Ser. No. 130,313

Int. Cl.[5] F21V *29/00;* **F28F** *7/00;* **H01R** *33/08*

U.S. Cl. 362—294 **14 Claims**



1. A heat sink assembly for use with an arc lamp package, said heat sink assembly comprising:

a) a first front heat sink portion having a left and right side;

b) a second front heat sink portion having a left and right side;

c) a first rear heat sink portion having a left and right side;

d) a second rear heat sink portion having a left and right side;

e) a first insulator portion having a front and back side, a front side of said first insulator portion being mechanically coupled to said right side of first front heat sink portion and said back side of said first insulator portion being mechanically coupled to said right side of said first rear heat sink portion;

f) a second insulator portion having a front and back side, said front side of said second insulator portion being mechanically coupled to said right side of second front heat sink portion and said back side of said second insulator portion being mechanically coupled to said right side of said second rear heat sink portion;

g) a third insulator portion having a front and back side, said front side of said third insulator portion being mechanically coupled to said left side of first front heat sink portion and said back side of said third insulator portion being

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mechanically coupled to said left side of said first rear heat sink portion;

h) a fourth insulator portion having a front and back side, said front side of said fourth insulator portion being mechanically coupled to said left side of second front heat sink portion and said back side of said fourth insulator portion being mechanically coupled to said left side of said second rear heat sink portion;

i) hinge means mechanically coupling said third insulator portion with said fourth insulator portion; and

j) latch means for removably coupling said first insulator portion with said second insulator portion; wherein

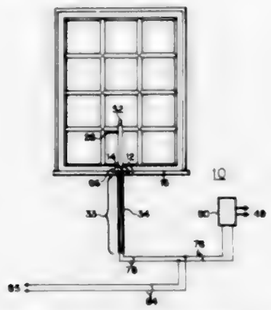
the arc lamp package is removably held between said first and second front heat sink portions and between said first and second rear heat sink portions by operation of said latch means.

5,329,437

RETRACTABLE ELECTRIC CANDLE SYSTEM

Perry A. Briggs, 1858 Hooksett Rd., Hooksett, N.H. 03106

Filed Apr. 20, 1993, Ser. No. 49,073
Int. Cl.[5] F21V *21/34, 35/00*
U.S. Cl. 362—393 **19 Claims**



1. A retractable electric candle system for installation through an aperture in a window sill for connection to an electric power source and an electric-powered display unit, the candle system comprising:

a base having a top surface, a bottom surface, and a hole extending through the base from the top surface to the bottom surface, the base for being attached to the sill so that the hole is aligned with the aperture,

a candle having a top end, an elongated body, and a bottom end, the candle slidably extending through the base hole and through the window sill aperture for being lifted to a raised position generally above the window sill with the bottom end near the base, and for being lowered to a retracted position generally below the window sill with the top end near the base and with the elongated body and bottom end extending into space below the window sill,

a lock means for detachably holding the candle in the raised position,

a stop means for preventing the candle from falling out of the base when the candle is in the retracted position,

a pop-up means for moving the top end of the candle slightly above the upper surface of the base for allowing the top end to be grasped for lifting the candle to the raised position,

a top electrical contact attached to the candle near the top end for connection to and cooperation with the electric-powered display unit,

a bottom electrical contact attached to the candle near the bottom end,

wire extending between and electrically connecting the top electrical contact and the bottom electrical contact,

a base electrical contact for detachably contacting the bottom electrical contact when the candle is the raised position and for connection to the electric power source, so that electric power may be delivered to the base electrical contact, through the bottom electrical contact when the candle is in the raised position, and through the wire to the top electrical contact to power the display unit, and

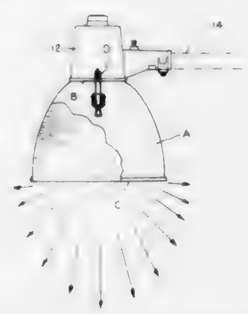
an attachment means for attaching the base electrical contact to the base.

5,329,438

OUTDOOR LIGHT REFLECTOR AND METHOD

Charles O. Thompson, 2500-C Devine St., Columbia, S.C. 29205

Filed Apr. 22, 1993, Ser. No. 51,183
Int. Cl.[5] F21S *1/10*
U.S. Cl. 362—431 **7 Claims**



1. For use in an outdoor pole mounted lighting fixture having a head fixture housing bearing a depending light source, the improvement comprising:

a unitary reflector formed from light impermeable material;

a side member of said reflector being of generally parabolic configuration having a circular cross section tapering inwardly toward a top end and directing light from said light source generally downwardly at a lower open end forming a light impermeable reflecting portion of said reflector;

an inwardly directed flange integral with and extending about said top end of said side member for receiving said light source therein and being complementary to a lower end of said head when joined to prevent the upward passage of light from said light source;

a matt-like finish on an interior surface of said reflector providing uniformity of spread and distribution of light;

said interior surface being of such a configuration as to reflect light generally downwardly toward said lower open end of said side member providing a substantially 90° cutoff at a horizontal plane avoiding directing light at an angle above the horizontal plane;

said lower end of said side member being entirely open to the atmosphere and devoid of any refractor so that said light is directed generally downwardly entirely by said interior surface of said reflector; and

a disconnectable fastener on said reflector adjacent said top end and being engageable with said head fixture housing;

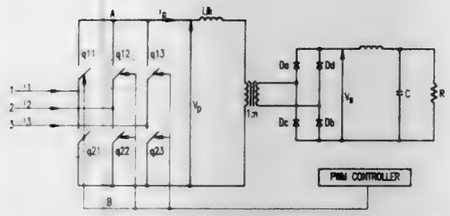
whereby loss of light and sky contamination through upwardly directed light is avoided.

5,329,439

ZERO-VOLTAGE-SWITCHED, THREE-PHASE PULSE-WIDTH-MODULATING SWITCHING RECTIFIER WITH POWER FACTOR CORRECTION

Dusan Borojevic; Fred C. Lee, and Vlatko Vlatkovic, all of Blacksburg, Va., assignors to Center for Innovative Technology, Herndon, Va.

Filed Jun. 15, 1992, Ser. No. 898,900
Int. Cl.[5] H02M *7/219*
U.S. Cl. 363—87 **2 Claims**



1. A three-phase, zero-voltage-switched, pulse-width-modulated, a.c.-to-d.c.-converter, comprising in combination:

a transformer having a primary winding and a secondary winding;

means including rectifying means and filter means for coupling said secondary winding to a load;

a three-phase input, comprising a first-phase input, a second-phase input, and a third-phase input;

switching bridge means for coupling said three-phase input means to said primary winding;

said switching bridge means comprising a first switching means coupled between said first phase input and a first side of said primary winding, second switching means coupled between said first-phase input and a second side of said primary winding, third switching means coupled between said second-phase input and said first side of said primary winding, fourth switching means coupled between said second phase input and said second side of said primary winding, fifth switching means coupled between said third-phase input and said first side of said primary winding, and sixth switching means coupled between said third phase and said second side of said primary winding;

resonant circuit means, including a leakage inductance of said transformer and a parasitic capacitance of said switching bridge means, said resonant circuit periodically established zero voltage across said first, second, third, fourth, fifth, and sixth switching means;

means for generating a six-step, pulse-width-modulating signal to switch between an off-state and an on-state said first, second, third, fourth, fifth, and sixth switching means at a zero voltage established by said resonant circuit means and generate a pulse-width-modulated series of in-phase, current and voltage pulses with successive voltage pulses of said series of opposite sign; and

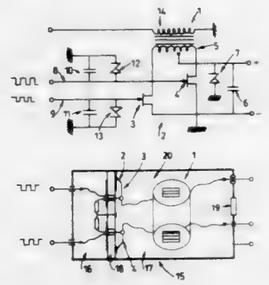
said means for generating a six-step, pulse-width-modulating signal providing a period of zero transformer primary voltage between each successive voltage pulse of said series.

5,329,440

DEVICE FOR CONVERTING A VERY-LOW-AMPLITUDE STEADY VOLTAGE SIGNAL INTO AN ALTERNATING VOLTAGE SIGNAL

Jacques Chaussy, Echirolles; Jean-Louis Bret, Seyssins; Bernard Picot, Brie et Angonnes, and Jacques Meyer, Sartrouville, all of France, assignors to Framatome, Courbevoie and Centre National de la Recherche Scientifique (CNRS), Paris, both of France

Filed Jan. 7, 1993, Ser. No. 1,643
Claims priority, application France, Jan. 7, 1992, 92 00083
Int. Cl.[5] H02M *7/538*
U.S. Cl. 363—146 **8 Claims**



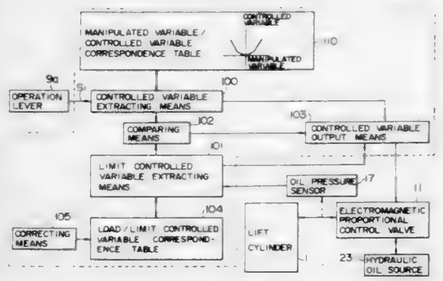
1. Device for converting of a very-low-amplitude steady voltage signal into an alternating voltage signal, of the type comprising a centre-tapped transformer (**1**) associated with a transistor (**3,4**) chopper (**2**), characterised in that the transformer (**1**) and the transistors (**3,4**) are arranged in a housing (**15**) held at very low temperature and in which is arranged a material (**20**) for thermal insulation of the transistors (**3,4**) with respect to the rest of the housing so as to reduce temperature fluctuations and allow operation of these transistors by self-heating due to their drive current.

5,329,441

HYDRAULIC CONTROL DEVICE FOR A WORK MACHINE

Kanji Aoki; Yukio Uchiyama, and Toshiyuki Midorikawa, all of Sagamihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and MHI Sagami High Technology & Control Engineering Co., Ltd., Kanagawa, both of Japan

Filed Feb. 5, 1992, Ser. No. 830,578
Claims priority, application Japan, Feb. 5, 1991, 3-035338
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—148 **5 Claims**



1. A control device for hydraulic equipment where an operator manipulates the control device, said hydraulic equipment including at least one hydraulic cylinder for performing a desired function, said cylinder supplied with pressurized oil by an oil line, said device comprising:

a work machine lever, manipulated by the operator, for providing an input controlled variable output;

an oil pressure sensor means, responsive to oil pressure in said oil line, for providing an oil pressure output indicative of the load on the hydraulic cylinder;

table means for storing a limit for each of a plurality of oil pressures, and, responsive to said oil pressure output, for providing a limit controlled variable output;

a controlled variable output means, responsive to said limit controlled output and said input controlled variable output, for providing the smaller of said input controlled variable output and said limit controlled variable output to said hydraulic equipment and thereby controlling pressurized oil supplied to said oil line; and

means for shifting said table means such that said limit controlled variable output insures a desired maximum speed of operation of said hydraulic cylinder.

5,329,442

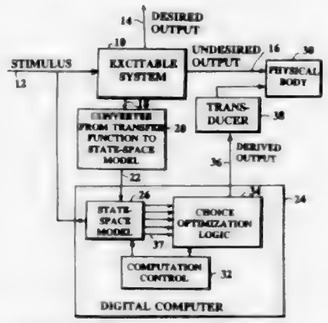
OPTIMAL DISTRIBUTED CONTROL SYSTEM FOR A LINEAR DISTRIBUTED PARAMETER SYSTEM

Allen Moshfegh, Great Falls, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 29, 1991, Ser. No. 751,939

Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—149 **9 Claims**



1. A control system comprising:

A. a linear continuous distributed parameter system, which, when excited by an input signal, produces both desired output responses and at least one undesired output response, which has a continuous distributed transfer function describable by a partial differential equation with respect to at least two independent variables, at least one of which is limited in length,

B. a physical body which is so placed that it is subject to the undesired output response,

C. means using a Moshfegh transform format for converting said continuous distributed transfer function of said system, said function describing the transfer between input signal and at least one undesired output response, into a digital distributed transfer function in a discrete format and for obtaining from the digital distributed transfer function a digital distributed state-space model of said system capable of use with a digital computer, said model being in the form of state-space equations,

D. means for using said model and responsive to the input signal for deriving an optimal computed output signal representing a derived output response which is coincident in time and space with the undesired output response, equal in magnitude and opposite in phase, and

E. transducer means responsive to the computed output signal for applying the derived output response to said body to cancel the effects of the desired output response.

5,329,443

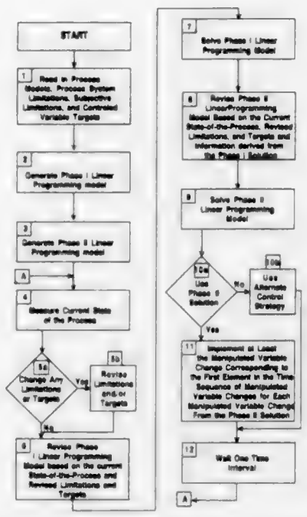
TWO-PHASE METHOD FOR REAL TIME PROCESS CONTROL

Dante P. Bonaquist, Grand Island; Michael D. Jordan, Williamsville, and Mark H. Karwan, Buffalo, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 16, 1992, Ser. No. 899,477

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—153 **10 Claims**



1. A method for controlling a process for separating air into high purity gas streams having one or more manipulated variables in which one manipulated variable is an air flow stream and one or more controlled variables with one of the controlled variables being the degree of purity of a discharge gas stream and having target values which depend upon the adjusted value of said manipulated variables, with the process controlled in real time using a process controller under the operation of a computer comprising the steps of:

establishing a first performance index to compute the absolute value of the deviation for each controlled variable in the process from its target value over a specified time horizon;

generating a first linear programming model the solution of which will minimize said first performance index;

solving said first linear programming model;

establishing a second performance index to compute the absolute change in the value of each manipulated variable from its previous value over a specified time interval;

generating a second linear programming model the solution of which will minimize said second performance index;

incorporating at least one dynamic constraint in said second linear programming model computed from the solution of said first linear programming model and being equal to a value above zero and of no greater than the value of the solution of said first linear programming model plus a predetermined amount;

solving said second linear programming model with said dynamic constraint; and

adjusting the manipulated variables in response to the solution of said second linear programming model to drive said controlled variables toward their target values and thereby causing the air to be separated into a high purity gas stream.

5,329,444

WORK MANAGEMENT SYSTEM EMPLOYING ELECTRONIC BOARD

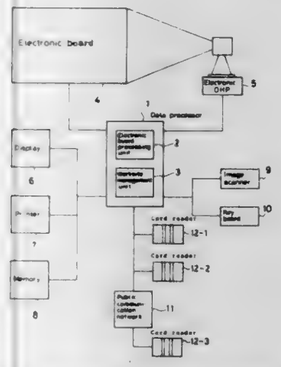
Hideki Takahashi; Teruo Fukunaga; Tomonori Inokoshi; Masataka Abe; Yuji Saito; Masaru Sukagawa; Mitsuaki Watanabe; Tateo Yokozawa; Akira Kikuchi; Hiromi Kato; Takashi Kunugi; Manabu Akimoto, and Yusuke Yamazaki, all of Tokyo, Japan, assignors to Shimizu Construction Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 872,811

Claims priority, application Japan, Apr. 26, 1991, 3-097332; Jul. 2, 1991, 3-161684

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 **9 Claims**



1. A work management system employing an electronic board, comprising:

input means having a function of inputting coordinate information from the surface of a panel;

output means having a function of projecting electronic information on said panel; and

data processing means for executing a predetermined processing, including at least one of preparation and input processing of a form, a chart or a drawing, retrieval, editing, and totalization, by establishing a correspondence between the information projected on said panel by using said output means and the coordinate information input from said input means, said data processing means being arranged to execute said input processing of a form, a chart or a drawing such that, when coordinate information is input from one point for an entry column for a designated item, said data processing means displays a list of registered items to be designated in a window for selection of one of said items, whereas, when coordinate information is input from two points for an entry column for time setting, said data processing means draws a bar between said two points.

5,329,445

IMAGE FILING APPARATUS PREVENTING THE STORAGE OF INCORRECT INFORMATION

Hachiro Mukai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 24, 1990, Ser. No. 632,848

Claims priority, application Japan, Dec. 25, 1989, 1-335865

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.01 **14 Claims**

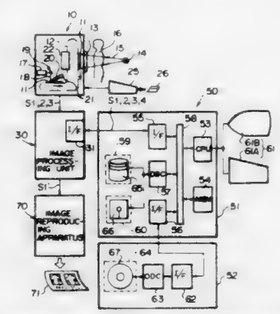
1. An image filing apparatus, comprising:

drive means which is loaded with an optical disk capable of storing a plurality of signals, and with which image signals representing images and subsidiary information associated with each of the images are stored on the optical disk and read therefrom,

data base constructing means, when the image signals ad the subsidiary information corresponding to each of the image signals are stored on the optical disk loaded into the drive means, for constructing an image signal retrieving data base from the subsidiary information such that an image signal corresponding to the subsidiary information may be retrieved,

storage means for storing the data base such that the data base can be rewritten,

data base construction preventing means for inspecting the subsidiary information when an image signal and the subsidiary information corresponding to the image signal are stored on the optical disk loaded into the drive means,



and for preventing a data base from being constructed from the subsidiary information when the subsidiary information has been found to be other than predetermined data and for replacing said subsidiary information found to be other than said predetermined data with predetermined data, and

means for recording information corresponding to a disk number of said optical disk on which the subsidiary information judged to be other than said predetermined data and the image signal corresponding to the subsidiary information judged to be other than said predetermined data have been recorded, onto said storage means.

5,329,446

TRANSLATION MACHINE

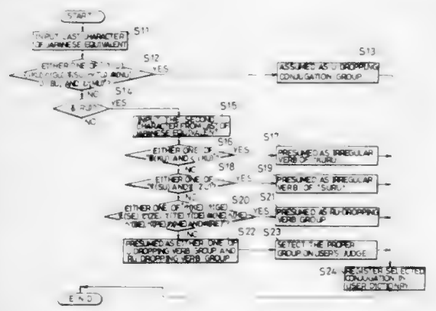
Shuzo Kugimiya; Hitoshi Suzuki, both of Nara; Yoji Fukumochi, Ikoma; Ichiko Sata, Nara, and Tokuyuki Hirai, Yamato-Koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 14, 1991, Ser. No. 641,732

Claims priority, application Japan, Jan. 19, 1990, 2-11053; Jan. 23, 1990, 2-13018; Jan. 26, 1990, 2-17118

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.04 **10 Claims**



1. A translation machine capable of translating one or more

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sentences described in a source language into a target language, said translation machine having a storing unit which stores dictionaries and predetermined rules, said translation machine comprising

means for dividing a sentence described in said source language into morphologic elements so as to analyze a syntax structure of each of said morphologic elements in accordance with said dictionaries and said predetermined rules; and

means connected to said dividing means for converting said syntax structure of said source language into a syntax structure of said target language so as to generate a resultant translated sentence in said target language on a basis of said syntax structure of said target language;

said dividing means including

a determining means for determining whether or not a character located at a proper spot of the character series composing said target language equivalent is a prespecified one and

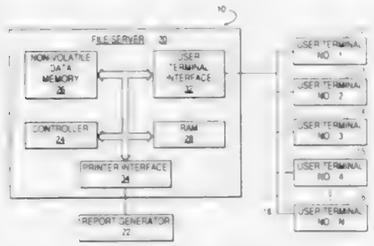
a presuming means for presuming the inflection of the translated word depending on the predetermined rules based on the determining result output by said determining means and for registering a presumed result in a user dictionary.

5,329,447

HIGH INTEGRITY COMPUTER IMPLEMENTED DOCKETING SYSTEM

Charles M. Leedom, Jr., 6524 Truman La., Falls Church, Va. 22043

Filed Mar. 12, 1992, Ser. No. 850,484
Int. Cl.[5] G06F *15/38, 15/20*
U.S. Cl. 364—419.19 **29 Claims**



1. A human operator controlled computer implemented deadline docketing system for a plurality of cases, comprising

non-volatile memory means for retaining a program including a series of executable commands for implementing the docketing system and for retaining stored signals when the system is de-energized including a plurality of case record keys uniquely identifying each case;

controller means connected with said non-volatile memory means for executing said program to operate the docketing system;

deadline recording means operating under the control of said controller means for receiving and storing in said non-volatile memory means unverified future calendar date signals associated with a unique case record key representing an initial human operator determined future calendar date by which an action must be taken in a case identified by the record key;

report generating means operating under the control of said controller means for generating in response to an operator entered case identifier key an operator viewable first report listing and identifying all unverified future calendar dates stored in said non-volatile memory means associated with the operator entered case record key; and

verification recording means operating under the control of said controlling means for converting unverified calendar date signals into verified future calendar date signals by receiving and storing in said non-volatile memory means in association with a future calendar date appearing in said first report a human operator generated verification signal indicating that the human operator has independently verified the accuracy of the corresponding future calendar date appearing in said first report.

5,329,448

METHOD AND APPARATUS FOR DETERMINING HORIZONTAL CONDUCTIVITY AND VERTICAL CONDUCTIVITY OF EARTH FORMATIONS

Richard A. Rosthal, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Aug. 7, 1991, Ser. No. 741,858
Int. Cl.[5] G01V *1/40*
U.S. Cl. 364—422 **49 Claims**



1. A method for generating a log of the horizontal conductivity and the vertical conductivity of earth formations surrounding a borehole, comprising the steps of:

a) moving through the borehole a logging apparatus having a transmitter coil and at least one receiver coil, all of the coils being axially aligned, and deriving first and second formation conductivity values from measurements taken in the borehole by transmitting electromagnetic energy from said transmitter coil and receiving electromagnetic energy at said at least one receiver coil;

b) selecting a horizontal conductivity model value and a vertical conductivity model value;

c) computing error values from the differences between: (i) first and second composite conductivity values computed as a function of said horizontal and vertical conductivity model values, and (ii) said first and second derived formation conductivity values;

d) modifying said horizontal and vertical conductivity model values;

e) repeating steps (c) and (d) until predetermined criteria of said error values are met; and

f) recording modified horizontal and vertical conductivity model values as recorded values; and

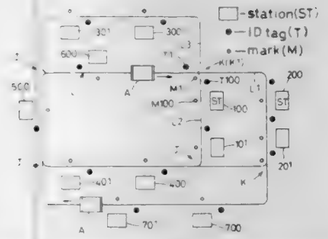
g) repeating steps (a) through (f) for a number of depth levels in the borehole to obtain a log of recorded horizontal and vertical conductivity values.

5,329,449

VEHICLE CONTROL SYSTEM FOR MULTI-BRANCHING TRACK

Hideichi Tanizawa, Moriguchi, and Yoshitaka Watanabe, Takarazuka, both of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan

Continuation of Ser. No. 736,086, Jul. 26, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 144,999
Claims priority, application Japan, Aug. 23, 1990, 2-223546; Sep. 4, 1990, 2-234966; Sep. 13, 1990, 2-245163; Nov. 1, 1990, 2-296221
Int. Cl.[5] B60T *7/16;* **G06F** *7/70;* **G06G** *7/78*
U.S. Cl. 364—424.02 **17 Claims**



1. A vehicle control system for a multi-branching track, the system comprising:

a vehicle (A);

a plurality of stations (ST) at each of which said vehicle (A) is stopped;

a main travelling track (L) for guiding the vehicle (A), said track (L) including a plurality of predetermined branch points (K), across each of said branch points (K) said main travelling track being discontinuously separated by predetermined distances between an upstream line and a plurality of downstream lines, said vehicle including means for sensing said main travelling track whereby said vehicle is adapted to effect guided runs on said upstream line and said downstream lines;

a storage means (T) disposed before each said branch point (K) and storing data for selectively guiding the vehicle to one of said downstream lines;

a mark (M) provided before each said branch point (K) for accurate detection of a branching start position of the vehicle;

wherein said vehicle includes read means for reading the data stored at said storage means and a mark sensor (6) for detecting said mark (M);

wherein said data stored at said storage means (T) includes data of branching directions of said downstream lines and further data of addresses of stations included in the respective downstream lines, said data and said further data being correlated with each other; and

wherein said vehicle effects a self-contained run through said predetermined distances to switch over from said upstream line to one of said downstream lines and then switches to a guided run.

5,329,450

CONTROL METHOD FOR MOBILE ROBOT SYSTEM

Masanori Onishi, Ise, Japan, assignor to Shinko Electric Co., Ltd., Japan

Filed May 7, 1992, Ser. No. 879,883
Claims priority, application Japan, May 10, 1991, 3-106109
Int. Cl.[5] G06F *7/70;* **G06G** *7/64*
U.S. Cl. 364—424.02 **2 Claims**

1. A method of controlling a mobile robot system of the type having a control station and a plurality of mobile robots, wherein the control station transmits instructions to the robots to travel to and to perform tasks at a plurality of work points, the method comprising the steps of:

(a) storing at the control station tasks for the robot;

(b) assigning some of the tasks to the robots;

(c) identifying any of the robots not currently having any assigned tasks;

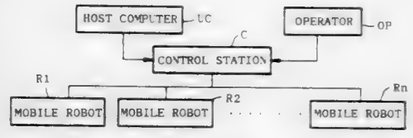
(d) identifying tasks not currently assigned to any of the robots;

(e) instructing the identified robots to evaluate the identified tasks, including the steps of each of the identified robots,

1) determining a best travel route to travel to each respective work point at which each unassigned task is to be performed, and

2) generating, for each unassigned task, an evaluation value depending on the best travel route to the work point at which the unassigned task is to be performed, and

3) transmitting the generated evaluation values to the control station;



(f) creating at the control station, an evaluation table containing the evaluation values transmitted to the control station;

(g) selecting an optimum evaluation value from the evaluation values in the evaluation table;

(h) determining the robot from which said optimum evaluation value was transmitted to the control station;

(i) determining the unassigned task for which said optimum evaluation value was generated;

(j) assigning the determined unassigned task to the determined robot;

(k) deleting from the evaluation table all of the evaluation values transmitted to the control station from the determined robot and all of the evaluation values generated for the determined unassigned task; and

(l) repeating steps (g) through (k) until all of the unassigned tasks have been assigned to the robots.

5,329,451

STEERABLE TRAILER AND STEERING APPARATUS OF COMBINATION VEHICLE

Ikurou Notsu, Saitama, Japan, assignor to Nissan Diesel Motor Co., Ltd., Saitama, Japan

Division of Ser. No. 764,304, Sep. 24, 1991, Pat. No. 5,289,892. This application Jun. 9, 1993, Ser. No. 73,500
Claims priority, application Japan, Sep. 26, 1990, 2-99741; Oct. 17, 1990, 2-107914
Int. Cl.[5] B62D *53/00*
U.S. Cl. 364—424.05 **14 Claims**

1. A combination vehicle including a tractor and a trailer comprising:

front wheel steering angle detecting means for detecting a front wheel steering angle of the tractor;

coupling angle detecting means for detecting a coupling angle about a coupling point between the tractor and the trailer;

rear wheel steering angle detecting means for detecting a rear wheel steering angle of the tractor;

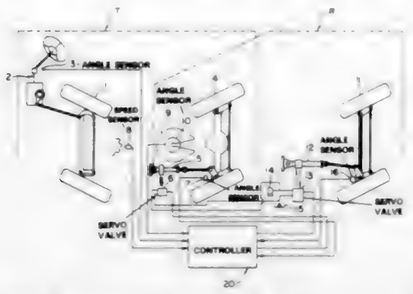
trailer wheel steering angle detecting means for detecting a trailer wheel steering angle;

actuators for steering the rear wheels of the tractor and the trailer wheels, separately; and

control means for calculating and memorizing a travel direction of a front end of the tractor at a location along a path of travel in response to signals transmitted from each of said detecting means, said control means transmitting

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output signals to said actuators so as to align travel directions of the coupling point and a rear end of the trailer



with the memorized direction of the front end of the tractor when the coupling point and the rear end of the trailer reach said location.

5,329,452

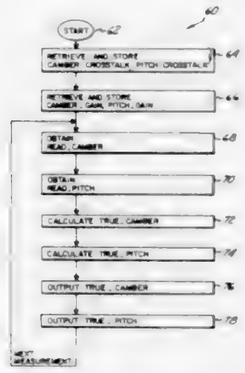
CROSSTALK COMPENSATION IN WHEEL ALIGNMENT SYSTEM

Gary R. Kercheck, Milwaukee, and Peter A. Peutz, Waukesha, both of Wis., assignors to SPX Corporation, Muskegon, Mich.

Filed Aug. 23, 1991, Ser. No. 748,842

Int. Cl.[5] **G06F** *15/20*

U.S. Cl. 364—424.05 **15 Claims**



1. A method of aligning wheels of a vehicle, the vehicle having two front steerable wheels and two back wheels, the method comprising

mounting head units to the two front steerable wheels and the two back wheels of the vehicle;

obtaining read_camber measurements from each of the head units mounted to the two front steerable wheels of the vehicle;

obtaining read_pitch measurements from each head unit mounted to the two front steerable wheels of the vehicle;

retrieving camber_crosstalk values for each of the head units mounted to the two front steerable wheels of the vehicle;

retrieving pitch_crosstalk values for each of the head units mounted to the two front steerable wheels of the vehicle;

calculating true_camber for each of the head units mounted to the two front steerable wheels of the vehicle based upon read_camber, read_pitch, and camber_crosstalk for each of the head units mounted to the two front steerable wheels of the vehicle;

calculating true_pitch for each of the head units mounted to the two front steerable wheels of the vehicle based upon read_camber, read_pitch, and pitch_crosstalk for each of the head units mounted to the two front steerable wheels of the vehicle; and

aligning the wheels of the vehicle using true_camber and true_pitch of the front two steerable wheels of the vehicle.

5,329,453

TRACTION CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

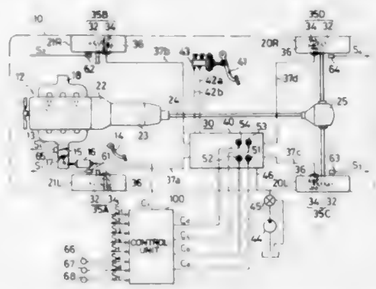
Toshiaki Tsuyama; Toru Onaka; Kazutoshi Nobumoto, and Fumio Kageyama, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 24, 1991, Ser. No. 719,958

Claims priority, application Japan, Feb. 22, 1990, 2-164469

Int. Cl.[5] **B60K** *41/20*

U.S. Cl. 364—426.02 **29 Claims**



1. A traction control system for an automotive vehicle, comprising:

slip detecting means for detecting a slip value of a driven wheel on a road surface;

braking force adjusting means for adjusting braking force to the driven wheel;

particular travelling state detecting means for detecting a particular travelling state in which a travelling state of the automotive vehicle is different from a basic travelling state;

peripheral speed detecting means for detecting a peripheral speed of the driven wheel;

differentiation means for differentiating the peripheral speed of the driven wheel to obtain a differentiated value of the peripheral speed thereof;

first control amount determining means for determining a first control amount for said braking force adjusting means based on the differentiated value of the peripheral speed thereof so that said first control amount is set greater as the differentiated value becomes greater in accordance with the basic travelling state in order to bring the slip value detected by said slip detecting means into agreement with a first predetermined target value for controlling a brake;

second control amount determining means for determining a second control amount for said braking force adjusting means based on the differentiated value of the peripheral speed of the driven wheel so that the second control amount is set greater as the differentiated value becomes greater in accordance with the particular travelling state in order to bring the slip value detected by said slip detecting means into agreement with a second predetermined target value for controlling the brake said second control amount is set so as to become lower than said first control amount for the same amount of the peripheral value of the peripheral speed of the driven wheel; and

brake control means for controlling said braking force adjusting means by the first control amount in the basic travelling state and by the second control amount when the particular travelling state is detected by said particular travelling state detecting means so that more braking force is applied as the first and second control amounts become larger.

5,329,454

CONSTANT SPEED MAINTAINING APPARATUS FOR VEHICLE

Masahiro Takada, Hirakata, and Akira Ishida, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 19, 1992, Ser. No. 901,578

Claims priority, application Japan, Jun. 19, 1991, 3-147153; Sep. 18, 1991, 3-237702

Int. Cl.[5] **B60K** *31/00*

U.S. Cl. 364—426.04 **12 Claims**



1. A constant speed maintaining apparatus for use in a vehicle comprising:

a vehicle speed detecting means for detecting a present speed V(t) of the vehicle;

a cruise control means for producing a control value U(t);

a target speed setting means for setting a target speed VD(t); and

an actuator for changing the opening degree of a throttle valve of a vehicle engine based on the control value U(t) to maintain the present speed V(t) substantially equal to said target speed VD(t);

said cruise control means comprising:

a differentiation means for calculating a differentiated present speed V(t);

a parameter estimation means for calculating an estimated parameter b_{est} based on said present speed V(t), differentiated present speed V(t), and control value U(t); and

a control value calculation means for calculating said control value based on said target speed VD(t), present speed V(t), differentiated present speed V(t), and estimated parameter B_{est}, in which B_{est} represents an estimated parameter of an input characteristic b in a transfer function given by:

$$V(s)/U(s)=b/(s^n+a_{n-1}s^{n-1}+\ldots+a_0)$$

wherein U(s) is a control input to an actuator, V(s) is an output vehicle speed, a is a parameter, and s represents a Laplacean operator.

5,329,455

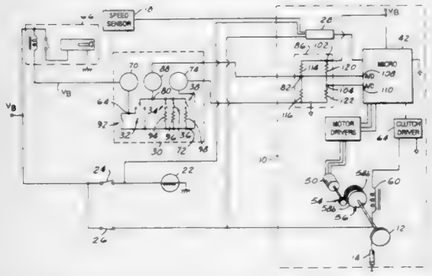
SPEED CONTROL SYSTEM WITH VARIABLE GAINS RELATED TO SPEED CONTROL

Kah S. Oo, Farmington Hills, and Gary M. Klingler, Milford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 11,843, Feb. 1, 1993, abandoned, which is a continuation of Ser. No. 743,461, Aug. 9, 1991, abandoned. This application Sep. 3, 1993, Ser. No. 116,821

Int. Cl.[5] **B60K** *31/00*

U.S. Cl. 364—426.04 **7 Claims**



2. A speed control system for controlling the engine throttle to maintain vehicle speed at a desired speed, comprising:

comparison means for generating an error signal by comparing the vehicle speed to the desired speed;

correction means for providing a plurality of correction signals each related to said error signal and multiplying each of said correction signals by one of an equal plurality of corresponding gain values;

gain providing means for providing each of said corresponding gain values with a variable amplitude generated as a linear function of said error signal, said corresponding gain value having a first linear relationship to said error signal when said error signal is less than a preselected amplitude and having a second linear relationship to said error signal when said error signal exceeds a preselected amplitude;

summing means for generating a control signal by summing each product of one of said correction signals times one of said corresponding gain values; and

actuation means for actuating the engine throttle in relation to said control signal.

5,329,456

MATERIAL FLOW CONTROL DEVICE

Toshiya Kaihara; Satoshi Kawashima; Hiroshi Imai; Kiyoshi Ide; Fumiaki Suzuki, all of Amagasaki, and Takao Shimizu, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 925,740

Claims priority, application Japan, Aug. 9, 1991, 3-200561; Mar. 13, 1992, 4-055284

Int. Cl.[5] **G06F** *15/46*

U.S. Cl. 364—468 **5 Claims**

1. A material flow control device for controlling flows of works within a production system including a plurality of controlled units each consisting of at least one production device, said production system including at least one controlled unit to which a plurality of work species are transferred from a plurality of controlled units situated upstream of said one controlled unit, said material flow control device comprising:

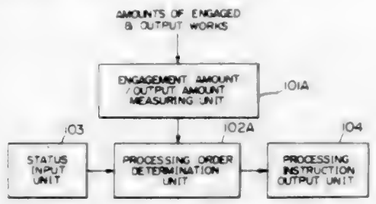
means for measuring engagement amounts of respective work species staying in respective controlled units;

means for setting reference engagement amounts for said

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respective work species within said respective controlled units;

means for calculating evaluation values for said respective work species in said respective controlled units, said evaluation values being based on either a difference or a ratio of said reference engagement amount and said measured engagement amount of said respective work species in said respective controlled units;



means for determining order of dispensing said respective work species to said respective controlled units from controlled units situated upstream of said respective controlled units in accordance with said evaluation values for said respective work species in said respective controlled units; and

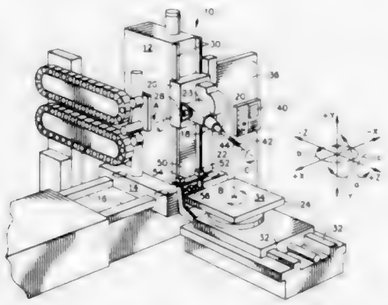
means for issuing dispensing instructions to said controlled units situated upstream of said respective controlled units in accordance with said dispensing order determined by said order determining means.

5,329,457

COMPREHENSIVE THREE-DIMENSIONAL ROTARY TOOL POINT COMPENSATION

R. David Hemmerle, Blue Ash, Ohio, and James E. Randolph, Jr., Wilmington, N.C., assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 15, 1993, Ser. No. 48,044
Int. Cl.[5] G06F *15/46*; G05B *19/18*
U.S. Cl. 364—474.35 **19 Claims**



1. A method for compensating for tool point position offsets of a computer numerical controlled (CNC) machining center of the type having a rotary spindle, wherein the spindle includes a tool holder at one end and is pivotably mounted for rotation about a spindle trunnion axis at an opposite end, the method comprising the steps of:

(a) mounting a spindle alignment bar in the tool holder of the spindle;

(b) positioning the spindle alignment bar in contact with a reference point;

(c) storing or recording a first coordinate location when the spindle alignment bar is in contact with the reference point;

(d) rotating the spindle alignment bar 90° about the trunnion axis;

(e) positioning the spindle alignment bar in contact with the same reference point;

(f) storing or recording a second coordinate location when the rotated alignment bar is in contact with the reference point; and

(g) determining at least one rotary tool point offset related to at least one degree of freedom of motion of the machining center from the first and second coordinate locations if the stored or recorded locations are different.

5,329,458

DEVICE AND METHOD FOR DETECTING POSITION OF EDGE OF CUTTING TOOL

Kunihiko Unno, Kariya; Kazuhiko Sugita, Anjo; Tetsuro Shibukawa, Nagoya; Yoichi Yamakawa, Aichi, and Hiromichi Ohta, Anjo, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 27, 1992, Ser. No. 858,487
Claims priority, application Japan, Mar. 27, 1991, 3-089724
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.37 **7 Claims**



1. A device for detecting a position of an edge of a cutting tool comprising:

a reference plate positioned to form a slit extending in a direction transverse to the longitudinal direction of the cutting tool between the edge of the cutting tool and said reference plate;

a laser light source for irradiating a laser light to said slit;

detecting means for detecting, along at least two nonparallel directions, light intensity values of a diffraction pattern created through diffraction of the laser light by said slit; and

processing means for determining the position of the edge of the cutting tool based on a comparison of output signals of said detecting means corresponding to said light intensity value along said two directions.

5,329,459

INTERACTIVE MEDICATION DELIVERY SYSTEM

Stephen B. Kaufman, Highland Park; Aleandro DiGianfilippo, Crystal Lake, and Tamara L. Sager, Libertyville, all of Ill., assignors to Healthtech Services Corporation, Northbrook, Ill.

Division of Ser. No. 877,695, May 1, 1992, Pat. No. 5,267,174, which is a division of Ser. No. 747,648, Aug. 20, 1991, Pat. No. 5,126,957, which is a continuation of Ser. No. 415,172, Sep. 29, 1989, Pat. No. 5,084,828. This application Sep. 2, 1993, Ser. No. 116,080
Int. Cl.[5] G06F *15/42*; B65D *83/04*
U.S. Cl. 364—479 **8 Claims**

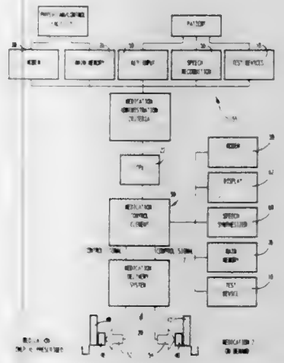
1. A medication delivery device comprising

a housing,

first storage means for storing at least one dose of a medication within the housing away from access by the user,

first delivery means associated with the first storage means for selectively delivering a medication dose from the first storage means to the user,

control means including external input means for receiving and interpreting at least one prescribed medication delivery command from the user, the control means actuating the first delivery means in response to the receipt of a prescribed medication delivery command from the external input means, the control means including timing means for preventing a second actuation of the first delivery means when the time period between a first and second actuation is less than a prescribed period, and



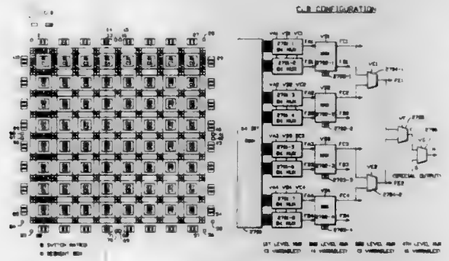
external output means for prompting the user to respond using the external input means to determine whether the medication dispensed with the first actuation of the first delivery means was lost by the patient and, if so, generating a repeat medication command that overrides the timing means to allow a second actuation of the first delivery means even when the time period between a first and second actuation is less than a prescribed period.

5,329,460

PROGRAMMABLE GATE ARRAY WITH IMPROVED INTERCONNECT STRUCTURE, INPUT/OUTPUT STRUCTURE AND CONFIGURABLE LOGIC BLOCK

Om P. Agrawal, San Jose; Michael J. Wright, Menlo Park, and Ju Shen, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 394,221, Aug. 15, 1989, Pat. No. 5,212,652. This application Feb. 1, 1993, Ser. No. 12,573
Int. Cl.[5] H03K *17/693*
U.S. Cl. 364—489 **6 Claims**



1. A configurable logic array comprising:

a substrate; and

a plurality of logic areas defined on the substrate, each logic area having a perimeter and programmable logic circuitry positioned within the perimeter for performing logic operations therein in accordance with user-provided configuration data;

an interconnect network defined on the substrate for carrying signals between the logic areas, wherein said interconnect network is configurable in response to user-supplied configuration data;

wherein each logic area is symmetrically divisible into at least first through fourth logic area portions;

wherein each logic area includes four or more input terminals distributively and symmetrically positioned about the perimeter of the logic area for receiving four or more input signals supplied from outside the perimeter and for conducting the four or more externally supplied input signals into the logic area;

wherein the programmable logic circuitry of each logic area includes combinatorial logic means, operatively coupled to the four or more input terminals of the logic area, for producing a plurality of combinatorial logic signals, each combinatorial logic signal being a function of one or more of the externally supplied input signals;

wherein each logic area further includes a plurality of output macrocells, operatively coupled to the corresponding combinatorial logic means of the logic area and positioned for distributively outputting the combinatorial logic signals produced by the corresponding combinatorial logic means out of the logic area from at least two of the four or more area portions of the logic area; and

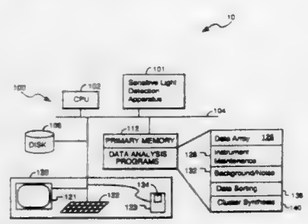
wherein the interconnect network has nodes symmetrically distributed about each logic area for supplying input signals to corresponding input terminals of the logic area and for receiving the combinatorial logic signals output from the output macrocells of the logic area.

5,329,461

DIGITAL ANALYTE DETECTION SYSTEM

Fritz Allen, Corrales, and Thomas Niemczyk, Albuquerque, both of N. Mex., assignors to Acrogen, Inc., Oakland, Calif.

Filed Jul. 23, 1992, Ser. No. 918,357
Int. Cl.[5] G06G *7/75*
U.S. Cl. 364—497 **39 Claims**



1. A system for detecting the presence of a small number of analyte particles within a sample, said sample being divided into a multiplicity of distinct pixel regions where light emitted in each of said pixel regions is related to the amount of analyte in each of said pixel regions, comprising:

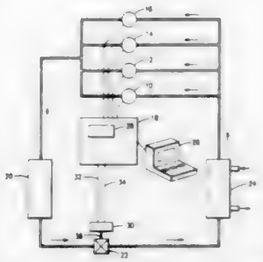
a plurality of pixel regions dimensioned such that the number of said analyte particles included within each of said pixel regions is less than a maximum detection threshold proportional to variation in optical responses emitted by said analyte particles;

means for measuring aggregate fluorescent energy from each of said pixel regions relative to an ambient noise threshold, wherein the aggregate fluorescent energy from each pixel region is proportional to said optical responses of analyte particles included therein; and

data processing means for receiving said measurements and, based on said measurements, counting the number of analyte particles within each of said pixel regions in order to determine the number of said analyte particles within said sample.

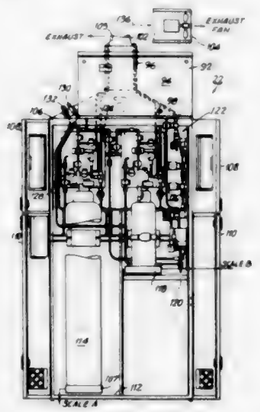
VOL 1164 ISS 2 JL 12 1994 UMI

5,329,462
EXPANSION VALVE CONTROL
Arthur F. Friday, Liverpool; Richard E. Ginn, Williamstown, and Edward F. Wright, Jr., Cicero, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 24, 1992, Ser. No. 996,441
Int. Cl.[5] F25B *41/00*; G05B *13/02*
U.S. Cl. 364—505 **6 Claims**



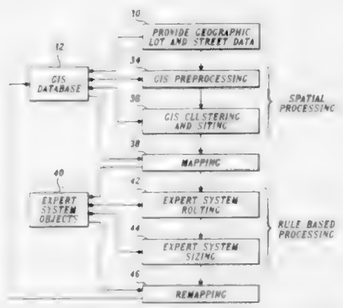
1. In an air conditioning system having a plurality of stages of compression for processing refrigerant flowing through an expansion valve, a process for controlling the valve position of the expansion valve when one or more stages of compression are to be deactivated, said process comprising the steps of:
sensing when one or more stages are to be deactivated;
interrupting the deactivation of the stages;
calculating a new valve position for the expansion valve based on the number of stages to be deactivated; and
commanding the expansion valve to move to the new valve position before releasing said step of interrupting the deactivation of the stages.

5,329,463
PROCESS GAS DISTRIBUTION SYSTEM AND METHOD WITH GAS CABINET EXHAUST FLOW CONTROL
Dennis A. Sierk; Ronald R. DuRoss, both of Huntsville; Stephen G. Geist, Union Grove, all of Ala., and Gregory L. Hays, Fayetteville, Tenn., assignors to SCI Systems, Inc., Huntsville, Ala.
Division of Ser. No. 576,067, Aug. 31, 1990, Pat. No. 5,220,517.
This application Jan. 13, 1993, Ser. No. 3,550
Int. Cl.[5] G06F *15/46*; G01F *1/34*
U.S. Cl. 364—510 **5 Claims**



1. A cabinet for housing process gas flow control means, said cabinet comprising, in combination, a housing, process gas flow control means in said housing, an exhaust outlet for said housing, an exhaust duct connected to said outlet, an exhaust fan for exhausting the gas from said housing to a remote location, measurement means for producing signals indicating the rate of gas flow through said exhaust duct, said measurement means including means responsive to operator control for setting a duct constant corresponding to the size of said exhaust duct, computing means for computing said flow rate as a function of the duct constant selected, and alarm means for comparing said signals with a pre-determined minimum level corresponding to a pre-determined gas flow and producing an alarm if said signals are below said level.

5,329,464
UTILITY LAYOUT DESIGN SYSTEM
Zarko Sumic, Kirkland, and Todd A. Pistorese, Redmond, both of Wash., assignors to Puget Sound Power & Light Company, Bellevue, Wash.
Filed Mar. 23, 1992, Ser. No. 855,906
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—512 **18 Claims**

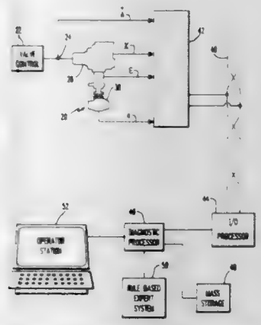


1. A method for designing a distribution system for distributing a utility, to a plurality of lots in an area, the method comprising the steps of:
providing lot data that defines the lots geographically, and storing the lot data in a computer in a geographic information system (GIS);
computer processing the lot data to produce actual siting data specifying a plurality of placement sites in the area for distribution devices, and storing the actual siting data in the computer;
mapping the lot and actual siting data into equivalent expert system data in a format suitable for processing by an expert system; and
computer processing the expert system data using an expert system to produce routing data specifying, for each lot, a route along which the lot can be connected to a distribution device.

5,329,465
ONLINE VALVE DIAGNOSTIC MONITORING SYSTEM
Frank G. Arcella, Bethel Park Borough; Fred H. Bednar, Shaler Township, Allegheny County; Jan J. Schreurs, and James M. Forker, both of Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 115,069, Oct. 30, 1987, abandoned.
This application Aug. 22, 1989, Ser. No. 397,323
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—551.01 **19 Claims**

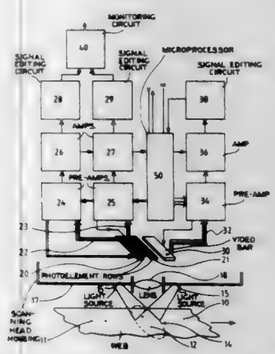
1. An online valve diagnostic system for diagnosing improper operation of a valve, comprising:
sensors, each sensor simultaneously sensing a different operational characteristic of the valve, to produce corresponding sensor signals;
data acquisition means for transmitting the sensor signals;

processing means for processing the sensor signals to produce processed signals, said processing means including
sensor signal processing means for comparing each of the sensor signals with corresponding baseline data to determine deviation therefrom in response to sensing of the operational characteristic and outputting the deviation as one of the processed signals; and



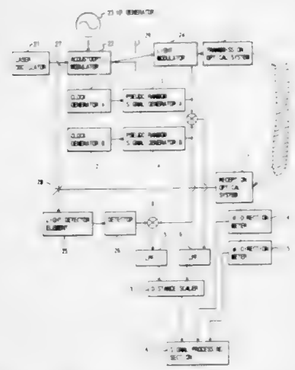
diagnosis means for comparing the processed signals with rules defining correspondence between known deviations and combinations of deviations and causes thereof to produce a diagnosis of the valve; and
output means for outputting the diagnosis of the valve.

5,329,466
REGISTRATION CONTROL DEVICE FOR USE IN A ROTARY PRINTING MACHINE
Patrick Monney, Villars-Ste-Croix, Switzerland, assignor to Bobst SA, Lausanne, Switzerland
Filed Nov. 12, 1992, Ser. No. 974,526
Claims priority, application Switzerland, Nov. 14, 1991, 03318/91-5
Int. Cl.[5] G01B *11/14*
U.S. Cl. 364—559 **13 Claims**



1. An apparatus, for use in a rotary printing machine having a traveling web with registration marks disposed thereon, for determining misregistration of said web, said apparatus comprising:
a scanning head having a row of individually selectable discrete photosensitive elements and a video bar, both disposed in a plane parallel to said web and both extending parallel to the cross-machine direction for scanning said registration marks as they pass beneath said scanning head, and each of said row of discrete photosensitive elements and said video bar generating respective electrical signals upon scanning said registration marks;
microprocessor means connected to said row of discrete photosensitive elements for selecting, dependent on a current amount of cross-machine displacement of said web, at least one photosensitive element in said row to be used to detect misregistration of said web, and to said video bar for controlling scanning of said web by said video bar;
first processing means, connected to said row of discrete photosensitive elements and to said microprocessor means, for generating a signal corresponding to machine-direction misregistration of said web from said electrical signal from said row of photosensitive elements; and
second processing means, connected to said video bar and to said microprocessor means, for generating a signal corresponding to cross-machine misregistration of said web from said electrical signals from said video bar quasi-simultaneously with the generation of said signal corresponding to machine-direction misregistration by said first processing means.

5,329,467
DISTANCE MEASURING METHOD AND APPARATUS THEREFOR
Akio Nagamune; Kouichi Tezuka, and Isamu Komine, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan
Filed Mar. 27, 1991, Ser. No. 676,080
Claims priority, application Japan, Mar. 30, 1990, 2-81311; Mar. 30, 1990, 2-81312
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] G01B *11/14*
U.S. Cl. 364—561 **7 Claims**



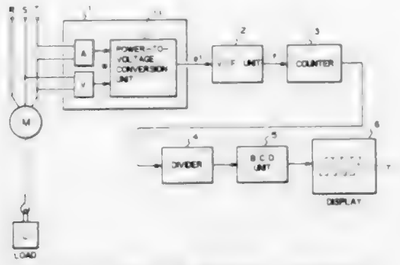
1. A distance measuring method comprising the steps of:
generating first and second pseudo random signals which are equal to each other in wave pattern but different from each other in frequency;
generating a first time-series pattern obtained by multiplying said first and second pseudo random signals by each other;
radiating laser light toward a target after intensity-modulating laser light with said first pseudo random signal;
converting a change in intensity of reflected light into an electric signal after reception of said reflected light as a reception signal from said target;
generating a second time-series pattern by multiplying said electric signal by said second pseudo random signal; and
measuring a distance to said target by calculating a time difference between said first and second time-series patterns.

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5,329,468
ACTUAL OPERATING TIME INDICATOR

Kazuhito Tsukahara, and Hisatsugu Watanabe, both of Yamanashi, Japan, assignors to Kabushiki Kaisha Kito, Yamanashi, Japan

Filed Mar. 1, 1993, Ser. No. 24,727
Claims priority, application Japan, Mar. 12, 1992, 4-53793; Oct. 5, 1992, 4-266217
Int. Cl.[5] G04F *5/00*
U.S. Cl. 364—569 **11 Claims**

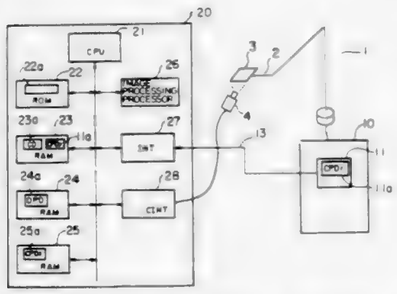


1. An actual operating time indicator, comprising:
a lifting motor (M) for lifting a load (L) up/down;
a power detection means (1) for detecting an input power (W) based on a current (A) and a voltage (V) supplied to the motor (M), and converting the input power (W) into a first voltage (el) proportional to the input power (W);
a voltage-to-periodic pulse conversion means (2) connected to the power detection means (1) for receiving the first voltage (el) and converting the first voltage (el) into the periodic pulse (f) proportional to the first voltage (el);
a counter means (3) connected to the voltage-to-periodic pulse conversion means (2) for counting and integrating the periodic pulse (f) to obtain an integrated power; and
a display (6) operatively connected to the counter means (3) for indicating the integrated power as an actual operating time (T) of the motor (M).

5,329,469
CALIBRATION METHOD FOR A VISUAL SENSOR

Atsushi Watanabe, Minamitsuru, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP91/00643, § 371 Date Jan. 24, 1992, § 102(e) Date Jan. 24, 1992, PCT Pub. No. WO91/19240, PCT Pub. Date Dec. 12, 1991
PCT Filed May 15, 1991, Ser. No. 820,588
Claims priority, application Japan, May 30, 1990, 2-140487
Int. Cl.[5] G01C *3/00*
U.S. Cl. 364—571.01 **7 Claims**

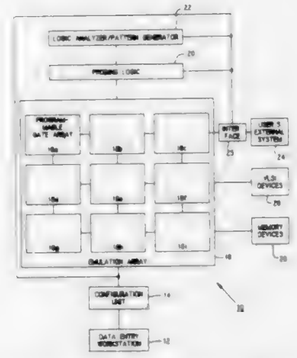


1. A visual sensor calibration method of calibrating a visual sensor in a robot system comprising the steps of:
providing a pattern plate including a plurality of dots, for obtaining a calibration, on an arm of a robot;
obtaining, using a robot controller, a first calibration pattern data of said pattern plate at a position of said pattern plate on said robot arm, said first calibration pattern data being coordinate positions of each of said plurality of dots in said pattern plate;
sending said first calibration pattern data of said pattern plate from said robot controller to a visual sensor controller;
obtaining, using said visual sensor controller, a second calibration pattern data from an image of said pattern plate, said second calibration pattern data being coordinate positions of each of said plurality of dots in said image of said pattern plate; and
obtaining, using said visual sensor controller, calibration data from said first calibration pattern data and said second calibration pattern data, to thereby calibrate a visual sensor.

5,329,470
RECONFIGURABLE HARDWARE EMULATION SYSTEM

Stephen P. Sample, Mountain View; Michael R. D'Amour, Los Altos Hills, and Thomas S. Payne, Union City, all of Calif., assignors to Quickturn Systems, Inc., Mountain View, Calif.

Continuation of Ser. No. 071,033, May 28, 1993, abandoned, which is a continuation of Ser. No. 824,341, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 279,477, Dec. 2, 1988, Pat. No. 5,109,353. This application Dec. 21, 1993, Ser. No. 171,348
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—578 **29 Claims**

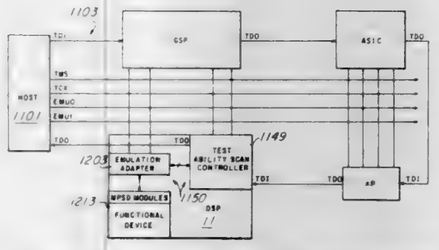


1. An electrically reconfigurable hardware emulation apparatus which can be configured with a circuit design in response to the input of circuit information and which transmits signal information between the configured circuit design and an external system adapted for use with a component incorporating the circuit design, said electrically reconfigurable hardware emulation apparatus comprising:
a plurality of electrically reconfigurable devices, at least some of said electrically reconfigurable devices having reprogrammable functional logic elements and input/output terminals capable of being connected to at least some of said functional logic elements;
at least one other of said electrically reconfigurable devices containing reprogrammable electrical conductors which are used to reconfigurably interconnect selected input-/output terminals of selected electrically reconfigurable devices containing functional logic elements such that selected functional logic elements in one of said selected electrically reconfigurable devices containing functional logic elements can be electrically coupled to selected functional logic elements in another of said selected electrically reconfigurable devices containing functional logic elements; and
an interface structure including circuitry which provides electrical paths for signals carrying signal information between the external system and designated ones of said functional logic elements in said electrically reconfigurable devices containing functional logic elements.

5,329,471
EMULATION DEVICES, SYSTEMS AND METHODS UTILIZING STATE MACHINES

Gary L. Swoboda, Sugar Land; Martin D. Daniels, Houston, and Joseph A. Coomes, Missouri City, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 911,250, Jul. 7, 1992, abandoned, which is a continuation of Ser. No. 387,549, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 093,463, Sep. 4, 1987, abandoned, and a continuation-in-part of Ser. No. 057,078, Jun. 2, 1987, Pat. No. 4,860,290. This application Jun. 29, 1993, Ser. No. 84,787
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—578 **69 Claims**



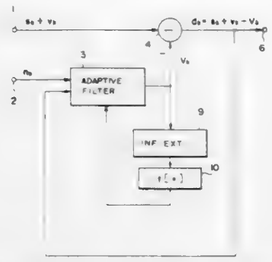
1. An emulation device which enables a functional circuit to support its own emulation, comprising:
a serial scan testability interface having at least first and second scan paths, said first scan path being provided for applying digital information to the functional circuit for use in emulation of the functional circuit; and
state machine circuitry connected to said second scan path, said state machine circuitry having a sequence of states responsive to said second scan path and corresponding to emulation command codes.

5,329,472
METHOD AND APPARATUS FOR CONTROLLING COEFFICIENTS OF ADAPTIVE FILTER

Akihiko Sugiyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 839,303, Feb. 20, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 143,239
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.19 **19 Claims**

1. A method of controlling coefficients of an adaptive filter, said method comprising the steps of:
obtaining a mixed signal by combining an interference signal with an output signal from an unknown system;
obtaining an output signal generated by said adaptive filter, and subtracting said output signal generated by said adaptive filter from said mixed signal to obtain a difference signal;
obtaining a square value of the output signal generated by the adaptive filter, and utilizing said square value of the output signal of the adaptive filter as obtained information relating to magnitude of the coefficients of said adaptive filter; and

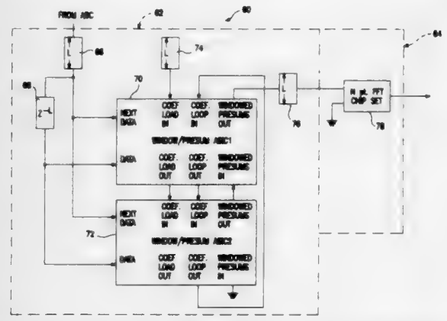


adaptively varying corrections applied to the coefficients of said adaptive filter according to said obtained information.

5,329,473
FAST WINDOW/PRESUM OPERATION

Peter Cangiane, 626 Hermosa Ave. #B, Hermosa Beach, Calif. 90254

Filed Sep. 17, 1991, Ser. No. 761,088
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—726 **22 Claims**



7. An apparatus for performing windowing and presumming operations comprising:
corner turning buffer means for accepting a stream of digital data and reordering the digital data by the operation of corner turning, said corner turning buffer means further storing the corner turned data as next data and outputting the data as next data;
delay buffer means for accepting the corner turned data from the corner turning buffer means, said delay buffer means storing the corner turned data as current data and outputting the data as current data; and
a specialized integrated chip means for accepting as inputs the next data from said corner turning buffer means and the current data from said delay buffer means, said integrated specialized chip means performing the windowing and presumming operations making use of both the current data and the next data input signals, and providing an output of the windowing and presumming operations.

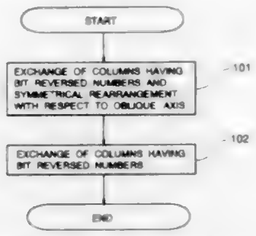
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5,329,474

ELEMENT REARRANGEMENT METHOD FOR FAST FOURIER TRANSFORM

Shouichirou Yamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 978,948
Claims priority, application Japan, Nov. 22, 1991, 3-334220
Int. Cl.[5] G06F *7/34*
U.S. Cl. 364—726 **5 Claims**



1. An element rearrangement method for a Fast Fourier Transform, comprising the steps of:

(a) rearranging a plurality of elements of Fast Fourier transform constituting an original array by exchanging columns having the elements with bit reversed numbers and symmetrical positioning of the columns with respect to an oblique axis; and

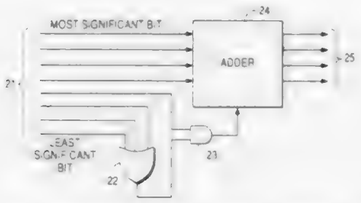
(b) rearranging the elements of the array generated in the above step by exchanging columns having the elements with bit reversed numbers

5,329,475

DATA ROUND-OFF DEVICE FOR ROUNDING-OFF M-BIT DIGITAL DATA INTO (M-N) BIT DIGITAL DATA

Tatsuro Juri, Osaka, and Shinya Kadono, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 736,056, Jul. 26, 1991, Pat. No. 5,218,563. This application Nov. 20, 1992, Ser. No. 979,668
Claims priority, application Japan, Jul. 30, 1990, 2-202123
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—745 **4 Claims**



1. A data round-off device for rounding an input m-bit digital signal which has a positive value to an (m−n) bit digital signal, where m is an integer and n is a natural number smaller than m, comprising:

a comparing means for comparing a value of a lower n-bit data of the input m-bit digital signal with a value of $2^{(n-1)}$ and for outputting a value '1' if the value of the lower n-bit data of the input m-bit digital signal is larger than the value of $2^{(n-1)}$ and a value '0' otherwise; and

an adding means for adding an output value of said comparing means to an upper (m−n)-bit data of the input m-bit digital signal thereby to obtain a rounded (m−n)-bit digital signal,

wherein said comparing means comprises:

a logical OR operation means for producing a logical sum of lower (n−1) bits of the input m-bit digital signal; and

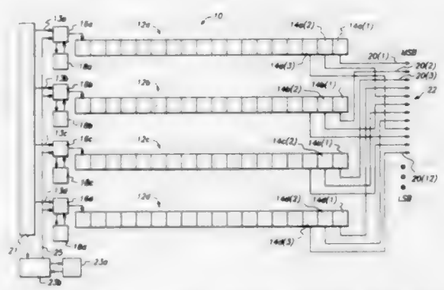
a logical AND operation means for producing a logical product of said logical sum and an n-th bit from a least significant bit of the input m-bit digital signal, said logical product being outputted as the output value of said comparing means.

5,329,476

METHOD AND APPARATUS FOR EARLY QUOTIENT COMPLETION IN ARITHMETIC DIVISION

Ted Williams, Los Gatos, Calif., assignor to HaL Computer Systems, Inc., Campbell, Calif.

Filed Oct. 30, 1992, Ser. No. 968,851
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—761 **20 Claims**



1. Apparatus for computing repeating quotient digits during a division process in a divider, comprising:

quotient digit generating means for generating a succession of quotient digits;

at least one quotient digit storage means for storing a series of the generated quotient digits, each quotient digit storage means coupled to the quotient digit generating means for receiving the quotient digits, each quotient digit storage means including a linked plurality of storage areas having a most significant reset storage area and lesser significant reset storage areas, the quotient digit storage means propagating and storing a last received quotient digit along the linked plurality of storage areas to the most significant reset storage area, the propagation duplicating and storing the last received quotient digit at the lesser significant reset storage areas; and

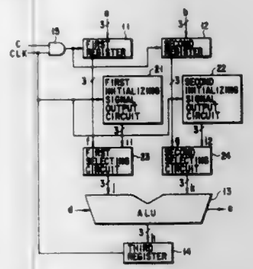
remainder comparison means coupled to the quotient digit generating means for receiving a current remainder of the division process and for determining when the current remainder has repeated, the remainder comparison means further coupled to each quotient digit storage means for resetting the storage areas of all quotient digit storage means containing duplicates of the last received quotient digit, when the current remainder differs from a previous remainder; the remainder comparison means terminating quotient digit generation by the quotient digit generation means upon determining that the current remainder has repeated; the quotient digit storage means, upon quotient digit generation termination, providing a final quotient including quotient digits stored in all quotient digit storage areas.

5,329,477

ADDER CIRCUIT HAVING CARRY SIGNAL INITIALIZING CIRCUIT

Tsuneaki Kudou, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1992, Ser. No. 943,561
Claims priority, application Japan, Sep. 11, 1991, 3-231520
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—786 **3 Claims**



1. An adder comprising:

a Manchester-type adder circuit including a plurality of adder circuits, each having a carry line and each designed to receive corresponding bits of two input data items which are to be added, the carry lines of said adder circuits being connected in series;

a plurality of initializing signal output circuits for generating initializing signals in response to predetermined data supplied before said Manchester-type adder circuit starts performing each operation, thereby to initialize said adder circuits; and

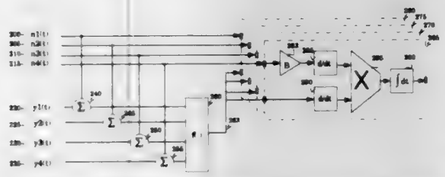
a plurality of selection circuits each receiving input data and an initializing signal supplied from one of said initializing signal output circuits, selecting and outputting the initializing signal upon receipt of the initializing signal to said plurality of adder circuits, and selecting and outputting the input data at other times to said plurality of adder circuits.

5,329,478

CIRCUIT AND METHOD FOR ESTIMATING GRADIENTS

David B. Kirk, 361 Monterey, South Pasadena, Calif. 91030; Douglas A. Kerns, 610 E. California Blvd., #7; Brooke P. Anderson, 1155 E. Del Mar #312, both of Pasadena, Calif. 91106; Kurt Fleischer, 2262 E. Oakdale St., Pasadena, Calif. 91107, and Alan H. Barr, 1111 Blanche St., Apt. 102, Pasadena, Calif. 91106

Filed Nov. 25, 1992, Ser. No. 981,762
Int. Cl.[5] G06G *7/18*
U.S. Cl. 364—828 **29 Claims**



1. A circuit for implementing a N-dimensional gradient estimate for a function f(), comprising:

input means for receiving N input signals $y_i(t)$ and noise signals $n_i(t)$, where i represents a component of an N-dimensional signal, and

coupling means for combining an input signal and a noise signal of the same component to produce a combined signal for each component;

means for determining an output signal of f() based on the combined signals input;

N sub-circuits for determining a derivative estimate for the input signal of each component, each sub-circuit receiving as input the output signal of the function f() and the corresponding noise signal for the sub-circuit component, each sub-circuit comprising;

a correlator for determining a correlation between the noise signal and the output signal of f(), and

an integration function integrating the correlated signal to produce a derivative estimate for the corresponding component;

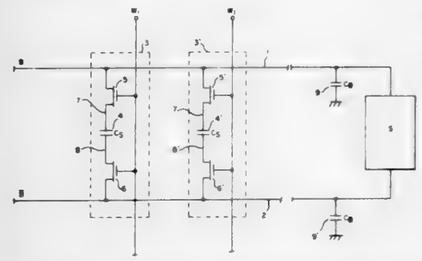
wherein N derivative estimates for the N input signals are generated, forming the gradient.

5,329,479

DYNAMIC SEMICONDUCTOR MEMORIES

Yoshiji Ota, Tenri, and Toshio Mimoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 80,210, Jul. 31, 1987, abandoned, which is a continuation of Ser. No. 742,106, Jun. 5, 1985, abandoned. This application Feb. 8, 1988, Ser. No. 154,442
Claims priority, application Japan, Jun. 29, 1984, 59-136110
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—149 **2 Claims**



1. A dynamic semiconductor memory with memory cell structure comprising

a first bit line with load capacitance C_1 and a second bit line with load capacitance C_2 for inputting and outputting information, said bit lines being complementary to each other,

storage capacitor means for storing information, said storage capacitor having capacitance C_S, and

a first selection means and a second selection means for specifying said storage capacitor means,

one end of said storage capacitor means being connected to said first bit line through said first selection means and the other end of said storage capacitor means being connected to said second bit line through said second selection means,

wherein C_1 and C_2 are significantly different from each other, and the voltages of said first and second bit lines depend on C_1, C_2 and C_S.

5,329,480

NONVOLATILE RANDOM ACCESS MEMORY

Jiin-Chuan Wu, Feng Shan, Taiwan; Henry L. Stadler, Berkeley, and Romney R. Katti, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

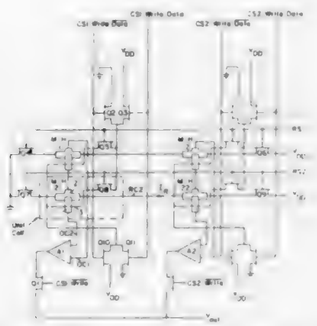
Continuation-in-part of Ser. No. 614,148, Nov. 15, 1990, abandoned. This application Dec. 18, 1992, Ser. No. 993,012
Int. Cl.[5] G11C *11/18*
U.S. Cl. 365—170 **6 Claims**

1. An array of nonvolatile magnetic random access memory cells arranged in rows and columns, each cell having

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a Hall-effect sensor of semiconductor material and a magnetic storage element, said Hall-effect sensor comprising a rectangular shape of said semiconductor material and said magnetic storage element comprising a thin-film layer of magnetic material having a discrete width and a length greater than said width, said magnetic material having an in-plane uniaxial anisotropy and in-plane bipolar remanent magnetization states, both of said in-plane characteristics of said magnetic material being in said layer of magnetic material along said length, said magnetic storage element being positioned with one end having said discrete width near the center of said Hall-effect sensor,

separate switching means for each row of cells for selectively conducting a sensing current through said Hall-effect sensor of each cell in a row from one end to an opposite end of said rectangular shape in a direction perpendicular to said length of said thin-film layer of magnetic material, thereby producing a differential in electrical potentials on sides of said rectangular shape that are parallel to said sensing current conducted through said Hall-effect sensor, and



separate means for each column of cells for amplifying said differential in electrical potentials of each cell in a row selected by said separate switching means, whereby a signal is produced the polarity of which corresponds to said bipolar remanent magnetization state of said layer of magnetic material along said length thereof,

each cell further having a conductor perpendicular to and overlaying said length of said layer of magnetic material, and

switching means for momentarily applying a current through said conductor with a selected polarity for storing a binary digit 1 or 0 in said layer of magnetic material, thereby setting said bipolar remanent magnetization state of said layer of magnetic material to a selected state representative of a binary digit of 1 or 0.

5,329,481

SEMICONDUCTOR DEVICE HAVING A MEMORY CELL

Evert Seevinck; Maarten Vertregt, and Godefridus A. M. Hurkx, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

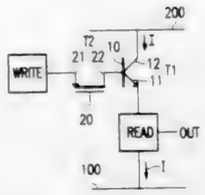
Filed Dec. 14, 1992, Ser. No. 989,629

Claims priority, application European Pat. Off., Dec. 16, 1991, 91203305.7

Int. Cl.[5] G11C *11/34*

U.S. Cl. 365—177 **6 Claims**

1. A semiconductor device comprising a semiconductor body provided with a programmable memory cell which comprises a bipolar transistor with an emitter and a collector of a first conductivity type mutually separated by a base of a second, opposite conductivity type, the emitter and the collector being coupled to a first and a second supply line, respectively, and the base being coupled to writing means through at least a control transistor provided with a control electrode, characterized in that the memory cell is coupled to reading means which are included in a current path which extends between the first and the second supply line and which comprises a



current path between the emitter and the collector of the bipolar transistor, the reading means being connected between the emitter and the first supply line.

5,329,482

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR PRODUCING IT

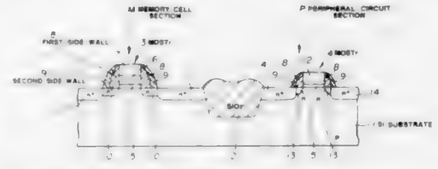
Hideharu Nakajima, and Hideaki Kuroda, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 7, 1992, Ser. No. 957,147

Claims priority, application Japan, Oct. 7, 1991, 3-287097

Int. Cl.[5] G11C *11/34*

U.S. Cl. 365—182 **6 Claims**



1. A semiconductor memory device in which a memory cell section and a peripheral circuit section are formed on one and the same substrate and in which the source regions and the drain regions of MOS transistors of said memory cell section and the peripheral circuit section consist in high concentration impurity regions and low concentration impurity regions, characterized in that

each of said MOS transistors has a first sidewall formed on a lateral side of a gate electrode formed on the substrate via a gate insulating film, and a second sidewall formed on an outer side of said first sidewall,

the low concentration impurity regions of the source regions and the drain regions of the MOS transistors are formed by being delimited by the ends of the gate electrodes and by the periphery of said high concentration impurity regions,

the high concentration impurity regions of the source region and the drain region of the MOS transistor of said peripheral circuit section are formed by being delimited by said first sidewall, and in that

the high concentration impurity regions of the source region and the drain region of the MOS transistor of said memory cell section are formed by being delimited by said second sidewall.

5,329,483

MOS SEMICONDUCTOR MEMORY DEVICE

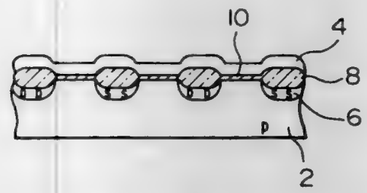
Toshio Wada, and Shoichi Iwasa, both of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,709

Claims priority, application Japan, Oct. 31, 1991, 3-313459

Int. Cl.[5] G11C *5/06*

U.S. Cl. 365—182 **4 Claims**



1. A MOS semiconductor memory device comprising:

a semiconductor substrate of a first conductive type;

first impurity diffused regions of a second conductive type different from the first conductive type extending parallel in a first direction on one surface of said semiconductor substrate which function as bit lines;

a plurality of spaced element isolation insulating films formed on said first impurity diffused regions of the second conductive type having active regions formed therebetween;

a plurality of MOS transistors formed in a matrix of columns extending in the first direction and rows extending in a second direction substantially perpendicular to said first direction, each MOS transistor including a gate formed on a part of said active region disposed between adjacent two of said element isolation films having a gate insulating film interposed therebetween, a source and drain formed in respectively two adjacent first impurity diffused regions, on which said two adjacent element isolation insulating films are formed, so that drains of adjacent transistors of a row are connected together and sources of adjacent transistors are connected together to form first and second alternating bit lines, respectively, and a channel region formed in a portion of said semiconductor substrate between the source and the drain;

a plurality of word lines, each connected electrically to said gates of said MOS transistors aligned along one of the rows and extending in said second direction; and,

a second impurity diffused region of said first conductivity type formed between two adjacent channel regions of the transistors in each of the columns and having a higher impurity concentration than the impurity concentration of said semiconductor substrate for suppressing parasitic channel formation between adjacent transistor of a column.

5,329,484

SEMICONDUCTOR MEMORY CIRCUIT, SEMICONDUCTOR MEMORY MODULE USING THE SAME, AND ACOUSTIC SIGNAL REPRODUCING SYSTEM

Hideo Tsuiki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

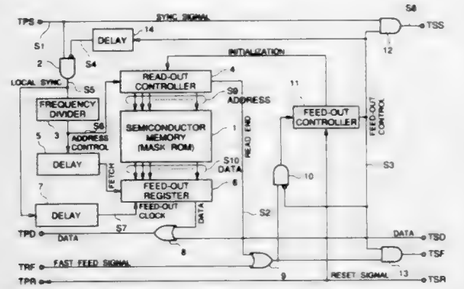
Filed Jun. 2, 1993, Ser. No. 71,389

Claims priority, application Japan, Jun. 2, 1992, 4-141211

Int. Cl.[5] G11C *27/00*

U.S. Cl. 365—45 **12 Claims**

1. A semiconductor memory circuit comprising a semiconductor memory device, a read-out controller generating on the basis of a synchronous signal supplied from an external an address signal to said semiconductor memory device for the purpose of reading out data from said semiconductor memory device, said read-out controller also generating a read end signal when the reading of the data from said read-out controller has been complete a feed-out means receiving the data read out from said semiconductor memory device for outputting the received data, a first gate means receiving the data outputted from said feed-out means and data from an external for outputting a selected one of the received two data, a feed-out control



means receiving said read end signal for generating a feed-out control signal, a second gate means responding to said feed-out control signal to control said read-out control means so as to stop the generation of said address signal supplied to said semiconductor memory device, and a third gate means responding to said feed-out control signal to start to supply said synchronous signal to an external.

5,329,485

MEMORY DEVICE

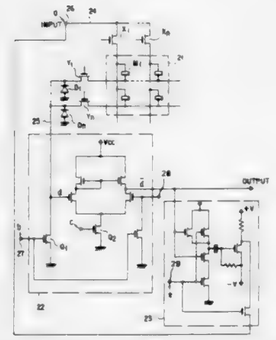
Yasuo Isono; Masamichi Morimoto, and Hiroshi Nakano, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 784,380

Claims priority, application Japan, Nov. 1, 1990, 2-296922; Nov. 15, 1990, 2-309369

Int. Cl.[5] G11C *11/22, 7/00*

U.S. Cl. 365—145 **6 Claims**



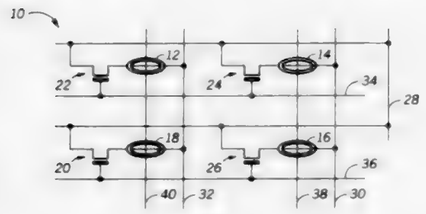
1. A memory cell array device wherein memory cells having a multi-layered structure in which a first conductivity layer is formed on one major surface of an insulating layer of a Langmuir-Blodgett film and a second conductive layer is formed on the other major surface to sandwich a ferroelectric layer for variably changing a polarization state by inputting a charge are arranged in a matrix form, and write/read access of data is performed by a change in polarization of said ferroelectric layer of said memory cell using tunnel switch property of said insulating layer, comprising:

selecting means for selecting a desired memory cell in said memory cell array;

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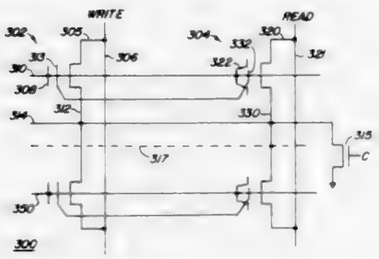
reading means for reading data stored in said memory cell selected by said selecting means and for sending the data as inverted/non-inverted charges;
data erasing means for erasing previous data read and retained by said reading means before new data is read and for setting said reading means in an initial state; and
rewriting means for detecting destructive read access of data stored in a desired memory cell in response to a reading operation of said reading means and for rewriting data ready by said reading means at a predetermined timing on the basis of a detection signal.

5,329,486
FERROMAGNETIC MEMORY DEVICE
Craig S. Lage, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 873,139, Apr. 24, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 96,204
Int. Cl.[5] G11C *17/02*
U.S. Cl. 365—145 **24 Claims**



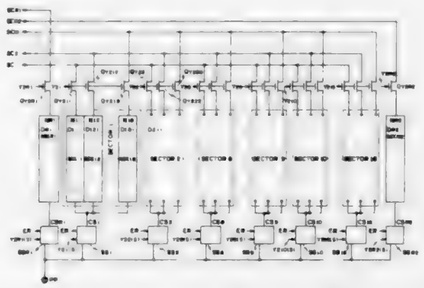
16. An integrated circuit memory cell comprising:
a semiconductor substrate;
a transistor device formed within the semiconductor substrate;
a dielectric layer overlying the transistor device;
an annular ferromagnetic core overlying the dielectric layer and being coupled to the transistor device.

5,329,487
TWO TRANSISTOR FLASH EPROM CELL
Anil Gupta, San Jose, and Kuo-Lung Chen, Saratoga, both of Calif., assignors to Altera Corporation, San Jose, Calif.
Filed Mar. 8, 1993, Ser. No. 28,042
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **12 Claims**



1. A memory cell comprising:
a word line;
a write line;
a read line;
a first transistor having a gate connected to the word line, a drain to the write line, a source, and a floating gate; and
a second transistor having a gate connected to the word line, a drain connected to the read line, a source and a floating gate connected to the floating gate of the first transistor, wherein the floating gate of the second transistor does not extend to either of the source and the drain of the second transistor.

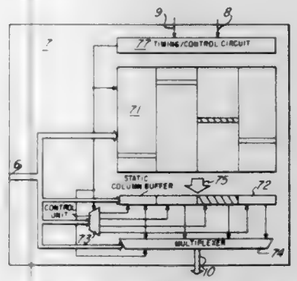
5,329,488
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANCY CIRCUIT
Kiyokazu Hashimoto, Tokyo, Japan, assignor to Nec Corporation, Japan
Filed Dec. 3, 1992, Ser. No. 985,607
Claims priority, application Japan, Dec. 27, 1991, 3-359812
Int. Cl.[5] G11C *11/40, 5/02*
U.S. Cl. 365—200 **7 Claims**



1. A nonvolatile semiconductor memory device comprising:
a plurality of sectors each comprising a plurality of main memory cell regions each composed of a matrix of nonvolatile memory cells;
control means for writing data in, erasing data from, and reading data from said nonvolatile memory cells in each of said sectors;
at least one redundant memory cell region composed of a matrix of nonvolatile memory cells;
replacing means for replacing any one of said nonvolatile memory cells which is selected by addressing in any one of said sectors and when the addressed cell is found to be defective, said replacing being with one of the nonvolatile memory cells and in said at least one redundant memory cell region; and
voltages of sources of memory cells constituting each sector being controlled and driven by a circuit means;
sources of memory cells in said redundant memory cell regions being controlled and driven by an independent circuit means which is other than said circuit means which controls and drives the voltages of the sources of memory cells constituting each sector.

5,329,489
DRAM HAVING EXCLUSIVELY ENABLED COLUMN BUFFER BLOCKS
Keith E. Diefendorff, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 639,309, Jan. 7, 1991, abandoned, which is a continuation of Ser. No. 175,875, Mar. 31, 1988, abandoned. This application Mar. 13, 1992, Ser. No. 852,939
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—189.05 **7 Claims**

1. A memory device comprising:
an array of individual, randomly accessed memory cells operatively arranged in rows and columns, said columns operationally divided into a multiplicity of data blocks,
a static column buffer operationally divided into a multiplicity of buffer blocks, one each of said multiplicity of data blocks associated with one each of said multiplicity of buffer blocks wherein during a data transfer cycle each of said multiplicity of data blocks is coupled to said corresponding buffer block but only one of said multiplicity of data blocks is latched into said corresponding buffer block; and



means for exclusively outputting said one latched buffer block of said static column buffer.

5,329,490
DYNAMIC SEMICONDUCTOR MEMORY WITH REFRESH FUNCTION
Tatsunori Murotani, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 22, 1993, Ser. No. 35,275
Claims priority, application Japan, Mar. 23, 1992, 4-064432
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 **10 Claims**

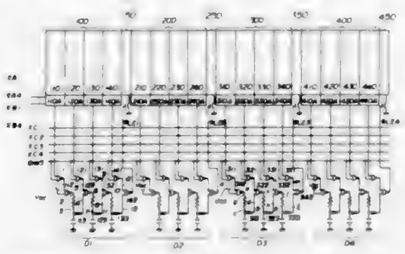
1. A dynamic semiconductor memory comprising:
a refresh mode identifying circuit for producing a refresh mode signal of active level when said identifying circuit detects that a mode is a refresh mode;
a refresh address signal generating circuit for generating a refresh address signal if said refresh mode signal is of active level;
a switch circuit for selecting said refresh address signal if said refresh mode signal is of active level while selecting an external address signal if said refresh mode signal is of inactive level;
a plurality of memory cell arrays each having a plurality of memory cells, word lines and bit lines;
an internal control signal producing circuit for producing a plurality of activation control signals each of which is associated with each of said memory cell arrays and becomes to be of activated level at a predetermined timing;
a plurality of row selecting circuits for being activated when said associated activation control signal is of activated level, to put a predetermined word line in said associated memory cell array to be on selection level in accordance with an address signal generated from said switch circuit; and
a plurality of sense amplifying circuits for being activated when said associated activation control signal is of activated level, to amplify and rewrite data stored in a memory cell which connects with a word line of selection level of associated memory cell array.

5,329,491
NONVOLATILE MEMORY CARD WITH AUTOMATIC POWER SUPPLY CONFIGURATION
David M. Brown, Fair Oaks; David S. Brannam, Cameron Park, and Russell D. Eslick, Placerville, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Jun. 30, 1993, Ser. No. 86,178
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—226 **12 Claims**

1. A nonvolatile memory card, comprising:
(A) a power supply input for receiving a device power supply voltage for the memory card;
(B) a plurality of memories arranged in an array, wherein each of the plurality of memories receives the device power supply voltage from the power supply input, wherein each of the plurality of memories receives a device power supply voltage indication signal that indicates voltage level of the device power supply voltage and configures circuitry within each of the plurality of memories to operate in accordance with the voltage level of the device power supply voltage;
(C) a voltage detection circuit coupled to the power supply input for detecting the voltage level of the device power supply voltage and for generating the device power supply voltage indication signal;
(D) a logic coupled to the voltage detection circuit and each of the plurality of memories for (1) receiving the device power supply voltage indication signal from the voltage detection circuit, (2) applying the device power supply voltage indication signal to each of the plurality of memories such that the circuitry of each of the plurality of memories is configured in accordance with the device power supply voltage indication signal, and (3) supplying data of the nonvolatile memory card with respect to the voltage level of the device power supply voltage to external circuitry.

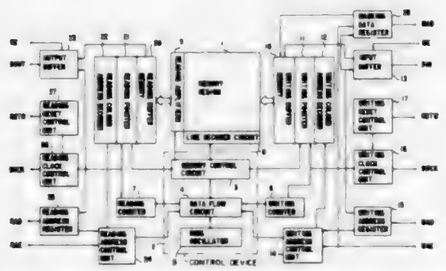
VOL 1164 ISS 2 JL 12 1994 UMI

5,329,492
SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED CONNECTIONS BETWEEN WORD LINES AND MEMORY CELL ARRAY BLOCKS
Hirohiko Mochizuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Nov. 19, 1992, Ser. No. 978,837
Claims priority, application Japan, Nov. 20, 1991, 3-304955
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.01 **14 Claims**



1. A semiconductor memory device comprising.
a memory cell array divided into a plurality of blocks respectively having bit lines, word lines, and memory cells coupled to the bit lines and word lines;
a plurality of sense amplifier means, respectively provided for the blocks and connected to the bit lines, for sensing and amplifying information stored in the memory cells;
first means, coupled to the word lines of the memory cell array, for selecting one of the word lines for each of the blocks so that at least one of selected word lines is located at a distance from a corresponding one of the plurality of sense amplifier means, said distance being different from distances from other sense amplifier means at which other selected word lines are located; and
second means, coupled to the plurality of sense amplifier means and the first means, for sequentially activating the plurality of sense amplifier means, starting from one of the blocks having one of the selected word lines located at a shortest distance from a corresponding one of the plurality of sense amplifier means.

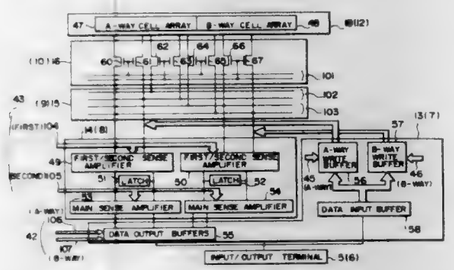
5,329,493
INTEGRATED SEMICONDUCTOR MEMORY ARRAY AND METHOD FOR OPERATING THE SAME
Willibald Meyer, Munich, and Norbert Wirth, Unterschleisheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jun. 9, 1993, Ser. No. 74,329
Claims priority, application European Pat. Off., Jun. 9, 1992, 92109690.5
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.01 **16 Claims**



12. A method for operating a semiconductor memory array having a memory region organized in lines and columns; a writing buffer memory associated with the memory region for serial-parallel conversion of data to be written in, a writing pointer and an input buffer associated with the writing buffer memory; a reading buffer memory associated with the memory region for parallel/serial conversion of data to be read out, a reading pointer and an output buffer associated with the reading buffer memory; a control device being formed of a memory control circuit and a data flow control circuit for controlling a data flow between the memory region and the writing buffer memory and between the memory region and the reading buffer memory; a reading column address decoder controlling the reading pointer and being associated with the reading buffer memory, a reading address control unit connected to the reading column address decoder, and a reading address register connected to the reading address control unit; a line address decoder being associated with the memory control circuit and the memory region and being triggered by the reading address control unit; a writing column address decoder controlling the writing pointer and being associated with the writing buffer memory; a writing address control unit connected to the writing column address decoder; and a writing address register connected to the writing address control unit; the line address decoder being triggered by the writing address control unit, which comprises:
reading bits of writing and reading address signals as a writing and reading addresses into the writing and reading address registers by means of writing and reading clock signals, during an active stage of writing and reading control signals supplied to the writing and reading address control units;
activating writing and reading reset signals supplied to the writing and reading pointers, no earlier than after a minimum period after a transition of the writing and reading control signals to an inactive state;
writing in and reading out input and output data to and from a memory region associated with the previously read-in writing and reading addresses, after activation of the writing and reading reset signals;
possibly again activating the writing and reading control signals and thereby reading in a new address, during the process of writing in and reading out data;
then tripping a new process of writing in and reading out data by subsequently activated writing and reading reset signals, if the writing and reading control signals have been reactivated; and
incrementing the previously read-in address independently of new writing and reading reset signals, if the writing and reading control signals have not been activated.

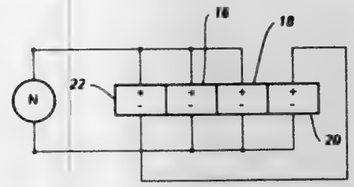
5,329,494
MEMORY CELL ARRAY DIVIDED TYPE SEMICONDUCTOR MEMORY DEVICE
Youichi Suzuki, and Takenori Nakamura, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 9, 1992, Ser. No. 848,152
Claims priority, application Japan, Mar. 7, 1991, 3-41902
Int. Cl.[5] G11C *8/00, 7/00*
U.S. Cl. 365—230.03 **16 Claims**

1. A memory device having any given number of memory blocks, each of the memory blocks, comprising:
a plurality of way cell arrays to and from each of which data can be written and read independently from said other way cell arrays;
memory cell selecting means for selecting a memory cell of each of said way cell arrays on the basis of an external address signal, respectively, the selected memory cells having the same common address mutually in said way cell arrays;
a plurality of sense amplifying means provided for each of said way cell arrays, for sensing and amplifying data read out of the memory cells, said sense amplifying means being allowed to be operative or inoperative in response to a sense control signal in data read/write operations;
data output buffer means for outputting outputs of said sense amplifying means to the outside; and



a plurality of way write buffer means provided for each of said wall cell arrays, are allowed to be any given number of said way write buffers being selectively operative on the basis of write way control signals, to write data in the selected memory cells of said way cell arrays corresponding thereto.

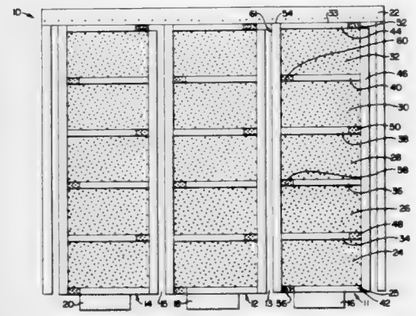
5,329,495
PASSIVE BEAMFORMER WITH LOW SIDE LOBES
William J. Zehner, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 30, 1993, Ser. No. 83,600
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—138 **2 Claims**



1. Apparatus for reducing the effective side lobe level of a multi-element directional antenna system used to transmit and receive propagated signals comprising, a first array of elements having uniform shading and a second array of elements partitioned into a plurality of equal parts, the parts being electrically connected so that the second array is bizonally shaded, the second array being approximately 60 percent longer than the first array.

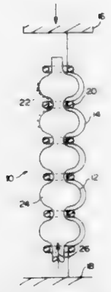
5,329,496
TWO-DIMENSIONAL ARRAY ULTRASONIC TRANSDUCERS
Stephen W. Smith, Durham, N.C., assignor to Duke University, Durham, N.C.
Filed Oct. 16, 1992, Ser. No. 962,455
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—140 **20 Claims**

1. A piezoelectric transducer chip comprising: a plurality of transducer elements a width of from about 0.05 mm to about 1 mm arranged in a two-dimensional array, at least one of said transducer elements being a multilayer element having an internal edge portion and comprising a plurality of piezoelectric layers and a plurality of electrode layers forming a plurality of capacitive elements electrically connected in parallel, each of said plurality of piezoelectric layers being separated from the adjacent piezoelectric layers by one of said plurality of electrode layers, and said piezoelectric layers consisting of a first set of alternating electrode layers and a second set of alternating electrode layers interposed between said first set of alternating electrode layers;
a first via electrically connecting said first set of alternating electrode layers, said first via being electrically insulated from said second set of alternating electrode layers; and



a second via electrically connecting said second set of alternating electrode layers, said second via being electrically insulated from said first set of alternating electrode layers;
wherein at least one of said vias is an internal via.

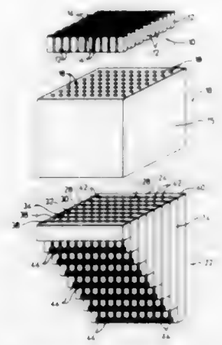
5,329,497
DEVICE FOR GENERATION OF HYDRODYNAMIC POWER
Branislav Previsic, Oberschwändi, 8497 Fischenthal, Switzerland, and Mile Previsic, Debaniceva 23, 41090 Zagreb,
Filed Oct. 5, 1993, Ser. No. 132,038
Claims priority, application Switzerland, Oct. 19, 1992, 03237/92
Int. Cl.[5] H04R *23/00;* **F03B** *13/10, 13/12*
U.S. Cl. 367—141 **13 Claims**



1. Device for generating hydrodynamic power by converting the energy of waves of an open body of water, which comprises at least one anchored float, at least one extendable pumping element attached to the float, and a pressure medium within the pumping element, wherein the pumping element comprises at least one fluid impermeable hose which expands radially while shortening in the longitudinal direction and which has at least one of an inlet opening and an outlet opening for at least one pressure medium, wherein said hose has flexible longitudinal fibers of high tensile strength operatively associated therewith, an upper force attachment connected to the float and fibers and a lower force attachment connected to the fibers and a fixing means so that a tensile force applied in the longitudinal direction of the pumping element is not applied to the hose.

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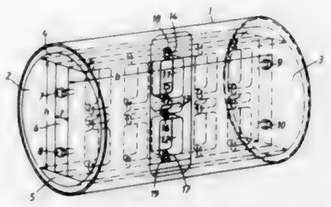
5,329,498
SIGNAL CONDITIONING AND INTERCONNECTION FOR AN ACOUSTIC TRANSDUCER
Michael Greenstein, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 17, 1993, Ser. No. 62,665
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—155 **19 Claims**



10. An acoustic transducer comprising:
an array of transducer elements having forward and rearward faces;
a backing member having a plurality of conductors extending therethrough, said backing member coupled to said rearward faces of said transducer elements, said conductors having first ends exposed to achieve electrical contact with said transducer elements, said conductors having second ends at a side of said backing member opposite to said transducer elements, said backing member having an acoustic impedance to attenuate acoustic wave energy; and
a plurality of parallel semiconductor members, each having contact pads at first edges, said plurality of semiconductor members having a laminate structure such that a surface of each of said semiconductor members is joined to a surface of another of said semiconductor members, said semiconductor members joined to said backing member such that said contact pads are aligned with said second ends of said conductors for electrical connection between said contact pads and said conductors, said semiconductor members having integrated circuitry for transmitting and receiving electrical signals to and from said transducer elements.

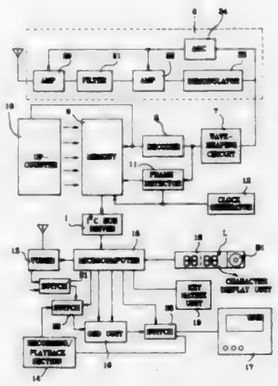
5,329,499
ACOUSTIC TRANSMITTER
Gunnar Molund; Rune Tenghamn, and Magnus Zetterlund, all of Västeras, Sweden, assignors to ABB Atom AB, Västeras, Sweden
PCT No. PCT/SE91/00612, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO92/06567, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 16, 1991, Ser. No. 989,010
Claims priority, application Sweden, Sep. 28, 1990, 9003086-7
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—174 **8 Claims**

1. An acoustic transmitter which has a cylindrical shape and which includes a shell arranged as an elastic diaphragm, pressure rods diametrically arranged inside the diaphragm, and a drive package arranged between the pressure rods; said device package comprising
a frame, driving members and a prestress device, said frame being arranged as a rectilinear parallelepipedic plate of magnetic material with parallelepipedic recessed with rounded corners in the form of drive windows and prestress windows, wherein two drive windows with an intermediate prestress window form a column with a common center line diametrically between the pressure rods, wherein the frame includes at least on column, wherein the driving members are arranged in the drive windows and comprise at least one drive cell which is controllable and extendable, wherein ends of the driving members in the direction of extension are arranged as pressure studs for which clearance holes with the same center line as that of the window of the column are provided in the frame, both from the drive windows towards



the pressure rods and towards an intermediate prestress window, wherein the pressure studs in one end of the driving members make contact with the pressure rods and in the other end make contact with the prestress devices arranged in the prestress windows, wherein the prestress devices comprise two prestress lugs with an intermediate wedge, and wherein the wedge is provided with a screw arrangement by means of which the wedge can be moved between the prestress lugs, whereby those pressure studs of the driving members which face the pressure rods will make contact with recesses in the pressure rods.

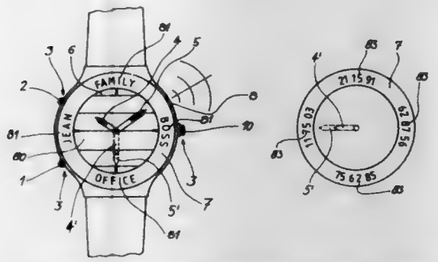
5,329,500
VIDEO CASSETTE RECORDER HAVING AUTOMATIC TIME SETTING FUNCTION
Bok H. Baik, Kyungki; Jung H. Hur, Seoul, and Dae S. Shim, Inchun, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Sep. 13, 1993, Ser. No. 119,579
Claims priority, application Rep. of Korea, Feb. 18, 1993, 2244/1993
Int. Cl.[5] G04B *47/00*
U.S. Cl. 368—10 **10 Claims**



1. A VCR having an automatic time setting function, comprising:
receiving means for receiving a current time signal transmitted from a broadcasting station and for demodulating the received current time signal;

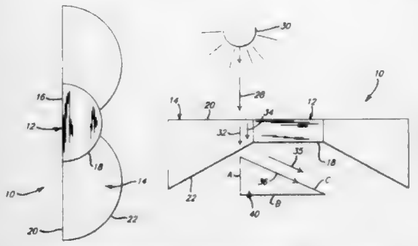
wave-shaping means for converting the demodulated current time signal from said receiving means to a digital signal and for outputting a resultant digital current time data;
means for decoding the digital current time data from said wave-shaping means;
means for storing the decoded current time data from said decoding means in frame units;
frame detecting means for detecting a starting point of each frame of the current time data from said wave-shaping means and for resetting a current time data of a frame previously stored in said storing means upon detection of the starting point;
tuning means for receiving audio and video signals transmitted from the broadcasting station and for tuning the received audio and video signals to a reference frequency;
control means for controlling VCR operations, for analyzing the current time data read from said storing means and for converting the current time data to a current time in accordance with an analyzed result;
on-screen display means for superimposing one of a timer signal and the current time on the video signal from said tuning means under the control of said control means and for outputting a resultant superimposed signal to an external display;
character display means for displaying the current time from said control means; and
key matrix means for applying one of a summer time display function signal and a time siren function signal to said control means.

5,329,501
TIMEPIECE ADAPTED TO RECEIVE RADIO BROADCAST MESSAGES TO BE DISPLAYED BY ITS HANDS
Pierre-André Meister, Bienne, and Andreas Tschanz, Würenlos, both of Switzerland, assignors to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland
Filed Oct. 1, 1993, Ser. No. 130,259
Claims priority, application Switzerland, Oct. 8, 1992, 03 144/92-5
Int. Cl.[5] G04B *47/00;* **G08B** *5/22*
U.S. Cl. 368—10 **20 Claims**



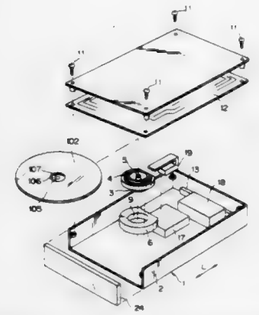
1. A timepiece including a time keeper in order to display at least hours and minutes by means of hands surmounting a dial surrounded by a bezel, a receiver capable of receiving radio broadcast messages for seeking persons, reception being triggered by the composition on a telephone handset of one of at least two predetermined and distinctive calling numbers, a memory for storing said calls, an acoustic transducer for signalling at least the arrival of a message and a control arrangement including at least one stem fitted into a crown adapted to be manually actuated, and wherein at least the calling numbers are inscribed on the dial or the bezel in plain language or in coded form, means being actuated so that at least upon reception of a message such is stored in the memory and at least one hand ceases its time indicating function in order to come to show the calling number emitting the message.

5,329,502
LIGHT BENDING WATCH APPARATUS
Chad T. Haring, 1143 Appleseed La., Apt. A, St. Louis, Mo. 63132, and Michael A. Fuller, 12381 Log Post Ct., Apt. A, St. Louis, Mo. 63141
Filed Dec. 10, 1993, Ser. No. 165,724
Int. Cl.[5] G04B *37/00*
U.S. Cl. 368—276 **9 Claims**



1. A personal time piece head assembly, comprising:
a watch compartment having a time keeping mechanism and indicator means for conveying a time value to a user; and
housing means for supporting said watch compartment such that said housing means extends below said watch compartment in a predetermined relationship, said housing means being made from a material which is capable of transmitting ultraviolet light through said housing means, said housing means also being formed with surface means for redirecting ultraviolet light impinging upon a top surface of said housing means to an area beneath said watch compartment.

5,329,503
MAGNETO-OPTICAL DISC RECORDING/REPRODUCING APPARATUS
Kiyoshi Ohmori, Kanagawa; Tetsu Watanabe, Tokyo; Katsuhiro Seo, Tokyo, and Junichi Kudo, Tokyo, all of Japan, assignors to Sony Corporation, Japan
Filed Oct. 26, 1992, Ser. No. 967,999
Claims priority, application Japan, Oct. 31, 1991, 3-311523
Int. Cl.[5] G11B *11/00*
U.S. Cl. 369—13 **10 Claims**



1. A magneto-optical disc recording and reproducing apparatus comprising:
rotational driving means for driving a magneto-optical disc at a substantially constant angular velocity, the magneto-optical disc having a substrate and a signal recording region formed on the substrate, the signal recording region divided from an inner periphery to an outer periphery into plural concentric signal recording zones located at increasing radial distances from a center of the magne-

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to-optical disc, each signal recording zone having a substantially equal line recording density and containing servo clock signals encoded such that linear distances between the servo clock signals along circular tracks of the magneto-optical disc increase as the radial distance of each track from the center of the magneto-optical disc increases, whereby the servo clock signals recorded at different radial distances from the center of the magneto-optical disc are reproduced at a substantially constant frequency;

optical means for radiating a light beam onto the magneto-optical disc and for receiving light returning from the magneto-optical disc;

magnetic field generating means for applying a magnetic field when information signals are being recorded on the magneto-optical disc; and

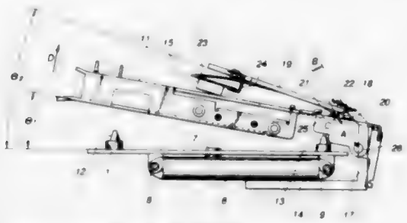
controlling means for controlling the rotational driving means, the optical means, and the magnetic field generating means, the controlling means further for converting the substantially constant frequency reproduced from the servo clock signals for use as plural channel clock frequencies for reproducing and recording signals in the signal recording zones, each signal recording zone having one corresponding channel clock frequency, such that the channel clock frequencies of signal recording zones located at larger radial distances from the center of the magneto-optical disc are higher than channel clock frequencies of signal recording zones located at smaller radial distances from the center of the magneto-optical disc.

5,329,504

DISC CARTRIDGE LOADING APPARATUS

Hiroshi Mukawa, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Feb. 3, 1993, Ser. No. 12,883
Claims priority, application Japan, Feb. 10, 1992, 4-056563
Int. Cl.[5] G11B *13/04, 17/02, 21/12*
U.S. Cl. 369—13 **2 Claims**



1. A disc cartridge loading apparatus comprising:

base means having disc rotationally driving means for rotationally driving a magneto-optical disc accommodated in a disc cartridge and an optical pickup unit for radiating at least one light beam on the magneto-optical disc;

a cartridge holder for holding the disc cartridge, rotatably mounted on the base means at a point of rotation and moved between a loading position in which the magneto-optical disc accommodated in the disc cartridge is loaded on the disc rotationally driving means and an unloading position in which the magneto-optical disc accommodated in the disc cartridge is taken out of the disc rotationally driving means, the unloading position being at a higher position than the loading position;

positioning means provided on the base means for positioning the disc cartridge held by the cartridge holder when the cartridge holder is positioned at the loading position, the positioning means including a pair of pins which are engaged to holes formed on the disc cartridge holder when the cartridge holder is positioned at the loading position;

external magnetic field generating means for generating and applying an external magnetic field to the magneto-optical disc;

supporting means for supporting the external magnetic field generating means and rotatable mounted on the cartridge holder, the supporting means being connected at a connected end to the optical pickup unit and being moved with the optical pickup unit in a radial direction of the magneto-optical disc, the direction being parallel to the insertion direction of the disc cartridge into the cartridge holder;

abutment means provided between the cartridge holder and the supporting means so that the cartridge holder and the supporting means abut at an abutment location, and a first distance from the abutment location to the connected end of the supporting means is less than a second distance from the abutment location to the point of rotation of the cartridge holder, for rotating the supporting means when the cartridge holder is moved toward the unloading position, whereby a first rotational angle between the base means and the supporting means increases by a larger amount than a second rotational angle between the base means and the cartridge holder; and

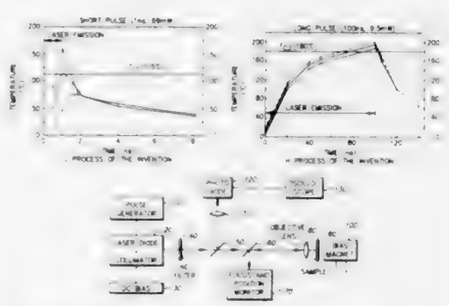
stopper means near the connected end of the supporting means for stopping the rotation of the supporting means when the cartridge holder is positioned at the loading position and for holding the supporting means approximately parallel to the base means.

5,329,505

SYSTEM AND METHOD FOR OVERWRITEABLE MAGNETO-OPTICAL RECORDING

Tomoko Ohtsuki, Tokyo, Japan, assignor to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 616,154, Nov. 20, 1990, abandoned. This application Aug. 18, 1993, Ser. No. 109,015
Claims priority, application Japan, Dec. 8, 1989, 1-317915
Int. Cl.[5] G11B *13/04, 11/10, 11/12*
U.S. Cl. 369—13 **24 Claims**



1. A data recording system comprising:

a recording medium having a data layer and a reference layer;

an electromagnetic source for directing an electromagnetic beam at the recording medium;

a pulse means connected to the electromagnetic source for causing the electromagnetic source to pulse for a first period of time and a second period of time, the first period of time of short enough duration to create a temperature differential between the data layer and the reference layer such that the data layer is heated to a first temperature at least equal to the Curie temperature of the data layer and the reference layer is heated to a second temperature less than the Curie temperature of the data layer, the second period of time being sufficient to heat the reference layer to a temperature at least equal to the Curie temperature of the reference layer; and

a magnetic source positioned proximate the medium for providing a magnetic field.

13. A method for magneto-optical recording comprising the steps of:

passing a recording medium proximate a magnetic source, the medium having a first and a second layer, the first layer having a coercive force greater than the coercive force of the second layer such that the magnetic source changes the magnetic orientation of the second layer in a first direction, but does not change the magnetic orientation of the first layer; and

directing an electromagnetic beam at a selected first portion of the recording medium for a first period of time, said first period of time of short enough duration to create a temperature differential between the first and second layers such that the first layer is heated to a first temperature at least equal to the Curie temperature of the first layer, and the second layer is heated to a temperature less than the Curie temperature of the first layer, such that the selected first portion of the first layer has its magnetic orientation aligned with the magnetic orientation of the selected first portion of the second layer.

5,329,506

INFORMATION RETRIEVING SYSTEM

Kenichi Kitta, Toride; Atsuki Hirose, and Yatani Ishikawa, both of Ibaraki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Jul. 17, 1991, Ser. No. 731,618
Claims priority, application Japan, Jul. 20, 1990, 2-190670
Int. Cl.[5] H04M *1/00;* **G11B** *17/22*
U.S. Cl. 369—32 **18 Claims**



9. An information retrieving system comprising:

a disk-shaped recording medium, for storing retrievable information data recorded under a predetermined rule, and

a retrieving apparatus, including:

input means for inputting information via retrieving keys;

data reading means for reading out said retrievable information data recorded at a position of said disk-shaped recording medium by moving in a radial direction of said disk-shaped recording medium in accordance with instruction from a control means;

memory means for storing a retrievable table comprising index information comprised of index data structured by a tree-structure relation based on said recorded predetermined rule of said retrievable data of said disk-shaped recording medium, placing a first character of said index data at a summit of said tree-structure relation and address information composed of addresses on said disk-shaped recording medium in connection with said retrievable data corresponding to said index information; and,

control means for retrieving said retrievable table at each of said retrieving keys, every time each character of inputted information is entered

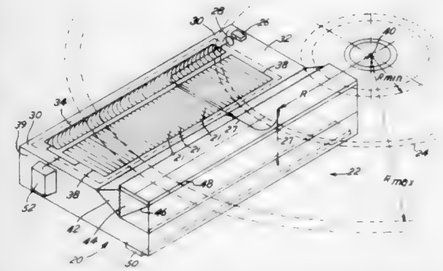
from said input means, and to move said data reading means to said address obtained.

5,329,507

SOLID STATE OPTICAL DISK READER

Jonathan B. Nelson, 512 W. Green, Apt. 8, Champaign, Ill. 61820, and Neil R. Brown, 8600 Skokie Boulevard, Skokie, Ill. 60077

Continuation of Ser. No. 765,031, Sep. 24, 1991, Pat. No. 5,251,193. This application Oct. 4, 1993, Ser. No. 131,991
Int. Cl.[5] G11B *7/085, 7/095*
U.S. Cl. 369—44.12 **1 Claim**



1. A solid state optical disk reader for accessing data stored on an optical disk comprising:

(a) a light source emitting a monochromatic beam in a beam direction;

(b) a waveguide optically coupled to said light source and confining said beam to a defined region;

(c) electro-optic adjustment and focus means for changing the index of refraction of said waveguide solely electrically thereby adjusting the direction of said beam through said waveguide to become radially aligned with and focused on a data track on said disk to be accessed; including: an integrated electro-optic adjustment means which electrically deflects said beam in said waveguide and which focuses said adjusted beam upon the surface of said data track;

(d) reflecting means coupled to said waveguide for reflecting said beam from said waveguide to said data track;

(e) detector means for detecting said beam after reflection of said beam from said data track, said detector means responsively issuing a signal; and

(f) a control circuit receiving said signal from said detector and responsively issuing control signals to said electro-optical adjustment and focus means.

5,329,508

REGENERATING DEVICE FOR OPTICAL RECORDING MEDIUM IN WHICH OVERLAPPING REGIONS ARE READ OUT BY A LIGHT BEAM IN A TIME SHARING MANNER TO PROVIDE SERVO CONTROL OF THE POSITIONAL RELATIONSHIP BETWEEN THE LIGHT BEAM AND THE MEDIUM

Akira Matsueda, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,340
Claims priority, application Japan, Nov. 1, 1991, 3-287906
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.11 **5 Claims**

1. A regenerating device for an optical recording medium comprising:

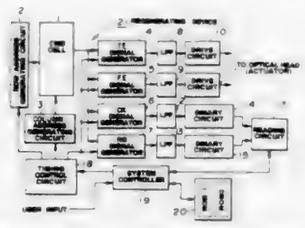
light beam application means for applying a light beam from a light source onto an optical recording medium;

light detecting means to which a reflection light from said optical recording medium is applied as incident light, said light detecting means having an image sensor including a plurality of cells disposed two-dimensionally, said plural-

ity of cells for storing charges by photoelectrically converting the incident light;

readout means for defining, by time sharing, a cell region in a predetermined position of all of said cells disposed tow-dimensionally in said image sensor so as to execute time-sharing read-out of charges, which is stored in said cells, as a detecting signal;

servo control means for controlling a posttional relationship of the light beam from said light source to said optical recording medium by processing one portion of said time-sharing detecting signals which are read out from said cells of said image sensor by said readout means; and



reading means for reading information recorded on said optical recording medium by processing another portion of said time-sharing detecting signals which are read out form said cells of said image sensor by said readout means,

wherein at least two cell regions, in a plurality of cell regions of said image sensor defined by said readout means, are overlapped to share a common region, and, wherein said servo control means processes said time-sharing signals obtained from cells included in said two cell regions and controls an optical head.

5,329,509

OPTICAL DISK UNIT

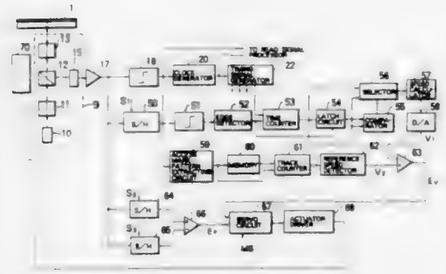
Tamane Takahara, Tokyo; Hideaki Osawa, and Naobumi Seo, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 504,182, Apr. 4, 1990, Pat. No. 5,157,645. This application Jul. 17, 1992, Ser. No. 915,495

Claims priority, application Japan, Apr. 6, 1989, 1-85849; Apr. 28, 1989, 1-111619; Aug. 28, 1989, 1-218515; Dec. 21, 1989, 1-329713

Int. Cl.[5] C11B *7/085*

U.S. Cl. 369—44.26 **8 Claims**



1. An optical disk unit for transmitting a light spot upon a surface of an optical disk provided with concentrical or spiral tracks on which a plurality of sample servo pits involving access marks specific for every predetermined number of tracks are formed, and detecting said access marks to recognize a moving state of said light spot on said optical disk, said optical disk unit comprising:

access mark pattern storage means for storing both access mark patterns corresponding to said access marks formed on said tracks and combined access mark patterns, said combined access mark patterns representing combinations of said access marks formed on adjacent tracks; and

position detecting means for checking to see whether a detected access mark pattern matches one of said access mark patterns and said combined access mark patterns stored in said access mark pattern storage means, and for determining that said light spot is located between two adjacent tracks when a detected access mark pattern matches one of said combined access mark patterns stored in said access mark pattern storage means.

5,329,510

METHOD AND APPARATUS FOR DISCRIMINATING BETWEEN UNFORMATTED MAGNETIC DISK ASSEMBLIES OF TWO DIFFERENT STORAGE CAPACITIES

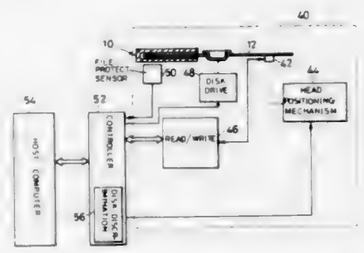
Hiroshi Tsuyuguchi, Tokyo; Shinichi Aikawa, Mitaka, and Fumio Nagase, Tama, all of Japan, assignors to TEAC Corporation, Tokyo, Japan

Continuation of Ser. No. 435,169, Nov. 13, 1989, abandoned. This application Nov. 30, 1992, Ser. No. 983,116

Claims priority, application Japan, Nov. 15, 1988, 63-288552

Int. Cl.[5] G11B *5/012*

U.S. Cl. 369—47 **4 Claims**



1. A method of distinguishing a first unformatted disk of a first storage capacity from a second unformatted disk of a second storage capacity as the first or second disk is loaded in a disk drive, the first storage capacity being less than the second storage capacity, which method comprises:

(a) writing predetermined track format data suitable for the second storage capacity on the loaded disk;

(b) reading the predetermined track format data from the loaded disk,

(c) detecting an error in the predetermined track format data which has been read from the loaded disk in the step (b); and

(d) determining that the loaded disk is of the first storage capacity based upon the detection of said error.

5,329,511

OPTICAL HEAD CLEANING CARTRIDGE

Kenichi Sato, Tokyo, Japan, assignor to TEAC Corporation, Japan

Filed Apr. 27, 1992, Ser. No. 874,623

Claims priority, application Japan, Apr. 30, 1991, 3-030251[U]

Int. Cl.[5] G11B *3/58*

U.S. Cl. 369—71 **13 Claims**

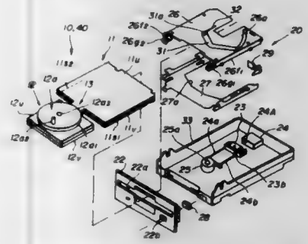
1. An optical head cleaning cartridge adapted for use in an optical disk unit which includes an optical head located at a predetermined position in a specific operation mode of the optical disk unit and which uses the optical head to record information signals on and/or reproduce information signals

from an optical disk which is accommodated within an optical disk cartridge, said optical head cleaning cartridge comprising:

a first casing assembly, said first casing assembly having a supporting shaft rotatably mounted with respect thereto and having external height, width, and depth dimensions which are substantially the same as those of said optical disk cartridge;

a cleaning element provided on said supporting shaft of said first casing assembly and engageable with the optical head when the optical head cleaning cartridge is loaded into the optical disk unit with the latter in the specific operation mode;

a second casing assembly rigidly and permanently connected to said first casing assembly by a connecting member integrally connecting said first and second casing assemblies, said first and second casing assemblies and said connecting member being formed of coplanar, one piece top and one piece bottom members;



a driving unit which is mounted on the top of said second casing assembly and located generally parallel to the one piece top member of said first and second casing assemblies and the connecting member at a position to allow manipulation of said driving unit in a state in which the optical head cleaning cartridge is loaded into the optical disk unit;

a transmitting mechanism housed within said first and second casing assemblies and said connecting member, said transmitting mechanism having means for transmitting power from said driving unit to said cleaning element via said connecting member;

said driving unit further including a driving shaft generally parallel to said supporting shaft on said first casing assembly, said driving shaft rotatably connecting said driving unit to said transmitting mechanism;

said cleaning element cleaning the optical head by rotating in response to said driving unit transmitting power via said transmitting mechanism.

5,329,512

TEMPERATURE DETECTION OF A MAGNETO-OPTIC RECORDING MEDIUM FOR CONTROLLING IRRADIATION OF AN ERASURE REGION

Atsushi Fukimoto, Kanagawa; Toshiki Udagawa; Shunji Yoshimura, both of Tokyo; Masumi Ono, Kanagawa, and Kouichi Yasuda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP91/01437, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/14244, PCT Pub. Date Aug. 20, 1992

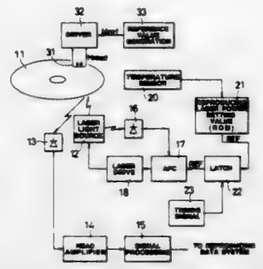
PCT Filed Oct. 19, 1991, Ser. No. 930,617

Claims priority, application Japan, Feb. 5, 1991, 3-035544

Int. Cl.[5] G11B *11/10, 7/00*

U.S. Cl. 369—121 **9 Claims**

1. A method for reproducing an optical recording medium comprising a recording layer and a reproducing layer, said recording and reproducing layers being magnetically coupled to each other in steady state, said method comprising rendering recorded data unreadable by extinguishing magentic coupling between the recording layer and the reproducing layer in a region the temperature of which is raised to a temperature higher than a predetermined temperature by irradiation of a readout laser beam during reproduction, and reading the recording information held by said recording layer in an area of an irradiated region other than the magnetic coupling extinguished region, characterized by



detecting the temperature of a irradiated portion of said optical recording medium, and

controlling the size of said magnetic coupling extinguished region based on the detected temperature.

5,329,513

ANGULAR RELATIONSHIP DETECTION DEVICE AND METHOD

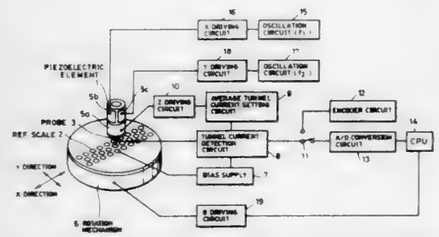
Hiroyasu Nose, Zama; Toshihiko Miyazaki, Hiratsuka; Kunihiro Sakai, Isehara; Toshimitsu Kawase, and Takahiro Oguchi, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,094

Claims priority, application Japan, Oct. 4, 1990, 2-265086

Int. Cl.[5] G11B *9/00*

U.S. Cl. 369—126 **31 Claims**



1. A device for detecting an angular relationship between a probe for reading information and an information arrangement arranged in at least one direction within a predetermined surface, said device comprising:

vibration means for vibrating the probe at a predetermined amplitude and a predetermined frequency in a predetermined direction along said predetermined surface; and

angular relationship detection means for detecting an angular relationship between the direction of vibration of said probe and the direction of arrangement of said information arrangement according to frequency information of a detection signal obtained via said probe during the vibration of said probe by said vibration means.

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5,329,514

INFORMATION PROCESSING APPARATUS, AND ELECTRODE SUBSTRATE AND INFORMATION RECORDING MEDIUM USED IN THE APPARATUS

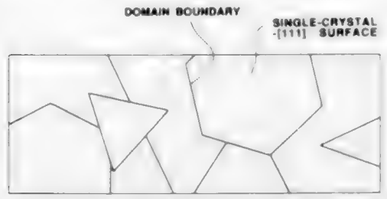
Ken Eguchi; Haruki Kawada, both of Yokohama; Kiyoshi Takimoto, Isehara, and Toshihiko Takeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1992, Ser. No. 919,273

Claims priority, application Japan, Jul. 31, 1991, 3-213054; Jul. 31, 1991, 3-213055

Int. Cl.[5] H04N *1/21*

U.S. Cl. 369—126 32 Claims



1. An electrode substrate comprising a substrate and at least one noble metal planar crystal formed on said substrate as an electrode layer wherein said noble metal planar crystal is made of a single crystal having an electrode surface forming at least a facet of (111) plane orientation and a boundary of said single crystal surface is substantially linear

5,329,515

INFORMATION CARRIER, INFORMATION RECORDING AND/OR REPRODUCING APPARATUS, AND INFORMATION DETECTING APPARATUS

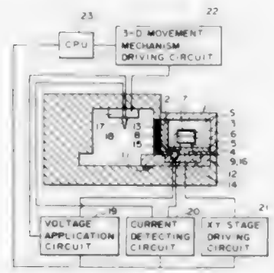
Hideyuki Kawagishi, Ayase; Toshihiko Miyazaki, Hiratsuka; Hisaaki Kawade, Yokohama; Etsuro Kishi, Kawasaki; Kiyoshi Takimoto, Isehara, and Toshihiko Takeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 845,958, Mar. 4, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 73,485

Claims priority, application Japan, Mar. 8, 1991, 3-68989

Int. Cl.[5] G01N *13/00*

U.S. Cl. 369—126 6 Claims



1. An information recording and/or reproducing apparatus for performing information recording and/or reproducing through a probe or an information recording medium contained in a container, comprising:

a containing section, said containing section being in a closed state for outside air and said probe being arranged in said containing section;

a holder for holding the container detachably;

a guiding section for guiding the information medium in the container held by said holder into said containing section, wherein said probe is relatively arranged with relation to the information recording medium at a position where recording and/or reproducing is possible, said guiding section performs guiding of the information recording medium in a state where said containing section and an inside of the container are shut off from outside air.

5,329,516

DISK PLAYER WITH INTERNAL CONVEYOR FOR EXCHANGING STORED DISKS

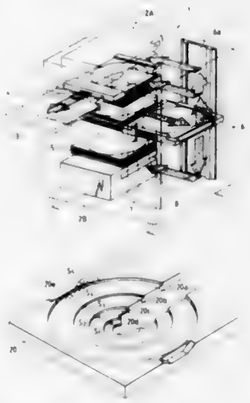
Masayuki Hoshi, and Masashi Tanabe, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,580

Claims priority, application Japan, Nov. 8, 1991, 3-321170; Nov. 8, 1991, 3-321171

Int. Cl.[5] G11B *33/02*

U.S. Cl. 369—77.1 9 Claims



1. A disk player comprising

a housing;

a plurality of sub-trays, each of which carries a disk;

a storing section, disposed within said housing, for storing a stack of said plurality of sub-trays;

a disk reproducing means comprising a pick-up transport ember and a single pick-up member disposed in said housing, and means for receiving a disk and means for reproducing up to two sides of said disk;

transporting means for transporting a selected sub-tray between said storing section and said disk reproducing means;

memory means for storing address data corresponding to a storing position for each of said disks carried in said sub-trays and to types of said disks;

instructing means for instructing said transporting means to select and transport one of said plurality of sub-trays including a disk from said storing section to said disk reproducing means, for instructing said reproducing means to reproduce said selected disk, and for instructing said pickup members; and

control means, coupled to said memory means and said instructing means, for moving said pickup members of said disk reproducing means to a predetermined position at a reproduction side of said selected disk for reproduction thereof, in accordance with the data stored in said memory means and instructions produced by said instructing means.

5,329,517

OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS UTILIZING A PLURALITY OF RECORDING LIGHT SPOTS

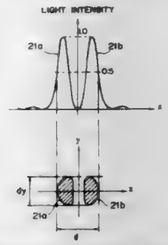
Eiji Yamaguchi, Sagamihara; Susumu Matsumura, Kawaguchi; Hiroaki Hoshi, Yokohama; Masakuni Yamamoto, Yamato, and Hideki Morishima, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 797,948, Nov. 26, 1991, abandoned. This application Aug. 11, 1993, Ser. No. 104,605

Claims priority, application Japan, Nov. 27, 1990, 2-321117

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—110 15 Claims



1. An optical information recording and reproducing apparatus for recording and reproducing an information pit on and from an information track of an optical information recording medium by irradiating a light beam focused into fine spots to the information track, said apparatus comprising:

a recording light source for generating a light beam;

spot forming means arranged in a path of the light beam generated from said recording light source for forming a plurality of recording light spots transversely to the information track on the information recording medium, said spot forming means comprising a focusing objective lens disposed in the light path and a phase shift device facing a pupil plane of the objective lens and having a split line arranged in a direction of the information track, so that the light beam generated by said light source is split into two light spots which are irradiated to the information track; and

means for reproducing a record domain formed by the recording light spots.

5,329,518

Patent Not Issued For This Number

5,329,519

LAN MONITORING METHOD AND APPARATUS

Colin S. I'Anson, Bristol, England, assignor to Hewlett Packard Company, Palo Alto, Calif.

PCT No. PCT/GB91/01952, § 371 Date Jul. 1, 1993, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO92/10896, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 6, 1991, Ser. No. 66,141

Claims priority, application European Pat. Off., Dec. 7, 1990, 90313320.5

Int. Cl.[5] H04J *3/14*; H04L *12/28*

U.S. Cl. 370—13 8 Claims

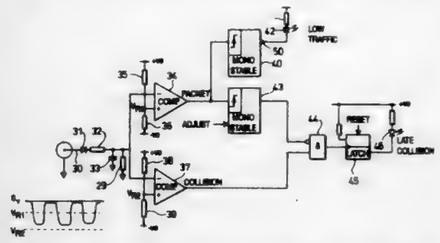
1. Apparatus for monitoring a CSMA/CD LAN, said apparatus comprising:

input means for providing a connection to said LAN to enable monitoring of the LAN whilst operational;

first detection means coupled to said input means and operative to detect the presence of a packet on the LAN and to generate a first output signal in response thereto;

second detection means coupled to said input means and operative to detect a packet collision on the LAN and to generate a second output signal in response thereto; and

late-collision indicator means connected to receive said first and second output signals and operative to provide a late-collision output indication when said second output signal indicates the occurrence of a packet collision subsequent to the elapse of a predetermined time interval from



the start of the last preceding packet as indicated by said first output signal.

5,329,520

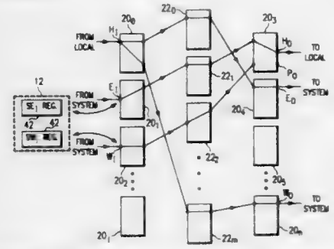
HIGH-SPEED FACILITY PROTECTION IN A DIGITAL TELECOMMUNICATIONS SYSTEM

C. Douglas Richardson, Dallas, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jul. 17, 1992, Ser. No. 915,449

Int. Cl.[5] H04L *1/22*

U.S. Cl. 370—16 14 Claims



1. A method of facility protection by a cross-connect in a telecommunications system, in which a facility is received by the cross-connect at one of first and second input ports from first and second redundant network lines, and is communicated to a head output port, and wherein the cross-connect is configured as a switching matrix of the Clos type having a first stage associated with each of the first and second input ports, a third stage associated with the head output port, and with a center stage for coupling the first and second input ports to the head output port, comprising the steps of:

monitoring the received facility at the first stage of the switching matrix associated with the first input port to detect an errored condition; and

responsive to detecting an errored condition, connecting, at the third stage of the switching matrix associated with the head output port, the head output port to the second input port so that the head output port receives the facility from the second input port.

5,329,521

METHOD AND APPARATUS FOR REDUNDANT LOCAL AREA NETWORK SYSTEMS

Jeffrey R. Walsh, 4203 Ravenhurst Cir., Glen Arm, Md. 21057, and David W. Barrett, 4209 Beckleysville Rd., Hampstead, Md. 21074

Filed Nov. 12, 1992, Ser. No. 975,315

Int. Cl.[5] H04J *1/16*

U.S. Cl. 370—16 12 Claims

1. A local area network system, comprising:

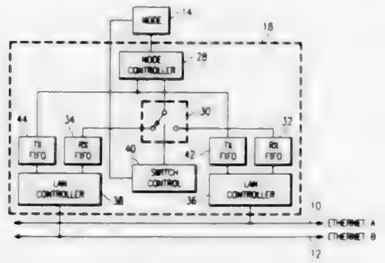
a plurality of communications nodes operable to transmit and receive information conveying data signals;

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a plurality of communications links for transmission of said information conveying data signals between said plurality of communications nodes; and

a plurality of redundant adapters each of which is coupled between one of said plurality of communications nodes and said plurality of communications links such that said one of said plurality of communications nodes is capable of transmitting and receiving said information conveying signals across each of said plurality of communications links, each of said plurality of redundant adapters including:

a plurality of local area network controllers, each of said plurality of local area network controllers operable to transmit and receive said information conveying data signals from one of said plurality of communications links;



a node controller coupled to said each of said plurality of local area network controllers and said one of said plurality of communications nodes operable to transmit and receive said information conveying data signals between said one of said plurality of communications nodes to which said node controller is coupled and said plurality of local area network controllers; and

a processor coupled to said node controller and said each of said plurality of local area network controllers and operable to control said node controller and said each of said plurality of local area network controllers such that said one of said plurality of communications nodes receives only said information conveying data signals that include the least transmissions errors.

5,329,522

SPACE-DIVISION MULTIPLEX COMMUNICATION METHOD OF EXECUTING MULTIPLEX COMMUNICATION

Tasuku Takagi, Sendai, Japan, assignor to Small Power Communication Systems Research Laboratories Co., Ltd., Sendai, Japan

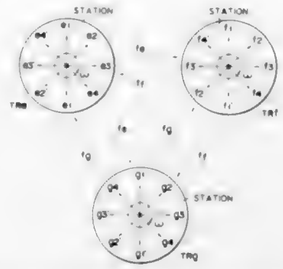
Continuation of Ser. No. 672,418, Mar. 20, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 103,311
Claims priority, application Japan, Mar. 23, 1990, 2-71930
Int. Cl.[5] H04J *3/00*; **H04B** *1/56*
U.S. Cl. 370—29 **4 Claims**

1. A time-division multiplex communication method of executing multiplex communication comprising the steps of:

outputting a plurality of radio beams of a same frequency radiated simultaneously from a transmission station in different directions;

rotating each of said plurality of radio beams at same rotational angular speed; and

allowing a plurality of communication terminals arranged in an area in which said plurality of radio beams radiated in different directions can be received, said radio beams being time divisionally divided by the number calculated in accordance with rotational angular speed and intentionally radiated from a single one of said plurality of communication terminals to each of the other of said plurality of communication terminals, said single communication terminal selecting at least one of said radio beams repeatedly radiated in synchronism with said time divisional timing and receiving only said radio beam in synchronism



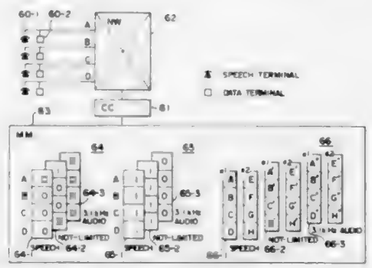
with said time divisional timing, thereby unidirectionally executing a multiplexing for other than said single communication terminal.

5,329,523

EXTENSION AGENT SYSTEM OF ISDN ELECTRONIC EXCHANGE

Sachiko Saito, and Takeshi Uehara, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 15, 1992, Ser. No. 945,130
Claims priority, application Japan, Sep. 18, 1991, 3-237728
Int. Cl.[5] H04J *3/02*; **H04Q** *11/04*; **H04M** *3/54*
U.S. Cl. 370—58.1 **18 Claims**



9. An extension agent system of an ISDN electronic exchange having a switching network to which interfaces grouped into groups are connected, extension agent numbers being respectively assigned to said groups, each of the interface including a plurality of channels of different types, said extension agent system comprising:

management means including a table and operated for managing first information indicating, for each of the different types of channels for each of the interfaces, the number of channels in use, second information indicating, for each of the different types of channels for each of the interfaces, the number of available channels, and third information stored in said table and indicating, for each of the groups in each of the different types of channels, a sequence of the interfaces to be accessed so that one of the interfaces receives a call having the extension agent number; and

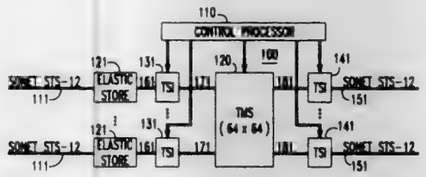
control means, operatively coupled to said management means, for comparing said first information with said second information to determine whether or not there is an available channel in an interface to which said first and second information refer and if a channel is available in said interface, said interface receives a call having the extension agent number and if no channel is available in said interface, said control means selects a next one of the interfaces for receiving a call having the extension agent number on the basis of the third information.

5,329,524

TDM CIRCUIT-SWITCHING ARRANGEMENT THAT HANDLES FRAMES OF DIFFERENT SIZES

Marianne F. Paker, West Chicago; Robert L. Pawelski, Lisle, and William A. Payne, III, Glen Ellyn, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 20, 1992, Ser. No. 963,975
Int. Cl.[5] H04J *14/08*
U.S. Cl. 370—58.1 **32 Claims**



1. A switching arrangement comprising:

means for receiving a plurality of time-division multiplex frames of different sizes; and

time division multiplex (TDM) circuit-switching means connected to the receiving means for interleaving the switching portions of different-size ones of the received frames in a time-shared manner in a single TDM circuit-switching circuitry whose use is shared the different-size ones of the received frames; wherein

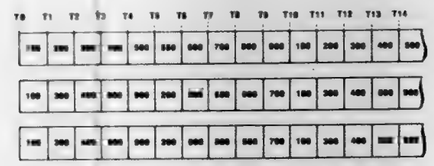
the TDM circuit-switching means commence switching of a received individual frame of any size as soon as an entire said individual frame is received.

5,329,525

SYSTEM AND METHOD APPLICABLE TO AUTOMOTIVE VEHICLES UTILIZING TIME DIVISION MULTIPLEX MODE FOR COMMUNICATING DATA BETWEEN MASTER AND SLAVE STATIONS

Atsushi Sakagami, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Oct. 22, 1990, Ser. No. 601,949
Claims priority, application Japan, Oct. 23, 1989, 1-273830; Oct. 23, 1989, 1-273831; Oct. 24, 1989, 1-274800
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.1 **17 Claims**



1. A time division multiplex communication system, comprising:

a) a master station for sequentially accessing a plurality of slave stations according to a predetermined calling order within a predetermined period of time and for transmitting a required information to any of the slave stations on the basis of information received from one accessed slave station;

b) a transmission line connected between the master station and the plurality of slave stations for transmitting the information between the master station and slave stations; and

c) changing means, responsive to the information received from the one accessed slave station, for changing the predetermined calling order according to the information received by the master station from the one accessed slave station so as to enhance a characteristic of the system for responding to the information from the one accessed slave station,

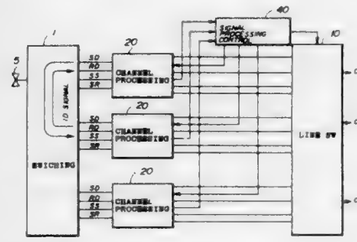
wherein the changing means comprises first means for increasing the access frequency of a particular slave station and at least one other corresponding slave station which carries out an operation in response to the information from the master station.

5,329,526

TRUNK LINE IDENTIFICATION SYSTEM

Shigeru Murata, and Kaoru Nagakura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 12, 1992, Ser. No. 850,134
Claims priority, application Japan, Mar. 18, 1991, 3-052810
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 **16 Claims**



1. A trunk line identification system for one of connecting channels of a first transmission line to a local subscriber of a first station and forming a trunk connection of the first transmission line with a second transmission line to connect the channels to a second station, the trunk line identification system comprising:

a line switch part connected to each of a plurality of channels of a first transmission line;

channel processing parts, coupled to said line switch part, for processing signals received from and transmitted to first and second transmission lines via said line switch part, said line switch part connecting each channel with corresponding channel processing parts; and

a switching system, connected to said channel processing parts, switching signals when relaying a signal received by a first channel processing part from the first transmission line via said line switch part to the second transmission line via said switching system and a second channel processing part,

said second channel processing part transmitting an identification signal to the first channel processing part via said switching system, and

said first channel processing part judging whether or not a line is being used as a trunk line based on whether the identification signal is detected,

said line switch part forming a trunk connection between said first and second channel processing parts when the identification signal is detected.

5,329,527

INTER-LOCAL AREA NETWORK CONNECTING SYSTEM

Yoshihiro Ujihashi; Toshihiro Shikama, and Kiyoshi Watanabe, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1991, Ser. No. 743,750
Claims priority, application Japan, Aug. 27, 1990, 2-225935
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.13 **7 Claims**

1. An inter-local area network (LAN) connecting system in which LANs are connected to an ATM asynchronous transfer

mode, switching network by respective bridge devices to effect communication between terminals connected to different LANs through said bridge devices and said switching network, comprising:

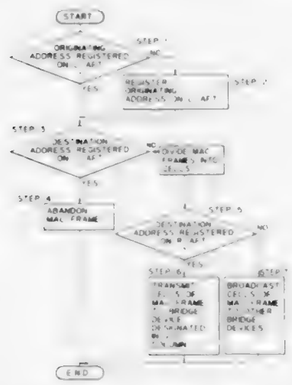
logical connections set between said bridge devices in advance to transfer cells, which are information units of data transfer; and

each of said bridge devices having

means for dividing an information frame received from a terminal connected to a LAN accommodated in this bridge device into a plurality of cells and sending out said cells to said ATM switching network,

means for restoring an information frame from a plurality of cells received from said ATM switching network and sending out said restored information frame to the LAN accommodated in this bridge device,

a first address table on which the addresses of terminals connected to the LAN accommodated in this bridge device are registered and held by learning,



a second address table on which the addresses of terminals connected to LANs accommodated in other bridge devices are registered and held by learning in pairs with identifiers that identify logical connections between this bridge device and other bridge devices,

means for checking address information of an information frame received from a terminal connected to the LAN accommodated in this bridge device or address information of an information frame restored from a plurality of cells received from said ATM switching network against said first or second address table, said checking means for checking each table separately in a predetermined sequence,

means for determining the destination in accordance with the registration condition of said first or second address table, and

means for effecting communication on the basis of the result of the determination.

5,329,528

DUPLEX COMMUNICATION CONTROL DEVICE

Hajima Akai; Hiromichi Ebashi, and Takashi Mizumori, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,502

Claims priority, application Japan, Jun. 26, 1992, 4-169263; Jun. 29, 1992, 4-170719; Jun. 29, 1992, 4-170722; Jul. 6, 1992, 4-178359

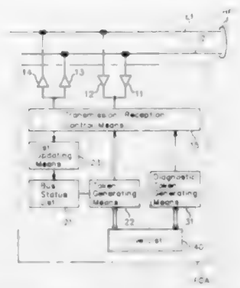
Int. Cl.[5] **H04J** *3/02*

U.S. Cl. 370—85.4 **10 Claims**

1. A duplex communication control device for transmitting and receiving data among a plurality of communication stations by passing a token between said plurality of communication stations connected to a first communication line and a second communication line, each of said plurality of communication stations comprising

bus status list means for storing information indicating whether a station can communicate over said first and second communication lines;

token generating means for carrying a newest bus status information, indicating whether the communication lines can be used or not be used, on a token frame and for outputting said token frame for transmission over said first and second communication lines;



list updating means for receiving said token frame transmitted over said first and second communication lines and for updating contents of a bus status list according to the bus station information carried on said token frame; and

transmission-reception means for selecting a predetermined one or alternate ones of said first and second communication lines for communication when said bus status information contained in said bus status list indicates that a predetermined one or at least one of said first and second communication lines can be used.

5,329,529

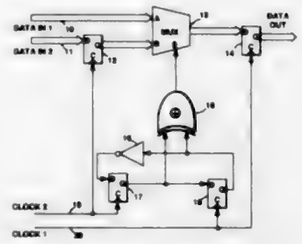
DIGITAL DATA ARBITRATION APPARATUS

Peter M. Murphy, Carmel, and Gregory G. Tamer, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Apr. 2, 1993, Ser. No. 42,179

Int. Cl.[5] **H04J** *3/02*

U.S. Cl. 370—85.6 **9 Claims**



7. Apparatus for selectively multiplexing first and second data signals from separate data paths, wherein the first and second data signals from the respective data paths occur at different sample rates determined by respective associated first and second clock signals and are non-synchronous, said apparatus comprising:

first and second data paths for providing said first and second data signals;

a source of said first and second clock signals respectively associated with said first and second data signals available on said first and second data paths;

a multiplexer having a first input port coupled to said first data path, a second input port coupled to said second data path, a control input port and an output port;

means coupled to the output port of said multiplexer and responsive to said first clock signal, for sampling signal provided by said multiplexer synchronous with said first clock signal; and

logic means coupled to receive said first and second clock signals and responsive to said second clock signal for initiating generation of a control signal, and responsive to said first clock signal for terminating generation of said control signal, and wherein said control signal is coupled to the control input port of said multiplexer for conditioning said multiplexer to pass data from said second data path on the occurrence of a pulse of said second clock signal, and to pass data from said first data path otherwise.

5,329,530

RADIO CONNECTION SYSTEM

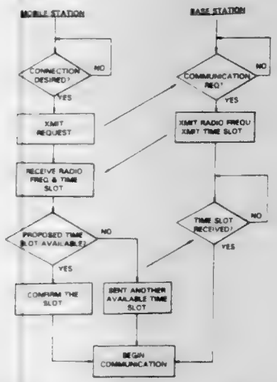
Susumu Kojima, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 26, 1992, Ser. No. 966,866

Claims priority, application Japan, Oct. 25, 1991, 3-307035

Int. Cl.[5] **H04B** *7/212*

U.S. Cl. 370—85.7 **4 Claims**



1. An interconnection method for use with a radio connection system for a mobile communication system comprising a plurality of base stations and a plurality of mobile units connectable to said base stations over TDMA (Time Division Multiple Access) communication channels, said method comprising:

said radio base stations each assigning only a radio communication channel frequency and not assigning time slot information to one of said mobile units which has sent a connection request to the base station,

said each base station awaiting a response from the mobile unit at any time slot on said radio frequency, and assigning a time slot as a communication channel when said response is received, and

said mobile unit sensing a carrier on said radio frequency over at least one TDMA frame to find unoccupied time slots and sending said response to said base station in one of said unoccupied time slots.

5,329,531

METHOD OF ACCESSING A COMMUNICATION MEDIUM

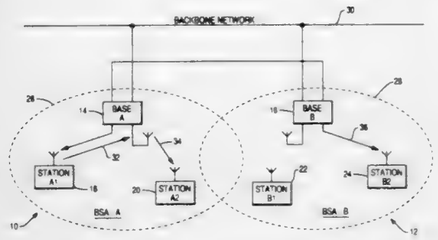
Wilhelmus J. M. Diepstraten, Diessen, and Hendrik van Bokhorst, MB Nijkerk, both of Netherlands, assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 18, 1993, Ser. No. 78,099

Claims priority, application United Kingdom, Mar. 6, 1993, 9304636

Int. Cl.[5] **H04J** *3/24*

U.S. Cl. 370—94.2 **2 Claims**



1. A method of accessing a communication medium of a local area network for isochronous and asynchronous communication between a plurality of communication stations which communicate by way of a base station, comprising the steps of:

generating uniform timing periods in said base station;

accessing the medium each period with at least one isochronous packet from the base station With a higher access priority than any asynchronous packets pending at the commencement of each timing period;

delaying any asynchronous packets in each timing period until the at least one isochronous packet and any isochronous traffic transmitted in response thereto have attempted access to the medium; and

accessing the medium for transmission of the asynchronous packets during the remainder of each timing period,

wherein one isochronous packet is transmitted from the base station each timing period and the one packet contains all the isochronous communication data which is to be transmitted to the communication stations in that period,

wherein each communication station having an asynchronous packet to transmit in a timing period receives the one isochronous packet to determine how much isochronous traffic will occur in the period and adjust its access delay accordingly.

5,329,532

LOGIC CIRCUIT WITH ADDITIONAL CIRCUIT FOR CARRYING OUT DELAY TEST

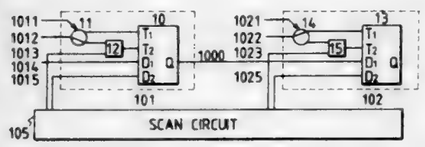
Mitsuji Ikeda; Kazumi Hatayama, both of Katsuta, and Terumine Hayashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 6, 1991, Ser. No. 755,837

Claims priority, application Japan, Sep. 10, 1990, 2-237175

Int. Cl.[5] **H04B** *17/00*

U.S. Cl. 371—22.3 **9 Claims**



1. A logic circuit comprising:

a combination logic for executing at least one predetermined

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logical function, wherein said combinational logic includes first and second flip-flop circuits connected in series,

wherein said first and second flip-flop circuits comprise:

a system data input pin for inputting a system data,

a first clock input pin for inputting a first clock signal which causes said system data to be stored in a respective one of said first and second flip-flops;

a scan data input pin for inputting a scan data,

a second clock input pin for inputting a second clock signal which causes said scan data to be stored in a respective one of said first and second flip-flops,

first switching means for selecting, in response to a first control signal given to a first control input pin thereof, a destination of a system clock signal for said first flip-flop circuit by switching between said first clock input pin and said second clock input pin of said first flip-flop circuit,

second switching means for selecting, in response to a second control signal given to a first control input pin thereof, a destination of a system clock signal for said second flip-flop circuit by switching between said first clock input pin and said second clock input pin of said second flip-flop circuit,

means for generating said first control signal to be given to said first control input pin of said first switching means for effecting said scan data to be input through said scan data input pin of said first flip-flop circuit therein, in response to said system clock signal for said first flip-flop circuit, and

means for generating said second control signal to be given to said first control input pin of said second switching means for effecting output data of said combination logic to be entered through said system data input pin of said second flip-flop circuit therein, in response to said system clock signal for said second flip-flop circuit

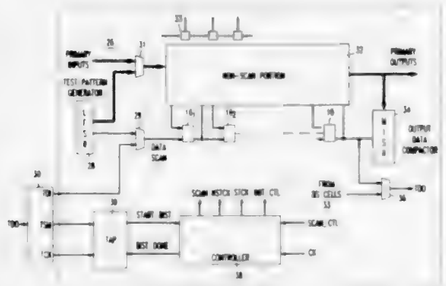
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5,329,533

PARTIAL-SCAN BUILT-IN SELF-TEST TECHNIQUE

Chih-Jen Lin, Lawrenceville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 26, 1991, Ser. No. 813,521
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.3 **11 Claims**



1. A method for testing an integrated circuit containing a plurality of flip-flops, a selected group of which is arranged in a scan chain for effectuating partial-scan testing of the integrated circuit, the method comprising the steps of:

(a) replacing each non-scan chain flip-flop which is self-looping with an initializable, non-scan flip-flop;

(b) initializing each flip-flop to a known state;

(c) placing the integrated circuit in a non-operational mode;

(d) shifting a first test vector into the scan chain flip-flops while simultaneously scanning out bits previously shifted into the scan chain flip-flops;

(e) returning the integrated circuit to a normal operating mode;

(f) applying first and second test vectors to the integrated circuit to cause it to generate a response and cause a bit to be shifted into each of the scan chain flip-flops;

(g) compacting the response of the integrated circuit with the bits shifted out of the scan chain flip-flops to yield a stream of bits indicative of the operation of the circuit; and

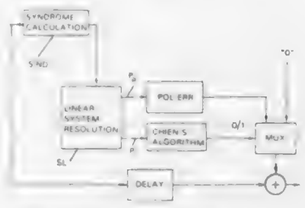
(h) repeating steps (c)–(g) a predetermined number of times.

5,329,534

"SYSTEM, DEVICES AND ALGORITHMS FOR THE ERROR CORRECTION IN DIGITAL TRANSMISSION"

Silvio Cucchi, Gaggiano; Giorgio Parladori, Verona, and Paolo Zapparoli, Varese, all of Italy, assignors to Alcatel Italia S.p.A., Milan, Italy

Filed Feb. 12, 1991, Ser. No. 654,272
Claims priority, application Italy, Feb. 14, 1990, 19360 A/90
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 **6 Claims**



1. A system for error correction in digital transmission using Reed-Solomon encoding/decoding techniques, said system comprising:

means for receiving coded data signals;

means for calculating syndromes of $S_i \ldots S_{i+1}$ of said coded data;

means for establishing coefficients of a locator polynomial;

means for establishing coefficients of an error polynomial defined by the equation

$$P_A(X) = E_0x^{t0} + \ldots + E_{t0-1}x + E_{t0} = \sum_{i=0}^{t0} E_ix^{t0-i}, \quad \text{(F1)}$$

where $P_A(\alpha^i)=f(e_i)$, with $f(e_i)$ being a function of the amplitude error in position i;

means for constructing a set of t equations for said error polynomial;

means for multiplying each equation of said set of equations by a predetermined constant representing a generic error in amplitude and position;

means for summing all terms of each equation of said set of equations multiplied by said predetermined constant to provide a generic syndrome;

means for substituting said generic syndrome in said set of equations to provide a revised set of t equations forming an error correction output;

means for modifying said locator polynomial;

means for determining error positions and related amplitudes by using Chien's algorithm on said modified locator polynomial to provide an error determination output;

means for multiplexing between said error correction output and a zero output based upon said error determination output to provide an output signal; and

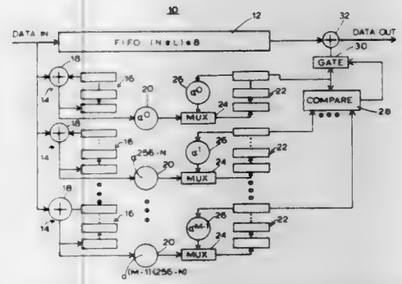
summing means for combining said coded data signals, delayed in time, with said output signal.

5,329,535

VARIABLE BLOCK LENGTHS ON-THE-FLY ERROR CORRECTING DECODER

Jonathan D. Coker, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,593
Int. Cl.[5] H03M *13/22*
U.S. Cl. 371—39.1 **6 Claims**



1. An ECC decoder used with variable block lengths for on-the-fly single burst correction comprising:

delay register means for sequentially receiving consecutive data subblocks at a delay register data input and for sequentially transferring said consecutive data subblocks to a delay register data output; each data subblock containing a predetermined number of error check bytes M; and said delay register means having a capacity equal to a subblock size of N*L bytes where N equals a maximum number of bytes per interleave and L equals an interleave level;

a plurality M of partial syndrome generator means for sequentially receiving consecutive subblocks of data and generating partial syndromes; where M equals said number of error check bytes; each of said plurality M of partial syndrome generator means including a programmable finite field multiplier;

compare means for comparing said generated partial syndromes;

a first one of said plurality M of partial syndrome generator means coupled to said delay register data output for selectively adding an error pattern to a transferred data subblock responsive to said compare means; and

wherein each of said plurality M of partial syndrome generator means includes a first register ring and a second register ring, said first and second register rings including L registers, and said programmable finite field multiplier transfers a partial syndrome generated by said first register ring to said second register ring.

5,329,536

METHOD AND APPARATUS FOR SEQUENTIALLY DECODING A DIGITAL STREAM ENCODED BY A CONVOLUTION TYPE ERROR-CORRECTING CODE

Marc Darmon, Paris; André Bazet, Clichy, and Pascal Brelivet, Paris, all of France, assignors to Alcatel Transmission par Faisceaux Hertziens A.T.F.H., Lavallois Perret Cedex, France

Filed Mar. 28, 1991, Ser. No. 676,489
Claims priority, application France, Mar. 30, 1990, 90 04090
Int. Cl.[5] G06F *11/10;* **H03M** *13/12*
U.S. Cl. 371—43 **6 Claims**

1. A method of sequentially decoding a block of a digital stream encoded by a convolution type error-correcting code, said sequential decoding making use of a stack algorithm wherein a plurality of entries are maintained in a stack with each entry corresponding to a node in a logic tree, each node having an associated metric corresponding to a probability that said node is a part of a correct decoding path through said logic tree, the nodes being stored in said stack in order according to their metric values with the node with the highest metric at the top of said stack, wherein, for each group of received coded bits corresponding to a single unencoded bit, said method comprises the steps of:

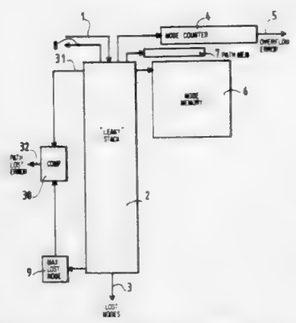
removing the node at the top of said stack;

calculating metrics of the two nodes following said removed node in said logic tree;

placing said two nodes in said stack; and

sorting said stack according to metric values so that the node with the highest metric value is at the top of said stack,

wherein said stack is a small-sized stack having a leaky bottom for losing the lowest-metric nodes when other nodes are added at the top of said stack, and wherein said method further comprises storing a total count of nodes



observed during the decoding of a block, and determining that decoding of said block is to be abandoned upon said count exceeding a limit value which is fixed in advance and which is greater than the size of said stack,

wherein said digital stream comprises a sequence of transitions of at least first and second types, the method being of the type in which all nodes which have been represented by entries in said stack during decoding of a block are stored together with their respective depths, wherein even numbered nodes are correspond to a first type of transition, e.g. zero, and odd numbered nodes correspond to a second type of transition, e.g. +1, so that there is no need to store the transition corresponding to each node since said transition is constituted by the LSB of the node number.

5,329,537

METHOD OF MAXIMUM LIKELIHOOD DECODING WITH SUB-SAMPLED DECODING TRELLIS, AND CORRESPONDING DECODING DEVICE

Michel Alard, Paris; Damien Castelain, and Jean-François Helard, both of Rennes, all of France, assignors to France Telecom, Paris, France

Filed Jan. 21, 1993, Ser. No. 7,140
Claims priority, application France, Jan. 24, 1992, 92 01047
Int. Cl.[5] G06F *11/10;* **H03M** *13/12*
U.S. Cl. 371—43 **10 Claims**



1. A method for the maximum likelihood decoding of a sequence of samples corresponding to the convolutional coding of a sequence of digital source elements, of the type imple-

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menting a Viterbi algorithm type of decision algorithm, defining an initial decoding trellis, constituted by a set of nodes corresponding to the possible states of the coding, each node being connected to its most probable direct antecedent node, and consisting in making a trace-back of an optimum path in said trellis, said method comprising the following steps

sub-sampling, by a ratio p, of said initial trellis, consisting in preserving only the nodes corresponding to one sample out of p consecutive samples and in associating, with each of the nodes preserved, an information element identifying its p order antecedent node in said initial trellis,

the trace-back of an optimum path in the sub-sampled trellis, by the association, with each node considered, of the p order antecedent node, delivering an information element designating the last two nodes of said optimum path,

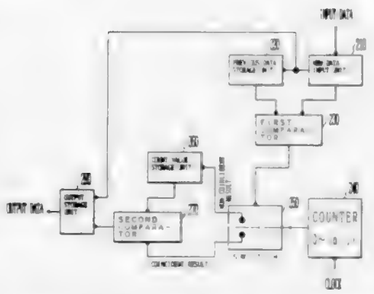
over-sampling by a ratio p by association, with said information element designating the last two nodes of said optimum path, of a decoding sequence corresponding to said last two nodes as well as to all the p-1 intermediate nodes not preserved during said sub-sampling step, p being an integer strictly greater than 1 chosen so that there is a single path between a node and its p order antecedent in said initial trellis.

5,329,538

CIRCUIT FOR PROVIDING DIGITAL DATA HAVING HIGH CLARITY IN A DIGITAL SIGNAL RECEIVER

Hisato Kawano; Takashi Tabu; Shigeru Sekine, and Masaki Kira, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 6, 1992, Ser. No. 846,939
Claims priority, application Japan, Mar. 8, 1991, 3-043221
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—57.2 **3 Claims**



1. An apparatus for providing output data having high clarity based on previous data and at least one time-series digital input signal within a time period, comprising:

counter means for cyclically counting clock signals produced by a clock independent of the input signal in the time period;

data change detecting means for detecting a first comparison result between input data extracted from the input signal by said clock and previous data extracted by said clock, the first comparison result being selected from a coincident result and a non-coincident result;

count value storage means for storing in memory a counter value provided by said counter means when the first comparison result detected by said data change detecting means is the non-coincident result;

comparing means for comparing the count value stored in the storage memory with a second counter value provided by said counter means in order to output a second comparison result selected from the coincident result and the non-coincident result, detecting means is the coincident result; and

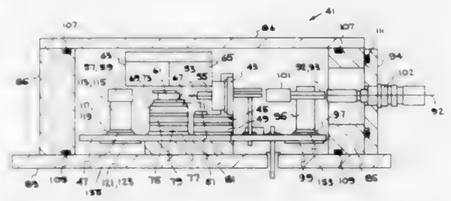
output means for storing the input data as output data when the second comparison result detected by said comparing means is the coincident result.

5,329,539

EFFICIENT LASER CONFIGURATION

Leonard P. Pearson, Sunnyvale; Todd E. Olson, Palo Alto, and Hop G. Nguyen, Sunnyvale, all of Calif., assignors to Lightwave Electronics, Mountain View, Calif.

Filed Oct. 28, 1991, Ser. No. 783,532
Int. Cl.[5] H01S *3/045*
U.S. Cl. 372—36 **22 Claims**



1. Compact solid state laser apparatus comprising:

laser diode pumping means, having an electrical power supply, for producing and issuing a pump light beam of a predetermined output wavelength λ_P, the laser diode pumping means including a heating module to thermally tune the output wavelength of the laser diode pumping means;

beam forming optics means for receiving the pump light beam and for forming and issuing a reformed light beam having predetermined optical characteristics, the beam forming optics means including a heating module and a region of meltable and solidifiable material in contact with the heating module to allow optical alignment of the beam forming optics means;

laser gain means for receiving the reformed light beam and for producing and issuing a laser gain means output light beam of predetermined output wavelength λ_L, the laser gain means including a solid state laser gain crystal, an optical resonator, a heating module and a region of meltable and solidifiable material in contact with the heating module to allow optical alignment of the laser gain means and to thermally tune the output wavelength of the laser gain crystal;

photodetector means, electrically connected to the laser diode means, for receiving a predetermined small fraction of the laser gain means output light beam and for adjusting the electrical power supplied to the laser diode pumping means to suppress the appearance of undesirable oscillations in the laser gain means output light beam, the photodetector means including a heating module and a region of meltable and solidifiable material in contact with the heating module to allow optical alignment of the photodetector means; and

an optical platform that is mechanically rigid, is thermally conductive, is electrically non-conductive and has low thermal expansion, the optical platform supporting the laser diode pumping means, the beam forming optics means, the laser gain means and the photodetector means.

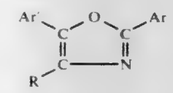
5,329,540

SILICATE GEL DYE LASER

Ilzoo Lee, and Josephine Covino-Hrbacek, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1993, Ser. No. 51,106
Int. Cl.[5] H01S *3/20*
U.S. Cl. 372—53 **8 Claims**

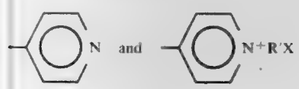
1. A dye laser comprising a laser dye gel and a pumping energy source operably coupled therewith and capable of producing stimulated emission of the dye gel, the dye gel comprising a lasing concentration of an organic dye soluble in water or alcohol in a transparent silica gel, wherein the organic dye has the formula:



wherein,

R is H or CH_3;

Ar is selected from the group consisting of

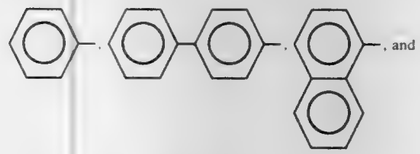


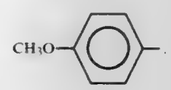
wherein

R' is —H, or an alkyl from 1 to 10 carbon atoms,

X is an anion; and,

Ar' is selected from the group consisting of



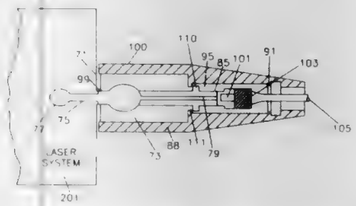


5,329,541

LASER CONNECTOR CONVERSION ADAPTOR

Joseph D. Brown, Acworth, Ga., assignor to CeramOptec, Inc., Enfield, Conn.

Filed May 11, 1992, Ser. No. 881,358
Int. Cl.[5] G02B *6/32;* **H01S** *3/097*
U.S. Cl. 372—88 **18 Claims**



1. A laser connector conversion adaptor system for rendering a pre-existing laser system inside connector receptive to and connectable to an otherwise non-fitting, incompatible outside connector, which comprises:

(a) a locking sleeve having a system end for connection to an inside connector and a rearward end for connection to an outside connector which is a non-fitting and incompatible with said inside connector; and,

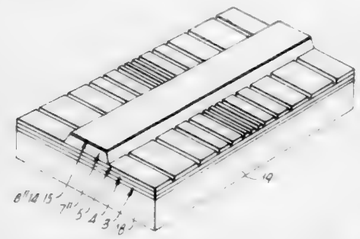
(b) a captive sleeve assembly located at least partially within said locking sleeve, including a pigtail attachment having a forward end and a rearward end, said forward end of said pigtail attachment being adapted to connect to a pre-existing laser system outside connector with extended fiber by attachment to said forward end of said pigtail attachment to said extended fiber, said pigtail attachment having a connective means for receiving a final outside connector for attachment to and compatible with an inside connector, said pigtail attachment having locking means with a first position and a second position within said locking sleeve and within said captive sleeve such that when said locking means is in said first position, the pigtail attachment is not removable from said locking sleeve to connect to an outside connector, and also such that when said locking means is in said first position said final outside connector is not connected to said connective means of said pigtail attachment, and when said locking means is in said second position within said locking sleeve and within said captive sleeve, said final connector is connected to said connective means of said pigtail attachment and said pigtail attachment is removable from said locking sleeve sufficiently to connect said final outside connector to an inside connector of a laser system.

5,329,542

DISTRIBUTED FEEDBACK LASERS

Leslie D. Westbrook, Ipswich, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB90/00488, § 371 Date Nov. 1, 1991, § 102(e) Date Nov. 1, 1991, PCT Pub. No. WO90/12436, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 2, 1990, Ser. No. 781,178
Claims priority, application United Kingdom, Mar. 31, 1989, 8907304
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—96 **15 Claims**



1. A distributed feedback laser comprising a laser medium and optical feedback to said laser medium, the optical feedback comprising periodic perturbations of the refractive index and/or gain of the laser medium, wherein said periodic perturbations are provided in a grating region which is distributed along the laser, the level of feedback provided by said perturbations varying throughout said grating region, characterised in that said level of feedback tends to zero at at least one of the ends of said grating region.

5,329,543

PULSED LASER USING A MOVING INTRACAVITY PHOTON DEFLECTOR AS A BEAM EXTRACTOR

Richard C. Paschal, 6608 Jocelyn Hollow Rd., Nashville, Tenn. 37205

Filed Aug. 24, 1992, Ser. No. 933,860
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—98 **10 Claims**

1. A pulsed laser system producing plural beam emission from momentary pulsed extraction of an intracavity circulating beam, said system comprising:

(a) a conventional laser generator means including a resonator and a means for producing an intracavity beam;

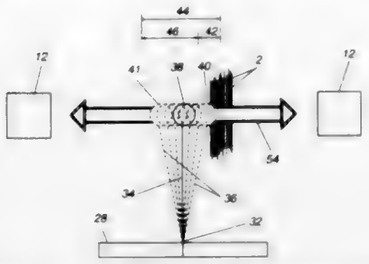
(b) a photon deflector means disposed within said resonator

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cavity for intercepting and deflecting lasing photons eminating at an angle to an optical axis of said resonator without causing power loss of said circulating beam;

(c) means for initiating, maintaining, and controlling motion of said photon deflector such that photons traveling in either direction on either side of said deflector are deflected out of said resonator while maintaining substantially constant power within said resonator;

(d) means for receiving, colimating, and extracting said deflected photons such that by varying rate and timing of the deflector means a colimated beam of coherent light pulses are produced.



5,329,544

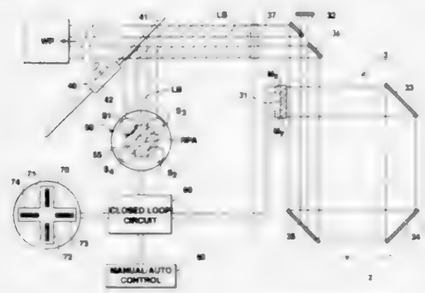
LASER CONTROL SYSTEM

Avigdor Shachrai, Natania; Haim Mukatel, Nes Ziona; Zion Resivan, Bat Yam, and Shlomo Turgeman, Rishon Lezion, all of Israel, assignors to MLI Industrial Lasers (1992) Ltd., Neve Sheret, Israel

Filed Dec. 18, 1992, Ser. No. 995,407

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—107 **20 Claims**



1. A control system for a laser outputting a laser beam, comprising:

an angularly displaceable control mirror for controlling the position of the outputted laser beam;

a drive for angularly displacing said control mirror;

sensor means located to sense the position of the outputted laser beam;

and a control circuit connected to said sensor for measuring any positional deviation of the outputted laser beam from a reference position, and for controlling said drive in response thereto to angularly displace said control mirror to correct said positional deviation.

5,329,545

TUYERE FOR INSTALLATION IN HEARTH OF ELECTRIC ARC FURNACE

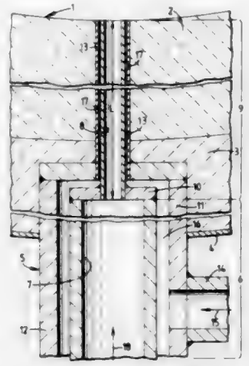
Roger Dudill, Solihull, and Michael F. E. Kingston, Warrington, both of United Kingdom, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 7, 1992, Ser. No. 987,034

Claims priority, application United Kingdom, Dec. 7, 1991, 9126068

Int. Cl.[5] F27D *1/00*; **C21B** *7/16*

U.S. Cl. 373—72 **12 Claims**



1. A tuyere for injecting gas into a refractory lined hearth of an electric arc furnace comprising an inlet portion and an outlet portion, said tuyere adapted for removable insertion into said hearth of said furnace with part of said inlet portion extending outwardly of said furnace and said outlet portion extending through said refractory lined hearth to conduct gases from outside said furnace into said refractory lined hearth;

said inlet portion including a primary inlet passage of a first cross-sectional area therethrough, said primary inlet passage surrounded by a first annular passage;

said outlet portion including a primary outlet passage of a second cross-sectional area therethrough, said primary outlet passage surrounded by a second annular passage; said first cross-sectional area being greater than said second cross-sectional area,

said primary inlet and outlet passages are in fluid communication with each other; said primary inlet passage adapted to introduce a high pressure gas into said tuyere; said primary inlet and outlet passages constructed and arranged so that gas exiting said tuyere into said furnace is at supersonic velocity when said gas introduced into said tuyere has a source pressure of at least 18 bar absolute;

said first and second annular passages are in fluid communication with each other and constructed and arranged to permit a cooling gas to surround said primary inlet and outlet passages and exit said tuyere inside said furnace.

5,329,546

CLOCK RECOVERY STABILIZATION METHOD AND CIRCUIT IN A RECEIVER OF A CODE DIVISION MULTIPLE ACCESS/DIRECT SEQUENCE (CDMA/DS) SYSTEM

Chang-Yong Lee, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 25, 1993, Ser. No. 22,361

Claims priority, application Rep. of Korea, Nov. 27, 1992, 22617/1992

Int. Cl.[5] H04L *27/30*

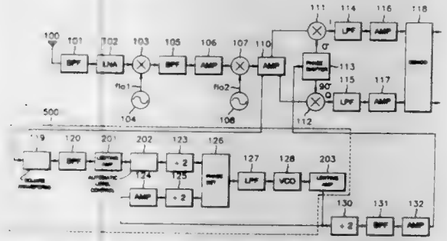
U.S. Cl. 375—1 **22 Claims**

1. A process for down-converting a spread spectrum signal

with first and second local oscillating signals, generating an amplified signal by amplifying the down-converted signal, separating the amplified signal into intermediate base band signals for I and Q channels, and demodulating the separated signals in a code division multiple access/direct sequence receiver, wherein said step of separating the amplified signal into intermediate base band signals for I and Q channels comprises the steps of:

squaring said amplified signal to provide a square wave signal, producing a filtered signal by filtering said square wave signal, said filtered signal being a spread spectrum signal of N times an intermediate frequency, and limit-amplifying the filtered signal to provide a limited signal maintained at a given amplitude;

generating an adjusted signal by automatically adjusting an input amplitude of said limited signal to exhibit a deviation of less than one decibel;



dividing a frequency of said automatically adjusted signal by N to produce an intermediate frequency signal;

recovering a clock signal by making a comparison of said intermediate frequency signal with a feedback signal, producing an oscillation signal in response to a phase difference obtained by said comparison, and limit-amplifying said oscillation signal to recover said clock signal;

maintaining said oscillating signal at a constant amplitude;

dividing a frequency of said oscillation signal by N to produce said feedback signal; and

dividing said frequency of said oscillation signal to produce a stable carrier signal, phase shifting said stable carrier signal, in quadrature, to produce first and second carrier signals and separately mixing said amplified signal with the first and second carrier signals to provide said intermediate base band signals for said I and Q channels.

5,329,547

METHOD AND APPARATUS FOR COHERENT COMMUNICATION IN A SPREAD-SPECTRUM COMMUNICATION SYSTEM

Fuyun Ling, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 11, 1993, Ser. No. 31,258

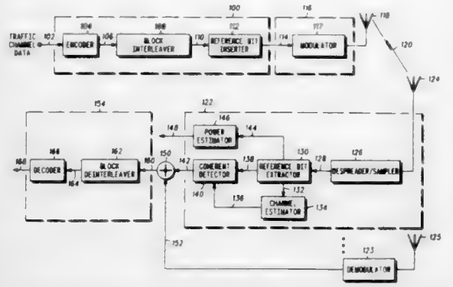
Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 **42 Claims**

1. A communication unit comprising:

(a) reference means for inserting reference symbols into a stream of input data symbols to form a reference coded stream of input data symbols; and

(b) spreading means, operatively coupled to the reference means, for preparing the reference coded stream of input data symbols for transmission over a communication channel by spreading the reference coded stream of input



data symbols with a spreading code prior to transmission over the communication channel.

5,329,548

BASE STATION FOR A FREQUENCY HOPPING TDMA RADIO COMMUNICATION SYSTEM

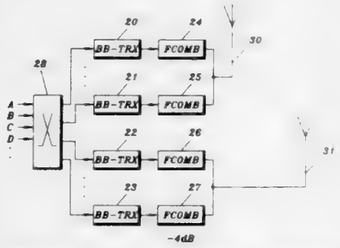
Lars U. Borg, Stockholm, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed Mar. 26, 1993, Ser. No. 37,410

Claims priority, application Sweden, Mar. 27, 1992, 9200962-0

Int. Cl.[5] H04J *4/00*; **H04B** *1/00*

U.S. Cl. 375—1 **6 Claims**



1. A base station for cellular frequency hopping TDMA radio communication systems, comprising:

at least two transmitter groups, each including at least one transmitter, each transmitter group being permanently connected to one respective antenna in an antenna group of a cell, and

means for controlled frequency hops in at least one TDMA channel, such that the signal bursts thereof are distributed on different transmitter groups and therefor on different antenna within the antenna group.

5,329,549

SIGNAL PROCESSING METHOD FOR A GPS RECEIVER

Kenichiro Kawasaki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 2, 1993, Ser. No. 100,143

Claims priority, application Japan, Aug. 5, 1992, 4-208768

Int. Cl.[5] H04L *7/04*

U.S. Cl. 375—1 **2 Claims**

1. A method for searching a carrier frequency and code phase of a signal received by a GPS receiver, comprising steps of:

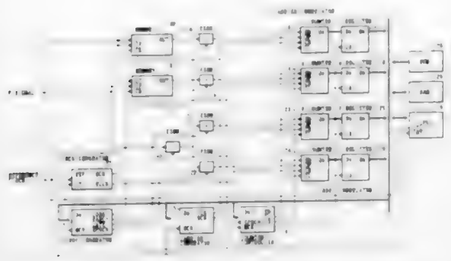
quantizing the received signal;

sampling the quantized signal at a first speed by a carrier frequency generated in the receiver;

storing the samples in a memory at said first speed;

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reading the samples from the memory at a second speed faster than said first speed; and



determining a correlation between a code of the received signal from the samples read from the memory and a code generated in the receiver.

5,329,550

SIGNAL PROCESSING CIRCUIT FOR THE EUROPEAN DIGITAL CELLULAR RADIO SYSTEM

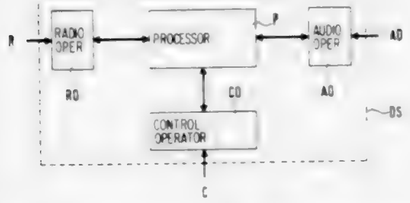
Emmanuel Rousseau, Paris, and Luc Dartois, Carrieres sous Poissy, both of France, assignors to Alcatel Radiotelephone, Paris, France

Filed Nov. 14, 1991, Ser. No. 791,401

Claims priority, application France, Nov. 15, 1990, 90 14211

Int. Cl.[5] H04B *1/38;* **H04L** *5/16*

U.S. Cl. 375—7 **14 Claims**



1. Signal processing circuit for a digital cellular radio system, said signal processing circuit continuously exchanging speech samples with a converter circuit (AD), exchanging baseband digital signals with a radio circuit (R) and exchanging data and signalling information with a control circuit (C) which also transmits processor control signals to it, characterized in that said signal processing circuit comprises a control operator (CO), a processor (P) which controls an audio operator (AO) and a radio operator (RO), said audio operator (AO) receiving said speech samples and transmitting them to said processor and receiving them from said processor in groups of samples, said radio operator (RO) receiving said baseband digital signals and transmitting them to said processor and receiving them from said processor in batches, said control operator (CO) routing and formatting said data, said signalling information and said processor control signals, said processor (P) being adapted to perform digital processing associated with said speech samples, in particular in a terminal, in accordance with information produced by said operators and to provide information addressed to said operators and being thus relieved of processing operations carrier out by said operators.

5,329,551

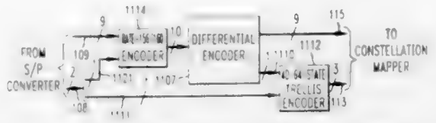
OVERLAPPED MULTILEVEL CODES

Lee-Fang Wei, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 16, 1992, Ser. No. 869,991

Int. Cl.[5] H04L *25/34, 25/49*

U.S. Cl. 375—17 **35 Claims**



1. A method for encoding input data comprising the steps of

encoding a first portion of said input data at least using a first redundancy code to provide a first encoded signal having at least a first portion, and

encoding a second portion of said input data along with said first portion of said first encoded signal using a second redundancy code to provide a second encoded signal.

5,329,552

METHOD OF BINARY ENCODING THE POINTS OF A CONSTELLATION USED IN A MULTICARRIER MODULATION OF OFDM TYPE

Tristan de Couasnon, Rennes; Raoul Monnier, Noyal sur Vilaine; Yvon Fouche, Chatenay Malabry, and Jean-Bernard Rault, Acigne, all of France, assignors to Thomson-CSF, Puteaux, France

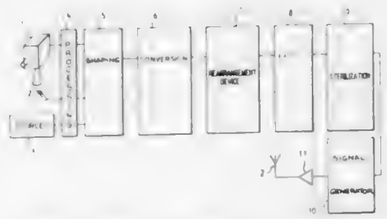
PCT No. PCT/FR92/00117, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/14315, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 11, 1992, Ser. No. 941,057

Claims priority, application France, Feb. 12, 1991, 91 01584

Int. Cl.[5] H04L *27/04, 27/12, 27/20*

U.S. Cl. 375—59 **3 Claims**



1. A method of binary encoding the N points of a constellation corresponding to the discrete positions in amplitude and in phase, associated with the encoding of binary words of a digital signal in a multicarrier modulation of OFDM type (Orthogonal Frequency Division Multiplexing) consisting in assigning to each channel of the multicarrier modulation a constellation of N points, by random drawing from a finite number of predetermined constellations, wherein said assigning is carried out only once, and assigning to each two adjacent points of each predetermined constellation binary words which differ from one another by at most two bits.

5,329,553

DECIMATION FILTER FOR A SIGMA-DELTA CONVERTER AND DATA CIRCUIT TERMINATING EQUIPMENT INCLUDING THE SAME

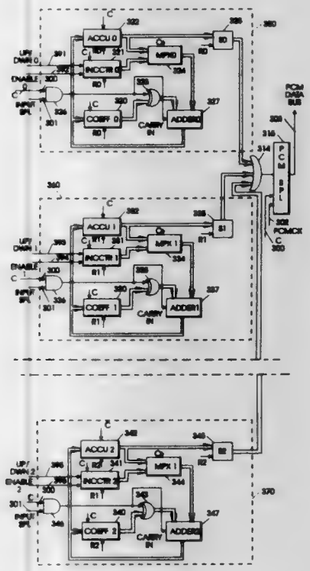
Jean-Claude Abbiate, La Gaude; Alain Blanc, Vence; Patrick Jeanniot, La Gaude, and Gerard Richter, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1992, Ser. No. 878,128

Claims priority, application European Pat. Off., Jul. 17, 1991, 91480115.4

Int. Cl.[5] H04B *14/06;* **H04L** *7/06*

U.S. Cl. 375—28 **7 Claims**



1. A decimation filter for converting an input train of sigma-delta pulses that includes a sigma-delta clock (fs) in synchronism with the sigma-delta clock into a train of Pulse Code Modulation (PCM) samples that include a PCM clock in accordance with the formula

$$H(f) = \left(\frac{\sin\left(\frac{N\pi f}{fs}\right)}{N \sin\left(\frac{\pi f}{fs}\right)} \right)^{p}$$

wherein N is the decimation factor, f the frequency and p an integer,

said filter comprising means for computing on PCM sample from a sequence of L sigma-delta samples in synchronism with the PCM clock,

characterized in that it further includes:

means for determining whether a phase correction has to be introduced in said PCM in order to lock the generation of the PCM samples on the sigma-delta clock extracted from the train of sigma-delta pulses, and

means responsive to said determination for shifting the computation process of said sequence by at least one sigma-delta clock pulse in order to provide phase control in the generation of the train of PCM samples.

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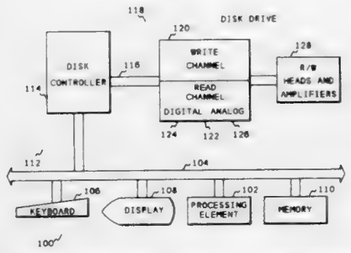
DIGITAL PULSE DETECTOR

Richard T. Behrens, Louisville; Trent Dudley, Littleton, and Neal Glover, Broomfield, all of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed May 8, 1992, Ser. No. 879,938

Int. Cl.[5] H04L *27/06*

U.S. Cl. 375—94 **21 Claims**



16. A circuit for detecting pulses in a continuous signal, said circuit comprising:

an analog to digital converter for converting said signal to digital sample values at controlled sampling times;

at least one data storage register connected to an output of said analog to digital converter for storing a previous digital sample value as said digital sample value is created at said controlled sampling time; and

at least one comparator connected to said at least one data storage register and connected to an output of said analog to digital converter for comparing a sign bit of each of said stored digital sample values and a sign bit of a current digital sample value from said analog to digital converter and for indicating a pulse at a most recently stored digital sample value if a sign bit of a next most recently stored digital sample value is not equal to a sign bit of said most recently stored digital sample value and a sign bit of said current digital sample value is equal to a sign bit of said most recently stored digital sample value.

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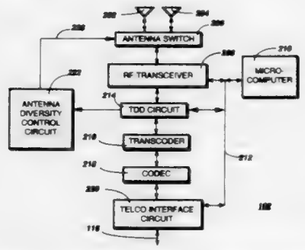
METHOD AND APPARATUS FOR ANTENNA DIVERSITY IN A WIRELESS COMMUNICATION SYSTEM

Paul Marko, Ft. Lauderdale; Craig Wadin, Sunrise, and Gary S. Lobel, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 9, 1992, Ser. No. 941,587

Int. Cl.[5] H04B *7/10;* **H04L** *1/02*

U.S. Cl. 375—100 **17 Claims**



1. A method for selecting one of at least two antennas in a communication unit for use in a wireless communication system, the method comprising the steps of:

(a) receiving during a receiving period a signal from a currently selected one of the at least two antennas, the signal

transmitted in a digital communications format comprisig a plurality of valid data patterns and an invalid data pattern that is not transmitted,

(b) determining the number of data patterns in the signal received in step (a) that comprise the invalid data pattern; and

(c) selecting for a subsequent receiving period one of the at least two antennas in response to the number of invalid data patterns determined in step (b)

5,329,556

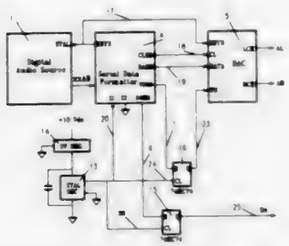
REPRODUCTION EQUIPMENT FOR DIGITAL AUDIO

Edmund Meitner, 4637 Mac Leod Tr. S.W., Calgary/Alberta, Canada, and Howard Burman, 6344 Hamilton, Montreal, Quebec, Canada H4E 3C4

Continuation of Ser. No. 687,584, Apr. 4, 1991. This application May 14, 1993, Ser. No. 62,698

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—106 **11 Claims**



7. In digital audio equipment including an input for receiving digital audio input signals, digital audio signal processing means, and a digital-to-analog converter,

said digital-to-analog converter having a first input for receiving a digital audio data signal and a second input for receiving a second word clock signal controlling the time when to accept said digital audio data signal supplied to said first input,

said input receiving said digital audio input signals and providing a digital audio signal to said digital audio processing means,

said digital audio processing means receiving a timing signal for processing said digital audio signal and providing a first word clock signal and said digital audio data signal, said digital audio data signal being forwarded to said first input of said digital-to-analog converter,

an ancillary circuit for synchronizing said digital audio data signal transmitted from said digital audio signal processing means to said digital-to-analog converter under control of said second word clock,

comprising

an oscillator, buffer storage for said first word clock, having an input for receiving said first clock, an output for providing said second word clock,

said oscillator providing said timing signal for operating said digital audio processing means, and said buffer storage for synchronizing said first word clock with said timing signal, thereby providing said second word clock;

said second word clock signal being used in said digital-to-analog converter for synchronizing said digital audio data signal supplied by said digital audio signal processing means.

5,329,557

DIGITAL DATA RADIO TRANSMISSION SYSTEM

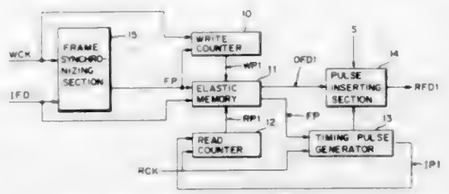
Kazuhiro Suzuki, Sendai, and Eiji Suzuki, Ohtawara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 3, 1991, Ser. No. 754,449

Claims priority, application Japan, Sep. 5, 1990, 2-233369; Mar. 20, 1991, 3-057416

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—112 **2 Claims**



1. A digital data radio transmission system for velocity-modulating input frame data, adding signals having a predetermined number of bits to said input frame data, and transmitting the resulting data as radio frame data, said system comprising:

means for generating frame position pulses;

writing means for dividing write clock pulses under control of the frame position pulses generated by said means for generating frame position pulses and for outputting the divided write clock pulses as write pulses;

storing means for receiving said write pulses from said writing means and for temporarily storing said input frame data and said frame position pulses according to said write pulses and outputting output frame data and frame position pulses;

timing pulse generating means for receiving said frame position pulses from said storing means and for outputting first and second control pulses in response to a supply of read clock pulses, the operation of said timing pulse generating means being controlled by said frame position pulses;

reading means for dividing said read clock pulses by the same number as the write clock pulses under control of said first control pulses and for outputting the divided read clock pulses as read pulses to said storing means; and

pulse inserting means for receiving the output frame data from said storing means and said second control pulses from said timing pulse generating means and for generating the radio frame data by inserting auxiliary pulses under control of said timing pulse generating means into the output frame data output from said storing means in response to said write pulses.

5,329,558

METHOD OF SYNCHRONIZING A RADIO RECEIVER WITH AN INCOMING RADIO SIGNAL

Lars G. Larsson, Stockholm; Jon K. Ugland, Sundryberg, both of Sweden, and Alex K. Raith, Durham, N.C., assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 10, 1992, Ser. No. 866,853

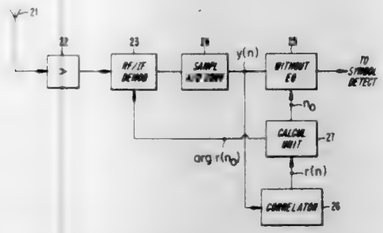
Claims priority, application Sweden, Apr. 12, 1991, 9101108-0

Int. Cl.[5] H04L *07/00*

U.S. Cl. 375—114 **5 Claims**

1. A method of synchronizing a baseband demodulator in a radio receiver with a synchronization part (s(i)) of a sampled baseband signal (y(n)) arriving at the demodulator, said sample baseband signal being transmitted from a radio transmitter over a radio medium in the form of bursts, each of which occupies a given time slot included in a number of time slots within a frame, wherein the radio medium exhibits time dispersion with limited spread of delayed signals to received radio signal and wherein each of the tim slots includes a data apart and a synchronization part which includes a known bit patterns ($s_o(i)$), comprising the steps of forming a time-dependent

correlation signal (r(n)) by carrying out in the radio receiver differential correlation of the received baseband signal (y(n)) with the know synchronization pattern ($s_o(i)$), and determining



a time position (n_o) of an extreme value of the time-dependent correlation signal (r(n)), a time position of said synchronization part of the received signal (y(n)) being the time position (n_o) of the extreme value.

5,329,559

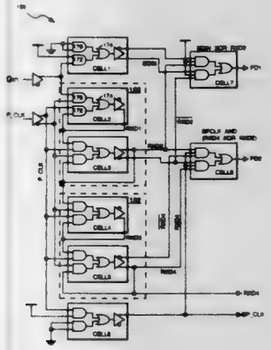
PHASE DETECTOR FOR VERY HIGH FREQUENCY CLOCK AND DATA RECOVERY CIRCUITS

Hee Wong, and Tsun-Kit Chin, both of San Jose, Calif., assignors to National Semiconductor, Santa Clara, Calif.

Continuation of Ser. No. 730,228, Jul. 15, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,266

Int. Cl.[5] H03D *3/20*

U.S. Cl. 375—119 **14 Claims**



6. A phase error detector for use in a data recovery circuit which receives a data signal and a synthesized clock signal, comprising:

a data delay circuit which receives a data signal and generates a first delayed data signal after a propagation delay;

a latch circuit which receives a cyclic clock signal that has positive and negative transitions at predefined times in each cycle of said clock signal, said latch circuit including a first sub-circuit that stores said data signal at a predefined time in each cycle of said clock signal, and a second sub-circuit that generates a second delayed data signal corresponding to said stored data signal after a predefined transition in said clock signal; wherein said data delay circuit and said second sub-circuit are identical circuits so that propagation delay of said data signal through said data delay circuit is equal to propagation delay of said stored data signal through said second sub-circuit; and

an exclusive-OR circuit, coupled to said data delay and latch circuits, which generates a first pulse signal whenever said first delayed data signal and said second delayed data signal are not equal; said first pulse signal having a width that corresponds to phase error between said data signal and said clock signal.

5,329,560

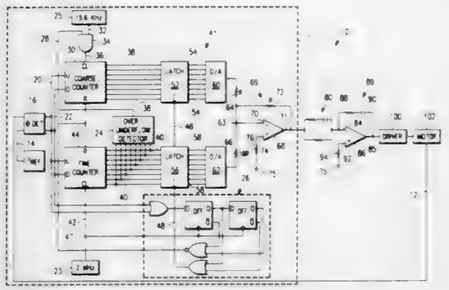
AGC CIRCUIT WITH NON-LINEAR GAIN FOR USE IN PLL CIRCUIT

Ali J. Rastegar, Santa Clara, Calif., and Francesco Carobolante, Phoenix, Ariz., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed May 19, 1992, Ser. No. 885,489

Int. Cl.[5] H04L *27/08;* **H03D** *3/24*

U.S. Cl. 375—120 **22 Claims**



20. A circuit for automatically controlling the gain applied to a signal for driving a motor in a phase-locked loop circuit, having a low gain during convergence and a high gain when a lock range has been reached, comprising:

frequency detection circuitry for comparing the frequency of a first input signal representing a speed of the motor and the frequency of a second input signal of a reference frequency and emitting a detector output pulse having a duration representing the difference therebetween;

a plurality of digital counters, each for counting clock pulses during respective successive intervals in the duration of said detector output pulse;

a plurality of clock signal generators for clocking a respective one of said counters, each of said clock signal generators generating a clock signal having a frequency proportional to a desired counting circuit output gain;

said counters being connected to count only after saturation of a counter operative during a previous time interval of said detector output pulse, and said clock signals applied to each respective counter that is operative during later intervals being of decreasing frequencies, whereby a discontinuous gain transfer function is produced;

circuitry for converting the binary numbers generated by the counting circuits to analog output voltages; and

circuitry for summing said analog output voltages for delivery to drive the motor.

5,329,561

DEVICE FOR CHECKING THE THICKNESS AND THE COHESION OF THE INTERFACE OF A DUPLEX TUBE

Didier Desruelles, Gresy-sur-Isere, France, assignor to Framatome; Cogema and Societe en nom Collectif Zircotube, all of France

Division of Ser. No. 711,997, Jun. 7, 1991, Pat. No. 5,225,148. This application Feb. 12, 1993, Ser. No. 16,890

Claims priority, application France, Jun. 8, 1990, 90 07187

Int. Cl.[5] G21C *17/017*

U.S. Cl. 376—245 **6 Claims**

1. Device for checking a thickness and cohesion of an interface of a duplex tube comprising a tubular core made from a first alloy covered with a cladding layer made from a second alloy, a base metal of said first alloy, a base metal of said second

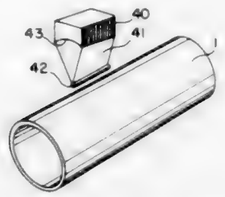
VOL 1164 ISS 2 JL 12 1994 UMI

alloy being identical to a base metal of said first alloy, said device comprising

(a) at least one ultrasonic transducer disposed for emitting ultrasonic waves in substantially radial directions with respect to said tube, from outside to inside said tube in said cladding layer and said core of said tube;

(b) detection and measuring means for detecting reflected ultrasonic waves reflected by surfaces of said tube and for determining propagation times and amplitudes and shape of the reflected ultrasonic waves;

(c) at least one indication coil connected to supply exciting current to a source of multi-frequency alternating current;



(d) means for measuring at least one of a phase and an amplitude of eddy currents induced in said tube by said induction coil;

(e) calculating means for calculating a thickness of said cladding layer from one of said phase and amplitude of eddy currents induced in said tube;

(f) calculating means for calculating a total thickness of said tube from the measurements of propagation times of said ultrasonic waves and the thickness of said cladding layer; and

(g) means for analyzing an amplitude and shape of the reflected ultrasonic waves.

5,329,562

METHOD OF CUTTING AND REMOVING NUCLEAR REACTOR

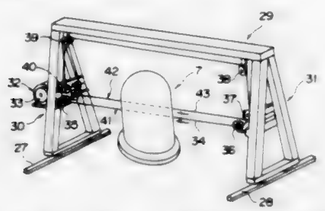
Setsuo Kubo, Kyoto, Japan, and Edward P. Johnston, Winnipeg, Canada, assignors to Kabushiki Kaisha Dymosha, Kyoto, Japan

Filed Aug. 18, 1992, Ser. No. 931,363

Claims priority, application Japan, Aug. 26, 1991, 3-236857; Jan. 24, 1992, 4-032913

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—260 **6 Claims**



1. A method of cutting and removing a nuclear reactor, comprising the steps of:

pressure-feeding a grouting material into a pressure vessel and to peripheral members outside said pressure vessel for integration thereof, and cutting said pressure vessel, with said pressure-fed grouting material therein, starting with the outer periphery of said pressure vessel, wherein said step of cutting includes the step of cutting with the use of a wire saw having diamond grains on the surface thereof.

5,329,563

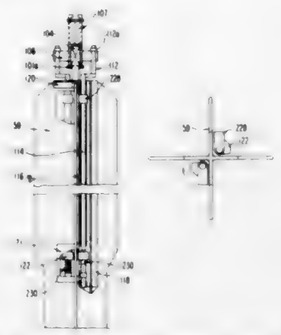
CONTROL ROD LATCH TOOL

Bengt I. Baversten, Weatogue, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Jul. 29, 1993, Ser. No. 98,887

Int. Cl.[5] G21C *7/00, 19/00*

U.S. Cl. 376—260 **7 Claims**



3. A tool for use in a nuclear reactor and which can be lowered onto an essentially cruciform cross-section control rod having a lift handle at the top and an unlatching handle arranged near the bottom, said control rod being releasably connected with a control rod drive by a connection mechanism which is operatively connected with said unlatching handle, said tool comprising:

first and second arms which extend down along opposite sides of said control rod from a cross-member which is seatable on the top of said control rod;

first and second actuator rods which are supported on said first and second arms;

first and second cam-like members which are fixed to said first and second actuator rods, respectively;

a rotatable drive input member, rotatably mounted on said cross member; and

crank means operatively interconnecting said input member with said first and second actuating rods, for selectively inducing said first and second actuator rods to rotate and to induce said first and second cam-like members to engage and lift said unlatching handle.

5,329,564

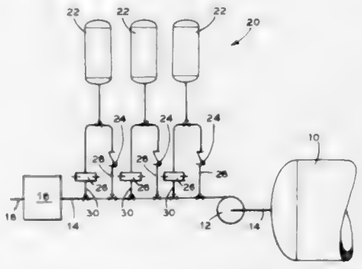
PASSIVE COOLING SYSTEM FOR A NUCLEAR REACTOR

John D. Malloy, III, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 30, 1993, Ser. No. 54,175

Int. Cl.[5] G21C *15/18*

U.S. Cl. 376—299 **3 Claims**



1. In a nuclear reactor coolant system where a coolant pump receives coolant from a coolant tank and directs coolant through a coolant line to the reactor during normal reactor operation, a passive coolant system for removing decay heat from the reactor when the coolant pump is inoperative, said passive cooling system comprising:

a. a plurality of coolant tanks in fluid communication with the coolant line via an inlet line and an exhaust line for each tank;

b. a check valve in each inlet line; and

c. flow control means in each exhaust line.

5,329,565

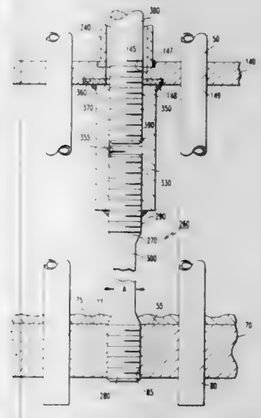
STAYROD ARRANGEMENT

Jay T. Moore, Milton, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1993, Ser. No. 137,358

Int. Cl.[5] G21C *15/00*

U.S. Cl. 376—402 **15 Claims**



1. A stayrod arrangement for enhancing removal of sludge from a lane having the sludge therein and defined between a plurality of spaced-apart structures, the stayrod arrangement adapted to reduce blockage of a fluid directed toward the lane, comprising a rod disposed adjacent the structures and having a portion thereof of reduced transverse cross section oriented parallel to the direction of the fluid for allowing the fluid past the reduced portion and into the lane for flushing the sludge from the lane.

5,329,566

PLENUM SPRING AND GETTER ASSEMBLY

Harold B. King, Wrightsville Beach, N.C., assignor to General Electric Company, San Jose, Calif.

Filed May 17, 1993, Ser. No. 63,265

Int. Cl.[5] G21C *3/18*

U.S. Cl. 376—418 **20 Claims**



14. A nuclear fuel rod comprising:

a cylindrical housing having first and second open ends;

a first end plug joined to said housing to close said first open end;

a second end plug joined to said housing to close said second open end;

a plurality of cylindrical nuclear fuel pellets stacked with opposing ends of adjacent pellets in abutment to form a fuel column, a first nuclear fuel pellet at one end of said fuel column being in abutment with said second end plug and a last nuclear fuel pellet at the other end of said fuel column being separated from said first end plug by a plenum space;

a plenum spring arranged in said plenum space for urging said last nuclear fuel pellet toward said second end plug, said plenum spring being a wire comprising a first wound section having a first diameter, a second wound section having a second diameter, a third wound section having a third diameter, a first connecting section for connecting said first and second wound sections and a second connecting section for connecting said second and third wound sections, said first diameter and said third diameter being greater than said second diameter; and

a substantially cylinder-shaped gas-permeable container containing getter material arranged in said plenum space for removing contaminants from the fluid therein, said container having a diameter less than said first diameter and greater than said second diameter and being arranged inside said first wound section of said plenum spring.

5,329,567

SYSTEM FOR STEREOTACTIC RADIOTHERAPY WITH A COMPUTERIZED TOMOGRAPHIC SCANNING SYSTEM

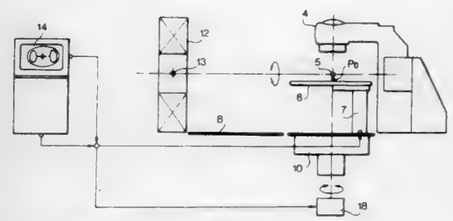
Jun Ikebe, 3-10-19 Nozawa Setagaya-ku, Tokyo 154, Japan

Filed Mar. 22, 1993, Ser. No. 35,037

Claims priority, application Japan, Mar. 24, 1992, 4-115116

Int. Cl.[5] A61N *5/10*

U.S. Cl. 378—20 **6 Claims**



1. A system for stereotactic radiotherapy comprising:

a first apparatus having a head for emanating an ionizing radiation, said head being rotatable about a horizontal axis, such that the ionizing radiation intersects said horizontal axis at an isocenter;

a second apparatus for taking a tomographic image, which is installed on the same floor as the first apparatus and which has a center for said tomographic image;

a turntable rotatable about a vertical axis passing through said isocenter;

driving means for reciprocatively rotating said head and for rotating said turntable;

a base mounted on said turntable being movable between said first and second apparatuses;

a treatment couch horizontally movably mounted on said base;

moving means for moving said couch with respect to said base along a longitudinal direction (Y) of said base and for moving said couch within a vertical (X-Z) plane perpendicular to said direction (Y);

positioning means for positioning said base in said second apparatus so that a positional relationship between said center and said base coincides with a positional relationship between said isocenter and the base when the base is moved from said second apparatus to said first apparatus;

storing means for storing data on a particular position in said tomographic image;

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first control means for controlling said driving means for reciprocating said head and rotating said turntable; and

second control means for controlling said moving means based on said stored data during the reciprocative rotation of said head and the rotation of the turntable so that said ionizing radiation is irradiated to a part in a patient on said couch dependent on said stored data of the position

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5,329,568

X-RAY GENERATOR WITH X-RAY TUBE VOLTAGE REGULATION FOR MAINTAINING THE X-RAY TUBE CURRENT AT A MAXIMUM VALUE

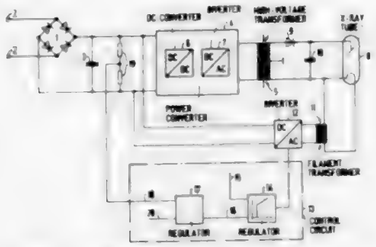
Klaus Buehler, Nuremberg; Bruno Doerrfuss, Herzogenaurach, and Bertram Blum, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 6,531

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1992, 4204115

Int. Cl.[5] H05G *1/34*

U.S. Cl. 378—110 **2 Claims**



1. An x-ray generator comprising:

an x-ray tube operable with a tube voltage and a tube current;

a network connectable to a mains voltage for supplying said x-ray tube with said tube voltage and tube current and thereby causing said mains voltage to exhibit a line voltage drop; and

regulating circuit means, connected to said network, for regulating said tube current by preventing said tube current from causing a selected maximum line voltage drop to be upwardly exceeded

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5,329,569

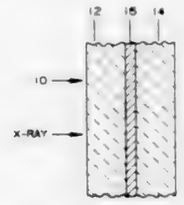
X-RAY TRANSMISSIVE DEBRIS SHIELD

Rick B. Spielman, Albuquerque, N. Mex., assignor to Sandia Corporation, Albuquerque, N. Mex.

Filed Feb. 18, 1993, Ser. No. 19,010

Int. Cl.[5] G21K *1/00*

U.S. Cl. 378—161 **20 Claims**



1. A composite window structure for transmitting x-ray radiation and for shielding radiation generated debris, comprising:

a layer of a first x-ray transmissive material; and

a layer of second x-ray transmissive material having a thermal conductivity greater than the first material and being at least ~12 μm in thickness, wherein said layers are laminated face-to-face.

5,329,570

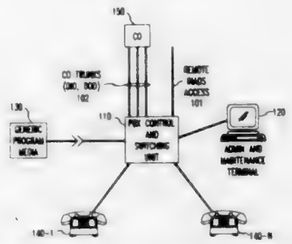
COPY PROTECTION OF SOFTWARE FOR USE IN A PRIVATE BRANCH EXCHANGE SWITCH

Joseph F. Glassmacher, Princeton Junction, N.J.; Joseph M. Greene, Nazareth, Pa.; Martin R. Kester, Mt. Olive Township, Morris County, and Joseph L. LaCava, Colts Neck, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 3, 1992, Ser. No. 984,802

Int. Cl.[5] H04M *3/00*

U.S. Cl. 379—189 **25 Claims**



1. A method of restricting execution of a program on a private branch exchange switch to a particular location for the private branch exchange switch, the method comprising the steps of:

storing at least a first indicator in software in the private branch exchange switch, the first indicator being unique to a particular service area provided by a central office;

receiving at least a second indicator in the software, the second indicator being reflective of the private branch exchange switch operating in the service area provided by the central office;

comparing said stored first indicator with said received second indicator in the software during the execution of said program; and

preventing further execution of said program on said private branch exchange switch when said stored first indicator in the software compares unfavorably with said received second indicator.

5,329,571

REACTOR CORE FOR A BOILING WATER NUCLEAR REACTOR

Patricia Quaglia, and Bertil Schölin, both of Västerås, Sweden, assignors to ABB Atom AB, Västerås, Sweden

Filed May 12, 1993, Ser. No. 65,747

Claims priority, application Sweden, May 25, 1992, 9201638

Int. Cl.[5] G21C *3/322*

U.S. Cl. 376—352 **20 Claims**

6. A reactor core for a boiling water nuclear reactor with a plurality of vertical fuel assemblies (**40**), each fuel assembly containing

a bottom-tie plate (**11**),

a top-tie plate (**12**),

a plurality of fuel rods (**10**) arranged between the bottom-tie plate and the top-tie plate,

a vertical casing (**6**) surrounding the fuel rods,

a number of spacers (**13**, **13***a–f*) for retaining the fuel rods in a spaced relationship,

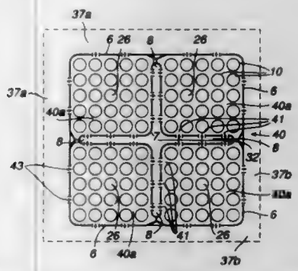
an inlet (**3**) for conducting water in through the bottom-tie plate through the space between the fuel rods and out through the top-tie plate,

a hollow support member (**7**) of cruciform cross section forming

a cruciform space (**32**), for conducting water in a vertical

direction from below and upwards through the fuel assembly, and gaps (**37***a*,**37***b*) between the fuel assemblies, said gaps being traversed with water in a vertical direction from below and upwards through the core,

wherein in some of the fuel assemblies outlet holes (**43**,**41**) are arranged in the casing (**6**) and in the support member (**7**) for release of water from the space between the fuel rods to the



gaps between the fuel assemblies and to the cruciform space (**32**), and said outlet holes (**43**,**41**) are arranged at a level located above the centre of the active length of the fuel rods so that a greater flowrate in the space between the fuel rods in achieved below the level of the holes and a lower flowrate is achieved in the space between the fuel rods above the level of the holes.

5,329,572

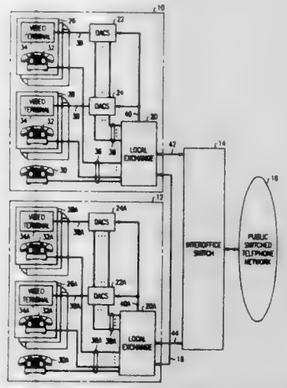
DIAL-UP SWITCHING AND TRANSMISSION OF BROADBAND COMMUNICATION CHANNELS THROUGH A LOCAL EXCHANGE

Gregory A. Martens, Palos Hills, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 24, 1992, Ser. No. 951,494

Int. Cl.[5] H04M *11/00*

U.S. Cl. 348—16 **20 Claims**



1. A telephone exchange for providing broadband dial-up switched connections for broadband customer data terminal equipment(DTE) comprising:

narrowband transmission channels, broadband transmission channels, and broadband interoffice transmission channels;

means for accepting over one of said narrowband transmission channels a request for broadband service between a customer's certain DTE and another DTE supported by another exchange;

means, responsive to said accepting means receiving said request, for automatically controlling the establishment of a broadband connection between one of said broadband transmission channels and said certain DTE;

means for communicating with an interoffice communications network to establish a broadband channel over one of said broadband interoffice transmission channels to said another exchange which supports said another DTE;

means for connecting said one broadband transmission channel and said one broadband interoffice transmission channel to establish a broadband connection through the telephone exchange between said certain DTE and another DTE, thereby permitting broadband communications upon dial-up demand by a customer.

5,329,573

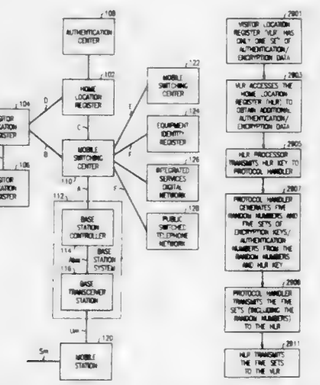
ARRANGEMENT FOR OBTAINING AUTHENTICATION KEY PARAMETERS IN A CELLULAR MOBILE TELECOMMUNICATIONS SWITCHING NETWORK

Cheng-Tze Chang, Lisle; Chinmei C. Lee, Woodridge, and Yie-de Zhu, Naperville, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 27, 1991, Ser. No. 799,580

Int. Cl.[5] H04M *11/00;* **H04L** *9/00;* **H04Q** *7/00*

U.S. Cl. 379—58 **3 Claims**



1. A method of obtaining authentication parameters for a mobile station on a mobile telecommunications call served by a first mobile switching center (MSC) comprising the steps of:

determining that Visitor Location Register (VLR) data stored in said first MSC for said mobile station has fewer than a predetermined parameter, n, of authentication parameter sets available for said mobile station, n having a value of at least 2;

responsive to said determining, requesting a second MSC which stores HLR data of said mobile station to provide a plurality of sets of authentication parameters for said mobile station;

responsive to receiving the request for authentication parameter sets, accessing a first processor means of said second MSC for storing Home Location Register (HLR) data of said mobile station, said HLR data comprising an authentication key of said mobile station;

from said first processor means, using said authentication key, accessing a second processor means of said second MSC for obtaining authentication parameters;

obtaining a plurality of sets of authentication parameters from said second processor means; and

transmitting said plurality of sets of authentication parameters to said first MSC for storing said sets in said VLR data for said mobile station.

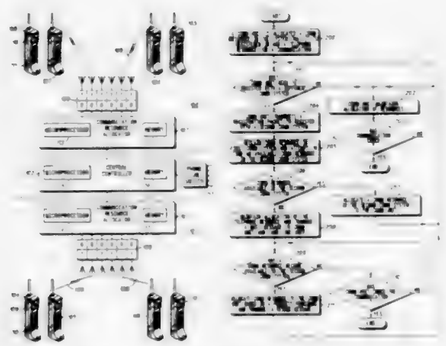
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5,329,574

METHOD FOR IMPROVING TELEPHONE RESOURCE ACCESS IN A COMMUNICATION SYSTEM NETWORK

Mark R. Nielson, Elgin, and Daniel J. McDonald, Cary, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1992, Ser. No. 841,966
Int. Cl.[5] H04M *11/00*; G05B *23/02*; H04Q *7/00*
U.S. Cl. 379—58 13 Claims



9. In a network of communication systems that comprises a plurality of communication systems, a central controller that interfaces with the plurality of communication systems and a limited number of telephone resources, wherein each communication system includes a plurality of communication units that are arranged into communication groups, a limited number of communication resources that are transceived via a limited number of repeaters, and a communication resource allocator that allocates via the central controller the limited number of communication resources among the plurality of communication units, a method that allows a communication unit to maintain allocation of a telephone resource when the communication unit roams in to a communication system that presently has no available communication resources, the method comprises the steps of:

a) engaging in a communication in a first communication system, wherein a communication resource in the first communication system and a telephone resource are allocated to the communication unit;

b) determining whether transceiving quality of the allocated communication resource in the first communication system has degraded below a predetermined level;

c) when the transceiving quality is below the predetermined level, transmitting a registration packet to a second communication system via the central controller;

d) reclaiming, by the central controller, the allocated communication resource in the first communication system;

e) when the central controller determines that the second communication system does not have an available communication resource, maintaining the allocation of the telephone resource to the communication unit until a communication resource becomes available in the second communication system;

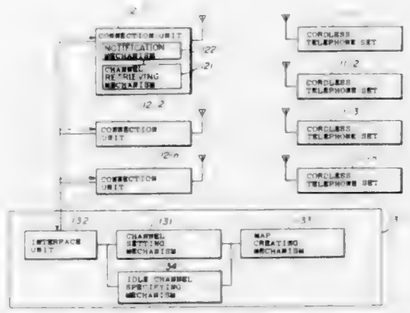
f) when a communication resource is not available in the second communication system, periodically receiving a busy message, wherein the busy message indicates that the communication is maintained but temporarily inactive.

5,329,575

IDLE CHANNEL RETRIEVING METHOD AND CORDLESS COMMUNICATIONS SYSTEM USING THE SAME

Koji Matsuda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 25, 1991, Ser. No. 691,464
Claims priority, application Japan, Apr. 26, 1990, 2-111195
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—63 19 Claims



1. A method for retrieving an idle channel in a system having a plurality of cordless communication devices, a plurality of connection units which couple said cordless communication devices to communication lines, and a control unit controlling said connection units, said system having a plurality of channels between said cordless communication devices and said connection units, said method comprising the steps of:

periodically supervising all connection units and determining which connection units are idle;

specifying, under control of said control unit, different channel retrieving ranges within which connection units which are idle respectively retrieve idle channels so that said connection units which are idle operate together to share a retrieval procedure for retrieving idle channels from all the channels in the system; and

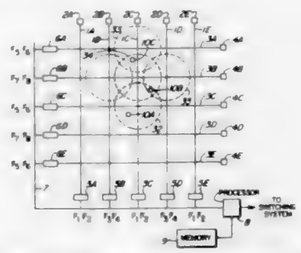
causing said connection units which are idle to retrieve idle channels within their respective channel retrieving ranges.

5,329,576

WIRELESS COMMUNICATION ZONE MANAGEMENT SYSTEM

Martin R. Handforth, Kanata, Canada, assignor to Mitel Corporation, Canada

Filed Apr. 29, 1992, Ser. No. 875,981
Claims priority, application Canada, May 23, 1991, 2043127
Int. Cl.[5] H04M *11/00*; H04H *1/02*; H04Q *7/00*; H04B *1/00*
U.S. Cl. 379—59 17 Claims



1. A wireless communication system comprising:

(a) a plurality of antennae, the antenna being arranged in a grid pattern over a communication region, each antenna being a leaky coaxial cable, whereby a grid pattern of leaky coaxial cables is formed,

(b) wireless portable terminals located within the communication region for emitting and/or receiving electromagnetic signals via said antennae,

(c) means for locating the position of at least one of said wireless portable terminals within the communication region relative to said grid pattern, comprising:

(i) crossovers within the grid pattern of orthogonal ones of said cables defining the centers of micro-cells for defining the position of said at least one of said terminals,

(ii) at least one first base station including at least one corresponding transceiver connected to one end of corresponding one or plural cables which are parallel in one direction, and at least one second base station including at least one corresponding transceiver each connected to one end of corresponding one of plural cables which are parallel in a second direction.

(iii) a transmission line connected to each of the base stations;

(iv) processing means connected to the transmission line, comprising means for storing a predetermined identity of each of said portable terminals associated with a micro-cell, means for detecting the identity of a portable terminal and for detecting the identity of first and second base stations connected to leaky cables which are closest to said portable terminal, for comparing the detected identity of the first and second base stations with said stored predetermined identity and for thereby determining the position of said portable terminal.

(d) each portable terminal being comprised of means for transmitting an identification signal.

(e) each base station being comprised of means for generating an identification signal, and including means for transmitting its own identification signal with the identification signal of said portable terminal upon reception thereof, to said processor means,

(f) said portable terminal being comprised of means for transceiving communication signals, means for transmitting identification and supervisory signals, and means for receiving supervisory and/or control signals,

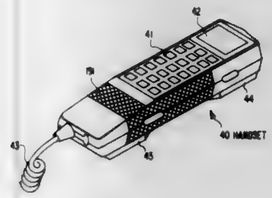
(g) each of the base stations including means for transmitting signals via one or more related leaky cables to said plural portable terminals in a time shared digital packet mode modulated on a particular frequency signal, each of the base stations transmitting at a particular frequency which is different from a particular frequency of its closest neighboring base station.

5,329,577

TELEPHONE HAVING TOUCH SENSOR FOR RESPONDING TO A CALL

Hidehiko Norimatsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 474,910, Feb. 5, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 998,652
Claims priority, application Japan, Feb. 3, 1989, 1-23713
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 28 Claims



1. A telephone comprising:

first means for annunciating a call meant for said telephone;

a touch sensor portion;

second means for detecting whether said touch sensor portion is touched or not and for producing a detection signal when said touch sensor portion is touched; and

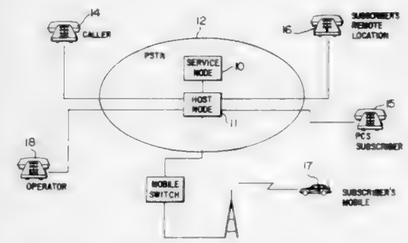
third means responsive to said detection signal for causing said telephone to respond to said call only after the annunciation of said call.

5,329,578

PERSONAL COMMUNICATION SERVICE WITH MOBILITY MANAGER

Paul M. Brennan, Toronto, and Raymond M. Mark, Mississauga, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 26, 1992, Ser. No. 887,758
Int. Cl.[5] H04M *1/64*, *3/42*
U.S. Cl. 379—67 11 Claims



1. A communication system for routing a call to a subscriber of a telephone mobility management service, wherein the subscriber of the service is assigned a unique personal telephone number, such that an incoming call made to the subscriber's unique telephone number is routed to the subscriber according to a call routing schedule tailored by the subscriber, comprising:

a) database means for storing:

i) a list of network addresses associated with telephone devices for use by the service subscriber;

ii) a list of calling line identification numbers (CLIDs) of callers identified by the subscriber as requiring special routing treatment; and

iii) a subscriber schedule indicative of which one of said telephone devices an incoming call should be routed to, on the time and day the incoming call is received;

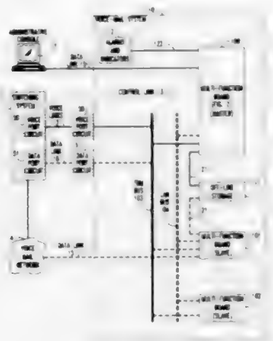
b) signalling receiver means for detecting the CLID of a caller when a call is received at said subscriber's unique telephone number;

c) data processing means for receiving the detected CLID and for accessing said list of CLIDs of callers, said list of network addresses and said subscriber schedule stored in said database means; and

d) application server means for routing the call according to the special routing treatment associated with the caller's CLID and subscriber schedule and wherein said subscriber can access said database means via said application server means and said data processor means to modify each list stored therein.

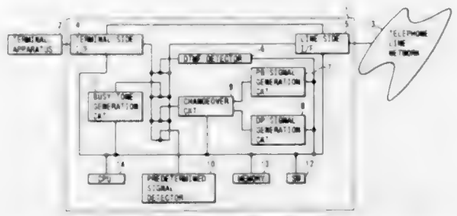
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5,329,579
MODULAR ADJUNCT PROCESSOR MADE OF IDENTICAL MULTI-FUNCTION MODULES ADAPTABLE UNDER DIRECTION OF ONE OF THEM TO PERFORM ANY OF THE ADJUNCT-PROCESSOR FUNCTIONS
Gordon R. Brunson, Broomfield, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 27, 1992, Ser. No. 919,674
Int. Cl.[5] H04M *1/64, 3/42;* **G05B** *15/00*
U.S. Cl. 379—88 **12 Claims**



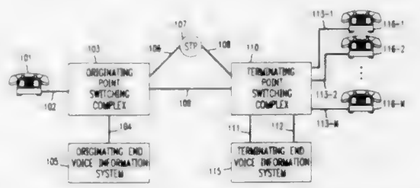
10. A communications-processing system comprising:
a set of a plurality of multi-function modules for together performing communications-processing functions, the modules of the set of modules being physically identical and each module comprising
a first interfere to a control communications link that interconnects the set of modules for inter-module communications,
a second interface to an external voice-communications link,
at least one configurable digital signal processor coupled by the second interface to the voice-communications link for performing voice-processing functions on communications flowing between the voice-communications link and the module,
a memory for storing definitions of communications-processing functions that are to be performed by this module,
a central processing unit for performing some of the functions defined by contents of the memory and for configuring the at least one digital signal processor to perform others of the functions defined by the contents of the memory, and
a communications medium communicatively interconnecting the above-recited elements of the module; and
each module of the set of modules being programmable, under direction of one module of the set of modules that is designated a master module, to become able to perform any one or more functions of the communications processing functions,
a master module including program means executed by the central processing unit for specifying to the master module, and for specifying to each module of the set of modules other than the master module via the control communications link, the one or more communications-processing functions that the module is to become able to perform, and
each module of the set of modules including program mean executed by the central processing unit, responsive to the specification received from the specifying means, for obtaining and storing in the memory programs for execution by the central processing unit of cause the module to become able to perform the specified one or more communications-processing functions.

5,329,580
COMMUNICATION TERMINAL ADAPTOR
Kanichi Yoshino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 4, 1991, Ser. No. 770,939
Claims priority, application Japan, Oct. 6, 1990, 2-268608
Int. Cl.[5] H04M *11/00;* **H04N** *1/32*
U.S. Cl. 379—90 **12 Claims**



4. A communication terminal adaptor according to claim 1, wherein said predetermined signal is a tone prompt signal.

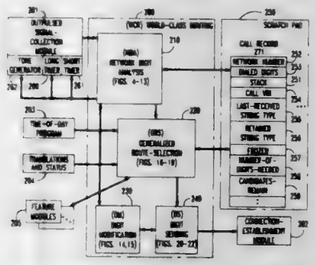
5,329,581
TARGET AREA CALLING SYSTEM
Albert Friedes, East Brunswick; Barbara I. Gaechter, Tinton Falls; Paramdeep S. Sahni, Marlboro, and Susan M. Zoccolillo, Howell, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 23, 1991, Ser. No. 812,302
Int. Cl.[5] H04M *11/00, 3/42*
U.S. Cl. 379—92 **18 Claims**



1. A method of completing each call in a series of telecommunications calls originated from a calling party and destined for a plurality of called parties served by a common terminating point switching complex, comprising the steps of:
(a) establishing an initial connection between said calling party and a first one of said called parties through a communication path extending from said calling party to said terminating point switching complex;
(b) inhibiting release of said communication path for the duration of said series of calls; and
(c) completing each call in said series of calls by establishing a connection between said calling party and a different one of said called parties, wherein said connection includes said communication path.

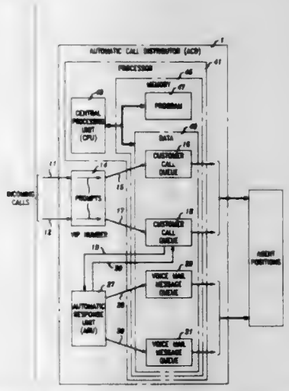
5,329,582
DYNAMIC TONE-ADMINISTRATION
Frank J. Bogart, Boulder; Bruce D. Butterfield, Denver; David L. Chavez, Jr., Northglenn; Henry C. Dittmer, Westminster; Frederick R. Fix, Arvada; Larry J. Hardouin, Westminster; Nancy K. Schmidt, Broomfield, and Linda L. Thomson, Westminster, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 31, 1991, Ser. No. 786,324
Int. Cl.[5] H04M *3/42, 11/00, 7/00;* **G06F** *15/38*
U.S. Cl. 379—201 **18 Claims**

1. A switching system for use in a telecommunications network having a network numbering plan, wherein a caller supplies a sequence of symbols to specify treatment that is to be given to a call, said sequence including at least one symbol string that is defined for the numbering plan of the network, comprising:
administratively programmable means for specifying a caller-perceivable signal for each of a plurality of symbol strings defined for the numbering plan;



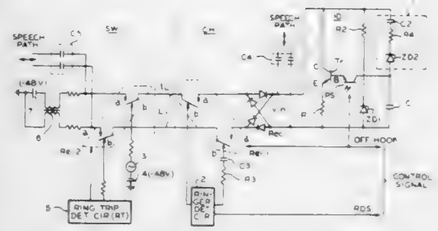
means, responsive to a call-control symbol sequence received from a caller served directly by the switching system without intermediacy of another switching system, for identifying the defined symbol strings that are included in the call-control symbol sequence; and
means, coupled to the means for identifying and to the means for specifying, for sending to the caller the call-perceivable signals that are associated with the symbol stings that are included in the call-control symbol sequence.

5,329,583
ENHANCED AUTOMATIC CALL DISTRIBUTION SYSTEM OPERATION
Janice H. Jurgensen, Chicago, and Wayne A. Senneke, Aurora, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 30, 1992, Ser. No. 906,955
Int. Cl.[5] H04M *1/64*
U.S. Cl. 379—266 **17 Claims**



1. An automatic call distributor (ACD) comprising:
a plurality of first queues for storing information identifying calls to be answered when an agent becomes available and a plurality of second queues for storing voice mail control information for calls for which callers have left a voice message; and
processor means, operative under the control of a program, for routing calls from one of said first queues and from one of said second queues to available agents in accordance with a priority scheme for appropriately giving preference to said first or said second queues;
wherein said preference is sometimes given to one of said second queues even if one of said first queues is not empty.

5,329,584
INTERFACE CIRCUIT TO QUICKLY ESTABLISH A LOOP CURRENT
Takashi Nagato, Kawasaki, Japan, assignor to Fujitsu Limited, Japan
Filed Dec. 16, 1992, Ser. No. 991,459
Claims priority, application Japan, Dec. 20, 1991, 3-338349
Int. Cl.[5] H04M *3/22*
U.S. Cl. 379—382 **8 Claims**



1. An interface circuit, for receiving a pair of telephone lines having a first line and a second line in a telephone switching system, and for providing a DC current to actuate a ring-trip circuit upon an Off-hook state, comprising:
a transistor for allowing a DC current supplied from the telephone lines to flow therethrough, said transistor having a collector electrode connected to said first line;
an emitter resistor connected between an emitter electrode of said transistor and said second line;
a bias resistor having a first terminal connected to said collector electrode;
constant-voltage means connected between a second terminal of said bias resistor and said second line;
a first capacitor connected in parallel to said constant-voltage means;
conductive means connected between said second terminal of said bias resistor and a base electrode of said transistor, for conducting a voltage from said constant voltage means to said base electrode; and
a charging circuit, connected in parallel to said base resistor, said charging circuit having a current path having a lower impedance to a voltage transient on said collector electrode than an impedance of said bias resistor, said current path also having a higher impedance to a steady state voltage on said collector electrode than said impedance of said bias resistor.

5,329,585
SUBSCRIBER LINE INTERFACE CIRCUIT FOR CONTROLLING AC AND DC OUTPUT IMPEDANCE
David M. Susak; Tony Takeshian, both of Chandler, and Dennis L. Welty, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 30, 1992, Ser. No. 983,197
Int. Cl.[5] H04M *1/76, 7/04*
U.S. Cl. 379—399 **10 Claims**

1. A subscriber line interface circuit (SLIC) having first and second inputs, comprising:
first means coupled to the first and second inputs of the SLIC for receiving first and second transmission signals having AC and DC signal levels, said first means sensing AC common mode variation and AC differential variation of said first and second transmission signals for providing

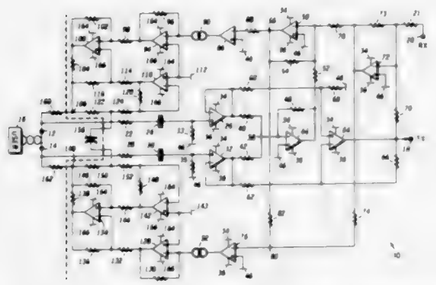
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a common mode feedback signal and a differential feedback signal, said first means including,

(a) a first amplifier having first and second inputs and an output, said output being coupled to said first input of said first amplifier, said first amplifier receiving first and second power supply potentials less than said DC signal level on said first transmission signal,

(b) a second amplifier having first and second inputs and an output, said output being coupled to said first input of said second amplifier, said second amplifier receiving said first and second power supply potentials less than said DC signal level on said second transmission signal,

(c) a first resistor and a first capacitor serially coupled between the first input of the SLIC and said second input of said first amplifier,



(d) a second resistor and a second capacitor serially coupled between the first input of the SLIC and said second input of said first amplifier,

(e) a third resistor coupled between said output of said first amplifier and a first node, and

(f) a fourth resistor coupled between said output of said second amplifier and said first node for providing said common mode feedback signal; and

second means coupled to the first and second inputs of the SLIC for providing an AC output impedance, said second means receiving said common mode feedback signal and said differential feedback signal for controlling said AC output impedance.

5,329,586

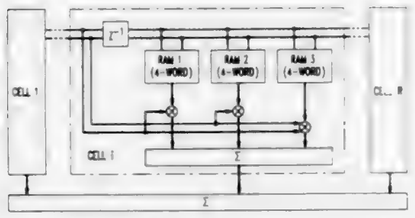
NONLINEAR ECHO CANCELLER FOR DATA SIGNALS USING A NON-REDUNDANT DISTRIBUTED LOOKUP-TABLE ARCHITECTURE

Oscar E. Agazzi, Florham Park, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 29, 1992, Ser. No. 891,357

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—406 **16 Claims**



2. The echo canceler of claim **1** wherein the bits in said first and second subsets are such that a particular term in a Volterra Series Expansion of the echo replica is not represented in the Volterra Series Expansion.

5,329,587

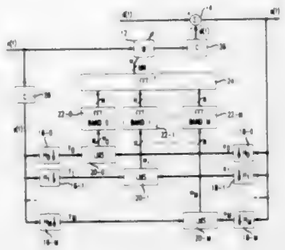
LOW-DELAY SUBBAND ADAPTIVE FILTER

Dennis R. Morgan, Morristown, N.J., and James C. H. Thi, Gaithersburg, Md., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 12, 1993, Ser. No. 30,931

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—410 **18 Claims**



1. A method for generating a signal reflecting an estimate of a disturbance, the method comprising the steps of

filtering a signal reflecting reference information with a plurality of subband filters to produce a plurality of subband reference reflecting signals;

filtering a signal reflecting a disturbance with a plurality of subband filters to produce a plurality of subband disturbance reflecting signals;

generating a plurality of sets of time domain subband weighting signals based on said subband reference reflecting signals and said subband disturbance reflecting signals;

combining said plurality of sets of time domain subband weighting signals to form a set of combined time domain weighting signals; and

filtering said reference signal with use of said set of combined time domain weighting signals to produce the signal reflecting an estimate of a disturbance.

5,329,588

TELECOMMUNICATION LINE CIRCUIT

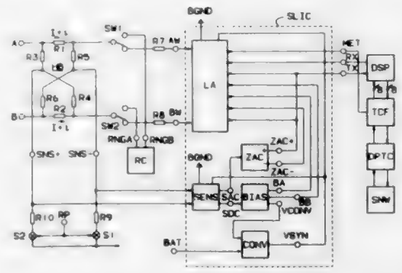
Eddie L. M. Willocx, Willebroek, and Elve D. J. Moons, Lummen, both of Belgium, assignors to Alcatel N. V., Amsterdam, Netherlands

Filed May 13, 1991, Ser. No. 699,998

Claims priority, application Belgium, May 11, 1990, 90201195.6

Int. Cl.[5] H04M *19/00*

U.S. Cl. 379—413 **15 Claims**



1. Telecommunication line circuit including a DC loop resistance synthesizing circuit, said line circuit comprising:

a Herter bridge,

two line wires coupled to the Herter bridge,

two line amplifiers for providing a synthesized feed voltage across the two line wires, a synthesized resistance in each said line wire, and a distinct line potential for each said line wire,

a sense amplifier coupled to the Herter bridge for producing a sense voltage proportional to a current flowing in the line wires,

bias means responsive to the sense voltage for providing a distinct respective bias voltage for each of the two line amplifiers,

battery means for supplying a battery supply voltage, and

a converter responsive to the bias means for converting the battery supply voltage to a common supply voltage for the two line amplifiers which is a combination of the two respective said distinct bias voltages.

5,329,589

MEDIATION OF TRANSACTIONS BY A COMMUNICATIONS SYSTEM

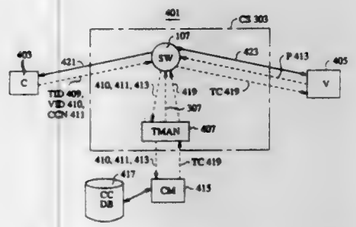
Alexander G. Fraser, Bernardsville; Carlos A. Perea, Somerset, and Roy P. Weber, Bridgewater, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 661,711, Feb. 27, 1991, abandoned.

This application Jun. 3, 1993, Ser. No. 71,950

Int. Cl.[5] H04M *11/04;* **G06F** *15/22*

U.S. Cl. 379—91 **28 Claims**



1. A method of employing a communications routing system of a type which functions generally to establish connections with arbitrary ones of a plurality of entities to in addition mediate a transaction involving delayed payment between certain ones of the entities including a customer, a vendor, and an approving entity which approves the transaction, the method comprising the steps of:

receiving a transaction specifier from the customer in the communications routing system; and

responding in the communications routing System to the transaction specifier by performing steps including

obtaining at least an identifier known to the approving entity from the customer,

obtaining at least a debit amount from the vendor,

providing the identifier and the debit amount to the approving entity,

receiving an indication from the approving entity whether the transaction is approved, and

providing the indication to the vendor, the communications routing system functioning during the steps to establish connections with the certain ones of the entities as required for the steps.

5,329,590

AUTOMATIC PAY-PER-VIEW RECEPTION IN A SATELLITE RECEIVER

Russell L. Pond, Euless, Tex., assignor to Uniden America Corporation, Ft. Worth, Tex.

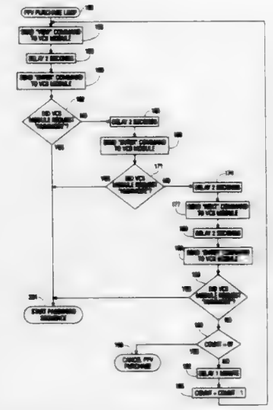
Filed Jul. 8, 1993, Ser. No. 89,674

Int. Cl.[5] H04N *7/173, 1/00*

U.S. Cl. 380—20 **11 Claims**

1. A method of initializing a descrambler in a pay-per-view program event receiver, comprising the steps of:

automatically executing plural different command sequences for the purpose of soliciting a positive response from said descrambler, for any one of said plural different command sequence, and



upon receiving said positive response after any of said command sequences, executing an activation sequence.

5,329,591

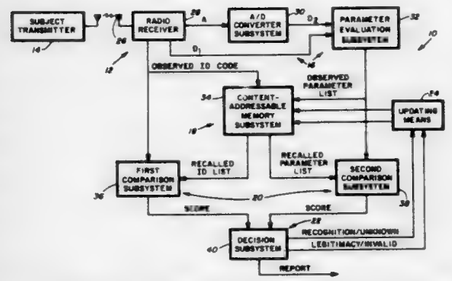
TRANSMITTER IDENTIFICATION AND VALIDATION SYSTEM AND METHOD

Barry J. Magrill, P.O. Box 1010, Fairfield, Fla. 32634

Filed Apr. 23, 1993, Ser. No. 52,378

Int. Cl.[5] H04K *1/00*

U.S. Cl. 380—25 **20 Claims**



1. A transmitter identification and validation system, comprising:

(a) means for receiving a signal transmitted by a subject transmitter and producing first and second output signals corresponding to the received signal;

(b) means for evaluating the first and second output signals and extracting and producing respectively therefrom an observed identification (ID) code corresponding to the subject transmitter of the received signal and at least one observed parameter value corresponding to at least one parameter of the received signal;

(c) means for storing sets of ID codes and parameter values corresponding to valid transmitters;

(d) means for comparing the observed ID code and observed parameter value of the received signal from the subject transmitter with said stored sets of ID codes and of parameter values and for generating, in response to the comparing, a pair of scores respectively proportional to the degree of match of the observed ID code with one of stored ID codes and to the degree of match of the observed

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parameter value with one of the stored parameter values; and

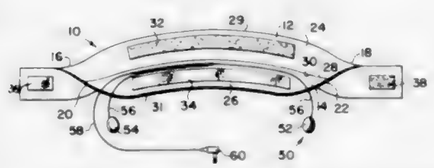
(e) means for evaluating the respective scores generated by said comparing means and for deciding, first, based on one of the scores whether or not the subject transmitter of the received signal is recognized as matching one of the valid transmitters and, second, based on the other of the scores the likelihood that the subject transmitter of the received signal is legitimate.

5,329,592

HEADBAND FOR REMOVABLY SECURING STEREO EARPHONES

Michaell A. Altman, Atlanta, Ga., assignor to Consumer Advantage, Inc., Tucker, Ga.

Filed Jul. 6, 1993, Ser. No. 87,607
Int. Cl.[5] H04R 5/00
U.S. Cl. 381—25 8 Claims



1. A headband for securing a set of left and right portable earphones, comprising:

a headband comprising an elongated first strip of material and an elongated second strip of material, each of said first and second strips having first and second ends, upper and lower edges and inner and outer faces, said lower edge of said first strip being attached to said upper edge of said second strip, and said first end of said first strip being attached to said first end of said second strip, and said second end of said first strip being attached to said second end of said second strip, said inner faces of said first and second strips being releasably attachable to each other, said attached first ends being releasably attachable to said attached second ends;

whereby wires attached to the set of left and right portable earphones can be removably placed between said first and second strips and strips releasably engaged to each other resulting in said earphones being securely held by said headband and said headband and earphones can be removably worn by a user about a user's head by attaching said first ends to said second ends.

5,329,593

NOISE CANCELLING MICROPHONE

John J. Lazzeroni, 15631 N. Oracle Rd., No. 111, Tucson, Ariz. 85737, and Melinda K. Carevich, 1415 S. Cherry, Tucson, Ariz. 85713

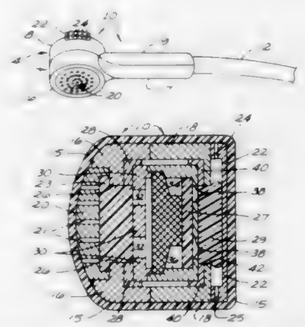
Filed May 10, 1993, Ser. No. 59,138
Int. Cl.[5] H04R 25/00; G10K 13/00
U.S. Cl. 381—168 14 Claims

1. A noise cancelling microphone for use in noisy environments in which a greater proportion of the environmental noise audio sounds received by the microphone emanates from a loud noise source situated at a specific location proximate an operator speaking into the microphone, the noise canceling microphone comprising:

a microphone housing enclosure having a front portion and a rear portion, said front portion having a plurality of openings therethrough to allow speech audio sounds to enter said enclosure, said front portion situated directly in front of the operator's mouth, the environmental noise audio sounds also entering said openings in said front portion;

a microphone cartridge situated interiorly to said microphone housing enclosure at a fixed location proximate said front portion openings, said microphone cartridge having a diaphragm with a front audio sound receiving surface and a rear audio sound receiving surface, said microphone cartridge so oriented that said diaphragm front audio sound receiving surface is in a direct line to the mouth of the operator to receive the speech entering said openings of said housing front portion;

means by which a selected amount of the environmental noise audio sounds emanating from the loud noise source



at the specific location may be permitted to enter the rear portion of said microphone housing enclosure, said means including at least one directional opening oriented in the direction of the location of the specifically located loud noise source when the operator is speaking into said openings in said microphone housing front portion; and

means by which the same environmental noise audio sounds are permitted to impinge upon the rear audio sound receiving surface of said diaphragm of said microphone cartridge to cancel the same environmental noise audio sounds impacting the front audio sound receiving surface of said microphone cartridge diaphragm in order that the microphone cartridge transmit only the speech audio sounds.

5,329,594

RECOGNIZING AND JUDGING APPARATUS

Susumu Maruno, Osaka; Shigeo Sakaue, Moriguchi; Toshiyuki Kohda, Takatsuki, and Yoshihiro Kojima, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 3, 1992, Ser. No. 845,248
Claims priority, application Japan, Mar. 6, 1991, 3-39912; May 1, 1991, 3-100035
Int. Cl.[5] G06K 9/62
U.S. Cl. 382—14 3 Claims

1. A recognizing and judging apparatus having a network organized in a multilayered hierarchical manner and comprising:

a given number of branched tree structures each having a plurality of layers, said given number being equal to a number of sets of characteristic data of an object to be recognized by said apparatus; and

a plurality of recognition units constituting said branched tree structures and positioned in said plurality of layers, each of said recognition units comprising:

a signal input section to which a signal is inputted;

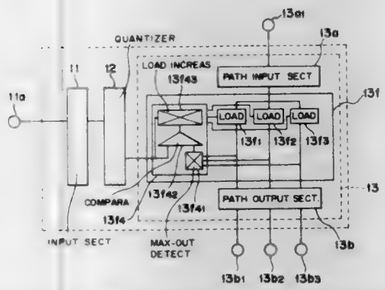
a quantizer for quantizing said signal input to said signal input section;

a path input section having at least one path input terminal;

a path output section having at least one path output terminal; and

a path selecting section operatively coupled with both said path input section and said path output section for selectively providing connection therethrough between said at least one path input terminal and said at least one path output terminal according to an output of said quantizer;

wherein a path selecting section of each of recognition units positioned on a layer adjacent to a lowermost layer of said plurality of layers comprises a learning device for changing a strength of said connection between said at least one



path input terminal and a path output terminal indicated by the output of said quantizer;

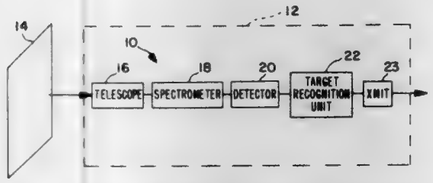
wherein said learning device comprises a maximum-output-terminal detector for detecting a path output terminal from which a maximum path signal is outputted, a comparator for comparing a number assigned to the path output terminal detected by said maximum-output-terminal detector and a number assigned to a path output terminal indicated by the output of said quantizer, and a load increaser for increasing a strength of connection between said path input terminal and said path output terminal indicated by the output of said quantizer based on a result of comparison performed by said comparator.

5,329,595

SYSTEM AND METHOD FOR ANALYZING OPTICAL SPECTRAL DATA OF A TERRAIN IMAGE

Donald W. Davies, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jun. 5, 1992, Ser. No. 893,489
Int. Cl.[5] G06K 9/46; G01J 3/28
U.S. Cl. 382—17 27 Claims



10. A system for analyzing data from an image, said system comprising:

spectrometer for receiving portions of said image and producing a plurality of spectra of individual pixels in said image;

light sensitive detector for receiving said plurality of spectra and converting said spectra into electrical data signals; and

target recognition unit for processing said electrical data signals representing said spectra, said target recognition unit including correlation means for comparing said signals with previously stored spectra data from features of known classes, said correlation means generating a correlation measure of the similarity between said spectra for said pixels and said spectra for said known feature, said correlation means including means for storing a matrix of coefficients, each of said coefficients in said matrix corresponding to one of the wavelength values in said spectra for one of a plurality of spectral basis vectors corresponding to known feature classes;

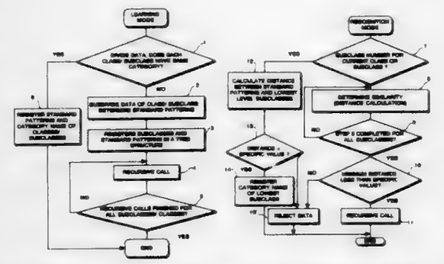
said correlation means further including multiply and accumulate means for receiving said coefficients, from said means for storing as well as said electrical data signals, said multiply and accumulate means multiplying said spectral data signals by a corresponding coefficient in the matrix, and the multiply and accumulate means adding the resulting multiplicative products to generate a spectral measure for each pixel in a image, wherein the coefficients in the matrix are chosen such that the results of the multiplication yield both positive and negative values and the sum will be approximately zero where there is no match and will be approximately one where there is a match and wherein a plurality of resulting sums for each pixel is a correlation value which indicates the likelihood that the spectra for the pixel is from one of the spectral basis vectors.

5,329,596

AUTOMATIC CLUSTERING METHOD

Hiroshi Sakou, Shiki, and Masahiro Abe, Iruma, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,688
Claims priority, application Japan, Sep. 11, 1991, 3-259784
Int. Cl.[5] G06K 9/70
U.S. Cl. 382—37 6 Claims



4. An automatic pattern recognition method to determine a category of input data points of unknown category, comprising:

performing a first learning step of dividing sample data into classes, which includes

generating sample data points whose categories are known,

generating a plurality of standard patterns in an n-dimensional space at arbitrary positions near a center of sample data points distribution, which standard patterns correspond to an arbitrary plurality of classes of the sample data points,

calculating the distances between individual sample data points and each of the standard patterns to determine the nearest standard pattern for each sample data point,

temporarily classifying each sample data point as belonging to the class corresponding to the nearest standard pattern,

adjusting the positions of the standard patterns if the difference between each standard pattern and center of distribution of the corresponding sample data points is not smaller in each dimension than a set specific value;

repeating the preceding three steps until the difference between each standard pattern and center of distribution of

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the corresponding sample data points is smaller in each dimension than a set specific value, and

determining a final position of each standard pattern and sample data points belonging to the class represented by the corresponding standard pattern;

performing a second learning step, when the sample data points belonging to one class do not belong to the same category, which includes

dividing the one class into a plurality of subclasses, and

repeating said step of dividing for the sample data points of each remaining class and subclass that has sample data points of more than one category;

performing a third learning step of relating the standard patterns, classes and subclasses obtained in the first learning step and second learning step to each other in a tree-structure representation and storing the tree-structure representation in memory;

inputting data points of unknown category; and

determining recognition/nonrecognition of the input data points of unknown category based on correspondence/-lack of correspondence between the input data points and the stored tree-structure representation.

5,329,597

DEVICE AND METHOD FOR MEASURING ANGLES OF A WORK

Hidehiko Kouno, 167, 2-chome, Dosho-cho, Yonago-shi, Tottori 683; Yoshiaki Niwa, Kanagawa; Akira Sengoku, Kanagawa, and Takayuki Aoki, Kanagawa, all of Japan, assignors to Amada Company, Ltd., Kanagawa and Hidehiko Kouno, Tottori, both of Japan, a part interest

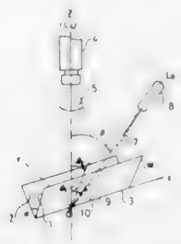
PCT No. PCT/JP91/00234, § 371 Date Dec. 4, 1991, § 102(e) Date Dec. 4, 1991, PCT Pub. No. WO91/13318, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 22, 1991, Ser. No. 768,205

Claims priority, application Japan, Feb. 23, 1990, 2-41258; Mar. 9, 1990, 2-56325; Mar. 15, 1990, 2-62793

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **22 Claims**



1. A method for measuring an angle α formed by two surfaces of a work, comprising the steps of:

emitting light in at least a direction toward the two surfaces for inducing linear light patterns on the two surfaces;

picking up the light patterns on the two surfaces in a pickup direction and onto a coordinate plane as an image, the pickup direction having predetermined positional relations with the two surfaces and the direction of the emitted light; and

obtaining inclinations α_1, α_2 of the two surfaces with respect to the pickup direction based on angles θ_1, θ_2 of the linear light patterns picked up on the coordinate plane with respect to a coordinate axis of the coordinate plane.

5,329,598

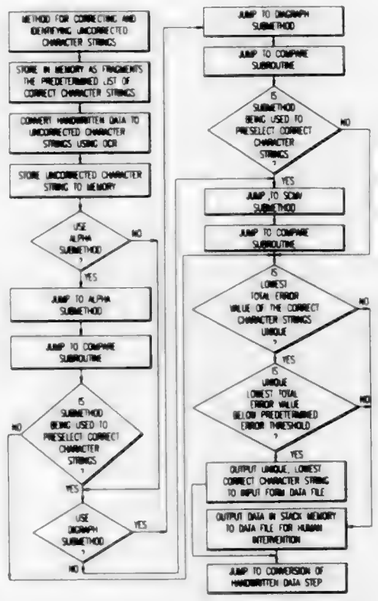
METHOD AND APPARATUS FOR ANALYZING CHARACTER STRINGS

Jon C. Geist, Olney, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jul. 10, 1992, Ser. No. 911,698

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—39 **21 Claims**



1. A method of analyzing an uncorrected character string generated by an input device, comprising the steps of:

dividing the uncorrected character string into at least one set of uncorrected character string fragments by use of at least one predetermined submethod;

successively selecting at least one correct character string from a predetermined list of correct character strings as at least one current correct character string,

comparing, for each current correct character string and each set of uncorrected character string fragments, a predetermined set of correct character string fragments to the corresponding set of uncorrected character string fragments to generate an error value for each predetermined set of correct character string fragments, wherein each predetermined set of correct character string fragments is generated by one predetermined submethod;

selecting, for each current correct character string, a lower error value from the generated error values as a corresponding total value for the current correct character string;

storing at least one current correct character string and the corresponding total value to a storage means; and

transferring the contents of the storage device to an appropriate output device upon reaching an end of the list of correct character strings;

wherein characters in the correct and uncorrected character string fragments are placed in a predetermined order without regard to ordering of the characters in the correct and uncorrected character strings, respectively.

5,329,599

ENHANCED FIDELITY REPRODUCTION OF IMAGES BY HIERARCHICAL TEMPLATE MATCHING

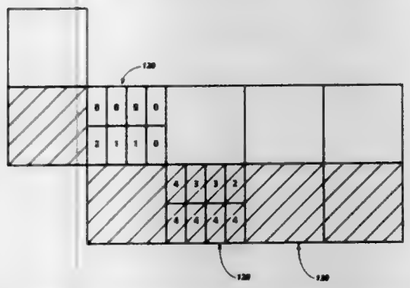
Douglas N. Curry, Menlo Park; Robert P. St. John, Santa Clara, and Sofia Filshtinsky, Saratoga, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 811,550, Dec. 20, 1991, abandoned.

This application Oct. 29, 1993, Ser. No. 146,629

Int. Cl.[5] G06K *9/40;* **G09G** *1/06*

U.S. Cl. 382—54 **22 Claims**



1. A method of enhancing the contour fidelity of reproduction of an image represented by a plurality of pixels, comprising the steps of:

storing a portion of pixels representing an image portion in a first storage;

isolating a region of the pixels of said image portion to form a window including a central pixel and a formation of pixels surrounding said central pixel;

comparing a group of pixels encompassing pixels surrounding said central pixel and within said window with a hierarchical set of standard pixel patterns, said hierarchical set comprising:

a set of pixel patterns in which each next higher member in said hierarchial set is a composite of the previous member and an extension pattern of additional bits, said extension pattern comprising at least a pixel that is on and a pixel that is off, wherein a match of any pattern also matches all patterns lower in the hierarchy; and

each of said pixel patterns including particular correctable pixel positions, said particular correctable pixel positions for each pattern being based upon the contour angle represented by that pattern;

indentifying matching pixel patterns; and

enhancing said central pixel if said central pixel is located at a particular correctable position in the highest priority pattern matched in said hierarchical set.

5,329,600

REFLECTION MONITOR OPTICAL FIBER COUPLER MANUFACTURING SYSTEM AND METHOD

Eisuke Sasaoka; Masumi Fukuma; Hiroaki Takimoto; Hiroshi Suganuma; Hiroshi Yokota; Junichi Yoshikawa, all of Kanagawa, and Kazuhiko Arimoto, Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Sumiden Opcom, Ltd., Tokyo, both of Japan

Filed Jun. 2, 1992, Ser. No. 892,208

Claims priority, application Japan, Jun. 3, 1991, 3-130213; Jul. 30, 1991, 3-212950; Jul. 30, 1991, 3-212951; Aug. 2, 1991, 3-194521; Aug. 2, 1991, 3-194524

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—43 **106 Claims**

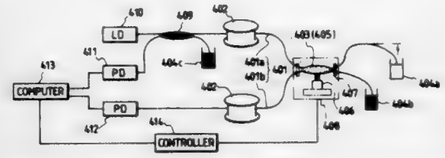
54. A system for fabricating an optical fiber coupler comprising:

means for fusing and elongating a coupler forming part of a plurality of optical fibers;

a light source for providing a predetermined quantity of light incident on at least one of said plurality of optical fibers from a first end-of said optical fibers;

an optical fiber for passing said light through said coupler forming part and for returning said light through said coupler forming part toward the first end of said optical fiber;

means for reflecting said light at a second end of said optical fiber;



means for detecting said returned light at a first end of at least one of said fibers;

means for obtaining a ratio of a characteristic of said detected light to a characteristic of said incident light; and

means for inhibiting the operation of said fusing and elongating means responsive to said obtaining means.

5,329,601

SEMICONDUCTOR OPTICAL WAVEGUIDE TYPE SWITCH INCLUDING LIGHT CONTROL MEANS

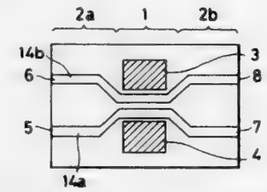
Shigeru Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 993,698

Claims priority, application Japan, Dec. 20, 1991, 3-355742

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—41 **18 Claims**



1. A semiconductor waveguide type optical switch comprising:

at least one optical waveguide formed within a core layer made of a semiconductor for absorbing controlling light; and

a pair of electrodes for applying a static electric field to a part of said waveguide where a refractive index change is to be caused by absorbing said controlling light;

said controlling light being entered into said waveguide together with light to be controlled wherein said controlling light is selectively absorbed at said part and said light to be controlled is propagated through said part, resulting in a switching operation of said light to be controlled.

5,329,602

OPTICAL FIBER COUPLER

Tsuneo Mori, and Kazuo Koya, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 28, 1993, Ser. No. 69,698

Claims priority, application Japan, May 29, 1992, 4-163719

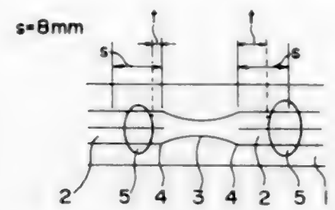
Int. Cl.[5] G72B *6/26*

U.S. Cl. 385—43 **1 Claim**

1. An optical fiber coupler which is an elongated integral body of a plural number of optical fibers fused together side-by-side consisting of two straightly columnar parts and a bi-conical part between the straightly columnar parts and adhe-

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sively bonded to a reinforcing base with a coating layer of an adhesive therebetween, the coating layer of the adhesive being formed on the surface of each of the straightly columnar parts



within a range from the boundary between the biconical part and the straightly columnar part to the point 8 mm apart therefrom.

5,329,603

STRAIN RELIEF BOOT FOR AN OPTICAL CONNECTOR PLUG

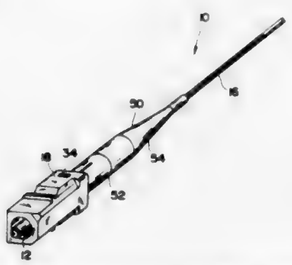
Tetsuaki Watanabe, Yokohama; Kouichiro Matsuno, Chigasaki, and Yasuhiro Ando, Houya, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka; Sumiden High Precision Co., Ltd., Chigasaki and Nippon Telegraph and Telephone Corporation, Tokyo, all of Japan

Filed Apr. 21, 1993, Ser. No. 49,189

Claims priority, application Japan, Apr. 22, 1992, 4-102950

Int. Cl.[5] G02B *6/00, 6/36*

U.S. Cl. 385—86 **12 Claims**



1. A strain relief boot for an optical connector plug, comprising:

a first tubular member of an elastomeric material adapted to be connected to an end portion of said optical connector plug, said first member adapted to surround a portion of an optical fiber cable connected to said optical connector plug, said portion being adjacent to said end portion of said optical connector plug; and

a second tubular member of another elastomeric material connected coaxially with said first member, said second member adapted to surround another portion of said optical fiber cable which is continuous to said portion of said optical fiber cable, a hardness of the elastomeric material of said second member being lower than that of the elastomeric material of said first member so as to reduce optical transmission loss upon bending of said optical fiber cable at said end portion of said connector plug when said boot is connected to said connector plug.

5,329,604

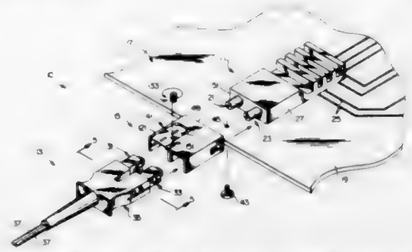
OPTICAL FIBER COUPLING DEVICE AND OPTOELECTRONIC SYSTEM UTILIZING SAME

Clark F. Baldwin, Vestal; David B. Howe, and Thomas B. Kellerman, both of Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 11, 1993, Ser. No. 16,368

Int. Cl.[5] G02B *6/00, 6/36*

U.S. Cl. 385—92 **25 Claims**



1. An optical fiber coupling device for coupling optic means and at least one optoelectronic device of an optoelectronic assembly, said coupling device comprising:

a housing adapted for being located adjacent said optoelectronic assembly relative to said optoelectronic device, said housing defining at least one chamber therein adapted for having said optic means positioned therein; and

latching means movably positioned within said housing relative to said chamber, said latching means adapted for initially engaging said optoelectronic device to thereby assume a relatively fixed position within said housing, said latching means thereafter adapted for engaging said optic means to retain said optic means within said chamber in optical alignment with said optoelectronic device.

5,329,605

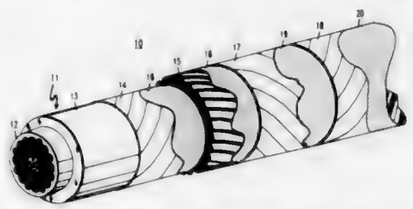
UNDERSEA ARMORED CABLE

W. Bernard Wargotz, Red Bank, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 27, 1992, Ser. No. 966,789

Int. Cl.[5] G02B *6/44;* **H01B** *7/14*

U.S. Cl. 385—107 **22 Claims**



1. A waterproofed insulated conductor which comprises a core with at least one conductor element, a polymeric jacket about the core, at least one textile covering over the polymeric jacket and at least one waterproof coating on top of said at least one textile covering, wherein said at least one waterproofing coating comprises a blend of from 15 to 40 weight percent of pine tar oil, the remainder being essentially natural (Trinidad) asphalt.

9. A method of fabricating a waterproofed insulated conductor comprising a core with at least one conductor element, and a polymeric jacket about the core, which method comprises applying at least one textile yarn covering on the polymeric jacket and applying at least one waterproofing coating on top of said at least one textile yarn covering, wherein said at least one waterproofing coating comprises a blend of from 15 to 40 weight percent pine tar oil, the remainder being essentially natural (Trinidad) asphalt.

5,329,606

FIBER OPTIC CABLE

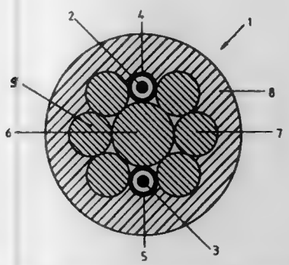
Jon S. Andreassen, Slattum Terasse, Norway, assignor to Alcatel Kabel Norge AS, Oslo, Norway

Filed Feb. 5, 1993, Ser. No. 14,116

Claims priority, application Norway, Feb. 6, 1992, 920484

Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—109 **11 Claims**



1. A fiber optic cable having a first layer of elements (4, 5, 7) stranded around a central core (6), including at least one strengthening member (7) and at least one tube (4, 5) having therein an optical fiber element (2, 3) loosely arranged therein, wherein

said at least one tube (4, 5) has a diameter which is less than that of the strengthening members (7), and the central core (6) has a diameter which is greater than that of said at least one strengthening member (7).

5,329,607

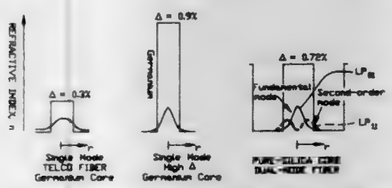
PURE-SILICA CORE DUAL-MODE OPTICAL FIBER

Neil T. Kamikawa, Kaneohe, and Arthur T. Nakagawa, Kailua, both of Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1992, Ser. No. 988,607

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—123 **2 Claims**



1. An improved dual-mode optical fiber in which dual-mode propagation having a cutoff wavelength greater than an operating wavelength of both the fundamental LP_{01} and second-order LP_{11} modes to provide an improved combination of spectral attenuation, bending losses and modal noise and modal dispersion for long-haul transmission at said operating wavelength of about 1550 nm comprising:

a pure-silica core to provide for reduced Rayleigh scattering and

a silica cladding depressed with fluorine, said core and cladding having a relative refractive index difference, Δ, of about 0.72% and a second-mode cutoff wavelength, λ_c, at about 1630 nm to thereby provide said dual-mode propagation with said cutoff wavelength being greater than said operating wavelength of both the fundamental LP_{01} and second-order LP_{11} modes.

5,329,608

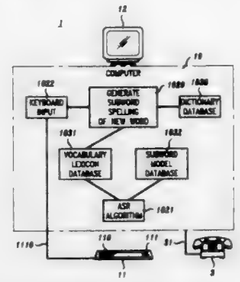
AUTOMATIC SPEECH RECOGNIZER

Enrico L. Bocchieri, Madison, N.J.; Sedat I. Gokcen; Rajendra P. Mikkilineni, both of Gahanna, Ohio; David B. Roe, Berkeley Heights, and Jay G. Wilpon, Warren, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 862,394, Apr. 2, 1992. This application Aug. 18, 1993, Ser. No. 108,839

Int. Cl.[5] G10L *5/04*

U.S. Cl. 395—2.52 **12 Claims**



1. A speech recognition system comprising:

a vocabulary database that contains a plurality of words and a corresponding phoneme string for each of said words;

a subword database that stores a plurality of phonemes representing word sounds;

processor means for determining if a first spoken word received as an input is one of said words contained in said vocabulary database, said processor means generating a first phoneme string based on phonemes stored in said subword database to represent said first word and determining which, if any, of said phoneme strings contained in said vocabulary database matches said first phoneme string;

means for receiving a new non-spoken word in dictionary form as a series of characters, said new word not previously contained in said vocabulary database;

said processor means ascertains a new phoneme string based on said new word and enters said new word and new phoneme string in said vocabulary database thereby enabling a subsequent spoken entry of the new word to be recognized based on the presence of the new word in the vocabulary database.

5,329,609

RECOGNITION APPARATUS WITH FUNCTION OF DISPLAYING PLURAL RECOGNITION CANDIDATES

Toru Sanada; Shinta Kimura, both of Kawasaki, and Kyung-Ho Loken-Kin, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 30, 1991, Ser. No. 737,871

Claims priority, application Japan, Jul. 31, 1990, 2-201259; Jan. 11, 1991, 3-013714

Int. Cl.[5] G10L *9/00*

U.S. Cl. 395—2.6 **11 Claims**

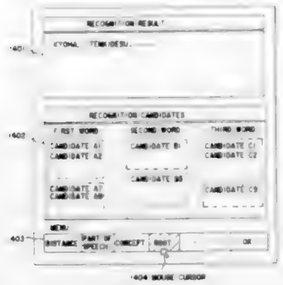
6. A recognition apparatus for displaying a plurality of recognition candidates obtained by recognition process applied to an input voice or character and allowing a user to select a recognition result from among the displayed recognition candidates, comprising:

dictionary storage means for storing each of a plurality of objects of recognition which can be the recognition candidates together with attribute information, independent of recognition degree, representing a respective attribute; and

attribute-dependent displaying means for classifying the

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recognition candidates into groups according to said attribute information obtained from said dictionary storage



means and displaying the recognition candidates for each classified group.

5,329,610

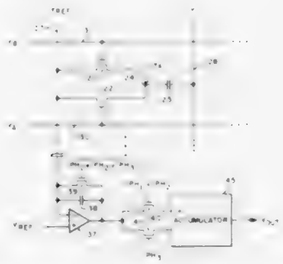
NEURAL NETWORK EMPLOYING ABSOLUTE VALUE CALCULATING SYNAPSE

Hernan A. Castro, Shingle Springs, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 19, 1992, Ser. No. 884,807

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—24 **15 Claims**



1. A neural network for calculating the absolute difference between an input and a stored weight comprising:

means for generating a sequence of voltage pulses including first, second and third voltage pulses;

an array of synapse cells arranged in rows and columns, said cells being coupled to said generating means, each cell generating a predetermined sequence of charges in response to said sequence of voltage pulses, said sequence including a first charge representing said input, a second charge representing said weight, and a third charge representing the lesser potential of either said weight or said input, said first, second, and third charges being generated in response to said first, second, and third voltage pulses respectively;

a plurality of summing devices coupled to said synapse cells, each device summing said first, second, and third charges generated by a plurality of synapse cells arranged along a single column of said array, the sum of said first charges being calculated in response to said first voltage pulse, the sum of said second charges being calculated in response to said second voltage pulse, and the sum of said third charges being calculated in response to said third voltage pulse;

a plurality of accumulators, each of which is coupled to a corresponding one of said summing devices, each accumulator adding said sum of said first charges to said sum of said second charges, and subtracting said sum of said third charges therefrom, to produce an output voltage representing the absolute value difference between said input and said weight for said single column.

5,329,611

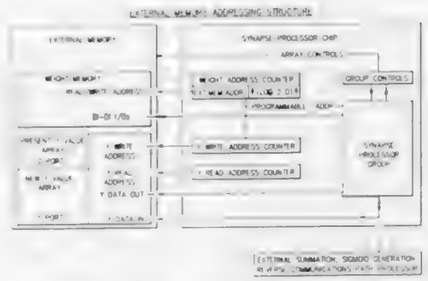
SCALABLE FLOW VIRTUAL LEARNING NEUROCOMPUTER

Gerald G. Pechanek, Endwell; Stamatis Vassiliadis, and Jose G. Delgado-Frias, both of Vestal, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 702,262, May 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 526,866, May 22, 1990, Pat. No. 5,065,339, Ser. No. 682,786, Apr. 9, 1991, and Ser. No. 681,842, Apr. 8, 1991. This application Jun. 21, 1993, Ser. No. 80,989

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—27 **40 Claims**



1. A computer system comprising a virtual neural synapse processor apparatus including

an N physical neuron structure, wherein N is an integer greater than or equal to one, partitioned into groups including

means for synapse processing including means for storing instructions and data, means for receiving instructions and data, means for executing instructions, and means for interfacing with external data storage for weights and neuron output values for V neurons, where V is greater than N and V is a number of neurons to be emulated (virtual neurons) on the N neuron structure,

means for executing group instructions, and communicating adder trees, said N neuron structure further including

neuron activation means for controlling a start of a neuron activation function,

means for interconnecting said groups into the N neuron structure, and

means for communicating instructions, data, and outputs of the neuron activation means back to input means for synapse processing through the communicating adder trees.

5,329,612

RULE FITNESS DETERMINATION, RULE REMOVAL, AND NEW RULE GENERATION

Yukinori Kakazu, 52-1, Bunkyodai, Ebetsu-shi, Hokkaido; Masaaki Minagawa, 6-6-20, 5-jou, Atsubetsu-chuou, Atsubetsu-ku, Sapporo-shi, Hokkaido; Kunihiko Unno, Kariya; Takao Yoneda, Nagoya, and Masashi Yamanaka, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya; Yukinori Kakazu, Ebetsu and Masaaki Minagawa, Sapporo, all of Japan

Filed Mar. 27, 1992, Ser. No. 858,491

Claims priority, application Japan, Mar. 27, 1991, 3-90038; Mar. 27, 1991, 3-90039

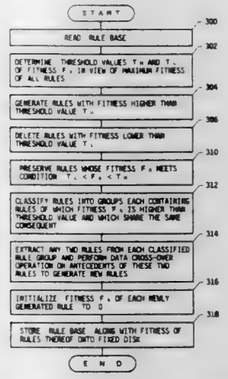
Int. Cl.[5] B23Q *15/04*; **G11C** *11/00*

U.S. Cl. 395—75 **5 Claims**

1. A processing apparatus comprising:

rule base storing means for storing a plurality of rules each made of an antecedent and a consequent, said antecedent describing a premise to be met, said consequent describing a conclusion in effect when a rule is met;

fitness degree computing means for inputting evaluation values of a result obtained by applying said rules stored in said rule base storing means, and computing degrees of fitness of said rules in accordance with said evaluation values;



selecting means for removing from said rule base storing means a rule having degree of fitness lower than a first predetermined value; and

rule generating means for selecting any two rules in said rule base storing means, said two selected rules having degrees of fitness higher than a second predetermined value and having a same consequent, said rule generating means further generating at least one new rule by combining the antecedents of said two selected rules.

5,329,613

APPARATUS AND METHOD FOR RELATING A POINT OF SELECTION TO AN OBJECT IN A GRAPHICS DISPLAY SYSTEM

Deborah D. Brase; Steven P. Larky, both of Austin; Joe C. St. Clair, Round Rock, all of Tex., and Paolo Sidoli, Milan, Italy, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 597,956, Oct. 12, 1990. This application May 6, 1993, Ser. No. 58,991

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—122 **12 Claims**

5. A video display system for picking visible objects from rendered three dimensional objects, comprising:

a frame buffer for storing displayed image data of rendered three dimensional objects;

a Z buffer memory for storing displayed image depth data of rendered three dimensional objects;

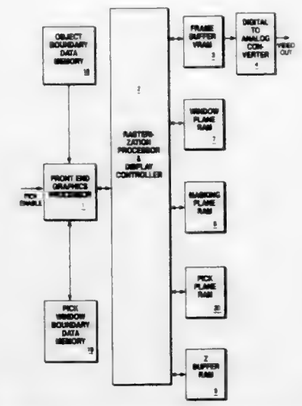
a plane memory for storing data representing windows used in rendering the displayed image data stored in the frame buffer;

means for storing object boundary data corresponding to each object which encompasses and is larger than each corresponding object;

means for defining a pick window with a pick window boundary;

a front end processor means for identifying each object which has object boundary data that intersects the pick window; and

a rasterization processor means for rerendering each identified object to identify which rerendered objects have



object depth data that matches the displayed image depth data.

5,329,614

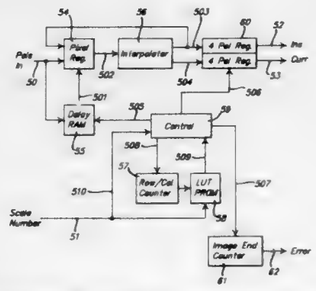
METHOD AND APPARATUS FOR ENLARGING GRAY SCALE IMAGES

Robert C. Kidd, and Debora I. Y. Grosse, both of Ann Arbor, Mich., assignors to Unisys Corporation, Bluebell, Pa.

Filed Feb. 7, 1991, Ser. No. 651,769

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—139 **15 Claims**



1. Apparatus for enlarging, by a given factor of scale, a gray scale input image having ordered rows and columns of digitized picture elements (pixels), each said pixel of said input image having a gray scale value, the apparatus comprising:

an input register for receiving gray scale pixel values of the input image, said input register having a plurality of pixel value storage locations;

a scale factor input register for receiving the given factor of scale;

means coupled to the scale factor input register for generating an ordered sequence of numbers as a function of the given factor of scale;

means for associating one number of said ordered sequence of numbers with each pixel and each row of pixels in the input image;

means coupled to the input register and the means for generating for leaving a vacant pixel value storage location between received pixel values of the input image, said vacant pixel value storage location being adjacent the pixel value storage location of each pixel of the input

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image associated with a number of a predetermined value and for leaving a plurality of vacant pixel storage locations between received pixels of the input image, each of said plurality of vacant pixel value storage locations being adjacent the pixel value storage location of each pixel in each row of the input image associated with a number of the predetermined value;

calculation means coupled to said input register for generating a gray scale value for each vacant pixel storage location as a function of neighboring pixel values; and

means for outputting an enlarged image, said enlarged image comprising ordered rows and columns of pixels including all of said input pixel values and said calculated pixel values.

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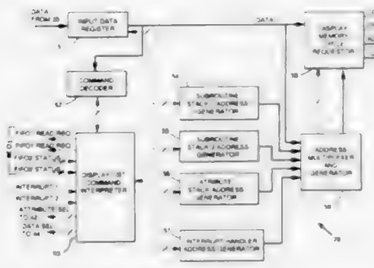
CONCURRENT GENERAL PURPOSE AND DMA PROCESSING IN A GRAPHICS RENDERING PROCESSOR

John M. Peaslee, and Jeffrey C. Malacarne, both of Chino Hills, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 582,710, Sep. 14, 1990, abandoned. This application Sep. 23, 1993, Ser. No. 125,614

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **9 Claims**



1. A display system for comprising.

a graphics processor for generating graphic pixel signals in response to display lists;

at least one stored program computer for generating a plurality of display lists, each display list including a plurality of graphic instructions, said plurality of display lists including high priority display lists requiring nearly immediate transfer of said plurality of graphical instructions to said graphics processor and low priority display lists requiring less nearly immediate transfer of said plurality of graphical instructions to said graphics processor;

a high priority hardware channel and a low priority hardware channel for providing said high priority display lists and said low priority display lists, respectively from said at least one stored program computer to said graphics processor;

First In First Out (FIFO) controller means coupled to said high priority hardware channel and said low priority hardware channel for receiving and storing said high priority and low priority display lists and coupling said display lists to said graphics processor; and

a display list processing means, said display list processing means receiving said high and low priority display lists from said FIFO controller means, said display list processor including means for processing said high priority display lists before said low priority display lists, said plurality of instructions being received sequentially, said display list processing means having means for concurrently transferring earlier-received instructions of said plurality of instructions of a display list to the graphics processor at the same time that said display list processing means is receiving additional received instructions of said display list from said FIFO controller means.

5,329,616

COMPRESSED IMAGE STORES FOR HIGH RESOLUTION COMPUTER GRAPHICS

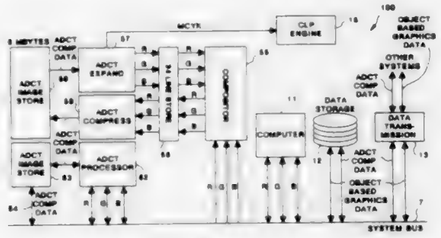
Kia Silverbrook, Woollahra, Australia, assignor to Canon Kabushiki Kaisha, Tokyo, Japan and Canon Information Systems Research Australia Pty. Ltd., New South Wales, Australia

Filed Aug. 13, 1991, Ser. No. 744,703

Claims priority, application Australia, Aug. 16, 1990, PK 1784; Aug. 16, 1990, PK 1785; Nov. 19, 1990, PK 3418

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—164 **24 Claims**



1. A graphics system comprising:

computer means connected to a bus, said computer means calculating at least one image from input data supplied via said bus;

a memory buffer connected to said bus for storing a portion of the at least one image as the portion is calculated; and

processor means connected to said memory buffer and an image memory for

(1) compressing the portion when said memory buffer is full, and then storing the compressed portion in said image memory as compressed data, and

(2) upon calculation of a next portion of the one image and expanding a part of the compressed portion from the image memory for combining with the next portion, compressing the combined image and then storing the combined image into said image memory.

5,329,617

GRAPHICS PROCESSOR NONCONFINED ADDRESS CALCULATION SYSTEM

Michael D. Asal, Sugar Land, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 735,203, Jul. 24, 1991, abandoned, which is a continuation of Ser. No. 386,057, Jul. 23, 1989, abandoned. This application Nov. 10, 1993, Ser. No. 150,569

Int. Cl.[5] G06F *12/10*; **G09G** *1/02*

U.S. Cl. 395—166 **8 Claims**



MODE 1: VALUE A > 0, VALUE B = 0 — SHIFT ONCE - THE MAGNITUDE OF SHIFT CONTROLLED BY VALUE A

MODE 2: VALUE A > 0, VALUE B > 0 — SHIFT TWICE - EACH MAGNITUDE OF SHIFT CONTROLLED BY A AND THEN B

MODE 3: VALUE A = 0 — PITCH ARBITRARY (MULTIPLICATION)

3. A method of calculating the linear address of a graphical display from presented X-Y binary value coordinates, said display having a number of bits within each pixel in the X direction and a pitch dimension, expressed in binary format,

between rows in the Y direction, said method comprising the steps of:

accessing a first register to determine a first value contained therein;

based upon a determined first value different from a designated value, indicating that the pitch is an exact power of two or that the pitch is calculated to be the sum of two powers of two, shifting a presented Y coordinate binary value a number of places dependent upon said first value to obtain a first resultant value;

based upon said shifting of said Y coordinate, accessing a second register to determine a second value contained therein;

based upon a determined positive second value, shifting said presented Y coordinate binary value a number of places dependent upon said second value to obtain a second resultant value;

adding together said first and second resultant values; and

based upon a determined first value equal to said designated value, indicating that the pitch is neither an exact power of two nor the sum of two powers of two, enabling a full multiplication of said presented Y coordinate binary number by said binary pitch dimension to obtain a third resultant value.

5,329,618

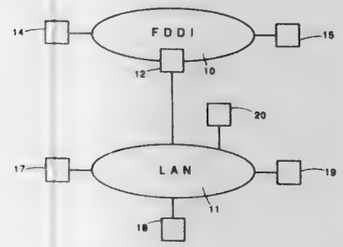
LOOK-UP TABLE FOR A BRIDGE IN A DATA COMMUNICATIONS SYSTEM

Yossef Moati, Haifa; Ilan Glazer, Tel-Aviv; Gabi Ben-David, Carmiel; Yoram Rimoni, Haifa; Moshe Zaiger, Kiryat Haim, and Yechiel Kurtz, Haifa, all of Israel, assignors to Fibronics Ltd., Haifa, Israel

Filed Apr. 2, 1992, Ser. No. 862,459

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **10 Claims**



1. In a bridge for interconnecting first and second networks in a data communications system, each network including a plurality of nodes having respective source addresses, said bridge being responsive to a destination address associated with a data transmission reaching the bridge from one of the nodes in the first network for forwarding the data transmission to the second network unless the destination address corresponds to an address in the first network, said source and destination addresses each having a total of (m+n) binary data bits;

a look-up table for storing the destination addresses therein, comprising:

an encoding means responsive to an (m+n) bit address for producing first and second codes having respectively m and n bits of data which together allow the (m+n) bit address to be decoded unambiguously,

a random access memory (RAM) coupled to the encoding means and having m addressable locations each for storing at least n bits of data, and

a contents addressable memory (CAM) coupled to the encoding means and having a plurality of addressable locations each for storing at least (m+n) bits of data; wherein:

if the location in RAM whose address is equal to the first code is available, then the second code is stored in said location,

if the location in RAM whose address is equal to the first code is not available and the second code is not stored therein already, then all (m+n) bits of said (m+n) bit address are stored in an available location in the CAM unless they are stored therein already, and

a destination address is looked up by reading the contents of the CAM as well as the contents of the location in the RAM whose address is equal to the first code.

5,329,619

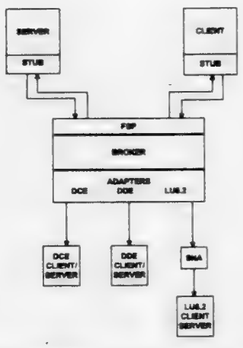
COOPERATIVE PROCESSING INTERFACE AND COMMUNICATION BROKER FOR HETEROGENEOUS COMPUTING ENVIRONMENTS

Peter Pagé, Darmstadt; Ruediger Warns, Aisbach; Terence G. Kennedy, and Omid Ejtemai-Jandaghi, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Software AG, Eberstadt, Fed. Rep. of Germany

Filed Oct. 30, 1992, Ser. No. 969,722

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **26 Claims**



1. A communication system for managing communication of messages among a plurality of participants in a computing environment, the participants including a server residing on a first computer, and a client residing on a second computer, the first and second computers being heterogeneous, the client and server sending messages to each other, the messages including a request from the client for a service, and the server providing a service, the participants being connected by a physical network with a network protocol, said system comprising:

a protocol independent communications transport layer, said transport layer having a low level application programming interface (LAPI) and accepting messages from the participants via the LAPI and said transport layer communicating with the physical network via the network protocol; and

a service broker, said service broker receiving the service request from the client and determining if the service provided by the server matches the service request, and, if so, communicating the service request to the server.

5,329,620

DAISY CHAINABLE VOICE-DATA TERMINAL

Gary D. Alford, Campbell, and Robert E. Sellers, Santa Clara, both of Calif., assignors to One Touch Systems, Inc., Santa Clara, Calif.

Filed Mar. 25, 1992, Ser. No. 858,318

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **3 Claims**

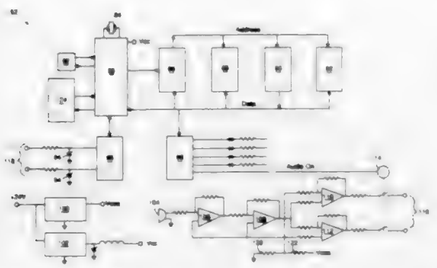
1. A response keypad unit, comprising:

an electret microphone;

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an audio amplifier having an input connected to the microphone and having a differential output for low-noise operation;

a daisy chain cable to distribute on a differential wire pair an audio channel, a digital serial input/output (SIO) channel and a power bus;



switching means connected to the daisy chain cable and said differential output of the audio amplifier for selectively coupling the audio amplifier to the daisy chain; and

microcomputer means connected to the daisy chain cable and including means for responding to a plurality of signals present on said SIO channel and including means for issuing a signal to the switching means to change its status.

5,329,621

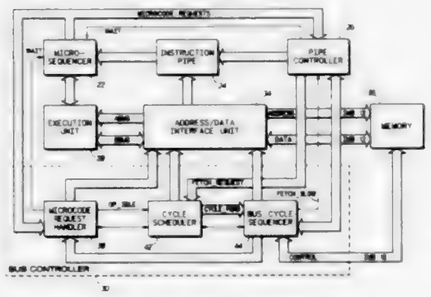
MICROPROCESSOR WHICH OPTIMIZES BUS UTILIZATION BASED UPON BUS SPEED

Bradley G. Burgess; James B. Eifert, and Michael S. Taborn, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 23, 1989, Ser. No. 425,082

Int. Cl.[5] G06F *9/28*

U.S. Cl. 395—325 **3 Claims**



1. A digital computing system comprising:

instruction execution and sequencing means for executing each of a plurality of instructions and for determining a sequence of instruction execution, the instruction execution and sequencing means further comprising:

i) instruction pipe means for storing a plurality of instructions;

ii) pipe controller means coupled to the instruction pipe means for monitoring the instruction pipe means and for providing prefetch request signals; and

iii) operand request means for providing operand read/-write request signals;

bus controller means coupled to the instruction execution and sequencing means for receiving the prefetch request signals and the operand read/write request signals and for operating a communication bus to perform prefetch bus cycles and operand read/write bus cycles, the bus controller means further comprising:

i) bus cycle scheduler means for determining whether to commence a prefetch bus cycle, commence an operand read/write bus cycle or to commence no bus cycle;

wherein the improvement comprises:

the bus controller further comprises bus speed determination means for determining a time required to complete a previously completed bus cycle and for providing a bus speed signal; and

the pipe controller means is coupled to the bus speed determination means to receive the bus speed signal and is for determining whether to provide the prefetch request signal based on a value of the bus,speed signal.

5,329,622

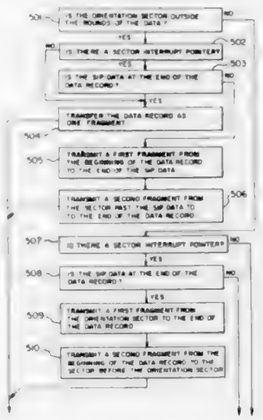
SYSTEM FOR RETRIEVAL OF A DATA RECORD BY BUFFERING THE RECORD IN SEGMENTS AND BEGINNING TRANSMISSION PRIOR TO THE BUFFER OBTAINING THE ENTIRE RECORD

Jay S. Belsan, Nederland, and Charles A. Milligan, Golden, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation of Ser. No. 419,593, Oct. 10, 1989, abandoned. This application Oct. 23, 1991, Ser. No. 780,998

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—250 **17 Claims**



1. A data read apparatus for reading data from a rotating media in a data storage device,

said rotating media having a plurality of tracks, a plurality of records subdividing said plurality of tracks, and a plurality of sectors subdividing said plurality of records;

said data storage device having a plurality of read/write heads for reading and writing said rotating media, a control module in communication contact with and interposed between a control unit and said plurality of read/-write heads, said control unit in communication contact with a processor by a data channel;

said data read apparatus comprising;

plurality of buffer memory means wherein each one of said plurality of read/write heads is coupled to a separate one of said plurality of buffer memory means;

means, responsive to a data read request received from said processor identifying a requested data record, for detecting a first sector boundary encompassed by said requested data record as said first sector boundary appears under a specific one of said plurality of read/write heads which is closest to the first sector boundary subsequent to said data read request;

means, in said data storage device, for identifying a beginning of said requested data record;

means for reading a first segment of said requested data record, from said first sector boundary to the end of said requested data record, into a specific one of said plurality of buffer memory means which corresponds to said specific one of said plurality of read/write heads;

means for transmitting said first segment of said requested data stored in said specific buffer memory means to said control module;

means, in said control module, for transferring said first segment of said requested data record to said processor prior to said specific one of said plurality of read/write heads completing said data read request for said requested data record;

means, in said data storage device and responsive to said means for identifying, for reading a second segment having a plurality of portions of said requested data record, from said identified beginning of said requested data record to said first sector boundary, into said specific buffer memory means;

means for transmitting a first portion of said second segment stored in said specific buffer memory means to said control module; and

wherein said transferring means transfers the first portion of said second segment of said requested data record stored in said control module to said processor prior to said specific one of said plurality of read/write heads reaching said first sector boundary while reading other portions of said second segment, upon reaching said first sector boundary completing transferring of said second segment, thereby completing transmission of said requested data record to said processor.

5,329,623

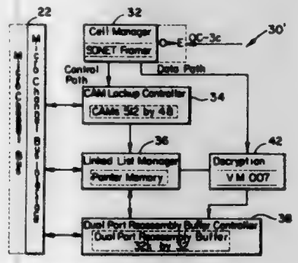
APPARATUS FOR PROVIDING CRYPTOGRAPHIC SUPPORT IN A NETWORK

Jonathan M. Smith, Philadelphia; C. Brendan S. Traw, Bensalem, and David J. Farber, Landenberg, all of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 900,163, Jun. 17, 1992. This application Nov. 12, 1993, Ser. No. 152,085

Int. Cl.[5] G06F *15/02*

U.S. Cl. 395—275 **10 Claims**



1. An interface for coupling a host computer to a high-speed telecommunications network, comprising reassembler means for reassembling and decrypting data that has been encrypted in accordance with a pre-defined key and segmented into a plurality of asynchronous transfer mode (ATM) cells, each cell comprising a virtual channel identifier (VCI) and a cell body, said reassembler means comprising:

(a) cell manager means for separating each cell body from that cell body's corresponding VCI;

(b) linked list manager means for storing linked list data indicative of addresses at which said cell bodies are to be stored;

(c) content addressable memory (CAM) means for storing said VICs and providing pointers into said linked list data;

(d) lookup controller means, operatively coupled to said cell manager means, said linked list manager means, and said CAM means, for writing said VCIs to said CAM means;

(e) reassembly buffer means, operatively coupled to said linked list manager means, for storing said cell bodies; and

(f) decryption means, operatively coupled to said cell manager means, said linked list manager means, and said reassembly buffer means, for decrypting said data in accordance with said key and writing the decrypted data to said reassembly buffer means.

5,329,624

METHOD OF CONTROLLING DATA TRANSFER BETWEEN MAIN MEMORY OF CENTRAL COMPUTER AND INPUT/OUTPUT DEVICE AND ARRANGEMENT THEREFOR

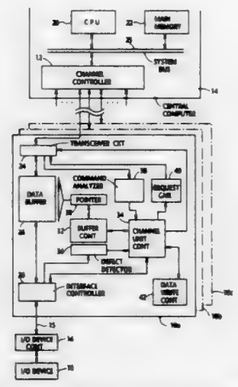
Yasuji Kawagishi, and Toshiaki Someya, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1991, Ser. No. 813,849

Claims priority, application Japan, Dec. 27, 1990, 2-414884

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 **6 Claims**



1. A method for temporarily storing data from a computer before being applied to a peripheral device comprising the steps of:

(a) determining a data write command from said computer, said data write command indicating data transfer from said computer to said peripheral device is required;

(b) responding to the determination of said data write command by issuing a data retrieve instruction to be applied to said computer for acquiring data stored in said computer into a buffer and by commencing establishment of a connection with said peripheral device; and

(c) storing the data from said computer in said buffer.

5,329,625

SYSTEM TO SERVICE PROCESSOR INTERFACE FOR A TABLET COMPUTER

Krishnamurthi Kannan, Yorktown Heights, N.Y.; Kyriakos Leontiades, Boca Raton, Fla.; Frank P. Novak, Park Ridge, N.J., and Vikram Sharma, Pleasantville, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,278

Int. Cl.[5] G06F *13/00*

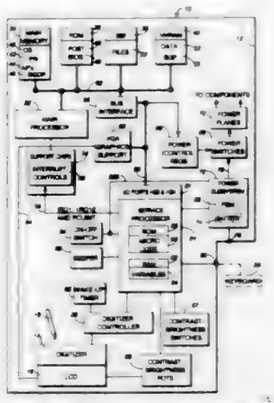
U.S. Cl. 395—275 **14 Claims**

1. A digitizer tablet computer comprising:

a pen actuated digitizer for generating digitizer data indicative of pen position;

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a digitizer controller connected to said digitizer for converting said digitizer data into digital coordinate data indicative of pen position;
a display for visually indicating representations of pen position;
a host processor connected to said display for controlling operation thereof;
a service processor connected to said host processor through an interface comprising an input buffer, an output buffer, and a controller status register (CSR);



first means connecting said service processor to said digitizer controller for receiving and buffering said coordinate data and transmitting such coordinate data to said service processor for processing;
second means in said service processor for transforming said coordinate data into processed data;
and third means for transmitting said processed data from said service processor to said host system through said interface

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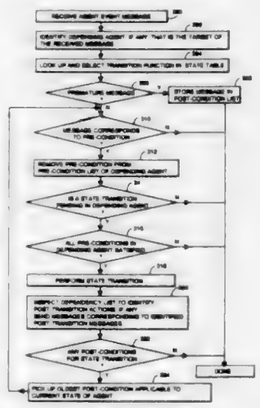
5,329,626

SYSTEM FOR DISTRIBUTED COMPUTATION PROCESSING INCLUDES DYNAMIC ASSIGNMENT OF PREDICATES TO DEFINE INTERDEPENDENCIES

Johannes Klein, San Francisco; Alberto Lutgardo; Edward Y. Chang, both of Santa Clara; Edward C. Cheng, S. San Francisco; Dora L. Lee, San Francisco, and Edward S. Lu, San Bruno, all of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 23, 1990, Ser. No. 601,990
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—375 **12 Claims**

1. In a computer system, a method of performing distributed computations, the steps of the method performed by said computer system comprising:
providing a set of cooperating computational agents to perform each distributed computation, each computational agent being programmed to progress through a sequence of state transitions among a predefined set of states;
defining and storing in at least one computer memory a plurality of distinct predicates that can be assigned to ones of said computational agents, each distinct predicate specifying a distinct state transition dependency between state transitions of first and second specified ones of said computational agents; each said defined predicate specifying a state transition of said first computational agent that is to be blocked until said second computational agent performs a specified action that satisfies said each defined predicate; wherein a first one of said plurality of defined predicates is a mutual strong commit dependency predicate that requires said specified first and second computational agents to commit a distributed computation's results only when said first and second computational agents mutually agree to commit said distributed computation's results and otherwise requires said first and second computational agents not to commit said distributed computation's results; and wherein a second one of said plurality of defined predicates is a finish dependency predicate that determines which of said specified first and second computational agents must finish a corresponding portion of said distributed computation before the other of said specified first and second computational agents;
dynamically assigning a set of predicates to the set of computational agents performing each distributed computation so as to define a corresponding set of state transition interdependencies said set of computational agents; wherein each assigned predicate is selected from said plurality of predicates, and different sets of predicates are assigned to the sets of computational agents for different distributed



computations; storing in at least one computer memory dependency data for each said computational agent specifying (A) a first set of state transitions of said each computational agent that are to be blocked, (B) preconditions for allowing each of said first set of state transitions to proceed, (C) a second set of state transitions of said each computation agent that are preconditions for state transitions by other ones of said computational agents for which each of said second set of state transitions are preconditions;
performing each distributed computation with said set of computational agents provided for that distributed computation, including blocking state transitions by ones of said set computational agents in accordance with said predicates assigned to said set of computational agents, and allowing each said blocked state transition to proceed when said action specified by the corresponding predicate is performed.

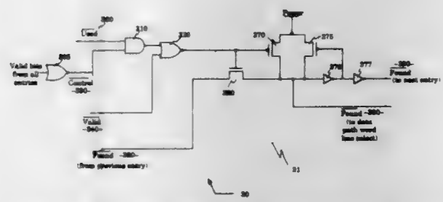
5,329,627

METHOD AND APPARATUS FOR A TRANSLATION LOOKASIDE BUFFER WITH BUILT-IN REPLACEMENT SCHEME IN A COMPUTER SYSTEM

Sunil Nanda, Los Altos, and Norman M. Hayes, Sunnyvale, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 17, 1992, Ser. No. 870,356
Int. Cl.[5] G06F *12/12*
U.S. Cl. 395—400 **12 Claims**

1. In a computer system using virtual addressing for its memory operations, a circuit for selecting an entry in a translation lookaside buffer to be replaced, wherein said translation lookaside buffer stores a plurality of entries of virtual-to-physical address translations, each of said plurality of entries has a used bit and a valid bit, said used bit for indicating when an entry is accessed for said memory operations, said valid bit for indicating when the virtual-to-physical translation of an entry is not valid, said circuit comprising:
a plurality of validity means, each of said plurality of validity means coupled to the valid bit of each entry for determining whether said entry is valid and if not, said validity means causing a first signal to be asserted;
a plurality of use means, each of said plurality of use means coupled to the used bit of each entry and to said validity means for determining whether said entry is used when a control signal is present and if not, said use means asserting a second signal to said validity means, said asserted second signal causing said first signal to be asserted;



a plurality of ripple means, each of said plurality of ripple means coupled to each entry, to an immediately previous entry and to a next consecutive entry, said ripple means receiving said first signal from the validity means of each entry and a first FOUND signal from said immediately previous entry, said ripple means outputting a second FOUND signal, said ripple means causing said second FOUND signal to be asserted when said first signal is asserted and said first FOUND signal is de-asserted, said ripple means causing said second FOUND signal to be asserted when said first FOUND signal is asserted, said second FOUND signal being input to the ripple means of said next consecutive entry, wherein an asserted second FOUND signal for an entry causes the second FOUND signal for said next consecutive entry to be asserted, such that an entry with an asserted second FOUND signal propagates said asserted second FOUND signal through next consecutive entries.

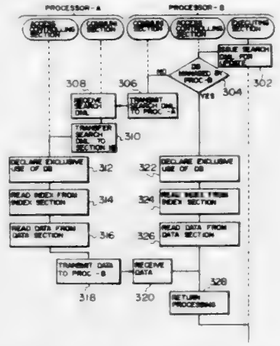
5,329,628

DATABASE SYSTEM PROVIDING DIRECT ACCESS FOR READS AND INDIRECT LOCKED ACCESS FOR WRITES AND READS IN WHICH AN ERROR WAS DETECTED IN PREVIOUS ATTEMPT

Shoji Yamamoto, Chigasaki, and Takashi Sumiyoshi, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1991, Ser. No. 644,910
Claims priority, application Japan, Jan. 29, 1990, 2-16025
Int. Cl.[5] G06F *12/00, 15/40*
U.S. Cl. 395—425 **20 Claims**

1. A database system comprising:
database means for storing a database;
managing processor means coupled to said database means, for managing said database means and selectively performing exclusive control to access said database means in response to an inputted particular request; and,
processor means coupled to said database means and to said managing processor means for generating a first database access request in accordance with a user program executed in the processor means, the processor means including:
means for i) directly accessing said database means in accordance with the generated database access request regardless of the exclusive control of said processor means over said database means when the first generated database access request is a first one of a first predetermined request type not accompanying a write operation to said database, and ii) outputting the first generated database access request to said managing processor means as the particular request when the generated database access request is a second one of a second predetermined request type accompanying a write operation to said database to indirectly access said data-



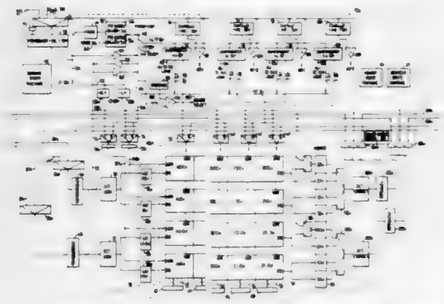
base means through said managing processor means exclusively controlling said access to said database means; and,
means for outputting the first database access request as the particular request to said managing processor means in response to an error in a previous direct access to said database means when the first generated database access request is the first one of the first predetermined request type.

5,329,629

APPARATUS AND METHOD FOR READING, WRITING, AND REFRESHING MEMORY WITH DIRECT VIRTUAL OR PHYSICAL ACCESS

Robert W. Horst, Champaign, Ill.; I. Ko Yamamoto, Santa Clara, and Ajay K. Shah, San Jose, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Jul. 3, 1989, Ser. No. 375,428
Int. Cl.[5] G06F *1/08*
U.S. Cl. 395—425 **22 Claims**



1. A computer memory system capable of receiving a plurality of virtual or physical address requests, comprising:
a row and column-addressable random access memory having at least one row address latch capable of indicating a plurality of memory locations, all of said indicated memory locations having a common physical row address;
at least a first register for storing at least portions of a row

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address corresponding to said common physical row address during at least a first and a second of said plurality of address requests, wherein the contents of said first register comprises at least portions of a virtual address during a first time period and at least portions of a physical address, different from said virtual address, during a second time period said second time period being different from said first time period; and

a comparator for receiving at least portions of an address request and for comparing said at least portions of an address request to at least portions of said first register to determine whether the memory location indicated by said address request is included in said plurality of memory locations wherein said at least portions of an address request comprises at least portions of one of said plurality of virtual or physical address requests and wherein said comparitor is used to compare said at least portions of an address request to said at least portions of said first register when said one of said plurality of virtual or physical address requests is a virtual address request and wherein said comparitor is also used to compare said at least portions of an address request to said at least portions of said first register when said one of said plurality of virtual or physical address requests is a physical address request.

5,329,630

SYSTEM AND METHOD USING DOUBLE-BUFFER PREVIEW MODE

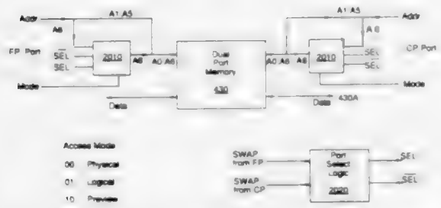
David R. Baldwin, Weybridge, United Kingdom, assignor to DuPont Pixel Systems Limited, London, United Kingdom

Continuation of Ser. No. 326,781, Mar. 21, 1989, abandoned. This application Jul. 31, 1992, Ser. No. 925,238

Claims priority, application United Kingdom, Mar. 23, 1988, 8806850; Mar. 23, 1988, 8806856; Mar. 23, 1988, 8806864; Mar. 23, 1988, 8806865

Int. Cl.[5] **G06F** *12/06*

U.S. Cl. 395—425 **19 Claims**



1. A subsystem for double buffering, comprising;

first and second interface ports;

a dual port memory having first and second parts;

a memory access controller, which

is connected to receive one or more bank-switch request signals, and

maintains an allocation of said two parts of said memory between said interface ports, and conditionally changes said allocation in accordance with said bank-switch signals, and

is connected to receive a mode signal, and

is connected and configured to arbitrate access to said two parts of said memory from said interface ports, in accordance with said allocation and with the mode selected by said mode signal, such that:

when a first mode has been selected by said mode signal, any part of said memory may be read or written to by either of said ports, regardless of said allocation; and

when a second mode has been selected by said mode signal, each said port can read or write to only the respective part of said memory defined by said allocation; and

when a third mode has been selected by said mode signal, said memory access controller arbitrates access to said two parts of said memory from said interface ports such that each said port can read the opposite part of said memory, which said allocation has assigned to the other respective one of said ports.

5,329,631

MICROPROCESSOR SYSTEM FOR EFFECTIVELY USING A PART OF AN ADDRESS SPACE

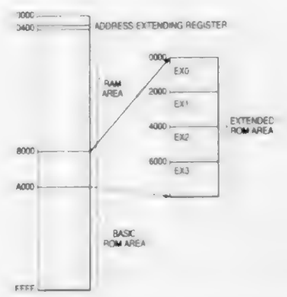
Masaaki Ishibashi, Tama, and Tsutomu Shimasue, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 494,480, Mar. 16, 1990, abandoned. This application Sep. 3, 1991, Ser. No. 752,993

Claims priority, application Japan, Mar. 16, 1989, 1-62005

Int. Cl.[5] **G06F** *12/06*

U.S. Cl. 395—425 **14 Claims**



1. A microprocessing system for extending an address space, comprising:

a basic semiconductor memory having a first address space formed by a one chip memory and a second address space formed by at least one memory chip, said first address space including a part for storing at least one of a program and data before startup of the microprocessing system;

an extended semiconductor memory re-using said part of the first address space as an extended address space after startup of the microprocessing system to address said extended semiconductor memory;

system start up indicating means for indicating whether said microprocessing system is in a system start up state;

a microprocessor, connected to said basic and extended semiconductor memories to directly address the first and second address spaces and operatively connected to said system start up indicating means, said microprocessor comprising reading and writing means for reading said one of the program and the data from said part of said first address space and for writing said one of the program and the data into said second address space when said system start up indicating means indicates that said microprocessing system is in the system start up state; and

address extending hard register means, connected to said microprocessor, having the address located in said second address space, for storing an extended address for accessing said extended semiconductor memory instead of accessing said part of said first address space when said system start up indicating means indicates that said microprocessing system is not in the system start up state and when said part of said first address space is addressed.

5,329,632

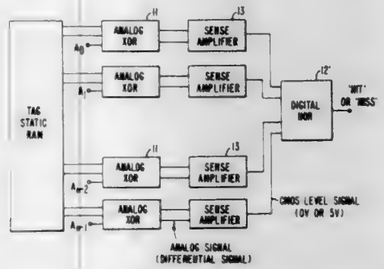
CACHE MEMORY SYSTEM, AND COMPARATOR AND MOS ANALOG XOR AMPLIFIER FOR USE IN THE SYSTEM

Sheau-Jiung Lee, and Gene Yang, both of Taoyuan, Taiwan, assignors to Acer Incorporated, Taipei, Taiwan

Division of Ser. No. 583,228, Sep. 14, 1990, Pat. No. 5,218,246. This application Feb. 26, 1993, Ser. No. 23,959

Int. Cl.[5] **G06F** *12/08*

U.S. Cl. 395—425 **17 Claims**



5. A Cache system of a computer system having a main memory and N-bit address lines, said computer supplying a N bits address to said lines, said main memory storing data, said Cache system comprising:

Data Random Access Memory (Data RAM) for storing a copy of frequently used data from said main memory; and

a Tag RAM including:

(a) Static Random Access Memory (SRAM) for storing addresses of said frequently used main memory data having a copy in the Data RAM, said SRAM having N bits data output;

(b) a metal oxide semiconductor (MOS) analog comparator for comparing N bits data output of said SRAM with said N bits address on the N bits address lines of said computer system;

wherein said comparator causes the Data RAM to supply said copy of said frequently used main memory data when said N bits data output of said SRAM are identical to the N bits address on the address lines of the computer system;

said MOS analog comparator including:

N number of MOS analog exclusive-OR (XOR) means, each of said analog XOR means having inputs connected to one bit of said address lines to be compared and to one bit of said data output of said SRAM, for performing XOR comparison of said one bit of said data output with one bit of said address lines;

a MOS not-OR (NOR) means having N input gate terminals each of which is connected to one output of said analog XOR means, said NOR means outputting a logic "1" state when every bit of said address lines is identical with a corresponding bit of said data output of said SRAM and outputting a logic "0" state when at least one bit of said address lines is not identical with said corresponding bit of said data output of said SRAM;

wherein the MOS analog XOR means has a first and a second output, said analog XOR means including:

a constant current source;

a first MOS switch having a first source terminal connected to said constant current source, a first gate terminal connected to one bit of said address lines;

a first MOS differential pair having a first and a second input MOS transistors whose source terminals being commonly connected to a drain terminal of said first MOS switch;

a second MOS switch having a second source terminal connected to the source terminal of said first MOS switch, a second gate terminal connected to complementary signal of said one bit of said address lines;

a second MOS differential pair having a third and a fourth input MOS transistors whose source terminals being commonly connected to a drain terminal of said second MOS switch;

wherein drain terminals of the first and third input MOS transistors are connected to the first output of the analog XOR means, and drain terminals of the second and fourth input MOS transistors are connected to the second output of the analog XOR means, and wherein said one bit of said SRAM data output is represented by two different signal values, each of said two signal values being applied to a gate terminal of one of the transistors of each differential pair in order to compare said one bit of said address lines with said one bit of said SRAM data output.

5,329,633

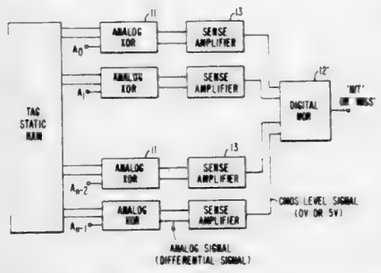
CACHE MEMORY SYSTEM, AND COMPARATOR AND MOS ANALOG XOR AMPLIFIER FOR USE IN THE SYSTEM

Sheau-Jiung Lee, and Gene Yang, both of Taoyuan, Taiwan, assignors to ACER Incorporated, Taipei, Taiwan

Division of Ser. No. 583,228, Sep. 14, 1990, Pat. No. 5,218,246. This application Feb. 26, 1993, Ser. No. 23,965

Int. Cl.[5] **G06F** *12/08*

U.S. Cl. 395—425 **20 Claims**



1. A Tag random access memory (RAM) device for use in a cache Tag RAM of a computer system with N-bit address lines, said memory device comprising:

a Tag static RAM having N bits data output;

a metal oxide semiconductor (MOS) comparator for comparing the N bits data output of said static RAM with said N bits address line of said computer system, said comparator including:

(a) N number of MOS analog exclusive-OR (XOR) means each having an input connected to one bit of address lines of said computer system and having a reference input connected to one bit of said data output of said Tag static RAM for XOR comparison with one bit of said address lines;

(b) a MOS not-OR (NOR) means having N input gate terminals each connected to one output of said analog XOR means, said NOR means outputting a logic "1" state when every bit of address lines of said computer system is identical with a corresponding bit of data output of said Tag RAM and outputting a logic "0" state when at least one bit of address lines of said computer system is not identical with said corresponding bit of data output of said Tag RAM;

The MOS analog NOR means including:

a constant current source;

first and second load means;
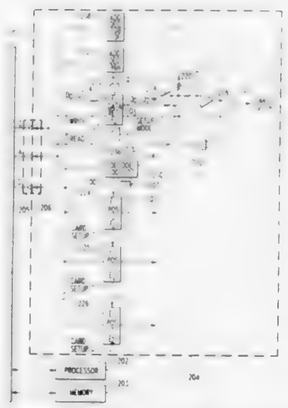
a reference MOS transistor having its source terminal connected to said constant current source, its gate terminal connected to a constant reference voltage and drain terminal connected to the first load means; and

N number of input MOS transistors, the source terminal of each of said input MOS transistors being connected to said constant current source and the drain terminal of

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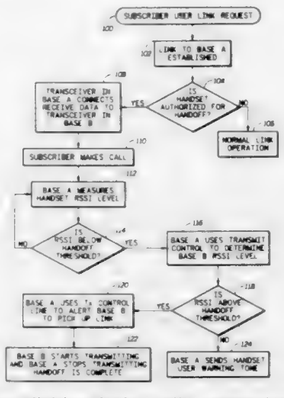
each of said input MOS transistors being connected to the second load means, for forming a MOS analog NOR amplifier, wherein drain terminals of said input MOS transistors generate a first output voltage at a node common to said drain terminals of said input MOS transistors and the drain terminal of said reference MOS transistor generates a second output voltage, so that when a logic "0" signal is applied to the input gate terminal of each of said input MOS transistors, the first output voltage is higher than the second output voltage, representing a HIT status, and so that when at least one logic "1" signal is applied to the input gate terminal of at least one input MOS transistor, the second output voltage is higher than the first output voltage, representing a MISS status.

5,329,634
COMPUTER SYSTEM WITH AUTOMATIC ADAPTER CARD SETUP
Stephen P. Thompson, Delray Beach, Fla., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Dec. 2, 1991, Ser. No. 801,215
Int. Cl.[5] G06F *13/00, 13/376*
U.S. Cl. 395—500 **9 Claims**



1. A computer adapter card, comprising in combination:
bus connecting means for electrically connecting said adapter card to a computer bus;
a first data register for storing a programmable adapter card number received from said bus connecting means;
a first address decoder for decoding a first address received from said bus connecting means, said first address decoder providing a first enable signal to said first data register in response to a decode of said first address;
switch means for selecting a switch selected adapter card number;
a second data register for storing setup data received from said bus connecting means;
a second address decoder for decoding a second address received from said bus connecting means, said second address decoder providing a second enable signal to said second data register in response to a decode of said second address; and
a comparator for comparing said programmable adapter card number stored in said first data register with said switch selected adapter card number, said comparator providing a third enable signal to said second data register in response to a match between said programmable adapter card number in said first data register and said switch selected adapter card number;
such that access to said second data register is provided by setting said switch means to said switch selected adapter card number, loading said switch selected adapter card number into said first data register, and addressing said second data register at said second address.

5,329,635
SEAMLESS HANDOFF FOR RADIO TELEPHONE SYSTEMS
Craig P. Wadin, Sunrise; Stelios J. Patsiokas, Plantation, and Paul D. Marko, Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 12, 1992, Ser. No. 881,975
Int. Cl.[5] H04Q *7/02*; H04J *3/16*
U.S. Cl. 455—33.2 **9 Claims**



1. In a time-division duplex radio communication system comprising a plurality of base stations and portable radio units communicating on a plurality of alternating transmit and receive frames, a method for seamless transfer of a communication link from a first base station to a second base station comprising the steps of:
at the first base station;
receiving a communication link request from a calling portable radio unit;
synchronizing with the calling portable radio unit
determining whether the calling portable radio unit has handoff authorization;
connecting received data to a transceiver in the second base station to allow for bit level synchronization to the calling portable radio unit;
measuring a first RSSI level at the first base station for the calling portable radio unit;
determining whether the first RSSI level for the calling portable radio unit is below a first handoff threshold;
determining a second RSSI level for the calling portable radio unit, as measured at the second base station, if the first RSSI level for the calling portable radio unit is below the first handoff threshold,
determining whether the second RSSI level for the calling portable radio unit is above a second handoff threshold;
if the first RSSI level is below the first handoff threshold and the second RSSI level is above the second handoff threshold, alerting the second base station to pick up the communication link;
at the second base station:
synchronizing with the calling portable radio unit;
receiving the alert to pick up the communication link from the first base station; and
commencing to transmit in a next transmit frame of the second base station following a last transmit frame of the first base station.

DESIGN PATENTS

GRANTED JUL. 12, 1994

ERRATA

For CLASS	See PATENT NO.
6-634	D 348,562
12-181	D 348,705
3-306	D 348,760

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348,555
COOKIE
Ron L. Harden; Ray Goins, and Darryl Jones, all of Collegedale, Tenn., assignors to McKee Foods Corporation, Collegedale, Tenn.
Filed Jun. 17, 1992, Ser. No. 903,097
Term of patent 14 years
U.S. Cl. D1—128



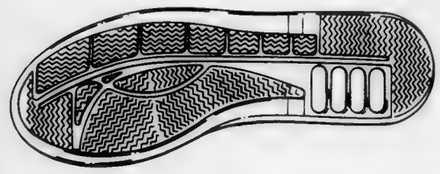
348,556
SOCK
Terry M. Haber, 25011 Castlewood, El Toro, Calif. 92630
Filed Oct. 2, 1992, Ser. No. 58
Term of patent 14 years
U.S. Cl. D2—980



348,557
INFANT GOWN
Twyla Thomas, 1232 S. West Ave., Freeport, Ill. 61032
Filed Apr. 24, 1992, Ser. No. 873,071
Term of patent 14 years
U.S. Cl. D2—718



348,558
SHOE SOLE
Engle E. Saez, Marblehead, Mass., assignor to Sperry Top-Sider, Inc., Cambridge, Mass.
Filed Mar. 25, 1992, Ser. No. 857,310
Term of patent 14 years
U.S. Cl. D2—956



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348,559
SHOE
David Preskar, North Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Aug. 18, 1993, Ser. No. 11,903
Term of patent 14 years
U.S. Cl. D2—969



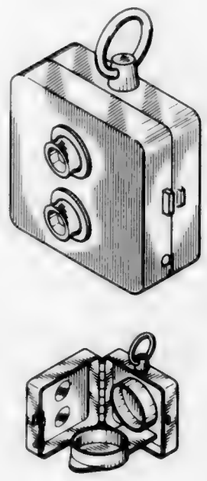
348,560
SHOE UPPER
Steven C. McDonald, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Sep. 17, 1993, Ser. No. 13,064
Term of patent 14 years
U.S. Cl. D2—969



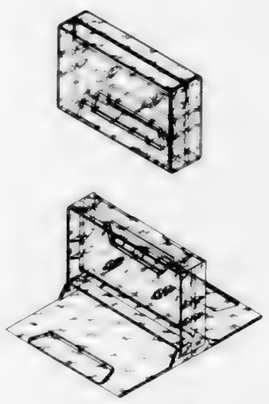
348,561
SHOE UPPER
Sergio G. Lozano, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 13, 1993, Ser. No. 14,112
Term of patent 14 years
U.S. Cl. D2—969



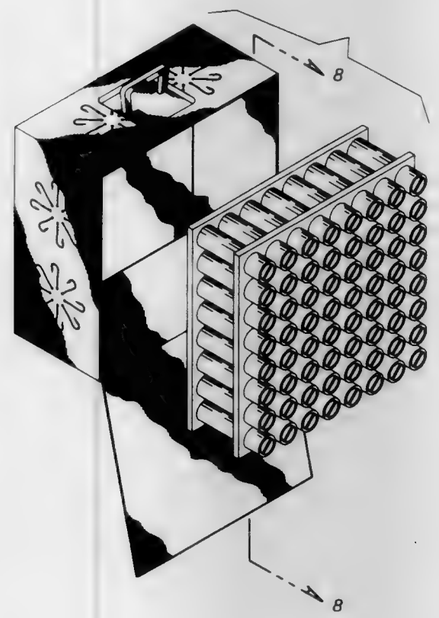
348,562
PERSONAL PORTABLE MEDICATION DISPENSER
Ray E. Smith, P.O. Box 712, Roscoe, Pa. 15477
Filed Dec. 28, 1992, Ser. No. 3,107
Term of patent 14 years
U.S. Cl. D3—203



348,563
CASE FOR AUDIO TAPE CASSETTES
Kazuhisa Horikiri, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 716,231, Jun. 17, 1991, Pat. No. D. 334,284.
This application Jan. 11, 1993, Ser. No. 3,762
Term of patent 14 years
U.S. Cl. D6—634



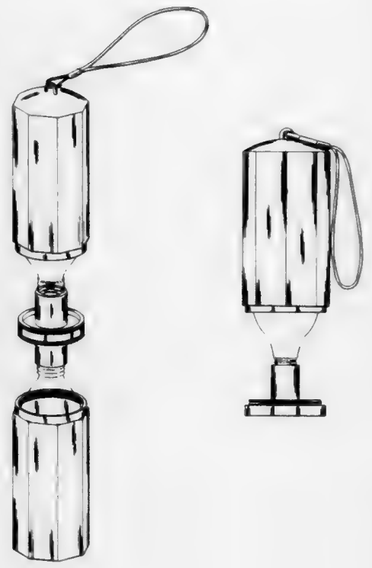
348,564
TACKLE BOX
Craig A. Kalkhof, R.D. I, Box 260, Westlake Rd., Ripley, N.Y. 14775
Filed Sep. 3, 1991, Ser. No. 754,412
Term of patent 14 years
U.S. Cl. D3—284



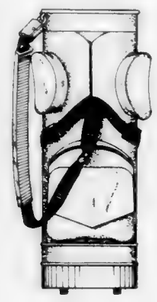
348,565
UTILITY BELT
Wallace L. Cummins, 72 W. Central Ave., Paoli, Pa. 19301
Filed Oct. 6, 1992, Ser. No. 223
Term of patent 14 years
U.S. Cl. D3—215



348,566
LIGHT BULB TRAVEL CARRIER
Waldo W. Neikirk, 581 Chalette Dr., Beverly Hills, Calif. 90213
Filed Mar. 30, 1993, Ser. No. 6,493
Term of patent 14 years
U.S. Cl. D3—201

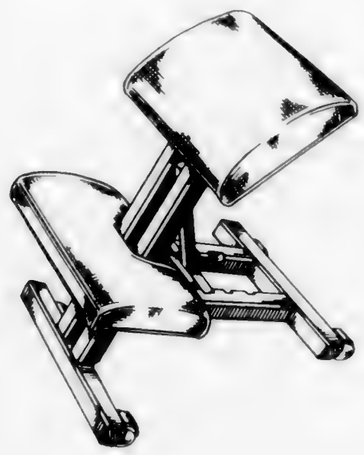


348,567
GOLF BAG
Steven B. Dunn, Santa Ana, Calif., assignor to Bullet Golf Ball, Inc., Santa Ana, Calif.
Filed Feb. 26, 1993, Ser. No. 5,245
Term of patent 14 years
U.S. Cl. D3—255



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348,568
CHAIR
Sylvain Landry, 660 Kenneth Street, Victoria, B.C., Canada V8Z 2B9
Filed Sep. 10, 1992, Ser. No. 943,197
Claims priority, application Canada, Mar. 10, 1992, 10-03-92-1
Term of patent 14 years
U.S. Cl. D6—330



348,569
COMBINED TABLE AND SEAT UNIT
Wilhelm Haussmann, Beuren, Fed. Rep. of Germany, assignor to Robert Krause GmbH & Co. KG, Weilheim/Teck, Fed. Rep. of Germany
Filed Aug. 23, 1991, Ser. No. 749,412
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1991, 9101311
Term of patent 14 years
U.S. Cl. D6—338



348,570
CHAIR
Robert M. Scheper, and Bruce M. Smith, both of Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Jun. 6, 1991, Ser. No. 711,439
Term of patent 14 years
U.S. Cl. D6—366



348,571
CHAIR
Hironaga Obata; Tetsuya Kano, both of Tokyo; Yuji Ishi, and Toru Nagao, both of Osaka, all of Japan, assignors to Itoki Co., Ltd., Osaka, Japan
Filed Sep. 23, 1991, Ser. No. 764,379
Claims priority, application Japan, Mar. 25, 1991, 3-7956
The portion of the term of this patent subsequent to May 17, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



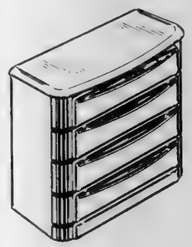
348,572
CHAIR
Peter Glass, 50 Sage Way, Napa, Calif. 94559
Filed Oct. 14, 1992, Ser. No. 426
Term of patent 14 years
U.S. Cl. D6—379



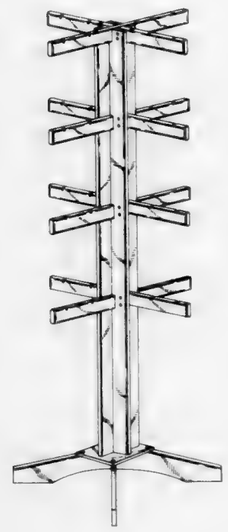
348,573
GARDENER'S WORK BENCH
Donald C. Ewald, Walden, N.Y., assignor to Vertex Services Ltd., Greenwich, Conn.
Filed Mar. 3, 1992, Ser. No. 844,420
Term of patent 14 years
U.S. Cl. D6—400



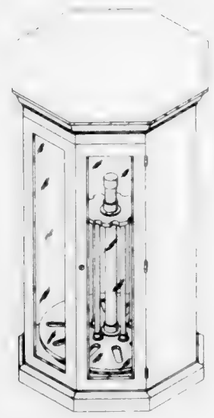
348,574
CHEST
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Aug. 4, 1992, Ser. No. 925,592
The portion of the term of this patent subsequent to May 10, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—446



348,575
PACKAGE DISPLAY RACK
Henry L. Dunn, Parkton, Md., assignor to Dunn Woodworks, Parkton, Md.
Filed Apr. 6, 1992, Ser. No. 864,024
Term of patent 14 years
U.S. Cl. D6—457

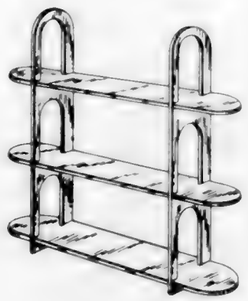


348,576
GUN CABINET
Jerry C. Narramore, 4601 Linpark Dr., Birmingham, Ala. 35222
Filed Jan. 22, 1993, Ser. No. 3,948
Term of patent 14 years
U.S. Cl. D6—470



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348,577
BOOKCASE
Barry Simpson, R.R. 1, Box 156, Warren, Vt. 05674
Filed Oct. 28, 1992, Ser. No. 907
Term of patent 14 years
U.S. Cl. D6—479



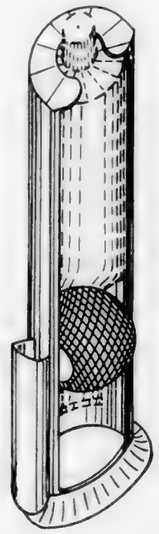
348,578
TABLE
H. Thomas Keller, High Point, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Feb. 23, 1993, Ser. No. 5,110
Term of patent 14 years
U.S. Cl. D6—484



348,579
TOILET TISSUE DISPENSER
Allen E. Brandenburg, Austin, Tex., assignor to Scott Paper Company, Delaware County, Pa.
Filed Oct. 9, 1992, Ser. No. 305
Term of patent 14 years
U.S. Cl. D6—523



348,580
COMBINED TOOTHPASTE TUBE DISPENSER AND TOOTHBRUSH HOLDER
Unto A. Heikkila, Tuurintie 1, SF 20100 Turku, and Hannu K. Hartman, Rauhankatu 1, 20100 Turku 10, both of Finland
Filed Oct. 15, 1992, Ser. No. 455
Term of patent 14 years
U.S. Cl. D6—541



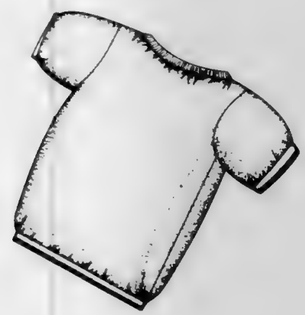
348,581
MINIATURE SHELF
Harry W. Starr, IV, 215 Clearwater, Plainview, Ill. 62676
Continuation-in-part of Ser. No. 556,794, Jul. 23, 1990, Pat. No. Des. 333,584. This application Apr. 23, 1992, Ser. No. 872,666
The portion of the term of this patent subsequent to Mar. 2, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—574



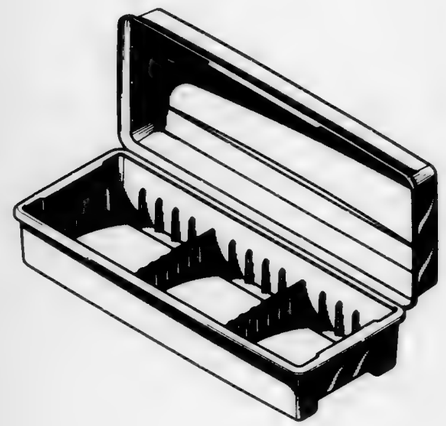
348,582
DOUBLE LOOP CURTAIN ROD SET
William L. Tacchella, Sturgis, Mich., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Jan. 24, 1992, Ser. No. 825,719
Term of patent 14 years
U.S. Cl. D6—575



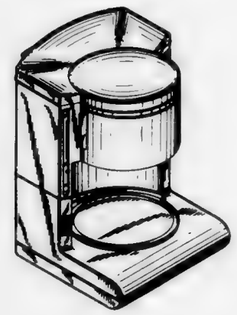
348,583
PILLOW
Linda D. Rubin, Glen Allen, Va., assignor to Stuffed Shirts, Inc., Richmond, Va.
Filed Oct. 22, 1993, Ser. No. 14,453
Term of patent 14 years
U.S. Cl. D6—597



348,584
AUDIO CASSETTE STORAGE CONTAINER
James K. Sankey, Hudson, Ohio, assignor to Alpha Enterprises, Inc., North Canton, Ohio
Filed Aug. 10, 1992, Ser. No. 927,371
The portion of the term of this patent subsequent to Jun. 21, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—632

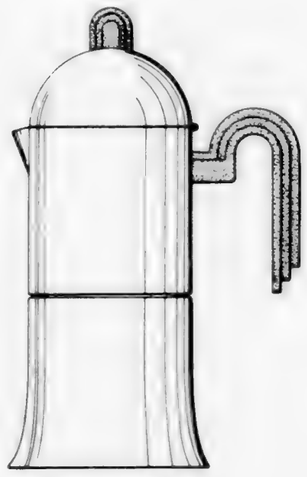


348,585
COFFEE MAKER
John C. K. Sham, Room 1508, Block C, 19 Broadwood Road, Hong Kong, Hong Kong
Filed Jul. 13, 1992, Ser. No. 912,891
Term of patent 14 years
U.S. Cl. D7—309



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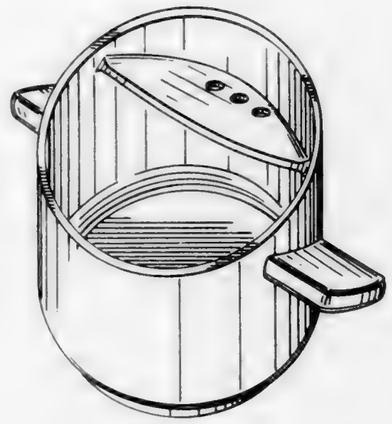
348,586
COFFEE POT
Cesare Menegozzo, Turin, Italy, assignor to Luigi Lavazza S.p.A., Turin, Italy
Filed Dec. 9, 1992, Ser. No. 2,364
Claims priority, application Italy, Jun. 22, 1992, DMA/001821
Term of patent 14 years
U.S. Cl. D7—318



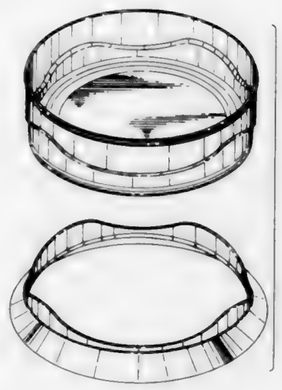
348,587
HAND-HELD ELECTRIC MIXER
Philippe Saltet, Chateaufort, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France
Filed Apr. 12, 1993, Ser. No. 6,900
Claims priority, application France, Oct. 22, 1992, 926 607
Term of patent 14 years
U.S. Cl. D7—376



348,588
COFFEE CUP
Kazuo Yasunaga, 13-24, Morikawachinishi 1-chome, Higashi Osakashi, Osakafu, Japan
Filed Oct. 29, 1992, Ser. No. 913
Term of patent 14 years
U.S. Cl. D7—510



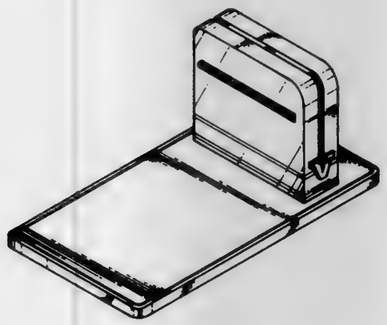
348,589
BOWL WITH BASE
Victor J. J. Cautereels, Eugeen Verelstlei, Belgium, and Ian Ferris, Wokingham, United Kingdom, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Aug. 21, 1992, Ser. No. 934,075
Term of patent 14 years
U.S. Cl. D7—558



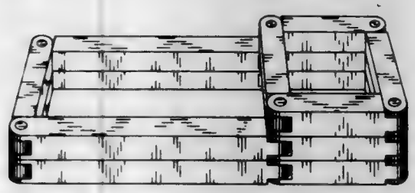
348,590
ESPRESSO TAMPER
Arthur C. Scott, 427 Elm St., Deerfield, Ill. 60015
Filed Feb. 1, 1993, Ser. No. 4,325
Term of patent 14 years
U.S. Cl. D7—682



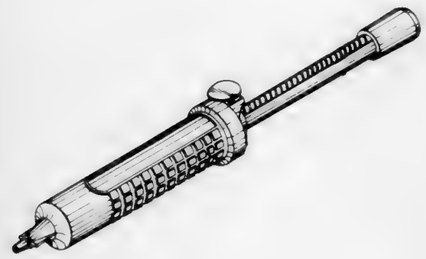
348,591
COMBINED CUTTING BOARD WITH DETACHABLE KNIFE CLEANER/SHARPENER
Dennis L. Willis, 1458 Green Valley Rd., Watsonville, Calif. 95076
Filed Dec. 23, 1992, Ser. No. 2,959
Term of patent 14 years
U.S. Cl. D7—698



348,592
PLANTER
Harry W. Scott, Jr., Dover; Randall W. Britt, and Kenneth L. Renfroe, both of Russellville, all of Ark., assignors to Thompson Industries Inc., Russellville, Ark.
Filed Nov. 4, 1991, Ser. No. 786,991
The portion of the term of this patent subsequent to Aug. 3, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—1



348,593
HAND HELD DESOLDERING TOOL
William S. Fortune, 29866 Cuthbert Rd., Malibu, Calif. 90265
Filed Apr. 21, 1992, Ser. No. 871,638
The portion of the term of this patent subsequent to Sep. 22, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—30



348,594
LID OPENER
Jack G. Clark, Jr., Houston, and Royel F. Montieth, Missouri City, both of Tex., assignors to E.B.S. Equipment Broker Services, Inc., Houston, Tex.
Filed Jan. 19, 1993, Ser. No. 3,743
Term of patent 14 years
U.S. Cl. D8—40

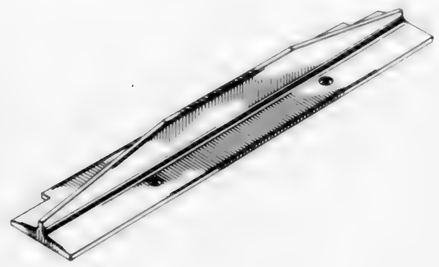


348,595
FULCRUM AREA FOR A TIRE IRON
John D. Kusner, Lyndhurst, Ohio, assignor to Ken-Tool, Akron, Ohio
Filed Aug. 27, 1991, Ser. No. 750,557
Term of patent 14 years
U.S. Cl. D8—89

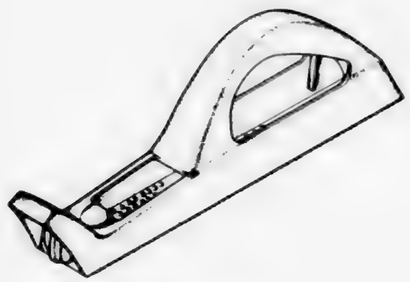


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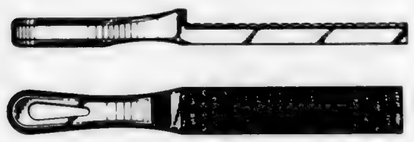
348,596
TRANSOM SUPPORT
Mason E. Slaydon, HC 67 Box 979, Many, La. 71449
Filed Nov. 6, 1992, Ser. No. 1,224
Term of patent 14 years
U.S. Cl. D8—349



348,597
FILE
Chih S. Chi, No. 37-7, Lane Hsia Pu, Tai Ping Rd., Tai Ping Hsiang, Taichung Hsien, Taiwan
Filed Sep. 15, 1992, Ser. No. 948,934
Term of patent 14 years
U.S. Cl. D8—90



348,598
MANUAL FILE AND SHARPENING TOOL
Daniel D. Friel, Jr., Kennett Square, Pa., and Erwin Parkell, Galena, Md., assignors to Edgecraft Corp., Avondale, Pa.
Filed Jan. 8, 1993, Ser. No. 3,483
Term of patent 14 years
U.S. Cl. D8—90



348,599
KNIFE
Kimiyuki Sakai, Seki, Japan, assignor to Gerber Sakai, Seki, Japan
Filed Nov. 12, 1992, Ser. No. 1,388
Term of patent 14 years
U.S. Cl. D8—99



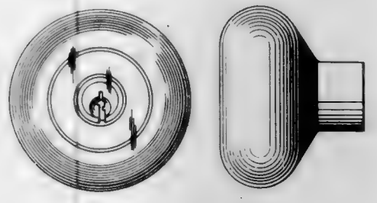
348,600
TOOL HANDLE
Gary L. Kiehl, P.O. Box 3758, Pasco, Wash. 99302
Filed Dec. 22, 1992, Ser. No. 2,889
Term of patent 14 years
U.S. Cl. D8—107



348,601
LIFTER FOR A TOILET SEAT
Jesse Borja, 926 Kagawa, Pacific Palisades, Calif. 90272, and Anthony Borja, 5338 Winedale La., Charlotte, N.C. 28205
Filed Jul. 6, 1992, Ser. No. 909,443
Term of patent 14 years
U.S. Cl. D8—307



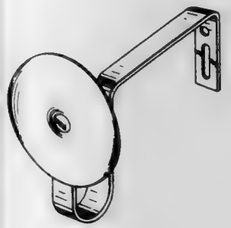
348,602
DOOR KNOB
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 31, 1992, Ser. No. 922,094
Term of patent 14 years
U.S. Cl. D8—310



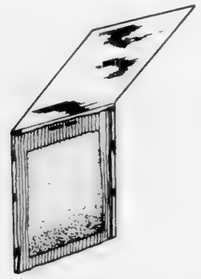
348,603
IMPLEMENT FOR CONTROLLING AN ELECTRONIC LOCK MECHANISM
Neal J. Castleman, and Roger Lynx, both of 2014 Broadway, Santa Monica, Calif. 90404
Filed Jul. 9, 1992, Ser. No. 911,132
Term of patent 14 years
U.S. Cl. D8—347



348,604
CURTAIN DRAPING HOOK
Christer Hannerstig, Höllviksnäs/Schweden, Sweden, assignor to AB A. Svensson & Co., Malmö, Sweden
Filed May 29, 1990, Ser. No. 530,069
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, M 89 08 413.6
The portion of the term of this patent subsequent to Nov. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—368



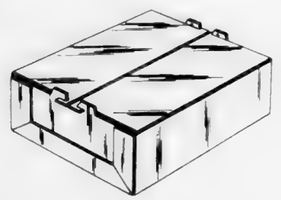
348,605
COMBINED TEABAG, HOLDER AND SQUEEZER
Hugh P. Christie, 50 Bevington Road, Glenunga 5064, South Australia, Australia
Filed Mar. 26, 1986, Ser. No. 846,983
Claims priority, application Australia, Sep. 27, 1985, 2733/85
Term of patent 14 years
U.S. Cl. D9—304



348,606
BOTTLE
Richard C. Edstrom, New York, N.Y., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Mar. 20, 1992, Ser. No. 854,277
Term of patent 14 years
U.S. Cl. D9—332

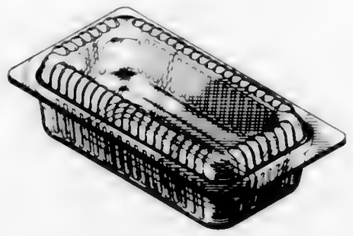


348,607
FRUIT AND PRODUCE CONTAINER
Thomas R. Young, 1535 E. Orangewood, Suite 118, Anaheim, Calif. 92803
Filed Aug. 19, 1992, Ser. No. 932,892
Term of patent 14 years
U.S. Cl. D9—423

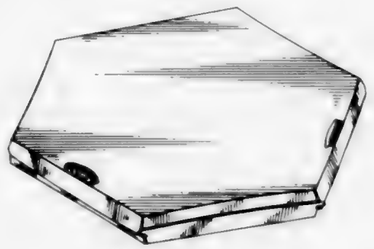


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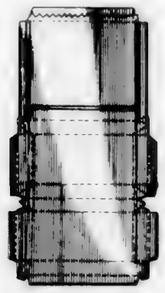
348,608
FOOD CONTAINER
Ihor Wyslotsky, 5050 Newport Dr., Section 7, Rolling Meadows, Ill. 60008
Filed Feb. 22, 1993, Ser. No. 5,216
Term of patent 14 years
U.S. Cl. D9—425



348,609
FOOD CARTON WITH HINGED COVER
Larry Eisman, Elkins Park, and Joel B. Corder, Pottstown, both of Pa., assignors to Dopaco, Inc., Downington, Pa.
Filed Dec. 7, 1992, Ser. No. 2,267
Term of patent 14 years
U.S. Cl. D9—430



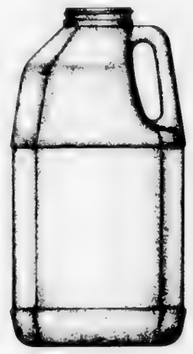
348,610
CARTON BLANK
Hampton E. Forbes, Jr., Newark, Del., assignor to Westvaco Corporation, New York, N.Y.
Filed Apr. 9, 1990, Ser. No. 506,388
The portion of the term of this patent subsequent to Nov. 12, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—433



348,611
COMBINED BOTTLE AND CAP
Melvin Abfier, Stamford, and Peter Bertolini, Shelton, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Jan. 22, 1993, Ser. No. 3,942
Term of patent 14 years
U.S. Cl. D9—529



348,612
PLASTIC BOTTLE
Carl D. Ring, Oakland, Tenn., assignor to Ring Can Corporation, Oakland, Tenn.
Filed Feb. 1, 1993, Ser. No. 4,271
Term of patent 14 years
U.S. Cl. D9—531



348,613
BOTTLE WITH CAP
Frank E. Gonda, Fairfield, Conn., and Harry H. Haubert, Freehold Township, Monmouth County, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Nov. 5, 1992, Ser. No. 1,261
Term of patent 14 years
U.S. Cl. D9—571



348,614
CLOCK
K. Joel Davis, Athens, Ga., assignor to GTC Properties, Inc., Wilmington, Del.
Filed Oct. 25, 1991, Ser. No. 784,003
Term of patent 14 years
U.S. Cl. D10—15



348,615
WRIST-WATCH
Jacques Bernard, St Ouen d'Attez, France, assignor to René Boivin, Paris, France
Filed Jan. 23, 1992, Ser. No. 824,330
Claims priority, application Hague, Jul. 24, 1991, DM/020217
Term of patent 14 years
U.S. Cl. D10—39



348,616
MANUFACTURING INSPECTION TRANSDUCER
Ardash V. Apigian, 43996 Brandywyne, Canton, Mich. 48187, and George K. Kotsonas, 11611 Amherst, Plymouth, Mich. 48170
Filed May 14, 1993, Ser. No. 8,521
Term of patent 14 years
U.S. Cl. D10—46

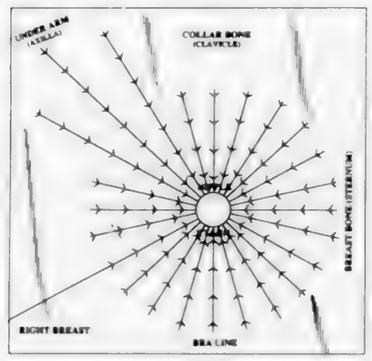


348,617
THERMOMETER-CLOCK FACE
Martin O. Riley, Pasadena, Calif., assignor to M M Industries, Inc., Los Angeles, Calif.
Filed Oct. 6, 1992, Ser. No. 183
Term of patent 14 years
U.S. Cl. D10—57

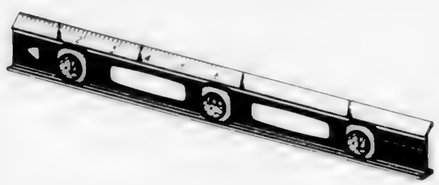


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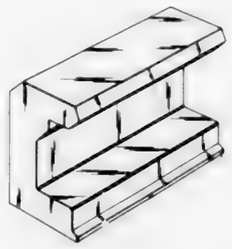
348,618
BREAST EXAMINATION PAD
Nan S. Leslie, and David C. Leslie, both of R.D. #4 Box 333, Washington, Pa. 15301
Filed Aug. 21, 1992, Ser. No. 933,065
Term of patent 14 years
U.S. Cl. D10—64



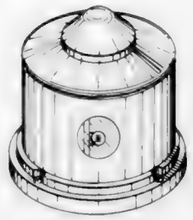
348,619
STRAIGHT EDGE LEVEL
Frederick S. Hansen, Manchester Center, Vt., assignor to The Stanley Works, New Britain, Conn.
Filed Feb. 16, 1993, Ser. No. 4,809
Term of patent 14 years
U.S. Cl. D10—69



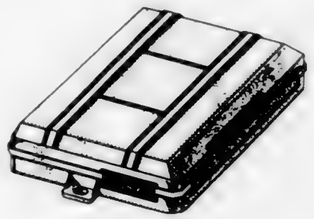
348,620
JAR STIRRER HOUSING
Bruce G. Roberts, 133 Peacockes Rd., Hamilton, New Zealand
Filed Aug. 25, 1992, Ser. No. 935,211
Term of patent 14 years
U.S. Cl. D10—81



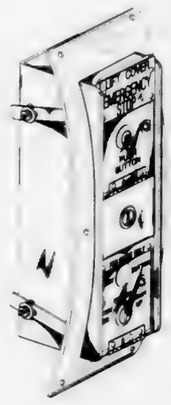
348,621
SENSOR HOUSING FOR ACTUATING STREET LAMPS
Frederick H. Blake, 3103 149th St. SE., Mill Creek, Wash. 98012
Filed Mar. 16, 1992, Ser. No. 851,769
Term of patent 14 years
U.S. Cl. D10—104



348,622
VEHICLE ALARM CASE MODULE
Darrell E. Issa, 1598 Parkview Dr., Vista, Calif. 92083
Filed Jan. 15, 1993, Ser. No. 3,711
Term of patent 14 years
U.S. Cl. D10—106



348,623
ESCALATOR SWITCH PANEL
Robert M. Coronato, and Robert M. Coronato, Jr., both of Toccoa, Ga., assignors to PTL Equipment Manufacturing Co., Inc., Toccoa, Ga.
Filed Jan. 15, 1993, Ser. No. 3,811
Term of patent 14 years
U.S. Cl. D10—108



348,624
LOCATION PARKING LIGHT FOR VEHICLES
David Russell, 37070 Garvin, Mt. Clemens, Mich. 48043
Filed Apr. 24, 1992, Ser. No. 873,047
Term of patent 14 years
U.S. Cl. D10—114



348,625
BELL
Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsiu Shui Hsiang, Chang Hua Hsien, Taiwan
Filed Jun. 28, 1993, Ser. No. 9,968
Term of patent 14 years
U.S. Cl. D10—116



348,626
JEWELRY FINGER RING
Krikor Bedoyan, North Hollywood, Calif., assignor to OraAmerica, Inc., Burbank, Calif.
Filed Jan. 25, 1993, Ser. No. 4,065
Term of patent 14 years
U.S. Cl. D11—32



348,627
COMBINED BROOCH AND PROPHYLACTIC HOLDER
Judith L. Kaufman, 20 E. 9th St., New York, N.Y. 10003
Filed Aug. 31, 1992, Ser. No. 936,547
Term of patent 14 years
U.S. Cl. D11—43



348,628
JEWELRY PENDANT
Joann Royce, San Carlos, Calif., assignor to Leddel International, Inc., San Mateo, Calif.
Filed Dec. 10, 1992, Ser. No. 2,442
Term of patent 14 years
U.S. Cl. D11—79

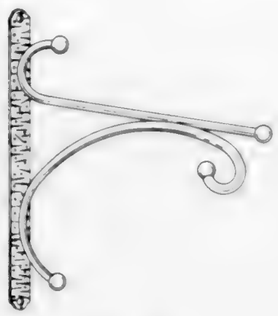


348,629
EASTER STOCKING
Pamela R. A. Henry, 3203 120 St., Amana, Iowa 52203
Filed Aug. 27, 1992, Ser. No. 917,626
Term of patent 14 years
U.S. Cl. D11—121

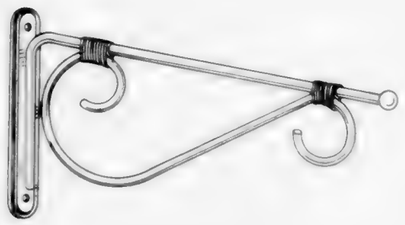


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348,630
PLANT BRACKET WITH BALLS
Fred Hollinger, Kings Park, N.Y., assignor to American Tack & Hardware Co., Monsey, N.Y.
Filed Jun. 9, 1993, Ser. No. 9,275
Term of patent 14 years
U.S. Cl. D11—148



348,631
PLANT BRACKET WITH WIRE
Fred Hollinger, Kings Park, N.Y., assignor to American Tack & Hardware Co., Monsey, N.Y.
Filed Jun. 9, 1993, Ser. No. 9,290
Term of patent 14 years
U.S. Cl. D11—148



348,632
PLANT BRACKET WITH LEAF
Fred Hollinger, Kings Park, N.Y., assignor to American Tack & Hardware Co., Monsey, N.Y.
Filed Jun. 9, 1993, Ser. No. 9,291
Term of patent 14 years
U.S. Cl. D11—148



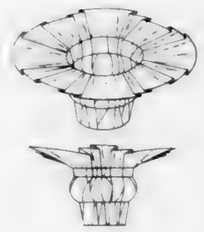
348,633
MAILBOX FLOWER POT HOLDER
Seymour Emalfarb, 1585 Saunders Rd., River Woods, Ill. 60015, and Bradley S. Emalfarb, 26529 N. Hwy. 83, Mundelein, Ill. 60060
Filed Sep. 21, 1993, Ser. No. 13,233
Term of patent 14 years
U.S. Cl. D11—156



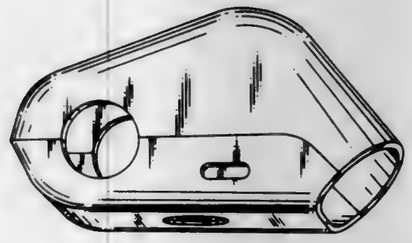
348,634
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application Oct. 21, 1991, Ser. No. 781,453
Term of patent 14 years
U.S. Cl. D11—164



348,635
FLOWER POT COVER
Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.
Filed Mar. 19, 1992, Ser. No. 854,467
Term of patent 14 years
U.S. Cl. D11—164



348,636
BICYCLE STEM COVER
Richard D. Williams, Brentwood, and Karen Watson, Columbia, both of Tenn., assignors to The Murray Ohio Manufacturing Company, Brentwood, Tenn.
Filed Apr. 8, 1992, Ser. No. 865,378
Term of patent 14 years
U.S. Cl. D12—118



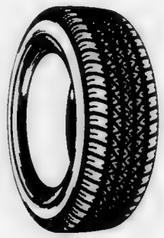
348,637
BABY STROLLER
Dan Globerman, Escazu, Costa Rica; Devon T. Siesboltz, Boyertown, Pa.; James Eldon, Barto, Pa., and David D. McClanahan, Harleysville, Pa., assignors to Graco Children's Products, Inc., Elverson, Pa.
Filed Nov. 18, 1992, Ser. No. 1,542
Term of patent 14 years
U.S. Cl. D12—129



348,638
CHANGE STROLLER ACCESSORY CONTAINER
Linton Mathews; Teresa L. Mathews, both of 6621 Cowboy Trail, Las Vegas, Nev. 89121, and Philip M. Stephens, 1624 S. Palm St., #3A, Las Vegas, Nev. 89104
Filed Sep. 15, 1992, Ser. No. 945,332
Term of patent 14 years
U.S. Cl. D12—133



348,639
AUTOMOBILE TIRE
Tomekichi Matsushita, and Tokimi Hamada, both of Osaka, Japan, assignors to The Ohtsu Tire & Rubber Co., Ltd., Izumi-Ohtsu, Japan
Filed Feb. 20, 1992, Ser. No. 837,878
Claims priority, application Japan, Aug. 30, 1991, 3-26312
Term of patent 14 years
U.S. Cl. D12—147



348,640
FOLDABLE BICYCLE CARRIER FOR AUTOMOBILES
Douglas W. Hall, 123 S. O'Leary, Flagstaff, Ariz. 86001
Filed Jan. 22, 1993, Ser. No. 3,980
Term of patent 14 years
U.S. Cl. D12—408

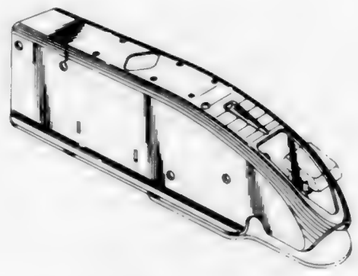


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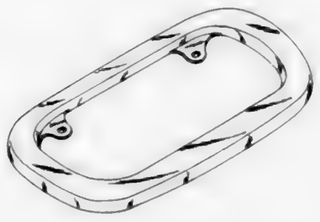
348,641
HOLDER OF WATER BOTTLE FOR BICYCLE
Masao Tsushi, Sakai, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan
Filed Mar. 4, 1993, Ser. No. 5,439
Claims priority, application Japan, Sep. 4, 1992, 4-26235
Term of patent 14 years
U.S. Cl. D12—411



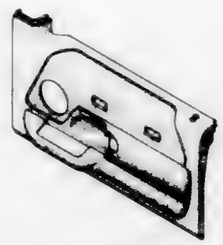
348,642
ELONGATED TRAILER COUPLER HOUSING
Jeffrey D. Wallace, Des Moines, and Herbert O. Dixon, Jr., West Des Moines, both of Iowa, assignors to Dico, Inc., Des Moines, Iowa
Filed Dec. 3, 1991, Ser. No. 801,841
The portion of the term of this patent subsequent to Apr. 12, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—162



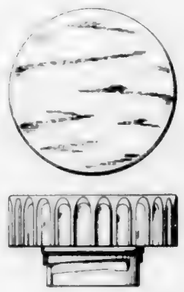
348,643
FRAME FOR INSTALLING A CAR LICENSE PLATE
Yoichi Nagata, Chigasaki, Japan, assignor to Nagata Industries Co., Ltd., Tokyo, Japan
Filed Apr. 8, 1992, Ser. No. 866,229
Term of patent 14 years
U.S. Cl. D12—193



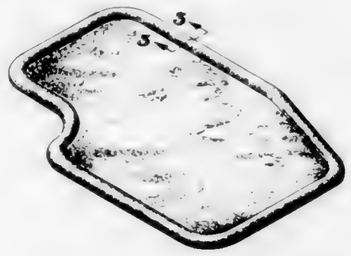
348,644
VEHICLE FRONT DOOR PANEL
Rex W. Lim, Granger, Ind., assignor to Paramount Plastics, Inc., Elkhart, Ind.
Filed Feb. 8, 1993, Ser. No. 2,768
Term of patent 14 years
U.S. Cl. D12—195



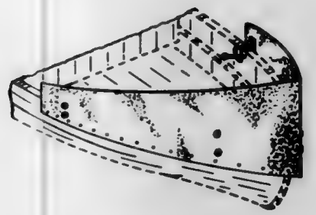
348,645
GAS OR OIL FILLER CAP
Robert S. Hitchcock, Lake Providence, La., and John D. Estes, Greenville, Miss., assignors to Moeller Products Co., Inc., Greenville, Miss.
Filed Jan. 22, 1993, Ser. No. 3,950
Term of patent 14 years
U.S. Cl. D12—197



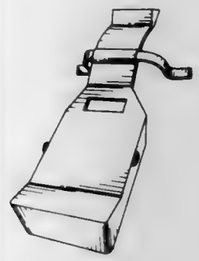
348,646
AUTOMOTIVE FLOOR MAT
Harold Reuben, Akron, Ohio, assignor to The Akro Corporation, Canton, Ohio
Continuation of Ser. No. 732,310, Jul. 18, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 12,770
Term of patent 14 years
U.S. Cl. D12—203



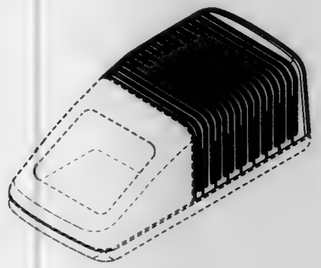
348,647
REMOVABLE BOAT BOW RISER
Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Dennis Rapp, 4385 Bridle Way, Reno, Nev. 89509
Filed Nov. 9, 1992, Ser. No. 1,247
Term of patent 14 years
U.S. Cl. D12—317



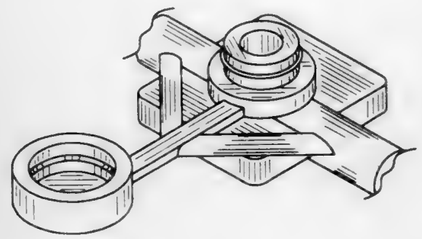
348,648
UNIVERSAL SLIP-IN SEAT FOR STAND-UP JET SKI
Juan E. Uribe, and Timothy W. Hunter, both of 1145 1st St., Livingston, Calif. 95334
Filed May 28, 1993, Ser. No. 8,789
Term of patent 14 years
U.S. Cl. D12—317



348,649
EXTERIOR SURFACE OF THE UPPER HOUSING FOR A BATTERY CHARGER FOR A PORTABLE RADIO
Scott H. Richards, Plantation, and Bruce A. Claxton, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 802,766, Dec. 5, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 7,930
Term of patent 14 years
U.S. Cl. D13—118



348,650
ELECTRIC TERMINAL CONNECTOR
Kenneth A. Julian, Oak Brook, Ill., assignor to Julian Electric, Inc., Westmont, Ill.
Filed Jul. 2, 1992, Ser. No. 907,456
Term of patent 14 years
U.S. Cl. D13—133



348,651
FIBER TROUGH COUPLING
Roy Henneberger, Eagan, Minn., assignor to ADC Telecommunications, Inc., Minneapolis, Minn.
Filed Apr. 1, 1991, Ser. No. 677,881
Term of patent 14 years
U.S. Cl. D13—155

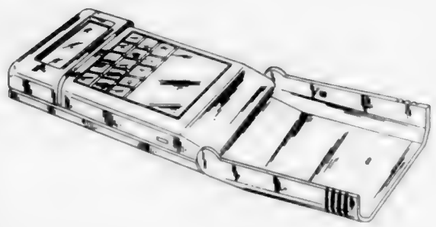


348,652
MEMBRANE SWITCH CONTROL MODULE
Raymond G. Reed, Milwaukie, and Carl G. Nordstrom, Lake Oswego, both of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Jan. 19, 1993, Ser. No. 3,861
Term of patent 14 years
U.S. Cl. D13—162



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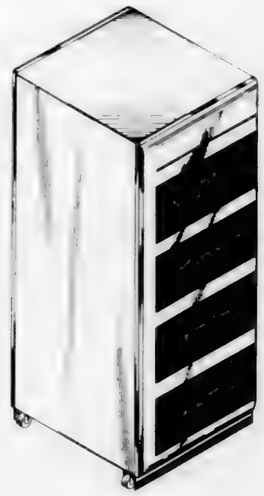
348,653
TIMER REMOTE
Willis Cheng, Taipei, Taiwan, assignor to Woods Far East, Inc., Taipei, Taiwan
Continuation-in-part of Ser. No. 216,977, Jul. 11, 1988, Pat. No. Des. 319,430. This application Jul. 16, 1990, Ser. No. 553,144
Term of patent 14 years
U.S. Cl. D13—168



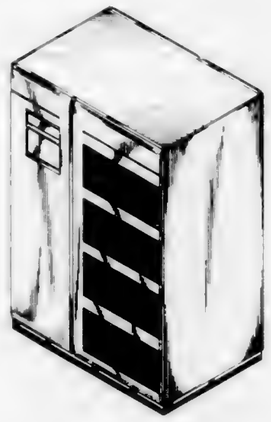
348,654
HAND HELD TERMINAL WITH INPUT KEYBOARD AND LCD DISPLAY TOUCH SCREEN
James D. Branck, and Brian D. Johnson, both of New Hartford, N.Y., assignors to PAR Technology Corporation, New Hartford, N.Y.
Filed Sep. 14, 1992, Ser. No. 948,775
Term of patent 14 years
U.S. Cl. D14—100



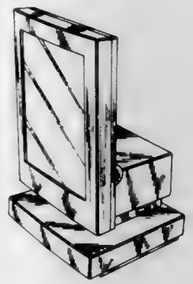
348,655
CABINET FOR A DISK DRIVE
Steven D. Bock, Louisville; Robert J. Miosek, Berthoud; Christopher S. Vinton, Louisville, and Gregory D. Volan, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Jan. 13, 1993, Ser. No. 3,566
Term of patent 14 years
U.S. Cl. D14—102



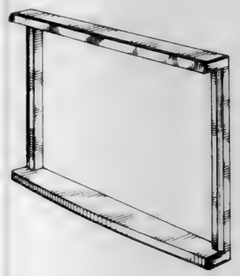
348,656
CABINET FOR A DISK DRIVE
Steven D. Bock, Louisville; Robert J. Miosek, Berthoud; Christopher S. Vinton, Louisville, and Gregory D. Volan, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Jan. 13, 1993, Ser. No. 3,567
Term of patent 14 years
U.S. Cl. D14—102



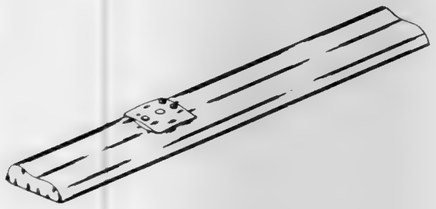
348,657
IMAGE DISPLAY
Yoshiyuki Matsuda, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1992, Ser. No. 2,676
Claims priority, application Japan, Jun. 19, 1992, 4-18233
Term of patent 14 years
U.S. Cl. D14—113



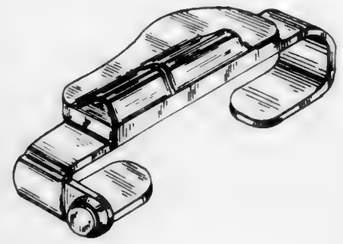
348,658
COMBINED FRAME FOR A PORTABLE COMPUTER MONITOR AND SUPPORT FOR A KEYBOARD
Barry Wingate, San Jose, Calif., assignor to Dolch American Instruments, Inc., Milpitas, Calif.
Filed Oct. 17, 1991, Ser. No. 778,607
Term of patent 14 years
U.S. Cl. D14—114



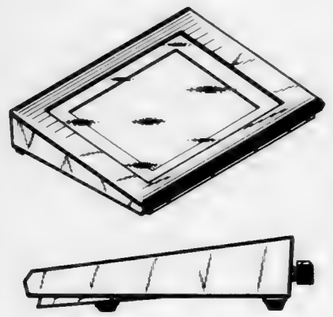
348,659
COMBINED HAND SUPPORT AND INPUT CONTROL
Brent A. Miller, 2524 Main St., #H, Chula Vista, Calif. 91911
Filed Dec. 1, 1992, Ser. No. 2,056
Term of patent 14 years
U.S. Cl. D14—114



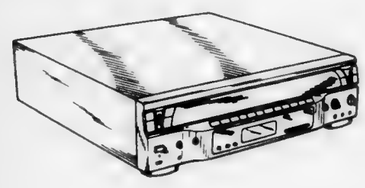
348,660
HAND-HELD COMPUTER INPUT DEVICE
John A. Parsons, Cumberland, Md., assignor to Micro-Integration Corp., Frostburg, Md.
Filed Apr. 29, 1993, Ser. No. 7,666
Term of patent 14 years
U.S. Cl. D14—114



348,661
TOUCH PANEL KEYBOARD
Peter K. Hansen, and Lars Kragh, both of Stamford, Conn., assignors to Trinitech Systems Inc., Stamford, Conn.
Filed Feb. 12, 1993, Ser. No. 4,854
Term of patent 14 years
U.S. Cl. D14—115



348,662
LASER DISK PLAYER
In C. Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Oct. 23, 1992, Ser. No. 747
Claims priority, application Rep. of Korea, Apr. 29, 1992, 1992-6860
Term of patent 14 years
U.S. Cl. D14—136



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348,663
WALKIE-TALKIE
Mark A. Grasso, 20748 Pacific Coast Hwy., Malibu, Calif. 90265
Filed Feb. 5, 1992, Ser. No. 831,287
Term of patent 14 years
U.S. Cl. D14—137



348,664
RADIO SCANNER
Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan
Filed Nov. 2, 1992, Ser. No. 1,091
Term of patent 14 years
U.S. Cl. D14—137



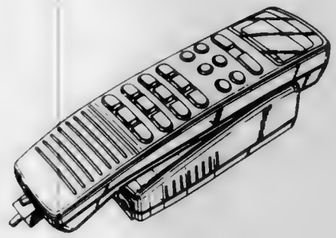
348,665
PORTABLE TELEPHONE
Albert Nagele, Wilmette, Ill., assignor to Motorola Inc., Schaumburg, Ill.
Filed Apr. 3, 1992, Ser. No. 862,279
Term of patent 14 years
U.S. Cl. D14—138



348,666
PORTABLE TELEPHONE
Terrance N. Taylor, Barrington, and James S. Cleary, Westchester, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.
Filed Apr. 16, 1993, Ser. No. 7,146
Term of patent 14 years
U.S. Cl. D14—138



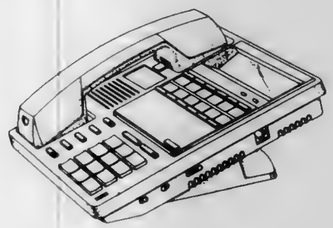
348,667
MOBILE TELEPHONE
Markku Oksman, Turku, Finland, and Adam White, London, England, assignors to Nokia Mobile Phones Ltd., Salo, Finland
Filed Mar. 10, 1993, Ser. No. 5,724
Claims priority, application United Kingdom, Sep. 10, 1992, 2025601
Term of patent 14 years
U.S. Cl. D14—148



348,668
TELEPHONE BASE
Terrance N. Taylor, Barrington, Ill., assignor to Motorola Inc., Schaumburg, Ill.
Filed Jun. 4, 1993, Ser. No. 9,818
Term of patent 14 years
U.S. Cl. D14—149



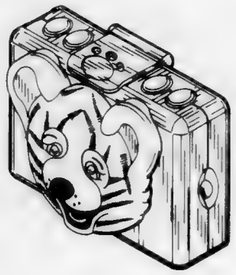
348,669
TELEPHONE SET
Joe Weidinger, Phoenix, assignor to Premier Telecom Products, Inc., Kans.
Filed Feb. 24, 1993, Ser. No. 5,152
Term of patent 14 years
U.S. Cl. D14—151



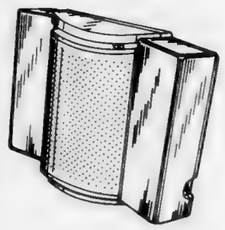
348,670
TELEPHONE SET
Kazunobu Yoneyama, Kawasaki, Japan, assignor to Mitsuko Corporation, Kanagawa, Japan
Filed Mar. 2, 1993, Ser. No. 5,375
Claims priority, application Japan, Sep. 4, 1992, 4-26042
Term of patent 14 years
U.S. Cl. D14—151



348,671
PORTABLE CASSETTE PLAYER
Mark A. Grasso, 4314 Marina City Dr., #728C, Marina del Rey., Calif. 90292
Filed Feb. 5, 1992, Ser. No. 831,288
Term of patent 14 years
U.S. Cl. D14—165

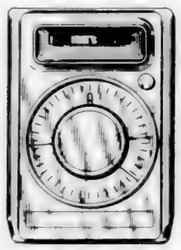


348,672
DESKTOP LOUDSPEAKER ENCLOSURE
Maria J. Falkner, Littleton, and Michael W. Kleeman, Maynard, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Dec. 30, 1991, Ser. No. 817,126
Term of patent 14 years
U.S. Cl. D14—215

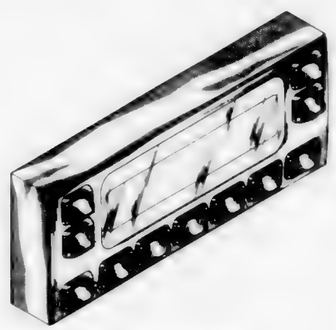


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348,673
TONE GENERATOR
Henry W. Jones, III; Jon Truelson, both of New Haven, and Louis Strick, Westport, all of Conn., assignors to Franz Manufacturing Company, Inc., New Haven, Conn.
Filed Oct. 5, 1992, Ser. No. 94
Term of patent 14 years
U.S. Cl. D14—217



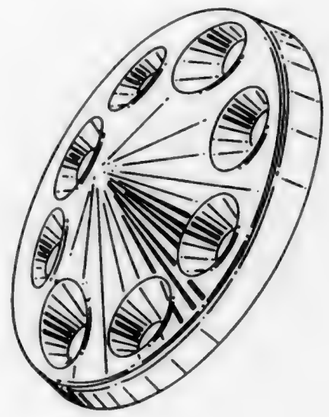
348,674
TELEPHONE CONTROL HOUSING
Phillip E. Lindeman, Roselle, and Joseph F. Pulio, Jr., South Barrington, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 27, 1993, Ser. No. 7,557
Term of patent 14 years
U.S. Cl. D14—240



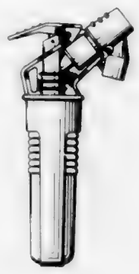
348,675
PAY TYPE TELEPHONE STATION VOLUME CONTROL PUSH-BUTTON SWITCH
Mark Matheny, Manchester, Conn., assignor to Tek Electronics Manufacturing Corporation, Manchester, Conn.
Filed Apr. 22, 1992, Ser. No. 873,272
Term of patent 14 years
U.S. Cl. D14—247



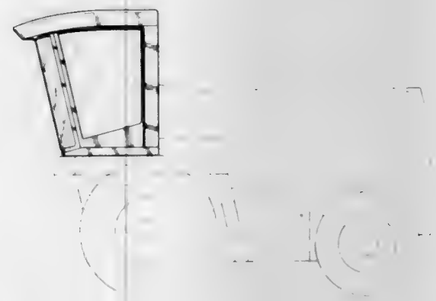
348,676
MOTORCYCLE POINT COVER
S. Wyatt Fuller, Parkland, Fla., and Alwin J. Stahel, St. Paul, Minn., assignors to KuryAkyn Holdings, Inc., Somerset, Wis.
Filed Jun. 12, 1991, Ser. No. 714,049
Term of patent 14 years
U.S. Cl. D15—5



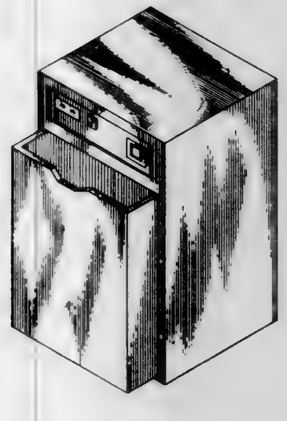
348,677
PRESSURIZED GAS INFLATION DEVICE
Matthew L. Phillips, North Easton, and David J. Lacorazza, Quincy, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Continuation-in-part of Ser. No. 828,653, Jan. 31, 1992, Pat. No. D. 336,090. This application Apr. 28, 1993, Ser. No. 8,706
The portion of the term of this patent subsequent to Jun. 1, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—7



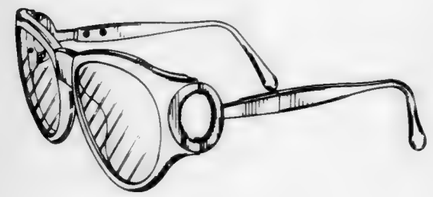
348,678
VEHICLE CAB
Paul Budde, Nottuln, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany
Filed May 22, 1992, Ser. No. 886,483
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, M 91 08 081.9
Term of patent 14 years
U.S. Cl. D15—30



348,679
COMPACTOR FOR PLASTIC MATERIALS
Antoine E. Wakim, 1313 N. Westlink, Wichita, Kans. 67212
Filed Feb. 5, 1993, Ser. No. 4,487
Term of patent 14 years
U.S. Cl. D15—123



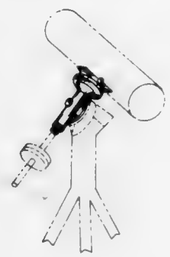
348,680
EYEGLASSES
Adolf Lüzlbauer, Tangastrasse 51, München 82, Fed. Rep. of Germany
Filed Nov. 20, 1992, Ser. No. 1,746
Claims priority, application Fed. Rep. of Germany, May 22, 1992, M 92 03 824.7
Term of patent 14 years
U.S. Cl. D16—102



348,681
EYEWEAR LENS FRONT
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jun. 7, 1993, Ser. No. 9,481
Term of patent 14 years
U.S. Cl. D16—102



348,682
TELESCOPE MOUNT
Scott R. Losmandy, 11554 Landale St., Studio City, Calif. 92607
Filed Dec. 14, 1992, Ser. No. 2,621
Term of patent 14 years
U.S. Cl. D16—136

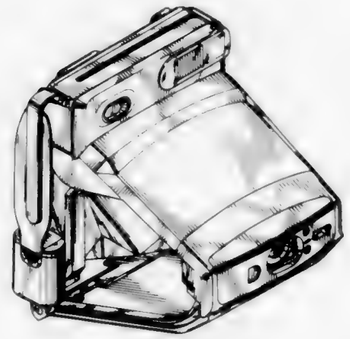


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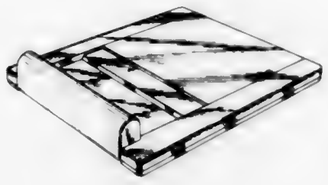
348,683
COMBINED MINIATURE VIDEO CAMERA AND MICROPHONE
Scott Park, 4117 Rio Del Norte, Bakersfield, Calif. 93308
Filed Jun. 9, 1993, Ser. No. 9,287
Term of patent 14 years
U.S. Cl. D16—202



348,684
INSTANT CAMERA
Minoru Shiiba, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 27, 1992, Ser. No. 858,780
Claims priority, application Japan, Oct. 3, 1991, D. 3-29920
Term of patent 14 years
U.S. Cl. D16—211



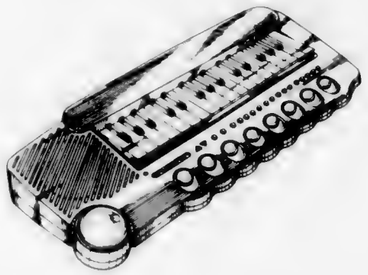
348,685
FILM CARRIER FOR MICROFILM READER PRINTER
Yoshihiro Miyazawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1992, Ser. No. 2,696
Claims priority, application Japan, Jun. 19, 1992, 4-18235
Term of patent 14 years
U.S. Cl. D16—236



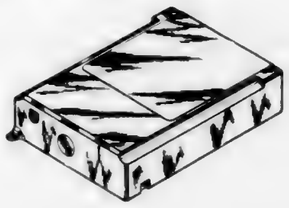
348,686
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Toshio Igo, Tokorozawa, and Yukihiro Ida, Higashikurume, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,487
Term of patent 14 years
U.S. Cl. D17—1



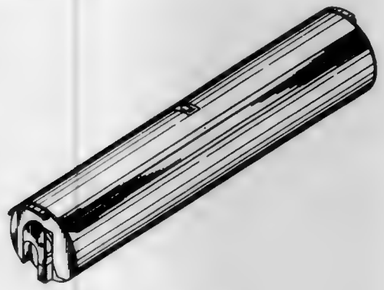
348,687
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Junichi Ono, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,488
Term of patent 14 years
U.S. Cl. D17—1



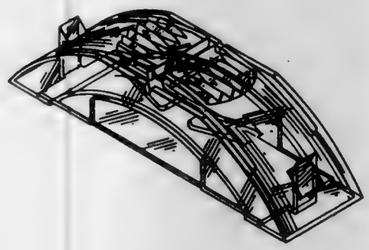
348,688
INK CARTRIDGE
Toshihiko Ujita, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 620,289, Nov. 30, 1990, abandoned.
This application Jan. 19, 1993, Ser. No. 7,085
Claims priority, application Japan, Jun. 6, 1990, 2-19169
The portion of the term of this patent subsequent to Dec. 22, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—12



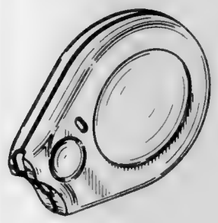
348,689
TONER CARTRIDGE
Hiroshi Kikuchi; Yukio Ota, and Hisao Ono, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 30, 1992, Ser. No. 876,463
Claims priority, application Japan, Dec. 20, 1991, 38233/1991
Term of patent 14 years
U.S. Cl. D18—43



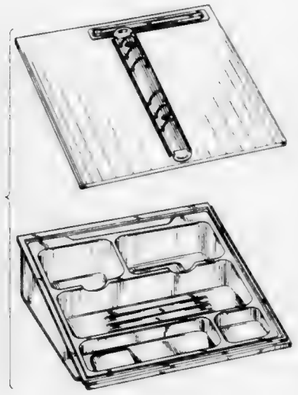
348,690
TAPE DISPENSER
Bruce E. Samuelson, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing, St. Paul, Minn.
Filed Jul. 30, 1992, Ser. No. 922,204
Term of patent 14 years
U.S. Cl. D19—69



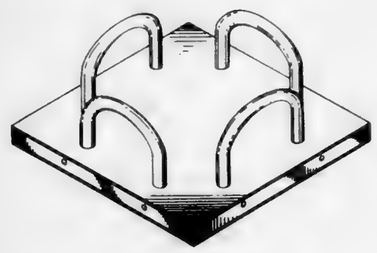
348,691
TAPE DISPENSER
Randall P. Bell, River Forest; James F. Caruso, Chicago, and Walter B. Herbst, Evanston, all of Ill., assignors to The Gillette Company, Boston, Mass.
Filed Nov. 12, 1992, Ser. No. 1,356
Term of patent 14 years
U.S. Cl. D19—69



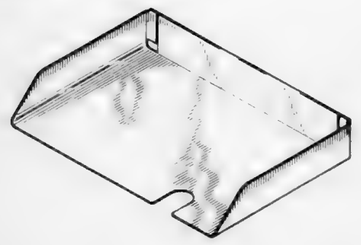
348,692
DESK ORGANIZER
Chiel Hou, F.4, No. 291, Sec. 5, Chung Hsiao E. Road, Taipei, Taiwan
Filed Jul. 24, 1992, Ser. No. 917,898
Term of patent 14 years
U.S. Cl. D19—75



348,693
PAPER HOLDER
John N. Tillyer, Sr., 64 Middle St., Saco, Me. 04072
Filed Nov. 2, 1992, Ser. No. 1,045
Term of patent 14 years
U.S. Cl. D19—86



348,694
VERTICALLY-MOUNTABLE LETTER TRAY
Mel Evenson, Rancho Palos Verdes, Calif., assignor to Rubbermaid Office Products Group Inc., Inglewood, Calif.
Filed Aug. 12, 1992, Ser. No. 928,201
Term of patent 14 years
U.S. Cl. D19—92



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348,695
DICE AGITATOR CUP
Leslie A. Simms, and Lester D. Hanshew, both of P.O. Box 122, Victor, W. Va. 25938
Continuation-in-part of Ser. No. 426,675, Oct. 26, 1989, abandoned. This application May 28, 1991, Ser. No. 705,905
Term of patent 14 years
U.S. Cl. D21—41



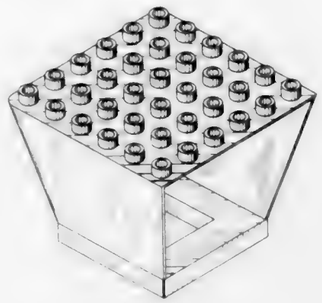
348,696
MUSICAL TOY CAN
Walter S. Reiling, Livingston, N.J., assignor to Meritus Industries Inc., Livingston, N.J.
Filed Apr. 29, 1992, Ser. No. 875,974
Term of patent 14 years
U.S. Cl. D21—64



348,697
ELEMENT FOR A TOY BUILDING SET
Jan Hatting, Veijle, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,825
Term of patent 14 years
U.S. Cl. D21—108

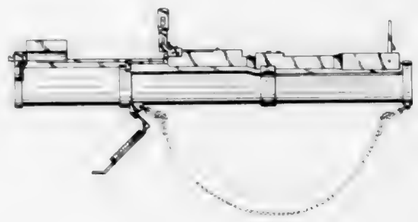


348,698
ELEMENT FOR A TOY BUILDING SET
Ib H. Berggreen, Rungsted Kyst, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,917
Term of patent 14 years
U.S. Cl. D21—108



348,699
TOY CLOCK
Joseph M. S. Chuk, Kwai Chung, Hong Kong, assignor to Roxy Plastic Factory Limited, Kowloon, Hong Kong
Filed Jul. 9, 1992, Ser. No. 910,977
Claims priority, application United Kingdom, Mar. 5, 1992, 2021443
Term of patent 14 years
U.S. Cl. D21—144

348,700
TOY BAZOOKA
Chao-Ching Lin, Pei-Tou Tapiei, Taiwan, assignor to Regency, Inc., New York, N.Y.
Filed Jul. 31, 1992, Ser. No. 922,960
Term of patent 14 years
U.S. Cl. D21—146



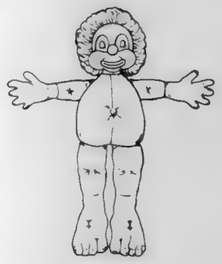
348,701
DOLL
Bonnie D. Romero, 318 Welch St., Mesquite, Tex. 75149
Filed Oct. 29, 1991, Ser. No. 786,910
The portion of the term of this patent subsequent to Feb. 9, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—166



348,702
DOLL
Bonnie D. Romero, 318 Welch St., Mesquite, Tex. 75149
Filed Oct. 29, 1991, Ser. No. 786,911
The portion of the term of this patent subsequent to Feb. 9, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—166



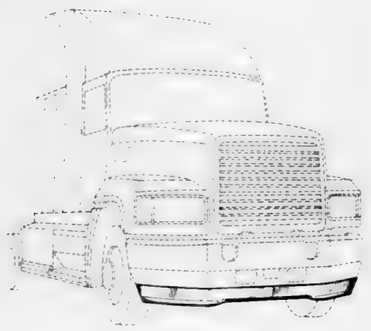
348,703
DOLL
Bonnie D. Romero, 318 Welch St., Mesquite, Tex. 75149
Filed Oct. 29, 1991, Ser. No. 786,912
The portion of the term of this patent subsequent to Feb. 9, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—166



348,704
CHARACTER DOLL
Larry E. George, 1265 Autumn Hills Dr., Reno, Nev. 89511
Filed Apr. 5, 1993, Ser. No. 6,683
Term of patent 14 years
U.S. Cl. D21—175



348,705
VEHICLE FRONT BUMPER AIR DAM EXTERIOR SURFACE
David P. Onopa, Allentown, Pa., assignor to Mack Trucks, Inc., Allentown, Pa.
Filed Dec. 31, 1992, Ser. No. 3,177
Term of patent 14 years
U.S. Cl. D12—181



348,706
DOOR FRAME MOUNTED EXERCISE BAR
Thomas A. Harrell, 9600 W. 51st Pl. F-306, Arvada, Colo. 80002
Filed Mar. 18, 1993, Ser. No. 6,198
Term of patent 14 years
U.S. Cl. D21—191

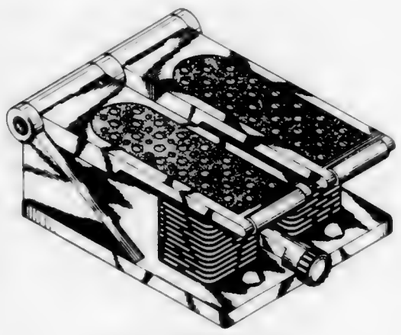


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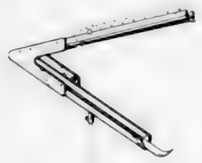
348,707
PHYSICAL EXERCISER
Marshall S. Cordell, Evanston, Ill., assignor to Cordell Enterprises, Inc., Skokie, Ill.
Filed Mar. 29, 1993, Ser. No. 6,408
Term of patent 14 years
U.S. Cl. D21—191



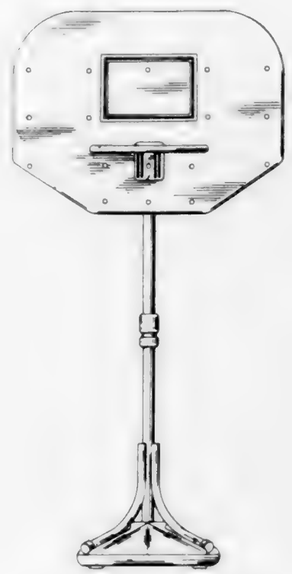
348,708
JOGGING EXERCISER
Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan
Filed Mar. 3, 1993, Ser. No. 5,411
Term of patent 14 years
U.S. Cl. D21—192



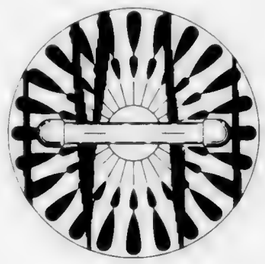
348,709
BASEBALL PITCHING DEVICE
Thomas A. Leps, 34 Wolfe Grade, Kentfield, Calif. 94904
Filed Mar. 20, 1992, Ser. No. 856,321
Term of patent 14 years
U.S. Cl. D21—199



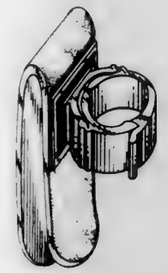
348,710
POOLSIDE BASKETBALL GOAL
Leon H. Tager, Citrus Heights, and William R. Storey, Roseville, both of Calif., assignors to Poolmaster, Inc., Sacramento, Calif.
Filed Oct. 5, 1992, Ser. No. 165
Term of patent 14 years
U.S. Cl. D21—201



348,711
PADDLE
Charles A. Czworkowski, 282 Newbury St. #16, Boston, Mass. 02116, and Dale Hardin, 2438 Neshaminy Blvd., Bensalem, Pa. 19020
Filed Aug. 19, 1991, Ser. No. 746,577
Term of patent 14 years
U.S. Cl. D21—213



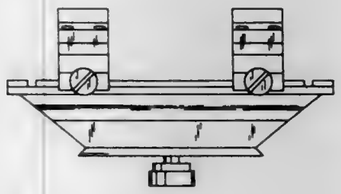
348,712
ATTACHABLE GOLF CLUB HOLDER
Stephen H. Parker, Jr., 804 DeSoto Dr., DeSoto, Tex. 75115
Filed Apr. 6, 1992, Ser. No. 864,077
Term of patent 14 years
U.S. Cl. D21—223



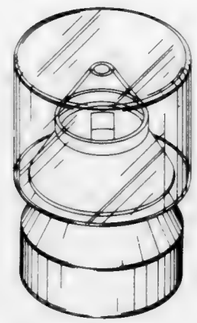
348,713
SEAT FOR FLOTATION DEVICE
Stephen Stricker, 7420 Berea Ct., Charlotte, N.C. 28226
Filed Nov. 22, 1993, Ser. No. 15,594
Term of patent 14 years
U.S. Cl. D21—237



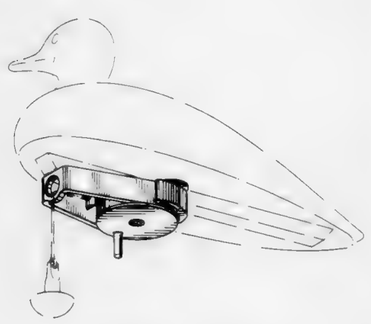
348,714
TELESCOPE MOUNT FOR A FIREARM
Irving N. Rubin, West Bloomfield, and Ivan Jimenez, Northville, both of Mich., assignors to Kwik-Site Corp., Wayne, Mich.
Filed May 28, 1992, Ser. No. 870,691
Term of patent 14 years
U.S. Cl. D22—110



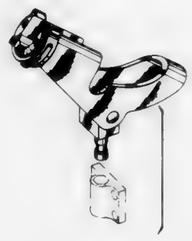
348,715
INSECT TRAP
William B. Warner, Chandler, Ariz., assignor to Farnam Companies, Inc., Phoenix, Ariz.
Filed May 11, 1992, Ser. No. 880,988
Term of patent 14 years
U.S. Cl. D22—122



348,716
DECOY ANCHOR
Timothy K. Sbrocchi, 4115 Willis Blvd., Toledo, Ohio 43623
Filed Dec. 14, 1992, Ser. No. 2,624
Term of patent 14 years
U.S. Cl. D22—125



348,717
LOCKING ROD HOLDER
Gary B. Ader, Spirit Lake, Iowa, assignor to Berkley, Inc., Spirit Lake, Iowa
Filed Sep. 23, 1992, Ser. No. 951,691
Term of patent 14 years
U.S. Cl. D22—147

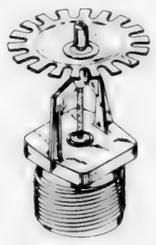


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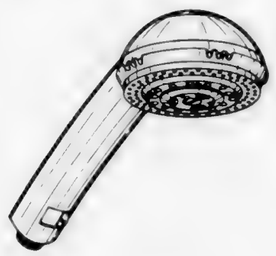
348,718
HOUSING FOR A SHOWER HEAD
Kenric Garrison, Lorain, Ohio, assignor to Moen Incorporated, Elyria, Ohio
Filed Apr. 19, 1993, Ser. No. 7,299
Term of patent 14 years
U.S. Cl. D23—213



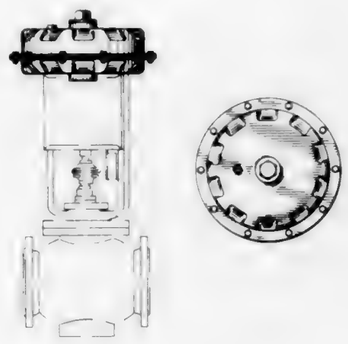
348,719
SPRINKLER HEAD
Kevin M. Dolan, Grand Rapids, Mich., assignor to The Viking Corporation, Hastings, Mich.
Filed May 6, 1993, Ser. No. 8,013
Term of patent 14 years
U.S. Cl. D23—214



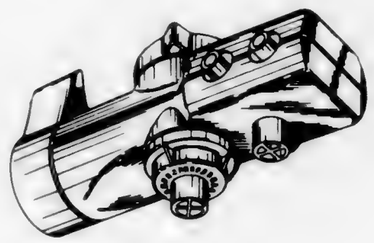
348,720
HAND HELD SHOWER HEAD
Andreas Haug, and Thomas Schoenherr, both of Stuttgart, Fed. Rep. of Germany, assignors to Hans Grohe GmbH & Co., KG, Fed. Rep. of Germany
Filed May 28, 1993, Ser. No. 8,876
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1992, 9208930
Term of patent 14 years
U.S. Cl. D23—223



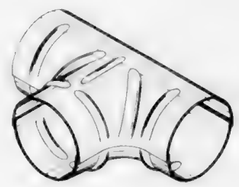
348,721
CONTROL VALVE HOUSING
Heinz Nägel, Daun, Fed. Rep. of Germany, assignor to Arca Regler GmbH, Tönisvorst, Fed. Rep. of Germany
Filed Apr. 23, 1992, Ser. No. 872,697
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 9107544
Term of patent 14 years
U.S. Cl. D23—233



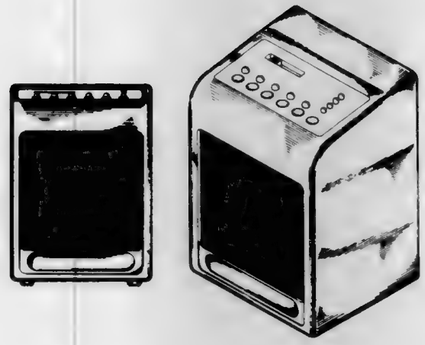
348,722
FAUCET DIVERTER VALVE
Bradley J. Pippel, Grandville, Mich., assignor to Amway Corporation, Ada, Mich.
Filed Aug. 17, 1992, Ser. No. 930,182
Term of patent 14 years
U.S. Cl. D23—233



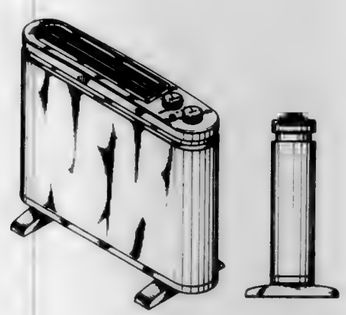
348,723
PROTECTIVE COVER FOR INSULATED PIPES
Ricky W. Carroll, Rte. 4, Box 246, Brenham, Tex. 77833
Filed Mar. 5, 1991, Ser. No. 665,444
Term of patent 14 years
U.S. Cl. D23—263



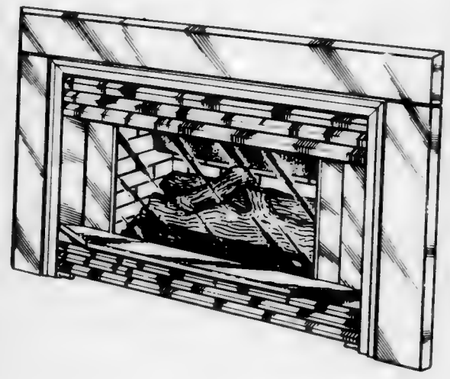
348,724
FAN HEATER
Eliza Lee, Taipei, Taiwan, assignor to Del-Rain Corporation, Niagara Falls, N.Y.
Filed Aug. 12, 1993, Ser. No. 11,687
Term of patent 14 years
U.S. Cl. D23—328



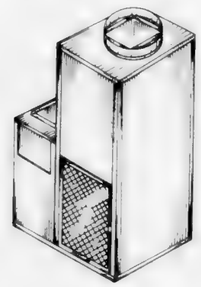
348,725
CONVECTION HEATER
Brent J. Wortham, Pasadena, Calif., assignor to Tatung Company of America, Inc., Long Beach, Calif.
Filed Oct. 2, 1992, Ser. No. 1,150
Term of patent 14 years
U.S. Cl. D23—335



348,726
GAS FIRED HEATER
Andrew M. Wilson, Handsacre, England, assignor to Valor Limited, Birmingham, United Kingdom
Filed Dec. 2, 1991, Ser. No. 801,821
Term of patent 14 years
U.S. Cl. D23—344

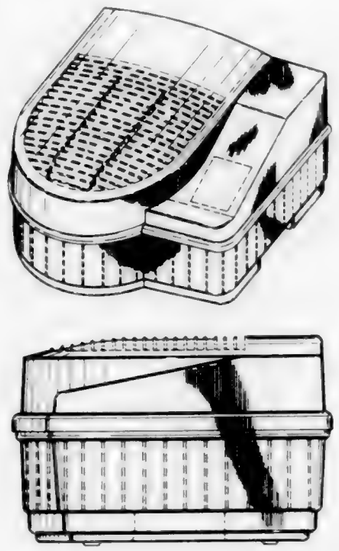


348,727
HEAT PUMP
Kevin W. Sawyer, Olive Hill, Ky., assignor to Consolidated Technology Corporation, Olive Hill, Ky.
Filed Jan. 3, 1992, Ser. No. 816,946
Term of patent 14 years
U.S. Cl. D23—355



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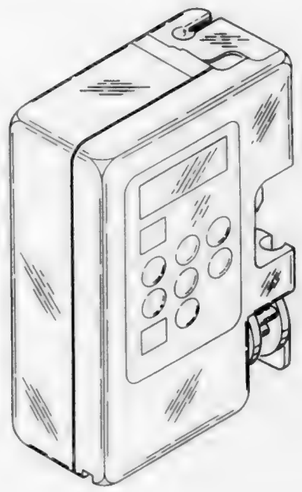
348,728
SHELL FOR AN EVAPORATIVE HUMIDIFIER
Richard M. O'Grady, Southington, Conn., and Johnson Peng, Taipei, Taiwan, assignors to Duracraft Corporation, Whitinsville, Mass.
Filed Aug. 9, 1993, Ser. No. 11,565
Term of patent 14 years
U.S. Cl. D23—358



348,729
COMBINED MOTOR HOUSING AND LIGHT FIXTURE FOR A CEILING FAN
Jean C. Mason, 2777 Woodshire Dr., Hollywood, Calif. 90068
Division of Ser. No. 815,352, Dec. 31, 1991. This application Sep. 13, 1993, Ser. No. 12,874
Term of patent 14 years
U.S. Cl. D23—411



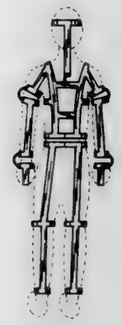
348,730
PERISTALTIC INFUSION PUMP
Clarence L. Walker, Webster Groves; Richard A. Sunderland, Creve Coeur, and Mark A. Davis, O'Fallon, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 538,791, Jun. 15, 1990, Pat. No. 5,057,081. This application Apr. 11, 1991, Ser. No. 683,760
Term of patent 14 years
U.S. Cl. D24—111



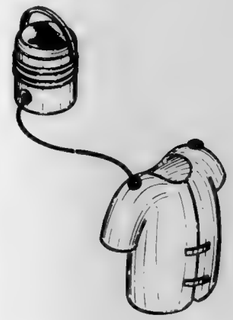
348,731
COMBINED URINE COLLECTOR AND CUP
Kathy S. Crawford, 5147 Holmes St., #2, Pittsburgh, Pa. 15201
Filed Jun. 26, 1990, Ser. No. 544,153
Term of patent 14 years
U.S. Cl. D24—122



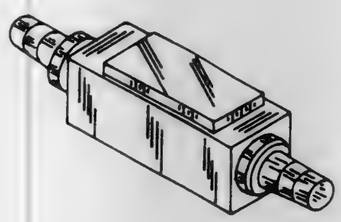
348,732
ELECTRIC WARMING HARNESS
William G. Warne, 28 Riggle St., Houston, Pa. 15342
Filed Dec. 23, 1991, Ser. No. 812,215
Term of patent 14 years
U.S. Cl. D24—206



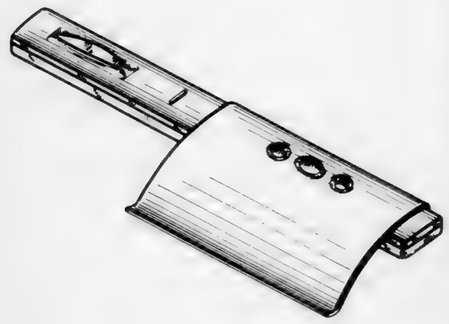
348,733
PEDIATRIC VEST FOR REDUCING BODY TEMPERATURE
Sheila M. Truelove, P.O. Box 227, Loogootee, Ind. 47553
Filed Jan. 14, 1993, Ser. No. 3,528
Term of patent 14 years
U.S. Cl. D24—206



348,734
BLOOD SAMPLE CUVETTE
Leon J. Arp, 1107 Highland Cir., Blacksburg, Va. 24060
Filed Jul. 20, 1992, Ser. No. 915,360
Term of patent 14 years
U.S. Cl. D24—224



348,735
PREGNANCY TESTING STICK
Theodorus J. J. Groothuizen, Ha Rotterdam, Netherlands, assignor to Organon Teknika B. V., Boxtel, Netherlands
Filed Mar. 31, 1992, Ser. No. 861,489
Claims priority, application Benelux, Dec. 5, 1991, 67163-01/03
Term of patent 14 years
U.S. Cl. D24—225

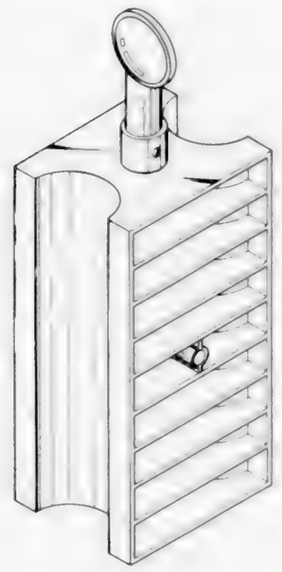


348,736
FENCE POST
Clarence Norris, 1109 Devonshire Dr., Montgomery, Ala. 36116
Filed Dec. 21, 1992, Ser. No. 2,576
Term of patent 14 years
U.S. Cl. D25—126



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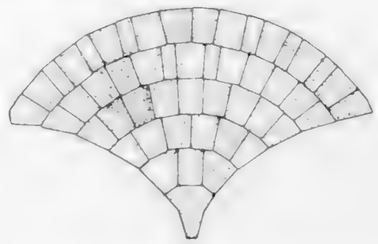
348,737
SUPPORTING BUFFER BLOCK FOR HIGHWAY SECURITY RAILING
Ching-Jung Yang, No. 435, Chung Hwa Road, Chu Pei City, Hsin Chu Hsien, Taiwan
Filed Sep. 28, 1992, Ser. No. 952,762
Term of patent 14 years
U.S. Cl. D25—133



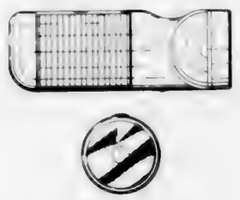
348,738
POST BASE FOOTING
Michael J. Jasinsky, 16440 Cranes Mill Rd. #1, Canyon Lake, Tex. 78133
Filed Nov. 4, 1992, Ser. No. 1,173
Term of patent 14 years
U.S. Cl. D25—133



348,739
PAVING STONE UNIT
Ronald G. Krueger, Hampton, and Arthur A. Labouseur, Wantage, both of N.J., assignors to Concrete Stone and Tile Corporation, Branchville, N.J.
Filed Apr. 3, 1992, Ser. No. 864,919
Term of patent 14 years
U.S. Cl. D25—157



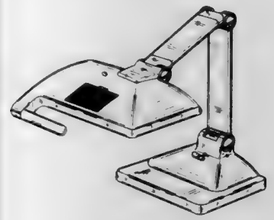
348,740
SOLAR RECHARGEABLE FLASHLIGHT
John S. Yuen, Kwun Tong, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jul. 31, 1992, Ser. No. 922,099
Claims priority, application United Kingdom, Mar. 17, 1992, 2021688
Term of patent 14 years
U.S. Cl. D26—37



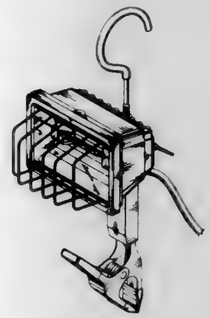
348,741
LIGHT FOR A REMOTE CONTROL UNIT
Don Ellison, P.O. Box 494953, Redding, Calif. 96049, and Karen Quirin, 440 Buckeye Ter. Apt. #7, Redding, Calif. 96003
Filed Jun. 25, 1992, Ser. No. 903,558
Term of patent 14 years
U.S. Cl. D26—38



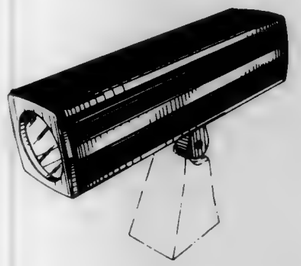
348,742
DESK LAMP WITH MAGNIFIER LENS
Brooks Rorke, Fairfield, Conn., and Jordan Kahn, Wellesley, Mass., assignors to Holmes Products Corp., Milford, Mass.
Filed Jan. 6, 1993, Ser. No. 3,290
Term of patent 14 years
U.S. Cl. D26—51



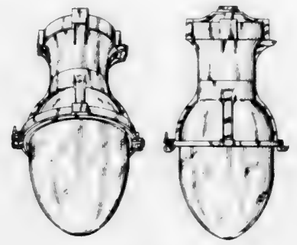
348,743
HALOGEN CLAMP LAMP
Monte A. Leen, Bellevue, Wash., and Frank T. Wen-Chung, Yung Her City, Taiwan, assignors to Leen & Associates, Inc., Bellevue, Wash.
Filed Jun. 28, 1993, Ser. No. 10,080
Term of patent 14 years
U.S. Cl. D26—60



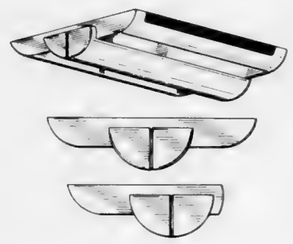
348,744
LIGHT PROJECTOR
Richard A. Johnson, Milwaukee, and Rupert O. Yantz, West Bend, both of Wis., assignors to Phoenix Products Company, Inc., Milwaukee, Wis.
Filed Mar. 31, 1992, Ser. No. 861,491
Term of patent 14 years
U.S. Cl. D26—63



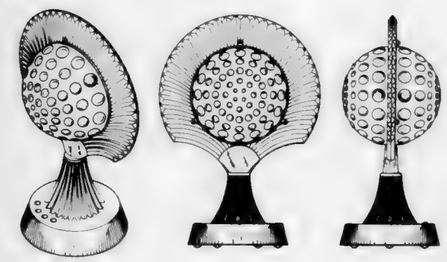
348,745
STREET LUMINAIRE
Robert L. Ewing, Newark, and Gregory J. Subisak, Gahanna, both of Ohio, assignors to Holophane Lighting, Inc., Newark, Ohio
Filed Sep. 17, 1993, Ser. No. 13,077
Term of patent 14 years
U.S. Cl. D26—67



348,746
INDIRECT LIGHTING FIXTURE
Douglas J. Herst, Ross, and Utkan Salman, Emeryville, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.
Division of Ser. No. 588,971, Sep. 27, 1990, Pat. No. Des. 341,439, and a continuation-in-part of Ser. No. 260,358, Oct. 20, 1988, Pat. No. Des. 311,967, Ser. No. 502,663, Apr. 2, 1990, abandoned, and Ser. No. 555,146, Jul. 19, 1990, abandoned. This application Aug. 3, 1993, Ser. No. 11,387
Term of patent 14 years
U.S. Cl. D26—85



348,747
DECORATIVE TABLE LAMP
Cheng-Tsai Wu, P.O. Box 82-144, Taipei City, Taiwan
Filed Dec. 11, 1992, Ser. No. 2,475
Term of patent 14 years
U.S. Cl. D26—106



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348,748
HAIR RINSING HOOD
Robert A. Zirnheld, Jr., 5509 Del Maria Way, Louisville, Ky. 40291
Filed Aug. 20, 1992, Ser. No. 932,056
Term of patent 14 years
U.S. Cl. D28—20



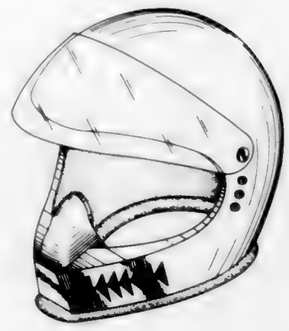
348,749
HAIRBAND
Paige Novick, New York, N.Y., assignor to Riviera Trading Corporation, New York, N.Y.
Filed Jan. 25, 1993, Ser. No. 4,067
Term of patent 14 years
U.S. Cl. D28—41



348,750
COVERED CYCLING HELMET
Francis R. Egger, Los Gatos, Calif., assignor to Specialized Bicycle Components, Inc., Morgan Hill, Calif.
Filed Jul. 11, 1991, Ser. No. 728,993
Term of patent 14 years
U.S. Cl. D29—12



348,751
COMBINED MOTORCYCLE HELMET AND AIR FILTER
Martin J. Bosack, 1427 N. Sumner Ave., Scranton, Pa. 18508
Filed Oct. 23, 1991, Ser. No. 781,285
Term of patent 14 years
U.S. Cl. D29—12



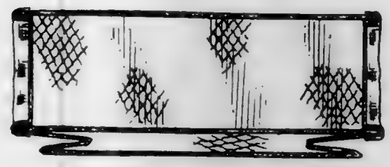
348,752
SAFETY HELMET
Chang-Hsien Ho, 12th Fl., 16, Ho Ping E Rd., Sec 1, Taipei, Taiwan
Filed Jul. 9, 1992, Ser. No. 910,988
Term of patent 14 years
U.S. Cl. D29—12



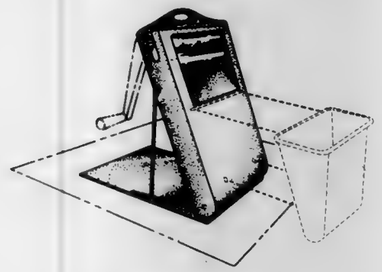
348,753
ROTATING AQUARIUM ORNAMENT
Ilko Stojanovski, 46477 Snowbird, Mt. Clemens, Mich. 48044
Filed Jun. 1, 1993, Ser. No. 8,975
Term of patent 14 years
U.S. Cl. D30—106



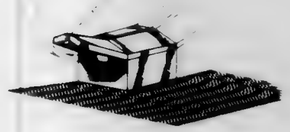
348,754
COLLAPSIBLE DRIP-DRY ACCESSORY BAG
Pamela L. Feller, 4349 Estrella Ave., San Diego, Calif. 92115
Filed Aug. 13, 1992, Ser. No. 930,030
Term of patent 14 years
U.S. Cl. D32—36



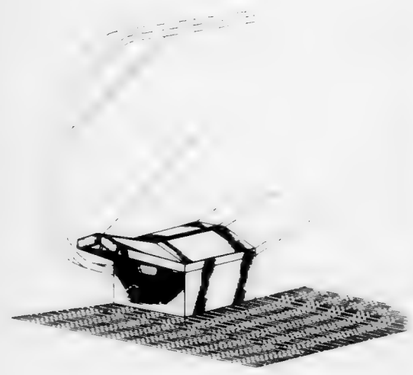
348,755
PORTABLE WRINGER
William W. Perry, 8294 Carriage La., Wichita Falls, Tex. 76306
Filed Jun. 30, 1993, Ser. No. 10,106
Term of patent 14 years
U.S. Cl. D32—53



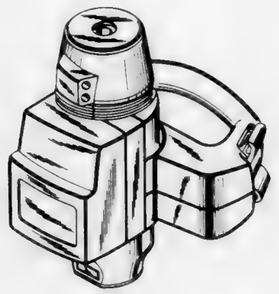
348,756
ESCALATOR HANDRAIL ENTRY HOUSING
Dale R. Barrett, Berlin; Gerald E. Johnson, Farmington; Ronald Laliberte, Waterbury; John T. Pitts, W. Hartford; Frank M. Sansevero, Glastonbury, all of Conn.; Willy Adrian, Obernkirchen, Fed. Rep. of Germany; Gerald Wente, Pohle, Fed. Rep. of Germany, and R. Zimmerman, Beimerstetien, Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.
Filed Jul. 9, 1993, Ser. No. 10,522
Term of patent 14 years
U.S. Cl. D34—30



348,757
ESCALATOR HANDRAIL ENTRY HOUSING
James A. Rivera, Bristol; Dat Nguyen, New Britain; Dale R. Barrett, Berlin, and Gerald E. Johnson, Farmington, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Jul. 9, 1993, Ser. No. 10,523
Term of patent 14 years
U.S. Cl. D34—30



348,758
HOIST
Uwe Lichtenvort, Essen, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Mar. 3, 1993, Ser. No. 5,391
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1992, 9206425.6
Term of patent 14 years
U.S. Cl. D34—33

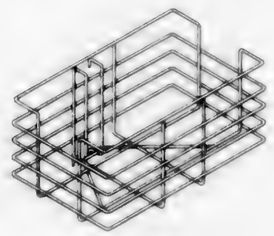


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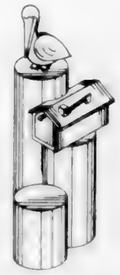
348,759
LOW LIFT CART
Randjit Bhambra, Stuttgart, Fed. Rep. of Germany, assignor to Porsche AG, Stuttgart, Fed. Rep. of Germany
Filed Mar. 3, 1993, Ser. No. 5,498
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1992, M9206453.1
Term of patent 14 years
U.S. Cl. D34—34



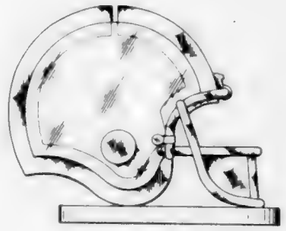
348,760
WIDE WIRE BASKET WITH MOUNTING PINS
Steven E. Linder, 9468 SW. 62nd Dr., Portland, Oreg. 97219
Filed Nov. 24, 1992, Ser. No. 1,948
Term of patent 14 years
U.S. Cl. D3—306



348,761
MAIL BOX
Rinaldo P. Castelli, 5427 Alloway St., Orlando, Fla. 32810, and Roy E. Starling, 720 S. Armitage St., Apopka, Fla. 32703
Filed Jun. 24, 1993, Ser. No. 9,777
Term of patent 14 years
U.S. Cl. D99—32



348,762
COIN BANK
Marcelino Burgos, 2058 Ireland Rd., Brockport, N.Y. 14420
Filed Jul. 19, 1992, Ser. No. 914,605
Term of patent 14 years
U.S. Cl. D99—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF JULY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Henricson, Kaj; and Klarin, Anja, 5,328,563, Cl. 162-30.100.

A B Lasers, Inc.: *See*—
Woelki, Michael; and Scaroni, James H., 5,329,090, Cl. 219-121.680.

A E Bishop & Associates Pty Limited: *See*—
Bishop, Arthur E.; and Scott, David W., 5,328,309, Cl. 409-307.000.

ABB Atom AB: *See*—
Molund, Gunnar; Tenghamn, Rune; and Zetterlund, Magnus, 5,329,499, Cl. 367-174.000.
Quaglia, Patricia; and Scholin, Bertil, 5,329,571, Cl. 376-352.000.

ABB Patent GmbH: *See*—
Kindermann, Robert; Styhler, Klaus; and Ziegler, Herbert, 5,329,239, Cl. 324-678.000.

ABB Vetco Gray Inc.: *See*—
Stephen, Garry R.; Marietta, Dale B.; Brammer, Norman; Fritshe, Casimir J.; Eckert, Lawrence A.; and Sharp, Allan C., 5,327,965, Cl. 166-208.000.

Abbiate, Jean-Claude; Blanc, Alain; Jeanniot, Patrick; and Richter, Gerard, to International Business Machines Corporation. Decimation filter for a sigma-delta converter and data circuit terminating equipment including the same. 5,329,553, Cl. 375-28.000.

Abbott Laboratories: *See*—
Fong, Conrad T. O.; Ali Elmesai, Mohamed R.; and Fieggen, Bruce Q., 5,328,848, Cl. 436-11.000.
Hook, William J.; and Larkin, Mark E., 5,328,041, Cl. 215-247.000.

Abboudi, Shalom Y.; and Adley, Robert. Underwater stair climbing exercise apparatus. 5,328,423, Cl. 482-53.000.

Abdelmalek, Fawzy T. High efficiency hybrid car with gasoline engine, and electric battery powered motor. 5,327,987, Cl. 180-65.200.

Abe, Hiroyuki; Ohta, Masatomo; Haga, Masahiro; Yamaji, Shigeki; and Watanabe, Shin, to Fujitsu Limited. Structure for fixing optical cable holding box to printed circuit board. 5,329,067, Cl. 174-260.000.

Abe, Koichi: *See*—
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Barbu, Stephane; and LePailleur, Laurent, 5,329,279, Cl. 341-50.000.

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Smith, Adlai H.; and Hunter, Robert O., Jr., 5,328,785, Cl. 430-5.000

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Marney, Derek; and Hardy, David, 5,329,065, Cl. 174-128.100

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Patterson, Ralph A.; and Wilde, John D., 5,329,349, Cl. 356-73.100

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Lo, Kun-Nan. Composite golf head. 5,328,176, Cl. 273-167.00H

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Orton, Kevin R.; and Lovisa, Noel W., 5,329,213, Cl. 318-16.000

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Rosotker, Michael D., 5,329,157, Cl. 257-666.000
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Forster, Heinz; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,328,897, Cl. 504-270.000.
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Polaroid Corporation: *See—*
Freedman, James R.; Sofen, Stephen R.; and Young, Kent M., 5,328,799, Cl. 430-200.000
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Poly, Wolfgang: *See—*
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Pond, Russell L., to Uniden America Corporation. Automatic pay-per-view reception in a satellite receiver. 5,329,590, Cl. 380-20.000

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Poole, Jon M.; Mannan, Sarwan K.; and Sizek, Howard W., to Inco Alloys International, Inc. Mechanically alloyed nickel-base composition having improved hot formability characteristics. 5,328,499, Cl. 75-255.000.

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Farng, Liehpao O.; Horodysky, Andrew G.; Poole, Ronald J.; and Donofrio, John R., 5,328,625, Cl. 252-51.50R.

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Portelli, Alfred L.: *See—*
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Porter, Incorporated: *See—*
Alexander, John E., 5,329,074, Cl. 181-235.000.

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White, Philip J., 5,328,783, Cl. 429-233.000.

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Powell, Timothy R. Trap for harvesting earthworms. 5,327,674, Cl. 43-71.000.

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Powers, Thomas C. Dual-line or quad-line controlled kite. 5,328,134, Cl. 244-155.00A.

PPG Industries, Inc.: *See—*
Goodwin, George B., 5,328,768, Cl. 428-428.000.
Hanson, Michael E.; Hunia, Robert M.; and Lin, Chia-Cheng, 5,328,975, Cl. 528-29.000.
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Praxair Technology, Inc.: *See—*
Bonaquist, Dante P.; Jordan, Michael D.; and Karwan, Mark H., 5,329,443, Cl. 364-153.000.
Nowobilski, Jeffert J., 5,328,336, Cl. 417-48.000.

Precision Dispensing Equipment, Inc.: *See—*
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Precision Fukuhara Works, Ltd.: *See—*
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Pregont, Jack E., to Pulptech Corporation. Method and apparatus for manufacture of free-flowing dunnage of molded pulp. 5,328,568, Cl. 162-226.000.

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Presz, Walter M., Jr., to United Technologies Corporation. Mechanism to reduce turning losses in angled conduits. 5,327,940, Cl. 138-39.000.

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Priddy, Dennis G.; and Cymbalski, Robert S., to International Data Matrix, Inc. Dynamically variable machine readable binary code and method for reading and producing thereof. 5,329,107, Cl. 235-494.000.

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Lanser, Michael L.; and Vander Kuyl, Paul T., 5,329,430, Cl. 362-83.100.
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Pax, Ralph A., Jr.; and Williams, Scott T., 5,328,227, Cl. 296-97.800

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Pritchard, Rodney R.; and Eisen, Mark B. Aquarium. 5,327,855, Cl. 119-267.000.

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Charrier, Jacqueline W.; and McNally, Mark P., 5,328,282, Cl. 401-4.000.
Cook, Charles D.; and Berg, Charles J., 5,328,053, Cl. 221-63.000.
Rasch, David M.; Hensler, Thomas A.; and Daniels, Dean J., 5,328,565, Cl. 162-113.000.
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Procter & Gamble Pharmaceuticals, Inc.: *See—*
Demuth, Thomas P., Jr.; and White, Ronald E., 5,328,908, Cl. 514-254.000.

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Pryce, Michael L. Supination control sole and shoe. 5,327,663, Cl. 36-144.000.

Przybilla, Klaus-Juergen: *See—*
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PSC, Inc.: *See—*
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Ptaschinski, Michael J., to International Paper Company. Insert for bicycle shipping container. 5,328,033, Cl. 206-586.000.

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Puget Sound Power & Light Company: *See—*
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Pullen, John H.; Singh, Rabinder; and Phillips, Kathryn A., to Boots Company plc. Mouthwash. 5,328,682, Cl. 424-49.000.

Pullman Company, The: *See—*
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Pulptech Corporation: *See—*
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Pyle, James H.: *See—*
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Quaglia, Patricia; and Scholin, Bertil, to ABB Atom AB. Reactor core for a boiling water nuclear reactor. 5,329,571, Cl. 376-352.000.

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Quickie Designs Inc.: *See—*
Counts, David M., 5,328,183, Cl. 280-42.000.
Lovins, Terrence F., 5,328,247, Cl. 297-423.300.

Quickturn Systems, Inc.: *See—*
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Quinlan, Roy G.: *See—*
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Quinn, Steven P. Rotating thrust-producing apparatus. 5,328,333, Cl. 416-193.00R.

Quinn, William F.: *See—*
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Quintana, Jason: *See—*
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R. J. Reynolds Tobacco Company: *See—*
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Lekwauwa, Aju N.; and Young, Walter R. D., Jr., 5,327,917, Cl 131-370.000.

R. R. Donnelley & Sons Co.: *See—*
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Rabbit, Connie S.: *See—*
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Radossi, Sergio, to Hoke Incorporated. Plug valve. 5,327,929, Cl. 137-315.000

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Rainal, Attilio J., to AT&T Bell Laboratories. Balanced circuitry for reducing inductive noise of external chip interconnections. 5,329,170, Cl. 307-303.100.

Raines, Kenneth, to B. Braun Medical Inc. Tamper resistant syringe cap. 5,328,474, Cl. 604-110.000.

Rainis, Andrew, to Chevron Research and Technology Company Reforming naphtha with large-pore zeolites. 5,328,595, Cl. 208-138.000.

Raith, Alex K.. *See*—
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Raman, Siva N.; Gray, Matthew W.; and Smith, Rodger L., to Mallinckrodt Veterinary, Inc. Compositions and processes for the sustained release of drugs. 5,328,697, Cl. 424-477.000

Rammler, David H. Catheter track and catheter for diagnosis and treatment. 5,327,891, Cl. 128-658.000

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Rasmusson, James K. *See*—
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Raspolli Galletti, Anna M.: *See*—
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Raterman, Michael F., to Mobil Oil Corporation. Mechanical shattering of asphaltenes in FCC riser. 5,328,591, Cl. 208-113.000

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Redd, Bruce L.; Walker, Eddie C.; Hare, Robet E.; Niederbaumer, Donald A.; Dunbar, James C.; and Bakken, Theresa A., to Procter & Gamble Company, The. Low pH mild personal cleansing bar with lathering mild synthetic surfactant and magnesium soap. 5,328,632, Cl. 252-174.000.

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Reeder, Robert P. Extensible golfing device and ball retriever. 5,328,174, Cl. 273-162.00E

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Reichental, A. N.; and Shafir, Alexander, to Sealed Air Corporation Apparatus for severing continuous sheet material. 5,327,805, Cl 83-471.200

Reiffenrath, Volker: *See*—
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Retallick, William B., to W. R. Grace & Co.-Conn. Ignition stage for a high temperature combustor. 5,328,359, Cl. 431-326.000

Reusch, Michael F. Pulsed synchrotron source. 5,329,241, Cl 328-235.000

Reuter, Martin, to Marco Systemanalyse und Entwicklung GmbH. Apparatus for operating a valve element. 5,328,149, Cl. 251-129.060.

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Rhone-Poulenc Rorer Pharmaceuticals Inc.: *See*—
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Ricca, Tom L. Attachment for automatic light switching. 5,329,204, Cl. 315-82.000.

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Richardson, Thomas D., Jr., to G. R. Osterland Company. Core puller for pulling test cores. 5,328,221, Cl. 294-50.700.

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Ricks, Jesse L. Stomach muscle builder. 5,328,435, Cl. 482-140.000.

Ricoh Company, Ltd.: *See*—
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TO WHOM

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Grim, Tracy E., to Royce Medical Company. Gel and air cushion ankle brace. Re. 34,661, Cl. 602-27.000.

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Semiconductor Energy Laboratory Co., Ltd.: *See*—
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Chambers, Douglas L.; Carmichael, Donald C.; and Wan, Chong T., to BOC Group Plc., The. Transparent article having reduced solar radiation transmittance and method of making same. B1 3,826,728, 7-12-94, Cl. 204-192.270.

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Hehn, Bruce A., to Alpha Enterprises, Inc. Audio cassette package. B1 4,589,549, 7-12-94, Cl. 206-387.000.

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Hunter Engineering Company: *See*—
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Martin, Frank J., to Frank J. Martin Company. Re-keyable pin tumbler drawer lock and pin tumbler cabinet door lock. B1 4,899,563, 7-12-94, Cl. 70-367.000.

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Bock, Steven D.; Miosek, Robert J.; Vinton, Christopher S.; and Volan, Gregory D., to Storage Technology Corporation. Cabinet for a disk drive. 348,656, 7-12-94, Cl. D14-102.000.

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CLASSIFICATION OF PATENTS

ISSUED JULY 12, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
7 5,327,585
211 5,327,586
422 5,327,587
5,327,588

CLASS 4
246.2 5,327,589
502 5,327,590

CLASS 5
47 5,327,591
81.1 5,327,592
85.1 5,327,593
100 5,327,594
460 5,327,595
475 5,327,596
481 5,327,597
5,327,598
604 5,327,599
625 5,327,600

CLASS 7
125 5,327,602

CLASS 8
111 5,328,489
159 5,327,603

CLASS 14
41 5,327,605

CLASS 15
22.1 5,327,608
98 5,327,609
5,327,610
167.2 5,327,607
176.4 5,327,611
235.4 5,327,612
250.02 5,327,613
250.04 5,327,614
250.40 5,327,615

CLASS 16
382 5,327,616

CLASS 19
98 5,327,617

CLASS 23
313 R 5,328,490

CLASS 24
68 SK 5,327,620
274 R 5,327,618
625 5,327,619

CLASS 28
149 5,327,621
220 5,327,622

CLASS 29
4 5,327,623
25.01 5,327,624
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25.35 5,327,626
5,327,627
33 F 5,327,628
91 5,327,629
216 5,327,630
271 5,327,631
401.1 5,327,632
402.08 5,327,633
428 5,327,634
469 5,327,635
525 5,327,636
596 5,327,637
603 5,327,638
709 5,327,639
741 5,327,640
747 5,327,641
809 5,327,645
828 5,327,642
830 5,327,643
861 5,327,644
888.42 5,327,646
889 5,327,647

CLASS 30
43.1 5,327,648
124 5,327,649
147 5,327,650
161 5,327,651
359 5,327,652

CLASS 33
1 M 5,327,653
258 5,327,654
288 5,327,655
503 5,327,657
512 5,327,656
621 5,327,658
834 5,327,659

CLASS 34
290 5,327,660
388 5,327,661

CLASS 36
50.1 5,327,662
144 5,327,663
174 5,327,664

CLASS 38
102.2 5,327,665

CLASS 40
634 5,327,666

CLASS 43
1 5,327,667
17.1 5,327,668
26 5,327,669
42.14 5,327,670
42.17 5,327,671
44.91 5,327,672
61 5,327,673
71 5,327,674
113 5,327,675

CLASS 44
280 5,328,491

CLASS 47
39 5,327,676
40.5 5,327,677
70 5,327,678
73 5,327,679

CLASS 49
27 5,327,680
252 Re.34,657
411 5,327,681
463 5,327,682
5,327,683
506 5,327,684

CLASS 51
5 E 5,327,685
165 R 5,327,686
165.71 5,327,687
168 5,327,601
394 5,327,688

CLASS 52
11 5,327,689
29 5,327,690
66 5,327,691
68 5,327,698
93.2 5,327,699
109 5,327,700
167 RM 5,327,692
396.02 5,327,693
727 5,327,694
735 5,327,695
745.21 5,327,696

CLASS 53
284.3 5,327,701
331.5 5,327,697
389.3 5,327,702
434 5,327,703
459 5,327,704
569 5,327,705
587 5,327,706

CLASS 55
302 5,328,492

CLASS 56
1 5,327,708
10.2 5,327,707
15.8 5,327,709
255 5,327,710
341 5,327,711

CLASS 57
22 5,327,712
213 5,327,713
230 5,327,714

CLASS 59
31 5,327,715

CLASS 60
39.02 5,327,716
5,327,717
39.03 5,327,718
39.07 5,327,719
39.281 5,327,720
269 5,327,721
323 5,327,722
562 5,327,723
568 5,327,724
605.2 5,327,725
648 5,327,726
757 5,327,727

CLASS 62
5 5,327,728
9 5,327,729
5,327,730
45.1 5,327,731
50.2 5,327,732
51.1 5,327,733
66 5,327,737
74 5,327,738
78 5,327,739
93 5,327,740
149 5,327,741
175 5,327,742
260 5,327,734
279 5,327,743
292 5,327,735
330 5,327,736
401 5,327,744
467 5,327,745
530 5,327,746

CLASS 65
1 5,328,493
60.1 5,328,494
99.5 5,328,495
268 5,378,496

CLASS 66
57 5,327,747
121 5,327,748
125 R 5,327,749
207 5,327,750

CLASS 68
18 C 5,327,751

CLASS 70
58 5,327,752
209 5,327,753
367 B1 4,899,563

CLASS 71
28 5,328,497
64.07 5,328,498

CLASS 72
14 5,327,754
53 5,327,755
77 5,327,756
79 5,327,757
149 5,327,758
164 5,327,760
225 5,327,761
247 5,327,762
257 5,327,763
296 5,327,764
5,327,765
316 5,327,766
338 5,327,767
405 5,327,768
458 5,327,769

CLASS 73
1 DV 5,327,771
1 J 5,327,770
25.04 5,327,772
30.01 5,327,773
37 5,327,774
40 5,327,775
49.2 5,327,776
54.06 5,327,777
54.21 5,327,778
64.45 5,327,779
118.1 5,327,780
121 5,327,781
129 5,327,782
597 5,327,783
714 5,327,784
756 5,327,785
779 5,327,786
861.12 5,327,787
861.33 5,327,788
861.56 5,327,789
862.325 5,327,790
862.628 5,327,791
865.5 5,327,792

CLASS 74
378 5,327,793
385 5,327,794
424.8 B 5,327,795
484 H 5,327,796
512 5,327,797
551.3 5,327,798
558 5,327,799

CLASS 75
255 5,328,499
343 5,328,500
352 5,328,501
377 5,328,502

CLASS 81
125 5,327,801
312 5,327,802

CLASS 83
152 5,327,803
305 5,327,804
471.2 5,327,805
636 5,327,806
783 5,327,807
861 5,327,808

CLASS 84
603 5,329,062

CLASS 89
1.817 5,327,809
36.05 5,327,811
273 5,327,810

CLASS 92
144 5,327,812
187 5,327,813
248 5,327,814

CLASS 95
101 5,328,503

CLASS 99
295 5,327,815
348 5,327,816
5,327,817
455 5,327,818
629 5,327,819

CLASS 100
5 5,327,820
5,327,821
45 5,327,822
88 5,327,823
199 5,327,824

CLASS 101
32 5,327,825
126 5,327,827
127.1 5,327,828
177 5,327,829
181 5,327,826
363 5,327,830
401.1 5,327,831
415.1 5,327,832
484 5,327,833

CLASS 102
202.9 5,327,834
275.11 5,327,835

CLASS 104
163 5,327,836

CLASS 105
226 5,327,837

CLASS 106
20 D 5,328,504
277 5,328,505
416 5,328,506
672 5,328,507
723 5,328,508

CLASS 108
25 5,327,838
51.3 5,327,839

CLASS 112
121.11 5,327,840
262.1 5,327,841

CLASS 114
105 5,327,842
144 R 5,327,843
211 5,327,846
218 5,327,844
5,327,845
5,327,847
222 5,327,848
315 5,327,849

CLASS 116
63 P 5,327,850

CLASS 117
79 5,328,548

CLASS 118
24 5,328,509
101 5,328,510
203 5,328,511
674 5,328,512
715 5,328,513
722 5,328,514
723 DC 5,328,516
723 ME 5,328,515

CLASS 119
19 5,327,851
5,327,852
72.5 5,327,853
220 5,327,854
267 5,327,855

CLASS 123
46 R 5,327,857
90.11 5,327,856
90.12 5,327,858
90.17 5,327,859
90.55 5,327,860
145 A 5,327,870
196 R 5,327,862
196 S 5,327,861
197.4 5,327,863
260 5,327,864
397 5,327,865
406 5,327,866
5,327,867
421 5,327,868
502 5,327,869
510 5,327,871
516 5,327,872
520 5,327,873
545 5,327,874
5,327,875
674 5,327,876

CLASS 124
24.1 5,327,877
41.1 5,327,878

CLASS 126
41 R 5,327,879

CLASS 128
6 5,327,880
11 5,327,881
203.12 5,327,883
204.21 5,327,887
205.26 5,327,904
640 5,327,888
642 5,327,889
653.1 5,327,890
653.2 5,327,884
653.5 5,327,898
658 5,327,891
660.07 5,327,892
661.08 5,327,893
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662.03 5,327,895
662.06 5,327,885
671 5,327,899
705 5,327,900
730 5,327,901
734 5,327,902
736 5,327,903
753 5,327,896
762 5,327,897
772 5,327,905
5,327,906
774 5,327,907
5,327,908
842 5,327,910
844 5,327,911
878 5,327,912
898 5,327,913
5,327,914

CLASS 131
194 5,327,915
331 5,327,916
370 5,327,917

CLASS 132
73 5,327,918
270 5,327,919

CLASS 134
7 5,328,517
10 5,328,518
57 R 5,327,920
182 5,327,921

CLASS 135
117 5,327,927
118 5,327,922

CLASS 136
244 5,328,519
256 5,328,520

CLASS 137
15 5,327,923
5,327,924
5,327,925
116.3 5,327,926
246.22 5,327,928
315 5,327,929
329.3 5,327,930
410 5,327,931
512.15 5,327,932
527.6 5,327,933
588 5,327,934
625.41 5,327,935
625.69 5,327,936
863 5,327,937

CLASS 138
39 5,327,940
42 5,327,941
44 5,327,938
89 5,327,942
98 5,329,063

CLASS 139
1 R 5,327,939

CLASS 141
18 B1 4,313,475
59 5,327,943
5,327,944
5,327,945
5,327,946
71 5,327,947
86 5,327,948
206 5,327,949
315 5,327,950

CLASS 144
358 5,327,951

CLASS 148
22 5,328,521
23 5,328,522
108 5,328,523
241 5,328,524
247 5,328,525
260 5,328,526
318 5,328,527
320 5,328,528
327 5,328,529
559 5,328,530
580 5,328,531

CLASS 152
209 R 5,327,952
5,327,953
527 5,327,954

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CLASS 156

134 5,328,532
136 5,328,533
150 5,328,534
155 5,328,535
229 5,328,536
233 5,328,537
249 5,328,538
275.5 5,328,539
285 5,328,540
304.2 5,328,541
313 5,328,542
574 5,328,543
578 5,328,544
583.1 5,328,545
584 5,328,546
5,328,547
628 5,328,550
630 5,328,551
5,328,552
636 5,328,553
643 5,328,554
5,328,555
5,328,556
5,328,557
5,328,558
647 5,328,559
661.1 5,328,560
666 5,328,561

CLASS 160

370.2 B1 5,024,262

CLASS 162

21 5,328,562
30.1 5,328,563
38 5,328,564
113 5,328,565
152 5,328,566
158 5,328,567
226 5,328,568
306 5,328,569
336 5,328,570

CLASS 164

516 5,327,955

CLASS 165

121 5,327,956
161 5,327,957
167 5,327,958
173 5,327,959

CLASS 166

51 5,327,960
68.5 5,327,961
187 5,327,962
5,327,963
208 5,327,964
5,327,965
5,327,966
5,327,972
246 5,327,967
250 5,327,969
5,327,971
278 5,327,970
293 5,327,968
307 5,327,973
311 5,327,974
369 5,327,975

CLASS 169

43 5,327,976

CLASS 172

376 5,327,977
439 5,327,978

CLASS 173

74 5,327,979

CLASS 174

36 5,329,064
128.1 5,329,065
151 5,329,066
260 5,329,067
261 5,329,068

CLASS 175

21 5,327,980
5,327,981
61 5,327,984
304 5,327,982

CLASS 177

245 5,329,069

CLASS 178

18 5,329,070

CLASS 180

41 5,327,983
65.2 5,327,987
5,327,992
65.4 5,327,991
79.1 5,327,986
89.18 5,327,988
248 5,327,989
271 5,327,990

CLASS 181

110 5,329,071
167 5,329,072
177 5,327,985
210 5,329,073
235 5,329,074

CLASS 182

179 5,327,993
187 5,327,994

CLASS 184

5 5,327,995
5,327,996
6.4 5,327,997
55.1 5,327,998

CLASS 187

104 5,329,075
127 5,329,076
133 5,329,077
136 5,329,078

CLASS 188

1.12 5,328,000
24.22 5,328,001
67 5,328,002
79.55 5,327,999
250 F 5,328,003
318 5,328,004
322.21 5,328,005

CLASS 192

8 C 5,328,007
17 R 5,328,008
42 5,328,009
45 5,328,010
5,328,012
113.36 5,328,011

CLASS 194

213 5,328,013
343 5,328,014

CLASS 198

345.1 5,328,016
365 5,328,017
379 5,328,018
548 5,328,015
624 5,328,019
779 5,328,020
803.11 5,328,021
834 5,328,022
847 5,328,023

CLASS 200

5 A 5,329,079
5 B 5,329,080
38 D 5,329,082
61.04 5,329,081
302.2 5,329,083
344 5,329,084

CLASS 204

81 5,328,571
129.4 5,328,573
149 5,328,574
150 5,328,572
157.15 5,328,575
164 5,328,576
168 5,328,577
180.1 5,328,578
181.1 5,328,579
5,328,580
182.8 5,328,581
192.12 5,328,582
5,328,583
192.27 B1 3,826,728
229 5,328,584
298.2 5,328,585

CLASS 205

63 5,328,586
73 5,328,587
120 5,328,588
296 5,328,589

CLASS 206

158 5,328,024
205 5,328,025
234 5,328,026
320 5,328,027
366 5,328,028
378 5,328,029
387 B1 4,589,549
429 5,328,030
443 5,328,031
455 5,328,032
586 5,328,033

CLASS 208

111 5,328,590
113 5,328,591
5,328,592
5,328,593
121 5,328,594
138 5,328,595
321 5,328,596

CLASS 209

31 5,328,034
173 5,328,035
366.5 5,328,036

CLASS 210

87 5,328,597
93 5,328,598
96.1 5,328,599
130 5,328,600
137 5,328,601
169 5,328,602
198.2 5,328,603
232 5,328,604
5,328,605
238 5,328,606
242.3 5,328,607
274 5,328,608
314 5,328,609
321.8 5,328,610
393 5,328,611
493.2 5,328,612
500.27 5,328,613
632 5,328,614
634 5,328,615
638 5,328,616
768 5,328,617

CLASS 211

55 5,328,037
151 5,328,038
183 5,328,039

CLASS 212

253 5,328,040

CLASS 215

6 5,328,043
247 5,328,041
252 5,328,044

CLASS 219

68 5,329,087
69.18 5,329,088
121.45 5,329,089
121.68 5,329,090
121.83 5,329,091
124.34 5,329,092
209 5,329,093
243 5,329,094
390 5,329,095
528 5,329,096
530 5,329,097
532 5,329,098
604 5,329,099
616 5,329,085
626 5,329,100
632 5,329,101
756 5,329,086

CLASS 220

7 5,328,042
254 5,328,045
266 5,328,046
307 5,328,047
334 5,328,048
345 5,328,049
506 5,328,050
575 5,328,051

CLASS 221

42 5,328,052
63 5,328,053

CLASS 222

77 5,328,054
83.5 5,328,055
94 5,328,056
135 5,328,057
153 5,328,058
189 5,328,059
209 5,328,060
212 5,328,061
385 5,328,062
524 5,328,063
607 5,328,064

CLASS 223

85 5,328,065

CLASS 224

42.03 R 5,328,066
42.45 R 5,328,067
42.46 A 5,328,068
148 5,328,069
270 5,328,070

CLASS 225

91 5,328,071

CLASS 226

15 5,328,072
27 5,328,073
55 5,328,074

CLASS 227

132 5,328,075
155 5,328,076
175 5,328,077

CLASS 228

5.7 5,328,083
18 5,328,084
33 5,328,085
146 5,328,086
175 5,328,087
179.1 5,328,078
180.5 5,328,079

CLASS 229

40 5,328,080
117.12 5,328,081
122.1 5,328,082
157 5,328,088
162 5,328,089
171 5,328,090
231 5,328,091
306 5,328,092

CLASS 235

375 5,329,102
462 5,329,103
5,329,104
463 5,329,105
472 5,329,106
494 5,329,107
5,329,108

CLASS 239

3 5,328,093
88 5,328,094
113 5,328,095
123 5,328,096
243 5,328,097
265.35 5,328,098
372 5,328,099
585.4 5,328,100
5,328,102
600 5,328,101

CLASS 241

5 5,328,103
24 5,328,104
46.17 5,328,105
99 5,328,106
295 5,328,107

CLASS 242

7.03 5,328,108
7.08 5,328,109
18 R 5,328,110
18.1 5,328,111
125.1 5,328,121
246 5,328,127
283 5,328,122
5,328,128
300 5,328,138
335 5,328,125
337 5,328,124
343.2 5,328,126
348.3 5,328,123
372 5,328,119
374 5,328,118
382.4 5,328,120
388 5,328,112
5,328,113
541.3 5,328,136
543 5,328,116
562 5,328,114
578.3 5,328,117
588.6 5,328,115

CLASS 244

3.15 5,328,129
3.23 5,328,130
12.2 5,328,131
53 R 5,328,132
118.1 5,328,133
155 A 5,328,134

CLASS 248

223.4 5,328,137
311.2 5,328,143
316.7 5,328,144
442.2 5,328,145
475.1 5,328,139
493 5,328,140
550 5,328,141

CLASS 249

48 5,328,142
219.1 5,328,146

CLASS 250

201.2 5,329,109
207 5,329,110
208.1 5,329,111
5,329,112
214 LS 5,329,113
214 PR 5,329,114
214 R 5,329,115
214 VT 5,329,116
221 5,329,117
227.12 5,329,118
229 5,329,119
231.1 5,329,120
231.13 5,329,121
306 5,329,122
362 5,329,123
367 5,329,124
442.11 5,329,125
453.11 5,329,126
459.1 5,329,127
492.2 5,329,129
492.22 5,329,130
551 5,329,131
560 5,329,132
562 5,329,133
584 5,329,128

CLASS 251

30.02 5,328,147
30.04 5,328,148
129.06 5,328,149
129.1 5,328,150
129.15 5,328,151
229 5,328,152

CLASS 252

30 5,328,618
32.5 5,328,619
32.7 E 5,328,620
46.6 5,328,621
46.7 5,328,622
49.9 5,328,623
51.5 A 5,328,624
51.5 R 5,328,625
60 5,328,626
79 5,328,627
91 5,328,628
117 5,328,629
5,328,630
174 5,328,632
174.23 5,328,631
181 5,328,633
182.17 5,328,636
186.27 5,328,634
194 5,328,635
299.60 5,328,637
299.61 5,328,638
5,328,639
299.62 5,328,640
299.63 5,328,641
299.65 5,328,642
299.66 5,328,643
315.6 5,328,644
5,328,645

CLASS 254

2 R 5,328,153
88 5,328,154
134.4 5,328,155

CLASS 256

32 5,328,156

CLASS 257

14 5,329,134
17 5,329,135
5,329,136
21 5,329,137
42 5,329,138
48 5,329,139
53 Re.34,658
66 5,329,140
103 5,329,141
139 5,329,142
173 5,329,143
197 5,329,144
198 5,329,145
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378 5,329,147
390 5,329,148
435 5,329,149
458 5,329,150
498 5,329,151
529 5,329,152
530 5,329,153
532 5,329,154
538 5,329,155
579 5,329,156
666 5,329,157
5,329,158
5,329,159
710 5,329,160
764 5,329,161
774 5,329,162

CLASS 261

52 5,328,646

CLASS 264

34 5,328,647
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45.3 5,328,650
46.1 5,328,651
51 5,328,652
284 5,328,653
289.3 5,328,654
544 5,328,655
571 5,328,656

CLASS 266

47 5,328,157
103 5,328,158

CLASS 267

52 5,328,159
141.3 5,328,160

CLASS 269

17 5,328,161

CLASS 270

58 5,328,162

CLASS 271

10 5,328,163
12 5,328,164
98 5,328,165
171 5,328,166
241 5,328,167
259 5,328,168
290 5,328,169
297 5,328,170

CLASS 273

80 C 5,328,171
144 B 5,328,172
5,328,173
162 E 5,328,174
167 H 5,328,175
5,328,176
169 5,328,184
186.2 5,328,185
187 R 5,328,186
237 5,328,187
239 5,328,188
292 5,328,189
358 5,328,190
411 5,328,191

CLASS 277

1 5,328,177
205 5,328,178
227 5,328,179

CLASS 279

2.16 5,328,180
2.17 5,328,181

CLASS 280

5.32 5,328,182
42 5,328,183
47.24 5,328,192
87.041 5,328,193
202 5,328,194
233 5,328,195
276 5,328,196
406.1 5,328,197
439 5,328,198
477 5,328,199
609 5,328,200
625 5,328,201
661 Re.34,659
707 5,328,202
728 A 5,328,203
734 5,328,204
822 5,328,205

CLASS 281

38 5,328,206

CLASS 283

77 5,328,207
105 5,328,208

CLASS 285

1 5,328,209
21 5,328,210
23 5,328,211
42 5,328,212
138 5,328,213
235 5,328,214
318 5,328,215
319 5,328,216

CLASS 292

201 5,328,218
216 5,328,219
341.19 5,328,217

CLASS 294

19.2 5,328,220
50.7 5,328,221
86.4 5,328,222
86.41 5,328,223
104 5,328,224

CLASS 296

26 5,328,225
68.1 5,328,226
97.4 5,328,135
97.8 5,328,227
98 5,328,228
121 5,328,229

136 5,328,230

CLASS 297

13 5,328,231
58 5,328,232
115 5,328,233
216.16 5,328,234
270 5,328,235
284.3 5,328,245
284.9 5,328,236
304 5,328,237
332 5,328,238
333 5,328,239
338 5,328,240
367 5,328,241
374 5,328,242
378.12 5,328,243
391 5,328,244
411.36 5,328,246
423.3 5,328,247
452.56 5,328,248
483 5,328,249

CLASS 299

8 5,328,250

CLASS 301

64.4 5,328,252

CLASS 303

9 5,328,251
11 5,328,256
36 5,328,253
100 5,328,254
103 5,328,255
115.2 5,328,257

CLASS 307

10.1 5,329,163
5,329,164
91 5,329,165
129 5,329,166
289 5,329,167
296.1 5,329,168
296.3 5,329,169
303.1 5,329,170
354 5,329,171
355 5,329,172
5,329,173
443 5,329,174
5,329,175
5,329,176
451 5,329,177
465 5,329,178
5,329,179
5,329,180
5,329,181
475 5,329,182
5,329,183
5,329,184
5,329,185
482 5,329,186
494 5,329,187
517 5,329,188
529 5,329,189
540 5,329,190
5,329,191
576 5,329,192
592 5,329,193

CLASS 310

17 5,329,194
68 B 5,329,195
156 5,329,196
198 5,329,197
247 5,329,198
263 5,329,199
313 R 5,329,208
316 5,329,200
323 5,329,201
334 5,329,202

CLASS 312

42 5,328,258
184 5,328,259
223.6 5,328,260

CLASS 313

491 5,329,203

CLASS 315

82 5,329,204
111.21 5,329,205
159 5,329,206
169.1 5,329,207
209 R 5,329,209
246 5,329,210
371 5,329,211

CLASS 316

108 5,329,299

CLASS 318

16 5,329,212
5,329,213
434 5,329,214
603 5,329,215
654 5,329,216
811 5,329,217

CLASS 320

21 5,329,218
22 5,329,219
23 5,329,220

CLASS 323

207 5,329,221
5,329,222
246 5,329,223
270 5,329,224
360 5,329,225

CLASS 324

158.1 5,329,226
5,329,227
248 5,329,229
262 5,329,230
309 5,329,231
318 5,329,232
5,329,233
5,329,234
338 5,329,235
453 5,329,236
501 5,329,237
522 5,329,239
678 5,329,228
765 5,329,238

CLASS 328

155 5,329,240
235 5,329,241

CLASS 329

300 5,329,242

CLASS 330

136 5,329,243
149 5,329,244
251 5,329,245
267 5,329,246
288 5,329,247
295 5,329,248
302 5,329,249

CLASS 331

2 5,329,250
5,329,251
15 5,329,252
17 5,329,253
34 5,329,254
96 5,329,255
107 A 5,329,256
107 G 5,329,257

CLASS 332

100 5,329,258
103 5,329,259
119 5,329,260

CLASS 333

17.2 5,329,261
33 5,329,262
116 5,329,263

CLASS 335

35 5,329,264
78 5,329,265
216 5,329,266
222 5,329,267

CLASS 336

119 5,329,268
213 5,329,269
5,329,270

CLASS 338

4 5,329,271

CLASS 340

461 5,329,272
517 5,329,273
825.22 5,329,274
825.340 5,329,276
870.31 5,329,276
971 5,329,277

CLASS 341

20 5,329,278
50 5,329,279
96 5,329,280
139 5,329,281
143 5,329,282
144 Re.34,660

CLASS 342

25 5,329,283
132 5,329,284
153 5,329,285
165 5,329,286

CLASS 343

752 5,329,287

CLASS 345

63 5,329,288
126 5,329,289
132 5,329,290
157 5,329,291
199 5,329,292

CLASS 346

25 5,329,295
74.2 5,329,296
76 L 5,329,297
76 PH 5,329,298
108 5,329,300
134 5,329,301
136 5,329,302
140.1 5,329,303
153.1 5,329,307

CLASS 347

7 5,329,304
11 5,329,293
95 5,329,305

CLASS 348

11 5,329,364
14 5,329,308
16 5,329,572
97 5,329,309
147 5,329,310
180 5,329,311
228 5,329,362
256 5,329,312
302 5,329,372
422 5,329,313
448 5,329,314
469 5,329,365
472 5,329,360
540 5,329,367
556 5,329,369
572 5,329,366
578 5,329,315
620 5,329,317
625 5,329,316
655 5,329,361
699 5,329,318
701 5,329,368
733 5,329,319
738 5,329,320
5,329,371
781 5,329,363

CLASS 349

90 5,329,306

CLASS 351

205 5,329,321
211 5,329,322

CLASS 353

10 5,329,323
120 5,329,324

CLASS 354

76 5,329,325
149.1 5,329,326
149.11 5,329,327
152 5,329,328
195.12 5,329,329
288 5,329,330
299 5,329,331

CLASS 355

53 5,329,332
5,329,333
5,329,334
5,329,335
5,329,336
55 5,329,337
207 5,329,338
246 5,329,339
5,329,340
273 5,329,341
285 5,329,342
290 5,329,343
301 5,329,344
316 5,329,345
326 R 5,329,346

CLASS 356

5 5,329,347
73.1 5,329,348
5,329,349
152 B1 Re.33,144
218 5,329,350
237 5,329,351
301 5,329,352
328 5,329,353
349 5,329,354
350 5,329,355
358 5,329,356
369 5,329,357
375 5,329,358
398 5,329,359

CLASS 358

296 5,329,373
310 5,329,374
335 5,329,376
343 5,329,375
400 5,329,377
406 5,329,378
433 5,329,379
455 5,329,380
5,329,381
464 5,329,382
500 5,329,383
514 5,329,384
515 5,329,385

CLASS 359

42 5,329,386
53 5,329,387
5,329,388
66 5,329,389
67 5,329,390
83 5,329,391
124 5,329,392
135 5,329,393
156 5,329,394
159 5,329,395
173 5,329,396
308 5,329,397
566 5,329,398
662 5,329,399
673 5,329,400
686 5,329,401
691 5,329,402
717 5,329,403
771 5,329,404
811 5,329,406
849 5,329,407

CLASS 360

59 5,329,408
77.02 5,329,409
94 5,329,410
96.5 5,329,411
97.01 5,329,412
113 5,329,413

CLASS 361

64 5,329,414
86 5,329,415
146 5,329,416
185 5,329,417
534 5,329,421
686 5,329,422
695 5,329,418
699 5,329,419
701 5,329,425
709 5,329,420
719 5,329,426
730 5,329,427
760 5,329,423
775 5,329,424
785 5,329,428

CLASS 362

74 5,329,429
83.1 5,329,430
85 5,329,431
103 5,329,432
154 5,329,433
238 5,329,434
293 5,329,435
294 5,329,436
393 5,329,437
431 5,329,438

CLASS 363

87 5,329,439
146 5,329,440

CLASS 364

148 5,329,441
149 5,329,442
153 5,329,443
401 5,329,444
413.01 5,329,445
419.04 5,329,446
419.19 5,329,447
422 5,329,448
424.02 5,329,449
5,329,450
424.05 5,329,451
5,329,452
426.02 5,329,453
426.04 5,329,454
5,329,455
468 5,329,456
474.35 5,329,457
474.37 5,329,458
479 5,329,459
489 5,329,460
497 5,329,461
505 5,329,462
510 5,329,463
512 5,329,464
551.01 5,329,465
559 5,329,466
561 5,329,467
569 5,329,468
571.01 5,329,469
578 5,329,470
5,329,471
724.19 5,329,472
726 5,329,473
5,329,474
745 5,329,475
761 5,329,476
786 5,329,477
828 5,329,478

CLASS 365

45 5,329,484
145 5,329,485
5,329,486
149 5,329,479
170 5,329,480
177 5,329,481
182 5,329,482
5,329,483
185 5,329,487
189.05 5,329,489
200 5,329,488
222 5,329,490
226 5,329,491
230.01 5,329,492
5,329,493
230.03 5,329,494

CLASS 366

102 5,328,261
139 5,328,262
254 5,328,263

CLASS 367

138 5,329,495
140 5,329,496
141 5,329,497
155 5,329,498
174 5,329,499

CLASS 368

10 5,329,500
5,329,501
276 5,329,502

CLASS 369

13 5,329,503
5,329,504
5,329,505
32 5,329,506
44.11 5,329,508
44.12 5,329,507
44.26 5,329,509
47 5,329,510
71 5,329,511
77.1 5,329,516
110 5,329,517
121 5,329,512
126 5,329,513
5,329,514
5,329,515

CLASS 370

13 5,329,519
16 5,329,520
5,329,521
29 5,329,522
58.1 5,329,523
5,329,524
60 5,329,526
85.1 5,329,525
85.13 5,329,527
85.4 5,329,528
85.6 5,329,529
85.7 5,329,530
94.2 5,329,531

CLASS 371

22.3 5,329,532
5,329,533
37.1 5,329,534
39.1 5,329,535
43 5,329,536
5,329,537
57.2 5,329,538

CLASS 372

36 5,329,539
53 5,329,540
88 5,329,541
96 5,329,542
98 5,329,543
107 5,329,544

CLASS 373

72 5,329,545

CLASS 374

182 5,328,264

CLASS 375

1 5,329,546
5,329,547
5,329,548
5,329,549
7 5,329,550
17 5,329,551
28 5,329,553
59 5,329,552
94 5,329,554
100 5,329,555
106 5,329,556
112 5,329,557
114 5,329,558
119 5,329,559
120 5,329,560

CLASS 376

245 5,329,561
260 5,329,562
5,329,563
299 5,329,564
352 5,329,571
402 5,329,565
418 5,329,566

CLASS 378

20 5,329,567
110 5,329,568
161 5,329,569

CLASS 379

58 5,329,573
5,329,574
5,329,577
59 5,329,576
63 5,329,575
67 5,329,578
88 5,329,579
90 5,329,580
91 5,329,589
92 5,329,581
189 5,329,570
201 5,329,582
266 5,329,583
382 5,329,584
399 5,329,585
406 5,329,586
410 5,329,587
413 5,329,588

CLASS 380

20 5,329,590
25 5,329,591

CLASS 381

68.2 B1 4,425,481
168 5,329,593

CLASS 382

8 5,329,597
14 5,329,594
17 5,329,595
37 5,329,596
39 5,329,598
54 5,329,599

CLASS 383

4 5,328,265
14 5,328,266
17 5,328,267
119 5,328,268

CLASS 384

57 5,328,269
100 5,328,270
108 5,328,271
112 5,328,272
206 5,328,273
428 5,328,274
472 5,328,275
477 5,328,276
572 5,328,277

CLASS 385

41 5,329,601
43 5,329,600
5,329,602
86 5,329,603
92 5,329,604
107 5,329,605
109 5,329,606
123 5,329,607

CLASS 395

2.52 5,329,608
2.6 5,329,609
24 5,329,610
27 5,329,611
75 5,329,612
122 5,329,613
139 5,329,614
162 5,329,615
164 5,329,616
166 5,329,617
200 5,329,618
5,329,619
5,329,620
250 5,329,622
275 5,329,623
5,329,624
5,329,625
325 5,329,621
375 5,329,626
400 5,329,627
425 5,329,628
5,329,629
5,329,630
5,329,631

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5,329,632
5,329,633
500 5,329,634
800 5,329,405

CLASS 397

87 5,329,294

CLASS 400

74 5,328,278
124 5,328,279
596 5,328,280
605 5,328,281

CLASS 401

4 5,328,282
23 5,328,283
119 5,328,284

CLASS 403

66 5,328,285
218 5,328,286
231 5,328,287
329 5,328,288
332 5,328,289
391 5,328,290

CLASS 404

2 5,328,291
6 5,328,292
9 5,328,293
25 5,328,294
84.1 5,328,295

CLASS 405

68 5,328,296
184 5,328,297
185 5,328,298
240 5,328,299
259.6 5,328,300

CLASS 406

171 5,328,301

CLASS 408

14 5,328,303
17 5,328,302
83 5,328,304
124 5,328,305
125 5,328,306
173 5,328,307
226 5,328,308

CLASS 409

307 5,328,309

CLASS 410

97 5,328,310

CLASS 411

353 5,328,311
366 5,328,312

CLASS 413

17 5,328,313
37 5,328,314

CLASS 414

236 5,328,315
280 5,328,316
403 5,328,317
411 5,328,318
416 5,328,319
495 5,328,320
631 5,328,321
786 5,328,322
790.4 5,328,323

CLASS 415

9 5,328,324
55.1 5,328,325
115 5,328,326
160 5,328,327
173.7 5,328,328

CLASS 416

62 5,328,329
5,328,330
96 R 5,328,331
186 R 5,328,332
193 R 5,328,333
196 A 5,328,334
203 5,328,335

CLASS 417

48 5,328,336
310 5,328,337
312 5,328,338
403 5,328,339

CLASS 418

55.1 5,328,340
55.3 5,328,341
55.5 5,328,342
61.3 5,328,343
85 5,328,344

CLASS 419

36 5,328,657

CLASS 420

71 5,328,658
448 5,328,659
562 5,328,660

CLASS 422

56 5,328,661
63 5,328,662
78 5,328,663
84 5,328,664
105 5,328,665
138 5,328,666
143 5,328,667
235 5,328,668

CLASS 423

32 5,328,669
140 5,328,670
210 5,328,671
212 5,328,672
235 5,328,673
244.07 5,328,674
328.2 5,328,675
446 5,328,676
560 5,328,677

CLASS 424

1.21 5,328,678
1.49 5,328,679
5 5,328,404
5,328,680
9 5,328,681
49 5,328,682
63 5,328,683
69 5,328,684
71 5,328,685
73 5,328,686
78.35 5,328,687
115 5,328,689
134.1 5,328,984
205.1 5,328,688
401 5,328,690
5,328,691
5,328,692
405 5,328,693
423 5,328,694
426 5,328,695
449 5,328,696
477 5,328,697
486 5,328,698
489 5,328,699
680 5,328,701

CLASS 425

4 R 5,328,345
107 5,328,346
116 5,328,347
140 5,328,348
289 5,328,349
451 5,328,350
526 5,328,351
562 5,328,352

CLASS 426

18 5,328,702
52 5,328,703
102 5,328,704
113 5,328,705
231 5,328,706
271 5,328,707
388 5,328,708
502 5,328,709
565 5,328,710
576 5,328,711
641 5,328,712

CLASS 427

8 5,328,713
58 5,328,714
97 5,328,715
121 5,328,716
126.2 5,328,717
126.3 5,328,718
156 5,328,725
165 5,328,719
213 5,328,720
5,328,721
250 5,328,722
272 5,328,723
391 5,328,724
420 5,328,726
428 5,328,735
459 5,328,736
569 5,328,737
595 5,328,727
600 5,328,728

CLASS 428

14 5,328,729
15 5,328,730
31 5,328,731
34.2 5,328,732
36.92 5,328,734
40 5,328,738
53 5,328,739
64 5,328,740
5,328,741
105 5,328,742
5,328,743
116 5,328,744
141 5,328,745
195 5,328,746
5,328,747
5,328,748
5,328,749
209 5,328,750
5,328,751
5,328,752
210 5,328,753
212 5,328,754
215 5,328,755
220 5,328,756
247 5,328,757
281 5,328,758
283 5,328,759
315.5 5,328,760
336 5,328,761
348 5,328,733
355 5,328,762
364 5,328,764
5,328,765
378 5,328,766
423.7 5,328,767
428 5,328,768
434 5,328,769
480 5,328,770
483 5,328,771
548 5,328,772
553 5,328,773
559 5,328,763
560 5,328,775
593 5,328,774
614 5,328,776

CLASS 429

27 5,328,777
5,328,778
32 5,328,779
65 5,328,780
97 5,328,781
101 5,328,782
233 5,328,783

CLASS 430

5 5,328,784
5,328,785
5,328,786
30 5,328,787
57 5,328,788
58 5,328,789
65 5,328,790
106 5,328,791
106.6 5,328,792
5,328,793
109 5,328,794
137 5,328,795
138 5,328,796
169 5,328,797
200 5,328,798
5,328,799
203 5,328,800
264 5,328,801
273 5,328,802
281 5,328,803
283 5,328,804
284 5,328,805
296 5,328,806
311 5,328,807
313 5,328,808
5,328,810
321 5,328,809
5,328,813
325 5,328,811
388 5,328,812
458 5,328,814
463 5,328,815
495 5,328,816
503 5,328,817
505 5,328,818
522 5,328,819
569 5,328,820

CLASS 431

2 5,328,353
5 5,328,354
10 5,328,355
125 5,328,356
266 5,328,357
5,328,358
326 5,328,359

CLASS 432

250 5,328,360

CLASS 433

4 5,328,361
6 5,328,362
9 5,328,363
18 5,328,364
29 5,328,365
34 5,328,366
81 5,328,367
116 5,328,368
125 5,328,369
147 5,328,370
173 5,328,371
220 5,328,372

CLASS 434

172 5,328,373
211 5,328,374
226 5,328,375

CLASS 435

1 5,328,821
4 5,328,822
5,328,823
6 5,328,824
5,328,825
5,328,826
5,328,827
7.21 5,328,830
7.9 5,328,828
5,328,829
12 5,328,831
19 5,328,832
36 5,328,833
68.1 5,328,834
69.3 5,328,835
69.4 5,328,836
5,328,837
172.3 5,328,838
191 5,328,839
209 5,328,841
240.2 5,328,840
5,328,842
240.23 5,328,843
240.31 5,328,844
254.1 5,328,845
264 5,328,846
291 5,328,847

CLASS 436

11 5,328,848
32 5,328,849
86 5,328,850
178 5,328,851
518 5,328,852

CLASS 437

3 5,328,853
24 5,328,854
25 5,328,855
31 5,328,856
5,328,857
5,328,858
5,328,859
34 5,328,860
40 5,328,861
41 5,328,862
52 5,328,863
57 5,328,864
60 5,328,865
70 5,328,866
187 5,328,873
191 5,328,867
203 5,328,868
209 5,328,869
216 5,328,870
226 5,328,549
231 5,328,871
235 5,328,872

CLASS 439

65 5,328,376
157 5,328,377
164 5,328,378
165 5,328,379
188 5,328,380
247 5,328,381
266 5,328,383
273 5,328,382
369 5,328,384
425 5,328,385
465 5,328,386
469 5,328,387
544 5,328,388
567 5,328,389
638 5,328,390
700 5,328,391
833 5,328,392
843 5,328,393

CLASS 440

61 5,328,394
77 5,328,395
86 5,328,396

CLASS 441

79 5,328,397
106 5,328,398

CLASS 446

27 5,328,399
98 5,328,400
295 5,328,401
427 5,328,402

CLASS 452

141 5,328,403

CLASS 454

78 5,328,405
260 5,328,406
365 5,328,407

CLASS 455

33.2 5,329,635

CLASS 462

17 5,328,409

CLASS 464

180 5,328,408

CLASS 472

99 5,328,410

CLASS 473

36 5,328,411

CLASS 474

8 5,328,412
13 5,328,413
80 5,328,414
112 5,328,415
153 5,328,416
179 5,328,417

CLASS 475

81 5,328,418
131 5,327,800
324 5,328,419

CLASS 477

185 5,328,006

CLASS 482

34 5,328,421
52 5,328,420
5,328,422
53 5,328,423
71 5,328,427
73 5,328,424
87 5,328,425
91 5,328,426
98 5,328,428
99 5,328,429
102 5,328,430
106 5,328,431
118 5,328,432
122 5,328,433
140 5,328,434
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CLASS 493

187 5,328,438
213 5,328,436
357 5,328,437
467 5,328,439

CLASS 494

10 5,328,440
58 5,328,441

CLASS 501

45 5,328,874
87 5,328,875
96 5,328,878
97 5,328,876
100 5,328,879
148 5,328,880

CLASS 502

1 5,328,894
80 5,328,881
127 5,328,877
155 5,328,882
303 5,328,883

CLASS 503

209 5,328,884
227 5,328,885
5,328,886
5,328,887
5,328,888
5,328,895

CLASS 504

116 5,328,889
227 5,328,896
270 5,328,897

CLASS 505

120 5,328,892
210 5,328,893
450 5,328,890

CLASS 514

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12 5,328,898
13 5,328,899
18 5,328,900
82 5,328,901
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214 5,328,905
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358 5,328,921
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282 5,328,963
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476 5,328,966
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230 5,329,001
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	5,328,434		5,328,096		5,328,678		5,329,350		5,329,554		5,327,756
	5,328,512		5,328,128		5,328,722		5,329,368		5,329,579		5,327,837
	5,328,690		5,328,135		5,328,785		5,329,370		5,329,582		5,327,845
	5,328,766		5,328,152		5,328,828		5,329,379		5,329,622		5,327,847
	5,329,044		5,328,170		5,328,834		5,329,386	09 :	5,327,623		5,327,852
	5,329,089		5,328,183		5,328,837		5,329,397		5,327,705		5,327,896
	5,329,234		5,328,195		5,328,856		5,329,398		5,327,742		5,327,911
	5,329,463		5,328,217		5,328,859		5,329,404		5,327,744		5,327,946
02 :	5,328,353		5,328,226		5,328,865		5,329,416		5,327,805		5,328,051
04 :	5,327,626		5,328,230		5,328,866		5,329,423		5,327,814		5,328,055
	5,327,668		5,328,247		5,328,893		5,329,433		5,327,830		5,328,098
	5,327,678		5,328,259		5,328,907		5,329,434		5,327,835		5,328,184
	5,327,839		5,328,263		5,328,933		5,329,460		5,327,851		5,328,185
	5,327,885		5,328,270		5,328,955		5,329,470		5,327,879		5,328,308
	5,327,928		5,328,287		5,328,962		5,329,473		5,327,897		5,328,310
	5,328,207		5,328,290		5,328,985		5,329,476		5,327,908		5,328,376
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	5,328,444		5,328,312		5,329,019		5,329,480		5,328,076		5,328,405
	5,328,821		5,328,319		5,329,028		5,329,487		5,328,277		5,328,411
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	5,328,929		5,328,363		5,329,085		5,329,539		5,328,399		5,328,659
	5,329,246		5,328,365		5,329,097		5,329,540		5,328,426		5,328,728
	5,329,585		5,328,366		5,329,103		5,329,559		5,328,542		5,328,730
	5,329,593		5,328,384		5,329,110		5,329,560		5,328,561		5,328,780
05 :	5,327,612		5,328,400		5,329,147		5,329,595		5,328,711		5,329,107
	5,328,295		5,328,401		5,329,153		5,329,599		5,328,717		5,329,114
	5,328,606		5,328,424		5,329,155		5,329,610		5,328,824		5,329,219
06 :	5,327,590		5,328,442		5,329,157		5,329,615		5,328,830		5,329,256
	5,327,615		5,328,446		5,329,167		5,329,620		5,328,912		5,329,259
	5,327,630		5,328,460		5,329,174		5,329,626		5,328,932		5,329,427
	5,327,646		5,328,461		5,329,179		5,329,627		5,328,938		5,329,495
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Update

Declaration of Continuation by Armenia

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that, on May 17, 1994, Armenia deposited a declaration of continuation of the application of the Patent Cooperation Treaty (PCT). Armenia is the 70th Contracting State of the PCT as of May 17, 1994. Consequently, nationals and residents of Armenia are entitled to file international applications under the PCT on or after May 17, 1994, and from the same date it is possible to file international applications designating and electing Armenia (country code: AM).

Under PCT Regulations, applicants are afforded the possibility or requesting the extension of the effects of any international application filed on or after December 25, 1991 (the date on which the Soviet Union ceased to exist), to successor States which have made a declaration of continuation. PCT Rule 32 will allow the extension of all international applications filed between December 25, 1991, and July 18, 1994, to Armenia.

Applicants or their agents in respect of each international application concerned will receive a notification from the International Bureau of WIPO, informing them about the possibility and the applicable conditions for extending the effects of their international application to Armenia.

Accession by Estonia

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Estonia deposited its instrument of accession to the Patent Cooperation Treaty (PCT) on May 24, 1994. Estonia will become the 71st Contracting State of the PCT on August 24, 1994. Consequently, nationals and residents of Estonia are entitled to file international applications on and after August 24, 1994, and from the same date it is possible to file international applications designating and electing Estonia (country code: EE).

Accession by Liberia

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Liberia deposited its intrument of accession to the Patent Cooperation Treaty (PCT) on May 27, 1994. Liberia will become the 72nd Contracting State of the PCT on August 27, 1994. Consequently, nationals and residents of Liberia are entitled to file international applications on and after August 27, 1994, and from the same date it is possible to file international applications designating and electing Liberia (country code: LR).

Listing of PCT Member Countries

Country	Instrument	Date of Deposit of Instrument	Entry into Force[1]
(1) Central African Republic[2]	Accession	15 September 1971	24 January 1978
(2) Senegal[2]	Ratification	08 March 1972	24 January 1978
(3) Madagascar	Ratification	27 March 1972	24 January 1978
(4) Malawi	Accession	16 May 1972	24 January 1978
(5) Cameroon[2]	Accession	15 March 1973	24 January 1978
(6) Chad[2]	Accession	12 February 1974	24 January 1978
(7) Togo[2]	Ratification	28 January 1975	24 January 1978
(8) Gabon[2]	Accession	06 March 1975	24 January 1978
(9) United States of America	Ratification	26 November 1975	24 January 1978
(10) Germany[3]	Ratification	19 July 1976	24 January 1978
(11) Congo[2]	Accession	08 August 1977	24 January 1978
(12) Switzerland[3]	Ratification	14 September 1977	24 January 1978
(13) United Kingdom[3]	Ratification	24 October 1977	24 January 1978
(14) France[3]	Ratification	25 November 1977	25 February 1978
(15) Russian Federation	Ratification	29 December 1977	29 March 1978
(16) Brazil	Ratification	09 January 1978	09 April 1978
(17) Luxembourg[3]	Ratification	31 January 1978	30 April 1978
(18) Sweden[3]	Ratification	17 February 1978	17 May 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark[3]	Ratification	01 September 1978	01 December 1978
(21) Austria[3]	Ratification	23 January 1979	23 April 1979
(22) Monaco[3]	Ratification	22 March 1979	22 June 1979
(23) Netherlands[3]	Ratification	10 April 1979	10 July 1979
(24) Romania	Ratification	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein[3]	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium[3]	Ratification	14 September 1981	14 December 1981
(32) Sri Lanka	Accession	26 November 1981	26 February 1982
(33) Mauritania[2]	Accession	13 January 1983	13 April 1983
(34) Sudan	Accession	16 January 1984	16 April 1984
(35) Bulgaria	Accession	21 February 1984	21 May 1984
(36) Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37) Mali[2]	Accession	19 July 1984	19 October 1984
(38) Barbados	Accession	12 December 1984	12 March 1985
(39) Italy[3]	Ratification	28 December 1984	28 March 1985
(40) Benin[2]	Accession	26 November 1986	26 February 1987
(41) Burkina Faso[2]	Accession	21 December 1988	21 March 1989
(42) Spain[3]	Accession	16 August 1989	16 November 1989
(43) Canada	Ratification	02 October1989	02 January 1990
(44) Greece[3]	Accession	09 July 1990	09 October 1990
(45) Poland	Accession	25 September 1990	25 December 1990
(46) Cote d'Ivoire[2]	Ratification	31 January 1991	30 April 1991
(47) Guinea[2]	Accession	27 February 1991	27 May 1991
(48) Mongolia	Accession	27 February 1991	27 May 1991
(49) Czech Republic	Declaration[4]	18 December 1992	01 January 1993
(50) Ireland[3]	Ratification	01 May 1992	01 August 1992
(51) Portugal[3]	Accession	24 August 1992	24 November 1992
(52) New Zealand	Accession	01 September 1992	01 December 1992
(53) Ukraine	Declaration[4]	21 September 1992	25 December 1991
(54) Viet Nam	Accession	10 December 1992	10 March 1993
(55) Slovakia	Declaration[4]	30 December 1992	01 January 1993
(56) Niger[2]	Accession	21 December 1992	21 March 1993
(57) Kazakhstan	Declaration[4]	16 February 1993	25 December 1991
(58) Belarus	Declaration[4]	14 April 1993	25 December 1991
(59) Latvia	Accession	07 June 1993	07 September 1993
(60) Uzbekistan	Declaration[4]	18 August 1993	25 December 1991
(61) China	Accession	01 October 1993	01 January 1994
(62) Slovenia	Accession	01 December 1993	01 March 1994
(63) Trinidad and Tobago	Accession	10 December 1993	10 March 1994
(64) Georgia	Declaration[4]	18 January 1994	25 December 1991
(65) Kyrgyzstan	Declaration[4]	14 February 1994	25 December 1991
(66) Republic of Moldova	Declaration[4]	14 February 1994	25 December 1991
(67) Tajikistan	Declaration[4]	14 February 1994	25 December 1991
(68) Kenya	Accession	08 March 1994	08 June 1994
(69) Lithuania	Accession	05 April 1994	05 July 1994
(70) Armenia	Declaration[4]	17 May 1994	25 December 1991
(71) Estonia	Accession	24 May 1994	24 August 1994
(72) Liberia	Accession	27 May 1994	27 August 1994

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.
[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.
[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.
[4]Declaration of continued application.

June 21, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 16, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,031,237 through 5,033,114
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 14, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,679,253 through 4,680,811
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 12, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,392,257 through 4,393,518
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and

six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))	$65.00
By other than a small entity	$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable	$620.00
(2) unintentional	$1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 11, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,450	06/916,992	06/30/87
(4,587,459)	(06/565,582)	(05/06/86)
Re. 33,279	07/315,242	07/31/90
(4,587,499)	(06/539,780)	(05/06/86)
Re. 34,313	07/769,492	07/13/93
(4,587,240)	(06/651,772)	(05/06/86)
Re. 34,433	07/700,244	11/09/93
(4,922,574)	(07/342,523)	(05/08/90)
4,328,641	06/215,916	05/11/82
4,328,679	06/223,003	05/11/82
4,328,710	06/250,241	05/11/82
4,328,740	06/219,408	05/11/82
4,328,766	06/242,088	05/11/82
4,328,815	06/251,573	05/11/82
4,328,924	06/224,034	05/11/82
4,328,931	06/239,223	05/11/82
4,328,946	06/235,359	05/11/82
4,328,950	06/260,965	05/11/82
4,328,956	06/219,623	05/11/82
4,329,144	06/216,459	05/11/82
4,329,147	06/215,966	05/11/82
4,329,163	06/237,311	05/11/82
4,329,166	06/219,696	05/11/82
4,329,192	06/226,285	05/11/82
4,329,209	06/227,850	05/11/82
4,329,216	06/250,821	05/11/82
4,329,228	06/237,209	05/11/82
4,329,240	06/222,479	05/11/82
4,329,255	06/220,315	05/11/82
4,329,262	06/247,363	05/11/82
4,329,267	06/238,996	05/11/82
4,329,271	06/216,240	05/11/82
4,329,276	06/242,584	05/11/82
4,329,278	06/242,585	05/11/82
4,329,280	06/252,745	05/11/82
4,329,284	06/226,341	05/11/82
4,329,353	06/222,091	05/11/82
4,329,385	06/218,587	05/11/82
4,329,406	06/248,639	05/11/82
4,329,436	06/262,204	05/11/82
4,329,439	06/250,348	05/11/82
4,329,464	06/265,520	05/11/82
4,329,473	06/219,885	05/11/82
4,329,474	06/255,592	05/11/82
4,329,480	06/253,477	05/11/82
4,329,481	06/255,085	05/11/82
4,329,485	06/278,149	05/11/82
4,329,486	06/278,225	05/11/82
4,329,509	06/227,339	05/11/82
4,329,520	06/238,842	05/11/82
4,329,521	06/239,960	05/11/82
4,329,596	06/226,814	05/11/82
4,329,621	06/216,874	05/11/82
4,329,725	06/264,373	05/11/82
4,586,196	06/657,316	05/06/86
4,586,197	06/696,993	05/06/86
4,586,202	06/656,871	05/06/86
4,586,204	06/653,595	05/06/86
4,586,205	06/639,105	05/06/86
4,586,207	06/671,890	05/06/86
4,586,208	06/682,612	05/06/86
4,586,212	06/620,853	05/06/86
4,586,223	06/644,676	05/06/86
4,586,228	06/641,818	05/06/86
4,586,233	06/608,580	05/06/86
4,586,242	06/661,133	05/06/86
4,586,246	06/584,714	05/06/86
4,586,253	06/713,587	05/06/86
4,586,258	06/607,799	05/06/86
4,586,260	06/614,818	05/06/86
4,586,266	06/663,243	05/06/86
4,586,270	06/674,925	05/06/86
4,586,271	06/639,501	05/06/86
4,586,272	06/613,964	05/06/86
4,586,273	06/566,186	05/06/86
4,586,281	06/709,769	05/06/86
4,586,283	06/745,781	05/06/86
4,586,286	06/787,666	05/06/86
4,586,287	06/627,064	05/06/86
4,586,288	06/514,564	05/06/86
4,586,289	06/720,536	05/06/86
4,586,291	06/673,943	05/06/86
4,586,292	06/696,550	05/06/86
4,586,298	06/616,691	05/06/86
4,586,299	06/247,563	05/06/86
4,586,301	06/638,342	05/06/86
4,586,304	06/630,714	05/06/86
4,596,307	06/253,505	05/06/86
4,586,308	06/740,820	05/06/86
4,586,309	06/595,076	05/06/86
4,586,312	06/595,581	05/06/86
4,586,315	06/630,928	05/06/86
4,586,321	06/539,798	05/06/86
4,586,322	06/714,521	05/06/86
4,586,325	06/733,217	05/06/86
4,586,326	06/549,690	05/06/86
4,586,334	06/693,793	05/06/86
4,586,335	06/660,239	05/06/86
4,586,350	06/650,593	05/06/86
4,586,352	06/768,430	05/06/86
4,586,353	06/722,512	05/06/86
4,586,356	06/750,356	05/06/86
4,586,357	06/701,611	05/06/86
4,586,359	06/739,766	05/06/86
4,586,361	06/643,789	05/06/86
4,586,363	06/740,540	05/06/86
4,586,364	06/400,277	05/06/86
4,586,366	06/589,309	05/06/86
4,586,369	06/665,399	05/06/86
4,586,373	06/682,607	05/06/86
4,586,374	06/698,614	05/06/86
4,586,376	06/654,761	05/06/86
4,586,381	06/518,528	05/06/86
4,586,383	06/417,454	05/06/86
4,586,384	06/705,132	05/06/86
4,586,387	06/589,091	05/06/86
4,586,389	06/539,140	05/06/86
4,586,390	06/668,963	05/06/86
4,586,391	06/561,248	05/06/86
4,586,398	06/537,344	05/06/86
4,586,401	06/600,637	05/06/86
4,586,402	06/539,912	05/06/86
4,586,405	06/756,501	05/06/86

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4,586,406	06/652,277	05/06/86
4,586,419	06/744,291	05/06/86
4,586,423	06/514,971	05/06/86
4,586,424	06/497,738	05/06/86
4,586,426	06/617,288	05/06/86
4,586,429	06/648,156	05/06/86
4,586,430	06/662,676	05/06/86
4,586,433	06/507,526	05/06/86
4,586,435	06/605,943	05/06/86
4,586,439	06/605,533	05/06/86
4,586,440	06/692,014	05/06/86
4,586,441	06/386,291	05/06/86
4,586,444	06/607,936	05/06/86
4,586,450	06/664,215	05/06/86
4,586,455	06/655,095	05/06/86
4,586,463	06/636,813	05/06/86
4,586,464	06/675,988	05/06/86
4,586,472	06/668,986	05/06/86
4,586,473	06/601,621	05/06/86
4,586,476	06/660,274	05/06/86
4,586,480	06/673,362	05/06/86
4,586,481	06/647,312	05/06/86
4,586,483	06/626,224	05/06/86
4,586,484	06/638,889	05/06/86
4,586,486	06/628,290	05/06/86
4,586,487	06/582,495	05/06/86
4,586,488	06/561,880	05/06/86
4,586,489	06/684,451	05/06/86
4,586,490	06/583,585	05/06/86
4,586,491	06/681,460	05/06/86
4,586,504	06/745,788	05/06/86
4,586,509	06/640,103	05/06/86
4,586,510	06/635,314	05/06/86
4,586,513	06/467,431	05/06/86
4,586,515	06/567,402	05/06/86
4,586,517	06/512,160	05/06/86
4,586,518	06/637,992	05/06/86
4,586,519	06/663,566	05/06/86
4,586,522	06/596,257	05/06/86
4,586,534	06/602,827	05/06/86
4,586,535	06/553,059	05/06/86
4,586,542	06/589,544	05/06/86
4,586,543	06/623,978	05/06/86
4,586,550	06/655,422	05/06/86
4,586,555	06/665,203	05/06/86
4,586,561	06/583,946	05/06/86
4,586,562	06/521,944	05/06/86
4,586,563	06/233,590	05/06/86
4,586,566	06/408,907	05/06/86
4,586,567	06/631,464	05/06/86
4,586,573	06/611,344	05/06/86
4,586,574	06/496,611	05/06/86
4,586,582	06/642,466	05/06/86
4,586,583	06/651,545	05/06/86
4,586,585	06/765,644	05/06/86
4,586,587	06/622,838	05/06/86
4,586,591	06/659,302	05/06/86
4,586,594	06/459,536	05/06/86
4,586,598	06/704,218	05/06/86
4,586,600	06/688,735	05/06/86
4,586,607	06/682,480	05/06/86
4,586,609	06/692,734	05/06/86
4,586,612	06/600,897	05/06/86
4,586,619	06/492,795	05/06/86
4,586,620	06/602,803	05/06/86
4,586,621	06/778,160	05/06/86
4,586,632	06/507,785	05/06/86
4,586,635	06/616,301	05/06/86
4,586,639	06/633,019	05/06/86
4,586,642	06/733,310	05/06/86
4,586,643	06/616,464	05/06/86
4,586,647	06/514,105	05/06/86
4,586,648	06/589,171	05/06/86
4,586,649	06/579,682	05/06/86
4,586,652	06/735,204	05/06/86
4,586,657	06/541,122	05/06/86
4,586,660	06/605,256	05/06/86
4,586,661	06/674,157	05/06/86
4,586,664	06/594,730	05/06/86
4,586,674	06/475,927	05/06/86
4,586,682	06/613,984	05/06/86
4,586,684	06/528,488	05/06/86
4,586,690	06/630,511	05/06/86
4,586,693	06/680,079	05/06/86
4,586,695	06/623,554	05/06/86
4,586,701	06/759,302	05/06/86
4,586,715	06/618,309	05/06/86
4,586,718	06/773,342	05/06/86
4,586,722	06/633,370	05/06/86
4,586,726	06/597,928	05/06/86
4,586,727	06/668,987	05/06/86
4,586,731	06/652,779	05/06/86
4,586,744	06/621,547	05/06/86
4,586,746	06/711,290	05/06/86
4,586,747	06/768,130	05/06/86
4,586,748	06/500,250	05/06/86
4,586,749	06/520,825	05/06/86
4,586,750	06/617,019	05/06/86
4,586,757	06/643,723	05/06/86
4,586,762	06/514,917	05/06/86
4,586,765	06/641,294	05/06/86
4,586,766	06/677,187	05/06/86
4,586,778	06/763,752	05/06/86
4,586,779	06/497,682	05/06/86
4,586,796	06/539,825	05/06/86
4,586,797	06/542,049	05/06/86
4,586,799	06/706,183	05/06/86
4,586,803	06/673,275	05/06/86
4,586,805	06/290,807	05/06/86
4,586,806	06/579,019	05/06/86
4,586,807	06/590,849	05/06/86
4,586,820	06/594,482	05/06/86
4,586,821	06/652,041	05/06/86
4,586,822	06/620,825	05/06/86
4,586,823	06/601,748	05/06/86
4,586,825	06/390,821	05/06/86
4,586,828	06/715,978	05/06/86
4,586,829	06/629,905	05/06/86
4,586,830	06/600,630	05/06/86
4,586,831	06/612,306	05/06/86
4,586,832	06/688,628	05/06/86
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4,586,838	06/716,060	05/06/86
4,586,852	06/627,161	05/06/86
4,586,853	06/627,167	05/06/86
4,586,859	06/654,792	05/06/86
4,586,863	06/599,666	05/06/86
4,586,867	06/565,419	05/06/86
4,586,875	06/742,159	05/06/86
4,586,886	06/718,351	05/06/86
4,586,893	06/699,741	05/06/86
4,586,895	06/733,646	05/06/86
4,586,906	06/739,526	05/06/86
4,586,907	06/678,563	05/06/86
4,586,916	06/696,507	05/06/86
4,586,924	06/629,169	05/06/86
4,586,929	06/597,733	05/06/86
4,586,930	06/481,782	05/06/86
4,586,932	06/592,009	05/06/86
4,586,935	06/692,190	05/06/86
4,586,936	06/546,570	05/06/86
4,586,937	06/625,973	05/06/86
4,586,939	06/556,181	05/06/86
4,586,940	06/655,559	05/06/86
4,586,944	06/662,862	05/06/86
4,586,947	06/451,763	05/06/86
4,586,949	06/595,786	05/06/86
4,586,951	06/632,555	05/06/86
4,586,954	06/740,601	05/06/86
4,586,955	06/743,854	05/06/86
4,586,959	06/698,537	05/06/86
4,586,962	06/608,690	05/06/86
4,586,981	06/520,817	05/06/86
4,586,983	06/638,683	05/06/86
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Patent Number	Serial Number	Issue Date
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4,923,488	07/332,165	05/08/90
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4,923,497	07/312,258	05/08/90
4,923,502	07/010,446	05/08/90
4,923,503	06/677,034	05/08/90
4,923,507	07/195,844	05/08/90
4,923,516	07/299,661	05/08/90
4,923,517	07/285,563	05/08/90
4,923,522	07/299,010	05/08/90
4,923,529	07/258,712	05/08/90
4,923,531	07/248,227	05/08/90
4,923,532	07/242,921	05/08/90
4,923,538	07/367,623	05/08/90
4,923,542	07/290,067	05/08/90
4,923,543	07/326,131	05/08/90
4,923,548	07/382,583	05/08/90
4,923,556	07/219,438	05/08/90
4,923,558	07/283,207	05/08/90
4,923,559	07/235,439	05/08/90
4,923,568	07/215,849	05/08/90
4,923,569	07/348,531	05/08/90
4,923,573	07/343,528	05/08/90
4,923,578	07/375,197	05/08/90
4,923,581	07/277,121	05/08/90
4,923,594	07/286,289	05/08/90
4,923,597	07/297,417	05/08/90
4,923,598	07/209,678	05/08/90
4,923,611	07/302,942	05/08/90
4,923,622	07/245,806	05/08/90
4,923,624	07/112,719	05/08/90
4,923,627	07/259,766	05/08/90
4,923,635	07/283,034	05/08/90
4,923,642	07/121,267	05/08/90
4,923,643	07/245,784	05/08/90
4,923,647	07/128,281	05/08/90
4,923,649	06/836,884	05/08/90
4,923,651	07/373,901	05/08/90
4,923,652	07/186,487	05/08/90
4,923,659	07/237,902	05/08/90
4,923,660	07/173,131	05/08/90
4,923,668	07/249,964	05/08/90
4,923,670	07/128,442	05/08/90
4,923,672	07/284,030	05/08/90
4,923,673	07/399,620	05/08/90
4,923,675	07/336,217	05/08/90
4,923,688	06/799,494	05/08/90
4,923,691	07/364,013	05/08/90
4,923,708	07/292,532	05/08/90
4,923,712	07/178,697	05/08/90
4,923,719	07/234,766	05/08/90
4,923,721	07/235,317	05/08/90
4,923,724	07/304,933	05/08/90
4,923,725	07/226,000	05/08/90
4,923,730	07/227,015	05/08/90
4,923,731	07/290,065	05/08/90
4,923,733	07/302,421	05/08/90
4,923,736	07/039,720	05/08/90
4,923,737	07/260,440	05/08/90
4,923,741	07/213,880	05/08/90
4,923,744	07/295,136	05/08/90
4,923,750	07/139,776	05/08/90

Patent Number	Serial Number	Issue Date
4,923,760	07/314,987	05/08/90
4,923,785	07/215,304	05/08/90
4,923,796	07/298,768	05/08/90
4,923,813	07/144,490	05/08/90
4,923,814	07/325,676	05/08/90
4,923,815	07/173,702	05/08/90
4,923,827	07/194,533	05/08/90
4,923,840	07/341,233	05/08/90
4,923,841	07/283,690	05/08/90
4,923,850	07/258,765	05/08/90
4,923,852	07/060,209	05/08/90
4,923,853	07/218,466	05/08/90
4,923,858	07/352,287	05/08/90
4,923,863	07/362,170	05/08/90
4,923,867	07/235,418	05/08/90
4,923,868	07/312,153	05/08/90
4,923,869	06/830,781	05/08/90
4,923,871	07/125,373	05/08/90
4,923,876	07/204,391	05/08/90
4,923,877	07/163,595	05/08/90
4,923,878	07/270,323	05/08/90
4,923,883	07/363,015	05/08/90
4,923,885	07/233,779	05/08/90
4,923,887	07/236,903	05/08/90
4,923,889	07/230,947	05/08/90
4,923,907	07/368,033	05/08/90
4,923,912	07/221,915	05/08/90
4,923,921	07/304,251	05/08/90
4,923,926	07/333,281	05/08/90
4,923,938	07/339,590	05/08/90
4,923,943	07/168,045	05/08/90
4,923,950	07/167,474	05/08/90
4,923,951	07/306,943	05/08/90
4,923,953	07/318,827	05/08/90
4,923,954	07/289,028	05/08/90
4,923,980	07/268,213	05/08/90
4,923,982	07/369,396	05/08/90
4,923,991	07/285,909	05/08/90
4,924,001	07/422,922	05/08/90
4,924,006	07/415,830	05/08/90
4,924,007	07/351,831	05/08/90
4,924,014	07/316,794	05/08/90
4,924,015	07/208,526	05/08/90
4,924,019	07/298,845	05/08/90
4,924,023	07/372,242	05/08/90
4,924,025	07/353,308	05/08/90
4,924,026	07/392,423	05/08/90
4,924,040	06/911,448	05/08/90
4,924,041	07/343,308	05/08/90
4,924,047	07/315,228	05/08/90
4,924,048	07/336,061	05/08/90
4,924,053	07/279,677	05/08/90
4,924,058	07/277,135	05/08/90
4,924,065	07/321,097	05/08/90
4,924,066	07/382,693	05/08/90
4,924,069	07/122,766	05/08/90
4,924,086	07/264,230	05/08/90
4,924,090	07/301,514	05/08/90
4,924,093	06/725,582	05/08/90
4,924,096	07/218,677	05/08/90
4,924,103	07/283,126	05/08/90
4,924,109	07/115,855	05/08/90
4,924,114	06/472,488	05/08/90
4,924,116	07/145,339	05/08/90
4,924,124	07/081,444	05/08/90
4,924,129	07/224,324	05/08/90
4,924,132	07/312,332	05/08/90
4,924,147	07/322,611	05/08/90
4,924,153	07/335,057	05/08/90
4,924,166	07/323,959	05/08/90
4,924,176	07/313,041	05/08/90
4,924,183	07/309,465	05/08/90
4,924,187	07/364,281	05/08/90
4,924,206	07/279,868	05/08/90
4,924,209	07/356,851	05/08/90
4,924,214	07/339,228	05/08/90
4,924,221	07/279,512	05/08/90
4,924,222	06/788,206	05/08/90
4,924,224	07/253,608	05/08/90
4,924,230	07/323,577	05/08/90
4,924,231	07/267,639	05/08/90
4,924,238	07/153,605	05/08/90
4,924,255	07/284,895	05/08/90
4,924,266	07/195,298	05/08/90
4,924,269	07/263,818	05/08/90
4,924,274	07/246,865	05/08/90
4,924,292	07/328,543	05/08/90
4,924,299	07/210,582	05/08/90
4,924,300	07/241,515	05/08/90
4,924,306	07/313,660	05/08/90
4,924,308	07/319,714	05/08/90
4,924,318	07/366,474	05/08/90
4,924,338	07/278,766	05/08/90
4,924,340	07/239,070	05/08/90
4,924,343	07/339,319	05/08/90
4,924,348	07/365,821	05/08/90
4,924,355	07/343,765	05/08/90
4,924,358	07/242,740	05/08/90
4,924,361	07/343,060	05/08/90
4,924,362	07/239,448	05/08/90
4,924,363	07/311,186	05/08/90
4,924,364	07/171,130	05/08/90
4,924,370	07/326,608	05/08/90
4,924,372	07/385,845	05/08/90
4,924,375	07/112,863	05/08/90
4,924,380	07/208,506	05/08/90
4,924,384	07/247,794	05/08/90
4,924,391	07/160,837	05/08/90
4,924,405	07/333,152	05/08/90
4,924,413	07/055,789	05/08/90
4,924,423	07/185,581	05/08/90
4,924,436	07/075,502	05/08/90
4,924,444	07/341,851	05/08/90
4,924,451	07/206,084	05/08/90
4,924,466	07/213,523	05/08/90
4,924,468	07/272,158	05/08/90
4,924,488	07/314,449	05/08/90
4,924,489	07/333,921	05/08/90
4,924,494	07/347,667	05/08/90
4,924,495	07/239,402	05/08/90
4,924,497	07/210,073	05/08/90
4,924,499	07/162,500	05/08/90
4,924,503	07/324,722	05/08/90
4,924,504	07/123,191	05/08/90
4,924,506	07/117,704	05/08/90
4,924,524	07/336,353	05/08/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re. 33,430 (4,468,817)	07/179,246 (06/542,457)	08/07/90 (09/04/84)	04/07/88 (10/17/83)	03/04/94

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Patent No.	Serial No	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re. 34,429	07/817,733	11/02/93	01/07/92	03/29/94
(4,893,333)	(07/323,282)	(01/09/90)	(03/14/89)	
4,404,059	06/382,407	09/13/83	05/26/82	05/04/94
4,443,006	06/301,188	04/17/84	09/11/81	03/17/94
4,508,110	06/531,847	04/02/85	09/14/83	09/13/93
4,521,401	06/580,933	06/04/85	02/16/84	05/12/94
4,523,441	06/554,304	06/18/85	11/22/83	03/17/94
4,541,532	06/497,897	09/17/85	05/25/83	04/21/94
4,554,500	06/480,746	11/19/85	03/31/83	03/17/94
4,576,520	06/659,601	03/18/86	10/11/84	05/12/94
4,722,197	06/746,174	02/02/88	06/18/85	04/04/94
4,733,481	06/844,112	03/29/88	05/19/86	05/17/94
4,753,456	07/060,964	06/28/88	06/15/87	02/14/94
4,763,379	07/028,653	08/16/88	03/20/87	05/09/94
4,772,841	07/011,914	09/20/88	02/05/87	03/17/94
4,779,697	06/873,193	10/25/88	06/11/86	05/12/94
4,780,141	06/945,632	10/25/88	12/23/86	05/09/94
4,795,256	07/023,567	01/03/89	03/09/87	04/21/94
4,796,555	07/105,526	01/10/89	09/29/87	04/28/94
4,807,707	07/112,300	02/28/89	10/26/87	03/29/94
4,832,210	07/155,915	05/23/89	02/16/88	05/12/94
4,846,373	07/110,038	06/11/89	10/15/87	05/17/94
4,857,721	07/174,059	08/22/89	03/28/88	04/21/94
4,887,998	07/132,418	12/19/89	12/14/87	05/17/94
4,889,396	07/283,166	12/26/89	12/12/88	05/10/94
4,892,088	07/365,370	01/09/90	06/13/89	05/17/94
4,897,862	07/199,481	01/30/90	05/27/88	04/21/94
4,899,027	07/355,340	02/06/90	05/22/89	05/17/94
4,901,259	07/232,269	02/13/90	08/15/88	04/21/94
4,904,185	07/267,032	02/27/90	11/04/88	05/17/94
4,905,827	07/267,793	03/06/90	11/07/88	05/16/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b))

4,244,707, Re. S.N. 07/120,218, Nov. 12, 1987, Cl. 51/308, ABRASIVE COMPOSITIONS FOR USE IN TOOTHPASTE, Satish K. Wason, Owner of Record: *Inventor*, Attorney or Agent: J.G. Mullins, Ex. Gp.: 1307

4,568,420, Re. S.N. 08/246,370, May 15, 1994, Cl. 162, MULTI-STAGE BLEACHING PROCESS INCLUDING AN ENHANCED OXIDATIVE EXTRACTION STAGE, Arthur J. Nonni, Owner of Record: *International Paper Co., New York, N.Y.*, Attorney or Agent: S. Peter Ludwig, Ex. Gp.: 1303

4,880,993, Re. S.N. 08/234,983, Apr. 28, 1994, Cl. 290/2, BUILDING HEAT AND POWER SYSTEM, Julian P. Packer, et. al., Owner of Record: *Combined Power Systems Limited, Manchester, England*, Attorney or Agent: Charles E. Baxley, Ex. Gp.: 2104

4,905,003, Re. S.N. 08/229,744, Apr. 19, 1994, Cl. 341/110, ANALOG/DIGITAL DATA STORAGE SYSTEM, Richard J. Helferich, Owner of Record: *Marvin A. Schwartz, Chatsworth, Calif.*, Attorney or Agent: Charles L. Gholz, Ex. Gp.: 2104

5,080,839, Re. S.N. 08/181,275, Jan. 13, 1994, Cl. 264/2, PROCESS FOR HYDRATING SOFT CONTACT LENSES, Pure Kindt-Larsen, et. al., Owner of Record: *Johnson & Johnson Vision Products, Inc., New Brunswick, N.J.*, Attorney or Agent: Paul J. Esatto, Jr., Ex. Gp.: 1307

5,113,628, Re. S.N. 08/246,356, May 19, 1994, Cl. 52/171, RAILLESS REFRIGERATOR DOOR DISPLAY, Richard J. Richardson, et. al., Owner of Record: *Anthony's Manufacturing Company, Inc., San Fernando, Calif.*, Attorney or Agent: Alan P. Block, Ex. Gp.: 3504

5,114,251, Re. S.N. 08/245,938, May 19, 1994, Cl. 400/120, SELF-ALIGNING THERMAL PRINT HEAD AND PAPER LOADING MECHANISM, Steven A. Mahoney, Owner of Record: *Hewlett-Packard Co., Palo Alto, Calif.*, Attorney or Agent: Curtis G. Rose, Ex. Gp.: 3307

5,115,170, Re. S.N. 08/246,016, May 19, 1994, Cl. 315/370, DEFLECTION YOKE FOR USE IN COLOR CATHODE RAY TUBES, Toshio Ose, et. al., Owner of Record: *Matsushita Electronics Corp., Kadoma-Shi, Japan*, Attorney or Agent: Martin G. Belisario, Ex. Gp.: 2202

5,117,453, Re. S.N. 08/245,606, May 19, 1994, Cl. 379/100, TELECOMMUNICATION SYSTEM, Joshua Piasecki, et. al., Owner of Record: *ECI Telecom, LTD., Petach Tikva, Israel*, Attorney or Agent: Scott C. Harris, Ex. Gp.: 2608

5,155,761, Re. S.N. 08/199,677, Feb. 22, 1994, Cl. 379/67, AUTOMATIC CALL BACK SYSTEM AND METHOD OF OPERATION, Daniel D. Hammond, Owner of Record: *Intervoice Inc., Dallas, Tex.*, Attorney or Agent: David H. Tannenbaum, Ex. Gp.: 2601

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a))

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,313,870, Reexam. No. 90/003,415, Apr. 21, 1994, Cl. 524/783, PROCESS FOR PRODUCING POLYCONDENSATES, Shozaburo Imai, et. al., Owner of Record: *Sumitomo Chemical Co., Ltd., Osaka, Japan*, Attorney or Agent: J. Frank Osha, Shugrue, Mion, Zinn, MacPeck & Seas, Washington, D.C., Ex. Gp.: 1511, Requester: Nippon Petrochemicals Corp., c/o John E. Benoit, Lane & Mittendorf, Washington, D.C.

4,553,314, Reexam. No. 90/003,430, May 12, 1994, Cl. 437/193, METHOD FOR MAKING A SEMICONDUCTOR DEVICE, Tsiu C. Chan, et. al., Owner of Record: *SGS-Thomson Microelectronics, Inc., Carrollton, Tex.*, Attorney or Agent: Lisa K. Jorgenson, c/o SGS-Thomson Microelectronics, Inc., Carrollton, Tex., Ex. Gp.: 1104, Requester: Ricoh Co., Ltd., Osaka, Japan

5,116,350, Reexam. No. 90/003,439, May 18, 1994, Cl. 606/159, CATHETER SYSTEM HAVING DISTAL TIP FOR OPENING OBSTRUCTIONS, Robert C. Stevens, Owner of Record: *Cordis Corporation, Miami, Fla.*, Attorney or Agent: Stephen J. Schultz, Watts, Hoffmann, Fisher & Heinke Co., L.P.A., Cleveland, Ohio, Ex. Gp.: 3309, Requester: John Nevin Shaffer, Jr., Austin, Tex.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JUNE 06, 1994
DUE TO FAILURE TO RENEW

Reg. No	Serial Number	Reg. Date
93,264	71/070,822	09/02/1913
93,303	71/070,362	09/02/1913
305,850	71/337,257	08/29/1933
305,882	71/337,023	08/29/1933
305,894	71/336,776	08/29/1933
305,915	71/336,521	08/29/1933
305,916	71/336,543	08/29/1933
305,928	71/336,205	08/29/1933
305,966	71/337,346	08/29/1933
305,984	71/334,928	08/29/1933
306,005	71/335,180	08/29/1933
579,246	71/560,276	09/01/1953
579,247	71/565,450	09/01/1953
579,252	71/588,347	09/01/1953
579,253	71/588,816	09/01/1953
579,269	71/608,327	09/01/1953
579,272	71/610,576	09/01/1953
579,277	71/613,371	09/01/1953
579,282	71/615,033	09/01/1953
579,284	71/616,225	09/01/1953
579,285	71/616,525	09/01/1953
579,290	71/618,961	09/01/1953
579,296	71/621,093	09/01/1953
579,301	71/621,786	09/01/1953
579,308	71/623,758	09/01/1953
579,310	71/624,520	09/01/1953
579,314	71/625,320	09/01/1953
579,316	71/625,553	09/01/1953
579,327	71/626,861	09/01/1953
579,330	71/627,069	09/01/1953
579,340	71/628,132	09/01/1953
579,347	71/629,060	09/01/1953
579,348	71/629,409	09/01/1953
579,356	71/631,322	09/01/1953
579,359	71/631,615	09/01/1953
579,366	71/632,555	09/01/1953
579,368	71/632,559	09/01/1953
579,374	71/633,176	09/01/1953
579,376	71/633,482	09/01/1953
579,377	71/633,483	09/01/1953
579,382	71/633,956	09/01/1953
579,383	71/633,957	09/01/1953
579,390	71/634,585	09/01/1953
579,396	71/635,384	09/01/1953
579,397	71/635,663	09/01/1953
579,401	71/635,998	09/01/1953
579,406	71/636,373	09/01/1953
579,407	71/636,648	09/01/1953
579,408	71/636,724	09/01/1953
579,411	71/636,981	09/01/1953
579,422	71/637,728	09/01/1953
579,427	71/637,923	09/01/1953
579,430	71/638,054	09/01/1953
579,431	71/638,087	09/01/1953
579,434	71/638,357	09/01/1953
579,447	71/638,967	09/01/1953
579,448	71/638,968	09/01/1953
579,452	71/639,310	09/01/1953
579,457	71/639,687	09/01/1953
579,466	71/640,591	09/01/1953
579,475	71/642,244	09/01/1953
579,479	71/643,029	09/01/1953
579,481	71/643,646	09/01/1953
579,482	71/643,648	09/01/1953
579,483	71/643,649	09/01/1953
579,488	71/561,707	09/01/1953
579,499	71/611,253	09/01/1953
579,503	71/623,476	09/01/1953
579,521	71/594,217	09/01/1953
966,813	72/388,269	08/28/1973
966,814	72/394,394	08/28/1973
966,815	72/418,836	08/28/1973
966,816	72/421,097	08/28/1973
966,821	72/413,366	08/28/1973
966,824	72/433,779	08/28/1973
966,828	72/423,202	08/28/1973
966,829	72/433,834	08/28/1973
966,830	72/434,024	08/28/1973
966,832	72/398,628	08/28/1973
966,833	72/400,522	08/28/1973
966,835	72/406,093	08/28/1973
966,838	72/409,023	08/28/1973
966,846	72/422,968	08/28/1973
966,849	72/407,350	08/28/1973
966,851	72/423,858	08/28/1973
966,852	72/425,110	08/28/1973
966,853	72/423,378	08/28/1973
966,854	72/430,046	08/28/1973
966,856	72/433,060	08/28/1973
966,859	72/440,712	08/28/1973
966,861	72/450,988	08/28/1973
966,863	72/405,266	08/28/1973
966,864	72/406,648	08/28/1973
966,865	72/411,411	08/28/1973
966,867	72/408,986	08/28/1973
966,872	72/428,546	08/28/1973
966,873	72/429,666	08/28/1973
966,874	72/434,733	08/28/1973
966,875	72/441,881	08/28/1973
966,877	72/392,728	08/28/1973
966,878	72/403,179	08/28/1973
966,879	72/404,295	08/28/1973
966,882	72/407,110	08/28/1973
966,883	72/408,722	08/28/1973
966,884	72/408,470	08/28/1973
966,887	72/414,206	08/28/1973
966,890	72/424,716	08/28/1973
966,891	72/426,033	08/28/1973
966,895	72/430,736	08/28/1973
966,897	72/435,578	08/28/1973
966,900	72/436,423	08/28/1973
966,903	72/438,228	08/28/1973
966,904	72/438,229	08/28/1973
966,906	72/438,348	08/28/1973
966,907	72/438,446	08/28/1973
966,925	72/443,404	08/28/1973
966,936	72/405,760	08/28/1973
966,937	72/413,053	08/28/1973
966,946	72/441,393	08/28/1973
966,948	72/409,965	08/28/1973
966,955	72/402,256	08/28/1973
966,958	72/416,050	08/28/1973
966,961	72/427,180	08/28/1973

Reg. No	Serial Number	Reg. Date
966,969	72/399,105	08/28/1973
966,971	72/409,053	08/28/1973
966,985	72/435,685	08/28/1973
966,988	72/436,197	08/28/1973
966,992	72/437,500	08/28/1973
967,001	72/438,593	08/28/1973
967,005	72/390,800	08/28/1973
967,009	72/406,812	08/28/1973
967,013	72/411,974	08/28/1973
967,014	72/418,772	08/28/1973
967,015	72/421,003	08/28/1973
967,018	72/429,421	08/28/1973
967,019	72/340,550	08/28/1973
967,025	72/396,899	08/28/1973
967,029	72/406,658	08/28/1973
967,032	72/412,796	08/28/1973
967,041	72/425,581	08/28/1973
967,042	72/427,746	08/28/1973
967,046	72/451,245	08/28/1973
967,048	72/440,447	08/28/1973
967,049	72/404,144	08/28/1973
967,052	72/440,549	08/28/1973
967,058	72/422,475	08/28/1973
967,059	72/423,473	08/28/1973
967,060	72/401,814	08/28/1973
967,066	72/411,796	08/28/1973
967,067	72/411,797	08/28/1973
967,068	72/422,856	08/28/1973
967,069	72/423,270	08/28/1973
967,070	72/382,249	08/28/1973
967,072	72/423,854	08/28/1973
967,076	72/409,084	08/28/1973
967,078	72/425,481	08/28/1973
967,079	72/425,671	08/28/1973
967,082	72/428,102	08/28/1973
967,083	72/429,865	08/28/1973
967,085	72/433,280	08/28/1973
967,088	72/434,766	08/28/1973
967,093	72/430,364	08/28/1973
967,094	72/430,392	08/28/1973
967,096	72/431,606	08/28/1973
967,099	72/437,684	08/28/1973
967,103	72/410,661	08/28/1973
967,106	72/421,513	08/28/1973
967,108	72/427,807	08/28/1973
967,109	72/428,644	08/28/1973
967,113	72/430,960	08/28/1973
967,114	72/431,203	08/28/1973
967,115	72/411,621	08/28/1973
967,118	72/426,771	08/28/1973
967,121	72/396,043	08/28/1973
967,133	72/389,886	08/28/1973
967,134	72/389,887	08/28/1973
967,135	72/389,889	08/28/1973
967,136	72/389,890	08/28/1973
967,137	72/389,892	08/28/1973
967,147	72/419,041	08/28/1973
967,151	72/428,802	08/28/1973
967,153	72/433,902	08/28/1973
967,160	72/439,865	08/28/1973
967,167	72/402,700	08/28/1973
967,168	72/402,706	08/28/1973
967,170	72/428,366	08/28/1973
967,174	72/431,423	08/28/1973
967,176	72/379,993	08/28/1973
967,177	72/397,758	08/28/1973
967,179	72/403,181	08/28/1973
967,180	72/403,182	08/28/1973
967,181	72/404,185	08/28/1973
967,182	72/405,370	08/28/1973
967,183	72/406,212	08/28/1973
967,187	72/422,775	08/28/1973
967,191	72/431,433	08/28/1973
967,193	72/437,057	08/28/1973
967,194	72/354,498	08/28/1973
967,195	72/394,558	08/28/1973
967,201	72/395,777	08/28/1973
967,204	72/406,384	08/28/1973
967,207	72/424,859	08/28/1973
967,210	72/395,527	08/28/1973
967,219	72/424,201	08/28/1973
967,220	72/431,222	08/28/1973
967,222	72/436,868	08/28/1973
967,223	72/381,643	08/28/1973
967,227	72/412,117	08/28/1973
967,233	72/441,911	08/28/1973
967,234	72/393,058	08/28/1973
967,245	72/408,711	08/28/1973
967,249	72/417,233	08/28/1973
967,251	72/424,175	08/28/1973
967,262	72/453,271	08/28/1973
967,263	72/453,272	08/28/1973
967,264	72/453,273	08/28/1973
967,265	72/429,177	08/28/1973
967,268	72/425,575	08/28/1973
968,144	72/416,662	09/11/1973

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1

[Docket No. 910764-1306]
RIN 0651-AA27

Duty of Disclosure

Agency: Patent and Trademark Office, Commerce
Action: Correcting amendments.
Summary: This document contains corrections to the final regulations which were published in the Federal Register on Friday, January 17, 1992 (57 FR 2021). The regulations related to changes regarding the duty of disclosure contained in parts 1 and 10.
Effective Date: March 16, 1992.
For Further Information Contact: Charles E. Van Horn by telephone at (703) 305-9054, or by facsimile transmission at (703) 305-8825, or by mail marked to his attention and addressed to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.
Supplementary Information:

Background

The final regulations that are the subject of these corrections, make changes to the rules of practice relating to the duty of disclosure and the procedures for submitting information disclosure statements to the Office.

Need for Correction

As published, the final regulations contain an error, which may be misleading and is in need of clarification.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

PART 1 - RULES OF PRACTICE IN PATENT CASES

Accordingly, 37 CFR Part 1 is corrected by making the following correcting amendment:

1. The authority citation for Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

§ 1.97(c)(2) [Corrected]

2. In § 1.97(c)(2), the fifth line down, is revised to read "certification as specified in paragraph (e) of this section . . ." instead of "(3) of this section."

June 17, 1994

CHARLES E. VAN HORN
Deputy Assistant Commissioner for Patent Policy and Projects

DEPARTMENT OF COMMERCE

Patent and Trademark Office

Extension of Existing Interim Orders Granting Protection under the Semiconductor Chip Protection Act of 1984 for Nationals, Domiciliaries and Sovereign Authorities of Certain Countries to Which Interim Protection Has Been Extended

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: Pursuant to section 914 of the Semiconductor Chip Protection Act of 1984 (SCPA), 17 U.S.C. 914, and the guidelines issued by the Patent and Trademark Office, 49 FR 44517 (Nov. 7, 1984), the Assistant Secretary of Commerce and Commissioner of Patents and Trademarks has determined that existing interim orders under which protection under the SCPA is made available to foreign mask work owners should be extended in duration for nationals, domiciliaries and sovereign authorities of Japan, Sweden, Australia, the Member States of the European Community, Canada, Switzerland, Finland, and Austria under section 914 of the SCPA.
Effective Date: This order is effective on June 30, 1994.
Termination Date: This order will terminate on July 1, 1995.
Addresses: Address correspondence to Michael S. Keplinger, Office of Legislative and International Affairs, United States Patent and Trademark Office, Box 4, Washington, D.C. 20231.
For Further Information Contact: Michael S. Keplinger, Office of Legislative and International Affairs, United States Patent and Trademark Office, Box 4, Washington, D.C. 20231, phone (703) 305-9300.
Supplementary Information: When Congress enacted the Semiconductor Chip Protection Act of 1984 (SCPA), it established an entirely new category of intellectual property that did not fall under the Paris Convention for the Protection of Industrial Property, the Universal Copyright Convention or the Berne Convention for the Protection of Literary and Artistic Works. The Congress created a balanced intellectual property regime for the protection of layout-designs of semiconductor chips that provided a level of protection that was satisfactory to meet the needs of the U.S. public and the domestic semiconductor chip industry. At the same time, Congress was also aware of the need of U.S. chip producers for protection in foreign markets, of the need of foreign chip producers for protection here in the United States and that there was no international treaty for the protection of chips. Faced with this dilemma, Congress created an innovative mechanism to encourage the rapid building of a worldwide consensus on an appropriate regime of intellectual property protection for chip layout-designs that would be compatible with U.S. law and would encourage the development of the international market for semiconductor chip products. To achieve these goals, Congress established a two-tiered system for protecting foreign works in the United States. Section 914 of the SCPA permits the Secretary of Commerce to extend interim access to protection under the SCPA for foreign chip creators if certain criteria are met, and section 902 permits the President to proclaim indefinite access to protection under the SCPA for foreign creators from countries that protect U.S. works. This system has laid the groundwork for establishing a technology-specific, carefully tailored and balanced regime of mask work protection in other chip-producing countries.

Section 902 of the SCPA sets out the criteria under which foreign works are eligible for protection in the United States. Section 902(a)(1) provides generally that a mask work fixed in a semiconductor chip product, by or under the authority of the owner of the mask work, may be protected under the SCPA if certain criteria are met.

The first of these is that when registration is sought or the mask work is first commercially exploited anywhere in the world, the owner of the mask work is 1) a U.S. national or domiciliary, 2) a national, domiciliary or authority of a foreign country that belongs to a treaty to which the United States also belongs that protects mask works, or 3) a stateless person regardless of where that person may be domiciled. Protection is also available if the mask work is first commercially exploited in the United States, or when the mask work comes within the scope of a Presidential proclamation issued under the SCPA.

The SCPA sets out the statutory criteria against which foreign laws are to be evaluated before issuing a Presidential proclamation. It provides substantially that when the President concludes that a foreign country grants U.S. mask work owners protection substantially the same protection that it grants its own nationals and domiciliaries, or on substantially the same basis as under the SCPA, the President may extend protection under this chapter to mask works of owners who are nationals, domiciliaries, or authorities of that country, or to mask works which are first commercially exploited in that country.

In 1987 the Chairman of the then House Subcommittee on Courts, Civil Liberties and the Administration of Justice noted that the transition provisions in section 914 of the SCPA were "intended to encourage the rapid development of a new worldwide regime for the protection of semiconductor chips." 133 Cong. Rec. E1283 (daily ed. April 6, 1987). These transitional provisions empowered the Executive to use the issuance of interim protection orders under section 914 of the SCPA as a means to encourage other nations to move speedily to establish substantially similar systems of protection. These provisions originally were set to expire three years after the date of the enactment of the SCPA, November 7, 1987.

The Congress has twice extended the authority to issue interim orders in the belief that this process is promoting the protection of U.S. mask works abroad and that the speedy enactment of laws in other countries that are patterned after U.S. law is progress. H.R. Rep. 100-388, 100th Cong., 1st Sess. (1987). Under the SCPA, the Assistant Secretary of Commerce and Commissioner of Patents and Trademarks has been delegated the tasks of determining when and under what conditions foreign mask works will be eligible for interim protection. To become eligible, a foreign government must demonstrate that it is making good faith efforts toward establishing a regime of protection in its territory that is substantially similar to that which is provided in the United States under the SCPA.

The countries to which interim protection has been extended (the Member States of the European Community, Australia, Austria, Canada, Finland, Japan, Sweden, and Switzerland) cooperated with the United States to try to establish a treaty for the adequate and effective protection of mask works in the World Intellectual Property Organization (WIPO). A Diplomatic Conference for the negotiation of a Treaty on the Protection of the Layout-Designs of Integrated Circuits (IPIC Treaty) was held in Washington during the month of May 1989. The IPIC Treaty adopted at the conclusion of the Conference did not meet the needs of either Japan or the United States. No developed country has thus far signed the Treaty, and it is yet to come into force.

Subsequent to the Diplomatic Conference, the United States has continued to work to conclude a multilateral agreement for the adequate and effective protection of semiconductor integrated circuit layout-designs. The Agreement on the Trade Related Aspects of Intellectual Property (TRIPs) that was adopted on December 15, 1993, in the Uruguay Round of Trade negotiations in the General Agreement on Tariffs and Trade contains a section that will require such protection. It builds upon the substantive provisions of the IPIC Treaty and adds the missing features deemed necessary to provide an adequate level of protection. It permits compulsory licensing of semiconductor technology only for public non-commercial uses or to remedy an adjudicated antitrust violation, it requires innocent infringers to pay reasonable royalties after notice, and it provides that products that include infringing chips fall within its scope of protection. Thus the TRIPs Agreement provides the level of protection in an internationally recognized text that is fully consistent with the U.S. SCPA and meets, or exceeds, the levels of protection provided in other countries' chip protection laws. The countries to which interim protection has been extended all worked closely with the United States to achieve this goal. However, the TRIPs Agreement has not yet been implemented by the United States, and the presently issued interim orders will expire on July 1, 1994, before the implementation of the TRIPs Agreement.

The combination of the standards set out in section 902 and the process established to implement section 914 clearly appear to have satisfied the Congressional intent behind this unprecedented process. In 1984, only the United States had specific legislation in place for the protection of chips, while today such protection is in place in all of the countries to which

interim protection has been extended. U.S. semiconductor chip layout-designs enjoy protection in all of those countries today. In some, the protection is enjoyed on the basis of national treatment and in some on the basis of reciprocity.

Since the interim orders were last extended, no complaints about the adequacy of the mask work protection laws in any of the countries to which interim protection has been extended have been received. Should such complaints arise in the future, they can be taken into account in determining whether a particular interim order should be rescinded prior to its scheduled termination.

Because of this favorable environment, and in order to ensure the continuing protection of U.S. layout-designs in foreign markets, I have determined that extending the present interim orders will provide the time needed for the final implementation of the TRIPs Agreement which will provide the basis for an adequate and effective multinational system for the protection for semiconductor mask works. In light of this, I am extending the interim orders for Japan, Sweden, Australia, the Member States of the European Community, Canada, Switzerland, Finland and Austria under Section 914 of the SCPA. These orders will expire on July 1, 1995

May 26, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

RXSYS International, Inc., Golden, Co., Reg. No. 1,536,236 for the mark "CAMPUSCARD AND DESIGN", Canc. No. 21,723.

242 E. 14 St. Corp. New York, N.Y., Reg. No. 1,436,872 for the mark "BLOWOUT BLITZ", Canc. No. 21,958

Freedom Savings and Loan Association, Tampa, Fla., Reg. Nos. 1,191,346; 1,191,347; 1,235,816 and 1,152,635 for the mark "FREEDOM SAVINGS", Canc. No. 22,073.

Chimney Rock Hospitality, Inc., Reg. No. 1,737,373 for the mark "DENIM & DIAMONDS", Canc. No. 21,722

Viking Boat Company, Inc., Goshen, Ind., Reg. No. 1,023,717 for the mark "SPORT-DECK", Canc. No. 21,960.

Twenty-First Century Manufacturing Company, Libertyville, Ill., Reg. Nos. 412,547; 630,850 and 630,851 for the mark "TCMCO", Canc. No. 21,994.

Foremost Dairies, Inc., La Jolla, Calif., Reg. No. 663,227 for the mark "TANGERINE TANGO", Canc. No. 21,434.

Tip Top Corporation, Omaha, Nebr., Reg. No. 696,830 for the mark "HI-STYLE", Canc. No. 21,859.

Automation Industries, Inc. dba Vitro Laboratories, Los Angeles, Calif., Reg. No. 1,043,731 for the mark "FOTO-DRAFT", Canc. No. 21,948.

Smith's Transfer Corporation, Staunton, Va., Reg. No. 1,054,493 for the mark "ST DESIGN", Canc. No. 22,263

Information Engineering, Inc., d/b/a Information Engineering Institute, Falls Church, Va., Reg. No. 1,595,733 for the mark "MACINSTITUTE (STYLIZED)", Canc. No. 22,288.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

L'Ermitage, Inc., Los Angeles, Calif., Reg. No. 1,085,154 for the mark "L'ERMITAGE", Canc. No. 21,628.

Tratech International, Inc., Birmington, Ala, Reg. No. 1,642,233 for the mark "TRATECH", Canc. No. 21,691.

Celltrek Enterprises, Incorporated, Reno, Nev., Reg. No. 1,757,173 for the mark "BEYOND IMAGINATION (STYLIZED)", Canc. No. 21,978.

Sakowitz, Inc. dba Sakowitz Trading Company, Houston, Tex., Reg. No. 1,560,393 for the mark "RAMPAGE", Canc. No. 21,983.

Skyline, Inc., Fort Lauderdale, Fla., Reg. No. 708,207 for the mark "MICROVITES", Canc. No. 21,986.

Metalogic, Inc., Chicago, Ill., Reg. No. 1,547,768 for the mark "METALOGIC", Canc. No. 22,028.

Karl Lee Remmler dba Eigenware Technologies, Saratoga, Calif., Reg. No. 1,647,329 for the mark "CSL (STYLIZED)", Canc. No. 22,037.

Puffin' Muffin, Ltd., Atlanta, Ga., Reg. No. 1,553,095 for the mark "PUFFIN' MUFFIN LTD 'HOME OF THE ORIGINAL SOUL MUFFIN' AND DESIGN", Canc. No. 22,114.

Jane Pettijohn DBA Key Placement Service, Indianapolis, Ind., Reg. No. 1,074,210 for the mark "KEY", Canc. No. 22,117.

Zentec Corporation, Santa Clara, Calif., Reg. No. 1,030,654 for the mark "ZENTEC AND DESIGN", Canc. No. 22,119.

Fun-Pak, Inc., Portland, Oreg., Reg. No. 1,165,517 for the mark "FUN-PACK", Canc. No. 22,131.

USA Chicken Express Inc., Jackson Heights, N.Y., Reg. No. 1,655,084 for the mark "CHICKEN EXPRESS AND DESIGN", Canc. No. 22,334.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having

been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Classic Sports Marketing, Inc., Bradenton, Fla., Reg. No. 1,738,604 for the mark "INTERNATIONAL BIKE EXPO", and design, Canc. No. 21,972.

ProTran Inc., San Francisco, Calif., Reg. No. 1,294,795, for the mark "PURE GLACIER WATER", and design Canc. No. 21,996.

Orgama, Ltd. d.b.a. Fabio, Valparaiso, Ind., Reg. No. 1,591,608, for the mark "FABIO" (sylized), Canc. No. 22,010.

Acuity Systems Incorporated, McLean, Va., Reg. No. 1,006,761, for the mark "AUTO-REFACTOR", Canc. No. 22,161.

CRC Chemicals Inc., Jenkintown, Pa., Reg. No. 999,843, for the mark "IMPREGLON", Canc. No. 22,286.

Aromatic Industries, Inc., Anaheim, Calif., Reg. No. 1,707,673 for the mark "FLORAL TAPESTRY", Canc. No. 22,322.

New Jersey Rubber Company, Taunton, Mass., Reg. No. 600,777, for the mark "TOPFLITE", Canc. No. 22,356.

H2O & Snow Vacations Inc., San Diego, Calif., Reg. No. 1,530,954, for the mark "H 2 O" and snow design, Canc. No. 22,403.

Michael C. Graham d.b.a. Gramarc International, Granc Blanc, Minn., Reg. No. 1,555,685, for the mark "TOP SECRET", Canc. No. 22,418.

Payroll Express, Inc., Albuquerque, N. Mex., Reg. No. 1,607,603, for the mark "EXPRESS PAY" (block form), Canc. No. 22,240.

M.H. Greenebaum, Inc., New York, N.Y., Reg. No. 372,748, for the mark "GREENTREE" and G design, Canc. No. 22,441.

GeoNet, Inc., South San Francisco, Calif., Reg. No. 1,647,676, for the mark "GEONET" and design, Canc. No. 22,526.

Hannah Spencer, Essex, Conn., Reg. No. 1,651,932, for the mark "HANNAH SPENCER", Canc. No. 22,540.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the canceliation will be proceeded with as in the case of default.

Marrowstone Ventures, Inc., Seattle, Wash., Reg. No. 1,513,563, for the mark "EDITOR'S CHOICE SOFTWARE", Canc. No. 21,443.

Ascot Imports, Inc., College Point, N.Y., Reg. No. 1,102,804, for the mark "ASCOT", Canc. No. 22,023.

The Brave New World, Inc., Los Angeles, Calif., Reg. No. 1,506,005, for the mark "PLANET", and design, Canc. No. 22,038.

Personally Yours, Inc., San Rafeal, Calif., Reg. No. 1,618,899, for the mark "PERSONAL PUZZLE", Canc. No. 22,067.

Continental Enterprises, Inc., Duarte, Calif., Reg. No. 1,507,055, for the mark "SILVER BULLET", Canc. No. 22,109.

Spyworld, Inc., Santa Monica, Calif., Reg. No. 1,760,479, for the mark "SPYWORLD", Canc. No. 22,112.

Active Life, New York, N.Y., Reg. No. 1,585,827, for the mark "MY BEST FRIEND", Canc. No. 22,148.

$5 to $10 Store, Inc., Los Angeles, Calif., Reg. No. 1,509,696, for the mark "$5 To $10 STORE", Canc. No. 22, 154.

Hot Shots Burgers & Fries, Inc., Little Rock, Ark., Reg. No. 1,596,928, for the mark "HOT SHOTS BURGERS & FRIES" and design, Canc. No. 22,187.

Stellar Computer Inc., Newton, Mass., Reg. Nos. 1,505,650 & 1,623,333, for the mark "STELLAR", Canc. No. 22,191.

Pure Golf, Inc., Anaheim, Calif., Reg. No. 1,504,120, for the mark "PURE" (stylized), Canc. No. 22,253.

Smith's Transfer Corporation, Staunton, Mass., Reg. No. 1,056,741, for the mark "HAULMARK OF SERVICE" and design, Canc. No. 22,262.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey For with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is important that patent practitioners complete each survey form no later than the time of response to the Office action being surveyed. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

VOL 1164 ISS 3 JL 19 1994 UMI

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificates of Correction Issue of July 19, 1994

Re. 34,040	5,116,420	5,188,815	5,228,127
Re. 34,565	5,123,912	5,190,100	5,228,602
D. 331,230	5,124,423	5,190,862	5,229,288
D. 341,988	5,130,587	5,193,988	5,230,218
D. 343,673	5,130,748	5,194,120	5,231,216
4,251,331	5,134,610	5,197,663	5,231,533
4,584,300	5,135,479	5,199,936	5,231,861
4,772,552	5,144,454	5,200,569	5,232,782
4,779,472	5,146,966	5,201,010	5,233,165
4,795,590	5,147,503	5,202,253	5,233,187
4,836,732	5,147,879	5,202,456	5,233,880
4,926,492	5,148,424	5,203,897	5,233,892
4,945,201	5,149,338	5,204,847	5,234,426
4,960,495	5,151,400	5,205,379	5,234,798
4,974,150	5,151,514	5,205,919	5,235,212
4,993,593	5,153,311	5,206,241	5,235,599
5,007,952	5,154,335	5,206,274	5,235,646
5,019,260	5,155,107	5,206,422	5,236,450
5,020,295	5,156,702	5,207,614	5,237,855
5,027,698	5,159,990	5,208,258	5,238,250
5,033,053	5,161,717	5,208,862	5,239,078
5,043,864	5,166,524	5,210,015	5,239,145
5,052,307	5,166,717	5,210,143	5,239,923
5,052,412	5,168,331	5,210,796	5,240,626
5,053,304	5,168,681	5,211,754	5,240,650
5,070,215	5,169,655	5,211,852	5,240,913
5,070,417	5,169,862	5,212,918	5,241,225
5,071,242	5,170,706	5,213,591	5,241,241
5,074,024	5,171,421	5,215,248	5,241,535
5,082,143	5,172,717	5,215,623	5,241,981
5,084,826	5,173,976	5,216,949	5,242,014
5,089,485	5,178,326	5,217,427	5,242,122
5,092,372	5,178,785	5,218,262	5,242,332
5,093,116	5,179,454	5,218,711	5,243,218
5,093,696	5,180,070	5,219,593	5,243,316
5,094,411	5,181,435	5,219,990	5,243,506
5,102,665	5,182,113	5,221,262	5,244,452
5,106,602	5,182,317	5,221,668	5,244,791
5,107,410	5,182,723	5,222,782	5,245,431
5,109,317	5,184,402	5,223,319	5,245,533
5,110,402	5,184,964	5,223,796	5,245,609
5,113,283	5,185,467	5,223,915	5,246,325
5,113,863	5,186,750	5,224,732	5,246,868
5,113,985	5,187,286	5,225,379	5,247,253
5,115,346	5,187,548	5,226,582	5,247,514
5,115,817	5,188,395	5,227,617	5,247,743
5,248,749	5,265,712	5,278,760	5,288,653
5,248,768	5,265,940	5,279,210	5,288,686
5,249,026	5,265,971	5,279,280	5,288,827
5,249,478	5,266,296	5,279,475	5,289,129
5,249,671	5,266,317	5,279,561	5,289,255
5,249,864	5,266,850	5,279,664	5,289,826
5,250,217	5,266,855	5,279,720	5,289,871
5,250,221	5,266,913	5,279,749	5,289,970
5,251,881	5,266,974	5,280,042	5,290,531
5,252,210	5,267,083	5,280,331	5,290,632
5,252,470	5,267,917	5,280,676	5,290,638
5,252,717	5,267,939	5,280,727	5,290,745
5,252,992	5,268,008	5,281,014	5,290,777
5,253,082	5,268,485	5,281,027	5,290,892
5,253,510	5,268,704	5,281,431	5,291,018
5,253,511	5,268,802	5,281,657	5,291,275
5,253,608	5,268,892	5,281,738	5,291,286
5,253,726	5,269,461	5,282,273	5,291,348
5,254,115	5,269,597	5,282,395	5,292,181
5,254,324	5,269,865	5,282,460	5,292,639
5,254,336	5,269,866	5,282,701	5,292,644
5,254,504	5,270,308	5,283,048	5,292,668
5,254,707	5,270,794	5,283,421	5,293,116
5,255,116	5,271,467	5,283,479	5,293,306
5,255,548	5,272,119	5,283,726	5,293,494
5,255,743	5,272,660	5,283,729	5,293,952
5,256,194	5,272,924	5,283,858	5,294,318
5,256,711	5,272,955	5,283,916	5,294,416
5,256,922	5,273,023	5,283,936	5,294,450
5,257,091	5,273,059	5,284,006	5,294,463
5,257,114	5,273,087	5,284,052	5,294,639
5,257,119	5,273,133	5,284,159	5,294,774
5,257,521	5,273,385	5,284,164	5,294,883
5,257,877	5,273,724	5,284,308	5,294,901
5,258,322	5,273,919	5,284,355	5,295,049
5,258,635	5,273,925	5,284,480	5,295,327
5,259,748	5,274,013	5,284,513	5,295,964
5,260,284	5,274,608	5,284,824	5,296,200
5,260,317	5,274,792	5,285,207	5,296,374
5,260,464	5,274,983	5,285,418	5,296,520
5,260,768	5,275,066	5,285,663	5,296,646
5,260,790	5,275,354	5,285,699	5,297,314
5,260,969	5,275,761	5,286,073	5,297,688
5,261,210	5,275,889	5,286,087	5,298,396
5,261,241	5,276,364	5,286,116	5,298,492
5,261,948	5,276,609	5,286,259	5,298,533
5,261,975	5,276,868	5,286,371	5,298,750
5,262,961	5,277,023	5,286,485	5,299,119
5,263,145	5,277,523	5,286,495	5,299,493
5,263,301	5,277,580	5,286,540	5,301,787
5,264,072	5,277,804	5,286,595	5,302,822
5,264,160	5,277,882	5,286,793	5,303,236
5,264,192	5,278,010	5,287,459	5,304,587
5,264,896	5,278,516	5,287,629	5,304,911
5,265,053	5,278,520	5,287,956	5,306,618
5,265,116	5,278,593	5,288,373	5,307,081

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
May 30-June 3, 1994

Date Issued	Type of Proceeding[1]	Proceeding or App'n No.	Party/Parties	Issue	Applicant's/ Respondent's Mark and Goods/Services	Opposer's/ Petitioner's Mark and Goods/Services	TTAB Decision	Mark and Goods of Registration Cited by Examing Atty.	Recommended for Publication
6-1	EX	74/222,413	Weslock Corp.	2(d)	"PREMIERE EDITION" (in stylized lettering) [metal hardware, namely, door handles, door knobs, door knockers, door entrance handle sets, and door locks]		Refusal Affirmed	"PREMIER BRASS" (and design) [curtain, shelf and cabinet hardware made of metal; metal door and window hardware, etc.]	No
6-1	EX	74/113,242	Hoke Inc.	2(d)	"SPACE SAVER" [geared actuator to control the operation of valve]		Refusal Affirmed	"SPACE SAVER" [air actuated cylinders]	No
6-2	EX	74/176,274	Expose New York, Inc.	2(d)	"EXPOSE" (in stylized lettering) [blouses]		Refusal Affirmed (as to both marks cited)	"X-POSE" (in stylized lettering) [brassieres]; "EXPOZAY" [swimwear]	No
6-2	EX	74/216,881	SKW Trostberg AG	Section 6 disclaimer requirement	"SKW-ADVANCED CHEMICALS FOR ADVANCED DRILLING" [oil field chemicals, especially additives or fluids for the drilling completion and work over of oil wells]		Refusal Affirmed		No
6-3	EX	74/247,074	Jacqueline Wagner	2(d)	"COLLISION CARTEL" (in stylized lettering) [a board game]		Refusal Affirmed	"CARTEL" (and design) [equipment for playing a board game involving foreign trade and finance terminology]	No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Proceeding(1)	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision
6-3	EX EX	74/092,392 74/092,395	Martha Stewart Inc	2(e)(1), 2(d)	Refusal Affirmed (on both grounds, as to both applications)
6-3	EX	74/126,294	Bear Creek Gardens, Inc.	whether the matter asserted for registration functions as a trademark for the goods recited in the application or is, instead, a cultivar or varietal name	Refusal Reversed

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ FOR RECONSIDERATION

Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examing Atty	Recommended for Publication
	"HOMESTYLES" and "HOMESTYLES TRENDS AND TRADITIONS" [both marks for books relating to home decoration]	"HOMESTYLES" [magazines]	No
	"FRAGRANT MEMORY" [live rose bushes]		No

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Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
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Box 171	Vacancy Announcement Applications.
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Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
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Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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	St. Louis Public Library	(314) 241-2288 Ext. 390
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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	07/26/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	05/20/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/04/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	08/02/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/02/93
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PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	06/27/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	08/30/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	12/02/92
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	09/29/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	07/05/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	06/14/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	07/22/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	01/29/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/08/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during June 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....Numbers 4,027,339 to 4,032,988 inclusive
Plant Patents.....4,059 to 4,068

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of June 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/10/93	04/26/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 40, 41, 42	01/06/94	03/14/94
Law Office 5—Mary Sparrow, Managing Atttorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/11/94	02/16/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/14/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/29/93	02/03/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/23/93	04/08/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/06/93	02/22/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/24/94	05/03/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/21/94	01/24/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/13/94	04/18/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/27/94	04/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/27/93	03/21/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/30/93	10/20/93
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jaqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	12/27/93	—0—
Renewals (All Classes)	03/14/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office.
2. Applicants with inquires concerning the status of their applications and a touch tone phone shouldcall (703) 308–8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dateshave either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

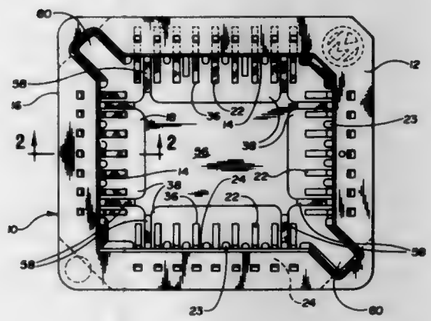
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REEXAMINATIONS

JULY 19, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,934,944 (2338th)
CHIP CARRIER SOCKET WITH OPEN APERTURE
Charles A. Kozel, McHenry; John T. Scheitz, Barrington, and Michael V. Stefaniu, Arlington Hts., all of Ill., assignors to Methode Electronics, Inc., Rolling Meadows, Ill.
Reexamination Request Nos. 90/003,106, Jun. 28, 1993 and 90/002,864, Oct. 23, 1992.
Reexamination Certificate for Patent No. 4,934,944, issued Jun. 19, 1990, Ser. No. 268,014, Nov. 7, 1988.
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—68



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **11–17** are confirmed.

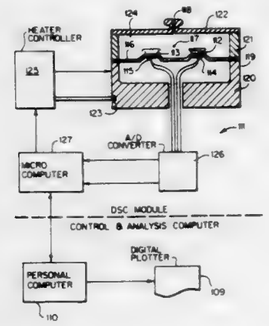
Claim **1** is cancelled.

Claims **2**, **5**, **10** and **18** are determined to be patentable as amended.

Claims **3**, **4**, **6–9**, **19** and **20**, dependent on an amended claim, are determined to be patentable.

2. [The chip carrier socket of claim **1** in which] *A chip carrier socket which comprises a frame having an inner and outer surface which defines and surrounds a space for receiving a chip carrier, and a plurality of elongated contacts carried by said frame, said contacts each defining a first section which resides within the inner surface of the frame and positioned to conductively engage a chip carrier carried in said space, said contacts also each defining a second section positioned on one side of said chip carrier socket to engage conductive members of a circuit board when said socket is carried thereon, the second sections each defining a contact end which projects inwardly from said frame, said socket defining an open aperture within and through said frame adjacent said inner surface, whereby said inwardly projecting contact ends are exposed in the upward perpendicular direction while the socket is carried on a circuit board, and* a panel member [is] positioned in a horizontally central portion of said space.

B1 5,224,775 (2339th)
METHOD AND APPARATUS FOR MODULATED DIFFERENTIAL ANALYSIS
Michael Reading, London, England; Brian K. Hahn, Newark, and Benjamin S. Crowe, Centerville, both of Del., assignors to TA Instruments Inc., New Castle, Del.
Reexamination Request No. 90/003,241, Nov. 8, 1993.
Reexamination Certificate for Patent No. 5,224,775, issued Jul. 6, 1993, Ser. No. 844,448, Mar. 2, 1992.
Int. Cl.[5] G01N *25/00*
U.S. Cl. 374—11



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **36–55** is confirmed.

Claims **2** and **28** are cancelled.

Claims **1**, **3–5**, **9**, **17**, **24**, **27** and **31** are determined to be patentable as amended.

Claims **6–8**, **10–16**, **18–23**, **25–26**, **29**, **30** and **32–35**, dependent on an amended claim are determined to be patentable.

1. A method for analyzing a material that undergoes a transition as a function of temperature comprising the steps of:
(a) selecting an underlying rate of change in the temperature;
(b) selecting a modulation function;
(c) selecting a modulation frequency;
(d) selecting a modulation amplitude;
(e) placing a sample of the material in an apparatus for detecting differential changes in a characterizing physical parameter of the sample with respect to a reference as a function of the temperature of the sample;
(f) varying the temperature of the sample according to the selected underlying rate of change of the temperature, the selected modulation function, the selected modulation frequency and the selected modulation amplitude; [and]
(g) recording a differential signal representative of differential changes in the characterizing physical parameter; *and*
(*h*) *deconvoluting the signal representative of the characterizing differential physical parameter to compute at least two deconvoluted signals.*

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,662

DUAL-HEIGHT WADER

Robert W. Keller, 10760 Bill Point Dr., Bainbridge Island, Wash. 98110

Original No. 4,912,860, dated Apr. 3, 1990, Ser. No. 358,635, May 30, 1989. Application for reissue Apr. 3, 1992, Ser. No. 862,794

Int. Cl.[5] **A41D** *13/02*

U.S. Cl. 2—82 **35 Claims**



23. A waterproof wader system, adjustable as to provide varying degrees of wearer body protection, comprising:

a first portion comprising a waist-high wader having a waist portion and a leg portion; and

a second extendable chest protective portion connected to said first portion, said second portion adapted to be worn in both a first lowered position folded around said wearer's waist, and a second extended position extending upwardly from said first portion over wearer's upper chest area.

Re. 34,663

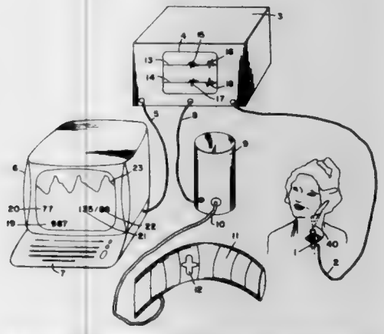
NON-INVASIVE DETERMINATION OF MECHANICAL CHARACTERISTICS IN THE BODY

Joseph B. Seale, 44 Puritan Rd., Buzzards Bay, Mass. 02532

Original No. 4,646,754, dated Mar. 3, 1987, Ser. No. 702,833, Feb. 19, 1985. Application for reissue Mar. 3, 1989, Ser. No. 319,340

Int. Cl.[5] **A61B** *5/10*

U.S. Cl. 128—774 **54 Claims**



1. An non-invasive system for inducing vibrations in a selected element of the human body and detecting the nature of responses for determining mechanical characteristics of said element,

said system comprising:

a drive means for inducing multiple-frequency vibrations, including below 20 KHz, in [a] *the* selected element of the body,

means for determining parameters of the vibration exerted on the body by the driver means,

means for determining the frequency components of mechanical impedance of the body based on said parameters of vibration exerted by said driver means,

means for sensing variations of a dimension of said element of the body over time, including in response to said driver means,

means for correlating said variations with frequency components of [operation] *at least one* of *said parameters of vibration exerted by* said driver means below 20 KHz, in order to determine corresponding frequency components of said variations.

means for resolving said frequency components *of said variations* into components of vibration mode shape, and

computer means for interpreting said parameters of vibration exerted by the driver means, *said frequency components of mechanical impedance,* and said components of vibration mode shape in a manner to determine said mechanical characteristics.

Re. 34,664

METHOD AND APPARATUS FOR ELECTROLYTIC REFINING OF COPPER AND PRODUCTION OF COPPER WIRES FOR ELECTRICAL PURPOSES

Carlos E. Roggero Sein, Lima, Peru, assignor to ASARCO Incorporated, New York, N.Y.

Original No. 4,891,105, dated Jan. 2, 1990, Ser. No. 107,218, Oct. 13, 1987. Continuation-in-part of Ser. No. 7,764, Jan. 28, 1987, abandoned. Application for reissue Dec. 23, 1991, Ser. No. 812,453

Int. Cl.[5] **C25D** *7/06*

U.S. Cl. 205—138 **5 Claims**



1. A method for the continuous production of round copper stock wire [by refining impure copper anodes to produce wire] for electrical purposes [of a diameter of about 0.2 inches] by electrodeposition comprising the steps of:

providing *in a single tank* a bath of electrolytic fluid with dissolved copper therein;

providing a plurality of anodes [made of impure copper] arranged *within said single tank* in spaced and parallel relation with respect to one another in said bath and defining spaced parallel pathways;

introducing a clean starting copper wire of a first diameter [of about 0.12 inch] into said bath at a first station and threading said wire through the bath and along each of the pathways in a serpentine path to successive stations with the wire traversing the pathways between each station *said stations being outside of said bath and said wire forming at least a pair of vertical wire curtains defined by horizontally disposed wires, each of said curtains in said pair travelling in opposite direction from the other curtain in said pair within said single tank;*

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continuously drawing said wire through said bath between the stations to a final station including the steps of withdrawing said wire from the bath after each pathway is traversed and reintroducing said wire a plurality of times into said bath, repeatedly passing said wire through said bath for travel along the pathways between successive stations, so that pure copper is electrodeposited on the wire on travel along each pathway between the stations; and

simultaneously applying an electrical current to said starting wire and to said anodes [at a current density less than 55 amps/feet^2 of surface area of the wire] so that the wire, while in the bath, acts as a cathode and copper ions are progressively and uniformly electrodeposited on the wire, thereby progressively increasing the cross-sectional area thereof while maintaining the surface of the wire smooth at all times; and

continuously withdrawing the enlarged smooth copper wire from said bath at said final station as it reaches the desired engrossed size [of about 0.2 inches].

Re. 34,665

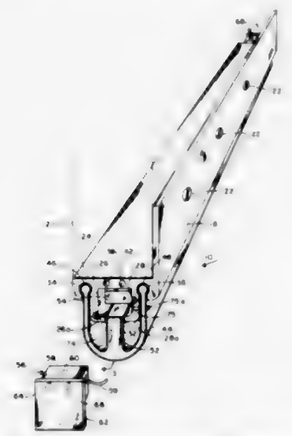
FAILSAFE SENSING EDGE FOR AUTOMATIC DOORS AND GATES

Charles G. Strand, 22 Suydam Dr., Melville, N.Y. 11747

Original No. 5,079,417, dated Jan. 7, 1992, Ser. No. 658,816, Feb. 22, 1991. Application for reissue Feb. 3, 1993, Ser. No. 12,638

Int. Cl.^{5} E05F *15/20*

U.S. Cl. 250—221 **12 Claims**



1. A sensing edge for a overhead door or gate having a door edge comprising:

a. channel means for mounting along the edge of said door or gate, said channel means having a pair of projecting, spaced arms forming a slot-like opening at the free ends thereof for extending the length of said channel means parallel to said door edge;

b. outer covering means supported on said channel means enclosing said arms, said outer covering means being made out of a flexible material readily depressed when an obstacle is encountered when said door or gate is closing;

c. member means of rigid material within and mounted on said outer covering means extending through said slot-like opening, said member means terminating in an actuating member between said arms and normally spaced from said door edge;

d. a light source means mounted on one end of said channel means for directing a light beam down the length of said channel means between said arms and in the space between said actuating member and said channel means when said outer covering means is in its normal, undepressed state, said actuating means blocking said light beam when said outer covering means is depressed by an obstacle in the path of said door or gate when being closed;

e. photoswitch means mounted on the other end of said channel means for receiving said light beam so that interruption of said light beam will actuate said photoswitch means; *and*

f. said light source means, channel means and photoswitch means forming a rigid structure whereby said light source means and photoswitch means remain in alignment and do not require adjustment once assembled[; and

g. means sealing the ends of said outer covering means capable of being compressed when said covering means is depressed by an obstacle].

Re. 34,666

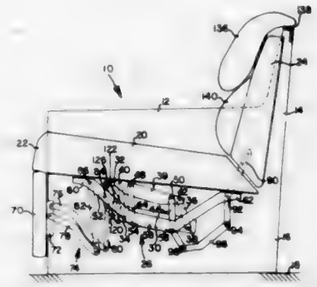
WALL PROXIMITY CHAIR

Bill D. Tacker, Okolona, Miss., assignor to Super Sagless Corporation, Tupelo, Miss.

Original No. 4,805,960, dated Feb. 21, 1989, Ser. No. 87,511, Aug. 20, 1987. Application for reissue Jul. 15, 1992, Ser. No. 915,892

Int. Cl.^{5} A47C *1/02*

U.S. Cl. 297—85 **15 Claims**



1. A frame within a frame incliner chair comprising

a fixed [outer] *outside* chair frame having a stationary back and side panels,

a seat and backrest disposed within the [outer] *outside chair* frame and a footrest operatively connected to the seat, said seat, backrest and footrest being movable between upright, TV and reclining positions,

and linkage mechanisms on each side of the chair carrying the seat and backrest, each of said mechanisms including:

a support plate secured to [the inside] *an inner surface* of the side panel,

a support link carried on front and rear pivot links which are pivotally connected to the support plate,

front and rear swing links pivotally connected to the support link and in turn pivotally connected to a seat mounting link, said seat mounting link carrying the seat,

a lazy tong linkage, carrying the footrest and mounted on the seat mounting link for movement between retracted and extended positions,

a backrest bracket pivoted on the seat mounting link and connected to the rear swing link by a backrest support link,

and a handle actuated mechanism interconnected to the lazy tong linkage and to the support link for extending the leg rest and for swinging the support link forwardly on the pivot links to move the seat and back rest forwardly and downwardly within the fixed outside [frame] *chair* from an upright to a TV position,

said backrest support link swinging the seat link forwardly with respect to the support link and [outside] *fixed outside chair* frame when pressure is exerted against the backrest to recline the backrest as the seat moves forward within the [outside] *fixed outside chair* frame.

Re. 34,667

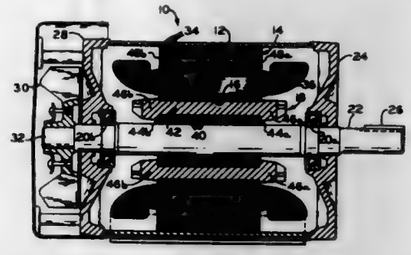
STATOR AND ROTOR LAMINATION CONSTRUCTION FOR A DYNAMO-ELECTRIC MACHINE

Thomas W. Neumann, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Original No. 4,801,832, dated Jan. 31, 1989, Ser. No. 116,303, Nov. 4, 1987. Application for reissue Jun. 4, 1990, Ser. No. 533,251

Int. Cl.^{5} H02K *1/00*

U.S. Cl. 310—216 **16 Claims**



1. A dynamo-electric machine comprising:

a generally cylindrical casing;

a stator core fixed in said casing and comprised of stator lamination plates of ferromagnetic material, said stator core having a cylindrical bore;

a stator winding embedded in stator slots radially projecting from the bore and which slots extend generally axially along the core, with end turns of said winding extending beyond end faces of said stator core;

a rotor supported in said bore for rotational movement and comprised of rotor lamination plates of ferromagnetic material, said rotor including conductive means for interacting with a magnetic field produced in an air gap between an outer periphery of said rotor and an inner periphery of the stator core when said stator winding is energized;

wherein each of said stator lamination plates comprises:

a flat annular plate of ferromagnetic material having a preselected outer diameter and a generally circular inner opening of a preselected inner diameter which forms [the stator] *said* bore when [like ones of] said plates are stacked face-to-face with one another,

said plate having a number of uniformly circumferentially spaced slots which project radially outwardly from the bore to an intermediate circumference of said plate to define teeth between the slots, said slots forming said stator slots when corresponding slot openings in the [like] plates are substantially aligned to communicate with one another and the plates are stacked,

said annular plate including a tooth portion defined by said teeth between said intermediate circumference and said circular inner opening, and a yoke portion defined between said intermediate circumference and an outer periphery of said plate, and

wherein each of said rotor lamination plates comprises a flat circular plate of ferromagnetic material having a number of equally circumferentially spaced closed *rotor* slots extending radially in a region near the outer periphery of said plate,

said *rotor* slots being formed to contain conducting members which extend axially along the rotor when [like ones of] said *rotor lamination* plates are stacked face-to-face with corresponding slots in communication with one another; and

wherein for a given ratio of said preselected inner diameter to said preselected outer diameter for said annular plate of each of said stator lamination plates, said teeth are sufficiently wide relative to [the] *an* area of said [slot openings] *slots* so that the ratio of flux density in said tooth portion to flux density in said yoke portion in response to energization of the stator winding is optimized for the number of poles n in the operating configuration of said stator winding; and

wherein the ratio of inner diameter to outer diameter of the annular plate forming said stator lamination plate is in the range of about 0.5025 to 0.504 for n equals 2.

Re. 34,668

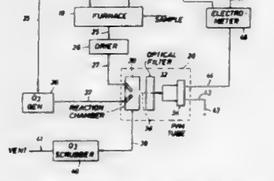
CHEMILUMINESCENT NITROGEN DETECTION APPARATUS AND METHOD

Robert E. Parks, Houston, and Robert L. Marietta, Needville, both of Tex., assignors to Nitec, Inc., Houston, Tex.

Original No. 4,018,562, dated Apr. 19, 1977, Ser. No. 625,510, Oct. 24, 1975. Continuation of Ser. No. 340,540, Apr. 18, 1989, abandoned. Application for reissue May 31, 1991, Ser. No. 708,810

Int. Cl.^{5} G01N *21/76, 31/12*

U.S. Cl. 436—114 **52 Claims**



11. A method for analysis of a sample dissolved in a gas phase solution comprising the sequential steps of:

(a) passing said solution through a gas chromatograph to produce a gas phase effluent;

(b) converting said effluent into combustion products in one step and in an oxygen-rich atmosphere in the gas phase at a temperature above 900° C., wherein substantially all the chemically bound nitrogen is converted to nitric oxide and wherein such conversion is in the absence of a catalyst;

(c) transferring said combustion products to a nitric oxide (NO) detector; and

(d) detecting the presence of NO at said detector by:

(i) reacting said combustion products with ozone (O_3) to obtain a chemiluminescent reaction of nitric oxide with ozone and

(ii) detecting light from the reaction having a wavelength of 600–900 nanometers.

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Re. 34,669

METHOD FOR PREPARING MOULDED POLYUREAPOLYURETHANE FLEXIBLE FOAMS

Roberto Frigo; Gian-Carlo Bagaglio, both of Varese, Italy; Gabriel Verhelst, Herent, and Mireille De Witte, Ghent, both of Belgium, assignors to Imperial Chemical Industries PLC, England and Atlas Europol SpA, Italy

Original No. 5,034,427, dated Jul. 23, 1991, Ser. No. 440,399, Nov. 22, 1989. Application for reissue Dec. 9, 1991, Ser. No. 803,959

Claims priority, application United Kingdom, Nov. 25, 1988, 8827589; Oct. 17, 1989, 8923354

Int. Cl.[5] **C08G** *18/14*

U.S. Cl. 521—163 **10 Claims**

1. A method to prepare polyurethane and/or polyurea flexible foams which comprises reacting:

A. an organic polyisocyanate composition

B. an isocyanate-reactive composition containing:

a. at least one high Mw isocyanate-reactive compound

b_1. a compound selected from the group consisting of DETDA and isophorone diamine of Mw below 1000 in an amount of less than 1% by wt of high Mw isocyanate-reactive compound(s) or

b_2. a mixture of at least two chain extenders of which at least one is a compound selected from the group consisting of DETDA and isophorone diamine of Mw below 1,000, in an amount of 0.1% to 10% by wt of which Mw isocyanate-reactive compound(s)

C. H_2O

D. optionally catalysts

E. optionally further blowing agents which are different from H_2O.

F. optionally further conventional additives.

PLANT PATENTS

GRANTED JULY 19, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,837

ROSE PLANT AUSLILAC

David C. H. Austin, Wolverhampton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Mar. 4, 1993, Ser. No. 26,546

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of *Rosa hybrida* rose plant of the shrub class, substantially as herein shown and described, being characterized particularly as to novelty by the unique combination of its distinctive, lilac-colored flowers; double flowers with rosette center; strong fragrance; and healthy, bushy growth.

8,838

ROSE PLANT AUSBURTON

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, Albrighton, England

Filed Mar. 29, 1993, Ser. No. 40,156

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of *Rosa hybrida* rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its fully double flowers, soft pink flower color, strong fragrance, and reflexed character of outer petals.

8,839

ROSE PLANT — MEIPELTA VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Sep. 10, 1993, Ser. No. 119,371

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant characterized by the following combination of characteristics:

(a) forms attractive half-double blossoms which are Rose Bengal suffused with Neyron Rose,
(b) forms petals which are firm and drop off cleanly,
(c) forms medium green adult wood,
(d) exhibits a prostrate growth habit,
(e) exhibits excellent disease resistance, and
(f) is particularly well-suited for growing in the landscape as a ground cover;

substantially as herein shown and described.

8,840

ROSE PLANT—MEIMODAC VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Sep. 10, 1993, Ser. No. 119,372

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant characterized by the following combination of charateristics:

(a) forms on an abundant and continuous basis attractive double blossoms that are Cardinal Red suffused with Neyron Rose in coloration,
(b) exhibits a bushy growth habit,
(c) forms petals that are firm and detach cleanly,
(d) forms bronze green adult wood,
(e) exhibits exceptional hardiness,
(f) exhibits excellent disease resistance, and
(g) is particularly suited for growing in the landscape as attractive ornamentation;

substantially as herein shown and described.

8,841

ROSE PLANT—MEIPOTAL VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Sep. 10, 1993, Ser. No. 119,373

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant characterized by the following combination of characteristics:

(a) forms continuously throughout the season attractive simple blossoms which are marbled Carmine Rose in coloration,
(b) forms blossom petals which are firm and drop off cleanly,
(c) forms attractive glossy foliage,
(d) exhibits a bushy growth habit,
(e) forms light green adult wood,
(f) exhibits excellent disease resistance,
(g) exhibits excellent winter hardiness, and
(h) is particularly well-suited for growing in the landscape;

substantially as herein shown and described.

8,842

MANDEVILLA: RUBY STAR

Richard J. Henny, Tavares, Fla., assignor to Gem Ornamentals Inc., Tavares, Fla.

Filed May 7, 1993, Ser. No. 59,133

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct variety of Mandevilla substantially as shown and described, characterized by flowers that open pale pink and turn to red within two days and last an additional 3–4 days on the plant, and shiny green oblong to elliptically shaped leaves.

8,843

CHRYSANTHEMUM PLANT NAMED PHOENIX

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jul. 30, 1993, Ser. No. 99,657

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Phoenix, as described and illustrated.

8,844

SPATHIPHYLLUM PLANT—CERES CULTIVAR

Erik van Dordrecht, De Kwakel, Netherlands, assignor to Gebr. Braam BV, De Kwakel, Netherlands

Filed Mar. 29, 1993, Ser. No. 38,690

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum having the following combination of characteristics:

(a) exhibits a smaller and more compact growth habit of lesser width than the Pallas cultivar,
(b) forms leaves that are narrower than those of the Pallas cultivar,
(c) flowers sooner and more frequently than the Pallas cultivar,
(d) forms a mature plant that lacks a pronounced main shoot

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with ground shoots having approximately the same size as the central shoot when the first flower appears,
(e) exhibits leaves that possess a silk-matte surface appearance that can be compared to the slightly more glossy leaves of the Pallas cultivar,
(f) commonly forms a geniculum that is more curved than that of the Pallas cultivar, and
(g) forms a very sturdy erect flower stem;
substantially as illustrated and described.

PATENTS

GRANTED JUL. 19, 1994

ERRATA

For CLASS	See PATENT NO.
14-005	5,329,652
16-016	5,329,653
477-117	5,329,830
100-093	5,329,844
101-121	5,329,848
128-004	5,329,887
139-370	5,329,961
139-450	5,329,962
141-006	5,329,963
165-001	5,329,982
165-153	5,329,988
229-167	5,330,094
271-101	5,330,169
280-477	5,330,196
269-045	5,330,216
279-051	5,330,224
404-001	5,330,278
43-017	5,330,282
414-417	5,330,301
439-157	5,330,411
473-093	5,330,412
474-069	5,330,423
606-222	5,330,441
606-232	5,330,442
418-055	5,330,463
417-089	5,330,475
434-265	5,330,514
117-086	5,330,610
117-105	5,330,611
117-086	5,330,612
117-217	5,330,729
156-329	5,330,813
501-001	5,330,937
530-404	5,331,109
257-377	5,331,170
310-068	5,331,231
318-568	5,331,232
257-777	5,331,235
315-039	5,331,248

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ERRATA—CONTINUED

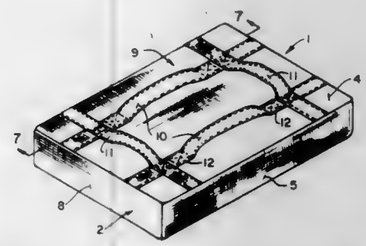
347-089	5,331,339
257-192	5,331,410
348-708	5,331,411
348-005	5,331,412
348-159	5,331,413
348-390	5,331,414
348-607	5,331,415
348-614	5,331,416
348-584	5,331,417
348-563	5,331,418
348-064	5,331,419
348-246	5,331,420
348-262	5,331,421
348-363	5,331,422
242-347	5,331,498
364-132	5,331,619
395-575	5,331,673

PATENTS

GRANTED JULY 19, 1994

GENERAL AND MECHANICAL

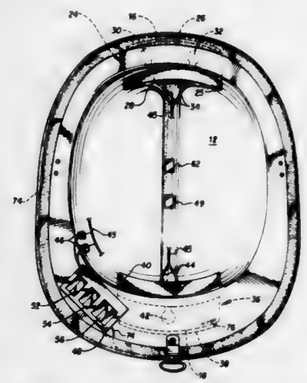
5,329,636
SAFETY CONTAINMENT SHIELD
Bruce K. Siddle, 306 Debra La., Waterloo, Ill. 62298
Filed Apr. 15, 1991, Ser. No. 684,826
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **4 Claims**



1. A safety containment shield for use for protective purposes, said shield incorporating a series of layers of material located adjacent to each other, one of said layers of material being a hardened configuration to resist impact, another of said layers being formed of a cushioned material, said one layer and said another layer being contiguous, and a third layer of said layers of material being an overlying covering, said overlying covering contiguously encasing the said one and said another layers, means connecting to the shield to provide for grasping by the user during application of the shield, said means comprising a strap, said layer of hardened material comprising a sheet of polymer, said sheet of cushioned material comprising a polymer foam, said strap means for grasping of the shield comprising at least one strap means for grasping by the hand to facilitate a holding of the shield during application and usage of the shield, said shield having opposite side edges, and said strap means for grasping by the hand connecting to the shield and extending approximately from one side edge of the shield to an opposite side edge, and having clearance intermediate thereof for grasping of the strap by the arm of the user during application of the shield, said covering material comprising a canvas cloth having a strength to substantially resist impact, the canvas cloth enveloping the entire exterior of the shield, said shield being light of weight to facilitate its maneuvering during application and usage by the user, said polymer sheet having a front surface and a back surface, said polymer sheet extending from one side edge to the opposite side edge of the shield, said polymer foam material having a thickness of approximately one inch to four inches and disposed along the front surface of the hardened polymer sheet, said foam material arranged between the hardened polymer sheet and the overlying covering material, a second foamed polymer sheet provided upon the backside of the hardened polymer sheet of material to add cushioning to the shield upon its backside and to minimize injury to the user during application of the shield, said backside arranged layer of cushioning material being approximately two to four inches in thickness.

5,329,637
FIREMAN'S HELMET WITH INTEGRAL FRONT AND REAR LIGHTS
Joseph W. Walker, 504 Briggs St., Wilson, N.C. 27893
Filed Sep. 14, 1992, Ser. No. 944,662
Int. Cl.[5] A42B *3/30*
U.S. Cl. 2—5 **6 Claims**

1. A helmet including an integral light assembly comprising: a helmet including a surrounding wall structure having an opening formed therein and defining a head receiving area within the helmet: a light assembly integrally mounted within the opening formed within the side wall structure; said light assembly including an outer lens disposed within a plane that lies closely adjacent the outer surface of the surrounding wall structure, a light bulb, and a light bulb holding frame extending inwardly from the opening within the side wall structure such that it projects into the space of the head receiving area; a battery pack disposed within the head receiving area of the helmet; switch means mounted to said helmet and operatively interconnected between the light bulb assembly and the battery pack for actuating the same; and including a clock integrally formed within the structure of the firemen's helmet



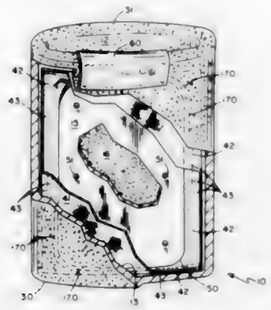
whereby actuating the clock at a selected time enables one to determine an elapsed time from the time of actuation thereby enabling one to determine how long a fireman has been exposed to a dangerous situation; a flasher; a locator defined by said light assembly, said battery pack, flasher, switch means and clock being interconnected by wires which fit into grooves which are molded into the helmet; said switch means, said battery pack and said light assembly being fitted in recesses in the wall structure of said helmet; and an impact switch operatively connected to said flasher for providing an indication said helmet has been impacted.

5,329,638
PROTECTIVE WRISTBAND
Brian J. Hansen, 5717 21st Ave. South, Minneapolis, Minn. 55417, and Stewart L. Hansen, 8305 West Bend Rd., Golden Valley, Minn. 55427
Continuation-in-part of Ser. No. 625,074, Dec. 10, 1990, Pat. No. 5,150,475. This application Aug. 31, 1992, Ser. No. 938,434
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—16 **22 Claims**

18. A cloth, freely rotatable, tubular, protective wristband to readily absorb sweat and protect a wrist against blows and having the aesthetic appearance of a conventional unprotective wristband, comprising:

a) a tubular band to encircle said wrist and comprising inner and outer layers of cloth, said layers being integrally connected to form a hollow interior portion, said cloth being absorbent to absorb sweat and stretchable to stretch over a hand and onto said wrist, said inner layer confronting said wrist, said band having a diameter which is approximately equal to the diameter of said wrist when on said wrist, said band being freely rotatable on said wrist, a portion of said inner and outer layers being integrally connected to form a hollow pocket portion; and

b) a resilient multi-piece shield being at least semi-rigid and having an underlying cushion, said resilient multi-piece shield and cushion being inserted into said hollow pocket portion wherein each piece of said multi-piece shield has corners which are set in a strip of padding to protect said hollow pocket portion, said resilient multi-piece shield and cushion having a width which is approximately equal to the width of said wrist, said resilient multi-piece shield



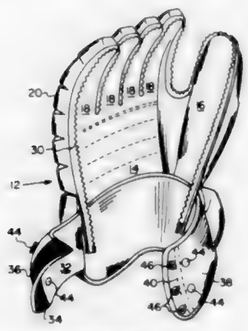
and cushion being disposed inside said hollow pocket portion between said layers of said band such that said resilient multi-piece shield and cushion are concealed to provide the conventional unprotected wristband appearance, said resilient multi-piece shield further including an outer periphery, said cushion including a greater periphery than said outer periphery of said resilient multi-piece shield to provide a tapered look to said outer layer of the cloth adjacent the periphery of said cushion.

5,329,639

ICE HOCKEY GLOVE WITH REMOVABLE PALM

Akio Aoki, Osaka, Japan, assignor to Trion Corporation, Osaka, Japan

Filed Dec. 21, 1992, Ser. No. 993,600
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161.1 **14 Claims**



13. A hockey glove comprising:
a back member including a body portion having opposed side edges thereof, a thumb portion and a plurality of finger portions;
padding means attached to an exterior side of said back member substantially covering said back member;
a removable front member selected from a plurality of said removable front members, each said front member including a palm portion, a thumb portion and a plurality of finger portions;
a zipper removably coupled said back member to one of said plurality of front members at peripheral edges of said front member and said back member, whereby said front and back members cooperate to form a hand receiving portion including a thumb stall and a plurality of finger stalls, wherein said zipper extends form a first end on one said side edge of said body portion adjacent the user's wrist to a second end on an opposed side edge of said body portion adjacent the user's wrist; and
a wrist closure means for securely fastening the glove to the user, said wrist closure means including a first flap attached to said back member along said side edge of said body member with hook and loop type fasteners provided on both the interior and exterior surfaces of said first flap, a second flap attached to said back member at an opposed side edge of said body member from said first flap, with hook and loop type fasteners provided on the interior of said second flap, and hook and loop type fasteners provided on an exterior surface of said back member's palm portion which is adjacent the user's wrist.

5,329,640

CUSHIONED SOCK

James T. Hourigan, 938 Deameade Walk, Marietta, Ga. 30064

Filed Apr. 14, 1993, Ser. No. 45,729
Int. Cl.[5] A41B *11/00*
U.S. Cl. 2—239 **7 Claims**



1. An adjustably cushioned sock having a cuff portion adapted to extend above the ankle, an ankle portion, an instep portion, and a sole portion comprising:
an interior layer and an exterior layer of fabric material forming said sock;
first and second separate air inflatable bladders disposed between said interior and exterior layers of fabric material to form separate circuits adapted to receive and retain air therein;
first and second finger-operated air pumps for each of said circuits, respectively, mounted on said exterior layer of said sock;
said first inflatable bladder being adapted for receiving and retaining air within the fabric layers of said sock over said instep and ankle portions of said sock;
said second inflatable bladder being adapted for receiving and retaining air within the fabric layers of said sock making up said sole portion of said sock; and
flexible manifold tubing disposed within said first and second layers of material of said sock to feed air from each said air pump into said first and said second bladders, respectively.

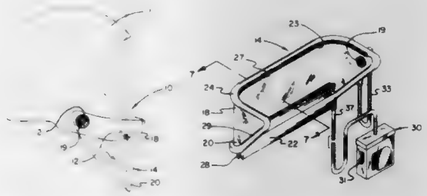
5,329,641

HELMET WITH NECK-SHIELD

Tom Kalhous, RRMC, FMO Victoria, British Columbia, Canada V0S 1B0

Filed May 24, 1993, Ser. No. 65,476
Int. Cl.[5] A42B *1/24*
U.S. Cl. 2—422 **9 Claims**

1. A helmet with neck-shielding apparatus for a helmet which has a chin and jaw protecting area, comprising:
neck-shielding assembly means for protecting a neck area of a user without covering eyes of the user, said neck-shielding assembly means including a curved upper portion capable of curving around the chin and jaw protecting area of the helmet, a curved lower portion extending downward from said curved upper portion and capable of curving around a portion of the neck area of the user, and first connector means attached to said curved upper portion, said first connector means for connecting said neck-shielding assembly means to the chin and jaw protecting area of the helmet, said curved upper portion for supporting said curved lower portion, and said curved lower portion for protecting a portion of the neck area of the user,



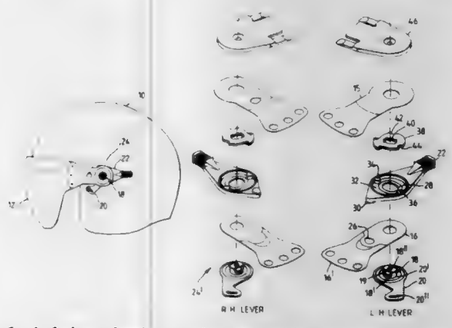
second connector means, attached to the chin and jaw protecting area of the helmet, for connecting to said first connector means for retaining said neck-shielding assembly means on the helmet, such that said neck-shielding assembly means protect a portion of the neck of the user without covering the eyes of the user, and
first inflatable air bladder assembly means, connected to said curved lower portion and positioned between said curved lower portion and the neck of the user, for restricting air flow between said curved lower portion of said neck-shielding assembly means and the neck of the user.

5,329,642

HELMETS

Ian Dampney, London, United Kingdom, assignor to Helmets Limited, Herts, United Kingdom

Filed Sep. 25, 1992, Ser. No. 950,894
Claims priority, application United Kingdom, Sep. 25, 1991, 9120363
Int. Cl.[5] A42B *3/00*
U.S. Cl. 2—424 **12 Claims**



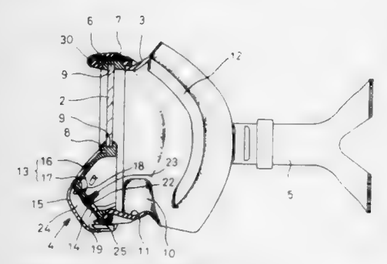
1. A helmet having a visor rotatably mounted on pivot means secured to the helmet and a visor displacement and latching mechanism for rotatably moving said visor between a lowered operative and a raised retracted position thereof, said mechanism comprising an operating lever which is rotatably mounted in relation to the visor pivot means and is also rotatable on a further pivot means secured to the visor and offset from said visor pivot means; first visor latching means for effecting latching engagement between the lever and the helmet to prevent rotation of the lever and the visor about the visor pivot means when the visor is in the operative position, said visor latching means being engageable and disengageable upon rotation of the lever, in opposite senses, about the further pivot means, when said visor is disposed in the operative position; a second visor latching means for effecting latching engagement between the lever and the helmet to prevent rotation of the lever and the visor about the visor pivot means when the visor is in the retracted position, said visor latching means being engageable and disengageable upon rotation of the lever, in opposite senses, about the further pivot means, when said visor is disposed in the retracted position; and visor driving means for effecting rotation of the visor from one to the other of the operative and retracted positions upon rotation of the lever about the visor pivot means, with said first and second visor latching means disengaged.

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DIVING FACE MASK

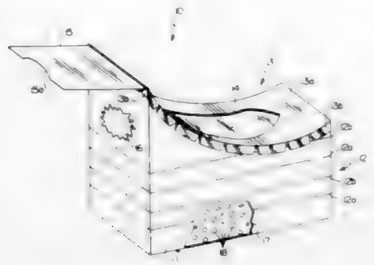
Hiromasa Sato, Zushi, Japan, assignor to Tabata Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 74,123
Claims priority, application Japan, Aug. 6, 1992, 4-210411
Int. Cl.[5] A61F *9/02*
U.S. Cl. 2—428 **15 Claims**



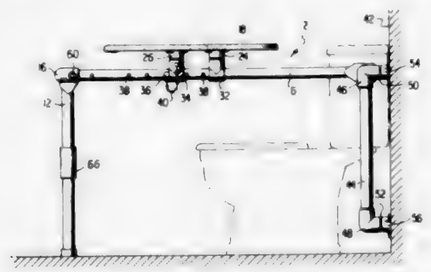
1. A diving face mask comprising:
a body frame having a lower edge, and a curved portion upwardly contoured from the lower edge so as to define a contoured interior space for receiving a lens; and
a purge valve assembly forwardly projecting from said body frame and comprising a nose frame, a valve and a nose cover,
said nose frame being integrally formed with said body frame to forwardly project therefrom, said nose frame having a generally V-shaped cross-section to include a forwardly inclined first wall and a rearwardly inclined second wall intersecting to each other at an angle of from 70 to 120 degrees, said first wall having a front edge forwardly and downwardly extending from said curved portion of the body frame, said second wall extending rearwardly and downwardly from the front edge of the first wall to said lower edge of the body frame,
said rearwardly inclined second wall having a valve seat and an opening passage passing through said valve seat, said valve seat being configured to receive said valve in water-tight relationship for closing and opening passage,
said nose cover being disposed forwardly of said nose frame and having a forwardly facing arcuate surface configured to generally conform to a configuration of said nose frame for covering a front face of said nose frame, said nose cover having a lower edge spaced from said body frame for defining a discharge opening therebetween.

5,329,644
DISPOSABLE URINE CONTAINER
Mary V. Scott, P.O. Box 446, Dayton, Wyo. 82836
Filed Mar. 15, 1993, Ser. No. 31,719
Int. Cl.[5] A47K *11/12*
U.S. Cl. 4—144.2 13 Claims



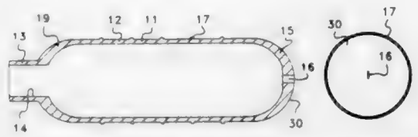
1. A portable urine container, comprising:
(a) a leak resistant collapsible enclosure means for holding a predetermined quantity of urine and including opposing side wall portions with upper end portions having a concave curvature adapted for cooperation with a woman's anatomy during urination;
(b) said enclosure means having an opening to provide access to said enclosure means;
(c) seal means for blocking said opening and having a slideable closure to define a closed position and an open position, said seal means including a laminate arrangement of component parts that are adaptable to conform to said predetermined curvature; and
(d) said seal means being affixed around said opening for providing access to said enclosure during urination when said slidable closure means defined said open position and to substantially seal said opening when said slidable closure means defines said closure position.

5,329,645
COMMODE COMFORT SUPPORT SYSTEM
Shirleen D. Fossum; Gary L. Monson, both of New Effington; Janel C. Rohde, and Kenneth A. Rohde, both of Rosholt, all of S. Dak., assignors to Rest Assured, Inc., Rosholt, S. Dak.
Continuation of Ser. No. 650,862, Feb. 5, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,676
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—254 2 Claims



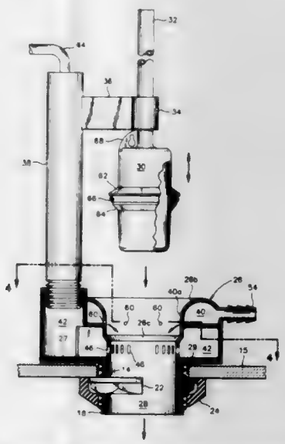
1. A device for providing support for a user seated on a commode, which commode is positioned adjacent an intersection of a wall and a floor, said device comprising;
a substantially U-shaped framework, wherein said framework comprises first and second elongated members having rearward ends adapted to be pivotably attached to the wall behind the commode, one on each side of the commode, and forward ends joined to an elongated forward crossbar which extends between the forward ends in front of the commode when a forward end of the framework is supported on the floor, said first and second elongated members and said crossbar being substantially coplanar;
floor-engaging means hinged to said framework for supporting the forward end of said framework on the floor, said floor-engaging means being pivotable between a position extending essentially parallel to said framework and a floor-engaging position extending essentially perpendicular to said framework;
means for limiting pivotable movement of said floor-engaging means into its floor-engaging position;
means for pivotably attaching said rearward ends of said first and second elongated members of said framework to the wall and permitting pivoting of said wall-attached framework through at least 90°;
a tray slidably mounted on said framework for movement between a forward position and a rearward user-supporting position on said framework; and
means for releasably securing said tray in a selected one of a plurality of positions on said framework;
said first and second elongated members being of such a length that when said tray is in its forwardmost position on said framework and the user is seated on the commode, said framework and tray are pivotable through said at least 90° between a storage position resting adjacent the wall and a use position in which said framework is supported on the floor by said hinged floor-engaging means with said tray and said framework forward crossbar passing over the user seated on the commode, and wherein, when said framework is supported on the floor, said tray can be selectively moved between its forward position and its rearward user-supporting position on said framework closely adjacent the user seated on the commode.

5,329,646
DRAIN FLUSHER DEVICE
Marc P. Bevacco, New Hope, Minn., and Steven J. Hiemsoth, Knoxville, Tenn., assignors to Cherne Industries Incorporated, Minneapolis, Minn.
Continuation of Ser. No. 768,812, Sep. 27, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 55,684
Int. Cl.[5] E03D *9/00*
U.S. Cl. 4—255.08 20 Claims



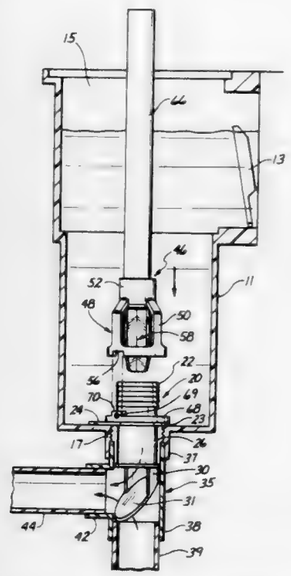
1. A drain flusher device for connection to a water pressure source of 50–90 p.s.i.g. for the expansive positioning in a conduit and for subsequently delivering a concentrated fluid spray from the front end of a flexible body, said drain flusher device further comprising:
a. a unitary flexible cylindrical body of a specified diameter range with opposing ends and having a thickened end wall at one said end and a thickened open end wall at the opposite end, said flexible cylindrical body further having a diameter ranging from approximately 0.75 to approximately 3.25 inches and being for use in pipelines ranging from one to six inches in diameter.
b. a flexible elongated slit through said thickened end wall, said flexible elongated slit having an effective, predetermined length and width which is independent upon said body diameter range and having a length of approximately 0.250 inches and a width of approximately 0.030 inches, and
c. connector means fixed to said flexible body thickened open end wall and being adapted for attachment to the water pressure source, whereby upon the introduction of water pressure into said flusher device, said flexible body initially seats in the conduit before said concentrated fluid spray is delivered through said flexible elongated slit.

5,329,647
FLUSH VALVE FOR LOW WATER VOLUME TOILET
Duane R. Condon, Ramona, Calif., assignor to Rectorseal Corporation, Houston, Tex.
Filed Nov. 24, 1993, Ser. No. 157,942
Int. Cl.[5] E03D *1/34*
U.S. Cl. 4—378 10 Claims



1. In a toilet having a bowl, a tank connected to the bowl for holding a quantity of water for draining into the bowl through a drain outlet in a bottom wall of the tank, a ballcock valve mounted in the tank and connected to a pressurized water line, a float connected to the ballcock valve for turning the ballcock valve ON and OFF in response to a water level in the tank, and a manually operated flush actuator mounted on the tank, the ballcock valve further having a filler tube for filling the tank with water from the water line and a refill hose for refilling the bowl with water from the water line, the improvement comprising:
a drain stopper seat mounted over the drain outlet and having a generally cylindrical central passage through which water from the tank can drain into the bowl, the stopper seat including a pressure chamber, a plurality of downwardly directed circumferentially spaced orifices in an interior wall of the stopper seat communicating with the pressure chamber and with the central passage, and a fitting communicating with the pressure chamber;
a filler hose coupled between the filler tube and the fitting of the drain stopper seat;
a stopper sized for sealing the central passage through the drain stopper seat when in a lowered position so that water ejected from the orifices will fill the tank and for opening the central passage when in a raised position so that water ejected from the orifices will join water draining from the tank through the central passage;
means for mounting the stopper for vertical reciprocation between the lowered position and the raised position;
means for connecting the flush actuator to the stopper so that manual operation of the actuator will cause the stopper to move upwardly from the lowered position to a raised position; and
an overflow tube having a lower end coupled to the drain outlet of the tank and an upper end for receiving a remote end of the refill hose of the ballcock valve.

5,329,648
DIVERTER VALVE MANIPULATOR TOOL
Wayne C. Davey, 4493 Rainbow Vista Dr., Fallbrook, Calif. 92028
Filed Jul. 9, 1993, Ser. No. 87,909
Int. Cl.[5] E04H *4/16, 4/12*
U.S. Cl. 4—490 7 Claims



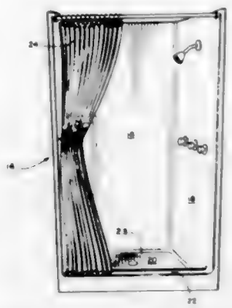
1. A manipulator tool for use in a swimming pool installation wherein a diverter valve having a body including an upper hollow cylindrical portion with a circumferential shoulder on a bottom end portion thereof is mounted in a suction outlet provided in a bottom of a skimmer housing with the shoulder seated on the upper rim of the suction outlet,
said manipulator tool comprising:
a combination therewith of an adapter ring adapted to encircle the upper cylindrical portion of the diverter valve and to be secured above the shoulder thereof, said adapter ring having a projection on an upper surface thereof;
a driver member including an upper hollow hub portion and a cylindrical skirt depending downwardly thereof, said skirt having side openings therein and a slot on the bottom thereof;
an inner guide member including an upper end portion extending upwardly into the hollow hub portion of the driver member and a lower elongated axial portion depending downwardly therefrom within the cylindrical skirt; and
an elongated tubular handle having one end portion extending down into and secured within the upper hollow hub portion of the driver member and having the upper end portion of the inner guide member secured within the one end thereof;
whereby a user by holding the upper end of the elongated handle can position the cylindrical skirt of the driver member over the upper cylindrical portion of the diverter valve and engage the slot on the bottom thereof on the projection provided on the upper surface of the adapter ring to thereby remotely rotate said diverter valve to a desired setting within the suction outlet of the skimmer by twisting the outer end of the elongated tubular handle.

5,329,649

SAFETY BATHING SHOWER/TUB APPARATUS

Robert L. Turek, 1919 Grand Ave., Ste. 1-K, San Diego, Calif. 92109

Continuation of Ser. No. 617,145, Nov. 23, 1990, abandoned.
This application May 19, 1993, Ser. No. 64,793
Int. Cl.[5] A47K 3/02
U.S. Cl. 4—583 12 Claims



1. A safety bathing device suitable for use for a bathtub or shower stall for preventing slip and fall and injuries related thereto to the users thereof comprising
said safety bathing device being formed from a layer of resilient shock absorbing foam material consisting of material selected from the following group of materials, polyurethane, polyimide and polyamide;
said safety bathing device having an outer surface, said outer surface being resilient and resistive to wear and tear water proof non-slip surface whereby a user is less apt to slip and fall and when a slip or fall occurs that user is less apt to be injured; and
said safety bathing device forms a liner for covering substantially the entire outer surface of said bathtub or shower stall.

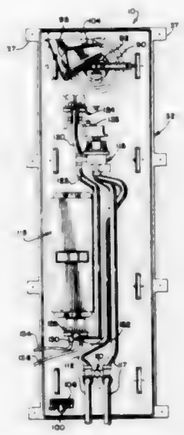
5,329,650

SHOWER STALL CONTROL COLUMN

Gianfranco Zaccai, Boston, and Arthur S. Rousmaniere, Andover, both of Mass., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Mar. 6, 1992, Ser. No. 848,711
Int. Cl.[5] A47K 3/22
U.S. Cl. 4—605 38 Claims

26. A system for providing water, air, light and sound to a shower stall defined by a back wall and side walls, the apparatus comprising:
a vertical housing mounted to one of said side walls adjacent a front edge portion thereof, said housing having a panel positioned at an angle relative to the side wall and facing the back wall, said panel having a vent in a top portion thereof comprising a plurality of spaced apart apertures;
an upper light positioned inside the housing adjacent an upper portion thereof;
a lower light positioned inside the housing adjacent a lower portion thereof;
a blower adapted to withdraw air through the vent;
a telephone positioned inside the housing, said telephone including a speaker, receiver, and means for dialing a desired telephone number, the means for dialing being accessible from outside the housing;
a sound system positioned inside the housing, said sound system including a speaker, receiver, and means for selecting a desired station, the means for selecting a station being accessible from outside the housing;
a shower head assembly extending outward in a substantially normal direction from a top portion of said housing panel toward the back wall and away from the side wall of the shower stall, the shower head assembly including a shower head and an arm pivotally attached to the housing to allow vertical adjustment of the shower head;
a plurality of supply lines positioned inside the housing for supplying water from a water supply to the shower head and a bathtub spout;
a valve system connected to said supply lines and positioned inside the housing for controlling the flow and temperature of water to one of said bathtub spout and shower head;
a signaling device accessible from outside the housing and adapted to send first desired signals to a control device for actuating the lights, the blower, and the valve system;
a control device positioned inside the housing for receiving said first signals and sending corresponding second signals to actuate the lights, the blower, and the valve system.

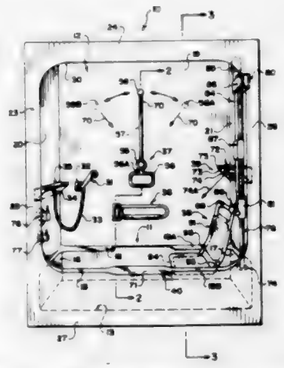


5,329,651

BATHING APPARATUS FOR THE INFIRM

Steve G. Mardero, and Brian D. Prystupa, both of Manitoba, Canada, assignors to Fiat Products Ltd., Winnipeg, Canada

Filed Apr. 23, 1993, Ser. No. 51,244
Int. Cl.[5] A47K 3/022
U.S. Cl. 4—605 25 Claims



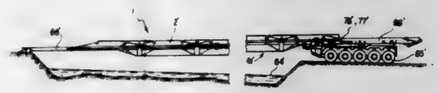
1. A bathing apparatus comprising a bathtub having a bottom wall on which a bather can stand, a front wall, end walls, and a rear wall, each of the walls being generally upstanding from the bottom wall, a shower enclosure wall upstanding from the rear wall and a bather support bar member mounted on the shower enclosure wall and extending therefrom horizontally and substantially at right angles to the shower enclosure wall at a height approximating to the stomach area of the bather, wherein the support bar member comprises a top bar and a bottom bar which lie parallel and vertically spaced, the bottom bar being arranged in a first vertical plane and the top bar being arranged in a second vertical plane spaced away from the first vertical plane such that with the bottom bar resting against the body of the bather, the top bar is held away from the body for engagement by the hands of the bather.

5,329,652

DEPLOYABLE BRIDGE AND VEHICLE FOR LAYING THE BRIDGE

Hans-Norbert Wiedeck, Mülheim, and Wolfgang Diefendahl, Straelen, both of Fed. Rep. of Germany, assignors to Krupp Industrietechnik Gesellschaft mit beschränkter Haftung, Duisburg, Fed. Rep. of Germany

Filed Mar. 31, 1993, Ser. No. 41,211
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 92105517
Int. Cl.[5] E01D 15/12
U.S. Cl. 14—5 12 Claims



1. In a deployable bridge, including
a plurality of identical bridge sections each having two identical track elements; each track element having a roadway carrier, a bottom boom and adjustment elements connecting the bottom boom with the roadway carrier; said bottom boom being height-adjustable relative to said roadway carrier and forming a bottom tensioning assembly;
transverse supports connecting the track elements of each said bridge section with one another; and
coupling means for coupling to one another the roadway carriers and the bottom booms of adjoining bridge sections;
the improvement wherein said bottom boom of each track element includes a mid section and two end sections flanking the mid section;
each track element further comprises
(a) pillars having opposite first and second ends; said first end of said pillars being articulated to said mid section of said bottom boom;
(b) a drive shaft assembly suspended from the track element;
(c) spindle sleeves inserted on said drive shaft assembly;
(d) a spindle head threadedly mounted on each said spindle sleeve; said pillars being articulated by the second end thereof to a respective said spindle head;
(e) coupling elements attached to opposite ends of said drive shaft assembly; and
(f) separate connecting means for torque-transmittingly connecting said spindle sleeves with said drive shaft assembly.

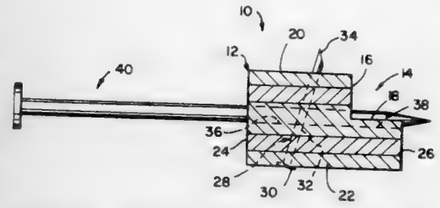
5,329,653

CARPET RESTRAINING STRIP

George A. Hultgren, Oquawka, Ill., assignor to Harry Hultgren, Rockford, Ill.

Filed Jan. 7, 1993, Ser. No. 1,274
Int. Cl.[5] A47G 27/04
U.S. Cl. 16—16 9 Claims

9. A method of installing carpet adjacent a wall extending upwardly from a floor, comprising the steps of:
providing a unitary elongated carpet tack strip defining a top surface, a bottom surface and a pair of side surfaces, the strip having a notch formed therein extending downwardly from the top surface and inwardly from one of the side surfaces, the carpet tack strip further including a plurality of tacks each having a point extending above the top surface of the carpet tack strip;
placing the carpet tack strip on the floor adjacent the wall such that the side surface of the carpet tack strip from which the notch extends inwardly is engaged with the wall throughout substantially the entire length of the strip;



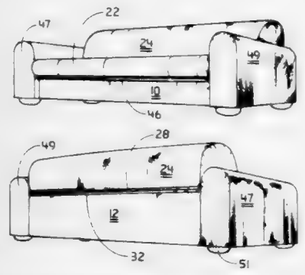
installing the carpet tack strip by laterally driving a fastener through the carpet tack strip and into the wall for mounting the carpet tack strip to the wall without connection to the floor;
placing carpet over the carpet tack strip and engaging the carpet with the tack points; and
tucking the edge of the carpet into the notch adjacent the wall.

5,329,654

FURNITURE SYSTEM

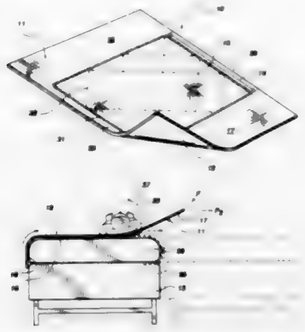
Ronald K. Sherman, 3100 N. Andrews Ave., Pompano Beach, Fla. 33064

Continuation-in-part of Ser. No. 702,910, May 20, 1991, abandoned. This application Sep. 24, 1992, Ser. No. 933,374
Int. Cl.[5] A47C 17/12, 17/22
U.S. Cl. 5—14 10 Claims



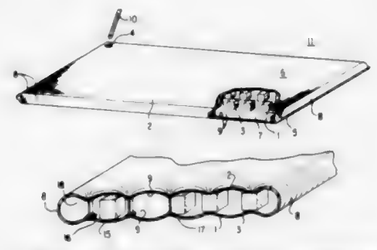
1. A furniture structure, comprising:
(a) a integral perimetric baseframe including a front panel, a rear panel and opposing side panels;
(b) a partially hollow back portion having front and rear edges and an integral internal rigid frame, said back portion selectably rotatably mounted between said side panels and to said rear panel by rear longitudinal hinge means secured between said rear edge of said back portion and said rear panel; and
(c) a seat portion having front and rear edges, an integral internal frame, and a rigid base, said seat portion selectably rotatably mounted between said side panels and to said front panel by front longitudinal hinge means secured between a front edge of said rigid base of said seat portion and said front panel of said baseframe.

5,329,655
SLIDABLE HOSPITAL SHEET FOR TURNING PATIENTS
Dean Garner, RFD 3, Box 335, Rupert, Id. 83350
Filed May 18, 1993, Ser. No. 63,157
Int. Cl.[5] A61G 7/10
U.S. Cl. 5—81.1 2 Claims



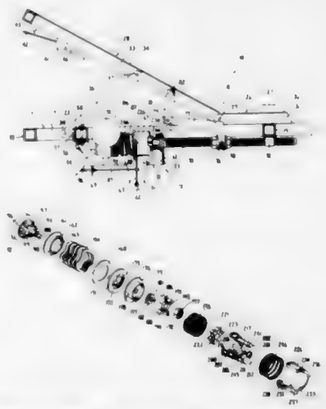
1. A method for turning a patient on a bed with minimal pain and discomfort, said method comprising:
a) selecting a bed sheet having a bottom surface characterized by low frictional drag on one side and higher frictional drag on a top surface on an opposing side;
b) placing the sheet on a bed surface with the bottom surface in contact with the bed surface, said top surface being exposed;
c) positioning a patient on the bed surface with most of the patient's torso on the top surface of the bed sheet; and
d) securing at least one end of the sheet underneath the mattress, said at least one end including a surface characterized by higher frictional drag which is in contact with a similar frictional surface of the mattress or a mattress cover to thereby prevent inadvertent slipping of the sheet from its secured position.

5,329,656
INSULATED PUNCTURE RESISTANT INFLATABLE MATTRESS
Dennis V. Leggett, 7109 Sontag Way, Springfield, Va. 22153, assignor to Dennis V. Leggett, Springfield, Va.
Filed Dec. 3, 1992, Ser. No. 985,194
Int. Cl.[5] A47C 27/08
U.S. Cl. 5—450 9 Claims



3. An inflatable enclosure formed of substantially air-impermeable closed-cell foam has been selected to provide semi-rigid characteristics between adjacent points of support comprising top and bottom surfaces connected at their edges to form the enclosure which contains a plurality of compressible resilient units attached to opposite points of the inside of said top surface and the inside of said bottom surface of said enclosure
(a) to cause self-inflation of the enclosure when air or another fluid is admitted to the collapsed enclosure; and
(b) to substantially reduce billowing when a weight is placed on the inflated enclosure;
said enclosure having at least one closable means for admitting a fluid to and releasing fluid from the enclosure.

5,329,657
QUICK RELEASE COUPLING FOR HEAD SECTION OF A HOSPITAL BED
Gary L. Bartley, Kalamazoo Township, Kalamamoo County; Christopher J. Hopper, Oshtemo Township, Kalamazoo County; Louis A. Haddock, Jr., Emmett Township, Calhoun County, and John S. Messner, Battle Creek, all of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed Oct. 21, 1992, Ser. No. 964,582
Int. Cl.[5] A61G 7/015, 7/018
U.S. Cl. 5—617 22 Claims

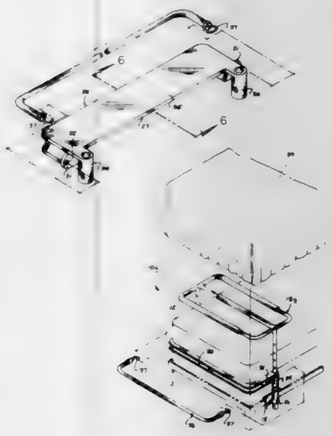


1. A patient support apparatus, comprising: a support part which has thereon a patient support surface and is supported for movement between first and second positions, and selectively actuable drive means coupled to said patient support part for effecting movement thereof, said drive means including a threaded shaft supported for rotation about a lengthwise axis thereof, a nut engaged with said shaft and held against rotation, means coupling said nut to said support part for effecting movement of said support part in response to axial movement of said nut along said shaft, a selectively actuable motor which can effect rotation of an output shaft, and releasable coupling means for respectively effecting and interrupting a driving coupling of said output shaft to said threaded shaft when respectively engaged and disengaged.

5,329,658
BLANKET ELEVATOR APPARATUS
Marie Fontenot, and Lyence Cuvillier, both of Rt. 1, Box 265, Buchanan Dam, Tex. 78609
Filed Oct. 22, 1993, Ser. No. 139,762
Int. Cl.[5] A47C 21/02
U.S. Cl. 5—505.1 4 Claims

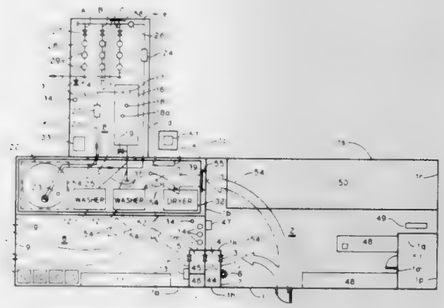
1. A blanket elevator apparatus, comprising,
spaced clip members, each clip member arranged for receiving a bed frame side rail therewithin,
and
each clip member including an entrance opening to receive said side rail and a front flange,
and
a base tube integrally mounted to the front flange projecting above the clip member,

and
a U-shaped frame, the U-shaped frame having spaced parallel frame legs arranged in a coextensive relationship relative to one another, with each of the frame legs arranged for sliding reception within a respective said base tube,
and
each frame leg having a row of adjustment apertures directed therethrough, and the base tube having aligned base tube bores,



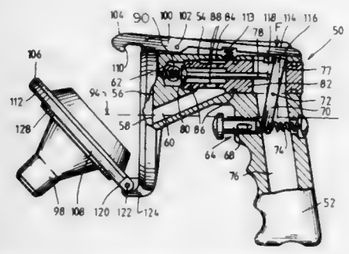
and
a lock pin arranged for reception through one of said adjustment apertures and through the base tube bores,
said apparatus further including a blanket lock plate comprised of a U-shaped flange having a U-shaped groove facing exteriorly of said lock plate and a resilient tether line adapted to frictionally retain a portion of a blanket within said groove.

5,329,659
LAUNDERING FACILITY AND METHOD
Gary L. Reinert, Sr., 4319 Middle Rd., Allison Park, Pa. 15101
Filed May 10, 1993, Ser. No. 58,244
Int. Cl.[5] D06F 35/00
U.S. Cl. 8—158 20 Claims



1. A laundering facility, comprising:
(a) a washer area;
(b) a washer and dryer for laundering contaminated clothing in said washer area;
(c) a cleaning fluid filtering area having means for automatically monitoring and controlling cleaning fluid quality discharged from said washer area to the outside environment;
(d) a clean area for working on decontaminated clothes received from said washer area; and
(e) means for automatically monitoring and controlling air quality in said washer area, in said cleaning fluid filtering area, and in said clean area, and means for monitoring and controlling air quality of the air discharged to the outside environment.
17. A laundering method, comprising:
(a) providing a containment area for receiving contaminated clothing;
(b) providing a washer area in said containment area for washing, drying, and decontaminating said clothing in one room;
(c) providing a clean area for working on decontaminated clean clothes received from said washer area;
(d) automatically monitoring and controlling air quality in said containment area, in said washer area, in said clean area, and in the air discharged to the outside environment; and
(e) automatically monitoring and controlling cleaning fluid quality discharged from said washer area to the outside environment.

5,329,660
PNEUMATIC GUN AND PROJECTILES THEREFOR
Jeffrey B. Fowler, Bedford, Australia, assignor to Compri Technic Pty. Ltd., Bayswater, Australia
PCT No. PCT/AU91/00352, § 371 Date Mar. 3, 1993, § 102(e) Date Mar. 3, 1993, PCT Pub. No. WO92/02310, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 9, 1991, Ser. No. 983,849
Claims priority, application Australia, Aug. 10, 1990, PK1710; Nov. 15, 1990, PK3364
Int. Cl.[5] B08B 9/04
U.S. Cl. 15—3.5 8 Claims



1. A hand held pneumatic gun comprising:
a main body having an airway arranged to be coupled to a source of compressed air and an air chamber;
a trigger valve means in said main body which is selectively actuated for communicating said airway fluidly with said air chamber;
a detachable breech;
an attaching means for attaching said breech to said air chamber in a sealed position; and
an interlocking means for blocking actuation of said trigger valve means when said breech is incorrectly positioned immediately adjacent the sealed position and for allowing actuation of said trigger valve means when said breech is in the sealed position.

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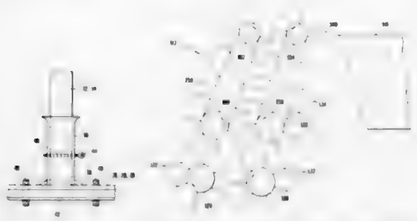
DEBRIS/LITTER COLLECTION APPARATUS HAVING A CONVEYOR WHICH INTERMESHES WITH FINGERS OF COLLECTOR ROLLER

Owen Smith, 8330 N. 19th Ave., #3126, Phoenix, Ariz. 85021

Continuation of Ser. No. 778,743, Oct. 18, 1991, Pat. No. 5,247,717, which is a continuation of Ser. No. 425,334, Oct. 23, 1989, abandoned. This application Mar. 6, 1992, Ser. No. 845,837

Int. Cl.[5] **E01H** *1/00*

U.S. Cl. 15—80 **10 Claims**



1. An apparatus for collecting litter from the ground, comprising:

a frame adapted for movement along the ground in a direction of movement;

a hopper mounted at one end of said frame;

a collector assembly supported on said frame, said collector assembly including:

a pair of rollers having a plurality of flexible fingers disposed radially on the periphery thereof, said rollers being substantially parallel to each other and arranged so that the fingers on one of said pair of rollers intermesh with the fingers of the other of said pair of rollers, and

means for rotating said pair of rollers in opposite directions about respective axes that are transverse to said direction of movement and disposed in a plane that is substantially parallel to the ground, to cause said intermeshing fingers to lift litter between them;

means for conveying litter lifted by said pair of rollers to the hopper, said conveying means including a first belt having a plurality of fingers thereon that intermesh with the fingers of one of said pair of rollers so as to remove the litter from the one roller, and a second belt having a plurality of fingers that intermesh with the fingers of said other roller, said second belt being substantially parallel with said first belt; and

means for rotating said conveyor means about an axis that is parallel to the rotational axes of said rollers with said first belt rotating in the same direction as said one roller.

5,329,662

MANIPULATOR FOR CONDUIT CLEANER

Roy W. Saiecker, Mendota, Ill., assignor to Spartan Tool Div. of Pettibone Corp., Mendota, Ill.

Filed Apr. 13, 1993, Ser. No. 47,582

Int. Cl.[5] **B08B** *9/04, 13/00*

U.S. Cl. 15—104.31 **16 Claims**

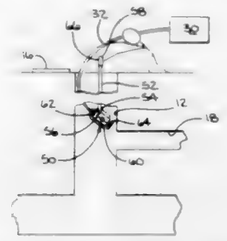
1. In combination:

a cleaner to be directed into a conduit to remove obstructions in a passageway defined by a conduit,

said conduit cleaner including a frame;

a manipulator having an elongate body with a lengthwise axis; and

means cooperating between a first part of the manipulator and the conduit cleaner frame to a) allow the first part of the manipulator to be selectively connected to and disconnected from the conduit cleaner frame by movement of the first manipulator part relative to the conduit cleaner frame in a first line substantially perpendicular to the lengthwise axis of the elongate manipulator body with the first manipulator part and conduit cleaner frame in a first relative position along the lengthwise axis of the manipulator body and b) prevent the first manipulator part from being disconnected from the conduit cleaner frame by movement of the first manipulator part in the first line with the first manipulator part and conduit cleaner frame in a second relative position along the lengthwise axis of the manipulator body,



said manipulator including a control portion that can be engaged by an operator and repositioned to controllably move the conduit cleaner to facilitate its direction into a conduit entryway that is not within direct reach of an operator,

whereby a user can use the manipulator to direct the conduit cleaner into a conduit entryway remote from a user and thereafter release the manipulator from the conduit cleaner.

5,329,663

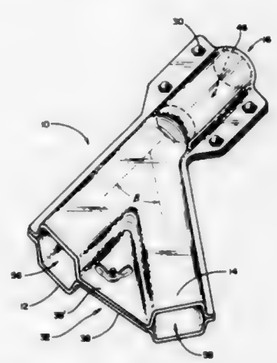
MULTIPLE ANGLE PAINT BRUSH HOLDER

Laura Council, Rte. 5, Box 21H, Wills Point, Tex. 75169

Filed May 19, 1993, Ser. No. 63,606

Int. Cl.[5] **A46B** *5/00*

U.S. Cl. 15—143.1 **11 Claims**



1. A painting tool, comprising:

means for receiving an extension means to reach a high, hard to reach painting location;

first means connected to the means for receiving for clamping onto a handle of a means for applying paint, the first means positioning the clamped means for applying paint at a first orientation parallel to and aligned with said means for receiving an extension means for painting the high, hard to reach painting location; and

second means connected to the means for receiving for clamping onto a handle of a means for applying paint, the second means positioning the clamped means for applying paint at a second orientation for painting the high, hard to reach painting location, the second orientation angled away from the first orientation.

5,329,664

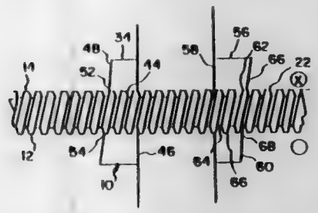
CLEANING DEVICE FOR A THREADED SHAFT

William A. Boston; Frank A. Balow, both of Western Springs, and Eugene Skipor, Hickory Hills, all of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 896,031, Jun. 8, 1992, abandoned, which is a division of Ser. No. 747,304, Aug. 19, 1991, Pat. No. 5,191,672. This application Jul. 19, 1993, Ser. No. 94,641

Int. Cl.[5] **B21C** *43/00*

U.S. Cl. 15—256.5 **1 Claim**



1. A cleaning device for a threaded shaft being driven in first and second opposite rotational directions of the shaft comprising, a pair of spaced first and second cleaning members each having a threaded recess received on the shaft and extending only partially around the shaft, with the recess of each cleaning member extending laterally in the cleaning members in a direction along the shaft after placement of the cleaning members on the shaft, such that the cleaning members may be removed from the shaft through the respective recesses, said cleaning members being snap-fitted onto the shaft through the respective recesses of the cleaning members, with the threads of the cleaning member being meshed with the threads of the shaft, said first cleaning member having a first edge of the threads and a second edge of the threads, with said second edge having a greater length of the threads than the first edge adjacent one side of the first cleaning member, and with the threads of the second edge of the first cleaning member being directed away from one rotational direction of the shaft, said second cleaning member having a first edge of the threads and a second edge of the threads, with said first edge of the second cleaning member having a greater length of the threads than the second edge adjacent one side of the second cleaning member, and with the threads of the first edge of the second cleaning member being directed away from the other rotational direction of the shaft, such that the second edge of the first cleaning member and the first edge of the second cleaning member scrape the threads of the shaft in opposite rotational directions of the shaft.

5,329,665

HIGH VELOCITY AIR AND STATIONARY DISTURBER CLEANER

Bruce E. Thayer, Webster; Samuel P. Mordenga, Rochester, both of N.Y., and Billy D. Walcott, Ranchos de Taos, N. Mex., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 805,762, Dec. 12, 1991. This application Aug. 4, 1993, Ser. No. 101,874

Int. Cl.[5] **A47L** *5/34*

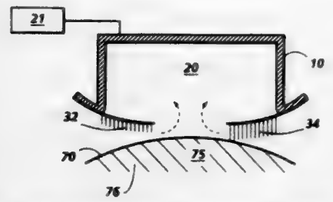
U.S. Cl. 134—308 **3 Claims**

1. An apparatus for cleaning particles from a surface, comprising:

a housing;

at least one film seal having one end attached to said housing with the other free end contacting the surface; and

vacuum means, connected to said housing, to generate air flow under said film seal in a direction substantially tangent to the surface at a velocity sufficient to disturb a layer of particles at the boundary between the particles and the surface to remove particles therefrom, said film seal includes a disturber attached to said film seal and frictionally contacting the surface.



5,329,666

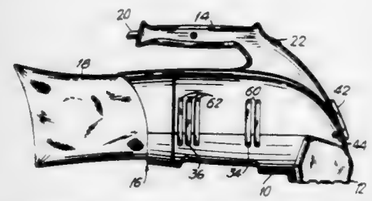
VACUUM CLEANER

Leonard E. Bowerman, Abingdon, Va.; Eugene K. Chumley, Mt. Carmel, Tenn.; Raymond D. Owens, Bristol, Va.; William E. Bartasevich, Kent, Ohio; Robert L. Waldo, Hiram, Ohio, and John R. Caterinacci, Maple Heights, Ohio, assignors to TRC Aquisition Corporation, Atlanta, Ga.

Division of Ser. No. 871,905, Apr. 21, 1992, Pat. No. 5,218,736, which is a division of Ser. No. 722,370, Jun. 25, 1991, Pat. No. 5,129,128, which is a continuation of Ser. No. 464,252, Jan. 12, 1990, abandoned. This application Jun. 15, 1993, Ser. No. 77,618

Int. Cl.[5] **A47L** *9/26*

U.S. Cl. 15—323 **2 Claims**



1. In a hand-held vacuum cleaner having a housing containing a motor, a power line cord for supplying electricity to said motor, the improvement for securing said line cord when said cleaner is not in use comprising a wall portion of said housing with a cylindrical surface extending longitudinally of said housing, a flat surface across said cylindrical surface defining opposing walls spaced longitudinally from each other to define a well for said line cord, and a second surface having spaced projections defining a second well positioned opposite to said first flat surface on said housing, said line cord being windable around said well and said second well.

5,329,667

PINLESS HINGE

Edward J. Erskine, Northville, N.Y., assignor to N.A. Taylor Co., Inc., Gloversville, N.Y.

Filed May 3, 1991, Ser. No. 710,770

Int. Cl.[5] **E05D** *1/04*

U.S. Cl. 16—269 **16 Claims**

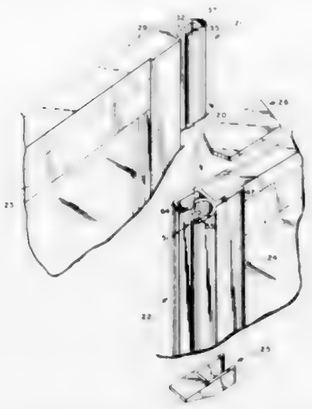
1. A hinge comprising first and second elongated cooperating components:

said first component comprising a first body, a generally straight first flange extending outwardly therefrom and terminating in a first distal end; a hooked termination of said first distal end, including an interior arcuate surface having a first radius extending between about 90 degrees and about 270 degrees, and an exterior projecting surface, said interior and exterior surfaces terminating in a common distal termination edge; and

said second component comprising a second body, having: a

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second flange having a length, and extending outwardly therefrom and terminating in a second distal end, including an exterior arcuate surface having a second radius extending between about 90 degrees and about 270 degrees, and equal to or slightly less than said first radius and an interior opening of approximately the same size and shape as said common distal termination of said first distal end; and a third flange having a length and extending



outwardly from said second body and having a side wall spaced a distance from said second flange throughout the majority of the length thereof approximately equal to the maximum dimension of said first flange exterior projecting surface from said first flange interior arcuate surface; and one of said components moving through an arc of about minus 10 degrees to about 180 degrees with respect to the other component from a first position to a second position, without detachment from said other component.

5,329,668

METHOD AND APPARATUS FOR DETACHING AND MIXING FIBER TUFTS

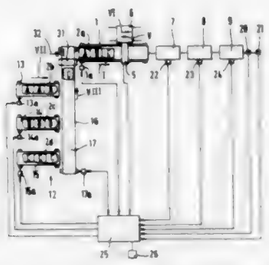
Stefan Schlichter, Viersen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Jun. 11, 1992, Ser. No. 897,056

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1991, 4119351

Int. Cl.[5] D01B *1/00*

U.S. Cl. 19—97.5 **10 Claims**



10. A method of removing fiber tufts from fiber bales, comprising the following steps:

(a) establishing identifiable groups of fiber bales, wherein the fiber bales within each group have identical, determined fiber properties and wherein the properties are different in each group;

(b) composing a row of fiber bales of predetermined, selected fiber properties;

(c) detaching fiber tufts in sequence from the fiber bales of said row;

(d) variably selecting further fiber bales from selected said groups, including the step of determining a limit interval for the fiber properties of each group; and

(e) consecutively adding the further fiber bales to said row, including the step of adding a fiber bale of different property when said limit is exceeded.

5,329,669

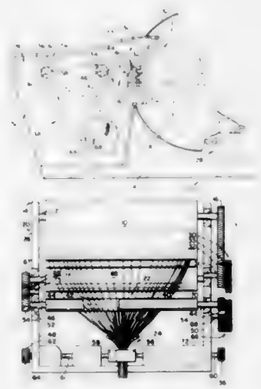
DRIVE SYSTEM FOR CARDING MACHINE DOFFER, CRUSH AND CALENDAR ROLLS

Doug L. Jamerson, 300 Claxton Dr., Greenville, S.C. 29611

Continuation-in-part of Ser. No. 739,220, Aug. 1, 1991, abandoned. This application Mar. 3, 1992, Ser. No. 845,145.

Int. Cl.[5] D01G *15/36*

U.S. Cl. 19—98 **6 Claims**



1. A fiber processing system for the front end of a textile card, comprising a doffer cylinder, a crush-roll pair and a calendar-roll, pair rotatively mounted in progression respectively from back to front on the front end of frame means of the textile card, a gearing means on said doffer cylinder, a timing unit having a timing drive pulley and timing gear combination rotatably mounted on said frame means for tandem rotation, said timing gear of said timing unit engaging said gearing means on said doffer cylinder, drive means including speed reduction means for directly driving said doffer cylinder, a timing slave pulley on one end of one roll of each of said crush-roll pair and calendar-roll pair, at least one timing belt connecting said timing drive pulley to each of said timing slave pulleys of said crush-roll pair and calendar-roll pair for rotating each said pair at speeds proportional to the speed of rotation of said doffer cylinder, and meshing gear means on the opposite end of each said one roll and on the adjacent end of each other roll of each said pair for causing the two rolls of each said pair to rotate in tandem.

5,329,670

STRUCTURE OF CLIP

Yu-Hwei Huang, No. 7, Alley 2, Lane 85, Min Tsu Rd., Lu Chou Hsiang, Taipei Hsien, Taiwan

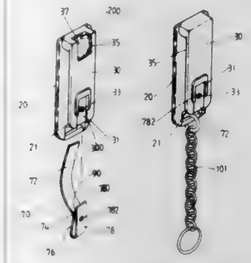
Filed Dec. 30, 1993, Ser. No. 176,581

Int. Cl.[5] A45F *5/00*

U.S. Cl. 24—3 K **4 Claims**

1. A clip comprising a casing having a face panel and a back panel joined at one end, said back panel having a hanging hole

on a bottom end thereof, said face panel comprising an inside track and an outside track on two opposite sides thereof and a stub rod raised from said outside track; and a clamping spring plate fastened to said casing for holding things, said clamping spring plate comprising an elongated, arched clamping portion disposed between said front and back panels of said casing and



stopped against an inside wall of said back panel and terminating in a free end, a vertical mounting portion mounted on said outside track, said mounting portion having a pin hole, which receives said stub rod, a curved connecting portion connected between said clamping portion and said mounting portion and mounted on said inside track.

5,329,671

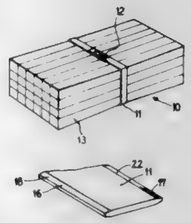
BEVELED EDGE STRAPPING

William A. Walczak, Schererville, Ind., and Ronald F. DeSimone, Orland Park, Ill., assignors to Acme Packaging Corporation, Riverdale, Ill.

Filed Mar. 18, 1993, Ser. No. 33,367

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—20 R **6 Claims**



1. Metal strapping for packaging items such as steel pipe, bars and other items comprising, metal strapping with first and second planar surfaces which can be placed about the items and joined and wherein at least the side edges of said metal strapping adjacent the first planar surface are tapered so that the tapered surfaces make an angle in the range of 20 to 40 degrees with said first planar surface and the edges tend to form a point which is thinner than said metal strapping whereby said tapered side edges will not cut-in and injure the packaged material.

5,329,672

METAL WIRE PAPER CLIP STRUCTURE

Linda A. Froehlich, and Richard D. Froehlich, both of 5151 Keiners La., Pittsburgh, Pa. 15205

Continuation of Ser. No. 45,452, May 4, 1987, abandoned, which is a continuation of Ser. No. 764,566, Aug. 12, 1985, abandoned. This application Oct. 29, 1990, Ser. No. 604,970

Int. Cl.[5] B42F *1/04*

U.S. Cl. 24—67.9 **5 Claims**

1. A metal wire paper clip comprising

a unitary length of spring-quality metal wire bent into an elongated configuration presenting

an elongated U-shaped inner loop,

an elongated U-shaped outer loop, and

an arcuately-curved interconnecting portion therebetween;

each such U-shaped loop having

an open end,

a closed end, and

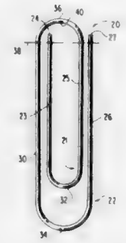
a pair of longitudinally-extending legs;

such closed end of the elongated U-shaped outer loop defining one longitudinal end of such bent wire elongated configuration,

such inner loop being nested within such outer loop with such open end of each such U-shaped loop facing in the same longitudinal direction;

such pair of longitudinally-extending legs of each such U-shaped loop including

a free leg having a distal end located at the open end of its respective U-shaped loop, and



a connecting leg,

such arcuately-curved interconnecting portion extending between such connecting legs at the open end of each such U-shaped loop and defining at its longitudinally outward midpoint the remaining longitudinal end of such bent wire configuration;

each such inner and outer loop free leg extending at least to the juncture of such longitudinally-extending connecting legs with such curved interconnecting portion while not extending beyond a location which is contiguous to a laterally transverse plane normal to the longitudinal axis of the clip which is longitudinally inward of a tangent to the longitudinally inward midpoint of the arcuately-curved interconnecting portion, and

each such U-shaped loop and such curved interconnecting portion being substantially coplanar so that the paper clip lies substantially flat when not in use.

5,329,673

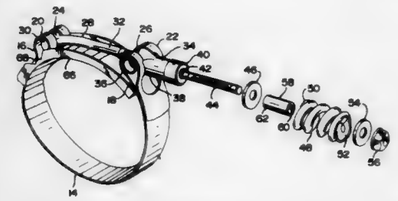
SELF TIGHTENING HOSE CLAMP WITH CENTERED SPRING

John S. Mason, Lake in the Hills, Ill., assignor to R. G. Ray Corporation, Buffalo Grove, Ill.

Filed Aug. 16, 1993, Ser. No. 107,984

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—279 **14 Claims**



1. A hose clamp for clamping a hose about a nipple, the clamp comprising:

band means for encircling at least a portion of the circumfer-

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ence of the hose, said band means having a first end and an opposing second end;

bolt means extending over the remaining portion of the circumference of the hose, said bolt means having a T end movably attached to said first end of said band means and an opposite rod end portion including a first end of said bolt means;

spring means circumscribing said rod end portion, said spring means having one end operatively contacting said second end of said band means and an other end operatively contacting said bolt means, for biasing said second end of said band means in a direction generally away from said first end of said bolt means; and

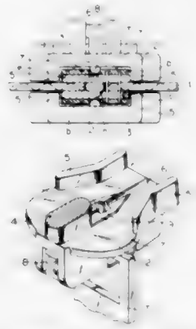
sleeve means disposed between said bolt means and said spring means for coaxially centering said spring means about said rod end portion of said bolt means during compression of said spring.

5,329,674

SLIDER FOR SLIDE FASTENER WITH AUTOMATIC STOP MEANS

Tsutomu Tomita, and Hideo Takabatake, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 53,192
Claims priority, application Japan, Apr. 30, 1992, 4-111796
Int. Cl.[5] A44B *19/00*
U.S. Cl. 24—418 **6 Claims**



1. A slider for a linear slide fastener having covered leg portions of fastener elements and coupling head portions of the fastener elements connected thereto, said slider including an automatic stop claw, a slider body which has an upper wing and a lower wing interconnected by a guide post, and a pull tab, comprising: a linear rib being protruded in a central longitudinal direction on an inner face of said upper wing of said slider body, pressure lands being provided at a lower height than said rib on both sides of said rib in the neighborhood of said guide post, to prevent the non-engaged fastener elements facing said pressure lands from deforming which maintains the fastener elements stability, and an opening for said automatic stop claw being punched in a middle portion of said rib and said pressure lands.

5,329,675

CARABINER WITH THUMB GRIP

Andrew McLean, Park City; John Bercaw, Salt Lake City; Charles Brainerd, Salt Lake City, and Jonny Woodward, Salt Lake City, all of Utah, assignors to Black Diamond Equipment, Ltd., Salt Lake City, Utah

Filed Aug. 17, 1992, Ser. No. 931,710
Int. Cl.[5] F16B *45/02*
U.S. Cl. 24—599.6 **6 Claims**

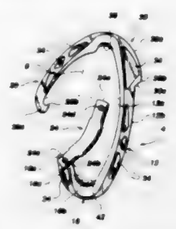
1. A carabiner comprising:

an arcuate spine having a concave front side, convex back side, upper end, and lower end,

a fin disposed to extend outwardly from the back side of the spine at a location near the upper end thereof, said fin having a contact surface which faces outwardly and downwardly toward the lower end of the spine, said contact surface including serrations formed therein,

a tail section extending from the lower end of the spine forwardly and upwardly to a termination,

a nose section extending forwardly and downwardly from



the upper end of the spine to a termination located forwardly and above the termination of the tail section, and

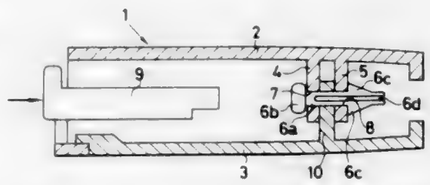
elongate gate means mounted at a lower end to the termination of the tail section, to pivot between a closed position, in which an upper end of the gate means is in contact with the termination of the nose section, and an open position, in which the upper end of the gate means is pivoted away from the termination of the nose section toward the spine.

5,329,676

BUCKLE DEVICE OF SEAT BELT UNIT AND METHOD FOR CONNECTING BUCKLE COVER IN SAID BUCKLE DEVICE

Katsuhiko Kobayashi, Youkaichi, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,635
Claims priority, application Japan, Apr. 2, 1992, 4-080981
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—633 **16 Claims**



1. A buckle device of a seat belt unit, comprising a buckle mechanism engaged with a tongue when the tongue is inserted into it as the seat belt is put on, a release member for releasing engagement of the tongue with the buckle mechanism, and a buckle cover formed by connecting an upper cover and a lower cover and for receiving at least a part of said buckle mechanism and said release member,

whereby holes for connecting are formed on said upper cover and said lower cover, said upper cover and said lower cover are connected together by inserting a lock pin into these holes and by setting the covers at a predetermined connecting position, and said predetermined connecting position is set at such position that said lock pin can be set by a movable member of said seat belt unit.

5,329,677

FASTENER ASSEMBLY

Yoshihiro Kanzaka, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,708
Claims priority, application Japan, Jun. 29, 1992, 4-051412[U]
Int. Cl.[5] A44B *1/18*
U.S. Cl. 24—687 **2 Claims**



1. A fastener assembly adapted for releasably fastening a first sheet to a second sheet, the first sheet having a through aperture formed therethrough, the fastener assembly comprising a male member attached to the first sheet and a female member attached to the second sheet and having a socket, the male member including a male member proper mounted on one side of the first sheet and a separate attachment plate mounted on the other side of the first sheet, the male member proper having a plug protuberantly extending from an outer side thereof for locking engagement with the socket and a through hole formed therethrough, the attachment plate having a clinching stud protuberantly extending from an inner side thereof, the male member proper and the attachment plate being joined to each other with the first sheet clamped therebetween and with the clinching stud inserted through the through aperture of the first sheet and then the through hole of the male member proper and clinched to the outer side of the male member proper, the attachment plate including a front wall and a channel portion mounted along one end thereof so as to define with an inner side of the front wall a furrow, one edge of the first sheet and one edge of the male member proper being fitted in the furrow.

5,329,678

MOLDED SAFETY PIN

Dante V. Bagnasco, 70 Harbor Hills Dr., Port Washington, N.Y. 11050

Filed Sep. 20, 1993, Ser. No. 123,736
Int. Cl.[5] A44B *9/00*
U.S. Cl. 24—709.4 **8 Claims**

1. A molded safety pin of the character described, comprising:

(a) a base portion being elongated in length relative to the width of the base portion, the base portion having an upper surface and a lower surface;

(b) a first extension at one end of the base portion;

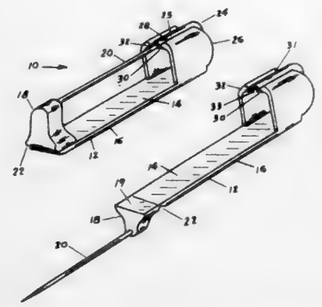
(c) means for providing a hinged connection between the first extension and the base portion;

(d) the first extension being thicker than the base portion, with a part of the first extension being normally below the lower surface of the base portion when the safety pin is in an open position;

(e) the first extension having a pin portion anchored therein, the pin portion extending substantially in a linear direction away from the first extension and the base portion when the safety pin is in an open position;

(f) the pin portion being readily biased back over the upper surface of the base portion by means of the hinged connection between the first extension and the base portion;

(g) a second extension comprising a detent extending in a reverse loop from the opposite end of the base portion for retaining the pin portion in a closed position when the pin portion is moved beneath the detent;



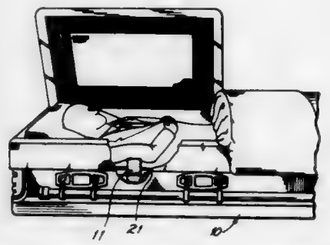
(h) the base portion also including as a molded part thereof a wing-like pin guiding structure extending transversely from the upper surface of the base portion at opposite sides of the detent to partly enclose and overlie the detent.

5,329,679

ARMREST FOR CASKET

Ilija Rojdev, Cincinnati, Ohio, assignor to Batesville Casket Company, Inc., Batesville, Ind.

Filed Jul. 20, 1992, Ser. No. 917,151
Int. Cl.[5] A61G *17/04*
U.S. Cl. 27—13 **16 Claims**



1. A prop for supporting the arm of a deceased in combination with a casket, said casket having a bed on which the deceased rests and an angle iron extending longitudinally of the casket along each side of the bed to support the bed, each said angle iron having a portion extending upwardly with its edge above the bed, said prop comprising:

an elongated member having a pair of opposed ends, generally rectangular in cross section, having in one side surface a transversely-extending, depressed area and a transversely-extending slot communicating with said area and extending toward one of said pair of opposed ends of the member, said depressed area and slot being dimensioned to fit over said upwardly-extending angle iron portion, with said angle iron edge extending into said slot to support said member in an upright position extending upwardly above said angle iron and bed to provide arm support.

5,329,680

PROCESS FOR MANUFACTURING FELTED PRODUCTS

Liora G. Manne, New York, N.Y., assignor to M G K Group Inc., New York, N.Y.

Filed Aug. 3, 1992, Ser. No. 924,163

Int. Cl.[5] D04H *1/20*

U.S. Cl. 28—107 **8 Claims**



1. A process for producing artistic textile or fabric materials for high-fashion carpets, rugs, tapestry, textiles, handbags, and clothing, which includes:

providing a clean, strong, colored backing base,

providing a scrim material consisting of a lightly-needle-punched layer of fibers,

laying the scrim onto the base and lightly needle-punching them together,

providing a needle-punched fabric consisting of a plurality of teased, colored fibers,

layering said fabric of colored fibers onto said base and scrim,

needle-punching the assembled base, scrim and fabric so that the colors of the base and fabric will be mixed together during the needling process and the multi-layers will blend together and become a unitary structure.

5,329,681

PROCESS FOR PREPARING THE POROUS METALLIC FRAMEWORK OF AN ELECTRODE CARRIER FOR THE ATTACHMENT OF A TAKE-OFF CONDUCTOR

Hans Sauer, Idstein-Walsdorf, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 29, 1991, Ser. No. 706,643

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1990, 4019256

Int. Cl.[5] B23P *13/00*; **H01M** *4/80*

U.S. Cl. 29—2 **12 Claims**

1. A process for preparing an electrode of a galvanic element which has a porous metallic framework carrier, to form a contact location for electrical and mechanical connection with a metal strip which serves as a take-off conductor, comprising the steps of:

heating the contact location by exposing the contact location to a heat source; and thereafter

subjecting the heated contact location to a stream of gas under pressure prior to connection of the take-off conductor.

5,329,682

METHOD FOR THE PRODUCTION OF ULTRASOUND TRANSFORMERS

Rudolf Thurn, Kemnath, and Hans-Joachim Burger, Kümersbruck, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 831,868, Feb. 5, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 90,562

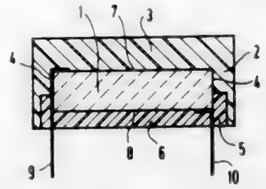
Claims priority, application European Pat. Off., Feb. 7, 1991, 91101712.7

Int. Cl.[5] H01L *41/22*

U.S. Cl. 29—25.35 **16 Claims**

1. A method for producing an ultrasound transformer as a single integral unit that includes a piezoelectric transformer element coupled to an acoustical matching layer formed from an elastomer capable of vibrating said method comprising the steps of:

producing an elastomer body from a molded part having centering contours to form the matching layer;



positioning the transformer element into the elastomer body;

centering the transformer element by engaging said transformer element with the centering contours; and

coupling the transformer element to the matching layer.

5,329,683

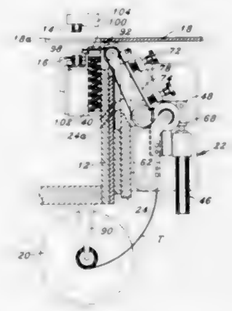
FASTENER SETTING APPARATUS HAVING REINFORCING TAPE FEEDER

John J. Butkus, Woodbury, and Paul R. Bird, Naugatuck, both of Conn., assignors to Scovill Fasteners Inc., Clarkesville, Ga.

Filed Jun. 29, 1993, Ser. No. 83,294

Int. Cl.[5] B23Q *3/00*; **B27F** *7/19*

U.S. Cl. 29—34 R **20 Claims**



1. Apparatus for setting snap fasteners onto a panel of fabric comprising:

a. a machine frame,

b. a horizontally disposed fabric support plate on the frame, the plate having a rear edge and accommodating lateral movement of the fabric in a direction parallel to the rear edge,

c. an axially aligned upper punch and a lower die reciprocable in the frame and means for driving the punch down toward the die to meet the die approximately at the level of the plate and for raising the punch,

d. feeding means in the frame for feeding fastener parts to the respective punch and die,

e. a reinforcing tape supply under the plate and tape feeding means secured to the frame for feeding the end of the tape in a direction perpendicular to the rear edge to a working position in which the tape end overlies the lower die, the tape feeding means comprising a driven means mounted on the frame and having an axis parallel to the rear edge and pressure means mounted on the frame under the plate and pivotable about an axis also parallel to the rear edge, the pressure means adapted to swing about its pivot from a lower disengaged position to an upper engaged position whereat it cooperates with the driven means to move the tape, and

f. severing means adjacent the die for severing the tape activated by the movement of the punch,

whereby as the punch reciprocates once the tape is fed to the working position, the punch and die set a fastener on the fabric with the reinforcing tape disposed against the fabric between parts of the fastener and the severing means severs the tape.

5,329,684

METHOD OF BURNISHING METAL PARTS, IN PARTICULAR LIGHT ALLOY WHEELS, AND APPARATUS FOR IMPLEMENTING SAID METHOD

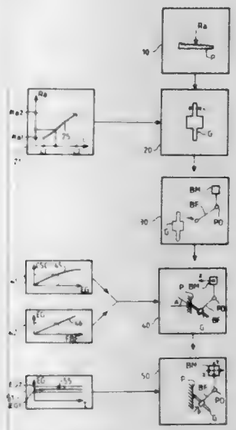
Pascal Budet, Strasbourg; Pierre Flicker, Altorf; Guy Kremer, Strasbourg, and Fabien Diederichs, Eckbolsheim, all of France, assignors to Messier-Bugatti, Villacoublay, France

Filed Feb. 8, 1993, Ser. No. 14,737

Claims priority, application France, Feb. 14, 1992, 92 01687

Int. Cl.[5] B21C *37/30*

U.S. Cl. 29—90.01 **5 Claims**



1. A burnishing method for applying surface compression stresses to metal parts, in particular wheels made of light alloy, by using a disk connected to a moving tool carrier by means of a flexure bar, wherein the method comprises the following successive steps:

a) the surface state of the region of the part to be subjected to burnishing is measured and the width of the disk for use in burnishing said part is deduced therefrom;

b) the disk selected in this way is installed on the tool carrier at the end of the associated flexure bar;

c) the disk installed in this way is pressed against the part concerned by exerting a predetermined force on said disk as a function of the desired surface compression stresses; and

d) burnishing proper of the part with the above-specified disk is then performed.

5,329,685

PNEUMATICALLY-POWERED BATTERING RAM

Donald E. Gillespie, 4629 Platt Rd., Ann Arbor, Mich. 48108

Filed Jun. 18, 1993, Ser. No. 80,661

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—254 **16 Claims**

1. A pneumatically-powered battering ram for striking objects, said battering ram comprising:

a hollow elongated housing having a first object-striking end, a second opposed end, an outer surface, and an internal compartment having a first portion proximate the object-striking end, and a second portion proximate the second opposed end;

a mass disposed within the first portion of said housing;

a charge cavity disposed between said mass and the second portion of said housing;

a compressed gas disposed and sealed within the second portion of said housing;

a valve means associated with said second portion of said housing to regulate the flow of said compressed gas from said second portion of said housing into said charge cavity; and

a trigger mechanism affixed to said object-striking end of said housing, said trigger mechanism having a first end which protrudes past the object-striking end and a second end releasably attached to said mass, said trigger mechanism being responsive to contact with the object stricken whereby when the trigger mechanism is activated, said mass is propelled through the object-striking end of said housing to strike said object.

10. A pneumatically-powered battering ram for striking objects, said battering ram comprising:

a hollow elongated housing having a first object-striking end, a second opposed end, an outer surface, and an internal compartment having a first portion proximate the object-striking end, and a second portion proximate the second opposed end;



a first bulkhead disposed within the first portion of said internal compartment and a second bulkhead disposed within the internal compartment between said first portion and said second portion;

a piston having a head and a base, said piston being disposed within the first portion of said housing such that said head of said piston is between said first bulkhead and said object-striking end of said housing;

a charge cavity disposed between the base of said piston and said second bulkhead;

a tank filled with a compressed gas disposed within the second portion of said housing between said second bulkhead and said second opposed end of said housing, said tank having a valve means associated with said second portion of said housing to regulate the flow of said compressed gas from said second portion of said housing into said charge cavity; and

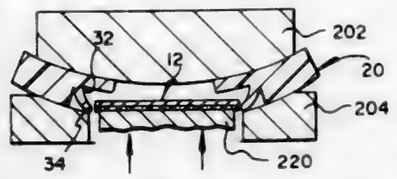
a trigger mechanism having a first end affixed to said object-striking end of said housing and a second end having a sear mechanism releasably engaging the base of said piston and retaining said piston in said housing whereby when the first end of said trigger mechanism strikes an object, said sear mechanism releases the base of said piston, causing said piston to be propelled through the object-striking end of said housing to strike the object.

5,329,686

SLIDE FRAME AND MANUFACTURING PROCESS

Maurice A. Kildal, Webster, N.Y.; Frank A. Richardson, Charlotte, N.C.; Brendan N. Leather, and Claude E. Monsees, both of Fort Mill, S.C., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,942
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—450 4 Claims



1. In a method of assembling a slide-like test element comprising the steps of a) forming a heat-fusible plastic frame member with an opening and a seat at one site; b) forming a reaction member with a diameter selected to allow said reaction member to fit within said opening, at another site; c) transporting said frame member to a site, for assembly with said reaction member; and d) assembling said reaction member with said frame member;

the improvement wherein step a) comprises the steps of forming said frame member out of a flexible polymer, and of forming a lip around and projecting out over said opening, said lip defining an opening having a diameter less than that of said reaction member,

and wherein step d) comprises the steps of

i) bending said frame, thereby enlarging the size of the opening defined by said lip so as to allow said reaction member to pass therethrough;

ii) inserting said reaction member past said lip and into said opening onto said seat; and

iii) relaxing said frame member and said lip so that the opening defined by said lip is restored to its original size thereby retaining said reaction member in said opening on said seat.

5,329,687

METHOD OF FORMING A FILTER WITH INTEGRALLY FORMED RESONATORS

Richard D. Scott, Mountain View, and Neal R. Knutson, San Jose, both of Calif., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 30, 1992, Ser. No. 968,743
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—527.2 16 Claims

1. A method of forming a coaxial combline filter electronic device comprising the steps of:

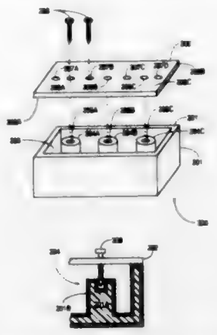
molding a first device element of plastic defining a cavity bounded by a bottom wall and a continuous upstanding sidewall, said first device element including a series of spaced aligned open-ended generally cylindrical rods integrally formed with and upstanding from said bottom in an interior of the cavity;

simultaneously molding an integral iris wall between each of said rods;

thereafter plating the interior of the cavity including the bottom wall, the sidewall and exterior and interior surfaces of said rods and said iris walls with a conductive material to form a series of second resonator elements of said device;

placing and securing a conductive cover to said sidewall; and

inserting a series of aligned third tuning elements of said device extending from an interior surface of said cover into the open end of respective aligned ones of said rods for tuning the second resonator elements to a desired frequency wherein said first device element, said second



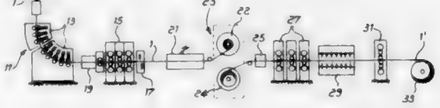
resonator elements, said iris walls, and said third tuning elements form said filter electronic device.

5,329,688

PROCESS AND PLANT FOR OBTAINING STEEL STRIP COILS HAVING COLD-ROLLED CHARACTERISTICS AND DIRECTLY OBTAINED IN A HOT-ROLLING LINE

Giovanni Arvedi, Via Mercatello, 26, and Giovanni Gosio, both of Cremona, Italy, assignors to Giovanni Arvedi, Cremona, Italy and Hoogovens Groep BV, Ijmuiden, Netherlands

PCT No. PCT/IT91/00057, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO92/00815, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 5, 1991, Ser. No. 971,846
Claims priority, application Italy, Jul. 9, 1990, 20884 A/90
Int. Cl.[5] B21B *1/46*; B22D *11/12*
U.S. Cl. 29—527.7 19 Claims



1. A process for obtaining steel strip coil directly from a hot-rolling line, said steel strip coil having characteristics of a cold-rolled product, comprising:

mould casting a flat product having a thickness of less than 100 mm;

reducing the thickness of said flat product immediately beyond the mould while maintaining a liquid core of said flat product;

after solidification of the core of said flat product, further reducing the thickness of said flat product by rolling at a temperature greater than 1100° C. to provide a flat product of 10–30 mm thickness;

induction re-heating said flat product to provide a substantially homogeneous temperature throughout said flat product of about 1100° C.;

subjecting said flat product to a further stage of hot-rolling in the austenitic region at a temperature above a temperature value corresponding to transformation point Ar_3;

reducing the temperature of the flat product to a temperature lower than a temperature corresponding to said transformation point Ar_3; and

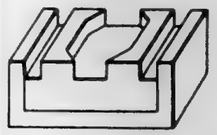
subjecting said flat product to at least one cold-rolling to obtain said steel strip having characteristics of cold-rolled product.

5,329,689

PROCESS FOR PRODUCING MAGNETIC HEAD SLIDER

Kasufumi Azuma, Sagamihara; Hideki Sonobe, Yokohama; Kazuo Nate, Machida; Akiko Mizushima, Yokohama; Harunobu Saito; Eisei Togawa, both of Odawara, and Hiroshi Ishizaki, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 941,250
Claims priority, application Japan, Sep. 4, 1991, 3-223934
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 18 Claims



1. A process for producing a magnetic head slider with at least one rail having an air bearing surface, the process comprising the steps of:

pressure bonding a non-metallic film on a work surface to be shaped of a magnetic head slider material so as to be in intimate contact with the work surface;

patterning the non-metallic film disposed on the work surface of the magnetic head slider material into at least one predetermined rail shape;

shaping the work surface of the magnetic head slider material utilizing the patterned non-metallic film as a mask; and

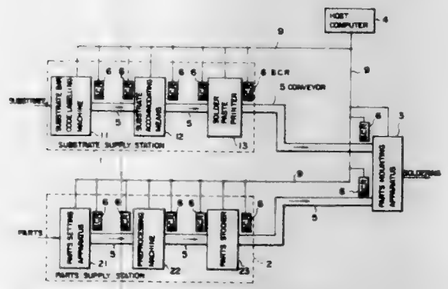
stripping off the patterned non-metallic film utilized as a mask which remains on the work surface of the magnetic head slider material so as to provide at least one shaped slider rail of the magnetic head slider.

5,329,690

PRINTED CIRCUIT BOARD ASSEMBLING SYSTEM

Yoshihisa Tsuji, Hadano; Sigeru Ninomiya, Tokyo; Kazuo Kato, Yamato; Mamoru Kobayashi, Hadano; Akio Kojima, Hadano; Hideaki Sasaki, Hadano, and Tetsuhiro Yokoyama, Hadano, all of Japan, assignors to Hitachi, Ltd. and Hitachi Computer Engineering Co., Ltd., Hadano, both of Japan

Continuation of Ser. No. 541,596, Jun. 21, 1990, abandoned.
This application Dec. 7, 1992, Ser. No. 987,085
Claims priority, application Japan, Jun. 22, 1989, 1-160291
Int. Cl.[5] B23P *21/00*
U.S. Cl. 29—701 21 Claims



1. A system for assembling a printed circuit board, comprising:

(a) a substrate supplying station supplying a plurality of substrates received from outside the system along with information defining parts to be assembled on the substrates;

(b) a parts supplying station supplying a plurality of parts received from outside the system, which plurality of parts are to be mounted on the plurality of substrates including:

(i) a plurality of parts containers, wherein each of said plurality of substrates has associated therewith one of said plurality of parts containers; and

(ii) a means using parts selected from said plurality of parts received from outside the system, which are to be mounted on the plurality of substrates, based on said information defining parts to be assembled on the substrates, for forming a set of parts for one of said plurality of substrates by placing a subset of said plurality of parts in the parts container associated with said one of said plurality of substrates; and

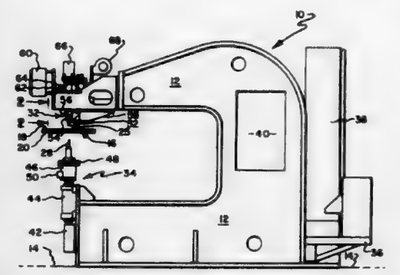
(c) a parts mounting station receiving said set of parts from said parts supplying station, receiving said one of said plurality of substrates from said substrate supplying station and mounting said set of parts on said one of said plurality of substrates.

5,329,691

HOLE PROBE APPARATUS

Bradley M. Roberts, Williamsville; Mark F. Cassidy, Orchard Park, and John W. Zienkiewicz, North Tonawanda, all of N.Y., assignors to Gemcor Engineering Corporation, Buffalo, N.Y.

Filed Nov. 4, 1992, Ser. No. 971,890
Int. Cl.[5] B21J *15/12*
U.S. Cl. 29—705 25 Claims



1. In an automatic apparatus comprising a frame means defining a work axis in relation to a workpiece positioned for operation thereon by the apparatus; a tool means having a first component carried by the frame means and a second component that is movable toward and away from the workpiece along a tool axis to operate on the workpiece; and a transfer means mounted on the frame means and operatively associated with the tool means for moving the tool means into and out of a working position wherein the tool axis is coincident with the work axis; the improvement which comprises:

(a) hole probe means mounted on the first component of the tool means and defining a probe axis that is spaced from the tool axis, wherein the probe means is movable into a position of alignment with the probe axis being coincident with the work axis when the transfer means moves the tool means out of the working position and wherein the probe means is then axially movable along the work axis and into and out of a hole provided in a workpiece;

(b) control means operatively associated with the transfer means for selectively directing movement of the respective tool means and probe means into and out of alignment with the work axis, wherein the control means further regulates the axial movement of the probe means along the work axis to locate the probe means at a predetermined position in the hole provided in the workpiece to enable

the probe means to obtain information about a characteristic of the hole;

(c) means operatively associated with the probe means for utilizing the information obtained by the probe means; and

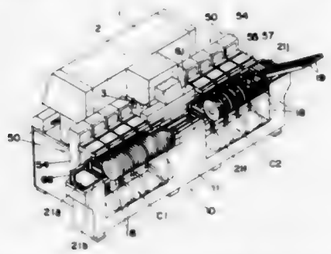
(d) wherein the probe axis defined by the probe means is a first determinable distance spaced from the tool axis defined by the tool means, which is mounted on the transfer means and operatively associated with the control means to serve as a locator means for locating the hole in the workpiece and a second determinable distance spaced from an operational axis defined by an operation to be performed on the hole and wherein the transfer means is directable by the control means to selectively move the locator means the first determinable distance out of the work position so that the probe means is moved into alignment with the probe axis being coincident with the work axis and wherein the probe means regulated by the control means is movable axially along the work axis towards the predetermined position in the hole and wherein the transfer means is directable by the control means to move the probe means the second determinable distance out of alignment with the work axis to enable the operation to be performed on the hole.

5,329,692

ELECTRONIC COMPONENTS MOUNTING APPARATUS

Yasuhiro Kashiwagi, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 22, 1991, Ser. No. 796,177
Claims priority, application Japan, Nov. 29, 1990, 2-333939
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—740 **19 Claims**



1. An electronic components mounting apparatus, comprising a plurality of pick-and-place heads mounted on a rotary head and indexed by rotation of the rotary head, an electronic components feeding device for feeding electronic components to said pick-and-place heads, and an X-Y table for positioning a circuit board relative to said rotary head, the electronic components of said electronic components feeding device being picked up by said pick-and-place heads and mounted on said circuit board, characterized in that:

said electronic components feeding device comprises a plurality of tables, each of said tables having electronic component feeders, a moving base where said tables are provided, a first moving means for reciprocatively moving said tables over the moving base along a first path, a retreat area provided along said first path, an accommodating area provided near said retreat area, and second moving means for moving the tables, provided with said feeders, away from said first path along a second path extending between the retreat area and the accommodating area,

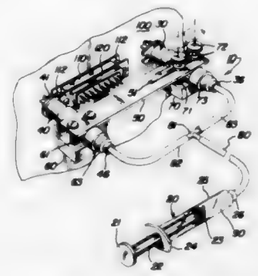
said second moving means being operative for moving said tables away from said first path to said accommodating area for enabling successive ones of said tables to move to said rotary head along said first path.

5,329,693

SEPARATION TOOL FOR MULTIPIN ELECTRICAL CONNECTORS

Larry D. Smith, Sylmar, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 48,871
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—764 **14 Claims**



1. A tool for separating an upper electronic connector from a lower electronic connector comprising:

a support member;

first and second extractor tabs connected to opposites sides of said support member and extending inward toward one another, said extractor tabs each including a flat surface, said extractor tabs being oriented relative to said support member such that said flat surfaces are parallel to and facing said upper connector, whereby said extractor tabs may be placed between the upper and lower connectors;

first and second operative shafts connected to opposite sides of said support member adjacent to said extractor tabs, each operative shaft extending downward toward the lower connector; and

means for moving said operative shafts from an upper position to a lower position whereby the operative shafts press against the lower connector hanging in free space or a substrate on which the lower connector is mounted, causing the extractor tabs to move upward with said flat surfaces making substantially uniform contact with said upper connector, and thereby separating the upper connector from the lower connector.

5,329,694

APPARATUS FOR ATTACHING A FASTENER TO AN ENCLOSED STRUCTURE

David W. Sickels, Plymouth, and Robert E. Sills, Livonia, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Filed Apr. 7, 1993, Ser. No. 44,360
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—798 **10 Claims**

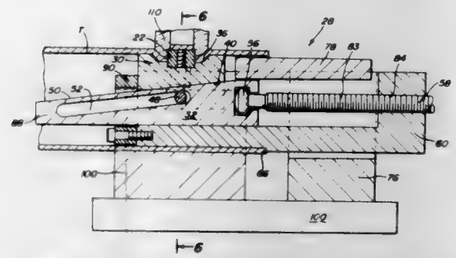
7. An apparatus for attaching a self-attaching fastener to a generally cylindrical tube having a generally cylindrical inner surface from inside said tube; said self-attaching fastener having a body portion and a fastening portion projecting from said body portion, said apparatus comprising:

a mandrel having a generally cylindrical convex external surface configured to be received within said tube and mate with said tube inner surface and said mandrel having a flat surface opposite said generally cylindrical surface;

a cam member having a flat surface received on said mandrel flat surface and an opposite cam surface inclined relative to said cam member flat surface;

a fastener holder having an inclined cam surface received on said cam member cam surface, said fastener holder having a generally cylindrical convex support surface configured to be received within said tube inner surface and a saddle-shaped recess in said cylindrical surface including a flat bottom surface and opposed outwardly inclined surfaces extending from said flat surface to said generally cylindrical surface, and a fastener pocket in said flat surface configured to receive and support said body portion of said self-attaching fastener;

means adapted to move said cam member relative to said fastener holder and mandrel to increase or decrease the distance between said fastener holder and said tube inner



surface to move said self-attaching fastener to locate said fastening portion adjacent said tube inner surface and said fastener holder generally cylindrical convex surface into engagement with said tube inner surface; and

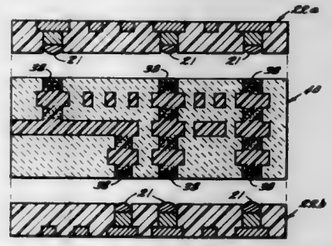
a die member having an opening configured to receive said fastening portion of said self-attaching fastener and die surfaces on opposed sides of said die opening configured to deform said tube into said saddle-shaped recess of said fastener holder and into locking engagement with said self-attaching fastener fastening portion.

5,329,695

METHOD OF MANUFACTURING A MULTILAYER CIRCUIT BOARD

Richard T. Traskos, Brooklyn, Conn., and John A. Olenick, Brockport, N.Y., assignors to Rogers Corporation, Rogers, Conn.

Continuation-in-part of Ser. No. 939,105, Sep. 1, 1992. This application Dec. 31, 1992, Ser. No. 999,494
Int. Cl.[5] H05K *3/36*
U.S. Cl. 29—830 **49 Claims**



1. A method of making a multilayer circuit comprising the steps of:

providing at least one first circuit board comprising a substrate of fusible dielectric material having opposing first and second surfaces, said first circuit board further comprising a first conductive circuit formed on said first surface, said first circuit including conductive material provided on at least one selected location thereof, said conductive material being exposed at said second surface;

providing at least one second circuit board comprising a substrate of ceramic material and a second conductive circuit formed thereon;

stacking said first and second circuit boards one on top of the other so that said conductive material exposed at said second surface of said first circuit board aligns with a selected location on said second circuit, said selected location on said second circuit or said conductive material exposed at said second surface of said first circuit board or both have a fusible conductive material disposed thereon; and

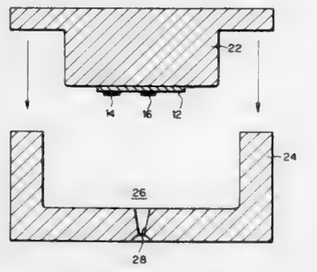
laminating said stacked circuit boards under heat and pressure effective to adhere said fusible dielectric material to said ceramic material and to fuse said fusible conductive material so as to form a cohesive multilayer circuit having a solid conductive interconnect between said first and second circuits, said solid conductive interconnect being defined by said fusible conductive material.

5,329,696

METHOD OF MANUFACTURING ELECTRONIC DEVICE

Takeshi Morita, and Osamu Hayashi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,121
Claims priority, application Japan, Jun. 24, 1991, 3-151932
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—841 **11 Claims**



1. A method of manufacturing an electronic device, comprising the steps of:

mounting a plurality of refractory electronic components onto one side of a printed circuit board;

attaching said printed circuit board temporarily to a male mold so as to face said one side of the printed circuit board against a female mold;

cooperating with said male mold and said female mold to define a cavity therebetween;

introducing a resin into said cavity to mold a housing such that said one side of the printed circuit board is embedded in said housing, and the other side of the printed circuit board is exposed to an interior of said housing; and

mounting a plurality of lower refractory electronic components onto the other side of said printed circuit board.

5,329,697

METHOD AND APPARATUS FOR TURNING A CONCAVE CUT IN A WORKPIECE

John T. Gentry, Springfield, Mo., assignor to Positronic Industries, Inc., Springfield, Mo.

Division of Ser. No. 961,484, Oct. 15, 1992, Pat. No. 5,255,580. This application Jul. 20, 1993, Ser. No. 94,761
Int. Cl.[5] B23B *1/00;* **H01R** *13/05, 43/00*
U.S. Cl. 29—874 **7 Claims**

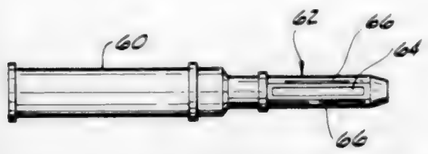
2. A compliant pin connector made according to a method for turning a concave cut in a workpiece on a screw machine comprising the steps of:

selecting the workpiece material from a group including electrically conductive materials suitable for use as solderless, press-in electrical pin connectors;

supporting the workpiece for rotation generally about its longitudinal axis;

rotating the workpiece in a first direction about an axis generally corresponding to its longitudinal axis;

turning a rotary cutter having a first tooth about an axis parallel to the axis of rotation of the workpiece in a second direction opposite to the first, the cutter tooth engaging the workpiece for forming a generally concave cut in the workpiece;



providing a second tooth on the cutter disposed relative to the first tooth for forming a second cut in the workpiece spaced for the first cut a predetermined angular distance;

forming the cuts to a sufficient depth whereby the cuts intersect to create an opening through the workpiece, portions of the workpiece on laterally opposite sides of the cut being adapted to be deformed inwardly toward the cut

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5,329,698

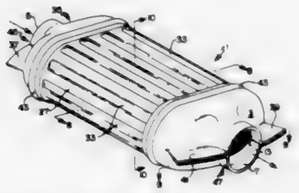
METHOD OF ASSEMBLING A CATALYTIC CONVERTER

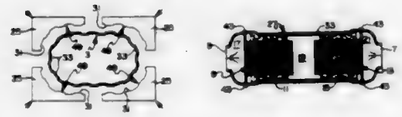
James R. Abbott, Jackson, Mich., assignor to Tennessee Gas Pipeline Company, Lincolnsire, Ill.

Division of Ser. No. 483,399, Feb. 22, 1990, Pat. No. 5,055,274, which is a continuation-in-part of Ser. No. 306,915, Feb. 2, 1989, abandoned. This application Jun. 28, 1991, Ser. No. 722,925

Int. Cl.[5] **B23P** *15/00*; **F01N** *3/28*

U.S. Cl. 29—890 **19 Claims**





1. A method of assembling a catalytic converter for use in a motor vehicle which comprises providing a catalyst substrate having a mid-section, assembling a thin radially compressible shock absorbent annular support mat around the mid-section of the catalyst substrate to form a preassembly, inserting the preassembly into a hollow one-piece cylindrical metal body extending longitudinally so as to be in centered spaced relation to the interior wall of said body, thereafter, radially deforming a central wall portion of said metal body by a first amount to form a radially inwardly compressed section in contact with said annular support mat and by a second amount to form longitudinal ribs extending radially inwardly from said compressed section so as to be in radial contact with said annular support mat whereby to apply and retain radial pressure on and radially compress said support mat to substantially reduce its thickness and to apply sufficient radial pressure against said substrate to hold said catalyst substrate in said body.

5,329,699

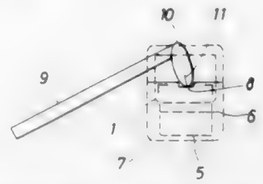
METHOD AND APPARATUS FOR PRESERVING FOR FURTHER USE RAZOR BLADE CUTTING EDGES

Charles B. McCoy, 242 County Fair, Houston, Tex. 77060

Filed Oct. 29, 1992, Ser. No. 968,297

Int. Cl.[5] **A45D** *27/00*

U.S. Cl. 30—34.05 **7 Claims**



1. A magnet apparatus in combination with a razor blade having a cutting edge, said magnet apparatus comprising:

a first permanent magnet polar surface having two opposite ends;

a second permanent magnet polar surface being situated at one of said ends;

a third permanent magnet polar surface being situated at the other of said ends,

said second and third polar surfaces having the same polarity and being of an opposite polarity to the first polar surface;

said first, second and third polar surfaces defining a receptacle;

said razor blade being held in said receptacle;

said cutting edge having its length situated in close proximity to said first polar surface; and each of said second and third polar surfaces being in proximity to an end of said length of said cutting edge.

5,329,700

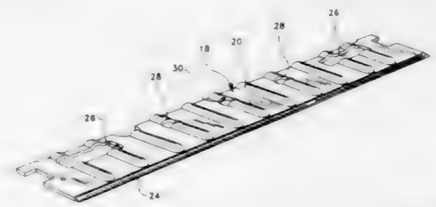
FLEXIBLE RAZOR UNIT EMPLOYING EMBOSSED BLADES

Frank A. Ferraro, Trumbull, and Vincent C. Motta, Norwalk, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 29, 1993, Ser. No. 54,584

Int. Cl.[5] **B26B** *21/16*

U.S. Cl. 30—41 **10 Claims**



1. A flexible twin-blade wet-shaving razor unit providing improved cutting effectiveness comprising:

a cap blade and a seat blade, each of said blades having a cutting edge for shaving and wherein at least one of said blades includes a plurality of embossments disposed substantially perpendicular to said cutting edge for increasing the rigidity of said cutting edge during shaving while allowing for flexing of said at least one blade in response to forces encountered during shaving;

a seat portion and a cap portion, said blades disposed and secured for shaving between said seat and cap portion; and

a spacer disposed between blades.

5,329,701

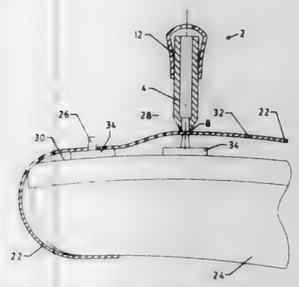
TOOL FOR CUSTOM FITTING SLIP-ONS TO GOLF SHOES AND A METHOD OF USE THEREFOR

Gregory A. Schultz, 229 Ritteu House Road, Kitchener, Ontario, Canada N2E 2V3 , and Mark E. Weber, 224 Ritteu House Road, Kitchner, Ontario, Canada N2E 2V5

Filed Jun. 1, 1993, Ser. No. 69,387

Int. Cl.[5] **B26B** *3/00*

U.S. Cl. 30—316 **2 Claims**



1. A method of custom fitting a slip-on having a sole to a golf shoe having a sole with a plurality of spikes extending outward from said sole of said golf shoe, each spike having a base, said method using a tool having an elongated hollow body with two open ends, a first end having a circular cutting edge thereon, a second end having a handle, said cutting edge being sized to fit over one spike, said method comprising the steps of stretching the slip-on over the golf shoe with the sole of the slip-on aligned with the sole of the golf shoe but spaced apart therefrom because of said spikes, grasping said tool by said handle and aligning a longitudinal axis of said tool with a longitudinal axis of one spike so that a cutting edge of said tool can surround said one spike, forcing the tool towards said one spike, thereby cutting a small opening in said sole of said slip-on said opening being aligned with said one spike, said opening having a diameter that is substantially equal to a diameter of said one spike, forcing the tool further onto said one spike so that the sole of the slip-on rests against the base of said one spike, repeating the method for other spikes on said golf shoe until the sole of said slip-on rests against the base of each spike and against the sole of said golf shoe.

5,329,702

ELECTRIC RAZOR

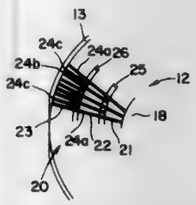
Hiromi Uchiyama, and Masaki Okabe, both of Nagano, Japan, assignors to Izumi Products Company, Nagano, Japan

Filed Mar. 3, 1993, Ser. No. 25,971

Claims priority, application Japan, Apr. 17, 1992, 4-125694

Int. Cl.[5] **B26B** *19/04*

U.S. Cl. 30—346.51 **11 Claims**



1. An electric razor comprising an external cutting member, which is provided with radial slits for bringing hair under a round shaving surface, and an internal cutting member which is for cutting said hair that is led through said slits while sliding along an inner surface of said external cutting member; wherein

said round shaving surface is divided into concentric plural sections via one or more circular partition grooves provided concentrically with a center of said shaving surface;

said external cutting member is integrally formed as one integral unit; and

said slits are opened at predetermined intervals in surfaces ranging from an outermost shaving section to an innermost shaving section and through said partition grooves, and said slits are further opened between each of said opened slits so as to be formed in the range up to an innermost partition groove or up to a partition groove located outside said innermost partition groove.

5,329,703

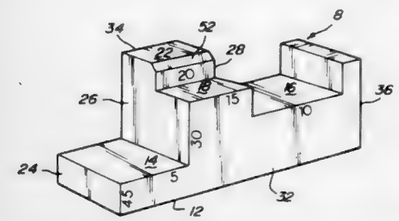
GAGE BLOCK

William L. Craig, 1675 S. Hadley, Ortonville, Mich. 48462

Filed Aug. 31, 1992, Ser. No. 937,971

Int. Cl.[5] **G01B** *3/30*

U.S. Cl. 33—567 **12 Claims**



1. A combination gage block and sine bar for setting up a plurality of commonly used angles comprising:

said gage block having a planar base and a plurality of planar reference surfaces parallel to said base at different distances from said base; and

said sine bar having a measuring surface for engaging a respective one of said planar reference surfaces to establish a different reference angle for different ones of said reference surfaces;

wherein at least one of said reference surfaces extends beyond a projected area of said base.

5,329,704

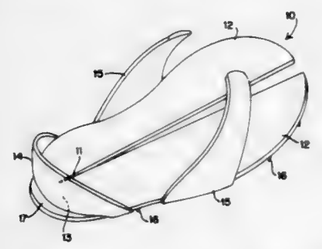
SPLIT-SOLE ANTI-SLIP ATTACHMENTS FOR FOOTWEAR

Roy C. Martin, Jr., Rte. 1, Box 1882, Bangor, Me. 04401

Filed Apr. 12, 1993, Ser. No. 44,656

Int. Cl.[5] **A43B** *3/12, 3/16*

U.S. Cl. 36—7.1 R **8 Claims**



1. In combination, an article of footwear and an attachment therefor, said article having sole structure and upper structure secured thereto, the upper structure having a waist line dividing the article into fore and rear parts, the rear part provided with a heel portion and the fore part having a toe portion, and

said attachment including a flexible, resilient sole and upper structure connected thereto, the upper structure of the attachment including a resilient counter yieldably maintained in a first position against spreading and defining a heel seat with the portion of the sole which is bordered thereby, the heel seat of lesser width than the heel portion of the article, the upper structure also including resilient, waist line arms, one for each side of the sole and curved inwardly and forwardly towards the opposite side, the two arms spaced and dimensioned to enable the toe portion of the article to be entered between the two arms and the sole of the attachment including two lengthwise sections joined together in the heel seat, the maximum width of the sole less than the widest portion of the forepart of the article whereby when the article is slid forwardly relative to the attachment, the two sections and the heel seat are spread apart with the arms as the forepart of the article is forged between and forwardly of the arms, the resiliency of the heel seat then forcing the heel seat and the arms into holding contact with the heel portion and waist line of the upper structure of the article, respectively, and the tread surfaces of said sole sections provided with traction enhancing members.

5,329,705

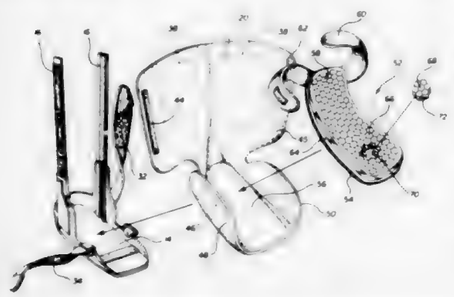
FOOTGEAR WITH PRESSURE RELIEF ZONES

Tracy E. Grim, Broken Arrow; Kevin R. O'Donnell, Thousand Oaks, both of Okla., and Eric G. Montag, Van Nuys, Calif., assignors to Royce Medical Company, Camarillo, Calif.

Filed Feb. 16, 1993, Ser. No. 17,818

Int. Cl.[5] A43B *13/38;* **A61F** *5/00, 5/37*

U.S. Cl. 36—88 **16 Claims**



1. A walker including pressure relief areas for the foot comprising:

a walker frame including an outer sole and struts extending from said sole upward;

a soft goods type support for enclosing the ankle, lower leg and at least a substantial portion of the foot;

means for securing said support to said frame;

a bladder for containing air mounted in said walker above said outer sole;

an inner sole mounted in said walker above said bladder, said inner sole having a plurality of relief zone areas arranged in a grid pattern constituting separate resilient sections removably secured on their lower surfaces to an underlying flexible sheet and together forming a normally substantially smooth surface for engagement by the foot, said sections being individually removable to provide localized pressure relief to selected areas of the foot; and

said resilient sections being directly adjacent one another to form said grid;

whereby one or a plurality of said adjacent sections may be removed at any desired area of the inner sole to provide relief corresponding to the afflicted zone of the foot.

5,329,706

COMPOSITE SKI BOOT QUARTER

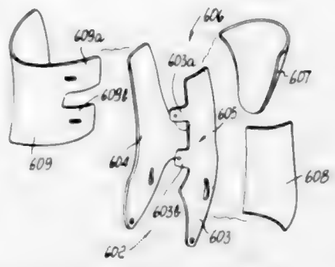
Alessandro Pozzobon, Paderno di Ponzano Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Continuation-in-part of Ser. No. 592,935, Oct. 4, 1990, Pat. No. 5,101,582. This application Feb. 28, 1992, Ser. No. 843,039

Claims priority, application Italy, Oct. 20, 1989, 82596 A/89

Int. Cl.[5] A43B *5/04*

U.S. Cl. 36—117 **11 Claims**



5. A composite ski boot quarter, comprising:

a first supporting element, said first supporting element being a malleolus supporting element for supporting at least a malleolus region of a user's lower leg, said first supporting element having at least a first perimetric edge; and

a second supporting element for supporting a rear calf region of a user's lower leg, said second supporting element having at least a second perimetric edge;

wherein said first supporting element and said second supporting element are rigidly mutually connected along said first perimetric edge and said second perimetric edge thereof, and wherein said first supporting element has a higher degree of rigidity than said second supporting element.

5,329,707

SKI BOOT

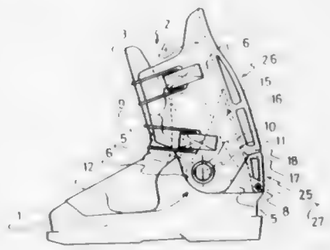
Jérôme Chaigne, Saint-Jorioz, and René Borel, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Jan. 31, 1992, Ser. No. 828,682

Claims priority, application France, Feb. 1, 1991, 91 01343

Int. Cl.[5] A43B *5/04*

U.S. Cl. 36—120 **23 Claims**



1. A ski boot comprising:

a shell base having opposite sides and a heel zone;

an upper extending above said shell base for enveloping the lower portion of the leg of a skier, said upper comprising:

a front portion; and

a rear spoiler, said rear spoiler being semi-tubular and comprising at least two laterally opposed wings, said two laterally opposed wings extending along respective ones of said opposite sides of said shell base;

means for journalling said rear spoiler to said shell base about a first axis in said heel area of said shell base;

means for latching each of said wings of said rear spoiler against movement relative to said shell base in a latched position for skiing, said means for latching further comprising means for permitting movement of said rear spoiler to an unlatched position said means for latching comprising one latching means on each of said wings of said rear spoiler cooperating with a respective second complementary latching means on each of said opposite sides of said shell base;

said rear spoiler comprising two distinct semi-tubular segments, said semi-tubular segments comprising an upper segment and a lower segment, said upper segment and said lower segment each comprising two laterally opposed wings for comprising said at least two wings of said rear spoiler, said upper segment and said lower segment at least partially overlapping;

said means for journalling said rear spoiler to said shell base about a first axis comprising means for journalling only said lower segment on said shell base about said first axis in said heel area of said shell base;

means for journalling said upper segment with respect to said lower segment about a second axis at respective wings on respective sides of said upper segment and said lower segment in an area substantially corresponding with the ankle of the skier; and

said lower segment of said rear spoiler further comprising:

an extension extending upwardly beneath said upper segment of said rear spoiler above a plane extending through said first axis and said second axis; and

wherein said one latching means on each of said wings of said rear spoiler cooperating with a respective second complementary latching means on each of said opposite sides of said shell base comprise one latching means for each of respective pairs of said wings of said lower segment and said upper segment of said rear spoiler on each of said opposite sides of said shell base for cooperating with a respective second complementary latching means on a respective opposite side of said shell base.

5,329,708

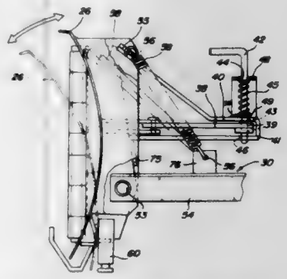
UNIVERSAL OFF ROAD VEHICLE SNOW PLOW

Michael J. Segorski, 1605 Minneapolis Ave., Gladstone, Mich. 49837, and Arnold R. Sirtola, 1456 W. Mapleridge, Rock, Mich. 49880

Filed Jul. 17, 1992, Ser. No. 915,421

Int. Cl.[5] E01H *5/04*

U.S. Cl. 37—231 **16 Claims**



6. An off-road vehicle snow plow including:

(a) a frame member mounted to an off-road vehicle,

(b) an adapter fixedly connected to said frame member,

(c) pivot means provided on said adapter,

(d) a cowling pivotally mounted to said pivot means for rotation through substantially 360° in a vertical plane when unattached to snow plow blades, said cowling including a portion of a hinge means for the attachment of snow plow blades.

5,329,709

STEAM IRON WITH FLUIDLY COMMUNICATED DRIP AND WEIGHTED VALVES

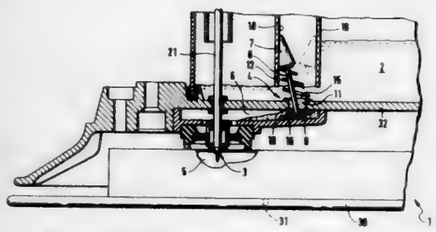
Augustin A. Pérez, Esplugues de Llobregat; Francesc Pons, Sant Just Desvern; Juan C. C. Sanz, Barcelona; José R. Garcia, Badalona; Miguel R. Andrés, Esplugues de Llobregat, all of Spain, and Bernd Trebitz, Bad Homburg, Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 21, 1992, Ser. No. 964,458

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1991, 4135650

Int. Cl.[5] D06F *75/18*

U.S. Cl. 38—77.7 **22 Claims**



1. A smoothing iron having a soleplate, steam chamber structure, water reservoir structure, a water discharge valve comprising valve bore structure, a sealing body for closing said valve bore structure, a weight displaceable by ironing movements, and a connecting member connecting said weight with said sealing body and arranged within said valve bore for causing said sealing body to open and close said valve bore in dependence upon the position of said weight, a drip valve and a water conduit structure serially connecting said drip valve and said water discharge valve, said drip valve for supplying water flowed from said water reservoir structure through said water discharge valve to said steam chamber structure for discharge through said soleplate.

5,329,710

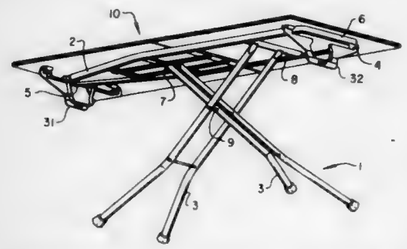
FOLDING TABLE TOP FOR AN IRONING BOARD

Leona B. Huddleston, 1034 Bancroft Rd., Keller, Tex. 76248

Filed Oct. 15, 1992, Ser. No. 962,270

Int. Cl.[5] D06F *81/00;* **A47B** *35/00;* **E05C** *1/10;* **E05D** *1/04*

U.S. Cl. 38—104 **15 Claims**



1. A table top adapted to be attached to an ironing board, the ironing board being of the type having a substantially planar deck having a top surface, a front end and a back end, the table top comprising

a plurality of planar sections, each section having a top, a bottom, a leading edge and a trailing edge, the sections juxtaposed sequentially along a longitudinal axis between a forward end and a rear end of the table top;

hinge means for hingeably coupling the trailing edge of one section to the leading edge of an adjacent section juxtaposed rearward along the longitudinal axis of the table top; and

attachment means on the bottoms of the sections at each end of the table top for attaching the table top to the top surface of the ironing board, each attachment means having

two coplanar bodies, each body having a large base adjacent the bottom of the table top and a small base opposite the large base, the bodies spaced apart on either side of an opening;

a grip coupled to the small base of each body and extending opposite the large base across the opening;

two arms extending coplanar with the bodies opposite the small bases, one arm on each end of the large base opposite the opening to define a recess adapted to sandwich one of the front or back ends of the ironing board between the large bases and the bottom of the section; and

pivot means for pivotally securing the arms to the bottom of the table top.

5,329,711

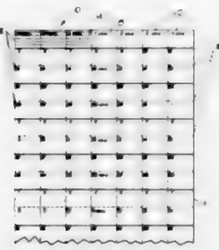
CREASE FOLD CALENDAR

Edward S. Dewey, 10 Commercial Warf West, Ste. 401, Boston, Mass. 02110

Continuation of Ser. No. 915,525, Jul. 20, 1992. This application May 10, 1993, Ser. No. 58,786

Int. Cl.[5] G09D *3/04*

U.S. Cl. 40—119 **5 Claims**



1. A recording calendar adapted to be used for recording diary entries for each date of a year of twelve months from January 1st to December 31st and fifty-two weeks, each seven day week commencing on a Sunday and ending on a Saturday, the recording calendar being imprinted with indicia including arabic numerals which correspond to each calendar date and other indicia delineating a substantial blank area which corresponds to each date thereof and being adapted to receive diary entries; the improvement comprising a web of paper of continuous length from one end to another end and a width defined by a left edge and a right edge, said numerals arranged in at least fifty-two rows, each of said rows comprising numerals disposed in laterally spaced relation across the web, the numerals in each of said rows being in chronological order from the left to the right edge of the web corresponding with the calendar dates and days of the week, a first of each of said numerals in each of said rows corresponding to a Sunday and a last of each of said numerals in each of said rows corresponding to a Saturday of each calendar month, said web including a plurality of scored lines spaced apart lengthwise of the web and extending laterally across the width thereof, said scored lines being spaced apart in a lengthwise direction of the web, a transverse increment being defined between each adjacent pair of said scored lines, each said increment consisting of from one to three of said rows, said web being foldable selectively along each of said scored lines for arranging in planar orientation at least two of said increments for the simultaneous visual display of consecutive weeks of a calendar year as defined by said increments whereby simultaneous visual reference can be made to diary entries prior to and after any particular date even where that date falls on a first or last day of any calendar month.

5,329,712

FRAME FOR THE DISPLAY OF PICTURES

Heinz Keller, Winterthur, Switzerland, assignor to Licinvest AG, Landquart, Switzerland

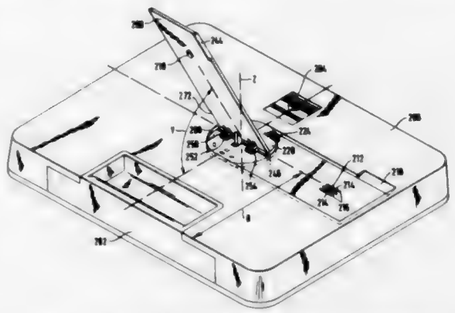
PCT No. PCT/EP91/01650, § 371 Date May 5, 1992, § 102(e) Date May 5, 1992, PCT Pub. No. WO92/03956, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 2, 1991, Ser. No. 855,632

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1990, 4028645

Int. Cl.[5] G09K *1/12*

U.S. Cl. 40—152.1 **8 Claims**



1. A frame for display of at least one picture, including:

a frame body comprising a rear wall made of plastic material, said frame body having a first pair of relatively long parallel edges and a second pair of relatively short parallel edges,

prop means for supporting the frame as a stand, said prop means comprising a bearing member mounted on said frame body rear wall and pivotable relative thereto through a 90° range between a first and a second end position about an axis which is perpendicular to said rear wall, said prop means further comprising a leg swingably mounted on said bearing member to support in a spread-apart position said frame body in either of an upright and sidewise position on one of said short and long edges, respectively, said axis being spaced by a different distance from said one short edge than from said one long edge, and said frame body having a stop lock for each of said end positions, each of said stop locks engaging said leg in order to fix said leg in an associated spread-apart position from said frame body such that said frame body when placed on a support plane defines therewith substantially equal angles in said upright and sidewise positions.

5,329,713

LABEL WITH REMOVABLE PART

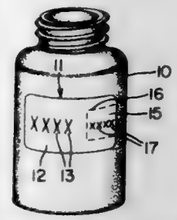
Peter Lundell, Oakland, N.J., assignor to Menasha Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 822,196, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 435,737, Nov. 13, 1989, abandoned. This application Nov. 22, 1993, Ser. No. 156,411

Int. Cl.[5] G09F *3/10*

U.S. Cl. 40—310 **4 Claims**

1. A combination of a bottle with an outer surface, a supply of a prescription pharmaceutical within said bottle and dispensable therefrom, and an initial unmodified label of negligible thickness and having an overall outline of a first characteristic shape, said unmodified label including a single contiguous main portion engaging and permanently adhered to said outer surface of said bottle and bearing indicia exposed to view and having a main outline of a second characteristic shape and providing a main part but less than all of said overall outline, a single contiguous secondary portion confronting but not adhered to said outer bottle surface and bearing indicia exposed to view and having a secondary outline providing a part but less than all of said overall outline, said main and secondary portions together providing the entirety of said overall outline,



and an integral destructible connection web between and joining said main portion and said secondary portion, whereby said secondary portion can be separated from said main portion and removed from said bottle upon destruction of said web, to convert said initial unmodified label to a final modified label consisting of said main portion, thus changing the shape of the label from said first characteristic shape to said second characteristic shape, to provide visible indication that said secondary portion has been removed.

5,329,714

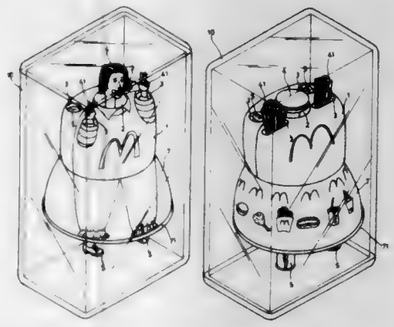
AMUSING FLOATING GADGET

Vincent K. Lee, No. 44, Lane 458, Sheh Chung Street, Taipei, Taiwan

Filed Apr. 1, 1993, Ser. No. 40,441

Int. Cl.[5] G09F *19/08;* **A63H** *3/26*

U.S. Cl. 40—409 **3 Claims**



1. An amusing floating gadget comprising:

a) a container filled with a fluid;

b) a buoyant body disposed within the fluid and capable of floating upwardly therein when the container is turned upside down;

c) the body including a first end and a second end, each end being provided with a plurality of countersunk holes, with each countersunk hole having a bottom peripheral edge portion;

d) a floating object disposed within each of some of the countersunk holes at both ends of the body, so that during upward floating of the body, the floating objects positioned at the upper end of the body retract outwardly therefrom while the floating objects positioned at the lower end of the body retract inwardly therein, each floating object including a fender for latching engagement with the bottom peripheral edge portion of its corresponding countersunk hole to prevent separation of the floating objects from the body;

e) a sinking object having a density greater than that of the fluid disposed within each of the remaining countersunk holes at the ends of the body, so that during upward floating of the body, the sinking objects at the upper end of the body retract inwardly therein and the sinking objects at the lower end of the body extend outwardly therefrom, each sinking object including a fender for latching engagement with the bottom peripheral edge portion of its corresponding countersunk hole to prevent separation of the sinking objects from the body; and

f) a skirt extending around a middle section of the body, the skirt being formed of light material and including an inner edge secured to the body and an outer edge provided with a member having a density greater than that of the fluid, so that the skirt is reversible to always encircle the lower half of the body during upward floating thereof whenever the container is turned upside down.

5,329,715

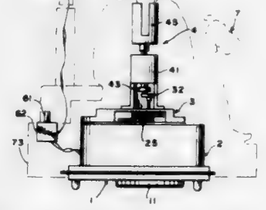
CLOCK CONTROLLED SWINGING TOY WITH SOUND PRODUCING MEANS

Shih Po-Wen, 2nd Fl., 6-1, Sublane 1, Lane 437 Pateh Road, Sec. 2, Taipei, Taiwan

Filed Aug. 10, 1992, Ser. No. 926,647

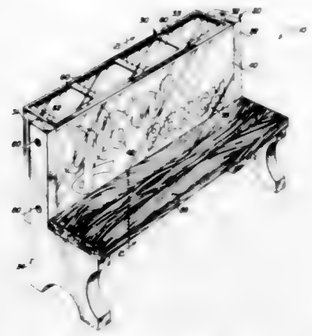
Int. Cl.[5] G09F *19/08*

U.S. Cl. 40—411 **2 Claims**



1. A swinging toy for swinging a doll, comprising: a base plate: a box supported above said base plate; a sound producing unit fastened in said box; a battery power supply; a motor drive connected to said battery power supply and controlled to turn on said sound producing unit; a control switch; a clock controlled by said control switch for turning on said motor drive; an actuator; and a transmission gear driven by said sound producing unit to rotate said actuator causing it to swing the doll, said sound producing unit comprising a platter driven by said motor drive through an endless belt to rotate a record, a cartridge carried on a tone arm and driven by said record to drive a buzzer causing it to produce sounds according to the grooves on said record, and said actuator comprising a bottom mounting plate fastened above said box, an upright tube supported on said bottom mounting plate, a rod mounted inside of said upright tube for rotation relative thereto, a chuck with jaws, said chuck being carried on said rod to grip the doll, a link connected between said rod, and a crank having an opposite end coupled to an output shaft on said transmission gear, said transmission gear having an input shaft coupled to a spindle on said platter of said sound producing unit.

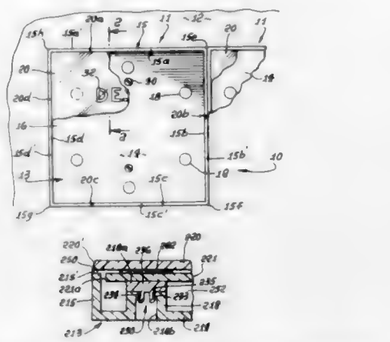
5,329,716
ILLUMINATED ADVERTISING BENCH
James H. Fite, 13395 SW. 1st Ter., Miami, Fla. 33184
Filed Nov. 16, 1992, Ser. No. 977,222
Int. Cl.[5] G09F *13/04*
U.S. Cl. 40—575 **11 Claims**



1. An advertising bench comprising:
a bench having a pair of spaced support members, a seating platform supportably disposed between said support members, and a seat back assembly,
said seat back assembly including a back panel, a removably mounted mid panel, and a front panel disposed in spaced apart relation from one another,
said seat back assembly further including a pair of opposite side panels, said side panels supportably holding said back panel, said mid panel, and said front panel therebetween,
said front panel being transparent so as to enable visibility of an exposed face of said mid panel therethrough,
said exposed face of said mid panel including advertising indicia formed thereon and further including lighting means connected thereto, said lighting means being structured and disposed to illuminate and draw attention to said advertising indicia,
power supply means structured and disposed to provide power for said lighting means, said power supply means being disposed within said seat back assembly and being rechargeable,
said seat back assembly also including a bottom panel and a top panel, said top panel including charging means therein, said charging means being structured and disposed to charge and recharge said power supply means,
switching means structured and disposed to turn said lighting means on and off,
reinforcing means mounted between said mid panel and said front panel and structured for preventing external pressure on said front panel from collapsing said front panel towards said mid panel, and
fastening means structured and disposed to secure said seat back assembly in a vertical orientation to and between said spaced support members of said bench.

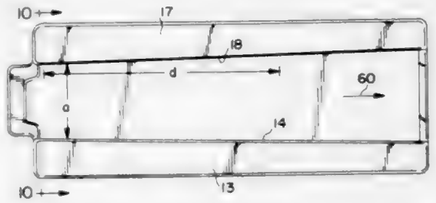
5,329,717
MULTIFACETED MODULAR SIGN SYSTEM AND COMPONENTS
John V. Follis, 1844 Mar Vista, Pasadena, Calif. 91104
Continuation of Ser. No. 685,147, Apr. 15, 1991, Pat. No. 5,230,175. This application Jun. 14, 1993, Ser. No. 75,408
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] G09F *7/00*
U.S. Cl. 40—605 **6 Claims**

6. In a modular sign system, a unit comprising, in combination,
a) a back frame having a thin backplate and a thin wall outstanding from the backplate and bounding a recess formed in front of the backplate,
b) support posts endwise outstanding relative to the backplate at spaced locations in said recess, the posts having lesser height than the wall,
c) and
i) faceplate structure received over the recess and supported on and by the posts, the faceplate structure having a bounding edge which is adjacent said wall,



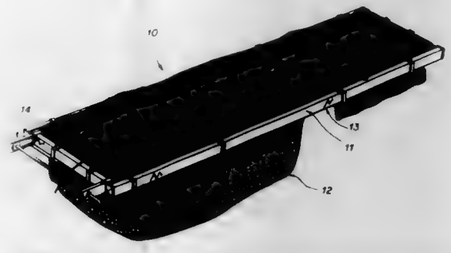
said faceplate structure adapted to carry sign information, and the backplate adapted to be carried adjacent a supporting surface,
d) the posts arranged in spaced apart relation in said recess and attached to the backplate, and caps telescopically attached to the posts, the caps projecting to overlie the posts endwise thereof but within said recess and presenting surfaces attached to the faceplate structure side facing said posts, said faceplate structure covering all of said caps.

5,329,718
MAGAZINE
William J. Howard, P.O. Box 573, Wilson, N.C. 27893
Filed Jan. 5, 1993, Ser. No. 682
Int. Cl.[5] F41A *7/69*
U.S. Cl. 42—50 **8 Claims**



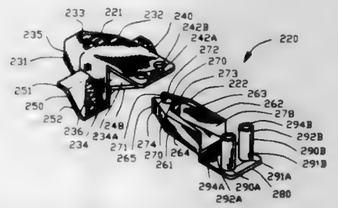
1. A magazine for holding two parallel rows of cartridges and for reliably, rapidly, forwardly, alteratively, feeding the uppermost cartridge from first one row and then from the other row to the chamber of a bolt-equipped firearm; wherein each said cartridge has a given length, a rim having a given diameter, a body, a shoulder, a neck, and a projectile in the neck; said magazine comprising:
A. a pair of cartridge-retaining lips terminating in edge portions,
(1) which are uniformly forwardly outwardly angled a longitudinal distance substantially equal to the length of the cartridge from the rim of the shoulder; and
(2) which at their closest point are spaced from each other a distance greater than the diameter of one cartridge at its rim and less than two cartridges at their rims; and
B. means for guiding the two parallel rows of cartridges toward the cartridge-retaining lips; and
C. means for upwardly biasing the two rows of cartridges such that the uppermost cartridge in said one row contacts the edge portion of the lip above that row and the uppermost cartridge in the other row contacts the edge portion of the lip above the other row.

5,329,719
FISH RACEWAY APPARATUS AND METHOD
H. K. Holyoak, Hwy. 29 North, Alapaha, Ga. 31622
Filed Mar. 9, 1993, Ser. No. 28,250
Int. Cl.[5] A01K *81/04*
U.S. Cl. 43—6.5 **20 Claims**



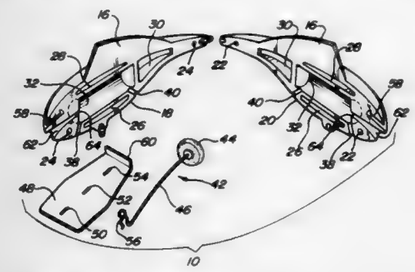
1. A fish raceway apparatus for raising and harvesting fish in a body of water, comprising:
a flexible mesh cage adapted to enclose fish in a body of water, said flexible mesh cage having sufficient volume so that fish can be raised therein, said flexible mesh cage having a harvesting section at one end portion thereof,
harvesting means for progressively closing said flexible mesh cage beginning at the other end portion thereof and continuing along said flexible mesh cage toward said harvesting section of said flexible mesh cage, at the other end portion thereof for herding the fish toward said harvesting section,
whereby, upon operation of said harvesting means, the fish within the flexible mesh cage are herded toward and into the harvesting section wherein the fish can be retrieved from the flexible mesh cage.

5,329,720
ENHANCED FISHING LURE
Richard D. Baron, Zephyrhills, Fla., assignor to Wanabe Outdoors, Inc., Tampa, Fla.
Continuation-in-part of Ser. No. 890,811, Jun. 1, 1992, Pat. No. 5,177,895. This application Jan. 8, 1993, Ser. No. 2,188
Int. Cl.[5] A01K *83/06*
U.S. Cl. 43—44.2 **28 Claims**



1. An enhanced fishing lure for attaching a bait to a fishing line, comprising in combination:
a lure head having a front aperture for enabling the fishing line to extend therethrough;
said lure head having an insert cavity communicating with said front aperture;
a lure insert comprising an insert portion;
a first and a second panel extending from said lure head and said lure insert;
a first and a second locking pin means secured to one of said first and second panels for cooperating with locking aperture means defined in the other of said first and second panels;
restraining means secured to said lure insert for restraining the movement of the fishing line relative thereto;
said first and second locking pin means extending through the bait for restraining the movement of the bait relative thereto; and
said lure insert being insertable within said insert cavity of said lure head with the fishing line extending between said first and second locking pin means and through said front aperture of said lure head and with said locking aperture means cooperating with said first and second locking pin means for interlocking said lure insert to said lure head.

5,329,721
DEPTH-ADJUSTABLE FISHING LURE
Richard D. Smith, 9250 Gale Rd., White Lake, Mich. 48386
Filed Sep. 7, 1993, Ser. No. 116,760
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.22 **7 Claims**



6. A fishing lure, comprising:
a lure body divided longitudinally into a first half and a second half, said first half and said second half being sealingly engaged together;
a hook attached to said lure body;
an interior chamber formed within an interior of said lure body upon the engagement of said first and second halves, said chamber having a first end and an other end which defines a substantially cylindrical shape having a circumference;
an intake line communicating the exterior of said lure body with said first end of said interior chamber;
a discharge line communicating the exterior of said lure body with said other end of said interior chamber;
a plunger which is sealingly engaged around said circumference of said interior chamber and divides said interior chamber into a first section and a second section; and
a stem which is connected to said plunger, said stem extending beyond said lure body and actuating said plunger to draw water through said intake into said first section and to release air from said second section through said discharge to select an operating depth for said fishing lure.

5,329,722

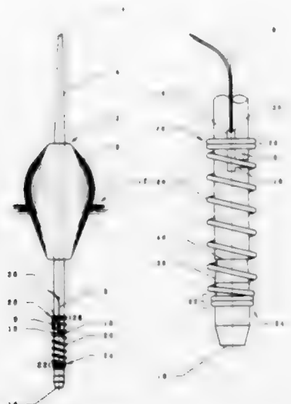
FISHING FLOAT

Shane V. Wilson, R.R. 1, Box 137, Alexandria, Ind. 46001

Continuation of Ser. No. 995,357, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 786,284, Nov. 1, 1991, abandoned. This application Dec. 13, 1993, Ser. No. 166,282

Int. Cl.[5] A01K *93/00*

U.S. Cl. 43—44.94 16 Claims



1. A fishing flat comprising:

(a) a stem having first and second stem ends;

(b) a buoyant member carried by said stem intermediate said first and second stem ends;

(c) a slot formed in said stem between said buoyant member and said first stem end, said slot configured to have a portion of a fishing line disposed therein; and

(d) a resilient biasing element which resists a movement of said portion of the fishing line disposed in said slot when said biasing element is not under compression, said movement resisted by said biasing element moved in a direction away from said buoyant member and toward said first stem end, said biasing element having an end which is movable from a first position, when said biasing element is under compression, which lies between said first stem end and said slot, to a second position, when said biasing element is not under compression, which lies between said buoyant member and said slot.

5,329,723

RAT AND WILD ANIMAL CATCHER

Chia P. Liul, No. 170-3, Hsinyi Road, Luchou Village, Taipei County, Taiwan

Filed Sep. 28, 1993, Ser. No. 127,360

Int. Cl.[5] A01M *23/18*

U.S. Cl. 43—61 2 Claims

1. A rat and wild animal catcher comprising:

a cage having a top grid, two side grids, a bottom grid, and two lateral open ends each disposed with a gate therein to close said open ends in such a manner that said gates each pivotly connects at one upper edge to said top grid with the lower edge outward and downward extends toward said open end of said cage;

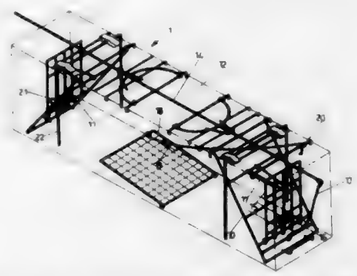
two press grids separately pivotly connected at a lower end to a lower portion of each of said gates with a torsional spring disposed thereon between said press grid and said gate to which said press grid is connected such that said press grids are always sprung outward against said gates by said torsional springs, and at an upper end to a fixing member which connects at another end opposite to said press grid to an upper portion of said gate connecting said press grid such that said press grid is restrained by said fixing member from being overly sprung outward by said torsional spring;

an actuating rod disposed on said top grid with two ends thereof separately extending toward said two gates while one of said two ends connects a cord another end of which further connects to a lower portion of said gate next to said cord;

a step member inside said cage and pivotly connected at one edge to said bottom grid; and

a link one end thereof being connected to a free edge of said step member opposite to said pivotly connected edge and the other end of said link being connected to a hanger provided on said top grid at an outer portion thereof above said gate having one lower portion connected to said cord;

said catcher being characterized by that said gate having one



lower portion connected to said cord can be pivotly lifted up and fixed to said hanger thereabove on said top grid by means of pressing said press grid connected to said gate toward an inner side of said cage, that said other gate can be pivotly lifted up in a similar manner such that it is fixed in place by said actuating rod disposed on said top grid when said actuating rod extends through a ring hook provided on a lower portion of said other gate, that said step member, when being subjected to a downward force, pulls said link and accordingly said hanger to release said gate being fixed thereto, and said gate, when being released from said hanger and moving downward to a certain position, pulls said cord downward so that said cord further pulls said actuating rod to separate from said ring hook of said another gate, causing said two gates to simultaneously move down and close said two open ends of said cage.

5,329,724

RODENT TRAP

Walter M. Saleman, 840 The Rialto, Venice, Fla. 34285

Continuation-in-part of Ser. No. 9,269, Jan. 26, 1993, Pat. No. 5,235,799. This application Mar. 29, 1993, Ser. No. 38,172

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] A01M *23/22*

U.S. Cl. 43—62 20 Claims

1. A rodent trap for capture, confinement, and disposal of one or more rodents comprising:

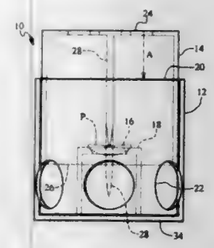
a lower member having a continuous upright side wall and a closed bottom which define an interior volume, said lower member side wall upwardly extending to define an open upper end of said lower member;

two opposing spaced apart bait posts positioned centrally atop said bottom, said bait posts defining a plurality of generally horizontal, vertically spaced bait support planes formed therebetween spaced above said bottom and structured to support a rigid piece of bait of various sizes such as a cracker and a peanut whereby the bait may be supported between said bait posts along one said bait support plane;

at least on entrance hole formed through said lower member side wall sized and positioned relative to said bottom to permit a rodent to freely pass through said entrance hole into said interior volume;

an upper member separate from said lower member and having an upright continuous side wall and a top, said upper member side wall downwardly extending to define an open lower end of said upper member;

said upper member sized to freely slide vertically within said lower member, said upper member side wall closing off said entrance hole when said upper member is in a downward closed position resting atop said bottom;



an upright trip rod connected at an upper end thereof to and downwardly extending from a central point of said top, a free distal lower end of said trip rod aligned between said bait posts when said upper member is engaged within said lower member;

said trip rod distal end being supported against the bait and, supporting said upper member in an armed position above said bottom a vertical distance sufficient for the rodent to enter into said interior volume through said aperture;

said upper member falling by gravity to said closed position when the rodent consumes a sufficient portion of the bait to allow said trip rod to pass downwardly between said bait posts.

5,329,725

BUG LIGHT AND BAG APPARATUS

Donald W. Bible, Rte. 2, Box 226, Wartburg, Tenn. 37887

Filed Jun. 7, 1993, Ser. No. 72,072

Int. Cl.[5] A01M *1/08*

U.S. Cl. 43—113 1 Claim



1. A bug light and bag apparatus, comprising,

a bug light assembly having a mesh body frame, the mesh body frame including a lower perimeter frame member, with the mesh body frame and lower perimeter frame member coaxially aligned about a predetermined axis, and

the lower perimeter frame member including a lower frame opening, and

a plurality of support legs extending from the lower perimeter frame member about the lower frame opening, with the support legs parallel to the axis, and a cylindrical fan mounting frame fixedly mounted to the support legs spaced from the lower perimeter frame member, with the cylindrical fan mounting frame coaxially aligned about the axis, with the fan mounting frame having a fan member mounted medially thereof, including fan blades, with an air transmissible bag member mounted to the cylindrical fan mounting frame, with the bag member coaxially aligned relative to the axis, and

the cylindrical fan mounting frame including an annular mounting flange, the annular mounting flange projecting radially and exteriorly of the fan mounting frame orthogonally relative to the axis, and the annular flange further including an "O" ring groove, and the bag member including a bag entrance end, and a resilient "O" ring, wherein the bag member is captured between the "O" ring and the "O" ring groove in adjacency to the bag entrance end, and

the annular mounting flange includes a door plate biased coextensively over the annular mounting flange, with a spring hinge mounting the door plate to the annular mounting flange and biasing the door plate in communication with the annular mounting flange, whereupon actuation of the fan motor displaces the door plate relative to the annular mounting flange, and

the bag member includes a bag exit opening coaxially aligned relative to the axis at a spaced relationship relative to the annular mounting flange, with the bag exit opening including a cylindrical housing mounted thereto, with the cylindrical housing including a cylindrical housing annular groove, and an air impermeable accessory bag mounted to the cylindrical housing, with the accessory bag having an accessory bag entrance end positioned over the cylindrical housing annular groove, with a resilient accessory bag "O" ring mounted onto the cylindrical housing annular groove capturing the accessory bag between the accessory bag "O" ring and the cylindrical housing annular groove.

5,329,726

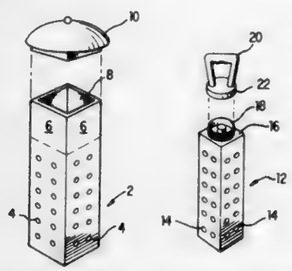
SYSTEM FOR TERMITE DETECTION AND CONTROL

Barbara L. Thorne, 6801 Wells Pkwy., University Park, Md. 20782, and James F. A. Traniello, 11 Smith Ave., Lexington, Mass. 02173

Filed Sep. 8, 1992, Ser. No. 941,460

Int. Cl.[5] A01M *1/00*

U.S. Cl. 43—124 35 Claims



15. A system for monitoring and controlling termite infestation, said system including:

a housing fixedly positioned relative to a target area to be monitored for termite activity, said housing having at least one opening defined therein,

a first cartridge removably receivable within said housing, said first cartridge including a bait material for termites and having at least one opening defined therein, said opening in said first cartridge being oriented relative to said opening in said housing such that said respective openings in said housing and said first cartridge are at least partially aligned with each other when said first cartridge is received within said housing in a predetermined operational position,

a second cartridge removably receivable within said housing, said second cartridge including a pesticide-containing

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bait material and having at least one opening defined therein, said opening in said second cartridge being oriented relative to said opening in said housing such that said respective openings in said housing and said second cartridge are at least partially aligned with each other when said second cartridge is received in said housing in said predetermined operational position,

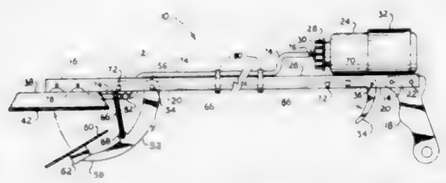
said first and second cartridge being selectively and interchangeably receivable within said housing.

5,329,727

TOPICAL HERBAL TREATMENT APPLICATOR

Madison F. Dixon, Drawer B, Swainsboro, Ga. 30401

Filed Aug. 10, 1993, Ser. No. 103,764
Int. Cl.[5] A01C *23/00*
U.S. Cl. 47—1.5 **20 Claims**



1. A plant treatment device providing for the remote topical application of plant treatment liquids to plants, comprising:

an elongate shaft having a first end, an opposite second end, a first side, and an opposite second side;

said first end of said shaft including handle means and trigger means extending from said first side of said shaft, and a liquid reservoir disposed adjacent said second side of said shaft;

said second end of said shaft including a first plate extending from said first side, with an arcuately pivotable arm extending from said first side immediately above said first plate;

said first plate including a porous pad affixed thereto, and said arm having a distal end with a second plate secured thereto so that said second plate is parallel to and immediately adjacent said porous pad when said arcuately pivotable arm is pivoted toward said first plate;

conduit means extending between said reservoir and said porous pad and providing for liquid flow between said reservoir and said porous pad to provide for the saturation of said porous pad;

means connecting said trigger means and said pivotable arm, so that said pivotable arm is arcuately swung toward said first plate when said trigger means is actuated; and,

at least said reservoir, said conduit means, said first plate with said porous pad, and said second plate are removably installable, whereby another said reservoir, said conduit means, said fist plate with said porous pad, and said second plate are temporarily installable to provide for the containment and application of a different plant treatment liquid; whereby,

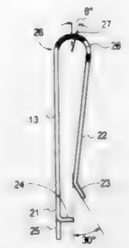
said plant treatment device is manipulated to place said porous pad immediately adjacent one side of a plant with the plant interposed between said porous pad and said second plate, said trigger means is actuated, and the plant is sandwiched between said porous pad and said second plate with plant treatment liquid being transferred directly to the plant from said porous pad.

5,329,728

PLANT POT HANGER

Glenn A. Ray, Santa Clara, Calif., assignor to Garco Enterprises, Santa Clara, Calif.

Filed Jul. 21, 1992, Ser. No. 917,553
Int. Cl.[5] A01G *9/02*; **A47G** *7/02*
U.S. Cl. 47—67 **9 Claims**



1. A pot hanger for a vertically hanging port having one pot portion including a top peripheral circular ridge, said hanger comprising:

a series of clips consisting essentially of angularly spaced, flat sheet, generally inverted U-shaped resilient spring clips of integral one-piece construction, each of said clips having a first distal essentially horizontal inwardly-facing tab adapted for seating under a downwardly facing pot exterior surface, a second distal bent end adapted for terminating against an inner surface of the pot peripheral circular ridge such that said clips are adapted to be springedly secured to the pot portion to fully support a weight of the pot portion, an upper bight portion adapted for bridging across the top of said peripheral circular ridge, and at least one aperture in said upper bight portion of each of said clips between said distal ends and extending along a medial longitudinal axis of each clip;

a series of angularly spaced discrete hanging elements separate from said clips, each hanging element having a first end entering a respective one of said at least one aperture of said clips and connecting the hanging element to the clip; and

means for connecting the opposite ends of said hanging elements to a support such that the weight of the pot portion is stably supported by said clips and said hanging elements.

5,329,729

PLANT IRRIGATION SYSTEM

Simon Liang, P.O. Box 82-144, Taipei, Taiwan

Filed Jul. 7, 1993, Ser. No. 86,990
Int. Cl.[5] A01G *27/00*, *25/00*
U.S. Cl. 47—81 **1 Claim**

1. A plant irrigation system comprising:

a reservoir for receiving water, having an upper indicating line and a lower indicating line on the outer surface thereof for denoting the highest and lowest water levels respectively, an inlet on the top thereof for filling water therein, a cap engageable with the inlet for preventing water from evaporating and flowing out thereof, an outlet on the top thereof, a first mounting plate arranged on the top thereof and having two openings, and a second mounting plate formed on the top thereof and having two slits;

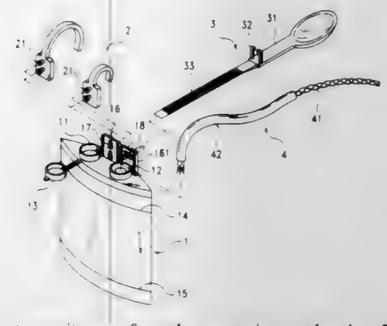
a hook having two protuberances engageable with the two openings of said first mounting plate so that the hook is detachably connected with said reservoir;

a plastic pipe having a lower end to be extended into said reservoir through the outlet of said reservoir and an upper end for burying into soil in a flower pot;

a wick enclosed within said plastic pipe; and

a spade for digging the soil, having a flexible and wrinkly strap for being firmly inserted through the slits of said second mounting plate and having a fastening means for keeping said plastic pipe in position;

whereby the plant irrigation system utilizes capillary action



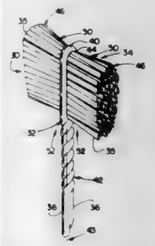
to transmit water from the reservoir to a plant in a flower pot via the wick enclosed by the plastic pipe thereby automatically controlling and adjusting required amount of water to meet different demands of various plants in different living environments.

5,329,730

ABRASIVE FINISHING TOOL

Alfred E. Scheider, Orange, and R. Brown Warner, Westlake, both of Ohio, assignors to Jason, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 409,680, Sep. 20, 1989, abandoned, Ser. No. 216,710, Jun. 8, 1988, and Ser. No. 471,385, Jan. 1, 1990. This application May 7, 1990, Ser. No. 519,632
Int. Cl.[5] B24B *9/02*
U.S. Cl. 51—334 **45 Claims**



1. An abrasive grinding tool comprising:

a shaft having a longitudinal axis; and

a relatively thin flat bundle of extruded plastic monofilaments having a central section, two end sections and two intermediate sections between said central section and said end sections;

said central section of said bundle being secured to said shaft whereby said intermediate sections project radially outwardly from two sides of said shaft in a direction generally perpendicular to said longitudinal axis;

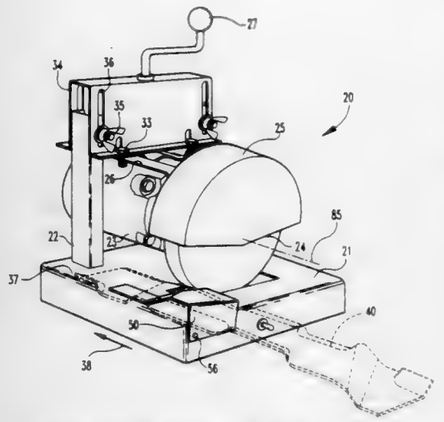
each monofilament in said bundle having a generally transverse rectangular cross-sectional shape and having an abrasive material embedded substantially uniformly therein throughout.

5,329,731

MULCHER BLADE GRINDER AND METHOD THEREOF

Gregory A. Wall, Nineveh, Ind., assignor to Wall Enterprises, Inc., New Whiteland, Ind.

Filed Jul. 7, 1993, Ser. No. 88,669
Int. Cl.[5] B24B *3/36*
U.S. Cl. 51—98 BS **8 Claims**



1. A blade grinding apparatus comprising:

a frame;

power means connected to said frame and having an rotary output;

grinding means mounted to said output to grind a first cutting edge and a second cutting edge on a blade;

blade supporting means on said frame, said blade supporting means having a first blade supporting surface and a second blade supporting surface with said first blade supporting surface positioned at a first angle relative to said second blade supporting surface, said blade supporting means operable to first position said blade when supported by said first blade supporting surface relative to said grinding means to grind said first cutting edge thereon and to then position said blade when supported by said second blade supporting surface relative to said grinding means to grind said second cutting edge thereon; and wherein:

said first blade supporting surface extends adjacent and in line with but at a different elevation than said second blade supporting surface;

said grinding means includes a grinding wheel rotatably mounted to said frame having an axis of rotation to grind a third cutting edge on said blade with said second cutting edge located between said first cutting edge and said third cutting edge;

said blade supporting means includes a bracket with an outer portion and an inner portion mounted to said frame, said bracket further includes an upper platform extending in the same direction as said axis and a downwardly slanting platform contiguous to said upper platform, said first blade supporting surface located on said upper platform and facing outwardly, said second blade supporting surface located on said downwardly slanting platform and facing outwardly;

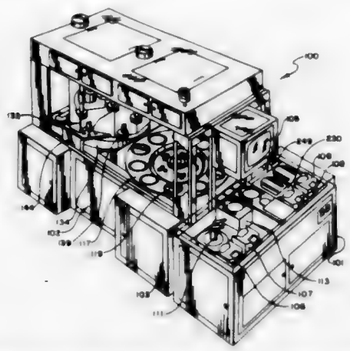
said inner portion spaced apart from said outer portion in elevation so said blade supporting means is operable to position said blade when supported by said first blade supporting surface relative to said grinding wheel to grind a third cutting edge on said blade.

5,329,732

WAFER POLISHING METHOD AND APPARATUS

Chris E. Karlsrud; Anthony G. Van Woerkom, both of Chandler, Ariz.; Shigeru Odagiri, Yokohama, Japan, and Isao Nagahashi, Fujisawa, both of Japan, assignors to Speedfam Corporation, Des Plaines, Ill.

Filed Jun. 15, 1992, Ser. No. 898,876
Int. Cl.[5] B24B 7/22
U.S. Cl. 51—131.5 14 Claims



1. Apparatus for polishing a surface of a thin wafer of material comprising:
a polishing surface;
a polishing assembly comprising a plurality of wafer carriers for polishing wafers against said polishing surface;
index apparatus comprising a plurality of load means equal to the number of said wafer carriers, each said load means for holding a wafer to be polished;
first means for positioning said wafer carriers adjacent individual ones of said load means;
means for substantially simultaneously engaging wafers held by said load means with individual ones of said wafer carriers;
second means for positioning said wafer carriers in polishing engagement against said polishing surface; and
means for moving said polishing assembly from a position at said polishing surface to a position at said index means.

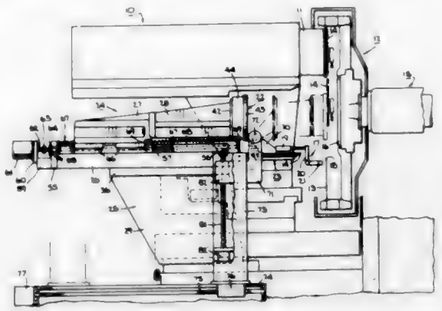
5,329,733

WAFER SLICING AND GRINDING MACHINE AND A METHOD OF SLICING AND GRINDING WAFERS

Robert E. Steere, Jr., Boonton, N.J., assignor to Silicon Technology Corporation, Oakland, N.J.

Division of Ser. No. 575,281, Aug. 30, 1990, Pat. No. 5,189,843.
This application Feb. 24, 1993, Ser. No. 21,899
Int. Cl.[5] B24B 49/00
U.S. Cl. 51—165.76 5 Claims

1. A method of slicing and grinding a wafer from an ingot comprising the steps of
positioning an ingot in a slicing position;
grinding a face of the ingot in said slicing position;
slicing a wafer from the ground face of the ingot in said slicing position;
moving the wafer sliced from the ingot to a holding station;
thereafter transferring the wafer from said holding station to a position with an unground face thereof in a plane common to the face of the ingot; and



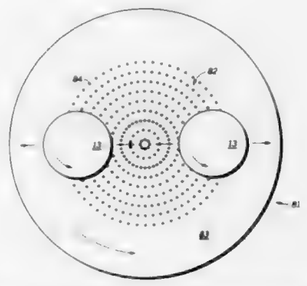
thereafter grinding the unground face of the wafer and the face of the ingot in said plane.

5,329,734

POLISHING PADS USED TO CHEMICAL-MECHANICAL POLISH A SEMICONDUCTOR SUBSTRATE

Chris C. Yu, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1993, Ser. No. 54,168
Int. Cl.[5] B24B 7/22
U.S. Cl. 51—283 R 27 Claims



1. A polishing pad for polishing a semiconductor substrate, wherein the polishing pad comprises:
an edge;
a plurality of pores having an average pore size;
a first region that is adjacent to the edge; and
a second region having a plurality of openings, wherein:
the second region is adjacent to the first region;
the second region is further from the edge compared to the first region; and
each opening of the plurality of openings has a width that is in a range of about 25–1000 percent larger than the average pore size.

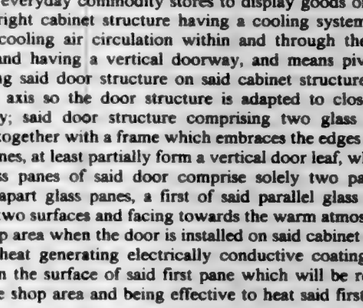
5,329,735

SYSTEM FOR FORMING AND POLISHING GROOVES IN GLASS PANELS

Thomas J. Charlton, 250 S. Woodland Beach Rd., Camano Island, Wash. 98292; Trent R. Seed, 6053 5th Ave. NE., Seattle, Wash. 98115, and Richard W. Seed, 2177 Killarney Way, Bellevue, Wash. 98004

Filed Jun. 8, 1992, Ser. No. 894,821
Int. Cl.[5] B24B 1/00, 7/19
U.S. Cl. 51—283 R 18 Claims

1. A method for forming a polished rectilinear groove in a glass panel having a continuous peripheral edge surrounding a flat face, said method comprising:
grinding an elongated rectilinear groove in said panel across said flat face with a grinding unit having an abrasive surface shaped and positioned such that said groove has a concave surface with a constant transverse profile merging with said flat face at longitudinal side edges of the



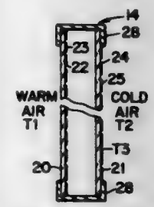
groove which are spaced from said peripheral edge except at the ends of the groove;
and polishing the surface of said groove with a rotating buffing cylinder simultaneously engaging substantially the entire surface of said groove and having a longitudinal center rotary axis parallel to said groove;
and supplying polishing liquid to said buffing cylinder while it is engaging said groove surface.

5,329,736

DOOR CONSTRUCTION FOR VERTICAL REFRIGERATOR AND FREEZER SPACES

Sven-Erik Sodervall, Edane, Sweden, assignor to Termofrost AB, Kista, Sweden

Continuation-in-part of Ser. No. 932,739, Aug. 25, 1992, abandoned, which is a continuation of Ser. No. 542,989, Jun. 25, 1990, abandoned. This application Mar. 3, 1993, Ser. No. 25,756
Claims priority, application Sweden, Jun. 30, 1989, 8902390-7
Int. Cl.[5] A47F 3/04
U.S. Cl. 52—171.3 4 Claims



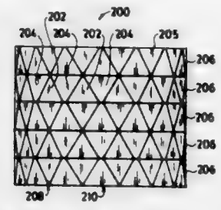
1. A vertical door structure and upright cabinet structure with refrigerator and freezer cold spaces of the kind normally used in everyday commodity stores to display goods on sale, said upright cabinet structure having a cooling system with forced cooling air circulation within and through the cold space, and having a vertical doorway, and means pivotally mounting said door structure on said cabinet structure on a vertical axis so the door structure is adapted to close said doorway; said door structure comprising two glass panes which, together with a frame which embraces the edges of the glass panes, at least partially form a vertical door leaf, wherein the glass panes of said door comprise solely two parallel, spaced apart glass panes, a first of said parallel glass panes having two surfaces and facing towards the warm atmosphere of a shop area when the door is installed on said cabinet structure, a heat generating electrically conductive coating provided on the surface of said first pane which will be remote from the shop area and being effective to heat said first glass pane electrically; and the second of said two parallel glass panes, having two surfaces and facing towards the colder refrigerator or freezer space when the door is installed on said cabinet structure and is closed, an infrared radiation reflective material coating provided on the surface of said second pane facing towards said colder space, said infrared radiation reflective material coating constituting the sole surface material on the surface of said second glass pane facing the colder space and which said sole surface material provides a radiation exchange with an emissivity factor, to the colder space, which is less than 0.2.

5,329,737

CERAMIC BUILDING BLOCK

Peter A. Roberts, Alfred; Kevin G. Hayes, Dansville, and Joanne M. Peek, Alfred Station, all of N.Y., assignors to PolyCeramics, Inc., Alfred, N.Y.

Continuation-in-part of Ser. No. 739,875, Aug. 2, 1991, Pat. No. 5,261,194. This application Oct. 15, 1993, Ser. No. 137,621
Int. Cl.[5] E04B 1/32
U.S. Cl. 52—245 9 Claims



1. An arcuate building structure comprised of a first five-sided building block adjacent to and abutting a first six-sided building block adjacent to and abutting a second five-sided building block adjacent to and abutting a second six-sided building block adjacent to and abutting a third five-sided building block adjacent to and abutting a third six-sided building block, wherein:
(a) each of said first five-sided building block, said second five-sided building block, and said third five-sided building block has substantially the same shape and size;
(b) each of said first six-sided building block, said second six-sided building block, and said third six-sided building block has substantially the same shape and size;
(c) each of said first six-sided building block, said second six-sided building block, and said third six-sided building block is comprised of a first top side, a first front side, a first back side, a first left side, a first right side, and a first bottom side, wherein:
1. said first top side has a substantially triangular shape, wherein at least two of the sides of such triangular shape are equal, and said first top side is substantially parallel to said first bottom side,
2. said first front side has a substantially trapezoidal shape comprising a top edge, a bottom edge, a right edge, and a left edge, wherein said right edge and said left edge have equal lengths and form equal angles with said bottom edge,
3. said first back side has a substantially triangular shape with at least two sides equal in length to each other,
4. said first left side and said first right side have shapes which are congruent, and each of said first left side and said first right side are in the shape of a parallelogram and comprise a substantially triangular-shaped recess disposed between the walls of said parallelogram, and
5. said first bottom side has a substantially trapezoidal shape and is comprised of a substantially triangular recess disposed between the walls of such trapezoidal shape;
(d) each of said first five-sided building block, said second five-sided building block, and said third five-sided build-

ing block is comprised of a second top side, a second front side, a second back side, a second right side, and second left side, wherein:

1. said second top side has a substantially rectangular shape and comprises a substantially triangularly shaped recess disposed within said substantially rectangular shape,
2. said second left side and said second right side are congruent with each other and are also congruent with said first left side and said first right side,
3. said second front side is congruent with both said second back side and said first back side; and

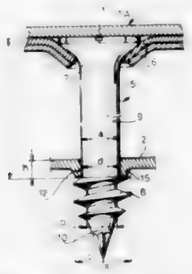
(e) disposed within each of said triangular recesses is a means for connecting one of said five-sided building blocks with one of said six-sided building blocks.

5,329,738

COMPOSITE STRUCTURE, ESPECIALLY FOR BUILDING

Francis Ovaert, 10 Boulevard Jourdan, Paris, France 75014 , and Pierre Potet, Chateau de Rhodes, La Bastide de Seron, France 09240

Filed May 7, 1992, Ser. No. 879,262
Claims priority, application France, May 7, 1991, 91 05609
Int. Cl.[5] F16B *25/00;* **E04B** *1/62*
U.S. Cl. 52—410 **16 Claims**



1. A composite structure comprising:

a metal sheet;

a layer of material;

at least one fastening device fastening said layer to said metal sheet, said fastening device comprising a rod-shaped member having first and second opposite ends, a head at said first end for enabling rotation of said member, a threaded portion at said second end for threading through said metal sheet upon rotation of said member, said threaded portion including a thread having a thread-root diameter, and a smooth portion between said head and said threaded portion and immediately adjacent said threaded portion;

said fastening device being extended through said layer of material with said head bearing toward a side of said layer of material remote from said metal sheet and with said threaded portion threaded through and entirely beyond said metal sheet; and

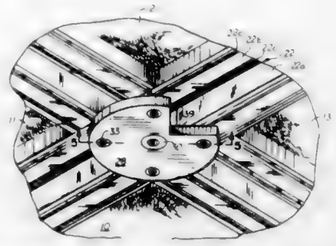
said smooth portion having a diameter, at least immediately adjacent said threaded portion, substantially greater than said thread-root diameter of said thread, such that upon said fastening device being rotated with said threaded portion threaded beyond said metal sheet said smooth portion internally upsets said metal sheet and forms integral therewith a flange having an internal surface substantially complementary to and mating with said smooth portion and forming a guide therefor.

5,329,739

AIR IMPERVIOUS FILTER SUPPORT SYSTEM

Jos. Madl, Jr., 2161 Vista Entrada, Newport Beach, Calif. 92660

Filed Mar. 14, 1991, Ser. No. 670,266
Int. Cl.[5] E04B *9/06;* **B01D** *46/00*
U.S. Cl. 52—506.06 **38 Claims**



1. A filter panel system wherein filter panels cover the walls or ceiling of a room, the walls or ceiling being an underlying surface, said system comprising:

a plurality of filter panels suspended against gravity at a predetermined distance from said underlying surface, the distance defining a gap between the filter panels and the underlying surface, the filter panels arranged adjacent to each other in closely spaced edge-to-edge relation such that the filter panels have adjacent edges, each filter panel having an integral rigid frame with a corner, wherein the corners of said adjacent panels meet to form an intersection, the gap between the filter panels and the underlying surface substantially free from obstruction to allow free communication of air within the gap;

a support rod having an end extending into the intersection generally perpendicular to said panels;

a support member attached to said rod to engage and support the panels, the filter panels retained against gravity substantially only by the support member; and

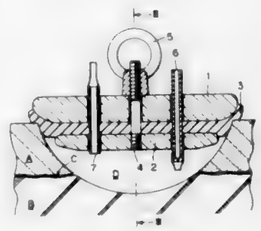
at least one air impervious sealing strip joining the adjacent edges of the filter panels, the sealing strip coupled only to the panels and free from any coupling to the underlying surface.

5,329,740

CONCRETE REPAIRING AGENT INJECTION PLUG

Yuichiro Hayashi, and Noboru Naito, both of Sakata, Japan, assignors to Nihon Mente Kaihatsu Kabushiki Kaisha, Yamagata, Japan

Filed Sep. 24, 1992, Ser. No. 949,986
Claims priority, application Japan, Oct. 2, 1991, 3-282263
Int. Cl.[5] E04G *23/02;* **E04B** *1/41*
U.S. Cl. 52—514 **10 Claims**



1. A concrete repairing agent injection plug device for injecting the repairing agent into an injection groove whose cross-section is arcuate formed in a concrete construction wall, the injection plug device comprising:

an elastic member partly or fully insertable into the injection groove;

a first pressure member positioned immediately above the elastic member;

a second pressure member positioned immediately below the elastic member, said second pressure member having an elongated plate shape, for sandwiching the elastic member between the first and second pressure members, the first and second pressure members and the elastic member being formed with a through hold arranged in line;

a pipe member formed with a repairing agent injection passage and detachably insertable into the through hole for injecting the repairing agent into a space of the injection groove, the pipe member having an outer portion protruding from the first pressure member and an inner end portion communicatable with the space of the injection groove; and

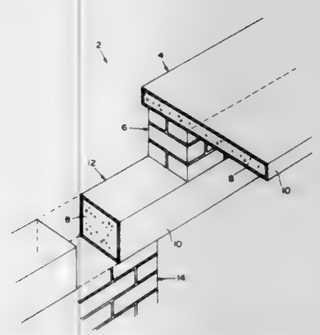
a pressure mechanism connected to the first and second pressure members for reducing a distance therebetween so as to laterally expand the elastic member.

5,329,741

PORTABLE CONSTRUCTIONAL ELEMENT AND A PROCESS FOR ITS PRODUCTION

Raphael Nicolaidis, 29 Parkside Place, Meanwood, Leeds, West Yorkshire, LS6 4NX, and Peter S. Hewitt, 16 The Vale, Collingham, Wetherby, West Yorkshire, LS22 5JN, both of United Kingdom

Continuation of Ser. No. 722,930, Jun. 28, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 40,568
Claims priority, application United Kingdom, Jul. 6, 1990, 9014990
Int. Cl.[5] E04C *2/00*
U.S. Cl. 52—725 **9 Claims**



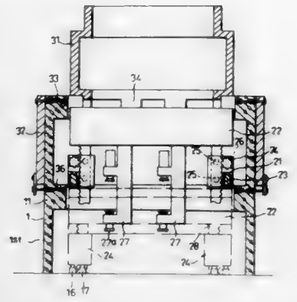
1. A portable constructional element comprising a foamed cementitious material in an outer covering, the foamed cementitious material being such that it has been introduced into the outer covering in a wet state and has set in the outer covering such that the foamed cementitious material is of a substantially uniform character throughout the constructional element, the outer covering being made of a plastics material, the outer covering having an inner surface which is free of inward deformations acting solely to key the foamed cementitious material to the outer covering, the outer covering and the foamed cementitious material being secured to one another by the setting of the foamed cementitious material in the outer covering, and the foamed cementitious material being such that it comprises a foaming agent and cement.

5,329,742

PROCESS FOR CONSTRUCTING A CONCRETE BUILDING

Wen-Yuan Lee, 7F-3, No. 8, Lane 390, Sec. 1, Chien-Kang Rd., Tainan City, Taiwan

Filed Jul. 8, 1992, Ser. No. 910,527
Int. Cl.[5] E04B *1/04*
U.S. Cl. 52—743 **14 Claims**



1. A method of constructing a concrete building, comprising the steps of:

a) forming a base structure providing a lowermost floor for a building;

b) providing an inner form having an upper vertically extending form portion disposed inward of an integral lower vertically extending form portion, a horizontal beam forming portion, and a vertical post forming portion so that the resulting horizontally extending beam is thicker than the vertical wall portion;

c) providing an outer form;

d) positioning on the base structure the inner and outer forms in juxtaposition for therebetween defining a concrete receiving chamber;

e) filling the chamber with concrete;

f) curing the concrete;

g) stripping the forms from the cured concrete and thereby exposing a first integral concrete wall, beam, and post providing at least a portion of a first floor of the building;

h) providing a jack assembly and a clamp assembly, each assembly operatively secured to the inner form;

i) elevating the inner form by operating the jack assembly;

j) clamping the clamp assembly to the horizontal beam and thereby positioning the inner form at a selected position; and

k) positioning the outer form relative to the inner form and thereby defining another concrete receiving chamber.

5,329,743

VARIABLE SET-UP REUSABLE CENTERING FRAME

Vincenzo A. Legnante, No. 57, Via Volterrana, Tavernuzza Di Impruneta, 50029 Firenze, Italy

PCT No. PCT/IT89/00017, § 371 Date Sep. 13, 1990, § 102(e) Date Sep. 13, 1990, PCT Pub. No. WO89/08758, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 14, 1989, Ser. No. 474,856
Claims priority, application Italy, Mar. 15, 1988, 47733 A/88
Int. Cl.[5] E04F *21/00*
U.S. Cl. 52—749 **23 Claims**

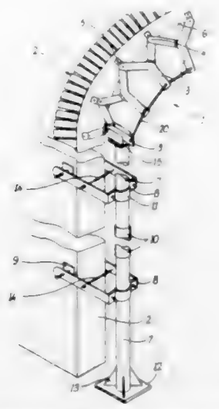
1. A variable set-up, reusable centering frame for employment as a movable and a stationary structure, comprising:

a succession of modular rod members each having a first upper branch, a second upper branch and a lower branch;

a continuous forming member;

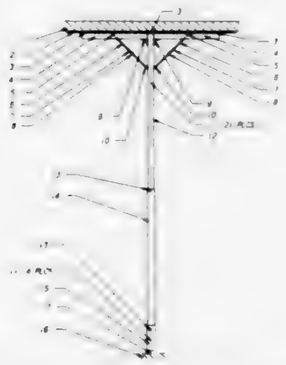
connection means for pivotably connecting said first and second upper branches to said continuous forming member;

slide rods, said slide rods extending between adjacent lower branches of said modular rod members, and said slide rods having a first end pivotably secured to a respective lower branch at a first securement location and a second end,



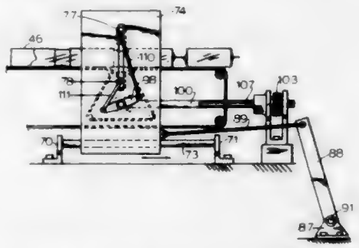
said second end being adjustably secured with fastening means to an adjacent lower branch at a second securement location such that spacing between said first and second securement locations is variable to provide for adaption of said continuous forming member to a desired shape.

5,329,744
HANDY T
Steven M. Sumter, 1916 W. Poplar St., Philadelphia, Pa. 19130
Filed Apr. 3, 1992, Ser. No. 863,058
Int. Cl.[5] E04D *15/00*
U.S. Cl. 52—749 **2 Claims**



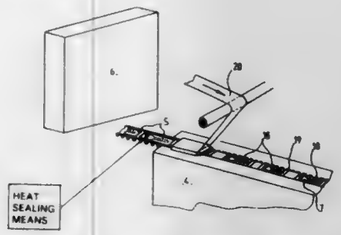
1. A device for temporarily supporting gypsum boards on ceiling members during installation, said device comprising:
first and second pivoting arms having upper and lower surfaces, each said arm having rows of friction grips attached to said upper surface to firmly hold the gypsum boards;
an upper support column having holes spaced at equal increments for height adjustments;
first and second hinges attaching said first and second arms to said upper support column;
first and second braces each having pivotable first and second members, said braces supporting the pivoting arms, and a cover locking the first and second arms in a locked open position;
a safety overlap device attached to the upper support column preventing damage to the braces upon closure;
a lower support column having a top and bottom, said lower support column slidably receiving said upper support column, said lower support column having holes spaced at equal increments; and
a first and second pin means comprising a spring and a metal pin, said first pin means connecting said upper and lower support columns by passing through aligned holes in said upper and lower support columns.

5,329,745
PACKAGING MACHINE SEAL MECHANISM APPARATUS/METHOD AND CONTROL
Yasutaka Suga, Ibaraki, Japan, assignor to Ossid Corporation, Rocky Mount, N.C. and Ibaraki Seiki Machinery Company, Ltd., Ibaraki, Japan
Filed Nov. 18, 1992, Ser. No. 978,324
Claims priority, application Japan, Apr. 15, 1992, 4-121444
Int. Cl.[5] B65B *9/06, 51/30, 57/00*
U.S. Cl. 53—75 **9 Claims**



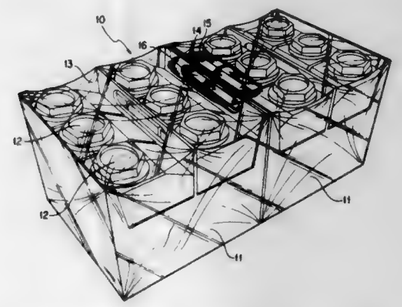
5. A packaging machine apparatus, comprising:
(a) a mechanism for gradually tubulating a belt-like film in a longitudinal direction of said film while conveying said film;
(b) a feed conveyor for equidistantly transferring a series of to-be-wrapped products into said tubular film;
(c) a mechanism including a lever for transmitting swing motion of said lever swinging through a predetermined arc to a frame through a linkage and reciprocating said frame along a line parallel to the longitudinal direction of said tubular film;
(d) a seal mechanism supported by said frame and adapted for clamping said tubular film with a pair of seal bars and heating a selected portion of said tubular film when said frame moves in the same direction as said tubular film;
(d) an operation control apparatus for said seal mechanism including a screw shaft disposed on said lever and connected to be driven by a first motor, said frame being connected through a linkage to a threaded slider mounted on and positioned along the length of said lever by rotation of said screw shaft; and
(f) a control mechanism for generating and transmitting control signals to said first motor and to a second motor for conveying a film and being adapted to receive and calculate a value of the length of to-be-wrapped products transferred from said feed conveyor into said tubular film as input data, and utilizing said input data to position said slider on said lever by signalling said first motor and the transfer speed of said film by signalling said second motor in correspondence with the value of the length of said to-be-wrapped products.

5,329,746
DEVICE FOR PACKING PROTECTED ARTICLES FOR USE IN PARTICULAR WITH FOODSTUFFS INTO PROTECTIVE BAGS
Henri Vulliez, Moulin de Butteaux - Flogny-la-Chapelle, 89360 Butteaux, France
Division of Ser. No. 641,535, Jan. 15, 1991, Pat. No. 5,161,691.
This application Aug. 10, 1992, Ser. No. 926,696
Claims priority, application France, Jan. 18, 1990, 90 00961; Apr. 11, 1990, 90 04674
Int. Cl.[5] B65B *9/02, 15/00, 35/16*
U.S. Cl. 53—111 R **8 Claims**



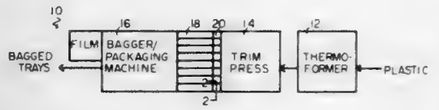
1. A device for packing molded plastic articles, such as forks and knives, into protective bags, wherein each molded article includes a flat part for protecting a portion of the molded articles and which is removably connected to a portion of the article by at least one frangible point, said portion of the article comprising, when said article is a fork, a plurality of prongs of said fork, and when said article is a knife, a sharp edge of said knife, the flat protecting part having graspable means for allowing the article to be easily grasped, said device comprising means for individually and mechanically gripping and conveying the articles from a mold, said gripping means comprising at least one robot having an arm and wrist for the simultaneous gripping of said graspable means of the protecting part of the molded articles, and for conveying the gripped molded articles to a packing means for being packed into the protective bags, and said packing means for packing the molded articles with their respective protecting parts into the protective bags including means for welding the protecting part of each article with the protective bag in which the article is enclosed through heat-sealing by ultrasound or high frequency.

5,329,747
METHOD TO ACCESS CARRYING HANDLE ON BUNDLE WRAPPED PREPACKAGED ITEMS
Allen C. Williams, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.
Filed Nov. 4, 1992, Ser. No. 971,372
Int. Cl.[5] B65B *17/02, 53/02, 61/16*
U.S. Cl. 53—413 **13 Claims**



1. A method of bundling a plurality of packages having one or more containers therein and providing for access to a carrying means comprising:
a) placing a plurality of packages having one or more containers therein and having a carrying means, in a desired position;
b) surrounding said plurality of packages with a heat-shrinkable thermoplastic film;
c) shrinking said heat-shrinkable thermoplastic film around said plurality of packages using a heat shrinking means; and
d) providing access to the carrying means through the heat-shrinkable film using a hot tool cutting means;
characterized in that the hot tool cutting means simultaneously cuts an access hole of a size sufficient to permit hand access therethrough and provides a weld around the periphery of said access hole thereby substantially eliminating tear propagation in the heat-shrinkable thermoplastic film.

5,329,748
NESTED PLASTIC TRAY SEPARATOR APPARATUS PACKAGING SYSTEM AND METHOD
Kenneth J. Belsito, Hyannis, Mass., assignor to Sencorp Systems, Inc., Hyannis, Mass.
Filed Jan. 19, 1993, Ser. No. 6,249
Int. Cl.[5] B65B *5/06, 35/50, 57/20*
U.S. Cl. 53—440 **20 Claims**



1. A packaging apparatus which comprises:
a) a channel receiving means having a one and other end, with one end to receive a plurality of vertically nested plastic tray products to be packaged into separate packages;
b) a tray product separating means at the one end of the receiving means to separate the received tray products into a plurality of separate units composed of a defined plurality of vertical nested plastic tray products;
c) feeding means at the one end of the receiving means to feed each unit of separated nested tray products to a packaging means; and
d) a packaging means at the other end of the receiving means to package each separated unit composed of the nested tray products, the improvement which comprises:
i) a base plate having a cavity therein, the base plate forming a part of the floor base of the receiving means;
ii) a pair of spaced-apart picker elements each having a one and other end;
iii) a tension-biased holdback finger element having an one and other end and positioned between the picker elements;
iv) separator activating means to move the picker elements sequentially and cyclically between a non-use position within the cavity and a tray product separating position extending generally vertically upward from the cavity and to have one end of the picker element extend between selected nested tray products to separate a defined number of nested tray products from the nested tray products directed to the receiving means;
v) the separator activating means moving the holdback finger element simultaneously with the picker elements to the non-use position and the finger element tension-biased to a generally vertical product tray holdback position within the cavity, wherein the holdback finger element is spaced-apart a defined distance from the picker elements in the product separator position to hold back temporarily the plurality of vertically nested

plastic tray products being directed into the receiving means; and

vi) stop means to hold the holdback finger element in the holdback position while the pair of picker elements move to the product separating position; and

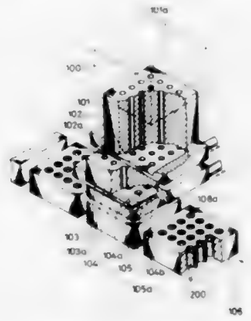
vii) product counter means to activate the separator activating means to provide for the separation of a defined number of a plurality of stacked tray products to compose a defined unit for packaging.

5,329,749

TABLET ENCAPSULATOR

Taizo Yamamoto, Osaka, and Hirokazu Konishi, Sakurai, both of Japan, assignors to Japan Elanco Company Limited, Osaka, Japan

Continuation of Ser. No. 978,403, Nov. 18, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 121,910
Claims priority, application Japan, Dec. 18, 1991, 3-361120
Int. Cl.[5] B65B *1/08, 35/14, 35/50*
U.S. Cl. 53—525 **19 Claims**



1. A tablet encapsulator comprising:

capsule holding means for holding a plurality of hard gelatin capsules each having an opening for receiving a plurality of tablets during a capsule filling sequence;

a first tablet guide shoot having plural first guide holes for directing said tablets into said openings in said capsules;

shutter means for normally preventing said tablets from entering the first guide holes and for intermittently permitting a predetermined number of tablets to pass through each of said first guide holes in said first tablet guide shoot and to enter each of said capsules through said openings in synchronism with intermittent motion of said capsule holding means;

a tablet holding block having plural second guide holes each for holding said predetermined number of the tablets before said shutter means permits said predetermined number of tablets to pass through each of said first guide holes;

a tablet carrier having plural third guide holes, said tablet carrier having a thickness being less than or substantially the same as a thickness of said tablets, said tablet carrier being reciprocable to align said third guide holes with said second guide holes for a number of times equal to the predetermined number of tablets to be received by said capsules during said capsule filling sequence so that with each reciprocation each of said second guide holes receives a single tablet until said predetermined number of tablets is received in each of said second guide holes;

a second tablet guide shoot having plural fourth guide holes for providing said tablets to said tablet carrier; and

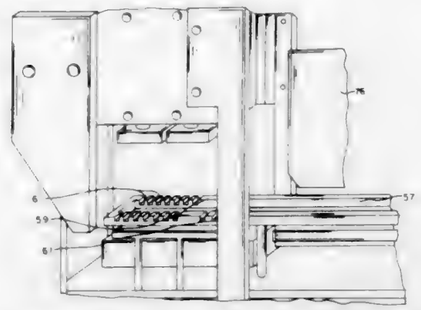
tablet supplying means for supplying said tablets to said fourth guide holes.

5,329,750

BLISTER PACKAGING MACHINERY

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Filed Nov. 12, 1992, Ser. No. 975,622
Int. Cl.[5] B65B *7/28, 41/08, 43/48, 51/22*
U.S. Cl. 53—559 **8 Claims**



1. A system for fabricating blister packs containing pills to be individually dispensed therefrom, the system having an input end and an output end and comprising:

a first reel for supporting a web of plastic material located adjacent to the input end of the system, the plastic material comprising the lid material of the blister packs;

intermittent drive means located adjacent to the output end of the system to feed the plastic material in a step and repeat manner along a linear path of travel through the system;

well forming means along the path of travel downstream from the first reel adapted to form individual pill receiving wells in a conveyed web of plastic corresponding to a plurality blister packs extending transversely across the web of plastic material;

dispensing means along the path of travel downstream from the well forming means adapted to dispense individual pills into the individual wells;

a second reel for supporting a web of rupturable material located above the path of travel downstream from the dispensing means to feed rupturable material onto the web of plastic material for movement therewith, the rupturable material constituting the lid material of the blister packs;

heating means located along the path of travel downstream from the second reel to fuse the plastic material to the rupturable material with pills therebetween and thereby form a two-part laminate;

support means downstream from the heating means and laterally offset from the path of travel for retaining a stack of apertured information-bearing cards in an operative orientation for being fed therefrom;

pick and place means with associated rail means located between the support means and the path of travel adapted to sequentially pick information-bearing cards from the support means and to place the picked card onto the rail means adjacent to, but offset from, the path of travel;

piston means located beneath the rail means adapted to shift the placed card to a location beneath the web of plastic material with the wells of the plastic material vertically aligned with the apertures of the card and with support rails for the plastic material, the support rails having recesses for the wells;

ultrasonic welding means along the path of travel adapted to raise the shifted card into contact with the plastic material and to couple the plastic material, with the rupturable material thereabove, with the raised card therebeneath to form a three part laminate;

punching means along the path of travel downstream from the ultrasonic welding means to cut the laminate along the path of travel and transverse thereto for forming blister packs in a continuous and automatic cycle of operation; and

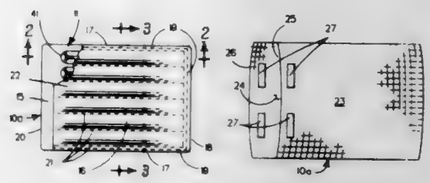
third reel means located along the path of travel adjacent to the output means to receive the remaining material of the three-part laminate after the cutting of the blister packs therefrom.

5,329,751

VENTILATING PNEUMATIC ANIMAL HARNESS

LeGrand Wadsworth, Rt. #1, Box 168, St. Ignatius, Mont. 59865

Filed Dec. 22, 1992, Ser. No. 994,991
Int. Cl.[5] B68C *1/12, 1/14*
U.S. Cl. 54—23 **4 Claims**



4. Ventilating pneumatic animal harness, comprising in combination:

a harness member comprising a strap body formed of resilient air permeable material with elongate mesh sides joined by peripheral banding to define at least one internal pocket to receive and positionally maintain a deformable pneumatic element, said strap body carrying on one outer surface a second strap having means for interconnection with other harness elements, and

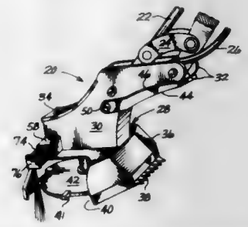
said at least one internal pocket carrying a bicycle inner tube configured in two elongate side-by-side courses to fit within the at least one internal pocket, said bicycle tire inner tube carrying gas at a pressure between one and five pounds per square inch above the ambient atmosphere and having valving means to maintain air therein and selectively allow input and exit of air therefrom.

5,329,752

BRUSHCUTTER HEAD

David E. Milbourn, 54 Milbourn La., Hoquiam, Wash. 98550

Filed Apr. 1, 1993, Ser. No. 988,942
Int. Cl.[5] A01G *23/08;* **A01D** *34/82*
U.S. Cl. 56—16.4 **24 Claims**



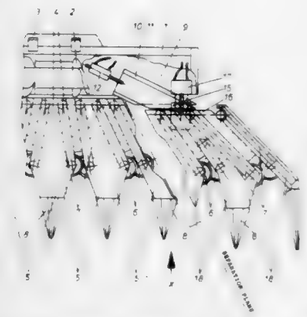
24. A work head for a brush cutting machine, comprising a housing; a cutting blade carried by said housing; a gripping jaw carried by a lower portion of said housing; a thumb pivotally mounted on said housing to pivot about a horizontal axis from a nonuse position, in which said thumb is at least substantially flush against an upper portion of said housing, toward said jaw to thereby grip cut brush and other debris between said thumb and said housing; and an actuator mounted inside said housing and connected to said thumb to pivot said thumb about said axis.

5,329,753

CORN HARVESTING IMPLEMENT FOR FIELD CHOPPING MACHINE

Rudolf Arnold, and Wilfried Schulz, both of Saulgau, Fed. Rep. of Germany, assignors to Claas Saulgau GmbH, Saulgau, Fed. Rep. of Germany

Filed Sep. 4, 1992, Ser. No. 940,454
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131491
Int. Cl.[5] A01D *45/02*
U.S. Cl. 56—98 **19 Claims**



1. A corn harvesting implement for a field chopping machine, comprising a drawing-in trough; a plurality of transporting passages supported on said drawing-in trough, said transporting passages including at least two outer transporting passages which are foldable upwardly to a transporting position for obtaining a smaller transporting width and foldable downwardly to a working position, said transporting passages also including stationary transporting passages, at least one of said upwardly foldable transporting passages and a neighboring one of said stationary transporting passages being arranged so that in said working position a predetermined distance is provided between at least a part of said at least one of said upwardly foldable transporting passages and at least a part of said neighboring one of said stationary transporting passages; and means for increasing said distance at least before a beginning of folding of said upwardly foldable passages from said working position to said transporting position.

5,329,754

MACHINE FOR CHOPPING CROP RESIDUE

William T. Fuesz, 20526 County Rd. 5, Haxtun, Colo. 80731

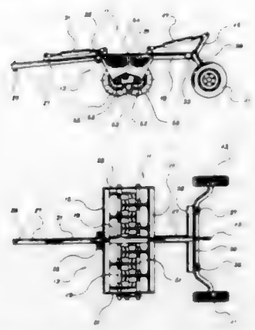
Filed Sep. 3, 1992, Ser. No. 940,376
Int. Cl.[5] A01D *34/44, 34/52;* **A01F** *29/06*
U.S. Cl. 56—504 **10 Claims**

1. A machine for chopping crop residue, comprising:

a frame having a forward direction of travel;

a cutting tool, having a circumferential sharp edge, and attached to the frame in a direction parallel to the direction of travel for chopping crop residue in a direction parallel to the direction of travel, wherein the cutting tool further comprises a hub having a pair of spaced apart circular plates attached to the frame, and a plurality of

removable cutting tool segments attached to the hub between the circular plates; and



a transverse knife attached to the cutting tool transversely to the direction of travel for chopping crop residue in a direction perpendicular to the direction of travel.

5,329,755

TEXTILE YARN PROCESSING MACHINE HAVING DEVICES FOR REDUCING FRICTIONAL CONTACT BETWEEN A ROTATING YARN BALLOON AND A BALLOON LIMITER

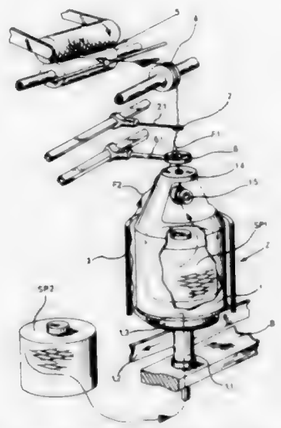
Johannes Frentzel-Beyme, Mönchengladbach; Rainer Lorenz, Nettetal-Breyell, and Helmut Heiser, Mönchengladbach, all of Fed. Rep. of Germany, assignors to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Nov. 2, 1992, Ser. No. 970,002

Claims priority, application Fed. Rep. of Germany, May 26, 1992, 4217360; Jul. 15, 1992, 9209495

Int. Cl.[5] D01H *1/42*

U.S. Cl. 57—58.36 **7 Claims**



1. A textile yarn processing machine having a plurality of spindle assemblies for processing of yarn, each spindle assembly includes a central axis, means for forming a balloon of yarn which rotates around said spindle assembly central axis as the yarn travels through said spindle assembly during processing, and a balloon limiter device surrounding the rotating balloon of yarn and having a generally cylindrical inside surface for frictional contact with the rotating balloon of yarn to restrict the size of the rotating balloon of yarn; wherein the improvement comprises:

means for (1) forming an undulating pattern of travel for the yarn through the rotating balloon of yarn so as to create times of contact and times of no contact of predetermined segments of the yarn with the inside surface of said balloon limiter as the yarn segment travels through said balloon limiter and (2) creating relationships wherein the sum of the times of contact of a segment of yarn advancing through the yarn balloon with the inside surface of said balloon limiter is to the total time of advance of this yarn segment through the rotating yarn balloon as is 1:5 to 1:200 and wherein each time of contact of the traveling yarn element with the inside surface of the balloon limiter is to each time of no contact as is 1:2 to 1:20, whereby frictional contact between the rotating balloon of yarn and the inside surface of said balloon limiter is reduced to avoid the necessity of the use of lubrication on the yarn being processed, said means for forming the undulating path of travel for the yarn and creating the relationships comprising a ring having an inside surface and an outside surface and positioned for running engagement by the yarn around one of said surfaces as the yarn travels through the rotating balloon of yarn, said one of said surfaces being engaged by said yarn having an undulating configuration which deviates from circularity in radial direction and in a predetermined manner corresponding to the desired predetermined undulating pattern of travel for the yarn, and said ring being positioned along said central axis of said spindle assembly and above and separate from said balloon limiter device at an upper end portion of the rotating balloon of yarn.

5,329,756

AUTOMATIC DEVICE FOR STARTING A TWO-FOR-ONE TWISTING STATION AFTER INTERRUPTION OF THE FEED YARN AND RELATIVE AUTOMATIC PROCESS

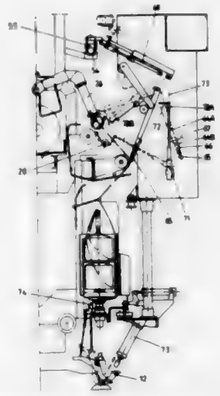
Roberto Meroni; Umberto Gerin, both of Pordenone; Fabio Lancerotto, Milan, and Vittorio Colussi, Pordenone, all of Italy, assignors to Savio S.p.A., Pordenone

Continuation of Ser. No. 520,547, May 8, 1990, abandoned. This application May 11, 1992, Ser. No. 884,216

Claims priority, application Italy, May 11, 1989, 20445 A/89

Int. Cl.[5] D01H *9/10, 9/18;* **B65H** *67/04*

U.S. Cl. 57—269 **7 Claims**



1. An automatic device for restarting a two-for-one twisting station and restoring yarn continuity between a feed and a bobbin on which yarn is wound, said station comprised of a feed side comprised of a feed source of at least two yarns to be twisted, a bobbin side comprised of a means to accumulate twisted yarn, and a twisting action assembly between said feed side and said bobbin side, said device being responsive to a call signal from said twisting station and disposed on a carriage which patrols twisting machine faces along which the twisting stations are aligned, characterized in that the automatic device selectively effects the operations involved in the restarting cycle and the rejoining cycle in accordance with a predetermined sequence;

means for discharging a full bobbin onto means for unloading said bobbin;

means for raising and lowering a bobbin carrier arm and for opening holding centres which hold a tube on which the bobbin is wound;

means for retaining and delivering the at least two yarns, wherein the yarns on the feed side are manually insertable and are clamped therein;

means for seizing the yarns on the feed side from said retention and delivery means, said seizing means selectively conveying the yarns either to between the holding centres in case of a doffing cycle or into a joining device in the case of a joining cycle, said seizing means comprising an extendable arm provided with a gripper at one end, said gripper operated by a servo control, and said arm divided into two hinged together parts of which at least one part can assume either an extended position or a plurality of positions folded through an angle relative to the other part so as to reduce its overall length and thus avoid obstacles existing in its path, and wherein said seizing means is pivotable from a first position proximate said retention and delivery means to a second position, wherein said second position enables trapping the twisted yarn between said bobbin and one of the holding centres, and to a third position for rejoining the yarn ends at the feed side of the bobbin at said joining device;

means for taking a new tube and positioning it between the holding centres;

means for seeking the yarn on the bobbin side and positioning it in said joining device when the yarns are to be rejoined in the rejoining cycle;

means for joining the yarn on the bobbin side to the yarns on the feed side;

control means for restarting the twisting action assembly; and

means for clearing the call signal.

5,329,757

TURBOCHARGER-BASED BLEED-AIR DRIVEN FUEL GAS BOOSTER SYSTEM AND METHOD

Henry B. Faulkner, Dover, Mass.; James B. Kesseli, Mont Vernon, N.H.; Michael C. Swarden, Cambridge, and Willem Jansen, Weston, both of Mass., assignors to Gas Research Institute, Chicago, Ill.

Filed May 12, 1993, Ser. No. 60,410

Int. Cl.[5] F02C *3/22*

U.S. Cl. 60—39.02 **17 Claims**

1. A method for increasing fuel gas pressure to a fuel system of a gas turbine engine, the steps comprising:

(a) discharging a portion of pressurized gas from a high-pressure section of a gas turbine engine to at least one of a plurality of turbines;

(b) transferring energy from said turbines to a plurality of compressors where each of said turbines drives a corresponding compressor of said compressors;

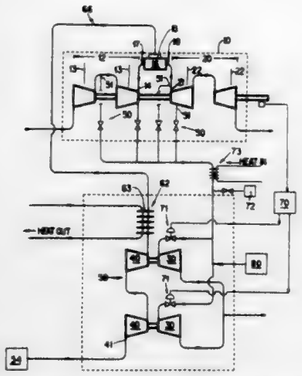
(c) supplying a gaseous fuel to an inlet of each of said compressors;

(d) compressing said gaseous fuel through said compressors;

(e) aftercooling the compressed gaseous fuel downstream, with respect to a direction of flow of said gaseous fuel, of said compressors;

(f) delivering the aftercooled and compressed gaseous fuel to a fuel system of the gas turbine engine; and

(g) controlling a delivery pressure of said gaseous fuel at a fuel inlet of the fuel system as a function of a power demand of the gas turbine engine, controlling said delivery pressure by varying a pressure drop across said turbines.



5,329,758

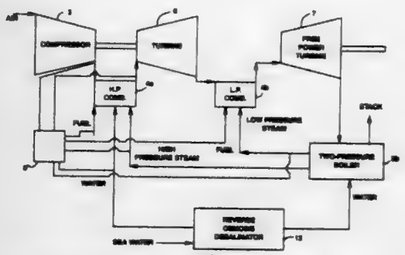
STEAM-AUGMENTED GAS TURBINE

Herman B. Urbach, Annapolis, and Donald T. Knauss, Severna Park, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1993, Ser. No. 64,540

Int. Cl.[5] F02C *3/30*

U.S. Cl. 60—39.05 **15 Claims**



1. A steam-augmented engine system, comprising:

compression means for receiving air and discharging a first compressed air flow mass;

first combustion means for receiving said first compressed air flow mass, a predetermined quantity of fuel, a predetermined quantity of purified water and a first predetermined quantity of water and steam mass, and for generating a first combustion product therefrom;

heat exchange means for producing said first predetermined quantity of steam mass and a second predetermined quantity of water and steam mass;

first expansion means for receiving and expanding said first combustion product from said first combustion means to generate a first power output for powering said compression means and for discharging an expanded combustion product;

second combustion means for receiving said product, a predetermined quantity of fuel and said second predetermined quantity of water and steam mass from said heat exchange means, and for generating a second combustion product therefrom;

second expansion means for receiving and expanding said second combustion product from said second combustion

means to generate a second power output and for discharging an exhaust product, said exhaust product being discharged to said heat exchange means;

regulating means for regulating said fuel, said purified water and said first predetermined and steam mass introduced into said first combustion means and for regulating said first combustion product, said fuel and said second predetermined water and steam mass introduced into said second combustion means, said first and second combustion means operating along a predetermined power profile, such that said second combustion means produces a stoichiometric combustion at a power point; and

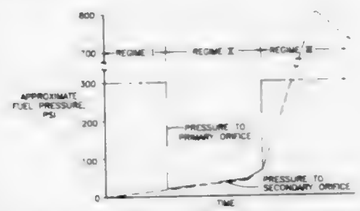
sea-water purifying means, coupled to said heat exchange means, for receiving sea-water, purifying said water and for discharging a first portion of the purified water to said heat exchange means.

5,329,759

METHOD FOR REGULATING FUEL FLOW IN A GAS TURBINE ENGINE

Hing C. Chan, Mississauga, Canada, assignor to Pratt & Whitney Canada, Inc., Lonqueil, Canada

Filed Jun. 30, 1993, Ser. No. 85,514
Int. Cl.[5] F02C *7/26*
U.S. Cl. 60—39.06 **9 Claims**



1. A method for regulating fuel flow to the combustor of a gas turbine engine, wherein the fuel flows through a hybrid fuel nozzle into the combustor and the nozzle has a primary and secondary orifice, comprises: a first fuel flow regime during which fuel flows to the primary orifice at a pressure between about 250 and 300 psi and to the secondary orifice at a pressure between about 1 and 5 psi; a second fuel flow regime during which fuel flows to both the primary and secondary orifices at a pressure between about 5 and 30 psi; and a third fuel flow regime during which fuel flows to the primary orifice at a pressure between about 250 and 300 psi and to the secondary orifice at a pressure consistent with engine operation in excess of 50% N_2 speed, wherein the first flow regime is operational between the initiation of engine start up and the attainment of stable fuel combustion in the combustor; the second fuel flow regime is operation between the attainment of stable combustion conditions and approximately 50% N_2 speed; and the third flow regime is operational thereafter.

5,329,760

SELF-SUSTAINING FUEL PURGING FUEL INJECTION SYSTEM

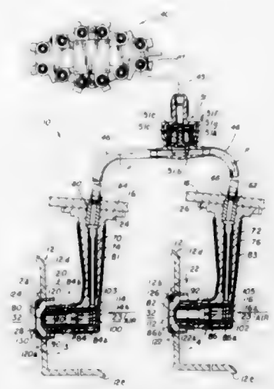
Jerome R. Bradley, and Theodore R. Koblish, both of Holland, Mich., assignors to Fuel Systems Textron, Inc., Zeeland, Mich.

Continuation of Ser. No. 61,622, May 13, 1993, abandoned, which is a division of Ser. No. 885,499, May 19, 1992, Pat. No. 5,277,023, which is a continuation-in-part of Ser. No. 772,490, Oct. 7, 1991, abandoned. This application Nov. 30, 1993, Ser. No. 159,949
Int. Cl.[5] F02G *3/00*
U.S. Cl. 60—39.06 **6 Claims**

1. A method of fueling a combustor of a gas turbine engine, comprising,

supplying fuel to first and second fuel discharge means said first and second fuel discharge means being connected in fuel flow relation and communicated to the cumbustor for discharge of fuel to the combustor for sustaining a flame region in the combustor, supplying pressurized air to first and second air injector means cooperatively associated with the respective first and second fuel discharge means for discharge to the combustor for sustaining said flame region, and

establishing different pneumatic pressures at the first and



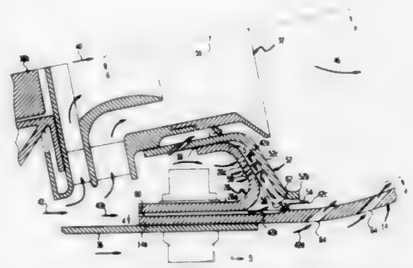
second fuel discharge means during discharge of the pressurized air to the combustor such that, in the event of interruption in the fuel supply to the first and second fuel discharge means during operation of the engine, the different pneumatic pressures established at the first and second fuel discharge means subject fuel residing therebetween to a pressure differential effective to purge the resident fuel into the combustor rapidly enough for the purged fuel to be ignited by said flame region.

5,329,761

COMBUSTOR DOME ASSEMBLY

Adrian M. Ablett, Cincinnati, Ohio; Clyde R. Draper, Saugus, Mass., and Steven C. Steffens, Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 724,287, Jul. 1, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 77,159
Int. Cl.[5] F02C *3/06*
U.S. Cl. 60—39.36 **13 Claims**



1. A combustor dome assembly for an annular gas turbine engine combustor having a liner for facing and confining combustion gasses, comprising:

an annular support plate attached to said liner and having a plurality of circumferentially spaced support openings formed therein each for supporting a respective carburetor;

a plurality of splashplates each having a center opening

fixedly joined coaxially to a respective one of said support openings of said support plate, each of said splashplates having opposite side edges extending axially upstream from said splashplate and in abutment with said support plate to space said splashplate axially downstream from said support plate and radially away from said liner to define respectively a plenum and an outlet gap between said splashplate and said liner in flow communication with said plenum;

said support plate also having a plurality of impingement holes formed therein for channeling a first portion of compressed air as impingement air into said plenum to impinge against said splashplate, said opposite side edges of each of said splashplates sealing leakage therethrough of the impingement air and confining the impingement air to flow radially through said plenum, out said outlet gap and across said liner; and

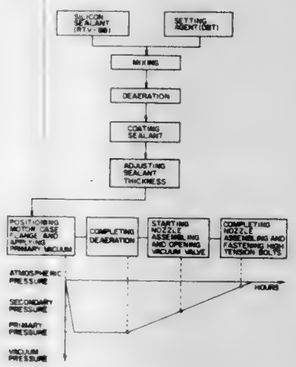
a plurality of circumferentially spaced, axially extending air slots disposed between said support plate and said liner for channeling a second portion of said compressed air therethrough and into said plenum for mixing with spent impingement air to form a cooling air film starter flowing through said outlet gap and along said liner.

5,329,762

METHOD FOR ASSEMBLING ROCKET PROPULSION MOTOR

Won Hoon Kim; Jung Rok Oh; Won Man Cho; Gwang Hwan Oh, and Tae Ho Lee, all of Daejon, Rep. of Korea, assignors to Agency for Defense Development, Daejon, Rep. of Korea

Filed Jun. 15, 1993, Ser. No. 77,462
Claims priority, application Rep. of Korea, Jun. 20, 1992, 10786/1992
Int. Cl.[5] B63H *11/00*; **F16J** *9/00*
U.S. Cl. 60—204 **3 Claims**



1. A method of assembling a rocket propulsion motor having a motor case with an interior and, a nozzle assembly, the motor case having a thermal insulation at an inner periphery surface of the motor case, and, an after dome flange provided with a plurality of threaded holes at an end of the motor case, the nozzle assembly having a thermal insulation at an inner periphery surface of said nozzle assembly, and, a nozzle flange at an outer periphery surface of the nozzle assembly and provided with a plurality of throughout holes and a plurality of threaded spacing holes, each of the throughout holes corresponding to each threaded spacing hole of the motor case to receive a high strength bolt for coupling the nozzle assembly to the motor case, and first and second O-rings spaced apart from each other and disposed at the outer periphery surface of the nozzle flange, the method comprising the steps of:

preparing a silicon sealant;

coating the silicon sealant to a predetermined uniform thickness over the thermal insulation of the motor case and nozzle assembly;

fastening a plurality of spacing bolts having threaded ends thereof into the corresponding threaded spacing holes of the nozzle flange such that a threaded end of each bolt is protruded beyond the corresponding threaded spacing hole to a predetermined length;

aligning the nozzle assembly with the motor case such that an end of the after dome flange of the motor case is positioned over the first O-ring;

maintaining the interior of the motor case at a primary vacuum pressure to remove voids from the silicon sealant;

applying a secondary vacuum pressure higher than the primary vacuum pressure to the interior of the motor case to move the nozzle assembly toward the motor case while simultaneously loosening the spacing bolts so that the the nozzle flange comes into contact with the after dome flange; and

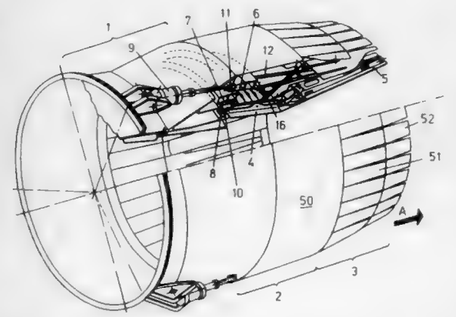
fastening the high strength bolts into the threaded holes of the motor case.

5,329,763

THRUST VECTORING VARIABLE GEOMETRY EXHAUST NOZZLE FOR GAS TURBINES

Jose I. Ibarreche Mendia, Gorliz, and Jose Rivacoba Urruela, Las Arenas, both of Spain, assignors to Sener, Ingenieria Y Sistemas, S.A.

Filed Feb. 22, 1993, Ser. No. 20,669
Claims priority, application Spain, Feb. 20, 1992, 9200369
Int. Cl.[5] F02K *1/00*
U.S. Cl. 60—232 **25 Claims**



1. A thrust vectoring variable geometry exhaust nozzle for a gas turbine comprising:

a convergent section defining a throat of variable area;

a divergent section downstream of the convergent section in the direction of flow, the divergent section having a variable geometry for orienting the thrust in any direction along a theoretical cone located around a centerline of the turbine, both the convergent and divergent sections including a plurality of master petals joined together by tangential cylindrical linkages having axes perpendicular to the longitudinal axis of the gas turbine, and a plurality of slave petals joined together by sliding linkages;

governing and outer radial support means for regulating the throat area and for regulating the vectoring of the thrust, the governing and outer radial support means comprising a governing system comprising a plurality of rings, concentric among themselves and with the centerline of the turbine, and a plurality of linear actuators having opposed upstream and downstream ends, the linear actuators being linked by the upstream ends to a fixed structure of the turbine, the plurality of rings including an outer, intermediate and inner ring;

linkage members for linking the plurality of rings to the fixed

structure of the turbine, the linkage members allowing joint axial displacement of the rings in equal magnitude with respect to the fixed structure and allowing relative rotary movement between the intermediate and outer rings and axial displacement of the outer and intermediate rings with respect to the inner ring, and for allowing the inclination of the outer ring in any direction, with the center of rotation of the outer ring directed along the centerline of the turbine; the master petals of the convergent section being linked to the inner ring, and the outer ring being connected by spherical linkages to the downstream end of the linear actuators; and

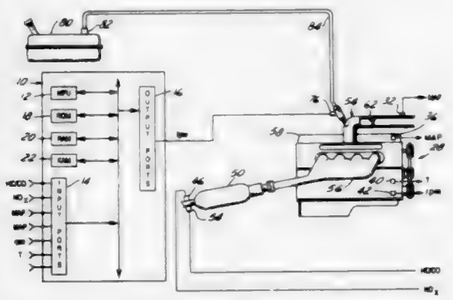
wherein the master petals of the divergent section are transversely subdivided into at least two segments joined together by cylindrical linkages having axes perpendicular to the tangential linkages of the master petals, one of the segments being joined to the outer ring by a strut which is connected to that segment by a spherical linkage and being connected to the outer ring via a tangential cylindrical linkage having an axis perpendicular to the centerline of the turbine.

5,329,764

AIR/FUEL FEEDBACK CONTROL SYSTEM

Douglas R. Hamburg, Bloomfield; Jeffrey A. Cook, Dearborn, and Eleftherios M. Logothetis, Birmingham, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 11, 1993, Ser. No. 3,031
Int. Cl.[5] F02B *19/16*
U.S. Cl. 60—285 **7 Claims**



1. An engine control system for optimizing conversion efficiency of a catalytic converter positioned in the engine exhaust, comprising:

a first sensor positioned downstream of the catalytic converter for providing a first electrical signal having an amplitude related to quantity of nitrogen oxides in the exhaust;

a second sensor positioned downstream of the catalytic converter for providing a second electrical signal having an amplitude related to quantity of both carbon monoxide and hydrocarbons in the exhaust; and

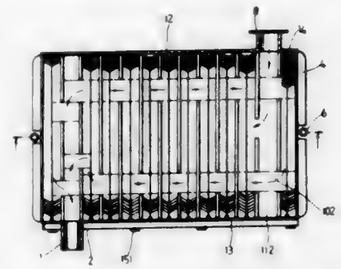
fuel control means for delivering fuel to the engine in relation to quantity of air inducted into the engine and a desired air/fuel ratio and a feedback variable derived by subtracting said first electrical signal from said second electrical signal.

5,329,765

EXHAUST PIPE ASSEMBLY FOR TREATING THE EXHAUST OF AN INTERNAL COMBUSTION ENGINE

Sung-Chuan Mai, and Kong-Ming Mai, both of Kaohsiung, Taiwan, assignors to Sung-Chuan Mai et al., Kaohsiung, Taiwan

Filed Jan. 22, 1993, Ser. No. 7,562
Int. Cl.[5] F01N *3/02*
U.S. Cl. 60—311 **10 Claims**



1. An exhaust pipe assembly comprising

a rectangular upper water container with a plurality of longitudinal pipe halves and a plurality of transverse short pipe halves at the bottom surface,

a rectangular lower water container with a plurality of longitudinal pipe halves and a plurality of transverse short pipe halves at the upper surface,

a front cover with an intake pipe,

a back cover with an outlet pipe,

a plurality of connecting tubes, and

a plurality of brush type filter elements,

wherein said upper water container and said lower water container are fixed with each other so that each of said plurality of longitudinal pipe halves and each of said plurality of transverse short pipe halves on said upper water container may coincide with those on said lower water container respectively to form a circuitous route; said front cover and said back cover are located at either end of said fixed with each other upper and lower water containers with said intake pipe and said outlet pipe communicating with said circuitous route respectively; said plurality of connecting tubes are bilaterally connected with said lower water container and said upper water container; and said plurality of filter elements are disposed longitudinally in said circuitous route respectively.

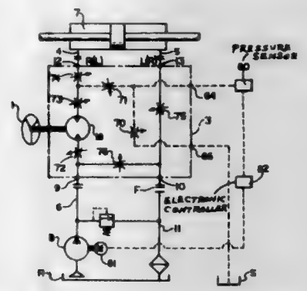
5,329,766

HYDRAULIC POWER STEERING SYSTEM WITH INPUT DETECTION CAPABILITY

Masayoshi Yamaguchi, Kameoka; Tsuyoshi Sasaki, Kyoto; Hisao Nagata, Ohbu, and Ichiro Nagasaka, Nishio, all of Japan, assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 10, 1993, Ser. No. 29,081
Claims priority, application Japan, Mar. 19, 1992, 4-063973
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—384 **8 Claims**

1. A hydrostatic power steering system including a steering control unit operated by an input, a steering cylinder hydraulically connected to said steering control unit through a left hydraulic line and a right hydraulic line, and a fluid pressure source for supplying pressurized fluid to said steering control unit through a fluid supply line; said steering control unit comprising a housing defining an inlet port, an outlet port, and right and left control fluid ports, a fluid meter having an internally-toothed member, and an externally-toothed member disposed within said internally-toothed member for orbital and rotational movement therein, and a directional control valve for controlling flow of pressurized fluid between said ports and said fluid meter, said directional control valve including a rotatable spool valve operably associated with said input, and a relatively rotatable sleeve valve defining, at its outer periphery, first and second annular grooves, said sleeve valve further defining first and second radial through bores communicating with said first annular groove, and a third radial through bore communicating with said second annular groove; said spool valve defining an axial slit selectively communicating with said



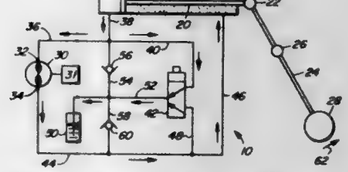
first and third radial through bores; said housing defining a pressure detection port and a drain port in fluid communication with said first and second annular grooves, respectively, of the sleeve valve, whereby a first orifice is formed between said first radial through bore and said axial slit, and a second orifice is formed between said second radial through bore and an axial groove containing pressurized fluid.

5,329,767

HYDRAULIC CIRCUIT FLOW CONTROL

Allan J. Hewett, Vancouver, Canada, assignor to The University of British Columbia, Vancouver, Canada

Filed Jan. 21, 1993, Ser. No. 6,584
Int. Cl.[5] F16D *31/02*; F15B *11/08, 13/04*
U.S. Cl. 60—475 **4 Claims**



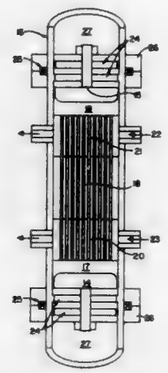
1. A hydraulic system comprising a double acting hydraulic piston cylinder having a first cylinder means acting under fluid pressure to move said piston in a first direction and a second cylinder means acting under fluid pressure to move said piston in a second direction different from said first direction, said first cylinder means and said second cylinder means having significantly different effective cross sectional areas, a bi-directional fluid pump/motor means having a first inlet/outlet connection and a second inlet/outlet connection, first connecting means connecting said first inlet/outlet connection to said first cylinder means, a second connecting means connecting said second inlet/outlet connection to said second cylinder means, a drive system connected to said pump/motor to supply energy to said pump/motor when said pump/motor is operating in a pumping mode moving fluid from one of said first and second cylinder means at a lower pressure to the other of said first and second cylinder means at a pressure higher than said lower pressure and to receive energy from said pump/motor when said pump/motor is operating in a motor mode when fluid is being directed from said other cylinder to said one cylinder, a two position circulation valve, said first and said second connecting means connecting their respective of said inlet/outlet connections to said circulation valve, a reservoir, a third connecting means connecting said reservoir with said circulation valve, said circulation valve being moveable between a first position directing flow of fluid between said first connecting means and said third connecting means when fluid pressure in said first cylinder means is higher than said fluid pressure in said second cylinder means and a second position directing flow of fluid between said second connecting means and said third connecting means when said fluid pressure in said second cylinder means is higher than said fluid pressure in said first cylinder means.

5,329,768

MAGNOELECTRIC RESONANCE ENGINE

William M. Moscrip, Chapel Hill, N.C., assignor to Gordon A. Wilkins, Trustee, Warsaw, Va.

Continuation-in-part of Ser. No. 691,003, Jun. 18, 1991, Pat. No. 5,146,750. This application Jun. 30, 1992, Ser. No. 906,845
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] F01B *29/10*; F02G *1/04*
U.S. Cl. 60—518 **18 Claims**



1. A resonant thermal machine including an alpha-type Stirling cycle engine, said resonant thermal machine being operatively connected to an external load or source, said resonant thermal machine comprising:

a sealed housing;

a compression piston having a first side and a second side opposite said first side movably mounted within said housing,

said compression piston being in sealed engagement with said housing and restricting the passage of gas between said second side of said compression piston and said first side of said compression piston;

an expansion piston opposite said compression piston having a first side and a second side opposite said first side movably mounted within said housing,

said expansion piston being in sealed engagement with said housing and restricting the passage of gas between said second side of said expansion piston and said first side of said expansion piston;

said compression piston and said expansion piston being capable of independent oscillatory movement and the relative movement of said pistons defining a phase angle;

first spring means for imposing a spring force upon said compression piston and for defining with said compression piston a first mechanical vibratory system having a first natural frequency of mechanical vibration;

second spring means for imposing a spring force upon said expansion piston and for defining with said expansion piston a second mechanical vibratory system having a second natural frequency of mechanical vibration;

a compression space within said housing having one side

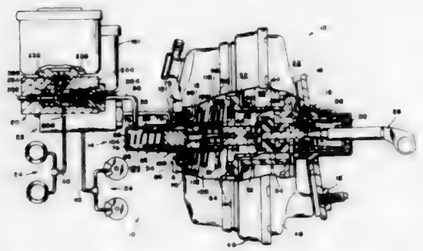
defined by said compression piston, said compression space containing a working fluid;
an expansion space within said housing having one side defined by said expansion piston, said expansion space containing a working fluid;
said expansion space and said compression space being in communicating relationship so as to allow said working fluid to flow between said expansion space and said compression space in response to said oscillatory movements of said compression piston and said expansion piston;
a cooler in a heat transferring relationship with said working fluid in said compression space;
a heater in a heat transferring relationship with said working fluid in said expansion space;
electronic means for controlling said phase angle and for shunting power between said external load or source and said machine;
said electronic means having a nominal electrical operating frequency;
compression motor/generator means operatively connected to said compression piston for transferring power between said compression piston and said electronic means;
expansion motor/generator means operatively connected to said expansion piston for transferring power between said expansion piston and said electronic means;
said electronic means electrically connected to said compression motor/generator means and said expansion motor/generator means and said external load or source;
said first natural frequency of mechanical vibration and said second natural frequency of mechanical vibration being substantially harmonic with said nominal electrical operating frequency.

5,329,769

MASTER CYLINDER AND BRAKE BOOSTER ARRANGEMENT FOR A BRAKE SYSTEM

Robert K. Wilson, and Donald A. Crumb, both of Granger, Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jul. 16, 1993, Ser. No. 93,112
Int. Cl.[5] B60T *13/20*
U.S. Cl. 60—549 **6 Claims**



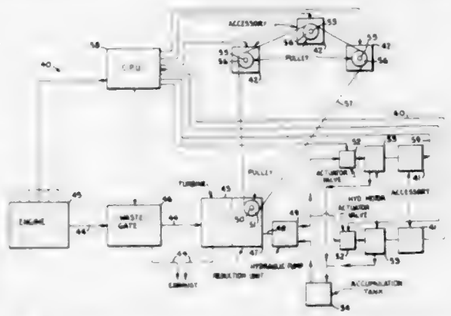
1. A brake system having a brake booster responsive to input force for developing an output force through a movable wall to provide an input force to a master cylinder for supplying a remote compensation valve connected to the wheel brakes of a vehicle with pressurized fluid to effect a brake application, said master cylinder comprising:
a first housing having a first end and a second end, said second end having a first outwardly projecting annular flange, said first housing having a blind axial bore therein that substantially extends from said second end toward said first end, said blind bore having a first outlet port adjacent said first end and a second outlet port adjacent said second end, said first housing having an annular shoulder located between said first and second outlet ports;
a second housing having a first end and a second end, said first end having a second outwardly projecting flange, said second end having an inwardly projecting flange; said second housing having an axial bore that extends from said second outwardly projecting flange to said inwardly projecting flange,
a first seal and bearing arrangement located in said blind bore adjacent said annular shoulder of said first housing;
a second seal and bearing arrangement located in axial bore adjacent said inwardly projecting flange on said second housing;
a sleeve located in said blind bore and axial bore having a first end for engaging said first seal and bearing arrangement and a second end for engaging said second seal and bearing arrangement to maintain said first and second seal and bearing arrangements in a substantially stationary position, said sleeve having a plurality of inwardly projecting tangs;
means for joining said first outwardly projecting flange with said second outwardly projecting flange to define a unitary structure;
a first piston located in said blind bore and engaging said first seal and bearing arrangement;
a second piston a first portion of which is located in said axial bore and engaging said second seal and bearing arrangement and a second portion which extends past said inwardly projecting flange in said second housing;
a first spring located in a first chamber defined by said blind bore and first piston;
a second spring located in a second chamber defined by said axial bore and said first and second pistons;
caging means connected to said second piston for limiting the extension of said second spring to define a maximum size for said second chamber, said caging means engaging said tangs on said sleeve to provide a stop to maintain said second piston within said second housing; and
means for joining said first outwardly projecting flange with said brake booster to position the end of said second portion of said second piston into engagement with said movable wall of said brake booster, said output force of said movable wall immediately moving said first and second pistons in said first and second chambers to develop said pressurized fluid to effect said brake application.

5,329,770

EXHAUST GAS TURBINE DRIVE SYSTEM FOR ENGINE ACCESSORIES

Michael S. Ward, 300 N. Main, Excelsior Springs, Mo. 64024

Filed May 6, 1993, Ser. No. 57,789
Int. Cl.[5] F02G *5/02*
U.S. Cl. 60—597 **21 Claims**



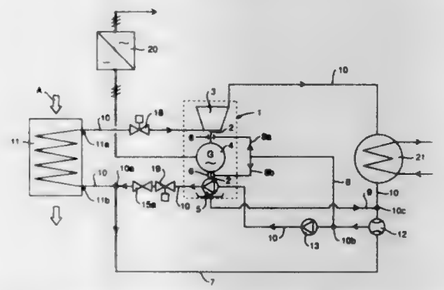
16. An exhaust drive system for driving engine accessories from engine exhaust and comprising:
(a) an engine with exhaust means;
(b) a plurality of engine accessories;
(c) a gas turbine;
(d) fluidic communication means for communicating the engine exhaust means with the turbine to rotate same;
(e) accessory drive means drivingly interconnecting said turbine with each of said accessories;
(f) a control system for independently and selectively operating said accessories;
(g) a drive pulley drivingly connected to said turbine;
(h) a driven pulley drivingly connected to at least one of said accessories;
(i) a drive belt drivingly interconnecting said drive pulley and said driven pulley;
(j) reduction transmission means having an input drivingly connected to said turbine and an output drivingly connected to said accessory;
(k) a plurality of accessories each having a driven pulley;
(l) said drive belt being drivingly connected to each driven pulley; and
(m) a control system for independently and selectively actuating said accessories.

5,329,771

METHOD FOR SECURING THE LUBRICATION OF BEARINGS IN A HERMETIC HIGH-SPEED MACHINE

Timo Kytömäki, Lappeenranta; Olli Lindgren, Helsinki; Jarmo Alamäki, Lappeenranta, and Jaakko Larjola, Mäntyharju, all of Finland, assignors to Oy High Speed Tech Ltd., Tampere, Finland

PCT No. PCT/FI91/00295, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO92/05342, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 25, 1991, Ser. No. 859,381
Claims priority, application Finland, Sep. 26, 1990, 904720
Int. Cl.[5] F01B *31/00;* **F01K** *19/00*
U.S. Cl. 60—657 **13 Claims**



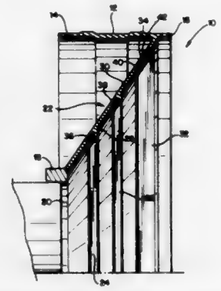
1. A method for operating a hermetic, small-size power plant, including the steps of:
a) conducting a primary circulation in a main line connecting a high-speed machine including at least a turbine and a generator installed on a joint rotor, a vaporizer and a condenser;
b) effecting fluid lubrication of bearings of the rotor during the continuing operation by fluid medium passing through the condenser and along the main line of the primary circulation;
c) connecting the vaporizer to the high-speed machine through medium flow paths defining a circulating medium circuit and bypassing the condenser and at least partly bypassing the main line of the primary circulation to secure passage of circulating medium accumulated in the vaporizer for lubrication of the bearings of the rotor during stopping of the primary circulation.

5,329,772

CAST SLOT-COOLED SINGLE NOZZLE COMBUSTION LINER CAP

David O. Fitts, Ballston Spa; John S. Haydon, Mayfield, both of N.Y., and Neil S. Rasmussen, Loveland, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 987,785, Dec. 9, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 162,971
Int. Cl.[5] F02C *1/00*
U.S. Cl. 60—756 **16 Claims**



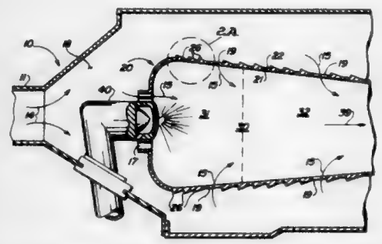
1. A one-piece, liner cap assembly for a combustion liner in a
an outer tubular sleeve having upstream and downstream ends;
an inner annular cowl concentric with said sleeve and having a central opening adapted to receive a forward end of a nozzle; and
an annular cone portion extending between said outer sleeve and said inner cowl, said cone extending rearwardly and radially inwardly from said downstream end of said outer sleeve to said inner cowl, said cone portion provided with a plurality of cooling apertures and a plurality of annular, concentrically arranged directional vanes on a downstream surface of said cone portion adapted to divert air passing through said cooling apertures in predetermined directions, wherein said outer tubular sleeve, said inner cowl and said annular cone portion are unitary cast construction.

5,329,773

TURBINE COMBUSTOR COOLING SYSTEM

Geoffrey D. Myers, Phoenix, and Judy P. Bottlinger, Chandler, both of Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Aug. 31, 1989, Ser. No. 401,366
Int. Cl.[5] F02C *7/12*
U.S. Cl. 60—759 **7 Claims**



1. A gas turbine engine combustor of the type disposed in an air supply plenum and adapted to receive air and fuel at one upstream end and discharge hot motive gases from the other downstream end comprising:
a generally cylindrical thin metallic liner having a smooth

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interior surface exposed to a flow of hot motive gases and a contoured exterior surface exposed to a flow of cooling air in said air supply plenum;

said contoured exterior surface having an axially spaced series of thickened ribs, each extending outwardly therefrom and substantially completely around the circumference of said generally cylindrical liner, the distance between the ribs of said axially spaced series increasing in the direction of flow of said hot motive gases; and

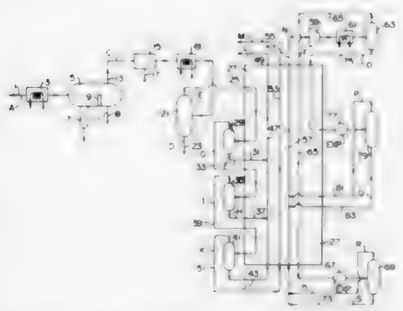
a number of small diameter cooling passages drilled through said ribs at a shallow angle to the flow of hot motive gases, said number decreasing in each rib downstream from the first of said series of ribs whereby the circumferential spacing between passages in each rib is about equal to the axial spacing between adjacent ribs.

5,329,774

METHOD AND APPARATUS FOR SEPARATING C_4 HYDROCARBONS FROM A GASEOUS MIXTURE

Dennis C. Tanguay, Stafford, Tex.; Gerard E. Dupuis, Pleasant Hill, and Bao Ha, Vacaville, both of Calif., assignors to Liquid Air Engineering Corporation, Montreal, Canada

Filed Oct. 8, 1992, Ser. No. 958,170
Int. Cl.[5] F25J *3/06*
U.S. Cl. 62—23 **28 Claims**



1. In a method of separating C_4 hydrocarbons from a feed entering separation equipment comprising a gaseous mixture, comprising cooling and partially condensing the feed in a plurality of successive stages of condensation and phase separation wherein a gaseous overhead from each separation stage is further cooled and partially condensed and supplied to the next separation stage and the liquid separated from each said stage is used to cool the gas, and supplying further refrigeration to the gas to effect said condensations by indirect heat exchange with a closed cycle refrigerant subjected to a compression/expansion cycle; the improvement wherein said feed undergoes no compression and no abrupt expansion, whereby said feed undergoes a pressure loss due only to friction of the passage of the feed through all the equipment by which said method is practiced.

5,329,775

CRYOGENIC HELIUM PRODUCTION SYSTEM

Brian C. Fiedler, East Amherst; James J. Maloney, Tonawanda, and James R. Handley, East Amherst, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 4, 1992, Ser. No. 985,982
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 **16 Claims**

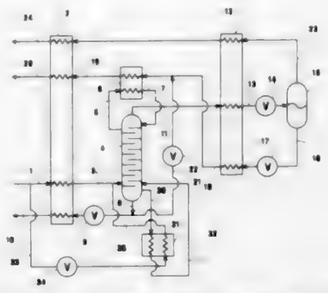
1. A cryogenic rectification method for producing crude helium comprising:

(A) cooling a feed comprising helium, hydrocarbon and carbon dioxide to a temperature sufficient to cool but not to freeze carbon dioxide in the feed;

(B) passing cooled feed into a column and separating the feed within the column by cryogenic rectification into a helium-enriched fluid and a first residue fluid;

(C) warming first residue fluid by indirect heat exchange with feed to cool the feed;

(D) partially condensing helium-enriched fluid taken from the column to produce crude helium vapor and a second residue fluid;



(E) warming second residue fluid by indirect heat exchange with partially condensing helium-enriched fluid;

(F) condensing vapor from the column by indirect heat exchange with second residue fluid and providing resulting liquid to the column; and

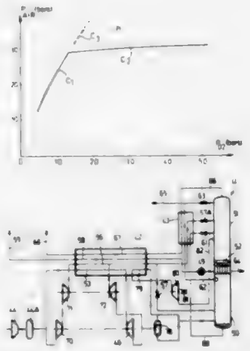
(G) recovering crude helium vapor as product crude helium.

5,329,776

PROCESS AND APPARATUS FOR THE PRODUCTION OF GASEOUS OXYGEN UNDER PRESSURE

Maurice Grenier, Paris, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Continuation of Ser. No. 848,243, Mar. 9, 1992. This application Nov. 17, 1993, Ser. No. 153,794
Claims priority, application France, Mar. 11, 1991, 91 02917; Dec. 20, 1991, 91 15935
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 **15 Claims**



1. Process for production of gaseous oxygen at a pressure higher than approximately 13 bars by air distillation in an apparatus provided with a double column comprising a mean pressure column and a low pressure column, each of said mean and low pressure columns having a respective base and a respective pressure, said process including the steps of:

i) withdrawing liquid oxygen at the base of said low pressure column;

ii) pumping said withdrawn liquid oxygen;

iii) introducing air to be distilled into a heat exchange line, said air being at a first high pressure lower than that at which air condenses by heat exchange with said pumped liquid oxygen, where said pumped liquid oxygen is at a pressure greater than approximately 13 bars, said first pressure being at least equal to approximately 30 bars;

iv) vaporizing said pumped liquid oxygen by heat exchange with said air in said heat exchange line, to produce gaseous oxygen at a pressure higher than approximately 13 bars;

v) withdrawing a portion of said air from said line, said portion being surplus to refrigerating needs of said line;

vi) expanding said portion to the pressure of said mean pressure column at an intermediate cooling temperature in a turbine, said turbine being slowed down by a first compressor, said compressor being used in step iii) to pressurize all the air to be distilled to said first high pressure; and

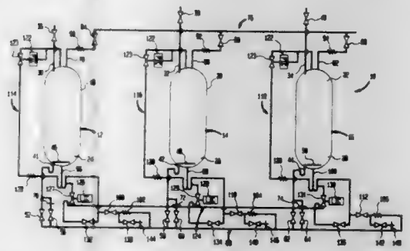
vii) withdrawing an amount of at least one liquid product from said apparatus as a final product.

5,329,777

CRYOGENIC STORAGE AND DELIVERY METHOD AND APPARATUS

William R. Weltmer, Jr., Murray Hill, N.J., assignor to The BOC Group, Inc., Murray Hill, N.J.

Filed Jun. 24, 1993, Ser. No. 83,125
Int. Cl.[5] F17C *13/02*
U.S. Cl. 62—49.2 **11 Claims**



1. A method of storing and delivering a cryogen substantially free of contaminants, said method comprising the steps of:

(a) storing the cryogen within a tank of a cryogenic storage facility having at least two tanks by filling the tank with the cryogen as a saturated liquid such that the cryogen is introduced into tank through a top head space region of the tank to wash the contaminants down towards a bottom region of the tank, thereby to substantially clear the top head space region of the contaminants;

(b) pressurizing the tank without contaminating the top head space region thereof and without converting the saturated liquid into a subcooled liquid by introducing a subsidiary superheated vapor stream into the bottom region thereof;

(c) introducing a major superheated vapor stream into the bottom region of the tank to scrub the superheated vapor stream with the saturated liquid contained within the tank, thereby to form scrubbed cryogenic vapor in the top head space region thereof while withdrawing a product stream from the top head space region of the tank formed from the scrubbed cryogenic vapor and thereby being substantially free of the contaminants;

(d) dispensing a stream of the cryogen from the tank by pressure building the tank with a pressure building circuit connecting the top head space and bottom regions thereof, thereby contaminating the top head space region with the contaminants previously washed down to the bottom region during step (a) while expelling the stream the cryogen from the bottom region thereof; and

(e) vaporizing the stream of the cryogen to form superheated vapor;

(f) forming a subsidiary stream from the superheated vapor;

(g) forming a major stream from the superheated vapor; and

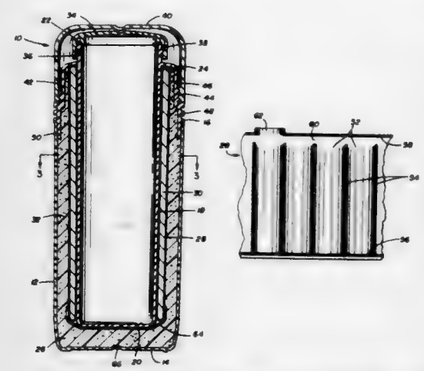
(h) continuously performing steps (a) through (g) on the tank and at least one remaining tank in an out of phase cycle such that the major superheated vapor stream introduced into the at least one remaining tank during the performance of step (c) thereon comprises the major stream formed during performance of step (g) on the tank and the head space region of each of the tank and the one remaining tank are substantially clear of the contaminants during the successive performance of step (c) thereon.

5,329,778

THERMALLY INSULATED BOTTLE AND METHOD OF ASSEMBLY THEREOF

Riaz A. Padamsee, 214 Lakeshore Dr., Durham, N.C. 27713

Division of Ser. No. 919,231, Jul. 27, 1992, Pat. No. 5,243,835. This application Jun. 28, 1993, Ser. No. 82,539
Int. Cl.[5] F25D *3/00*
U.S. Cl. 62—56 **5 Claims**



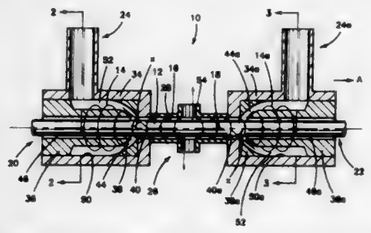
1. A method for assembling a bottle for containing a fluid comprising the steps of forming a sleeve with at least one edge seam and a plurality of seams extending short of the edge seam, filling the sleeve with a freezable fluid, positioning the sleeve around an inner cup, forming a chamber between the inner cup and an outer container by positioning the inner cup within the outer container, and filling the chamber with a thermal insulating material by permitting the material to foam and cure therein.

5,329,779

METHOD AND APPARATUS FOR COOLING WORKPIECES

Luis F. Lozano D., and Ana G. Briceno F., both of Puerto Ordaz, Venezuela, assignors to C.V.G. Siderurgica Del Orinoco, C.A., Matanzas, Venezuela

Filed Feb. 9, 1993, Ser. No. 15,470
Int. Cl.[5] F25D *13/06*
U.S. Cl. 62—63 **25 Claims**



1. An apparatus for cooling a workpiece, comprising a work-

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piece cooling passage having inlet means for receiving the workpiece and outlet means for discharging the workpiece, the cooling passage having a central axis and further including inlet means for introducing a cooling medium and outlet means for removing the cooling medium from the cooling passage, the cooling medium inlet means providing a substantially helical flow of cooling medium in the cooling passage around the central axis from the cooling medium inlet means to the cooling medium outlet means, the cooling medium outlet means including chamber means downstream of the cooling passage for expanding a flow area of the cooling medium, whereby pressure and velocity of the cooling medium in the cooling passage are controlled so as to provide accelerated cooling of the workpiece.

5,329,780

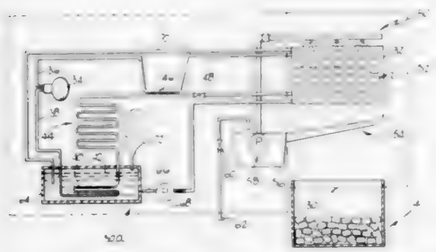
ICE MAKING METHOD AND APPARATUS

John A. Broadbent, Aurora, Colo., assignor to Broad Research, Aurora, Colo.

Continuation-in-part of Ser. No. 840,672, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 607,827, Nov. 1, 1990, abandoned, which is a continuation of Ser. No. 410,369, Sep. 21, 1989, Pat. No. 4,990,169, which is a continuation-in-part of Ser. No. 271,228, Nov. 14, 1988, Pat. No. 4,922,723. This application Mar. 29, 1993, Ser. No. 38,537

Int. Cl.[5] F25C *1/12*

U.S. Cl. 62—72 **36 Claims**



1. An apparatus for making ice from water comprising: a refrigerated element having at least two sides; at least one flexible ice forming membrane on each said side of the refrigerated element; and means for flexing said membranes into and out of contact with said sides of the refrigerated element whereby said ice forms on said membranes when said membranes are flexed into contact with said refrigerated element, and said ice is detached from said membranes when said membranes are flexed out of contact with said refrigerated element.

5,329,781

FROST CONTROL SYSTEM

Nancy L. Farrey; William W. Hoerner, both of Dubuque; David P. Leppert, Zwingle, all of Iowa, and Glenn A. Nicol, Dickeyville, Wis., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Continuation of Ser. No. 870,952, Apr. 20, 1992, Pat. No. 5,203,175. This application Apr. 19, 1993, Ser. No. 49,767

The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.

Int. Cl.[5] F25D *21/12*

U.S. Cl. 62—82 **20 Claims**

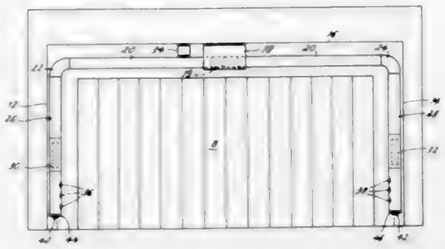
1. A frost control system for removing and/or inhibiting the formation of condensation upon a door having a top, a base, first and second side edges, and a controlled surface, said frost control system comprising:

a duct system for conveying a volume of air;

a blower for drawing the volume of air into the duct system through an opening;

a heating element for applying heat to the volume of air and creating a warmed volume of air;

a discharge aperture disposed adjacent to a side edge of the door for discharging at least a portion of the warmed



volume of air from the duct system and in a substantially horizontal direction across the controlled surface.

5,329,782

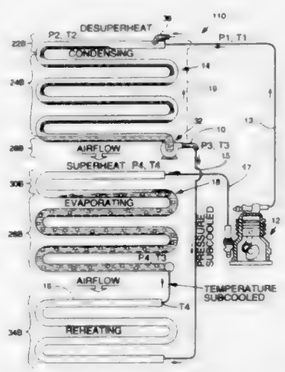
PROCESS FOR DEHUMIDIFYING AIR IN AN AIR-CONDITIONED ENVIRONMENT

Robert E. Hyde, 18448 SE. Pine St., Portland, Oreg. 97233-4859

Continuation-in-part of Ser. No. 948,300, Sep. 21, 1992, Pat. No. 5,291,744, which is a division of Ser. No. 666,251, Mar. 8, 1991, Pat. No. 5,150,580. This application Oct. 12, 1993, Ser. No. 136,112

Int. Cl.[5] F25D *17/06*

U.S. Cl. 62—90 **12 Claims**



7. A method for improving operation of an air conditioning system for cooling and decreasing relative humidity of a flow of air which includes a compressor, a condenser, an expansion valve, and an evaporator connected in series by conduit for circulating refrigerant in a closed loop therethrough, the evaporator positioned to receive a flow of air, the method comprising:

transmitting liquid refrigerant through the expansion valve into the evaporator;

vaporizing a portion of the liquid refrigerant to effect cooling of the flow of air;

transmitting vaporized refrigerant from the outlet of the evaporator to the inlet of the compressor;

compressing the vaporized refrigerant to produce compressed vapor refrigerant;

transmitting the compressed vapor refrigerant from an outlet of the compressor to an inlet of the condenser at a first temperature and first pressure;

condensing the compressed vapor refrigerant to discharge liquid refrigerant at a second temperature less than the first temperature;

boosting the first pressure of the liquid refrigerant discharged from the condenser by an incremental pressure to a second pressure;

transmitting the liquid refrigerant at said second pressure to an inlet of a reheater, the reheater positioned adjacent the evaporator to receive the cooled flow of air from the evaporator; and

subcooling the liquid refrigerant in the reheater to a third temperature less than said second temperature and partially reheating the cooled flow of air received by the reheater from the evaporator thereby decreasing the relative humidity of the cooled flow of the air.

5,329,783

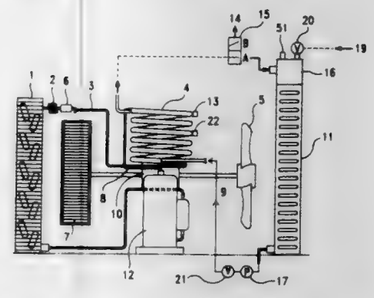
AIR CONDITIONING APPARATUS

Ten S. Yang, Taipei, Taiwan, assignor to Fast Maker Enterprise Co., Ltd., Keelung, Taiwan

Filed Dec. 9, 1992, Ser. No. 987,782

Int. Cl.[5] F25B *39/04*

U.S. Cl. 62—183 **4 Claims**



1. An air conditioning system, comprising:

a compressor for pressurizing a refrigerant, said compressor having an inlet port and an outlet port;

an evaporator having an outlet port fluidly coupled to said compressor inlet port;

condensing means having a refrigerant input line coupled in fluid communication with said compressor outlet port and a refrigerant output line coupled in fluid communication with an inlet port of said evaporator for condensing said refrigerant from a gaseous state at a first temperature to a liquid state at a second temperature, said first temperature being higher than said second temperature, said condensing means including (1) a first conduit having opposing first and second ends for carrying a coolant therethrough, (2) a second conduit extending in concentric spaced relation through said first conduit, said second conduit being fluidly coupled to said refrigerant input line on one end thereof and fluidly coupled to said refrigerant output line on an opposing end for carrying said refrigerant therebetween, and (3) a third conduit extending in concentric spaced relation through said second conduit for carrying said coolant therethrough, said third conduit having a first end coupled in fluid communication with said first end of said first conduit and a second end coupled in fluid communication with said second end of said first conduit, wherein heat from said refrigerant in said second conduit is transferred to said coolant within both said first and third conduits; and

means for displacing said coolant coupled in closed loop fluid communication with both said first and third conduits, sand coolant displacement means including (1) a coolant pump having an outlet coupled in fluid communication with said first end of said of said first and third conduits, (2) a radiator having an outlet coupled in fluid communication with an inlet of said coolant pump and a first coolant inlet coupled in fluid communication with said second end of each said first and third conduits, and (3) means for cooling said radiation.

5,329,784

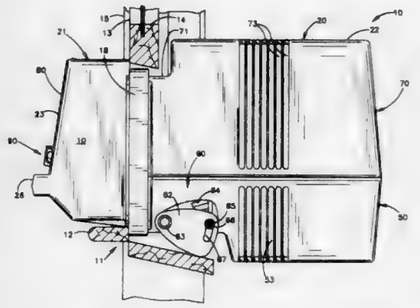
LEVELING ARMS FOR A LOW PROFILE ROOM AIR CONDITIONER

Robert W. Kennedy, Dublin, Ohio, and Richard F. Stewart, North Brunswick, N.J., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Division of Ser. No. 859,161, Mar. 27, 1992. This application Jun. 15, 1993, Ser. No. 77,672

Int. Cl.[5] F25D *23/12;* **E06B** *7/28;* **F16M** *13/00*

U.S. Cl. 62—262 **4 Claims**



1. In a room air conditioner adapted to be mounted in an opening defined by a window assembly having a windowsill, the outer portion of which has a downwardly sloping surface, the air conditioner having an enclosure with sidewalls and a bottom surface adapted to rest against an inner portion of said windowsill, the improvement which comprises:

a pair of adjustable leveling arms, each being pivotally connected to a respective sidewall of said enclosure just above an outer portion of said windowsill, each arm being adapted to pivot about a pivot axis at an inner end thereof between a retracted position above a plane of said windowsill and a downwardly extending position in engagement with the outer portion of said windowsill; and

means for securing each of said arms relative to the respective enclosure sidewall in its downwardly extended position, wherein each of said arms defines an arcuate slot through which a portion of said securing means extends.

5,329,785

REFRACTORY ELEMENT

Akira Sakurai; Masahiro Shiotsu, both of Kyoto; Toshikazu Yano, Yokohama; Masao Ochi, Yokohama, and Toshihiro Sugawara, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 695,693, May 3, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,619

Claims priority, application Japan, May 21, 1990, 2-130563; May 21, 1990, 2-130564; May 21, 1990, 2-130565; Oct. 4, 1990, 2-267142

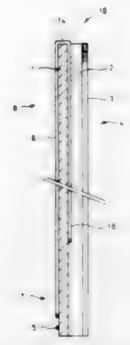
Int. Cl.[5] F25D *7/00*

U.S. Cl. 62—316 **2 Claims**

1. A refractory building panel for retaining cool an inner side of said panel when an outer side of said panel is subjected to excessive heat, said panel comprising an intermediate substantially rigid impervious layer defining a structural component of the panel, said intermediate layer having inner and outer faces defining the panel dimensions, said panel also comprising an inner, heat transmission cooling layer joined to the inner face of said intermediate layer with first liquid passages arranged along and throughout said inner surface of said intermediate layer including a liquid supply port for connecting said first liquid passages to a source of liquid under pressure for attaining a cooling effect throughout said inner face when said port is connected to pressurized liquid, an outer layer joined to the

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outer face of said intermediate panel, said outer layer being a porous ooze cooling layer, comprising a first inner layer of soft porous material and a second outer layer of hard porous material, second liquid passages disposed between said intermediate



layer and said outer layer and including outlet ports in said second liquid passages, and fluid passage joints connecting said first and second liquid passages to distribute liquid throughout said outer layer when the port of said first liquid passage is connected to said source of liquid under pressure.

5,329,786

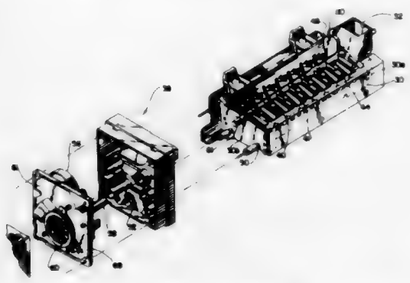
RECOVERABLE DOMESTIC ICE MAKER

James L. Willis, Ft. Smith, Ark., and James R. Giordano, Loveland, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 840,027, Feb. 24, 1992, Pat. No. 5,160,094. This application Aug. 31, 1992, Ser. No. 938,892

Int. Cl.[5] F25C *1/12*

U.S. Cl. 62—353 **3 Claims**



1. An ice making apparatus comprising:

a mold in the form of an elongated tray in which water is frozen to form an ice body;

means for ejecting the ice body from the mold including an elongate stripper blade rotationally driven by a motor disposed at a first end of the mold to carry the ice body from the mold; and

a fill cup mounted at an end wall of the mold, opposite the first end, for delivering water to the mold, said fill cup including a continuous planar wall extending a full width of the mold end wall to increase an effective height of the end wall to prevent ice bodies carried by the stripper blade from falling over the end wall.

5,329,787

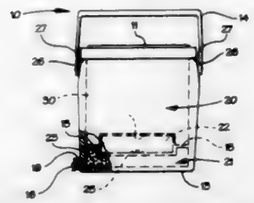
COMBINATION FOOD AND BEVERAGE COOLER

Mark G. Friday, Rte. #2, Box 331, Dallas, N.C. 28034

Filed Jan. 26, 1993, Ser. No. 9,289

Int. Cl.[5] B67D *5/62*

U.S. Cl. 62—389 **4 Claims**



1. A combination food and beverage cooler, comprising:

(a) a rigid bottom wall, a plurality of attached side walls, a top opening defined by said side walls, and a solid, rigid partition wall fixedly secured within said cooler parallel to and in spaced-apart relation to said bottom wall, and in sealing engagement with said side walls, said partition wall defining a food compartment on one side thereof and an enclosed beverage compartment on an obverse side thereof;

(b) said partition wall having a recess formed therein;

(c) a tray insert removably positioned in said food compartment and supported by said partition wall;

(d) said tray insert having an inverted recess formed therein in mating alignment with the recess in the partition wall to collectively define a cooling compartment, said cooling compartment extending upwardly into the food compartment and downwardly into the beverage compartment; and

(e) a reusable cooler pack for being positioned in said cooling compartment.

5,329,788

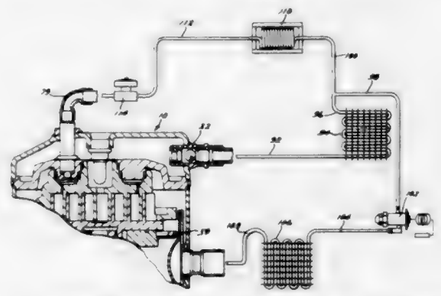
SCROLL COMPRESSOR WITH LIQUID INJECTION

Jean-Luc Caillat, Dayton, and Karl P. Wang, Vandalia, both of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Jul. 13, 1992, Ser. No. 912,908

Int. Cl.[5] F25B *31/00*; F04C *18/04, 29/04*

U.S. Cl. 62—505 **39 Claims**



1. A scroll-type refrigerant compressor for use in a conventional refrigerating circuit and having liquid refrigerant compressor cooling, comprising:

(a) first and second scroll members each having an end plate on one face of which is disposed a scroll wrap, said scroll members being mounted so that said wraps are intermeshing with respect to one another so that when one of said scroll members is moved in an orbital path with respect to the other of said scroll members, said wraps define moving fluid compression chambers which progress from a relatively large size at suction pressure to a relatively small size at discharge pressure;

(b) a fluid biasing chamber disposed in sealing relationship with the opposite face of one of said end plates;

(c) first passage means through said one end plate for placing said biasing chamber in fluid communication with the fluid in one of said compression chambers at a point therein where the fluid being compressed is at a pressure intermediate said suction and discharge pressures, whereby said fluid at said intermediate pressure acts to bias the one scroll member having said one end plate against the other scroll member to enhance sealing therebetween; and

(d) a second passage means for placing said biasing chamber in fluid communication with liquid refrigerant in said circuit when said compressor requires cooling.

5,329,789

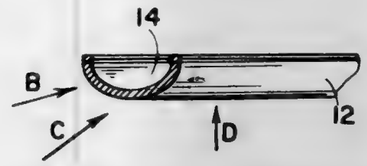
JEWELRY WITH TUBULAR APPEARANCE

Jonathan Mandelbaum, Forest Hills, N.Y., assignor to Almond Jewelers Inc., Westbury, N.Y.

Filed May 5, 1993, Ser. No. 59,084

Int. Cl.[5] A44C *25/00*

U.S. Cl. 63—2 **16 Claims**



1. A piece of jewelry with a tubular appearance extending outwardly from a primary plane, comprising:

at least one half-tubular member having a half-tubular shape, the member having an outer polished convex surface and an inner polished concave surface, the convex and concave surfaces curving first away from and then toward the primary plane to form said half-tubular shape, and wherein the half-tubular member has a main curvature in the primary plane, the half-tubular member having a width which is small compared to a circumferential length of the half-tubular member along the main curvature, whereby even at acute angles to the primary plane, the half-tubular member appears to be a fully tubular member.

5,329,790

KNITTING MACHINE

Werner Engelfried, Sindelfingen, and Gerhard Müller, Esslingen 1, both of Fed. Rep. of Germany, assignors to Terrot Strickmaschinen GmbH, Stuttgart, Fed. Rep. of Germany

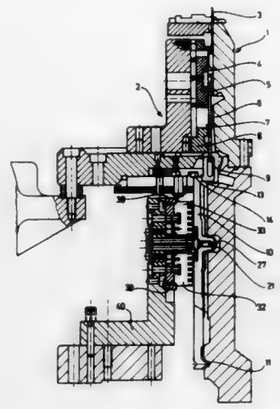
Filed May 4, 1993, Ser. No. 57,090

Claims priority, application Fed. Rep. of Germany, May 26, 1992, 4217419

Int. Cl.[5] D04B *15/68*

U.S. Cl. 66—221 **9 Claims**

1. Knitting machine comprising stitch-forming knitting needles mounted in a rotatingly driven needle cylinder, displaceable selector elements for initiating specific knitting operations, springs biasing the selector elements into a first position, mechanical control means for transferring the selector elements into a second position against the action of said biasing springs electromagnetic selector means comprising at least one activatable magnetic pole for holding the selector elements in said second positions thereof, said displaceable selector elements (16) having a stop edge (36) cooperating in the second position with a counterstop edge (37) stationary relative to the movement of the selector element, and that when the stop edge (6) engages on the counterstop edge (37) the selector elements (16) are located at such a small distance from the electromagnetic selector means (32, 33) hereby forming an air gap (38), that the magnetic force of said electromagnetic selector means is still



sufficient to hold the selector elements (16) in their second position and means for adjusting the distance between the selector elements (16) and the electromagnetic selector means (32, 33).

5,329,791

PLASTIC WASHTUB

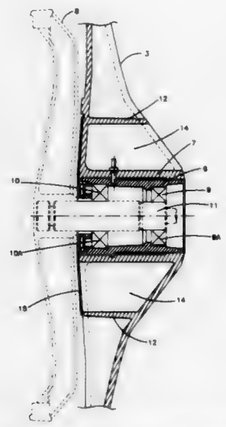
Giuseppe Cargnel, Treviso, and Piero Durazzani, Pordenone, both of Italy, assignors to Zanussi Elettrodomestici S.P.A., Italy

Filed Nov. 24, 1992, Ser. No. 981,069

Claims priority, application Italy, Nov. 27, 1991, PN91 U 00040

Int. Cl.[5] D06F *37/04*

U.S. Cl. 68—24 **1 Claim**



1. A plastic washtub used in a clothes-washing machine, having a rigid structure (1) made up of a cylindrical wall (2) around a circumference and a circular bottom-wall; a circular front-wall, that can be attached to said rigid structure; a cylindrical hubhousing (7) formed in the bottom wall and circled by one or more closed, empty chambers adjacent to the hub-housing (7) so that the hub-housing (7) does not come into contact

with washing liquid, and a hub (6), placed through the center of the bottom wall, which si inserted into a central portion of the cylindrical hub-housing (7) and which supports a central shaft (11) of a rotor (8), characterized in that the bottom-wall (3) is made substantially in the form of fretwork, with portions alternately shallower and deeper, delimited by suitable ribs (4) orthogonal to the bottom-wall and by at least one circular collar (12) made in the bottom (3) of the washtub extending from the bottom to the height of these ribs, the collar (12), bottom wall (3) and ribs (40 being arranged to form a plurality of cavities (14) adjacent to the cylindrical central hub-housing portion (7), the washtub being fitted with protection means (15), being substantially flat, of plastic, circular in form, and with a circular opening (16) in the center, the protection means being applied in a watertight manner against the central hub-housing (7), against the edge of the collar (12) and against the ribs of the washtub bottom, so as to transform those cavities (14) into corresponding closed chambers

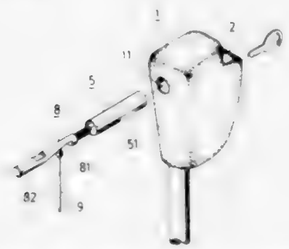
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5,329,792

CONCEALED CAR LOCKING DEVICE FOR AUTOMATIC SHIFT LEVER

Chi-Yuan Lee, Back Building, No. 704-7, Chung-Cheng Rd., Hsin-Chuang City, Taiwan

Filed Apr. 27, 1993, Ser. No. 52,706
Int. Cl.[5] B60R *25/06*
U.S. Cl. 70—201 1 Claim



1. A concealed car locking device for an automatic shift lever, comprising

a housing disposed on one side of a handle of said shift lever;

an engaging lever located inside said housing, the engaging lever having a first end protruding from the housing forming a push button;

a sleeve disposed inside said handle crossing a plane of said engaging lever and defining a slot;

a shift lever control connecting-rod located inside said sleeve and having a front end extending outside said handle which end comprises a knob for shift changing;

a first spring abutting against said engaging lever, so as to bias the push button outwardly from the housing;

a rotatable lock core located in the housing;

a locating piece located in the housing at the bottom of said engaging lever, the locating piece fixed to said lock core so as to rotate therewith and having a second spring abutting against the locating piece;

a limiting end provided on the center top of said engaging lever;

a front and a rear ratchet formed on the bottom of said engaging lever;

a thrust piece for engaging one of said front and rear ratchets formed on said locating piece; whereby, when said engaging lever compresses said first spring when the push button is pressed into the inside of said housing, said thrust piece abuts against said front ratchet of said engaging lever, thereby locking said limiting end of said engaging lever in the slot defined in said sleeve, so that said knob of said control connecting-rod is unable to be pressed for gear changing; and,

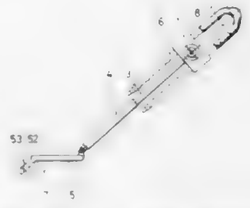
a key configured to be inserted into said lock core so as to rotate said lock core and said locating piece such that said thrust piece of said locating piece rotates out of contact with said front ratchet, thereby enabling said first spring to move said engaging lever to its original position.

5,329,793

ANTI-THEFT DEVICE FOR A VEHICLE

Kun-Chao Chen, 58, Ma Yuan West St., Taichung, Taiwan

Filed Apr. 13, 1993, Ser. No. 46,226
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 3 Claims



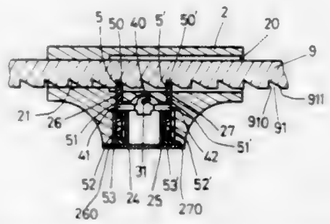
1. An anti-theft device for a vehicle comprising a housing having a chamber formed therein, a sleeve extended upward therefrom, a lock mechanism received in said sleeve; a casing engaged in said housing, an orifice formed in said casing for receiving said lock mechanism; a rod including a first end rotatably coupled to said casing and a second end; a tube including a first end for slidably receiving said second end of said rod and a second end; means for securing said second end of said rod to said tube; a ring element including an extension extended therefrom and pivotally coupled to said second end of said tube, and a shank engaged through said housing and said casing so as to form said anti-theft device.

5,329,794

AUTOMOBILE STEERING LOCK

Tsung-I Lo, 5th Fl., No. 76, Ai-Kuo E. Rd., Taipei, Taiwan

Filed Jun. 1, 1993, Ser. No. 69,217
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 1 Claim



1. An anti-theft device for attachment to a steering wheel of an automobile comprising:

a housing having a longitudinal passageway in a rear portion, a hexagonal hole in a left rear portion communicating with the passageway, several rivet holes in a front inner edge, two parallel vertical apertures in a front interior, an upper and a lower U-shaped member between said two vertical apertures, two comparatively large round holes in an intermediate portion of said two vertical apertures;

a lock base provided on an upper surface of the housing for depositing a lock, having a locating ring in a bottom and a locating block on the locating ring;

an elongate tubular body member having its front end fixed in the passageway of said housing, its longitudinal hollow interior communicating with said passageway of the housing, and a hook with a curve at its end welded thereon;

an elongate rod member provided to telescopically move in said hexagonal hole of the housing and in said tubular body member, having a hook with a curve at its end welded thereon, and a plurality of grooves equally spaced apart in a rear portion, each said groove having a right sloped face and a left vertical face;

said lock having a hole in a bottom for the locating block to fit therein, and a second hole opposite a hole in the bottom of the lock base for an actuating pin to fit therein;

two vertical square plates, two springs, two stoppers and a cap placed in the front interior of the housing, each said vertical plate having a front vertical sloped side and a central square hole for each of two wings of a dead bolt to insert therein to move with the dead bolt, said cap having the same number of rivet holes as the rivet holes in the housing for rivets to fix the cap with the housing;

said dead bolt having a slot for the actuating pin of the lock to fit therein and said two wings extending from its sides, fitting in the front interior of the housing with the wings fitting in two lateral apertures and in said two square holes in the vertical plates; and wherein

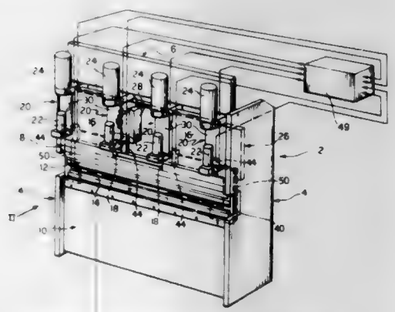
said two vertical plates being urged by said two springs to protrude in two of said grooves of the rod member when the lock is in locked condition, said rod member being able to be pulled outward from the housing for adjusting its length with regard to the body member in locked condition, with the front sloped sides of said vertical plates sliding over said sloped faces of the grooves of the rod member, said rod member being impossible to be retracted inward in the housing in locked condition, with the front sloped sides of said vertical plates being stopped by the vertical faces of the grooves of the rod member, said dead bolt being moved inward by the actuating pin of the lock with the two vertical plates together to engage two of the grooves of the rod member for locking this device on a steering wheel without using a key.

5,329,795

PRECISION BENDING PRESS FOR RELATIVELY SHORT PIECES OF SHEET METAL

Franco Sartorio, and Stefano Vergano, both of Torino, Italy, assignors to Amada Company, Ltd., Isehara, Japan

Filed Nov. 30, 1992, Ser. No. 982,995
Claims priority, application Italy, Dec. 30, 1991, T091A001051
Int. Cl.[5] B21J *13/04*
U.S. Cl. 72—21 11 Claims



1. A bending press for sheet metal, comprising:

a reaction structure comprising a single pair of lateral uprights connected to one another by a connecting beam;

at least one fixed tool-holder beam and at least one movable tool holder beam, said tool-holder beams attached to said lateral uprights and disposed in a general common plane, said movable tool holder beam movable towards said fixed tool-holder beam in order to follow a working path in said plane, one of which tool-holder beams carries a die and the other of which carries a forming punch, and in which the movable tool-holder beam includes n segments, n being greater than or equal to 2, which under a working load can deform substantially independently from each other;

a plurality of actuators of a number equal to at least n+1 connected to, and for controlling the movement of, the movable tool-holder beam, the actuators being connected to the connecting beam of the reaction structure and said structure being stressed by the overall working load generated by the actuators;

an auxiliary structure which is not affected appreciably by deformations of the reaction structure caused by the working load;

a plurality of position transducers associated with respective actuators for generating signals which indicate the distance between the punch and the die and including means for sending said signals to a control processor and each transducer including a first part attached to the movable tool-holder beam and a second part attached to the auxiliary structure; and

a control processor which receives signals from the position transducers and controls the actuators in such a manner that they impart identical displacements and displacement speeds to the beam;

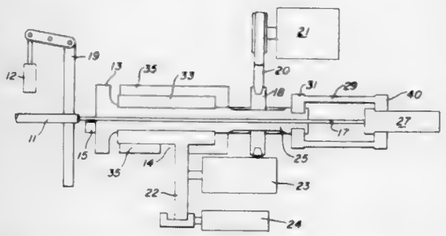
wherein each actuator applies a working load between the connecting beam and the movable tool-holder beam.

5,329,796

ROD STAMPING MACHINE

Richard F. Edmonds, Jr., Sellersville, and William C. Sholly, Souderton, both of Pa., assignors to SRW Associates, Inc., Wilmington, Del.

Division of Ser. No. 846,708, Mar. 6, 1992, Pat. No. 5,209,094.
This application Feb. 16, 1993, Ser. No. 18,211
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] B21C *26/00*
U.S. Cl. 72—71 12 Claims



1. A metalworking machine for stamping the ends of metal rods, comprising:

a base;

a rod-like workpiece releaseably affixed to said base;

a hollow spindle rotatably affixed to said base having an axial bore;

a chuck mounted on one end of said spindle and having an axial bore and an axis of rotation co-linear with, the longitudinal axis of said workpiece;

a cutting tool mounted in said chuck;

drive means for rotating said spindle;

a stamping rod slideably held within said spindle bore, said stamping rod including indicia imprint means on one end;

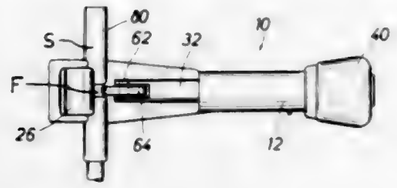
impact means affixed to said base acting upon said stamping rod; and

advance means affixed to said base which moves said tool

relative to said workpiece, whereby said advance means causes the tool to cut the workpiece, and the impact means forcibly drives the stamping rod forward, thereby producing an identification mark in the end of the workpiece

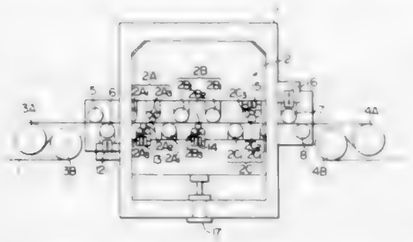
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5,329,797
TUBE-RESIZING TOOL
John Calhoun, 1948 Perry Ave., Groves, Tex. 77619
Filed May 18, 1993, Ser. No. 63,881
Int. Cl.[5] B21D *17/04*
U.S. Cl. 72—121 **6 Claims**



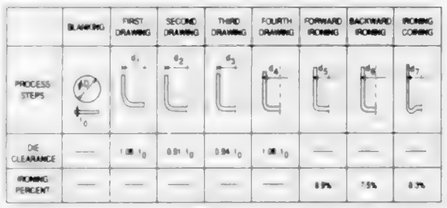
1. A tube-resizing tool comprising:
(a) a frame assembly including a first leg and a second leg, the first leg being adjustable toward or away from the second leg which is fixed to the frame assembly;
(b) two rollers of substantially identical common length and substantially uniform outer peripheral cross-section rotatably mounted in tandem to the second leg; and
(c) a resizing wheel rotatably mounted to the first leg, the resizing wheel having a substantially uniform outer peripheral cross-section and a length less than the length of each of the rollers, wherein the axes of the rollers and the axis of the resizing wheel are substantially parallel and the midpoint of the length of the resizing wheel and the midpoints of the length of the rollers lie in a plane substantially perpendicular to their axes.

5,329,798
LEVELING DEVICE AND LEVELING METHOD
Yoshio Takakura; Tomoaki Kimura, and Tadashi Nishino, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 583,220, Sep. 17, 1990, abandoned. This application Dec. 23, 1991, Ser. No. 825,840
Claims priority, application Japan, Sep. 18, 1989, 1-240018
Int. Cl.[5] B21D *1/05*
U.S. Cl. 72—164 **26 Claims**



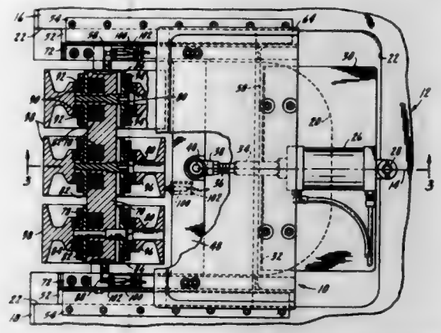
1. A levelling device for a strip including a tension leveler and bridle rolls arranged at the inlet side and at the outlet side of said tension leveler, said inlet side and outlet side bridle rolls applying a tension to said strip, and a roll group in said tension leveler applying bending actions and stretching actions to said strip for correcting the flatness of said strip, comprising:
a tension fluctuation suppressing means provided at least between said inlet side bridle rolls and said tension leveler for substantially suppressing tension fluctuations transferred from said bridle rolls through said strip to said tension leveler,
wherein said tension fluctuation suppressing means includes first and second fluctuation suppressing rolls between which said strip travels and pressing means for adjustably moving said first fluctuation suppressing roll toward the second fluctuation suppressing roll to thereby suppress tension fluctuations transferred from said bridle rolls through said strip to said tension leveler.

5,329,799
PROCESS AND APPARATUS FOR PRESS-FORMING TUBULAR CONTAINER-LIKE ARTICLE FROM STRIP, INCLUDING FORWARD AND BACKWARD IRONING STEPS
Norio Ito, Toyota, and Koichi Mine, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed May 25, 1993, Ser. No. 67,050
Claims priority, application Japan, May 29, 1992, 4-163521; May 29, 1992, 4-163522
Int. Cl.[5] B21D *22/24*
U.S. Cl. 72—340 **24 Claims**



1. A method of pressing a sheet-like blank into a tubular container, including a first process in which the sheet-like blank is drawn into an intermediate workpiece having a tubular portion and a bottom portion which closes one of opposite axial ends of the tubular portion, and a second process in which said tubular portion of said intermediate workpiece is ironed in an axial direction thereof, said second process comprising:
a forward ironing step for placing said intermediate workpiece on a columnar first ironing punch such that at least a leading end portion of said first ironing punch is positioned within said intermediate workpiece; and forcing said intermediate workpiece and said first ironing punch together into a first die hole, to iron said tubular portion of the workpiece in an axial direction from said one of said opposite axial ends of said tubular portion, toward the other of said opposite axial ends; and
a backward ironing step for placing said intermediate workpiece on a columnar second ironing punch such that at least a trailing end portion of said second ironing punch is positioned within said intermediate workpiece, and forcing said intermediate workpiece and said second ironing punch together into a second die hole, with a columnar pushing punch held in pressing contact at one end thereof with an outer surface of said bottom portion of said intermediate workpiece remote from the trailing end portion of said second ironing punch, to iron said tubular portion of the workpiece in an axial direction from said other of said opposite axial ends of said tubular portion toward said one of said opposite axial ends.

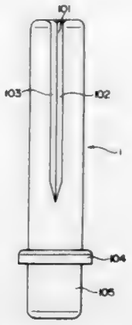
5,329,800
CONVERSION SYSTEM HAVING CONVEYOR SLIDE ASSEMBLY FOR MULTIPLE BELTS
Frank J. Herdzina, South Barrington, and Steven F. Herdzina, McHenry, both of Ill., assignors to Service Tool International, Inc., Elk Grove Village, Ill.
Filed Feb. 11, 1993, Ser. No. 16,570
Int. Cl.[5] B21D *24/16*
U.S. Cl. 72—361 **19 Claims**



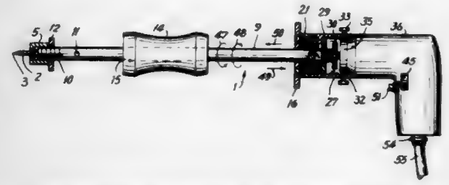
1. In a conversion system of the type having cooperatively-engageable, reciprocable upper and lower tooling defining a plurality of stations having tools which progressively convert shells into can ends, at least one endless conveyor for indexing shells into and through the stations of the tooling, the conveyor revolving around head and tail pulleys and defining a longitudinal axis, the improvement comprising a pulley for use as either a head pulley or tail pulley, comprising:
a base member attached to the conversion system;
a cylindrical drum defining an axis and having an outer surface engageable with the conveyor, the base member being a stationary shaft extending parallel to the axis of the drum;
support means for mounting the drum for rotation about the drum's axis; and
mounting means attached to the base member for mounting the support means such that support means is slidable on the mounting means in a direction parallel to the conveyor's longitudinal axis.

5,329,801
PRESS DIE SET
Nobuo Enomoto; Toshio Wada; Kazuyoshi Umeya; Kazuo Yamada, and Koki Okanda, all of Yamanashi, Japan, assignors to Enomoto Co., Ltd., Uenohara, Japan
Filed Apr. 13, 1993, Ser. No. 47,142
Claims priority, application Japan, Apr. 20, 1992, 4-126903; Apr. 20, 1992, 4-126904; Oct. 28, 1992, 4-080265[U]
Int. Cl.[5] B21D *37/10*
U.S. Cl. 72—456 **6 Claims**

1. A sliding bearing assembly for a die set comprising:
a guide post having an outer surface in which are formed at least two V-shaped grooves disposed parallel to the axis of said guide post, each of said grooves being defined by two flat surfaces making a 90 degree angle therebetween;
a guide bushing comprising a cylindrical member having an axial bore in the inner wall of which are formed at least two V-shaped grooves disposed parallel to the axis of said cylindrical member and opposing the grooves in said guide post, each of said grooves being defined by two flat surfaces making a 90 degrees angle therebetween, said guide bushing being mounted on said guide post so as to provide relative linear movement therebetween; and
a substantially cylindrical retainer assembly positioned within the bore of said guide bushing and comprising at least two cross roller bearings both mounted on a generally circular frame consisting of interconnected coupling members with the roller of each of said cross roller bearings arranged to engage and travel in respective grooves in said guide post and in said guide bushing.



5,329,802
AUTOMATIC SLIDE HAMMER ATTACHMENT
Delio A. Nunez, 25-53 99th St., E. Elmhurst, N.Y. 11369
Filed Mar. 23, 1993, Ser. No. 35,706
Int. Cl.[5] B21D *1/12*
U.S. Cl. 72—457 **2 Claims**



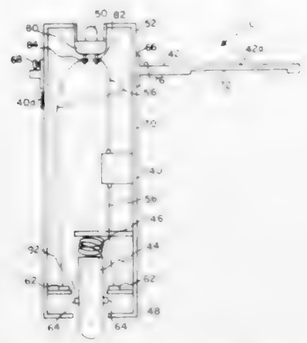
1. A dent removing tool having means for attaching onto a rotary power source comprising:
a slide hammer having an elongated body with impacting means mounted for reciprocal movement thereon,
screw means mounted on one end of said elongated body for enabling said slide hammer to engage, penetrate and disengage from an intended workpiece,
an impact-receiving member mounted on the opposite end of said elongated member,
mounting means on said elongated body for attaching said slide hammer to a rotary power source, said mounting means including bearing means to allow relative longitudinal movement of said elongated body therethrough, and further including an impact-transmitting member to transmit impacts from said impacting means to said impact-receiving member and said elongated member,
a driving connection between said elongated body and said rotary power source for imparting rotary force to said elongated body as well as allowing longitudinal movement between said elongated body and said rotary power source,
whereby said impact-transmitting member and said impact-receiving member may be separated from one another when rotary force is imparted to said elongated member may be placed in contact with one another when an impact is imparted to said impact-transmitting member.

5,329,803

DIESEL FUEL INJECTOR TUNING TOOL

Keith Booth, 3525 SW. 15th Ct., Fort Lauderdale, Fla. 33312

Filed Nov. 16, 1992, Ser. No. 976,572
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—119 A **10 Claims**



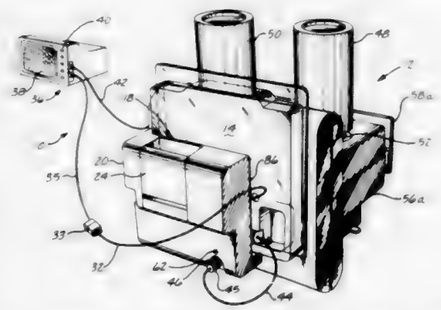
1. A tool for tuning an engine having a fuel injector unit comprising a follower and a body having a flange portion protruding outward from said body, comprising:
- a support structure having a follower contact surface,
- a plunger member slidably connected to said support structure, for bearing against said flange portion,
- a light source connected to a power source,
- a circuit for delivering electric current from said power source to said light source,
- switch means which closes said circuit when said plunger member is moved to a predetermined position, and opens said circuit when said plunger member moves out of said predetermined position.

5,329,804

CALIBRATION SYSTEM AND METHOD FOR CALIBRATING A BLOOD GAS SENSOR

Cheryl D. Germany, Kirkland; Conrad T. Oi Fong, Redmond; Steven B. Duke, Bothell, all of Wash., and Gerald G. Vurek, Mountain View, Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 16, 1992, Ser. No. 962,990
Int. Cl.[5] G01N *33/00*
U.S. Cl. 73—1 G **17 Claims**



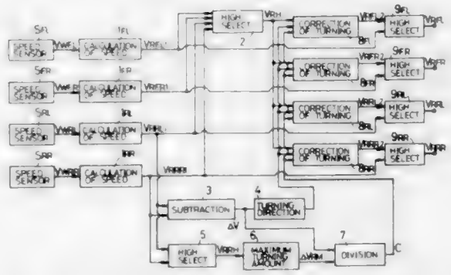
1. A calibration system for calibrating a medical sensor sensitive to a chemical parameter, said medical sensor being disposed in a liquid pool contained within a housing that maintains the medical sensor in a sterile environment during calibration of the medical sensor prior to its in vivo use, said calibration system comprising:
- (a) a chassis adapted for supporting a housing in which a medical sensor is disposed and maintained in a sterile condition during calibration of the medical sensor;
- (b) a heater disposed on the chassis, said heater being adapted for heating a liquid in a portion of the housing in which the medical sensor is disposed, to a predefined calibration temperature;
- (c) a source of a first calibration gas connected in fluid communication with a connector, said connector being adapted to connect to a fluid line that extends from the housing to enable the first calibration gas to bubble through the liquid in which the medical sensor is disposed;
- (d) valve means, connected in fluid communication with and between the source of the first calibration gas and the connector, said valve means being opened to enable a flow of the first calibration gas through the connector during the calibration of the medical sensor, said valve means controlling the flow of the first calibration gas through the liquid to achieve a first predefined chemical calibration point in the liquid;
- (e) biasing means, disposed on the chassis, for biasing the heater against the housing to ensure heat transfer from the heater to the liquid in which the medical sensor is disposed; and
- (f) temperature control means, electrically coupled to the heater, said temperature control means being adapted to connect to a lead coupled to the medical sensor that conveys a signal produced by the medical sensor, which is indicative of the temperature of the liquid, said temperature control means controlling the temperature of the heater so that the liquid in which the medical sensor is disposed is heated to the predefined calibration temperature and maintained at the predefined calibration temperature during the calibration of the medical sensor.

5,329,805

VEHICLE BODY SPEED ESTIMATING METHOD IN ANTI-LOCK CONTROL SYSTEM FOR VEHICLE

Toshio Yahagi; Yoshihiro Iwagawa; Yoichi Sugimoto; Tsuyoshi Satoh, and Takeshi Kojima, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 648,330, Jan. 30, 1991, Pat. No. 5,109,694, which is a continuation of Ser. No. 381,422, Jul. 18, 1989, abandoned. This application Jan. 30, 1992, Ser. No. 828,297
Claims priority, application Japan, Jul. 18, 1988, 63-178368; Oct. 18, 1991, 3-271205
Int. Cl.[5] G01N *19/02*
U.S. Cl. 73—9 **11 Claims**



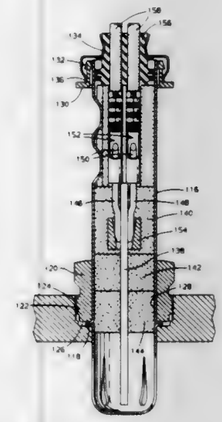
11. A method for estimating a vehicle body speed in an anti-lock control system for a vehicle for controlling the braking pressure for wheels by estimating the vehicle body speed on the basis of a wheel rotational speed detected in a speed sensor and judging a slip rate of the wheel on the basis of the estimated vehicle body speed, said method comprising the steps of:
- calculating first vehicle body speeds at least for a front wheel side and a rear wheel side, respectively, based on wheel rotational speeds detected in speed sensors for the vehicle wheels;
- selecting a higher one of at least two wheels speeds derived from the front wheel side and the rear wheel side, respectively;
- correcting said selected higher wheel speed by a correction value based on a difference in speed between inner and outer wheels during turning of the vehicle to calculate second vehicle body speeds at least for the front wheel side and the rear wheel side, respectively;
- selecting a higher one of said first and second vehicle body speeds associated with respective wheels as an estimated vehicle body speed for the associated wheel to be used in an anti-lock control for the wheel.

5,329,806

EXHAUST SENSOR WITH TUBULAR SHELL

Mark R. McClanahan, Clio; Bruce R. Dinger, Davison, and Richard W. Duce, Flushing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 11, 1993, Ser. No. 59,398
Int. Cl.[5] G01N *27/12*
U.S. Cl. 73—31.05 **5 Claims**



1. A gas sensor comprising:
- a tubular shaped shell having a crimped lip formed near a lower portion of the shell;
- a gas sensing element carried in the shell;
- a nut slidably received over the tubular shaped shell for engagement with the crimped lip;
- said nut having a threaded portion for engagement with a threaded boss.

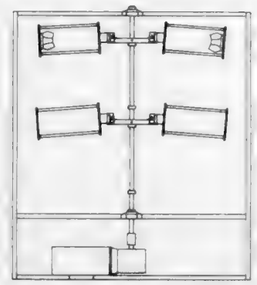
5,329,807

CENTRIFUGE TEST APPARATUS FOR FOOTWEAR AND APPAREL

Thomas G. Sugar, Newark, and Seshamamba Yalamanchili, New Castle, both of Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jun. 18, 1993, Ser. No. 80,024
Int. Cl.[5] G01M *3/04*
U.S. Cl. 73—40 **14 Claims**

1. A test apparatus for detecting leakage of a liquid from articles of footwear comprising:
- (a) at least one hanging basket capable of swinging outward and inward into which the footwear filled with water to be tested is placed;
- (b) a rotatable hub having a longitudinal axis around which the hanging basket is positioned;



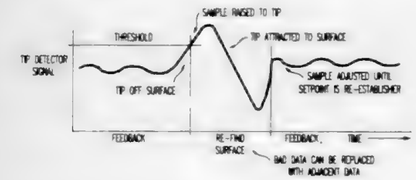
- (c) a means for rotating the rotatable hub; and
- (d) a housing enclosure containing the rotatable hub and hanging basket.

5,329,808

ATOMIC FORCE MICROSCOPE

Virgil B. Elings, and John A. Gurley, both of Santa Barbara, Calif., assignors to Digital Instruments, Inc., Santa Barbara Calif.

Continuation of Ser. No. 831,876, Feb. 6, 1992, Pat. No. 5,224,376, which is a continuation of Ser. No. 707,292, May 30, 1991, Pat. No. 5,237,859, which is a continuation of Ser. No. 447,851, Dec. 8, 1989, abandoned. This application Jul. 2, 1993, Ser. No. 85,053
Int. Cl.[5] G01B *21/30*
U.S. Cl. 73—105 **4 Claims**



1. An atomic force microscope comprising:
- a sample holder and a probe with a sensing tip;
- scanning means for creating relative movement between a sample in the holder and the sensing tip in X, Y, and Z coordinate directions;
- sensing means for sensing the vertical position of the sensing tip; and
- feedback means connected between the sensing means and the scanning means for maintaining the tip in a preestablished relationship with respect to a scanned surface of the sample in the Z direction, thereby to obtain height information about the scanned surface of the sample, wherein the feedback means comprises,
- analog-to-digital conversion means for obtaining an analog signal from the sensing means and for converting said analog signal into a digital signal,
- digital computation means including program means for receiving said digital signal from said analog-to-digital conversion means and for calculating and outputting first digital vertical control signals which create desired relative movement between a sample in the holder and the sensing tip in the Z coordinate direction to maintain the tip in the pre-established relationship with respect to the scanned surface of the sample in the Z direction, and
- first digital-to-analog conversion means for receiving said

first digital vertical control signals from said digital computation means and for outputting analog control signals to the scanning means to effect movement thereof in the Z direction; and wherein:

said digital computation means includes

means for determining that the sensing tip has come off the surface of the sample, including

means for determining whether a motion of the tip in a predetermined direction exceeds a predetermined threshold,

means for signalling said feedback means to move the sample in said predetermined direction when it is determined that the motion of the tip in the predetermined direction has exceeded said predetermined threshold,

means for determining whether or not upon said moving of said sample in said predetermined direction a responsive movement of said tip in said predetermined direction has been produced, and

means for determining that the tip has come off the surface of the sample when it has been determined that said responsive movement of the tip has not been produced; and

means for generating control signals to place the tip back on the surface of the sample.

5,329,809

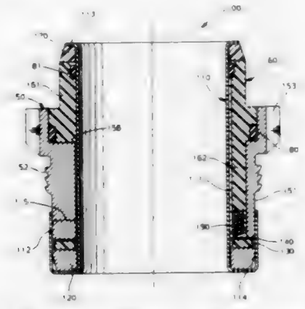
NON-INTRUSIVE CYLINDER PRESSURE SENSOR

Mark C. Sellnau, Bloomfield Hills, Mich.; Robert G. Plyler, Vienna, Ohio, and Andrew F. Rodondi, Sharpsville, Pa., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 22, 1993, Ser. No. 50,796

Int. Cl.[5] G01L *23/32*; G01M *15/00*

U.S. Cl. 73—115 **10 Claims**



1. In an internal combustion engine, a cylinder pressure sensor disposed between a first wall and a second wall of an engine component housing and axially responsive to flexure of the first wall relative to the second wall, comprising in combination:

a substantially cylindrical sleeve with a terminal end thereof being outwardly upwardly cupped to define an annular channel, the annular channel having a bottom portion thereof substantially normal to the sleeve for engagement with the first wall;

an annular load sensing element disposed within the annular channel;

a substantially cylindrical mounting shell having a lower portion nested within said annular channel and in communication with the sensing element, an upper portion for engagement with the second wall, and an axial conduit therethrough;

a substantially cylindrical annular bonnet having a top portion and a finger depending axially therefrom, the annular bonnet top portion being stacked adjacent the mounting shell with the finger disposed within the axial conduit thereby providing a carrier for electrically conductive material to a terminal at the distal end of the finger; and means for sealing the sensing element from contamination.

5,329,810

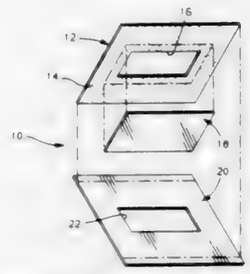
NON-DESTRUCTIVE TEST STRIP AND METHOD FOR MEASURING PAINT FILM BUILD

Sid C. Rogers, Pendleton; Charles K. Sylvester, Anderson, and Steve A. Harris, Elwood, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1993, Ser. No. 110,260

Int. Cl.[5] G01N *1/00*

U.S. Cl. 73—150 R **8 Claims**



4. In combination, an unpainted automotive fascia and a non-destructive test strip for measuring paint thickness on the fascia after it has been painted, the test strip including:

a) a desired length of tape having an adhesive coating on an inner surface and a window;

b) a paint strip of sufficient area to cover the window secured to the tape by the adhesive coating; and

c) a backing formed from material easily peeled from the adhesive coating.

5,329,811

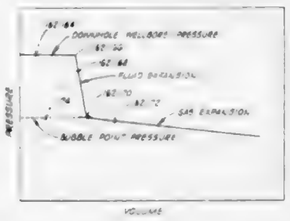
DOWNHOLE FLUID PROPERTY MEASUREMENT TOOL

Roger L. Schultz, Richardson, and William L. Bohan, Garland, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Feb. 4, 1993, Ser. No. 13,591

Int. Cl.[5] E21B *47/06, 49/08*; G01N *7/14, 33/28*

U.S. Cl. 73—155 **26 Claims**



1. A method of measuring a parameter of a hydrocarbon bearing well fluid, comprising:

(a) lowering a testing tool to a downhole location within a well;

(b) trapping a well fluid sample in said tool at said downhole location;

(c) while said tool remains within said well;

(1) expanding a volume of said trapped well fluid sample without first decreasing said volume; and

(2) during step (c) (1), repeatedly measuring a pressure of said trapped well fluid sample at different volumes and thereby generating pressure versus volume data for said trapped well fluid sample; and

(d) after step (c), expelling said well fluid sample from said tool back into said well by positively displacing said well fluid sample from said tool.

5,329,812

THERMAL FLOW SENSOR

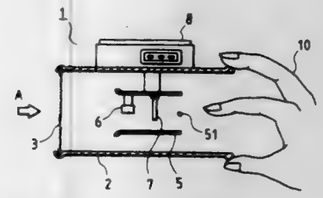
Yasuo Tada, and Tomoya Yamakawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,082

Claims priority, application Japan, Mar. 20, 1991, 3-081440

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.21 **3 Claims**



1. A thermal flow sensor, comprising:

a cylindrical housing through which a fluid to be measured flows;

a substantially straight-pipe-shaped detecting tube set in said housing, said detecting tube defining a fluid passageway;

a heat-sensitive resistor arranged in said detecting tube, a flow rate being detected from an amount of varied heat in said heat-sensitive resistor;

a flow regulating means located at an inlet side of said housing through which said fluid flows into said housing, for preventing the insertion of an unwanted object into said housing; and

an insertion preventing member comprising at least one bar located downstream of said heat-sensitive resistor and covering only a part of the fluid passageway inside said detecting tube, for protecting said heat-sensitive resistor substantially free from a loss of fluid pressure, wherein said at least one bar of said insertion preventing member and said heat-sensitive resistor are laid substantially orthogonal with each other.

5,329,813

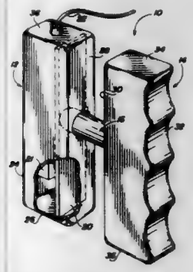
GRASP ANALYSIS APPARATUS

Royce C. Lewis, Jr., 5233 - 19th St., Lubbock, Tex. 79407

Continuation of Ser. No. 599,775, Oct. 17, 1990, Pat. No. 5,157,970. This application Oct. 23, 1992, Ser. No. 965,587

Int. Cl.[5] A61B *5/22*

U.S. Cl. 73—379.03 **14 Claims**



11. Apparatus by which the force of grasp one exerts with a hand is measured to determine when less than the maximum force is actually being exerted, comprising:

a palm engaging part, a finger engaging part spaced from said palm engaging part, shaft means extending between said finger engaging part and said palm engaging part and mounted to reciprocate respective to one of said finger engaging part and said palm engaging part;

adjustment means for changing the effective length of said shaft means; a transducer mounted respective to the other of said finger engaging part and said palm engaging part; said shaft means engages said transducer with an applied force that is proportional to the force of grasp exerted on said finger engaging part and said palm engaging part;

means including said transducer for measuring the force of grasp jointly exerted between the fingers and palm of the hand at a first location near the end of the fingers; means including said transducer for measuring the force of grasp jointly exerted between the fingers and palm of the hand at another location that is near the palm; and means including said transducer for measuring the force of grasp jointly exerted between the fingers and palm of the hand at a third location between said first and second location;

means comparing the measured force of grasp at said first, second and third locations to determine the configuration of a curve plotted from said measured force;

means constructing a curve and for comparing the resultant curve to a bell shaped curve which is considered a true representation of ones effort; while a curve other than a bell shaped curve is considered as a false representation of ones effort to grasp an object.

5,329,814

APPARATUS FOR TURNING A BODY TO BE BALANCED INTO A WORKING POSITION

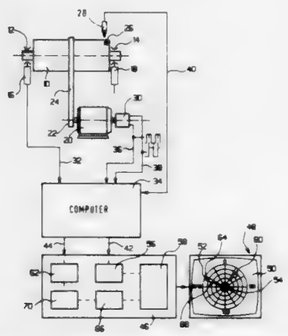
Jürgen Betz; Jürgen Kissinger, and Peter Heydt, all of Griesheim, Fed. Rep. of Germany, assignors to Dr. Reutlinger and Sohne Gmbh & Co. KG, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 660,524, Feb. 25, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,820

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1990, 4006867

Int. Cl.[5] G01M *1/22*

U.S. Cl. 73—462 **11 Claims**



1. Apparatus for locating unbalance in a rotary body to be balanced, comprising:

means for supporting the body for rotation about its axis of rotation;

means for rotating the body as so supported;

means for determining the angular position of unbalance of the body with respect to a reference position thereof;

means for displaying on a screen a mark representing the so-determined angular position of unbalance;

means for generating electrical pulses during rotational movement of the body such that the numbers of pulses

generated during given angles of rotation of the body are proportional to such angles of rotation of the body, whereby trains of pulses are generated by rotational movement of the body from said reference position to respective sequential momentary positions thereof an a train of pulses is generated when the body rotates through a complete revolution of the body;

means for determining the respective ratios of the numbers of said pulses in the respective trains of pulses that are generated by rotational movement of the body from said reference position thereof to said sequential momentary positions thereof in relation to said number of pulses generated in said train of pulses during a complete revolution of the body; and

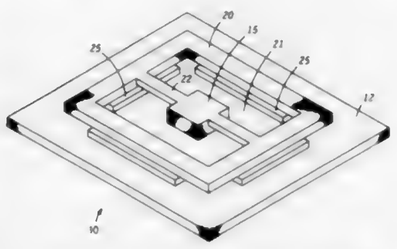
means for utilizing said ratios to sequentially display on said screen respective momentary rotational positions of the body.

5,329,815

VIBRATION MONOLITHIC GYROSCOPE

William C. Dunn, Mesa, and Raymond M. Roop, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1991, Ser. No. 810,064
Int. Cl.[5] G01P *9/04*
U.S. Cl. 73—505 **15 Claims**



5. A vibration monolithic gyroscope comprising:

a mounting post fixedly attached to a base and defining a first axis;

a mass positioned in a plane perpendicular to the post and spaced therefrom, the mass defining second and third axes mutually perpendicular to each other and to the first axis;

an arm affixed at one end to the post and at another end to the mass and mounting the mass for vibrational movement about the second axis;

driving apparatus mounted adjacent to the mass for causing the mass to move in a vibrational motion about the second axis; and

sensing apparatus positioned adjacent the mass for sensing movement about the third axis in response to movement of the gyroscope about the first axis.

5,329,816

ELECTRODE PATTERN INTENDED FOR TUNING FORK-CONTROLLED GYRO

Jan Söderkvist, Täby; Bo Nilsson-Almqvist, Karlskoga; Tony Holm, Degerfors, and Fredrik Börjesson, Stockholm, all of Sweden, assignors to Swedish Ordnance - FFV/Bofors AB, Sweden

Filed Jan. 8, 1992, Ser. No. 817,814
Claims priority, application Sweden, Jan. 8, 1991, 9100043-0
Int. Cl.[5] G01P *9/04*
U.S. Cl. 73—505 **11 Claims**

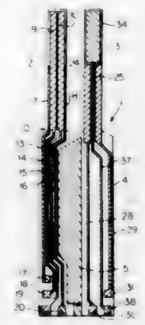
1. A tuning fork-controlled gyro comprising:

two legs and a base part,

one end of each leg being connected with the base part, the legs and base part being made of a single piezo-electric piece, and the legs being freely vibratable,

the legs being provided with an electrode pattern comprising drive electrodes for generating a vibration in the legs of the tuning fork in the plane of the tuning fork or out of the plane of the tuning fork and sensing electrodes for sensing vibrations occurring in the legs of the tuning fork in a plane perpendicular to the plane in which the vibration was generated,

wherein the electrodes for driving and sensing are separated so that the drive electrodes are applied on one leg of the



tuning fork and the sensing electrodes are applied on the other leg of the tuning fork, the sensing electrodes including first sensing electrodes for sensing vibrations out of the plane of the tuning fork or in the plane of the tuning fork respectively and second sensing electrodes (feedback electrodes) for sensing vibrations in the plane of the tuning fork or out of the plane for regulating the in-plane or out-of-plane driving of the tuning fork.

5,329,817

ULTRASONIC HOLOGRAPHY IMAGING METHOD AND APPARATUS

George F. Garlick, and Glen C. Dunham, both of Kennewick, Wash., assignors to Advanced Imaging Systems, Richland, Wash.

Filed Nov. 22, 1991, Ser. No. 796,711
Int. Cl.[5] G01N *29/06*
U.S. Cl. 73—605 **30 Claims**



1. An ultrasonic holographic imaging apparatus for generating a holographic image of object structure in a selected plane of an object that is place in the path of ultrasound while minimizing holographic image distortions caused by interfering structure of the object spaced from the selected object plane defining an out-of-focus structure, comprising:

a) an ultrasonic holographic detection surface aligned with an optical axis;

b) an ultrasonic transducer means for (1) directing a coherent object beam of ultrasound along the optical axis and through the object to the ultrasonic holographic detection surface, and (2) directing a coherent ultrasonic reference beam to the holographic detection surface to interfere with the object beam to form an ultrasonic hologram at the detection surface;

c) an ultrasonic imaging lens system aligned with and extending along the optical axis between the object and the holographic detection surface for focusing ultrasound from the selected object plane onto the holographic detection surface; and

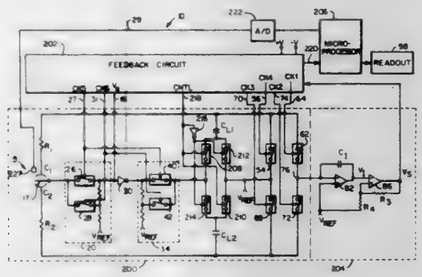
d) wherein the ultrasonic transducer means directs the ultrasonic object beam through the object at a plurality of acute incident angles relative to the optical axis to project images of the out-of-focus structure on the detection surface at spaced locations corresponding to the acute incident angles.

5,329,818

CORRECTION OF A PRESSURE INDICATION IN A PRESSURE TRANSDUCER DUE TO VARIATIONS OF AN ENVIRONMENTAL CONDITION

Roger L. Frick, Hackensack, and Gregory S. Munson, Minneapolis, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed May 28, 1992, Ser. No. 890,627
Int. Cl.[5] G01L *19/04, 9/12*
U.S. Cl. 73—708 **47 Claims**



1. Apparatus for measuring pressure, comprising:

a pressure sensor comprising at least first and second sensing means each having an impedance value which varies with pressure and with a predetermined environmental condition;

impedance means having an impedance value which is substantially unchanged by changes in the predetermined environmental condition;

connection means for alternately connecting the impedance means into operative relation with the first and second sensing means, successively, the sensor and impedance means together providing first and second signals during respective alternative connection of the impedance means with the first and second sensing means, the first and second signals being functions of pressure and the predetermined environmental condition; and

correction means responsive to the first and second signals for correcting a pressure indication for variations of the predetermined environmental condition based upon the first and second signals.

5,329,819

ULTRA-HIGH PRESSURE TRANSDUCER

Kyong M. Park, Thousand Oaks, and Abrar A. Tirmizi, Simi Valley, both of Calif., assignors to Kavlico Corporation, Moorpark, Calif.

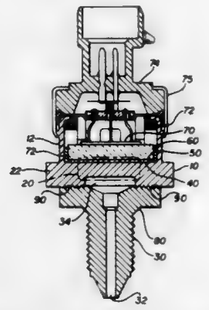
Filed May 6, 1993, Ser. No. 57,541
Int. Cl.[5] G01L *7/08, 9/12*
U.S. Cl. 73—724 **20 Claims**

10. A simple and reliable ultra high pressure transducer comprising:

a capacitive pressure transducer made of two closely spaced insulating plates of low mechanical hysteresis material, said plates each having a layer of conductive material on their opposed faces forming electrodes which are spaced slightly from one-another, and at least one of said plates being a thin diaphragm which is flexible under applied deflection forces to deflect toward the other plate and change the capacitance between said electrodes, said thin diaphragm being mounted to and spaced apart from the other insulating plate at the facing surfaces of the outer peripheries thereof;

an ultra high pressure fitting including an ultra high pressure input coupling part for handling pressures in excess of 20,000 psi and for connecting to a source of ultra high pressure fluid, and a thick, flat flexible metal diaphragm integral with said fitting and bonded to said thin diaphragm over the greater portion of the active areas of said thin and thick diaphragms;

said thick metal diaphragm constituting means for determining the magnitude of the deflection of said bonded thin



and thick diaphragms as pressure to said ultra high pressure input coupling part is varied; and

an ultra high pressure chamber adjacent to and having an extent comparable to that of said thick metal diaphragm, said chamber being connected to said input coupling part;

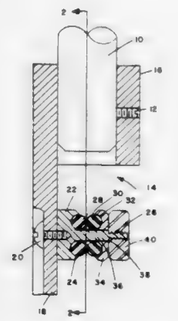
whereby, when the ultra high pressure applied to said input coupling part changes the corresponding pressure change in said chamber causes the deflection of said bonded thick and thin diaphragms to change correspondingly, and the resultant changed output capacitance of the transducer indicates the new ultra high pressure level.

5,329,820

MATERIALS TESTING GRIP

Stephen M. McMahon, Quincy, Mass., assignor to Instron Corporation, Canton, Mass.

Continuation of Ser. No. 804,284, Dec. 9, 1991, abandoned. This application May 17, 1993, Ser. No. 62,701
Int. Cl.[5] G01N *3/08*
U.S. Cl. 73—833 **8 Claims**



1. A testing grip combination comprising:

an actuator element that is movable along an axis,

a connecting member connected to said actuator element for movement along said axis,

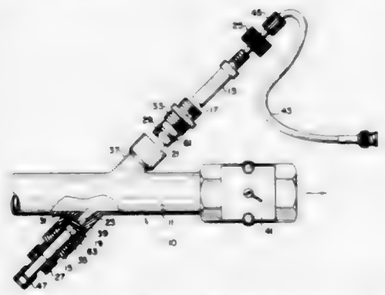
a first jaw portion attached to said connecting member,
a second jaw portion, and
means for limiting movement of said first jaw portion and said second jaw portion thereapart,
each of said first jaw portion and said second jaw portion having a gripping face,
each said gripping face facing the other said gripping face,
the first jaw portion gripping face being out of parallel with the second jaw portion gripping face, and defining therewith a nip that has a portion oriented parallel to said axis so as to receive a test fiber by movement transverse to said axis.

5,329,821

AUTORANGING SONIC FLOWMETER

Theodore N. Birnbaum, Tulsa, and Ellis M. Zacharias, Jr., Broken Arrow, both of Okla., assignors to Nusonics, Inc., Tulsa, Okla.

Filed May 8, 1992, Ser. No. 880,887
Int. Cl.[5] G01F *1/00*
U.S. Cl. 73—861.28 **21 Claims**



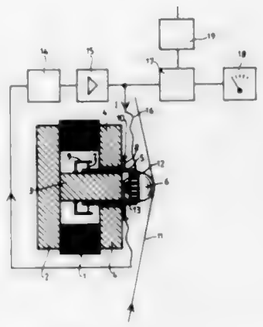
1. For use with a system for measuring the flow of a fluid in a pipe wherein a pair of transducers is mounted on the pipe in an upstream-downstream relationship, each transducer being excited by one of a pair of oscillators to transmit a sonic signal through said fluid in said pipe to the other of said transducers, the improvement comprising:
a pair of transducer mounting sleeves extending outwardly from said pipe providing communication with the interior of said pipe;
a pair of acoustic window means, one disposed in each of said sleeves for hydraulically isolating said transducers from said fluid in said pipe for passing said transducer sonic signals through said pipe; and
a microprocessing network adapted for measuring the flow of said fluid of said pipe selected from a plurality of pipe sizes, each pipe size having a different inner diameter, said system having a signal transit time between transducers exactly equal to the time elapse of N cycles of a frequency emitted by said oscillators, wherein the value of N is computed by the microprocessor from transmit time data and relates to the size of the pipe.

5,329,822

YARN TENSION SENSOR FOR A TEXTILE MACHINE

Robert Hartel, Aachen; Karl-Josef Hoehne, Cologne; Ferdinand-Josef Hermanns, Erkelenz; Herbert Henze, Moenchengladbach; Herbert Knors, Moenchengladbach; Dietmar Engelhardt, Moenchengladbach; Wilhelm Zitzen, Moenchengladbach; Manfred Veyes, Moenchengladbach; Herbert Merkens, Erkelenz; Wolfram Weissenfels, Moenchangladbach; Hermann Ruetten, Viersen; Dirk Jaegers, Moenchengladbach, and Berndt Pommer, Moenchangladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Sep. 4, 1992, Ser. No. 940,671
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1991, 4129803
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.61 **14 Claims**



1. A yarn tension sensor for a textile machine, particularly adapted for measuring the tensioning of a yarn traveling at high speed, comprising:
means for generating a magnetic field,
plunger means having a coil winding and disposed for axial movement within said magnetic field, said plunger means having a surface in direct contact with the yarn for axial movement of the plunger in response to yarn tension fluctuations,
a position sensor disposed in sufficiently close proximity to said plunger to detect changes in the position thereof representative of tension fluctuations in a yarn traveling in contact with said yarn contact surface, and
a controller connected to said position sensor to receive plunger position signals therefrom and connected to said coil winding of said plunger for regulating electrical current through said coil winding as a function of said plunger position signals from said position sensor to produce an axial force of said plunger sufficient to compensate for said tension fluctuations.

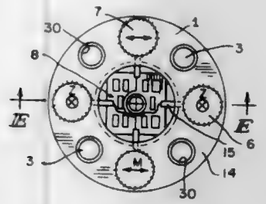
5,329,823

INTERPOSED FORCE SENSOR INCLUDING AMPLIFIERS

Hans Sonderegger, Neftenbach; Mario Giorgetta, Winterthur, and Peter Wolfer, Kleinandelfingen, all of Switzerland, assignors to Kistler Instrumente AG, Winterthur, Switzerland

Filed May 31, 1991, Ser. No. 708,908
Claims priority, application Switzerland, May 31, 1990, 01840/90
Int. Cl.[5] G01L *1/04*
U.S. Cl. 73—862.642 **17 Claims**

10. An interposed sensor to be fitted between two force-transmitting machine parts having a first lateral extent comprising:
a housing having a lateral extent not greater than said first lateral extent, a plurality of holes around the periphery of said housing, at least one through hole and a hole in the center of said housing;
one or more measuring elements secured in said holes around the periphery of said housing;
said measuring elements and housing having a common planar surface;



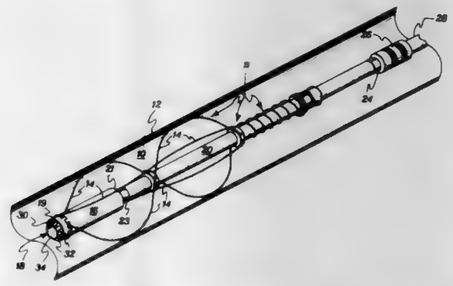
said at least one through hole in said housing receiving a preloading bolt interconnecting said two force-transmitting machine parts; and
electronics including one or more charge amplifiers secured in said hole in the center of said housing.

5,329,824

CENTRALIZER FOR INTERNAL PIPE INSPECTION DEVICE

Joseph R. Carapezza, Waltham, and Linda T. Ystueta, Brighton, both of Mass., assignors to Niagara Mohawk Power Corporation, Syracuse, N.Y.

Continuation of Ser. No. 917,590, Jul. 17, 1992, abandoned. This application Jul. 15, 1993, Ser. No. 92,031
Int. Cl.[5] G01B *5/12*
U.S. Cl. 73—866.5 **33 Claims**



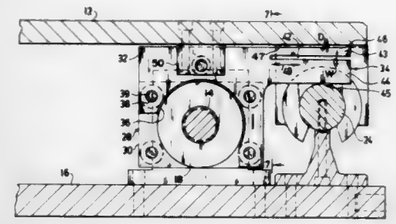
1. A collapsible support mechanism for a pipe inspection device having an inspection head and a hose section trailing therefrom, said collapsible support mechanism comprising:
a plurality of bendable support legs, each of said support legs having a first end and a second end, each support leg first end being pivotally secured to said inspection head;
two ferrules encircling said hose, a first one of said two ferrules being disposed nearer to said inspection head than a second one of said two ferrules, said bendable support legs each being pivotally secured between its first end and its second end to said first ferrule, and each support leg being pivotally secured adjacent its second end to said second ferrule such that when said first and second ferrules are near said inspection head said support legs are flexibly bent and pivoted outwardly from said inspection head to support said device and when said ferrules are remote from said inspection head said support legs are collapsed towards said inspection head; and
biasing means for maintaining said support legs in an extended position from said inspection head.

5,329,825

PRECISION MOVING STAGE

Paul D. Askins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,716
Int. Cl.[5] F16H *25/24*
U.S. Cl. 74—89.15 **15 Claims**



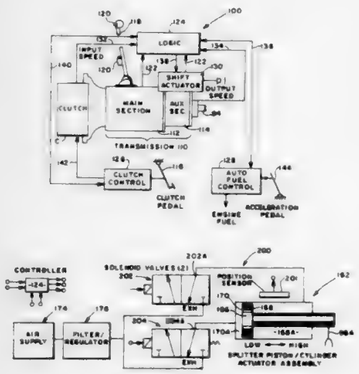
1. In a precision positioning stage assembly, comprising:
a movable stage;
a lead screw having a longitudinal axis parallel to the direction of movement of said stage;
a follower threadably engaged with said lead screw;
a linear guide rod for supporting one side of said stage, said linear guide rod having its axis parallel to the direction of movement of said stage;
a drive member secured to said stage, said drive member having a pair of oppositely disposed contact surfaces spaced apart a predetermined distance; and
a torque member secured to said follower, said torque member having a drive section for placement between said contact surfaces and moving said stage along said guide rod, said drive section and said contact surfaces having an configuration so as to provide substantially point contact therebetween and a stop section for contacting said linear guide rail and said stage for preventing rotation of said follower when said lead screw is rotated.

5,329,826

ENHANCED AUTOMATED SPLITTER SHIFTING WITH DUAL SOLENOID VALVES AND AUTO FUEL CONTROL

Roger A. Graves, Jr., Battle Creek, and William J. Mack, Clarkston, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 22, 1992, Ser. No. 823,743
Int. Cl.[5] F16H *59/00*
U.S. Cl. 74—335 **20 Claims**



1. A method for controlling an automated vehicular transmission (**100**) system comprising a compound transmission

(110) comprising a main transmission section (112) connected in series with an auxiliary transmission section (114) having a high-speed auxiliary section ratio and a low-speed auxiliary section ratio, nonsynchronized jaw clutch means (96) for engaging one of said auxiliary section ratios, a two-position fluid actuated actuator (162) for shifting the auxiliary section to a selected one of the high-speed and low-speed ratios thereof, said actuator comprising a differential area piston (166) with a first piston face (170) for generating a force to urge engagement of said high-speed ratio and a second piston face (168) smaller than and opposed to said first face for generating a force to urge engagement of said low-speed ratio, a position sensor (201) for sensing said actuator is in either the high-speed ratio engaged position, the low-speed ratio engaging position or an intermediate position and for generating position signals indicative thereof, a fuel controlled engine (E) drivingly connected to said transmission, a manually positioned fuel throttle device (144) by which an operator requests a desired amount of fuel to be supplied to the engine, a fuel controller (128) for controlling the amount of fuel supplied to said engine, a first two-position control valve (204) having a pressurizing position for selectively pressurizing and an exhausting position for selectively exhausting said first piston face, a second two-position control valve (202) having a pressurizing position for selectively pressurizing and an exhausting position for selectively exhausting said second piston face, said control valves individually operable, rotational speed sensing means (150, 152, 154, 155) for sensing substantially synchronous or not substantially synchronous conditions at said jaw clutches and for providing speed signals indicative thereof, a control unit for receiving input signals including signals from said position sensor and rotational speed sensors and for processing same according to predetermined logic rules to generate command output signals to said fuel controller and said first and seconds valves, said method comprising the steps of:

(i) upon sensing a selection of a shift from said low-speed to said high-speed auxiliary section ratio, causing both said first and said second valve to assume the pressurizing positions thereof, monitoring the position of said actuator and causing said fuel controller to supply a reduced amount of fuel to said engine, then

(a) if the actuator is sensed as moving to the high-speed ratio engagement position, fueling the engine in accordance with operator positioning of said fuel throttle device and retaining at least the first valve in the pressurizing position for a predetermined time, then causing both valves to assume the exhausting position thereof, or

(b) if the actuator is sensed as moving to and remaining in the intermediate position, causing both valves to move to the exhausting position thereof, causing the fuel control to fuel the engine to rotate at a target synchronous rotation until substantial synchronous rotation of the-high-speed ratio jaw clutch is sensed, causing at least the first valve to assume the pressurizing position, then when the actuator is sensed as moving to the high-speed ratio engaging position thereof, fueling the engine in accordance with operator positioning of said fuel throttle device and retaining at least the first valve in the pressurized position for a predetermined time, then causing both valves to assume the exhausting positions thereof.

5,329,827

FUNCTION SELECTOR KNOB LOCK

Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 21, 1993, Ser. No. 6,541

Int. Cl.[5] G05G *1/10*

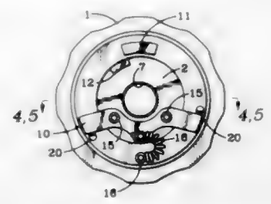
U.S. Cl. 74—553 **4 Claims**

1. A selector lock in combination with a hoist function selector knob comprising:

a selector knob assembly comprised of a shaft mounted stop and a hand operated knob co-axially mounted about said stop for rotation and axial displacement thereabout;

said stop and said hand operated knob having co-planar surfaces in one position retaining mode and corresponding non co-planar surfaces in a second position selecting mode;

deformable spring means secured to one of said co-planar



surfaces and in selected contact with the other of said co-planar surfaces in response to axial displacement of said hand operated knob relative to said stop; and

said deformable spring means coacts with a stop pin on the other of said co-planar surfaces.

5,329,828

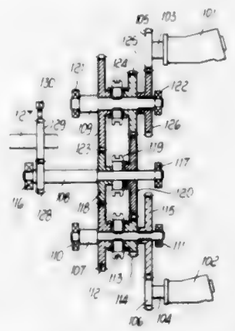
THREE-SHAFT GEARBOX WITH DUAL INPUT MOTORS

Fritz C. A. Hurth, Montagnola, Switzerland, assignor to Clark-Hurth Components S.p.A., Italy

Division of Ser. No. 788,329, Nov. 5, 1991. This application Dec. 14, 1992, Ser. No. 990,534

Int. Cl.[5] F16H *37/06*

U.S. Cl. 74—661 **2 Claims**



1. Three-shaft gearbox particularly for industrial vehicles, comprising:

a rotatable first input countershaft (107);

a rotatable second input countershaft (109);

means (101, 103, 105, 126; 102, 104, 106, 115) for driving said first and second countershafts;

a rotatable output shaft (108);

at least one first input gear (112, 114) rotatably supported by said first input countershaft;

means (113) for rigidly connecting said first input gear with said first input countershaft;

at least one second input gear (123, 125) rotatably supported by said second input countershaft;

means (124) for rigidly connecting said second input gear with said second input countershaft;

at least one output gear (118, 120) rotatably supported by said output shaft; and

means (119) for rigidly connecting said output gear to said output shaft;

wherein both of said first and second input gears mesh directly with said output gear, the gearbox comprising: a first said first input gear; a second said first input gear; a first synchronization

means for selectively rigidly connecting one of said first and second said first input gears to said first input countershaft; a first said second input gear; a second said second input gear; a second synchronization means for selectively rigidly connecting one of said first and second said second input gears to said second input countershaft; a first said output gear; a second said output gear; and an output synchronization means for rigidly connecting one of said first and second said output gears to said output shaft; wherein the first said first input gear and the first said second input gear both mesh with the first said output gear, and wherein the second said first input gear and the second said second input gear both mesh with the second said output gear.

5,329,829

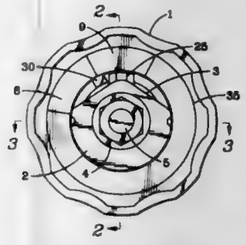
INDICATING POSITIVE POSITIONING SELECTOR KNOB LOCK

Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 22, 1993, Ser. No. 7,222

Int. Cl.[5] G05G *1/10*

U.S. Cl. 74—553 **6 Claims**



1. A selector lock for a lever hoist function selector knob comprising:

a selector knob assembly comprised of a stop mounted on a shaft and a hand operated open ended cylinder knob co-axially mounted about said stop for rotation and axial displacement thereabout;

said stop and said hand operated knob having interfering surfaces in one position retaining mode and corresponding non-interfering surfaces in a second position selector mode;

means for effecting axial displacement of said hand operated knob relative to said stop and for selecting interference of said surfaces and thereby rotation between said stop and said hand operated knob in one axial relative position between said stop and said hand operated knob and preventing relative rotation between said stop and said hand operated knob in a second axial relative position between said stop and said hand operated knob; and

indicating means on said knob and said stop viewable through an open end of said knob for determining the rotary position of said knob.

5,329,830

SHIFT CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION FOR VEHICLE

Takeshi Kitagawa; Hiroshi Takuma; Shoji Kan; Yoichi Furuichi, and Takahiro Taki, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/00692, § 371 Date Oct. 30, 1992, § 102(e) Date Oct. 30, 1992, PCT Pub. No. WO92/21898, PCT Pub. Date Dec. 10, 1992

PCT Filed Oct. 30, 1992, Ser. No. 968,830

Claims priority, application Japan, May 31, 1991, 3-129262

Int. Cl.[5] F16H *61/08*

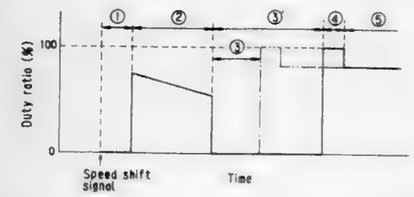
U.S. Cl. 477—117 **4 Claims**

1. A shift control apparatus for an automatic transmission of a vehicle wherein a plurality of speed ratios are achieved by electronically controlling individual hydraulic pressures supplied to a plurality of frictional engaging elements to selectively engage these frictional engaging elements, comprising:

speed ratio select means for changing over the speed ratio of the vehicle automatic transmission from a neutral position to a running position;

operation condition determination means for determining operation condition of the vehicle;

an electromagnetic valve for controlling a hydraulic pressure supplied to a first frictional engaging element of said plurality of frictional engaging element to achieve a first speed; and



electromagnetic valve control means for controlling operation of said electromagnetic valve so that when the speed ratio select means is determined by the operation condition determination means to be slowly manipulated, a supply time of a maximum hydraulic pressure to said first frictional engaging element is extended by a first predetermined time.

5,329,831

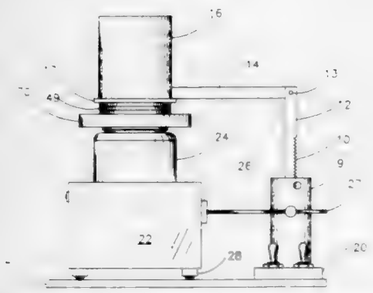
OPENER FOR SCREWED CAP CONTAINERS

Webster Pierce, Jr., 214 W. 58th St., and Mack Cheramie, 2415 E. Main, both of Cut Off, La. 70345

Division of Ser. No. 754,628, Sep. 4, 1991, Pat. No. 5,207,125. This application Mar. 15, 1993, Ser. No. 31,606

Int. Cl.[5] B67B *7/18*

U.S. Cl. 81—3.43 **16 Claims**



1. An apparatus for loosening or tightening threaded lids from containers or jars comprising:

a) a base plate;

b) a torque head assembly;

c) drive means for rotating the torque head assembly;

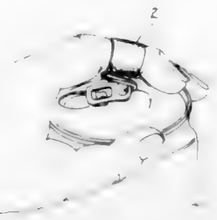
d) a biasing means, positioned intermediate said torque head assembly and said drive means for engaging the container lid to be loosened or tightened; and

e) means positioned between the biasing means and the torque head assembly for providing friction resistance to the rotation of the torque head assembly; and

f) containment means for holding said container in stationary position while said biasing means turns the lid on the container.

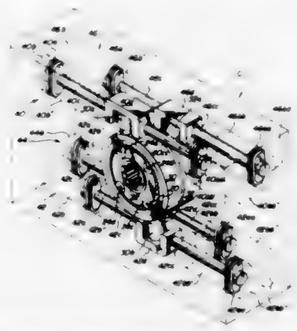
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5,329,832
PULL TAB CAN OPENER
Ronald E. Tegethoff, 729 Lincoln Ave., Prescott, Ariz. 86301
Continuation of Ser. No. 990,330, Dec. 10, 1992, abandoned. This application Nov. 30, 1993, Ser. No. 159,101
Int. Cl.[5] B67B *7/00*
U.S. Cl. 81—3.55 **4 Claims**



1. A can opener tool for opening a can having a pull tab attached to a scored closure member integrally formed in a top side of the can, the can opener tool comprising: a flexible strap of self adhesive material ordinarily wrapped completely around any digit of a finger; and opener means comprising a single solid hook attachment connected to said flexible strap of self adhesive material for engaging pull tabs for opening said can which is utilized by the natural flexation of the finger as a hand is placed over the top side of the can to lift the can, the hook engaging the pull tab and with the natural flexation of the finger when lifting the can, the pull tab of the can is pulled upward by the can opener tool forcing the scored closure member on the can to move inward opening the can, the flexible strap is comprised of one piece of flexible self adhesive material with a slit in a center of the flexible strap by which the solid hook of the can opener tool is secured in the slit and therefore secured snugly against a palm side of a finger digit of the user's finger holding the hook when the strap is wrapped around the finger digit.

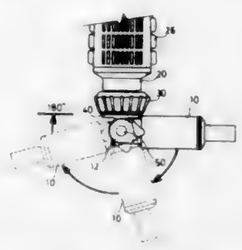
5,329,833
BIMODAL HYDRAULIC RECIPROCATING TORQUE ACTUATOR
Anthony J. Sergan, 22 Ellen Dr., Farmington, Conn. 06032
Filed Jul. 31, 1992, Ser. No. 923,301
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—57.39 **24 Claims**



22. An apparatus for applying rotational force to a workpiece comprising:
a cylindrical driving member having means for engaging said workpiece on which rotational force is to be applied;
a first member for imparting rotational force to said cylindrical driving member;
a second member for imparting rotational force to said driving member;
means for forcing said driving member to rotate in a first direction in response to movement of said first member in a first direction and means for permitting said driving member to slip with respect to said first member in response to movement of said first member in a second direction opposite said first direction;
means for forcing said driving member to rotate in said first direction in response to movement of said second member in said first direction and means for permitting said driving to slip with respect to said second member in response to movement of said second member in said second direction;
means for moving said first and second members in alternating directions to apply a relatively continuous rotational force to said driving member; and
means for moving said members in the same direction to apply intermittent rotational force with increased power to said driving member

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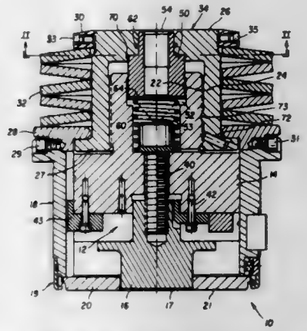
5,329,834
MULTI-ANGLE ALL-PURPOSE RATCHET SCREWDRIVER
Jason Wong, 28-2, Lane 232, Hu-Lin Street, Taipei, Taiwan
Filed Jun. 7, 1993, Ser. No. 71,860
Int. Cl.[5] B25B *13/06*; **B25G** *1/08*, *1/06*
U.S. Cl. 81—58.3 **14 Claims**



1. A multi-angle all-purpose ratchet screwdriver comprising:
a screwdriver chuck having one end for holding different size fastener loosening tools and having another end formed as a U-shaped hinged section having two vertical arms formed with serrations which constitute a multi-angular ratchet wheel;
a handle having a hinge tab, a threaded section and grip section having a tubular space therein;
a positioner plate for screwing, securing and movement on the threaded section;
a ratchet-angle locking plate having a slot for inserting the hinge tab of the handle, and having two rows of toothed ridges which enmesh with said serrations;
a first connecting means for pivotally connecting said screwdriver chuck to said handle;
an accessories holder installed into the tubular space inside the handle for holding different size screw unfastening tools;
a seat guide secured onto an upper end of the grip section of the handle, and having a seat lock for insertion of a second connecting means, and having a securing tab; and
a cover having a seat lock on one end to connect to the seat lock of said seat guide for holding the inserted second connecting means, which enable the cover to be removed and replaced, and the cover having a catch for interlocking with the securing tab on the seat guide to prevent the accessories holder from slipping out of the handle,
wherein screw-on pressure produced by the positioner plate that is exerted on the toothed ridges on the ratchet-angle locking plate which are enmeshed with serrations of the

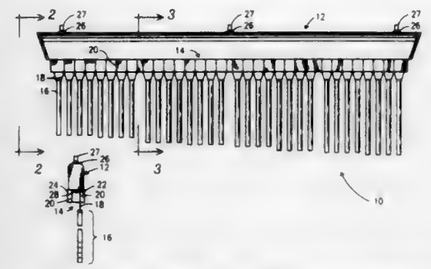
multi-angle ratchet wheel allows firm adjustment over a varied range of angles.

5,329,835
ADJUSTABLE LENGTH PUNCH SET ASSEMBLY
Richard L. Timp, Vadnais Heights; Michael W. Schultz, Wayzata, and John H. Morehead, White Bear Lake, all of Minn., assignors to Wilson Tool International, Inc., White Bear Lake, Minn.
Filed Oct. 7, 1992, Ser. No. 958,021
Int. Cl.[5] B26F *1/14*
U.S. Cl. 83—686 **10 Claims**



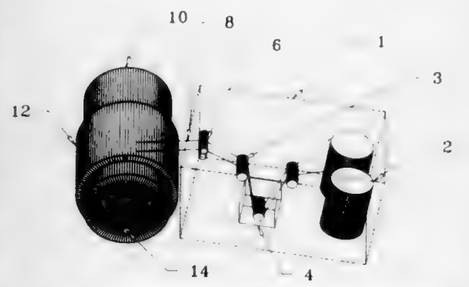
10. An adjustable length punch assembly permitting length adjustment without disassembly thereof, the punch assembly comprising:
(a) a punch driver having a hole formed axially therein and containing a plurality of first detent stops formed circumferentially about the hole;
(b) a punch holder carried by the punch driver, the punch holder and punch driver each having mutually engageable threaded portions thereon permitting axial length adjustment by rotating the threaded portions with respect to each other, the punch holder having a cavity formed axially therein and aligned with the hole in the punch driver and having a plurality of second detent stops formed circumferentially about the cavity, wherein the number of the plurality of second detent stops is less than the number of the plurality of first detent stops, the number of the first detent stops being an integer multiple of the number of second detent stops, and the number of second detent stops being alignable with a like number of first detent stops by rotating the punch driver and punch holder;
(c) a push button locking means having a plurality of detents corresponding in number and position to the plurality of second detent stops formed in the punch holder, the push button means being positioned axially within the cavity of the punch holder and accessible through the hole of the punch driver with the plurality of detents being engageable with a like number of detent stops of the punch driver and punch holder, the push button locking means being axially moveable between a first position in which the plurality of detents engages a like number of detent stops of both the punch driver and the punch holder to prevent axial movement therebetween, and a second position in which the plurality of detents disengages one or the other of said detent stops to enable axial movement of the punch holder with respect to the punch driver;
(d) a spring positioned with the cavity formed axially in the punch holder, the spring urging the push button locking means into the first said position, and being depressible by an external force applied through the hole in the punch driver to the push button locking means thereby moving the push button means into the said second position.

5,329,836
CHIME DEVICE HAVING QUICKLY RELEASABLE CHIME MEMBERS
John W. Stannard, Box 666, Crystal Beach, Fla. 34681
Filed Jan. 15, 1993, Ser. No. 4,040
Int. Cl.[5] G10D *13/08*
U.S. Cl. 84—402 **6 Claims**



1. A chime device having quickly detachable individual chime members, comprising:
an elongate base having a top surface, a bottom surface, a front surface, and a back surface;
an elongate cover disposed in abutting, overlying relation to said top surface;
means for spacing said base and cover apart from one another;
a first plurality of parallel slots formed in said base member along the extent thereof;
said first plurality of parallel slots being formed in said front surface and having a predetermined depth such that the upper and lower ends thereof are formed to the extent of said predetermined depth in said top and bottom surfaces, respectively;
whereby an individual chime member suspended from a looped cord means is suspended from said base member by inserting said cord means through a pair of contiguous slots of said first plurality of parallel slots when said base and cover are spaced apart from one another and is removed from said base member by lifting said cord means from said contiguous slots when said base and cover are spaced apart from one another.

5,329,837
CONTINUOUS FIBER COMPOSITE ACOUSTIC DRUMSHELL
Michael D. Appolonia, III, 22 Tillson Ave., Highland, N.Y. 12528
Filed May 7, 1992, Ser. No. 879,365
Int. Cl.[5] G03B *7/00*
U.S. Cl. 84—411 R **8 Claims**



1. A composite structure acoustic drumshell to which a drumhead is attached comprising a composite material of

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continuous fiber filament in a thermoset polymer matrix wherein the fibers are layered and angled in the drumshell, in relation to the drumhead, to maximize the degree of resonant frequency coupling between the acoustic shell and the drumhead.

5,329,838
DRUM WITH SHELL LESS SUSCEPTIBLE TO INFLUENCE FROM DRUM STAND

Toshinori Yamashita, Shizuoka, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation-in-part of Ser. No. 819,814, Jan. 12, 1992, abandoned. This application Jan. 25, 1993, Ser. No. 8,177
Claims priority, application Japan, Jan. 14, 1991, 3-14807; Oct. 25, 1991, 3-306689
Int. Cl.[5] **G10D** *13/02*
U.S. Cl. 84—421 **10 Claims**



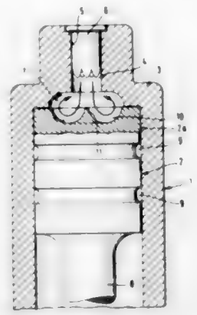
1. A drum comprising:
(a) a shell defining a hollow space;
(b) a head stretched over said hollow space;
(c) a fastening mechanism affixing said head to said shell, for causing resonant vibrations to take place in said shell in the presence of vibrations of said head when said head is beaten, wherein said head transfers a force of a beat to said shell so as to produce forced vibrations in said shell, wherein said resonant vibrations have nodal lines shared with said forced vibrations, and wherein said fastening mechanism is affixed to said shell at a first predetermined location on at least one of said nodal lines; and
(d) a supporting mechanism provided between said shell and a drum stand, and affixed to said shell at a second predetermined location on any one of said nodal lines.

5,329,839
EXPLOSIVE POWDER CHARGE OPERATED SETTING TOOL

Gerhard Ehmig, Rankweil, Austria, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Jun. 1, 1993, Ser. No. 69,472
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1992, 4222961
Int. Cl.[5] **B25C** *1/08;* **E04G** *21/16*
U.S. Cl. 89—1.14 **9 Claims**

1. Explosive powder charge operated setting tool comprising an axially extending piston guide (**1**) having a trailing end and extending axially in a driving direction of the tool, an axially elongated driving piston (**2**) coaxially with and slidably mounted and guided within said piston guide and having a trailing end relative to the driving direction of the tool, said piston guide (**1**) is closed at the trailing end thereof by a base part (**3**), said base part has an axially extending channel open opposite to the driving direction to an explosive powder charge chamber (**5**), said driving piston (**2**) has a depression in the trailing end thereof facing said base part (**3**), wherein the improvement comprises that said depression (**10**) is annularly-shaped and extends concentrically about the axis of said driving piston (**2**) and is semicircularly-shaped in axial cross-section, said depression has a radially outer diameter corresponding approximately to twice the diameter of the semicircular cross-section at the trailing end of said driving piston, and said base part has a front end surface facing the trailing end of said

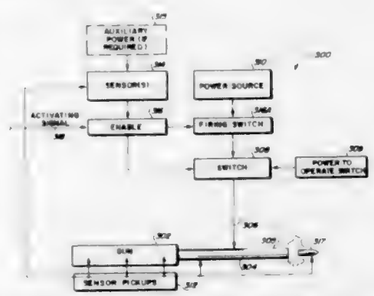


drive piston with a recess (**7**) arranged centrally of the axis of said piston guide (**1**) and having a diameter greater than the radially outer diameter of said depression (**10**) in said driving piston (**2**).

5,329,840
HIGH CAPACITY ELECTRICAL CARTRIDGE INTERCONNECT

Martin Corney, Glendora, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Division of Ser. No. 786,445, Nov. 1, 1991, Pat. No. 5,235,129. This application Jun. 22, 1993, Ser. No. 80,966
Int. Cl.[5] **F41A** *19/58, 19/68*
U.S. Cl. 89—135 **6 Claims**

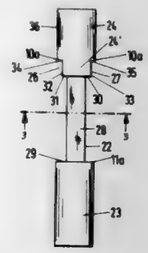


1. An electrical system for controlling the firing of a weapon using electrically ignited ammunition, said weapon having a gun barrel, a firing chamber and a firing circuit for furnishing a firing pulse to said firing chamber, said system comprising:
sensing means for determining if the weapon is conditioned for safely firing the next round of ammunition, said sensing means being coupled to supply a readiness signal when said weapon is ready for safe firing and including
a first sensor positioned to respond to a projectile exiting the gun barrel,
a second sensor positioned to detect entry of a fresh round of ammunition in the firing chamber, and
a third sensor positioned to respond to an empty cartridge casing exiting from the firing chamber; and
a switch coupled to respond to said readiness signal and complete a circuit path from an external power source to the firing circuit.

5,329,841
PISTON-SLIDE-VALVE

Axel Sauer, Nürtingen, and Roland Meyer, Roth, both of Fed. Rep. of Germany, assignors to Hydraulik-Ring GmbH, Nürtingen, Fed. Rep. of Germany

Filed Mar. 12, 1992, Ser. No. 849,732
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108272
Int. Cl.[5] **F16J** *1/00;* **B23H** *1/00*
U.S. Cl. 92—172 **12 Claims**



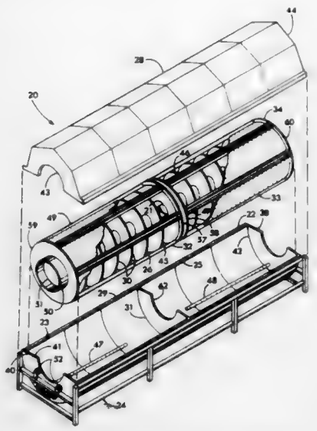
1. A piston-slide valve including a housing having a bore therein as well as including a piston with at least one oil groove having a groove bottom and control edge means therewith, the piston slides as guided in the bore of the housing, comprising:
a needle roller out of which said piston is made by application of wire erosion to produce the oil groove of the piston displaced in working positions;
said needle roller having said at least one oil groove and said control edge means therein as formed by the wire erosion;
a multiple-edge profile located in the groove bottom of said at least one oil groove; and
a sleeve bushing inserted in said housing and including an inner wall thereof that forms the bore made by wire erosion in which a piston in one position and in another working position occupies location displaced by 90° with respect to the working positions.

5,329,842
COMBINATION BLANCHER AND COOLER

David R. Zittel, Columbus, Wis., assignor to Lyco Manufacturing, Inc., Columbus, Wis.

Filed Sep. 15, 1993, Ser. No. 122,782
Int. Cl.[5] **A23L** *3/00;* **A23N** *12/00;* **A47J** *37/12;* **F25D** *25/02*
U.S. Cl. 99—348 **12 Claims**

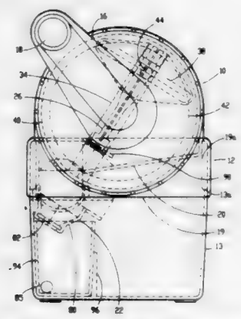
1. A food processing apparatus, comprising:
a) a tank having an inlet end and a discharge end;
b) a baffle which divides the tank into a heated compartment and a cooled compartment;
c) a perforated cylinder mounted rotatably within the tank so that water contained in the tank will enter the cylinder, the cylinder having an inlet opening near the inlet end of the tank for receiving introduced food product and a discharge opening near the discharge end of the tank where food product which has moved through the cylinder can be discharged therefrom, wherein the cylinder is divided into a first segment which extends within the heated compartment of the tank and a second segment which extends within the cooled compartment of the tank;
d) an auger positioned substantially within the perforated cylinder to rotate with the cylinder, the auger having portions which define a helical surface, wherein portions of the auger extend axially within the first segment of the cylinder and portions of the auger extend axially within the second segment of the cylinder;
e) a chute which extends between the heated compartment and the cooled compartment of the tank; and
f) at least one lifting flight located within the cylinder first segment and rotatable with the first segment to elevate food product from within the heated compartment of the tank to deposit the food product in the chute to be discharged into the cooled compartment of the tank, wherein a food product introduced at the tank inlet end will traverse the tank and be subjected to both heating and cooling.



5,329,843
CHERRY PITTER

Paul P. W. Cheung, Hong Kong, Hong Kong, assignor to Maxpat Trading & Marketing (Far East) Limited, Hong Kong

Filed Aug. 11, 1992, Ser. No. 928,514
Claims priority, application United Kingdom, Aug. 19, 1991, 9117879.8
Int. Cl.[5] **A23N** *4/02;* **A47J** *23/00*
U.S. Cl. 99—549 **25 Claims**



1. A pitter for removing a pit from a fruit with an outer flesh comprising:
a platform adapted to support the fruit having an opening sized to allow passage of the pit, the opening also sized to prevent passage of the fruit;
a pit ejector adapted to reciprocate along a longitudinal axis, the ejector comprising an elongate punch with a proximal end near the platform, the punch having a first arm and at least a second arm radiating out from the longitudinal axis, the arms each being inclined from the proximal end of the punch to form a hollow center, the outer edge of the first arm having a substantially flat profile and the second arm having front, inner and rear portions, the front portion extending farther from the longitudinal axis than the inner and rear portions;
means for reciprocating the pit ejector so that the elongate

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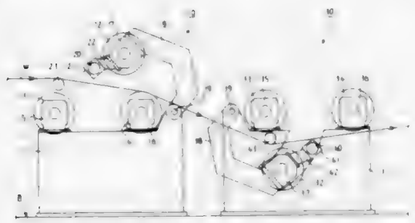
punch drives through the fruit and pushes the pit through the outer flesh of the fruit and through the opening;
an upper reservoir for housing a plurality of fruits;
a delivery passage connecting the upper reservoir to the platform, the delivery passage being sized and positioned to align the fruits and to deliver the fruits from the upper reservoir onto the platform one at a time; and
the punch being oriented so that the first arm projects radially towards the delivery passage and the second arm is prevented from contacting the fruits while the fruits are in the delivery passage.

5,329,844

CALENDER WITH PIVOTALLY DISPLACEABLE ROLL

Pekka Koivukunnas, Järvenpää; Juha Honkala, Helsinki; Risto Turunen, Jyväskylä; Juhani Niskanen, Muurame; Ville Korhonen, and Timo Pirinen, both of Jyväskylä all of Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Oct. 10, 1991, Ser. No. 774,460
Claims priority, application Finland, Oct. 11, 1990, 905001
Int. Cl.[5] B30B *15/34, 3/04;* **D21G** *1/02*
U.S. Cl. 100—93 RP **17 Claims**



1. A calender in a paper or board machine, comprising:
a calender frame,
at least two soft-faced rolls mounted on the calender frame,
roll support means connected to the calender frame for pivotal movement relative to the calender frame about a pivot axis transverse tot eh machine direction, and
at least one hard roll mounted on the roll support means, so that by pivotal movement of the roll support means the hard roll can be displaced between a first position in which it forms calendering nips with the two soft-faced rolls and a second position in which it is spaced from the soft-faced rolls, whereby the web can be threaded by shifting the hard roll to its second position, passing the web over the soft-faced rolls, and shifting the hard roll back to its first position so that the web is brought into the nips between the hard roll and the soft-faced rolls.

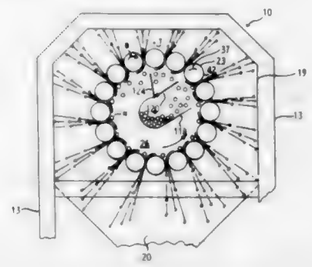
5,329,845

APPARATUS FOR WATERLESS HULLING OF NUTS AND THE LIKE

Ronald A. Bichel, 1016 River Bend Dr., Hartford, Wis. 53027

Filed Jul. 26, 1993, Ser. No. 97,137
Int. Cl.[5] A23N *7/02*
U.S. Cl. 99—627 **21 Claims**

1. Apparatus for removing the outer covering of products, such as fruits, vegetables or nuts, without using water comprising:
a plurality of rotatable rollers arranged in radially spaced-apart relationship about an axis so as to define a rotatable roller cage having a generally cylindrical, sloped, product-processing chamber having a high end and a low end;
abrading means on the peripheral surface of each of said rollers, that portion of said abrading means confronting said chamber as a roller rotates moving arcuately through a first quadrant toward the axis of said chamber and then through a second quadrant away from the axis of said chamber;
means to rotate said roller cage about said axis in one direction and to rotate each roller in a direction opposite to said one direction, taking into account the size and weight of said products and the rate at which said products are fed into said chamber, to effect distribution of substantially a single layer of said products along said rollers, to effect advancement of said products from said high end toward said low end of said chamber, and to effect removal of said outer covering of said products in contact with said abrading means of said rollers;



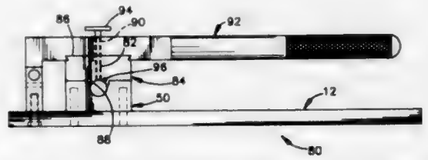
means to introduce said products into said chamber near said high end for processing;
container means in said chamber having a product-recovery opening in the top thereof near said low end of said chamber to receive products from which said outer covering has been removed and which are falling toward the bottom of said chamber;
and means to expel said products from which said outer covering has been removed from said container exteriorly of said chamber.

5,329,846

TISSUE PRESS AND SYSTEM

Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401

Filed Aug. 12, 1991, Ser. No. 728,247
Int. Cl.[5] B30B *15/14, 15/16*
U.S. Cl. 100—50 **35 Claims**



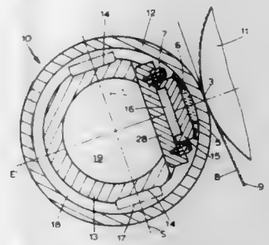
1. A tissue press for compressing or shaping a piece of tissue, comprising:
a first member, and a first forming element on said first member;
a second member connected with said first member, and a second forming element on said second member;
said second member being movable toward said first member to move said second forming element toward said first forming element to compress or shape the piece of tissue between the first and second forming elements; and
means for selectively controlling the temperature of the piece of tissue while it is being compressed or shaped.

5,329,847

PRESS ROLL HAVING COMPONENTS EXHIBITING APPROXIMATELY EQUAL GRAVITY INDUCED FLEXURE

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Feb. 16, 1993, Ser. No. 17,759
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204177
Int. Cl.[5] B30B *3/04;* **D21G** *1/02*
U.S. Cl. 100—162 B **5 Claims**



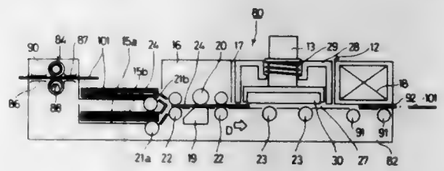
1. In a press roll cooperating with a mating roll, the press roll and the mating roll defining a roll nip for treating a moving web of material and being oriented such that a median axis of the press roll and a median axis of the mating roll lie in a non-vertical pressing plane, said press roll comprising
a hollow, rotatable roll casing being disposed adjacent to the roll nip;
a stationary yoke located within the roll casing, the yoke and the roll casing defining an intermediate space;
a shoe located between the yoke and the roll casing and being adapted to transmit a pressing force from the yoke to the roll casing; and
a pressure chamber located between the yoke and the shoe and being adapted to receive a pressure medium for pressing the shoe against the roll casing; the improvement wherein at least one of the dimensions and material of the roll casing, the dimensions and material of the yoke, and the degree of filling of the intermediate space with a liquid are selected, such that gravity induced flexures of the roll casing and the yoke occurring in a median plane perpendicular to the pressing plane are approximately equal.

5,329,848

STAMP DEVICE CAPABLE OF PERFORATING THERMAL STENCIL PAPER

Tsuneo Yasui; Takemi Yamamoto; Takashi Miki, all of Nagoya, and Tetsuji Fuwa, Hashima, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 811,974, Dec. 23, 1991, Pat. No. 5,253,581. This application Dec. 29, 1992, Ser. No. 998,790
Claims priority, application Japan, Dec. 29, 1990, 2-417190; May 9, 1991, 3-104225; May 27, 1991, 3-121028; Feb. 21, 1992, 034961
Int. Cl.[5] B41L *13/02*
U.S. Cl. 101—121 **21 Claims**



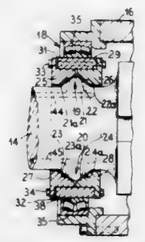
1. A stencil making device for forming images on a thermal recording sheet and a thermal stencil sheet comprising:
an input inputting image data;
a memory that stores the input data;
a thermal recording sheet supply;
a thermal stencil sheet supply;
a heating device that thermally forms an image from the image data on a thermal recording sheet for proofing the image, and that thermally perforates an image corresponding to the image data on a thermal stencil sheet for printing;
a feeder that feeds a thermal recording sheet from the thermal recording sheet supply and a thermal stencil sheet from the thermal stencil sheet supply to said heating device;
a stamp that applies ink to a stencil sheet thermally perforated by the heating device;
a selector that selects one of a thermal recording sheet and a thermal stencil sheet for feeding;
control means for controlling forming of the image a controller that selectively controls the feeding of one of a thermal recording sheet from the thermal recording sheet supply and a thermal stencil sheet from the thermal stencil sheet supply to the heating device according to a a selection made by the selector; and
a discharge that discharges a thermal recording sheet from the stencil making device for proofing.

5,329,849

SELF-LOADING CONTROLLED CROWN ROLL

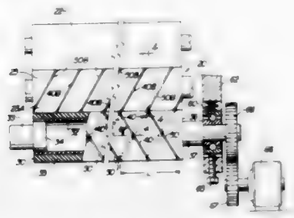
Arnold J. Roerig, Beloit, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Jun. 11, 1993, Ser. No. 74,527
Int. Cl.[5] B30B *3/04*
U.S. Cl. 100—162 B **15 Claims**



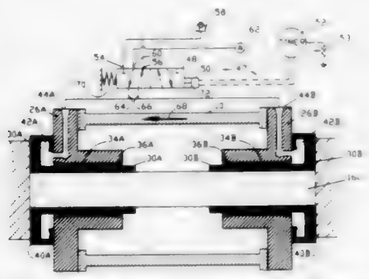
1. A press roll forming a controlled press nip with an opposed roll comprising, in combination:
a rotatable elongate tubular roll shell having an inner smooth support surface and having an outer press surface to form a press nip with an opposed roll with said press nip and an axis of the roll shell defining a support plane;
a support shaft extending axially through the roll shell for contributing support for the roll shell in the support plane in the radial direction of the nip;
a controllable hydrostatic roll shell support positioned between the roll shell and the shaft for applying a controlled radial supporting force to said inner support surface wherein the nip load on the shell is carried by the shaft;
and end guide means between at least one end of the shaft and the end of the shell accommodating free relative movement between the roll shell and shaft in said support plane with said guide means having planar sliding surfaces on the shaft and on the roll shell extending at an angle to the support plane.

5,329,850
METERING ROLLER FOR A LITHOGRAPHIC PRINTING PRESS
Eduardo Duarte, 528 Rawls Cir., Irving, Tex. 75061
Filed Jul. 10, 1992, Ser. No. 911,327
Int. Cl.[5] B41F *7/26, 7/32*
U.S. Cl. 101—148 11 Claims



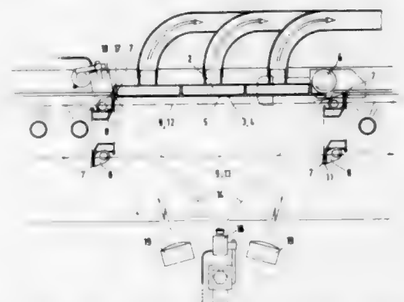
1. A method of applying dampening fluid which is essentially free of alcohol to a printing plate in a lithographic printing press comprising the steps of:
urging surfaces of a metering roller and a transfer roller into pressure indented relation to form a metering nip;
rotating said transfer roller and said metering roller such that dampening fluid is carried by the surface of at least one of the rollers through said metering nip;
forming a zone of differential pressure intermediate opposite ends of said metering nip;
moving said zone of differential pressure longitudinally of said metering nip for transferring a portion of the dampening fluid longitudinally of said metering nip toward the end of said rollers to form a spiral shaped bead of dampening fluid on the surface of one of the rollers at said metering nip; and
slipping the surface of the roller having said spiral shaped bead relative to a form roller for moving the bead of dampening fluid through a second nip to apply a uniform film of dampening fluid to said form roller.

5,329,851
FLUIDIC DRIVEN SELF-OSCILLATING PRINTER ROLLER AND METHOD
Stanley Momot, LaGrange, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.
Continuation of Ser. No. 770,067, Oct. 2, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,466
Int. Cl.[5] B41F *31/14*; B41L *27/28, 27/16*
U.S. Cl. 101—348 8 Claims



1. In an oscillating roller assembly having an elongate roller mounted for both rotational movement and oscillating movement along its length and a source of fluidic pressure for forcing said oscillating movement, the improvement being an oscillating drive mechanism, comprising:
means for imparting a longitudinal force on the elongate roller from the source of fluidic pressure in at least one of two opposite direction including
a fixedly mounted, T-shaped annular collar with an elongate stem portion and a cross bar part, and
another annular collar carried by the elongate roller and aligned to slideably receive the cross bar part therewithin to form an annular pressure chamber; and
means connected with the source of pressure for selectively controlling the application of pressure to the pressure chamber to alternatively move the elongate roller in two opposite longitudinal directions.

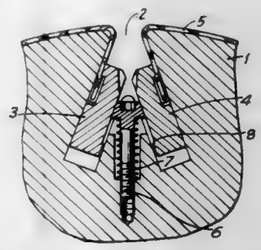
5,329,852
PRINTED SHEET MONITORING ASSEMBLY
Claus A. Bolza-Schuenemann, and Johannes G. Schaede, both of Wuerzburg, Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Fed. Rep. of Germany
Filed Aug. 10, 1992, Ser. No. 926,697
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126799
Int. Cl.[5] B41F *13/24*
U.S. Cl. 101—232 6 Claims



1. A printed sheet monitoring assembly usable to monitor a printed sheet in a sheet-fed rotary press, said printed sheet monitoring assembly comprising:
a suction box having a planar lower suction surface for tightly holding a sheet to be monitored in a crease-free manner, said suction box being positioned intermediate first and second spaced processing devices of the press;
first and second spaced, endless conveyor chains passing beneath said suction surface and defining an upper chain path and a lower chain path;
a plurality of sheet gripping means secured to, and extending between said conveyor chains;
an opto-electronic image sensor positioned beneath said suction surface, said sensor being operable to monitor a printed sheet held against said suction surface; and
trigger means operable to activate said sensor when a printed sheet to be monitored is properly positioned on said suction surface.

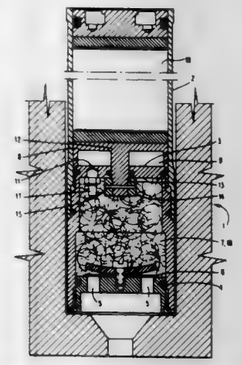
5,329,853
BLANKET CLAMPING DEVICE
Manfred Stegmeir, Augsburg, and Peer Dilling, Stätzling, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach, Fed. Rep. of Germany
Filed Apr. 1, 1993, Ser. No. 41,712
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1992, 4210778
Int. Cl.[5] B41F *27/12*
U.S. Cl. 101—415.1 2 Claims

1. A blanket clamping device for clamping a blanket mounted on a transfer cylinder of an offset rotary printing machine, the transfer cylinder having a periphery and an axis and a clamping duct extending in axial direction of the transfer cylinder, the clamping duct having a bottom with a bore therein and being open at the periphery of the transfer cylinder, the blanket having ends, the blanket clamping device comprising two clamping rails mounted in the clamping duct, each of the clamping rails being connected to one of the ends of the blanket, the clamping rails extending at an angle relative to each other and having surfaces defining a gap therebetween, the gap having a center, at least one screw mounted in the



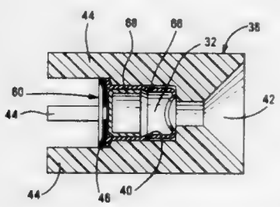
center of the gap and screwed into the bore in the bottom of the clamping duct, the screw having a truncated cone-shaped head, the clamping rails each having a surface facing the truncated cone-shaped head of the at least one screw, each of the surfaces of the clamping rails defining a step, such that the truncated cone-shaped head prevents movement of the clamping rails past the periphery of the transfer cylinder by engaging the steps.

5,329,854
PROJECTILE FOR THE DISPERSAL OF A LOAD WITH TIME DELAY
Sven Komstadius, Snäckstigen 2, S-582 58 Linköping; Sören Hanberger, Förmansgatan 7, S-582 66 Linköping, and Hans Ellström, Vitsippevägen 6, S-582 69 Linköping, all of Sweden
PCT No. PCT/SE90/00700, § 371 Date Jun. 16, 1992, § 102(e) Date Jun. 16, 1992, PCT Pub. No. WO91/07636, PCT Pub. Date May 30, 1991
PCT Filed Oct. 30, 1990, Ser. No. 861,784
Claims priority, application Sweden, Nov. 21, 1989, 8903900-2
Int. Cl.[5] F42B *12/70*
U.S. Cl. 102—505 1 Claim



1. A projectile for the dispersal of a load with a predetermined time delay after firing the projectile from a launching tube (1) by means of a hot gas under pressure, comprising a cylindrical casing (2) with a first pressure chamber (7) formed by a portion of the casing (2), a cross wall (3) within the casing and an external side wall (4), provided with at least one supply opening (5) for the hot gas to the first pressure chamber (7), further comprising a second pressure chamber (9), formed by a second portion of the casing (2), said cross wall (3) and a piston (8) axially movable with slide fitting in the casing, further comprising said load (10) standing in connection with the piston (8) axially movable with slide fitting in the casing, a throttled gas connection (11) being arranged between the first and second pressure chambers (7, 9), the piston (8), under the effect of a pressure built up in the second pressure chamber (9), being arranged to make an axial movement, but not until the pressure has reached a predetermined level, shooting the load (10) out of the casing (2), characterized in that a fibrous material (16) with relatively good thermal conductivity is so arranged in the first pressure chamber (7) that the pressure in the gas conducted to the chamber remains relatively constant with time, so that the pressure in the gas conducted to the second pressure chamber (9) shows a relatively constant increase per time unit.

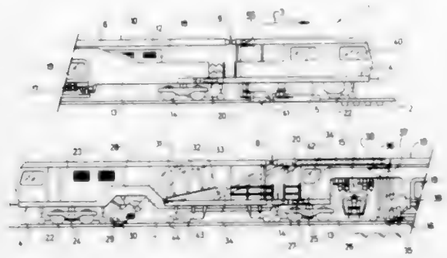
5,329,855
CARTRIDGE FOR EXPLOSIVELY OPERATED INDUSTRIAL TOOLS
Janusz Szyndlar, Unionville, Canada, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Jul. 20, 1993, Ser. No. 95,132
Int. Cl.[5] C06D *5/00*
U.S. Cl. 102—530 8 Claims



1. In a cartridge for use in an explosively operated industrial tool, said cartridge having an elongated shell which is open at one end and closed at a base end and having a chamber at said base end containing explosive powder,
a gas check assembly within said shell adjacent said explosive powder comprising;
(a) a gas check member having an outwardly facing first opening in a first end, said first opening extending through said member to a second end adjacent said explosive powder opposite said first end,
(b) a primer having a detonator end, said primer arranged within said first opening so that said detonator end is facing outwardly, said primer being seated against a shoulder within said first opening, and
(c) a retaining member associated with said gas check member for retaining said primer within said first opening, said retaining member comprising a plate having an opening therethrough adjacent to and in alignment with said detonator end, said plate having a peripheral edge that is turned outwardly in a direction away from said detonator end, said peripheral edge being in interfering engagement with opposing walls of at least two projections extending from said first end on opposite sides of said first opening, whereby said plate is secured to said gas check member so that said plate retains said primer within said first opening.

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5,329,856
CONTINOUS ACTION TAMPING MACHINE
Frederic Lorscheider, Longeville-Les-Saint-Avold, France, assignor to Franz Plasser Bahnbaumaschinenindustriegesellschaft mbH, Vienna, Austria
Filed Jul. 20, 1993, Ser. No. 94,551
Claims priority, application Austria, Aug. 21, 1992, 1688/92
Int. Cl.[5] E01B *27/00*
U.S. Cl. 104—2 **11 Claims**



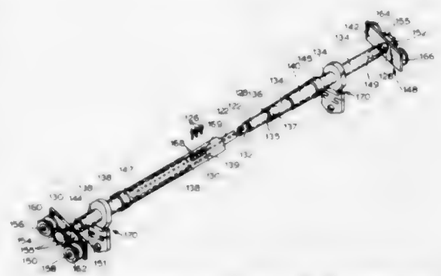
1. A mobile machine for leveling, lining and tamping a track, which comprises
(a) an elongated machine frame supported on undercarriages for continuous movement along the track in an operating direction during a leveling, lining and tamping operation, the machine frame comprising,
(1) three machine frame parts arranged successively adjacent each other in a direction of elongation of the machine frame and pivotally linked to each other,
(2) one of the machine frame parts being an auxiliary trussing linking the two adjacent machine frame parts to each other during the operation,
(b) a carrier frame supported on and directly above at least one of the undercarriages for intermittent movement along the track relative to the continuously moving machine frame, the one machine frame part bridging over the carrier frame,
(c) a respective coupling linking each carrier frame end to an adjacent one of the machine frame parts, and
(d) a track tamping unit and a track lifting and lining unit mounted on the carrier frame.

5,329,857
TRACK SWITCH FOR SUSPENDED MOVABLE WALL PANELS
N. Douglas Owens, Lynn, Ind., assignor to Modernfold, Inc., New Castle, Ind.
Filed Dec. 22, 1992, Ser. No. 994,881
Int. Cl.[5] E01B *25/26*
U.S. Cl. 104—103 **9 Claims**



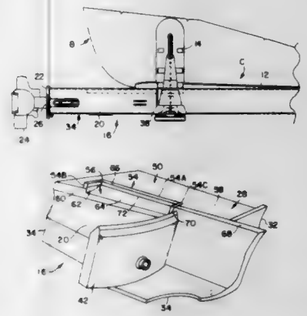
1. A track switch for a movable wall panel track intersection having a first track path and a second track path, the switch comprising:
an actuator operatively connected to a power source and selectively movable between a first actuator position and a second actuator position upon actuation by the power source; and
a diverter operatively connected to the actuator, the diverter being selectively movable between a first diverter position upon movement of the actuator to the first actuator position, and a second diverter position upon movement of the actuator to the second actuator position, the first diverter position defining the first track path of the track intersection and the second diverter position defining the second track path of the track intersection;
the actuator including a bias means for biasing the diverter toward the selected diverter position, the bias means being operatively connected to the diverter such that, as the diverter is in or moving toward the selected diverter position, the bias means allows the diverter to move toward the non-selected diverter position upon application of a force against the diverter toward the non-selected diverter position, and thereafter returned to the selected diverter position upon cessation of the force, and wherein the actuator is movable from a selected one of the first or second actuator positions to the other of the first or second actuator positions upon movement of the diverter toward the non-selected position upon application of the force, the actuator movable toward the non-selected actuator position independent of the power source.

5,329,858
UNIVERSAL TELESCOPING BULKHEAD DOOR TROLLEY ASSEMBLY
Thomas G. Morris, Littleton, and Laurence J. Artelli, Parker, both of Colo., assignors to Joseph T. Ryerson & Son, Inc., Chicago, Ill.
Filed Mar. 15, 1993, Ser. No. 31,655
Int. Cl.[5] B60P *7/00*
U.S. Cl. 105—178 **15 Claims**



9. A trolley apparatus capable of longitudinal adjustment to different lengths to span a plurality of interior spacings of parallel rail car tracks within an upper interior of a rail car, and capable of carrying a bulkhead door between differently spaced rail car tracks, said apparatus comprising:
an interior first frame member;
a second frame member rigidly connected to and concentrically receiving one end of said first frame member;
a third frame member longitudinal moveable with respect to another end of said first frame member and disposed to concentrically receive said another end of said first frame member;
means mounting said third frame member for longitudinally adjustment with respect to said first frame member, such that said third frame member can be longitudinally adjusted and secured, at different positions relative to said first frame member, to span a plurality of rail car track spacings;
cylindrical frame means disposed to concentrically receive said first, second and third frame members and structurally reinforce said first, second and third frame members;
said frame members carrying a plurality of trolley wheels capable of rotating along said rail car tracks for movement of said frame members in a direction transverse to their longitudinal axes; and
door connecting means removably connected to one of said frame members for suspending a bulkhead door downwardly from said frame member.

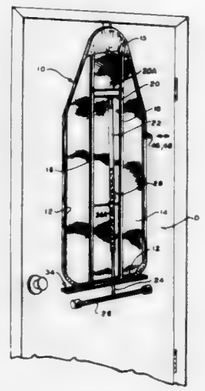
5,329,859
INCREASED STRENGTH RAILWAY TANK FOR UNDERFRAME CONSTRUCTION AND METHOD WITH CENTER SILL POCKET AND WELD SUPPORT FOR POOLING WELDING MATERIAL
Laurence E. Culligan, Portage Des Sioux, and Paul J. Dumser, St. Charles, both of Mo., assignors to ACF Industries, Incorporated, Earth City, Mo.
Filed Jul. 12, 1993, Ser. No. 89,344
Int. Cl.[5] B61D *17/00*
U.S. Cl. 105—416 **30 Claims**



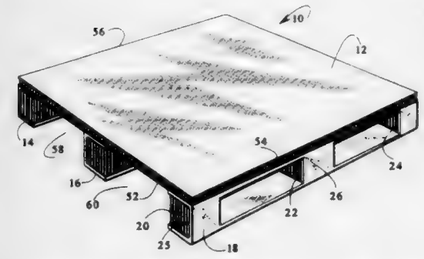
1. An underbody construction for supporting the end of an elongate railway car body, the body being cradled in a cradle pad, and the underbody construction comprising:
a center sill assembly having first and second spaced apart side plates respectively spaced to either side of a longitudinal centerline of the car body, and a top plate fitting over the side plates, the width of the top plate corresponding to the spacing between the side plates, the top plate being attached to the side plates to form part of the center sill assembly;
a pocket formed in the top plate at the respective sides thereof where the top plate meets one of the side plates, the pockets being used to pool welding material used to join the cradle pad and center sill assembly; and,
a weld support installed on the center sill assembly adjacent each pocket, each weld support being attached to the top plate adjacent its associated pocket, the weld supports extending above the upper surface of the top plate for a bottom surface of the cradle pad to rest on each weld support, and each weld support being attached to the cradle pad to provide a substantial contact surface between the center sill assembly and cradle pad with the pooled welding material collected in each pocket effecting a strong and durable weld between the cradle pad and center sill assembly.

5,329,860
DOOR MOUNTED IRONING BOARD
Henry Mattesky, Cedar Grove, N.J., assignor to Herbert Glatt, Morristown, N.J.
Filed Mar. 26, 1991, Ser. No. 675,322
Int. Cl.[5] A47B *5/00*
U.S. Cl. 108—48 **20 Claims**

1. An ironing board assembly arranged for mounting on a door, comprising:
a mounting means having a transverse member and an upright member attached centrally to said transverse member;
an upper gripper attached atop said mounting means and sized to hang from the top of said door;
an ironing board hingedly attached to said transverse member;
stabilizing means mounted on said mounting means below said upper gripper for laterally stabilizing said ironing board assembly, said stabilizing means including a resilient layer having on opposite sides thereof an adhesive backing, said layer being rearwardly affixed to said transverse member for securing said member to said door, said layer being able to absorb shocks by giving without dislodging, said layer comprising a compressible foam; and
a leg hingedly attached below said board distal to said transverse member.



5,329,861
LIGHTWEIGHT PALLET
David F. McCarthy, 1319 Swainwood Dr., Glenview, Ill. 60025
Continuation of Ser. No. 719,833, Jun. 24, 1991, abandoned.
This application Feb. 12, 1993, Ser. No. 17,959
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.3 **12 Claims**



1. An improved pallet of the type used to package, store, or ship goods, the improvement comprising in combination:
(a) a pallet base having an upper face, a bottom face, and a first side opposite a second side;
(b) a predominantly U-shaped cap having an interior wall and an exterior wall and being mounted adjacent to the bottom face of the pallet base and extending from the first side to the second side of the pallet base;
(c) said U-shaped cap having a first arm, a second arm, and a beam section intermediate the first and second arms, the

first arm being secured to the bottom side of the pallet base, the beam section being adjacent to the side surface of the support member, and the second arm extending around and below the lowermost portion of the support member; and

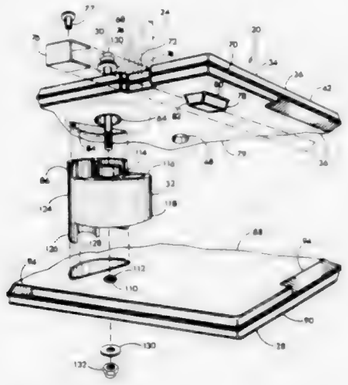
(d) a compression support member having an upper end and a side surface extending transversely downwardly from the upper end, the support member being mounted in the U-shaped cap with the side surface of the support member protectively adjacent an interior wall of the U-shaped cap.

5,329,862

HOISTING PALLET

Harlon W. Breezer, Portage; Thomas M. Pintar, Coloma, and Michael J. Wolfe, Pardeeville, all of Wis., assignors to Penda Corporation, Portage, Wis.

Filed Mar. 29, 1993, Ser. No. 38,526
Int. Cl.[5] **B65D** *19/00*
U.S. Cl. 108—55.5 **13 Claims**



11. A pallet comprising:

(a) a twin-sheet thermoformed top deck having a thermoplastic upper sheet which is fused to a thermoplastic lower sheet, wherein the top deck has a lower surface, and two opposed ends and two sides which extend between the ends;

(b) portions of the pallet top deck which define at least one downwardly protruding plastic detent on each of said two opposed ends of the top deck, wherein the detents have an inwardly facing surface which extends beneath the top deck lower surface to engage against a flexible lifting member looped beneath the top deck to restrain outward motion of the member when the pallet is supported by the lifting member;

(c) portions of the pallet top deck which define a a pair of notches proximate each of said opposed ends, wherein a notch is positioned on each of said top deck sides intermediate said opposed ends, and wherein each notch has a bearing wall which extends vertically and has outwardly extending sidewalls which restrict motion of a flexible lifting member engaged within a notch in a direction between said opposed ends;

(d) a bottom deck disposed beneath the top deck; and

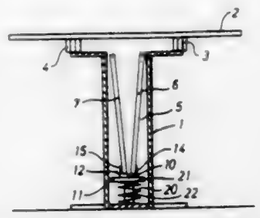
(e) a plurality of plastic posts which extend between and are fastened to the top deck and the bottom deck, wherein the posts are located inwardly from the top deck indents and notches.

5,329,863

TABLE

Preben Rasmussen, Galten, and Per Hånsbæk, Højbjerg, both of Denmark, assignors to Skovby Mobelfabrik A/S, Galten, Denmark

PCT No. PCT/DK91/00314, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO92/06613, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 16, 1991, Ser. No. 988,931
Claims priority, application Denmark, Oct. 17, 1990, 2507/90
Int. Cl.[5] **A47B** *1/06*
U.S. Cl. 108—86 **4 Claims**



1. A table with table leaves defining a table area when said leaves are in a first retracted position, said table leaves being displaceable away from one another in a second extended position and having additional leaves which are hingedly interconnected and adapted to be unfolded between said table leaves for abutting said table leaves when said table leaves are in said second extended position to extend said table area, each said additional leaves having hinged rim portions (**8,9**) thereof and stored in a folded condition in a storing chamber situated centrally below the table, said additional leaves being additionally connected to a vertically displaceable carrying member (**11**) for moving said leaves in said folded condition vertically along a moving path defined by said storing chamber; said table further including guide means (**12**) having at least one connecting member (**14,15**) for supporting each additional leaf (**6, 7**) at a substantially fixed and relatively short distance from said hinged rim portions (**8, 9**) thereof, each said at least one connecting member (**14, 15**) hingedly connected at a first end to a bottom side of a respective one of said additional leaves to thereby form hinged connections (**18,19**) thereat, and connected at a second end to said displaceable carrying member (**11**) at a location substantially vertically below said hinged connection (**18, 19**) of each respective additional leaf (**6, 7**) when said additional leaves (**6, 7**) are in said folded condition, both said hinged connections (**18,19**) defining axes of rotation extending parallel to said hinged rims (**8, 9**) of said additional leaves (**6, 7**).

5,329,864

DOOR OR WALL REINFORCING FILLER ASSEMBLY

Erich Doring, Im Holzeli, CH-9442 Berneck, Switzerland

Division of Ser. No. 441,998, Nov. 28, 1989, Pat. No. 5,188,040. This application Nov. 20, 1992, Ser. No. 979,242
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840497
Int. Cl.[5] **E06B** *9/00*
U.S. Cl. 109—49.5 **13 Claims**

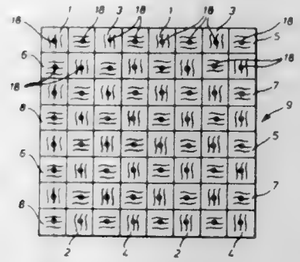
13. A door or wall reinforcing filler assembly, comprising:

a reinforcing filler panel for fitting into the frame of a door or wall;

the panel comprising a first set of recycled motor vehicle tire tread strips arranged parallel to one another in a first direction, and a second set of recycled motor vehicle tire tread strips arranged parallel to one another in a second direction perpendicular to said first direction, and fastener means for fastening the strips together into at least one layer forming said filler panel;

securing means for securing the panel to a door or wall frame;

the panel comprising at least two separate layers, a first layer comprising said first set of strips stacked on top of each other to form a first stack, said stack comprising one layer of said panel having a thickness equal to the width of a strip, and a second layer comprising said second set of



strips stacked on top of each other to form a second stack at right angles to the strips in the first stack and said fastener means comprise fasteners extending transversely through each stack; and

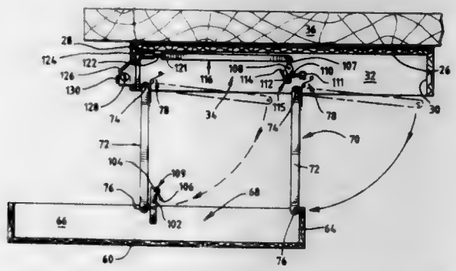
additional fastener means for securing the stacks together.

5,329,865

SECURITY BOX ASSEMBLY ADAPTED TO BE MOUNTED BENEATH AN UNDERSURFACE

Jeffrey McWard, Rte. 3 - Box 66, Taylorville, Ill. 62568

Filed Oct. 30, 1992, Ser. No. 968,827
Int. Cl.[5] **E05G** *1/04*
U.S. Cl. 109—50 **13 Claims**



1. A security box assembly adapted to be mounted substantially out of sight beneath a horizontal undersurface comprising:

a box comprising a hollow, upwardly open body portion and a hollow, downwardly open cover portion;

the cover portion comprising a top wall with depending side walls and front and back walls defining a hollow interior with a downwardly facing opening;

means for securing the cover portion to an undersurface;

the body portion comprising a bottom wall with upstanding side walls and front and back walls defining a hollow interior with an upwardly facing opening having a continuous upper peripheral edge and being movable to and from a closed, locked position against the cover portion;

the cover and body portions being so structured that, in said closed, locked position, the bottom and top peripheral edges of the body and cover portions are respectively in abutting relationship and the side walls and front and back walls of the cover and body portions are respectively in vertical, co-planar relationships;

locking mechanism secured to the box for holding the body portion in the closed, locked position;

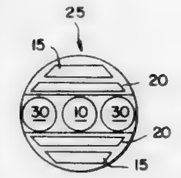
releasing mechanism secured to the box and structured to release the locking mechanism to enable movement of the body portion from the closed, locked position to an open position enabling access to the hollow interior; and a linkage on each side of the box comprising a pair of links horizontally spaced apart along each side of the body portion, each link having opposite ends thereof pivotally connected respectively to the corresponding side walls of the body portion and cover portion.

5,329,866

COMBINED LOW NO_x BURNER AND NO_x PORT

Albert D. LaRue, Uniontown, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 3, 1993, Ser. No. 116,312
Int. Cl.[5] **F23D** *1/00*
U.S. Cl. 110—265 **8 Claims**



1. A burner and port combination for the combustion of a pulverized coal fuel plus air mixture, the burner and port combination comprising:

a throat;

a burner nozzle positioned at a central area of the throat, the burner nozzle having an inlet for receiving the pulverized coal fuel plus air mixture and an outlet for discharging the pulverized coal fuel plus air mixture;

a secondary air tube positioned laterally adjacent the burner nozzle at each lateral side of the nozzle in the throat for providing a first portion of a secondary air to the throat; and

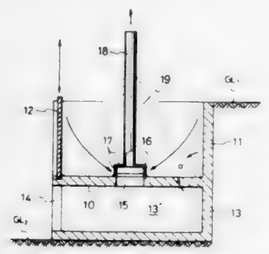
a plurality of vanes positioned at an upper portion of the throat above the burner nozzle and the tubes and at a lower portion of the throat below the burner nozzle and the tubes for deflecting a second portion of the secondary air in the throat from the burner nozzle.

5,329,867

METHOD OF PRODUCING ACTIVE RICE HUSK ASH

Shuichi Sugita, 7-7 Aza Hohkohno, Ooaza Niida, Hachinohe-shi, Aomori-ken, Japan

Filed Aug. 25, 1993, Ser. No. 111,569
Claims priority, application Japan, Nov. 24, 1992, 4-334965
Int. Cl.[5] **F23G** *5/00*
U.S. Cl. 110—346 **3 Claims**



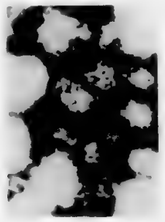
1. A method of producing active rice husk ash comprising the steps of placing a hollow platform having many holes of a size too small for rice husk to enter on an enclosed floor slab, erecting a chimney on the hollow platform in communication with the interior of the hollow platform, forming a cone of rice

husk around the chimney to completely cover the hollow platform, igniting the rice husk at the small holes for smolderingly incinerating the rice husk into carbonized rice husk, and allowing the carbonized rice husk to self-burn into ash.

5,329,868
METHOD OF MAKING A TEXTILE USING FIBER AGGREGATES

Gunter Tesch, Avenue Jean-Marie-Musy 15, Fribourg, Switzerland CH-1700

Division of Ser. No. 842,187, May 18, 1992, Pat. No. 5,286,556. This application Nov. 9, 1993, Ser. No. 149,559
Claims priority, application Switzerland, Jul. 18, 1990, 02374/90
Int. Cl.[5] D05B *1/00*
U.S. Cl. 112—262.1 **6 Claims**



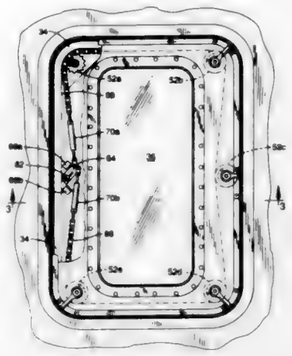
1. A method of manufacturing a textile, such as a bedspread, a garment or the like comprising:
- providing a first textile layer having opposing, first and second surface portions;
- supporting said first textile layer on said first surface portion;
- depositing a filler of fiber aggregates on the second surface portion of said first textile layer;
- placing a second textile layer on the deposited filler of fiber aggregates; and
- connecting the first and second textile layers along respective edges thereof to form a textile.

5,329,869
CLOSURE LATCHING MECHANISM

Arvie E. Freeman, Ophir, and Franz A. Shindler, Gold Beach, both of Oreg., assignors to Freeman Marine Equipment, Inc., Gold Beach, Oreg.

Filed Mar. 19, 1993, Ser. No. 33,840
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—117 **11 Claims**

1. A marine closure such as a door or hatch cover, comprising:
- a peripheral closure frame;
- inner and outer closure panels covering the frame to define a hollow core;
- a plurality of latching dogs spaced about a peripheral portion of the closure;
- latching dog actuating means mounted within the core and extending about the periphery of the core and operably connected to all of the dogs for actuating all of the dogs simultaneously, the actuating means including one handle operably connected to the plurality of latching dogs, wherein rotation of the handle causes rotation of all of the latching dogs and wherein the distal end of at least one of the dogs rotates at a different rate than the distal ends of the remaining dogs when the handle is rotated; and

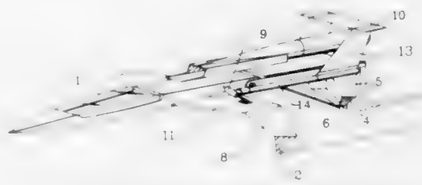


- a large window through the closure occupying a major central area of the closure inwardly of the actuating means.

5,329,870
WATERCRAFT WITH VERTICALLY MOVABLE HYDROFOILS

Kenneth E. Cook, P.O. Box 6006, Lake Worth, Fla. 33466

Continuation of Ser. No. 649,292, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 325,147, Mar. 17, 1989, abandoned. This application Sep. 9, 1991, Ser. No. 758,476
Int. Cl.[5] B63B *1/28*
U.S. Cl. 114—280 **17 Claims**

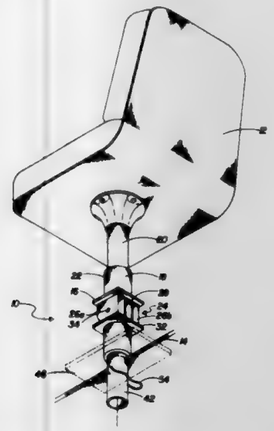


1. A supercavitating hydrofoil watercraft, comprising:
- a hull,
- a plurality of supercavitating hydrofoils,
- a first means attached to said hull, for connecting at least one of said hydrofoils to said hull and for allowing said one hydrofoil to move vertically with reference to said hull, said first means comprising a projecting beam that projects laterally away from said hull and is substantially entirely above the water when the watercraft is moving at supercavitating speeds, said projecting beam having two ends, said one hydrofoil being carried near one of said ends, the other of said two ends being supported by said hull and constituting at least part of the support for said beam, and
- dampening means for dampening any vertical motion of at least said one hydrofoil while said watercraft is moving at a supercavitating speed.

5,329,871
FOLD DOWN SEAT UTILIZING PIVOTALLY CONSTRUCTED BRACKET

Louie W. Gibbs, Clermont, Fla., assignor to Classic Manufacturing Co., Inc., Clermont, Fla.

Filed Mar. 19, 1993, Ser. No. 34,876
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—363 **17 Claims**

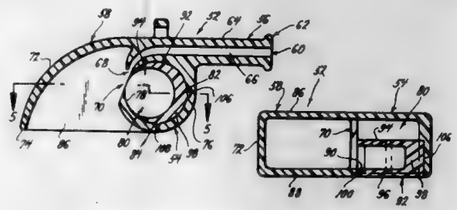


1. A pivoting bracket for supporting a boat seat upon a pedestal rigidly affixed to the deck of a boat, such bracket enabling the seat normally to remain upright, but also permitting the seat to be pivoted, on occasion, over into a low center of gravity position adjacent the deck,
- said bracket comprising a pair of interfitting first and second members,
- a pivot pin extending through said first and second members,
- said pivot pin permitting said members to reside in an aligned relationship when the seat is intended to reside in an upright position, as well as in a n angular attitude when the seat has been folded over into a position close to the deck, in which position the seat resides at an angle to the vertical, and
- locking means enabling said members to be locked in the aligned relationship, such that a user may sit on the seat without the seat possibly moving into an unusable position, said locking means being a spring biased locking pin integral with said first and second members and utilized for locking said first and second members together when such members are disposed in a desired relationship.

5,329,872
ALL WEATHER SAFETY WHISTLE AND SOUND GENERATOR

Howard W. Wright, 4920 Crownover, St. Louis, Mo. 63128

Filed Aug. 30, 1991, Ser. No. 753,317
Int. Cl.[5] G10K *5/00*
U.S. Cl. 116—137 R **3 Claims**

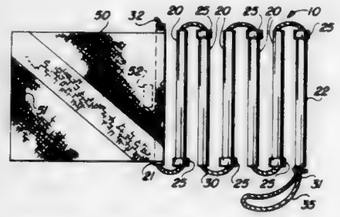


1. A sound generating apparatus for producing sound in response to air being blown through the apparatus, the apparatus comprising:
- a mouthpiece having opposite first and second ends and an air flow channel extending through an interior of the mouthpiece between the first and second ends, and an air flow inlet provided at the first end of the mouthpiece to enable air to be blown into the inlet and through the air flow channel;
- means connected with the mouthpiece for producing a sound in response to air being blown through the air flow channel of the mouthpiece, the means for producing a sound including a body portion having a hollow interior chamber and at least one body portion wall enclosing the interior chamber, the body portion wall being formed unitarily with the mouthpiece, the air flow channel extending through the body portion wall and opening into the interior chamber at the second end of the mouthpiece, and the body portion having a sound producing opening extending through the body portion wall from the interior chamber;
- means connected with the sound producing means for forming and maintaining a bubble of air at the sound producing means when the apparatus is submerged under water, the air bubble maintained at the sound producing means enabling the sound producing means to produce sound in response to air being blow through the air flow channel of the mouthpiece when the apparatus is submerged under water, the means for forming and maintaining a bubble of air including a cowling having a hollow interior volume and at least one cowling wall enclosing the cowling interior volume, the cowling wall being formed unitarily with the body portion wall and enclosing the sound producing opening within the interior volume of the cowling, and the cowling wall having at least one sound emitting opening extending through the cowling wall from the interior volume of the cowling; and
- a second opening through the body portion wall to the interior chamber, and a closure member releasably attached to the body portion wall covering over the second opening, the closure member being removable from the body portion wall to open the second opening.

5,329,873
EXTENDABLE PERSONAL DIVE FLAG

Nancy Tiballi, 3789 Golden Point Dr., North Miami Beach, Fla. 33180

Filed Nov. 1, 1993, Ser. No. 144,824
Int. Cl.[5] G09F *17/00, 21/02;* **A62B** *37/00*
U.S. Cl. 116—173 **5 Claims**



1. An extendable, personal dive flag comprising:
- a plurality of tubular segments, each of said tubular segments being structured and disposed to be matingly engaged with one another,
- said tubular segments including a proximal segment, a distal segment, and a plurality of middle segments, and being positionable between an extended, interlocking position and a collapsed, compact position,
- said tubular segments being in a substantially small, lightweight, and easily portable bundle when in said collapsed,

compact position so as to be conveniently carried by a diver,

said tubular segments forming a substantially elongate, easily carryable shaft when in said extended interlocking position so as to enable the diver to swim towards a water's surface while holding said shaft and to extend said distal segment of said shaft through the water's surface before the diver reaches the water's surface,

a warning flag fixedly secured to said distal segment,

automatic extension means structured and disposed to, upon demand and initiation by the diver, rapidly and independently position said tubular segments in said extended, interlocking position from said collapsed, compact position,

said automatic extension means including an elastic chord threaded through a hollow center of each of said tubular segments,

stopping means disposed at opposite ends of said elastic chord to prevent said elastic chord from being pulled out from said tubular segments,

said elastic chord being structured and disposed to urge said tubular segments into said extended, interlocking position when said tubular segments are not affirmatively retained in said bundle of said compact, collapsed positon, and

quick release retaining means structured and disposed to removably maintain said warning flag disposed about said tubular segments and hold said tubular segments in said bundle of said compressed, collapsed position until released to initiate automatic extension by said automatic extension means.

5,329,874

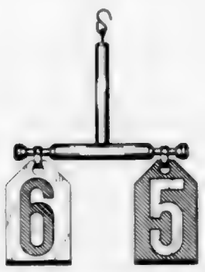
PORTABLE TENNIS SCORE KEEPER

William L. Posey, 19803 Almaden Rd., San Jose, Calif. 95120

Filed Nov. 13, 1992, Ser. No. 975,840

Int. Cl.[5] A63B *71/06*; **G09F** *9/00*

U.S. Cl. 116—222 **5 Claims**



1. A portable scoring device for the game of tennis, comprising:

a) a geometrically configured base structure including an elongated support member;

b) a multiplicity of indicia-bearing plates constituting a set suspended from each end of the elongated support member, the indicia-bearing plates of each set being manipulable to display indicia indicative of the tennis points and set scores at any given time during the game; and

c) means medianly attached on said elongated support member to suspend said device for facility in manipulating the indicia-bearing plates and viewing the score displayed thereby.

5,329,875

PORTABLE AND WIND-RESISTANT SIGNALLING DEVICE

Beatrice Feuvray, 10, Impasse Monoclair, 71100 Chalon-sur-Saone, France

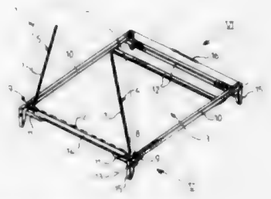
PCT No. PCT/FR91/00396, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO91/18380, PCT Pub. Date Nov. 28, 1991

PCT Filed May 16, 1991, Ser. No. 949,540

Claims priority, application France, May 16, 1990, 90 06334

Int. Cl.[5] G09F *7/22*; **E01F** *9/01*

U.S. Cl. 116—63 P **19 Claims**



1. A signalling device comprising:

a rigid base frame (**3**);

an indicator panel (**1**) having a lower part (**2**) pivotally mounted on a support assembly for pivotal movement about a transverse axis, said support assembly bearing on said base frame (**3**);

said support assembly comprising two torsion bars (**4**, **5**), each of said torsion bars including a central torsion segment (**6**) placed substantially horizontally relative to said rigid base frame (**3**) and said indicator panel (**1**), a first bent end portion (**7**) fast with said indicator panel **1**); and

a locking device for immobilizing said support assembly in a locked position at which said panel (**1**) is raised to a folded out position, substantially vertical relative to said rigid base frame and locking said panel relative to said base frame, and for unlocking said panel relative to said base frame, and for unlocking said panel relative to said base frame (**3**) when said panel (**1**) must be folded down into a folded down and unlocked position in the plane of said base frame (**3**);

each of said torsion bars including a second bent end portion (**8**) for engagement with a locking notch (**9**, **21***a*, **24**) in said locking device, when said indicator panel (**1**) is in said folded out position, and being releasable when said locking notch (**9**, **21***a*, **24**) is moved to release said second bent end portion (**8**) and said indicator panel (**1**) is unlocked, for folding said panel (**1**) into said folded down position.

5,329,876

ANIMAL WATERER

Jere R. Tracy, 3060 N. Kiowa, Apt. B, Lake Havasu City, Ariz. 86403

Filed Jul. 21, 1993, Ser. No. 95,103

Int. Cl.[5] A01K *5/00*

U.S. Cl. 119—51.03 **13 Claims**

1. An animal watering apparatus which reduces spillage and mess while providing adequate water availability, said apparatus comprising:

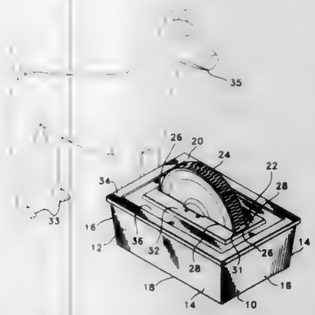
a dish for holding a quantity of water;

a lid covering said dish and having an opening therein;

a wheel rotatably mounted to at least one of said dish and said lid in an upright orientation so that a portion of said wheel extends through said opening in said lid, said wheel having first and second opposing edges which extend in generally upright planes; and

means, applied to an outer circumferential surface of said wheel and projecting outward from said wheel, for lifting a portion of said water from said dish as said wheel rotates, said lifting means comprising a multiplicity of

spaced apart ridges formed in said outer circumferential surface of said wheel and projecting radially outward from said wheel, said ridges extending substantially across said outer circumferential surface of said wheel between



said first and second edges, a ridge opening is provided in a central region between said first and second edges, said ridge opening permitting a small quantity of water to fall as said wheel rotates to draw water away from said first and second edges toward said central region.

5,329,877

WATERING VALVE FOR SMALL ANIMALS HAVING VARIABLE FLOW RATES

Egon Schumacher, Barnstorf, Fed. Rep. of Germany, assignor to Lubing Maschinenfabrik Ludwig Benign GmbH & Co. KG, Fed. Rep. of Germany

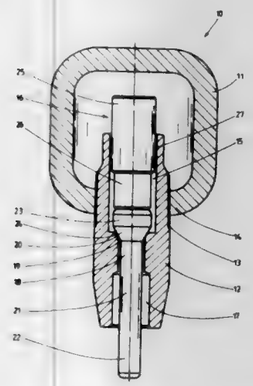
PCT No. PCT/EP92/00221, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO92/13445, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 1, 1992, Ser. No. 927,496

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1991, 9101513[U]

Int. Cl.[5] A01K *7/00*

U.S. Cl. 119—72.5 **17 Claims**



1. A watering valve for small animals, comprising:

a housing which is connectable to a water supply;

a valve pin partially inserted in said housing and having a portion extending from said housing for an animal to touch to start a flow of water from said watering valve; and

an upper pin located above said valve pin and at least partially inserted into a bore hole in said housing so as to form a flow restriction section between said upper pin and a portion of said bore hole directly adjacent to said upper pin, said upper pin having portions of different cross-sectional area wherein said upper pin is insertable into said bore hole in different positions relative to said bore hole such that for each position the flow restriction section will be of a different length in order to control the flow rate of water from said watering valve.

5,329,878

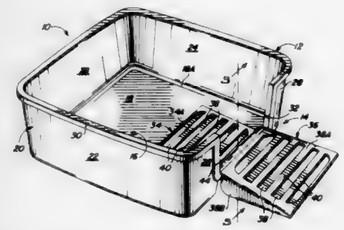
LITTER CONTAINER HAVING INTERNAL AND EXTERNAL ACCESS RAMPS

Rhonda R. McCauley, 4905 Osage Dr., #201, Boulder, Colo. 80303

Filed Dec. 18, 1992, Ser. No. 995,419

Int. Cl.[5] A01K *1/02*

U.S. Cl. 119—165 **14 Claims**



1. A litter container assembly for a pot belly pig, comprising:

(a) a litter container defining an enclosed area for containing a quantity of animal litter, the container having a bottom wall and a sidewall with an opening formed therein, said opening being spaced above said bottom wall; and

(b) means defining an inclined ramp which leads into and from said enclosed area of said litter container for supporting an animal during entry into and exit from said litter container, said ramp defining means being attached to the sidewall adjacent to said opening therein and extending therefrom, said means defining said inclined ramp having a first ramp structure being located inside of said litter container and a second ramp structure being located outside of said litter container, said first ramp structure being supported upon and in contact with said bottom wall of said litter container and extending between the bottom wall and said opening formed in said sidewall spaced above said bottom wall.

5,329,879

CAT WASTE ELIMINATION SYSTEM INCLUDING ANTI-LITTER SPREADING AND CONTAINMENT DEVICE AND ALSO INCLUDING A DEVICE ALLOWING WALKING KITTENS TO SAFELY ENTER A KITTY LITTER BOX

Robert W. Walton, 4 Chapel Street South, Thorold, Ontario, Canada L2V 3Y7

Continuation-in-part of Ser. No. 793,126, Nov. 8, 1991, Pat. No. 5,193,488. This application Mar. 2, 1993, Ser. No. 25,121

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] A01K *1/01*

U.S. Cl. 119—166 **12 Claims**

1. An anti-litter spreading and containment device comprising in combination:

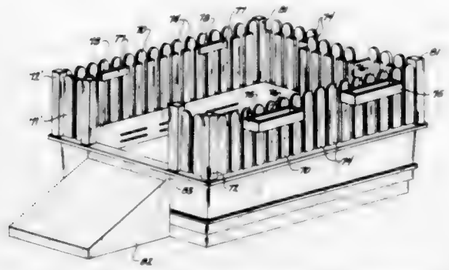
a. a substantially rectangular top tray compartment;

b. a substantially rectangular bottom tray assembly;

c. a granular material on the bottom of the top tray compartment; and

d. a fence surrounding almost completely the top of the top tray compartment except for a space in the fence for the animal to enter and exit: and wherein said top tray com-

partment possesses a bottom configuration consisting of a multiplicity of V-shaped valleys and inverted V-shaped hills, the bottom of said valleys possessing a multiplicity of longitudinal holes, said bottom capable of supporting the granular material in which that cat waste is to be deposited, the longitudinal holes in the bottom valleys being of sufficient number and size to permit passage therethrough of the cat's urine but also being sufficiently limited in size



so as to be capable of supporting most or substantially all of the granular material which is placed atop some without permitting passage through the holes of said bottom valleys; and wherein said bottom tray assembly possesses aeration openings in its sides and in at least one of its ends to assists in evaporation of the cat's urine deposited upon the granular material contained in said top tray compartment

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5,329,880

CLUMPABLE ANIMAL LITTER

Maurice G. Pattengill, Golden; Jerry D. Glynn, Aurora, and Martin A. Jones, Boulder, all of Colo., assignors to Western Aggregates Inc., Boulder, Colo.

Filed Aug. 18, 1993, Ser. No. 108,950
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—171 **25 Claims**

1. A waterproof litter receptacle for use in disposal of animal waste products, said litter receptacle containing a mixture of hydrophilic shale aggregate, said mixture of hydrophilic shale having a fraction of coarse material with a size less than at least about 5 mesh (4000 microns), said mixture having the property of agglomerating into a clump upon contact with urine, and the clump of agglomerated shale and urine being capable of physical removal with a perforated scoop.

5,329,881

DOG CHEW TOY FOR CANINE DENTAL CARE AND METHODS FOR MAKING CHEW TOY

Anthony O'Rourke, Malibu, Calif., assignor to Booda Products, Inc., Gardena, Calif.

Filed Aug. 31, 1992, Ser. No. 938,282
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—710 **44 Claims**



1. A chew toy for dogs comprising a length of rope formed of a plurality of soft pliable threads, said threads being impregnated with a therapeutic dental agent so as to dispose said agent throughout said rope whereby upon being chewed by a dog a substantial portion of said agent is retained within said rope and a lesser portion of said agent is released onto the teeth of the dog

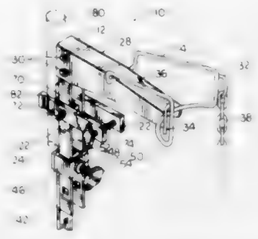
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5,329,882

SMALL LIVESTOCK HEAD RESTRAINT DEVICE

Roy H. Hunt, 2361 10th St. West, Woodland Hills, Calif. 93560

Filed Jan. 12, 1993, Ser. No. 3,458
Int. Cl.[5] A01K *15/04*
U.S. Cl. 119—757 **20 Claims**



1. A head restraint device for small livestock which is temporarily positionable adjacent to a fence, the head restraint device comprising:

a headrest support assembly including a mounting shaft and a headrest arm fixed to one end of the mounting shaft and extending away therefrom;

means for supporting and securely holding a snout portion of a head of a standing animal, including a headrest fixed to the headrest arm; and

adjustable clamping means for temporarily securing the headrest support assembly to the fence

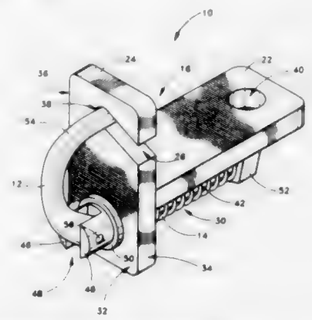
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5,329,883

RELEASABLE HITCH

James R. White, Box 22, Rexford, Mont. 59930

Filed Jan. 18, 1994, Ser. No. 181,831
Int. Cl.[5] A01K *1/06*
U.S. Cl. 119—779 **7 Claims**



1. A releasable hitch, comprising:

a vertical member with opposing side and end walls, one of said side walls being bisected by a lateral channel, said vertical member additionally comprising a horizontally disposed bore perpendicular to a longitudinal axis of said vertical member;

a horizontal member joined perpendicularly to said vertical member between the top and bottom of said vertical member;

a bolt fitted for rotational and longitudinal motion within said horizontally disposed bore;

a C-shaped hook pivotally secured to a first end of said bolt, said C-shaped hook having a free end adapted for engagement with said lateral channel; and

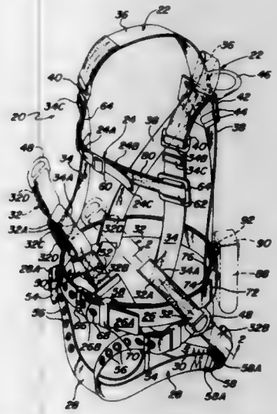
a spring acting upon said bolt to normally bias said free end of said hook within said channel.

5,329,884

HARNESS WITH ADJUSTABLE POSITIONING PAD AND TOOL BELT

Michael Bell, 1705 Triumphe Way, Warrington, Pa. 18976

Continuation-in-part of Ser. No. 893,298, Jun. 4, 1992, Pat. No. 5,228,412. This application Feb. 4, 1993, Ser. No. 13,281
Int. Cl.[5] A62B *35/00*
U.S. Cl. 119—857 **25 Claims**



1. A harness formed of a flexible material to be worn by a person, said harness including a waist belt, a pair of upper torso straps, a pair of leg straps, each of said upper torso straps including a chest strap portion for extending over a portion of the chest of the person, a shoulder strap portion for extending over a respective shoulder of the person, and a back strap portion for extending over a portion of the back of the person, wherein said waist belt is connected to each of the back strap portions by respective sliding connector means, each of said leg straps for extending about a respective leg of the person and terminating at an upper end portion, each of the upper end portions of said leg straps including a passageway through which said waist belt extends.

5,329,885

LEASH-CONTROLLABLE DOG HARNESS

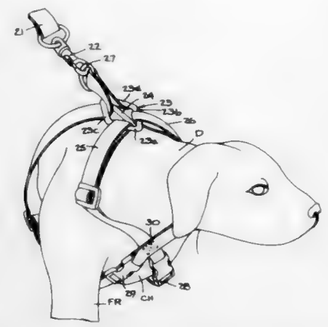
Joseph S. Sporn, 274 W. 86th St. #4B, New York, N.Y. 10024

Filed Feb. 26, 1993, Ser. No. 23,638
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—864 **14 Claims**

14. A harness controllable by a leash for use on a dog having a shoulder, a left foreleg crotch and a right foreleg crotch, each crotch leading to a respective sensitive pit; said harness comprising:

(a) a junction provided with a left and a right opening to slidably receive a strap; said junction when the harness is in use, lying over the shoulder of the dog; and

(b) a pair of flexible loops, each defined by a strap, one end of which is coupled to said junction, the other end going through a respective opening, whereby when the harness is installed the strap of one loop passes through the left crotch and from there through the left opening to be coupled to said leash; the strap of the other loop passes through the right crotch and from there through the right crotch and from there through the right opening to be coupled to said leash whereby should the leash be pulled by a leash holder or strained against by the dog, the loops



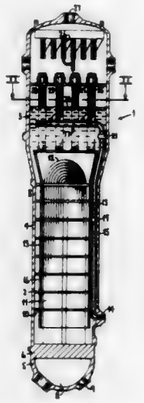
then ride up the left and right crotches to engage and apply pressure to a sensitive pit to induce the dog to take an action relaxing the pressure.

5,329,886

STEAM GENERATOR

Robert L. Sylvester; Randall C. Johnson; Gregory V. Smith; King W. Chan; Willis B. Middlebrooks, III; Jawahar K. Visaria, all of Pensacola; Robert M. Wilson, Cantonment, and George Bieberbach, Pensacola, all of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1993, Ser. No. 100,845
Int. Cl.[5] F22B *1/02*
U.S. Cl. 122—32 **4 Claims**



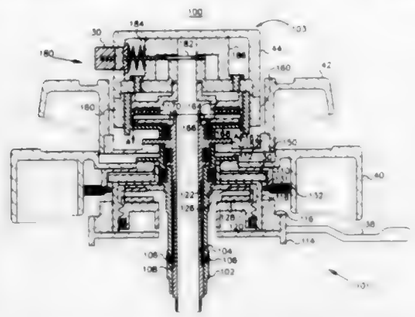
1. In a steam generator comprised of a generally cylindrical steel shell containing a plurality of U-shaped heat exchanger tubes connected to a heated primary fluid inlet and outlet in the base of the steel shell and having a steam outlet at the top of the steel shell, the improvement being a secondary fluid supply system comprising a secondary fluid inlet nozzle in said steel shell near the base thereof and connected to a riser pipe spaced between the inside surface of said steel shell and a cylindrical tube bundle wrapper and connected to a distribution ring positioned in an upper recirculating pool above the tops of the U-shaped heat exchanger tubes, said distribution ring having a plurality of spray nozzles adapted to introduce the secondary fluid into the recirculating pool.

5,329,887

ENDOSCOPE CONTROL ASSEMBLY WITH REMOVABLE CONTROL KNOB/BRAKE ASSEMBLY

Robert E. Ailinger, Norwood, and Robert J. Herrington, Holland, both of Mass., assignors to Vision Sciences, Incorporated, Natick, Mass.

Filed Apr. 3, 1992, Ser. No. 862,810
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **18 Claims**



1. An endoscope insertion tube control assembly for an endoscope having a handle and an elongated inserting tube extending from the handle to a distal end comprising:
- an elongated support shaft projecting from the handle;
- a removable first controlling means for controlling up/down movement of the distal end of the insertion tube;
- removable second controlling means for controlling left/-right movement of the distal end of the insertion tube;
- removable braking means for braking up/down and left/-right movement of the insertion tube, the braking means being coupled to the controlling means such that the braking means and the controlling means are removable as a unit, the braking means including:
  - a first braking mechanism, coupled to the first controlling means, for releasably restricting up/down movement of the insertion tube; and
  - a first brake actuating means coupled to the first braking mechanism, for causing the first braking mechanism to restrict up/down movement of the insertion tube;
  - a second braking mechanism, coupled to the second controlling means, for releasably restricting left/right movement of the insertion tube; and
  - a second brake actuating means coupled to the second braking mechanism, for causing the second braking mechanism to restrict left/right movement of the insertion tube; and
- fastening means for releasably securing the unit that includes the braking means and the controlling means to the support shaft.

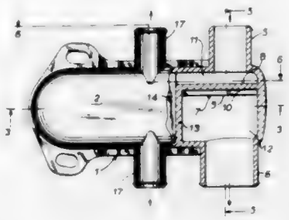
5,329,888

THERMOSTAT HOUSING ASSEMBLY FOR A MARINE ENGINE

Christopher J. Luckett; Bruce A. Schroeder, and Norman W. Schweitz, all of Stillwater, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Aug. 9, 1993, Ser. No. 104,379
Int. Cl.[5] F01P *7/14*
U.S. Cl. 123—41.08 **14 Claims**

1. A thermostat housing for an internal combustion engine, comprising a housing, first inlet means in the housing for introducing coolant to the housing, first outlet means in the housing and connected to a circulating pump for circulating coolant to the engine, baffle means in the housing for preventing direct flow of coolant from said first inlet means to said first outlet means, first passage means in the housing and communicating with said first inlet means, a pair of manifold outlets connected to said first passage means for supplying coolant from said first passage means to the manifolds of the engine, second passage means providing communication between said first inlet means and said first outlet means, return inlet means in said housing for returning coolant from the engine to the second passage means, a thermostat opening providing communication between the first passage means and the second passage means, and a thermostat mounted in said opening to control the flow of coolant therethrough, whereby when the thermostat is closed, a portion of the coolant entering said first inlet means



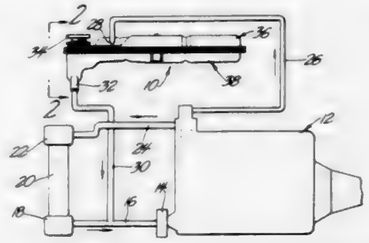
will flow to said first passage means and then to said manifold outlets and a second portion of said coolant entering said first inlet means will flow through said second passage means to said first outlet means and coolant returning to the housing through said return inlet means will flow through said second passage means and to said first outlet means, and whereby opening of said thermostat results in a portion of the coolant returning to the housing through said return inlet means flowing through said thermostat opening to said first passage means and then to said manifold outlets.

5,329,889

DEGAS TANK FOR ENGINE COOLING SYSTEM

Danny R. Caldwell, Flint, Mich., assignor to Molmec, Inc., Walled Lake, Mich.

Filed Nov. 22, 1993, Ser. No. 155,491
Int. Cl.[5] F01P *3/22*
U.S. Cl. 123—41.54 **7 Claims**



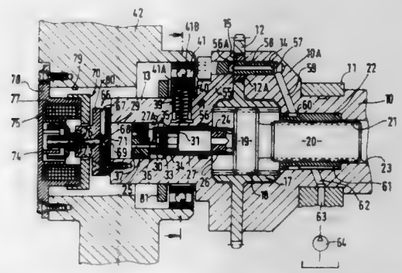
1. A degas tank for use with the cooling system of an internal combustion engine and adapted to have a pressure cap mounted thereon, said degas tank comprising an upper member and a lower member both made of a plastic material and adapted to be fixedly connected to each other to form a unitary tank, the upper member being formed with a first peripheral rim, first rib means integrally formed in said upper member, said first rib means being surrounded by said first peripheral rim and serving as partitions for providing the upper member with a plurality of first cavities, the lower member being formed with a second peripheral rim having the same configuration and size as the first peripheral rim of the upper member, said lower member having second rib means integrally formed therewith for providing the lower member with a plurality of second cavities which correspond in shape and size at their open ends with the shape and size of the open ends of the first cavities, said first rib means and said first peripheral rim of said upper member each having first seating surfaces lying is a first plane, said second rib means and said second peripheral rim each having second seating surfaces lying in a second plane so when said upper member is joined to said lower member at said first and second seating surfaces, said first and second cavities cooperate to form a plurality of chambers, and slot means formed in the first and second rib means for providing openings which serve to connect said plurality of chambers in series starting with a liquid coolant receiving chamber and ending with a liquid coolant supply chamber so as to allow the gases entrained in the coolant to collect in the degas tank and be exhausted to atmosphere through the pressure cap.

5,329,890

HYDRAULIC CONTROL DEVICE

Martin Mueller, Moeglingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00748, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO93/08379, PCT Pub. Date Apr. 29, 1993
PCT Filed Sep. 4, 1992, Ser. No. 74,822
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135380
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **8 Claims**



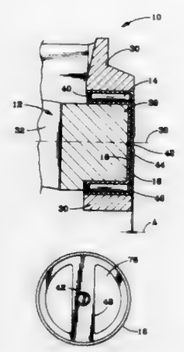
1. A hydraulic control device for rotating a camshaft of an internal combustion engine relative to a crankshaft, comprising a coupling member which is longitudinally displaceable by a fluid pressure and has an outer circumference with a first set of gear teeth provided at a first location and engageable with an inner set of gear teeth of the camshaft, and a second set of gear teeth provided at a second location of the outer circumference of the coupling member; a hollow cylindrical driving wheel supporting an end of said coupling member and having a central bore hole provided with a set of gear teeth engaging with said second set of gear teeth of said coupling member, so that two sets of gear teeth are formed, one of said sets of gear teeth being a spiral set of gear teeth and the other of said sets of gear teeth being a straight set of gear teeth, so that the camshaft is rotated relative to said driving wheel by a displacement of said coupling member; at least one piston acted upon by a pressure fluid and arranged in a hydraulic housing mountable on the camshaft and having at least one radial bore hole which receives said at least one piston; said hydraulic housing having
- a cylinder space; a ball bearing arranged eccentrically relative to an axis of the cam shaft so that said at least one piston slides at an inner circumference of said ball bearing; a plurality of fluid connections leading to said cylinder space in said hydraulic housing from a respective compression space of said at least one bore hole, said fluid connection being provided with at least one outlet valve; a double-acting piston arranged in said cylinder space and having a pressure limiting valve producing a fluid connection from an annular pressure space situated on one side of said double-acting piston to a large pressure space situated on the other side of said double-acting piston, said double-acting piston continuously contacting said coupling member.

5,329,891

ROCKER ARM ASSEMBLY

Richard F. Murphy; John A. DiLauro, and Matthew G. Urmaza, all of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Aug. 27, 1993, Ser. No. 113,462
Int. Cl.[5] F01L *1/18*
U.S. Cl. 123—90.39 **22 Claims**



1. A rocker arm assembly for mounting about a stud means, the rocker arm assembly comprising:
- a rocker arm;
- a bearing support member having two support arms extending in opposite directions along an axis, the bearing support member being adapted for mounting about the stud means;
- two bearing cups fixed to the rocker arm, one bearing cup extending over each support arm, the bearing cups having a bottom surface forming an interference fit such that a preload results along said axis from deformation of at least one of said bearing cups; and
- rolling members within an annulus formed between the bearing support member and the bearing cups such that the rocker arm is free to oscillate rotatably with respect to the bearing support member.

5,329,892

FRAME FOR BED VESSEL

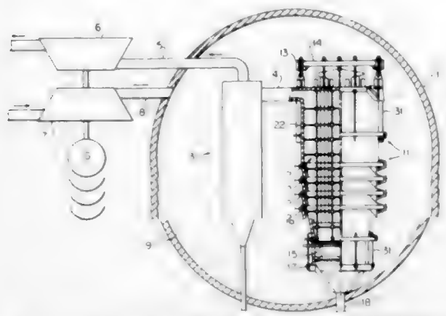
Harald Svendsen, Finspong, Sweden, assignor to Abb Carbon AB, Finspong, Sweden

PCT No. PCT/SE91/00420, § 371 Date Dec. 15, 1992, § 102(e) Date Dec. 15, 1992, PCT Pub. No. WO91/19940, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 11, 1991, Ser. No. 955,704
Claims priority, application Sweden, Jun. 15, 1990, 9002122-1
Int. Cl.[5] F22B *37/24*
U.S. Cl. 122—510 **11 Claims**

1. A frame structure for a bed vessel in an energy plant with higher or lower pressure in the bed vessel in relation to the surrounding space, said frame structure comprising:
- horizontally extending, continuous frames with stiff corners surrounding walls of the bed vessels to stiffen the walls;
- said frames including beams which are built up from rolled standard beams;
- each individual frame being supported and guided by devices applied to the bed vessel wall, said devices making possible axial movements of the frame beams in relation to said devices; and
- wherein anti-twist bars are provided for each frame including crossbars rigidly attached to each frame, said crossbars

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extending to the adjacent frame with the ends of the crossbars mounted in a web of said adjacent frame, ends of said



crossbars at said mounting point being freely axially movable.

5,329,893

COMBUSTION ENGINE WITH VARIABLE COMPRESSION RATIO

Hans Drangel, Stockholm; Per-Inge Nilsson, Vagnhärad, and Lars Bergsten, Järna, all of Sweden, assignors to SAAB Automobile Aktiebolag, Sweden

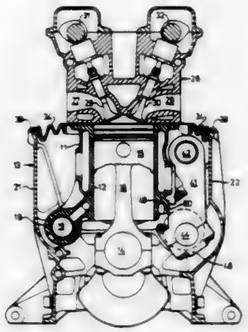
PCT No. PCT/SE91/00817, § 371 Date Aug. 3, 1993, § 102(e) Date Aug. 3, 1993, PCT Pub. No. WO92/09798, PCT Pub. Date Jun. 11, 1992

PCT Filed Aug. 23, 1990, Ser. No. 66,104

Claims priority, application Sweden, Dec. 3, 1990, 9003835-7

Int. Cl.[5] F02B *75/04*

U.S. Cl. 123—78 C **11 Claims**



1. An internal combustion engine having a variable compression ratio, which comprises:

a crankcase section;

a cylinder section pivotably mounted on the crankcase section, the crankcase section having a plurality of vertically extending lateral walls which enclose the cylinder section, the lateral walls having respective upper surfaces which lie essentially in the same plane; and

a seal arranged between the upper surfaces of the lateral walls and the cylinder section to provide a seal between the crankcase section and the cylinder section.

5,329,894

VARIABLE VALVE TIMING

John B. Phoenix, and Lancelot Phoenix, both of 92 Leopold Ave., Handsworth Wood, Birmingham B20 1ET, England

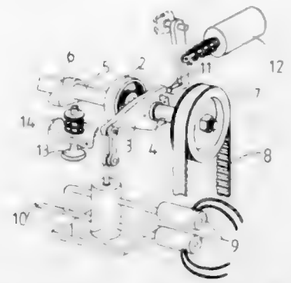
PCT No. PCT/GB91/01916, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO92/09793, PCT Pub. Date Jun. 11, 1992

PCT Filed Oct. 31, 1991, Ser. No. 910,183

Claims priority, application United Kingdom, Nov. 27, 1990, 9025739

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 **18 Claims**



1. An internal combustion engine valve timing system in which at least one camshaft is driven by means of a mechanism including a differential gear system which an permit a limited change in a phase relationship between an engine crankshaft and the at least one camshaft and in which the phase change takes the form of an angular displacement which is compliantly constrained about some nominal angle in such a way that a torque reaction from the camshaft operating valves results in a change in instantaneous phase displacement in some desired manner.

12. A valve timing system in an internal combustion engine, said engine having a crankshaft, at least one camshaft and valves associated with said at least one camshaft, said valve timing system comprising a differential gear system means, driven by said crankshaft, for compliantly driving said at least one camshaft in a phase relationship with said crankshaft, said differential gear system means including compliant means, responsive to torque variations from said camshaft, for providing a limited angular phase change from a nominal phase relationship between said crankshaft and said at least one camshaft.

5,329,895

SYSTEM FOR CONTROLLING VALVE SHIFT TIMING OF AN ENGINE

Masami Nishida; Toru Kurisu; Takashi Ikai; Hiroaki Sugiura; Hiroshi Enomoto; Masunori Kanda; Eiichi Yanagida; Hiroaki Deguchi; Masaki Fukuma, and Akira Asai, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 27, 1993, Ser. No. 127,280

Claims priority, application Japan, Sep. 30, 1992, 4-262566; Jan. 29, 1993, 5-013101; Mar. 30, 1993, 5-071692

Int. Cl.[5] F01L *1/08*

U.S. Cl. 123—90.17 **32 Claims**

1. A system for controlling a valve-shift-timing of an engine, comprising:

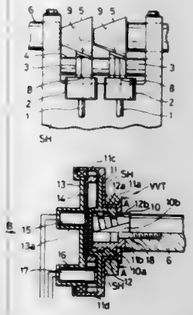
a cam shaft arranged so as to be rotatably driven by an output shaft of the engine;

a swingable cam disposed so as to be swingable for lifting at least one of an intake valve and an exhaust valve in accordance with a pivotal movement of said swingable cam upon at least one of a direct and an indirect abutment with said at least one of said intake valve and said exhaust valve;

a rotatable cam disposed on said cam shaft so as to be rotatable integrally with said cam shaft and to move said swingable cam pivotally in accordance with rotation of said cam shaft;

a transfer means for transferring said rotatable cam in an axial direction in which said cam shaft extends; and

a rotational phase changing means for changing a rotational phase of said rotatable cam relative to said output shaft in



accordance with the movement of said rotatable cam by said transfer means;

wherein each of an abuttable surface of said swingable cam and an abuttable surface of said rotatable cam is of a shape tapered in the axial direction in which said cam shaft extends; and

said rotatable phase changing means is disposed on a portion other than said swingable cam.

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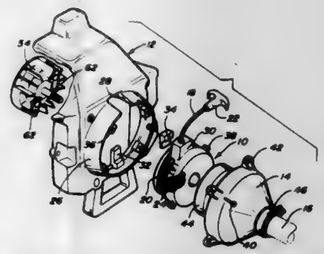
REPLACEABLE RECOIL STARTER

Robert G. Everts, Chandler, Ariz., assignor to Ryobi Outdoor Products, Inc., Chandler, Ariz.

Filed Jan. 6, 1993, Ser. No. 1,298

Int. Cl.[5] F02N *3/02*

U.S. Cl. 123—185.3 **13 Claims**



1. A replaceable starter assembly for a hand-held internal combustion engine of a power tool having an engine housing and a starter housing removeably secured to the engine housing comprising:

a cartridge substantially enclosed by the starter housing;

a spool mounted on the cartridge for rotation relative to the cartridge;

a recoil spring biasing the spool for rotation in one direction relative to the cartridge;

a rope wound on the spool which is pulled to rotate the spool in the opposite direction relative to the cartridge from said one direction;

said cartridge being secured to the engine housing of the power tool on a surface of the engine housing facing away from the internal combustion engine, said cartridge being detachable from the engine housing of the power tool to allow replacement of the starter assembly without disassembly of the engine housing of the power tool.

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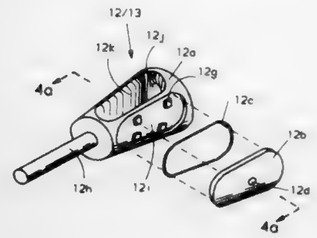
ROTARY VALVE WITH SEAL FOR INTERNAL COMBUSTION ENGINE

Jeffrey A. Hemphill, Fairlawn, and Brian D. Hamphill, Painesville, both of Ohio, assignors to Renaissance Motor Works, Co., Ohio

Filed Jun. 1, 1993, Ser. No. 70,277

Int. Cl.[5] F01L *7/08, 7/16*

U.S. Cl. 123—190.17 **20 Claims**



1. A rotary valve for use in an internal combustion engine comprising:

a valve bore, said bore located between a combustion chamber and a manifold, said combustion chamber having at least one opening into said valve bore and said manifold having at least one opening into said valve bore, said combustion chamber having an interior surface;

b) a valve body containing a flow passage, said flow passage having at least two ends, said flow passage providing intermediate communication between said opening in said combustion chamber and said opening in said manifold, said valve body having an outer surface, at least one portion of said outer surface configured to seal said opening to said combustion chamber and to form a substantially continuous surface with said interior surface of said combustion chamber when covering said opening to said combustion chamber, said portion of said outer surface of said valve body mounted so as to allow relative motion between said portion of said outer surface of said valve body and said valve body along radial lines from the axis of rotation of said valve body, said valve body rotatably mounted in said valve bore;

c) a gas tight pocket located between said portion of said outer surface of said valve body and said axis of rotation of said valve body, the square area of which is larger than the square area of said opening to said combustion chamber on parallel sections taken perpendicular to a radial line from said axis of rotation of said valve through the centroid of said opening to said combustion chamber;

d) means for allowing said combustion chamber to communicate with said gas tight pocket when said portion of said outer surface of said valve body is stationary and positioned over said opening to said combustion chamber;

e) means for transmitting torque to said valve body.

5,329,898

SHAFT SEAL AND BORE ASSEMBLY

John J. Nelson, Novi, Mich., and Lawrence E. Bell, Kingston, N.H., assignors to Freudenerg-NOK General Partnership, Plymouth, Mich.

Filed May 5, 1993, Ser. No. 57,612

Int. Cl.[5] F02F *7/00*

U.S. Cl. 123—195 C **32 Claims**

1. A housing cover and seal assembly wherein:

said housing cover comprises a single piece construction

having a first surface containing a cylindrical bore defined by an annular flange, said annular flange containing a plurality of circumferentially aligned radial grooves and said flange also having a circumferential sealing surface on its radially inner surface; and



said seal comprises an annular base member having a radially outwardly extending locking rib engaging at least one of said plurality of grooves in a locking arrangement

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5,329,899

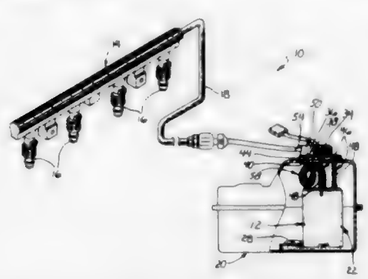
FUEL SYSTEM PRESSURE FUSE

Ulf Sawert, Grand Blanc; Timothy F. Coha, Davison; William S. Zimmerman, and Gregory K. Rasmussen, both of Grand Blanc, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1993, Ser. No. 134,439

Int. Cl.[5] F02B *77/00;* **F02M** *37/04*

U.S. Cl. 123—198 DB **4 Claims**



1. A fuel system for an internal combustion engine comprising a fuel reservoir having a pump assembly disposed therein, fuel delivery means in operable communication with said engine and a fuel conduit extending between said fuel reservoir and said fuel delivery means, said fuel reservoir further comprising a port in a wall of said reservoir and a fluid connection operable with said port to connect said fuel conduit to said fuel reservoir and said pump assembly, said pump assembly having an electric pump with an inlet and an outlet with a check valve means in operable communication with said outlet and in flow communication with said fluid connection in said cover by an elastomeric hose, said hose comprising a flexible body having a plurality of sinusoidal convolutions and a region of reduced wall thickness, said elastomeric hose operable to accommodate positive pressure variation between said check valve and said fuel delivery means through expansion at said convolutions and rupture of said region of reduced wall thickness, wherein said rupture is confined to said fuel reservoir.

5,329,900

ROTARY INTERNAL COMBUSTION ENGINE

Anthony O. Dye, Cambridge, England, assignor to Surgevest Limited, Cambridge, England

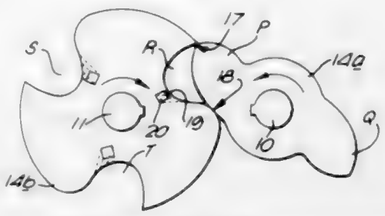
PCT No. PCT/GB90/01692, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO91/06747, PCT Pub. Date May 16, 1991

PCT Filed Nov. 5, 1990, Ser. No. 855,027

Claims priority, application United Kingdom, Nov. 6, 1989, 8925018

Int. Cl.[5] F02B *53/00*

U.S. Cl. 123—238 **12 Claims**



1. An internal combustion engine comprising separate rotary compression and expansion sections and a combustion chamber having inlet and outlet ports communicating with said compression and expansion sections respectively, in which each of said compression and expansion sections is a rotary device comprising:

a first rotor rotatable about a first axis and having at its periphery at least one recess bounded by a curved surface; and

a second rotor counter-rotatable to said first rotor about a second axis, parallel to said first axis, and having at least one radial lobe bounded by a curved surface,

said rotors intermeshing whereby, on rotation thereof, a transient chamber of progressively increasing (expansion section) or decreasing (compression section) volume is defined between said recesses and lobe surfaces,

said surfaces being contoured such that during passage of said lobe through said recess, said recess surface is continuously swept, by both a tip of said lobe and a movable location on said lobe which location progresses along both said lobe surface and said recess surface, to define said transient chamber,

the respective first and second rotors of the compression and expansion sections being coupled for rotation, and

wherein the inlet and outlet ports of the combustion chamber are valved by adjacent end surfaces of the respective first rotors of the compression and expansion sections, said end surfaces having openings therein communicating with respective recesses of said first rotors.

5,329,901

HOT SURFACE IMPACT IGNITION TYPE INTERNAL COMBUSTION ENGINE AND METHOD OF HOT SURFACE IMPACT IGNITION

Shigeru Onishi, Kanazawa, Japan, assignor to Nippon Clean Engine Research Institute Co., Ltd., Kanazawa, Japan

PCT No. PCT/JP90/01500, § 371 Date Jun. 27, 1991, § 102(e) Date Jun. 27, 1991, PCT Pub. No. WO91/19085, PCT Pub. Date Dec. 12, 1991

PCT Filed Nov. 16, 1990, Ser. No. 688,582

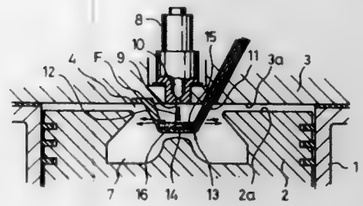
Int. Cl.[5] F02B *23/02;* **F02M** *53/02*

U.S. Cl. 123—254 **20 Claims**

1. A hot surface impact ignition type internal combustion engine, comprising:

a piston positioned at a top center portion of a combustion chamber and having a top face in which a cavity is formed, the cavity having a central portion; and

an electrically heated heating member arranged in the combustion chamber and positioned at the central portion of the cavity of the piston, the heating member having a heating surface which is formed substantially flat and which extends in a direction perpendicular to an axial line



of injected fuel, wherein fuel is injected from a fuel injector toward the heating surface of the heating member in the form of a continuous fluid stream, the fuel striking the heating surface in the form of an unatomized fluid.

5,329,902

CYLINDER FUEL INJECTION TYPE TWO-CYCLE INTERNAL COMBUSTION ENGINE

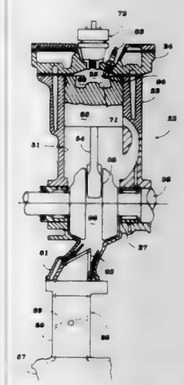
Osamu Sakamoto; Chitoshi Saito, and Seiichi Nishimura, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation-in-part of Ser. No. 830,670, Feb. 3, 1992, abandoned. This application Feb. 2, 1993, Ser. No. 12,311

Claims priority, application Japan, Feb. 2, 1991, 3-33558; Feb. 3, 1992, 4-047581

Int. Cl.[5] F02B *23/10*

U.S. Cl. 123—257 **36 Claims**



1. A direct injected internal combustion engine having a pair of relatively movable components defining a variable volume combustion chamber, one of said components defining a recessed area with a projection extending generally centrally into and spaced from the periphery of said recessed area, said recessed area forming a substantial portion of the volume of said chamber when said components are in such a relative position that the chamber is at its minimum volume condition, fuel injection means mounted within the other of said components and disposed so that fuel issuing therefrom will impinge upon said projection as said components approach said minimum volume condition, a spark plug having its gap disposed contiguous to said recess when said components are in their minimum volume condition, means for initiating injection of fuel as said components approach said minimum volume condition under low speed, low load conditions, and means for firing said spark plug when said fuel injection means is injecting fuel.

5,329,903

PIVOTABLE JOINT

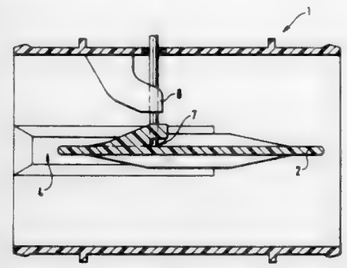
Manfred Mueller, Freiberg, and Manfred Winter, Oedheim, both of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Oct. 27, 1992, Ser. No. 967,040

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1991, 9113727[U]

Int. Cl.[5] F02D *9/08;* **F16K** *51/00*

U.S. Cl. 123—337 **7 Claims**



1. In an intake manifold of an engine, a pivotable joint, comprising:

a first part provided with pivot bores, and

a second part with resiliently mounted pivot pins received in said pivot bores such that said second part is pivotably mounted in a desired assembled position relative to said first part,

wherein said first part has a closed tubular cross section, and

wherein said pivot pins of said second part are elastically displaceable during assembly of said first and second parts and snap resiliently into the pivot bores of said first part when said second part reaches said desired assembled position;

wherein said first part comprises a section of said intake manifold of an internal combustion engine, and said second part is a throttle valve disposed in said intake manifold.

5,329,904

ENGINE CONTROL APPARATUS FOR DISCRIMINATING CYLINDERS

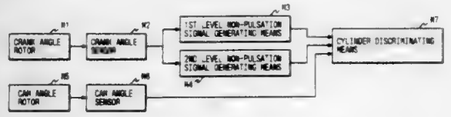
Naoki Kokubo, Aichi; Koji Sakakibara, Hekinan, and Hiroshi Haraguchi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 3, 1993, Ser. No. 101,294

Claims priority, application Japan, Aug. 4, 1992, 4-208081; Nov. 30, 1992, 4-320007; Jun. 15, 1993, 5-143491

Int. Cl.[5] F02P *5/155, 7/067*

U.S. Cl. 123—414 **13 Claims**



1. An engine control apparatus comprising:

a crank angle rotor having a configuration representing a crank angle of an engine;

a crank angle sensor operatively associated with said crank angle rotor to generate a crank angle signal in accordance with said configuration of said crank angle rotor;

said configuration of said crank angle rotor including first and second silent sections, said first silent section being cooperative with said crank angle sensor to constitute a means for generating a first level non-pulsation compo-

nent of said crank angle signal, and said second silent section being cooperative with said crank angle sensor to constitute a means for generating a second level non-pulsation component of said crank angle signal;

a cam angle rotor having a configuration representing a cam angle of the engine;

a cam angle sensor operatively associated with said cam angle rotor for generating a cam angle signal to provide a plurality of different kinds of signal level sequences with respect to said first and second silent sections of said crank angle rotor; and

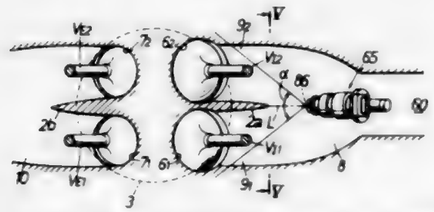
a cylinder discriminating means for discriminating each cylinder of said engine on the basis of said first and second level non-pulsation components of said crank angle signal and said signal level sequences of said cam angle signal.

5,329,905

FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

Yuji Kawaguchi, and Makoto Kishida, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 785,129, Oct. 30, 1991, abandoned.
This application Feb. 25, 1993, Ser. No. 23,745
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—472 **5 Claims**



1. A fuel injection type internal combustion engine having a cylinder head which is provided with a pair of intake valve bores facing a combustion chamber, a single intake passage, and a pair of intake ports which are separated by a partition wall and which connect the intake passage to both the intake valve bores, and a fuel injection valve having a single fuel ejection port disposed to be directed from the intake passage toward the two intake valve bores, a pair of air assist ejection ports being disposed in the vicinity of the fuel ejection port for finely atomizing fuel from the fuel ejection port, said air assist ejection ports are disposed at opposite sides of said fuel ejection port to lie on a first plane that extends substantially perpendicular to a second plane on which the pair of intake ports lie, said fuel ejection port and an end edge of said partition wall which is closer to said intake passage being substantially included in said first plane, a pair of assist air flows from the pair of air assist ejection ports being directed to intersect each other at such a specific angle that intersection of the assist air flows controls the fuel ejected from the fuel ejection port so as to be atomized and change the shape of the pattern of fuel ejected from the fuel ejection port to flow into a cocoon shape substantially conforming to the shape of the pari of intake ports.

5,329,906

LOW EMISSION DUEL FUEL VALVE STRUCTURE

Scott P. Jensen; Mitchel J. Gillispie, both of Tacoma, and Robert A. McLean, Puyallup, all of Wash., assignors to Energy Conversions, Inc., Tacoma, Wash.

Filed Aug. 16, 1993, Ser. No. 109,811
Int. Cl.[5] F02D *19/08*; F02M *61/14*
U.S. Cl. 123—470 **1 Claim**

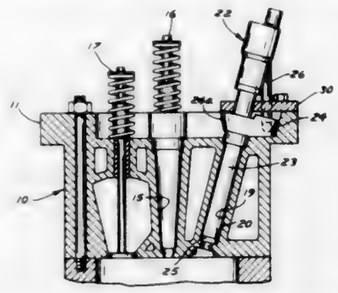
1. A cylinder in an internal combustion engine including a cylinder head having a liquid fuel injector valve and a plurality of exhaust valves, including

a bore in said cylinder head for a gaseous fuel injector valve, said bore having a counter bore seat at the inner bottom thereof,

a body of said gaseous fuel injector valve disposed in said bore and seated on said counter bore seat,

said cylinder having a combustion chamber,

said gaseous fuel injector valve body providing said gaseous fuel injector direct access to said combustion chamber,



a plate number disposed over an edge portion of said gaseous fuel injector valve and overlying a portion of said gaseous fuel injector valve,

means securing said plant member to said cylinder head,

whereby said gaseous fuel injector valve is inserted into and removed from said cylinder said cylinder head without disturbing the remainder of the cylinder and wherein,

said gaseous fuel injector includes a gas supply inlet fitting,

said fitting is mounted onto a gas bell,

said gas bell slips onto said gaseous fuel injector valve body, whereby

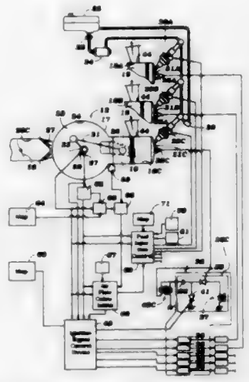
said plate member overlies said gas bell securing the same.

5,329,907

FUEL INJECTION CONTROL DEVICE FOR TWO STROKE COMBUSTION ENGINE

Kimihiro Nonaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 8, 1993, Ser. No. 73,740
Claims priority, application Japan, Jun. 26, 1992, 4-191393
Int. Cl.[5] F02D *41/34, 41/36*
U.S. Cl. 123—478 **24 Claims**



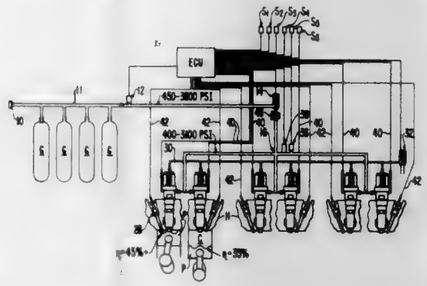
1. A fuel injection system for an internal combustion engine having at least two cylinders, exhaust port means for discharging exhaust gases from each of said cylinders, an exhaust pipe having a pair of inlet ends each communicating with a respective one of said exhaust port means and a common outlet end for discharging the exhaust gases to the atmosphere so that exhaust pulses from one of said cylinders may generate an exhaust pulse back to the exhaust port of the other cylinder, a pair of fuel injectors each supplying fuel to a respective one of said cylinders, and means for controlling the operation of said fuel injectors to provide a difference in the fuel injection to each cylinder from the other for compensating for the transmission of exhaust pulses.

5,329,908

COMPRESSED NATURAL GAS INJECTION SYSTEM FOR GASEOUS FUELED ENGINES

Yul J. Tarr, and Julius P. Perr, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 8, 1993, Ser. No. 73,062
Int. Cl.[5] F02B *43/00*; F02M *51/00*
U.S. Cl. 123—527 **27 Claims**



1. Compressed gas injection system for gaseous fueled engines, comprising a gas supply containing a compressed fuel gas in a gaseous state, at least one fuel injector for injecting a variable quantity of gaseous fuel into an engine cylinder, a supply line means for enabling the compressed fuel gas to flow said supply of compressed fuel gas to said at least one fuel injector, said fuel gas being at a pressure above at least approximately 2,000 psi for at least a portion of the total contents of the gas supply, and an electronic control means for controlling both the quantity fuel gas injected into the engine cylinder by said fuel injector and the time at which it is injected relative to a cycle of operation of the engine cylinder as a function of monitored gas pressure and engine operating parameters, said time being from between about 20° before to about 10° after said piston reaches a top dead center position whenever said fuel gas pressure is above at least approximately 2,000 psi.

5,329,909

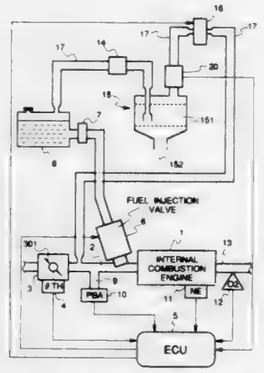
EVAPORATIVE FUEL-PURGING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Fumio Hosoda; Masayuki Habaguchi; Kazuhito Kakimoto; Toru Tochizawa; Masashi Uchiyama, and Yoshiharu Ave, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 853,288, Mar. 18, 1992, abandoned.
This application Jul. 7, 1993, Ser. No. 90,244
Claims priority, application Japan, Mar. 19, 1991, 3-80725
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **10 Claims**

1. In an evaporative fuel-purging control system for an internal combustion engine having a fuel tank and an intake passage, said evaporative fuel purging control system including a canister for adsorbing evaporative fuel generated from said fuel tank, a purging passage connecting between said canister and said intake passage for purging a mixture of said evaporative fuel and air therethrough into said intake passage, and a purge control valve arranged across said purging passage for controlling the flow rate of said evaporative fuel supplied to said intake passage, the improvement comprising:

a mass flowmeter means arranged across said purging passage, for determining an actual flow rate of said mixture of evaporative fuel and air being purged, said mass flowmeter means including output characteristic determining means for determining an output characteristic of said mass flowmeter means so as to define a predetermined relationship between the actual flow rate and a measured flow rate of said mixture from said mass flowmeter means based on the concentration of evaporative fuel in the mixture such that said measured flow rate of said mixture varies relative to the actual flow rate of said mixture as the concentration of said evaporative fuel in said mixture



varies wherein the output characteristic determining means of said mass flowmeter means has defined the output characteristic such that said measured flow rate of said mixture is larger than the actual flow rate of said mixture as the concentration of said evaporative fuel in said mixture increases;

desired purging flow rate-setting means responsive to operating conditions of said engine for setting a desired flow rate of said mixture; and

purge control means for comparing said desired flow rate of said mixture with said measured flow rate of said mixture obtained by said mass flowmeter means, and for controlling opening of said purge control valve based on results of the comparison.

5,329,910

EFFICIENT AUXILIARY ENGINE COMBUSTION SYSTEM

Kazuo Tanaka, Kamagaya, Japan, assignor to Yugen Gaisha Shunwa Denshi Kikaku, Kamagaya, Japan

Filed Nov. 30, 1993, Ser. No. 159,276
Claims priority, application Japan, Dec. 28, 1992, 4-093386[U]
Int. Cl.[5] F02M *27/04*
U.S. Cl. 123—536 **16 Claims**

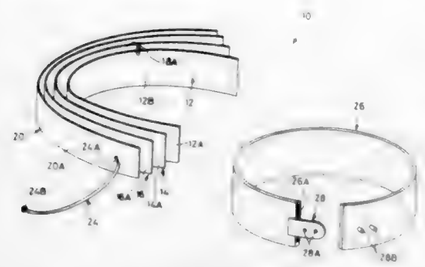
1. An efficient auxiliary engine combustion system for installation on an engine air intake or fuel delivery line comprising:

a first metal plate proximate the engine air intake or fuel delivery line having an outer surface;

an inner surface of a dielectric insulator located on the outer surface of the first metal plate;

an inner surface of a second metal plate located on an outer surface of the dielectric insulator;

a capacitor located on a surface of the dielectric insulator; and



a third metal plate located about the outer surface of the second metal plate.

5,329,911

FUEL ACTIVATION APPARATUS USING MAGNETIC BODY

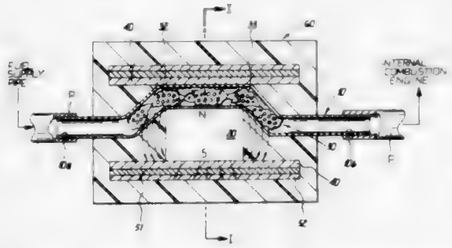
Tae Y. Jeong, 508, Mabuk-ri Kusung-myon, Yongin-gun Kyungi-do, Rep. of Korea

Filed Sep. 14, 1993, Ser. No. 121,234

Claims priority, application Rep. of Korea, Aug. 24, 1993, 93-16426

Int. Cl.[5] F02M *33/00*

U.S. Cl. 123—538 **12 Claims**



1. A fuel activation apparatus using a magnetic body, said fuel activation apparatus comprising:

a fuel activation duct having a shape of a hollow pipe, which is connected between a fuel supply end and a fuel consumer end and which is provided as a fuel supply path;

a fuel activation member which is disposed inside said fuel activation duct, and which is made of a magnetic material to make the fuels rotatably flow;

a magnetic body having a shape of a bar, which is disposed adjacently to the external surface of said fuel activation duct; and

a magnetic induction layer made of a magnetic material, which is disposed so as to enclose said fuel activation duct and said magnetic body, to thereby induce a magnetic force from said magnetic body.

5,329,912

INDUCTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

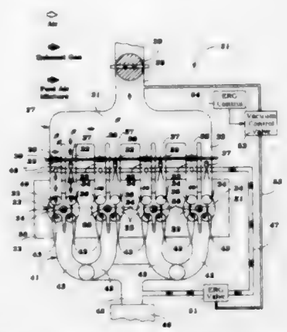
Hiromitsu Matsumoto, and Chizuko Imai, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 21, 1992, Ser. No. 994,191

Claims priority, application Japan, Dec. 19, 1991, 3-336664; Jan. 20, 1992, 4-7474; Feb. 7, 1992, 4-22462

Int. Cl.[5] F02B *31/02*

U.S. Cl. 123—568 **43 Claims**



1. An induction system for an internal combustion engine having a combustion chamber, at least a pair of intake passages serving said combustion chamber for introducing an air charge thereto, each of said intake passages being configured to induce turbulence to the charge entering said combustion chamber from the respective intake passage, the intake passages being configured relative to each other for promoting turbulence to the charge within said chamber and for mixing of the charge introduced by each of said intake passages with that of the other to promote a homogeneous charge within the combustion chamber, at least one exhaust passage for discharging exhaust gases from said combustion chamber, means for introducing a stoichiometric fuel air charge into at least one of said intake passages under at least one running condition, and means for delivering exhaust gases from said exhaust passage into another of said intake passages under said one running condition.

5,329,913

OIL VAPOR SEPARATOR SYSTEM FOR THE ENGINE OF A GAS HEAT PUMP AIR CONDITIONER

Shigeto Suzuki; Makoto Oguri, and Toshinori Fukudome, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 26, 1992, Ser. No. 857,777

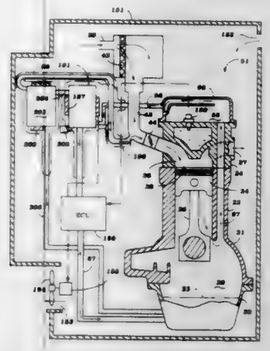
Claims priority, application Japan, Mar. 26, 1991, 3-087802

Int. Cl.[5] F02B *25/06*

U.S. Cl. 123—573 **6 Claims**

1. An internal combustion engine having a crankcase and crankcase ventilating system and contained within a housing having an air inlet and an air discharge through which cooling air is circulated, an oil vapor separator contained within said housing, conduit means for delivering gases from said crankcase ventilating system to said oil vapor separator, return conduit means for returning condensed oil from said oil vapor separator to said crankcase, ventilating discharge means for discharging ventilating gases from said oil vapor separator to said engine for combustion in a combustion chamber thereof, said oil vapor separator being positioned within the housing in such a manner that heat transferred from said engine to the interior of said housing will heat said oil vapor separator, and

means for controlling the temperature within the housing to maintain sufficient heat in said oil vapor separator to vaporize



water vapor for separation from lubricant and to prevent overheating of said engine.

5,329,914

CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Kazuhide Togai, Takatsuki, and Tetsurou Ishida, Kyoto, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

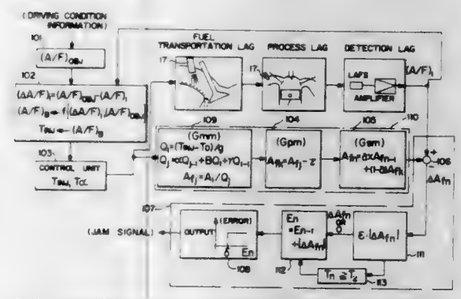
PCT No. PCT/JP92/00389, § 371 Date Dec. 31, 1992, § 102(e) Date Dec. 31, 1992, PCT Pub. No. WO92/17696, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 30, 1992, Ser. No. 949,880

Claims priority, application Japan, Mar. 28, 1991, 3-064683

Int. Cl.[5] F02D *41/14, 41/22*

U.S. Cl. 123—688 **16 Claims**



1. A control device for an internal combustion engine comprising:

objective air fuel ratio calculating means for calculating an objective air fuel ratio depending on a driving condition;

a large area air fuel ratio sensor disposed in an exhaust system;

fuel amount calculating means for calculating a fuel amount in accordance with a difference between a measurement air fuel ratio detected by said large area air fuel ratio sensor and the objective air fuel ratio;

controlling means for supplying an actuating instruction signal to a fuel injector depending on said fuel amount;

air fuel ratio estimating means including,

a first estimating unit for estimating a first air fuel ratio on intake in consideration with a fuel transportation lag between fuel injection and suction in accordance with said actuating instruction signal,

a second estimating unit for estimating a second air fuel ratio at a time when the gas arrives to the large area air fuel ratio sensor in consideration with a transportation lag of the gas between the process of the engine between suction and arrival to said large area air fuel ratio sensor in accordance with said first fuel ratio, and

a third estimating unit for estimating a third air fuel ratio at a time when said large area fuel ratio sensor detects said first, second and third air fuel ratios in consideration with a response lag which is inherent to the large area air fuel ratio sensor in accordance with said second air fuel ratio; and sensor jam judging means for judging a jam of said large area air fuel ratio sensor by comparing said third air fuel ratio with the measurement air fuel ratio.

5,329,915

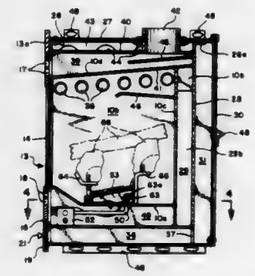
GAS FIREPLACE CAPABLE OF BEING INSTALLED WITHOUT MASONRY WORK

Lynn C. Broadbent, 1590 N. Fort Canyon, and Craig L. Broadbent, 1520 N. Fort Canyon, both of Alpine, Utah 84004

Filed Oct. 23, 1992, Ser. No. 965,902

Int. Cl.[5] F24B *1/188*

U.S. Cl. 126—524 **8 Claims**



1. A gas fireplace apparatus capable of being installed without masonry work, comprising a firebox enclosing a gas fireplace burner and provided with bottom, top, opposite side, front, and back walls and with a window in the front wall for viewing a fire burning in the fireplace; interconnecting, air circulating chambers laterally of, back of, above, and below said firebox, with inflow means for air to be heated and outflow means for the heated air; a series of spaced air flow conduits extending between and providing air flow communication between the laterally placed air circulating chambers, said series of spaced air flow conduits extending through said firebox from front to back thereof below but adjacent to the top wall of the firebox; an upper duct defining a flue chamber; and air inflow openings located below and above said viewing window, respectively, those above said window opening into said flue chamber.

5,329,916

OVEN

Poul Lygum, Bakel, Netherlands, assignor to Koppens Machinefabriek B.V., Bakel, Netherlands

Filed Feb. 25, 1993, Ser. No. 22,951

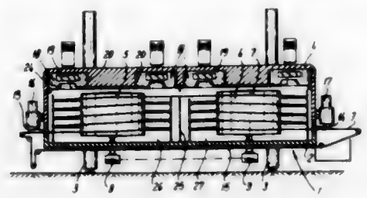
Claims priority, application Netherlands, Feb. 26, 1992, 9200351

Int. Cl.[5] A21B *1/00*

U.S. Cl. 126—21 A **9 Claims**

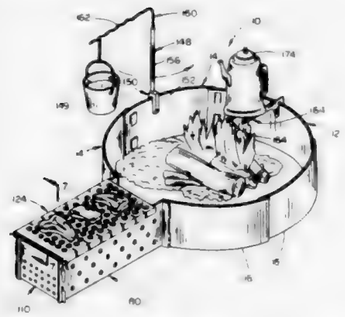
1. An oven comprising a housing, heating means in the housing, and a conveyor belt which runs through the housing and on which food products to be heated can be accommodated, means constraining the belt to run in two helical paths about spaced parallel vertical axes, the direction of movement of the belt along one helical path, as seen from above, being opposite the direction of movement of the belt about the other helical path, the housing comprising two chambers separated

by a partition, one said helical path being disposed in one said chamber and the other said helical path being disposed in the



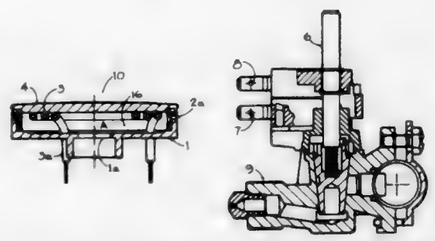
other said chamber, the partition having an opening through which the belt runs between said chambers.

5,329,917
FIRE RING
David C. Young, 2331 N. 42nd St., Grand Forks, N. Dak. 58203
Filed Mar. 30, 1993, Ser. No. 40,125
Int. Cl.[5] F24P *3/00*
U.S. Cl. 126—29 **2 Claims**



1. A portable fire ring, comprising:
a first curved ring section having an upper edge, lower edge, and opposite ends,
a pair of second curved ring sections removably connected together in an end-to-end relationship and removably connected to one end of said first curved ring section, each of said ring sections having an upper edge, a lower edge, a first end and a second end;
a pair of third curved ring sections removably connected together in an end-to-end relationship and removably connected to the other end of said first curved ring section, each of said third ring sections having an upper edge, a lower edge, a first end and a second end,
said first, second and third ring sections defining a partial circle with the second end of the end-most second ring section being spaced from the second end of the endmost third ring section;
first and second straight grill sections having an upper edge, a lower edge, and opposite ends,
one end of said first grill section being removably secured to the second end of the end-most second ring section and extending outwardly therefrom, one end of said second grill section being removably secured to the second end of the end-most third ring section and extending outwardly therefrom parallel to said first grill section in a spaced-apart relationship thereto,
and an end gate having an upper edge, lower edge, and opposite ends;
one end of said end gate being secured to the other end of said first grill section, the other end of said end gate being secured to the other end of said second grill section;
a normally horizontally disposed grill positioned on the upper edges of said first and second grill sections and the upper edge of said end gate,
said grill being pivotably mounted with respect to said grill sections to enable said grill to be pivotally raised with respect thereto.

5,329,918
COMBINED ELECTRIC AND GAS BURNER
Gaetano Di Bari, Via A. Diaz, 97, 22100 Como, Italy
Filed Jan. 27, 1993, Ser. No. 10,617
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—39 BA **9 Claims**

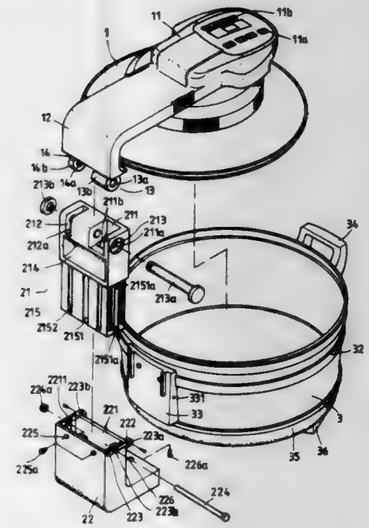


1. A combined burner for a stove cooktop having at least one cooking station, comprising:
a gas burner having a plurality of gas exit ports through which a combustible gas may flow, wherein said gas burner is configured as an annular ring with said gas ports being circumferentially disposed under said cooking station so that said gas may be mixed with air and ignited to produce heat under said cooking station for food cooking;
a source of a pressurized combustible gas in fluid communication with said gas burner;
a plurality of electric heating elements concentrically disposed within said annular ring gas burner under said cooking station for simmer cooking of foods;
burner base means for structural support of said electric heating elements and said gas burner to said stove cooktop;
a top cap member having a top, bottom and upward sides, said top cap member being supported by said base means and disposed such that the bottom side of said top cap covers said electric heating elements, and the top side of said topcoat member lying in a plane substantially parallel with the plane of said stove cooktop,
an enclosed gas/air mixing chamber defined by top, bottom and side walls, with said chamber being disposed under said top cap member such that said top cap member further comprises the top wall of said chamber,
gas valve control means for adjustment of gas flow rate to said gas burner ports, said gas valve control means having a valve stem shaft for manual operation; and
control means having a first microswitch actuated by operation of said valve shaft for adjustment of power to said electric heating elements so as to provide simmer cooking heating adjacent said gas burner heating under said cooking station.

5,329,919
EXPANSIBLE CYCLONE STOVE
Kwei T. Chang, No. 14, Lane 54, Luong Chuan St., Panchiao City, Taipei Hsien, Taiwan
Filed Oct. 2, 1992, Ser. No. 955,782
Int. Cl.[5] F24C *1/16*
U.S. Cl. 126—275 E **3 Claims**

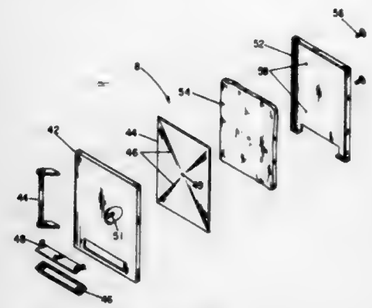
1. An expansible cyclone stove comprising:
a lid comprising a control panel on a top edge thereof, which includes control keys and a display unit, a handle traversely extended sideways from said control panel and

terminating in a downward bend coupled with two bushings, said lid having a bottom and a hot air fan recessed therein, a plurality of internally threaded columns around said hot air fan, a foraminous covering fastened to said internally threaded columns by screws and covering the recess in the bottom of said hot air fan, said bushings each having an outside locating groove;
a stove body having a step around a peripheral surface adjacent a top edge thereof for mounting a cooking container, a handhold and a side block fastened to an outside ring thereof at two opposite locations, and a plurality of external cushions fastened to a bottom plate thereof by screws, said side block having two opposite screw holes;
an expansible mount comprised of an angle frame fastened to said stove body and a connecting block movably connected between said bushings of said handle of said lid and said angle frame, said angle frame having a bottom bend fastened to the bottom edge of said stove body by screws, a first pair of opposite through holes on two opposite side walls adjacent a top edge thereof respectively fastened to the two opposite screw holes on said side block of said



stove body by screws, a chamber on the top edge to receive said connecting block, a second pair of opposite through holes on the two opposite side walls spaced from said first pair of opposite through holes at the same level, and a third pair of opposite through holes on a front face thereof, said connecting block comprising two top openings, which receive said bushings of said handle of said lid and each of which has an elongated raised portion releasably engaged into the locating groove on either bushing for permitting said lid to be retained in a position perpendicular to said stove body, a through hole transversely piercing through said two top openings with two opposite ends terminating in two expanded countersunk holes through which a screw is inserted and locked with a screw to hold said bushings inside said two top openings, and a bottom extension having two transverse sleeves at different levels alternatively fastened between said second pair of opposite through holes inside said angle frame, and two vertical locating grooves on a front face thereof stopped by two screws threaded into said third pair of opposite screws on said angle frame.

5,329,920
WOOD BURNING BOILER
Dennis Brazier, Rte. 1 - Box 80, Greenbush, Minn. 56726
Continuation of Ser. No. 799,975, Nov. 29, 1991, abandoned.
This application Mar. 5, 1993, Ser. No. 29,934
Int. Cl.[5] F23M *7/00;* **F24H** *1/00*
U.S. Cl. 126—344 **14 Claims**



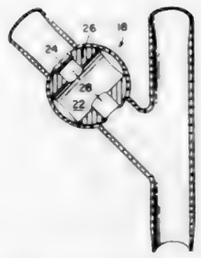
1. Heating apparatus comprising:
a) stove means having a plurality of side, top and bottom walls, wherein said walls enclose a first cavity and wherein at least one of said walls included an access port to the first cavity and at least one of said walls includes an exhaust port to the first cavity, for containing a fire within the first cavity;
b) heat exchange means having a plurality of walls secured to and surrounding said stove means to define a second cavity for containing a thermal transfer medium to contact the walls of said stove means without communicating with said access and exhaust ports;
c) door means for covering said access port and comprising 1) an external metal panel, 2) a first metal panel, wherein portions of said first and external panels subtend an air space between the first and external panels, 3) a second metal panel, 4) an insulator layer mounted between the first and second panels, 5) first fastener means for restraining said first panel to said external panel, 6) second fastener means offset from said first fastener means for restraining said first panel to said second panel, and 7) wherein at least one of said first and second fastener means comprises a pin which projects from one of the external or first panels and loosely extends through an aperture at the other of the first or second panels, such that the other of the first and second panels flexes along said pin with thermal changes in said first cavity, whereby said external, first and second panels are substantially thermally insulated from one another and said first and second panels are able to flex independent of one another without transfering panel flexion to cause warpage of the external panel; and
d) flue means communicating with said exhaust port for exhausting combustion gases.

5,329,921
ENDOTRACHEAL TUBE
Spiro Socaris, 1 Alden Ct., Delmar, N.Y. 12054, and Martha G. Kowalik, 35 Oakwood St., Albany, N.Y. 12208
Filed Mar. 1, 1993, Ser. No. 24,641
Int. Cl.[5] A61M *16/04, 25/00*
U.S. Cl. 128—207.14 **18 Claims**

1. An endotracheal tube adapter for mounting on an end of an endotracheal tube external to a patient comprising:
(a) an elongated rigid plastic first tube having first and second ends, said first end being adapted to provide a substantially air-tight seal when fitted with an endotracheal tube; said second end being adapted to provide a substantially

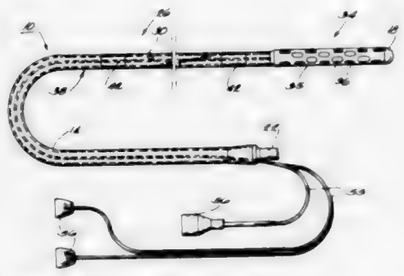
air-tight seal when fitted with a device for ventilating a patient;

(b) a second tube having first and second ends, said first end of said second tube attached to said first tube between said first tube and second ends so as to provide substantially air-tight communication between the bore of said first and said second tubes thereby forming a common interior;



(c) a stopcock positioned in said second tube so as to divide said second tube into two segments, said stopcock controllable between two positions, a closed position wherein fluid communication between said segments of said second tube is prevented and an open position wherein fluid communication between said segments of said second tube is substantially unimpeded, said stopcock having a bore which is between 50% and 110% of the bore of said second tube.

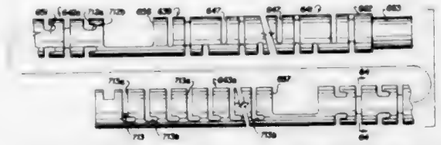
5,329,922
OXIMETRIC ESOPHAGEAL PROBE
John L. Atlee, III, N71 W29436 Tamron La., Hartland, Wis. 53029
Filed Oct. 19, 1992, Ser. No. 963,072
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—632 **11 Claims**



1. An esophageal probe comprising:

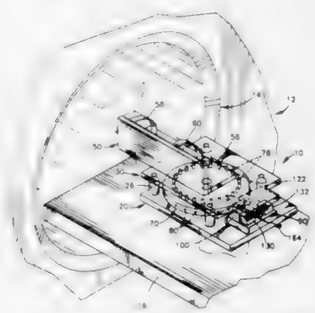
an elongated tubular hollow body member having a distal portion that is insertible into an esophagus of a patient and including a probe having a contact portion, having a length for contact with the esophagus, said contact portion having a distal end for communicating with a gastro-esophageal junction of the patient and a proximal end for communicating with a hypo-pharynx of the patient, one third of the length of said contact portion from said distal end defining a distal third and a remaining two thirds defining a proximal two thirds, and an oximeter sensor located in the proximal two thirds of said contact portion, said oximeter sensor being constructed and arranged to measure a level of oxygen saturation in a patient's blood in tissue located in that portion of the esophagus adjacent the proximal two thirds of said contact portion.

5,329,923
TORQUABLE CATHETER
Ingemar H. Lundquist, 17 Mile Dr. at The Dunes, Pebble Beach, Calif. 93953-1186
Continuation of Ser. No. 945,666, Sep. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 790,648, Nov. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 725,660, Jul. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 657,106, Feb. 15, 1991, abandoned. This application Sep. 24, 1993, Ser. No. 126,681
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—642 **6 Claims**



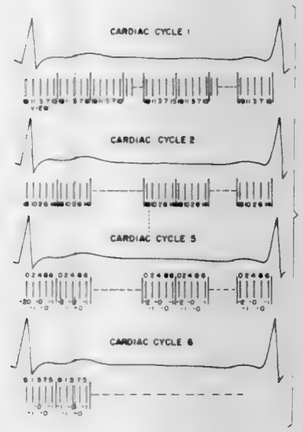
1. A catheter having a high torque capability adapted to be inserted into a through a lumen of a vessel comprising a flexible elongate tubular shaft having proximal and distal extremities, a length, and a longitudinal axis, said shaft being comprised of a torquable tubular member extending at least a portion of the length of the shaft, said torquable tubular member having a cylindrical wall, said wall having formed therein a plurality of spaced apart slots spaced longitudinally of the longitudinal axis, at least certain of said slots having a first portion having a width which extends generally circumferentially of the cylindrical wall and a second portion which extends generally longitudinally of the cylindrical wall beyond the width of the first portion.

5,329,924
SEQUENTIAL IMAGING APPARATUS
Peter M. Bonutti, Effingham, Ill., assignor to Apogee Medical Products, Inc., Effingham, Ill.
Continuation-in-part of Ser. No. 802,358, Dec. 4, 1991. This application Aug. 10, 1992, Ser. No. 927,341
Int. Cl.[5] A61B *6/00, 5/055*
U.S. Cl. 128—653.1 **32 Claims**



1. A method of imaging a knee joint of patient with an imaging unit, said method comprising the steps of gripping a lower portion of a patient's leg at a location below the knee joint with a cuff which is connected with a rotatable member, positioning the knee joint in the imaging unit, bending the knee joint while the knee joint is in the imaging unit, moving the lower portion of the patient's leg along an arcuate path while bending the knee joint, rotating the cuff and the member under the influence of force applied against the cuff by the lower portion of the patient's leg and transmitted from the cuff to the member during bending of the knee joint, retaining the lower portion of the patient's leg against movement in a direction transverse to the arcuate path during bending of the knee joint, said step of retaining the lower portion of the patient's leg against movement in a direction transverse to the arcuate path including restraining the lower portion of the patient's leg against movement in a direction transverse to the arcuate path under the influence of force transmitted from the member through the cuff to the lower portion of the patient's leg, and imaging the knee joint when the lower portion of the patient's leg is at each of a plurality of positions along the arcuate path.

5,329,925
REDUCED SCAN TIME CARDIAC GATED MAGNETIC RESONANCE CINE AND FLOW IMAGING
Moriel S. NessAiver, Cleveland Heights, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio
Continuation-in-part of Ser. No. 859,153, Mar. 27, 1992, which is a continuation-in-part of Ser. No. 791,855, Nov. 14, 1991, Pat. No. 5,273,040. This application Apr. 28, 1992, Ser. No. 874,807
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **20 Claims**



1. A cine magnetic resonance imaging method comprising:

(a) monitoring cardiac cycles of a subject in a magnetic resonance imaging region;

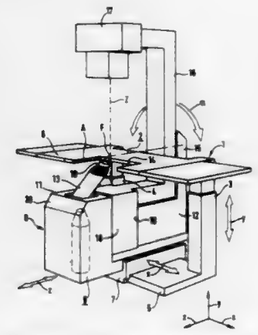
(b) in coordination with each monitored cardiac cycle, generating a series of groups of consecutive echo sequences and receiving a corresponding plurality of echo signals, each echo signal corresponding to one view of k-space, a positive portion of k-space being segmented into n segments, a negative portion of k-space being segmented into a corresponding n segments, all of the views of each group being from one of the positive k-space portion and the negative k-space portion;

(c) repeating step (b) with each of the groups at substantially the same time in each of a plurality of the monitored cardiac cycles;

(d) sorting the echo signals by group such that each group corresponds to a different time interval of each of the subject's cardiac cycles;

(e) reconstructing a frame image representation from the echo signals of each group.

5,329,926
THERAPY STATION FOR TREATMENT WITH FOCUSED ACOUSTIC WAVES HAVING AN X-RAY LOCATING SYSTEM PIVOTABLE RELATIVE TO AN ACOUSTIC WAVE SOURCE
Klaus Herrmann, Nuremberg; Guenther Krauss, Erlangen, and Peter Noegel, Effeltrich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Aug. 2, 1993, Ser. No. 100,371
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1992, 4232683
Int. Cl.[5] A61B *6/00, 17/22*
U.S. Cl. 128—653.1 **9 Claims**



1. A therapy station for treating a subject with focused acoustic waves comprising:

a source of focused acoustic waves, said focused acoustic waves converging at

a focus;

a support table adapted to accommodate a subject to be treated;

source carrier means, to which said source of focused acoustic waves is mounted,

for adjusting the position of said source of focused acoustic waves in a plane relative to said support table;

x-ray locating means for identifying the position of a treatment site in said subject, and having a central ray; and

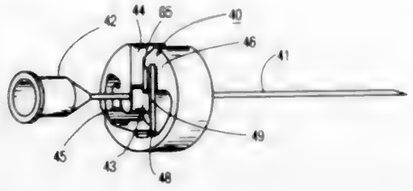
x-ray carrier means, to which said x-ray locating means is mounted and which is pivotably attached to said source carrier means, for permitting rotation of said x-ray locating means relative to said source of focused acoustic waves while maintaining said central ray proceeding through said focus.

5,329,927
APPARATUS AND METHOD FOR LOCATING AN INTERVENTIONAL MEDICAL DEVICE WITH A ULTRASOUND COLOR IMAGING SYSTEM
Bayard Gardineer, Skillman, and David Vilkomerson, Princeton, both of N.J., assignors to Echo Cath, Inc., Monmouth Junction, N.J.
Filed Feb. 25, 1993, Ser. No. 22,112
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—660.03 **23 Claims**

1. An ultrasonic imaging system for locating an interventional medical device within an interior region of a body under investigation, comprising:

a vibrator means coupled to said interventional medical device and operative to provide a vibratory mechanical oscillation along at least one axis at a frequency, to transmit said oscillation to said coupled medical device in the form of flexural waves, to cause said medical device to provide motion according to said flexual waves, and

an ultrasonic imaging system including signal interrogation means for detecting said motion, and means for generating



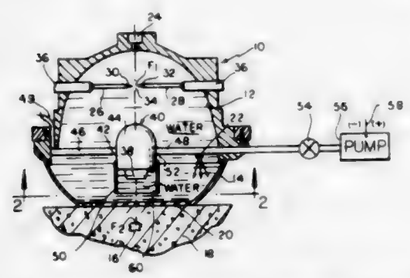
an image of said interior region of said body in which said motion and therefore said device is locatively represented.

5,329,928

REFLECTED SHOCKWAVE SHIELDING DEVICE

A. Glen Brisson, Kildeer; Exequiel D. Cruz, Arlington Heights, and Dianne L. Vickers, Cary, all of Ill., assignors to Bantum Tripter Joint Venture, Columbus, Ohio

Filed Aug. 16, 1993, Ser. No. 106,855
Int. Cl.[5] A61B *17/22*
U.S. Cl. 128—660.03 7 Claims



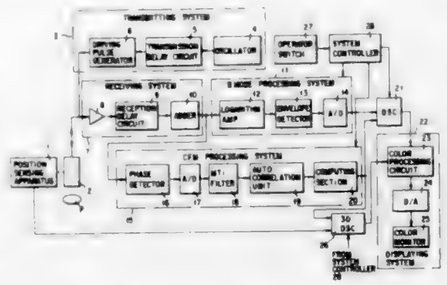
1. In an extracorporeal lithotripter comprising a truncated ellipsoidal reflector open at one end, said one end being downwardly directed substantially toward the surface of the earth, a rubber diaphragm closing said open end; said reflector having a first focus point within said reflector and a second focus point outside said reflector and beyond said diaphragm, said reflector having an axis of rotation which passes through both of said focus points, said reflector and said diaphragm comprising a volume filled with water, a pair of electrodes in said reflector and having ends in spaced relation providing a spark gap at said first focus point, an electrical spark between said electrodes across said gap producing a shockwave focused by said reflector on said second focus point, an ultrasound transducer within said reflector and aimed toward said second focus point, and a housing for said transducer, said housing being supported from said reflector adjacent said reflector open end and having a rounded upper end disposed toward said spark gap to deflect shockwaves, said housing having an open end and a bore opening at said housing end toward said second focus point, said transducer being mounted in said bore and aimed downwardly thereof, the improvement comprising means extending downwardly from said housing toward said diaphragm and defining a downwardly opening space, means opening into said space and selectively operable to effect filling of said space with water or a gas, water in said space conducting soundwaves to and from said transducer, and gas being nonconductive of shockwaves to guard said transducer against reflected shockwaves from below.

5,329,929

ULTRASONIC DIAGNOSTIC APPARATUS

Takeshi Sato, Tochigi, and Akinami Ohhashi, Saitama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 17, 1992, Ser. No. 929,921
Claims priority, application Japan, Aug. 26, 1991, 3-213625; Jul. 22, 1992, 4-195162
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—660.65 19 Claims



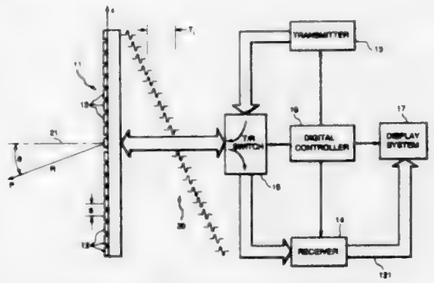
1. An ultrasonic diagnostic apparatus comprising:
means for collecting echo signals by scanning a three-dimensional area of a subject with an ultrasonic beam;
means for detecting Doppler signals of a bloodstream based on said echo signals collected by said collecting means;
means for making a three-dimensional bloodstream distribution in said three-dimensional area based on said Doppler signals;
means for producing a plurality of projection images with different projecting directions based on said three-dimensional bloodstream distribution; and
means for displaying successively said plurality of projection images at specified intervals of time in specified sequence.

5,329,930

PHASED ARRAY SECTOR SCANNER WITH MULTIPLEXED ACOUSTIC TRANSDUCER ELEMENTS

Lewis J. Thomas, III, Schenectady, N.Y., and Michael J. Harsh, Waukesha, Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 12, 1993, Ser. No. 135,521
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.01 13 Claims



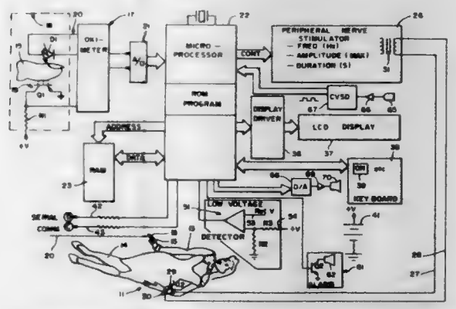
1. A vibratory energy imaging system comprising:
a transducer array having a plurality n of separate transducer elements disposed at successive locations in a plane that extends in opposite directions from a central axis;
a multi-channel transmitter for energizing a set of transducer elements in the transducer array;
a multi-channel receiver for receiving a number N of echo signals produced by N transducer elements in the transducer array, said receiver having N channels;
switching means for selectively coupling at least a pair of transducer array elements, respectively, to individual channels of the transmitter, respectively, and to individual channels of the receiver, respectively; and
a multi-channel multiplexer having a common port and a plurality of other ports, said common port being selectively coupled to any one of said plurality of other multiplexer ports in said multiplexer and being coupled to said switching means, said other multiplexer ports being coupled, respectively, to separate groups of N transducer elements, respectively,
said multiplexer being operable during a plurality of firings of the transmitter to produce vibratory energy signals from successive sets of N transducer elements and to receive echo signals from said successive sets of N transducer elements for application to the N channels of the receiver, the receiver being operable to coherently sum the successive sets of N echo signals to form a single echo beam.

5,329,931

APPARATUS AND METHOD FOR AUTOMATIC STIMULATION OF MAMMALS IN RESPONSE TO BLOOD GAS ANALYSIS

William L. Clauson, 47 Manzanita Rd., Atherton, Calif. 94702, and Mir A. Imran, Palo Alto, both of Calif., assignors to William L. Clauson, Atherton, Calif.

Continuation-in-part of Ser. No. 313,592, Feb. 21, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 799,557
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—716 18 Claims



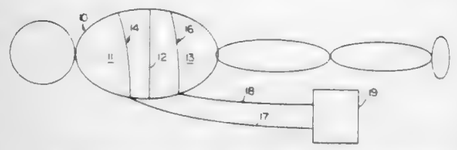
1. Apparatus for automatic stimulation of a patient, comprising means adapted to be coupled to the patient for measuring the saturation level of a predetermined gas in the blood of the patient and supplying an electrical signal representative of the measured saturation level, computer means for receiving said electrical signal and automatically generating a control signal when the measured saturation level falls below a predetermined value, patient stimulation means adapted to be coupled to the patient, a battery, switch means connected to the battery, isolation means coupling the computer means to the patient stimulation means and to the switch means whereby when a control signal is supplied by the computer means through the isolation means to the patient stimulation means a stimulant is supplied by the patient stimulation means to the patient and power supply means connected to the isolation means whereby the computer controls the switch means to energize the patient stimulation means only after it has been determined by the computer means that patient stimulation is necessary to thereby conserve battery power.

5,329,932

METHODS OF AND APPARATUS FOR MONITORING RESPIRATION AND CONDUCTIVE COMPOSITION USED THEREWITH

John E. Yount, Beaverton, Oreg., assignor to Oregon Health Sciences University, Portland, Oreg.

Continuation-in-part of Ser. No. 433,705, Nov. 9, 1989, Pat. No. 5,099,855. This application Oct. 31, 1991, Ser. No. 786,214
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—721 22 Claims



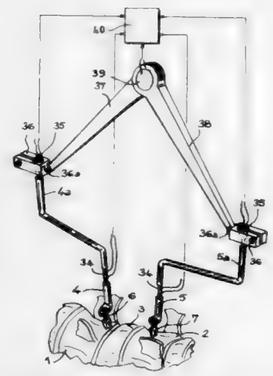
1. A stretchable tube comprising a length, wall thickness and inside diameter whereby the tube is useful as a respiratory gauge having minimal response to proximate high frequency electromagnetic fields and containing a composition of 35–90% by volume glycerol, 65–10% by volume water and an amount of a salt in a concentration of from about 20 g per 100 ml to saturated which is effective as an electrolyte, wherein said salt is one of sodium chloride, potassium chloride, potassium acetate, potassium bromide, calcium lactate and a mixture thereof.

5,329,933

DEVICE FOR MEASURING THE ANGLE OF MOVEMENT OF TWO VERTEBRAE

Henry Graf, 8, rue Duquesne, Lyons, France 69006

Division of Ser. No. 950,632, Sep. 14, 1992, Pat. No. 5,291,901. This application May 5, 1993, Ser. No. 56,872
Claims priority, application France, Sep. 24, 1991, 91 11964
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—781 1 Claim



1. An apparatus for measuring an angle of movement of one vertebra of a patient with respect to another spaced vertebra relative to at least two of three orthogonal planes which extend through a longitudinal axis along which the vertebrae are aligned for purposes of making therapeutical decisions with respect to spinal surgical procedures, wherein the vertebrae include outwardly extending spinous processes and wherein the three orthogonal planes include a first plane extending along the longitudinal axis and in general alignment with the spinous processes, a second plane extending perpendicularly with respect to the longitudinal axis, and a third plane orthogo-

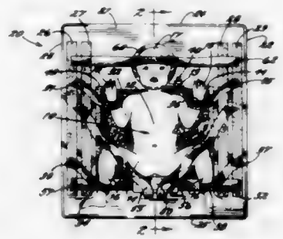
nal to both the first and second planes and extending along the longitudinal axis, the apparatus comprising: an electrical converter and display means for indicating a degree of flexion-extensional movement in said first plane of the spaced vertebrae with respect to one another and indicating a degree of torsional movement of the spaced vertebrae with respect to one another in planes parallel to said second plane, first and second rods each having lower ends for engaging respective vertebrae in space relationship with respect to one another and each having upper ends, each of said rods including a strain gauge spaced intermediate said upper and lower ends, means for electrically connecting said strain gauge to said electrical converter and display means, a pair of first rotation monitoring gauges mounted in spaced relationship to each other on said upper ends of said rods a pair of spaced block members, a pair of additional rods each having first ends mounted in spaced relationship to one of said block members and each supporting said block members in surrounding relationship to one of said first rotation monitoring gauges, each of said additional rods having second ends which are pivotable about a joint with respect to one another, a second rotation monitoring gauge mounted to measure the relative rotation between said second ends of said additional rods, and means for electrically connecting each of said first and said second rotation monitoring gauges to said electrical convertor and display means whereby the degree of flexion-extensional movement of the spaced vertebrae relative to one another and the degree of torsional movement of the spaced vertebrae with respect to one another may be displayed when forces are applied on said first and second rods.

5,329,934

MEDICAL PATIENT RESTRAINT DEVICE

Karolen C. Bowman, P.O. Box 2084, North Wilkesboro, N.C. 28659

Filed Dec. 9, 1992, Ser. No. 987,663
Int. Cl.[5] A61G *15/00, 7/00;* **A61F** *5/37,* **A47C** *27/14*
U.S. Cl. 128—845 **14 Claims**



7. A medical patient restraint device for providing additional patient comfort while restraining the patient during a surgical procedure such as the circumcision of an infant, said restraint device comprising:

a generally rectangular shaped body support member sized to receive and support a patient in a reclined position thereon,

a pair of side straps each having first fastening means positioned on an upper surface thereon for cooperating with second fastening means to thereby fasten a portion of the patient to each of said side straps, said pair of side straps each being secured to said body support member and being laterally spaced apart a distance sufficient to receive the patient therebetween, each one of said pair of side straps being adjacent a respective side of the patient and extending from the head of the patient beyond the lower torso thereof;

a plurality of individual straps detachably connected to said pair of side straps and having said second fastening means positioned on a lower surface thereof for detachably securing each of the patient's arms and legs to said first fastening means positioned on the upper surface of said side straps and without having said plurality of individual straps extending across the torso of the patient;

a head support member detachably connected to a medial upper portion of said body support member for supporting the head of the patient when lying on said body support member between said pair of straps;

a lower torso support member detachably connected to a medial lower portion of said body support member for abuttingly engaging the lower torso of the patient and preventing the patient from sliding off said body support member; and

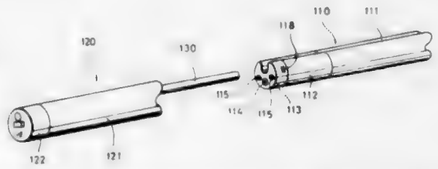
a pair of leg straps each having said second fastening means positioned on a lower surface thereof and each of said pair of leg straps having an end fixedly secured to a medial lower end portion of said body support member and alongside the lower extent of said lower torso support member, said pair of leg straps adapted to diagonally extend from said secured end thereof, over said lower torso support member, across an upper leg portion of the patient without extending across the torso of the patient, and be detachably connected to said pair of side straps, said second fastening means of said pair of leg straps cooperating with said first fastening means of said pair of side straps so that said pair of leg straps collectively form a generally V-shaped configuration over the patient when connected to said pair of side straps and thereby restrain the patient in a spread eagle position.

5,329,935

SHEATHED ENDOSCOPE AND SHEATH THEREFOR

Nagashige Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 630,896, Dec. 20, 1990, Pat. No. 5,257,617. This application May 10, 1993, Ser. No. 58,758
Claims priority, application Japan, Dec. 25, 1989, 1-335534; Dec. 25, 1989, 1-335535
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **5 Claims**



1. A sheath for a sheathed endoscope that is removably fitted over a flexible elongate insert part of said endoscope, comprising:

a flexible tubular member that is removably fitted over said insert part;

a distal end cover that is connected to the distal end of said tubular member so as to be removably fitted over the distal end of said insert part, said distal end cover being made of a shape-memory synthetic resin material that is restored to a previously memorized shape by heating it to a shape restoration temperature; and

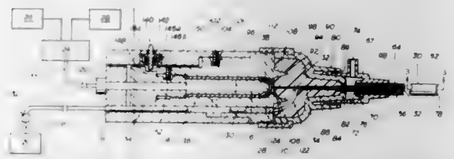
lock means that is provided on said distal end cover, said lock means engaging the distal end of said insert part at ordinary temperatures and disengaging therefrom when said distal end cover is restored to the memorized shape.

5,329,936

PORTABLE ARTHROSCOPE WITH PERISCOPE OPTICS

Michael Lafferty, Leucadia; Daniel Kline, Carlsbad, and Charles S. Slemon, Encinitas, all of Calif., assignors to Citation Medical Corporation, Reno, Nev.

Continuation of Ser. No. 970,969, Nov. 3, 1992, which is a continuation of Ser. No. 814,418, Dec. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 650,066, Feb. 4, 1991, Pat. No. 5,188,093. This application Jan. 21, 1993, Ser. No. 6,510
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—6 **21 Claims**



1. An arthroscope for use with a video camera which comprises:

a cap having a base plate engageable with said camera;

a needle including a hollow tube, said needle having a proximal end mounted on said cap, and said needle having a distal end distanced from said cap;

an illuminating fiber extending through said tube of said needle, said illuminating fiber having a proximal end and a distal end, said proximal end of said illuminating fiber extending from said tube and through said cap for light communication through said base plate;

an image guide extending through said tube of said needle, said image guide having a proximal end and a distal end, said proximal end of said image guide extending from said tube and through said cap for light communication through said base plate;

a lens attached to said distal end of said image guide; and

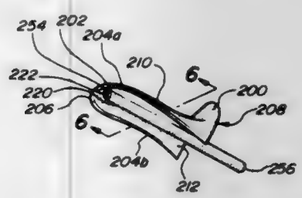
means for holding said lens, said distal end of said image guide and said distal end of said illuminating fiber at said distal end of said needle.

5,329,937

SPECULUM PROTECTOR WITH SMOKE TUBE

Stephen Krstevich, Northville; Fredrick Kamienny, Bloomfield Hills; Frederick Erlich, Farmington Hills, and Steve Watkins, St. Clair Shores, all of Mich., assignors to Nova Healthcare Industries, Inc., Madison Heights, Mich.

Filed Sep. 10, 1992, Ser. No. 943,319
Int. Cl.[5] A61B *1/32*
U.S. Cl. 128—17 **6 Claims**



1. A removable blade cover system to be used with a speculum of the type including a lower blade and an upper blade, each blade having a concave blade surface and convex blade surface, said concave blade surfaces being in opposing relationship facing each other that can be separated or opened to provide a concave walled viewing channel therebetween for visual examination and treatment of a patient, the blade cover system characterized by:

a blade cover having opposite site edges and a flexible one-piece integrally formed elastic hollow sleeve with an open end and an opposite closed end constructed to be placed in covering protective relation over a speculum blade with a concave exterior surface and convex exterior surface closely conforming to substantially the entire length and sides of the respective blade surfaces;

a smoke tube disposed along the concave exterior surface of the blade cover with one end exposed to an exterior of said blade cover to retrieve smoke from about said blade cover and another opposite end operably connectable to a vacuum pump; and

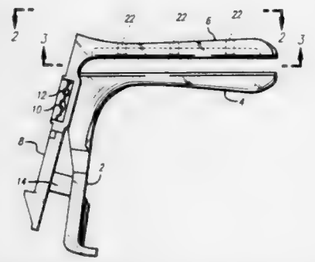
said smoke tube being integrally formed with and unitary with the concave surface of the blade cover and formed from the same material as the blade cover.

5,329,938

METHOD FOR ENDOSCOPIC EXAMINATION OF BODY CAVITY USING CHEMILUMINE-SCENT LIGHT SOURCE

Neal M. Lonky, Yorba Linda, Calif., assignor to The Trylon Corporation, Torrance, Calif.

Division of Ser. No. 660,674, Feb. 25, 1991, Pat. No. 5,179,938, which is a continuation-in-part of Ser. No. 526,770, May 18, 1990, abandoned, which is a continuation of Ser. No. 20,188, Feb. 26, 1987, abandoned, which is a continuation of Ser. No. 694,092, Jan. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 581,363, Feb. 17, 1983, abandoned. This application Dec. 16, 1992, Ser. No. 991,444
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—18 **15 Claims**



1. An endoscopic instrument for the detection of various internal medical disorders in a body cavity which are visually detectable endoscopically, comprising a housing having a handle means, a chemiluminescent light source retaining means and a chemiluminescent light source retained in said retaining means, said light source comprising said apparatus comprising a liquid impervious light transmitting body containing therein a chemiluminescent light source for creating a chemiluminescent light in the spectrum comprising at least blue and green wavelengths of light, said light transmitting body being sized to be disposed within the cavity to be examined, said chemiluminescent light source creating a diffused light which illuminates said body cavity without producing any substantial shadows and wherein said spectrum allows enhanced visualization of said various internal disorders.

5,329,939

HUMIDIFIER WITH LIQUID LEVEL CONTROL

Blair E. Howe, Rancho Santa Margarita, Calif., assignor to Cimco, Inc., Costa Mesa, Calif.

Filed Dec. 11, 1992, Ser. No. 989,341
Int. Cl.[5] A61M *16/00;* **H05B** *3/20*
U.S. Cl. 128—203.27 **14 Claims**

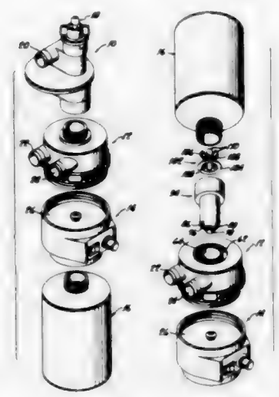
1. A humidifier for heating and vaporizing water for mixing with a breathing mixture comprising:

a heater having:

a heater housing

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a heater platen extending across the heater housing, and
a heating element mounted in the housing adjacent the heater platen,
a breathing mixture flow housing comprising:
means for defining a flow chamber having input and output ports,
means for connecting the chamber to the heater housing adjacent the heater platen,
a liquid container, and
a nipple receiving bore extending from the interior of said chamber to the exterior of said mixture flow housing, and
a flow control nipple having:
an elongated hollow cylindrical body having a smooth exterior surface slidingly and sealingly received in said



bore, a rounded closed bottom end having an inwardly and downwardly tapered side wall, and an upper end,
a fitting mounted to said upper end and configured and arranged to rigidly connect said body to said liquid container, whereby said container and nipple can be inverted and inserted as a unit into said bore with said nipple in said flow housing and said container mounted to said flow housing through said nipple,
a feed hole formed in said bottom end tapered wall, and
a vent hole formed in said bottom end tapered wall and spaced from said feed hole, said vent hole having an uppermost hole boundary that is positioned further from said bottom end than said feed hole, said nipple having an interior defining a single common passage for air and water extending from said feed and vent holes to said fitting.

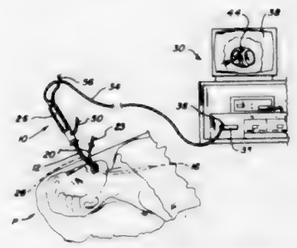
5,329,940

ENDOTRACHEAL TUBE INTUBATION ASSIST DEVICE

Edwin L. Adair, 2800 S. University Blvd., Denver, Colo. 80210

Continuation of Ser. No. 479,833, Feb. 14, 1990, abandoned. This application Jan. 16, 1992, Ser. No. 821,788
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.26 **3 Claims**

1. An endotracheal tube and an intubation assist device for placing an endotracheal tube of predetermined length within a patient's trachea, said endotracheal tube having proximal and distal ends, said assist device including;
a substantially cylindrical handle having a central longitudinal axis, a proximate end and a distal end and having a centrally located single passageway extending longitudinally therethrough from one end to the other end along said axis;
a tubular insertion section, malleable along its entire length, having an open distal end and a proximate end received in said centrally located single passageway and extending through said cylindrical handle so that said centrally located single passageway and distal end of said tubular insertion section are in axial alignment, said distal end of said insertion section being positionable within the distal end of the endotracheal tube so that the entire length of said tubular insertion section is positionable within the endotracheal tube, and shapeable along its entire length to a substantially fixed configuration, prior to attachment of the endotracheal tube, for insertion into a patient without further manipulation;
attachment means at said distal end of said substantially cylindrical handle for removably attaching the endotracheal tube to said substantially cylindrical handle in airtight relationship, with said insertion section removably positionable through the endotracheal tube but within the distal end thereof so that the endotracheal tube is formable to said predetermined substantially fixed configuration of said malleable insertion section and is in fixed relation thereto during insertion;



oxygen supply means extending through said substantially cylindrical handle for providing oxygen to the endotracheal tube during the intubation process; and
an endoscope assembly having a viewing end located at the open distal end of said insertion section, locatable within the distal end of the endotracheal tube when it is connected to said attachment means, and including an optic lens, a light carrying bundle of optical fibers, processing means including a light source and a video camera for processing an image from the optic lens, an external viewing monitor for displaying a visual image from the viewing end, and an optic cable assembly placed through said insertion section to connect the light carrying bundle of optic fibers, optic lens and processing means; so that said insertion section and the endotracheal tube may be placed into the patient's trachea and said substantially cylindrical handle may be manipulated to insert the endotracheal tube within the trachea using a visual image within said distal end of said endotracheal tube as a guide.

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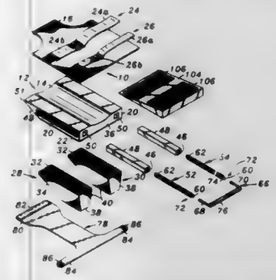
ORTHOTIC HAND AND FOREARM SUPPORT DEVICE

Robert C. Bodine, Jr., 30 Dianthus, Rancho Santa Margarita, Calif. 92688

Continuation-in-part of Ser. No. 452,627, Dec. 14, 1989, Pat. No. 5,060,638. This application Oct. 18, 1991, Ser. No. 780,856
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] A61F *5/10*
U.S. Cl. 128—845 **38 Claims**

1. A hand and forearm orthotic device comprising:
a block member having a front end, a rear end, a generally flat upper surface, and a generally flat underside;
at least one support member releasably attached to said underside of said block member, said support member having a front end, a rear end and a bottom surface;
a retainer strap operative to hold a human forearm in a first position on the upper surface of said block member; and
a hand support member attached to and extending forward

of the front end of said block member to engage the hand when said forearm is in said first position;
said block member and said at least one support member being shaped such that when interconnected, the upper surface to bottom surface dimension at the front end of said block member and said support member is greater



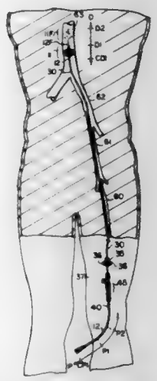
than the upper surface to bottom surface dimension at the rear end of said block member and said support member such that when the bottom surface of said support member is positioned on a horizontally planar underlying surface, the forearm in said first position on the upper surface of the block member will be inclined such that the wrist is higher than the elbow.

5,329,942

METHOD FOR FILTERING BLOOD IN A BLOOD VESSEL OF A PATIENT

Rolf Gunther, Aachen, Fed. Rep. of Germany, and Brian L. Bates, Bloomington, Ind., assignors to Cook, Incorporated, Bloomington, Ind.

Continuation-in-part of Ser. No. 566,768, Aug. 14, 1990, abandoned. This application Mar. 20, 1992, Ser. No. 856,114
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 **13 Claims**



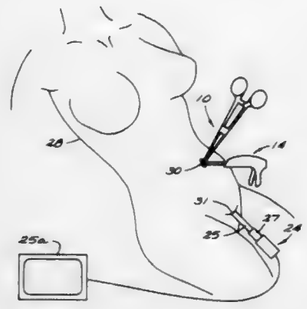
13. A method of filter blood in a blood vessel comprising:
providing a filter which is connected to a positioning means;
positioning the filter in the blood vessel at a desired location;
fixing the filter in position in the blood vessel by fixing the positioning means relative to the skin of the patient;
filtering an amount of blood within the blood vessel with the filter;
releasing the positioning means with respect to the skin of the patient before the filter has become endothelialized to the blood vessel;
adjusting the position of the filter in the blood vessel by changing the position means relative to the skin of the patient; and
refixing the filter in the new position in the blood vessel by fixing the positioning means relative to the skin of the patient.

5,329,943

ENDOSCOPIC ASSISTED ABDOMINOPLASTY

Gerald W. Johnson, Houston, Tex., assignor to Jeffrey W. Johnson, Monroe, La. and Lana L. Davis, Spring, Tex.

Filed Jul. 12, 1993, Ser. No. 89,774
Int. Cl.[5] B31B *1/00*
U.S. Cl. 128—898 **27 Claims**



1. A surgical abdominoplasty procedure eschewing the use of large abdominal incisions and sutures comprising the steps of
making a small incision through the umbilicus,
inserting a surgical cutting and cauterizing instrument through said incision and undermining the skin over a sufficient area of the fascia and muscle to be repaired to permit smooth contraction of the skin over the repaired fascia and muscle,
inserting a surgical clamping instrument through said incision, underneath the skin and above the fascia, to engage the fascia at predetermined spaced points and operating the clamping instrument to plicate the fascia,
inserting a fascial stapler through the incision and stapling the plicated fascia with surgical staples,
repeating the procedure at a predetermined spacing along the fascia being repaired to complete the fascial and muscular repair, and
suturing or closing the umbilical incision.

5,329,944

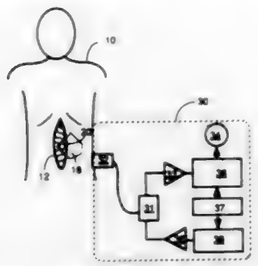
SURGICAL IMPLEMENT DETECTOR UTILIZING AN ACOUSTIC MARKER

Carl E. Fabian, 577 NE. 96th St., Miami Shores, Fla. 33138, and Philip M. Anderson, 37 Winding Way, Madison, N.J. 07940

Continuation-in-part of Ser. No. 857,221, Mar. 25, 1992, Pat. No. 5,190,059, which is a continuation of Ser. No. 698,199, May 6, 1991, Pat. No. 5,107,862, which is a continuation of Ser. No. 437,184, Nov. 16, 1989, abandoned. This application Mar. 2, 1993, Ser. No. 25,182
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—899 **16 Claims**

1. An apparatus for detecting a surgical implement within a wound in human or animal tissue, comprising:
(a) a marker secured to a surgical implement adapted to be positioned within said wound, said marker having a battery and being powered thereby;
(b) acoustic signal generating means for generating an acoustic signal;
(c) signal generating means for generating a signal having a

predetermined frequency band and being operative to cause said acoustic generating means to generate said acoustic signal, providing said marker with signal identity,



said signal generating means receiving power from said battery; and

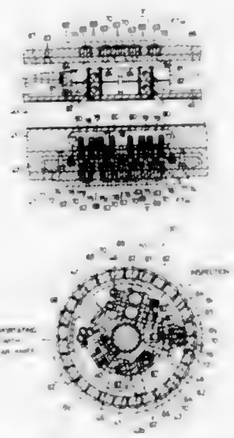
(d) detection means having a transducer in contact with human or animal tissue, for detecting said acoustic signal.

5,329,945

APPARATUS FOR DISCHARGING DEFECTIVE FILTER CIGARETTES DURING THE MANUFACTURE OF FILTER CIGARETTES

Takayuki Irikura, and Minoru Suzuki, both of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 110,942
Claims priority, application Japan, Aug. 24, 1992, 4-224146
Int. Cl.[5] A24C *5/34, 5/345*
U.S. Cl. 131—94 **4 Claims**



1. Apparatus for transporting and discharging filter cigarette elements for use in a filter cigarette manufacturing system, said apparatus comprising a drum train having a plurality of rotary transportation drums disposed continuous with one another so as to transfer cigarette elements successively between adjacent said drums, one of said drums comprising a rotary discharge drum having an axis and a plurality of transportation grooves, arranged at regular intervals in the circumferential direction on the outer peripheral surface thereof and adapted to receive and transport the cigarette elements as said discharge drum rotates, each said transportation groove having at least one jet hole therein, said rotary discharge drum further comprising supply means for introducing compressed air into said at least one jet hole of each of said transportation grooves for discharging a cigarette element therein said transportation groove passes through a discharge zone during rotation of said rotary discharge drum, said supply means including a plurality of independent blow pressure lines, each of said blow pressure lines including an independent valve means for selectively connecting and disconnecting the blow pressure line to and from a compressed air supply, each of said jet holes being located in its transportation groove so as to be in communication with one of said blow pressure lines when its transportation groove passes through said discharge zone, wherein said jet holes and said blow pressure lines are arranged such that none of said transportation grooves has a jet hole therein capable of communicating with a blow pressure line capable of communicating with any jet hole in an adjacent transportation groove.

5,329,946

HAIR LINE SHAPING GUIDE

Tesfa Guma, 9607 Wadsworth Dr., Bethesda, Md.

Filed Oct. 14, 1993, Ser. No. 135,968
Int. Cl.[5] A45D *24/34*
U.S. Cl. 132—213.1 **6 Claims**



1. A hair line shaping guide comprising:

a main templet having a longitudinal axis extending between a first end and a second end and a length therebetween, said main templet having a smooth straight edge extending along a first edge between said first and second ends and a curved surface extending along a second edge from said first end to approximately a midway point between said first and second ends, said curved surface terminating at a terminal point spaced away from said longitudinal axis and forming a horizontal curving arm generally perpendicular to said longitudinal axis, said curved surface defining a J-shaped curve, said horizontal curving arm having a straight edge opposite said curved surface, said straight edge extending from said terminal point back to said second edge and forming a right angle therewith, a portion of said second edge from said midway point to said second end being straight and smooth and a plurality of holes located along the length of said main templet, whereby said J-shaped curve and said right angle are used to shape and style hair of a user while cutting or shaving.

5,329,947

COSMETIC BAG FOR HANGING ON THE SUN VISOR OF AN AUTOMOBILE

Arie Shikler, Sherman Oaks, Calif., assignor to Auto-Shade, Inc., Moorpark, Calif.

Filed Nov. 5, 1992, Ser. No. 971,938
Int. Cl.[5] A45D *33/00;* **B60R** *7/00*
U.S. Cl. 132—304 **3 Claims**

1. A cosmetic case that can be attached to the visor of an automobile, comprising:

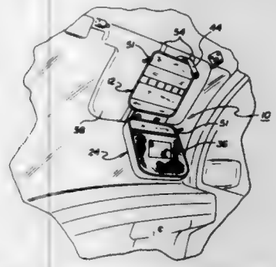
a first portion that has a first pocket and an outer wall constructed from an insulative material, said first pocket including strips of hook and loop material adapted to close said first pocket;

a second portion that has an outer wall constructed from an insulative material, said second portion being coupled to said first portion by a hinge which allows said first and second portions to be folded into a folded position such that said first portion is adjacent to said second portion,

said second pocket further having a second pocket which includes a porous wall and a zipper that can enclose said second pocket;

a mirror that has a pad of loop material that mates with a pad of hook material located on said porous wall;

a hanging strap attached to said first portion, said hanging



strap having hook material that mates with loop material located on said outer wall of said second portion so that said first and second portions can be secured in said folded position; and,

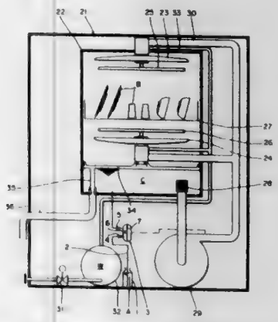
a pair of outer straps attached to said outer wall of said first portion, said outer straps being adapted to receive the visor.

5,329,948

METHOD FOR WASHING DISHES WITH STICKING INHIBITOR

Munehiro Nogi; Koichiro Miyazaki, both of Sakai; Seiji Takubo, Osaka; Yoshio Amimoto, Takatsuki, and Ryutaro Ohashi, Tondabayashi, all of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Jul. 26, 1991, Ser. No. 736,497
Claims priority, application Japan, Jul. 27, 1990, 2-199692
Int. Cl.[5] B08B *3/08*
U.S. Cl. 134—25.2 **4 Claims**



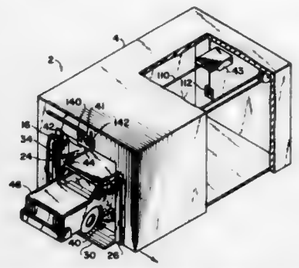
1. A method for washing dishes comprising the steps of washing and rinsing, in which a sticking inhibitor is applied to surfaces of said dishes in at least one step selected from the group consisting of the washing step, a step between the washing step and the rinsing step, the rinsing step or a step after the rinsing step such that food is easily removed from said surfaces, wherein said sticking inhibitor contains a compound comprising a fluoroalkyl group having hydrophilic groups and hydrophobic groups, said compound being adsorbed to the surfaces of the dishes by said hydrophilic groups and being adsorbed to food surfaces by said hydrophobic groups.

5,329,949

HOME WASH SYSTEM WITH RADIO-CONTROLLED INFRARED MOTION SENSOR ACTIVATOR

Lane Moncourtois, 101 New Hackensack Rd., Poughkeepsie, N.Y. 12603, and Stephen Cook, 11 Taconic Dr., Hopewell Junction, N.Y. 12533

Filed Mar. 17, 1992, Ser. No. 852,763
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—57 R **4 Claims**



4. A vehicle washing apparatus adaptable for use with an automatically openable garage door, said apparatus comprising a washing liquid source, said liquid source in controllable flow communication with distribution pipes mounted vertically on each side of the garage door opening and along the base of said opening, spray nozzles mounted on said pipes and in flow communication therewith, said nozzles being oriented to direct a fluid spray towards a vehicle passing said pipes and outwardly from said door opening, and shroud means associated with said pipes to prevent sprayed fluid from entering said garage and protecting said pipes and nozzles from said vehicle and wherein an electronic controller operable by a user controls the operation of said apparatus including means to initiate said operation by a signal to said controller to activate a motor to open said garage door, IR sensing means to sense the approach of said vehicle to said door opening, means to determine the condition that said door is open, said IR motion sensor being activated upon determination that said door is open, said sensing means then activating the flow control means to allow pressure flow of washing liquid from said source to said nozzles, said flow terminating when said IR sensor no longer senses said vehicle motion, and the controller after a predetermined time deactivates said flow control means to terminate flow from said source.

5,329,950

CLEAN-IN-PLACE PROCESS AND EQUIPMENT

Joseph P. Barinas, Hardwick Township, Warren County, N.J., assignor to Sanirab Corporation, Blairstown, N.J.

Filed May 14, 1993, Ser. No. 62,347
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—95.3 **20 Claims**

1. Automatic, self contained cleaning and sanitizing equipment, which comprises:

(a) a first liquid holding tank for a cleaning solution;

(b) a second liquid holding tank for a sanitizing solution;

(c) a cleaning line running from said first liquid holding tank and having an outlet adapted for connection to an item to be cleaned;

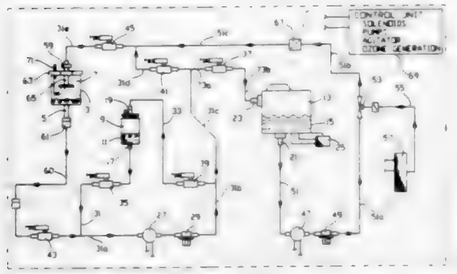
(d) a cleaning return line running back to said first liquid holding tank and having an inlet adapted for connection to said item to be cleaned;

(e) a sanitizing line running from said second liquid holding tank and having an outlet connected to said cleaning line which is adapted for connection to said item to be cleaned;

(f) a sanitizing return line running back to said second liquid holding tank and having an inlet connected to said cleaning return line, which cleaning return line is adapted for connection to said item to be cleaned;

(g) a first pumping means connected to said equipment for circulating liquid from said first holding tank to said item to be cleaned and back to said first liquid holding tank through said cleaning return line;

(h) a second pumping means connected to said equipment for circulating liquid from said second holding tank to said



item to be cleaned and back to said second liquid holding tank through said sanitizing return line;

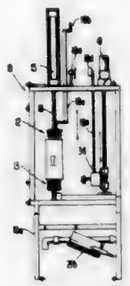
(i) an ozone generating means connected to said second liquid holding tank or said sanitizing line for inclusion of ozone therein and for creation of an ozone-based sanitization liquid therein.

5,329,951

CYLINDER HEAD CLEANING MACHINE

Colin H. Jones, 8 Pimpala Avenue, Seaford, Victoria, 3198, Australia

Filed May 10, 1993, Ser. No. 58,220
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—104.4 **14 Claims**



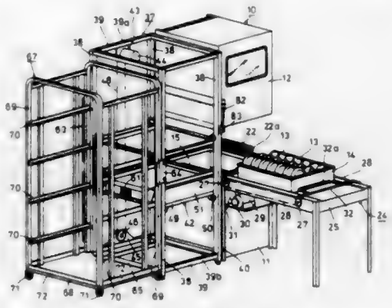
1. A machine for cleaning an internal combustion engine cylinder head by using a high-pressure water jet or jets and which comprises a housing, a pair of horizontally-rotatable, vertically opposed clamping assemblies for removably supporting a cylinder head to be cleaned within the housing, the assemblies comprising a tailstock upper clamping assembly and a headstock lower clamping assembly, each assembly having identical, spring-loaded clamping members comprising a central member surrounded by a plurality of circumferentially-spaced, clamping members arranged in a circular path upon a horizontally-rotatable disc, at least one high-pressure water jet nozzle mounted within the housing and adapted to direct a high-pressure water spray jet over the cylinder head, and high-pressure water pump means for applying high-pressure water to the at least one high-pressure water jet nozzle.

5,329,952

APPARATUS FOR WASHING DISHES

Toshio Kojima, Tokai; Chiyoshi Toya, Nagoya; Takeshi Hugikawa, Toyoake; Hiroshi Torimitsu, Nagoya; Tomio Suyama, Ohara, and Sadayuki Hirate, Toyoake, all of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Aichi, Japan

Filed Jan. 27, 1992, Ser. No. 826,390
Int. Cl.[5] B08B *3/00*
U.S. Cl. 134—133 **2 Claims**



1. A dish washing system comprising:

a rack carry-in unit (**24**) in which a rack (**14**) with dishes (**13**) to be washed can be loaded, having a mechanism (**32**) for carrying the rack (**14**) toward a downstream dishwasher (**10**) along a rack carry-in line;

a dishwasher (**10**) including a washing tank (**11**) and equipped with a casing (**12**) having an open bottom for covering said washing tank (**11**) having an open top, wherein the casing (**12**) is ascended or descended by a drive means (**16**, **17**, **19**, **20**) to allow carrying the rack (**14**) horizontally in and out of the washing tank (**11**);

a rack carry-out mechanism (**21**, **11**) disposed adjacent to the dishwasher (**10**) for feeding the rack (**14**) after completion of dishwashing in a direction intersecting with the rack carry-in line of the rack carrying unit (**24**);

a lifter unit (**37**) disposed adjacent to the dishwasher (**10**) in such a relationship that the rack carry-out line of the lifter unit (**37**) intersects with the rack carry-in line of the rack carry-in unit (**24**), having a lift (**42**) which is ascended or descended in a horizontal posture by a lift mechanism (**44**, **46**, **47**, **48**);

a rack loading device (**62**) disposed adjacent to the lift (**42**) for pulling the rack (**14**) fed out by the rack carry-out mechanism (**21**, **22**) to a predetermined position in the lift (**42**), as well as, forwarding the rack (**14**) from the lift (**42**) located at a predetermined level to a downstream wagon (**67**); and

a wagon (**67**) for receiving the rack (**14**) fed out of the lift (**42**) on a plurality of bracket pairs (**70**) disposed therein at predetermined vertical intervals, wherein said wagon is removably set at the outlet side of the lifter unit (**37**).

5,329,953

UMBRELLA, IN PARTICULAR STAND UMBRELLA

Klaus Becher, Gummersbach, Fed. Rep. of Germany, assignor to Becher Textil-und Stahlbau, Fed. Rep. of Germany

PCT No. PCT/DE92/00155, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO92/15218, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 25, 1992, Ser. No. 946,351
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1991, 4106147
Int. Cl.[5] A45B *19/04*
U.S. Cl. 135—31 **6 Claims**

1. An umbrella comprising a framework, a roof construction and an umbrella roof in which roof rods are articulated on a

pole part; said pole part being displaceable telescopically in relation to a stand tube and carries a crown, a runner displaceable along the stand tube, said crown and runner being movable oppositely in mutual dependence upon each other during opening and closing of the umbrella, at least one auxiliary strut of a predetermined fixed length for forcing opposite movement of the crown and runner in mutual dependence upon each



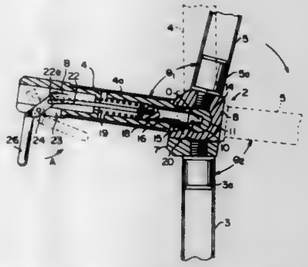
other, one end of said at least one auxiliary strut being articulated on the stand tube and the other end of said at least one auxiliary strut being articulated on at least one of the roof rods, a supporting strut articulately connected to at least one of said roof rods and said runner, and said runner being provided with a locking device by which said runner can be arrested in an upper position whereby the umbrella roof can be tensioned by said supporting strut.

5,329,954

STICK-LIKE MEANS FOR PHYSICALLY HANDICAPPED PERSON

Toshiaki Miyoshi, Ehime, Japan, assignor to Ohta Inc. (A.K.A. Ohta Kabushiki Kaisha), Okayama, Japan

Filed Dec. 23, 1992, Ser. No. 996,100
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—71 **8 Claims**



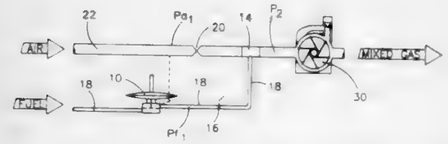
1. Stick-like means for a physically handicapped person including a grip handle to be grasped by the hand, a forearm supporting rod and a main rod whose lower end comes in contact with the ground, wherein said grip handle and said forearm supporting rod are connected to each other substantially at right angles, and an engagement member between said grip handle and said supporting rod is rotatably attached at an upper end of the main rod so as to rotate the grip handle between a location where it extends forward and a location where it extends upward with respect to the main rod extending upright and to rotate the forearm supporting rod between a location where it extends upward and a location where it extends backward with respect to the upright-extending main rod, and wherein an engagement pin provided in said grip handle is inserted in a recessed portion formed in said engagement member between the grip handle and the forearm supporting rod under such a condition that grip handle extends forward, so that the engagement pin locks the grip handle and the forearm supporting rod with respect to the main rod, and said engagement pin is extracted from said recessed portion of said engagement member for releasing the grip handle and the forearm supporting rod from being locked except when the grip handle extends forward.

5,329,955

APPARATUS AND METHOD FOR MIXING GASES

Wayne C. Gessler, Point Pleasant; John J. Van Eerden, Churchville, and Chad F. Gottschlich, Philadelphia, all of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Continuation of Ser. No. 911,454, Jul. 10, 1992. This application Sep. 24, 1993, Ser. No. 126,429
Int. Cl.[5] G05B *11/00*
U.S. Cl. 137—7 **7 Claims**



1. In a method of mixing gases (A) and (B) to maintain a substantially constant ratio of said gases throughout the range from minimum flow rate to maximum flow rate, the steps which comprise:

(a) feeding gas (A) and controlling its pressure drop at a specified value at the expected maximum flow rate demand through a passage into a mixing area,

(b) feeding gas (B), and controlling the ratio of its flow to gas (A), through a different passage into said mixing area, thereby mixing gases (A) and (B), and

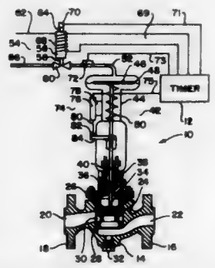
(c) flowing the resulting mixture from said mixing area, wherein the gas (A) and the gas (B) are caused to flow at speeds to cause turbulent flows of gases (A) and (B) upstream of said controlling steps, wherein said speed is controlled to attain a Reynolds number of gases (A) and (B) above at least about 2000.

5,329,956

PNEUMATIC OPERATED VALVE STROKE TIMING

William D. Marriott, Ellington; Winslow K. Duff, and Francis X. McDonald, both of Enfield, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 28, 1993, Ser. No. 68,741
Int. Cl.[5] F16K *37/00*
U.S. Cl. 137—15 **12 Claims**



1. A method for timing the full operational motion of a valve plug in an electrically actuated, pneumatically operated valve without intrusion by an electrically conductive connection to a conductor of the electrical actuation signal, comprising:

generating an electrical actuation signal;

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electrically conducting the actuation signal to the valve to initiate pneumatically induced movement of the valve plug toward a limit of motion;

non-intrusively sensing arrival of the actuation signal at the valve;

sending a start timing signal to a time measuring device when the actuation signal is sensed;

non-intrusively sensing when the valve plug reaches the limit of motion;

sending an end timing signal to the time measuring device upon sensing that the valve plug has reached the limit of motion;

measuring the time elapsed from the start timing signal to the end timing signal with the time measuring device; and

recording the time elapsed.

5,329,957

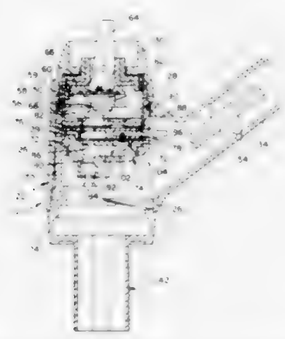
FLUID FLOW SYSTEM VACUUM BREAKER

Mario E. Semchuck, and Reid H. Baker, both of Chatsworth, Calif., assignors to Emhart Inc., Newark, Del.

Continuation of Ser. No. 751,050, Aug. 28, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 996,486

Int. Cl.[5] **E03C** *1/10*; **F16K** *24/02*

U.S. Cl. 137—218 **14 Claims**



1. A fluid flow system having a vacuum breaker, which comprises:

a base having an upper extension;

an inlet flow line for receiving and conducting fluid therethrough;

an outlet flow line for receiving and conducting fluid therefrom;

a valve housing mounted in an upper portion of the upper extension of the base;

a valve mounted within the valve housing and interposed between the inlet flow line and the outlet flow line for controlling selective passage of fluid through the fluid flow system;

a module assembled removably in a fixed position within an intermediate portion of the upper extension of the base below the valve and within the fluid flow system independently of the housing and the valve and formed with a module fluid path;

a manifold assembled removably in a fixed position within the intermediate portion of the upper extension of the base below the module and within the fluid flow system independently of the housing and the valve and formed with a manifold fluid path; the module fluid path and the manifold fluid path being in communication to form a fluid flow path therethrough;

the fluid flow path being positioned for conducting the flow of fluid in a first direction from the valve to the outlet flow line upon the application of a positive pressure sufficient to cause the fluid to flow in the first direction;

the module and the manifold each formed with a non-fluid-flow passageway which are in communication with each other to form a linking passageway between a pressurized environment externally of the fluid flow system and the fluid flow path; and

means, removably mounted in a fixed position within the linking passageway during use of the fluid flow system and responsive to development of a negative pressure sufficient to cause fluid to flow in a direction opposite the first direction from the outlet flow line through the fluid flow path and out of the inlet flow line, for coupling the fluid flow path to a pressurized environment which neutralizes the effect of the negative pressure and precludes the flow of fluid in the direction opposite the first direction.

5,329,958

SINGLE-CONTROL MIXER CARTRIDGE FOR HOT AND COLD WATER

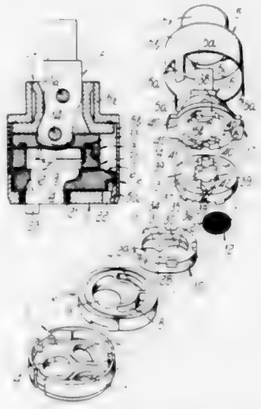
Orlando Bosio, Casaloldo, Italy, assignor to AMFAG S.r.l., Castelgoffredo, Italy

Filed Apr. 28, 1993, Ser. No. 53,274

Claims priority, application Italy, Apr. 30, 1992, MN92A000010

Int. Cl.[5] **F16K** *11/074*

U.S. Cl. 137—269 **23 Claims**



1. Single-control mixer cartridge for hot and cold water, comprising: a substantially flat bottom, provided with openings for the separate inflow of hot and cold water and with an outflow opening for hot, cold or mixed water; a body associated with said bottom; a fixed plate superimposed on said bottom and provided with water flow openings corresponding to those provided in said bottom; and a movable plate provided with a plate cover, so as to internally define a mixing chamber, and movable to assume different positions with respect to the fixed plate; said plate cover being coupled to an actuation lever pivoted on a coupling rotatable within said body; characterized in that the bottom is provided with means for the stable engagement of a supplemental bottom,

wherein said means for the stable engagement of a supplemental bottom comprise a plurality of slots passing through the thickness of the bottom and provided with a tooth in an intermediate region of said thickness.

5,329,959

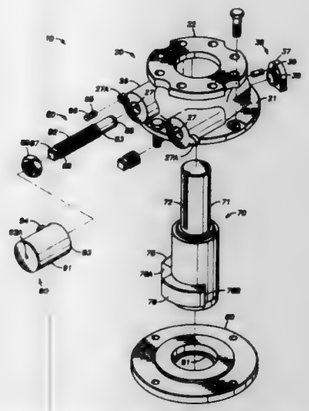
LOCKING DEVICE

Charles D. Owen, Houston; Michael E. Rembert, Cypress, and Albert S. Davis, Richmond, all of Tex., assignors to Bettis Corporation, Waller, Tex.

Filed Oct. 29, 1992, Ser. No. 968,364

Int. Cl.[5] **F16K** *5/08, 35/00, 51/00*

U.S. Cl. 137—315 **1 Claim**



1. A combination valve locking and testing device linking a valve and a valve actuator, said valve being movable between an open and a closed position, said combination device comprising:

housing member releasably secured to both said valve and said actuator, said housing member being bored for oscillatably receiving a hub member; oscillatable hub member having engagement means engageable with both said actuator and with said valve's stem for translating actuator motion into valve motion between said open and closed positions;

lug means depending from said hub member, and movable therewith, said hub means presenting at least one surface engageable with a stop member and at least one surface engageable with at set member;

said housing member including an opposed pair of threaded stop member receiving aperture means through said housing in communicating relationship with said housing bore, each said stop member receiving aperture means being parallel to and substantially equidistant from a plane through the axis of said hub; said housing member further including an opposed pair of test member receiving aperture means through said housing in communicating relationship with said housing bore said pair of test member receiving aperture means being positioned on opposite sides of a plane through the axis of said hub, and in non-parallel relationship with said plane; at least one stop member being adjustably receivable by at least one of said stop member receiving aperture means through said housing, each said stop member including means for adjustably, and substantially orthogonally, engaging one of said lug means' stop member engageable surfaces; and at least one test member being removably receivable by said test member receiving aperture means, each said test member including means for engaging at least one of said lug means' test member engageable surfaces, and being adapted to, when fully received by its associated aperture means, block oscillation in one direction by said hub member after said hub rotates in an incremental amount from either of its associated valve open and valve closed position, and such that the force exerted against said test member by said associated stop surface is lateral whereby the valve's operability may be tested in both its open and closed positions.

5,329,960

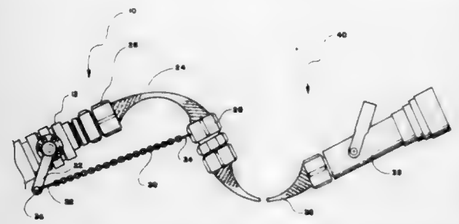
PRESSURE ACTUATED VALVE ASSEMBLY

Thomas J. Bello, 130 Kaulana St., Hilo, Hi. 96720

Filed Dec. 1, 1993, Ser. No. 159,584

Int. Cl.[5] **F16K** *31/14*

U.S. Cl. 137—467 **20 Claims**



1. A valve assembly for use in a high pressure fluid flow system, comprising:

a body defining a first longitudinal axis, said body having a bore, an inlet opening, and an outlet opening, said inlet opening and said outlet opening being in communication with said bore;

a valve being movably disposed within said bore;

a lever fixedly attached to said valve, said lever being operable to displace said valve between a first position and a second position;

a transfer-hose having a first end having first coupling attached thereto, and a second end having a second coupling attached thereto, said first coupling being attachable to said body adjacent said outlet opening; and

a linkage extending from said lever to said second coupling, said linkage being operable in response to a displacement of said second coupling, said second coupling being displaceable to stress said linkage to define a second longitudinal axis, the second longitudinal axis being displaceable between a first position and second position, the first position of said second longitudinal axis being divergent relative to the first longitudinal axis and the second position of the second longitudinal axis being convergent relative to the first longitudinal axis.

5,329,961

REED WITH OPTICAL WEFT DETECTOR

Patrick Bouvyn, Waregem, and Frans Vandenabeele, Zonnebeke-Beselare, both of Belgium, assignors to Barco N.V. and Picanol N.V., Belgium

Filed Jun. 25, 1993, Ser. No. 81,140

Claims priority, application Belgium, Jul. 3, 1992, 09200620

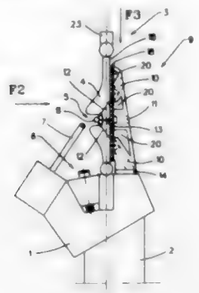
Int. Cl.[5] **D03D** *51/34*

U.S. Cl. 139—370.2 **10 Claims**

1. In a loom having a reed which includes a plurality of blades forming a guide duct for a weft thread, and an optical weft detector comprising means including a light emitter for emitting light and means including a light detector for picking up portions of said light which are reflected by the weft thread, the improvement wherein:

the light emitter and the light detector are mounted outside the blades on a side of the reed which faces away from the

guide duct, and further comprising means including said blades for spatially limiting a detection zone of the light



detector to a zone defined by light rays reflected in the guide duct by the weft thread.

5,329,962

WEFT SUPPLY CHANGING AND THREADING APPARATUS

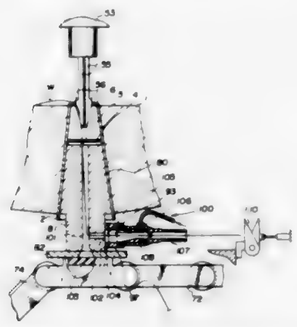
Kimimasa Ohnishi, Hachioji; Shuichi Kojima, Tokyo, and Tokayuki Chikuma, Musashino, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 26, 1992, Ser. No. 935,096

Claims priority, application Japan, Sep. 3, 1991, 3-222892; Sep. 19, 1991, 3-075277[U]; Sep. 20, 1991, 3-240931

Int. Cl.[5] D03D *47/34*, D03J *1/12*

U.S. Cl. 139—450 **19 Claims**



1. A yarn supply system in combination with a loom, comprising:

a yarn supply member including a hollow core member on which a weft yarn is wound, and a middle plate fixedly disposed inside said hollow core member to divide the inside of said hollow core member into first and second chambers along an axial direction of said hollow core member, the weft yarn having a tip end section which is stored in said first chamber, said middle plate being formed with a through-hole through which said first and second chambers are in communication with each other;

a stand member for supporting said yarn supply member at a yarn supply station; and

first means for generating an air stream and for supplying the air stream into said first chamber and through said through-hole of said middle plate, said air stream drawing out the weft yarn tip end section stored inside said hollow core member and transferring the weft yarn tip end section to a downstream side device forming part of the loom.

5,329,963

METHOD OF AND APPARATUS FOR PACKAGING A BEVERAGE IN A CONTAINER

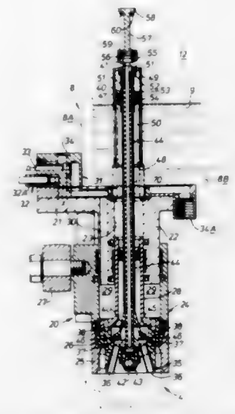
Michael E. Jones, Barsted, and Andrew J. Kenward, London, both of Great Britain, assignors to Guinness Brewing Worldwide Limited, London, Great Britain

Filed Oct. 7, 1992, Ser. No. 957,727

Claims priority, application United Kingdom, Oct. 8, 1991, 9121375

Int. Cl.[5] B67C *3/06*

U.S. Cl. 141—6 **16 Claims**



1. A method of packaging a beverage in a container having a primary chamber and a relatively smaller secondary chamber which communicates with the primary chamber by way of a restricted orifice which comprises the successive steps of:

(a) subjecting the interior of the container and thereby the primary and secondary chambers to a pressure greater than atmospheric pressure by admission thereto of a non-oxidizing gas,

(b) reducing the pressure of gases in the interior of the container to substantially atmospheric pressure to dilute the atmospheric oxygen content within the primary and secondary chambers to a predetermined percentage by volume of the gases within the container and which oxygen content is substantially negligible in its effect, if any, on the beverage which is to be sealed in the container,

(c) charging the interior of the container with said beverage and

(d) sealing the container to provide a beverage package; and which further comprises throughout said steps maintaining the exterior of the container at atmospheric pressure and the interior of the container at not less than atmospheric pressure.

5,329,964

CRISS-CROSS HOPPER INCLUDING NON-CONTACTING INSERTS

Stephen J. Derezinski, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 9, 1993, Ser. No. 118,701

Int. Cl.[5] B05C *5/02*

U.S. Cl. 137—561 A **6 Claims**

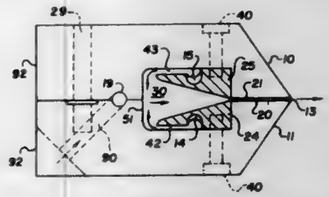
1. A criss-cross flow hopper comprising:

a first hopper half having a first planar surface, the planar surface adjoining a first cavity having an exit end and an entrance end;

a second hopper half having a second planar surface, the planar surface adjoining a second cavity having an exit end and an entrance end wherein said first and second hopper halves cooperate to form an exit slot bounded by the first and second planar surfaces and a chamber bounded by the first and second cavities;

a first insert having a first side having a widthwise distribution channel and a second side, the first side of said first insert securable to a surface of the first cavity wherein a first slot is formed bounded by the surface of the first cavity and the first side of said first insert when said first insert is secured to the surface of said first cavity;

a second insert having a first side having a widthwise distribution channel and a second side, the first side of said second insert securable to a surface of the second cavity wherein a second slot is formed bounded by the surface of



the second cavity and the first side of said second insert when said second insert is secured to the surface of the second cavity;

wherein said first and second inserts are not in contact and cooperate to form a damping chamber bounded by the second side of said first insert and the second side of said second insert, the damping chamber is in fluid communication with the first and second slots and the exit slot such that when liquid flows through the first and second widthwise distribution channels the liquid is directed toward the entrance end through the first and second slots and then the liquid combines in the damping chamber where it is directed toward the exit and through the exit slot.

5,329,965

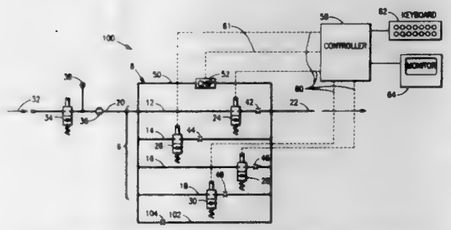
HYBRID VALVING SYSTEM FOR VARYING FLUID FLOW RATE

Daniel J. Gordon, Newtown, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 30, 1993, Ser. No. 100,596

Int. Cl.[5] F16K *11/20*

U.S. Cl. 137—599 **8 Claims**



1. A valving system for varying fluid rate, comprising:

a common fluid inlet receptive of fluid input, and a common fluid outlet for discharging a total fluid flow;

a plurality of binary fluid control lines having predetermined rates of flow and being connected in parallel between the common fluid inlet and the common fluid outlet, the binary lines each having therein a binary valve and a metering means for passing a predetermined rate of fluid flow to the common outlet, the predetermined rates being chosen cooperatively such that sequentially selected binary lines separately or in combination provide for sequentially increased rates of total fluid flow in increments including a largest increment;

an analog fluid control line connected in parallel with the binary lines between the common fluid inlet and the common fluid outlet, the analog line having therein a continuously adjustable flow rate regulator for passing any selected rate of fluid flow up to a maximum rate at least equal to the largest increment; and

controller means for setting each binary valve in a selected open or closed position, and for setting the flow rate regulator for a selected rate of fluid flow through the analog line, such that cooperative settings provide for a smoothly variable and selectable rate of total fluid flow.

5,329,966

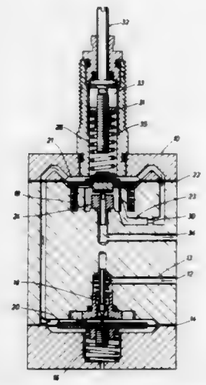
GAS FLOW CONTROLLER

David C. Fenimore, Sierra Madre; Walter H. McHenry, Covina, and James L. Blumberg, Sylmar, all of Calif., assignors to Vici Metronics Incorporated, Duarte, Calif.

Filed Mar. 8, 1993, Ser. No. 27,383

Int. Cl.[5] F16K *31/365*, *31/04*

U.S. Cl. 137—613 **12 Claims**



1. In a system for delivering gas at a predetermined rate of flow, comprising:

a flow controller having a diaphragm forming upstream and downstream chambers;

means for delivering gas to the upstream chamber of the flow controller at a substantially constant pressure;

said controller having an outlet from the downstream chamber which is opened and closed by the diaphragm;

means connecting the upstream and downstream chambers and having a fixed orifice therein;

spring means urging the diaphragm toward its closed position; and

means for selectively adjusting the spring force to achieve the predetermined rate of flow without having to use a gas flow measurement device to monitor the flow rate.

5,329,967

LEVER ASSEMBLY FOR SINGLE-CONTROL MIXING VALVE

Werner Gnauert, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany

Filed Jul. 13, 1993, Ser. No. 91,239

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1992, 4223093

Int. Cl.[5] F16K *11/078*

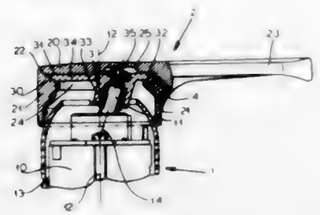
U.S. Cl. 137—625.17 **7 Claims**

1. In combination with a single-control mixing valve having an upwardly directed stem extending along a stem axis and

movable relative to a normally stationary valve axis for regulation of flow through the valve, a lever assembly comprising:

a flange element having a socket fitted complimentarily over the stem and a plate having a periphery and extending transversely of the valve axis;

means for securing the flange element to the stem with the socket fitted over same;



a lever having a cup-shaped base part formed with a downwardly open seat complimentarily fittable with the plate and an arm projecting laterally from the base part, the seat having a laterally open recess; and

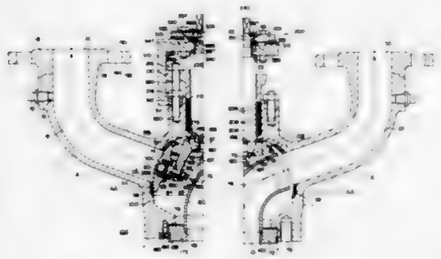
means for securing the plate in the seat with a portion of the seat periphery projecting laterally into the recess.

5,329,968

SHUTTLE VALVE

Walter W. Powell, Sugar Land, Tex., assignor to KWW Gesellschaft für Verfahrenstechnik mbH, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 29, 1992, Ser. No. 906,152
Int. Cl.[5] F16K *11/02*
U.S. Cl. 137—625.46 **27 Claims**



26. A shuttle valve, comprising:

a valve housing which further comprises:

at least one inlet aperture; and

at least two outlet apertures, wherein each of said at least two outlet apertures has associated therewith a flow passage,

and further wherein said valve housing has an inner cavity located therewithin which has spherical seating surfaces located adjacent each of said flow passages;

a valve assembly wherein said valve assembly is located in said inner cavity of said valve housing and wherein said valve assembly further comprises:

a valve disk wherein said valve disk has a spherical surface, at least in part, and wherein said spherical surface defines a sphere which has a center point, and further wherein said center point defines a first point location, and

a flow directing element, wherein said flow directing element is rotatably seated within said valve housing and is rotatable without a prior displacement, and further wherein said flow directing element is connectably attached with said valve disk so that said flow directing element and said valve disk rotate simultaneously with one another;

a valve shaft assembly which further comprises:

a valve shaft, wherein said valve shaft extends from said inner cavity to the exterior of said valve housing, and further wherein said valve shaft rotates about an axis of rotation, wherein a horizontal plane is defined by a plane which is perpendicular to said axis of rotation of said valve shaft, and which passes through said first point location, wherein said first point location defines a first point location on said horizontal plane, and further wherein said point of intersection of said axis of rotation of said valve shaft and said horizontal plane defines a second point location on said horizontal plane, wherein said first point location and said second point location are at least one of eccentric with one another and displaced from one another on said horizontal plane; and further wherein said valve shaft assembly is connectably attached with said valve assembly so that said valve shaft assembly controls a rotation of said valve assembly, and further wherein the actuation of said valve shaft assembly causes the rotation of said valve assembly within said inner cavity of said valve housing so as to rotate said valve disk from a first flow passage to a second flow passage;

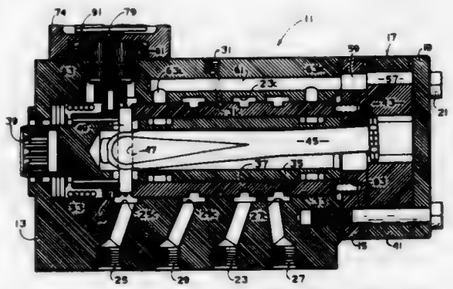
and further wherein a continued actuation of said valve shaft assembly, along with said first point location and said second point location being at least one of eccentric with one another and displaced from one another on said horizontal plane, provides a seating force, wherein said seating force perfects a seating between said spherical surface of said valve disk and said spherical seating surfaces adjacent said second flow passage.

5,329,969

FLUID CONTROLLER WITH JOYSTICK CAPABILITY AND ACTUATOR THEREFOR

Kenneth G. Rasmussen, Maple Grove; Dwight B. Stephenson, Savage, and William J. Novacek, Bloomington, all of Minn., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 850,712, Mar. 13, 1992, which is a division of Ser. No. 703,318, May 20, 1991, Pat. No. 5,115,640. This application Jul. 29, 1993, Ser. No. 100,012
Int. Cl.[5] F15B *9/09*
U.S. Cl. 137—625.24 **44 Claims**



1. A controller operable to control the flow of fluid from a source of pressurized fluid to a fluid pressure operated device; said controller being of the type including housing means defining an inlet port for connection to the source, a return port for connection to a reservoir, and first and second control fluid ports for connection to the fluid pressure operated device; valve means disposed in said housing means, and comprising a primary, rotatable valve member, and a cooperating, relatively rotatable follow-up valve member, said primary and follow-up valve members defining a neutral rotary position, and a rotary operating position in which said primary valve member is rotatably displaced from said neutral rotary position, relative to said follow-up valve member; said housing means and said valve members cooperating to define a main fluid path providing fluid communication between said inlet port and said first

control fluid port and between said second control fluid port and said return port when said valve members are in said rotary operating position; said primary and follow-up valve members defining a neutral axial position and, an axial operating position in which said follow-up valve member is axially displaced from said neutral axial position, relative to said primary valve member; said housing means and said valve members cooperating to define an auxiliary fluid path providing fluid communication between said inlet port and one of said first and second control fluid ports and between the other of said control fluid ports and said return port when said valve members are in said axial operating position; characterized by:

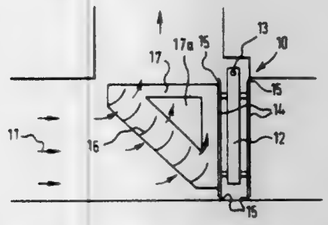
(a) actuator means operably associated with said housing means and operable to generate a predetermined mechanical output in response to a predetermined electrical input signal; (b) means operable to convert said mechanical output of said actuator into axial motion of said follow-up valve member between said neutral axial position and said axial operating position.

5,329,970

DIVERTER VALVES

Anton F. Squirrell, Mellingen, Switzerland, assignor to WES Technology Inc., Santa Ana, Calif.

PCT No. PCT/GB91/01585, § 371 Date Mar. 16, 1993, § 102(e) Date Mar. 16, 1993, PCT Pub. No. WO92/05380, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 16, 1991, Ser. No. 27,170
Claims priority, application United Kingdom, Sep. 17, 1990, 9020297
Int. Cl.[5] F16K *11/02*
U.S. Cl. 137—625.44 **4 Claims**



1. A diverter valve provided at a three-way junction between an inlet passageway and first and second outlet branches therefrom and through which junction passes a high temperature gas, the valve having a closure member pivotable between a first position wherein it closes said first outlet branch of the junction while leaving said second outlet branch open and a second position wherein it closes said second outlet branch of the junction while leaving said first outlet branch open; wherein the improvement comprises that:

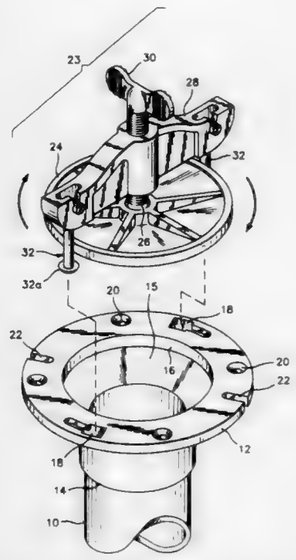
said closure member at one side thereof carries one or more deflecting vanes, said deflecting vane or vanes being located with respect to said closure member (a) such that when the latter closes said second outlet branch, said vane or vanes is or are positioned in front of said closure member so as to serve to direct the flow of said gas from said inlet passageway into and through said first outlet branch, and (b) such that when said closure member closes said first outlet branch, said vane or vanes is or are positioned behind said closure member so as to remain entirely out of contact with the gas flowing from said inlet passageway into and through said second outlet branch.

5,329,971

CLOSET FLANGE TEST PLUG

Duane R. Condon, 2330 Raymond Ave., Ramona, Calif. 92065

Continuation-in-part of Ser. No. 926,032, Aug. 4, 1992, abandoned. This application Sep. 30, 1993, Ser. No. 129,690
Int. Cl.[5] F16L *55/10*
U.S. Cl. 138—89 **9 Claims**



1. An apparatus for temporarily sealing the central opening in a closet flange of the type having diametrically opposite mounting slots, comprising:

an elongate unitary mounting body having a first arm with a first end and a second arm with a second end, the arms aligned in opposite directions from a central hub having a threaded through base, each end having an arm receiving slot and an upwardly opening pin mounting slot therein;

a generally circular disk-shaped sealing member having an elastomeric generally convex lower surface dimensioned for covering an opening in the closet flange and sealingly engaging an entire inner edge of the closet flange surrounding the opening;

an elongated threaded shaft mounted in the threaded through bore;

manually grippable means mounted to an upper end of the shaft for rotating the shaft;

means for connecting a lower end of the shaft to a center of the disk-shaped sealing member so that the shaft extends perpendicular away from an upper surface of the sealing member; and

a pair of unitary generally L-shaped retaining arms each disposed in a receiving slot and having an integral formed outwardly extending pivot pin on one end extending into a mounting slot and thereby connected to a corresponding end of the mounting body and having a head on another end, the head of each of said retaining arms being dimensioned to fit in corresponding diametrically spaced slots in the closet flange so that the heads can be engaged with an underside of the flange so that the manually grippable means may be turned to rotate the shaft and firmly press the lower surface of the sealing member against the inner edge of the closet flange to seal the central opening in the closet flange.

5,329,972

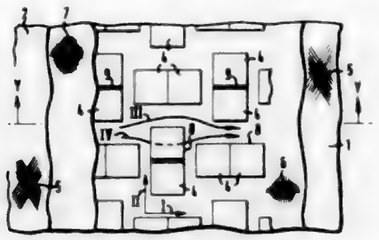
FIRE RESISTANT PLASTIC STRUCTURE

Jeremy D. L. Guiton, London, England, assignor to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Continuation of Ser. No. 274,141, Sep. 14, 1988, abandoned. This application Nov. 21, 1990, Ser. No. 616,925

Int. Cl.[5] **F16L** *57/00*

U.S. Cl. 138—103 **15 Claims**



1. A fire resistant structure comprising:

a pair of parallel walls of combustible plastic with a spacing therebetween;

an array of strut elements arranged at selected mutual distances in said spacing to form a rigid but permeable core throughout said spacing, each said strut element being bonded at their opposite sides to respective ones of said walls which array of strut elements is bonded to at least one of said walls by means of a flexible carrier cloth which is impregnated by an adhesive;

a fluid inlet passing through one of said walls;

a fluid outlet passing through one of said walls; and

means for pumping cooling fluid from the fluid inlet through said spacing towards the fluid outlet.

5,329,973

RIGID POLYVINYL CHLORIDE PIPE

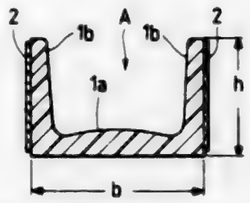
Shiro Kanao, No. 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Continuation of Ser. No. 780,936, Oct. 23, 1991, abandoned. This application Oct. 21, 1993, Ser. No. 139,044

Claims priority, application Japan, Oct. 24, 1990, 2-287671

Int. Cl.[5] **F16L** *9/16*

U.S. Cl. 138—154 **8 Claims**



1. A rigid polyvinyl chloride pipe comprising a strip member (A) that comprises:

a rigid polyvinyl chloride resin strip (1) with a U-shaped cross section consisting of an intermediate portion (1*a*) of a predetermined width having a generally flat surface on at least one lateral side and two ribs (1*b*) that extend from opposite sides of said intermediate portion (1*a*) in a generally perpendicular direction with respect to said intermediate portion; and

a layer of flexible synthetic resin (2), which is highly fusible to the rigid polyvinyl chloride resin, being fused integrally to substantially the entire outer surface of a lateral side of either one or both ribs (1*b*), (1);

wherein said strip member (A) is wound spirally to be positioned in such a way that said generally flat surface faces inwardly to form an interior of said rigid polyvinyl chloride pipe, the U-shaped concave portion (3) of said rigid strip (1) is open radially outward and that the flexible synthetic resin layer (2) is interposed between the mating surfaces of two adjacent ribs (1*b*) so that said adjacent ribs (1*b*) are fused together by means of said flexible synthetic resin layer (2) in such a way that the width (w) of the flexible synthetic resin layer (2) is generally equal to or smaller than the width (W) of each of said ribs (1*b*) as said adjacent ribs are joined together, in which the rigid polyvinyl chloride resin has a Shore D hardness of at least 65 and the flexible synthetic resin has a Shore A hardness of 50–100.

5,329,974

PROCESS OF COLLECTING AND PROCESSING NON-AQUEOUS DRIP-LIQUIDS

Max G. Paping, Culemborg, Netherlands, assignor to Holding M.G. Paping B.V., Netherlands

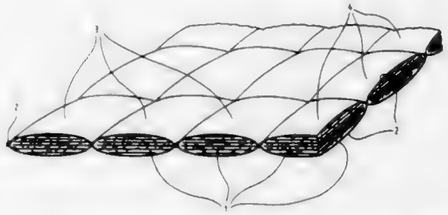
PCT No. PCT/EP91/01653, § 371 Date Apr. 29, 1993, § 102(e) Date Apr. 29, 1993, PCT Pub. No. WO92/04576, PCT Pub. Date Mar. 19, 1992

PCT Filed Aug. 29, 1991, Ser. No. 50,115

Claims priority, application Netherlands, Aug. 30, 1990, 9001921

Int. Cl.[5] **B65B** *1/20*

U.S. Cl. 141—11 **6 Claims**



1. A process for catching and processing non-aqueous drip-liquids, in which the drip-liquids to be processed are caught in an oily and non-aqueous liquid catching, non-woven, water repelling cloth which is incorporated into an envelope of a hydrophobic synthetic resin fiber fabric, the envelope with cloth being partitioned in a number of tracks, collecting the enveloped liquid catching cloth with absorbed drip-liquids, washing the collected envelope liquid catching cloth in a solvent for the drip liquid, separating the drip liquid from the solvent, and incinerating the separated drip liquids with power generation.

5,329,975

APPARATUS FOR PRESSURIZING CONTAINERS AND CARBONATING LIQUIDS

Robert G. Heitel, 1320 La Mirada St., Laguna Beach, Calif. 92651

Filed Sep. 22, 1993, Ser. No. 125,105

Int. Cl.[5] **B67C** *3/00*

U.S. Cl. 141—17 **14 Claims**

9. A hand-held apparatus for pressurizing a container by charging the container with compressed gas from a standard compressed gas cartridge, said apparatus comprising:

a housing sized to receive a standard cartridge containing compressed gas;

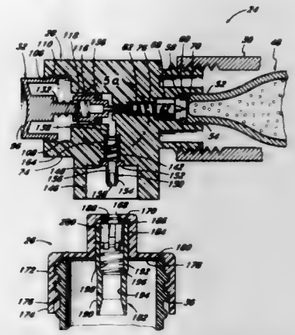
a piercing element positioned to pierce a diaphragm on the cartridge to allow compressed gas to escape from the cartridge;

an inlet port into which gas from said cartridge flows;

an outlet port which is in fluid communication with said inlet port;

a manually controllable valve which controls the flow of gas out of the cartridge; and

a coupling device for releasably and manually coupling said



outlet port with a cap which is removably secured to an opening on said container and which contains a check valve which permits flow of pressurized gas into the container but normally prevents gas flow out of the container, said coupling device being adapted to actuate the check valve when the container is to be charged with said compressed gas.

5,329,976

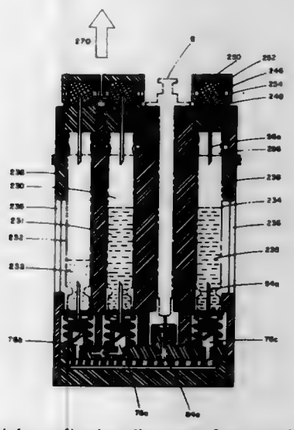
SYRINGE-FILLING AND MEDICATION MIXING DISPENSER

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Continuation-in-part of Ser. No. 805,503, Dec. 9, 1991. This application Sep. 21, 1992, Ser. No. 948,278

Int. Cl.[5] **A61M** *1/00*

U.S. Cl. 141—25 **22 Claims**



1. A multiple medication dispenser, for use with first and second containers containing first and second liquid medications and a syringe of the type including a needle cannula, a barrel and a plunger, the dispenser comprising:

a body to which the first and second containers and the syringe are mountable;

first and second dual port means for providing first and second gas and liquid ports into the interiors of the first and second containers;

first means for substantially simultaneously pumping a first gas into the first container through the first gas port and the first liquid medication from the first container through the first liquid port;

second means for substantially simultaneously pumping a second gas into the second container through the second gas port and the second liquid medication from the second container through the second liquid port;

means for fluidly directing the first and second liquid medications from the first and second pumping means to the needle cannula;

whereby the first and second liquid medications are pumped from the first and second containers by the first and second pumping means, through the needle cannula and into the syringe.

5,329,977

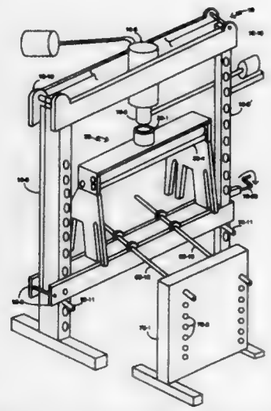
PELLET VENEER LATHE

Gerald M. Fisher, 1491 Greenwood Ave., Palo Alto, Calif. 94301, and Robert S. Smith, 1263 Emory St., San Jose, Calif. 95126

Continuation-in-part of Ser. No. 895,605, Jun. 8, 1992, Pat. No. 5,215,135. This application May 21, 1993, Ser. No. 65,998

Int. Cl.[5] **B27L** *5/02*

U.S. Cl. 144—213 **12 Claims**



1. A pellitizer of the veneer lathe type comprising,

a press having a frame including a first compression exerting member and compression resisting members and a space between said members for receiving a log portion for compressing and peeling therein;

a log saddle including a veneer knife assembly and a nose bar mounted thereto, said log saddle being in said space between said members, said log saddle including an elongated frame portion having end plates, said end plates having a pair of symmetrical slide glides therein;

a plurality of incisor rolls, each said roll having an axle, each said roll having sharp edges in its surface for incising the periphery of a said log portion, each said axle of each said roll being mounted in a pair of said end plate guide slides, said axles being parallel to one another; and

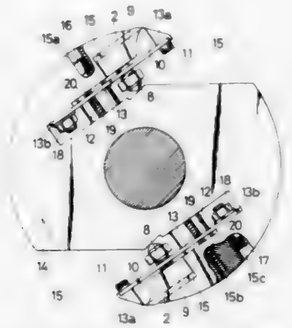
in operation, said first compression exerting member of said press being connectable to said log saddle, for providing force to each said axle of said rolls when a log is in contact position with said nose bar and said rolls, wherein said rolls are automatically forced to become positioned equally spaced about the periphery of a log portion by the

action of said symmetrical guide slides responsive to the force provided by said first compression exerting member.

5,329,978
PLANER

Katsuji Hasegawa, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Ohbu, Japan

Filed Apr. 23, 1993, Ser. No. 52,376
Claims priority, application Japan, May 1, 1992, 4-139995; Mar. 18, 1993, 5-085311
Int. Cl.[5] B27G *13/00*
U.S. Cl. 144—225 **25 Claims**



1. A planer having at least one blade attached to and supported on a cutterhead for cutting wood chips from a wood surface for rough finishing, said planer further comprising

at least one pressing member mounted on said cutterhead,

wherein said pressing member includes a head element having an edge which is located to have a predetermined angle with respect to said blade and is resiliently movable in a predetermined direction to bring said edge of said head element into contact with a selected portion of the wood surface located immediately before a cutting edge of said blade moving in a fixed direction for cutting or alternatively on a boundary between the wood surface and a chip being currently cut from said wood surface by said blade, and a foot element having a first end attached to said cutterhead and a second end, said second end constituting said head element

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5,329,979
METHOD OF REMOVING INSERTING A PORTABLE TABLE FROM AND INTO A STORAGE COMPARTMENT OF A VEHICLE

Geoffrey S. Miller, 411 Berkley Rd., Haverford, Pa. 19041, and Francis A. Richard, 1045 North West End Blvd., Quakertown, Pa. 18951

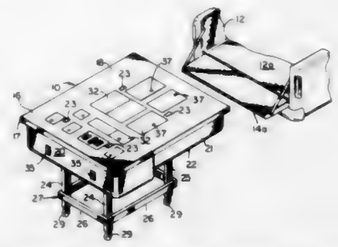
Continuation of Ser. No. 881,919, May 12, 1992. This application May 21, 1993, Ser. No. 65,559
Int. Cl.[5] A47B *23/00*; **B25H** *1/12*
U.S. Cl. 144—329 **4 Claims**

1. A method of removing a portable table from a storage compartment of a vehicle, the table including a frame having first and second legs mounted for movement between a first position wherein the first and second legs extend from the frame for being engaged with a support surface such that the frame is self-supported above the support surface to permit work to be readily carried out on the table and a second position wherein the first and second legs are retracted from the first position toward the frame such that the table is positionable within the storage compartment of the vehicle, the method comprising the steps of:

moving the table outwardly from the storage compartment with the first and second legs in the second position until a portion of the table extends beyond the storage compartment, the first leg being positioned outwardly of a leading edge of the storage compartment such that the first leg is movable to the first position without engaging the storage compartment, and the second leg is positioned inwardly of the leading edge of the storage compartment;

moving the first leg to the first position such that the first leg engages the support surface and supports the portion of the table extending beyond the storage compartment above the support surface;

moving the table further outwardly from the storage compartment until another portion of the table extends beyond



the storage compartment and a second leg is positioned outwardly of the leading edge of the storage compartment such that the second leg is movable to the first position without engaging the storage compartment and a portion of the frame is supported by the storage compartment;

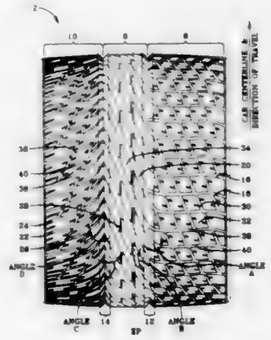
moving the second leg to the first position such that the second leg engages the support surface and supports the other portion of the table above the support surface and lifts the frame out of engagement with the storage compartment; and

moving the remaining portion of the table from the storage compartment.

5,329,980
ASYMMETRIC TIRE TREAD WITH TWO AQUACHANNELS

Douglas A. Swift, Hudson, and John J. Taube, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 11, 1993, Ser. No. 29,839
Int. Cl.[5] B60C *11/11*
U.S. Cl. 52—209 R **7 Claims**



1. An asymmetric tire tread when in an annular configuration for a tire comprising first, second, and third circumferentially extending zones, said zones having edges which are parallel to the equatorial plane of the tire and said edge between the first zone and second zone is in the center of a first aquachannel and said edge between the second zone and third zone is in the center of a second aquachannel, the second zone being disposed between the first zone and the third zone,

(1) said first zone having a width of between 35 percent and 48 percent of the width of said tire tread, said first zone having a net-to-gross ratio between 55 percent and 70 percent, a plurality of substantially laterally extending wide grooves extending inward from said first aquachannel to the nearest tread edge, each laterally extending wide groove having a centerline being oriented such that the centerline forms an angle of between 30 degrees and 80 degrees at a point where the centerline merges with the first aquachannel;

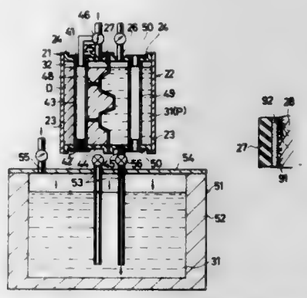
(2) the width of the second zone being between 20 and 30 percent of the width of said tire tread, said second zone having a net-to-gross ratio between 38 percent and 48 percent, a plurality of wide grooves laterally extending from said first aquachannel across said second zone to the second aquachannel, said wide grooves in the second zone having a centerline being oriented such that the centerline forms an angle of between 155 degrees to 170 degrees at the point the centerline merges with the first aquachannel and an angle of from between 10 degrees to 25 degrees at the point where the centerline merges with said second aquachannel;

(3) the width of the third zone being between 25 and 40 percent of the width of said tire tread and having a net-to-gross ratio between 50 percent and 66 percent with a plurality of laterally extending wide groove segments extending axially outwardly from said second aquachannel to the nearest tread edge, each laterally extending wide groove having a centerline being oriented such that the centerline forms an angle between 25° and 40° at the point where the centerline merges with the second aquachannel.

5,329,981
METHOD OF PRODUCING A METAL MOLD

Masahito Ito; Miyuki Koujiya; Hiroshi Sarai; Seiya Nakao; Takao Nomura; Satoru Kitou; Fuminori Matsuda; Susumu Yamada; Kesato Kuroiwa, and Hiroshi Mihara, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 715,856, Jun. 17, 1991, abandoned, which is a continuation of Ser. No. 433,373, Nov. 9, 1989, abandoned. This application Oct. 7, 1993, Ser. No. 133,282
Claims priority, application Japan, May 10, 1989, 1-116554; May 22, 1989, 1-128055
Int. Cl.[5] B22D *18/00, 18/06*
U.S. Cl. 164—7.2 **29 Claims**



1. A method of producing a metal mold, comprising the steps of:

contacting by use of negative pressure a resilient rubber sheet with a product configuration surface of a matrix, said resilient rubber sheet having an even thickness corresponding to the plate thickness of a product, and having a heat resistance sufficient to maintain elasticity during subsequent processing, wherein during the contacting step said heat resistant and resilient rubber sheet stretches and shrinks freely;

contacting said heat resistant and resilient rubber sheet with a melt of a low melting-point alloy while maintaining close contact between said sheet and said matrix;

cooling said melt, thereby casting a first mold part;

removing said matrix;

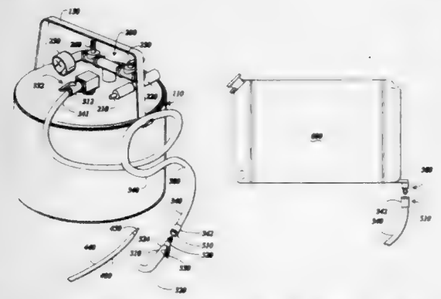
contacting said heat resistant and resilient rubber sheet at said first mold part with said melt of a low melting-point alloy while maintaining contact between said sheet and said first mold part; and

allowing said melt to cool, thereby casting a second mold part.

5,329,982
METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINE COOLANT EXTRACTOR/INJECTOR WITH COUPLING

Gerry E. Payne, 1455 Pratt Hwy., Birmingham, Ala. 35214

Continuation-in-part of Ser. No. 760,709, Sep. 16, 1991, Pat. No. 5,242,373. This application Sep. 7, 1993, Ser. No. 118,390
Int. Cl.[5] F04F *1/02*
U.S. Cl. 165—1 **5 Claims**



1. An apparatus for a coolant extractor/injector with coupling such as for transportation of the coolant to and/or from an internal combustion engine cooling system, using a portable tank assembly comprising:

a cooling system having at least one coupling means at or near the lowest point of the cooling system or at some other strategic point of the cooling system,

a tank with a top opening and a dip tube the top end of which is on the inside of the tank and which is connected to the tank top opening and using a pressure control assembly which is on the outside of the tank and which is connected to the tank top opening, comprising a venturi connector, a venture chamber connected to the venturi connector, and an air pressure gauge connected to the tank top opening,

means associated with said pressure control assembly

for maintaining a pressure inside of said tank above or below the pressure outside of said tank independent of the presence of an operator and

for moving a liquid into the tank or out of the tank independent of the source of gaseous pressure,

a closeable transfer hose assembly

one end of which is connected to the top end of the dip tube,

the other end of which has a coupling means which will sealably and flowably mate with any of the coupling means on the cooling system.

4. A method of extracting and injecting coolant such as for transportation of the coolant to and/or from an internal combustion engine cooling system, said method comprising the steps of:

introducing a vacuum in a tank assembly having a tank and a hose means;

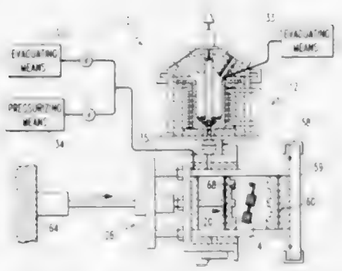
storing the vacuum in the tank without the presence of an operator;
sealably and flowably connecting the hose coupling means to one of the cooling system coupling means;
drawing the coolant through the hose means into the tank under the influence of the vacuum;
disconnecting the hose coupling means from the cooling system coupling means;
temporarily storing the coolant in the tank;
introducing gaseous pressure into the tank;
storing the pressure in the tank; without the presence of an operator;
sealably and flowably reconnecting the hose coupling means to one of the cooling system coupling means; and
returning the coolant to its original environment from the tank through the hose means under the influence of the pressure.

5,329,983

SEALED CHAMBER DIE CASTINGS OF METAL MATRIX COMPONENTS

Arnold J. Cook, 372 N. Craig St., Pittsburgh, Pa. 15213, assignor to Arnold J. Cook, Pittsburgh, Pa.

Filed Oct. 8, 1991, Ser. No. 773,192
The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 **31 Claims**



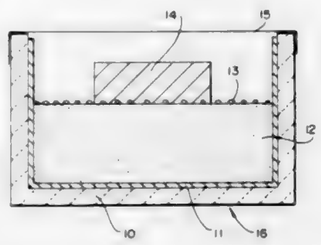
17. An apparatus for casting metal matrix composites comprising:
a melt chamber within which a metal is disposed, the metal chamber includes means for melting the metal, a melt passage through which the metal can flow from the melt chamber and a melt valve for controlling the flow of metal through said melt passage;
a preform chamber within which a liquid preform mixture is disposed, the preform chamber includes a preform passage through which the preform mixture can flow from the preform chamber and a preform valve for controlling the flow of preform from the preform passage;
a mold chamber comprised of a mold passage through which the preform mixture and metal can flow from their respective chambers and a mold valve disposed within the mold passage such that when the mold valve is closed, the mold chamber is fluidically isolated and when the mold valve is open, the preform mixture and melted metal can flow through the mold passage, said mold valve is mechanical and can be positioned between a closed orientation and an open orientation;
a mold defining a mold cavity within which the preform mixture and the metal are formed and a riser cavity fluidically connected to the mold cavity for holding the melted metal, said mold disposed within the mold chamber;
means for evacuating the mold chamber, said evacuating means in communication with the mold chamber;
means for fluidically sealing the melt valve to the mold valve;
means for pressurizing the mold chamber such that the melted metal is forced into the mold cavity; and
said melt chamber disposed above the mold chamber and is rotatably connected to a swing pole such that the melt valve can be swung into proper alignment with the mold valve and sealed thereagainst with the sealing means.

5,329,984

METHOD OF FORMING A FILLER MATERIAL FOR USE IN VARIOUS METAL MATRIX COMPOSITE BODY FORMATION PROCESSES

Marc S. Newkirk, Newark, Del., and Mark G. Mortenson, North East, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 790,096, Nov. 5, 1991, abandoned, which is a continuation of Ser. No. 520,911, May 9, 1990, abandoned. This application May 7, 1993, Ser. No. 59,441
Int. Cl.[5] B22D *19/14*; **B01J** *2/00*
U.S. Cl. 164—98 **12 Claims**



1. A method for forming a filler material for metal matrix composite formation, comprising:
(a) spontaneously infiltrating a permeable mass of filler with a molten matrix metal which is provided in a quantity which is sufficient only to coat said filler to form a porous metal matrix composite;
(b) reacting at least a portion of said matrix metal coating on said permeable mass of filler with another material to form a coating comprising reaction product on at least a portion of said filler; and
(c) comminuting the porous metal matrix composite.

5,329,985

METHOD AND APPARATUS FOR THE INDIVIDUAL MARKING OF GREEN SAND MOLDS

Wendelin Weimann, Klettgau, Fed. Rep. of Germany, assignor to Georg Fischer AG, Schaffhausen, Switzerland

Filed Mar. 31, 1993, Ser. No. 40,865
Claims priority, application Switzerland, Apr. 10, 1992, 01180/92
Int. Cl.[5] B22C *23/00*
U.S. Cl. 164—229 **10 Claims**

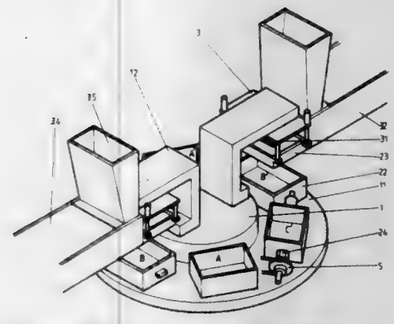
1. A method of marking green sand casting molds comprising marking a surface of the sand mold after compacting of the sand mold in a mold cavity and removing the sand mold from the mold cavity with an identification mark which is transferred from the surface of the sand mold to the casting during a casting operation.

5,329,986

AUTOMATIC MOLDING APPARATUS FOR FORMING SAND CASTING MOLDS

Tsuen-Ching Wu, 569 Dong-Guang Rd., Taichung, Taiwan

Continuation of Ser. No. 763,232, Sep. 20, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 8,232
Int. Cl.[5] B22C *11/04, 11/10, 15/02*
U.S. Cl. 164—181 **2 Claims**



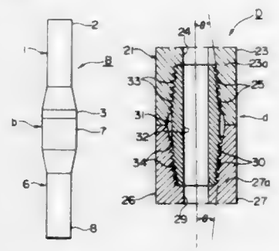
1. An automatic molding apparatus comprising:
means for forming sand casting molds, said means comprising a pattern supporting plate, a mold pattern located on said pattern supporting plate, a flask surrounding said pattern supporting plate, said flask having an open top and bottom and handles mounted on an exterior thereof;
a rotatable turntable having said means for forming sand casting molds mounted thereon, said turntable being rotatable to six consecutive positions with respect to a stationary base beneath said turntable
means for positioning pouring spouts over a mold pattern in a flask located at first and fourth positions;
means for adding and compressing sand in a flask located at second and fifth positions, said means comprising sand supply means positioned above said turntable, means for opening and closing said sand supply means, a feeding channel beneath said sand supply means, said feeding channel including an upper opening for allowing sand from said sand supply means to enter said feeding channel, said feeding channel including a movable plate which, when open, allows sand in said feeding channel to enter a flask when one of said flasks is positioned below said feeding channel, a pressing plate located above said turntable for compressing sand around said mold pattern in said flask, a sand adding box positioned below said pressing plate and having an open top and bottom for receiving sand from said feeding channel and allowing sand to pass into said flask, said sand adding box having sidewalls in direct communication with sidewalls of said flask to prevent sand from being displaced outside said flask before sand is compressed therein, sustaining shafts arranged under said turntable for raising said flask and said sand adding box into communication with said pressing plate when said flask and sand adding box are filled with sand; and
means for separating a flask from a mold pattern to form a mold cavity located at third and sixth positions said means comprising a sustaining shaft arranged under said turntable for pushing said pattern supporting plate and said flask containing compressed sand into communication with clamping means positioned above said turntable for engaging said handles on said flask and for maintaining said flask containing compressed sand in a raised position after said pattern supporting plate and said mold pattern have been lowered by said sustaining shaft to separate said flask from said mold pattern and to thereby form a mold cavity.

5,329,987

MOLTEN METAL POURING PIPE FOR PRESSURE-CASTING MACHINE

Mitsuru Andoh, Ena, and Noriyoshi Naruse, Tokyo, both of Japan, assignors to Tokyo Yogyo Kabushiki Kaisha, Tokyo and Akechi Ceramics Co., Ltd., Gifu, both of Japan

Filed May 17, 1993, Ser. No. 62,998
Claims priority, application Japan, Jun. 22, 1992, 4-187672
Int. Cl.[5] B22D *17/06, 41/50*
U.S. Cl. 164—306 **9 Claims**



1. In a pressure-casting machine that contains a molten metal delivery system, which comprises:
a mold;
a closed vessel arranged below said mold;
a molten metal pouring pipe made of a refractory, said molten metal pouring pipe having a center axis, a length of at least 4 m, and an outside diameter of at least 350 mm;
an upper end of said molten metal pouring pipe being attached substantially vertically from below to an opening in a bottom wall of said mold of the pressure-casting machine;
a lower end of said molten metal pouring pipe extending through a lid of said closed vessel arranged below said mold, and said lower end being immersed into molten metal received in a ladle arranged in said closed vessel; and
said molten metal pouring pipe comprising at least two pipe sections connected to each other in series and in a liquid-tight manner;
the improvement wherein:
said at least two pipe sections have mutually engageable screw threaded sections for connecting said pipe sections to each other by means of a threaded joint formed by engagement of screw threads of said mutually engageable screw threaded sections, said screw threaded sections each having tapered surfaces provided with said screw threads, said tapered surfaces each having an inclination angle within a range of from 2.0° to 15.0° relative to the center axis of said molten metal pouring pipe, whereby molten metal is moved upwardly through said pouring pipe, under pressure, with liquid tightness.

5,329,988

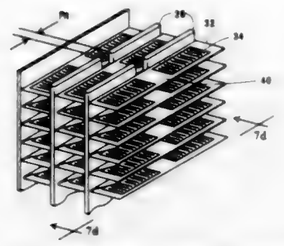
HEAT EXCHANGER

Joseph S. Juger, Cheshire, Conn., assignor to The Allen Group, Inc., New Haven, Conn.

Filed May 28, 1993, Ser. No. 69,557
Int. Cl.[5] F28F *1/22*
U.S. Cl. 165—153 **13 Claims**

1. A heat exchanger core, comprising:
a pair of header plates, each of which having a plurality of openings therein;
a plurality of oval cross-section heat exchanger tubes adapted to receive a fluid medium therethrough extending in generally spaced parallel relationship between said header plates, the ratio between the major diameter and the minor diameter of each of said tubes being from about 12/1 to about 18/1, each of said plurality of tubes being positioned and arranged such that the ends of each of said

tubes are joined to corresponding openings in each of said header plates to form a plurality of tube-to-header joints; and



a plurality of louvered serpentine heat transfer fin elements disposed between said header plates in a heat exchange relationship with said plurality of tubes.

5,329,989

INDUCTION MELTING AND CASTING APPARATUS

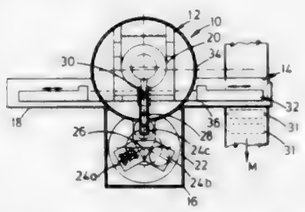
John G. Wilson, Wishaw, Scotland, assignor to Consarc Engineering Limited, Bellshill, Scotland

Filed Nov. 1, 1991, Ser. No. 777,222

Claims priority, application United Kingdom, May 4, 1989, 8910266.9

Int. Cl.[5] B22D *11/10, 41/00*

U.S. Cl. 164—507 **7 Claims**



1. A vacuum induction melting and casting apparatus comprising a melt chamber containing a melting unit for melting a material by induction under vacuum, a plurality of casting stations coupled to the melt chamber by valve means, said casting stations being disposed around the periphery of the melt chamber and each casting station having respective tundish means associated therewith which are adapted to be moved through respective valve means into said melt chamber so that, in use, a selected tundish means when disposed in said melt chamber receives melt from said melting unit and transfers said melt to its casting station and said casting stations are capable of being used for the same casting operation or different casting operations.

5,329,990

HEAT EXCHANGER

Hitoshi Chigira, Gunma, Japan, assignor to Sanden Corporation, Japan

Division of Ser. No. 724,905, Jul. 2, 1991, Pat. No. 5,251,694. This application Jul. 6, 1993, Ser. No. 86,116

Claims priority, application Japan, Jul. 2, 1990, 2-172648

Int. Cl.[5] F28F *9/02*

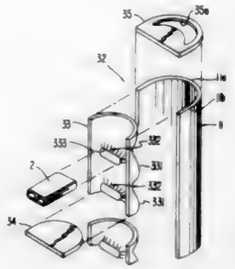
U.S. Cl. 165—153 **6 Claims**

3. A heat exchanger comprising:

a first header pipe including a plurality of elongate holes;

a second header pipe comprising a U-shaped wall and front wall connected thereto to define a hollow portion, said front wall comprising a plurality of convex portions and a plurality of elongate holes, said convex portions extending toward said U-shaped wall and said elongate holes disposed between said convex portions in a longitudinal direction of said header pipes;

a plurality of fluid tubes disposed between said header pipes



in fluid communication therewith via said elongate holes; and

a plurality of corrugated fins disposed between opposed outer surfaces of said fluid tubes.

5,329,991

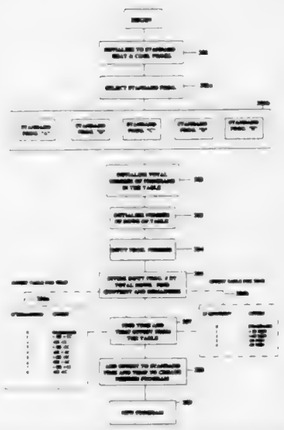
PRE-PROGRAMMED ELECTRONIC PROGRAMMABLE THERMOSTAT

Vinay Mehta; James L. Barrett, both of Germantown, Tenn., and Yuk Ming Wong, Kowloon, Hong Kong, assignors to Hunter Fan Company, Memphis, Tenn.

Filed Nov. 5, 1992, Ser. No. 971,645

Int. Cl.[5] F25B *29/00*

U.S. Cl. 165—12 **18 Claims**



1. A method of programming a programmable thermostat with one of a plurality of built-in program sets, where each built-in program set comprises a plurality of times and at least a plurality of temperatures, said method comprising the steps of: selecting a desired one of said plurality of built-in program sets and programming said programmable thermostat with the times and temperatures associated with the desired built-in program set.

5,329,992

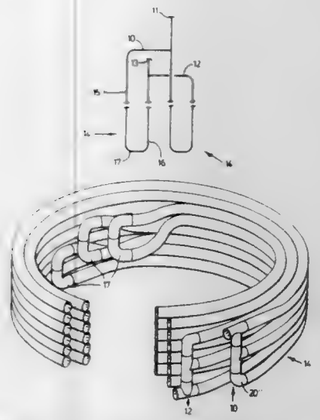
PREFABRICATED GROUND COIL ASSEMBLY

Benjamin A. Tripp, R. R. #2, Orangeville, Ontario, Canada L9W 2Y9

Filed Feb. 16, 1993, Ser. No. 18,203

Int. Cl.[5] F28D *21/00*

U.S. Cl. 165—45 **7 Claims**



1. A prefabricated ground coil assembly coiled in an annular configuration for storage and openable to an uncoiled configuration for use, comprising:

a first header providing an inlet means for connection to a fluid supply circuit;

a second header providing an outlet means for connection to the fluid supply circuit;

a plurality of flexible elongate coil elements connected in parallel between the headers, each coil element comprising a first pipe connected at one end to the first header and a second pipe connected at one end to the second header, and a footer interconnecting the other ends of the first and second pipes, the first and second pipes being of the same length or of different lengths wherein the difference in length is the same for each coil element;

the coil elements being coiled spirally in contiguous relation to form an annular package whose axial length is equal to the sum of the diameters of the pipes, the package being openable to a substantially planar configuration in which the pipes of the coil elements lie parallel to one another.

5,329,993

INTEGRAL HEAT PIPE, HEAT EXCHANGER AND CLAMPING PLATE

Ehsan Ettehadieh, Albany, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Division of Ser. No. 820,566, Jan. 14, 1992, Pat. No. 5,253,702. This application Jan. 13, 1993, Ser. No. 4,102

Int. Cl.[5] F28D *15/02;* **H01L** *23/427*

U.S. Cl. 165—104.14 **11 Claims**

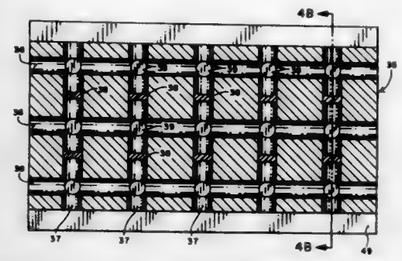
1. An integral heat pipe, heat exchanger, and clamping assembly comprising:

an evaporator comprising a first and second plurality of wick-lined channels containing a working fluid;

said first plurality of wick-lined channels extending internally and laterally in a first dimension across said evaporator;

said second plurality of wick-lined channels extending internally and laterally across said evaporator in a second dimension substantially perpendicular to said first dimension and intersecting said first plurality of wick-lined channels;

a plurality of plugs disposed in said second plurality of wick-lined channels, said plugs isolating said working fluid within particular regions of said second plurality of wick-lined channels and preventing fluid communication between said first plurality of wick-lined channels;



condenser means coupled to said evaporator for condensing evaporated working fluid vapor; and,

heat exchanger means connected to said condenser means for transferring heat absorbed by said condenser means.

5,329,994

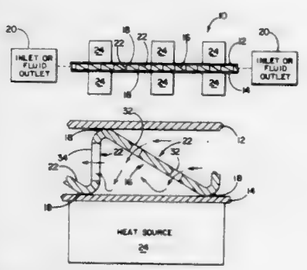
JET IMPINGEMENT HEAT EXCHANGER

Roger J. Collings, Rockford, Ill., and Michael P. Ciacco, Canton, Mich., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 23, 1992, Ser. No. 993,864

Int. Cl.[5] F28F *13/12*

U.S. Cl. 165—109.1 **27 Claims**



1. A heat exchanger comprising:

first and second heat conductive spaced apart plates;

a heat conductive sheet disposed between the plates and having repeating ridges in thermal contact with the plates with successive ridges facing a different one of the plates; and

sections of the sheet disposed between successive ridges being inclined with respect to the axis of fluid flow and containing at least one aperture with the at least one aperture between opposed surfaces of the section passing fluid flow through the at least one aperture when fluid flows along the axis of fluid flow and with fluid flow through the at least one aperture of a plurality of the sections producing jets of fluid contacting one of the plates.

19. A heat exchanger comprising:

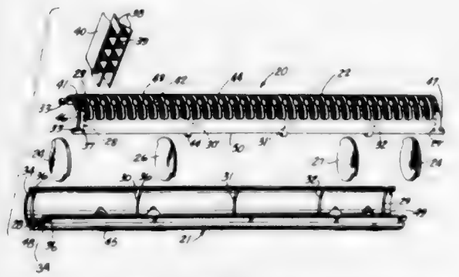
first and second heat conductive spaced apart plates with one of the plates being selectible to exchange more heat than the other of the plates with fluid flowing through the heat exchanger by choosing a direction of fluid flow through the exchanger;

a heat conductive sheet disposed between the plates and having repeating ridges in thermal contact with the plates with successive ridges facing a different one of the plates and sections of the sheet between successive ridges being inclined with respect to the axis of fluid flow and containing at least one aperture with the at least one aperture extending between opposed surfaces of the section for

passing fluid flow through the at least one aperture when fluid flows along the axis of fluid flow with fluid flow through the at least one aperture of a plurality of sections producing jets of fluid contacting one of the plates; and
means for controlling the direction of fluid flow along the fluid flow axis in a first direction or a second direction opposite to the first direction to select which of the first and second plates exchanges more heat

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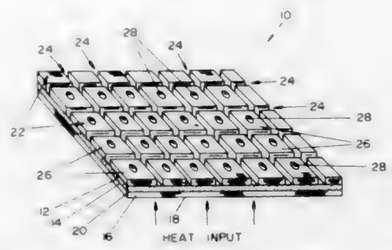
5,329,995
HEAT EXCHANGER ASSEMBLY I
LaVoyce Dey, Youngsville, Pa., and Sigurd Case, Frewsburg, N.Y., assignors to Valeo Engine Cooling Incorporated, Jamestown, N.Y.
Filed Aug. 28, 1992, Ser. No. 937,502
Int. Cl.[5] F28F *9/04*
U.S. Cl. 165—153 **15 Claims**



1. A heat exchanger comprising:
spaced generally parallel header and tank constructions;
a plurality of tubular elements whose opposite ends are connected to the header and tank constructions and extend between the header and tank constructions;
each of the header and tank constructions comprising a separate header portion and a separate tank portion, the separate header portion and separate tank portion being adapted to be joined to form the spaced generally parallel header and tank constructions of the heat exchanger; wherein ends of the header portion have end aligning tabs which can be bent over to align the separate header portion and separate tank portion; and
end caps and at least one baffle plate which are inserted in grooves in an inner surface of the separate header portions and the separate tank portions; wherein tubular elements are inserted in elongated, spaced receiving slots in the separate header portion surfaces of the header and tank construction and side tabs are adjacent to grooves in the header portion for the baffle plates.

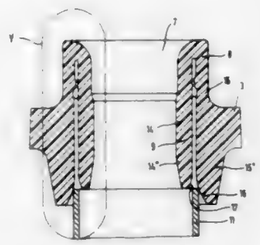
5,329,996
POROUS LAYER HEAT EXCHANGER
John H. Rosenfeld, Lancaster, Pa., assignor to Thermacore, Inc., Lancaster, Pa.
Continuation-in-part of Ser. No. 2,329, Jan. 8, 1993, Pat. No. 5,267,611. This application Nov. 24, 1993, Ser. No. 157,914
Int. Cl.[5] F28F *3/02*
U.S. Cl. 165—168 **3 Claims**

1. A heat exchanger structure comprising:
a heated structure including a heated surface and a second surface attached to the heated surface;
a porous layer with a first surface and a second surface, the first and second surfaces separated by the thickness of the layer, and the first surface of the porous layer being in contact with the second surface of the heated structure;
a fluid layer with a first surface and a second surface, the first and second surfaces separated by the thickness of the layer, and the first surface of the fluid layer being in contact with the second surface of the porous layer, the fluid layer including a network of intersecting, continuous and interconnected channels, the channels forming sections of the fluid layer which are islands separated from each other by the channels, with one boundary of the channels being formed by the porous layer, and the fluid layer also including at least one hole, each hole located in an island formed by the channels within the fluid layer;
a sealing layer which seals the second surface of the fluid



layer-to enclose the channels, and includes extensions aligned with the holes in the fluid layer, so that, with the extensions, the holes penetrate through the sealing layer;
a first manifold structure interconnected with the extensions of the holes in the sealing layer and also interconnected with a first pipe; and
a second manifold interconnected with at least one channel in the fluid layer and also interconnected with a second pipe.

5,329,997
HEAT EXCHANGER
Juergen Bayer, Esslingen; Dieter Engelhardt, Stuttgart, and Prasanta Halder, Ditzingen, all of Fed. Rep. of Germany, assignors to Behr GmbH & Co., Stuttgart, Fed. Rep. of Germany
Filed Apr. 16, 1993, Ser. No. 39,130
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1990, 9016381[U]
Int. Cl.[5] F28F *9/04*
U.S. Cl. 165—173 **12 Claims**



1. Heat exchanger (**1**) having at least one tube connection and at least one heat-exchanger tube (**11**) which is held, at one end, in a liquid-tight or gas-tight manner in a plastic tube base (**3**), the tube base (**3**) exhibiting for each tube connection (**6**) an opening (**7**) for passage of heat-exchanger fluid from the tube (**11**) into a junction box (**2**) or in a reverse direction and the tube base (**3**) exhibiting, in an area of the opening (**7**), for each tube connection a sleeve-shaped connecting socket (**8**), in which there is disposed an annular groove (**9**), extending coaxially to the opening (**7**) and open in a direction of the heat-exchanger tube (**11**), by which annular groove an inner ring (**14**) and an outer ring (**15**) are formed and into which annular groove the end (**11***) of the heat-exchanger tube (**11**) is pressed, characterized in that a section (**15***) of the outer ring (**15**) which is adjacent to a heat-exchanger block (**10**) is of longer

construction than a corresponding section (**14***) of the inner ring (**14**).

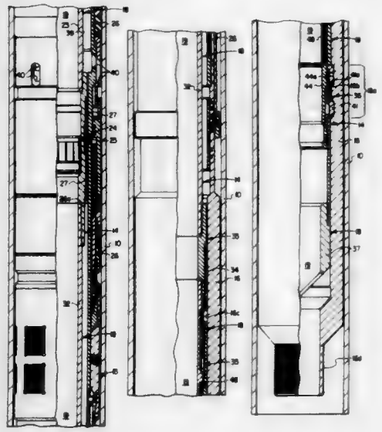
5,329,998
ONE TRIP TCP/GP SYSTEM WITH FLUID CONTAINMENT MEANS
Jon A. King, Jakarta Selatan; David L. Houdek, Balikpapan, both of Indonesia; Byron D. DePriest, Carenco, La., and Mark A. Phillips, Jakarta, Indonesia, assignors to Halliburton Company, Houston, Tex.
Filed Dec. 23, 1992, Ser. No. 995,382
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—51 **21 Claims**



1. Apparatus for completing a well having a well bore intersecting an earth formation, including first and second seal bore conductors each having a seal bore mandrel installed at first and second longitudinally spaced locations, respectively, within the well, said well completion apparatus comprising, in combination:
a tubular flow conductor adapted for suspension from a well head assembly and for longitudinal movement through the seal bore mandrels;
a well completion tool coupled to said tubular flow conductor for performing a well completion operation;
annular seals externally mounted on said tubular flow conductor at longitudinally spaced locations thereon, said annular seals being adapted for slidable, sealing engagement against the seal bore mandrels of said seal bore conductors; and
said annular seals being disposed in first and second groups, said first and second groups of annular seals being longitudinally separated with respect to each other by a distance sufficient to permit sealing engagement of one or more annular seals of the first group against the seal bore mandrel of the first seal bore conductor simultaneously with sealing engagement of one or more annular seals of the second group against the seal bore mandrel of the second seal bore conductor, respectively.

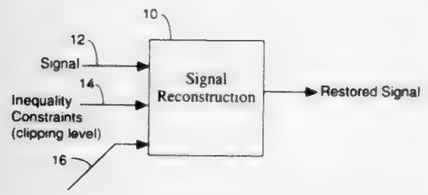
5,329,999
ANNULAR SAFETY SYSTEM
Pat M. White, Carrollton, Tex., and Lewis D. Proctor, Marykirk, Scotland, assignors to Halliburton Company, Houston, Tex.
Filed Jun. 3, 1993, Ser. No. 71,166
Int. Cl.[5] E21B *34/00*
U.S. Cl. 166—129 **19 Claims**

1. An annular safety system for a cased well comprising:
(a) packer means for anchoring and sealing in said casing, said packer means having outlet ports for flow from inside to outside said packer means;
(b) a landing nipple connected below said packer means; and
(c) operating seal unit means for operating said packer means to anchor and seal in said casing, said operating seal unit means sealingly engaging and extending through said packer means to form an annular flow passage communicating with said packer means outlet ports, said operating seal unit means including:
a dual head having primary and secondary well tubing connected thereto,
a valve permitting downward flow and automatically preventing upward flow in said secondary well tubing,



a primary flow conduit therein connected to said dual head and having a flow passage communicating said primary tubing through said landing nipple with said well casing below said packer means, said primary flow conduit having a safety valve therein operable to prevent upward flow in said primary conduit,
lockable locator means on said primary flow conduit for landing and releasably locking in said landing nipple, and annular flow passages therein for communicating said secondary tubing with said annular flow passage through said packer means.

5,330,000
SQUEEZE PACKER LATCH
Kenneth J. Givens, Okotoks, Canada; Eric Stenzel, Duncan, Okla.; Donald Hushbeck, Duncan, Okla.; Kevin Bersheidt, Duncan, Okla., and Jerry T. Bohlen, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Sep. 22, 1992, Ser. No. 949,463
Int. Cl.[5] E21B *23/06*
U.S. Cl. 166—134 **16 Claims**



1. An apparatus for retaining a tubular member in a valved squeeze packer, comprising:
(a) a sleeve-shaped member having a central axis and an

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internal bore along the central axis dimensioned to receive the tubular member therethrough, the sleeve-shaped member having a plurality of radially flexible fingers with inwardly facing ribs;

(b) means for limiting axial movement of the sleeve-shaped member between first and second axial positions with respect to the tubular member; and

(c) a mandrel member attached to the valved squeeze packer and having outwardly facing ribs engageable with the inwardly facing ribs, the ribs of the mandrel member and sleeve-shaped member remaining engaged when the sleeve-shaped member is in the second axial position and tensile force on the tubular member is below a preselected force, and disengaging when the tensile force on the tubular member reaches a preselected force.

5,330,001

LEAD IN GUIDE ASSEMBLY

John L. Baugh, Houston; George J. Melenyzer, Humble, both of Tex., and James Peterson, Gretna, La., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 23, 1992, Ser. No. 979,620
Int. Cl.[5] E21B *23/02*
U.S. Cl. 166—138 **12 Claims**



1. A seal assembly guide for centralizing a seal assembly being run from a well surface within a well bore to a cooperating sealing bore located at a downhole location, the seal assembly guide comprising:

a tubular seal carrier having abutting means for locating the seal carrier at a desired depth within the cooperating sealing bore and having external seal means for establishing sealing integrity with the cooperating sealing bore, the tubular seal carrier having a leading end and having a trailing end adapted to be made up in a tubing string leading to the well surface;

collapsible guide means located at the leading end of the tubular seal carrier for centralizing the seal carrier within the surrounding well bore, the guide means being collapsible between an expanded, running-in position while above the sealing bore and a retracted position within the cooperating sealing bore; and

wherein the abutment means comprises a downwardly facing no-go shoulder on the tubular seal carrier for engaging a cooperable upwardly facing shoulder provided as a part of the cooperating sealing bore located at the downhole location.

5,330,002

HANGER ASSEMBLY

Brian Saunders, Bristol, England, assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 22, 1993, Ser. No. 7,419
Claims priority, application European Pat. Off., Jan. 22, 1992, 92300551.6
Int. Cl.[5] E21B *33/04*
U.S. Cl. 166—208 **8 Claims**



1. A hanger assembly for a wellhead, comprising:

a tubular housing having a landing face on an inside surface thereof;

a tubular metal hanger disposed coaxially within said housing and spaced radially inwardly therefrom to form therewith a space, said hanger having axially spaced, circumferentially extending external teeth;

a supporting device disposed in said space and seated on said landing face, said supporting device engaging at least one of said teeth for suspending said hanger in said housing;

sealing means comprising an annular metal sealing ring disposed in said space in surrounding relationship to at least one of said teeth and in sealing engagement therewith; and

actuating means urging said sealing ring into said sealing engagement with said at least one tooth, comprising:

a wedge disposed in said space and oriented to apply a radial inward force to said sealing ring in response to relative axial movement between said sealing ring and said wedge, and

means for producing said relative axial movement.

5,330,003

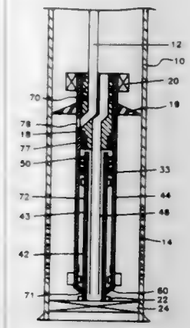
GRAVEL PACKING SYSTEM WITH DIVERSION OF FLUID

Robert L. Bullick, 5101 Dover Pl., New Orleans, La. 70131

Filed Dec. 22, 1992, Ser. No. 994,944
Int. Cl.[5] E21B *43/04, 43/08*
U.S. Cl. 166—278 **30 Claims**

1. A method of gravel packing a selected interval of a well comprising:

placing a screen in the well and anchoring the screen to a location opposite the selected interval; and



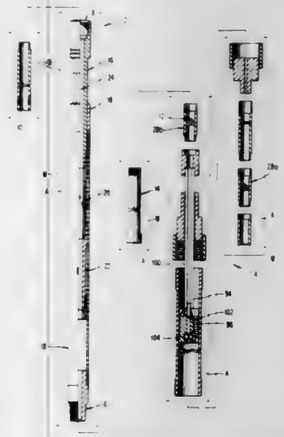
increasing the area of the screen open for flow therethrough during gravel-packing.

5,330,004

WELL TREATMENT METHOD AND APPARATUS

Robert M. Williams, and Bob Davis, both of Hobbs, N. Mex., assignors to WADA Ventures, Hobbs, N. Mex.

Filed Feb. 24, 1993, Ser. No. 21,578
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—279 **21 Claims**



1. A method of treating a well using a tool string including a pump, comprising the steps of:

supplying a predetermined amount of treatment fluid to the well;

pumping fluid from the well and holding the fluid in the tool string; and

releasing the treatment fluid from the tool string into the well.

5,330,005

CONTROL OF PARTICULATE FLOWBACK IN SUBTERRANEAN WELLS

Roger J. Card; Paul R. Howard, and Jean-Pierre Feraud, all of Tulsa, Okla., assignors to Dowell Schlumberger Incorporated, Sugar Land, Tex.

Filed Apr. 5, 1993, Ser. No. 42,978
Int. Cl.[5] E21B *33/138, 43/267*
U.S. Cl. 166—280 **22 Claims**

1. Method of treating a subterranean formation penetrated by a wellbore comprising the steps of providing fluid suspension including a mixture of a particulate material and a fibrous material; pumping the fluid suspension including a mixture of the particulate material and the fibrous material through the wellbore and depositing the mixture of particulate material and fibrous material in the subterranean formation.

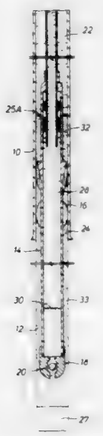
16. In a subterranean formation penetrated by a wellbore, a porous pack comprising a particulate material having a size in the range of 10 to 100 U.S. mesh in intimate mixture with a fibrous material.

5,330,006

OIL MUD DISPLACEMENT WITH BLAST FURNACE SLAG/SURFACTANT

James J. W. Nahm, Houston; Kenneth M. Cowan, Sugar Land, and Reece E. Wyant, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 964,988, Oct. 22, 1992. This application Feb. 25, 1993, Ser. No. 24,117
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—293 **20 Claims**



1. A method for drilling and cementing a well, comprising:

drilling a borehole utilizing an oil based drilling fluid, thus producing a used oil based drilling fluid to be displaced out of the borehole;

combining ingredients comprising water, blast furnace slag and a surfactant to produce a cementitious slurry;

disposing a pipe within said borehole;

passing said cementitious slurry into said borehole thus at least partially displacing said used oil based drilling fluid by direct fluid contact with said cementitious slurry; and

displacing said cementitious slurry into an annulus surrounding said pipe.

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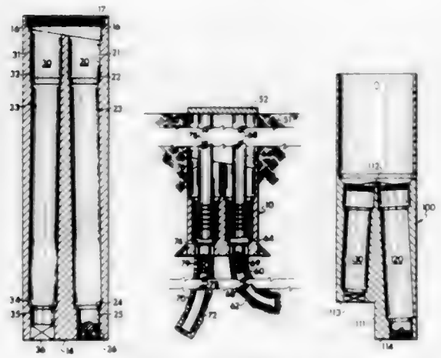
TEMPLATE AND PROCESS FOR DRILLING AND COMPLETING MULTIPLE WELLS

Gary J. Collins, Richmond; John L. Baugh, and Wilhelm E. Benker, both of Houston, all of Tex., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 936,972, Aug. 28, 1992. This application Jun. 18, 1993, Ser. No. 80,042

Int. Cl.[5] E21B *15/04, 7/08, 43/01*

U.S. Cl. 166—313 **72 Claims**



1. A template for drilling and completing multiple subterranean wells from a first casing, said template comprising:

first means for guiding a drill string during drilling and casing during completion of multiply subterranean wells from said first casing, said first means comprising a body having a first end face and at least one second end face and a plurality of axially extending bores therethrough, each of said bores intersecting said first end face and said second end face; and

second means for securing said body to said first casing.

27. A process for drilling and completing subterranean wells via a first casing which extends from the surface of the earth to a predetermined depth, said process comprising:

securing a template having at least two bores therethrough to said first casing;

drilling a first subterranean well bore through one of said bores and into a subterranean formation; and

securing a first length of production casing to said template, said first length of production casing extending into said first well bore, said template supporting said first length of production casing.

5,330,008

PROTECTIVE COVERING FOR A HORSE'S HOOF AND METHOD OF ATTACHING

Robert D. Sigafoos; William Moyer, both of Kennett Square, and Mary Hazzard, Unionville, all of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Dec. 2, 1992, Ser. No. 984,914

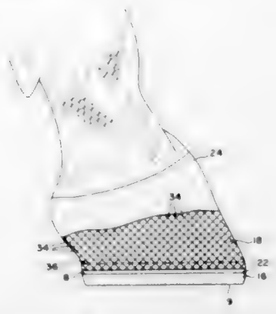
Int. Cl.[5] A01L *3/00, 7/02*

U.S. Cl. 168—12 **19 Claims**

1. A protective covering for a horse's hoof comprising:

a horseshoe having convex and concave edges, and bonding and wear surfaces;

a layer of polymeric resin bonded to said bonding surface of said horseshoe; and



a layer of polymeric fiber fabric embedded in said polymeric resin layer, emerging from said layer at said convex edge of said horseshoe and extending therefrom to form a skirt.

5,330,009

BUILT-UP INNER FLOATING CEILING, EQUIPPED WITH INSTANT FIRE EXTINGUISHING DEVICES, FOR USE IN AN OIL STORAGE TANK

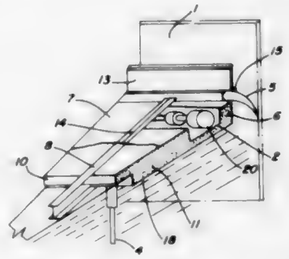
Feng-Qiu Zhang, Room 101, Sichuan Mansion, Shenzhen, China

Filed Sep. 16, 1992, Ser. No. 945,531

Claims priority, application China, Sep. 17, 1991, 91 1 08843.1

Int. Cl.[5] A62C *3/00*

U.S. Cl. 169—66 **10 Claims**



1. A built-up inner floating ceiling, equipped with instant fire extinguishing devices, for use in an oil storage tank, comprising:

a skeleton of radial structure, said skeleton consisting of H-shaped radial beams and peripheral beams which are bolted together;

foam plastic buoys, fitted into the grooves of said H-shaped beams and pressed by cover plates on top, and in contact with metallic nets provided beneath;

girded girders, bolted into an integral body and supported by supporting legs;

said radial beams being uniformly arranged at equal angular intervals, each with one end bolted to a girder and the other end bolted to a centre disk which is fitted in the centre of said inner floating ceiling;

further comprising anti-rotational wires and connecting wires, fitted between said cover plates and the top of the tank, and fire-proof foam plates, tongue-shaped seals and fixing plates for said seals, all fitted round the periphery of said ceiling;

the peripheral ones among said foam plastic buoys being made into a hollow structure, to form hollow chambers along and close to the periphery in said peripheral plastic buoys, which hollow chambers are used to place instant fire extinguishing devices.

5,330,010

WEED EXTRACTION APPARATUS

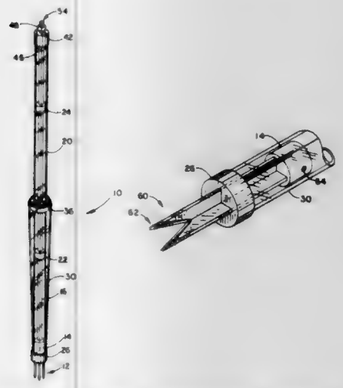
Robert J. Smotherman, 5430 Burkett La., Loomis, Calif. 95630

Continuation-in-part of Ser. No. 939,018, Sep. 2, 1992, Pat. No. 5,261,496. This application Nov. 4, 1993, Ser. No. 147,494

The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.

Int. Cl.[5] A01B *33/06;* **A01D** *9/06*

U.S. Cl. 172—25 **17 Claims**



1. An apparatus for removing vegetation from soil, comprising:

(a) a guide tube, said guide tube having a proximal end and a distal end;

(b) a shaft, said shaft having a proximal end and a distal end, said shaft slidably disposed within said guide tube;

(c) stop means for limiting the extent of travel of said shaft within said guide tube;

(d) a weed extraction head coupled to coupled to said proximal end of said shaft;

(e) coupling means for coupling said distal end of said shaft to a source of rotary force; and

(f) a hollow sleeve, said sleeve having a proximal end and a distal end, said sleeve being tapered from said distal end toward said proximal end, said guide tube disposed within said sleeve, said proximal end of said guide tube being aligned with said proximal end of said sleeve, said sleeve coupled to said guide tube.

5,330,011

FREE FALL STROKER APPARATUS AND METHOD

Gary T. Powell, Avoca, Pa., assignor to The George E. Failing Company, Enid, Okla.

Filed Oct. 13, 1992, Ser. No. 959,363

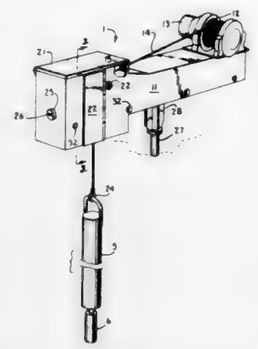
Int. Cl.[5] E02D *7/08*

U.S. Cl. 173—1 **29 Claims**

20. A method of raising and dropping a drop hammer attached to a cable, said method comprising the steps of:

(a) running the cable between a pair of guide means;

(b) moving a cable engaging means in one direction between the guide means to engage the cable and raise the hammer; and



(c) moving the cable engaging means in a second direction which is non-reciprocal to said first direction to release the cable and thereby drop the hammer.

5,330,012

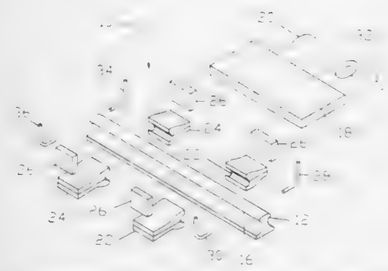
FEED SHELL LUBRICATION MANIFOLD

Ward D. Morrison, Claremont, N.H., assignor to Cannon Industries, Inc., Claremont, N.H.

Filed Dec. 30, 1992, Ser. No. 998,814

Int. Cl.[5] E21C *5/00*

U.S. Cl. 173—141 **8 Claims**



1. An improved feed shell for a rock drill having a feed guide, gibs which ride on a first guide surface and a second guide surface of the feed guide, the gibs in combination with the first guide surface and the second guide surface directing the rock drill, the improvement comprising:

a first nozzle attached to the feed shell, said first nozzle being positioned with respect to the first guide surface such that said first nozzle directs fluid onto the first guide surface;

a second nozzle attached to the feed shell, said second nozzle being positioned with respect to the second guide surface such that said second nozzle directs fluid onto the second guide surface; and

means for supplying fluid to said first nozzle and said second nozzle,

wherein the gibs form a pair of leading gibs and a pair of trailing gibs; and further wherein said first nozzle and said second nozzle are positioned such that they direct fluid onto the first guide surface and the second guide surface ahead of the pair of leading gibs.

3. An improved feed shell for a rock drill having a feed guide, gibs which ride on a first guide surface and a second guide surface of the feed guide, the gibs in combination with the first guide surface and the second guide surface directing the rock drill, the improvement comprising:

a first nozzle having a first nozzle passage, said nozzle being

attached to the feed shell and positioned with respect to the first guide surface such that said first nozzle directs fluid onto the first guide surface;

a second nozzle having a second nozzle passage, said second nozzle being attached to the feed shell and positioned with respect to the second guide surface such that said second nozzle directs fluid onto the second guide surface;

means for supplying fluid to said first nozzle and said second nozzle;

a first manifold housing said first nozzle having a first manifold input port for fluid;

a first manifold passage which communicates with said first manifold port and said first passage in said first nozzle;

a second manifold housing said second nozzle having a second manifold input port for fluid; and

a second manifold passage which communicates with said second manifold input port and said first passage in said second nozzle.

5,330,013

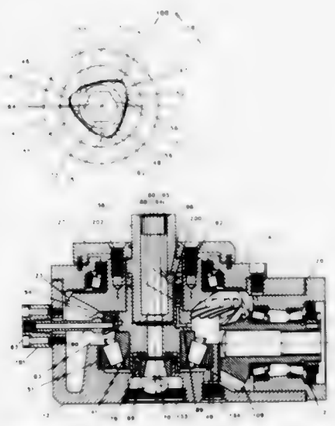
DRILL HEAD UNIT

Phillip A. Sollami, Herrin, Ill., assignor to The Sollami Company, Herrin, Ill.

Continuation-in-part of Ser. No. 683,862, Apr. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 947,554, Sep. 21, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 38,390

Int. Cl.[5] E21C *7/02*

U.S. Cl. 173—216 **2 Claims**



1. A drill head unit for transmitting rotational power from a horizontally oriented motor to a vertically oriented hollow drill bit comprising;

a housing having a first cavity therein for enclosing a gear assembly,

a first spiral bevel gear mounted in said first cavity and journaled for rotation about a vertical axis,

said first spiral bevel gear having a central opening in a top thereof, a hollow drill chuck,

a portion of said drill chuck having a plurality of equally spaced lobes around a circumference thereof, each of said lobes having a crest,

said first spiral bevel gear further having a hollow shaft extending downwardly below said central opening,

said first spiral bevel gear having a tubular member having a plurality of recesses which are complementary in shape to said plurality of lobes around the circumference of said drill chuck for slidably receiving said drill chuck within said first spiral bevel gear to transmit rotational power to said drill chuck,

said first spiral bevel gear having contact areas and relief areas spaced around said central opening, said contact areas positioned to exert rotational force to said drill chuck at positions having an angle of between about 8 degrees and about 30 degrees from said crest of each of said lobes,

a second cavity in said housing below said first bevel gear, said second cavity being in communication with said central opening in said first spiral bevel gear,

a tubular projection above said second cavity extending upwardly,

a port in said housing opening into said second cavity through which a fluid may flow,

first sealing means between said tubular projection and said downwardly extending hollow shaft for sealing said first cavity from said second cavity,

a spiral bevel pinion mounted in said first cavity and journaled for rotation about a horizontal axis, said spiral bevel pinion being adapted to engage said first spiral bevel gear,

attachment means for attaching said spiral bevel pinion to a shaft of said motor,

second sealing means for sealing said first spiral bevel gear against said housing, and

third sealing means for sealing said spiral bevel pinion against said housing.

5,330,014

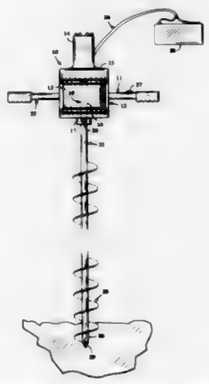
POWER WINCH-ICE AUGER CONVERSION APPARATUS

David A. Wagner, 1000 3rd St. S., Cold Spring, Minn. 56320

Filed Aug. 2, 1993, Ser. No. 100,361

Int. Cl.[5] B25F *3/00*; **F25C** *5/04*

U.S. Cl. 175—18 **5 Claims**



1. An ice auger conversion apparatus comprising, in combination:

(a) a winch;

(b) a winch drive motor connected to a driven end of the winch;

(c) a winch drive socket conversion member connected to a driving end of the winch;

(d) one end of a drive conversion adapter member removingly connected to the winch drive socket; and

(e) another end of the drive conversion adapter member removingly connected to an ice auger shaft member.

5,330,015

APPLICATION OF SCLEROGLUCAN MUDS TO DRILLING DEVIATED WELLS

Alain Donche, Jurancon; Alain Vaussard, Pau, and Patrick Isambourg, Saint Lys, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

PCT No. PCT/FR91/01032, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/11340, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 19, 1991, Ser. No. 920,280

Claims priority, application France, Dec. 21, 1990, 90 16067

Int. Cl.[5] C09K *7/02*; **E21B** *21/00*

U.S. Cl. 175—61 **8 Claims**

1. A method of drilling deviated wells, which comprises:

drilling a borehole at an angle greater than 0° and less than or equal to 90°, with respect to vertical, in the presence of a water-based drilling mud;

said mud comprising water and scleroglucan.

5,330,016

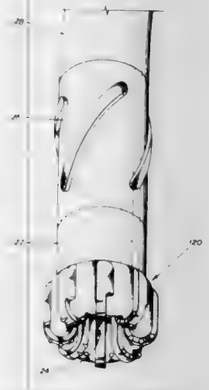
DRILL BIT AND OTHER DOWNHOLE TOOLS HAVING ELECTRO-NEGATIVE SURFACES AND SACRIFICIAL ANODES TO REDUCE MUD BALLING

William C. Paske, Missouri City; Paul F. Rodney, Spring, and Ronald D. Ormsby, Houston, all of Tex., assignors to Barold Technology, Inc., Houston, Tex.

Filed May 7, 1993, Ser. No. 60,182

Int. Cl.[5] E21B *17/00*

U.S. Cl. 175—320 **59 Claims**



9. A portion of a drill string for drilling an earth borehole, comprising in combination:

a steel bit body having a first end defining a cutting face, said cutting face having a plurality of cutters mounted therein;

said steel bit body having a second end defining a tubular body adapted to be threaded into a steel cross over sub, and

a steel cross-over sub being adapted to threadedly mate with said second end of said drill bit, said combination being characterized by at least a portion of said steel bit body being electro-negative with respect to the standard reduction potential of steel.

5,330,017

METHOD OF PROCESSING DRILLING MUD IN EARTH-BORING OPERATIONS

Thomas H. Hart, Lindsay, and Jimmy G. Reid, Norman, both of Okla., assignors to Profit Production, Inc., Norman, Okla.

Filed Apr. 6, 1992, Ser. No. 863,836

Int. Cl.[5] E21B *21/06*

U.S. Cl. 175—66 **5 Claims**



1. A method for treating drilling fluids used in a process of drilling a borehole in the earth to recover hydrocarbons, the drilling fluid including water and particulate material characterizing the drilling fluid for a particular application, comprising:

collecting the drilling fluid in a discard pit formed in the surface of the earth;

injecting gas into the collected drilling fluid in a pattern such as to cause agitation of the fluid until it is significantly dried to facilitate final disposal; and

covering the dried material with earth.

5,330,018

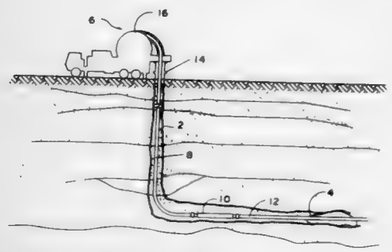
AUTO SET BI-DIRECTIONAL JAR

Jerry Griffith, 309 Wyman Rd., Scott, La. 70583

Filed May 6, 1993, Ser. No. 58,870

Int. Cl.[5] E21B *31/107*

U.S. Cl. 175—299 **17 Claims**



1. A jarring apparatus, comprising:

a cylindrical housing containing hammer means;

a mandrel slidably disposed within said housing to form a spring chamber, said mandrel containing anvil means;

latch means for latching said mandrel to said cylindrical housing;

biasing means, positioned within the spring chamber, for biasing said latch means in an engaged position within said housing;

and wherein said mandrel further contains:

first releasing means for releasing said latch means and allowing said hammer means to deliver an upper impact to said anvil means; and

second releasing means for releasing said latch means and allowing said hammer means to deliver a downward impact to said anvil means.

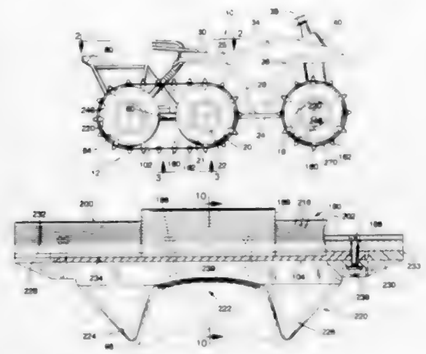
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5,330,019

TRACK VEHICLE

Richard D. Cartwright, Beaverton, Oreg., assignor to H-Tracker, Inc., Aloha, Oreg.

Filed May 6, 1993, Ser. No. 58,471
Int. Cl.[5] B62D *55/04*
U.S. Cl. 180—9.21 **7 Claims**



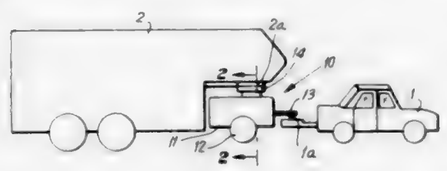
1. In a vehicle:
a wheel and a belt trained over the wheel, the belt having opposite lateral margins;
a row of multiple cleat structures with the cleat structures following one another along the length of the belt secured to the outer surface of the belt, the cleat structures establishing traction between the belt and terrain traveled over by the vehicle, the row of cleat structures including a first series of cleat structures and a second series of cleat structures and the cleat structures of the first series being interspersed with the cleat structures of the second series;
each cleat structure in said first and second series of cleat structures having a central expanse located intermediate the opposite lateral margins of the belt;
the cleat structures of the second series, at regular intervals along the length of the belt, including an extension section extending transversely of the belt and aligned with the central expanse in the cleat structure and protruding beyond one of said belt lateral margins, the cleat structures of the first series having opposite ends located inwardly of the opposite lateral margins of the belt; and
the extension section having a height which is less than the height of the central expanse in the cleat structure.

5,330,020

SELF-POWERED TOWING SERVOMECHANISM

George M. Ketcham, 350 Wilson Rd., Easton, Conn. 06612

Filed Jun. 3, 1991, Ser. No. 709,364
Int. Cl.[5] B62D *53/04*
U.S. Cl. 180—14.2 **8 Claims**



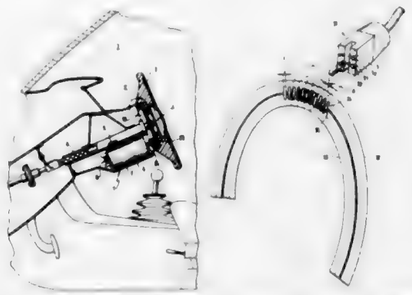
1. An obedient self-powered and self-controlling slave vehicle for interposition between a leading master vehicle and a towed trailer unit; said slave vehicle having a body and independent suspension means for two independently driven ground engaging wheels, said ground engaging wheels each having an axis of rotation lying in a vertical plane common to both axes and which extends transversely of said slave vehicle;
individual suspension means for said respective ground-engaging wheels permitting oscillations of said respective axes of said respective ground wheels in said substantially vertical plane to the substantial exclusion of movements of said axes of said respective ground wheels in any other direction;
a power supply mounted on said slave vehicle;
controllable variable torque transmitting means interposed in independent drive means from said power supply to said respective ground engaging wheels;
control means carried by said slave vehicle and controlling said variable torque transmitting means, said control means being operatively associated with actuator means and attached to said master vehicle by attachment means and actuated by said actuator means for it to follow the omnidirectional movement of said actuator means, and thus movements of said actuator means relative to a reference point on said slave vehicle, to provide selective steering, acceleration and braking of said slave vehicle duplicating movements of said master vehicle in the absence of a mechanical interconnection between said vehicles; and
pivot means affixed to said slave vehicle body, said pivot means including first and second members providing for relative rotation between said members, one of said members being rigidly and immovably affixed to said slave vehicle body, the other of said members being rigidly attachable to said towed trailer at a leading end of said trailer, said trailer having ground engaging wheels at a trailing end of said trailer, said first and second members being rotatable relative to each other about an axis intersecting a centroid of said respective axes of rotation of said respective ground engaging wheels of said slave vehicle.

5,330,021

POWER STEERING SYSTEM FOR VEHICLES

Wilhelm Beer, Ruesselsheim, and Juergen Balz, Wiesbaden, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Fed. Rep. of Germany

PCT No. PCT/EP92/00101, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO91/11862, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 20, 1992, Ser. No. 927,301
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 **15 Claims**



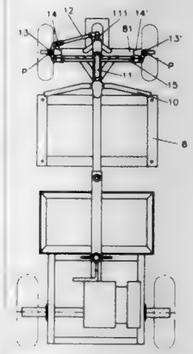
1. A power steering system for vehicles with a passenger compartment, said power steering system comprising:
a steering axle;
a steering wheel rotatably disposed at an end of the steering axle;
a steering gear adjacent to the steering wheel and coupled to the steering axle;
an electric servomotor positioned in the passenger compartment and operatively coupled to the steering gear which generates a torque at the steering gear and at the steering axle assisting a rotary motion at the steering wheel; and
an electronic system positioned in the passenger compartment, further comprising:
a sensor unit for sensing torque applied to said steering wheel, said sensor unit including at least four sensor elements and two transmitting elements rotatable relative to each other and positioned concentrically with respect to the steering axle with a first of the transmitting elements attached to said steering gear and having an external circumference with a plurality of openings therein and a second of the transmitting elements attached to said steering wheel and having an internal circumference surrounding the external circumference and having a plurality of openings with a pitch equal to the pitch of the openings in the internal circumference whereby said sensor unit senses torque applied to the steering wheel.

5,330,022

FRONT WHEEL STEERING MECHANISM FOR ELECTRO MOBILE

Yu-Shu Lin, 7F, No. 2-1, Lane 130, Shing-Yi Road, Pei Tou, Taipei, Taiwan

Filed Jun. 8, 1993, Ser. No. 74,042
Int. Cl.[5] B62D *9/00*
U.S. Cl. 180—79.3 **5 Claims**



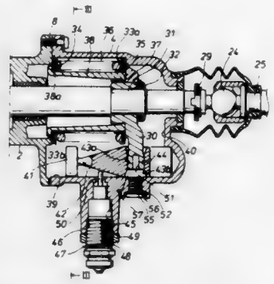
1. An electric vehicle having an electro mobile front wheel steering mechanism comprising:
a chassis as a bottom support for the electric vehicle, said chassis containing a transversal axle having first and second sides;
a turnable steering shaft located at a central position of the transversal axle said steering shaft containing a rocker arm; and
a pair of wheels mounted on the first and second sides of the transversal axle, respectively, the improvement being characterized in that said wheel steering mechanism further comprising:
a pair of h-shaped first and second wheel axle end beams fixed on the first and second sides, respectively, of the transversal axle, each wheel axle end beam containing a pair of tongues at one end thereof, both tongues being tilted at a first tilt angle relative to the wheel axle end beam, each tongue containing a pin hole, and a room being provided between the pair of tongues;
a connecting rod being adapted to be connected to the rocker arm of the steering shaft at one end thereof;
a Y-shaped first steering pitch axle including a first axle end and a first joint section for inserting into the room formed between the pair of tongues at one end of the first wheel axle end beam; the first joint section having a top surface and two sides and a first steering axle hole, said first steering axle hole having an axis normal to the top surface of the first joint section, said first joint section being at a second tilt angle relative to the first axle end;
a connecting rod arm and a first transversal pulling rod arm located at respective sides of the first joint section; the connecting rod arm containing a first pin hole and the first transversal pulling rod arm containing a second pin hole;
an obtuse angularly shaped second steering pitch axle including a second axle end and a second joint section for inserting into the room formed between the pair of tongues at one end of the second wheel axle end beam; the second joint section having a top surface and two sides and a second steering axle hole; said second steering axle hole having an axis normal to the top surface of the second joint section, said second joint section being at the second tilt angle relative to the second axle end; the second joint section being connected to a second transversal pulling rod arm on one side thereof, the second transversal pulling rod arm containing a third pin hole which is located in a comparable position with respect to the second pin hole located on the first transversal pulling rod arm; and
a transversal pulling rod that connects to the first and second transversal pulling rod arms at the second and third pin holes, respectively.

5,330,023

VEHICLE STEERING SYSTEM WITH A STEERING OUTPUT SENSOR

Katsuyuki Miyashita; Ryozou Yoshizawa; Yukio Yoneda, and Takashi Kohata, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 563,413, Aug. 6, 1990, Pat. No. 5,135,067. This application Feb. 18, 1992, Ser. No. 837,064
Claims priority, application Japan, Mar. 28, 1991, 3-027302[U]
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—140 **11 Claims**



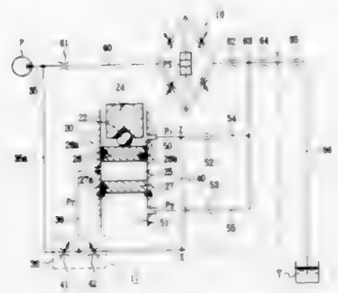
1. A vehicle steering system, comprising:
a housing assembly;
a steering rod supported in said housing assembly so as to be moveable in a longitudinal direction as an output end of said vehicle steering system;
actuation means for moving said steering rod in said longitudinal direction according to a steering input given thereto;
a connecting arm member extending radially from said steering rod;
a guided member guided for movement in said longitudinal direction; and
connecting means connecting said guided member to a free end of said connecting arm member so as to permit movement of said guided member together with said steering rod in said longitudinal direction but to accommodate at least a lateral movement of said guided member away from and toward said steering rod.

5,330,024

STEERING FORCE CONTROL APPARATUS FOR POWER STEERING SYSTEM

Yasuyoshi Emori, and Ikuo Nomura, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 1,979
Claims priority, application Japan, Jan. 24, 1992, 4-032995
Int. Cl.[5] B62D 5/06
U.S. Cl. 180—141 7 Claims



1. A steering force control apparatus of a power steering system, comprising:

a hydraulic reaction mechanism having a reaction piston held in a cylinder chamber so as to be movable coaxially to input and output shafts of said power steering apparatus in order to selectively constrain a relative positional displacement between said input and output shafts, and a hydraulic reaction chamber formed in said cylinder chamber so as to apply a reaction oil pressure to said reaction piston; and

a hydraulic reaction force control valve mechanism for controlling a first variable throttle paired with a second variable throttle, said first variable throttle being upstream from said second variable throttle, said first variable throttle and said second variable throttle in association with each other in accordance with vehicle running conditions, thereby supplying an intermediate pressure produced between said first variable throttle and said second variable throttle as the reaction oil pressure to said hydraulic reaction chamber,

wherein said reaction piston has seal members in slidable contact with inner wall surfaces of said cylinder chamber, said hydraulic reaction chamber being separated from a neighboring first low-pressure chamber by said reaction piston,

said first low-pressure chamber is connected to a tank through a first connection passage having a third throttle, and

a low-pressure passage extending from a low-pressure chamber, formed at said second variable throttle on the downstream side in said hydraulic reaction force control valve mechanism, to said tank is connected to a position midway along said connection passage between said first low-pressure chamber and said tank and on the upstream side of said third throttle.

5,330,025

SUSPENSION CONTROL SYSTEM

Sadaaki Kamei, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

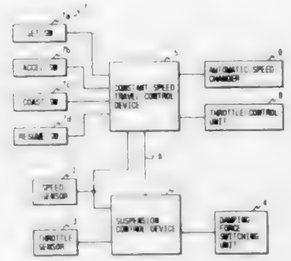
Filed Jan. 26, 1993, Ser. No. 9,223
Claims priority, application Japan, Jan. 29, 1992, 4-13713
Int. Cl.[5] B60G 17/15
U.S. Cl. 180—170 4 Claims

1. A suspension control system comprising:

constant speed travel control means for controlling a travel speed of a vehicle according to data input from a control switch means and a vehicle speed sensor and for issuing an over-drive off instruction to an automatic speed changer;

damping force switching means for changing a damping force of said suspension provided between a vehicle body and a wheel; and

suspension control means or detecting acceleration of said vehicle from outputs provided by said vehicle speed sensor and a throttle opening sensor, and for calculating a first damping force of said suspension from said acceleration thus detected, said suspension control means receiving control state data from said constant speed travel control means and issuing a damping force increasing request when said control state data indicates a predetermined variation in acceleration of said vehicle, said suspension control means determining a damping force according to said first damping force and said damping force increasing request and applying a switching instruction to said damping force switching means, wherein said control switch means includes a cruise control set switch, an acceleration switch, a coast switch and a resume switch.

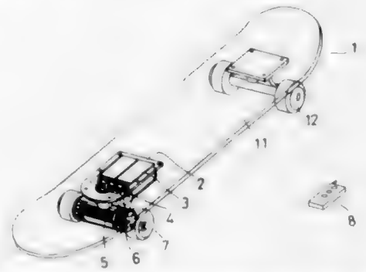


5,330,026

REMOTE-CONTROLLED ELECTRIC SKATE-BOARD

Chi-Hsueh Hsu, 4F, No. 144, Chu-Lin Rd., Yung-Ho Shih, Taipei Hsien, and Shih-Hsin Chen, 4F, No. 35-1, Hsin-Ching, Tung-Jung Li, Sung-Shan District, Taipei, both of Taiwan

Filed May 28, 1993, Ser. No. 68,230
Int. Cl.[5] A63C 17/12
U.S. Cl. 180—181 1 Claim



1. A remote-controlled electric skate-board comprising:

a board of an elongate rectangular shape for a player to stand thereon;

a connecting base having a rectangular upper plate with a plurality of screw holes around a circumferential edge for screws to fix said connecting base with a front bottom wall of said board, a chamber under an upper plate for depositing a battery unit and a circuit board therein, a hollow cylindrical housing connected with a support post below said upper plate for placing a direct current motor, and two reinforcing ribs at both sides of said post;

said battery unit having several rechargable batteries to supply power to a circuit on said circuit board and said motor;

said circuit board for arranging the electronic circuit thereon for receiving signals from a remote controller and operating said motor;

said direct current motor deposited in said cylindrical housing of said connecting base, having both ends of a shaft respectively connected with and driving a shaft of a sun gear of each of a set of two sun and planet gear units and a blowing fan connected at one end;

the two sets of sun and planet gear units respectively having a sun gear with a shaft rod connected with said shaft of said direct current motor to be driven by said motor and three planet gears and a stationary epicyclic gear to engage one another to allow said three planet gears to rotate all simultaneously, said three planet gears sustained by a triangular bracket affixed with a shaft rod to rotate a roller fixed with said shaft rod;

a pair of rollers fixed under a front bottom portion of said board, respectively combined with a one-way bearing and then with a shaft connected with said shaft rod of each said sun and planet gear unit, rotated by said shaft rod to roll on the ground, and another pair of rollers fixed under a rear bottom portion of said board to roll by means of human force;

said remote controller to transmit wireless signals to the electronic circuit on said circuit board in said connecting base; and,

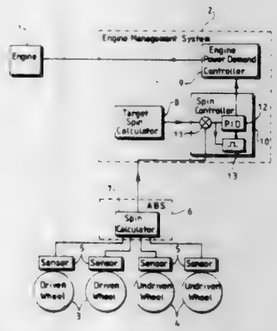
said electronic circuit receiving a signal from said remote controller for starting or stopping said motor to rotate said two sets of said sun and planet gear units, said rollers under said front bottom portion of said board being rotated to move said skate-board in addition to human force.

5,330,027

METHOD OF AND APPARATUS FOR CONTROLLING WHEEL SPIN

Douglas W. Glover, Worcestershire, England, assignor to Lucas Industries public limited company, Solihull, England

Filed Dec. 27, 1991, Ser. No. 815,016
Claims priority, application United Kingdom, Jan. 4, 1991, 9100165
Int. Cl.[5] B60K 15/00
U.S. Cl. 180—197 10 Claims



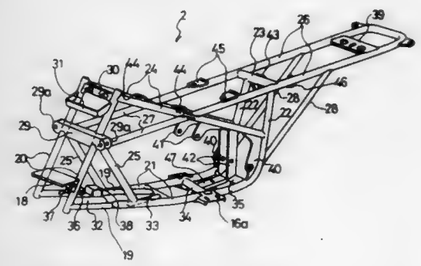
1. An apparatus for reducing wheel spin of at least one driven wheel of a vehicle, said apparatus comprising detecting means for detecting wheel spin and spin control means responsive to said detecting means for controlling spin by reducing drive to the at least one driven wheel upon detection by said detecting means of wheel spin exceeding a predetermined threshold, said spin control means being arranged to reduce the drive in accordance with a predetermined function of wheel spin, said predetermined function having a first term which is proportional to wheel spin and a second term which is an integral function relative to the time of wheel spin, said integral function having an initial value when said detecting means detects wheel spin exceeding a predetermined threshold, said initial value corresponding to a predetermined drive reduction.

5,330,028

SADDLE-RIDING TYPE VEHICLE

Akio Handa; Tsutomu Takeuchi; Tsuneo Kajikawa; Ikuo Ariga, all of Saitama, and Masao Shinada, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 960,082
Claims priority, application Japan, Oct. 11, 1991, 3-292480; Oct. 11, 1991, 3-292481; Oct. 11, 1991, 3-292482; May 26, 1992, 4-157330
Int. Cl.[5] B62M 7/00
U.S. Cl. 180—219 7 Claims



1. A saddle-riding vehicle comprising

a frame including right and left front pipes extending downwardly; reinforced right and left front suspension mounting structures including the lower portions of said right and left front pipes, respectively; right and left center pipes, each including a rearwardly extending portion and an upwardly extending portion, said right and left center pipes extending rearwardly from said right and left front suspension mounting structures, respectively; right and left straight main pipes extending from the upper portions of said right and left front pipes, respectively, to intermediate positions of said upwardly extending portions of said right and left center pipes, respectively; right and left seat rail pipes extending rearwardly from mid portions of said right and left main pipes, respectively, the upper ends of said upwardly extending portions of said right and left center pipes extending to mid portions on said right and left seat rails, respectively; and right and left reinforcing pipes extending between said right and left reinforced front suspension mounting structures, respectively, and said right and left main pipes, respectively, in longitudinal alignment with said right and left seat rail pipes, respectively.

5,330,029

FAIRING FOR A MOTORCYCLE

Heijiro Yoshimura; Yukihiro Yamazaki; Yasutsugu Takahashi, all of Saitama; Nobuya Itoh, Tokyo; Masanobu Shibayama; Takahisa Suzuki, both of Saitama, and Hiroaki Tsukui, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 717,333, Jun. 18, 1991, abandoned.
This application Apr. 23, 1993, Ser. No. 51,334
Claims priority, application Japan, Jun. 18, 1990, 2-159078; Mar. 20, 1991, 3-081972
Int. Cl.[5] B62K 11/00
U.S. Cl. 180—219 19 Claims

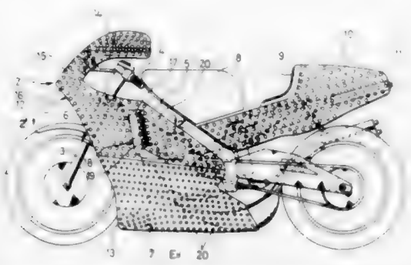
1. A fairing for a motorcycle comprising:

a fairing cover extending from a front end of a frame for a motorcycle rearwardly to cover both sides of an engine

operatively mounted adjacent to the front end of the frame of the motorcycle;

an outlet for air exhausted from a radiator operatively connected to said engine being provided adjacent to a radiator side of the motorcycle;

an inner duct provided to project inwardly to said frame of the motorcycle to communicate with said outlet; and



a plurality of small air flow apertures provided at least in a sidewardly curved surface portion of said fairing for reducing air resistance during cornering of the motorcycle;

wherein said plurality of small air flow apertures are also formed in said inner duct

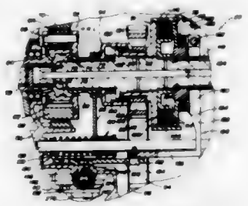
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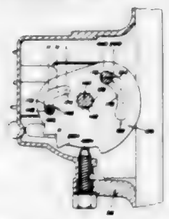
5,330,030

TWO-SPEED TRANSFER CASE WITH ELECTRONIC TORQUE MODULATION

Richard E. Eastman, Central Square; Robert J. Wilson, Warners; David Sperduti, Auburn, and Randy W. Adler, Seneca Falls, all of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Filed Mar. 9, 1993, Ser. No. 28,363
Int. Cl.[5] B60K *17/34*
U.S. Cl. 180—233 **25 Claims**





1. A power transfer system for a motor vehicle having an engine and first and second sets of wheels, said power transfer system comprising:

a transfer mechanism having an input member rotatably driven by the engine, a first output member interconnecting said input member to the first set of wheels for transmitting drive torque from the engine to the first set of wheels for defining a two-wheel drive mode, a second output member interconnected to the second set of wheels, a speed reduction mechanism driven by said input member for establishing a reduced-ratio low-range drive, a shift member movable between a first position for directly coupling said first output member to said input member for establishing a high-range drive and a second position for coupling said first output member to said speed reduction mechanism for establishing said low-range drive, a clutch assembly operable in an actuated state for selectively transmitting drive torque from said first output member to said second output member for establishing a four-wheel drive mode, coupling means for mechanically coupling said first output member to said second output member in response to movement of said shift member to said second position, and biasing means for urging said coupling means to a position de-coupled from said second output member upon movement of said shift member to said first position;

sensor means for detecting dynamic and operational characteristics of the vehicle and generating sensor input signals in response thereto;

mode select means for enabling a vehicle operator to intentional select one of a two-wheel high-range drive mode, a four-wheel high-range drive mode, a four-wheel low-range drive mode and an on-demand four-wheel high-range drive mode, said mode select means further operable for generating a mode signal indicative of the particular drive mode selected;

coordinating means for coordinating movement of said shift member and said actuated state of said clutch assembly;

actuator means for selectively moving said coordinating means; and

controller means for controlling actuation of said actuator means in response to said mode signal, said controller means operable for causing said actuator means to move said coordinating means to a 2WH position to de-actuate said clutch assembly and move said shift member to said first position when said two-wheel high-range drive mode is selected, said controller means causing said actuator means to move said coordinating means to a 4WH position to fully actuate said clutch assembly and move said shift member to said first position when said four-wheel high-range drive mode is selected, said controller means causing said actuator means to move said coordinating means to a 4WL position to de-actuate said clutch assembly and move said shift member to said second position when said four-wheel low-range drive mode is selected, and said controller means causing said actuator means to modulate the position of said coordinating means between said 2WH and 4WH positions to vary the degree of actuation of said clutch assembly between said de-actuated and fully actuated conditions as a function of said sensor input signals for modulating the drive torque transmitted to the second set of wheels while maintaining said shift member in said first position when said on-demand mode is selected.

5,330,031

ALTERNATIVE FUEL SYSTEM FOR POWERED INDUSTRIAL VEHICLE

Tom W. Hill, Lexington, Ky., and Bryan S. Memmott, Martinsburg, W. Va., assignors to Clark Material Handling Company, Lexington, Ky.

Filed Mar. 30, 1992, Ser. No. 860,536
Int. Cl.[5] B60K *28/00, 15/00;* **F02B** *43/02*
U.S. Cl. 180—271 **12 Claims**

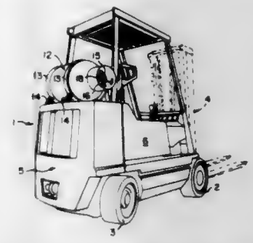
1. In a material handling industrial vehicle having an engine within an engine compartment, a compressed natural gas (CNG) fuel system for the vehicle providing a source of fuel to the engine in propelling the vehicle and powering its material handling systems; the improvement comprising:

a CNG tank mounted near the engine compartment;

a first fuel line section extending from the CNG tank;

a second fuel line section extending to the engine compartment and connected to the engine;

refilling means outside the engine compartment interconnecting the first and second fuel line sections comprising a refilling valve having a valve chamber, a valve element normally biased to the closed position in the chamber, and communicating one side through a passageway with said first and second fuel line sections, a refilling passageway communicating with the valve chamber on the other side of the valve element, whereby nozzle means can be inserted in the refilling passageway, supplying compressed natural gas at a pressure sufficient to unseat the valve element, causing gas under nozzle pressure to flow



through said first fuel line section, recharging the CNG tank;

an ignition circuit including an electrical switch means, having a normally closed position, connected in the ignition circuit to the engine; and

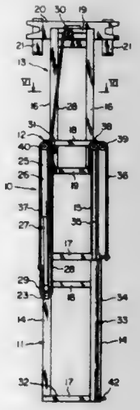
an element connected with the electrical switch means actuated when the nozzle means is inserted in the refilling passageway to open the normally closed electrical switch means, disabling the ignition circuit of the vehicle.

5,330,032

LIFT TRUCKS AND EXTENSIBLE MAST STRUCTURES THEREFOR

Barry M. Warner, Winchester, United Kingdom, assignor to Linde Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 18, 1993, Ser. No. 19,058
Claims priority, application United Kingdom, Feb. 20, 1992, 9203576
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—9 E **13 Claims**



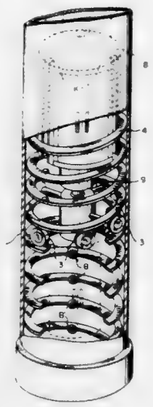
13. A method of controlling the movement of an extensible mast structure for a lift truck, said mast structure including a fixed mast section, at least one movable mast section mounted on said fixed mast section and a load carrying carriage movable along said movable mast section, a primary jack for moving said load carrying carriage relative to said at least one movable mast section and a secondary jack for moving said movable mast section relative to said fixed mast section to extend said extensible mast structure, said two jacks having operational cross-sectional areas selected to sequence the operation of said primary jack to move said load carrying carriage before the movement of said secondary jack to extend said extensible mast structure, said method comprising initiating the stroke of said primary jack to move said load carrying carriage relative to said movable mast section, initiating the stroke of said secondary jack to move said movable mast section relative to said fixed mast section to extend said extensible mast structure before the completion of said stroke of said primary jack to move said at least one movable mast section relative to said fixed mast section to extend said extensible mast structure, and thereafter completing said stroke of said primary jack to assist the stroke of said secondary jack to move said movable mast section relative to said fixed mast section to extend said extensible mast structure while simultaneously continuing to move said load lifting carriage relative to said extensible mast structure during the completion of said stroke of said primary jack to provide substantially uninterrupted movement of said at least one movable mast section relative to said fixed mast section during the extension of said extensionable mast structure.

5,330,033

LIFT DEVICE COMPRISING STRAP-LIKE RAIL AND BEARINGS FITTED TO HELICAL STRAP-LIKE RAIL

Shigezou Tatumi, No. 33-6 Asahimachi 2-chome, Nara-shi, Nara 631, Japan

PCT No. PCT/JP91/01085, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO92/03369, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 15, 1991, Ser. No. 971,771
Claims priority, application Japan, Aug. 15, 1990, 2-216201
Int. Cl.[5] B66B *7/02*
U.S. Cl. 187—95 **3 Claims**



1. A lift device comprising bearings and a strap-like rail that are designed to screw fit in each other, characterized in that shielded bearings are mounted in a circumferential thread fashion at a proper pitch on at least three pillars provided inside an outer shell cylinder, that a short cylinder is threadingly inserted into said outer shell cylinder around the outer circumference of which short cylinder a strap-like rail is curvedly wound so as to screw fit into said bearings, that said short cylinder is rotated by a motor mounted on a frame to support said short cylinder at a vertically central position via thrust bearings, and that side iron plates are provided on the frame surrounding sides of the pillars and the shielded bearings thereon with a slight gap being kept therebetween, said iron plates forming a cam groove slidably engaged on the pillars to

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stop rotation of said frame around said pillars when said frame moves vertically with said short cylinder, as well as maintaining said short cylinder at the vertically central position.

5,330,034

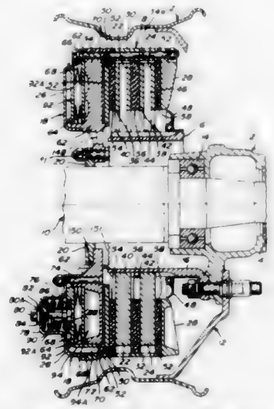
BRAKE ASSEMBLY

Claude Rancourt, and Yvon Rancourt, both of 1400 54ième Rue Nord, St. Georges Ouest, Beauce County, Quebec, Canada G5Y 2E1

Continuation-in-part of Ser. No. 861,419, Mar. 31, 1992, abandoned. This application Jun. 1, 1992, Ser. No. 890,801

Int. Cl.[5] F16D *65/12, 65/24*

U.S. Cl. 188—71.6 **22 Claims**



1. A disc brake assembly for a vehicle wheel wherein the wheel includes a hub journaled to an axle on the vehicle, the disc brake assembly is within the confines of the wheel and concentric with the axle, the disc brake assembly comprising a housing mounted to the vehicle and at least a radial disc within the housing and means mounting the disc to the wheel, the disc having at least a first radial planar friction surface, a first brake shoe provided adjacent the first planar friction surface of the disc, movable axially towards and away from the first friction surface of the disc, for friction engagement therewith and release thereof, means provided for restraining the first brake shoe from rotating with the disc, an intermediate wall mounted within the housing and fixed thereto extending parallel with the radial disc and located such that the first brake shoe moves axially between the intermediate wall and the radial disc, movable spring abutment means mounted for axial movement within the housing between the intermediate wall and the housing such that the intermediate wall is between the movable spring abutment means and the first brake shoe, pusher link members extending between the spring abutment means and the first brake shoe passing through the intermediate wall such that the first brake shoe moves axially with the spring abutment mans, spring means extending between the housing wall and the spring abutment means such that the spring means urges against the spring abutment means to press the first brake shoe against the first friction surface of the disc in a safety brake mode, a first gaseous fluid bladder being provided between the intermediate wall and the spring abutment means whereby the first bladder when expanded forces the spring abutment means to overcome the spring means to release the first brake shoe from the first friction surface of the disc to release the safety brake mode, a second gaseous fluid bladder being provided between the intermediate wall and the first brake shoe such that when service brakes are applied the second bladder is expanded so as to urge the first brake shoe to the first friction surface of the disc, a housing plate at one end of the first bladder, the housing plate being located between the housing and the intermediate wall, and quick release valve means being mounted to the intermediate wall and communicating with the second bladder for evacuating gaseous fluid from the second bladder to accelerate the rate of modulation of the second bladder.

5,330,035

HOLDING DOWN SPRING FOR SPOT-TYPE DISC BRAKES AND ASSOCIATED HOUSING AND BRAKE SHOES

Ulrich Klimt, Gross-Umstadt; Georg Halasy-Wimmer, Eschborn; Helmut Ruckert, Reinheim, and Matthias Jakob, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany

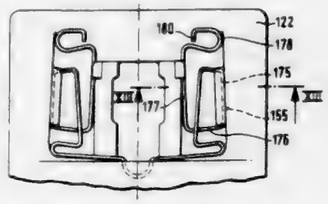
PCT No. PCT/EP90/01940, § 371 Date Jul. 24, 1991, § 102(e) Date Jul. 24, 1991, PCT Pub. No. WO91/08401, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 13, 1990, Ser. No. 730,803

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1989, 3938881; Jul. 6, 1990, 4021566

Int. Cl.[5] F16D *65/38*

U.S. Cl. 188—73.36 **20 Claims**



1. A hold down spring arrangement acting on at least one disc brake shoe having a back plate mounted in a brake housing opposite a brake disc, comprising a hold down spring comprising an elongated element having two legs formed therein joined together at one end, said legs extending in the same general direction as the axis of said brake disc but inclined outwardly in a V with respect to each other from said joined ends when in a relaxed condition, and which legs are elastically swingable towards each other;

each of said legs formed with a first wing comprised of a looped shape of said elongated element, each of said first wings including one axially extending segment and another radially spaced opposite segment connected thereto but extending axially in the reverse direction, said housing having undercut recesses, said one segment of each of said first wings engagable in a respective axial undercut recess in said housing while said another opposite segment of said first wing extends generally axially across and in engagement with said back plate of at least one said brake shoe.

5,330,036

MECHANICAL BRAKE FOR A HOIST AND TRACTION MACHINE

Yoshio Nishi; Haruo Kubota; Yoshio Ueno, and Munenobu Honda, all of Osaka Sayama, Japan, assignors to Elephant Chain Block Company Limited, Osaka, Japan

Continuation of Ser. No. 856,646, Mar. 24, 1992, abandoned. This application Nov. 18, 1993, Ser. No. 154,388

Claims priority, application Japan, Oct. 31, 1991, 3-286893

Int. Cl.[5] F16D *13/64, 65/02, 69/02*

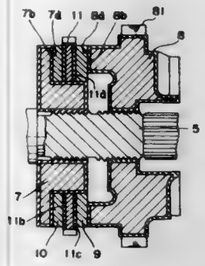
U.S. Cl. 188—251 M **8 Claims**

1. A mechanical brake for a hoist and traction machine, comprising:

lining plates; and

braking members having braking surfaces disposed adjacent to said lining plates,

each of said braking surfaces of said braking members having



brake releasing force control layers formed thereon, each of said brake releasing force control layers comprising a heat-treated plating layer selected from the group consisting of nickel phosphate, nickel chromium and chromium.

5,330,037

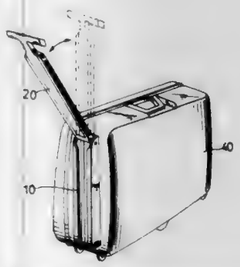
WHEELED TRAVEL BAG WITH ADJUSTABLE HANDLE

King-Shen Wang, No. 16, Lane 116, Ta An Kang Rd., Ta Chia Chen, Taichung Hsien, Taiwan

Filed Sep. 15, 1992, Ser. No. 945,251

Int. Cl.[5] A45C *5/14, 13/26*

U.S. Cl. 190—18 A **11 Claims**



1. A travel bag for enclosing a travelers belongs comprising:

a) a case having a generally convexly curved bottom and at least one side;

b) a wheel non-pivotally attached to a middle portion of the convexly curved bottom, the wheel being rotatable about an axis of rotation;

c) two pairs of pivoting castors attached to the bottom, the two pairs being located on opposite sides of the axis of rotation; and,

d) an adjustable handle assembly attached to the at least one side, the handle assembly comprising:

i) an elongated handle bar having a handhold portion;

ii) a sleeve affixed to the at least one side, the sleeve including means defining an elongated channel with an open end adapted to slidably receive the elongated handle bar therein such that the elongated handle bar is movable between a retracted position and an extended position;

iii) pivot means operatively associated with the elongated handle bar enabling the handle bar to be angularly moved about a pivot axis with respect to the sleeve when in its extended position, the pivot axis extending generally parallel to the axis of rotation; and,

iv) locking means operatively associated with the elongated handle bar and the sleeve to releasably lock the handle bar at a desired angular orientation with respect to the sleeve when the handle bar is in its extended position, wherein the locking means comprises: a plurality of teeth formed on an end of the elongated handle bar and, a projecting block extending from the sleeve and defining an edge portion adapted to engage at least one of the teeth formed on the elongated handle bar.

5,330,038

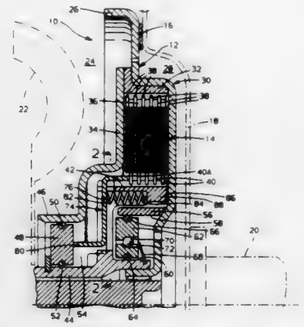
TORQUE CONVERTER CLUTCH

Raymond J. Haka, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1993, Ser. No. 113,870

Int. Cl.[5] F16D *33/00*

U.S. Cl. 192—3.29 **2 Claims**



1. A torque converter clutch comprising:

an input member;

an output member;

clutch means disposed between said input and output members for selectively transmitting drive force therebetween, said clutch means comprising:

friction clutch means having an apply chamber responsive to hydraulic fluid pressure for providing an engagement force on said input member;

viscous clutch means for transmitting drive forces from said friction clutch means to said output member including;

housing means secured to said friction clutch means;

viscous plate input means drivingly connected with said housing means, viscous plate output means drivingly connected with said output member, viscous drive fluid disposed in said housing and cooperating with said viscous plate input means and said viscous plate output means for transmitting drive forces therebetween, first piston means slidably disposed in said housing and being responsive to the pressure in the apply chamber for controlling the drive transmission between said viscous input and output means, first spring means for urging said first piston to reduce the drive force in the viscous clutch and for reacting on said friction clutch means to increase the engagement force with the input member when the pressure in the apply chamber increases.

5,330,039

CLUTCH WITH TORQUE MEASURING DEVICE

David J. Baker, Arbroath, Scotland, assignor to TI Matrix Engineering Limited, Angus, Scotland

PCT No. PCT/GB91/00509, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO91/15684, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 2, 1991, Ser. No. 930,655

Claims priority, application United Kingdom, Apr. 2, 1990, 9007350.3

Int. Cl.[5] F16D *25/14, 27/16*

U.S. Cl. 192—30 W **25 Claims**

12. A clutch device comprising:

a support frame,

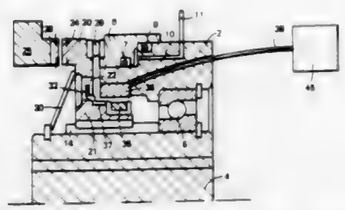
a rotary drive member journaled in said support frame,

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a drivable clutch member journaled in said frame,

a clutch element carried by said rotary drive member for rotation therewith and for movement along the axis of said rotation between a first position in which said clutch element couples said rotary drive member to said drivable clutch member and a second position in which said rotary drive member is decoupled from said drivable clutch member,

clutch control means selectively operable to move said clutch element between said first and second positions thereof,



transducer means mounted on said clutch element, said transducer means being adapted to provide an output signal dependent on torque transmitted by said clutch element in said first position thereof,

electrical treatment means carried by said frame, and

electrical transmission means transmitting said output signal to said electrical treatment means, said electrical transmission comprising co-operating first and second non-contacting members carried respectively by said clutch element and said frame

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5,330,040

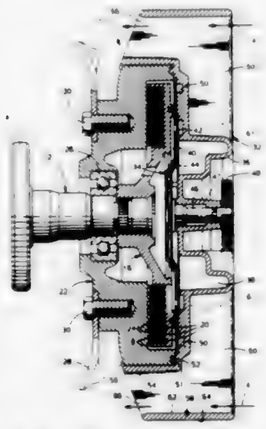
RINGED COVER AND SEAL FOR A VISCOUS FLUID CLUTCH AND METHOD OF MAKING

David B. Drennen, Beilbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1992, Ser. No. 956,231

Int. Cl.[5] F16D *35/02*

U.S. Cl. 192—58 B **21 Claims**



1. A viscous fluid coupling comprising:

(a) a housing having inner and outer surfaces;

(b) a cover, having inner and outer surfaces, cooperating with the housing to form a hollow interior;

(c) a plate mounted between the housing and the cover to separate a fluid working chamber from a fluid reservoir;

(d) a clutch plate rotatably disposed in the working chamber;

(e) an input shaft drivingly connected to the clutch plate; and

(f) a plurality of fins on the outer surface of the cover extending radially past the housing and terminating at attached ring means.

19. A method of forming a viscous fluid clutch having a cover and a housing, comprising:

(a) forming a bowl-like cover having inner and outer surfaces;

(b) forming a housing;

(c) attaching the cover to the housing;

(d) integrally forming fins on the outer surface of the cover so that the fins extend radially beyond the housing; and

(e) forming a ring to the radially outermost ports of the fins.

5,330,041

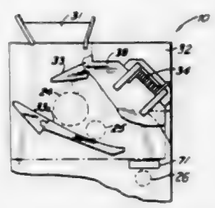
METHOD AND APPARATUS FOR IMPROVED COIN, BILL AND OTHER CURRENCY ACCEPTANCE AND SLUG OR COUNTERFEIT REJECTION

Bob M. Dobbins, Villanova, and Jeffrey E. Vaks, Chester Springs, both of Pa., assignors to Mars Incorporated, McLean, Va.

Continuation of Ser. No. 595,076, Oct. 10, 1990, Pat. No. 5,167,313. This application Jun. 15, 1992, Ser. No. 898,802

Int. Cl.[5] G07D *5/08, 7/00*

U.S. Cl. 194—206 **39 Claims**



1. A method of operating a money validation apparatus which utilizes an acceptance criteria having an outer limit to validate an inserted item as a genuine item, to reduce the acceptance of counterfeit items, comprising:

defining an anti-cheat criteria suitable for sensing a counterfeit item which has a parameter falling close to the outer limit of the acceptance criteria;

testing an item and generating characteristic data for the item;

comparing the time characteristic data to the anti-cheat criteria;

adjusting the acceptance criteria for the genuine item to reduce the acceptance of counterfeit items if the item characteristic data for the inserted item is within the anti-cheat criteria; and,

utilizing the adjusted acceptance criteria to test a subsequently inserted item.

5,330,042

ESCALATOR APPARATUS

Yoshio Ogimura, Saitama, and Megumi Ookubo, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 25, 1993, Ser. No. 8,140

Claims priority, application Japan, Jan. 23, 1992, 4-010047; Feb. 18, 1992, 4-030832

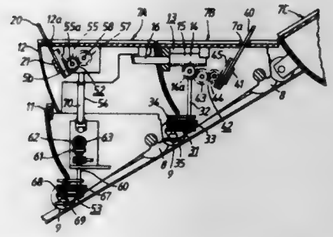
Int. Cl.[5] B66B *23/12*

U.S. Cl. 198—333 **5 Claims**

1. An escalator having a plurality of steps provided endlessly in a line and running between mounting and dismounting areas, for carrying passengers and a wheeled conveyance comprising:

(a) a first special step having a movable footplate capable of rising and falling, and a first wheelstop mechanism; and

(b) a second special step adjacent to the first special step having a lift mechanism capable of projecting and retracting for supporting the movable footplate, and a second wheelstop mechanism capable of projecting and retracting in linked movement with the lift mechanism, for stopping a wheel of the wheeled conveyance;



(c) wherein, when the wheeled conveyance is mounted, the lift mechanism projects in a horizontal path area between the mounting and dismounting areas, the movable footplate of the first special step is supported at the same height as the second special step, and the supported movable footplate of the first special step travels along an inclined path area between the mounting and dismounting areas.

5,330,043

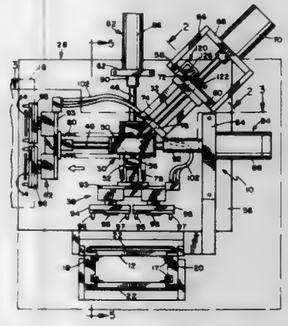
TRANSFER APPARATUS AND METHOD FOR TESTING FACILITY

Larry R. Stuckey, San Diego, Calif., assignor to Delta Design, Inc., San Diego, Calif.

Filed May 25, 1993, Ser. No. 66,863

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—346.2 **10 Claims**



1. A transfer apparatus for transferring chips back and forth from a conveyor to a test station, comprising:

a mounting frame for locating above a conveyor for transporting items to be tested and adjacent a test rig for testing items from the conveyor;

a transfer head assembly rotatably mounted on the frame for picking up items from the belt and transferring them to the test rig for testing before returning tested items to the belt;

the transfer head assembly comprising a rotatable drive shaft, a first pick-up head assembly mounted at one end of the drive shaft and oriented at 45° to the drive shaft, a second pick-up head assembly mounted at said one end of the drive shaft and oriented 45° to the drive shaft and perpendicular to the first pick-up head, and drive means for rotating the drive shaft between a first position in which the first pick-up head assembly is positioned above the conveyor and the second pick-up head assembly is positioned facing the test rig, and a second position in which the first pick-up head assembly is facing the test rig and the second pick-up head assembly is positioned above the conveyor;

each pick-up head assembly including a pick-up head means for picking up and holding an item to be tested and ejecting a tested item onto the conveyor; and

pick-up head drive means for driving each pick-up head means back and forth in each of said rotatable shaft positions between extended and retracted positions in a first direction perpendicular to said conveyor and at an angle of 45° to said shaft and in a second direction perpendicular to said first direction and to said test rig and at an angle of 45° to said shaft;

whereby said rotatable shaft is repeatedly rotated back and forth between said first and second positions, said first pick-up head being extended to pick up at least one item to be tested from the conveyor in said first position, being extended to position said item for testing at said test rig in said second position, and being extended to return the tested item to the conveyor and pick up a new item to be tested on return to said first position, while said second pick-up head is simultaneously extended to pick up at least one item to be tested from the conveyor in said second position, is extended to position said item for testing at said test rig in said first position, and is extended to return the tested item to the conveyor and pick up a subsequent item to be tested on return to said second position.

5,330,044

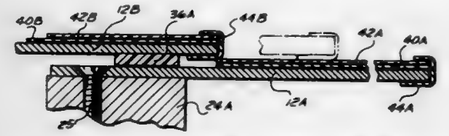
CONVEYOR WITH PLATFORM CONTAINING INDICIA

Dennis R. Conklin, Jr., 2700 North Hayden, Apt. 1108, Scottsdale, Ariz. 85257

Filed Apr. 14, 1993, Ser. No. 47,580

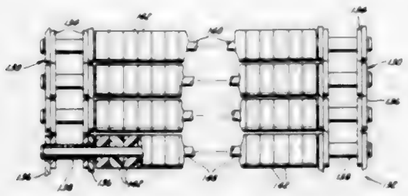
Int. Cl.[5] B65G *43/00*

U.S. Cl. 198—502.1 **17 Claims**



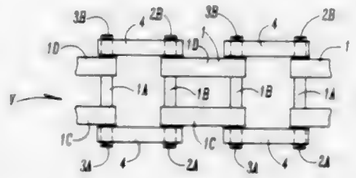
1. In a conveyor (**10**) including a plurality of baggage carrying panels (**12**) a plurality of support bars (**24**), one for each panel (**12**); means for supporting the support bars (**24**) in a spaced apart position along the distance covered by the conveyor (**10**) in a repeat pattern from beginning to end to beginning; means for fastening each panel (**12**) to one support bar (**24**); and means for transporting the support bars (**24**) and the panels (**12**) along the support means (**28**); the panels (**12**) being arranged at least immediately adjacent each other to provide at least a viewable portion (**32**) of the panel (**12**) that is visible when the conveyor (**10**) is operating; wherein the improvement comprises: a protective lamina having visual information, fastened to the viewable portion (**32**) of at least one panel (**12**), protecting the visual information, and each of the panels (**12**) overlaps its immediately preceding panel (**12**) to produce an overlapped section (**43**) on the face of the preceding panel (**12**), and further including a length of tape placed along the length of the preceding panel (**12**) on its overlapped section (**34**) to act as a spacer (**36**) between the overlapped section (**34**) of the preceding panel (**12**) and the immediately adjacent following panel (**12**).

5,330,045
LOW BACKLINE PRESSURE CHAIN
Wasyly G. Hodlewsky, Greendale, Wis., assignor to Rexnord Corporation, Milwaukee, Wis.
Division of Ser. No. 787,788, Nov. 4, 1991, which is a continuation of Ser. No. 452,290, Dec. 18, 1989, Pat. No. 5,096,050, which is a division of Ser. No. 689,885, Jan. 9, 1985, Pat. No. 4,909,380, which is a continuation of Ser. No. 350,842, Feb. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 269,749, Jun. 2, 1981, abandoned. This application Aug. 24, 1993, Ser. No. 111,180
Int. Cl.[5] B65G *17/00*
U.S. Cl. 198—779 12 Claims



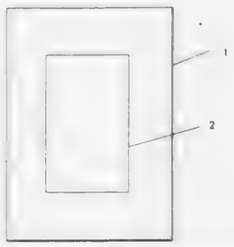
1. A low backline pressure chain, comprising:
first and second parallel strands of chain, each strand of chain comprising a plurality of bushing links and pin links and hollow pins connecting said links together;
a plurality of shafts, each shaft mounted at one end in one of said hollow pins in said first strand of chain and at the other end in the corresponding hollow pin in the second strand of chain; and
a plurality of rollers loosely mounted for rotation on each of said shafts.

5,330,046
CERAMIC CONVEYOR BELT
Yukio Yuzawa; Yoshinori Yamamoto; Hiroyuki Ohira; Toshimasa Yoshizane, and Nobuyuki Shibasaki, all of Kumagaya, Japan, assignors to Chichibu Cement Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 963,069, Oct. 19, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 104,732
Claims priority, application Japan, Oct. 23, 1991, 3-275650; Mar. 31, 1992, 4-76677
Int. Cl.[5] B65G *17/06*
U.S. Cl. 198—850 1 Claim



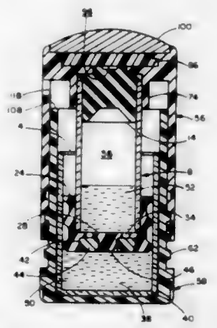
1. A ceramic conveyor belt assembly comprising a number of first ceramic belt parts (**8**) and a number of second ceramic belt parts (**9**) successively interconnecting the first ceramic belt parts,
each of said first ceramic belt parts (**8**) being formed as an integral part and having first, second, third and fourth anchor means (**8***a*, **8***b*, **8***c*, **8***d*) at front left, front right, rear left and rear right locations thereof, respectively,
each of said second ceramic belt parts (**9**) being formed as an integral part and having first, second, third and fourth catch means (**9***a*, **9***b*, **9***c*, **9***d*) at front left, front right, rear left and rear right locations thereof, respectively,
said anchor means (**8***a*, **8***b*, **8***c*, **8***d*) and the corresponding catch means (**9***a*, **9***b*, **9***c*, **9***d*) being adapted to be engageable with and disengageable from each other to assemble and disassemble the ceramic conveyor belt assembly as they are turned about 90° between first and second positions relative to each other

5,330,047
PACKAGING FOR AGRICHEMICALS
Samuel T. Gouge, Raleigh, N.C.; Steven F. McEvoy, Jacksonville, Fla.; Glenn C. Knudsen, and Leonard E. Hodakowski, both of Raleigh, N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.
Continuation-in-part of Ser. No. 874,608, Apr. 27, 1992, abandoned. This application Feb. 22, 1993, Ser. No. 20,506
Int. Cl.[5] B65D *85/82*
U.S. Cl. 206—205 14 Claims



1. A containerization system which comprises at least one inner cold water soluble bag containing an agrochemical composition in an outer water insoluble bag made of a flexible and sealed polymeric film, each bag having a surface area delimitated by the external largest outline thereof, wherein the surface area of the inner bag is at least 5% less than the surface area of the outer bag, and wherein the entire outer surface of said inner bag is loosely enclosed by the outer bag such that the inner bag is free to move in the outer bag.

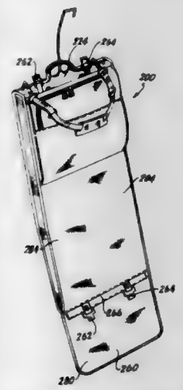
5,330,048
CONTROLLED ACCESS MIXING VIAL
Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.
Filed Jul. 9, 1993, Ser. No. 89,456
Int. Cl.[5] B65D *25/08*
U.S. Cl. 206—221 15 Claims



1. A controlled access mixing vial, for use with first and second pharmaceutical components, the second component being a liquid component, comprising:

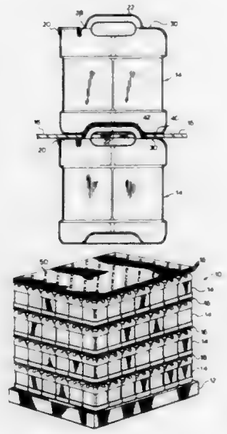
a mixing container having first and second ends with openings at the first and second ends;
a septum mounted to and sealing the first end of the mixing container;
a breachable seal at the opening at the second end of the mixing container, the first component being within a mixing region between the seal and the septum;
a supplemental container;
the mixing and supplemental containers being coaxially translating containers with the second end of the mixing container sealably positioned within the supplemental container, the second component being within a variable volume region defined by the mixing and supplemental containers;
a first rotary drive element associated with and covering the first end of the mixing container;
a second rotary drive element associated with the supplemental container;
thread means for rotationally coupling the first and second rotary drive elements so that rotating the first and second drive elements in a first rotary direction from an initial rotary orientation to a final rotary orientation drives the mixing container into the supplemental container from a pre-mixed condition to a post-mixed condition to force the second component past the breachable seal and into the mixing region causing the first and second components to mix to create a mixed pharmaceutical;
a first rotary lock operably coupling the first and second rotary drive elements when in the initial rotary orientation and preventing rotary movement except in the first rotary direction when in the initial rotary orientation; and
a second rotary lock operably coupling the first and second drive elements when in the final rotary orientation and preventing any relative rotary movement therebetween when in the final rotary orientation.

5,330,049
GARMENT BAG WITH REINFORCING MEMBERS
Jeffrey A. Bertelsen, Somerville, N.J., and Robert P. Davis, Vidalia, Ga., assignors to Tumi Luggage, Inc., Middlesex, N.J.
Filed Mar. 16, 1992, Ser. No. 851,842
Int. Cl.[5] A45C *5/12, 13/10, 13/36*
U.S. Cl. 206—279 18 Claims



1. A flexible garment bag of the type adapted to be folded from an extended configuration to a folded configuration for carrying, comprising
a front panel,
a rear panel,
means for connecting said front panel in confronting relationship to said rear panel to define an enclosed garment receiving cavity,
means for providing access to said garment receiving cavity,
only one reinforcing member, said reinforcing member being elongated and extending along a top end of the garment bag,
handle means connected to said reinforcing member for carrying the garment bag in the folded configuration,
support means connected to said reinforcing member within said garment receiving cavity for supporting garments,
an elongated stiffening member secured to one of said panels exterior of said garment receiving cavity, said stiffening member extending parallel to said reinforcing member but remote therefrom so that said stiffening member lies adjacent said top end of the garment bag in the folded configuration, said stiffening member being less rigid than said reinforcing member, and
securing means for securing the garment bag in the folded configuration so that a bottom end of the garment bag lies adjacent said top end, said securing means including at least two fasteners each having a first portion and a second portion, said first portions being connected to said top end of the garment bag and said second portions being connected adjacent said stiffening member so that upon engagement of said first and second portions with one another in the folded configuration of the garment bag, forces transmitted through said fasteners to a lower region of the garment bag are not transmitted through said stiffening member.

5,330,050
PALLET MERCHANDISING SYSTEM FOR CONTAINERS
Benjamin H. Stansbury, Jr., Los Angeles, Calif., and Robert G. Dickie, Newmarket, Canada, assignors to Cornos Corporation, Scarborough, Canada
Filed Nov. 12, 1993, Ser. No. 150,902
Int. Cl.[5] B65D *19/00*
U.S. Cl. 206—386 1 Claim



1. A palletized merchandising system comprising
a pallet,
a plurality of like containers stacked in layers on said pallet,
a divider sheet interposed between said layers of like containers, wherein the improvement is characterized by
said like containers comprising
a unitary blow molded body of a generally parallelepiped shape, said like containers having a top face, bottom face, a front face and side walls and a diagonally extending parting line,

VOL 1164 ISS 3 JL 19 1994 UMI

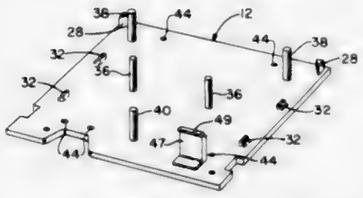
a pour spout in said top face spaced along said parting line towards one corner of said top face,
a handle on the top face extending upwardly therefrom and spaced along the parting line,
a recess in said bottom face extending upwardly therefrom and spaced along the parting line, said recess sized to receive a handle of a like container in a stacking relation, and
said divider sheets having a plurality of apertures adapted to receive said handles of said like containers and to orient the front face of said like containers when an upper layer of like containers is stacked over a lower layer of like containers.

5,330,051

DIMENSIONALLY STABLE FIBERGLASS REINFORCED THERMOPLASTIC MAGNETIC TAPE DATA CARTRIDGE BODY

Robert D. Dangler, Brecksville, and Frederick J. Brannan, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 6, 1992, Ser. No. 847,540
Int. Cl.[5] **B32B** *27/40;* **B65D** *6/00, 85/575;* **G11B** *23/02*
U.S. Cl. 206—387 **4 Claims**



1. A tape cartridge case comprising a backplate and cover both formed of a fiber reinforced thermoplastic matrix material, wherein said fiber reinforced thermoplastic matrix material contains from about 15 to about 85 percent by weight of a thermoplastic polyurethane component and from about 85 to about 15 percent by weight of an immmiscible thermoplastic polymer component based upon the total weight of the thermoplastic polyurethane component and the immiscible thermoplastic polymer component, wherein the amount of fibers in the matrix material is from about 5 percent to about 60 percent by weight based upon the total weight of the thermoplastic polyurethane component, the immiscible thermoplastic polymer component and the fibers, the matrix material being prepared in the presence of high shear, wherein said immiscible thermoplastic polymer component is PET, modified PET, a block styrenic copolymer, a polyether block amide (PEBA), a polyester-ether copolymer, or ethylene propylene diene (EPDM) terpolymers, and wherein the exterior surfaces of said case are smooth and essentially free of fibers.

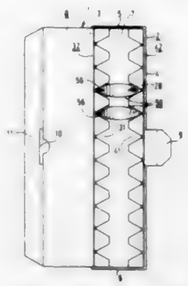
5,330,052

PACKED ELECTRIC LAMPS

Wilhelmus J. J. Van Hest, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 28, 1993, Ser. No. 70,147
Claims priority, application Netherlands, Jul. 24, 1992, 9201333; European Pat. Off., Aug. 13, 1992, 92202495.5
Int. Cl.[5] **B65D** *85/42*
U.S. Cl. 206—419 **10 Claims**

1. Packed electric lamps comprising
a box (**1**) provided with a base (**2**) having a base wall (**7**) and side walls (**3, 4, 5, 6**) connected thereto and to one another, and provided with a lid (**8**),
first seats (**31**) and in line therewith second seats (**41**) being present in the base (**2**) at a first wall (**3**) and a second wall (**4**), respectively, of said walls, and
electric lamps (**20**) enclosed each at a distance from others in a respective first (**31**) and a respective second seat (**41**),
characterized in that the lamps (**20**) are enclosed in cushion-shaped cartons (**50**) having a longitudinal direction (**51**),



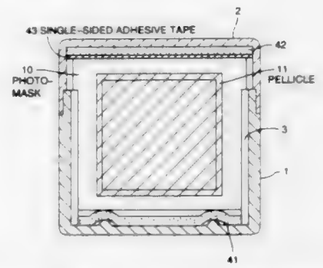
the first seats (**31**) and the second seats (**41**) are present at a first side wall (**3**) and a second side wall (**4**) which face one another and run substantially parallel to the longitudinal direction (**51**) of the cushion-shaped cartons (**50**), which cartons (**50**) are each accommodated in a first seat (**31**) and in a second seat (**41**) in line therewith.

5,330,053

CASE FOR PHOTOMASK

Kazuhiro Tabuchi; Hiroyuki Inomata, and Takashi Yamauchi, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 831,903, Feb. 6, 1992, abandoned. This application Jul. 7, 1993, Ser. No. 88,861
Claims priority, application Japan, Feb. 7, 1991, 3-4455
Int. Cl.[5] **B65D** *85/48*
U.S. Cl. 206—455 **6 Claims**



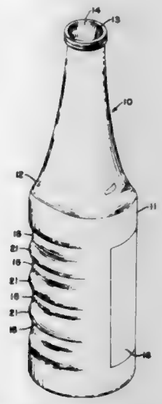
1. A case for a plate for use in a photolithographic process, comprising a case main unit having an upper opening for accommodating the plate, a lid for the opening of the case main unit, a lower cushion on an inner bottom of the case main unit, and an upper cushion removably disposed on an inner ceiling of the lid, whereby the plate is accommodated as elastically squeezed at opposite peripheral ends of the plate between the upper and lower cushions, wherein the upper cushion has a smooth surface on the side touching the inner surface of the lid and has a coarse surface on the side touching the accommodated plate, and the upper cushion is not adhered to the inner surface of the lid, wherein the upper and lower cushions are made of a rubber from the group consisting of a silicone rubber or a fluoro-rubber.

5,330,054

BEVERAGE BOTTLE WITH FINGERGRIPS

Harvey J. Brown, Dix Hills, N.Y., assignor to Get A Gripp II Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 642,428, Jan. 17, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 987,877
Int. Cl.[5] **B65D** *1/02, 23/08, 23/10*
U.S. Cl. 206—459.5 **18 Claims**



1. A hand grippable bottle for holding a beverage which can be securely grasped and which affords a high degree of beverage product information visibility while being hand held, comprising: a slender bottle having a main body closed at one end by a base and a neck extending from an opposite end of the main body, and a beverage contained in the bottle, said neck being tapered in a direction toward an open end of the neck where said neck terminates, said main body having a plurality of finger indentations formed therein, arranged on a first side of the main body, suitable for receiving a corresponding plurality of a person's fingers to facilitate grasping and holding of the bottle without slipping, the individual finger indentations of said plurality being separated from each other by adjoining non-indented regions of the main body, said main body having a second side, opposite the first side, which does not define any finger indentations and which bears information as to the beverage contained in the bottle.

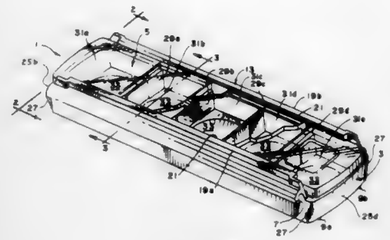
5,330,055

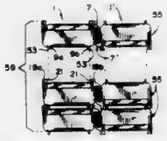
PACKAGE ASSEMBLY FOR SEPARATELY PACKAGING, DISPLAYING, AND DISPENSING A PLURALITY OF ARTICLES

Robert T. Kendra, Irwin; Philip H. Weihl, Greensburg; Thomas J. Baric, Trafford, all of Pa.; Kent W. Murphy, Wooster, Ohio; Edward L. Bejster, Latrobe, Pa., and Harry C. Dundore, Rome, Ohio, assignors to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 938,638, Aug. 31, 1992. This application May 12, 1993, Ser. No. 62,372
Int. Cl.[5] **B65D** *73/02*
U.S. Cl. 206—534.1 **25 Claims**

1. A package module for separately packaging a plurality of articles, comprising:
a tray means for holding articles and having an axis, including a top portion, a bottom wall, sidewalls, and a plurality of spaced-apart walls traversing said axis for defining a plurality of article holding chambers;
a lid means for covering the tray means, said lid means being slidably mounted on the top portion of said tray means for sequentially uncovering said chambers to sequentially dispense said articles when slid along said axis;
means for releasably interconnecting a sidewall of the tray means of two different package modules to form a single package assembly from two package modules, and
means for detachably connecting the bottom wall of the tray





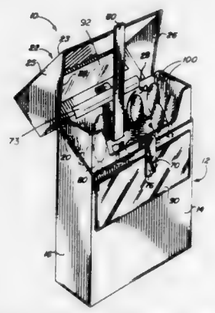
means of one package module with the top portion of the tray means of another package module to render said modules vertically stackable into a compact and shock absorbent assembly.

5,330,056

PACKAGE FOR COSMETIC ARTICLES

Daniel de la Rocha, 6303 SW. 42 St., Miami, Fla. 33155

Filed May 18, 1993, Ser. No. 63,884
Int. Cl.[5] **B65D** *69/00*
U.S. Cl. 206—581 **9 Claims**



1. A package for containing cosmetic articles therein comprising:
a container including a bottom, a front wall, a rear wall, and opposite side walls, all having inner and outer surfaces, and an open top disposed in communication with an interior of said container,
said container further including a lid disposed for placement in covering relation to said interior of said package on said open top,
carrier means movably disposed within said interior for holding said cosmetic articles in a predetermined arrangement, said carrier means being movable within said interior between a lowered, stowed position, and a raised position, said raised position facilitating retrieval of the cosmetic articles through said open top,
movement means for moving said carrier means between said lowered, stowed position and said raised position,
said lid hingedly attached along an upper edge of said rear

wall and movable between an open position and a closed position in covering relation to said open top,

said carrier means including a carrier including a central core having a top face, a bottom face, a front face, a rear face, and opposite side faces,

said central core including a plurality of channels formed therein, each of said channels including an open end at said top face of said central core, and being structurally adapted to removably receive one of the cosmetic articles therein such that a portion of each of the cosmetic articles extend from said top face and outwardly from said open top of said container when said carrier means is in said raised position, and

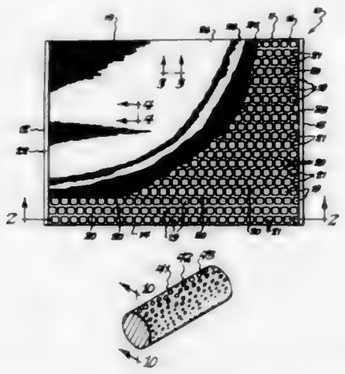
said sample carrier further including an outer cover disposed in overlying relation to said top face, said bottom face, said front face, and said rear face of said central core.

5,330,057

SCREEN AND SCREEN CLOTH FOR VIBRATORY MACHINE AND METHOD OF MANUFACTURE THEREOF

Ronald J. Schiller, Lancaster, and John J. Bakula, Grand Island, both of N.Y., assignors to Derrick Manufacturing Corporation, Buffalo, N.Y.

Filed Jan. 8, 1993, Ser. No. 1,857
Int. Cl.[5] B07B *1/49*
U.S. Cl. 209—392 **33 Claims**



1. A screen assembly for a vibratory screening machine comprising a frame, and a screen cloth on said frame having wires with a diameter D of between about 1.6×10^{3} micrometers and 17.8 micrometers and having a peak to valley roughness R of between about $R=0.05D$ and $R=0.333D$

5,330,058

OPEN-FRAME RACK FOR SELF-SERVICE VENDING OF EVERGREENS

Everett Rice, 4094 Terrance Ct., Fort Gratiot, Mich. 49054

Filed Sep. 17, 1993, Ser. No. 123,643
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—4 **19 Claims**

1. An open-frame rack having at least a first story, said open-frame rack comprising:

a plurality of floors, each floor comprising:

a perimeter frame, said perimeter frame being provided with a plurality of apertures;

a plurality of beams connected with said perimeter frame, each beam of said plurality of beams being provided with a plurality of apertures;

a plurality of cross-beams connected with said perimeter frame, said cross-beams being oriented transverse with respect to said beams, each cross-beams of said plurality of cross-beams being provided with a plurality of apertures;

a plurality of runners connected with said perimeter frame, said runners being oriented parallel with respect to said beams; and

a plurality of pins, a pin of said plurality of pins being insertably received in selected apertures of said plurality of apertures of said perimeter frame, said plurality of beams and said plurality of cross-beams; and

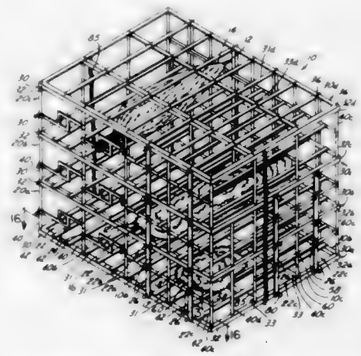
a plurality of posts, each end of each post of said plurality of posts being structured to insertably receive said pins;

wherein said first story comprises:

a first floor of said plurality of floors;

selected said apertures of said first floor insertably receiving a first set of pins of said plurality of pins;

a first set of posts of said plurality of posts insertably receiving at one end thereof each pin of said first set of pins;



a second floor of said plurality of floors vertically spaced from and superimposed over said first floor;

selected said apertures of said second floor insertably receiving a second set of pins of said plurality of pins; and

said first set of posts insertably receiving at the other end thereof each pin of said second set of pins to thereby define said vertical spacing between said first and second floors;

wherein each beam of said plurality of beams is positioned so as to define at least one compartment, said plurality of posts being mutually spaced a predetermined distance apart to thereby further define said at least one compartment; and

wherein said at least one compartment is provided with at least one access door connected with at least one of a said post and a said perimeter frame.

5,330,059

STORING, ORGANIZING AND RETRIEVING DEVICE FOR PROTECTIVE CASES ENCLOSING OPTICAL OR MAGNETIC RECORDING OR RECORDED MEDIA

Darrell J. Metcalf, 520 First St., Fillmore, Calif. 93015

Filed Jul. 6, 1992, Ser. No. 908,032
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—40 **24 Claims**

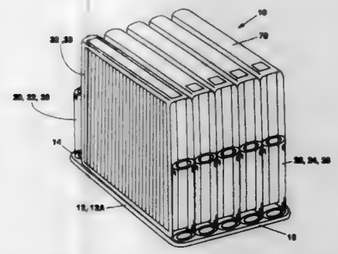
1. A storing, organizing and retrieving device for protective cases enclosing optical or magnetic recording or recorded media, said protective cases having opposite sides that are similarly shaped, and said device comprising:

a) a base member,

b) at least one first protective-case positioning member extending normal from the surface of said base member,

c) at least one second protective-case positioning member extending normal from the surface and on the opposite side of said base member in alignment with said first protective-case positioning member and

d) said first and second members have one or more protective-case alignment surface which is formed contiguously



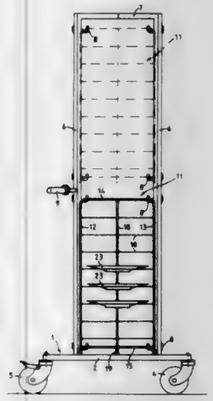
along a span of said members, and said members are spaced to allow opposites edges of one or more protective case to be slideably aligned between said alignment surfaces.

5,330,060

SHELF AND TRANSPORTATION SYSTEM, IN PARTICULAR FOR GASTRONOMIC PURPOSES

Hubert Bohner, Dellenhag 8, 7967 Bad Waldsee-Gaisbeuren, Fed. Rep. of Germany

PCT No. PCT/DE91/00779, § 371 Date Mar. 30, 1993, § 102(e) Date Mar. 30, 1993, PCT Pub. No. WO92/05723, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 3, 1991, Ser. No. 40,353
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1990, 4031308; Mar. 15, 1991, 4108356
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—41 **13 Claims**



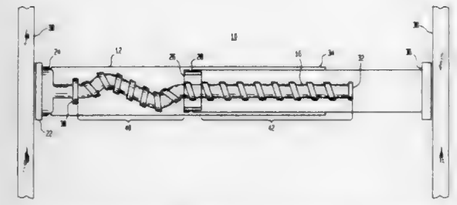
1. A shelf and transportation system, in particular for gastronomic purposes, said system comprising a mobile bearing structure including four vertical square columns which are arranged in a square, said columns having lateral surfaces which are parallel to the diagonals of the square and are connected to one another at the top and at the bottom; a plurality of inserts which can be hooked onto the square columns and which have a plurality of retaining devices for objects which are to be deposited or transported, each of said inserts having a rectangular frame with horizontal and vertical legs the width of each frame corresponding approximately to the distance between two adjacent square columns of the said bearing structure, and each frame being hooked in the region of its corners into hooks which are attached to said square columns.

5,330,061

SPINNING SHOWER ROD MECHANISM

Charles E. Geltz, Drexel Hill, Pa., assignor to Zenith Products Corporation, Aston, Pa.

Filed Mar. 17, 1993, Ser. No. 32,616
Int. Cl.[5] A47H *1/08*
U.S. Cl. 211—105.4 **15 Claims**



1. A telescoping rod assembly which can be secured between two supports comprising:

a first hollow tube having first and second ends;

a second hollow tube having first and second ends fitted within said first hollow tube, said first end for bracing against one of said supports;

a flexible threaded rod having first and second ends fitted within said second hollow tube, said first end for bracing against the other of said supports;

threading means secured to said second hollow tube for extendably threading said flexible threaded rod in said first hollow tube; and

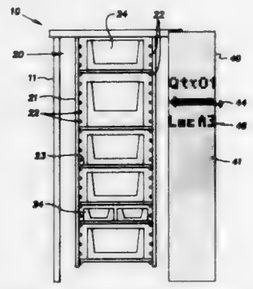
securing means for securing said first end of said first hollow tube substantially close to said first end of said flexible threaded rod.

5,330,062

LIGHT TREE DISPLAY FOR A HORIZONTAL CAROUSEL

Michael L. Murphree, Naperville, Ill., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 10, 1992, Ser. No. 974,252
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—122 **25 Claims**



1. A carousel system for delivering items to a loading or picking station and communicating information to an operator, comprising:

at least one horizontally movable carousel having a plurality of vertically spaced shelves for storing and delivering items to a specific location;

a visible display including an array of regularly spaced, lightable elements positioned adjacent the carousel and

substantially spanning the vertical height of the carousel; and

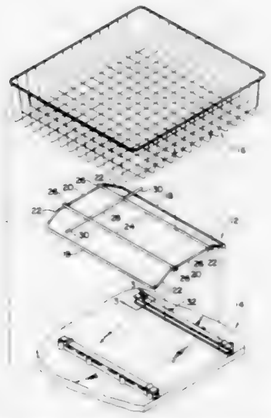
means to operate the display responsive to an operating condition of the horizontal carousel such that loading or picking information regarding a selected shelf is displayed substantially horizontally aligned with and adjacent that shelf.

5,330,063

ORGANIZER GLIDE SYSTEM

Lee E. Remmers, Ocala, Fla., assignor to Vermont American Corporation, Louisville, Ky.

Filed Jun. 2, 1992, Ser. No. 892,284
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—162 10 Claims



1. A reciprocating organizer glide system comprising:

a base frame comprising a pair of spaced apart parallel front and rear cross members, a pair of leg members extending downward at an angle from the distal ends of each one of said cross members providing flexible support, a pair of side runners spaced apart extending longitudinally and parallel to one another and generally perpendicular to said cross members and said leg members, said side runners being attached to the distal ends of said leg members, a pair of spaced apart and parallel support members extending lengthwise, parallel to, and in between said side runners being attached to said cross members and a stop member attached to said support members between said front and rear cross members, located near one end of said support members, said stop member extending outward at least as far as said side runner; and

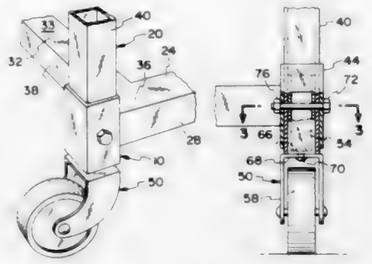
a pair of support rails mounted to a support structure, spaced apart and parallel to one another, each one of said support rails comprising a top surface, an exterior sidewall, and an interior sidewall, an inner channel within said interior sidewall extending continuously along the entire length of said support rail for supporting said side runners of said base frame, said side runners being slidably engaged within said channels of said support rails, a plurality of spaced apart external grooves extending longitudinally within said exterior sidewall of each of said support rails, and a front or rear stop means located on said top surface near one end of each of said support rails.

5,330,064

SUPPORT ASSEMBLY FOR A HOLDING RACK

Donald M. Hall, P.O. Box 1247, Progress St., Kingston, N.Y. 12401

Filed Apr. 29, 1993, Ser. No. 53,801
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—182 13 Claims



1. A support assembly for a holding rack, said support assembly comprising:

a) an upright member;

b) said upright member including a hollow tube;

c) an exterior support member disposed adjacent to said upright member, said exterior support member being configured for being disposed between said upright member and an outer perimeter of a frame of a holding rack;

d) a caster disposed substantially below said exterior support member;

e) said caster including an extension configured for being received in said hollow tube; and

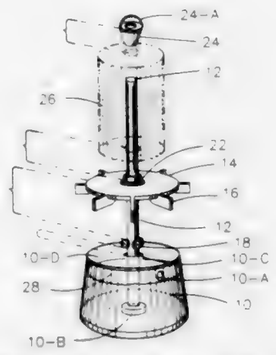
f) said extension being received in said hollow tube.

5,330,065

CARTRIDGE FILTER CLEANING ROTATABLE RACK

James A. Bradley, 717 North Halifax Dr., Ormond Beach, Fla. 32176

Filed Sep. 4, 1992, Ser. No. 940,492
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—163 8 Claims



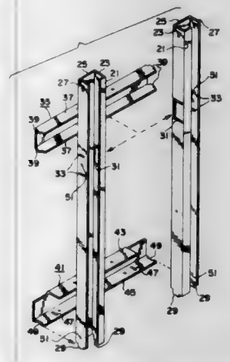
1. A rotatable device for holding objects, comprising a hollow vessel pedestal base, whereby said pedestal base is comprised of a solid flat bottom having an interior floor, a solid flat top, said flat bottom and flat top being parallel, and an inclined circumferential wall serving to connect said solid flat bottom and said solid flat top, whereas said pedestal base disposes an elongated tubular rotatable stanchion extending perpendicularly from the center of the interior floor of said pedestal base, through an aperture in the center of said solid flat top, said rotatable stanchion protrudes above said pedestal base, thereby providing receiving and holding means for a cartridge filter, said rotatable stanchion disposes a plurality of rotatable support wheels, said support wheels being circumferentially spaced on said rotatable stanchion, said support wheels providing the total support means for said rotatable stanchion and a flat rotatable platform on top thereof.

5,330,066

TWO TIER FRAME

Joseph W. Carroll, West Chester, Pa., assignor to Kim Manufacturing Company, Downingtown, Pa.

Filed Aug. 31, 1992, Ser. No. 938,397
Int. Cl.[5] A47B *47/00*
U.S. Cl. 211—189 12 Claims



1. A frame device for supporting objects such as batteries during seismic stress, comprising:

a pair of vertical frame members each formed in a G shaped cross section and having an inside face facing the other of the pair, a front face extending perpendicularly away from said inside face to an outside face parallel to and facing away from said inside face, and a back face extending perpendicularly away from said inside faces for only part of the distance to said outside face;

a top horizontal cross member formed in a C shaped cross section and having horizontally extending tab portions at each terminal end;

said inside faces of said vertical frame members each having slots for passing one end of said top cross member through each inside face and said outside faces of said vertical frame members each having slots positioned to receive said tab portions of said top cross member to fixedly attach said top cross member to said vertical frame members;

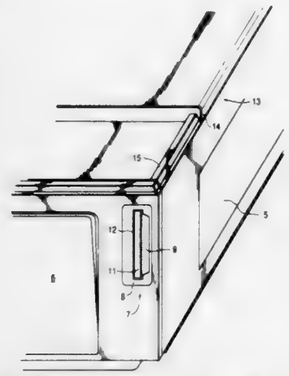
a bottom horizontal cross member formed in a C shaped cross section and having a bottom face extending the width of said top cross member, said bottom face having a slot and a notch proximate each terminal end, said vertical members each having tabs at the lower terminal of the inside and outside faces for engaging said slot and notch on said bottom face, said bottom cross member having a top face sized to engage said inside faces of said vertical frame members.

5,330,067

COLLAPSIBLE TRANSPORT BOX

Oddbjorn Gronnevik, Nesbru, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO92/00026, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO92/13771, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 7, 1992, Ser. No. 927,492
Claims priority, application Norway, Feb. 8, 1991, 910494
Int. Cl.[5] B65D *7/00*
U.S. Cl. 220—7 5 Claims



1. In a collapsible box formed of a generally planar material blank including a bottom and side walls hinged or otherwise connected to said bottom to be foldable relative thereto to a folded position whereat adjacent edges of adjacent pairs of said walls form respective corners of said box, and releasable connections joining said adjacent pairs of walls of respective said corners, the improvement wherein each said releasable connection comprises:

a vertical slot formed in a first said wall;

a fastening tongue projecting from said edge of a second said wall;

said tongue extending through said slot in a direction from inwardly to outwardly of said box; and

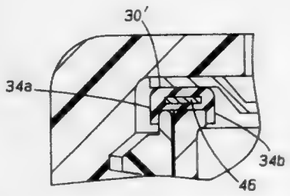
a portion of said tongue projecting outwardly of said slot being bent laterally and extending across an external portion of said first wall.

5,330,068

FUEL TANK CLOSURE ASSEMBLY

Daniel M. Duhaime, Bloomfield Hills; Mark R. Henault, Dearborn, and Daniel J. Kmiecik, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 86,070
Int. Cl.[5] B65D *53/02*
U.S. Cl. 220—304 3 Claims



1. A fuel tank closure assembly comprising:

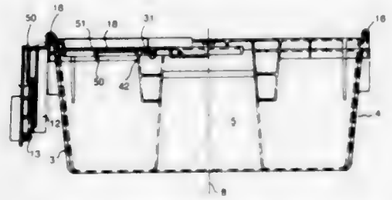
a fuel tank wall having a nipple, with the nipple including a planar sealing surface and at least one radial locating surface;

an annular seal having an annular body and at least one annular lip, said seal mounted on said nipple with said body overlying said planar sealing surface and said lip being retained by said radial surface;
a closure overlying said body of said seal;
means for retaining said closure against said seal; and
a support substantially enclosured within said seal whereby said seal will maintain a substantially planar and circular shape during mounting of said seal onto said nipple.

5,330,069
BI-FOLD LID FOR CONTAINER

Barry Jamison, Cincinnati, Ohio, and Eric Stein, Tega Cay, S.C., assignors to Buckhorn Material Handling Group, Inc., Milford, Ohio

Filed Apr. 12, 1993, Ser. No. 45,180
Int. Cl.[5] B65D *43/4*
U.S. Cl. 220—335 **4 Claims**

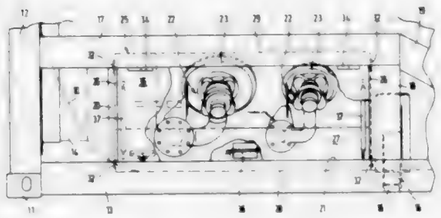


1. A pair of bi-fold lids for covering an open top of a container, each of said bi-fold lids being hinged to a top of one of a sidewall and an endwall of the container and being joined across a mid-portion of the open top to form a joint when the lids are in a closed position, comprising:
each said bi-fold lid having front and rear sections hinged together along a hinge joint and each of said front and rear sections having flanges extending outwardly beyond a hinge axis of said hinge joint and recessed flanges extending inwardly of the hinge axis and formed between said outwardly extending flanges, wherein the outwardly extending flanges of one of said sections overlap corresponding positioned recessed flanges of the other said sections to strengthen the hinge joint between said sections.

5,330,070
TANK CONTAINER HAVING AN ARMATURE BOX

Till Gerhard, Mudersbach, and Dieter Pfau, Elkenroth, both of Fed. Rep. of Germany, assignors to Westerwaelder Eisenwerk Gerhard GmbH, Weitefeld, Fed. Rep. of Germany

Filed Nov. 19, 1993, Ser. No. 155,180
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1992, 9215881[U]
Int. Cl.[5] B65D *7/14*
U.S. Cl. 220—562 **7 Claims**

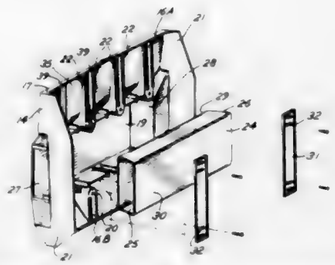


1. A tank container comprising a tank having a tank jacket, a frame at least partially surrounding the tank, armatures protruding from said tank jacket, and an armature box located within the profile of the tank container defined by the frame and surrounding said armatures, wherein the armature box is fixed to the frame and has an opening facing the tank, said opening having a peripheral region which is sealed with respect to said tank jacket.

5,330,071
PLASTIC REFUSE CONTAINER

Brian G. Parker, Alto, Mich., assignor to Waste Management of North America, Inc., Oak Brook, Ill.

Filed Aug. 14, 1992, Ser. No. 929,813
Int. Cl.[5] B65F *3/04*
U.S. Cl. 220—645 **11 Claims**

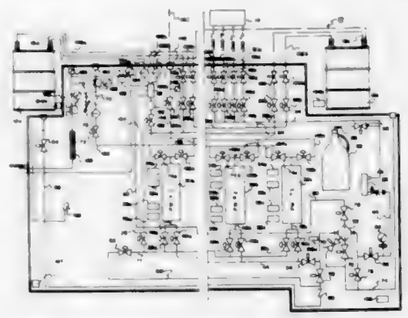


1. A plastic container having a molded plastic body including a floor, a front wall, a rear wall, a first end wall, and a second end wall, the combination thereof defining an open topped plastic container, the container further including a rim defining the perimeter of the open top, a side fork pocket secured to the first end wall and a side fork pocket secured to the second end wall, each side fork pocket including a lift tube, and a side fork pocket housing having a plurality of bolt pockets, with one or more bolt pocket including at least one pillar abutting the rim.

5,330,072
PROCESS AND APPARATUS FOR ELECTRONIC CONTROL OF THE TRANSFER AND DELIVERY OF HIGH PURITY CHEMICALS

Edward T. Ferri, Jr., Gilroy, Calif., and J. Tobin Geatz, Durham, N.C., assignors to Applied Chemical Solutions, Hollister, Calif.

Continuation-in-part of Ser. No. 583,826, Sep. 17, 1990, Pat. No. 5,148,945. This application Sep. 21, 1992, Ser. No. 948,392
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—1 **13 Claims**

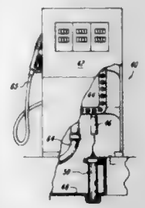


1. A process for control of apparatus for transfer and delivery of chemical from at least one bulk source to at least one end-use station which comprises:
providing multiple vessels, each such vessel including valving to control flow of chemical into and out of the vessel;
providing at least one conduit for the flow of chemical between the bulk source and each such vessel;
providing at least one conduit for the flow of chemical between each such vessel and an end-use station;
providing means to transfer chemical at a uniform flow rate from a bulk source to each such vessel;
providing means to pressurize each such vessel, including valving to control the flow of pressurized gas into each vessel;
providing means to sense level of chemical in each such vessel and to provide a signal therefor;
providing means to sense demand for chemical at an end-use station and to provide a signal therefor;
providing electronic means to analyze the signals from each of the means to sense the presence of chemical in each vessel and the means to sense demand at an end-use station and to regulate the operation of the valving in response thereto;
controlling chemical flow through each vessel through the steps comprising: when low chemical level is sensed in a vessel, the electronic means regulates the valving so as to cause chemical to be transferred from a bulk source into the vessel until a high chemical level is sensed; when a high chemical level is sensed in a vessel, the electronic means regulates the valving so as to cause the vessel to be pressurized; and when a demand is sensed at an end-use station, the electronic means regulates the valving to cause chemical to be delivered under pressure from the vessel to the end-use station; and
maintaining uniform flow rate of chemical through the system through the steps comprising: when a low chemical level is sensed in a first vessel delivering chemical, the electronic means regulates the valving to cause chemical to be delivered from a second vessel before the first vessel is completely evacuated, so as to assure no interruption in flow.

5,330,073
GASOLINE DISPENSER LEAK DETECTORS AND AUTOMATIC SHUT-OFF SYSTEMS

J. Randall Collins, Fort Wayne, Ind., and Ralph F. Cohn, Waltham, Mass., assignors to Boston Advanced Technologies, Inc., Newton, Mass.

Filed Apr. 15, 1993, Ser. No. 47,818
Int. Cl.[5] B67D *5/14*
U.S. Cl. 222—52 **7 Claims**

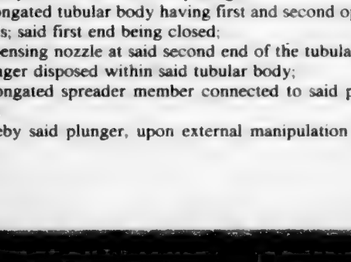


1. A system for controlling dispensation of hydrocarbon fuels comprising:
dispensing means for dispensing a hydrocarbon fuel from a storage tank;
sensor means for sensing a leak of hydrocarbon fuel in an environment proximal to the dispensing means, the sensor means comprising
an optical waveguide having a central axis along which light can transmitted, the waveguide being disposed in said environment, such that fuel present in the environment contacts at least a portion of the waveguide;
irradiation means for projecting light into a first end of said waveguide, and detector means disposed at a second end of said waveguide for detecting the amount of light propagated through the waveguide; and
control means for terminating the dispensation of fuel based on detection of leak by the sensing means.

5,330,074
APPARATUS FOR DISPENSING FLOWABLE MATERIALS FROM A POUCH

Ralph C. Wirsig, Kingston, and David C. King, Bath, both of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

PCT No. PCT/CA91/00408, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993, PCT Pub. No. WO92/08670, PCT Pub. Date May 29, 1992
PCT Filed Nov. 13, 1991, Ser. No. 50,254
Claims priority, application United Kingdom, Nov. 16, 1990, 9024916
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—82 **4 Claims**



1. A dispenser for flowable supplied in pouches of flexible film, comprising:
a) a tube having an inner surface;
b) a lid removably attached to one end of the tube, said lid having an orifice defining a conduit through said lid, and said lid having skirt means for trapping a pouch and holding taut a portion adjacent the orifice of the film of said trapped pouch;
c) a nozzle removably attached to the orifice;
d) a puncture means on said nozzle for piercing the taut portion of film of said trapped pouch;
e) a piston within the tube adapted to move toward and away from the one end of the tube in directions parallel to the longitudinal axis of the tube,
said piston having a peripheral lip means, facing said one end of the tube, for peeling the film of said pouch adjacent the inner surface of the tube by advancement of the piston toward said one end of said tube,
said lip means having a length sufficient for causing said peeled film to form pleats in a plane perpendicular to the longitudinal axis of the tube,
said piston having a piston channel means for receiving said pleats; and
f) a peripheral lid channel on said lid facing said piston and adapted to receive said peripheral lip means.

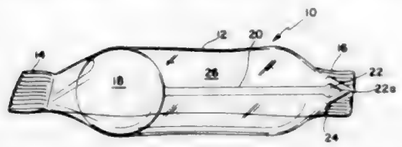
5,330,075
SINGLE PORTION FOOD CONDIMENT DISPENSER

Donald W. Brown, Sr., Pawtucket, R.I., assignor to John G. Brown, No. Providence, R.I.

Filed Jul. 14, 1993, Ser. No. 91,859
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—82 **31 Claims**

1. A dispenser for fluids, comprising:
an elongated tubular body having first and second opposing ends; said first end being closed;
a dispensing nozzle at said second end of the tubular body;
a plunger disposed within said tubular body;
an elongated spreader member connected to said plunger; and
whereby said plunger, upon external manipulation of said

tubular body into communication with said plunger, is movable within the tubular body toward said nozzle to cause ejection of fluid material out of said nozzle and



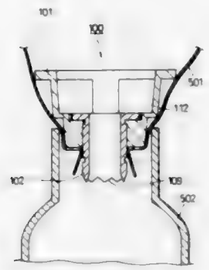
ejection of said connected spreader member through said nozzle and outside said elongated tubular body into the open air for use in spreading the ejected fluid material.

5,330,076

FILLING CONNECTOR AND DISCHARGEABLE BAG

Orihiro Tsuruta, Gunma, Japan, assignor to Orihiro Co., Ltd., Tomioka, Japan

Filed Apr. 27, 1993, Ser. No. 52,829
Claims priority, application Japan, Oct. 5, 1992, 4-266311
Int. Cl.[5] B67B *7/24*
U.S. Cl. 222—83 **14 Claims**



1. A filling connector, comprising:
a tubular first connecting element having a hollow portion; and
a tubular second connection element having teeth formed at one end thereof and supported for sliding movement on an inner circumferential face of said first connection element wherein said first and second connection elements are located within a bag filled with a material and said first connection element is secured to an inner face of said bag;
said first and second connection elements being provided with a holding mechanism for holding said second connection element in a first position in which said second connection element is accommodated within said first connection element and in a second position in which the one end of said second connection element projects from said first connection element.

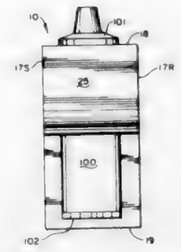
5,330,077

ACCUMULATOR FOR SQUEEZING PLIANT TUBES

Kathryn Swanson, 421 E. Hoffman, Cannon Falls, Minn. 55009

Filed May 27, 1993, Ser. No. 68,660
Int. Cl.[5] B65D *35/28*
U.S. Cl. 222—95 **14 Claims**

1. An appliance for accumulating a viscid material from a pliant tube comprising a unitary fully stationary frame which defines a wedge-shaped channel having a depth of about 3 to 10 cm at the major longitudinal open end and a depth of about 0.5 to 2 cm at the minor longitudinal open end, wherein the frame includes a front portion and a rear portion, with the front portion transversely spaced and longitudinally angled from the rear portion to form the wedge-shaped channel, and the frame is adapted for receiving a pliant tube placed into the channel



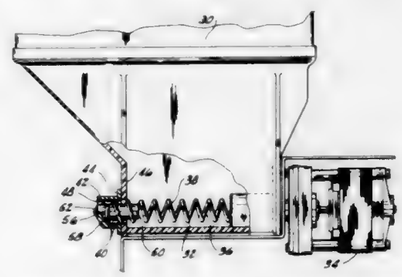
through the major longitudinal open end and moved through the minor longitudinal open end.

5,330,078

ADDITIVE OVERFLOW REDUCTION SYSTEM FOR AN AUTOMATIC VENDING MACHINE

Leonard A. Ficken, Manchester, and Franklin D. Newkirk, Florissant, both of Mo., assignors to Unidynamics Corporation, Stamford, Conn.

Filed Apr. 1, 1993, Ser. No. 41,825
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129.4 **4 Claims**



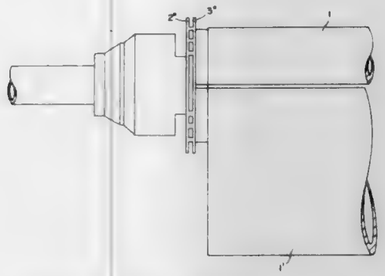
1. An additive overflow reduction system for an automatic vending machine having at least one additive storage container for storing a supply of an additive such as dry creamer, sugar or sugar substitute, a product mixing bowl to which a selected additive is supplied and mixed with a beverage such as coffee or tea, the at least one storage container including an auger-type delivery mechanism for supplying a metered amount of additive to the mixing bowl, the system comprising:
a housing in which the auger is mounted for rotation and defines a bore of substantially the same diameter as the auger, the housing forming an opening of substantially half the cross-sectional area of the auger at an end of the auger above the mixing bowl,
the auger having a conical end with a base diameter at least half the auger diameter portion, protruding through the opening in the housing so as to reduce the cross-sectional area of the opening and prevent residual additive from being disposed in the area of the conical end portion when the auger is not rotating, and
a terminal end portion of the auger adjacent the housing opening having at least a last quarter turn disposed perpendicular to the axis of rotation of the auger.

5,330,079

DISPENSING CARTRIDGE WITH REINFORCED RETAINING FLANGE

Wilheim A. Keller, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland

Filed Jul. 15, 1993, Ser. No. 91,295
Claims priority, application European Pat. Off., Jul. 17, 1992, 92810546.9
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—135 **14 Claims**



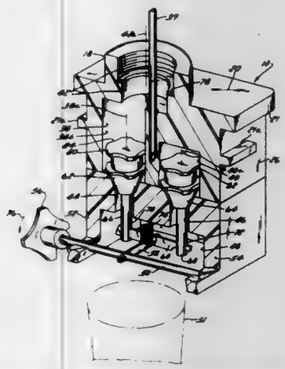
1. A dispensing cartridge, comprising:
a cartridge body having a longitudinal axis and a first end; and
a retaining flange connected to said first end;
wherein said retaining flange comprises at least two flat plate portions disposed in parallel planes with respect to one another, and a plurality of webs connecting said flat plate portions.

5,330,080

BEVERAGE DISPENSER AND STAND THEREFORE FOR USE WITH BEVERAGE CONTAINING BOTTLES

John L. O'Connor, 105 McMakin Manor Dr., LaGrange, Ky. 40031

Filed Jan. 19, 1993, Ser. No. 5,656
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—181 **9 Claims**



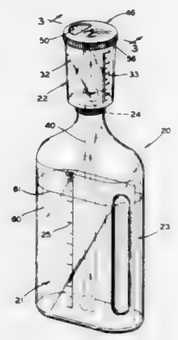
1. An apparatus for dispensing liquid directly from a vertically oriented inverted container containing a liquid positioned above said apparatus to a receptacle positioned directly below said apparatus, said apparatus comprising
(a) a body having an open top end adapted to receive and secure the open mouth of said container, said body defining
(i) a channel defining an essentially straight path for liquid flow from said mouth to a bottom opening directly above said receptacle such that when said body is secured to the vertically inverted container said straight path provides for the direct vertical flow of a liquid, said channel adapted to be selectively opened and closed to the passage of liquid, and further including a first chamber adapted to communicate with the liquid in said container and a first passageway positioned beneath and in substantial longitudinal axial alignment with said first chamber, said first passageway in selective communication with said first chamber, being open directly to the atmosphere, and communicating with said bottom opening directly above the receptacle for said liquid thereby providing a vertically downward, substantially unimpeded, flow of the liquid in said channel without substantial change of direction from said container to said receptacle when channel is open and
(ii) a second chamber spaced from said first chamber and adapted to communicate with the ullage volume within said container and a second passageway in selective communication with said second chamber, said second passageway being in communication with the atmosphere, and
(b) first and second valve elements removably disposed in respective seated positions in said first and second passageways thereby normally closing said passageways against the passage of liquid and gas between said container and the respective bottom opening and atmosphere; and
(c) a valve control device secured to said body for movement between a closed position and an open position, said valve control device operatively connected to said valve elements for sequentially removing said second and then said first valve element from respective seated positions when moved to said open position thereby permitting the equilibration of air pressure in the ullage volume with atmospheric pressure and the subsequent vertically downward, substantially unimpeded, flow without substantial change of direction of the liquid from the container through said vertical channel and said opening, said valve control device returning said valve elements to said seated positions when moved to said closed position.

5,330,081

MEASURING DOSAGE DISPENSER

Robert A. Davenport, Sylvania, Ohio, assignor to Impact Products, Inc., Toledo, Ohio

Filed Apr. 8, 1993, Ser. No. 44,632
Int. Cl.[5] B65D *37/00;* **B67D** *5/06*
U.S. Cl. 222—207 **4 Claims**



1. A measuring device including:
a) a first flexible reservoir portion including a central circular inlet having a male threaded connector portion;
b) a second portion measuring reservoir portion including a circular bottom wall, an upwardly extending circumferential

side wall enclosing the bottom to form a cup-shaped reservoir and terminating in a radially and axially extending retaining wall portion, an inlet having a concentric upwardly extending lip portion, and a concentric downwardly depending wall having a threaded female connecting portion for attachment to the male threaded connector portion of said first reservoir portion;

c) a tube in fluid communication between said first reservoir portion and the inlet of said second reservoir portion; and

d) a closure for said second reservoir portion including a concentric downwardly depending lip in axial alignment with the inlet of said second reservoir portion to receive an end of said tube, a diametric ridge provided within the downwardly depending lip to space the end of said tube from said closure to provide fluid flow between said tube and the downwardly depending lip, and an outer downwardly depending side wall having a radially inwardly extending in mating engagement with the retaining wall of said second reservoir portion for retaining said closure on said second reservoir portion.

5,330,082

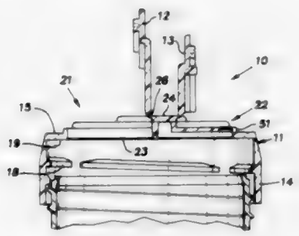
THREADED DISPENSING CLOSURE WITH FLAP

Michael J. Forsyth, Stow, Ohio, assignor to Weatherchem Corporation, Twinburg, Ohio

Continuation of Ser. No. 734,204, Jul. 22, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,650

Int. Cl.[5] B67D *3/00*

U.S. Cl. 222—480 **10 Claims**



1. An injection molded thermoplastic screw-on dispensing cap for a container with a circular mouth and an externally threaded neck, the cap having a generally cylindrical internally threaded skirt adapted to be threaded onto the neck of the container, a generally circular end wall radially inward of the skirt, the end wall having at least one dispensing opening therethrough for dispensing granular or particulate products from the container, a flap, a living hinge on the end wall formed integrally with the flap supporting the flap for movement between a closed and an open position, the flap being relatively rigid in its construction apart from the hinge, catch means for releasably holding the flap in its closed position with a retaining force that is sufficiently low to be overcome with a finger force applied by a user, the hinge being arranged such that when the flap is held closed by the catch means the hinge is adapted to resist forces on the flap, generally in the plane of the flap and away from the hinge, substantially exclusively by tensile reaction forces therein, the end wall including an annular area radially within the skirt for applying a circumferentially continuous pressure on the mouth of the container, the dispensing opening being relatively large with a dimension in the plane of the end wall generally at least an order of magnitude greater than the average wall thickness of the end wall and skirt and being adjacent a portion of said annular area, the annular area tending to deform axially upwardly when the cap is tightened onto the container neck and tending to move the flap in a direction to open it, means associated with said catch means and effectively responsive to axial upward deformation of the annular area to maintain an adequate level of retaining force of said catch means and thereby reduce the risk that the flap will open when the cap is over-tightened on the container neck.

5,330,083

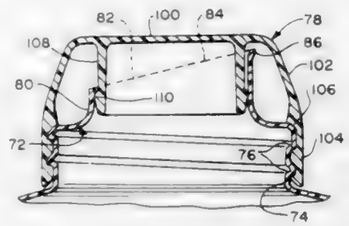
CONTAINER WITH DRIPLESS SPOUT AND METHOD OF FORMING SAME

George F. Bartimes, Chicago, and Lawrence D. Stepenske, Darien, both of Ill., assignors to Continental Plastic Containers, Inc., Norwalk, Conn.

Division of Ser. No. 597,347, Oct. 15, 1990, Pat. No. 5,215,694. This application Apr. 6, 1993, Ser. No. 43,291

Int. Cl.[5] B65D *23/06*

U.S. Cl. 222—571 **15 Claims**



1. A container having a neck finish including a terminal cylindrical part defining a mouth, and said cylindrical part being formed with a hollow, radially outwardly directed bead of limited circumferential extent, said bead, over at least part of said limited circumferential extent, having a substantially constant radial extension directed outwardly rom the remainder of said neck finish.

5,330,084

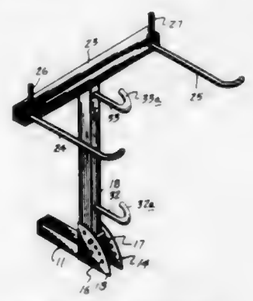
BICYCLE RACK APPARATUS

Mark R. Peters, P.O. Box 9387, 16615 Glenshire Dr., Truckee, Calif. 96162

Filed Apr. 12, 1993, Ser. No. 44,765

Int. Cl.[5] B60R *9/10*

U.S. Cl. 224—42.45 R **5 Claims**



1. A bicycle rack apparatus, comprising,

a first support tube, having a first support tube first end spaced from a first support tube second end, with the first support tube including first and second guide plates mounted to the first support tube in a spaced parallel relationship extending beyond the first support tube second end, with the first guide plate including a semi-annular array of first bores, with the second guide plate including a semi-annular array of second bores,

and

a pivot axle pivotally mounted through and in an orthogonal relationship relative to the first guide plate and the second guide plate, with the pivot axle being spaced from the semi-annular arrays of first bores and second bores,

and

a second support tube, having a second support tube, first end and a second support tube second end, the second support tube including respective first and second triangular link plates fixedly and orthogonally mounted to the second support tube and located intermediate the first guide plate and the second guide plate, with the first triangular link plate including a first apex, the second triangular link plate including a second apex, with the first apex and the second apex positioned in contiguous communication with the second support tube with the pivot axle directed through the first link plate and the second link plate, with the first link plate and the second link plate being arranged for abutment with the first support tube adjacent the first support tube second end upon pivoting of the second support tube about the first support tube, and means for supporting a bicycle.

5,330,085

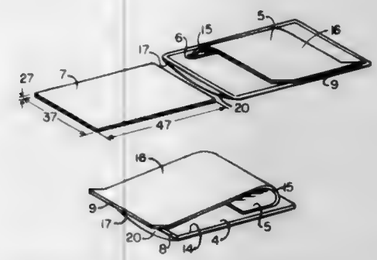
VISOR LOCATED ACCESS CARD HOLDER

Robert I. Horensky, and R. Douglas Horensky, both of 11778 Frederick Rd., Ellicott City, Md. 21042

Filed Dec. 17, 1992, Ser. No. 993,232

Int. Cl.[5] B60R *7/05*

U.S. Cl. 224—312 **20 Claims**



1. A device intended for removable attachment to an automobile sun visor wherein provision is made for a pocket specifically intended for safe and convenient storage of a standard plastic access card;

said device comprising a plurality of plastic sheets and a clip, said plurality of plastic sheets comprising at least one first, one second and one third plastic sheet, said clip comprising a base and a clip member projecting from said base;

said base being substantially rectangular in aggregate perimeter with at least one substantially linear edge, possessing first and second planar surfaces and a width and a length approximating, respectively, the width and length of a standard plastic access card and further possessing a substantially constant thickness at least as great as the thickness of said access card;

said clip member projecting from said first surface of said base, possessing a thickness of lesser dimension than width further possessing an arcuate portion proximate the juncture with said base and a substantially planar portion extending from said arcuate portion at a small inclination with respect to said first surface of said base, terminating in an edge proximate to one said substantially linear edge of said base;

said clip member thereby possessing a flexibility comparative with respect to and in a direction normal to said base sufficient to admit the width of a typical automobile sun visor and a resilience in said direction normal to said base sufficient to exert a compressive force when displaced by the width of an automobile sun visor adequate to retain said device in a position of removable attachment to said automobile sun visor;

each of said plurality of plastic sheets being substantially rectangular in shape, each having first and second opposed planar surfaces and four substantially linear edges, each said sheet further possessing a width at least as great as the width of a standard plastic access card and a thickness less than the thickness of said access card;

each of said first and second plastic sheets further possessing both a width and a length slightly greater, respectively, than the width and length of said base, said first sheet possessing an aperture through which said clip member projects from the base and disposed in planar alignment with both said base and said second sheet such that said first sheet lies above said base, facing said first surface of the base and said second sheet lies below said base with said first surface of said second sheet facing said second surface of said base, said four edges of said first sheet and said four edges of said second sheet being aligned in four substantially linear pairs of edges fixedly attached such that said base is enclosed-between said fast and second plastic sheets;

said third plastic sheet disposed in planar alignment with said second sheet facing said second surface of said second sheet and having at least two opposed edges each attached to an aligned edge of said second sheet forming thereby a pocket between said second and third sheets, at least one edge of said third sheet having a free linear dimension at least equal to the width of a standard access card thus providing an aperture into said pocket between said second and third plastic sheets.

5,330,086

ELECTROMOTIVE STAPLER

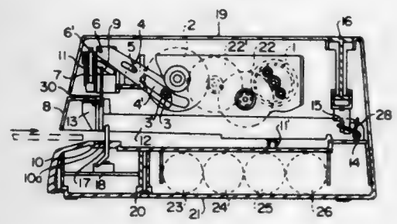
Shigehiko Shimomura, Moriyama, and Tadayuki Haruyama, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 25, 1992, Ser. No. 951,100

Claims priority, application Japan, Sep. 26, 1991, 3-247267

Int. Cl.[5] B25C *1/06*; **B27F** *7/36*

U.S. Cl. 227—007 **9 Claims**



1. An electromotive stapler comprising:

an electric motor,

a control circuit to drive the electric motor,

a series of gears driven by the motor,

a driving gear driven by the series of gears and having a boss on a side face thereof,

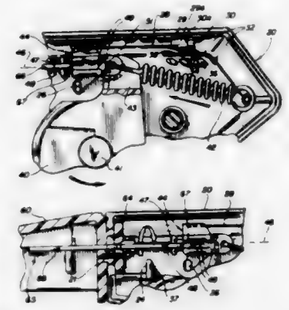
a coupling rod having a slide slot through which said boss is inserted,

a striking block coupled with the coupling rod moving reciprocally by rotation of the electric motor to strike a staple into a plurality of papers,

a paper holder for holding the plurality of papers while the staple is struck into the plurality of papers, and

a push rod linked with the striking block to press down said paper holder, wherein the push rod presses down in direct contact with said paper holder when the striking block is below a certain point and said push rod is separated from said paper holder when said striking block is not below said certain point.

5,330,087
ROTATING HEAD SKIN STAPLER
Michael A. Murray, Bellevue, Ky.; John F. Love; James D. Hughett, both of Cincinnati, Ohio; Randy R. Stephens, Fairfield, and Richard F. Schwemberger, Cincinnati, both of Ohio, assignors to Ethicon, Inc., Somerville, N.J.
Division of Ser. No. 931,814, Aug. 18, 1992, Pat. No. 5,240,164, which is a division of Ser. No. 806,951, Dec. 12, 1991, Pat. No. 5,161,725, which is a continuation of Ser. No. 479,318, Feb. 13, 1990, abandoned. This application May 14, 1993, Ser. No. 62,890
Int. Cl.[5] A61B *17/068*
U.S. Cl. 227—175 2 Claims



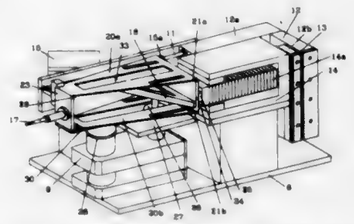
1. A stapler comprising:
a base containing a trigger for actuating a mechanism for closing staples, said trigger moving in a path defining a stroke having a beginning and an end;
a stapling mechanism extending from said base, said stapling mechanism capable of causing staples to be closed; and
located in said base, opposing means for acting on said trigger at the end of said stroke during the formation of staples, said opposing means comprising a stop on said base;
said trigger comprising a drive block moved along a travel axis in said base, said drive block having buffer means which engage said stop on said base to oppose said trigger; and
wherein said buffer means does not engage said stop at the beginning of said stroke and thereafter said buffer means engages said stop after the beginning of said stroke and during the closing of staples by said stapling mechanism, and remains engaged with said stop until the end of said stroke.

5,330,088
ELECTRICAL CONTACT CONTAINING A BRAZE DIFFUSION BARRIER
Graham A. Whitlow; Carl B. Freidhoff, both of Murrysville, Pa.; Philip E. Carpentier, Elmira, and Paul O. Wayland, Montour Falls, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio
Filed Apr. 30, 1993, Ser. No. 54,171
Int. Cl.[5] H01H *1/02*; B23K *31/02*
U.S. Cl. 229—179.1 14 Claims



8. A method of securing a contact surface to a copper electrode using a braze containing copper wherein the method comprises:
applying by deposition an impermeable barrier layer to the contact surface for prevention of copper diffusion from the braze into the contact;
placing the contact surface in juxtaposition to the copper electrode; and
attaching the electrode to the contact surface by brazing the impermeable barrier layer to the electrode.

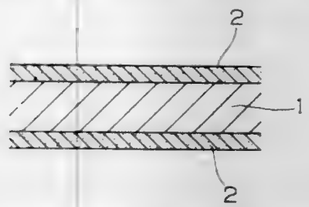
5,330,089
POLAR BOND HEAD
John W. Orcutt, and Galle Lin, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 691,944, Apr. 26, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 983,092
Int. Cl.[5] B23K *1/06*
U.S. Cl. 228—1.1 25 Claims



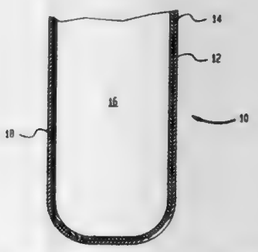
1. A bonder with a polar motion bond head for bonding semiconductor devices, comprising:
a bond head frame assembly including a bond head secured to a mounting frame on which the bond head frame assembly is mounted, and a pivot mount attached to the mounting frame, wherein the bond head frame assembly and mounting frame are movable in an arc about the pivot mount;
a second voice coil motor for moving the bond head in a linear motion;
a first voice coil motor for moving the bond head and second voice coil motor in an arc in a horizontal plane;
a third voice coil motor for moving the bond head in a vertical direction; and
an optical viewing system mounted on the mounting frame;
wherein the bond head is positioned over a location on a semiconductor using polar movement.

5,330,090
BRAZING AGENT AND A BRAZING SHEET BOTH COMPRISING AN ALUMINUM ALLOY CONTAINING A FLUX
Ichiro Iwai, Oyamashi, Japan, assignor to Showa Aluminum Corporation, Osaka, Japan
Filed Dec. 21, 1992, Ser. No. 994,556
Claims priority, application Japan, Dec. 27, 1991, 3-346994; Jan. 14, 1992, 4-005031
Int. Cl.[5] B23K *25/363*
U.S. Cl. 228—56.3 24 Claims

1. A flux-containing aluminum alloy brazing agent consisting essentially of a compacted powder mixture of an aluminum element, a silicon element and the flux,
wherein silicon is contained at 3–15% by weight of all the elements other than the flux, and the ratio in weight of all the elements other than the flux to the flux is from 99.9:0.1 to 70:30, and wherein the apparent density is 90% or more of a theoretical density.



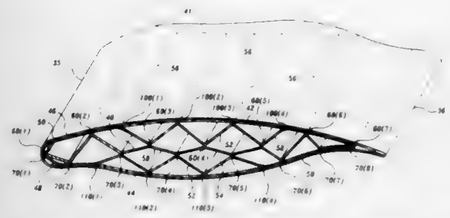
5,330,091
SEAMLESS CYLINDER SHELL CONSTRUCTION
John P. Collier, Franklin Lakes, N.J.; Richard Hogel, Oceanside, Calif.; James G. Marsh, Amhurstburg, Canada, and Prakash Thomas, Poway, Calif., assignors to The BOC Group, Inc., Murray Hill, N.J.
Filed Oct. 9, 1992, Ser. No. 958,993
Int. Cl.[5] C21D *8/02*
U.S. Cl. 228—107 7 Claims



1. A method of forming a seamless cylinder shell suitable for finishing into a gas cylinder comprising:
cladding a nickel sheet to a steel sheet so the nickel and steel sheets are uniformly bonded throughout and a composite sheet is thereby formed having two opposed surfaces;
physically and chemically cleaning the two opposed surfaces of the composite sheet so that oil, soil, scale, oxide, and smut is removed from the composite;
pretreating the two opposed surfaces of the composite sheet to retain a lubricant and then, coating the two opposed surfaces of the composite with the lubricant; and
cold drawing the composite sheet into the seamless cylinder shell.

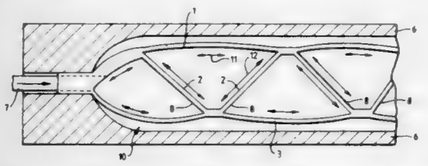
5,330,092
MULTIPLE DENSITY SANDWICH STRUCTURES AND METHOD OF FABRICATION
Paul S. Gregg, Seattle; Matthew G. Kistner, Enumclaw, and Jeff D. Will, Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 17, 1991, Ser. No. 809,304
Int. Cl.[5] B23K *28/02*; E04C *2/32*
U.S. Cl. 228—157 8 Claims

1. A method for superplastic forming a sandwich structure that includes upper and lower sheets and a plurality of mutually interconnected webs extending between the upper and lower sheets, the method comprising the steps of:
(a) positioning first, second, and third worksheets in a stack so that there are different numbers of worksheets in the stack at two or more different locations in the stack, the worksheets comprising a material having superplastic properties;
(b) joining the worksheets together, such that the first worksheet is joined to the second worksheet at one or more first locations without being joined to the third worksheet at the first locations, and such that the third worksheet is joined to the second worksheet at one or more second locations different from the first locations without being joined to the first worksheet at the second locations;
(c) after the joining step, placing one or more skin sheets around the stack, the skin sheets comprising a material having superplastic properties;



(d) superplastically forming the skin sheets to form a skin enclosing the stack; and
(e) after at least partially superplastically forming the skin sheets, superplastically forming the stack so as to form the sandwich structure such that there are different numbers of webs at two or more different locations in the sandwich structure.

5,330,093
MANUFACTURE OF ARTICLES BY DIFFUSION BONDING AND SUPERPLASTIC FORMING
Ian Bottomley, and Duncan Finch, both of Samlesbury, United Kingdom, assignors to British Aerospace Public Limited Company, London, England
Filed Aug. 13, 1992, Ser. No. 928,744
Claims priority, application United Kingdom, Aug. 14, 1991, 9117546
Int. Cl.[5] B23K *31/00*
U.S. Cl. 228—157 6 Claims



1. A method for producing a structure comprising the steps of:
diffusion bonding at least two sheets of similar materials together in selected areas, said sheets having different chemical composition thereby having different flow stress characteristics; and
superplastically forming the diffusion bonded sheets in a mold, said sheets being one of titanium and titanium alloys.

5,330,094
STACKABLE DISPLAY TRAY
Noel J. Mertz, Geneva, Ill., assignor to Jefferson Smurfit Corporation, Clayton, Mo.
Filed Dec. 16, 1993, Ser. No. 167,162
Int. Cl.[5] B65D *5/50*
U.S. Cl. 229—167 20 Claims

1. A collapsible, one-piece, display tray adapted to be stacked with other similar trays, said tray being formed from a

unitary blank of foldable sheet material, such as paperboard, and comprising:

(a) a generally rectangular bottom wall panel having pairs of opposed side walls and end walls joined thereto;

(b) each of said side walls comprising a single, generally U-shaped side wall panel foldably joined to an adjacent side edge of said bottom wall panel and upstanding therefrom;

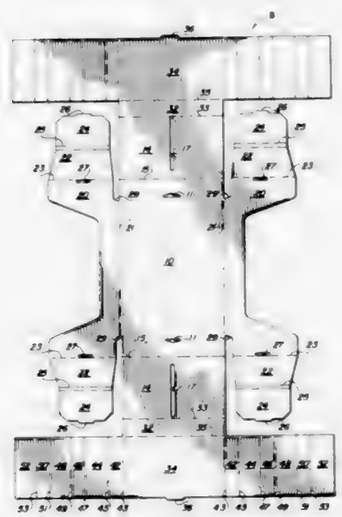
(c) each of said end walls comprising:

(i) an outer panel foldably joined to an adjacent end edge of said bottom wall panel and extending upwardly therefrom;

(ii) a relatively narrow top panel foldably joined to an upper edge of said outer panel and extending inboardly therefrom;

(iii) an inner panel foldably joined to an inboard edge of said top panel and extending downwardly therefrom in interlocking engagement with said bottom wall panel;

(iv) a pair of connecting flaps, each having outer sections joined at outer side edges to adjacent end edges of respective side wall panels and folded inwardly to lie



against an outer surface of said outer panel, and having inner sections foldably joined at inner side edges to inner side edges of respective outer flaps and folded to extend through an opening in said outer panel and lie against an inner surface of said outer panel in interlocking engagement with respective side wall panels;

(d) corner posts, upstanding from each corner of said bottom wall panel between related of said inner panels and said connecting flap inner sections, each corner post comprising:

(i) a first connecting panel foldably joined to an adjacent side edge of said related end wall inner panel;

(ii) a first main panel foldably joined to an adjacent edge of said first connecting panel;

(iii) a second connecting panel foldably joined to an adjacent side edge of said first main panell

(iv) a second main panel foldably joined to an adjacent edge of said second connecting panell

(v) a third connecting panel foldably joined to an adjacent side edge of said second main panel;

(vi) a third main panel foldably joined to an adjacent edge of said third connecting panel.

5,330,095

METHOD OF ASSEMBLING A UNIVERSAL JOINT

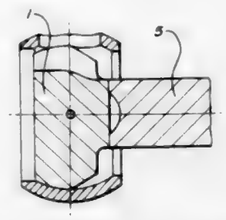
Werner Krude, Neunkirchen, and Peter Harz, Hennef, both of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

Filed Aug. 12, 1993, Ser. No. 105,400

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1992, 4227810

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—177 **10 Claims**



1. A method of assembling a constant velocity universal joint having an outer joint part with a plurality of circumferentially distributing outer running grooves, an inner joint part having a plurality of inner running grooves corresponding to said outer running grooves, a cage arranged between said inner joint part and said outer joint part having a plurality of windows corresponding to said plurality of inner and outer running grooves and a torque transmitting ball received in each of said plurality of corresponding inner and outer grooves and windows, said method comprising the steps of:

assembling said inner joint part and said cage at a relative pivot angle of up to 90° to form an inner joint assembly; and

welding said inner joint part of said inner joint assembly to a shaft.

5,330,096

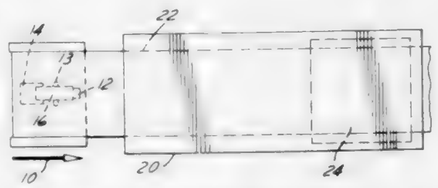
METHOD OF WAVE SOLDERING WITH UNIQUE SOLDER PAD CONFIGURATION

Thomas D. Belanger, Jr., Saline, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 16,329, Feb. 10, 1993, Pat. No. 5,307,980. This application Jan. 24, 1994, Ser. No. 185,340

Int. Cl.[5] H05K *3/34*

U.S. Cl. 228—180.22 **3 Claims**



1. A method of wave soldering a surface mount device having a longitudinal axis to a printed circuit board in a wave soldering machine having a solder wave, said method comprising the steps of:

providing a first solder pad on the printed circuit board having a width not greater than the width of the surface mount device;

providing a second solder pad on the printed circuit board having a width greater than the width of the surface mount surface mount device;

aligning the longitudinal axis of the surface mount device in relation to a direction substantially perpendicular to the solder wave;

aligning the printed circuit board so that said first solder pad enters the solder wave before said second solder pad; and

wave soldering the surface mount device to said first and second solder pads by passing the printed circuit board through the wave soldering machine.

5,330,097

HOT DIFFUSION WELDING METHOD

Shinichiro Inoue, Hirakata, Japan, assignor to Komatsu Ltd., Tokyo, Japan

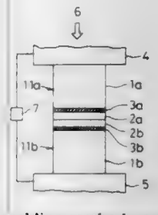
PCT No. PCT/JP91/00976, § 371 Date Jan. 25, 1993, § 102(e) Date Jan. 25, 1993, PCT Pub. No. WO92/01528, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 23, 1991, Ser. No. 966,170

Claims priority, application Japan, Jul. 24, 1990, 2-195959; Oct. 19, 1990, 2-280948

Int. Cl.[5] B23K *11/00, 11/18, 11/20*

U.S. Cl. 228—194 **26 Claims**



1. A hot diffusion welding method comprising:

(a) a plating layer forming step of forming a plating layer as an insert material on a joint face of a first part to which a second part is to be joined wherein said second part is a copper metal part made from pure copper or a copper alloy, and said insert material is a copper plating layer of pure copper or a copper alloy applied to the joint face of the first part;

(b) a superposing step of superposing the second part on the first part with the plating layer between, the plating layer being formed on the joint face of the first part in the plating layer forming step; and

(c) a heating and pressurizing step of heating, with resistance heat, a joint of a superposed body which has been obtained in the superposing step, the resistance heat being generated by supplying a current, and pressurizing the superposed body in the superposed direction thereof to unite the first and second parts at the joint at which the plating layer is formed.

5,330,098

SILVER-COPPER-ALUMINUM-TITANIUM BRAZING ALLOY

Howard Mizuhara, Hillsborough, Calif., assignor to The Morgan Crucible Co., PLC, Great Britain

Continuation of Ser. No. 670,453, Mar. 11, 1991, abandoned, which is a continuation of Ser. No. 267,885, Nov. 7, 1988, abandoned. This application Nov. 13, 1992, Ser. No. 975,982

Int. Cl.[5] B23K *1/00, 35/24*

U.S. Cl. 228—214 **14 Claims**

1. A method of increasing oxidation resistance of a copper-silver-titanium braze on an article comprising the step of including in a copper-silver-titanium brazing material a small amount of aluminum such that the brazing material substantially comprises, in weight percent 0.5 to 3% titanium, 0.25 to 2% aluminum, 2 to 5% copper, balance silver and heating the article to a temperature sufficient to melt said brazing material.

5,330,099

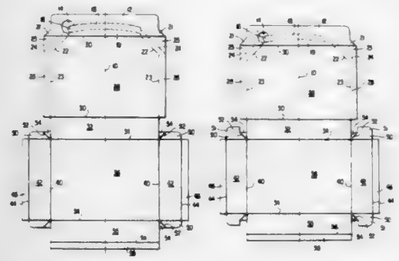
CONTAINER FOR FOODSTUFFS

Jonathan T. Beales, Memphis, Tenn., and David E. Stier, Middletown, N.Y., assignors to International Paper Company, Purchase, N.Y.

Continuation-in-part of Ser. No. 48,176, Apr. 20, 1993, abandoned. This application Oct. 4, 1993, Ser. No. 131,520

Int. Cl.[5] B65D *5/54*

U.S. Cl. 229—207 **10 Claims**



1. A paperboard container of generally rectangular parallelepiped form and displaying particular utility for the packaging of frozen foodstuffs, the container including a lower tray and an upper cover panel which covers said tray, said tray having a bottom wall, two side walls, a rear wall, and a front wall, said side walls and said front wall each having an upper edge, said front wall, said rear wall, and said side walls each having ends, a horizontal flange extending laterally outwardly from said upper edge of each said side walls, a horizontal flange extending inwardly from said upper edge of said front wall, an external gusset integrally joining adjacent said ends of each of said side walls, front wall, and rear wall to thereby define four external fold gussets, each of said external gussets being at least partially folded upon itself along a fold line extending across itself, said upper cover panel extending over and covering said tray and adhesively secured to said side wall horizontal flanges, said upper cover panel having a front flange and an elongated tear strip therein, said front flange having ends and being of a length substantially the same as the length of said tray front wall except for generally triangular web portions at respective said front flange ends adjacent the juncture of said upper cover panel and to said upper cover panel front flange, said upper cover front flange adhesively secured to said tray front wall except at said tear strip and except at a region of said upper cover front flange which is located above said tear strip, a slanting exterior cut line at a front edge of said upper cover panel to define a triangular segment of each said front edge of said upper cover panel, slanting interior cut lines which parallel respective said slanting exterior cut lines, and main lateral cut lines running parallel to said outwardly extending side wall horizontal flange, all of said cut lines extending approximately one half through the thickness of said upper cover panel.

5,330,100

ULTRASONIC FUEL INJECTOR

Igor Malinowski, 995 Deep Valley Dr., Box 2981, Palos Verdes Estates, Calif. 90274

Filed Jan. 27, 1992, Ser. No. 825,912

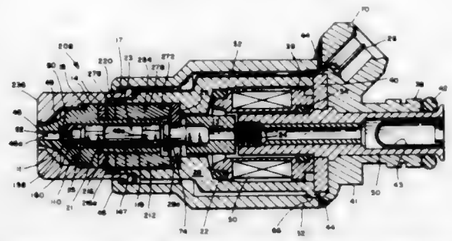
Int. Cl.[5] F02M *61/06;* **B05B** *17/06*

U.S. Cl. 239—102.2 **8 Claims**

3. In an ultrasonic fuel injector atomizer apparatus, having a housing and a horn actuator assembly, said horn actuator assembly including a horn, a crystal actuator, a compression member, and an electrode member, the improvement compris-

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ing an extension of said electrode member extending beyond said compression member for support of said crystal actuator

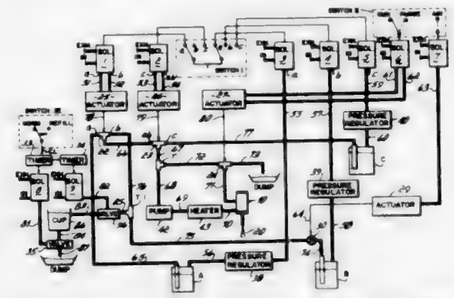


in said housing, and an attachment mechanism attaching said electrode member extension to said housing.

5,330,101
MATERIAL CHANGEOVER AND ANTI-SKIN OVER SYSTEM

James J. Turner, Amherst, and William E. Donges, Wellington, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Continuation-in-part of Ser. No. 831,873, Feb. 6, 1992, abandoned. This application Sep. 30, 1992, Ser. No. 954,313
Int. Cl.[5] B05B *15/02*
U.S. Cl. 239—112 **62 Claims**



7. In a method for coating printed circuit boards including a coating applicator gun having a nozzle and means to deliver a coating material to said nozzle for application to a circuit board, the method of preventing skin-over of residual moisture curable coating material on said nozzle between coating applications including the step of:

docking said nozzle in a container holding a substantially moisture-free inert gas.

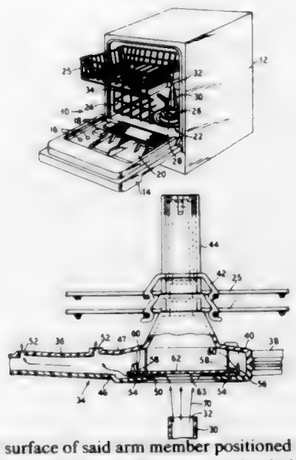
5,330,102
SPRAY ARM INLET FOR DISHWASHER

Wilbur W. Jarvis, St. Joseph Township, Berrien County, and Roger J. Bertsch, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 19, 1993, Ser. No. 19,842
Int. Cl.[5] B05B *3/06*
U.S. Cl. 239—228 **18 Claims**

1. An inlet in a bottom surface of a hollow interior spray arm member for a dishwasher having a central hub area and a plurality of arms extending approximately radially therefrom, said arms having holes therein from which wash liquid, received from a source of pressurized liquid in the form of a free jet not enclosed in a conduit, but directed along a path at said arm member, is to be ejected, said bottom surface consisting solely of a relatively flat surface, at least one of said holes and said inlet, said inlet comprising:

an opening formed as an unencumbered aperture in said

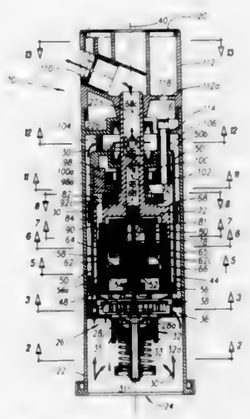


bottom surface of said arm member positioned in said path of said free jet and communicating with said hollow interior of said arm member and a flat surface positioned within said interior perpendicular to and in said path.

5,330,103
REVERSING ROTARY DRIVE SPRINKLER

Gershon Eckstein, San Diego, Calif., assignor to Pepco Water Conservaton Products, Inc., Fresno, Calif.

Filed Apr. 2, 1993, Ser. No. 42,472
Int. Cl.[5] B05B *3/16*
U.S. Cl. 239—242 **17 Claims**



1. A rotary drive sprinkler comprising:

a sprinkler housing adapted for connection to a supply of irrigation water;

a spray head for outward projection of an irrigation water stream and supported for rotation relative to said housing;

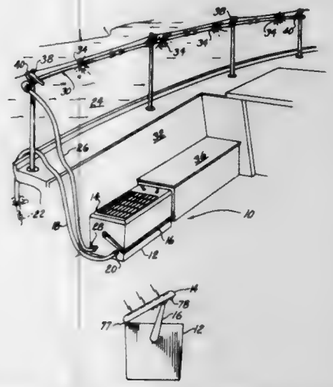
a rotary drive assembly for rotatably driving said spray head; and

a reversing mechanism including means for reversing the direction of spray head rotation within end limits of a part-circle arcuate path, said reversing mechanism including a drive member coupled to said spray head and first and second drive elements rotatably driven in opposite directions by said rotary drive assembly, and means for selectively coupling said drive member to one of said first and second drive elements for carrying said drive member in revolution coaxial with the rotation of said one drive element, and thereby, rotating said spray head in a first direction.

5,330,104
PORTABLE OUTDOOR MISTER

David G. Marcus, 6937 Laurel La., Highland, Calif. 92346

Filed Jul. 2, 1992, Ser. No. 908,227
Int. Cl.[5] B05B *9/03, 1/14*
U.S. Cl. 239—266 **11 Claims**



1. Apparatus for providing a comfortable region within a relatively hot, dry environment having a reservoir of water therein, comprising:

(a) a self-priming pump having a pump inlet and a pump outlet;

(b) electrical battery means having a liquidic electrolyte for powering the pump;

(c) a container having a base portion, side portions, and an openable lid portion, the pump being mounted to the base portion, the lid portion being hingedly connected to a side portion of the container, the container substantially absorbing noise from operation of the pump and protecting against contamination of the environment by leakage of the electrolyte from the battery means;

(d) a spray wand having a plurality of nozzle means spaced along a substantially rigid conduit for distributing the water in the form of a corresponding number of expanding fine spray streams;

(e) fluid conduit means for connection to the pump and the nozzle means for misting the environment;

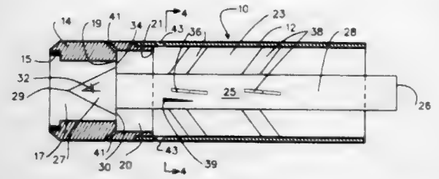
(f) solar panel means located on the lid portion of the container for recharging the battery means; and

(g) a holder for supporting the lid portion in a partially open position by the holder for orienting the solar panel means normal to received sunlight.

5,330,105
ASPIRATING NOZZLE AND ACCESSORY SYSTEMS THEREFOR

Joseph B. Kaylor, Manasssas, Va., assignor to Valkyrie Scientific Proprietary, L.C., Manassas Park, Va.

Filed Mar. 26, 1993, Ser. No. 37,647
Int. Cl.[5] B05B *1/34, 7/00*
U.S. Cl. 239—400 **27 Claims**



1. An aspirating nozzle, comprising:

a nozzle body having an upstream end and a downstream end and a wall defining a generally cylindrical fluid passage between said ends, said fluid passage having a first zone of reduced cross sectional area at the upstream end, a second zone of enlarged cross sectional area downstream of said first zone, and a transition zone between said first and second zones;

a central stream shaping means positioned axially within said fluid passage, said stream shaping means having a head portion and a body portion, the head portion of said means being larger than the body portion but smaller than said first zone and extending into that zone to define an annular space of varying dimension between the stream shaping means and the inner surface of said nozzle wall and a constricted passage between said first and second zones, the body portion of said means extending beyond the downstream end of said transition zone;

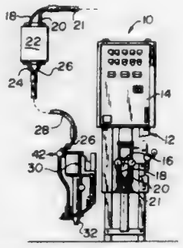
a plurality of vanes extending between the body portion of said stream shaping means and said nozzle body wall, said vanes acting to hold said body portion fixed relative to said nozzle body; and

port means adjacent said transition zone adapted for drawing a stream of ambient air into said fluid passage downstream of said stream shaping means head portion when a liquid is flowing through said passage.

5,330,106
HOSE SWIVEL SYSTEM FOR DISPENSERS

Arnold W. Braun, Jr., Trenton, Mich., assignor to Graco Inc., Minneapolis, Minn.

Filed Apr. 30, 1993, Ser. No. 54,147
Int. Cl.[5] B05B *7/02, 9/03, 15/08*
U.S. Cl. 239—526 **12 Claims**



9. A dispenser supplied by a pair of flexible hoses characterized by its ergonomic characteristics comprising, in combination, a dispenser housing adapted to be hand held having an inner end and an outer end, a valved nozzle defined on said housing outer end, a valve control mounted on said housing, a distributor having an axis mounted upon the dispenser, first

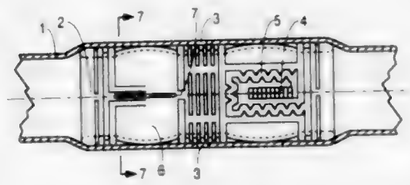
and second bores defined in said distributor each in communication with the nozzle, first and second swivels rotatably mounted upon said distributor for rotation thereto about said distributor axis, a third bore defined in said first swivel in communication with said first bore during swiveling of said first swivel, a fourth bore defined in said second swivel in communication with said second bore during swiveling of said second swivel, and hose connection ports defined on each of said swivels in communication with the associated swivel bore whereby each of said swivels may be attached to one of said flexible supply hoses.

5,330,107

DRIP IRRIGATION EMITTER EMBODIED IN A WATER CONDUIT PRESSURE COMPENSATING WITH SELF-REGULATION

George Karathanos, Attikis, Greece, assignor to Eurodrip S.A., Attikis, Greece

PCT No. PCT/GR92/00013, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO93/02547, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 28, 1992, Ser. No. 39,152
Claims priority, application Greece, Aug. 1, 1991, 910100334
Int. Cl.[5] B05B *1/30*
U.S. Cl. 239—533.1 **3 Claims**



1. A drip irrigation system, comprising a water conduit (1) and a series of cylindrical, one-piece, pressure compensating emitters (2), inserted in said water conduit (1), wherein each emitter (2) has a body comprised of a flexible elastic material and having inlet means (4) in communication with the interior of the water conduit (1), said inlet means (4) in communication with a labyrinth-like flow passage (5) defined between the outer periphery of the emitter body and the interior wall of said conduit (1), said flow passage passing through a deformable part (6) of the emitter body and opening into a peripheral channel (7) communicating with an exit hole in the wall of the water conduit (1), said deformable part (6) of the emitter body being deformed in response to the water pressure within the water conduit (1) and coacting with the inner surface of the water conduit, thereby maintaining the water flow through the passage (5) on a constant level independently of the water pressure variation within the water conduit, characterized in that each emitter (2) is symmetrical having the peripheral channel (7) placed in the middle of the length of the emitter body with an inlet means (4), a flow passage (5) and a deformable part (6) located on each side of said channel (7).

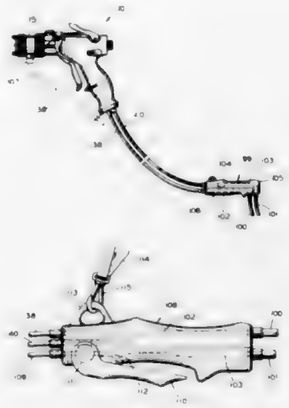
5,330,108

SPRAY GUN HAVING BOTH MECHANICAL AND PNEUMATIC VALVE ACTUATION

Thomas E. Grime, Temperance, Mich.; James P. Baltz, Waterville, and Roger T. Cedoz, Curtice, both of Ohio, assignors to Ransburg Corporation, Indianapolis, Ind.

Division of Ser. No. 894,730, May 27, 1992, Pat. No. 5,236,129.
This application Apr. 28, 1993, Ser. No. 55,537
Int. Cl.[5] B05B *7/12*
U.S. Cl. 239—578 **4 Claims**

1. A liquid spray gun including a trigger, a valve needle means movable between a closed position and an open position when liquid is discharged and atomized from a nozzle assembly, a cylinder, a piston mounted to slide in said cylinder between first and second positions, said piston separating said cylinder into first and second chambers, means for urging said valve needle means to said closed position, trigger actuated valve means located in a box remote from said spray gun for creating a pressure differential between said first and second chambers to cause said piston to move from said first position to said second position, means for moving said valve needle means from said closed position to said open position when



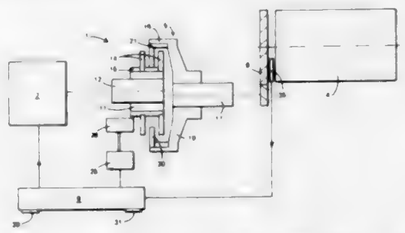
said piston moves from said first position to said second position, a first liquid supply hose and a first air hose connected between said spray gun and said box, a second liquid supply hose connected from a liquid source to said box, and a second air hose connected from a source of pressurized air to said box, and wherein said box includes first passage means connecting said first and second liquid supply hoses and second passage means connecting said first and second air hoses.

5,330,109

CONTROL OPERATION OF A CLUTCH DRIVE SYSTEM

David T. Walter, Great Linford, England, assignor to TI Interlock Limited, Bedford, England

Filed Mar. 10, 1992, Ser. No. 848,792
Claims priority, application United Kingdom, Dec. 19, 1991, 9126900.1
Int. Cl.[5] B02C *23/04*
U.S. Cl. 241—30 **12 Claims**



8. A start-up method for a grinding mill having an unbalanced load, said mill being rotatably drivable from a rotary drive shaft through a clutch adapted to accommodate misalignment between said shaft and said mill, said method comprising the steps of

initially engaging said clutch to effect a first rotation of said mill and said unbalanced load in a drive direction;

disengaging said clutch to permit said mill and load to rotate under the weight thereof through a second rotation in the direction reverse to said drive direction, and through a third rotation in said drive direction, and

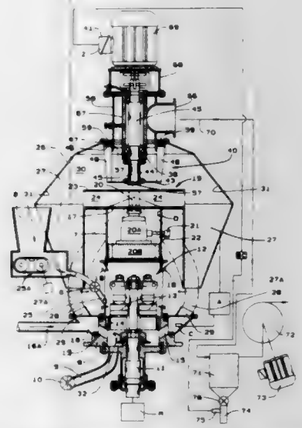
re-engaging said clutch during said third rotation of said mill and said load in said drive direction.

5,330,110

APPARATUS FOR GRINDING MATERIAL TO A FINENESS GRADE

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Jul. 12, 1993, Ser. No. 89,094
Int. Cl.[5] B02C *15/00*
U.S. Cl. 241—53 **9 Claims**



1. Apparatus for grinding material to a selective finenes grade, in which the apparatus comprises:

a) a vertical frame forming a passage having a base formed with material receiving inlet means and a material outlet spaced from said base;

b) grinding means adjacent said base for grinding material received at said inlet means;

c) a material circulating fan positioned adjacent said material outlet for moving said material out of said outlet;

d) a casing surrounding said vertical frame passage and spaced therefrom, said casing providing a chamber adjacent said fan, said chamber having a selective fine material outlet and a bypass passage for other than selective fine material connected into said base material receiving inlet means for further grinding;

e) motor driving said grinding means;

f) fineness grade material collecting means connected to said chamber fine material outlet, said collecting means effecting withdrawal of selective fine material from said chamber having the selective fineness grade; and

g) means initially supplying material to said grinding means to mingle with said other than selective fine material.

5,330,111

IMPACT CRUSHER

Geoffrey P. Brown, Vancouver, Canada, assignor to Vitreous Environmental Group Inc., Calgary, Canada

Filed Jan. 2, 1992, Ser. No. 815,747
Int. Cl.[5] B02C *13/288*
U.S. Cl. 241—56 **6 Claims**

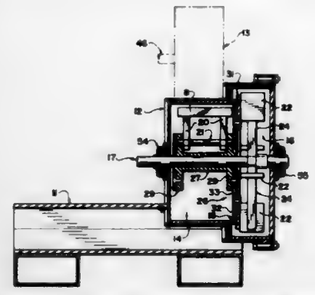
1. A crushing apparatus comprising:

(a) a housing comprising first and second cylindrical chambers, said first chamber having a first diameter and an inlet for input of material to be crushed and air, and said second chamber having an outlet for expulsion of air and crushed material, said housing defining an opening between said first chamber and said second chamber, the opening having a diameter substantially equal to the first diameter of the first chamber;

(b) an axle mounted for rotation in said housing and provided with means for rotating said axle;

(c) a hammer mounted on said axle for rotation in said first chamber;

(d) a blade mounted for rotation on said axle in said second chamber and having an extended planar surface oriented



for moving air in said second chamber and out of said outlet;

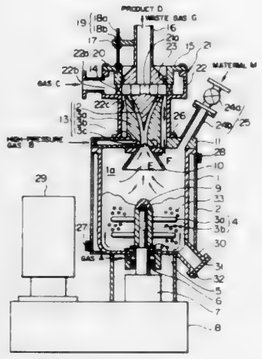
(e) a flywheel mounted on said rotating axle for rotation with said rotating axle and forming a central wall between said first and second chamber spaced from the housing to permit a selected flow of air and crushed particles around the periphery of the flywheel from said first chamber to said second chamber.

5,330,112

CRUSHING APPARATUS

Osamu Nagaoka, and Tsuyoshi Ishikawa, both of Tochigi, Japan, assignors to Mitsui Mining Company, Limited, Tokyo, Japan

Filed May 17, 1993, Ser. No. 61,590
Claims priority, application Japan, May 27, 1992, 4-35372[U]
Int. Cl.[5] B02C *17/16, 23/30*
U.S. Cl. 241—57 **10 Claims**



10. A crushing apparatus for crushing a supplied material into the form of a fine powder and for guiding the fine powder to the outside thereof, said crushing apparatus comprising:

a crushing tank having a crushing chamber opened upward, having an agitator provided therein to crush the material supplied through a material supply device into the fine powder and having a first gas supply device for sending the fine powder upward;

a classifier provided adjacently to the upper portion of said

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crushing tank and formed into substantially a cylindrical shape containing a classifying chamber, said classifier having: a gas emitting portion for emitting a second gas to said classifying chamber; a vane for guiding the second gas from the gas emitting portion in the tangential direction thereof; and a cylindrical communicating portion for communicating said classifying chamber with said crushing chamber of said crushing tank;

a guide device disposed at the interior of the communicating portion of said classifier for guiding the fine powder formed within said crushing chamber to the classifying chamber of said classifier and forming a ring-like circulation passage between said guide device and the inner surface of the communicating portion of said classifier, said guide device having: a dispersing tube having a cavity formed therein and gradually increased in diameter toward said classifying chamber; an introduction port provided at an opening on the crushing chamber side of the dispersing tube; and a gas reservoir for supplying a high-pressure gas to the introduction port,

a fine powder extracting tube attached movable in an up and down direction with respect to said classifier by means of a linking member in the state where an opening thereof is positioned at the center portion of the classifying chamber, said fine powder extracting tube for guiding to the outside the fine powder classified at the classifying chamber of said classifier;

a suction nozzle provided on said crushing tank in the state where an upper opening of said suction nozzle is separated by a small distance from the introduction port of said guide device, said suction nozzle increased in diameter toward the lower end thereof; and

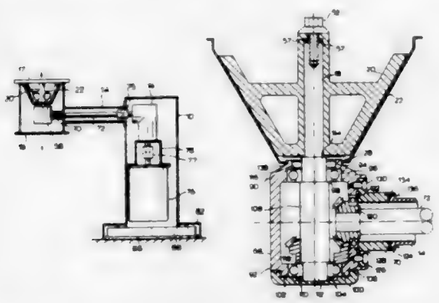
a core provided at the interior of the cavity of the dispersing tube of said guide device in a manner spaced therefrom, said core forming a ring-like communication passage gradually increased in diameter toward said classifying chamber between the inner peripheral surface of said dispersing tube and said core.

5,330,113

UNDERDRIVEN SIZE REDUCTION MACHINE

Kimberly J. Poser, and Benjamin K. Murugesu, both of Kitchener, Canada, assignors to Quadro Engineering Inc., Waterloo, Canada

Filed Mar. 29, 1993, Ser. No. 37,840
Int. Cl.[5] B02C *19/08*
U.S. Cl. 241—74 **8 Claims**



8. A size reduction machine for use in process industries to continuously and precisely reduce the size of particles, while controlling fines, said machine comprising an impeller mounted on a rotatable spindle, a drive means operably connected to said spindle for effecting rotation of said spindle, said spindle and impeller being vertically mounted within a vertically extending channel having an input and an output, a screen having a tapered apertured wall formed in a frusto-conical shape, said screen rigidly mounted within said channel so that any particles passing from said input to said output pass through said screen, said impeller being shaped and mounted so that a gap between an edge of said impeller and an interior of said screen remains substantially constant as said impeller rotates relative to the screen, wherein the improvement comprises

said drive means for drivingly rotating said spindle is operably connected to said spindle under where said impeller is mounted onto said spindle, said drive means extending into said channel and that portion of the drive means which extends into said channel is fully enclosed and sealed within a gearbox housing, substantially preventing ingress and egress of said particles into and out of said gearbox housing, said gearbox housing comprises a hollow body having

an upper end having a bore and an internal counterbore,

a lower end having a sealable and closable opening,

a side wall having an opening for sealingly receiving a hollow adaptor for supporting said gearbox, said adaptor mounted about an aperture in a wall of said channel and providing access for a drive shaft of said drive means,

a lip seal fitted within said bore for sealingly engaging said spindle,

a first racer bearing fitted within said internal counterbore,

a second racer bearing fitted with said opening, said spindle is rotatably mounted within said first and second racer bearings,

said drive shaft drivingly engages said spindle,

said screen has a narrow end having an aperture adapted to frictionally fit about said upper end of said gearbox for closing said narrow end, and

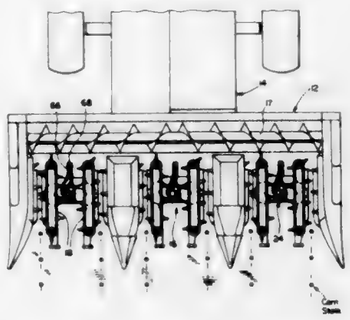
said impeller has a base having a circular disc for directing flow of said particles outwardly towards said screen as said impeller rotates.

5,330,114

SHREDDER ATTACHMENT FOR COMBINE CORN HEAD

Michael J. Trenkamp, 610½ 2nd Ave. SE., and Loras F. Gravel, 31406 Hickory, both of Dyersville, Iowa 52040

Filed May 28, 1993, Ser. No. 68,182
Int. Cl.[5] A01D *45/10*
U.S. Cl. 241—101.7 **8 Claims**



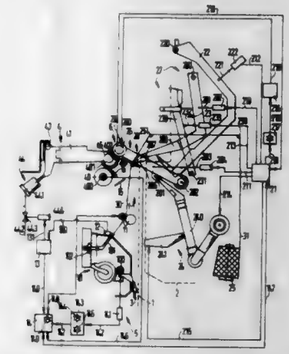
1. A shredder attachment for the corn head of a combine comprising at least one cutter assembly mounted in underlying relation to gathering chains and feed rolls on a combine corn head which are adapted to receive rows of corn stalks therebetween, said cutter assembly including means mounting the cutter assembly from the corn head below and at the rear of the feed rolls for orienting the cutter assembly adjacent the path of movement of rows of corn stalks passing downwardly and rearwardly between the gathering chains and feed rolls as the combine moves forwardly, said cutter assembly including a pair of rotatable cutter bars, each cutter bar being in the form of a circular plate, at least one radially extending cutting blade mounted on a periphery of each circular plate with the blades overlapping the rows of corn stalks to shred the corn stalks as they pass between the gathering chains and feed rolls and means driving said circular plates to shred the corn stalks passing therebetween, said means driving the rotatable plates including a hydraulic motor, a gear box supporting said motor, said gear box including a bracket forming the means supporting the cutter assembly from the corn head of the combine, said gear box including a meshed gear drive train therein having one of said gears driven by said motor, each of the circular plates having a shaft connected with another of said gears with the drive train rotating the circular plates in opposite directions.

5,330,115

METHOD AND APPARATUS FOR FORMING A RESERVE WINDING ON A ROTATING EMPTY TUBE

Walter Mayer, Ingolstadt; Sebastian Brandl, Böhmfeld, and Josef Neumeyer, Ingolstadt, all of Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,785
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131178
Int. Cl.[5] B65H *54/02*
U.S. Cl. 242—18 PW **27 Claims**



1. A method of forming a reserve of parallel windings of a thread, which is delivered at a constant rate of speed from a work station, on the longitudinal end region of a rotating empty tube which is driven by a drive cylinder at a constant peripheral speed during normal thread winding operations, comprising the following steps:

a) bringing a drive roller into contact with the peripheral surface of said tube, which is lifted off from said drive cylinder;

b) driving said drive roller at a peripheral speed adapted to the constant thread delivery speed of the thread from the work station;

c) winding a reserve of parallel windings of said thread on one end of said tube;

d) displacing said thread to the middle of said tube after said reserve is completed;

e) adapting the peripheral speed of said drive roller to drive said tube at a speed which is corrected for the effective diameter of said tube and to the shortening of the path of said thread occasioned by said displacement of said thread to maintain a constant winding tension on said thread;

f) lowering said tube onto the peripheral surface of said drive cylinder after said reserve is completed; and

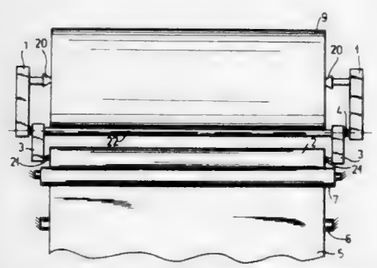
g) passing said thread to a crosswinding device and lifting said drive roller from the surface of said tube.

5,330,116

METHOD OF AND APPARATUS FOR ROLLING UP PLASTIC FOIL

Helmut Meyer, Troisdorf, Fed. Rep. of Germany, assignor to Reifenhauser GmbH & Co. Maschininfabrik, Troisdorf, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,462
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1991, 4105597
Int. Cl.[5] B65H *19/00*
U.S. Cl. 242—533.2 **1 Claim**



1. An apparatus for winding a plastic foil web onto a succession of winding tubes, said apparatus comprising:

a contact roller having a periphery and defining a winding position;

means for feeding a plastic foil web in contact with the contact-roller periphery to the winding position;

a pair of first arms engaging a first winding tube between them at said contact roller;

means supporting said first arms for pivoting about an axis of rotation for said pair of first arms;

means for pivoting said pair of first arms about said axis to dispose said first winding tube adjacent the periphery of said contact roller at said winding position;

means rotating the first tube and for thereby winding the plastic foil web fed to said winding position on said first winding tube;

a pair of second arms of the same length as said first arms and pivotable about said axis independently of said first arms, said second arms engaging a second winding tube between them, said pairs of first and second arms lying in respective planes extending radially of the axis and said first arms being wholly axially offset from said second arms so that one of said pairs of arms is disposed inwardly of the other pair of arms and is rotatable independently about said axis without touching the other pair;

means for pivoting said pair of second arms about said axis; and

control means for, in sequence:

during winding of a roll of said plastic-foil web onto the first winding tube between said first arms at said winding position, rotating said pair of second arms about said axis in a predetermined sense to position said second winding tube at a waiting position angularly spaced about said axis from said winding position,

upon completion of winding of a roll of said plastic foil web on the first winding tube engaged by said pair of first arms, rotating said pair of first arms in said sense out of said winding position to form a stretch of the plastic foil web between said periphery of said contact roller and a periphery of the completed roll and to position the roll in another position angularly spaced in said sense from said winding position about said axis,

rotating said second pair of arms about said axis in said sense to displace said second winding tube from said waiting position into said winding position and to position said second winding tube adjacent said periphery of

said contact roller for engaging the plastic foil web along the plastic-foil stretch,

thereafter transversely severing said plastic-foil web along the plastic-foil stretch to separate the completed roll from the web applied to said second winding tube,

angularly displacing said pair of first arms about said axis in said sense into a removal position spaced form said completed position by about 90° and at which said roll is removed, said first and second pairs of arms being rigid and engaging the respective winding tubes at a uniform radial distance from said axis, said tubes being spaced from said axis to said uniform distance in all of the positions,

removing the completed roll from between the first arms in the removal position and winding said plastic foil web at said winding position onto said second winding tube between the pair of second arms, and

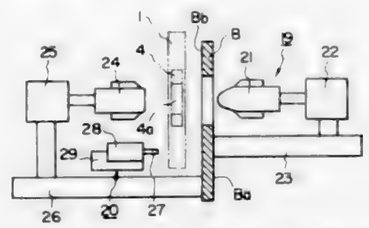
fitting a third winding tube between the first arms from which the roll has been removed for repeating said sequence.

5,330,117

CASSETTE ADAPTABLE TAPE WIDNING APPARATUS AND ASSEMBLY

Jun Taniguchi, and Koichi Sota, both of Chohu, Japan, assignors to Otari, Inc., Chohu, Japan

Filed Sep. 4, 1992, Ser. No. 940,514
Claims priority, application Japan, Dec. 27, 1991, 3-346532
Int. Cl.[5] B65H *18/08*
U.S. Cl. 242—540 **11 Claims**



1. An adaptable cassette tape winding apparatus for loading tape into a cassette comprising: cassette holding means for positioning and holding a cassette; first rotating drive means having a first rotatable drive shaft for fitting the hub of one type of tape cassette; second rotating drive means having a second rotatable drive shaft for fitting the hub of another type of tape cassette; said first and second drive shafts being on opposite sides of said cassette holding means; reciprocal moving means for selectively moving said first or second rotatable drive shaft into engagement with a cassette mounted in said cassette holding means whereby said cassette tape winding apparatus is adaptable to load tape into different type tape cassettes.

5,330,118

TAPE DRIVING APPARATUS

Akira Yoshikawa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 21, 1991, Ser. No. 795,960
Claims priority, application Japan, Nov. 27, 1990, 2-328660; Jun. 5, 1991, 3-134083
Int. Cl.[5] G11B *15/18*; **B65H** *59/00*
U.S. Cl. 242—334.4 **7 Claims**

1. A tape driving apparatus comprising:

driving means for driving a supply reel and a take-up reel, respectively;

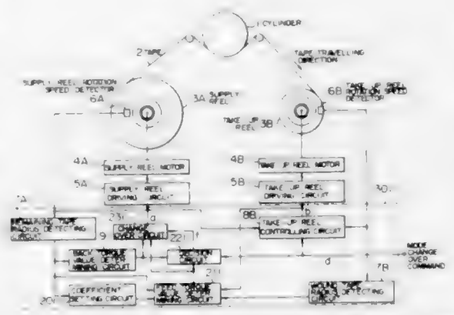
remaining tape radius detecting means for detecting information of a tape radius remaining on said supply reel;

wound tape radius detecting means for detecting information of a tape radius wound on said take-up reel;

take-up reel controlling means for producing take-up side torque information and controlling said take-up reel;

coefficient setting means for setting a determining coefficient of feed torque for said supply reel in accordance with said information of the remaining tape radius on said supply reel or said information of the wound tape radius on said take-up reel,

feed torque value determining means for determining feed torque information of said supply reel on the basis of said take-up side torque information, said information of the remaining tape radius on said supply reel, said information of the wound tape radius on said take-up reel and said determining coefficient of feed torque;



back torque value determining means for determining back torque information proportional to said information of the remaining tape radius on said supply reel;

decision means for outputting a torque information change-over signal on the basis of a magnitude relationship between a feed torque represented by said feed torque information and a back torque represented by said back torque information at a time determined by a mode change-over command; and

change-over means for sending either one of said feed torque information and said back torque information to said supply reel driving means on the basis of said torque information change-over signal.

5,330,119

AUTOMATED UNCOILING APPARATUS

Jose L. Rodriguez, Adrian, Mich.; Robert W. Sampico, Monclova, and Jeffrey A. Quate, Bowling Green, both of Ohio, assignors to Abbey Etna Machine Company, Perrysburg, Ohio

Filed Aug. 12, 1992, Ser. No. 929,766
Int. Cl.[5] B65H *19/10*; **B21C** *47/16*
U.S. Cl. 242—559.2 **29 Claims**

1. Apparatus for preparing successive coils of strip stock for uncoiling and feeding into a strip processing line comprising:

a) at least two coil support means, each coil support means being adapted for rotatably supporting a coil of strip stock for uncoiling;

b) holding means associated with each coil support means, said holding means being adapted to receive a free leading end of the strip stock and hold the leading end in a predetermined position;

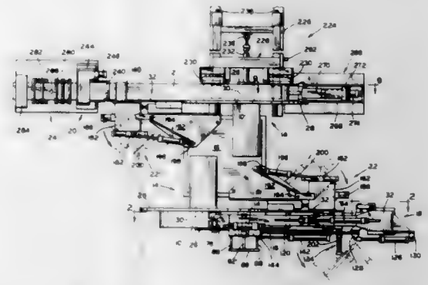
c) aligning means adjacent the processing line for receiving the leadmg end from said holding means and guiding the leading end into the processing line;

d) driving means associated with each holding means, said driving means being adapted to urge the strip stock from said holding means through said aligning means and into the processing line;

e) takeoff means spaced apart from said aligning means, said takeoff means adapted to feed the strip stock from the coil mounted on said coil support means to said holding means; and

f) transfer means for successively transferring each coil support means and associated holding means from said takeoff means to said aligning means and back to the takeoff means.

20. A takeoff mechanism for uncoiling a coil of strip stock, comprising:



a) means for rotating the coil; and

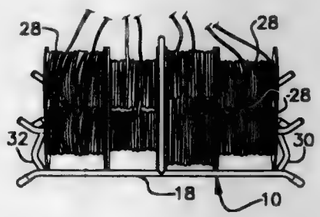
b) a knife including angularly disposed first and second blades, said first blade being adapted to peel a free leading end of strip stock from the coil with the coil wound in one direction as the coil is rotated and said second blade being adapted to peel a free leading end of strip stock from the coil with the coil wound in the other direction as the coil is rotated.

5,330,120

RACK AND HANDBARROW FOR CARRYING SPOOLS OF WIRE

Norman P. Tussing, 1365 SE. 10th St., Warrenton, Oreg. 97146

Filed Jan. 26, 1993, Ser. No. 9,838
Int. Cl.[5] B65H *49/32*
U.S. Cl. 242—588.2 **9 Claims**



1. A handbarrow, comprising:

a frame adapted to carry spools of wire and dispense wire therefrom, the frame including

a generally planar base having

a first longitudinal side member,

a second longitudinal side member opposite the first side member,

a first end,

a second end opposite the first end,

a first handle at the first end of the base, and

a second handle at the second end of the base, the first and second handles defining, respectively, first and second cross members between the longitudinal side members of the base, the frame further including

a stanchion affixed to the base and disposed between the longitudinal side members of the base, and

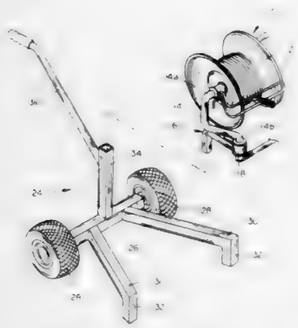
a spindle affixed at its proximal end to the stanchion and projecting in cantilever fashion from the stanchion above the base and in spaced relation with the base, the spindle being adapted to receive a spool of wire journaled thereon, the handles being disposed in transverse relation to the spindle, whereby the base of the frame can be grasped by the handles, one in each hand, and carried by a person.

5,330,121

SUPPORT BRACKET FOR HOSE REELS

John H. Eley, Box 8, Orchard, Nebr. 68764

Filed Apr. 12, 1993, Ser. No. 46,589
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] B65H *75/40*
U.S. Cl. 242—401 **8 Claims**



5. A support bracket for a hose reel of the type having a reel rotatably mounted on a support tube, comprising:

a support arm for supporting said reel, including a generally horizontal leg and a generally vertical leg depending from the horizontal leg;

said support tube connected to the horizontal leg of said support arm, to support the reel;

a generally vertically oriented receiver tube having upper and lower ends;

the lower end of said support arm vertical leg removably, slidably journaled with the receiver tube upper end to support said reel;

said receiver tube being connected between a pair of spaced apart and parallel legs of a cart handle, and further comprising:

said receiver tube being mounted on an elongated horizontal tubular member and perpendicular thereto, said elongated horizontal tubular member having first and second ends;

a first connecting bracket selectively connecting one leg of the handle to the first end of said elongated horizontal member; and

a second connecting bracket selectively connecting the other leg of the handle to said second end of the elongated horizontal tubular member.

5,330,122

CABLE REEL ASSEMBLY

Michael Wood, Darlington, Australia, assignor to Harnischfeger of Australia P & Y Ltd., Bassendean, Australia

Filed Apr. 28, 1992, Ser. No. 875,169
Claims priority, application Australia, Feb. 12, 1992, PL0865
Int. Cl.[5] B65H *57/28*
U.S. Cl. 242—158 B **16 Claims**

1. A cable reel assembly including:

(i) a mounting frame;

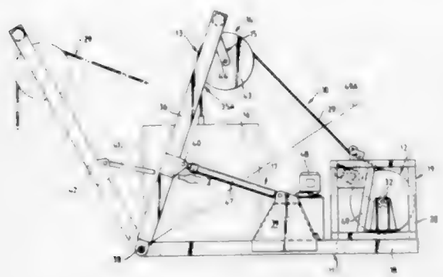
(ii) a cable drum rotatably supported on the mounting frame;

(iii) drive means for driving rotation of the cable drum;

(iv) a reeving carriage for controlling movement of cable in relation to the cable drum which includes an upper roller

means and a lower roller means mounted on a roller mounting frame, a rail aperture located between the upper roller means and the lower roller means and a cable roller assembly located below the roller mounting frame having a cable aperture for passage of the cable;

(v) a horizontally oriented support rail which passes through the rail aperture, the support rail being rhombus shaped in cross section, and including a plurality of bearing surfaces each of which is offset to the horizontal for bearing



contact with the upper roller means and the lower roller means, the support rail being located above a longitudinal axis of the cable drum, whereby the reeving carriage is adapted for reciprocatory movement relative to the support rail; and

(vi) an endless reeving member having upper and lower segments oriented in a vical plane, the endless reeving member being rotatably driven to cause the reciprocatory movement of the reeving carriage.

5,330,123

UNITARY BODY FOR MOUNTING TAPE TRANSPORT ELEMENTS

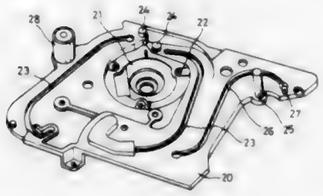
Myung C. Baek, Suwon, and Yu S. Chae, Kyungki, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 29, 1991, Ser. No. 736,763

Claims priority, application Rep. of Korea, Jul. 31, 1990, 11415/1990

Int. Cl.[5] G11B *15/60, 21/16*

U.S. Cl. 242—346.1 **2 Claims**



1. In a tape transport and guide structure for a video cassette recorder, a homogenous one-piece guide body comprising a pair of guide grooves for guiding a pair of slant bases acting to load a tape to a drum, a guide groove formed adjacent to one of said slant base guide grooves for guiding a tape guide roller, stoppers disposed adjacent to leading ends of said guide grooves to position said slant bases and said guide roller, a drum receiving recess for slantly mounting a drum at an incline of a given angle, a plurality of drum fastening holes, and a shaft for mounting an I-shaped tape guide roller and a main slant post, both of which guide the tape along a path through the guide body.

5,330,124

THERMAL PROTECTION DEVICE USING THE VAPORIZATION AND SUPERHEATING OF A RECHARGEABLE LIQUID

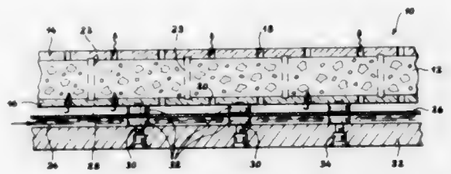
Roger Le Touche, Ecquevilly, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Mar. 3, 1993, Ser. No. 25,991

Claims priority, application France, Mar. 3, 1992, 92 02517

Int. Cl.[5] B64C *1/38*

U.S. Cl. 244—117 A **19 Claims**



1. A device for thermal protection of a structure, and comprising:

a. at least one retention layer impregnated with a fluid substance which is normally in the liquid state and has a boiling point that is below a maximum permissible temperature of said structure; and

b. means for resupplying said retention layer with said substance, said resupplying means comprising a porous membrane that is impermeable to said substance when said substance is in said liquid state but is permeable thereto when said substance is in the vapor state, said membrane being interposed between said retention layer and a supply space for supplying said substance when said substance is in the liquid state, said supply space being adjacent to said structure.

5,330,125

METHOD AND APPARATUS FOR FORMATION AND HOLDING OF A LOOSE STARTING FLAP OF A REPLACEMENT PAPER ROLL, TYPICALLY A PAPER ROLL IN A PRINTING MACHINE ROLL CHANGER

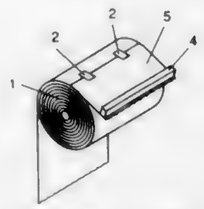
Norbert Dylla, Stadtbergen, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 971,042

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139586

Int. Cl.[5] B65H *19/10*

U.S. Cl. 242—562 **16 Claims**



1. A method for the formation and holding of a loose starting flap (5) of a replacement paper roll (1), in which the uppermost or top layer of the replacement roll has a starting portion, the end of which is adhered to the then underlying layer of the roll, comprising the steps of

perforating the uppermost layer of the roll inwardly of the end of the starting portion along a perforation line (3) which extends essentially parallel to the axis of the roll to define a flap portion located between the perforation line and the end;

adhering at least part of the flap portion of the uppermost layer to an adhering means (4; 9, 12; 809, 812, 909, 912); and

relatively moving the adhering means and the roll with the uppermost flap portion adhered thereagainst to thereby tear the uppermost flap portion at said perforation line (3) and sever a flap (5) from the remainder of the roll along the perforation line (13) while said flap portion, and then said flap (5) is adhered to and held by said adhering means.

5,330,126

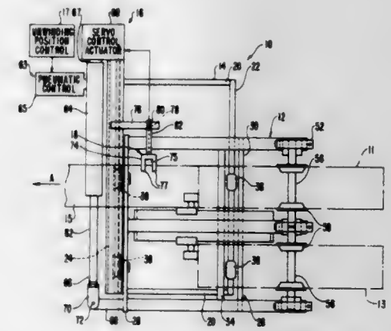
CUP SIDEWALL STOCK UNWIND STAND

Gregory I. Grischenko, River Edge, N.J., assignor to James River Corporation of Virginia, Richmond, Va.

Filed Apr. 10, 1992, Ser. No. 866,552

Int. Cl.[5] B65H *19/10*

U.S. Cl. 242—559 **32 Claims**



1. An unwind stand for rolled material comprising:

a movable supporting means for supporting at least two rolls of material, said supporting means including a first roll holding means and a second roll holding means for holding a first roll of material and a second roll of material respectively;

a shifting means including a shifting mechanism connected to said movable supporting means for shifting said movable supporting means between a first unwinding position in which a first roll of material received by said first roll holding means is positioned for unwinding and a second unwinding position in which a second roll of material received by said second roll holding means is positioned for unwinding;

an alignment detecting means for detecting the position of the material unwinding from a roll relative to an unwinding material alignment position, said alignment detecting means operatively connected to said shifting mechanism and adapted to actuate movement of at least a portion of said shifting mechanism for adjusting said movable supporting means to maintain the material in said alignment position, wherein the material unwinding from a roll travels in an unwinding direction and said shifting mechanism shifts said movable supporting means laterally with respect to the unwinding direction.

5,330,127

WINDING SPOOL FOR RIBBONLIKE OR FILAMENTARY MATERIAL

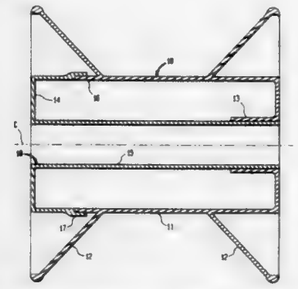
Manfred Häfner, Leopoldshöhe, Fed. Rep. of Germany, assignor to Häfner & Krullmann GmbH, Leopoldshöhe, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 11,650

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 9201120[U]

Int. Cl.[5] B65H *75/14*

U.S. Cl. 242—118.4 **14 Claims**



1. A winding spool for ribbonlike or filamentary winding material; comprising:

a cylindrical mandrel defining an axis and being provided at each axial end with a disk-like rim;

a tubular inner hub arranged concentrically to said axis and connected at one axial end of said mandrel;

a cover secured to the other axial end of said mandrel in opposition to said hub; and

an inner tubular member with smooth inside surface and fixedly secured to said cover and said inner hub,

wherein said mandrel is extended beyond said cover-near rim by a stub, said cover including an edge overlapping said stub of said mandrel.

5,330,128

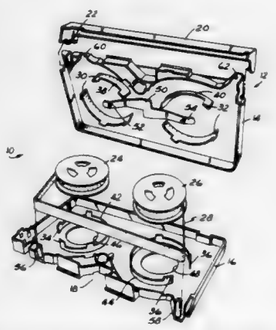
MAGNETIC TAPE CASSETTE WITH MOTION LIMITING FINGERS

Chi C. Li, Melody Garden, Hong Kong; Thomas J. Mott, Jr., Farmington Hills, and P. Eric Petersen, V, Sterling Heights, both of Mich., assignors to Producers Color Service, Inc., Southfield, Mich.

Filed Sep. 23, 1991, Ser. No. 763,538

Int. Cl.[5] G11B *23/087*

U.S. Cl. 242—345.2 **8 Claims**



1. In a tape cassette that includes a substantially rectangular housing having upper and lower housing sections of molded plastic construction, a pair of tape reels carried for rotation

within said housing, a length of magnetic tape extending between said reels for recording and/or playback of information, an aperture in a sidewall of said housing for external access to said tape by a recording/playback apparatus, and a pair of apertures in a bottom wall of said housing aligned with said reels for external access to said reels by reel drive means of the recording/playback apparatus, the improvement in which said cassette further comprises motion-limiting means comprising a circular array of angularly spaced concentric discrete arcuate fingers integrally molded on each said section for opposed alignment with fingers on the opposing section to form a segmented cylindrical enclosure surrounding each said reel and radially spaced from each said reel so as to limit lateral motion of said reels and maintain alignment of said reels with said apertures in said bottom wall while permitting free rotation of said reels, wherein said motion-limiting means further comprises a plurality of arcuate wall segments integrally interconnecting the fingers of each said array, said wall segments having a radius of curvature identical to said fingers, and being of a height less than said fingers and positioned on the opposed sections for spaced opposed alignment to cooperate with said fingers to form said enclosure with a gap for permitting travel of said tape to and from the associated reel

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5,330,129

MAGNETIC TAPE APPARATUS WITH SIMPLIFIED TAPE REEL BRAKING AFTER TAPE THREAD-IN

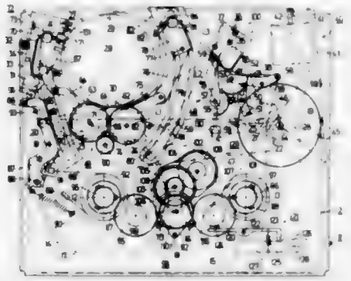
Josef Inschlag, Kleinschlag bei Hartberg, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 6, 1992, Ser. No. 926,578

Claims priority, application Australia, Aug. 16, 1991, A-1624/91

Int. Cl.[5] **G11B** *15/22*

U.S. Cl. 242—355.1 **4 Claims**



1. A magnetic tape apparatus for cooperating with a magnetic tape which extends between two adjacent rotatable reel hubs, said apparatus comprising:

a) a pair of winding mandrels for receiving respective ones of said reel hubs;

b) tape threading means moveable between a thread-out position, in which the tape threading means engages behind the tape which extends along an initial path, and a thread-in position, in which the tape extends along an operational path in the apparatus;

c) first brake means for braking one of said winding mandrels receiving one of the reel hubs as the tape threading means is moved from said thread-out position to said thread-in position such that said tape is unwound from the other reel hub;

d) detecting means for detecting whether said tape threading means has reached the thread-in position;

e) winding mandrel driving means for selectively driving said winding mandrels; and

f) second brake means comprising said driving means being brought into braking engagement with said other winding mandrel for braking the other reel hub in response to said detecting means having detected said tape threading means having reached the thread-in position,

said other winding mandrel and other reel hub being free of braking action as the tape is unwound therefrom during movement of the threading means from the thread-out position to the thread-in position.

5,330,130

TWO-BEARING REEL HAVING SELECTOR MECHANISM FOR SELECTING BETWEEN TOGGLE MODE AND MOMENTARY MODE

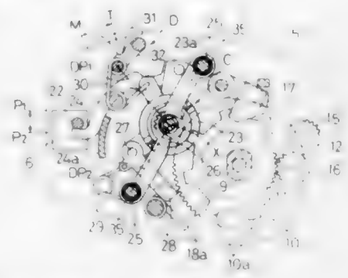
Noboru Sakaguchi, Tondabayashi, Japan, assignor to Shimano Inc., Osaka, Japan

Continuation of Ser. No. 680,853, Apr. 5, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 28,598

Claims priority, application Japan, Apr. 11, 1990, 2-38624[U]

Int. Cl.[5] **A01K** *89/15*

U.S. Cl. 242—261 **3 Claims**



1. A two-bearing reel comprising:

right and left side cases;

a spool;

a spool shaft;

a handle for rotating said spool;

a transmission system for transmitting torque between said spool and said handle, said transmission system including a clutch mechanism, said clutch mechanism having a cam disk, said cam disk being rotatable between engaging and disengaging positions for engaging and disengaging said clutch mechanism, respectively, said spool being freely rotatable when said clutch mechanism is disengaged;

a control element engageable with said cam disk, and a control member contacting said control element, said control member being movable between first and second control positions, said clutch mechanism being engaged when said control member is in the first control position, said clutch mechanism being disengaged when said control member is in the second control position;

a selector mechanism movable between toggle mode and momentary mode positions, said selector mechanism including a selector lever and a selector member for selectively positioning said selector mechanism in the toggle mode and momentary mode positions;

a first toggle spring having first and second ends, said first end being connected to said selector member, said second end being connected to said cam disk, said first toggle spring defining a first virtual dead point between said first end of said toggle spring and said spool shaft; and

a second toggle spring having first and second ends, said first end of said second toggle spring being connected to one of said side cases, said second end of said second toggle spring being connected to said cam disk, said second toggle spring defining a second virtual dead point between said first end of said second toggle spring and said spool shaft, and wherein the urging force of said second toggle spring is weaker than the urging force of said first toggle spring; and

wherein said cam disk is urged to the engaging position by said first and second toggle springs to engage said clutch mechanism when said selector mechanism is in the toggle mode position and said control member is in the first control position; and

wherein said second end of said first toggle spring moves across the first dead point when the selector mechanism is in the toggle mode position and said control member is moved from the first control position to the second control position, and wherein said cam disk is rotated and said second end of said second toggle spring is moved across the second dead point by said first toggle spring when said first toggle spring moves across the first dead point and the selector mechanism is in the toggle mode position; and

wherein said cam disk is urged to the engaging position by said second toggle spring when said selector mechanism is in the momentary mode position and said control member is in the first control position; and

wherein said cam disk is urged to the engaging position by said second toggle spring when said selector mechanism is in the momentary mode position and said control member is in the second control position.

5,330,131

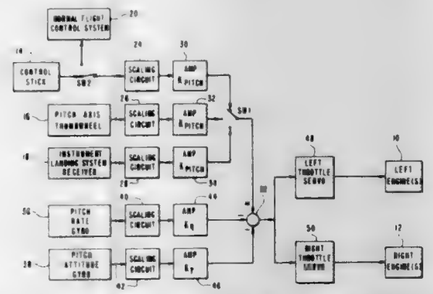
ENGINES-ONLY FLIGHT CONTROL SYSTEM

Frank W. Burcham, Lancaster; Glenn B. Gilyard, Palmdale; Joseph L. Conley, Mountain View; James F. Stewart, and Charles G. Fullerton, both of Lancaster, all of Calif., assignors to The United States of America as represented by the Administrator of National Aeronautics and Space Administration, Washington, D.C.

Filed May 28, 1992, Ser. No. 889,347

Int. Cl.[5] **B64C** *19/00*

U.S. Cl. 244—75 R **11 Claims**



1. A backup flight control system for controlling the flight path of an aircraft having a wing, a plurality of normally movable control surfaces for effecting pitch, roll and yaw moments, and first and second positionally fixed engines, each having a throttle controlled by a throttle actuator and each being disposed on opposite sides of a vertical symmetry plane of the aircraft, the system comprising:

means for selectively switching on the backup flight control system when at least one of the control surfaces is determined to be at least partially inoperative;

flight path input means for inputting a desired flight path;

control means, connected to the flight path input means, for generating throttle actuator control signals based on an amount of pitch, roll and yaw necessary to achieve the desired flight path;

means for generating a signal indicative of the actual flight path; and

means for adjusting the throttle actuator control signals to account for variations between the desired and actual flight paths.

5,330,132

FORCE-LIMITING DEVICE FOR AN AIRCRAFT LANDING GEAR SHOCK ABSORBER, AND A SHOCK ABSORBER INCLUDING SUCH A DEVICE

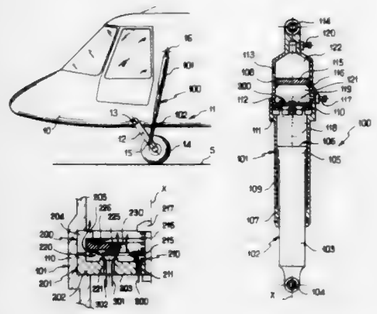
Philippe Lucienne, Aumont, and Albert De Pindray, Magny-les-Hameaux, both of France, assignors to Messier-Bugatti, Velizy-Villacoublay, France

Filed Dec. 2, 1992, Ser. No. 984,521

Claims priority, application France, Dec. 11, 1991, 91 15371

Int. Cl.[5] **B64C** *25/60*

U.S. Cl. 244—104 FP **13 Claims**



1. A force-limiting device for an aircraft landing gear shock absorber, said shock absorber being of the type comprising a main body in which a rod-piston slides, having both a diaphragm hydraulic shock absorbing means that acts under normal conditions of use and a two-chamber energy-absorbing means comprising one chamber containing gas at low pressure and another chamber containing gas at high pressure, which means acts during a crash landing, wherein the device comprises:

a box forming a partition for the main body of the shock absorber, said box having a bottom which includes a plurality of small throttling orifices distributed around the axis of said bottom, and a plurality of large flow section orifices disposed concentrically around said throttling orifices;

a central valve member that is loaded by an associated return spring to close said small throttling orifices;

an annular valve member disposed around said central valve member and being loaded by an associated resilient return member to close said large flow section orifices, said resilient return member holding the said annular valve member in its closed position and allowing said annular valve member to open above a predetermined threshold, then enabling a large volume of hydraulic fluid to pass through said large flow section orifices in a very short time.

5,330,133

PARACHUTE WITH SHOCK ABSORBING FEATURE

Ole-Bendt Rasmussen, 23, Forchwaldstrasse, CH 6318 Walchwil, Switzerland

Division of Ser. No. 435,471, Dec. 13, 1989, Pat. No. 5,205,650. This application Dec. 11, 1992, Ser. No. 989,323

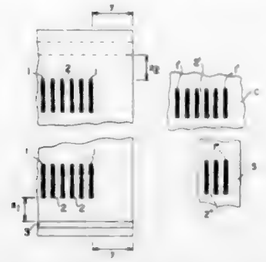
Claims priority, application United Kingdom, Apr. 18, 1988, 8809077

Int. Cl.[5] **B64D** *17/02*

U.S. Cl. 244—145 **7 Claims**

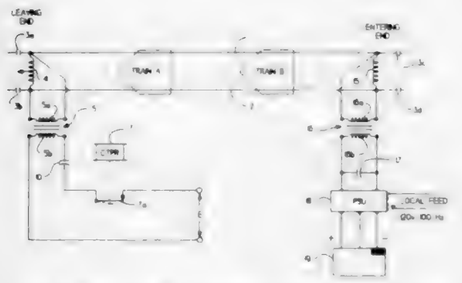
1. In a parachute having a generally semi-spherical canopy with one pole and a plurality of suspension lines or shrouds each connected at one end thereof to a point on the periphery of said canopy, the points of connection for the plural shrouds being spaced around said periphery, at least said canopy being formed of orientable thermoplastic polymeric film material,

the improvement comprising a shock absorber band in a region of the polymeric film material of said canopy adjacent each of said points of connection of said shrouds, said shock absorber band being comprised of a plurality of ribs in said canopy film material extending generally transversely of an arc connecting the adjacent point of connection and the pole of the canopy, said ribs being formed by stretching the film material in a



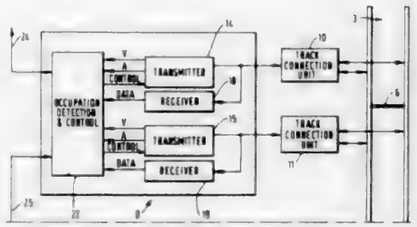
direction generally parallel to said arc and being interrupted along their transverse length at a plurality of spaced points by stripes of unstretched film material, said stripes extending in generally parallel relation in a direction generally parallel to said arc, said shock absorber band being capable of absorbing tension when the canopy region adjacent a point of connection is stressed incidental to opening of the parachute.

5,330,134
RAILWAY CAB SIGNAL
Anthony G. Ehrlich, Pittsburgh, Pa., assignor to Union Switch & Signal Inc., Pittsburgh, Pa.
Filed May 13, 1992, Ser. No. 882,605
Int. Cl.[5] B61L *21/10, 3/16*
U.S. Cl. 246—34 R **18 Claims**



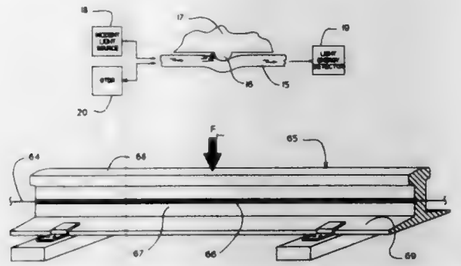
1. An improved railway cab signal transmitter for transmitting a cab signal onto a pair of rails having an impedance bond between said rails at a transmitter end of a track circuit, the transmitter comprising:
a transmitting circuit in parallel arrangement with said impedance bond and having reactance to generally resonate with said impedance bond at a preselected cab signal frequency;
code means for providing a cab signal of said preselected frequency to said transmitting circuit; and said reactance having a value to produce such cab signal having a current generally independent of the position of a track vehicle in said track circuit.

5,330,135
RAILWAY TRACK CIRCUITS
Richard J. Roberts, Melksham, United Kingdom, assignor to Westinghouse Brake and Signal Holdings Ltd., Chippenham
Filed Oct. 16, 1992, Ser. No. 962,454
Claims priority, application United Kingdom, Oct. 23, 1991, 9122438
Int. Cl.[5] B61L *25/00*
U.S. Cl. 246—34 R **5 Claims**



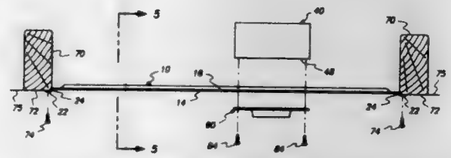
1. A railway track circuit system comprising:
a) a railway track having electrically conductive rails including first and second track circuit sections adjacent one another;
b) a first transmitter of signals coupled with the rails in said first track circuit section near a first end of that section;
c) a second transmitter of signals coupled with the rails in said first track circuit section near a second end of that section, opposite said first end;
d) a first receiver of signals coupled with the rails in said first track circuit section near said first end of that section, for receiving signals from said second transmitter;
e) a second receiver of signals coupled with rails in said first track circuit section near said second end of that section, for receiving signals from said first transmitter;
f) a third transmitter of signals coupled with the rails in said second track circuit section near a first end of that section, adjacent said first end of said first track circuit section;
g) a fourth transmitter of signals coupled with the rails in said second track circuit section near a second end of that section, opposite said first end of that section;
h) a third receiver of signals coupled with the rails in said second track circuit section near said first end of that section, for receiving signals form said fourth transmitter; and
i) a fourth receiver of signals coupled with the rails in said second track circuit section near said second end of that section, for receiving signals form said third transmitter, in which system:
j) the first transmitter, the third transmitter, the first receiver and the third receiver are coupled in a discrete track circuit unit to occupation detection circuitry in that unit, said occupation detection circuitry being adapted to:
1) estimate the impedance of the first track circuit section for producing an indication of the position of a vehicle in that section; and
2) determine whether a signal from the fourth transmitter is received by the third receiver at a strength greater than a predetermined strength, in response to the estimate of the impedance of the first track circuit section being indicative of a vehicle having passed out of the first track circuit section towards the second track circuit section.

5,330,136
RAILWAY CODED TRACK CIRCUIT APPARATUS AND METHOD UTILIZING FIBER OPTIC SENSING
Michael E. Colbaugh, Levelgreen, Pa., assignor to Union Switch & Signal Inc., Pittsburgh, Pa.
Filed Sep. 25, 1992, Ser. No. 951,582
Int. Cl.[5] B61L *25/02*; G01L *1/24*
U.S. Cl. 246—122 R **52 Claims**



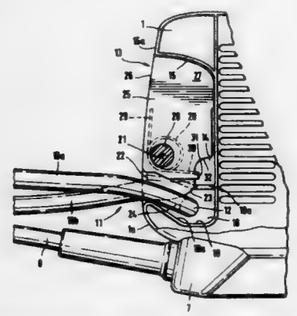
1. Railway track circuit apparatus for detecting a railway vehicle present in a track section having a first end and a second end, said apparatus comprising:
light emission means for generating a reference light signal at said first end of said track section;
optical sensor means for emitting a vehicle detection light signal based upon said reference light signal in response to a presence of said railway vehicle in said track section;
detector means in optical communication with said sensor means for receiving said detector light signal;
processor means operatively connected to said detector means for interpreting said vehicle detection light signal to detect presence of said railway vehicle in said track section;
said optical sensor means comprises an elongated optical fiber conductor extending along said track section from said first end to said second end; and
said elongated optical fiber conductor is placed at said track section by attachment at a plurality of spaced apart locations intermediate said first end and said second end, and said elongated optical fiber conductor is used both for detection of said railway vehicle and as a communication medium.

5,330,137
APPARATUS AND METHOD FOR MOUNTING AN ELECTRICAL BOX BETWEEN STUDS IN A WALL
John H. Oliva, 875 New Bedford Pl., Fairfield, Calif. 94333-1400
Filed Jan. 4, 1993, Ser. No. 189
Int. Cl.[5] G12B *9/00*
U.S. Cl. 248—27.1 **10 Claims**



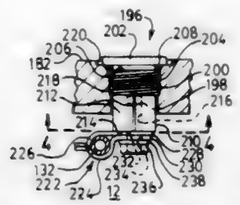
1. A mounting assembly for attachment between two wall studs, comprising:
a flat elongated frame having a front planar face, a rear planar face, a first and second opposing ends attachable to said wall studs, and a central cut-out portion defining a top edge and a bottom edge, side top and bottom edges having no apertures therein for accommodating a fastener;
an electrical box having a plurality of sides with a first depth, a back end, and an open front end, the front end of said box placed flush with the rear face of said frame with a portion of said box contacting said top edge and another portion of said box contacting said bottom edge;
a faceplate placed on the front face of said frame opposite and in alignment with said electrical box, a portion of said faceplate contacting said top edge and another portion contacting said bottom edge; and
a fastener inserted through said cut-out portion for fastening said electrical box to said faceplate, thereby attaching said box and said face plate to said frame.

5,330,138
CABLE SUPPORT FOR AN ELECTRICALLY-OPERATED PORTABLE HANDHELD WORK APPARATUS
Helmut Schlessmann, Waiblingen, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany
Filed Jun. 30, 1992, Ser. No. 906,494
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1991, 4121423
Int. Cl.[5] F16G *11/04*; F16L *3/00*
U.S. Cl. 248—52 **11 Claims**



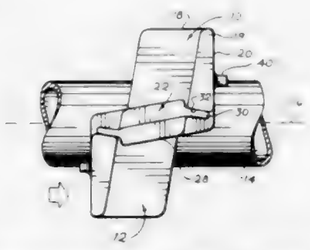
1. A cable holder for an electrically-operated portable handheld work apparatus supplied with electrical energy via an electric cable, the cable holder comprising:
wall means fixed on said work apparatus for defining a chamber therein;
a closure piece disposed in said chamber and delimiting a recess within said chamber for receiving a loop-like segment of the cable therein;
pivot means for pivotally mounting said closure piece in said chamber so as be to pivotally movable about a pivot axis between a predetermined first position wherein said wall means and said closure piece conjointly define an opening to said recess for allowing said loop-like segment of the cable to be inserted through said opening and into said recess and a predetermined second position wherein said closure piece blocks said opening to hold said segment in said recess without applying a clamping force to said loop-like segment;
said closure piece and said wall means conjointly defining wedge-shaped holding means when said closure piece is in said second position for permitting said loop-like segment to become wedged in said wedge-shaped holding means when a pulling force is applied to said cable in the course of work with said work apparatus; and,
resilient biasing means for resiliently biasing said closure piece into said second position.

5,330,139
MOUNTING APPARATUS FOR A FLUID CONDUIT ASSEMBLY
Mark E. Tietje, Batavia, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Aug. 31, 1992, Ser. No. 937,084
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—65 7 Claims



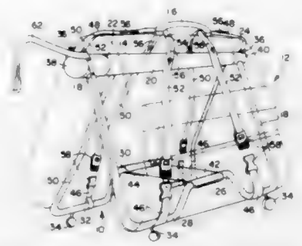
1. An apparatus for mounting a fluid conduit assembly, comprising:
a housing member having an internal cavity, an outer surface and a threaded bore that extends therebetween;
a stud member having a first end portion defining a generally flat head member and a second end portion, said stud member being positioned within the threaded bore defined in said housing member with the head member positioned in generally flush relationship with the outer surface of the housing member, and the second end portion extending into said internal cavity; and
means for clamping the fluid conduit to the second end portion of the stud member to secure the position of the fluid conduit within the internal cavity defined by the housing member.

5,330,140
PIPE ANCHOR
Zoltan Cseri, Northbrook, Ill., assignor to P.E.P. Industries, Ltd., Bedford Park, Ill.
Filed Dec. 30, 1992, Ser. No. 998,478
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—74.2 6 Claims



1. A pipe anchor for securing a pipe to a support structure comprising a pair of components adapted to interengage in a closed position with each other around a pipe having an axis, each of components comprising a head having an open cavity surface and an outer surface, said cavity surface extending partially around half said axis for supporting a portion of said pipe, a pair of spaced legs extending from the outer surface of said head, said legs having coplanar ramp surfaces extending at an angle toward said axis, the ramp surfaces of the legs of one component in inverted position relative to the other component being slidably engageable with the ramp surfaces of respective legs of the other component to embrace the pipe when the components are moved toward each other to a closed position, and locking means near the ends of the legs for locking the components in a closed position.

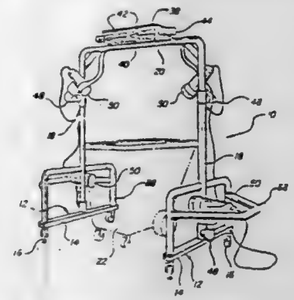
5,330,141
GARMENT BAG LUGGAGE CART ATTACHMENT
Young S. Kim, Cupertino, Calif., assignor to Inno Design, Inc., Sunnyvale, Calif.
Filed May 29, 1992, Ser. No. 890,717
Int. Cl.[5] A63B *55/08*
U.S. Cl. 248—98 9 Claims



1. A luggage cart in combination with a garment bag having first and second sides and a handle which extends from said garment bag having a direction extending upward from said luggage cart when said garment bag is positioned on said luggage cart said luggage cart comprising:
first and second frame members pivotally coupled to each other proximate a top peripheral edge of at least one of said first and second frame members, said first and second frame members each having an interior side and an exterior side, the coupled top peripheral edge of said frame members defining a spine for supporting said garment bag thereon with said first and second sides of said garment bag each positioned adjacent said exterior side of one of said first and second frame members and extending downward from the top peripheral edge of said frame members, said first and second frame members further being formed for at least partially supporting said first and second sides of said garment bag on the exterior sides of said frame members, said first and second frame members being free to pivot about said spine with respect to one another,
securing means provided on at least one of said first and second frame members for securing a garment bag to said first and second frame members with first and second sides of the garment bag each positioned adjacent said exterior side of one of said first and second frame members and extending downward from the top peripheral edge of said frame members when the garment bag is supported on said spine, and
means for selectively limiting pivotal movement of said first and second frame members about said spine with respect to one another, said means for selectively limiting pivotal movement of said first and second frame members defining a maximum angle of separation between the interior sides of said first and second frame members.

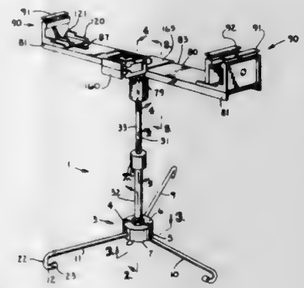
5,330,142
MOBILE SUPPORT FRAME FOR RADIATION DETECTION EQUIPMENT
J. Russell Gnau, III, Royal Oak, Mich., assignor to Hot-Sci, Inc., Royal Oak, Mich.
Filed Mar. 29, 1993, Ser. No. 38,794
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—122 9 Claims

1. A mobile support frame for supporting radiation detection equipment used to detect radiation from material passed through said frame, said frame comprising;
a base structure including a pair of base members, a pair of support members extending upwardly from said pair of base members and disposed in spaced parallel relationship with respect to one another with a cross member extending therebetween at the upper margins of said support members opposite said base members and at least one detector mount movably supported along said support members such that said detector mount may be located at a plurality of positions along said support members;



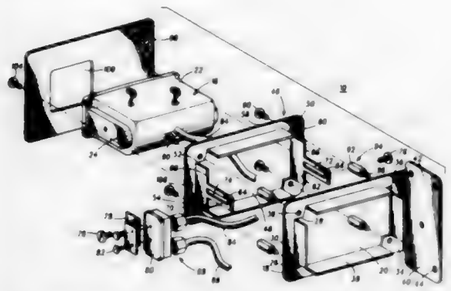
said detector mount being rotatable about an axis perpendicular to said support members such that the radiation detection equipment may be orientated in a plurality of positions about said perpendicular axis to monitor the radioactivity from material passed through said frame.

5,330,143
CRAFT STAND
Homer C. Rich, 1100 S. Noland Rd., Independence, Mo. 64050, and Robert E. Morgan, 2255 NE. Porter Rd., Blue Springs, Mo. 64014
Filed Nov. 27, 1992, Ser. No. 982,620
Int. Cl.[5] D05C *1/02*
U.S. Cl. 248—161 15 Claims



1. A craft stand comprising:
(a) a base;
(b) a telescoping standard having an upper telescoping member and a lower hollow telescoping member; a lower end of said lower telescoping member attached to said base; said upper telescoping member is slidingly received within said lower telescoping member and advanceable between a raised alignment and a retracted alignment with respect to said lower telescoping member; said upper telescoping member includes a channel extending substantially across a length thereof and adapted to receive a pin secured to and extending inward from said lower telescoping member such that when said upper telescoping member is advanced to said raised alignment said pin engages a lower end edge of sad channel and prevents said lower telescoping member from advancing therebeyond;
(c) a frusto conical flexible washer slidingly positioned on said upper telescoping member; a lower end of said washer having an outer diameter that is smaller than an outer diameter of an upper end of said washer; the outer diameter of said washer lower end further being smaller than an inner diameter of said lower telescoping member and the outer diameter of said washer upper end being larger than the inner diameter of said lower telescoping member;
(d) a clamping nut comprising a cylindrical sleeve having a wall extending across an upper end thereof and having an upper telescoping member receiving aperture extending therethrough; said clamping nut being slidingly positioned on the upper telescoping member above said washer; said clamping nut threadingly securable to an upper end of the lower hollow member when said upper telescoping member is advanced to a desired alignment with respect to the lower telescoping member such that said wall of said clamping nut engages said upper end of said washer and urges said washer into said lower hollow member upper end such that an upper inner edge of the lower hollow member engages an outer surface of said washer and compresses said washer around said upper telescoping member to resist further retraction or extension of said upper telescoping member with respect to said lower telescoping member;
(e) a set screw threadingly secured within a set screw aperture extending through said lower telescoping member and threadingly advanceable to selectively engage said upper telescoping member to further resist retraction or extension of said upper telescoping member with respect to said lower telescoping member;
(f) a universal joint assembly attached to an upper end of said upper telescoping member;
(g) a cross arm having a middle and opposite ends; said cross arm connected to said universal joint assembly at said middle; and
(h) a pair of clamp assemblies each attached to a respective cross arm opposite end and comprising:
(1) a first clamp member having a first member base and a first member upright extending perpendicular to said first member base at one end thereof; said first member base including side flanges extending upward from said first member base and away from said first member upright; said flanges including a front horizontal edge, a vertical edge and a rear horizontal edge; said vertical edge spaced from said first member upright by said front horizontal edge; said first member upright includes a first member inner groove on an inner surface of said first member upright and a first member outer groove on an outer surface of said first member upright and a plurality of bosses extends into each of said first member inner groove and outer groove;
(2) a second clamp member comprising a second member base and a second member upright extending perpendicularly to said second member base medially thereof; said second clamp member being positionable on said first clamp member such that said second base member is supported on said rear horizontal edge of said side flanges and a front edge of said second member base is positioned in abutting relationship with said vertical edge of said first member base; said second member upright includes a second member inner groove on an inner surface of said second member upright and a second member outer groove on an outer surface of said second member upright and a plurality of bosses extend into each of said second member inner groove and outer groove; and
(3) connector means engaging said uprights and adapted for drawing upper ends of said uprights together.

5,330,144
FRAME STRUCTURE AND ASSEMBLY FOR WALL MOUNTING A SPEAKER OR CAMERA
Bruce B. Stevenson; Paul T. Scherer; Bill R. Unseld, and James W. Dickens, all of Lexington, Ky., assignors to Square D Company, Palatine, Ill.
Filed Jan. 8, 1993, Ser. No. 1,968
Int. Cl.[5] A47F 5/08
U.S. Cl. 248—231.9 36 Claims



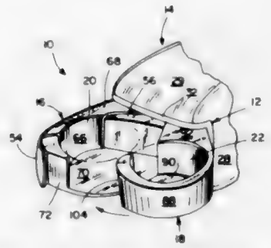
1. A mounting frame structure for association with a preformed aperture in a wall and for recessed mounting of a speaker or camera having a housing, the frame structure comprising:
a one-piece, unitary frame body having a front and back side, the frame body having an open central region for receiving therethrough body portions of the housing, the frame body having a flattened perimeter region extending about the open central region, the perimeter region defined by an outer and inner edge, a plurality of apertures individually located in the perimeter region at periodically spaced intervals about and adjacent to the central region;
a shoulder region upstanding rearwardly from and extending substantially about the perimeter region, the shoulder region having an outer and inner face, the inner face of the shoulder region being adjacent to the housing; said shoulder region including at least one L-shaped flange attached to the outer face of the shoulder region, one leg of each such L-shaped flange abutting the outer face of the shoulder region, the opposite leg of each such L-shaped flange perpendicularly upstanding from the outer face, the upstanding leg being positioned near the front face of the perimeter region and having means for being fastened to the wall; and
a mounting flange upstanding rearwardly in a perpendicular direction from the perimeter region, the mounting flange having a generally flat shape and at least one aperture therethrough for receiving a fastener so that the mounting flange abuts and fastens to a stud or cross member of the wall.

5,330,145
HOLDER FOR DRINKING VESSELS
Vernon C. Evans, Monroe County, and David E. Miller, St. Clair County, both of Ill., assignors to Kup-It,Inc., Red Bud, Ill.
Filed Nov. 6, 1992, Ser. No. 972,860
Int. Cl.[5] A47K 1/00
U.S. Cl. 248—311.2 24 Claims

15. An adapter for holding a relatively large drinking vessel and for rendering a conventional cup holder, that is located along an upright surface, suitable for holding such a drinking vessel, said adapter comprising: a base having an upwardly opening socket which is wide enough to receive the relatively large drinking vessel; a coupling element projecting downwardly from the base directly beneath the socket and being of a width less than the socket, the element being configured to fit into a conventional cup holder in place of a cup; and means for enabling the coupling element to rotate relative to the base about an axis that is eccentric to the element and to thereby cause the base when placed over and supported on a conventional cup holder to be driven horizontally over the conventional cup holder and against the nearby upright surface, the coupling element being configured for manual manipulation.

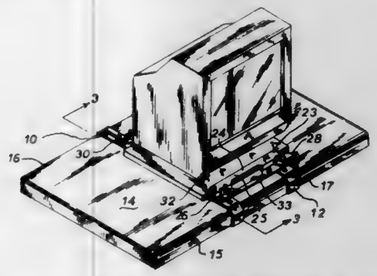


5,330,146
CONTAINER HOLDER
David J. Spykerman, Zeeland, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Dec. 7, 1993, Ser. No. 163,321
Int. Cl.[5] A47K 1/08
U.S. Cl. 248—311.2 33 Claims



1. A container holder assembly comprising:
a recess forming member adapted for mounting in a vehicle;
a first container support receptacle pivotally mounted in said recess forming member for movement between a storage position and a use position, said first container support receptacle including a C-shaped wall defining a first aperture for holding a container, said C-shaped wall including material defining an opening in one side; and
a second container support receptacle pivotally mounted to said first container support receptacle for movement through said opening between a retracted position in said first container support receptacle and an extended position from said first container support receptacle, said second container support receptacle including a second wall defining a second aperture for holding a container, said first and second apertures being aligned for supporting a single container when said second container support receptacle is in said retracted position, but defining separate apertures for supporting a pair of containers when said second container support receptacle is in said extended position.

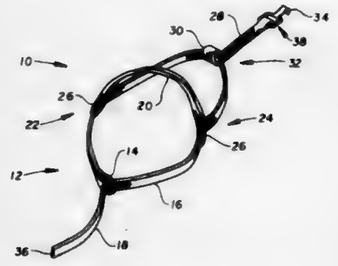
5,330,147
VIDEO MONITOR CLAMP
Eric B. Volcheff, Manitowoc; Robert W. Wacker, Plymouth, and Dale M. Hemberger, Sheboygan, all of Wis., assignors to Mayline Company, Inc., Sheboygan, Wis.
Filed Jan. 22, 1993, Ser. No. 7,529
Int. Cl.[5] A47B 97/00
U.S. Cl. 248—316.4 9 Claims



1. A clamp assembly for adjustably mounting an electronic data station device having a supporting base to a tiltable supporting table having a flat supporting surface between parallel front and rear edges, said clamp assembly comprising:
a pair of main clamp members, each having a flat body portion extending between hooked front and rear ends spaced by a distance equal to a distance between the front and rear edges of the table, the hooked ends allowing the main clamp members to be slid laterally onto the flat supporting table surface with the hooked ends engaging the front and rear edges to position the main clamp members parallel to one another and spaced laterally apart at any selected position along said table edges;
each main clamp member having an open mounting slot in the flat body portion extending along substantially the entire length thereof;
a pair of angular cross clamp members extending between said main clamp members and generally perpendicular thereto, each cross clamp member having an angular cross section including a first leg disposed parallel to the table surface and a pair of apertures each aligned with a mounting slot in one main clamp member;
threaded fastening means slidably disposed in the mounting slots and extending upwardly through the apertures in the cross clamp members; and
manually operable threaded tightening means for engaging said fastening means and adjusting the spacing between the cross clamp members and the positioning thereof along the main clamp members between the front and rear table edges;
whereby the device may be placed on the table with the base overlying the main clamp members, the threaded fastening means and cross clamp members adjusted along the mounting slots to bring the cross clamp members into engagement with the front and rear edges of the base of the device, and the tightening means adjusted to secure the base in a selected position anywhere on the table surface.

5,330,148
WHEEL TIEDOWN DEVICE
H. Dennis Floyd, Rte. 2, Box 281, Lavonia, Ga. 30553
Filed Aug. 10, 1993, Ser. No. 103,689
Int. Cl.[5] B65D 63/00
U.S. Cl. 248—499 5 Claims

1. A wheel tiedown device for securing a vehicle by at least one road wheel thereof to a conveyance, comprising a harness partially surrounding one road wheel, said wheel tiedown device having:
a lasso member comprising a linear member having proximal and distal ends, said proximal end including lasso slip ring means, and said distal end being passed through said slip ring means, thereby defining a lasso loop of selectively variable dimensions and a handle member, wherein said lasso loop, when placed over a vehicle wheel, partially encircles the wheel by contacting the sides of the wheel, thereby describing a chord on each side of the wheel when tightened, and radially contacting the circumferential surface of the wheel, and wherein said handle member is attached to the trailer at said distal end;
a cross member having proximal and distal ends including



first and second spanning slip ring means, said cross member spanning and slidably attaching to said lasso loop at two diametrically opposite points of said lasso loop at the sides of the secured wheel; and
a tether member having an end comprising tether slip ring means, said tether member slidably attaching to said lasso loop by said third slip loop at a point diametrically opposite said lasso slip ring means, whereby said tiedown device is automatically adjusted when placed over a vehicle wheel and tightened by pulling on one of said lasso handle and said tether member,

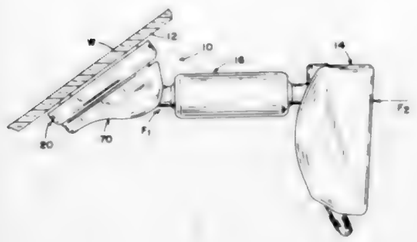
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5,330,149
BREAKAWAY ACCESSORY MOUNTING FOR VEHICLES
Theodore M. Haan, Byron Center; Wayne Vandenbrink, West Olive; Stephen J. Forbes, Wyoming, and Dennis J. TenBroeke, Hudsonville, all of Mich., assignors to Donnelly Corporation, Holland, Mich.
Filed Jan. 28, 1993, Ser. No. 10,615
Int. Cl.[5] F16M 13/00
U.S. Cl. 248—549 47 Claims

1. A breakaway accessory mounting assembly for vehicles for supporting rearview mirrors and other accessories comprising:
a base for attachment to a surface of a vehicle panel such as a window;
a coupler engaging said base and including a support for engaging and supporting an accessory such as a rearview

mirror, and positioning means for positioning said coupler in an installed position on said base; and

retaining means extending between said base and coupler for



slidably receiving said coupler on said base in a lateral direction and allowing rotation of said coupler with respect to said base to said installed position about a predetermined first axis without further lateral sliding movement, for resiliently holding said base and coupler together in said installed position, and for releasing said coupler from said base when a predetermined force is imposed on said coupler.

5,330,150

Patent Not Issued For This Number

5,330,151

PARTIALLY REUSABLE SWIMMING POOL WALL FORM

John D. Boyack, Rte. 17, Box 515, Tyler, Tex. 75704

Filed Jul. 29, 1992, Ser. No. 922,014
Int. Cl.[5] E04B *1/16*; E04H *4/02*
U.S. Cl. 249—83 9 Claims

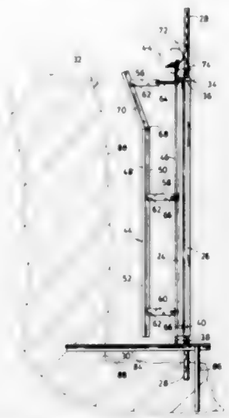
1. A partially removable swimming pool wall form comprising:

a removable panel having inner and outer faces and a plurality of mounting holes;

a sleeve attached to said outer face of the panel for attaching said removable panel to a partially buried stake;

a continuous sheet forming a cavity with said inner face of the panel for pouring a swimming pool wall;

an upright for supporting said sheet;



braces connected to said upright for temporarily attaching said upright to said panel through said mounting holes; and

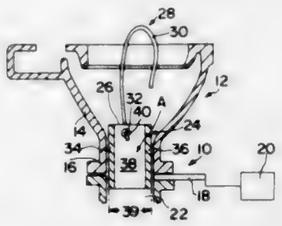
fasteners extending through said mounting holes for removably attaching said panel to said braces.

5,330,152

FLUSH VALVE CHOCK

John Visco, 334 Jeffer St., Ridgewood, N.J. 07450

Filed Jul. 14, 1993, Ser. No. 91,579
Int. Cl.[5] F16K *35/02*; E03D *5/012, 5/08, 11/10*
U.S. Cl. 251—89.5 17 Claims



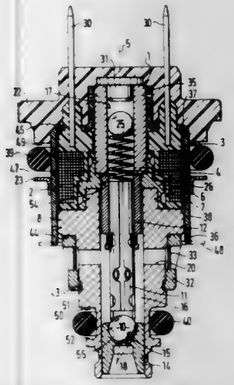
1. A chock for holding open a valve member in a flush valve means of a portable toilet having outlet means for communicating the toilet with a storage means, the valve member being associated with the outlet means and movable between a closed position wherein the valve member blocks the outlet means and an open position wherein the outlet means is unblocked, and wherein the valve member is biased toward the closed position, the chock comprising a body member including means for selective placement within the outlet means so as to hold the valve member in the open position and allow fluid communication between the toilet and the storage means, and handle means connected to the body member for placing the body member in the outlet means and for removing the body member from the outlet means.

5,330,153

ELECTROMAGNETICALLY OPERABLE VALVE

Ferdinand Reiter, Markgroeningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00052, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/11605, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 21, 1991, Ser. No. 915,990
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1990, 4003229
Int. Cl.[5] F16K *31/06*; B05B *1/32*
U.S. Cl. 251—129.21 19 Claims



1. An electromagnetically operable injection valve for fuel injection systems of internal-combustion engines, having a core (1) coaxial with a longitudinal axis (5) of said valve, said core having a first end and a second end, said core is surrounded by a magnet coil which is part of a magnetic circuit, an armature (12) connected to a valve closing body by means of which said valve closing body (10) is operated to interact with a stationary valve seat (15), a tubular metallic intermediate part (6) having a first end and a second end, said first end of said intermediate part is closely connected to said second end of the core facing the armature and said second end of said intermediate part is connected to a tubular connecting part (8), a metallic valve seating body (14) which includes the stationary valve seat (15), said valve seating body is attached to tubular connecting part at a lower end facing away from the intermediate part, and having a plastic sheath (22) which surrounds an upper end of the valve facing away from the valve seating body, the valve is at least partially surrounded in a direction of the longitudinal axis of the valve and is completely surrounded in a circumferential direction by a metallic housing jacket (3) which closes the magnetic circuit, the metallic housing jacket is connectd to said first end of the core (1) at an upper end (35) and to the connecting part (8) at a lower end (36),and overhangs the magnet coil (2) at least in the axial direction.

5,330,154

PORTED BAYONET COUPLING

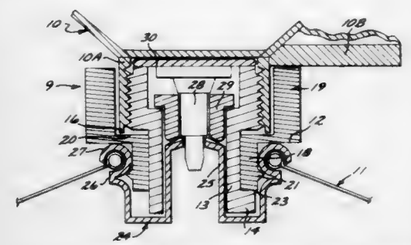
James S. Mashburn, 213 Rivo Alto Canal, and Jerry P. Mashburn, Rivo Alto Canal, both of Long Beach, Calif. 90803

Filed Dec. 2, 1992, Ser. No. 984,910
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—144 9 Claims

1. A coupling apparatus for interconnecting a fluid supply control valve having an inlet orifice to a fluid supply outlet fixture having an outlet orifice centrally located in a cylindrical recess formed therein, said recess having an inwardly protruding lip formed about its circumference, wherein the coupling apparatus comprises:

a collapsible annular collar, having an outwardly protruding rib extending about its circumference, configured and dimensioned for insertion into said fixture's cylindrical recess upon collapse and wherein said rib engages the lip of said outlet fixture so as to prevent the collar's extraction from said recess upon expansion of said collar; and

a hollow shaft extending from said control valve and centered about said inlet orifice, configured and dimensioned



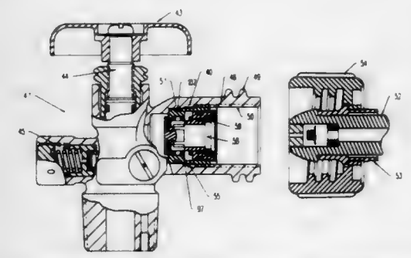
so as to be slidably insertable into said collar while said collar is in its expanded state so as to bring the inlet orifice into fluid communication with the outlet orifice, said hollow shaft including means to hook under said collar upon full insertion and relative rotation thereto whereby the presence of the shaft within the collar prevents the collar's collapse and whereby the inlet and outlet orifices are firmly held in fluid communication with one another.

5,330,155

PRESSURE-LOADED CYLINDER VALVE INSERT

David M. Lechner, Lancaster, N.Y., assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Nov. 5, 1991, Ser. No. 787,835
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.6 17 Claims



1. A valve insert adapted to be removably mounted as a unit on one fluid conduit to selectively enable a flow of fluid therethrough when another fluid conduit is sufficiently engaged therewith and to prevent such fluid flow when such conduits are physically separated from one another, comprising:

a tubular body adapted to be sealingly mounted on said one fluid conduit, said body having an opening through which fluid may flow, having an annular seat surrounding said opening and facing toward the normal direction of fluid flow, having an abutment surface facing away from the normal direction of fluid flow, and having an inwardly-facing surface;

a valve member mounted on said body for movement relative thereto, said valve member having a resilient seal mounted for movement toward and away from said seat to define a variable-area orifice through which fluid may flow, said member being movable relative to said body to any position between one position at which said orifice area is a maximum and another position at which said orifice area is zero, said member having an abutment surface arranged to face said body abutment surface and

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having an outwardly-facing surface arranged to slidably engage said body inwardly-facing surface, the joint between said inwardly- and outwardly-facing surfaces being sealed at all relative positions between said member and body;

biasing means acting between said body and member abutment surfaces for continuously urging said seal to move toward said seat;

a docking member mounted on said member and adapted to engage said other fluid conduit; and

coupling means for selectively holding said first and second conduits together with said other conduit engaged with said insert;

whereby when said conduits are separated, pressure differential across said insert will act across a first area to urge said seal into tighter sealed engagement with said seat, and when said other conduit is engaged with said insert and displaces said seal off said seat, a pressure differential across said insert will act across a second area to urge said docking member into fluid-tight sealed engagement with said other conduit independent of the specific position of said member relative to said body.

5,330,156

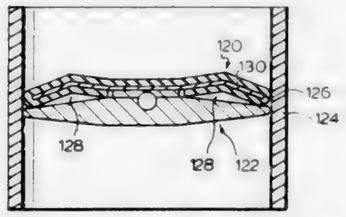
SEAL ARRANGEMENT FOR VALVES

Thomas P. McKavanagh, 14924 Yong Street, Suite 602, Aurora, Ontario, Canada L4G 6H7

Continuation-in-part of Ser. No. 793,526, Nov. 18, 1991, Pat. No. 5,150,881. This application Aug. 17, 1992, Ser. No. 930,312

Int. Cl.[5] F16K *25/00, 41/04*

U.S. Cl. 251—159 **20 Claims**



12. A valve comprising a valve housing, a valve member pivotally secured in said valve housing and movable from an open position allowing fluid to pass through said valve to a closed position impending fluid moving through said valve, said valve housing having a peripheral sealing surface which cooperates and forms a seal with the valve member when the valve member is in the closed position, and a washer type seal overlying and on an upstream face of said valve member; said washer type seal having a generally resilient body portion having a forward face and a rearward face having an outer exposed sealing face therebetween in contact with said peripheral sealing surface of said valve housing when said valve member is in the closed position, said forward face being exposed to fluid pressure within said housing, said rearward face cooperating with said valve member to define a low pressure cavity therebetween wherein different pressure differentials are created when said forward face is exposed to different fluid pressures within the valve housing, exceeding the pressure of the low pressure cavity; said washer including a mechanical biasing arrangement of a material different than said resilient body located between the forward face and the rearward face and extending about a length thereby said mechanical biasing arrangement, when exposed to any of the pressure differentials and when said valve member is in the closed position, resiliently distorts along said length thereby and moves in a predetermined directed manner towards said sealing face and thereby exerts a greater force on said sealing face increasing the sealing effect between said sealing face and said peripheral sealing surface of said valve housing, such that the sealing effect increases as the mechanical biasing arrangement continues to distort along said length thereof in the predetermined directed manner caused by increases in the fluid pressure exposed to said forward face, said mechanical biasing arrangement being selected to determine the sealing effect at any of the pressure differentials.

5,330,157

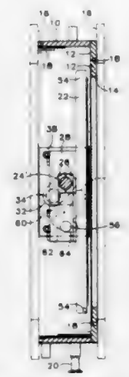
ROTARY DISK VALVE

Charles D. Dern, Feasterville, and David L. Ho, Hatboro, both of Pa., assignors to Hull Corporation, Hatboro, Pa.

Filed Jul. 28, 1993, Ser. No. 98,145

Int. Cl.[5] F16K *1/22*

U.S. Cl. 251—162 **6 Claims**



1. A rotary disk valve, comprising:

a) a valve body having a peripheral section and an annular valve seat section defining a central opening and a radially extending valve seat surface,

b) a valve disk configured to removably seat against said valve seat surface,

c) drive pivot means mounted on the valve body for reversible rotation,

d) drive link means secured to the drive pivot means for rotation therewith,

e) valve disk support shaft means mounted on the drive link means of rotation relative to the drive link means on an axis parallel to but spaced from the axis of rotation of the drive pivot means,

f) guide cam means on the valve body,

g) bracket means on the valve disk supporting the valve disk support shaft means, and

h) guide cam follower means on the bracket means slidably engaging said guide cam means,

i) the drive pivot means, valve disk support shaft means and guide cam means being arranged whereby rotation of the drive pivot means 180° in one direction moves the valve disk first arcuately from fully open position to an intermediate position spaced from said valve seat surface, and then linearly to fully closed position sealed against said valve seat surface.

5,330,158

FLANGE SEAL

Thomas J. Ellich, Hibbing, and Dennis J. Peterson, Virginia, both of Minn., assignors to NewCon Co., Hibbing, Minn.

Continuation of Ser. No. 851,467, Mar. 13, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 122,776

Int. Cl.[5] F16K *3/00*

U.S. Cl. 251—327 **14 Claims**

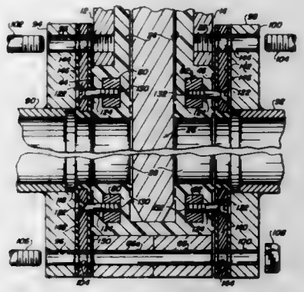
8. Apparatus for improving the sealing function of a bore segment disposed within the bore section of a gate valve, which bore segment includes first and second annular surfaces

disposed on opposed sides of the bore segment, said apparatus comprising in combination:

a) a first stabilizing ring disposed in one part of the bore segment;

b) a second stabilizing ring disposed in another part of the bore segment;

c) a first annular flange separate of and distinct from the bore segment and locatable adjacent one of the first and second annular surfaces;



d) a first interconnection for interconnecting said first annular flange with said first stabilizing ring;

e) a second annular flange separate of and distinct from the bore segment and locatable adjacent the other of the first and second annular surfaces; and

f) a second interconnection for interconnecting said second annular flange with said second stabilizing ring.

5,330,159

APPARATUS FOR AUTOMATICALLY INSERTING AND REMOVING SCREW-THREADED ELEMENTS INTO AND FROM TAPPED BORES

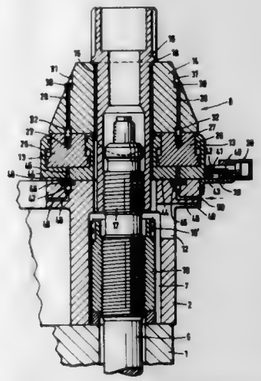
Siegfried Heiermann, Waltrop, Fed. Rep. of Germany, assignor to Westfalia Becorit Industrietechnik GmbH, Fed. Rep. of Germany

Filed Jan. 19, 1993, Ser. No. 5,560

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1992, 4201324

Int. Cl.[5] B25B *29/00*

U.S. Cl. 254—29 A **9 Claims**



1. An apparatus for use in automatically inserting and removing screw-threaded elements into tapped bores on a common pitch circle, particularly for attaching and detaching a cover of a reactor pressure vessel; a screw-clamping device for subjecting the screw-threaded elements to tension, said device comprising a carrier for engaging on the cover and having apertures for receiving the screw-threaded elements, clamping mechanisms each with a pair of hydraulic piston and cylinder units connected to a pressure bridge which is engageable with abutment means on one of the associated screw-threaded elements and mounting means for mounting the mechanisms on the carrier wherein the mounting means includes guides for guiding each mechanism relative to the carrier to permit adjustment of each mechanism radially and around the pitch circle.

5,330,160

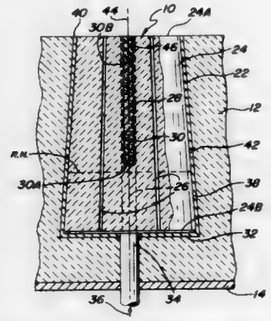
GAS STIR PLUG WEAR INDICATOR INCLUDING LOW MELTING POINT COMPONENT AND METHOD OF USE

Eckehard Eisermann, Vermilion, and Robert Mascara, Canfield, both of Ohio, assignors to Martin & Pagenstecher, Inc., North Olmstead, Ohio

Filed May 11, 1993, Ser. No. 59,403

Int. Cl.[5] B22D *41/58*

U.S. Cl. 266—44 **15 Claims**



1. A device for introducing gas into a mass of molten metal comprising a plug which is worn away during use and which should be replaced when said plug has worn away to a remnant height point, said plug comprising a central longitudinal axis, a top end, a bottom end, a core, and a low melting point component, said core being comprised of a refractory material extending between said bottom end and said top end, said core having a cavity therein, said cavity having a bottom located adjacent said remnant height point and extending upward therefrom along said longitudinal axis, said low melting point component being located within said cavity and extending from the bottom of said cavity to an intermediate point thereabove, said plug being arranged so that when said plug has been worn away to said intermediate point by said molten metal said low melting point component melts and flows out of said cavity and said molten metal flows into said cavity to provide a first visual appearance, said first visual appearance changing to a second visual appearance when said plug has worn away to said remnant height point.

5,330,161

SPRAY COOLED HOOD SYSTEM FOR HANDLING HOT GASES FROM A METALLURGICAL VESSEL UTILIZING PNEUMATIC PROCESSING OF MOLTEN METAL

David A. Lehr, Medina; Gordon R. Roberts, North Olmsted, and Mark T. Arthur, Lakewood, all of Ohio, assignors to Ucar Carbon Technology Corporation, Danbury, Conn.

Filed Jul. 8, 1993, Ser. No. 88,800

Int. Cl.[5] C21C *5/38*

U.S. Cl. 266—158 **4 Claims**

1. A hollow hood assembly comprising a plurality of hollow hood sections for handling hot gases from a pneumatic processing metallurgical vessel, said hollow hood assembly having a

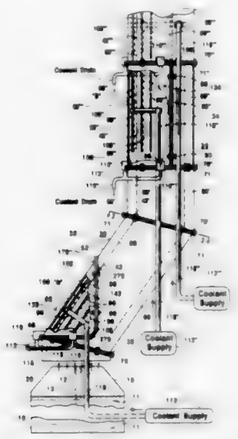
plurality of removeable sub-assemblies, a said removeable sub-assembly comprising:

a) an inner metal base member shaped to form a pre-determined portion of the periphery of a hollow hood section;

b) an outer metal covering member spaced from and in register with said inner metal base member;

c) means for joining the outer covering member to the inner metal base member and for defining a substantially enclosed space between said spaced apart base member and said covering member with one or more outer liquid drain openings being located at the lowermost portion of the enclosed space;

d) a plurality of spray means located within said enclosed space at predetermined locations adjacent to and spaced from said inner metal base member for directing a spray of liquid coolant in the form of liquid droplets against the inner metal base member in an amount sufficient to maintain an acceptable temperature in said inner metal base member;



e) a liquid coolant supply header conduit affixed within said enclosed space and extending across the inner metal base member for supplying liquid coolant to said spray means;

f) a liquid coolant supply conduit for supplying liquid directly and independently to said sub-assembly from a liquid coolant supply source which is located outside of said enclosed space to said liquid coolant supply header conduit within said enclosed space;

g) at least one liquid coolant drain receptacle located adjacently outside of said enclosed space and in communication with said one or more drain openings for receiving a flow of liquid coolant from inside of said enclosed space;

h) a liquid coolant drain conduit for directly and independently withdrawing liquid coolant from said drain receptacles of said sub-assembly and substantially avoiding any buildup of liquid coolant within said enclosed space; and

i) means for removeably closely engaging a said sub-assembly to a said hollow hood section

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5,330,162

DIPPING AND POURING APPARATUS FOR MOLTEN METAL

Mitsukane Nakashima; Yasunori Nakatsuka, both of Nagoya, and Toei Sano, Kasugai, all of Japan, assignors to Meichuseiki Kabushiki Kaisha, Aichi, Japan

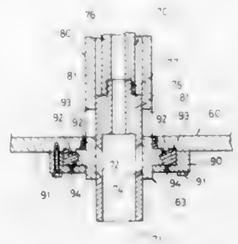
Filed May 25, 1993, Ser. No. 66,227

Claims priority, application Japan, Jul. 29, 1992, 4-058974[U]

Int. Cl.[5] B22D *41/16*

U.S. Cl. 266—236 **8 Claims**

1. A dipping and pouring apparatus comprising a molten metal holder having an interior region for receiving a body of molten metal, a duct provided at and extending from, the bottom of the molten metal holder, said duct being formed as an open ended, hollow cylindrical member whose bottom end opens into the air and whose top end opens to the interior region of said molten metal holder, and a valve member including a cylindrically formed valve body portion received in the duct and an elongated stem portion attached to said valve body and extending into the interior region of said molten metal



holder, said valve body being movable in the axial direction between an open position and a closed position and being provided with a main axial passage of a diameter less than the diameter of said duct opening into the air and its other end communicating with the interior region of said molten metal holder and at least one branch passage having one end connected to the main axial passage, whereby said valve member is movable for selectively connecting the interior region of the molten metal holder to the main axial passage.

5,330,163

LIMIT RINGS FOR RESILIENT SUPPORTS AND METHODS OF MANUFACTURE THEREFOR

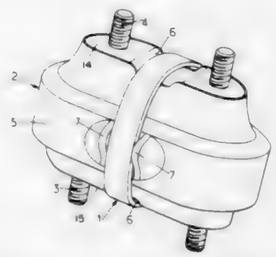
Francois Bodin, Fontaine, and Pierre Georget, Chambray Les Tours, both of France, assignors to Hutchinson, France

Filed Aug. 14, 1991, Ser. No. 744,903

Claims priority, application France, Jun. 11, 1991, 91 07079

Int. Cl.[5] F16M *7/00*

U.S. Cl. 267—140.13 **6 Claims**



1. An anti vibration hydraulic support for interposition with a vehicle chassis and an internal combustion engine, said support comprising a top metal core having two bolts, a bottom metal core having two bolts, a cylindrical wall of elastomer circumferentially surrounding and interconnecting said top and bottom metal cores, a supporting ring surrounding said metal cores in a direction transverse to said wall of elastomer, said supporting ring comprises of alternating layers of a tape of an elastically deformable material and sheet of parallel threads.

5,330,164

VIBRATION DAMPING APPARATUS

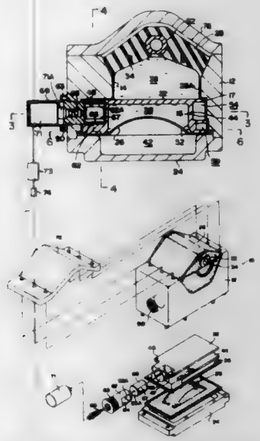
Kazuya Takano, Kamakura, and Hiroshi Kojima, Yokohama, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 37,691, Mar. 25, 1993, abandoned, which is a continuation of Ser. No. 770,535, Oct. 3, 1991, abandoned. This application Sep. 24, 1993, Ser. No. 126,020

Claims priority, application Japan, Oct. 11, 1990, 2-272717; Feb. 18, 1991, 3-023388

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—140.14 **18 Claims**



1. A vibration damping apparatus, comprising:

a first securing member which is connected to one of a vibration generating source and a vibration receiving member;

a second securing member which is connected to the other of said vibration generating source and said vibration receiving member;

an elastic member which provides a connection between said first securing member and said second securing member and is subject to deformation whenever vibration occurs;

a main liquid chamber, a portion of a wall of which is formed by a part of said elastic member, said main liquid chamber being subject to expansion and contraction when vibration occurs;

a sub-liquid chamber which is interconnected with said main liquid chamber via a plurality of restricting passages and which is subject to expansion and contraction when vibration occurs;

a restricting passage forming member, which contains at least two of said restricting passages and has a recess which defines said sub-liquid chamber, being secured to one of said first securing member and said second securing member; and

a restricting passage control means for varying the sectional area of an aperture of at least one restricting passage between said main liquid chamber and said sub-liquid chamber, wherein said restricting passage control means comprises a hollow rotor and a cylindrical member, said cylindrical member is inserted in an insertion hole of said one of said first securing member and said second securing member securing said restricting passage forming member and in a cylindrical hole substantially coaxial with said insertion hole and extending through said restricting passage member to said recess, said hollow rotor is coaxially inserted in said cylindrical member so as to enable the sectional area of said aperture of at least one of said restricting passage to be varied.

5,330,165

VIBRATION DAMPER

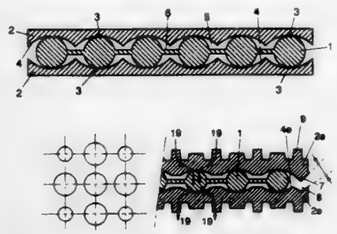
Willy van Goubergen, Viaduktstraat 131, 1040 Brussel, Belgium

Continuation of Ser. No. 647,766, Jan. 30, 1991, abandoned. This application May 26, 1992, Ser. No. 890,386

Claims priority, application Netherlands, Feb. 7, 1990, 9000294

Int. Cl.[5] F16F *1/36, 3/08*

U.S. Cl. 267—141 **19 Claims**



1. A vibration damper comprising:

at least two elastomeric plate elements having an outer side, an inner side and at least one longitudinal dimension and at least one removably insertable layer of discrete elastomeric bodies sandwiched between said plates, said discrete elastomeric bodies interconnected to each other to prevent rolling of said bodies, said bodies having substantially no longitudinal dimension compared to said at least one longitudinal dimension of said plate elements, said plates being of a different hardness than said bodies and of such a design that lateral movement of said bodies is limited, said bodies being laterally and transversely spaced such that they form a mat of discrete elastomeric bodies that are distributed over said inner sides of said plates, said bodies initially contacting said plates at a point-shaped area of contact when said plates are unloaded, said bodies freely deforming independently from one another and thereby absorbing vibration when said plates are loaded.

5,330,166

UPPER MOUNTING STRUCTURE FOR A WHEEL SUSPENSION

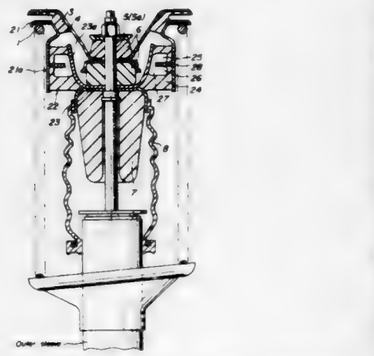
Hirofumi Aoki, Chigasaki, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Apr. 27, 1992, Ser. No. 873,853

Claims priority, application Japan, Jun. 24, 1991, 3-177795

Int. Cl.[5] B60G *15/06;* **F16F** *9/54*

U.S. Cl. 267—220 **7 Claims**



1. An upper mounting structure for a wheel suspension, comprising:

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(a) a strut assembly including an outer sleeve and a piston rod telescopically movable with respect to each other, one of which supports a wheel rotatably and the other is to be coupled with a vehicle body;
(b) a coil spring between said outer sleeve and said piston rod to energize the strut assembly in its extending direction;
(c) a spring support on which an upper end of said coil spring is seated;
(d) an upper support attached to said spring support through a spring insulator and adapted to be fastened to the vehicle body;
(e) a strut mounting insulator through which said upper support is coupled with either one of the piston rod or an outer sleeve of the strut assembly to the vehicle body; and
(f) an additional insulator connected between said spring support and said either one of the piston rod or outer sleeve of the strut assembly to the vehicle body, wherein the additional insulator is an active control insulator, stiffness of which is determined by a control signal, and further wherein the additional insulator has higher stiffness than the spring insulator within a higher frequency range and a lower stiffness than the strut mounting insulator within a lower frequency range

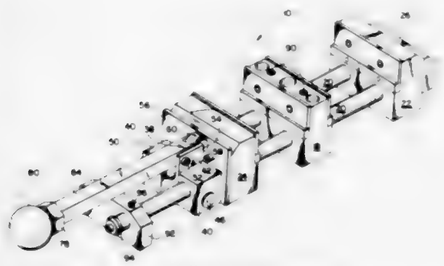
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5,330,167

WORK HOLDER WITH SELF-ENERGIZING FRICTION LOCK

Edwin W. Plumb, 29 Linden Rd., Woodbury, Conn. 06798

Filed Mar. 24, 1993, Ser. No. 36,369
Int. Cl.[5] B25B *1/02*
U.S. Cl. 269—43 **25 Claims**



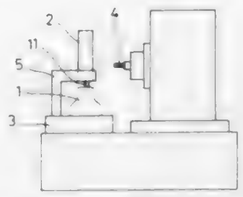
1. A workpiece holding device comprising
fixed jaw means,
a pair of guide rods extending through the fixed jaw means,
movable jaw means mounted on the guide rods for movement toward and away from the fixed jaw means, and
a clamping mechanism slidably mounted on the guide rods and connected to the movable jaw means, the clamping mechanism having a cam shaft rotatable about an axis perpendicular to the guide rods, the cam shaft having a pair of recesses formed thereon dimensioned and configured to register with surfaces of the guide rods for selectively engaging the guide rods in self-clamping frictional locking relation.

5,330,168

DEVICE FOR CLAMPING A WORKPIECE

Minoru Enomoto, Obu; Shoji Inagaki, Anjo; Yasuhiro Okada, Nagoya; Fumio Sakamoto; Noritaka Ise, both of Toyota; Masashi Ito, Seto, and Fuyuhiko Yoshikura, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 26, 1993, Ser. No. 9,074
Claims priority, application Japan, Jan. 30, 1992, 4-015331
Int. Cl.[5] B25B *1/10*
U.S. Cl. 269—329 **10 Claims**



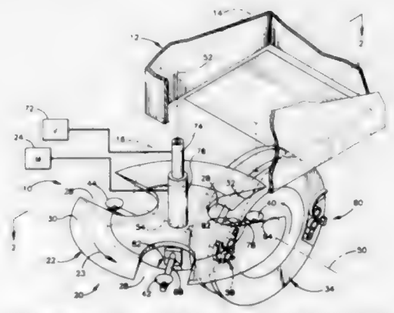
1. A clamping device in a machine tool, said clamping device holding a workpiece at a predetermined position during a machining operation of the workpiece by the machine tool and comprising:
a housing;
a clamper carried by said housing to be movable for clamping said workpiece;
a feed device for moving said clamper toward said workpiece;
a load sensor means for detecting a clamping force generated by said clamper;
a memory means in which a target clamping force is stored; and
a control means for comparing the clamping force detected by said load sensor means with the target clamping force stored in said memory means, and for controlling said feed device during the machining operation in response to a deviation between the detected clamping force and the target clamping force so that said workpiece is held with the target clamping force during the machining operation.

5,330,169

APPARATUS AND METHOD FOR HANDLING SHEET MATERIAL ARTICLES

Richard B. Hawkes, Bethlehem, Pa., assignor to AM International, Inc., Chicago, Ill.

Filed Nov. 5, 1993, Ser. No. 147,883
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—101 **18 Claims**



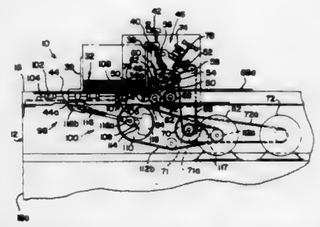
1. An apparatus for use in handling sheet material articles, said apparatus comprising hopper means for supporting a stack of sheet material articles, separator means for sequentially separating edge portions of sheet material articles from adjacent sheet material articles in the stack of sheet material articles in said hopper means, and feed means for sequentially feeding sheet material articles from said hopper means, said separator means including a rotatable separator disk having surface means for defining a plurality of gaps which extend through said separator disk, and a plurality of suction applicator heads which are rotatable with said separator disk relative to said hopper means, each of said suction applicator heads being aligned with a gap in said separator disk, each of said suction applicator heads including means for applying suction to a portion of a lowermost sheet material article in the stack of sheet material articles at the gap in said separator disk with which the suction applicator head is aligned.

5,330,171

BASE HAVING ANTI-VIBRATION MEANS

George B. Murad, Buffalo Grove, and Neil A. Polit, Crystal Lake, both of Ill., assignors to Videojet Systems International, Inc., Wood Dale, Ill.

Continuation of Ser. No. 853,103, Mar. 18, 1992, Pat. No. 5,199,699. This application Mar. 22, 1993, Ser. No. 34,073
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] B65H *3/24*
U.S. Cl. 271—131 **18 Claims**



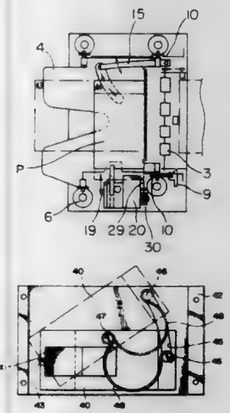
1. In apparatus including a base operatively associated with operating means sensitive to horizontal vibration of the base, and article feeder means including a transfer member movable between a first position and a second position; the combination therewith comprising drive means operative to effect substantially horizontal reciprocating movement of said transfer member between said first and second positions, said drive means including a rotary drive shaft and linkage means including connecting rod means interconnecting said drive shaft to said transfer member such that rotation of said shaft effects said reciprocating movement of said transfer member, said linkage means further including a balance link pivotally supported generally intermediate its length and having a first end pivotally interconnected to said transfer member, and counterbalance means including counterweight means carried by said balance link in a manner to offset horizontal forces imparted to the base by reciprocating movement of said transfer member, whereby to minimize horizontal vibration forces acting on the base.

5,330,170

FINISHER FOR AN IMAGE FORMING APPARATUS WHICH ROTATES ABOUT A STAPLING POSITION

Kunihiro Uotani, Seto; Yoshihide Sugiyama, Okazaki; Fumitaka Hyodou, Nukata; Akira Hirose, Tokyo, and Takashi Fujii, Omiya, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 982,821
Claims priority, application Japan, Nov. 29, 1992, 3-339322
Int. Cl.[5] B42B *2/00*; **G03G** *21/00*
U.S. Cl. 270—53 **16 Claims**



1. A finisher for an image forming apparatus, comprising:
a plurality of bins arranged one above another;
clamping and moving means operable with any one of said plurality of bins for clamping a stack of sheets distributed to the bin and then moving said stack to a stapling position;
stapling means rotatable substantially about the stapling position for stapling the stack of sheets brought to the stapling position; and
control means for controlling said clamping and moving means and said stapling means such that said stapling means is variable in angle relative to the stack of sheets distributed to the bin.

5,330,172

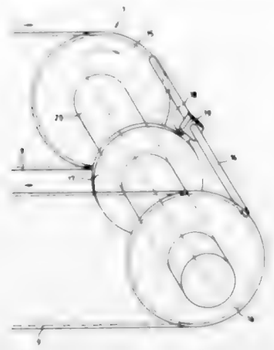
HOLDING BAR ASSEMBLY OF A PAPER SHEET-PROCESSING MACHINE AND METHOD OF GUIDING AND TRANSPORTING THE HOLDING BAR

Michael Seydel, Eppelheim, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 28, 1993, Ser. No. 83,977
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1992, 4221580
Int. Cl.[5] B65H *29/04*
U.S. Cl. 271—204 **9 Claims**

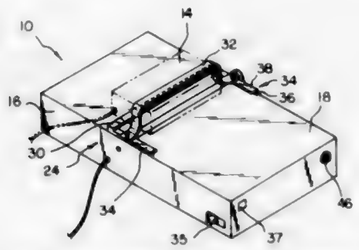
9. Method of guiding and transporting a holding bar aligned transversely to a sheet-conveying direction in a paper sheet-processing machine, which comprises moving the holding bar in the sheet-conveying direction and guiding it through at least

one direction-reversing region and, in the at least one direction-reversing region, automatically stiffening the holding bar



in opposition to transverse bending of the holding bar by inertial forces.

5,330,173
HAND SCANNER APPARATUS
Gary L. Wensink, 1005 'E' St. NW., Miami, Okla. 74354, and Paul E. Keyes, Jr., 2111 Cascade Dr., Killeen, Tex. 76542
Filed Mar. 11, 1993, Ser. No. 29,718
Int. Cl.[5] B65H *5/06*
U.S. Cl. 271—240 **17 Claims**



1. A hand scanner support and paper guide apparatus for mechanically scanning a thin sheet using a scanner designed to be hand-held, said apparatus comprising:

a housing which includes a planar upper wall which serves as a flat surface along which the thin sheet is moved,

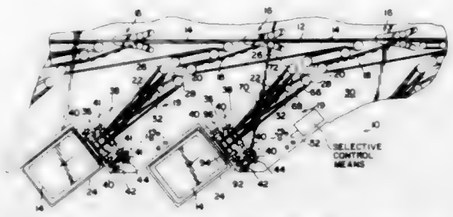
support assembly means, connected to said housing, for supporting the scanner a spaced distance above said planar upper wall as the thin sheet is moved past the scanner,

guide assembly means, connected to said housing, for guiding the thin sheet in a straight path as the thin sheet is moved along said planar upper wall,

drive assembly means, housed within said housing, for moving the thin sheet past the scanner, wherein said drive assembly means include a driven, thin-sheet-contacting element,

a slot, in said planar upper wall, for permitting said driven, thin-sheet-contacting element to contact and move the thin sheet as it lies on said planar upper wall.

5,330,174
AUTOMATIC ARTICLE DISCHARGE INTO MAIL CONTAINER
Mario Ricciardi, Glenview, Ill., assignor to Bell & Howell Phillipsburg Company, Allentown, Pa.
Filed Jan. 12, 1993, Ser. No. 2,392
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—297 **4 Claims**



1. A device for the delivery of documents conveyed in a substantially vertical orientation along a document path to a receptacle disposed adjacent said document path, said documents being delivered to said receptacle in a substantially horizontal orientation, comprising:

diverting means disposed along said document path for selectively diverting individual substantially vertically disposed documents away from said document path in a direction toward said receptacle;

document receiving and transporting means disposed adjacent said diverting means successively receiving each document and progressively advancing and changing the orientation of said documents directed from said document path from said substantially vertical orientation to said substantially horizontal orientation;

said document receiving and transporting means including means for delivering each of said documents directly into said receptacle in a substantially horizontal orientation;

said document receiving and transporting means comprising:

first belt means extending between first substantially vertical roller means and first substantially horizontal roller means;

second belt means extending between second substantially vertical roller means and second substantially horizontal roller means;

drive means to move said first and second belt means around said respective roller means;

one face of said first belt means and one face of said second belt means being driven by said drive means in the same direction and adjacent one another to form a document engaging and transporting path between said belt means;

said document engaging path being disposed in a substantially vertical orientation adjacent said first substantially vertical roller means, said path rotating sustantially ninety degrees along the length of said path to said substantially horizontal roller means, said path being disposed substantially horizontal adjacent said second substantially horizontal roller means;

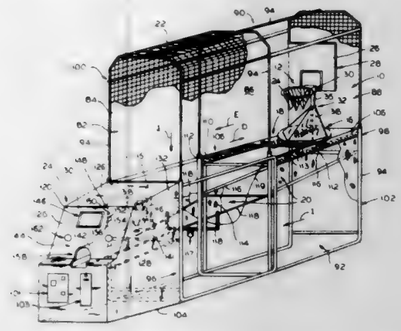
said document engaging path including a document exit nip between said first substantially horizontal roller means and said second substantially horizontal roller means;

said exit nip being substantially horizontally disposed and adapted to transport each successive document from said document engaging path directly into said receptacle;

said first substantially horizontal roller means rotating about a first axis, and said second substantially horizontal roller means rotating about a second axis; and,

said first axis disposed at a distance downstream from said second axis relative to said document engaging path.

5,330,175
BASKETBALL ASSEMBLY WITH ROTABLE AND LINEARLY DISPLACEABLE HOOP
Samuel Kim, 3820 Charlemagne Dr., Hoffman Estates, Ill. 60195
Filed Jul. 15, 1992, Ser. No. 914,763
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **12 Claims**



1. An automated game assembly for use by at least one player, said assembly of the type having a basketball hoop mounted to a backboard remotely located from said player, the basketball hoop and the backboard being mounted on a vertical support, said game assembly further comprising:

means including a rotating plate for rotating the basketball hoop and backboard about a vertical axis, said vertical axis extending through said basketball hoop and offset horizontally from said vertical support, said vertical support mounted on said rotating plate;

means including a linear displacing plate for linearly displacing the basketball hoop and backboard away from and toward the player, said rotating plate rotatably mounted to said linear displacing plate; and

a ball return chute located beneath said rotating plate and said linear displacing plate; and

a pivot post surrounding said vertical axis and extending through said rotating plate and into said linear displacing plate.

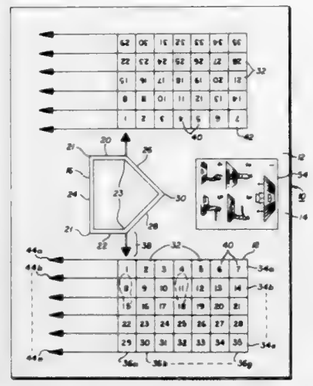
5,330,176
STANCE AND STRIDE TRAINING AID
Richard D. Cagney, Jr., 9314 Lawndale Ave., Evanston, Ill. 60203
Filed Aug. 24, 1992, Ser. No. 934,845
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—26 R **12 Claims**

1. A stance and stride training aid for use on a support surface such as the ground for teaching a batter proper batting techniques, said training aid comprising:

a body positionable on said support surface and providing a substantially planar surface onto which the batter stands;

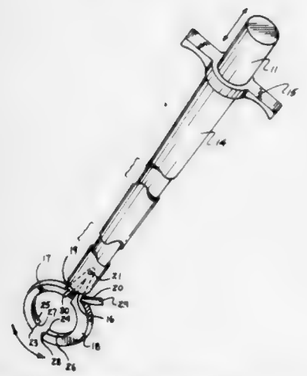
a home plate indicium positioned on said body;

a stance indicium positioned on said body adjacent said home plate indicium;



a plurality of stride indicia positioned on said body, said stride indicia extending linearly from said stance indicium.

5,330,177
GOLF TEE SET APPARATUS
Mark Rogge, 3112 134th Ave. NE., Lake Stevens, Wash. 98258
Filed Jul. 9, 1993, Ser. No. 88,378
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—32.5 **3 Claims**



1. A golf tee set apparatus, comprising,

a support post, the support post having a post first end spaced from a post second end, and

an actuator sleeve, the sleeve having a first end, having a first end handle fixedly mounted to the sleeve first end, and a sleeve second end spaced from the sleeve first end, and

a first semi-circular jaw and a second semi-circular jaw, with the first jaw and the second jaw having a respective first jaw leg and a second jaw leg extending from the first jaw and the second jaw, and the first jaw including a first jaw free end spaced from the first jaw leg, and the second jaw having a second jaw free end spaced from the second jaw leg, the first jaw leg and the second jaw leg pivotally mounted about a jaw leg axle, and the jaw leg axle mounted pivotally relative to the support post, with the first jaw leg and the second jaw leg arranged in adjacency to and reception within the sleeve second end, and

the first jaw free end and the second jaw free end arranged

in a facing confronting relationship to secure a golf tee therebetween, the first jaw and the second jaw are arrange for reception of a golf ball therebetween, whereupon projection of the actuator sleeve second end over the first jaw leg and the second jaw leg effects projection of the first jaw free end towards the second jaw free end in a contiguous communication relative to one another, and

a guide leg, having a guide leg axle pivotally mounted to the first jaw leg in adjacency to the first jaw, and the guide leg slidably directed through the second jaw leg in adjacency to the second jaw, with a guide leg spring wound about the guide leg and captured between the first jaw leg and the second jaw leg to normally bias the first jaw in a spaced relationship relative to the second jaw.

5,330,178

GOLF BALL AND TEE POSITIONER APPARATUS

Edwin C. Geisbert, Sr., 7720 Whistler Dr., Quincy, Mich. 49082

Filed Oct. 29, 1993, Ser. No. 145,411
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—32.5 **7 Claims**



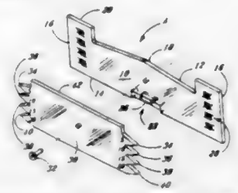
1. Apparatus for placing a golf ball and tee in position, comprising, first and second elongated shafts laterally spaced apart and substantially parallel to one another, said first and second shafts having respective first and second handles proximate one another so as to be grippable by a golfer's hand, said first shaft having tee-holding means proximate an end thereof and said second shaft having a ball-holding means proximate an end thereof in opposing relation to said tee-holding means such that the golf ball and tee can be held between said tee-holding means and ball-holding means, said second shaft being movable relative to said first shaft and having means operably associated therewith for biasing said second shaft and ball-holding means thereon toward said tee-holding means on said first shaft to hold the golf ball and tee therebetween, said second shaft being movable after the tee is inserted in the ground away from said tee-holding means by movement of said second handle toward said first handle so to disengage said ball-holding means from the golf ball and allow movement of said apparatus in a manner to disengage said tee-holding means from the tee inserted in the ground.

5,330,179

GOLFER'S PUTTING AID

Frederick E. Hampel, Rte. 2, Box 2290, Old Reed Creek Rd., Hartwell, Ga. 30643

Filed Feb. 12, 1993, Ser. No. 17,301
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—32 H **7 Claims**



1. A putting gauge for determining the distance of break of a putted golf ball when putted from a given point on a surface of a golf green toward a golf cup at a proper speed, said gauge including;

an elongated base member having upper and lower edges and opposite ends each of which includes measuring indica;

an elongated sighting element pivotally mounted on said base member and having a sighting edge and opposite ends including pointing means alignable with said indicia;

a bubble level secured to said base member so that said base member may be held in a horizontal position transverse to true vertical and said sighting edge may be arranged in a position corresponding to the slope of said golf green surface at said golf cup and said pointing means points to said measuring indicia to indicate the distance a golf ball properly putted from a predetermined distance will break to the left or right of said golf cup.

5,330,180

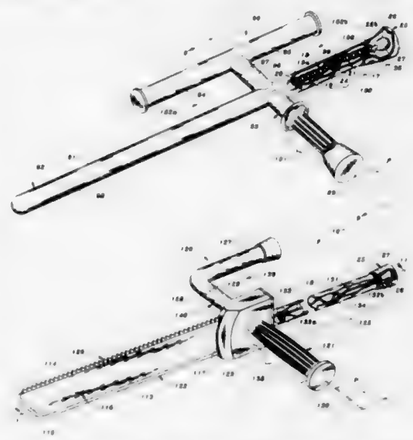
Patent Not Issued For This Number

5,330,181

CROSSHANDLED BATON WITH CONSTRAINING MEANS

John K. Wong, 607 E. Tennessee St., Fairfield, Calif. 94533

Filed Dec. 16, 1992, Ser. No. 991,151
Int. Cl.[5] F41B *15/02*
U.S. Cl. 273—84 R **14 Claims**



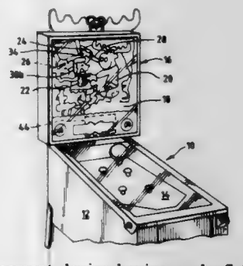
1. A police baton comprising an elongated main branch defining a longitudinal axis, a first end and a second end coextensive of said longitudinal axis, a cross branch of length less than said elongated main branch, said cross branch attached to said main branch at a first side thereof at a location that is spaced closer to said first end than said second end of said main branch and defining a longitudinal axis substantially normal to that of said main branch, said main branch including cavity means having an open end, a closed end and a side wall defining an axis of symmetry coincident with said longitudinal axis of said main branch, said main branch also including a strap stowable within but releasably disconnectable relative to said cavity means through and as function of operating state of said open end to define first and second operating states for said baton, and guard attached to said main branch at a second side opposite to said first side, said guard defining a bisecting plane that also longitudinally bisects said main and cross branches, said guard being L-shaped as defined by said bisecting plane and including a pair of parallel arms parallel to said main branch and a transverse arm having a longitudinal axis of symmetry coincident with that of said cross branch.

5,330,182

MOVEABLE ARM AND INSERTS FOR AMUSEMENT DEVICE

Joseph E. Kaminkow, Arlington Heights, Ill., assignor to Data East Pinball, Inc., Melrose Park, Ill.

Filed Sep. 10, 1993, Ser. No. 120,123
Int. Cl.[5] A63F *7/36*
U.S. Cl. 273—108 **6 Claims**



1. In an amusement device having a playfield and a backboard display, said display comprising a display wall having a first image carried thereon plus a transparent display wall portion; a rotatable arm positioned behind said transparent display wall portion, said arm being decorated to appear as a part of said first image, whereby an illusion of image movement can be provided as the arm rotates, and means for rotating said arm in response to a predetermined event taking place on the playfield.

5,330,183

IMPACT CONVEYING FLIPPER BUTTON

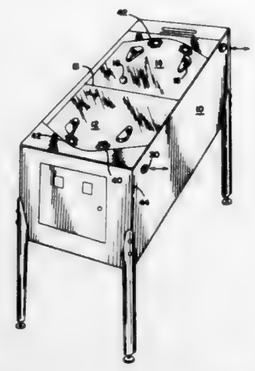
Alvin J. Gottlieb, Elmhurst, Ill., assignor to Alvin G. & Co., Melrose Park, Ill.

Filed Mar. 3, 1992, Ser. No. 845,384
The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.
Int. Cl.[5] A63F *7/22*
U.S. Cl. 273—121 R **17 Claims**

1. A pinball machine to be played by a player having a projectile, comprising:

a projectile sensing mechanism; and

an impact transferral mechanism to impart an accentuated physical stimulus of touch to the player in response to the projectile contacting the projectile sensing mechanism, wherein the magnitude of the accentuated physical stimulus of touch is greater than any natural vibrations produced solely by the projectile contacting the projectile sensing mechanism.



5,330,184

RUBBER COMPOUND FOR HOCKEY PUCKS

Nolan E. Douglas, 4311 Ida Dr., Akron, Ohio 44319

Filed Nov. 18, 1992, Ser. No. 978,242
Int. Cl.[5] A63B *71/00;* **C08L** *27/00*
U.S. Cl. 273—128 R **11 Claims**

1. A hockey puck for ice hockey comprising a rubber compound having a relatively constant low coefficient of restitution at variable temperatures comprising:

from about 30 to 50 parts by weight of natural rubber;

from about 35 to 55 parts by weight of a masterbatch comprising styrene-butadiene rubber and high styrene resin, said masterbatch having a total available weight of styrene of at least 50 percent by weight of said masterbatch;

from about 10 to 20 parts by weight of halogenated butyl rubber to total 100 parts by weight of rubber; and

from about 35 to 45 parts by weight of a plasticizer, per 100 parts by weight of rubber.

5,330,185

METHOD AND APPARATUS FOR RANDOM PLAY OF LOTTERY GAMES

L. Rogers Wells, Versailles, Ky., assignor to Interlott, Inc., Cincinnati, Ohio

Filed Mar. 30, 1993, Ser. No. 39,751
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—138 A **20 Claims**

1. A lottery system having a plurality of chance games available to a player, comprising:

a) processing means comprising a pseudorandom sequence generating means and a controller;

b) input means connected to the processing means for accepting player selection data and for providing player selection data to the processing means;

c) visual game indicia connected to the processing means; and

d) a ticket dispenser connected to the processing means for dispensing lottery tickets;

e) the input means including means for enabling the player to select a particular chance game to play from among the plurality of available chance games;

f) the input means further including means for enabling the player to instruct the lottery system to select at random a

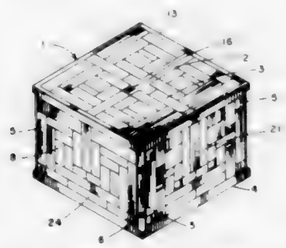
chance game to play from among the plurality of available chance games; and



g) the lottery system including means for selecting a chance game at random and means for dispensing a corresponding ticket when so instructed by the player

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5,330,186
PUZZLE BOX
Timothy M. Jones, Rte. 10, Box 314, Greeville, Tenn. 37743
Filed Sep. 4, 1992, Ser. No. 941,243
Int. Cl.[5] A63F *9/08*
U.S. Cl. 273—153 S **5 Claims**



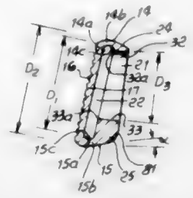
1. An improved puzzle box device having a top lid, bottom and sides connected fixedly to the bottom, said sides having a plurality of sliding panels defining a plane and at least one depressible panel mounted on a spring urging said at least one depressible panel into said plane over which selected sliding panels can be moved when said depressible panels are depressed, said sides having fixed corners at the intersections thereof, and wherein movement of the sliding panels on the sides of the box in a desired predetermined sequence permits unlocking and removal of the top lid.

5,330,187
IRON GOLF CLUB HEAD WITH DUAL INTERSECTING RECESSES
Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Continuation-in-part of Ser. No. 921,857, Aug. 5, 1992, Pat. No. 5,282,625. This application Apr. 30, 1993, Ser. No. 52,697
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169 **29 Claims**

1. A golf club head having a body defining a heel, toe, top wall, sole, and a front wall defining an upwardly and rearwardly inclined front face and rear face, and comprising

a) said body defining a forwardly extending main recess located rearwardly of said front wall,

b) and said body also defining an undercut recess located directly rearwardly of said front wall rear face and extending outwardly from said main recess toward said top wall and toward said bottom wall, adjacent said rear face.



said rear face having a slant height dimension D_1 between uppermost and lowermost extents of said undercut recess in a vertical plane, and said front wall having a slant height dimension D_2 between uppermost and lowermost extents thereof in said plane, where:

$$0.90 < D_1/D_2 < 0.95$$

5,330,188
PUTTER ALIGNMENT SYSTEM
Eric W. Reimers, 1235 Starwood, Missoula, Mont. 59802
Filed Nov. 21, 1991, Ser. No. 795,665
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.1 **12 Claims**



1. A putting improvement system for golfers, comprising;

electromagnetic beam generation means for generating electromagnetic energy;

beam directing means attached to a golf putter, for creating an alignment beam, said alignment beam being a portion of said electromagnetic energy subsequent to encountering the beam directing means, the beam directing means being arrayed so as to be effectively perpendicular to face of the putter;

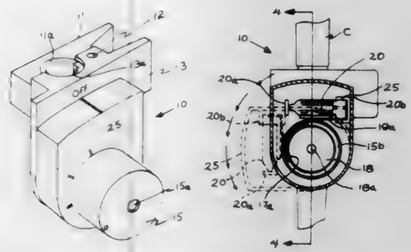
beam receiving means for placement at a location remote from said putter, the beam receiving means being attuned to said alignment beam; and

signal means for generating a sensory signal under conditions where a preselected intensity level of said alignment beam impinges on the beam receiving means; wherein

the electromagnetic beam generation means and the beam receiving means are situated in close proximity to each other on a remote target unit and said beam directing means is in the form of a focusing reflector mounted on the putter; and

said focusing reflector is shaped so as to direct said alignment beam into the form of a vertically extending, horizontally narrow slot shape, with the intensity thereof being generally uniform throughout said slot.

5,330,189
GOLF SWING AID
James Reichow, 2912 N. 82nd Cir., Brooklyn Park, Minn. 55444
Filed Jun. 11, 1993, Ser. No. 74,589
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **7 Claims**



1. A golf swing aid, particularly arranged and constructed for height of backswing indication whereby forward distance travel of the ball on forward swing of the club results in proportion to the backswing, said aid including:

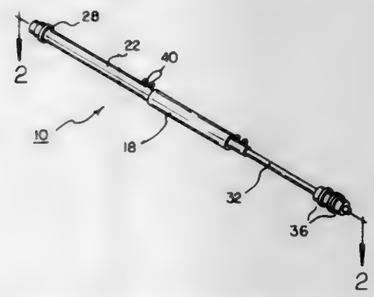
a. clamp means for mounting the aid onto the shaft of a golf club;

b. said clamp means including a rear clamp and a forward clamp;

c. a first housing arranged on said forward clamp and housing at least selected portions of a sound emitting electrical circuit including a source of power, electrical conductors and a sound emitting element; and,

d. a second housing arranged for rotation about said first housing and including a mercury switch and leads extending between said conductors and said mercury switch whereby the tripping position of said mercury switch may be modified to control the amount of backswing required to complete the electrical circuit and excite said sound emitting element.

5,330,190
END WEIGHTED GOLF TRAINER
George W. Oakley, Jr., 109 Ramblin Rd., Salisbury, Md. 21801
Filed Sep. 3, 1993, Ser. No. 115,584
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **5 Claims**



1. A device for use in training a golfer when the golfer is repeating a golf swing, as in a confined space, without a golf club, comprising:

a central tube fabricated of polyvinylchloride with a wall diameter and thickness to allow limited resilience and flexibility, the central tube having a pair of apertures therethrough radially aligned at each end;

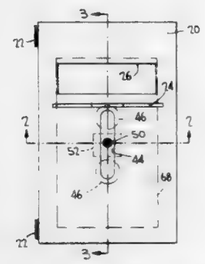
a tubular cover positioned over the central tube, the length of the cover being less than that of the central tube to expose the apertures at the ends of the central tubes, the cover being fabricated of a soft elastomeric material;

a first end tube fabricated of polyvinylchloride having a pair of apertures at its axially interior end aligned with the apertures at the first end of the central tube and with an interior wall diameter to fit over the end of the central tube, and a single weight at its axially exterior end;

a second end tube fabricated of polyvinylchloride and having a pair of apertures at its axially interior end aligned with the apertures at the second end of the central tube and with an exterior diameter to fit within the second end of the central tube, and a plurality of weights at the axially exterior end thereof, the second elongated tube having greater flexibility than that of the first end tube; and

fasteners positionable through the aligned holes of the three tubes for releasably coupling them along a common axis.

5,330,191
GOLFER'S HEAD MOVEMENT MONITOR DEVICE
Eugene M. Hoganson, 2085 Seven Lakes S., West End, N.C. 27376-9611
Continuation-in-part of Ser. No. 946,107, Sep. 17, 1992, abandoned. This application May 20, 1993, Ser. No. 63,718
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.1 **17 Claims**

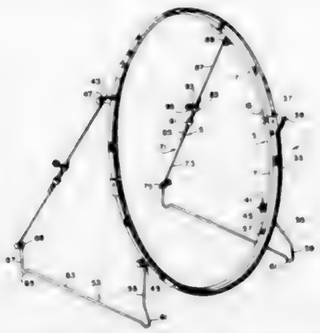


1. A golfer's head movement monitor device comprising support means for supporting a golf ball in a position to be hit forwardly by a golfer in a given direction, and generating means for generating two separate narrow beams of light which are visible to the golfer when he has taken his stance to hit the golf ball, said beams of light being angularly related to one another and being disposed rearwardly of said position.

5,330,192
ADJUSTABLE GOLF SWING PRACTICE DEVICE
James Amos, P.O. Box 2625, Muncie, Ind. 47307
Filed Jun. 7, 1993, Ser. No. 72,006
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—191 A **7 Claims**

4. A golf trainer comprises a hoop having major circular segments made of curved angle material and including bases and flanges, with bases of the segments lying flat and flanges of the segments extending forward from the bases, angle interconnectors interconnecting the segments, each angle interconnector having a relatively short circular segment shape, and having a flat wall underlying the flat wall of the major angle segments, and having a flange extending forward therefrom and extending partially along an outside of a flange of an adjacent major segment, one end portion of each connector being welded to an end of an angle segment, and another end of each connector having openings for receiving fasteners extending through complementary openings in opposite ends of the major angle segments for assembling the segments into a hoop

by overlying ends of the major segments having the complementary holes with the extended ends of the connectors and aligning the holes in the connectors with the complementary holes in the major segments, and fasteners extending through the aligned holes and thereby joining the connectors and the major segments in a continuous hoop with uniform forward-extending flanges for forming one continuous line on forward-extending edges of the flanges, and a smooth, slippery continu-



ous U-shaped plastic wear strip having a closed forward portion and an open rearward portion connected to the flanges for covering the forward extending edges of the flanges with the smooth, continuous plastic strip, and further comprising lugs connected to at least some of the segments and extending rearward therefrom in a direction opposite to the flanges, and adjustable anchors extending rearward and downward from the lugs.

5,330,193
GOLF SWING PRACTICING ARTICLE
Yasuhiro Ijiri, 4-28-203, Terauchi 1-chome, Toyonaka-shi, Osaka, Japan
Filed Nov. 24, 1992, Ser. No. 980,998
Claims priority, application Japan, Nov. 30, 1991, 3-114343[U]; Jan. 10, 1992, 4-18422[U]
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—193 A **11 Claims**



1. A golf swing practicing article comprising a shaft body having first and second ends and the same degree of bending rigidity as that of an ordinary golf club,

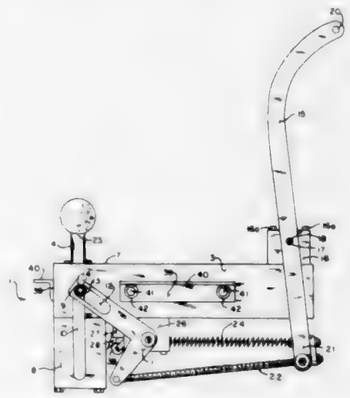
a grip carried on a first end section of said shaft body,

a weight member carried at an opposite second end section of the shaft body for increasing the article mass at said second end section, said article having an overall length less than that of said ordinary golf club and being substantially symmetrical around a center axis of the shaft body,

said weight member occupying 40 to 60 % of said overall length, and

the weight member comprising a first portion and a second portion, the first portion being proximal the shaft body first end section and tapering outwardly of the shaft body center axis in a direction away from said shaft body first end section, the weight member second portion being distal the shaft body first end section and having a substantially constant outer diameter, an end part of the weight member second portion remote from the first portion thereof having a recess wherein weights can be removably received.

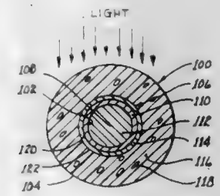
5,330,194
GOLF BALL DELIVERY DEVICE
William W. Copeland, P.O. Box 1624, Desloge, Mo. 63601
Filed Apr. 5, 1993, Ser. No. 42,678
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—201 **7 Claims**



1. In a golf ball delivery device for the automatic delivery of golf balls to a tee for driving, said device having a housing, a ball feeder adjacent to one end of said housing, said ball feeder provided for supplying said delivery device with golf balls, a ball channel integrally provided within said housing, said channel provided for guiding golf balls from said ball feeder to said tee, said tee provided for supporting a ball for driving, a piston attached to the underside of said tee, said piston provided for reciprocating said tee from a lower ball receiving position to an elevated ball driving position, a delivery mechanism for incrementally delivering balls to the lowered tee, a platform covering said device, said platform having an aperture therethrough for elevating of the next golf ball upon a tee into position for driving, a pivot handle mechanically communicating with said piston which upon activating said delivery device, automatically delivers a golf ball from the housing channel and onto the tee for elevating into a driving position, said housing having a piston channel therein, said piston capable of vertically reciprocating within said piston channel, said piston channel disposed for guiding said piston into position in alignment with said ball channel for receiving the next golf ball upon the tee and for elevating the ball into a ball driving position, the ball receiving position comprising said piston retracting below the surface of said ball channel, thereby enabling the top of the said tee to be at least in alignment with the bottom edge of the ball channel and to receive the next golf bal thereon in preparation for elevating the ball into a ball driving position, the ball driving position comprising said piston being elevated to a position upwardly within the piston channel, thereby arranging the golf ball supported upon the tee at a

position above said platform in preparation for a drive, said pivot handle being mounted to the device and capable of pivoting forwardly or rearwardly with respect to the device, lever means pivotally connected to the housing, said lever means connected by linkage to the pivotal handle, at one end, and connecting to the lever means at its other end, said lever means slidably connecting with the piston to provide for its elevating or retracting depending upon the direction of pivot provided to the handle during its manipulation, the upper end of the pivot handle having a structure means provided therein, said structure means disposed for engagement by a golf club to provide for the manual pivot to the handle during its forward and rearward pivot while setting up the next golf ball at an elevated position above the platform in preparation for driving of a ball, and pin means operatively associated with the lever means, and provided for entering into the ball channel to regulate the individual delivery of balls to the lowered tee, in preparation for elevating a ball into a golf ball driving position.

5,330,195
GLOW-IN-THE-DARK-GOLF BALL MAKING METHOD
James D. Gulick, Peoria, Ariz., assignor to Sports Glow, Inc., Scottsdale, Ariz.
Continuation of Ser. No. 660,278, Feb. 22, 1991, abandoned, which is a division of Ser. No. 452,259, Dec. 15, 1989, Pat. No. 5,007,647. This application Aug. 14, 1992, Ser. No. 929,471
Int. Cl.[5] A63B *43/06, 37/12*
U.S. Cl. 273—213 **2 Claims**



2. A method of creating a glow-in-the-dark golf ball comprising the steps of:

providing a golf ball having a core and a cover with said cover having an external surface;

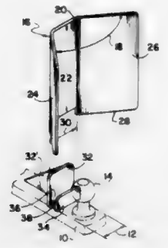
providing glow-in-the-dark phosphorescent materials beneath said external surface of said cover that generate a phosphorescent glow of light after receiving at least one of light and heat energy to produce a phosphorescent flow of light in a dark environment;

directly applying on said external surface of said cover of said glow-in-the-dark golf ball at least one of light and heat energy for a period of time sufficient to subsequently generate the phosphorescent glow of light from said glow-in-the-dark golf ball that is visible in a dark environment after removal of said one of light and heat energy; and

removing said one of light and heat energy for subsequently generating from said golf ball the phosphorescent glow of light for an extended period of time to permit use of said golf ball having a phosphorescent glow with a golf club.

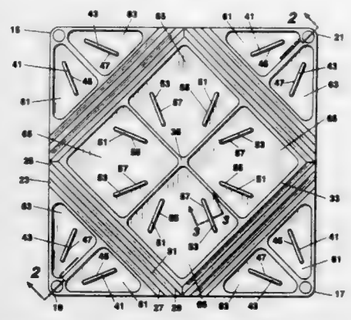
5,330,196
TRAILER HITCH GUIDE
Richard Ricles, 951 Broken Sound Pkwy., Suite 200, Boca Raton, Fla. 33487
Filed Feb. 1, 1994, Ser. No. 189,601
Int. Cl.[5] B60D *1/36*
U.S. Cl. 280—477 **1 Claim**

1. A trailer hitch guide comprising a rearwardly extending support of a selected width for supporting thereon an attachable and detachable hitch guide, a hitch ball in upstanding relation integral on an end of said support, a V-shaped hitch guide for facilitating engagement to said hitch ball presenting a V-shaped compartment bounded by a rectangular central panel of the same width as said support and of a selected height and having opposite angularly oriented side panels of identical heights sized larger than said height of said central panel for providing a depending bottom edge on each side panel forming therebetween along a bottom edge of said central panel a hitch guide connection groove, cooperating spaced apart hitch



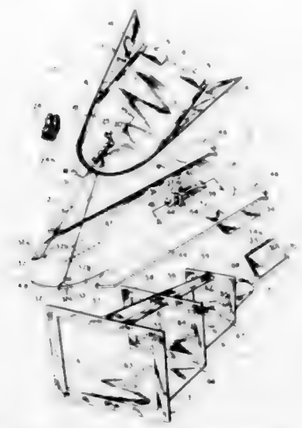
guide-supporting panels integral on said support rearwardly of said hitch ball bounding therebetween a hitch guide positioning compartment, and said hitch guide having an operative position disposed with said central panel in said positioning compartment and a length portion of said support in said connection groove, whereby use of said positioning compartment contributes to the attachment of said hitch guide to said support which is supplemented also by said support length portion serving as a tongue in said connection groove.

5,330,197
GAME BOARD
Willard E. Bair, 6802 E. 78th St., Tulsa, Okla. 74133-3465
Filed Feb. 11, 1993, Ser. No. 17,507
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—285 **9 Claims**



1. A game board comprising a unitary thin plastic member having a face with a pair of parallel grooves therein having nadirs separated by a zenith therebetween dividing said member into first and second segments, said first segment having a plurality of first ridges having side wall surfaces in non-parallel planes perpendicular to said face and said second segment having a plurality of second ridges having sidewall surfaces in non-parallel planes perpendicular to said face, said side wall surfaces of said first and second ridges being aligned such when said segments are folded at said nadirs into juxtaposition with each other, the side wall surfaces of said first and second ridges abut for frictional interface therebetween.

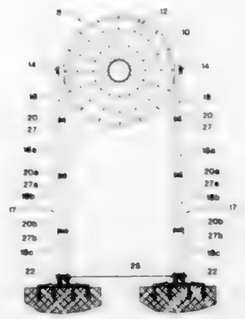
5,330,198
TOY GLIDER TARGET GAME
Milton J. Dinhofer, 32 Skillman St., Roslyn, N.Y. 11576
Filed Feb. 4, 1993, Ser. No. 13,738
Int. Cl.[5] A63H *27/14*
U.S. Cl. 273—317 **21 Claims**



1. A flying game comprising in combination:
a) (A) a toy glider including a thin plastic unitary planar swept back delta wing having parallel plane top and bottom surfaces of uniform thickness defining a uniform cross-section, lateral distal ends of said wing tapering upwards and extending from a leading edge of the wing to a trailing edge of the wing and being parallel to each other and a longitudinal axis of the glider and defining laterally extending thin planar stabilizers of the same thickness as the wing, individual ailerons integrally formed at the trailing edge of said wing along a horizontal surface, located in a forward part of said wing and having an independent plastic nosepiece attached thereto; and
b) (A) a launching device having a short length channel of concave configuration, with resilient means of a rubber band mounted to a front end of the device, a pistol grip mounted to a rear of the device and extending downwards therefrom, the pistol grip having a pivotally mounted trigger with trigger means protruding upwards into the channel and being spring activated to return to a load position after each launch.

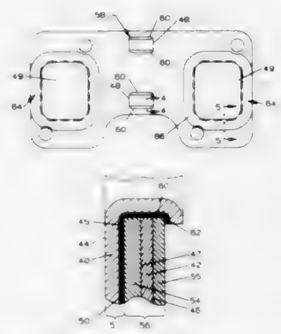
5,330,199
BALL ACCURACY TARGET
Ebrahim F. Vand, P.O. Box 202350, Austin, Tex. 78720
Filed May 7, 1993, Ser. No. 57,894
Int. Cl.[5] A68B *63/04*
U.S. Cl. 273—400 **5 Claims**

1. A ball control practice device comprising;
a) a target including a net secured within an annular hoop;
b) an octagon screw protruding outward on both axes mounted on said annular tube;
c) a pair of elongated poles with an octagon hole extending the width of each pole and diametrically aligned with said octagon screw;
d) a wing nut with thread means mating with the thread means of said octagon screw;
e) frame base attachments having upper and lower portions;
f) attachment means for attaching said target to said elongated poles, including means for permitting said target to rotate 360 degrees in 45 degree intervals;
g) means by which said elongated poles with said target attached are attached to the upper portions of said frame base attachments;
h) means for permitting vertical adjustment of said targets; and



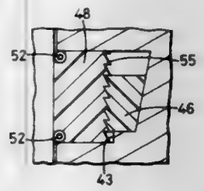
i) said lower portions of said frame base attachments having means to secure said practice device to a playing surface.

5,330,200
GASKET ASSEMBLY FOR SEALED JOINTS EXPERIENCING THERMALLY INDUCED MOVEMENT
Joseph D. Unseth, Peoria, Ill., assignor to Caterpillar, Inc., Peoria, Ill.
Filed Dec. 4, 1992, Ser. No. 986,164
Int. Cl.[5] F16J *15/10, 15/12*
U.S. Cl. 277—9 **13 Claims**



1. A gasket assembly adapted for use in an internal combustion engine having a cylinder head and an exhaust manifold with the gasket assembly being disposed between the cylinder head and the exhaust manifold when installed to form a pressure tight seal, comprising:
a first substantially flat plate having an outer side and an opposite inner side;
a second substantially flat plate having an outer side and an opposite inner side;
the first and the second plate both having an elongated slot with a predetermined length and a rectangular shaped hole formed therein;
a first layer of material having a low coefficient of friction relative to the first plate attached to the inner side of the first plate defining a first plate assembly;
a second layer of material having a low coefficient of friction relative to the second plate attached to at least one of the sides of the second plate defining a second plate assembly; and
means for interconnecting the first and second plate assemblies including a plurality of securing tabs having a predetermined length less than the predetermined length of the slot, the securing tabs integrally extending from the first plate assembly and extending through the slot and being hooked around the second plate assembly to establish a sliding relationship between the first layer of material and the second layer of material.

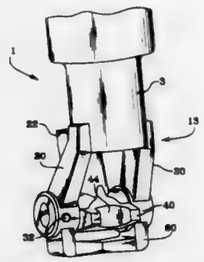
5,330,201
SEALING ASSEMBLY
Brian Hart, Wakefield, England, assignor to Cooper Industries, Inc., Houston, Tex.
Filed Apr. 6, 1992, Ser. No. 864,284
Claims priority, application European Pat. Off., Apr. 9, 1991, 91303094.6
Int. Cl.[5] F16J *15/48*
U.S. Cl. 277—117 **7 Claims**



1. A sealing assembly for sealing between two relatively rotatable cylindrical surfaces, comprising:
a groove in at least one of said cylindrical surfaces, said groove having an inner wall,
a radially outer seal part and a radially inner seal part disposed in said groove so that said radially outer seal part is disposed radially outwardly of said radially inner seal part, said radially outer seal part having a radially outer seal face adapted to sealingly engage one of said surfaces and a radially inner face adapted to engage said radially inner seal part, said radially inner seal part having a radially inner seal face adapted to sealingly engage the other of said surfaces and a radially outer face adapted to engage said radially outer seal part, said radially inner seal part being disposed between said radially inner face of said radially outer seal part and said inner wall of said groove,
said groove being configured so that it has a non-uniform radial depth,
said radially inner seal part being movable axially relative to said radially outer seal part in response to fluid pressure from a radially deeper portion of said groove towards a radially shallower portion to effect setting of the sealing assembly,
said groove and said seal parts being so dimensioned that said seal parts become compressed between the surfaces during setting of the sealing assembly, and
cooperable means disposed on said radially outer seal part and said radially inner seal part for preventing substantial release of compression of said seal parts once the sealing assembly has been set.

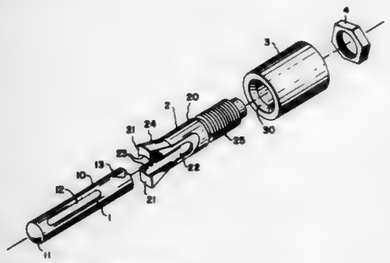
5,330,202
TOOL RETAINER FOR A PERCUSSIVE, FLUID-ACTIVATED APPARATUS
Robert R. Kimberlin, and Steven W. Bodell, both of Troutville, Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Oct. 8, 1992, Ser. No. 958,377
Int. Cl.[5] B25D *17/08*
U.S. Cl. 279—19.1 **3 Claims**

1. In a percussive, fluid-activated apparatus having a fronthead and a collared working tool supported therein along a longitudinal fronthead axis, said tool for penetrating a work surface, a retainer for said tool comprising:
a. a pair of spaced-apart support arms extending outwardly from said fronthead to a position alongside said longitudinal axis;
b. latch means pivotally mounted between said arms for pivoting between a tool retaining position and a tool releasing position;
c. detent means for retaining said latch means in a tool retaining position and a tool releasing position, respectively;
d. stop means spaced below said latch means for contacting said work surface to provide clearance between said latch means and said work surface, whereby said latch means can be pivoted by an operator at all times;
e. said latch means further comprising:
i. a pivot pin extending between said support arms, said pivot pin being fixed from rotation with respect to said



support arms, and having an axis transverse to said longitudinal axis;
ii. yoke means for engaging said tool collar;
iii. a handle angularly positioned with respect to said yoke means; and
iv. a pivot housing connecting said yoke means and said handle, said housing having a bore therethrough pivotally mounted on said pivot pin; and
f. elastic O-ring means positioned between said pivot pin and said support arms, said O-ring means being positioned in grooves in said pivot pin and said arms, said O-ring means being not in contact with said pivot housing, whereby said O-ring means are free from pivotable wear against said housing, as said housing pivots, while being positioned for absorbing shock.

5,330,203
METHOD OF GENERATING A TORIC SURFACE ON A MOLDING TOOL
Richard J. Fleenor, Stafford, and Kenneth L. Opdyke, Fairport, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Division of Ser. No. 953,395, Sep. 29, 1992, Pat. No. 5,269,105.
This application May 21, 1993, Ser. No. 66,186
Int. Cl.[5] B23B *31/20;* **B29C** *45/26*
U.S. Cl. 279—46.3 **9 Claims**



1. An assembly comprising:
(a) a tool which comprises an elongated body and a curved

surface at an upper end of the tool, said elongated body comprising a cylindrical shell including a cavity extending transversely through said cylindrical shell such that application of diametrically opposed forces on the cylindrical shell distorts the shape of the curved surface;

(b) a collet comprising

(i) a base; and

(ii) a pair of diametrically opposed arms extending longitudinally from said base for receiving and supporting the cylindrical shell of said tool therebetween, wherein said arms are circumferentially separated from each other by a pair of longitudinally extending diametrically opposed spaces and comprise arcuate interior surfaces which define a central cavity in which the cylindrical shell of said tool is received and supported, and said arms comprising tapered portions at distal ends thereof such that a thickness of the tapered portions increases towards the distal ends; and

(c) tightening means for forcing the distal ends of said arms towards each other, whereby the arms exert diametrically opposed forces on the cylindrical shell of a tool received and supported therein.

5,330,204

NON-IMPACT KEYLESS CHUCK

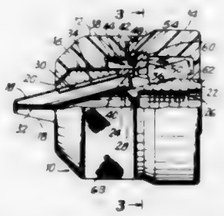
Robert O. Huff, Piedmont; Paul T. Jordan, Seneca, and William F. Forquer, West Union, all of S.C., assignors to Jacobs Chuck Technology Corporation, Wilmington, Del.

Continuation of Ser. No. 884,205, May 18, 1992, Pat. No. 5,253,879, which is a division of Ser. No. 449,722, Dec. 11, 1989, Pat. No. 5,125,673. This application Jul. 29, 1993, Ser. No. 99,160

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] **B23B** *31/10*

U.S. Cl. 279—62 **30 Claims**



1. A chuck for use with a manual or powered driver having a rotatable drive shaft comprising a generally cylindrically body having a nose section and a tail section, said tail section having a first axial bore formed therein to mate with said drive shaft of said driver and said nose section having a second axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said second axial bore and an exterior surface of said body, a plurality of jaws slidably positioned in each of said angularly disposed passageways, each of said jaws having a jaw face formed on one side thereof and threads formed on the opposite side thereof, a nut rotatably mounted on said body substantially concentric with said body, said nut being in threaded engagement with said threads on said jaws, and a generally cylindrical front sleeve member overlying said nose section of said body and being permanently rotatably and axially fixed on said nut, wherein said nut has substantially axially directed serrations formed around its circumferential surface, said serrations projecting radially out from the remainder of said nut so that when said front sleeve member is pressed on to said nut, said serrations dig into said front sleeve member in order to cause the material of said front sleeve member to interdigitate with said serrations and thereby rotatably fix said front sleeve member on said nut without subjecting said front sleeve member to excessive hoop stress.

5,330,205

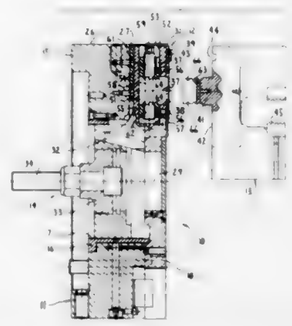
POWER CHUCK WITH QUICK CHANGE TOP JAW

Jerry Norton, Prairie Ronde Township, Kalamazoo County, Mich., assignor to Buck Chuck Company, Kalamazoo, Mich.

Filed Nov. 4, 1993, Ser. No. 147,875

Int. Cl.[5] **B23B** *31/16*

U.S. Cl. 279—124 **8 Claims**



1. In a chuck construction having a housing rotatable about an axis, and a plurality of jaw carriers mounted on the housing for movement radially thereof, each jaw carrier being adapted to have a top jaw mounted thereon adjacent a front face of the housing, and releasable locking means associated with each jaw carrier for permitting secure mounting and quick changing of the top jaw relative to the respective jaw carrier, the improvement wherein said releasable locking means comprises:

a bore formed in said jaw carrier in generally parallel relationship to said axis, said bore opening inwardly from a front face of the jaw carrier;

a post fixed to and projecting rearwardly from a rear face of the top jaw for slidable insertion into said bore for permitting the rear face of the top jaw to be positioned directly adjacent the front face of the jaw carrier;

releasable locking means cooperating between said jaw carrier and said post for permitting secure and rigid mounting but quick changing of the top jaw relative to the jaw carrier; and

said locking means including opening means formed interiorly of said jaw carrier and extending in generally intersecting relationship with said bore, said opening means extending generally radially and including inner and outer portions which are disposed respectively on radially inner and radially outer sides of said bore, outer and inner clamp members slidably disposed respectively within the outer and inner portions of said opening means, threaded spindle means extending between and being threadedly connected to said inner and outer clamp members for causing movement of said inner and outer clamp members in opposite directions relative to one another in response to rotation of said spindle means, and rib-and-groove wedge means formed on and cooperating between said inner and outer clamp members and diametrically opposite sides of said post for creating a rigid but releasable clamping engagement on diametrically opposite sides of said post at locations which are disposed on radially opposite sides of said post relative to said axis for rigidly securing said post to the respective jaw carrier.

5,330,206

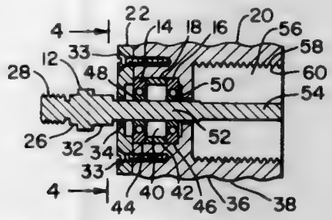
ADAPTER FOR POWER TOOLS

Luba M. Krumszyn, 125 The Crossway, Yonkers, N.Y. 10701, and Zinovi Khabal, Yonkers, N.Y., assignors to Luba Krumszyn, Yonkers, N.Y.

Filed Oct. 18, 1993, Ser. No. 136,908

Int. Cl.[5] **B23B** *51/12*

U.S. Cl. 279—144 **4 Claims**



1. An adapter for power tools comprising: a generally cylindrical drive shaft having a first end, a second end, and an intermediate portion, with said second end including at least one flat portion for forming a driving connection with a power tool; a pair of bearings mounted on said intermediate portion of said drive shaft; chuck means for driving a tool bit, with said chuck means connected to said first end of said drive shaft; and a collar member encircling said drive shaft, with said collar member having a first cavity portion enclosing said pair of bearings, and with said collar member capable of rotating relative to said drive shaft; with said collar member having a second cavity portion and with said second end of said drive shaft projecting into said second cavity; a cap member having a central aperture through which said drive shaft passes; and connection means connecting said cap member and said collar member for rotation of said cap member with said collar member, with said cap member disposed to cover said first cavity portion of said collar member.

5,330,207

HAND ACTIVATED SKATE BRAKE AND METHOD

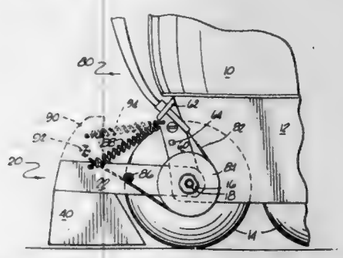
David N. Mitchell, Englewood, Colo., assignor to Out of Line Sports, Inc., Englewood, Colo.

Continuation of Ser. No. 934,166, Aug. 24, 1992, Pat. No. 5,253,882, which is a continuation-in-part of Ser. No. 830,609, Feb. 4, 1992, Pat. No. 5,211,409. This application Jan. 15, 1993, Ser. No. 5,016

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] **A63C** *17/14*

U.S. Cl. 280—11.2 **10 Claims**



7. An assembly for use in a roller skate brake system, said assembly comprising carriage means including a braking surface, a left side pivot point and a right side pivot point, said carriage means being rotatably connected at said pivot points to a roller skate, the carriage riding on said skate above a skating surface when the skate is being used to skate on said skating surface and said carriage means being oriented so that a line drawn between the pivot points is substantially parallel to an axle of the skate; a rotation of said carriage means in a first direction about said pivot points urging said braking surface towards the skating surface and a rotation of the carriage means in a second direction about the pivot points urging said braking surface away from the skating surface,

said brake system having an actuator for rotating the carriage means in said first direction, thereby using the skating surface for stopping while maintaining a constant angle of the skate relative to the skating surface as the carriage means rotates, said roller skate being attachable to a skater's foot so that the foot is firmly held within the skate and is substantially fixed relative to said carriage means.

5,330,208

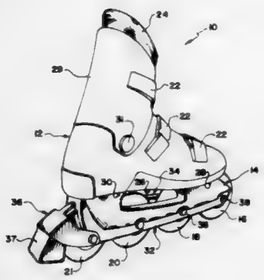
SHOCK ABSORBENT IN-LINE ROLLER SKATE

Francois E. Charron, P.O. Box 169, Suite 101 - 1184 Denman Street, Vancouver, British Columbia, Canada V6G 2M9 , and Gerald O. S. Oyen, #480 - 601 West Cordova Street, Vancouver, British Columbia, Canada V6B 1G1

Filed Mar. 22, 1993, Ser. No. 50,819

Int. Cl.[5] **A63C** *17/04*

U.S. Cl. 280—11.22 **16 Claims**



1. An in-line roller skate comprising

(a) a boot with a heel, arch and toe adapted to receive a foot of a skater;

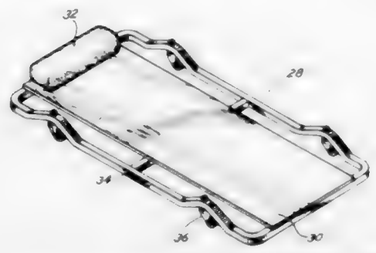
(b) a first wheel supporting rail means secured to an underside of the boot and extending from the heel to the toe of the boot, and having at least one first cavity therein;

(c) a second wheel supporting rail means secured to an underside of the boot, adjacent and parallel to the first rail and having at least one second cavity therein;

(d) at least three wheel means mounted in tandum in a line between the first and second rail means, the three wheel means being respectively connected to the first and second rail means by respective axles and bearings, the first cavity being located between the boot and the axles and bearings associated with the first rail means, and the second cavity being located between the boot and the axles and bearings associated with the second rail means; and

(e) first disc-shaped resilient shock absorbing means located in the first cavity between the axles and bearings and the first rail means connecting to the boot and second disc-shaped resilient shock absorbing means located in the second cavity between the axles and bearings and the second rail means connecting to the boot to enable the respective three wheel means to move upwardly or downwardly relative to the boot and the first and second rail means.

5,330,209
LOW PROFILE MECHANICS CREEPER
James L. Pool, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa
Division of Ser. No. 567,725, Aug. 15, 1990, Pat. No. 5,174,592, which is a continuation of Ser. No. 305,444, Feb. 2, 1989, abandoned. This application May 18, 1992, Ser. No. 885,164
The portion of the term of this patent subsequent to Dec. 27, 2009, has been disclaimed.
Int. Cl.[5] B25H *5/00*
U.S. Cl. 280—32.6 **2 Claims**

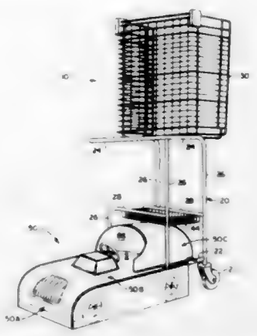


1. An improved mechanic's creeper of the type including a platform for receiving a person in a reclined position, a frame for supporting said platform, and casters mounted on said frame for allowing said mechanic's creeper to creep, the improvement comprising in combination:
a low profile, generally planar, rectangular frame having generally parallel, spaced sides and transverse ends formed as a continuous, closed loop tubular member having an upper surface defining a platform support plane and also having four corners, the frame thereby defining a circumference, each of said sides including two, spaced, upwardly extending caster recess bends intermediate two of the four corners having a lower surface and being of the tubular member, said bends being opposite each other, each bend formed to receive a caster and effectively position the entire rectangular frame more nearly adjacent the floor level, each bend including a generally flat section to receive a caster;
a supplemental support bracket comprising a straight, tubular member connecting the parallel spaced sides of the frame intermediate the caster recess bends;
a caster mounted to the lower surface of each caster recess bend attached to the flat section;
a rectangular platform mounted to the upper surface of the ends of said generally rectangular frame, supported on the supplemental support bracket and defining a frame and a platform surface which is immediately adjacent the ground level and below the level of the caster bends along the entire circumference of the frame

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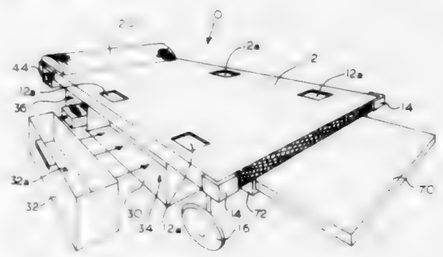
5,330,210
CART HAVING A CHILD ACCOMMODATING SEAT STRUCTURE
Gene K. Lambrecht, 675 Ten Rod Rd., North Kingstown, R.I. 02852
Filed Dec. 29, 1992, Ser. No. 997,857
Int. Cl.[5] B62B *5/00*
U.S. Cl. 280—33.993 **17 Claims**

1. A cart, comprising:
a frame having a lower frame portion, an upper frame portion and at least one support member extending upwardly from and interconnecting said lower frame portion and said upper frame portion;
wheels supporting said frame;
an upper basket attached to said upper frame portion;
a lower basket connected to said lower frame portion, and
a shell disposed on said lower basket, said shell including at least one slot, said support member being disposed within said slot, said shell further including a seat arranged and



dimensioned to locate a child directly below said upper basket.

5,330,211
MECHANIC'S CREEPER
Michael A. Nicholson, Route 1, Box 255, Littleton, N.C. 27850
Filed Sep. 16, 1991, Ser. No. 760,189
Int. Cl.[5] B25H *5/00*
U.S. Cl. 280—32.6 **9 Claims**

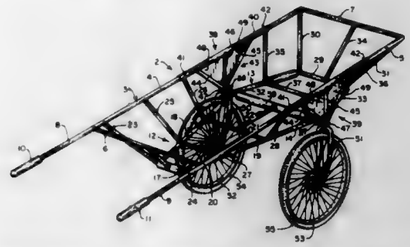


1. A creeper, comprising:
a) a main panel having an underside, a top side, a front end and a back end;
b) an extendable panel slidably mounted to the underside of the main panel and movable from a retracted position underneath the main panel to an extended position where at least a portion of the extended panel extends outwardly from the main panel;
c) a storage frame depending from the underside of the main panel;
d) a storage drawer disposed within and removable from the storage frame;
e) roller means attached to the underside of the main panel; and
(f) alarm means attached to the underside of the main panel for generating an audible signal when actuated.

5,330,212
COLLAPSIBLE WHEELED CARRIER FOR DUCK AND GOOSE DECOYS AND THE LIKE
William Gardner, 940 Hazel Ave., Campbell, Calif. 95008
Filed Jan. 13, 1993, Ser. No. 3,792
Int. Cl.[5] B62B *1/20*
U.S. Cl. 280—40 **8 Claims**

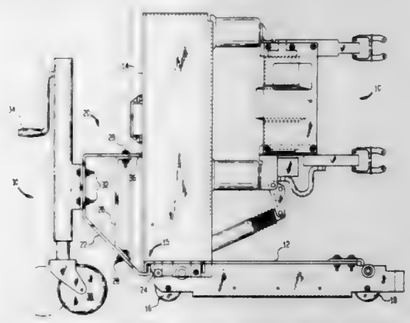
3. A collapsible wheeled carrier for normally rollably transporting articles, comprising:
a) a main frame including a pair of laterally spaced elongated side members;

b) a bottom frame structure joined to said main frame and with said main frame defining a nacelle within which articles to be transported may be retained; and
c) a pair of wheel assemblies pivotally mounted on said main frame and detachably engageable to said bottom frame structure to retain said wheel assemblies normally in position of use and selectively detachable therefrom to enable pivotal displacement of said wheel assemblies to collapsed positions of disuse for storage or transport of said wheeled carrier;



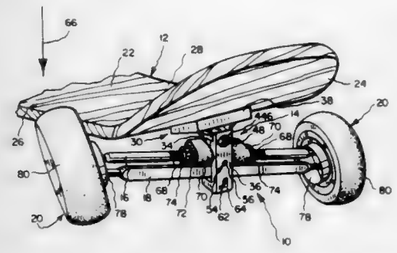
d) said bottom frame structure comprising a pair of chassis frames conjoined medianly of said main frame and extending in the direction of opposite ends of said elongated side members; and
e) each of said chassis frames possessing a trapezoidal configuration sharing a common base rail, and side rails on each chassis frame converging from said base rail toward an end rail remote from said base rail.

5,330,213
FIFTH WHEEL DEVICE FOR RACKABLE SWITCHGEAR UNITS
Michael L. Peruso, Knightdale, N.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Filed Sep. 9, 1992, Ser. No. 942,553
Int. Cl.[5] B60S *9/08*
U.S. Cl. 280—43.2 **16 Claims**



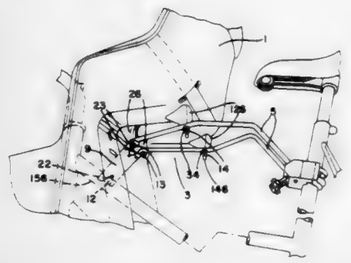
1. A steerable, rackable electrical apparatus system comprising:
a wheeled rackable electrical apparatus;
a lifting bracket selectively attachable and detachable from the electrical apparatus; and
a steerable, wheeled, self-supporting means for lifting a portion of the electrical apparatus to a lifted position and for supporting weight of the lifted apparatus without operator lifting effort, coupled to the lifting bracket.

5,330,214
SIMPLIFIED STEERING MECHANISM FOR SKATEBOARDS AND THE LIKE
Paul F. Brooks, 708 E. 8125 South, Sandy, Utah 84094, and Ken D. Lisonbee, 3185 W. 8600 South, West Jordan, Utah 84088
Continuation-in-part of Ser. No. 988,868, Dec. 8, 1992, Pat. No. 5,232,235, which is a continuation-in-part of Ser. No. 754,008, Sep. 3, 1991, Pat. No. 5,169,166. This application Jul. 19, 1993, Ser. No. 93,358
Int. Cl.[5] A63C *17/01*
U.S. Cl. 280—87.042 **13 Claims**



1. A steering mechanism having both wheel tilting and wheel steering capabilities, said steering mechanism comprising:
a generally planar platform having top and bottom broad faces and having first and second longitudinal sides,
a plunger having proximate and distal ends, the proximate end thereof being rigidly affixed to the bottom broad face of the platform, and the distal end extending downwardly from the platform at an acute angle with respect to a longitudinal axis of the platform,
top and bottom axles of equal length disposed in parallel aligned relationship to each other, each axle intersecting the plunger and each axle being pivotally secured at an approximate midpoint to the plunger, and
a pair of wheels, one end of both the top and bottom axles being pivotally secured to the first wheel and the other end of both axles being pivotally secured to the second wheel,
such that when a downward vertical force is exerted on one of the longitudinal sides of the platform, the wheels tilt and turn simultaneously relative to the platform.

5,330,215
CENTER-MOUNTED PASSENGER SEAT FOR BICYCLE
Morrie Bishaf, and John Faulhaber, both of Gurnee, Ill., assignors to All American Products, Inc., Gurnee, Ill.
Filed Jan. 28, 1993, Ser. No. 10,262
Int. Cl.[5] B62J *1/28*
U.S. Cl. 280—202 **6 Claims**



1. A seat adapted to carry a passenger between the saddle and handlebars of a bicycle comprising:
means for carrying the passenger;

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a bracket connected to said means for carrying the passenger, said bracket comprising a forward support plate connected to a plurality of rail-like members, said forward support plate comprising a cutout for nesting engagement with the top tube of a men'style bicycle and a cutout for nesting engagement with the top tube of a women's style bicycle;

means for engaging said bracket with the seat tube of the bicycle; and

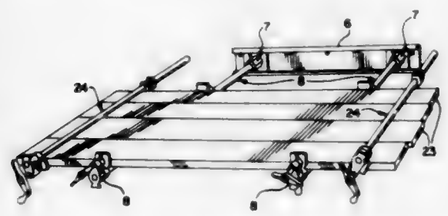
means for engaging said bracket with the top tube of the bicycle.

5,330,216

WALL MOUNTED PIPE CLAMP

Mark Schnell, Kiel, Wis., assignor to Adjustable Clamp Co., Chicago, Ill.

Filed Apr. 28, 1993, Ser. No. 55,261
Int. Cl.[5] B25B *1/24*
U.S. Cl. 269—45 **5 Claims**



1. A wall mounted pipe clamp installation comprising, an elongated wall bracket mounted flatwise and horizontally on a wall and having upper and lower edges in the form of parallel downwardly and upwardly facing channels, a pair of pipe end receiving sockets mounted on said wall bracket and each comprising a base with exposed parallel edges interfitting in bracket supported relationship in said channels and an outwardly projecting pipe end receiving socket formation, and a pair of pipe clamps with the distal end of each pipe secured in a said socket formation.

5,330,217

BICYCLE TRAILER AND HITCH APPARATUS

Francis D. McCarthy, 21 Curve St., Millis, Mass. 02054

Filed Feb. 20, 1992, Ser. No. 838,016
Int. Cl.[5] B62D *63/06*; **B60D** *1/00*
U.S. Cl. 280—204 **8 Claims**

1. A trailer and hitch apparatus for a bicycle, the bicycle having a body which includes a rear wheel fork, the rear wheel fork having a top end and a bottom end, a rear wheel rotatably mounted in a slot in a rear wheel mounting plate located at the bottom end of the rear wheel fork, the trailer and hitch apparatus comprising:

a. a hitch assembly, the hitch assembly comprising,

i. a horizontal frame having a front end and a rear end,

ii. a pair of legs mounted on and extending from the rear end of the frame,

iii. means for attaching the front end of the frame to the rear wheel fork of the bicycle near the top end,

iv. means for mounting a bottom end of each leg of the pair of legs to the rear wheel fork near the bottom end, and

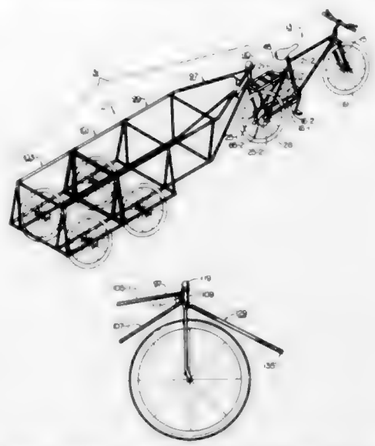
b. a trailer assembly, the trailer assembly including,

i. a first trailer module,

ii. a front section, the front section having a front end and a rear end,

iii. means for fixedly connecting the rear end of the front section to the first trailer module, and

c. means for attaching the front end of the front section to the rear end of the frame for pivotal movement about a horizontal axis and pivotal movement about a vertical axis, said means comprising a pipe, a first sleeve rotatably mounted on said pipe and fixed to said front section, said pipe extending upward, a second sleeve fixedly mounted



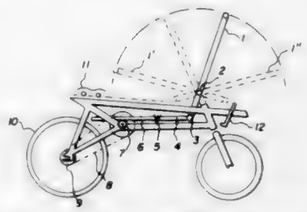
on the bottom of said upwardly extending pipe at right angles thereto, a horizontal tube rotatably mounted in said second sleeve, a block fixed to each end of said horizontal tube and fixedly attached to said frame.

5,330,218

BICYCLE DRIVEN BY ALTERNATING ROWING MOVEMENT

Pablo G. Escudero, Ecuador Street, 441, 1925 Ensenada - Burenos Aires State, Argentina

Filed May 18, 1992, Ser. No. 884,946
Int. Cl.[5] B62M *1/16*
U.S. Cl. 280—245 **2 Claims**



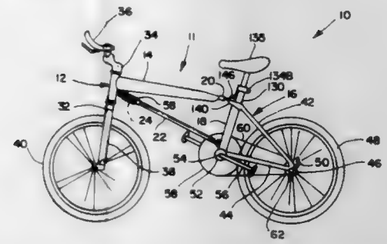
1. A bicycle driven by alternating rowing movement comprising a frame having a rear wheel and a steerable front wheel, a hollow operating lever having a pivot mount on a front portion of said frame for pivotal movement in a vertical plane along the longitudinal axis of said frame, said operating lever having a lower lever arm extending below said pivot mount and a pivotal steering handle on the upper end thereof, means connected to said lower lever arm and said rear wheel for translating the pivotal movement of said operating lever into rotary movement of said rear wheel, a seat slidably mounted on said frame, means operatively connecting said seat to said operating lever for moving said set in response to pivotal movement of said operating lever, a steering shaft within said hollow operating lever and connected to said steering handle and to said steerable front wheel, said steering shaft having an articulated connection at said pivot mount such that steering movement of said steering handle is transmitted to said front wheel throughout the complete pivoting angle of said operating lever.

5,330,219

FLEXIBLE AND FOLDING BICYCLE

Mark L. Groendal, Kentwood; Richard D. Vaughn, Jenison, and Ricky A. Engvall, Rockford, all of Mich., assignors to Greendale Bicycle Company, Grand Rapids, Mich.

Filed Sep. 13, 1993, Ser. No. 121,040
Int. Cl.[5] B62K *3/04, 15/00*
U.S. Cl. 280—275 **28 Claims**



1. A bicycle having a frame defining a longitudinal axis, front and rear wheels operably connected to and supporting said frame, and a pedal crankshaft journaled to said frame for manually propelling one of said wheels, said frame comprising:

a rear frame member including a generally vertical center post position within an imaginary generally vertical plane extending along the longitudinal axis;

a front frame member including a generally horizontal cross bar member positioned within said generally vertical longitudinal plane;

a spring plate flexibly interconnecting said front and rear frame members so as to allow vertical/rotational relative movement of said frame members within said generally vertical longitudinal plane about said spring plate, said spring plate being configured so as to minimize relative movement of said frame members out of said generally vertical longitudinal planes; and

a shock-absorbing member operably connected between said front and rear frame members and spaced from said spring plate, said shock-absorbing member being configured to limit said vertical/rotational relative movement between said frame members toward each other in a first direction about said spring plate but being configured to permit a range of said vertical/rotational relative movement between said frame members in a second direction opposite said first direction.

5,330,220

APPARATUS FOR ROTATABLY FITTING A FORK STEM IN A HEAD TUBE OF A BICYCLE

Masashi Nagano, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Oct. 30, 1992, Ser. No. 968,920
Claims priority, application Japan, Nov. 5, 1991, 3-090294[U]
Int. Cl.[5] B62K *21/06*
U.S. Cl. 280—279 **6 Claims**

1. An apparatus for rotatably fitting a fork stem in a head tube of a bicycle, comprising:

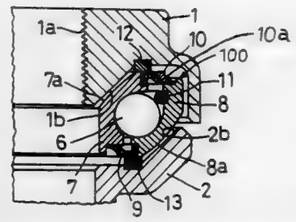
first race means including a first race element fitted on said fork stem and defining a first contact surface, and a first ring element fitted on said first race element through contact with said first contact surface, said first ring element defining a first supporting surface facing radially outwardly;

second race means opposed to said first race means axially of said fork stem, said second race means including a second race element inserted into an annular space defined between said fork stem and said head tube, said second race element defining a second contact surface, and a second ring element fitted on said second race element through contact with said second contact surface, said second ring element defining a second supporting surface facing radially inwardly;

rolling bodies arranged between said first supporting surface and said second supporting surface; and

retaining means provided on said second ring element for holding said first and second ring elements and said rolling bodies as one unit;

wherein said first contact surface is shaped to have a component of reaction force acting radially inwardly of said fork stem from said first ring element to said first race element



when said first race element and said second race element are moved relative to each other to clamp said rolling bodies between said first supporting surface and said second supporting surface, and

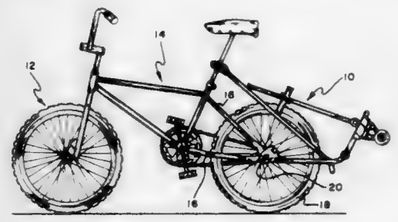
said second contact surface is shaped to have a component of reaction force acting radially outwardly of said head tube from said second ring element to said second race element when said first race element and said second race element are moved relative to each other to clamp said rolling bodies between said first supporting surface and said second supporting surface.

5,330,221

BICYCLE WHEELIE BALANCING DEVICE

Steven W. Sutton, 369 Doris Dr., Millville, N.J. 08332

Filed Jan. 15, 1993, Ser. No. 5,058
Int. Cl.[5] B62H *1/12, 7/00*
U.S. Cl. 280—293 **13 Claims**



1. An auxiliary device attachable to a bicycle having a base frame supporting a seat, a rear wheel rotating on a rear axle and forwardly extending frame members forming a rear wheel axle support frame on each side of the rear wheel, the device comprising:

(a) a rearwardly extending rigid support frame comprising:

(i) a rearward section,

(ii) a pair of members comprising forward ends attachable to the rear wheel axle support frame, and

(iii) a pair of angled members rigidly attached to and angling forwardly and upwardly from the rearward section and comprising forward ends attachable to the base frame,

(b) a rear member comprising a rearward end and a forward end pivotally attached at the forward end to the rearward section of the rigid support frame,

(c) an adjustment and support member comprising a forward

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section and rearward end pivotally attached at the rearward end to the rearward end of the rear member,

(d) attachment mans to lengthwise selectively attach the forward section of the adjustment and support member to the angled members of the rearwardly extending rigid support frame,

(e) an axle member having ends,

(f) a pair of wheels rotatably affixed on the ends of the axle member, each wheel comprising an outside vertical edge, said edges being distanced from each other about four to about ten inches, and

(g) axle attachment means:

(i) to structurally attach the axle member to the rear member in parallel alignment with the rear axle of the bicycle, and

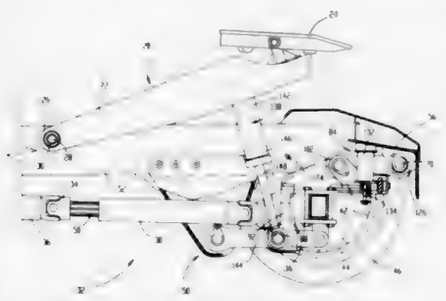
(ii) to allow lengthwise flexure movement between the axle and the rear member.

5,330,222

FRAME ISOLATOR FOR TERMINAL TRACTOR

Merlin B. Halverson, Lawrence, Kans., and Raymond J. Carter, Troy, Mo., assignors to Ottawa Truck, Inc., Ottawa, Kans.

Filed Mar. 8, 1993, Ser. No. 27,712
Int. Cl.[5] B62D *53/06*; **B60G** *11/22*
U.S. Cl. 280—438.1 **9 Claims**



1. A load isolation system for a tractor comprising:

a main frame;

an axle oriented transversely to said main frame and mounting wheels thereon;

a fifth wheel assembly including a boom pivotally mounted to said main frame;

means for supporting said boom through a predetermined path of movement;

an axle saddle coupled to the axle and the main frame, the axle saddle comprises:

shoulder means for supporting the axle to receive a load applied to said fifth wheel, said shoulder means including first and second shoulder members;

a plurality of substantially parallel spaced anti-torque link members pivotally interconnecting said shoulder means to said main frame;

means for connecting the axle to the shoulder means;

crossbeam means positioned laterally within and below the main frame and rigidly fastened between the first and second shoulder members of the shoulder means; and

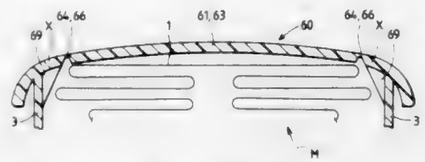
means for pivotally mounting the means for supporting to the crossbeam means.

5,330,223

AIR BAG COVER HAVING REINFORCING RIBS

Tetsushi Hiramitsu; Michio Inoue; Akihiko Sonobe; Tadashi Yamamoto; Hiroshi Ogawa, and Takanobu Ikeda, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jul. 15, 1993, Ser. No. 91,263
Claims priority, application Japan, Oct. 29, 1992, 4-075358[U]; Oct. 29, 1992, 4-291653; Oct. 29, 1992, 4-291666; Oct. 30, 1992, 4-293490
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—728 A **10 Claims**



1. An air bag apparatus comprising:

a bag holder;

an air bag disposed in a deflated condition on said bag holder;

a pad member including an upper wall portion surrounding a periphery of the air bag and side wall portions extending downward from a periphery of said upper wall portion and coupled to said bag holder, said upper wall portion including cover portions adapted to be opened upon breakage of a breakage portion of the upper wall portion when the air bag is inflated and expanded; and

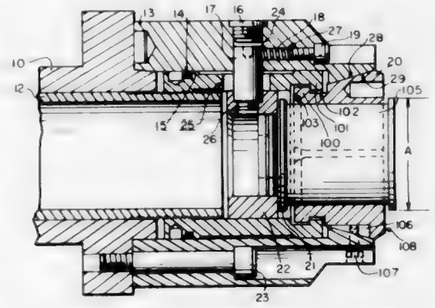
a plurality of vertically extending plate-shaped ribs integrally formed with said upper wall portion and said side wall portions along a periphery of said breakage portion, said ribs extending from said side wall portions to said breakage portion below a lower surface of said upper wall portion.

5,330,224

COLLET CHUCK

Donald N. Terwilliger, Elmira, and Roger R. Smith, Erin, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Sep. 2, 1993, Ser. No. 114,969
Int. Cl.[5] B23B *31/20*
U.S. Cl. 279—51 **20 Claims**



1. A collet chuck for holding a tool or workpiece on a spindle of a machine tool, comprising:

a hollow collet mount having a rear end to be attached to the spindle, a front end, an exterior surface, an interior surface, a radially disposed hole extending from the exterior surface to the interior surface, and a cam surface adjacent the front end on the interior surface;

a tubular collet having a front end, a rear end, an interior surface, an exterior surface, a collet cam adjacent the front end on the exterior surface for interacting with the cam surface of the collet mount, and a slot formed in the collet, wherein the slot is associated with said radially disposed hole, and means for connecting the collet to a displacing mechanism for displacing the collet along said axis, wherein, when the collet is displaced, the collet cam interacts with the cam surface to close the collet;

a stop member disposed inside the tubular collet at a clearance from the interior surface of the collet;

a pin passing through the hole and the slot and being attached to the stop member; and

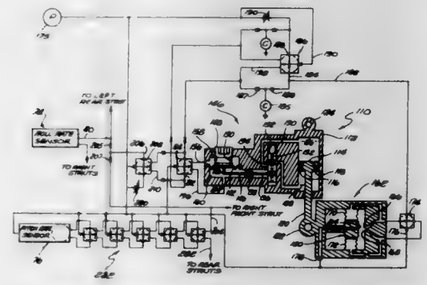
a spring biasing the pin substantially along said axis.

5,330,225

PASSIVE VEHICLE SUSPENSION SYSTEM

Kenneth A. Hair, Valencia, Calif., assignor to HR Textron Inc., Valencia, Calif.

Filed Jan. 24, 1992, Ser. No. 825,209
Int. Cl.[5] B60G *21/06*
U.S. Cl. 280—703 **10 Claims**



1. A low band width passive vehicle suspension system for land vehicles having front and rear wheels with a shock absorbing unit connected between the vehicle body and each wheel comprising:

(A) a first fluidic sensor means for sensing pitching motions of said vehicle body and providing a first fluidic signal responsive thereto;

(B) a second fluidic sensor means for sensing rolling motions of said vehicle body and providing a second fluidic signal responsive thereto;

(C) a fluidic accelerometer means at each wheel for sensing movement of each wheel responsive to road disturbances and providing a third fluidic signal responsive thereto;

(D) means for defining a variable orifice disposed effectively in parallel with each of said shock absorbing units;

(E) fluidic circuit means for receiving said first, second and third fluidic signals and providing a separate output signal for each wheel; and

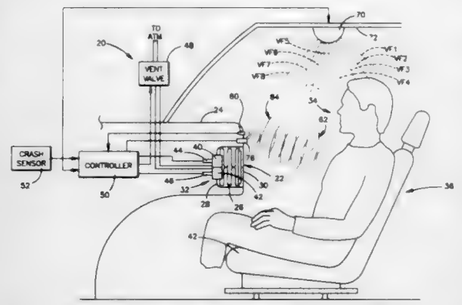
(F) means for applying said separate output signal to said means for defining a variable orifice for changing said orifice characteristics to in turn change the damping characteristics of each said shock-absorbing unit to stabilize said vehicle.

5,330,226

METHOD AND APPARATUS FOR DETECTING AN OUT OF POSITION OCCUPANT

Scott B. Gentry, Romeo; Joseph F. Mazur, Washington, and Brian K. Blackburn, Rochester, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 4, 1992, Ser. No. 986,041
Int. Cl.[5] B60R *21/22, 21/26, 21/28*
U.S. Cl. 280—735 **40 Claims**



1. An apparatus for detecting position of an occupant in an occupant compartment of a vehicle, said apparatus comprising:

first sensing means mounted at a known location near the front of the occupant compartment for sensing the position of the occupant relative to a predetermined reference location in the occupant compartment and for generating a first electric signal indicative of the sensed position of the occupant relative to the predetermined reference location by said first sensing means;

second sensing means mounted at a location rearward of said first sensing means and adjacent the occupant for sensing the position of the occupant relative to the predetermined reference location in the occupant compartment and for providing a second electric signal indicative of the sensed position of the occupant relative to the predetermined reference location by said second sensing means; and

control means connected to said first sensing means and to said second sensing means for providing an electric enable signal when at least one of said first electric signal from said first sensing means and said second electric signal from said second sensing means indicates the occupant is at a first predetermined position relative to the predetermined reference location in the occupant compartment, said control means providing a disable signal only when both said first electric signal from said first sensing means and said second electric signal from said second sensing means indicate the occupant is at a second predetermined position relative to the predetermined reference location in the occupant compartment.

5,330,227

STORABLE TRUCK BED WEIGHTS FOR IMPROVED TRACTION AND HANDLING

Alger J. Anderson, 3306 North Riverwood Dr., Twin Lake, Mich. 49457

Filed Jan. 4, 1993, Ser. No. 194
Int. Cl.[5] B60R *27/00*
U.S. Cl. 280—759 **17 Claims**

1. An apparatus for adding weight to a vehicle to improve traction, the vehicle having a floor, the apparatus comprising:

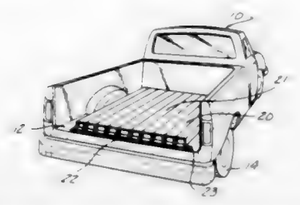
a plurality of elongated container means having at least one sidewall defining an enclosed, hollow compartment for holding material to add weight to the vehicle, each of the container means having first and second ends and a hold down surface;

securing means for releasably attaching each container

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means to the floor of the vehicle, the securing means engageable with said hold down surface of each container means;

said elongated container means comprising an elongated container having a predetermined rectangular cross-sec-



tion and sidewalls defining an inner peripheral surface; and

at least one removable end cover with a planar surface generally perpendicular to and complimentary in shape with the inner peripheral surface of said elongated container and generally disposed parallel to said cross-section.

5,330,228

SAFETY RESTRAINT FOR MOTOR VEHICLES

Bernd Krebs, Wettstetten, Fed. Rep. of Germany, and Jacques M. Dulin, Morgan Hill, Calif., assignors to Audi AG, Ingolstadt, Fed. Rep. of Germany

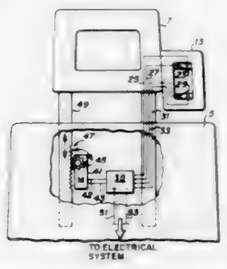
PCT No. PCT/EP91/00195, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO91/15383, PCT Pub. Date Oct. 17, 1991

PCT Filed Feb. 2, 1991, Ser. No. 861,888

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1990, 4010452

Int. Cl.[5] B60R *21/02, 22/26, 22/18;* **B60N** *2/48*

U.S. Cl. 280—801.2 **4 Claims**



1. In a safety restraint for motor vehicles of the kind wherein a seat belt is provided to a seat having a height adjustable freely vertically movable head rest for restraining the lap and chest portions of a passenger seated thereon and wherein the seat belt is directed from an upper deflection point mounted along an inner surface of the vehicle compartment above and behind said seat to pass obliquely downward over an upper corner portion of the seat back and over the shoulder portion of a passenger to connect with a buckle assembly disposed at the opposite hip portion of said seat, the improvement comprising in operative combination:

a) means for preselectively adjusting the vertical location of said upper deflection point of said seat belt to compensate for different passenger head heights;

b) means for coupling said safety belt to said head rest;

i) said coupling means includes at least one face having a contact surface engaging said seat belt to provide a force component sufficient to move said head rest upward or downward when said over the shoulder portion of said seat belt is brought into tension in a substantially straight line between said passenger shoulder and said upper deflection point by sudden forward movement of a passenger; and

c) said head rest moves automatically to a pre-determined optimal anti-whiplash height position in relation to said straight line upon application of said force component by said over the shoulder portion of said seat belt engaging said coupling means contact surface when said seat belt undergoes said sudden tension and engages said coupling means face.

5,330,229

COMPLETED BOOK AND A CASE FOR MAKING THE BOOK

John D. Zoltner, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 486,456, Feb. 28, 1990, abandoned, which is a division of Ser. No. 369,482, Jun. 20, 1989, Pat. No. 5,061,139. This application Dec. 16, 1992, Ser. No. 991,457

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] B42D *5/00*

U.S. Cl. 281—15.1 **14 Claims**



1. In a case for binding pages of a book thereto and having a spine, the improvement comprising: a smooth inner surfaced U-shaped channel member, said U-shaped channel member being made of a material which reacts with plastic deformation when crimped around pages of a book; and means for attaching said U-shaped channel member interiorly of said spine.

5,330,230

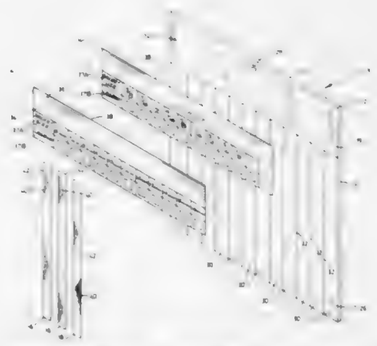
KIT FOR IDENTIFYING INDIVIDUALY SIZED IMPLEMENTS

Donald G. Craig, Tilghman, Md., assignor to Peter A. Norton, Waukesha, Wis.

Filed Jan. 19, 1993, Ser. No. 986,351

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—81 **3 Claims**



1. A kit for identifying individually sized objects, the kit having component parts capable of being utilized at a remote location to facilitate the visual identification of an object, the kit comprising:

a substrate having a display surface which supports a legend having a predetermined number of colored indicia which are directly correlated with a predetermined range of object sizes, and wherein the legend further includes a first display surface, and an opposite second surface, and wherein the second surface has an adhesive layer deposited thereon, and wherein the adhesive layer adhesively affixes the legend on the display surface of the substrate; and

individual labelling indicia for identifying the individual objects, and wherein the individual labeling indicia are releasably affixed on the display surface of the substrate, the labeling indicia applied selectively to objects having a corresponding size, and wherein the labeling indicia is compared to the legend for visual identification of an object by a user.

5,330,231

GREETING CARD WITH PERSONAL IDENTIFIER AND METHOD OF PRODUCING

Phyllis M. Godfrey, 505 Seventh St., Hartford, Wis. 53027

Filed Jul. 12, 1993, Ser. No. 91,227

Int. Cl.[5] B42D *15/04, 15/10*

U.S. Cl. 283—78 **13 Claims**



1. A method of producing a personal identifier greeting card wherein a printed greeting bearing a visible personal idetifier image of an object said object selectively transmitted by a sender, said method comprising the steps of:

supplying a treated sheet construction having a greeting printed thereon, said greeting being selected by a sender;

coating said object with a colorless developing solution; and

applying said coated object to said treated sheet construction, said coated object reacting with said treated sheet construction to immediately develop said visible personal identifier image of said selected object selected by the sender of said printer greeting.

5,330,232

CLEAR WINDOW LABEL

Douglas M. Smith, Buffalo, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Oct. 8, 1992, Ser. No. 957,813

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—81 **11 Claims**

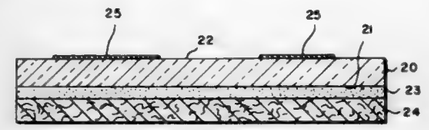
1. A label comprising:

a transparent film having front and back faces;

a first, removable, adhesive coat disposed on said front face;

reverse printed indicia on said back face;

a second adhesive coat disposed on said back face over said reverse printing; and



a paper sheet, having printing on a first face thereof; said first face of said paper in contact with said second adhesive coat.

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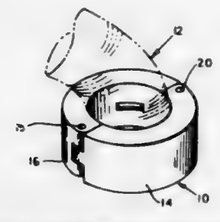
RECREATIONAL VEHICLE SEWER APPARATUS

James Kress, 550 W. 10th St., Erie, Pa. 16502

Filed Apr. 27, 1993, Ser. No. 52,691

Int. Cl.[5] F16L *25/00*

U.S. Cl. 285—9.2 **14 Claims**



1. An attachment in combination with an end of a recreation vehicle drain hose comprising;

a first clamping member and a second clamping member;

said clamping members together having a weight of about eleven pounds;

said clamping members having an inside surface and an outside surface; and,

said clamping members defining a space receiving said drain hose and to support said drain hose on a surface over a sewage receptacle with said drain hose aligned with an opening in said sewage receptacle.

5,330,234

EXHAUST COUPLING WITH AN ADJUSTABLE AIRWAY

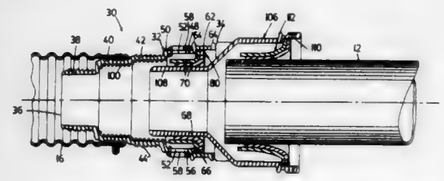
Henry D. Sweeny, c/o Mechanics Safety Company Inc., 560 Conestogo Road, Waterloo, Ontario, Canada N2L 4E3

PCT No. PCT/CA90/00249, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO92/02311, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 8, 1990, Ser. No. 983,567

Int. Cl.[5] F16L *21/00*

U.S. Cl. 285—62 **11 Claims**



1. A coupler for connecting a vehicle exhaust pipe to an exhaust extraction hose, said coupling including a housing

(32,116) having an inlet end (34,124) adapted for connection to the exhaust pipe, an outlet end (36,118) adapted for connection to the extraction hose, and a curtain wall assembly (68,122) positioned adjacent the inlet end for sealing contact with an exhaust pipe when in use, characterized in that: said curtain wall assembly (68,122) comprises at least a pair of facially abutting flexible curtain wall members (70,126) defining a plurality of flexible, mutually offset, adjacent flap member (78,140), and a clamping ring member (80,128) peripherally clamping the curtain wall members (70,126) together; air passageway means (52,145) extend through said housing downstream of said curtain wall assembly, and an adjustable slider member (56,144) is provided on said housing, said slider member having air passage means (58,144) which can be moved into and out of registry with said air passageway means to increase or decrease airflow through the air passageway means.

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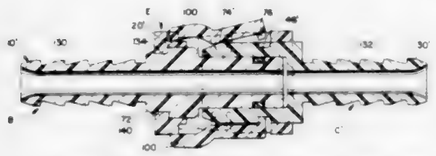
ALL PLASTIC QUICK-CONNECT COUPLING

Ross L. Wagner, Akron, and Gregory Kreczko, Hudson, both of Ohio, assignors to Swagelok Quick-Connect Co., Hudson, Ohio

Continuation-in-part of Ser. No. 531,852, May 31, 1990, Pat. No. 5,123,677. This application Jun. 16, 1992, Ser. No. 899,424

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—81 **20 Claims**



1. A coupling assembly for selectively joining first and second fluid lines together from an uncoupled relation to a coupled relation, the coupling assembly comprising:

a first coupling member having an opening therethrough, a first end adapted for connection to a first fluid line and a groove defined on an external surface thereof;

a second coupling member having an opening therethrough a first end adapted for connection to a second fluid line and a groove defined on an external surface thereof;

a sleeve member having a radially inward extending should received in one of the grooves of the first and second coupling members, the sleeve including a latching member pivotally secured thereto with a tab extending therefrom and dimensioned for selective receipt in the other of the grooves of the first and second coupling members when the first coupling members are in coupled relation; and,

a ring secured to one of the first and second coupling members by securing means for movement between first and second positions, the ring having a surface that inhibits pivotal movement of the latching member in the first position to maintain the first and second coupling members in coupled relation and the ring permitting pivotal movement of the latching member in the second position to allow the first and second coupling members to uncouple.

5,330,236

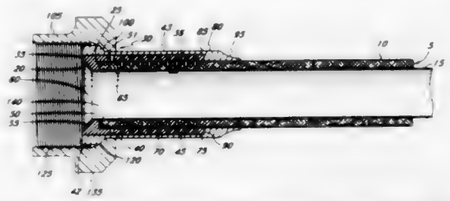
COMPOSITE TUBE FITTING

Robert F. Peterjohn, Los Alamitos; Dale W. Gordon, Orange, and Richard J. Drysdale, Anaheim, all of Calif., assignors to Aerofit Products, Inc., Buena Park, Calif.

Filed Oct. 2, 1992, Ser. No. 956,666

Int. Cl.[5] F16L *39/02*; **F16C** *3/02*

U.S. Cl. 285—149 **18 Claims**



1. An end fitting for composite tubing, said tubing including a composite matrix of strong fibers and a binder, said fitting comprising:

an inner sleeve for surrounding said matrix;

a plurality of pins for inserting through said inner sleeve and penetrating said matrix to secure said inner sleeve to said tubing; and

a rigid outer sleeve surrounding said inner sleeve to retain said pins in said inner sleeve, said outer sleeve including an annular tail having an inner diameter smaller than the outer diameter of said inner sleeve so that an annular shoulder engages the rear of said inner sleeve to retain the outer sleeve on the inner sleeve.

5,330,237

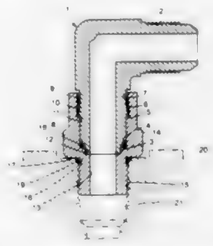
PIPE JOINT FOR HYDRAULIC PIPE

Hiroshi Suzuki; Katsuya Miyata, both of Kariya, and Minoru Kimura, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Tokiwa Seiki Co., Ltd., Tokyo, both of Japan

Filed Mar. 4, 1992, Ser. No. 845,699

Int. Cl.[5] F16L *17/06*

U.S. Cl. 285—281 **12 Claims**



1. A pipe joint for hydraulic pipe, comprising:

an elbow body having a first end provided with a connecting portion to be connected to a pipe, and a second end provided with a threaded portion and an annular clearance groove, which are arranged axially and successively; and

a cylindrical adapter having a first end provided with a threaded portion and an annular clearance groove, and a second end provided with an externally threaded portion, in which external threads are cut, to be screwed in a hydraulic apparatus;

wherein the respective threaded portions of the elbow body and the adapter drop into the respective annular clearance grooves of the adapter and the elbow body, respectively, when the elbow body is screwed completely in the adapter so that the elbow body is able to turn relative to the adapter.

5,330,238

COUPLER FOR CONNECTING TWO PLASTIC PIPES AND PROCESS AND MOLD FOR PRODUCING THE COUPLER

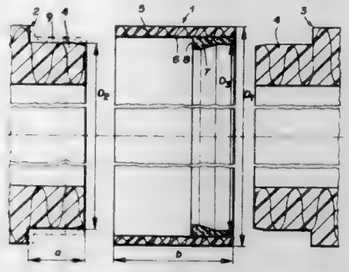
Börge Carlström, Oberwil, Switzerland, assignor to Hobas Engineering AG, Basel, Switzerland

Filed Sep. 4, 1992, Ser. No. 940,520

Claims priority, application Switzerland, Sep. 6, 1991, 2622/91

Int. Cl.[5] F16L *47/00*

U.S. Cl. 285—291 **4 Claims**



1. A coupler for connecting two pipes, the coupler comprising:

an outer layer having a coupler internal diameter and a coupler external diameter, said outer layer also having a first end and a second end, said coupler internal diameter between said first and second ends of said outer layer is substantially equal to an internal diameter of said outer layer at said second end;

a sealing means for sealing said outer a layer to one of the two pipes, said sealing means including an inner layer positioned inside said outer layer and extending from said first end of said outer layer toward said second end of said outer layer by a distance substantially equal to 30–50% of a length of said outer layer, said inner layer having a first end and a second end, said first end of said inner layer being positioned adjacent said first end of said outer layer, said inner layer having an internal diameter decreasing from said first end of said inner layer to said second end of said inner layer;

the two pipes each have a pipe external diameter substantially equal to said coupler external diameter, said two pipes also each have a pipe end section with a pipe end external diameter smaller than the pipe external diameter, each of said pipe end sections being substantially half as long as said outer layer.

5,330,239

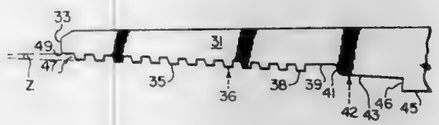
PIPE COUPLING

Thomas L. Blose, Houston, Tex.; David L. Britten, Calgary, Canada; Kevin J. Humphreys, and Trent M. V. Kaiser, both of Edmonton, Canada, assignors to IPSCO Enterprises Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 467,620, Jan. 19, 1990, abandoned. This application Oct. 3, 1991, Ser. No. 770,566

Int. Cl.[5] F16L *25/00*

U.S. Cl. 285—328 **23 Claims**



1. A pipe connection of the type having a female component and a mating male component, each matingly threaded for connection therebetween, and each provided with a sealing area adjacent the threaded area, the sealing area of the coupling components being formed as mating frusto-conical surfaces, at least one of such surfaces having controlled surface roughness; the respective sealing areas of the components being in axially aligned sealing engagement when the pipe connection has been assembled; characterized in that:

(a) the slopes of the frusto-conical sealing surfaces are each relatively shallow;

(b) the slope of the frusto-conical sealing surface of the male component is selected to be slightly less than that of the frusto-conical sealing surface of the female component such that the sealing bearing load relative to axial distance of the contacting sealing surfaces of the components when the components have been assembled qualitatively simulates that of a pair of mating shrunk-fit circular cylindrical sealing surfaces; and

(c) the slope of the load thread pitch line of the male component relative to the axis thereof is slightly steeper than the load thread pitch line of the female component relative to the axis thereof.

5,330,240

CLOSED SLING WITH SELF-CINCHING LOOP

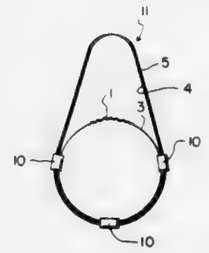
Philippe Barra, 43 rue Belle Rade, 59240 Dunkerque, France

Continuation of Ser. No. 867,833, Apr. 13, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 142,852

Claims priority, application France, Apr. 11, 1991, 91 04441

Int. Cl.[5] B66C *1/18*

U.S. Cl. 294—74 **7 Claims**



1. A closed deformable and reusable sling with a self-cinching loop, for lifting a load comprising a length of metal wire with tow ends definitively fixed to one another to form an endless loop, said endless loop forming intercrossed loops lying in substantially parallel planes of orientation to form at least three loops, one of said intercrossed loops being a cinching loop and at least a first lifting loop and a second lifting loop, said at least first and second lifting loops being larger than said cinching loop and superimposed thereon, said cinching loop and said at least first and second lifting loops connected together by sliding sleeves at points along said wire of said loops to allow said cinching loop to tighten around said load, said sliding sleeves located close to said load gripped by said cinching loop.

5,330,241

HAND APPARATUS

Yutaka Takahashi, Placentia, Calif., assignor to Amada Engineering and Service Company, Inc., La Mirada, Calif.

Filed Oct. 9, 1992, Ser. No. 958,778

Int. Cl.[5] B66C *1/42*

U.S. Cl. 294—86.41 **2 Claims**

1. A hand apparatus comprising:

a vertically and horizontally movable arm;

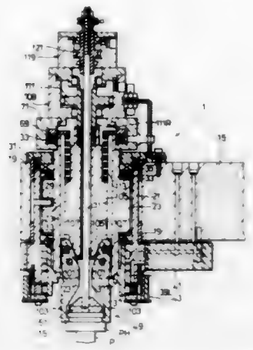
a turnable cylinder attached to a free end of said movable arm;

a support cylinder disposed inside said turnable cylinder,

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said support cylinder being movable in a horizontal direction relative to said turnable cylinder, said support cylinder including a first tapered surface;

a means for restraining said support cylinder from moving in said horizontal direction, said restraining means being mounted on said turnable cylinder, said restraining means



including a second tapered surface engageable with said first tapered surface, said second tapered surface being movable towards and away from said first tapered surface of said support cylinder;

a turnable and tiltable clamp hand disposed inside said support cylinder; and

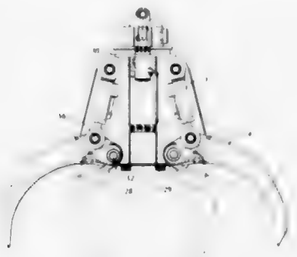
a clamp disposed at a lower end of said clamp hand.

5,330,242

ROTATABLE HYDRAULIC GRAPPLE

Bobby D. Lucky, Sr., Rte. 1, Box 160, Bain Rd. NW., Athens, Ala. 35611

Filed Dec. 23, 1992, Ser. No. 995,996
Int. Cl.[5] B66C *1/42*
U.S. Cl. 294—88 **4 Claims**



1. A rotatable grapple, comprising:

a) a yoke assembly having a channel within said yoke assembly;

b) a housing, said housing comprising:

1) a plurality of housing walls;

2) an interconnecting means for interconnecting said housing walls;

3) a plurality of actuator chambers extending radially outward from, and angularly spaced about, the longitudinal axis of the housing, each of said actuator chambers having four sides with three of said four sides being formed by the interconnected housing walls, said three sides consisting of:

(a) an innermost chamber side closet to the longitudinal axis of the housing, said innermost chamber side having a right edge and a left edge,

(b) a right chamber side connected to, and extending outwardly from, the right edge of the innermost chamber side, and

(c) a left chamber side connected to, and extending outwardly from, the left edge of the innermost chamber side, said right chamber side and said left chamber side being parallel to each other;

4) a plurality of chamber outer plates, each of said outer plates forming the fourth and outermost side of respective ones of the actuator chambers, each outer plate having a right edge connected to respective ones of said right chamber sides and a left edge connected to respective ones of said left chamber sides;

5) the right edge of each of the plurality of innermost chamber sides connecting to the left edge of the innermost chamber side of the adjoining actuator chamber, thereby forming the sides of a housing cavity centered along the longitudinal axis of the housing, said housing cavity communicating with the channel located in the upper yoke assembly;

6) a plurality of hydraulic actuators mounted one each within said actuator chambers;

7) a first communicating means for communicating fluid between the channel located in the yoke assembly and the housing cavity;

8) a second communicating means for communicating fluid between the housing cavity and each of said hydraulic actuators for causing movement of each of said hydraulic actuators;

c) a plurality of tines connected to respective ones of said hydraulic actuators such that movement of said hydraulic actuators effects actuation of said tines;

d) a rotatable attaching means for rotatably attaching said housing to said yoke assembly, the longitudinal axis of said housing being collinear with the longitudinal axis of said yoke assembly;

e) a rotating means for rotating said housing relative to said yoke assembly and about the collinear longitudinal axes of said yoke assembly and said housing;

f) a suspending means for suspending said yoke assembly from a boom, said suspending means including a supplying means connectable to an external source of fluid pressure medium for supplying a fluid medium to said channel of said yoke assembly, and;

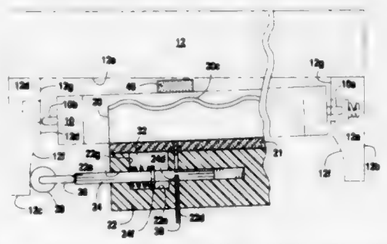
g) a stopping means for stopping the actuation of each of said actuators.

5,330,243

REPLACEMENT APPARATUS FOR FLUORESCENT BULBS

James H. Held, 13303 Marceline, San Antonio, Tex. 78232

Filed Nov. 30, 1992, Ser. No. 982,956
Int. Cl.[5] H01K *3/32*
U.S. Cl. 294—19.1 **6 Claims**



1. Apparatus for inserting cylindrical fluorescent bulbs in axially spaced sockets mounted in out of reach overhead locations on a housing having a downwardly facing wall between said sockets, said bulbs being of the type having a single central rigid contact prong projecting axially from each end of the bulb; said sockets defining axially aligned tubular contacts for respectively receiving said prongs, at least one of said tubular contacts being axially spring biased toward the other prong, comprising:

an elongated tubular handle;

a one piece bulb grasping unit rigidly secured to an end of said handle and formed by molding of a semi-rigid, resiliently deformable plastic material;

said bulb grasping unit being elongated along an axis perpendicular to the axis of said tubular handle and defining a recess of generally semi-cylindrical cross-section; said recess having axially spaced, arcuate portions thereof with an arcuate extent slightly greater than 180°;

the internal radius of said recess being substantially equal to, but not less than the external radius of said fluorescent bulb, whereby a fluorescent bulb can be secured in, or removed from said recess by a generally radial movement of said grasping unit relative to a fluorescent bulb to resiliently deform said spaced arcuate portions of said recess;

said tubular handle having a length sufficient to move a grasped bulb to or from an axially aligned position relative to said sockets without requiring a ladder;

and a pad of flexible material having an adhesive coating on one face thereof to permit attachment of said pad to the top surface of a fluorescent bulb secured in said recess of said grasping unit;

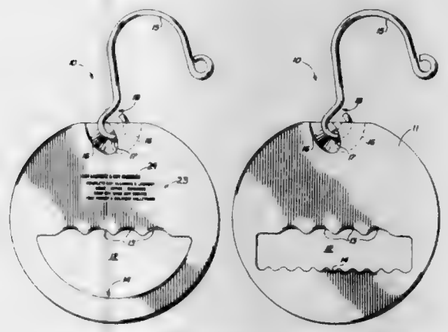
said pad having a thickness proportioned to align said contact prongs with said tubular contacts when said pad engages said downwardly facing wall of said housing.

5,330,244

ADVERTISING BASE AND CLOTHES HANGER CARRIER

Donald C. Rodwell, 1201 E. Rancho Dr., Phoenix, Ariz. 85014

Filed Oct. 1, 1992, Ser. No. 955,111
Int. Cl.[5] A45F *5/00;* **B60R** *7/00*
U.S. Cl. 294—143 **5 Claims**



1. A carrier for carrying clothes on a clothes hanger comprising:

(a) a base having an outer edge and opposite generally parallel surfaces;

(b) said base defining a region on one surface for placement of informational indicia thereon;

(c) said base defining an opening and having an aperture disposed above said opening, said opening having a first boundary contoured to comfortably accept the fingers of a hand to enable the user to grasp the carrier and a second boundary for engagement with clothes hangers; and

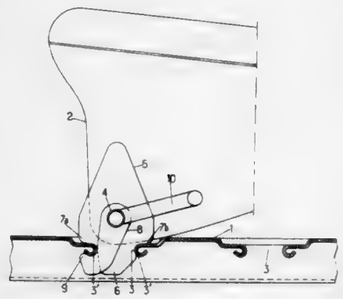
(d) hanging means having a hooked-shaped upper end and a hook shaped lower end, which hanger means is directly connected to said base at said lower end which extends through said aperture, said lower end and said aperture being complimentarily arranged so as to permit swiveling of the hanging means from a position generally parallel to the plane of the base to a position generally perpendicular to the plane of the base so that the clothes may be hung on the clothes hanger hook in various positions and to permit the hanging means to be swiveled to an out-of-the-way position adjacent a surface of the base when a user grasps the carrier.

5,330,245

MOVABLE VEHICLE SEAT

Bernard Boisset, Etampes, France, assignor to Bertrand Faure Automobile "BFA", Massy, France

Filed Dec. 9, 1992, Ser. No. 987,716
Claims priority, application France, Dec. 12, 1991, 91 15442
Int. Cl.[5] B60N *2/02*
U.S. Cl. 296—65.1 **11 Claims**



1. A combination of a vehicle having a floor, a seat with a seat structure and a fixing system for fixing the seat to the floor, said combination comprising:

an opening having an edge in the floor of the vehicle;

a fixing mechanism attached to the set structure which fixes the seat structure to the floor, said fixing mechanism including

a latch having a distal portion provided with a shoulder which said distal portion penetrates said opening,

a mounting means for mounting said latch for rotation relative to the set structure,

a control means for selectively moving the distal portion of said latch in said opening between (a) an unlocking position where said shoulder is free to penetrate into or escape from said opening and (b) a locking position where, after penetration of said distal portion of said latch into said opening, said shoulder is underneath and in locking engagement with said edge of said opening, and

a positioning and guide plate attached to the seat structure along side of which said latch is rotatably mounted, said plate including a distal projection which penetrates said opening when said distal portion of said latch penetrates said opening and an enlarged region on opposite sides of said distal projection which engages the flow when the projection penetrates said opening.

5,330,246

SLAT BLOCK AND GUIDE TRACK APPARATUS FOR ROLLING TRUCK BED COVER

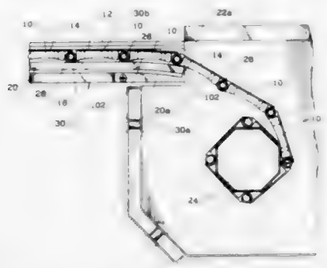
Richard G. Bernardo, 2350 NE. 29th St., Lighthouse Point, Fla. 33064

Filed Nov. 18, 1992, Ser. No. 978,110
Int. Cl.[5] B60P *7/02*
U.S. Cl. 296—98 **8 Claims**

1. A slat block for use with a slat in a rolling, retractable truck bed cover, said cover made from a plurality of elongated slats, each slat having a pair of slat ends, a slat surface bottom,

and a slat surface top, said slats having hinges, each hinge terminating at each end in a hinge end on opposing longitudinal sides that interlock, said slats interconnected in a side-by-side array for covering the utility bed of a pickup truck and slidably mounted in parallel guide tracks attached to opposing truck bed walls, each guide track having an entrance, comprising:

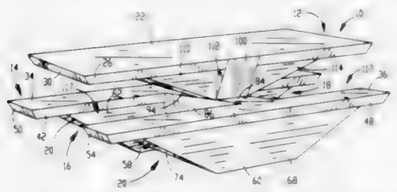
a rigid body sized in length for mounting between adjacent slat hinges, sized in width to extend at least one inch inwardly from a slat end, and sized in thickness to extend from the slat surface bottom in predetermined areas to at least the extent of a hinge thickness, said slat block including an end cap at one end integrally formed with said rigid



body and extending beyond a portion of said rigid body in length and sized and contoured to cover said hinge end and the slat end whereby said slat block acts as a bearing surface for lateral restraint of independent movement and as a guide for smoothing the movement of the truck bed cover into and out of each guide track entrance;

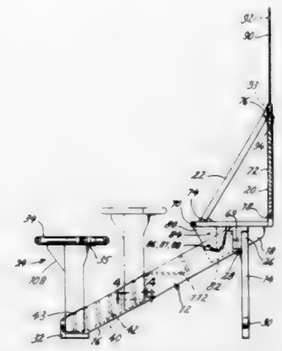
said rigid body having an upper flat surface, a lower surface having a curved central portion, said end cap having a flat end face, said rigid body cured lower surface sized in curvature and length to provide smooth contact between said slat block and said guide track entrance to prevent jamming of said truck bed cover when said truck bed cover is moved relative to said guide track entrance.

5,330,247
MONOLITHIC CAST PICNIC TABLE
Obed M. Fricke, Montezuma, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.
Filed Mar. 16, 1993, Ser. No. 33,237
Int. Cl.[5] A47C *5/02*; A47B *83/02*
U.S. Cl. 297—157 **11 Claims**



1. A unitary, monolithic, cast picnic table comprising a generally horizontal table section presenting a pair of side margins, a generally horizontal bench section located generally along and below each of the side margins of said table section, a central connecting section joining said table section and bench sections, and base structure permitting placement of the picnic table on a support surface.

5,330,248
FOLDABLE AND ADJUSTABLE DRAWING DESK
Susan V. Smyly; Suzanne Iannaccone, both of New York, and John F. Wilson, Harrison, all of N.Y., assignors to I.S. International, New York, N.Y.
Filed Dec. 1, 1992, Ser. No. 983,814
Int. Cl.[5] A47B *39/00*
U.S. Cl. 297—174 **26 Claims**



1. An adjustable foldable desk having a storage position for storage and transportation and a drawing position for use by a drawer to draw an object, the desk comprising:

a center leg having a longitudinal axis and first and second ends;

an end leg having a longitudinal axis which is pivotally attached to the second end of the center leg so that the end leg can be pivoted with respect to the center leg between the drawing position in which the longitudinal axes of the end and center legs are transverse to each other and the storage position in which the longitudinal axes of the end and center legs are substantially parallel to each other;

an easel for holding a drawing board having a longitudinal axis is pivotally attached to the center leg so that the easel can be pivoted with respect to the center leg between the drawing position in which the longitudinal axes of the center leg and the easel are transverse and the storage position in which the longitudinal axis of the center leg and easel are substantially parallel;

a seat assembly selectively attached to the center leg; and

means for selectively adjusting the position of the seat assembly with respect to the easel along said center leg, wherein said adjustment includes both horizontal and vertical adjustment of said seat assembly with respect to said easel.

5,330,249
CUSHION FOR ABSORBING SHOCK, DAMPING VIBRATION AND DISTRIBUTING PRESSURE
Fredric J. Weber, Waco, Tex., and Edmund R. Burke, Colorado Springs, Colo., assignors to Spenco Medical Corporation, Waco, Tex.
Continuation of Ser. No. 421,424, Oct. 13, 1989, Pat. No. 5,121,962. This application Jan. 29, 1992, Ser. No. 827,678
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] B62J *1/18*
U.S. Cl. 297—214 **6 Claims**

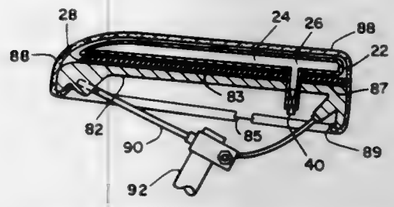
1. A bicycle saddle comprising:

a saddle base having a top surface defining a horn area and a rear area;

a cushion for dampening vibration, distributing pressure and absorbing shock, the cushion disposed on the top surface of the saddle base and including:

(a) a deformable bladder having a chamber adapted to contain a fluid; and

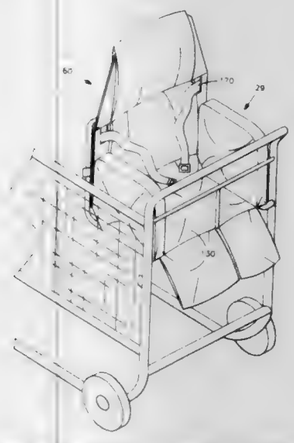
(b) a viscoelastic material disposed within the chamber, the viscoelastic material being a gel comprising a minor portion of polyvinylchloride resin and a major portion



of dialkyl phthalate plasticizer in a weight ratio of plasticizer to resin of from about 7:1 to about 10:1; and

valve means for selectively varying the amount of fluid in the chamber to enable the shock capability of the cushion to be varied.

5,330,250
LINER FOR A SHOPPING CART CHILD SEAT
Guadalupe E. Reyes, 13861 Fernwood Dr., Garden Grove, Calif. 92643
Filed Mar. 16, 1992, Ser. No. 851,339
Int. Cl.[5] A47C *27/00*
U.S. Cl. 297—229 **5 Claims**



1. A seat liner for supporting a child in a shopping cart, the cart having a fold-out child seat for supporting the child thereupon, the seat constructed of horizontal wires, the liner comprising:

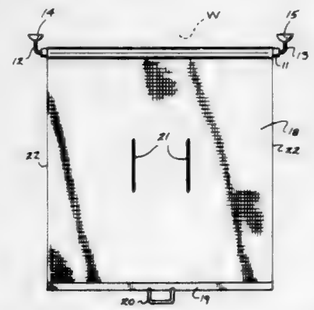
a base of stiff sheet material having a generally rectangular, flat, upward facing, surface, the base fitting into and removably supported by a horizontal member of the fold-out child seat, the base lying generally between upwardly protruding child seat wires;

a pair of side arms, each of the side arms having a rigid interior core and a compliant overcover, the side arms being fixedly mounted onto the upward facing surface and extending upwardly therefrom to define a space therebetween for accepting, while providing lateral support, the torso of a 15 to 26 pound child, one portion of each of the side arms extending to the rear of the child, above the protruding wires on one side of the child seat;

a flexible backrest of stiff sheet material having a generally rectangular near vertical, flat surface, the backrest being attached to each one of the side arms on the one portion thereof so that the backrest is supported and positioned above the upwardly protruding child seat wires and rests in contact with a near vertical member of the fold-out child seat, the backrest having means for removable attachment of the backrest to the near vertical member for restraint of the seat liner within the child seat, and child restraining belt means for holding the child within the seat liner;

the backrest having backrest cushion means for supporting the torso and head of the child, the base having base cushion means for supporting the weight of the child thereupon, the base cushion means extending under the legs of the child to cushion the legs against discomfort from the upwardly protruding child seat wires.

5,330,251
RETRACTABLE SEAT COVER APPARATUS
Karen A. McGuire, 195 Logan Rd., Gibsonia, Pa. 15044
Filed Apr. 19, 1993, Ser. No. 48,314
Int. Cl.[5] A47C *31/11*
U.S. Cl. 297—229 **4 Claims**



1. A retractable seat cover apparatus, comprising,

a support axle, and

a support housing rotatably mounted about the support axle, and the support axle having an axle first end spaced from an axle second end, with the axle first end including a first support rod fixedly mounted to the axle first end, and

a second support rod fixedly mounted to the axle second end, the first support rod including a first suction cup, the second support rod including a second suction clip, with the first suction cup and the second suction cup arranged for adherence to a vehicular rear window, and

biasing means mounted within the housing secured to the housing and to the support axle for biasing the housing in a first orientation about a support axle, with a flexible web mounted to the housing, with the flexible web arranged in a furled configuration in the first position, and the flexible web arranged in an extended orientation relative to the housing in a second position, and

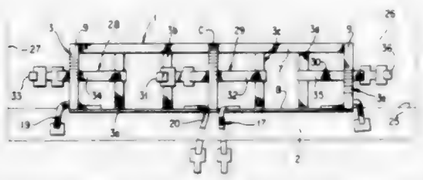
a fixed rib mounted to the flexible web in a spaced parallel relationship relative to the housing at a free distal end of the flexible web, with a handle mounted to the rib, and

a plurality of parallel slots orthogonally oriented relative to the rib directed through the flexible web for receiving seat belt members therethrough.

5,330,252
DEVICE FOR CENTERING THE SEATING OF SMALL CHILDREN IN AN AUTOMOBILE
Edmund A. Kutauskas, 1320 New Ave., Elmont, N.Y. 11003
Filed Jun. 15, 1993, Ser. No. 76,840
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—232 **6 Claims**

1. An elongated device which is angular in form, comprising

a row of laterally spaced angle members each of which has an upper arm extending away from a vertex of the member and a lower arm extending away from the vertex, an elongated upper strip integral with and extending across an upper end of each of the upper arms, a lower elongated strip integral with and extending across an outer end of each of the lower arms, an inclined rib integral at an upper end thereof with an end of the upper strip and integral at a lower end with the lower strip, a second inclined rib integral at an upper end thereof with an opposite end of the upper strip and integral at a lower end with the lower strip, and a further inclined rib integral at an upper



end thereof with the center of the upper strip and integral at a lower end with the center of the lower strip, the device seated at the center of the rear seat of an automobile with the vertexes of the angle members along the juncture of the rear seat and the back of the seat and secured in its seated condition by means of seat belts of the automobile fastened to the device, and a pair of seat belts mounted to the device of which one of the pair is belted about a child seated upon the rear seat or the automobile to the left of the center of the device and the other seat belt of the pair is adapted to be belted about a second child seated upon the rear seat to the right of the center of the device.

5,330,253

MECHANISM FOR MODULATING HEIGHT OF LEGS OF CHAIR FOR SMALL CHILD

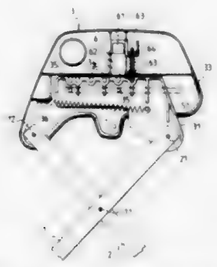
Tomihisa Kaneko, Tokyo, Japan, assignor to Combi Corporation, Tokyo, Japan

Filed Oct. 6, 1993, Ser. No. 132,272

Claims priority, application Japan, Oct. 16, 1992, 4-078156[U]

Int. Cl.[5] A47C *3/34*

U.S. Cl. 297—344.15 **5 Claims**



1. A mechanism for modulating the height of a chair for a small child, comprising:

a seat portion including a support member on opposite lateral sides thereof;

a pair of holders respectively provided inside said support members, each of said holders being substantially U-shaped defining a sliding cavity therein;

a pair of sliders respectively slidably disposed in said cavities of said holders in forward and backward directions;

a pair of leg assemblies respectively associated with said support members, each leg assembly including a front and a rear leg arranged in an X-like configuration and being pivotally secured to each other, said front leg being pivotally coupled at the upper end thereof to a front of an associated support member and said rear leg being pivotally coupled at the upper end thereof to an associated slider at the rear end thereof;

locking means for locking each of said sliders in a selected position along each of said holders to thereby lock said chair at a predetermined height, said locking means including an engagement pin slidably secured to a top of said holder and a plurality of holes provided in each of said sliders at a predetermined interval extending in said forward and backward directions, said pin being engageable with one of said holes.

5,330,254

WORKPLACE CHAIR

John E. Larson, P.O. Box 1607, Hamilton, Mont. 59840

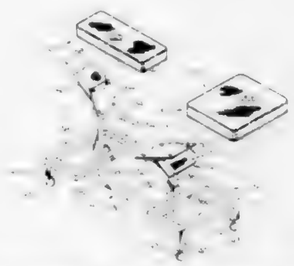
Division of Ser. No. 613,306, Nov. 15, 1990, Pat. No. 5,186,519.

This application Feb. 8, 1993, Ser. No. 15,345

The portion of the term of this patent subsequent to Dec. 16, 2010, has been disclaimed.

Int. Cl.[5] A47C *1/022, 7/50*

U.S. Cl. 297—354.11 **13 Claims**



1. An adjustable chair comprising front seat assembly means, rear seat assembly means, and base assembly means, the base assembly means supporting the front and rear seat assembly means independently of one another; said front seat assembly means having a front seat pivotally mounted for rotation about a horizontal axis, said axis defining a front seat fulcrum; and said rear seat assembly means having a rear seat pivotally mounted for rotation about a horizontal axis, said axis defining a rear seat fulcrum; the two rotation axes being separated from one another a sufficient distance that a person may sit on the front seat and position his or her back against the rear seat; said front seat having a configuration adapted to support a sitting person and being so configured and positioned with respect to said rear seat whereby a sitting person may be supported by the front and rear seats with his or her sacrum, coccyx and ischial tuberosities clear of bearing contact with said front seat; front seat mounting means mounting said front seat assembly means to said base assembly means whereby said front seat assembly means is vertically adjustable; rear seat mounting means mounting said rear seat assembly means to said base assembly means whereby said rear seat assembly means is vertically adjustable; said front and rear seat mounting means being so constructed and arranged that the front and rear seats can be vertically adjusted independently of one another along parallel axes whereby the relative lateral distance between the front seat fulcrum and the rear seat fulcrum will remain unchanges as the seats are raised or lowered; said rear seat being so constructed and arranged that it is substantially longer than said front seat so that said rear seat extends sufficiently below its horizontal axis of rotation to support the spinal sacrum region of a person sitting in the chair and extends sufficiently above its horizontal axis of rotation to support the spinal dorsal region of a person sitting in the chair whereby a sitting person's spinal sacrum region will be supported as a result of a sitting person's upper back levering said rear seat into contact with the sitting person's sacrum region.

5,330,255

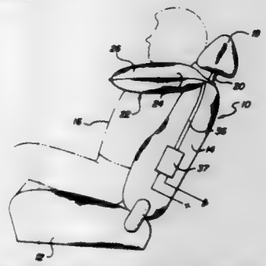
SEAT INTEGRATED INFLATABLE NECK SUPPORT

Edwin V. Stawicki, Highland, Mich., assignor to Davidson TEXTRON INC., Dover, N.H.

Filed Nov. 12, 1992, Ser. No. 974,705

Int. Cl.[5] A47C *1/10*

U.S. Cl. 297—391 **18 Claims**



1. An inflatable neck support for a vehicle seat that has a head restraint comprising:

a U-shaped collar having a curved back for resting on a seat back to support a back of a neck and head of a seat occupant and two side arms for resting on opposite shoulders of the seat occupant to support opposite sides of the neck and head,

the neck support including an inflatable bladder of impervious material that has an inlet opening for connecting the inflatable bladder to an air supply tube for inflating the bladder,

means for attaching the inflatable neck support to a seat back or head restraint of a vehicle seat, and

the inflated neck support being low and oblong so that it is essentially disposed below the head restraint in use so that the inflated neck support does not obstruct or otherwise interfere with functioning of the head restraint.

5,330,256

Patent Not Issued For This Number

5,330,257

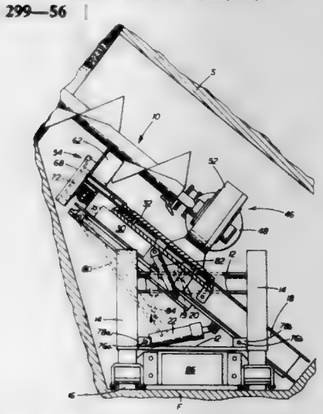
AUGER MINING MACHINE

Gary R. Wurster, Corbin, Ky., assignor to Salem Tool, Inc., London, Ky.

Filed Oct. 14, 1992, Ser. No. 961,085

Int. Cl.[5] E21C *27/22, 31/10*

U.S. Cl. 299—56 **18 Claims**



1. An auger mining apparatus for winning mineral from a seam, comprising:

a support frame;

a tilt platform held on said support frame and including a first guideway;

means for selectively displacing said tilt platform at a pitch angle between 0°–45° with respect to said support frame;

a first carriage cooperatively mounted on said first guideway so as to provide for reciprocating movement along a first path, said first carriage including a second guideway;

a second carriage cooperatively mounted on said second guideway so as to provide for reciprocating movement along a second path extending in a direction substantially perpendicular to said first path; and

an auger drive mounted to said second carriage.

5,330,258

PRESSURE CONTROL UNIT FOR BRAKE SYSTEM

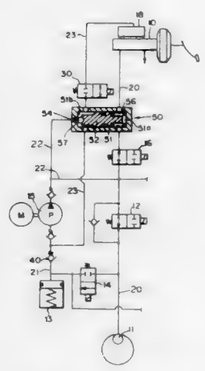
Yukio Hoshoya, and Kei Fukuyo, both of Shizuoka, Japan, assignors to Nissinbo Industries, Inc., Tokyo, Japan

Filed Dec. 11, 1992, Ser. No. 989,437

Claims priority, application Japan, Dec. 13, 1991, 3-351204; Dec. 13, 1991, 3-351205

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—113.2 **18 Claims**



1. A pressure control unit for a brake system that includes a master cylinder connected to brake circuits for a plurality of drive and follower wheels, each brake circuit being connected to a wheel cylinder through a main brake line, and each brake circuit includes a normally open-type inlet valve installed in the main brake line to open or close passage to the main brake line, a normally closed-type outlet valve to open or close passage between the wheel cylinder and a working fluid reservoir, a suction line that connects a suction side of a hydraulic pump connected to the working fluid reservoir, and a delivery line that connects the hydraulic pump to the main brake line on a master cylinder side from the outlet valve, the pressure control unit for the drive wheels comprising:

(a) a selector valve, fitted in the main brake line on the master cylinder side of a connection between the main brake line and the delivery line, said selector valve being formed to switch to a closed state only during traction control operation;

(b) a reflux line which connects a master cylinder reservoir and the suction line;

(c) a switching valve installed in said reflux line, said switching valve being formed to switch to a free passage state between the master cylinder reservoir and the suction line during traction control operation;

(d) a relief valve, fitted across both the main brake line and said reflux line, wherein a first end of said relief valve is subject to pressure from the master cylinder, and a second end is subject to pressure from the delivery line,

during traction control operation, when the pressure from the delivery line reaches or exceeds a threshold level, said

relief valve opens to exhaust excess hydraulic pressure of the delivery line to said reflux line, and at all other times said relief valve remains closed; and

(e) a check valve connected to the suction line on a working fluid reservoir side of a connection with said reflux line.

5,330,259

ELECTROHYDRAULIC BRAKING SYSTEM WITH REMOTE BOOSTER

Seth C. Ravndal, South Bend, and Daniel J. Patient, Granger, both of Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 22, 1992, Ser. No. 995,247

Int. Cl.[5] **B60T** *8/42, 13/20*

U.S. Cl. 303—115.4 **2 Claims**



1. A pressure boost mechanism for use in a brake system comprising a pressure boost mechanism (**60**) adapted to be connected to an accumulator (**40**) and primary and secondary chambers of a master cylinder for generating a boosted pressure at a fixed multiple of the pressure in either the primary or secondary master cylinder chambers comprising:

a housing (**90**) including a stepped bore (**92**), an accumulator chamber (**174**) adapted to receive fluid from the accumulator (**40**) at one end of the bore (**92**), and a boost chamber (**200**) within an adjacent first housing member (**148**);

the first housing member (**148**) including a first valve seat (**147**) at one end thereof proximate the accumulator chamber;

a first valve member (**182, 192**) slidably received in the housing (**90**) spring biased to seat against the first valve seat (**147**) to prohibit fluid flow into or out of the accumulator chamber (**174**); the first valve member (**182, 192**) comprising a hollow stem (**182**) one end of which receives a ball valve (**192**)

a hollow second valve member (**150**) located within the boost chamber (**200**) having a second valve seat (**156**) at one end thereof for urging the first valve member (**182, 192**) away from the first valve seat (**147**), the second valve member being spring biased away from engagement with the first valve member (**182, 192**);

first piston means (**100, 110**) having a first piston portion (**100**) of area A_1 adapted to receive pressure generated in the master cylinder (**20**) and a second piston portion (**110**) of area A_2, where area A_1 is greater than area A_2, the second piston portion (**110**) including a passage (**134**) in communication with a central passage (**153**) of the second valve member (**150**), the second piston portion (**110**) operably mated to another end of the second valve member (**150**), the passage (**132**) in the second piston (**110**) is communicated to a reservoir chamber (**122**), wherein in response to the build up of master cylinder pressure, P_m, the first piston means (**100, 110**) is moved to cause the second valve member (**150**) to move the first valve member (**182, 192**) away from the first valve seat (**147**) permitting fluid from the accumulator chamber (**174**) to flow into the boost chamber (**200**) to act upon the second piston portion (**110**) in opposition to the master cylinder pressure acting as the first piston means (**100**), wherein the pressure P_{200} within the boost chamber (**200**) in the steady state, will rise to approximately:

$$P_{200} = P_m (A_1/A_2)$$

5,330,260

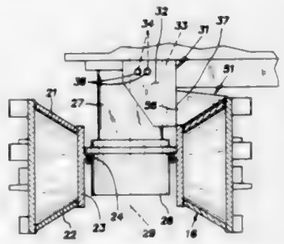
WHEEL CLEANING SYSTEM

Ernie Freeman, 1460 W. 130th St., Brunswick, Ohio 44212

Filed Sep. 9, 1992, Ser. No. 942,433

Int. Cl.[5] **B62D** *55/088*

U.S. Cl. 305—12 **9 Claims**



1. A kit for reducing the tendency of debris to be wound around and accumulated on the axle of a refuse compactor comprising a cutter body to be attached to the inboard face of a wheel and a cutter plate to be attached to the compactor on a part that is stationary with respect to an axle associated with the wheel, the cutter body having a cutting edge and a mounting area for mating with a receiving area of the wheel, the cutting edge having an effective length, at least parts of the cutting edge being spaced from the mounting area a distance that is the same order of magnitude as the effective length, the mounting area extending in at least two directions each with dimensions at least the same order of magnitude as the effective length of the cutting edge to provide a stable mounting so as to reliably resist high cutting forces when it is attached to the wheel, the cutter plate having an edge with an effective length substantially the same as the effective cutting length of the cutter body, the cutter plate having visual indicia to permit it to be aligned with a reference location on the compactor to facilitate its proper positioning thereon and having sufficient reinforcement in a plane perpendicular to a plane in which its cutting edge lies.

5,330,261

COOLER DOOR DISPLAY RACK

James L. Bennett, 7516 Hayes Cir., Ralston, Nebr. 68127

Filed Feb. 10, 1992, Ser. No. 833,107

Int. Cl.[5] **A47F** *5/00, 3/06*

U.S. Cl. 312—321.5 **11 Claims**

1. A cooler door display rack for a cooler having a frame at least partially defining a cooling compartment, a transparent door pivotally mounted on said frame and having interior and exterior faces, storage racks mounted in vertically spaced apart relation within the cooling compartment and in horizontally spaced relation from the door, the space between the door and the storage racks defining a cooling air flow zone, the cooler door display rack comprising:

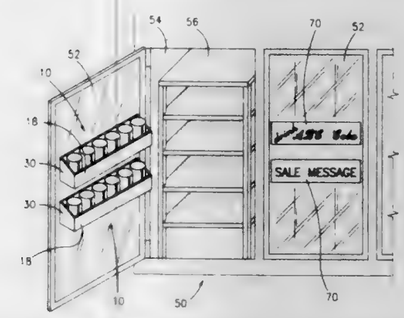
a generally horizontal shelf surface for supporting products placed thereon and having four peripheral edges;

a first front wall, a first rear wall, and two side walls, said walls attached to said shelf surface adjacent the peripheral edges thereof and extending upwardly from said shelf surface, thereby forming an open top box having a bottom, front, rear and two sides;

said front wall extending upwards above said rear wall such that said front wall has a greater vertical height than said rear wall whereby access to beverage containers supported on said shelf surface is facilitated;

securement means for securing said display rack to the inside surface of said cooler door such that said first front wall is located adjacent said transparent door interior face whereby said display rack extends into said cooling air flow zone upon closing said transparent door,

said display rack being adapted for receiving and supporting generally cylindrical beverage containers on said shelf surface and within said four walls,



advertisement display means operatively associated with said first front wall for removably and replaceably receiving and supporting advertising indicia which substantially covers the front wall in upright relation such that upon securement of said display rack to the inside surface of said cooler door, the advertising indicia supported by said advertisement display means is visible through the transparent door;

said shelf surface comprising a plurality of holes therethrough for drainage of any condensation accumulating on said shelf surface; and

a product retainer of generally the same dimensions as said shelf surface and mounted in vertically spaced relation above and generally parallel to said shelf surface and having openings therethrough such that a product may be received through such opening and rest upon said shelf surface.

5,330,262

COVED BACKSPLASH FOR A COUNTERTOP

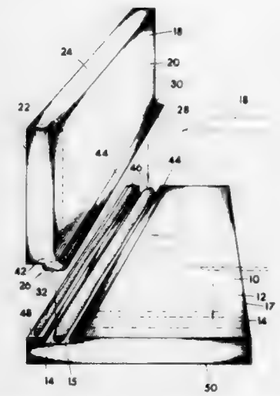
Chris R. Peters, Chico, Calif., assignor to Transfer Flow International, Inc., Chico, Calif.

Filed Dec. 21, 1992, Ser. No. 994,351

Int. Cl.[5] **A47B** *96/18*

U.S. Cl. 312—140.4 **3 Claims**

1. A backsplash (**18**) with coved lip (**28**), said backsplash (**18**) and coved lip (**28**) made of plastic solid surfacing material and structured for attachment into a dado in a top surface of a countertop made of plastic solid surfacing material to define a coved intersection between said backsplash (**18**) and the countertop in the creation of a non-laminated plastic solid surfacing material combination countertop with backsplash (**18**) wherein a joint at the coved intersection between said backsplash (**18**) and a horizontal workspace surface of the countertop is a tightly closed and virtually imperceptible joint, said backsplash (**18**) being an elongated generally rectangular structure having a narrow top edge (**24**) and an oppositely disposed narrow horizontally disposed bottom edge (**42**), said horizontally disposed bottom edge (**42**) of said backsplash (**18**) for resting on a surface of the countertop immediately adjacent the dado, said backsplash (**18**) further having a relatively wide vertically oriented back surface (**22**) extending between said top and bottom edges (**24, 42**), and a relatively wide vertically oriented front surface (**20**) extending between said top and bottom edges (**24, 42**) and oppositely disposed from said back surface (**22**) of said backsplash (**18**), and backsplash (**18**) further having said coved lip (**28**) extending outward beyond said front surface (**20**) of said backsplash (**18**) and terminating in a front terminal edge with said coved lip (**28**) extending generally fully along a front bottom lengthwise edge of said backsplash (**18**), a bottom surface (**34**) of said coved lip (**28**) having a generally horizontally disposed plane for placement said gluing within the dado in the countertop,



said lip having a vertically oriented side wall (**40**) defined between said horizontally disposed bottom edge (**42**) of said backsplash (**18**) and said bottom surface (**34**) of said coved lip (**28**) for abutting a vertically oriented side wall of the dado and thereby properly positioning said front terminal edge of said coved lip (**28**) relative to the dado, said lip having a convex surface extending from a point on said bottom surface to said front terminal edge,

said coved lip (**28**) including an upper radius (**30**) extending from said front terminal edge to said front surface (**20**) of said backsplash (**18**) for defining a coved interface between said backsplash (**18**) and the countertop,

said coved lip (**28**) being approximately equal in cross-sectional width between said vertically oriented side wall (**40**) on said backsplash (**18**) and said front terminal edge of said coved lip (**28**) as a cross-sectional width of the dado.

5,330,263

MULTIPLE PURPOSE MOBILE STORAGE CABINET

William T. Wilkinson, Box 772, Crownsville, Md. 21032

Filed Jan. 6, 1993, Ser. No. 1,509

Int. Cl.[5] **A47B** *88/00, 81/00;* **A47F** *5/02;* **D06F** *53/00*

U.S. Cl. 312—328 **5 Claims**

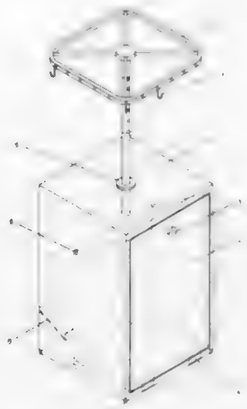
1. A device for the storage and organization of household articles comprising:

base unit consisting of a top having an opening in the center, a bottom parallel to said top, and four sides, said sides being perpendicular to said top and bottom, and each side being perpendicular to two sides and parallel with one side, and two opposite sides being solid and two adjacent sides having openings of varying sizes;

a storage bin having four sides each side being perpendicular to two sides and parallel with one side and a bottom which is perpendicular to the four sides, said storage bin is positioned in one of the openings in the side of the base unit;

a plurality of hinges located along the side of the storage bin

and arranged to permit the storage bin to tip-out from the opening in the side of the base unit;
a means to stopping the storage bin from tipping completely out of the base unit;
a fitting set into the opening of the top surface said fitting having an internal circular opening and a flange which rests on the top of the base unit;
a tube having top and bottom ends, length and an outside diameter slightly smaller than the inside circular opening in the fitting, said tube containing a plurality of holes



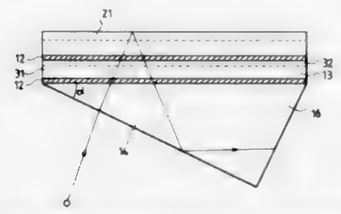
along the length of the tube said holes are perpendicular to the length of the tube;
a frame having a plurality of hooks is attached to the top end of the tube;
a pin which is inserted in the holes in the tube and adjusts the location of the frame along the tube;
a plurality of bars arranged in the opening in the side of the base unit opposite the opening containing the storage bin, said bars positioned at different elevations in relation to the bottom of the base unit allowing for the storage of foot wear articles.

5,330,264

METHOD AND APPARATUS FOR COPYING AND MANUFACTURING HOLOGRAM PLATE

Hirosi Ando, Aichi, and Masayuki Goto, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 1, 1992, Ser. No. 877,517
Claims priority, application Japan, May 1, 1991, 3-100099
Int. Cl.[5] G03H *1/20*
U.S. Cl. 359—12 **13 Claims**



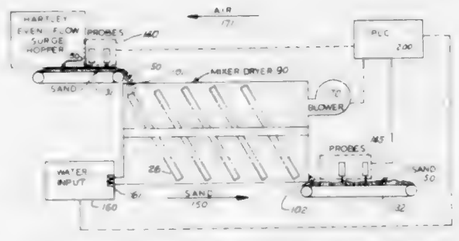
1. A hologram plate manufacturing apparatus comprising:
a hologram plate having a photosensitive surface and a light incident surface;
a copying optical element having a first surface in opposed relation to said photosensitive surface of said hologram plate and a second surface provided with a reflection film;
an optical member disposed adjacent to said light incident surface of said hologram plate, said optical member being adjusted such that when light incident through said hologram plate and reflected on said copying optical element is re-reflected on said optical member, the re-reflected light does not advance toward said hologram plate; and
a refraction index adjusting layer disposed between said hologram plate and said optical member, said adjusting layer having a refraction index substantially equal to refraction indexes of said hologram plate and said optical member so that light is not substantially refracted or reflected as it passes through said refraction index adjusting layer.

5,330,265

APPARATUS AND APPARATUS FOR MIXING AND COOLING MOLDING SAND

James P. Keating, Jr., and Leslie C. Knopp, both of Neenah, Wis., assignors to Hartley Controls Corporation, Neenah, Wis.

Filed Aug. 16, 1993, Ser. No. 107,402
Int. Cl.[5] B28C *7/04*; **B01F** *15/04, 15/06*
U.S. Cl. 366—7 **7 Claims**



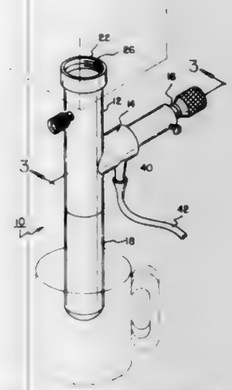
1. An improved apparatus for mixing and cooling molding sand using a molding sand mixer that mixes molding sand, the improvement comprising:
an adjustable water supply means for variably supplying water to the molding sand in the molding sand mixer;
a first set of output sensors having a temperature sensor and an electrical conductivity sensor;
a second set of output sensors having a temperature sensor and an electrical conductivity sensor;
a sand supply means for supplying molding sand to the molding sand mixer so that a substantially continuous flow of molding sand enters into and exits out of the molding sand mixer;
an adjustable blower means for variably blowing air into the molding sand mixer;
and a programmable logic control mechanism, programmed to independently adjust the water supply means and the blower means in response to input from the second set of output sensors, having a plurality of information inputs and command outputs;
at least one command output being connected to the adjustable water supply means; at least one other command output being connected to the adjustable blower means;
the first set of output sensors being in contact with a flow of molding sand coming from the sand supply means and entering into the molding sand mixer; the first set of output sensors measuring the temperature and moisture content of the molding sand entering into the molding sand mixer;
the second set of output sensors being in contact with a flow of molding sand exiting the molding sand mixer; the second set of output sensors measuring the temperature and moisture content of the molding sand exiting the molding sand mixer;
the first set of output sensors and the second set of output sensors being connected to the inputs of the programmable logic control mechanism;
the programmable logic control mechanism being programmed to maintain the moisture content of the exiting sand in the range of 1–3.5% and at a temperature of less than 120° F.

5,330,266

CAPPUCCINO ATTACHMENT FOR AN ESPRESSO MACHINE

Leslie H. Stubaus, 68 W. Main St., Bogota, N.J. 07603

Filed Oct. 18, 1993, Ser. No. 136,891
Int. Cl.[5] B01F *13/02*; **A47J** *31/40*
U.S. Cl. 366—101 **3 Claims**



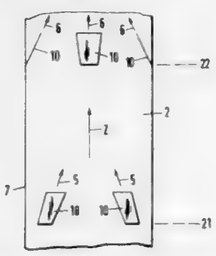
1. A cappuccino attachment for an espresso machine, the attachment comprising, in combination:
an upper frother body having an internally threaded upper opening, an externally threaded lower opening, and an aperture formed adjacent the upper opening;
a cylindrical extension having a first end integral with the frother body intermediate its upper and lower openings, and a second end opposite the first end, a first aperture formed within the second end, a second aperture formed through the cylindrical extension intermediate the first and second ends of the cylindrical extension;
an internal passage providing a fluid interconnection between the upper opening of the frother body, the lower opening of the upper frother body, the first aperture of the cylindrical extension, and the second aperture of the cylindrical extension, the passage being internally threaded adjacent the lower opening of the upper frother body;
an air intake adjustment mechanism having a cylindrical member with a hollow interior, the cylindrical member having a diameter less than the diameter of the cylindrical extension, the cylindrical member having a first end connected with the second end of the cylindrical extension, the air intake adjustment mechanism including a conical air adjustment screw operatively engaged with the hollow interior of the cylindrical member, the screw functioning to control the amount of air passing into the internal passage;
a hollow frothing tunnel having an externally threaded upper opening adapted to be connected with the internal threads of the passage adjacent the lower opening of the upper frother body, the hollow frothing tunnel having a plurality of apertures formed within its surface, the frothing tunnel functioning to aerate passing fluids;
a lower frother body having an internally threaded upper opening, and a lower aperture, the internally threaded upper opening of the lower frother body adapted to be connected to the externally threaded lower opening of the upper frother body;
a steam valve attachment assembly, the assembly including a locking screw positioned through the aperture of the upper frother body, and an O-ring seal positioned about the internal passage below the locking screw, the attachment assembly adapted to engage a steam valve assembly.

5,330,267

STATIONARY FLUID MIXER WITH FLUID GUIDE SURFACES

Willy Tauscher, Winterthur, Switzerland, assignor to Gebrueder Sulzer Aktiengesellschaft, Winterthur, Switzerland

Filed Dec. 2, 1992, Ser. No. 983,434
Claims priority, application Switzerland, Dec. 10, 1991, 03632/91-0
Int. Cl.[5] B01F *5/00*
U.S. Cl. 366—336 **8 Claims**



1. A stationary fluid mixer in a fluid flow conduit having a flow in the direction of an axis extending centrally of said conduit comprising:
a plurality of baffle plates secured to a wall of the conduit and obstructing fluid flow from said conduit wall to and toward the center of the conduit, each said baffle plate extending from the wall towards an interior of the conduit, each said baffle plate having a width at an end thereof in the interior of the conduit which is greater than a width of the baffle plate at the point of attachment to the conduit wall, the baffle plates forming an angle relative to a fluid medium flow direction through the conduit of 10° to 45°;
at least two of said baffle plates disposed at a first cross section of said conduit substantially normal to the direction of flow, said first cross section constituting a first spaced apart plane;
at least two other of said baffle plates disposed at a second cross section of said conduit substantially normal to the direction of flow, said second cross section constituting a second spaced apart plane from said first cross section;
said baffles of said first cross section being offset so as to not overlie said baffles of said second cross section when said spaced apart planes are registered one to another in the direction of flow whereby said fluid passing in the direction of flow encounters baffles in staggered relationship when flow through said conduit.

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5,330,268

APPARATUS FOR DETERMINING THE CONDITION OF A PRESSURE TRANSMITTING FLUID

Hans-Christof Klein, Hattersheim; Peter Lobberg, Friedrichsdorf; Hans-Joachim Krause, Gottingen/Elliehausen; Arno May, Gottingen; Dietmar Oberdorfer, Gottingen, and Ulrich Pluquett, Gottingen, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany

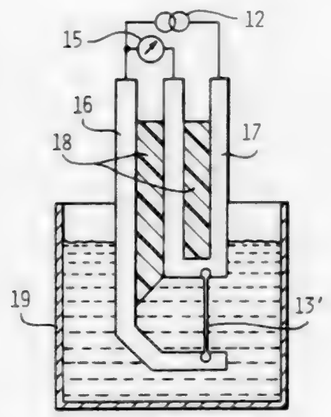
PCT No. PCT/EP90/02037, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO91/11707, PCT Pub. Date Aug. 8, 1991

PCT Filed Nov. 28, 1990, Ser. No. 915,682

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1990, 4002792

Int. Cl.[5] **G01N** *27/04, 25/56, 25/00*

U.S. Cl. 374—54 **4 Claims**



1. A method of measuring the water content level in a liquid, comprising the steps of:

determining the constant electrical current magnitude which when passed through a length of a geometrically configured and dimensioned electrically conductive wire which will heat the surrounding liquid in a thin layer over said wire to establish a boundary layer stream and steady state heat transfer by cellular convection from said wire into said liquid over a range of water content levels in said liquid;

stretching said length of conductive wire between a pair of electrodes, fixing either end of said length of wire so as to be mechanically stabilized and extending the longitudinal axis of said length of electrically conductive wire at an at least partially vertical inclination within said liquid;

passing said previously determined constant magnitude of electrical current through said wire extended within said liquid to cause the length of electrically conductive wire to be heated to a temperature varying with the water content level in said liquid;

determining the electrical resistance of said wire at said temperature; and

analyzing the results of said determination by comparison with previously determined electrical resistance values of said length of electrically conductive wire with said constant electrical current magnitude passed therethrough corresponding to varying water content levels of said liquid to ascertain the actual water content level of said liquid.

5,330,269

PACKAGE

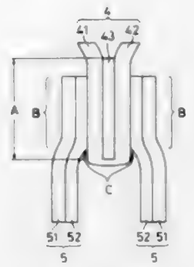
Mamoru Kamada, Yokohama; Masaei Ibi, Isesaki; Tomonobu Sekiguchi, Sakai; Masashi Yamamoto, Kokogawa; Noboru Andoh, Kashiwa, and Kenichi Itakura, Yokohama, all of Japan, assignors to Toyo Aluminum Kabushiki Kaisha, Osaka, Japan

Filed Nov. 6, 1992, Ser. No. 972,891

Claims priority, application Japan, Nov. 8, 1991, 3-293151; Feb. 27, 1992, 4-041023; Mar. 19, 1992, 4-063793; Jul. 14, 1992, 4-186817

Int. Cl.[5] **B65D** *33/18*

U.S. Cl. 383—210 **10 Claims**



1. A heat-sealed package comprising: a package body forming an enclosure and having a heat-sealing layer at an openable end of the package; and a laminate thermally fused to said package body at said openable end of the package, said laminate comprising outer layers each thermally fused to respective portions of the heat-sealing layer of said package body, and a middle layer interposed between said outer layers, said middle layer being bonded to said outer layers, said middle layer comprising a pattern of resin coating one of said outer layers, and adhesive covering said resin, said resin having a lower bonding strength with said one of said outer layers than a bonding strength of said adhesive with the layer contacted by the adhesive, such that said middle layer is easily peelable to create an opening at said openable end of the package.

5,330,270

STATICALLY PRESSURE BALANCED SLIDE UNIT

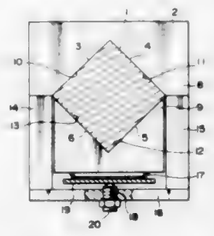
Yoshiki Ohmori, Ohmuta, Japan, assignor to Nippon Thompson Co., Ltd., Japan

Filed Feb. 24, 1993, Ser. No. 22,251

Claims priority, application Japan, Feb. 24, 1992, 4-072857

Int. Cl.[5] **F16C** *32/06*

U.S. Cl. 384—8 **9 Claims**



1. A static pressure slide unit comprising:

a guide rail, having a pair of oppositely inclined first and second top surfaces and a pair of oppositely inclined first and second bottom surfaces;

a two-part slider slidably mounted on said rail and including a slider main body having a pair of oppositely inclined third and fourth top surfaces in sliding contact with the first and second top surfaces of said guide rail, respectively, and a slider pressure member having a pair of oppositely inclined third and fourth bottom surfaces in sliding contact with the first and second bottom surfaces of said guide rail and mounted on said slider main body so as to be movable closer to or away from said guide rail;

means for constantly urging said slider pressure member against said guide rail; and

means for supplying a pressurized fluid to a sliding contact interface between said guide rail and said slider.

5,330,271
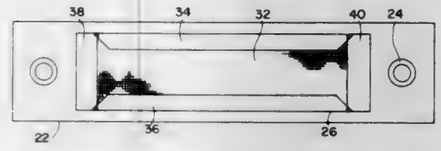
BEARING FOR HATCH COVER OR THE LIKE

James Moy, Norwell, Mass., assignor to Quamco, Inc., Rockland, Mass.

Filed Jan. 28, 1993, Ser. No. 10,611

Int. Cl.[5] **F16C** *29/02*

U.S. Cl. 384—13 **14 Claims**



1. A bearing assembly comprising:

base means for supporting a bearing member, said base means being adapted to be secured to a support element;

plate means for defining a bearing surface area;

flexible, self-lubricating bearing means disposed over said plate means, said bearing means being a woven member comprised of at least a first fiber, said woven member conforming generally to the form of said plate means and extending beyond the edges thereof; and

capture means sandwiched between and affixed to said base means and said plate means, the length and width of said capture means being greater than corresponding dimensions of said plate means, said capture means engaging edge regions of said woven bearing member which extend beyond said plate means to thereby retain said woven member on said plate means.

5,330,272

LINEAR DRIVE

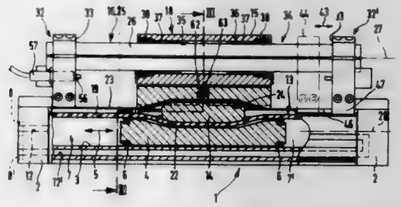
Kurt Stoll, Esslingen, Fed. Rep. of Germany, assignor to Festo KG, Esslingen, Fed. Rep. of Germany

Filed Feb. 18, 1993, Ser. No. 19,628

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, 4206751

Int. Cl.[5] **F16C** *29/02;* **F01B** *29/00*

U.S. Cl. 384—26 **54 Claims**



1. A linear drive comprising a housing which has a longitudinal slot, a drive part able to be moved longitudinally in the housing, a longitudinal guide arranged outside the housing and extending parallel to the direction of movement of the drive part, on which a guide part suitable for connection with a load, is arranged for movement along a guide path in the longitudinal direction, and a link means connecting the drive part with the guide part with the formation of a common longitudinally moving unit and extending through the longitudinal slot, wherein the longitudinal guide is designed in the form of a rod guide, which has at least one guide rod arranged at a radial distance from the housing and next thereto so that it is circumferentially accessible along its guide path, the guide part at least partly surrounding the guide rod,

wherein the guide rod is secured in position on the housing by means of two holders spaced apart in the direction of movement in relation to each other, between which holders the guide path is arranged,

wherein on at least one holder a stroke limiting abutment is provided projecting into the path of the guide part, and,

wherein for adjustable preset of guide strokes of different length at least one holder is arranged on the housing so as to be adjustable in the direction of motion and furthermore the guide rod is arranged on at least one of the holders so as to be adjustable in the direction of movement of the moving unit.

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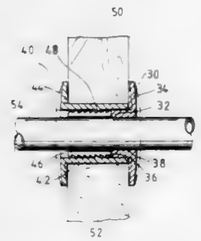
SUPPORT MEMBER FOR HOLDING UP ROTATING ROD IN SOCCER TABLE FRAME

Lore Tsai, No. 22, Lane 20, Zen Chung Street, E. District, Taichung, Taiwan

Filed Jun. 24, 1993, Ser. No. 80,720

Int. Cl.[5] **F16C** *33/04*

U.S. Cl. 384—215 **3 Claims**



1. A support member for holding up a rotating rod in a soccer table frame comprising:

a male retainer having a first columnar portion and a first disk portion attached to one end of said first columnar portion which has an arresting portion located on a circumference thereof and which has an axial hole;

a female retainer having a second columnar portion and a second disk portion attached to one end of said second columnar portion which is provided axially with a fitting hole having a stopping portion disposed on an inner wall surface thereof;

said male retainer and said female retainer being fastened respectively to two sides of a frame of a soccer table in such a manner that said first columnar portion of said male retainer is fitted into said fitting hole of said female retainer, and that said arresting portion of said male retainer engages said stopping portion of said female retainer; and

wherein said first disk portion or said second disk portion is slanted at a predetermined angle, with an outer edge of said first disk portion or said second disk portion inclining toward said first columnar portion or said second columnar portion, so as to cause said first disk portion and said second disk portion to urge flexibly said frame of said soccer table at the time when said male retainer engages said female retainer.

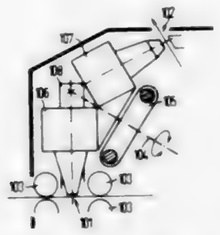
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PRINTING DEVICE HAVING AT LEAST TWO PRINTING STATIONS SEPARATED SPATIALLY FROM ONE ANOTHER

Rolf Schimmelpfennig, Munich, and Heinz Strohdiek, Paderborn, both of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Fed. Rep. of Germany

PCT No. PCT/DE90/00166, § 371 Date Mar. 13, 1992, § 102(e) Date Mar. 13, 1992, PCT Pub. No. WO90/10917, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 7, 1990, Ser. No. 752,484
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 8902848[U]; Jul. 31, 1989, 8909248[U]
Int. Cl.[5] B41J *3/54*
U.S. Cl. 400—82 12 Claims



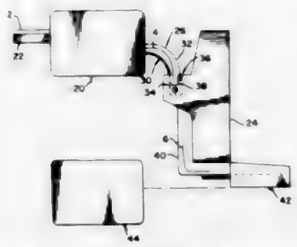
1. A printing device having at least two working areas which are separated spatially from one another and each have separate feed devices for an original assigned to the respective working area, comprising: a first functional unit including at least one printing head assigned to a first of said working areas, at least one further functional unit assigned to a second of the working areas, a common carrier to which said at least one printing head and said at least one further functional unit are attached, means including a carriage for displacing said first functional unit and said second functional unit in a direction parallel to a direction of print lines, and means including a common swivel drive for defining a swivel axis and for swiveling said first functional unit and said second functional unit between said work areas about said swivel axis, said swivel axis extending perpendicularly to the direction of the print lines.

5,330,275

APPARATUS AND METHOD FOR PRINTING A NEGOTIABLE INSTRUMENT IN AT LEAST TWO COLORS

William D. Hasewinkle, 1373 NW. 124 Ave., Pembroke Pines, Fla. 33026

Filed Sep. 23, 1991, Ser. No. 764,329
Int. Cl.[5] B41J *3/54*
U.S. Cl. 400—82 30 Claims



1. A system for producing a negotiable instrument printed in at least two colors, the system comprising:

a stand-alone non-impact printer operable to print in at least one color;

a stand-alone impact-type dot-matrix printer operable to print in at least one additional color, the stand-alone printers positioned with respect to each other so that paper output by one of the stand-alone printers is received by the other of the stand-alone printers;

means on the other of the stand-alone printers for detecting the presence of the paper in an input position, and means responsive to said detection for activating the other of the stand-alone printers to print on the paper; and

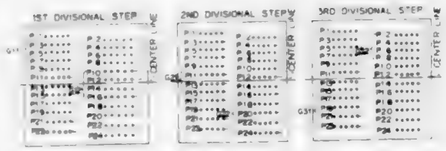
a computer connected to each of the stand-alone printers and programmed to transmit information to be printed to each of the stand-alone printers to produce the negotiable instrument printed in at least two colors.

5,330,276

DIVISIONAL STEP DOT PRINTING DEVICE

Toshifumi Tanida, Oume, Japan, assignor to Fujitsu Limited, Kawaskai, Japan

Continuation of Ser. No. 833,617, Feb. 13, 1992, abandoned, which is a continuation of Ser. No. 489,590, Mar. 7, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 89,614
Claims priority, application Japan, Mar. 10, 1989, 1-59442
Int. Cl.[5] B41J *2/30*
U.S. Cl. 400—124 7 Claims



1. A divisional step dot printing device wherein divisional step dot printing comprises at least two types of divisional steps, said device comprising:

printing head means having a plurality of head pins divided into at least four groups, with each group having an equal number of head pins, said printing head means having a center line with an equal number of said head pins above and below said center line;

print medium means on which printing by said printing head means is carried out, said print medium means being placed on a platen;

carriage means carrying said printing head means, said carriage means transporting said printing head means along an axis which is adjacent an axis of the platen, wherein at least two of said groups of head pins are separated along a vertical line which is perpendicular to said center line;

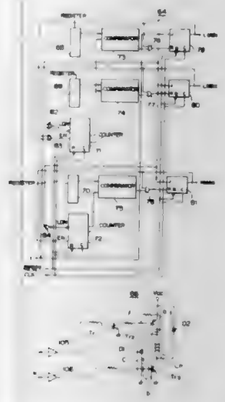
head pin selection means for selecting predetermined ones of said head pins in each of said at least four groups to contact and thereby print on said print medium means during each divisional step, wherein two groups are selected for each divisional step, and in at least one first type of divisional step one of said selected groups is positioned such that a number of said head pins from said one of said selected groups are above said center line, and an equal number of head pins from said group are below said center line, and in at least one second type of divisional step, two of said groups are selected and positioned so that they are entirely on opposite sides of said center line, and equidistant therefrom, and wherein for each type of divisional step, said two of said selected groups are disposed on opposite sides of said vertical line perpendicular to said center line.

5,330,277

DRIVE SYSTEM FOR WIRE DOT HEAD

Tadashi Kasai; Takao Uchida; Jiro Tanuma; Naoji Akutsu, and Chihiro Komori, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,260
Claims priority, application Japan, Oct. 25, 1991, 3-279619
Int. Cl.[5] B41J *2/30*
U.S. Cl. 400—157.3 5 Claims



1. A drive system for a wire dot head having a plurality of print wires, comprising:

armatures supporting the print wires thereon, respectively;

cores arranged opposite to the armatures, respectively;

permanent magnets for attracting the respective armatures to the associated cores;

means for forming magnetic paths through the armatures, cores and permanent magnets, respectively, so that a magnetic flux produced from the respective permanent magnets passes along the corresponding magnetic paths;

coils for producing a magnetic flux between the respective armatures and the corresponding cores to cancel the magnetic flux produced by the corresponding permanent magnets, whereby the armatures are released from the associated cores;

displacement detection means for outputting a movement starting timing signal indicating the initiation of a movement of each print wire and an impact timing signal indicating an impact of the print wire by detecting a displacement of the print wire;

combinations of first and second switching elements, each connected in series between terminals for supplying electric power from a power supply with each coil interposed between the switching elements;

first circuits for causing an electric current to continuously flow to the respective coils via the corresponding second switching elements when the associated first switching elements have changed from ON state to OFF state;

second circuits for discharging electrical energy stored in the respective coils when the corresponding second switching elements have changed from ON state to OFF state;

means for controlling a drive current for each of the coils on the basis of a print timing signal indicating the timing of a print by the corresponding print wire, the movement initiation timing signal and the impact timing signal, said control means using three timing signals for driving the coil so that:

by the first timing signal produced from the print timing signal, the first and second switching elements are both turned on to supply the electric power to the coil from the power supply,

by the second timing signal produced from the movement initiation timing signal, the first switching element is turned off to cut off the supply of the electric power from the power supply and to cause the electric current to continuously flow to the coil, and

by the third timing signal produced from the impact timing signal, the second switching element is turned off to discharge electrical energy stored in the coil; and

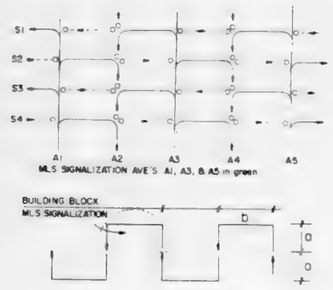
means for regulating the minimum time and the maximum time from the output of the first timing signal until the output of the second timing signal and the maximum time from the output of the first timing signal until the output of the third timing signal.

5,330,278

COORDINATED TRAFFIC SIGNAL SYSTEM FOR ROADS

Subhash Raswant, 84-49 168th St., Jamaica, N.Y. 11432

Filed Aug. 19, 1992, Ser. No. 932,350
Int. Cl.[5] E01C *1/00*
U.S. Cl. 404—1 27 Claims



1. A method of controlling traffic signals, on a road traffic network of a type having a plurality of grid-like intersections between a first set of road portions running substantially parallel to one another and a second set of road portions also running substantially parallel to one another, yet at about right angles to said first set of road portions, comprising the steps of:

(1) providing at each of said intersections, a vehicle traffic signal having two major phases, "go" and "stop" of substantially equal time duration; and

(2) determining said time duration, designated P, according to the equation $P=2Ta+tb$ of each major phase of said vehicle traffic signal by calculating the expected time, ta, for a vehicle to travel a distance designated "a", starting, on a first road of said first set of road portion, from a first intersection with a first road portion of said second set of road portions to an adjacent intersection with a second road portion of said second set of road portions, and wherein the time, designated tb is the expected time of travel a distance designated "b", the distance between a road portion of said second set of road portions, from a first intersections with a road portion of a first set of road portions to an adjacent intersection.

5,330,279

OVERLAY BINDER INCLUDING EASY-RELEASE LABEL LEADER

Paul E. Ruble, 249 Devia Dr., Newbury Park, Calif. 91320

Filed Jan. 7, 1993, Ser. No. 1,180
Int. Cl.[5] B42F *13/40;* B42D *3/00, 3/18*
U.S. Cl. 402—3 15 Claims

1. A flexible label leader, comprising:

a first end portion having first and second opposite surfaces;

a second end portion;

a loop portion which is attached to said second end portion,

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extends from said first end portion and is folded back over said first surface thereof; and

adhesive means provided on said second surface of said first end portion for releasably adhering a label thereto.

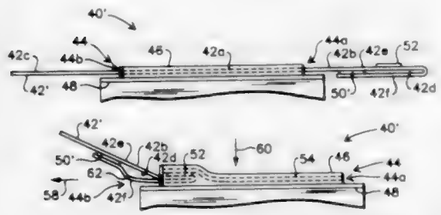
5. A bound work comprising:

a cover;

a transparent overlay which is sealed along its longitudinal edges to an outer surface of the cover to define a slot between the cover and the overlay which has first and second transverse ends which are at least partially open; and

a flexible label leader, including:

a central portion which extends through the slot;



a first end portion which protrudes from said first transverse end of the slot and has first and second opposite surfaces;

a second end portion which protrudes from said second transverse end of the slot;

a loop portion which extends from said first end portion and is folded back over said first surface thereof;

adhesive means provided on said second surface for releasably adhering an end portion of a label thereto; and

means for retaining said loop portion adjacent said first surface of said first end portion while the leader is pulled through said slot, and for releasing said loop portion so that said loop portion can be used to peel said leader from a label adhered thereto when the label has been pulled into place in said overlay.

5,330,280

FILING APPARATUS OF BOTH-SIDE OPENING/CLOSING TYPE

Shinichi Kaneda, Nara, and Takio Kiyomi, Kyoto, both of Japan, assignors to Kokuyo Kabushiki Kaisha, Japan

PCT No. PCT/JP91/01683, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992

PCT Filed Dec. 3, 1991, Ser. No. 934,634

Int. Cl.[5] B42F *3/02*

U.S. Cl. 402—49 **31 Claims**

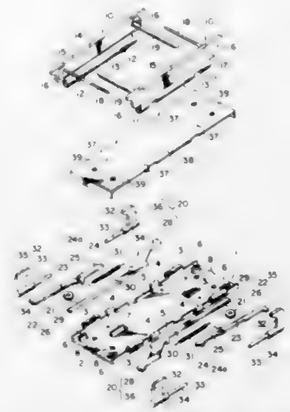
1. A filing apparatus of a both-side opening and closing type comprising:

an attaching member having coupling portions at right and left side edges;

a pair of right and left opening/closing members in which filing rods which can be mutually pierced are projected on inner surfaces and which have coupling portions which are coupled to said coupling portions;

a pair of right and left coupling mechanisms which include coupling rods and are movable between an inoperative position where said coupling rods are pierced to the coupling portions of said attaching member and the coupling portions of said opening/closing members corresponding to said coupling portions by elastic pressing forces, thereby rotatably coupling the coupling portions, and an operative position where when the coupling mechanisms are made operative against the elastic pressing forces, the coupling rods are inserted into respective ones of the coupling portions to thereby release the coupling state between the coupling portions;

a holding mechanism which is constructed in a manner such that the operative positions of the coupling mechanisms are held and, when the opening/closing members reach the coupling position from a position away from the attaching member, said position is detected and the holding state at said operative positions is released; and



operating members which are respectively arranged at front, back, right, and left positions of said attaching member and operate the coupling mechanisms from the inoperative positions to the operative positions.

5,330,281

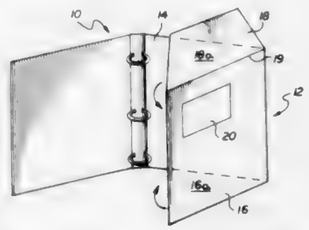
DEVICE FOR MOUNTING PHOTOGRAPHS AND THE LIKE

Robert Kalan, 1040 148th Dr. SE., Bellevue, Wash. 98007

Filed Jul. 16, 1993, Ser. No. 93,064

Int. Cl.[5] B42F *13/00*

U.S. Cl. 40—73 **11 Claims**



1. A device for framing a item of memorabilia comprising.

a first panel having a front surface, a rear surface and an aperture therein;

a second panel foldably connected to the first panel along an edge thereof and foldable against the rear surface of the first panel so as to overlie the aperture, said second panel having a first surface and a second surface, said second surface being partially exposed through said aperture when the second panel is folded against the rear surface of the first panel;

said front surface of the first panel having first indicia printed thereon and said second surface of the second panel having corresponding second indicia printed thereon so as to be visible through the aperture when the second panel is folded against the rear surface of the first panel, said first and second indicia being substantially in registration along the edges of the aperture when the second panel is folded against the rear surface of the first panel; and

means for securing the item of memorabilia to be viewed through the aperture.

5,330,282

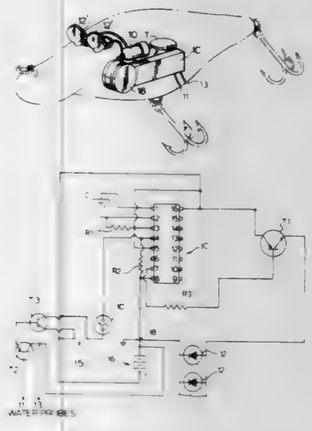
FISHING LURE

Nicholas A. Rodgers, 15 Blair Lane, R.R. #1, Perkinsfield, Ontario, Canada L0L 2V0

Filed Jun. 7, 1993, Ser. No. 72,390

Int. Cl.[5] A01K *85/01*

U.S. Cl. 43—17.6 **4 Claims**



1. Fishing lure comprising:

a lure body,

at least one light source mounted on said body and designed, in conjunction with said body, to be visible, exteriorly of said body, when illuminated,

a power source for energizing said light source, breaking a connection between said power source and said at least one light source,

said circuit including a switch responsive to motion of said lure to alternate between OFF and ON states,

said circuit being responsive to a transition of said switch from OFF to ON state to establish said connection between said power source and said light source,

wherein said circuit includes timing means adapted when said body is in water to time a predetermined period after said transition and, responsive to the expiration of said period for breaking said connection.

5,330,283

BICYCLE SEAT CONNECTOR MEMBER

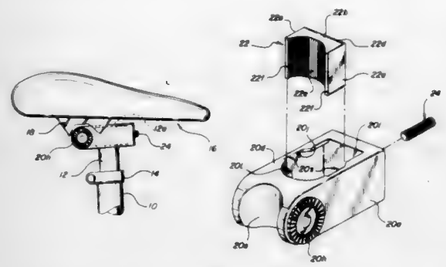
Thomas B. Ballard, 25550 Mulberry Dr., Southfield, Mich. 48034

Filed Mar. 9, 1993, Ser. No. 28,179

Int. Cl.[5] B62J *1/00*

U.S. Cl. 403—97 **10 Claims**

1. A bicycle seat connector member adapted to clamp on a bicycle seat post and including circumferentially arrayed serrations on opposite side faces of the member adapted to coact with circumferentially arrayed serrations on a frame of a bicycle seat to adjustably mount the bicycle seat on the connector member with a fastener passing through aligned apertures in the centers of the circumferential arrays of serrations on the member and on the seat frame to allow the serrations to be disengaged upon loosening of the fastener to adjust the angular position of the seat relative to the post characterized in that:



the connector member includes first and second clamping jaws which are movable slidably together to clamp the connector member to the seat post.

5,330,284

APPARATUS FOR MOUNTING AND DISMOUNTING BEARINGS

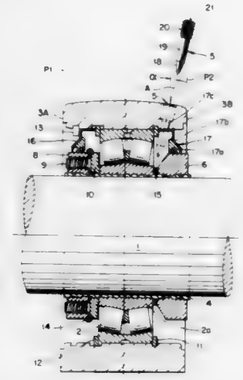
Stig Persson, Katrineholm, Sweden, assignor to SKF Mekan AB, Hatrineholm, Sweden

Filed Mar. 25, 1993, Ser. No. 36,832

Claims priority, application Sweden, Apr. 10, 1992, 9201150-01

Int. Cl.[5] F16B *2/00*; **F16D** *1/00*

U.S. Cl. 403—370 **7 Claims**



1. A device for mounting and/or dismounting a bearing on a shaft having a longitudinal axis, comprising a tapered clamping sleeve provided between the bearing and the shaft, the bearing having inner and outer races; displacing means for effecting relative axial displacement between the bearing and clamping sleeve in at least one axial direction, said displacing means including at least one wedge-pointed screw arranged, when being screwed in towards the shaft, to produce a relative displacement in the axial direction between the clamping sleeve and the bearing by wedge action; the bearing being situated in a bearing housing surrounding the outer race, the bearing housing including first and second axially spaced end surfaces facing in opposite axial directions, the first and second end surfaces situated radially outwardly of the bearing and defining first and second end planes oriented substantially perpendicular to the shaft axis; the displacing means further including a flange axially affixed to the clamping sleeve and projecting radially therefrom; the at least one wedge-pointed

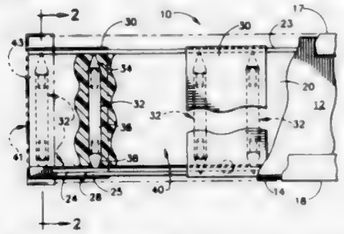
screw being arranged to be screwed about an axis of rotation extending non-parallel to said shaft; said at least one wedge-pointed screw including radial inner and outer ends, said radial inner end being wedge-pointed and arranged to exert said axial wedge force between the flange and the inner race of the bearing at a location disposed axially between said first and second end planes; said axis of rotation coinciding with an axis of a screw access hole formed in said outer housing at a location disposed axially between said first and second end planes.

5,330,285

APPARATUS FOR DEFLATING TIRES OF MOVING VEHICLES

Kenneth J. Greves, and Daniel R. Olive, both of Lawrenceburg, Ind., assignors to Stop-Stick, Inc., Lawrenceburg, Ind.

Filed Jan. 28, 1993, Ser. No. 10,662
Int. Cl.[5] E01F *13/00*
U.S. Cl. 404—6 **15 Claims**



1. A tire deflating apparatus for use with a road surface, comprising:

(a) a plurality of spikes which are oriented so as to penetrate a tire of a vehicle as the vehicle travels over said tire deflating apparatus;

(b) a support structure which maintains said plurality of spikes in said orientation; and

(c) an exterior collapsible cover at least partially surrounding said plurality of spikes, said collapsible cover protecting the user while handling said tire deflating apparatus, said collapsible cover having a longitudinal dimension which is much greater than its transverse dimension, and said orientation of said plurality of spikes tending to puncture a tire which rolls over the tire deflating apparatus in said transverse direction, said collapsible cover engaging the road surface.

5,330,286

Patent Not Issued For This Number

5,330,287

GRADER

Walter P. Constantin, 200 S. Eastern St., Rayne, La. 70578

Filed May 22, 1992, Ser. No. 887,081
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.
Int. Cl.[5] E01C *23/12*
U.S. Cl. 404—90 **8 Claims**

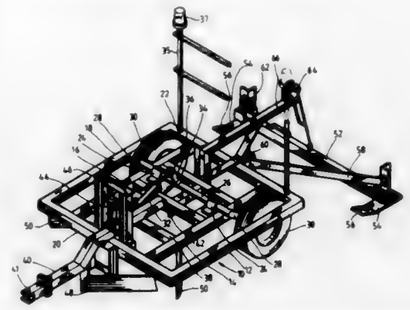
1. A road maintainer comprising

a main frame having a front and a rear,

a horizontally disposed shearing blade carried below said main frame to shear material from the surface of the road,

a pair of wheels supporting the main frame,

means on said main frame for moving the shearing blade vertically with respect to the road surface so as to adjust the cutting depth of said shearing blade, and



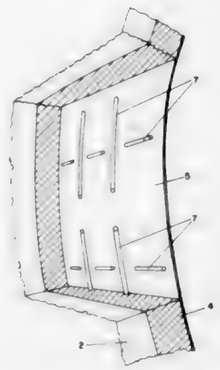
a depth-of-cut gauge mounted on said main frame and operably connected to said moving means to indicate the cutting depth of said shearing blade.

5,330,288

UNDERGROUND STORAGE TANK

Franco Ferrari, La Spezia, Italy, assignor to Inq. Nino Ferrari USA Inc., Montclair, N.J.

Filed Apr. 23, 1993, Ser. No. 52,177
Claims priority, application Italy, Apr. 28, 1992, GE92A000051
Int. Cl.[5] B65G *5/00*
U.S. Cl. 405—55 **6 Claims**



1. An underground liquid storage tank, comprising:

(a) an annular metal liner extending along a generally longitudinal axis, said liner including a plurality of curved plates having interior surfaces bounding a liquid storage chamber, and exterior surfaces located opposite the interior surfaces;

(b) an annular concrete facing concentric with said axis, surrounding the liner, and bounding an annular space with the exterior surfaces of the plates;

(c) a plurality of structural elements fixedly mounted on the exterior surfaces of the plates and located within said annular space; and

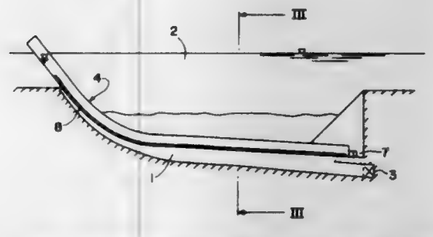
(d) a viscous, settable, elastic filler filling said annular space and encapsulating the elements therein to form a strengthened elastic bond between the liner and the filler.

5,330,289

SERPENT SEDIMENT-SLUICING SYSTEM

Haakon Stole, Fagerliveien 20 D, 7018 Trondheim, Norway

PCT No. PCT/NO90/00075, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO91/16981, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 27, 1990, Ser. No. 938,246
Int. Cl.[5] E02B *3/02*
U.S. Cl. 405—74 **9 Claims**



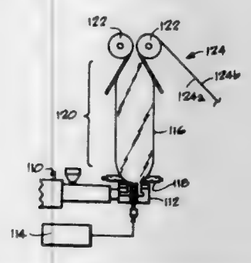
1. A method for removing sedimented particles from a settlement basis comprising a bottom portion having a longitudinally extending sluice therein having longitudinal side edges, comprising providing a flexible, longitudinal tube means in said basin or sluice, changing the buoyancy of said tube means by introduction of a fluid to or removal of a fluid from said tube means, thereby causing said tube means to seal at least a portion of said side edges, and changing the buoyancy of said tube means by introduction of a fluid to or removal of a fluid from said tube means, thereby causing the tube means to unseal at least a portion of said side edges.

5,330,290

LEVEE GATE AND PROCESS FOR THE PRODUCTION THEREOF

John F. Hogan, 720 Danbridge Way, Roswell, Ga. 30076

Division of Ser. No. 848,313, Mar. 9, 1992, Pat. No. 5,217,557. This application Feb. 19, 1993, Ser. No. 20,199
Int. Cl.[5] E02B *7/06;* **B29C** *47/00*
U.S. Cl. 405—91 **14 Claims**



1. A product produced by the process comprising:

a. extruding a cylindrical tube of thermoplastic material,

b. inflating said cylindrical tube as it is extruded to provide an inflated length of said cylindrical tube,

c. flattening the inflated length of tube without fusing opposed walls of said tube to each other to form two opposed rectangular sheets,

d. continuously fusing a portion of the opposed walls of said two rectangular sheets together, said portion which is fused forming a seam, said seam forming a sleeve along one edge of said two rectangular sheets, and

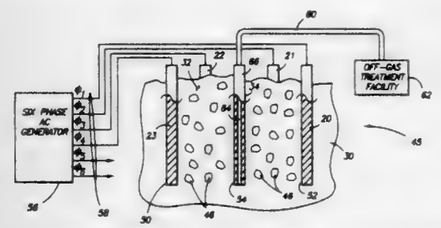
e. continuously perforating a plurality of holes in one of said rectangular sheets.

5,330,291

HEATING OF SOLID EARTHEN MATERIAL, MEASURING MOISTURE AND RESISTIVITY

William O. Heath, Richland; Richard L. Richardson, West Richland, and Steven C. Goheen, Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 792,213, Nov. 13, 1991. This application May 13, 1992, Ser. No. 882,996
Int. Cl.[5] E02D *3/11;* **B09B** *3/00*
U.S. Cl. 405—128 **11 Claims**



1. A method for treating solid earthen material having volatile, semi-volatile, and non-volatile contaminants in the presence of microbial organisms, the method comprising the steps of:

(a) inserting a plurality of electrodes into solid earthen material, the electrodes being arranged in a selected geometric perimeter defining a region of material to be treated;

(b) applying at least six phases of voltages to corresponding ones of the electrodes;

(c) adjusting the voltages within a first selected range of voltages to heat the material substantially uniformly throughout the region to a temperature sufficient to promote activity of microbial organisms feeding on voltage, semi-volatile, and non-volatile contaminants within the region of material; and

(d) controlling the voltages for maintaining the temperature of the material for a time sufficient for the microbial organisms to substantially biodegrade the volatile, semi-volatile, and non-volatile contaminants within the region of material.

5,330,292

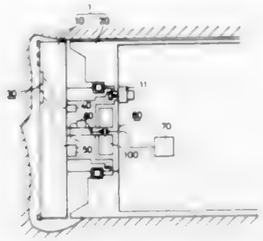
SYSTEM AND METHOD FOR TRANSMITTING AND CALCULATING DATA IN SHIELD MACHINE

Shoichi Sakanishi; Tetsuya Shinbo, both of Hiratsuka; Tomoyuki Abe, Fujisawa; Yasuhiko Ichimura, Hiratsuka; Yasuo Kanemitsu, Hiratsuka; Kanji Shibatani, Hiratsuka; Masahiko Yamamoto, Hiratsuka, and Hiroaki Yamaguchi, Isehara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP91/00316, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO91/14077, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 8, 1991, Ser. No. 927,672
Claims priority, application Japan, Mar. 9, 1990, 2-58388
Int. Cl.[5] E21D *9/06*
U.S. Cl. 405—141 **25 Claims**

1. A shield machine apparatus for excavating a void in a natural ground, said shield machine apparatus comprising a non-rotary shield body, a rotary cutter head rotatably mounted on the front end of said non-rotary shield body so as to excavate said void in said natural ground, transmitting/receiving antenna means positioned on one of said rotary cutter head and said non-rotary shield body for transmitting electromagnetic waves toward a portion of the natural ground defining said void and for detecting reflected waves resulting from the reflection of the thus transmitted electromagnetic waves by said portion of the natural ground and producing a reflected signal representative of the detected reflected waves, detection means for detecting either the peak value or zero cross position

function of the portion of said reflected signal which is larger than a predetermined standard value; time counting means for counting the time from (a) the transmission of a trigger signal



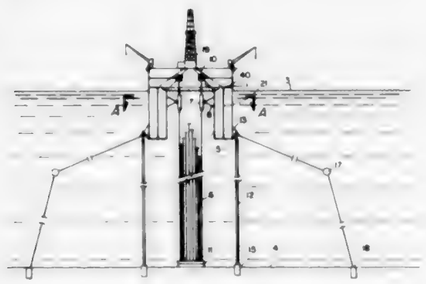
to said transmitting/receiving antenna means to cause the transmission of said electromagnetic waves, until (b) the detection of said function; and display means for displaying a function of the output of said time counting means.

5,330,293

FLOATING PRODUCTION AND STORAGE FACILITY

Charles N. White, and John A. Mercier, both of Houston, Tex., assignors to Conoco Inc., Ponca City, Okla.

Filed Feb. 26, 1993, Ser. No. 23,507
Int. Cl.[5] B63B *35/44*
U.S. Cl. 405—211 **10 Claims**



1. A vessel floating on a body of water having a surface and a bottom for recovering hydrocarbons from a reservoir beneath the bottom:

(a) the vessel having a regular or irregular polygonal horizontal cross-section and having a centralized opening therethrough;

(b) the vessel having wave transparent attributes;

(c) the vessel having horizontal restraint means sited interior of the centralized opening adapted to restrain the risers within a limited horizontal zone with reference to the vessel while allowing vertical freedom of motion with reference to the vessel;

(d) the vessel having the risers sited in the horizontal restraint means and connected to the bottom of the body of water, the risers having sufficient buoyancy means below but near the surface of the water to tension the risers into vertical position; and

(e) the vessel having one or more tendons vertically connecting it to the bottom of the body of water under sufficient tension that no tendon will go slack in a design storm.

5,330,294

RISER FOR A GREAT WATER DEPTH

Jean Guesnon, Saint Germain En Laye, France, assignor to Institut Francais Du Petrole, Rueil Malmaison Cedex, France

Continuation of Ser. No. 598,928, Oct. 17, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 7,764
Claims priority, application France, Oct. 17, 1989, 89/13549
Int. Cl.[5] E21B *7/12*
U.S. Cl. 405—224.2 **12 Claims**



1. A marine riser for installation in a body of water having a great depth, the riser comprising: a central tube means for transferring a fluid including mud from a bottom of the body of water to an upper level thereof;

peripheral lines connected to said riser;

an internal lining disposed in said central tube for reducing an amount of mud circulating in the riser; and

a plurality of floats surrounding the central tube and being respectively disposed solely along an axial length of an upper section of the central tube,

wherein said internal lining is disposed coaxially with respect to said central tube and has a diameter less than a diameter of said central tube so as to define an annular space between an outer surface of said internal lining and an inner surface of said central tube.

5,330,295

INDEXABLE INSERT FOR ROUGHING AND FINISHING

James A. Pawlik, Sterling Heights, Mich., assignor to Valenite Inc., Troy, Mich.

Continuation of Ser. No. 260,554, Oct. 17, 1988, abandoned, which is a continuation of Ser. No. 171,332, Mar. 21, 1988, Pat. No. 5,114,282. This application Feb. 23, 1990, Ser. No. 485,807
Int. Cl.[5] B26D *1/29*
U.S. Cl. 407—42 **4 Claims**

1. A cutting tool comprising,

a tool body rotatable about a central axis,

said body having recessed pockets disposed about said axis for receipt of indexable cutting inserts,

said pockets having a seating face with adjoining abutment walls,

said seating face having a threaded aperture,

an insert positioned in at least some of said pockets,

said inserts comprising a wafer of cemented carbide with an aperture which traverses top and bottom faces and is designed for receipt of a screw which mates with said threaded aperture to forceably secure said insert into abutting relationship with said walls,

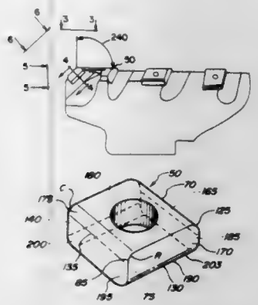
said inserts further comprising parallel top and bottom faces, polygonal in form, of acute angles at opposite corners,

said top and bottom faces separated by at least four adjoining peripheral side sections,

said four side sections comprising at least a first and second pair of oppositely oriented sides where each side forms both an acute included angle and an obtuse included angle with adjoining sides, each of said sides further comprising first and second surfaces which intersect with each other,

said first pair of said oppositely oriented first surfaces having a radiused form extending from said top face to said second surfaces,

said second pair of said oppositely oriented first surfaces intersecting said top face to form right angles,



said insert having at least two cutting edges formed by the intersections of one said first surface from said first pair and one said first surface from said second pair at two of said four corner sections of said top and bottom faces,

said cutting edge having a negative radial rake of between about 0° to 30° and a positive axial rake of between about 10° to about 20°,

said cutting edge having a negative true rake angle of between about 5° to about 10°,

said cutting edge having a lead angle of about between 0° to about 90°, and

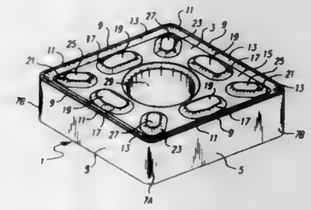
said cutting edge having a positive angle of inclination between about 0° to about 30° GTE 6222B-0243B.

5,330,296

CERAMIC CUTTING TOOL WITH CHIP CONTROL

Craig W. Beeghly, Raleigh, N.C.; Deepak P. Ahuja; Pankaj K. Mehrotra, both of Greensburg, Pa., and Kenneth L. Niebauer, Raleigh, N.C., assignors to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 629,760, Dec. 18, 1990, Pat. No. 5,141,367. This application Jun. 5, 1992, Ser. No. 894,694
Int. Cl.[5] B23B *27/16*
U.S. Cl. 407—114 **17 Claims**



1. A ceramic cutting insert comprising:

a rake face having an integral as molded means for providing chip control;

a flank face;

a cutting edge at the junction of said rake face and said flank face;

wherein the included angle respectively formed by said rake face and said flank surface at the cutting edge is less than 90 degrees; and

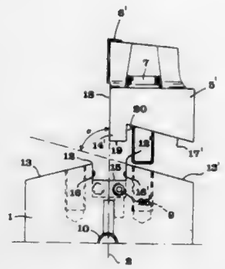
wherein said ceramic has a transverse rupture strength of at least 80 ksi and a fracture toughness of at least 5 MPam$^{\frac{1}{2}}$.

5,330,297

BORING TOOL

Sven Engstrand, Sandviken, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Feb. 24, 1993, Ser. No. 21,560
Claims priority, application Sweden, Feb. 24, 1992, 9200543
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—153 **7 Claims**



1. A boring tool comprising a generally rod-shaped body having a geometric axis, said body being adapted at a free end thereof, to receive two holders which project in radially opposite directions and which are each adjustable in different radial positions by displacement along a guide structure including a groove provided in a free end of said body and extending transversely of said tool axis, said groove being defined by two opposed boundary surfaces and having a sufficient width for accommodating an elongate guide lug on each of said two holders, each of said holders being lockable in a desired position of radial adjustment by at least one locking screw which traverses a through hole in the holder and can be tightened in an associated threaded hole in said body, the groove merging, at opposite, substantially parallel edges thereof, into first support surfaces, which are each inclined relative to the tool axis to define an acute-angled wedge-shaped portion of material between each of said first support surfaces and a respective one of the boundary surfaces defining the groove, each of the support surfaces being adapted to cooperate with a respective second support surface on each of said holders, said second support surfaces being similarly inclined relative to boundary surfaces of said guide lugs, at substantially the same acute angle as the angle between cooperating surfaces of said wedge-shaped portions of said body.

5,330,298

MILLING MACHINE ACCESSORY PROVIDING AUTOMATIC AND MANUAL QUILL CONTROL

Gary A. Welch, Chanhassen, and Timothy L. Rashleger, Tonka Bay, both of Minn., assignors to IIC, Inc., Chanhassen, Minn.

Filed Mar. 31, 1993, Ser. No. 40,674
Int. Cl.[5] B23C *1/16;* **B23B** *39/00*
U.S. Cl. 409—80 **19 Claims**

1. A milling machine for milling a workpiece, comprising:

a lower frame and column portion;

a knee, coupled to the lower frame and column portion;

a saddle, coupled to the knee portion;

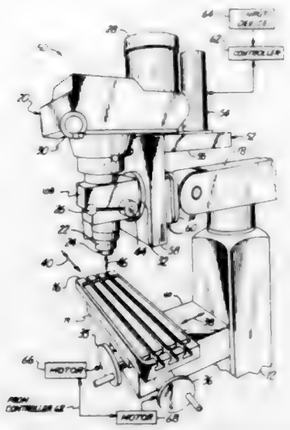
a table, coupled to the saddle;

a ram, coupled to the column portion;

a head coupled to the ram, the head having a quill and a rotatable spindle and means to rotate the spindle, the table providing movement of the workpiece relative to the spindle along a first axis, and the saddle providing move-

ment of the workpiece relative to the spindle along a second axis;

manual control means, coupled to the head, for providing manual control of the quill and spindle along a third axis; and



automatic control means, coupled to the head and ram, for providing automatic control of the head, quill, and spindle along the third axis, the automatic control means and the manual control means being independent of one another so that the spindle can be manually and automatically controlled to move along the third axis.

5,330,299

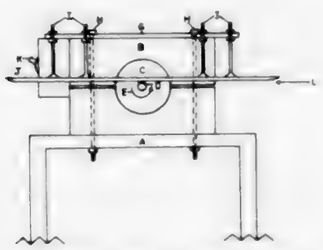
DUAL CONTINUOUS FEED LAP JOINT MILLING TABLE FOR PAPER

Jon A. Gates, 15 Whitewood, Aliso Viejo, Calif. 92656

Filed Dec. 7, 1992, Ser. No. 987,354

Int. Cl.[5] B23C *3/12*

U.S. Cl. 409—138 **1 Claim**



1. A dual continuous feed lap joint milling machine for milling lap joints on upper and lower opposite lateral edges of a planar workpiece comprising:

support having a surface for supporting said workpiece and first and second recesses in said surface at opposed lateral positions;

first and second milling devices position adjacent respective ones of said recesses wherein

said first and second milling devices each comprise: a variable speed high revolution motor driving a shaft and having a chuck lock mounting, a motor mount having means for mounting a said motor in a horizontal position and a first plate extending from said motor mount;

a rectangular pitch plate suspended slightly spaced from the milling blade by four machine threaded pins welded by the head to said pitch plate, positioned in such a manner so that each joint extends slightly from inside each corner of the rectangular pitch plate, said pins extending in and through the motor mount first plate, which extends adjacent the pitch plate, said pins being adjustably attached to said first plate wherein the space between the pitch plate and the milling blade may be adjusted, and said milling blades and said pitch plates being positioned to mill the lower lateral edge and the upper lateral edge of opposite sides of said planar workpiece.

5,330,300

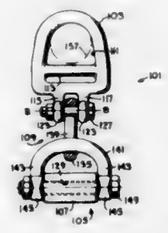
ARTICULATED PIVOTING TIE-DOWN DEVICE

Leon Jones; Gerald F. Hoffa; David E. Wilson; Les Baych, and David Snyder, all of Cedar Rapids, Iowa, assignors to Columbus McKinnon Corporation, Cedar Rapids, Iowa

Filed Nov. 16, 1992, Ser. No. 976,490

Int. Cl.[5] B60P *7/08*

U.S. Cl. 410—106 **2 Claims**



1. A tie-down device for securing cargo to a vehicle with cable and strap tie-down, said device comprising:

(a) a retainer portion adapted to be secured to the vehicle; said retainer portion having a generally horizontally oriented retainer portion throughbore;

(b) a clevis having a pair of clevis legs end portions, each said clevis leg end portion having a clevis leg throughbore coaxial with the other; said clevis being generally semi-elliptically shaped with the major axis thereof generally parallel to said axis of said clevis leg throughbores;

(c) a first pin inserted through said clevis leg throughbores and said retainer portion throughbore such that said clevis and said retainer portion are pivotally connected to each other about a common axis;

(d) a connector having a first opening adapted to receive the cables of the cable tie-downs, and a second opening having a linear side adapted to receive the straps of the strap tie-downs; said connector having a pair of connector legs terminating in generally annularly shaped connector leg end portions, each said connector leg end portion having a connector leg throughbore coaxial with the other;

(e) a second pin inserted through said connector leg throughbores; and

(f) a link encircling said clevis and said second pin such that said connector and said clevis are pivotally connected to each other; and

(g) wherein said connector and said link are adapted to operably and generally uninhibitedly pivot relative to said clevis in order to maintain relative alignment with resultant binding and dynamic force vectors, whether said vectors are vertical or horizontal or transverse or any orientation therebetween, induced by said cable or strap tie-downs, thereby reducing stress due to shifting of the cargo.

5,330,301

LOADING MECHANISMS

Carl D. Brancher, Abergavenny, United Kingdom, assignor to Surface Technology Systems Limited, Newport, United Kingdom

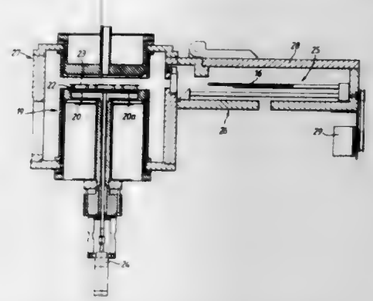
PCT No. PCT/GB91/00221, § 371 Date Sep. 1, 1992, § 102(e) Date Sep. 1, 1992, PCT Pub. No. WO91/15032, PCT Pub. Date Oct. 3, 1991

PCT Filed Feb. 14, 1991, Ser. No. 924,022

Claims priority, application United Kingdom, Mar. 22, 1990, 9006471.8

Int. Cl.[5] B65G *65/00*

U.S. Cl. 414—417 **4 Claims**



1. A workpiece loading mechanism, comprising a work station including a treatment bed having substantially continuous workpiece receiving surface and having a plurality of lifting elements, which pass through the bed and are arranged in lines, and means for moving the elements between a workpiece lift position and a withdrawn position in which they do not project above the surface; a pallet for supporting a plurality of workpieces in respective workpiece locations disposed in an array and means for moving the pallet into and out of the work station so that in one position it overlies the bed, the pallet defining a plurality of slots open at one end corresponding to the lines of the elements such that when the pallet is in said one position each element can pass through a slot to lift the workpieces off the pallet, at least one of the slots extending through a plurality of workpiece positions and such that the pallet can be withdrawn from the work station with the elements in the workpiece lift position and the elements can then lower the workpieces on to the bed as they return to their withdrawn position.

5,330,302

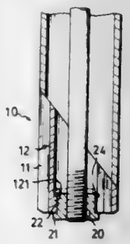
WEDGE-NUT ASSEMBLY FOR FASTENING BICYCLE STEM TUBE IN STEERER TUBE

Chao F. Chen, Taichung Hsien, Taiwan, assignor to Kalloy Industrial Co., Ltd., Taiwan

Filed Jul. 22, 1993, Ser. No. 96,022

Int. Cl.[5] F16B *13/04, 37/08*

U.S. Cl. 411—79 **1 Claim**



1. A wedge-nut assembly comprising:

a wedge with a tubular cross section, comprising at least three radially inwardly convex portions longitudinally extending on an inner side thereof and a corresponding number of blocks projecting from the radially inwardly convex portions; and

a nut comprising two annular flanges between which the blocks are disposed so that the nut is mounted in the tubular wedge.

5,330,303

DEVICE FOR FASTENING AT LEAST TWO MEMBERS TO EACH OTHER

Dominique Dubost, La Celle Saint Cloud, France, assignor to Tech Industries, Chezal-Benoit, France

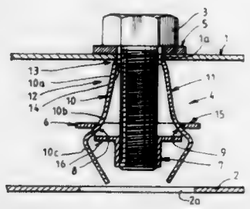
PCT No. PCT/FR92/00737, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO93/03285, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 24, 1992, Ser. No. 30,256

Claims priority, application France, Jul. 26, 1991, 91 09538

Int. Cl.[5] F16B *21/00*

U.S. Cl. 411—344 **5 Claims**



1. Device for fastening at least two members to each other, using a screw (**3**) and a transfer nut (**4**) which are adapted in order to engage in recesses (**1***a*,**2***a*) in the said members (**1**,**2**), characterised in that the transfer nut (**4**) comprises a nut plate (**6**) comprising a tapped hole (**7**), on either side of which nut plate are zones (**8**,**9**) for passage of branches (**10**,**11**) of an attachment member (**12**) with a cross-section of general flared U shape, whose intermediate portion (**13**) comprises a passage hole (**14**) for the screw (**3**), facing the tapped hole (**7**) in the nut plate (**6**), and is adapted to bear against a stop surface of the screw (**3**) or of the member (**1**) on which this screw bears, so that the nut plate causes a separation of the branches (**10**,**11**) of the attachment member (**12**) and their abutment against a bearing surface of the other member (**2**) during screwing, in order to fasten the members to each other, and in that the nut plate (**6**) comprises two axially offset portions (**15**,**16**), an internal one (**16**) in which the tapped hole (**7**) is made, and an external one (**15**) extending at least partly around the internal portion and adapted to abut against a bearing surface of the other member, opposite to that against which the branches of the attachment member abut, in order to allow positional holding of the nut by pinching of the other member between this external portion of the nut plate and the branches of the attachment member.

5,330,304

APPARATUS FOR HANDLING ELONGATED PRODUCTS

Anthony A. Ceridis, Belmont; John Cranfield, San Bruno, and Kyle C. Vine, Burlingame, all of Calif., assignors to Heat and Control, Inc., South San Francisco, Calif.

Division of Ser. No. 51,064, Apr. 21, 1993, which is a division of Ser. No. 823,829, Jan. 22, 1992, Pat. No. 5,277,533. This application Oct. 21, 1993, Ser. No. 140,734

Int. Cl.[5] B65G *69/00, 47/04*

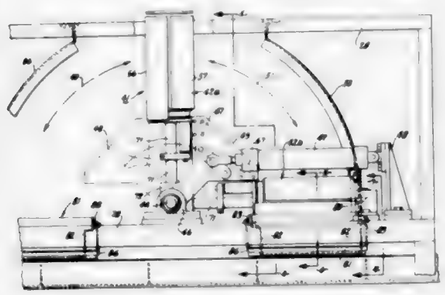
U.S. Cl. 414—21 **4 Claims**

1. In a weighing and packaging system for handling elongate products, the combination comprising:

a weigher with product discharge means, receptacle means positioned below said discharge means for receiving

weighed product charges from the weigher with the weighed products being arranged in a generally vertical position, said receptacle means having an open top portion and a bottom portion including an iris array which may be selectively closed for supporting product with respect to said receptacle means and opened for releasing product therefrom means for selectively moving said iris array;

at lease two canister means angularly spaced apart and mounted for joint movement about a common horizontal axis between a first position for receiving product in a generally vertical attitude contained in said receptacle



means to a second position for releasing such product in a generally horizontal attitude.

said canister means having selectively movable sidewalls for releasing product from the canister in said second position; and

power means for moving said canister means about said horizontal axis between said two positions and for opening and then closing said movable sidewalls when one of the canisters is in the second position whereby the elongate product may be dropped from the canister disposed in a generally horizontal attitude for movement to a location for a packaging operation.

5,330,305

DRIVEN MECHANISM FOR A THREE DIMENSIONAL VEHICLE PARKING SYSTEM

Junichi Go, Gifu, Japan, assignor to Fujihensokuki Co., Ltd., Gifu, Japan

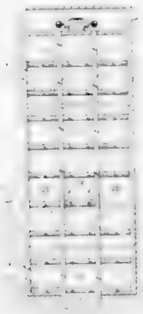
PCT No. PCT/JP91/01692, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO92/10629, PCT Pub. Date Jun. 25, 1992

PCT Filed Apr. 12, 1991, Ser. No. 867,182

Claims priority, application Japan, Dec. 11, 1990, 2-415768

Int. Cl.[5] E04H *6/06*

U.S. Cl. 414—254 **5 Claims**



1. A three dimensional parking system including a plurality of parking stations arranged in a vertical direction for receiving vehicles to be parked, the system comprising:

a pair of lifts for supporting the vehicle, each of the lifts having a plurality of lift fork beams formed in a comb-like arrangement;

a lift compartment disposed adjacent to the parking stations for enabling said lifts to vertically move among the parking stations;

the parking stations including a plurality of energy charging devices and a plurality of platforms for carrying the vehicles, said platforms being horizontally movable between the parking stations and said lift compartment;

each of said platforms including a plurality of drive wheels for allowing the platform to laterally move, a motor for driving said drive wheels, a controller for controlling said motor, an energy storage device, and a connector for connecting said energy storage device to said energy charging device when the platform is located in the parking station;

each of said platforms further including a plurality of platform fork beams formed to pass between said lift fork beams of the pair of lifts, whereby a vehicle is transferred between the pair of lifts and a selected platform located in a predetermined stop position within the lift compartment, by the cooperation of said lift fork beams and platform fork beams; and

detection means for determining whether said selected platform is exactly located in said predetermined stop position within the lift compartment, said detection means including front detector pair comprising a first detector disposed in a front end of each platform and a first counter element arranged in said lift compartment for facing said first detector of the platform located in said predetermined stop position, and rear detector pair comprising a second detector disposed in a rear end of each platform and a second counter element arranged in said lift compartment for facing said second detector of the platform located in said predetermined stop positions, whereby said controller controls said motor in response to signals transmitted from said first and second detectors.

5,330,306

PALLET HANDLING PLATTEN UNIT

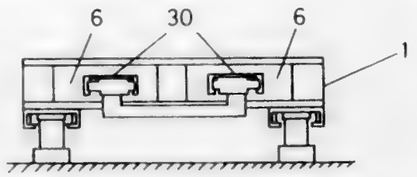
Trevor A. Pemberton, Sutton Bassett; John C. A. Wright, Dunstable, and David M. Jinks, Gaddesby, all of United Kingdom, assignors to Cleco Limited, Leicestershire, United Kingdom

Filed Apr. 21, 1992, Ser. No. 871,492

Claims priority, application United Kingdom, Oct. 19, 1989, 8923257.3; European Pat. Off., Oct. 16, 1990, 90311299.3

Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—286 **5 Claims**



1. A pallet handling platten unit for placing a pallet having a boarded top wall and a boarded bottom wall on a warehouse storage rack and for retrieving the pallet therefrom, the warehouse storage rack including a pair of parallel-spaced beams, the pallet handling platten unit being positioned adjacent and movable parallel to the warehouse storage rack pair of beams, comprising:

(a) a platform;

(b) at least one primary platten mounted on the platform;

(c) means for moving the at least one primary platten into engagement with the boarded bottom wall of the pallet and moving the pallet positioned on the at least one primary platten laterally with respect to the pair of beams such that the pallet and the at least one primary platten are positioned over the pair of beams;

(d) at least one auxiliary platten mounted on the platform and able to be positioned at an initial level, a first level and a second level where the initial level is beneath the at least one primary platten, the first level is above the at least one primary platten, the second level is above the first level;

(e) means for elevating the at least one auxiliary platten to the first level;

(f) means for moving the at least one auxiliary platten laterally of the pair of beams when the at least one auxiliary platten is at the first level such that the at least one auxiliary platten engages the pallet beneath the boarded top wall when the pallet is positioned on the at least one primary platten;

(g) means for elevating the at least one auxiliary platten from the first level to the second level such that the pallet positioned on the at least one primary platten will be transferred from the at least one primary platten to the at least one auxiliary platten;

(h) means for withdrawing the at least one primary platten from being positioned over the pair of beams;

(i) means for lowering the at least one auxiliary platten from the second level to below the first level in order to deposit the pallet onto the pair of beams; and

(j) means for withdrawing the at least one auxiliary platten from engagement with the pallet positioned on the pair of beams.

5,330,307

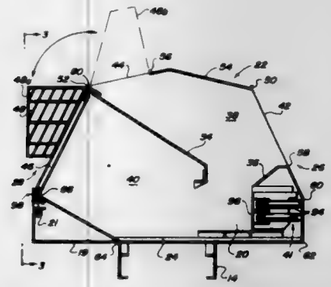
PLASTICS COMPACTOR FOR MOBILE EQUIPMENT

Kent Spiers, Caledonia, Miss., and Philip E. Carr, Clearfield, Pa., assignors to Marathon Equipment Company, Vernon, Ala.

Filed Feb. 12, 1993, Ser. No. 16,941

Int. Cl.[5] B65B *21/02*

U.S. Cl. 414—406 **19 Claims**



1. A mobile system for collection of recyclable refuse, comprising:

a vehicle;

a hollow container mounted transversely to said vehicle, said container having a top and laterally spaced first and second ends;

a first refuse inlet disposed in one of said first and second ends for depositing refuse therethrough into said container;

a second refuse inlet disposed in said top for depositing refuse therethrough into said container;

an opening to said container in the other one of said ends;

a discharged door pivotally secured to said container for selectively closing said opening; and

a basket pivotally secured to said container proximate said top for depositing refuse into said container through said second refuse inlet.

5,330,308

AUTOMATIC REFUSE CONTAINER LOADING DEVICE

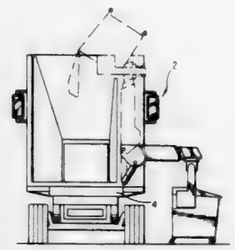
Valerio Armando, S. Lorenzo, 100; Lodovico Armando, S. Lorenzo, 86, both of I-12023 Caraglo CN, and Massimo Armando, Via del Corva, 23, I-12100 Cuneo, all of Italy

Filed Mar. 27, 1992, Ser. No. 858,863

Claims priority, application Italy, Mar. 29, 1991, T91A000223

Int. Cl.[5] B65F *3/02*

U.S. Cl. 414—408 **11 Claims**



1. An automatic device connected to a truck for unloading refuse from a refuse collection container into the truck, the device comprising:

a first multi-extractable telescopic arm connected to a chassis of the truck, said first arm being rotatable about a horizontal and a vertical plane;

a second telescopic arm centrally connected to a free end of said first arm and rotatable by 360 degrees about a vertical axis of said second arm;

third and fourth arms connected to free ends of said second arm and rotatable by 360 degrees about respective horizontal axes of each of said third and fourth arms;

gripping means for gripping side portions of said collection container, said gripping means being connected to respective free ends of each of said third and fourth arms;

control means for rotating said first arm about said horizontal and vertical planes;

means for rotating said second arm about said vertical axis of said second arm; and

means for rotating said third and fourth arms about said respective horizontal axes of said third and fourth arms;

wherein rotation of said first, second, third and fourth arms transports a refuse collection container to/from a first position adjacent to said truck to/from a second position in which refuse in said container is unloaded into said truck.

5,330,309

READER HAVING CASSETTE LOCATING AND UNLATCHING MECHANISM

Roger S. Brahm, Canandaigua, N.Y., and James D. Lattimore, Safety Harbor, Fla., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1992, Ser. No. 982,175

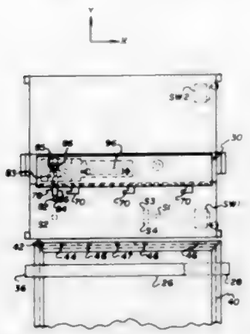
Int. Cl.[5] B65D *85/30;* **G03B** *41/00*

U.S. Cl. 414—411 **53 Claims**

30. A reader for reading a photostimulable element disposed in a cassette, said cassette having a latching mechanism for allowing removal of the photostimulable element disposed within the cassette, said cassette having a reference means for locating a first relative position with respect to the latching mechanism of the cassette and at least one access opening for allowing access to the latching mechanism, said reader comprising:

a movable extractor bar assembly having means for unlatching and latching the latching mechanism of the cassette and for removing the removable photostimulable element disposed in the cassette, said extractor bar assembly comprising a slide plate and an extractor bar slideably secured

to said slide plate and movable along at least two axes relative to the cassette; and



means for locating said extractor bar assembly in a first relative position with respect to the latching mechanism of the cassette.

5,330,310

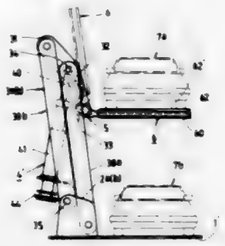
DOUBLE-DECK PARKING DEVICE

Hyh-Cheeng Lin, 5F, No. 3-1, Lane 49, An Tay Street, Nei Hu, Taipei, Taiwan

Continuation-in-part of Ser. No. 776,169, Oct. 15, 1991, abandoned. This application May 10, 1993, Ser. No. 58,841

Int. Cl.[5] E04H *6/06*

U.S. Cl. 414—228 **5 Claims**



1. A double-deck parking device comprising:

(a) a substantially rectangular base plate having a pair of opposing longitudinally extending end sections and a pair of opposing transversely extending end sections;

(b) a pair of longitudinally spaced apart support members, each of said support members fixedly coupled to said base plate at a respective longitudinal end section adjacent one of said transversely extending end sections;

(c) a pair of lifting arm assemblies respectively coupled in pivotal relation to each of said support members, each of said lifting arm assemblies including a front arm member and a rear arm member pivotally connected to a respective support member on a first end of each of said front and rear arm members, a lifting arm member pivotally coupled to said front and rear arm members at a second end thereof, and a connecting frame extending in said longitudinal direction coupled to said longitudinally displaced opposing front arm members, each of said support members, front and rear arm members and lifting arm members defining a four bar linkage;

(d) a pair of drive mechanisms for rotatively displacing each of said lifting arm assemblies with respect to a respective support member, each of said drive mechanisms including a screw rod having an upper end secured to said connecting frame, a hydraulic cylinder coupled to said screw rod for actuation thereof, said hydraulic cylinder being secured to a respective rear arm member and driven by a reversible motor;

(e) a platform supported on said connecting frame, said platform having substantially the same rectangular contour as said base plate, wherein actuation of said drive mechanisms provides for displacement of said platform (1) to a position above said base plate for providing a parking base for a vehicle above said base plate; (2) to a position transversely adjacent said base plate for loading a vehicle thereon, and (3) to a position wherein said platform extends substantially in a vertical direction to allow vehicles of varying height to be mounted on said base plate.

5,330,311

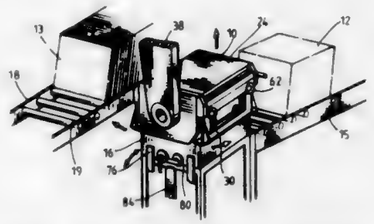
ROBOT MEANS FOR UNLOADING OPEN BOXES

Clifton M. Cawley, Nederland, and Wesley D. Cawley, Port Neches, both of Tex., assignors to Ohmstede-Cawley, Ltd., Beaumont, Tex.

Filed May 14, 1993, Ser. No. 63,224

Int. Cl.[5] B65G *65/00*

U.S. Cl. 414—416 **13 Claims**



1. A robot for picking up open top boxes containing product, assisting in removing the product from the box, and setting the product on a conveyor comprising,

a body having first and second ends, one of said ends being open, and having four sides, the first of the sides being fixed and the opposite second side being open, and the third and fourth sides each having one edge pivotally connected to the fixed side and having a ledge on an opposite edge extending towards an inside of the body for holding the box and product therein when the box is inverted,

a sensor connected to the body for detecting the presence of a box relative to the body,

means connected to the body for rotating the body about its longitudinal axis and for moving the body in an X, Y and Z direction,

a carriage positioned in the body for longitudinal movement therein,

suction means on the carriage for engaging and gripping an end of the box and pulling the box into the body when the carriage is retracted, and

retractable and extendable suction means connected to each of the third and fourth sides for gripping the sides of a box in the body.

10. A box stripper for receiving an inverted open box containing product for assisting in the separation of the product from the box comprising,

a support for receiving an inverted open top box containing product, said support having first and second ends,

vertical stop means at the first end and at the second end for positioning the box on the support,

suction means at each of the first and second ends of the support for engaging and pulling opposite ends of the box away from the product in the box,

movable clamping fingers adjacent each end of the support for moving the fingers into the box between the product and each end of the box, and

means for moving the clamping fingers toward and away from each other for clamping the product therebetween.

5,330,312

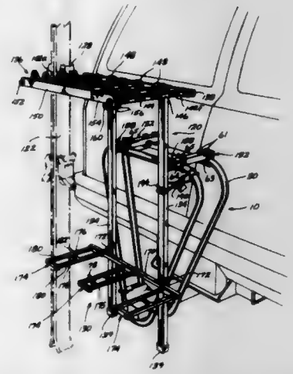
SKI RACK ATTACHMENT FOR A VEHICLE-MOUNTED RACK

Ivor J. Allsop, Bellingham, and Eivind Clausen, Bellingham, both of Wash., assignors to Allsop, Inc., Bellingham, Wash.

Division of Ser. No. 587,061, Sep. 26, 1990, Pat. No. 5,181,822, which is a continuation-in-part of Ser. No. 397,693, Aug. 23, 1989, abandoned. This application Nov. 20, 1992, Ser. No. 979,800

Int. Cl.[5] B60R *9/00*

U.S. Cl. 414—462 **11 Claims**



1. A ski rack assembly for mounting to an articulated support assembly attached to a vehicle, said ski rack assembly comprising:

a ski rack frame, said rack frame including two vertically oriented parallel beams and a cross beam connected between said vertical beams adjacent the top of said vertical beams;

a support frame said support frame including a first cross beam connected to said rack frame and at least one pair of open-ended support arms connected to said support frame first cross beam, said support arms being spaced apart so that at least one ski may be secured therebetween, wherein said support frame first cross beam is hingedly connected to said rack frame cross beam so that said support arms may be selectively moved between a first position extending perpendicularly away from said rack frame and a second position approximately parallel to and overlapping said rack frame; and

two mounting arms, each said mounting arm attached to a separate one of said rack frame vertical beams and adapted for connection to the articulated support assembly, wherein said mounting arms are hingedly attached to said vertical beams to move between a first extended position extending perpendicularly away from said vertical beams and a second collapsed position wherein said mounting arms are approximately substantially parallel to the vertical plane which contains said vertical beams.

5,330,313

SPARE TIRE HOIST ANTI-THEFT DEVICE

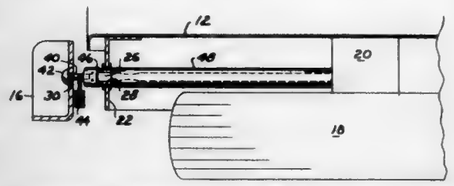
Doris E. Easterwood, 2517 Slagestand, Duncan, Okla. 73533

Filed Apr. 8, 1993, Ser. No. 43,694

Int. Cl.[5] B62D *43/04*

U.S. Cl. 414—463 **4 Claims**

1. In an anti-theft apparatus for precluding access to the actuating shaft and lock of a vehicle spare tire hoist mounted below the rear end portion of the frame forwardly of the rear bumper, said actuating shaft extending generally horizontally and longitudinally between the hoist and a rearward frame cross member spaced forwardly of the bumper, said actuating shaft having a socket in its rearward end portion and said bumper having an opening admitting one end portion of a wrench or hand crank engageable with the actuating shaft for angular rotation of the latter, the improvement comprising:



locking shaft means including a rod having a transverse aperture projecting through the bumper and into the actuating shaft socket;

a first coextensive sleeve loosely surrounding the actuating shaft; and,

a second sleeve substantially equal in length with the spacing between said bumper and the rearward frame cross member and loosely surrounding said rod.

5,330,314

VACUUM LIFTING/LOWERING HEAD

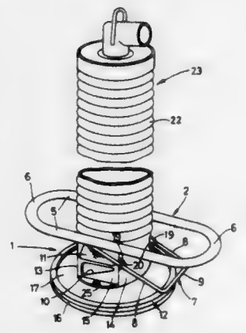
Stewart Bennison, Chesterfield, England, assignor to Palamatic Handling Systems Limited, Chesterfield, United Kingdom

Filed Dec. 30, 1991, Ser. No. 814,567

Claims priority, application United Kingdom, Jan. 3, 1991, 9100056

Int. Cl.[5] B66C *1/02*

U.S. Cl. 414—627 **9 Claims**



1. A vacuum lifting/lowering head for the handling of articles comprising a housing; a resilient sealing lip provided around a lower portion of said housing and adapted, in use, to engage an article to be lifted/lowered; a fixed, upper steadying handle attached to said housing and adapted to be engaged by a user's hand to manoeuver said housing with respect to an article to be lifted/lowered; an opening in said housing, a displaceable valve member associated with said opening to close or reveal said opening, and a movable lower handle pivotally attached to said housing, with which lower handle said valve member is movable, and adapted to be manually displaceable by the fingers of the user's same hand to control the position of said valve member for the admission, non-admission, or partial-admission of atmospheric air to an interior of said housing as part of lifting/lowering operations; with said movable lower handle of such construction that upon deliberate or accidental release by the user, said movable lower handle always remains in the position at which it was located at the moment of said release.

5,330,315

METHODS FOR LIFTING

John M. Beattie, and Jimmie D. Sinden, both of Greeley, Colo., assignors to TRLI, Inc., Greeley, Colo.

Filed Dec. 4, 1991, Ser. No. 802,244
Int. Cl.[5] B60S *13/00*
U.S. Cl. 414—786 **5 Claims**



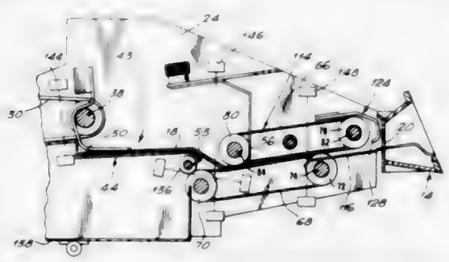
1. A method for lifting and supporting a vehicle of the type having a plurality of wheels, the method comprising the steps of:
(a) providing first and second spaced-apart tool bar members;
(b) providing first and second lift fork means;
(c) mounting said lift fork means on said tool bar members in a manner such that said fork means may be moved along said tool bar members and may also be moved laterally with respect to said tool bar members; wherein one said lift fork means is mounted on each said tool bar member;
(d) providing lift tray means connected between said first and second tool bar members;
(e) providing lift means for lifting said tool bar members and said tray means;
(f) positioning said vehicle between said tool bar members in a manner such that at least one of said wheels is supported on said tray means;
(g) moving said lift fork means laterally toward said vehicle in a manner such that it engages at least one of said wheels; and
(h) lifting said tool bar members so as to lift said vehicle by means of said lift fork means and said lift tray means.

5,330,316

SHEET HANDLING APPARATUS AND METHOD

Symon P. A. Buckman, and David L. Patterson, both of Dundee, Scotland, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 5, 1992, Ser. No. 831,590
Claims priority, application United Kingdom, Mar. 12, 1991, 9105151.6
Int. Cl.[5] B65G *57/11*
U.S. Cl. 414—790.2 **10 Claims**



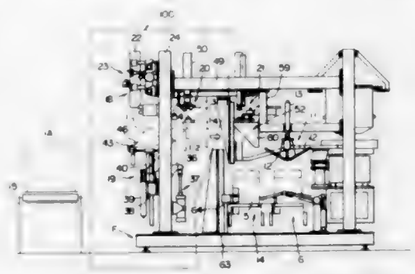
2. A sheet handling apparatus for accumulating a plurality of sheets into a stack and for feeding the stack to an exit location, comprising:
first feeding means for feeding said sheets one by one along a first feed path to a stacking area, with said first feed path having an output end;
a stacking area located at said output end;
a support member positioned lower than said output end;
resiliently deformable means positioned to engage and urge each of said sheets leaving said first feed path towards said support member to form said stack on said support member;
said support member being dimensioned so that an edge portion of said stack projects beyond an edge of said support member;
second feeding means for feeding said stack of sheets along a second feed path from said stacking area to said exit location;
said second feeding means including first and second cooperating parts; and
moving means for moving said first cooperating part between active and inactive positions relative to said second cooperating part;
said first cooperating part, when in said active position, being effective to cooperate with said second cooperating part to grip said edge portion of said stack and feed said stack along said second feed path to said exit location;
said resiliently deformable means comprising a plurality of strips having free ends which are biased to engage said support member.

5,330,317

TRANSFER DEVICE FOR TRANSFERRING FOLDABLE CONTAINER

Koichi Akimoto, Tokyo, and Junichi Yamamoto, Otsu, both of Japan, assignors to Fujimori Kogyo Co., Ltd., Tokyo and Kimura Machinery Industrial Co., Ltd., Shiga, both of Japan

Filed Oct. 20, 1992, Ser. No. 963,802
Claims priority, application Japan, Oct. 24, 1991, 3-305385
Int. Cl.[5] B65G *56/06*
U.S. Cl. 414—797.8 **4 Claims**



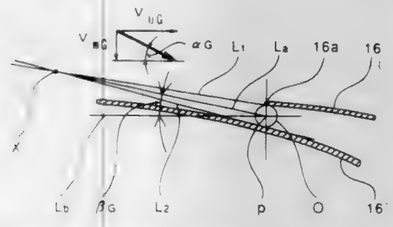
1. A transfer device for transferring a foldable container wherein said container is one which is formed from a thin flexible film material, has an approximately cubical shape when unfolded and is provided with a pour spout at one surface, wherein a plurality of said containers are folded into an approximately triangular shape by inverting one-half of said container within the other half of said container by folding along the diagonal plane which extends between a pair of diagonally opposing edges and passes through the center of said container, each folded container having an apex and an approximately rectangular bottom surface, wherein said containers are stacked to form a stacked configuration, having a top and a bottom, of said containers, wherein said transfer device comprises:
a storage box which stores foldable containers including a pour spout, in a stacked configuration such that the apex of said foldable container is directed upward and the approximately rectangular bottom surface of said container is approximately horizontal and is supported by said storage box, wherein at least the bottom of said storage box is open and said storage box is provided with a shutter mechanism from which the container located at the bottom of the stack may be extracted;
a container extraction mechanism disposed below said storage box and provided with a head part for sequentially extracting containers from the bottom of said stack of containers and subsequently inclining said container so that said pour spout is directed upward and, maintaining said container in this position, said head part is transported in the direction of said inclination of said container; and
a transfer mechanism, disposed above said container extraction mechanism, said transfer mechanism having a chuck for grasping said pour spout on said container and transferring said container to a next processing step.

5,330,318

CENTRIFUGAL PUMP WITH AN IMPROVED AXIAL DIFFUSOR

Motoyasu Ogawa, Tokyo, Japan, assignor to Nikkiso Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1993, Ser. No. 36,732
Claims priority, application Japan, May 28, 1992, 4-136795
Int. Cl.[5] F04D *29/44*
U.S. Cl. 415—1 **4 Claims**



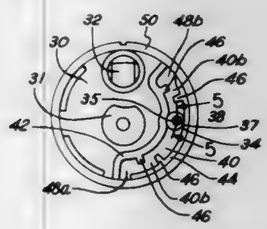
1. A driving method for a centrifugal pump having an axial diffusor with a plurality of blades, comprising driving said pump such that a blade incident angle is in the range from 3° to 10° and a value obtained by subtracting from said blade incident angle a treating liquid incident angle is in the range from −3° to 8°.

5,330,319

AUTOMOTIVE FUEL PUMP VAPOR ORIFICE AND CHANNEL

Dequan Yu, and Henry W. Brockner, both of Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 2, 1993, Ser. No. 115,079
Int. Cl.[5] F04D *9/00*
U.S. Cl. 415—55.1 **6 Claims**



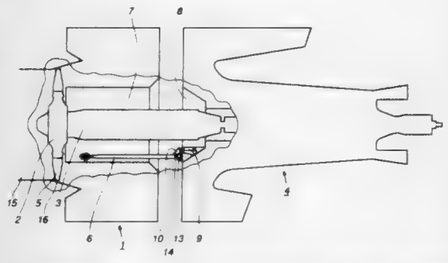
1. A fuel pump for supplying fuel from a fuel tank to an automotive engine, comprising:
a pump housing;
a motor positioned within said housing, said motor able to rotate a shaft protruding therefrom upon application of an electrical current;
an impeller attached to said shaft for rotatably pumping fuel;
a pump bottom mounted to said housing having an outlet therethrough in fluid communication with a motor chamber surrounding said motor, said pump bottom having an opening for allowing said shaft to pass through to connect to said impeller;
a pump cover mounted on an end of said housing and attached to said pump bottom with said impeller therebetween such that a pumping chamber is formed in said housing along the periphery of said impeller, and with said pump cover having a fuel inlet therethrough in fluid communication with said fuel tank and with said pumping chamber; and
means for purging fuel vapor from said pumping chamber comprising a purge orifice through said pump cover in fluid communication with said pumping chamber and with a purge channel,
said purge channel running radially along an outer circumference of said pump cover and having a plurality of baffles to hinder fuel vapor flow before said fuel vapor exits through at least one vapor outlet leading to said fuel tank, and with
said purge orifice having a plurality of interconnected sections of different diameters for gradually dissipating said fuel vapor through said purge orifice, a first chamfered section leading from said pumping chamber to said plurality of interconnected sections, and a second chamfered section leading from said plurality of sections to said purge channel.

5,330,320

METHOD AND A DEVICE IN A ROTATING MACHINE

Martin Månsson, Finspong, Sweden, assignor to ABB Carbon AB, Finspong, Sweden

Filed Mar. 31, 1993, Ser. No. 40,619
Claims priority, application Sweden, Apr. 1, 1992, 9201061-0
Int. Cl.[5] F01D *25/24*
U.S. Cl. 415—129 **10 Claims**



1. A device for controlling the blade tip clearance in a rotating machine, which machine includes a turbine part and a compressor part, the turbine part including a stator housing, a rotor shaft, rotatably journalled in the stator housing, with at least one turbine disc with blades fixedly arranged on said rotor shaft, the rotor shaft being secured to a rotor shaft comprised by the compressor part such that a common rotor shaft is obtained, the stator housing being formed with a stator cone, wherein the blade tips have an angle which substantially corresponds to the angle of the stator cone, wherein the rotor shaft and the stator housing are displaceable in relation to each other, wherein the rotor shaft is axially journalled in the compressor housing and wherein the compressor part is pendantly suspended so as to permit displacement thereof, including the rotor shaft and the turbine disc/turbine discs, in the axial direction.

9. A method for controlling the blade tip clearance in a rotating machine, machine including a turbine part and a com-

pressor part, the turbine part including a stator housing, a rotor shaft, rotatably journalled in the stator housing, with at least one turbine disc with blades fixedly arranged on said rotor shaft, the rotor shaft being secured to a rotor shaft comprised by the compressor part such that a common rotor shaft is obtained, the stator housing being formed with a stator cone, the blade tips having an angle which substantially corresponds to the angle of the stator cone, and wherein the rotor shaft and the stator housing are displaceable in relation to each other, said method comprising the steps of:

axially journalling the rotor shaft in the compressor part and axially displacing the compressor part, including the rotor shaft and the turbine disc/turbine discs, in relation to the stator housing.

5,330,321

ROTOR SHROUD ASSEMBLY

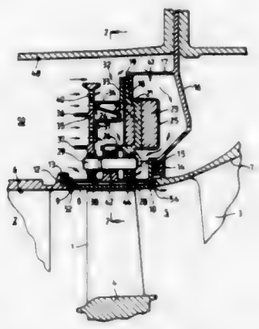
Michael C. Roberts, and John F. Leonard, both of Bristol, England, assignors to Rolls Royce plc, London, England

Filed May 11, 1993, Ser. No. 59,292

Claims priority, application United Kingdom, May 19, 1992, 9210642.6

Int. Cl.[5] F01D *11/08*

U.S. Cl. 415—136 **13 Claims**



1. A gas turbine engine rotor seal for surrounding a rotor assembly of circumferentially spaced blades, each having a radial tip, comprising:

a plurality of arcuate shroud liner segments encircling the rotor assembly, each segment being mounted for radial movement and having a radially inner surface spaced from the tips of said blades by a pre-determined clearance,

a first control ring having a relatively rapid radial response to thermal change,

a second control ring having a relatively slow radial response to thermal change,

mounting means including a support member supporting each of the shroud segments, each support member being coupled to the first and second control rings and each of the shroud segments, whereby the radial position of the shroud segments is continuously controlled by the thermal expansion of the first and second control rings in combination.

5,330,322

CYLINDRICAL ELASTOMERIC BEARING WITH LARGE ANGULAR DEFLECTION

Jacques A. Aubry, Cabries, France, assignor to Aerospatiale Societe National Industrielle, Paris, France

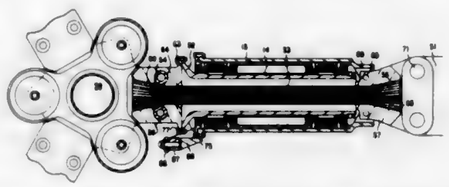
Filed Dec. 22, 1992, Ser. No. 994,748

Claims priority, application France, Dec. 26, 1991, 91 16185

Int. Cl.[5] B64C *27/35;* **F16C** *27/06*

U.S. Cl. 416—134 A **30 Claims**

1. Cylindrical elastomeric bearing with wide angular deflection, comprising three coaxial cylindrical torsible elements: one central element, and two lateral elements arranged either side of the central element, each torsible cylindrical element comprising a deformable elastomeric central part, relatively flexible angularly and relatively rigid radially, which is rigidly locked to an inner armature and an outer armature; wherein the outer armature of the central element and the inner armature of each lateral element are rigidly locked together so as to



form a single common armature; wherein the inner armature of the central element is mounted on an inner sleeve to which it is rigidly locked, and the outer armature of each lateral element is mounted in an outer sleeve to which they are rigidly locked; wherein the inner sleeve and outer sleeve are coaxially arranged in such a way that the outer sleeve and inner sleeve can rotate in relation to each other about their common axis with virtually no possibility of radial deflection.

5,330,323

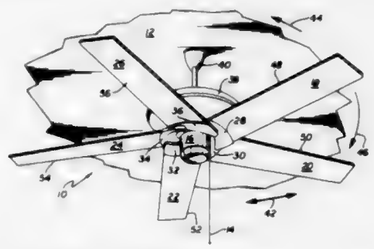
CEILING FAN

Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.

Filed Jan. 19, 1993, Ser. No. 988,054

Int. Cl.[5] F04D *29/34*

U.S. Cl. 416—219 A **11 Claims**



1. A ceiling fan comprising:

(A) a motor having a rotor defining a plurality of spaced apart pairs of openings;

(B) a blade iron removably attached to each pair of said openings;

(C) a fan blade removably attached to each blade iron; each blade iron having

(1) an arcuate web portion;

(2) a first flange extending inwardly from said web portion for attachment to said rotor;

(3) a second flange extending outwardly from said web portion for receiving said fan blade;

(D) said second outwardly extending flange having a leading edge and a trailing edge;

(E) said trailing edge of each said blade iron overlapping the leading edge of the next successive blade iron.

5,330,324

ANNULAR GASKET DISPOSED AT ONE AXIAL EXTREMITY OF A ROTOR AND COVERING BLADE FEET

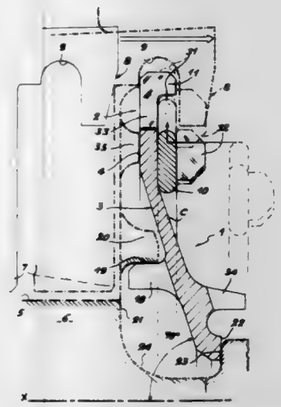
Daniel Agram, Melun; Jean-Louis Charbonnel, Boissise le Roi; Philippe G. E. Joly, Vaux le Penil; Gérard G. Mirancourt, Brie Comte Robert; Jacky S. Naudet, Bondoufle, and Jean-Claude Prato, Cesson, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed Aug. 16, 1993, Ser. No. 106,632

Claims priority, application France, Sep. 9, 1992, 92 10743

Int. Cl.[5] F01D *11/00*

U.S. Cl. 416—220 R **5 Claims**



1. An annular gasket disposed at one axial extremity of a rotor and covering broachings for receiving blade feet situated on the rotor and comprising:

three concentric bearing surfaces for bearing on associated surfaces on the rotor, which gasket bearing surfaces includes a radially internal sealing bearing surface orientated facing away from the broachings, a radially external bearing surface with an axial orientation orientated towards the broachings, and a radially median bearing surface radially orientated outwardly, the gasket having, at least over a radially internal portion, the shape of a cone opening axially towards the broachings, the blades having grooves formed therein and the gasket having, radially outwardly of the radially external bearing surface, a substantially circular collar which engages said grooves of the blades.

5,330,325

AGITATING VANE

Kohichi Kato, Warabi, and Shigeru Nishioka, Tokyo, both of Japan, assignors to Satake Chemikal Equipment Mfg., Ltd., Moriguchi, Japan

Division of Ser. No. 905,315, Jun. 29, 1992, Pat. No. 5,277,550.

This application Aug. 2, 1993, Ser. No. 100,293

Claims priority, application Japan, Oct. 17, 1991, 3-298551; Oct. 17, 1991, 3-298552

Int. Cl.[5] B01F *7/16*

U.S. Cl. 416—227.00 R **5 Claims**

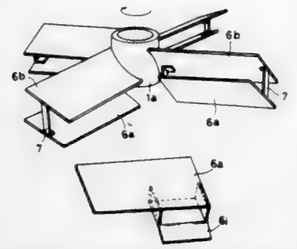
1. An agitating vane comprising:

a hub rotatable about an axis;

a plurality of flat plates laterally disposed at an outer circumference of the hub, said plates each being flat in all directions on an entirety of the surfaces thereof; and

auxiliary vanes disposed at side edges of each of said flat plates and in parallel therewith such that spaces are left between said flat plates and said auxiliary vanes,

wherein each of said flat plates is disposed laterally of said hub in an inclined manner in a rotational direction of the hub, each of said auxiliary vanes being formed as a plate



shape and being spaced above or below each of the flat plates.

5,330,326

METHOD FOR PRODUCING PROFILED PARTS BY GRINDING AND A TURBOMACHINE BLADE PRODUCED THEREBY

Ulrich Kuehne, Schwalbenweg 11, D-4230 Wesel; Karlheinz Heine, Wesel; Klaus Meyer, Neunkirchen am Brand, and Klaus Rueschmann, Wesel, all of Fed. Rep. of Germany, assignors to Ulrich Kuehne, Erlangen, Fed. Rep. of Germany

Division of Ser. No. 189,764, May 3, 1988, Pat. No. 5,205,081.

This application Jan. 29, 1993, Ser. No. 11,217

Claims priority, application Fed. Rep. of Germany, May 4, 1987, 3714805

Int. Cl.[5] B24B *1/00*

U.S. Cl. 416—248 **10 Claims**

1. Intermediate product for a turbomachine blade, comprising:

a) an elongated metal block having an original cross section and a length of from 5 to 30% greater than the length of the blade to be produced;

b) a suction side contour, a root contour and a top contour of the blade at least partly ground into said metal block, and remaining pieces having the original cross section of the metal block protruding from both said root and said top contours; and

c) said root contour and said top contour having lengthwise dimensions slightly exceeding actual dimensions to be produced.

5,330,327

TRANSFER TUBE MATERIAL FLOW MANAGEMENT

Thomas M. Anderson, Hugo, Minn., assignor to Schwing America, Inc., White Bear, Minn.

Filed Apr. 27, 1993, Ser. No. 54,073

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—53 **25 Claims**

1. A method of controlling the operation of a positive displacement piston/cylinder material pump and pipeline system

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having an inlet for receiving material during each filling stroke, an outlet at which material is delivered to a pipeline during each pumping stroke, and a valve in the pipeline located downstream from the pump for preventing material flow through the pipeline when the valve is in a closed position, the method comprising:

closing the valve at an end of each pumping stroke to prevent material flow through the pipeline towards the pump;

sensing pressure of the material in the pipeline on an up stream side of the valve; and

opening the valve during a subsequent pumping stroke when sufficient pressure exists in the pipeline on the up stream side of the valve to ensure that material will flow in a positive direction through the pipeline.

5,330,328

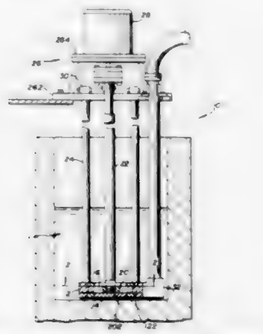
SUBMERSIBLE MOLTEN METAL PUMP

Paul V. Cooper, 8389 Sherman Rd., Chesterland, Ohio 44026

Division of Ser. No. 748,145, Aug. 21, 1991, Pat. No. 5,203,681. This application Feb. 3, 1993, Ser. No. 13,097

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—424.1 **8 Claims**



1. A pipe coupling adaptor for connecting between a graphite discharge pipe and a standard pipe flange connected to a standard, refractory-lined pipe elbow, said adaptor comprising two symmetrical half units having lower flange members for connecting to a superstructure of a pump, each half unit having one half of a standard pipe flange at its top, a pair of plate flanges along its vertical edges, and bolts in said plate flange; whereby said adaptor provides the necessary transition from the graphite discharge pipe necessary in the environment of the metal bath and also supports the weight of the discharge pipe without needing additional cementing when assembled.

5,330,329

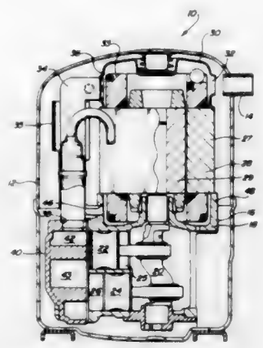
SUCTION CONDUIT ASSEMBLY MOUNTING

Brian D. Clark, Troy, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Jun. 1, 1993, Ser. No. 68,791

Int. Cl.[5] F04B *21/00*

U.S. Cl. 417—312 **10 Claims**



1. A suction conduit assembly comprising:

an elongated suction conduit having a first end and a second end, said first end adapted to be secured to motor means, said suction conduit defining a relatively unrestricted suction gas flowpath therethrough, said first end of said suction conduit having a plurality of circumferentially spaced radially outwardly extending retaining tabs and an annular ring spaced from said plurality of retaining tabs and extending radially outward from said first end of said suction conduit to define a generally annular gap between said plurality of retaining tabs and said annular ring, said annular ring being angled towards said plurality of retaining tabs.

5,330,330

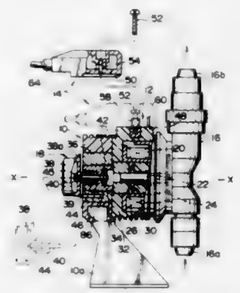
ELECTROMAGNETICALLY OPERATED FIXED DISPLACEMENT PUMP

Fukuji Kuwabara; Akihiro Fuse; Hiroshi Iizuka, and Akira Ogasawara, all of Saitama, Japan, assignors to Iwaki Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 24,953

Int. Cl.[5] F04B *43/04*

U.S. Cl. 417—413 R **8 Claims**



1. A modular electromagnetically operated fixed displacement pump comprising a common pump body for use with a selected one of a plurality of control units, said pump body having a closed exterior surface, a pump head provided at an end thereof in the axial direction and having an inlet port and discharge port, said pump body accommodating an electromagnetic coil, a movable armature movable in the axial direction of said pump body with energization of said coil and a reciprocating member movable in unison with said armature in the axial direction of said pump body, said pump head having a pump chamber defined therein and communicating with said inlet port and said discharge port via valve means, the volume of said pump chamber being varied with the reciprocation of said reciprocating member to obtain pumping operation, a stroke adjustment assembly disposed on the side of said pump body opposite said pump head in the axial direction of said pump body for adjusting the stroke of said armature, said stroke adjustment assembly including a stop member displaceable in the axial direction of said pump body, operating means for causing the displacement of said stop member by external manual rotating operation, and coupling means operatively coupling said operating means and said stop member, stroke number control means for adjustably selecting the frequency of energization of said electromagnetic coil to thereby control the stroke number of said armature, said pump body being provided with power source connection means for energizing said electromagnetic coil,

said electromagnetically operated fixed displacement pump further comprising:

a control unit with said stroke number control means and said power source connection means provided thereon;

mounting means for detachably mounting said control unit on the exterior surface of said pump body; and

terminal means for electrically connecting said pump body and said control unit when said control unit is mounted on said pump body;

whereby a plurality of said control units are provided as said control unit for various pump specifications, one of said plurality of control units being replaceably mounted on said pump body to be adapted for each pump specification.

5,330,331

METERING PUMP FOR HIGHLY VISCOUS FILLINGS

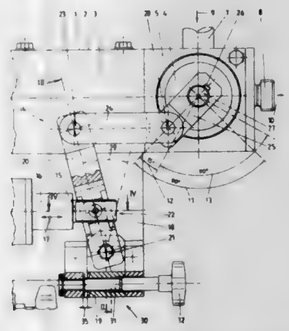
Klaus Doede, Verl, Fed. Rep. of Germany, assignor to Klockner Hansel GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 2, 1992, Ser. No. 970,258

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1991, 4136097

Int. Cl.[5] F04B *7/00*

U.S. Cl. 417—519 **5 Claims**



1. A metering pump for highly viscous fillings having a housing defining a cylinder (**2**), a piston (**1**) in said cylinder, crankshaft - type drive means (**37**) for imparting back and forth movements of said piston in said cylinder, a rotary slide valve (**4**) for controlling the movement of the viscous fillings through the pump, and a drive (**36, 15, 14**) for imparting rotational movement to said rotary slide valve, said rotary slide valve having connections (**6**) for a suction line to and a discharge line from the piston/cylinder unit, a plate cam (**36**) driven by said drive means, a coupling assembly driven by said plate cam, and a clamping lever (**25**) engaging with the rotary slide valve and said coupling assembly, wherein the coupling assembly comprises:

a pivoted lever (**20**) having two ends;

an articulated joint (**21**) formed on one end of said pivoted lever;

a displaceably arranged bearing block (**19**) supporting said articulated joint; and

an adjusting drive (**30**) for altering the position of said bearing block independently from the crankshaft - type drive and progressively altering the position of the articulated joint independently of said drive means while the metering pump and its rotary slide valve are operating, and altering the position of the rotational angle of the rotary slide valve.

5,330,332

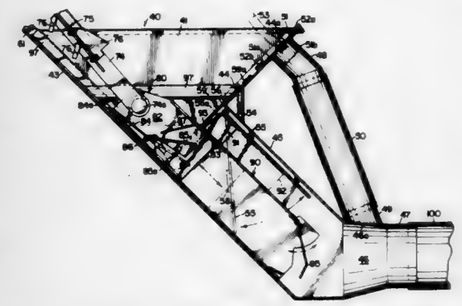
MANURE TRANSFER SYSTEM

Clifford B. Nesseth; Raymond P. Nesseth, both of Barron, and Clinton A. Nesseth, Cameron, all of Wis., assignors to NTH, Inc., Barron, Wis.

Filed Aug. 31, 1992, Ser. No. 938,877

Int. Cl.[5] F04B *19/22*

U.S. Cl. 417—440 **32 Claims**



1. An improved manure transfer system for transferring manure or the like from a first location to a remote second location, comprising:

(a) collection means at said first location for collecting and holding manure or the like;

(b) conduit means operatively connected with said collection means, for transporting manure held thereby to a remote location; said conduit means defining an outlet through which the transported manure is discharged;

(c) pump means operatively connected relative to said collection means and said conduit means for pumping manure normally in one direction from said collection means and through said conduit means;

(d) maintenance means independent of said pump means, for enabling repair and maintenance of said pump means and said conduit means, comprising:

(i) valve means operatively connected with said conduit means for closing back-flow of manure through said conduit means when said pump means is removed from said operative connection; and

(ii) bypass access means operatively connected to said conduit means for providing access to said conduit means at a position intermediate said valve means and said conduit outlet; whereby said access means permits pressure relief of and bidirectional pumping of material to and from said conduit means.

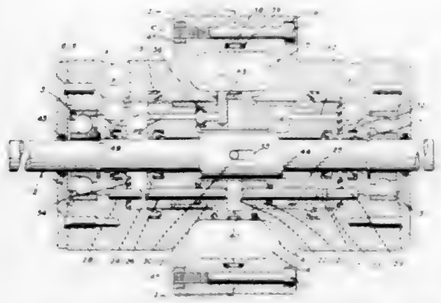
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5,330,333

INDEXING ROTARY ACTUATOR WITH CLUTCH PISTONS

Greg Holmes, Teakwood Dr., Rte. 10 Box 318-62, Winston Salem, N.C. 27127

Filed Mar. 19, 1993, Ser. No. 34,423
Int. Cl.[5] F01C *1/00, 21/00;* F03C *2/00*
U.S. Cl. 418—35 8 Claims



1. An indexing rotary actuator for unidirectionally rotating an output shaft through a specific angle of rotation per each indexing operation, comprising:

an annular main piston chamber;

first and second main pistons rotatable around a central axis of the indexing rotary actuator through said annular main piston chamber;

a clutch piston chamber disposed parallel to the central axis of the indexing rotary actuator within a central portion thereof; and

first and second clutch pistons disposed within said clutch piston chamber slidably supported along the output shaft, said first and second clutch pistons operatively coupled to said first and second main pistons respectively via first and second mounting piston rings,

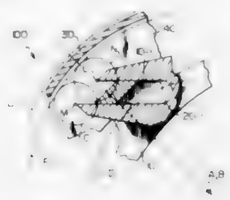
said first and second clutch pistons movable in both directions along the output shaft to respectively engage and disengage rotational movement of said first and second main pistons to the output shaft.

5,330,334

COMPACT OLDHAM COUPLING

James W. Bush, Skaneateles, and Wayne P. Beagle, Kirkville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 26, 1993, Ser. No. 112,034
Int. Cl.[5] F01C *1/04;* F16D *3/04*
U.S. Cl. 418—55.3 2 Claims



1. A scroll machine having a shell with an axis containing a reference member, a coupling member and a scroll member with said coupling member coacting with said reference member and said scroll member such that said scroll member is held to an orbiting motion with respect to said reference member wherein:

said coupling member is generally ring-shaped and has a center and a pair of keys on a first side with said first pair of keys being located on a chord spaced from said center and said axis;

said first pair of keys being of a parallelogram shape with one pair of opposing sides of said parallelogram being parallel to said chord;

said scroll member having a pair of slots parallel to said chord for receiving said first pair of keys and coacting therewith;

each slot of said pair of slots extending to an outer edge of said scroll member with each portion of said edge corresponding to said slot being essentially equally spaced from said axis when said corresponding edge is closest to said shell;

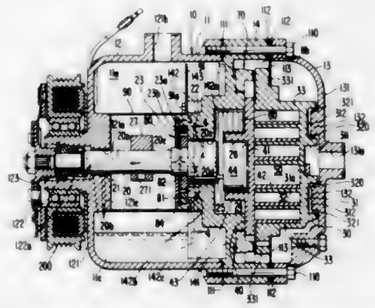
an outermost one of each second pair of opposing sides of said parallelogram being essentially continuous with said portion of said edge corresponding to a corresponding slot when said corresponding edge is closest to said shell whereby a reduced envelope is obtained.

5,330,335

HORIZONTALLY ORIENTED ROTARY MACHINE HAVING INTERNAL LUBICATION OIL PUMP

Kiyoshi Teracuhi, Isesaki; Akihiro Kawano, Maebashi; Hideaki Satoh, Isesaki; Norio Kitano, Fujioka, and Yuji Yoshii, Takasaki, all of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Jul. 29, 1992, Ser. No. 921,322
Claims priority, application Japan, Jul. 31, 1991, 3-067317[U]; Jul. 31, 1991, 3-067318[U]
Int. Cl.[5] F01C *1/04, 21/04;* F01M *1/02, 11/00*
U.S. Cl. 418—55.6 9 Claims



1. In a rotary machine including a housing having an inner hollow space;

an inner block fixedly disposed within said housing to divide said inner hollow space into first and second portions, wherein said inner block comprises a circular depression centrally formed at one end surface thereof opposite to said second portion of said inner hollow space of said housing, an axis of said circular depression being offset with an axis of said drive shaft, said circular depression including a small diameter portion and a large diameter portion which faces said first portion of said inner hollow space of said housing;

a trochoid-type pump operatively coupled with said drive shaft, such that rotational motion of said drive shaft causes said trochoid-type pump to pump a lubrication liquid stored in a lower region of said first portion of said inner hollow space, said trochoid-type pump comprising a first circular plate snugly disposed within said small diameter portion, said first circular plate including a hole having a periphery which is generally sine shaped to form a plurality of first teeth, a second circular plate including a first central hole through which said drive shaft passes, a key-groove mechanism fixedly connecting said drive shaft to said second circular plate, an outer periphery of said second circular plate is generally sine shaped to form a plurality of second teeth, a part of said second teeth engaging with a part of said first teeth to dependently rotate said first circular plate during rotation of said drive shaft and said second circular plate, and a third circular plate fixedly disposed within said large diameter portion of said circular depression to prevent axial movement of said first and second circular plates, said third circular plate including a second central hole through which said drive shaft closely passes;

a drive shaft disposed within at least said first portion and extending substantially in the horizontal direction, said drive shaft being rotatably supported by said inner block and a part of said housing; and

a driven mechanism driven by said drive shaft, said driven mechanism being disposed within said second portion of said inner hollow space and being operatively connected to one end of said drive shaft.

4. In a rotary machine including a housing having an inner hollow space;

an inner block fixedly disposed within said housing to divide said inner hollow space into first and second portions;

a drive shaft disposed within at least said first portion and extending substantially in the horizontal direction, said drive shaft being rotatably supported by said inner block and a part of said housing;

a driven mechanism driven by said drive shaft, said driven mechanism being disposed within said second portion of said inner hollow space and being operatively connected to one end of said drive shaft;

pumping means for pumping a lubrication liquid located in a lower region of said first portion of said inner hollow space of said housing; and

shielding means for shielding said drive shaft from said lubrication liquid located in said lower region of said first portion of said inner hollow space of said housing, wherein said shielding means comprises a single annular cylindrical member having cylindrical inner and outer surfaces and fixedly and hermetically held between said inner block and said part of said housing and which spacedly surrounds said drive shaft.

5,330,336

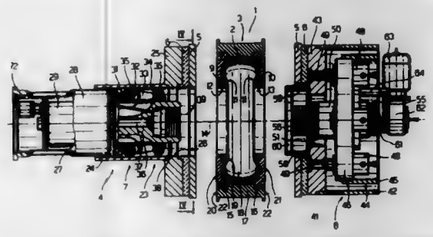
Patent Not Issued For This Number

5,330,337

ROAD VEHICLE TIRE CURING DEVICE

Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 967,345
Claims priority, application Italy, Oct. 31, 1991, TO91A 000825; Jul. 1, 1992, T092A 000551
Int. Cl.[5] B29C *35/02*
U.S. Cl. 425—36 17 Claims



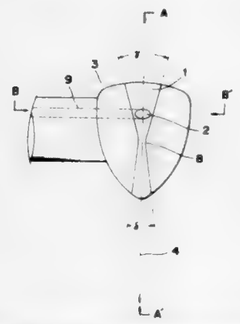
1. A road vehicle tire curing device comprising a toroidal mold for receiving a tire and having first and second coaxial cylindrical inner surfaces; external means for heating said mold; a gas curing unit connected to said mold and comprising a first and a second portion on either side of the mold; each of said cylindrical surfaces defines a seat for a respective one of said portions of the curing unit; a releasable joint being provided for connecting the two portions of the curing unit through the mold; and one of the two portions of the curing unit comprising axial thrust means for packing the mold and external heating means against the other portion.

5,330,338

APPARATUS FOR SPINNING OF POLYURETHANE ELASTIC FILAMENTS

Kiyoshi Nakata, Tsuruga, and Seishu Hayashi, Otsu, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Feb. 17, 1993, Ser. No. 18,534
Claims priority, application Japan, Feb. 17, 1992, 4-069264; Feb. 18, 1992, 4-069493; Feb. 18, 1992, 4-069494
Int. Cl.[5] D06B *1/08*
U.S. Cl. 425—94 5 Claims



1. An apparatus for spinning of polyurethane elastic filaments, which comprises:

a spinning nozzle through which a polyurethane material is extruded to form a polyurethane elastic filament;

a means for application of a finishing agent to the filament, which is arranged downstream in the running direction of the filament from the spinning nozzle, said means having a guide provided with a groove through which a filament is allowed to pass from an inlet to an outlet of the groove, the groove having a bottom and sidewalls, an opening formed on the bottom of the groove for supplying a finishing agent to the passing filament, said bottom of the groove defined by an upper inclined plane and a lower inclined plane which form an apex extending into the groove at which the filament is to be brought into contact with the guide, the upper inclined plane and the lower inclined plane making respective angles away from the passing filament in the depth direction of the groove with an increase in distance from the apex, said groove having a width between the sidewalls which decreases from the inlet toward a narrowest portion of the groove width in the vicinity of the apex and which increases from the narrowest portion toward the outlet, said opening for supplying the finishing agent being formed at a position at least 3 mm higher than that of the apex and at least 2 mm apart from the filament, and said opening also having a diameter greater than the groove width at the narrowest portion; and

a roller for winding up the filament thus treated with the finishing agent.

5,330,339

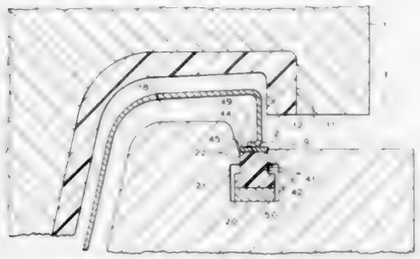
MOLDING APPARATUS

Gregory M. Gatarz, East Brunswick, N.J., and Ronald M. Marsilio, Mogadore, Ohio, assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 931,436, Aug. 19, 1992, Pat. No. 5,206,076, which is a continuation of Ser. No. 467,771, Jan. 19, 1980, abandoned. This application Jan. 28, 1993, Ser. No. 10,940

Int. Cl.[5] **B29C** *43/18, 43/32*

U.S. Cl. 425—116 **20 Claims**



1. A molding apparatus capable of being selectively opened and closed for molding and demolding operations comprising:

(a) a molding receptacle for receiving a shell having a finish and a non-finish side, said molding receptacle having a molding surface for defining a void between said non-finish side of said shell and said molding surface;

(b) male mold closing means for applying sufficient pressure to said shell during the molding operation;

(c) a seal groove and a self-retainable elastomeric seal, said seal groove in one or more of said molding receptacle, said male mold closing means or said shell adapted for releasably retaining said elastomeric seal, said seal groove comprising an open end and a closed end, the lateral cross-sectional dimension at said open end being smaller than the lateral cross-sectional dimension at said closed end, said elastomeric seal adapted for closing said void between said non-finish side of said shell and said molding surface when said mold is closed, said elastomeric seal comprising a first lateral cross-sectional dimension for cooperation with an inside surface of said seal groove in a first molding surface which is larger than said lateral cross-sectional dimension of said open end of said seal groove, and a second lateral cross-sectional dimension extending beyond said seal groove which is smaller than said lateral cross-sectional dimension at said open end of said seal groove, whereby said elastomeric seal is retained within said seal groove when said molding apparatus is opened, and wherein said first lateral cross-sectional dimension comprises a first layer of elastomeric material having a first hardness value and said second lateral cross-sectional dimension comprises a second layer of elastomeric material joined to said first layer for engagement to a second molding surface, said second layer having a different hardness value than said first layer.

5,330,340

PELLETIZER WITH AUTOMATIC KNIFE ADJUSTMENT

Frederick C. Suppon, and Chester E. Alkiewicz, both of Fulton, N.Y., assignors to The Black Clawson Company, Middletown, Ohio

Filed Mar. 25, 1992, Ser. No. 857,461

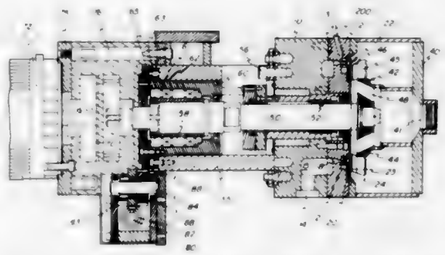
Int. Cl.[5] **B29B** *9/02*

U.S. Cl. 425—142 **2 Claims**

1. In a pelletizer having a die plate body in which plastic resin material at an elevated temperature is extruded through a plurality of orifices formed in the face of an annular die plate in said die plate body, a hub which has pellet cutting knife blades therein, said hub being mounted on a drive shaft with said blades coacting with said die plate face for severing pellets of said resin material at said die plate face, and in which said drive shaft hub and blades are movable by shaft positioning means axially of the direction of shaft rotation toward and away from said die plate face to control the spacing between said blades and said face, the improvement in means for positioning said blades in relation to said die plate face, comprising:

piezoelectric accelerometer means mounted on said die plate body and operable to provides an electric analog signal representative of the vibrational accelerations of said die plate,

a computer, means in said computer receiving said analog signal and converting said signal to a digital signal,



means in said computer receiving said digital signal effecting a Fast Fourier Transform thereon and providing a frequency domain output,

signal processing means connected to receive said frequency domain output and responding to the occurrences of said accelerations at a discrete portion of said frequency domain output representing contact by said blades against said die plate face and providing a contact signal output, and

means connected to receive said contact signal output for controlling said shaft positioning means.

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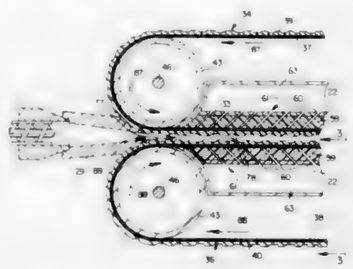
PROCESS AND APPARATUS FOR CONTINUOUS THREE-DIMENSIONAL FORMING OF HEATED THERMOPLASTIC MATERIALS

James Kemerer, Mission Viejo, and Clyde W. Vassar, Carlsbad, both of Calif., assignors to Kemcast Partners-1989, Mission Viejo, Calif.

Division of Ser. No. 843,362, Feb. 25, 1992, Pat. No. 5,244,618, which is a division of Ser. No. 506,072, Apr. 6, 1990, Pat. No. 5,167,781. This application Jun. 4, 1993, Ser. No. 72,490

Int. Cl.[5] **B29C** *39/16*

U.S. Cl. 425—144 **12 Claims**



1. In a machine for continuous three-dimensional impression forming of products from heated, formable thermoplastic material between first and second carriages having first and second belt molds revolvable around the respective first and

second carriages with drive means for revolving the first and second belt molds around their respective carriages and with means for changing the relative spacing between the carriages for positioning first and second mold surfaces of the respective first and second belt molds in contact in mated relationship with each other for defining at least one moving three-dimensional forming channel between the mated mold surfaces of the revolving belt molds, with said channel moving from an entrance into the moving three-dimensional forming channel into which is fed heated, formable thermoplastic material to an exit from which product exits and where the first and second revolving belt molds separate from each other and then return to the entrance along respective first and second return paths, the improvement comprising:

(a) a first belt mold including:

(b) a first endless, flexible backing belt having a plurality of plies of fabric,

(c) said plurality of plies of fabric in said first backing belt being bonded together in laminated relationship,

(d) a first endless flexible rubber mold adhered to said first backing belt with said backing belt being on an inner side of said first belt mold and with said rubber mold being on an outer side of said first belt mold,

(e) said first rubber mold having a first rubber mold surface on its outer side including a first three-dimensional impression forming surface,

(f) a second belt mold including:

(g) a second endless, flexible backing belt having a plurality of plies of fabric,

(h) said plurality of plies of fabric in said second backing belt being bonded together in laminated relationship,

(i) a second endless flexible rubber mold adhered to said second backing belt with said second backing belt being on an inner side of said second belt mold and with said second rubber mold being on an outer side of said second belt mold,

(j) said second rubber mold having a second rubber mold surface on its outer side including a second three-dimensional impression forming surface,

(k) said first and second three-dimensional impression forming surfaces of the first and second belt molds forming heated thermoplastic material in at least one moving three-dimensional forming channel defined between the first and second three-dimensional impression forming surfaces between the mated mold surfaces of the revolving belt molds and removing heat from three-dimensionally formed thermoplastic material in said moving three-dimensional forming channel for forming product to be discharged from the exit, such product having three-dimensionally configured product surfaces,

(l) first guide means engaging the revolving first belt mold for laterally guiding the first belt mold in its movement along the moving three-dimensional forming channel for maintaining lateral alignment of the first rubber mold surface in mated relationship with the second rubber mold surface,

(m) second guide means engaging the revolving second belt mold for laterally guiding the second belt mold in its movement along the moving three-dimensional forming channel for maintaining lateral alignment of the second rubber mold surface in mated relationship with the first rubber mold surface,

(n) first air blowing means directing air onto said first rubber mold surface for removing heat from said first rubber mold surface as the first belt mold is moving in the first return path from the exit to the entrance,

(o) second air blowing means directing air onto said second rubber mold surface for removing heat from the second rubber mold surface as the second belt mold is moving in the second return path from the exit to the entrance, and

(p) means for controlling said first and second air blowing means for producing consistent surface temperatures in the respective first and second rubber mold surfaces as these rubber mold surfaces first contact the heated thermoplastic material being introduced into said entrance.

5,330,342

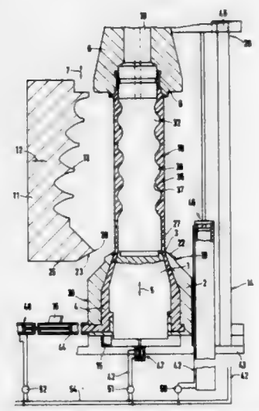
APPARATUS FOR AND METHOD OF MANUFACTURING OF PREFORMS HAVING A LONGITUDINAL WALL WITH A VARIABLE CROSS SECTION

Gerhard Linss, and Karl-Friedrich Ossberger, both of Weissenburg, Fed. Rep. of Germany, assignors to Ossberger-Turbinenfabrik GmbH & Co., Weissenburg, Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 979,144

Int. Cl.[5] **B29C** *49/04, 49/28, 49/78*

U.S. Cl. 425—150 **7 Claims**



4. An apparatus for manufacturing a tube-like preform having a longitudinal wall with a variable cross-section for blow molding of a bellows from a thermoplastic material, said apparatus comprising:

a tubular die having an exit opening with a variable cross-section;

a collar die having a recess, said collar die being movable into engagement with and away from said tubular die, the thermoplastic material being injected through said exit opening of said tubular die into said recess of said collar die when said collar die sits on said tubular die, and the preform being manufactured upon movement of said collar die away form said tubular die;

first drive means for moving said collar die into engagement with and away from said tubular die;

second drive means for varying the cross-section of said exit opening of said tubular die;

first control means for continuously controlling operation of said first drive means;

second control means for continuously controlling operation of said second drive means; and

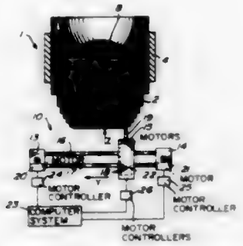
computer means for continuously controlling a speed of said first drive means and displacement of said second drive means in accordance with operation of said first control means and said second control means and in accordance with a program, which controls forming the cross-section of the wall of the preform along its entire longitudinal extent in accordance with the displacement path of said collar die when it moves away from said tubular die, in such a manner that oscillations of larger and smaller cross-sections of said exit opening of said tubular die correspond to a continuously controlled speed rate of the movement of said collar die so, that a thickness of the wall of the produced preform changes from peaks to valleys in a wave-like manner to form the variable cross-section of the wall.

5,330,343

VARIABLE-SHAPE MOLD

Jacques Berteau, Calixa-Lavallée, Canada, assignor to Autocontrole Inc., Montreal, Canada

Filed Nov. 10, 1992, Ser. No. 973,960
Int. Cl.[5] B28B *7/02*
U.S. Cl. 425—175 **13 Claims**



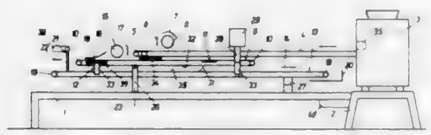
1. A device for forming a variable-shape mold surface, comprising a plurality of cylindrical and helically threaded rods each having a longitudinal axis and a mold surface defining end, and means for assembling said rods into a bundle of laterally adjacent rods in which (a) the helical thread of each rod is engaged with the helical threads of the adjacent rods, (b) each rod is rotatable about its longitudinal axis, and (c) said mold surface defining ends of the rods define said variable-shape mold surface, whereby, upon rotation of one of said helically threaded rods about its longitudinal axis, the thread of said one rod slides on the threads of the adjacent rods to impart longitudinal movement to said one rod relative to the adjacent rods and therefore axial movement of the mold surface defining end of said one rod, to thereby modify the configuration of the variable-shape mold surface.

5,330,344

APPARATUS FOR FORMING DOUGH

Helmut König, Statteggerstrasse 80, A-8045 Graz, Austria

Filed May 28, 1992, Ser. No. 890,545
Claims priority, application Austria, May 31, 1991, 1109/91
Int. Cl.[5] A21C *3/06, 3/10;* **B29C** *53/18, 53/32*
U.S. Cl. 425—321 **25 Claims**



1. Apparatus for forming portioned dough pieces comprising:

a first endless running belt having a carrying run which travels in a first direction;

endless conveyor means for conveying portioned dough pieces from a dough portioning device onto said first endless running belt;

forming means disposed above a downstream end of said first endless running belt for forming dough pieces on said first endless running belt;

a second endless running belt disposed in parallel relation below said first endless running belt, said second endless running belt having a carrying run travelling in a second generally opposite direction to said first endless running belt, said first endless running belt transferring said portioned dough pieces onto said second running belt at an upstream end of second running belt, said first endless running belt having a lower run which cooperates with said carry run of said second endless running belt for further forming said dough pieces as said dough pieces travel along said second endless running belt;

a base frame for supporting said first and second endless running belt;

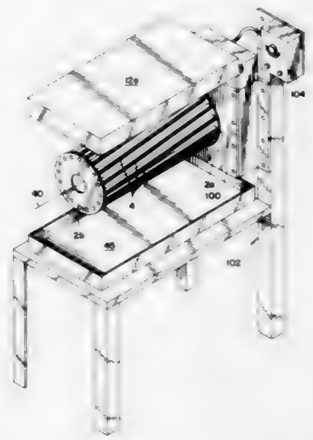
a swivel bearing mounted on said base frame, said swivel bearing having a vertical axis, said second endless running belt being swivel mounted on said swivel bearing for movement in a generally horizontal plane around said vertical axis between an operating position wherein said second endless running belt is disposed obliquely with respect to said first endless running belt, and a resting position wherein said second endless running belt extends substantially parallel to said first endless running belt.

5,330,345

APPARATUS AND METHOD FOR CONTINUOUSLY WINDING A LENGTH OF MATERIAL INTO A HELICAL FORM

Christopher W. Strock, Yarmouth, Me.; Rachel E. Hefner, Troy, N.Y.; Shelly Petronis, Vernon Hills, Ill., and René M. Cooper, Ballston Spa, N.Y., assignors to Sheridan Catheter Corp., Argyle and Rensselaer Polytechnic Institute, Troy, both of N.Y.

Filed Jul. 16, 1992, Ser. No. 914,145
Int. Cl.[5] B65H *75/28;* **B29C** *53/32*
U.S. Cl. 425—391 **16 Claims**



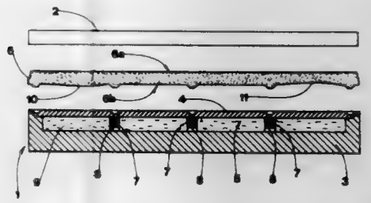
1. An apparatus for continuously winding a length of tubular material into a helical form, comprising: a base plate; two oppositely positioned end plates, at least one of the end plates being connected to the base plate; a plurality of rollers mounted on and extending between said two end plates, said plurality of rollers being arranged in a substantially circular manner about a winder axis, each of said rollers having a respective longitudinal axis and a non-grooved outer surface over which the tubular material travels, each of said rollers having a first portion whose outer diameter is greater than a second portion; means for individually rotatably driving each of said rollers in the same rotational direction about their respective longitudinal axes, said rollers being arranged with respect to the winder axis such that a first plane containing the winder axis and interseting the longitudinal axis of one of the rollers is different from a second plane containing the longitudinal axis of said one roller and intersecting the winder axis so that tubular material fed onto an outer surface of the rollers is continuously wound into a helical form as the length of tubular material moves along the length of the rollers.

5,330,346

DIE FOR CERAMIC TILES

Italo Scardovi, Faenza, Italy, assignor to Sicheata Gruppo Ceramische S.p.A., Sassuolo, Italy

Filed Feb. 1, 1993, Ser. No. 12,024
Claims priority, application Italy, Feb. 13, 1992, M092A000018
Int. Cl.[5] B29C *43/00*
U.S. Cl. 425—405.1 **4 Claims**



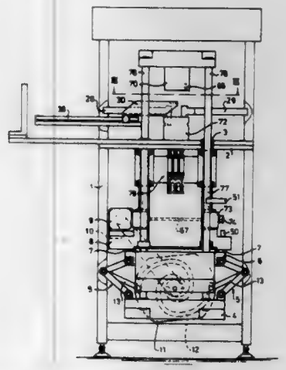
1. A die for ceramic tiles: a first half die and a second half die, at least one of said half dies comprises a rigid, concave base to define a cavity, an incompressible fluid being disposed in said cavity, said cavity being closed by an elastic wall, said elastic wall having an external face on which an imprint of a face of a tile to be realized is inscribed, a lattice being disposed within the cavity, said lattice dividing said cavity into a plurality of chambers, said lattice defines a supporting surface for said elastic wall said elastic wall being fixedly connected to said supporting surface, said imprint being made at a position corresponding to a position of said lattice.

5,330,347

MOULDING PRESS FOR AN INJECTION MOULDING DEVICE

Gerardus J. M. Ten Vaarwerk, Beek, Netherlands, assignor to AMCO Holding B.V., Netherlands

Filed Sep. 24, 1992, Ser. No. 950,822
Claims priority, application Netherlands, Sep. 24, 1991, 9101617
Int. Cl.[5] B29C *35/00*
U.S. Cl. 425—406 **16 Claims**



1. A moulding press for a moulding device, said moulding press comprising:

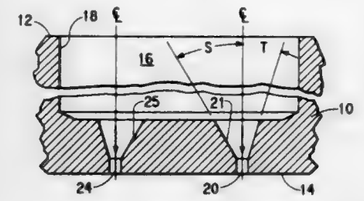
an upper mould half and a lower mould half, said upper mould half being movable with respect to said lower mould half between a mould open position and a mould closed position, said upper mould half being movably connected to tie bars, said tie bars being connected to an upper plate and a lower plate, a connection between said upper and lower plates including two arms pivotally connected to each other and having free ends which are pivotally connected to said upper and lower plates, respectively, a first end of at least one control arm engaging a pivotable point of said two arms and a second opposed end of said control arm engaging on a cam track of a cam disc, said cam disc being mounted rotatably on a frame of said moulding press, means for rotating said cam disc wherein rotation of said cam disc moves said at least one control arm between a first position and a second position, whereby when said at least one control arm moves into said first position, said arms move said lower plate into a retracted position thereby moving said tie bars in a first direction so that said upper and lower moulds are in said mould open position and when said at least one control arm moves into said second position said arms move said lower plate to an extended position thereby moving said tie bars in a second direction so that said upper and lower moulds are in said mould closed position.

5,330,348

SPINNERET FOR THE PRODUCTION OF HOLLOW FILAMENTS

Arun P. Aneja, Greenville; James H. Drew, Goldsboro, both of N.C., and Curtis E. Moran, Jr., Martinsville, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 925,042, Aug. 5, 1992. This application Nov. 9, 1992, Ser. No. 979,775
Int. Cl.[5] D01D *5/24*
U.S. Cl. 425—461 **3 Claims**



1. A spinneret for the production of a hollow filament comprising: a plate having a nozzle having an entrance hole extending therethrough to a complex orifice defined by a plurality of separate slots curved about the center of the orifice, each of said slots having a tapered entrance connecting said hole with said slot and a center line, said tapered entrance forming an inbound angle and outbound angle with respect to said center line, wherein said inbound angle is greater than the outbound angle and the sum of the inbound angle plus the outbound angle does not exceed 55 degrees, whereby a flow of polymer through the complex orifice in polymer streams causes the polymer flowing in each stream to flow faster on the outside of the slots to create an inward bending movement of the polymer streams exiting each slot toward one another to improve coalescence in forming the hollow filament.

5,330,349

INJECTION MOLD HAVING A CYLINDRICAL DOWN GATE

Yuichi Fukushima, Saitama, and Keiichiro Uchida, Tokyo, both of Japan, assignors to Sony Corporation, Japan

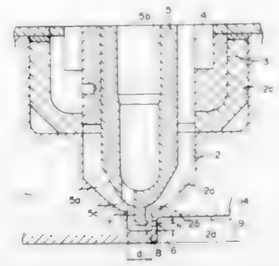
Filed Mar. 24, 1993, Ser. No. 36,261
Claims priority, application Japan, Mar. 30, 1992, 4-103466
Int. Cl.[5] B29C *45/20*
U.S. Cl. 425—549 **4 Claims**

1. A gate apparatus for injection molding, comprising:

an injection-molding die arrangement including a male die and a female die provided with a cavity, one of said dies including a cylindrical down gate having an upper cylindrical portion, a middle taper portion and a lower small cylindrical hole of a diameter smaller than the upper cylindrical portion, and a cross gate formed through a

wall separating the cavity and the lower small cylindrical hole; and

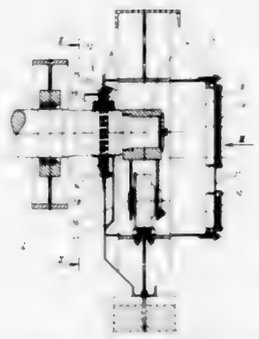
a nozzle chip having a lower taper portion of a shape conforming to the middle taper portion of the down gate, said nozzle chip being provided with an axial projection which axially projects from the lower end of the lower taper



portion and which is provided with a conical projection laterally projecting from the lower end of the axis projection, an injection passage extending through said nozzle chip and communicating with said down gate said nozzle chip being fixedly inserted in the down gate so that the conical projection is positioned so as to extend toward and into immediate proximity of said cross gate

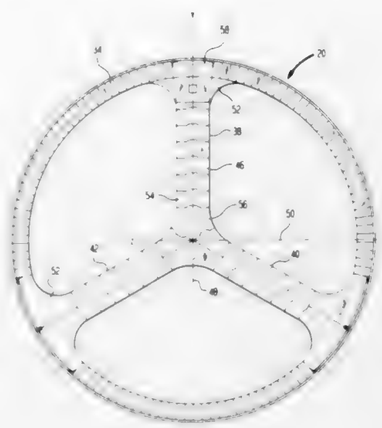
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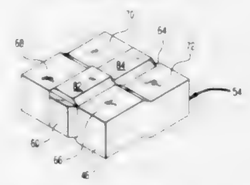
5,330,350
RECIPROCATING GRATE COOLER
Gert Tegtmeier, Oelde, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Fed. Rep. of Germany
Filed Jul. 1, 1992, Ser. No. 907,383
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1991, 9108470
Int. Cl.[5] F23D *15/02*
U.S. Cl. 432—77 **7 Claims**



1. A reciprocating grate cooler construction having a cooler housing under positive air pressure; a drive mechanism external of said housing and having a reciprocable drive shaft extending through an elongate opening in a side wall of said cooler housing; an air tight drive housing enclosing said drive mechanism and encircling said shaft, said drive housing being in communication with the interior of said cooler housing via said opening; and a pressure equalization connection coupling said drive housing to said cooler housing at said opening to enable substantially equal pressure to be maintained within said cooler housing and said drive housing.

5,330,351
TREFOIL CONSTRUCTION FOR ROTARY KILNS
George E. Ransom, Jr., Wayne; George E. Ransom, III, Saddle Brook, both of N.J., and Ralph Ingerson, Jr., Bel Air, Md., assignors to RRI, Inc., Paterson, N.J.
Filed Aug. 6, 1993, Ser. No. 102,919
Int. Cl.[5] F27B *7/28*
U.S. Cl. 432—103 **20 Claims**





1. A multichambered structure for a rotary kiln, said kiln having an inclined, cylindrical body mounted for rotation about the longitudinal axis thereof, said cylindrical body being a steel shell having a refractory brick lining therewithin, said kiln during rotation thereof receiving, at the upstream end for passage down the incline, a charge of materials-to-be-processed and, at the downstream end, heated gases for flowing countercurrent to said charge, said multichambered structure comprising, in combination:

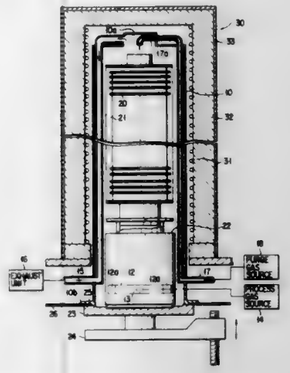
at least three bases formed from radial blocks equidistantly spaced about and adjustably attached at one surface thereof to the inner surface of said steel shell, each said base extending axially along said steel shell and on the surface opposite the attachment having a profile therein for accepting spoke blocks;

at least three walls formed from spoke blocks, each of said walls extending radially from one of said bases and axially along the length of said base to the center portion of the cylindrical body, said spoke blocks having in one side thereof a profile complementary to said radial blocks for mating therewithin and having on the side opposite thereof a profile for accepting additional ones of said spoke bricks;

a hub assembly formed from hub segments interlocking with the spoke brick of the three walls and extending axially along the centralmost portion of the walls; and,

each said spoke block, when viewing the exterior of said walls, having an offset profile and forming a wall resistant to torsional forces resulting from the flow of said charge during the rotation of the kiln.

5,330,352
OXIDATION/DIFFUSION PROCESSING APPARATUS
Shingo Watanabe, Tokyo, and Shinichi Jintate, Hyogo, both of Japan, assignors to Tokyo Electron Sagami Limited, Kanagawa and Mitsubishi Electric Corporation, Tokyo, both of Japan
Filed Jan. 29, 1993, Ser. No. 11,372
Claims priority, application Japan, Jan. 31, 1992, 4-040747
Int. Cl.[5] F27B *9/04*
U.S. Cl. 432—152 **12 Claims**



1. An oxidation/diffusion processing apparatus, comprising:

a processing vessel, arranged such that a longitudinal direction thereof is vertical, for storing a plurality of target objects to be processed;

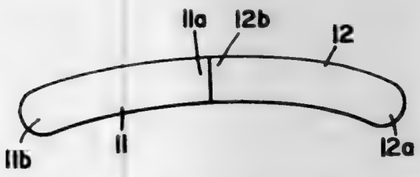
heating means, arranged around said processing vessel, for heating an interior of said processing vessel;

process gas supply means for supplying a process gas from a lower portion of said processing vessel into said processing vessel, said process gas supply means comprising a process gas supply source and a process gas inlet pipe communicating with both said process gas supply source and a lower portion of said processing vessel; and

exhaust means for exhausting an exhaust gas of process gas from an upper portion of said processing vessel, said exhaust means comprising a gas discharge pipe and an exhaust unit connected to said gas discharge pipe, said gas discharge pipe being open in a central portion inside the processing vessel at an upper end portion of the processing vessel and having a part extending upward within the processing vessel;

wherein the process gas is supplied to said target objected heated to a predetermined temperature by said heating means to perform oxidation/diffusion processing to said target objects.

5,330,353
MATRIX BAND
Dennis L. Wavrin, 207 S. Main, Lesueur, Minn. 56058
Filed Mar. 17, 1993, Ser. No. 32,630
Int. Cl.[5] A61C *5/04*
U.S. Cl. 433—39 **6 Claims**



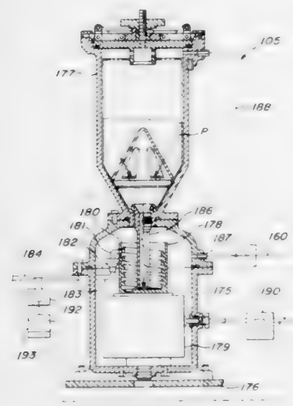
1. A modified dental matrix band for engaging around a first tooth having a prepared cavity area and the first tooth having a contact point with a second tooth, comprising:

(a) a first plastic member;

(b) a second metal member sized and configured for insertion between the first and second teeth at the contact point; and

(c) said first member operatively connected to said second member, thereby forming a modified matrix band having the metal member for insertion between the first and second teeth at the contact point and the plastic member positioned adjacent the prepared cavity area, wherein a fiber optic light may pass through the plastic member to the prepared cavity area.

5,330,354
DENTAL TREATMENT SYSTEM
Ben J. Gallant, Corpus Christi, Tex., assignor to American Dental Technologies, Inc., Troy, Mich.
Filed Mar. 27, 1992, Ser. No. 859,158
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—88 **51 Claims**



1. A system for performing a dental procedure on teeth or associated tooth structure by means of abrasive particles carried by a fluid stream comprising, for use with a source of fluid at a pressure above atmospheric pressure;

(a) means for increasing the pressure of said fluid to about an initial pressure;

(b) pressure selection means for selectively providing said fluid at at least a first pressure or a second pressure, each of said first and second pressures being less than about said initial pressure;

(c) abrasive mixing means for combining the abrasive particles with said fluid at either said first pressure or said second pressure to provide an abrasive-laden fluid stream;

(d) selectively operable means for activating and deactivating said abrasive mixing means; and

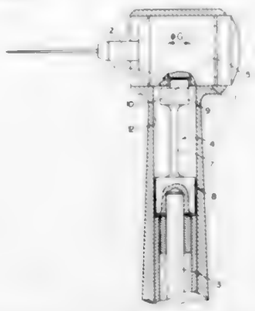
(e) nozzle means for delivering said abrasive-laden fluid stream to the teeth or tooth structure undergoing said dental procedure.

5,330,355

ENDODONTIC ANGLE-PIECE

Eric Lietaer, Sallanches, France, assignor to Anthogyr, société anonyme, Sallanches, France

PCT No. PCT/FR90/00750, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO91/18555, PCT Pub. Date Dec. 12, 1991
PCT Filed May 28, 1990, Ser. No. 952,821
Int. Cl.[5] A61C *1/18*
U.S. Cl. 433—112 11 Claims



1. An angle-piece for an endodontic instrument (2) comprising

a head (1),

a transmission shaft (3) mounted so that it is guided and rotates in the head (1), the transmission shaft having a longitudinal axis,

an instrument holder sleeve (5) that rotates about, and slides along, a transverse axis which is perpendicular to said longitudinal axis,

a cam (10) that engages the instrument holder sleeve (5), said cam being driven by the transmission shaft (3), said cam being off-centred with respect to said longitudinal axis of the transmission shaft (3)

wherein the angle-piece comprises a main transmission element the main transmission element being positioned between the cam and the transmission shaft (4), the main transmission element being made of a material having a modulus of elasticity, the main transmission element (4) being rotated by the transmission shaft (3) and being angularly and freely flexible in the head (1) with respect to said longitudinal axis of the transmission shaft (3), at its end,

wherein, when forces (F) are applied to the instrument (2), bending of main transmission element (4) reduces an amplitude of movement of the instrument holder sleeve (5) and of the instrument (2).

5,330,356

Patent Not Issued For This Number

5,330,357

SYSTEM FOR TREATING PERIODONTAL DISEASE

Duane C. Keller, 62 Grantwood, St. Louis, Mo. 63123

Division of Ser. No. 454,430, Dec. 12, 1989, Pat. No. 5,129,824.
This application Jul. 6, 1992, Ser. No. 909,142
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—215 4 Claims



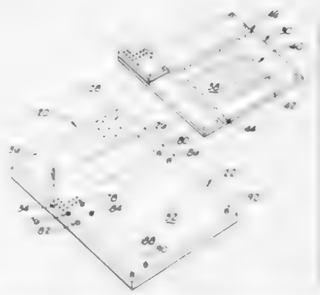
1. A system for treatment of a patient having gum disease, said patient having gums and bony structure for supporting teeth, said system comprising a length of dental floss having a supply of a medicament thereon sufficient for delivering said medicament to the bony structure or subgingivally below the gum line and for treating a plurality of disease sites, said dental floss being capable of being used by said patient without help from a dental professional so as to deliver said medicament to said bony structure supporting said teeth and so as to at least partially effect bonding of said medicament with said bony structure thereby to provide a residual medication action on said bony structure after said dental floss has been removed so as to impede deterioration of said bony structure and said gums.

5,330,358

COMPUTERIZED EDUCATIONAL AND ENTERTAINMENT DEVICE

Sarukkai R. Narayanan, 2120 NW. 113th St., Oklahoma City, Okla. 73120

Filed Apr. 7, 1992, Ser. No. 864,565
Int. Cl.[5] G09B *7/00*; A63F *9/00*
U.S. Cl. 434—340 11 Claims



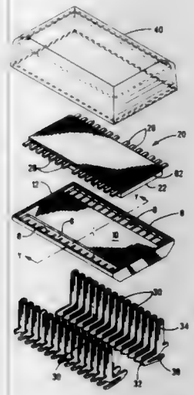
1. In an automated educational and entertainment device of the type including a housing having a work surface formed thereon, computer means within the housing for processing data inputted to the computer means and generating information for the user of the device, output means mounted on the housing and electrically communicating with the computer means for providing information from the computer means to the user of the device, and input means supported by said work surface and electrically communicating with the computer means for providing user generated data to the computer means, the improvement wherein the input means is formed on a support member separate from the housing and wherein the device further comprises communication means formed partially on the housing and partially on the support member for providing electrical communication between the input means and the computer means; the input means further comprising a first array of substantially parallel conductors extending along the surface of the support member; a second array of substantially parallel conductors extending along the surface of the support member substantially perpendicularly to the first array, wherein each array is comprised of: a plurality of write groups each comprising a plurality of interconnected, spaced conductors extending across the support member; and a plurality of read groups each comprised of a plurality of interconnected, spaced conductors extending across the support member and interspersed with conductors of the write groups such that one conductor of each read group is disposed between a selected pair of conductors of each write group; and means for connecting the write groups and the read groups to the I/O ports of a computer.

5,330,359

SOCKET FOR STACKING INTEGRATED CIRCUIT CHIPS

Kevin E. Walker, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 26, 1993, Ser. No. 38,738
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—69 11 Claims



1. A socket for supporting an integrated circuit chip and electrically connecting said chip to circuit traces on a substrate, said chip having electrical leads extending therefrom in respective outward directions in a spaced relationship, said socket comprising:

a dielectric base defining a top surface for supporting said chip, and a bottom surface, the base holding a plurality of electrical contacts, each of said contacts having a foot portion which extends below the bottom surface for electrical connection with one of said traces, and a main body portion which extends above the top surface for electrical connection with one of said leads, said body portions being associated with respective said leads, each of the main body portions having a solder coating on a side thereof, said solder coated sides being in a spaced relationship corresponding to the spaced relationship of said leads and extending beside their respective said leads in respective directions parallel to the respective outward directions of their respective said leads such that said sides are in abutting relationship with their respective said leads when said chip is disposed in said socket, whereby said contacts are electrically connectable with said leads by reflow of said solder coating.

5,330,360

MEMORY CARD AND CONNECTOR THEREFOR

Edward K. Marsh, Kernersville, and Riley K. Barker, Lexington, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

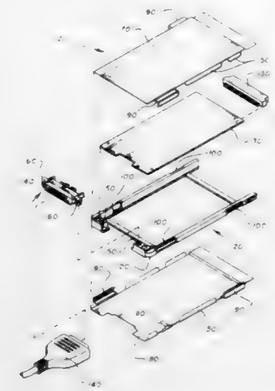
Filed Aug. 21, 1992, Ser. No. 933,321
Int. Cl.[5] H01R *9/09, 13/648*
U.S. Cl. 439—76 7 Claims

1. A memory card of the type having a frame for housing a circuit element comprising:

connector means for interfacing data between the circuit element and an outside environment which will utilize the memory card, said connector means comprising mating means for mechanically interfacing said connector means to the frame;

mating means on the frame for mechanically interfacing with said connector mating means, said frame mating means and said connector mating means being mechanically interfaced such that the structural integrity of the card is enhanced;

cover means in sealing engagement with the frame for securing the circuit element in the frame; and



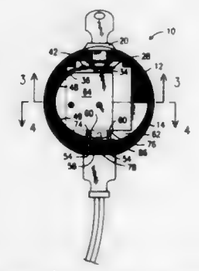
grounding means integrally attached to the cover means for grounding the circuit element to the memory card.

5,330,361

ELECTRICAL PLUG LOCKING DEVICE

Gary W. Brend, 3329 Cheviot Dr., Tampa, Fla. 33618

Filed Aug. 20, 1993, Ser. No. 109,662
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—134 15 Claims



1. A locking device for use with an electrical plug having two or more prongs, the locking device comprising,

a top housing generally hemi-spherical in shape having an inner cavity and an aperture at an apex for insertion of a keyed tumbler lock element,

a bottom housing generally hemi-spherical in shape having an inner cavity and a planar bottom surface containing at least two apertures for insertion of prongs from an electrical plug,

the tumbler lock element having a bottom portion engaging a slot in an intermediate guide lever mounted in the top housing inner cavity,

a locking element mounted on each side of the slot in the intermediate guide lever to secure the tumbler loch to the intermediate guide lever,

a flexible cable rotatably attached at an end of the intermediate guide lever and inserted into a channel of inner walls of the top and bottom housings,

a guide plate mounted in the inner wall of the bottom housing to assist movement of the flexible cable,

a first and second notches on bottom portion of the guide

plate to receive and align a tip of the electrical plug prong and,

a plurality of attaching elements axially mounted within bores on a planar top surface of the bottom housing and a planar bottom surface of the top housing to attach the top and bottom housing together.

5,330,362

LOW-OPERATING-FORCE CONNECTOR

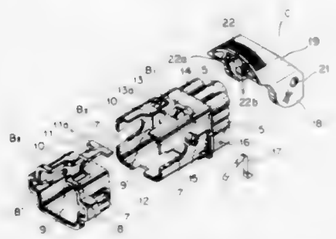
Keiichi Ito; Hirotaka Noda; Nobutoshi Hagiwara, all of Aichi; Naoto Taguchi, Shizuoka; Yuji Hatagishi, Shizuoka, and Toshifumi Matsuura, Shizuoka, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 32,005

Claims priority, application Japan, Apr. 3, 1992, 4-020077

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—157 **4 Claims**



1. A low-operating-force connector comprising: a female housing and a corresponding male housing;

driven pins provided on opposite sides of one of said housings;

pin guide grooves formed on opposite sides of the other of said housings for guiding said driven pins;

a cam member substantially in a gate-like configuration comprising a pair of levers each having a cam groove formed therein, and a lever handle interconnecting said levers, said levers movable mounted on a respective one of said opposite sides of said other housing with their cam grooves in alignment with said pin guide grooves so that through rotation of said cam member or levers, said driven pins are brought into and out of engagement with said levers to lock together or unlock said female and male housings;

a pair of resilient locking pieces provided on said one housing, each having on its outer periphery an engagement projection and an outwardly presented grip at a free end thereof projecting beyond said lever handle when the female and male housings are locked, said locking pieces being resiliently displaceable toward each other in a direction parallel to a wall surface on which the pair of locking devices are provided;

a pair of engagement portions provided on said lever handle of the cam member for engagement with said engagement projections of the resilient locking pieces; and

spring means disposed between said levers of the cam member and said other housing for normally urging said cam member into an upright opened position,

whereby when said female and male housing are completely fitted with each other through rotation of said cam member to a closed leaning position against said one housing, said engagement projections of the resilient locking pieces engage with said engagement portions to lock said cam member in the closed position, and whereby when said engagement portions are released from said engagement projections of the resilient locking pieces by manual displacement of the locking pieces toward each other, said cam member is opened by a resilient action of said spring means up to a starting position for separating said female and male housings.

5,330,363

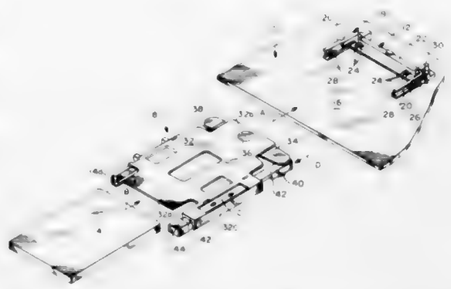
IC PACK CONNECTOR APPARATUS WITH SWITCH MEANS

Michael J. Gardner, Pleasanton; Jerry D. Kachlic, Milpitas, both of Calif., and Paul M. O'Brien, Knockerra Kilrush, Ireland, assignors to Molex Incorporated, Lisle, Ill.

Filed May 13, 1993, Ser. No. 61,133

Int. Cl.[5] H01R *13/635*

U.S. Cl. 439—188 **5 Claims**



1. In a connector apparatus for providing an interconnection between an IC pack and a printed circuit board, including

a header connector for mounting on the printed circuit board into which the IC pack is inserted and from which it is ejected,

a plurality of terminals on the header connector adapted for interconnection of the IC pack to electrical traces on the printed circuit board, and

an IC pack ejector mechanism mounted on the header connector including a reciprocally mounted actuator member adapted to effect disconnection of the IC pack from the header connector,

wherein the improvement comprises:

an electrical switch on the header connector adapted to be actuated in response to movement of the IC pack, and including an actuatable portion located in the path of movement of the actuator member, wherein said actuatable portion comprises one of a pair of spaced-apart contacts.

5,330,364

ELECTRICAL CONNECTOR FOR WELL SURVEYING TOOL

Houston B. Mount, II, and Jim R. Powers, both of Tulsa, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Jan. 31, 1992, Ser. No. 829,997

Int. Cl.[5] H01R *17/18*; **G01V** *1/00*

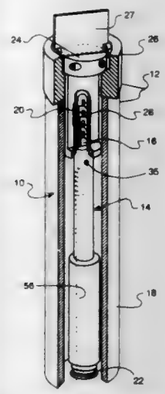
U.S. Cl. 439—190 **17 Claims**

1. An electrical connector assembly comprising:

a non-conductive support having a plurality of contacts suitable for establishing electrical connection with a well-bore examination tool through a tool positioning pipe;

an adapter for mounting the non-conductive support in the tool positioning pipe, the adapter having an inlet for receiving the non-conductive support, an outlet for allowing the plurality of contacts to extend outwardly therefrom, and a means for holding the non-conductive support; and

a receptacle for receiving the non-conductive support, the receptacle having a plurality of contact elements suitable for establishing electrical connection with the plurality of



contacts and for establishing electrical connection with an electronics package.

5,330,365

ADAPTER UNIT WITH FLEXIBLE CARRIER

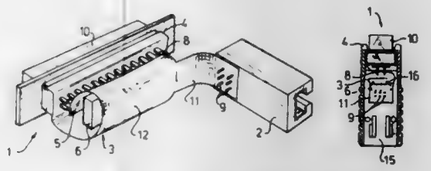
Anthony M. Leeson, Handelskade 7, 's-Hertogenbosch, Netherlands 5211-TH

Filed Feb. 12, 1993, Ser. No. 17,080

Claims priority, application Netherlands, Feb. 13, 1992, 9200262

Int. Cl.[5] H05K *5/00*

U.S. Cl. 439—77 **2 Claims**



1. An adapter for mating two connectors, comprising:

a housing for supporting first and second electrical connectors on two sides of said housing, said housing having a first opening for mating connection with the first electrical connector and a second opening for mating connection with the second electrical connector;

a carrier disposed in said housing and formed from a flexible material, said carrier having:

a first and second surface;

electrical conductive pathways on said first surface, said carrier connected to the first and second electrical connectors with said conductive pathways being electrically connected to terminals on the first and second electrical connectors;

one or more electronic components disposed on said first surface, each said component electrically connected to said conductive pathways;

a flap-like portion; and

said carrier wrapped around each said component in such a manner as to disposed said flap-like portion between each said component and the terminals of the first connector, wherein said flap-like portion provides electrostatic shielding for each said component.

5,330,366

CONNECTOR WITH UNLOCKING MEMBER

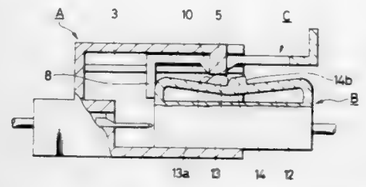
Masanori Tsuji, and Motohisa Kashiyama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Aug. 4, 1993, Ser. No. 101,710

Claims priority, application Japan, Aug. 4, 1992, 4-054683[U]

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—352 **6 Claims**



1. A connector provided with an unlocking member, comprising:

a female connector housing having an opening provided at an end thereof, being formed with a locking pawl portion projecting from a wall of said female connector housing and extending in an inward direction;

a male connector housing for being fitted into the opening of said female connector housing, being formed with a flexible locking arm extending in a fitting direction and being supported by a wall of said male connector housing at both ends thereof and having a locking projection engagable with the locking pawl portion of said female connector housing; and

an unlocking member held by said female connector housing so as to be slidable in a direction opposite to the fitting direction during disengagement of the male connector housing from the female housing, being formed with an unlock drive projection and a male connector removal portion, said unlocking member being so arranged that, when moved within said female connector housing, said unlocking member deforms the flexible locking arm of said male connector housing by bringing the unlock drive projection thereof into contact with the locking projection of said male connector housing to disengage the locking projection of said male connector housing from the locking pawl portion of said female connector housing and further removing said male connector housing from said female connector housing by urging said male connector housing past the male connector removal portion thereof.

5,330,367

CUTTING AND CLAMPING TERMINAL ELEMENT

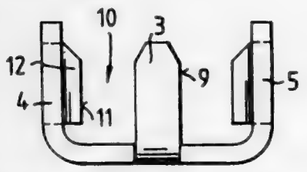
Andrzej Janczak, Berlin, Fed. Rep. of Germany, assignor to Krone Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Mar. 3, 1993, Ser. No. 25,967

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, 4207369

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—402 **20 Claims**



1. A cutting and clamping terminal element for contacting

electrical conductors, particularly for cable cores of telecommunication technology, comprising:

a U-shaped section piece including a bottom portion, and first and second opposite side walls; and

a central web cut free from said bottom portion of the U-shaped section piece and upwardly bent off, said central web being spaced from said first side wall, said central web, said first side wall and a distance between said central web and said first side wall forming a cutting and clamping contact means for receiving a cable core

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5,330,368

APPARATUS FOR LIGHTING BASELESS BULBS

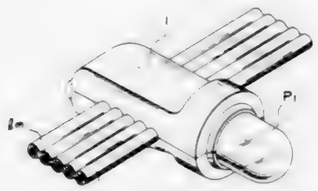
Masaaki Tsuruzono, 1-18-1, Yazaike, Adachi-ku, Tokyo, Japan

Filed Aug. 28, 1993, Ser. No. 936,522

Claims priority, application Japan, Feb. 7, 1992, 4-56814

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—409 **8 Claims**



1. An apparatus for lighting a number of baseless bulbs for the purpose of decoration, comprising:

a flat bundle of cables each sheathed with an electrically insulative synthetic resin and arranged in a spaced relationship while extending in parallel with each other,

a plurality of baseless bulbs arranged one after another along at least one cable of said flat bundle of cables while making electrical connection to said at least one cable via lead wires, and

a plurality of holding means each serving to firmly hold a respective baseless bulb and said flat bundle of cables so that a central axis of a bulb held by the holding means extends parallel with a plane of said flat bundle of cables and perpendicular to the extending direction of said cables, said plurality of holding means being arranged one after another in the spaced relationship along said flat bundle of cables;

wherein said holding means comprise moldable plastic material; and

wherein each of said plurality of holding means is in the form of a socket comprising:

a main body molded of a flexible elastic synthetic resin and comprising a first half and a second half jointed to each other via a folding portion interposed therebetween, said first half and said second half being integrated with each other in a face-to-face relationship by folding said second half along said folding portion when said socket is used,

a first clamping wall formed on said first half of said main body for firmly holding a base portion of a baseless bulb in a clamped state when both halves of the main body are integrated with each other for use in the face-to-face relationship, said first clamp wall being contoured to exhibit a semicylindrical shape corresponding to the base portion of said baseless bulb,

a second clamp wall formed on said first half for firmly receiving a plurality of transversely extending cables constituting a flat bundle of cables in the clamped state when both halves of the main body are integrated with each other for use in the face-to-face relationship, said second clamping wall being contoured to exhibit a corrugated wall surface consisting of a plurality of transversely extending semicylindrical cable receiving grooves corresponding to said plurality of transversely extending cables,

a first clamping wall formed on said second half for firmly holding the base portion of said baseless bulb in the clamped state in cooperation with said first clamp wall on said first half when both halves of the main body are integrated with each other for use in the face-to-face relationship, said first clamp wall being contoured to exhibit a semicylindrical shape corresponding to the base portion of said baseless bulb,

a second clamp wall formed on said second half for firmly receiving said plurality of transversely extending cables constituting said flat bundle of cables in the clamped state in cooperation with said second clamp wall on said first half when both halves of the main body are integrated with each other for use in the face-to-face relationship, said second clamp wall being contoured to exhibit a corrugated wall surface consisting of a plurality of transversely extending semicylindrical cable receiving grooves corresponding to said plurality of transversely extending cables, and

at least two selective contact pieces fitted into said first clamp wall formed on said first half for firmly receiving said transversely extending cables in the clamped state while extending at a right angle relative to said transversely extending cables, a first one of said selective contact pieces being electrically connected to one of lead wires extending from said baseless bulb by receiving the lead wire in a V-shaped groove formed on a projected part of said first selective contact piece, and moreover, electrically connected to one cable selected from said plurality of transversely extending cables via a piercer projecting from said first selective contact piece and pierced into said selected cable, a second one of said selective contact pieces having a length different from that of the first selective contact piece and being electrically connected to the other lead wire extending from said baseless bulb by receiving said other lead wire in a V-shaped groove formed on a projected part of said second selective contact piece, and moreover, electrically connected to another cable selected from said plurality of transversely extending cables via a piercer projecting from said second selective contact piece and pierced into said selected other cable.

5,330,369

CONNECTOR

Takao Nozaki, and Masamitsu Chishima, both of Mie, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Division of Ser. No. 684,403, Apr. 12, 1991, Pat. No. 5,217,390. This application Mar. 24, 1993, Ser. No. 36,234

Claims priority, application Japan, Apr. 16, 1990, 2-99578; May 30, 1990, 2-57035[U]; Jun. 22, 1990, 2-66733[U]; Jul. 13, 1990, 2-74696[U]

The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.

Int. Cl.[5] H01R *3/00*

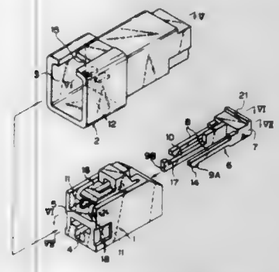
U.S. Cl. 439—489 **1 Claim**

1. A connector comprising:

a pair of connector housings each including a front half portion for accommodating a terminal and which are coupled with each other;

a locking mechanism including a cantilever-like resilient locking member having a leading end and disposed on one of said pair of connector housings, and a locking portion disposed on the other connector housing, in which the leading end of said cantilever-like resilient locking member of the one of said pair of connector housings interferes with said locking portion of the other connector housing so as to be flexed away from a normal state and is then restored to its normal state after a lapse of predetermined time so as to be brought into engagement with said locking portion; and

a detecting spacer which is operative to be locked and connected to one of said pair of connector housings by means of another locking member, a lock-releasing portion being provided on the other connector housing for releasing locking between said detecting spacer and said one of said pair of connector housings when said other connector housing is properly coupled with said one of said pair of



connector housings, and a second locking portion being provided on said detecting spacer so as to interfere with said cantilever-like resilient locking member of said locking mechanism when said cantilever-like resilient locking member is in a flexed posture which is away from its normal state, to thereby prevent the withdrawal of said detecting spacer when said locking mechanism for said pair of connector housings is in a lock-error condition.

5,330,370

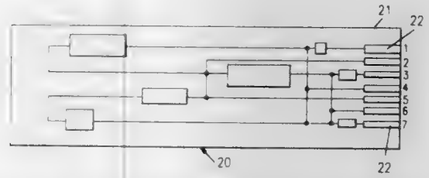
MULTIPLE-INTERFACE SELECTION SYSTEM FOR COMPUTER PERIPHERALS

Brad R. Reddersen, Eugene; Phillip W. Shepard, Elmira, and Rockie D. Moch, Eugene, all of Oreg., assignors to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.

Continuation of Ser. No. 788,267, Nov. 4, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,189

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—502 **32 Claims**



1. An interface configuration system for a computer peripheral comprising:

(1) a given first host computer;

(2) a computer peripheral having (a) at least two internal configuration selection circuits and (b) sufficient internal hardware and/or firmware to be internally configurable for at least the given first host computer and a given second host computer selectable by actuation of a given one or more of said internal configuration selection circuits; and

(3) an interface connector cable having a first end connectable to the computer peripheral and a second end connectable to the given first host computer,

wherein the first end of the interface connector cable includes a multiple contact connector constructed and arranged to be properly physically and electrically connectable to a specific computer peripheral or class of computer peripherals,

wherein the first end of the interface connector cable includes at least one electrical connection between two contacts which, when the first end of the interface connector cable is plugged into the computer peripheral, completes the given one or more of said internal configuration selection circuits within the computer peripheral thereby configuring the internal hardware and/or firmware of the computer peripheral to correspond to the given first host computer as opposed to the given second host computer.

5,330,371

CONNECTOR

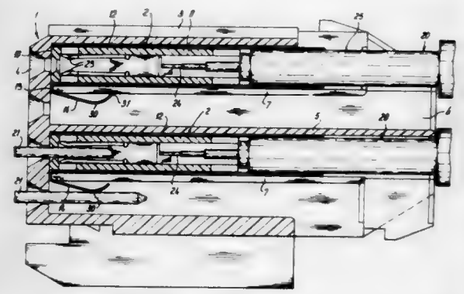
Derek Andrews, Platanenstraat 23, Vinkel, Netherlands 5382 KA

Filed Mar. 12, 1993, Ser. No. 30,990

Claims priority, application Netherlands, Mar. 26, 1992, 9200559

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—579 **20 Claims**



1. A connector, comprising a body of electrically insulating material, contact members fitted in said body, and an outer conductor fitted around said body, said body being provided at a contact side with one or more contact holes for receiving signal pins of a complementary connector and contacting said signal pins with said contact members, said outer conductor being provided with one or more strip-type contact springs extending along said connector for contacting earth pins of said complementary connector, said contact springs being made integral with said outer conductor, and an edge of said outer conductor lying at least in the vicinity of said contact side of said body, characterised in that said contact springs extend essentially from said edge along said outer conductor, in such a way that said outer conductor has an essentially uninterrupted outer periphery.

5,330,372

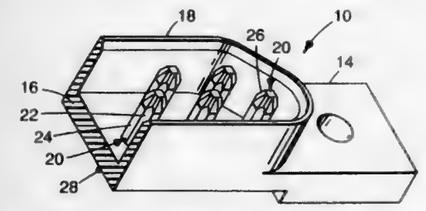
HIGH-DENSITY CONNECTOR

Richard A. Pope; Clyde W. Boling, both of Austin, and David A. Bates, Cedar Park, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 13, 1993, Ser. No. 61,212

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—692 **2 Claims**



1. A male connector component comprising:

an electrically insulative substrate having a substantially flat surface;

a buttress including an electrically insulative portion and electrically conductive portions extending substantially perpendicularly from said flat surface of said substrate, said buttress having an octagonal cross-section where said buttress meets said substrate and including a tapered tip having a quadrilateral cross-section;

four electrically conductive contacts forming said conductive portions of said buttress and inset into said insulative portion of said buttress and electrically insulated from each other, said contacts each having a substantially flat surface forming one of the surfaces of said buttress and a bent tip tapering in both width and thickness and inset into one of said buttress tip quadrilateral surfaces such that a surface of said bent tip of said contact is substantially coplanar with said one quadrilateral surface

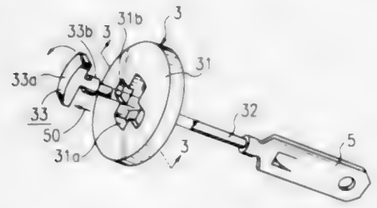
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5,330,373

SOCKET FOR A LAMP

Takashi Terayama, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,609
Int. Cl.[5] H01R *13/24*
U.S. Cl. 439—700 **8 Claims**



1. In a lamp socket including a central electrode having a substantially rectangular button-shaped terminal having a given shape disposed at a central part of a circular disc-shaped insulator and a coil spring for normally biasing said central electrode, said button-shaped terminal having an electric cord connected thereto, the improvement comprising:

a substantially rectangular-shaped through-hole formed at the central part of said insulator and being sized to allow said button-shaped terminal to be inserted therethrough, said through hole having a sectional shape conforming to the shape of said button-shaped terminal;

a fitting groove formed on a front surface of said insulator at a position angularly offset from said through hole by angle of about 90° and being sized to enable said button-shaped terminal to be seated in said fitting groove, and

said insulator having an integral clip portion arranged on a rear surface of said insulator to permit the button-shaped terminal to pass through said clip portion when the button-shaped terminal is aligned to pass through said through-hole and to hold said button-shaped terminal when the button-shaped terminal is seated in said fitting groove.

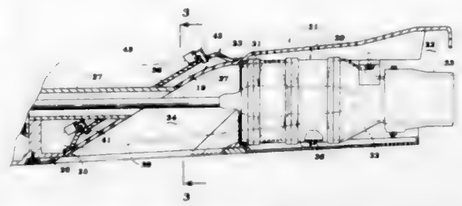
5,330,374

JET PROPULSION SYSTEM

Tetsuya Ishino, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 16, 1993, Ser. No. 18,021
Claims priority, application Japan, Feb. 17, 1992, 4-61182
Int. Cl.[5] B63H *11/02*
U.S. Cl. 440—42 **11 Claims**

1. A watercraft comprised of a hull, a jet propulsion unit mounted by said hull for propulsion of said watercraft, said jet propulsion unit being comprised of an outer housing comprised of a water inlet portion forming a water inlet opening and water inlet duct for drawing water from the body of water in which said watercraft is operating, said water inlet portion of said outer housing terminating at an outer housing impeller portion containing an impeller for pumping the water and an outer housing discharge nozzle, and means for providing with



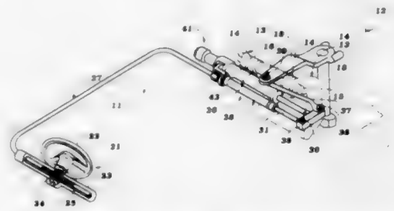
said outer housing an enclosed sound insulation jacket extending around at least a portion of said jet propulsion unit outer housing from substantially said water inlet opening to substantially said impeller portion.

5,330,375

STEERING SYSTEM FOR MARINE PROPULSION UNIT

Eiichiro Tsujii, and Akihiro Onoue, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 8, 1993, Ser. No. 14,650
Claims priority, application Japan, Feb. 6, 1992, 4-054110
Int. Cl.[5] B63H *25/02*
U.S. Cl. 440—61 **14 Claims**



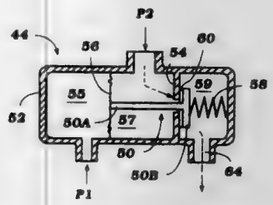
1. A steering arrangement for a marine outboard drive comprised of a clamping bracket adapted to be affixed to the transom of a watercraft, a swivel bracket, tilt pivot means for pivotally supporting said swivel bracket about a generally horizontally extending tilt axis relative to said clamping bracket, a propulsion device carried by said swivel bracket for steering movement about a vertically extending steering axis, a steering arm affixed to said propulsion device and extending toward the watercraft transom, a steering operator remote from the transom for operator control, a control cable affixed at one end to said steering operator for operation thereby, a guide tube for receiving a member operably connected to the other end of said steering cable and supporting said member for movement along a reciprocal axis parallel to and spaced from said tilt axis, a hydraulic cylinder for containing a piston operatively connected to said propulsion device for assisting in the steering, and means for operating said steering arm from said member for steering of said propulsion device.

5,330,376

WATER COOLING SYSTEM FOR A MARINE PROPULSION UNIT

Shigeo Okumura, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 19, 1991, Ser. No. 762,510
Claims priority, application Japan, Sep. 20, 1990, 2-248892
Int. Cl.[5] B63H *21/10*
U.S. Cl. 440—88 **23 Claims**



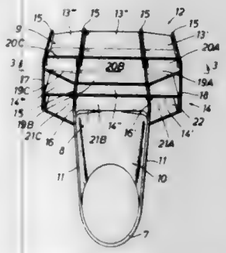
1. A water cooling system for a marine propulsion unit comprising: a coolant jacket having an input port and a discharge port; a pressure sensitive valve device responsive to a pressure differential in said coolant jacket, and wherein said pressure sensitive valve device is open to flow therethrough when said pressure differential exceeds a predetermined limit; a temperature sensitive valve device, said temperature sensitive valve device and said pressure sensitive valve device positioned within said cooling system in parallel flow paths; and wherein said pressure sensitive valve device and said temperature sensitive valve device are located just beyond said discharge port of said coolant jacket.

5,330,377

MULTI-LEVEL SWIM FIN

Gregory P. Kernek, 236 Royal Oaks, Huntsville, Tex. 77340

Filed Feb. 2, 1993, Ser. No. 14,824
Int. Cl.[5] A63B *31/11*
U.S. Cl. 441—64 **9 Claims**



7. A swim fin assembly comprising: a shoe having a toe portion; a fin assembly having upper and lower levels, each of said levels having a pair of fin members; means for connecting only said lower level to said toe portion; and substantially planar side wall means for attaching said upper and lower levels of fin members to one another in vertically spaced relationship.

5,330,378

FLOAT FOR ROPES

David E. Park, 426 Bon-Aire Ave., New Castle, Pa. 16105

Continuation-in-part of Ser. No. 646,343, Jan. 28, 1991, Pat. No. Des. 329,486. This application Aug. 21, 1992, Ser. No. 933,076
Int. Cl.[5] B63B *22/00*
U.S. Cl. 441—133 **9 Claims**

1. A float assembly for providing buoyant support to a line of indeterminate length comprising;

a plurality of circumferentially adjacent pieces joined along adjacent substantially planar mating surfaces so as to form a volume of buoyant material surrounding a longitudinal hole suitable for passage of the line;

cooperating fastening means located on said planar mating surfaces to semipermanently fasten adjacent ones of said circumferentially adjacent pieces to each other, said cooperating fastening means comprising snap fit male and female type fasteners, whereby;



said volume of buoyant material forming said float assembly may be attached to a line so as to surround the line without the need to thread the line through said longitudinal hole, and

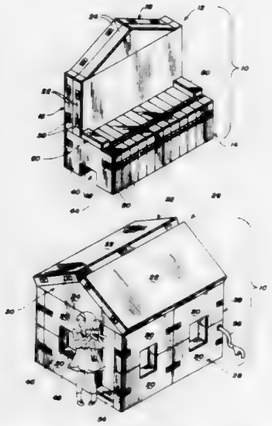
said volume of buoyant material forming said float assembly may be removed from the line without pulling an end of the line out of said longitudinal hole and without the use of tools.

5,330,379

CONSTRUCTION SET

Douglas L. Roh, and Katrina J. Roh, both of 718 Barham Down Dr., Manchester, Mo. 63011

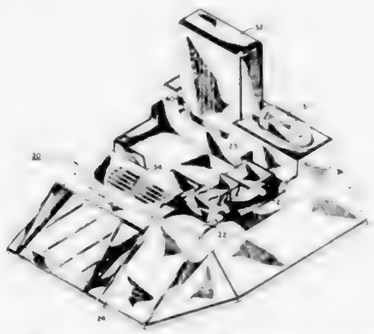
Filed Apr. 5, 1993, Ser. No. 42,702
Int. Cl.[5] A63H *33/00, 33/04, 33/30*; A47C *7/00*
U.S. Cl. 446—71 **7 Claims**



1. A construction set that can be stored in a form of a sofa having a bench, a backrest and a headrest comprising a plurality of first pieces forming the bench, a plurality of second pieces forming the backrest and a plurality of third pieces forming the headrest, wherein pairs of fasteners of opposite gender are arranged on the faces of said first, second and third pieces, with even numbers of pairs of fasteners of opposite gender positioned about the faces such that when like faces with fasteners of like pieces are placed in registry, some of the fasteners on the contacting faces mate, said pairs of fasteners further positioned about the faces such that some of the fasteners on at least one face of each first, second and third pieces mate with some of the fasteners on at least one face of each

unlike piece, said pieces being flexible solids with planar faces and being easily and completely disassembled from the sofa form and rearranged into a toy house having sidewalls, gables and a roof wherein the first pieces form the sidewalls, the second pieces form the roof and the third pieces form the gables.

5,330,380
AUDIBLE MESSAGE/INFORMATION DELIVERY SYSTEM
Robert McDarren, Ridgefield, Conn., and Joseph Truchsess, City Island, N.Y., assignors to Link Group International, Ridgefield, Conn.
Filed Mar. 15, 1993, Ser. No. 31,312
Int. Cl.[5] A63H *33/00*
U.S. Cl. 446—397 **18 Claims**



1. A message or information delivery system for providing a pre-recorded, specially designated message selected from a plurality of pre-recorded messages in response to the receipt of a message identifying code, said system comprising

A. at least one group of toys having a plurality of separate and distinct models within the group, with each model having a plurality of identical members and selected from the group consisting of toy vehicles, dolls, stuffed animals, airplanes and action figures;

B. separate and distinct code means associated with each member of each model for specifically designating the particular model of the group to which said member belongs; and

C. a message delivering/handling member comprising

a. at least one input zone for

1. independently receiving and cooperatingly interacting with any member of any model of the group, and

2. determining the identifying code associated with each member,

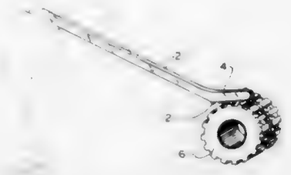
b. electronic circuitry means incorporating a plurality of separate, distinct, individualized pre-recorded messages, each of which are specifically associated with at least one particular model,

c. processing means for receiving the identifying code and selecting the particular message associated with said code, and

d. output means connected to said processing means for receiving the message and audibly delivering the message to the user,

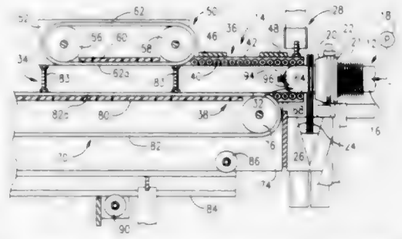
whereby a specially created, specific message relating to one particular model in a group of models is uniquely identified and audibly delivered to the user upon demand.

5,330,381
GROOVED WHEEL AND STICK TOY
Arthur W. Hutcheson, 360 New World Dr., Clairton, Pa. 15025
Filed Oct. 21, 1992, Ser. No. 964,063
Int. Cl.[5] A63H *33/02*
U.S. Cl. 446—450 **5 Claims**



1. A wheel and stick amusement toy comprising: a stick portion comprising a handle and a blade portion, said blade portion having a series of grooves, a wheel portion having a tread surface, said tread surface running along the periphery of said wheel and having two outer grooved surfaces and an inner grooved surface, said inner grooved surface between said outer surfaces, said outer grooved surfaces describing a circle with a first diameter, and said inner grooved surface describing a circle with a second diameter smaller than said first diameter so that said inner grooved surface forms a channel between said outer grooved surfaces.

5,330,382
SIZER ADAPTER APPARATUS AND METHOD FOR CREATING SUBSTANTIALLY EVENLY AND INCOMPLETELY FILLED CASINGS
Richard G. Powers, Overland Park, Kans., assignor to Marlen Research Corporation, Overland Park, Kans.
Filed Oct. 5, 1992, Ser. No. 956,604
Int. Cl.[5] A22C *11/00*
U.S. Cl. 452—37 **21 Claims**



1. Sizing apparatus for handling flowable material and discharging the same as a discrete portion encased within an incompletely filled casing, said sizing apparatus comprising:

an elongated, tubular stuffing horn presenting an internal diameter, a rearward material input end, and a forward discharge end adapted for receiving a casing thereover permitting the casing to receive said flowable material;

a pump operably coupled with said horn input end for delivery of a discrete portion of said material to and out of said discharge end,

said casing having an internal volume greater than the volume of a discrete portion of said material in order to accommodate said discrete portion while remaining incompletely filled, said casing having a maximum potential expanded diameter if completely filled with said material which is greater than said horn internal diameter; and

means for substantially evenly spreading said discrete portion of said material within said casing receiving the same, and for preventing complete filling of a section of said casing while leaving other sections thereof substantially unfilled, said spreading means including:

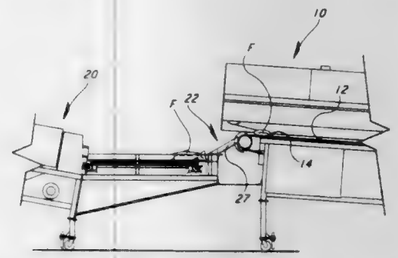
tunnel-defining structure presenting an inlet end and an outlet end and comprising a pair of elongated spaced apart, opposed, casing-conveying members, said inlet end having an initial contact point where said casing first engages the inlet end after passage from said horn discharge end; and

means mounting said tunnel-defining structure with the inlet end thereof closely adjacent the discharge end of said horn for receiving said casing having material therein as the casing is discharged from said horn, and for spreading said material along the entire length of the casing as the casing passes through the tunnel-defining structure, the distance between said discharge end of said horn and said initial contact point being less than said internal diameter of said horn,

the distance between said casing-conveying members being less than the maximum potential expanded diameter of said casing,

the length of said casing-conveying members being substantially greater than the distance therebetween and sufficient for spreading said material evenly throughout the length of said casing.

5,330,383
FISH TRANSFER MECHANISM
Robert M. Ryan, 5651 - 40th Ave. West, Seattle, Wash. 98199
Filed Jul. 16, 1993, Ser. No. 92,718
Int. Cl.[5] A22C *25/08, 25/12*
U.S. Cl. 452—182 **9 Claims**



1. A fish transfer mechanism for operating between a fish header and a fish gutter to change the orientation between the header and the gutter of a fish having a forward end and a central body having a belly, comprising

an infeed conveyor, for holding the fish on its side in a transversely aligned position;

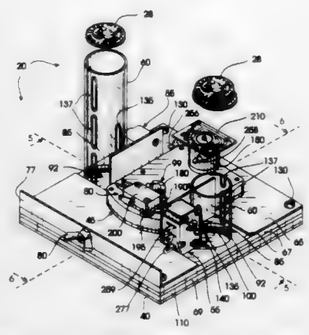
an outfeed conveyor, for holding the fish upright on its belly in a longitudinally aligned position;

a downwardly and forwardly sloped transfer surface adjacent to the infeed conveyor at one end and the outfeed conveyor at the opposite end;

rotating means at said transfer surface for engaging a fish leaving said infeed conveyor and causing the fish to rotate from a transversely aligned position on the infeed conveyor to a longitudinally aligned position aligned with the outfeed conveyor; and

turning means at said transfer surface for twisting the fish from its side to its belly down position.

5,330,384
VERTICAL COIN STRIPPER MECHANISM
Donald A. Shapley, and Roger L. Wilson, both of Conway, Ark., assignors to Polyveno Ark., Conway, Ark.
Filed Oct. 30, 1992, Ser. No. 968,814
Int. Cl.[5] G07D *1/00*
U.S. Cl. 453—17 **18 Claims**



18. A rotary coin payout mechanism comprising:

rigid frame plate means for securing said mechanism to a supporting structure;

coin tube means for aligning a plurality of coins to be gravitationally dispensed;

retaining plate means affixed to said frame plate means for mounting said coin tube means, said retaining plate means comprising tube receptive orifice means for receiving said coin tube means;

stationary coin receptor plate means for periodically receiving coins, said receptor plate means comprising coin receptor orifice means axially registered with said tube receptive orifice means and a central drive orifice disposed between said coin receptive orifice means;

rotatable disk means for transferring coins from said coin receptor plate means, said disk means comprising a drive hub coaxial with said tube receptive orifice and a spaced apart coin stripper orifice for removing coins when axially aligned with said coin receptor orifice means and radially displacing them; and,

an escape plate comprising escape orifice means for axially registering with said coin stripper orifice to dispense a coin when said disk means is rotated.

5,330,385
AIR CONDITIONING SYSTEM SUITABLE FOR USE IN AN ELECTRIC VEHICLE
Yoshihiko Hotta, and Akihiro Tajiri, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1992, Ser. No. 983,828
Claims priority, application Japan, Dec. 4, 1991, 3-320726
Int. Cl.[5] B60H *1/32*
U.S. Cl. 454—75 **7 Claims**

1. An air conditioning system for use in an electric vehicle having an air conditioner for air-conditioning the room of said vehicle, comprising:

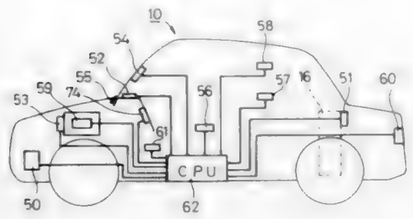
an environment sensor for detecting the state of an environment in the vehicle room;

warning means; and

controlling means for operating an air-conditioning switch so as to read the output of said environment sensor, activating said warning means for a predetermined time interval only when said environment sensor produces an out-

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put indicative of an improper state of environment in the vehicle room, and deactivating the air conditioner when



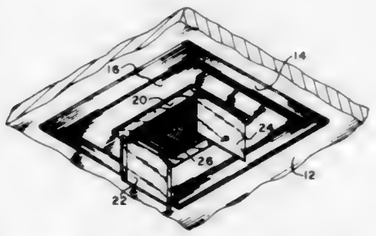
the output of said environment sensor remains unchanged after a predetermined time interval has elapsed.

5,330,386

METHOD AND DEVICE FOR VENTILATING A HOME

Thomas P. Calandra, 213 Phil Ellena, Cherry Hill, N.J. 08034

Filed Mar. 23, 1993, Ser. No. 35,802
Int. Cl.[5] F24F *7/007, 13/18*
U.S. Cl. 454—341 **8 Claims**



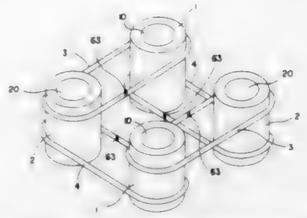
8. A ventilating device comprising:
(i) a rectangular frame member two opposite ends,
(ii) a rectangular central opening through the frame member,
(iii) a pair of doors, a first door hingeably attached proximate one end of the frame swinging outwardly in a first direction from the frame member to an open position and a second door hingeably attached proximate the opposite end of the frame swinging outwardly in the first direction from the frame member to an open position, both doors swinging back to the frame member to a closed position to close in combination the central opening of the frame,
(iv) screen means across the central opening to at least partially obstruct sight through the central opening while allowing essentially unobstructed air flow,
(v) closure means to hold the door in the closed position comprising at least one magnet on each door position to engage the frame member when each door is swung to the closed position, and
(vi) opening means to allow a person to open the doors without climbing comprising a pair of members each having an eye opening, each of the members attached to and extending in the first direction from each of the doors proximate an end furthest away from the hingeable attachment and a hand held rod member at least one and half feet long with a hook on an end.

5,330,387

ELASTIC COUPLING

Shinji Miyakawa, Kasugai, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Continuation of Ser. No. 828,572, Jan. 31, 1992. This application Oct. 21, 1993, Ser. No. 139,048
Claims priority, application Japan, Feb. 5, 1991, 3-003961[U]
Int. Cl.[5] F16D *3/78, 3/58*
U.S. Cl. 464—93 **9 Claims**



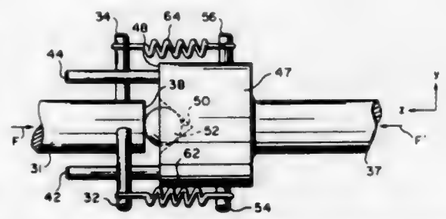
1. An elastic coupling for connecting two shafts comprising:
at least two first fixtures which are disposed at equal intervals on a circumference of a central axis line and are to be connected to one of the shafts;
second fixtures which are as many as said first fixtures, are disposed at equal intervals on said circumference of said central axis line and between two adjacent first fixtures, and are to be connected to the other of the shafts;
reinforcing members formed of twisted metallic wire strands extending in a loop-like shape for connecting each of said neighboring first fixtures and second fixtures; and
an elastic covering member which covers said first fixtures, said second fixtures and said reinforcing members, said elastic covering member being formed coaxially with said central axis line,
each of said reinforcing members being constituted by welding one longitudinal end and the other longitudinal end of said twisted metallic wire strands in a welding joint portion,
said reinforcing member being wound around said first fixtures and said second fixtures in an "O"-shape of said loop-like shape,
said welding joint portion being located at a radially innermost side of said "O"-shape adjacent to said central axis line.

5,330,388

SHAFT COUPLING UTILIZING TENSION SPRINGS AND RADIALLY AND AXIALLY PROJECTING PINS

Douglass L. Blanding, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 27, 1992, Ser. No. 826,510
Int. Cl.[5] F16D *3/16*
U.S. Cl. 464—106 **6 Claims**



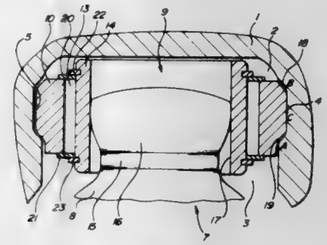
1. A constant velocity joint for connecting an input shaft to an ouput shaft, the constant velocity joint comprising: a coupling including a set of radial projections fixed to one of said shafts and a set of axial projections fixed to the other of said shafts, the radial and axial projections being arranged to be brought into positive abutment upon the application of torque to the input shaft for driving the output shaft through the coupling; point contact bearing means disposed between the input and output shafts, and resilient means comprising springs which are in tension between the radial projections on the input shaft and spring attachment means on said output shaft for urging the input and output shafts toward one another to engage the point contact bearing means between the shafts.

5,330,389

ROLLER AND TRACK CONFIGURATION FOR A TRIPOD JOINT

Dieter Jost, Troisdorf, and Werner Krude, Neunkirchen-Wolperath, both of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

Filed Nov. 1, 1991, Ser. No. 786,702
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1990, 4034758
Int. Cl.[5] F16D *3/26*
U.S. Cl. 464—111 **16 Claims**



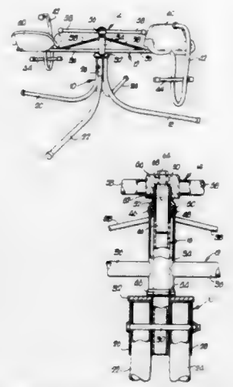
1. A tripod joint comprising:
an outer joint part with three circumferentially distributed longitudinal recesses each forming circumferentially opposed tracks;
an inner joint part with three tripod arms which extend into the longitudinal recesses, respectively;
a plurality of three rolling members supported by and movably and pivotally held on said tripod arm in rolling contact with said tracks;
the longitudinal recesses being provided with guiding means for holding and guiding the rolling members in said longitudinal recesses, said guiding means associated with and extending parallel to said longitudinal recesses such that said rolling members are axis-parallel to themselves throughout their rolling contact with said tracks, and said rolling members being in contact with one of said tracks such that there is provided a first contact point with said tracks for accommodating a circumferentially directed transmission force in the region of a central roller plane and at least one second contact point with said guiding means spaced from said first contact point for accommodating an inwardly directed guiding force, said second contact point being on a surface of the associated one of said guiding means and said guiding means surface on an acute or obtuse angle with respect to the arm axis;
said first contact point being different from said second contact point and with contact existing in both the first and second contact points when said inwardly directed guiding force is exerted from said tripod arms to said rolling members.

5,330,390

RIDER PROPELLED ROUNDABOUT

Tim C. Liebert, 5815 W. 88th St., Overland Park, Kans. 66207, and Frederick Houghland, 401 Michele, Coffeyville, Kans. 67337

Filed Sep. 4, 1992, Ser. No. 940,637
Int. Cl.[5] A63G *1/16*
U.S. Cl. 472—23 **7 Claims**



1. A rider propelled roundabout apparatus comprising:
a stand for supporting the apparatus upon the ground, the stand including a vertical center post and a plurality of depending legs;
a roundabout assembly supported on the stand for rotation relative to the stand about a substantially vertical axis, the assembly including at least one seat for supporting a rider;
a drive bar supported on the stand for rotation relative to the stand about an axis collinear with the axis of rotation of the assembly; and
a roller clutch situated between the stand and the drive bar for preventing rotation of the drive bar in a first rotary direction relative to the stand while permitting rotation of the drive bar in a second rotary direction relative to the stand, the rider propelling the assembly in the second rotary direction by exerting a force on the drive bar in the first rotary direction, the drive bar being free to rotate with the rider in the second rotary direction so that the rider may continuously hold onto the drive bar and exert additional force on the drive bar in the first rotary direction at any time to further propel the assembly;
the center post of the stand being formed of a hollow, cylindrical tube having upper and lower ends, the lower end being connected to the legs, and the upper end receiving a solid cylindrical end piece on which the drive bar is supported, the roller clutch being disposed between the end piece and the drive bar;
wherein the drive bar includes a centrally located hub formed with a cup-shaped receptacle within which the roller clutch is secured, the hub being further provided with a through hole passing through the receptacle for permitting the hub to be retained on the end piece.

5,330,391

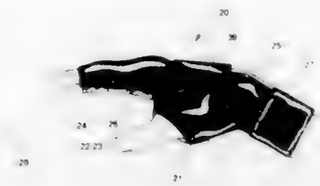
SPORTS GLOVE FOR BOWLING AND OTHER SPORTS

Kenneth R. Mitchell, 3811 Indianwood Dr., Columbus, Ind. 47203

Filed Jan. 8, 1993, Ser. No. 2,220
Int. Cl.[5] A63B *71/14*
U.S. Cl. 473—59 **4 Claims**

1. A sports glove for a bowler comprises:
a glove body having a palm side and oppositely disposed

back side and having open-tipped glove sleeves for the third and fourth digits of a hand;
first pouch means disposed as part of the glove sleeve for the third digit for receiving therein a first cushioning member;
second pouch means disposed as part of the glove sleeve for the fourth digit for receiving therein a second cushioning member;
a first cushioning member disposed in said first pouch;
a second cushioning member disposed in said second pouch;



a pair of spaced-apart attachment pads secured to the palm side of said glove body;
a pair of foam wedges one each being secured to a different one of said attachment pads;
a spacer strip secured at one end to the glove sleeve for the third digit and secured at another, opposite end to the glove sleeve for the fourth digit;
a wrist strap secured to said glove body; and
an invertible brace applied against the back side of said glove body and secured in position by said wrist strap

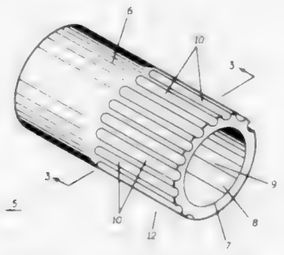
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5,330,392

FINGER GRIP INSERT PROVIDING SIZE COMPLIANCE

Mark Bresin, 9900 NW. 6th St., Coral Springs, Fla. 33071, and William Thielen, 7902 SW. 8th, North Lauderdale, Fla. 33068

Filed Jun. 7, 1993, Ser. No. 72,435
Int. Cl.[5] A63B *37/00*
U.S. Cl. 473—130 **20 Claims**



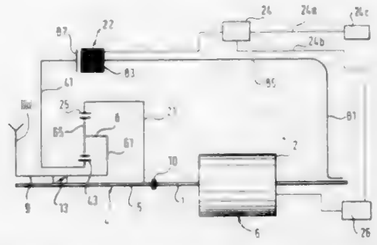
10. An insert for a bowling ball finger hole, comprising:
a resilient tubular member adapted to fit into the bowling ball finger hole, having;
a central axis;
an outer cylinder wall;
at least one recess in the outer cylinder wall; and
an aperture extending substantially parallel to the central axis, the aperture adapted to receive a bowler's finger; and
the at least one recess able to deform in response to pressure exerted on the resilient tubular member by the bowler's finger.

5,330,393

GEAR UNIT FOR COMBINATION WITH AN AUXILIARY POWER CONSUMING UNIT OF A MOTOR-VEHICLE

Reinhard Deppert, Gochsheim; Manfred Lutz, Schweinfurt; Walter Kurz, Durach, and Wolfgang Baier, Obbach, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 893,924, Jun. 4, 1992,. This application Jun. 5, 1992, Ser. No. 893,644
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118853
Int. Cl.[5] F16H *3/44*
U.S. Cl. 475—154 **51 Claims**



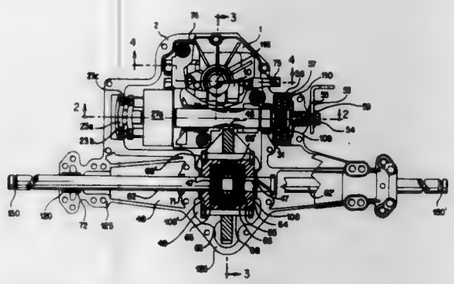
1. A gear unit for combination with an auxiliary power consuming unit of a motor-vehicle, said auxiliary power consuming unit having stator means and an auxiliary unit input shaft with an axis (A), comprising:
a gear unit input member;
a gear unit output member;
planetary gear means, including a sun wheel, a ring wheel, a planetary wheel carrier and at least one planetary wheel on said planetary wheel carrier;
said gear unit input member, said gear unit output member and said planetary gear means being located in a substantially annular arrangement about said axis (A);
gear change clutch means for selectively preventing or permitting rotation of said sun wheel with respect to said stator means;
external means for controlling said gear change clutch means;
free wheel means for permitting rotation of said gear unit output member with respect to said gear unit input member in a predetermined sense of rotation when said gear change clutch means prevents rotation of said sun wheel and for transmitting input torque from said gear unit input member to said gear unit output member in said predetermined sense of rotation when said gear change clutch means permits rotation of said sun wheel;
said gear unit input member being continuously in driving connection with said planetary wheel carrier;
said ring wheel being adapted for continuous driving connection with said gear unit output member;
said sun wheel having a central passage;
said gear unit input member being shaped as a gear unit input sleeve extending axially through said central passage of said sun wheel and having a first end portion adjacent to said stator means and a second end portion remote from said stator means;
said gear unit output member extending axially within said gear unit input member and having a first end portion adjacent to said stator means and a second end portion remote from said stator means;
said gear unit output member being adapted for being fastened to said auxiliary unit input shaft;
said gear unit input member being axially fixed and rotatably mounted on said gear unit output member about said axis (A);
said planetary wheel carrier being mounted for common rotation with said gear unit input member adjacent said first end portion of said gear unit input member axially between said sun wheel and said stator means;
securing means for drivingly securing said ring wheel with respect to said gear unit output member adjacent said first end portion thereof, said securing means including a ring wheel support member located axially between said planetary wheel carrier and said stator means; and
said second end portion of said gear unit input member being provided with a drive means engagement face about said axis (A).

5,330,394

RIDER TRANSAXLE HAVING IMPROVED HYDROSTATIC TRANSMISSION

Ray M. Hauser, Decatur, Ill., and Alan W. Johnson, Ames, Iowa, assignors to Hydro-Gear Limited Partnership, Sullivan, Ill.

Division of Ser. No. 917,858, Jul. 22, 1992, which is a continuation-in-part of Ser. No. 727,463, Jul. 9, 1991, Pat. No. 5,201,692. This application Mar. 2, 1993, Ser. No. 25,272
Int. Cl.[5] F16H *1/28*
U.S. Cl. 475—230 **8 Claims**



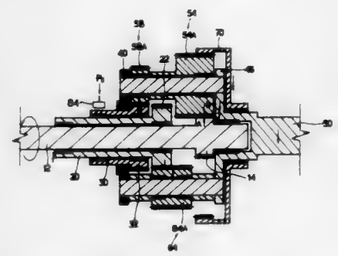
1. A differential gear unit powered by an input drive means and connected to an output means powered by said differential gear unit, comprising
a) a ring gear engaged to and driven by said input drive means;
b) a plurality of planet gears mounted in said differential gear unit, each said planet gear having a hub mounted on the rear thereof;
c) an end cap unit secured to said ring gear, said end cap unit having hub mounting means formed therein to hold the hubs of said planet gears, and to transfer the rotational force of said ring gear to said planet gears to simultaneously move said planet gears which said ring gear and to allow rotation of said planet gears about their axis of rotation;
d) a plurality of bevel gears engaged and driven by said planet gears and acting to driven said output means, said bevel gears being secured in a direction along their axis or rotation by said end cap unit.

5,330,395

CONTINUOUSLY-GEARED AUTOMATIC TRANSMISSION WITH CONTROLLING BRAKES

Jong O. Ra, 24/1, 265-154, Bokwang-Dong, Yongsan-Gu, Seoul; Joon Y. Lim, Duckyong Villa Ka-204 141-2, Duckjeong-Ri, Hoecheon-Uep, Yangju-Gun, Kyungki-Do, and Wan M. Yoo, Incheon, all of Rep. of Korea, assignors to Jong Oh Ra and Joon Young Lim, both of Rep. of Korea

Filed Jul. 28, 1992, Ser. No. 921,050
Claims priority, application Rep. of Korea, Jul. 29, 1991, 91-12992; Aug. 31, 1991, 91-15169
The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.
Int. Cl.[5] F16H *37/06*
U.S. Cl. 475—330 **17 Claims**



1. An automatic variable speed transmission, comprising:
an input shaft (12) with a first section (12A) and a second section (12B) for receiving rotational input;
an input sun gear (14) integrally formed between said first section (12A) and said second section (12B) of said input shaft to enable simultaneous rotation with said input shaft;
a medium speed control shaft (20) having a medium speed sun gear (22) integrally formed with an end (20A) and being rotatably and coaxially mounted on said first section (12A) of said input shaft to enable independent rotation about said input shaft;
a reverse rotation control shaft (30) having a reverse rotation sun gear (32) integrally formed with an end (30A) and being rotatably and coaxially mounted on said medium speed control shaft (20) to enable independent rotation about said medium speed control shaft;
a first carrier (40) coaxially mounted on said reverse rotation control shaft (30) near said reverse rotation sun gear (32) to enable independent rotation about said reverse rotation control shaft;
a second carrier (46) having a hollow cylinder part (44) and being coaxially mounted on said second section (12B) of said input shaft to enable independent rotation about said second section;
a plurality of locking pins (52A, 52B) secured to and interlinking said carriers (40, 46) to enable simultaneous rotation of said carriers (40, 46);
a plurality of input differential gears (54) with each said input differential gear being rotatably mounted on each said locking pin (52AA) and with the inner side of the rear half of each said input differential gear being meshed with said input sun gear (14);
a plurality of reverse rotation differential gears (58) with each said reverse rotation differential gear being integrally formed with each said input differential gear (54A) and being rotatably mounted on each said locking pin (52AA) and with the inner side of each said reverse rotational differential gear being meshed with said reverse rotation sun gear (32);
a plurality of medium speed differential gears (64) with each said medium speed differential gear being rotatably mounted on each said locking pin (52BB) and with the rear half and the inner side of the forward half of each said

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medium speed differential gear being meshed with the forward half of each said input differential gear (**54A**) and said medium speed sun gear (**22**), respectively;

an output shaft (**50**) integrally formed with said hollow cylinder part (**44**) of said carrier (**46**);

a low speed ring gear (**70**) rotatably mounted on said hollow cylinder part (**44**) of said carrier (**46**) and being smashed with the outer side of the rear half of each said input differential gear (**54A**);

a low speed brake means (**80**) for applying a braking force to said low speed control shaft (**70**) to provide a low speed driving;

a medium speed brake means (**82**) for applying a braking force to said medium speed control shaft (**20**) to provide a medium speed driving;

an interlocking means (**90**) for directly coupling the rotation of said input shaft (**12**) to said medium speed control shaft (**20**) so that they rotate simultaneously to provide a high speed driving; and

a reverse rotation brake means (**84**) for applying a braking force to said reverse rotation control shaft (**30**) to provide a reverse driving

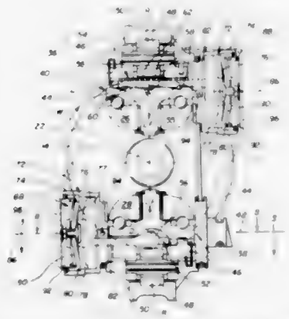
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5,330,396

LOADING DEVICE FOR CONTINUOUSLY VARIABLE TRANSMISSION

Charles B. Lohr, Kettering, and William J. Heidemann, Sidney, both of Ohio, assignors to The Torax Company, Inc., Dayton, Ohio

Filed Dec. 16, 1992, Ser. No. 991,321
Int. Cl.[5] F16H *15/08*
U.S. Cl. 476—10 **10 Claims**



1. A continuously variable transmission comprising:

a support structure;

two toric traction discs rotatably supported by said support structure for rotation about a central axis, one for rotation with an input shaft and the other for rotation with an output shaft, said toric discs having opposing traction surfaces defining therebetween a toric cavity;

at least two motion transmitting traction rollers disposed in said toric cavity in spaced relationship and in engagement with said toric discs for transmission of motion therebetween, each of said traction rollers being rotatably supported by a pivot trunnion supported to pivot about a pivot axis;

means for controllably pivoting said pivot trunnions for a transmission ratio change; and

means for forcing said traction rollers into force transmitting engagement with said toric discs, at least a portion of said means for forcing disposed in each of said pivot trunnions to produce an outward load force from within each said pivot trunnion and vary the load force as needed to maintain said force transmitting engagement, said means for forcing comprising,

a first hydraulic control means for controllably positioning said portion of said means for forcing disposed in each of said pivot trunnions, said first hydraulic control means including, at each pivot trunnion, a hydraulic cylinder having a load volume defined therein between a first plate and a second plate

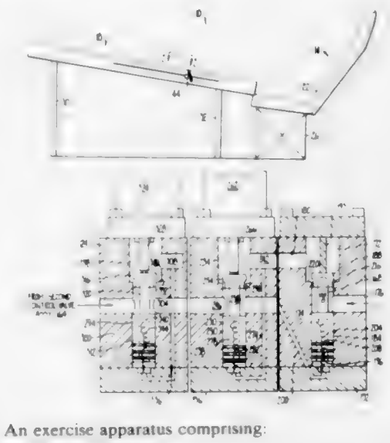
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5,330,397

LINEAR TRACKING ISOKINETIC EXERCISER

Jeffrey T. Prince, Grass Valley; Glen R. Mangseth, El Dorado Hills; Malcolm L. Bond, Davis; John Bouwman, Vacaville, and Philip T. Dempster, St. Helena, all of Calif., assignors to Loredan Biomedical, Inc., West Sacramento, Calif.

Continuation of Ser. No. 473,281, Jan. 31, 1990, abandoned. This application Aug. 20, 1993, Ser. No. 110,347
Int. Cl.[5] A63B *24/00*
U.S. Cl. 482—7 **11 Claims**



1. An exercise apparatus comprising:

a guide having an axis;

a first reciprocating member slidingly coupled to the guide;

a second reciprocating member slidingly coupled to the guide;

wherein the first and second reciprocating members slide along the axis of the guide;

wherein the first and second reciprocating members are slidingly coupled to the guide for alternately reciprocating movement relative to each other; and

isokinetic means, coupled to the first and second reciprocating members, for moving the first and second reciprocating members isokinetically in response to a force applied by a user to the first and second reciprocating members, the isokinetic means comprising:

first fluid compression means, coupled to the first reciprocating member, for compressing a fluid in response to the force applied by the user to the first reciprocating member;

second fluid compression means, coupled to the second reciprocating member, for compressing the fluid in response to the force applied by the user to the second reciprocating member; and

fluid flow regulating means, in fluid communication with the first and second fluid compression means, for controlling fluid flow from the first and second fluid compression means for moving the first and second reciprocating members when the user applies the force to the first or second reciprocating member;

wherein the fluid flow regulating means comprises:

a first servo valve assembly having a first servo valve spool fitted within a first servo valve bore, the first servo valve bore having a first servo valve fluid inlet in fluid communication with the first fluid compression means and a first servo valve fluid outlet, the first servo valve spool being capable of moving between a first servo spool position, wherein fluid flows between the first servo valve fluid inlet and the first servo valve fluid outlet through a first servo valve orifice area defined by the servo valve spool and a servo valve seat, and a second servo spool position, wherein fluid flows between the first servo valve fluid inlet and the first servo valve fluid outlet through a second servo orifice area defined by the first servo valve spool and the servo valve seat, the second servo orifice area being less than the first servo orifice area;

velocity setting means for selecting an isokinetic velocity value for the first and second reciprocating members; and

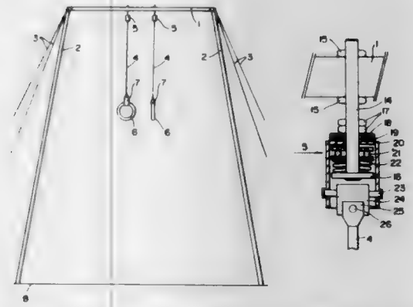
first servo valve control means, coupled to the first servo valve assembly and to the velocity setting means, for controlling the position of the first servo valve spool so that fluid flows between the first servo valve fluid inlet and the first servo fluid valve outlet at a constant rate.

5,330,398

GALLOWS FOR SPORT GYMNASTICS WITH RIGID RING SUSPENSION

Gerard Barbafieri, and Henry Miceli, both of 16 Bd Faidherbe, Marseille 13012, France

PCT No. PCT/FR90/00899, § 371 Date May 20, 1992, § 102(e) Date May 20, 1992, PCT Pub. No. WO91/08800, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 11, 1990, Ser. No. 856,970
Claims priority, application France, Dec. 13, 1989, 89 16756; May 22, 1990, 90 06675
Int. Cl.[5] A63B *7/02*
U.S. Cl. 482—23 **20 Claims**



1. Gallows for sport gymnastics having a rigid ring suspension which is adapted for training exercises and competitive events, comprising:

a relatively flexible cross beam;

a plurality of uprights;

elastic blocks journally connecting said cross beam to said plurality of uprights;

at least one ring;

at least one rigid rod having a top and a bottom;

at least one self-locking trunnion including a universal joint, said universal joint being connected to the top of said rigid rod; and

at least one attaching member connecting said at least one ring to the bottom of said at least one rigid rod;

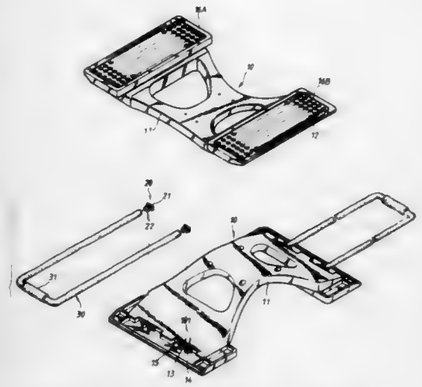
wherein said at least one self-locking trunnion is constructed and arranged to prevent turning of said at least one self-locking trunnion when a load is not suspended on said at least one ring, and to permit turning of said at least one self-locking trunnion when a load is suspended on said at least one ring.

5,330,399

BOARD-AND ROPE EXERCISE ASSEMBLY

Chen-Yueh Fan, 3rd Fl., No. 2, Alley 2, Lane 88, Sec. 2, Shui Yuan Rd., Hsi Chih Chen, Taipei Hsien, Taiwan

Filed Aug. 18, 1993, Ser. No. 108,341
Int. Cl.[5] A63B *4/00*
U.S. Cl. 482—34 **6 Claims**



1. A board-and-rope exercise assembly comprising:

a curved board comprising an arc-shaped middle portion integrating with two terminal pedals so that an exerciser can exercise his/her legs by rocking said curved board; and

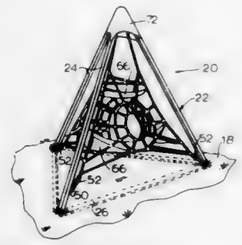
two elastic ropes each attached to a corresponding one of said pedals so that an exerciser can exercise his/her arms by pulling said ropes, each of said elastic ropes comprising two ends, each of said ends being attached to a corresponding locking element comprising a flat anchor member, each of said pedals having an underside and two faces formed thereon by means of undercutting the underside of each of the pedals thereby forming substantially flat surfaces which lie in substantially the same plane as said pedals, each of said faces comprising two pairs of limits, each pair of limits configured so as to form a T-shaped locking section which lies between each pair of said limits and a corresponding one of said faces so as to allow each said elastic rope to extend around an end of a corresponding said pedal.

5,330,400

CLIMBING AND PLAY STRUCTURE

Joseph G. Huberman, 904 Dorothea Dr., Raleigh, N.C. 27603

Filed Apr. 22, 1993, Ser. No. 52,102
Int. Cl.[5] A63B *17/00*
U.S. Cl. 482—35 **15 Claims**

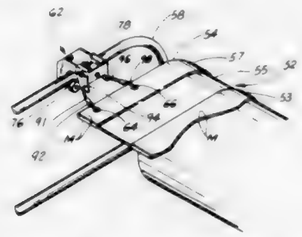


1. A climbing and play structure,

(a) a support surface on which said climbing and play structure is placed;

(b) an outer rigid support structure comprising sloping compressive beams and having lower vertices between said sloping compressive beams and said support surface, and an upper vertex formed where the upper ends of at least three sloping compressive beams slope toward a single point and are joined to each other, said outer rigid support structure forming a polyhedral shape;
(c) a primary inner network comprising primary tensile members roughly paralleling said sloping compressive beams and said support surface, each of said primary tensile members being connected to other tensile members at the interior of said vertices, wherein at least three primary tensile members are connected to each other at the interior of said upper vertex, said primary inner network forming faces along sides of said network between said primary tensile members; and
(d) a secondary inner network comprising secondary tensile members forming a pattern on one or more of said faces.

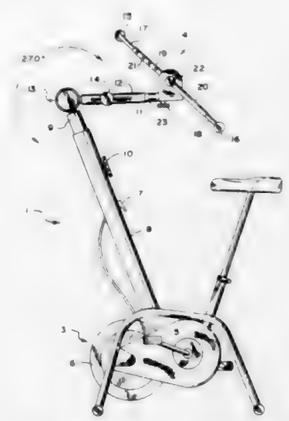
5,330,401
SUSPENSION SYSTEM FOR TREADMILL WITH RESILIENT SURFACE
James W. Walstead, Baytown, Tex., assignor to Orbiter Royalty Trust, Baytown, Tex.
Filed Mar. 2, 1993, Ser. No. 25,222
Int. Cl.[5] A63B *22/02*
U.S. Cl. 482—54 **9 Claims**



1. A treadmill with a trampoline-like surface, comprising:
(a) a running surface formed of an endless belt with generally parallel lateral edges;
(b) a support means for supporting the lateral edges of the endless belt for travel between the two points;
(c) suspension means for suspending the endless belt from the support means as the belt travels between the two points, the suspension means including flexible but non-stretchable wire cable positioned between the endless belt and the support means for maintaining a relatively uniform distance between the suspension means and the lateral edges;
(d) means for connecting the flexible wire cable between the support means and the endless belt; and
(e) spring means for applying a resiliency to the running surface.

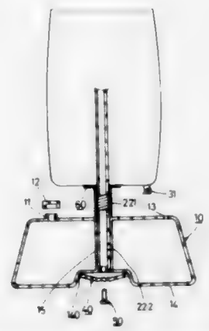
5,330,402
EXERCISING DEVICE
Kimball W. Johnson, P.O. Box 126, Orleans, Vt. 05860
Filed May 11, 1993, Ser. No. 59,859
Int. Cl.[5] A63B *22/12, 22/04*
U.S. Cl. 482—62 **12 Claims**

1. An exercising device comprising frame means having an upper portion and a lower portion a rotary crank handle mechanism mounted on the upper portion of said frame means for exercising the upper body portion of a person, an exercising mechanism mounted on the lower portion of said frame means for exercising the lower body portion of a person, the upper rotary crank handle mechanism and the lower exercising mechanism being independently operable from each other, adjustable pivot means for connecting the rotary crank handle mechanism to the upper portion of the frame means for pivoting the rotary crank handle mechanism in a vertical plane through an arc at least 270°, whereby the angular orientation of the rotary crank handle relative to the frame means can be pivotally adjusted from a position in proximity to a user on one



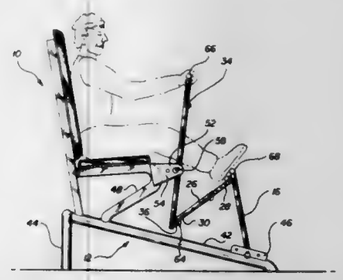
side of said frame means distal to the user through an arc of at least 270° to the other side of said frame means to thereby selectively position the rotary crank handle mechanism for use by a person on either side of said pivot means for exercising the upper body.

5,330,403
INFLATABLE PUNCHING DEVICE
James Y. Kuo, No. 57-12, Kuang-Ming Rd., Taichung City, Taiwan
Filed Sep. 3, 1993, Ser. No. 116,290
Int. Cl.[5] A63B *69/34*
U.S. Cl. 482—83 **4 Claims**



1. An inflatable punching device, comprising:
a portable base for ground support with a hollow casing that confines a receiving space therein and that has an inlet for filling said receiving space;
an engaging rod projecting vertically from said casing;
a tube-like spring coil provided vertically on said casing, said engaging rod being squeezed into a lower end of said tube-like spring coil;
a connecting rod having a bottom end squeezed into an upper end of said tube-like spring coil so that said tube-like spring coil engages resiliently said engaging rod and said connecting rod together and permits said connecting rod to extend vertically from said tube-like spring coil; and
an inflatable cylinder-shaped bag being made of an air impermeable material and having two opposed ends, a tubular member having only one open end being disposed in said cylinder-shaped bag and being formed integrally with said cylinder-shaped bag, said tubular member extending substantially the full length of said bag axially from one of said opposed ends to define a blind bore in said cylinder-shaped bag, said connecting rod having substantially its full length inserted tightly into said blind bore so as to retain said cylinder-shaped bag on said connecting rod, said cylinder-shaped bag further having valve means connected thereto.

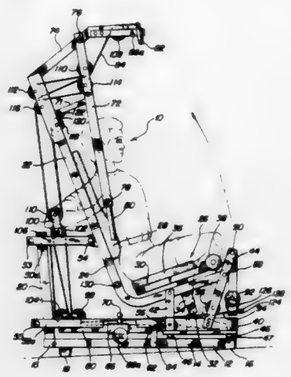
5,330,404
EXERCISE APPARATUS
Joe A. Lopeteguy, 2813 Karla St., Bakersfield, Calif. 93312, and Mike L. Lopeteguy, 6717 Kimberly Ave., Bakersfield, Calif. 93308
Filed Mar. 1, 1993, Ser. No. 24,669
Int. Cl.[5] A63B *21/00, 64/06*
U.S. Cl. 482—91 **10 Claims**



1. An isometric exercise apparatus having a base, a seat, a seat pedestal, supporting said seat on said base seat, a first endwise pivoted post spaced a first distance from said seat, a first cross arm on said first post defining a foot rest on either side of said first post arranged for outward foot pressure, a second post spaced a second lesser distance from said seat, having upper and lower portions and pivoted therebetween, a second cross arm on said second post defining a hand rest on either side of said second post arranged for inward or outward arm pressure, said first and second cross arms lying in generally parallel planes, and a link linking said first post to the upper or lower portions of said second post for pulling or pushing force respectively on said second post against the resistance of foot pressure on said first post, said seat pedestal comprising a third post rigidly attached to and extending from said base and a seat support, said second post being pivoted on said seat support.

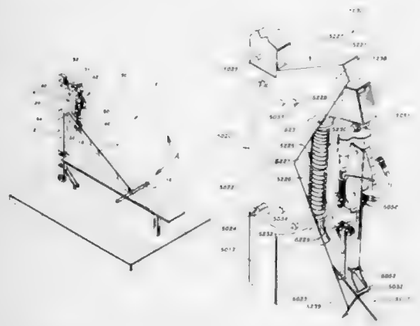
5,330,405
EXERCISE MACHINE
Theodore G. Habing, Long Beach; Yong S. Chu, Glendale, and Douglas J. Habing, Manhattan Beach, all of Calif., assignors to Pacific Fitness Corporation, Cypress, Calif.
Filed Oct. 25, 1993, Ser. No. 142,620
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—96 **130 Claims**

1. An exercise apparatus comprising:
a frame;
a subframe movable with respect to the frame, said subframe having a seat for a user of the apparatus and a press arm pivotally coupled to the subframe for operation by the user while seated in said seat;
linkage means for movably coupling the subframe to the frame;
load bearing means coupled to the frame for supporting the subframe with the user seated thereon;



resistance communication means for coupling the press arm to the load bearing means such that the combined weight of the subframe and the user provides an exercise resistance during operation of the press arm.

5,330,406
HYDRAULIC EXERCISE APPARATUS
Gary W. Patterson, 1061 S. Emerson, Denver, Colo. 80209
PCT No. PCT/US91/07669, § 371 Date Jun. 10, 1993, § 102(e) Date Jun. 10, 1993
PCT Filed Oct. 15, 1991, Ser. No. 75,503
Int. Cl.[5] A63B *21/008*
U.S. Cl. 482—113 **6 Claims**



1. A hydraulic exercise apparatus comprising:
a support member having a longitudinal support member axis;
a carrier mounted upon said support member and having a carrier axis parallel to said support member axis;
first and second lever members pivotally attached to said carrier at a first and second hinge point, respectively, said first and second hinge points separated by a distance along said carrier axis, said first and second lever members extending outwardly away from said carrier to a first and second free distal end, respectively, and having a first and second longitudinal lever member axis, respectively, such that said first and second lever member axes are pivotable in a common plane;
first and second stop members rigidly attached to said carrier and extending outwardly away from said carrier to confine said first and second lever members therebetween

and limit pivotal movement of said first and second lever member, respectively, away from the other lever member,

a hydraulic resistance member having a first end portion and a second end portion defining a longitudinal resistance member axis, said first and second end portions movable toward one another along said axis when so urged by a force greater than a pre-selected force, said first end portion pivotally attached to said first lever member at a point lying between said first hinge point and said first free distal end, and said second end portion pivotally attached to said second lever member at a point lying between said second hinge point and said second free distal end; and,

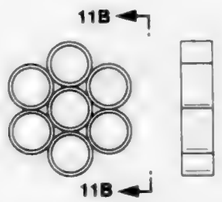
a biasing member having a first end portion and a second end portion, said first end portion attached to said first lever member and said second end portion attached to said second lever member to resiliently bias said first and second lever members away from one another.

5,330,407

EXERCISE METHOD AND APPARATUS UTILIZING ELASTOMERIC SPHERES

Mark J. Skinner, Montclair, Calif., assignor to Spherepoint, Inc., Santa Cruz, Calif.

Filed Aug. 19, 1991, Ser. No. 699,771
Int. Cl.[5] A63B *21/15*
U.S. Cl. 482—117 **8 Claims**



1. A variable friction device comprising, in combination:

a first member having a first engaging surface, a second member having a second engaging surface,

said first and second engaging surfaces of said first and second members spaced apart,

at least one of said first and second members being a sphere with the engaging surface of said one member being spherical,

at least one elastomeric sphere located between said first and second members and in contact with said first and second engaging surfaces, and

means for moving one of said engaging surfaces or said elastomeric sphere relative to at least one of said first and second member,

said at least one elastomeric sphere including a plurality of a elastomeric spheres located between said first and second members,

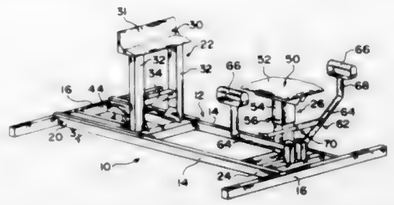
each of said spheres in contact with both of said first and second engaging surfaces and with at least one other sphere and wherein said moving means moves said elastomeric sphere and said means for moving said elastomeric sphere causes the surfaces of said spheres to move with respect to said first and second surfaces and produces sliding friction between at least a pair of said spheres in contact with one another.

5,330,408

APPARATUS FOR MAXIMIZING PUSH-UPS

Herbert L. Westmoreland, Jr., 2009 Jerome Blvd., Racine, Wis. 53403

Filed Dec. 3, 1992, Ser. No. 985,814
Int. Cl.[5] A63B *26/00*
U.S. Cl. 482—141 **9 Claims**



1. An apparatus for maximizing push-ups, the apparatus comprising:

a rectangular base;

an elevated foot rest nearer one end of the base;

an elevated torso engaging platform nearer an opposite end of the base, said foot rest being horizontally movable toward and away from said elevated torso engaging platform; and

a pair of hand graspable arm members each having a first end and a second end respectively;

at least one pivotal mounting means which is located at a position below said elevated torso engaging platform wherein a first end of each of said arm members is connected, to allow pivotal movement of said arm members;

said second end of said arm members being positioned substantially vertically above said first end of said arm members on opposite sides of said torso engaging platform, respectively; and

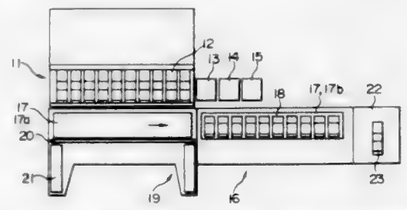
a biasing means which maintains said arm members at an equally spaced distance away from one another at all times while the arm members are pivoted by a user, toward and away from each other when performing routines which include push-ups, bent arm and seated dip exercises.

5,330,409

CASSETTE CHANGING APPARATUS FOR INDEX-FEEDING MACHINING SYSTEMS

Shoji Futamura, and Chikara Murata, both of Kawasaki, Japan, assignors to Institute of Technology Precision Electrical Discharge, Kanagawa, Japan

Filed Dec. 16, 1992, Ser. No. 991,100
Claims priority, application Japan, Dec. 20, 1991, 3-337348
Int. Cl.[5] B23Q *3/155*
U.S. Cl. 483—29 **7 Claims**



1. A cassette-changing apparatus for index-feed machining systems, the apparatus comprising:

a base;

a plurality of machining units positioned at predetermined intervals on said base in a workpiece feeding direction;

a plurality of cassettes, each one of said plurality of cassettes being positionable in one of said plurality of machining units, said plurality of machining units sequentially performing a plurality of machining processes on a workpiece as the workpiece is passed in said workpiece feeding direction through said cassettes positioned in said machining units;

first and second cassette holders being moveable towards and away from said plurality of machining units, said first and second cassette holders defining a plurality of positioning groove means for housing and holding subsets of said plurality of cassettes and for aligning said subsets of cassettes in said predetermined intervals with said plurality of machining units when said first and second cassette holders are positioned toward said machining units;

cassette changing means for moving said subsets of cassettes on said first and second cassette holders from a standby location to a loading location;

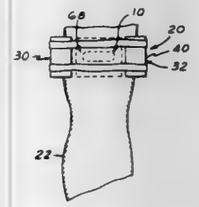
transfer means movable in a transfer direction intersecting said workpiece feeding direction and for extracting in said transfer direction one of said plurality of cassettes from one of said plurality of machining units and onto one of said cassette holders in said loading position, said transfer means also for installing in said transfer direction another one of said plurality of cassettes from another one of said holders in said loading position into one of said plurality of machining units, said transfer means including an engaging means for engaging and disengaging with said plurality of cassettes.

5,330,410

METHOD FOR INCREASED PRODUCTION OF GROWTH FACTOR IN LIVING TISSUE USING AN APPLIED FLUCTUATING MAGNETIC FIELD

David J. Baylink, Redlands, Calif., assignor to IatroMed, Inc., Phoenix, Ariz.

Continuation of Ser. No. 718,455, Jun. 20, 1991, Pat. No. 5,195,940. This application Feb. 8, 1993, Ser. No. 14,968
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] A61N *2/04*
U.S. Cl. 600—13 **4 Claims**



1. A method for stimulation for production of a growth factor in tissue within a human subject comprising the steps of:

(1) determining a desired composite magnetic flux having a static field component;

(2) applying a magnetic flux which fluctuates in intensity to the human subject along an axis;

(3) sensing the actual composite magnetic flux along the axis in the living tissue, wherein the actual composite magnetic flux includes a component of the fluxuating applied magnetic flux and a component of a naturally existing statetic magnetic flux; and

(4) comparing the actual composite magnetic flux to the desired composite magnetic flux, determining an error value, and modifying the applied magnetic flux to correct the error value to stimulate the production of a growth factor in said tissue.

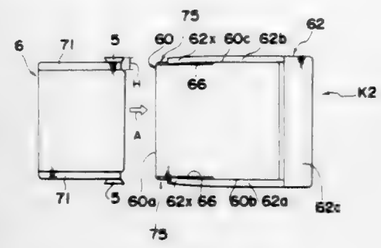
(5) elevating with said applied magnetic flux the level of said growth factor from a first value to a second value at least twenty per cent greater than said first value.

5,330,411

LEVER-TYPE CONNECTOR

Mitsuhiro Fujitani; Toshikazu Saba, both of Yokkaichi, and Tatsuo Fukuyama, Hiroshima, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Oct. 20, 1992, Ser. No. 963,741
Claims priority, application Japan, Oct. 21, 1991, 3-85656[U]; Oct. 21, 1991, 3-85657[U]; Oct. 21, 1991, 3-85658[U]
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—157 **1 Claim**



1. A lever type connector comprising:

a first connector;

a second connector which is fitted into the first connector;

a lever which is rotatably mounted on the first connector;

a pin which projects from the second connector;

the lever being formed with a recess such that the pin is inserted into the recess when the second connector is fitted into the first connector; and

a recessed step portion which is provided on an outer face of the first connector and is engageable with a bent portion of the lever so as to temporarily stop the lever;

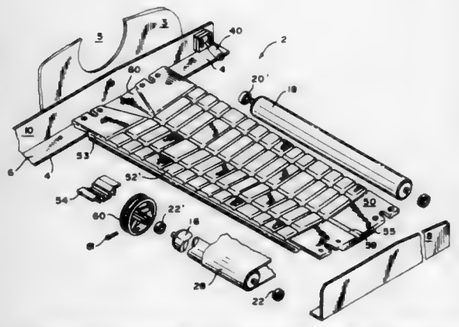
wherein the bent portion of the lever held in engagement with the recessed step portion is disengaged from the recessed step portion upon insertion of the pin into the recess such that temporary stop of the lever is cancelled automatically.

5,330,412

BOWLING ALLEY PIT ASSEMBLY AND BOUNCE BOARD

Michael W. Stephens, Richmond, Va., assignor to AMF Bowling, Inc., Mechanicsville, Va.

Filed Jul. 13, 1993, Ser. No. 90,310
Int. Cl.[5] A63D *5/00*
U.S. Cl. 473—93 **11 Claims**



1. A bowling alley pit assembly for transferring bowling pins and balls which fall from an adjacent pin deck to a pin elevator and ball return comprising a base member, a forward and rear portion of said base member and a pair of laterally spaced walls, said base member positioned between said laterally

spaced walls in a pit area at one end of a longitudinal bowling alley with said forward portion adjacent to the pin deck of the bowling alley and with said rear portion adjacent to a pin elevating mechanism, a pair of rotatable rollers disposed between said walls, a motor and means operatively connecting said motor to one of said rollers for rotation thereof, an endless belt passing over and around said rollers for rotation therewith with a top surface of said belt moving in a direction away from the pin deck and toward the pin elevating mechanism so that fallen pins will be carried rearwardly toward the pin elevating mechanism, ball deflecting means including a unitary bounce board for guiding a ball laterally across said belt away from the pin elevating mechanism and toward a ball return mechanism, and means for adjusting the position of one of said roller tracking means, said bounce board comprising a unitary elongated plastic structure having upper and lower surfaces, said upper surface including a raised, generally rectangular pattern and a plurality of relatively shallow channels thereon and having two side-by-side relatively flat, longitudinally extending portions which slope downwardly toward the center of said upper surface and which define an obtuse angle at the intersection of said elongated portions, said longitudinally extending portions also having an outwardly diverging recessed area at one end thereof for receiving a bowling ball therein and said lower portions including reinforcing means molded therein.

5,330,413

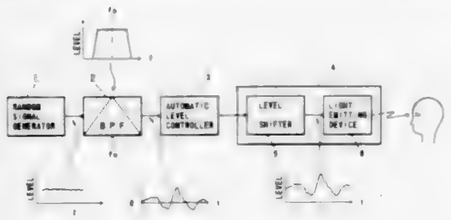
Patent Not Issued For This Number

5,330,414

BRAIN WAVE INDUCING APPARATUS

Mitsuo Yasushi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 11, 1992, Ser. No. 833,937
Claims priority, application Japan, May 23, 1991, 3-118561
Int. Cl.[5] A61M *21/00*
U.S. Cl. 600—27 **10 Claims**



1. A brain wave inducing apparatus for inducing desired brain waves from a subject, comprising:

a random signal generator for outputting a random noise signal;

a band pass filter for receiving the random noise signal and selectively passing frequency components that lie in a frequency range of the desired brain waves;

an automatic level controller for setting the frequency components of said band pass filter to a predetermined amplitude;

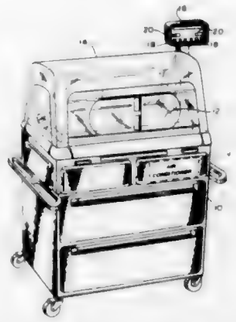
a stimulating light generator for converting the output of said automatic level controller into a light signal for stimulating the subject to induce the desired brain waves from the subject.

5,330,415

INCUBATOR WITH REMOTE CONTROL AND DISPLAY MODULE

William J. Storti, Norristown; William A. Heineman, Penns Park, and Robert K. Vaccaro, Philadelphia, all of Pa., assignors to Air-Shields, Inc., Hatboro, Pa.

Continuation of Ser. No. 315,974, Feb. 27, 1989, abandoned. This application Sep. 24, 1990, Ser. No. 587,573
Int. Cl.[5] A61G *11/00*, *10/00*; **A61H** *31/00*; **A62B** *31/00*
U.S. Cl. 600—22 **3 Claims**



1. In an incubator including infant support means for an infant, a transparent hood adapted to enclose the infant support means in a protective environment, an air conditioner which is responsive to a control signal to develop conditioned air for circulation to provide a controlled environment in the hood and first and second sensor means for developing first and second signals, respectively representative of conditions of the environment within the hood and of an infant positioned within the hood, apparatus comprising:

base means for holding said air conditioner and having a top surface upon which said infant support means are positioned and upon which said hood is mounted;

control and display means for (1) generating said control signal to control the environment within said hood, and (2) displaying the conditions of the environment within said hood and the condition of an infant positioned within said hood in response to the respective first and second signals;

mounting means for positioning said control and display means in proximity to said hood at generally the eye-level of a standing adult;

and means for transmitting said first and second signals to said control and display means and for receiving said control signal from said control and display means to effect the control of the environment within said hood and the display of the conditions of the environment within said hood and of the infant positioned within said hood.

5,330,416

ROLLING MASSAGE APPARATUS WITH VIBRATORY SUPPORT

Teruo Masuda, Tokyo; Masahiro Matsuzaki, Sayama, and Shoji Ohshita, Saitama, all of Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,510
Claims priority, application Japan, May 28, 1991, 3-37669[U]; Dec. 13, 1991, 3-330466
Int. Cl.[5] A61H *15/00*
U.S. Cl. 601—52 **16 Claims**

1. A massage apparatus on which a user is adapted to lie, comprising:

a flat and long base plate;

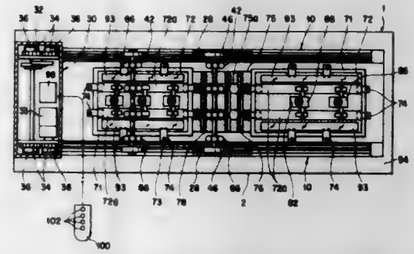
a carrier holding massage rollers located over an upper surface of the long base plate and movable in the longitudinal direction of the long base plate;

driving means coupled to the carrier for reciprocally driving the carrier in the longitudinal direction of the base plate;

a vibration transmission plate made of a material capable of transmitting vibration;

coupling means for coupling the vibration transmission plate to the base plate such that the vibration transmission plate is movable relative to the base plate independently of the massage rollers;

a vibration generator coupled to the vibration transmission plate and driven to vibrate the vibration transmission plate so as to move the vibration transmission plate relative to the base plate;



said vibration transmission plate having a hollow container portion therein, and wherein the vibration generator is held in the hollow container portion;

the vibration of the vibration transmission plate being carried out separately and independently of movement of the massage rollers; and

a cover covering at least an upper surface of the base plate and covering the vibration transmission plate, the carrier and the massage rollers, whereby massage imparted by vibration of the vibration transmission plate and massage imparted by movement of the massage rollers are both applied independently and at the same time to a user who is lying down on the cover.

5,330,417

METHOD AND AN APPARATUS FOR JOINT-CONTROLLED TRAINING OF DIFFERENT MOTORIC UNITS FOR DEVELOPMENT OF FUNCTIONAL MUSCLE STRENGTH AND PROPRIOCEPTIVITY

Ken Petersen, Påskvägen 29, Västra Frölunda; Per Renström, Persikovägen 27, Mölnlycke, both of Sweden, and Malcolm Pope, 2015 Spear St., Shelburne, Vt. 05483

PCT No. PCT/SE90/00306, § 371 Date Oct. 3, 1991, § 102(e) Date Oct. 3, 1991, PCT Pub. No. WO90/13338, PCT Pub. Date Nov. 15, 1990
PCT Filed May 9, 1990, Ser. No. 768,272
Claims priority, application Sweden, May 11, 1989, 8901684-4
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—16 **15 Claims**

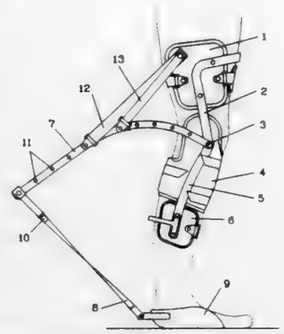
1. An apparatus for joint controlled training of motoric units for development of functional muscle strength and proprioceptivity, the apparatus comprising:

means for arresting a joint axis associated with a muscle group or motor unit to be trained;

brace means provided below the joint axis;

at least one arm pivotally connected to the arresting means at the joint axis;

load application means connected between the arm and the arresting means for applying a load to the muscle group or motor unit to be trained;



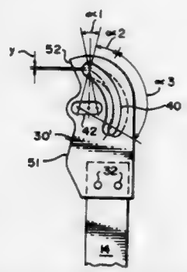
angle adjusting means connected between the arm and the brace means for adjusting an angle under which the load is applied to the muscle group or motor unit to be trained.

5,330,418

MULTIAXIS CONTROLLED MOTION KNEE BRACE WITH A FOUR BAR JOINT AND METHOD FOR PRODUCING SAME

Jeffrey H. Townsend, Bakersfield, Calif., and Robert J. Williams, Shoreview, Minn., assignors to Townsend Industries, Inc., Bakersfield, Calif.

Continuation-in-part of Ser. No. 664,983, Mar. 6, 1991, Pat. No. 5,259,832. This application Mar. 3, 1993, Ser. No. 26,152
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—26 **3 Claims**



1. In a knee brace for controlling movement of the femur relative to the tibia during extension and flexion of a wearer's leg, having a pair of femoral links and a pair of tibial links, one of said femoral links being hinged to one of said tibial links by a joint mechanism at a medial side of the brace and the other of said femoral links being hinged to the other of said tibial links by a joint mechanism at a lateral side of the brace; wherein each of said femoral and tibial links comprises a strut and an end cap secured over an end of the strut, the end caps being formed of plastic and said struts being formed of a fiber and resin composite material; wherein each said joint mechanism comprises pivot means, interconnecting a portion of the end cap of the tibial link which extends axially beyond an end of the strut over which it is secured and a portion of the end cap of the femoral link which extends axially beyond an end of the strut over which it is secured, for producing a motion of a reference point on the femur which is an essentially linear, horizontal translation that results in the tibia being constrained to slide posteriorly relative to the femur in a first phase of flexion from a straight leg position, and which produces an essentially unicentric arcuate movement about said reference point in a second phase of flexion; wherein each said pivot

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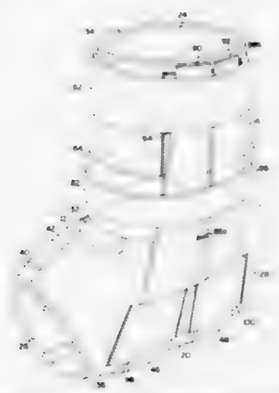
means comprises a first and a second cam pin follower and a first and a second camming slot means, each said cam pin follower being positionally fixed relative to an end cap of one of said femoral and tibial links and being relatively displaceable with respect to the end cap of the other of said femoral and tibial links within a respective camming slot means; wherein said essentially linear, horizontal translation that results in the tibia being constrained to slide posteriorly relative to the femur in the first phase of flexion from the straight leg position is produced by a pivotal movement of one of said femoral and tibial links relative to the other of said femoral and tibial links about said second cam follower; and wherein the essentially unicentric arcuate movement about said reference point in the second phase of flexion is produced by a pivotal movement of one of said femoral and tibial links relative to the other of said femoral and tibial links about said first cam follower.

5,330,419

ORTHOPEDIC ANKLE BRACE METHOD

Russell A. Toronto, Salt Lake City, Utah, and Charles A. Bastyr, San Diego, Calif., assignors to Smith & Nephew Donjoy, Inc., Carlsbad, Calif.

Continuation of Ser. No. 839,468, Feb. 20, 1992, Pat. No. 5,217,431. This application Jun. 1, 1993, Ser. No. 70,557
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—27 **20 Claims**



1. A method for stabilizing an ankle joint of a patient comprising:

distally encircling at least a portion of a foot and proximally encircling at least a portion of a lower leg with a boot, the foot and lower leg having an ankle joint connectively positioned therebetween;

applying a first tension force to the ankle joint by attaching a first tension strap to said boot at a first first tension strap attachment point and at a second first tension strap attachment point, such that said first tension strap extends a first tension length from said first first tension strap attachment point around the bottom of the foot to said second first tension strap attachment point;

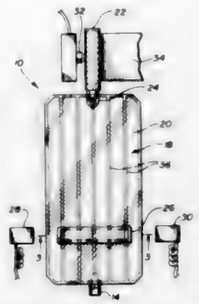
applying a second tension force to the ankle joint by attaching a second tension strap to said boot at a first second tension strap attachment point and at a second second tension strap attachment point, such that said second tension strap extends a second tension length from said first second tension strap attachment point around the posterior of the lower leg and around the bottom of the foot to said second tension strap attachment point.

5,330,420

HEMOLYSIS DETECTOR

Kyu H. Lee, Bryn Mawr, Pa., assignor to Therakos, Inc., Westchester, Pa.

Filed Jan. 13, 1992, Ser. No. 820,102
Int. Cl.[5] A61N *1/00*
U.S. Cl. 604—4 **3 Claims**



1. A device for the detection of hemolysis of red cells in blood in an extracorporeal blood path comprising:

a shell, said shell divided into a blood compartment and a plasma compartment,

a blood inlet port for receiving a flow of blood into the blood compartment of said shell from said extracorporeal blood path,

a semipermeable membrane permeable to blood plasma but impermeable to blood cells acting as the boundary between the blood compartment and the plasma compartment,

means for applying a varying transmembrane pressure between the blood and plasma compartments comprising an elastic air sac contiguous with said plasma compartment,

detection means for determining optical changes associated with the presence of lysed red blood cells in the blood plasma portion of the blood in the plasma compartment of said shell, and

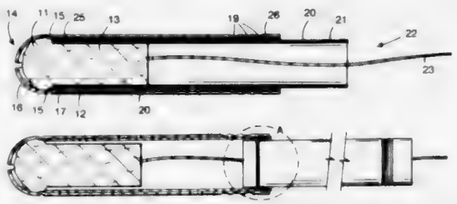
a blood outlet port for returning said flow of blood from the blood compartment of said shell to said extracorporeal blood path.

5,330,421

TAMPON APPLICATOR

Warren Tarr, Turners Falls; William M. Child, Wales, and Quiteria M. Mendes, Ludlow, all of Mass., assignors to Tambrands Inc., White Plains, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,324
Int. Cl.[5] A61F *13/20*
U.S. Cl. 604—18 **35 Claims**



1. An insertion device for inserting material into a body cavity, said material having an enlarged head portion, comprising;

an elongate, tubular holder, comprising at least one layer of paper, said holder being shaped for insertion into the body cavity and having an expulsion end which is dimensioned to fit over the head portion of the material and adapted to open to allow said material to be expelled therethrough;

an elongate, tubular plunger, adapted to hold telescopically at least a portion of the material to be inserted, dimensioned to fit telescopically and slidably within said holder and to be movable from a telescoped position in which a major portion of said tubular plunger is within said holder to an extended position in which one distal end of the plunger is withdrawn from the tubular holder, and adapted, in said extended position, to expel said material from said device when pushed manually into said holder; and

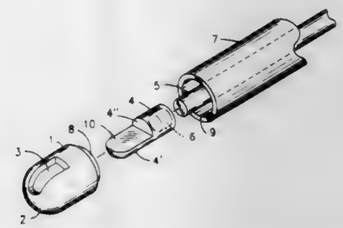
a retaining structure, comprising a member separate from said holder tube, said member being interposed between said plunger and said holder and mounted on an inner surface of said holder tube at said expulsion end to engage the head portion of said material and prevent it from moving with said plunger when said plunger is moved from said telescoped to said extended position.

5,330,422

DEVICE FOR REMOVING A BIOPSY FLUID SAMPLE FROM A BODY CAVITY

Aaron Schneider, St. Petersburg, Fla., assignor to Biological Tissue Reserve, Inc., St. Petersburg, Fla.

Filed Nov. 9, 1993, Ser. No. 149,622
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—27 **3 Claims**



1. A device for removing fluid from a human body cavity for the determination of a biopsy test thereon comprising:

(a) a hollow cap having a cylindrically shaped outer surface and having a first end and a second end, said cap being closed at said first end except for an opening extending from the interior to the exterior of said cap, and said cap having a hollow cylindrical shape at said second end;

(b) a rod of substantial length having attached at one end thereof a plug having its outer configuration and size appropriate to fit snugly against the interior surface of the closed end of said cap, except that said plug has a cut-away section which is capable of being positioned at said opening and is also capable of being rotated to a position away from said opening, and when positioned at said opening in said cap, will allow free fluid flow between said cut-away section and the exterior of said cap;

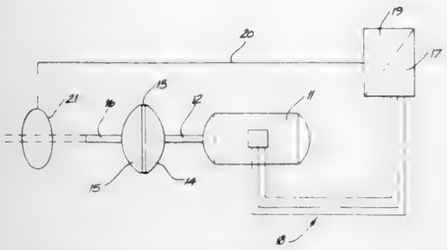
(c) a sleeve of substantial length but shorter than the length of said rod, said sleeve having an inside diameter greater than the outer diameter of said plug and adapted to allow free passage of said plug along the length of said sleeve, said sleeve being attached at one end thereof to the said open end of said cap and in axial alignment therewith; whereby the device will admit the flow of fluid into the interior of said cap when the cut-away section of said plug is positioned at said cap opening and when the plug is rotated on its linear axis and whereby fluid communication between said opening and said cavity is cut off by rotating the plug to position the cut-away section away from said cap opening so that the fluid will be retained within the cavity.

5,330,423

DRIVE SYSTEM

Donald J. Holster, 292A North Rocks Road, North Rocks, New South Wales, 2151, Australia

Filed Nov. 16, 1992, Ser. No. 975,324
Claims priority, application Australia, Nov. 15, 1991, PK 9515
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—69 **10 Claims**



1. A conveyor belt drive system adapted to move a conveyer belt, said system comprising:

(a) a drive shaft adapted for rotatable connection to a drive assembly of said conveyor belt;

(b) drive means for rotatably urging said drive shaft, said drive means including, in series.

(i) a motor rotatably connected to a fluid coupling of the type whose output torque varies as a function of input shaft speed,

(ii) said fluid coupling rotatably connected to the drive shaft, and

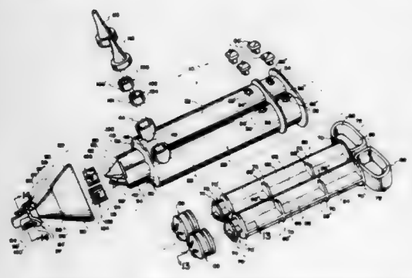
(c) motor speed control means for controlling the output speed of the motor, whereby the output torque of said fluid coupling transmitted to said drive shaft responds in accordance with said output speed of said motor so as to cause the drive shaft to maintain a desired torque.

5,330,424

MEDICAL LAVAGE APPARATUS AND METHODS

Darrel Palmer, Sandy, and William R. Houghton, Midvale, both of Utah, assignors to Ballard Medical Products, Draper, Utah

Division of Ser. No. 923,706, Jul. 31, 1992, Pat. No. 5,254,086. This application Jun. 24, 1993, Ser. No. 82,179
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—28 **5 Claims**



1. A method for removing aspired physiological liquids through check-valves which remain competent during a lavage procedure comprising the steps of:

connecting a double cylinder medical lavage apparatus to a patient body cavity communicating tube;

proximally reciprocating a pair of plungers of the double cylinder medical lavage apparatus to draw wash liquid into one cylinder while drawing physiological debris through the communicating tube toward and into the other cylinder;

passing liquid through a first centrally disposed flow pathway formed by a first dome-shaped, slit stop valve for liquid flowing from said communicating tube to said other cylinder;

distally reciprocating said pair of plungers to flush wash liquid through the communicating tube toward and into the patient body cavity while competently closing the first centrally disposed flow path of said first stop valve and pumping the physiological debris to a waste container out of the other cylinder;

passing the physiological debris through a second centrally disposed flow pathway formed by a second dome-shaped, slit stop valve for liquid flowing from the other cylinder to a waste container, said second stop valve competently closing the second centrally disposed flow pathway during the proximally reciprocating step.

5,330,425

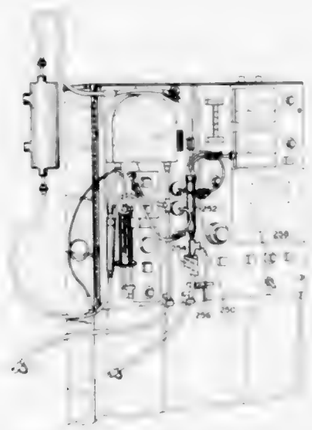
BLOW MOLDED VENOUS DRIP CHAMBER FOR HEMODIALYSIS

David S. Utterberg, 1080 Chestnut St., San Francisco, Calif. 94109

Division of Ser. No. 876,041, Apr. 30, 1992. This application May 11, 1993, Ser. No. 59,316

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—83 **9 Claims**



1. In a dialysis system which comprises a dialysis set mounted in a dialysis machine, said dialysis set comprising a venous chamber, the dialysis machine carrying a bubble detector and a downstream clamp, each being engaged with said dialysis set, the improvement comprising an injection site positioned on said set downstream from said venous chamber, but upstream of the bubble detector and downstream clamp of said dialysis apparatus, whereby drugs may be administered through the injection site of the set to the patient

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5,330,426

MIXING AND DELIVERY SYRINGE ASSEMBLY

Marshall S. Kriesel, Saint Paul, and Thomas N. Thompson, Richfield, both of Minn., assignors to Science Incorporated, Bloomington, Minn.

Filed Aug. 13, 1992, Ser. No. 930,749

Int. Cl.[5] A61M *37/00*

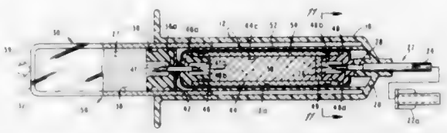
U.S. Cl. 604—89 **23 Claims**

1. A device for intermixing a first fluid component with a second component and for dispensing the mixture from the device comprising:

(a) a housing having an internal chamber with an outlet;

(b) container means connected to said housing for containing the first fluid component, said container means being movable relative to said chamber from a first position to a second position;

(c) adding means disposed within said internal chamber for adding said second component to said first fluid component upon movement of said container means toward said second position to form in infusible mixture, said adding



means comprising a scaffold upon which said second component is removably carried; and

(d) flow means for permitting fluid flow between said adding means and said outlet upon movement of said container means toward said second position, whereby said infusible mixture will be dispensed through said outlet as a result of movement of said container means toward said second position.

5,330,427

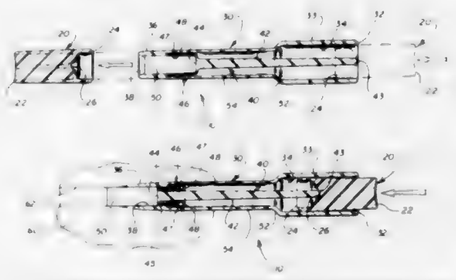
PREFILLED SUPPOSITORY APPLICATOR

Edward A. Weissenburger, Mercerville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 894,487, Jun. 5, 1992, Pat. No. 5,213,566, which is a continuation-in-part of Ser. No. 724,641, Jul. 2, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 26,882

Int. Cl.[5] A61F *15/00*

U.S. Cl. 604—14 **1 Claim**



1. A method of depositing medicament in suppository form in the body cavity of a patient comprising the steps of:

providing a one piece suppository applicator comprising a cylindrical main body portion having a distal end and a proximal end, wherein the main body portion is composed of a barrel stem at the distal end and a barrel grip at the proximal end thereof, said main body portion further comprising: an integral flexible chamber means at the distal end; a flexible plunger means adjacent, integral to and at least partially defining said flexible chamber means; said flexible plunger means and flexible chamber means are integrally joined and housed within said barrel stem, wherein said flexible plunger means is capable of inverting without rupturing when said plunger means is moved toward the distal end of said barrel stem;

filling the flexible chamber of said suppository applicator with a medicament and capping the distal end of said applicator with a cap portion;

removing the cap portion of the applicator from the distal end and inserting the cap portion in the proximal end of the main body portion of the applicator; and

engaging and compressing the plunger means of the applicator to pres into and invert the flexible chamber toward the distal end of the applicator to eject the medicament suppository therefrom and apply it into the body cavity.

5,330,428

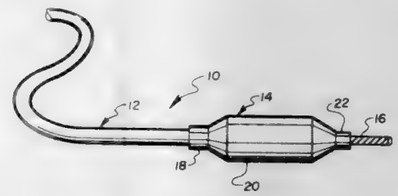
DILATATION CATHETER HAVING A RANDOM COPOLYMER BALLOON

Lixiao Wang, St. Paul; Bruce H. Rau, Clearwater, and David Sogard, Edina, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed May 14, 1991, Ser. No. 699,926

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—96 **22 Claims**



1. A dilation catheter comprising:

a compliant balloon having at least one layer of a thermoplastic material comprising a random copolymer consisting essentially of random repeating units of ethylene terephthalate and ethylene isophthalate.

5,330,429

CATHETER WITH A BALLOON REINFORCED WITH COMPOSITE YARN

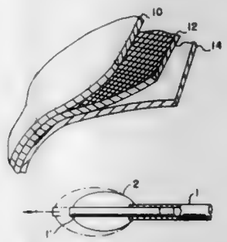
Noriyasu Noguchi, Shiga; Yoshiharu Yamazaki, Ohtsu; Mitsuyuki Hagio, Kamakura, and Yasuhiko Futami, Tokyo, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 666,987, Mar. 11, 1991, Pat. No. 5,201,706. This application Jan. 8, 1993, Ser. No. 2,422

Claims priority, application Japan, Sep. 5, 1989, 1-116607

Int. Cl.[5] A61M *29/02*

U.S. Cl. 604—96 **10 Claims**



1. A balloon for use in a balloon catheter, comprising:

an outer elastic film;

a reinforcing fabric, comprising a composite yarn consisting of an elastic yarn and a non-elastic yarn having a larger free length than that of said elastic yarn; and

an inner elastic film,

wherein the reinforcing fabric and the inner elastic film are not adhered with each other, and

wherein the reinforcing fabric is adhered with the outer elastic film.

5,330,430

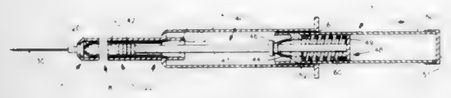
RETRACTABLE SYRINGE APPLICATOR

Robert J. Sullivan, 15 Floramar, Rancho Santa Margarita, Calif. 92688

Filed Dec. 6, 1993, Ser. No. 163,299

Int. Cl.[5] A61M *5/20*

U.S. Cl. 604—134 **9 Claims**



1. A combination retractable injector and injector enclosure comprising:

a hypodermic syringe including a cylindrical syringe body supporting an axially mounted canula at one end, the other end being open, and including a plunger slidably engaged within the body, the plunger having a sealing means, outwardly biased first locking means, first disengaging means, and a grasping and manipulation means, the LATTER extending from the open other end of the syringe body; and

an open ended tubular inner case providing, an internal annular lip adapted for passing the syringe body therethrough, and for engaging the first locking means, the inner case further providing a coil spring coaxially engaged within the inner case between the annular lip and the grasping and manipulation means of the plunger, such that with the first locking means engaged with the annular lip the spring is held in compression;

the injector enclosure being of tubular construction and including an inwardly biased second locking means, the enclosure operably engaging the combination of the syringe and inner case within the enclosure, the canula and inner case extending from opposite ends of the injector enclosure respectively, the second locking means engaging the other end of the syringe body for locking the later in place at a forward position within the injector enclosure, so that as the inner case is drawn out of the enclosure, the plunger is drawn through the syringe body to fill the body with an injection liquid, the injector enclosure further including second disengaging means for forcing the first engagement means to disengage the annular lip of the inner case;

whereby with the canula positioned for injecting, the inner case is forced into the injector enclosure thereby driving the plunger into the body of the hypodermic syringe for injecting the injection liquid, until the first and second disengaging means are brought simultaneously into contact with the second and first locking means respectively, thereby disengaging the syringe body from the forward position within the injector enclosure, and the plunger from the annular lip of the inner case thereby allowing the spring to drive the hypodermic syringe fully into the injector enclosure to conceal the canula.

5,330,431

INFUSION PUMP

Glenn Herskowitz, 425 Divisadero, Ste. 200, San Francisco, Calif. 94117

Filed Mar. 12, 1993, Ser. No. 30,782

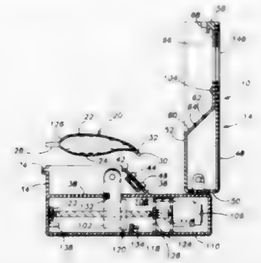
Int. Cl.[5] A61M *1/00;* **B65D** *35/28*

U.S. Cl. 604—153 **5 Claims**

1. An infusion pump for use with a flexible bag containing a prepackaged intravenous solution, said bag having first and second ends and first and second sidewalls, the first end having a dispensing port adapted for discharging the solution through intravenous tubing for delivery to a patient, said pump comprising the combination of a housing, support means carried by

VOL 1164 ISS 3 JL 19 1994 UMI

the housing for supporting said bag in a delivery mode position, platen means carried by the housing for providing a platen surface which is positionable along said first sidewall of the bag, compression roller means within the housing for applying a compression force against said second sidewall of the bag with the first sidewall juxtaposed against said platen surface for producing pressure in said intravenous solution within the bag, drive means for moving the compression roller in a direction toward said dispensing port of the bag while said



compression force is being applied for expelling solution from the bag through the dispensing port, and control means for controlling the drive means to move the compression roller in said direction for controlling said pressure in the solution, said control means including means for sensing the level of fluid pressure of the solution within the bag, and means responsive to said means for sensing the level of fluid pressure for operating said drive means to move the compression roller at a rate toward said dispensing port which maintains said fluid pressure substantially at a predetermined level.

5,330,432

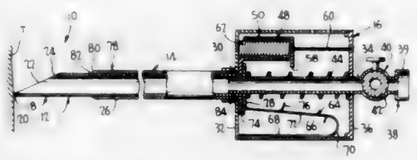
RETRACTABLE SAFETY PENETRATING INSTRUMENT

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Dec. 6, 1991, Ser. No. 805,506

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—164 **42 Claims**



1. A retractable safety penetrating instrument for introduction into a cavity in the body comprising

a cannula having a distal end for positioning in the body cavity, a proximal end for positioning externally of the body cavity and a lumen extending between said distal and proximal ends;

a tubular needle slidably disposed in said cannula lumen and having a sharp distal tip for penetrating a wall of the cavity;

retracting means for moving said sharp distal tip proximally from an extended position where said sharp distal tip protrudes beyond said cannula distal end to a retracted position where said sharp distal tip is withdrawn into said cannula to prevent contact of said sharp distal tip with tissue; and

trigger means including an operating member movable distally when said sharp distal tip has penetrated into said cavity and a trigger member for being engaged by said operating member when said operating member moves distally for automatically actuating said retracting means to move said sharp distal tip to said retracted position.

5,330,433

BIDIRECTIONAL FEMORAL ARTERIAL CANNULA

James D. Fonger, Wayland, Mass., and Kenneth R. Jonkman, Grand Rapids, Mich., assignors to Trustees of Boston University, Boston, Mass. and DLP, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 816,874, Jan. 2, 1992, Pat. No. 5,171,218. This application Sep. 18, 1992, Ser. No. 947,306

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—164 **7 Claims**



1. A method of delivering blood through a cannula in a patient, the cannula having a proximal end, a distal end, and a diverting side hole, the method comprising the steps of:

inserting the cannula in a blood vessel of the patient, the cannula being inserted until the diverting side hole enters the blood vessel;

pumping blood through the proximal end of the cannula to the distal end of the cannula; and

directing the blood continuously in a first direction through the distal end of the cannula and in a second direction opposite to the first direction through the diverting side hole of the cannula.

5,330,434

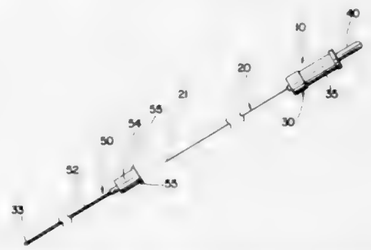
CATHETER INTRODUCER AND METHOD OF USING SAME

Richard H. McFarlane, Geneva, Ill., assignor to Taut, Inc., Geneva, Ill.

Filed Jan. 22, 1993, Ser. No. 6,927

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—164 **8 Claims**



1. In combination with a flexible catheter of a predetermined length having a) a distal end, b) a proximal end with a hub, and c) a lumen extending between the ends, a catheter introducer comprising:

an elongate, narrow, flexible, electrically conductive wire having a distal end zone and a proximal end zone and being sized for passage through the catheter and said wire being of a length slightly greater than the predetermined length of the catheter axially through the lumen, so that the distal end zone of the wire protrudes from the lumen at the distal end of the catheter defining a distal wire tip,

a hub on the proximal end zone of the wire comprising means to cooperate with the catheter to resist movement of the wire tip into the catheter upon insertion into a patient, and

electrical connection means connected to said wire, said electrical connection means being connected to said wire, said electrical connection means being structured and

disposed to receive a current charge from an external power source and transfer it to said distal wire tip such that said distal wire tip, upon being energized, enables the catheter to pass directly into the patient.

5,330,435

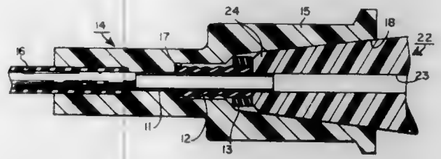
VALVE FOR A CATHETER ASSEMBLY

Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039

Filed Apr. 8, 1993, Ser. No. 44,134

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—167 **15 Claims**



1. A catheter comprising

a hub;

a catheter secured to and extending from said hub to define a flow path;

a tube secured to and within said hub to define a flow path, said tube being coaxial with said catheter; and

an elastomeric valve mounted on one end of said tube remote from said catheter and within said hub, said valve having a sheath disposed over said tube in overlying relation and having a closed end defining a wall to seal said one end of said tube against a flow of blood from said catheter and a sleeve concentrically mounted on said sheath, said sleeve begin, radially stretched on said sheath to maintain a circumferentially applied compressive force on said wall of said sheath.

5,330,436

INTRODUCING DEVICE

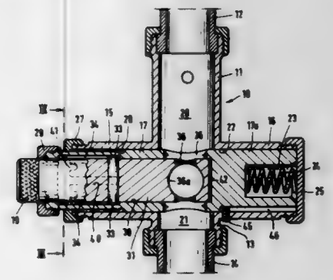
Harald Heidmueller, Heidenrichstrasse 10, 5000 Koeln 80, Fed. Rep. of Germany

Filed May 25, 1993, Ser. No. 66,201

Claims priority, application Fed. Rep. of Germany, May 26, 1992, 4217324

Int. Cl.[5] A61B *17/34*

U.S. Cl. 604—167 **9 Claims**



1. An introducing device for introducing instruments into a body comprising a trocar pipe **(14)**, a housing **(10)** with two coaxially aligned oppositely directed channels **(20, 21)**, at least one of said channels **(20, 21)** is connected with said trocar pipe **(14)** and between which a slide **(17)** is arranged that is linearly movable along an axis and transverse to said channels **(20, 21)**, said slide **(17)** having a first passage opening **926)** alignable with said channels **(20. 21)**, said slide **(17)** is coupled with an auxiliary slide **(31)** movable in the direction of said axis and having a second passage opening **(36)** of smaller dimension then that of said first passage opening **(26)**, and said auxiliary slide **(31)** is adjustable with respect to said slide **(17)** such that said first passage opening **(26)** and said second passage opening **(36)** come into axial alignment with each other.

5,330,437

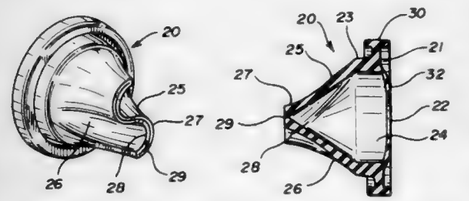
SELF SEALING FLEXIBLE ELASTOMERIC VALVE AND TROCAR ASSEMBLY FOR INCORPORATING SAME

Bernard J. Durman, Loveland, Ohio, assignor to Ethicon Endo-Surgery, Cincinnati, Ohio

Filed Nov. 12, 1993, Ser. No. 152,758

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—167 **13 Claims**



1. A self sealing flexible elastomeric valve adapted to have a device inserted therethrough, said valve comprising:

a) a flange having an aperture therethrough,

b) a cylindrical wall defining a tubular opening extending from said flange, and

c) a pair of mutually opposed first and second sealing wall sections extending from said cylindrical wall, said first and second sealing wall sections each having a distal sealing end, said wall sections converging at said distal sealing ends wherein said wall sections are adjacent to each other and define a generally S-shaped slit.

5,330,438

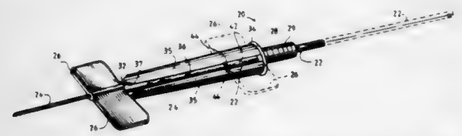
PROTECTIVE SHEATH FOR BUTTERFLY NEEDLES AND IV INFUSION SET AND SHEATH ASSEMBLY

Peter J. Gollobin, 54 Woodland Dr., Oyster Bay, N.Y. 11771, and Vincent Chimienti, 2 Osborne La., Greenvale, N.Y. 11548

Filed Oct. 8, 1993, Ser. No. 133,470

Int. Cl.[5] A61N *5/32*

U.S. Cl. 604—177 **20 Claims**

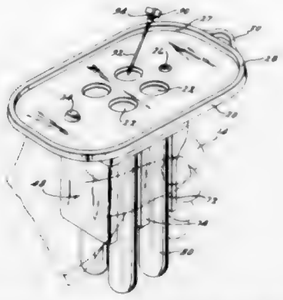


1. In an improved IV infusion set of the type including a length of tube with a hollow needle at one end, and a pair of outwardly projecting flexible wings adjacent the end of the tubing with the needle and a sheath slidably disposed on the tube and adapted to be slid over the needle to cover the needle after use, the improvement comprising:

said sheath comprising a hollow generally tubular body having a forward end oriented toward the needle and a rearward end oriented away from the needle, said body having means for more readily accommodating said wings other than 180 degrees apart when said tube is pulled through said sheath to secure said wings, said means comprising at least three longitudinally extending fingers separated by slots extending from the forward end of the body toward the rearward end, each of the slots being dimensioned to receive only one of the wings to allow at least

part of said sheath to be slid past the wings to cover the needle.

5,330,439
SAFETY DEVICE FOR USE IN COLLECTING FLUID SAMPLES
Craig M. Jackson, Del Mar, Calif., assignor to American National Red Cross, Washington, D.C.
Filed Apr. 8, 1992, Ser. No. 865,374
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—192 22 Claims



1. A safety device for use in collecting fluids into fluid collection tubes having penetrable stopper means inserted therein through a fluid transfer hose having at least one hollow needle attached thereto comprising:
a fluid collection tube retainer, said retainer including a frame having a plurality of openings therethrough for receiving fluid collection tubes and one or more openings for receiving one end of a fluid transfer hose and a gripable body member having a plurality of grooves for partially engaging said fluid collection tubes; and
a safety overshield selectively attached to said fluid collection tube retainer having a downwardly extending lip which engages said frame, a plurality of openings one the face of said safety overshield which correspond to the openings of said frame, and an upwardly projecting rim about the periphery of said safety overshield.

5,330,440
REVERSE THREAD CARPULE DENTAL SAFETY SYRINGE
Sydney D. Stanners, Box 11, 9169 Barnes Place, Sidney, B. C., Canada V8L 4X7; Arthur Makosinski, and Rodney Katz, both c/o The University of Victoria, P.O. Box 3055, Victoria, B. C., Canada V8W 3P6
Filed Oct. 21, 1992, Ser. No. 963,966
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—195 16 Claims

10. An anaesthetic carpule for use with a dental syringe comprising:
(a) a hollow cylindrical carpule casing having a first end and a second end;
(b) a piston enclosed in the interior of the first end of the carpule casing, the piston having a first end thereof first releasable engagement means and at a second end thereof second releasable engagement means; and
(c) a head having a first interior end and a second exterior end at the second end of the carpule casing opposite the piston, the head having a threaded needle engaging means protruding from the second end thereof, in a direction opposite to the piston, the head having on an exterior thereof second threads which releasably engage with mating threads of a needle end of a barrel of a dental syringe, and the head releasably engaging with the second engagement means of the second end of the piston when



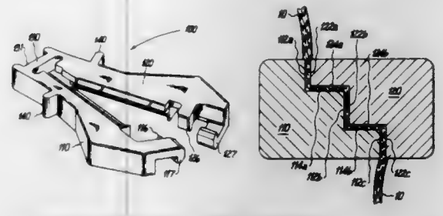
the piston is moved against the first interior end of the head.

5,330,441
SURGICAL SUTURING NEEDLE AND METHOD FOR MAKING SAME
Janniah S. Prasad; Robert Maurer; Paul Kapralos, all of Fairfield, Conn.; John E. Buzerak, Dutchess, N.Y., and Charles L. Putnam, Belle Mead, N.J., assignors to American Cyanamid Company, Wayne, N.J.
Filed Apr. 30, 1993, Ser. No. 55,165
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—222 26 Claims



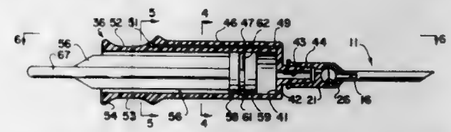
1. A method of making a surgical suturing needle from a blank, comprising the steps of:
metal-working the blank to form a shaft portion of the needle with a rectangular cross-section, with said rectangular cross-section having a major axis and a minor axis and a ratio of the major axis to the minor axis of no more than about 1.2;
metal-working a first end of the blank to form a needle head triangularly-shaped in cross-section terminating in a needle point and having a plurality of cutting edges;
metal-working the needle head to form a transition portion between the shaft portion and the needle point with a width greater than a width of the shaft portion, with the cutting edges extending axially from the needle point to at least the transitional portion; and
sharpening the needle point and cutting edges.

5,330,442
SUTURE RETAINING CLIP
David T. Green, Westport; Henry Bolanos, East Norwalk; Henry R. Sienkiewicz, Stamford, all of Conn.; Kenneth E. Toso, Portchester, N.Y.; Michael S. Kolesa, Norwalk, and H. Johnathan Tovey, Milford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 9, 1992, Ser. No. 959,182
Int. Cl.[5] A61B 17/06
U.S. Cl. 606—232 18 Claims



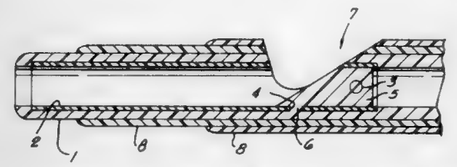
1. A suture holding clip, which comprises:
first and second legs each having at least one suture contacting surface engagement with the suture contacting surface of the other of said legs to form a serpentine interface therebetween, said first and second legs being movable between an open position wherein said suture contacting surfaces define a gap therebetween for the reception of at least one suture strand and a closed position wherein said suture contacting surfaces are engaged, said suture clip having at least two interlock means spaced apart from each other to prevent reopening of the suture holding clip after it has been fully closed;
wherein said suture contacting surface of each of said first and second legs comprises five planar walls and four substantially right angle corners formed by the intersections of said five planar walls.

5,330,443
ASPIRATION NEEDLE, SYRINGE FOR USE THEREWITH, APPARATUS INCORPORATING THE SAME AND KIT FOR USE IN FINE NEEDLE ASPIRATION CYTOLOGY
Trevor J. Powles, Greenhedges, Coulsdon Lane, Chipstad, Surrey, CR55QP, United Kingdom, and Mir A. Imran, 731 Barron Dr., Palo Alto, Calif. 94306
Filed Apr. 20, 1993, Ser. No. 49,998
Int. Cl.[5] A61M 5/00, 5/31
U.S. Cl. 604—240 6 Claims



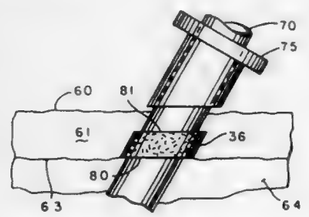
1. An aspiration needle for use in collecting larger cell samples with a syringe for fine needle aspiration cytology without increasing the size of the needle comprising a rigid elongate tubular member having distal and proximal extremities, the distal extremity being formed to provide a sharp point, the tubular member having a bore extending therethrough from the distal extremity to the proximal extremity and having an opening at the distal extremity in communication with the bore and a body secured to the proximal extremity of the tubular member and forming a chamber therein in communication with and in close proximity to the opening to the bore of the tubular member, said chamber being formed by a sloping uninterrupted side wall leading distally to the opening to the bore of the tubular member, said body including a hub separate from the chamber and spaced proximally of the chamber for receiving said syringe and for establishing communication between the syringe and the chamber.

5,330,444
CATHETER TIP WITH A LOW FRICTION LINING AND METHOD OF USE
William E. Webler, Costa Mesa, and Viet P. Dinh, Santa Ana, both of Calif., assignors to Intertherapy, Inc., Santa Ana, Calif.
Filed Sep. 15, 1992, Ser. No. 945,175
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—265 18 Claims



1. A catheter with a distal end, distal tip, and proximal end comprising a short lumen at its distal end, said short lumen extending from the distal end of the catheter a small proximal distance from the distal end, said short lumen terminating at its proximal end at the side of the catheter; an exit port at the proximal end of the short lumen communicating with said short lumen, and a low friction tube secured to the internal wall of the short lumen by means of an anchoring system comprising a plug made of a material which is bondable to the catheter, and at least one anchoring hole in the proximal end of the low friction tube through which the anchor plug is bonded to the catheter material thereby locking the low friction tube in place.

5,330,445
SHEATH FOR WOUND CLOSURE CAUSED BY A MEDICAL TUBULAR DEVICE
John R. Haaga, 4309 N. Hilltop, Chagrin Falls, Ohio 44022
Division of Ser. No. 896,588, Jun. 10, 1992, Pat. No. 5,254,105, which is a continuation-in-part of Ser. No. 787,518, Nov. 4, 1991, Pat. No. 5,195,988, which is a division of Ser. No. 514,769, Apr. 26, 1990, Pat. No. 5,080,655, which is a division of Ser. No. 288,858, Dec. 23, 1988, Pat. No. 4,936,835, which is a continuation-in-part of Ser. No. 199,130, May 26, 1988, Pat. No. 4,838,280. This application Jul. 1, 1993, Ser. No. 84,135
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—265 18 Claims



1. A hollow tubular sheath attachable to a tubular medical device, said medical device insertable into tissue of a body, means associated with medical device and sheath for depositing said sheath into said body tissue, said sheath having a generally rigid outer coating of a material defined in a class comprising gelatin, collagen, cellulose, bioabsorbable polymers and combinations thereof, and said sheath having a distal end portion softer than said coating and which deforms and adheres to said body tissue.

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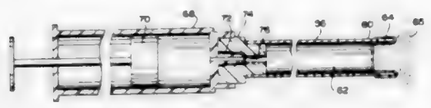
WOUND TREATING DEVICE USING AN INFLATABLE MEMBRANE AND METHOD FOR TREATING WOUNDS

Thomas D. Weldon, and Charles E. Larsen, both of P.O. Box 5149, Aquadilla, P.R. 00605

Continuation-in-part of Ser. No. 634,406, Dec. 27, 1990, Pat. No. 5,129,882. This application Jun. 16, 1992, Ser. No. 899,507

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—271 **19 Claims**



1. A wound treating device comprising:

a tubular portion having a proximal end, a distal end and a lumen extending therebetween;

inflatable means cooperatively associated with said distal end of said tubular portion, said inflatable means comprising a flexible membrane carried at said distal end of said tubular portion and being positionable within said distal end and movable between a retracted position and an inflated position to form a balloon-like projection at said distal end when moved to the inflated position;

said proximal end of said tubular portion being adapted to receive means for moving said inflatable means between said retracted position and said inflated position; and

a wound treating agent disposed within said distal end of said tubular portion when said inflatable means is in said retracted position and said wound treating agent being discharged from said distal end by said inflatable means when said inflatable means is moved to said inflated position.

5,330,447

IRRIGATOR FOR COLOSTOMY PATIENTS

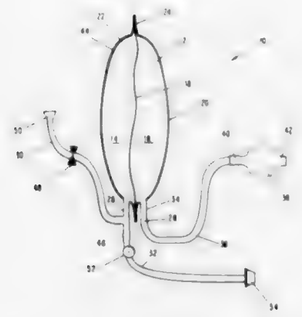
Reinhardt Barth, Maintal, Fed. Rep. of Germany, assignor to Pardes Spezialstrumpfe GmbH, Maintal, Fed. Rep. of Germany

Filed Aug. 27, 1992, Ser. No. 937,351

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1991, 4128420

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—277 **11 Claims**



1. An irrigator for use by a colostomy patient for intestinal flushing, comprising:

a bag for receiving a flushing liquid, said bag having a membrane dividing said bag into an air chamber on one side and a closable flushing liquid chamber on the other side;

a drainage line with a first and a second end and connected with said first end to said bag;

a connector, connected to said second end of said drainage line, for connecting said drainage line to a colostomy stoma;

a pump connected to said air chamber for pressurizing same;

an inlet hose connected to said flushing liquid chamber, said inlet hose having a shut-off valve, wherein said inlet hose and said drainage line are both guided into said flushing liquid chamber and are connected to one another; and

a T-connector for connecting said inlet hose and said drainage line.

5,330,448

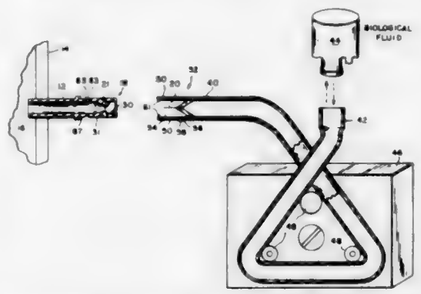
METHOD AND APPARATUS FOR MEDICAL FLUID TRANSFER

Cristina Chu, 7 Richard Rd., Lexington, Mass. 02173

Continuation of Ser. No. 490,764, Mar. 8, 1990, abandoned. This application Aug. 24, 1992, Ser. No. 934,300

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—280 **15 Claims**



1. Apparatus for transferring a selected fluid in a desired direction to or from a selected body area of a medical PATENT, the apparatus comprising:

a catheter having a distal end and a proximal end, the length of the catheter between said ends being sufficiently greater than the distance from said selected body area where said distal end is adapted to be implanted to an exit point for the catheter from the patient's body, that a length of the catheter may extend external to the patient's body when the catheter is fully implanted;

means located at the proximal end of the catheter for sealing said catheter proximal end, said sealing means including a sealing element of a material which may be repeatedly punctured by a needle and which reseals when the needle is removed;

receptacle means adapted to function as a source or sink for said selected fluid;

a needle adapted to puncture sd sealing element;

a tubular means connecting said receptacle means and said needle; and

noninvasive pump means for pumping the selected fluid in the desired direction at a desired flow rate between said body area and said receptacle means through said catheter, needles, and tubular means.

5,330,449

CATHETER STRAIN RELIEF DEVICE

James B. Prichard, Hazelwood, and Raymond O. Bodicky, Oakville, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 642,485, Jan. 17, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 22,824

Int. Cl.[5] A61M *25/00*; **C09J** *5/100*

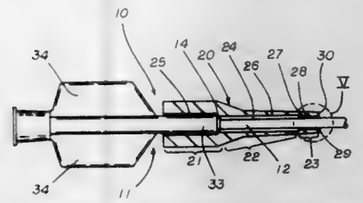
U.S. Cl. 604—282 **19 Claims**

1. A device for relieving strain concentration at a junction between a rigid member and a flexible member of a medical device, said strain relief device comprising:

a strain relief body having a proximal portion, a central portion, and a distal portion, said strain relief body forming a lumen therethrough, and the junction between the rigid member and the flexible member being positioned within said lumen,

means attaching said proximal portion of said strain relief body to the rigid member,

means attaching said distal portion of said strain relief body to the flexible member, and including a wicking cavity



located between said distal portion and the flexible member, said wicking cavity including means for encouraging wicking of a bonding material therein, and said means attaching said distal portion of said strain relief body to the flexible member further including bonding material in said wicking cavity, and

means for discouraging wicking in said central portion,

whereby, said device inhibits strain concentrations due to lateral-type forces which tend to bend the flexible member at an angle relative to the rigid member, and due to axial pull forces which tend to separate the flexible member from the rigid member.

5,330,450

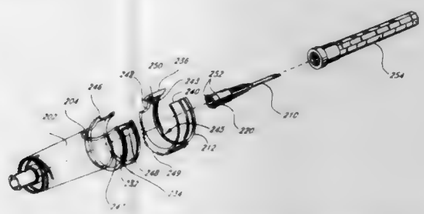
MEDICAL CONNECTOR

George A. Lopez, Corona del Mar, Calif., assignor to ICU Medical, Inc., Irvine, Calif.

Continuation of Ser. No. 747,010, Aug. 19, 1991, which is a continuation-in-part of Ser. No. 346,193, Jan. 9, 1987, abandoned, which is a division of Ser. No. 606,679, May 3, 1984, abandoned, which is a continuation-in-part of Ser. No. 543,248, Oct. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 460,585, Jan. 24, 1983, abandoned. This application Aug. 17, 1993, Ser. No. 108,441

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—283 **10 Claims**



1. A safety connector for connection to the branch port on a fluid flow line having a branch port thereon, said connector comprising:

a tubular body having proximal and distal ends;

an opening at the distal end of said tubular body for receiving said branch port;

a channel in the wall of said tubular body, adjacent the distal end thereof, for receiving said fluid flow line when said branch port is engaged within said tubular body;

a locking collar having inward and outward facing surfaces rotatably mounted on the distal end of said tubular body, said collar having a slot therein, and said collar rotatable from a first position in which said channel and slot are aligned to receive said fluid flow line when said branch port is engaged within said tubular body, and a second position in which said slot in said collar is no longer aligned with said channel and a portion of said collar contacts said branch port a sufficient distance from the intersection of said branch port with said fluid flow line such that said collar prevents removal of said branch port from said tubular body, and

a radially outwardly extending stop located on the distal end of said tubular body, said stop designed to be received by said radially inwardly facing surface of said rotatable collar, the stop and collar cooperating so that the range of rotation of said rotatable collar with respect to said tubular body is limited.

5,330,451

MULTI PURPOSE PERFUSION CANNULA

Shlomo Gabbay, Short Hills, N.J., assignor to Shelhigh, Inc., N.Y.

Filed Dec. 17, 1992, Ser. No. 992,116

Int. Cl.[5] A61M *5/31*

U.S. Cl. 604—284 **10 Claims**



1. A perfusion cannula for insertion into an artery, a main channel fluidly connected to an intra-aortic portion of said cannula, said main channel in fluid connection with an aortic perfusion line of a cardiopulmonary bypass, said portion having a proximal end adjacent said main channel and a distal end remote from said main channel, a first side port adapted for fluid connection to a balloon pump at a remote end and in fluid connection with said portion at a near end, a blood pressure port fluidly connected to a blood pressure monitoring tube, said tube being within said portion and extending to a pressure point upstream of said distal end, said tube being adapted for connection to a blood pressure monitoring device.

5,330,452

TOPICAL MEDICATING DEVICE

Gerald P. Zook, 909 N. 8th St. Apt. B–2 Tacoma, Wash. 98403

Filed Jun. 1, 1993, Ser. No. 69,411

The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.

Int. Cl.[5] A61F *13/02*

U.S. Cl. 604—307 **19 Claims**

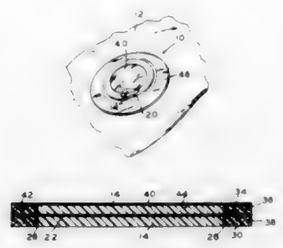
1. A topical medicating device, comprising:

a. a viscoelastic gel pad, having an upper surface, a lower surface, and a lateral perimeter;

b. a flexible retaining ring formed to fit closely about the lateral perimeter of said viscoelastic gel pad; said retaining ring having an upper surface and a lower surface, and

bounding a central area wherein said viscoelastic gel pad is located;

c. an impermeable sheet member, attached about the upper surface of said retaining ring, which provides an occlusive layer adjacent to said upper surface of said viscoelastic gel pad;



d. a thin, porous meshwork affixed to said retaining ring and extending across said central area of said retaining ring to support said viscoelastic gel pad within said central area; and

e. means for attaching said viscoelastic gel pad and said flexible retaining ring with affixed porous meshwork to a target skin surface upon a patient.

5,330,453

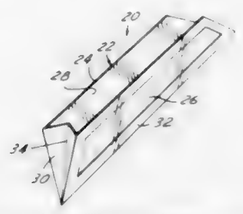
FEMININE URINARY AID

Maurice H. Cornellier, P.O. Box 2123, Inverness, Fla. 34451

Filed Aug. 2, 1993, Ser. No. 100,265

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—329 **12 Claims**



1. A feminine urinary aid that comprises a one-piece body of water resistant biodegradable water soluble composition, said body having a pair of flat side portions each with elongated parallel linear side edges and one end edge perpendicular to said side edges, said side portions being integrally joined to each other along contiguous side edges of said portions, the other side edges of said side portions being free side edges, and a triangular end portion integrally joined to said side portions at said end edges so as to close one end of said body and impart an open-topped V-shaped cross section to said body viewed in a direction parallel to said side edges.

5,330,454

OSTOMY APPLIANCE WITH FLOATING BELT-ATTACHMENT RING

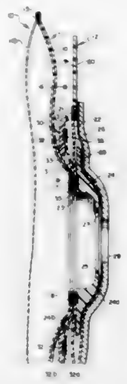
Wayne P. Klingler, and Walter F. Leise, Jr., both of Lindenhurst, Ill., assignors to Hollister Incorporated, Libertyville, Ill.

Filed Jun. 21, 1993, Ser. No. 78,820

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—338 **10 Claims**

1. An ostomy appliance comprising a collection pouch formed of thermoplastic film having a wall provided with a stoma opening; a flexible faceplate having pouchside and bodyside surfaces and being provided with pressure-sensitive adhesive means along said bodyside surface for adhesive attachment of said appliance to a wearer; said faceplate having an opening aligned with said pouch opening and being secured to said pouch wall about said pouch opening; and belt-attachment means interposed between said faceplate and pouch and comprising (a) a thin, highly-flexible annular web having an opening defined by an inner edge portion and (b) a relatively stiff belt-attachment ring joined to an outer edge portion of said web; said attachment ring being provided with means for detachably connecting said ring to a body-encircling support belt; whereby, said thin, flexible web supports said belt-attachment ring for limited independent movement towards and away from said fireplate and pouch to facilitate connection and disconnection of said ring and belt by a user when said appliance is worn; said web being thermoplastic and having its inner edge portion interposed between and heat sealed to both said pouch wall and said faceplate along an annular first heat seal zone; said faceplate including inner and outer ring elements; said inner ring element being formed of flexible non-porous thermoplastic material and said outer ring element being formed of moisture vapor permeable material.



5,330,455

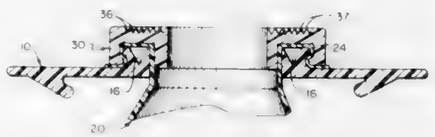
ENTEROSTOMY APPLIANCE

Lester M. McKay, 2804 Buena Vista, Mission Viejo, Calif. 92692

Filed Apr. 15, 1992, Ser. No. 868,422

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—339 **26 Claims**



1. An enterostomy appliance, comprising: a flexible pouch having an open end for placing in position over a stoma formed in a person's abdominal wall for receiving feces and other effluent discharged from the person's body through the stoma, and having a closed opposite end; a flexible sealing ring for forming a seal at the stoma; and an assembly base carrying the pouch and the sealing ring; said sealing ring being in the form of an annular member having a central aperture for receiving the stoma and a planar body-confronting surface encircling the central aperture for establishing a fluid-tight seal with the skin of the person's body in the area immediately surrounding the stoma, a plurality of closely spaced V-shaped annular grooves formed into said annular member from said planar body-confronting surface thereof, said V-shaped annular grooves being concentric with each other and with said central aperture, the spacing between adjacent V-shaped annular grooves being such that an annular pointed thread-shaped formation terminating in a tip is formed between each two adjacent grooves, each annular pointed thread-shaped formation being concentric with said V-shaped annular grooves, with each other, and with said central aperture, and the tips of all said annular pointed thread-shaped formations lying in the plane of the body-confronting surface of said annular member.

5,330,456

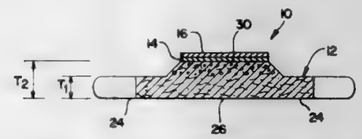
DISPOSABLE ABSORBENT PANEL ASSEMBLY

Robin K. Robinson, Tacoma, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.

Continuation of Ser. No. 865,968, Apr. 9, 1992, abandoned. This application Jul. 8, 1993, Ser. No. 88,907

Int. Cl.[5] A61F *13/50, 13/46*

U.S. Cl. 604—368 **9 Claims**



1. A disposable absorbent panel assembly, comprising:

a fibrous absorbent panel comprising fiberized wood pulp, said panel including front and rear end portions, spaced apart side edge portions extending longitudinally between said end portions, and a central portion positioned between said side edge portions and extending longitudinally between said end portions, the fibrous material of said side edge portions having a relatively greater density than the fibrous material of said central portion;

said absorbent panel further comprising highly-sorbent superabsorbent material substantially confined to said central portion thereof to form a zoned superabsorbent area which extends laterally approximately to said relatively denser side edge portions, which said side edge portions are relatively free of superabsorbent material; and

a liquid transfer layer comprising resilient material and positioned above said absorbent panel for overlying at least said central portion of the absorbent panel so that liquid can flow downwardly through said transfer layer into said absorbent panel, said transfer layer promoting wicking and distribution of liquid within said absorbent panel assembly.

5,330,457

ENHANCED CORE UTILIZATION IN ABSORBENT PRODUCTS

Richmond R. Cohen, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 768,785, Sep. 30, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 941,856

Int. Cl.[5] A61F *13/15*

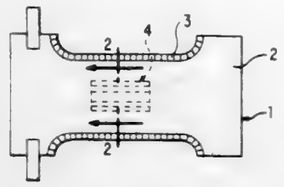
U.S. Cl. 604—378 **25 Claims**

1. A fluid-absorbing article comprising, in combination, a fluid-retaining core component arranged within at least a fluid-permeable coverstock and a fluid-impervious backing layer, said core component having a plurality of zones defined as:

(a) a zone of vulnerability positioned in said core component for maximum potential exposure to initial wetting, said zone of vulnerability having a wadding component comprising synthetic fiber or filament; and

(b) a plurality of additional core zones in the core component each having a wadding component arranged in the core component in areas of reduced potential exposure to initial wetting and in fluid-receivable relation from said zone of vulnerability;

wherein the wadding component in the zone of vulnerability has (1) a greater average pore size and a greater liquid-solid contact angle than the average pore size and contact angle of the wadding components within the plurality of additional core zones, and (2) a higher average fractional value of fiber volume-to-fiber surface area than the average fractional value of fiber volume-to-fiber surface area within the wadding components of the additional core zones; and wherein the average fractional value of fiber volume-to-fiber surface area, the average pore size and the liquid-solid contact angle within the wadding components of said additional core zones decrease in relative value in general proportion to increased geometric distance from said zone of vulnerability and corresponding decreased potential exposure to initial wetting.



5,330,458

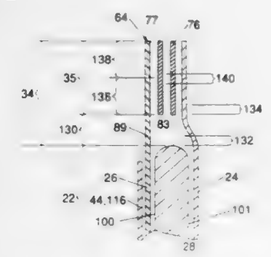
ABSORBENT ARTICLE WITH ELASTIC FEATURE HAVING A PORTION MECHNICALLY PRESTRAINED

Kenneth B. Buell, and James W. Richardson, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 750,755, Aug. 22, 1991, Pat. No. 5,151,092, which is a continuation-in-part of Ser. No. 715,152, Jun. 12, 1991, abandoned. This application Jun. 12, 1992, Ser. No. 898,108

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—385.1 **14 Claims**



1. A disposable absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined with said topsheet;

an absorbent core having side edges and waist edges, said absorbent core being positioned between said topsheet and said backsheet; and

an elastic feature extending outwardly from one of said edges of said absorbent core, said elastic feature comprising a segment of said backsheet which extends beyond said edge of said absorbent core and an elastomeric member joined with said backsheet such that a portion of said backsheet segment coincides with at least a portion of said elastomeric member, said portion of said backsheet coinciding with said elastic member being mechanically prestrained to permanently elongate portions of said back-

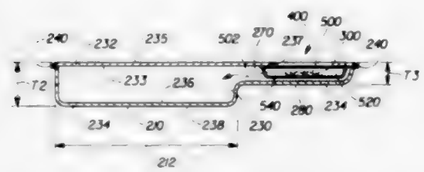
sheet prior to combining said backsheet with said elastomeric member.

5,330,459

DISPOSABLE ABSORBENT ARTICLE HAVING AN INFLATABLE SPACER

Gary D. Lavon, Harrison, and Theodora Beck, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1993, Ser. No. 81,536
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.1 **21 Claims**



1. A disposable absorbent article having a front edge, a rear edge, longitudinal edge, and longitudinal and lateral centerlines, the disposable absorbent article comprising

a liquid impervious backsheet;

a liquid pervious topsheet joined to the backsheet, the liquid pervious topsheet having an aperture therethrough for receiving fecal matter;

an absorbent core disposed intermediate the topsheet and the backsheet;

an inflatable component comprising:

an inflatable spacer disposed intermediate the topsheet and the backsheet, the inflatable spacer having an inflated volume and inflated thickness for maintaining a fecal void space thickness intermediate the topsheet and the backsheet, the inflatable spacer comprising at least one inflatable spacer chamber;

a gas evolving material disposed within the inflatable component, the gas evolving material evolving a gas for inflating the inflatable spacer upon combining with an activating material; and

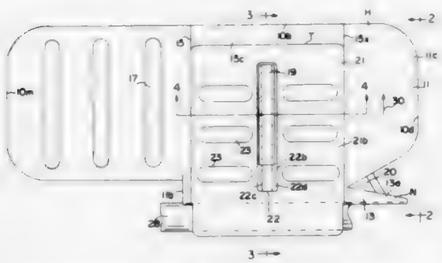
a port for receiving the activating material and communicating the activating material to the gas evolving material; wherein the gas evolving material is disposed intermediate a gas permeable membrane and the port.

5,330,460

UNIVERSAL SLITTER HAVING A SLIDER

Gordon L. Moss, Bloomington, and David A. Liebl, Saint Louis Park, both of Minn., assignors to Medamicus, Inc., Minneapolis, Minn.

Filed Nov. 27, 1992, Ser. No. 982,591
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—280 **13 Claims**



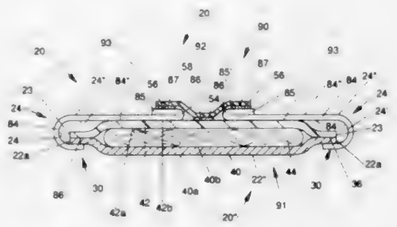
1. An introducer slitter for facilitating the removal of an introducer from a catheter or pacer lead that is of one of a number of different outer diameters and extends through the introducer without sliding the introducer over the proximal end of the catheter wherein the catheter and introducer each has an axially elongated tubular portion with inner and outer peripheral surfaces, comprising a handle section that has a front edge portion and a top edge portion, said handle section having an axially elongated handle member that includes an axially extending lower edge and an axially extending arcuate section joined to the handle member lower edge, said arcuate section being vertically spaced from the top edge and having a radial inner surface for abutting against the catheter outer peripheral surface, means defining a cutting edge joined to the handle section adjacent to the juncture of the handle member to the arcuate section and being radially outwardly of the arcuate section surface, the front edge portion having a front edge part extending radially outwardly relative to the arcuate section and being axially rearwardly of the means defining the cutting edge, a clamp member having clamp means for clampingly abutting against the catheter outer peripheral surface generally diametrically opposite the arcuate section, and retaining means for retaining the clamp member in abutting relationship to the handle section and connecting the clamp member to the handle section for limited slidable movement relative to the handle section between a catheter clamping position that the arcuate section and clamp member cooperatively clampingly engaging the catheter to retain the catheter in an axially fixed clamped position relative to the slitter, and a catheter release position, the clamp means including a clamp jaw for abutting against the catheter and a vertically extending clamp leg having a top axially extending terminal edge and a lower edge joined to the clamp jaw, said clamp jaw being vertically opposite the arcuate section from the top edge in both the clamp member clamping and unclamping positions, the arcuate section having a front nose portion extending axially forwardly of the cutting edge for entering between the introducer inner surface and the catheter outer peripheral surface as the introducer is pulled rearwardly relative to the catheter tubular portion whereby the cutting edge slits the introducer tubular portion as the introducer is pulled rearwardly, the nose portion extending axially forwardly of the clamp jaw, the arcuate section having an outer peripheral surface that defines at least part of the nose portion, the means defining the cutting edge having an exposed part that is adapted to engage the introducer and extends radially outwardly of the arcuate section outer peripheral surface and away from the clamp jaw.

5,330,461

ABSORBENT ARTICLE HAVING FOLDED SIDE FLAPS

Karen K. Leeker, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1992, Ser. No. 995,462
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 **17 Claims**



1. An absorbent article in a folded configuration having an adhesive side and a non-adhesive side, said absorbent article comprising:

a main body portion comprising an absorbent assembly, a body-facing side, a garment side, and a periphery comprising longitudinal edges and transverse edges; and

a pair of flaps, each of said flaps being joined along a line of juncture to said main body portion, and each flap comprising a proximal edge adjacent to the line of juncture, a distal edge disposed away from the line of juncture, a body-facing side, and a garment side, each said flap being folded to be over the garment side of said main body portion to form a first flap portion and each said flap being folded again to form a second flap portion having a body-facing side and a garment side, said garment side of said second flap portion facing away from said garment side of main body portion such that, in the absorbent article's folded configuration, said garment side of said main body portion and said garment side of each said second flap portion all face opposite said body-facing side of said main body portion, and

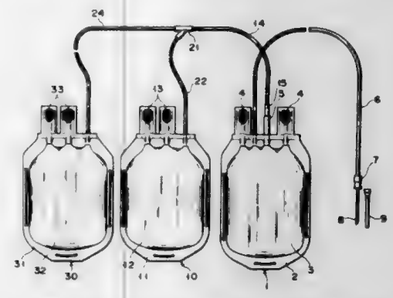
a flap securement member joined to said garment side of said second flap portion of each said flap whereby at least a portion of said flap securement member on said second flap portion overlays said main body portion such that each said flap securement member forms at least a portion of said adhesive side of the absorbent article.

5,330,462

MULTIPLE BAG

Yasushi Nakamura, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1991, Ser. No. 771,304
Claims priority, application Japan, Oct. 5, 1990, 2-267873
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—410 **4 Claims**



1. A multiple bag assembly, comprising: a plurality of interconnected bags;

said interconnected bag including a chemical containing blood collecting bag charged with a liquid chemical and at least one vacant bag;

said chemical containing blood collecting bag having an inner surface with a first roughness and said at least one vacant bag having an inner surface with a second roughness, said first roughness being less than said second roughness;

said first roughness of said inner surface of said chemical containing blood collecting bag being in the range of 2 μm to 15 μm in terms of Rz; and

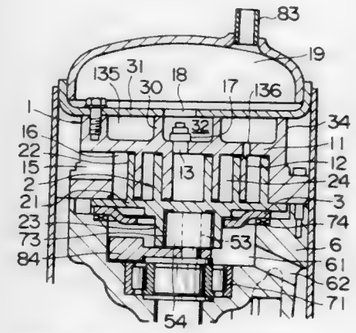
said second roughness of said inner surface of said at least one vacant bag being in the range of approximately 15 μm to 50 μm in terms of Rz.

5,330,463

SCROLL TYPE FLUID MACHINERY WITH REDUCED PRESSURE BIASING THE STATIONARY SCROLL

Takahisa Hirano, Nagoya, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 708,714, May 31, 1991, Pat. No. 5,186,616.
This application Nov. 6, 1992, Ser. No. 972,911
Claims priority, application Japan, Jul. 6, 1990, 2-179062; Jul. 6, 1990, 2-179063
Int. Cl.[5] F01C *1/04*
U.S. Cl. 418—55.5 **19 Claims**



1. A scroll type fluid machinery comprising:

a closed housing, the housing having means forming a high pressure chamber and means forming a low pressure chamber, fluid pressure in the closed housing varying form a low pressure in the low pressure chamber to a high pressure in the high pressure chamber;

a stationary scroll and a revolving scroll having end plates, each end plate having a spiral element and the spiral elements being engageable with each other so as to form closed spaces which varying in volume during revolution of the revolving scroll in a solar motion;

a first annular member surrounding a discharge port in the stationary scroll;

the high pressure fluid chamber being partially formed on an outside of the end plate of said stationary scroll by a partition wall, the end plate and the first annular member and the high pressure fluid chamber being in communication with the discharge port defined in the stationary scroll, the partition wall separating at least a portion of the high pressure chamber form the low pressure chamber in the closed housing;

a second annular member at a periphery of the end plate of the stationary scroll, both the first and second annular members being integral with the end plate of the stationary scroll and both the first and second annular members having ends in sealing engagement with the partition wall forming the high pressure fluid chamber, the stationary scroll being fixed to the partition wall by at least one of the first and second annular members;

an intermediate pressure fluid chamber being formed between the end plate of said stationary scroll, the first annular member, the second annular member and the partition wall forming said high pressure fluid chamber; and

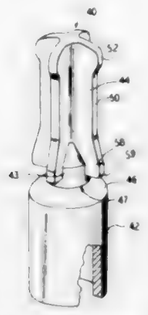
an intermediate pressure introduction hole communicating with said closed spaces and the intermediate pressure fluid chamber during compression, the intermediate pressure introduction hole being formed in the end plate of said stationary scroll, and intermediate pressure fluid in said closed spaces being introduced into said intermediate pressure fluid chamber through said hole.

5,330,464

RELIABLE BREAKABLE CLOSURE MECHANISM

Jean-Marie Mathias, Lillois; Jean-Claude Bernes, Faimes; Ermenegildo Lavezzo, Souvret, and Jack Debrauwere, Halle, all of Belgium, assignors to Baxter International Inc., Deerfield, Ill.

Filed Mar. 11, 1992, Ser. No. 849,267
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—415 12 Claims



1. A fluid path having a frangible seal, comprising:
a substantially tubular housing having first, second, and third chambers aligned along an axis, the first chamber including an interior rib, the second chamber interconnecting the first and third chambers, the second chamber having an interior rib; and
a frangible seal member secured within the first chamber of the tubular housing, the frangible seal member made of a rigid, non-polyvinylchloride plastic and comprising:
a tubular seal member secured in sealing engagement to the interior of the first chamber, the tubular seal member having a closed end with a rupturable membrane facing the second chamber of the tubular housing;
a stem attached to and extending axially from the rupturable membrane of the tubular seal member toward the second chamber of the tubular housing; and
a plurality of vanes extending radially from the stem, at least two of the vanes having spurs formed on extremities thereof and constructed to frictionally engage the inner walls of the second chamber of the tubular housing when the stem is separated from the tubular seal member.

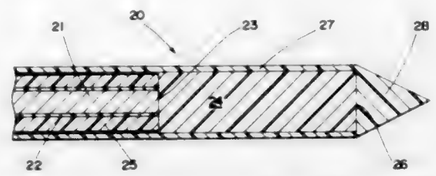
5,330,465

CONTINUOUS GRADIENT CYLINDRICAL DIFFUSION TIP FOR OPTICAL FIBERS AND METHOD FOR USING

Daniel R. Doiron, Santa Ynez; Hugh L. Narcisco, Jr., and Paul Paspa, both of Santa Barbara, all of Calif., assignors to Laser Therapeutics, Inc., Buellton, Calif.

Division of Ser. No. 799,047, Nov. 26, 1991, Pat. No. 5,196,005. This application Oct. 30, 1992, Ser. No. 969,413
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—7 3 Claims

1. A method for administering photodynamic therapeutic treatment to tumors comprising the steps of:
(a) introducing a suitable photosensitive molecule into or around the tumor; and
(b) photoirradiating said photosensitive molecules by means of a diffuser tip to deliver an amount of light energy sufficient to effect the destruction of the tumor cells;
wherein said diffuser tip has a proximal end which abuts against the tip of an optical fiber or array of fibers and a distal end, said diffuser tip comprising a cylindrical central core of an optically transparent elastomer, said core containing light scattering centers embedded therein, said light scattering centers being distributed within the core so that the concentration of light scattering centers increases continuously in a direction



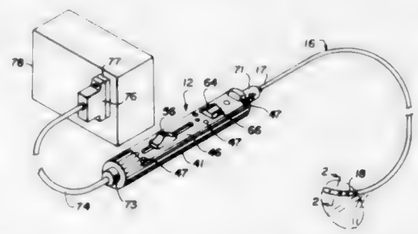
from the proximal end of the diffuser tip to the distal end of the diffuser tip.

5,330,466

CONTROL MECHANISM AND SYSTEM AND METHOD FOR STEERING DISTAL EXTREMITY OF A FLEXIBLE ELONGATE MEMBER

Mir A. Imran, Palo Alto, Calif., assignor to Cardiac Pathways Corporation, Sunnyvale, Calif.

Filed Dec. 1, 1992, Ser. No. 983,963
Int. Cl.[5] A61M *37/00*
U.S. Cl. 606—13 9 Claims



1. A control mechanism for use with a flexible elongate member having proximal and distal extremities and having a plurality of circumferentially spaced-apart elements having a characteristic which is activated by heat disposed in the distal extremity comprising a housing adapted to be grasped by a human hand and coupled to the proximal extremity of the flexible elongate member, a first control member slidably mounted in the housing for linear motion from one linear position to another linear position, a second control member rotatably mounted in the housing for rotary motion from one rotary position to another rotary position, said first and second control members being accessible to the fingers of the human hand grasping the housing and electrical means adapted to couple the first and second control members to the elements in the distal extremity of the flexible elongate member to supply heat to the elements whereby when the first and second control members are moved, the distal extremity of the flexible elongate member is moved in accordance with the positioning of the first and second control members.

5,330,467

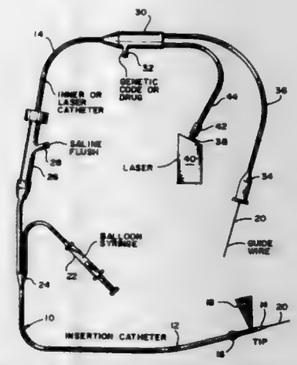
CELL TREATMENT APPARATUS AND METHOD

George S. Abela, 80 Longfellow Rd., Wellesley, Mass. 02181

Continuation of Ser. No. 866,473, Apr. 10, 1992. This application Apr. 28, 1993, Ser. No. 53,206
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—15 24 Claims

1. An apparatus for patient treatment comprising:
a treatment catheter including an optical fiber, a body having a wall with a window means disposed therein to pass

laser energy from said optical fiber, and a treatment agent channel inside said body, said window means passing laser energy for poration of a patient's cells in vivo, said treatment agent channel operable to supply treatment agent to said window means for entry into a patient's cells in vivo



after the patient's cells have been porated by said laser energy, said treatment catheter further including a flushing solution channel distinct from said treatment agent channel and terminating in a flushing solution exit for applying flushing solution to a treatment site in a patient.

5,330,468

DRILL GUIDE DEVICE FOR ARTHROSCOPIC SURGERY

Stephen S. Burkhart, 201 Village Cir., San Antonio, Tex. 78232

Filed Oct. 12, 1993, Ser. No. 134,983
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—96 17 Claims



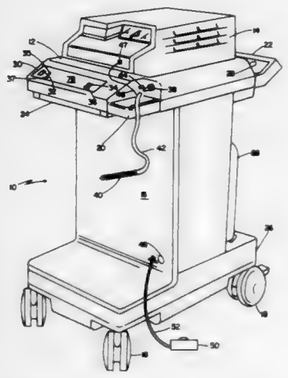
1. An orthopedic drill guide device for use in drilling through bone with a flexible pin, comprising:
a rigid frame with a first end and a second end, said frame having a uniform radius of curvature;
an elongated, tubular aiming means having a near end rigidly attached near the first end of said frame, said aiming means having a curved removed end for aligning said flexible pin adjacent to an entry point of a bone to be drilled, said aiming means for passage of said flexible pin therethrough;
an elongated, tubular receiving means adjustably attached to said frame and including means for selectively positioning said receiving means axially about said frame, said receiving means having a near end and having a curved removed end for capturing said flexible pin upon exiting the bone;
wherein the removed ends of said tubular aiming means and said tubular receiving means are inserted through small incisions in the skin of the patient to points adjacent the bone to be drilled, the tubes of said aiming means and said receiving means having axes nonaligned with the hole drilled in the bone between the removed ends thereof.

5,330,469

APPARATUS FOR SUPPORTING AN ELECTROSURGICAL GENERATOR AND INTERFACING SUCH WITH AN ELECTROSURGICAL PENCIL AND AN INERT GAS SUPPLY

Richard P. Fleenor, Denver, Colo., assignor to Beacon Laboratories, Inc., Broomfield, Colo.

Continuation-in-part of Ser. No. 377,528, Jul. 10, 1989, Pat. No. 5,041,110. This application Apr. 5, 1991, Ser. No. 681,082
The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—40 28 Claims



1. An apparatus for supporting and operatively interfacing one of a plurality of standard electrosurgical generators provided with a selected standard electrical plug, an electrosurgical pencil, and at least one gas receptacle to permit an operator to conduct gas-enhanced electrosurgery, comprising:
a support structure having an accessible platform for receiving and removably supporting said one of said plurality of standard electrosurgical generators;
first receiving means, mounted on said support structure, and adapted for receiving the at least one gas receptacle;
second receiving means, mounted on said support structure, adapted for receiving the electrosurgical pencil and interconnected to said first receiving means;
control interface means, mounted on said support structure, interconnected to said first receiving means and connectable to operator control means, wherein an operator may control with said operator control means the provision of gas from the at least one gas receptacle to the electrosurgical pencil and the provision of an electrical output from said one of said plurality of standard electrosurgical generators to the electrosurgical pencil to conduct gas-enhanced electrosurgery; and
accessible outlet means, mounted on said support structure and adapted for connectably receiving said selected standard electrical plug, said outlet means selectively interconnected said one of said plurality of standard electrosurgical generators to said control interface means.

5,330,470

ELECTRO-SURGICAL TREATMENT INSTRUMENT

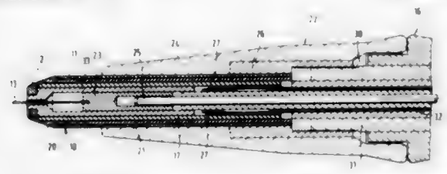
Alfred Hagen, Tuttlingen, Fed. Rep. of Germany, assignor to Delma elektro-und medizinische Apparatebau Gesellschaft mbH, Tuttlingen, Fed. Rep. of Germany

Filed Jul. 2, 1992, Ser. No. 907,936

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122219

Int. Cl.[5] A61B *17/39*

U.S. Cl. 606—42 15 Claims



1. An electro-surgical treatment instrument for cutting and coagulating a tissue with a high frequency current comprising:

a holder having a proximal end for placement near the tissue and a distal end;

first and second coagulation electrodes movably coupled to the proximal end of the holder so that the coagulation electrodes can be brought into contact with the tissue during an operation;

a cutting electrode fixed to the holder and extending from the proximal end, the coagulation electrodes being axially displaceable relative to the cutting electrode and the holder;

a radio frequency generator connected to the distal end of the holder, the generator supplying the high frequency current to the first and second coagulation electrodes and the cutting electrode; and

an annular insulation layer disposed between the first and second coagulation electrodes, the insulation layer providing a spacing between said coagulation electrodes which is small enough so that the high frequency current flows between said coagulation electrodes to coagulate the tissue when the instrument is brought into contact with the tissue.

5,330,471

BI-POLAR ELECTROSURGICAL ENDOSCOPIC INSTRUMENTS AND METHODS OF USE

Philip E. Eggers, Dublin, Ohio, assignor to Hemostatic Surgery Corporation, Georgetown, Cayman Islands

Continuation-in-part of Ser. No. 711,920, Jun. 7, 1991, abandoned. This application May 1, 1992, Ser. No. 877,704

Int. Cl.[5] A61B *17/38*

U.S. Cl. 606—48 27 Claims



1. An instrument for performing endoscopic electrosurgery on a tissue by passing a current through the tissue to cause hemostasis thereof, the instrument comprising:

an elongated barrel having a proximal end and a distal end;

first and second shearing members disposed on the distal end of the elongated barrel,

the first shearing member having a first shearing surface, a first cutting edge having a length and a first exterior surface, a portion of the first exterior surface adjacent the first cutting edge defining a first electrode;

the second shearing member having a second shearing surface, a second cutting edge, and a second exterior surface, a portion of the second shearing member adjacent the second cutting edge defining a second electrode;

means for connecting the first and second shearing members so that the first shearing surface moves relative to the second shearing surface through a range of motion in a scissors-like cutting action, wherein the first and second cutting edges close together for shearing tissue located therebetween the scissor-like cutting action defining a cutting point located just distally of where the first and second cutting edges come together, the cutting point moving distally along the cutting edges where the first and second cutting edges come together through the range of motion; and

an electrically insulative material interposed between the first and second electrodes so that the first and second electrodes do not contact each other in the range of motion, and so that the current passes between the first and second electrodes distal to the cutting point and not between the first and second shearing surfaces, the first and second cutting edges cutting the tissue at the cutting point; and

actuating means connected to the proximal end of the elongated barrel to move the first and second shearing members through the range of motion,

wherein the first and second shearing members comprise an electrically conductive material, the means for connecting the first and second shearing members comprises a material that does not conduct electricity between the first and second shearing members and the electrically insulative material comprises a first layer of material disposed on the first shearing member to form substantially the entire length of the first cutting edge and the first shearing surface.

1. An instrument as defined in claim 1 wherein the first layer of electrically insulative material has a first hardness, the second shearing member has a second hardness, and the first hardness is greater than the second hardness.

5,330,472

DEVICE FOR APPLYING A TENSIONAL FORCE BETWEEN VERTEBRAE OF THE HUMAN VERTEBRAL COLUMN

Peter Metz-Stavenhagen, Bad Wildungen, Fed. Rep. of Germany, assignor to Howmedica GmbH, Schoenkirchen, Fed. Rep. of Germany

Filed Jun. 13, 1991, Ser. No. 714,473

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—53 7 Claims



1. A device for applying an adjustable tensional force between two vertebrae of the human vertebral column, said device comprising:

(a) a first retaining member and a second retaining member to be brought into engagement with a first associated vertebra and a second associated vertebra and said first retaining member having a first throughbore and said second retaining member having a second throughbore;

(b) a threaded rod which can be accommodated simultaneously within both said firth throughbore and said second throughbore;

(c) an elongated tube having an unthreaded inner and outer surface which is dimensioned so that said threaded rod can e slid into said tube; and

(d) a nut which threads onto said threaded rod and which contacts said tube so as to support said tube on said threaded rod and so as to adjust the position of said tube on said threaded rod, thereby adjusting the distance between said first retaining member and said second retaining member and thus adjusting the tensional force between said first associated vertebra and said second associated vertebra.

5,330,473

BRANCH CONNECTOR FOR SPINAL FIXATION SYSTEMS

Robert S. Howland, Seal Beach, Calif., assignor to Advanced Spine Fixation Systems, Inc., Cypress, Calif.

Filed Mar. 4, 1993, Ser. No. 26,518

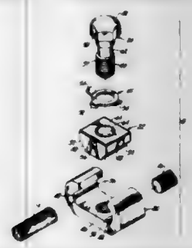
Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—61 28 Claims

1. A connector for connecting a first spine rod to a second rod comprising:

a wedge-shaped upper saddle and a C-shaped lower saddle, wherein the saddles mate to define a first opening for receiving the first spine rod, and a second opening for receiving the second rod, wherein a longitudinal axis of the first opening and a longitudinal axis of the second opening are in a common plane; and

means for clamping the saddle together to grip the first and second rods independently of a bone screw wherein the clamping means is located between the first and second



openings and wherein the clamping means press the spine rods downwardly and outwardly.

5,330,474

VERTEBRAL LOCKING AND RETRIEVING SYSTEM

Chih-I Lin, 513 S. Golden Pardos Dr., Diamond Bar, Calif. 10765

Continuation-in-part of Ser. No. 935,271, Aug. 26, 1992, Pat. No. 5,257,994, which is a continuation-in-part of Ser. No. 924,448, Aug. 4, 1992, Pat. No. 5,196,014. This application Jul. 29, 1993, Ser. No. 98,859

Int. Cl.[5] A61B *17/58*

U.S. Cl. 606—61 8 Claims



1. A vertebral locking and retrieving system for use in retrieving a deformed vertebra and maintaining the deformed vertebra in a normal, healthy position comprising:

at least one locking pin having a threaded end portion adapted to be secured to a normal, healthy vertebra, an integrally formed locking end portion, and a stopping protrusion located between the threaded end portion and the locking end portion;

at least one connector comprising a receiver part having a cylindrical through hole defining a first longitudinal axis, and an integrally formed substantially cubic portion at one lateral side of said through hole, said cubic portion having a locking aperture adapted to non-rotatably accept the locking end portion of the at least locking pin such that the cubic portion rests on the stopping protrusion to prevent movement of the cubic portion towards the normal, healthy vertebra;

at least one locking component engageable with the locking end portion of said at least one locking pin after the locking end portion has passed through the locking aperture of the cubic portion to hold said at least one connector onto the at least one locking pin;

a remedial component adapted to be secured at one end thereof to one of a deformed vertebra located immediately adjacent to said normal, healthy vertebra but different from said normal, healthy vertebra to which said at least one locking pin is secured;

coupling means for interconnecting said at least one connector and said remedial component, said coupling means extending along said first longitudinal axis into said through hole of said receiver part and being threadably attached to said receiver part;

fastening means for fixedly securing said remedial component to said coupling means;

wherein said locking aperture of the substantially cubic portion of said at least one connector defines a second longitudinal axis that extends at an acute angle of deflection relative to a plane extending perpendicular to said first longitudinal axis.

5,330,475

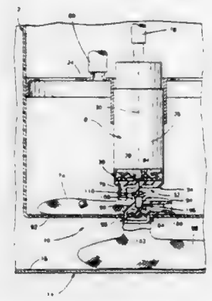
MODULAR FUEL SENDER FOR MOTOR VEHICLE

Orrin A. Woodward, Davison; Edward A. Hantle, Caro, and Christopher J. Mahoney, Birch Run, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1993, Ser. No. 158,344

Int. Cl.[5] F02M *33/00*

U.S. Cl. 417—89 4 Claims



1. In a modular fuel sender including

a reservoir in a fuel tank of a motor vehicle,

a jet pump having an inlet chamber connected to said fuel tank, a venturi passage between said inlet chamber and said reservoir, and a nozzle with an orifice aimed at said venturi passage, and

an electric fuel pump in said reservoir including a regenerative turbine pump and an electric motor,

said regenerative turbine pump further including an impeller drivingly connected to said electric motor, a housing defining a substantially annular pump channel around said periphery of said impeller, an inlet port at an upstream end of said pump channel connected to said reservoir for admitting fuel at ambient pressure to said pump channel, a discharge port at a downstream end of said pump channel for discharging fuel therefrom at a discharge pressure, and a bleed orifice in said housing open to said pump channel between said inlet port and said discharge port for bleeding a mixture of liquid fuel and vapor from said pump channel at a pressure between ambient and said discharge pressure,

the improvement comprising:

means connecting said bleed orifice to said nozzle in said jet

pump so that said mixture of fuel and vapor bled from said pump channel issues from said orifice in said jet pump nozzle as a jet stream and into said venturi passage in said jet pump whereby fuel from said inlet chamber is aspirated into said reservoir through said venturi passage

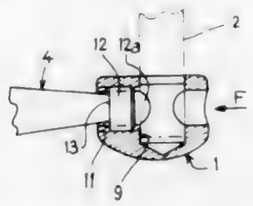
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5,330,476

PROTECTIVE CAP FOR AN OSTEOSYNTHESIS PIN AND ASSEMBLY INCLUDING THIS CAP AS WELL AS AN INSTRUMENT FOR FIXING IT ON THE PIN

Jean-Claude Hiot, 80300 Bouzincourt; Christophe Obry, Clinique Pauchet de Butler, rue Albérie de Coloue, 80000 Amiens; Patrick Letot, Domaine "Les Gouttes", 03160 Saint Aubin le Monial, and Patrick Sueur, 15, rue des Majots, 80000 Amiens, all of France, assignors to Christophe Obry, St. Fucien; Jean-Claude Hiot, Bouzincourt; Patrick Sueur, Amiens and Patrick Letot, Dieppe, all of France

Filed Nov. 18, 1992, Ser. No. 976,921
Claims priority, application France, Nov. 18, 1991, 91 14184
Int. Cl.[5] A61F *5/00*
U.S. Cl. 606—60 **7 Claims**



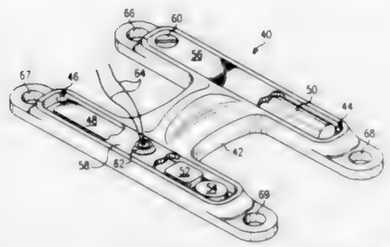
1. A protective cap (**1**, **14**) for an osteosynthesis pin (**2**), said cap comprising: a housing (**9**), for receiving one end of the pin in a longitudinal direction; and a tapped hole (**11**) which opens out transversely in said housing, and which receives a fixing screw (**12**) having on one end thereof a head for (**12***a*) matching a cylindrical surface of the pin, and on an opposite end thereof an integral terminal part (**4**), said fixing screw allowing the pin and the cap to be solidly attached together; wherein said screw (**12**) has, at its junction with said terminal part, a brittle zone (**13**) allowing said screw and said terminal part to rupture at the brittle zone at the end of screwing and allowing said screw to be locked in the transverse hole (**11**).

5,330,477

APPARATUS AND METHOD FOR BONE FIXATION AND FUSION STIMULATION

David F. Crook, Garland, Tex., assignor to AMEI Technologies Inc., Wilmington, Del.

Filed Jan. 28, 1992, Ser. No. 826,991
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—69 **31 Claims**



1. Apparatus for stimulating healing of and immobilizing a fracture or a fusion site of a bone, the bone having a bone surface with a bone contour, the apparatus comprising

a substantially rigid plate having a surface for intimately mating with the bone surface;

said surface having a preformed contour that is the inverse image of the bone contour;

fastening means for securing said plate directly to the bone;

an electronic-module housing secured to said plate; and

an electronic module, removably disposed in said housing, having disposed therein an electronic circuit for generating and emitting an energy for stimulating the healing of the site.

5,330,478

Patent Not Issued For This Number

5,330,479

RECIPROCATING BONE PUNCH

Henry B. Whitmore, Rte. 5, Box 369, San Antonio, Tex. 78221

Filed Mar. 11, 1993, Ser. No. 29,529
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—79 **9 Claims**



1. A surgery bone chisel instrument comprising,

a casing having an open front end,

a tool bit having cutting elements lying in a circle with tips spaced apart and directed toward each other, and having an actuating element diametrically opposite the tips,

the tool bit including a shaft mounted in the casing adjacent the open front end of the casing with its axis disposed transverse to the casing, and oscillatable on that axis, and operable in response to such oscillation for alternately extending the tips through the open front end of the casing, and

means for oscillating the tool bit, including a driver in the casing at a rear end of the casing, a lever in the casing rockable on a transverse axis at a midpoint of the lever,

the lever at the front end having operable connection with said actuating element, and at its rear end with the driver,

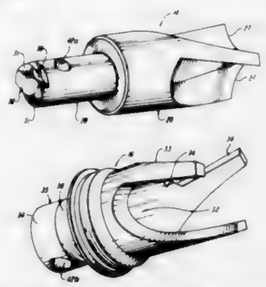
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5,330,480

SURGICAL DRILL

Raphael F. Meloul, Randolph, and Jose F. Lizardi, Medfield, both of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Mar. 3, 1993, Ser. No. 25,977
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—80 **13 Claims**



1. A drill apparatus for penetrating bone, comprising

a generally cylindrical primary drill member having cutting surfaces at a distal end thereof and an elongate stem at a proximal end thereof, the stem having at least one driver engaging surface at its proximal end;

a generally cylindrical secondary drill member having cutting surfaces at a distal end thereof and a stem at a proximal end thereof, the secondary drill member having an axial bore extending therethrough for receiving the primary drill member in a clearance fit such that at least a portion of the proximal end of the primary drill member stem is able to protrude from the proximal end of the bore in the secondary drill member;

coupling means for joining the primary and secondary drill members to facilitate the rotation of the secondary drill member upon rotation of the primary drill member;

a drill body member for receiving proximal portions of the primary and secondary drill members, the drill body member having at a distal end thereof a cylindrical portion with a first axial bore extending therein for a distance less than the length of the drill body member, and having an elongate stem extending proximally from the cylindrical portion for insertion into a drill chuck; and

a clutch mechanism having

a driver means for facilitating clockwise rotation of the primary drill member, the driver means being disposed at a bottom portion of the first axial bore of the drill body member and having at least one substantially vertical drive surface for engaging the driver engaging surface of the primary drill member stem upon clockwise rotation of the driver means and an angled non-drive surface adjacent the drive surface that is unable to engage the driver engaging surface of the primary drill member stem upon counterclockwise rotation of the driver means; and

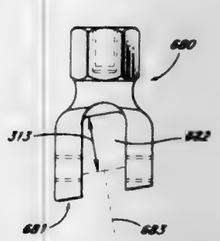
compression means for biasing the stem of the primary drill member away from the driver means to prevent rotation of the primary dill member absent an axial load on the primary drill member able to overcome the biasing force of the compression means.

5,330,481

APPARATUS FOR IMPLANTATION AND EXTRACTION OF OSTEAL PROSTHESES

Larry L. Hood, Laguna Hills; Robert C. Klapper, Los Angeles; James T. Caillouette, Newport Beach, and Alexander Ureche, Mission Viejo, all of Calif., assignors to Advanced Osseous Technologies, Inc., Aliso Viejo, Calif.

Continuation-in-part of Ser. No. 706,786, May 29, 1991, which is a division of Ser. No. 475,492, Feb. 6, 1990, Pat. No. 5,045,054, and Ser. No. 704,467, May 23, 1991, which is a continuation of Ser. No. 304,820, Jan. 31, 1989, Pat. No. 5,019,083. This application Feb. 18, 1992, Ser. No. 838,879
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—99 **23 Claims**



1. An adaptor for connecting an ultrasonic device to a prosthesis including a ball having a given diameter at an exposed end thereof and a lower portion of the prosthesis, said adaptor comprising:

a base portion having an external circumference, said base portion being provided with a first recess having a diameter for receiving the ball, the external circumference of said base portion being provided with at least a second recess to provide clearance for the lower portion of the prosthesis;

a plurality of cap screws provided in corresponding apertures in said base portion for causing a high compression interference between an upper portion of the ball of the prosthesis and an internal surface of said first recess, a face of each of said cap screws contacting a lower edge of the ball at a point below a midpoint of the diameter of the ball; and

a connector for connecting said adaptor to the ultrasonic device, wherein said first recess has a first longitudinal axis extending through an external opening thereof, said connector has a second axis of propagation of ultrasonic energy, and said first axis extends within about 45° of normal to said second axis.

5,330,482

ENDOSCOPIC EXTRACTION DEVICES, WIRE BASKET STONE EXTRACTORS, STENT RETRIEVERS, SNARES AND METHOD OF CONSTRUCTING THE SAME

Rebecca C. Gibbs, Greensboro; Mark C. Martel, Winston-Salem, both of N.C., and Zdenek A. Fremund, Montvale, N.J., assignors to Wilson-Cook Medical Inc., Winston-Salem, N.C.

Continuation of Ser. No. 715,987, Jun. 17, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 127,446
Int. Cl.[5] A61B *17/22, 17/50*
U.S. Cl. 606—113 **23 Claims**



1. In a medical extraction device, said device including a retaining cannula and an extraction assembly including at least one extraction wire extendable from said retaining cannula into a pre-formed configuration for removing a foreign body from within a patient, the improvement comprising said extraction wire being constructed out of a composite construction which includes an inner monofilament wire of shape memory material surrounded by a plurality of at least five outer stranded wires stranded together about said inner monofilament wire of shape memory material, said outer stranded wires being made of material which is readily solderable as compared to said shape memory material, and

wherein said extraction wire is attached to the rest of said extraction assembly by the soldering of said outer stranded wires to each other and to the rest of said extraction assembly.

5,330,483

SPECIMEN REDUCTION DEVICE

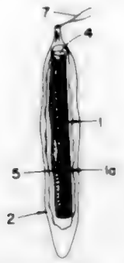
Malcolm D. Heaven, Hopewell, and Michael Schuler, Edison, both of N.J., assignors to Advanced Surgical Inc., Princeton, N.J.

Filed Dec. 18, 1992, Ser. No. 992,776
Int. Cl.[5] A61B *17/22*
U.S. Cl. 606—114 **15 Claims**

1. A thermally activated specimen reduction device comprising:

a member having an inner wall defining an empty space for receiving surgically removed tissue, the member being in an expanded configuration at body temperature, and the member being shrinkable from the expanded configuration to a smaller specimen reducing configuration wherein the empty space becomes smaller, the member shrinking to the small configuration by heating the member to a temperature above body temperature, the inner wall of the

member exerting a crushing force when the member shrinks from the expanded configuration to the smaller



specimen reducing configuration, and the crushing force being sufficient to crush the surgically removed tissue.

5,330,484

DEVICE FOR FRAGMENTATION OF THROMBI

Rolf W. Günther, and Thomas Schmitz-Rode, both of Aachen, Fed. Rep. of Germany, assignors to William Cook Europe A/S, Denmark

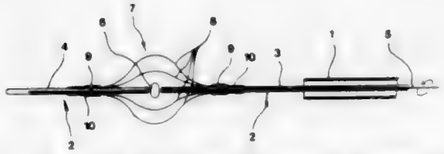
PCT No. PCT/DK91/00227, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO92/03098, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 13, 1991, Ser. No. 969,296

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025825

Int. Cl.[5] **A61B** *17/22*

U.S. Cl. 606—128 **8 Claims**



1. A device for fragmentation of thrombi, comprising an external catheter having, an inner lumen/an internal catheter passed through the external catheter, a torsion-resistant flexible shaft journalled in the internal catheter, and an action body connected with the flexible shaft to be fixed relative to the flexible shaft, characterized in that the internal catheter (**2**) is composed of a proximal and a distal part (**3, 4**), between which the action body (**6**) is arranged with the flexible shaft being (**5**) (**6**) journalled in both parts (**3,4**) of the internal catheter, the action body (**6**) being concentrically surrounded by a resiliently deformable grid body (**7**), comprising legs (**8**) by which the distal and proximal parts (**3, 4**) of the internal catheter are connected with each other.

5,330,485

CEREBRAL INSTRUMENT GUIDE FRAME AND PROCEDURES UTILIZING IT

David A. Clayman, and Tai Q. Nguyen, both of c/o University Medical Center, 655 W. 8th Ave., Jacksonville, Fla. 32209

Continuation-in-part of Ser. No. 786,278, Nov. 1, 1991. This application May 18, 1993, Ser. No. 62,633

Int. Cl.[5] **A61B** *17/00*

U.S. Cl. 606—130 **15 Claims**

1. A cerebral instrument guide frame for use with a live human patient, comprising:

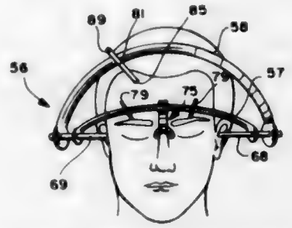
a first arcuate member having first and second ends, and a radius;

a second arcuate member having first and second ends and a radius;

the radius of said second arcuate member greater than the radius of said first arcuate member;

aligned first and second openings provided adjacent each of said first and second ends of each of said first and second arcuate members;

first and second rigid ear fixator rods mounted in said aligned openings, the first in the openings adjacent said first ends of said first and second arcuate members, and the second in the openings adjacent said second ends of said first and second arcuate members, said rods mounted for movement with respect to said first and second arcuate



members along a common axis passing through said openings, and said arcuate members mounted for pivotal movement with respect to each other about said common axis;

an abutment mounted on one of said arcuate members for engaging a portion of a patient's head to preclude movement of said arcuate member past that portion of the patient's head; and

an instrument guide mounted on the other of said arcuate members for guiding an instrument aligned therewith into contact with the patient's head, said guide directed to the midpoint of said common axis.

5,330,486

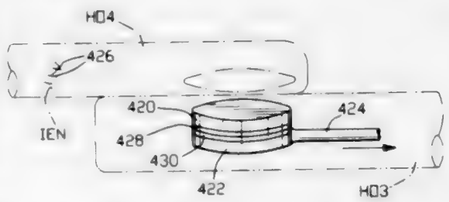
LAPAROSCOPIC OR ENDOSCOPIC ANASTOMOSIS TECHNIQUE AND ASSOCIATED INSTRUMENTS

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 921,510, Jul. 29, 1992, Pat. No. 5,258,008. This application Nov. 25, 1992, Ser. No. 981,251

Int. Cl.[5] **A61B** *17/00*

U.S. Cl. 606—139 **31 Claims**



1. An endoscopic surgical assembly comprising:

an anastomoses stapling device having:

a flexible shaft,

an anvil portion and a stapling portion at a distal end of said shaft,

first actuator means, disposed in part at a proximal end of said shaft and operatively connected to said anvil portion and said stapling portion, for moving said anvil portion and said stapling portion towards one another to clamp at least one tubular organ segment in a stapling operation, and

second actuator means, disposed in part at said proximal end of said shaft and operatively connected to said stapling portion, for ejecting a plurality of staples essentially simultaneously from said stapling portion towards said anvil portion upon a clamping of a tubular organ segment, said staples being arranged in an endless type configuration in said stapling portion, said staples being oriented in a transverse direction relative to said shaft and concomitantly ejected from said stapling portion in said transverse direction;

an illumination guide connected to said stapling device for guiding light from said proximal end to said distal end; and

an image guide connected to said stapling device for transmitting an image from said distal end to said proximal end.

5,330,487

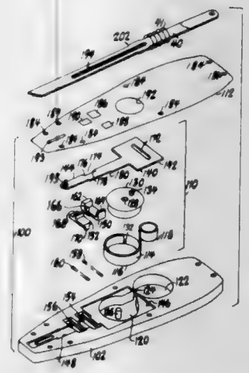
DRIVE MECHANISM FOR SURGICAL INSTRUMENTS

Curtis W. Thornton, Cary, and Thomas W. Ruckdeschel, Apex, both of N.C., assignors to TFI Acquistion Corp., Research Triangle Park, N.C.

Filed Dec. 17, 1992, Ser. No. 991,891

Int. Cl.[5] **A61B** *17/12*

U.S. Cl. 606—143 **18 Claims**



1. A surgical instrument comprising:

means for storing a plurality of binding devices;

means for applying at least one of said binding devices to an object at a surgical work site;

means for feeding said binding devices at least one at a time to said applying means, said means for feeding comprising:

power source means having a power outer, said power source means being pre-loaded with sufficient energy to feed more than one said binding devices;

a feeder member means for engaging at least one of said binding devices and for moving it into a position to be acted on by said applying means;

a drive link means operatively connected to said power source means and said feeder member means for transmitting power from said power source means to said feeder member means; and

means associated with said applying means for enabling said power source means to apply said power output to said drive link means at a predetermined time.

5,330,488

VERRES NEEDLE SUTURING KIT

Milton H. Goldrath, 31074 Oakleaf, Franklin, Mich. 48025

Continuation-in-part of Ser. No. 36,074, Mar. 23, 1993. This application Apr. 9, 1993, Ser. No. 46,207

Int. Cl.[5] **A61B** *17/00*

U.S. Cl. 606—148 **10 Claims**

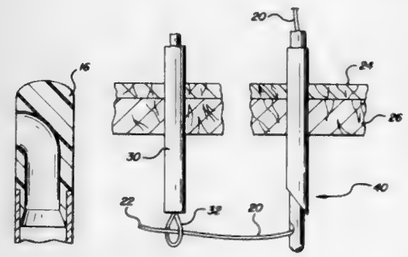
1. A needle assembly kit for passing a piece of suture material into a surgical site, said kit comprising:

a needle assembly including:

a hollow, cylindrical sheath terminating in a sharp cutting edge for piercing external body tissue of a patient;

and a spring loaded, hollow, gas introducing probe disposed inside said sheath and having a cylindrical outer surface, a blunt free end, a longitudinal channel formed in said probe, and an opening formed in said surface proximate said blunt free end and in communication with said channel so as to permit the passage of gas through said channel, said probe being operative to move between a first, extended position wherein said blunt tip projects from said sheath to prevent said cutting edge from cutting internal body tissue of said patient to a second, retracted position wherein said blunt tip is substantially disposed inside said sheath so as to permit said cutting edge to penetrate said tissue, said probe being biased into said first position and operative to move from said first to said second position as the needle assembly penetrates into a body cavity of said patient and:

an angled guide connecting said channel and said opening, said guide tapering in a direction toward said opening so as, to guide an end of a piece of suture material which is treaded through said channel out of said opening for subsequent capture by a suture snare; and



a snare assembly comprising:

an elongated stylet having a sharpened point at one end;

a cannula including a generally tubular passage configured to surround at least a portion of the length of the stylet so that the sharpened point projects therefrom, said cannula being further configured to lockably engage the stylet when it is disposed in the tubular passage; and

a snare shaft comprising a generally elongated shaft configured to fit into the tubular passage of the cannula and having a loop of a resilient material at one end thereof, said loop normally being of a diameter greater than the diameter of the tubular passage, but being capable of being compressed into a shape which fits into the tubular passage, said snare shaft further including a collar portion surrounding a portion of the length of said shaft so as to be slidable therealong, said collar portion configured to lockably engage the cannula.

5,330,489

STERNUM CLOSURE BUCKLE

David T. Green, Westport; Henry Bolanos, East Norwalk, and Thomas W. Alesi, Jr., New Fairfield, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,164

Int. Cl.[5] **A61B** *17/08*

U.S. Cl. 606—151 **28 Claims**

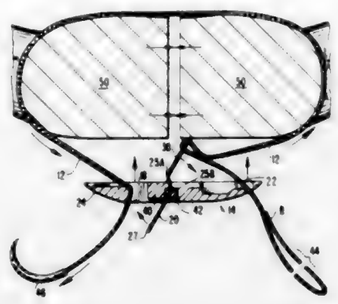
1. A strap assembly to be looped about split portions of a human sternum to retain the sternum portions in adjacent contacting relation to promote healing thereof, comprising:

a flexible biocompatible strap member and dimensioned to be passed through intercostal tissue and about the sternum portions; and

a buckle member dimensioned to be positioned adjacent the sternum and having a reduced profile when in a secured position, said buckle member comprising:

a base member having a lower surface and an upper surface, said base member defining a longitudinal axis and having

a transverse opening extending generally transverse to said longitudinal axis for reception of said strap member such that said strap member is passed through said lower surface of said base member and through said transverse opening to extend beyond said upper surface of said base member; and



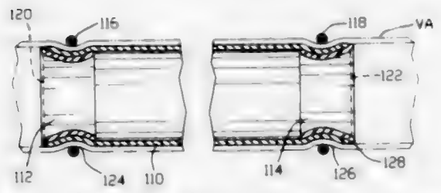
means for engaging said strap member received within said transverse opening to secure said strap member around the sternum portions, said engaging means having a first end portion for wedging said strap member against at least a transverse bearing surface of said base member and a second end portion attached to said strap member, said at least a transverse bearing surface disposed adjacent said transverse opening.

5,330,490

ENDOSCOPIC DEVICE, PROSTHESIS AND METHOD FOR USE IN ENDOVASCULAR REPAIR

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023, and Jonathan Tiefenbrun, 62 Country Rd., Mamaronek, N.Y. 10543

Filed Apr. 10, 1992, Ser. No. 866,758
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—153 **19 Claims**



1. A method for performing a vascular repair operation, comprising the steps of:
providing a tubular member made of a nontoxic biocompatible material;
making an incision in a blood vessel;
inserting said tubular member in a collapsed configuration through said incision into said blood vessel;
expanding said tubular member from said collapsed configuration into an opened configuration inside said blood vessel; and
bonding an upstream edge of said tubular member to said blood vessel by inserting an optical fiber through said incision into said blood vessel and directing a laser beam at said tubular member along said upstream edge, said optical fiber being disposed at least partially in an angioscopic instrument, further comprising the step of using said angioscopic instrument to locate said upstream edge inside said blood vessel.

5,330,491

ENDOSCOPIC SUTURING DEVICE

Edward E. Walker, Stockton; Royce L. Ferderick, South Bound Brook; C. Ray Britt, South Plainfield; Gene Kammerer, East Brunswick, and Barbara Howard, Plainfield, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 947,662, Sep. 18, 1992, Pat. No. 5,234,445. This application Jun. 7, 1993, Ser. No. 65,590
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **9 Claims**



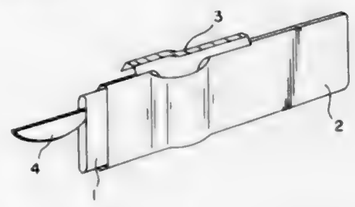
1. A medical device comprising:
a) a cannula, said cannula having a distal end and a frangible proximal end, said distal end having a beveled surface thereon, said cannula having a first channel extending axially therethrough and a second channel extending at an angle from said beveled surface to said first channel, said cannula having a score line adjacent to the slide end;
b) a suture, said suture having a proximal end, a distal loop, and a slip knot securing said loop to said slide end, said slide end threaded through said first and second channels, and mounted to the proximal end of said cannula; and
c) means for mounting the proximal end of said suture to the frangible proximal end.

5,330,492

SAFETY SCALPEL

Doug L. Haugen, Gainesville, Fla., assignor to DLH Concepts, Inc., Gainesville, Fla.

Filed Oct. 21, 1992, Ser. No. 964,597
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **7 Claims**



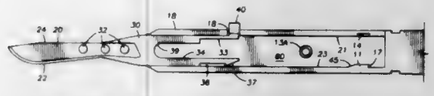
1. A safety scalpel comprising:
a handle having a hollow interior and two opposite ends, said handle having an opening at one of said opposite ends;
a cutting blade attached to said handle such that a portion of said blade protrudes from said opening;
a sheath slidably disposed around said cutting blade and within said hollow interior of said handle, said sheath being arranged to reciprocate between an extended position in which said sheath covers said protruding portion of said blade and a retracted position in which said sheath does not cover said protruding portion of said blade so that said protruding portion of said blade is exposed;
a deformable elastic member disposed so that said elastic member is temporarily deformed when said sheath is in said retracted position and said deformable elastic member relaxes progressively as said sheath is extended, and so that said deformable elastic member continually urges said sheath to said extended position when said sheath is in said retracted position and holds said sheath in said extended position when said sheath is in said extended position; and
actuating means arranged so as to retract said sheath in response to deliberate actuation of said actuating means, said actuating means further comprising locking means to lock said sheath in said extended position, said locking means arranged to prevent retraction of said sheath and unintentional exposure of said blade resulting from accidental contact with said sheath when said sheath is in said extended position,
whereby said scalpel is safe to handle and said cutting blade cannot be exposed by accidentally bumping said sheath when said sheath is in said extended position, but which can easily be used and said blade can easily be exposed by actuating said actuating means.

5,330,493

DISPOSABLE SCALPEL

Michael L. Haining, 6731 Ashmore, Houston, Tex. 77069

Filed Nov. 27, 1992, Ser. No. 982,596
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **3 Claims**



1. A retractable blade surgical scalpel comprising:
(a) a handle having a proximal end and a distal end, said handle defining a chamber having an upper surface, a lower surface and an opening at the distal end, and having a slot through the upper surface and notches in said chamber near either end of said slot;
(b) a projection on the lower surface of said chamber near the proximal end;
(c) a blade carrier slidably mounted within said chamber;
(d) a surgical blade secured on said blade carrier oriented toward said opening;
(e) an upper flexible member extending from said blade carrier having a tab at the proximal end to engage either of said notches to secure said blade in an exposed position or retracted position; and
(f) a lower flexible member extending from said blade carrier having a notch on the under surface engageable with said projection to permanently lock said carrier and blade in a retracted position.

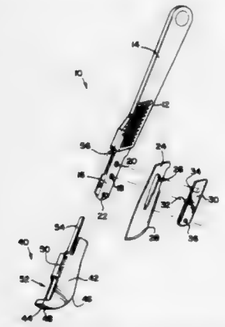
5,330,494

KNIFE

Cornelis A. van der Westhuizen, Mein Heim, District Kimberly, Cape Province, and Stephanus M. Grobler, Pretoria, both of South Africa, assignors to Cornelis A. van der Westhuizen, Cape Province, South Africa

Filed Jan. 22, 1993, Ser. No. 7,598
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **10 Claims**

1. A scalpel which comprises
an elongate blade holder having a blade attachment component at a first end thereof;
an apertured scalpel blade having a cutting edge;
a mounting component, with the blade sandwiched between the mounting component and the blade attachment component, and with the mounting component secured to the blade attachment component by means of at least one connecting element extending between the mounting component and the blade attachment component as well as through the blade aperture;
a protective member for the blade and comprising a pair of protective panels located respectively on opposite sides of the blade, with each panel having a protective edge, and the panels being joined by a bridging component remote from the protective edges;
bias means biassing the protective member into a first position in which its protective edges protrude beyond the cutting edge of the blade, so that the protective member covers the cutting edge of the blade, with the protective member being movable against the biassing force exerted by the bias means, from the first position to a second position in which the cutting edge is exposed for use;



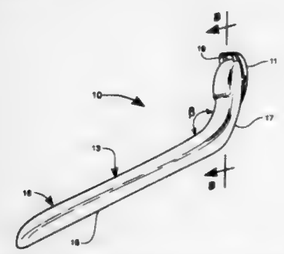
a primary locking component on the protective member and comprising a protruding member on the inside of each of the protective panels; and
a secondary locking component comprising a complementary primary recess in each of the blade attachment component and the mounting component, and which hold the protruding members, thereby to lock the protective member in its first position, with the panels, protruding members and primary recesses being arranged such that the protruding members are released automatically from the primary recesses when the protective edges of the protective member are placed against the surface to be cut and force is exerted on the blade in the direction of said surface.

5,330,495

DISPOSABLE GRAFTING KNIFE

Daniel R. Dettwiler, Vacaville, and Michael D. Shannon, Fairfield, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

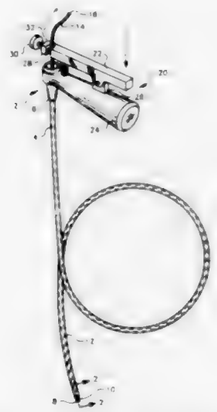
Filed May 24, 1993, Ser. No. 65,795
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **8 Claims**



1. A disposable surgical knife for harvesting a tissue graft of substantially uniform width and thickness, comprising:

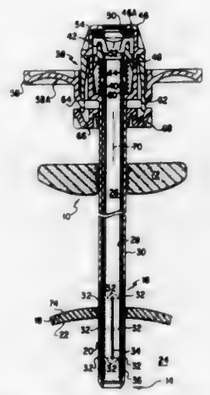
(a) a handle having first and second ends and corresponding first and second lengthwise portions of respective preselected lengths joined at an angle of about 120° to 150°;
(b) a narrow blade having first and second ends, said blade being sharpened on one side and formed along the length thereof to define a preselected cross-sectional size and shape of a tissue graft, said first and second ends of said blade being embedded into said second end of said handle to define preselected width and thickness for said cross-sectional size and shape of the graft; and
(c) a cup-shaped receptacle removably attachable to said second lengthwise portion of said handle near said blade, said receptacle defining a cavity near said blade for catching a harvested tissue graft, and means on said handle near said second end thereof for removably attaching said receptacle to said handle.

5,330,496
VASCULAR CATHETER ASSEMBLY FOR TISSUE PENETRATION AND FOR CARDIAC STIMULATION AND METHODS THEREOF
Clifton A. Alferness, 2022 235th Pl., Redmond, Wash. 98053
Filed May 6, 1991, Ser. No. 695,724
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—171 **20 Claims**



1. A vascular catheter apparatus for blunt boring through inner cardiac tissue and into the pericardial space comprising:
a catheter having a lumen therein, said catheter having a proximal end and a tapered distal end, said catheter insertible through the vascular system to rest in a cardiac chamber adjacent to inner cardiac tissue;
a stylet within said lumen, said stylet having a proximal end and a blunt probe as a distal end; and
a probe actuation means including a handle and a spring-biased means on said handle and attached to said proximal end of said stylet wherein movement of said spring-biased means relative to said handle causes axial movement of said stylet relative to said catheter such that said blunt probe separates inner cardiac tissue and for passage through the bored tissue and into the pericardial space.

5,330,497
LOCKING TROCAR SLEEVE
Michael W. Freitas, Irving, and Fred A. Allgood, Fort Worth, both of Tex., assignors to Dexide, Inc., Fort Worth, Tex.
Continuation of Ser. No. 679,748, Apr. 25, 1991, Pat. No. 5,232,451, and a continuation-in-part of Ser. No. 440,199, Nov. 22, 1989, Pat. No. 5,122,122. This application Dec. 15, 1992, Ser. No. 990,513
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—185 **12 Claims**

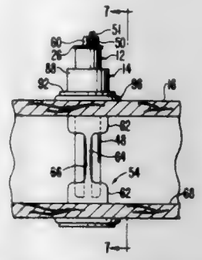


1. An improved assembly used to transport an endoscopic instrument through an incision in a patient's body, while minimizing loss of gas used to inflate the body cavity during endoscopic procedures, the assembly comprising:
a housing;
an outer sleeve extending from the housing, with a plurality of hinges to expand radially within the cavity to resist withdrawal;
an inner sleeve concentric with, and having a portion secured to, the outer sleeve to transport an endoscopic instrument;
the outer sleeve having a proximate portion movable relative to the inner sleeve to expand or retract the hinges;
actuator means to move one of the sleeves relative to the other, with user detectable detent means to signal a change in the radial position of the hinges by change in user feel;
seal means to prevent gas flow through the interior of the assembly from the body cavity;
stop means adapted to engage the exterior of the body to cooperate with the hinges when expanded to resist movement of the assembly and to minimize loss of gas between the outer sleeve and the incision.

5,330,498
BLOOD VESSEL OCCLUSION TROCAR
John D. Hill, 2040 Broadway, Apt. 101, San Francisco, Calif. 94115
Filed Dec. 17, 1991, Ser. No. 808,767
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—194 **30 Claims**

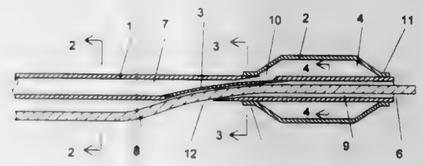
1. An occluder apparatus for obstructing the flow of blood in a blood vessel having an interior comprising:
an elongated hollow tubular body having a leading end size for reception in said blood vessel;
means for inserting said body through the wall of said blood vessel to extend said leading end into the interior of said blood vessel;

an inflatable diaphragm carried in a collapsed, deflated condition within the interior of said body;
means for conducting an inflating fluid from an external source into fluid communication with the interior of said diaphragm to effect expansion thereof; and



diaphragm release enabling means comprising a pair of elongated opening means extending longitudinally in said body for releasing said diaphragm in an inflated state from said body into flexible occluding engagement with the interior wall of said blood vessel about substantially the full circumference of a transverse section thereof.

5,330,499
CATHETER EXCHANGE SYSTEM
Nozomu Kanesaka, 36 Cathy Rd., Hillsdale, N.J. 07642
Filed Dec. 28, 1992, Ser. No. 998,089
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—194 **7 Claims**



1. A dilation catheter comprising,
one flexible tube having an outer surface, an elongated hole extending throughout an entire length of the tube, and distal and proximal ends,
a balloon attached to the outer surface of the tube near the distal end thereof and having distal and proximal ends,
a first opening formed in the tube to communicate the hole with the balloon,
a second opening formed in the tube near the first opening to communicate the hole with an outside of the tube, and
a partition in a form of a single separating wall located inside the tube to sealingly divide the elongated hole into first and second hole portions, said partition extending form a portion near proximal of the second opening to a portion near distal of the first opening, said first hole portion communicating with the proximal end of the tube and the first opening so that inflation and deflation of the balloon attached to the tube can be controlled by fluid applied through the first hole portion, said second hole portion communicating with the distal end and the second opening to allow a guide wire to pass therethrough.

5,330,500
SELF-EXPANDING ENDOVASCULAR STENT WITH SILICONE COATING
Ho Y. Song, 803, Keosung Kosok-mansion, 1168-2, Jinbuk-dong, Cheonju-si, Cheongrabuk-do, Rep. of Korea 560-160
PCT No. PCT/KR91/00023, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO92/06734, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 17, 1991, Ser. No. 861,785
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—198 **6 Claims**



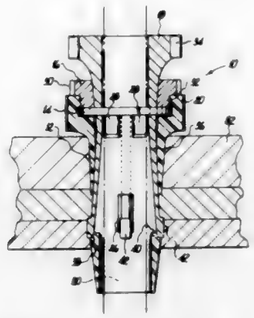
1. A self-expanding stent comprising:
a cylindrical main frame of a first diameter and comprising a plurality of unit structures, each unit structure formed in an endless zig-zag configuration;
a plurality of connecting members for connecting the unit structures to one another while allowing expansion and contraction of the main frame;
an anti-migration frame fastened to the main frame for preventing the stent from migrating, the anti-migration frame having the same structure as the main frame and a second diameter larger than the first diameter of the main frame; and
a mesh wrapped around an outer surface formed by the main frame and the anti-migration frame,
wherein the stent further comprises a coating of silicone rubber over the mesh.

5,330,501
TISSUE GRIPPING DEVICE FOR USE WITH A CANNULA AND A CANNULA INCORPORATING THE DEVICE
H. John Tovey, Milford, Conn.; Wayne P. Young, Brewster, N.Y., and David A. Nicholas, Trumbull, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 708,051, May 30, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 13,245
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—198 **26 Claims**

1. A tissue gripping device for use with a cannula, said device comprising:
a housing member having a generally cylindrical shape including a central passageway, said housing member having flange means at a proximal end for positioning outside a patient's body and an opening at a distal end for positioning within said patient's body, said housing member having a plurality of longitudinally directed slots, said flange means including an internal threaded portion;
a collet having a generally cylindrical shape including a central passageway aligned with said central passageway of said housing member, said collet having an external threaded portion adapted to cooperate with said threaded portion of said housing member, said collet further having means for engaging a cannula extending distally into said central passageway of said housing member when said collet is positioned thereon; and
a tissue gripping member having a generally cylindrical shape including a plurality of flexible finger-like expansion members extending distally from a flange at a proximal

end thereof, said members corresponding in number to said slots in said housing member, said members forming a cylinder having a first diameter such that said expansion members are positioned within said housing member;

wherein said tissue gripping member passes through said



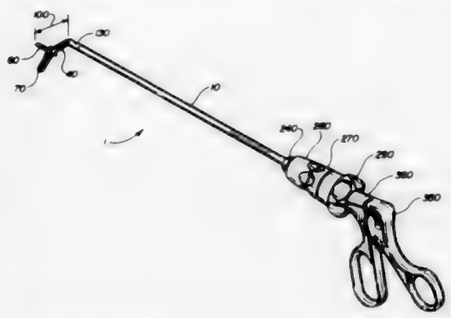
collet into said housing member so that said finger-like expansion members align with said slots, such that advancing said gripping member distally into said housing member causes a distal end of said expansion members to contact a distal end of said slots to cam said members outwardly through said slots to engage tissue of patient.

5,330,502

ROTATIONAL ENDOSCOPIC MECHANISM WITH JOINTED DRIVE MECHANISM

William L. Hassler, Sharonville; Thomas Murray; Charles Armstrong, both of Cincinnati, and Daniel Price, Loveland, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Filed Oct. 9, 1992, Ser. No. 959,017
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—205 15 Claims



1. An endoscopic mechanism comprising:

an endoscopic portion containing an outer tube which defines a longitudinal axis of said tube and through which may be operated an drive rod;

a drive rod contained within said outer tube, said drive rod containing a proximal end connected to a handle, and a distal end connected to an end effector portion;

a trigger connected to said drive rod said trigger capable of operating said end effector portion; and

wherein said end effector portion is capable of being angulated up to 90° with said outer tube; and

wherein said end effector portion is connected to an articulation tube concentric to said outer tube, and said articulation tube capable of moving said end effector portion with respect to said longitudinal axis.

5,330,503

SPIRAL SUTURE NEEDLE FOR JOINING TISSUE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 744,406, Aug. 13, 1991, Pat. No. 5,222,976, which is a division of Ser. No. 352,337, May 16, 1989, Pat. No. 5,053,047. This application Aug. 13, 1992, Ser. No. 928,567
Int. Cl.[5] A61B *11/00*
U.S. Cl. 606—223 3 Claims



3. A suture needle for joining tissue comprising

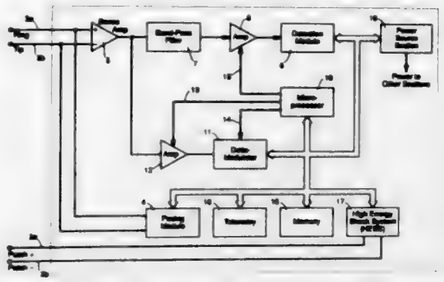
an elongate body member having a sharp distal end, a proximal end and a spiral configuration therebetween forming a plurality of coils whereby multiple bites of tissue can be penetrated with said suture needle, said spiral configuration being formed of coils disposed in a single plane.

5,330,504

CARDIOVERTING DEFIBRILLATING DEVICE WITH OFF-LINE ECG ANALYSIS

William M. Somerville, Aspley, and John P. Wickham, Five Dock, both of Australia, assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Continuation-in-part of Ser. No. 851,624, Mar. 16, 1992, abandoned. This application May 3, 1993, Ser. No. 56,598
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 25 Claims



1. Apparatus for administering electrotherapy to a patient's heart to restore a normal heart rhythm comprising:

an unsophisticated primary detector means for detecting, with a first degree of precision, possible abnormalities in a patient's heart rhythm;

a sophisticated secondary detector means for analyzing the heart rhythm and more precisely identifying abnormalities therein, said secondary detector means being generally inactive in regard to detecting and analyzing abnormalities in the heart rhythm in the absence of a detection of a possible abnormality by said primary detector means;

memory means within said secondary detector means for storing a portion of an ECG signal;

means responsive to the detection of a possible abnormality in the heart rhythm by said primary detector means for activating said secondary detector means and for causing at least a portion of said ECG signal to be stored in said memory means, said secondary detector means being constructed and arranged to analyze said stored portion of said ECG signal with a second degree of precision significantly higher than the first degree of precision exercised by said primary detector means in order to confirm said rhythm abnormality; and

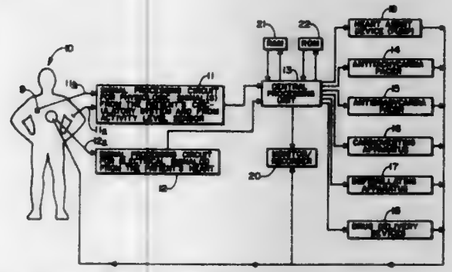
means responsive to confirmation of said rhythm abnormality by said secondary detector means for delivering appropriate electrocardiac therapy to the heart.

5,330,505

SYSTEM FOR AND METHOD OF TREATING A MALFUNCTIONING HEART

Todd J. Cohen, Port Washington, N.Y., assignor to Leonard Bloom, Towson, Md., a part interest

Filed May 8, 1992, Ser. No. 879,909
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—6 41 Claims



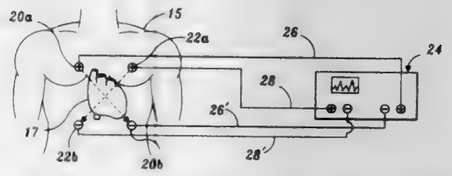
1. A system for treating a malfunctioning heart comprising means for supplying a plurality of treatment modalities to a patient, a plurality of sensors for sensing respective parameters reflecting condition of a patient, means responsive to outputs from at least two of said sensors of at least two of said parameters reflecting condition of a patient for producing respective signal representations of the parameters, means for weighing the respective signal representations, means for processing output from the means for weighing to develop control output for selectively enabling the means for supplying a plurality of treatment modalities to a patient to effect selection of respective ones of treatment modalities as called for by the control output.

5,330,506

REDUCED CURRENT CARDIAC PACING APPARATUS

Clifton A. Alferness, Redmond, Wash., and Raymond E. Ideker, Durham, N.C., assignors to Physio-Control Corporation, Redmond, Wash.

Continuation of Ser. No. 713,169, Jun. 11, 1991, abandoned. This application Sep. 21, 1993, Ser. No. 125,080
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—10 21 Claims



1. An external cardiac pacing apparatus for delivering a total cardiac pacing current to a patient's heart muscle comprising:

a plurality of electrode pairs attachable to the patient's chest; and

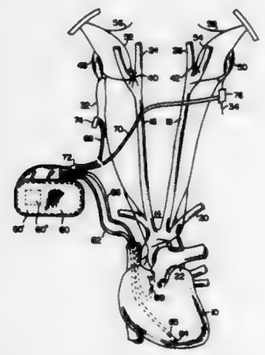
a plurality of isolated current sources, each of which is coupled to one pair of each of the plurality of electrode pairs, wherein each of the isolated current sources includes means for delivering an individual pacing current to one of each of the electrode pairs at substantially the same time such that the individual pacing currents delivered by the plurality of isolated current sources additively form a total cardiac pacing current, wherein each individual pacing current has a magnitude less than the total cardiac pacing current.

5,330,507

IMPLANTABLE ELECTRICAL VAGAL STIMULATION FOR PREVENTION OR INTERRUPTION OF LIFE THREATENING ARRHYTHMIAS

Peter J. Schwartz, Milan, Italy, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 24, 1992, Ser. No. 873,437
Int. Cl.[5] A61N *1/368*
U.S. Cl. 607—14 10 Claims



1. A method for treating a cardiac arrhythmia comprising the steps of:

continuously measuring the electrogram of the patient's heart;

detecting certain characteristics of said electrogram indicative of tachycardia;

initiating the storage of a sequence of said characteristics of said electrogram upon detection of a tachycardia;

delivering one or more electrical stimulation therapies to the patient's nervous system for depressing the patient's heart rate;

providing a patient selection trigger to permit a patient to cause the delivery of a preset electrical stimulation therapy to the patient's nervous system;

providing patient initiated storage means to permit the patient to initiate storage of said sequence of said characteristics of said electrogram and said delivering of said one or more electrical stimulation therapies to the patient's nervous system for depressing the patient's heart rate; and

initiating the storage of a further sequence of said characteristics of said electrogram following delivery of said stimulation therapies.

5,330,508

APPARATUS FOR DETECTION AND TREATMENT OF TACHYCARDIA AND FIBRILLATION

Bruce Gundersoa, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 2, 1993, Ser. No. 24,996
Int. Cl.[5] A61N *1/362;* A61B *5/0464*
U.S. Cl. 607—14 16 Claims

16. Apparatus for identifying an arrhythmia, comprising:

means for sensing electrical signals from a patient's heart

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indicative of the depolarization of a chamber or chambers of said patient's heart;
means for measuring and storing the intervals separating said electrical signals:
means for detecting the occurrence of an arrhythmia; and
means responsive to said detecting means for determining whether said detected arrhythmia is tachycardia or a rapid rhythm due to a different cause, said responsive means in turn comprising:
means for sorting said measured intervals into interval ranges;

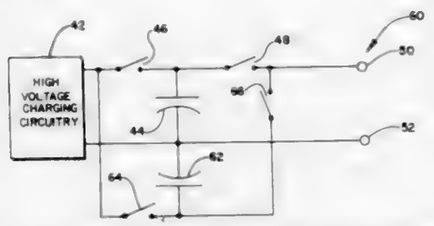


means for determining the numbers of intervals within each said interval range;
means for identifying ones of said interval ranges which have the highest numbers of said stored intervals;
means for determining the total number of said stored intervals falling within said identified interval ranges; and
means for identifying the occurrence of tachycardia in response to said total number meeting a predetermined criterion.

5,330,509
METHOD AND APPARATUS FOR FAR-FIELD TACHYCARDIA TERMINATION

Mark W. Kroll, Minnetonka, and Theodore P. Adams, Edina, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Continuation of Ser. No. 863,738, Apr. 6, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 140,882
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—14 **26 Claims**

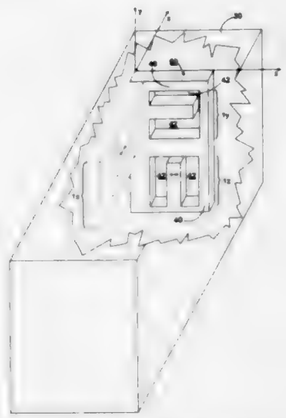


1. A method for operating an implantable device connected to at least two implanted electrodes located in a human patient to treat ventricular tachycardia, the method comprising the device-implemented steps of:
(a) sensing a ventricular tachycardia in the human patient; and
(b) in response the ventricular tachycardia, delivering a series of two or more anti-tachycardia electrical stimulation pulses each having an energy value of less than about 5 joules to the two or more electrodes in a committed burst of less than about 5 seconds, at least one of the stimulation pulses being a far-field pulse having an energy value between about 0.01 joule and 5 joules, an amplitude between about 5 volts and 200 volts, and being delivered through two or more far-field electrodes having a combined surface area that exceeds about 1 square centimeter and an inter-electrode distance of greater than about 2 centimeters.

5,330,510
PACEMAKER WITH PATIENT EFFORT-CONTROLLED FREQUENCY

Thierry Legay, Fontenay Les Briis, and Alain Ripart, Gif-Sur-Yvette, both of France, assignors to ELA Medical, Montrouge, France

Filed Dec. 22, 1992, Ser. No. 995,050
Claims priority, application France, Dec. 31, 1991, 91 16368
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—19 **70 Claims**



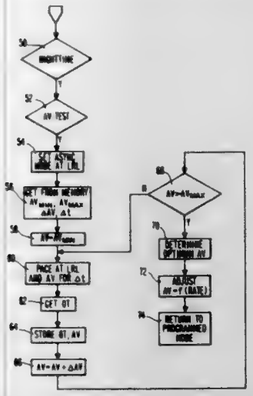
1. A pacemaker having a stimulation frequency controlled by the patient's effort according to a control parameter computer from the acceleration measured at the level of the patient's trunk, comprising first means for measuring acceleration along a first axis, second means for measuring acceleration along a second axis, and third means for measuring acceleration along a third axis, wherein the third axis is perpendicular to said first and second axes, and said first and second axes are perpendicular to one another and parallel to said flat surface, and wherein said first, second and third measuring means operate independently of one another; and
means for determining said control parameter for controlling the stimulation frequency as a function of the measured acceleration in said first, second and third axes.

5,330,511
DUAL CHAMBER PACEMAKER WITH AUTOMATICALLY OPTIMIZED AV DELAY

Willem Boute, Dieren, Netherlands, assignor to Vitatron Medical B.V., Dieren, Netherlands

Filed Jan. 19, 1993, Ser. No. 5,744
Int. Cl.[5] A61N *1/368*
U.S. Cl. 607—25 **26 Claims**

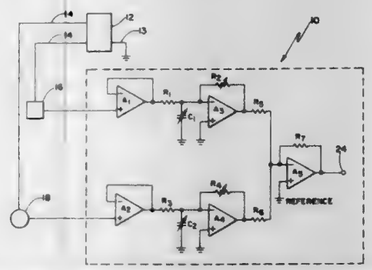
15. A dual chamber pacemaker having means for sensing atrial heartbeats (AS) and for generating ventricular pace pulses (VP) each synchronized to a preceding AS, comprising means for determining the QT intervals following a series of delivered VPs, means for analyzing said QT intervals, and AV means for setting the AV interval between an AS and a following VP, said AV means having adjusting means for adjusting said AV interval as a function of said analyzed QT intervals.



5,330,512
ELECTRODE CHARGE-NEUTRAL SENSING OF EVOKED ECG

John A. Hauck, and Julio C. Spinelli, both of Shoreview, Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Dec. 28, 1992, Ser. No. 997,442
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—28 **31 Claims**

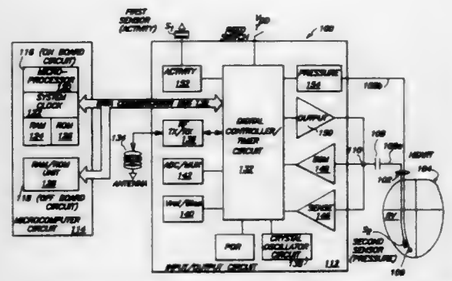


1. An apparatus for cardiac pacing and sensing, comprising:
(a) a bipolar cardiac pacing lead adapted for positioning within a heart chamber, said lead having a distal end with a first electrode, and a second electrode spaced from said first electrode;
(b) a reference electrode electrically isolated from both first and second electrodes;
(c) means for transmitting to both said first and second electrode an electrical stimulus pulse in a bipolar mode; and
(d) circuit means connected to both said first and second electrodes and said reference electrode for obtaining an evoked electrical potential, said circuit means comprising first means for sensing a first electrical signal at said first electrode in a unipolar mode in reference to said reference electrode, second means for sensing a second electrical signal at said second electrode in a unipolar mode in reference to said reference electrode, and means for adding said first and second signals from said first and second sensing means to cancel out any residual opposite polarized potentials and to obtain the evoked electrical potential.

5,330,513
DIAGNOSTIC FUNCTION DATA STORAGE AND TELEMETRY OUT FOR RATE RESPONSIVE CARDIAC PACEMAKER

Lucy M. Nichols, Maple Grove; Glenn M. Roline, Anoka; Tom D. Bennett, Shoreview, and David L. Thompson, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed May 1, 1992, Ser. No. 881,996
Int. Cl.[5] A61N *5/00*
U.S. Cl. 607—32 **13 Claims**



1. An implantable, rate responsive cardiac pacemaker comprising:
means for determining an occurrence of selected cardiac events;
means for detecting and processing a physiologic parameter;
means for delivering pacing pulses at a selected pacing rate;
means for varying the pacing rate as a function of a stored algorithm having at least one programmed-in rate responsive modifier value for setting the pacing rate in dependence upon the measured physiologic parameter and the occurrence of selected cardiac events;
means for establishing at least one rate response algorithm modifier value;
means for periodically optimizing the rate response algorithm modifier value to achieve a predetermined rate achievement criteria;
means for transmitting signals representative of the optimized rate responsive modifier value and the programmed-in rate responsive modifier value to a remote location external of said implantable pacemaker;
means for storing n periodic changes of the first rate response algorithm modifier value and n time of change of the response algorithm modifier value in n memory locations;
means for transmitting the n periodic changes to said remote location and their corresponding times;
means for sampling the varying pacing rate and storing rate trend data in memory over a predetermined time duration, said rate trend data indicative of a trend in said pacing rate;
means for transmitting the rate trend data in conjunction with the algorithm modifier value to said remote location;
means for deriving beat-by-beat averages of the pacing rate and percentage of paced values in a total of the spaced and sensed event intervals value over programmable time segments; and
means for accumulating the derived rate averages and percentage paced values in memory over a predetermined duration in conjunction with storing the n periodic changes for subsequent transmission to said remote location.

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5,330,514

DUMMY FOR PRACTICING CARDIOPULMONARY RESUSCITATION (CPR) OF A HUMAN BEING

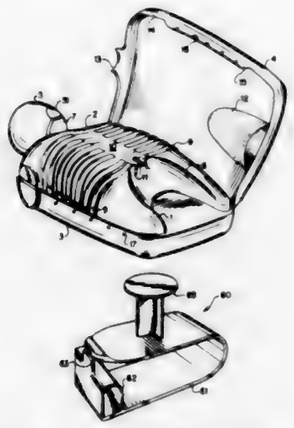
Einar Egelandsdal, Forus, Norway; Geoffrey C. Garth, Long Beach; John Hamilton, Torrance, both of Calif.; David Johnson, Hopewell Junction, N.Y.; Tore Laerdal, Gausel, Norway, and Charles A. Patterson, Westminster, Calif., assignors to Asmund S. Laerdal A/S, Stavanger, Norway

Filed Jul. 28, 1992, Ser. No. 920,711

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1992, 4201768

Int. Cl.[5] **G09B** *23/28*

U.S. Cl. 434—265 **2 Claims**



1. A dummy for practicing cardiopulmonary resuscitation (CPR) of a human being, comprising a simulation of the thorax and the head, wherein the thorax simulation is formed by a hollow body of plastic material, which is in air exchange relationship with the atmosphere and which is of a wall thickness which is so selected that the compressibility and return force of the thorax simulation correspond to those of a human thorax, and further comprising a cover formed of an elastically deformable material which covers the hollow body and which is releasably mounted to the hollow body, wherein the elasticity of the cover determines the inflation resistance of the bag to approximate the inflation resistance of the human lungs, wherein the hollow body has a stomach portion in the form of a depression which with its ribcage simulates the costal arch, and wherein a spring element which can be inserted into the depression is fixed to the underside of the cover or into the depression.

5,330,515

TREATMENT OF PAIN BY VAGAL AFFERENT STIMULATION

Paul Rutecki, Houston; Joachim F. Wernicke, League City, and Reese S. Terry, Jr., Houston, all of Tex., assignors to Cyberonics, Inc.

Filed Jun. 17, 1992, Ser. No. 900,007

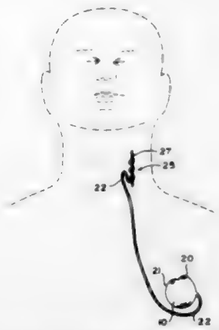
Int. Cl.[5] **A61N** *1/05*

U.S. Cl. 607—46 **16 Claims**

1. A method of treating patients suffering from chronic or persistent pain which is neuropathic or psychogenic, or which is nociceptive in the case of a patient with terminal disease, the method including the steps of:

implanting a nerve electrode assembly at a distal end of an electrical lead on the vagus nerve of the patient,

implanting a stimulus generator in the patient's body for generating an output signal with variable electrical waveform parameters programmable externally of the body, and electrically connecting the generator to a proximal end of the lead internally of the patient to enable the generator, when activated, to selectively deliver a programmed electrical signal having predetermined electrical waveform parameters as a stimulus directly to the patient's vagus nerve via the implanted nerve electrode



assembly for modulating electrical activity of the nerve to stimulate afferent fibers thereof and alleviate the pain under treatment, and

selectively activating the generator to alleviate the pain under treatment.

5,330,516

DEVICE FOR GENERATING HAND FUNCTION

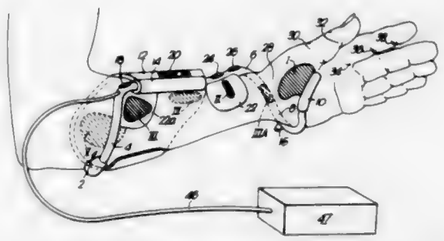
Roger H. Nathan, Beer Sheva, Israel, assignor to Ben-Gurion University of the Negev Research & Development Authority, Beer Sheva, Israel

Filed Mar. 27, 1992, Ser. No. 859,101

Claims priority, application Israel, Mar. 28, 1991, 97701

Int. Cl.[5] **A61N** *1/36*

U.S. Cl. 607—48 **15 Claims**



1. A device for generating hand function, comprising:

an S-type splint consisting of a forearm portion adapted to extend along the palmar side of the forearm, a palmo-dorsal transition portion leading to a dorsal portion adapted to extend across the dorsal side of the carpal bones of the hand. and a palmar portion, at least the end of which is adapted to touch the palm of the hand of the wearer of said device;

a plurality of electrodes, mounted on said splint in positions in which they are adapted to make contact with skin portions directly overlying muscles to be stimulated, said electrodes being connectable to an electronic circuit adapted to produce, upon activation, stimulation currents delivered via combinations of said electrodes in predetermined, timed sequences to preselected groups of muscles, and

at least one switching means, so located on the device as to be actuatable by the wearer of said device, by which means said predetermined, timed sequences can be initiated.

5,330,517

DEVICE FOR TREATING TISSUE BY PULSE SEQUENCE GROUP

Serge Mordon, Villeneuve D'Ascq; Jean-Marc Brunetaud, La Madeleine, and Hubert Guillet, Saint Michel Sur Orge, all of France, assignors to Institut National De La Sante Et De La Recherche Medicale, Paris, France

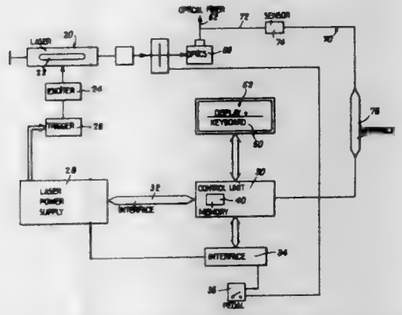
PCT No. PCT/FR92/00345, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO92/18057, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 16, 1992, Ser. No. 971,987

Claims priority, application France, Apr. 22, 1991, 91 04950

Int. Cl.[5] **A61N** *5/00*

U.S. Cl. 607—89 **14 Claims**



1. A method for heat treating biological tissue, comprising the steps of:

(a) illuminating a localized region of the tissue with a sequence of laser pulses in sufficient number to deliver a total amount of energy that causes said heat treatment to be performed at said localized region, said sequence comprising:

a first group of laser pulses delivering 70% to 80% of the total energy of the pulse sequence, each pulse in said first group having a duration not greater than 200 ms and each delivering an amount of energy in the range from 10 J to 100 J, and

a second group delivering 20% to 30% of the total energy of the sequence, consisting of pulses each having an energy in the range from 2 J to 40 J,

the duration of any one of the pulses in the second group being lesser than the duration of any one of the pulses in the first group; and

(b) repeating step (a) for illuminating another localized region of the biological tissue to be treated.

5,330,518

METHOD FOR TREATING INTERSTITIAL TISSUE ASSOCIATED WITH MICROWAVE THERMAL THERAPY

Bruce H. Neilson, Brooklyn Park; Eric N. Rudie, Plymouth, and Mitchell Dann, Wayzata, all of Minn., assignors to Urologix, Inc., Minneapolis, Minn.

Filed Mar. 6, 1992, Ser. No. 847,894

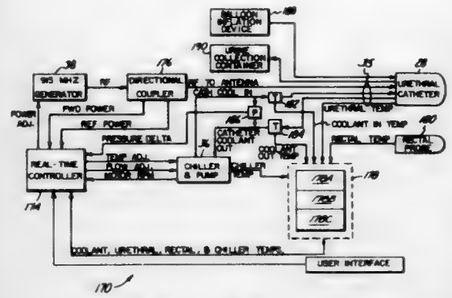
Int. Cl.[5] **A61N** *5/02*

U.S. Cl. 607—101 **12 Claims**

1. A method for treating benign prostatic hyperplasia comprising:

inserting a microwave antenna-containing catheter shaft into a urethra so as to position the microwave antenna adjacent a prostatic region of the urethra, the catheter shaft having a first lumen and a second lumen, the first and second lumens circumjacent the microwave antenna;

providing a drive signal the antenna to apply an RF emission to tissue surrounding the urethra, the RF emission causing molecular excitation of tissue surrounding the urethra sufficient to heat the tissue;



circulating a fluid through the first lumen and the second lumen while providing the drive signal to absorb energy emitted by the antenna and heat conducted by tissue adjacent an outer surface of the shaft; and

continuing to circulate the fluid through the first lumen and second lumen for a period of at least about 10 minutes after the drive signal is terminated.

5,330,519

THERAPEUTIC NONAMBIENT TEMPERATURE FLUID CIRCULATION SYSTEM

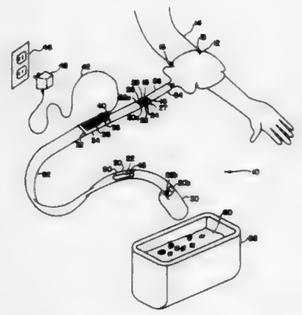
Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.

Continuation of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089. This application Jul. 30, 1993, Ser. No. 100,047

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[5] **A61H** *9/00*

U.S. Cl. 607—104 **6 Claims**



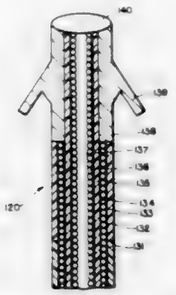
1. A device for therapeutically treating a desired portion of the body of a patient with a nonambient temperature therapeutic treatment fluid comprising:

a pad positionable on the desired portion of the body, said pad having a fluid inlet port, a fluid outlet port, and a continuous pad flowpath from said inlet port to said outlet port for circulation of a nonambient temperature therapeutic treatment fluid therethrough;

a fluid inlet line having two ends, a first inlet end in fluid

communication with a therapeutic treatment fluid source and a second inlet end connected to said fluid inlet port;
a fluid outlet line having two ends, a first outlet end in fluid communication with the fluid source and a second outlet end connected to said fluid outlet port;
means for driving a therapeutic treatment fluid through said pad flowpath; and
means for maintaining a fluid back pressure in said pad flowpath.

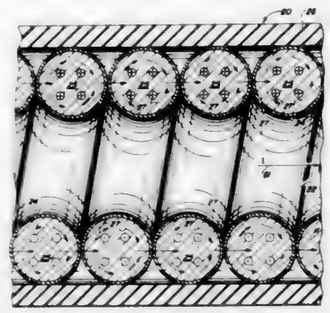
5,330,520
IMPLANTABLE ELECTRODE AND SENSOR LEAD APPARATUS
David S. Maddison, Wollstonecraft; Michael Skalsky, Waverley; Gerhard Gotthardt, Castle Hill, and Neil Anderson, Artarmon, all of Australia, assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.
Continuation-in-part of Ser. No. 617,949, Nov. 27, 1990, abandoned, and a continuation-in-part of Ser. No. 644,426, Jan. 22, 1991, abandoned, said Ser. No. 617,949, is a continuation of Ser. No. 453,125, Dec. 5, 1989, abandoned, which is a continuation of Ser. No. 223,738, Jul. 25, 1988, abandoned, which is a continuation of Ser. No. 863,357, May 15, 1986, abandoned, said Ser. No. 644,426, is a continuation of Ser. No. 188,487, Apr. 29, 1988, abandoned. This application Oct. 8, 1991, Ser. No. 772,975
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—122 **2 Claims**



1. A flexible electrode cardioversion or defibrillation lead for use in a transvenous lead system for supplying electrotherapy to the heart comprising:
an inner conductive layer;
an insulative layer surrounding said inner conductive layer;
an outer conductive layer surrounding said insulative layer; and
an outer conductive sheath surrounding at least a portion of said outer conductive layer;
wherein said sheath is formed from a flexible, biocompatible material having a non-abrasive effect on cardiac tissue during operation of said lead, said material comprising intrinsically conducting polymers, said material being able to supply a cardioverting/defibrillating energy discharge having a magnitude of up to 40 Joules.

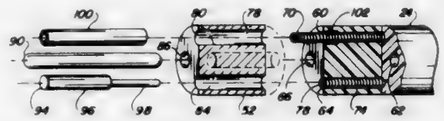
5,330,521
LOW RESISTANCE IMPLANTABLE ELECTRICAL LEADS
Donald M. Cohen, 17512 Luther Ave., Irvine, Calif. 92714
Filed Jun. 29, 1992, Ser. No. 905,771
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—122 **13 Claims**

1. An implantable electrical lead, comprising:
an electrically conductive wire core formed into a helical coil having individual coils with precompression between said coils, having distal and proximal ends;
a layer of an electrically conductive material formed around said wire core to provide electrical continuity between said wire core and said electrically conductive layer;
a biocompatible, electrically insulating sheath covering said layer of electrically conductive material formed on said



wire core; a first lead connector electrically connected to said proximal end of said wire core; and
an electrode electrically connected to said distal end of said wire core.

5,330,522
RING ELECTRODE FOR A MULTILUMEN LEAD AND METHOD OF CONSTRUCTING A MULTILUMEN LEAD
Paul E. Kreyenhagen, Redmond, Wash., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.
Filed Dec. 29, 1992, Ser. No. 997,804
Int. Cl.[5] A61N *1/04*
U.S. Cl. 607—122 **19 Claims**

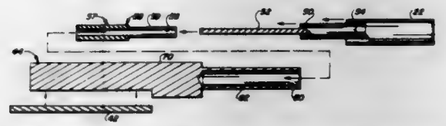


1. A pacing lead having a connector at a proximal end and an electrode at a distal end interconnected by a lead body, said pacing lead comprising:
a multilumen tubing having a plurality of lumens;
a plurality of conductors extending through said lumens of said multilumen tubing;
at least one cylindrical electrode having a solid generally cylindrical cross section and at least two bores corresponding to two of said lumens;
means for electrically interconnecting said at least one cylindrical electrode to at least one of said plurality of conductors; and
means for interconnecting and affixing said at least one cylindrical electrode to said multilumen tubing, wherein said means for interconnecting and affixing includes a connecting element projecting from said cylindrical electrode for insertion into at least one of said lumens.

5,330,523
IMPLANTABLE DEFIBRILLATOR PATCH LEAD
Arthur A. Campbell, Reseda; Stephen M. Jones, Canyon Country, and Phong D. Doan, Stevenson Ranch, all of Calif., assignors to Siemens Pacesetter, Inc., Sylmar, Calif.
Filed Aug. 5, 1992, Ser. No. 926,076
Int. Cl.[5] A61B *1/04*
U.S. Cl. 607—129 **9 Claims**

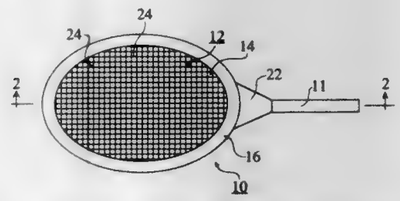
1. An implantable patch lead for use with an implantable defibrillation device, comprising:

an electrical conductor having a proximal end and a distal end;
a proximal connector, coupled to the proximal end of the electrical conductor, for electrically connecting the conductor to the implantable defibrillation device;
a wire mesh patch electrode;
an electrically conductive connector element having a body portion defining a slot into which a portion of the wire mesh patch electrode is inserted and bonded, the electri-



cally conductive connector element also having receiving means, spaced from said slot, for receiving and securely retaining the electrical conductor, the electrically conductive connector element thereby electrically interconnecting the electrical conductor and the wire mesh patch electrode; and
means for electrically, insulating the electrical conductor, the electrically conductive connector element, and a peripheral portion of the wire mesh patch electrode in a biocompatible insulation material.

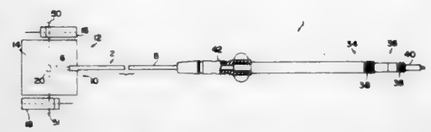
5,330,524
DEFIBRILLATION ELECTRODE WITH MESH CONFIGURATION
Craig E. Mar, Fremont, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 759,670, Sep. 13, 1991, abandoned. This application Jun. 17, 1993, Ser. No. 79,689
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—129 **4 Claims**



1. An implantable cardiac defibrillation electrode which comprises:
an electrically conductive wire mesh formed of crossed spirally wound cables, each of said cables comprising a plurality of stranded wire elements;
said crossed cables being formed in a rectilinear twill weave pattern, with each cable going over at least two consecutive cables and then under at least two consecutive cables in an alternate manner.

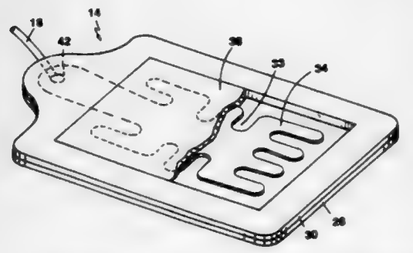
5,330,525
EPICARDIAL LEAD HAVING DUAL ROTATABLE ANCHORS
Keith J. Proctor, Lino Lakes, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 29, 1993, Ser. No. 55,128
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—130 **11 Claims**

1. An epicardial lead adapted for attaching to a heart comprising:
an insulated conductor having proximal and distal ends; an electrical connector connected to said proximal end of said conductor
a body connected to said conductor, said body including a non-conductive an electrode electrically connected to said distal end of said conductor, arm mounted to said



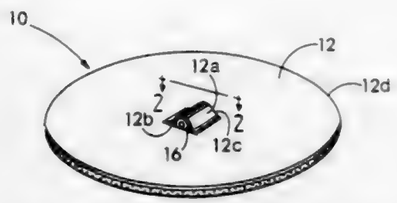
body, said arm rotatable between a first position and a second position about a first axis, said arm having an anchor, said anchor shaped to engage said heart and attach said lead thereto when said arm is rotated from said first position to said second position.

5,330,526
COMBINED DEFIBRILLATION AND PACING ELECTRODE
Randall W. Fincke, Winchester, and Rolf S. Stutz, Cambridge, both of Mass., assignors to ZMD Corporation, Wilmington, Del.
Filed May 1, 1992, Ser. No. 877,838
Int. Cl.[5] A61B *5/0402*
U.S. Cl. 607—142 **42 Claims**



1. An electrode for transcutaneously delivering defibrillation pulses to a patient's heart, the electrode comprising:
an insulating substrate,
a conducting plate having a top surface, a bottom surface, and an electrical terminal for making a connection to an external source of electrical current, said conducting plate being positioned with said bottom surface on said substrate, and
a layer of electrolytic gel comprising a concentration of an electrolyte that produces a combination series resistance of two of said electrodes, when measured with the electrodes configured in a series circuit with a 50 Ω resistance, and with the electrolytic gel layer of each electrode in contact with that of the other electrode, that is greater than 1 Ω when a 200 Joule defibrillation pulse is discharged into the series circuit, said layer of electrolytic gel covering the entire top surface of said conducting plate, the gel contacting a patient's skin when the electrode is positioned on the patient's skin to thereby prevent said conducting plate from contacting the patient's skin.

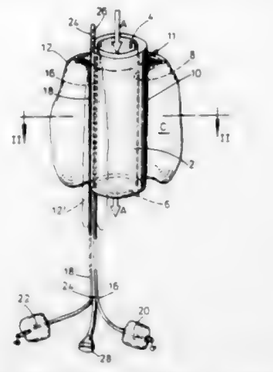
5,330,527
MULTIPURPOSE MEDICAL ELECTRODE
David A. Montecalvo, Plymouth, and David Rolf, Minneapolis, both of Minn., assignors to Lec Tec Corporation, Minnetonka, Minn.
Continuation of Ser. No. 344,698, Apr. 28, 1989, Pat. No. 5,205,297, which is a continuation-in-part of Ser. No. 173,589, Mar. 25, 1988, abandoned. This application Apr. 26, 1993, Ser. No. 54,049
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] A61N *1/18*
U.S. Cl. 607—152 15 Claims



1. A hydrogel matrix for a multipurpose medical electrode having an electrically conductive backing, said matrix comprising:
a dispersion of a natural or synthetic hydrophilic polymer, water and a humectant,
said matrix is a flexible sheet having a tacky lower surface for establishing a bond to provide electrical contact with the skin of a patient,
said electrically conductive backing having a predetermined resistivity of a first value,
said matrix having a resistivity of a second value that is greater than said first value, and
a gelation inhibitor uniformly distributed within the matrix in an amount sufficient to retard gelation of the matrix prior to forming the matrix into said flexible sheet.

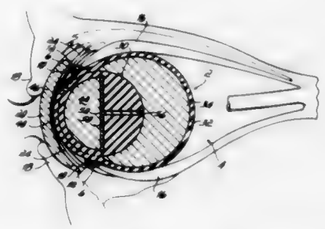
5,330,528
VASCULAR SURGICAL DEVICES
Taha R. Lazim, Glasgow, Scotland, assignor to British Technology Group Limited, London, United Kingdom
PCT No. PCT/GB90/01871, § 371 Date May 22, 1992, § 102(e) Date May 22, 1992, PCT Pub. No. WO91/07927, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 30, 1990, Ser. No. 859,450
Claims priority, application United Kingdom, Dec. 1, 1989, 8927282
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 12 Claims

1. A surgical device suitable for insertion into a body fluid passageway to span a damaged or deformed region thereof by forming communication between two relatively sound portions of said passageway spaced apart by the intervening damaged or deformed region of the passageway, said device comprising a substantially tubular body member having open end portions, and an outer sleeve member secured at one end thereof to the body member adjacent to one of said open end portions and secured at the other end thereof to the body member adjacent the second of said open end portions so as to define an annular outer chamber around said body member, said outer sleeve member being formed from flexible material in order to allow inflation of said annular outer chamber, the body member comprising a tubular wall means defining annular inner chamber means and adapted to be in an inoperative, flaccid, condition immediately before use, means being provided for rendering the flaccid wall means into a relatively rigid condition when the device is in position for use within the



body fluid passageway, means also being provided for the concomitant inflation of the annular outer chamber.

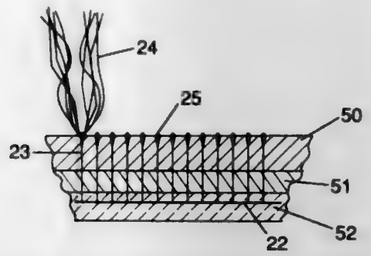
5,330,529
ORBITAL IMPLANT DEVICE
Mark A. Cepela, 1078 Arden Dr., Villa Hills, Ky. 41017
Filed Feb. 17, 1993, Ser. No. 18,712
Int. Cl.[5] A61F *2/14*
U.S. Cl. 623—4 18 Claims



1. An orbital implant device for an eye prosthesis adapted for fitting into an orbit comprising:
a substantially rigid sphere with a substantially smooth exterior surface along at least an anterior portion thereof adapted to receive a cosmetic eye appliance;
an expandable balloon integrally attached to and overlying a posterior portion of said substantially rigid sphere to define an expandable space adapted to receive a quantity of fluid; and
a self-sealing infusion site on said anterior portion of said substantially rigid sphere which communicates with said expandable space and which is adapted to receive a hollow needle to adjust said quantity of said fluid in said expandable space to thereby adjust a dimension of said expandable balloon.

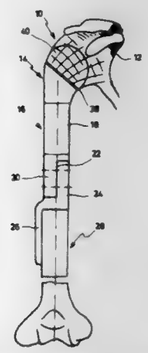
5,330,530
FIBER PROSTHESIS AND METHOD OF IMPLANTATION IN LIVING TISSUE
John L. Hastings, 385 River Valley Rd., Atlanta, Ga. 30328
Filed Nov. 30, 1992, Ser. No. 982,998
Int. Cl.[5] A61F *2/10*
U.S. Cl. 623—15 1 Claim

1. A method of securing hair fibers to a scalp comprising:
a) implanting in a subcutaneous layer an elongated base filament substantially parallel to the scalp, said base filament having a plurality of anchor filaments extending perpendicularly therefrom, said anchor filaments having a length sufficient to span the epidermis and dermis and terminating in an eyelet such that only a tip of said eyelet is exposed to the dermal surface of the scalp; and



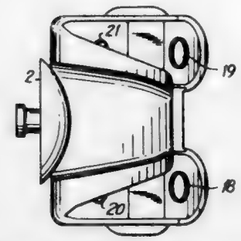
b) attaching a plurality of hair fibers selected from the group consisting of synthetic and natural fibers to each of said anchors filaments by threading said hair fibers through said eyelets at the dermal surface.

5,330,531
HUMERAL ENDOPROSTHESIS
Rudolfo Capanna, Bologna, Italy, assignor to Howmedica GmbH, Schönkirchen, Fed. Rep. of Germany
Filed Dec. 2, 1992, Ser. No. 985,085
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 9115283[U]
Int. Cl.[5] A61F *2/40*
U.S. Cl. 623—19 8 Claims



1. An endoprosthesis for partly or completely replacing the humerus comprising a spherical head portion having means for connecting said head portion to an elongate distal shaft portion, wherein the spherical head includes openings lying in a meridian plane for fixing a number of ligaments and includes at least a partly circumferential groove extending in a meridian plane distally below an equator of the spherical head to receive a band made of body compatible material wrapped thereabout and wherein said head has a hollow inner cavity including a cross wall, said connecting means including a threaded bore in said cross wall for receiving a threaded pin to connect the head portion to the distal shaft portion.

5,330,532
KNEE JOINT PROSTHESIS
Chitranjan Ranawat, 535 E. 70th St., New York, N.Y. 10021
Filed Nov. 9, 1990, Ser. No. 612,605
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 3 Claims

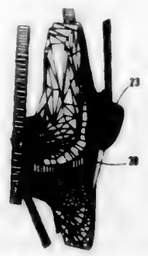


1. In a knee joint prosthesis having a femoral component which includes a pair of laterally spaced-apart condylar bearing portions, each of which has an external anteroposterior surface which is smoothly convexly curved anteroposteriorly to conform substantially to an anteroposterior surface of a human anatomical femoral condyle, and each of said condylar bearing portions being smoothly convexly curved laterally throughout said anteroposterior surface, configured for mutual articulation with mating portions of a tibial component, and an intercondylar portion joining said two condylar bearing portions;
said prosthesis also having a tibial component which includes a platform having a superior surface containing a pair of laterally spaced-apart concavities, each of which is correspondingly configured to receive in nested relation, one of said condylar portions of said femoral component, and a stabilizing post extending superiorly from said superior surface of said platform intermediate said concavities for reception in the intercondylar portion of the femoral component;
the improvement comprising providing a patellar flange element having an anterior surface extending above the bridging portion joining said condylar bearing portions and having a trochlear groove therein, and having varying depth to width ratios of said groove of between about 0.1 to 0.2 along a medial axis of said trochlear groove configured to receive a patellar insert comprising a patellar prosthesis which when said patellar prosthesis is in place in said trochlear groove, allows an angle of flexion between about −8° and 120° when anterior to posterior linear dimensions of the femoral component is within the range of between about 50 mm and about 74 mm, said depth to width ratios being so arranged that said patella rides deeper within said trochlear groove through said angle of flexion than does a patella in a human knee joint.

5,330,533
PROSTHESIS FOR KNEE REPLACEMENT
Peter S. Walker, The Institute of Orthopaedics, Department of Biomedical Engineering, Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, Middlesex H47 4LP, England
Filed Feb. 3, 1992, Ser. No. 829,369
Claims priority, application United Kingdom, Feb. 4, 1991, 91 02348.1
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 17 Claims

1. A knee prosthesis which comprises a femoral component having at least one condylar bearing surface having an anterior portion, a posterior portion and a distalmost point therebetween, wherein the radius of the bearing surface in each sagittal section is substantially constant from posterior to a point more anterior than the distalmost point, a tibial component and a meniscal bearing component between the femoral and tibial

components, said meniscal bearing component having a concave bearing surface for supporting the femoral component, the bearing surfaces in the respective sagittal sections of the femoral and meniscal bearing components being substantially continuous from posterior to anterior, whereby contact be-



tween the femoral and meniscal bearing component can be maintained across a substantial width of the condylar bearing surface throughout the range of flexion and wherein the prosthesis includes guide means for guiding the meniscal bearing component on said tibial component through sliding movement substantially constrained to an anterior-posterior axis.

5,330,534

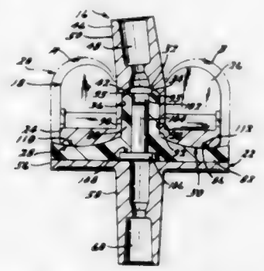
KNEE JOINT PROSTHESIS WITH INTERCHANGEABLE COMPONENTS

Stephen M. Herrington, Warsaw, Ind.; Adolph V. Lombardi, Jr., Columbus, and Bradley K. Vaughn, Worthington, both of Ohio, assignors to Biomet, Inc., Warsaw, Ind.

Filed Feb. 10, 1992, Ser. No. 832,927

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 **10 Claims**



1. A prosthetic replacement system for a knee having independently interchangeable components, comprising:

a plurality of different sized femoral components each of which include

(a) a first bearing surface having a cross-section in the coronal plane defined at least in part by a first radius, and

(b) a second bearing surface having a cross-section in the coronal plane defined at least in part by a second radius, said second radius being displaced from said first radius, the distance between the center of said first radius to the center of said second radius being substantially equal for each of said femoral components; and

a tibial component being able to operatively engage each of said femoral components;

whereby one of said femoral components and said tibial component are used to provide a prosthetic replacement for the knee.

5,330,535

SCREW-NUT FOR SCREWING IMPLANTS TOGETHER

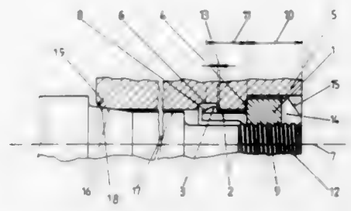
Walter Moser, Herrenschwanden, and Roland Willi, Netterbach, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur and Protek AG, Berne, both of Switzerland

Continuation of Ser. No. 848,091, Mar. 9, 1992, abandoned. This application Apr. 22, 1993, Ser. No. 52,220

Claims priority, application Switzerland, Mar. 7, 1991, 00692/91-3

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 **6 Claims**



1. An implant comprising:

a tibia plate which, when in an operative position, settles on a resected tibia bone to form a platform for an artificial knee, the tibia plate including a stem receiving recess;

a stem projecting into the stem receiving recess of the tibia plate, wherein the stem is connected to the tibia plate for enhancing side-hold and for preventing withdrawal of the tibia plate, wherein:

a portion of the stem which, when in the operative position, contacts a lower plane of the tibia plate, consists of a cone with a small half angle which fits into a cylindrical bore in the tibia plate, the cylindrical bore including a rounded corner to produce line contact between the stem and the lower plane of the tibia plate;

and wherein a clearance exists between the cylindrical bore and the projecting stem in the direction of an upper plane of the tibia plate, the clearance being sized to allow the tibia plate to be substantially inclined out of a position perpendicular to the stem axis towards the stem axis;

the implant further including a screw-nut inserted from the top of the plate to press against a shoulder of the plate in an upper plane of the tibia plate and fixing the stem in the operative position while allowing the inclination of the tibia plate toward or away from the stem axis.

5,330,536

FEMUR PORTION OF A HIP

Karl H. Täger, Gauting, and Hans E. Harder, Probsteierhagen, both of Fed. Rep. of Germany, assignors to Howmedica GmbH, Schoenkirchen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 244,447, Sep. 14, 1988, abandoned. This application Dec. 14, 1990, Ser. No. 629,053

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1987, 8712607

Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—23 **1 Claim**

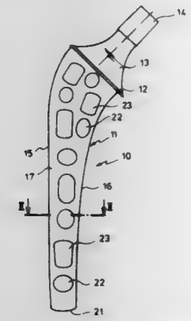
1. The femoral portion of a hip joint prosthesis comprising:

(a) a monolithic shank having a length L, a hollow space therewithin having an axis, a distal end, outer surfaces, and a posterior side, a medial side, an anterior side, and a lateral side, wherein the shank is formed as circumferentially closed hollow body throughout at least a major portion of said length L and comprises a plurality of openings located on only each of said posterior side and said anterior side and interconnecting said outer surfaces of said shank and said hollow space of the shank wherein said

distal end of the shank is open and provides a free access to said hollow space of said shank,

(b) a neck and

(c) a solid collarless end portion of said shank adjacent to said neck with a threaded bore having an axis formed in said solid end portion lateral of said neck, said axis of said bore being substantially aligned with said axis of said hollow space, wherein in the lateral—medial plane the wall thickness of said shank continuously reduces down-



wardly while in the anterior—posterior plane the thickness is constant throughout the length of said shank.

5,330,537

LEATHER TREATMENT SELECTED AMPHIPHILIC COPOLYMER

Thomas Stewart, Doylestown; Patricia M. Lekso, Lansdale, and Anton G. El A'mma, Phoenixville, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 535,228, Jun. 7, 1990. This application Dec. 7, 1992, Ser. No. 986,209

Int. Cl.[5] C14C *5/00*

U.S. Cl. 8—94.1 R **1 Claim**

1. A method for waterproofing tanned leather, comprising:

treating said tanned leather with at least one weight percent of an aqueous dispersion comprising a water insoluble dispersed amphiphilic copolymer formed from about 52% by weight to about 88% by weight of at least one primary alkene, and from about 12 weight percent to about 48 weight percent of at least one copolymerizable water soluble ethylenically unsaturated acidic hydrophilic co-monomer, and where said amphiphilic copolymer has a weight average molecular weight of from about 2000 to about 100,000, and

post treating said tanned leather with a mineral tanning agent, where said post treated leather has a temper of at least 155 mils and a dynamic water resistance greater than 15,000 Maeser flexes.

5,330,538

SALT-AND-PEPPER DENIM

Edward W. Teague; Jarvis L. Clark, and Max H. Hance, all of Mooresville, N.C., assignors to Burlington Industries, Greensboro, N.C.

Filed Mar. 10, 1989, Ser. No. 322,130

Int. Cl.[5] D06Q *1/02, 1/00*

U.S. Cl. 8—114.6 **25 Claims**

1. A method of producing a fabric, comprising the steps of:

(a) forming a plurality of individual cotton yarns having a twist multiplier value of at least 4.6 and varying within the range of between 4.6 and 10.5;

(b) subjecting said plurality of individual cotton yarns to exposure to a caustic solution under tension;

(c) dyeing said plurality of individual cotton yarns by exposure to a dye liquor under tension to achieve dyeing of the other periphery of the individual yarns with very little dyeing of their cores;

(d) utilizing said plurality of individual cotton yarns to produce a fabric; and

(e) abrading at least one surface of said fabric, whereby first and second portions of the surface of said fabric are different shades of color, providing lighter portions dispersed throughout a darker portion, said lighter portions having fractional area value of greater than about 33%.

5,330,539

FIBER REACTIVE DYES - APPLICATIONS WITH LOW SALT

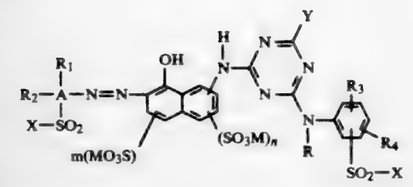
Thomas S. Phillips, North Providence; Kevin D. Costa, Pawtucket, both of R.I.; Werner Russ, Hofheim-Weilbach, Fed. Rep. of Germany, and Thomas V. Chambers, Rock Hill, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 18, 1991, Ser. No. 810,731

Int. Cl.[5] C09B *62/04, 62/507, 62/085, 62/095*

U.S. Cl. 8—549 **7 Claims**

1. A method for dyeing a substrate containing hydroxyl or carbamide groups comprising contacting said substrate with an aqueous solution of a dye of the formula:



wherein:

M represents a hydrogen atom, or an alkali or alkaline earth metal; n and m are 0 or 1;

A is a benzene nucleus or a naphthalene nucleus;

R is hydrogen or an alkyl group having 1 to 4 carbon atoms;

R_1 and R_2 are hydrogen, hydroxyl, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, R_1 and R_2 are the same or different;

R_3 and R_4 are hydrogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, R_3 and R_4 are the same or different;

X is a vinyl group, or a fiber reactive group of the general formula $—CH_2CH_2—Z$ wherein Z is chloro, sulfato, thiosulfato or phosphato, sulfato; Y is selected from chlorine, bromine or fluorine, and the copper, cobalt, chrome and nickel metal complexes thereof.

wherein:

said dye is present in an amount from about 0.5 to about 6% by weight based on the weight of said substrate and wherein said aqueous solution contains an inert inorganic salt in about the following amounts relative to said dye concentration:

% Dye	Salt g/l
0–.5	10–15
.5–2	25–50
2–4	25–50
4–6	25–50.

5,330,540

METHOD OF DYEING TEXTILES

Daniel T. McBride, Chesnee; William M. Pascoe, Inman, and John H. Belue, Spartanburg, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 12, 1993, Ser. No. 133,894

Int. Cl.[5] C09B *67/00*

U.S. Cl. 8—554 **16 Claims**

1. A process for dyeing a textile material comprising the steps of:

(a) applying a solution having an insoluble dye dispersed therein and an ionic dispersant in sufficient quantity to disperse said insoluble dye;

(b) subsequently applying a solution including a component counter-ionic to said ionic dispersant, thereby substantially neutralizing said ionic dispersant; and

(c) heating said textile material to fix said insoluble dye.

5,330,541

METHOD FOR SALT-FREE DYEING

David M. Hall, Auburn, Ala.; Tony M. Leonard, Lookout Mountain, Ga.; Charles D. Cofield, and Hugh W. Barrow, both of Dalton, Ga., assignors to American Emulsions, Co., Dalton, Ga.

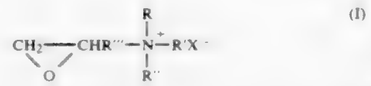
Filed Dec. 15, 1992, Ser. No. 970,253

Int. Cl.[5] D06P *3/60;* **C09B** *67/00*

U.S. Cl. 8—576 **9 Claims**

1. In a process for dyeing textile fibers or fabrics with a dye normally requiring an exhaust salt which includes the steps of washing and rinsing, the improvement which comprises the

steps of a) treating the fibers or fabrics with a dilute solution of potassium hydroxide, b) treating the fibers or fabrics with a dilute solution of an epoxy ammonium compound of the formula:



(I)

wherein R, R′ and R″ are alkyl radicals having 1 to 8 carbon atoms, R‴ is an alkylene radical having 1 to 8 carbon atoms and X^- is an anionic group selected from the group consisting of sulfate, sulfonate and halide, and c) dyeing the fibers or fabrics in a dyebath without a salt for exhausting the dye in the dyebath and at a temperature below 200° F.

5,330,542

DYE-INCORPORATED COMPOSITION

Shuichi Maeda, Hidaka; Satoru Imamura; Kazuo Mitsuhashi, both of Machida, and Takako Tsukahara, Sagamihara, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

PCT No. PCT/JP91/00677, § 371 Date Jan. 24, 1992, § 102(e) Date Jan. 24, 1992, PCT Pub. No. WO91/18950, PCT Pub. Date Dec. 12, 1991

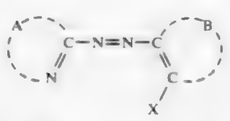
PCT Filed May 22, 1991, Ser. No. 809,513

Claims priority, application Japan, May 25, 1990, 2-136844; Nov. 28, 1990, 2-328423

Int. Cl.[5] C09B *11/00, 11/02, 57/04, 67/22, 67/42*

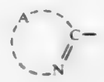
U.S. Cl. 8—639 **8 Claims**

1. A dye-incorporated composition which comprises a mixture of a cyanine dye and an azo metal chelate compound, wherein the azo metal chelate compound is an azo compound of the following formula (I):

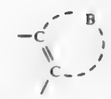


(I)

wherein A is a residue forming a hetero ring together with the carbon atom and the nitrogen atom to which it is bonded, B is a residue forming an aromatic ring or a hetero ring together with the two carbon atoms to which is bonded, and X is a group having an active hydrogen, wherein



is a thiazole ring, a benzothiazole ring, a pyridobenzothiazole ring, a binzopyridothiazole ring, a pyridothiazole ring, a pyridine ring or a quinoline ring; or a thiazole ring, a benzothioazole ring, a pyridobenzothiazole ring, a benzopyridothiazole ring, a pyridothiazole ring, a pyridine ring or a quinoline ring substituted by an alkyl group, an alkoxy group, an aryloxy group, an aralkyl group, an aryl group, a halogen atom, a cyano group, a nitro group, an ester group, a carbamoyl group, an acyl group, an aclyamino group, a sulfamoyl group, a sulfonamide group, an amino group a hydroxyl group, a phenylazo group, a pyridinoazo group or a vinyl group; and



is a benzene ring, a naphthalene ring, a pyridine ring, a pyridone ring, a tetrahydroquinoline ring or a pyrazole ring; or a benzene ring, a naphthalene ring, a pyridine ring, a pyridone ring, a tetrahydroquinoline ring or a pyrazole ring substituted by an alkyl group, an alkoxy group, an aryloxy group, an aralkyl group, an aryl group, a halogen atom, a cyano group, a nitro group, an ester group, a carbamoyl group, an acyl group, an acylamino group, a sulfamoyl group, a sulfonamide group, an amino group, a hydroxyl group, a phenylazo group, a pyridinoazo group or a vinyl group;

chelated with a metal.

5,330,543

THIOPHENEAZO DYES WITH A COUPLING COMPONENT OF THE DIAMINOPYRIDINE SERIES

Guenter Hansen, Ludwigshafen; Gunther Lamm, Hassloch; Hermann Loeffler, Speyer; Helmut Reichelt, Neustadt; Helmut Degen, Frankenthal; Arno Lange, Bad Durkheim, and Clemens Grund, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

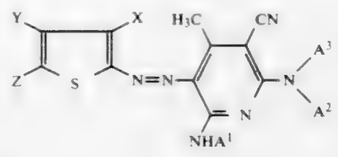
Continuation of Ser. No. 967,131, Oct. 27, 1992, abandoned. This application Oct. 27, 1993, Ser. No. 141,705

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1991, 4138550

Int. Cl.[5] C09B *29/042, 29/40;* **D06P** *1/18, 3/54*

U.S. Cl. 8—662 **12 Claims**

1. A process for dyeing and printing textile materials with azo dyes, which comprises applying thereto an azo dye of the formula Ia



(Ia)

where

X is cyano or a radical of the formula $COOQ^1$ or $CONQ^1Q^2$, wherein Q^1 and Q^2 are identical or different and singly are, independently of one another, substituted or unsubstituted C^1–C^{12}-alkyl with or without interruption by from 1 to 3 oxygen atoms in ether function, C_5–C_7-cycloalkyl, C_3–C_4-alkenyl, or substituted or unsubstituted phenyl, or together are, together with the nitrogen atom joining them, a 5- or 6-membered saturated heterocyclic radical with or without further hetero atoms or else Q^2 may be hydrogen,

Y is C_1–C_6-alkylthio, C_1–C_6-alkylsulfonyl, halogen, substituted or unsubstituted phenoxy, substituted or unsubstituted phenylthio or substituted phenylsulfonyl, with the proviso that Y is not —Br,

Z is cyano, nitro, substituted or unsubstituted phenylsulfonyl, C_1–C_6-alkylsulfonyl, formyl or a radical of the formula —CH=T, wherein T is the radical of an acidic-CH compound, and

A^1, A^2 and A^3 are identical or different and singly are, independently of one another, substituted or unsubstituted C_1–C_{12}-alkyl, with or without interruption by from 1 to 3 oxygen atoms in ether function, C_5–C_7-cycloalkyl, substituted or unsubstituted phenyl, C_3–C_6-alkenyl, substituted or unsubstituted benzoyl, C_1–C_8-alkanoyl, C_1–C_8-alkylsulfonyl or substituted or unsubstituted phenylsulfonyl, or A^2 and A^3 together are, together with the nitrogen atom joining them, a 5- or 6-membered saturated heterocyclic radical with or without further hetero atoms.

5,330,544

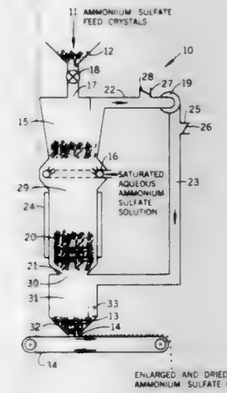
PROCESS AND APPARATUS FOR INCREASING THE SIZE OF AMMONIUM SULFATE CRYSTALS

Walter G. Thomson, Hitchcock, Tex., and Jonathan K. Kramer, Ft. Lee, N.J., assignors to BASF Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 574,205, Aug. 28, 1990, abandoned. This application Jan. 27, 1992, Ser. No. 825,739

Int. Cl.[5] C01C *1/24*

U.S. Cl. 23—313 R **16 Claims**



1. A process for preparing ammonium sulfate of uniform size crystals which comprises:

a) spraying a feed of descending ammonium sulfate crystals with an aqueous ammonium sulfate solution such that individual ammonium sulfate feed crystals are contacted by the ammonium sulfate solution;

b) providing a countercurrent flow of gas having a lifting force which retards the rate of descent of the crystals as they are sprayed, the contact time of the crystals with the solution and the temperature of such contact being sufficient to enlarge the ammonium sulfate crystals until the crystals enlarge to the point where they overcome the lifting force of the countercurrent flow of gas; and,

c) heating the uniform ammonium sulfate crystals to reduce their water content.

5,330,545

MIDDLE DISTILLATE COMPOSITION WITH IMPROVED COLD FLOW PROPERTIES

Kenneth Lewtas, Wantage, and Kenneth W. Bartz, Abingdon, both of United Kingdom, assignors to Exxon Chemical Patents Inc., Linden, N.J.

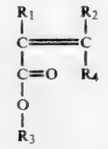
Continuation of Ser. No. 876,244, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 303,593, Jan. 27, 1989, abandoned, which is a continuation of Ser. No. 901,216, Aug. 28, 1986, abandoned. This application Dec. 28, 1992, Ser. No. 997,403

Claims priority, application United Kingdom, Aug. 28, 1985, 85-21392

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—395 **13 Claims**

1. A distillate petroleum fuel oil boiling in the range of 120° C. to 500° C. containing 0.0001 to 0.5 wt. % additive comprising polyvinylester polymer or copolymer containing at least 25 wt % of repeating n-alkyl ester monomer units represented by the general formula



wherein R_1 and R_2 are hydrogen or methyl, R_4 is $COOR_3$, and R_3 is independently n-alkyl which (i) has an average number of carbon atoms from 12 to 20, and (ii) contains a methyl branch at the 1 or 2 position, and wherein no more than 10 wt % of the ester monomer units contain alkyl groups containing more than 20 carbon atoms and no more than 20 wt. % of the ester monomer units contain alkyl groups containing fewer than 12 carbon atoms.

5,330,546

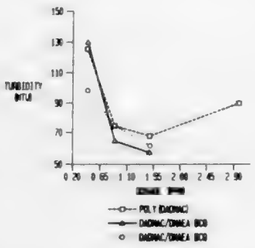
HYDROPHOBIC POLYELECTROLYTE COAGULANTS FOR CONCENTRATING COAL TAILINGS

Manian Ramesh, Naperville; Ram A. Venkatadri, South Chicago; Lawerence J. Connelly, Oak Lawn, and Jeffrey R. Cramm, Winfield, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Aug. 18, 1992, Ser. No. 931,828

Int. Cl.[5] C10L *9/10;* **C02F** *1/56*

U.S. Cl. 44—620 **7 Claims**



1. A method for concentrating coal tailings which include liquid and colloidal particles, said method comprising the steps of:

a. feeding said coal tailings to a thickner;

b. treating said coal tailings with a hydrophobic polyelectrolyte copolymer coagulant which comprises diallyldimethylammonium chloride monomer and a hydrophobic monomer selected from the group consisting having of: dialkylaminoethylacrylates having from C_4 to C_{20} quaternaries and dialkylaminoethylmethacrylates having from C_4 to C_{20} quaternaries, said coagulant is added to the coal tailings in an amount between about 0.05 to about 0.25 lb/ton;

c. treating said coal tailings with a flocculant in an amount between about 0.05 to about 0.25 lb/ton, whereby said colloidal particles agglomerate and settle out as concentrated tailings;

d. discharging concentrated tailings from said thickener; and

e. withdrawing clarified liquid from said thickener.

5,330,547

METHODS AND MATERIALS FOR CONFERRING TRIPSACUM GENES IN MAIZE

Mary W. Eubanks, 4110 Hulon Dr., Durham, N.C. 27705

Continuation-in-part of Ser. No. 613,269, Nov. 13, 1990, Pat. No. P.P. 7,977. This application Sep. 14, 1992, Ser. No. 944,389

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] A01H *1/02, 5/00*

U.S. Cl. 47—58 **12 Claims**

6. A method of producing a hybrid maize seed comprising the steps of:

(a) crossing a *Tripsacum dactyloides* female parent with a *Zea diploperennis* male parent to produce (*Tripsacum dactyloides X Zea diploperennis*) hybrid seed; then

(b) growing a (*Tripsacum dactyloides X Zea Diploperennis*) hybrid plant from said seed to maturity, then

(c) crossing said (*Tripsacum dactyloides X Zea diploperennis*) hybrid plant with Zea mays to produce seed;

(d) harvesting the seed produced in (c), wherein said seed produced in (a) all of has the identifying characteristics of ATCC 75297, and wherein said seed produced in (c) germinates into a plant having resistance to corn rootworm (*Diabrotica virgifera*).

5,330,548

METHOD FOR PRODUCING GLASS PREFORM FOR OPTICAL FIBER

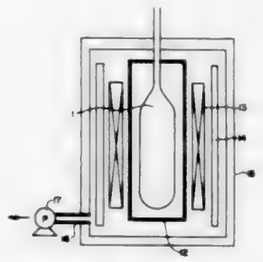
Toshio Danzuka; Masumi Ito, and Ichiro Tsuchiya, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 17, 1992, Ser. No. 913,965

Claims priority, application Japan, Jul. 19, 1991, 3-179814; Apr. 9, 1992, 4-088640

Int. Cl.[5] C03B *37/023*

U.S. Cl. 65—3.12 **6 Claims**



1. A method for producing a glass preform for an optical fiver, comprising the steps of:

heating a glass soot preform to remove gas from said soot preform at a temperature of from 900° to 1200° C. at which said soot preform is not vitrified under reduced pressure, continuing heating until the pressure is reduced to 10 Pa or lower, and then

heating the preform from the above-heating step at a temperature of 1500° to 1600° C. under pressure of 10 Pa or lower for 1 to 60 minutes at which the preform is vitrified under reduced pressure.

5,330,549

APPARATUS FOR THE MANUFACTURE OF SHEETS OF GLASS HAVING A COMPLEX SHAPE

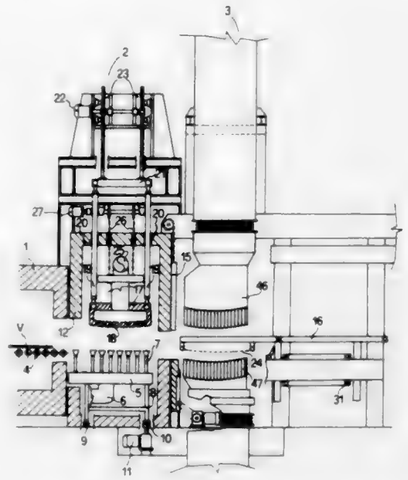
Giovanni Carlomagno; Vincenzo Caico, both of Naples, and Edoardo Tereo, San Salvo, all of Italy, assignors to Societa Italiana - SIV - S.p.A., San Salvo, Italy

Filed Jul. 10, 1992, Ser. No. 911,939

Claims priority, application Italy, Jul. 10, 1991, 91A000504

Int. Cl.[5] C03B *23/03, 23/035*

U.S. Cl. 65—182.2 **11 Claims**



1. An apparatus for shaping and tempering a glass sheet for use in a motor vehicle, comprising:

a heating station including a furnace and a roller conveyor extending horizontally through said furnace for feeding the glass sheet in a downstream direction through said furnace along a predetermined path;

a shaping station positioned adjacent and downstream of said heating station and including an air bed means for supporting the glass sheet at a floating level on an air bed in a position downstream of said roller conveyor along said predetermined path, and an upper shaping mold spaced above said air bed means and said floating level and comprising a perforated shaping surface and a vacuum means for creating suction through said perforated shaping surface to attract the glass sheet thereto;

a tempering station positioned downstream of said shaping station and including tempering nozzle means for rapidly cooling the glass sheet;

a glass supporting ring for supporting the glass sheet;

ring moving means for moving said glass supporting ring vertically from a position below said floating level toward said perforated shaping surface of said upper shaping mold, and for moving said glass supporting ring horizontally from said shaping station toward said tempering station; and

wherein said air bed means comprises an air plenum and a plurality of upwardly directed air nozzles individually removably supported by said plenum and in fluid communication with said plenum to allow air to be supplied through said nozzles from said plenum to form said air bed, said plenum having a ring-shaped area devoid of said nozzles, said ring-shaped area corresponding to a shape of said glass supporting ring to be positioned in said ring-shaped area below said floating level.

5,330,550

INSTALLATION FOR THE BENDING OF GLAZING

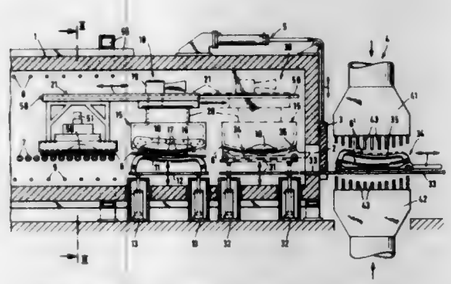
Hans-Werner Kuster, Aachen; Werner Diederen, Herzogenrath, and Karl-Josef Ollfisch, Aachen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Feb. 10, 1993, Ser. No. 15,843

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1992, 4203751

Int. Cl.[5] C03B *23/03*

U.S. Cl. 65—260 **9 Claims**



1. Installation for the bend of glazings, comprising:

a continuous furnace for heating glazings to a bending temperature;

a conveyor for conveying glazings through the furnace;

means, including a lower bending shape, for defining at least one bending station in the furnace;

means for defining a transfer station in the furnace;

plate suction means in the furnace and mounted for displacement to transport glazings from the conveyor to the lower bending shape of the at least one bending station;

an upper suction shape, in the furnace, for bending a glazing in the at least one bending station and mounted for displacement to transport glazings from the at least one bending station to the transfer station in synchronism with movement of the plate suction means, so that the displacement to transport glazings of said plate suction means is performed simultaneously with the displacement to transport glazings of said upper suction shape; and

an annular frame movable between said transfer station, where a glazing is transferred thereto from the upper suction shape, and a cooling station outside of said furnace.

5,330,551

GLASSWARE FORMING MACHINE WITH COOLING SYSTEM

James A. Bolin, Tulsa, Okla., assignor to I.M.T.E.C. Enterprises, Inc., Tulsa, Okla.

Filed Dec. 2, 1992, Ser. No. 984,882

Int. Cl.[5] C03B *11/12, 9/38, 9/14, 9/193*

U.S. Cl. 65—265 **14 Claims**

1. A glassware forming machine comprising:

a pair of carriers each pivoted for swinging movement toward and away from each other between an open position and a closed position;

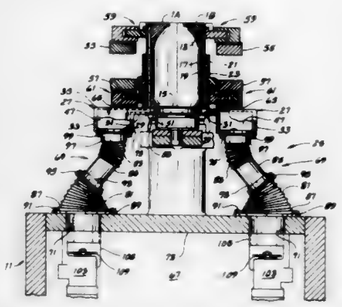
a plurality of mold members carried by each carrier, each mold member on each carrier being related to a mold member on the other carrier so that, with the carriers in their said closed position, each mold member on one carrier mates with a mold member on the other carrier to define a mold cavity for molding an item of glass,

each mold member having air passages extending therethrough for passage of air for cooling;

a plenum carried by each carrier for delivering air to the air passages of the mold members carried by the carrier, the plenum having ports for flow of air into the passages in the mold members and thence through and out of said passages;

means providing a chamber below said carriers for air to be blown into the plenums and thence up through said air passages, and

means for delivery of air from said chamber means to each plenum allowing swinging of said carriers and comprising, for each carrier:



conduit means comprising flexible corrugated bellows-formation metal tubing in communication at one end constituting its lower end with said chamber for entry of air from said chamber, and in communication at its other end constituting its upper end with the plenum for delivery of air into the plenum.

5,330,552

METHOD FOR INCREASING CROP YIELD

John M. Rizzo, Rte. 1, Box 3-16, Cleveland, Miss. 38732

Filed Jul. 8, 1993, Ser. No. 86,875

Int. Cl.[5] C05C *9/00*

U.S. Cl. 71—30 **7 Claims**

1. A method for increasing the yield of rice plants which comprises applying to said plants during the rice plant growth stage a granular fertilizer consisting essentially of urea and ammonium sulfate in a urea/ammonium sulfate weight ratio of about 4/1, at a rate of about 100 to about 150 pounds per acre.

5,330,553

SINTERED CARBONITRIDE ALLOY WITH HIGHLY ALLOYED BINDER PHASE

Gerold Weinl, Alvsjo; Rolf G. Oskarsson, Ronninge, and Per Gustafsson, Hiddinge, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed May 22, 1992, Ser. No. 886,876

Claims priority, application Sweden, May 24, 1991, 9101591-7

Int. Cl.[5] C22C *29/02*

U.S. Cl. 75—236 **2 Claims**

1. Sintered titanium-based carbonitride alloy containing hard constituents of a carbide, nitride, carbonitride or combinations thereof of Ti, at least one of W and Mo and at least one metal selected from the group consisting of Zr, Hf, V, Nb, Ta and Cr in 5-30% binder phase of a metal selected from the group consisting of cobalt, nickel and alloys thereof, and said sintered carbonitride alloy containing hard constituent grains with a core-rim structure, the content of molybdenum and/or tungsten in the binder phase being >1.5 times higher than in the rim and >3.5 times higher than in the core of adjacent hard constituent grains with core-rim structure.

5,330,554

METHOD FOR PRODUCING IRON-NITRIDE POWDERS

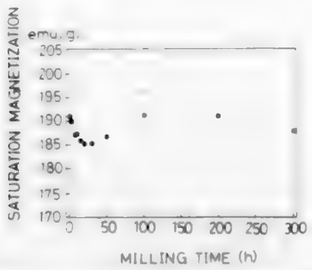
Tamotsu Koyano, and Uichiro Mizutani, both of Nagoya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 28, 1992, Ser. No. 936,280

Claims priority, application Japan, Aug. 30, 1991, 3-219988; Mar. 31, 1992, 4-77748

Int. Cl.[5] **B22F** *9/04*

U.S. Cl. 75—348 **7 Claims**



3. A method for producing iron-nitride power, comprising the steps of

introducing iron powder and an intermetallic compound powder of iron and nitrogen into a vessel; and

milling said iron powder and said intermetallic compound powder under an inert gas atmosphere or an ammonia gas or nitrogen atmosphere or a mixed gas atmosphere of N_2 and H_2 at a temperature less than 160° C.

5,330,555

PROCESS AND APPARATUS FOR MANUFACTURING LOW-GAS AND PORE-FREE ALUMINUM CASTING ALLOYS

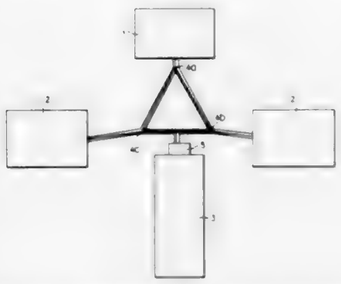
Heinz Lorenz, Toging/Inn, Fed. Rep. of Germany, assignor to VAW Aluminium AG, Bonn, Fed. Rep. of Germany

Filed Apr. 13, 1993, Ser. No. 46,766

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1992, 42121936

Int. Cl.[5] **C22B** *9/04*

U.S. Cl. 75—386 **15 Claims**



1. Process for manufacturing low-gas and substantially pore-free aluminum alloy castings by vacuum treatment of the alloy melt, characterized by the steps of (a) alloying the metal melt in a smelting furnace; (b) feeding the melt to at least one vacuum furnace; (c) heating the melt to a casting temperature required for continuous casting; (d) maintaining a vacuum in the vacuum furnace to degasify the melt and increase the density of the melt to a maximum density; (e) feeding the maximum density melt to a continuous casting mold, and forming low-gas and pore-free aluminum alloy castings therefrom.

5,330,556

METHOD FOR TREATING GAS AND PARTICULATE SOLIDS IN A FLUID BED

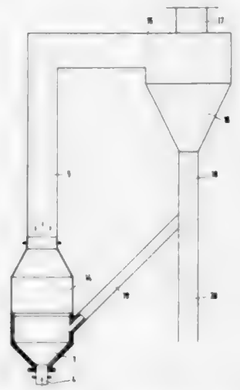
Gregory J. Hardie, East Fremantle; John M. Ganser, Attadale; Ian D. Webb, Port Kembla, all of Australia; Timo Hyppänen; Karl Myöhänen, both of Karhula, Finland, and Ismo Nopanen, Summa, Finland, assignors to Hismelt Corporation Pty Limited, Kwinana, Australia and Ahlstrom Corporation, Karhula, Finland

Filed Sep. 3, 1992, Ser. No. 939,917

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1991, 4131962

Int. Cl.[5] **C22B** *5/14*

U.S. Cl. 75—414 **20 Claims**



1. A method of providing a fluidized bed in which gas and particles react, utilizing a mixing chamber, a gas-particles separator, and an inlet pipe having a given minor dimension and opening up into the mixing chamber, said method comprising the steps of substantially continuously:

(a) upwardly introducing gas into the mixing chamber through the inlet pipe at a rate of more than 35 m/sec, and at an approximately constant rate over a distance leading to the mixing chamber that is longer than the given minor dimension of the inlet, to freely move into the mixing chamber;

(b) introducing particulate solids into the mixing chamber substantially independently of the introduction of gas in step (a);

(c) passing a mixture of reacted particles and gas to the separator; and

(d) separating particles from the gas in the separator, and returning some of the separated particles to the mixing chamber

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5,330,557

FLUID BED REDUCTION TO PRODUCE FLOWABLE MOLYBDENUM METAL

William A. May, Boulder, Colo., assignor to Amax Inc., Englewood, Colo.

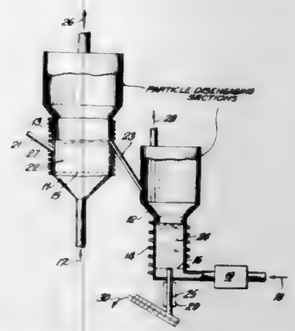
Continuation of Ser. No. 479,026, Feb. 12, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 59,501

Int. Cl.[5] **C22B** *34/34*

U.S. Cl. 75—623 **14 Claims**

8. The process for reducing molybdenum dioxide to molybdenum metal in a fluid bed reactor at a temperature of about

1025° C., to 1075° C. using hydrogen as the active reductant and controlling the off-gas such that the hydrogen:water vapor



ratio does not exceed about 24:1 so that fluidization of the bed is maintained.

5,330,558

METHOD FOR REMOVING CHROMIUM CONTAINING COATINGS FROM ALUMINUM SUBSTRATES

David R. McCormick, Madison Heights, and Chi-Fan Hsu, Farmington Hills, both of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Mar. 31, 1993, Ser. No. 40,793

Int. Cl.[5] **C23F** *7/00*

U.S. Cl. 75—715 **20 Claims**

1. A process for removing a chromium containing coating from an aluminum article which comprises: contacting the aluminum article having a chromium containing coating, with an aqueous alkaline treating solution at a pH above 10 for a sufficient time to form an aluminum article with an ultrasonically removable chromium containing coating; and treating the aluminum article, with the ultrasonically removable coating, with ultrasonic vibrations to remove the chromium containing coating.

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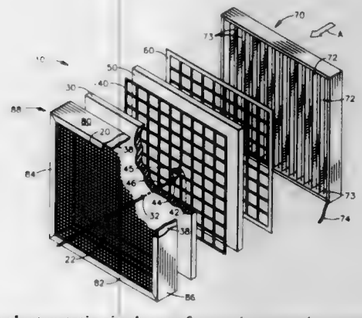
METHOD AND APPARATUS FOR ELECTROSTATICALLY CLEANING PARTICULATES FROM AIR

William A. Cheney, and Wendell P. Spurgin, both of Cincinnati, Ohio, assignors to United Air Specialists, Inc., Cincinnati, Ohio

Filed Aug. 11, 1992, Ser. No. 928,274

Int. Cl.[5] **B03C** *3/12, 3/14*

U.S. Cl. 95—63 **39 Claims**



1. An electrostatic air cleaner for use in removing particulate matter from moving air, said electrostatic air cleaner including an electrical connection to ground potential, said electrostatic air cleaner also including an electrical connection to at least one source of high voltage electrical power, said electrostatic air cleaner having an inlet end and an outlet end, said electrostatic air cleaner comprising:

(a) an electrically conductive first air permeable support layer located near said outlet end of said electrostatic air cleaner, wherein said first air permeable support layer is electrically connected to ground potential;

(b) an electrically non-conductive first layer of reticulated foam, said first layer of reticulated foam having a first side and a second side, said first side of the first layer of reticulated foam being adjacent to said first air permeable support layer;

(c) an air permeable layer of semiconductive material comprising carbon-impregnated polycarbonate, said layer of semiconductive material having a first side and a second side, said first side of the semiconductive material being adjacent to said second side of the first layer of reticulated foam, wherein said layer of semiconductive material is electrically connected to a first source of high voltage electrical power;

(d) an electrically non-conductive second layer of reticulated foam, said second layer of reticulated foam having a first side and a second side, said first side of the second layer of reticulated foam being adjacent to the second side of said layer of semiconductive material; and

(e) an electrically conductive second air permeable support layer located near said inlet end of said electrostatic air cleaner and adjacent the second side of said second layer of reticulated foam, wherein said second air permeable support layer is electrically connected to ground potential.

39. A method of cleaning particulate matter from air, comprising the step of directing said moving air through an air filter, whereby particulate matter is removed from the moving air by at least one layer of open cell reticulated foam, said at least one layer of open cell reticulated foam having a first side and a second side, wherein said at least one layer of open cell reticulated foam is charged to a high DC voltage on its first side by an air permeable layer of semiconductive material comprising carbon-impregnated polycarbonate, said semiconductive material being electrically connected to a source of high voltage electrical power, and wherein said at least one layer of open cell reticulated foam is held to ground potential on its second side by an air permeable layer of conductive material which is electrically connected to a source of high voltage electrical power, thereby creating a high voltage electric field through said at least one layer of open cell reticulated foam, and wherein said at least one layer of open cell reticulated foam is non-deliquescent so that the high voltage electric field produced through the at least one layer of open cell reticulated foam is not dissipated by a buildup of water vapor.

5,330,560

SUPPORTED SORBENTS FOR REMOVAL AND RECOVERY OF ARSENIC FROM GASES

Sherman S. Chao, Indian Head Park, and Amir Attari, Barrington, both of Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed Mar. 29, 1993, Ser. No. 38,965

Int. Cl.[5] **B01D** *53/04*

U.S. Cl. 95—95 **12 Claims**

1. A process for removal and recovery of arsenic from a gas comprising the steps of:

contacting a supported sorbent comprising an inert solid support coated with one of phosphoric acid and at least one metal halide with an arsenic-containing gas;

one of adsorbing and absorbing said arsenic with said supported sorbent;

desorbing said arsenic from said supported sorbent; and

collecting said desorbed arsenic.

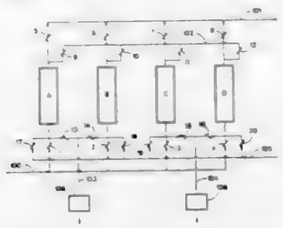
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5,330,561

EXTENDED VACUUM SWING ADSORPTION PROCESS

Ravi Kumar, Allentown; Tarik Naheiri, Bath, and Charles F. Watson, Orefield, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 976,878, Nov. 16, 1992, abandoned. This application Mar. 25, 1993, Ser. No. 47,559
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—101 22 Claims



1. A process for selectively separating a more strongly adsorbable component from a less strongly absorbable component of a feed gas mixture in a plurality of adsorption beds containing an adsorbent selective for the more strongly adsorbable component, comprising the steps of:

(a) introducing a feed gas mixture at high pressure containing said more strongly absorbable component and said less strongly adsorbable component into an inlet of a first adsorption bed containing said adsorbent selective for the more strongly adsorbable component and adsorbing the more strongly adsorbable component on the adsorbent while the less strongly adsorbable component passes through said first bed unadsorbed until the adsorption front of the more strongly adsorbable component approaches an outlet of said first bed and terminating the introduction of the feed gas mixture;

(b) following the termination of the introduction of the feed gas mixture into said first bed and without any intervening steps, cocurrently depressurizing said first bed to a lower pressure to remove said gas mixture from said first bed and passing said gas mixture to an outlet of a second bed of said plurality of adsorption beds at lower pressure to countercurrently purge said more strongly adsorbable component from said second bed undergoing step (d);

(c) countercurrently evacuating said first bed under vacuum conditions to further remove said more strongly absorbable component at the lowest pressure;

(d) countercurrently purging said first bed with cocurrently depressurizing gas mixture from a bed of said plurality of adsorption beds undergoing step (b) to remove additional more strongly adsorbable component from said first bed;

(e) repressurizing said first bed with less strongly adsorbable component from a bed of said plurality of adsorption beds currently undergoing step (a) and with feed gas mixture; and

(f) performing steps (a) through (e) in each of said plurality of adsorption beds in a phased sequence wherein at least two adsorption beds are countercurrently evacuated simultaneously in overlapping countercurrent evacuation steps in said plurality of adsorption beds.

5,330,562

FLUIDIZED BED SCRUBBER FOR USE IN GAS CLEANING SYSTEM

Robert J. Anderson, Lakeland, Fla., assignor to Medx, Inc., Miami, Fla.

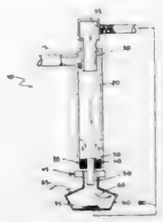
Filed Mar. 12, 1993, Ser. No. 31,658
Int. Cl.[5] B01D *5/00, 51/00, 53/34*
U.S. Cl. 95—108 13 Claims

1. A fluidized bed scrubber for use in gas cleaning systems, comprising:

a first chamber;

a second chamber below said first chamber;

a fluidized bed, comprising fluidized solids, in said first chamber;



means for injecting a stream of fluidizing gas into said fluidized bed within said first chamber for maintaining the fluidized state of said fluidized solids;

a downcomer passing from within said first chamber into said second chamber;

means for introducing a quantity of polluted gas, comprising a plurality of pollutants and clean gas, into said first chamber above said downcomer;

means for injecting a stream of said fluidized solids into said first chamber above said downcomer such that said polluted gas and said fluidized solids are carried from said first chamber through said downcomer into said second chamber, and such that said fluidized solids mix with said polluted gas above and within said downcomer so as to condition said polluted gas such that said pollutants bond with said fluidized solids and are removed from said polluted gas; and

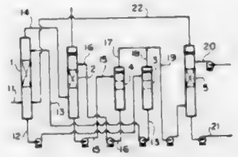
means for removing a second portion of pollutants from said polluted gas.

5,330,563

PROCESS FOR SEPARATING A VOLATILE ORGANIC COMPOUND FROM A GAS

Osamu Yamase; Yasuyuki Makita, and Kazuyoshi Jajima, all of Tokyo, Japan, assignors to Showa Shell Sekiyu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,884
Claims priority, application Japan, Apr. 21, 1992, 4-128063
Int. Cl.[5] B01D *53/14*
U.S. Cl. 95—163 4 Claims



1. In a process for separating a volatile organic compound from a gas containing the volatile organic compound by

introducing the gas into a first absorption column at a lower part in the first absorption column,

supplying a first absorption liquid into the first absorption column at an upper part at the first absorption column to contact countercurrently with the gas to absorb a major portion of the volatile organic compound in the gas,

introducing the gas leaving the first absorption column and containing a remaining volatile organic compound into a second absorption column at a lower part at the second absorption column,

supplying a second absorption liquid into the second absorption column at an upper part of the second absorption column to contact countercurrently with the gas from the first absorption column,

supplying the first absorption liquid leaving at a lower part of the first absorption column into a first desorption column at an upper part of the first desorption column,

recycling the liquid leaving at a lower part of the first desorption column back to the first absorption column as the first absorption liquid,

supplying the second absorption liquid leaving at a lower part of the second absorption column into a second desorption column at an upper part of the second desorption column,

recycling the liquid leaving at a lower part of the second desorption column back to the second absorption column as the second absorption liquid, and

recovering a remaining volatile organic compound,

the improvement which comprises controlling the operating pressure at the first and second desorption columns within the area defined below curve:

$$P = 8.31 + 51f + 200f^2$$

where P is the operating pressure in mmHg and f is the concentration in molar fraction the volatile organic compound in the gas to be fed into the first absorption column, when the concentration is at or less than 0.379 but greater than or equal to 0.100 and within the area defined below line:

$$P = -70f + 83$$

when the concentration is greater than 0.379 but less than or equal to 0.400, to reduce the amount of volatile organic compound in a discharging gas to less than 0.100 when the amount of volatile organic compound in a feeding gas was assumed to be 1.

5,330,564

AQUEOUS COATING FOR PROTECTING SPRAY CABINS FROM ENAMEL OVERSPRAY AND PROCESS FOR PRODUCING IT

Juergen Geke, Duesseldorf; Bernhard Zange, Morsbach-Birken; Hans Rehm, Hilden; Hans Fehr, Duesseldorf; Thomas Molz, Hilden; Kurt Buick, Neuss; Emil Bruegel, Grevenbroich, and Lutz Huesemann, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/01570, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO91/04303, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 17, 1990, Ser. No. 842,362
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1989, 3931907
Int. Cl.[5] C09D *5/20*
U.S. Cl. 106—2 20 Claims

1. An aqueous and storage stable coating composition to protect spray booths against lacquer overspray, which composition after use is easy to remove from the treated surface with cold water and comprises:

5 to 80% by weight of material selected from the group consisting of C_8 carboxylic acids and the alkali metal salts thereof;

1 to 40% by weight of pH regulator material selected from the group consisting of alkanolamines and alkali metal hydroxides;

1 to 15% by weight of material selected from the group consisting of layered silicates, polyacrylates, carboxymethylcellulose, and mixtures thereof; and, optionally,

additives selected from the group consisting of hydrophobizing release agents, flow improvers, coloring pigments, and corrosion inhibitors; and

as the balance, water,

and has a pH value from 6 to 10; and has a viscosity from 30 to 50 DIN-sec.

5,330,565

ACTIVE AGENT-CONTAINING PRINTING INK

Hachiro Saitoh, Yokosuka, and Toshimichi Matsui, Joyo, both of Japan, assignors to Nippon Petrochemicals Company Limited, Tokyo, Japan

Continuation of Ser. No. 716,893, Jun. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 460,402, Jan. 3, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 987,234
Int. Cl.[5] C09D *11/02, 5/00*
U.S. Cl. 106—20 R 7 Claims

1. An active agent-containing printing ink comprising

(a) printing ink; and

(b) active agent-containing fine particles of a thermoplastic polymer,

said thermoplastic polymer being compatible with the active agent and having been combined previously with the active agent by impregnation, wherein said active agent is selected from the group consisting of insecticides, perfumes and deodorants, and

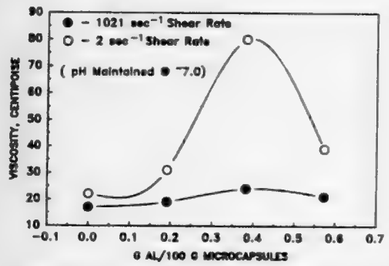
said active agent-containing fine particles of said thermoplastic polymer being of a size and density effective to provide the effect of the active agent to said printing ink when said ink is applied to a substrate.

5,330,566

CAPSULE COATING

Claude T. Copeland, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Filed Feb. 24, 1992, Ser. No. 840,422
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—21 E 1 Claim



1. An improved coating for pressure-sensitive record material of the type comprising an aqueous slurry at a pH greater than 6 of binder and anionic microcapsules containing a color former and a solvent wherein the improvement comprises including in addition in the aqueous slurry an aluminum cation as a cationic metal salt selected from the group consisting of polyaluminum chloride, aluminum chloride, aluminum chlorohydrate and aluminum sulphate in a concentration range of from about 0.15 parts of cation per 100 parts microcapsules to about 3.9 parts of cation per 100 parts microcapsules on a dry-weight basis.

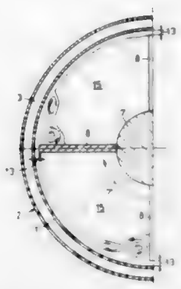
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5,330,567

PROCESS AND ARRANGEMENT FOR PREPARING A SOLUTION OF CELLULOSE

Stefan Zikeli, Regau; Bernd Wolschner; Dieter Eichinger, both of Vöcklabruck; Raimund Jurkovic, Lenzing, and Heinrich Firgo, Vöcklabruck, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Continuation of Ser. No. 739,920, Aug. 8, 1991, abandoned, which is a division of Ser. No. 389,499, Aug. 4, 1989, abandoned.
This application Oct. 28, 1992, Ser. No. 998,774
Claims priority, application Austria, Aug. 16, 1988, A 2036/88
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] C09D *101/02*
U.S. Cl. 106—198 9 Claims



1. A method of preparing a solution of cellulose in aqueous tertiary amine oxide from a suspension of cellulose in an aqueous tertiary amine oxide solution using an apparatus comprising a vertically oriented indirectly heated and evacuatable vessel having a cylindrical internal wall, an inlet means in the upper part of the vessel, an elongated rotatable shaft mounted centrally of the vessel, a spreading means fixed to the shaft adjacent the inlet means, an agitator means fixed to the shaft below the spreading means, and an outlet means at the lower part of the vessel, said method comprising the steps of:

heating the internal wall of said vessel to a temperature of between 50° and 150° C.;

continuously supplying a suspension of cellulose in an aqueous solution of a tertiary amine oxide to the inlet means;

spreading the suspension on said heated internal wall with said spreading means as it is supplied to the inlet means to form a coat or layer on said internal wall;

continuously rotating said shaft to cause said agitator means to move said layer or coat downwardly along said heated inner wall while intensively mixing said suspension;

subjecting the interior of said vessel to a pressure of 0.5 mbar to 1000 mbar to promote evaporation of water from said layer or coat of cellulose suspension as it moves downwardly along said internal wall to concentrate said aqueous tertiary amine oxide solution until said cellulose dissolves; and

continuously discharging the resultant cellulose solution from said outlet means.

5,330,568

LOW SOFTENING POINT HOMOPOLYPROPYLENE WAX

Vernon K. Park; Randal R. Ford, and Robert P. Allen, all of Longview, Tex., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 26, 1992, Ser. No. 966,788
Int. Cl.[5] C08L *91/06*
U.S. Cl. 106—270 20 Claims

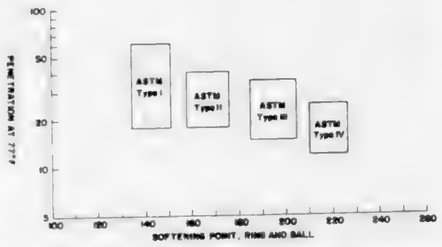
1. A composition comprising a low molecular weight crystalline homopolypropylene wax having a number average molecular weight below 10,000, a ring and ball softening point below about 155° C., a comonomer content of less than 1 mole percent and a melt viscosity of at least 30 cP at 190° C. wherein said low molecular weight crystalline homopolypropylene wax is produced from a high molecular weight crystalline polypropylene homopolymer containing less than one percent comonomer having a number average molecular weight from 20,000 to 500,000 and a flow rate of 0.1 to 800.

5,330,569

INDUSTRIAL ASPHALTS

Edgar L. McGinnis, Moraga, and Judson E. Goodrich, Santa Rosa, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Division of Ser. No. 527,419, May 23, 1990, Pat. No. 5,098,480, which is a continuation-in-part of Ser. No. 488,206, Mar. 5, 1990, abandoned, and a continuation-in-part of Ser. No. 324,473, Mar. 16, 1989, abandoned, said Ser. No. 488,206, continuation of Ser. No. 356,816, is a continuation of Ser. No. 206,541, Jun. 14, 1988, abandoned, which is a continuation of Ser. No. 948,263, Dec. 18, 1986, abandoned, said Ser. No. 324,473, continuation of Ser. No. 147,391, is a continuation of Ser. No. 626,188, Jun. 29, 1984, abandoned. This application Dec. 18, 1991, Ser. No. 809,655
Int. Cl.[5] C08L *95/00*; C09D *195/00*
U.S. Cl. 106—284.1 9 Claims



1. An industrial grade asphalt composition produced by a one-step method from vacuum distilled asphalt which comprises heating at an elevated temperature without air-blowing a mixture comprising:

a. from about 0.5 to 10.0 percent by weight green phosphoric acid, and

b. a bituminous material to make up 100 percent by weight, said bituminous material comprising vacuum distilled asphalt having a viscosity of at least 50 Cst at 350° F. and a softening point in the range 110° to 150° F. and a penetration of 40 to 100 dmm, thereby producing an industrial grade asphalt having a viscosity of less than 2500 at 350° F. and a softening point in the range 200° to 240° F. and a penetration in the range 12 to 40 dmm at 77° F.

5,330,570

PREPARATION AND METHOD FOR COATING GLASS VESSELS

Joachim Giersberg, Marl-Sinsen; Hartmut Gomm, Mühlheim, and Dirk Naumann, Essen-Kupferdreh, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jul. 20, 1992, Ser. No. 917,254
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1991, 4124137
Int. Cl.[5] C03C *17/28*
U.S. Cl. 106—287.19 7 Claims

1. A preparation suitable for coating hot glass vessels to improve the exterior surface of the vessels, said preparation comprising a solution of the compound $(HO)_xSn(C_2O_4)_y$ wherein x has a value of 0.2 to 3.8, y has a value of 1.9 to 0.1 and $(2y+x)=4$, in such an amount that the Sn content of the solution is 0.45 to 4.5 moles/L.

5,330,571

INCLUSION PIGMENTS OF ZIRCONIUM SILICATE WITH INCLUDED CHROMIC OXIDE, A PROCESS FOR THE PREPARATION AND USE THEREOF

Dietrich Speer, Hanau; Akos Kiss, Alzenau-Wasserlos; Peter Kleinschmit, Hanau; Jenny Horst, Gelnhausen, and Christel Zell, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 12, 1992, Ser. No. 847,498
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1991, 4108624
Int. Cl.[5] G08K *3/00*
U.S. Cl. 106—450 11 Claims

1. A brilliant light green inclusion pigment comprising:

zirconium silicate as a casing component and an inorganic oxide having a fine particle size as a discrete, included colored compound, wherein the inorganic oxide is chromic oxide having a D_{50} average particle size value in the range of 0.1 to 3.0 μm, and wherein the pigment has a color value, as measured in the CIE-Lab-system, in the range of L=30 to 35, a=−15 to −17 and b=13 to 16, measured with a 5% by weight coloration in a transparent enamel and by burning or firing at 1060° C.

5,330,572

METHOD OF SLAKING QUICKLIME CONTAINED IN ASH

Jacques Blondin, Cuincy, and Oussama Baalbaki, Villeneuve D'Asco, both of France, assignors to Charbonnages De France (Etablissement Public), Rueil Malmaison Cedex, France

PCT No. PCT/FR91/00027, § 371 Date Jul. 7, 1992, § 102(e) Date Jul. 7, 1992, PCT Pub. No. WO91/10628, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 18, 1991, Ser. No. 867,674
Claims priority, application France, Jan. 19, 1990, 90 00635
Int. Cl.[5] C04B *2/04*
U.S. Cl. 106—705 6 Claims

1. A method of slaking quicklime in fly ash to provide a hydraulically settable mixture, comprising:

(1) wetting the ash at ambient temperature in a first stage with a quicklime slaking stoichiometric excess of cold water to form prehydrated ash such that the quicklime therein is completely wetted but without hydration of compounds in the fly ash other than quicklime and wherein the cold water is up to 20% by weight of the ash; and

(2) contacting the prehydrated ash at a temperature between about 130° C. and 250° C. in a receptacle in a second stage with steam under pressure such that hydration of the quicklime is substantially completed, excess water is eventually vaporized and hardening of the ash is prevented.

5,330,573

MOLDING OF CALCIUM SILICATE HAVING HIGH STRENGTH AND ITS MANUFACTURING METHOD

Masayuki Nakano; Ryozo Kuramoto; Shigeo Otozaki; Katsuaki Kaneko; Hideo Shibasaki, and Noritoshi Tamura, all of Tokyo, Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan

PCT No. PCT/JP91/01069, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO93/02986, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 9, 1991, Ser. No. 39,213
Int. Cl.[5] C04B *2/00, 14/42*
U.S. Cl. 106—796 2 Claims

1. A molding of calcium silicate having high strength comprising calcium silicate hydrate, quartz, tobermorite and a reinforcing material made of glass fiber and pulp, wherein

said molding contains 2–10 wt % of said glass fiber and 2–10 wt % of said pulp,

a Ti/Qi ratio obtained by powder-X-ray diffraction is 0.1–1.0, wherein Ti represents the intensity of the X-ray diffraction of a (002) face of tobermorite crystal, and Qi represents the intensity of the X-ray diffraction of a (101) face of quartz crystal, and

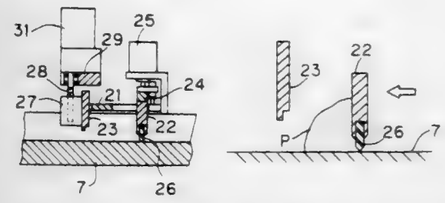
said molding has an absolute bulk density is 0.3–0.7 g/cc.

5,330,574

ELECTRODE FORMING APPARATUS

Tadahiro Nakagawa; Shizuma Tazuke; Mitsuro Hamuro; Hirokazu Higuchi; Katsuyuki Moriyasu, and Akihiko Takahashi, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 31, 1992, Ser. No. 861,129
Claims priority, application Japan, Nov. 8, 1991, 3-321332; Dec. 3, 1991, 3-347938; Feb. 28, 1992, 4-078980
Int. Cl.[5] B05C *3/18, 11/04*
U.S. Cl. 118—120 14 Claims



1. An apparatus for forming a layer of electrode paste on a bottom surface of a dipping vessel for applying electrodes onto ends of chip type electronic components, said apparatus comprising:

a frame;

a dipping vessel on the frame;

a recovery blade mounted on the frame for collecting said electrode paste on the bottom surface of said dipping vessel by moving the paste toward a first end of said dipping vessel;

a levelling blade mounted on the frame for levelling said electrode paste collected at said first end of said dipping vessel, by moving the paste toward a second end of said dipping vessel while forming the paste to have a constant thickness over the bottom surface of said dipping vessel;

driving means for relatively reciprocating said recovery blade and said levelling blade with respect to said dipping vessel for collecting and levelling the paste;

first moving means for moving said recovery blade between a position in contact with the bottom surface of said dipping vessel when collecting the paste and a retracted position when not collecting the paste; and

second moving means for moving said levelling blade between a position spaced from the bottom surface of said dipping vessel by a distance corresponding to said constant thickness when levelling the paste, and a retracted position when not levelling the paste.

4. An apparatus for forming a layer of electrode paste on a bottom surface of a dipping vessel for applying electrodes onto ends of chip type electronic components, said apparatus comprising:

a blade assembly having a recovery blade for collecting the electrode paste on the bottom surface of a dipping vessel and a levelling blade for levelling the collected paste to a constant thickness over the bottom surface of such dipping vessel;

moving means for relatively moving the recovery blade with respect to be in contact with and along the bottom surface to collect the paste, and away from the bottom surface after collecting the paste; and for moving the levelling blade to a position separated from the bottom surface by a predetermined gap corresponding to said constant thickness, and of relatively moving the levelling blade with respect to and along the bottom surface, to

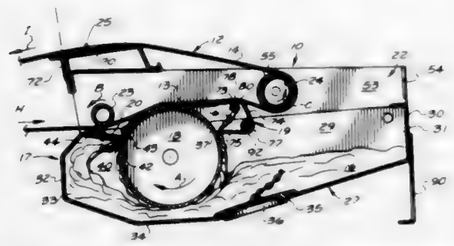
form the layer of electrode paste, and away from the bottom surface after levelling the paste.

5,330,575

METHOD AND APPARATUS FOR APPLICATION OF WALLPAPER PASTER

Robert N. Poole, Phoenix, and Daniel L. Poole, Glendale, both of Ariz., assignors to Blackhawk Metal Products, Inc., Phoenix, Ariz.

Filed Nov. 18, 1992, Ser. No. 978,254
Int. Cl.[5] B05C *1/08*
U.S. Cl. 118—123 **16 Claims**



1. A wallpaper paste applying apparatus for applying paste to a back surface of wallpaper comprising:

a trough having an upstream end and a downstream end;

an applicator roller removably carried by said trough;

an adjustable scraper bar removably carried by said trough upstream of and adjacent to said application roller, said adjustable scraper bar including an elongate member extending between opposing sidewalls of said trough, said elongate member having a scraper portion with a hook shaped cross-section, said scraper portion having an apex extending longitudinally therealong positioned in an upward direction to contact said wallpaper, and a plurality of notches having an adjustable depth formed along said apex, said notches having an upstream edge, and a depth being the vertical distance between said apex and said upstream edge said depth adjustable by tilting said elongate member, thereby positioning said upstream edge to remove a predetermined level of paste from said wallpaper;

drive means for driving said applicator roller;

a lid removably and hingedly coupled to said trough for movement between an open position and a closed position; and

an outfeed roller carried by said lid, positioned upstream of said adjustable scraper bar in the closed position.

12. A wallpaper paste applying apparatus for applying paste to a back surface of wall paper comprising:

a trough having an upstream end, a downstream end, a bottom having a portion sloping downward from said upstream end to a substantially horizontal portion, opposing sidewalls extending upward from said bottom, an upstream endwall extending upward from said bottom at said upstream end, and a downstream endwall extending upward from said bottom at said downstream end;

an applicator roller removably carried by said trough, positioned adjacent said bottom proximate said downstream end; and

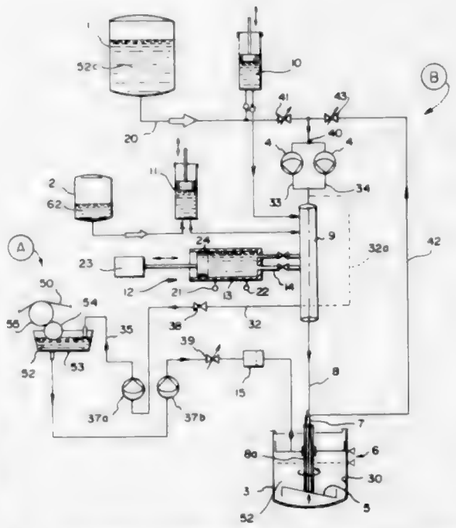
a pressure area downstream of said applicator roller, for receiving build-up of paste during operation, said build-up closing voids formed between said applicator roller and said paste, and contacting said applicator roller, said pressure area is defined by said applicator roller and said downstream endwall, said downstream endwall constructed to closely follow the curve of said applicator roller and having an uppermost portion with an edge angled inward parallel to said applicator roller so as to form a space therebetween.

5,330,576

RECIRCULATING COATING LIQUID SUPPLY SYSTEM WITH VISCOSITY REGULATION

Dieter Clauditz, deceased, late of Augsburg, Fed. Rep. of Germany by Elfrtede Rosa Clauditz, Regina Clauditz, heirs , assignor to Baldwin-Gegenheimer GmbH, Augsburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 692,126, Apr. 26, 1991, abandoned. This application May 4, 1992, Ser. No. 878,446
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 9004745
Int. Cl.[5] B05C *11/00*
U.S. Cl. 118—688 **20 Claims**



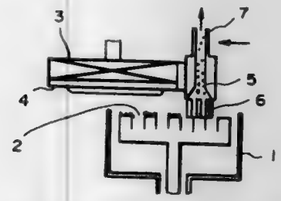
1. A recirculating coating liquid supply system for continuous delivery of a supply of coating liquid to a coating apparatus, the coating liquid comprising a mixture of coating liquid base and coating liquid thinner, the supply system comprising a holding tank for coating liquid mixture, an applicator trough associated with the coating apparatus and conduit means for circulating coating liquid mixture from the holding tank to the applicator trough and from the applicator trough back to the holding tank, the conduit means including a main feed line having an inlet at the holding tank and two branches, a first branch having an outlet at the applicator trough and a second branch having an outlet at the holding tank, the conduit means further including a return feed line having an inlet at the applicator trough and an outlet at the holding tank, a pump positioned in the main feed line, the pump dividing the main feed line into an upstream section and a downstream section, a viscometer, means operatively connecting the viscometer to the main feed line for measurement of the viscosity of coating liquid mixture flowing through the main feed line, a coating liquid base tank for carrying a quantity of coating liquid base, means for infusing a quantity of coating liquid base from the coating liquid base tank into the main feed line for adjustment of the viscosity of coating liquid mixture flowing through the main feed line, a coating liquid thinner supply, and means for infusing a quantity of coating liquid thinner from the coating liquid thinner supply into the main feed line for adjustment of the viscosity of coating liquid mixture flowing through the main feed line.

5,330,577

SEMICONDUCTOR FABRICATION EQUIPMENT

Kazuo Maeda; Kouichi Ohira, and Mitsuo Hirose, all of Tokyo, Japan, assignors to Semiconductor Process Laboratory Co., Inc.; Canon Sales Co., Inc. and Alcan-Tech Co., Inc., all of Japan

PCT No. PCT/JP92/00136, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO92/15115, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 12, 1992, Ser. No. 934,759
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—722 **11 Claims**



1. A semiconductor fabrication apparatus comprising:

wafer holding means for holding a wafer on a wafer mounting surface;

at least one gas dispersing device having a gas releasing surface adapted to release a reaction gas for forming a film on the wafer;

at least one cleaner, fixed to said wafer holder means, having a suction port and a brush connected to said suction port; and

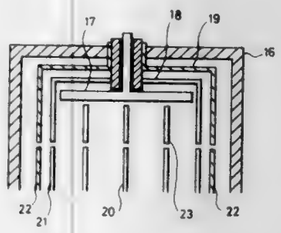
means for moving said cleaner or said gas dispersing device so that said brush contacts and traverses said gas releasing surface.

5,330,578

PLASMA TREATMENT APPARATUS

Mitsunori Sakama; Takeshi Fukada; Mitsuhiro Ichijo, and Hisashi Abe, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 11, 1992, Ser. No. 849,738
Claims priority, application Japan, Mar. 12, 1991, 3-072470; Nov. 22, 1991, 3-333922; Nov. 22, 1991, 3-333923; Nov. 22, 1991, 3-333925
Int. Cl.[5] C23C *16/50, 16/54*
U.S. Cl. 118—723 R **7 Claims**



1. A plasma gaseous reaction apparatus comprising a reaction chamber, a system for supplying reaction gas to said reaction chamber and a exhaust system for discharging unnecessary reaction products, said apparatus being characterized in that in which a pair of facing electrodes disposed in said reaction chamber are covered by shields except of an area in which said electrodes face each other, said shields has a double structure consisted of an inner first shield electrically insulated from said electrodes and an outer second shield which is kept in earth potential, a substrate support for supporting substrates has a structure of surrounding said substrates by a frame except of said area in which said electrodes face, the outside of said substrate support is kept in the earth potential and is covered by a conductor plate electrically insulated from said susceptor and said pair of shields and said substrate support are provided so that plasma generated by electric power supplied from said pair of electrodes is confined in a space surrounded by said pair of shields and said substrate support.

5,330,579

APPARATUS AND METHOD FOR SPENT SOLVENT COLLECTION

J. Carroll Rushing, Greenville, S.C., and Donald E. Stanley, Tyrone, Ga., assignors to EZE Products, Inc., Greer, S.C.

PCT No. PCT/US90/01074, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/12906, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 26, 1990, Ser. No. 923,789
Int. Cl.[5] B08B *13/00*; B64F *5/00*
U.S. Cl. 134—12 **23 Claims**



1. An apparatus for use in the removal of coatings from airplanes, said removal requiring the application of a solvent composition to the surfaces of an airplane for dissolving a coating thereon, said solvent composition having a sufficiently high vapor pressure to be present in both a liquid phase and a gaseous vapor phase at stripping temperatures, said solvent in said vapor phase being lighter than said liquid phase and heavier than air, comprising:

a portable carriage positionable beneath said airplane;

a receptacle having spaced side walls and carried by said carriage, said side walls extending vertically upwardly, said receptacle further defining a receptacle bottom portion, said receptacle receiving spent solvent in both said liquid and said vapor phases after application of said solvent to said airplane surfaces and dissolution of said paint therein, said side walls directing said received spent solvent in both phases to said receptacle bottom portion such that said vapor phase is trapped above said heavier liquid phase by the lighter air thereover; and

an exhaust port located above said receptacle bottom portion for removing said vapor phase.

13. A method for removing paint from airplanes using a solvent for dissolving said paint, said solvent having a sufficiently high vapor pressure to be present in both a liquid and a gaseous vapor phase at stripping temperatures, said solvent in said vapor phase being lighter than said liquid phase and heavier than air, comprising:

providing a plurality of portable solvent receiving receptacles;

positioning said receptacles beneath said airplane;

interconnecting said receptacles at spaced side walls thereof thereby forming a continuous solvent receiving means;

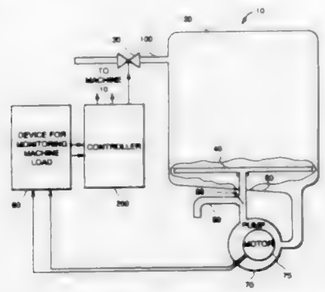
stripping said paint from the surfaces of said airplane by applying said solvent thereto;

receiving spent solvent in both said liquid and said vapor phases in said continuous solvent receiving means;

directing said received spent solvent in both phases to bottom portions defined in said various receptacles such that solvent in said vapor phase is trapped above said heavier

liquid phase by the lighter air thereover at said various bottom portions of said interconnected receptacles; and
removing said vapor phase from said receptacles through exhaust ports located above said receptacle bottom portions.

5,330,580
DISHWASHER INCORPORATING A CLOSED LOOP SYSTEM FOR CONTROLLING MACHINE LOAD
Walter Whipple, III, Amsterdam, N.Y.; David A. Schneider; Gregory O. Miller, both of Louisville, Ky.; Mark E. Dausch, and Vivek V. Badami, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed May 1, 1992, Ser. No. 877,304
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[5] B08B *3/02, 7/04*
U.S. Cl. 134—18 **14 Claims**



1. A dishwasher for cleansing food handling items with a liquid comprising:
a frame for containing food handling items to be cleansed;
means for providing a liquid to said frame;
a circulation pump for distributing said liquid in said frame;
a motor coupled to said pump;
a sensor for detecting power consumption surges in said motor as said frame receives said liquid; and
a controller, responsive to said sensor, for controlling said liquid providing means, said controller comprising a microprocessor incorporating a fuzzy-logic feedback control algorithm adapted to process an elapsed time for distributing said liquid, an amplitude of the power consumption surges and an average slope of the power consumption surges to control said liquid providing means.

5,330,581
USE OF CAUSTIC AND SURFACTANT AS A CLEANER FOR RECYCLED PLASTIC
Allen R. Syrinek, Richmond, Tex., assignor to Nalco Chemical Company, Naperville, Ill.
Filed Aug. 26, 1992, Ser. No. 935,855
Int. Cl.[5] B08B *3/04, 3/08;* **C11D** *7/12, 1/66*
U.S. Cl. 134—22.17 **2 Claims**

1. A method for cleaning plastic objects comprising the steps of:
mixing a stream of liquid surfactant solution and a stream of liquid caustic solution with water, the concentration of said surfactant in the mixture being capable of cleaning the plastic objects and the concentration of said caustic in the mixture being capable of removing glue and labels from the plastic objects; and
contacting the plastic objects with said mixture under conditions suitable to remove glue and labels from the plastic objects and to clean the plastic objects;
monitoring the concentration of said surfactant in said mixture by mixing a sample of said mixture with potassium iodomercurate and determining the absorbance of said sample;
monitoring the concentration of said caustic in said mixture; and
adjusting the flow rates of said liquid surfactant stream and said liquid caustic stream to maintain the concentrations of said surfactant and said caustic in the mixture effective to remove said glue and said labels from said plastic objects

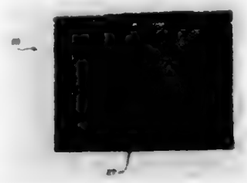
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5,330,582
METHOD FOR CLEANING ROSIN-BASE SOLDER FLUX
Machio Chihara, Nara; Jiro Mizuya, Osaka; Tatsuya Okumura, Osaka, and Takashi Tanaka, Osaka, all of Japan, assignors to Arakawa Chemical Industries, Ltd., Osaka, Japan
Division of Ser. No. 771,886, Oct. 7, 1991, abandoned, which is a continuation of Ser. No. 538,621, Jun. 15, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 92,944
Claims priority, application Japan, Nov. 8, 1989, 1-291905
Int. Cl.[5] C23G *1/00*
U.S. Cl. 134—40 **15 Claims**

1. A cleaning method for removing a rosin-base solder flux, the method comprising bringing a cleaning agent into contact with the flux on a printed wiring board, the cleaning agent consisting essentially of a mixture of
(A) at least one glycol ether compound represented by the formula

$$R^1O-(CH_2CHO)_n-R^2 \quad (1)$$
$$\quad\quad\quad

5,330,587
SHAFT OF LASER NITRIDE-HARDENED SURFACE ON TITANIUM
William J. Gavigan, Nazareth, Pa.; Craig L. Snyder, Glen Gardner; Frank J. Tufano, Skillman, both of N.J., and Ronald S. Miller, Tatamy, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Division of Ser. No. 843,691, Feb. 28, 1992. This application Apr. 1, 1993, Ser. No. 41,078
Int. Cl.[5] C22C *14/00*
U.S. Cl. 148—212 6 Claims



1. A shaft for rotation in a fluid handling device comprising:
(a) a substrate consisting essentially of commercially pure titanium; and
(b) a laser nitride-hardened surface layer thereon, said surface layer comprising a matrix of titanium, with TiN particles dispersed therein, said surface layer having a hardness of at least 52 Rockwell C, and being free from cooling cracks.

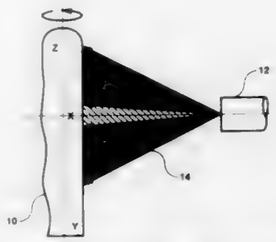
5,330,588
ORGANIC-AQUEOUS COMPOSITION AND PROCESS FOR FORMING CORROSION-RESISTANT COATINGS ON METAL SURFACES
Harold J. Gulley, Cleveland, Ohio, assignor to E2K1 & Associates Inc., Cleveland, Ohio
Filed Feb. 2, 1993, Ser. No. 12,733
Int. Cl.[5] C23C *22/48*
U.S. Cl. 148—271 18 Claims

1. A non-toxic composition for imparting a corrosion resistant film on metallic surfaces, comprising:
a) a first solution having the following ingredients mixed together in the percentages by weight of the total first solution as indicated:
i) 3.33×10^{-5} to 16.6% Carboxymethylmercaptosuccinic acid;
ii) 1.0×10^{-5} to 5% styrene maleic anhydride;
iii) 1.67×10^{-5} to 8.35% $NaHSO_3$;
iv) 0.67×10^{-5} to 3.35% $NaNO_2$;
v) 0.415×10^{-5} to 2.083% HCl;
vi) 0.83×10^{-5} to 4.15% Sodium Dimethyldithiocarbamate;
vii) 2.5×10^{-5} to 12.5% Disulfonated Alkyl Diphenyl Oxide;
viii) 2.67×10^{-5} to 13.35% $NaNO_3$;
ix) Balance H_2O;
b) a second solution having 2.5×10^{-5} to 12.5% by weight Sodium Silicate and the balance H_2);
c) said composition being prepared by adding 0.02% to 0.05% by volume of said first solution to a volume of water and mixing, thereafter adding 0.2% to 0.8% by volume of HNO_3 to said volume of water and mixing, and thereafter adding 2% and 4% by volume of said second solution in said volume of water and mixing, whereby said composition is formed.

5,330,589
HAFNIUM ALLOYS AS NEUTRON ABSORBERS
Boching Cheng, Cupertino, and Rosa L. Yang, Los Altos, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.
Filed May 25, 1993, Ser. No. 67,325
Int. Cl.[5] C22C *27/00*
U.S. Cl. 148—421 8 Claims

1. A hafnium alloy consisting of 0.1–1.5% Sn by weight, 0.03–0.2% O by weight, 0.01–0.15% Fe by weight, 0.01–0.15% Cr by weight, less than 0.10% Ni by weight, 0.02–2.0% Zr by weight, the balance being Hf and impurities.

5,330,590
HIGH TEMPERATURE CREEP AND OXIDATION RESISTANT CHROMIUM SILICIDE MATRIX ALLOY CONTAINING MOLYBDENUM
Sai V. Raj, Strongsville, Ohio, assignor to The United States of America, as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.
Filed May 26, 1993, Ser. No. 67,184
Int. Cl.[5] C22C *29/18*
U.S. Cl. 148—423 6 Claims



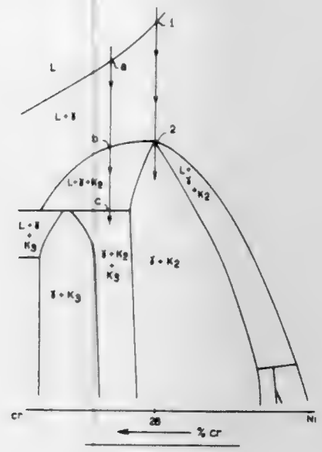
4. A method of improving the high temperature creep strength and oxidation resistance of a Cr_3Si alloy comprising alloying about 50 wt % molybdenum with said alloy to produce a two-phase microstructure of $(Cr,Mo)_3Si$ and $(Cr,Mo)_5Si_3$ so that Cr_2O_3 is formed below about 1200° C. and SiO_3 is formed above about 1200° C.

5,330,591
ALLOY FOR GLASS FIBRE CENTRIFUGES
Stella Vasseur, Nancy, France, assignor to Isover Saint-Gobain, Courbevoie, France
Filed Apr. 6, 1992, Ser. No. 864,339
Claims priority, application France, Apr. 25, 1991, 91 05097
Int. Cl.[5] C22C *19/05*
U.S. Cl. 148—427 8 Claims

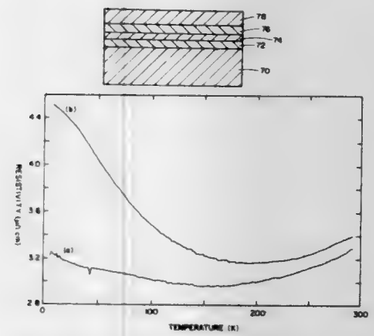
1. A glass fibre centrifuge as cast from a nickel-based alloy consisting essentially of the following elements expressed in percentage by weight:

Cr	27.5–29.5%
W	6.5–7.8%
C	0.69–0.73%
Fe	7–10%

the remainder substantially being nickel and having in its crystalline structure fine $M_{24}C_6$ carbides distributed homogeneously in the alloy matrix, M being chromium, at least one equivalent metal, or combinations thereof, the $M_{23}C_6$ carbides being substantially secondary carbides formed from the cast alloy comprising M_7C_3 primary carbides.

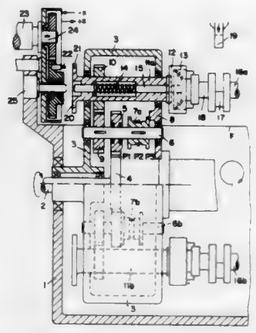


5,330,592
PROCESS OF DEPOSITION AND SOLID STATE REACTION FOR MAKING ALLOYED HIGHLY CONDUCTIVE COPPER GERMANIDE
Mohamed O. Aboelfotoh, Poughkeepsie; Michael J. Brady, Brewster, and Lia Krusin-Elbaum, Dobbs Ferry, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 21,146, Feb. 23, 1993, Pat. No. 5,288,456. This application Nov. 8, 1993, Ser. No. 148,593
Int. Cl.[5] C22C *9/00*
U.S. Cl. 148—536 14 Claims



1. A method for preparing a highly oxidation resistant compound comprising the steps of:
(a) providing a semiconductor substrate having a Ge layer deposited thereon;
(b) depositing a layer of material on said substrate, said material being selected from the group consisting of Ga, Au and mixtures of Ga and Au;
(c) depositing a layer of Cu on said material layer; and
(d) annealing said substrate and material layers at a temperature in the range from about 150° C. to about 500° C. for a period of about 15 minutes to about 3 hours to produce a stoichiometric Cu_3Ge compound containing said material.

5,330,593
PROCESS AND APPARATUS FOR THE INDUCTIVE HARDENING OF ELONGATE WORKPIECES
Edgar Stengel, Remscheid, Fed. Rep. of Germany, assignor to AEG-Elotherm GmbH, Remscheid-Hasten, Fed. Rep. of Germany
Filed Nov. 12, 1992, Ser. No. 975,418
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1991, 4140747; Oct. 6, 1992, 4233530
Int. Cl.[5] C21D *1/10*
U.S. Cl. 148—572 13 Claims



1. An apparatus for induction hardening of elongate workpieces, comprising a rotary ring having a plurality of retaining devices, each of said retaining devices retaining one of said workpieces horizontally and rotatably about a longitudinal axis, a drive unit for rotatably driving said retaining devices, a drive shaft coupled to said drive unit, and a three-position adjustable clutch-brake unit associated with each of said retaining devices, each adjustable clutch-brake unit being disposed between its associated retaining device and said drive shaft, each adjustable clutch-brake unit having a first position wherein the associated retaining device is driven by said drive shaft, a second position wherein the associated retaining device is uncoupled from said drive shaft and is freely rotatable, and a third position wherein the associated retaining device is braked against a fixed stop on said rotary ring.

5,330,594
METHOD OF MAKING COLD FORMED HIGH-STRENGTH STEEL PARTS
Hugh M. Gallagher, Jr., Cincinnati, Ohio, assignor to Consolidated Metal Products, Inc., Cincinnati, Ohio
Continuation-in-part of Ser. No. 848,646, Mar. 9, 1992, Pat. No. 5,236,520, which is a continuation-in-part of Ser. No. 602,675, Oct. 24, 1990, Pat. No. 5,094,698. This application Dec. 17, 1992, Ser. No. 992,123
Int. Cl.[5] C21D *7/02*
U.S. Cl. 148—651 11 Claims

1. A method of making a high-strength steel part selected from the group of parts consisting of various types of bolts, screws, axles and cam shafts, comprising the steps of:
providing a blank of high-strength steel material having a ferrite-pearlite microstructure and a tensile strength of at least about 120,000 psi and a yield strength of at least about 90,000 psi that comprises by weight:
carbon: about 0.30 to about 0.65%,
manganese: about 0.30 to about 2.5%,
at least one element from the group consisting of aluminum, niobium, titanium and vanadium, and mixtures thereof, in an effective amount for grain refining up to about 0.35%,
iron: balance; and
cold forming said blank by upsetting, forging or extrusion to provide a part selected from the group of parts consisting

of various types of bolts, screws, axles and cam shafts, whereby the mechanical properties of tensile strength and yield strength of said part are substantially the same or greater than said blank

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5,330,595

PROCESS OF MAKING RESIN-IMPREGNATED MATERIAL WEBS

Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Sep. 3, 1992, Ser. No. 940,122

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1991, 4129190

Int. Cl.[5] **B29C** *47/06, 47/34, 47/92;* **B32B** *31/30*

U.S. Cl. 156—64 **28 Claims**



1. A process for the continuous fabrication of resin impregnated material webs, comprising the steps of:

winding off a substantially resin-free material web from a first roll means;

providing a low-solvent or solvent-free solid resin in the form of flakes or powder, wherein said resin is heat treatable and can be cured by heat, chemical reactions or cooling;

extruding a film from the resin;

joining the extruded film with the substantially resin-free material web to form a layer formation; and

subjecting the layer formation to heat and area pressure.

2. A process for the continuous fabrication of resin impregnated material webs, comprising the steps of

winding off a substantially resin free material web from a first roll means;

providing a low-solvent or solvent-free solid resin in the form of flakes or powder, wherein said resin is heat-treatable and can be cured by heat, chemical reactions or cooling;

spreading the resin on the substantially resin-free material web; and

subjecting the resin-covered material web to heat and area pressure.

5,330,596

RECYCLING OF BARRIER POLYSTYRENE FOAM SCRAP AND BARRIER POLYSTYRENE FOAM CONTAINING RECYCLED BARRIER POLYSTYRENE FOAM SCRAP

Gerald G. Gusavage, 420 Trena Ave., Lancaster, Pa. 17601; Thomas A. Hessen, 641 Ridgeview Dr., Eprata, Pa. 17522; Thomas R. Hardy, 1018 N. 12th St., Lebanon, Pa. 17042; Henry G. Schirmer, 156 Edgecombe Rd., and Susan R. Flye, 807 Palmetto St., both of Spartanburg, S.C. 29302

Continuation-in-part of Ser. No. 590,892, Oct. 1, 1990, Pat. No. 5,118,561. This application May 13, 1992, Ser. No. 882,216

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] **B32B** *3/26*

U.S. Cl. 156—78 **3 Claims**

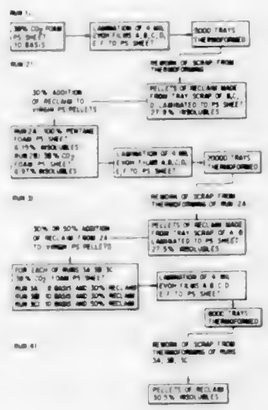
1. A method to recycle thermoformable barrier sheet comprising:

(a) extruding and foaming polymer pellets thereby making a first sheet of foamed polymer having two opposing surfaces;

(b) laminating onto at least one said surface of said first foamed sheet a flexible barrier film, said flexible barrier film having a barrier layer containing a barrier polymer selected from ethylene vinyl alcohol copolymer, acrylonitrile copolymer, amorphous nylon copolymer, or mixtures thereof, and a bonding layer, whereby the bonding layer is adhered to the one said surface of said foamed polymer sheet thereby making a laminate;

(c) thermoforming the resultant laminate where steps (b) and (c) generate scrap of laminate;

(d) making reclaim pellets by grinding and pelletizing the scrap;



(e) extruding and foaming more of said polymer pellets together with from about 0.001% up to about 100% by weight of the reclaim pellets of scrap, thereby making a second sheet of foamed polymer having two opposing surfaces; and

(f) laminating onto at least one said surface of said second foamed sheet a flexible barrier film;

whereby said second foamed sheet contains on a weight basis from about 0.0001% up to about 30% flexible barrier film and wherein said foaming steps comprise injecting 100% carbon dioxide as a blowing agent.

5,330,597

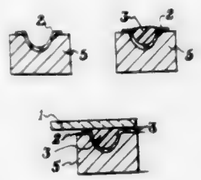
PROCESS FOR THE PREPARATION OF A VEHICLE WINDOW

William E. Leuchten, Mountain Lakes, N.J., and Henry W. Griffin, Bloomfield Hills, Mich., assignors to Essex Specialty Products, Inc., Clifton, N.J.

Filed Aug. 18, 1992, Ser. No. 931,733

Int. Cl.[5] **B60J** *10/02*

U.S. Cl. 156—108 **6 Claims**



1. A process for preparing a prefabricated vehicle window comprising the sequential steps of:

(a) placing a cover film in a receptacle to provide a film cavity, with a portion of the cover film extending over the sides of the receptacle, wherein the cavity is of a dimension sufficient to hold a bead of adhesive which would extend around the entire periphery of the window;

(b) depositing a bead of an uncured, deformable bead of adhesive in the cavity in an amount sufficient to slightly overfill the cavity; and

(c) contacting the bead of adhesive with a vehicle window under conditions sufficient to press adhesive out of the cavity and between the vehicle window and the portions of the cover film extending over the sides of the receptacle in an amount sufficient to bond the film to the entire periphery of the window along the inboard and outboard edges of the bead of adhesive.

5,330,598

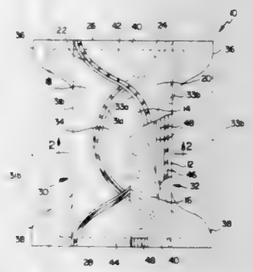
METHOD OF MANUFACTURING AN ABSORBENT GARMENT WITH TARGET REGION AND END CAPS

Edward P. Erdman, Renton, and Heinz Pieniak, Des Moines, both of Wash., assignors to Paragon Trade Brands, Inc., Federal Way, Wash.

Filed Aug. 14, 1992, Ser. No. 929,812

Int. Cl.[5] **A61F** *13/15;* **B32B** *31/08*

U.S. Cl. 156—164 **11 Claims**



1. A method of producing overlay strips for absorbent garments, the method comprising:

providing a sheet of nonwoven material having first and second side edges and of a length which is equal to the length of multiple garments;

positioning stretchable material in a repetitive pattern on the sheet, said pattern having a pitch substantially equal to the length of the garment, said pattern alternately approaching the first side edge of the sheet and then the second side edge of the sheet; and

severing the sheet along said pattern to form two continuous strips with stretchable material extending substantially continuously along the longitudinal severed edge of each strip, each strip having alternating wide and narrow portions.

5,330,599

GRID STRUCTURES

Tak Aochi, Morgan Hill, and Robert J. Pyle, Campbell, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Dec. 19, 1988, Ser. No. 286,120

Int. Cl.[5] **B31C** *3/00*

U.S. Cl. 156—173 **9 Claims**

1. A method of fabricating a grid structure of desired configuration from a composite material substantially consisting of filamentary material embedded in a matrix, said method comprising the steps of:

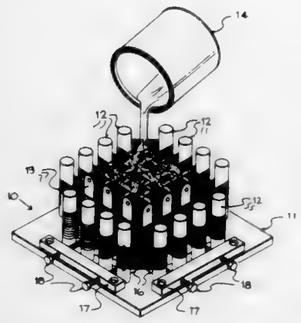
a) arranging filamentary material according to a predetermined pattern to define interstices for said grid structure;

b) covering each one of a plurality of mandrels individually with filamentary material consisting of fibrous filament, said mandrels conforming in cross-sectional configuration to said interstices defined by said pattern, said fibrous filaments being arranged on said mandrels so as to extend predominantly transversely with respect to said filamentary material arranged to define said interstices when said mandrels are inserted into said interstices;

c) inserting said mandrels covered with said fibrous filaments into corresponding interstices defined by said pattern;

d) causing said filamentary material arranged to define said interstices and said filamentary material covering said mandrels to be impregnated with a matrix material;

e) applying compressional forces to said filamentary material impregnated with said matrix material between adjacent



mandrels, said compressional forces being substantially entirely perpendicular to said fibrous filaments of said filamentary material covering said mandrels when said mandrels have been inserted into said corresponding interstices;

f) curing said matrix material that has impregnated said filamentary material, thereby forming an integral structure made of said composite material consisting of said filamentary material embedded in said matrix; and

g) removing said mandrels from said interstices.

5,330,600

METHOD OF MODIFYING CORRUGATED OR RIBBED PIPE TO HAVE A SMOOTH OUTER WALL

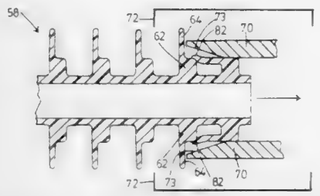
Manfred A. A. Lupke, Thornhill, Canada, assignor to Corma Inc., Ontario, Canada

Filed Nov. 17, 1992, Ser. No. 977,762

Claims priority, application Canada, Nov. 22, 1991, 2,056,060

Int. Cl.[5] **B32B** *31/20*

U.S. Cl. 156—242 **13 Claims**

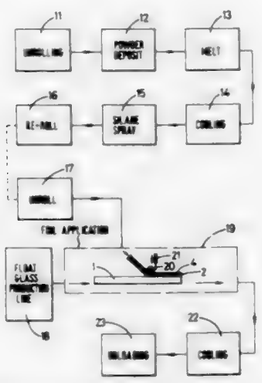


1. A method for modifying profile pipe to form double-walled thermoplastic pipe having a substantially smooth outer surface and a substantially smooth inner surface comprising passing a heated softened profiled pipe having a smooth inner surface and a profiled outer surface having a projecting profile of diameter greater than a desired outer diameter of pipe to be formed past means for deforming the profile to correspond to the desired outer diameter of modified pipe to be formed, the profiled pipe being heated sufficiently for molding the profile to form a smooth pipe outer surface corresponding to the diameter of the sleeve.

5,330,601
SURFACE MODIFICATION OF ELASTOMERS FOR BONDING
Peter Gottschalk, Maplewood, Minn., assignor to H.B. Fuller Licensing & Financing, Inc., Minneapolis, Minn.
Filed May 20, 1993, Ser. No. 64,964
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—281 **23 Claims**

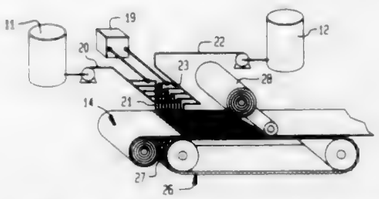
1. A method of bonding substrates together wherein at least one of the substrates is of a rubber material based on diene monomers and is pretreated before bonding, the pretreatment comprising:
providing an aqueous solution of monopersulfate compound ($2KHSO_5.KHSO_4.K_2SO_4$);
applying the solution to the surface to be treated for a period of time, and
subsequently substantially removing the solution from the surface; and subsequently
bonding by applying adhesive to at least one of the substrate surfaces to be bonded and pressing them together for a period of time for adhesion.

5,330,602
MANUFACTURE OF ARTICLES THAT INCLUDE THERMOSETTING POWDER COATINGS
Roger J. Leach, Chardai, St George's Hill, Byfleet Road, Cobham, Surrey KT11-1EA, England
PCT No. PCT/GB90/01286, § 371 Date Feb. 14, 1992, § 102(e) Date Feb. 14, 1992, PCT Pub. No. WO91/02648, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 14, 1990, Ser. No. 834,563
Claims priority, application United Kingdom, Aug. 15, 1989, 8918637.3
Int. Cl.[5] B32B *31/00*; **C09J** *5/02*
U.S. Cl. 156—283 **4 Claims**



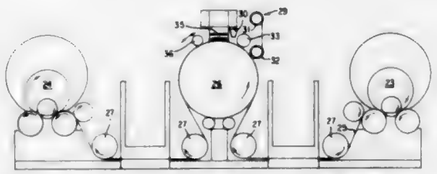
1. In a method of manufacturing an article that comprises a component and cured thermosetting powder material bonded to said component, the method comprising a first step of heating thermosetting organic powder to fuse it into a layer on a backing member, and a second step of forming a bond between the fused-powder layer and said component by maintaining contact between the fused-powder layer and said component while the powder is melted and until the powder is cured, the improvement wherein the first and second steps are carried out as discretely separate steps with an interval of time between them, and the fused-powder layer on the backing member is cooled following said first step and before said second step to retard curing of the fused-powder layer in said interval.

5,330,603
CONTINUOUS STRUCTURE FORMING METHOD
LeRoy Payne, 3300 Nicholas La., Molt, Mont. 59057
Continuation-in-part of Ser. No. 753,344, Aug. 30, 1991, Pat. No. 5,145,282, which is a continuation-in-part of Ser. No. 521,442, May 10, 1990, Pat. No. 5,049,006, which is a continuation-in-part of Ser. No. 417,501, Oct. 5, 1989, Pat. No. 4,955,760, which is a continuation-in-part of Ser. No. 235,205, Aug. 23, 1988, Pat. No. 4,872,789. This application Apr. 20, 1992, Ser. No. 870,927
Int. Cl.[5] C09J *7/02, 5/04*
U.S. Cl. 156—295 **17 Claims**



1. A method of forming a continuous structure including the steps of preselecting a plurality of reactive resin forming materials, applying a first of said resin forming materials over a supporting surface in a first preselected pattern including a plurality of independent sections, applying a second of said reactive resin forming materials different from said first reactive resin forming materials over a supporting surface in a second preselected pattern including a plurality of independent sections spaced from said independent sections of said first pattern, sealing said independent sections of said first pattern from said independent sections of said second pattern, transporting said first and second patterns and a porous blanket to a job site, intermixing said different reactive resin forming materials in said respective patterns while in contact with said blanket, forming a liquid resin mixture over said blanket, positioning said blanket in a preselected configuration while said blanket is deformable and adhesive, and setting said blanket in said configuration.

5,330,604
EDGE JOINTING OF FABRICS
Andrew Allum, Darwen; John Jeffery, Blackburn; Ian C. Sayers, Ribchester, and Michael D. Spence, Blackburn, all of United Kingdom, assignors to Scapa Group PLC, Lancashire, England
Filed Apr. 1, 1992, Ser. No. 861,592
Claims priority, application United Kingdom, Apr. 5, 1991, 9107149
Int. Cl.[5] B29C *65/00*; **B32B** *31/26*
U.S. Cl. 156—304.7 **8 Claims**



1. A method of manufacturing a papermakers fabric comprising the steps of supporting a plurality of apertured fabric bands in closely spaced side-by-side disposition with the apertures in the edge region of one band arranged in alignment with and at appropriate centers with respect to those of the other band, providing a pinned support body bridging the space between the edges of the respective adjacent bands, the

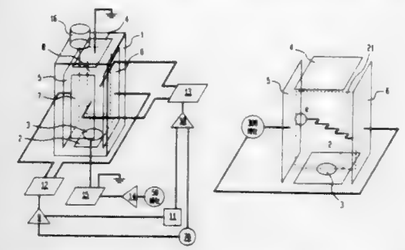
said support body having a profile corresponding to that of the apertured fabric, feeding a plurality of side-by-side yarns and polymeric matrix material to the support body, applying heat to the said space and the adjacent regions of the band edges to melt the matrix material and to bring the matrix material into intimate contact with the edges of the respective adjacent bands, the side-by-side yarns and the pinned support body, and cooling the matrix material.

5,330,605
METHOD FOR PRODUCTION OF A COPOLYESTER RESIN FILM LAMINATED METAL SHEET
Atsuo Tanaka; Tetsuhiro Hanabusa, both of Tokuyama; Harunori Kojo, Yamaguchi, and Tsuneo Inui, Tokuyama, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 494,634, Mar. 16, 1990, abandoned. This application Feb. 19, 1992, Ser. No. 839,726
Int. Cl.[5] B32B *31/08, 31/20, 31/26*
U.S. Cl. 156—309.9 **5 Claims**

1. A method for producing a metal sheet or strip laminated with a biaxially oriented copolyester resin film comprising essentially of the steps of
heating a metal sheet or strip having both sides covered with a double layer consisting of a lower layer of metallic chromium and an upper layer of hydrated chromium oxide to a temperature of Tm-50° C. to Tm-4° C. and
laminating a 5–50 μm thick biaxially oriented copolyester resin film having a melting temperature of T_m, a density of 1.3500 to 1.4100 g/cc, and a planar orientation coefficient of 0.0668–0.1510 directly onto both sides of said covered metal sheet or strip with laminating rolls having a surface temperature of Tm-150° to Tm-10° C., and
wherein Tm is 200° C.–250° C. and wherein the copolyester resin consists essentially of 75 to 99 mol % of polyethylene terephthalate and 1 to 25 mole % of a polyester resin which is produced by the esterification of at least one saturated polycarboxylic acid selected from the group consisting of phthalic acid, isophthalic acid, terephthalic acid, succinic acid, azelaic acid, adipic acid, sebacic acid, diphenylcarboxylic acid, 2,6-naphthalene dicarboxylic acid, 1,4-cyclohexane dicarboxylic acid and trimellitic acid anhydride with at least one saturated polyalcohol selected from the group consisting of ethylene glycol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, propylene glycol, polytetramethylene glycol, trimethylene glycol, triethylene glycol, neopentyl glycol, 1,4-cyclohexane dimethanol, trimethylol propane and pentaerythritol.

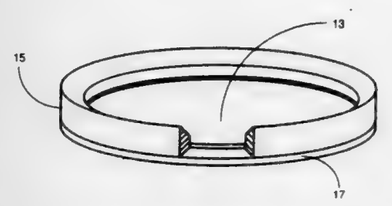
5,330,606
PLASMA SOURCE FOR ETCHING
Masafumi Kubota, Osaka; Noboru Nomura, Kyoto, and Tokuhiko Tamaki, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 10, 1991, Ser. No. 805,864
Claims priority, application Japan, Dec. 14, 1990, 2-402319; Feb. 25, 1991, 3-30019
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **11 Claims**

1. An apparatus for generating plasma comprising:
a plasma chamber;
a pair of electrodes for generating plasma in said plasma chamber;
first power supply means for applying a first high-frequency power to said pair of electrodes, to produce an oscillation electric field in a space formed by said pair of electrodes;
a holder for holding at least one wafer, said holder disposed in said plasma chamber and provided outside said space formed by said electrodes, said holder having a holding face which faces said space, said holding face being substantially parallel to the direction of said oscillation electric field; and
second power supply means for applying a second high-frequency power to said holder, to supply said holder with a bias voltage,
wherein the period of said first high-frequency power is



shorter than the period of said second high-frequency power, and is shorter than the time required for electrons contained in said plasma to travel between said pair of electrodes.

5,330,607
SACRIFICIAL METAL ETCHBACK SYSTEM
Ronald S. Nowicki, Sunnyvale, Calif., assignor to Genus, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 601,508, Oct. 23, 1990, abandoned. This application Aug. 27, 1992, Ser. No. 938,303
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **9 Claims**



1. An apparatus for etchback processing after via fill in integrated circuit manufacturing comprising:
a base member for supporting a substrate during processing, the substrate having a surface to be etched comprising at lest two materials, one of which is a metal that comprises less of the surface area of the substrate than the other materials, and the others of which are nonmetals;
a sacrificial metal structure supported by the base member and having a central opening of the shape of the periphery of the substrate, providing a nesting recess wherein the substrate may be placed and removed; and
plasma generation apparatus for creating a plasma over the substrate and the sacrificial metal structure;
wherein the sacrificial metal structure has a surface exposed to plasma consisting substantially of a refractory metal from Group VI of the periodic table.

5,330,608

APPARATUS FOR WRAPPING FLEXIBLE, ELONGATE OBJECTS

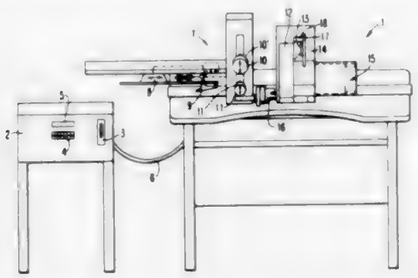
Heinrich Kemmler, Hauneck, and Heinrich Will, Haunetal, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 699,460, May 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 294,608, Nov. 30, 1988, abandoned. This application Jun. 21, 1993, Ser. No. 80,563

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1987, 3710938

Int. Cl.[5] **B32B** *31/00*; **G05G** *1/00*

U.S. Cl. 156—361 **11 Claims**



1. An apparatus for wrapping up flexible elongate objects comprising a wrapping wheel arranged coaxially to a longitudinal axis of the objects and having a tape spool support movable therewith, drive means with a roller drive for advancing the objects and arranged at one side of the wrapping wheel, the drive means also including a carriage movable parallel to an axis of rotation of the wrapping wheel and to the longitudinal axis of the objects, respectively, and including a holding device on the wrapping wheel side of said carriage for holding an end of an object for pulling the object through the wrapping wheel, the drive means further including two vertically displaceable rolls which for a start of the wrapping are positioned relative to one another so far that the holding device is movable between the rolls to the wrapping wheel, said rolls being arranged vertically one above the other and oriented with their axes of rotation transversely relative to the longitudinal axis of the objects, and an electric program control for controlling a drive length wherein one roll is provided with a length detecting means and the other roll is driven from an external power source, the operation of said drive rolls being synchronized with said carriage movement so that when said carriage has advanced a predetermined distance, said holding device is disengaged from said object and said rolls are moved together to engage and further advance said object through said wrapping wheel.

5,330,609

PRESSING ROLL FOR A TIRE BUILDING MACHINE

Hans Dreyer, Hamburg, and Werner Wedekind, Salzhausen, both of Fed. Rep. of Germany, assignors to Krupp Maschinentechnik Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jun. 22, 1993, Ser. No. 79,779

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1992, 4220490

Int. Cl.[5] **B29D** *30/28*

U.S. Cl. 156—421 **6 Claims**

1. A pressing roll for a tire building machine, comprising

(a) a shaft having a longitudinal axis, a substantially rectangular cross-sectional outline, opposite top and bottom sides and opposite lateral sides; said lateral sides having a length extending perpendicularly to said longitudinal axis;

(b) a plurality of discs inserted on said shaft in an axial series; each said disc having an inner part, an annular outer part circumferentially surrounding said inner part and a ball bearing positioned between said inner and outer parts; said outer part being rotatable relative to said inner part; said inner part of each said disc including a substantially rectangular aperture having opposite top and bottom sides and two opposite lateral sides; said lateral sides having a length extending perpendicularly to said longitudinal axis; said shaft passing through said aperture; said length of said opposite lateral sides of said aperture being greater than said length of said opposite sides of said shaft; said opposite lateral sides of said aperture being slidable on said opposite sides of said shaft; said apertures forming part of said mounting means;

(c) mounting means for providing for an individual displaceability of each said disc perpendicularly to said longitudinal axis;



(d) force-exerting power means for displacing said discs relative to said shaft;

(e) a cavity extending along said longitudinal axis and being defined by the apertures of the serially-arranged discs;

(f) a top displacement chamber forming a part of said cavity and bounded by said top side of said shaft and said top side of the aperture of each said disc;

(g) a bottom displacement chamber forming part of said cavity and bounded by said bottom side of said shaft and said bottom side of the aperture of each said disc;

(h) top and bottom displacement hoses disposed in said top and bottom displacement chambers, respectively; and

(i) pressurizing means for inflating said top and bottom displacement hoses by a pressurized fluid for displacing said discs relative to said shaft; said top and bottom displacement hoses and said pressurizing means forming said force-exerting power means.

5,330,610

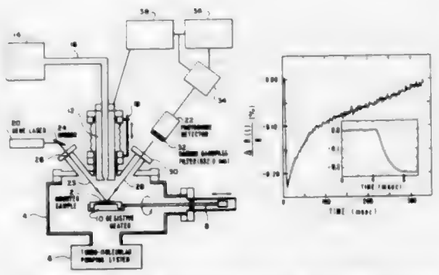
METHOD OF DIGITAL EPILAXY BY EXTERNALLY CONTROLLED CLOSED-LOOP FEEDBACK

Djula Eres, and Jeffrey W. Sharp, both of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed May 28, 1993, Ser. No. 68,027

Int. Cl.[5] **C30B** *25/02*

U.S. Cl. 117—86 **13 Claims**



1. A method for the formation of thin film materials, comprising the steps of:

(a) delivering a pulse of gaseous material to a growth surface of a substrate to form an adsorption layer of said gaseous material on said growth surface;

(b) monitoring available active sites on said growth surface and controlling the delivery of said gaseous material according to the availability of active sites on said growth surface;

(c) growing an epitaxial layer on said growth surface.

5,330,611

CUBIC BORON NITRIDE CARBIDE FILMS

Gary L. Doll, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 446,758, Dec. 6, 1989, Pat. No. 5,139,391, and a continuation-in-part of Ser. No. 670,823, Mar. 18, 1991, abandoned. This application Jul. 7, 1992, Ser. No. 909,917

Int. Cl.[5] **C30B** *29/36*

U.S. Cl. 117—105 **19 Claims**

1. A method for forming thin films of cubic boron nitride carbide comprising the following steps:

providing a substrate comprising silicon;

providing a target of hexagonal boron nitride which has been diluted with carbon, said target being disposed in proximity with said silicon substrate;

inducing vaporization of said target using a pulsed excimer laser operating at parameters sufficient to dissociate and vaporize said target, such that the vaporized material deposits onto a surface of said substrate to form a thin film of cubic boron nitride carbide on said surface and so that said film is electrically insulating and wherein said cubic boron nitride carbide includes a portion having the formula $(BN)_{1-x}C_x$ where $0.1<x<1$.

5,330,612

METHOD OF FABRICATING NANO-SIZE THIN WIRES AND DEVICES MADE OF SUCH THIN WIRES

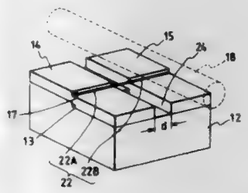
Masao Watanabe, Sapporo, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,974

Claims priority, application Japan, Oct. 2, 1991, 3-255088

Int. Cl.[5] **C30B** *23/00*

U.S. Cl. 117—86 **4 Claims**



1. A nano-size thin wire making method, comprising the steps of:

a) providing a single-crystal substrate having a cleavage plane with at least one cleavage-plane step line formed therein by cleaving an ionic single crystal;

b) evaporating a metal onto said cleavage plane in a vacuum chamber, with a mask wire disposed at a distance from said cleavage plane and extended in a direction intersecting the cleavage-plane step line;

c) forming a pair of metal thin film electrodes, which have marginal edges facing each other across a gap corresponding to the mask wire and each having, on its surface, a surface step line corresponding to the cleavage-plane step line, on the cleavage plane; and

d) evaporating a semiconductive or conductive material onto the pair of metal thin film electrodes to grow nano-size thin wires from the surface step lines on the pair of metal thin film electrodes so that the thin wires are connected to each other at their tips above the gap.

5,330,613

ELECTRIC CONNECTION METHOD

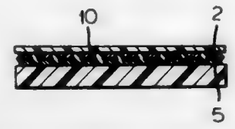
François Lambert, 3 Rue Marcel Doret, 78140 Velizy, France

Filed Mar. 27, 1992, Ser. No. 859,326

Claims priority, application France, Mar. 28, 1991, 91 04210

Int. Cl.[5] **B44C** *1/22*; **B29C** *37/00*

U.S. Cl. 156—630 **8 Claims**



1. A method of making an electrical connection, comprising the steps of:

(a) forming in a pattern a plurality of electrically conductive elements on a first piece adapted to form one another of the electrical connection;

(b) forming in said pattern another plurality of electrically conductive elements on a second piece adapted to form a second member of said electrical connection;

(c) applying over said pattern of the elements of said first piece a duroplastic resin hardening and becoming electrically conductive upon heating;

(d) heating the electrically conductive elements of said second piece; and

(e) placing the second piece against said resin with the heated electrically conductive elements of said second piece in juxtaposition with the electrically conductive elements of said first piece, thereby bonding said electrically conductive elements of said pieces together with hardened portions of the resin between the elements of the pieces rendered electrically conductive by heat from said elements of said second piece.

5,330,614

MANUFACTURING METHOD OF A CAPACITOR HAVING A STORAGE ELECTRODE WHOSE SIDEWALL IS POSITIVELY INCLINED WITH RESPECT TO THE HORIZONTAL SURFACE

Ji-hong Ahn, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 22, 1992, Ser. No. 917,182

Claims priority, application Rep. of Korea, Aug. 31, 1991, 91-15250; Nov. 30, 1991, 91-21974; Feb. 29, 1992, 92-3339

Int. Cl.[5] **H01L** *21/306*

U.S. Cl. 156—631 **33 Claims**

1. A method for manufacturing a semiconductor memory device including a process for manufacturing a capacitor comprising the steps of:

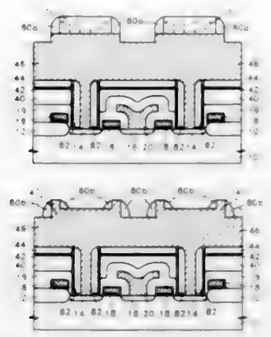
forming a first conductive layer on a semiconductor substrate;

forming a first pattern composed of a 1st first-material layer on said first conductive layer;

etching said first conductive layer, using said first pattern composed of said 1st first-material layer as an etch-mask;

removing said first pattern composed of said 1st first-material layer;

forming a first sidewall spacer composed of 1st second-material layer on the resultant structure; and



etching the material layer under said first sidewall spacer, using said first sidewall spacer as an etch-mask.

5,330,615

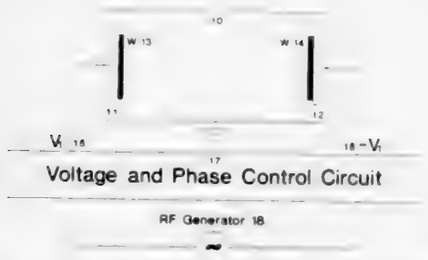
SYMMETRIC DOUBLE WATER PLASMA ETCHING SYSTEM

Cheng Chu, 5373 Bothe Ave., San Diego, Calif. 92122

Filed Nov. 4, 1991, Ser. No. 787,076

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 **1 Claim**



1. A method for symmetrically plasma etching two semiconductor wafers comprising the steps of:

symmetrically placing two wafers on two planar electrodes in an etching chamber maintaining at a chamber reference voltage;

injecting an etching gas into said etching chamber; and

applying an RF voltage to said two electrodes to provide to said two electrodes two corresponding symmetrical 180 degree out-of-phase voltages of substantially equal magnitude relative to said chamber reference voltage whereby said etching gas is ionized and said etching method produce a minimal stray electrical discharge.

5,330,616

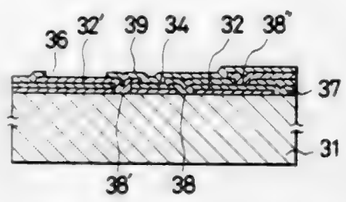
ELECTRIC DEVICE PROVIDED WITH CARBON PATTERN STRUCTURE AND MANUFACTURING METHOD FOR THE SAME

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 631,758, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 301,136, Jan. 25, 1989, abandoned. This application Oct. 23, 1992, Ser. No. 965,434

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 **27 Claims**



1. A method of producing patterns mainly made of carbon comprising:

forming an amorphous or diamond-like carbon film having SP^3 carbon bonds on a substrate;

covering said carbon film with a mask made of a material resistant to an oxygen containing etchant in accordance with a prescribed pattern; and

carrying out a chemical vapor etching reaction by virtue of an electric power using said oxygen containing etchant.

5,330,617

METHOD FOR ETCHING INTEGRATED-CIRCUIT LAYERS TO A FIXED DEPTH AND CORRESPONDING INTEGRATED CIRCUIT

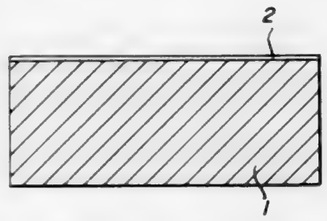
Michel Haond, Meylan, France, assignor to France Telecom, France

Filed Nov. 15, 1991, Ser. No. 792,262

Claims priority, application France, Nov. 16, 1990, 90 14306

Int. Cl.[5] B05D *5/00*

U.S. Cl. 156—646 **6 Claims**



1. A method for etching a layer of material of an integrated circuit, over a fixed depth, said method consisting of:

a) depositing onto said layer of material designated as the layer to be etched, a protective layer forming a stop layer,

b) depositing onto said stop layer a reference layer made of a material identical to that of the layer to be etched and whose thickness is made substantially equal to the depth of the etch to be produced in said layer to be etched,

c) applying to said reference layer an etch mask having the plane dimensions of the etch to be produced in said layer to be etched,

d) carrying out the etching by chemical attack, dry or wet, of said reference layer by the intermediary of the etch mask until encountering and exposing a portion of the stop layer in a zone for etching the reference layer,

e) removing said mask and said exposed stop layer;

f) simultaneously subjecting the reference layer, remaining stop layer and the layer of material to be etched in the region of said zone liberated by the removal of the exposed stop layer to a chemical attack, dry or wet, until the remaining stop layer underneath said reference layer is exposed, the reference layer and the remaining stop layer forming an auxiliary mask for the layer to be etched so as to create, in the layer to be etched, an etch having the plane dimensions of the etch of the reference layer and a depth substantially proportional to the thickness of this reference layer.

5,330,618

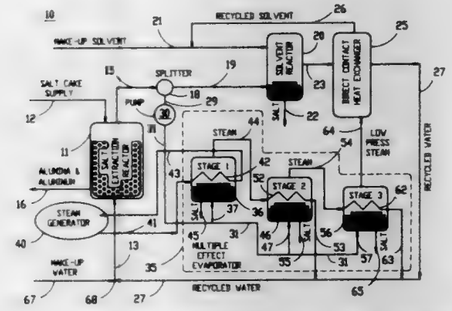
PROCESS FOR SEPARATING DISSOLVED SOLIDS FROM A LIQUID USING AN ANTI-SOLVENT AND MULTIPLE EFFECT EVAPORATORS

Edward J. Daniels, Oak Lawn; Bassam J. Jody, Chicago, and Patrick V. Bonsignore, Channahon, all of Ill., assignors to University of Chicago, Chicago, Ill.

Filed Dec. 10, 1992, Ser. No. 988,447

Int. Cl.[5] B01D *1/26*

U.S. Cl. 159—47.1 **20 Claims**



1. A process for treating aluminum salt cake containing water soluble halide salts, comprising contacting the salt cake with water to dissolve water soluble halide salts forming a saturated brine solution, splitting the saturated brine solution, transporting a portion of the split saturated brine solution to a solvent reactor and introducing into the saturated bring solution a water-miscible low-boiling organic material in an amount sufficient to precipitate a portion of the dissolved halide salts forming at least a two-phase mixture of an aqueous-organic-salt solution phase and a precipitated salt phase, separating the precipitated salt phase from the aqueous-organic-salt solution phase, transporting another portion of the split saturated brine solution to an evaporator producing low grade steam waste product, and passing the aqueous-organic-salt solution phase in direct heat exchange relationship with the low grade steam to boil off the organic portion of the solution and recycling same to the reactor, wherein normally discarded low grade steam from an evaporator provides the required energy to treat a portion of the dissolved halide salts from the salt cake.

17. A system for treating aluminum salt cake containing water soluble halide salts, comprising a salt extraction tank, means for transmitting the salt cake and water to said extraction tank and contacting same to form a saturated brine solution, a solvent reactor, a multiple effect evaporator connected to a source of steam, a splitter provided to split the saturated brine solution means for transporting a portion of the split saturated brine solution to said reactor, means for introducing into the saturated brine solution a water-miscible low-boiling organic material from a supply thereof in an amount sufficient to precipitate a portion of the dissolved halide salts forming at least a two-phase mixture of an aqueous-organic-salt solution phase and precipitated salt phase, means for separating the precipitated salt phase from the aqueous-organic-salt solution phase, means for transporting another portion of the split saturated brine solution to said multiple effect evaporator, the last stage thereof producing low grade steam, a direct contact heat exchanger, means for transporting the low grade steam to said heat exchanger and passing the aqueous-organic-salt solution in heat exchange relationship with the low grade steam to boil off the organic portion of the solution and means for recycling said organic portion to said reactor, whereby normally discarded low grade steam from a multiple effect evaporator provides the required energy to treat a portion of the dissolved halide salts from the salt cake.

5,330,619

METHOD FOR REPULPING FIBROUS MATERIALS CONTAINING CROSSLINKED POLYAMIDE WET STRENGTH AGENTS WITH ENZYME

Mark A. Johnson, Chillicothe; Alexander R. Pokora, and Joseph B. Henry, both of Pickerington, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Feb. 1, 1993, Ser. No. 12,039

Int. Cl.[5] D21C *5/02*

U.S. Cl. 162—5 **12 Claims**

1. A method of repulping fibrous paper or paperboard sheet materials containing a polyamide wet strength resin which is crosslinked with epicholorhydrin which comprises reacting said fibrous materials with an enzyme selected from the group consisting of bromelain, pepsin, tyrspin, alcalase, savinase, and mixtures thereof, in an amount sufficient to hydrolyze said resin.

5,330,620

BLEACHING PULP WITH CHLORIC ACID

Richard M. Berry, Ile Perrot; Michael Paleologou, Pierrefonds, and Norman Liebergott, Laval, all of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Feb. 25, 1992, Ser. No. 841,101

Int. Cl.[5] D21C *9/12*

U.S. Cl. 162—29 **8 Claims**

1. A process for bleaching pulp which comprises employing as the sole oxidizing agent chloric acid generated separately from the pulp slurry and thereafter added thereto, at a charge concentration on pulp amount of about 70% to 100% based on o.d. pulp, and wherein the chloric acid is produced at a charge concentration of about 10% to about 40% generated by reaction of a metal chlorate salt with from about 5% to about 15% chemical equivalent of a strong mineral acid, in the absence of a transition metal or heavy metal catalyst, and recovering and recycling residual unreacted chloric acid.

5,330,621

CONTINUOUS ELEMENTAL ANALYSIS OF PROCESS FLOWS

Pertti Visuri, San Diego, Calif.; Erkki Kiiskila, Karhula, Finland, and Markku Koskelo, Middletown, Conn., assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Sep. 23, 1992, Ser. No. 948,645

Int. Cl.[5] D21C *7/12*

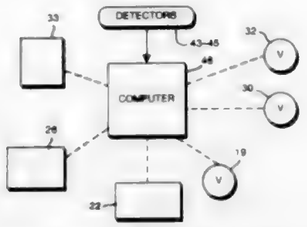
U.S. Cl. 162—49 **25 Claims**

1. A method of effecting process control of equipment used for the production of cellulose pulp, comprising the steps of:

(a) making continuous on-line analysis of one or more of the partial elemental makeup, concentrations of molecules, and concentrations of chemical substances of one or more fluid streams selected from the group consisting of black liquor and liquid slurries including at least about 3% comminuted cellulosic fibrous material by bombarding the fluid stream being analyzed with radioactive particles or radiation, and detecting radioactive particles or radiation as a result of that bombardment:

(b) determining one or more of at least the partial elemental makeup, concentrations of molecules, and concentrations

of chemical substances of the one or more fluid streams; and



(c) in response to (b), controlling one or more processes for acting on the one or more fluid streams to optimize the one or more processes.

5,330,622

COMPOSITION FOR RENDERING A PAPER OR TEXTILE BASE RESISTANT TO WATER, OIL AND SOLVENTS, TREATED BASE AND PROCESS FOR THE PRODUCTION OF THE TREATED BASE

André Honnorat, Annecy, and Claude Riou, Menthon Saint Bernard, both of France, assignors to Aussedat-Rey, Velizy Villacoublay, France

Filed Jul. 24, 1992, Ser. No. 918,073
Claims priority, application France, Jul. 25, 1991, 91 09693
Int. Cl.[5] D21H *17/72*
U.S. Cl. 162—135 **17 Claims**

1. A treated paper of textile base which is resistant to water, oil and solvents, wherein the base is treated with a composition comprising, by weight of dry product relative to the base,
(a) at least 0.03% of glyoxal,
(b) at least 0.01% of a dimeric alkylketen, and
(c) at least 0.002% of a fluorinated salt which is a diethanolamine salt of perfluoroalkyl ethyl phosphate

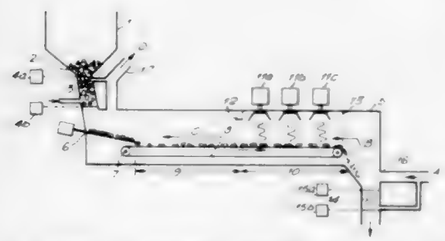
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5,330,623

PROCESS OF DESTRUCTIVE DISTILLATION OF ORGANIC MATERIAL

Kenneth M. Holland, Ashwood, Wynwoods, CampbellClose, Romford, United Kingdom

Continuation-in-part of Ser. No. 474,066, May 11, 1990, Pat. No. 5,084,141. This application Jan. 27, 1992, Ser. No. 826,126
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] C10B *53/00*
U.S. Cl. 201—19 **14 Claims**



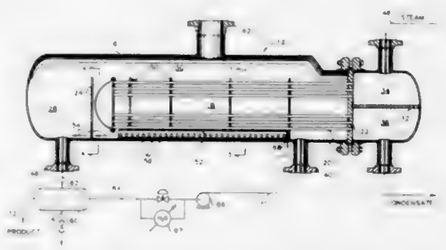
1. A process of destructive distillation of waste organic material containing a substantial proportion of carbon-carbon bonds, which comprises the steps of:
(a) pre-heating the bulk of said waste organic material to a temperature of at least about 60° C. at superatmospheric pressure in a pre-heating zone, substantially without pyrolysis of said organic material to elemental carbon, by means of a hot gas stream;
(b) feeding said pre-heated material by movable feed means directly from said pre-heating zone to a microwave discharge zone having an atmosphere comprising a substantially oxygen-free gas at superatmospheric pressure;
(c) pyrolyzing said pre-heated material in said zone by means of a microwave discharge in the low gigahertz frequency range for about 15 to 60 minutes, to cause fission of substantially all the carbon-carbon bonds in said organic material in addition to fission of more polar chemical bonds, to produce solid fission products of elemental carbon, and gaseous by-products;
(d) collecting said solid fission products downstream of said microwave discharge zone; and
(e) recycling at least part of said gaseous by-products to said hot gas stream to effect said pre-heating.

5,330,624

FRACTIONATOR-REBOILER SLUDGE REMOVAL SYSTEM AND METHOD

John W. Ebert, Basehor, Kans., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 27, 1991, Ser. No. 815,305
Int. Cl.[5] B01D *3/26;* **B08B** *3/02*
U.S. Cl. 203—4 **10 Claims**



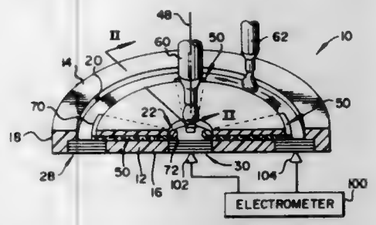
6. A method of removing sludge from a reboiler supplying heat to a fractional distillation column, said reboiler comprising a horizontally positioned shell and tube heat exchanger of the evaporative type, and having a weir plate and at least one baffle plate of the same general shape as a cross section of said shell, said weir plate and said baffle late being traversely disposed in said shell and each having a cut-out in a lower edge, said method comprising the following steps:
withdrawing a process liquid product stream from said fractional distillation column and passing at least a portion of said process liquid product stream as a feed stream to said reboiler;
vaporizing a portion of said reboiler feed stream in said reboiler and withdrawing unvaporized liquid from said reboiler as a reboiler liquid product;
passing a pressurized liquid flush stream along an inner bottom surface of said shell;
dislodging accumulations of sludge in said shell with said liquid flush to form a mixture comprising sludge and reboiler liquid product; and
removing sludge from said reboiler by flowing said mixture of sludge and reboiler liquid product through said cut-outs in said lower edge of said weir plate and said baffle plate to a reboiler outlet.

5,330,625

ROUND POTENTIOMETRIC SLIDE ELEMENTS AND METHOD OF USING THE SAME

Martin F. Muszak; Thomas R. Kissel, both of Rochester, and Maurice A. Kildal, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1992, Ser. No. 965,824
Int. Cl.[5] G01N *27/333*
U.S. Cl. 204—153.1 **11 Claims**



7. A method of analyzing a sample liquid using a potentiometric slide element, comprising the steps of
a) dispensing one of a sample liquid and a reference liquid onto an ion-selective electrode in a central location of a slide element an annularly-shaped ion-selective electrode in an annular groove spaced away from and centered on said central location a known distance, said electrodes being of substantially identical composition, the slide element also having an ion bridge portion fluidly connecting said central location with said annular groove;
b) dispensing the other of the liquids into any portion of said annular groove so that the liquid contacts the ion-selective electrode in said annular groove;
c) allowing a differential ionic activity to develop in said electrode, and an ionic bridge to form in said bridge portion; and
d) contacting the ion-selective electrodes with an electrometer, so that said slide element can be used regardless of its rotational orientation about said central location.

5,330,626

IRRADIATION OF POLYMERIC ION EXCHANGE MEMBRANES TO INCREASE WATER ABSORPTION

Shoibal Banerjee, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1993, Ser. No. 25,634
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] C07C *5/00;* **C25B** *13/00, 13/08*
U.S. Cl. 204—157.15 **6 Claims**

1. A process for modifying a fluorinated ion exchange membrane comprising irradiating said membrane, in an environment substantially free of a monomer which would graft polymerize with components of said membrane, with a non-spark-producing ionizing electron beam radiation with a dose of about 1-10 megarads.

5,330,627

THERMOSETTING COATING COMPOSITIONS AND THEIR USE

Roland Grütter, Wuppertal; Reiner Böhmert, Haan, and Rolf Reinecke, Wiesbaden, all of Fed. Rep. of Germany, assignors to Herberts G.m.b.H., Wuppertal, Fed. Rep. of Germany

Continuation of Ser. No. 983,624, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 826,690, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 377,529, Jul. 10, 1989, abandoned. This application Sep. 9, 1993, Ser. No. 119,324
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1988, 3823731
Int. Cl.[5] C25D *13/10*
U.S. Cl. 204—181.4 **6 Claims**

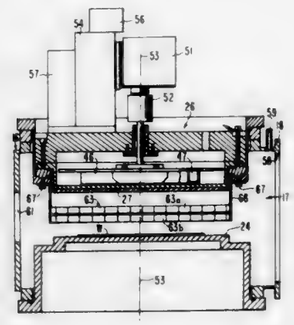
1. A process for producing a coating, which comprises applying by electrodip coating an electrically conducting substance to a thermosetting coating composition containing
(A) one or more binders in liquid or dissolved form containing acidic groups, basic groups, or ionic groups of like charge, having a number average molecular weight of from 300 to 10,000 g/mole,
(B) one or more binders in solid, particulate form under application and storage conditions and having a number average molecular weight of at least 50,000 g/mole, and containing at least 15 basic groups per molecule when (A) contains acidic groups, or at least 15 acidic groups per molecule when (A) contains basic groups, or at least 15 ionic groups per molecule of the same charge which is opposite to the sign of the charge of the ionic groups of (A),
wherein both binders (A) and (B) are present in particulate form.

5,330,628

COLLIMATED DEPOSITION APPARATUS AND METHOD

R. Ernest Demaray, Oakland; Vance E. Hoffman, Los Altos; John C. Helmer, Menlo Park; Young H. Park, San Ramon, and Ronald R. Cochran, Mountain View, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 471,212, Jan. 29, 1990, abandoned. This application Oct. 23, 1991, Ser. No. 780,882
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.12 **15 Claims**



15. A method of depositing a step coating in an opening in a workpiece having an aspect ratio which changes as the coating builds up therein, comprising the steps of:
supporting the workpiece in a chamber,
establishing a first subatmospheric gas pressure within the chamber,
emitting particles from a sputter source for forming the coating on the workpiece, so that at least some of said particles will be deposited on said workpiece, the individ-

ual deposited particles impinging on the surface of the workpiece at angles of incidence,

passing the particles from the source to the workpiece through a collimating filter having a plurality of transmissive cells with a length to diameter ratio greater than the aspect ratio of the opening to limit the angles of incidence at which the particles impinge upon the workpiece, and

reducing the pressure in the chamber as the coating builds up in the opening.

5,330,629

METHOD FOR DEPOSITING ALUMINUM LAYERS ON INSULATING OXIDE SUBSTRATES

John E. Cunningham, Lincroft; William Y. Jan, Scotch Plains; John A. Rentschler, Brick, and Colin A. Warwick, Holmdel, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 15, 1992, Ser. No. 990,959
Int. Cl.[5] C23C *4/08*
U.S. Cl. 204—192.17 **11 Claims**

1. A method for manufacturing an article which comprises a substrate body, wherein the substrate body includes an insulating material region having a principal surface, the method comprising the steps of:

a) depositing on the surface, from an aluminum-containing vapor, a metallic layer that substantially comprises metallic aluminum; and

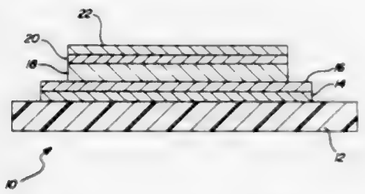
b) during step (a), depositing on the surface, from the vapor, an additional element such that the additional element is incorporated in the metallic layer in an amount effective for improving the wetting of the surface by the metallic layer, the additional element selected from the group consisting of arsenic, phosphorus, and antimony.

5,330,630

SWITCH WITH IMPROVED THRESHOLD VOLTAGE

Patrick J. Klersy, Madison Heights, and Stanford R. Ovshinsky, Bloomfield Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Mich.

Filed Jan. 2, 1991, Ser. No. 636,815
Int. Cl.[5] C23C *14/34*; B05D *3/06*
U.S. Cl. 204—192.25 **18 Claims**



1. A method of manufacturing an improved threshold switching device, said device comprising a body of chalcogenide threshold switching material disposed between two electrodes, said method including the steps of:

vacuum depositing a body of chalcogenide threshold switching material, said chalcogenide material being characterized by an initial first fire threshold voltage; and

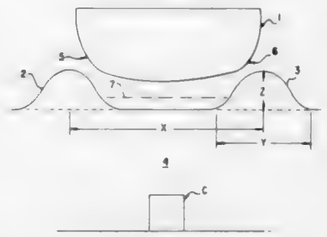
exposing said body of chalcogenide threshold switching material to an atmosphere including fluorine therein, thereby reducing the first fire threshold voltage to a value substantially lower than the initial value.

5,330,631

ALUMINIUM SMELTING CELL

Draco D. Juric, Camberwell; Raymond W. Shaw, Woodend; Geoffrey J. Houston, Ashburton, and Ian A. Coad, Kingsbury, all of Australia, assignors to Comalco Aluminium Limited, Melbourne, Australia

PCT No. PCT/AU91/00372, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/03597, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 19, 1991, Ser. No. 969,850
Claims priority, application Australia, Aug. 20, 1990, PK1843
Int. Cl.[5] C25C *3/08*
U.S. Cl. 204—243 R **14 Claims**



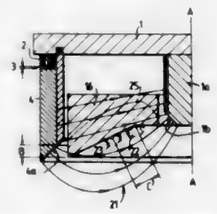
1. An aluminum smelting cell comprising side walls and a floor defining a cathode surface, at least one anode having an active electrode surface spaced from and substantially parallel to said cathode surface to define an interelectrode gap, said cathode surface being substantially horizontal in the longitudinal direction of said anode(s) and shaped structures projecting from said cathode surface, said shaped structures being covered by wetted cathode material and being shaped to modify the current distribution between the anode(s) and the cathode whereby current flows through said shaped structures and through the remaining cathode portions to cause preferential shaping of the anode(s) to encourage shortening of the release path of bubbles under said anode(s) to thereby minimize cell resistivity and enable operation at a reduced anode to cathode distance, said cathode surface having regions adjacent said shaped structures, said regions being active cathode areas.

5,330,632

APPARATUS FOR CATHODE SPUTTERING

Eggo Sichmann, Gelnhausen, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Oct. 27, 1992, Ser. No. 967,136
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202349
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.18 **19 Claims**



1. Cathode sputtering apparatus comprising

a target having a front to be sputtered, an opposing back, and a central aperture with an axis therethrough, said front having an inner annular surface and an outer frustoconical surface which are concentric to said axis and adjoin at an angle to form a break, said outer frustoconical surface facing said axis,

a yoke facing the back of said target and extending radially to outside of said target,

magnet means associated with said yoke at only one of radially outside said target and radially inside said central aperture,

first pole shoe means extending axially from said magnet means to a first end surface, said first pole shoe means being separated from said magnet means by a gap,

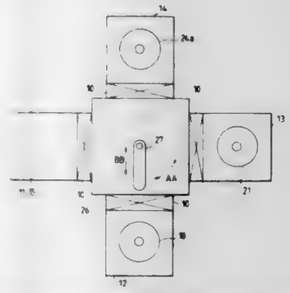
second pole shoe means associated with said yoke at the other of radially outside said target and radially inside said central aperture, said second pole shoe means extending axially from said yoke to a second end surface, said first and second end surfaces being arranged to provide arcuate lines of magnetic flux extending over the front of said target.

5,330,633

PROCESS FOR FORMING METAL DEPOSITED FILM CONTAINING ALUMINUM AS MAIN COMPONENT BY USE OF ALKYL ALUMINUM HYDRIDE

Shigeyuki Matsumoto, Atsugi, and Osamu Ikeda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 656,960, Feb. 19, 1991, Pat. No. 5,151,305. This application Jul. 17, 1992, Ser. No. 913,918
Claims priority, application Japan, Feb. 19, 1990, 2-36194; Feb. 19, 1990, 2-36195; Feb. 19, 1990, 2-36196; Feb. 19, 1990, 2-36197
Int. Cl.[5] C23C *14/34, 16/00*
U.S. Cl. 204—298.25 **8 Claims**



1. An apparatus providing a system for forming a metal film comprising:

a load and unload chamber for loading a substrate having a semiconductor or conductor portion and an insulating portion and unloading said substrate on which a first metal film and a second metal film are formed;

a first film-forming chamber provided with chemical vapor deposition means for selectively forming said first metal film on said semiconductor or conductor portion of said substrate by said chemical vapor deposition means, said chemical vapor deposition means having first gas supplying means for supplying an alkylaluminum hydride gas, second gas supplying means provided with a hydrogen purifier for supplying a purified hydrogen gas into said first film-forming chamber, gas evacuating means for evacuating means for evacuating said gas from said first film-forming chamber, and a first substrate holder, wherein said first film-forming chamber is connected with said load and unload chamber;

a second film-forming chamber for non-selectively forming said second metal film on said first metal film and said insulating portion of said substrate, said second film-forming chamber having a second substrate holder and being connected with said load and unload chamber;

a first gate valve disposed between said first film-forming chamber and said load and unload chamber;

a second gate valve disposed between said second film-forming chamber and said load and unload chamber; and

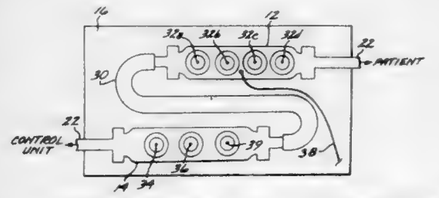
conveying means for conveying said substrate on which said first metal film is formed from said first film-forming chamber through said load and unload chamber to said second film-forming chamber, wherein said first film-forming chamber, said second film chamber and said load and unload chamber are shielded from an atmosphere during conveying of said substrate.

5,330,634

CALIBRATION SOLUTIONS USEFUL FOR ANALYSES OF BIOLOGICAL FLUIDS AND METHODS EMPLOYING SAME

David K. Wong, Del Mar, and Kenneth M. Curry, Oceanside, both of Calif., assignors to VIA Medical Corporation, San Diego, Calif.

Filed Aug. 28, 1992, Ser. No. 937,980
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—409 **13 Claims**



1. A method for the calibration of a sensor employed for the detection of CO_2 partial pressure in physiological fluid, said method comprising

contacting a sensor assembly having: a fluid passageway and a sensor for CO_2 exposed to said fluid passageway, and means to pass physiological fluid or infusible calibrant, or physiological fluid and infusible calibrant over said sensor, with an infusion medium/calibrant comprising: non-buffered physiological sodium chloride-containing saline, and an amount of sodium bicarbonate effective to provide a concentration of HCO_3^- in the range of about 1 up to 100 mM/L; and thereafter

calibrating said sensor.

5,330,635

PROTECTIVE COATING PROCESS FOR ALUMINUM AND ALUMINUM ALLOYS

Robert L. Floyd, Jr., Norcross, Ga., assignor to Lockheed Corporation, Calabasas, Calif.

Filed Mar. 25, 1993, Ser. No. 36,765
Int. Cl.[5] C25D *5/00*
U.S. Cl. 205—204 **2 Claims**

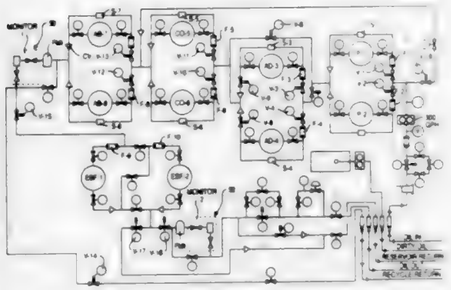
1. A protective coating process for aluminum and aluminum alloy components the process comprising the steps of:

a) anodizing the component to be coated to form an anodized component;

b) applying a coating composition comprising a colloidal, water-borne polyurethane resin to the anodized component at a temperature of approximately 150° F. for a period ranging from about 30 to 60 minutes, wherein said coating composition seals the anodized component through hydration and simultaneously primes the anodized component to provide a surface coating; and

c) curing the surface coating.

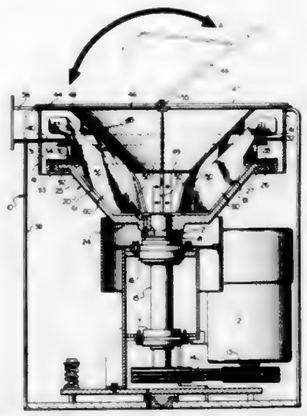
5,330,636
APPARATUS FOR CONTINUOUS RECONDITIONING OF HYDROCARBON FLUIDS
Ralph Reichert, Belmont, Calif., assignor to Adfiltech Corporation, Alexandria, Va.
Filed Dec. 4, 1992, Ser. No. 985,884
Int. Cl.[5] B01D *17/12, 36/02*
U.S. Cl. 210—96.1 **11 Claims**



1. Apparatus arranged for the continuous reconditioning of non-conductive hydrocarbon fluids from a system utilizing said fluids comprising:
an arrangement of interconnected filters having separate inlets and comprising at least two different type filters, the interconnected filters including at least one filter means for removing water from said non-conductive hydrocarbon fluids,
means for mechanically and electrically arranging said interconnected filters to allow a continuous reconditioning of said non-conductive hydrocarbon fluids with optional re-refining of selected portions of said fluids;
means for monitoring the moisture content of said fluids following their passage through said arrangement; and
means responsive to said monitoring for automatically and selectively rerouting said fluids to ether a clean reservoir or to recycling to said arrangement of interconnected filters.

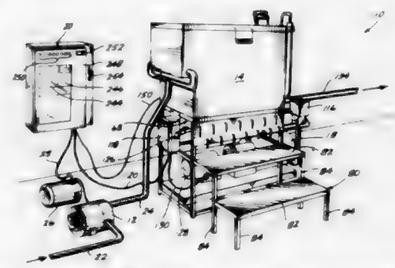
5,330,637
INDEXABLE SCREEN FOR CENTRIFUGAL SEPARATOR DEVICE
Robert J. Nemedi, Kalamazoo, Mich., assignor to Inter-Source Recovery Systems, Inc., Kalamazoo, Mich.
Division of Ser. No. 816,592, Dec. 31, 1991. This application Jul. 6, 1993, Ser. No. 88,072
Int. Cl.[5] B04B *1/04*
U.S. Cl. 210—232 **8 Claims**

1. The method of reducing wear on the surface of a screen used in a centrifugal separator device which device comprises a rotatable bowl having one or more blade assemblies fixed in an rotatable with said bowl said blade assemblies having a blade having a leading surface and
a screen releasably attached to the top of said bowl, according to the steps of:
(a) assessing said screen for wear on the surface of said screen;
(b) disconnecting said screen from said separator bowl;
(c) moving said screen relative to said bowl so as to move a wear area on said screen surface from at least a first position to a second position relative to said bowl where the wear area of said screen is spaced away from said blade; and,



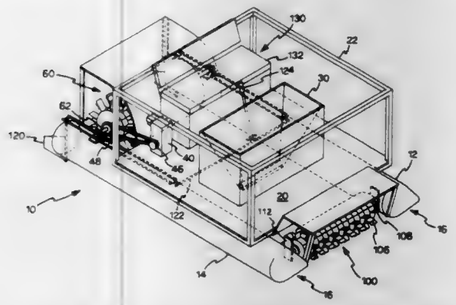
(d) releasably connecting said screen to said bowl whereby said screen is fixed to and rotatable with said bowl at said second position.

5,330,638
COMMERCIAL FILTERING SYSTEM
Sidney A. Burklund, Bothell, and Terry D. Olson, Auburn, both of Wash., assignors to Filtercorp Partners L.P., Woodinville, Wash.
Continuation-in-part of Ser. No. 695,580, May 3, 1991, Pat. No. 5,143,604, which is a continuation-in-part of Ser. No. 527,566, May 22, 1990, Pat. No. 5,075,000. This application Jan. 29, 1992, Ser. No. 827,944
Int. Cl.[5] B01D *29/62*
U.S. Cl. 210—108 **10 Claims**



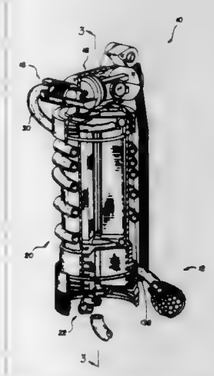
1. A filtering system for filtering a contaminated fluid, the filtering system comprising:
a filter tank;
a variable-speed first pump for delivering an inlet flow of contaminated fluid into said filter tank;
a plurality of filter cassettes removably supported within said filter tank, each of said filter cassettes housing a filter pad;
a variable-speed second pump in cooperative engagement with said plurality of removably filter cassettes, said second pump providing a vacuum to said filter cassettes to draw the contaminated fluid through said filter pads and further providing a return flow of filtered fluid; and
a level control mechanism interactively coupled to said first pump capable of adjusting the flow rate of said first pump to maintain a substantially uniform level of fluid in said filter tank.

5,330,639
MOBILE WATER AGITATING AND AERATING APPARATUS
Larry Murphree, Rte. #1, Box 186A, Myrtle, Miss. 38650
Filed Dec. 3, 1992, Ser. No. 984,778
Int. Cl.[5] C02F *7/00*
U.S. Cl. 210—170 **7 Claims**



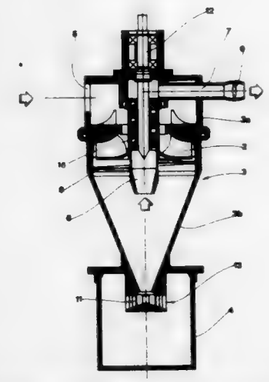
1. A mobile apparatus for destroying aquatic vegetation and for aerating water, comprising:
a) a vessel configured for movement across a body of water;
b) means disposed on said vessel for propelling said vessel across a body of water;
c) first means disposed on said vessel for destroying aquatic vegetation as said vessel is propelled across a body of water containing aquatic vegetation and said first aquatic vegetation destroying means includes a freewheeling, unpowered paddlewheel having a plurality of blades; and
d) first means disposed on said vessel for aerating water as said vessel is propelled across a body of water.

5,330,640
PORTABLE WATER FILTER HAVING AN INLET CONDUIT WITH A WEIGHT AND FLOAT CONSTRUCTION
James F. Fife; Daniel J. Vorhis; Kenneth D. Laughlen, and Nancy L. Dienes, all of Seattle, Wash., assignors to Mountain Safety Research, Inc., Seattle, Wash.
Division of Ser. No. 732,975, Jul. 19, 1991, Pat. No. 5,266,196. This application Aug. 18, 1993, Ser. No. 108,442
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—170 **10 Claims**



1. An inlet assembly in combination with a portable water filter, comprising:
an inlet conduit having a first end and a second end, said first end being connected to a water filter, said second end being adapted to be placed in water to be filtered;
a weight coupled to a second end of said inlet conduit, the weight being adapted to maintain the second end below the surface of the water; and
a float coupled to the inlet conduit at a position downstream of the second end, said float maintaining the second end off the bottom of the water, the float being located a given distance from the weight to position the second end at a preferred position between the top surface of the water and the bottom of the water from which the water is to be drawn into the conduit.

5,330,641
SEPARATOR OF SOLID PARTICLES FOR VARIABLE DISCHARGE FLUID FLOW RATES IN DENTAL APPARATUS
Ennio Cattani, Parma, Italy, assignor to Cattani S.p.A., Parma, Italy
Filed Feb. 2, 1993, Ser. No. 12,318
Claims priority, application Italy, Feb. 19, 1992, M92A000025
Int. Cl.[5] B01D *19/00, 21/26, 33/15*
U.S. Cl. 210—188 **4 Claims**



1. A separator of liquids and solid particles from discharge material from a dental apparatus, comprising:
a separator chamber, in which gases are removed from said discharge material;
a container having an inlet hole, an upper section and a lower section, said container receiving said discharge material from said separator chamber through said inlet hole, said container also having an outlet hole, liquids separated from said discharge material being discharged through said outlet hole, said upper section being generally cylindrical, said inlet hole being in said upper section;
a collector attached to said lower section for receiving solids from said container;
a rotor rotatably mounted within said upper section;
said lower section being of a truncoconical shape with its larger end directly attached to said upper section, and its smaller end being connected to said collector;
a conduit having two ends, one of said conduit ends being arranged axially to the lower truncoconical section and adjacent the larger end of said lower section, the other of said conduit ends being connected to said outlet hole;
a tap connected to said outlet hole, said tap selectively blocking said outlet hole when in a closed position according to the material level in said separator chamber, said upper section being connected to said outlet hole only through said conduit, said rotor causing substantially only

liquid to be discharged through said conduit and said outlet hole when said tap is in an open position.

5,330,642

METHOD OF FILTERING CELLULOSE ACETATE SOLUTIONS AS WELL AS A PLANT FOR CARRYING OUT THE METHOD

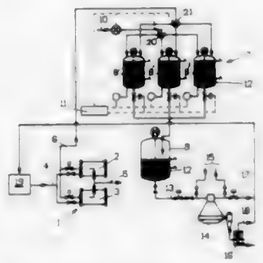
Walter Klein, Lenzing, Austria, assignor to Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Mar. 11, 1992, Ser. No. 849,196

Claims priority, application Australia, Mar. 14, 1991, A577/91

Int. Cl.[5] B01D *29/62, 29/66, 29/80*

U.S. Cl. 210—194 **4 Claims**



1. A plant apparatus to be used in a cellulose acetate production process for filtering cellulose acetate spin solutions under backflushing, comprising

a filtering station provided in a cellulose acetate duct and including at least one backflush filter having means to backflush said at least one backflush filter and a backflush duct means for transporting backflush liquid with insoluble solids away from said filtering station,

feed means, including a plant for producing new spin solution, for supplying unfiltered cellulose acetate spin solution to said filtering station,

a dilution station in communication with said backflush duct means for receiving said backflush liquid with said insoluble solids,

a solvent supply means for feeding solvent into said dilution station for diluting said backflush liquid,

a further means starting from said dilution station for transporting said diluted backflush liquid with said insoluble solids to a separator means,

said separator means comprises means for separating insoluble solids from said diluted backflush liquid,

a supply means starting at said separator means for supplying said backflush liquid freed from solids to said feed means.

5,330,643

SOLID/LIQUID SEPARATION APPARATUS WITH ADJUSTABLE SCREEN

Robert M. Webb, Agoura, and Thomas M. Webb, Newbury Park, both of Calif., assignors to T. H. Creears Corporation, Westlake Village, Calif.

Continuation-in-part of Ser. No. 706,888, May 29, 1991, abandoned. This application Jul. 13, 1992, Ser. No. 912,546

Int. Cl.[5] B01D *35/00*

U.S. Cl. 210—255 **14 Claims**

1. A solid/liquid separation apparatus, comprising:

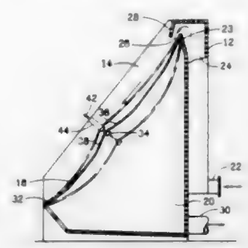
an outer support frame having spaced side walls;

a downwardly-inclined separator screen having an upper end and a lower end and supported on said support frame between said side walls;

inlet means for directing a solid/liquid mixture to be separated onto the upper end of said separator screen to flow downwardly along the screen towards the lower end of the screen;

at least one support member extending transversely across the screen at a location intermediate its ends to divide the screen into an upper section inclined at a first vertical angle and a lower section inclined at a second vertical angle on opposite sides of said support member; and

adjustable mounting means for adjustably mounting said screen for movement in a direction transverse to the



screen to adjust the first and second vertical angles of the upper and lower screen sections;

the adjustable mounting means comprising at least one adjustment screw mechanism having a first part secured to one of said side walls and a second part secured to said support member

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5,330,644

FILTER SECTOR

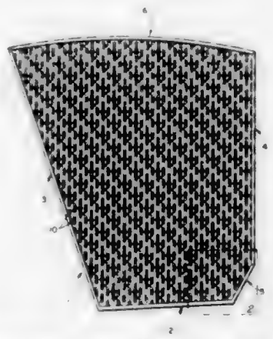
Bjarne Nilsson, Lanterngatan 9, S-462 55 Vänersborg, Sweden

Filed Nov. 24, 1992, Ser. No. 980,403

Claims priority, application Sweden, Nov. 27, 1991, 9103515-4

Int. Cl.[5] B01D *33/23*

U.S. Cl. 210—323.1 **9 Claims**



1. A filter sector for a rotating filter disk of a rotating filter, said filter disk comprising a plurality of filter sectors and each of said filter sectors including a first and a second spaced plate-shaped element formed from a sheet material having a relatively thin material thickness, said elements forming between them an interior drainage space for filtrate, each element having a main plane having said relatively thin material thickness, said main plane being provided with perforations to direct filtrate to said interior drainage space, protrusions shaped in said material extending outwardly from said main plane and being adapted to keep a filter cloth at a distance from the main plane, each of said protrusions having outwardly directed walls and a top wall defining a cavity open towards said interior drainage space, and said walls having a material thickness substantially corresponding to said relatively thin material thickness, wherein said plate-shaped elements are further provided with bulbs shaped in said material and extending inwardly from said main plane into said interior drainage space, each of said bulbs having inwardly directed walls and a flat top wall defining a cavity open towards the exterior of said filter sector, said inwardly directed walls and said flat top wall having a material thickness substantially the same as said relatively thin material thickness, and said flat top wall of each bulb of said first plate-shaped element abutting a flat top wall of a bulb of said second plate-shaped element and being positively connected thereto.

5,330,645

APPARATUS FOR CONTINUOUSLY SEPARATING SOLID AND LIQUID FRACTIONS OF A MIXTURE OF SOLID AND LIQUID FRACTIONS

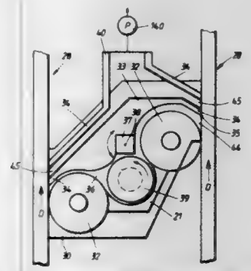
Joachim Geldmacher, Heidnüchelsweg 20, D-5223 Nümbrecht, Fed. Rep. of Germany

Filed Sep. 9, 1992, Ser. No. 942,425

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1991, 4130145; Aug. 5, 1992, 4225818

Int. Cl.[5] B01D *33/46*

U.S. Cl. 210—327 **12 Claims**



1. Apparatus for continuously filtering a mixture of a liquid fraction and a solid fraction, comprising a mixture-containing vessel; a driven elongated rotary carrier mounted in said vessel; a plurality of neighboring filters provided on and rotatable with said carrier and spaced apart from each other in the longitudinal direction of said carrier, each of said filters having at least one foraminous wall which intercepts the solid fraction but is permeable to the liquid fraction and at least one internal chamber for the liquid fraction adjacent said at least one wall; means for evacuating the liquid fraction from said chambers and for establishing a pressure differential between the mixture in said vessel and said chambers so that the liquid fraction of the mixture flows through said walls into the respective chambers and the solid fraction is intercepted by said walls; and means for removing the intercepted solid fraction from said walls, including a plurality of stationary receptacles in said vessel, at least one for each of said walls and each having an internal compartment for the solid fraction, means for at least partially sealing the compartment from the mixture in said vessel and means for directing the intercepted solid fraction from the respective wall into the compartment, said sealing means comprising a rotary element provided on each of said receptacles and engaging the respective wall, and a stripping element provided on each receptacle, spaced apart from the respective rotary element and engaging the respective wall to strip the solid fraction from said wall, said directing means comprising an inlet provided between the stripping element and the rotary element on each receptacle and communicating with the respective compartment.

5,330,646

APPARATUS FOR FILTERING LIQUIDS

Rune Frykhult, Stockholm, Sweden, assignor to Ingenjorsfirman R. Frykhult AB, Stockholm, Sweden

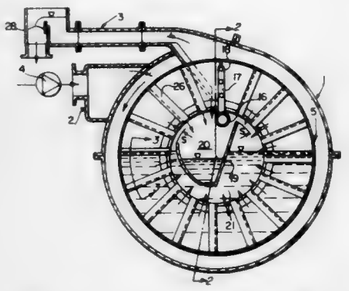
PCT No. PCT/SE91/00112, § 371 Date Jun. 30, 1992, § 102(e) Date Jun. 30, 1992, PCT Pub. No. WO91/12065, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 18, 1991, Ser. No. 861,984

Claims priority, application Sweden, Feb. 16, 1990, 9000569-5; Feb. 16, 1990, 9000571-1

Int. Cl.[5] B01D *33/21*

U.S. Cl. 210—331 **8 Claims**



1. An apparatus for filtering liquids, such as fiber pulp suspensions, comprising:

at least one annular hollow filter disc with side walls covered with filter material adapted to be at least partly immersed in a body of a liquid to be filtered and arranged substantially transverse to a horizontal axis extending centrally through the filter disc;

means for rotating the annular hollow disc about the horizontal axis;

shaft wall means connected to the filter disc and forming a circular cylindrical chamber, which extends centrally through the hollow filter disc coaxial with the axis and which communicates with the interior of the hollow filter disc;

means for creating a pressure difference between the body of liquid to be filtered and the interior of the hollow filter disc, such that a filtrate of the liquid is forced through the filter material into the hollow filter disc and passed therefrom into the cylindrical chamber;

spray nozzle means for cleaning the filter material;

rigid stationary partition wall means extending axially in the cylindrical chamber and dividing the latter into at least first and second adjacent axial channels, which are partly defined by the shaft wall means, wherein during operation, the second axial channel of the first and second adjacent axial channels, as seen in the direction of rotation of the filter disc, receives a purer filtrate fraction than that of the first axial channel of the two adjacent channels;

the partition wall means being radially spaced from the shaft wall means and arranged, such that all of the axial channels receive various fractions of filtrate, respectively, during operation;

filtrate discharge means adapted to discharge the fractions of filtrate separately from the respective axial channels, such that the pressure prevailing in the filtrate of each channel is at least substantially as high as atmospheric pressure;

the filtrate discharge means being adapted to maintain the axial channels at least partly filled with air; and

pressure control means for keeping the pressure in the purer filtrate fraction in the second channel somewhat higher than the pressure in the less pure filtrate fraction in the first channel, where communication between the adjacent channels takes place.

5,330,647

FILTER DEVICE FOR SEPARATING COARSE COMPONENTS FROM LIQUID COMPONENTS

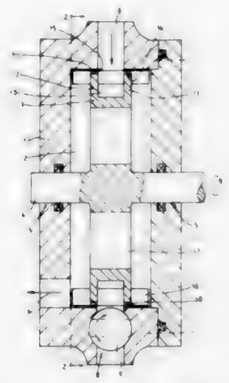
Hans-Michael Sulzbach, Königswinter; Ferdinand Althausen, Neunkirchen, and Reiner Raffel, Siegburg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Fed. Rep. of Germany

Filed Apr. 14, 1992, Ser. No. 868,407

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112787

Int. Cl.[5] **B01D** *35/02*

U.S. Cl. 210—383 **8 Claims**



8. A filter device for separating coarse components from liquid components which contain powdered, fine-grain or fibrous solid particles comprising:

a) a housing comprising a hollow chamber defined by a circular base, a circular top, and a cylindrical wall connecting said base and said top, said cylindrical wall having an inside surface, said housing being provided with

i) an inlet in said cylindrical wall for the introduction of liquid component into said chamber,

ii) a sump outlet spaced away from said inlet for removal of filtered material from said chamber, and

iii) an outlet located either in said base or in said top for allowing liquid component to pass through said housing, and

b) a rotor mounted in said housing, said rotor having an outer circumferential surface which forms a filter gap with said inside surface, and wherein said rotor is provided with agitator blades which comb through any dead-flow spaces within said hollow chamber.

5,330,648

FILTER MEDIA HOLD DOWN MECHANISM

Barry R. Benschoter, and Barry L. Nehls, both of Bowling Green, Ohio, assignors to Henry Filters, Inc., Bowling Green, Ohio

Filed Jun. 29, 1992, Ser. No. 905,446

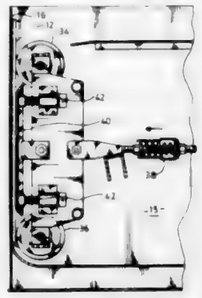
Int. Cl.[5] **B01D** *33/04, 33/056, 29/96*

U.S. Cl. 210—387 **5 Claims**

1. In an improved filtration apparatus including an upper tank for holding dirty liquid and having an imperforate upstream end wall and a perforate floor, and a lower filtrate compartment beneath the floor for receiving liquid from the upper tank through said perforate floor, a guide roller over which the filter media is moved downwardly and positioned to guide the filter media first along the upstream end wall and then downstream along the floor for filtering out contaminants as the dirty liquid is received from the tank into the filtrate compartment, and a chain and slat conveyor for moving the filter media, wherein the improvement comprises:

a hold down mechanism means for urging the filter media against the upstream imperforate end wall thereby to prevent contaminant migration between the end wall and the filter media;

the hold down mechanism means including a frame mounted adjacent the upstream end wall; said hold down mechanism means including a spring assembly for elastically urging said frame toward the tank end wall; said frame



including a plurality of upper and lower rotatable spools for carrying and guiding said chain and slat conveyor along the tank end wall and urging the filter media therebetween;

the frame further including a skid plate extending generally vertically between said spools; said skid plate extending generally parallel to said end wall for guiding the filter media thereover.

5,330,649

FUEL INJECTION VALVE INCLUDING A FILTER ON THE VALVE

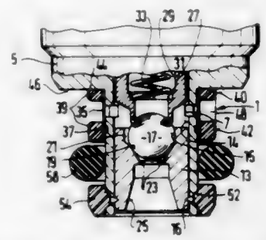
Udo Hafner, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 800,308, Nov. 29, 1991, Pat. No. 5,186,882. This application Nov. 30, 1992, Ser. No. 983,353

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4037952

Int. Cl.[5] **B01D** *35/02*

U.S. Cl. 210—430 **10 Claims**



1. A fuel injection valve having a longitudinal axis which is defined in a radial direction relative to said longitudinal axis toward an outside by a valve body having a circumferential outer surface, at least one radially directed through opening in said circumferential outer surface of said valve body, a filter on said circumferential outer surface, said filter includes a filter cloth that abuts said circumferential outer surface and covers said at least one through opening, said filter cloth having first and second end portions spaced along said axis, and said filter cloth is wholly retained parallel to said longitudinal axis in abutment with the circumferential outer surface of the valve body (**5, 61**) by means of a sprayed plastic coating (**39**) sprayed in an area covering said first end portion and said second end portion of the filter cloth (**35**) and at least one portion of the circumferential outer surface of the valve body (**5, 61**).

5,330,650

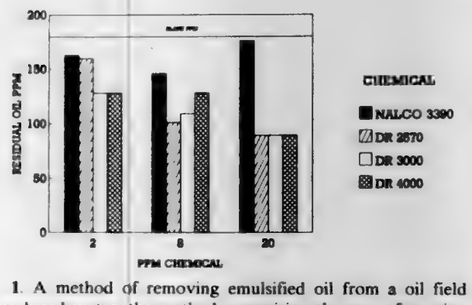
DISPERSION POLYMERS FOR OIL FIELD WATER CLARIFICATION

Norman E. Byrne, Houston; Robert A. Marble, Sugarland, both of Tex., and Manian Ramesh, Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

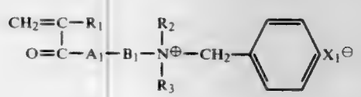
Filed Oct. 30, 1992, Ser. No. 968,763

Int. Cl.[5] **C02F** *1/56*

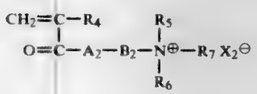
U.S. Cl. 210—708 **7 Claims**



1. A method of removing emulsified oil from a oil field produced water, the method comprising the step of treating the oil-containing water with an effective amount of a dispersion of a water-soluble cationic polymer, said dispersion of the water-soluble cationic polymer being prepared by polymerizing a water-soluble monomer mixture containing a least 5 mole % of a cationic or methacrylamide in an aqueous solution of a polyvalent anionic salt, said polymerization is carried out in an aqueous solution including from about 1 to about 10 percent by weight based on the total weight of the monomers a dispersant polymer, said dispersant polymer being a water-soluble cationic polymer which is soluble in said aqueous solution of the polyvalent anionic salt and which contains at least 20 mole % of cationic monomer units represented by a general formula (II):



(I)



(II)

wherein R_1 and R_4 are each H or CH_3; R_2, R_3, R_5 and R_6 are each an alkyl group having 1 to 2 carbon atoms; R_7 is a hydrogen atom or an alkyl group having 1 to 2 carbon atoms; A_1 and A_2 are each an oxygen atom or NH; B_1 and B_2 are each 2 to 4 carbon atoms or a hydroxypropyl group and X_1- and X_2- are each a counter anion once treated, the emulsified oil flocculates; and removing the flocculated emulsified oil from the treated oil field produced water.

5,330,651

TREATMENT OF CONTAMINATED AGRICULTURAL RUN-OFF

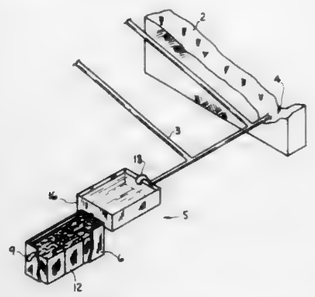
William Robertson; David W. Blowers, and Carol J. Ptacek, all of Waterloo, Canada, assignors to University of Waterloo, Waterloo, Canada

Filed May 8, 1992, Ser. No. 879,915

Claims priority, application United Kingdom, May 10, 1991, 91 10201

Int. Cl.[5] **C02F** *3/28*

U.S. Cl. 210—617 **9 Claims**



3. Procedure for treating contamination in agricultural run-off water, wherein:

the procedure is carried out in or adjacent to an agricultural field;

the agricultural field is of the kind in which run-off water from the field drains naturally, under gravity, to a run-off water collection point, located in or adjacent to the field;

the procedure includes the step of providing a receptacle at the collection point;

the procedure includes the step of providing in the receptacle a body of material;

the procedure includes the step of so arranging the body of material in the receptacle, and of so directing the flow of run-off water, that the water, in flowing naturally under gravity, and substantially without the use of a powered pump, enters the receptacle, percolates through the body of material contained therein, and then passes out from the receptacle;

the body of material comprises or includes solid pieces of organic carbon material;

the nature of the receptacle is such that the solid pieces of organic carbon material are contained and confined therein;

the body of material is of such permeability that the run-off water can percolate through the body;

in relation to the quantity of run-off water collected, the dimensions of the body of material are such that the water percolating through the body remains in the body, and in contact with the pieces of organic carbon material, for a substantial period of time;

the procedure includes the step of providing an inlet and an outlet in respect of the receptacle, through which the run-off water enters and leaves the receptacle;

the procedure includes the step of so directing the flow of run-off water, and of arranging the receptacle to be of such capacity and dimensions, and of arranging the positions of the inlet and the outlet, that the carbon material in the receptacle remains substantially always covered with water, and remains so even during periods when the flow of water entering the receptacle is zero or nearly zero, whereby the body of material is maintained under anaerobic conditions;

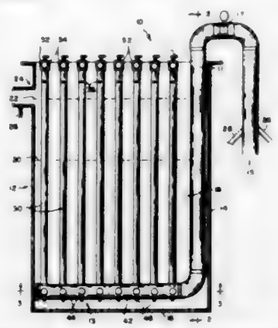
and wherein the substantial period of time is long enough for nitrate compounds dissolved in the water to undergo substantially complete reduction.

5,330,652

FLUIDIZED BED REACTOR AND DISTRIBUTION SYSTEM

Joshua N. Goldman, Montague, and John R. Rosenau, Amherst, both of Mass., assignors to Aquafuture, Inc., Turners Falls, Mass.

Filed Feb. 26, 1993, Ser. No. 23,323
Int. Cl.[5] C02F *3/06*
U.S. Cl. 210—618 14 Claims



1. A fluidized bed reactor for filtering fluids comprising:
a reactor tank defining a volume;
a media bed disposed within said tank to a selected level;
a fluid inlet to said tank;
a distribution network connected to receive fluid from said inlet and having outlet ports for distribution of the fluid through the media bed;
a fluid outlet from said tank, said outlet maintaining a selected fluid level in the tank, which level is above that of the media; and
flow means for temporarily maintaining a gravity fed fluid flow through at least a portion of said distribution network after a termination in fluid flow from the fluid inlet.

5,330,653

METHOD FOR THE REDUCTION OF HYDROGEN SULFIDE IN SEWAGE TREATMENT PLANTS

Albert L. Vroman, Portland, Mich., assignor to Zing Odor Control, Inc., Portland, Mich.

Filed Jun. 14, 1993, Ser. No. 75,789
Int. Cl.[5] C02F *3/00*; A61L *11/00*
U.S. Cl. 210—631 12 Claims

1. A method for reducing hydrogen sulfide in an atmosphere in an enclosure housing equipment in which sewage is process and in which humans at least periodically work which comprises:
admixing methyl benzoate in the sewage in an amount of between about 0.05×10^{-3} and 0.125×10^{-3} part per volume of an aqueous composition containing 2.0 to 6.3% by volume methyl benzoate per part by volume of the sewage which amount reduces the hydrogen sulfide in the atmosphere in the enclosure to a level which does not exceed 15 ppm.

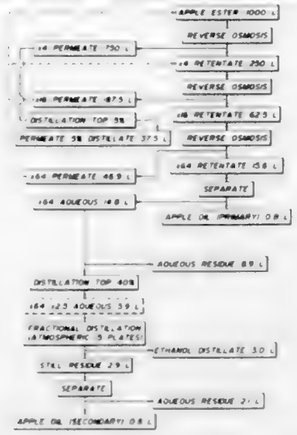
5,330,654

FLAVOR CONCENTRATES AND THEIR PRODUCTION

Anthony M. Humphrey, Chorleywood, and Gerald E. Usher, Reading, both of Great Britain, assignors to Bush Boake Allen Limited, Great Britain

PCT No. PCT/GB91/00077, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO91/10373, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 18, 1991, Ser. No. 915,695
Claims priority, application United Kingdom, Jan. 19, 1990, 9001322
Int. Cl.[5] B01D *61/04*
U.S. Cl. 210—652 19 Claims

1. A process for preparation of a natural flavour concentrate comprising flavour chemicals derived from a fruit or vegetable juice distillate comprising subjecting the distillate to reverse osmosis characterised in that the distillate is substantially free of saccharide and reverse osmosis is continued until a retentate is obtained that can phase separate, the rententate is phase



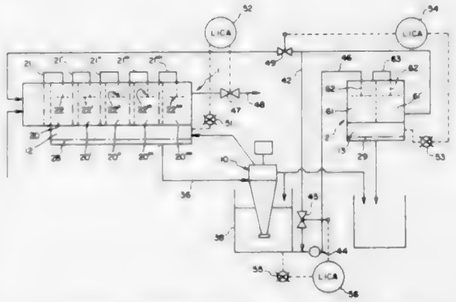
separated into an aqueous phase and a substantially anhydrous organic phase which contains a high proportion of the flavour chemicals, and the organic phase is recovered.

5,330,655

METHOD OF REGULATING A FLOTATION SYSTEM WITH A PRIMARY AND SECONDARY STAGE

Peter Schweiss, Elchingen, and Hans-Dieter Dorflinger, Heidenheim, both of Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 30, 1993, Ser. No. 100,483
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1992, 4225117
Int. Cl.[5] B03D *1/02, 1/08*
U.S. Cl. 210—703 2 Claims



1. A method of regulating a flotation system having an inflow quantity of suspension flow dependent on production demands, said flotation system including a primary flotation stage having a plurality of primary flotation cells, and a froth chute in communication with each of said primary flotation cells, each said primary flotation cell having a froth overflow device; and a secondary flotation stage having a plurality of secondary flotation cells, and a froth chute in communication with each of said secondary flotation cells; said method comprising the steps of:
feeding said inflow quantity of suspension to said primary flotation stage and forming a froth in said primary froth chute;

determining an overflow level of the suspension flow to the froth chute in the primary flotation stage;
dependent on said overflow level, adjusting a back-up level of the froth in the froth chute of the primary flotation stage;
dependent on said back-up level, controlling accepts from an outlet of said primary flotation stage to provide a substantially constant back-up level of the froth in the froth chute of the primary flotation stage;
de-aereating the froth from the froth chute of the primary flotation stage;
transporting the de-aereated froth to a collection vessel which is in fluid communication with an inlet to the secondary flotation stage;
recycling suspension flow from the secondary flotation cells of the secondary flotation stage in part to an inlet of the primary flotation stage, and in part to the inlet of the secondary flotation stage;
regulating the level of de-aereated froth in the collection vessel by controlling the amount of suspension flow recycled from said secondary flotation stage to the inlet of the secondary flotation stage;
measuring a height of the froth in the froth chute of the secondary flotation stage before an outflow weir associated therewith; and
regulating the ratio of the amount of said suspension flow from the secondary flotation cells which is transported to the inlet of the primary flotation stage relative to the amount of said suspension flow which is transported to the inlet of the secondary flotation stage, dependent on said measuring step.

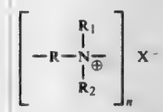
5,330,656

POLYSALT COMPOSITIONS AND THE USE THEREOF FOR TREATING AN OIL AND WATER SYSTEM

Denis E. Hassick, Monroeville, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 5, 1993, Ser. No. 26,948
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—708 7 Claims

1. A method for treating a waste system that includes an oil phase dispersed in a water phase comprising:
introducing to said waste system an effective amount of a composition comprising a polysalt complex consisting essentially of (a) an anionic polymer component based on polymerization of a water soluble anionic monomer which consists essentially of from about 5 to 50%, by weight, of acrylic acid or methacrylic acid and from about 50 to 95%, by weight, of acrylamide or methacrylamide, and (b) a water soluble cationic polymer component selected from the group consisting of (i) a polyamine represented by formula (I)



(I)

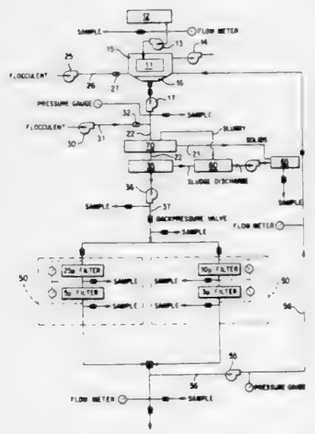
wherein R_1 and R_2 are the same or different radicals selected from the group consisting of straight or branched C_1–C_8 alkyl, substituted straight or branched C_1–C_8 alkyl and hydrogen, wherein R is a radical selected from the group consisting of straight or branched C_1–C_8 alkyl and substituted straight or branched C_1–C_8 alkyl, and wherein n ranges from about 2 to 50,000, and (ii) C_1–C_{12} dialkyl diallyl ammonium polymers, wherein the weight ratio of said anionic polymer component (a): said cationic polymer component (b) ranges from about 5:95 to 40:60, on an active basis, and wherein X is a halogen selected from the group consisting of chlorine, bromine, fluorine and iodine, wherein said treatment provides an improvement in the separation of said oil phase and said water phase of said waste system.

5,330,657

SYSTEM AND METHOD FOR REMOVING ASBESTOS PARTICLES FROM A SLURRY

Gordon R. Chapman, Missouri City; Donald R. Andruik, Houston; James V. Van Matre, Baytown; Andre Stenzel, Houston; Robert J. Logan, Houston; Edwin D. McCrory, Houston; Michael W. Singleton, Houston, all of Tex., and Robert M. Richmond, Bakersfield, Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Apr. 27, 1992, Ser. No. 874,793
Int. Cl.[5] C02F *1/52*
U.S. Cl. 210—712 9 Claims



1. A method for removing asbestos and other hazardous solid particles from a slurry collected during removal of insulation from pipelines, equipment or other structures, the method including:
(a) transferring the slurry from collection means to separation means;
(b) injecting a first flocculent into the slurry and injecting a second flocculent into the slurry downstream from the injection of the first flocculent; and
(c) separating a first portion of solid particles from the slurry in a first separation means thereby forming a first remaining slurry containing solid particles, and
(d) separating a second portion of solid particles from said first remaining slurry to form a second remaining slurry containing solid particles, and
(e) separating a third portion of solid particles from said second remaining slurry to form water recyclable to said process of removing insulation from pipelines, equipment or other structures.

5,330,658

SOLUTION DECONTAMINATION METHOD USING PRECIPITATION AND FLOCCULATION TECHNIQUES

David C. Grant, Gibsonia; Edward J. Lahoda, Edgewood; Ching-Yu Lin, Monroeville, and Francis Talko, N. Huntingdon, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1993, Ser. No. 32,362
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—717 17 Claims

1. A method for removing heavy metal and/or radioactive contaminants and oxidizing agents selected from the group consisting of hydrogen peroxide, ozone, chlorine, chlorine

dioxide, potassium permanganate, manganese dioxide, nitric acid, sodium hypochlorite, potassium hypochlorite, magnesium hypochlorite and calcium hypochlorite, from a contaminated stream, said method including the steps of:

a. removing substantially all of said oxidizing agents from said contaminated stream by adjusting the pH of the stream, and/or aerating said stream for from between about 1 to 24 hours;

b. treating said stream with aqueous ferrous sulfate solution to reduce and/or precipitate said contaminants;

c. treating said stream with an effective amount of a hydroxide solution sufficient to increase the pH of the stream to between about 9 to 12 , such that the precipitates, the contaminants, and/or the ferrous ions form coprecipitates with the hydroxide ion which are substantially insoluble in said stream;

d. treating said stream with a flocculant; and

e. separating said coprecipitates from the stream;

wherein step (a) is performed prior to steps (b) and (c).

5,330,659

PROCESS FOR DENATURATING WATER-DILUTABLE PAINTS AND SOLVENT-BASED PAINTS AND DENATURATION SOLUTION USED IN THIS PROCESS

Joseph Schapira, Paris; Patrick Droniou, Colombes; Michel Sudour, Luzarches, and Véronique Lerouge née Bouaffree, Bois Colombes, all of France, assignors to C F P I, France

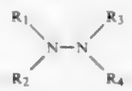
Filed Jul. 30, 1992, Ser. No. 921,802

Claims priority, application France, Aug. 2, 1991, 91 09914

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—725 **12 Claims**

1. A process for denaturating water-dilutable paints and solvent-based paints comprising treating said paints by washing them with an aqueous denaturation phase or solution whose pH is from 4.5 to 7 and which contains an effective quantity of at least one denaturation agent comprising an amine molecule having the formula



(I)

or the formula:



(II)

in which the substituents R_1 to R_7, which may be identical or different, denote:

a hydrogen atom,

a radical of formula —O—Re in which Re is selected from the group consisting of hydrogen and a C_1 to C_4 saturated aliphatic hydrocarbon chain, wherein the substituents R_5 to R_7 are not simultaneously all hydrogen atoms,

or of a hydrate or else of an organic or inorganic acid salt of said amine molecule, and separating the denatured paint from said aqueous denaturation phase or solution.

5,330,660

METHOD FOR EVACUATING FLOATING SLUDGE FROM SETTLING TANKS AND THICKENER TANKS

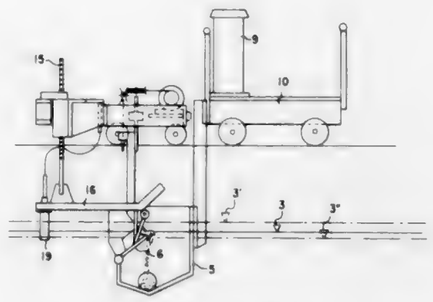
Karl Kettenbach, Aarbergen, Fed. Rep. of Germany, assignor to Passavant-Werke AG, Fed. Rep. of Germany

Filed Sep. 3, 1992, Ser. No. 939,512

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1991, 4129748

Int. Cl.[5] B01D *21/30, 21/04*

U.S. Cl. 210—741 **11 Claims**



1. A method for evacuating sludge floating on a liquid from a settling or thickener tank by sections of the tank wherein the floating sludge is pushed together between a scraper blade and a sludge drain and wherein the sludge drain includes an intake edge adjacent the pushed together floating sludge which is lowered relative to a liquid level of the tank by a push-down unit attached to the scraper blade and then by the scraper blade engaging therewith, said method comprising the steps of:

a) lifting the scraper blade which is adjacent the sludge drain, after evacuation of a section of the tank, above a level of the sludge in an adjacent section of the tank;

b) advancing the scraper blade to a position in the adjacent section remote from the sludge drain;

c) lowering the scraper blade at the position;

d) following the scraper blade with the sludge drain in the liquid so that the sludge in the adjacent section between the scraper blade and the sludge drain is pushed together therebetween;

e) causing the sludge drain to approach the scraper blade and lowering the push-down unit of the scraper blade to a predetermined position relative to the liquid level;

f) pre-lowering the intake edge of the sludge drain by the push-down unit at the predetermined position as the sludge drain is moved closer to the scraper blade;

g) further lowering the intake edge with the scraper blade as the sludge drain continues to move so that the sludge is evacuated into the sludge drain; and

h) repeating steps a-g to evacuate sludge from a subsequent section of the tank.

6. A method for evacuating sludge as claimed in claim **1** wherein the push-down unit includes a leading buffer ramp and a following guide link and wherein the intake edge of the sludge drain is pivotable and further includes an arm and a sliding roller supported by the arm; and wherein said pre-lowering step includes the step of pivoting the intake edge by engaging the sliding roller with the buffer ramp and then the guide link.

7. A method for evacuating sludge as claimed in claim **6** wherein the lowering the push-down unit step includes the step of detecting the liquid level with a pressure gage chamber projecting downward from the guide link.

5,330,661

PROCESS AND APPARATUS FOR THE DECOMPOSITION OF ORGANOCHLORINE SOLVENT CONTAINED IN WATER

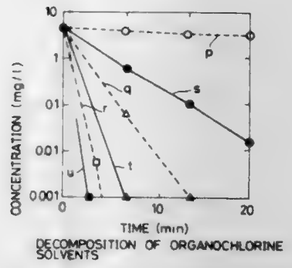
Taneaki Okuda, and Kazuo Tateishi, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Aug. 17, 1992, Ser. No. 885,673

Claims priority, application Japan, Oct. 18, 1991, 3-298163

Int. Cl.[5] C02F *1/32*

U.S. Cl. 210—748 **4 Claims**



DECOMPOSITION OF ORGANOCHLORINE SOLVENTS

1. A process for decomposing an organochlorine solvent contained in water, said water and solvent being in a container having a circumference, said process comprising the steps of: adding at least one of hydrogen peroxide and ozone to the water, the concentration of the hydrogen peroxide in said water being approximately 100–200 mg/l, and the ozone being present in a concentration of up to approximately 50 mg/l, and radiating ultraviolet rays into said water from all directions outside the entire circumference, which comprises causing a catalytic amount of a water-insoluble barium titanate to coexist in the water.

5,330,662

COMPOSITIONS CONTAINING COMBINATIONS OF SURFACTANTS AND DERIVATIVES OF SUCCINIC ACYLATING AGENT OR HYDROXYAROMATIC COMPOUNDS AND METHODS OF USING THE SAME

Richard W. Jahnke, Mentor; Lawrence J. Kocurek, Willowick, and James H. Bush, Mentor, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 17, 1992, Ser. No. 852,872

Int. Cl.[5] E21B *43/00;* **C09K** *7/02*

U.S. Cl. 252—8.551 **51 Claims**

1. A composition comprising a mixture of a brine and a liquid hydrocarbon, and (A) an emulsifying amount of (i) at least one reaction product of a hydrocarbyl-substituted succinic acylating agent, and at least one of (a) ammonia, (b) an alcohol, or (c) an amine, or at least one salt of the reaction product; or (ii) at least one reaction product of a hydroxyaromatic compound, an aldehyde, and an amine, and (B) at least one surfactant selected from the group consisting of a polyoxyalkylene amine, a polyoxyalkylene amide, a polyoxyalkylene alcohol, a polyoxyalkylene phenol, a fatty acid salt, an amine or an alkaline earth or transition metal sulfonate, or a reaction product of a hydroxyamine or a polyalkylenepolyamine with an acylating agent selected from the group consisting of a fatty monocarboxylic acylating agent, a dicarboxylic acylating agent other than a succinic acylating agent, and a tricarboxylic acylating agent.

49. A method, comprising the steps of introducing the composition of claim **1** into a wellbore and drilling, completing or working over the wellbore hole.

5,330,663

NEUTRAL AND LOW OVERBASED ALKYLPHENOXY SULFONATE ADDITIVE COMPOSITIONS

Robert H. Wollenberg, Orinda; Richard J. Nelson, Pinole; John McDonald, Emeryville; Susanne G. Ruelas, San Pablo; Curtis B. Campbell, Hercules, all of Calif., and Kathryn E. Matera, Northford, Conn., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Sep. 2, 1992, Ser. No. 938,779

Int. Cl.[5] C10M *159/24, 135/10*

U.S. Cl. 252—18 **32 Claims**

1. A lubricating oil soluble, low viscosity, neutral and low overbased alkylphenoxy sulfonate additive composition having a viscosity of no more than about 1000 cSt at 100° C. when the composition contains 40 weight percent of diluent oil wherein said diluent oil has a viscosity of about 2 to about 10 cSt at 100° C. and further wherein the alkyl group(s) on the alkylphenoxy sulfonate are substantially straight chain.

5,330,664

NEUTRAL AND LOW OVERBASED ALKYLPHENOXY SULFONATE ADDITIVE COMPOSITIONS DERIVED FROM ALKYLPHENOLS PREPARED BY REACTING AN OLEFIN OR AN ALCOHOL WITH PHENOL IN THE PRESENCE OF AN ACIDIC ALKYLATION CATALYST

Robert H. Wollenberg, Orinda; Richard J. Nelson, Pinole; John McDonald, Emeryville; Susanne G. Ruelas, San Pablo; Curtis B. Campbell, Hercules, all of Calif., and Kathryn E. Matera, Northford, Conn., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Sep. 2, 1992, Ser. No. 939,195

Int. Cl.[5] C10M *135/10, 159/24*

U.S. Cl. 252—18 **22 Claims**

1. A lubricating oil soluble, neutral and low overbased alkylphenoxy sulfonate additive composition having a viscosity of no more than about 1000 cSt at 100° C. in the presence of 40 weight percent diluent oil wherein said diluent oil has a viscosity of from about 2 to about 10 cSt at 100° C. which composition is prepared by the process of

(a) forming a lubricating oil soluble alkylphenol by contacting an olefin or alcohol with phenol or a C_1 to C_7 alkylphenol in the presence of an acidic alkylation catalyst characterized as having a Hammett (H_o) value of about −2.3 or less at a temperature of above about 90° C. and under conditions sufficient to cause alkylation of the phenol wherein the olefin or alcohol has a sufficient number of carbon atoms to impart oil solubility to the resulting alkylphenol;

(b) sulfonating the alkylphenol prepared in (a) above so as to produce an alkylphenol sulfonic acid; and

(c) neutralizing the product prepared in (b) above with the sufficient amount of an alkaline earth metal base so that the resulting product has a TBN from 0 to about 100.

5,330,665

PRODUCTION OF EITHER AN ALKALINE EARTH METAL ALKYL PHENATE OR A SULPHURISED ALKALINE EARTH METAL ALKYL PHENATE

Charles Cane, and Anthony Garner, both of Hull, United Kingdom, assignors to BP Chemicals (Additives) Limited, London, England

Continuation of Ser. No. 494,307, May 13, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 713,084

Claims priority, application United Kingdom, May 22, 1982, 8215014; Jul. 22, 1982, 8221268

Int. Cl.[5] C10M *159/22*

U.S. Cl. 252—25 **20 Claims**

1. a process for producing a sulphurised alkaline earth metal alkyl phenate comprising reacting at elevated temperature in the range 130° C. to 200° C., in the presence of sulphur, an alkyl phenol with an alkaline earth metal base in the presence

as solvent of either an alkylene glycol alkyl ether or a polyalkylene glycol alkyl ether of formula:

$$R(OR^1)_xOR^2$$

wherein R is a C_1 to C_6 alkyl group, R^1 is alkylene, R^2 is hydrogen or C_1 to C_6 alkyl and x is an integer in the range 1 to 6 and employing as a catalyst an inorganic halide.

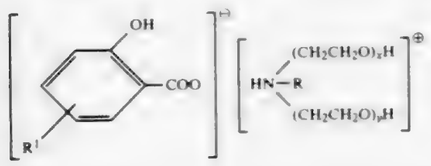
5,330,666

LUBRICANT COMPOSITION CONTAINING ALKOXYLATED AMINE SALT OF HYDROCARBYLSALICYCLIC ACID

Jacob J. Habeeb, Westfield, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Feb. 22, 1993, Ser. No. 21,294
Int. Cl.[5] C10M *129/50*
U.S. Cl. 252—34 **5 Claims**

1. A lubricant oil composition which consists essentially of:
(a) a major amount of lubricant oil basestock, and
(b) a minor amount of an alkoxylated amine salt of hydrocarbylsalicylic acid, said salt having the formula:



(I)

where R is alkyl or alkenyl of from 6 to 18 carbon atoms, R^1 is a hydrocarbyl having from 2 to 30 carbon atoms, and x and y are each independently integers of from 1 to 15 with the proviso that the sum of x+y is from 2 to 20.

5,330,667

TWO-CYCLE OIL ADDITIVE

George M. Tiffany, III, Houston, Tex.; Jack Ryer, East Brunswick; Renee M. Roper, Manalapan, both of N.J., and William H. Stover, Sarnia, Canada, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Apr. 15, 1992, Ser. No. 869,282
Int. Cl.[5] C10M *139/00*
U.S. Cl. 252—49.6 **39 Claims**

1. A two-cycle oil additive comprising a dispersant (A) which is the reaction product of a polyalkylene polyamine, at least one monocarboxylic acid acylating agent and optionally at least one high molecular weight carboxylic acid acylating agent; and (B) at least one succinimide dispersant and (C) a polyolefin thickener, and wherein at least one of the dispersants is borated.

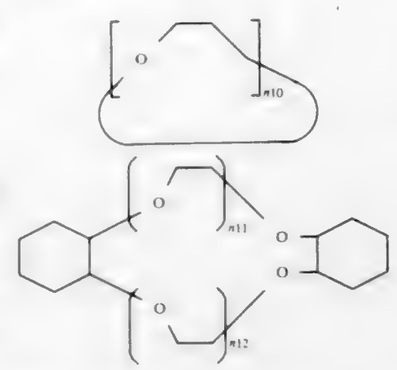
5,330,668

ORGANIC FERROMAGNETIC SUBSTANCE AND PROCESS FOR PRODUCING SAME

Kazuhisa Murata, Tsukuba; Akio Matsuda, Kashiwa, and Takashi Masuda, Abiko, all of Japan, assignors to Director-General of Agency of Industrial Science & Technology, Japan

Filed Feb. 28, 1992, Ser. No. 843,181
Claims priority, application Japan, Jun. 25, 1991, 3-180213
Int. Cl.[5] H01F *1/00*; C07G *17/00*
U.S. Cl. 252—62.51 **3 Claims**

1. An organic ferromagnetic substance which comprises an amorphous carbonaceous substance in mid course of graphitization produced from an organic compound selected from the group consisting of:
I. aza compounds selected from the group consisting of 1,4,8,11-tetrazaundecane, 1,5,8,12-tetrazadodecane, 1,5,9,13-tetrazatridecane, 1,4,8,11-tetrazacyclotetradecane and 1,4,8,12-tetrazacyclopentadecane;
II. crown compounds represented by the following general formula (V) and (VI):



(V)

(VI)

wherein n_{10}–n_{12} each represent an integer of 1 to 8; and
III. alkylamines,
said organic compound having a hydrogen-to-carbon ratio of 1.7 or more and said carbonaceous substance having 1–50 hydrogen atoms per 100 carbon atoms.

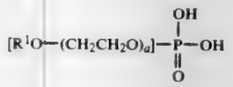
5,330,669

MAGNETIC COATING FORMULATIONS

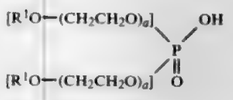
Masahiko Yasuda; Shigeo Hosokawa; Yorozu Yokomori, all of Mie; Shinichiro Jimbo, Tokyo, all of Japan, and Edmond G. Kolycheck, Lorain, Ohio, assignors to Kyowa Hakko Kogyo Co., Ltd. and The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 740,398, Aug. 5, 1991, Pat. No. 5,292,853, which is a continuation-in-part of Ser. No. 426,132, Oct. 24, 1989, Pat. No. 5,037,934. This application Mar. 31, 1993, Ser. No. 41,016
Claims priority, application Japan, Oct. 28, 1988, 63-271035; May 22, 1989, 1-126580; Aug. 8, 1989, 1-203738
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] G11B *5/00*
U.S. Cl. 252—62.54 **6 Claims**

1. A magnetic coating formulation; comprising:
magnetic particles and a binder, at least a portion of said binder being a polyurethane resin having a weight average molecular weight of from about 10,000 to about 350,000 and synthesized from a reactant mixture of at least one phosphorus compound, an epoxy compound having at least two epoxy groups, one epoxy group and at least one hydroxyl group, or combinations thereof,
a polyisocyanate, and
a polyfunctional hydroxyl compound having a molecular weight by end group analysis of from about 300 to about 10,000, and
optionally, a chain extender,
said urethane resin containing one phosphoric acid group or one residual group derived from phosphoric acid per 3,000 to about 200,000 number average molecular weight of said urethane resin, said urethane resin having a weight average molecular weight of from about 10,000 to about 350,000;
said phosphorus compound being a phosphorus compound (a) represented by the structural formula set forth below, or a phosphorus compound (b) represented by the structural formula set forth below, or a phosphorus compound (c) set forth by the structural formula set forth below,
said phosphorus compound (a) being a compound (a_1) alone or a mixture of the compound (a_1) and another compound (a_2):

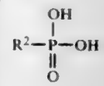


Compound (a_2)

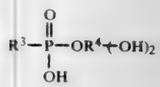


wherein R^1 is a hydrogen atom, a phenyl group, an alkyl group having 1–40 carbon atoms, or an alkylphenyl group having 1–40 carbon atoms, and n is an integer of 0–30,

Phosphorus compound (b):



wherein R^2 is a phenyl group, an alkyl group having 1–40 carbon atoms, or an alkylphenyl group having 1–40 carbon atoms; and wherein phosphorus compound (c) is



where R^3 is an aromatic or an alkyl substituted aromatic having from 6 to 40 carbon atoms, and R^4 is a disubstituted alkyl having from 1 to 12 carbon atoms.

5,330,670

GLYCOL-BASED POLYCARBOXYLATE-CONTAINING ANTIFREEZE COOLANT FORMULATIONS

David E. Turcotte, Woodhaven; John J. Conville, Canton; James T. Lyon, Novi; Richard J. Holland, Grosse Ille, and Stanley T. Hirozawa, Birmingham, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Jul. 23, 1991, Ser. No. 734,653
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] C09K *5/00*
U.S. Cl. 252—76 **8 Claims**

1. A glycol-based automotive antifreeze/coolant solution for use in hard water having silicate and phosphate salts and including a glycol-soluble polycarboxylate additive present in an amount which stabilizes the solution against hard water precipitate formation, said polycarboxylate additive being at least one of (i) a sodium salt of a copolymer of acrylic acid and maleic acid, and (ii) a secondary alcohol modified polyacrylic acid.

5,330,671

FLUID, FORMULATION AND METHOD FOR COAL DUST CONTROL

Erroll M. Pullen; Melvyn D. Pullen, and Carol Pullen, all of 16 Cordia Crescent, Umhlanga Rocks, South Africa

Filed Sep. 11, 1992, Ser. No. 944,089
Int. Cl.[5] C09K *3/22*; C10L *5/00*
U.S. Cl. 252—88 **21 Claims**

1. An aqueous, coal dust suppression or coal dewatering fluid comprising one or more surfactants in an amount of from about 15 to about 25% by weight selected from fatty acids, alkyl sulphates, alkyl ether sulphonates and alkyl aryl sulphonates, and at least one high terpene-containing natural oil containing at least 90% terpenes and selected from one or more citrus peel oils, said fluid comprising amounts of said surfactant(s) and high terpene-containing natural oil(s) effective in combination for coal dust suppression or coal dewatering.

10. A method for dewatering coal comprising applying a dewatering formulation to coal, said dewatering formulation comprising water dosed with an aqueous fluid including one or more surfactants and at least one high terpene-containing natural oil containing at least 90% terpenes and selected from one or more citrus peel oils, said aqueous fluid comprising amounts of said surfactant(s) and high terpene-containing natural oil(s) effective in combination for coal dewatering, and said water being dosed with the aqueous fluid in an amount effective for dewatering coal.

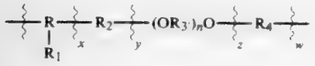
5,330,672

FABRIC CARE COMPOSITION COMPRISING WATER SOLUBLE OR WATER-DISPERSIBLE COPOLYMER CONTAINING UV-ABSORBING MONOMER

Matthew E. Langer, New City, N.Y.; Simon R. Ellis, Little Sutton, United Kingdom; John F. Hessel, Metuchen; Ferial Khorshahi, Leonia, both of N.J., and Russell J. Ward, Upton, United Kingdom, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 731,596, Jul. 17, 1991, abandoned. This application May 28, 1993, Ser. No. 70,033
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] C11D *9/00*
U.S. Cl. 252—108 **20 Claims**

1. A heavy duty detergent composition comprising:
(a) about 20 to about 75% by weight of a surfactant selected from the group consisting of soap, nonionic surfactant, anionic surfactant, ampholytic surfactant, zwitterionic surfactant, cationic surfactant and mixtures thereof; and
(b) about 0.01 to 10% by weight of a water-soluble or water-dispersible copolymer comprising a UV-absorbing monomer (absorbing in the 280–400 monomer range) and a hydrophilic group;
wherein said copolymer has the formula:



wherein
R is a difunctional aryl group or a difunctional straight or branched alkyl chain having 4 to 16 carbons;
R_1 is hydrogen, an aliphatic group having 1–20 carbons, an aryl, alkaryl, a secondary amine, an alkali metal sulfonate, an alkali metal carboxylate, an alkyl ether or a halogen atom;
R_2 is a straight or branch chain alkoxy group having 1 to 16 carbons, an aryl or a substituted aryl group;
R_3 is a straight or branch chain alkyl group having 1 to 16 carbons;
R_4 is a UV-absorbing monomer absorbing in the UVB (280–320 nm) and/or UVA (320–400 nm) range;
x is selected such that the hydrophobe is present at 0–49.9 mol % of the polymer;
y is selected such that the R_2 group is present at 0–49.9 mol % of the polymer;
z is selected such that the $(OR_3)_n$ group is present at 0 to 49.9 mol % of the polymer wherein n is an integer between about 12 and 200;
w is selected such that R_4 is present at 0.05 to 99.9 mol % of the polymer;
and w plus z equal at least 0.05 to 99.9 mol % of the polymer;
and w plus z equal at least 0.05 mol %.

5,330,673

AUTO BODY CLEANER AND ALL PURPOSE ADHESIVE AND URETHANE CLEANER

Ronnie E. Bayless, Plant City, Fla., assignor to Dotolo Research Corp., Largo, Fla.

Filed Aug. 12, 1993, Ser. No. 105,704
Int. Cl.[5] C11D *3/18, 1/83, 1/66, 3/20*
U.S. Cl. 252—171 7 Claims

1. A non-aqueous cleaning composition consisting of the following ingredients in approximate percentage by weight:

Ingredients	Percent
D-limonene	80 to 97.5
cocamide DEA/dihexyl sodium sulfosuccinate	2.5 to 20

5,330,674

METHOD FOR INCREASING THE EFFICIENCY OF A DISINFECTANT CLEANING COMPOSITION USING ALKYL POLYGLYCOSIDES

Allen D. Urfer, Lansdale, and Virginia L. Lazarowitz, Hatfield, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Sep. 9, 1992, Ser. No. 942,555
Int. Cl.[5] C11D *3/22, 1/62, 3/48, 11/00*
U.S. Cl. 252—176.17 2 Claims

1. A process for increasing the germicidal efficiency of a disinfectant cleaning formulation which comprises adding to said disinfectant cleaning formulation an effective amount of a compound of the formula I

$$R{-}O{-}(G)_n \qquad I$$

wherein R is an alkyl group having from 8 to 16 carbon atoms, G is a glucose residue; and n is 1.6; wherein said formulation is comprised of a mixture of $C_{12\text{-}18}$ alkyl dimethylbenzylammonium chlorides, and wherein the weight ratio of said mixture to said compound of formula I is from about 10:1 to about 1:10.

5,330,675

USE OF POLYACETALS BASED ON VINYL ETHERS AND DIHYDROXY COMPOUNDS IN DETERGENTS AND CLEANERS AND POLYACETALS

Matthias Kroner, Eisenberg; Heinrich Hartmann, Limburgerhof; Richard Baur, Mutterstadt; Volker Schwendemann, Neustadt; Hans-Ulrich Jaeger, Neustadt, and Johannes Perner, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 988,788
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142130
Int. Cl.[5] C11D *3/37*
U.S. Cl. 252—174.23 8 Claims

1. A reduced-phosphate or phosphate-free detergent or cleaner formulation comprising 1 to 50% by weight of at least one surfactant and from 0.1 to 50% by weight, based on said detergent or cleaner formulation of polyacetals obtained by cationically initiated polyaddition of

(a) divinyl ethers and

(b) dihydroxy compounds and also, optionally,

(c) monohydroxy compounds, the molar ratio of (a):(b) being from 2:1 to 1.001:1 and the molar ratio of the vinyl ether groups in (a) to the sums total of the hydroxyl groups in (b) and (c) being from 2:1 to 1:1, said polyacetals having K values, determined by the method of H. Fikentscher at 25° C. in tetrahydrofuran at a polyacetal concentration of 1% by weight, of from 8 to 100.

5,330,676

CHLOROISOCYANURATE COMPOSITIONS WHICH RAPIDLY DISINTEGRATE

Jeffrey J. Glen, Meriden, Conn., assignor to Olin Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 648,949, Feb. 1, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 951,952
Int. Cl.[5] C01B *11/06*
U.S. Cl. 252—186.35 6 Claims

1. A composition in compressed form consisting essentially of a chloroisocyanurate compound and a disintegrating amount ranging from about 0.5 to about 5% by weight of Guar gum.

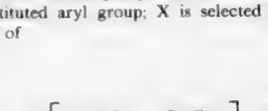
5,330,677

BLEACHING COMPOSITION

Kohshiro Sotoya, Wakayama; Muneo Aoyagi, Tochigi; Nobuyuki Ogura, and Youhei Kaneko, both of Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

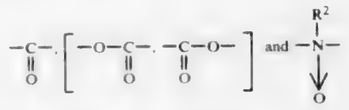
Division of Ser. No. 533,354, Jun. 5, 1990, Pat. No. 5,158,700. This application Aug. 5, 1992, Ser. No. 924,955
Claims priority, application Japan, Jun. 14, 1989, 1-150758
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—186.38 17 Claims

1. A bleaching composition which comprises (a) a peroxygen compound capable of yielding hydrogen peroxide in an aqueous solution and (b) an organic peracid precursor having the formula (I):



(I)

where R_1 is selected from the group consisting of a straight-chain or branched-chain C_1–C_{20} alkyl or alkenyl group which may have a substituent group and, an unsubstituted or C_1–C_{20} alkyl-substituted aryl group; X is selected from the group consisting of



Y is selected from the group consisting of

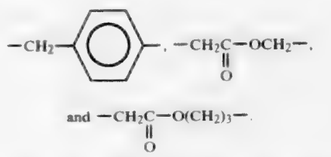


where

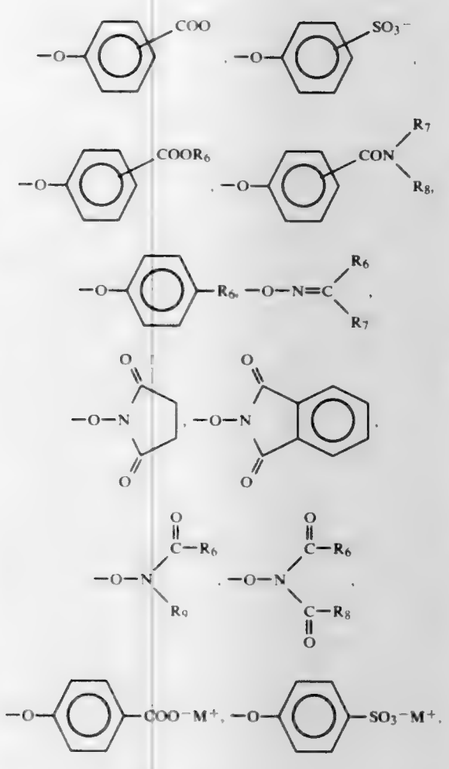
n is an integer of 1 to 10,

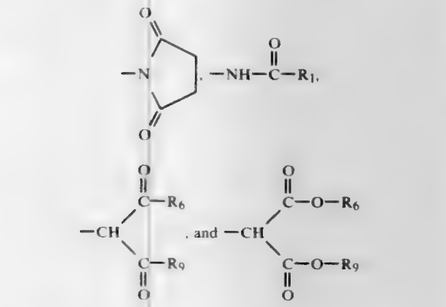
R_2 and R_3 each is selected from the group consisting of a C_1–C_3 alkyl group which may have a substituent group,

R_4 and R_5 each is selected from the group consisting of a C_1–C_{12} alkylene group which may have a substituent group,



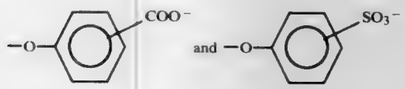
L is a leaving group selected from the group consisting of





where

R_6 and R_9 each is a alkyl group, R_7 and R_8 each is selected from the group consisting of hydrogen or an alkyl group, and M^+ denotes an alkali metal ion or hydrogen ion or a glycerin residue or sugar residue, and X is selected from the group consisting of an inorganic or organic counter ion, provided that when L is selected from the group consisting of



X^- does not exist.

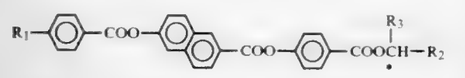
5,330,678

LIQUID CRYSTAL COMPOUND

Nobuhiro Okabe; Hiroyuki Mogamiya, and Noriko Yamakawa, all of Chiyoda, Japan, assignors to Showa Shell Sekiyu Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1993, Ser. No. 66,445
Claims priority, application Japan, Aug. 19, 1992, 4-242771
Int. Cl.[5] C09K *19/32, 19/20;* C07C *69/76*
U.S. Cl. 252—299.62 7 Claims

1. A liquid crystal compound having an excellent light leaking ratio under tristable states and represented by the following formula:



wherein R_1 is a C_6–C_{16} linear alkyl group or C_6–C_{16} linear alkoxy group, R_2 is a C_4–C_{12} linear alkyl group, R_3 is a C_1–C_3 alkyl group or C_1–C_3 haloalkyl group, and C having an asterisk indicates an asymmetric carbon atom.

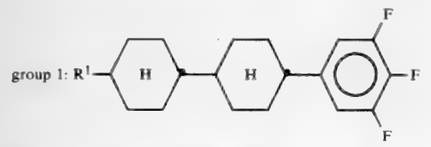
5,330,679

NEMATIC LIQUID-CRYSTAL COMPOSITION FOR ACTIVE MATRIX APPLICATION

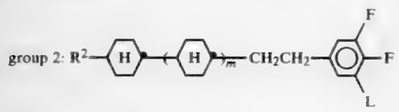
Kei Sasaki, Tenri; Masako Okada, Ikoma; Shuichi Kohzaki, Nara; Fumiaki Funada, Yamatokooriyama; Bernhard Rieger; Hiroshi Numata, both of Yokohama, all of Japan; Reinhard Hittich, Modautal, Fed. Rep. of Germany; Herbert Plach, Darmstadt, Fed. Rep. of Germany; Thomas Geelhaar, Mainz, Fed. Rep. of Germany; Eike Poetsch, Mühltal, Fed. Rep. of Germany, and Volker Reiffenrath, Rossdorf, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany and Sharp Corporation, Osaka, Japan

Filed Mar. 3, 1992, Ser. No. 845,108
Claims priority, application European Pat. Off., Mar. 4, 1991, 91103200.1
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[5] C09K *19/30*
U.S. Cl. 252—299.63 3 Claims

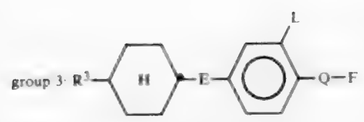
1. A nematic liquid-crystal composition based on terminally and laterally fluorinated compounds, comprising about 8 to 60% by weight of one or more compounds from group 1:



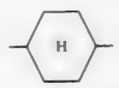
wherein R^1 denotes a straight-chain alkyl group of 2 to 7 carbon atoms, about 6 to 80% by weight of one or more compounds from group 2:



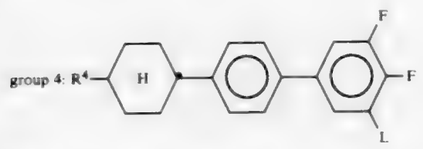
wherein R^2 denotes a straight-chain alkyl group of 2 to 7 carbon atoms, L is H or F and m is 1 or 0, about 8 to 60% by weight of one or more compounds from group 3:



wherein R^3 denotes a straight-chain alkyl group of 2 to 7 carbon atoms, E is



and L is H or F and Q is OCF_2, OCFH, $OCFC_1$ or a single bond, and 0 to 60% by weight of one or more compounds from group 4:



wherein R^4 denotes a straight-chain alkyl group of 2 to 7 carbon atoms and L is H or F.

5,330,680

FOLIATED FINE GRAPHITE PARTICLES AND METHOD FOR PREPARING SAME

Kouji Sakawaki; Yuji Yoshizumi, and Yutaka Yamashita, all of Kitakyushu, Japan, assignors to Mitsui Mining Company, Limited, Tokyo, Japan

Continuation of Ser. No. 460,096, Feb. 2, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 947,879

Claims priority, application Japan, Jun. 8, 1988, 63-139483

Int. Cl.[5] B01J *13/00;* **C01B** *31/04*

U.S. Cl. 252—309 **12 Claims**

1. A method for preparing foliated fine graphite particles of substantially uniform shade which comprises the steps of (a) dispersing expanded graphite particles having a honeycomb structure along the graphite crystal layer planes, a rate of expansion of 50 or greater and a bulk density of 0.01 g/cm^3 or less in from 1.5 to 100 times the volume of the expanded graphite of a liquid which has low viscosity, surface tension and specific gravity and which exhibits good wetting properties for the expanded graphite particles and, while the expanded graphite particles are in the liquid, (b) imparting ultrasonic energy to both the liquid and the interior of the graphite particles, whereby the particle walls are subjected to ultrasonic vibrations and the impact of cavitation caused thereby from both inside and the outside of the particles, for a period of time effective to comminute by ultrasonic energy alone more than 90% of the starting graphite particles into foliated fine particles which have a substantially uniform shape, a thickness of 1 μm or less and a diameter of 1 to 100 μm and an aspect ratio of from 100 to 7,000.

5,330,681

STABLE EMULSIONS OF PERFLUOROPOLYETHERS

Fabio Brunetta, Treviso, and Giovanni Pantini, Milan, both of Italy, assignors to Ausimont S.r.l., Milan, Italy

Division of Ser. No. 501,481, Mar. 30, 1990, Pat. No. 5,183,589. This application Sep. 29, 1992, Ser. No. 953,128

Claims priority, application Italy, Mar. 31, 1989, 19974 A/89

Int. Cl.[5] A61K *7/025, 7/40;* **B01J** *13/00*

U.S. Cl. 252—312 **10 Claims**

1. Stable emulsions of perfluoropolyethers having perfluoroalkyl end groups, consisting of:

a) from 0.01% to 50% by weight of a perfluoropolyether;

b) from 0.01% to 5% of a surfactant; and

c) from 45 to 99.98% of a solution in water of a polyhydroxylated compound selected from the group consisting of polyalcohols other than glycerine and the saccharides containing at least three hydroxylic groups;

i) said solution in water is a syrup (a concentrated solution) containing 50 to 80% by weight of the polyhydroxylated compound;

ii) the polyhydroxylated compounds are crystalline powders soluble in water;

iii) the surfactant is an ionic surfactant or emulsifier used for cosmetics.

5,330,682

METHODS OF EMULSIFICATION WITH PEPTIDE EMULSIFIERS

Christopher J. Brock, Wallingford, United Kingdom, and Michael B. Enser, Winscombe, England, assignors to Agricultural & Food Research Council, Berkshire, England

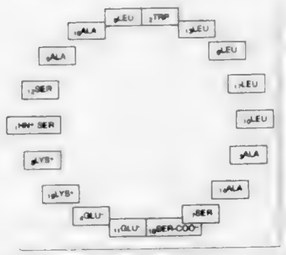
PCT No. PCT/GB88/00969, § 371 Date May 4, 1990, § 102(e) Date May 4, 1990, PCT Pub. No. WO89/04209, PCT Pub. Date May 18, 1989

PCT Filed Nov. 3, 1988, Ser. No. 488,016

Claims priority, application United Kingdom, Nov. 7, 1987, 8726132; Jul. 1, 1988, 8815748

Int. Cl.[5] B01J *13/00;* **B01F** *17/30*

U.S. Cl. 252—314 **12 Claims**



1. A method for the production of an emulsified product consisting essentially of

adding to a material to be emulsified a polypeptide consisting of not more than 29 amino acid groups having at least one alpha-helical region said alpha-helix having hydrophilic and hydrophobic axial domains such that the axial region of the polypeptide may lie on a fat/water interferace of the product with the hydrophilic axial domain in the water phase and the hydrophobic axial domain in the fat phase, the alpha-helix having at least 2 turns and wherein at least 70% of the amino acids of the polypeptide are in the alpha-helix forming region.

5,330,683

METHOD OF INHIBITING CORROSION IN BRINE SOLUTIONS

Barry W. Sufrin, Naperville, Ill., assignor to NALCO Chemical Company, Naperville, Ill.

Continuation of Ser. No. 870,642, Apr. 16, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 79,702

Int. Cl.[5] C23F *11/12, 11/14*

U.S. Cl. 252—387 **20 Claims**

1. A method of inhibiting corrosion in aqueous brine solution systems wherein a brine solution containing at least 100,000 ppm of a salt from the group consisting of calcium chloride, calcium bromide, potassium chloride, potassium bromide, lithium chloride, magnesium chloride, magnesium bromide, sodium chloride, and sodium bromide is treated with at least 200 ppm by weight gluconate and at least 200 ppm of an alkane polyol selected from the group consisting of sorbitol and mannitol.

19. A method of inhibiting corrosion in brine solution refrigeration systems comprising treating the brine solution with at least about 200 ppm gluconate, at least about 200 ppm sorbitol, at least about 100 ppm of borax, and at least about 5 ppm of a corrosion inhibitor for yellow metals.

5,330,684

ANISOTROPIC CONDUCTIVE ADHESIVE FILM

Kenji Emori, and Yoshihiko Tasaka, both of Sagamihara, Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 729,082, Jul. 12, 1991, abandoned. This application Nov. 3, 1992, Ser. No. 970,806

Int. Cl.[5] H01B *1/00, 1/20, 1/22*

U.S. Cl. 252—512 **17 Claims**

1. A moisture resistant anisotropically electrically conductive adhesive comprising:

a) about 100 parts of cyanate ester resin, including one or more cyanate ester compounds,

b) from about 10 to about 300 parts of a film formable thermoplastic resin,

c) from about 10 to about 500 parts of an epoxy resin,

d) from about 0.01 to about 10 parts of an organometallic catalyst, wherein said catalyst contains at least one carbon atom covalently bonded to a transition metal atom, and

e) from about 0.1 to about 20 parts conductive particles selected from the group consisting of metal particles, including coagulated metal particles, and metal-covered polymeric particles per 100 parts total weight of said adhesive,

said adhesive having been cured in 60 seconds or less at 180° C.

5,330,685

NARROW BAND RADIATION FILTER FILMS

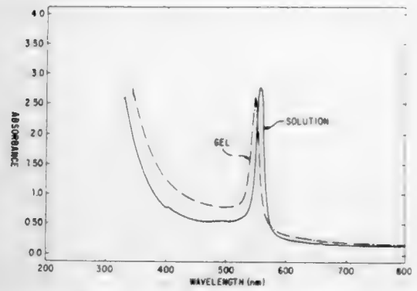
Hans P. Panzer, Stamford, and Lino Giovanni, Shelton, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 3, 1991, Ser. No. 637,041

Int. Cl.[5] F21V *9/00;* **B01F** *3/00;* **B01J** *13/00;* **G02B** *5/24*

U.S. Cl. 252—582 **11 Claims**

1. A satellite peak free, narrow band radiation filter comprising a crystalline colloidal array of charged particles of a copolymer of styrene and a comonomer selected from the group consisting of 1-sodium, 1-allyloxy-2-hydroxylpropane sulfonate; styrene sulfonate; 2-acrylamido-2-methylpropane sulfonate; 3-sulfopropyl methacrylate potassium salt and vinyl sulfonate fixed in a self-supporting film of polymeric hydrogel wherein said hydrogel film is a copolymer comprising acrylamide, an optional water-soluable comonomer selected from the group consisting of vinyl pyrrolidone and hydroxyethylmethacrylic acid ester and N,N-methylenebisacrylamide, the ratio of acrylamide and optional water soluble comonomer to



N,N-methylenebisacrylamide ranging from about 1:8 to about 1:12 on a weight basis.

5,330,686

TEMPERATURE STABLE AND SUNLIGHT PROTECTED PHOTOCHROMIC ARTICLES

Robert A. Smith, and Barry Van Gemert, both of Murrysville, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 19, 1992, Ser. No. 932,172

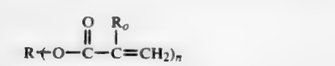
Int. Cl.[5] G02B *5/23;* **C08K** *5/34*

U.S. Cl. 252—586 **19 Claims**

1. A photochromic article comprising:

(a) the polymerizate of

i. at least one monomer selected from monomers represented by the graphic formula,



wherein R_o is selected from the group consisting of hydrogen and methyl, R is selected from the group consisting of C_1–C_{20} alkyl, C_2–C_{20} ethylenically unsaturated alkyl(alkenyl), C_5–C_8 cycloalkyl, hydroxy (C_1–C_4) alkyl, C_1–C_4 alkoxy (C_2–C_4) alkyl, C_2–C_4 oxiranyl, C_1–C_8 amino alkyl, C_1–C_4 alkoxy (C_1–C_4) alkoxy (C_2–C_4) alkyl, phenyl, substituted phenyl, phenyl (C_1–C_9) alkyl, substituted phenyl (C_1–C_9) alkyl, phenoxy (C_1–C_9) alkyl and substituted phenoxy (C_1–C_9) alkyl, wherein the phenyl substituents are represented by X_m and wherein X is selected from the group consisting of C_1–C_9 alkyl, cyano, chloro, bromo, methoxy, nitro, amino, methylthio and m is selected from the integers 1–5, and n is selected from the integers 1–4; and

ii. a crosslinking amount of a material selected from the group consisting of anhydrous methacrylic anhydride, anhydrous acrylic anhydride, and mixtures of such anhydrides; and

(b) a photochromic amount of a photochromic material selected from the group consisting of spiro(indoline) pyrido benzoxazine and spiro(benzindoline) pyrido benzoxazine, said polymerizate being permeable to ultraviolet and visible light.

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5,330,687

PREPARATION OF FUNCTIONALIZED POLYMERS UTILIZING A SOLUBLE HIGHLY REACTIVE FORM OF CALCIUM

Reuben D. Rieke, Lincoln, Nebr., assignor to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 739,294, Aug. 1, 1991, Pat. No. 5,211,886. This application Jul. 30, 1992, Ser. No. 923,749

The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

Int. Cl.[5] C07F *3/04*

U.S. Cl. 260—665 R 20 Claims

1. A calcium-substituted polymeric reagent comprising a polymer substituted with calcium atoms in a covalent interaction, wherein the calcium atoms are derived from a zerovalent calcium species comprising formally zerovalent calcium metal atoms.

5,330,688

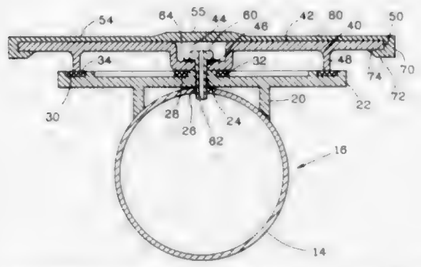
FLEXIBLE DIFFUSER ASSEMBLY FOR AERATION APPLICATIONS

Ernest W. Downs, Cincinnati, Ohio, assignor to Enviroquip International, Inc., Cincinnati, Ohio

Filed May 27, 1993, Ser. No. 67,844

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—122.2 10 Claims



1. In combination with an aeration system utilizing a plurality of fluid medium transmission conduits, with each said conduit provided with at least one flange projecting therefrom, where said flange includes a base plate mounted thereto and a central opening communicating with said conduit, a diffuser assembly comprising

(1) a first member having a continuous annular face portion, said first member including a central recess with a bore aligned with said central opening,

(2) a locking bolt member extending through said bore and threadably engaging said central opening, where said bolt member includes a central, through orifice communicating with said conduit through which said fluid medium may pass, and

(3) a porous elastomeric cover lying contiguous with said annular face portion and engaging the periphery of said first member, where said cover includes a plurality of perforations.

5,330,689

ENTRAPMENT OF WATER-INSOLUBLE COMPOUND IN ALPHA TOCOPHEROL-BASED VESICLES

Andrew S. Janoff, Yardley, Pa.; Lois E. Bolcsak; Alan L. Weiner, both of Lawrenceville, N.J.; Paul A. Tremblay, Hamilton, N.J.; Michael V. W. Bergamini, Cupertino, Calif., and Robert L. Suddith, Robbinsville, N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Division of Ser. No. 599,290, Oct. 17, 1990, Pat. No. 5,234,634, which is a division of Ser. No. 280,551, Dec. 6, 1988, Pat. No. 5,041,278, which is a division of Ser. No. 911,138, Sep. 24, 1986, Pat. No. 4,861,580, and a continuation-in-part of Ser. No. 786,740, Oct. 15, 1985, abandoned. This application Mar. 29, 1993, Ser. No. 39,941

Int. Cl.[5] A61K *9/127, 9/133*

U.S. Cl. 264—4.3 22 Claims

1. A method for the treatment of a water-insoluble compound in alpha-tocopherol vesicles, comprising

(a) dissolving the water-insoluble compound in an organic solvent;

(b) removing the organic solvent, leaving a dried preparation comprising the water-insoluble compound; and

(c) adding to the dried preparation an aqueous suspension of alpha-tocopherol vesicles prepared by adding to an aqueous phase a salt form of an organic acid derivative of alpha-tocopherol capable of forming closed bilayers in an amount sufficient to form completely closed vesicles, and agitating the mixture until a suspension of vesicles is formed.

5,330,690

PROCESS AND APPARATUS FOR RENEWING THE REFRACTORY LINING OF FOUNDRY LADLES

Wilhelm Eitel, Ratingen, Fed. Rep. of Germany, assignor to Intocast GmbH Feuerfestprodukte und Giesshilfsmittel, Ratingen, Fed. Rep. of Germany

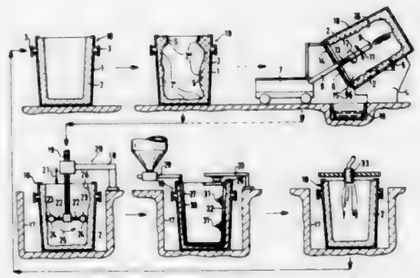
PCT No. PCT/DE91/00021, § 371 Date Aug. 4, 1992, § 102(e) Date Aug. 4, 1992, PCT Pub. No. WO91/12103, PCT Pub. Date Aug. 22, 1991

PCT Filed Jan. 14, 1991, Ser. No. 916,000

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1990, 4003646

Int. Cl.[5] B32B *35/00;* C21B *7/06;* F27D *1/16*

U.S. Cl. 264—30 6 Claims



1. A process for renewing a refractory lining of a ladle, the refractory lining having a predetermined thickness, and the ladle containing at least one of: 1) a slag which is adhered to the refractory lining, and 2) a slag-impregnated surface layer of the refractory lining, the process comprising the steps of:

A) heating the ladle;

B) tilting the ladle on a side thereof such that the ladle is sloped relative to a horizontal plane wherein an opening of the ladle is located proximate a lower end of the sloped ladle;

C) melting at least one of the slag and the slag-impregnated surface layer via a high-temperature burner that utilizes pure oxygen and allowing the melted at least one of the slag and the slag-impregnated surface layer to run out of the opening so that after melting has ended, the refractory lining has an exposed glassy surface;

D) cooling the ladle;

E) roughening the exposed glassy surface; then

F) casting a refractory lining material against the roughened exposed glassy surface to form a renewed refractory lining adhered to the roughened exposed glassy surface of the refractory lining such that a thickness of the renewed refractory lining combined with the refractory lining is approximately the same as the predetermined thickness of the refractory lining.

2. An apparatus for renewing a refractory lining of a ladle used for casting metallurgical material, the apparatus comprising:

a stand upon which the ladle is removably supported to lie at an angle relative to a horizontal plane so that an opening of the ladle is located proximate a lower end of the angled ladle;

a movable high-temperature burner being removably disposed in the ladle and guidable along an inner surface of the ladle, the high-temperature burner being pivotable, rotatable and displaceable along a longitudinal axis of the ladle, the high-temperature burner melting at least one of a slag adhered to the refractory lining and a slag-impregnated surface layer of the refractory lining so that the melted at least one of the slag and the slag-impregnated surface layer exits the ladle via the opening;

a device which receives the melted at least one of the slag and the slag-impregnated surface layer exiting the opening;

a roughening device for roughening an exposed glassy surface of the refractory lining which exists after the melted at least one of the slag and the slag-impregnated surface layer has exited via the opening;

a template lowerable into the ladle such that at times when the template is in the ladle, a space is defined between the template and a portion of the refractory lining which remains after the melted at least one of the slag and the slag-impregnated surface layer exits the opening and the roughening device has roughened the exposed glassy surface; and

a feed device for feeding lining material in the space for renewal of the refractory lining.

5,330,691

METHOD FOR PRODUCING GLASS FIBER REINFORCED PLASTERBOARD

Emmanuel H. C. A. Geeraert, Ekeren, Belgium, assignor to N.V. Recdo S.A., Kapelle, Belgium

Division of Ser. No. 681,108, Apr. 5, 1991, Pat. No. 5,173,364. This application Sep. 4, 1992, Ser. No. 941,209

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1990, 4011793

Int. Cl.[5] B28B *1/08, 11/14*

U.S. Cl. 264—42 16 Claims

1. A method for producing glass fibre reinforced gypsum boards adapted for use as a wallboard having a uniform isotropic high break resistance comprising a single uniform layer of body material having a generally uniform density, said method including the steps of:

a) forming a water-gypsum paste by adding water to a solid mixture to obtain a water to solid mixture ratio of 0.4 to 0.6, said solid mixture comprising gypsum, glass fibre and a non-water absorbing filler material, said filler material having a particle size of no larger than 350 microns, an apparent density of no more than 0.7 g/cm^3 and being added in an amount so as not to exceed 20 weight percent of said gypsum board;

b) dispersing said solid mixture in said water of said paste in an essentially uniform manner to reduce viscosity and density of said paste;

c) pouring said paste into a form and subjecting said paste to vibrations to spread and shape said paste in said form; and

d) cutting said paste into said gypsum board and subsequently drying said gypsum board.

5,330,692

PROCESS FOR PRODUCING AN ALUMINUM NITRIDE SINTERED PRODUCT

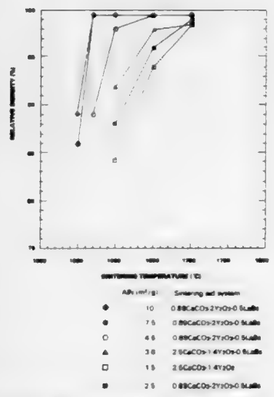
Noboru Hashimoto, Suita; Kyoji Tanaka, Kobe; Susumu Kajita, Hirakata, and Hiroyoshi Yoden, Kadoma, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jul. 12, 1993, Ser. No. 89,558

Claims priority, application Japan, Dec. 22, 1992, 4-342914; Jan. 26, 1993, 5-010749; Jan. 26, 1993, 5-010750

Int. Cl.[5] C04B *35/58*

U.S. Cl. 264—65 4 Claims



1. In a process for producing an aluminum nitride (AlN) sintered product, which comprises the steps of adding sintering aids to AlN powder to form a mixture, compacting the resulting mixture, and then sintering the compacted mixture at a sintering temperature in a non-oxidizing atmosphere;

said AlN powder having a specific surface area in a range of about 3.5 to 8 m^2/g and an oxygen content between 0.5 and 1.8 wt %;

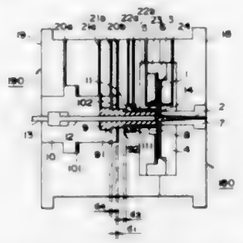
said sintering aids comprising:

a first sintering aid comprising at least one selected from the group consisting of rare earth oxides and rare earth compounds which are converted to corresponding rare earth oxides by said sintering, said first sintering aid being incorporated such that an equivalent rare earth oxide amount thereof is in a range of 0.5 to 10 wt % in relation to the AlN sintered product;

a second sintering aid comprising at least one selected from the group consisting of alkaline earth oxides and alkaline earth compounds which are converted to corresponding alkaline earth oxides by said sintering, said second sintering aid being incorporated such that an equivalent alkaline earth oxide amount is in a range of 0.1 to 5 wt % in relation to the AlN sintered product; and

LaB_6 as a third sintering aid, an additive amount of said third sintering aid being in a range of 0.05 to 3 wt % of the AlN sintered product.

5,330,693
PROCESS AND APPARATUS FOR INJECTION-MOLDING PRODUCT HAVING MINUTE SURFACE PATTERN AND CENTRAL HOLE
Kunio Takada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 17, 1991, Ser. No. 761,284
Claims priority, application Japan, Sep. 18, 1990, 246270
Int. Cl.[5] B29C *45/38*
U.S. Cl. 264—106 **58 Claims**



1. A process for injection molding of a product having a minute surface pattern and a central hole, comprising the steps of:

injecting a resin into a cavity defined by a mold including a movable half provided with a stamper having a minute surface pattern and a fixed half defining the cavity in combination with the movable half to form a product;

providing the movable half with an ejector ring reciprocally movable at first and second stage strokes in a mold opening-and-closing direction, a gate cutter reciprocally movable at first and second stage strokes in the mold opening-and-closing direction, and an ejector pin carried within the gate cutter and reciprocally movable in the mold opening-and-closing direction;

moving the gate cutter at the first stage stroke to form a central hole of the product in the cavity, and holding the product by a circumference of the gate cutter tip at its inner peripheral face of the central hole;

opening the mold;

substantially simultaneously with commencement of the mold opening, moving the ejector ring at the first stage stroke to release the product from the stamper and moving the gate cutter at the second stage stroke in a direction causing the release of the product from the stamper to retain the linkage between the gate cutter and the product; and

after the mold is opened, moving the ejector ring to release the linkage between the gate cutter and the product and moving the ejector pin to release a sprue from the gate cutter.

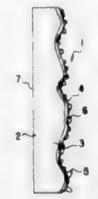
5,330,694
METHOD OF PATTERNING A CONCRETE SURFACE
Nobuo Iwaya, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan
Filed Dec. 15, 1992, Ser. No. 991,212
Claims priority, application Japan, Dec. 17, 1991, 3-353727
Int. Cl.[5] B28B *1/16, 7/36;* B32B *3/26, 31/12*
U.S. Cl. 264—112 **5 Claims**

1. A method of patterning a concrete surface which comprises the steps of:

preparing a pattern transfer mat releasably carrying a multiplicity of aesthetic grains on a surface of said pattern transfer mat, said surface of said pattern transfer mat having an undulating profile;

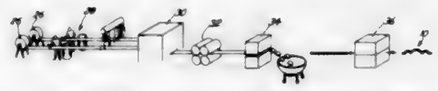
casting concrete against said surface of said pattern transfer mat curing said cast concrete, and detaching said pattern transfer mat from said cured concrete to transfer said aesthetic grains to a surface of said cured concrete and to embed said aesthetic grains in said surface of said cured concrete; and

depositing a particulate cement powder on said aesthetic grains before said casting of said concrete against said



pattern transfer mat such that said particulate cement powder absorbs water from said cast concrete causing fine air cells entrapped between said pattern transfer mat surface and said cast concrete to collapse to thus provide a smooth concrete surface.

5,330,695
METHOD OF MANUFACTURING DIAPHRAMS FOR DYNAMIC MICROPHONES
Charles E. Seeler, Evanston, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.
Division of Ser. No. 734,213, Jul. 22, 1991, Pat. No. 5,259,036.
This application Jul. 8, 1993, Ser. No. 88,794
Int. Cl.[5] B32B *31/06, 31/20*
U.S. Cl. 264—134 **8 Claims**



1. A method of manufacturing diaphragms comprising the steps of:

(a) applying a solution of uncured rubber to a first sheet of plastic film and allowing said rubber solution to dry to form a rubber layer;

(b) applying a second sheet of plastic film to said rubber layer to form a laminar structure with said first sheet of plastic film;

(c) compressing said laminar structure at a temperature and pressure and for a period of time sufficient to permit said uncured rubber to spread evenly between said first and second plastic sheets to a desired thickness without curing said rubber;

(d) punching blanks from said laminar structure;

(e) pressing said blanks in a mold having a predetermined contour at a temperature and pressure sufficient to cure said rubber thereby imparting a predetermined shape to said blanks; and

(f) releasing said blanks from said mold.

5,330,696
PROCESS OF MAKING LAMINAR ARTICLES OF A POLYOLEFIN AND A NYLON/POLYVINYL ALCOHOL BLEND
Vinod K. Mehra, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 515,699, Apr. 26, 1990, abandoned, which is a division of Ser. No. 181,119, Mar. 17, 1988, Pat. No. 4,950,513. This application Jun. 7, 1991, Ser. No. 711,966
Int. Cl.[5] B29C *47/06;* B32B *31/30*
U.S. Cl. 264—141 **10 Claims**

1. A process for preparing a laminar article of polymeric material, comprising the steps of:

(a) selecting a polyamide and a polyvinyl alcohol component, to function as a barrier in said laminar article;

(b) preparing a melted blend of said polyamide and said polyvinyl alcohol component;

(c) combining about 2 to about 39 percent by weight of the melted blend with about 60 to about 97 percent by weight of a polyolefin and about 0.25 to about 12 percent by weight of an alkylcarboxyl-substituted polyolefin at a sufficient temperature to melt all the components, thereby forming a melted heterogeneous mixture;

(d) forming the melted heterogeneous mixture by (i) stretching a body of the mixture and (ii) cooling the stretched body to below the melting point of the lowest melting polymer component

whereby the blend of (b) is present in a polyolefin matrix as a multitude of thin, substantially two-dimensional, parallel, and overlapping layers.

5,330,697
METHOD OF PREPARING FILMS CONTAINING LIQUID CRYSTALLINE POLYMERS
Chiu P. Wong, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 595,978, Oct. 11, 1990, Pat. No. 5,124,184, which is a continuation of Ser. No. 88,160, Aug. 21, 1987, Pat. No. 4,963,402. This application May 8, 1992, Ser. No. 880,746
Int. Cl.[5] B29C *47/06*
U.S. Cl. 264—171 **17 Claims**



1. A method of preparing a film, the method comprising the steps of:

(a) mixing a thermotropic liquid cyrstalline polymer with a host polymer to provide a first material;

(b) coextruding the first material with a second material so as to form a film having at least two layers wherein the first material forms a first layer and the second material forms a second layer;

(c) quenching the film; and

(d) orienting the quenched film in at least one direction;

wherein the oriented film has an exposed first major surface comprising protrusions resulting from regions of the liquid cyrstalline polymer in the host polymer.

5,330,698
PROCESS FOR MAKING HIGH ELONGATION PPD-T FIBERS
Steven R. Allen, Midlothian, and David M. Harriss, Chesterfield, both of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 19, 1993, Ser. No. 47,392
Int. Cl.[5] D01D *5/06, 10/06;* D01F *6/60*
U.S. Cl. 264—184 **6 Claims**

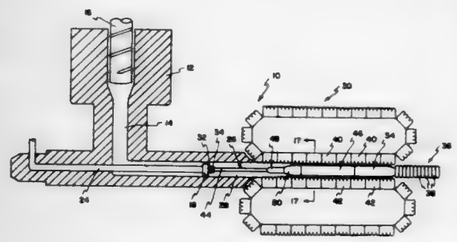
1. A process for making a textile quality para-aramid fiber with an elongation at break greater than 7%, comprising:

(a) forming a spinning solution of 10 to 14 weight percent poly(p-phenylene terephthalamide) having an inherent viscosity of up to 4 dl/g in sulfuric acid of at least 90% concentration;

(b) extruding the solution through capillaries in a spinneret, through a layer of inert non-coagulating fluid, and into an aqueous coagulating liquid to yield fibers; and

(c) maintaining separation of the fibers through the coagulating liquid and maintaining the temperature of the coagulating liquid at a temperature of from 40 to 80 degrees C.

5,330,699
VACUUM CLEANER HOSE AND METHOD FOR MAKING SAME
Daniel W. Shetler, North Canton, and Larry W. Bryson, Massillon, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Mar. 29, 1993, Ser. No. 38,874
Int. Cl.[5] B29C *53/30*
U.S. Cl. 264—508 **10 Claims**



1. A method of making a continuous tubular product having a surface discontinuity imprinted on the inside surface thereof comprising the steps of:

a) heating a desired material to a molten state,

b) forming said molten material into a continuous tubular form and removing heat from said tubular form whereby the inside surface thereof acquires a softened deformable state,

c) while said inside surface is in said softened state, passing said inside surface over a multiplicity of free rolling imprint rollers, said rollers comprising a tandem series of rotating surfaces whereby a separate portion of said inside surface engages each of said rollers.

5,330,700
POROUS ELECTRODE FOR A PACEMAKER AND METHOD OF MAKING SAME
Thomas M. Soukup, Lake Jackson, Tex., and Paul E. Kreyenhagen, Castaic, Calif., assignors to Siemens Pacesetter, Inc., Sylmar, Calif.
Division of Ser. No. 507,698, Apr. 10, 1990, Pat. No. 5,097,843.
This application Sep. 18, 1991, Ser. No. 761,576
Int. Cl.[5] B22F *3/10, 7/08*
U.S. Cl. 419—2 **8 Claims**

1. A method of making a porous electrode comprising the steps of:

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mixing a plurality of globules which are formed of a sintered material with a solvent and a binder to form a paste;
applying the paste to an electrode stem;



forming the paste into a desired shape; and
sintering to bind the particles together.

5,330,701

PROCESS FOR MAKING FINELY DIVIDED INTERMETALLIC

Karl G. Shaw; David E. Alman, both of Troy; René M. Cooper, Ballston Spa, all of N.Y.; Randall M. German, State College, Pa., and Kazuo P. McCoy, Troy, N.Y., assignors to Xform, Inc., Cohoes, N.Y.

Filed Feb. 28, 1992, Ser. No. 843,605
Int. Cl.[5] B22F *9/00*
U.S. Cl. 419—10 **6 Claims**



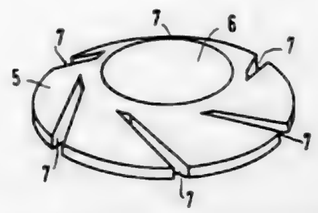
1. A controlled reactive sintering process for producing a finely divided intermetallic compound comprising:
(a) intimately mixing finely divided reactants;
(b) bringing a portion of said intimately mixed reactants in a protective atmosphere to a temperature sufficient to initiate an exothermic reaction and to form a transient liquid phase;
(c) providing a heat sink to control said exothermic reaction so as to produce a layered body of intermetallic compound;
(d) cooling said layered body of intermetallic compound in said protective atmosphere; and
(e) comminuting said layered body of intermetallic compound to provide a finely divided intermetallic compound.

5,330,702

PROCESS FOR PRODUCING CUCR CONTACT PIECES FOR VACUUM SWITCHES AS WELL AS AN APPROPRIATE CONTACT PIECE

Horst Kippenberg, Herzogenaurach, and Franz Hauner, Röthenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE89/00343, § 371 Date Dec. 2, 1991, § 102(e) Date Dec. 2, 1991, PCT Pub. No. WO90/15424, PCT Pub. Date Dec. 13, 1990
PCT Filed May 31, 1989, Ser. No. 777,408
Int. Cl.[5] B22F *3/24*
U.S. Cl. 419—28 **21 Claims**



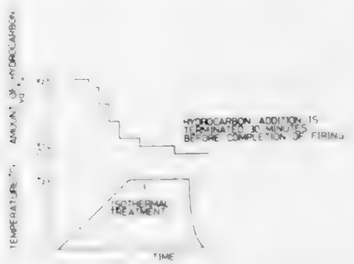
1. A process for producing a vacuum-switch contact piece with copper and chromium, in which a powder blank is compacted, comprises the steps of:
compacting the powder blank in two stages,
in the first stage sintering to compact until a closed porosity of the sintered body is achieved; and
in a second stage performing a hot-isostatic pressing operation for sintering the solid state of the copper-chromium compact, wherein the sintering process takes place at a temperature in the range of between 1000° C. and 1070° C. and the hot-isostatic pressing operation takes place under inert gas below the melting temperature of copper (1083° C.), and that the sintered body is brought unenclosed to a final density of at least 99% space filling.

5,330,703

PROCESS FOR FIRING ALLOYS CONTAINING EASILY OXIDIZABLE ELEMENTS

Tsuneaki Ohashi, Ohgaki, and Nobuo Tsuno, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jan. 27, 1993, Ser. No. 9,959
Claims priority, application Japan, Jan. 27, 1992, 4-012364
Int. Cl.[5] B22F *1/00*
U.S. Cl. 419—57 **2 Claims**



1. A process for firing an alloy containing an easily oxidizable element selected from Al, lanthanides and rare earth elements other than lanthanides, comprising firing a shaped material comprising powders of alloys containing said easily oxidizable element in an atmosphere consisting essentially of hydrogen and at least one hydrocarbon gas, the total amount of said at least one hydrocarbon gas being 0.01–5.0 volume %.

5,330,704

METHOD FOR PRODUCING ALUMINUM POWDER ALLOY PRODUCTS HAVING LOWER GAS CONTENTS

Paul S. Gilman, Suffern, N.Y., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Feb. 4, 1991, Ser. No. 650,122
Int. Cl.[5] B22F *3/16*
U.S. Cl. 419—60 **15 Claims**

1. A process for reducing the gas content of a dispersion strengthened aluminum base alloy, comprising the steps of:
(a) compacting a powder Composed of particles produced by rapid solidification of said alloy to obtain a compacted billet having a density varying from 70% to 98% of full density;
(b) vacuum autoclaving said compacted billet at a temperatures ranging from 350° C. to the alloy's incipient melting point;
(c) forming said billet into a substantially fully dense wrought product.

5,330,705

HEAT RESISTANT ALLOYS

John H. Culling, St. Louis, Mo., assignor to Carondelet Foundry Company, Pevely, Mo.

Filed Jun. 4, 1993, Ser. No. 72,150
Int. Cl.[5] C22C *38/42, 19/05, 30/00*
U.S. Cl. 420—49 **10 Claims**

1. An alloy consisting of a base alloy, about 0.6% to about 2.5% copper and about 0.55% to about 2.65% of a microalloying group of elements, said base alloy being selected from the group consisting of H-type alloys and high silicon alloys, said alloys having the following compositions by weight:

	Base Alloy	
	H-Type	High Silicon
Nickel	8% to 62%	10.5 to 28%
Chromium	12% to 32%	14.8 to 23%
Silicon	up to 2.5%	3% to 6.6%
Manganese	up to 3%	0.2% to 4%
Aluminum	less than 0.5%	up to 4%
Carbon	0.12 to 0.6%	0.12% to 0.5%
Cobalt	up to 1.5%	up to 1.5%
Iron	Essentially balance	Essentially balance

and said microalloying group of elements consisting essentially of, by weight:

Tungsten	0.2% to 0.85%
Molybdenum	0.2% to 0.85%
Columbium	0.1% to 0.5%
Titanium	0.05 to 0.45%

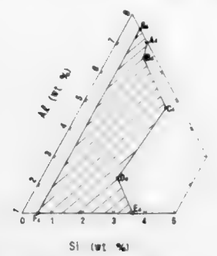
5,330,706

VIBRATION-DAMPING ALLOY OF HIGH STRENGTH

Takayuki Ohdake; Toshimichi Ohmori; Toshihiro Takamura; Takemi Yamada, and Tetsuya Sampei, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP91/01037, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO92/02653, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 2, 1991, Ser. No. 847,057
Claims priority, application Japan, Aug. 4, 1990, 2-207105
Int. Cl.[5] C22C *38/06, 38/02*
U.S. Cl. 420—103 **5 Claims**

1. A vibration-damping alloy of high strength containing not more than 0.01 wt. % C, not more than 0.01 wt. % N, not more than 0.01 wt. % O, not more than 0.01 wt. % P, not more than 0.01 wt. % S, more than 0.50 wt. % Si, those proportions of Al and Si which fall within the range defined in FIG. 1 by the lines connecting points A_4(Al: 7.05 wt. %; Si: 0.95 wt. %), B_4(Al: 6.5 wt. %; Si: 1.10 wt. %), C_4(Al: 4.70 wt. %; Si: 2.75



wt. %), D_4(Al: 2.25 wt. %; Si: 2.45 wt. %), E_4(Al: 1.00 wt. %; Si: 3.60 wt. %), F_4(Al: 1.00 wt. %; Si: more than 0.50 wt. %) and G_4(Al: 7.50 wt. %; Si: more than 0.50 wt. %), and that proportion of Mn which ranges from 0.1 wt. % to the sum of said proportions of Al and Si, the balance of its composition being Fe and unavoidable impurities.

5,330,707

STEEL FOR MAKING VERY LARGE PIPE MOLDS

Ashok K. Khare, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

Filed Jun. 25, 1993, Ser. No. 82,986
Int. Cl.[5] C22C *38/46, 38/44*
U.S. Cl. 420—109 **4 Claims**

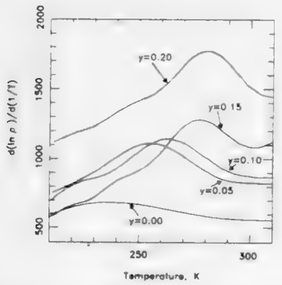
1. A ferritic alloy steel generally used for high temperature applications in weight percentage consisting essentially of from about 0.12% to about 0.18% carbon, about 0.70% to about 0.95% manganese, about 0.008% maximum phosphorous, about 0.008% sulphur, about 0.20% to about 0.35% silicon, about 1.05% to about 1.25% nickel, about 1.85% to about 2.25% chromium, about 0.60% to about 0.75% molybdenum, about 0.03% to about 0.08% vanadium, and balance essentially iron.

5,330,708

SULFIDE ALLOYS THAT EXHIBIT THERMAL BISTABILITY

Lee S. Martinson, Coralville; John W. Schweitzer, Iowa City, and Norman C. Baenziger, North Liberty, all of Iowa, assignors to The University of Iowa Research Foundation, Iowa City, Iowa

Filed Apr. 26, 1993, Ser. No. 51,947
Int. Cl.[5] C01F *17/00*; B22F *9/00*
U.S. Cl. 420—415 **8 Claims**



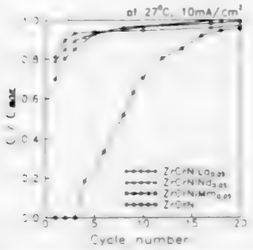
1. A thermally bistable material $A(Co_{1-x}M_x)X_{2-y}$, where x is greater than 0 and less than 1, y is equal to or greater than 0

and less than 2, A is one element from either of group 1, group 2 or rare earth elements of the periodic table, M is a transition metal and X is one of S, Se and Te.

5,330,709
ZIRCONIUM-BASED HYDROGEN STORAGE MATERIALS USEFUL AS NEGATIVE ELECTRODES FOR RECHARGEABLE BATTERY

Jai Y. Lee, and Soo R. Kim, both of Seoul, Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Taijeon, Rep. of Korea

Filed Feb. 2, 1993, Ser. No. 12,408
Claims priority, application Rep. of Korea, Feb. 14, 1992, 92-2206
Int. Cl.[5] C22C *22/00*
U.S. Cl. 420—422 **1 Claim**



1. A zirconium-based hydrogen storage material showing an improved activation behavior, which is represented by the following formula:

$$ZrCrNiM_x \quad (I')$$

wherein M is a light rare earth metal selected from the group consisting of La, Nd, and Mm, Mm being a Misch metal comprising a mixture of rare earth elements; and $0<x<0.1$.

5,330,710
NICKEL-BASE ALLOY FOR GLASS-CONTRACTING MEMBER USED IN UNENERGIZED STATE

Toshio Masaki, Hitachi; Noriaki Sasaki, Katsuta; Shin-ichiro Torata, Katsuta; Hiroshi Igarashi, Katsuta; Tetsuya Shimizu, and Tomohito Iikubo, both of Nagoya, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

PCT No. PCT/JP90/00879, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO92/01076, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 9, 1990, Ser. No. 838,207
Int. Cl.[5] C22C *19/03*
U.S. Cl. 420—441 **2 Claims**

1. A nickel-base alloy for a glass-contacting member used in an unenergized state and having an excellent resistance to corrosion by glass, said alloy consisting essentially in percent by weight of 25 to 40% of chromium, 10 to 45% of cobalt and 0.01 to 0.50% of at least one element selected from among rare earth metals with the balance consisting of nickel and unavoidable impurities.

5,330,711
NICKEL BASE ALLOYS FOR CASTINGS

Raymond G. Snider, Derby, England, assignor to Rolls-Royce plc, London, United Kingdom

PCT No. PCT/GB92/00228, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992
PCT Filed Feb. 6, 1992, Ser. No. 927,497
Claims priority, application United Kingdom, Feb. 7, 1991, 9102642
Int. Cl.[5] C22C *19/05*
U.S. Cl. 420—448 **9 Claims**

1. A nickel-base casting alloy, consisting essentially of the composition, by weight percent: carbon 0.05, chromium 16, cobalt 10, aluminum 0.9, titanium 2.7, niobium 4.9, tantalum 1.4, tungsten 2, molybdenum 4.9, boron 0.005, zirconium 0.01, balance nickel and incidental impurities.

5,330,712
COPPER-BISMUTH ALLOYS

Akhileshwar R. Singh, Bedford, Ohio, assignor to Federalloy, Inc., Bedford, Ohio

Continuation-in-part of Ser. No. 51,161, Apr. 22, 1993, abandoned. This application May 18, 1993, Ser. No. 63,435
Int. Cl.[5] C22C *9/02*
U.S. Cl. 420—473 **10 Claims**



1. A cast alloy consisting essentially of about 0.1 to 7% bismuth, about 2 to 6% tin, about 4 to 10% zinc, about 0.5 to 1% nickel, and about 0.1 to 1.0% mischmetal and the balance copper and incidental impurities.

5,330,713
GOLD-COLORED ALLOY

Daniel Davitz, P.O. Box 385, Morton Grove, Ill. 60053

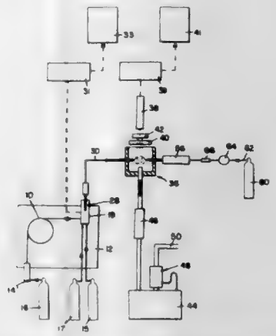
Filed Dec. 9, 1991, Ser. No. 804,803
Int. Cl.[5] C22C *30/02*
U.S. Cl. 420—587 **11 Claims**

1. A corrosive and tarnish resistant alloy consisting essentially of 6 to 19.8 percentage by weight of gold, 5 to 12 percentage by weight indium, 6.2 to 12 percent by weight of zinc, 6.2 to 12 percent by weight palladium, 23 to 40 percent by weight copper and 23 to 40 percent by weight silver.

5,330,714
PROCESS AND APPARATUS FOR SIMULTANEOUS MEASUREMENT OF SULFUR AND NON-SULFUR CONTAINING COMPOUNDS

Richard Godec, Erie; Neil Johansen, Boulder, and Donald H. Stedman, Englewood, all of Colo., assignors to Sievers Instruments, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 659,105, Sep. 6, 1991, Pat. No. 5,227,135, which is a continuation of Ser. No. 444,636, Dec. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 275,980, Nov. 25, 1988, abandoned. This application Feb. 4, 1993, Ser. No. 13,338
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] G01N *25/22*
U.S. Cl. 422—52 **5 Claims**

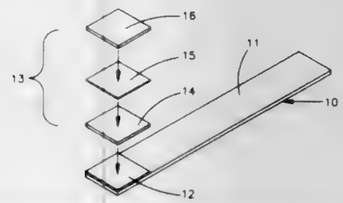


1. A method for measuring sulfur in a sample, consisting essentially of:
(a) a step including producing sulfur monoxide from the sample;
(b) a step including reacting the sulfur monoxide with ozone to produce a chemiluminescent sulfur compound; and
(c) a step including detecting the chemiluminescence of the chemiluminescent sulfur compound to measure the sulfur in the compound.

5,330,715
MULTILAYER TEST DEVICE HAVING FUSION BONDING ATTACHMENT LAYER

Kenneth A. Blake; James E. Christner, and Leonard J. Lucchese, II, all of Elkhart, Ind., assignors to Environmental Test Systems, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 681,609, Apr. 8, 1991, abandoned. This application Dec. 30, 1992, Ser. No. 998,203
Int. Cl.[5] G01N *21/77*
U.S. Cl. 422—56 **15 Claims**

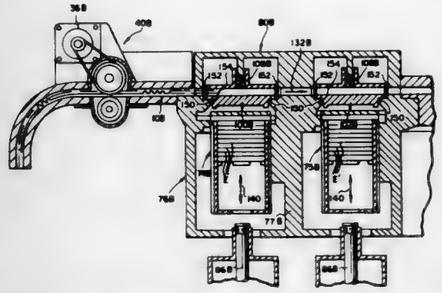


6. A multilayer dry reagent test device for the determination of analytes in test fluids comprising:
A. at least two layers of porous matrix material in contiguous relationship, at least one of which is incorporated with a test reagent composition to form a test reaction area, and
B. a preformed fibrous attachment layer of a fusible thermoplastic material located between adjacent matrix layers and having sufficient porosity to permit the free flow of test fluid between adjacent matrix layers, wherein said attachment layer forms a continuous interface area between said matrix layers so that said matrix layers are laminated or fusion bonded evenly and continuously to each other across the entire attachment surface area except in those areas defined by the pores of the attachment layer.

5,330,716
FLEXIBLE PUSHER BLADE AND HOUSING

James D. Shaw, Hilton; Martin F. Muszak, and David A. Heavner, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 500,650, Mar. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 349,451, May 9, 1989, abandoned. This application Sep. 28, 1990, Ser. No. 590,205
Int. Cl.[5] G01N *35/00*
U.S. Cl. 422—63 **13 Claims**



8. In a chemical analyzer comprising a source of test elements to analyze liquid and a housing for a pusher blade to push test elements,
the improvement wherein said housing comprises opposing guiding walls defining a path of travel for a pusher blade having a rack gear therein, said walls being shaped to define an approximately right-angled bend in such path, and means in said housing for driving said blade, said drive means including a pinion gear that engages a blade to be driven by said means.

5,330,717
ELECTROPNEUMATIC APPARATUS FOR SAMPLING RAPIDLY PREDETERMINED VOLUMES OF A MIXTURE, TO BE CONNECTED TO A COMPUTER

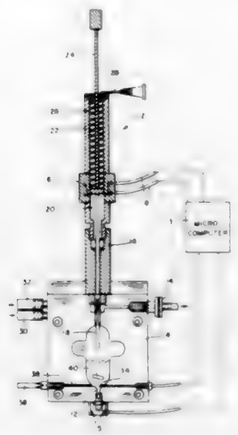
Alfred Berteloot, 4652 Boyer, Montreal Quebec, Canada H2J 3E4 , and Michel Brunette, Laval, Canada, assignors to Alfred Berteloot, Montreal, Canada

Filed May 9, 1991, Ser. No. 697,769
Int. Cl.[5] G01N *21/00, 35/02, 1/14;* B01L *3/02*
U.S. Cl. 422—68.1 **9 Claims**

1. An electropneumatic apparatus for performing a fast sampling of a liquid mixture, comprising:
a chamber for containing said mixture, said chamber having a bottom aperture provided with a flow sensor connected to a processing and controlling means, and an upper aperture;
a pressurized air system connected to said upper aperture and capable of alternately producing inside said chamber positive and negative pressures relative to an ambient pressure existing outside said chamber, said liquid mixture being held inside said chamber by said negative pressure produced by said air system, said air system being controlled by said processing and controlling means; and
a manifold array under said bottom outlet for collecting

predetermined sample volumes of said liquid mixture, said manifold array being movable by means of a motor controlled by said processing and controlling means;

whereby a succession of said negative and positive pressures inside said chamber are producible by means of said pressurized air system controlled by said processing and controlling means, for exiting said predetermined sample volumes from said bottom aperture, said processing and controlling means calculating said predetermined sample volumes by means of said flow sensor, and said manifold array collecting said predetermined sample volumes.



5,330,718

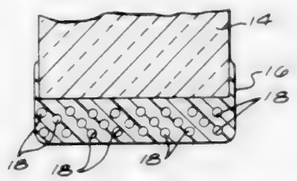
SENSOR ELEMENT AND METHOD FOR MAKING THE SAME

Henry K. Hui, Laguna Niguel, and Charles S. Bankert, Oceanside, both of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation-in-part of Ser. No. 758,291, Aug. 28, 1991, Pat. No. 5,219,527, which is a continuation of Ser. No. 394,638, Aug. 16, 1989, abandoned. This application Oct. 14, 1992, Ser. No. 960,903

Int. Cl.[5] **G01N** *21/64*

U.S. Cl. 422—82.07 **25 Claims**



1. A sensor element for sensing carbon dioxide in a sample comprising:

an optical fiber having a surface portion covered with a matrix made from a hydrophobic material that is permeable to carbon dioxide; and

a plurality of vesicles dispersed throughout said matrix, each of said vesicles containing an aqueous sensing solution including a dye indicator which dissociates into two different species in response to the presence of carbon dioxide, an agent for modifying the equilibrium of dissociation of said dye indicator to be within a range for optimal sensitivity to said carbon dioxide, and an aqueous base for raising the pH of said aqueous sensing solution to be outside a physiological range of carbon dioxide concentration when said dye indicator is not exposed to carbon dioxide, and to be within said physiological range of carbon dioxide concentration when said dye indicator is exposed to carbon dioxide, said dye indicator being exposable to an external excitation through said matrix, and at least one species of said dye indicator producing an emission of light in response to said excitation, with said emission of light being related to the content of carbon dioxide in said sample, whereby exposure of the dye indicator to carbon dioxide will cause the equilibrium of dissociation of the indicator to be within said range for optimal sensitivity.

17. A method for making a sensor element for sensing an analyte in a sample, said sensor including an optical fiber having a surface portion covered with a matrix made from a material that is permeable to the analyte, and a plurality of vesicles dispersed throughout said matrix, each of said vesicles containing an aqueous sensing solution including a fluorescent dye indicator which has an equilibrium of dissociation into two different species which is sensitive to said analyte, comprising the steps of:

adding said fluorescent dye indicator substance that is sensitive to said analyte to an aqueous solution and an agent for modifying the equilibrium of dissociation of said dye indicator substance to be within an optimal range of sensitivity to said analyte;

adding an aqueous base to said aqueous solution to change the pH of said aqueous solution to be outside an optimal range of sensitivity of said dye indicator substance in said aqueous solution to form said aqueous sensing solution;

adding said aqueous sensing solution to a liquid silicone matrix containing a curing inhibitor for prolonging the liquid state of said matrix;

homogeneously dispersing the aqueous solution throughout said liquid matrix solution to form an emulsion of said sensing solution in a plurality of vesicles in said liquid matrix;

coating said surface of said optical fiber with said emulsion; and

heating said emulsion to cure said matrix of said emulsion into a solid semi-permeable membrane that is permeable to said analyte.

5,330,719

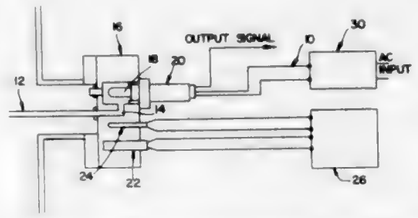
AUTOMOTIVE OXYGEN SENSOR FOR USE IN AN INDUSTRIAL PROCESS ANALYZER

Daniel C. Barnett, Concord; John J. Fry, Wickliffe; George R. Hall, II, Geneva; David F. Ross, Euclid; Robert A. Smith, Mentor, and Gordon D. Woolbert, North Canton, all of Ohio, assignors to Elsag International B.V., Amsterdam Zuidoost, Netherlands

Continuation-in-part of Ser. No. 335,605, May 8, 1989, Pat. No. 5,037,761, which is a division of Ser. No. 92,868, Sep. 3, 1987, abandoned. This application Jan. 22, 1990, Ser. No. 468,385

Int. Cl.[5] **G01N** *25/00*

U.S. Cl. 422—95 **5 Claims**



1. An apparatus for analyzing the oxygen content of a gas, comprising:

an analyzer manifold having an automotive oxygen sensor connected therewith, said oxygen sensor having at least one sensor element;

means for directing a gas sample to said analyzer manifold and across said at least one sensor element of said oxygen sensor;

integral electric heating means contained within the oxygen sensor for maintaining the sensor element at a predetermined operating temperature range; and

power supply means connected to said integral electric heating means for applying a voltage thereto with said voltage being greater than a nominal 12 volts to 14 volts and for limiting a current applied to the integral electric heating means to reduce stress on the integral electric heating means.

5,330,720

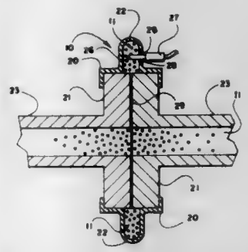
SYSTEM FOR DETECTING FUGITIVE EMISSIONS

Nelson W. Sorbo, Canoga Park, and John Kert, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 23, 1993, Ser. No. 21,145

Int. Cl.[5] **G01M** *3/04*

U.S. Cl. 422—98 **12 Claims**



1. A system for monitoring a mechanical member of a closed mechanical system for gaseous emissions comprising:

sensing means for detecting a gas escaping from the mechanical member and for providing a concentration of said gas;

means for generating and transmitting an electrical signal distinctive of a location of said mechanical member having a magnitude proportionate to a level of said concentration of gas provided by said sensing means;

a housing for enclosing the mechanical member and for receiving said gas escaping from the mechanical member said housing defining an opening through which said sensing means is received and

a semi-permeable membrane inserted in said opening of said housing interposed between said opening and said sensing means, wherein said semi-permeable membrane permits said gas to slowly dissipate to exterior said housing and prevents foreign matter from entering interior said housing.

5,330,721

STEP PIPETTE

Jukka Tervamäki, Helsinki, Finland, assignor to Nippon Zeon Company, Ltd., Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 45,534

Claims priority, application Finland, Apr. 13, 1992, 921648

Int. Cl.[5] **B01L** *3/02*

U.S. Cl. 422—100 **8 Claims**

1. A step pipette, comprising:

a frame;

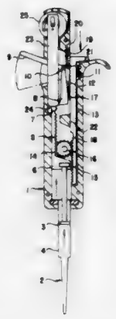
a cylinder provided on said frame;

a piston provided within said cylinder and movable in a direction between a lower and an upper position within said cylinder;

a dosing rack supported by said frame which is parallel to said direction and which is fixed to said piston, said dosing rack being provided with a dosing toothing;

a striker supported by the frame and movable between an upper and a lower position, a portion of said striker capable of meshing with the dosing toothing for transferring the dosing rack and the piston downwards by predetermined strokes;

said dosing rack also including a longitudinal transmission toothing, a gear in mesh with said longitudinal transmission toothing and supported by said frame, a filling rack supported by said frame parallel with the dosing rack, a second longitudinal transmission toothing provided on said filling rack, which is in mesh with the gear from the opposite side relative to the transmission toothing of the dosing rack;



a striker spring means for pressing the striker against the dosing toothing;

a release element means on the filling rack for releasing the tension of the striker spring after a last full-length stroke thereby disengaging said striker form said dosing toothing;

a loosening spring for moving the striker from the dosing toothing to an upper disengaged position after the last full-length stroke to thereby allow filling of the cylinder by retraction of the piston;

means for reengaging said striker with the dosing rack.

5,330,722

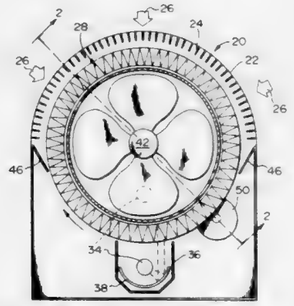
GERMICIDAL AIR FILTER

William E. Pick, R.R. 2, Carp, Canada, K0A 1L0, and Kerby F. Fannin, Jerome, Mich., assignors to William E. Pick, Carp, Canada

Continuation-in-part of Ser. No. 661,251, Feb. 27, 1991, abandoned. This application Sep. 24, 1992, Ser. No. 950,833

Int. Cl.[5] **A61L** *2/00;* **B01D** *41/00*

U.S. Cl. 422—121 **17 Claims**



1. A germicidal air filter, comprising:

a filter medium for removing particulate matter including at

least a portion of microorganisms from an air stream to be filtered, the filter medium having an upstream side exposed to the air to be filtered;

an ultraviolet radiation source located in proximity of the upstream side of the filter medium for exposing at least a portion of that side of the filter medium to ultraviolet radiation at germicidal levels;

one of said radiation sources and filter medium being displaceable with respect to the other of the radiation source and the filter medium; and

means for displacing said one radiation source and filter medium so that a surface of the upstream side of the filter medium is systematically and repeatedly exposed to germicidal levels of radiation.

5,330,723

IN-LINE COMPRESSED AIR CARBON MONOXIDE FILTER

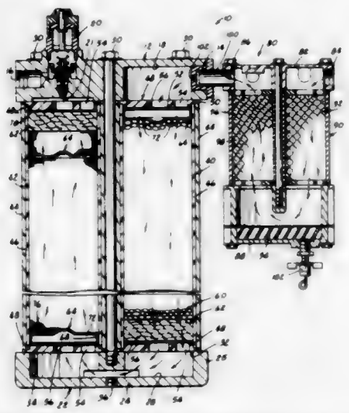
Charles E. Martin, Hicksville, Ohio, and Kenneth W. Overby, Hamilton, Ind., assignors to MST, Inc., Hicksville, Ohio

Division of Ser. No. 455,450, Nov. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 56,123, Jun. 1, 1987, Pat. No. 4,865,815. This application Jun. 23, 1992, Ser. No. 902,745

The portion of the term of this patent subsequent to Sep. 12, 2006, has been disclaimed.

Int. Cl.[5] **A62B** *7/10*

U.S. Cl. 422—122 **5 Claims**



1. A filter for removing carbon monoxide from a compressed air line comprising:

housing means including a manifold and enclosure means,

the manifold including means defining an inlet and an outlet, and means between said inlet and outlet for directing air downwardly from said inlet and receiving air directed upwardly toward said outlet,

the enclosure means defining an enclosed volume suspended beneath and spaced from said manifold,

first means mounted and extending between said inlet and said enclosure means for directing incoming air downwardly into said enclosed volume, and

second means mounted and extending between said enclosure means and said outlet for directing air from said enclosure means to said outlet,

each of said first and second means comprising cartridge means having an imperforate sidewall and open end walls for receiving and passing air to and from said manifold and said enclosure means,

one of said first and second means comprising a bed of activated charcoal within the associated sidewall extending substantially between said end walls, and the other of said first and second means comprising a bed of catalytic pellets within the associated sidewall extending substantially between said end walls for removing carbon monoxide in air passing therethrough,

each said cartridge means comprising filter means adjacent to one said end wall for preventing passage of dust and particulate matter therethrough, and baffle means adjacent to the opposing end wall for directing incoming air along the adjacent sidewall, said baffle means in said first means being positioned adjacent to said manifold and said baffle means in said second means being positioned adjacent to said enclosure means,

third baffle means positioned within said bed of catalytic pellets for directing air passing therethrough internally along the associated said sidewall, all of said baffle means being of identical construction and comprising a disc having a periphery in sealing engagement with the associated sidewall and a circular array of passage means through said disc adjacent to said periphery, said discs being of circular peripheral contour, and wherein said passage means comprises a plurality of angularly spaced rectangular slots extending radially of said disc, said each said baffle means further comprises a plurality of vanes integrally projecting from said disc, one adjacent to a circumferential edge of each said slot and being angled with respect thereto for directing air passing through said slots circumferentially of said disc.

5,330,724

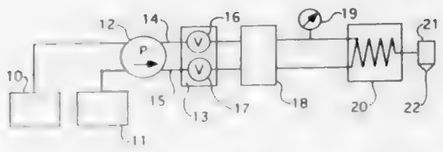
APPARATUS FOR BLENDING AND DISPENSING FOAMABLE, CURABLE ORGANOSILOXANE COMPOSITIONS

Therese M. Bauman, White Lake Twp., Oakland County, and Todd S. Klenk, Fenton, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 174, Jan. 4, 1993, Pat. No. 5,252,627. This application Apr. 21, 1993, Ser. No. 50,785

Int. Cl.[5] **C08F** *2/00;* **B01F** *15/02;* **C08J** *9/00*

U.S. Cl. 422—133 **5 Claims**



1. An apparatus for blending and dispensing a foamable organosiloxane composition, said apparatus comprising: 1) a source of organohydrogensiloxane, a source of reactant selected from the group consisting of curable polyorganosiloxanes containing silanol groups, water and alcohols, and a source of curing catalyst

2) a means for mixing said organohydrogensiloxane, said reactant selected from the group consisting of curable polyorganosiloxanes containing silanol groups, water and alcohols, and said curing catalyst, said means for mixing having a mixing zone consisting essentially of a channel having an inlet and an outlet and containing a plurality of static mixing elements positioned within the channel, wherein the ratio of the length of said channel to the diameter of said channel is at least 11, and

2) an exit zone communicating with the outlet of said channel and comprising a nozzle containing an exit orifice where the diameter of said exit orifice does not exceed 1.50 mm.

5,330,725

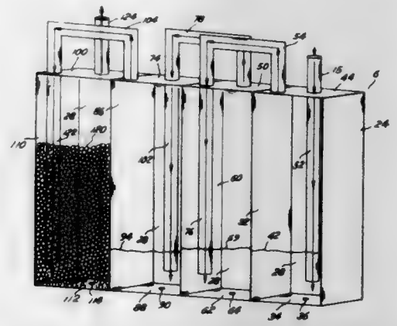
VACUUM TRUCK EXHAUST GAS TREATMENT APPARATUS

Richard A. Mumalo, Long Beach, Calif., assignor to Rust Industrial Services Inc., Westbrook, Ill.

Filed Jun. 7, 1990, Ser. No. 534,594

Int. Cl.[5] **B01D** *53/18*

U.S. Cl. 422—170 **11 Claims**



1. A waste material treatment apparatus to remove gases, liquids and solids from collected waste materials comprising liquids, solids, air and other gases to purify said air for discharge back into the atmosphere, comprising a treatment receptacle, a first treatment chamber in said treatment receptacle, first separation means in said first treatment chamber to separate said liquids and solids from said air and other gases, a second treatment chamber in said treatment receptacle, second separation means in said second treatment chamber to separate said other gases from said air, said first and second separation means being different from each other and being retained in their respective treatment chambers separated from each other, said treatment receptacle having inlet means to flow said collected waste materials to said first separation means in said first treatment chamber to separate said liquids and solids from said air and other gases of said collected waste materials, transfer means to transfer said air and other gases from said first treatment chamber to said second separation means in said second treatment chamber to separate said other gases from said air to purify said air for discharge back into the atmosphere, and outlet means to discharge said air to the atmosphere after said other gases have been separated therefrom.

5,330,726

DEVICE FOR THE SEPARATION OF UNDESIRED EXHAUST GAS COMPONENTS

Hermann Brüggendick, Hünxe, and Karl Klinginger, Essen, both of Fed. Rep. of Germany, assignors to Steag Aktiengesellschaft, Essen, Fed. Rep. of Germany

PCT No. PCT/EP90/02057, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO91/09672, PCT Pub. Date Jul. 11, 1991

PCT Filed Nov. 30, 1990, Ser. No. 877,173

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1990, 4000203

Int. Cl.[5] **B01D** *53/06, 53/34;* **B01J** *8/08;* **F26B** *17/12*

U.S. Cl. 422—177 **15 Claims**

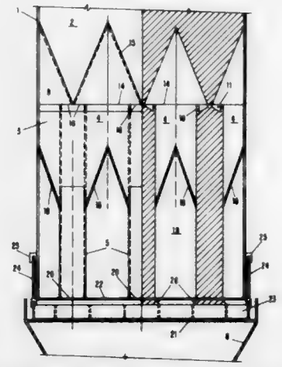
1. A device for separating undesired exhaust gas components from a fluid, said device comprising:

a reactor with a reaction chamber, said reactor having a top and a bottom;

said top having a means for introducing a granular adsorption medium;

said bottom comprising first and second oppositely slanted sidewalls arranged with longitudinal extensions thereof parallel to one another and forming between each of said first and second sidewalls a trough open in a direction toward said top, said trough having removal funnels, each having a funnel mouth, for removing the granular adsorption medium;

said bottom further having fluid inflow openings for admitting a fluid into said reaction chamber, said funnel mouths and said fluid inflow openings arranged alternatingly in said troughs, wherein said funnel mouths of neighboring ones of said troughs are arranged to from a grid structure; and



said bottom further having distributing elements for covering said fluid inflow openings positioned above said fluid inflow openings, said distributing elements having a shape selected from the group consisting of a pyramid, a cone, a pyramid sector, and a cone sector, said distributing elements having lower edges that are spaced in the vertical direction at least with portions of said lower edges from said oppositely slanted sidewalls for delimiting said fluid inflow openings.

5,330,727

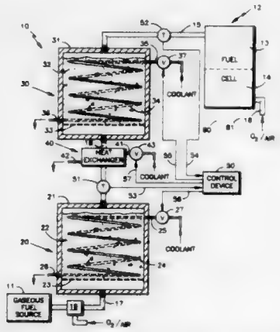
APPARATUS FOR REMOVING CARBON MONOXIDE FROM GASEOUS MEDIA

John C. Trocciola; Craig R. Schroll, both of Glastonbury, and Roger R. Lesieur, Enfield, all of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Division of Ser. No. 853,663, Mar. 19, 1992. This application Dec. 23, 1992, Ser. No. 995,845

Int. Cl.[5] **B01D** *53/04*

U.S. Cl. 422—177 **3 Claims**



1. An apparatus for reducing the concentration of carbon monoxide in a gaseous medium, consisting essentially of:

a. a confined quantity of catalyst capable of oxidizing carbon monoxide forming an inlet portion and an outlet portion,

wherein said catalyst has a threshold temperature below which said catalyst is inactivated when exposed to a predetermined carbon monoxide concentration;

b means for controlling the temperature of at said inlet portion above the threshold temperature;

c means for controlling the temperature of said outlet portion below said threshold temperature;

d means for passing the gaseous medium through said inlet portion and said outlet portion; and

e. means for introducing gaseous oxygen to said inlet portion.

5,330,728

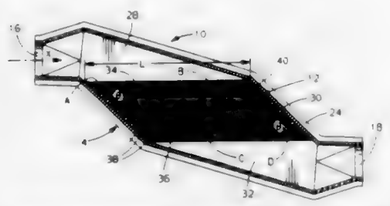
CATALYTIC CONVERTER WITH ANGLED INLET FACE

Michael R. Foster, Columbiaville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 976,309, Nov. 13, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 73,024

Int. Cl.[5] B01D *50/00, 53/34*

U.S. Cl. 422—177 12 Claims



1. A catalytic converter comprising a rigid canister having an inlet, an outlet and a catalyst coated substrate disposed between said inlet and said outlet, said catalyst coated substrate having exhaust gas flow passages extending from an inlet face to an outlet face and oriented at an acute angle to said inlet face of said substrate and wherein said substrate is mounted within said canister such that said inlet face is substantially parallel to the direction of exhaust gas entering said converter through said inlet.

5,330,729

SINGLE CRYSTAL PULLING APPARATUS

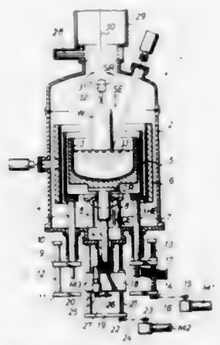
Michiaki Oda, and Koji Mizuishi, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Japan

Filed Feb. 10, 1992, Ser. No. 833,986

Claims priority, application Japan, Feb. 15, 1991, 3-42168

Int. Cl.[5] C30B *15/02*

U.S. Cl. 117—217 8 Claims



1. A single crystal pulling apparatus of the Czochralski method type wherein a cylindrical heater arranged to encompass a crucible installed in a main chamber is supported at the bottom portion thereof by two vertical electrodes which are vertically and simultaneously shiftable to shift said heater vertically and by one or more vertical shaft means, each said vertical shaft means being one of an additional electrode or an insulated dummy electrode, said vertical shaft means being capable of shifting vertically in synchronism with said two vertical electrodes, and being arranged in a manner such that the two vertical electrodes and the vertical shaft means are located at regular intervals along the bottom circumference of the cylindrical heater.

5,330,730

GAS GENERATOR FOR AN INFLATABLE IMPACT CUSHION FOR PROTECTING AN OCCUPANT OF A MOTOR VEHICLE FROM INJURY

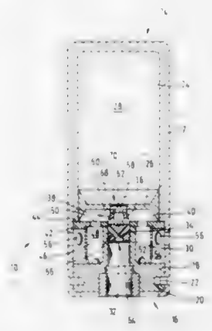
Uwe Brede, Furth; Josef Kraft, Berg, and Wolfram Seebeck, Veitsbronn, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Oct. 28, 1992, Ser. No. 967,398

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1991, 4135547

Int. Cl.[5] B01J *7/00*

U.S. Cl. 422—305 17 Claims



1. A gas generator for an inflatable impact cushion of a motor vehicle which comprises:

a housing, in which a combustion chamber is formed;

at least one outlet opening in a wall of the housing for emergence of combustion gases forming in the combustion chamber;

a storage chamber for storing liquified gas within said housing, the storage chamber being separated from the combustion chamber by a partition wall;

an ignition device, arranged adjacent to said combustion chamber, with an ignition charge for generating combustion gases for igniting the liquified gas; and

a longitudinally displaceably guided piston which, when the ignition charge is ignited, is displaced in a direction of the partition wall and penetrates the partition wall due to the gas pressure formed, as a result of the combustion of the ignition charge;

first channel means located in a region of a rear end of the piston in the direction of movement for allowing the combustion gases of the ignition charge to arrive in the combustion chamber, and second channel means in a region of a front end of the piston for allowing liquified gas from the storage chamber to arrive in the combustion chamber and to burn therein.

5,330,731

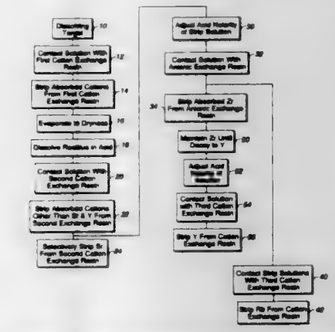
PROCESS FOR SEPARATION OF ZIRCONIUM-88, RUBIDIUM-83 AND YTTRIUM-88

Richard C. Heaton; David J. Jamriska, Sr., and Wayne A. Taylor, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the Untied States Department of Energy, Washington, D.C.

Division of Ser. No. 744,747, Aug. 14, 1991, Pat. No. 5,167,938. This application Nov. 25, 1992, Ser. No. 981,449

Int. Cl.[5] C01F *11/16, 17/00;* C22B *34/00*

U.S. Cl. 423—2 18 Claims



1. A process for selective separation of zirconium 88 from proton irradiated molybdenum targets comprising:

dissolving a proton irradiated molybdenum target in a hydrogen peroxide solution to form a first ion-containing solution;

contacting the first ion-containing solution with a first cationic exchange resin whereby ions selected from the group consisting of molybdenum, niobium, technetium, selenium, vanadium, arsenic, germanium, zirconium and rubidium remain in the first ion-containing solution while ions selected from the group consisting of rubidium, zinc, beryllium, cobalt, iron, manganese, chromium, strontium, yttrium and zirconium are selectively adsorbed by the first cationic exchange resin;

contacting the first cationic exchange resin with an acid solution capable of stripping adsorbed ions from the first cationic exchange resin whereby the adsorbed ions are removed from the first cationic exchange resin to form a second ion-containing solution;

evaporating the second ion-containing solution for time sufficient to remove substantially all of the acid and water from the second ion-containing solution whereby a residue remains;

dissolving the residue from the evaporated second-ion containing solution in a dilute acid to form a third ion-containing solution, said third ion-containing solution having an acid molarity adapted to permit said ions to be adsorbed by a cationic exchange resin;

contacting the third ion-containing solution with a second cationic exchange resin whereby the ions are adsorbed by the second cationic exchange resin;

contacting the second cationic exchange resin with a dilute sulfuric acid solution whereby the adsorbed ions selected from the group consisting of rubidium, zinc, beryllium, cobalt, iron, manganese, chromium, and zirconium are selectively removed from the second cationic exchange resin to form a fourth ion-containing solution while ions selected from the group consisting of strontium and yttrium remain on the second cationic exchange resin;

adjusting the acid molarity of the fourth ion-containing solution to within a range whereat an anionic exchange resin is capable of adsorbing zirconium ions and niobium ions;

contacting the fourth ion-containing solution with an anionic exchange resin whereby zirconium ions and niobium ions are adsorbed by the anionic exchange resin while the remainder of the ions remain in solution;

contacting the anionic exchange resin with an acid solution capable of stripping zirconium from the anionic exchange resin whereby the adsorbed zirconium ions are selectively removed from the anionic exchange resin while the niobium ions remain adsorbed by the anionic exchange resin.

5,330,732

METHOD FOR PURIFYING EXHAUST GASES

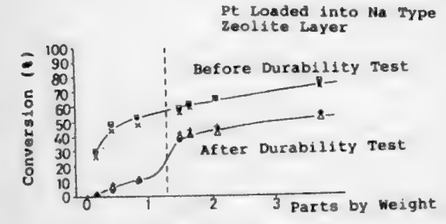
Kazunobu Ishibashi, Toyota; Shinichi Matsumoto; Shiroh Kondoh, both of Aichi, and Yasuhide Utsumi, Iwata, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota; Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi; Catalar Industrial Co. Ltd., Shizuoka and Tosoh Corporation, Shinnanyo, all of Japan

Continuation of Ser. No. 599,411, Oct. 18, 1990, abandoned. This application Apr. 17, 1992, Ser. No. 870,218

Claims priority, application Japan, Oct. 18, 1989, 1-270678; Dec. 22, 1989, 1-333878

Int. Cl.[5] B01J *23/38*

U.S. Cl. 423—213.2 19 Claims



1. A process for purifying an oxygen rich exhaust gas from an internal combustion engine operating at an air fuel ratio of 18 or more comprising the steps of:

providing a catalyst consisting essentially of:

a catalyst support;

a layer formed on said catalyst support and including zeolite wherein said zeolite is a zeolite selected from the group consisting of analcimes, sodalites, zeolite A, natrolites, mordenites, heulandites, ZSM-5, and a mixture thereof; and

platinum loaded on said layer by 1.3 parts by weight or more with respect to 100 parts of weight of said layer;

a second step of contacting said catalyst with said oxygen rich exhaust gases containing nitrogen oxides, thereby reducing by catalytic reduction said nitrogen oxides;

wherein said second step is conducted at a temperature of 120°–450° C.

5,330,733

METHOD FOR REMOVING POLLUTANTS FROM A COMBUSTION GAS

Alessandro Baroni; Luigi Civitano, and Omero Sguerri, all of Pisa, Italy, assignors to Enel-Ente Nazionale per l'Energia Elettrica, Rome, Italy

Filed Jun. 22, 1992, Ser. No. 902,254

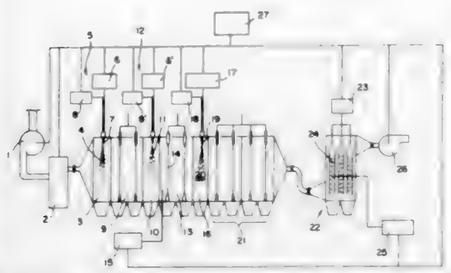
Claims priority, application Italy, Sep. 19, 1991, MI91A002482

Int. Cl.[5] C01B *21/00, 17/00;* C01C *1/18, 1/24*

U.S. Cl. 423—235 1 Claim

1. A method for removing pollutants from a combustion gas taken from a boiler plant, which combustion gas contains light ashes, sulphur dioxide and nitrogen oxides as pollutants, which comprises: cooling the combustion gas in a heat exchanger to about 110° C.; removing at least most of the light ashes from the combustion gas in at least one electrostatic precipitator; energizing the combustion gas by means of electrons generated by impulsive electric fields to convert most of the sulphur

dioxide and the nitrogen oxides into sulfuric acid and nitric acid, respectively, with the presence of residual sulphur dioxide; adding dry ammonia prepared in a gas environment and stored at a temperature of about 100° C. to the combustion gas to convert the sulfuric acids and nitric acids into the ammonium salts of these acids, producing a combustion gas containing ammonium sulphate, ammonium nitrate, sulphur dioxide, and ammonia; introducing hydrogen peroxide into the combustion gas to convert the residual sulphur dioxide into sulfuric acid, which reacts with the ammonia to produce ammonium sulphate; removing the ammonium salts from the combustion gas in an electrostatic precipitator; and passing the combustion gas to a chimney.



5,330,734

SILICA PILLARED MICAS

Jack W. Johnson, Clinton, and John F. Brody, Bound Brook, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Mar. 9, 1993, Ser. No. 28,485
Int. Cl.[5] C01B *33/26*; B01J *20/12, 21/16*
U.S. Cl. 423—328.3 **10 Claims**

1. A method of producing a silica-pillared mica comprising the steps of:
(a) contacting a fluoromica having layers with a material selected from the group consisting of organosilicon precursors and organosilicon oligomers for a time and at a temperature sufficient to allow said material to intercalate between said layers of said fluoromica;
(b) calcining said fluoromica having said material diffused therein for a time and at a temperature sufficient to decompose said material into a silica pillar and to form an intermediate pillared mica product;
(c) washing said calcined intermediate pillared mica product;
(d) recalcining said washed and calcined intermediate pillared mica product for a time and at a temperature sufficient to form a silica pillared mica.

5,330,735

PURIFICATION OF HYDROCHLORIC ACID

Kirk A. Cronin, Freeland, Mich.; William A. Evanko, Golden, Colo., and Alireza Malekadeli, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 21, 1993, Ser. No. 6,412
Int. Cl.[5] C01B *7/07*
U.S. Cl. 423—488 **11 Claims**

1. A process for treating contaminated aqueous hydrochloric acid to remove silane, silanol, or siloxane contained in said hydrochloric acid, the process comprising:
(I) contacting said hydrochloric acid with a hydrophobic polystyrenic resin for a time sufficient to adsorb said silane, silanol, or siloxane contained in said hydrochloric acid onto the hydrophobic polystyrenic resin, thereby treating said hydrochloric acid; and
(II) separating the treated aqueous hydrochloric acid from the hydrophobic polystyrenic resin.

5,330,736

ZEOLITE L SYNTHESIS AND RESULTING PRODUCT

Jianxin Wu, Elkridge; David M. Chapman, Ellicott City, and Robert R. Gatte, Columbia, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Dec. 7, 1992, Ser. No. 986,406
Int. Cl.[5] C01B *33/26*
U.S. Cl. 423—709 **8 Claims**

1. A method for preparing a crystalline aluminosilicate zeolite L which comprises:
(a) preparing an aqueous precursor mixture of silica, alumina, and alkali metal hydroxides within the range of the following molar compositions:

Na_2O 0 to 8

K_2O 2 to 9

Al_2O_3 1

Si_2O 5 to 35

H_2O 100 to 600

(b) adding to said precursor mixture from about 0.1 to about 10 percent by weight of an amorphous aluminosilicate seeding gel which does not contain zeolite L and which has a molar composition of

15 ± 2 Na_2O

1 Al_2O_3

14 ± 2 SiO_2

350 ± 50 H_2O

(c) stirring or homogenizing the mixture for from 2 minutes to over 2 hours to form a homogenous synthesis gel; and
(d) reacting the synthesis gel at a temperature of from about 60 ° to 250° C. for a period of time sufficient to produce crystalline zeolite L.

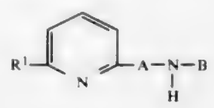
5,330,737

NITROGEN-SULFUR LIGANDS AS OPIATE RECEPTOR DRUG MIMICS

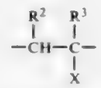
Raghavan Rajagopalan, St. Louis County, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Dec. 6, 1991, Ser. No. 804,852
Int. Cl.[5] A61K *49/02, 43/00*; C07D *213/74, 213/83*
U.S. Cl. 424—1.65 **17 Claims**

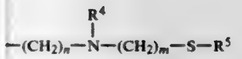
1. A ligand useful in forming radionuclide complexes, said ligand having the general formula:



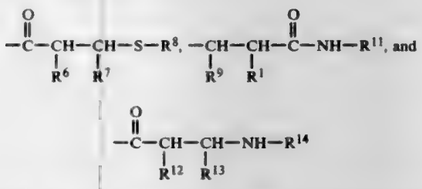
wherein R^1 is selected from the group consisting of hydrogen, hydroxyl, and lower alkoxyl; A is



wherein R^2, and R^3 are defined in the same manner as R^1 above, and wherein X is

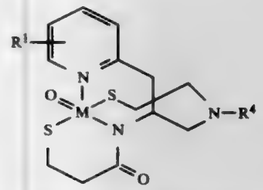


wherein n and m are 1 to 3, R^4 is selected from the group consisting of hydrogen, lower alkyl, benzyl, and cyclobutylmethyl, and R^5 is a suitable protecting group selected from the group consisting of acetyl, benzoyl, alkoxycarbonyl, carbamoyl, methoxymethyl, and tetrahydropyranyl; and B is selected from the group consisting of



wherein R^6, R^7 and R^9 to R^{14} are defined in the same manner as R^1 above, and R^8 is a suitable protecting group defined in the same manner as R^5 above.

3. A radionuclide complex having the general formula:



wherein M is a radionuclide; and wherein R^1 is hydrogen, hydroxyl, or methoxyl; and R^4 is hydrogen, methyl, benzyl, or cyclobutylmethyl.

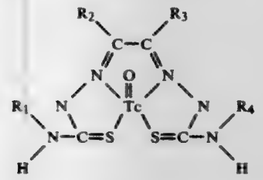
5,330,738

TECHNETIUM-99M COMPLEXS FOR USE AS RADIOPHARMACEUTICALS

Dennis L. Nosco, Florissant, Mo., assignor to Mallinckrodt Medical Inc., St. Louis, Mo.

Division of Ser. No. 605,207, Oct. 29, 1990, Pat. No. 5,116,598. This application Mar. 23, 1992, Ser. No. 855,279
Int. Cl.[5] A61K *49/02*
U.S. Cl. 424—1.65 **2 Claims**

1. A technetium-99 m radiopharmaceutical complex for examining the renal function, said complex having the formula:



wherein
each of the symbols R_1–R_4 is individually selected from the group consisting of hydrogen, straight or branched, unsubstituted or hydroxy group or acid group substituted alkyl having 1–4 carbon atoms, and ACOOH, wherein A is a straight or branched, unsubstituted or hydroxy group or acid group substituted alkyl group having 0–4 carbon atoms; and
Tc represents technetium-99 m; with the provisos that
(a) at least one of the symbols R_1–R_4 is ACOOH; and
(b) at most four of the symbols R_1–R_4 are ACOOH; and
(c) if R_2 or R_3 is CH_2COOH then one other of R_1–R_4 must be CH_2COOH; or a pharmaceutically acceptable salt of this complex.

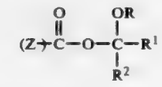
5,330,739

IODINATED BENZOYL ACETALS AND KETALS FOR X-RAY IMAGING

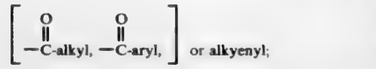
Carl R. Illig, Phoenixville, Pa., assignor to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,415
Int. Cl.[5] A61K *49/04*; C07C *205/00, 229/00, 69/76*
U.S. Cl. 424—5 **7 Claims**

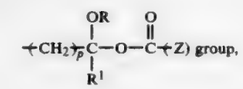
1. A compound having the structure



wherein (Z)–COO is the residue of an iodinated aromatic acid; R is alkyl, cycloalkyl, aryl, aralkyl,



R^1 is H, alkyl cycloalkyl, aryl, aralkyl, or $+CH_2+_mCO_2R^3$; R^2 is $-CH_2-_nCO_2R^4$, or a



wherein
Z, R and R^1 are as defined above; or R^1 and R^2, taken together with the carbon atom to which they are attached represent cycloalkyl;
R^3 is H, alkyl, cycloalkyl, aryl or aralkyl;
R^4 is H, alkyl, cycloalkyl, aryl or aralkyl; and
m, n and p are independently an integer of from 0 to 17.

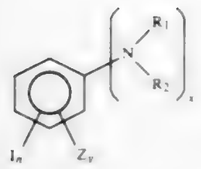
5,330,740

COMPOSITIONS OF IODOANILINE DERIVATIVES IN FILM-FORMING MATERIALS FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Carl R. Illig, Phoenixville, and Thomas J. Caulfield, Audubon, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Mar. 1, 1993, Ser. No. 24,714
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.
Int. Cl.[5] A61K *49/04*; G01N *21/00*
U.S. Cl. 424—5 **67 Claims**

1. An x-ray contrast composition for oral or retrograde examination comprising:
a polymeric material capable of forming a coating on the gastrointestinal tract, said polymeric material having atoms containing polarizable electrons thereon, in combination with a divalent cation; and
an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein

Z is H, halo, C_1–C_{20} alkyl, cycloalkyl, lower alkoxy, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;

R_1 and R_2 are independently H, C_1–C_{25} alkyl, cycloalkyl, acetyl or halo-lower-alkyl, wherein said C_1–C_{25} alkyl, cycloalkyl and halo lower-alkyl are optionally substituted with fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy and said acetyl is optionally substituted with fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy;

n is 1–4;

y is 1–4; and

x is 1 or 2

in a pharmaceutically acceptable carrier.

5,330,741

LONG-WAVELENGTH WATER SOLUBLE CHLORIN PHOTOSENSITIZERS USEFUL FOR PHOTODYNAMIC THERAPY AND DIAGNOSIS OF TUMORS

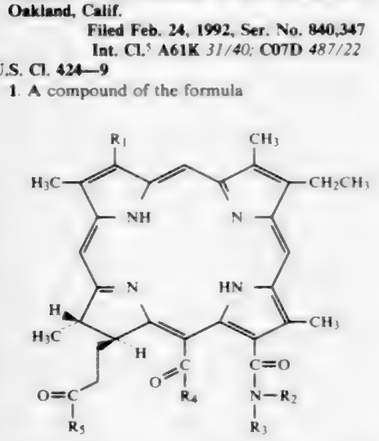
Kevin M. Smith, and Shwn-Ji H. Lee, both of Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 24, 1992, Ser. No. 840,347

Int. Cl.[5] A61K *31/40;* **C07D** *487/22*

U.S. Cl. 424—9 **26 Claims**

1. A compound of the formula



(IA)

wherein

R_1 is H; CH_3; CH_2CH_3; $CH{=}CH_2$; $CH(OH)CH_3$; $CH(O\text{-alkyl})CH_3$; $C(=O)CH_3$; CHO; CH_2OH or CH_2 alkoxy;

R_2 is H, alkyl or aryl;

R_3 is H; alkyl; aryl; $(CH_2)_nCH(NH_2)CO_2H$ wherein n is 3 or 4; aryl substituted on aromatic ring with alkyl; alkyl substituted with $N(alkyl)_2$ or $^{(+)}N(alkyl)_3$; or $(CH_2)_nCO_2R_9$ wherein R_9 is H, alkyl or aryl;

R_4 is OH or alkoxy;

R_5 is OH; OR_{10} wherein R_{10} is alkyl or aryl; $NR_{12}R_{13}$ wherein R_{12} and R_{13} are H, alkyl or aryl; or $NH(CH_2)_nCH(NH_2)CO_2H$ wherein n is 3 or 4;

and the pharmaceutically acceptable salts and esters thereof.

5,330,742

METHODS AND COMPOSITIONS FOR MAGNETIC RESONANCE IMAGING

Edward A. Deutsch, Maryland Heights, and Dennis A. Moore, Ferguson, both of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 699,848, Aug. 5, 1991, abandoned. This application Apr. 3, 1992, Ser. No. 862,865

Int. Cl.[5] G01N *31/00;* **A61K** *49/00;* **C07F** *13/00*

U.S. Cl. 424—9 **9 Claims**

1. A method for obtaining magnetic resonance images of body organs and tissues which comprises:

(a) administering to a mammal having organs and tissues, a diagnostically effective amount of a paramagnetic metal cluster of the formula $Z+[Mn_{12}X_{12}(OYR)_{16}(L)_4]-$, where OYR is an oxyacid such as benzoic acid, acetic acid, methyl sulphonic acid, methyl phosphonic acid; L is a neutral donor such as water, alcohol, pyridine, or other amines; X is a chalcogen, such as O or S; and Z is a pharmaceutically acceptable counterion, in a pharmaceutically acceptable carrier; and

(b) imaging the organs and tissues.

5,330,743

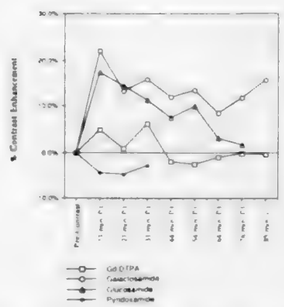
AMINOSACCHARIDE CONTRAST AGENTS FOR MAGNETIC RESONANCE IMAGES

Wendell A. Gibby, Mapleton, and N. Rao Puttagunta, Provo, both of Utah, assignors to Magnetic Research, Inc., Provo, Utah

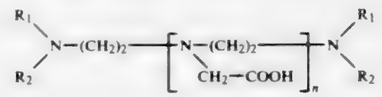
Filed Nov. 12, 1992, Ser. No. 975,607

Int. Cl.[5] A61B *5/055;* **C07H** *15/12*

U.S. Cl. 424—9 **19 Claims**



1. A contrast enhancing agent comprising a chelating agent represented by the formula A:



wherein n=an integer between 1 and 3; and

R_1 and R_2 are the same or different, independently, and are selected from the group consisting of H, Alkyl ($C_{1\text{-}18}$), aryl, arylalkyl, mono or polyhydroxyaryl, substituted aryl, substituted hydroxyaryl, alkoxyalkyl, arylalkoxyalkyl, cyclohexyl, mono or polyhydroxy cyclohexyl, furfuryl, tetrahydrofurfuryl, pyranylalkyl, tetrahydropyranylalkyl, and monosaccharide, and wherein at least one of R_1 and R_2 is a monosaccharide.

5,330,744

METHOD FOR INCREASING SENSITIVITY TO CHEMICALLY INDUCED TERMINAL DIFFERENTIATION

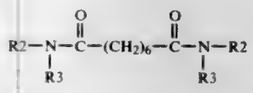
Sandro Pontremoli, Genoa, Italy; Ronald Breslow, Englewood, N.J.; Paul A. Marks, Bridgewater, Conn., and Richard A. Rifkind, New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research and The Trustees of Columbia University in the City of New York, both of New York, N.Y.

Filed Nov. 14, 1988, Ser. No. 270,643

Int. Cl.[5] A61K *49/00, 31/205, 31/16*

U.S. Cl. 424—10 **18 Claims**

1. A method of treating a patient having a tumor sensitive to treatment with the compound below and characterized by proliferation of neoplastic cells which comprises administering to the patient an amount of vincristine effective to render the cells resistant to vincristine and subsequently administering to the patient an amount of a compound effective to selectively induce terminal differentiation of such neoplastic cells and thereby inhibit their proliferation, the compound having the structure:



wherein R2 and R3 are independently the same or different and are a hydrogen atom, or a lower alkyl, alkenyl, or alkynyl group.

5,330,745

METHOD FOR USING CRYOGENIC AGENTS FOR TREATING SKIN LESIONS

Ronald A. McDow, 1717 Nottingham Pl., Nashville, Tenn. 37221

Continuation-in-part of Ser. No. 381,296, Jul. 18, 1989, Pat. No. 5,200,170. This application Jan. 13, 1993, Ser. No. 4,119

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] A61K *9/08;* **A61L** *9/04;* **A61M** *35/00;* **A01N** *25/02*

U.S. Cl. 424—45 **20 Claims**



1. A method of cryogenically treating a skin lesion comprising the steps of:

(a) placing a hollow fluid retaining device, having a side wall defining a bottom open end of a size slightly greater than a skin lesion to be removed by cryosurgery and a top open end, in an essentially upright position on a patient's skin in a manner whereby said bottom open end seals against the patient's skin entirely surrounding said skin lesion and said top open end is above said bottom open end,

(b) introducing into said top open end of said upright fluid retaining device a liquid cryogenic agent to cause formation of a liquid pool of said cryogenic agent to contact directly the entire area of said skin lesion,

(c) terminating said introducing of said cryogenic agent step,

(d) retaining said hollow fluid retaining device in said upright position surrounding said skin lesion after said introducing step has been terminated in order to retain said liquid pool of cryogenic agent within said bottom open end of said fluid retaining device and in contact directly with said skin lesion for a period of time to permit said cryogenic agent to reduce the temperature of said skin lesion to a temperature such that permanent, irreversible rupture of cellular membranes of cells of said skin lesion occurs while said cryogenic agent is evaporating, and

(e) subsequently removing said fluid retaining device from said upright position after said liquid cryogenic agent has evaporated.

5,330,746

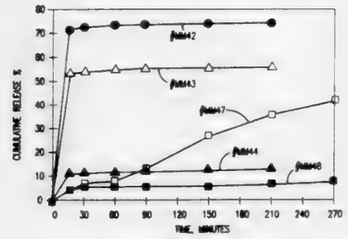
DENTAL VARNISH COMPOSITION, AND METHOD OF USE

Michael M. Friedman, and Amnon Sintov, both of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem and Petro Products Ltd., Jerusalem, Israel

Continuation-in-part of Ser. No. 189,918, May 3, 1988, abandoned, and a continuation-in-part of Ser. No. 304,091, Jan. 31, 1989, abandoned. This application Jun. 21, 1989, Ser. No. 369,223

Int. Cl.[5] A61K *7/16, 7/22*

U.S. Cl. 424—49 **24 Claims**



1. A sustained release liquid varnish composition which consists essentially of:

(a) a sustained release acrylic polymer; and

(b) either (i) a bacteriocidal quaternary ammonium salt or (ii) a hypersensitivity agent;

in a pharmaceutically acceptable vehicle, wherein said sustained release acrylic polymer is selected from the group consisting of (1) an anionic copolymer based on methacrylic acid and methylmethacrylate wherein the ratio of free carboxyl groups to the ester groups is approximately 1:1, (2) an anionic copolymer based on methacrylic acid and methylmethacrylate wherein the ratio of free carboxyl groups to the ester groups is approximately 1:2, (3) a copolymer based on acrylic and methacrylic acid esters with a low content of quaternary ammonium groups wherein the molar ratio of the ammonium groups to the remaining neutral methacrylic acid esters is 1:20, and (4) a copolymer based on acrylic and methacrylic acid esters with a low content of quaternary ammonium groups wherein the molar ratio of the ammonium groups to the remaining neutral methacrylic acid esters is 1:40, and wherein the concentration of the copolymers in the liquid varnish is 9.9% or greater.

5,330,747

COSMETICS WITH ENHANCED DURABILITY

Duane G. Krzysik, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 3, 1993, Ser. No. 12,695

Int. Cl.[5] A61K *7/021, 7/42*

U.S. Cl. 424—63 **2 Claims**

1. An eye cosmetic comprising a film forming agent, a pigment, a wax, and an oil, the film forming agent being a non-flammable hot-melt silicone pressure sensitive adhesive composition comprising a mixture of:

(i) 40 to 70 parts by weight of a trimethylsilyl-endblocked benzene-soluble resinous copolymer containing silicon bonded hydroxyl radicals and consisting essentially of

triorganosiloxy units of the formula $R'''_3SiO_{\frac{1}{2}}$ and tetrafunctional siloxy units of the formula $SiO_{4/2}$ in a ratio of 0.6 to 0.9 triorganosiloxy units per tetrafunctional siloxy unit present in the copolymer molecule, and R''' is a monovalent hydrocarbon radical of one to six carbon atoms;

(ii) 30 to 60 parts by weight of a silanol-endblocked polydiorganosiloxane fluid, wherein the total parts by weight of the resinous copolymer and the silanol-endblocked polydiorganosiloxane fluid equals 100 parts; the mixture of (i) and (ii) exhibiting tackiness and adhesiveness, and blended with: (iii) 0.5 to 20 weight percent, based on the total weight of the resinous copolymer and the silanol-endblocked polydiorganosiloxane fluid, of a phenyl-containing polysiloxane fluid of the formula $A_3SiO[-Si(C_6H_5)(R')O]_x[Si(R_2)O]_ySiB_3$ wherein R is a monovalent radical selected from the group consisting of —O-SiR'''$_3$, hydrocarbon radicals of one to three carbon atoms, and —OH; R' is a monovalent radical selected from the group consisting of —OSiR'''$_3$, —OH and —CH_3; R''is a monovalent hydrocarbon radical of one to three carbon atoms; A and B are endblocking units selected from the group consisting of —OSiR'''$_3$ where R''' is a hydrocarbon radical of one to eight carbon atoms, —OH, halide radicals, and amine radicals; x is an integer having a value greater than zero; and the value of x and y is such that the phenyl-containing polysiloxane fluid has a viscosity at twenty-five degrees Centigrade of 5 to 60,000 centistokes, and has 1 to 100 phenyl groups per 100 siloxane units.

5,330,748

DENTIFRICES CONTAINING ZINC OXIDE PARTICLES

Anthony E. Winston, East Brunswick, N.J.; Todd W. Domke, Newtown, Pa., and Amy L. Joseph, Hopewell, N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed May 19, 1993, Ser. No. 64,411

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—49 **7 Claims**

1. A dentifrice in the form of a toothpaste or tooth gel comprising:

a. an effective amount of an abrasive;

b. an effective amount of zinc oxide particles; and

c. a liquid vehicle in an amount sufficient to provide the desired consistency.

5,330,749

LIQUID MOUTHWASH CONTAINING A PARTICULATE BICARBONATE SUSPENSION

Kenneth J. Giacin, Pennington, and Amy L. Joseph, Hopewell, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 75,216, Jun. 10, 1993. This application Aug. 31, 1993, Ser. No. 113,812

Int. Cl.[5] A61K *7/16, 33/10, 33/30*

U.S. Cl. 424—49 **9 Claims**

1. A mouthwash composition which is a liquid concentrate consisting essentially of (1) about 5–50 weight percent of ethanol; (2) about 5–35 weight percent of water; (3) about 0.5–30 weight percent of a humectant ingredient; (4) about 2–30 weight percent of a suspension of particulate alkali metal bicarbonate ingredient, having an average particle size of about 0.6–5 microns; (5) about 0–3 weight percent of a hydrophilic polymer ingredient; and (6) about 0–5 weight percent of a surfactant ingredient; wherein said particulate bicarbonate suspension provides a higher content and more stability than bicarbonate dissolved in the liquid medium; and said hydrophilic polymer thickness the mouthwash liquid concentrate medium, stabilize the particulate bicarbonate suspension phase, enhances mouthfeel, and increases residual mouthwash adherence to oral cavity surfaces; and said liquid mouthwash concentrate has a viscosity varying between slightly viscous and soft gel consistency, and at high viscosity exhibits thixotropic properties; and said liquid mouthwash concentrate has a transparent or translucent optical clarity

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5,330,750

NAIL LACQUERS

Christine Sheard, and Julia E. Fisher, both of Nottinghamshire, United Kingdom, assignors to The Boots Company Plc., England

PCT No. PCT/EP91/01753, § 371 Date Mar. 18, 1993, § 102(e) Date Mar. 18, 1993, PCT Pub. No. WO92/05762, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 14, 1991, Ser. No. 30,038

Claims priority, application United Kingdom, Sep. 29, 1990, 9021252.3

Int. Cl.[5] A61K *7/04*

U.S. Cl. 424—61 **18 Claims**

1. A nail lacquer composition which comprises film former, solvent and 0.05 to 10% by weight of crystalline calcium sulphate fibers having an aspect ratio of at least 2:1.

5,330,751

ANTIPERSPIRANT AND METHOD OF MAKING SAME

Maria A. Curtin, South Easton, and Alan M. Phipps, Framingham, both of Mass., assignors to The Gilette Company, Boston, Mass.

Continuation-in-part of Ser. No. 336,675, Apr. 12, 1989, abandoned, which is a division of Ser. No. 181,564, Apr. 14, 1988, abandoned. This application Oct. 3, 1990, Ser. No. 594,349

Int. Cl.[5] A61K *7/32, 7/34, 7/38, 9/12*

U.S. Cl. 424—66 **9 Claims**

1. An antiperspirant composition comprising a dermatologically acceptable carrier and an effective amount of a basis aluminum chloride having high antiperspirant efficacy made by the process comprising mixing basic aluminum chloride with monosilicic acid in aqueous solution to increase the efficacy thereof.

5,330,752

COMPOSITIONS AND METHODS FOR DISINFECTING/CLEANING OF LENSES AND FOR DESTROYING OXIDATIVE DISINFECTANTS

John Y. Park, Santa Ana, and James N. Cook, Mission Viejo, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 690,625, Apr. 24, 1991, Pat. No. 5,281,353. This application Sep. 21, 1993, Ser. No. 125,088

Int. Cl.[5] A61K *37/50, 33/40;* **A61L** *9/00;* **C11D** *3/48*

U.S. Cl. 424—94.4 **17 Claims**

1. A method of destroying oxidative disinfectant comprising:

contacting an oxidative disinfectant-containing liquid medium with a material selected from the group consisting of glutathione, oxidized glutathione and mixtures thereof, and a co-factor selected from the group consisting of nicotinamide adenine dinucleotide phosphate, nicotinamide adenine dinucleotide and mixtures thereof in the presence of glutathione reductase in an amount effective to promote the oxidation of said co-factor.

5,330,753

CHOLERA VACCINES

John J. Mekalanos, Cambridge, Mass., and Ronald K. Taylor, Memphis, Tenn., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 188,016, Apr. 29, 1988, Pat. No. 5,098,998, which is a continuation-in-part of Ser. No. 43,907, Apr. 29, 1987, abandoned. This application Mar. 23, 1992, Ser. No. 855,809

Int. Cl.[5] C07K *15/04, 13/00;* **A61K** *39/106*

U.S. Cl. 424—190.1 **16 Claims**

1. A method of producing a TcpA vaccine comprising growing a culture of *Vibrio cholerae* cells in a growth medium wherein said medium a) contains at least one of the following amino acids: asparagine, arginine, serine, glutamic acid, glutamine, wherein said growth medium is maintained at a temperature of 22°–30° C. with exposure to oxygen, b) has an ionic strength equivalent to at least 50 μM NaCl, c) has a pH of about 6.5 or less; and d) is maintained at a temperature of 22°–30° C. with exposure to oxygen; wherein said TcpA pilus is present at a concentration representing 1% or more of total cell protein;

recovering a TcpA antigen-containing fraction from said culture; and

formulating a vaccine comprising a TcpA antigen obtained from said fraction and a physiologically acceptable carrier.

5,330,754

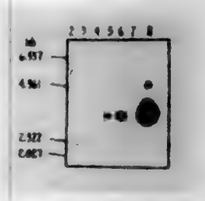
MEMBRANE-ASSOCIATED IMMUNOGENS OF MYCOBACTERIA

Archana Kapoor, Maison De L. Inde, 35 Boulvard Jourdan, 75014 Paris, France, and Anil Munshi, 9450 Gilman Dr., No. 920573, LaJolla, Calif. 92093-0573

Filed Jun. 29, 1992, Ser. No. 906,395

Int. Cl.[5] C07K *13/00, 15/04;* **A61K** *39/04*

U.S. Cl. 424—190.1 **6 Claims**



1. A purified *M. bovis* BCG protein whose amino acid sequence is represented in SEQ ID NO: 2.

2. A purified protein of a mycobacterium other than *M. bovis* BCG, wherein said protein

is a homolog of the protein of claim 1;

is an immunogenic membrane-associated protein of said mycobacterium; and

is encoded by DNA which is capable of hybridizing with a DNA probe having the complete sequence represented in SEQ ID NO: 1 under conditions where, on a Southern blot,

said probe will identify single 3.25 kb BamHI fragments from *M. bovis* BCG and *M. tuberculosis* H37Rv DNA, but will not hybridize with BamHI-digested DNA from either *M. smegmatis* or *M. vaccae.*

5,330,755

PROCESS FOR THE PRODUCTION OF AN ANTI-DIARRHOEIC PRODUCT BASED ON CAROB

Remi Thomas, Berneuil en Bray, France, assignor to Nestec S.A., Vevey, Switzerland

Filed Jun. 19, 1992, Ser. No. 901,258

Claims priority, application European Pat. Off., Jul. 31, 1991, 91112849.4

Int. Cl.[5] A61K *35/78;* **A61L** *2/08;* **C07C** *69/88*

U.S. Cl. 424—195.1 **15 Claims**

1. A process for producing a carob product comprising treating ground, desugared carob pod with superheated steam to pasteurize and dry the carob.

5,330,756

POLYPHASE FLUID EXTRACTION PROCESS, RESULTING PRODUCTS AND METHODS OF USE

Gary M. Steuart, 98 Viking Terr., Northfield, Minn. 55057, and M. Conrad Huffstutler, Jr., 6200 Lynn La., Lago Vista, Tex. 78645

Continuation-in-part of Ser. No. 599,616, Oct. 18, 1990, abandoned. This application Nov. 24, 1992, Ser. No. 980,839

Int. Cl.[5] A01N *25/02, 65/00;* **A61K** *35/78, 37/22*

U.S. Cl. 424—405 **5 Claims**

1. A process for preparation of Concentrated Fluid Symphytum Extracts, CFSE, which comprises the steps of:

selecting live, healthy plants of single or mixed wild or non-wild taxonomically-classified plant species comprising

S. officinale, S. asperum, S. armeniacum, S. tauricum, S. sylvaticum, S. peregrinum, S. anatolicum, S. icaricum, S. orientale, S. kurdicum, S. pseudobutbosum, S. uplandicum, S. circinale, S. ottomanum, S. icaricum, S. brachycalyx, S. aintabicum, S. longisetum, S. bornmuelleri, S. tuberosum, S. bulbosum, S. ibericum, or *S. longipetiolatum ;*

harvesting whole parts of said plant species comprising one or more of roots, stems, leaves, anthers, buds, and blooms;

charging said whole harvested parts immediately into protective, tightly-closed chambers, which are sunlight-opaque, and which provides a protective environment to prevent moisture evaporation and light-activated chemical, biological processes;

removing said charged whole parts from said protective chamber and comminuting them immediately within a protective environment to a length or thickness dimension of approx. 1 mm;

charging said comminuted parts within a time period of approximately 1–2 hours into a closed, extraction apparatus adapted to provide controlled ranges of internal pressure, temperature and a forced-convection-contact-velocity differential between said comminuted parts and an extraction fluid for an extended diffusion time,

charging an extraction fluid into said extraction apparatus wherein said extraction fluid is a chemical compound, a single phase or multiple phases, a vapor or liquid solution, or a suspension, and the mass ratio of said extraction fluid to said comminuted plant parts lies in the range 0,01 to 10000 wherein said extraction fluid comprises single-or two-phase water, single- or two-phase water solutions with one or more biocompatible solutes, two-phase fluids with a liquid with equilibrium vapor phase, multi-phase, multi-component biocompatible fluid solutions with one or more dispersed liquid phases, and an equilibrium vapor phase, or multi-phase, multi-component biocompatible fluid solutions with one or more dispersed liquid phases, and an equilibrium vapor phase containing dispersed droplets, particles, or vesicles;

extracting, by diffusional transfer, biologically active species into said extraction fluid from said comminuted plant parts in said extraction apparatus for a total diffusion time in the range 1–200 hours while forced-convection-contact-velocity differential is maintained within the range 0,5–3 meter/sec; and internal temperature is in the range 20–380 deg. K. and an absolute internal pressure is in the range 1–5000 kPa;

separating solid plant residues from supernatant Concentrated Fluid Symphytum Extract by physical means comprising solvent extraction, sedimentation, coagulation, distillation, centrifugation or filtration through microporous, adsorbent media,

wherein said extraction fluid consists of 1,2 propanediol-free liquid or vapor phases.

5,330,757

METHOD FOR THE PREVENTION AND REVERSAL OF THE EXTRINSIC AGING OF THE SKIN BY TRANSDERMAL APPLICATION OF SELENAMINO ACIDS AND COMPOSITIONS THEREFORE

Karen E. Burke, 420 E. 51st, New York, N.Y. 10022

Continuation of Ser. No. 886,501, May 20, 1992, abandoned. This application Nov. 4, 1993, Ser. No. 147,902

Int. Cl.[5] A61K *13/00*

U.S. Cl. 424—449 **18 Claims**

1. A method for enhancing and accelerating the repair of chromic cellular and molecular damage to mammalian skin, the method comprising topical administration to skin requiring such repair of a composition consisting essentially of selenoamino acids in pharmaceutically acceptable transdermal carrier, wherein the selenoamino acids are present at a concentration by weight of at least about 0.05% based on the total weight of the composition.

5,330,758

PROCESS FOR PRODUCING A COSMETIC COMPOSITION FOR APPLICATION TO THE HAIR, COMPOSITION OBTAINED BY THIS PROCESS AND PROCESS FOR COSMETIC TREATMENT WITH THE AID OF THE SAID COMPOSITION

Isabelle Hansenne-Richoux, Paris, and Marie-Pascale Audousset, Levallois-Perret, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 653,632, Feb. 12, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 997,909

Claims priority, application France, Feb. 23, 1990, 90 02301

Int. Cl.[5] A61K *37/22*

U.S. Cl. 424—450 **14 Claims**

1. A process for producing a cosmetic composition for application to the hair, said composition comprising in an aqueous dispersion phase a dispersion of vesicles comprising at least one nonionic amphiphilic lipid capable of forming vesicles and at least one water-insoluble, volatile or non-volatile silicone in the form of an oil, gum or resin, said nonionic amphiphilic lipid being present in said composition in an amount ranging from 1 to 20 weight percent based on the total weight of said composition and said silicone being present in an amount ranging from 0.5 to 10 weight percent based on the total weight of said composition, said process comprising

(a) admixing said nonionic amphiphilic lipid capable of forming vesicles with said water-insoluble volatile or non-volatile silicone,

(b) mixing the mixture resulting from step (a) with an aqueous phase to be encapsulated in the vesicles to be formed and agitating the resulting mixture until said vesicles are formed, and

(c) dispersing the formed vesicles in an aqueous phase,

said nonionic amphiphilic lipid being a linear or branched ether or ester of polyglycerol having the formula

$$RO-[-C_3H_5(OH)-O-]_n-H$$

wherein

$-C_3H_5(OH)-O-$ represents in a mixture or separately $-CH_2-CHOHCH_2-O-$

$$-\underset{\displaystyle CH_2OH}{\overset{\displaystyle |}{CH}}-CH_2O- \text{ and } -CH_2-\underset{\displaystyle CH_2OH}{\overset{\displaystyle |}{CHO}}-.$$

n has a mean statistical value ranging from 2 to 6, and R represents either

(a) an aliphatic chain R_1 or an R_2CO radical wherein R_1 is a linear or branched C_{12}-C_{17} aliphatic radical and R_2 is a linear or branched C_{11}-C_{17} aliphatic radical, or

(b) R_3 $[OC_2H_3(R_4)]$, wherein $-OC_2H_3(R_4)-$ represents, in a mixture or separately,

$$-O-\underset{\displaystyle R_4}{\overset{\displaystyle |}{CH}}-CH_2- \text{ and } -O-CH_2-\underset{\displaystyle R_4}{\overset{\displaystyle |}{CH}}-,$$

wherein R_3 is R_1 and R_2CO and R_4 is R_1, wherein R_1 and R_2 have the meanings given above

wherein said water-insoluble volatile or non-volatile silicone is selected from the group consisting of

a polydimethylsiloxane,

a mixture of a polydimethylsiloxane and a trimethylsiloxysilicate,

a polydimethylsiloxane modified by a hydroxyl group at the end of the chain,

a polydimethylsiloxane modified by a C_{12}-C_{22} alkoxy group,

a polydimethylsiloxane modified by a polyoxyalkylene group wherein the alkylene moiety has 2-3 carbon atoms,

a polydimethylsiloxane modified by an acyloxyalkyl radical wherein the acyl moiety has 12-22 carbon atoms and the alkyl moiety has 1-4 carbon atoms,

a polydimethylphenylsiloxane, a polymethylalkylsiloxane wherein the alkyl moiety has 20 carbon atoms,

a polymethylalkylarylsiloxane, wherein the alkyl moiety has 1-4 carbon atoms, modified by an alkylamine group wherein the alkyl moiety has 1-4 carbon atoms, and

a cyclopolysiloxane,

and wherein non-volatile silicone is in solution in at least one cyclic volatile silicone oil.

5,330,759

ENTERIC COATED SOFT CAPSULES AND METHOD OF PREPARATION THEREOF

Shrikant N. Pagay, Guilderland, and Gregg Stetsko, Bethlehem, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Aug. 26, 1992, Ser. No. 935,505

Int. Cl.[5] A61K *9/58*

U.S. Cl. 424—462 **7 Claims**

1. A filled soft capsule not having a subcoating and coated with from about 1 to about 20 mg./cm.^{2} of an enteric coating consisting essentially of by weight from about 60% to about 90% of a 1:1 copolymer of methacrylic acid and methyl or ethyl acrylate or methyl or ethyl methacrylate and from about 10% to about 40% of a plasticizer selected from the group consisting of triacetin, a polyethylene glycol having a molecular weight in the range from 400 to 3350, propylene glycol, dibutyl phthalate and triethyl citrate and a mixture thereof.

5,330,760

EFFERVESCENT ANTACID

William C. Walton, Fulwell, England, assignor to Sterling Winthrop Inc., New York, N.Y.

Filed Aug. 27, 1992, Ser. No. 936,688

Int. Cl.[5] A61K *9/46*

U.S. Cl. 424—466 **10 Claims**

1. A chewable effervescent antacid tablet comprising (a) primary ingredients consisting essentially of from about 35 to about 53 percent by weight of the primary ingredients of calcium carbonate and from about 0 to about 14 percent by weight of the primary ingredients of magnesium carbonate as the antacid component; from about 3.5 to about 7 percent by weight of the primary ingredients of a bicarbonate salt and from about 3.5 to about 7 percent by weight of the primary ingredients of malic acid as the effervescent component; and from about 21 to about 53 percent by weight of the primary ingredients of a bulking agent; and (b) an effective amount of a tablet lubricating agent.

5,330,761

BIOADHESIVE TABLET FOR NON-SYSTEMIC USE PRODUCTS

Anand R. Baichwal, Wappingers Falls, N.Y., assignor to Edward Mendell Co. Inc., Patterson, N.Y.

Filed Jan. 29, 1993, Ser. No. 11,428

The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.

Int. Cl.[5] A61K *9/14, 9/20, 9/50, 9/68*

U.S. Cl. 424—469 **13 Claims**

1. A bioadhesive controlled-release solid tablet, comprising

a controlled release bioadhesive excipient comprising a heterodisperse gum matrix comprising a heteropolysaccharide gum and a homopolysaccharide gum capable of cross-linking said heteropolysaccharide gum in the presence of aqueous solutions, the ratio of said heteropolysaccharide gum to said homopolysaccharide gum being from about 1:3 to about 3:1;

an inert pharmaceutical diluent selected from the group consisting of monosaccharide, a disaccharide, a polyhydric alcohol, and mixtures thereof, the ratio of said inert diluent to said heterodisperse gum matrix being from about 21:1 to 200:1; and

a locally active agent in an amount effective to render a local effect when the formulation is exposed to fluid in an environment of use.

5,330,762

TANDOSPIAINE ANTIDEPRESSIVE THERAPY

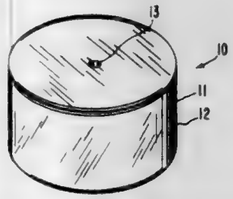
Atul D. Ayer, Palo Alto, and Dana Ridzon, San Francisco, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 842,682, Feb. 27, 1992, Pat. No. 5,185,158. This application Jan. 27, 1993, Ser. No. 10,086

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 **6 Claims**



1. An osmotic dosage form for administering tandospirone to a patient in need of tandospirone therapy, wherein the dosage form comprises:

(a) a wall comprising a member selected from the group consisting of cellulose acetate, cellulose diacetate, and cellulose triacetate, which wall forms:

(b) an internal compartment;

(c) at least one exit passageway in the wall that connects the exterior of the dosage form with the compartment;

(d) a push composition in the compartment comprising a composition that, in the presence of fluid that enters the compartment, increases in dimensions and thereby occupies space in the compartment; and wherein the osmotic dosage form is characterized by:

(e) a tandospirone composition comprising 1 mg to 750 mg of tandospirone and a polyethylene oxide polymer comprising a 190,000 to 210,000 molecular weight pressed into a layer that provides a dispensable tandospirone composition for administering, when the dosage form is in operation, to the patient in need of tandospirone therapy at a controlled rate over a period up to thirty hours.

5,330,763

DELIVERY MATRICES PREPARED BY SOLID-STATE DISSOLUTION

Dilip J. Gole, Ann Arbor; R. Saul Levinson, Saline; James Carbone, Belleville, and J. Desmond Davies, Grosse Pointe Farms, all of, assignors to Janssen Pharmaceutica Inc., Piscataway, N.J.

Continuation of Ser. No. 613,087, Nov. 6, 1990, Pat. No. 5,215,756, which is a continuation-in-part of Ser. No. 454,938, Dec. 22, 1989, abandoned. This application Jul. 23, 1991, Ser. No. 734,505

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—484 **13 Claims**

1. A porous unit dosage form prepared according to a method comprising the steps of:

(a) dispersing or dissolving a matrix forming agent in a first solvent;

(b) solidifying a unit volume of the dispersion or solution; and

(c) contacting the solidified unit volume with a second solvent, the first solvent in the solidified unit volume being substantially miscible with the second solvent, the solidification point of the first solvent being higher than the solidification point of the second solvent, the second solvent being at a temperature at or higher than the solidification point of the second solvent and at a temperature at or lower than the solidification point of the first solvent, the matrix forming agent being substantially insoluble in the second solvent, the contacting being sufficient to substantially remove the first solvent from the solidified unit volume yielding a unit dosage form; and

(d) recovering the unit dosage form.

5,330,764

METHODS OF PREPARING BULK DELIVERY MATRICES BY SOLID-STATE DISSOLUTION

Dilip J. Gole, Ann Arbor; R. Saul Levinson, Saline; James Carbone, Belleville, and J. Desmond Davies, Grosse Pointe Farms, all of Mich., assignors to Janssen Pharmaceutica Inc., Piscataway, N.J.

Continuation of Ser. No. 613,087, Nov. 6, 1990, Pat. No. 5,215,756, which is a continuation-in-part of Ser. No. 454,938, Dec. 22, 1989, abandoned. This application Jul. 23, 1991, Ser. No. 734,635

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—484 **15 Claims**

1. A method for preparing a porous delivery matrix comprising the steps of:

(a) solidifying a dispersion or solution of a matrix forming agent in a first solvent;

(b) contacting the solidified dispersion or solution with a second solvent, the first solvent in the solidified dispersion or solution being substantially miscible with the second solvent, the solidification point of the first solvent being higher than the solidification point of the second solvent, the second solvent being at a temperature at or higher than the solidification point of the second solvent and at a temperature at or lower than the solidification point of the first solvent, the matrix forming agent being substantially insoluble in the second solvent, the contacting being sufficient to substantially remove the first solvent from the solidifed disperison or solution thereby yielding a delivery matrix that is substantially free of the solvent; and

(c) recovering the delivery matrix.

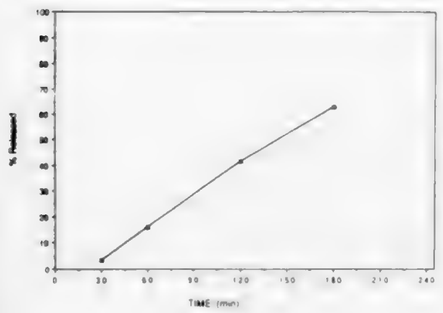
5,330,765

Patent Not Issued For This Number

5,330,766
SUSTAINED RELEASE PHARMACEUTICAL COMPOSITION

Angelo M. Morella, Campbelltown, and Mark C. Fisher, Birkenhead, both of Australia, assignors to F. H. Faulding & Co. Limited, Parkside, Australia

Division of Ser. No. 574,551, Aug. 24, 1990, Pat. No. 5,202,128, which is a continuation-in-part of Ser. No. 461,370, Jan. 5, 1990, abandoned. This application Jan. 21, 1993, Ser. No. 7,633
Claims priority, application Australia, Jan. 6, 1989, PJ2192
Int. Cl.[5] A61K *9/16, 9/22, 9/30;* B05D *7/00*
U.S. Cl. 424—490 20 Claims



1. A method for the preparation of a sustained release pharmaceutical pellet composition for administration to a patient at a predetermined dosage and interval which comprises: forming a core element containing a therapeutically effective amount of at least one active ingredient having an aqueous solubility of at least 1 in 30 and coating said core element with an admixture of the following components:

(a) from 1 to 85% by weight of a matrix polymer which is insoluble at a pH of from 1 to 7.5 and contributes to the control of the rate of release of the active ingredient in the stomach and intestines;

(b) from 1 to 30% of an enteric polymer which is substantially insoluble at a pH of from 1 to 4, sufficient to delay the release of the active ingredient in the stomach, but which is soluble at a pH of from 6 to 7.5 so as not to substantially delay release in the intestines;

(c) from 1 to 60% of a compound soluble at a pH of from 1 to 4, sufficient to enable initiation of release of the active ingredient in the stomach;

said percentages being by weight based on the total weight of components (a), (b), and (c); the ratio of the components (a), (b), and (c) in said coating being such that a dose of the pellet composition delivers to the patient a therapeutically effective amount of said active ingredient over the course of said predetermined interval, the active ingredient blood level at steady state being at least 75% of maximum blood level for more than approximately 4 hours, and the time for reaching the maximum concentration of the active ingredient being between about 4 and about 30 hours.

5,330,767
SUSTAINED RELEASE MICROCAPSULE

Masaki Yamamoto; Shigeyuki Takada, and Yasuaki Ogawa, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 541,067, Jun. 20, 1990, abandoned, which is a division of Ser. No. 249,198, Sep. 23, 1988, Pat. No. 4,954,298, which is a continuation of Ser. No. 826,968, Feb. 7, 1986, abandoned. This application Aug. 31, 1992, Ser. No. 936,726
Claims priority, application Japan, Feb. 7, 1985, 60-22978; Nov. 27, 1985, 60-267977
The portion of the term of this patent subsequent to Mar. 27, 2004, has been disclaimed.
Int. Cl.[5] A61K *9/50, 9/52;* B01J *13/04*
U.S. Cl. 424—497 13 Claims

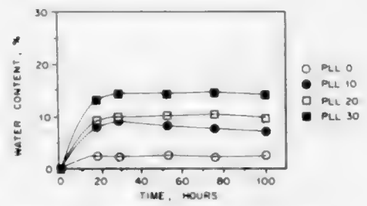
1. A sustained-release microcapsule for injection containing a water-soluble drug, which is produced by a process consisting essentially of preparing a W/O emulsion composed of a water-soluble drug-containing solution as the inner aqueous phase and a biodegradable polymer-containing solution as the oil phase, adjusting the viscosity of the W/O emulsion used in preparing the W/O/W emulsion to from about 150 to about 10,000 centipoises by the procedures of increasing the polymer concentration in the oil phase; adjusting the ratio of the aqueous phase to the oil phase; adjusting the temperature of said W/O emulsion; adjusting the temperature of the external aqueous phase; adjusting the temperature of the W/O emulsion with a line heater or cooler or the like in infusing the W/O emulsion into the external aqueous phase; or carrying out the above procedures in combination, dispersing said emulsion in an aqueous phase and subjecting the resulting W/O/W emulsion to an in-water drying to form microcapsules.

10. A microcapsule as claimed in claim 1, wherein the polymer is a copolymer of lactic acid and glycolic acid.

5,330,768
CONTROLLED DRUG DELIVERY USING POLYMER/PLURONIC BLENDS

Tae G. Park, Cambridge, Mass.; Smadar Cohen, Petach-Tickva, Israel, and Robert S. Langer, Newton, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 5, 1991, Ser. No. 726,349
Int. Cl.[5] A61K *9/16*
U.S. Cl. 424—501 3 Claims



1. A method for controlled release comprising

blending a biocompatible, non-toxic polymer degrading by hydrolysis selected from the group consisting of poly(lactic acid), poly(glycolic acid), polyorthoesters, polyanhydrides, and poly(amino acids) and block copolymers of polyethyleneoxide and polypropyleneoxide in a ratio between 10:90 and 90:10 of polymer to block copolymer, mixing into the blend a compound to be released, and

delivering the blend containing the compound to the site where release is to be achieved.

5,330,769
ACID SANITIZER

Michael D. McKinzie, and Murray W. Winicov, both of Kansas City, Mo., assignors to West Agro, Inc., Kansas City, Mo.

Continuation of Ser. No. 973,826, Nov. 9, 1992, abandoned. This application Oct. 5, 1993, Ser. No. 131,869
Int. Cl.[5] A61K *33/42, 33/04, 31/255, 31/205*
U.S. Cl. 424—605 16 Claims

1. An aqueous, dilutable acid sanitizer concentrate composition comprising individual amounts of water, from about 2–12% by weight of an aliphatic C_6–C_{10} germicidally effective fatty acid, from about 5–20% by weight of hydrotrope-solubilizer selected from the group consisting of the alkane sulfonates and disulfonates, from about 5–40% by weight of a strong acid selected from the group consisting of phosphoric and sulfuric acids and mixtures thereof, and a component for giving the composition enhanced stability, said stabilizing component comprising an effective amount of from about 3.5–15% by weight of a weak acid selected from the group consisting of propionic, butyric and valeric acids and mixtures thereof, said composition, when diluted in water to form a use solution, having a pH of from about 1–5.

5,330,770
WATER-SOLUBLE GLASS WATER-TREATING AGENT

Toyohiko Kuno, Uji, Japan, assignor to Kinki Pipe Giken Kabushiki Kaisha, Kyoto, Japan

Continuation-in-part of Ser. No. 725,902, Jul. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 491,490, Mar. 9, 1990, abandoned. This application Apr. 21, 1993, Ser. No. 50,839
Claims priority, application Japan, Mar. 11, 1989, 1-58735; Feb. 14, 1990, 2-34893
Int. Cl.[5] A61K *33/38, 33/00, 31/695;* A01N *59/16*
U.S. Cl. 424—618 4 Claims

1. A boron-free water-soluble glass for treating water consisting essentially of, by weight: 57 to 72% of SiO_2, 19.5 to 35% of Na_2O and 1.0 to 2.0% of Ag_2O.

5,330,771
USE OF EUGENOL IN CHEWING GUM AS AN ANTIOXIDANT

David G. Barkalow, Deerfield; JaCara R. Muhammad, Chicago, and Gordon N. McGrew, Evanston, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Oct. 29, 1992, Ser. No. 968,277
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 23 Claims

1. A stabilized mint oil composition, comprising:

a mint oil selected from the group consisting of peppermint oil, spearmint oil, corn mint oil, Scotch spearmint oil and mixtures thereof; and

an antioxidant stabilizer system which is substantially free of synthetic antioxidants, the stabilizer system including about 0.2% to about 0.7% eugenol by weight of the mint oil, blended into the mint oil.

5,330,772
USE OF GUM GUAIAC AS AN ANTIOXIDANT IN CHEWING GUM

David G. Barkalow, Deerfield; Jacara R. Muhammad, Chicago, and Michael J. Greenberg, Northbrook, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Dec. 11, 1992, Ser. No. 989,288
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 19 Claims

1. A stabilized mint flavoring composition comprising at least one mint flavoring and gum guaiac, wherein said gum guaiac minimizes oxidation in said mint flavoring.

5,330,773
PROCESS FOR MAKING CHEESE OR A CHEESE-RELATED SPECIALTY

Rocco Piliero, Aze, and Nicolas Meugniot, Entrammes, both of France, assignors to Bongrain S.A., Guyancourt, France

Continuation of Ser. No. 663,556, Mar. 5, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 905,128
Claims priority, application France, Aug. 29, 1989, 89 11347
Int. Cl.[5] A23C *9/12*
U.S. Cl. 426—36 9 Claims

1. A process for making a low fat cheese or low fat cheese specialty from a low fat milk or a low fat milk residue, wherein said final cheese or cheese specialty has an impression of homogeneity and freshness without having a chalky consistency or aftertaste and can be sliced, said process comprising the steps of:

a) ultrafiltrating said low fat milk or low fat milk residue to produce a low fat milk liquor;

b) adding and dispersing a gelatin solution into said low fat milk liquor in as homogeneous manner as possible to produce a low fat milk blend, said milk blend maintained at a temperature greater than or equal to 20° C. to prevent said gelatin solution from solidifying during dispersion in said milk liquor, said gelatin solution selected from the group consisting of carrageenates, gelatin, guar, carob, xanthan or mixtures thereof;

c) adding a starter to said low fat milk blend to produce a low fat paste, said starter is selected from the group consisting of lactic acid curd, lactic acid bacteria, rennet, rennet curd and a mixed curd; and

d) ripening said low fat paste while maintaining a pH of about 5 or less over approximately ¾ of the composition of said cheese paste, said ripened cheese paste having a fat content relative to the dry matter of less than or equal to 50%.

5,330,774
L-MALIC ACID DEGRADING YEAST FOR WINE MAKING

Juan L. Carrau, Rua Luiz Michielon, No. 722/102, 95070-Caxias do Sul, RS, Brazil; Aldo J. P. Dillon, Rua Antonia Bohler. No. 79/803, 95070-Caxias do Sul, RS, Brazil; Luciana A. Serafini, Avenue Italia, No. 480, Bairro Sao Pelegrino, 95100-Caxias do Sul, RS, Brazil, and Mirian S. Pazqual, Rua Vinte de Setembro, No. 2388O/201, 95100-Caxias do Sul, RS, Brazil

Continuation of Ser. No. 20,278, Feb. 18, 1993, abandoned, which is a continuation of Ser. No. 585,115, Nov. 20, 1990, abandoned. This application Sep. 27, 1993, Ser. No. 127,459
Int. Cl.[5] C12N *1/18, 1/00, 1/16*
U.S. Cl. 426—13 2 Claims

1. A biologically pure culture of a yeast strain obtained by the fusion of *Saccharomyces cerevisiae* (Montrachet) and *Schizosaccharomyces pombe* (Benda I), the yeast strain having all the identifying characteristics of DSM 5736 as deposited with the international deposit authority known as DSM Deutsche Sammlung Von Microorganismen Und Zellkuturer GmbH.

5,330,775

STERILITY CONTROL OF FOOD PRODUCT BY INTRODUCING A HARMLESS NON-STERILE COMPONENT

Roland A. Palmer, Eversley, England, assignor to The New Covent Garden Soup Company Limited, London, United Kingdom

PCT No. PCT/GB88/00815, § 371 Date Nov. 27, 1990, § 102(e) Date Nov. 27, 1990, PCT Pub. No. WO89/02928, PCT Pub. Date Apr. 6, 1989
PCT Filed Oct. 3, 1988, Ser. No. 613,569
Claims priority, application United Kingdom, Oct. 2, 1987, 8723139
Int. Cl.[5] A23L *1/39*
U.S. Cl. 426—61 10 Claims

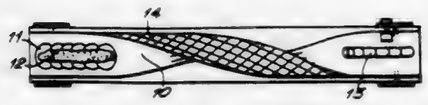
1. In a method for treating and packaging a liquid food product for temporary storage under controlled conditions and distribution to consumers, comprising the steps of sterilizing the food product and then sealing it in a container, the improvement comprising introducing into the food product, after the sterilization step and before the sealing step, a non-sterile component substantially free of all micro-organisms liable to cause disease but containing food-spoilage bacteria for causing evident spoilage of the food product after a given period of storage under controlled conditions

5,330,776

METHOD AND APPARATUS FOR PREPARATION OF ROLLED PRODUCTS

John I. G. Wikstroem, Bjuv, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Filed Aug. 12, 1992, Ser. No. 929,703
Claims priority, application European Pat. Off., Sep. 2, 1991, 91114713.0
Int. Cl.[5] A21C *3/06*
U.S. Cl. 426—500 22 Claims



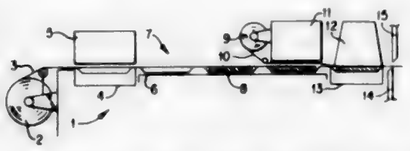
1. A process for preparing rolled products comprising placing and transporting an article on an endless conveyor belt upper run having a complete spiral twist therein between an upper run upstream end and an upper run downstream end and shaping the transported article in the twist so that a rolled product emerges from the twist on the upper run.

5,330,777

SEALED INTERNAL PACKAGE LABEL

James Mize, Jr., Simpsonville; Kent A. Davis, Travelers Rest, and Henry W. Stockley, Spartanburg, all of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Continuation of Ser. No. 282,660, Dec. 12, 1988, abandoned, which is a division of Ser. No. 135,870, Dec. 21, 1987, Pat. No. 4,890,739. This application Jul. 3, 1990, Ser. No. 545,686
Int. Cl.[5] B65B *11/00*
U.S. Cl. 426—383 6 Claims



1. A method of providing a package having a transparent covering film with a label sealed internally to said film comprising the steps of:

a) placing the product to be packaged on a support member which has a heat sealable surface around the periphery of the product;

b) placing a label whose printed surface is heat sealable on the product with the printed side facing upwardly;

c) heating a transparent covering film having a heat sealable surface to its softening and heat sealing temperature and to a temperature which is in the heat sealing temperature range of the label;

d) covering the product with the heated covering film so that said film seals to the label; and, moving the film further down and around the sides of the product so that it seals to the support member around the periphery of the product thereby enclosing the product in a package with an internal label sealed securely in place to the covering film.

5,330,778

HYDROPHOBIC PROTEIN MICROPARTICLES

Leonard E. Stark, Naperville, Ill., and Akiva T. Gross, Newton, Mass., assignors to Opta Food Ingredients, Inc., Bedford, Mass.

Continuation of Ser. No. 702,828, May 20, 1991, Pat. No. 5,145,702, which is a division of Ser. No. 403,111, Sep. 1, 1989, Pat. No. 5,021,248, which is a continuation-in-part of Ser. No. 246,435, Sep. 19, 1988, abandoned. This application Aug. 24, 1992, Ser. No. 934,033
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[5] A23J *1/12*; C08H *1/00*
U.S. Cl. 426—531 23 Claims

1. A fat-substitute comprising a stable aqueous dispersion of microparticles of hydrophobic protein, said hydrophobic protein being water-insoluble in its non-denatured state and said fat-substitute having organoleptic properties of a fat.

5,330,779

MATERIAL FOR FOOD AND METHOD FOR PRODUCTION THEREOF

Makoto Watanabe, Nakakoma, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1991, Ser. No. 724,765
Claims priority, application Japan, Jul. 3, 1990, 2-176640; Jul. 3, 1990, 2-176641; Jul. 3, 1990, 2-176642
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] A21D *2/16*; A23L *1/10*
U.S. Cl. 426—549 20 Claims

1. A food additive material which is slowly adsorbed and digested which comprises:

(1) a mixture of starches comprising (a) a cereal starch having an amylose content of less than 25% and (b) a starchy material having a high amylose content; and

(2) a modifier which modifies the enzymatic reaction ratio with amylase such that it is not more than 95% as compared to an unmodified starch mixture; and

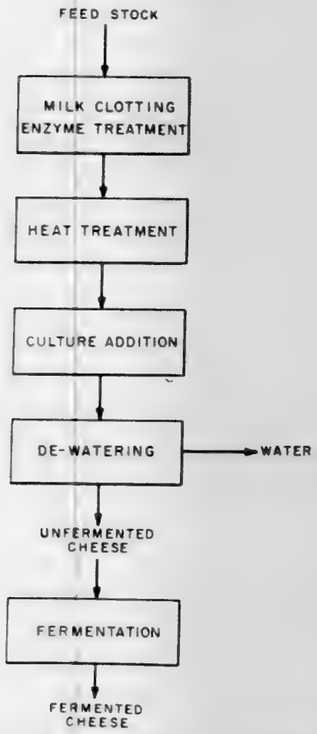
wherein the ratio of the cereal starch and the high amylose content starch is selected such that the resultant starch mixture comprises an amylose content ranging from between 25% and 60% by weight.

5,330,780

CHEESE AND PROCES AND SYSTEM FOR MAKING IT

Jeng-Jung Yee; Jeffrey L. Kornacki, and Rajagopalan Narasimhan, all of Green Bay, Wis., assignors to Schreiber Foods, Inc., Green Bay, Wis.

Continuation of Ser. No. 512,552, Apr. 23, 1990, Pat. No. 5,165,945, which is a continuation of Ser. No. 76,787, Jul. 23, 1987, abandoned. This application Jul. 10, 1992, Ser. No. 912,152
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] A23C *19/028*
U.S. Cl. 426—582 21 Claims



1. A process for making a high or a very high solids content cheese having the body and the texture of a conventional cheese but containing both casein and soluble proteins, from a feed stock which comprises unrenneted casein, soluble proteins, water and other cheese ingredients in the required proportions, on a dry basis, desired in the cheese, said process comprising the following sequential steps:

(a) reacting a coagulating amount of a milk clotting enzyme with said feed stock; then

(b) heating the feed stock for a time period sufficient to coagulate it and to substantially deactivate said enzyme;

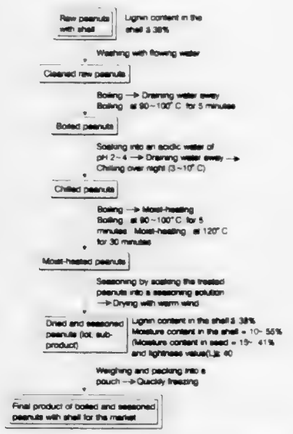
(c) removing water substantially without removing soluble proteins from the coagulated feed stock to produce cheese which contains casein and substantially all of the soluble proteins present in the feed stock but has the body and the texture of a conventional natural cheese, steps (a) and (b) allowing the removal of sufficient water to bring the solids content of said cheese to above about sixty percent by weight.

5,330,781

BOILED AND SEASONED PEANUTS WITH SHELL, AND METHOD FOR PREPARATION THEREOF

Akira Matsunobu, Nishinomiya; Sumio Horishita, Kobe, and Rhuichiro Konaka, Nagasaki, all of Japan, assignors to Ton Co., Ltd., Hyogo, Japan

Filed Dec. 6, 1991, Ser. No. 802,887
Claims priority, application Japan, Dec. 6, 1990, 2-417695
Int. Cl.[5] A23L *1/36*
U.S. Cl. 426—632 7 Claims



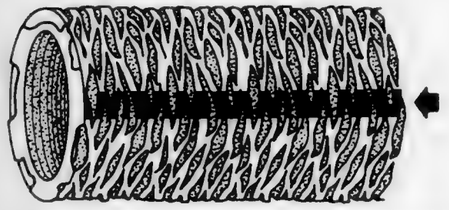
1. Boiled and seasoned peanuts having a shell which may be easily split, wherein the lignin content of the shell is not more than 38% on a dry matter basis and the moisture content of the shell is from about 10 to about 55%.

5,330,782

METHOD FOR PREPARATION OF COLORED POROUS POLYTETRAFLUOROETHYLENE MATERIAL

Shin-ichi Kanazawa, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

PCT No. PCT/JP92/00456, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO92/18563, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 10, 1992, Ser. No. 955,876
Claims priority, application Japan, Apr. 11, 1991, 3-106686
Int. Cl.[5] A01N *1/02*
U.S. Cl. 427—2.25 15 Claims



1. A method for preparing a colored porous polytetrafluoroethylene material which comprises the steps of:

a) impregnating a porous polytetrafluoroethylene material with a colorant, said material having a structure comprising fibers and nodes connected to one another through the fibers; and

b) heating at least a portion of the porous material impregnated with the colorant at a temperature of at least a

melting point of the porous material to form convex regions and concave regions on the porous material, an amount of the nodes in the concave regions being greater than an amount of the nodes in the concave regions, wherein the colorant being substantially confined in the convex regions.

5,330,783

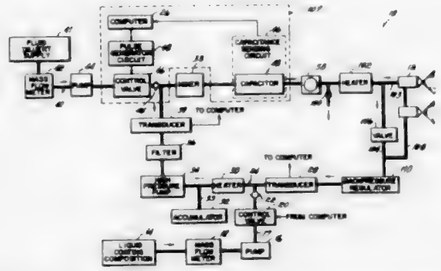
METHOD AND APPARATUS FOR FORMING AND DISPENSING SINGLE AND MULTIPLE PHASE COATING MATERIAL CONTAINING FLUID DILUENT

Laurence B. Saidman, Avon Lake; Timothy E. Wilson, Amherst; Stephen L. Merkel, Bay Village, and James C. Smith, Amherst, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Division of Ser. No. 728,051, Jun. 28, 1991, Pat. No. 5,215,253, which is a continuation-in-part of Ser. No. 662,401, Feb. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 575,203, Aug. 31, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 953,973

Int. Cl.[5] B05D *1/02*

U.S. Cl. 427—8 **30 Claims**



1. The method of applying a coating material formulation onto a substrate, comprising:

combining a flow of supercritical fluid diluent with a flow of liquid coating composition to form a coating material formulation;

circulating the coating material formulation within a recirculation loop at a selected minimum temperature and minimum pressure sufficient to substantially maintain the supercritical fluid diluent in solution in the coating material formulation;

sensing a parameter of said coating material formulation which is correlated to at least one of the supercritical fluid diluent content and the liquid coating composition content of said coating material formulation;

producing an output dependent on said sensed parameter;

controlling the flow of at least one of the supercritical fluid diluent and liquid coating composition which are combined with one another dependent on said output so that a selected ratio of supercritical fluid diluent to liquid coating composition is substantially maintained in said coating material formulation within the recirculation loop;

transmitting the coating material formulation from the recirculation loop to one or more coating dispensers; and

applying the coating material formulation onto a substrate.

5,330,784

PROCESS OF PRODUCING A FLEXIBLE MAGNETIC RECORDING MEDIA HAVING A BACKING COATING

Michael Bobrich, Boehl-Iggelheim; Gregor Brodt, Heppenheim, and Hermann Roller, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Filed Nov. 4, 1993, Ser. No. 145,599

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1992, 4238174

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—131 **5 Claims**

1. A process for the production a magnetic recording medium, consisting of a nonmagnetic flexible substrate having a magnetic layer applied to one side of the substrate and consisting of magnetic material finely divided in an organic binder, and a backing coating present on that side of the substrate which is opposite the magnetic layer and consisting of nonmagnetizable solids finely distributed in a binder, wherein the binder matrix of the backing coating contains, in addition to conventional polymers, polyurethaneurea (meth)acrylate which is obtained by reacting a poly(meth)acrylate having up to 2 terminal OH groups per mol and a molecular weight of from 200 to 50,000 with a mixture of aliphatic polyisocyanates having an average functionality of from 3.0 to 6 NCO groups per mol, consisting of

from 0.1 to 10% by weight of a diisocyanate,

from 20 to 80% by weight of a triisocyanate and

from 20 to 60% by weight of an isocyanate having a functionality of from 4 to 10,

with the proviso that from 1.2 to 3.0 NCO groups react per OH group and the remaining OH groups are converted substituted urea groups with aminoalkyltrialkoxysilanes.

5,330,785

METHOD FOR THE SEALING OF UNSTABLE ROCK STRATA

Anthony C. Plaisted, 2032 Blairmore Rd., Lexington, Ky. 40502, and Leonard G. Hickam, 531 Maple St., Georgetown, Ky. 40324

Continuation-in-part of Ser. No. 804,143, Dec. 6, 1991, Pat. No. 5,165,958, which is a continuation-in-part of Ser. No. 561,761, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 420,495, Oct. 12, 1989, abandoned. This application Nov. 23, 1992, Ser. No. 979,753

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] B05C *1/16*

U.S. Cl. 427—136 **14 Claims**

1. A method of sealing rock strata utilizing non-reactive fillers, said method comprising:

providing an aqueous curable sealant composition having a stable shelf life, said composition having first and second components,

said first component comprising on a total weight basis:

(a) from about 10 to 85% by weight of alkali metal silicate solution; and

(b) from about 2 to about 50% by weight of at least one non-reactive filler,

said second component comprising a solution on a total weight basis of from about 0.7% to about 10.0% of a water soluble for said alkali metal silicate,

said method comprising mixing said first and second components together to form a sealing composition, applying said composition in a surface coating to said rock strata and said composition setting in a chemical reaction to initiate gel formation, said chemical reaction involving said alkali metal silicate and said water soluble reactant, to form an impervious sealant coating imparting structural strength and reinforcement and also preventing penetration of air and dust through said rock strata.

5,330,786

METHOD OF MANUFACTURING COLOR-COATED OPTICAL FIBERS

Tsuyoshi Nonaka, and Nobuhiro Akasaka, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 25, 1992, Ser. No. 841,068

Claims priority, application Japan, Feb. 25, 1991, 3-029870

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—163 **2 Claims**

1. A method of manufacturing a color-coated optical fiber comprising the steps of:

coating the outer circumference of said optical fiber with a primary coating layer wherein said primary coating is a resin coating selected from the group consisting of thermosetting resins, and radiation setting resins;

maintaining the primary coating layer in an atmosphere of inert gas mixed with oxygen, such that the oxygen content is in the range of about 0.1% to less than 5%, wherein the primary coating layer is maintained in an unhardened state; and

applying a secondary UV curable coating layer, which may be colored, to the outer circumference of the primary coating layer.

5,330,787

POLISH COMPOSITION FORMING HYDROPHILIC LAYER AND SPRAY-AWAY POLISHING PROCESS

David R. Berlin, Huntington, Conn.; Bonnie A. Rishel, Yorktown Heights, and Richard R. Wolstoncroft, Mt. Kisco, both of N.Y., assignors to First Brands Corporation, Danbury, Conn.

Filed Dec. 2, 1991, Ser. No. 800,949

Int. Cl.[5] B65B *33/00*

U.S. Cl. 427—154 **22 Claims**

3. A process for polishing a surface to provide a protective coating for said surface wherein said process comprises: applying to said surface a polish composition comprising a multicomponent mixture which when applied to the surface under effective drying conditions forms a substantially dry hydrophilic film which may be substantially removed from said surface by water rinsing of said surface; permitting said polish composition to dry under effective drying conditions to form said hydrophilic film; and removing said hydrophilic film from said surface by rinsing the surface with water whereby said surface retains thereon at least one component of said multicomponent mixture.

5,330,788

TEMPORARY COATING SYSTEM

Wilbert J. Roberts, Plymouth, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Aug. 10, 1992, Ser. No. 927,769

Int. Cl.[5] B65B *33/00*

U.S. Cl. 427—154 **31 Claims**

1. A weather resistant, rapidly removable, temporary coating composition which comprises:

(a) from about 3 to about 25% by weight of a film forming acrylic polymer, an acrylic copolymer or a mixture thereof;

(b) from about 0.1 to about 5% by weight of a nonionic surfactant comprising a hydroxylated or ethoxylated acetylenically unsaturated hydrophobic moiety;

(c) from 0 to about 10% by weight of an anionic phosphate ester surfactant;

(d) from about 0.5 to about 10% by weight of a neutralizing agent, above the amount associated with the polymer and anionic surfactant; and

(e) water.

5,330,789

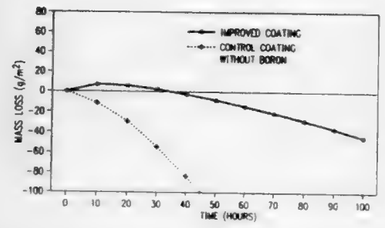
CONVERSION COATING ON CARBON/CARBON COMPOSITES WITH CONTROLLED MICROSTRUCTURE

Roy E. Booth, Duncanville, Tex.; David M. Shuford, Albuquerque, N. Mex., and John S. Linck, Pueblo, Colo., assignors to Loral Vought Systems Corporation, Grand Prairie, Tex.

Filed Feb. 5, 1993, Ser. No. 14,118

Int. Cl.[5] B05D *1/06, 1/10*

U.S. Cl. 427—189 **27 Claims**



1. A method for forming a coating on a carbon substrate for protecting the substrate from degradation at elevated temperatures, comprising:

(a) forming a first mixture consisting essentially of silicon particulates and silicon carbide particulates;

(b) contacting a surface of said substrate with said first mixture;

(c) heating said surface of said substrate and the thus contacting first mixture under suitable reaction conditions to form a first coating on said surface of said substrate;

(d) cooling the thus coated substrate surface;

(e) forming a second mixture comprising boron particulates, silicon carbide particulates, and silicon particulates;

(f) contacting said thus coated substrate surface with said second mixture; and

(g) heating said thus coated substrate surface and the thus contacting second mixture under suitable reaction conditions to form a microstructure coating on said surface of said substrate.

5,330,790

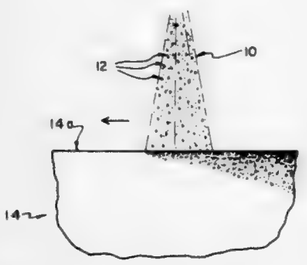
IMPACT IMPLANTATION OF PARTICULATE MATERIAL INTO POLYMER SURFACES

Noel C. Calkins, P.O. Box 416, Los Alamos, N. Mex. 87544

Filed Feb. 7, 1992, Ser. No. 832,224

Int. Cl.[5] B05D *1/12*

U.S. Cl. 427—204 **18 Claims**



1. A method of treating a surface of a solid polymeric article, comprising driving a particulate material by a fluid carrier emitted at a pressure of between approximately 20,000 and 65,000 pounds per square inch so as to achieve impact implantation and penetration of said particulate material into the

surface of said article to a depth and concentration sufficient to alter surface characteristics of the article.

5,330,791

METHOD OF RECLAIMING PHOSPHOR

Yoshikatsu Aihara; Tomokazu Suzuki; Yoshiaki Shizuki; Shoichi Bando, and Katsunori Uchimura, all of Anan, Japan, assignors to Nichia Kagaku Kogyo K.K., Tokushima, Japan

Continuation of Ser. No. 587,092, Sep. 24, 1990, abandoned. This application Apr. 16, 1993, Ser. No. 47,072

Claims priority, application Japan, Apr. 21, 1990, 2-105906

Int. Cl.[5] C09K *11/01*

U.S. Cl. 427—215 **6 Claims**

1. A method of reclaiming a zinc sulfide phosphor from a recovered phosphor slurry containing carbon, a bichromate, and polyvinyl alcohol, said method comprising the successive steps of:

(a) adding water to a recovered phosphor slurry, heating the recovered phosphor slurry to a temperature of at least 70° C., adding an alkali to said recovered phosphor slurry to adjust the alkali concentration in the slurry to be not more than 0.5N, adding an oxidizing agent in an amount of 0.1 to 20.0 wt % with respect to a dry solid component of said slurry, whereby said carbon and bichromate are separated from a phosphor in said recovered phosphor slurry and said polyvinyl alcohol is decomposed and dissolved into said alkali, removing an alkali solution containing said carbon, bichromate and decomposed polyvinyl alcohol from the remaining phosphor slurry, and washing said recovered phosphor slurry with water; and thereafter

(b) treating the phosphor slurry with an acid by adding an acid solution to the phosphor slurry to adjust the pH of the slurry to be 3.0 to 5.0, thereby cleaning the phosphor in the slurry,

(c) removing the acid in step (b) and washing the slurry with water and retreating the surface of the phosphor by adding a water soluble compound containing at least one element selected from the group consisting of Zn, Al and alkaline earth metals and at least one member selected from the group consisting of colloidal silica, alumina sol and titania sol, each having a grain size of not more than 50 nm to the washed slurry, and thereafter adjusting the pH to 6.5 to 7.5 to effect coprecipitation of said at least one element and said at least one member onto the surface of the phosphor.

5,330,792

METHOD OF MAKING LUBRICATED METALLURGICAL POWDER COMPOSITION

James R. Johnson, River Falls; Mary L. Orfield, Menomonie, and William J. Mueller, Colfax, all of Wis., assignors to Hoeganaes Corporation, Riverton, N.J.

Filed Nov. 13, 1992, Ser. No. 975,823

Int. Cl.[5] B05D *7/00;* **B32B** *15/02*

U.S. Cl. 427—217 **20 Claims**

1. A method of producing a lubricated iron-based metallurgical powder composition, comprising:

(a) providing a solution of a metal salt of a fatty acid in an organic solvent, said metal being capable of forming an alloy with iron;

(b) wetting a metallurgical powder composition comprising iron-based particles having a weight average particle size of from about 10–350 microns with said solution in an amount to provide about 0.1–3 weight parts of metal salt to about 100 weight parts of the iron-based particles; and

(c) removing the solvent to provide iron-based particles having a coating of the metal salt.

14. A method of producing a lubricated iron-based metallurgical powder composition consisting essentially of:

(a) providing a solution of a metal salt of a fatty acid in an organic solvent, said metal being capable of forming an alloy with iron and wherein said metal is selected from the group consisting of copper, molybdenum, nickel, manganese, and mixtures of these;

(b) wetting a metallurgical powder composition consisting essentially of iron-based particles having a weight average particle size of from about 10–350 microns with said solution in an amount to provide about 0.1–3 weight parts of metal salt to about 100 weight parts of the iron-based particles; and

(c) removing the solvent to provide iron-based particles having a coating of the metal salt.

5,330,793

METALLO-ORGANIC PRECURSORS TO TITANIUM NITRIDE

Charles H. Winter, Grosse Pointe Park; Tilak S. Lewkebandara, Detroit; James W. Proscia, Dearborn, and Philip H. Sheridan, Madison Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 825,235, Jan. 24, 1992, Pat. No. 5,194,642. This application Nov. 5, 1992, Ser. No. 971,655

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—248.1 **22 Claims**

1. A process for depositing a coating of titanium nitride on a surface of a substrate, comprising the steps of:

A) heating a metallo-organic precursor of the formula:

$$(Cl_2TiNR)_2,$$

wherein R is a monovalent alkyl or aryl radical having from 1 to about 12 carbon atoms, to prepare a gaseous precursor; and

B) directing the gaseous precursor against the surface of the substrate at a temperature sufficient to deposit a coating of titanium nitride thereon.

5,330,794

ROOM TEMPERATURE CURABLE SURFACE COATINGS AND METHODS OF PRODUCING AND APPLYING SAME

Paul N. Bosco, Fort Lee, and Terrance Fay, Vernon, both of N.J., assignors to Ceram Tech International, Ltd., Pomona, N.Y.

Continuation of Ser. No. 500,779, Mar. 28, 1990, Pat. No. 5,164,003. This application Sep. 16, 1992, Ser. No. 946,744

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—387 **29 Claims**

1. A method for forming a ceramic coating on a surface comprising:

mixing an aqueous solution of alkali metal silicate and a silica gel to form a composition with a silica to alkali metal oxide molar ratio of at least about 6.6:1;

mixing said composition with a cross-linking agent and a metal oxide or hydroxide to form a binder;

mixing said binder and a filler;

applying the resulting mixture to said surface to form a coating; and allowing the coating to dry, such that said coating chemically bonds to said surface.

5,330,795

EMULSION BASED COATINGS AND A METHOD USING AN EMULSION BASED COATING TO SEAL ASBESTOS CONTAINING SOILS

Vern H. Batdorf, Minneapolis, and Craig D. Cervin, Ramsey, both of Minn., assignors to H. B. Fuller Licensing & Financing, Vadnais Heights, Minn.

Continuation of Ser. No. 649,020, Feb. 1, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,572

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—393.6 **30 Claims**

1. A process for sealing an asbestos containing particulate matrix with at least one coating from subsequent asbestos release, which process comprises applying a film forming aqueous emulsion to form a continuous, permanent, protective coating directly on the asbestos containing matrix, said aqueous emulsion comprising about 25 to 70 wt-% water, a polymer, and about 30 to 75 wt-% solids based on the emulsion as a whole, said emulsion further comprising from about 0.5 to 2.0 wt-% surfactant stabilizer based on the emulsion as a whole.

5,330,796

METHOD OF FORMING COATING FILMS

Akira Kasari, Hiratsuka; Satoru Ito, Kanagawa, and Shigeru Nakamura, Owariasahi, all of Japan, assignors to Kansai Paint Company, Ltd., Amagasaki, Japan

Filed May 5, 1992, Ser. No. 878,461

Claims priority, application Japan, May 15, 1991, 3-139799; May 15, 1991, 3-139800; May 21, 1991, 3-116090; May 22, 1991, 3-117318

Int. Cl.[5] B05D *1/36, 7/00*

U.S. Cl. 427—407.1 **3 Claims**

1. A method of forming a coating film by forming in sequence a pigmented base coat and a clear top coat on a substrate followed by finishing by the two-coat one-bake technique, the method being characterized by using, as a coating composition for pigmented base coat formation, a composition comprising, as essential components thereof,

(1) at least one OH-containing resin selected from the group consisting of an OH-containing polyester resin and an OH-containing vinyl resin, each having a hydroxyl value of about 20 to 200,

(2) a methylol amino resin etherified with an alcohol,

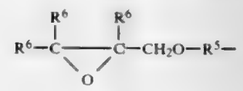
(3) a polyorganosiloxane which has, on an average, at least two groups, per molecule, each selected from the class consisting of a silanol group and an alkoxysilane group and has a number average molecular weight of at least 1,000 the polyorganosiloxane optionally having, on an average, at least one epoxy group per molecule, the polyorganosiloxane being prepared by subjecting to hydrolysis condensation a silane compound of the general formula

$$R^1{}_xSi(OR^2)_{4-x} \quad (I)$$

wherein R^1 and R^2 may be the same or different and each is a hydrocarbon group containing 1 to 13 carbon atoms and x is 1, the epoxy-containing polyorganosiloxane being prepared by subjecting to hydrolysis cocondensation a silane compound of the general formula (I) wherein x is 1, 2 or 3 and an epoxy-containing silane of the general formula

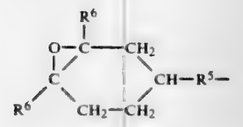
$$G-Si(OR^3)_{4-y} \quad (II)$$
$$\quad\quad (R^4)_{y-1}$$

wherein R^3 and R^4 may be the same or different and each is a hydrocarbon group consisting 1 to 13 carbon atoms, Y is 1, 2 or 3, G is a group of the formula



(III)

or



(IV)

wherein R^5 is a bivalent hydrocarbon group containing 1 to 13 carbon atoms and the R^6 groups may be the same or different and each is a hydrogen atom or a methyl group,

(4) a flaky metal powder and/or a mica powder, and

(5) an organic solvent,

and using, as a coating composition for clear top coat formation, a composition comprising, as essential components thereof,

(1) a base resin which is (i) an OH-containing resin further containing at least one group selected from the class consisting of a silanol group and a hydrolyzable group bound directly to a silicon atom within the same molecule or (ii) a mixed resin composed of a resin containing at least one group selected from the class consisting of a silanol group and a hydrolyzable group bound directly to a silicon atom and an OH-containing resin,

(2) a methylol amino resin etherified with an alcohol, and

(3) an organic solvent.

5,330,797

CURTAIN COATER WITH DISPLACEABLE EDGE GUIDES AND METHOD

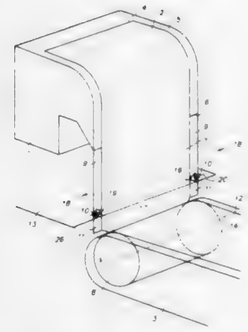
Willem Muës, Tremelo, Belgium, assignor to Agfa-Gevaert N. V., Mortsel, Belgium

Filed Jun. 9, 1992, Ser. No. 895,692

Claims priority, application European Pat. Off., Jun. 18, 1991, EP 91201538.5

Int. Cl.[5] B05D *1/30;* **B05C** *5/00*

U.S. Cl. 427—420 **9 Claims**



1. In a method of curtain coating a moving web in which a web is moved along a fixed path and a generally planar curtain of a liquid coating composition is formed on a coating hopper and allowed to fall from said hopper by gravity and impinge on said moving web generally transversely of said path at a locus along said path while the web is supported on a web-supporting roller rotating on an axis generally transverse to said web path and while side edges of the curtain are acted upon by edge guides arranged on opposite sides of the web path between the hopper and web and extending at one end into proximity to said web for laterally guiding the curtain side edges and substantially preventing contraction of the transverse dimension of the falling curtain, and the coating is occasionally interrupted by intercepting the falling curtain before the same inpinges on the moving web by means of a curtain intercepting member in an intercepting position adjacent the web and then restored by displacing said curtain intercepting member from its intercepting position to an inoperative position out of the path of the curtain, the improvement which comprises intercepting with said curtain intercepting member the entire transverse dimension of the curtain between said edge guides while displacing independently of said coating hopper at least a portion of each edge guide which is adjacent to said web away from said web to a position removed from said web and clear of said intercepting member when said member is in its intercepting position, and when said intercepting member is dis-

placed to its inoperative position returning each of said portions of the edge guides to its position adjacent said web.

5,330,798

THERMAL SPRAY METHOD AND APPARATUS FOR OPTIMIZING FLAME JET TEMPERATURE

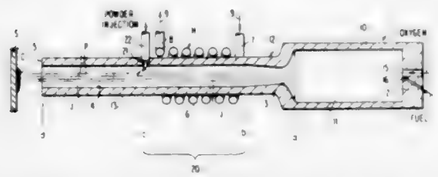
James A. Browning, Enfield, N.H., assignor to Browning Thermal Systems, Inc., Enfield, N.H.

Filed Dec. 9, 1992, Ser. No. 987,818

The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.

Int. Cl.[5] **B05D** *1/10*

U.S. Cl. 427—446 **8 Claims**



1. In a method of thermal spraying of a powdered material by entrainment of particles of said powdered material in a supersonic flame jet from one of an oxy-fuel, air-fuel, or plasma heat source and expanding the flame jet to atmospheric or lower pressure characterized by a temperature above the melting point of the material being sprayed, the improvement comprising reducing the jet temperature after such expansion to below the melting point of the material prior to introduction of the material particles into said flame jet.

5,330,799

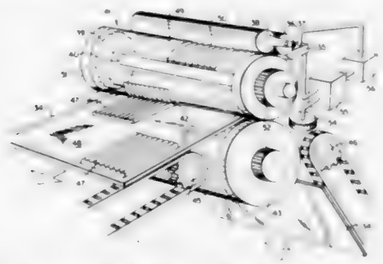
PRESS POLYMERIZATION OF LENTICULAR IMAGES

Ellen R. Sandor, Chicago; William T. Cunnally, Island Lake, and Stephan B. Meyers, Chicago, all of Ill., assignors to The Phscologram Venture, Inc., Chicago, Ill.

Filed Sep. 15, 1992, Ser. No. 945,139

Int. Cl.[5] **B05D** *3/06*; **B05C** *9/08*

U.S. Cl. 427—510 **34 Claims**



9. A method of manufacturing autostereograms comprising:

(a) providing a transparent cylinder having a relief pattern on its outer surface, said relief pattern being a lenticular relief pattern comprising an array of inverse lenticules, and said transparent cylinder having a source of ultraviolet radiation within the transparent cylinder;

(b) wrapping a flexible substrate sheet partially around the transparent cylinder, said flexible substrate sheet having a stereographic image thereon, the image being in registration with the lenticular relief pattern on the transparent cylinder;

(c) flowing a thermosetting polymer resin onto the transparent cylinder between the relief pattern and the flexible substrate sheet;

(d) curing the thermosetting polymer resin in situ, and simultaneously bonding the polymer resin to the flexible substrate sheet while maintaining the registration between the flexible substrate sheet and the stereographic image, with ultraviolet radiation produced by the source of ultraviolet radiation within the transparent cylinder thus producing a composite lenticular sheet having an array of lenticules on its front surface and a stereographic image; and

(e) removing the composite lenticular sheet.

5,330,800

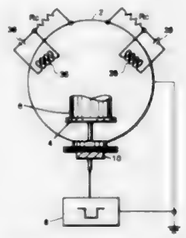
HIGH IMPEDANCE PLASMA ION IMPLANTATION METHOD AND APPARATUS

Robert W. Schumacher, Woodland Hills; Jesse N. Matossian, Canoga Park, and Dan M. Goebel, Tarzana, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 4, 1992, Ser. No. 971,433

Int. Cl.[5] **B05D** *3/06*

U.S. Cl. 427—523 **18 Claims**



13. A plasma ion implantation method, comprising:

providing a target object within a plasma chamber,

introducing an ionizable gas into the chamber, and

electrically energizing said target with an energization signal that undergoes a signal rise to (a) emit secondary electrons which forms a 3-dimensional beam that establishes a background plasma in said gas in the vicinity of the target through electron-gas collisions, and a primary pulsed plasma in the vicinity of the target through a beam-plasma instability interaction between said 3-dimensional secondary electron beam and said background plasma, and to (b) produce an implanation of ions from said primary plasma into said target, with said plasma experiencing a rise in density under said beam-plasma instability interaction, and said ion implantation experiencing a rise in implantation rate, that lag said signal rise.

5,330,801

PROCESS FOR TINNING ELECTRICALLY CONDUCTIVE WIRE

Anthony M. Monteiro, Holyoke, Mass.; Stephen M. Hilliard, Vernon, and Ralph L. Ferraro, Sandy Hook, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 494,635, Mar. 16, 1990, abandoned. This application May 8, 1991, Ser. No. 789,667

Int. Cl.[5] **B05D** *3/12, 5/12, 1/18, 3/10*

U.S. Cl. 427—560 **19 Claims**

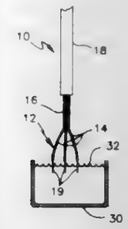
1. A method of applying solder to a nickel plated wire, comprising the steps

firstly, immersing the wire in a chemical flux for a period of time;

next, immersing the wire for a period of time into a static solder pot having molten solder therein and with no ultrasonic agitation operational;

next, immersing the wire into a chemical flux for a period of time; and

immersing the wire for a period of time into an ultrasonic solder pot having molten solder therein and with ultrasonic agitation operational, the wire when removed from the ultrasonic solder pot being sufficiently coated with the



molten solder such that the solder has formed a suitable intermolecular bond to the nickel plating.

5,330,802

PLASMA CVD OF CARBONACEOUS FILMS ON SUBSTRATE HAVING REDUCED METAL ON ITS SURFACE

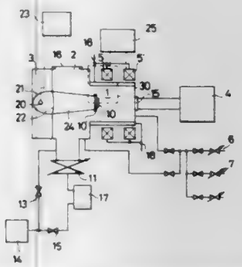
Shumpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 585,278, Sep. 19, 1990, abandoned, which is a continuation of Ser. No. 387,800, Aug. 1, 1989, abandoned, which is a division of Ser. No. 216,333, Jul. 8, 1988, Pat. No. 4,871,581. This application Jun. 11, 1992, Ser. No. 896,914

Claims priority, application Japan, Jul. 13, 1987, 2-175559

Int. Cl.[5] **B05D** *3/06*; **C23C** *16/26*

U.S. Cl. 427—577 **7 Claims**



1. A method for forming a carbonaceous material containing diamond or microcrystalline grains therein comprising the steps of:

placing a substrate in a reaction chamber said substrate provided with reduced Ni, Ge, or Mn on its surface;

inputting a carbon compound gas into said reaction chamber;

supplying an electric energy to said gas to convert said gas to a plasma; and

forming said carbonaceous material on said substrate wherein said reduced Ni, Ge, or Mn act as seeds on the surface of said substrate to promote formation of said carbonaceous material.

5,330,803

LIQUID CRYSTAL DEVICE

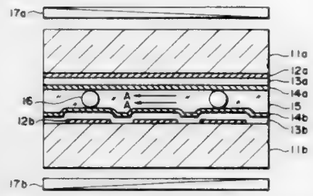
Hideaki Takao, Sagamihara; Masanobu Asaoka, Yokohama, and Makoto Kojima, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,209

Claims priority, application Japan, Aug. 6, 1991, 3-219384

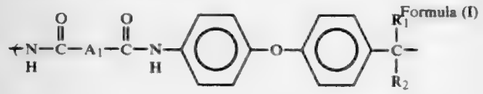
Int. Cl.[5] **G02F** *1/1337*

U.S. Cl. 428—1 **39 Claims**

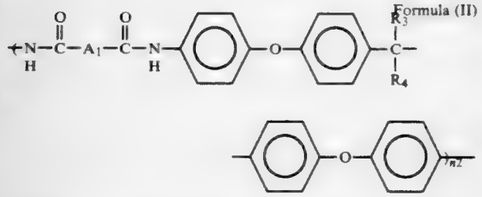


1. A liquid crystal device, comprising: a pair of substrates, at least one of which has an alignment film thereon, and a liquid crystal disposed between the substrates; wherein said alignment film comprises a resin including a first polyamide represented by formula (I) below and a second polyamide represented by formula (II) below:

Formula (I)



Formula (II)



wherein R_1-R_4 independently denote a group of $CF_3(CF_2)_l(CH_2)_m$ wherein l and m are integers satisfying $l \geq 0$ and $m \geq 0$; and A_1 and A_2 are mutually different divalent organic residues; and n1 and n2 are integers satisfying $n1 \geq 2$ and $n2 \geq 2$.

5,330,804

SYNTHETIC WOOD MULCH

John G. Allison, Brevard, N.C., and Hal J. Thompson, Naples, Fla., assignors to Earth Trends, Inc., Brevard, N.C.

Filed Mar. 27, 1991, Ser. No. 680,802

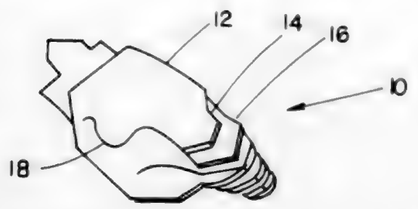
Int. Cl.[5] **A01G** *13/02*

U.S. Cl. 428—15 **19 Claims**

1. A synthetic wood article comprising:

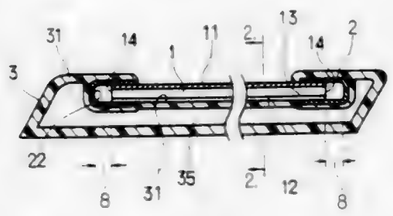
an irregular wood chip shaped substrate; said substrate being substantially formed from at least first and second plastics; said substrate having a plurality of discrete layers; at least one of said layers being made substantially from said first plastic and at least another of said layers being made substantially of said second plastic; portions of adjacent

layers adhering to one another; said layers having edges; an edge of one layer overlapping and being offset from the



edge of its adjacent layer; said offset edges being substantially irregular.

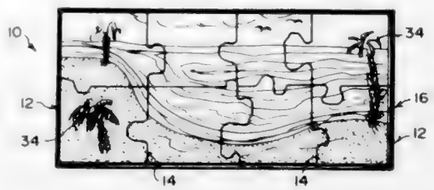
5,330,805
BLOW MOLDING AND ITS MOLDING PROCESS
Itaru Shirahata, Oobu, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Oobu, Japan
Filed May 5, 1992, Ser. No. 878,502
Claims priority, application Japan, May 15, 1991, 3-141069
Int. Cl.[5] B60R *13/04*
U.S. Cl. 428—31 **15 Claims**



1. A blow molding comprising:
a blow molded body with a hollow interior formed therein;
an ornamental strip formed with an ornamental surface attached to a bottom plate in its longitudinal direction by at least one fixture, which strip is embedded in an outer surface of said blow molded body; and
an end cap attached to each end of said ornamental strip and embedded in said outer surface of said blow molded body, each of said end caps being in sliding contact with said ornamental strip and positioned in such a manner at each end of the ornamental strip so as to provide a space between the bottom of the end cap and the terminal edge of the ornamental strip.

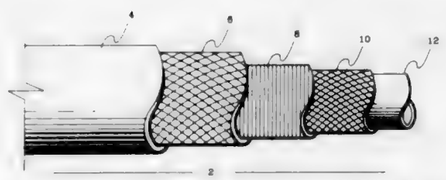
5,330,806
PUZZLE TOWEL/MAT FOR BATH, BEACH AND KITCHEN
Daniel W. Bythewood, and Alicia Bythewood, both of 2 Faith Ct., Dix Hills, N.Y. 11746
Filed Jul. 13, 1992, Ser. No. 912,308
Int. Cl.[5] B32B *3/00, 3/02;* **F16B** *5/07*
U.S. Cl. 428—33 **8 Claims**

1. A beach towel comprising:
a) a plurality of irregularly shaped pieces having interlocking sides to match up with each other to form one complete regularly shaped unit, said irregularly shaped pieces being fabricated out of soft, heavy woven cloth material; and
b) means for retaining said interlocking sides of said plurality of irregularly shaped pieces together when matched up with each other, so as to keep said one complete regularly shaped unit together for use, wherein each said irregularly shaped piece includes a matching portion of a picture



thereon, so that when said interlocking sides are matched up with each other the picture will be completed.

5,330,807
COMPOSITE TUBING WITH LOW COEFFICIENT OF EXPANSION FOR USE IN MARINE PRODUCTION RISER SYSTEMS
Jerry G. Williams, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.
Filed Mar. 15, 1990, Ser. No. 495,054
Int. Cl.[5] B32B *1/08;* **F16L** *11/02*
U.S. Cl. 428—34.5 **5 Claims**

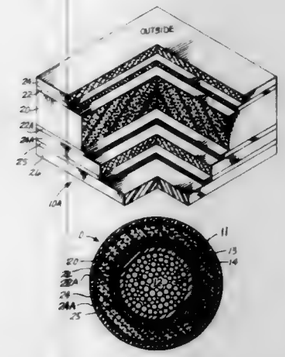


1. A composite laminated tubing which substantially does not change in length in response to temperature changes for use in an environment which undergoes temperature changes and wherein it is highly desirable to minimize changes in the length of said tubing, said tubing comprising:
an elongate hollow tubular body formed of a plurality of layers of fibers fixed in a binder, each fiber layer having fibers oriented in at least one predetermined orientation, wherein at least a portion of said fibers have a low thermal coefficient of expansion and are oriented within the body to provide said tubing with an effective thermal coefficient of expansion in the longitudinal direction of not greater than 6×10^{-7} in/in-°F. and a Poisson's ratio of from 0.4 to 0.6.

5,330,808
POLYOLEFIN BOTTLES WITH GLOSSY SURFACE
Allan W. Duff; Heinz P. Krysmanski, both of Oakville, and Helga A. Plishka, Etobicoke, all of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada
Filed Dec. 4, 1991, Ser. No. 802,179
Int. Cl.[5] B65D *23/00*
U.S. Cl. 428—35.7 **4 Claims**

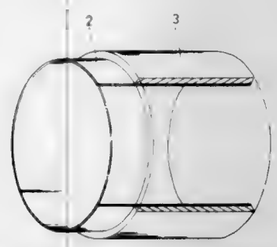
1. A monolayer blow molded bottle having a glossy external surface, said monolayer bottle consisting essentially of a polymer selected from linear polyethylene having a density of at least 0.940 g/cm^3, a melt index of less than 2.0 dg/min, a stress exponent of less than 1.5, and containing at least 400 ppm of a fluoropolymer processing aid, said monolayer bottle having a gloss of at least 50 on its external surface.

5,330,809
THERMAL PROTECTION SLEEVE FOR REDUCING OVERHEATING OF WIRE BUNDLES UTILIZED IN AIRCRAFT APPLICATION
Mickey A. Williamson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Division of Ser. No. 355,619, May 23, 1989, abandoned. This application Dec. 12, 1990, Ser. No. 638,475
The portion of the term of this patent subsequent to Dec. 12, 2007, has been disclaimed.
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.2 **1 Claim**



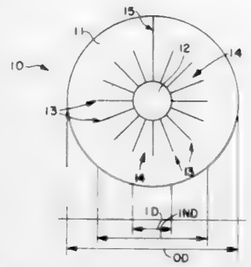
1. An electrical cable having a wire bundle core surrounded by a thermal protection sleeve, said thermal protection sleeve comprising a lamination of silicone foam and an acrylic adhered layer of fiber glass provided on both sides of said silicone foam.

5,330,810
LIQUID TRANSFER TUBE
Todomu Nishino, Nabari, Japan, assignor to Nitta Moore Company, Osaka, Japan
Filed Oct. 6, 1992, Ser. No. 957,253
Int. Cl.[5] F16L *11/04*
U.S. Cl. 428—36.91 **11 Claims**



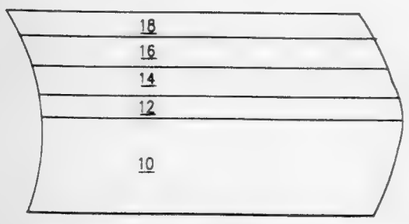
1. A flexible, alcohol resistant, gasoline resistant fuel transfer tube having controlled gasoline permeation formed by simultaneous extrusion, comprising:
at least a first layer and a second layer;
said first layer having a polyamide resin containing at least 70 mol % in the molecular chain of the constituent units composed of metaxylene diamine or mixed xylene diamine containing metaxylene diamine and paraxylene diamine wherein said paraxylene diamine content is not more than 30% thereof, and an α,ω-aliphatic dicarboxylic acid having 4 to 10 carbon atoms;
said polyamide has a relative viscosity of at least 1.5;
said first layer being no more than 0.3 mm in thickness; and
said second layer having a polyolefin resin.

5,330,811
DISPOSABLE LAMINATE DRAIN COVER
Mark R. Buchalter, 3326 Farragut St., Hollywood, Fla. 33021
Filed Jun. 13, 1990, Ser. No. 537,256
Int. Cl.[5] A47K *1/06*
U.S. Cl. 428—40 **4 Claims**



1. A laminate article for upgrading the appearance of a deteriorated surface around an annular hole of a drain fixture, comprising:
a cover member having a shape corresponding to the surface to be upgraded, said cover member including an upper layer which is resistant to corrosion and has an attractive visual appearance, a pressure sensitive adhesive layer for adhering onto the surface to be upgraded, and a removable liner layer for covering the adhesive layer prior to installation of the cover member on the deteriorated surface,
wherein said cover member is a pressure-sensitive laminate sheet which can be disposably applied to the deteriorated surface around the annular drain hole, said laminate sheet having said upper, adhesive, and liner layers diecut together to form the laminate article with an outer annular portion having an outer diameter, an inner annular hole having an inner diameter, and a plurality of radial lines extending from an intermediate diameter between said outer and inner diameters to said inner annular hole, whereby said cover member can be applied around drain holes of inner diameters anywhere in the range from said intermediate diameter to said inner diameter of said cover member.

5,330,812
SHEET MATERIAL WITH IMPROVED CUT RESISTANCE
Anthony R. Knoerzer, Fairport; Pang-Chia Lu, Pittsford; Conway F. Shields, Fairport, and Donald G. Whyman, Victor, all of N.Y., assignors to Mobil Oil Corp., Fairfax, Va.
Continuation-in-part of Ser. No. 611,578, Nov. 13, 1990, abandoned. This application Apr. 13, 1992, Ser. No. 867,634
Int. Cl.[5] B32B *7/02, 27/16*
U.S. Cl. 428—40 **8 Claims**



1. In a thin film form composite material comprising a base liner film form material, a release layer on at least one surface of said base liner, a pressure sensitive adhesive layer disposed

on said release layer, and a peelable face layer film form material disposed on said pressure sensitive adhesive, such that said adhesive layer adheres more strongly to said face layer than to said release layer on said base liner, said face layer being releasable adhered to said release layer on said base liner by means of said adhesive;

the improvement, whereby allowing said composite material to be subjected to a die cutting or perforating operation whereby said face layer and adhesive are cut through so as to make such peelable from said composite, but said base liner is not substantially cut through to an extent such that, if said cut face layer is peeled from said release layer, said base liner retains its integrity, which comprises

the surface of said base liner adjacent to said release layer being modified to provide a thin and tough skin of polymeric material, comprising up to about 5% in thickness of said base liner, which is more cut resistant than is the remainder of said base liner material to an extent sufficient to maintain the integrity thereof after die cutting of said face layer

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5,330,813

PATCH FOR PREVENTING CARBURIZATION, NITRIDING OR OXIDATION, AND METHOD OF PREVENTING CARBURIZATION, NITRIDING OR OXIDATION

Kouichi Hirooka, Nara; Kouichi Ito, Osaka, and Susumu Tanabe, Suita, all of Japan, assignors to Kabushiki Kaisha Nard Kenkyusho, Amagasaki, Japan

Continuation of Ser. No. 613,686, Nov. 20, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,249

Claims priority, application Japan, Apr. 1, 1989, 1-83023

Int. Cl.[5] **C23C** *8/04*

U.S. Cl. 156—329 **10 Claims**

1. A high temperature resistant patch for preventing carburization, nitriding or oxidation which comprises

a film comprising a heat-fusible or heat-meltable particulate material which is at least one member selected from the group consisting of borax, boron oxide, borosilicic acid, phenylboric acid, water glass, frit, low melting point glass of 300°-500° C., and a powder or crushed foil of a metal having a melting point of not higher than 900° C. having an anti-carburizing, anti-nitriding or anti-oxidizing effect, and a heat-decomposable polyolefin resin as a binder; and

a heat-resistant silicone pressure sensitive adhesive which retains its pressure sensitive adhesive force, which is decomposed at a carburizing, nitriding or oxidizing temperature, provided on a side of the film, wherein an inhibitor of flow of the heat-meltable particulate material at the time of heating is incorporated as an adjuvant in said film, wherein the adjuvant is at least one member selected from the group consisting of titanium oxide, iron oxide, zinc oxide talc, calcium carbonate, silica, aluminum silicate, alumina, zircon, zirconia, magnesia, Silicon carbide, fly-ash, graphite and kaolinite, and wherein from 20 to 95 parts by weight of the particulate material is blended with from 5 to 80 parts by weight of the heat-decomposable polyolefin resin.

5,330,814

FLEXIBLE PROTECTIVE COVER PAD

Takeko N. Fewell, 204 Greenhurst Ave., Summerville, S.C. 29485

Filed Jan. 7, 1993, Ser. No. 1,166

Int. Cl.[5] **B32B** *3/06, 3/08*

U.S. Cl. 428—41 **18 Claims**

1. A flexible protective cover pad, comprising:

(a) a backing sheet of flexible material having a middle portion and a pair of side portions extending along opposite sides of the middle portion, said backing sheet of flexible material being coated on one surface with an adhesive;

(b) an elongated strip of flexible foam-like material being moldable to the shape of an edge of an object to be covered, said strip of foam-like material being applied to adhesive-coated surface of said middle portion of said backing sheet, said strip of foam-like material having a greater thickness than said backing sheet; and



(c) a pair of elongated sheets of flexible material for protecting said adhesive-coated surface of said side portions of said backing sheet, said sheets of protective material being releasably applied to and peelable from said adhesive-coated surface of said side portions of said backing sheet.

5,330,815

HEAT SHRINKABLE ENVELOPE

Uwe Brudermann, Heikendorf, and Hans-Juergen Meltsch, Schwerte, both of Fed. Rep. of Germany, assignors to RXS Schrumpftechnik-Garnituren GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 696,071, May 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 636,202, Dec. 31, 1990, abandoned. This application Aug. 28, 1992, Ser. No. 938,550

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1990, 4007378

Int. Cl.[5] **B32B** *1/00, 27/12, 31/26*

U.S. Cl. 428—68 **35 Claims**

1. In a heat-shrinkable envelope having at least one stretchable and shrinkable component in the form of a planar layer, a reinforcing component and a cover layer joined to the shrinkable component with the reinforcing component therebetween, the improvement comprising:

said reinforcing component comprising a randomly disposed open-pore arrangement of fibers, the longitudinal axes of which are in planes essentially parallel to said planar layer, said arrangement being one which imparts isotropic characteristics of stretchability and heat-shrinkability to said reinforcing component, and said parallel arrangement being a characteristic of the envelope in the heat-shrunk state;

said fibers of said reinforcing component disposed in arbitrary directions before and after motion events caused by stretching and shrinking of said shrinkable component and having longitudinal axes extending substantially parallel to said planar layer; and

fixing means for bonding the fibers of said reinforcing component to said shrinkable component and to said cover layer before stretching of said shrinkable component and for causing said fibers to remain bonded to said shrinkable component and to said cover layer as said shrinkable component shrinks.

5,330,816

HIGH R SUPER INSULATION PANEL

Stanley J. Rusek, Jr., Newark, Ohio, assignor to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

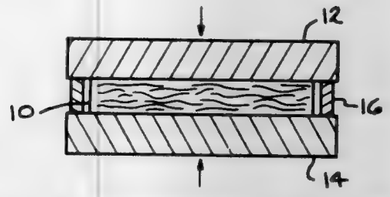
Filed Dec. 23, 1992, Ser. No. 993,883

Int. Cl.[5] **B32B** *1/04*

U.S. Cl. 428—69 **18 Claims**

1. An insulation panel comprising a heat set insulation board

of compressed glass fibers and a partially evacuated gas-tight envelope encapsulating the board, where, prior to the evacuation of the envelope, the board has been subjected to a heat setting process in which the glass fiber board is raised to a heat setting temperature above the strain temperature of the glass



but below the softening temperature of the glass, and to a pressure applied by opposed platens within the range of from about 10 psi (69 kPa) to about 50 psi (345 kPa) followed by a quick release of the board from the platens prior to substantial cooling of the board.

5,330,817

INCONTINENCE PAD

Robert C. Arnott, and James P. Cain, both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed May 15, 1989, Ser. No. 351,385

Int. Cl.[5] **B32B** *33/00*

U.S. Cl. 428—85 **2 Claims**



1. A reusable incontinance pad comprising a top layer of circular knit terry fabric, an absorbent layer below said top layer being composed of a 70/30 blend of polyester/acrylic nonwoven fabric and a water impervious layer below said absorbent layer, all of said layers being connected together to form a unitary structure.

5,330,818

REINFORCEMENT PREFORM OF KNITTED FIBRES

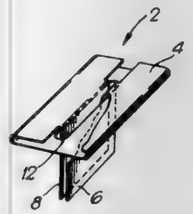
Kenneth R. Langley, Gloucestershire, England, assignor to Rolls-Royce plc, London, England

Filed Dec. 19, 1991, Ser. No. 810,158

Claims priority, application United Kingdom, Dec. 20, 1990, 9027585

Int. Cl.[5] **D04B** *1/00;* **B32B** *3/10, 3/06;* **B29B** *7/00*

U.S. Cl. 428—102 **7 Claims**



1. A one-piece knitted fiber preform for a reinforced article having two adjacent sections in a "T" shape, said preform comprising:

a first preform section formed from a central portion of a single, continuous knitted fabric, the first preform section including an elongate opening extending across a width of the knitted fabric; and

a second preform section being formed from the knitted fabric at a first end of the first preform section, the second preform section being passed through said elongate opening and being substantially perpendicular to the first preform section, the first and second preform section forming a junction which is further reinforced to withstand stress.

5,330,819

PACKAGING MATERIAL

Bernd Krueger, Pohlheim, Fed. Rep. of Germany, assignor to Sued-Chemie AG, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 691,325, Apr. 25, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 19,549

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 9004714[U]; Aug. 25, 1990, 9012268[U]

Int. Cl.[5] **B65D** *81/12;* **B32B** *3/00*

U.S. Cl. 428—102 **9 Claims**



1. A packaging material for dunnage purposes, comprising small-sized individual bodies of substantially identical shape to be introduced into hollows of packages or containers encompassing articles which are to be cushioned therein, each body including a filler comprising paper shreddings within an outer paper envelope, wherein each body is substantially ball-shaped with a diameter ranging between 1 cm and 10 cm, and wherein the paper envelope is air-permeable and is made of coarsely porous, heat-sealable, thin high-strength wrapping tissue.

5,330,820

BALLISTIC RESISTANT COMPOSITION ARTICLE HAVING IMPROVED MATRIX SYSTEM

Hsin L. Li, Parsippany, N.J.; Leroy C. Lin, Richmond, Va.; Dusan C. Prevorsek, Morristown, and Hong B. Chin, Parsippany, both of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 379,396, Jul. 13, 1989, abandoned. This application Nov. 6, 1989, Ser. No. 432,259

Int. Cl.[5] **B32B** *5/12*

U.S. Cl. 428—113 **29 Claims**

1. An impact resistant composite comprised of two or more layers; at least two of said layers being two adjacent fibrous layers each comprising a network of filaments having a tensile modulus of at least about 150 g/denier, an energy-to-break of at about 8 j/d and a tenacity equal to or greater than about 7 g/denier in a rigid matrix wherein said matrix comprises one or more thermosetting resins and one or more thermoplastic resins wherein the weight % ratio of thermosetting resins to thermoplastic resins based on solids content is selected such that

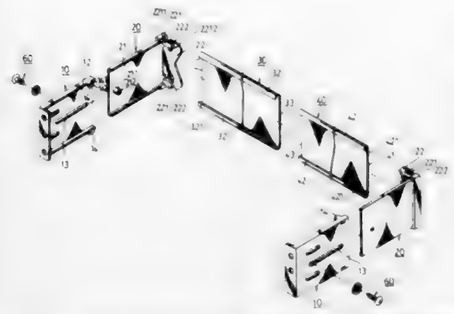
peel strength between adjacent fibrous layers is at least about 3.0 lbs/in as determined by the peel resistance test of ASTM-D-1876-72.

5,330,821

DECORATIVE DEVICE FOR CONCEALING THE TOP OF CURTAINS AND CERTAIN FIXTURES

Wen-Hsiung Lo, Feng-Yuan City, Taiwan, assignor to New Paradise Enterprise Co., Ltd., Taichung Hsien, Taiwan

Filed May 5, 1993, Ser. No. 56,904
Int. Cl.[5] A47H *1/10*
U.S. Cl. 428—120 **2 Claims**



1. A decorative device for concealing the top of curtains and curtain fixtures, said decorative device comprising:

a pair of fixing plates, each of said fixing plates having two sliding rails extending perpendicularly from an upper edge and a lower edge thereof which are opposite to one another;

a pair of L-shaped slide plates, each having an elongated plate which engages slidably with the respective fixing plate between said two rails of one of said fixing plates, each of said elongated plates having a connecting plate extending perpendicularly therefrom, each of said connecting plates having an upper side and a lower side which are opposite to one another;

first and second elongated shielding plates having a uniform thickness, each of said first and second shielding plates having inwardly curving upper and lower sides which are opposite to one another and first and second ends which connect with said upper and lower sides, respectively, said first shielding plate being wider than said second shielding plate so that said first end of said second shielding plate can be telescoped with said second end of said first shielding plate with said inwardly curving upper and lower sides of said second shielding plate being received by said inwardly curving upper and lower sides, respectively, of said first shielding plate, said upper and lower sides of said connecting plates being received respectively in said inwardly curving upper and lower sides of said first end of said first shielding plate and said inwardly curving upper and lower sides of said second end of said second shielding plate; and

means for retaining said first and second shield plates to said connecting plates; the improvements comprising:

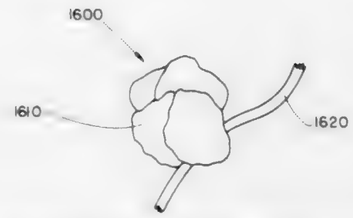
said retaining means including two L-shaped members fixed adjacent to said upper and lower sides of each of said connecting plates, respectively, each of said L-shaped members having a vertical plate and a horizontal plate, each of said horizontal plates having two opposite sides connected perpendicularly to its respective vertical plate and one of said connecting plates so that a receiving groove is formed between each of said vertical plates of said L-shaped members and its connecting plates, each of said receiving grooves having a width which is substantially identical to the thickness of said inwardly curving upper and lower sides of said first and second shielding plates so as to allow edges of said inwardly curving upper and lower sides, said edges of said inwardly curving upper and lower sides being adjacent to said first end of said first shielding plate and said second end of said second shielding plate and which are received by said receiving grooves of the connecting plates, respectively.

5,330,822

PARTICULATE, ABSORBENT, POLYMERIC COMPOSITIONS CONTAINING INTERPARTICLE CROSSLINKED AGGREGATES

Charles J. Berg; Frank H. Lahrman, and Donald C. Roe, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 503,506, Apr. 2, 1990, Pat. No. 5,300,565. This application Aug. 20, 1993, Ser. No. 109,795
Int. Cl.[5] B32B *23/02*
U.S. Cl. 428—192 **20 Claims**



1. An absorbent member comprising a mixture of fiber material and a particulate, absorbent, polymeric composition; the mixture having a fiber/polymeric composition weight ratio of from about 98:2 to about 2:98, and said polymeric composition having a gel expansion pressure under a 28X load of greater than or equal to about 20 kilodynes per square centimeter and a Swelling Rate at a 28X load of greater than or equal to about 0.3 g/g/sec.

5,330,823

TRANSPARENT RECORDING SHEETS

Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1993, Ser. No. 36,575
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **28 Claims**

1. A substantially transparent recording sheet which comprises (a) a substantially transparent substrate; (b) a binder polymer coated on the substrate; and (c) particles of an antistatic component, said particles being present on at least the surface of the binder polymer coating, wherein at least one of the following three conditions is met: (1) the index of refraction of the binder and the index of refraction of the antistatic component differ by no more than about ±0.01; (2) the antistatic component has a melting point of about 70° C. or less; (3) the antistatic particles are of an average particle diameter of less than about 1 micron.

5,330,824

IMAGE PROTECTING FILM AND IMAGE PROTECTING METHOD

Hiroshi Takimoto, Yokohama, and Minoru Masuda, Machida, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 547,145, Jul. 3, 1990, abandoned. This application Sep. 25, 1992, Ser. No. 951,325
Claims priority, application Japan, Jul. 4, 1989, 1-172178
Int. Cl.[5] B32B *27/36*
U.S. Cl. 428—201 **9 Claims**

1. An image protecting film bonded to an image recorded on a porous recording medium by an ink jet recording system, which film comprises a light transmitting non-porous support of an aromatic polyester and a layer composed mainly of a polyester resin directly bonded to the support and also to the

image recorded on said porous recording medium, said polyester being a copolymer comprising aliphatic dicarboxylic acid units, aromatic dicarboxylic acid units and aliphatic polyol units;

wherein the molar ration of the aliphatic dicarboxylic acid units to the aromatic dicarboxylic acid units in the polyester resin is from 8:2 to 2:8; and

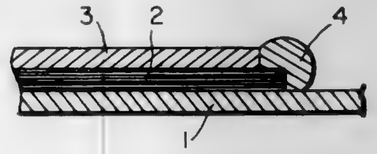
wherein said polyester resin has a softening point of from 50° to 130° C., a glass transition point of −30° to 40° C., a number-average molecular weight of from 5000 to 25,000 and a melt viscosity of rom 700 to 3,000 poise at 200° C.

5,330,825

PRINTED CIRCUIT SUBSTRATE WITH PROJECTED ELECTRODE AND CONNECTION METHOD

Kazuo Ouchi, and Masakazu Sugimoto, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Feb. 24, 1993, Ser. No. 21,683
Claims priority, application Japan, Feb. 24, 1992, 4-73453
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **3 Claims**



1. A printed circuit substrate with at least one projected electrode comprising an insulating substrate having formed on one surface or both surfaces thereof an electrically conductive circuit, wherein at least one projected electrode comprising a metallic substance is formed at the side of the end portion of the electrically conductive circuit.

5,330,826

PREPARATION OF CERAMIC-METAL COATINGS

Timothy E. Taylor; Clyde Riley, both of Huntsville; William R. Lacefield, Jr., Birmingham; Harold D. Coble, and George W. Maybee, both of Huntsville, all of Ala., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 13, 1990, Ser. No. 565,936
Int. Cl.[5] B32B *5/32*
U.S. Cl. 428—216 **17 Claims**

1. An article comprising a substrate consisting essentially of a material selected from the group consisting of titanium and alloys thereof, stainless steel and cobalt-chromium alloy, containing a coating of a calcium phosphate and a metal selected from the group consisting of cobalt, nickel, chromium and rhodium, said coating of calcium phosphate and said metal being in the form of particles of said metal electrolytically codeposited with particles of said calcium phosphate on said substrate, the size of the calcium phosphate particles ranging from about 0.1 to about 100 microns.

5,330,827

REINFORCING FIBRES AND A METHOD OF PRODUCING THE SAME

Anders S. Hansen, Oksbol, Denmark, assignor to Danaklon A/S, Varde, Denmark

Continuation of Ser. No. 314,573, Feb. 8, 1989, abandoned. This application Aug. 3, 1992, Ser. No. 921,985
Claims priority, application Denmark, Sep. 30, 1987, 5146/87
Int. Cl.[5] B32B *5/16, 13/02;* **D02G** *3/02;* **D04H** *1/58*
U.S. Cl. 428—283 **20 Claims**

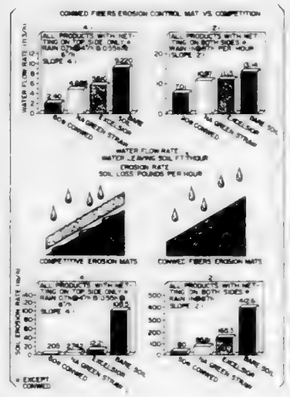
1. A fiber-reinforced composite material comprising an inorganic cement-based binder and reinforcing fibers, wherein the reinforcing fibers have been prepared by fibrillation of a film made from a polyolefin or polyolefin derivative, the film having been stretched in a ratio of at least 1:15, the fibers having a thickness of 10–100 μm and containing inorganic particles selected from the group consisting of chalk, talc, silica, mica, barium sulphate, glass, and a dyeing agent, the particles having a size of 1–10 μm and being present in the fibers in an amount of 12–20% by weight, calculated based on the total fiber weight, the particles being embedded in the polyolefin or polyolefin derivative and substantially homogeneously distributed within the fibers, substantially none of the particles being exposed at fiber surfaces.

5,330,828

WOOD FIBER MAT FOR SOIL APPLICATIONS

William M. W. Jacobsen, Jr., Hickory, N.C.; L. Carl Belt, Lebanon, and Ernest De Pass, Bound Brook, both of N.J., assignors to Conwed Fibers, a division of Leucadia Inc., New York City, N.Y.

Continuation of Ser. No. 638,497, Jan. 7, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 947,946
Int. Cl.[5] B32B *27/00;* **D04H** *1/04;* **E02B** *3/04, 3/12*
U.S. Cl. 428—286 **26 Claims**



1. A mat comprised of a thoroughly mixed blend of a predetermined percentage of wood fibers and a predetermined percentage of a thermoplastic material fiber, the wood fibers diameter being determined by a mesh screen, the wood fiber diameter ranging in size by using mesh screens between 8 mesh and 100 mesh, the melting temperature of said thermoplastic material fiber being below 400° F., the thoroughly mixed blend of wood and thermoplastic fibers entangling to form a mat which has a porosity which permits vegetation to grow through the mat, and the wood and thermoplastic fibers being sized to allow the mat to become an integral part of the soil surface.

5,330,829

ELASTOMERIC COMPOSITION CONTAINING ELASTOMER AND AMORPHOUS PROPYLENE/HEXENE COPOLYMER

Richard A. Miller, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 923,414, Jul. 31, 1992, Pat. No. 5,274,037. This application Nov. 15, 1993, Ser. No. 153,407
Int. Cl.[5] C08F *210/14, 10/14;* **C08L** *53/02, 9/06*
U.S. Cl. 428—286 **14 Claims**

1. An article of manufacture comprising an adhesive composition between two substrates wherein said adhesive composition comprises:

(a) an amount up to 90 wt. %, based on (a) plus (b), of an amorphous propylene/hexene copolymer containing at least 20 wt. % propylene;

(b) at least 10 wt. %, based on (a) plus (b), of an elastomer selected from styrene butadiene styrene block copolymers;
(c) about 0 to 70 wt. %, based on the total weight of the composition, of a tackifier, and;
(d) about 0 to 80 wt. %, based on the total weight of the composition, of a process oil

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5,330,830

HEAT-RESISTING POROUS MEMBRANE, HYDROPHILIZED HEAT-RESISTING POROUS MEMBRANE AND PRODUCTION PROCESSES THEREOF

Takao Miyamori; Kazuaki Hayashida, and Jun Kamo, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,135
Int. Cl.[5] B32B *3/26*; B29C *65/00*; C08F *4/00*; B01D *33/21*
U.S. Cl. 428—304.4 9 Claims

1. A heat-resisting porous membrane comprising a porous polyolefin membrane having a crosslinked copolymer held on at least a part of the pore surfaces thereof, the crosslinked copolymer being composed of a monomer (A) comprising at least one multifunctional (meth)acrylate and a monomer (B) comprising at least one monofunctional (meth)acrylate whose ester forming part consists of a hydrocarbon radical of 5 to 18 carbon atoms.

5,330,831

PRINTABLE HIGH BARRIER MULTILAYER FILM

Anthony R. Knoerzer, and Leland W. Reid, both of Fairport, N.Y., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 20, 1991, Ser. No. 811,126
Int. Cl.[5] B32B *7/12*
U.S. Cl. 428—353 7 Claims

1. A film combination comprising:
(a) an oriented polymeric substrate which in its unmodified state is susceptible of transmitting oxygen and water vapor in an amount which is detrimental to product packaged by said substrate;
(b) a primer coating on at least one surface of said substrate (a);
(c) a layer of cross-linked polyvinyl alcohol on said coating (b); and
(d) on said cross-linked layer a layer of a blend of (1) a polyvinyl alcohol homo or copolymer and (2) an ethylene-acrylic acid copolymer.

5,330,832

PRESSURE-SENSITIVE ADHESIVES OF POLYVINYL METHYL ETHER

Wen-Feng Liu, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 22, 1993, Ser. No. 34,256
Int. Cl.[5] C08L *29/10, 31/04*
U.S. Cl. 428—355 10 Claims

1. A water-removable pressure sensitive adhesive composition containing polyvinyl methyl ether and a styrenic block copolymer wherein polyvinyl methyl ether comprises the major component of said pressure sensitive adhesive composition and present as water-soluble first component and a water-dispersible styrenic block copolymer is a second component, the polyvinyl methyl ether and the styrenic block copolymer present in said pressure sensitive adhesive composition in a weight ratio of from about 95:5 to about 88:12, parts by weight.

5,330,833

TIN OXIDE FIBER AND A PROCESS FOR PRODUCING THE SAME

Hiroya Yamashita; Keiko Seki, both of Tokuyama; Sumio Sakka, Hirakata, and Toshinobu Yoko, Uji, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Tokuyama, Japan

Filed Jan. 31, 1992, Ser. No. 828,606
Claims priority, application Japan, Jul. 24, 1991, 3-185541; Oct. 24, 1991, 3-278080; Oct. 29, 1991, 3-283303; Oct. 31, 1991, 3-286663
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—364 2 Claims

1. A tin oxide fiber having a composition expressed by the general formula

$$Sn_{1-y}Z_yO_2$$

wherein Z is a metal element of Group V of the periodic table, and y is 0.001 to 0.25, and having (i) a diameter of 5 to 500 μm, (ii) a length which is greater than 1 cm, (iii) an aspect ratio which is greater than 50, and (iv) an electrical resistivity of 1×10^{-3} ohm-cm to 1×10^{5} ohm-cm; said fiber being prepared by spinning a solution of a divalent tin compound soluble in an alcohol and a compound of a metal of Group V of the periodic table which is soluble in an alcohol, and then heat-treating the spun fiber.

5,330,834

DYE-RETARDED NYLON 6/6,6 BLOCK COPOLYMER FIBERS

William T. Windley, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 12, 1992, Ser. No. 882,382
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—364 5 Claims

1. A fiber having a surface and comprising a block copolymer of 2 to 39 weight percent poly(hexamethylene adipamide) and 70 to 98 weight percent poly(ε-caprolactam) having both a first melting point near that of poly(hexamethylene adipamide) and a second melting point near that of poly(ε-caprolactam) and having a stainblocker applied to the surface thereof.

5,330,835

SEAMLESS CAPSULE AND PROCESS FOR PRODUCING THE SAME

Yukio Kikuchi, and Ryosei Kamaguchi, both of Osaka, Japan, assignors to Morishita Jintan Co., Ltd., Osaka, Japan

Filed Jul. 31, 1992, Ser. No. 922,752
Claims priority, application Japan, Jul. 31, 1991, 3-191784
Int. Cl.[5] A61K *9/50, 9/66*; B01J *13/04*
U.S. Cl. 428—402.22 9 Claims

1. A seamless capsule, comprising:
a central core layer comprising a hydrophilic substance dissolved in an alcohol;
a film forming an outer wall layer for the capsule; and
a discrete layer of a viscous liquid having a viscosity of not more than 1000 cp at 100° C., said viscous liquid being scarcely miscible with water, wherein said discrete layer of viscous liquid is between said central core and said film.

5. The seamless capsule according to claim 1, wherein said viscous liquid is isobutylene polymer.

5,330,836

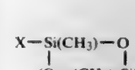
FUNCTIONALIZED SILICA PARTICLE AND USE THEREOF FOR CROSS-LINKING SILICONES

Mark A. Buese, Upper Darby, and Dana L. Poczynok, Newtown, both of Pa., assignors to Temple University-Of The Common Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Sep. 3, 1992, Ser. No. 940,103
Int. Cl.[5] B32B *5/16*; C04B *14/04*
U.S. Cl. 428—405 11 Claims

1. A process for preparing a polyfunctionalized filler comprising

treating a silanol-containing filler with a bonding agent comprising one or more compounds according to the formula



wherein X is
chlorine, bromine, or iodine;
the group —OR wherein R is C_1 to C_8 straight- or branched-chain alkyl or aryl, preferably C_1 to C_4 alkyl;
the group

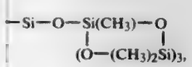


wherein
R^1 is selected from the group consisting of hydrogen and C_1 to C_6 straight- or branched-chain alkyl, or
R^1 forms, together with the carbonyl carbon and nitrogen of said group, a ring containing from five to seven carbon atoms;
the group

wherein
R^2 and R^3, same or different, are selected from the group consisting of hydrogen and C_1 to C_6 straight- or branched-chain alkyl, or
R^2 forms, together with the carbonyl carbon and nitrogen of said group, a ring containing from five to seven atoms, and R^3 is C_1 to C_6 straight- or branched-chain alkyl;
the group —NR^4R^5 wherein
R^4 and R^5 same or different, are selected from the group consisting of hydrogen and C_1 to C_8 straight- or branched-chain alkyl or aryl; or
the group



wherein
R^7 is C_1 to C_8 straight- or branched-chain alkyl or aryl;
to convert at least a portion of the silanol groups on the filler to a moiety of the formula



and recovering the polyfunctionalized filler.

5,330,837

GOLF BALL COMPOSITIONS

Michael J. Sullivan, Chicopee, Mass., assignor to Lisco, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 856,552, Mar. 24, 1992, Pat. No. 5,187,013, which is a continuation-in-part of Ser. No. 642,469, Jan. 17, 1991, Pat. No. 5,098,105, which is a continuation-in-part of Ser. No. 449,774, Dec. 13, 1989, Pat. No. 4,986,545. This application Feb. 12, 1993, Ser. No. 16,838
The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.
Int. Cl.[5] A63B *37/12*
U.S. Cl. 428—407 3 Claims

1. A golf ball comprising a core and a cover wherein the cover is formed from a composition comprising from about 5 to about 50 parts by weight of an amine modified ethylene-propylene rubber and from about 95 to about 5 parts by weight of an ionic copolymer of an olefin and a metal salt of an unsaturated carboxylic acid based on 100 parts by weight of the composition.

5,330,838

COATED CARBONACEOUS ARTICLES AND METHOD FOR MAKING SAME

Paul N. Dyer, Allentown; Vincent L. Magnotta, Wescosville, and Robert E. Stevens, Emmaus, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 29, 1988, Ser. No. 228,346
Int. Cl.[5] B05D *7/00*
U.S. Cl. 428—408 21 Claims

1. A method for producing a protective coating on the surface of a carbonaceous substrate, comprising, providing a substantially uniform coating of liquid or solid precursor material on the substrate surface at a first temperature in the range of about 0° C. to about 100° C., said precursor material being one having boron-oxygen bonds and being substantially non-reactive with the substrate at the first temperature and being capable of reacting with the substrate at a second temperature in the range of about 1200° C. to about 3000° C., raising the substrate to the second temperature to etch and to react the coating with the substrate to form a porous region of substantially uniform depth in the substrate surface containing interconnecting interstices and boron carbide, wherein said porous region has a void volume of up to about 50 per cent of the volume originally occupied by the carbonaceous substrate, and at least partially filling said interconnecting interstices with a glass forming material.

5,330,839

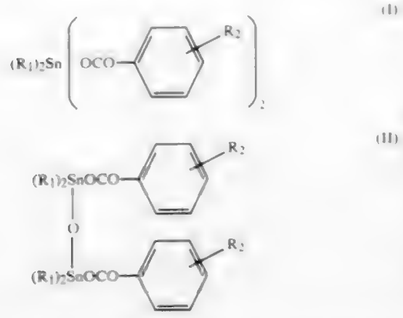
ELECTROCOATING COMPOSITION CONTAINING BLOCKED ISOCYANATE, DIALKYLTIN AROMATIC CARBOXYLATE AND A BISMUTH OR ZIRCONIUM COMPOUND

Yoshio Yasuoka, Fujisawa; Masafumi Kume, Hiratsuka; Tadayoshi Hiraki, Odawara; Kiyoshi Kato, Naka; Hidehiko Haneishi, and Masato Yamamoto, both of Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Apr. 9, 1992, Ser. No. 865,585
Claims priority, application Japan, Apr. 16, 1991, 3-114137; Jan. 10, 1992, 4-020682
Int. Cl.[5] C09D *5/44*; C08G *18/22*
U.S. Cl. 428—413 12 Claims

1. A blocked isocyanate group-containing electrocoating composition which consists essentially of:
(A) a blocked isocyanate group-containing vehicle resin selected from the group consisting of self-crosslinking amine-epoxy resin adduct vehicle resins having a blocked isocyanate group and an active hydrogen in their molecules, and external crosslinking vehicle resin compositions consisting essentially of (1) an amine-epoxy resin adduct and (2) a blocked isocyanate compound,

(B) at least one dialkyltin aromatic carboxylate represented by the following formula (I) or (II)



(I)

(II)

wherein R_1 represents an alkyl group having 1–12 carbon atoms and R_2 represents a hydrogen atom or an alkyl group having 1–4 carbon atoms, and

(c) at least one bismuth or zirconium compound.

5,330,840

POLYSILOXANE CONTAINING POLYURETHANE AND COATED ARTICLES USEFUL AS TONER FUSING MEMBERS

Jiann H. Chen, Fairport; Tsang J. Chen, and Lawrence P. DeMejo, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 890,502, May 28, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 102,864

Int. Cl.[5] B32B *27/40*

U.S. Cl. 428—423.1 **3 Claims**

1. A coated article comprising:

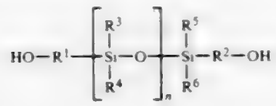
a substrate, and coated thereon a composition comprising a crosslinked $_n$' block copolymer product of,

a polyurethane block copolymer and

a melamine resin; wherein,

said polyurethane comprises the polycondensation product of a mixture of reactants comprising:

about 25 to 60 weight percent based on total weight of said products of an organopolysiloxane diol of the formula I,



wherein,

R^1 and R^2 are independently C_{1-6} alkylene;

R^3–R^6 are independently C_{1-6} alkyl or phenyl;

and

n is 3 to 300;

a C_{2-20} diol that contains not more than one ester or one ether group; and

a monomeric diisocyanate of the formula,

OCN-D-NCO

wherein,

D is a hydrocarbon bridging group.

5,330,841

AQUEOUS COATING COMPOSITION AND ITS USE FOR COATING MINERAL SUBSTRATES

Hermann Gruber; Helmut Reiff, both of Leverkusen, and Hermann Kober, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 1, 1992, Ser. No. 891,535

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1991, 4118231

Int. Cl.[5] B32B *27/00;* **C08J** *3/00;* **C08K** *3/18;* **C08L** *75/00*

U.S. Cl. 428—425.5 **13 Claims**

1. An aqueous coating composition comprising

A) 100 parts by weight of a water-soluble polyether component having an average hydroxyl functionality of least 2.5 and an average OH number of 100 to 600 and containing at least one polyether polyol,

B) 40 to 240 parts by weight of a water-soluble or water-dispersible polyisocyanate component containing at least one nonionically/hydrophilically modified organic polyisocyanate having (cyclo)aliphatically bound isocyanate groups,

C) 10 to 50 parts by weight of magnesium oxide and/or hydroxide in finely dispersed form and

D) 50 to 150 parts by weight water.

5,330,842

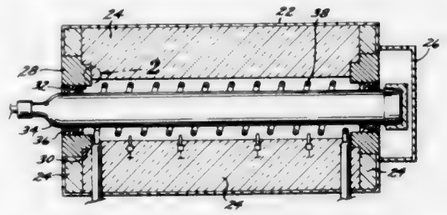
SURFACE TREATED VESTIBULE BLOCK AND PROCESS OF MAKING THE SAME

David L. Thompson, 378 N. Via Porto, Anaheim, Calif. 92806, assignor to David M. Volz and David L. Thompson, Calif., a part interest

Filed Mar. 17, 1992, Ser. No. 853,032

Int. Cl.[5] B32B *17/06*

U.S. Cl. 428—426 **14 Claims**



1. A vestibule block to be utilized in a furnace for making semi-conductors and integrated circuits and, the vestibule block comprising ceramic material and having a abrasion resistant outer surface comprising an alkali earth metal alumino silicate which has been heated above its transition point.

5,330,843

WATER RESISTANT VERMICULITE ARTICLES AND METHOD OF THEIR MANUFACTURE

Chia-Chih Ou, Lexington, Mass., and Deborah Neumayer, Evanston, Ill., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 30, 1990, Ser. No. 530,715

Int. Cl.[5] C04B *20/02*

U.S. Cl. 428—446 **21 Claims**

1. A method of rendering water resistant a vermiculite article comprised of delaminated vermiculate lamellae, said article being prepared from an aqueous dispersion of said lamellae, said method comprising the step of contacting the article with a solution of an inorganic monovalent cation selected from the group consisting of: H^+, Na^+, K^+, Cs^+, Rb^+ and Fr^+, and mixtures thereof.

5,330,844

ADHESIVE COMPOSITOIN AND METAL-BONDED COMPOSITE

Koichi Taguchi, and Kinpei Iwata, both of Shibukawa, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1991, Ser. No. 813,694

Claims priority, application Japan, Dec. 28, 1990, 2-415502; May 23, 1991, 3-146544

Int. Cl.[5] B32B *15/08;* **C08K** *3/34;* **C09J** *133/08, 133/10*

U.S. Cl. 428—463 **12 Claims**

1. An adhesive composition comprising an acrylate monomer and/or a methacrylate monomer, an organic peroxide in the amount of from 0.1 to 20 parts by weight per 100 parts by weight of the (meth)acrylate monomer, a reducing agent capable of reacting with said organic peroxide to generate radicals, and which contains zeolite in the amount of from 3 to 40 parts by weight per 100 parts by weight (meth)acrylate monomer.

5,330,845

PACKAGING LAMINATE WITH GAS BARRIER PROPERTIES

Thorbjörn Andersson, Södra Sandby, and Ann-Magret Asp, Lund, both of Sweden, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Oct. 24, 1991, Ser. No. 782,322

Claims priority, application Sweden, Nov. 7, 1990, 9003542-9

Int. Cl.[5] B32B *27/10;* **B65D** *15/22*

U.S. Cl. 428—487 **13 Claims**



1. Laminated packaging material with good gas barrier properties, comprising a first and second layer of a fibrous material, a layer of a water based polymer placed between and in direct contact with the layers of fibrous material which layer of a water based polymer functions both as a binding agent and as a ga barrier in the packaging material, and a first and second layer of polyethylene placed against the outside of the first and second layer of a fibrous material.

5,330,846

HEAT-CURABLE, AQUEOUS SYNTHETIC RESIN MIXTURES FOR COATING WOODWORKING MATERIALS

Wolfgang Eisele, Ludwigshafen; Hans Etling, Dannstadt-Schauernheim; Walter Pfalzgraf, Mutterstadt; Walter Pitteroff, Bobenheim, and Otto Wittmann, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 429,506, Oct. 31, 1989, abandoned. This application Sep. 13, 1991, Ser. No. 759,658

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1988, 3837965

Int. Cl.[5] B32B *27/08, 27/42;* **C08J** *3/00;* **C08L** *61/00*

U.S. Cl. 428—503 **6 Claims**

1. A finishing foil which comprises an absorptive paper impregnated with an aqueous synthetic resin mixture containing

(A) from 5 to 50% by weight of an etherified melamine/formaldehyde condensate having a molar ratio of melamine to formaldehyde of from 1:4.5 to 1:5.8,

(B) from 5 to 60% by weight of a copolymer which is present in the form of an aqueous dispersion, is crosslinkable by a condensation reaction and consists of predominant amounts of alkyl acrylates and/or methacrylates, minor amounts of comonomers having groups capable of crosslinking and other components, and

(C) from 10 to 50% by weight of urea,

the amount of components (A), (B) and (C) summing to 100% by weight and being based on the solids content of the aqueous synthetic resin mixture.

5,330,847

TREATMENT OF WOOD AND WOOD-BASED MATERIALS

Richard J. Murphy, London; David J. Dickinson, Haywards Heath, and Philip Turner, London, all of United Kingdom, assignors to Imperial College of Science, Technology & Medicine, London, United Kingdom

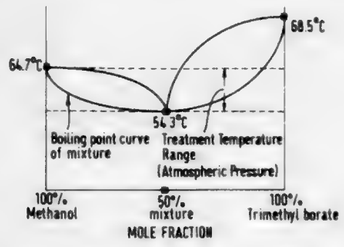
PCT No. PCT/GB89/00836, § 371 Date Jan. 18, 1991, § 102(e) Date Jan. 18, 1991, PCT Pub. No. WO90/00959, PCT Pub. Date Feb. 8, 1990

PCT Filed Jul. 20, 1989, Ser. No. 635,593

Claims priority, application United Kingdom, Jul. 21, 1988, 8817349; May 8, 1989, 8910510

Int. Cl.[5] B32B *21/04*

U.S. Cl. 428—537.1 **21 Claims**



1. A method of preserving timber or wood based board comprising exposing said timber or board having a moisture content up to 28% by weight to a vapor mixture comprised of a positive azeotrope of an organo-boron compound and an alcohol at a temperature greater than or equal to the boiling point of the mixture, but below the boiling point of the alcohol, wherein said organo-boron compound hydrolyses to form a boric acid reaction product in said timber or board.

5,330,848

RESONATOR BODY FOR DRUMS

Roman Kluczynski, Bad Berleburg; Johannes Lutter, Bad Berleburg 3- Wingeshausen; Werner Beuter; Horst Treude, both of Bad Berleburg-Wingeshausen, and Heinz Burkert, Bad Berleburg/Aue, all of Fed. Rep. of Germany, assignors to Sonor Johs. Link GmbH

Filed Sep. 28, 1992, Ser. No. 952,243

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1992, 4132366

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—537.1 **14 Claims**

1. A resonator body for a musical instrument, comprising a plurality of shaped and glued-together material layers including an outer layer, the resonator body having the shape of a hollow cylinder having an axis and a circumference, wherein the material layers are superimposed on each other in radial direction and the material layers each have two abutting edges forming connecting seams extending in direction of the axis of the hollow cylinder, the connecting seams of the material layers being offset relative to each other in circumferential direction of the hollow cylinder, the abutting edges of at least the outer material layer having contours of complementary

toothed configurations and engaging into each other in circumferential direction of the hollow cylinder, such that the con-



necting seam formed by the abutting edges of at least the outer material layer is non-linear

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5,330,849

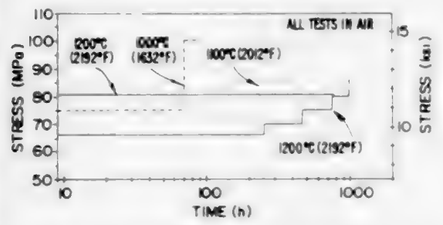
COMPOSITE MATERIALS AND METHODS FOR MAKING THE SAME

Christopher R. Kennedy; Birol Sonuparlak, both of Newark; Ali S. Fareed, Wilmington; John E. Garnier, Newark, and Gerhard H. Schiroky, Hockessin, all of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 61,854, Jun. 12, 1987, Pat. No. 5,202,859. This application Apr. 2, 1992, Ser. No. 862,397

Int. Cl.[5] **B22F** *5/00;* **B05D** *5/00*

U.S. Cl. 428—552 **21 Claims**



1. A coated ceramic filler material adapted for use as a reinforcing component in a composite comprising a ceramic matrix embedding said filler material, said coated ceramic filler material comprising a ceramic filler material having a plurality of superimposed coating assemblies, said plurality comprising an interior assembly at least one assembly exterior to said interior assembly, each of said assemblies comprising a first coating and at least one coating exterior to said first coating and in substantially continuous contact with said first coating; a boundary between said ceramic filler material and said coating in contact with said filler material forming a first zonal junction, the boundary between said ceramic matrix and said coating in contact with said ceramic matrix forming a second zonal junction, and each of the boundaries between adjacent coatings forming additional zonal junctions; and the zonal shear strength of at least one of the zonal junctions being weak relative to a remainder of the other zonal junctions to permit (1) debonding of said filler material on application of stress prior to fracture of said filler material and (2) pull-out of said filler material upon fracture of said filler material.

5,330,850

CORROSION-RESISTANT SURFACE-COATED STEEL SHEET

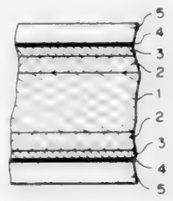
Nobukazu Suzuki, Ibaraki; Seiji Bando, Osaka; Satoshi Ikeda, Ibaraki; Tetsuaki Tsuda; Atsuhisa Yakawa, both of Nishinomiya, and Yukihiro Yoshikawa, Osaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 687,675, Apr. 19, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,666

Claims priority, application Japan, Apr. 20, 1990, 2-105049; Jul. 16, 1990, 2-187515; Jul. 21, 1990, 2-193465; Aug. 11, 1990, 2-212101

Int. Cl.[5] **B32B** *15/08*

U.S. Cl. 428—623 **22 Claims**



1. A surface-coated steel sheet having improved corrosion resistance, comprising a steel sheet having on at least one surface thereof an inorganic-organic composite coating which comprises the following layers (a) to (d) from bottom to top of the coating:

(a) a first zinc alloy plating layer with a coating weight of 10–100 g/m^2 which contains at least one of nickel (Ni) and cobalt (Co) as an alloying element in an amount satisfying the following inequality:

$$0.05 \leq (5 \times Co) + Ni \leq 10$$ in weight percent,

(b) a second zinc alloy plating layer with a coating weight of 0.05–10 g/m^2 which contains at least one of Ni and Co as an alloying element in an amount satisfying the following inequality:

$$10 < (5 \cdot Co) + Ni \leq 40$$ in weight percent,

(c) a chromate film layer with a coating weight of 20–300 mg/m^2 as Cr, and

(d) an organic coating layer, with a thickness of 0.2–5 μm.

5,330,851

CORROSION RESISTANT AL OR AL ALLOY MATERIALS

Takenori Nakayama, Kobe, Japan, and Toyohiko Konno, Stanford, Calif., assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 694,394, May 1, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 50,994

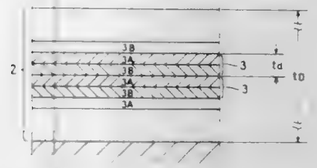
Int. Cl.[5] **B32B** *15/20, 15/04*

U.S. Cl. 428—627 **3 Claims**

1. A conductor material for a semiconductor device, a corrosion-resistant Al or Al alloy material of Al alloyed with a metal selected from the group consisting of Mg, Si, Mn, Cu, Zn, Cr, Ni, Fe and mixtures thereof on the surface of which deposits are formed, said deposits comprising unit periodic layers formed such that unit deposits of a plurality of layers consisting of components selected from groups (1) or (2), the layers being adjacent to each other, with each of said layer being formed of said components different from one another, and characterized by the fact that said unit periodic layers are less than 50 Å thick, and that the total thickness of the deposit is more than five times the average thickness of said unit periodic layer and

is less than 2,500 Å, said groups (1) and (2) being selected from the group consisting of:

(1) Al, Si, Ti, Zr, Hf, Nb, Ta, Cr, noble metals, their oxides,



carbides, nitrides, borides, silicides and mixtures thereof, and

(2) Si, Ti, Zr, Hf, Nb, Ta, Cr, noble metals, their oxides, carbides, nitrides, borides, silicides and mixtures thereof.

5,330,852

MAGNETO-OPTICAL MEMORY AND METHOD OF PRODUCING SUCH A MEMORY

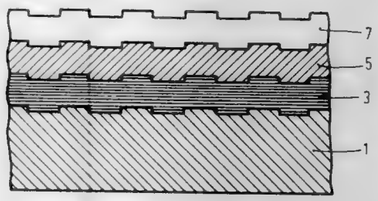
Klaus W. Gerstenberg, Halstenbek, and Heinrich Heitmann, Winsen/Luhe, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 147,846, Jan. 25, 1988, abandoned. This application May 15, 1990, Ser. No. 524,719

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1987, 3702480

Int. Cl.[5] **G11B** *5/66*

U.S. Cl. 428—694 DE **9 Claims**



1. A magneto-optical memory having a substrate of a material which is transparent for the visible to infrared spectral range and on which, there are provided in the following sequence, an elastic dielectric layer which is transparent at the visible-to-infrared spectral range and has a refractive index which is higher than the refractive index of the substrate and which at a wavelength of 800 nm is 1.9–2.5, has an absorption coefficient $K < 0.05$ and constitutes a diffusion barrier layer for oxygen and/or water, and is deposited on the substrate from organic silicons by a PCVD (plasma-activated chemical vapor deposition) process, an essentially amorphous and/or microcrystalline magneto-optical layer with uniaxial anisotropy and a magnetic ordering temperature > ambient temperature and a top layer acting as a reflection or interference layer and as a diffusion barrier layer for oxygen and/or water.

5,330,853

MULTILAYER TI-AL-N COATING FOR TOOLS

Dieter Hofmann, Bruchköbel, and Bernd Hensel, Frankfurt, both of Fed. Rep. of Germany, assignors to Leybold AG, Hanau 1, Fed. Rep. of Germany

Filed Aug. 19, 1991, Ser. No. 747,287

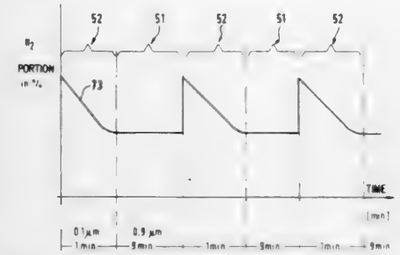
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1991, 4108712; May 14, 1991, 4115616

Int. Cl.[5] **B23B** *51/00*

U.S. Cl. 428—697 **16 Claims**

1. A hard multilayer surface coating for a substrate comprising

a plurality of first layers wherein each first layer consists of at least one element from a first group consisting of Ti, Zr, Hf, and V, at least one element from a second group consisting of Al and Si, and at least one element from a third group consisting of N and C, the content of Said at least one element from said third group varying from a maximum to a minimum through the thickness of each first layer, and



a plurality of second layers alternating with said first layers, each said second layer consisting of at least one element from each of said first, second, and third groups, the relative proportion of said at least one element from said third group being less in said second layer than in said first layer.

5,330,854

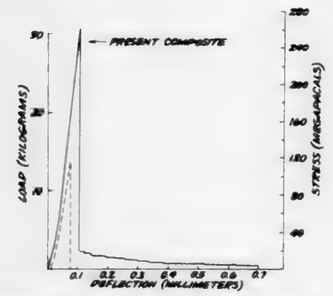
FILAMENT-CONTAINING COMPOSITE

Raj N. Singh, Schenectady, and William A. Morrison, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 24, 1987, Ser. No. 100,806

Int. Cl.[5] **B32B** *9/00;* **B05D** *3/02*

U.S. Cl. 428—698 **41 Claims**



1. A process for producing a composite with a porosity of less than about 10% by volume comprised of boron nitride-coated filaments and a matrix phase, said filament component of said coated filaments comprising at least about 10% by volume of the composite, said matrix phase containing silicon carbide formed in situ in an amount of at least about 5% by volume of the composite and elemental silicon in an amount of at least about 1% by volume of the composite, which comprises the following steps:

(a) providing a filament selected from the group consisting of elemental carbon, a SiC-containing material containing at least about 50% by weight silicon and at least about 25% by weight carbon, and a combination thereof, said filament having a diameter of at least about 50 microns;

(b) depositing a coating of boron nitride on said filament leaving no significant portion thereof exposed;

(c) providing infiltration-promoting material in the form of

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particulates and/or fibers, said infiltration-promoting material containing elemental carbon;

(d) contacting a plurality of said boron nitride-coated filaments with said infiltration-promoting material to produce a preform wherein said infiltration-promoting material envelops each coated filament preventing contact therebetween and wherein said coated filaments are at least substantially parallel to each other, said preform having an open porosity ranging from about 25% by volume to about 85% by volume of the preform;

(e) contacting said preform with silicon-associated infiltrating means whereby said silicon is infiltrated into said preform;

(f) heating the resulting structure in a partial vacuum to a temperature at which said silicon is molten and infiltrating said molten silicon into said preform to produce an infiltrated product having the composition of said composite, said preform containing sufficient elemental carbon to react with said silicon to form said composite, said partial vacuum being at least sufficient to remove gas from said preform so as to allow said molten silicon to infiltrate said preform; and

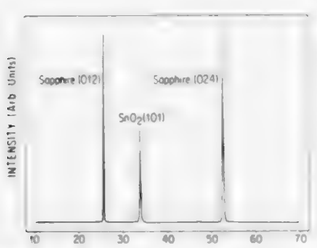
(g) cooling said product to produce said composite, said boron nitride-coated filaments being enveloped by said infiltration-promoting material to enable said infiltration by molten silicon.

5,330,855

PLANAR EPITAXIAL FILMS OF SnO_2

Stephen Semancik, Mount Airy, and Richard E. Cavicchi, Washington Grove, both of Md., assignors to The United States of America, as represented by the Secretary of Commerce, Washington, D.C.

Filed Sep. 23, 1991, Ser. No. 764,203
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—701 **14 Claims**



1. A thin film structure comprising:

a smooth planar epitaxial film of SnO_2 having low defect density, rutile unit cell structure, one crystalline orientation, controlled stoichiometry, extended lateral dimensions as compared to single crystals, atomic order extending to the surface of said film and being of extremely smooth surface morphology, colorless and transparent.

5,330,856

METHOD OF MAKING A CATHODE FOR USE IN AN ELECTROLYTIC CELL

Jose Gonzalez, Sunnyvale, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Jun. 8, 1993, Ser. No. 73,195
Int. Cl.[5] H01M *6/18, 6/00*
U.S. Cl. 429—212 **14 Claims**

1. A method for making a cathode comprising

(a) providing a cathode premix comprising 10 to 50 weight percent of solvent and 5 to 30 weight percent of a prepolymeric material;

(b) introducing up to 20 weight percent of polyethylene oxide into the premix to form a mixture;

(c) introducing 35 to 65 weight percent of a compatible cathodic material and 1 to 20 weight percent electroconductive material into said mixture so as to provide a cathode paste; and

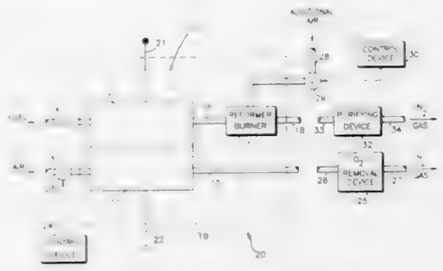
(d) producing a cathode from said cathode paste; wherein all weight percents are based on the total weight of said cathode paste.

5,330,857

METHOD OF GENERATING HIGH-PURITY NITROGEN GAS

Richard A. Sederquist, Newington; John C. Trocciola, Glastonbury; Paul J. Farris, South Windsor, and Murdo J. Smith, II, Bristol, all of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Continuation of Ser. No. 785,605, Oct. 30, 1991, abandoned.
This application Sep. 22, 1993, Ser. No. 125,354
Int. Cl.[5] H01M *8/00*
U.S. Cl. 429—13 **3 Claims**



1. A method of generating high-purity nitrogen gas, comprising the steps of

operating a fuel cell device having a cathod side and an anode side, including the sub-steps of

passing an air stream through the cathode side of the fuel cell device,

feeding a gaseous fuel stream to the anode side of the fuel cell device, and

electrochemically combining oxygen from the air stream in the fuel cell device with fuel from the fuel stream, with attendent formation of a cathode exhaust gas stream containing nitrogen and residual oxygen, and generation of electric power;

controlling said passing step; and

reducing at least the residual oxygen content of the cathode exhaust gas stream to a level at which the cathode exhaust gas constitutes the high-purity nitrogen gas, including at least one of the sub-steps of

performing said controlling step in such a manner as to optimize the oxygen utilization at the cathode side of the fuel cell device even at the expense of reducing the amount of electric power generated relative to the optimum electric power generation operating conditions of the fuel cell device, and

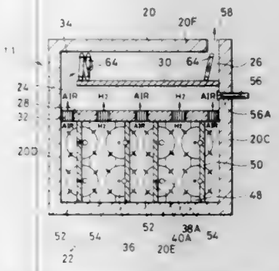
removing most of the residual oxygen from the cathode exhaust gas stream exhausted from the cathode side of the fuel cell device, while maintaining both oxygen and nitrogen contained in the cathode exhaust gas in their gaseous states throughout.

5,330,858

SOLID ELECTROLYTE TYPE FUEL CELL POWER GENERATION MODULE AND SYSTEM

Hiroyuki Shundou, and Tsuneo Nakanishi, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 29, 1992, Ser. No. 890,263
Claims priority, application Japan, May 30, 1991, 3-126297; Sep. 4, 1991, 3-223192
Int. Cl.[5] H01M *8/02, 8/22*
U.S. Cl. 429—22 **24 Claims**



1. A planar solid electrolyte fuel cell power generation system comprising:

(A) a power generation module including:

(a) a heat insulated vessel,

(b) a first partition wall provided in said heat insulated vessel and having a first exhaust gas passage,

(c) a second partition wall provided in said heat insulated vessel and having a second exhaust gas passage,

(d) a stack chamber provided in said heat insulated vessel and partitioned by said first partition wall, said stack chamber having first and second inner surfaces,

(e) a combustion chamber provided in said heat insulated vessel adjacent to said stack chamber through said first partition wall, and partitioned by said first and second partition walls, said combustion chamber communicating with said stack chamber through said first exhaust gas passage,

(f) a heat exchanging chamber provided in said heat insulated vessel adjacent to said combustion chamber through said second partition wall, said heat exchanging chamber communicating with said combustion chamber through said second exhaust gas passage,

(g) a cell stack provided in said stack chamber with gaps between it and said first and second inner surfaces of said stack chamber, respectively, said cell stack having:

(g-1) a plurality of planar single cells built up one on another,

(g-2) an oxidant gas supply manifold for supplying an oxidant gas to said planar single cells and extending through said plurality of planar single cells,

(g-3) a fuel gas supply manifold for supplying a fuel gas to said planar single cells, and

(g-4) a current output conductor for outputting electricity generated by said planar single cells and connected to said cell stack,

(h) a sealing means provided in said stack chamber and in contact with said cell stack and said first and second inner surfaces, respectively, of said stack chamber,

(i) an oxidant gas exhaust chamber for collecting an oxidant gas exhausted from said cell stack, said oxidant gas exhaust chamber provided in said stack chamber and partitioned by said sealing means and said cell stack, said oxidant gas exhaust chamber communicating with said combustion chamber through said first exhaust gas passage,

(j) a fuel gas exhaust chamber for collecting a fuel gas exhausted from said cell stack, said fuel gas exhaust chamber provided in said stack chamber and partitioned by said sealing means and said cell stack, said fuel gas exhaust chamber communicating with said combustion chamber through said first exhaust gas passage,

(k) a heat exchanger, provided in said heat exchanging chamber, for preheating said fuel gas and said oxidant gas supplied to said cell stack, respectively,

(l) a fuel gas supply pipe communicating with said heat exchanger, and

(m) an oxidant gas supply pipe communicating with said heat exchanger;

(B) an inverter connected to said cell stack in said stack chamber and for inverting direct current generated by said single cells into alternating current; and

(C) a control device connected to said power generation module and said control device, controlling operation of said power generation system;

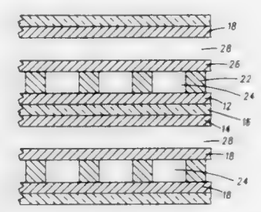
whereby said exhaust oxidant gas and said exhaust fuel gas, exhausted from said cell stack and passed through said first exhaust gas passage, are burnt in said combustion chamber to form a combustion gas, and said combustion gas is introduced into said heat exchanging chamber.

5,330,859

SOLID OXIDE FUEL CELL WITH SINGLE MATERIAL FOR ELECTRODES AND INTERCONNECT

Charles C. McPheeters, Naperville; Paul A. Nelson, Wheaton, and Dennis W. Dees, Downers Grove, all of Ill., assignors to University of Chicago, Chicago, Ill.

Filed Aug. 24, 1992, Ser. No. 934,364
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—33 **20 Claims**



16. A solid oxide fuel cell having a plurality of individual cells with each of said cells comprising:

electrodes having an electrolyte disposed there between; and

interconnect material elements between said electrodes with said electrodes and said interconnect material elements consisting essentially of the same elemental constituents and said electrodes being dimensioned to provide good electrical properties.

5,330,860

MEMBRANE AND ELECTRODE STRUCTURE

Walther G. Grot, Chadds Ford, Pa., and Shoibal Banerjee, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1993, Ser. No. 51,822
Int. Cl.[5] H07M *4/86*
U.S. Cl. 429—42 **22 Claims**

1. An electrode composition comprising:

(a) catalytically active particles;

(b) a hydrocarbon selected from the group of 1-methoxy-2propanol, 1-ethoxy-2-propanol; 1-methoxy-2-methyl-2-propanol; 1-isopropoxy-2-propanol; 1-propoxy-2-propanol; 2-phenoxy-1-propanol; 2-ethoxy-1-propanol; 2,3-ethoxy-1-propanol; 2-methoxy- 1-propanol; 1-butoxy-2-propanol; or mixtures thereof; and

(c) a binder.

5,330,861

METAL HYDRIDE CELLS HAVING IMPROVED CYCLE LIFE AND CHARGE RETENTION

Michael A. Fetcenko, Rochester Hills, and Stanford R. Ovshinsky, Bloomfield Hills, both of Mich., assignors to Ovonic Battery Company, Inc., Troy, Mich.

Filed May 7, 1992, Ser. No. 879,823

Int. Cl.[5] **H01M** *4/38*

U.S. Cl. 429—57 **22 Claims**



1. A rechargeable hydrogen storage cell comprising:
a negative electrode having the following composition:

$$(\text{Ovonic Base Alloy})_a M_b$$

where
Ovonic Base Alloy represents an Ovonic alloy that contains 0.1 to 60 atomic percent Ti, 0.1 to 25 atomic percent Zr, 0.1 to 60 atomic percent V, 0.1 to 57 atomic percent Ni, and 0.1 to 56 atomic percent Cr, as described above;
a is at least 70 atomic percent;
M represents at least one modifier chosen from the group consisting of Co, Mn, Al, Fe, W, La, Mo, Cu, Mg, Ca, Nb, Si, and Hf,
b is 0 to 30 atomic percent;
$b>0$; and
$a+b=100$ atomic percent;
a positive electrode; and
a separator chosen from the group consisting of
an electrolyte retentive, fine fiber, having a thickness of approximately 5–12 microns nylon separator and a wettable polypropylene separator resistant to reaction with H_2 gas and alkaline electrolyte,
where the surface of said wettable polypropylene has been treated using radiation grafting or a chemical treatment

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5,330,862

METHOD FOR FORMING RESIST MASK PATTERN BY LIGHT EXPOSURE HAVING A PHASE SHIFTER PATTERN COMPRISING CONVEX FORMS IN THE RESIST

Hiroki Tabuchi, Nara; Katsuji Iguchi, Yamatokoriyama; Makoto Tanigawa, Kitakatsuragi; Takayuki Taniguchi, Tenri, and Hiroyuki Moriwaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

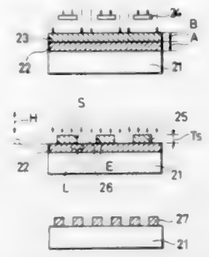
Filed Apr. 28, 1992, Ser. No. 874,809

Claims priority, application Japan, Jun. 7, 1991, 3-136799; Dec. 6, 1991, 3-323442

Int. Cl.[5] **G03F** *9/00*

U.S. Cl. 430—5 **8 Claims**

1. A method for forming a resist pattern by light exposure comprising the steps of:
i) forming a resist layer having an upper surface on a semiconductor substrate,
ii) forming a phase shifter pattern for inverting the phase of exposure light, said phase shifter pattern comprising convex forms in an upper portion of the resist layer itself,
iii) exposing the whole upper surface of the resulting resist layer including the phase shifter pattern to form unexposed portions positioned below and adjacent to side walls of the convex forms of the phase shifter pattern, and



iv) developing the resist layer, thereby forming a desired resist pattern having a width shorter than a wavelength of the exposure light

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5,330,863

PHOTOSENSITIVE MATERIAL FOR ELECTRONIC PHOTOGRAPHY USE

Mitsuru Narita; Tsuneo Tamura, and Seizou Kitagawa, all of Matsumoto, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 10, 1990, Ser. No. 507,592

Claims priority, application Japan, Apr. 12, 1989, 1-92740; Apr. 28, 1989, 109737; Feb. 6, 1990, 2-26314

Int. Cl.[5] **G03G** *5/08*

U.S. Cl. 430—58 **4 Claims**

1. A photosensitive material for use in electric photography, which comprises in sequence:
a conductive substrate;
a carrier transport layer consisting of a selenium/arsenic alloy;
a carrier generation layer consisting of a selenium/tellurium alloy; and
an overcoat layer consisting of a selenium/arsenic alloy; wherein a carrier injection preventive layer consisting of a selenium/arsenic/sulfur alloy comprising 38 atomic percent arsenic, 57 atomic percent selenium and 4.8 atomic percent sulfur is inserted between the carrier generation layer and the overcoat layer.

3. A photosensitive material for use in electric photography, which comprises in sequence:
a conductive substrate;
a carrier transport layer consisting of a selenium/arsenic alloy;
a carrier generation layer consisting of a selenium/tellurium layer; and
an overcoat layer consisting of a selenium/arsenic alloy; wherein a first carrier injection preventive layer consisting of a selenium/arsenic/sulfur alloy comprising 28.5 atomic percent arsenic, 35.7 atomic percent selenium and 35.7 atomic percent sulfur is inserted between the carrier generation layer and the overcoat layer and a second carrier injection preventive layer consisting of a selenium-/arsenic/sulfur alloy comprising 28.5 atomic percent arsenic, 35.7 percent atomic percent selenium and 35.7 atomic percent sulfur is inserted between the conductive substrate and the carrier transport layer.

5,330,864

CYAN CHROMOGENIC LEUCO DYES FOR PHOTOTHERMOGRAPHIC MATERIALS

Raffaella Biavasco, and Cristina Soncini, both of Savona, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

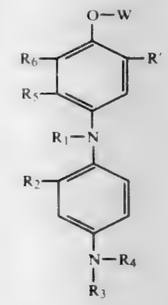
Filed Sep. 2, 1992, Ser. No. 939,093

Claims priority, application Italy, Sep. 18, 1991, MI91A002467

Int. Cl.[5] **G03C** *1/498*

U.S. Cl. 430—619 **14 Claims**

1. A photothermographic material capable of producing a high density cyan image upon imagewise exposure and thermal development comprising coated on a support base at least one light-sensitive emulsion layer containing: (a) a binder; (b) a silver source material; (c) a light sensitive silver halide in catalytic proximity to said silver source material, wherein said emulsion layer or an adjacent layer thereto comprises a chromogenic cyan leuco dye represented by the general formula:

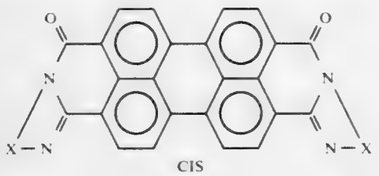


wherein R_1 is a —CONH—R_8 group, a —CO—R_8 group or a —CO—O—R_8 group, R_8 being an alkyl group or an aryl group; R_2 is a hydrogen atom or a short alkyl group; R_3 and R_4 may be the same or different including a hydrogen atom, a short alkyl group, a —X—Y group, wherein X is a short alkylene group and Y is a cyano group, a halogen atom, —OH or —$NHSO_2$—Z group, wherein Z is an alkyl group; R_5 independently is a hydrogen atom, a halogen atom, an alkyl group, or a —NHCO—R group, wherein R is an alkyl group or an aryl group, and R_6 independently is a hydrogen atom, a halogen atom, an alkyl group, or an alkoxy group; or R_5 and R_6 can combine to form a benzene ring or a heterocyclic ring; R' is a hydrogen atom or is A—R_7, wherein A is a —NCHO— group, a —CONH— group, or a —NHCONH— group, and R_7 is an alkyl group or an aryl group, W is a hydrogen atom or a group as described for R_1.

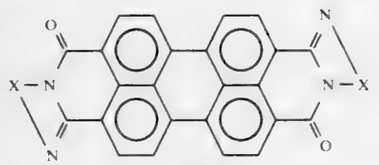


structure 1

wherein R = aryl, alkyl, aralkyl, alkaryl, naphtyl, alkoxyaryl or a heterocyclic group and their substituted derivatives, and



CIS



TRANS
structure 2

wherein X = a phenylene, naphtylene, pyridylene or phenanthrene group and the corresponding alkyl, aryl, aralkyl, nitro, chloro, bromo and methoxy substituted derivatives of these groups,

wherein said mixture of perylene pigments is selected from the group consisting of a pigment mixture of perylenes of structure 1 with perylenes of structure 2, a pigment mixture of perylenes of structure 1 and a pigment mixture of perylenes of structure 2.

5,330,865

MULTI-LAYERED ELECTROPHOTOGRAPHIC ELEMENT HAVING A MIXTURE OF PERYLENE PIGMENTS

Gerardus R. B. Leus, CV Venlo; Achilles W. M. Persoon, CR Maasbree, and Clemens T. Weijkamp, RR Zijtaart, all of Netherlands, assignors to Oce-Nederland, B.V., MA Venlo, Netherlands

Filed Oct. 9, 1992, Ser. No. 959,092

Int. Cl.[5] **G03G** *5/06*

U.S. Cl. 430—59 **18 Claims**

1. A multi-layered electrophotographic element comprising an electrically conductive substrate, and a photoconductive layer on a surface thereof comprising a mixture of charge generating perylene pigments of the following structures:

5,330,866

PHOTOSENSITIVE MEMBER COMPRISING AN AMINO COMPOUND

Hideaki Ueda, Kawanishi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 14, 1992, Ser. No. 835,574

Claims priority, application Japan, Feb. 18, 1991, 3-023174; Aug. 15, 1991, 3-205201; Oct. 17, 1991, 3-269283; Oct. 18, 1991, 3-270847

Int. Cl.[5] **G03G** *5/06*

U.S. Cl. 430—59 **28 Claims**

1. A photosensitive member having a photosensitive layer comprising an amino compound represented by the following general formula [I]:

5,330,867

PHOTOGENERATING TITANYL PHTHALOCYANINE AND PROCESSES THEREOF

Cheng-Kuo Hsiao; Ah-Mee Hor, both of Mississauga; James D. Mayo, Toronto; Giuseppa Baranyi, Mississauga, all of Canada; Gregory J. Kovacs, Sunnyvale, Calif.; Terry L. Bluhm, Pittsford, N.Y.; Zoran D. Popovic, and B. W. Anissa Yeung, both of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1992, Ser. No. 933,852
Int. Cl.[5] G03G 5/06
U.S. Cl. 430—76 24 Claims

1. A layered imaging member comprised of a photogenerating layer of titanyl phthalocyanine prepared by depositing amorphous titanyl phthalocyanine on a substrate maintained at a temperature of from below 25° to about minus 30° C. for a period of time until the deposition process is completed; and contacting the substrate product with an aliphatic alcohol

5,330,868

ELECTROGRAPHIC FLUORESCENT LIQUID DEVELOPER

Domenic Santilli, Webster, and John W. May, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 742,139, Aug. 8, 1991, Pat. No. 5,176,980. This application Sep. 8, 1992, Ser. No. 941,829
Int. Cl.[5] G03G 9/09, 9/125
U.S. Cl. 430—106 9 Claims

1. An electrographic liquid developer comprising an aliquot of fluorescent toner diluted in a liquid developer vehicle having a high flash point and a low vapor pressure

5,330,869

ELECTROSTATOGRAPHIC TONER AND DEVELOPER COMPOSITIONS WITH PHTHALIMIDE DERIVATIVES

John C. Wilson, Rochester; Steven M. Bonser, Fairport, and Hans W. Osterhoudt, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1993, Ser. No. 114,728
Int. Cl.[5] G03G 9/107, 9/097
U.S. Cl. 430—106.6 20 Claims

10. A dry, electrostatographic developer composition comprised of a mix of carrier particles and toner particles wherein the toner particles are comprised of a binder polymer and a charge-control agent wherein the binder polymer comprises a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-control agent is a compound selected from the group consisting of phthalimide, 4-aminophthalimide and 4-tert-butylphthalimide and wherein each of the carrier particles comprises a core particle having an overcoat of a polymer comprising poly(methyl methacrylate) or a copolymer of butylstyrene and a C_1–C_4 alkyl methacrylate.

5,330,870

DEVELOPER COMPOSITION FOR ELECTROPHOTOGRAPHY FOR FLASH FUSING

Shingo Tanaka, Kainan; Koji Nishibuchi, Wakayama; Koji Shimokusa, Wakayama, and Tetsuya Ueno, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,429
Claims priority, application Japan, Sep. 7, 1991, 3-255763
Int. Cl.[5] G03G 9/00
U.S. Cl. 430—109 8 Claims

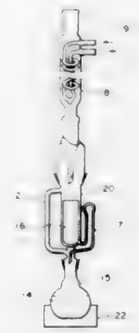
1. An electrophotographic developer composition for flash fusing which comprises a binder resin comprising a polyester resin and a colorant, wherein said polyester resin is formed between an acid component, not less than 80 mol % of said acid component being a phthalic acid series dicarboxylic acid, and an alcohol component, not less than 80 mol % of said alcohol component being a bisphenol A alkylene oxide adduct, said polyester resin having an acid value of not more than 10.0 KOH mg/g, a softening temperature of not less than 95.0° C and not more than 125.0° C., as determined using a flow tester of the "koka-shiki" type, and a glass transition temperature of not less than 50.0° C. and not more than 80.0° C., as determined by DSC, whereby substantially no odor is produced upon flash fusing.

5,330,871

TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Hirohide Tanikawa, Yokohama; Masaki Uchiyama, Ichikawa; Yoshinobu Joh, Kawasaki; Yasutaka Akashi, Yokohama; Masaaki Taya, Kawasaki, and Makoto Unno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,915
Claims priority, application Japan, Nov. 29, 1990, 2-332691
Int. Cl.[5] G03G 9/00
U.S. Cl. 430—110 24 Claims



1. A toner for developing an electrostatic image, comprising: a binder resin, a metal-containing compound reactive with said binder resin and a colorant, wherein the binder resin contains (a) a first component of a low molecular weight in amounts of less than 80 wt. % detectable as an extract in 6 hours of extraction, and (b) a second component in amounts of at least 20 wt. % detectable as an extraction residue after 6 hours of extraction , said second component including (c) a third component of a tetrahydrofuran-non-extractable matter in amounts of below 20 wt. % detectable as an extraction residue after 72 hours of extraction; each said extraction being a Soxhlet extraction with tetrahydrofuran, wherein the toner shows a dynamic modulus and a loss modulus, respectively at 200° C and 0.1 Hz, which are substantially unchanging with time.

5,330,872

LIQUID COLORED TONER COMPOSITIONS

Peter E. Materazzi, Southington, Conn., and Barry F. Nelsen, Mountain Lakes, N.J., assignors to Olin Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 765,625, Sep. 25, 1991, Pat. No. 5,238,762, which is a continuation-in-part of Ser. No. 657,012, Feb. 15, 1991, Pat. No. 5,116,705, which is a continuation-in-part of Ser. No. 498,785, Mar. 26, 1990, abandoned. This application Apr. 5, 1993, Ser. No. 42,912
Int. Cl.[5] G03G 9/00
U.S. Cl. 430—115 14 Claims

1. A liquid toner composition comprising:

A. a colored predispersion comprising a homogeneous mixture of at least one nonpolymeric resin material, at least one polymeric plasticizer, at least one colorant material and at least one maleic anhydride adduct of polyolefin; (1) said nonpolymeric resin material characterized by:

(aa) being insoluble and nonswellable in the liquid carrier;
(bb) having a melting point between 60° to 180° C.; and
(cc) having an acid number higher than about 100;
(2) said polymeric plasticizer characterized by:
(aa) being soluble in said nonpolymeric resin;
(bb) being insoluble in the liquid carrier;
(cc) having a melting point from about 35° C. to about 70° C.; and
(3) said colorant material having an average primary particle size of less than about 0.5 microns;
(4) said maleic anhydride adduct of polyolefin characterized by:
(aa) being partially soluble in the liquid carrier; and
(bb) having an acid number higher than about 45; and wherein said colored predispersion contains about 50% to about 98.5% by weight nonpolymeric resin; about 1.0% to 20% by weight polymeric plasticizer; about 0.5% to 30% by weight colorant material and about 0.5 to about 10% by weight anhydride adduct of polyolefin; and

B. an aliphatic hydrocarbon carrier liquid having a conductivity of 10^{-9} MHOS/$_{cm}$ or less, a dielectric constant of 3 or less, and a flash point of 100° F. or greater; and

C. external charge system comprising an interacting mixture of a maleic anhydride adduct of polyolefin and an amphipathic copolymer, said maleic anhydride adduct of polyolefin characterized by:
(aa) being partially soluble in the liquid carrier; and
(bb) having an acid number higher than about 45; the weight ratio of said anhydride adduct of polyolefin and amphipathic copolymer being from about 1:10 to about 10:1;

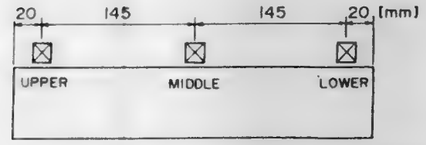
wherein said toner containing about 0.1% to about 10% by weight colored predispersion and about 99.9% to about by weight of said liquid carrier and about 0.005% to about 0.25% of said external charge system and said colored predispersion particles having about 0.5–10 micron average particle size and being insoluble and nonswellable in said liquid carrier.

5,330,873

PRODUCTION METHOD OF PHOTOSENSITIVE MEMBER BY ELIMINATING OUTERMOST SURFACE PORTION OF PHOTOSENSITIVE LAYER

Isao Doi, Toyonaka; Kenji Masaki, Ibaraki; Shuji Iino, Hirakata, and Izumi Osawa, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 611,710, Nov. 9, 1990. This application Jan. 14, 1993, Ser. No. 4,675
Claims priority, application Japan, Nov. 9, 1989, 1-291859; Nov. 9, 1989, 1-291860; Nov. 9, 1989, 1-291861; Nov. 9, 1989, 1-291862; Nov. 30, 1989, 1-312960
Int. Cl.[5] G03G 5/00
U.S. Cl. 430—133 13 Claims



1. A production method of a photosensitive member having an organic photosensitive layer and a surface protective layer in this order on an electrically conductive substrate comprising;

a first step of forming the organic photosensitive layer by coating a solution which includes a solvent, a binder resin and an organic photosensitive material on the electrically conductive substrate,

a second step of mechanically wearing the organic photosensitive layer to a degree of 30 Å – 2 μm in thickness so as to eliminate an oxidized outermost surface portion of the organic photosensitive layer, and

a third step of forming the surface protective layer under vacuum conditions on the organic photosensitive layer.

5,330,874

DRY CARRIER COATING AND PROCESSES

Hadi K. Mahabadi, Toronto; Denise Y. Wright; T. Hwee Ng, both of Mississauga, all of Canada; Angelo J. Barbetta, Penfield, and John A. Creatura, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1992, Ser. No. 953,382
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] G03G 5/00
U.S. Cl. 430—137 26 Claims

1. A process for the preparation of carrier particles consisting essentially of the dry coating of a carrier core or carrier cores with conductive submicron polymeric particles containing from about 1 to about 50 weight percent of conductive fillers, and wherein said conductive polymer particles are prepared by mixing at least one monomer with a polymerization initiator, a crosslinking component and a chain transfer component; effecting bulk polymerization until from about 5 to about 50 weight percent of the monomer has been polymerized; terminating polymerization by cooling the partially polymerized monomer; adding thereto from about 1 to about 50 weight percent of a conductive filler or conductive fillers, followed by mixing thereof; dispersing the aforementioned mixture of conductive filler or fillers, and partially polymerized product in water containing a stabilizing component to obtain a suspension of particles with an average diameter of from about 0.05 to about 1 micron in water; polymerizing the resulting suspension by heating; subsequently washing and drying the product; thereafter heating the carrier core or carrier cores and the resulting conductive polymer particles to enable fusing thereof to said core or cores; and cooling the carrier particles obtained, which particles have a conductivity of from between about 10^{-4} to about 10^{-10} mho-cm^{-1}.

5,330,875

PROCESS FOR PRODUCING NEGATIVE AND POSITIVE ORIGINAL IMAGES ON A BILEVEL PRINTING PLATE UTILIZING NON-SILVER HALIDE LAYER AND SILVER HALIDE OVERLAYER

Michael W. Adelman, Ramsey; Robert W. Hallman, Palisades Park, both of N.J.; Suck-Ju Hong, Bronxville; Ken-Ichi Shimazu, Briarcliff Manor, both of N.Y., and Burton H. Waxman, Rockaway, N.J., assignors to Sun Chemical Corporation, Fort Lee, N.J.

Filed May 5, 1993, Ser. No. 57,592
Int. Cl.[5] G03F 7/095, 7/30
U.S. Cl. 430—142 15 Claims

1. A process for producing a negative original image and a positive original image on a printing plate employing a single stage silver halide development step, said process comprising:

(a) providing a coated printing plate comprising a substrate having coated thereon a first positive-working, non-silver halide, light sensitive coating photoinsensitive to light at silver halide speeds and a second or top negative-working coating comprising silver halide emulsion;

(b) exposing a first portion of said plate image-wise through a positive original at a high light energy level sufficient to expose said first coating and second coating;

(c) exposing at a low light energy level both a second portion of said plate image-wise through a negative original and nonimage-wise exposure of said first portion from step (b), said first and second portions comprising different parts of said plate;

(d) developing said top coating after step (c);

(e) exposing said plate from step (c) overall at a high light energy level;

(f) treating said plate after step (e) to remove exposed and unexposed residue of said second coating;
(g) treating said first coating after step (f) to remove non-image containing areas of said first coating whereby a printing plate is produced containing images corresponding to said negative and positive originals.

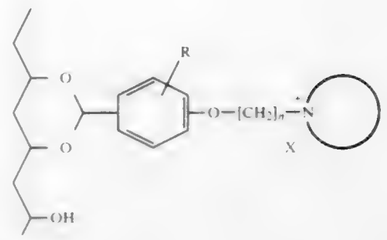
9. A process for producing a negative original image and a positive original image on a bilevel printing plate having a first negative-working non-silver halide coating and a second or top negative-working silver halide coating, said process comprising:
(a) providing said bilevel printing plate comprising a substrate having coated thereon a first negative-working, non-silver halide, light sensitive coating photoinsensitive to light at silver halide speeds and a second or top negative-working coating comprising silver halide emulsion;
(b) exposing at a low light energy level both a first portion of said plate image-wise through a positive original and nonimage-wise exposure of a second portion of said plate, said first and second portions comprising different parts of said plate;
(c) exposing at a high light energy level said second portion image-wise through a negative original;
(d) developing said top coating after step (c);
(e) exposing said plate from step (c) overall at a high light energy level;
(f) treating said plate after step (e) to remove exposed and unexposed residue of said top coating;
(g) treating said first coating after step (f) to remove non-image containing areas of said first coating whereby a printing plate is produced containing images corresponding to said negative and positive originals.

5,330,876
HIGH MOLECULAR WEIGHT BINDERS FOR LASER ABLATIVE IMAGING
Linda Kaszczuk, Webster, and Richard W. Topel, Jr., Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 30, 1993, Ser. No. 99,968
Int. Cl.[5] G03C *5/16*; **G03F** *7/26*
U.S. Cl. 430—269 **8 Claims**

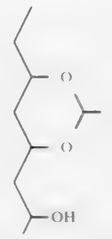
1. A process of forming a single color, dye ablation image having an improved D-min comprising imagewise-heating by means of a laser, a dye-ablative recording element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric binder having an infrared-absorbing material associated therewith, said laser exposure taking place through the dye side of said element, and removing the ablated image dye material to obtain said image in said dye-ablative recording element, wherein said polymeric binder has a polystyrene equivalent molecular weight of at least 100,000 as measured by size exclusion chromatography.

5,330,877
PHOTOSENSITIVE COMPOSITIONS CONTAINING STILBAZOLIUM GROUPS
John Curtis, Princeton, N.J., assignor to Ulano Corporation, Brooklyn, N.Y.
Filed May 29, 1992, Ser. No. 890,238
Int. Cl.[5] G03C *1/73*; **C08F** *8/00*
U.S. Cl. 430—287 **10 Claims**

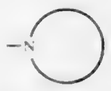
1. A photosensitive polymer composition comprising a compound of the structure



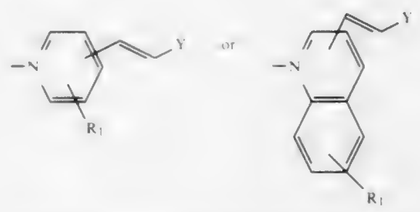
wherein



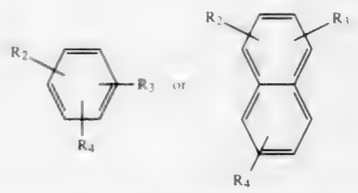
represents a polyvinyl alcohol unit, R is hydrogen or alkyl, or alkoxy, n is an integer from 1 to 6,



is a radical having the structure



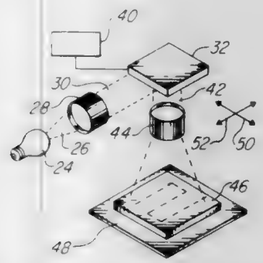
X is an anion, and Y is a monovalent radical having the structure



and more particular, Y = phenyl and naphthyl unsubstituted or substituted with hydrogen, alkyl, alkenyl, alkoxy, analkyl, and R_1, R_2, R_3 and R_4 are hydrogen, alkyl, alkenyl, alkoxy, aralkyl, substituted alkyl, substituted alkoxy, carboxyl, carboxyl ester, amino, substituted amino, amido, substituted amido, cyano,

hydroxy, nitro, isocyanato, sulphonyl halide, and may be the same or different, or R_2 taken together with R_3 is methylenedioxy.

5,330,878
METHOD AND APPARATUS FOR PATTERNING AN IMAGING MEMBER
William E. Nelson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 742,133, Aug. 8, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 47,254
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—311 **6 Claims**



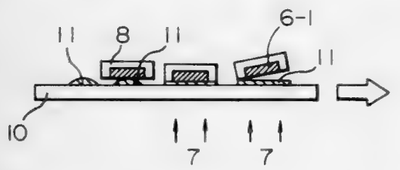
1. A method for patterning a printed circuit board coated with a light sensitive material comprising:
a. generating light with a source;
b. modulating light energy from said source into a pre-determined pattern, wherein said pre-determined pattern is formed by selectively addressing elements of a spatial light modulator;
c. imaging said pre-determined pattern through an imaging lens; and repeatedly transporting said printed circuit board past said imaging lens in a mosaic pattern allowing said predetermined pattern to expose said light sensitive material.

4. A method for patterning a reticle substrate used in the manufacture of printed circuit boards comprising:
a. generating light with a source;
b. modulating light energy from said source into a pre-determined pattern, wherein said pre-determined pattern is formed by selectively addressing elements of a spatial light modulator;
c. imaging said pre-determined pattern through an imaging lens; and
d. repeatedly transporting said reticle substrate past said imaging lens in a mosaic pattern allowing said predetermined pattern to expose said reticle substrate.

5,330,879
METHOD FOR FABRICATION OF CLOSE-TOLERANCE LINES AND SHARP EMISSION TIPS ON A SEMICONDUCTOR WAFER
Charles H. Dennison, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Jul. 16, 1992, Ser. No. 914,804
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—313 **23 Claims**

1. A method for fabricating close-tolerance submicron lines on a semiconductor wafer having a gate oxide layer over a substrate and a gate polysilicon layer over the gate oxide, comprising the steps of:
a. depositing a first layer on top of the gate polysilicon layer;
b. forming a loose-tolerance trench in the first layer having a width of less than 1 micrometer (μm);
c. depositing a non-conformal material to a predetermined thickness of between 0.3 and 0.45 μm over the first layer thereby forming a teardrop-shaped void in the trench, said teardrop-shaped void having a narrow, close-tolerance uniform width dimension;
d. chemically, mechanically polishing (CMP) the non-conformal material down to a top surface of the first layer, thereby exposing the void;
e. depositing a conformal mask material over the first layer and void;
f. CMP polishing and removing the conformal mask material down to the first layer, thereby leaving only the narrow void filled with conformal mask material;
g. anisotropically etching by a photolithography process, the first layer and non-conformal material thereby forming the submicron line below the conformal mask material.

5,330,880
PROCESS FOR PRODUCING OPTICAL DISKS
Shinkichi Horigome, Tachikawa; Yoshinori Miyamura, Tokyo; Yumiko Anzai, Tachikawa; Keizo Kato, and Hiroshi Shiraishi, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 28, 1992, Ser. No. 936,293
Claims priority, application Japan, Sep. 3, 1991, 3-222692
Int. Cl.[5] G11B *7/26*
U.S. Cl. 430—321 **12 Claims**



1. A process for producing optical disks comprising the steps of subjecting a photoresist layer on a substrate formed of silicon quartz, glass or a metal to light exposure, developing and etching treatments to obtain a stamper and then duplicating an information pattern for an optical disk from the stamper to a transparent plastic substrate by using a UV curable resin to prepare a replicated substrate of an optical disk, wherein the light exposure is conducted either by contacting a mask side surface of a photomask provided with a nontransparent mask having an information pattern for an optical disk to the photoresist side surface of said substrate having the photoresist layer or by noncontact projection, wherein plural stampers obtained by repeating the treatments of light exposure, developing and etching are fixed to a holder and plural replicated substrates are prepared by conducting a duplication process with said holder, wherein the duplication process comprises the steps of placing the UV curable resin in a convex form on a transparent plastic sheet moving continuously or intermittently, pressing the holder onto the resin, irradiating ultraviolet light to cure the UV curable resin, and then peeling the sheet off the stampers, and wherein, in the duplication process, at least three of said holders are used, the holders are pressed against the UV curable resin, and the ultraviolet light irradiation and the peeling of the resin from the stampers are conducted continuously.

5,330,881

MICROLITHOGRAPHIC METHOD FOR PRODUCING THICK, VERTICALLY-WALLED PHOTORESIST PATTERNS

Alan L. Sidman, Wellesley, and Susan K. Fung, Worcester, both of Mass., assignors to Digital Equipment Corp., Maynard, Mass.

Continuation of Ser. No. 360,522, Jun. 2, 1989, abandoned. This application Dec. 21, 1992, Ser. No. 994,602
Int. Cl.[5] G03C *1/495, 1/727*
U.S. Cl. 430—322 11 Claims

1. A method for creating a thick film photoresist mask having vertical walls on a substrate comprising the steps of

a. coating a substrate with a thick photoresist compound to form a thick film photoresist layer;
b. coating the photoresist with a solution to form a barrier layer;
c. coating the barrier layer with a layer of contrast enhancing compound;
d. exposing the product of step c to a pattern, wherein a mask pattern image center of focus is positioned only at a single position within the photoresist layer, said single position being about 75% of the way up from the substrate surface toward the surface of the contrast enhancing compound layer, and
e. stripping the exposed contrast enhancing compound layer and the barrier layer, and developing the exposed photoresist layer.

5,330,882

PROCESS FOR EXPOSING A PHOTOSENSITIVE RESIN COMPOSITION TO LIGHT

Chitoshi Kawaguchi, Soraku; Seiji Arimatsu, Hirakata; Katsuji Konishi, Ibaraki, and Kazunori Kanda, Yao, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jun. 4, 1991, Ser. No. 709,964
Claims priority, application Japan, Jun. 5, 1990, 2-146614
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—327 11 Claims

1. A process for exposing a photosensitive resin plate comprising a substrate and a photosensitive resin layer on said substrate, which process comprises preliminarily exposing said resin plate to light to quench oxygen dissolved in said photosensitive resin layer and then conducting a main exposure, wherein said photosensitive resin layer has a thickness of 0.1 to 10 mm and is prepared from a photosensitive resin composition which comprises:

(a) a polymer binder which is three dimensionally cross-linked resin particles with an ionic group, having a particle size of 0.01 to 5 microns,
(b) a radically polymerizable monomer,
(c) a sensitizing dye, and
(d) a photopolymerization initiator which is excited by a light of a different wave length from a light exciting said sensitizing dye,

wherein said preliminary exposure is conducted with a light only exciting said sensitizing dye, and said main exposure is conducted with a light exciting said photopolymerization initiator.

5,330,883

TECHNIQUES FOR UNIFORMIZING PHOTORESIST THICKNESS AND CRITICAL DIMENSION OF UNDERLYING FEATURES

Mario Garza, Sunnyvale, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 29, 1992, Ser. No. 907,757
Int. Cl.[5] G03C *1/825*
U.S. Cl. 430—513 3 Claims

1. Method of fabricating semiconductor features having uniform critical dimensions (cd's), comprising:

applying a film of photoresist over a semiconductor wafer, for defining underlying features having critical cd's;
applying a top antireflective coating of a partially-fluorinated compound selected from the group consisting of:

(a) $R_fCH_2CH_2SCH_2CH_2CO_2Li$;
(b) $(R_fCH_2CH_2O)P(O)(ONH_4)_2$;
(c) $(R_fCH_2CH_2O)_2P(O)(ONH_4)$;
(d) $(R_fCH_2CH_2O)P(O)(OH)_2$;
(e) $(R_fCH_2CH_2O)_2P(O)(OH)$;
(f) $R_fCH_2CH_2SCH_2CH_2N^+(CH_3)_3\ CH_3SO_4^-$;
(g) $R_fCH_2CH(OCOCH_3)CH_2N^+(CH_3)_2CH_2CO_2^-$;
(h) $R_fCH_2CH_2SO_3X$ (X = H and NH_4);

wherein: $R_f = F(CF_2CF_2)_{3-8}$

over the film of photoresist; and
exposing the photoresist to masked light to form a pattern in the photoresist, said pattern defining the underlying features

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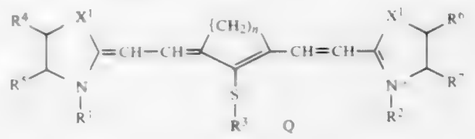
5,330,884

PHOTOGRAPHIC ELEMENT WITH NEAR-INFRARED ANTIHALATION LAYER

Dietrich M. Fabricius, Hendersonville, N.C., and Thomas Schelhorn, Neu Isenburg, Fed. Rep. of Germany, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 26, 1993, Ser. No. 72,852
Int. Cl.[5] G03L *1/06*
U.S. Cl. 430—522 10 Claims

10. A photographic element comprising a dye of formula:



Q

wherein

X^1, X^2 independently represents $—CR^8R^9—$, —S—, —Se—, $—NR^{10}—$, —CH=CH— or —O—;

n is 3;

R^1 and R^2 independently represent alkyl of 1 to 10 carbons or substituted alkyl of 1 to 10 carbons;

R^3 represents a ring chosen from the set consisting of aryl, substituted aryl, and a heterocyclic ring;

R^4, R^5, R^6 and R^7 independently represent hydrogen, alkyl of 1–10 carbons, substituted alkyl of 1–10 carbons, R^4 and R^5 taken together or R^6 and R^7 taken together may represent the atoms necessary to form a 5 or 6-membered aliphatic ring, an aromatic six-membered ring, an aromatic 10-membered ring, a substituted aromatic six-member ring or a substituted aromatic 10-member ring;

R^8, R^9 independently represent alkyl of 1–10 carbons, substituted alkyl of 1–10 carbons, aryl of 6–10 carbons, substituted aryl of 6–10 carbons;

R^{10} represents an alkyl of 1–10 carbons, substituted alkyl of 1–10 carbons, aryl of 6–10 carbons, substituted aryl of 6–10 carbons.

5,330,885

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yasuhiko Takamuki; Kazuhiro Yoshida, and Takeo Arai, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,300
Claims priority, application Japan, Feb. 17, 1992, 4-029622
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—523 7 Claims

1. A silver halide photographic light-sensitive material comprising a support having provided on a first side thereof, in order, at least one light-sensitive silver halide emulsion layer, and a protective layer, and, on a second side of said support, in order, a backing layer, and a backing protective layer, wherein at least one of the light-sensitive silver halide emulsion layer, the protective layer, the backing layer, and the backing protective layer contains polymer latex stabilized by gelatin, comprising latex that is reacted with gelatin after polymerization reaction, or latex polymerized in the presence of gelatin,

at least one of said protective layer and backing protective layer comprising a surfactant selected from the group consisting of anionic fluorine-containing surfactants represented by Formula FA and cationic fluorine-containing surfactants represented by Formula FK;

Formula FA

$$Rf—A_nY$$

wherein, Rf represents a fluorine substituted alkyl group or an aryl group having 3 to 30 carbon atoms, A represents a divalent group having 1 to 12 carbon atoms containing at least one bond of

$$—O—,\ —COO—,\ —\underset{\displaystyle R_1}{\overset{|}{C}}ON—\ \text{or}\ —SO_2\underset{\displaystyle R_1}{\overset{|}{N}}—,$$

wherein R_1 represents an alkyl group having 1 to 5 carbon atoms, n is 1 to 2, Y represents

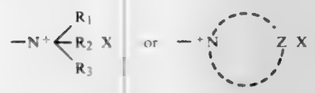
$$—COOM,\ —SO_3M—,\ —OSO_3M\ \text{or}\ —\overset{\displaystyle O}{\overset{\|}{P}}(OM)_2,$$

wherein M represents a hydrogen atom or cations of alkali metal, alkaline earth metal or quaternary ammonium salts;

Formula FK

$$(Df—W)_n$$

wherein, Df represents the n-valent group which contains at least three fluorine atoms and at least three carbon atoms, W represents



wherein R1, R2 and R3 each represents an alkyl group having 1 to 4 carbon atoms, or an alkyl group substituted by a univalent X represents a halogen atom or the R—SO-2—O— group (R is an alkyl group or an aryl group having 1 to 10 carbon atoms), Z represents an atomic group necessary to constitute a 5 or 6-membered cycle, and n is 1 or 2.

5,330,886

COLOUR PHOTOGRAPHIC RECORDING MATERIAL

Günter Helling, Odenthal, and Günter Renner, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 27, 1993, Ser. No. 9,952
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203532
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—537 6 Claims

1. Colour photographic recording material comprising a support, at least one light-sensitive silver halide emulsion layer containing a pyrazoloazole magenta coupler and at least one other layer arranged closer to the support and at least one other layer arranged further away from the support than the silver halide emulsion layer containing the pyrazoloazole magenta coupler, wherein these other layers contain gelatine and a graft polymer containing from 2 to 50 mol-% of alkylene oxide, from 50 to 98 mol-% of vinyl alcohol and form 0 to 20 mol-% of vinyl acetate.

5,330,887

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING COMBINATIONS OF MAGENTA COUPLERS AND SENSITIZING DYES

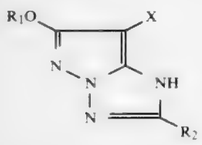
Kazunori Hasebe, and Kiyoshi Nakazyo, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 212,744, Jun. 28, 1988, abandoned. This application Jun. 23, 1992, Ser. No. 905,136
Claims priority, application Japan, Jun. 30, 1987, 62-163569
Int. Cl.[5] G03C *1/18, 7/38, 1/035*
U.S. Cl. 430—550 22 Claims

1. A silver halide color photographic material comprising a support having on one side thereof at least one silver halide emulsion layer corresponding to each of the colors cyan, magenta, and yellow in which each of the colors cyan, magenta and yellow, respectively, are formed, wherein the layer which forms a magenta color is a green sensitive layer comprising:

(A) at least one coupler represented by formula (I) or formula (II) below:

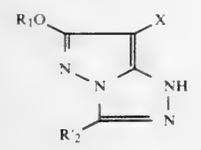
Formula (I)



wherein

R_1 represents an alkyl group, an aryl group or a heterocyclic group;
R_2 represents a hydrogen atom or a substituent group; and
X represents a hydrogen atom or a coupling elimination group;

Formula (II)

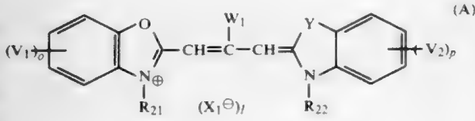


where

R_1 is defined the same as R_1 in formula (I);
R_2 represents an alkyl group, an aryl group, an alkylthio group, an arylthio group or a heterocyclic thio group; and
X is defined the same as in formula (I); and

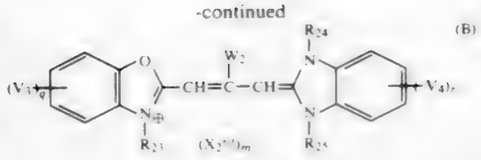
(B) silver halide grains which have been spectrally sensitized in such a way that they have a peak sensitivity between 540 nm and 555 nm by at least one spectrally sensitizing dye represented by the formulae (A), (B) and (C) below:

(A)

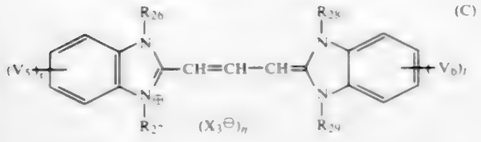


-continued

(B)



(C)



wherein

W_1 and W_2 each represents a hydrogen atom or an alkyl group,

V_1, V_2, V_3 and V_4 each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an amido group, an alkoxycarbonyl group or a cyano group,

V_1 and V_2, or V_3 and V_4 may be the same or different, and they may represent a condensed benzene ring;

V_5 and V_6 may be the same or different and each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an amido group, an alkoxycarbonyl group or a cyano group;

the subscripts o, p, q, r, s, and t each represents an integer of from 1 to 4 and when the subscripts each represents an integer of from 2 to 4, V_1's, V_2's, V_3's, or V_4's may be the same or different

R_{21}, R_{22}, R_{23}, R_{24}, R_{26}, R_{27}, R_{28} and R_{29} each represents an alkyl group or an aralkyl group, provided that at least one of R_{21} and R_{22}; at least one of R_{23}, R_{24}, and R_{25}; or at least one of R_{26}, R_{27}, R_{28}, and R_{29} represents an alkyl group or an aralkyl group which contains a sulfo group or a salt thereof, a carboxyl group or a salt thereof, or a hydroxyl group;

Y represents an oxygen atom or a sulfur atom,

X_1, X_2 and X_3 represent acid anions; and

l, m and n represent 0 or 1, and l, m and n represents 0 when each compound is an intramolecular salt;

provided that the speed at the spectral sensitivity peak wavelength of said green sensitive layer is 2.5 times or more of the speed of 500 nm and,

wherein said silver halide grains are cubic silver chlorobromide having an average silver chloride content of 99 mol % and silver bromide content of 1 mol % and having a silver bromide rich phase at the corner of the cube, wherein the average silver bromide content on the surface of the silver halide grains is about 5 mol % and the silver bromide rich phase has a maximum silver bromide content of about 50 mol %.

5,330,888

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masakazu Morigaki; Yasuhiro Yoshioka, and Nobuo Seto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,436

Claims priority, application Japan, Nov. 27, 1991, 3-335820

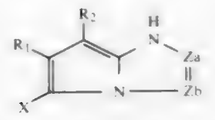
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] **G03C** *7/38, 1/34*

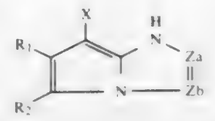
U.S. Cl. 430—551 **18 Claims**

1. A silver halide color photographic material comprising a support having thereon at least one silver halide emulsion layer, wherein the at least one silver halide emulsion layer contains at least one cyan coupler represented by the following general formula (I) or (II) and at least one lipophilic compound represented by the following general formula (A), (B) or (C):

(I)

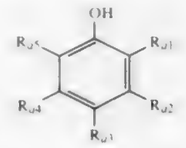


(II)



wherein Za represents $-C(R_3)=$ and Zb is $-N=$; R_1 and R_2 each represents an electron attractive group having a Hammett's substituent constant σ_p value of at least 0.20 and the sum of σ_p values of R_1 and R_2 is at least 0.65; R_3 represents a hydrogen atom or a substituent group; X represents a hydrogen atom or a group which can be eliminated by a coupling reaction with an oxidant of an aromatic primary amine color developing agent; optionally R_1, R_2, R_3 or X may be a bivalent group which forms a dimer or a polymer through said bivalent group or a homopolymer or a copolymer thereof through a high-molecular weight chain;

(A)



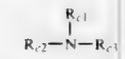
wherein R_{a1}, R_{a2}, R_{a3}, R_{a4} and R_{a5} may be the same or different and each represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, $-X_a-R_{a0}$, an aliphatic oxycarbonyl group, an aromatic oxycarbonyl group, a halogen atom, an acyl group, a sulfonyl group, a carbamoyl group, a sulfamoyl group, a cyano group, a nitro group, a sulfo group or a carboxyl group; X_a represents —O—, —S—, or $-N(R_{a01})-$; R_{a01} represents an aliphatic group, an aromatic group, a heterocyclic group, $-Si(R_{a6})(R_{a7})(R_{a8})$, $-CO(R_{a9})$, or $-SO_2(R_{a10})$; R_{a0} represents a hydrogen atom or R_{a01}; R_{a6}, R_{a7} and R_{a8} may be the same or different and each represents an aliphatic group, an aromatic group, an aliphatic oxy group or an aromatic oxy group; R_{a9} and R_{a10} each represents an aliphatic group, an aromatic group, an aliphatic amino group or an aromatic amino group; n represents 0 or 1; groups located at the ortho-position to each other among R_{a1} to R_{a5} may combine together to form a five-membered to eight-membered ring or R_{a0} and R_{a1} may combine together to form a five-membered to eight-membered ring;

(B)



wherein R_{b1} and R_{b2} may be the same or different and each represents an aliphatic group, a heterocyclic group, an unsubstituted aromatic group or an aromatic group substituted by an aliphatic group, an aromatic group, a heterocyclic group, an aliphatic oxycarbonyl group, an aromatic oxycarbonyl group, a halogen atom, an acyl group, a sulfonyl group, a carbamoyl group, a sulfamoyl group, a cyano group, a nitro group, a sulfo group, a carboxyl group or $—SR_{b0}$; R_{b0} represents an aliphatic group, an aromatic group or a heterocyclic group; m represents an integer of 0 to 2; or R_{b1} and R_{b2} may combine together to form a five-membered or eight-membered ring, and

(C)



wherein R_{c1} and R_{c2} may be the same or different and each represents an aliphatic group or a heterocyclic group; R_{c3} represents a hydrogen atom, $—CO(R_{c4})$, $—SO_2(R_{c5})$, $—SO(R_{c5})$, an oxy radical, $—Y—R_{c0}$ or R_{c1}; R_{c4} and R_{c5} may be the same or different and each represents an aliphatic group, an aromatic group, an aliphatic amino group or an aromatic amino group; Y represents —O— or $—N(R_{c01})—$; R_{c0} represents a hydrogen atom, $—CO(R_{c6})$, $SO_2(R_{c7})$ or R_{c1}; R_{c01} represents $—CO(R_{c8})$, $—SO_2(R_{c9})$, an aromatic group or R_{c1}; R_{c6}, R_{c7}, R_{c8} and R_{c9} may be the same or different and each represents an aliphatic oxy group, an aromatic oxy group or R_{c4}; at least two of the groups represented by R_{c1} to R_{c3} may combine together to form a five-membered to eight-membered ring, and R_{c0} and R_{c01} may combine together to form a five-membered to eight-membered ring.

5,330,889

PROCESS AND MEDIUM FOR IDENTIFICATION OF BACTERIA OF THE LISTERIA GENUS

Daniel Monget, Saint-Sorlin en Bugey, France, assignor to Bio Merieux, France

Filed Jan. 13, 1992, Ser. No. 819,876

Claims priority, application France, Jan. 16, 1991, 91 00650

Int. Cl.[5] **C12Q** *1/04, 1/37;* **G01N** *21/75*

U.S. Cl. 435—34 **18 Claims**

1. A process of bacteriological analysis in which the sample to be analyzed is brought into contact with an identification medium comprising a chromogenic or fluorigenic substrate capable of being hydrolyzed in the presence of at least one enzyme associated with the metabolism of at least one bacterial species, wherein, in order to differentiate the *monocytogenes* species in a sample which may contain bacteria of the Listeria genus, a glycine aminopeptidase substrate is introduced into the identification medium.

5,330,890

Patent Not Issued For This Number

5,330,891

METHOD FOR DETECTION OF A NUCLEIC ACID USING PARTICULATE REAGENT HAVING POLYOXYALKYLENE SIDE CHAINS

Richard C. Sutton, and Marsha B. Oenick, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 558,272, Jul. 25, 1990, Pat. No. 5,200,315. This application Oct. 30, 1992, Ser. No. 968,936

Int. Cl.[5] **C12Q** *1/70;* **G01N** *21/00;* **C08L** *33/00;* **C08F** *12/16*

U.S. Cl. 435—5 **9 Claims**

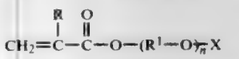
1. A method for the detection of a nucleic acid comprising:

A. forming a water-insoluble hybridization product between said nucleic acid of interest, with a reagent comprising:

(I) a water-insoluble nonporous particle whose outer surface comprises a copolymer having recurring units derived by polymerization from:

(a) at least about 0.5 mole % of one or more ethylenically unsaturated polymerizable monomers having reactive groups which are, directly or indirectly, capable of reaction with an oligonucleotide having an amino or sulfhydryl group,

(b) from about 0.1 to about 20 mole % of one or more ethylenically unsaturated polymerizable monomers which are represented by the structure:



(C) wherein R is hydrogen or methyl, R^1 is alkylene having 2 to 4 carbon atoms, X is hydrogen or acyl and n is 2 to 30, and

(c) from about 60 to about 99.4 mole % of one or more ethylenically unsaturated oleophilic monomers which provide hydrophobicity to said copolymer, said monomers being selected from the group consisting of vinyl aromatics, acrylic end methacrylic acid esters and amides, butadiene, acrylonitrile, vinyl acetate, vinylbenzyl acetate, vinyl bromide, vinylidene chloride and crosslinkable monomers, and

(II) said oligonucleotide covalently attached to said particle through said reactive groups, said oligonucleotide being complementary to said nucleic acid of interest, and

B. detecting the presence of said hybridization product as an indication of the presence or amount of said nucleic acid of interest.

5,330,892

MCC GENE (MUTATED IN COLORECTAL CANCER) USED FOR DIAGNOSIS OF CANCER IN HUMANS

Bert Vogelstein; Kenneth W. Kinzler, both of Baltimore, Md.; Raymond White, Salt Lake City, Utah, and Yusuke Nakamura, Tokyo, Japan, assignors to The Johns Hopkins University, Baltimore, Md.; University of Utah, Salt Lake City, Utah and The Cancer Institute, Japan

Filed Mar. 13, 1991, Ser. No. 670,611

Int. Cl.[5] **C12Q** *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **30 Claims**

1. A method of diagnosing a neoplastic colorectal tissue of a human, comprising:

(a) obtaining a colorectal tissue sample of a human;

(b) comparing MCC gene coding sequences or MCC mRNA molecules in said tissue sample to wild-type MCC gene coding sequences or MCC mRNA molecules, an observed alteration in MCC gene coding sequence or mRNA molecules in said tissue sample as compared to wild-type indicating neoplasia of the tissue.

5,330,893

USE OF SUPEROXIDE DISMUTASE IN SPECIMEN DILUENT

Adrienne L. Gilbert, Buffalo Grove; James L. Stewart, Gurnee; Sarah L. Kidd, Chicago, and George J. Dawson, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 647,374, Jan. 25, 1991, abandoned. This application May 10, 1993, Ser. No. 59,868

Int. Cl.[5] **C12Q** *1/26;* **C12N** *9/02*

U.S. Cl. 435—7.1 **9 Claims**

1. In a method for detecting antibodies in a specimen which comprises contacting a diluted specimen with at least one recombinant antigen expressed as a fusion protein with superoxide dismutase, the improvement comprising mixing said specimen with a diluent comprising superoxide dismutase.

5,330,894

ANTI-PROCOLLAGENASE MONOCLONAL ANTIBODIES AND A METHOD FOR THE ASSAY OF PROCOLLAGENASE UTILIZING THEREOF

Hiroshi Ohmoto, Osaka; Shintaro Inoue, Odawara, and Seiichi Iwamoto, Kobe, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

PCT No. PCT/JP91/00144, § 371 Date Sep. 27, 1991, § 102(e) Date Sep. 27, 1991, PCT Pub. No. WO91/12333, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 7, 1991, Ser. No. 768,866

Claims priority, application Japan, Feb. 7, 1990, 2-28098

Int. Cl.[5] **G01N** *33/573*

U.S. Cl. 435—7.4 **2 Claims**

1. In a sandwich enzyme linked immunosorbent assay for determining the amount of procollagenase present in a human body fluid comprising the steps of contacting a sample of the

body fluid with a first antibody immobilized on a solid phase and a second antibody labeled with an enzyme to form a complex, said first and second antibodies binding specifically to said procollagenase with a molecular weight of 52,000, whose corresponding collagenase cleaves Type I, Type II and Type III collagens, and determining the amount of said labeled second antibody bound to said complex, the improvement wherein said first and second antibodies are both a monoclonal antibody of the immunoglobulin class and subclass of G_1 having an L-chain of the Kappa isotype, and have a 50% inhibitory concentration of less than 10 ng/ml against said corresponding collagenase; said first and second antibodies recognize different epitopes of the procollagenase from each other; and wherein said first antibody is produced from a hybridoma of the accession number FERM BP-2701 and said second antibody is produced from a hybridoma of the accession number FERM BP-2700.

5,330,895

DETECTION REAGENT AND ANTIBODY SPECIFIC FOR DOPAMINE RELEASING PROTEIN

Victor D. Ramirez, 1519 Waverly Dr., Champaign, Ill. 61820, and Frank Marcus, 43 Remington Ct., Danville, Calif. 94526

Division of Ser. No. 420,830, Oct. 12, 1989, Pat. No. 5,149,786. This application Sep. 17, 1992, Ser. No. 946,768

Int. Cl.[5] C07K *3/02, 15/28;* G01N *33/532, 33/563*

U.S. Cl. 435—7.21 2 Claims

1. An immunoassay kit for quantifying the concentration of dopamine releasing protein within a sample, which kit comprises:

a first antibody or antibody fragment specific for dopamine releasing protein, wherein said dopamine releasing protein is capable of selectively stimulating the dose-dependent release of dopamine from striatal tissue; and

detecting means for detecting binding of dopamine releasing protein by said antibody or antibody fragment.

5,330,896

MONOCLONAL ANTIBODIES TO AN AUTOCRINE GROWTH FACTOR ANTIGEN THAT BINDS TO ACTIVATED LYMPHOCYTES AND CANCER CELLS

Ronald J. Billing, 9883 Pacific Heights Blvd.; Suite G, San Diego, Calif. 92121

Continuation-in-part of Ser. No. 115,739, Oct. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 846,828, Mar. 31, 1986, abandoned, and a continuation of Ser. No. 469,608, Feb. 24, 1983, abandoned. This application Jan. 10, 1990, Ser. No. 463,087

Int. Cl.[5] C07K *15/00;* G01N *33/574*

U.S. Cl. 435—7.23 3 Claims

1. A partially purified antigen of vertebrate source that has the following properties

(a) it functions as an autocrine growth factor produced by tumor cells and activated lymphocytes,

(b) it binds to the surface membrane of tumor cells and stimulates the growth of these cells and cells of the lymphoid series,

(c) it is present on the cell membrane and within the cytoplasm of tumor cells and activated lymphocytes,

(d) it is present in the cytoplasm of unstimulated normal peripheral blood lymphocytes but when these cells are stimulated by antigens or by mitogens, said antigen appears also on the cell membrane,

(e) it is present on lymphocytes activated in vitro by mitogens,

(f) it is present in the medium from growing cancer cells and in the serum of patients with cancer and diseases in which activated lymphocytes are present,

(g) its molecular weight is approximately 15,000 daltons,

(h) is capable of binding to CBL1 monoclonal antibody which is produced by the hybridoma cell line having the ATCC number HB8214

5,330,897

SIALIC ACID BINDING LECTIN OF PROTOZOAN ORIGIN

Frank F. Pindak; David J. Wells, both of Mobile, Ala., and Pavol Demeš, Bratislava, Czechoslovakia, assignors to South Alabama Medical Science Foundation, Mobile, Ala.

Continuation-in-part of Ser. No. 626,111, Dec. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 344,923, Apr. 27, 1989, abandoned. This application May 19, 1992, Ser. No. 885,729

Int. Cl.[5] G01N *33/574, 33/566, 33/567*

U.S. Cl. 435—7.23 10 Claims

1. A method of identifying a lectin-binding region in a histological preparation comprising the steps of:

(a) incubating a tissue section or cell preparation with a sialic acid-binding lectin isolated from a species belonging to the genus Tritrichomonas, substantially free of natural contaminants, or a polypeptide subset of the intact lectin molecule which retains the function of binding to sialic acid, substantially free of natural contaminants;

(b) washing said tissue section or cell preparation to remove unbound material;

(c) additionally incubating said tissue section or cell preparation with detectably labeled lectin-binding material; and

(d) detecting bound detectably labeled lectin-binding material to visualize tissue- or cell-bound lectin.

5,330,898

METHOD FOR THE VERY RAPID DETECTION OF POLYAMINES

David Bar-Or, Englewood, and Clive Solomons, Denver, both of Colo., assignors to Diagnostic Markers, Inc., Englewood, Colo.

Filed Oct. 3, 1991, Ser. No. 770,519

Claims priority, application Israel, Feb. 20, 1991, 97318

Int. Cl.[5] C12Q *1/04, 1/06;* G01N *21/78*

U.S. Cl. 435—29 16 Claims

1. A method for detecting the presence of a polyamine in a sample in which a blue color forms when the polyamine is present and a green color forms when the polyamine is absent, comprising the step of:

contacting an aqueous sample containing a polyamine with a mixture of dimethyl sulfoxide and indigo carmine at an alkaline pH, wherein said blue color forms within five minutes indicating the presence of the polyamine.

5,330,899

CALIBRATED INOCULATION ASSEMBLY AND METHOD OF PRESERVING STERILITY

Donald H. DeVaughn, San Francisco, Calif., assignor to Bio-Plas, Inc., San Francisco, Calif.

Filed Oct. 13, 1992, Ser. No. 959,617

Int. Cl.[5] C12Q *1/24*

U.S. Cl. 435—30 43 Claims

1. An inoculation kit assembly comprising:

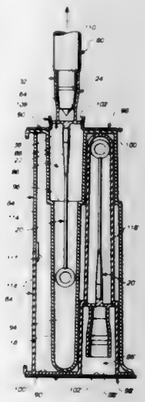
an inoculation device including an elongated member having an inoculation end and an opposed gripping end;

container means including a cavity with an opening into said cavity, said cavity being dimensioned to receive said inoculation device, said inoculation device being positioned in said cavity for grasping of said gripping end through said opening;

sheet cover means positioned across and sealing said opening and retaining said inoculation device in said cavity, said cover means having an inner central surface facing said cavity and an opposite facing unsterile outer surface; and

handling tool means capable of telescopic engagement with said gripping end of said inoculation device through said opening for releasable grasping of said gripping end;

said cavity, said inoculation device and said inner surface facing said cavity all being sterile, said cover means being formed of a deformable material capable of being punctured by said handling tool from said outer surface and said cover means being spaced from said inoculation device such that said material is displaced by said handling tool into said cavity during grasping of said gripping end to a position in said cavity for unimpeded grasping of said



gripping end and said material is displaced outwardly away from said cavity during removal of said inoculation device through said opening while maintaining said inoculation device out of contact with unsterile portions of said container means and said cover means.

5,330,900

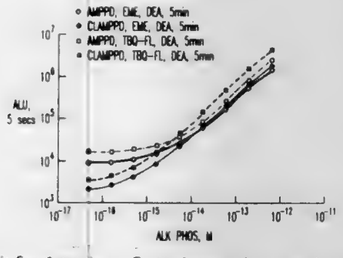
CHEMILUMINESCENT 3-(SUBSTITUTED ADAMANT-2'-YLIDENE) 1,2-DIOXETANES

Irena Y. Bronstein, Newton; Brooks Edwards, Cambridge, and Rouh-Rong Juo, Alston, all of Mass., assignors to Tropix, Inc., Bedford, Mass.

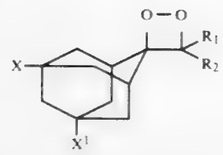
Division of Ser. No. 574,786, Aug. 30, 1990, which is a continuation-in-part of Ser. No. 559,152, Jul. 25, 1990, abandoned, which is a division of Ser. No. 367,772, Jul. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 140,197, Dec. 31, 1987, abandoned. This application Dec. 12, 1991, Ser. No. 806,928

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 35 Claims



1. A kit for detecting a first substance in a sample, comprising an enzymatically cleavable chemiluminescent 1,2-dioxetane compound capable of producing light energy when decomposed, substantially stable at room temperature before a bond by which an enzymatically cleavable labile substituent thereof is intentionally cleaved, represented by the formula:

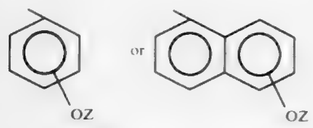


wherein:

X and X^1 each represent, individually, hydrogen, a hydroxyl group, a halo substituent, a hydroxy (lower) alkyl group, a halo (lower) alkyl group, a phenyl group, a halophenyl group, an alkoxyphenyl group, a hydroxyalkoxy group, a cyano group or an amide group, with at least one of X and X^1 being other than hydrogen; and

R_1 is $—O(CH_2)_nCH_3$, n=0–2 and

R_2 is



wherein Z is an enzymatically cleavable labile group selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-2,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, α-D-glucoside, β-D-glucoside, α-D-mannoside, β-D-mannoside, β-D-fructofuranoside, β-D-glucosiduronate, p-toluenesulfonyl-L-arginine ester, and p-toluenesulfonyl-L-arginine amide; and an enzyme capable of cleaving said enzymatically cleavable labile group of said 1,2-dioxetane compound.

5,330,901

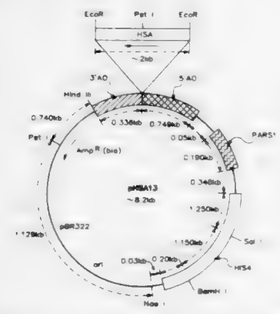
EXPRESSION OF HUMAN SERUM ALBUMIN IN *PICHIA PASTORIS*

William D. Prevatt, and Kotikanyadan Sreekrishna, both of Bartlesville, Okla., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Apr. 25, 1991, Ser. No. 691,079

Int. Cl.[5] C12P *21/02;* C12N *1/19*

U.S. Cl. 435—69.6 16 Claims



16. An improved process for the secretion of HSA in transformed cells of *Pichia pastoris* GS115 comprising:

(a) cultivating in a fermentation broth cells of *Pichia pastoris* GS115 which have been transformed with a linear integrative site-specific vector containing the following serial arrangement: a first insertable DNA fragment 5' AOX1 Promoter at least one expression cassette containing a

HSA structural gene encoding a signal sequence and a mature HSA protein operably linked to a *Pichia pastoris* AOX1 regulatory region and an AOX1 termination sequence, at least one marker gene and a second insertable DNA fragment 3' to AOX1 termination sequence, under conditions suitable for sustaining the viability of said transformed cells of *Pichia pastoris* GS115, under suitable conditions for the expression of said HSA by said cells of *Pichia pastoris* GS115, and

(b) maintaining the pH of said fermentation broth at a pH in the range of from about 5.7 to about 6.4 contemporaneously with the expression of HSA protein.

5,330,902

LEADER SEQUENCES FOR THE PRODUCTION OF RECOMBINANT PROTEINS

Peter C. Keck, Millbury; Charles M. Cohen, Medway; James S. Huston, Newton, and Richard J. Ridge, Acton, all of Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Division of Ser. No. 857,684, Mar. 25, 1992, Pat. No. 5,215,896, which is a continuation of Ser. No. 731,303, Jul. 16, 1991, abandoned, which is a continuation of Ser. No. 28,500, Mar. 20, 1987, abandoned. This application Jan. 15, 1993, Ser. No. 3,989

Int. Cl.[5] **C12N** *15/62, 15/09;* **C07K** *3/24*

U.S. Cl. 435—69.7 **10 Claims**

1. A method of promoting the formation of inclusion bodies comprising a target polypeptide within a cellular host which expresses said target polypeptide, said method comprising the steps of

ligating in reading sequence a pendant DNA to a DNA encoding said target polypeptide to produce a fused DNA, said pendant DNA comprising a sequence of nucleotides which encodes a proline-free alpha helical polypeptide having a central axis and opposed hydrophilic and hydrophobic lateral surfaces, the hydrophobic surface comprising axially proximate nonpolar amino acid residues, the hydrophilic surface comprising axially proximate charged amino acid residues, said alpha helical polypeptide being of the structure:

$(N—C—S—N—S—CN)_b$

wherein b is an integer from 1 to 30, N comprises a member selected from the group consisting of nonpolar amino acid residues, and the Ns together define said hydrophobic surface, C comprises a member selected from the group consisting of charged amino acid residues, and the Cs together define said hydrophilic surface, S comprises a member selected from the group consisting of hydrophilic, neutral amino acid residues, and wherein up to two of said N, C and S residues can independently be histidine, said alpha helical polypeptide being further characterized by formation of insoluble aggregates within said cellular host; and

expressing said fused DNA in said cellular host to produce insoluble aggregates comprising a fused protein encoded by said fused DNA.

5,330,903

METHOD FOR PRODUCING CAPSULAR POLYSACCHARIDES

Roger G. Kern, Pasadena; Gene R. Petersen, Pomona, and Gil F. Richards, Duarte, all of Calif., assignors to Calfornia Institute of Technology (JPL), Pasadena, Calif.

Filed Nov. 27, 1991, Ser. No. 799,419

Int. Cl.[5] **C12P** *19/04*

U.S. Cl. 435—101 **9 Claims**

1. A method for producing an isolated capsular polysaccharide comprising the steps of:

(a) providing a wild type bacterial strain that produces a capsular polysaccharide and a bacteriophage that degrades at least one capsular polysaccharide produced by the wild type bacterial strain;

(b) selecting phage resistant mutants of the bacterial strain that produce a capsular polysaccharide;

(c) propagating the mutants to obtain a culture thereof; and;

(d) harvesting the altering capsular polysaccharides of the mutants

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5,330,904

METHOD FOR MAMMALIAN CELL TRANSFECTION USING 25-HYDROXYCHOLESTEROL

David H. Spear, Playa del Rey, and Peter A. Edwards, Los Angeles, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jun. 17, 1992, Ser. No. 899,745

Int. Cl.[5] **C12N** *15/00, 1/00, 1/14;* **C12Q** *1/68*

U.S. Cl. 435—172.3 **10 Claims**

10. A process for transfecting a mammalian cell with exogenous DNA comprising:

growing a mammalian cell culture in a medium supplemented with fetal bovine serum;

removing the medium and supplement from the cell;

adding a transfection medium supplemented with 10%, by volume, of a serum and 2.5 μg/ml 25-hydroxycholesterol to a mammalian cell culture, wherein the serum is selected from the group consisting of human, newborn calf, calf, horse, lamb, and pig sera;

adding a calcium phosphate-DNA precipitate solution to the transfection medium over the cell to form a calcium phosphate-DNA precipitate/medium mixture;

incubating the cell in the presence of the calcium phosphate-DNA precipitate/medium mixture at 35° C. to 37° C. in an atmosphere of 3% to 5%, by volume, carbon dioxide for less than 6 hours;

washing the cell; and

incubating the cell in the presence of medium supplemented with fetal bovine serum at 37° C. in an atmosphere of 5%, by volume, carbon dioxide.

5,330,905

METHOD FOR ISOLATING AN ENZYME FROM A FERMENTATION BROTH

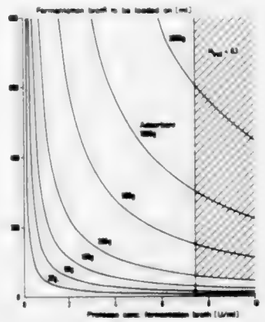
Maria-Regina Kula, Niederzier-Hambach, and Martin-Roger Grote, Lunen, both of Fed. Rep. of Germany, assignors to Forschungzentrum Juelich GmbH, Juelich, Fed. Rep. of Germany

Filed Aug. 27, 1991, Ser. No. 750,305

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1990, 4027290

Int. Cl.[5] **C12N** *9/00, 9/28, 9/32, 9/50*

U.S. Cl. 435—183 **20 Claims**



1. A method for isolating an enzyme from a microbial cell-containing fermentation broth in which the enzyme is produced, comprising the steps of:

(a) mixing in a container said broth with a particulate material capable of binding the enzyme, to form a mixture;

(b) fluidizing the mixture resulting from step (a) by passing an ascending stream of inert gas through said mixture at a rate effective to mix the contents of said mixture in said container so that said enzyme in said broth binds to said particulate material, said stream of gas evaporating said mixture thereby increasing the concentration of said broth to enhance binding of said enzyme to the particulate material;

(c) removing said broth from said mixture, leaving said enzyme bound to said particulate material; and

(d) recovering bound enzyme from said particulate material by elution.

5,330,906

MUTANT LUCIFERASE OF A FIREFLY

Naoki Kajiyama, and Eiichi Nakano, both of Noda, Japan, assignors to Kikkoman Corporation, Japan

Division of Ser. No. 675,211, Mar. 26, 1991, Pat. No. 5,219,737. This application Jun. 15, 1993, Ser. No. 76,042

Claims priority, application Japan, Mar. 27, 1990, 2-75696; Oct. 30, 1990, 2-294258

Int. Cl.[5] **C12N** *9/02, 15/53, 15/70*

U.S. Cl. 435—189 **5 Claims**

1. A mutant luciferase having the amino acid sequence of the luciferase of *Luciola cruciata* in which one of the following changes appears: serine is replaced by asparagine at amino acid 286, glycine is replaced by serine at amino acid 326, histidine is replaced by tyrosine at amino acid 433 or proline is replaced by serine at amino acid 452.

5,330,907

METHOD OF PREPARING ACTIVATED PROTEIN C

Anton Philapitsch, Ebenfurt, and Hans P. Schwarz, Vienna, both of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed Jun. 17, 1992, Ser. No. 899,869

Claims priority, application Austria, Jun. 20, 1991, 1238/91

Int. Cl.[5] **C12N** *9/00*

U.S. Cl. 435—217 **7 Claims**

1. A method of preparing activated protein C comprising activating protein C with plasmin, wherein said activation is carried out at a protein C/plasmin ratio of between 4,000 and 40,000 μg/CU.

5,330,908

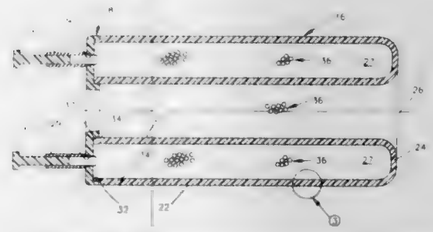
HIGH DENSITY CELL CULTURE SYSTEM

Glenn F. Spaulding, Houston, Tex., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 23, 1992, Ser. No. 996,263

Int. Cl.[5] **C12N** *5/02;* **C12M** *1/24, 1/04, 1/10*

U.S. Cl. 435—240.24 **16 Claims**



1. A method for oxygenating mammalian cells in a culture medium comprising the steps of:

providing an annular culture chamber defined between inner and outer cylindrically formed rigid walls each having gas permeable perforations,

filling the annular culture chamber with a culture media containing microcarrier beads and mammalian cells to have a zero head space and disposing the annular culture chamber on a roller bottle drive means in an incubator for rotation about a horizontal axis of the annular culture chamber,

rotating the annular culture chamber about its horizontal axis at a rotational speed adequate to suspend the microcarrier beads in the culture media for cell growth,

oxygenating the culture media through the inner and outer cylindrically formed walls of said annular culture chamber, and

adding fresh culture media and withdrawing spent culture media from the annular culture chamber to maintain cell growth during incubation.

5,330,909

MONOCLONAL ANTIBODY SPECIFICALLY RECOGNIZING N-TERMINAL PORTION OF HUMAN CALCITONIN

Nobuhiko Yamashita, Takatsuki; Manabu Nakamoto, Nara; Ryoichi Okura, Nishinomiya, and Isao Matsushita, Ikoma, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Oct. 8, 1992, Ser. No. 958,083

Claims priority, application Japan, Oct. 11, 1991, 3-263587

Int. Cl.[5] **C07K** *15/28;* **C12N** *5/20;* **C12P** *21/08*

U.S. Cl. 435—240.27 **4 Claims**

3. A hybridoma OCT1 having accession number FERM BP-4001.

5,330,910

APOLIPOPROTEIN B-SPECIFIC MONOCLONAL ANTIBODIES PRODUCED BY TWO NOVEL HYBRIDOMAS

Steven Young; Joseph L. Witztum, and Linda K Curtiss, all of San Diego, Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation of Ser. No. 893,659, Aug. 6, 1986, abandoned. This application Sep. 27, 1989, Ser. No. 415,432

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] **C12N** *5/12;* **C07K** *15/28*

U.S. Cl. 435—240.27 **6 Claims**

2. An antibody that (a) immunoreacts with apoprotein B-100, and (b) has an antibody combining site secreted by the hybridoma having the ATCC accession number HB 8746.

5,330,911

SURFACES HAVING DESIRABLE CELL ADHESIVE EFFECTS

Jeffrey A. Hubbell; Stephen P. Massia, and Neil P. Desai, all of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 414,144, Sep. 28, 1989, Pat. No. 5,278,063. This application May 21, 1990, Ser. No. 527,198

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[5] **C12N** *5/06;* **C07K** *5/10, 7/06*

U.S. Cl. 435—240.243 **57 Claims**

22. A method of derivatizing a substrate surface comprising:

chemically derivatizing a surface with GREDVY, GRGD or GYIGSR peptide, wherein said peptide is covalently attached through an N-terminal amine to a hydroxyl group on the substrate surface; and

plating cells on the peptide derivatized surface,

wherein the peptide is at a concentration of about 0.001 picomoles/cm^2 to about 50 picomoles/cm^2, wherein said substrate supports cell focal adhesion formation and cell spreading.

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5,330,912

PRODUCTION OF *TRICHODERMA HARZIANUM* RIFA CMI CC NO. 333646

Mary J. Toet, and Amanda Somers, both of Harare, Zimbabwe, assignors to Agricura (Private) Limited, Zimbabwe

Filed Jun. 25, 1992, Ser. No. 904,351
Claims priority, application Zimbabwe, Jul. 1, 1991, 87/91
Int. Cl.[5] C12N *1/14*
U.S. Cl. 435—254.1 **3 Claims**

1. A method for producing *Trichoderma harzianum* Rifa strain CMI CC No. 333646 in a form suitable for adding directly to soil to protect plants from pathogenic fungi comprising the steps of:

1) preparing a carrier-containing culture growth medium comprising a carrier, water and molasses, said carrier being selected from the group consisting of spent grain, crushed maize cobs, bran and cellulose;

2) sterilizing the carrier-containing culture growth medium by a Tyndalisation procedure comprising the steps of

a) spreading the carrier-containing culture growth medium over trays,

b) placing the trays in a heating chamber and

c) heating said chamber to a temperature of from about 130° C. to about 140° C. for about 24 hours and

d) cooling for about 24 hours and

e) reheating to about 130° C. to about 140° C. for about 24 hours;

3) inoculating the sterilized carrier-containing culture growth medium with *Trichoderma harzianum* Rifa strain CMI CC No. 333646 spores;

4) incubating the inoculated and sterilized carrier-containing culture growth medium at about 28° C. for about 21 days to grow the *Trichoderma harzianum* Rifa CMI CC No 333646 to form an incubated product; and

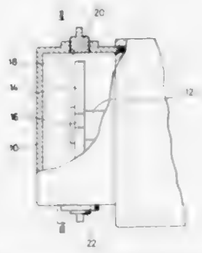
5) drying the incubated product in a sterile air stream at ambient temperature to obtain said *Trichoderma harzianum* Rifa strain CMI CC No. 333646 for adding directly to soil to be protected.

5,330,913

METHOD OF DISRUPTING THE CHLORELLA CELL WALL BY CELL RUPTURE

Hideo Nakayama, Daiichi Sun Chlorella Building 868, Monzen-cho, Hanayamachi-dori, Horikawa Nishiiru Shimogyo-ku, Kyoto-shi 600, Japan

Filed Sep. 2, 1992, Ser. No. 939,264
Claims priority, application Japan, Sep. 11, 1991, 3-261156
Int. Cl.[5] C12N *1/06*
U.S. Cl. 435—259 **1 Claim**



1. A method for disrupting CHLORELLA cell walls by cell rupture comprising:

(a) placing rigid spheres having a diameter of about 500 to about 800 μm in a cylindrical tight-sealable container having a notched impeller blade therein to a volume filling from 80 to 85% of the capacity of the tight-sealable container;

wherein 70 to 80% of said spheres have diameters of about 500 μm and a remainder of said spheres have a diameter of about 800 μm;

said notched impeller blade has a diameter of 80 to 90% of an inside diameter of said cylindrical tight-sealable container,

said notched impeller blade has a thickness of about 15% to about 25% of an inside length of said tight-sealable container;

(b) adding an aqueous suspension of not more than 30% by dry weight CHLORELLA cells to the tight-sealable container in an amount substantially filling the remainder of the capacity of said tight-sealable container;

(c) sealing said tight-sealable container; and

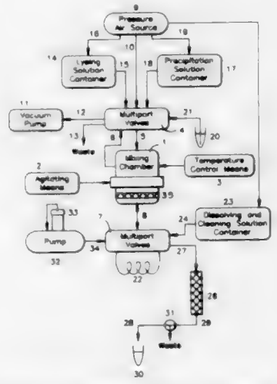
(d) rotating said notched impeller blade at a peripheral speed of 10 to 20 m/s.

5,330,914

APPARATUS AND METHOD FOR AUTOMATED PURIFICATION OF EXTRA-CHROMO-SOMAL DNA FROM A CELL SUSPENSION IN A CONTAINER

Mathias Uhlen, Upsala, and Tomas Moks, Täby, both of Sweden, assignors to CEMU Bioteknik AB, Upsala, Sweden

PCT No. PCT/SE89/00144, § 371 Date Nov. 26, 1990, § 102(e) Date Nov. 26, 1990, PCT Pub. No. WO89/09265, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 17, 1989, Ser. No. 603,717
Claims priority, application Sweden, Mar. 24, 1988, 8801098
Int. Cl.[5] E12N *1/08*; C12M *1/36*; C07H *15/12*
U.S. Cl. 435—270 **10 Claims**



4. An apparatus for separating and recovering plasmid DNA from bacterial cells which contain plasmid DNA and chromosomal DNA; said apparatus comprising:

a) a mixing chamber having a plurality of inlet and outlet ports for the passage of fluid therethrough and means for controlling the temperature of said chamber;

b) an agitator in said mixing chamber;

c) a first multi-port set of valves having a plurality of inlet and outlet ports;

d) a lysing solution container and a conduit which connects said lysing solution container to an inlet port of said first multi-port set of valves for the passage of lysing solution therethrough;

e) a precipitating solution container and a conduit which connects said precipitating solution container to an inlet port of said first multi-port set of valves for the passage of precipitating solution therethrough;

f) a vacuum pump which is connected to an outlet port of said first multi-port set of valves;

g) a bacterial cell suspension container and a conduit which connects said bacterial cell suspension container to an inlet port of said first multi-port set of valves for the passage of bacterial cell suspension therethrough;

h) a conduit which connects an outlet port of said first multi-port set of valves to an inlet port of said mixing chamber for the passage of lysing solution, precipitating solution and bacterial cell suspension into said mixing chamber;

i) a waste conduit connected to an outlet port of said first multi-port set of valves for the elimination of waste therefrom;

j) a second multi-port set of valves having a plurality of inlet and outlet ports for the passage of fluid therethrough;

k) a conduit which connects an outlet port of said mixing chamber to an inlet port of said second multi-port set of valves for the passage of fluid therethrough and means for filtering precipitated chromosomal DNA, protein and cellular debris from said fluid which passes therethrough for the production of a filtered fluid which contains dissolved plasmid DNA in the substantial absence of chromosomal DNA, protein and cellular debris;

l) a sample collector for collecting the filtered fluid containing the dissolved plasmid DNA; said sample collector having an inlet and an outlet, set inlet of the collector being connected to an outlet port of said second multi-port set of valves for receiving said filtered fluid and said outlet of the colletor being connected to an inlet port of said second multi-port set of valves for returning said filtered fluid to said second multi-port set of valves;

m) means for recovering the plasmid DNA, said means for recovering the plasmid DNA being connected by a conduit to an outlet port of said second multi-port set of valves for the passage of filtered fluid from the sample collector to the plasmid DNA recovery means via the second multi-port set of valves;

n) a dissolving and cleaning solution container and a conduit which connects said dissolving and cleaning solution container to an inlet port of said second multi-port set of valves for the passage of dissolving and cleaning solution therethrough;

o) a conduit which connects the second multi-port set of valves with the mixing chamber for passing the dissolving and cleaning solution from the second multi-port set of valves through said filter means and into the mixing chamber; and

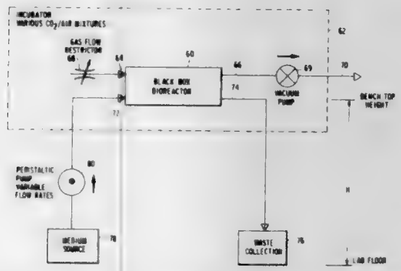
p) a conduit which connects an outlet port of said mixing chamber to an inlet port of said first multi-port set of valves for drawing bacterial cell suspension into said mixing chamber by action of said vacuum pump and for the elimination of the dissolving and cleaning solution through the waste conduit via the first multi-port set of valves.

5,330,915

PRESSURE CONTROL SYSTEM FOR A BIOREACTOR

John R. Wilson, Minneapolis, Minn., and Ewald Kowol, Fernwald, Fed. Rep. of Germany, assignors to Endotronics, Inc., Minneapolis, Minn. and Tecnomara Deutschland GmbH, Fernwald, Fed. Rep. of Germany

Filed Oct. 18, 1991, Ser. No. 779,082
Int. Cl.[5] C12M *1/36, 1/04, 3/04*
U.S. Cl. 435—289 **6 Claims**



1. A pressure control system for a bioreactor comprising:

a bioreactor having a gas space and a cell culture space therein separated by a hydrophobic gas permeable membrane which is impermeable to cells and liquids;

gas supply means and gas removal means connected to a gas inlet and a gas outlet, respectively, of said gas space in said bioreactor;

liquid nutrient media supply means and liquid waste removal means connected to said bioreactor separately from said gas supply means and gas removal means; and

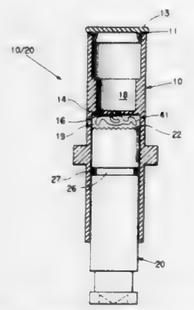
gas pressure control means for controlling the gas pressure in said gas space and liquid nutrient media pressure control means for controlling pressure in said cell culture space being operatively connected to said bioreactor to maintain a higher pressure in said cell culture space than in said gas space to prevent displacement of the liquid media in the cell culture space.

5,330,916

CELLULAR COMPONENT EXTRACTION APPARATUS AND DISPOSABLE VESSEL USEFUL THEREIN

John G. Williams, Landenberg, Pa., and Louis G. Rosanio, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 543,928, Jun. 26, 1990, Pat. No. 5,114,858. This application Feb. 3, 1992, Ser. No. 830,389
Int. Cl.[5] C12M *1/12, 1/24, 1/36*
U.S. Cl. 435—311 **6 Claims**



1. A device useful for storing, transporting and processing a biological sample from which solvent soluble components in a fluid are extracted, comprising:

an extraction vessel having an upper chamber and a lower chamber, the chambers being separated by a radially extending wall having an upper surface and a lower surface and means for allowing fluid to pass therethrough,

a plunger having an end surface for insertion into the lower chamber; and

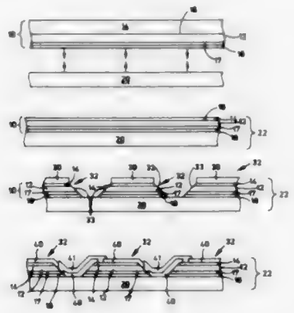
a plurality of serrations formed on the lower surface of the radially extending wall and on the inserted opposing end surface of the plunger for disrupting a biological sample upon relative movement between the plunger and the extraction vessel, whereby solvent soluble components are released from the biological sample.

5,330,917
TEST SWAB DEVICE AND METHOD OF DETECTING LEAD, MERCURY, ARSENIC, AND BISMUTH
Marcia J. Stone, Wellesley, Mass., assignor to HybriVet Systems, Inc., Natick, Mass.
Continuation-in-part of Ser. No. 709,981, Jun. 4, 1991, abandoned, which is a continuation of Ser. No. 499,488, May 7, 1990, Pat. No. 5,039,618, which is a continuation-in-part of Ser. No. 305,221, Feb. 2, 1989, abandoned. This application Aug. 27, 1991, Ser. No. 750,312
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] G01N *33/20. 21/78*
U.S. Cl. 436—73 **37 Claims**



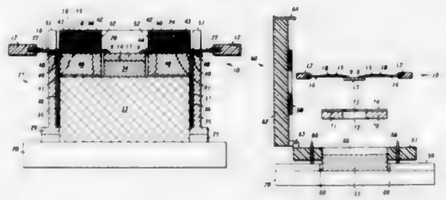
1. A method of testing for a metal on a surface with a reagent that reacts with the metal, comprising the steps of:
providing a swab stick having a stem and an absorbent ball of material at one end of the stem, wherein the absorbent ball of material is impregnated with the reagent;
contacting the impregnated absorbent ball of material with the surface; and
detecting the presence of the metal by inspecting the impregnated ball of material for a reaction between the metal and the reagent;
wherein the metal tested for is mercury.

5,330,918
METHOD OF FORMING A HIGH VOLTAGE SILICON-ON-SAPPHIRE PHOTOCELL ARRAY
Wadad B. Dubbelday, Spring Valley; Larry D. Flesner, and George P. Imthurn, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 31, 1992, Ser. No. 938,920
Int. Cl.[5] H01L *31/18*
U.S. Cl. 437—2 **7 Claims**



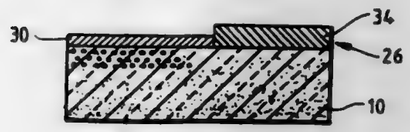
1. A method for forming a multi-cell photovoltaic circuit on an insulating substrate, comprising the steps of:
forming a first silicon layer having a first concentration of a first dopant with a first polarity on a silicon wafer having a second concentration of a second dopant with a second polarity opposite said first polarity to create a photovoltaic junction;
forming a second silicon layer on said first silicon layer, said second silicon layer having a third concentration of a third dopant having said first polarity, where said third concentration is greater than said first concentration of said first dopant;
forming a silicon dioxide layer on said second silicon layer by thermal oxidation;
bonding an insulating substrate to said silicon dioxide layer to create a bonded wafer;
thinning said silicon wafer to form a thinned silicon layer;
etching said bonded wafer to form a plurality of separate photodiodes having sloped sidewalls and to expose selected regions of said insulating substrate;
forming an insulting silicon dioxide layer on said selected regions of said insulating substrate and on said separate photodiodes;
exposing selected regions of said thinned silicon layer and regions of said second silicon layer of each of said photodiodes; and
forming metal interconnects between said exposed selected regions of said thinned silicon layer of one of said photodiodes with said second silicon layer of another of said photodiodes.

5,330,919
METHOD FOR ELECTRICALLY TESTING A SEMICONDUCTOR DIE USING A TEST APPARATUS HAVING AN INDEPENDENT CONDUCTIVE PLANE
Gregory L. Westbrook, Chandler, and William M. Williams, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 8, 1993, Ser. No. 14,591
Int. Cl.[5] G01R *31/26;* **H01L** *21/66*
U.S. Cl. 437—8 **13 Claims**



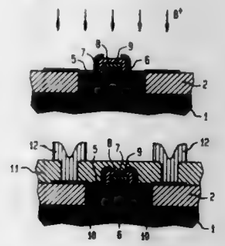
1. A method for adjusting a characteristic impedance, comprising the steps of:
providing a tape carrier for a semiconductor die, the tape carrier comprising a film having a first major surface, a second major surface, a region for receiving the semiconductor die, and a plurality of conductors on the first major surface, each of the plurality of conductors having a first end projecting to the region for receiving the semiconductor die, a central portion, and a second end projecting away from the region for receiving the semiconductor die;
providing the semiconductor die, the semiconductor die having a first major surface and a plurality of bonding pads on the first major surface;
bonding the first end of each of the plurality of conductors to at least one of the plurality of bonding pads;
providing an independent conductive plane, the independent conductive plane having a first major surface and a second major surface wherein the independent conductive plane is separate from the tape carrier and is a removable portion of a test apparatus;
coupling the independent conductive plane with the central portion of the plurality of conductors;
electrically testing the semiconductor die; and
de-coupling the independent conductive plane from the central portion of the plurality of conductors wherein the independent conductive plane remains with the test apparatus.

5,330,920
METHOD OF CONTROLLING GATE OXIDE THICKNESS IN THE FABRICATION OF SEMICONDUCTOR DEVICES
Hamid R. Soleimani, Westborough; Brian S. Doyle, Framingham, both of Mass., and Ara Philipossian, Redwood Shores, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Jun. 15, 1993, Ser. No. 77,570
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—24 **6 Claims**



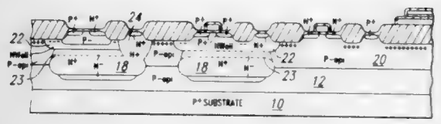
1. A method of controlling gate oxide thickness in the fabrication of semiconductor devices comprising:
forming a sacrificial gate oxide layer on select locations of a semiconductor substrate surface;
implanting nitrogen ions into the select locations of the substrate through the sacrificial gate oxide layer;
thermally annealing the substrate and sacrificial gate oxide layer to assist pile-up of the nitrogen ions at the semiconductor substrate surface;
removing the sacrificial gate oxide layer; and
thermally forming a gate oxide layer on the silicon semiconductor substrate surface, wherein the select locations having nitrogen ion implanted will have a thinner gate oxide layer than a non-implanted region.

5,330,921
METHOD OF FABRICATING SEMICONDUCTOR DEVICE
Takehito Yoshida, Moriguchi, and Shinichi Ogawa, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Mar. 18, 1992, Ser. No. 853,642
Claims priority, application Japan, Mar. 19, 1991, 3-54530
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—25 **16 Claims**



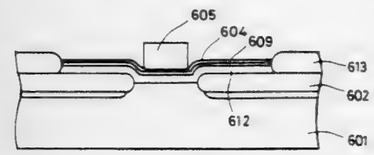
1. A method of fabricating a semiconductor device, comprising the steps
forming a titanium silicide film on semiconductor substrate;
implanting dopant ions into said titanium silicide film and said semiconductor substrate; and
annealing said semiconductor substrate so as to activate said dopant ions, thereby forming p-n junctions in said semiconductor substrate; and
wherein a fraction of said dopant tons implanted into said semiconductor substrate ranges from 40 percent to 70 percent of a total dose of said dopant ions implanted into said titanium silicide film and said semiconductor substrate.

5,330,922
SEMICONDUCTOR PROCESS FOR MANUFACTURING SEMICONDUCTOR DEVICES WITH INCREASED OPERATING VOLTAGES
John P. Erdeljac, Plano, and Louis N. Hutter, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Sep. 25, 1989, Ser. No. 411,782
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—30 **24 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:
forming a first epitaxial layer of a first conductivity type on a semiconductor substrate of the first conductivity type;
doping a region of the first epitaxial layer with a dopant of a second conductivity type;
doping the region of the first epitaxial layer with a faster-diffusing dopant of the second conductivity type;
forming a second epitaxial layer of the first conductivity type over the first epitaxial layer;
doping a region of the second epitaxial layer with a dopant of the second conductivity type, the region of the second epitaxial layer being in alignment with the region of the first epitaxial layer; and
diffusing the dopants so that the doped region of the second epitaxial layer becomes in electrical contact with the doped region of the first epitaxial layer.

5,330,923
MANUFACTURING PROCESS FOR A MICRO MIS TYPE FET
Shigeru Kusunoki; Shigeki Komori, and Katsuhiro Tsukamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 637,871, Jan. 8, 1991, Pat. No. 5,196,908. This application Nov. 20, 1992, Ser. No. 980,408
Claims priority, application Japan, Jan. 12, 1990, 2-5161
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **14 Claims**



1. A process of manufacturing a micro MIS type FET comprising the steps of:
preparing a semiconductor layer having a first conductivity type at least in a region from a surface to a predetermined depth of a semiconductor substrate,
selectively forming an isolation insulating film on said semiconductor substrate to form a semiconductor composite,
subjecting said semiconductor composite to epitaxial growth conditions whereby an epitaxial layer is formed at least above said semiconductor layer,
growing a first conductivity type threshold voltage control

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region in the surface of said substrate, said region having an impurity concentration of more than $1\times10^{17}/cm^3$,

growing a first conductivity type epitaxial layer having a thickness of less than 100 nm and an impurity concentration of less than $1\times10^{16}/cm^3$ on said surface of said semiconductor layer to over said isolation insulation film, and

forming second conductivity type source/drain regions mutually spaced apart by a distance of less than 2 μm having a depth exceeding the distance from the top surface of said epitaxial layer to the bottom of said epitaxial layer, said source/drain regions extending into portions of said epitaxial layer over said isolation insulating film,

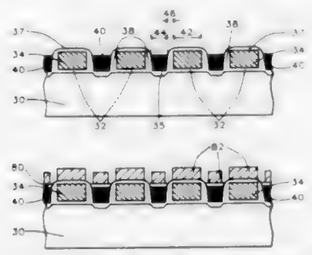
whereby a channel layer with a length of less than 2 μm having an impurity concentration of less than $1\times10^{16}/cm^3$ is formed above said threshold voltage control region between said source/drain regions in said substrate surface, a lower boundary of said channel layer having a depth less than depths of said source/drain regions, said substrate having an abrupt change in impurity concentration at said lower boundary of said channel layer.

5,330,924

METHOD OF MAKING 0.6 MICROMETER WORD LINE PITCH ROM CELL BY 0.6 MICROMETER TECHNOLOGY

Heng S. Huang, Taipei; Kun-Luh Chen, Chu-nan; Te-Sun Wu, and Han-Shen Lo, both of Chu-pei, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Nov. 19, 1993, Ser. No. 154,789
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—43 **31 Claims**



1. A method of manufacturing closely spaced self-aligned polysilicon conductor lines in a ROM integrated circuit having cell and peripheral regions, comprising the steps of:

forming parallel, conductive semiconductor device structures in a semiconductor substrate;

forming an insulating layer over said semiconductor substrate;

forming a first conductive polysilicon layer over said insulating layer;

patterning said first conductive polysilicon layer to form first polysilicon conductor lines which are parallel to each other, and orthogonal to said parallel, conductive semiconductor device structures;

forming a first silicon oxide layer on and between said first polysilicon conductor lines;

anisotropically etching said first silicon oxide layer to produce sidewall structures on said first polysilicon conductor lines;

forming a second silicon oxide layer on and between said first polysilicon conductor lines;

forming a second conductive polysilicon layer over said first polysilicon conductor lines and in openings between said first polysilicon conductor lines; and

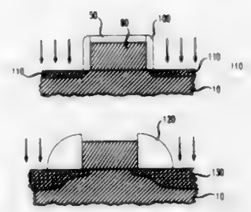
etching back said second conductive polysilicon layer to form second polysilicon conductor lines, parallel to, between and self-aligned with said first polysilicon conductor lines, and separated from said first polysilicon conductor lines by the width of said sidewall structures.

5,330,925

METHOD FOR MAKING A MOS DEVICE

Kwing F. Lee, Red Bank, and Ran-Hong Yan, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 18, 1992, Ser. No. 900,625
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—44 **14 Claims**



1. A method for manufacturing at least one MOS device, comprising the steps of:

a) providing a silicon wafer which has a principal surface;

b) forming a polysilicon layer which overlies the principal surface;

c) forming a layer, overlying the polysilicon layer, which is resistant to at least certain polysilicon etchants;

d) patterning the etch-resistant layer;

e) patterning the polysilicon layer such that at least one polysilicon gate electrode is formed, said electrode overlain by a cap portion of the etch-resistant layer, and

f) implanting the principal surface with a first ionic flux such that first source and drain junction region are formed in the silicon wafer,

CHARACTERIZED IN THAT

g) the method further comprises, before the implanting step, the steps of:

conformally depositing by low pressure chemical vapor deposition, a first dielectric sidewall layer which overlies the patterned polysilicon layer and at least a portion of the principal surface, and which has a thickness greater than 200 Å as measured laterally relative to the principal surface; and patterning the first sidewall layer such that a first sidewall is formed, the first sidewall contactingly disposed adjacent the polysilicon gate electrode, and

h) the implanting step is performed such that the first source and drain junction regions are at least partially excluded from that portion of the silicon wafer that directly underlies the polysilicon gate electrode and the first sidewall.

5,330,926

METHOD OF FABRICATING SEMICONDUCTOR DEVICE HAVING A TRENCHED CELL CAPACITOR

Natsuki Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 791,345
Claims priority, application Japan, Nov. 14, 1990, 2-307688
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **21 Claims**

1. A method for fabricating a semiconductor device, adapted for a MOS type DRAM having a grooved cell capacitor portion formed in a main surface of a semiconductor substrate, comprising the steps of:

forming a first layer of the same conductivity type as that of the semiconductor substrate on a selected portion of the semiconductor substrate with an oxidization-resistant first insulating film as a mask, and performing thermal oxidization to form a field oxidized film;

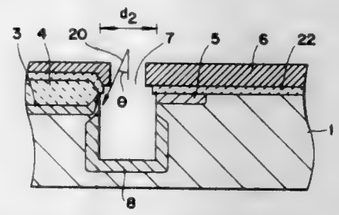
removing the first insulating film;

forming a second insulating film on an entire surface of the semiconductor substrate;

forming an opening in the second insulating film at the portion which is in a close proximity to the field oxidized film;

etching the semiconductor substrate to form a groove;

performing oblique rotational ion injection into a portion of the groove other than a side wall portion of the groove adjacent the first layer with the second insulating film as a



peak-shaped mask, forming only in a selected region inside the groove a second layer of the same conductivity type as that of the semiconductor substrate;

removing the second insulating film;

forming a third layer of an opposite conductivity type to that of the semiconductor substrate at least on the entire side wall of the groove; and

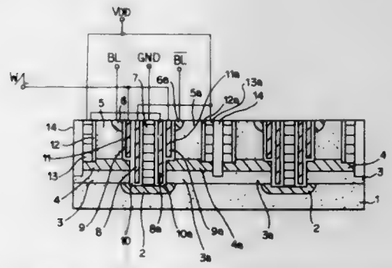
forming a dielectric film and a conductive electrode in the groove.

5,330,927

METHOD OF CONSTRUCTING A REDUCED SIZE HIGHLY INTERGRATED STATIC RANDOM ACCESS MEMORY WITH DOUBLE VERTICAL CHANNEL STRUCTURE

Yong H. Lee, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Chungcheongbuk, Rep. of Korea

Filed May 5, 1992, Ser. No. 878,549
Claims priority, application Rep. of Korea, May 13, 1991, 7702/1991
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **8 Claims**



1. A method of making a static random access memory comprising the steps of:

forming, on a substrate of a first conductivity type, an impurity diffusion region of a second conductivity type functioning as a first source/drain region;

forming a first layer of the first conductivity type, on the substrate;

forming a second impurity diffusion region of the second conductivity type, on the first layer;

forming a second layer of the first conductivity type, on the first layer;

forming a third impurity diffusion region of the second conductivity type, on the second layer, such that the center of the third impurity diffusion region is located on a vertical line passing the center of the first impurity diffusion region;

forming a first trench extending from the surface of the third impurity diffusion region to the second impurity diffusion region and having a width less than that of the third impurity diffusion region, based on the center of the third impurity diffusion region so that respective remaining portions of the third impurity diffusion region and the second layer at opposite sides of the first trench become a second source/drain region and a first vertical channel region;

forming first gate electrodes at opposite sides of the first trench, respectively, and forming a first insulating region around each first gate electrode, the first insulating region functioning to insulate electrically the first gate electrode from other parts;

forming a second trench extending from the remaining bottom portion of the first trench to the surface of the first impurity diffusion region and having a width corresponding to the width of the remaining bottom portion of the first trench so that respective remaining portions of the second impurity diffusion region and the first layer at opposite sides of the second trench become a third source/drain region and a second vertical channel region;

forming second gate electrodes at opposite sides of the second trench, respectively, and forming a second insulating region around each second gate electrode, the second insulating region functioning to insulate electrically the second gate electrode from other parts;

forming a ground electrode at a portion of the second trench defined between second insulating regions, the portion corresponding to the remaining center portion of the second trench;

forming a third trench at a portion of the second layer corresponding to a region defined between adjacent memory cells; and

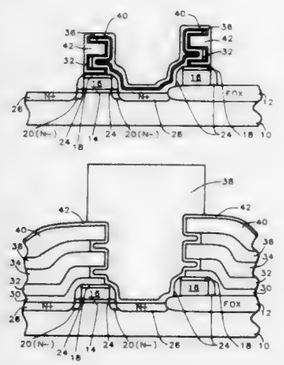
forming third insulating regions and load resistors being in contact with the first layer, at opposite sides of the third trench, respectively.

5,330,928

METHOD FOR FABRICATING STACKED CAPACITORS WITH INCREASED CAPACITANCE IN A DRAM CELL

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 28, 1992, Ser. No. 951,794
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **25 Claims**



1. Method for fabricating a dynamic random access memory having a capacitor comprising:

selectively forming field oxide areas on the surface of a

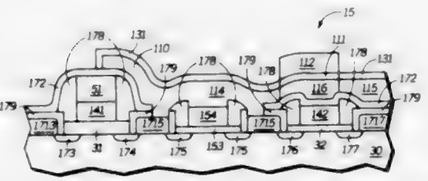
semiconductor substrate while leaving device areas for fabrication of field effect devices;
forming a gate dielectric layer on said substrate in the said device areas;
depositing a first layer of polysilicon on the said field oxide areas and said device areas; removing portions of said first polysilicon layer while leaving portions thereof for the gate structure in said device areas, and portions over said field oxide areas; forming source/drain structures within said device areas of said semiconductor substrate associated with said gate structures;
forming a first oxide layer over said device and field oxide areas; and forming said capacitors by,
depositing a second polysilicon layer over the device and field oxide areas,
depositing a second oxide layer over said second polysilicon layer,
forming openings to said source/drain structures by etching through said second oxide, second polysilicon, and first oxide layers,
forming cavities between said first oxide layer and said second oxide layer by lateral etch of said second polysilicon layer;
depositing a third polysilicon layer over said cavities, device and field oxide,
patterning and anisotropical etching said second and third polysilicon layers and said second oxide layers so as to have their remaining portions over the planned capacitor areas whereat said capacitor is to be formed,
said patterning and etching leaves a portion of said second polysilicon layer under said second oxide layer,
removing by isotropic etching said first and second oxide layers whereby said remaining second and third polysilicon layers construct the bottom storage node electrode of said capacitor,
forming a capacitor dielectric layer over the said bottom storage node electrode, and
depositing a fourth polysilicon layer as the top plate electrode, and
patterning said fourth polysilicon layer and said dielectric layer.

5,330,929

METHOD OF MAKING A SIX TRANSISTOR STATIC RANDOM ACCESS MEMORY CELL

James R. Pfiester, and James D. Hayden, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1992, Ser. No. 955,785
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **7 Claims**



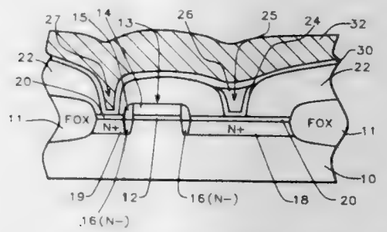
1. A method of forming a static random access memory cell comprising the steps of:
forming an active region lying within a semiconductor substrate having a first conductivity type and a primary surface, the active region lying adjacent to the primary surface and including a first segment, a second segment, and a third segment, wherein:
the first segment has an adjacent end has a first length that generally extends a first distance in a first direction;
the second segment has an adjacent end and has a second length that generally extends a second distance in the first direction; and
the third segment has a first end and a second end and has a third length that generally extends in a second direction, which is generally perpendicular to the first direction, wherein the adjacent ends of the first and second segments lies near the first and second ends of the third segment, respectively;
forming a first pass transistor, a second pass transistor, a first latch transistor, and a second latch transistor, wherein:
each pass transistor includes a first source/drain region, a second source/drain region, a channel region, and a gate electrode;
each latch transistor includes a source region, a drain region, a channel region, a gate dielectric layer, and a gate electrode;
the gate dielectric layers of the latch transistors are formed simultaneously and the gate electrodes of the latch transistors are formed simultaneously;
the channel region of the first pass transistor, the channel region of the first latch transistor, part of each of the first and second source/drain regions of the first pass transistor, and part of each of the source and drain regions of the first latch transistor lie within the first segment;
the first source/drain region of the first pass transistor lies furthest from the adjacent end of the first segment and the source region of the first latch transistor lies closest to the adjacent end of the first segment; and
the channel region of the second pass transistor, the channel region of the second latch transistor, part of each of the first and second source/drain regions of the second pass transistor, and part of each of the source and drain regions of the second latch transistor lie within the second segment; and
the first source/drain region of the second pass transistor lies furthest from the adjacent end of the second segment and the source region of the second latch transistor lies the closest to the adjacent end of the second segment; and
forming a first load transistor and a second load transistor within a layer having a fourth segment, a fifth segment, and a sixth segment, wherein:
the fourth segment has an adjacent end, has a fourth length that generally extends a fourth distance in the first direction, and lies over the first segment, wherein the fourth distance is shorter than the first distance;
the fifth segment has an adjacent end, has a fifth length that generally extends a fifth distance in the first direction, and lies over the second segment, wherein the fifth distance is shorter than the second distance;
the sixth segment has a first end and a second end, has a sixth length that generally extends in the second direction, and lies over the third segment, wherein the adjacent ends of the fourth and fifth segments lie near the first and seconds ends of the sixth segment, respectively;
the gate electrode of the first latch transistor also acts as a gate electrode for the first load transistor and the gate electrode of the second latch transistor also acts as a gate electrode for the second load transistor;
each load transistor includes a source region, a drain region, and a channel region, wherein the channel region
has a drain-side edge lying at the drain region of its load transistor;
has a drain offset region, which is that portion of the channel region of its load transistors lying immediately adjacent to the drain-side edge and does not overlie the gate electrode of its load transistor; and does not have a source offset region;
the source, drain, and channel regions of the first load transistor lie within the fourth segment and the source region of the first load transistor lies nearest to the adjacent end of the fourth segment compared to the drain and channel regions of the first load transistor; and
the source, drain, and channel regions of the second load transistor lie within the fifth segment and the source region of the second load transistor lies nearest to the adjacent end of the fifth segment compared to the drain and channel regions of the second load transistor,
wherein the memory cell is configured such that:
the first source/drain region of the first pass transistor is electrically connected to a first bit line, the first source/drain region of the second pass transistor is electrically connected to a second bit line;
the gate electrodes of the pass transistors are part of a word line;
the source regions of the latch transistors are electrically connected to one another; and
the source regions of the load transistors are electrically connected to one another.

5,330,930

FORMATION OF VERTICAL POLYSILICON RESISTOR HAVING A NITRIDE SIDEWALL FOR SMALL STATIC RAM CELL

Keh-Fei C. Chi, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore

Filed Dec. 31, 1992, Ser. No. 999,745
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—60 **18 Claims**



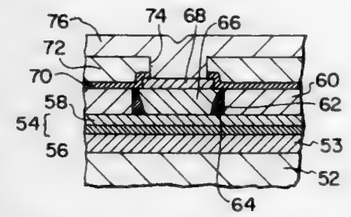
13. The method of forming a vertical resistor within a contact window of an integrated circuit comprising:
providing a contact window through a passivation layer to a device structure within a semiconductor substrate;
depositing a silicon nitride layer within said contact window;
anisotropically etching back said nitride layer to form nitride sidewalls within said contact window to prevent migration of any impurities from said passivation layer into said planned vertical resistor;
depositing a layer of polysilicon within said contact window;
anisotropically etching back said polysilicon to leave said polysilicon only within said contact opening; and
ion implanting into said polysilicon layer remaining in said contact window sufficient ions and simultaneously into said passivation layer to provide for said planned vertical resistor thereby completing formation of said resistor.

5,330,931

METHOD OF MAKING A CAPACITOR FOR AN INTEGRATED CIRCUIT

Ismail T. Emesh, Cumberland; Iain D. Calder; Vu Q. Ho, both of Kanata; Gurvinder Jolly, Orleans, and Lynnette D. Madsen, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal and McMaster University, Hamilton, both of Canada

Filed Sep. 23, 1993, Ser. No. 125,264
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—60 **14 Claims**



1. A method of fabricating a capacitor for a memory element of an integrated circuit on a substrate, comprising:
providing a first conductive layer defining a first conductive electrode on the substrate;
providing a first dielectric layer thereon;
defining an opening through the first dielectric layer, the opening having steep sidewalls and exposing the first conductive electrode within a bottom of the opening;
filling the opening with a capacitor dielectric material, the capacitor dielectric material characterized by a dielectric strength greater than that of the first dielectric material;
planarizing the resulting structure to provide a surface of the capacitor dielectric material coplanar with a surrounding surface of the first dielectric layer; and
providing a second conductive layer defining a second electrode contacting the surface of the capacitor dielectric material.

5,330,932

METHOD FOR FABRICATING GAINP/GAAS STRUCTURES

William U. Liu; Shou-Kong Fan; Timothy S. Henderson, all of Richardson, and Darrell G. Hill, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1992, Ser. No. 999,072
Int. Cl.[5] H01L *21/20, 21/306*
U.S. Cl. 437—133 **24 Claims**

1. A method for removing portions of successive layers of GaAs and GaInP comprising the steps of:
performing a reactive ion etch on said GaAs layer; and performing a wet etch on said GaInP layer, whereby a mesa formed as a result of said reactive ion etch and said wet etch has substantially vertical sidewalls, and further whereby GaInP/GaAs structures having dimensions of less than approximately 3.0 μm may be fabricated.

5,330,933

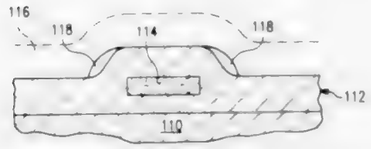
METHOD FOR FABRICATING SEMICONDUCTOR CIRCUITS

Tsiu C. Chan, Carrollton, and William A. Bishop, Irving, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 298,530, Jan. 18, 1989, Pat. No. 5,196,233.
This application Jul. 10, 1992, Ser. No. 911,975
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—193 **7 Claims**

1. A method for forming an interconnect in an integrated circuit device, comprising the steps of:

forming a patterned first layer of polycrystalline silicon over the device defining a first layer of conductive elements;
forming an insulating layer over the patterned first polycrystalline silicon layer, wherein sidewalls are produced where the insulating layer passes over the first level polycrystalline silicon layer;
forming a second layer of polycrystalline silicon over the insulating layer;
defining a pattern for the second polycrystalline silicon layer to define a second layer of conductive elements, wherein, for each first layer conductive element, all second layer



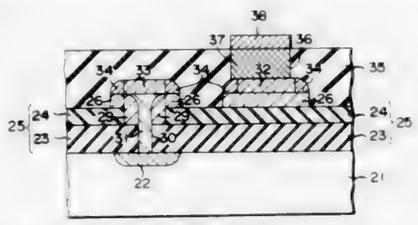
conductive elements that cross over such first layer conductive element are connected to a common electrical node in order for these second layer conductive elements to have the same voltage during device operation;
etching the second polycrystalline silicon layer using the defined pattern; and
leaving behind a second level polycrystalline silicon stick along the sidewall of the insulating layer after etching the second polycrystalline silicon layer;
wherein current flow through the second level polycrystalline silicon stick is prevented during device operation.

5,330,934

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE HAVING MINIATURIZED CONTACT ELECTRODE AND WIRING STRUCTURE

Hideki Shibata, and Naoki Ikeda, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 912,216, Jul. 10, 1992, Pat. No. 5,243,220, which is a continuation of Ser. No. 659,223, Feb. 22, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 77,081
Claims priority, application Japan, Mar. 23, 1990, 2-72019
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—195 **19 Claims**



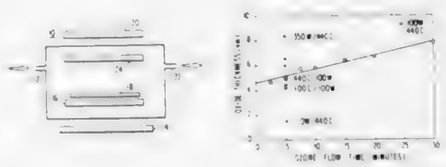
10. A method of fabricating a semiconductor having a miniaturized contact electrode and wiring structure, comprising the steps of:
forming a first interlayer insulating film on a semiconductor substrate;
forming a first buffer layer on said first interlayer insulating film and a stopper insulating film on said first buffer layer;
selectively forming a first opening having a bottom inside said first interlayer insulating film and shallower than a thickness of said first interlayer insulating film;
forming a second buffer layer to cover said first opening and said stopper insulating film;
performing anisotropic etching to leave said second buffer layer on a sidewall of said first opening;
executing anisotropic etching with said first and second buffer layers used as masks to penetrate that part of said bottom of said first opening which is exposed, and forming a second opening to expose a face of said semiconductor substrate;
filling a first wiring conductor in said second opening and said first opening following said second opening;
forming a contact electrode on said first wiring conductor filled in said first opening as wide as a width of said first opening, and selectively forming a first wiring layer on said first interlayer insulating film;
depositing a third buffer layer and performing anisotropic etching to leave said third buffer layer on sidewalls of said contact electrode and said first wiring layer;
forming a second interlayer insulating film to cover said contact electrode and said first wiring layer, and forming a third opening in said second interlayer insulating film so as to expose said first wiring layer;
forming a second wiring conductor on said first wiring layer so as to fill an interior of said third opening; and
forming a second wiring layer on said second wiring conductor.

5,330,935

LOW TEMPERATURE PLASMA OXIDATION PROCESS

David M. Dobuzinsky; David L. Harmon, both of Essex Junction, Vt.; Srinandan R Kasi, Croton-On-Hudson, N.Y.; Donald M. Kenney, Shelburne, Vt.; Son Van Nguyen, Williston, Vt.; Tue Nguyen, Essex Junction, Vt., and Pai-Hung Pan, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 602,993, Oct. 24, 1990, abandoned. This application Jul. 21, 1992, Ser. No. 915,752
Int. Cl.[5] H01L *21/02*
U.S. Cl. 437—239 **10 Claims**



1. A method for oxidizing a surface of a substrate comprising the steps of:
placing said substrate in a chamber, heating said chamber to a temperature not exceeding 440° C., supplying a plasma comprising a mixture of reactive gases of oxygen and ozone including both oxygen and ozone ions and radicals, which mixture is generated outside said chamber, into said chamber, and oxidizing said surface to grow an oxide layer in the presence of said mixture.

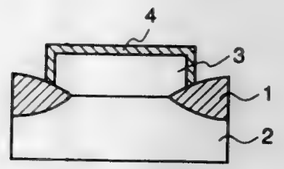
5,330,936

METHOD OF PRODUCING A SILICON NITRIDE FILM AND METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

Akihiko Ishitani, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,486
Claims priority, application Japan, May 27, 1991, 3-120559
Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*
U.S. Cl. 437—241 **3 Claims**

1. A method of producing a silicon nitride film consisting essentially of the step of:
subjecting a substrate, having both a silicon film region and a silicon oxide film region, to selective chemical vapor deposition of silicon nitride so as to deposit a silicon nitride film only on the silicon film region of the substrate, wherein said selective chemical vapor deposition is carried out by use of a source gas comprising ammonia and a silane system, said source gas being subject to doping with hydrogen chloride and,



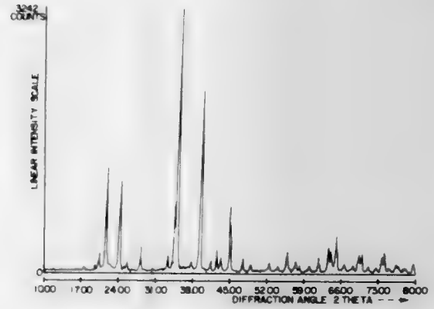
wherein a volume ratio of said silane system to hydrogen chloride is in the range of a volume ratio from 1:0.1 to 1:0.7 at a pressure of 1 atm.

5,330,937

BORON SUBOXIDE MATERIAL AND METHOD FOR ITS PREPARATION

Cristan Ellison-Hayashi; Morteza Zandi; Dinesh K. Shetty; Peter Kuo, all of Salt Lake City, Utah; Russell Yeckley, Oakham, and Frank Csillag, Southboro, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 729,467, Jul. 12, 1991, Pat. No. 5,135,892. This application Jul. 28, 1992, Ser. No. 920,357
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] C01B *35/10;* **C04B** *35/00*
U.S. Cl. 501—1 **19 Claims**



1. A superhard boron suboxide material having a KHN_{100} value of at least about 3800 kg/mm^2 and an average grain size of approximately 0.1–40 microns.

3. A superhard boron suboxide material having a KHN_{100} value of at least about 3800 kg/mm^2 and an X-ray diffraction pattern substantially as shown in FIG. **12**.

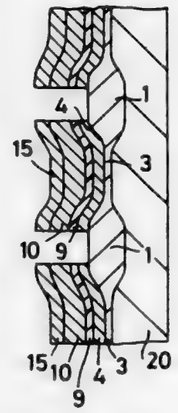
11. A method of making a superhard boron suboxide material, comprising
mixing a boron oxide (B_2O_3) powder with a boron powder to form a mixture, and
subjecting said mixture to a temperature of about 1500° C. to about 2200° C. and a pressure and time sufficient to produce a boron suboxide material having a KHN_{100} value of at least about 3800 kg/mm.

5,330,938

METHOD OF MAKING NON-VOLATILE SPLIT GATE EPROM MEMORY CELL AND SELF-ALIGNED FIELD INSULATION

Emilio Camerlenghi, Bergamo, Italy, assignor to SGS-Thomson Microelectronics s.r.l., Agrate Brianza, Italy

Division of Ser. No. 631,008, Dec. 19, 1990, Pat. No. 5,241,499. This application Jun. 18, 1993, Ser. No. 77,934
Claims priority, application Italy, Dec. 22, 1989, 22844 A/89
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—57 **3 Claims**



1. Process for fabricating a non-volatile split gate EPROM memory cell, the memory cell including a substrate with diffusions of source and drain separated by a channel area, a floating gate superimposed over a first part channel area and a control gate formed by a first and a second polysilicon strip, respectively, a cell gate oxide between said floating gate and said first part of the channel area, a transistor gate oxide between said control gate and a second part of the channel area, an interpoly oxide between said floating gate and said control gate and a layer of dielectric filler wherein said floating gate is aligned with the drain diffusion and said control gate is aligned with said floating gate and with the diffusions of the source and drain, said process comprising the steps of:
defining parallel strips of field insulation and active area;
implanting a cell channel in said semiconductor substrate; growing said cell gate oxide;
depositing and doping of said first layer of polysilicon;
defining the first polysilicon layer in first strips perpendicular to those of the field insulation;
growing said transistor gate oxide and said interpoly oxide;
depositing and doping of said second polysilicon layer;
defining said second polysilicon layer in second strips parallel and partially superimposed over those of the first polysilicon layer;
self-aligned etching of a multilayered structure comprising the second polysilicon layer, the transistor gate oxide, the interpoly oxide, the first polysilicon layer and the cell gate oxide up to the field insulation oxide;
subsequent etching of said field oxide to uncover substrate strips;
implanting said source and drain in the uncovered substrate strips;
subsequent lateral sealing oxidation of the multilayered structure; and
filling empty spaces between one cell and the next with said dielectric filler.

5,330,939

METHOD OF PREPARING VITREOUS CERAMIC COMPOSITION SUITABLE FOR COATING CERAMIC ARTICLES

Filippo Marazzi, Sassuolo, and Mariano Paganelli, Modena, both of Italy, assignors to Ceramica Filippo Marazzi S.p.A., Bologna, Italy

Continuation of Ser. No. 921,997, Aug. 4, 1992, abandoned, which is a division of Ser. No. 662,831, Mar. 1, 1991, abandoned. This application Nov. 23, 1993, Ser. No. 156,799
Claims priority, application Italy, Mar. 9, 1990, 19641 A/90
Int. Cl.[5] C03C *1/00, 14/00*
U.S. Cl. 501—32 8 Claims

1. A method of preparing frits, useful in the coating of ceramic pieces, consisting of the steps of:

preparing a vitreous ceramic composition by mixing the following ingredients expressed in weight percent to form a mixture thereof:

SiO_2	30–50%
Al_2O_3	10–25%
ZnO	8–25%
B_2O_3	5–20%; and
TiO_2	0–7%,

heating said mixture to a temperature at least sufficient for melting said composition to produce a vitreous mass which will separate rapidly up to 50% of the crystalline phase made up essentially of gahnite; and

suddenly cooling said vitreous mass.

5,330,940

FIBERIZABLE ZINC-PHOSPHATE GLASS COMPOSITIONS

Bruce G. Aitken, Erwin; George H. Beall, Big Flats, and Candace J. Quinn, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jul. 6, 1992, Ser. No. 909,406
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] C03C *13/00*
U.S. Cl. 501—35 6 Claims

1. Fiberizable glass compositions consisting essentially, expressed in terms of mole percent on the oxide basis, of at least 65% total of 10–55% ZnO, 28–40% P_2O_5, 0.2–5% MoO_3, 10–35% R_2O, wherein R_2O consists of at least two alkali metal oxides in the indicated proportions selected from the group consisting of 0–25% Li_2O, 0–25% Na_2O, and 0–25% K_2O and up to 35% total of optional ingredients in the indicated proportions selected from the group consisting of 0–10% Al_2O_3, 0–15% B_2O_3, 0–15% $Al_2O_3+B_2O_3$, 0–15% Cu_2O, 0–5% F, 0–25% Sb_2O_3, 0–35% PbO, 0–35% SnO, 0–35% PbO+SnO, 0–5% ZrO_2, 0–4% SiO_2, 0–20% MgO+CaO+SrO+BaO+MnO, 0–20% MgO, 0–20% CaO, 0–20% SrO, 0–20% BaO and 0–10% MnO, and 0–5% rare earth metal oxide.

5,330,941

QUARTZ GLASS SUBSTRATE FOR POLYSILICON THIN FILM TRANSISTOR LIQUID CRYSTAL DISPLAY

Susumu Yaba; Shinya Kikugawa, and Yukinori Ohta, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,776
Claims priority, application Japan, Jul. 24, 1991, 3-207486; Nov. 15, 1991, 3-327149; Nov. 15, 1991, 3-327150
Int. Cl.[5] C03C *3/00*
U.S. Cl. 501—54 5 Claims

1. An optically homogeneous quartz glass substrate for polysilicon thin film transistor liquid crystal displays, having an aluminum content of 5–40 ppm; a halogen content of not more than 10 ppm; an OH content of not more than 100 ppm; a total content of a heavy metal element and an alkali metal element of not more than 1 ppm; and an annealing point of not less than 1,180° C.

5,330,942

COMPOSITE OF REFRACTORY MATERIAL

Cressie E. Holcombe, Knoxville, and Marvin S. Morrow, Kingston, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Jan. 22, 1993, Ser. No. 7,441
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—87 3 Claims

1. A composite refractory material comprising a boron carbide matrix and secondary phase uniformly distributed throughout said boron carbide matrix, said secondary phase consisting of a first element and at least one of boron, oxygen, and carbon, said first element being yttrium, said refractory material comprises about 9.4 wt. % of said first element.

5,330,943

PROCESS FOR IMPROVING THE PHYSICAL AND CATALYTIC PROPERTIES OF A FLUID CRACKING CATALYST

Joseph C. S. Shi, Bartow, Ga.; Edwin W. Alberg, Annapolis, and Geoffrey R. Wilson, Timonium, both of Md., assignors to Thiele Kaolin Company, Sandersville, Ga.

Continuation of Ser. No. 562,905, Aug. 6, 1990, Pat. No. 5,135,756, which is a continuation-in-part of Ser. No. 321,355, Mar. 19, 1989, Pat. No. 4,946,814. This application Jun. 25, 1992, Ser. No. 904,336
Int. Cl.[5] B01J *37/02, 29/04, 21/16*
U.S. Cl. 502—62 11 Claims

2. A process for improving the physical and catalytic properties of a sol based fluid cracking catalyst which comprises the steps of;

(a) preparing an acid aluminum sulfate silica sol binder component,

(b) preparing a clay slurry component,

(c) combining components (a) and (b),

(d) preparing a zeolite slurry component,

(e) preparing an alumina slurry component,

(f) adding an effective amount of an alkaline or acid stable surfactant to at least one of the components,

(g) combining the components and spray drying,

(h) washing, exchanging, drying, calcining and recovering the catalyst product.

5,330,944

SULFUR-RESISTANT HYDROGENATION CATALYST AND PROCESS FOR HYDROGENATION USING SAME

Fawzy G. Sherif, Stony Point, and Willem Vreugdenhil, Katonah, both of N.Y., assignors to Akzo Nobel nv, Arnhem, Netherlands

Filed Jan. 22, 1993, Ser. No. 9,209
Int. Cl.[5] B01J *27/22, 29/08*
U.S. Cl. 502—64 13 Claims

1. A catalyst composition for the hydrogenation of an unsaturated sulfur-containing compound without appreciably breaking the carbon-sulfur bond comprising tungsten carbide and a mixture of zeolite and alumina.

5. A catalyst composition according to claim 1, wherein the catalyst comprises from about 1 to about 50 wt % tungsten carbide based upon the total weight of catalyst.

5,330,945

CATALYST FOR TREATMENT OF DIESEL EXHAUST PARTICULATE

Richard F. Beckmeyer, Clarkston, Mich., and Chih-Hao Tsang, Houston, Tex., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 681,251, Apr. 8, 1991, abandoned. This application Nov. 3, 1992, Ser. No. 970,707
Int. Cl.[5] B01J *21/16, 29/06*
U.S. Cl. 502—66 12 Claims

2. A washcoat for treatment of exhaust emissions from diesel engines comprising intermingled fine particles of silica and zeolite, and very fine particles of catalytic metal, at least a portion of the catalytic metal carried by the zeolite particles; and very fine particles of colloidal silica disposed over the particles of zeolite, silica, and catalytic metal, the overlying colloidal silica layer serving as a barrier to sulfur constituents in the exhaust emissions thereby inhibiting reaction thereof with the catalytic metal while permitting penetration of hydrocarbon to be cracked and oxidized by the underlying particles.

3. A method of making a washcoat mixture for treatment of exhaust emission from diesel engines, comprising:

a) impregnating fine particles of at least one of zeolite and silica with very fine particles of catalytic metal selected from the group consisting of platinum, palladium, rhodium, ruthenium and mixtures thereof;

b) forming a slurry having the fine particles of zeolite and silica and very fine particles of colloidal silica at an acidic pH; and

c) applying the slurry as a thin coating to a support substrate.

5,330,946

PROCESS OF ACID BINDING FINE SMECTITE CLAY PARTICLES INTO GRANULES

Russell E. Hynes, Aberdeen, Miss., and Robert S. Nebergall, Lombard, Ill., assignors to American Colloid Company, Arlington Heights, Ill.

Filed Jan. 29, 1993, Ser. No. 11,273
Int. Cl.[5] B01J *20/12, 21/16, 37/00*
U.S. Cl. 502—82 28 Claims

1. A process for manufacturing granules comprising an acid-activated smectite clay comprising:

contacting particles of a smectite clay with an acid, and washing excess acid from the smectite clay particles, to form acid-activated smectite clay particles;

binding said acid-activated clay particles together by mixing a composition containing said acid-activated smectite clay particles, water in an amount of about 40% to about 70% by weight, and an acid, to form bound granules of said smaller, acid-activated clay particles;

recovering granules having a desired particle size distribution; and

recycling non-recovered granules to the binding stage of the process for recovery of aggregates having the desired particle size distribution.

28. The product made by the process of claim 1.

5,330,947

BORON ALKYL AS CO-CATALYST TO IMPROVE POLYMERIZATION YIELD AND CONTROL POLYDISPERSITY

Edwar S. Shamshoum, Houston; David J. Rauscher, Webster, and Shabbir A. Malbari, Pasadena, all of Tex., assignors to Fina Technology, Inc., Dallas, Tex.

Filed Oct. 15, 1991, Ser. No. 776,154
Int. Cl.[5] C08F *4/649*
U.S. Cl. 502—110 16 Claims

9. A process for making a catalyst system for the polymerization of olefins comprising:

a) contacting a conventional Ziegler-Natta catalyst with an aluminum alkyl as a first co-catalyst of the general formula AlR'_3 where R' is an alkyl having one to eight carbon atoms, R' being the same or different, and with a boron alkyl as a second co-catalyst of the general formula BR''_3 where R'' is an alkyl having one to eight carbon atoms, R'' being the same or different.

5,330,948

HOMOGENEOUS CATALYSTS FOR STEREOREGULAR OLEFIN POLYMERIZATION

Tobin J. Marks; Moris S. Eisen, both of Evanston, and Michael A. Giardello, Skokie, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Mar. 31, 1992, Ser. No. 860,784
Int. Cl.[5] C08F *4/64, 4/642, 4/68, 4/62, 4/622*
U.S. Cl. 502—104 26 Claims

8. A method of preparing a catalyst for use in polymerizing olefins, comprising the steps of:

1) combining in a polar solvent a cyclopentadienyl anion having a chiral substituent selected from the group consisting of menthyl, neomenthyl, or phenylmenthyl with a cyclopentadienyl compound having the substituent AR_2X where A comprises a Group 13, 14, 15, or 16 element of the Periodic Table, R is an alkyl group (C_1–C_{12}) and X is a halogen;

2) mixing the product of Step 1 with a deprotonating agent in a nonpolar solvent;

3) mixing the product of Step 2 with MX_4 in a polar solvent, where M=an element from Groups 3, 4, or 5 of the Periodic Table, and X is a halogen; and

4) separating a chiral catalytic complex from the reaction product of Step 3 by mixing with a nonpolar solvent and extracting from said nonpolar solvent.

5,330,949

METHOD FOR PRODUCING POLYOLEFIN

Hideo Funabashi; Akira Tanaka; Rikuo Ohnishi; Toshikazu Kasahara, and Takashi Yamawaki, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 279,260, Dec. 1, 1988, abandoned, which is a continuation of Ser. No. 871,221, Jun. 6, 1986, abandoned. This application Apr. 26, 1990, Ser. No. 515,782
Claims priority, application Japan, Jun. 17, 1985, 60-131307; Jun. 18, 1985, 60-132578; Nov. 20, 1985, 60-260370; Nov. 22, 1985, 60-263177; Nov. 26, 1985, 60-265266; Dec. 17, 1985, 60-284099; Dec. 21, 1985, 60-288697; Dec. 30, 1985, 60-298332; Dec. 30, 1985, 60-298333; Jan. 28, 1986, 61-16328; Feb. 28, 1986, 61-43669; Feb. 28, 1986, 61-43670
Int. Cl.[5] C08F *4/654, 4/656, 10/00*
U.S. Cl. 502—111 2 Claims

1. In a method for producing a solid catalyst carrier having a surface hydroxyl group concentration of up to 3 μ mole/m^2 which is useful for preparing a catalyst containing (A) a solid catalyst component, (B) an organoaluminum compound and (C) an electron donating compound; which catalyst is useful for polymerizing an α-olefin having three or more carbon atoms for copolymerizing an α-olefin having three or more carbon atoms and ethylene; the improvement comprising:

contacting at least one member selected from the group consisting of oxides of elements belonging to Groups II, III and IV of the periodic table and a composite of inorganic oxides containing at least one such oxide, with at least one silicon halide selected from the group consisting of alkylchlorosilanes having 1–6 carbon atoms and tetrachlorosilane, in a molar ratio of 1–50:1 with respect to said oxides;

contacting the product thereof with an aliphatic monovalent alcohol in a ratio of 1–100:1 with respect to said silicon halide;

separating the resulting solid after said contacting;

contacting the resulting solid with a solution containing a magnesium alkoxide represented by the formula:

$$Mg(OR^2)_f(OR^3)_{2-5}$$

wherein R^2 and R^3 are the same or different, and each represents an alkyl group of 1–10 carbon atoms, and t is a real number of 0 to 2, wherein said solution containing a magnesium alkoxide is a mixture thereof with at least one additional member selected from the group consisting of a hydrocarbon, an electron donor and an alkoxytitanium compound; and

contacting the product thereof with tetrachlorosilane.

5,330,950

MIXED ZIEGLER AND CHROMIUM CATALYST AND PROCESS FOR PREPARING A BROAD MOLECULAR WEIGHT DISTRIBUTION HDPE

John T. T. Hsieh, Warren, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 139,220, Dec. 29, 1987, abandoned. This application Aug. 14, 1989, Ser. No. 393,824

Int. Cl.[5] **C08F** *4/24, 10/02*

U.S. Cl. 502—113 **15 Claims**

1. A catalyst system for production of ethylene polymerization products, having a density of 0.94 to 0.97 and I_{21}/I_2 ratio (MFR) ranging from about 140 to about 200 comprising two catalyst components

wherein a first of said two catalyst components comprises an aluminum component and a titanium component on a magnesium oxide support; and wherein a second of said two catalyst components comprises a chromium compound on an inert support;

wherein a weight ratio of said second of said two catalyst components to said first of said two catalyst components ranges from 3:1 to 15:1 and

wherein the weight ratio provides said catalyst which gives a broader molecular weight distribution (MWD) than either of said two catalyst components alone

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5,330,951

CATALYST COMPOSITION FOR POLYMERIZING ALPHA-OLEFIN

Robert I. Mink, Warren, and Thomas E. Nowlin, Cranbury, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 9, 1992, Ser. No. 997,433

Int. Cl.[5] **C08F** *4/10, 4/64*

U.S. Cl. 502—115 **26 Claims**

1. A process for preparing a supported alpha-olefin polymerization catalyst composition which comprises the steps of

i) providing a slurry of a solid, porous carrier having silanol groups and a non-polar solvent to form a slurry of step (i), wherein the non-polar solvent is one in which an organomagnesium compound is soluble,

ii) contacting the slurry of step (i) with at least one organomagnesium compound having the formula

$$R_mMg\,R'_n \qquad (I)$$

where R and R' are the same or different C_4–C_{12} alkyl groups, m and n are each 0, 1 or 2, provided that m+n is equal to the valence of Mg and thereby producing at least one alkane selected from the group consisting of R_mH and R_nH, wherein R_m and R_n' are as defined above; where sufficient magnesium compound is used to react with the carrier hydroxyl groups (OH) at a Mg/OH ratio of 1.0,

iii) adding to the slurry of step (ii) an amount of 1-butanol, wherein the amount of 1-butanol provides a 1-butanol:Mg molar ratio of 0.1 to 0.40, to control flow ratio of polymerization product and to maintain flow ratio in a range of 20 to 17, and thereby forming a slurry of step (iii);

iv) contacting the slurry of step (iii) with at least one titanium metal compound soluble in the non-polar solvent to provide a Ti:Mg ratio of 0.5 to 2.0, and

v) combining the product of step (iv) with an activating amount of diisobutylaluminum hydride.

5,330,952

CATALYST COMPOSITIONS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 805,227, Dec. 11, 1991, Pat. No. 5,229,475. This application Mar. 18, 1993, Ser. No. 33,214

Claims priority, application Netherlands, Dec. 13, 1990, 9002739

Int. Cl.[5] **B01J** *31/00, 31/18, 31/24*

U.S. Cl. 502—162 **5 Claims**

1. A catalyst composition useful in the production of linear alternating polymers of carbon monoxide and at least one ethylenically unsaturated hydrocarbon formed by reacting a palladium compound; an anion of a non-hydrohalogenic acid with a pKa of less than 2; and a phosphorus bidentate ligand; the improvement which comprises including within the catalyst composition an acid with a pKa of above about 4 but less than about 6 selected from the group consisting of benzoic acid, acetic acid, adipic acid, isobutyric acid, heptanoic acid, α-phenylbutyric acid, pivalic acid, valeric acid, 2,4,6-trimethylbenzoic acid, pentachlorophenol or pentafluorophenol.

5,330,953

PREPARATION OF ANATASE TITANIUM DIOXIDE

Dominic G. Meina, Strathclyde, Scotland, assignor to Tioxide Specialties Limited, London, England

Filed Apr. 26, 1993, Ser. No. 51,779

Claims priority, application United Kingdom, Jun. 20, 1992, 9213140.8

Int. Cl.[5] **B01J** *27/18, 27/82*

U.S. Cl. 502—208 **24 Claims**

1. A process for preparing anatase titanium dioxide having a high surface area comprising the steps of:

a) preparing hydrous titania in the anatase form by hydrolysis of a titanium compound selected from the group consisting of titanyl sulphate and titanium orthoesters,

b) forming an aqueous dispersion of said hydrous titania in the anatase form at a Ph of not more than 3,

c) adding to the dispersion a hydrolyzable water soluble salt of a rutile inhibitor,

d) increasing the Ph of the dispersion to precipitate a first coating on the surface of said hydrous titania particles comprising the rutile inhibitor in the form of a hydrous oxide; and

e) adding a water soluble phosphate to form a second coating on the said hydrous titania particles comprising a phosphate.

22. Particulate anatase titanium dioxide having a specific surface area of at least 30 meters squared per gram as determined by BET nitrogen desorption measurement prepared according to the process of claim 1.

5,330,954

CATALYTIC SYSTEM AND ITS APPLICATION TO THE OXYDEHYDROGENATION OF SATURATED CARBOXYLIC ACIDS AND THE OXIDATION OF ALDEHYDES TO ACIDS

Emmanuel Cadot, Gentilly; Franck Daubrege, Paris; Gilbert Herve, Levis Saint Nom, and André Teze, Conflans St. Honorine, all of France, assignors to Elf Atochem, S.A., Paris, France

Filed Sep. 3, 1992, Ser. No. 939,510

Claims priority, application France, Sep. 30, 1991, 91 10868

Int. Cl.[5] **B01J** *27/198;* **C07C** *51/16*

U.S. Cl. 502—209 **30 Claims**

1. A catalytic system based on oxygen, vanadium, phosphorus and molybdenum, of the formula:

$$H_mX_nMe_pPMO_{12-x}V_xO_{40}$$

wherein

X represents a VO^{2+} cation with $0<n\leq 2$,

H represents protons with $0\leq m<4$, $0\leq x\leq 3$,

Me is a metal ion, with $0\leq p<t$, t depending on the charge of the corresponding ion.

5,330,955

CARBONYLATION REACTION CATALYSTS

Richard W. Wegman, South Charleston, W. Va., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 227,295, Aug. 2, 1988, Pat. No. 5,218,140. This application Mar. 17, 1993, Ser. No. 32,509

Int. Cl.[5] **B01J** *27/18, 23/54;* **C01B** *25/45;* **C01G** *41/02*

U.S. Cl. 502—210 **12 Claims**

1. A solid catalyst for the carbonylation of one or more alcohols, ethers, and ether alcohols to esters and, optionally, to carboxylic acids, by reaction thereof in the vapor state, said catalyst having the formula $M[W_{12}PO_{40}]$ in which M is a metal selected from the group consisting of Ir, Rh, Fe and Th.

5,330,956

POISONING-RESISTANT CATALYST, PROCESS FOR PRODUCTION THEREOF, AND PROCESS FOR USING SAID CATALYST

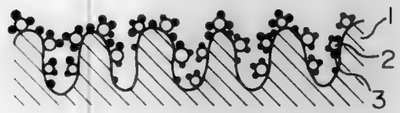
Tetsuro Haga; Hiroshi Kawagoshi, and Hisao Yamashita, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,918

Claims priority, application Japan, Sep. 20, 1991, 3-241456

Int. Cl.[5] **B01J** *21/12, 23/40*

U.S. Cl. 502—261 **5 Claims**



1. A poisoning-resistant catalyst for combustion of CO and inflammable gases in air containing a poisonous component for the catalyst which comprises an inorganic carrier, a noble metal active ingredient supported on said inorganic carrier, and silica supported on said noble metal active ingredient, said noble metal active ingredient comprising at least one member selected from the group consisting of Pt, Rh and Pd, an outer part of the surface of said catalyst being richer in silica and an inner part of said catalyst becoming richer in said noble metal active ingredient the deeper from the outer part of the surface said inner part becomes; the amount of silica relative to said at least one member selected from the group consisting of Pt, Rh and Pd being 4 to 20 in terms of the atomic ratio of Si to said at least one member selected from the group consisting of Pt, Rh and Pd.

5,330,957

COMPOSITION FOR THE ABSORPTION OF POLLUTANTS

Daniel Duquenne, Clermont, France, assignor to Elf Atochem S.A., Paris, France

Continuation of Ser. No. 582,918, Apr. 19, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 18,919

Claims priority, application France, Feb. 17, 1989, 89 02099

Int. Cl.[5] **B01J** *20/26;* **C02F** *1/28;* **B01D** *17/04*

U.S. Cl. 502—402 **11 Claims**

1. Composition for absorbing polluting products, comprising at least one norbornene polymer selected from the group consisting of polycyclo[2,2,1]-2-heptene and poly-5-methylbicyclo[2,2,1]-2-heptene, and at least one alkaline-earth metal halide as an agent for breaking an aqueous emulsion of water-soluble oil wherein said composition comprises from 5 to 250 parts by weight of said emulsion-breaking agent per 100 parts by weight of norbornene polymer.

5,330,958

CATALYST GRANULES, IN PARTICULAR FOR THE OXIDATIVE DEHYDROGENATION OF METHANOL IN ORDER TO YIELD FORMALDEHYDE

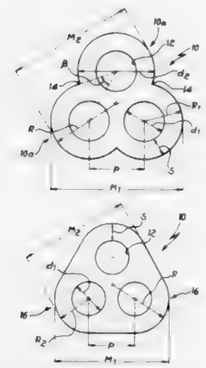
Augusto Viola; Massimo Brusa; Bernardo Merighi, and Giuseppe Gubitosa, all of Novara, Italy, assignors to Montecatini Technologie S.p.A., Milan, Italy

Filed Dec. 1, 1992, Ser. No. 984,315

Claims priority, application Italy, Oct. 6, 1992, MI92 A 002301

Int. Cl.[5] **B01J** *23/88, 23/28, 35/02;* **C07C** *45/00*

U.S. Cl. 502—316 **13 Claims**



1. Catalyst granule of cylindrical shape, having a cross section with at least three points of contact with the circumscribed circumference, wherein said catalyst granule has at least three through-bores having axes which are substantially parallel to each other and to the axis of the granule, and substantially equidistant from each other, and wherein said catalyst granule is derived from powders comprising $Fe_2(MoO_4)_3$ and MoO_3.

5,330,959

ENHANCED SPEED CARBONLESS PAPER

James M. Raby, Youngstown, N.Y., and Rodney E. Williams, Fremont, Ohio, assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 888,383, May 22, 1992, abandoned, which is a continuation of Ser. No. 602,619, Oct. 24, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 17,989

Claims priority, application Japan, Oct. 27, 1989, 1-280226; Nov. 28, 1989, 1-306621

Int. Cl.[5] **B41M** *5/124;* **C08G** *8/28*

U.S. Cl. 503—201 **2 Claims**

1. A method of using a coating composition in a carbonless copying system at temperatures below 40° F., said carbonless copying system including a transfer substrate, a recording substrate, an image-forming component carried in microcapsules by said transfer substrate and a coating composition carried by said recording substrate, said coating composition comprising:

a resin dispersion which is a phenol/aldehyde condensation product formed by the interaction of alkyl-substituted salicylic acid, an alkyl-substituted phenol, an aldehyde and a metal source;

a binder; and

a pigment,

said method comprising applying pressure in selected areas upon the transfer substrate at temperatures below 40° F. to

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cause said microcapsules to rupture, thereby allowing the microencapsulated image-forming component to contact said coating composition to form a colored image on corresponding areas of the recording substrate.

5,330,960

HEAT TRANSFER SHEET

Masashi Ono; Shigeo Yasui; Ayashi Noguchi, all of Okayama; Ryohei Takiguchi, Tokyo; Hiroshi Eguchi, Tokyo, and Komei Kafuku, Tokyo, all of Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

PCT No. PCT/JP91/01273, § 371 Date May 21, 1992, § 102(e) Date May 21, 1992, PCT Pub. No. WO92/05032, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 25, 1991, Ser. No. 858,982

Claims priority, application Japan, Sep. 25, 1990, 2-255512

Int. Cl.[5] B41M *5/035, 5/38*

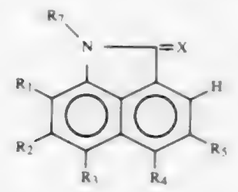
U.S. Cl. 503—227 **4 Claims**

4. A process for thermal transfer printing comprising the steps of:

(i) providing an image-receiving sheet and a heat transfer sheet comprising:

a substrate sheet; and

a dye layer provided on one surface of the substrate sheet, the dye layer comprising a dye of the formula:



wherein

X is any of

$C(COOR_7)_2$ wherein the R_7 groups may be the same or different), or



in which

A is an electron attracting group,



is a residual group of a five- or six-membered ring that may have a condensed ring, and

Z is —CO—, —NR_6—, —S—, —O— or —NH—,

R_1 is any of a hydrogen atom, R_6, a halogen atom, a nitro group, —OR_6, —SR_6, or an allyl group which may have a substituent;

R_2 is any of a hydrogen atom, a halogen atom, —OR_6, or —SR_6;

R_3 is any of a hydrogen atom, R_6, a halogen atom, a nitro group, an allyl group which may have a substituent, —OR_6, —SR_6, a sulfamoyl group, a carbamoyl group, an acyl group, an acylamide group, a sulfone amide group, an ureido group, or —NR_6R_6 wherein the R_6 groups may be the same or different;

R_4 is any of a hydrogen atom, a halogen atom, —OR_6, —SR_6, a cyano group, —$COOR_6$, a carbamoyl group, or a sulfamoyl group;

R_5 is any of a hydrogen atom, a halogen atom, —OR_6, or —SR_6;

R_6 is any of an alkyl group which may have a substituent, an aryl group which may have a substituent, a cycloalkyl group which may have a substituent or a heterocyclic ring which may have a substituent; and

R_7 is any of a hydrogen atom, —R_6, an allyl group which may have a substituent, an alkenyl group which may have a substituent, a heteroalkenyl group which may have a substituent, an arylalkylene group which may have a substituent, a heteroaryl-alkylene group which may have a substituent, an alkoxyalkylene group which may have a substituent, an oxycarbonylalkyl group which may have a substituent, a carboxyalkyl group which may have a substituent, an oxycarboxyalkyl group which may have a substituent or a cycloalkylalkylene group which may have a substituent, with the proviso that any two adjacent groups among R_1, R_2, R_3, R_4 and R_5 may form a ring;

(ii) bringing the heat transfer sheet into contact with the image-receiving sheet; and

(iii) applying thermal energy to the heat transfer sheet, in accordance with information for printing, thereby forming an image on the image-receiving sheet.

5,330,961

IMAGE RECEIVING SHEET FOR THERMAL TRANSFER RECORDING AND PROCESS FOR PREPARING THE SAME

Toshihisa Takeyama; Shigehiro Kitamura, and Kunihiro Koshizuka, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,668

Claims priority, application Japan, Sep. 12, 1991, 3-233247

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **9 Claims**

1. In an image receiving sheet for thermal transfer recording comprising: a support and a thermal transfer image receiving layer provided on a surface of the support and which contains a resin having drying affinity for a thermally diffusible dye provided thereon; the improvement comprising

said support comprising a substrate having a first side and a second side; a first porous resin film being laminated on the first side; a second porous resin film being laminated on the second side; and said first and second porous resin film each being mainly composed of a polyester resin and having a density in the range of 0.5 to 1.2 g/cm^3.

5,330,962

THERMAL DYE TRANSFER PRINTING METHOD FOR OBTAINING A HARD COPY OF A MEDICAL DIAGNOSTIC IMAGE

Luc De brabandere, Lier; Emiel Verdonck, Berlaar; Frans Feytens, Meise, and Martin Pollefeyt, Brugge, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 12, 1992, Ser. No. 974,906

Claims priority, application European Pat. Off., Nov. 19, 1991, 91203008.7

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **21 Claims**

17. Thermal dye transfer printing method comprising the step of imagewise heating a dye-donor element comprising a support having thereon a dye layer thereby transferring a dye image to a transparant dye-image receiving element, comprising a support having thereon a dye image-receiving layer, said dye-image receiving element being such that when a dye image has been transferred onto said receiving element the specular gloss of the transferred dye image measured from the readable side of the image in areas having a transmission density of at least 2.00 is at the most 90.

5,330,963

TRANSFER PRINTING METHOD

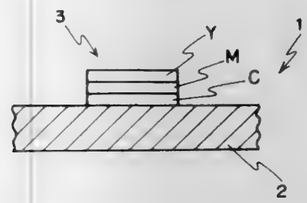
Manabu Ikemoto, and Hitomi Kawabata, both of Osaka, Japan, assignors to Fujicopian Company, Ltd., Osaka, Japan

Filed Mar. 22, 1993, Ser. No. 35,317

Claims priority, application Japan, Mar. 25, 1992, 4-067166

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **1 Claim**



1. A transfer printing method comprising the steps of:

providing a thermal transfer ink sheet wherein a heat-meltable ink Y containing a sublimation dye for yellow, a heat-meltable ink M containing a sublimation dye for magenta and a heat-meltable ink C containing a sublimation dye for cyan are applied on a single foundation in the order of ink C, ink M and ink Y in a direction opposite to a direction in which said thermal transfer ink sheet is to be fed,

selectively melt-transferring at least two of the inks Y, M and C onto a master sheet in the order of ink C, ink M and ink Y to form a master image in which at least two of the respective images of the inks Y, M and C are superimposed one on the other; and

transferring the sublimation dyes contained in the superimposed images onto an image receptor; wherein in forming said master image on said master sheet, a thermal transfer printer is used which is constructed to use a thermal transfer ink sheet wherein a yellow ink Y, a magenta ink M and a cyan ink C are periodically arranged in this order on a single foundation in a direction opposite to a feeding direction of the thermal transfer ink sheet and detection marks Sy, Sm and Sc are provided for the inks Y, M and C, respectively, and which selects the inks for desired colors by detecting the detection marks with a detection means when the thermal transfer ink sheet is moved in the feeding direction; and wherein in the thermal transfer ink sheet detection marks Sy, Sm and Sc are provided for said inks C, M and Y, respectively, and said inks C, M and Y are transferred onto said master sheet in this order by selecting and transferring said sublimation ink C upon detection of the detection mark Sy, said sublimation ink M upon detection of the detection mark Sm, and said sublimation ink Y upon detection of the detection mark Sc, by the detection means.

5,330,964

METHOD OF CONTROLLING VEGETATION

Carl A. Alesi, Jr., 1544 Broad Run Rd., Dowingtown, Pa. 19355

Filed Feb. 24, 1993, Ser. No. 22,062

Int. Cl.[5] A01N *59/00*

U.S. Cl. 504—119 **3 Claims**

1. An environmentally safe method of controlling low lying vegetation selected from the group consisting of weeds, moss, poison ivy, clover and grass, comprising the steps of:

providing a quantity of sodium bicarbonate adjacent to said low lying vegetation; and

applying to the locus thereof sodium bicarbonate in powder form to a thickness in a range of about ¼ inch to about ½ inch.

5,330,965

CYCLOHEXENONE OXIME ETHERS AND THEIR USE AS HERBICIDES

Ulf Misslitz, Neustadt; Norbert Meyer, Ladenburg; Juergen Kast, Boehl-Iggelheim; Norbert Goetz, Worms; Albrecht Harreus, Ludwigshafen; Thomas Kuekenhoehner, Frankenthal; Bruno Wuerzer, Otterstadt; Helmut Walter, Obrigheim; Karl-Otto Westphalen, Speyer, and Matthias Gerber, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

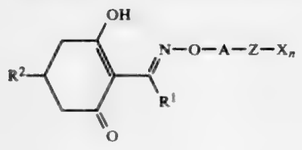
Division of Ser. No. 697,040, May 8, 1991, Pat. No. 5,228,896. This application Jan. 15, 1993, Ser. No. 981,492

Claims priority, application Fed. Rep. of Germany, May 9, 1990, 4014987

Int. Cl.[5] A01N *43/42, 43/10, 43/08;* **C07D** *333/22*

U.S. Cl. 504—244 **3 Claims**

1. A cyclohexenone oxime ether of the formula I



(I)

where

R^1 is C_1–C_6-alkyl;

A is C_2–C_6-alkylene or C_3–C_6-alkenylene, where these groups may carry from one to three C_1–C_3-alkyl groups or halogen atoms;

Z is a 5-membered heteroaromatic structure having from one to three hetero atoms selected from the group consisting of three nitrogen atoms and one oxygen or sulfur atom a 6-membered heteroaromatic structure having from one to four nitrogen atoms;

X is an amino group —NR^aR^b, where

R^1 is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl

R^b is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_6-acyl or benzoyl, where the aromatic ring may additionally carry from one to three of the following substituents: nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkyl, or X is nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, benzyloxycarbonyl or phenyl, where the aromatic radicals may additionally carry from one to three of the following substituents: nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, carbonyl, C_1–C_4-alkoxycarbonyl or benzyloxycarbonyl,

n is from 0 to 3, or from 1 to 4 where Z is halogen-substituted pyridyl, and

R^2 is C_1–C_4-alkylthio-C_1–C_6-alkyl; C_1–C_4-alkylthio-C_3–C_7-cycloalkyl phenyl substituted by three C_1–C_4-alkyl groups, or its agriculturally useful salts and esters of C_1–C_{10}-carboxylic acids and inorganic acids.

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5,330,966

METHOD OF PREPARING 2223 PHASE (BI,PB)-SR-CA-CU-O SUPERCONDUCTING FILMS

Noriki Hayashi, and Satoshi Takano, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Inc. and The Kansai Electric Power Co., Inc., both of Osaka, Japan

Continuation of Ser. No. 666,299, Mar. 8, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 905,994

Claims priority, application Japan, Mar. 8, 1990, 2-57649; Mar. 8, 1990, 2-57650

Int. Cl.[5] B05D 5/12; C23C 16/00

U.S. Cl. 505—473 7 Claims

1. A method of preparing a bismuth oxide superconducting film consisting essentially of a 2223 phase, comprising the steps of:

forming a Bi-Sr-Ca-Cu oxide superconducting layer with atomic ratios of 2:2:2:3 of Bi:Sr:Ca:Cu on a base material in a crystallographically oriented state by a vapor phase method at a temperature of at least 600° C.;

laying a layer of a material containing lead on said oxide superconducting layer to obtain a two-layer structure; and

heating treating said two-layer structure to obtain a $Bi_2Pb_{0.5}Sr_2Ca_2Cu_3$ oxide superconducting film.

5,330,967

SUPERCONDUCTING BEARING DEVICE STABILIZED BY TRAPPED FLUX

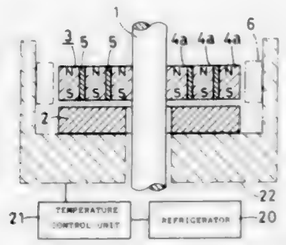
Ryoichi Takahata, Nara, and Shoji Eguchi, Osaka, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jul. 16, 1991, Ser. No. 730,164

Claims priority, application Japan, Jul. 17, 1990, 2-188693; Dec. 18, 1990, 2-403263

Int. Cl.[5] B60L 13/04; H02K 55/00, 7/09

U.S. Cl. 505—166 7 Claims



1. A superconducting bearing device comprising, in a temperature environment for realizing a Type II superconducting state:

a rotor;

a permanent magnet in the form of a disk having an end face and being mounted on said rotor concentrically thereto;

a Type II superconductor disposed in a magnetic field of the permanent magnet;

wherein the permanent magnet, the Type II superconductor and the rotor are positioned so that:

the permanent magnet is mounted on the rotor so that the rotation of the rotor does not alter the magnetic flux distribution around the axis of rotation of the rotor;

the Type II superconductor is spaced from the permanent magnet by a distance permitting a predetermined quantity of magnetic flux of the permanent magnet to penetrate thereinto;

the superconductor is disposed at a position not permitting the rotation of the rotor to alter the distribution of penetrating magnetic flux;

the superconductor permits penetration of the magnetic flux of the permanent magnet;

the superconductor is held at a temperature for realizing a Type II superconducting state after the superconductor is magnetized by the magnetic field of the permanent magnet;

the rotor is stabilized by the penetrating magnetic flux trapped in the superconductor;

the Type II superconductor is opposed to said end face of the permanent magnet and is spaced apart therefrom axially of the rotor;

the permanent magnet includes a plurality of annular permanent magnets arranged at a spacing radially of the rotor and a non-magnetic material interposed therebetween; and

polarities of the ends of each permanent magnet which are opposite axially of the rotor are magnetized to polarities opposite to each other, polarities of all the permanent magnets being magnetized to the same polarity at their ends which are positioned towards the same direction with respect to the axis of rotation.

5,330,968

LASER ABLATION PROCESS FOR PREPARING OXIDE SUPERCONDUCTING THIN FILMS

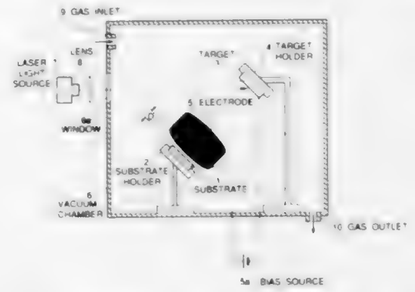
Tatsuoki Nagaishi; Nobuhiro Ota, and Naoji Fujimori, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 12, 1992, Ser. No. 897,668

Claims priority, application Japan, Jun. 12, 1991, 3-167804

Int. Cl.[5] B05D 3/06; H01L 39/24

U.S. Cl. 505—474 10 Claims



1. In a laser ablation process for preparing a compound copper-oxide superconductor film on a substrate, the improvement comprising arranging an electrode between a substrate and a target, wherein said electrode is of a shape selected from the group consisting of: a planar shape which extends across an area between the substrate and the target and a cylindrical shape; and

applying a bias voltage having a potential which is 75 to 100 volts higher than a potential of said target between the electrode and the target while the film is formed by the laser ablation.

5,330,969

METHOD FOR PRODUCING STRAIN TOLERANT MULTIFILAMENTARY OXIDE SUPERCONDUCTING WIRE

Douglas K. Finnemore, Ames, Iowa; Theodore A. Miller, Tucson, Ariz.; Jerome E. Ostenson, Ames, Iowa; Louis A. Schwartzkopf, Mankato, Minn., and Steven C. Sanders, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 651,551, Feb. 6, 1991, Pat. No. 5,189,260. This application Nov. 24, 1992, Ser. No. 980,759

Int. Cl.[5] B05D 5/12; H01B 12/00

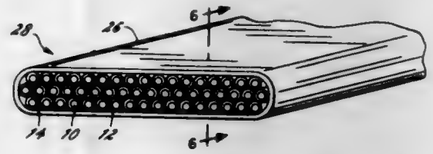
U.S. Cl. 505—431 10 Claims

1. A method of producing a strain tolerant multifilamentary wire capable of carrying superconducting currents comprising the steps of:

providing a plurality of amorphous filaments of a high Tc material capable of conducting superconducting currents when in the crystalline state, the length of the filaments being at least several orders of magnitude greater than the filament diameter;

coating the filaments with a thin layer of normal conductive metal on the exterior surfaces of the filaments;

orienting the coated filaments such that the length of the filaments is generally along an elongate axis of the microfilamentary wire, the step of orienting producing substantial filament-to-filament overlap;



compacting the oriented coated filaments to form an elongate composite in which the overlapped coated filaments are pressed into contact with each other; and

heat treating the composite to crystallize the amorphous filaments while leaving a normal metal interface between the crystallized filaments, the step of heat treating serving to preserve the normal metal coating on the filaments to form said interface to produce the multifilamentary wire capable of carrying superconducting currents in which the crystallized superconducting filaments are supported in a normal metal matrix.

5,330,971

GROWTH HORMONE FUSION PROTEINS, METHODS OF PRODUCTION, AND METHODS OF TREATMENT

Julian R. E. Wells, College Park; Robert M. King, Unley, and Geoffrey L. Francis, Athelstone, all of Australia, assignors to GroPep Pty. Ltd., Thebarton, Australia

PCT No. PCT/AU90/00210, § 371 Date Jan. 22, 1991, § 102(e) Date Jan. 22, 1991, PCT Pub. No. WO90/15142, PCT Pub. Date Dec. 13, 1990

PCT Filed May 22, 1990, Ser. No. 646,616

Claims priority, application Australia, Jun. 9, 1990, PJ 4672

U.S. Cl. 514—2 9 Claims

1. A fusion protein exhibiting growth factor activity including:

(a) a first amino acid sequence including the first 46 N-terminal amino acids of methionine porcine growth hormone (metpGH) selected from the group consisting of:
MFPAMPLSSLFANAVLRAQHLHQLAAD-TYKEFERAYIPEGQRYSIQVN, and
MFPAMPLSSLFANAVLRAQHLHQLAAD-TYKEFERAYIPEGQRYSIQVNFAHY; and

(b) a second amino acid sequence for epidermal growth factor, joined to the C-terminal of the first amino acid sequence.

2. A fusion protein exhibiting insulin-like growth factor-I (IGF-I) or insulin-like growth factor-II (IGF-II) activity including:

(a) a first amino acid sequence including the first 11 N-terminal amino acids of metpGH selected from the group consisting of:
MFPAMPLSSLF-,
MFPAMPLSSLFVN-,
MFPAMPLSSLFVNFAHY- and
MFPAMPLSSLFVNGFAHY-; and

(b) a second amino acid sequence for IGF-I, IGF-II, or analogues thereof, joined to the C-terminal of the first amino acid sequence.

5,330,970

COMPOSITION AND METHOD FOR INHIBITING COKE FORMATION AND DEPOSITION DURING PYROLYTIC HYDROCARBON PROCESSING

Dwight K. Reid, Houston, and Daniel E. Fields, The Woodlands, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 676,044, Mar. 27, 1991, Pat. No. 5,128,023. This application Apr. 1, 1992, Ser. No. 861,729

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.[5] C10G 9/16

U.S. Cl. 507—90 8 Claims

7. A composition for inhibiting the formation and deposition for coke on the heated metal surfaces in contact with a hydrocarbon feedstock which is undergoing pyrolytic processing to produce lower hydrocarbon fractions and said metal surfaces having a temperature of about 1600° F. or higher, which improvement comprises a synergistic combination of a boron compound and a dihydroxybenzene compound selected from the group consisting of hydroquinone, resorcinol, catechol, and 4-tert-butyl resorcinol, wherein said boron compound is contained in a glycolic carrier selected from the group consisting essentially of ethylene glycol, propylene glycol, glycerol, hexylene glycols and polyethylene glycols.

5,330,972

METHOD OF IMPEDING APOPTOSIS OF CD4 CELLS IN PERSONS INFECTED WITH HUMAN IMMUNODEFICIENCY VIRUS

Frederick O. Cope, Worthington, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.

Filed May 28, 1993, Ser. No. 69,264

Int. Cl.[5] A61K 37/02

U.S. Cl. 514—2 16 Claims

1. A method of impeding the apoptosis of CD4 cells in a person infected with human immunodeficiency virus comprising enterally feeding to said person a therapeutically effective amount of an enteral nutritional product comprising:

(a) a soy protein hydrolysate having a degree of hydrolysis in the range of about 14 to 17 and a molecular weight partition, as determined by size exclusion chromatography wherein 30%–60% of the particles have a molecular weight in the range of 1500–5000 Daltons and the amino acid profile of the soy protein hydrolysate has less than 1% free amino acids;

(b) a second source of protein which comprises a source of intact protein in a quantity sufficient to yield a stable emulsification of the soy protein hydrolysate and the intact protein in the nutritional product; and

(c) a source of fat characterized by the ratio, by weight, of the sum of the n-6 fatty acids to the sum of the n-3 fatty acids being in the range of about 1.3:1 to 2.5:1.

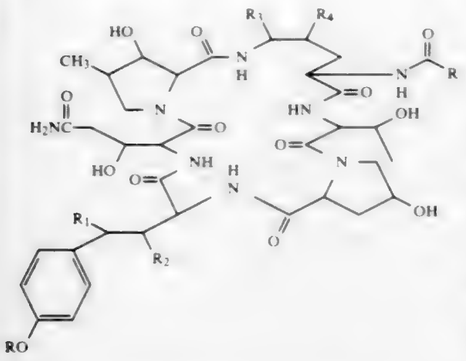
5,330,973

LIPOPEPTIDE DERIVATIVES

Milton L. Hammond, Somerville; Robert E. Schwartz, Westfield, and James M. Balkovec, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 19, 1990, Ser. No. 495,198
Int. Cl.[5] C07K *5/12, 7/06;* A61K *37/02*
U.S. Cl. 514—11 12 Claims

1. A compound having the formula:



wherein
R_1, R_2, R_3 and R_4 are independently H or OH;
R′ is C_5–C_{23} alkyl, C_5–C_{23} alkenyl, C_5–C_{23} alkynyl or aryl; and
R is an acyl, phosphono or sulfo radical which possesses a charged group at a neutral pH.

5,330,974

THERAPEUTIC FIBRINOGEN COMPOSITIONS

Eli Pines, Watchung, N.J., and William J. White, Wayne, Pa., assignors to Fibratek, Inc., Pepper Pike, Ohio

Filed Mar. 1, 1993, Ser. No. 24,121
Int. Cl.[5] A61K *37/02;* C07K *15/08, 3/24*
U.S. Cl. 514—21 1 Claim

1. A method for producing a therapeutic fibrinogen composition comprising three or more steps including at least the steps of:
(A) precipitating fibrinogen from a sample of mammalian blood plasma with polyethylene glycol 1000;
(B) resuspending said fibrinogen in solution; and
(C) reprecipitating said fibrinogen with glycine;
wherein precipitation of said fibrinogen with polyethylene glycol is performed only once; and wherein about 90 to 95% of the fibrinogen present in said sample is recovered.

5,330,975

BACTERIAL TOXIN NEUTRALIZER

Hiroko Isoda, Sapporo; Yoshihiro Kawasaki, Kawagoe; Morimasa Tanimoto, Sayama; Shunichi Dosako, Urawa, and Tadashi Idota, Kawagoe, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Division of Ser. No. 473,761, Feb. 2, 1990, abandoned. This application Jul. 14, 1992, Ser. No. 913,500
Claims priority, application Japan, Feb. 7, 1989, 1-027823
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[5] A61K *31/715*
U.S. Cl. 514—25 2 Claims

1. A bacterial enterotoxin neutralizer composition which is a mixture by weight of 10% ganglioside G_{D3}, 50% lactoferrin, 30% kappa-casein glycomacropeptide and 10% sialyllactose.

5,330,976

ANTIMYCOTIC COMPOSITIONS OF NIKKOMYCIN COMPOUNDS AND AZOLE ANTIMYCOTICS

Richard F. Hector, Dublin, Calif.; Klaus Schaller, Wuppertal, Fed. Rep. of Germany; Heinrich F. Moeschler, and Manfred Plempel, both of Leverkusen, Fed. Rep. of Germany, assignors to Miles Inc., Berkeley, Calif.

Continuation of Ser. No. 876,541, Apr. 29, 1992, Pat. No. 5,194,427, which is a continuation of Ser. No. 822,451, Jan. 17, 1992, Pat. No. 5,134,126, which is a continuation of Ser. No. 640,769, Jan. 14, 1991, Pat. No. 5,096,889, which is a continuation of Ser. No. 442,970, Nov. 19, 1989, Pat. No. 5,006,513, which is a continuation of Ser. No. 118,078, Nov. 9, 1987, abandoned. This application Feb. 11, 1993, Ser. No. 16,442
Int. Cl.[5] A61K *31/70, 31/415*
U.S. Cl. 514—43 2 Claims

1. A synergistically, fungicidally effective antimycotic composition comprising fungicidally effective amount of nikkomycin X or nikkomycin Z, and miconazole the weight of the nikkomycin X or Z to miconazole ranging from about 1:1 to about 30:1.

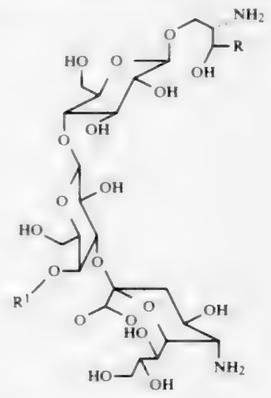
5,330,977

DI-N-ACETYL LYSOGANGLIOSIDE COMPOSITIONS

Ezio Tubaro, and Giovanni Cavallo, both of Rome, Italy, assignors to The Wellcome Foundation Limited, London, England

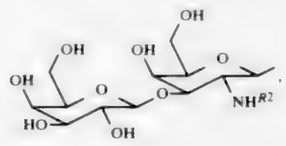
Division of Ser. No. 689,901, Jun. 18, 1991, Pat. No. 5,281,702. This application Jul. 27, 1992, Ser. No. 918,611
Claims priority, application Italy, Dec. 28, 1989, 48702A/89
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[5] A61K *31/715, 31/725*
U.S. Cl. 514—53 2 Claims

1. A pharmaceutical composition comprising an N-deacetyllysoganglioside of the formula:



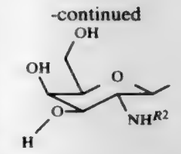
(I)

wherein
R represents $-CH{=}CH(CH_2)nCH_3$ or $-CH_2CH_2(CH_2)nCH_3$;
n is 12 or 14;
R^1 represents



or

-continued



and R^2 represents hydrogen or acetyl;
or a physiologically acceptable salt thereof
together with a pharmaceutically acceptable carrier therefor.

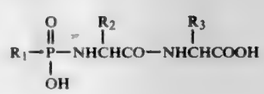
5,330,978

PHOSPHONIC ACID DERIVATIVES AND USE THEREOF

Mitsuhiro Wakimasu; Masaaki Mori, and Akira Kawada, all of Ibaraki, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 3, 1992, Ser. No. 892,768
Claims priority, application Japan, Jun. 13, 1991, 3-142099; Apr. 9, 1992, 4-089111
Int. Cl.[5] C07F *9/22;* A61K *33/42*
U.S. Cl. 514—80 16 Claims

1. A compound represented by formula [I] or a pharmaceutically acceptable salt thereof:



[I]

wherein
R_1 is (i) a C_{1-12} alkyl group which may substituted by C_{3-8} cycloalkyl, halogen, hydroxy which may be protected, C_{1-2} alkoxy, ketone or amino which may be protected , (ii) a 5 to 7 member cycloalkyl group which may be substituted by lower alkyl having 1 to 3 carbon atoms, halogen, hydroxy which may be protected, C_{1-2} alkoxy, keto, or amino which may be protected or (iii) an aralkyl group which may be substituted by lower alkyl having 1 to 3 carbon atoms, C_{5-6} cycloalkyl, halogen, hydroxy which may be protected, or C_{1-2} alkoxy;
R_2 is (i) a C_{1-8} alkyl group (ii) a cyclohexylmethylene group or (iii) a benzyl group; and
R_3 is an indolylmethyl group or a benzyl group.

5,330,979

METHOD OF TREATING RENAL DISORDERS WITH INOSITOLTRIPHOSPHATE

Matti Siren, Montagnola/Lugano, Switzerland; Bertil Lofkvist, Perstorp, and Lars Edvinsson, Lund, both of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Continuation-in-part of Ser. No. 580,661, Sep. 11, 1990, Pat. No. 5,128,332, which is a continuation-in-part of Ser. No. 492,740, Mar. 13, 1990, Pat. No. 5,015,634, which is a continuation-in-part of Ser. No. 367,968, Jun. 19, 1989, Pat. No. 5,051,411, which is a continuation-in-part of Ser. No. 251,556, Sep. 30, 1988, Pat. No. 5,023,248, which is a continuation-in-part of Ser. No. 214,500, Jul. 1, 1988, Pat. No. 5,003,098, which is a continuation-in-part of Ser. No. 173,985, Mar. 28, 1988, Pat. No. 5,019,566, which is a continuation-in-part of Ser. No. 38,230, Apr. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 15,679, Feb. 17, 1987, Pat. No. 4,797,390, which is a continuation-in-part of Ser. No. 788,801, Oct. 18, 1985, Pat. No. 4,735,936. This application Jun. 18, 1992, Ser. No. 900,129
Claims priority, application Sweden, Oct. 23, 1984, 8405295; Dec. 16, 1986, 8601709
Int. Cl.[5] A61K *31/66*
U.S. Cl. 514—103 11 Claims

1. A method of treating abnormal renal function caused by abnormal levels of neuropeptide Y (NPY) comprising administering to a human or an animal in need thereof an effective amount of a pharmaceutical composition comprising at least one specific isomer of inositol triphosphate sufficient to treat abnormal renal function caused by abnormal levels of neuropeptide Y.

5,330,980

MEDICAMENT FOR THE TOPICAL TREATMENT OF SKIN

Jae S. Shin, Kangnam-ku, Gaepo-Dong, Hyundai Apt. 203-905, Seoul, Rep. of Korea

Filed Aug. 24, 1992, Ser. No. 934,034
Int. Cl.[5] A61K *31/655, 31/10*
U.S. Cl. 514—157 18 Claims

1. A medication for the topical treatment of burned, irritated, ulcered, chafed, or infected skin, comprising:
a. about 36.0% to 85.3% by weight of petrolatum U.S.P.;
b. about 3.4% to 13.6% by weight of wool-fat U.S.P.;
c. about 2.0% to 12.0% by weight of a sulfa compounded-ingredient selected from the group consisting of sulphadiazine, sulphacetamide, sulphamerazine, sulphamezathine, and sulphanilamide;
d. about 8.7% to 34.8% by weight of zinc oxide U.S.P.; and
e. about 0.6% to 3.6% by weight of disodium formaldehyde sulphoxylate diaminodiphenyl sulfone.

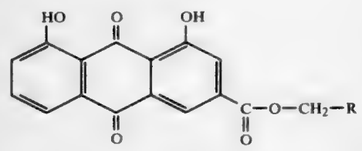
5,330,981

ARYLALKYL ESTERS OF 4,5-DIHYDROXY-9,10-DIHYDRO-9,10-DIOXO-2-ANTHRACENECARBOXYLIC ACID HAVING THERAPEUTICAL ACTIVITY

Sergio Rosini, and Maurizio Mian, both of Pisa, Italy, assignors to Istituto Gentili S.p.A., Pisa, Italy

PCT No. PCT/EP92/00881, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/19584, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 21, 1992, Ser. No. 966,038
Claims priority, application Italy, May 3, 1991, MI91 A 001215
Int. Cl.[5] A61K *31/60, 31/44, 31/40, 31/215*
U.S. Cl. 514—159 11 Claims

1. A compound of formula (1)



(I)

wherein R—CH_2—O— is the residue of an R—CH_2OH alcohol derived from the reduction of an R—COOH carboxylic acid having anti-inflammatory action, which is a member selected from the group consisting of salicylic, arylacetic, arylpropionic, and anthranilic acids; or enantiomers, diastereoisomers and mixtures thereof or pharmaceutically acceptable salts thereof.

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5,330,982

PHARMACEUTICAL COMPOSITION CONTAINING A 5-HT RECEPTOR ANTAGONIST AND AN H^+K^+ATPASE INHIBITOR AND A METHOD OF TREATING GASTROINTESTINAL DISORDERS THEREWITH

Michael B. Tyers, Ware, England, assignor to Glaxo Group Limited, London, England

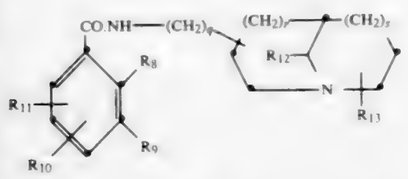
Continuation of Ser. No. 769,393, Oct. 1, 1991, abandoned, which is a continuation of Ser. No. 537,789, Jun. 14, 1990, abandoned, which is a continuation of Ser. No. 133,893, Dec. 16, 1987, abandoned. This application Aug. 25, 1992, Ser. No. 935,443

Claims priority, application United Kingdom, Dec. 17, 1986, 8630080

Int. Cl.[5] **A61K** *31/55*

U.S. Cl. 514—214 **10 Claims**

1. A pharmaceutical composition for use in human or veterinary medicine comprising an effective amount of a compound which is an antagonist of 5-HT at 5-HT_3 receptors and promotes gastric emptying, and an effective amount of a compound which is an H^+K^+ATPase inhibitor, with at least one physiologically acceptable carrier or excipient, wherein said compound which is an antagonist of 5-HT at 5-HT_3 receptors is a compound of formula (III):



(III)

wherein R_8 represents a C_{1-6}alkoxy or amino N-substituted by one or two groups selected from C_{1-6}alkyl and C_{3-8}cycloalkyl, or optionally N-substituted by C_{4-5}polymethylene; one of R_9, R_{10} and R_{11} is hydrogen and the other two are independently selected from hydrogen, chloro, bromo, trifluoromethyl, hydroxy, C_{1-6}alkoxy, C_{1-6}alkylthio, C_{1-6}alkyl and amino; one of R_{12} and R_{13} represents hydrogen, C_{1-6}alkyl, phenyl or phenylC_{1-3}alkyl, which phenyl moieties may be substituted by C_{1-6}alkyl, C_{1-6}alkoxy, CF_3 or halogen, and the other of R_{12} and R_{13} is hydrogen or C_{1-6}alkyl; q is zero or an integer from 1 to 4; r is zero, or an integer from 1 to 3; and s is zero, 1 or 2, or a physiologically acceptable salt or solvate thereof, and said H^+K^+ATPase inhibitor is a 2-(pyridylmethylsulphinyl)benzimidazole, or a physiologically acceptable salt thereof.

5,330,983

14-O-P-CHLOROBENZOYLACONINE AND ANALGESIC/ANTI-INFLAMMATORY AGENT CONTAINING THE SAME

Mitsuo Murayama, Utsunomiya, Japan, assignor to Sanwa Shoyaku Kabushiki Kaisha, Tochigi, Japan

PCT No. PCT/JP91/01298, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993

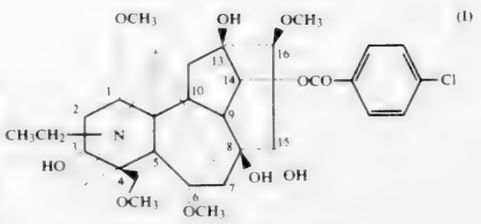
PCT Filed Sep. 27, 1991, Ser. No. 989,018

Claims priority, application Japan, Jul. 8, 1991, 3-263354

Int. Cl.[5] **C07D** *221/22, 223/14;* **A61K** *31/435*

U.S. Cl. 514—216 **2 Claims**

1. 14-O-p-chlorobenzoylaconine of the formula (I)



(I)

or a pharmaceutically acceptable salt thereof.

5,330,984

FUNGICIDAL COMPOSITIONS

Ruth Küng, Dielsdorf, Switzerland, and Dominique G. G. Driant, Paris, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y. and Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 883,908, May 13, 1992, abandoned, which is a continuation of Ser. No. 784,199, Oct. 28, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,510

Claims priority, application Switzerland, Nov. 2, 1990, 3491/90

Int. Cl.[5] **A01N** *43/64;* **A61K** *31/535*

U.S. Cl. 514—239.5 **5 Claims**

1. A fungicidal composition containing a synergistic fungically effective amount of at least two active ingredients, wherein one active ingredient is: a) 4-(4-chlorophenyl)-2-phenyl-2-[(1H-1,2,4-triazol-1-yl)methyl]butane nitrile, or an acid addition salt or metal complex thereof, and the second active ingredient is: b) fenpropimorph or an acid addition salt thereof, together with a suitable carrier, wherein the synergistic weight ratio of the active ingredients a) and b) is in the range of 2:1 to 1:20.

5,330,985

2-AMINO-N-[[4-(AMINOCARBONYL)PYRIMIDIN-2-YL]AMINO]-ALKYL]PYRIMIDINE-4-CARBOXAMIDE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Pascal George, St Arnoult en Yvelines; Benoit Marabout, Massy; Jacques Froissant, Brevainville Morée, and Jean Pierre Merly, Sceaux, all of France, assignors to Synthelabo, Le Plessis Robinson, France

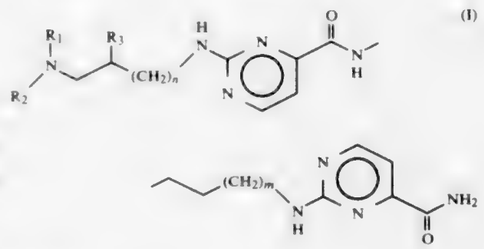
Filed Jul. 1, 1993, Ser. No. 84,493

Claims priority, application France, Jul. 3, 1992, 92 08199; Dec. 14, 1992, 92 15037

Int. Cl.[5] **A61K** *31/495, 31/50;* **C07D** *403/02, 403/06*

U.S. Cl. 514—252 **7 Claims**

1. A compound which is a pyrimidine-4-carboxamide derivative of the formula (I)



(I)

in which

n is 0 or 1, m is 0 or 1,

R_1 represents a methyl group when

R_2 represents a phenoxy(C_1–C_4)alkyl group (in which the phenoxy group optionally carries 1 or 2 substituents selected from halogen atoms and methoxy groups), or

R_1 and R_3 form together with the nitrogen atom to which they are attached a 4-phenoxypiperidin-1-yl group (in which the phenoxy group optionally carries 1 or 2 substituents selected from halogen atoms and methoxy groups), a phenoxymethylpiperidin-1-yl group (in which the phenoxy group optionally carries 1 or 2 C_1–C_4 alkyl groups) or a 4-phenylpiperazin-1-yl group (in which the phenyl group optionally carries 1 or 2 substituents selected from halogen atoms and methoxy groups), and

R_3 represents a hydrogen atom or only when n is 1 a hydroxyl group or a methoxy group, or is an addition salt thereof with an acid.

5,330,986

INDOLE-7-CARBOXAMIDE DERIVATIVES

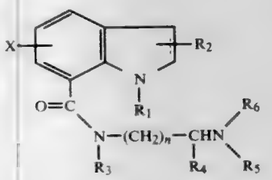
Gregory M. Shutske, Flemington, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Nov. 24, 1992, Ser. No. 980,869

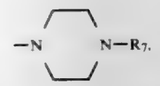
Int. Cl.[5] **A61K** *31/495, 31/40;* **C07D** *403/00, 209/04*

U.S. Cl. 514—253 **45 Claims**

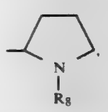
1. A compound of the formula



where R_1 and R_2 are independently H, loweralkyl and arylloweralkyl; wherein R_3 through R_6 are independently selected from aryl, arylloweralkyl, and in addition R_3 and R_5 can be joined together to form a piperazine ring of the formula



where R_7 is H, loweralkyl, aryl, arylloweralkyl, pyrimidyl; and R_4 and R_5 can be joined together to form a pyrrolidine ring of the formula



where R_8 is H, loweralkyl, aryl, arylloweralkyl; X is H, loweralkyl, halogen, NO_2, NH_2, CF_3 and OR_9 where R_9 is loweralkyl, arylloweralkyl and n is an integer of 1 to 3; and the pharmaceutically acceptable acid addition salts thereof and the optical isomers thereof where such isomers exist.

5,330,987

SUBSTITUTED PYRIDOPYRIMIDINONES AND RELATED HETEROCYCLES AS ANGIOTENSIN II ANTAGONISTS

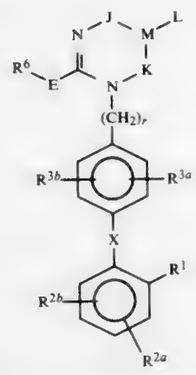
Eric E. Allen, Somerset; Prasun K. Chakravarty, Edison; Stephen E. de Laszlo, Atlantic Highlands; William J. Greenlee, Teaneck; Arthur A. Patchett, and Thomas F. Walsh, both of Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 590,981, Oct. 1, 1990, abandoned. This application Jun. 4, 1992, Ser. No. 894,036

Int. Cl.[5] **A61K** *31/505;* **C07D** *403/12, 487/04*

U.S. Cl. 514—258 **15 Claims**

1. A compound of formula (I):



(I)

or a pharmaceutically acceptable salt thereof

wherein:

M is a C atom;

L is C or N when connected to K or J to form a ring as defined below;

J is —C(=Y)-where Y is O or NR^{21} and K and L are connected together to form a 6 membered aromatic ring containing one N atom that is not at K and five C atoms which can be substituted at the carbon atoms with R^{8a} and R^{8b};

K is —C(=Y)- where Y is O or NR^{21} and J and L are connected together to form a 6 membered aromatic ring containing one N atom that is not at J and five C atoms which may be substituted at the carbon atoms with R^{8a} and R^{8b} provided that only one of J and K is —C(=Y)—;

R^1 is

(a) $—CO_2R^4$,

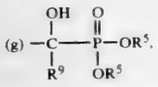
(b) $—SO_3R^5$,

(c) $—NHSO_2CF_3$,

(d) $—PO(OR^5)_2$,

(e) $—SO_2—NH—R^9$,

(f) $—CONHOR^5$,



(g)



(h)

(i) $—SO_2NH$-heteroaryl as defined below,

(j) $—CH_2SO_2NH$-heteroaryl as defined below,

(k) $—SO_2NH—CO—R^{22}$,

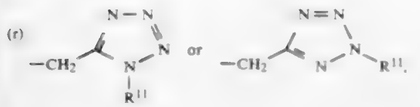
(l) $—CH_2SO_2NH—CO—R^{22}$,

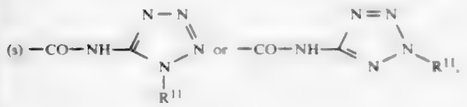
(m) $—CONH—SO_2R^{22}$,

(n) $—CH_2CONH—SO_2R^{22}$,
(o) $—NHSO_2NHCO—R^{22}$,
(p) $—NHCONHSO_2—R^{22}$,

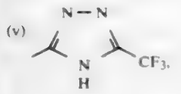
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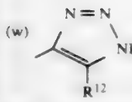
(q) 

(r) 

(s) 

(t)—$CONHNHSO_2CF_3$,
(u)—$SO_2NH—CN$,

(v) 

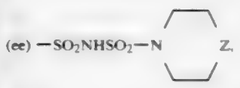
(w) 

(x)—$PO(OR^5)(OR^4)$,
(y)—$SO_2NHCONR^4R^{22}$,
(z)—$SO_2N(R^{25})—OR^{25}$,
(aa)—$SO_2NHSO_2R^{22}$,

(bb)—$SO_2NH—P(R^{26})_2$,

(cc)—$CONH—P(R^{26})_2$,

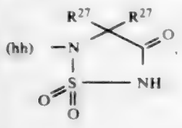
(dd) $—SO_2NHCO_2R^{22}$,

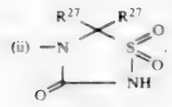
(ee) 

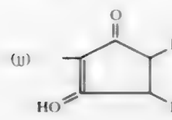
wherein Z is O, $—S(O)_x—$, $—N(R^{11})—$, $—NCOR^{22}$, $—NSO_2R^{22}$, $—NCO_2R^{22}$ or $—NCON(R^4)R^{22}$;

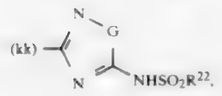
(ff) $—NHSO_2NHSO_2R^{22}$,

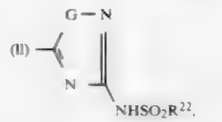
(gg) 

(hh) 

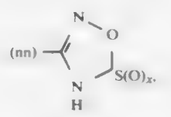
(ii) 

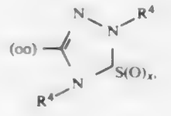
(jj) 

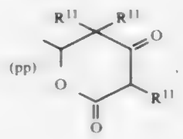
(kk) 

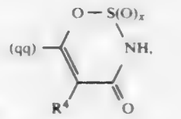
(ll) 

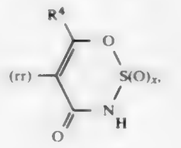
(mm) 

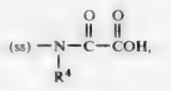
(nn) 

(oo) 

(pp) 

(qq) 

(rr) 

(ss) 

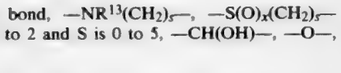
(tt) $—NHSO_2R^{22}$.

-continued

(uu) 

(vv) 

wherein
G is O or S;
wherein heteroaryl is are unsubstituted, monosubstituted or disubstituted five or six membered aromatic ring which can optionally contain from 1 to 3 heteroatoms selected from the group consisting of O, N or S,
wherein said ring is selected from the group consisting of pyridine pyrimidine pyrazine, triazine, furan, thiophene, oxazole, thiazole, imidazole, triazole, or thiadiazole, and
wherein the substituents are members selected from the group consisting of —OH, —SH, $—C_1–C_4$-alkyl, $—C_1–C_4$-alkoxy, $—CF_3$, halo (Cl, Br, F, I), $—NO_2$, $—CO_2—CO_2-(C_1–C_4$-alkyl), $—NH_2$, $—NH(C_1–C_4$-alkyl) and $—N(C_1–C_4$-alkyl)$_2$;
R^{2a} and R^{2b} are each independently
(a) H,
(b) halogen, (Cl, Br, I, F)
(c) NO_2,
(d) NH_2,
(e) $C_1–C_4$-alkylamino,
(f) di($C_1–C_4$-alkyl)amino
(g) SO_2NHR^9,
(h) CF_3,
(i) $C_1–C_6$-alkyl,
(j) $C_1–C_6$-alkoxy,
(k) $C_1–C_6$-alkyl—S—,
(l) $C_2–C_6$-alkenyl,
(m) $C_2–C_6$-alkynyl;
(n) aryl as defined below,
(o) aryl($C_1–C_4$-alkyl), wherein aryl is defined below;
(p) $C_3–C_7$-cycloalkyl;
R^{3a} is
(a) H,
(b) halo,
(c) $C_1–C_6$-alkyl,
(d) $C_1–C_6$-alkoxy,
(e) $C_1–C_6$-alkoxyalkyl;
R^{3b} is
(a) H,
(b) halo,
(c) NO_2,
(d) $C_1–C_6$-alkyl,
(e) $C_1–C_6$-acyloxy,
(f) $C_3–C_7$-cycloalkyl,
(g) $C_1–C_6$-alkoxy,
(h) $—NHSO_2R^4$,
(i) hydroxy($C_1–C_4$-alkyl),
(j) aryl($C_1–C_4$-alkyl), wherein aryl is defined below;
(k) $C_1–C_4$-alkylthio,
(l) $C_1–C_4$-alkyl sulfinyl,
(m) $C_1–C_4$-alkyl sulfonyl,
(n) NH_2,
(o) $C_1–C_4$-alkylamino,
(p) di($C_1–C_4$-alkyl)amino,
(q) fluoro-$C_1–C_4$-alkyl-,
(r) $—SO_2—NHR^9$,
(s) aryl as defined below,
(t) furyl,
(u) CF_3,
(v) $C_2–C_6$-alkenyl,
(w) $C_2–C_6$-alkynyl;
wherein aryl is phenyl or naphthyl optionally substituted with one or two substituents selected from the group consisting of halogen, $N(R^4)_2$, CO_2R^4, $C_1–C_4$-alkyl, $C_1–C_4$-alkoxy, NO_2, CF_3, $C_1–C_4$-alkylthio, OH,



R^4 is H, aryl as defined above or straight chain or branched $C_1–C_6$ alkyl optionally substituted with aryl or heteroaryl as defined above;
R^{4a} is aryl as defined above or straight chain or branched $C_1–C_6$-alkyl optionally substituted with aryl as defined above

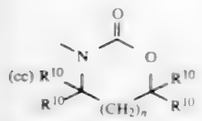


E is a single bond, $—NR^{13}(CH_2)_s—$, $—S(O)_x(CH_2)_s—$ where x is 0 to 2 and S is 0 to 5, —CH(OH)—, —O—, CO—;
R^6 is
(a) aryl as defined above optionally substituted with 1 or 2 substituents selected from the group consisting of halo —O—$C_1–C_4$-alkyl, $C_1–C_4$-alkyl, $—NO_2$, $—CF_3$, $—SO_2NR^9R^{10}$, —S—$C_1–C_4$-alkyl —OH, $—NH_2$, $C_3–C_7$-cycloalkyl, $C_3–C_{10}$-alkenyl;
(b) straight chain or branched $C_1–C_6$-alkyl, $C_2–C_5$-alkenyl or $C_2–C_5$-alkynyl each of which can be optionally substituted with a substituent selected from the group consisting of aryl as defined above, $C_3–C_7$-cycloalkyl, halo, CF_3, CF_2CF_3, $—NH_2$, $—NH(C_1–C_4$-alkyl), $—OR^4—N(C_1–C_4$-alkyl)$_2$, $—NH—SO_2R^4$, $—COOR^4$, $—SO_2NHR^9$; or
(c) heteroaryl, as defined above,
(d) $C_3–C_7$-cycloalkyl;
(e) perfluoro-$C_1–C_4$-alkyl,
(f) H;
R^{8a} and R^{8b} are independently
(a) H, provided they are not both H,
(b) $C_1–C_8$-alkyl substituted with a substituent selected from the group consisting of guanidino, —O—COR^4-aryl, as defined above, -heteroaryl, as defined above, -tetrazol-5-yl, $—CONHSO_2R^{22}$, $—SO_2NH$-heteroaryl, wherein heteroaryl is defined above, $—SO_2NHCOR^{22}$, $—PO(OR^4)_2$, $—PO(OR^4)R^9$, $—SO_2NH—CN$, $—NR^{10}COOR^{22}$, morpholino, 4-R^{22}-piperazin-1-y, and 4-COR^{22}-piperazin-1-yl;
(c) —CO-aryl,
(d) $-C_3–C_7$-cycloalkyl,
(e) $—COOR^4$,
(f) $—SO_3H$,
(g) $—NR^4R^{22}$,
(h) $—NR^4COR^{22}$,
(i) $—NR^4COOR^{22}$,
(j) $—SO_2NR^4R^9$,
(k) $—NO_2$,
(l) $N(R^4)SO_2R^{22}$,
(m) $—NR^4CONR^4R^{22}$,



(o) -aryl or -heteroaryl as defined above,
(p) $—NHSO_2CF_3$,
(q) $—SO_2NH$-heteroaryl, wherein heteroaryl is defined above;
(r) $—SO_2NHCOR^{22}$,
(s) $—CONHSO_2R^{22}$,
(t) $—PO(OR^4)_2$,
(u) $—PO(OR^4)R^4$,
(v) -tetrazol-5-yl,

(w) —CONH(tetrazol-5-yl),
(x) —COR^4,
(y) —SO_2NHCN,
(z) —$NR^4SO_2NR^4R^{22}$,
(aa) —$NR^4SO_2OR^{22}$,
(bb) —$CONR^4R^{22}$,



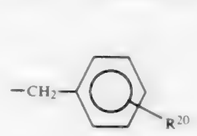
where n = 0 or 1



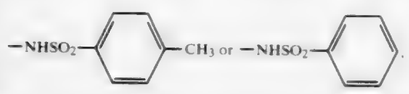




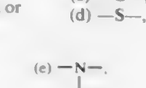
R^9 is H, C_1–C_5-alkyl, aryl or arylmethyl, wherein aryl is defined above;
R^{10} is H, C_1–C_4-alkyl;
R^{11} is H, C_1–C_6-alkyl, C_1–C_4-alkenyl, C_1–C_4-alkoxyalkyl, or



R^{12} is —CN, —NO_2 or —CO_2R^4;
R^{13} is H, (C_1–C_4-alkyl)CO—, C_1–C_6-alkyl, allyl, C_3–C_6-cycloalkyl, aryl or arylmethyl, wherein aryl is defend above;
R^{14} is H, C_1–C_8-alkyl, C_1–C_8-perfluoroalkyl, C_3–C_6-cycloalkyl, aryl or arylmethyl, wherein aryl is defined above;
R^{15} is H, C_1–C_6-alkyl;
R^{16} is H, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, aryl or arylmethyl, wherein aryl is defined above;
R^{17} is —NR^9R^{10}, —OR^{10}, —$NHCONH_2$, —$NHCSNH_2$,



R^{18} and R^{19} are independently C_1–C_4-alkyl or taken together are —$(CH_2)_q$— where q is 2 or 3;
R^{20} is H, —NO_2, —NH_2, —OH or —OCH_3;
R^{21} is
(a) aryl as defined above,
(b) heteroaryl as defined above,
(c) C_1–C_4-alkyl optionally substituted with a substituent selected from the group consisting of aryl as defined above, heteroaryl as defined above, —OH, —NH_2, —$NH(C_1$–C_4-alkyl), —$N(C_1$–C_4-alkyl)$_2$, —CO_2R^{4a}, halo, —CF_3;
R^{22} is
(a) aryl as defined above,
(b) heteroaryl as defined above,
(c) C_3–C_7-cycloalkyl,
(d) C_1–C_8-alkyl optionally substituted with a substituent selected from the group consisting of aryl as defined above, heteroaryl as defined above, —OH, —SH, C_1–C_4-alkyl, —$O(C_1$–C_4-alkyl), —$S(C_1$–C_4-alkyl), —CF_3, halo (Cl, Br, F, I), —NO_2, —CO_2H, —$CO_2(C_1$–C_4-alkyl), —NH_2, —$NH(C_1$–C_4-alkyl), —$N(C_1$–C_4-alkyl)$_2$, —PO_3H_2, —$PO(OH)(O—C_1$–C_4-alkyl); —$PO(OR^4)R^9$ or —C_3–C_6-cycloalkyl, or;
(e) perfluoro-C_1–C_4-alkyl;
R^{25} is
(a) H,
(b) aryl as defined above, or
C_1–C_6-alkyl optionally substituted with aryl, F, Cl, Br, —OH, —NH_2, —$NH(C_1$–C_4-alkyl), —$N(C_1$–C_4-alkyl)$_2$, or CF_3;
R^{26} is
(a) aryl as defined above,
(b) C_1–C_6-alkyl optionally substituted with aryl, F, Cl, Br, —OH, —NH_2, —$NH(C_1$–C_4-alkyl), —$N(C_1$–C_4-alkyl)$_2$, CF_3, —$COOR^4$, or CN,
(c) —$OCH(R^4)$—O—CO—R^{4a}, or
(d) —OH or —O—C_1–C_6-alkyl wherein alkyl is as defined in (b);
R^{27} is
(a) H,
(b) C_1–C_6-alkyl optionally substituted with aryl, as defined above F, Cl, Br, —OH, —NH_2, —$NH(C_1$–C_4-alkyl), —$N(C_1$–C_4-alkyl)$_2$, CF_3, —$COOR^4$, or CN, or
X is
(a) a carbon-carbon single bond,
(b) —CO—,
(c) —O—,
(d) —S—,



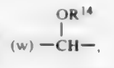
(e) —N—,
|
R^{13}

(f) —CON—,
|
R^{15}

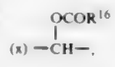
(g) —NCO—,
|
R^{15}

(h) —OCH_2—,
(i) —CH_2O—,
(j) —SCH_2—,
(k) —CH_2S—,
(l) —$NHC(R^9)(R^{10})$,
(m) —NR^9SO_2—,
(n) —SO_2NR^9—,
(o) —$C(R^9)(R^{10})NH$—,
(p) —CH=CH—,
(q) —CF=CF—,
(r) —CH=CF—,
(s) —CF=CH—,
(t) —CH_2CH_2—,
(u) —CF_2CF_2—,
(v) —CH=CH— or



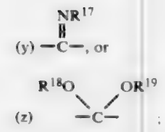


(w) —CH—,
|
OR^{14}



(x) —CH—,
|
$OCOR^{16}$

-continued



(y) —C—, or

(z)

and
r is 1 or 2.

5,330,988

Patent Not Issued For This Number

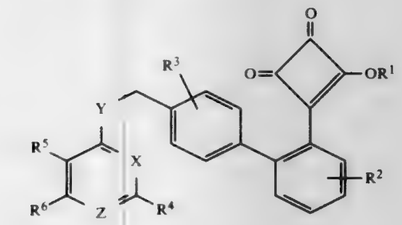
5,330,989

HETEROCYCLES SUBSTITUTED WITH BIPHENYL-3-CYCLOBUTENE-1,2-DIONE DERIVATIVES

Richard M. Soll, Lawrenceville, N.J., and William A. Kinney, Churchville, Pa., assignors to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 782,029, Oct. 24, 1991, abandoned. This application Sep. 11, 1992, Ser. No. 943,614
Int. Cl.[5] A61K *31/505;* **A01N** *43/54;* **C07D** *239/24, 239/88*
U.S. Cl. 514—258 **6 Claims**

1. The compounds of formula 1:



1

wherein:
Y is O, NR^7, or $NCOR^7$;
X is N;
Z is N;
R^1 is H, alkyl, benzyl, alkoxyalkyl, phenyl;
R^2 is H, alkyl, benzyl, alkoxyalkyl, phenyl, alkoxy, alkyl-OH, perfluoroalkyl, F, Cl, Br, I, NR^7R^8;
R^3 is H, alkyl, benzyl, alkoxyalkyl, phenyl, alkoxy, alkyl-OH, perfluoroalkyl, F, Cl, Br, I, NR^7R^8;
R^4 is H, NR^7R^8, OR^1, CN, F, Cl, I, Br, perfluoroalkyl, alkyl, phenyl, alkoxy, alkyl-OH, alkoxyalkyl, —$(CH_2)_nCO_2R^1$, —$(CH_2)_nCONR^7R^8$ where n=1, 2, 3, 4, or 5;
R^5 and R^6 taken together represent a linking chain of CR^9R^{10} of 4 linking members; or R^5 and R^6 taken together represent a repeating linking chain of (R^9C=CR^{10}) up to 2 repeating units;
R^7 is H, alkyl, phenyl, benzyl;
R^8 is H, alkyl, phenyl, benzyl;
R^9 is chosen from H, alkyl, benzyl, alkoxyalkyl, phenyl, halogen, OR^1, NR^7R^8;
R^{10} is chosen from H, alkyl, benzyl, alkoxyalkyl, phenyl, halogen, OR^1, NR^7R^8;
wherein alkyl contains 1–8 branched or straight chain carbon atoms or the pharmaceutically acceptable salts thereof.

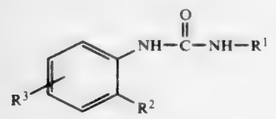
5,330,990

SUBSTITUTED UREA COMPOUNDS AND THEIR PREPARATION AND USE

John B. Hansen, Lyngby, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

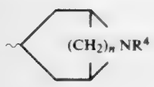
Continuation of Ser. No. 573,934, Aug. 27, 1990, abandoned. This application Sep. 17, 1992, Ser. No. 947,073
Claims priority, application Denmark, Sep. 8, 1989, 4434/89
Int. Cl.[5] A61K *31/44;* **C07D** *221/02*
U.S. Cl. 514—299 **14 Claims**

1. A compound of formula I:



(I)

wherein
R^1 is a group of formula II



II

wherein n is 2 or 3 and R^4 is H or C_{1-7}-alkyl;
R^2 is a 1,2,4-oxadiazole optionally substituted with C_{1-8}-alkyl, C_{3-7}-cycloalkyl or phenyl; or R^2 is —$C(—R^6)$=N—O—R^7, wherein R^6 is hydrogen or methyl and R^7 is C_{1-6}-alkyl which may be substituted with C_{3-7}-cycloalkyl; and
R^3 is hydrogen, methyl, nitro or halogen; or a pharmaceutically acceptable salt thereof.

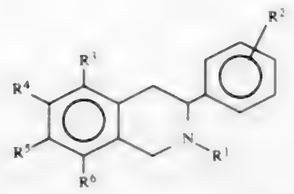
5,330,991

TETRAHYDROISOQUINOLINE COMPOUNDS AND FUNGICIDES CONTAINING THE SAME

Takumi Tokunaga; Teruhiko Ide; Hiroyuki Watanabe, and Kenji Tsuzuki, all of Shinnanyo, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Jul. 23, 1992, Ser. No. 917,289
Claims priority, application Japan, Jul. 25, 1991, 3-207277
Int. Cl.[5] A61K *31/47;* **C07D** *215/12*
U.S. Cl. 514—307 **3 Claims**

1. A tetrahydroisoquinoline derivative of the formula:



where R^1 represents a C_1–C_5 straight or branched alkyl, C_2–C_5 straight or branched alkenyl or C_2–C_5 straight or branched alkynyl; R^2 represents a C_1–C_{10} straight or branched alkyl, C_3–C_{10} straight or branched alkenyl, C_2–C_{10} straight or branched alkynyl, C_1–C_{10} straight or branched alkoxy, C_2–C_{10} straight or branched alkenyloxy, C_2–C_{10} straight or branched alkynyloxy, or C_1–C_{10} straight or branched halogenated alkyl; R^3, R^4, R^5 and R^6, which may be the same or different, each represent a hydrogen atom, C_1–C_{10} straight or branched alkyl, C_2–C_{10} straight or branched alkenyl, C_2–C_{10} straight or branched alkynyl, C_1–C_{10} straight or branched alkoxy, C_2–C_{10} straight or branched alkenyloxy, C_2–C_{10} straight or branched alkynyloxy or halogen atom, provided that R^3, R^4, R^5 and R^6 are not simultaneously hydrogen atoms and R^4 and R^5 are not simultaneously methoxy groups or an acid addition salt thereof

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5,330,992

1-CYCLOPROPYL-4-PYRIDYL-QUINOLINONES

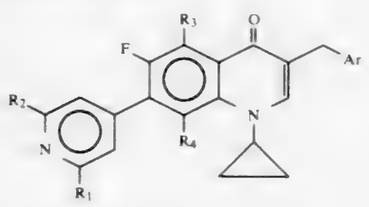
Michael A. Eissenstat, Town of West Sand Lake; John D. Weaver, III, Town of Northumberland; Gee-Hong Kuo, Town of East Greenbush, and Mark P. Wentland, Town of Colonie, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Oct. 23, 1992, Ser. No. 967,473

Int. Cl.[5] **A61K** *31/47;* **C07D** *215/233*

U.S. Cl. 514—312 **24 Claims**

1. A compound of formula



wherein

R_1 is hydrogen, lower-alkyl, or trifluoromethyl;

R_2 is lower-alkyl, trifluoromethyl or CH_2Z where Z is hydroxy, chloro, lower-alkylamino or dilower-alkylamino;

R_3 and R_4 are each independently hydrogen or fluoro; and

Ar is phenyl, an aromatic 5- or 6-membered heterocycle having carbon and up to two heteroatoms chosen from nitrogen and oxygen; or any of these substituted at one to three positions with lower-alkyl, fluoro, chloro, hydroxy, amino, lower-alkylamino, dilower-alkylamino, carboxy, sulfonamido, lower aklylsulfonamido, methylenedioxy, trifluoroacetamido, lower-alkanoylamino, or carbanoyl;

or a pharmaceutically acceptable acid addition salt thereof.

5,330,993

IMMUNOSUPPRESSIVE COMPOUNDS

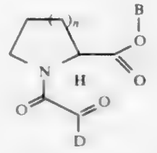
David M. Armistead, Maynard; Joshua S. Boger, Concord; Harold V. Meyers, Belmont; Jeffrey O. Saunders, Acton, and Roger D. Tung, Cambridge, all of Mass., assignors to Vertex Pharmaceuticals, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 547,814, Jul. 2, 1990, Pat. No. 5,192,773. This application Jul. 2, 1991, Ser. No. 724,734

Int. Cl.[5] **A61K** *31/445, 31/40*

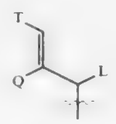
U.S. Cl. 514—330 **1 Claim**

1. A method of suppressing an immune response in an individual, comprising administering a composition comprising an effective amount of an immunosuppressive compound in a physiologically acceptable vehicle to an individual in need thereof, wherein the immunosuppressant compound can bind to FK-506 binding protein and is represented by the formula:



and pharmaceutically acceptable salts thereof;

wherein B is hydrogen, CHL-Ar, (C1–C6)-straight or branched alkyl, (C1–C6)-straight or branched alkenyl, (C5–C7)-cycloalkyl, (C5–C7)-cycloalkenyl or ar substituted (C1–C6)-alkyl or alkenyl, or



wherein L and O are independently hydrogen, (C1–C6)-straight or branched alkyl or (C1–C6)-straight or branched alkenyl;

wherein T is Ar or substituted cyclohexyl with substituents at positions 3 and 4 which are independently selected from the group consisting of hydrogen, hydroxyl, O-(C1–C4)-alkyl or O-(C1–C4)-alkenyl and carbonyl;

wherein Ar is selected from the group consisting of 1-naphthyl, 2-naphthyl, 2-furyl, 3-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl and phenyl having one to three substituents which are independently selected from the group consisting of hydrogen, halo, hydroxyl, nitro, CF_3, (C1–C6)-straight or branched alkyl or (C1–C6)-straight or branched alkenyl, O-(C1–C4)-straight or branched alkyl or O-(C1–C4)-straight or branched alkenyl, O-benzyl, O-phenyl, amino and phenyl;

wherein D is either hydrogen or U;

wherein U is hydrogen, O-(C1–C4)-straight or branched alkyl or O-(C1–C4)-straight or branched alkenyl, (C1–C6)-straight or branched alkyl or (C1–C6)-straight or branched alkenyl, (C5–C7)-cycloalkyl or (C5–C7)-cycloalkenyl substituted with (C1–C4)-straight or branched alkyl (C1–C4)-straight or branched alkenyl, 2-indolyl, 3-indolyl, [(C1–C4)-alkyl or (C1–C4)-alkenyl]-Ar or Ar;

wherein the stereochemistry at carbon position 1 is L;

wherein n is 1 or 2; and

wherein the immune response to be suppressed is an autoimmune response or graft immuno-rejection.

5,330,994

TETRAHYDROPYRIDINE ISOXAZOLINE DERIVATIVES

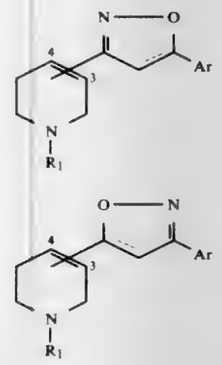
Yazhong Pei, Ann Arbor, and Haile Tecle, Ypsilanti, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 24, 1992, Ser. No. 856,603

Int. Cl.[5] **C07D** *401/04;* **A61K** *31/44*

U.S. Cl. 514—340 **12 Claims**

1. A compound selected from the following Formula I or Formula II



wherein the dotted line represents the presence or absence of a double bond;

wherein the isoxazole/isoxazoline ring is attached to either the 3- or 4-position of the tetrahydropyridine ring;

wherein Ar is 2- or 3-thienyl, or phenyl substituted with from 1 to 3 substituents selected from chlorine, bromine, fluorine, trifluoromethyl, hydroxy, straight or branched alkoxy having from 1 to 4 carbon atoms, trifluoromethoxy, nitro, or NR_3R_4 wherein each of R_3 and R_4 is hydrogen or alkyl having from 1 to 4 carbon atoms;

wherein R_1 is hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, a cycloalkylmethyl group wherein the cycloalkyl moiety has from 3 to 6 carbon atoms, phenyl$(CH_2)_n$— wherein n is one or two and the phenyl ring is unsubstituted, or is substituted with from 1 to 3 substituents selected from chlorine, bromine, fluorine, trifluoromethyl, hydroxy, straight or branched alkoxy having from 1 to 4 carbon atoms, straight or branched alkyl having from 1 to 4 carbon atoms, trifluoromethoxy, nitro, or —NR_3R_4 wherein R_3 and R_4 are as defined above; and pharmaceutically acceptable salts thereof.

5,330,995

ANILIDE DERIVATIVES AND THEIR USE FOR COMBATING BOTRYTIS

Karl Eicken, Wachenheim; Norbert Goetz, Worms; Albrecht Harreus, Ludwigshafen; Eberhard Ammermann, Heppenheim; Gisela Lorenz, Neustadt, and Harald Rang, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

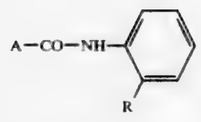
Filed Nov. 9, 1992, Ser. No. 973,976

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138387; Feb. 18, 1992, 4204764; Feb. 18, 1992, 4204766; Feb. 18, 1992, 4204767; Feb. 18, 1992, 4204768

Int. Cl.[5] **A01N** *43/14;* **C07D** *213/82*

U.S. Cl. 514—355 **4 Claims**

1. A method for treating Botrytis infestation comprising applying to a subject in need thereof, an effective amount of a compound of formula



where

A has the following meanings:

pyridin-3-yl substituted in the 2-position by halogen, methyl, trifluoromethyl, methoxy, methylthio, methylsulfinyl or methylsulfonyl,

R has the following meanings: unsubstituted or halogen-substituted C_2–C_{12}-alkyl, unsubstituted or halogen-substituted C_3–C_{12}-alkenyl, C_3–C_6-alkynyl, unsubstituted or halogen-substituted C_2–C_{12}-alkoxy, unsubstituted or halogen-substituted C_3–C_{12}-alkenyloxy, C_3–C_{12}-alkynyloxy, unsubstituted or C_1–C_4-alkyl-substituted C_3–C_6-cycloalkyl, unsubstituted or C_1–C_4-alkyl-substituted C_4–C_6-cycloalkenyl, unsubstituted or C_1–C_4-alkyl-substituted C_5–C_6-cycloalkyloxy, unsubstituted or C_1–C_4-alkyl substituted C_5–C_6-cycloalkenyloxy, or phenyl which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or halogen, with the proviso that when R is unsubstituted phenyl, A cannot be 2-chloropyridine-3-yl, in a suitable carrier.

5,330,996

AMINO ACYL AMINO PROPARGYL DIOL COMPOUNDS FOR TREATMENT OF HYPERTENSION

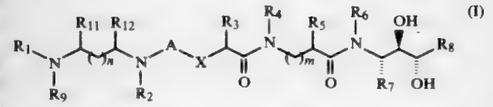
Gunnar J. Hanson, Skokie, Ill., and J. Timothy Keane, Clayton, Mo., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 29, 1991, Ser. No. 784,276

Int. Cl.[5] **C07D** *277/30;* **A61K** *31/425*

U.S. Cl. 514—365 **33 Claims**

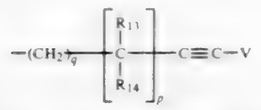
1. A compound of Formula I:



wherein A is selected from methylene, CO, SO and SO_2; wherein X is selected from oxygen atom, methylene and $>NR_{10}$ with R_{10} selected from hydrido, alkyl and benzyl; wherein each of R_1 and R_9 is a group independently selected from hydrido, alkyl, cycloalkyl, alkoxyacyl, haloalkyl, alkoxycarbonyl, benzyloxycarbonyl, loweralkanoyl, haloalkylacyl, phenyl, benzyl, naphthyl, and naphthylmethyl, any one of which groups having a substitutable position may be optionally substituted with one or more radicals selected from alkyl, alkoxy, alkenyl, alkynyl, halo, haloalkyl, cyano and phenyl, and wherein the nitrogen atom to which R_1 and R_9 are attached may be combined with oxygen to form an N-oxide; wherein R_2 is selected from hydrido, alkyl, dialkylaminoalkyl, alkylacylaminoalkyl, benzyl and cycloalkyl; wherein R_3 is selected from alkyl, cycloalkylalkyl, acylaminoalkyl, phenylalkyl, naphthylmethyl, aryl, heterocyclicalkyl, heterocycliccycloalkyl, heteroaryl and heteroarylalkyl, wherein the cyclic portion of any of said phenylalkyl, naphthylmethyl, aryl, heterocyclicalkyl, heterocycliccycloalkyl, heteroaryl and heteroarylalkyl groups may be substituted by one or more radicals selected from halo, hydroxy, alkoxy and alkyl; wherein each of R_4 and R_6 is independently selected from hydrido, alkyl, benzyl and cycloalkyl; wherein R_5 is selected from hydrido, alkyl, benzyl, cycloalkyl, cycloalkylalkyl, alkoxyalkyl, alkylthioalkyl, heteroarylalkyl and heteroarylcycloalkyl; wherein R_7 is selected from substituted or unsubstituted alkyl, cycloalkyl, phenyl, cycloalkylalkyl and phenylalkyl, any one of which may be substituted with one or more

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groups selected from alkyl, hydroxy, alkoxy, halo, haloalkyl, alkenyl, alkynyl and cyano; wherein R_8 is selected from



wherein V is selected from hydrido, alkyl, cycloalkyl, haloalkyl, benzyl and phenyl; wherein each of R_{13} and R_{14} is a radical independently selected from hydrido, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, heterocyclic and heterocyclicalkyl; wherein each of R_{11} and R_{12} is independently selected from hydrido, alkyl, haloalkyl, dialkylamino and phenyl; and wherein m is zero or one; wherein n is a number selected from zero through five; wherein p is a number selected from zero through five; and wherein q is a number selected from zero through five; or a pharmaceutically-acceptable salt thereof;

with the proviso that for any of the foregoing R^1 through R^{14} substituents containing a radical selected from alkyl, cycloalkyl, alkenyl, alkynyl, aryl, heterocyclic and heteroaryl, the following shall apply:

alkyl is a linear or branched radical having one to about twenty carbon atoms;

cycloalkyl is a cyclic radical having three to about ten carbon-ring atoms;

alkenyl is a linear or branched radical having two to about twenty carbon atoms and containing at least one carbon-carbon double bond;

alkynyl is a linear or branched radical having two to about twenty carbon atoms and containing at least one carbon-carbon triple bond;

aryl is selected from phenyl, naphthyl and biphenyl;

heterocyclic is a saturated or partially unsaturated radical consisting of a carbocyclic ring system having one ring or two fused rings, which ring system contains one, two or three hetero atoms as ring members selected from nitrogen, oxygen and sulfur atoms, and which ring system has four to about twelve ring members; and

heteroaryl is a fully unsaturated radical having a carbocyclic ring system consisting of one ring or two fused rings, said ring selected from five-membered rings containing one, two or three hetero atoms as ring members selected from nitrogen, oxygen, and sulfur atoms.

5,330,997

1H-INDAZOLE-3-ACETIC ACIDS AS ALDOSE REDUCTASE INHIBITORS

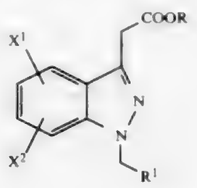
Banavara L. Mylari, and William J. Zembrowski, both of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 776,533, Oct. 11, 1991, Pat. No. 5,236,945, which is a continuation of Ser. No. 499,279, Jun. 11, 1990, abandoned. This application Feb. 24, 1993, Ser. No. 21,824

Int. Cl.[5] A61K *31/38;* **C07D** *417/06*

U.S. Cl. 514—367 **15 Claims**

1. A compound of the formula

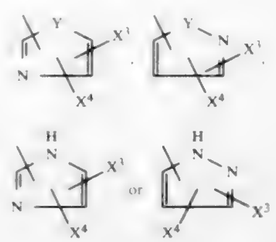


wherein

X^1 and X^2 are each independently hydrogen, fluoro, chloro, bromo, trifluoromethyl, $(C_1–C_3)$alkyl or $(C_1–C_3)$alkoxy;

R is hydrogen or a radical group forming a conventional ester which is hydrolyzable under physiological conditions;

R^1 is



Y is sulfur or oxygen;

X^3 and X^4 are combined with the adjacent carbons to which they are attached to form a benzene ring substituted by X^5 and X^6; and

X^5 and X^6 are each independently hydrogen, fluoro, chloro, bromo, trifluoromethyl, $(C_1–C_3)$alkyl or $(C_1–C_3)$alkoxy; and

a pharmaceutically acceptable cationic salt thereof when R is hydrogen; or

a pharmaceutically acceptable acid addition salt thereof.

5,330,998

THIAZOLIDINEDIONE DERIVATIVES AS HYPOGLYCEMIC AGENTS

David A. Clark, East Lyme; Steven W. Goldstein, Mystic, and Bernard Hulin, Essex, all of Conn., assignors to Pfizer Inc., New York, N.Y.

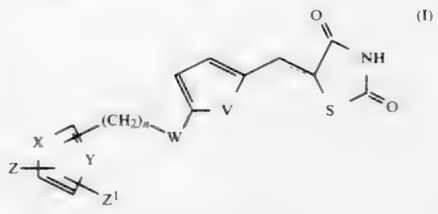
PCT No. PCT/US88/00745, § 371 Date Aug. 14, 1990, § 102(e) Date Aug. 14, 1990

PCT Filed Mar. 8, 1988, Ser. No. 566,437

Int. Cl.[5] A61K *31/425;* **C07D** *417/12*

U.S. Cl. 514—369 **28 Claims**

1. A compound of the formula



(I)

wherein

the dotted line represents a bond or no bond;

V is —CH=CH—, —N=CH—, —CH=N—, S, O or NR;

W is S, SO, SO_2, SO_2NR^1, NR^1SO_2, $CONR^1$ or NR^1CO;

X is S, O, NR^2, —CH=N— or —N=CH;

Y is CH or N;

Z is hydrogen, $(C_1–C_7)$alkyl, $(C_3–C_7)$cycloalkyl, phenyl, pyridyl, furyl, thienyl or phenyl mono- or disubstituted with the same or different groups which are $(C_1–C_3)$alkyl, trifluoromethyl, $(C_1–C_3)$alkoxy, fluoro, chloro or bromo;

Z^1 is hydrogen or $(C_1–C_3)$alkyl;

R, R^1 and R^2 are each independently hydrogen or $(C_1–C_4)$ alkyl; and

n is 1, 2 or 3;

a pharmaceutically acceptable cationic salt thereof; or a pharmaceutically acceptable acid addition salt thereof when the compound contains a basic nitrogen.

5,330,999

2,4-THIAZOLIDINEDIONE COMPOUNDS

Guillaume de Nanteuil, Suresnes; Jacques Duhault, Croissy sur Seine; Denis Ravel, Igny, and Yolande Herve, Puteaux, all of France, assignors to Adir et Compagnie, Courbevoie, France

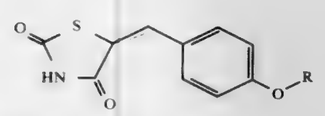
Division of Ser. No. 930,001, Aug. 14, 1992, Pat. No. 5,266,582. This application Jan. 29, 1993, Ser. No. 11,162

Claims priority, application France, Aug. 20, 1991, 91 10430

Int. Cl.[5] A61K *31/425;* **C07D** *417/12, 277/06*

U.S. Cl. 514—369 **11 Claims**

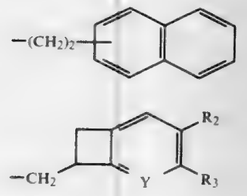
1. A compound of formula (I),



in which:

the dotted line indicates the optional presence or of a double bond,

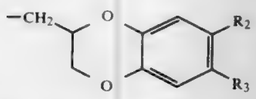
R represents any one of the following groups:



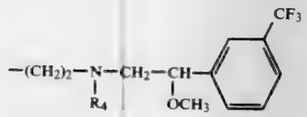
in which:

Y represents CH,

R_2 and R_3, which are identical or different, represent hydrogen, halogen, linear or branched $(C_1–C_6)$alkyl, or linear or branched $(C_1–C_6)$ alkoxy, or together form methylenedioxy or ethylenedioxy,

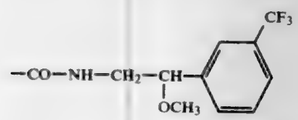


in which R_2 and R_3 are as defined above,

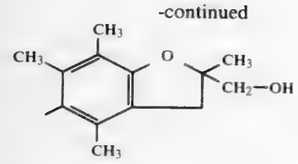


in which:

R_4 represents hydrogen or linear or branched $(C_1–C_6)$ alkyl which is unsubstituted or substituted by phenyl,

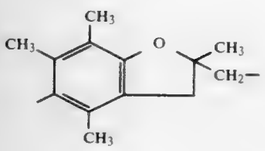


-continued



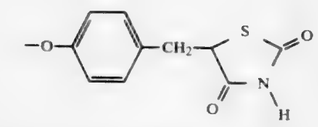
J2

or



J3

(I)



C

or their enantiomers, diastereoisomers or epimers or as their addition salts with a pharmaceutically-acceptable acid.

D

5,331,000

ANTIPYRETIC AND ANALGESIC METHODS AND COMPOSITIONS CONTAINING OPTICALLY PURE R(−) KETOPROFEN

James W. Young, Palo Alto, Calif.; Nancy M. Gray, Marlborough, Mass., and William J. Wechter, Redlands, Calif., assignors to Sepracor Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 848,458, Mar. 9, 1992, abandoned. This application Mar. 1, 1993, Ser. No. 24,728

Int. Cl.[5] A61K *31/19*

U.S. Cl. 514—570 **14 Claims**

1. A method of eliciting an analgesic effect with reduced gastrointestinal toxicity in a human, comprising administering to said human a therapeutically effective analgesic amount of R(−) ketoprofen or a pharmaceutically acceptable salt thereof, substantially free of its S(+) stereoisomer.

5,331,001

ω-[2-(TETRAZOLYLALKYL)CYCLOHEXYL-]-2-AMINOALKANOIC ACIDS AS ANTOGONISTS OF EXCITATORY AMINO ACID RECEPTORS

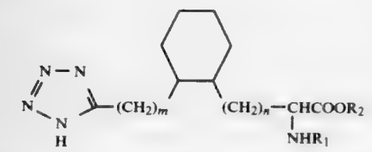
Gregory S. Hamilton, Catonsville, Md., assignor to Guilford Pharmaceuticals Inc., Baltimore, Md.

Filed Dec. 2, 1992, Ser. No. 984,454

Int. Cl.[5] A61K *31/41;* **C07D** *257/04*

U.S. Cl. 514—381 **14 Claims**

12. A method for antagonizing excitatory amino acid NMDA receptors by utilizing a compound having the general formula:



wherein R1 and R2 are selected from the group consisting of hydrogen and C1 to C6 lower alkyl; the stereoisomers being in

their resolved or racemic form; n and m are independently 0, 1, 2, or 3; and the pharmaceutically acceptable salts thereof.

5,331,002

5-ARYL-4-ALKYL-3H-1,2,4-TRIAZOLE-3-THIONES USEFUL AS MEMORY ENHANCERS

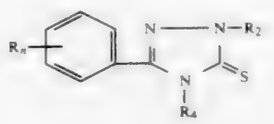
Jerry A. Miller, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 832,062, Feb. 6, 1992, Pat. No. 5,236,942, which is a division of Ser. No. 658,789, Feb. 26, 1991, Pat. No. 5,100,906, which is a continuation-in-part of Ser. No. 513,524, Apr. 19, 1990, abandoned. This application Aug. 11, 1993, Ser. No. 105,693

Int. Cl.[5] **A61K** *31/28*

U.S. Cl. 514—384 **15 Claims**

1. A method for the enhancement of memory and cognition which comprises administerng to a patient in need thereof an effective dose of a compound of the formula



wherein

R is halogen, trifluoromethyl, C_{1-4} lower alkyl or C_{1-4} lower alkoxy;

n is zero, 1 or 2;

R_2 represents hydrogen or C_{1-3} lower alkyl; and

R_4 independently represents C_{1-3} lower alkyl.

5,331,003

ANTICOCCIDIAL METHODS

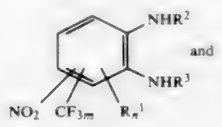
George O. P. O'Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 26, 1993, Ser. No. 37,800

Int. Cl.[5] **A61K** *31/415, 31/16*

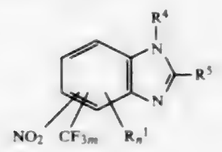
U.S. Cl. 514—394 **8 Claims**

1. A method of treating coccidiosis attributable to *Eimeria* in a fowl which comprises administering to the fowl an effective amount of an active agent selected from compounds of the formulae



I

and



II

wherein

R^1 represents bromo or chloro,

m represents an integer of 0 or 1 and n represents an integer of from 0 to 3, with the sum of m and n being an integer of from 1 to 3;

R^2 represents difluoroacetyl, chlorodifluoroacetyl, 2,2,3,3-tetrafluoropropionyl, or a perfluoroalkanoyl of from C_2 to C_4;

R^3 represents H, trichloroacetyl, or an independently selected R^2 as described above;

R^4 represents H, OH, OCH_3, or a group hydrolyzable to a foregoing R^4 moiety; and

R^5 represents difluoromethyl, chlorodifluoromethyl, 1,1,2,2-tetrafluoroethyl, or a perfluoroalkyl of C_1–C_3; or a physiologically acceptable salt of a Formula II compound.

5,331,004

AROMATIC MUSTARDS AND AZIRIDINES AND PHARMACEUTICAL USES THEREOF

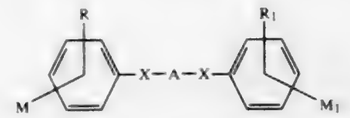
William A. Denny, Pakuranga, and Graham J. Atwell, Meadowbank, both of New Zealand, assignors to Circadian Pharmaceuticals (Australia) Pty. Ltd., Toorak, Australia

Filed Jul. 16, 1992, Ser. No. 914,783

Int. Cl.[5] **A61K** *31/165;* **C07C** *235/56*

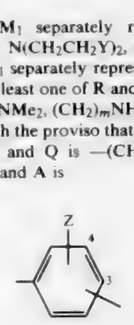
U.S. Cl. 514—406 **6 Claims**

1. A compound for use in treatment of a neoplastic disease state in a mammal, said compound having general formula (I)



(I)

wherein M and M_1 separately represent H, aziridinyl, $N(Et)CH_2CH_2Y$ or $N(CH_2CH_2Y)_2$, where Y is Cl, Br, I or OSO_2Me: R and R_1 separately represent up to three of H or CH_2Q, such that at least one of R and R_1 is CH_2NMe_2, where Q is H, Me, $(CH_2)_nNMe_2$, $(CH_2)_mNHC(=NH)NH_2$ and n=0, 2–4 and m=2–4 with the proviso that n may only be 0 when R or R_1 is $—CH_2O$, and Q is $—(CH_2)_nNMe_2$; X represents CONH or NHCO; and A is



IIa

wherein Z=H, CH_2Q, SO_2NHQ or CONHQ, where Q is H, Me, $(CH_2)_pNMe_2$, $(CH_2)_pNHc(=NH)NH_2$, and p=2 to 4, or an acid addition salt or N-oxide thereof.

5,331,005

AMIDINES DERIVED FROM 3-AMINOETHYL INDOLES AND PROCESS FOR THE PREPARATION THEREOF

José M. Calderó Ges; Anna Bosch Rovira; Joan Maria Roca Acin, all of Barcelona; Pere Dalmases Barjoan, Sant Feliu de Llobregat, and Francisco Marquillas Olondriz, Barcelona, all of Spain, assignors to Vita-Invest, S.A., Sant Joan Despi, Spain

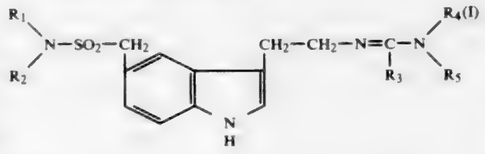
Filed Jul. 7, 1993, Ser. No. 87,004

Claims priority, application Spain, Jul. 20, 1992, 9201513

Int. Cl.[5] **A61K** *31/40, 31/44;* **C07D** *209/08, 213/06*

U.S. Cl. 514—415 **6 Claims**

1. An amidine of formula (I)



(I)

where:

R_1 is an atom of hydrogen or a lower alkyl or alkenyl group:

R_2 is an atom of hydrogen or a lower alkyl or alkenyl group, aryl, arylalkyl or cycloalkyl group;

R_3 and R_4 may be the same or different and are an atom of hydrogen or a lower straight or branched chain alkyl group; and

R_5 is an atom of hydrogen; a straight or branched chain alkyl, alkenyl or alkynyl group, which may be substituted with an hydroxy group, alkoxy, alkoxycarbonyl, carboxyl, trifluoromethyl, halogen, carbonyl cyano; a cyano group, phenyl, aryl, cycloalkyl, heterocycle or arylalkyl, optionally substituted with a hydroxy group, alkoxy, halogen, amino, alkoxycarbonyl, carboxyl, trifluoromethyl, carbonyl, cyano, nitro, lower alkyl or lower alkenyl, or may form an optionally substituted heterocycle with R_4 and with the nitrogen atom; and the physiologically acceptable salts thereof.

5,331,006

AMINO ACID ANALOGS AS CCK ANTAGONISTS

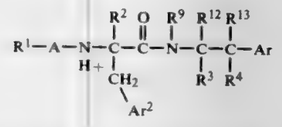
David C. Horwell, Cambridge, England; Julian Aranda, Vörstetten, Fed. Rep. of Germany; Corinne Augelli-Szafran, Ypsilanti, Mich.; Hans-Jurgen Betche, Vörstetten, Fed. Rep. of Germany; Ann Holmes, Dexter; Michael D. Mullican, Ypsilanti, both of Mich.; Martyn C. Pritchard, Cambridge, England; Reginald S. Richardson, Haverhill, England; Edward Roberts, Newmarket, England; Bruce D. Roth, Ann Arbor, Mich.; Bradley D. Tait, Canton, Mich.; Bharat K. Trivedi, Farmington Hills, Mich.; Uwe Trostmann, March-Hugstetten, Fed. Rep. of Germany, and Paul C. Unangst, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 576,308, Aug. 31, 1990, abandoned. This application Jul. 12, 1991, Ser. No. 726,656

Int. Cl.[5] **A61K** *31/27;* **C07C** *271/10*

U.S. Cl. 514—481 **24 Claims**

1. A compound of formula

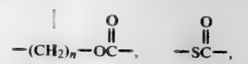


I

or a pharmaceutically acceptable salt thereof wherein:

R^1 is a cycloalkyl or polycycloalkyl hydocarbon of from three to twelve carbon atoms with from zero to four substituents each independently selected from the group consisting of alkyl, halogen, CN, OR*, SR*, CO_2R^*, CF_3, NR^5R^6, and $—(CH_2)_nOR^5$ wherein R* is hydrogen or alkyl, R^5 and R^6 are each independently hydrogen or alkyl and n is an integer from zero to six with the proviso that n is an intege. from one to six where R^1 is $—(CH_2)_nOR^5$;

A is $—(CH_2)_nCO—$, $—SO_2—$, $—S(=O)—$, $—NHCO—$,



$—O—(CH_2)CO—$, $—O—(CH_2)_2CO—$, $—O—(CH_2)_3CO—$, $—O—(CH_2)_4CO—$, $—O—(CH_2)_5CO—$, $—O—(CH_2)_6CO—$, or $—HC=CHCO—$ wherein n is an integer from zero to six;

R^2 alkyl, $—(CH_2)_n—CH=CH_2$, $—(CH_2)_nC\equiv CH$, $—(CH_2)_nAr$, $—(CH_2)_nOR^*$, $—(CH_2)_nOAr$, $—(CH_2)_nCO_2R^*$, or $—(CH_2)_nNR^5R^6$ wherein n, r*, R^5, and R^6 are as defined above and Ar is as defined below;

R^3 and R^4 are each independently selected from hydrogen, R^2 and $—(CH_2)_{n'}$-β-D wherein:

n' is an integer of from zero to three;

β is a bond,

$—OCO(CH_2)_n—$,

$—O(CH_2)_n—$,

$—NHCO—$,

$—NHCOCH_2—$,

$—NHCO(CH_2)_3—$,

$—NHCO(CH_2)_4—$,

$—NHCO(CH_2)_5—$,

$—NHCO(CH_2)_6—$,

$—CONH—$,

$—CONHCH_3—$,

$—CONH(CH_2)_3—$,

$—CONH(CH_2)_4—$,

$—CONH(CH_2)_5—$,

$—CONH(CH_2)_6—$,

$—COO(CH_2)_n—$,

$—CO(CH_2)_n—$,

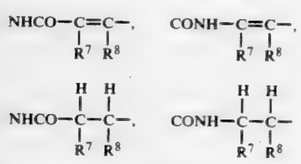
$—S—(CH_2)_n—$,

$—S(=O)—(CH_2)_n—$,

$—SO_2—(CH_2)_n—$,

$—NHSO_2—(CH_2)_n—$,

$—SO_2NH(CH_2)_n—$,



wherein R^7 or R^8 are independently selected from hydrogen and R^2 or together form a ring $(CH_2)_m$ wherein m is an integer of from 1 to 5 and n is as defined above;

D is

$—COOR^*$,

$—CH_2OR^*$,

$—CHR^2OR^*$,

$—CH_2SR^*$,

$—CHR^2SR^*$,

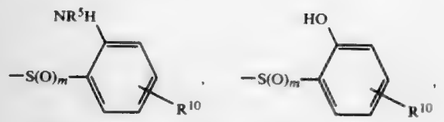
$—CONR^5R^6$,

$—CN$,

$—NR^5R^6$,

$—OH$,

—H and the acid replacements



wherein R^{10} is OH, NH_2CH_3 or Cl,

wherein m is an integer of from 0 to 2,

wherein R*, R^2, R^5, and R^6 are as defined above;

R^9 is hydrogen or alkyl, $—(CH_2)_nCO_2R^*$, $—(CH_2)_nOAr'$, $—(CH_2)_nNR^5R^6$, wherein n, R*, R^5, and R^6 are as defined above or taken from R^3 and Ar' is taken from Ar as defined below;

R^{12} and R^{13} are each independently hydrogen;

Ar is an unsubstituted or substituted hydrocarbon ring system selected from a monocyclic 5- or 6-member ring or a bicyclic ring system wherein each ring is independently a 5- or 6-member ring and a tricyclic ring system wherein each ring is independently a 5- or 6-member ring wherein the substituent is independently selected from nitro, NR^5R^6, halogen, alkyl, hydroxy or alkoxy; and

Ar^2 is selected from Ar as defined above or, naphthyl or the CH_2AR^2 moiety of formula I is the sidechain of phenylalanine or tyrosine,

the above alkyl or alkoxy groups have a straight or branched chain of from one to six carbon atoms.

5,331,007

ARYLALKYL-AMINES AND -AMIDES HAVING ANTICONVULSANT AND NEUROPROTECTIVE PROPERTIES

Ronald C. Griffith, Pittsford, N.Y., and James J. Napier, Lindenhurst, Ill., assignors to Fisons Corporation, Bedford, Mass.

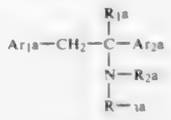
Continuation of Ser. No. 427,661, Oct. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 232,566, Aug. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 11,982, Feb. 6, 1987, abandoned. This application Jul. 20, 1992, Ser. No. 918,158

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.[5] **A01N** *31/34, 37/12, 37/18;* **A61K** *31/275*

U.S. Cl. 514—522 **14 Claims**

1. A compound of formula IA:



IA

wherein

R_{1a} is hydrogen, C1 to C4 alkyl or methoxycarbonyl;

R_{2a} is $COCH_2NH_2$;

R_{3a} is hydrogen or methyl; and

Ar_{1a} and Ar_{2a}, which may be the same or different, represent phenyl or phenyl substituted by one or more of amino, nitro, halogen, hydroxy, C1 to C4 alkoxy, C1 to C4 alkyl or cyano;

and pharmaceutically acceptable salts thereof

5,331,008

THIOESTER ENANTIOMERIC COMPOUNDS AND THEIR THERAPEUTIC USES

Pierre Duhamel; Lucette Duhamel, both of Mont Saint Aignan; Denis Danvy, Cany Barville; Jean-Christophe Plaquevent, Notre Dame de Bondeville; Bruno Giros, Kremlin Bicetre; Claude Gros, Paris; Jean-Charles Schwartz, Paris, and Jeanne-Marie Lecomte, Paris, all of France, assignors to Societe Civile Bioprojet, France

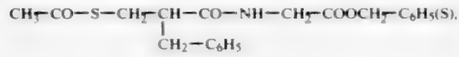
Division of Ser. No. 274,884, Nov. 22, 1988, Pat. No. 5,208,255. This application Feb. 1, 1993, Ser. No. 11,672

Claims priority, application France, Nov. 24, 1987, 87 16239

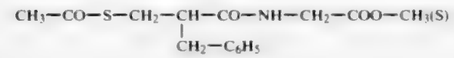
Int. Cl.[5] **A61K** *31/21*

U.S. Cl. 514—513 **5 Claims**

1. In a method of treating a disease in which high blood pressure is reduced and diuresis and natriuresis are provoked, the improvement comprising both reducing high blood pressure and provoking diuresis and natriuresis by the administration to a patient of a therapeutically effective dose of a chiral compound selected from the group consisting of



and



5,331,009

PHARMACEUTICAL COMPOSITIONS FOR TREATING ADRENOLEUKODYSTROPHY

Donald Suddaby, North Humberside, and Keith Coupland, South Cliffe, both of United Kingdom, assignors to Croda International Plc, North Humberside, United Kingdom

PCT No. PCT/GB88/00373, § 371 Date Sep. 25, 1989, § 102(e) Date Sep. 25, 1989, PCT Pub. No. WO89/08095, PCT Pub. Date Sep. 8, 1989

PCT Filed May 13, 1988, Ser. No. 411,484

Claims priority, application United Kingdom, Mar. 23, 1988, 8804188

Int. Cl.[5] **A61K** *31/22*

U.S. Cl. 514—549 **10 Claims**

1. A method for treating adrenoleukodystrophy, which comprises administering a pharmacologically effective amount of a composition which includes an effective amount of C22:1 long-chain fatty acid and no more than about 20 percent of C20:1 long-chain fatty acid, the ratios of said C22:1 to C20:1 acids being substantially greater than 2:1, said composition being substantially free of saturated fatty acids having 24 and 26 carbon atoms.

5,331,010

1-PHENYLA IKANECARBOXYLIC ACID DERIVATIVES AS ANTICONVULSANT AND NEUROPROTECTIVE AGENTS

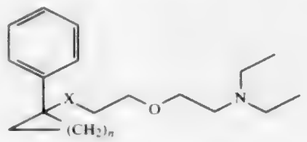
Amy H. Newman; Silvia N. Calderon, both of Silver Spring, and Frank C. Tortella, Columbia, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 5, 1991, Ser. No. 715,082

Int. Cl.[5] **A01N** *37/18, 33/02;* **C07C** *233/00*

U.S. Cl. 514—617 **17 Claims**

1. A compound having the formula:



wherein X is $—CH_2O—$, [$—C(=O)O—$,] $—C(=O)NH$, CH_2NH, or $—CH_2N(C_2H_5)$, and n is an integer between 1–5; or a pharmaceutically acceptable salt thereof.

5,331,011

N-BENZYL-N-PHENOXYETHYLAMINES AND AGRICULTURAL AND HORTICULTURAL BACTERICIDES

Mitsunori Oda; Kazutoshi Kikkawa; Akinori Tanaka; Satoko Imaruoka, and Shigeo Yoshinaka, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

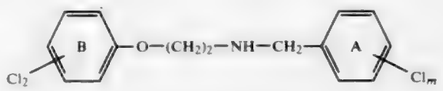
Division of Ser. No. 691,798, Apr. 26, 1991, Pat. No. 5,221,694. This application Apr. 7, 1993, Ser. No. 43,854

Claims priority, application Japan, Apr. 26, 1990, 2-108632

Int. Cl.[5] **A01N** *37/30;* **C07C** *63/08, 217/08*

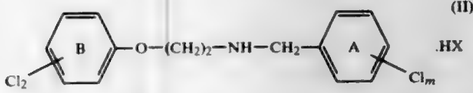
U.S. Cl. 514—555 **11 Claims**

1. An N-benzyl-N-phenoxyethylamine selected from the group consisting of the N-benzyl-N-phenoxyethylamine represented by the following formula (I):



(I)

and an agriculturally acceptable acid addition salt represented by the following formula (II):



(II)

wherein m represents a number of 1 or 2 with a proviso that when m is 1 and a chlorine atom in the ring A is present at para(4)-position of the ring A, two chlorine atoms in the ring Bare present at 2,3-, 2,5-, 2,6-, 3,4- or 3,5-positions of the ring B, and HX represents an acid.

5,331,012

TOPICAL PHARMACEUTICAL PREPARATION FOR FEVER BLISTERS AND OTHER VIRAL INFECTIONS AND METHOD OF USE

Kenneth B. Riddick, 918 Liberty St.; Joe G. Matheson, Jr., 419 Mitchell St., and Louis E. Mizelle, Jr., Rte. 2, Box 175, all of Ahoskie, N.C. 27910

Continuation of Ser. No. 559,617, Jul. 30, 1990, abandoned. This application Mar. 5, 1992, Ser. No. 846,734

Int. Cl.[5] **A61K** *31/16*

U.S. Cl. 514—626 **1 Claim**

1. A pharmaceutical composition for topically treating fever blisters, and Herpes virus infections in mammals consisting essentially of:

ethyl alcohol in a concentration of about 95% W/V;

lidocaine or a pharmaceutically acceptable salt thereof in a concentration of about 2% W/V; and

camphor in a concentration of about 1% W/V.

5,331,013

METHOD FOR THE TREATMENT OF ULCERATIVE PROCTITIS AND COLITIS

B. Håkan J. Ahlman, Askim; Stellan Björck, Hovås, and Annica B. Dahlström, Askim, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Continuation of Ser. No. 646,505, Jan. 23, 1991, abandoned, which is a continuation of Ser. No. 363,097, Jun. 8, 1989, abandoned. This application Apr. 1, 1992, Ser. No. 860,278

Int. Cl.[5] **A61K** *31/16*

U.S. Cl. 514—626 **5 Claims**

1. A method for restoring mucosol integrity in a patient suffering from ulcerative proctitis and ulcerative colitis comprising local administration to the reactal/colonic mucosa of the patient of an effective amount of a composition comprising a local anaesthetic or a pharmaceutically acceptable salt thereof and wherein the composition does not contain antiseptics which cause irrigative effects.

5,331,014

EFFECT OF N,N,N-TRIMETHYLSPHINGOSINE ON PROTEIN KINASE-C ACTIVITY; MELANOMA CELL GROWTH IN VITRO; METASTATIC POTENTIAL IN VIVO AND HUMAN PLATELET AGGREGATION

Satoshi Kimura; Yasuyuki Igarashi; Sen-itiroh Hakomori; Mohammad N. Ahmad; Hirofumi Okoshi, and Kazuko Handa, all of Seattle, Wash., assignors to The Biomembrane Institute, Seattle, Wash.

PCT No. PCT/US91/09196, § 371 Date Jun. 30, 1993, § 102(e) Date Jun. 30, 1993, PCT Pub. No. WO92/12119, PCT Pub. Date Jul. 23, 1992

Continuation of Ser. No. 724,625, Jul. 2, 1991, Pat. No. 5,151,360, which is a continuation-in-part of Ser. No. 636,353, Jul. 31, 1990, Pat. No. 5,137,919. This PCT application Dec. 23, 1991, Ser. No. 81,383

Int. Cl.[5] **A61K** *31/14*

U.S. Cl. 514—642 **9 Claims**

1. A therapeutic method for moderating inflammatory reactions comprising administering to a host in need of treatment an amount of N,N,N-trimethylsphingosine, or a pharmaceutically acceptable salt thereof, capable of inhibiting neutrophil activity.

5,331,015

ABSORBENT FOAM MATERIALS FOR AQUEOUS BODY FLUIDS AND ABSORBENT ARTICLES CONTAINING SUCH MATERIALS

Thomas A. DesMarais, Norwood; Keith J. Stone; Hugh A. Thompson, both of Fairfield; Gerald A. Young, Cincinnati; Gary D. LaVon, Harrison, and John C. Dyer, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 42,363, Apr. 2, 1993, Pat. No. 5,268,224. This application Nov. 23, 1993, Ser. No. 156,858

Int. Cl.[5] **C08J** *9/28;* **B32B** *3/26;* **A61F** *13/15*

U.S. Cl. 521—62 **11 Claims**

1. A polymeric foam material especially suitable for absorbing and retaining aqueous body fluids, said foam material, when washed and dried, comprising a hydrophilic, flexible structure of interconnected open cells having sufficient residual hydrophilizing agent comprising a non-irritating surfactant to render the surface of the structure hydrophilic, which structure has, when in contact with aqueous body fluids:

A) a pore volume of from about 12 to 100 mL/g;

B) a specific surface area of from about 0.5 to about 5.0 m^2/g as determined by capillary suction; and

C) a resistance to compression deflection such that a confining pressure of 5.1 kPa produces after 15 minutes a strain of from about 5% to 95% compression of the structure when it is saturated at 37° C. to its free absorbent capacity with synthetic urine having a surface tension of 65±5 dynes/cm.

5,331,016

PLASTIC MOLDINGS MADE OF WATER-EXPANDED POLYMER RESIN

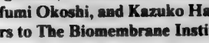
Lothar Frank, deceased, late of Plüderhausen by Brigitte Frank, executor , and Gunter Hieber, Schorndorf-Oberberken, both of Fed. Rep. of Germany, assignors to Schock & Co., GmbH, Schorndorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 835,125, Feb. 12, 1992, Pat. No. 5,254,599. This application Oct. 18, 1993, Ser. No. 138,362

Int. Cl.[5] **C08G** *18/14*

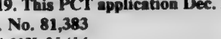
U.S. Cl. 521—64 **20 Claims**

1. Plastic molding made of a water-expanded polymer resin and produced from a curable mixture containing a water component emulsified by an emulsifier component in a resin-forming component, said resin-forming component of said curable mixture containing a monomer component and a cross-linker on an acrylate basis and/or an acrylate prepolymer, and the weight ratio of said water component to said resin-forming component being at least 1:1 wherein the emulsifier component comprises a first and/or a second polymeric, non-ionic surfactant, each one having an HLB value of from 3 to 7, whereby the first polymeric, non-ionic surfactant is represented by the formula (I):



(I)

wherein X represents a C_6–C_{80} alkyl group or a C_6–C_{80} alkylene group and Y represents a hydrophilic moiety comprising an ester residue derived from a carboxylic or dicarboxylic acid or derivatives thereof and whereby the second polymeric, non-ionic surfactant is represented by the formula (II):



(II)

wherein A represents a hydrophilic backbone selected from the group consisting of

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polyether moieties obtained by a condensation reaction of sorbit and/or sorbitol with glycerol,
polyalkyleneoxides,
polysiloxane moieties, and
polyacrylate moieties
and wherein B represents a hydrophilic sidechain selected from the group consisting of
C_5–C_{22} fatty acids,
C_5–C_{22} hydroxy fatty acids, poly(hydroxy fatty acids),
C_5–C_{22} alkyl groups,
C_5–C_{22} alkoxy groups,
polyalkylene oxides, and
polyethers comprising alkylene oxide units and bearing on its free ends C_5–C_{22} alkyl residues.

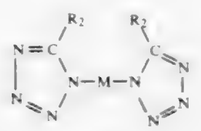
5,331,017

BLOWING AGENTS OF THE TETRAZOLES AND THEIR DERIVATIVES

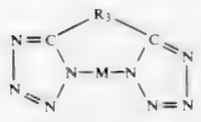
Atsuhiro Onishi, Takasago; Koichi Matsunami, Toyonaka; Masanao Ebara, and Hiroaki Tanaka, both of Takasago, all of Japan, assignors to Toyo Kasei Kogyo Company, Limited, Japan

Division of Ser. No. 941,836, Sep. 8, 1992, which is a continuation-in-part of Ser. No. 798,561, Nov. 26, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 78,054
Claims priority, application Japan, Nov. 26, 1990, 1-324953; Aug. 26, 1991, 3-240402
Int. Cl.[5] **C08J** *9/10*
U.S. Cl. 521—90 **5 Claims**

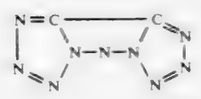
1. In a process for the production of cellular products which comprises incorporating a blowing agent into rubber or a synthetic polymer and then heating to activate the blowing agent, the improvement which comprises using as the blowing agent tetrazole compounds represented by the formulae (II), (III) and (V):



(II)



(III)



(V)

wherein
R_2 is selected from the group consisting of H, —OH, —COOH, $—SO_3H$, $—NO_2$, halogen and $—NH_4R_5$ wherein R_4 and R_5 each are H or C_1 to C_4 alkyl, C_1 to C_6 alkyl, C_3 to C_6 cycloalkyl or C_2 to C_6 alkenyl, optionally substituted by C_1 to C_6 alkyl, —OH, —COOH, $—SO_3H$, $—NO_2$, halogen, $—NR_4R_5$ wherein R_4 and R_5 are as defined above or, R_2 can be phenyl, benzyl or phenethyl radicals optionally substituted by 1 to 3 halogen, —OH, NO_2, $—NR_4R_5$, wherein R_4 and R_5 are as described above, C_1 to C_4 alkyl and esters or amides of lower carboxylic acids;
R_3 is selected from the group consisting of C_5 to C_6 alkylene, cycloalkylene or alkenylene, unsubstituted or substituted by C_1 to C_6 alkyl, —OH, —COOH, SO_3H, $—NO_2$, halogen, NR_4R_5 wherein R_4 and R_5 are as defined above, —O—, —S—, $—SO_2$, —CO—, —phenylene or bisphenylene, said phenylene or bisphenylene being unsubstituted or substituted by 1 to 8 halogens, —OH, $—NO_2$, esters or amides of lower carboxylic acids, NR_4R_5, wherein NR_4 and R_5 are as defined above or C_1 to C_4 alkyl; and
M is a divalent metal selected from Ca, Cu, Zn, Mn, Fe, Co, Ni and Ba.

5,331,018

BIMODAL CURED INTERMIXED POLYMERIC NETWORKS WHICH ARE STABLE AT HIGH TEMPERATURE

Vincent D. McGinniss, Sunbury; James L. White, Columbus, both of Ohio, and Hiroyuki Mikuni, Sagamihara, Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,863
Int. Cl.[5] **C08F** *2/50, 18/14, 18/18*
U.S. Cl. 522—16 **15 Claims**

1. A non-emissive, bimodal-cured, polymeric network which has an onset degradation temperature that is about 100° C. above the onset degradation temperature of a base polymer, and which is the cured reaction product of a mixture of the following ingredients:
(a) a combination of one or more liquid carrier monomers or prepolymers which combination is firstly reacted to form said base polymer by exposure of said mixture to ultraviolet (UV) radiation in the presence of a UV photosensitizer at a temperature, T_{uv}; and
(b) between about 10 and 100 wt-% based on ingredient (a) of a combination of one or more monomers or prepolymers which combination is secondly reacted by heating of said mixture at a temperature, T_Δ, to form a cured high temperature stable polymer having an onset degradation temperature at least about 100° C. higher than that of said base polymer, at least one of said monomers or prepolymers forming said cured high temperature stable polymer being modified or blocked to be unreactive at temperatures below about T_Δ and selected from the group consisting of blocked amine monomers, blocked anhydride monomers, blocked dianhydride monomers, blocked alcohol monomers, and amine-functional silicone resins modified with a maleic anhydride or blocked with a methyl ethyl ketone,
wherein ingredient (b) is soluble or dispersible in ingredient (a) at a temperature, T_s, wherein T_s is equal to or lower than T_{uv}, and T_{uv} is at least about 50° C. lower than T_Δ.

5,331,019

LUBRICIOUS RADIATION STABLE POLYMERIC COMPOSITION AND ARTICLES THEREFROM

Donald N. Payne, Jr., Durham, N.C.; Jess M. Waller, Akron, Ohio; Richard P. Clarke, Raleigh, N.C.; George R. Titus, Raleigh, N.C., and David A. Martin, Raleigh, N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 4, 1990, Ser. No. 576,750
The portion of the term of this patent subsequent to Sep. 25, 2007, has been disclaimed.
Int. Cl.[5] **C08J** *5/16;* **C08K** *5/20, 5/3435;* **C08L** *23/00*
U.S. Cl. 522—75 **9 Claims**

1. A composition comprising a semicrystalline polyolefin having a weight distribution wherein the ratio of the weight average molecular weight to the number average molecular weight is no greater than 9.0, a radiation stabilizing amount of a hindered amine stabilizer and a lubricating amount of erucyl erucamide.

5,331,020

ORGANOSILICON COMPOUNDS AND COMPOSITIONS CONTAINING THEM

Scott S. D. Brown, Barry; Peter C. Hupfield, Brynteg Parc, both of Wales; Peter Y. K. Lo, Midland, Mich., and Richard G. Taylor, Barry, Wales, assignors to Dow Corning Limited, Barry, Wales

Division of Ser. No. 976,114, Nov. 13, 1992, Pat. No. 5,270,423. This application Aug. 16, 1993, Ser. No. 107,103
Int. Cl.[5] **C08F** *2/46*
U.S. Cl. 522—99 **11 Claims**

1. A composition which will cure upon exposure to radiation comprising:
(I) at least one organosilicon compound having a having a siloxane portion and at least one group of the general formula

$$—OR'OCH=CHR'' \quad (i)$$

linked to a silicon atom via an Si—O—C bond, wherein R' is selected from the group consisting of divalent hydrocarbon radicals having up to 8 carbon atoms and groups of the formula $—R^*—(OR^*)_n—$, wherein R^* denotes an alkylene group having up to 6 carbon atoms and n has a value of from 1 to 12, R'' is selected from the group consisting of hydrogen and alkyl groups having up to 10 carbon atoms; and
(II) an initiator.

5,331,021

GRAFTED COPOLYMERS HIGHLY ABSORBENT TO AQUEOUS ELECTROLYTE SOLUTIONS USED IN DIAPERS AND PAPER TOWELS

Iqbal Ahmed, Bartlesville, Okla., and Henry L. Hsieh, Pittboro, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 65,829, May 21, 1993, Pat. No. 5,290,871, which is a division of Ser. No. 919,075, Jul. 23, 1992, Pat. No. 5,214,117, which is a continuation of Ser. No. 632,226, Dec. 20, 1990, abandoned. This application Sep. 24, 1993, Ser. No. 126,279
Int. Cl.[5] **A61F** *13/15, 13/20;* **D21F** *11/00;* **D21H** *11/00*
U.S. Cl. 523—105 **2 Claims**

1. A paper towel containing therein a graft copolymer formed by
(a) graft polymerizing onto a first polymer selected from the group consisting of polysaccharide, polypropylene, and polyethylene; at least one comonomer selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, acrylic acid, methacrylic acid, alkali salts of acrylic acid, alkali salts of methacrylic acid, 2-methacryloyloxyethane sulfonic acid, alkali salts of 2-methacryloyloxyethane sulfonic acid, N-vinyl-2-pyrrolidone and combinations of two or more thereof;
(b) graft copolymerizing therewith an ampholytic ion pair monomer having an ammonium cation and a sulfonate anion wherein
(i) the ammonium cation is 2-methacryloyloxyethyldimethylammonium; and
(ii) the sulfonate anion is selected from the group consisting of 2-acrylamido-2-methylpropane sulfonate, 2-methacryloyloxyethane sulfonate, vinyl sulfonate, styrene sulfonate and any combination of two or more thereof;
wherein the comonomers and ion pair monomers are provided in amounts which are effective to produce a highly absorbent graft copolymer.

5,331,022

METHOD FOR THE REDUCTION OF RADON LOAD IN CLOSED SPACES

Ludwig Jochmann, and Josef Hess, both of Zug, Switzerland, assignors to Hesco AG, Industrieconsulting & Industrievertretungen, Zug, Switzerland

Filed Oct. 1, 1992, Ser. No. 934,734
Claims priority, application Switzerland, Apr. 9, 1991, 1046/91
Int. Cl.[5] **G21F** *1/10;* **C08L** *27/16, 33/06, 39/06*
U.S. Cl. 523—136 **7 Claims**

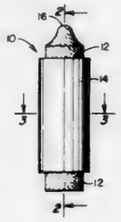
1. A method of reducing a radon load in a space bounded by surfaces, said method comprising the steps of:
(a) providing a composition consisting essentially of
a vinylidene chloride-acrylate copolymer dispersion in water,
an alkylphenolethoxylate nonionic surfactant containing 10 moles of ethylene oxide per mole of the alkylphenolethoxylate,
a thickening agent selected from the group which consists of a vinyl pyrrolidone copolymer, and
a diurethane solution in a water/propylene glycol/isopropanol mixture, and
a defrothing agent;
(b) applying said composition to said boundary surfaces; and
(c) allowing said composition to dry on said surfaces.

5,331,023

PRESSURE-SENSITIVE CRAYON ADHESIVE

Peter S. Columbus, Melville, N.Y., and Yogeshbhai B. Patel, Gahanna, Ohio, assignors to Borden, Inc., Columbus, Ohio

Filed Mar. 23, 1992, Ser. No. 855,919
Int. Cl.[5] **C08L** *91/06;* **C09D** *13/00;* **C09J** *191/06*
U.S. Cl. 523—164 **31 Claims**



1. A solid thermoplastic and pressure-sensitive crayon adhesive consisting essentially of an intimate mixture of:
A. from about 40% to 75% by weight of polyisobutylene having a Flory molecule weight of 40,000 to 70,000;
B. about 25% to 60% by weight of synthetic wax having a needle penetration value of from about 1 to 6 and a melting point of at least 190° F.; and
C. optionally containing up to about 30% by weight of an adhesion promoter resin for the polyisobutylene wherein said resin has a softening point above 150° F. and is a member selected from the group consisting of rosin, modified rosin, a rosin derivative, a terpene resin, a hydrogenated resin, a resin prepared from a C-5 aliphatic hydrocarbon, and a resin prepared from a mixture of a C-5 aliphatic and a C-9 aromatic hydrocarbon; and wherein the total quantity of polyisobutylene, wax, and resin make up at least 90% of the crayon.

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5,331,024

PROCESS FOR THE PREPARATION OF AN AQUEOUS DISPERSIONS OF PLASTICS HAVING A REDUCED FORMALDEHYDE CONTENT AND USE THEREOF

Gerhard Brink, Burghausen, and Konran A. Wierer, Mehring, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 809,709, Dec. 17, 1991, abandoned. This application Aug. 13, 1993, Ser. No. 106,319

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040959

Int. Cl.[5] C08K *9/00;* C08F *6/00, 8/00;* C08L *33/00*

U.S. Cl. 523—200 7 Claims

1. A process for the preparation of an aqueous dispersion of a plastic having a solids content of 30 to 70% by weight, a reduced formaldehyde content, and which avoids the addition of any urea which comprises adding after polymerization has ended, 0.05 to 10.0% by weight, based on the polymer, of which said plastic is comprised, at least one peroxy compound selected from the group consisting of hydrogen peroxide, organic peroxides, perborates, percarbonates, persulfates and perphosphates, to an aqueous dispersion containing said polymer and wherein said polymer was prepared from at least one monomer selected from the group consisting of acrylic acid esters, methacrylic acid esters, vinyl esters, olefins, vinyl halides, vinylaromatics and ethylenically unsaturated carboxylic acids and amides thereof, and a cross-linking agent containing N-methylol groups, said cross-linking agent being present in said polymer in an amount not exceeding 10% by weight based on the total weight of the polymer.

5,331,025

COATING COMPOSITIONS INCORPORATING COMPOSITE POLYMER PARTICLES

Alvin C. Lavoie, Lansdale; Jen-Chi Chen, Morrisville; Chao-Jen Chung, North Wales; Dennis P. Lorah, Lansdale; Peter R. Sperry, Doylestown, and Andrew W. Gross, Hatboro, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 4, 1992, Ser. No. 971,365

Int. Cl.[5] C08K *5/01;* C08L *63/02*

U.S. Cl. 523—437 20 Claims

1. A non-aqueous coating composition, comprising:

(a) a film-forming resin;

(b) a volatile organic liquid which is a solvent for the film-forming resin; and

(c) at least one composite polymer particle,

wherein the weight ratio of said composite polymer particles to said film-forming resin solids is from about 10:90 to about 40:60;

wherein said composite polymer particles are from about 50% by weight to about 90% by weight a first stage polymer and from about 10% by weight to about 50% by weight a second stage polymer, based on the total weight of said composite polymer particle;

wherein said first stage polymer is formed from at least one ethylenically unsaturated monomer, is insoluble in said film-forming resin and said volatile organic liquid and has a glass transition temperature of less than the glass transition temperature of said second stage polymer; and

wherein said second stage polymer is formed from at least one ethylenically unsaturated monomer and has a glass transition temperature of greater than about 40° C.

5,331,026

ELECTROCOATING COMPOSITION COMPRISING THE SOLID PIGMENT DISPERSION

James W. Benefiel, Northville; Peter D. Clark, Farmington Hills, and Laura M. Lanni, Waterford, all of Mich., assignors to BASF Corporation, Southfield, Mich.

Continuation of Ser. No. 722,625, Jun. 27, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,848

Int. Cl.[5] C08L *63/00*

U.S. Cl. 523—456 14 Claims

1. A process for producing an aqueous one component cathodic electrocoating composition comprising:

A) first, forming a powder dispersion of a pigment in a solid resin selected from the group consisting of polyesters, polyurethanes, epoxies, aminoplasts, alkyd and acrylic resins by

i) mixing pigments into molten solid resin, followed by

ii) chilling the pigment/resin mixture and

iii) pulverizing the mixture into a powder,

B) subsequently, forming the electrocoating composition by

i) first mixing together the powder dispersion of a pigment in a solid resin and a principal resin selected from the group consisting of epoxy amine adducts, and

ii) subsequently adding a crosslinker and optionally an additive selected from the group consisting of organic solvents, catalysts, wetting agents, conditioning agents, thickeners, rheology control agents, antioxidants, surfactants, leveling agents and mixtures thereof,

C) salting with an acid and

D) dispersing in deionized water.

5,331,027

LUBRICIOUS HYDROPHILIC COATING, RESISTANT TO WET ABRASION

Richard J. Whitbourne, Fairport, N.Y., assignor to Sterilization Technical Services, Inc., Rush, N.Y.

Continuation of Ser. No. 872,927, Apr. 23, 1992, abandoned, which is a division of Ser. No. 642,191, Jan. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 92,077, Sep. 2, 1987, Pat. No. 5,001,009. This application May 25, 1993, Ser. No. 67,253

Int. Cl.[5] C08L *1/10;* A61M *5/32*

U.S. Cl. 524—37 8 Claims

1. A lubricious hydrophilic coating for an organic polymeric surface which is substantially more slippery when wet than when dry, and resistant to removal by wet abrasion comprising a single layer of a hydrophilic polymer selected from the group consisting of polyvinylpyrrolidone, polyvinylpyrrolidone polyvinyl acetate copolymer, and a mixture thereof, and a water-insoluble stabilizing polymer selected from the group consisting of a cellulose ester, nylon, and a mixture thereof.

5,331,028

POLYMER-MODIFIED ASPHALT COMPOSITION AND PROCESS FOR THE PREPARATION THEREOF

Joseph L. Goodrich, Lafayette, Calif., assignor to Chevron Research and Technology Company, a division of Chevron U.S.A. Inc., San Francisco, Calif.

Filed Jun. 30, 1993, Ser. No. 84,934

Int. Cl.[5] C08L *95/00*

U.S. Cl. 524—68 53 Claims

1. A polymer-modified asphalt composition comprising:

(a) about 80 to 99.7 weight percent of a polymer-asphalt reaction product prepared by reacting (i) about 100 parts by weight of an asphalt having an initial viscosity at 60° C. of from 100 to 20,000 poise, with (ii) about 0.5 to 11 parts by weight of a glycidyl-containing ethylene copolymer containing about 0.1 to about 20 weight percent glycidyl moieties and having a weight-average molecular weight of from about 10,000 to about 1,000,000; and

(b) about 0.3 to 20 weight percent of a styrene/conjugated-diene block copolymer having a weight-average molecular weight of from about 100,000 to about 1,000,000.

5,331,029

RESIN FOR BONDING POLYARYLENE SULFIDE AND ADHESIVE

Hiroyuki Sato, Fukushima; Kazuhiro Watanabe, Tokyo, and Toshiya Watanabe, Saitama, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 875,331, Apr. 29, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 75,925

Claims priority, application Japan, Apr. 30, 1991, 3-126649; Feb. 19, 1992, 4-069820

Int. Cl.[5] C08K *5/34*

U.S. Cl. 524—94 4 Claims

1. An adhesive for bonding polyarylene sulfides, which comprises (i) a copolymer wherein a main constituent element of the repeating unit of the copolymer is —A—Z—R—Z—, wherein —Z— is an ester linkage; A is an arylene sulfide oligomer component block comprising one or more arylene groups; and R is an organic compound residue formed by removing one atom or one group attached to each of two carbon atoms among carbon atoms constituting either an aliphatic main chain or an aromatic ring and has at most a molecular weight corresponding to an oligomer, but is different from A, and (ii) a pyrrolidone solvent.

5,331,030

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Roberto Cipolli, Novara; Roberto Oriani; Gilberto Nucida, both of Milan, and Enrico Masarati, Piacenza, all of Italy, assignors to Ministero Dell'Universita' E Della Ricerca Scientifica E Tecnologica, Rome, Italy

Filed Dec. 1, 1992, Ser. No. 983,977

Claims priority, application Italy, Dec. 4, 1991, MI91 A 003253

Int. Cl.[5] C08K *5/3492, 5/3435*

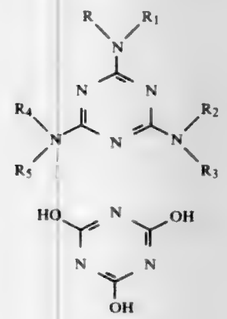
U.S. Cl. 524—100 11 Claims

1. Self-extinguishing polymeric compositions comprising:

a) from 90 to 40 parts by weight of a thermoplastic polymer or a polymer with elastomeric properties;

b) from 6 to 33 parts by weight of one or more ammonium or amine phosphates, phosphonates or mixtures therein;

c) from 4 to 27 parts by weight of one or more salts of 2,4,6-triamino-1,3,5-triazine derivatives with cyanuric acid, of formula (I):



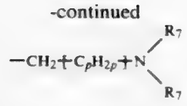
(I)

where:

at least one of the radicals from R to R_5 is:

$$-CH_2+C_mH_{2m}+O-R_6$$

-continued



in which:

m is a whole number between 1 and 7:

p is a whole number between 1 and 5;

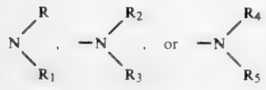
R^6 is H, C_1–C_8 alkyl, C_2–C_6 alkenyl, $+C_qH_{2q}]O-R_8$ where q is a whole number between 1 and 4 and R_8 is H, C_1–C_4 alkyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl;

the radicals R_7, which can be the same or different, are: H, C_1–C_8 alkyl, C_2–C_6 alkenyl, C_6–C_{12} cycloalkyl, alkylcycloalkyl, C_1–C_4 hydroxyalkyl, the group:



is replaced by a heterocyclic radical bound to the alkyl chain by the nitrogen atom, selected from the group consisting of aziridine, pyrrolidine, piperidine, morpholine, thiomorpholine, piperizine, 4-methylpiperazine, 4-ethylpiperazine,

or in formula (I) at least one member of the group



is replaced by a heterocyclic radical bound to the triazine ring by the nitrogen atom selected from the group consisting of aziridine, pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine, 4-methylpiperazine, 4-ethylpiperazine, 2-methylpiperazine, 2,5-dimethylpiperazine, 2,3,5,6-tetramethylpiperazine, 2,2,5,5-tetramethylpiperazine, 2-ethylpiperazine, and 2,5-diethyl-piperazine, the other radicals from R to R_5, which can be the same or different, and have the aforesaid meanings;

or are members selected from the group consisting of H, C_1–C_{18} alkyl, C_2–C_8 alkenyl, C_6–C_{16} cycloalkyl, alkylcycloalkyl, or their hydroxyl or C_1–C_4 hydroxyalkyl derivatives.

5,331,031

GAMMA CRYSTALLINE MODIFICATION OF 2,2', 2''-NITRILO[TRIETHYL-TRIS(3,3',5,5'-TETRA-TERT-BUTYL-1,1'-BIPHENYL-2,2'-DIYL) PHOSPHITE]

Stephen D. Pastor, Danbury, Conn.; Sai P. Shum, Pleasantville, N.Y., and Paul A. Odorisio, Leonia, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 18, 1993, Ser. No. 108,964

Int. Cl.[5] C07F *9/6574;* C08K *5/52*

U.S. Cl. 524—119 6 Claims

1. A process for the preparation of the gamma crystalline form of the compound 2,2',2''-nitrilo[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl) phosphite]characterized by melting in the range of 178°–185° C. and by an X-ray diffraction pattern obtained using Cu-Kα which exhibits diffraction angles (2Θ):

Peak No.	Diffraction Angle
1	5.4
2	6.3
3	8.8
4	9.9
5	10.3

-continued

Peak No	Diffraction Angle
6	10.8
7	11.7
8	13.8
9	14.8
10	15.5
11	16.1
12	17.0
13	17.7
14	18.4
15	20.2

which comprises, crystallizing or recrystallizing said compound from an alkanol of 4 to 8 carbon atoms.

5. A composition stabilized against thermal, oxidative and actinic induced degradation which comprises

(a) a polyolefin, and

(b) an effective stabilizing mount of the gamma crystalline form of 2,2',2''-nitrilo-[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl) phosphite], characterized by melting in the range of 178°–185° C. and by an X-ray diffraction pattern obtained using Cu-Kα which exhibits diffraction angles (2Θ):

Peak No	Diffraction Angle
1	5.4
2	6.3
3	8.8
4	9.9
5	10.3
6	10.8
7	11.7
8	13.8
9	14.8
10	15.5
11	16.1
12	17.0
13	17.7
14	18.4
15	20.2

5,331,032

HYDROPHILIC AROMATIC POLYESTER FIBER

Togi Suzuki, Matsuyama; Shigeo Mori, Kyoto, and Noboru Chujo, Joyo, all of Japan, assignors to Teijin Limited, Osaka and Dai-ichi Kogyo Seiyaku Co., Ltd., Kyoto, both of Japan

Division of Ser. No. 672,956, Mar. 21, 1991, Pat. No. 5,262,460, which is a continuation-in-part of Ser. No. 474,761, Mar. 29, 1990, abandoned. This application Jul. 30, 1993, Ser. No. 100,462

Claims priority, application Japan, Aug. 4, 1988, 63-193487; Apr. 11, 1989, 1-89808; Apr. 18, 1989, 1-96453; Apr. 19, 1989, 1-97449; Jul. 10, 1989, 1-175707; Dec. 12, 1989, 1-320559; Feb. 2, 1990, 2-24060

Int. Cl.[5] **C08K** *5/53*

U.S. Cl. 524—135 **24 Claims**

1. A hydrophilic aromatic polyester fiber consisting of an aromatic polyester resin composition comprising (a) 100 parts by weight of an aromatic polyester resin and (b) 0.2 to 30 parts by weight of at least one water-insoluble polyoxyethylene polyether polymer, said water-insoluble polyoxyethylene polyether polymer satisfying all of the requirements (i) to (iii):

(i) the polyoxyethylene polyether polymer is a non-random copolymer type polyoxyethylene polyether polymer represented by the formula (I):

$$Z\left[(CH_2CH_2O)_l-(R^1O)_m-R^2\right]_k \quad (I)$$

wherein Z is a residue of an organic compound having 1 to 6 active hydrogen atoms and a molecular weight of 300 of less, R^1 is an unsubstituted or substituted alkylene group having at least 6 carbon atoms, R^2 is a member selected from a hydrogen atom, monovalent hydrocarbon groups having 1 to 40 carbon atoms, and monovalent acyl groups having 2 to 40 carbon atoms, k is an integer of from 1 to 6, l is an integer satisfying the relationship of $k \times l \geqq 70$, and m is an integer of 1 or more,

(ii) the polyoxyethylene type polyether has a number average molecular weight of 5,000 to 16,000; and

(iii) in the formula (I), R^1, R^2, l and m satisfy the following relationships:

when k is an integer of 1,

$$0.4 < \frac{m[M(R^1O) + [M(R^2)]}{44l} < 3.0$$

and

when k is an integer of 2 to 6,

$$0.23 < \frac{m[M(R^1O)] + [M(R^2)]}{44l} < 3.0$$

wherein $[M(R^1O)]$ represents the molecular weight of the radical R^1O and $[M(R^2)]$ represents the molecular weight of the radical R^2.

5,331,033

HOT MELT ADHESIVE

Daniel Stauffer, Kane, Pa.; Paul P. Puletti, Pittstown, N.J., and Thomas F. Kauffman, Easton, Pa., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Feb. 23, 1993, Ser. No. 21,148

Int. Cl.[5] **C08L** *91/06*

U.S. Cl. 524—275 **18 Claims**

1. A carton, case or tray formed utilizing a hot melt adhesive composition having a specific gravity less than 0.98 and a viscosity less than 8000 cps at 175° C., said adhesive consisting essentially of:

a) 20 to 50% by weight of at least one ethylene n-butyl acrylate copolymer containing 25–45% by weight n-butyl acrylate and having a melt index of at least 10;

b) 30 to 60% of a tackifying resin selected from the group consisting of aliphatic and cycloaliphatic hydrocarbon resins or hydrogenated derivatives thereof and hydrogenated aromatic hydrocarbon resins;

c) 10 to 30% by weight of a synthetic wax having a melting point above 100° C.; and

d) 0–1.5% stabilizer.

5,331,034

PROCESS FOR REDUCING THE DISCOLORATION OF A PLASTIC MOLDING COMPOSITION AT THE PROCESSING TEMPERATURE

Gerhard Pfahler, Augsburg, and Georg Schmailzl, Gersthofen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 13, 1991, Ser. No. 791,448

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1990, 4036359

Int. Cl.[5] **C08K** *5/05, 5/06, 5/13*

U.S. Cl. 524—386 **6 Claims**

1. A process for reducing the discoloration of a plastic molding composition which contains a phenolic compound as stabilizer and heavy-metal ions as catalysts residues, which comprises adding at the processing temperature from 0.001 to 1% by weight, based on the polymer, of ditrimethylolpropane to the molding composition wherein said polymer is polyethylene or polypropylene or mixture thereof.

5,331,035

PROCESS FOR THE PREPARATION OF IN SITU DISPERSION OF COPOLYMERS

James E. Hall, Mogadore, Ohio, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,118

Int. Cl.[5] **C08K** *3/02*

U.S. Cl. 524—457 **14 Claims**

1. A process for the preparation of a dispersion copolymer by the dispersion copolymerization of 35 to 70% by weight of a vinyl aromatic monomer and 30 to 65% by weight of a conjugated diene monomer comprising carrying out the copolymerization in a hydrocarbon dispersing medium in the presence of a block copolymer dispersing agent having a preformed block and at least one block formed in situ during the copolymerization of the dispersion copolymer and a catalytically effective amount of an anionic initiator, the preformed block being soluble in the dispersing medium and the block formed in situ being insoluble in the dispersing medium.

5,331,036

OIL EXTENDED ULTRA HIGH MOLECULAR WEIGHT ELASTOMERS

Jung W. Kang, Clinton; Gary B. Seaver, Canal Fulton, and Takatsugu Hashimoto, Akron, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 586,064, Sep. 21, 1990, Pat. No. 5,260,370. This application Mar. 23, 1993, Ser. No. 34,969

The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.[5] **C08K** *5/01*

U.S. Cl. 524—474 **13 Claims**

1. An elastomer composition comprising

(A) an ultra high molecular weight copolymer composition of a 1,3-conjugated diene and an aromatic vinyl compound having a weight average molecular weight of greater than about 1,000,000 and a vinyl content in the diene base of from 30 to 80% by weight; and

(B) from about 30 to about 300 parts by weight of oil per 100 parts by weight of the copolymer (A).

5,331,037

EXTRUDED SOLID COMPOSITE ARTICLES AND COMPOSITIONS FOR PRODUCING SAME

Evan E. Koslow, Weston, Conn., assignor to Koslow Technologies Corporation, Orange, Conn.

Division of Ser. No. 778,266, Oct. 17, 1991, Pat. No. 5,249,948, which is a continuation-in-part of Ser. No. 682,182, Apr. 8, 1991, Pat. No. 5,189,092. This application Apr. 1, 1993, Ser. No. 41,673

Int. Cl.[5] **C08K** *3/04, 3/22, 5/09;* **B29D** *23/00*

U.S. Cl. 524—496 **14 Claims**

1. An extruded composite solid article formed by extrusion of an extrudable composition comprising a substantially uniform mixture of:

a) about 50% to about 70% by weight activated carbon particles as powdered or granular primary particles having a diameter of from about 0.1 to about 3000 micrometers;

b) about 27.5% to about 37.5% by weight lubricating oil;

c) about 4.0% to about 22.5% by weight thermoplastic binder particles having a diameter of from about 0.1 to about 250 micrometers and optionally

d) up to about 3% by weight solid state lubricant, and

wherein said activated carbon particles have a softening temperature at least about 25° C. above the softening temperature of the binder particles.

5,331,038

ADHESIVE FOR MULTIPACKS

Steven H. Dillman, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 28, 1992, Ser. No. 952,372

Int. Cl.[5] **C08F** *8/04;* **C08L** *51/00, 53/00*

U.S. Cl. 524—505 **6 Claims**

1. An adhesive for joining containers into cluster packages from which individual containers can be easily removed, consisting of:

(a) 100 parts of a linear hydrogenated triblock copolymer of a vinyl aromatic hydrocarbon and conjugated diene which has a coupling efficiency of greater than 45% and a peak molecular weight of 50,000 to 150,000,

(b) 30 to 110 parts of an endblock resin having a weight average molecular weight of from 1000 to 10000, and

(c) 80 to 210 parts of a hydrogenated hydrocarbon resin having a softening point below 35° C;

wherein the following relationships are satisfied:

$$H - 1.6E < 93$$

$$H + 1.3E > 175$$

$$H + 6.8E < 854$$

where H is the amount of hydrocarbon resin and E is the amount of endblock resin.

5,331,039

WATER-BASED BINDER COMPOSITION AND ITS USE FOR THE PRODUCTION OF COATING OR SEALING COMPOSITIONS

Harald Blum, Wachtendonk; Werner Kubitza; Joachim Probst, both of Leverkusen; Michael Sonntag, Odenthal, and Volker Schneider, Wachtendonk, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 9, 1992, Ser. No. 973,368

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137429

Int. Cl.[5] **C08L** *67/00*

U.S. Cl. 524—507 **10 Claims**

1. A water-based binder composition comprising

A) an aqueous solution or dispersion of a water-dilutable organic polyol component containing a mixture of at least 5% by weight each of at least two hydroxy-functional polymers selected from at least two of the following groups

A1) polyester resins containing hydroxyl, urethane and carboxylate groups and having a molecular weight (M_w) of 3000 to 100,000, a hydroxyl number of 20 to 240, an acid number (based on all of the carboxyl groups, wherein 25 to 100% are present in carboxylate form) of 8 to 60 and a urethane group content (—N-H—CO—O—) of 1.0 to 15.0% by weight,

A2) polyester resins containing hydroxyl and carboxylate groups, but no urethane or sulfonate groups, and having a molecular weight (M_w) of 1000 to 50,000, a hydroxyl number of 15 to 240 and an acid number (based on all of the carboxyl groups, wherein 25 to 100% are present in carboxylate form) of 15 to 90,

A3) polyester resins containing hydroxyl and sulfonate groups and, optionally, carboxylate groups and/or urethane groups and having a molecular weight (M_w) of 1000 to 50,000, a hydroxyl number of 15 to 240 and an acid number (based on all the sulfonic acid and optional carboxyl groups, wherein 25 to 100% are present in salt form) of 3 to 45,

A4) polyacrylate resins containing hydroxyl groups, and also carboxylate and/or sulfonate groups and having a molecular weight (M_w) of 500 to 100,000, a hydroxyl number of 15 to 270 and an acid number (based on all

the carboxyl and sulfonic acid groups, wherein 25 to 100% are present in salt form) of 5 to 125 and

A5) acrylate-grafted polyester resins containing hydroxyl groups, and also carboxylate and/or sulfonate groups and having a molecular weight (M_w) of 3000 to 100,000, a hydroxyl number of 20 to 300 and an acid number (based on al the carboxyl and sulfonic acid groups, wherein 25 to 100% are present in salt form) of 5 to 75, and

B) a polyisocyanate component which is emulsified in the aqueous solution or dispersion A), has a viscosity at 23° C. of 50 to 10,000 mPa.s and contains one or more organic polyisocyanates,

wherein the NCO:OH equivalent ratio, based on the isocyanate groups of component B) and the hydroxyl groups of the polyol component present in A), is 0.2:1 to 5:1

5,331,040

ADHESIVE COMPOSITION WITH FUNCTIONAL FILLER

Yueh-Ling Lee, Sayre, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1992, Ser. No. 966,256

Int. Cl.[5] C08L *33/00*

U.S. Cl. 524—522 **13 Claims**

1. An adhesive composition comprising

(a) 40–75% by weight, based upon the total amount of adhesive dry solids, of a latex comprising 1–10% by weight, based upon the latex dry components, of a crosslinking agent and 90–99% by dry weight, based upon the latex dry components, of a copolymer comprising (i) 30–50% by weight, based upon the weight of the copolymer, of acrylonitrile, methacrylonitrile or mixtures thereof, (ii) 45–70% by weight, based upon the weight of the copolymer, of butyl acrylate, ethyl acrylate, 2-ethylhexyl acrylate, lauryl acrylate, lauryl methacrylate, octyl acrylate, heptyl acrylate, or mixtures thereof, and (iii) 1–5% by weight, based upon the weight of the copolymer, of methacrylic acid, acrylic acid, itaconic acid, or mixtures thereof;

(b) 10–25% by weight, based upon the total amount of adhesive dry solids, of a latex plasticizer comprising a copolymer comprising (i) 10–15% by weight, based upon the weight of the copolymer, of acrylonitrile, methacrylonitrile or mixtures thereof, (ii) 80–85% by weight, based upon the weight of the copolymer, of butyl acrylate, ethyl acrylate, 2-ethylhexyl acrylate, lauryl acrylate, lauryl methacrylate, octyl acrylate, heptyl acrylate, or mixtures thereof, and (iii) 1–5% by weight, based upon the weight of the copolymer, of methacrylic acid, acrylic acid, itaconic acid, or mixtures thereof, said latex plasticizer having a T_g less than that of the latex binder (a) and a decomposition temperature of at least 288° C.; and

(c) 5–50% by weight, based upon the total amount of adhesive dry solids, of a functional filler.

5,331,041

POLYMERIZABLE COMPOSITIONS AND IN-MOLD CURED PRODUCTS USING SAME

Yuji Takayama, Kanagawa; Hirokazu Matsueda, Aichi; Masato Sugiura, Aichi; Tatsuhiko Ozaki, Aichi; Hirotaka Wada, Aichi, and Toshiharu Suzuki, Aichi, all of Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Filed Apr. 22, 1993, Ser. No. 52,634

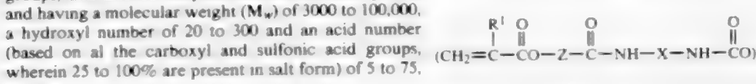
Claims priority, application Japan, May 1, 1992, 4-139987; Mar. 9, 1993, 5-76232

Int. Cl.[5] C08J *3/02;* **C08K** *3/00;* **C08L** *51/00, 39/00*

U.S. Cl. 524—555 **18 Claims**

1. A polymerizable composition comprising unsaturated urethane shown by Formula (1) given below, vinyl monomer copolymerizable with said unsaturated urethane, and an inorganic powder filler, said unsaturated urethane and said vinyl monomer being contained at weight ratio 10/90–90/10, said inorganic powder filler being contained at a rate of 30–300 weight parts per 100 weight parts of the sum of said unsaturated urethane and said vinyl monomer:

Formula (1)



where R^1 is hydrogen atom or methyl group; X is a residual group obtained by removing isocyanate groups from diisocyanate; Y is a residual group obtained by removing hydroxyl groups from non-radical polymerizable di-ol or tri-ol selected from the group consisting of (a) partial esters derivable from alkane monocarboxylic acid or alkene monocarboxylic acid with 5–22 carbon atoms and trihydric or tetrahydric poly-ol, (b) partially etherified trihydric or tetrahydric poly-ols with alkyl or alkenyl group with 5–22 carbon atoms, (c) 1,2-alkane di-ols with 6–22 carbon atoms or polyoxyalkylene alkane di-ols obtainable by addition of alkylene oxide with 2–4 carbon to 1,2-alkane di-ol with 6–22 carbon atoms, (d) partial or complete esters obtainable from hydroxy alkane monocarboxylic acid or hydroxy alkene monocarboxylic acid with 5–22 carbon atoms and dihydric or trihydric alcohol and (e) esters obtainable from 1 mole of alkyl or alkenyl succinic acid with alkyl or alkenyl group with 5–22 carbon atoms and 2 moles of (polyoxy)alkylene glycol with alkylene group with 2–4 carbon atoms; Z is an organic group in the form of $(R^2O)_m$ or R^3O, R^2 being an alkylene group with 2–4 carbon atoms, R^3 being an alkylene group with 2–12 carbon atoms, and m being an integer 2–10; and n is 2 or

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5,331,042

POLYOXYALKYLENEAMINE-NEUTRALIZED, LOW MFFT AQUEOUS DISPERSIONS OF ETHYLENIC/CARBOXYLIC POLYMERS

Dominique Charmot, Paris, and Roland Reeb, Gressy, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Nov. 15, 1991, Ser. No. 792,676

Claims priority, application France, Nov. 15, 1990, 90 14197

Int. Cl.[5] C08L *31/00*

U.S. Cl. 524—556 **26 Claims**

1. A low MFFT aqueous dispersion of film-forming ethylenic/carboxylic polymer particulates, said aqueous dispersion comprising an effective, at least partially neutralizing amount of a polyoxylalkyleneamine, said polyoxyalkyleneamine comprising at least one primary and/or secondary amine functional group per molecule thereof.

5,331,043

(METH)ACRYLATE RESINS WITH REDUCED YELLOWING, THEIR PRODUCTION AND USE

Klaus-Uwe Koch, Hanau, and Heidi Mich, Rodgau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 11, 1993, Ser. No. 2,383

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1992, 4200354

Int. Cl.[5] C08K *5/17, 5/54, 5/56, 5/36*

U.S. Cl. 524—714 **17 Claims**

1. A (meth)acrylate-containing, polymerizable mixture containing:

(Meth)acrylate (A)	20–99.9 parts by weight
Comonomers (B)	0–79.9 parts by weight
Soluble polymers in A or B (C)	0–70 parts by weight
sum of A + B + C	59.9–99.9 parts by weight
Silane	0.1–30 parts by weight
Plasticizer	0–40 parts by weight

the total of A + B + C + Silane + plasticizer being 100 parts by weight and, for each 100 parts by weight of the

-continued

above-indicated components,	
free radical initiators	0.1–5 parts by weight
organic Cu^{2+} compound	0.005–10 ppm
Organic quaternary ammonium compounds	0.005–3 parts by weight
Organic sulfur-containing chain regulator compounds	0–5 parts by weight.

5,331,044

LOW TEMPERATURE IMPACT RESISTANT, EASILY FLOWING, THERMOPLASTIC POLYURETHANE ELASTOMER COMPOSITIONS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Deitrich Lausberg, Ludwigshafen; Rolf Steinberger, Schifferstadt; Walter Heckmann, Weinheim, and Harald Schulz, Vechta, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 7, 1990, Ser. No. 477,034

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1989, 3903537

Int. Cl.[5] C08J *5/04;* **C08K** *3/00, 5/00;* **C08L** *75/00*

U.S. Cl. 524—871 **12 Claims**

1. Low temperature impact resistant, easily flowing, thermoplastic polyurethane elastomer compositions, comprising a mixture of thermoplastic multiblock polyurethane elastomers having different hardnesses and optionally reinforcing fillers wherein the thermoplastic polyurethane elastomers are prepared by reacting:

a) organic diisocyanates with:

b) polyhydroxyl compounds having molecular weights of from 500 to 8,000; and

c) diols having molecular weights of from 60 to 400 in an equivalent ratio of NCO groups from said organic diisocyanates (a) to the total of the hydroxyl groups from said components (b) and (c) of from 1.0:1.0 to 1.2:1.0 wherein the thermoplastic polyurethane elastomer compositions comprise:

A) 5 to 95 parts by weight of at least one thermoplastic polyurethane elastomer (A) having a Shore A hardness of less than 95 wherein components b) and c) taken together have an average hydroxyl equivalent weight of greater than about 200;

B) 95 to 5 parts by weight of at least one Shore A hardness of greater than 98 whereby the parts by weight of (A) and (B) total 100 parts by weight wherein components b) and c) taken together have an average hydroxyl equivalent weight of from 110 to about 200; and

C) 0 to 60 weight percent based on the weight of (A) and (B) of reinforcing filler; with the proviso that the flexible segment of the thermoplastic polyurethane elastomer (A) and (B) comprises either both polyester segments or both polyether segments.

5,331,045

POLYVINYL ALCOHOL ESTERIFIED WITH LACTIC ACID AND PROCESS THEREFOR

Maria Spinu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 12, 1993, Ser. No. 17,234

Int. Cl.[5] C08L *29/02, 29/04*

U.S. Cl. 525—61 **4 Claims**

1. A polymer comprising polyvinyl alcohol in which at least 1% of hydroxyl groups in said polyvinyl alcohol are esterified with lactic acid, and wherein each lactic acid ester group contains an average of 1.0 to about 3 lactic acid units.

5,331,046

POLYOLEFINIC RESIN COMPOSITION HAVING SUPERIOR PAINTABILITY

Suk K. Chang; In S. Seo, and Dae W. Hong, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

Filed Oct. 30, 1992, Ser. No. 969,329

Claims priority, application Rep. of Korea, Dec. 24, 1991, 91-24290

Int. Cl.[5] C08L *51/06*

U.S. Cl. 525—71 **11 Claims**

1. A polyolefinic resin composition which comprises:

(A) 40 to 80 parts by weight of a crystalline polypropylene resin;

(B) 1 to 50 parts by weight of a thermoplastic olefinic rubber prepared by dynamically crosslinking 10 to 70 parts by weight of a crystalline polypropylene resin with 90 to 30 parts by weight of an ethylene-α-olefin rubber;

(C) 0.5 to 30 parts by weight of a polypropylene resin modified by grafting a polar monomer which has a physical affinity, but is not reactive, with an ethylene copolymer or ethylene copolymer rubber modified with α,β-unsaturated carboxylic acid or a derivative thereof; and

(D) 1 to 40 parts by weight of said modified ethylene copolymer or ethylene copolymer rubber based on 100 parts by weight of the total weight of the components (A), (B) and (C).

5,331,047

OLEFIN POLYMER FILMS

James Giacobbe, Philadelphia, Pa., assignor to Himont Incorporated, Wilmington, Del.

Filed Feb. 17, 1993, Ser. No. 18,634

Int. Cl.[5] C08L *53/00, 23/10, 23/16, 23/08*

U.S. Cl. 525—88 **9 Claims**

1. A film or sheet material comprising a blend of 1) from 95 to 60%, by weight of a heterophasic olefin polymer composition prepared by polymerization in at least two stages which is comprised of

(a) from about 10 to 50 parts of a propylene homopolymer having an isotactic index greater than 80, or a copolymer selected from the group consisting of (i) propylene and ethylene, (ii) propylene, ethylene and a CH_2=CHR alpha-olefin, where R is a C2-8 straight or branched alkyl, and (iii) propylene and an alpha-olefin as defined in (ii), said copolymer containing over 80% propylene and having an isotactic index greater than 80;

(b) from about 5 to 20 parts of a semi-crystalline, essentially linear copolymer fraction having a crystallinity of about 20 to 60% wherein the copolymer is selected from the group consisting of (i) ethylene and propylene containing over 55% ethylene, (ii) ethylene, propylene, and an alpha-olefin as defined in (a) (ii) containing from 1 to 10% of the alpha-olefin and over 55% of both ethylene and alpha-olefin, and (iii) ethylene and an alpha-olefin as defined in (a) (ii) containing over 55% of said alpha-olefin, which copolymer is insoluble in xylene at room or ambient temperature; and

(c) from about 40 to 80 parts of a copolymer fraction wherein the copolymer is selected from the group consisting of (i) ethylene and propylene containing from 20% to less than 40% ethylene, (ii) ethylene, propylene, and an alpha-olefin as defined in (a) (ii) wherein the alpha-olefin is present in an amount of 1 to 10% and the amount of ethylene and alpha-olefin present is from 20% to less than 40%, and (iii) ethylene and an alpha-olefin as defined in (a) (ii) containing from 20% to less than 40% of said alpha-olefin, and optionally with 0.5 to 10% of a diene, said copolymer fraction being soluble in xylene at ambient temperature, and having an intrinsic viscosity of from 1.5 to 4.0 dl/g; with the total of the (b) and (c) fractions, based on the total olefin polymer composition, being from about 50% to 90%, and the weight ratio of (b)/(c) being less than 0.4; and

2) from 5 to 40%, by weight of a copolymer of ethylene with a CH_2=CHR alpha-olefin, where R is a C_{1-8} straight or branched alkyl, having a density of from 0.890 to 0.940 g/cm^3.

5,331,048

BLENDS OF VINYLAROMATIC-CONJUGATED DIENE BLOCK COPOLYMERS AND POLYBUTENES

Lori C. Hasselbring, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 3, 1992, Ser. No. 925,346
Int. Cl.[5] C08K *3/34*
U.S. Cl. 525—98 **15 Claims**

1. A composition comprising: (a) a resinous polymodal monovinyl aromatic-conjugated diene block copolymer; and (b) at least one liquid polybutene;

wherein said polymodal monovinyl aromatic-conjugated diene block copolymer is present in an amount in the range of about 85 to about 97 weight percent, based on total weight of said monovinyl aromatic-conjugated diene block copolymer and said at least one polybutene; and

wherein said at least one polybutene is present in an amount in the range of about 3 to about 20 weight percent, based on total weight of said monovinyl aromatic-conjugated diene block copolymer and said at least one polybutene

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5,331,049

WATER-CURABLE, HOT MELT ADHESIVE COMPOSITION

Jay D. Audett, Houston, and Mun F. Tse, Seabrook, both of Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jun. 22, 1990, Ser. No. 542,235
Int. Cl.[5] C08G *81/02*
U.S. Cl. 525—100 **18 Claims**

1. A water curable, hot melt adhesive composition, comprising a blend of:

(a) a copolymer of ethylene and an ester of an α-β ethylenically unsaturated carboxylic acid having grafted silane functionality wherein said copolymer comprises ethylene in an amount from about 50 to about 95 parts by weight copolymerized with said ester in an amount from about 5 to about 50 parts by weight; and

(b) a tackifier having an acid number of at least about 5, said adhesive composition being essentially free of metal carboxylate and/or stearic acid silanol condensation catalysts.

5,331,050

LOW VOC CLEAR EPOXY ACRYLIC COATING COMPOSITION FOR BASECOAT CLEAR COAT FINISH

Lee R. Harper, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 719,951, Jun. 24, 1991, Pat. No. 5,215,783. This application Mar. 3, 1993, Ser. No. 25,924
Int. Cl.[5] C08F *8/30*
U.S. Cl. 525—125 **15 Claims**

1. A coating composition comprising about 40–80% by weight, based on the weight of the coating composition, of binder in volatile organic solvent; wherein the binder consists essentially of about

40–95% by weight, based on the weight of the binder, of an epoxy acrylic polymer consisting essentially of polymerized monomers of at least one alkyl methacrylate having 2–12 carbon atoms in the alkyl group and a glycidyl methacrylate or glycidyl acrylate and having a weight average molecular weight of about 3,000–10,000 and a glass transition temperature of about −20° to +50° C.;

5–60% by weight, based on the weight of the binder of an organic polyisocyanate crosslinking agent; and

a sufficient amount of catalyst to cure the binder;

wherein the coating composition when cured has a water vapor permeability value of about 1400–3200.

5,331,051

REACTION INJECTION MOLDING POLYUREA RESIN COMPOSITION

Hideo Ishibashi, Neyagawa; Toshiyuki Oshima, Ibaraki; Rie Tamura, Toyonaka; Satoshi Yamamoto, Hirakata, and Takaharu Izumo, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Aug. 12, 1992, Ser. No. 928,349
Claims priority, application Japan, Aug. 21, 1991, 3-235355
Int. Cl.[5] C08L *75/02*; **C08G** *18/50*
U.S. Cl. 525—131 **8 Claims**

1. A reaction injection molding polyurea resin composition comprising the reaction product of:

(a) a polyoxyalkylenepolyamine having an average molecular weight greater than about 400 and a plurality of terminal primary or secondary amino groups,

(b) an aromatic polyamine and/or xylylenediamine, and

(c) a polyisocyanate,

said polyoxyalkylenepolyamine containing dispersed therein a polymer prepared by the in situ polymerization of at least two different olefinically unsaturated monomers in the presence of a radical polymerization initiator,

the first of said monomers being a monofunctional acrylate monomer whose homopolyer has a glass transition temperature (Tg) below −20° C. and a solubility parameter between 9.2 and 10.5,

the second of said monomers being a monofunctional acrylate monomer whose homopolymer has a solubility parameter less than 9.2 or greater than 10.5 or a monofunctional methacrylate monomer, the proportion of said first monomer being at least 20% by weight of the entire monomers, the ratio of the average amino equivalent of said polyamines (a) and (b) in combination to the average NCO equivalent of said polyisocyanate (c) being between about 1:0.7 to 1:1.5.

5,331,052

CURABLE COMPOSITION BASED ON BRANCHED ACRYLATES WITH CARBOXYL GROUPS AND/OR BRANCHED ACRYLATES WITH EPOXIDE GROUPS AND AMINOPLAST RESINS

Werner A. Jung, Ascheberg, Fed. Rep. of Germany, assignor to BASF Lacke + Farben AG, Münster, Fed. Rep. of Germany

PCT No. PCT/EP88/00249, § 371 Date Sep. 29, 1989, § 102(e) Date Sep. 29, 1989, PCT Pub. No. WO88/07565, PCT Pub. Date Oct. 6, 1988
PCT Filed Mar. 25, 1988, Ser. No. 411,525
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1987, 3710668
Int. Cl.[5] C08L *61/26, 61/24, 33/02*
U.S. Cl. 525—155 **10 Claims**

1. A curable composition comprising:

A) a polymer having at least two —COOH groups,

B) a polymer having at least two epoxide groups, and

C) an aminoplastic resin,

characterized in that as component A) a soluble branched acrylate copolymer is obtained by copolymerization of:

a1) 5 to 30 percent by weight of a monomer with at least two polymerizable olefinic unsaturated double bonds wherein di- and polyesters of di- and polyols with acrylic acid are excluded,

a2) 3 to 50 percent by weight of a carboxylic groups-containing monomer,

a4) 0.1 to 20 percent by weight of a tertiary amine with a polymerizable olefinic unsaturated double bond,

a5) 0 to 40 percent by weight of a hydroxyl groups-containing monomer, and

a3) 0 to 80 percent by weight of a further monomer with a polymerizable olefinic unsaturated double bond,

wherein the sum of components a1), a2), a3), a4) and a5) is 100 percent by weight and at least one of the components a1), a2), a3), a4) and a5) is an acrylate monomer,

in an organic solvent at 70° to 130° C., using at least 0.5

percent by weight relative to the total weight of the monomers, of a polymerization regulator and using a polymerization initiator, wherein the polymerization of the acrylate copolymer is carried out so that a solution of the polymer with a solid content of 40 to 65 percent by weight results, wherein the proportions of the individual components to each other are so selected that between the carboxyl groups of component A) and the epoxide groups of component B) a molar ratio of 3:1 to 1:3 is obtained and that between the epoxide resin component and the aminoplastic resin component a wight ratio of 65:35 percent by weight to 98:2 percent by weight is obtained.

5,331,053

FIBRID REINFORCED ELASTOMERS

Dexter L. Atkinson; Arnold Frances, both of Wilmington, Del., and Lee J. Hesler, Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1990, Ser. No. 629,657
Int. Cl.[5] C08L *77/00, 9/04, 9/08*
U.S. Cl. 525—184 **5 Claims**

1. An elastomer composition reinforced with from 0.5 to 60 parts of poly(m-phenylene isophthalamide) fibrids per hundred parts of the elastomer.

5,331,054

PROPYLENE COPOLYMER COMPOSITION

Takashi Fujita; Toshihiko Sugano; Hajime Mizuno, and Hideshi Uchino, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 962,837
Claims priority, application Japan, Oct. 21, 1991, 3-272447; Oct. 21, 1991, 3-272448
Int. Cl.[5] C08L *23/10, 23/14, 23/18*
U.S. Cl. 525—240 **6 Claims**

1. A polypropylene composition containing 3 to 50% by weight of the following propylene polymer (A), and 97 to 50% by weight of the following propylene random copolymer (B):

propylene polymer (A):

a propylene polymer having the following properties (a) to (c):

(a) the propylene polymer is either a propylene homopolymer or a propylene polymer containing not more than 10 mol % of ethylene or an α-olefin having a carbon number of 4 to 20 and having a number average molecular weight (Mn) of 10,000 to 300,000;

(b) the propylene polymer has a molecular weight distribution (Mw/Mn) within the range of 1 to 2.8; and

(c) the propylene polymer has a mean elution temperature (T_{50}) ranging from 50° to 90° C., and an elution dispersion degree (σ value) of 0.1 to not more than 9,

propylene random copolymer (B):

a propylene random copolymer comprising propylene, and ethylene and/or an α-olefin having a carbon number of 4 to 20, the propylene random copolymer having the following properties (d) and (e):

(d) the propylene random copolymer has 90 to 99.5 mol % of structural units obtained from propylene, and 0.5 to 10 mol % of structural units obtained from ethylene and/or an α-olefin having a carbon number of 4 to 20; and has a number average molecular weight (Mn) of 10,000 to 200,000;

(e) the propylene random copolymer has a molecular weight distribution (Mw/Mn) of 4 to 9.

5,331,055

PROCESS FOR PRODUCING VINYL ESTER POLYMER AND PROCESS FOR PRODUCING VINYL ALCOHOL POLYMER

Naoki Fujiwara; Kazutoshi Terada, and Hitoshi Maruyama, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation-in-part of Ser. No. 705,643, May 24, 1991, abandoned. This application Aug. 17, 1992, Ser. No. 928,774
Claims priority, application Japan, May 28, 1990, 2-138963
Int. Cl.[5] C08F *2/24, 2/30*
U.S. Cl. 525—244 **11 Claims**

1. A process for producing a vinyl alcohol polymer having an average degree of polymerization of 4000 to 100,000, comprising seed polymerizing a monomer consisting essentially of a vinyl ester monomer to a conversion of from 20.0% to 78.9% in a seed emulsion containing a vinyl ester seed polymer and a water-soluble initiator to produce a vinyl ester polymer, said water-soluble initiator being present in an amount of from 1×10^{-8} to 2×10^{-4} mol per liter of said liquid reactant and from 1×10^{-28} to 1×10^{-20} mol per particle of said vinyl ester seed polymer, and hydrolyzing said vinyl ester polymer.

5,331,056

ELECTROCONDUCTIVE POLYMER COMPOSITIONS PRODUCED FROM POLYMERIZABLE AMPHIPHILIC HETEROCYCLES

Nicole Pecate, Montesson, and Joël Richard, Chantilly, both of France, assignors to Rhone-Poulenc Films, Courbevoie, France

Filed Dec. 18, 1992, Ser. No. 992,758
Claims priority, application France, Dec. 18, 1991, 91 16197
Int. Cl.[5] C08F *257/02, 267/02, 279/02*; **H01B** *1/00*
U.S. Cl. 525—279 **25 Claims**

1. A polymeric composition of matter which comprises at least one polymer support substrate (A) and at least one amphiphilic heterocyclic monomer (B) containing two conjugated sites of ethylenic unsaturation and at least one substituent having an amphiphilicity-imparting number of carbon atoms.

16. An electroconductive polymeric composition of matter which comprises at least one polymer support substrate (A) and at least one electroconductive polymerizate (C) having units derived from at least one amphiphilic heterocyclic monomer (B) containing two conjugated sites of ethylenic unsaturation and at least one substituent having an amphiphilicity-imparting number of carbon atoms.

5,331,057

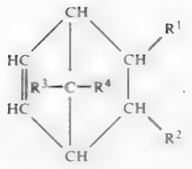
CYCLOOLEFIN BLOCK COPOLYMERS AND A PROCESS FOR THEIR PREPARATION

Michael-Joachim Brekner, Frankfurt am Main; Frank Osan, and Jürgen Rohrmann, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

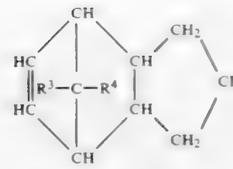
Filed Feb. 18, 1993, Ser. No. 19,094
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1992, 4205416
Int. Cl.[5] C08F *297/08*; **C08L** *53/00*
U.S. Cl. 525—289 **18 Claims**

1. A process for the preparation of a cycloolefin block copolymer, comprising

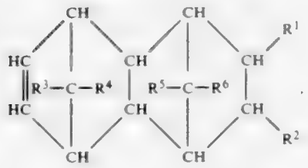
a) 0.1 to 95% by weight, with respect to the total amount of monomers employed, of at least one monomer of the formulae I, II, III, IV, V or VI



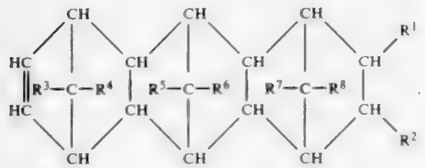
(I)



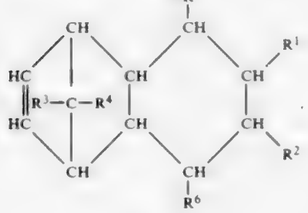
(II)



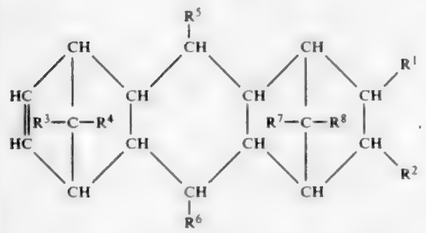
(III)



(IV)



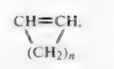
(V)



(VI)

in which R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 are identical or different and are a hydrogen atom or a C_1–C_8- alkyl radical, wherein it being possible for the same radicals in the various formulae to have different meanings,

b) 0 to 95% by weight, with respect to the total amount of monomers employed, of a cycloolefin of the formula VII



(VII)

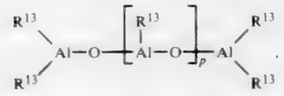
in which n is a number from 2 to 10, and

c) 0 to 99% by weight, with respect to the total amount of monomers employed, of at least one acyclic olefin of the formula VIII



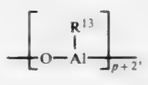
(VIII)

in which R^9, R^{10}, R^{11} and R^{12} are identical or different and are a hydrogen atom or a C_1–C_8-alkyl radical, are polymerized at temperatures of −78° to 150° C. and a pressure of 0.01 to 64 bar, in the presence of a catalyst comprising an aluminoxane of the formula (IX)



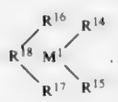
(IX)

for the linear type and/or of the formula (X)



(X)

for the cyclic type, wherein, in the formulae (IX) and (X), the radicals R^{13} are identical or different and are a C_1–C_6-alkyl group, a C_6–C_{18}-aryl group, benzyl or hydrogen, and p is an integer from 2 to 50, and a metallocene of the formula XI



(XI)

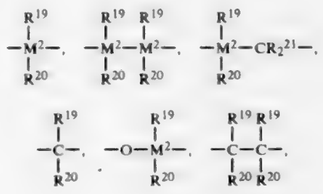
in which

M^1 is titanium, zirconium, hafnium, vanadium, nioblum or tantalum,

R^{14} and R^{15} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_6–C_{10} alkoxy group, a C_6–C_{10} aryl group, a C_6–C_{10}- aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_4–C_{40}-alkyl aryl group or a C_8–C_{40}-arylalkenyl group,

R^{16} and R^{17} are a mononuclear or polynuclear hydrocarbon radical which can form a sandwich structure with the central atom M^1,

R^{18} is



$=BR^{19}$, AlR^{19}, —Ge—, —Sn—, —O—, —S—, =SO, $=SO_2$, $=NR^{19}$, =CO, $=PR^{19}$, or $P(O)R^{19}$, where R^{19}, R^{20} and R^{21} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-fluoroalkyl group, a C_6–C_{10}-fluoroaryl group, a C_6–C_{10}-aryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-aralkenyl group, or a C_7–C_{40}-alkylaryl group or R^{19} and R^{20}, or R^{19} and R^{21}, form a ring, in each case with the atoms linking them, and

M^2 is silicon, germanium or tin, and, in each case at a molecular weight distribution M_w/M_n of less than 2, always with respect to the polymer block forming, the reaction conditions are changed one or more times in such a way that the monomer/comonomer ratio changes by at least 10% or a further polymerizable monomer of the formulae I–VIII is metered into the monomer or the monomers.

14. A cycloolefin block copolymer prepared by the process of claim **1**.

5,331,058

POLYMERIZATION OF OLEFINIC-CONTAINING MONOMERS EMPLOYING ANIONIC INITIATORS

Neil Shepherd, Waltham Abbey, and Malcolm J. Stewart, Henlow, both of England, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the U.K. of Gt. Britain and Northern Ireland, London, England

PCT No. PCT/GB91/00187, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO91/12277, PCT Pub. Date Aug. 22, 1991

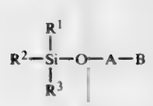
PCT Filed Feb. 6, 1991, Ser. No. 920,368

Claims priority, application United Kingdom, Feb. 8, 1990, 9002804.4

Int. Cl.[5] **C08F** *8/42, 8/34, 8/32, 4/46*

U.S. Cl. 525—332.3 **9 Claims**

1. Process for the anionic polymerisation of an olefinic-containing monomer comprising contacting the monomer in an inert solvent with a monofunctional silyl ether initiator of the formula I



I

wherein R^1, R^2 and R^3 are independently selected from saturated and unsaturated aliphatic and aromatic radicals, A is a hydrocarbon bridging group containing from 1 to 25 carbon atoms, and B is an alkali metal.

5,331,059

HYDROPHILIC, HIGHLY SWELLABLE HYDROGELS

Friedrich Engelhardt, Frankfurt am Main; Rüdiger Funk, Wiesbaden-Naurod; Ulrich Riegel, Frankfurt am Main; Gerlinde Ebert, Dreieich, and Hanss-Jerg Kleiner, Kronberg, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 974,621

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138408

The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.

Int. Cl.[5] **C08F** *8/40;* **C08J** *3/24;* **C08K** *5/5373, 5/15*

U.S. Cl. 525—340 **23 Claims**

1. Hydrophilic, highly swellable hydrogel derived from hydrophilic monomers in (co)polymerized form or derived from graft (co)polymers, in which the hydrogel is further surface modified by means of a mixture of

A) one or more diglycidyl phosphonates of general formula I



(I)

in which R is alkyl, alkenyl or aryl, each of which is optionally substituted, and

B) one or more other reactive compounds which are capable of reacting with the functional groups in the polymer.

5,331,060

PROCESS FOR COMPATIBILIZING POLYPHENYLENE ETHER-POLYAMIDE COMPOSITIONS

David F. Aycock, Glenmont, and Sai-Pei Ting, Delmar, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 635,897, Dec. 28, 1990, abandoned, which is a division of Ser. No. 582,821, Sep. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 118,130, Nov. 6, 1987, abandoned, which is a continuation of Ser. No. 777,816, Sep. 19, 1985, abandoned. This application Feb. 22, 1993, Ser. No. 21,638

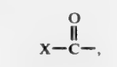
Int. Cl.[5] **C08L** *71/04, 77/00*

U.S. Cl. 525—397 **7 Claims**

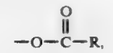
1. A process for providing compatible blends of a polyphenylene ether resin and a polyamide resin, comprising the steps of:

a) melt-blending a polyphenylene ether resin and a polyamide resin with an effective compatibilizing amount of a compatibilizing compound which contains in its molecule both

(i) at least one group having the formula



wherein X is F, Cl, Br, I, OR, or



wherein R is H or an alkyl or aryl radical; and

(ii) at least one carboxylic acid, acid anhydride, acid amide, imido, carboxylic acid ester, amino, or hydroxyl group; and

wherein groups (i) and (ii) are covalently bonded through an aryl linkage, and are not simultaneously a COOH group; and

b) neutralizing the blend.

5,331,061

THERMOPLASTICALLY PROCESSABLE ELASTOMERIC BLOCK COPOLYETHERESTERETHERAMIDES AND PROCESSES FOR THE PRODUCTION AND USE THEREOF

Hanns-Jorg Liedloff, Domat/Ems, Switzerland, assignor to EMS-Inventa AG, Switzerland

Continuation of Ser. No. 526,842, May 22, 1990, abandoned. This application Dec. 9, 1992, Ser. No. 988,346

Claims priority, application Fed. Rep. of Germany, May 24, 1989, 3917017

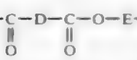
Int. Cl.[5] **C08L** *67/00, 77/00*

U.S. Cl. 525—425 **10 Claims**

1. A thermoplastically processable, elastomeric, block copolyetheresteretheramide compound which consists of randomly arranged, recurring polyetheresteramide units A and polyetheramide units B in a ratio of units A to units B of 5:1 to

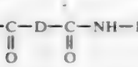
1:5, said units A and said units B being connected through ester and/or amide linkages,

said units A being of Formula I



there being 3 to 35 of said Formula I in each of said units A;

said units B being of Formula II



there being 3 to 35 of said Formula II in each of said units B;

and wherein

D represents a divalent radical which remains after the removal of the carboxylic groups from a polyamide with terminal carboxylic groups having a molar mass of 700 to 10000 g/mol, and

E is a divalent radical which remains after the removal of the hydroxyl groups from poly(oxytetramethylene) with terminal hydroxyl groups having a molar mass of 600 to 3500 g/mol, and

F is a divalent radical which remains after the removal of the amino groups from poly-(oxy-1,2-propylene) with terminal amino groups having a molar mass of 350 to 2500 g/mol,

said compounds having a modulus of flexural elasticity of about 40 to about 700 N/mm^2

5,331,062

POLYURETHANE-EPOXY INTERPENETRATING POLYMER NETWORK ACOUSTIC DAMPING MATERIAL

Usman A. Sorathia, Arnold; William L. Yeager, Queen Anne, and Timothy L. Dapp, Bowie, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1991, Ser. No. 752,248

The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.

Int. Cl.[5] C08F *283/04*

U.S. Cl. 525—454 **13 Claims**

1. A process for preparing an improved acoustic damping material consisting of an interpenetrating polymer network of a soft polymer component made of polyurethane and a hard polymer component made of an epoxy polymer, comprising the steps of:

mixing in a predetermined ratio a soft polymer component and a hard polymer component, wherein the constituents of said soft polymer component comprise an aromatic diisocyanate, a previously dried polyalkylene ether glycol, a chain extender, and a cross-linking agent, said constituents of said soft polymer component having the following ratios in equivalents, said dried polyalkylene ether glycol to said aromatic diisocyanate being from about 0.45:1 to about 0.50:1, said chain extender to said aromatic diisocyanate being from about 0.35:1 to about 0.40:1, and said cross-linking agent to said aromatic diisocyanate being from about 0.05:1 to about 0.06:1, and wherein the constituents of said hard polymer component comprise an epoxy resin and a curing agent, the ratio by weight of said epoxy resin to said curing agent being from about 19:1 to about 21:1, and further wherein the predetermined ratio of said soft polymer component to said hard polymer component is from about 1:1 to about 9:1 by weight; and

curing the mixture for from 12 to 20 hours at from 100 to 120 degrees C.

5,331,063

TOUGH HIGH PERFORMANCE COMPOSITE MATRIX

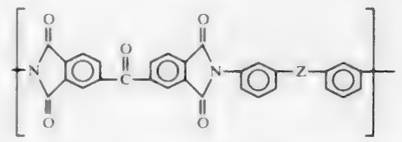
Ruth H. Pater, Tabb, and Norman J. Johnston, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 429,514, Oct. 31, 1989, Pat. No. 5,159,029. This application Oct. 27, 1992, Ser. No. 968,082

Int. Cl.[5] C08L *79/08;* **C08J** *5/08;* **C08K** *3/04*

U.S. Cl. 525—421 **3 Claims**

1. A process for preparing a semi-interpenetrating polymer network which process comprises reacting an uncrosslinked, nadic end-capped thermosetting polyimide prepolymer with a polyamic acid precursor of a linear thermoplastic polyimide having the following repeating unit:



wherein Z═O═C or SO_2, to form a semi-2-interpenetrating polymer network, wherein the thermosetting polyimide has a repeating unit which is not identical to the repeating unit of the thermoplastic polyimide.

5,331,064

POLYBENZAZOLE COMPOSITIONS CONTAINING PENDANT POLY(AROMATIC SULFIDE) MOIETIES

Ying H. So, and Thomas A. DeVilbiss, III, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 397,705, Aug. 23, 1989, abandoned. This application Mar. 29, 1990, Ser. No. 501,646

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—435 **11 Claims**

1. A process for synthesizing a cross-linked composition containing polybenzazole polymer, said process comprising heating a graft copolymer containing polybenzazole blocks and poly(aromatic sulfide) blocks grafted to said polybenzazole blocks to a temperature sufficient to induce cross-linking between the graft copolymer molecules.

5,331,065

PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT POLYETHYLENE-TEREPHTHALATE FROM RECYCLED POLYETHYLENETEREPHTHALATE

Riccardo Po', Novara; Nicoletta Cardi, Olgiate Olona; Luisa Fiocca, Novara; Antonio Gennaro, Cameri; Giorgio Giannotta, Milan, and Ernesto Occhiello, Novara, all of Italy, assignors to Eniricerche S.p.A. and Enichem S.p.A., both of Milan, Italy

Filed Jul. 7, 1993, Ser. No. 88,314

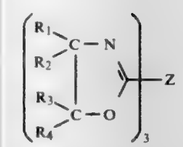
Claims priority, application Italy, Jul. 15, 1992, MI.92-A/001713

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—437 **10 Claims**

1. A process for preparing high molecular weight PET from recycled PET, comprising:

a) reacting the recycled PET at elevated temperature with at least one oxazoline of general formula:



(I)

where R_1, R_2, R_3 and R_4, which can be the same or different, represent a hydrogen atom, a halogen, or an alkyl, cycloalkyl, aryl, alkylaryl, alkoxy or carboxyalkyl radical containing from 1 to 20 carbon atoms, and Z represents a trivalent linear, branched or cyclic aliphatic radical including from 1 to 16 carbon atoms or Z represents an aromatic or alkylaromatic radical containing from 6 to 20 carbon atoms;

b) cooling the reaction product obtained to ambient temperature.

5,331,066

PROCESS FOR PRODUCING POLYESTER ETHER COPOLYMER

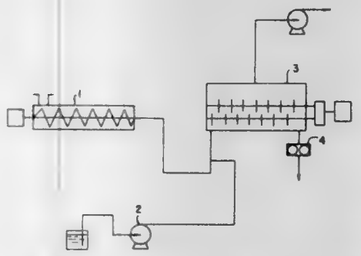
Yutaka Takanoo; Ikuo Okino, and Yasuhiro Nakatani, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 465,189, Feb. 22, 1990, abandoned. This application Jul. 9, 1992, Ser. No. 912,137

Claims priority, application Japan, Jun. 24, 1988, 63-157605; Jun. 24, 1988, 63-157606

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—438 **12 Claims**



1. A process for producing a polyester ether copolymer which comprises conducting polycondensation after or while melting and mixing a polyester polymer of 0.5 (dl/g) or more intrinsic viscosity, and a polyether polymer having hydroxy groups at its terminals and having a number average molecular weight of 200 to 10,000.

5,331,067

SILICONE-CONTAINING CONTACT LENS POLYMERS, OXYGEN PERMEABLE CONTACT LENSES AND METHODS FOR MAKING THESE LENSES AND TREATING PATIENTS WITH VISUAL IMPAIRMENT

Leonard Seidner, Brooklyn, N.Y.; Harry J. Spinelli, Wilington, Del.; Mohammed I. Ali, Aberdeen, and Lester Weintraub, Mount Laurel, both of N.J., assignors to Permeable Technologies, Inc., Morganville, N.J.

Division of Ser. No. 507,613, Apr. 10, 1990, Pat. No. 5,244,981. This application Jan. 12, 1993, Ser. No. 3,535

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—479 **20 Claims**

1. A method of making a contact lens comprising

1) forming a contact lens from a copolymeric material comprising about 10% to about 98% by weight of at least one preformed silicone-containing acrylic copolymer and about 2% to about 90% by weight of a matrix formed from the random polymerization of a mixture of monomers, said monomers being selected from the group consisting of silicone acrylates, esters of alpha, beta-unsaturated acids, wetting monomers and mixtures thereof, said preformed silicone-containing acrylic copolymer being copolymerized throughout said matrix; and

2) polishing said lens from step 1 to produce a contact lens exhibiting at least one substantially enhanced characteristic of oxygen permeability, hardness or machineability relative to contact lenses formed from the random polymerization of monomers in amounts substantially equal to the weight percentages of said monomers in said copolymer.

5,331,068

ADDUCTS OF DIAMINODIPHENYL SULFONE COMPOUNDS AS HARDENERS FOR EPOXY RESINS

Yefim Blyakhman, Bronx, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 11,083, Jan. 29, 1993, abandoned, which is a continuation of Ser. No. 783,452, Oct. 25, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,415

Int. Cl.[5] C08G *59/18, 59/24, 59/50*

U.S. Cl. 525—523 **2 Claims**

1. A hardener for polyfunctional epoxy resins comprising the adduct of 3,3'-diaminodiphenylsulfone and a cycloaliphatic diepoxide wherein the ratio of aminohydrogen equivalent of said sulfone to epoxy equivalent of said diepoxide is from 8:1 to 15.2:1.

5,331,069

METHOD OF TREATING POLY(ARYLENE SULFIDE SULFONE) POLYMERS AND POLYMERS

Rex L. Bobsein, and Earl Clark, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 27, 1992, Ser. No. 966,782

Int. Cl.[5] C08G *75/14*

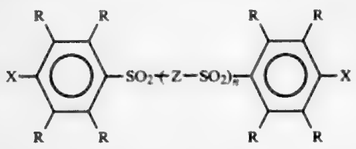
U.S. Cl. 525—537 **21 Claims**

1. A process for treating a recovered poly(arylene sulfide sulfone) polymer recovered from a reaction mixture produced by contacting at least one dihaloaromatic sulfone, at least one polar organic compound, and at least one sulfur source at polymerization conditions, said process for treating comprising:

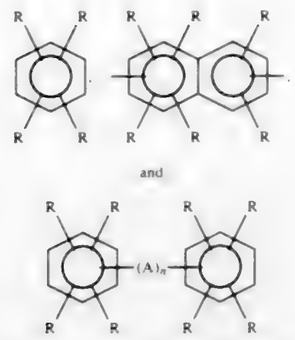
(1) contacting said recovered poly(arylene sulfide sulfone) polymer with a haloaromatic sulfone mixture comprising at least one haloaromatic sulfone and a polar organic compound to produce a haloaromatic sulfone treated polymer;

wherein said contacting is under conditions sufficient to improve the melt flow properties of said polymer;

wherein said haloaromatic sulfone is represented by the formula



wherein each X is selected from the group consisting of fluorine, chlorine, bromine, iodine, and hydrogen, with the proviso that at least one X is a halogen; Z is a divalent radical selected from the group consisting of



and

wherein each n is 0 or 1; A is selected from the group consisting of oxygen, sulfur sulfonyl, and CR_2; and each R is selected from the group consisting of hydrogen and alkyl radicals having one to 4 carbon atoms, the total number of carbon atoms in all of the R groups in the molecule being 0 to 12; and

(2) contacting said haloaromatic sulfone treated polymer with a zinc compound;

wherein said contacting is under conditions sufficient to incorporate an amount of zinc cations effective to improve the melt stability of said polymer.

5,331,070

PROCESS FOR OLEFIN POLYMERIZATION

Ted M. Pettijohn, Bartlesville, Okla.; William K. Reagen, Stillwater, Minn., and Shirley J. Martin, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 13, 1992, Ser. No. 976,124

Int. Cl.[5] C08F 4/24

U.S. Cl. 526—105 **13 Claims**

1. A process comprising polymerizing at least one olefin in a reaction zone in the presence of:

(a) a catalyst system composition consisting essentially of chromium oxide supported on an inorganic oxide support;

(b) a pyrrole-containing compound; and

(c) a non-hydrolyzed metal alkyl selected from the group consisting of aluminum alkyls, lithium alkyls, magnesium alkyls, zinc alkyls, and mixtures thereof.

5,331,071

CATALYST COMPONENTS FOR POLYMERIZATION OF OLEFINS

Naoki Kataoka; Yosuke Numao; Takashi Seki; Yoshio Tajima, and Kazuo Matsuura, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,546

Claims priority, application Japan, Nov. 12, 1991, 3-323848; Nov. 12, 1991, 3-323849

Int. Cl.[5] C08F 4/64

U.S. Cl. 526—128 **6 Claims**

1. A process for the manufacture of polyolefins which comprises polymerizing an olefinic hydrocarbon in the presence of a catalyst composition comprised of a first component (I) and a second component (II),

said first component (I) resulting from the reaction of a compound (i) of the formula

$$Me^1R_n^1X_{4-n}^1$$

wherein R^1 is a hydrocarbon moiety of 1–24 carbon atoms, X^1 is a halogen atom, Me^1 is zirconium, titanium or hafnium, and n is an integer of $0 \leqq n \leqq 4$;

a compound (ii) of the formula

$$Me^2R_m^2X_{z-m}^2$$

wherein R^2 is a hydrocarbon group of 1–24 carbon atoms, X^2 is an alkoxy group of 1–12 carbon atoms or a halogen atom, Me^2 is an element of Groups I–III in the Periodic Table, z is the valence of Me^2, and m is an integer of $0 \leqq m \leqq 3$;

an organocyclic compound (iii) having two or more conjugated double bonds represented by the formula

$$(Cp)_rSiR_s^3X_{4-r-s}^3$$

wherein Cp is a cyclopentadienyl group; R^3 is a hydrocarbon group of 1–24 carbon atoms; X^3 is a halogen atom; and r and s are $0<r \leqq 4$ and $0 \leqq s \leqq 3$, respectively, where $r+s \leqq 4$; and

an inorganic carrier or particulate polymer carrier or mixtures thereof (iv),

said second component (II) being a modified organoaluminum compound having Al—O—Al bonds derived from the reaction of an organoaluminum compound and water.

5,331,072

POLYAZOPYRROLES AND ELECTRIC CELLS BASED THEREON

Yasunori Yokomichi, Osaka; Shinichi Tada, Ikoma; Hitoshi Nishino, Kyoto, and Kenji Seki, Yao, all of Japan, assignors to Osaka Gas Company Limited, Japan

Filed Jan. 26, 1993, Ser. No. 8,985

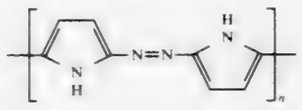
Claims priority, application Japan, Feb. 6, 1992, 4-020327

Int. Cl.[5] C08F 126/06, 126/02

U.S. Cl. 526—258 **1 Claim**

1. A polazopyrrole of the general formula (I):

(I)



wherein n represents an integer of 5 to 10,000.

5,331,073

POLYMERIC COMPOSITIONS AND INTRAOCULAR LENSES MADE FROM SAME

Joseph I. Weinschenk, III, Laguna Niguel, and F. Richard Christ, Laguna Beach, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Nov. 9, 1992, Ser. No. 973,470

Int. Cl.[5] C08F 226/10, 220/54, 220/10, 212/08; A61F 2/16

U.S. Cl. 526—264 **22 Claims**

1. An intraocular lens sized and adapted to be inserted through an incision into a mammalian eye for use, said intraocular lens comprising a copolymer including a first constituent derived from a first monomeric component the homopolymers of which have a refractive index of at least about 1.50, said first monomeric component including one or more aryl-containing groups, a second constituent derived from a second monomeric component other than said first monomeric component the homopolymers of which have a glass transition temperature of less than about 22° C., and a third constituent derived from a crosslinking monomeric component in an amount effective to facilitate returning a deformed intraocular lens made of said copolymer to its original shape.

5,331,074

ANTIFOULING COATING COMPOSITIONS

William W. Slater, deceased, late of Houston, Tex.; Margaret Slater, executrix, Berkeley Heights, N.J.; Rodney R. Brooks, and Michael J. Winter, both of Tyne and Wear, United Kingdom, assignors to Courtaulds Coatings (Holdings) Limited, London, Great Britain

PCT No. PCT/GB91/01050, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO92/00357, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 28, 1991, Ser. No. 956,772

Claims priority, application United Kingdom, Jun. 29, 1990, 9014564.0

Int. Cl.[5] C08G 77/06

U.S. Cl. 528—14 **22 Claims**

1. A coating composition resistant to fouling by aquatic organisms, comprising an organopolysiloxane composition which cures to an elastomer in the presence of moisture and which comprises a polydiorganosiloxane (A) having a viscosity of 500 to 1,000,000 mPa.s at 25° C. and formed of recurring diorganosiloxy units of the formula —$(R_2)SiO$—, where the radicals R, which can be the same or different within each unit and from unit to unit, represent hydrocarbon radicals having 1 to 10 carbon atoms, the polydiorganosiloxane (A) being terminated with silicon-bonded hydrolysable groups and/or being terminated with silicon-bonded hydroxyl groups and mixed with a stoichiometric excess of a crosslinking agent (B) for alpha, omega-dihydroxypolydiorganosiloxanes, said crosslinking agent (B) containing at least two silicon-bonded hydrolysable groups per molecule, characterised in that the coating composition is packed in two separate packages to be mixed before application of the coating composition to an underwater surface, the first of the said packages comprising the polydiorganosiloxane (A) and any crosslinking agent (B), and the second of the said packages comprising an alpha,omega-dihydroxypolydiorganosiloxane (C) having a viscosity of 500 to 10,000 mPa.s at 25° C. and formed of recurring diorganosiloxy units of the formula —$(R_2)SiO$—, where R is defined as above, the second package being free of crosslinking agent for the alpha, omega-dihydroxypolydiorganosiloxanes and free of any catalyst for cross-linking between silicon-bonded hydrolysable groups and silicon-bonded hydroxyl groups, the ratio of moles of crosslinking agent (B) to total moles of silicon-bonded hydroxyl groups in the polydiorganosiloxane (A) plus polydiorganosiloxane (C) being less than 1.5:1.

5,331,075

HEAT CURABLE ORGANOPOLYSILOXANE COMPOSITIONS, PREFORMED LATENT PLATINUM CATALYSTS, AND METHODS FOR MAKING

Chris A. Sumpter; Larry N. Lewis, both of Scotia, and William B. Lawrence, Cairo, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 800,311, Nov. 29, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 955,987

Int. Cl.[5] C08G 77/08

U.S. Cl. 528—15 **9 Claims**

1. A heat curable organopolysiloxane composition capable of resisting a substantial increase in viscosity after at least a five day accelerated aging period at 50° C., comprising,

(A) vinyl organopolysiloxane fluid

(B) silicon hydride siloxane, and

(C) an amount of a preformed latent platinum catalyst which is effective for catalyzing addition between (A) and (B), where the preformed latent platinum catalyst is made by effecting reaction in the substantial absence of (A) or (B) or mixture thereof, between a zero valent platinum catalyst complex and 1.0 to 60 moles of an organic nitrogen compound per mole of platinum, and the organic nitrogen compound is a member selected from the class consisting of 2,2'-bipyridine, diazodicarboxylate, diisopropylazodicarboxylate, 4-phenyl-1,2,4-triazoline-3,5-dione, azobistoluoyl, azobisbenzoyl, azobis(N,N'-dimethylformamide), 4-methyl-1,2,4-triazoline-3,5-dione, 1,10-phenanthroline, di-t-butyl azodicarboxylate, neocuproine, dibenzyl azodicarboxylate, phthalazine, qinazoline, quinoxaline, 4,4'-dipyridyl, 3,3'-dipyridyl, 2,4'-dipyridyl, benzimidazole, indazole, dipyridyl ketone, 2,2';6',2-terpyridine and 4,4'-trimethylene dipyridine.

5,331,076

SILOXANE COMPOUNDS

Kenichi Fukuda; Yasuo Tarumi, both of Takasaki; Hiroshi Inomata, Annaka, and Yasushi Yamamoto, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 993,877

Claims priority, application Japan, Dec. 24, 1991, 3-356414

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] C08L 83/08; C07F 7/08

U.S. Cl. 528—27 **13 Claims**

1. A siloxane compound of formula (1):

(I)



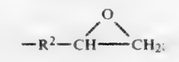
wherein R_f is a perfluoropolyether or perfluoroalkylene group; R^1 is a monovalent lower hydrocarbon group or a group of formula (2):

(2)



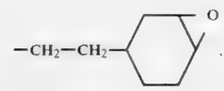
X is a group of formula (3):

(3)



wherein R^2 is a divalent organic group, or a group of formula (4):

(4)



and letters p, q, m and n are integers of 0 to 3 satisfying the relationship: $0<p+q \leqq 3$, $0<m+n \leqq 3$, $0<p+n$, $0<q+m$, $0<p+q+m+n<6$.

5,331,077

ALKENYL GROUP-CONTAINING ORGANO(POLY)SILOXANES

Rudolf Braun, Kastl, and Karl Braunsperger, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich

Filed Dec. 24, 1992, Ser. No. 996,438

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1991, 4143203

Int. Cl.[5] C08G 77/12

U.S. Cl. 528—31 **9 Claims**

1. An organo(poly)siloxane composed of units of the formula $[R_aR^1_{3-a}SiO_{1/2}]$, $[R_bR^1_{2-b}SiO_{2/2}]$ and $[R^1SiO_{3/2}]$, in which R is a monovalent organic radical which is free from aliphatic carbon-carbon multiple bonding, R^1 is a monovalent organic radical having at least one aliphatic carbon-carbon multiple bond, a is 0, 1 or 2 and b is 0 or 1.

5,331,078

BLOCKED HIGHLY FUNCTIONAL POLYISOCYANATE ADDUCTS, A PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF

Rainer Gras, Bochum, and Elmar Wolf, Recklinghausen, both of Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Sep. 17, 1992, Ser. No. 946,087

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1991, 4134032

Int. Cl.[5] **C08G** *18/81*

U.S. Cl. 528—45 **18 Claims**

1. A blocked highly functionalized polyisocyanate composition comprising:

(a) a polyisocyanate with an isocyanate functionality greater than 2; and

(b) a blocking agent; wherein 1.25–2 mole of said blocking agent are reacted per NCO group, and wherein the melting point of said composition is less than 128° C

5,331,079

LIQUID SORBENT

Zdzislaw J. Kozlowski, Ville LaSalle, Canada, assignor to E.R.T. Environmental Research Technology K.S.P.W. Inc., Montreal, Canada

Continuation-in-part of Ser. No. 815,187, Dec. 31, 1991, Pat. No. 5,239,040. This application Mar. 31, 1993, Ser. No. 41,222

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

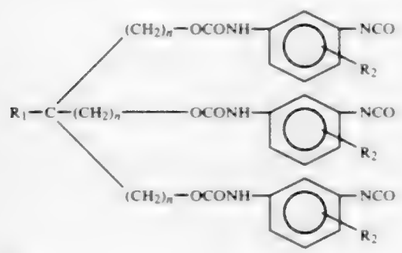
Int. Cl.[5] **C08G** *18/14*

U.S. Cl. 528—48 **23 Claims**

1. A process for preparing a polyurethane particulate liquid absorbent which comprises:

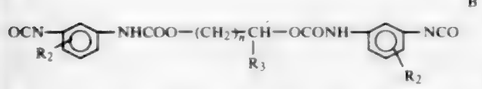
(i) reacting together at a temperature of from 180° C. to 200° C., for a time of less titan 10 minutes, a prepolymer of the formula A

A



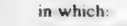
with a prepolymer of the general formula B

B



in the presence of a lower alkylester solvent of the general formula C

C



in which:

n represents 1, 2, or 3;

R_1 represents a lower alkyl group having 1 to 6 carbon atoms;

R_2 represents hydrogen, or a lower alkyl group having 1 to 4 carbon atoms; and;

each of R_3 and R_4 represents a lower alkyl group having 1 to 3 carbon atoms, and when R_2 is other than hydrogen, It is in the meta- or para-position relative to the -NH- linkage; and wherein the weight ratio of prepolymer of formula A to prepolymer of formula B is about 3:1, and the reaction mixture contains from 22% to 25% by weight of ester solvent;

(ii) cooling the titus formed polymer;

(iii) adding thereto an alcoholic medium chosen from the group consisting of

(a) ethanol; or

(b) a mixture of ethanol, methanol and water containing 85% by weight ethanol, up to 15% by weight methanol, remainder water; or

(c) ethanol containing from 4% by weight to 6% by weight isopropanol;

(iv) adding thereto with mixing hexamethylene tetramine,

(v) allowing the spontaneous reaction to proceed thereafter during which a temperature in the range of 55° C. to 65° C. is developed, and during which at least some of both tile lower alkyl ester solvent, the alcoholic medium, and any water present, to evaporate; and

(vi) recovering a particulate polyurethane product.

5,331,080

EPOXIDE-PHOSPHOROUS ACID-CONTAINING REACTION PRODUCTS AND THEIR USE IN COATING COMPOSITIONS

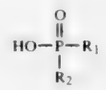
Shanti Swarup; Gregory J. McCollum, both of Gibsonia; Paul J. Prucnal, and Debra L. Singer, both of Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 862,144, Apr. 2, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 114,864

Int. Cl.[5] **C08G** *65/10*

U.S. Cl. 528—89 **11 Claims**

1. A curable film-forming composition comprising a resinous film-forming polymer which is reactive with carboxyl and a crosslinking agent, wherein the curable composition has a tendency to yellow on cure, characterized in that the curable composition contains from about 0.1 to 10.0 percent by weight based on total weight of resin solids of an acid functional compound which is the reaction product of: (i) a monoepoxide, (ii) a phosphorus-containing acid of the structure:



where R_1 and R_2 can be the same or different and can be hydrogen or hydroxyl with at least R_1 or R_2 being hydrogen, and (iii) an anhydride.

5,331,081

USE OF FLUORINATED AROMATIC POLYAMIDES AS ORIENTATION LAYER FOR LIQUID-CRYSTAL SWITCHING AND DISPLAY DEVICES

Hans-Rolf Dübal, Königstein/Taunus, Fed. Rep. of Germany; Mikio Murakami, Kakegawa, Japan; Otto Herrmann-Schönherr, Bensheim, and Arnold Schneller, Mainz, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/01893, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO91/08509, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 12, 1990, Ser. No. 849,007

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1989, 3938209

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

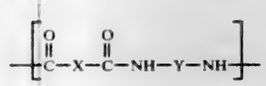
Int. Cl.[5] **C08G** *69/26, 69/32, 63/44*

U.S. Cl. 528—288 **10 Claims**

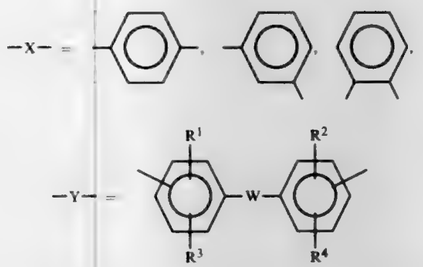
1. An orientation layer in liquid crystal switching and dis-

play elements, comprising a fluorinated aromatic polyamide, which polyamide contains structural units of the formula I

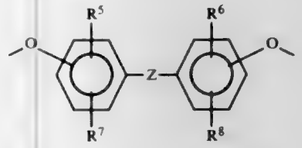
(I)



the symbols in formula I having the following meaning:



in which R^1 and R^2 are identical or different and are perfluorinated alkyl having 1 to 4 carbon atoms, R^3 and R^4 are identical or different and are H or CF_3, and in which —W— is —O—, $—C(CH_3)_2—$, $—C(CF_3)_2—$, $—SO_2—$, —CO—, $—CH_2—$, a single bond or the radical



in which R^5, R^6, R^7 and R^8 are identical or different and are CH_3, CF_3, OCH_3, F, Cl, Br or H, and —Z— is $—C(CH_3)_2—$, $—C(CF_3)_2—$, $—SO_2—$, —CO—, $—CH_2—$ or —O—.

5,331,082

PROCESS FOR MANUFACTURE OF HIGH MOLECULAR WEIGHT POLYESTER RESINS FROM 2,6-NAPHTHALENE DICARBOXYLIC ACID

Allen B. Mossman, Wheaton; John A. Macek, Naperville, and Lawrence G. Packer, Lisle, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 16, 1993, Ser. No. 78,680

Int. Cl.[5] **C08G** *63/18*

U.S. Cl. 528—298 **20 Claims**

1. A process of preparing a high quality linear polyester resin which comprises reacting in a first step or zone 2,6-naphthalene dicarboxylic acid with a molten prepolymer derived from a glycol and 2,6-naphthalene dicarboxylic acid to form a low molecular weight product of the first step or zone; reacting the resultant product with a glycol in at least two successive steps or zones of glycol addition to form prepolymer; and polymerizing at least a portion of the resulting prepolymer to form polyester resin which exhibits midpoint glass transition temperatures above about 123° C.

5,331,083

GAS PHASE PROCESS FOR FORMING POLYKETONES

Paul K. Hanna, East Windsor, N.J., and Teresa M. Cheron, Yonkers, N.Y., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Division of Ser. No. 898,627, Jun. 15, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 96,754

Int. Cl.[5] **C08G** *67/02*

U.S. Cl. 528—392 **6 Claims**

1. In a gas phase process for catalytically polymerizing carbon monoxide and at least one olefinically unsaturated hydrocarbon in the presence of a catalyst comprising a compound of a Group VIII metal, an anion of a non-hydrohalogenic acid having a pK_a of less than about six, and a polydentate ligand to form a polyketone, wherein the improvement comprises polymerizing the carbon monoxide and hydrocarbon in the presence of an amount of liquid, non-polymerizable diluent which is effective in increasing the amount of polyketone formed and hydrogen is added while polymerizing the carbon monoxide and hydrocarbon to reduce the molecular weight and increase the bulk density and thermal stability of the polyketone.

5,331,084

FLUORINE-SUBSTITUTED EPOXIDES AND A METHOD FOR THEIR PREPARATION

Jürgen Kulpe, and Heinz Strutz, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

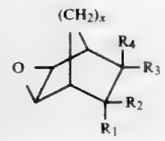
Filed Feb. 12, 1993, Ser. No. 16,901

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206387

Int. Cl.[5] **C07D** *301/14, 301/19, 303/04, 303/06*

U.S. Cl. 528—402 **7 Claims**

1. A fluorine-substituted epoxide of the formula



in which R_1 is an alkyl of the formula

$$—(CH_2)_m—(C_nF_{2n+1}),$$

in which m is 1 or 2, and n is an integer from 1 to 17, and x is 0 or 1 and R_2, R_3 and R_4 are the same or different and are radicals selected from the group consisting of H, fluorine, C_1 to C_{18}-alkyl, fluorine-substituted C_1 to C_{18}-alkyl and an alkyl of the formula

$$—(CH_2)_m—(C_nF_{2n+1}),$$

in which m is 1 or 2, and n is an integer from 1 to 17.

5,331,085

METHOD FOR INCREASING VISCOSITY UNIFORMITY IN POLYCARBONATE MANUFACTURE

Randy Northrop, Evansville, and Kent Wenderoth, Wadesville, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed May 28, 1993, Ser. No. 69,043

Int. Cl.[5] **C08G** *64/40*

U.S. Cl. 528—491 **14 Claims**

1. A process for treating polycarbonate to reduce batch-to-batch variations in viscosity, said process comprising:

mixing solutions of successive batches of polycarbonate dissolved in an organic solvent to form a solution containing from about 10 to about 30 weight percent solids;

blending said solution for a time period sufficient to reduce batch-to-batch variations in viscosity of said polycarbonate before recovery of said polycarbonate from said solution; and

recovering said polycarbonate from said solution after said blending step

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5,331,086

DEASHING PROCESS FOR POLYOLEFINS USING AN ALPHA,BETA-UNSATURATED KETONE

Phil M. Stricklen, Bartlesville, Okla.; Calvin E. Moore, Houston, Tex., and Dennis G. Glascock, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 769,902, Oct. 1, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,674

Int. Cl.[5] **C08F** *6/00; C08J 11/04*

U.S. Cl. 528—493 **22 Claims**

1. A process for producing at least one polymer of 1-olefins comprising:

(a) subjecting at least one 1-olefin to polymerization conditions in the presence of a catalyst composition

wherein said catalyst composition comprises at least one component being a halide of a metal selected from the group consisting of Groups IV, V, VI and VIII of the Periodic Chart of the Elements; and

wherein said catalyst composition further comprises at least one component selected from the group consisting of elemental metal, organometal compounds and mixtures thereof, the metal being selected from Groups I, II and III of the Periodic Chart;

to form a polymerization reaction mixture having therein said at least one polymer;

(b) treating said polymerization reaction mixture with a alpha,beta-unsaturated ketone;

(c) separating said at least one polymer from said reaction mixture

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5,331,087

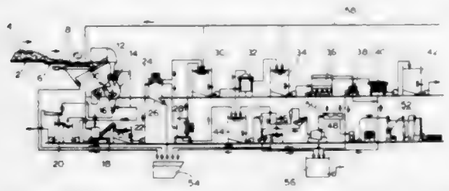
METHOD FOR REPROCESSING THERMOPLAST-COATED PACKING MATERIALS AND THERMOPLAST MATERIAL FOR FURTHER PROCESSING

Wilhelm Menges, Brannenburg, Fed. Rep. of Germany, assignor to PWA Industriepapier GmbH, Raubling, Fed. Rep. of Germany

Filed Dec. 27, 1991, Ser. No. 815,349

Int. Cl.[5] **C08F** *6/00;* **C08J** *11/04*

U.S. Cl. 528—499 **21 Claims**



1. Method for reprocessing used thermoplast-coated packing material comprising a carrier material including essentially vegetable fibrous materials, said method comprising the following steps:

a) washing said used packing material with a rinsing agent to decontaminate said packing material,

b) substantially separating the packing material from external impurities and said rinsing agent,

c) comminuting the packing material to small sheet pieces by the action of tools performing at least one a cutting and tearing function,

d) disintegrating the small sheet pieces in aqueous suspension under the action of at least one of impact, friction and shearing forces to suspend the fibrous materials carrying the thermoplast coating and to largely separate the thermoplast particles forming the outer surfaces of the sheet pieces in the suspension from the carrier material,

e) separating the suspension of thermoplast particles and fibrous materials into a first fraction consisting essentially of fibrous materials and a second fraction consisting essentially of thermoplast particles, and

f) draining the thermoplast particles.

5,331,088

PROCESS FOR MAKING GRAFT COPOLYMERS FROM LIGNITE AND VINYL MONOMERS

John J. Meister, 31675 Westlady Rd., Beverly Hills, Mich. 48025

Continuation-in-part of Ser. No. 787,264, Nov. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 479,839, Feb. 14, 1990, Pat. No. 5,138,007, which is a continuation-in-part of Ser. No. 286,344, Dec. 19, 1988, Pat. No. 4,931,527, and a continuation-in-part of Ser. No. 286,534, Dec. 19, 1988, Pat. No. 4,940,764. This application Nov. 16, 1992, Ser. No. 977,119

Int. Cl.[5] **C08H** *5/02*

U.S. Cl. 530—203 **13 Claims**

1. A water-insoluble, thermoplastic, grafted particle of lignite, said lignite having at least 2 alkylaromatic molecules and at least one grafted sidechain such that each sidechain has at least one repeat unit, M', formed by polymerizing at least one hydrophobic ethene monomer, M, wherein the at least one ethene monomer has a dipole moment of less than 1.2 or a water solubility of less than 5 g/100 g water at 30° C. and the at least one ethene monomer, M, is polymerized by free radical polymerization wherein the substituents on the monomer or monomers are hydrophobic.

5,331,089

PEPTIDES USEFUL AS TACHYKININ AGONISTS

Neil R. Curtis, Royston, and Brian J. Williams, Great Dunmow, both of England, assignors to Merck Sharpe & Dohme, Ltd., Hoddesdon

Continuation of Ser. No. 854,193, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 716,425, Jun. 17, 1991, abandoned, which is a continuation of Ser. No. 324,170, Mar. 16, 1989, abandoned. This application Dec. 17, 1992, Ser. No. 993,493

Claims priority, application United Kingdom, Mar. 25, 1988, 8807246

Int. Cl.[5] **C07K** *7/54, 7/06, 7/08*

U.S. Cl. 530—317 **9 Claims**

1. A peptide of the formula (I):

$$R^1—[A—Met—X—Gln—Y—Q—Z]_n—R^2 \quad (I)$$

in which any of the amide linkages between the amino acids is optionally N-methylated; and wherein

A represents Leu;

X represents Gly or a bond;

Y represents an aromatic amino acid residue selected from the group consisting of Trp, D-Trp, Phe, Tyr and Npa;

Q represents a hydrophobic amino acid residue selected from the group consisting of Trp, D-Trp, Phe, Tyr, Npa, Ile and Val;

Z represents Gly;

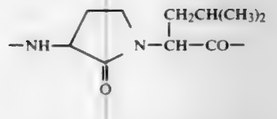
n is 1 or 2;

R^1 represents an amino blocking group; and

R^2 represents a carboxyl blocking group; or

R^1 and R^2 together represent a bond between the carboxyl group of Z and the amino group of A; or

Z and A, optionally together with the bond R^1-R^2, form a moiety of formula (II):



(II)

5,331,090

CR2 LIGAND COMPOSITIONS AND METHODS FOR MODULATING IMMUNE CELL FUNCTIONS

Waldemar Lernhardt, Solana Beach, Calif., assignor to California Institute of Biological Research, La Jolla, Calif.

Filed Sep. 8, 1989, Ser. No. 404,679

Int. Cl.[5] **A61K** *37/00, 37/02;* **C07K** *5/00, 7/00*

U.S. Cl. 530—329 **2 Claims**

1. A CR2 ligand consisting essentially of a polypeptide having an amino acid residue sequence selected from the group consisting of

NSGVEA,
QNSGVEALI,
TQNSGVEALI,
VTQNSGVEALI,
LVTQNSGVEALI,
QNSGVEALIHAIL,
QNSGVEALIHAI,
QNSGVEALIH,
PAIVEAG,
KPAIVEAG,
NKPAIVEAG,
SNKPAIVEAG,
PAIVEAGG,
PAIVEAGGM, and
PAIVEAGGMQ,

said ligand having the ability to specifically bind CR2 receptor.

5,331,091

MELANIN FORMATION-INHIBITORY PROTEIN, AND ITS PREPARATION AND USES

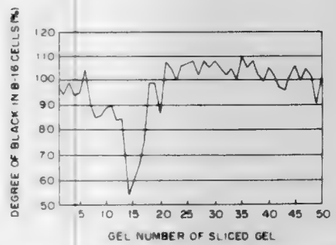
Shigeharu Fukuda; Yasuo Suemoto, and Masashi Kurimoto, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seitbutsu Kagaku Kenkyujo, Okayama, Japan

Filed Aug. 20, 1993, Ser. No. 109,249

Claims priority, application Japan, Aug. 21, 1992, 4-264025

Int. Cl.[5] **C07K** *3/02, 3/28;* **C12P** *21/02;* **A61K** *37/43*

U.S. Cl. 530—350 **9 Claims**



1. An isolated protein which has the following physicochemical properties:

(1) molecular weight
90,000±20,000 on sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE);

(2) isoelectric point
pI=5.5±0.5;

(3) ultraviolet absorption spectrum
exhibiting the maximum absorption spectrum at a wavelength of around 280 nm;

(4) solubility in solvent
soluble in water, physiological saline, phosphate buffer and Tris-HCl buffer;

(5) activity
exerting a melanin formation-inhibitory activity in pigment cells; and

(6) stability of activity
inactivated in water (pH 7.4) at 80° C. for 30 minutes; stable in water (pH 7.4) at 4° C. for one month.

5,331,092

PROCESS OF PREPARATION OF COLLAGEN CONTAINING IN MAJOR PROPORTION INSOLUBLE COLLAGEN AND COLLAGEN HAVING HIGH MECHANICAL RESISTANCE AND THERMAL STABILITY OBTAINED THEREBY

Alain Huc, Ste. Foy les Lyons, and René Gimeno, Pelussin, both of France, assignors to Coletica, Lyons, France

Filed Nov. 6, 1992, Ser. No. 971,636

Int. Cl.[5] **C08L** *89/06;* **A61L** *15/04;* **A61K** *9/22*

U.S. Cl. 530—356 **17 Claims**

1. A method of preparation of collagen from collagenic tissue, comprising grinding and optionally washing said collagenic tissue with a phosphate buffer and then with purified water to eliminate the phosphate, to get a ground material; acidifying said ground material to a pH value ranging between 3 and 4, so as to obtain a collagenic paste which is then diluted in a diluting solution to get a collagenic gel having a collagen concentration lower than 2.5% by weight expressed in dry collagen; and performing an homogenizing shearing stirring at high speed providing ultrasonic effect during a period of time sufficient to get a substantially homogeneous collagen gel containing in major proportion insoluble collagen.

5,331,093

ANTI-FOCOSYLCERAMIDE MONOCLONAL ANTIBODY

Hideki Ishihara, Saitama; Hiroshi Hattori, Tokyo, and Kenichi Ono, Saitama, all of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Continuation of Ser. No. 432,898, Nov. 7, 1989, abandoned. This application May 27, 1992, Ser. No. 888,306

Claims priority, application Japan, Nov. 9, 1988, 63-281433

Int. Cl.[5] **C07K** *15/28;* **G01N** *33/574;* **C12N** *5/12*

U.S. Cl. 530—387.5 **2 Claims**

1. A monoclonal antibody which is PC47H as produced by the hybridoma deposited under international deposit number FERM BP-2557.

5,331,094

PURIFIED ACTIVE SOMATOSTATIN RECEPTOR

Cecil M. Eppler, Langhorne, Pa.; John R. Zysk, Frenchtown; Martin J. Corbett, Mt. Holly, both of N.J., and Hong-Ming Shieh, Langhorne, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 677,009, Mar. 28, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,246

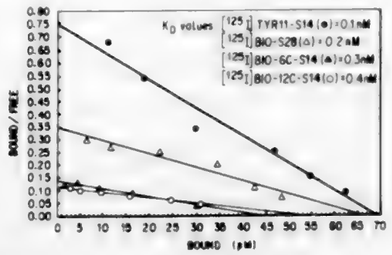
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[5] **C07K** *15/06, 15/14*

U.S. Cl. 530—395 **5 Claims**

1. A substantially pure somatostatin receptor, sufficiently free of associated proteins so as to be suitable for protein sequencing, which receptor is purified at least 30,000-fold rela-

tive to a whole cell non-solubilized membrane bound receptor and in glycosylated form as a molecular weight of between



75,000–90,000 daltons and consists of a 35,000–40,000 dalton core when not glycosylated

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5,331,095

PROCESS FOR PURIFICATION OF BASIC FIBROBLAST GROWTH FACTOR

Paula J. Shadle, Gulph Mills, Pa.; Kate B. Silverness, Castro Valley, and Robert S. King, Fremont, both of Calif., assignors to Scios Nova Inc., Mt. View, Calif.

Filed Apr. 12, 1993, Ser. No. 45,929

Int. Cl.[5] C07K *3/22. 3/20. 13/00*

U.S. Cl. 530—399 **9 Claims**

1. A method to recover purified bFGF from a sample containing bFGF, said method consisting essentially of:

(a) contacting a solution containing bFGF with a strong cation exchange matrix;

(b) eluting from said strong cation exchange matrix a multiplicity of fractions at least one of which contains bFGF;

(c) contacting the bFGF-containing strong cation exchange matrix fractions with a hydrophobic interaction matrix;

(d) eluting from said hydrophobic interaction matrix a multiplicity of fractions at least one of which contains bFGF;

(e) contacting the bFGF-containing hydrophobic interaction matrix fractions with a weak cation exchange matrix;

(f) eluting from said weak cation exchange matrix a multiplicity of fractions at least one of which contains bFGF; and

(g) recovering the purified bFGF from the bFGF-containing weak cation exchange matrix fractions.

5,331,096

2- AND 3-SULFUR DERIVATIVES OF 1,5-IMINOSUGARS

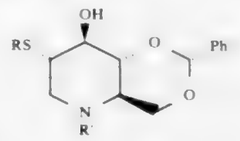
Francis J. Koszyk, Prospect Heights, and Richard A. Mueller, Glencoe, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 942,572, Sep. 9, 1992, Pat. No. 5,268,482, which is a continuation-in-part of Ser. No. 861,696, Apr. 1, 1992, Pat. No. 5,206,251. This application Aug. 2, 1993, Ser. No. 100,850

Int. Cl.[5] C07D *221/00*

U.S. Cl. 546—115 **4 Claims**

1. A compound of the formula



wherein

$R = C_1$–C_4 alkyl or phenyl $R' = H$ or $COOCH_2CH_2OCH_3$.

5,331,097

POLY(OXYALKYLENE) SUBSTITUTED XANTHENE COLORANT AND METHOD FOR MAKING THE SAME

Timothy B. Gunnell, Moore; John B. Hines, Jr., and Carey N. Barry, Jr., both of Spartanburg, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

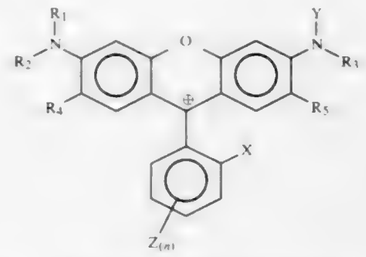
Filed Aug. 13, 1991, Ser. No. 744,342

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] C07D *311/88*

U.S. Cl. 549—226 **29 Claims**

1. A xanthene colorant comprising a compound having the structure:



where Y is a poly(oxyalkylene) substituent having a straight or branched polymer chain of from 3 to 375 monomer units selected from ethylene oxide, propylene oxide, butylene oxide and glycidol;

where R_1 and R_2 are independently selected from H, C1–C20 alkyl, aryl and Y, provided that if either R_1 or R_2 is Y, the other is not H;

R_3 is selected from C1–C20 alkyl, aryl and Y;

R_4 and R_5 are independently selected from H, C1–C4 alkyl, C1–C4 alkoxy, Cl, Br and I;

X is selected from H, SO_3—, CO_2—, $COOR_6$, Cl, Br and OH, and R_6 is C1–C8 alkyl or aryl; and

each Z is independently selected from SO_3—, CO_2—, $COOR_7$, Cl, Br and OH, and R_7 is C1–C8 alkyl or aryl, and n is 0, 1, 2, 3 or 4.

5,331,098

MONO- AND DI(FUNCTIONALLY-SUBSTITUTED PHENYLENE) SEMI-RIGID CROWNS AND PRECURSORS THEREOF

Harry W. Gibson, and Yadollah Delaviz, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 574,633, Aug. 29, 1990, Pat. No. 5,142,068, which is a continuation-in-part of Ser. No. 418,362, Oct. 6, 1989, Pat. No. 5,028,721. This application Jun. 22, 1992, Ser. No. 902,185

Int. Cl.[5] C07D *323/00*

U.S. Cl. 549—349 **9 Claims**

1. Bis(extraannular functionally-substituted phenylene)-32-crown-10 compounds which are 5-carboalkoxy substituted.

5,331,099

PROCESS FOR PREPARING P-NITROAROMATIC AMIDES AND PRODUCTS THEREOF

Michael K. Stern, and James K. Bashkin, both of University City, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 888,999, May 22, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 45,309

Int. Cl.[5] C07C *231/08*

U.S. Cl. 564—154 **77 Claims**

1. A process for preparing N-(4-nitroaromatic) amides comprising:

(a) contacting an amide and nitrobenzene in the presence of a suitable solvent system, and

(b) reacting the amide and nitrobenzene in the presence of a suitable base and a controlled amount of protic material at a suitable temperature in a confined reaction zone.

5,331,100

SELF-BUILDING DETERGENTS

Harry A. Smith, and Donald A. Tomalia, both of Midland, Mich., assignors to Dowbrands Inc., Indianapolis, Ind.

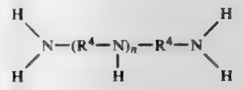
Filed Nov. 27, 1987, Ser. No. 125,912

Int. Cl.[5] C07C *231/10*

U.S. Cl. 564—468 **10 Claims**

1. A process for the preparation of a carboxylated polyamine amide having one secondary amide comprising

(A) contacting a carboxylic acid and a polyamine, the polyamine of the formula



in which R^4 is independently a divalent organic radical having from 2 to 15 carbon atoms and n is from 1 to 99, under conditions sufficient to form water and a polyamine amide having one secondary amide;

(B) removing at least a portion of the water formed in Step A; and

(C) contacting the dewatered product with an unsaturated ester to substitute all remaining amino hydrogen atoms with alkyl carboxylate substituents thereby forming the carboxylated polyamine amide having one secondary amide.

5,331,101

PROCESS FOR PREPARATION OF AMINES FROM ALCOHOLS, ALDEHYDES OR KETONES

Clarence E. Habermann, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1990, Ser. No. 461,600

Int. Cl.[5] C07C *209/14*

U.S. Cl. 564—480 **17 Claims**

1. A process for preparing secondary amines which comprises contacting an alcohol, aldehyde, or ketone with a primary amine in the presence of a catalyst under reaction conditions sufficient to form a secondary amine, wherein the catalyst comprises a homogeneous mixture of (a) 10–90 mole percent cobalt or an insoluble salt thereof, (b) 9–89 mole percent copper or an insoluble salt thereof, and (c) 1–20 mole percent of a metal or insoluble salt of a metal selected from the group consisting of a Lanthanum series metal, thorium, uranium, scandium, titanium, and yttrium.

5,331,102

METHOD FOR DECOLORIZATION OF ALKANOLAMINES AND ALKYLENEAMINES

Charles A. Gibson, South Charleston, W. Va., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 28, 1993, Ser. No. 83,663

Int. Cl.[5] C07C *209/84*

U.S. Cl. 564—498 **18 Claims**

1. A method of producing alkanolamines or alkyleneamines having a reduced color comprising contacting, in the presence of water, color-containing alkanolamines or alkyleneamines with a solid acid catalyst comprising a metal oxide having a bonded inorganic acid functionality selected from the group consisting of chloride, fluoride, and sulfate ions, under conditions effective to reduce the color of said alkanolamines or alkyleneamines.

5,331,103

PROCESS FOR MONOHYDROXYLATION OF PHENOLIC COMPOUNDS

Michel Costantini, and Dominique Laucher, both of Lyons, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Feb. 26, 1993, Ser. No. 22,896

Claims priority, application France, Feb. 26, 1992, 92 02210; Feb. 26, 1992, 92 02211

Int. Cl.[5] C07C *37/60*

U.S. Cl. 568—803 **38 Claims**

1. A process for the hydroxylation of an aromatic compound having both an —OR group and a hydrogen atom attached to the aromatic ring with the hydrogen atom being in the para position to the —OR group, where R is a hydrogen atom or a hydrocarbon radical having 1 to 24 carbon atoms which can be saturated or unsaturated, linear or branched aliphatic radicals or a saturated or unsaturated, or aromatic, monocyclic, bicyclic, or polycyclic cycloaliphatic radical, comprising

reacting the aromatic compound with hydrogen peroxide in the presence of effective amounts of a strong acid, a ketonic compound, and a polar aprotic organic solvent having a basicity donor number less than 25.

5,331,104

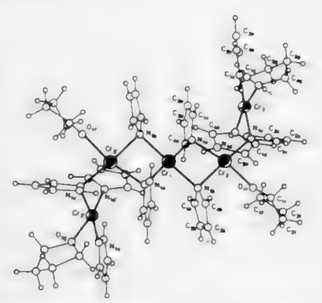
CHROMIUM COMPOUNDS AND USES THEREOF

Willim K. Reagen, Stillwater, Minn., and Brian K. Conroy, Batavia, Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 698,515, May 10, 1991, Pat. No. 5,198,563, which is a continuation-in-part of Ser. No. 454,554, Dec. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 392,688, Aug. 10, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 978,542

Int. Cl.[5] C07C *2/30;* **B01J** *31/14;* **C08F** *4/62*

U.S. Cl. 585—512 **30 Claims**



1. A trimerization process comprising contacting at least one mono-1-olefin with a catalyst prepared by a process comprising forming a mixture of and refluxing:

(a) a chromium salt;

(b) a metal amide which is a pyrrolide; and

(c) an electron pair donor solvent which can affect a reaction between the chromium salt and metal amide.

5,331,105

METHOD FOR INHIBITING HYDRATE FORMATION

Simon N. Duncum, Middlesex; Antony R. Edwards, and Christopher G. Osborne, both of Surrey, all of United Kingdom, assignors to The British Petroleum Company p.l.c., London, England

Filed Oct. 1, 1992, Ser. No. 955,071

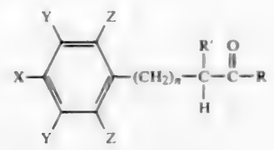
Claims priority, application United Kingdom, Oct. 10, 1991, 9121508.7

Int. Cl.[5] C07C *7/00, 7/20*

U.S. Cl. 585—800 **12 Claims**

1. A method for inhibiting or retarding hydrate formation in

a medium comprising water and gas susceptible to hydrate formation, which method comprises adding a compound of formula:



wherein

R=OH, OCH_3, OC_2H_5, $NHNH_2$ or H

R'=NH_2 or NH_3+

X,Y,Z=H or OH, and

n=a number in the range 0 to 6,

the compound being added in an amount effective to inhibit or retard hydrate formation.

5,331,106

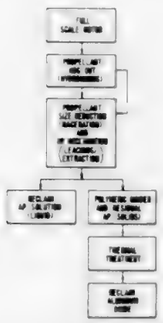
RESOURCE RECOVERY SYSTEM

Stanley E. Spas, El Dorado Hills, Calif., assignor to Aerojet General Corporation, Rancho Cordova, Calif.

Filed Feb. 4, 1992, Ser. No. 831,120

Int. Cl.[5] **C06B** *21/00*

U.S. Cl. 588—202 **21 Claims**



1. A process for recovering aluminum oxide from rocket propellant comprising the steps of:

providing a quantity of rocket propellant comprising a binder, aluminum and an oxidizer;

removing oxidizer from said quantity of rocket propellant to yield a material comprising aluminum and oxidizer in an amount less than or equal to about 15% by weight of the material;

thermally treating said material in a combustion chamber at a reducing atmosphere to essentially yield aluminum oxide particles; and

collecting the aluminum oxide particles directly from the combustion chamber.

5,331,107

HERBICIDE RESISTANCE IN PLANTS

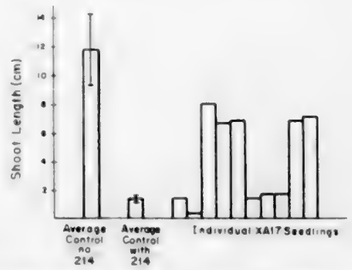
Paul C. Anderson, Minneapolis, and Kenneth A. Hibberd, Falcon Heights, both of Minn., assignors to MGI Pharma, Inc., Minneapolis, Minn.

Division of Ser. No. 639,321, Aug. 10, 1984, Pat. No. 4,761,373, which is a continuation-in-part of Ser. No. 586,802, Mar. 6, 1984, abandoned. This application Mar. 8, 1988, Ser. No. 169,094

The portion of the term of this patent subsequent to Aug. 2, 2005, has been disclaimed.

Int. Cl.[5] **A01H** *1/06, 1/02;* **C12N** *15/00*

U.S. Cl. 800—235 **2 Claims**



1. A maize plant, the growth of which is resistant to inhibition by an herbicide at levels of said herbicide which normally inhibit the growth of maize plants by inhibiting the activity of acetohydroxyacid synthase, wherein said resistance is conferred by an altered acetohydroxyacid synthase whose activity is resistant to inhibition by said herbicide at levels of said herbicide which normally inhibit the activity of an unaltered acetohydroxyacid synthase.

5,331,108

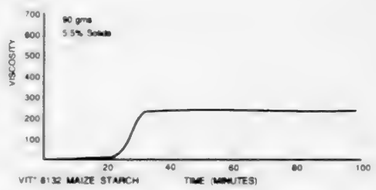
MUTANT MAIZE VARIETY CONTAINING THE GLT1-1 ALLELE

Oliver E. Nelson, Cross Plains, and David Pan, Madison, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 31, 1992, Ser. No. 830,038

Int. Cl.[5] **C12N** *15/00, 5/00;* **A01H** *5/00, 1/02*

U.S. Cl. 800—235 **7 Claims**



1. A maize plant comprising in its genome the gltl-1 mutant allele, wherein the gltl-1 mutant allele is derived from plants of the line deposited as ATCC No. 75122.

5,331,109

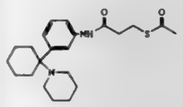
PHENCYCLIDINE DERIVATIVES AND PROTEIN AND POLYPEPTIDE PHENCYCLIDINE DERIVATIVE CONJUGATES AND LABELS

Kenneth F. Buechler, San Diego, Calif., assignor to Biosite Diagnostics Incorporated, San Diego, Calif.

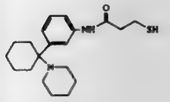
Filed Apr. 6, 1992, Ser. No. 864,104

Int. Cl.[5] **C07K** *17/02;* **A61K** *39/385;* **C07C** *333/08;* **C07D** *211/00*

U.S. Cl. 530—404 **4 Claims**

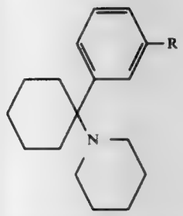


EXAMPLE 4

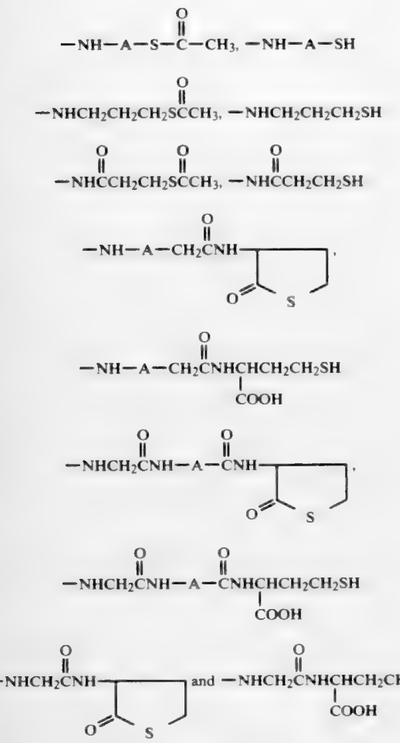


EXAMPLE 5

1. A compound of the formula:



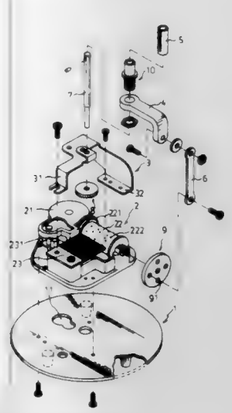
where R is a first linking group consisting of one of the following:



where A is a second hydrocarbyl linking group of from 1 to 20 carbons and from 0 to 10 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, which may either be in the chain or substituted on the chain which may be straight or branched.

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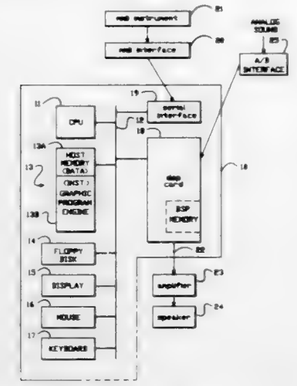
5,331,110
MUSICAL BOX
Joseph Chen, P.O. Box 82-144, Taipei, Taiwan
Filed Oct. 13, 1993, Ser. No. 136,321
Int. Cl.[5] **G10F** *1/12*
U.S. Cl. 84—95.2 **1 Claim**



1. A musical box comprising:
a base;
a seat having a casing; said seat fixedly mounted on said base;
a spiral spring fitted within said casing;
a control lever connected to said spring;
a drum having a first end and a second end; said drum including a plurality of protuberances thereon;
a gear fixedly mounted on said first end of said drum;
a gear train connected to said spring and engaging said gear;
a hitting member fixedly mounted on said seat and having a plurality of tines in contact with said drum;
a disc having a hole; said disc connected to said second end of said drum;
a frame having a first leg and a second leg; said first leg connected to said hitting member and said second leg connected to said seat;
a second gear meshed with said gear;
an axle extending downward and vertically through said frame and engaging said second gear;
an arm sleeved over said axle and connected to said hole of said disc;
a connector attached to said axle; and
a sleeve fitted over said axle.

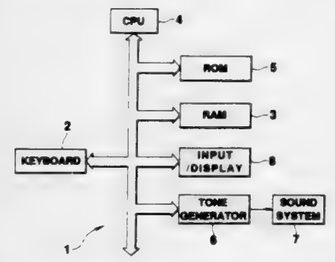
5,331,111
SOUND MODEL GENERATOR AND SYNTHESIZER WITH GRAPHICAL PROGRAMMING ENGINE
Steven S. O'Connell, Scotts Valley, Calif., assignor to Korg, Inc., Tokyo, Japan
Filed Oct. 27, 1992, Ser. No. 967,163
Int. Cl.[5] **G09B** *15/04;* **G10H** *7/00*
U.S. Cl. 84—602 **49 Claims**

29. An apparatus for developing a sound generating program, comprising:
a user input to supply input data;
graphical programming engine, coupled with the user input and including a set of graphical function symbols, to generate and connect graphic function symbols into a graphical model representative of a sound generating program in response to input data, the set of graphical function symbols including a symbol for a real time output function that supplies output data and a symbol for a real time input function that receives at least a portion of the input data;
a display, coupled with the graphical programming engine, to display the graphical model;
translation resources coupled with the graphical programming engine, to translate the graphical model into an



ordered list of object names with associated parameters specifying a sound generating program.

5,331,112
APPARATUS FOR CROSS-CORRELATING ADDITIONAL MUSICAL PART TO PRINCIPAL PART THROUGH TIME
Jun Sato, and Junichi Minamitaka, both of Fussa, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 588,050, Sep. 25, 1990. This application Jan. 21, 1993, Ser. No. 7,119
Claims priority, application Japan, Sep. 29, 1989, 1-252405; Dec. 30, 1989, 1-341502; Dec. 30, 1989, 1-341506; Dec. 30, 1989, 1-341507; Dec. 30, 1989, 1-341508
Int. Cl.[5] **G10H** *7/00;* **G04B** *13/00;* **A63H** *5/00*
U.S. Cl. 84—609 **6 Claims**



1. An apparatus for generating an additional musical part which is to be played simultaneously with a principal melodic part of a music piece, the apparatus comprising:
principal part providing means for providing a principal melodic part of a music piece;
pitch set succession providing means for providing a succession of pitch sets available in an additional part of said music piece;
control parameter generating means for generating control parameters for each melodic line of said additional part to be played simultaneously with said principal melodic part; and
additional part generating means for generating said additional part having at least one melodic line based on said principal melodic part, said succession of pitch sets and said control parameters;
said control parameter generating means including pointer

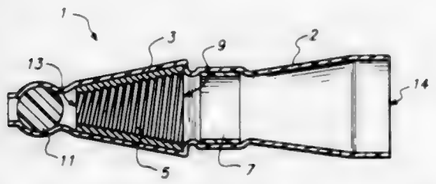
generating means for generating a pointer that points to a segment of said principal melodic part at a past time; and said additional part generating means including determining means for determining a current content of said additional part by referencing said segment of said principal melodic part pointed to be said pointer

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5,331,113
ELECTRICAL CONNECTOR

Pravin L. Soni, Union City, and Mohamed H. Higgy, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 30, 1992, Ser. No. 968,651
Int. Cl.[5] H01R *4/02, 43/02*
U.S. Cl. 174—87 **19 Claims**



1. A device for forming an electrical connection between a plurality of elongate electrical conductors, which comprises an electrically insulating sleeve and a hollow connecting element contained within the sleeve, the connecting element formed from solder for forming a solder connection between the conductors and having a tapering internal surface that is provided with a screw thread, arranged so that a temporary electrical connection between the conductors may be formed by twisting them into the connecting element.

18. A method of forming an electrical connection between a plurality of elongate electrical conductors by means of a device comprising an electrically insulating sleeve and a hollow connecting element contained within the sleeve, the connecting element formed from solder, for forming a solder connection between the conductors and having a tapering internal surface that is provided with a screw thread, arranged so that a temporary electrical connection between the conductors may be formed by twisting them into the connecting element, the method comprising:

(a) twisting the elongate electrical conductors into the solder connecting element of the device, thereby forming a temporary electrical connection between the conductors;
(b) heating the device so that at least some of the solder of the connecting element melts; and
(c) allowing the device to cool so that the molten solder solidifies and forms a solder connection between the conductors.

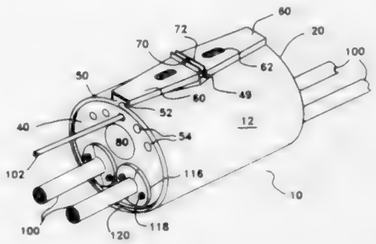
5,331,114
METHOD AND APPARATUS TO PRESSURE SEAL CABLE SPLICES

Howard W. Rudolph, 321 Boone Rd., Birdsboro, Pa. 19508, assignor to Howard W. Rudolph, Birdsboro, Pa.

Filed Oct. 17, 1991, Ser. No. 778,027
Int. Cl.[5] H02G *15/113, 15/04*
U.S. Cl. 174—93 **12 Claims**

1. An apparatus for sealing cable splices comprising:

(a) a sleeve having an interior and exterior surface, a first end, a second end and a longitudinal slit having a longitudinal edge along both sides thereof and which is able to be separated and thereby alter the diameter of the sleeve;
(b) a pair of locking flanges secured to the exterior surface which extend longitudinally adjacent each side of the longitudinal edge and which may be cammed together to close the longitudinal slit;
(c) an inner flange located along one longitudinal edge of the longitudinal slit which extends peripherally and is adjacent the inner surface of the sleeve when the pair of locking flanges are releasably secured together;
(d) an end cap located at each of the first and second ends of the sleeve, the end cap having at least one opening therein to permit the passage of a cable therethrough;
(e) means for releasably camming the locking flanges adjacent one another; and

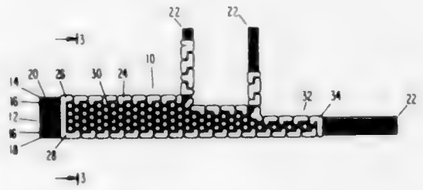


(f) means for indicating the internal pressure in the sleeve when an encapsulant is inserted therein, the means for indicating internal pressure being located on at least one of the end caps, the means for indicating the internal pressure in the sleeve comprising a dome which is generally concave to the exterior surface of the end cap when the pressure in the interior of the sleeve is at a first internal pressure and is generally convex to the exterior to the surface of the end cap when the pressure in the interior of the sleeve is at a second internal pressure.

5,331,115
MOLDED WOVEN CABLING AND A METHOD OF PRODUCTION

Floyd Ysbrand, 2500 Davis Blvd., Joplin, Mo. 64802

Filed Nov. 23, 1992, Ser. No. 980,478
Int. Cl.[5] H01B *7/08*
U.S. Cl. 174—117 M **10 Claims**



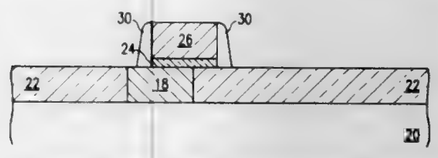
4. A molded cable comprising:

a plurality of conductors forming said cable, said conductors being positioned in spaced relationship with each other; and
a plastic like molding compound molded into a woven pattern around said conductors.

5,331,116
STRUCTURE AND METHOD FOR FORMING CONTACT STRUCTURES IN INTEGRATED CIRCUITS

Michael E. Haslam, Highland Village, and Charles R. Spinner, III, Dallas, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Apr. 30, 1992, Ser. No. 876,953
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 **9 Claims**



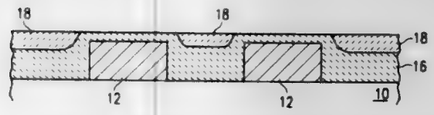
1. A contact structure in an integrated circuit, comprising:

an underlying conductive element;
a first interconnect layer overlying a portion of the underlying conductive element;
an insulating buffer layer lying between the underlying conductive element and the first interconnect layer; and
conductive sidewall spacers alongside the vertical sidewalls of the first interconnect layer, wherein a conductive contact is made between the underlying conductive element and the first interconnect layer through at least one of the conductive sidewall spacers.

5,331,117
METHOD TO IMPROVE INTERLEVEL DIELECTRIC PLANARIZATION

Frank R. Bryant, Denton, and Charles R. Spinner, III, Dallas, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Nov. 12, 1992, Ser. No. 974,923
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 **9 Claims**



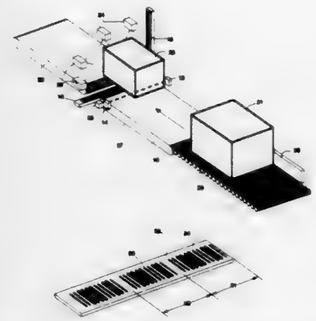
1. A structure consisting of a portion of a semiconductor device, comprising:

a conductive structure disposed over a portion of a dielectric region;
a conformal dielectric layer disposed adjacent to the conductive structure and disposed over the dielectric region, the conformal dielectric layer having an upper surface adjacent the conductive structure which is lower than an upper surface of the conductive structure; and
a first spin-on-glass region disposed on the conformal dielectric layer upper surface, having an upper surface lower than the conductive structure upper surface, and having a first etch rate; and
a second spin-on-glass region disposed on the first spin-on-glass region upper surface, having an upper surface approximately coplanar with the conductive structure upper surface, and having a second etch rate which is slower than the first etch rate.

5,331,118
PACKAGE DIMENSIONAL VOLUME AND WEIGHT DETERMINATION SYSTEM FOR CONVEYORS

Soren Jensen, 4 Puritan Rd., Duxbury, Mass. 02332

Filed Nov. 27, 1992, Ser. No. 982,448
Int. Cl.[5] G01G *19/40;* **G01B** *11/00*
U.S. Cl. 177—25.14 **18 Claims**



1. A method for determining the dimensional volume of a package having sides and length, width and height on a conveyor belt having first and second side edges, comprising the steps of:

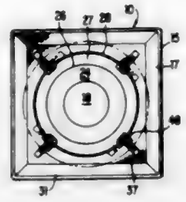
moving said package on said conveyor belt;
skewing said package to tile first side of said conveyor belt to be aligned with a side parallel to the direction of movement of said conveyor belt;
determining tile length of said package as it moves on said conveyor belt;
providing a horizontally disposed strip below, and disposed perpendicular to the direction of, said conveyor belt and the level of said conveyor belt, said strip containing machine-readable indicia indicating units of incremental length along said strip starting from zero, said zero point disposed at said first side edge of said conveyor belt;
providing a vertically disposed strip at said first side edge of said conveyor belt, said strip facing toward said second side edge, said strip containing machine-readable indicia indicating units of incremental length along said strip starting from zero, said zero point disposed at said first side edge of said conveyor belt;
providing a horizontally disposed reader above said horizontally disposed strip and above the height of said package, said reader able to read said indicia on said horizontally disposed strip;
providing a vertically disposed reader at said second side edge of said conveyor able to read said indicia on said vertically disposed strip;
moving said package to a position to cover portions of said vertically and horizontally disposed strips adjacent to said first side edge, said package covering said indicia starting at the zero point of said vertically and horizontally disposed strips;
reading by means of said vertically and horizontally disposed readers tile portions of indicia of said vertically and horizontally disposed strips not covered by said package;
determining the lowest incremental length measurement of said indicia on said horizontally disposed strip, such measurement being tile width of said package;
determining tile lowest incremental length measurement of said indicia on said vertically disposed strip, such measurement being the height of said package; and
calculating the package's dimensional volume by taking the product of said measurements for the length, tile height and the width of said package.

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5,331,119
SPEAKER SUPPORT FRAME

Ricky D. Leger, Richmond; Jeffery J. Buchanan, and Bill R. Unseld, both of Lexington, all of Ky., assignors to Square D Company, Palatine, Ill.

Filed Jan. 8, 1992, Ser. No. 817,899
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—150 **23 Claims**



1. A speaker support frame structure for association with a preformed aperture in a wall board and for recessed mounting of a speaker having a housing, the frame structure comprising:

(A) a one-piece, unitary, molded frame body having a front side and a back side and also having:

(1) an open central region for receiving therethrough body portions of the speaker housing,

(2) a flattened perimeter region extending about the open central region the perimeter region having a front side adapted for making abutting engagement with the speaker housing,

(3) a shoulder region upstanding frontally from and extending peripherally about the perimeter region, the shoulder region being adjacent to the speaker housing,

(4) an outwardly turned collar region extending peripherally about the shoulder region, the collar region adjusted for contacting the exterior side of the wall board adjacent the preformed aperture,

(5) a plurality of orifice means that are individually located in the collar region at perimetrically spaced intervals about and adjacent to the shoulder region, and

(6) a plurality of stop means, one stop means being adjacent each orifice means;

(B) a plurality of leg members, one for each of the orifice means, each leg member having a proximal portion and a distal portion; and

(C) a plurality of screw means, one for each of the orifice means, each screw means extending through a different one of the orifices and threadably engaging the proximal portion of a different one of the leg members; so that, when the frame body is positioned in the preformed aperture, each one of the screw means can be rotated to pivot its associated leg member outwardly into abutting engagement with the adjacent stop means and with the leg member distal portion yieldingly engaging the interior side of the wall board, thereby clamping the wall board between the leg members and transversely adjacent portions of the collar region.

5,331,120
METHOD FOR ACOUSTIC ABSORPTION

Robert L. Fleischer, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

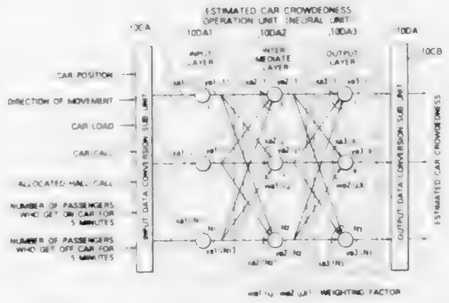
Filed Jul. 13, 1993, Ser. No. 90,679
Int. Cl.[5] F16F *7/00*
U.S. Cl. 181—207 **7 Claims**

1. A method for controlling emission or reflection of acoustic energy which comprises forming an article with a surface comprising, a titanium-tin alloy containing from about 13.5 to about 24.5 atom percent tin, the balance essentially titanium or a titanium-chromium alloy containing from about 52 to about 56 atom percent tin, from about 8 to about 12 atom percent aluminum, the balance essentially titanium.

5,331,121
ELEVATOR CONTROL APPARATUS

Shintaro Tsuji, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 658,510, Feb. 21, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,618
Claims priority, application Japan, Mar. 28, 1990, 2-77114
Int. Cl.[5] G66B *1/20*
U.S. Cl. 187—124 **20 Claims**



1. An elevator control apparatus for estimating car crowdedness and for controlling operation of the car using the estimated car crowdedness, comprising:

an input data conversion means for converting a traffic data signal, including car position data, car direction data, car load data and data regarding car calls and hall calls into a form which is usable as an input for a neural net;

an estimated car crowdedness unit including a neural net having an input layer for receiving neural net data from said input data conversion means, an output layer for outputting a signal representative of the estimated car crowdedness of a selected car, and an intermediate layer provided between the input an output layers in which weighting factors are set;

an output data conversion means for converting the signal output from the output layer into an operational control data signal;

a learning data creation means including a memory unit for storing both the estimated car crowdedness for a predetermined hall and the input data at a predetermined time, for storing, as actual car crowdedness, the car crowdedness when said car stops at or passes the predetermined hall, and for outputting the stored input data, the estimated car crowdedness and the actual car crowdedness as one learning data pair signal; and

a correction means for correcting the weighting factors set in the intermediate layer of the estimated car crowdedness unit using the learning data signal said correction means being connected to said learning data creation means and to said estimated car crowdedness unit.

5,331,122
SAFETY LOCK OFF DEVICE

John R. Winder, P.O. Box 167564, Irving, Tex. 75016-7564

Filed Sep. 10, 1992, Ser. No. 942,617
Int. Cl.[5] H01H *9/28*
U.S. Cl. 200—43.19 **6 Claims**

1. A safety lock device for a toggle switch that has a cover plate with an area through which a toggle switch actuator protrudes, the device locks the switch in an off position, and comprises:

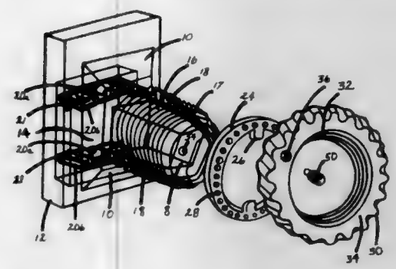
a hollow cylindrical head having, two slotted openings and a threaded outer surface, a flared skirt and a base plate attached thereto, said base plate having an open center;

two vice arms attached within said open cylinder head and having opposed grooved vice heads at an end of each arm

adjacent to said base plate opening, said vice arms being shaped to protrude through said slotted openings;

alignment guides on said base plate positioned to fit into the area of the cover plate where the toggle switch actuator protrudes for aligning the device on the cover plate;

a circular lock ring having two teeth in its inner circumference and a plurality of screw holes through its flat surface



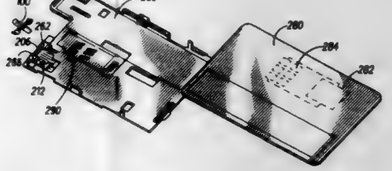
, said lock ring being sized to slide over said cylindrical head with said teeth on said vice arms for compressing said vice arms;

a lock nut threaded onto said cylindrical head and having a flange thereon with a hole alignable with one of said screw holes when threaded thereon, and a screw inseratable into said aligned holes.

5,331,123
SWITCH OPERATIVE RESPONSIVE TO POSITIONING OF A CARD MEMBER

Martin J. Kimbell, Wheaton, and Mark W. Schwartz, Addison, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 1, 1992, Ser. No. 894,506
Int. Cl.[5] H01H *35/00, 3/16*
U.S. Cl. 200—52 R **20 Claims**



1. A switch mounted upon a support platform and positioned above an electrical circuit, the switch being operative alternately to permit powering of electrical contacts of the electrical circuit or to prevent powering of the electrical contacts, said switch comprising:

a lever arm having a distal end portion and a proximal end portion;

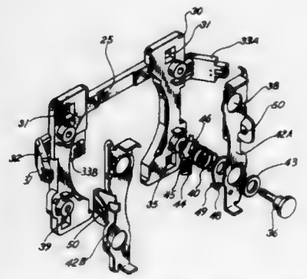
a pivot arm coupled to the lever arm at a connecting point located along the lever arm and positioned to extend beyond at least one side surface of the lever arm to abut against the support platform in supportive engagement therewith, the connecting point defining a fulcrum permitting pivotal movement of the lever arm thereabout; and

means forming a force receiving surface upon the distal end portion of the lever arm for receiving actuation forces thereat whereby actuation forces applied to the force receiving surface generate twisting moments to cause pivotal movement of the lever arm about the fulcrum out of a first switch position wherein said proximal end portion of said lever arm is in contact with said electrical circuit and into a second switch position wherein said proximal end portion of said lever arm is out of contact with said electrical circuit to enable powering of the electrical contacts of the electrical circuit.

5,331,124
WIRELESS FLOATING HORN SWITCH

David J. Danielson, Hamilton, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Jul. 20, 1992, Ser. No. 916,594
Int. Cl.[5] H01H *9/00*
U.S. Cl. 200—61.54 **19 Claims**



1. An electrically conductive base insert for use in a wireless floating horn switch comprising:

an insulated flat electrical conductor including a horn circuit having at least one exposed access pad;

a ground circuit;

at least one connector associated with both the horn circuit and the ground circuit;

at least one moveable bracket united with the base insert by at least one attaching assembly;

a spring contacting the insulated electrically conductive base insert and the bracket for urging the bracket away from the insulated conductive base insert;

a contact capable of reversibly striking the exposed access pad to complete the horn circuit;

the moveable bracket urging the contact into electrical communication with the exposed access pad; and

an insulator made of an electrically inert material including a sleeved aperture complementary to a first aperture on the bracket.

5,331,125
STEERING WHEEL HORN SWITCH ASSEMBLY INCLUDING HORN RING OPERATOR

Albert Weinstein, 9070 Tracy Ct. 3, Boca Raton, Fla. 33496

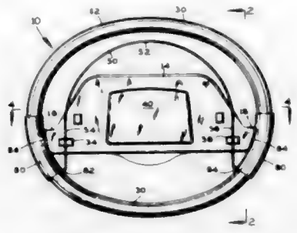
Continuation-in-part of Ser. No. 834,146, Feb. 10, 1992, Pat. No. 5,219,415. This application Jun. 11, 1993, Ser. No. 74,592
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] H01H *9/00*
U.S. Cl. 200—61.54 **16 Claims**

1. In combination with a vehicle steering wheel comprising a rim portion and two spokes connecting said rim portion to a hub portion fitted with a restraint assembly, and having a button on each said spoke for operating a horn switch, an apparatus for depressing said buttons to operate said horn switch, comprising:

an elongate member formed into an inverted U-shape having two ends and being of a width relative to said rim portion to fit within said rim portion and simultaneously extend

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over both said buttons while said ends rest against said rim portion,



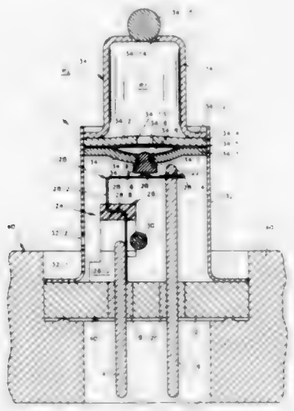
joining means for pivotally joining each said end to said rim portion, such that pushing against said elongate member depresses said buttons and operates said horn switch.

5,331,126

PRESSURE SWITCH APPARATUS FOR MONITORING PRESSURE LEVEL IN AN ENCLOSED CHAMBER AND METHODS OF CALIBRATING SAME AND FOR MAKING A MOVABLE CONTACT ARM FOR USE THEREWITH

Daniel Dwyer, Norton, Mass.; Daniel Morin, North Providence, R.I.; Massimo Mazzola, Napoli, Italy, and Karl R. Abrahamson, Easton, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1993, Ser. No. 76,041
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 P **7 Claims**



1. Pressure responsive electrical switch apparatus for monitoring the pressure level in an enclosed chamber comprising a header and first and second generally elongated terminals, each terminal having a longitudinal axis, the header mounting the terminals electrically isolated from each other and from the header, the second terminal having a distal free end extending laterally generally 90° from the longitudinal axis of the second terminal,

a movable contact arm assembly having a generally U-shaped base composed of electrically insulative material comprising first and second legs extending downwardly from a bight portion, an electrically conductive member having a first portion with a first end formed with first and second legs extending from a central portion, the first and second legs of the electrically conductive member encased in respective first and second legs of the U-shaped base, the central portion extending between the first and second legs of the U-shaped base and being electrically connected to the first terminal, the electrically conductive member having a second portion with a second end formed with a movable contact received under and biased toward the distal free end of the second terminal, the electrically conductive member having an intermediate portion supported by and extending from the bight portion of the base, and

a pressure sensor assembly comprising an open ended sleeve extending upwardly from the header, a pressure reference chamber having an open end, a pressure responsive disc movable between first and second oppositely dished configurations closing the open end of the pressure reference chamber and received in the open ended sleeve, the sleeve being formed by a wall having a vent opening therethrough,

the disc being adapted to transfer motion to the intermediate portion of the electrically conductive member when moving from one of the configurations to the other configuration to move the movable contact away from the distal free end of the second terminal.

5,331,127

DUAL PUSH-PULL INDUCTION HEATING DRIVE CIRCUIT

Su-Min Chen, No. 9, Yung Duang Lane, Herming Village, Show Shui Hsiang, Chang Hwa Hsien, Taiwan

Filed Mar. 26, 1992, Ser. No. 858,283
Int. Cl.[5] H05B *6/06*
U.S. Cl. 219—661 **6 Claims**



1. A dual push-pull induction heating drive circuit comprising:

an oscillation triggering control circuit, connected by means of a signal line with a switching logic circuit which sends out two oscillation signals that pass through an amplifying drive circuit and drive a dual push-pull switching output circuit provided with at least two power elements connected with an induction coil; and

a pulse width modulating circuit having a comparing element controlled to send out pulses with widths capable of being modulated, said pulses serving via said switching logic circuit and said amplifying drive circuit to drive alternately said power elements to cause said induction coil to generate an alternating magnetic field, and

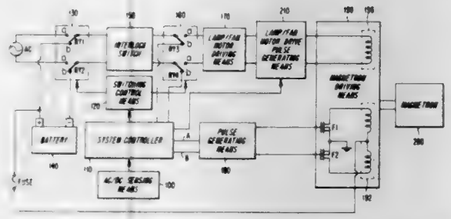
wherein a synchronous detection comparing circuit having at least a comparing element is provided with two input ends thereof connected respectively with two ends of said induction coil, said comparing element having an output end sending out a synchronous pulse signal received by said switching logic circuit and a differentiation circuit to bring synchronous differentiation pulse signal received by an input end of said comparing element of said pulse width modulating circuit to generate power control pulse signal intended to drive alternately said two power elements via said switching logic circuit and said amplifying circuit to cause said induction coil to bring about high frequency oscillation.

5,331,128

APPARATUS FOR DRIVING MICROWAVE OVEN USING BOTH A.C. AND D.C. CURRENT

Hung-Chan Koh, Kunpo, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 6, 1993, Ser. No. 85,829
Claims priority, application Rep. of Korea, Jul. 3, 1992, 92-11863; Jul. 28, 1992, 92-13524
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—717 **11 Claims**



1. An apparatus for driving a microwave oven, comprising:

AC/DC sensing means for sensing whether a driving power supplied to the microwave oven is AC or DC and outputting the sensed result;

system control means connected to said AC/CD sensing means for controlling associated peripheral components in response to an output signal from said AC/CD sensing means and for outputting pulse control signals when said AC/DC sensing means senses that the driving power to the microwave oven is DC;

an interlock switch adapted to be interlocked according to an actuated state of a door of the microwave oven;

first switching means connected to said interlock switch, an external AC power source and a battery for selecting one of the external AC power source or DC power from the battery and supplying power from the selected power source to said interlock switch;

second switching means connected to said interlock switch and a lamp and fan motor driving means for supplying the AC power from said interlock switch to the lamp and fan motor driving means;

switching control means connected to said first and second switching means and to said system control means for controlling said first and second switching means in response to control signals from said system control means;

pulse generating means connected to said system control means for alternately outputting pulses of opposite levels in response to the pulse control signals outputted from said system control means;

magnetron driving means connected to said pulse generating means for inputting the alternate pulses from said pulse generating means when the driving power to the microwave oven is DC and AC power from said second switching means when the driving power to the microwave oven is AC and supplying desired voltages to filament and anode terminals of a magnetron, respectively, to drive the magnetron, said magnetron driving means having a transformer for inducing the desired voltage supplied to the anode terminal of the magnetron to a relatively lower high voltage; and

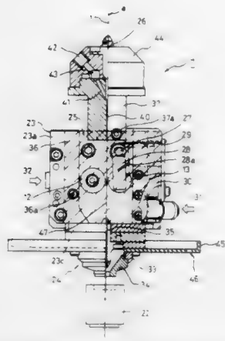
lamp and fan motor drive pulse generating means connected to said lamp and fan motor driving means and said system control means for converting the voltage supplied to the anode terminal of the magnetron into a lamp and fan motor drive pulse in response to frequency generation control signals from said system control means when the driving power to the microwave oven is DC.

5,331,129

UPPER GUIDE ASSEMBLY FOR A WIRE CUT ELECTRIC DISCHARGE MACHINE

Toshiyuki Aso, and Yuki Kita, both of Oshino, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP92/00385, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO92/17308, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 27, 1992, Ser. No. 949,552
Claims priority, application Japan, Mar. 27, 1991, 3-085741
Int. Cl.[5] B23H *7/10*
U.S. Cl. 219—69.12 **5 Claims**



1. An upper guide assembly for a wire cut electric discharge machine, comprising:

a body having a wire path extending straight in a vertical direction;

an upper nozzle connected to a lower portion of said body for discharging a jet of machining fluid out of the upper guide assembly and the upper nozzle having its center axis aligned with the wire path; and

means for forming a pillar of a pressurized machining fluid in the interior of the upper guide assembly by also supplying the pressurized machining fluid into the body independently of the jet of machining fluid supplied to the upper nozzle, the pillar having its center axis aligned with the wire path in the interior of the body, such that a wire passing through the wire path in the upper guide assembly is guided and held by the pillar.

5,331,130

METHOD AND APPARATUS FOR FUSING TERMINAL OR COMMUTATOR WIRE CONNECTIONS ON AN ARMATURE OR STATOR

Eric J. Kirker, Vandalia, Ohio, assignor to Odawara Automation, Inc., Tipp City, Ohio

Filed Sep. 22, 1992, Ser. No. 949,383
Int. Cl.[5] B23K *11/31*
U.S. Cl. 219—86.51 **15 Claims**

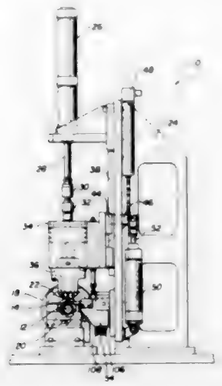
1. An apparatus for fusing a workpiece consisting of at least two electrically conductive elements comprising:

an electrode;

means for moving the electrode into contact with said workpiece causing said electrode to apply a force to said workpiece;

means for monitoring the force applied by said electrode; and

means for applying an opposition force to said electrode when a predetermined force has been reached by said



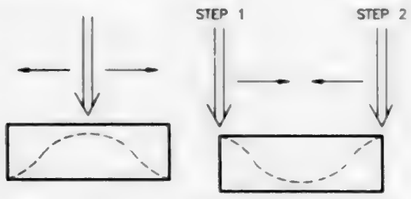
electrode to relieve a portion of said force applied by said electrode to said workpiece.

5,331,131

SCANNING TECHNIQUE FOR LASER ABLATION

Kenneth L. Opdyke, Fairport, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Sep. 29, 1992, Ser. No. 953,399
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 **16 Claims**



1. A method for ablatively modifying a target surface while avoiding ablative debris accumulation comprising the steps of a) directing a beam of pulsed UV radiation at the point of the target surface where the least amount of material is to be removed; and b) scanning the beam in the direction toward the portion of the target surface where the greatest amount of material is to be removed.

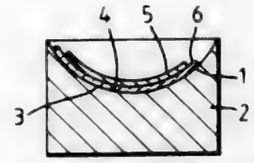
5,331,132

MANUFACTURE OF VISUAL LENSES

Michael H. Freeman, Denbigh, United Kingdom, and Colin M. Perrott, Portola Valley, Calif., assignors to Pilkington Diffractive Lenses Limited, St. Helens, United Kingdom

Division of Ser. No. 683,036, Apr. 10, 1991. This application Oct. 2, 1992, Ser. No. 955,420
Claims priority, application United Kingdom, Apr. 17, 1990, 9008580-4
Int. Cl.[5] B23K *26/18*
U.S. Cl. 219—121.69 **8 Claims**

1. A method of making contact lenses and intra-ocular lenses in which at least a portion of the light passing through the lens is focussed by diffractive means, which method comprises placing the back surface of a consumable mask directly in contact with the lens, the mask having a pattern surface shaped to provide the diffractive means in the finished lens, and exposing the lens and mask to pulses from a laser for a time sufficient to ablate the consumable mask so that as the mask is ablated the



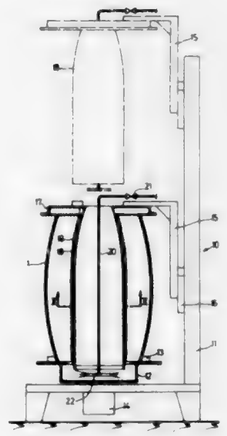
lens is eroded in accordance with the pattern on the mask pattern surface.

5,331,133

PROCESS PERMITTING THE MODIFICATION OF THE CHEMICAL COMPOSITION OF THE INNER FACE OF A BARREL, AND MACHINE IMPLEMENTING SUCH A PROCESS

Bernard Cordier, Cognac, France, assignor to Seguin Moreau & Co. Of Zone Industrielle, Merpins, France

Continuation of Ser. No. 711,700, Jun. 7, 1991, abandoned. This application Jul. 7, 1993, Ser. No. 87,085
Claims priority, application France, Jun. 7, 1990, 90 07102
Int. Cl.[5] H05B *3/58;* **F24J** *3/00*
U.S. Cl. 219—523 **9 Claims**



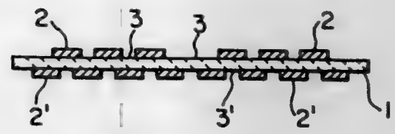
1. A machine for modifying the chemical composition of an inner face of a shell of a barrel having a main axis, comprising:
means for supporting the shell of the barrel with said main axis oriented vertically;
means for heating the inner face of the shell;
means for moistening the inner face of the shell;
means for supporting and vertically displacing, simultaneously, said heating and moistening means along said main axis; and
means for controlling said heating means and said moistening means so that said inner face of the shell is cyclically, alternately, heated and moistened when said heating and moistening means are moved into said shell by means of said supporting and vertically displacing means.

5,331,134

DOUBLE-LAYERED CERAMIC HEATER

Noboru Kimura, Gunma, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 17, 1993, Ser. No. 62,133
Claims priority, application Japan, May 21, 1992, 4-154349
Int. Cl.[5] H05B *3/20, 3/10, 3/16*
U.S. Cl. 219—543 **4 Claims**



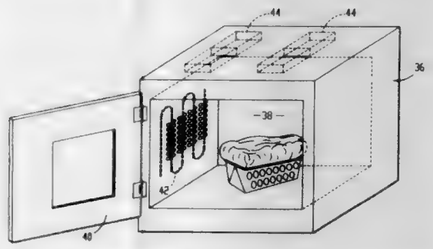
1. In a double-layered ceramic heater consisting of an electrically insulating ceramic base plate and two resistance heater element layers formed on the upper and lower surfaces of the ceramic base plate each in a pattern having, on the surface of the ceramic base plate, a heating area covered by the resistance heater element layer where heat is evolved by electric resistance and a gap area where the resistance heater element layer is not formed, the improvement which comprises forming the resistance heater element layers each in such a patterned fashion that the gap area of the heater element layer on the upper surface of the base plate is opposite face-to-face with the heating area on the lower surface and the gap area on the lower surface of the base plate is opposite face-to-face with the heating area on the upper surface with the ceramic base plate inbetween and wherein the width of the gap space for one of the heater element layers is in the range from 0.5 to 5.0 mm and is smaller than the width of the heating area thereof.

5,331,135

MICROWAVE BAKING PAN

David Ovadia, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Filed Feb. 12, 1993, Ser. No. 17,014
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—728 **18 Claims**



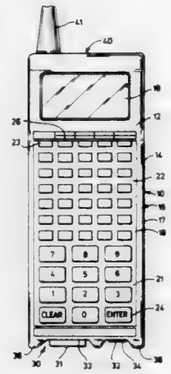
1. A baking pan consisting essentially of:
a metallic body presenting a bottom wall, upstanding, interconnected sidewall structure connected with said bottom wall to define therewith a cavity for receiving a flowable material to be baked,
said bottom wall and sidewall structure each having a series of apertures therethrough dimensioned to permit passage of microwave or rf radiation therethrough, at least certain of said apertures having a maximum dimension of from about 15–35 mm,
each of said bottom wall and sidewall structure having a total open area defined by said apertures therethrough which is at least about 20% of the total interior surface area of the respective bottom wall or sidewall structure,
said sidewall structure having a height of from about 2–4 inches,
said bottom wall and sidewall structure having a metal thickness of at least about 0.07 mm; and
a liner disposed within said cavity and covering both said bottom wall and sidewall structure apertures for preventing escape of said flowable material through the apertures, said liner being able to withstand baking temperatures of from about 430°–625° F. while permitting passage of said microwave or rf radiation therethrough and not significantly reducing thermal conductivity through the pan walls.

5,331,136

HAND-HELD DATA CAPTURE SYSTEM WITH INTERCHANGEABLE MODULES

Steven E. Koenck; Phillip Miller; George E. Hanson; Darald R. Schultz, and Jeffrey S. Krunnfusz, all of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 660,615, Feb. 25, 1991, Pat. No. 5,218,187, which is a continuation-in-part of Ser. No. 467,096, Jan. 18, 1990, Pat. No. 5,052,020. This application Jun. 4, 1993, Ser. No. 71,555
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] G06F *15/20*
U.S. Cl. 235—375 **7 Claims**



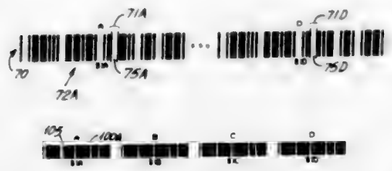
1. A hand-held data collection terminal unit comprising:
a base module having a housing including a user input and output means, the base module including a first microprocessor circuit for controlling the functions of the base module, and for communicating data and control signals to and from the base module according to a predetermined operational mode of the first microprocessor circuit of the base module;
means, forming part of the base module, for receiving and for mounting and electrically and communicatively coupling a data and communication module to the base module; and
a data and communication module comprising a second microprocessor circuit and an interface circuit, the second microprocessor circuit being coupled to the interface circuit and coupled between the interface circuit and the first microprocessor circuit of the base module, the second microprocessor circuit in combination with the interface circuit capable of emulating data communication between the first and second microprocessor circuits according to the predetermined operational mode of the first microprocessor.

5,331,137

MACHINE READABLE CODE COMBINING PREPRINTED INDICIA WITH HAND-MARK DATA

Jerome Swartz, Old Field, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Jul. 14, 1992, Ser. No. 913,092
Int. Cl.[5] G06K *7/10, 5/00;* **G09B** *3/06, 7/06*
U.S. Cl. 235—375 **13 Claims**



1. A method of entering a hand-marked response into a system using a plurality of encoded and pre-printed bar code sequences, each bar code sequence corresponding to a unique predetermined character string and including a plurality of spaces and a plurality of bars and a modified bar, the modified bar arranged to render the bar code sequence non-decodable by a bar code decoding device when the modified bar is not hand-marked, the modified bar arranged to render the bar code sequence decodable by the bar code decoding device when the modified bar is hand-marked, the method comprising:

a) hand-marking the modified bar of a selected one of the plurality of bar code sequences;

b) reading the plurality of bar code sequences with a bar code reading means and forming a first signal representative of the plurality of bar code sequences;

c) processing the first signal with the bar code decoding device to decode said unique predetermined character string corresponding to the selected one of the plurality of bar code sequences which includes the hand-marked modified bar, and forming a second signal including the decoded unique predetermined character string of the selected one of the plurality of bar code sequences; and

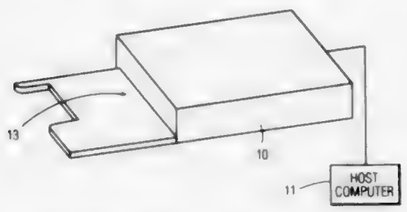
d) outputting the second signal from the bar code decoding device to the system.

5,331,138

HYBRID CARD READER

Jagtar S. Saroya, San Pedro, Calif., assignor to American Magnetics Corp., Carson, Calif.

Filed Nov. 3, 1992, Ser. No. 971,190
Int. Cl.[5] G06K *7/08*
U.S. Cl. 235—449 **8 Claims**



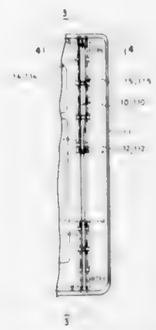
1. A hybrid card reader for data in a magnetic stripe card and in a smart card selectively, including thereon electrodes for making electrical contact thereto, said reader including contacts for engaging said electrodes and means responsive to the presence of a card for providing a first signal for signalling the presence of a smart card to a host controller, said reader also including a latching mechanism responsive to a signal from said host controller for locking said card in position for the duration of a transaction, said host controller being responsive to said first signal for interogating said reader as to the presence of said electrodes and for activating said latch if electrodes are present.

5,331,139

CARD READER WITH ANTIABRASION MEMBER

Kwang Hee Lee, Inchon, Rep. of Korea, assignor to Goldstar Electric Machinery Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 17, 1993, Ser. No. 32,254
Claims priority, application Rep. of Korea, Mar. 18, 1992, 4344/1992; Sep. 28, 1992, 18413/1992
Int. Cl.[5] G06K *7/08*
U.S. Cl. 235—449 **6 Claims**



1. A card reader having an antiabrasion member for preventing a bottom surface of a card checking passage of said card reader from card contact abrasion, wherein said antiabrasion member comprises:

a plurality of notches for preventing said member from being horizontally displaced in a mold, said notches being provided at both sides of said member and being engaged with individual ribs of said mold when said member is located in said mold;

at least one slit being provided as a result of laterally cutting said member throughout the width of said member, said slit being positioned between said notches; and

at least one erected resilient part integrally extending from a side of said member near said slit, said resilient part allowing said slit to be inserted in a rib of said mold and preventing said member from being vertically displaced in said mold.

5,331,140

CODE READING SYSTEMS

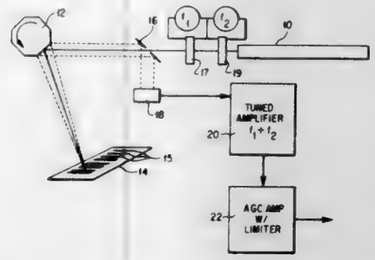
Joseph F. Stephany, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 2, 1992, Ser. No. 862,029
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **33 Claims**

1. A method for reading a fluorescent code on the surface of an article comprising the steps of:

directing radiation toward the code to cause the code to fluoresce, the radiation being modulated at two frequencies, which frequencies are non-harmonically related; and

detecting a radiation signal resulting from fluorescence of the code, which radiation signal is of a frequency that is



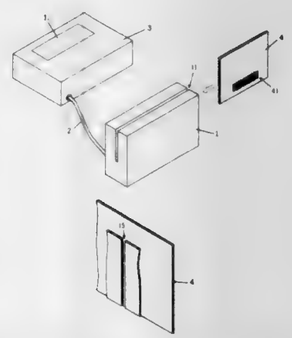
one of a sum of the two frequencies and the difference of the two frequencies.

5,331,141

BAR CODE READER AND GAME SET USING THE SAME

Fukashi Kaneko, Tokyo, Japan, assignor to APE, Inc., Tokyo, Japan

PCT No. PCT/JP92/00591, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO92/21100, PCT Pub. Date Nov. 26, 1992
PCT Filed May 6, 1992, Ser. No. 961,886
Claims priority, application Japan, May 10, 1991, 3-135712
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **26 Claims**



1. A bar code reader for reading bar code data from a card-shaped bar code record medium on which a bar code is formed by alternately arranging first bars having a relatively bright color and second bars having a relatively dark color which represents a front identification symbol and a rear identification symbol and coded data arranged between the front identification symbol and the rear identification symbol, said coded data depending on the width of each of the bars, comprising:

an optical system having a light emitting portion and a light receiving portion for optically detecting a change in the color of each of the bars as said bar code record medium moves in relation to the optical system;

an aperture for regulating the relative positional relationship between said bar code and said optical system so that the longitudinal direction of each of the bars in said bar code is approximately perpendicular to the direction of movement of said bar code record medium;

a counter for generating count value data for each detected bar corresponding to the width of each bar;

temporary storing means for temporarily storing the count value data for each bar;

judging means for judging if noise is included in the bar code data read from said bar code record medium depending on whether the total number of bars for which count value data are stored coincides with a predetermined number of bars; and

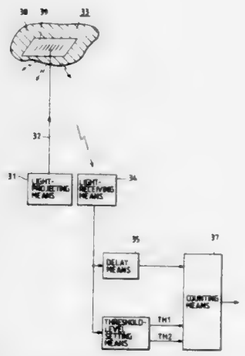
decoding means for decoding the bar code data read from said bar code record medium on the basis of each of said count value data stored in said temporary storing means in response to a judgment by said judging means that no noise is included in said bar code data.

5,331,142

SCAN VELOCITY DETECTOR AND CODE READER USING THE SAME

Shinya Takenaka, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 27, 1992, Ser. No. 826,378
Claims priority, application Japan, Jan. 31, 1991, 3-11131
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—466 **9 Claims**



1. A scan velocity detector for detecting scan velocity when a surface of an object to be scanned is scanned with a beam of light, comprising:

lighting-receiving means for receiving light reflected from said surface of said object to be scanned and for converting said light reflected into an electrical signal;

first level setting means for setting a first threshold level using an output signal from said light receiving means as a reference;

second level setting means for setting a second threshold level relatively lower than said first threshold level;

delay means for delaying said output signal from said light-receiving means by a predetermined delay time; and

first counting means for counting a time duration from when a delay output signal from said delay means exceeds said second threshold level until said delay output signal of said delay means reaches said first threshold level, the time counted providing an indication of scan velocity;

third level setting means for setting a third threshold level;

second counting means for counting a length of a time from when said delay output signal from said delay means exceeds said third threshold level until said delay output signal from said delay means falls below said third threshold level and for outputting a second counting output; and

determining means for determining from said first counting output from said first counting means and a said second counting output from said second counting means whether or not a clear area has been scanned.

5,331,143

OPTICAL SCANNER USING AN AXICON AND AN APERTURE TO ASPHERICALLY FORM THE SCANNING BEAM

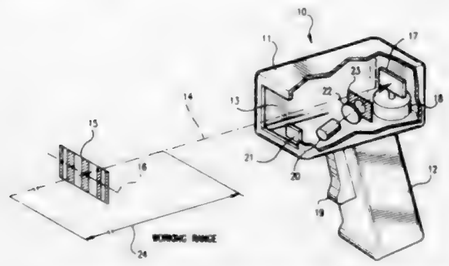
Emanuel Marom, and Joseph Katz, both of Stony Brook, N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Aug. 28, 1992, Ser. No. 936,472

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **29 Claims**



1. A scanner for scanning optically encoded information of varying light reflectivity, said scanner comprising:

(a) a light source for directing a collimated beam of light in a path toward information to be scanned, and means for causing the beam of light to move along a scan line;

(b) an optical element having a substantially flat first surface perpendicular to an axis of the collimated beam of light and a second surface defined by a figure of rotation revolved about said axis, said figure of rotation being at an angle with respect to said first surface, said optical element causing a phase tilt of the collimated beam of light inward toward said axis;

(c) means for forming an aperture for limiting the extent of the collimated beam of light passing through the optical element, wherein the extent of the collimated light passing through said optical element establishes a predetermined working range of the scanner for a particular phase tilt caused by the optical element; and

(d) a light detector positioned to receive light reflected from said information.

5,331,144

CARD READER-WRITER

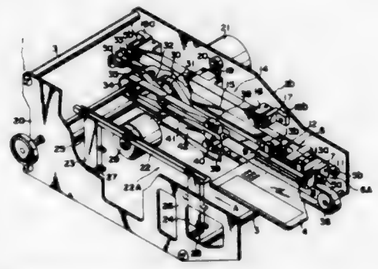
Yasuo Shima, and Makoto Ukai, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 711,853, Jun. 7, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 98,156

Claims priority, application Japan, Jun. 7, 1990, 2-147483

Int. Cl.[5] G06K *7/00*

U.S. Cl. 235—486 **34 Claims**



1. A card reader-writer comprising:

a body having a card inserting opening into which a card to which reading and writing of information can be made is inserted;

read/write means arranged in the body to read and write information from and on the card;

means for carrying the card which is inserted into the card inserting opening to the read/write means, said carrying means including means for chucking the card at one lateral edge portion of the card, guiding means for guiding said chucking means between the card inserting opening and the read/write means, and means for moving the chucking means along said guiding means; and

means for adjusting a positional relationship between the card and the chucking means.

5,331,145

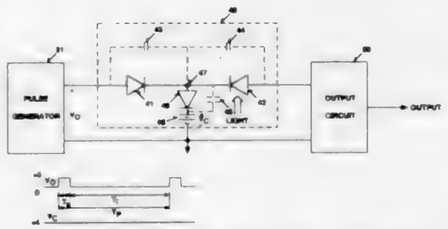
DIODE ADDRESSING STRUCTURE FOR ADDRESSING AN ARRAY OF TRANSDUCERS

Gene P. Weckler, Los Gatos, and Satoru C. Tanaka, Milpitas, both of Calif., assignors to EG&G Reticon Corporation, Sunnyvale, Calif.

Filed Apr. 30, 1993, Ser. No. 56,356

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **20 Claims**



1. A pixel structure of a solid state imager, comprising:

(A) photosensitive transducer circuit having (1) a first terminal coupled to a node and (2) a second terminal coupled to an output circuit, wherein the photosensitive transducer circuit (1) generates a current which is a function of an incident photon flux of the photosensitive transducer circuit and (2) stores the photon-generated carriers;

(B) switching diode circuit having a first terminal coupled to the node and a second terminal coupled to a pulse source, wherein the pulse source periodically applies a first voltage to the second terminal of the switching diode circuit to forward bias the switching diode circuit and to reverse bias the photosensitive transducer circuit such that the node is charged towards the first voltage;

(C) clamping circuit having a clamping diode coupled to the node for clamping the node to a second voltage plus the threshold voltage of the clamping diode when the pulse source applies the first voltage to the second terminal of the switching diode circuit, wherein the second voltage is lower than the first voltage.

5,331,146

CONTACT-TYPE IMAGE SENSOR FOR GENERATING ELECTRIC SIGNALS CORRESPONDING TO AN IMAGE FORMED ON A DOCUMENT

Hiromi Tanimizu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 22, 1993, Ser. No. 20,722

Claims priority, application Japan, Feb. 28, 1992, 4-043438; Dec. 11, 1992, 4-331336

Int. Cl.[5] H01J *40/14*

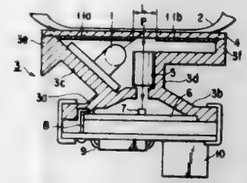
U.S. Cl. 250—208.1 **21 Claims**

1. A contact-type image sensor comprising:

a light source for applying light to a document to read an image on the document;

photoelectric conversion means for generating electric signals from an incident light;

an optical system having an incident portion and designed to guide to said photoelectric conversion means the light applied from said light source and reflected from a predetermined position on the document; and



light-shielding means having at least one shielding part located in a region between a first plane containing the incident portion of the optical system and a second plane containing the predetermined position and opposing the first plane, the light-shielding means reducing an amount of light that is reflected from a position other than the predetermined position and incident on said optical system.

5,331,147

SCANNING OPTICAL APPARATUS HAVING AT LEAST ONE DIVISION SENSOR

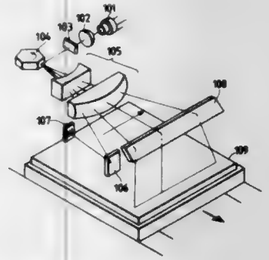
Toshiyuki Mizuno, Yokohama, and Yoshinobu Shiraiwa, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,386

Claims priority, application Japan, Aug. 30, 1991, 3-220007

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.2 **23 Claims**



1. A scanning optical apparatus comprising:

a light source section;

scanning means for deflecting a light beam from said light source section and for scanning on a scanning surface; and

detecting means for detecting the light beam which scans on the scanning surface, said detecting means including three or more photosensors closely arranged adjacent one another in the scanning direction, at least one of said photosensors being comprised by a division sensor arranged symmetrically with respect to the scanning direction.

5,331,148

METHOD AND A DEVICE FOR THE RECORDING OF NUMBER AND SIZE CLASSIFICATION OF OBJECTS, PARTICULARLY LIVE FISH

Torbjorn Kvassheim, Gosenstien 1, N-4041 Hafrsfjord, Norway

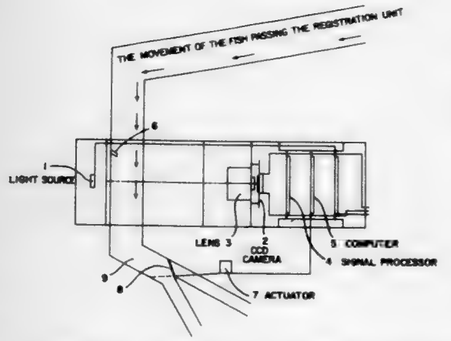
PCT No. PCT/NO90/00128, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992, PCT Pub. No. WO91/03029, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 8, 1990, Ser. No. 835,972

Claims priority, application Norway, Aug. 14, 1989, 893253

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—221 **24 Claims**



1. A method for counting live fish to obtain the number thereof, said method including the steps of:

moving the fish, generally in seriatim, along a path, each of the fish moving at generally the same speed; adjacent, individual fish in the path being spaced from each other in the path or overlapping one another in the path;

placing the fish in a given orientation as they move along the path;

measuring the size of the area of the oriented, moving fish presented in a plane parallel to the direction of movement of the fish in the path;

establishing at least one preselected parameter of fish area size;

ascertaining the number of measured fish having an area size meeting the preselected area size parameter, said ascertained number being taken as the number of individual fish that are spaced from each other along the path;

determining a mean area size for the measured fish meeting the preselected area size parameter;

accumulating a totalized area size for fish measurements in which the area size of the fish is greater than the preselected area size parameter;

determining the number of fish represented by said accumulated totalized area size by dividing same by the mean area size, said number being taken as an indication of the number of fish overlapping one another along the path; and

adding the number so determined to the number of fish having an area size meeting the preselected area size parameter to obtain the total number of fish.

5,331,149

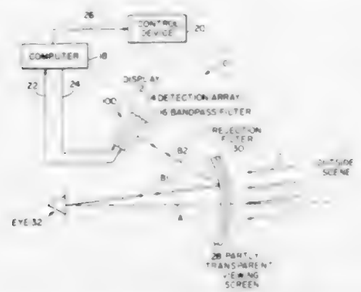
EYE TRACKING SYSTEM HAVING AN ARRAY OF PHOTODETECTORS ALIGNED RESPECTIVELY WITH AN ARRAY OF PIXELS

Mark B. Spitzer, Sharon, Mass., and Jeffrey Jacobsen, Hollister, Calif., assignors to Kopin Corporation, Taunton, Mass.

Continuation-in-part of Ser. No. 851,178, Mar. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 643,552, Jan. 19, 1991, Pat. No. 5,300,788, and Ser. No. 636,602, Dec. 31, 1990, Pat. No. 5,206,749, and Ser. No. 834,849, Feb. 13, 1992, Pat. No. 5,258,325, and Ser. No. 815,684, Dec. 31, 1991. This application Dec. 4, 1992, Ser. No. 985,285

Int. Cl.[5] G06M 7/00

U.S. Cl. 250—221 28 Claims



1. A system for determining the direction in which the eye of a viewer is looking comprising:

a) a viewing screen for viewing an image;

b) a display comprising an array of pixels for projecting said image on the viewing screen in a transmit optical path;

c) an array of photodetectors located adjacent the display for detecting light emanating from the display pixels and reflected from the eye of the viewer and returning along the transmit optical path.

5,331,150

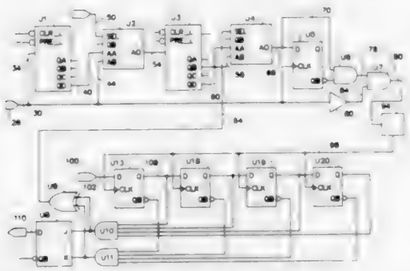
PHOTOELECTRIC SENSOR WITH VARIABLE LIGHT PULSE FREQUENCY

Brian J. Marsh, Stephenson County, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 20, 1993, Ser. No. 49,940

Int. Cl.[5] G01V 9/04

U.S. Cl. 250—222.1 14 Claims



1. A photoelectric sensor, comprising:

a light source;

means for causing said light source to be energized and deenergized at a preselected rate to provide a series of light pluses emanating from said light source;

a light sensitive device disposed in light transmission relation with said light source;

means for determining whether said light sensitive device is receiving one of said light pulses when said light source is energized, said determining means having an output signal which is representative of a coincident receipt of one of said light pulses when said light source is energized; and

means for changing said preselected rate in response to a change of said output signal during one energization of said light source from a previous energization, said changing means comprising a first means for selecting a first rate when said output signal is generally identical for a preselected number of energizations of said light source and a second means for selecting a second rate when said output signal is not generally identical for said preselected number of energizations of said light source, said first rate being a higher frequency than said second rate.

5,331,151

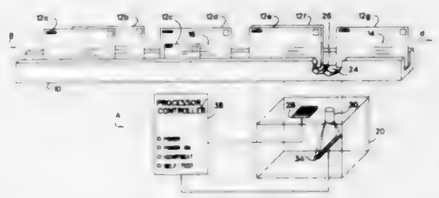
MULTIPLE ENVELOPE DETECTOR

Don W. Cochran, and James E. Triner, both of Gates Mills, Ohio, assignors to Pressco Technology, Inc., Solon, Ohio

Filed Jan. 25, 1993, Ser. No. 8,746

Int. Cl.[5] G01N 9/04

U.S. Cl. 250—223 R 27 Claims



1. A detector for detection of relative orientation of selected items in a stream thereof comprising:

illumination means adapted for illuminating each similarly oriented peripheral portion of each item of an item subset, which item subset is part of a series of item subsets forming an item stream;

image acquisition means for acquiring an image of each illuminated item subset of the item stream;

signal generating means for generating a series of analog signals corresponding to each image, each analog signal including data representative of a number of illuminated peripheral portions of an associated subset;

counter means for extracting a numeric value, representative of the number of illuminated peripheral portions, from the data of each associated subset; and

means adapted for communicating each numeric value to an associated data processing device.

5,331,152

FIBER OPTIC POSITION INDICATOR

Stephen P. Fenton, Inverurie, Scotland, assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Feb. 24, 1993, Ser. No. 21,708

Int. Cl.[5] H01J 5/16

U.S. Cl. 250—227.11 31 Claims

1. In an apparatus having an object that moves along a linear path of a selected length, the object being located at least in part within a housing, an improved means for sensing the position of the object along the linear path, comprising in combination:

an elongated aperture in the housing adjacent the linear path;

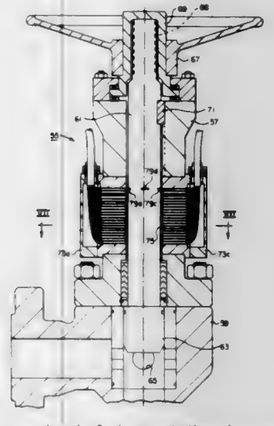
a holder;

a plurality of input fiber optic tubes extending to the holder, the input fiber optic tubes having transmitting ends mounted to the holder, spaced apart from each other and arranged in a straight line which has a length that is at least a substantial portion of the length of the linear path, the spacing between each of the transmitting ends being substantially less than the length of the linear path;

means or mounting the holder to the housing at least in part within the aperture adjacent the object with the transmitting ends being substantially perpendicular to the linear path;

light source means for transmitting light through the input fiber optic tubes;

light reflecting means on the object, including at least one light reflecting portion hat moves with the object, for reflecting light from the light source means passing through each of the transmitting ends when the light



reflecting portion is facing and directly across from the each of the transmitting ends, the light reflecting portion of the object being of a length substantially less than the length of the linear path, measured parallel to the linear path, such that the light reflecting portion will reflect light from no more than a small portion of the transmitting ends at one time; and

output means incorporated with each of the transmitting ends of the input fiber optic tubes for receiving reflected light from the ljght source means which is reflected from the reflecting portion of the object, and for transmitting the reflected light to a display to indicate the position of the object along the linear path.

5,331,153

GRAVITY ORIENTATION DEVICE HAVING AN ENCODER AND A ROTATABLE SHAFT MOUNTED IN A CYLINDRICAL CASING

Alain Gendron, Ste-Catherine, and Pierre Senecal, Montréal, both of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Feb. 8, 1993, Ser. No. 14,482

Claims priority, application Canada, Feb. 14, 1992, 2061058

Int. Cl.[5] G01D 5/34

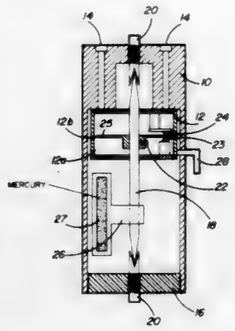
U.S. Cl. 250—231.10 4 Claims

1. A gravity orientation device comprising:

a) a cylindrical casing;

b) a shaft rotatably mounted in said cylindrical casing along a longitudinal axis of the cylindrical casing and having pointed ends contacting bearing surfaces located in ends of said casing, the shaft rotating a full 360° at a maximum angle of inclination of the longitudinal axis of the casing of nearly 90° from horizontal;

c) an encoder mounted within said casing and having a fixed portion secured to said casing and a rotary portion secured to said shaft; and



d) a weight pendulum mounted on said shaft for rotation around the shaft under influence of gravity.

5,331,154

ROTARY ENCODER FOR DETECTING A ROTATING POSITION OF A MOTOR

Kenichi Kondo; Shigeo Yamagata; Yuji Sakaegi; Toshihiko Kudo; Kazuhiro Matsunaga, and Tsutomu Takayama, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

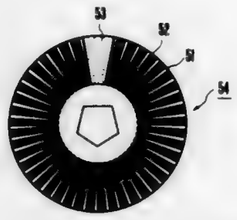
Division of Ser. No. 441,718, Nov. 27, 1989, Pat. No. 5,168,364.

This application Sep. 11, 1992, Ser. No. 943,764

Claims priority, application Japan, Nov. 30, 1988, 63-300839; Nov. 30, 1988, 63-300840; Nov. 30, 1988, 63-300842; Nov. 30, 1988, 63-300848; Dec. 14, 1988, 63-316760

Int. Cl.[5] G01D 5/34

U.S. Cl. 250—231.17 7 Claims



1. A rotary encoder for detecting a rotating position of a motor, comprising:

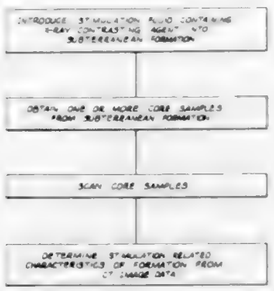
an encoder rotary plate including a light-blocking part, a light-transmitting part, a semi-light-transmitting part which has an intermediate transmission factor between transmission factors of said light-blocking part and said light-transmitting part;

detecting means for detecting a rotating position of said encoder rotary plate based on said light-blocking part, said light-transmitting part and said semi-light-transmitting part;

exposure means for controlling an exposure condition of a photoconverting member according to an output of said detecting means; and

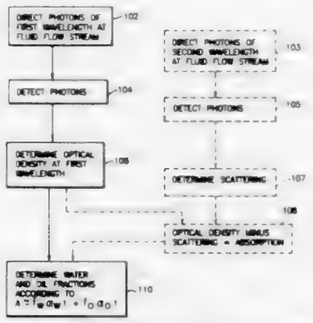
control means for varying a photoconversion characteristic of said photoconverting member depending on the output of said detecting means.

5,331,155
METHODS OF DETERMINING SUBTERRANEAN FORMATION CHARACTERISTICS USING COMPUTED TOMOGRAPHIC IMAGES
Matthew E. Blauch, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed May 8, 1992, Ser. No. 880,439
Int. Cl.[5] G01V *5/04*
U.S. Cl. 250—255 **20 Claims**



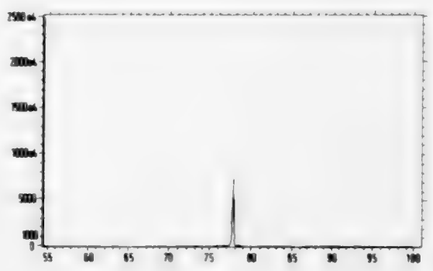
1. A method of determining stimulation related characteristics of a subterranean producing zone penetrated by a well bore prior to stimulating said zone comprising the steps of:
(a) injecting a quantity of a stimulation fluid having an X-ray contrasting agent admixed therewith into said zone by way of said well bore;
(b) obtaining one or more preserved core samples from said zone;
(c) scanning said one or more core samples with X-rays and producing computed tomographic images of said one or more core samples; and
(d) determining said characteristics of said zone from said computed tomographic images.

5,331,156
METHOD OF ANALYZING OIL AND WATER FRACTIONS IN A FLOW STREAM
Daniel R. Hines, Lawrence Ville, N.J.; Noboru Wada, Evergreen, Colo.; Stephen Garoff, Pittsburgh, Pa.; Oliver C. Mullins, Ridgefield, Conn.; Paul Hammond, Bourn; Jeffrey Tarvin, Great Shelford, both of England; Stephen P. Cramer, Palo Alto, Calif., and Ralphe Wiggins, Stamford, Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 955,100, Oct. 1, 1992, Pat. No. 5,266,800. This application Feb. 9, 1993, Ser. No. 15,708
Int. Cl.[5] G01F *5/00, 1/74;* **G01N** *21/35*
U.S. Cl. 250—256 **29 Claims**



1. A method of determining at least one of an oil fraction and a water fraction of a fluid flow stream having a width l, said method comprising:
a) directing a first number of photons of a first predetermined wavelength at said fluid flow stream, said first predetermined wavelength being chosen to be a wavelength where the absorptions of said oil and said water are substantially identical, wherein the absorption coefficients of said oil and said water at said wavelength are known;
b) detecting a second number of photons of said first predetermined wavelength which pass through said fluid flow stream; and
c) determining, from said first number and second number, said width l, and said absorption coefficients of said oil and said water at said first predetermined wavelength, at least one of said oil fraction and said water fraction of said fluid flow stream.

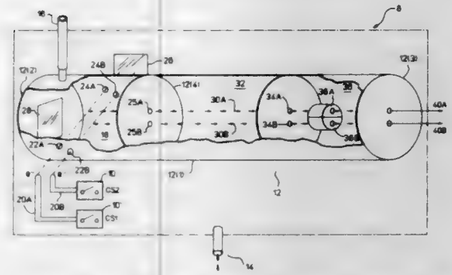
5,331,157
METHOD OF CLEAN REMOVAL OF IONS
Jochen Franzen, Bremen, Fed. Rep. of Germany, assignor to Bruker-Franzen Analytik GmbH, Fed. Rep. of Germany
Filed Nov. 25, 1992, Ser. No. 981,756
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4139037
Int. Cl.[5] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—282 **12 Claims**



1. A method of well-defined ejection of undesired ions of mass m+n, with $n \geq 1$, while keeping desired ions of mass m in an ion trap of an ion trap mass spectrometer, said ion trap mass spectrometer having two end cap electrodes and one annular electrode, wherein a high-frequency quadrupolar storage field with at least one superposed weak multipolar field is generated in said ion trap mass spectrometer, comprising the steps of:
(a) adjusting the amplitude of a high-frequency storage field to satisfy a non-linear resonance condition of said at least one superposed weak multipolar field for said ions of mass m+n; and
(b) applying a high-frequency excitation voltage to said two end caps of said ion trap mass spectrometer to weakly oscillate all ions, said ions of mass m+n thereby receiving energy through non-linear resonance from said high-frequency storage field and leaving said ion trap, whereas ions of mass m remains inside said ion trap.

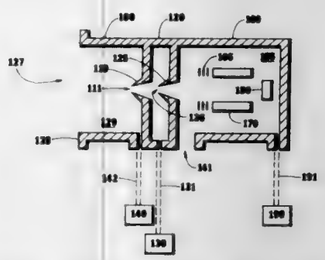
5,331,158
METHOD AND ARRANGEMENT FOR TIME OF FLIGHT SPECTROMETRY
Jerry T. Dowell, Portola Valley, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 7, 1992, Ser. No. 988,043
Int. Cl.[5] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—287 **14 Claims**

1. A time-of-flight arrangement comprising:
excitation means for establishing a first and a second ionizing particle beam, each ionizing particle beam having an on and an off state, wherein the second ionizing particle beam is switched to the on state when the first ionizing particle beam is in the off state and the first ionizing particle beam is switched to the on state when the second ionizing particle beam is in the off state;
encoding means adjacent said excitation means, said encoding means for establishing timing signatures within the first and second ionizing particle beams;
an ionization chamber for holding a sample, positioned adjacent said encoding means, receiving the first and second ionizing particle beams containing the timing signatures,



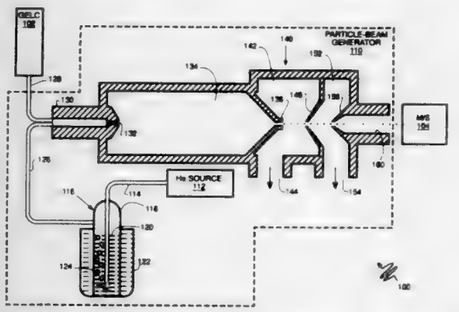
whereby the first and second ionizing particle beams ionize the sample to produce a directed plurality of encoded ion streams;
a drift region receiving the directed plurality of encoded ion streams, the drift region adjacent the ionization means; and
a plurality of detectors respectively associated with at least a pair of encoded ion streams, adjacent the drift region such that each of said plurality of detectors detects a corresponding one of said plurality of encoded ion streams.

5,331,159
COMBINED ELECTROSPRAY/PARTICLE BEAM LIQUID CHROMATOGRAPHY/MASS SPECTROMETER
James A. Apffel, Jr., San Jose, and Robert G. Nordman, Palo Alto, both of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.
Filed Jan. 22, 1993, Ser. No. 7,464
Int. Cl.[5] H01J *49/04*
U.S. Cl. 250—288 **16 Claims**



1. A liquid chromatography-mass spectrometry system adaptable for use with either a particle beam or electrospray interface device, said system comprising:
momentum separator housing that defines one or more momentum separator chambers, wherein the housing forms a coupling means to a plurality of different types of interface devices;
momentum separator that includes one or more nozzles and one or more pumps
mass analyzer housing that defines a mass analyzer chamber wherein the mass analyzer housing is attached to said momentum separator housing;
means for analyzing the mass of ions, said mass analyzing means being positioned in said means analyzer chamber; and
means for focusing ions into said mass analysis means.

5,331,160
PARTICLE-BEAM GENERATOR FOR LC/MS INTERFACE
Robert T. Whitt, Carrollton, Tex., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 31, 1993, Ser. No. 40,712
Int. Cl.[5] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—288 **10 Claims**



1. A particle-beam generator for generating a particle beam from a liquid solution including an analyte and a solvent liquid in which said analyte is dissolved, said particle-beam generator comprising:
a carrier gas source for providing a carrier gas;
mixing means for mixing said carrier gas with an organic vapor to provide a dispersant gas, said organic vapor being soluble in said solvent liquid, said mixing means being coupled to said carrier gas source;
nebulizer means for nebulizing said solution into droplets, said nebulizer means being coupled to said mixing means for receiving said dispersant gas, said nebulizer means providing for contact between said dispersant gas and said solution;
a desolvation chamber providing for vaporization of said solvent liquid to produce a solvent vapor; and
a momentum separator for separating said analyte from said carrier gas, said organic vapor, and said solvent vapor to yield a particle beam of said analyte.

5,331,161
ION IRRADIATION SYSTEM AND METHOD
Iwao Ohdomari, 2-9-8, Nagahama, Kanazawa-ku, Yokohama-shi, Kanagawa, 236; Masaaki Sugimori; Junichi Murayama, both of Kanagawa; Meishoku Koh, Tokyo; Katsunori Noritake, Tokyo; Takashi Matsukawa, Tokyo, and Hiroaki Shimizu, Tokyo, all of Japan, assignors to Iwao Ohdomari, Kanagawa, Japan
Filed Sep. 1, 1992, Ser. No. 938,611
Claims priority, application Japan, Mar. 6, 1992, 4-084904
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—309 **9 Claims**

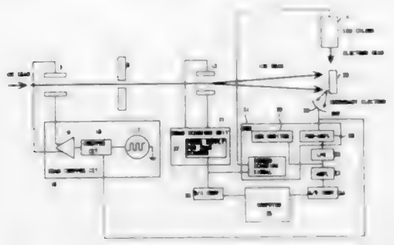
1. An ion irradiation system comprising:
an ion microprobe,
a deflector for deflecting an ion microbeam generated by said ion microprobe;
a micro slit for extracting a single or predetermined number of ions from said ion microbeam deflected by said deflector;

a sample holder mechanism for holding a sample to be irradiated with said single or predetermined number of ions extracted through said micro slit;

a scanning electron microscope mechanism for observing the surface of said sample in real time;

a secondary electron detecting system for detecting secondary electrons which are emitted from the surface of said sample, said secondary electron detecting system including a secondary electron multiplier; and

an electric field control circuit for controlling an electric field which is applied to said deflector, said electric field control circuit being composed of a clock generator, a counter connected to said clock generator and a high-



voltage amplifier connected to said counter and having an output connected to said deflector;

wherein said counter counts output signal pulses from said secondary electron multiplier and supplies a clock signal to said high-voltage amplifier of said electric field control circuit during counting of said single or predetermined number of ions and stops the supply of said clock signal to said high-voltage amplifier upon completion of counting of said single or predetermined number of ions, whereby said ion microbeam is chopped by said deflector one or more time to instantaneously reverse its direction of deflection with respect to said micro slit, thereby extracting said single or predetermined number of ions through said micro slit

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5,331,162

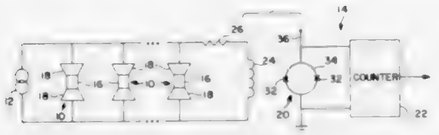
SENSITIVE, LOW-NOISE SUPERCONDUCTING INFRARED PHOTODETECTOR

Arnold H. Silver, Rancho Palos Verdes; Michael Leung, Lomita; Gregory S. Lee, Mountain View; Randy W. Simon, Belmont, and Robert D. Sandell, Manhattan Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 22, 1991, Ser. No. 796,555

Int. Cl.[5] G01J *1/42*; **H01L** *39/22*

U.S. Cl. 250—336.2 **30 Claims**



1. A superconducting infrared photodetector, comprising:

a plurality of superconducting detector elements connected together, each detector element having a thin granular film of superconducting material which promotes the formation of oppositely-polarized fluxons;

means for supplying a bias current to the detector elements, the bias current driving the fluxons to opposite sides of the film; and

a SQUID readout circuit for measuring a voltage change that is induced across the detector elements by a change in the flow of fluxons when infrared radiation is incident on the detector elements;

wherein the SQUID readout circuit is a digital SQUID readout circuit that operates in the tracking mode.

5,331,163

RADIOACTIVE AREAL DENSITY DETECTOR WITH SCINTILLATING RECEIVER

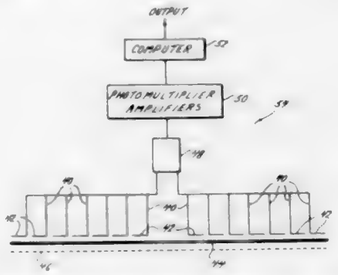
Harry S. Leahey; W. Robert Binns; John W. Epstein, and Joseph Klarmann, all of St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 659,904, Feb. 25, 1991, Pat. No. 5,118,940. This application Feb. 21, 1992, Ser. No. 839,907

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] G01N *23/16, 23/06*

U.S. Cl. 250—367 **30 Claims**



1. A detector for simultaneously measuring the thickness of a traveling web at multiple locations across its width comprising:

a radiation source for emitting radiation which passes through said traveling web at each of said multiple locations; and

a receiving means positioned at each of said multiple locations, said receiving means having means for receiving the radiation which passes through the web; said receiving means including means for converting said received radiation into a signal, said signals thereby being representative of the web thickness at said receiving means locations.

5,331,164

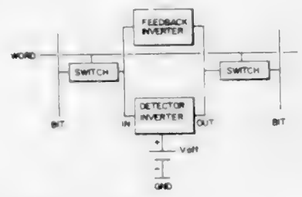
PARTICLE SENSOR ARRAY

Martin G. Buehler, La Canada; Brent R. Blaes, San Dimas, and Udo Lieneweg, Altadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 19, 1991, Ser. No. 672,705

Int. Cl.[5] H01L *29/78*

U.S. Cl. 250—370.02 **3 Claims**



1. An ion detector comprising:

a metal-oxide-semiconductor field-effect transistor (MOSFET) having a bloated drain surface area forming a detector diode;

a voltage source providing a controlled bias voltage for reverse biasing said detector diode; and

means for applying said bias voltage to said detector diode through a pull-up component for selectively altering said reverse biasing whereby to selectively alter the sensitivity of said detector to incident ions.

5,331,165

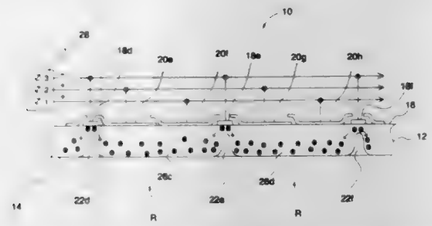
SPLIT EVENT REDUCED X-RAY IMAGER

Wayne W. Frame, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Dec. 1, 1992, Ser. No. 983,943

Int. Cl.[5] H01L *27/14, 29/78*

U.S. Cl. 250—370.09 **19 Claims**



1. A charge coupled device X-ray imager for generating and collecting electric charges corresponding to received X-ray radiation while reducing the occurrence of split events, comprising:

a semiconductor material having a photosensitive surface for receiving X-ray radiation energy, having an internal region for generating electrical charges corresponding to said received X-ray radiation, and having a plurality of permanent barriers formed therein to divide said semiconductor material into a plurality of columns;

barrier means coupled to said semiconductor material for establishing in said semiconductor material a plurality of temporary barriers having sufficient potential gradient to substantially reduce the occurrence of split events, said barrier means comprising a plurality of barrier electrodes and clock means for applying a voltage to each of said plurality of barrier electrodes, each of said plurality of barrier electrodes being sufficiently narrow so that an application of voltage to each of said barrier electrodes by said clock means establishes a plurality of temporary barriers in said semiconductor material with potential gradients sufficient to substantially reduce the occurrence of split events, and

collection means coupled to said semiconductor material having a plurality of collection site electrodes for affecting collection and readout of said generated electrical charges,

said plurality of barrier electrodes having a width substantially smaller than the width of each of said plurality of collection site electrodes.

5,331,166

DENTAL X-RAY IMAGE DETECTING DEVICE WITH AN AUTOMATIC EXPOSURE FUNCTION

Koei Yamamoto; Kazuhisa Miyaguchi; Norio Takahashi, all of Shizuoka; Takao Makino, and Keisuke Mori, both of Kyoto, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto and Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, both of Japan

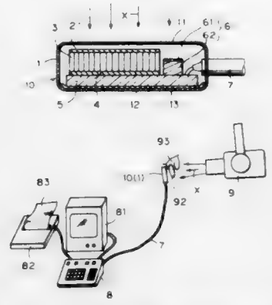
Filed Oct. 21, 1992, Ser. No. 964,431

Claims priority, application Japan, Oct. 25, 1991, 3-306974; Oct. 25, 1991, 3-306975

Int. Cl.[5] A61B *6/14*; **G01T** *1/20*

U.S. Cl. 250—370.11 **4 Claims**

1. A dental X-ray image detecting device to be disposed in an inter-oral region behind a tooth to be photographed, wherein X-rays penetrating the tooth are converted into an optical image and the optical image is then converted into a digital signal to be reproduced on a monitor display, said dental X-ray image detecting device arranged such that an X-ray image sensor comprising a first X-ray fluorescent element, a solid-state image pickup device mounted on a surface of a fixture substrate and a plurality of optical fiber bundles for optically connecting a fluorescent surface of the X-ray fluorescent element to an image pickup surface of the image pickup device, is housed in an outer casing, said dental image detecting device further comprising an X-ray intensity detecting element secured to the surface of the fixture substrate, said detecting element comprising a photo detecting element and a



second X-ray fluorescent element mounted on the photo detecting element, wherein cores of filaments of all of the glass fiber bundles are joined substantially perpendicular both to the fluorescent surface of the first X-ray fluorescent element and to the surface of the solid-state image pickup device, each of said bundles having a diameter substantially equal to one another, and a bottom section of said outer casing, located in the X-ray radiation direction from the X-ray fluorescent element, includes an X-ray shield material.

5,331,167

METHOD AND APPARATUS FOR INSPECTING HEAT-RESISTANT MULTILAYER CONTAINERS MADE OF SYNTHETIC RESIN

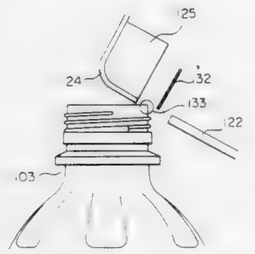
Masaru Hoshino, and Tsutoo Yamada, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP89/00118, § 371 Date Dec. 3, 1990, § 102(e) Date Dec. 3, 1990, PCT Pub. No. WO90/08951, PCT Pub. Date Aug. 9, 1990

PCT Filed Feb. 6, 1989, Ser. No. 582,833

Int. Cl.[5] G01N *21/90*

U.S. Cl. 250—372 **14 Claims**



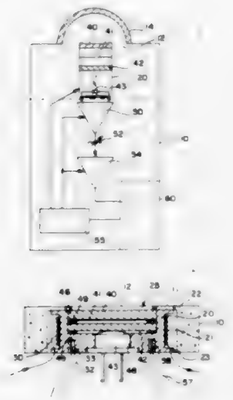
1. A method of inspecting a heat resistant multilayer container made of synthetic resin characterized by projecting light to an upper end portion of a mouth portion of a heat resistant multilayer container formed by blow forming a parison made of a main resin and heat-resistant resin, receiving light passing the upper end portion of the mouth portion, extracting and detecting light having a specific wavelength, outputting the

light as an electrical signal and evaluating the quality of the heat resistant multilayer container in accordance with the outputted signal value.

5,331,168
REFERENCE GRADE SOLAR ULTRAVIOLET BAND PYRANOMETER

David J. Beaubien, 101 Industrial Rd., Box 746, Turners Falls, Mass. 01376, and Arthur F. Beaubien, 12 N. Taylor Hill Rd., Montague, Mass. 01351

Filed Feb. 19, 1992, Ser. No. 838,601
Int. Cl.[5] G01J *5/02*
U.S. Cl. 250—372 **18 Claims**





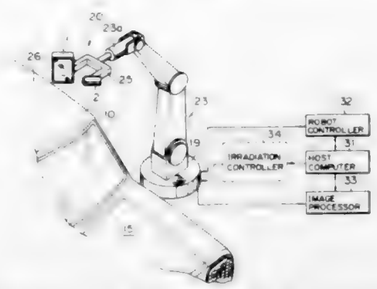
1. A pyranometer comprising, in combination: a housing means having a dome constructed of UV-transmissive material, a detector means including a UV-pass "black glass" filter for transmitting UV-B radiation, a phosphor layer for absorbing said UV-B radiation and reemitting visible radiation in a portion of the visible spectrum blocked by said "black glass" filter, a glass filter for passing light emitted by said phosphor and for blocking red light, a solid state photodiode receiving light from said phosphor, said solid state photodiode selected to have a peak response at a wavelength not longer than green, said response rapidly dropping off at longer wavelengths, for producing an output in correspondence with the intensity of UV-B radiation on said phosphor layer, whereby the pyranometer is solar blind, and thermal stabilization means for maintaining said detector means at a preselected temperature.

5,331,169
SURFACE INSPECTION METHOD AND DEVICE WITH IRRADIATION

Kazumoto Tanaka, Hiroshima; Kazuo Hironaka, Hatsukaichi, and Yoshimi Shimbara, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 25, 1992, Ser. No. 981,443
Claims priority, application Japan, Nov. 25, 1991, 3-309148
Int. Cl.[5] G01N *21/88, 21/55;* **G01B** *11/30*
U.S. Cl. 250—372 **5 Claims**

1. An inspection method comprising the steps of:
irradiating light having a predetermined changing pattern onto a substantially specular surface to be inspected by an irradiation device facing the surface,
forming an image based on reflected light in correspondence with the predetermined changing pattern by means of an imaging device, and utilizing reflected light of 200–350 nm wavelength only to form the image so as to detect a flaw in the surface by

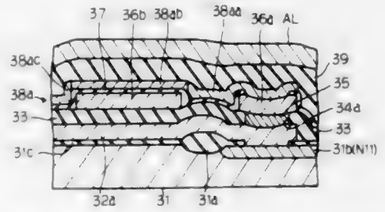


identifying points which differ from the predetermined changing pattern of the light.

5,331,170
STATIC TYPE RANDOM ACCESS MEMORY DEVICE WITH STACKED MEMORY CELL FREE FROM PARASITIC DIODE

Fumihiko Hayashi, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,572
Claims priority, application Japan, Mar. 28, 1991, 3-64218
Int. Cl.[5] H01L *27/11*
U.S. Cl. 257—377 **6 Claims**



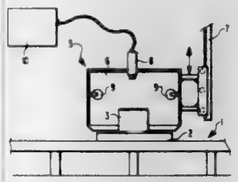
1. A static type random access memory device fabricated on a single semiconductor substrate, comprising a plurality of memory cells each having a series combination of a first enhancement type load transistor with a first channel conductivity type, a first memory node and a second enhancement type driver transistor with a second channel conductivity type opposite to said first channel conductivity type coupled between first and second sources of voltage level different in voltage level, a series combination of a third enhancement type load transistor with said first channel conductivity type, a second memory node and a fourth enhancement type driver transistor with said second channel conductivity type coupled between said first and second sources of voltage level, and fifth and sixth enhancement type transfer transistors coupled between said first and second memory nodes and a pair of digit lines, respectively, said first enhancement type load transistor and said fourth enhancement type driver transistor having respective gate electrodes coupled with said first memory node, said third enhancement type load transistor and said second enhancement type driver transistor having respective gate electrodes coupled with said second memory node, the gate electrode of each of said second and fourth enhancement type driver transistors being held in contact with one of said second and first memory nodes formed in a surface portion of said single semiconductor substrate and extending over a first insulating film covering a major surface of said single semiconductor substrate, said gate electrode of said each of said second and fourth enhancement type driver transistors being covered

with a first inter-level insulating film having a contact hole exposing a part of said gate electrode of said each of said second and fourth enhancement type driver transistors, said part of said gate electrode being covered with a metal film without dopant impurity, the gate electrode of one of said first and third enhancement type load transistors being held in contact with said metal film and having a first conductivity type opposite to a second conductivity type of said gate electrode of said each of said second and fourth enhancement type driver transistors so that said gate electrode of said one of said first and third enhancement type load transistors being prevented from dopant impurity of said second conductivity type contained in said gate electrode of said each of said second and fourth enhancement type driver transistors, a second insulating film being covered with said gate electrode of said one of said first and third enhancement type load transistors, a semiconductor film extending over said second insulating film for providing a source, a channel and a drain of the other of said first and third enhancement type load transistors, said drain of said other of said first and third enhancement type load transistors being held in contact with said gate electrode of said one of said first and third enhancement type load transistors through a contact hole formed in said second insulating film.

5,331,171
INSPECTION SYSTEM FOR CONTROLLING THE LAYING OF A STRING OR LAYER OF A FLUORESCENT MATERIAL ON A METAL PIECE

Adolfo Bongi, Turin, Italy, assignor to Comau S.p.A., Grugliasco, Italy

Filed Aug. 5, 1993, Ser. No. 102,423
Claims priority, application Italy, Sep. 30, 1992, T092 A000794
Int. Cl.[5] G01N *21/64*
U.S. Cl. 250—461.1 **2 Claims**

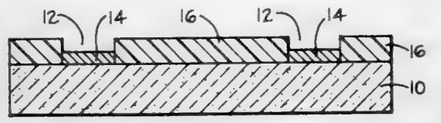


1. An optical inspection system for controlling the laying of a string or a layer of a fluorescent material on a metal piece, said system comprising:
a transport line with piece-supporting pallets for transporting pieces to be controlled,
an optical inspection station located on the path of said line, said station comprising:
wall means movable between an opened condition and a closed condition in which said wall means define a dark chamber wherein the piece to be controlled is confined,
at least a Wood lamp located on said wall means to illuminate said piece by ultra-violet light after that said piece has been confined within said dark chamber,
video camera means supported by said wall means for optically inspecting the string of a fluorescent material on said piece, illuminated by the ultra-violet light of said at least a Wood lamp, and
electronic means for processing output signals from said video camera means and to provide data on the quality of the laying of the string or layer of fluorescent material.

5,331,172
IONIZED METAL CLUSTER BEAM SYSTEMS AND METHODS

Nalin Kumar, Austin; Chenggang Xie, Cedar Park; Rama R. Goruganthu, Austin, all of Tex., and Mohammed K. Ghazi, Newport Beach, Calif., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex. and Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 896,126, Jun. 9, 1992, Pat. No. 5,290,732, which is a continuation-in-part of Ser. No. 653,609, Feb. 11, 1991, Pat. No. 5,156,997. This application Sep. 29, 1993, Ser. No. 128,975
Int. Cl.[5] H01J *37/30*
U.S. Cl. 250—492.21 **31 Claims**

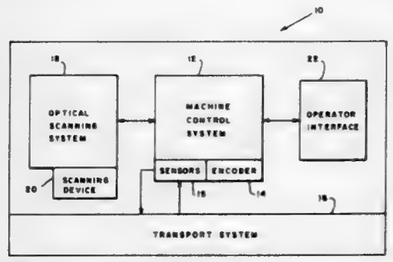


1. A method of removing metal deposited in a focusing aperture for an ionized metal cluster beam, said method comprising the steps of:
generating an ionized metal cluster beam;
providing an aperture holder with a aperture therethrough;
directing the cluster beam at the aperture holder wherein a portion of the cluster beam enters and passes through the aperture whereas another portion of the cluster beam strikes the aperture holder and deposits metal on the aperture holder, and the deposited metal blocks some or all of the aperture;
discontinuing to direct the cluster beam at the aperture;
generating an ion beam;
directing the ion beam at the aperture so that at least some of the deposited metal blocking the aperture is removed;
discontinuing to direct the ion beam at the aperture; and then
directing a portion of the cluster beam at the aperture, thereby preventing the deposited metal from completely blocking the aperture.

5,331,173
SYSTEM AND METHOD FOR INDICATING THE LOCATION OF A BENCHMARK

John K. Eckl, Brookfield, and John L. Lorenzo, Southbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 24, 1992, Ser. No. 996,286
Int. Cl.[5] G06K *5/00*
U.S. Cl. 250—556 **4 Claims**



1. In an optical scanning system including a dash code scanner for scanning a benchmark code printed on a document being transported through a paper handling machine, an improvement to initializing the optical scanning system relative to the location of the benchmark code in an electrically adjustable benchmark window, the improvement comprising:
means for sensing a lead edge of a benchmark window;

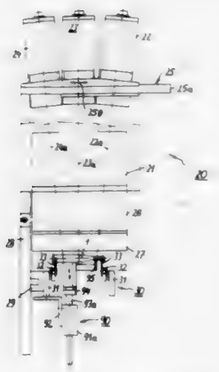
scanner means for detecting a benchmark code;
means for generating a first signal beginning at the lead edge of the benchmark window and ending at the detection of the benchmark code;
means for deriving a count indicative of a number of encoder pulses between the lead edges of the benchmark window and the benchmark code; and
means for displaying said count on an LED display.

5,331,174

METHOD OF INSPECTING THE DIMENSIONAL ACCURACY OF MEDICAL AMPULS

Hans-Ulrich Dassler, Oberschleissheim; Rüdiger Haas, Faistenhaar, and Johann Lang, Oberschleissheim, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

PCT No. PCT/EP92/00755, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/17770, PCT Pub. Date Oct. 15, 1992
PCT Filed Apr. 3, 1992, Ser. No. 969,218
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1991, 4111145
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—560 **21 Claims**



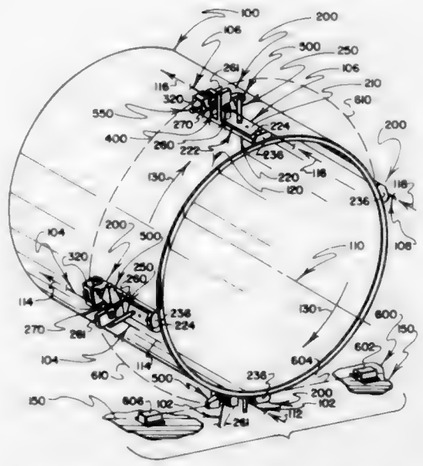
1. A method for inspecting a medical ampul for dimensional accuracy, the ampul having a longitudinal axis, said method comprising the steps of:
(a) conveying the ampul in a horizontal position on a conveying device which moves the ampul in cycles along a path;
(b) lifting the ampul from the conveying device;
(c) illuminating the ampul perpendicular to its longitudinal axis with light from a diffusely radiating illumination source, so that light passes through the ampul and is modulated by the ampul;
(d) detecting the modulated light with a camera system which produces at least one camera signal with information about the configuration of the ampul;
(e) conveying the at least one camera signal to a digital image evaluation unit; and
(f) determining the dimensions of the ampul in the digital image evaluation unit.

5,331,175

STRAND BREAKAGE DETECTION SYSTEM FOR USE WITH A PLURALITY OF STRANDS BEING FED IN UNISON ALONG A ROTATING CIRCULAR ARRAY OF FEED PATHS

Paul H. Morris, and Joseph L. Krause, Jr., both of Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 18, 1992, Ser. No. 995,634
Int. Cl.[5] G01N *21/86;* **G01V** *9/04*
U.S. Cl. 250—561 **26 Claims**



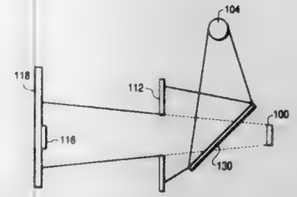
1. A system for sensing breakage of one or more of a plurality of strands of material that are being fed substantially in unison along an array of separate feed paths while the array of feed paths is being rotated about an axis of rotation that extends substantially centrally among the feed paths, comprising:
a) indicator means for detecting breakage of one or more of the strands including a plurality of indicator assemblies that each have guide means positioned along a separate one of the feed paths for guiding an associated strand of material for movement along its associated feed path, with the indicator assemblies extending in a substantially circular array that is substantially concentric about the axis of rotation whereby, when the array of indicator assemblies is rotated together with the array of feed paths about the axis of rotation, each of the indicator assemblies is caused to move along a common circular path that is substantially concentric about the axis of rotation;
b) detector means positioned alongside the common circular path so that, when the array of indicator assemblies is rotated about the axis of rotation, each of the indicator assemblies is caused to move past the detector means at least once during each revolution of such rotation; and,
c) with each of the indicator assemblies having flag means including an indicator flag connected to the associated guide means for moving relative thereto from a nested position to an extended position in response to sensed breakage of the associated strand, with the positioning of any of the indicator flags in its extended position being detected by the detector means, and with the detector means providing a signal that is indicative of sensed strand breakage in response to detection of any of the indicator flags in its extended position.

5,331,176

HAND HELD TWO DIMENSIONAL SYMBOL READER WITH A SYMBOL ILLUMINATION WINDOW

Robert Sant' Anselmo, West Hills, and Carl Sant' Anselmo, Rancho Palos Verdes, both of Calif., assignors to Veritec Inc., Chatsworth, Calif.

Filed Apr. 10, 1992, Ser. No. 866,059
Int. Cl.[5] G06K *7/10*
U.S. Cl. 250—566 **14 Claims**



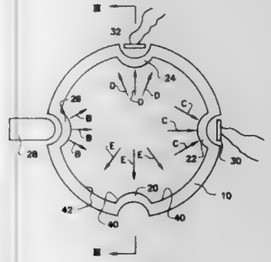
1. A symbol illuminator and capture system, comprising:
a two dimensional sensor for viewing a two dimensional symbol, having a viewing window and capturing an entire symbol image; and
projection means, associated with said sensor, for projecting two dimensional illumination window for illuminating the entire symbol, the illumination window being equal to or larger in size than and aligned with the viewing window.

5,331,177

TURBIDITY SENSOR WITH ANALOG TO DIGITAL CONVERSION CAPABILITY

David Kubisiak, Carver County, and Mark L. Wilson, Ramsey County, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 26, 1993, Ser. No. 53,042
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—574 **14 Claims**



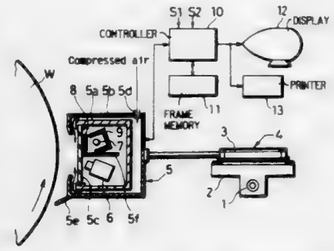
1. A turbidity sensor, comprising:
a light source;
first and second light sensitive components disposed in light communication relation with said light source, said first light sensitive component being disposed to directly receive light emanating from said light source, said second light sensitive component being disposed to receive light emanating from said light source and scattered by particles suspended between said light source and said first light sensitive component, said first and second light sensitive components having first and second output signals, respectfully, which are representative of the light intensity received by their respective light sensitive components;
means for determining a predefined relationship of said first and second output signals, said determining means comprising first means for canceling said first output signal with a first plurality of current pulses and second means for canceling said second output signal with a second plurality of current pulses, said determining means further comprising means for comparing said first and second plurality of pulses.

5,331,178

OPTICAL SURFACE INSPECTING SYSTEM FOR INSPECTING THE SURFACE OF A ROLLING ROLL HAVING MECHANISM FOR KEEPING CLEAN A WINDOW THROUGH WHICH A CAMERA DETECTS A CONDITION OF THE ROLLING ROLL

Makoto Fukuda; Makoto Azuma; Katsuro Dejima; Yukiyoshi Maeda, and Kunihiko Yoshitake, all of Kakogawa, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

PCT No. PCT/JP92/00617, § 371 Date Mar. 3, 1993, § 102(e) Date Mar. 3, 1993, PCT Pub. No. WO93/01488, PCT Pub. Date Jan. 21, 1993
PCT Filed May 14, 1992, Ser. No. 980,792
Claims priority, application Japan, Jul. 5, 1991, 3-165648
Int. Cl.[5] G01N *21/89*
U.S. Cl. 250—571 **7 Claims**



1. An optical surface inspecting system for inspecting the surface of a rolling roll, comprising:
a housing box capable of moving along the longitudinal axis of a rotating rolling roll being sprayed with cooling water or coated with residual cooling water, provided with a window and a water droplet removing mechanism for removing droplets of cooling water adhering to the surface of the window by blowing compressed air, supplied from an air source, from at least two different directions against the surface of the window;
a stroboscopic illuminating device contained in the housing box to illuminate the surface of the rolling roll through the window;
a television camera contained in the housing box to pick up an image of the surface of the rolling roll in synchronism with the illuminating operation of the stroboscopic illuminating device and for providing a still video signal representing the image of the surface of the rolling roll;
an image storage device for storing the still video signal provided by the television camera;
an image display for displaying a picture corresponding to the still video signal stored in the image storage device; and
a controlled which synchronizes the illuminating operation of the stroboscopic illuminating device with a vertical synchronizing for the television camera, stores the still video signal provided by the television camera in the image storage device and reads the still video signal from the image storage device and applies the same to the image display.

5,331,179

METHOD AND APPARATUS FOR ACQUIRING AN X-RAY IMAGE USING A THIN FILM TRANSISTOR ARRAY

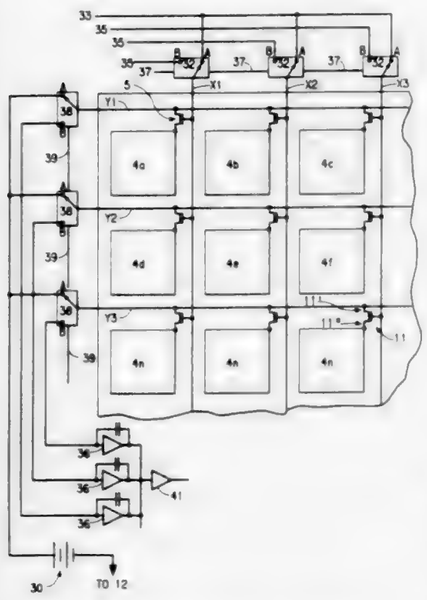
Denny L. Y. Lee, West Chester, Pa., and Lothar S. Jeromin, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 7, 1993, Ser. No. 44,428

The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.

Int. Cl.[5] G01N *23/04*

U.S. Cl. 250—591 **12 Claims**



1. An X-ray image capture element, comprising:

a first, electrically conductive backing layer,

a second, photoconductive layer responsive to both actinic and X-ray radiation extending substantially over said backing layer, the photoconductor layer having a back surface in contact with said backing layer and a front surface opposite said back surface;

a third, dielectric layer substantially transparent to both actinic and X-ray radiation, the dielectric layer also having a back surface and a front surface, the dielectric back surface extending substantially over and in contact with said front surface of the photoconductive layer;

a plurality of discrete conductive outer microplates substantially transparent to both actinic and X-ray radiation, said outer microplates arranged on said front surface of the dielectric layer with a space between adjacent microplates, each of said outer microplates having dimensions coextensive with a minimum resolvable picture element;

a first plurality of discrete conductive Xn address lines extending along the outer microplates;

a second plurality of discrete conductive Yn sense lines extending along said outer microplates in a direction across said Xn address lines; and

each outer microplate being connected to one adjacent of said plurality of the Xn address and Yn sense lines via at least one transistor.

5,331,180

POROUS SEMICONDUCTOR LIGHT EMITTING DEVICE

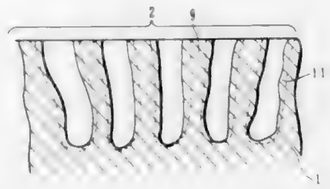
Masao Yamada; Motoo Nakano, both of Kawasaki, Japan; George J. Collins, Fort Collins, Colo.; Tetsuro Tamura, and Akira Takazawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 28, 1993, Ser. No. 53,562

Claims priority, application Japan, Apr. 30, 1992, 4-138074; Jul. 22, 1992, 4-195650; Aug. 19, 1992, 4-220292; Aug. 28, 1992, 4-230156; Aug. 28, 1992, 4-230160; Mar. 19, 1993, 5-060595

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—3 **26 Claims**



1. A semiconductor light emitting device comprising:

a first of one of Si and SiC semiconductor layer of a first conductivity type, said first semiconductor layer including a porous surface region formed of a quantum wire cluster having a transition energy different from the bulk state; and

a second layer formed on said porous region and having a function of supplying carriers of a second conductivity type, said porous region and said second layer forming a diode structure.

5,331,181

NON-VOLATILE SEMICONDUCTOR MEMORY

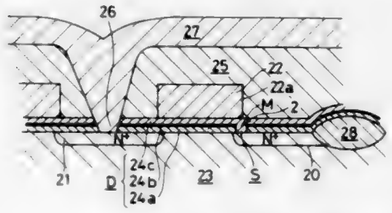
Kenichi Tanaka, Nara; Yoshimitsu Yamauchi, Yamatokoriyama, and Keizo Sakiyama, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 735,807, Jul. 25, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 82,511

Claims priority, application Japan, Aug. 1, 1990, 2-206434

Int. Cl.[5] H01L *29/00, 29/34, 27/02, 29/68*

U.S. Cl. 257—23 **6 Claims**



1. A non-volatile semiconductor memory comprising:

a semiconductor substrate including source and drain diffusion regions and a gate electrode, and

an insulating film which is at least provided on the semiconductor substrate just below the gate electrode and has a portion over the source diffusion region and adjacent to an edge of the gate electrode having a dielectric breakdown strength smaller than a remaining portion of said film,

wherein the insulating film is comprised of a laminated film having a multilayer structure on the drain side and at least a single-layer film on the source side which is broken down at a smaller voltage than said laminated film on the drain side, and a permanent conductive path between said gate electrode and said source diffusion region formed when a predetermined voltage is applied to break down said at least single-layer film on the source side, so that data can electrically be written only once.

5,331,182

ORGANIC LIGHT EMITTING DEVICE AND PREPARATION AND USE THEREOF

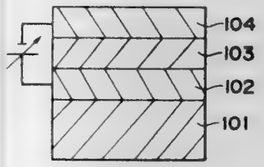
Akio Takimoto; Michio Okajima; Masaaki Suzuki, and Hisahito Ogawa, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 8, 1991, Ser. No. 742,421

Claims priority, application Japan, Aug. 8, 1990, 2-211056; Nov. 29, 1990, 2-335909

Int. Cl.[5] H01L *29/28*

U.S. Cl. 257—40 **7 Claims**



1. An organic light-emitting device having a light-emitting layer between a pair of electrodes mounted on a base plate, in which the light-emitting layer contains a polymer comprising a repeating unit of the formula:

$$-Z-(X-Y)_n- \quad (I)$$

wherein n is at least 2; X is O, S, Se or Te; Y is an aromatic or substituted aromatic group; Z is a group containing an imide ring.

5,331,183

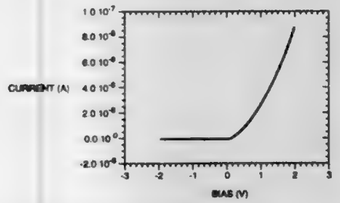
CONJUGATED POLYMER - ACCEPTOR HETEROJUNCTIONS; DIODES, PHOTODIODES, AND PHOTOVOLTAIC CELLS

N. S. Sariciftci, and Alan J. Heeger, both of Santa Barbara, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 17, 1992, Ser. No. 930,161

Int. Cl.[5] H01L *29/28*

U.S. Cl. 257—40 **15 Claims**



1. A heterojunction device comprising

a. a layer of a conjugated polymer which serves as a donor, and adjacent thereto, a

b. layer of an acceptor material comprising an acceptor selected from the group consisting of the group of fullerenes, substituted fullerenes, fullerene derivatives, polymers comprising fullerenes or substituted fullerenes or of organic or polymeric acceptors having electronegativity in the range to enable a photoinitiated charge separation process defined by the following steps:

Step 1: $D+A \rightarrow {}^{1,3}D^*+A$, (excitation on D);

Step 2: ${}^{1,3}D^*+A \rightarrow {}^{1,3}(D-A)^*$, (excitation delocalized on D-A complex);

Step 3: ${}^{1,3}(D-A)^* \rightarrow {}^{1,3}(D^{\delta+}-A^{\delta-})^*$, (charge transfer initiated);

Step 4: ${}^{1,3}(D^{\delta+}-A^{67-})^* \rightarrow {}^{1,3}(D^{+\cdot}-A^{-\cdot})$, (ion radical pair formed);

Step 5: ${}^{1,3}(D^{+\cdot}-A^{-\cdot}) \rightarrow D^{+\cdot}+A^{-\cdot}$, (charge separation);

where:

donor (D) and acceptor (A) units are either covalently bound (intramolecular), or spatially close but not covalently bonded (intermolecular);

"1,3" denotes singlet or triplet excited states, respectively.

5,331,184

INSULATED GATE BIPOLAR TRANSISTOR HAVING HIGH BREAKDOWN VOLTAGE

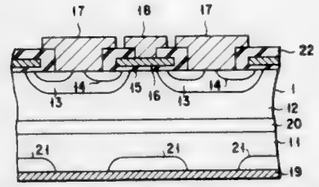
Masashi Kuwahara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 11, 1992, Ser. No. 928,066

Claims priority, application Japan, Aug. 12, 1991, 3-225382

Int. Cl.[5] H01L *29/74, 31/111, 29/76, 23/58*

U.S. Cl. 257—139 **10 Claims**



1. An insulated gate bipolar transistor comprising:

a semiconductor substrate including a first region of first conductivity type and a second region of second conductivity type provided over said first region;

a third region of said second conductivity type provided in said first region;

a fourth region of said first conductivity type provided in said third region;

a first main electrode ohmically connected to said third and fourth regions;

a gate insulating film provided on said first region so as to extend to said fourth region over said third region;

a gate electrode provided on said gate insulating film so as to be disposed over said third region;

a plurality of fifth regions of said second conductivity type, provided in said second region, each having an impurity concentration higher than that of said second region; and

a second main electrode ohmically connected to said second region together with said fifth regions.

5,331,185

FIELD EFFECT TRANSISTOR HAVING A GAINAS/GAAS QUANTUM WELL STRUCTURE

Nobuhiro Kuwata, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Division of Ser. No. 912,732, Jul. 13, 1992, Pat. No. 5,286,662. This application Nov. 15, 1993, Ser. No. 151,895

Claims priority, application Japan, Jul. 17, 1991, 3-176977

Int. Cl.[5] H01L *29/161, 29/80, 29/56*

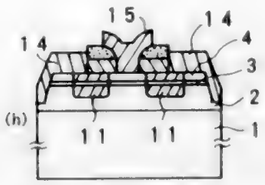
U.S. Cl. 257—192 **5 Claims**

1. A field effect transistor comprising;

a GaInAs/GaAs quantum well structure having an undoped GaAs buffer layer, an impurity doped GaInAs channel layer and an undoped GaAs cap layer formed on a semi-insulative semiconductor substrate;

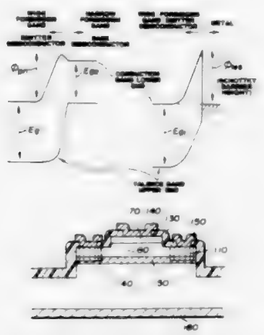
a source region and a drain region of a low resistivity formed by ion-implanting impurities from the surface of said GaInAs/GaAs quantum well structure to reach at least said

impurity doped GaInAs channel layer and annealing them;
a gate electrode formed on said undoped GaAs cap layer between said source region and the drain region; and
a source electrode and a drain electrode respectively having



at least portions thereof formed on said undoped GaAs cap layer and on said source region and said drain region said undoped GaAs cap layer having a flat surface in an area including at least the area of said gate electrode, said source region and said drain region and having a thickness of 30–50 nm.

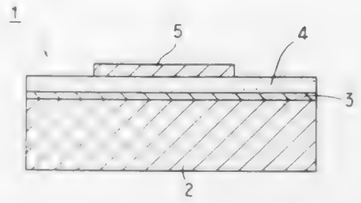
5,331,186
HETEROJUNCTION BIPOLAR TRANSISTOR WITH BASE ELECTRODE HAVING SCHOTTKY BARRIER CONTACT TO THE EMITTER
Kouhei Morizuka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 5, 1992, Ser. No. 846,059
Claims priority, application Japan, Mar. 6, 1991, 3-040284
Int. Cl.[5] H01L *29/161, 29/205, 29/225*
U.S. Cl. 257—198 **9 Claims**



9. A semiconductor device comprising:
a collector layer made of a first conductive type semiconductor;
a base layer made of a second conductive type semiconductor; and
an emitter layer made of the first conductive type semiconductor, said collector layer, base layer and emitter layer being laminated successively on a substrate,
a base electrode being in contact with the base layer and the emitter layer,
wherein said emitter layer having a first forbidden band gap energy **Eg1**, said base layer having a second forbidden band gap energy **Eg2**, and a junction formed between said base electrode and said emitter layer having a Schottky barrier height **ϕMS**; **Eg1**, **Eg2** and **ϕMS** satisfying the following equation:

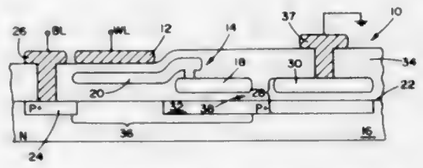
$$Eg1 > \phi MS > Eg2.$$

5,331,187
FERROELECTRIC THIN FILM ELEMENT WITH (III) ORIENTATION
Toshio Ogawa, Iwata, Japan, assignor to Myrata Mfg. Co., Ltd., Japan
Filed Feb. 22, 1993, Ser. No. 20,555
Claims priority, application Japan, Feb. 21, 1992, 4-035243
Int. Cl.[5] H01L *29/04, 23/48*
U.S. Cl. 257—295 **7 Claims**



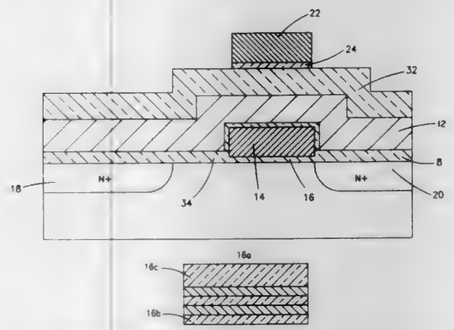
1. A ferroelectric thin film element comprising:
a substrate;
an electrode formed on said substrate and composed of an alloy thin film in which the alloy is selected from the group consisting of the Ni-Cr-Al system and the Ni-Al system; and
a ferroelectric thin film formed on said electrode and having a crystal orientation in the direction (111),
said ferroelectric thin film being composed of a ferroelectric material having a composition with a spontaneous polarization axis in the direction (111).

5,331,188
NON-VOLATILE DRAM CELL
Alexandre Acovic, Yorktown Heights, N.Y.; Ching-Hsiang Hsu, Hsin Chu, Taiwan; Matthew R. Wordeman, Mahopac, and Being S. Wu, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 25, 1992, Ser. No. 841,343
Int. Cl.[5] H01L *29/68;* **G11C** *11/24*
U.S. Cl. 257—298 **34 Claims**



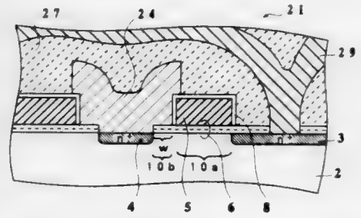
1. A non-volatile dynamic random access memory cell comprising:
a semiconductor substrate;
a layer of insulating material formed on a surface of said semiconductor substrate;
a storage capacitor having a storage node formed in said semiconductor substrate, wherein said storage capacitor further includes a plate formed in said layer of insulating material above said storage node and a connected contact;
a control electrode formed on a surface of said insulating layer;
a source diffusion region formed in said semiconductor substrate;
a transfer transistor disposed between said storage node and said source diffusion region; and
a floating gate formed in said layer of insulating material between said control electrode and said surface of said semiconductor substrate, said floating gate having a first layer disposed over said storage node and separated therefrom by said insulating material having a thickness that will allow electrons to tunnel between said storage node and said first layer for transferring a charge directly between said floating gate and said storage capacitor, and a second layer disposed at a greater distance from said surface of said semiconductor substrate than said first layer, said first layer being connected to said second layer.

5,331,189
ASYMMETRIC MULTILAYERED DIELECTRIC MATERIAL AND A FLASH EEPROM USING THE SAME
Kevin K. Chan, Staten Island; Sang H. Dhong, Mahopac; Dieter P. E. Kern, Amawalk, and Young H. Lee, Somers, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 19, 1992, Ser. No. 901,281
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—321 **4 Claims**



1. A memory cell comprising:
a substrate of a first conductivity type having an upper surface;
a source and a drain, each comprising a region of a second conductivity type, formed within said substrate and partially extending downwardly from said upper surface of said substrate;
a first insulating layer disposed on said substrate,
a floating gate adjacent to said first insulating layer, said floating gate having four sides, an upper surface and a lower surface, said lower surface being in contact with said first insulating layer;
a thin thermal oxide adjacent to said four sides and said upper surface of said floating gate;
a polysilicon spacer formed adjacent to one of said sides of said floating gate;
a first charge transfer means for removing charge from said floating gate electrode, said first charge transfer means adjacent to a portion of said substrate and a portion of said floating gate;
a first layer of a directional dielectric material including at least three layers, said layers alternating between at least two materials, each of said two materials having different dielectric constants, a layer of said at least three layers closest to said first charge transfer means being thicker than others of said at least three layers;
said first charge transfer means insulated from said first portion of said substrate and said first portion of said floating gate by said first layer of directional dielectric material:
a control gate adjacent to said floating gate and insulated from said floating gate by a second insulating layer; and
a second charge transfer means for injecting charge into said floating gate,
said second charge transfer means adjacent to said second insulator, said control gate, said floating gate, and a second surface portion of said substrate;
said second charge transfer means insulated from said second insulator and said control gate by a third insulator;
and said second charge transfer means insulated from said third insulator, said floating gate and said second surface portion of said substrate by a layer of second directional dielectric material.

5,331,190
SEMICONDUCTOR DEVICE INCLUDING NONVOLATILE MEMORIES
Nóriyuki Shimoji, Kyoto, and Hironobu Nakao, Ukyo, both of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Dec. 18, 1992, Ser. No. 992,915
Claims priority, application Japan, Dec. 19, 1991, 3-335416; Jan. 17, 1992, 4-6827
Int. Cl.[5] H01L *29/68, 29/78;* **G11C** *11/34*
U.S. Cl. 257—324 **20 Claims**



1. A semiconductor device including nonvolatile memories comprising:
a) a substrate of semiconductor,
b) a first region formed in the surface of the substrate,
c) a second region formed in the surface of the substrate and defining a space between the first region and the second region, the surface of the space comprising a first portion and a second portion,
d) an insulating layer for holding electrons spanning the first portion and the second portion,
e) a control electrode being on the insulating layer and spanning the first portion, and
f) a first region electrode attaching to the first region, spanning the second portion and being electrically disconnected from the control electrode.

5,331,191

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, PROCESS FOR FABRICATING THE SAME, AND APPARATUS FOR FABRICATING THE SAME

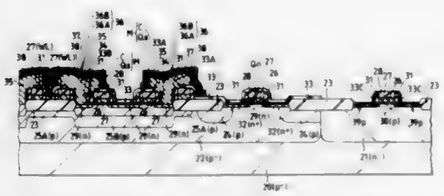
Jun Sugiura, Musashino; Osamu Tsuchiya, Ohme; Makoto Ogasawara, Ohme; Fumio Ootsuka, Ohme; Kazuyoshi Torii, Kodaira; Isamu Asano; Nobuo Owada, both of Ohme; Mitsuaki Horiuchi, Hachioji; Tsuyoshi Tamaru, Ohme; Hideo Aoki, both of Ohme; Nobuhiro Otsuka, Kokubunji; Seiichirou Shirai, Hamura; Masakazu Sagawa, Ohme; Yoshihiro Ikeda, Ohme; Masatoshi Tsuneoka, Ohme; Toru Kaga, Urawa; Tomotsugu Shimmyo, Kawagoe; Hidetsugu Ogishi, Hachioji; Osamu Kasahara, Hinode; Hiromichi Enami, Tachikawa; Atsushi Wakahara, Ohme; Hiroyuki Akimori, Ohme; Sinichi Suzuki, Ohme; Keisuke Funatsu, Ohme; Yoshinao Kawasaki, Kumage; Tunehiko Tubone, Kudamatsu; Takayoshi Kogano, Iruma, and Ken Tsugane, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodiara, both of Japan

Division of Ser. No. 496,330, Mar. 20, 1990, Pat. No. 5,202,275. This application Sep. 30, 1992, Ser. No. 954,142

Claims priority, application Japan, Mar. 20, 1989, 1-65849

Int. Cl.[5] H01L *29/10, 29/78*

U.S. Cl. 257—336 **11 Claims**



1. A semiconductor integrated circuit device including an n-channel MISFET having LLD structure and a p-channel MISFET having LLD structure, wherein a width of side wall spacers, which are formed on and in self-alignment with a gate electrode of said p-channel MISFET, is made larger than that of side wall spacer which are formed on and in self-alignment with the side walls of a gate electrode of said n-channel MISFET.

5,331,192

SEMICONDUCTOR DEVICE

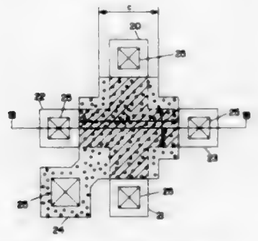
Hitoshi Kudoh, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 708,122, May 29, 1991, abandoned, which is a continuation of Ser. No. 539,029, Jun. 15, 1990, abandoned. This application Aug. 27, 1992, Ser. No. 937,440

Claims priority, application Japan, Jun. 15, 1989, 1-153425

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—368 **12 Claims**



1. A semiconductor device comprising:

(a) a substrate of a first conductivity type having a surface region;

(b) four non-overlapping diffusion layers including at least a first source layer, a second source layer and a drain layer, disposed in said substrate and electrically separated so that a different voltage level may be applied to each of said diffusion layers, and wherein each of said four diffusion layers is of a second conductivity type which is reverse to said first conductivity type; and

(c) a common gate disposed on said substrate surface region between said four diffusion layers wherein only one common channel is formed in a single continuous physical region between said four diffusion layers.

5,331,193

SEMICONDUCTOR DEVICE RESISTANT TO SLIP LINE FORMATION

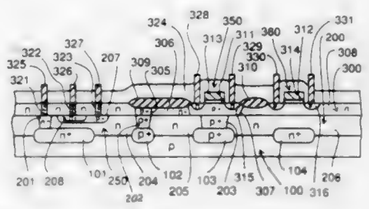
Yasukazu Mukogawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,164

Claims priority, application Japan, Feb. 14, 1992, 4-028413; Jan. 20, 1993, 5-007797

Int. Cl.[5] H01L *29/360, 29/380, 29/730*

U.S. Cl. 257—371 **7 Claims**



1. A semiconductor device, comprising:

a first semiconductor substrate having a main surface and containing oxygen in a first concentration;

a semiconductor layer epitaxially grown on the main surface of said first semiconductor substrate;

a second semiconductor substrate joined onto said semiconductor layer and containing oxygen in a second concentration lower than said first concentration;

a bipolar transistor formed in said semiconductor layer and including

an emitter region of first conductivity type formed in said semiconductor layer and having an upper surface, a lower surface and side surfaces,

a base region of second type conductivity formed to surround said lower surface and side surfaces of said emitter region, said base region having an upper surface, a lower surface and side surfaces,

a collector region of the first type conductivity formed to surround said lower surface and side surfaces of said base region; and

a field effect transistor formed in said second semiconductor substrate.

5,331,194

BIPOLAR STATIC INDUCTION TRANSISTOR

Katsunori Ueno, Matsumoto, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 30, 1992, Ser. No. 969,757

Claims priority, application Japan, Oct. 30, 1991, 3-283369

Int. Cl.[5] H01L *29/72*

U.S. Cl. 257—498 **6 Claims**

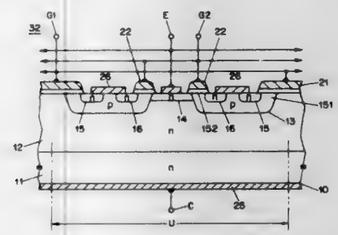
1. A bipolar transistor, comprising:

a collector region of first conductivity type having first and second surfaces;

a base region of second conductivity type having first and second surfaces formed in an insular form at the first surface of the collector region;

an emitter region of first conductivity type adjoining the base region formed at the first surface of the collector region;

a source region of first conductivity type formed in an insular form at the first surface of the base region which is electrically coupled with the source region; and



a gate disposed on a gate insulator which is formed on a portion of the base region between the first surface of the collector region and the source region;

wherein the current flowing between the collector region and the emitter region is controlled by a voltage applied to the gate with the base region and the source region short-circuited together.

5,331,195

FUSE CONSTRUCTION OF A SEMICONDUCTOR DEVICE

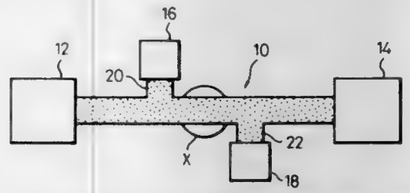
Okeda Yukihiro, Sagamihara, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,068

Claims priority, application Japan, Jun. 21, 1991, 3-177317

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—529 **15 Claims**



1. A fuse structure for a semiconductor device that includes a fuse body incorporated in an internal wiring of the semiconductor device and connecting end electrode portions provided at both ends of the fuse body, said fuse structure having at least one fusing voltage charging electrode provided in said fuse body and between said end electrode portions to drive a fusing current for fusing said fuse body by resistance heating.

5,331,196

ONE-TIME, VOLTAGE-PROGRAMMABLE, LOGIC ELEMENT

Tyler A. Lowrey, and Ruojia Lee, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 746,824, Aug. 19, 1991, Pat. No. 5,241,496. This application Aug. 31, 1993, Ser. No. 114,886

Int. Cl.[5] G11C *17/16*

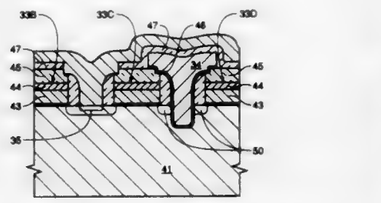
U.S. Cl. 257—529 **6 Claims**

1. A one-time, voltage-programmable logic element comprising:

an insulated-gate, field-effect transistor, said transistor having a channel region within a semiconductor substrate, and first and second source/drain regions interconnected by said channel region, said first source/drain region being coupled to an output line;

a trench within said substrate abutting said second source/-drain region;

a dielectric layer which lines said trench;



a conductive plug within said trench, said dielectric layer being disposed between said plug and said second source/-drain region, and said conductive plug being coupled to a reference voltage.

5,331,197

SEMICONDUCTOR MEMORY DEVICE INCLUDING GATE ELECTRODE SANDWICHING A CHANNEL REGION

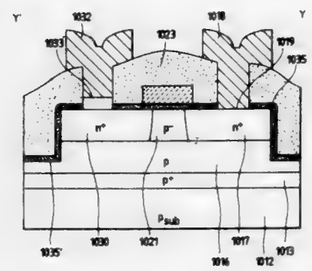
Mamoru Miyawaki, Tokyo; Akira Ishizaki, Atsugi; Genzo Momma, Hiratsuka; Hiroshi Yuzurihara, Isehara, and Tetsunobu Kohchi, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,258

Claims priority, application Japan, Apr. 23, 1991, 3-092294; Apr. 23, 1991, 3-092295; Apr. 26, 1991, 3-097256

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—530 **11 Claims**



1. A semiconductor memory device comprising:

an insulated gate transistor including a plurality of main electrode regions provided along a major surface of a substrate and a channel region provided between said plurality of main electrode regions, and a gate electrode provided on said channel region with a gate insulator therebetween, said gate electrode having at least two opposing portions that sandwich said channel region therebetween; and

an electrically breakable memory element provided on one of said main electrode regions,

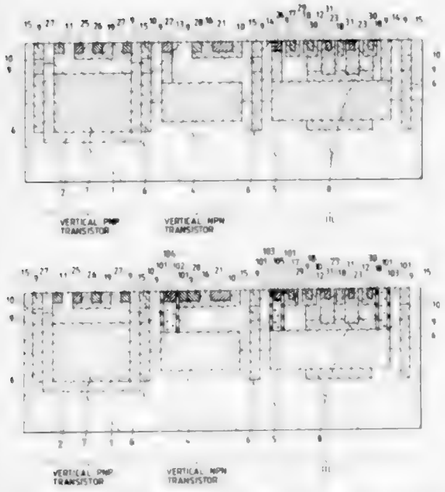
wherein a doped semiconductor region is provided between said opposing portions beneath said channel region, said doped semiconductor region having a same conductivity type as said channel region and an impurity concentration higher than that of said channel region.

5,331,198

SEMICONDUCTOR DEVICE INCLUDING IIL AND VERTICAL TRANSISTORS

Akihiro Kanda; Mitsuo Tanaka; Takehiro Hirai, and Masahiro Nakatani, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 808,691, Dec. 17, 1991, Pat. No. 5,162,252.
This application Aug. 5, 1992, Ser. No. 924,986
Claims priority, application Japan, Jul. 1, 1991, 3-159268
Int. Cl.[5] H01L *29/730, 29/120, 29/460*
U.S. Cl. 257—555 **10 Claims**



1. A semiconductor device comprising a vertical npn transistor, a vertical pnp transistor and an IIL; said IIL comprising:
- a one-conductivity type semiconductor substrate;
- a reverse-conductivity type first buried layer formed in said substrate;
- a one-conductivity type second buried layer having a lower impurity density than an impurity density of the first buried layer, formed on said first buried layer;
- a reverse-conductivity type semiconductor layer formed on said semiconductor substrate having said first and second buried layers;
- a one-conductivity type first diffused layer contacting said second buried layer, formed in said semiconductor layer;
- a reverse-conductivity type second diffused layer contacting said second buried layer, formed in said first diffused layer; and
- a one-conductivity type third diffused layer formed at a position set apart in a lateral direction with respect to said first diffused layer;

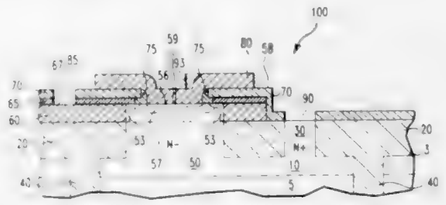
said first buried layer formed as an emitter of the IIL, said second buried layer and said first diffused layer formed as a base of the IIL, said second diffused layer formed as a collector of the IIL, and said third diffused layer formed as an injector of the IIL; an impurity density of a portion of the base immediately beneath and in contact with the collector being lower than the impurity density of the emitter; and the impurity density of the base being monotonically lower from the emitter toward the collector.

5,331,199

BIPOLAR TRANSISTOR WITH REDUCED TOPOGRAPHY

Shao-Fu S. Chu, Poughkeepsie; Kyong-Min Kim, Hopewell Junction; Shaw-Ning Mei, Wappingers Falls; Victor R. Nastasi, Hopewell Junction, and Somnuk Ratanaphanyarat, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 876,597, Apr. 30, 1992, Pat. No. 5,234,846.
This application Apr. 16, 1993, Ser. No. 46,709
Int. Cl.[5] H01L *29/72, 29/04*
U.S. Cl. 257—587 **5 Claims**



1. A bipolar transistor formed in a first silicon epitaxial layer above a silicon substrate and in a second silicon epitaxial layer above said first silicon epitaxial layer, comprising a base in said second epitaxial layer disposed above a base-collector junction and an emitter, having an emitter top surface, disposed above said base and connected thereto by an emitter-base junction, said base-collector junction being disposed above a collector portion of said first epitaxial layer extending downwardly to a buried conductor extending horizontally to a vertical collector extension that extends upwardly to a collector contact, said base and said collector extension being separated horizontally by an insulating member, in which said insulating member has an insulating member top surface substantially coplanar with a first epitaxial surface of said first silicon epitaxial layer and substantially below said emitter top surface;
- a base contact layer of polysilicon is disposed above said insulating member with a polysilicon top surface;

said second epitaxial layer of silicon containing said emitter is disposed above said first epitaxial layer, having a top surface substantially coplanar with said polysilicon top surface;
- a doped layer of a first dielectric, doped with a base dopant of a first polarity, is disposed above said second epitaxial layer's top surface and said polysilicon top surface, and has a base aperture therein above said emitter, said base aperture being separated horizontally from said layer of polysilicon by a horizontal link distance;
- a doped polysilicon emitter contact member, doped with an emitter dopant of a second polarity opposite said first polarity, is disposed in contact with said emitter top surface in said base aperture;
- a sidewall spacer of a second dielectric different from said first dielectric and impermeable to said dopant of said first polarity is disposed within said base aperture between said polysilicon emitter contact and said first dielectric;

said layer of polysilicon above said insulating member is doped with said base dopant having a concentration gradient with a maximum at said polysilicon top surface abutting said first dielectric;
- a link region of said second epitaxial layer below said link distance is doped with said base dopant having a concentration gradient with a maximum at said second epitaxial layer's top surface abutting said first dielectric, said layer of polysilicon and said link region of said second epitaxial layer each having a predetermined concentration of said base dopant sufficient to form a conductive path extending from a base contact area of said layer of polysilicon through said link region of said second epitaxial layer to said base; and

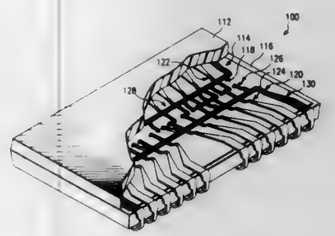
said emitter has a concentration gradient of said emitter dopant having a maximum at that portion of said second epitaxial layer's top surface abutting said polysilicon emitter contact member.

5,331,200

LEAD-ON-CHIP INNER LEAD BONDING LEAD FRAME METHOD AND APPARATUS

Boon C. Teo, Mandarin Gardens; Tjandra Karta, Asia Garden, and Siu W. Low, Singapore, all of Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1992, Ser. No. 954,183
Int. Cl.[5] H01L *23/48, 29/44, 25/52, 29/60*
U.S. Cl. 257—666 **7 Claims**



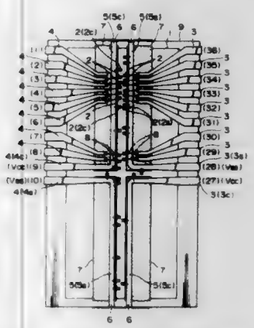
1. A device, comprising:
- a semiconductor device having bond pads located in at least one center row of a surface of said semiconductor device;
- a plurality of bond fingers each having a first end directly connected to a respective one of a first plurality of said bond pads and a second end for connection to external circuitry; and
- at least one bus bar having a plurality of bus bar bond fingers for directly connecting to a second plurality of said bond pads and at least one bus bar bond finger for connection to external circuitry.

5,331,201

SEMICONDUCTOR DEVICE HAVING INNER LEAD ARRANGEMENT WITH ENHANCED STABILITY

Tomoki Nishino, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,060
Claims priority, application Japan, Dec. 24, 1991, 3-339210
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 **5 Claims**



1. A rectangular resin-sealed semiconductor having four sides, two opposite sides of which are short sides and the other sides are longer relative to said short sides, comprising:

a semiconductor chip having pad electrodes formed on a circuit forming surface in the interior of the main surface; and

a plurality of inner leads cemented to said semiconductor chip through an insulator for electric insulation such that ends of said inner leads reach the edge of the circuit forming surface of said semiconductor chip; wherein

common conductors, which are connected with at least one of power supplying inner leads, and/or grounding inner leads, and at least one of said inner leads are coupled on said semiconductor chip, and said common conductors engage at least one support bar extending to the middle of one of said short sides.

5,331,202

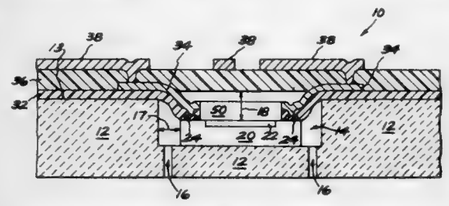
Patent Not Issued For This Number

5,331,203

HIGH DENSITY INTERCONNECT STRUCTURE INCLUDING A CHAMBER

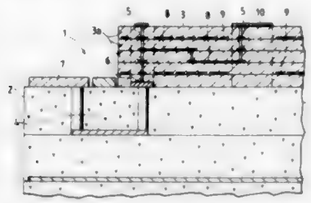
Robert J. Wojnarowski, Ballston Lake; Charles W. Eichelberger, Schenectady, and William P. Kornrumpf, Albany, all of N.Y., assignors to Generla Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 504,770, Apr. 5, 1990, abandoned. This application Oct. 25, 1993, Ser. No. 141,460
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—698 **20 Claims**



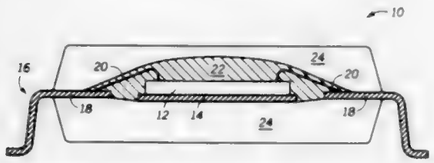
1. In a high density interconnected system including at least one electronic chip having an upper surface defining a plane, a high density interconnect (HDI) structure including a first dielectric layer of dielectric material bonded to said chip and a first pattern of HDI conductors disposed on or in said dielectric material, the conductors of said HDI interconnect structure electrically connected to said electronic chip, the improvement comprising:
- said HDI structure including an overlying layer overlying said chip, said overlying layer spanning said chip and being spaced from said upper surface of said chip whereby a portion of said overlying layer comprises a ceiling of a chamber which is disposed between said chip and said overlying layer, said overlying layer defining a plane;
- said first dielectric layer of said HDI structure including a portion disposed at an angle to the plane of said overlying layer and extending from said overlying layer to said upper surface of said chip, said first dielectric layer of the HDI structure being bonded to both said overlying layer and to said upper surface of said chip;
- said first pattern of HDI conductors being disposed on said first dielectric layer of said HDI structure and including conductors which extend from an ohmic contact with a contact pad of said chip to said overlying layer;
- said overlying layer comprising (a) a second dielectric layer of said HDI structure; and (b) a second pattern of HDI conductors disposed on said second dielectric layer, at least some conductors of said second pattern of conductors being ohmically connected to conductors of said first pattern of conductors.

5,331,204
INTEGRATED CIRCUIT PACKAGE IN WHICH IMPENDANCE BETWEEN SIGNAL PADS AND SIGNAL LINES IS MATCHED BY REDUCING THE SIZE OF A GROUND PLANE
Masao Kuroda; Ryuji Imai, and Toshiya Asano, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan
Filed Oct. 19, 1992, Ser. No. 962,419
Claims priority, application Japan, Oct. 17, 1991, 3-269333
Int. Cl.[5] H01L *23/48, 29/46, 23/02, 39/02*
U.S. Cl. 257—758 **3 Claims**



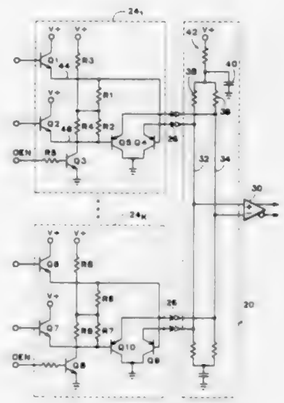
1. An integrated circuit package comprising:
a multilayer part including:
a plurality of wiring layers each having a plurality of signal lines;
a pair of ground layers;
a conductor pad; and
a plurality of insulating layers through which said wiring layers and said ground layer are laminated,
wherein an inner size of the conductor pad is selected to be not less than five times as large as a trace width of the signal lines in the plurality of wiring layers, said inner size being the maximum diameter of an inscribing circle in an outline of the conductor pad, and
wherein an area defined by the pair of ground layers and existing in a vertical direction from the conductor pad is not larger than a region defined by extending a width of the signal lines over a circumference of the conductor pad.

5,331,205
MOLDED PLASTIC PACKAGE WITH WIRE PROTECTION
William F. Primeaux, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 21, 1992, Ser. No. 838,657
Int. Cl.[5] H01L *23/28*
U.S. Cl. 257—790 **11 Claims**



1. A semiconductor device comprising:
a leadframe with a die receiving area and a plurality of leads;
a semiconductor die attached to the die receiving area, the semiconductor die having a plurality of bonding pads on a surface;
a conductive wire extending from each bonding pad to one of the plurality of leads, the conductive wire electrically coupling the semiconductor die to the leadframe;
an epoxy resin encapsulating compound formed over the surface of the die including the pads and a portion of the leadframe, wherein the epoxy resin encapsulating compound completely encapsulates each of the conductive wires and only covers a first side of the leadframe, the epoxy resin encapsulating compound comprising a material having a low coefficient of thermal expansion; and
a second encapsulating compound surrounding the die, the epoxy resin encapsulating compound, a second side of the leadframe, and a portion of the leads.

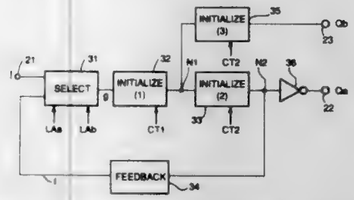
5,331,206
CIRCUIT FOR DRIVING A TRANSMISSION LINE
John E. Liron, Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Nevada City, Calif.
Filed May 1, 1992, Ser. No. 877,000
Int. Cl.[5] H03K *3/01, 17/56, 17/60*
U.S. Cl. 307—270 **10 Claims**



1. A circuit for driving a transmission line composed of first and second conductors, said circuit comprising:
first and second transistors each having a base, a collector and an emitter, the bases of the first and second transistors being connected to receive an input differential signal, and the collectors being connected to a first reference potential level,
a differential transmission line having two conductors with an input end and an output end, the emitters of the first and second transistors being connected to the input end,
an output enable transistor having a base, a collector and an emitter, the emitter being connected to a second reference potential level and the collector being connected to the first reference potential level through a resistor, and
first and second resistors coupled in series between the conductors at the output end of the differential transmission line, a node between the first and second resistors being coupled to the collector of the output enable transistor and to said resistor so that the output enable transistor selectively places the first and second transistors either in a conductive condition, in which they apply the input differential signal to the input end of the differential transmission line for transmission to the transmission line, or in a non-conductive condition, in which they isolate the transmission line from the input differential signal.

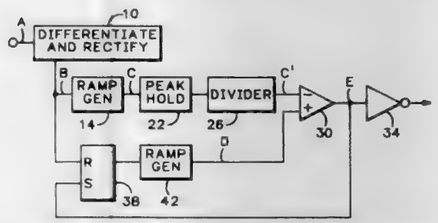
5,331,207
LATCH CIRCUIT WITH INDEPENDENT PROPAGATION DELAYS
Satoru Tanoi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Aug. 4, 1992, Ser. No. 924,470
Claims priority, application Japan, Aug. 20, 1991, 3-208042
Int. Cl.[5] H03K *3/037, 3/356*
U.S. Cl. 307—272.1 **20 Claims**
1. A latch circuit receiving an input signal, a latch signal, and

a control signal having active and inactive states, and generating a pair of complementary output signals, comprising:
a selecting circuit for selecting either the input signal or a feedback signal, responsive to said latch signal, and generating an internal signal;
two initializing circuits, each of which receives said control signal and each generates an identical output signal that has a fixed state when said control signal is active and that



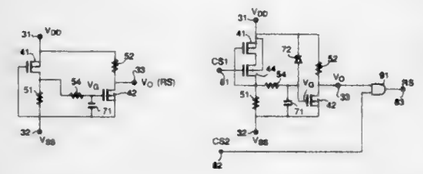
is identical to said internal signal when said control signal is inactive;
an inverter coupled to invert one of the identical output signals; and
a feedback circuit coupled to return said one of said identical output signals to said selecting circuit as said feedback signal, before said one of said identical output signals is inverted by said inverter.

5,331,208
NON-RETRIGGERABLE ONE-SHOT CIRCUIT
Charles S. Meyer, Nevada City, Calif., assignor to NVision, Inc., Nevada City, Calif.
Filed Aug. 3, 1992, Ser. No. 924,316
Int. Cl.[5] H03K *3/284*
U.S. Cl. 307—273 **11 Claims**



1. A non-retriggerable one-shot circuit for extracting information representative of a clock having a period T from a sequence of input pulses such that the interval between two consecutive input pulses is either T or T/2, said circuit having an input terminal for receiving said input pulses and comprising:
a frequency detector connected to said input terminal for developing a reference voltage dependent on T, the frequency detector comprising a ramp generator for generating a voltage ramp of which the amplitude depends on the time that has elapsed since occurrence of an input pulse in said sequence, and a hold circuit for holding the peak voltage of the ramp,
an interval measurement circuit,
a comparator for comparing the voltage developed by the interval measurement circuit with the reference voltage and providing an output pulse when a predetermined relationship exists therebetween, and
enabling means connected between the input terminal and the interval measurement circuit and responsive to said output pulse for allowing an input pulse received at the input terminal to be communicated to the interval measurement circuit,
said interval measurement circuit developing a voltage dependent on the time that has elapsed since receiving the input pulse communicated from said enabling means.

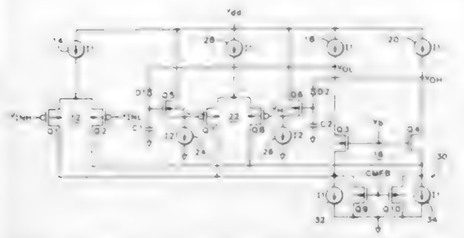
5,331,209
AUTO-RESET CIRCUIT WITH IMPROVED TESTABILITY
Yoshimitu Fujisawa, Osaka, and Yasuhiro Shin, Tokyo, both of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Feb. 26, 1993, Ser. No. 23,674
Claims priority, application Japan, Feb. 28, 1992, 4-043743
Int. Cl.[5] H03K *3/01, 3/12*
U.S. Cl. 307—296.4 **16 Claims**



1. An auto-reset circuit for generating a power-up reset signal, comprising:
a first power-supply terminal for receiving a first potential;
a second power-supply terminal for receiving a second potential different from said first potential;
an output terminal for output of the reset signal;
a first active element having first and second terminals, and a third terminal for controlling conduction between the first and second terminals, the first terminal being coupled to said first power-supply terminal, the third terminal being coupled to said second power-supply terminal;
a first resistor coupled between the second terminal of the first active element and said second power-supply terminal;
a second resistor coupled between said first power-supply terminal and said output terminal;
a second active element having first and second terminals, and a third terminal for controlling conduction between the first and second terminals, the first terminal being coupled to said second power-supply terminal, the second terminal being coupled to said output terminal, and the third terminal being coupled to the second terminal of the first active element;
a third resistor coupled between the second terminal of the first active element and the third terminal of the second active element; and
a capacitor coupled between the third terminal of the second active element and said second power-supply terminal.

5,331,210
DIFFERENTIAL CMOS PEAK DETECTION CIRCUIT
Benjamin J. McCarroll, Portland, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.
Filed Mar. 16, 1993, Ser. No. 32,032
Int. Cl.[5] H03K *5/24*
U.S. Cl. 307—351 **9 Claims**
1. A differential CMOS peak detector comprising:
a differential input stage having a differential input and a differential output, a differential input signal being applied to the differential input;
a differential peak detector circuit coupled to the differential output of the differential input stage to produce a differential peak output in response to the differential input signal;
a negative feedback loop having a differential input and a differential output, the differential output being coupled in opposition to the differential output of the differential input stage and the differential input being coupled to

receive the differential peak output from the differential peak detector circuit; and



means coupled to the differential outputs of the differential input stage and the negative feedback loop to minimize common mode differences in response to a common mode bias signal derived from the differential peak output.

5,331,211

RELEASING CIRCUIT FOR ACTUATING VEHICULAR SAFETY DEVICE

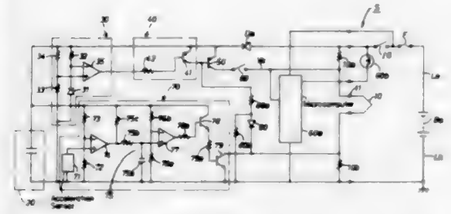
Akira Kondo; Motoharu Naitou, both of Okazaki; Toshiaki Ota, Anjo; Mitsuhiko Masegi, Nukata, and Masao Sakurai, Ohbu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 726,118, Jun. 27, 1991, abandoned, which is a continuation of Ser. No. 359,473, May 23, 1989, abandoned. This application May 14, 1993, Ser. No. 61,499

Claims priority, application Japan, May 23, 1988, 63-125343

Int. Cl.[5] B60R *21/16*

U.S. Cl. 307—10.1 **41 Claims**



1. A release circuit for a vehicle passenger-safety device having a current-actuated release element connectable to an electrical power source for actuation thereof, comprising:

a controllable semiconductive device in a circuit path between the release element and the electrical power source and biasable from and between a non-conducting state and a current-conducting state sufficient to actuate the release element;

means connected to the electrical power source and the controllable semiconductor device for detecting the voltage of the electrical power source and for controlling the controllable semiconductor device to its non-conducting state to prohibit conduction when the voltage of the electrical power source is below a selected value; and

means for sensing the acceleration of the vehicle and providing an electrical signal thereof indicative of abnormal acceleration to the controllable semiconductor device to control the controllable semiconductor device to the current-conducting state sufficient to actuate the release element, the abnormal acceleration signal controlling the controllable semiconductor device to the current-conducting state sufficient to actuate the release element irrespective to the means for detecting controlling the controllable semiconductor device to its non-conducting state to prohibit conduction.

5,331,212

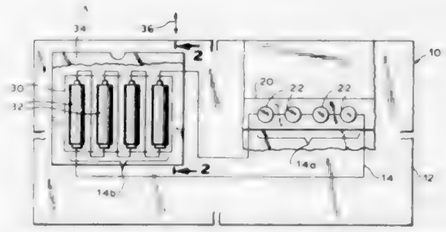
ELECTRICAL DEVICE WITH ALTERNATIVE BATTERY POWER SUPPLIES

Mark Johnson-Williams, Half Moon Bay, Calif., and Zeb Billings, Hartland, Wis., assignors to Western Publishing Company Inc., Racine, Wis.

Continuation-in-part of Ser. No. 652,789, Feb. 8, 1991, Pat. No. 5,248,843. This application Mar. 26, 1992, Ser. No. 857,744

Int. Cl.[5] H02J *7/00*

U.S. Cl. 307—66 **14 Claims**



1. An electrical device characterized by alternative battery power supplies, comprising:

(A) an electrical circuit;

(B) a pre-installed first button-cell battery power supply small enough to be easily swallowed by a child, said first supply being disposed in a non-user-accessible portion of said device; and

(C) a user-accessible compartment for receipt of a second non-button-cell battery power supply to large to be easily swallowed by a child;

said first supply being initially operatively connected to said circuit, and the presence of a second supply in said compartment operatively connecting the second supply to said circuit to power said circuit regardless of the presence or absence of said first supply in said circuit.

5,331,213

PULSE TRANSMISSION CIRCUIT WITH UNDERSHOOT ELIMINATING CIRCUITRY

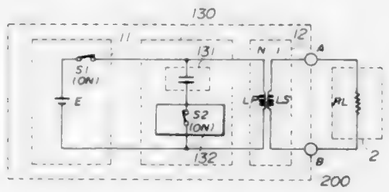
Hisakazu Ohmori; Yukio Furukawa; Masakazu Oi, and Akihiko Takada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 8, 1992, Ser. No. 910,507

Claims priority, application Japan, Jul. 11, 1991, 3-197122

Int. Cl.[5] H03K *5/01*

U.S. Cl. 307—108 **17 Claims**



1. An undershoot eliminating circuit provided between a pulse transformer of a pulse transmitter coupled to a transmission line and a pulse transformer driving circuit for driving the pulse transformer, the pulse transformer driving circuit having an impedance high enough to cause the pulse transmitter to be substantially isolated from the transmission line, said undershoot eliminating circuit comprising:

a capacitor; and

switching means, connected in series with the capacitor, for selectively connecting said capacitor to both the pulse transformer driving circuit and the pulse transformer in parallel on the basis of a voltage based on a pulse wave generated by the pulse transformer driving circuit and applied across the switching means.

5,331,214

LOAD CONTROL DEVICE HAVING ABNORMAL CONDITION DETECTING FOR SERIAL SIGNAL LINE, TRANSMITTER AND RECEIVER

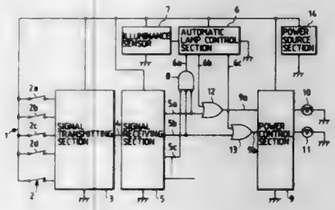
Satoshi Mori, and Makoto Shibahara, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Apr. 21, 1992, Ser. No. 871,443

Claims priority, application Japan, Apr. 22, 1991, 3-036997[U]

Int. Cl.[5] H01H *35/00*

U.S. Cl. 307—116 **15 Claims**



1. A load control device comprising:

an operation input section provided with a plurality of input switches;

signal transmitting means for outputting an operation signal provided in response to an operation of said operation input section through a serial signal line;

sensor means for outputting a detecting signal in accordance with external conditions;

signal receiving and control means including a control section for outputting a control signal in response to at least one signal of the group consisting of (1) a signal derived from said operation signal and (2) said detecting signal, said signal receiving and control means including a signal receiving section responding to an abnormal condition of said signal transmitting means or said serial signal line or to an abnormal internal condition to yield an abnormal signal as said derived signal; and

load controlling means for controlling a load in accordance with said control signal of said control means.

5,331,215

ELECTRICALLY ADAPTABLE NEURAL NETWORK WITH POST-PROCESSING CIRCUITRY

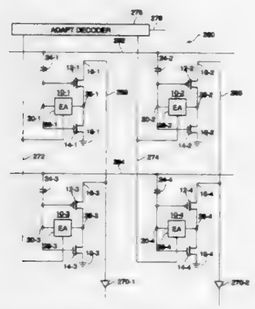
Timothy P. Allen, Los Gatos; Janeen D. W. Anderson, Fremont; Carver A. Mead, Pasadena; Federico Faggin, Los Altos Hills; John C. Platt, Mountain View, and Michael F. Wall, Sunnyvale, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 913,691, Jul. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 781,503, Oct. 22, 1991, Pat. No. 5,160,899, which is a continuation of Ser. No. 525,764, May 18, 1990, Pat. No. 5,059,920, which is a continuation-in-part of Ser. No. 486,336, Feb. 28, 1990, Pat. No. 5,068,622, which is a continuation-in-part of Ser. No. 282,176, Dec. 9, 1988, Pat. No. 4,935,702. This application Jul. 30, 1992, Ser. No. 922,535

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

Int. Cl.[5] H03K *19/0948*

U.S. Cl. 307—201 **44 Claims**



23. A synaptic array fabricated on a semiconductor substrate comprising:

a plurality of electrically-alterable synaptic elements disposed in at least one row and at least one column, each of said electrically-alterable synaptic elements comprising an input node, an output node, an amplifier having an input connected to a floating node and an output connected to said output node, an MOS capacitor having a first plate connected to said input node and a second plate connected to said floating node, an adapt control signal node, an electron injecting means coupled to said floating node for injecting electrons on to said floating node while the voltage on said floating node is within the normal operating range of said amplifier, negative feedback means, coupled between said floating node and said electron injecting means, and responsive to an adapt control signal asserted on said adapt control signal node for controlling said electron injecting means to vary the rate of injection of electrons on to said floating node in response to the magnitude of the voltage on said floating node, and a current sense node for supplying a current required by said synaptic element in response to a signal on said input node and said voltage on said floating node;

a row input line associated with each row of said array, each said row input line connected to the input nodes of all of said electrically alterable synaptic elements associated with its row;

a column sense line associated with each column of said array, each said column sense line connected to the current sense nodes of all of said electrically alterable synaptic elements associated with its column; and

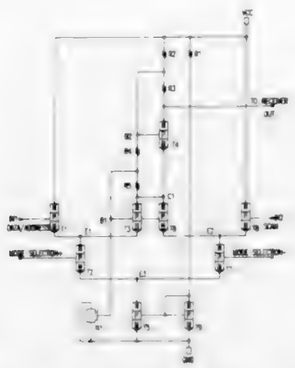
a column adapt control input line associated with each column of said array, each said column adapt control input line connected to the adapt control signal nodes of all of said electrically alterable synaptic elements associated with its column.

5,331,216

HIGH SPEED MULTIPLEXER

Walter S. Klara, Hopewell Junction; Frank A. Montegari, Wappingers Falls, and Gordon S. Sager, Salt Point, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1992, Ser. No. 973,891
Int. Cl.[5] H03K *17/62*
U.S. Cl. 307—243 **6 Claims**



1. A high speed bipolar multiplexer circuit comprising:

first, second, third, and fourth bipolar transistors, said first and second transistors having a common emitter connection and said third and fourth transistors having a common emitter connection, collectors of said first and third transistors being connected to a source of voltage, a base of the first transistor being connected to a first input terminal, a base of the third transistor being connected to a second input terminal, and bases of the second and fourth transistors being connected in common;

fifth and sixth transistors having a common emitter connection, the fifth transistor having its collector connected to the common emitter connection of the first and second transistors and the sixth transistor having its collector connected to the common emitter connection of the third and fourth transistors, a base of the fifth transistor being connected to first mode selection terminal and a base of the sixth transistor being connected to a second mode selection terminal;

current source and current mirror transistors, said current source-transistor being connected between the common emitter connection of said fifth and sixth transistors and circuit ground and said current mirror transistor connected in series with a first resistor between said source of voltage and circuit ground and having common base connection with said current source transistor to drive said current source transistor; and

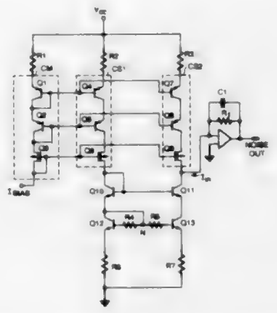
a low-gain, linear amplifier including a seventh transistor and a voltage divider, said voltage divider being connected between said source of voltage and the common collector connection of said second and fourth transistors, said seventh transistor having an emitter connected to the common collector connection of the second and fourth transistors, a collector connected to an output terminal and through a portion of said voltage divider to said source of voltage, and a base connected to a first tap of said voltage divider establishing a bias level for the seventh transistor, said bases of the second and fourth transistors being connected to a second tap of said voltage divider to establish a bias level for said second and fourth transistors, said first, second and seventh transistors being always in a conductive state when said high-speed bipolar multiplexer is in a first mode of operation thereby minimizing a signal delay from said first input terminal to said output terminal and when said high-speed bipolar multiplexer is in a second mode of operation, said first transistor is non-conductive thereby isolating said first input terminal from said output terminal.

5,331,217

LOW POWER INTEGRATED CIRCUIT WHITE NOISE SOURCE

Anthony G. Mellissinos, Encinitas, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 18, 1992, Ser. No. 900,965
Int. Cl.[5] H03K *4/00;* **H03B** *1/00*
U.S. Cl. 307—260 **5 Claims**



1. A noise source fabricated on an integrated circuit, comprising:

a plurality of bipolar junction transistors each having an emitter terminal coupled to a circuit common potential, a collector terminal coupled to an output of an associated current source, and a base terminal coupled through an associated resistance to a bias signal, the associated resistance coupled to the base terminal of each of said transistors having a resistance value selected to enhance a noise signal generated by said transistor in a collector current thereof; and

transresistance amplifier means having an input coupled to said collector terminal of one of said transistors for converting said noise signal to a voltage signal having white noise characteristics.

5,331,218

SWITCHED-CAPACITOR NOTCH FILTER WITH PROGRAMMABLE NOTCH WIDTH AND DEPTH

Kristaan L. Moody, Nottingham, and Paul W. Latham, II, Lee, both of N.H., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Jul. 13, 1992, Ser. No. 912,382
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] H03K *5/00*
U.S. Cl. 307—521 **5 Claims**

1. A notch filter circuit comprising:

a) a filter circuit input and a filter circuit output;

b) first and second operational amplifiers;

c) first and second capacitors connected respectively between the output and the negative input of each of said first and second amplifiers;

d) a first switched-capacitor resistor connected between said filter circuit input and said first-amplifier input;

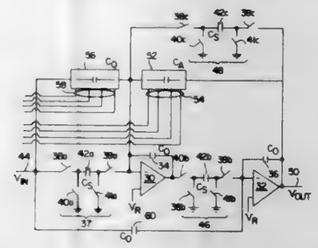
e) a second switched-capacitor resistor connected between said first amplifier output and said second amplifier input, said second-amplifier output connected to said filter circuit output;

f) a third switched-capacitor resistor connected between said filter circuit output and said first amplifier input;

g) a first programmable capacitor array connected in parallel with said third switched-capacitor resistor;

h) a third capacitor connected between said second-amplifier input and said filter circuit input, and

i) a second programmable capacitor array connected in



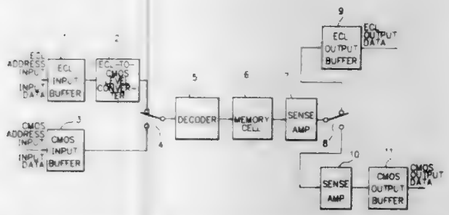
parallel with said first switched-capacitor resistor, so that a change only in the capacitance of said second capacitor array causes a corresponding change in the filter notch depth and a change only in the capacitance of said first capacitor array causes a corresponding change in the filter notch width.

5,331,219

SEMICONDUCTOR INTEGRATED CIRCUIT WITH SELECTIVE INTERFACING ON DIFFERENT INTERFACE LEVELS

Kazuyuki Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,864
Claims priority, application Japan, Oct. 28, 1991, 3-281414
Int. Cl.[5] H03K *19/0175, 19/173*
U.S. Cl. 307—475 **3 Claims**



1. A semiconductor integrated circuit comprising:

plurality of input buffer means for inputting signals on a plurality of different input interface levels, respectively;

plurality of output buffer means for outputting signals on a plurality of different output interface levels, respectively;

selector means for selectively connecting the input buffer means and the output buffer means, whereby the semiconductor integrated circuit can operate on the different input and output interface levels;

a semiconductor memory;

first amplifying means for amplifying an input signal supplied from the input buffer means selectively connected by the selector means and applying the amplified signal to the semiconductor memory, the signal having a logic amplitude corresponding to a lower one of the different input interface levels;

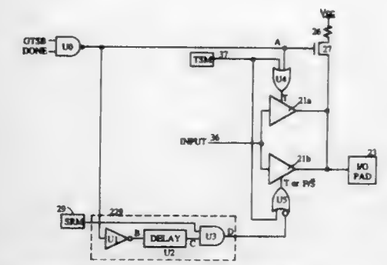
second amplifying means for amplifying a readout signal supplied from the semiconductor memory to a logic amplitude corresponding to a higher one of the different output interface levels and applying the amplified readout signal to the output buffer means selectively connected by the selector means, wherein the first and second amplifying means are implemented by a single circuit.

5,331,220

SOFT WAKEUP OUTPUT BUFFER

Kerry M. Pierce, and Charles R. Erickson, both of Fremont, Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Feb. 12, 1993, Ser. No. 16,643
Int. Cl.[5] H03K *19/092, 19/00*
U.S. Cl. 307—475 **1 Claim**



1. A soft wakeup output buffer comprising:

a buffer (**21**) for generating a corresponding output signal (to I/O pad **23**) from an input signal (**36**);

means (T) responsive to a high impedance control signal (A) for placing said buffer into a high impedance mode;

means (FS) responsive to a slew rate signal (D) for controlling response rate of said buffer; and

means (**229**) responsive to said high impedance control signal for controlling said slew rate signal (D) comprising:

a logic gate (U3) having two inputs which generates said slew rate signal (D);

means for generating a first slew rate control signal and providing said first slew rate control signal to a first input of said logic gate; and

means for generating a second slew rate control signal which

receives said high impedance control signal (A); and

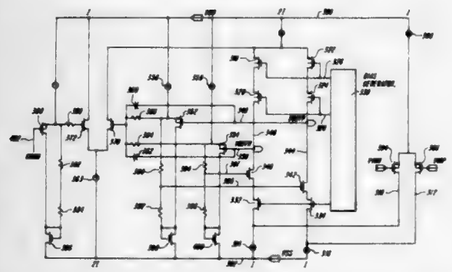
applies a delay of time Td to said high impedance control signal (A) and after time Td applies said high impedance control signal (A) to a second input of said logic gate (U3).

5,331,221

GAIN LINEARITY CORRECTION FOR MOS CIRCUITS

Apparajan Ganesan, Salem, N.H.; Paul F. Ferguson, Jr., Tewksbury, and David H. Robertson, Somerville, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 654,341, Feb. 12, 1991, abandoned.
This application Aug. 23, 1993, Ser. No. 110,327
Int. Cl.[5] H03K *17/14, 3/013;* **H03F** *1/30*
U.S. Cl. 307—491 **6 Claims**



1. A gain correction circuit for an MOS analog circuit having a gain stage comprising an MOS driver means, an MOS

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current source transistor connected in a series connection with said driver means and means for applying a supply voltage across said series connection, said gain correction circuit comprising:

an MOS shield transistor connected in series between said driver means and said current source transistor so that an output voltage appears across said shield transistor and said current source transistor, said shield transistor having a gate and a drain, and wherein said shield transistor can operate in a saturation operating mode and a linear operating mode; and

means responsive to said output voltage for applying a bias voltage to said shield transistor gate which bias voltage varies with said output voltage in accordance with a predetermined linear relationship;

wherein said applying means comprises means for sensing said output voltage and means responsive to said sensed output voltage;

wherein said sensing means comprises a voltage divider network and means for applying said output voltage to said voltage divider network

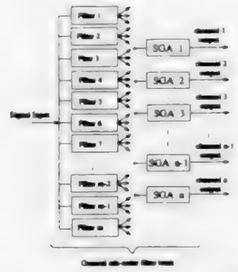
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5,331,222

COCHLEAR FILTER BANK WITH SWITCHED-CAPACITOR CIRCUITS

Jyhfong Lin, Hyattsville, Md.; Shihab A. Shamma, Washington, D.C., and Thomas G. Edwards, College Park, Md., assignors to University of Maryland, College Park, Md.

Filed Apr. 29, 1993, Ser. No. 53,539
Int. Cl.[5] H03B *1/04*; **H04B** *1/10*
U.S. Cl. 307—520 **12 Claims**



1. A bi-phasic switched-capacitor type filter bank with means for transmission of a single input channel signal and means for transmission of multiple output channel signals comprising:

multiple nth-order switched-capacitor (SC) filter means for reducing the capacitor spread ratio and facilitating a very large time constant type filter, each of the nth-order switched-capacitor filter means receives the single input channel signal, each of the nth-order SC filter means is of the same order;

multiple sum-gain amplifier (SGA) means for conditioning each of the multiple output channel signals from the filter bank, the SGA means does not have a sample and hold circuit means; and

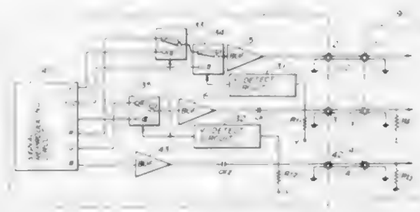
each output channel signal is conditioned by at least two of the nth-order SC filter means that are in turn connected to one SGA means whereby the number of nth-order SC filter means is reduced by mutual parallel sharing.

5,331,223

SIGNAL SUPPLYING UNIT HAVING MEANS FOR SELECTING SIGNAL IN ACCORDANCE WITH TERMINAL CONNECTION

Takashi Nishijima, Fussa, Japan, assignor to Teac Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 571,738, Aug. 23, 1990, abandoned. This application Jun. 8, 1992, Ser. No. 894,256
Claims priority, application Japan, Aug. 25, 1989, 1-99338[U]
Int. Cl.[5] G06G *7/00*; **H03K** *5/22*; **H04N** *5/268*
U.S. Cl. 307—529 **18 Claims**



1. A signal supplying unit comprising:

a first terminal;

a second terminal;

a first signal source, coupled to said first terminal, for outputting a first signal;

a second signal source, coupled to said second terminal, for outputting a second signal;

a third signal source, coupled to said second terminal, for outputting a third signal;

detecting means, coupled to said first terminal, for detecting whether or not said first terminal is coupled to a terminal of an external unit and for outputting a detecting signal; and

selecting means, coupled to said detecting means, for selectively supplying either said second signal output from said second signal source or said third signal output from said third signal source to said second terminal in accordance with said detecting signal output from said detecting means.

5,331,224

I_{ccp} LEAKAGE CURRENT INTERRUPTER

James R. Ohannes, Portland, and Stephen W. Clukey, South Portland, both of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 19, 1992, Ser. No. 932,354
Int. Cl.[5] H03K *17/16*, *19/094*
U.S. Cl. 307—443 **15 Claims**

2. A BiCMOS latched transceiver circuit comprising

(a) a first data latch circuit,

(b) a first BiCMOS three-state output buffer,

(c) a second data latch circuit,

(d) a second BiCMOS three-state output buffer,

(e) a first latched transceiver I/O node, and

(f) a second latched transceiver I/O node,

wherein said first data latch circuit is coupled between a high-potential power rail and a low-potential power rail and has a first data input node coupled directly to said first latched transceiver I/O node, a first data latch CMOS input stage, a first latch intermediate stage, a first invertor loop, and a first latch output node,

wherein said first data latch CMOS input stage includes a first latch input pullup transistor coupled to said high-potential power rail through a first disconnect transistor comprising a first disconnect control gate node coupled to a first ancillary input of said first data latch circuit,

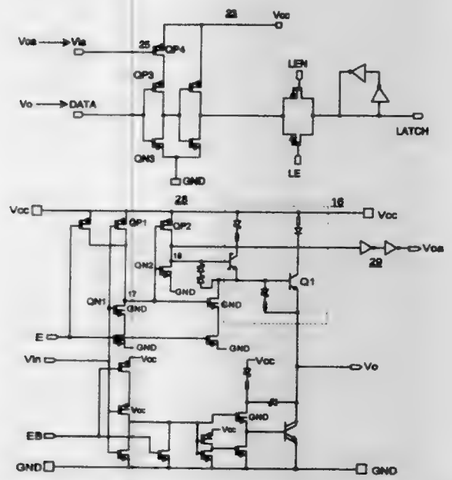
wherein said first BiCMOS three-state output buffer is coupled between said high-potential power rail and said low-potential power rail and includes (1) a first CMOS input stage having an output coupled through a plurality of invertor stages to a first CMOS control stage, and (2) a TTL output stage coupled to a first BiCMOS three-state output buffer output node,

wherein said first CMOS control stage includes a first CMOS control stage output node coupled to a first ancillary output,

wherein said second data latch circuit is coupled between said high-potential power rail and said low-potential power rail and includes a second data input node coupled directly to said second latched transceiver I/O node, a second data latch CMOS input stage, a second latch intermediate stage, a second invertor loop, and a second latch output node,

wherein said second data latch CMOS input stage includes a second data latch input pullup transistor coupled to said high-potential power rail through a second disconnect transistor having a second disconnect input node coupled to a second ancillary input of said second data latch circuit,

wherein said second BiCMOS three-state output buffer is coupled between said high-potential power rail and said low-



potential power rail and includes a second CMOS input stage, a plurality of second CMOS invertor stages, a second CMOS control stage separated from said second CMOS input stage by an odd number of said plurality of second CMOS invertor stages and having a second CMOS control stage output node which is coupled to a second ancillary output,

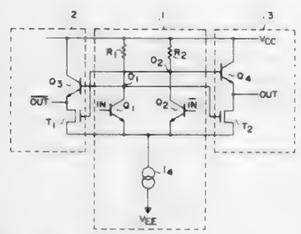
wherein said first ancillary output of said first BiCMOS three-state output buffer is connected to said second ancillary input of said second data latch circuit and said second ancillary output of said second BiCMOS three-state output buffer is connected to said first ancillary input of said first data latch circuit, and wherein an output node of said second BiCMOS three-state output buffer is connected to said first latched transceiver I/O node and said first BICMOS three-state output buffer is connected to said second latched transceiver I/O node wherein said first latch output node of said first data latch is connected to an input of said first CMOS input stage of said first BiCMOS three-state output buffer and said second latch output node of said second data latch is connected to an input of said second CMOS input stage of said second BiCMOS three-state output buffer.

5,331,225

BICMOS LOGIC CIRCUIT WITH BIPOLAR TRANSISTOR AND MOS TRANSISTOR FORMED ON THE SAME SEMICONDUCTOR SUBSTRATE

Masataka Matsui, Tokyo, and Yukihiro Urakawa, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 735,043, Jul. 24, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 970,240
Claims priority, application Japan, Jul. 25, 1990, 2-194983
Int. Cl.[5] H03K *19/02*
U.S. Cl. 307—446 **5 Claims**



1. A logic circuit comprising:

a bipolar differential circuit for obtaining first and second differential circuit outputs which are complementary to each other, said bipolar differential circuit having a terminal that is directly connected to a constant current source;

a first output circuit for obtaining a first output circuit output between a first bipolar transistor having the first differential circuit output as a control input and a first MOS transistor having the second differential circuit output as a control input, said first bipolar transistor and said first MOS transistor being connected tin series with each other between said constant current source and a power source of said bipolar differential logic circuit; and

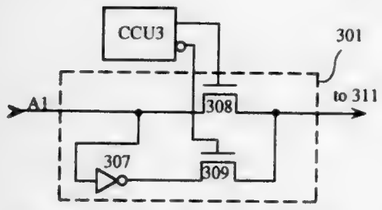
a second output circuit for obtaining a second output circuit output complementary to the first output circuit output between a second bipolar transistor having the second differential circuit output as a control input and a second MOS transistor being connected in series with each other as a control input, said second bipolar transistor and said second MOS transistor being connected in series with each other between said constant current source and said power source.

5,331,226

LOGIC CELL FOR FIELD PROGRAMMABLE GATE ARRAY HAVING OPTIONAL INPUT INVERTERS

F. Erich Goetting, Cupertino, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Jul. 23, 1992, Ser. No. 919,812
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **5 Claims**



1. A field programmable logic device comprising:

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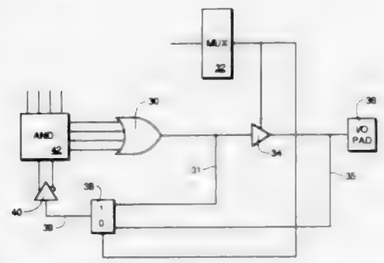
a plurality of logic cells each having a plurality of input leads;
a plurality of interconnect lines;
for at least one of said input leads an optional inverter having:
an optional inverter input terminal which can be connected to at least one of said interconnect lines by a corresponding at least one antifuse,
an optional inverter output terminal which connects to at least one of said input leads, and
means to provide on said optional inverter output terminal a selected one of a signal on said optional inverter input terminal and the complement of said signal on said optional inverter input terminal.

5,331,227

PROGRAMMABLE LOGIC DEVICE MACROCELL WITH AN EXCLUSIVE FEEDBACK LINE AND AN EXCLUSIVE EXTERNAL INPUT LINE

Mark A. Hawes, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Continuation of Ser. No. 883,076, May 15, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 166,662
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 **4 Claims**



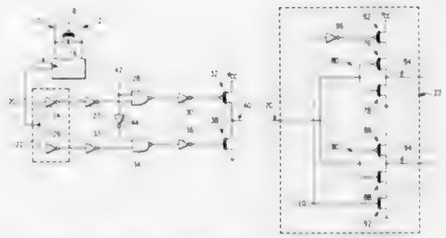
1. A field programmable logic device (FPLD), comprising:
a) means, having an input and output, for creating a sum-of-products signal on its output;
b) an I/O pad, having:
b1) an input for receiving the sum-or-products signal and outputting it from the FPLD, and
b2) an output for receiving external signals, from outside of the FPLD, and inputting them;
c) first switching means,
having an input that is coupled exclusively and directly to the output of the creating means and an output coupled directly to the I/O pad,
for initiating a stopping mode that prevents the sum-of-products signal from reaching the I/O pad, and
for initiating an allowing mode that allows the sum-of-products signal to proceed to the I/O pad and be output from the FPLD;
d) internal feedback means,
coupled at one end exclusively and directly 1) to the output of the creating means, and 2) to the input to the first switching means,
for feeding back the sum-of-products signal to the input of the creating means;
e) external feedback means,
coupled at one end exclusively and directly 1) to the output of the first switching means, and 2) to the input to the I/O pad,
for feeding back the external signals, received from the I/O pad, to the input of the creating means;
f) second switching means,
coupled directly to external feedback means to receive the external signals from the external feedback means, and
coupled directly to the internal feedback means to receive the sum-of-products signals from the producing means,
for initiating a stopping mode that prevents the sum-of-products signal from reaching the input of the producing means, but allows the external signal to reach the input of the producing means, and
for initiating an allowing mode that allows the sum-of-products signal to proceed to the input of the producing means, but stops the external signal from reaching the input of the producing means; and
g) control means,
coupled directly to the first and second switching means, for initiating stopping and allowing modes of the first and second switching means.

5,331,228

OUTPUT DRIVER CIRCUIT

James Brady, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 31, 1992, Ser. No. 923,135
Int. Cl.[5] H03K *19/00, 19/0948*
U.S. Cl. 307—473 **5 Claims**



1. An output driver circuit, comprising:
a sense amplifier having an output;
a first inverter and a second inverter coupled to said sense amplifier, each inverter having one-channel transistor and one p-channel transistor, wherein said first inverter and said second inverter are utilized to drive a first and second chain of logic gates respectively, and wherein the transistors in the first inverter and the second inverter are selected so that said first inverter and said second inverter have complementary preferential output states, said first inverter consisting of an additional p-channel transistor in series with its p-channel transistor and said second inverter consisting of an additional n-channel transistor in series with its n-channel transistor, wherein the additional transistors force the inverters to the preferential output states when receiving a gating signal; and
a p-channel output transistor coupled to said first chain of logic gates and an n-channel output transistor coupled to said second chain of logic gates, wherein the first and second inverters generate their preferential output states in response to an intermediate voltage range from the sense amplifier to turn off both the n-channel output transistor and the p-channel output transistor.

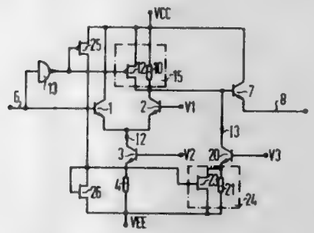
5,331,229

CMOS/ECL SIGNAL LEVEL CONVERTER

Claude Barre, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 15, 1992, Ser. No. 869,472
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1991, 4112310
Int. Cl.[5] H03K *17/0.75*
U.S. Cl. 307—475 **5 Claims**

1. A signal level converter for converting CMOS input signal levels to ECL output signal levels, comprising:
first and second transistors having bases and having collectors and emitters defining collector-to-emitter paths, the emitters of said first and second transistors being connected to each other, the collector of said first transistor being directly connected to a first supply voltage potential, a first controllable resistor connected between the collector of said second transistor and the first supply voltage potential, the base of said second transistor being connected to a reference potential, and said first resistor having a control electrode;
a third transistor having a base and having a collector and an emitter defining a collector-to-emitter path, the collector of said third transistor being connected to the emitters of said first and second transistors, a second resistor connected between the emitter of said third transistor and a second supply voltage potential, and the base of said third transistor being connected to a control potential;



a fourth transistor having a collector connected to the first supply voltage potential, a base connected to the collector of said second transistor and an emitter;
an input signal terminal connected to the base of said first transistor, an output signal terminal connected to the emitter of said fourth transistor;
an inverter having an input terminal and an output terminal, said input terminal of said inverter being connected to said input signal terminal, said output terminal of said inverter being connected to said control electrode of said controllable resistor; and
a second controllable resistor having a control electrode connected to said input signal terminal, and a fifth transistor having a collector connected to the base of said fourth transistor, an emitter connected through said second controllable resistor to the second supply voltage potential and a base connected to a further control potential.

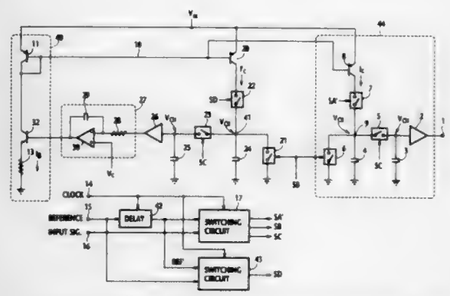
5,331,230

INTEGRATED-CIRCUIT SAMPLED-AND-HOLD PHASE DETECTOR WITH INTEGRATED CURRENT SETTING RESISTOR

Masaki Ichihara, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,541
Claims priority, application Japan, Aug. 2, 1991, 3-216425
Int. Cl.[5] H03K *5/26*
U.S. Cl. 307—514 **7 Claims**

1. A phase detector comprising:
a first storage capacitor;
first charge/discharge means for charging said first storage capacitor with a first constant current for a duration corresponding to a phase difference between an input pulse and a reference pulse and discharging said first storage capacitor;
first sample-and-hold means for sampling a voltage developed in said first storage capacitor, said sampled voltage representing a phase difference between said input pulse and said reference pulse;
a second storage capacitor;
second charge/discharge means for charging said second storage capacitor with a second constant current for a fixed time interval and discharging said second storage capacitor;
second sample-and-hold means for sampling a voltage developed in said second storage capacitor;
current setting means, including current control means and a resistive element connected in series to the current control means, for producing a setting current through said resistive element, said current control means being connected



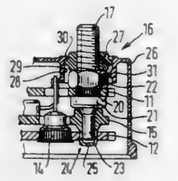
to said first charge/discharge means and said second charge/discharge means for determining said first and second constant currents according to said setting current; and
differential integrator means for differentially integrating the voltage sampled by said second sample-and-hold means with respect to a reference voltage and controlling the current control means of said current setting means in accordance with the differentially integrated voltage.

5,331,231

RECTIFIER DEVICE FOR THREE-PHASE GENERATORS IN VEHICLES

Karl-Heinz Koplin, Schwieberdingen; Stefan Renner, Weissach-Flacht; Gerhard Pflueger, and Henning Fasterding, both of Markgroeningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00382, § 371 Date Mar. 5, 1992, § 102(e) Date Mar. 5, 1992, PCT Pub. No. WO91/03836, PCT Pub. Date Mar. 21, 1991
PCT Filed May 25, 1990, Ser. No. 838,432
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1989, 3929427
Int. Cl.[5] H02K *11/00*
U.S. Cl. 310—68 D **9 Claims**



1. A rectifier device for a three-phase generator of a vehicle, said rectifier device comprising a metallic front cooling plate having a front side and a rear side and provided with a hole, and a rear cooling plate provided with an opening, said cooling plates being spaced from each other and extending parallel to each other; a plurality of positive diodes arranged on one of said cooling plates and a plurality of negative diodes arranged on another of said cooling plates; a printed circuit board made of insulating material fastened between said front and rear cooling plates, said printed circuit board having electrical conductors for connecting said diodes with each other and also

with said three-phase generator; electrical connection means for making electrical connection with said front cooling plate comprising a nut and a threaded bolt having a flange, an annular shoulder and an axial pin projecting into said opening of said rear cooling plate, said threaded bolt being pressed in said hole in said front cooling plate, and said flange and said shoulder being positioned and dimensioned so that said annular shoulder contacts on said rear side of said front cooling plate, the nut being screwed on said threaded bolt from said front side of said front cooling plate to secure said threaded bolt in said hole; and insulating means for electrically insulating said threaded bolt from said rear cooling plate, said insulating means being received in said opening and receiving said axial pin

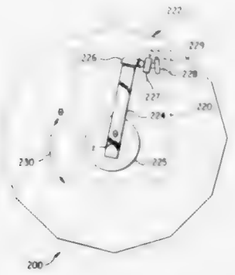
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5,331,232

ON-THE-FLY POSITION CALIBRATION OF A ROBOTIC ARM

Michael Moy, Lafayette; Robert W. Schmidt, Broomfield, and Robert A. Brummet, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed May 14, 1992, Ser. No. 883,014
Int. Cl.[5] G05B *19/42*
U.S. Cl. 318—568.11 **12 Claims**



1. A position sensing apparatus for use with a robotic device which moves along a predetermined, fixed path with respect to a base, the fixed path including a verification position, the apparatus comprising:

position encoder means for sensing a relative position between the robotic device and the base and producing a signal indicating said relative position;

an interrupt flag coupled to one of the robotic device and the base;

interrupt sensor means, coupled to the other one of the robotic device and the base, for sensing said interrupt flag when the robotic device moves through the verification position and for producing a position verification signal indicative thereof; and

controller means, coupled to said position encoder means and said interrupt sensor means, for receiving said position signal and said position verification signal and for comparing the relative position indicated by said position encoder with said verification position.

5,331,233

SENSE AMPLIFIER CIRCUIT FOR REDUCING TRANSMISSION DELAY IN DATA LINE

Yukihiro Urakawa, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

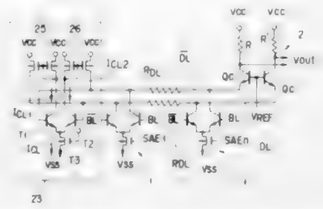
Filed May 26, 1992, Ser. No. 891,965
Claims priority, application Japan, May 27, 1991, 3-121353
Int. Cl.[5] H03F *3/45*; **G11C** *7/02, 7/06*; **G01R** *19/155*
U.S. Cl. 307—530 **19 Claims**

1. A sense amplifier circuit comprising:

a plurality of differential amplifier means for receiving potentials of a plurality of pairs of bit lines at input terminals thereof and subjecting the potentials of the bit line pairs to a differential amplification;

common load means acting as a common load for said plurality of differential amplifier means;

paired data lines connected to said plurality of differential amplifier means;



first clamping means connected between said common load means and said paired data lines, for clamping the potentials of said paired data lines; and

second clamping means for reducing the amplitude of a voltage between said paired data lines

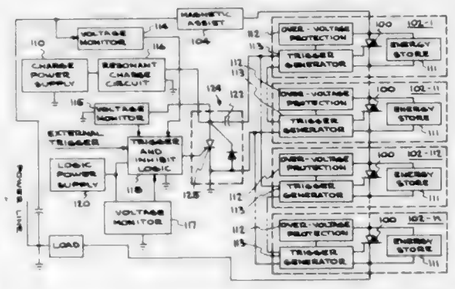
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5,331,234

SOLID STATE SWITCH

Bernard T. Merritt, and Gary R. Dreifuerst, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 12, 1992, Ser. No. 897,730
Int. Cl.[5] H03K *17/72, 3/57*
U.S. Cl. 307—631 **18 Claims**



1. A switch for discharging a high energy storage capacitor, comprising:

a circuit assembly comprising at least one reverse conducting thyristor, an energy storage means connected across the thyristor, and a voltage source triggering means connected to the thyristor;

a saturable inductor connected to said reverse conducting thyristor, said inductor delaying a main current pulse received from traveling through the reverse conducting thyristor until such time as said thyristor is sufficiently actuated;

a triggering chassis for receiving an external trigger pulse, said chassis including a capacitor connected to a high speed closing switch where said closing switch is connected to said voltage triggering means of said circuit assembly;
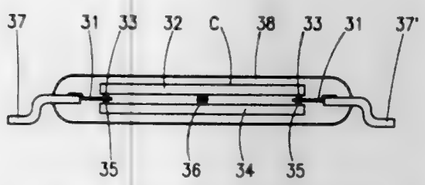
voltage protection means connected to the reverse conducting thyristor to actuate the thyristor when a selected voltage has been exceeded, said voltage protection means including a shielded break-over diode.

5,331,235

MULTI-CHIP SEMICONDUCTOR PACKAGE

Heung S. Chun, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Apr. 10, 1992, Ser. No. 866,846
Claims priority, application Rep. of Korea, Jun. 1, 1991, 9124/1991
Int. Cl.[5] H01L *23/16*
U.S. Cl. 257—777 **6 Claims**



1. A multi-chip semiconductor package comprising:

at least one chip set including first and second semiconductor chips each having a first face and a second face with said first face of the said first chip facing said first face of said second chip, said first face of said first and second chips having first and second solder bumps formed thereon;

first and second TAB tapes each having an inner lead and an outer lead wherein said inner lead of said first and second tapes is disposed between said first and second chips and bonded between said first solder bump on said first and second chips and said second solder bump on said first and second chips, respectively;

a solder bonded between and connected to said first face of said first and second chips; and

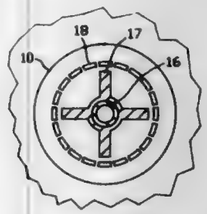
first and second beam leads of a lead frame bonded to the outer leads of the first and second TAB tapes, respectively.

5,331,236

MICRODYNAMIC DEVICES FABRICATED ON SILICON-ON-SAPPHIRE SUBSTRATES

Douglas A. Sexton, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 19, 1992, Ser. No. 932,430
Int. Cl.[5] H02N *1/00*; **H02K** *15/00*
U.S. Cl. 310—40 MM **7 Claims**



1. An improved micromotor capable of being driven at increased driving potentials comprising:

a silicon-on-sapphire substrate; and

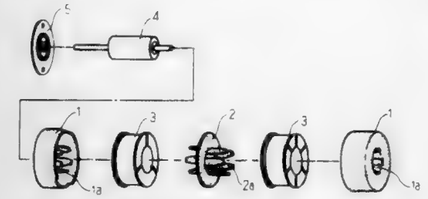
micromotor constituents fabricated on said silicon-on-sapphire substrate to assure said being driven at increased driving potentials.

5,331,237

STEPPING MOTOR

Hirotaka Ichimura, Nagano, Japan, assignor to Minebea Kabushiki Kaisha, Nagano, Japan

Filed Apr. 23, 1993, Ser. No. 52,165
Claims priority, application Japan, Apr. 28, 1992, 4-136186
Int. Cl.[5] H02K *15/12*
U.S. Cl. 310—44 **4 Claims**



1. In a stepping motor comprising:

(a) a housing comprising a pair of can-type stator yokes each of which is provided with a toothed portion in an inner surface thereof for forming a plurality of magnetic poles;

(b) a rotor provided in said housing;

(c) a pair of coils disposed around said rotor in said housing; and

(d) a flat-type stator yoke provided with a toothed portion forming a plurality of magnetic poles which correspond to those of said toothed portions of said can-type stator yokes, said flat-type stator yoke being disposed in said housing;

the improvement comprising:

(e) both of said can-type stator yokes being injection molded yokes formed of an injection molded composite powder in which a metal powder of a soft magnetic material is mixed with a powder of a thermoplastic synthetic resin; and

(f) said flat-type stator yoke being a one-piece, integrated injection molded yoke formed of an injection molded composite powder in which a metal powder of a soft magnetic material is mixed with a powder of a thermoplastic synthetic resin which is the same as that of said can-type stator yokes, and said flat-type stator yoke being provided with its magnetic poles extending from opposite sides thereof and having its magnetic poles correspond to those of said can-type stator yokes.

5,331,238

APPARATUS FOR CONTAINMENT AND COOLING OF A CORE WITHIN A HOUSING

Tyrone A. Johnsen, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

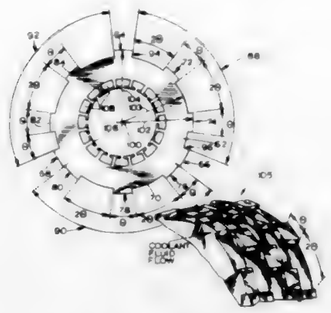
Filed Mar. 1, 1993, Ser. No. 24,590
Int. Cl.[5] H02K *9/18, 9/19, 9/22, 1/12*
U.S. Cl. 310—58 **16 Claims**

1. A core and housing assembly for electromagnetic devices comprising:

housing means for housing a core, the housing means having an inner housing perimeter;

a core for providing an electromagnetic flux path, the core comprising a plurality of core laminations and having an outer core perimeter and cooling fins projecting from the outer core perimeter, each core lamination having cooling fins arranged in a cooling fin configuration, the cooling fin configuration of each lamination being substantially similar to the cooling fin configurations of the other core laminations of the core, the cooling fins of each core lamination being arranged in a plurality of segments and wherein each segment of cooling fins of a core lamination has a different cooling fin configuration, each core lamination of the core being rotated with respect to adjacent core laminations to form cascaded cooling passages

through which cooling fluid may cascade to cool the core, each of the cooling fins having a height above the outer



core perimeter, the heights of the cooling fins being substantially the same; and,

retaining means for retaining the core within the housing.

5,331,239

INVERTER INTEGRAL TYPE MOTOR

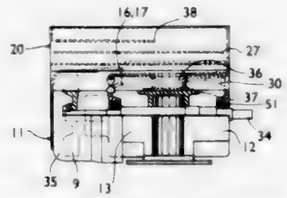
Seung G. Kwun; Seung K. Jeong; Jim S. Park, and Jae Y. Choe, all of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 18, 1992, Ser. No. 993,272

Claims priority, application Rep. of Korea, Dec. 20, 1991, 23683; Dec. 30, 1991, 24985

Int. Cl.[5] H02K *11/00, 5/00*

U.S. Cl. 310—68 R **7 Claims**



1. An inverter integral type motor, comprising:

a rotor having a shaft including a shaft end;

a stator core having first and second ends, a cylindrical hole receiving said rotor and a ventilation hole for cooling said stator core by air flow;

first and second cup-shaped brackets holding said stator core at said first and second ends, said first and second brackets having respective first and second shaft holes through which said shaft is inserted for rotation, respective first and second openings corresponding to said ventilation hole, and a plurality of holes for bolt tightening said first and second brackets to said stator core;

a fan fixed to said shaft end of said shaft, generating said air flow toward said stator core;

a fan cover covering said fan and guiding said air flow into said ventilation hole and along a periphery of said first and second brackets, and said stator core;

an inverter having a plurality of heat transfer fins transferring heat generated by said inverter using said air flow;

a plurality of bosses formed on said first and second brackets, mounting said inverter and said fan cover; and

means for connecting said inverter to said first and second brackets and said fan cover to one of said first and second brackets via said plurality of bosses.

5,331,240

FIELD ASSEMBLY OF ELECTRIC MOTORS

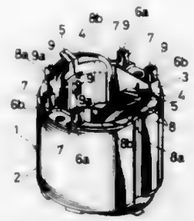
Kohki Hyodo, Nishio, Japan, assignor to Makita Corporation, Anjo, Japan

Filed May 21, 1993, Ser. No. 65,625

Claims priority, application Japan, May 22, 1992, 4-041165

Int. Cl.[5] H02K *11/00, 3/46*

U.S. Cl. 310—71 **7 Claims**



7. In a field assembly of an electric motor having a metallic core formed of a stack of annular laminations around a cavity and having an upper end and a lower end, and a terminal plate of an insulating material and mounted on said upper end of said core, the improvement comprising

a coil winding disposed on said core and having first and second coil ends extending therefrom,

at least one first terminal supporting means on said terminal plate and disposed in the vicinity of said first coil end of said coil winding, said first terminal supporting means supporting and retaining said second coil end of said coil winding, and

at least one second terminal supporting means on said terminal plate and disposed in the vicinity of said second coil end of said coil winding, said second terminal supporting means supporting and retaining said first coil end of said coil winding,

whereby said coil winding is mounted with said ends thereof having an enhanced degree of freedom.

5,331,241

ELECTRO-STRICTIVE ACTUATOR

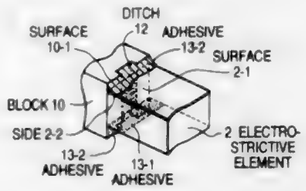
Kiyoshi Itoh, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 799,160, Nov. 27, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,228

Claims priority, application Japan, Nov. 30, 1990, 2-130424[U]

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—328 **10 Claims**



1. An impact-type dot-matrix printer head comprising:

a printing wire having a first end facing a sheet surface to strike and print the sheet surface, and having a second end;

an arm having a first end for supporting and moving the second end of said printing wire towards the sheet surface, said arm being rotatable about a supporting point provided on a second end of said arm, which is opposite the first end of said arm;

an electro-strictive element positioned adjacent said arm,

said electro-strictive element expanding along a longitudinal direction in response to a driving voltage so as to contact said arm, said electro-strictive element having a first surface at a first longitudinal end thereof and having a second surface at a second longitudinal end thereof;

a mechanical member connecting said electro-strictive element to said arm at a position between the first and second ends of said arm and adjacent said supporting point, said mechanical member being adhered to said electro-strictive element and including a third surface in direct contact with said first surface; and

frame means for supporting said arm by said supporting point and adhering the second longitudinal end of said electro-strictive element, said frame means including a fourth surface in direct contact with said second surface.

5,331,242

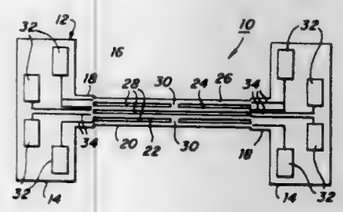
VIBRATING TINE RESONATORS AND METHODS FOR TORSIONAL AND NORMAL DYNAMIC VIBRATING MODE

Fred Petri, Snohomish, Wash., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 18, 1992, Ser. No. 978,114

Int. Cl.[5] H03H *9/215*

U.S. Cl. 310—370 **25 Claims**



1. A vibrating tine resonator for use as a transducer or the like, said resonator comprising:

a unitary body cut from flat, planar crystalline stock and having a generally uniform thickness;

said body including spaced apart end portions; and

said body including a tine system extending between said end portions;

said vibrating tine resonator being characterized by:

said tine system including a pair of similar tine arrays extending side-by-side between said end portions;

each array including a pair of tines extending parallel to one another and defining a slot separating said pair of tines; and

each array including a unsupported bridge portion spanning said slot and joining said tines.

5,331,243

METHOD FOR LIFTING A GENERATOR ROTOR SHAFT TO FACILITATE SHAFT BREAKAWAY AND MAINTENANCE

John Halbohm, Esperance, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 10, 1992, Ser. No. 988,698

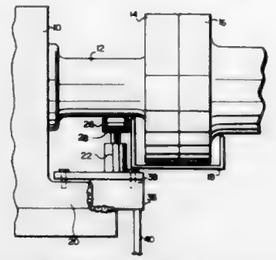
Int. Cl.[5] H02K *5/00*

U.S. Cl. 310—91 **3 Claims**

1. A method of facilitating rotational start-up of a non-rotating rotor shaft having a journal resting on a lower bearing surface of a bearing having upper and lower bearing surfaces encompassing said shaft bearing journal, comprising the steps of:

with the upper and lower bearing surfaces encompassing said shaft journal, engaging a pair of rollers carried by a lifting jack with and below the shaft at a location spaced axially along the shaft from said bearing; and

lifting the non-rotating rotor shaft from the lower bearing surface by actuating the lifting jack to space the shaft bearing journal and the lower bearing surface relative to one another, the step of lifting including spacing the shaft journal from the lower bearing surface a distance sufficient to enable formation of a lubricant film between the shaft journal and the lower bearing surface to permit rotation of said shaft in said bearing;



rotating the shaft while maintaining the rollers engaged with the shaft and the shaft journal spaced said distance from the lower bearing surface; and

removing said rollers from contact with said shaft.

5,331,244

PERMANENT MAGNET DC MACHINE HAVING MEANDER-LIKE STATOR WINDINGS FOR PRODUCING HIGH TORQUE WITHOUT EXCESSIVE HEATING

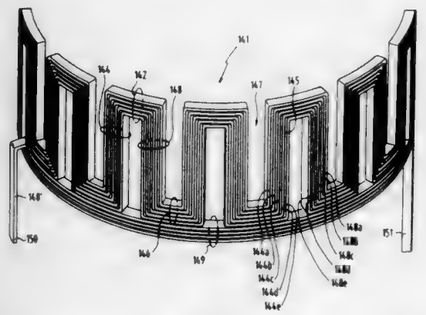
Erich Rabe, deceased, late of Buchenbach, Fed. Rep. of Germany by Hans-Joachim Rabe, Legal Representative , assignor to ORTO Holding, Luxembourg

Filed Oct. 26, 1992, Ser. No. 966,522

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1990, 4041805; Sep. 10, 1991, 4130016

Int. Cl.[5] H02K *1/00*

U.S. Cl. 310—180 **25 Claims**



1. An electronically commutated DC machine, especially an electronically commutated DC motor comprising:

a permanent magnet rotor defining a cylindrical annular air gap, centered about a rotational axis, having a homogeneous magnetic field with linear and radially extending magnetic field lines and with a continuously changing polarity within said essentially cylindrical annular gap,

an air-core and meander-like stator means including linear forward or backward extending meander sections parallel to the rotational axis and extending within the annular gap wherein each linear forward or backward extending meander section comprises a number of conductor sections geometrically parallel and having an essentially rectangular cross-sectional area, a longer side of the conductor cross-sectional area extending parallel to the direction of the magnetic field lines.

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5,331,245

PERMANENT MAGNET EXCITED ELECTRIC MOTOR WITH IMPROVED TORQUE RIPPLE

Martin Burgbacher, St. Georgen, and Michael Hermann, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Papst Licensing GmbH, Spaichingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 665,525, Mar. 5, 1991, Pat. No. 5,170,083, which is a continuation of Ser. No. 218,397, Jul. 13, 1988, Pat. No. 4,998,032, which is a continuation-in-part of Ser. No. 140,976, Jan. 6, 1988, abandoned, which is a continuation of Ser. No. 2,957, Jan. 13, 1987, abandoned. This application Jul. 23, 1991, Ser. No. 734,443

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1986, 3600737; Jul. 13, 1987, 3723099; Jul. 23, 1990, 9010895[U]

Int. Cl.[5] H02K *1/22*

U.S. Cl. 310—186 16 Claims



1. A multi-phase brushless d.c. electric motor comprising a stator and a magnetic rotor, one of the rotor and stator being hollow and having a substantially cylindrical internal surface, and the other of the stator and rotor having a substantially cylindrical external surface and being received within said internal surface such that a substantially cylindrical air gap is defined between said internal and external surfaces, wherein the stator is arranged to have a number of main poles and a number of auxiliary poles interspersed among the main poles with stator slots having orifices separating all poles around its substantially cylindrical surface, and the rotor has a plurality of magnetic rotor poles around its substantially cylindrical surface, the interaction of the rotor poles and the main and auxiliary poles being arranged to effect rotation of the magnetic rotor, and wherein the substantially cylindrical surface of the stator is provided with protuberances which are generally parallel with respect to the motor axis, and wherein the angular extent of each said main pole of the stat or substantially corresponds to the angular extent of a rotor pole.

5,331,246

COIL ASSEMBLY RETAINER FOR ELECTRIC MOTOR

Richard A. Baronosky, Bristol, Conn., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 30, 1992, Ser. No. 998,796

Int. Cl.[5] H02K *1/00*

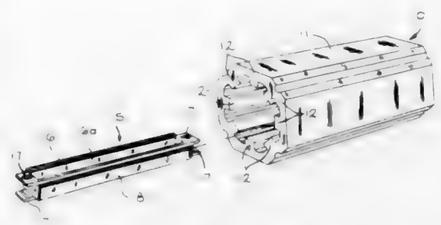
U.S. Cl. 310—194 27 Claims

1. An electric motor comprising:

a hollow stator having a plurality of radially inwardly extending stator poles formed thereon;

a rotor assembly supported within said stator for rotation relative thereto, said rotor assembly having a plurality of radially outwardly extending rotor poles formed thereon;

an electromagnetic coil assembly disposed about at least one of said stator and rotor poles, said electromagnetic coil assembly including a bobbin disposed about said one of said stator and rotor poles and an electromagnetic coil disposed about said bobbin, said bobbin including at least one flange portion extending outwardly therefrom; and



means engaging said outwardly extending flange portion for retaining said bobbin about said one of said stator and rotor poles.

5,331,247

SURFACE ACOUSTIC WAVE DEVICE AND COMMUNICATION DEVICE USING THE SAME

Hiroaki Ikeda, Kawasaki; Takashi Shiba, Yokosuka, and Osamu Hikino, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 933,305

Claims priority, application Japan, Aug. 22, 1991, 3-211143; Oct. 28, 1991, 3-281026

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 B 14 Claims

1. A surface acoustic wave device comprising a surface acoustic wave substrate and a pair of interdigital electrodes formed on said substrate, each of said electrodes having a bus bar and a plurality of electrode fingers extending from said bus bar generally perpendicular thereto and interdigitated with electrode fingers of the other electrode so that finger pairs are formed between adjacent electrode fingers extending from different bus bars, wherein:

at least one withdrawal weighting gap is provided with respect to said pair of interdigital electrodes on said substrate such that said electrode fingers of said pair of interdigital electrodes are divided into a plurality of electrode finger groups, and no finger exists in said gap to form a nonexciting portion in said surface acoustic wave device, each of said electrode finger groups including electrode fingers regularly arranged with a predetermined pitch, said withdrawal weighting gap of said nonexciting portion having a width as viewed in a surface acoustic wave propagating direction equal to a distance between one electrode finger and another electrode finger not adjacent to said one electrode finger in said regularly arranged electrode fingers, said nonexciting portion causing a distortion of distribution of an electric field to be generated by electrode fingers of said pair of interdigital electrodes when an electric voltage is applied across said bus bars with all of said electrode fingers of said pair of interdigital electrodes being arranged with said predetermined pitch; and

at least one distortion cancelling finger pair being included in each of said electrode finger groups and being arranged such that a length between a central line between said distortion cancelling finger pair and a central line between a finger pair adjacent to said distortion cancelling finger pair is different from a length between central lines between other adjacent two finger pairs in said regularly arranged electrode fingers in said electrode finger groups to cancel said distortion of the electric field distribution, said central lines being viewed generally in a lengthwise direction of said electrode fingers.

5,331,248

COOLING APPARATUS OF MAGNETRON

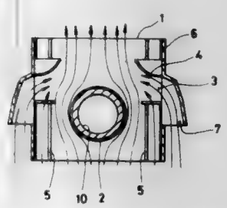
Seong T. Kang, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 23, 1992, Ser. No. 872,375

Claims priority, application Rep. of Korea, May 3, 1991, 91-7213

Int. Cl.[5] H01J *25/50*

U.S. Cl. 315—39.51 6 Claims



1. A cooling apparatus of magnetron having an anode, comprising:

(a) a heat radiation plate having first and second sides with an anode supporting means for firmly supporting the anode;

(b) a flow guide means provided on said heat radiation plate for guiding cooling-air having a flow direction towards the anode;

(c) a yoke member having third and fourth sides for enclosing said heat radiation plate; and

(d) an air passage means provided on the third and fourth sides of said yoke member for deviating the flow direction of the cooling-air driven from the third and fourth sides of said yoke member into the first and second sides of said heat radiation plate.

5,331,249

DISCHARGE TUBE

Hajime Minamikata; Kiyoshi Yagi, and Seiichi Wakabayashi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 408,576, Sep. 18, 1989, abandoned. This application Dec. 20, 1991, Ser. No. 810,425

Claims priority, application Japan, Sep. 27, 1988, 63-239639; Jul. 25, 1989, 1-190478

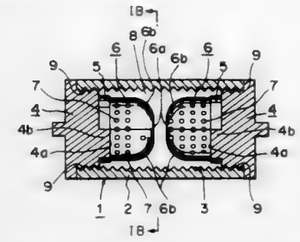
Int. Cl.[5] H01J *61/06*

U.S. Cl. 313—632 8 Claims

1. A discharge tube comprising:

a casing; and

a pair of electrode means including anode side electrode means and cathode side electrode means provided opposite each other within said casing to cause a discharge therebetween, said anode side electrode means and said cathode side electrode means having opposing end portions formed in a generally non-acute contour, the opposing end portions of at least said cathode side electrode means includes a planar face substantially opposing the other electrode means and a curved peripheral portion around said planar face, said planar face being formed with a multiplicity of cutouts therein wherein said curved peripheral portion around said planar face is also formed



with cutouts such that a density of cutouts in said planar face is larger than that in said curved peripheral portion.

5,331,250

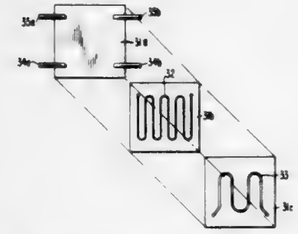
THICK FILM RESISTOR FOR USE IN A VACUUM AND A HIGH PRESSURE DISCHARGE LAMP HAVING SUCH A RESISTOR

Jagannathan Ravi, Elmira, N.Y.; Gerard Van Bockstal, Lier, Belgium; Go Suzuki, Aichi, and Kouji Shirasu, Yamanashi, both of Japan, assignors to North American Philips Corporation, New York, N.Y. and NGK Insulators, Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 626,914, Dec. 12, 1990, Pat. No. 5,159,242. This application Oct. 26, 1992, Ser. No. 966,245

Int. Cl.[5] H01J *7/44*

U.S. Cl. 315—71 27 Claims



1. A high pressure discharge lamp having an outer lamp envelope, a discharge vessel disposed within said lamp envelope and energizable for emitting light, and multiple resistor means within said envelope, characterized in that:

an integral thick film resistor comprises a substrate and a plurality of metallic resistive elements disposed on said substrate which comprise said plurality of said resistor means,

said substrate consists essentially of a material having an emissivity of greater than about 0.9.

5,331,251

AUTOMATIC CORRECTOR OF HEADLIGHT ELEVATION DURING CHANGES IN THE ATTITUDE OF A VEHICLE

Paul Marois, Paris, France, assignor to Valeo Vision, Bobigny, France

Filed May 14, 1993, Ser. No. 61,449

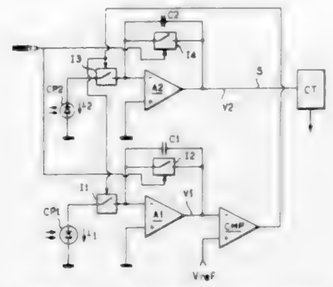
Claims priority, application France, May 15, 1992, 92 05929

Int. Cl.[5] B60Q *1/02*

U.S. Cl. 315—82 8 Claims

1. A device for automatically correcting the elevation angle of at least one vehicle headlight during changes in the attitude of said vehicle, the device being of the type comprising at least two lighting sensors integrated in the headlight and constrained to move therewith, the two sensors being disposed to

detect the brightness of the road in the field of illumination of the headlight in two different directions at two predetermined angles relative to a reference direction of said headlight, an actuator suitable for varying the angle of inclination of the headlight relative to the vehicle, and processor means suitable for generating an actuator control signal as a function of the signals delivered by the sensors which are essentially proportional to the quantity of light that each of them receives, wherein the processor means comprise gain servo-control means controlled by the signal provided by the first sensor, said gain servo-control means controlling the gain of a variable gain circuit receiving the signal from the second sensor, in such a manner that said gain increases with decreasing signal from the second sensor.



5,331,252

STRUCTURE AND DRIVING METHOD OF A PLASMA DISPLAY PANEL

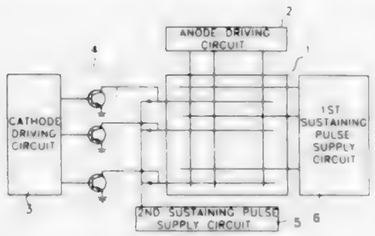
Dae-Il Kim, Kyungki-Do, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 13, 1992, Ser. No. 975,703

Claims priority, application Rep. of Korea, Mar. 4, 1992, 92-3566

Int. Cl.[5] G09G *3/10*

U.S. Cl. 315—169.4 **9 Claims**



1. A plasma display panel comprising:

a first plate;

a second plate having an inner surface opposed to the first plate;

a gas disposed between the first and second plate;

stripe-like anodes and barrier ribs disposed on the first plate;

first sustaining electrodes disposed on the inner surface of the second plate for sustaining a discharge;

a dielectric material covering the first sustaining electrodes and isolating the first sustaining electrodes from the gas;

stripe-like cathodes disposed on the dielectric material as second sustaining electrodes; and

a plurality of capacitors respectively connected to the stripe-like cathodes at respective common nodes.

5,331,253

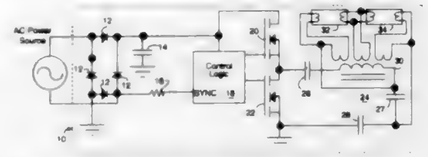
ELECTRONIC BALLAST FOR GASEOUS DISCHARGE LAMP OPERATION

Richard C. Counts, Dallas, Tex., assignor to USI Lighting, Inc., San Leandro, Calif.

Filed Aug. 24, 1992, Ser. No. 934,411

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **6 Claims**



1. A gaseous discharge lamp system, comprising:

an output transformer having a natural resonant frequency Fn and a primary winding with a capacitor input and at least one secondary winding for direct connection to a gaseous discharge lamp and its filaments;

a pair of output transistors connected in series across an input for a direct current source of power and having at their common junction a connection to said capacitor input of said primary winding of the output transformer such that said common junction may be alternatively switched by the output transistors between each polarity of said direct current source at a plurality of rates that includes a first switching rate to start said gaseous discharge lamps and a second switching rate to operate said gaseous discharge lamps;

oscillator means connected to the pair of output transistors for controlling the switching rate of power applied to the output transformer relative to said frequency Fn; and

synchronizing means connected to control the oscillator means and having an input for an alternating current source for phase locking the frequency output of the oscillator means to either said first switching rate to startup said gaseous discharge lamps or said second switching rate to operate said gaseous discharge lamps, wherein minor variations in the values of individual circuit components do not prevent operation of the oscillator at said switching rates.

5,331,254

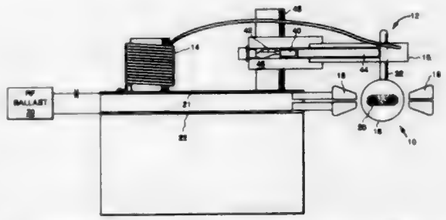
STARTING CIRCUIT FOR AN ELECTRODELESS HIGH INTENSITY DISCHARGE LAMP EMPLOYING A VISIBLE LIGHT RADIATOR

John P. Cocoma, and George A. Farrall, both of Rexford, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 19, 1993, Ser. No. 5,954

Int. Cl.[5] H05B *41/16*

U.S. Cl. 315—248 **10 Claims**



1. A starting circuit for an electrodeless high intensity discharge lamp of the type having an excitation coil situated about an arc tube for exciting an arc discharge in an ionizable fill contained in said arc tube, comprising:

a starting probe disposed proximate to said arc tube, said starting probe comprising a translucent starting chamber having a wall enclosing an interior containing a gas;

excitation means for providing a starting voltage to said starting probe for initiating a discharge in said chamber of sufficient magnitude for initiating an arc discharge in said arc tube; and

visible light radiating means for illuminating said starting chamber during application of said starting voltage for enhancing initiation of the discharge therein.

5,331,255

HIGH VOLTAGE POWER SUPPLY

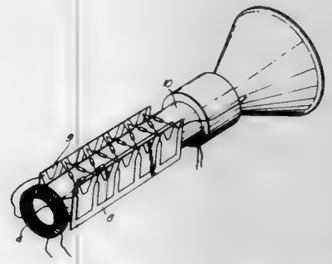
John R. Banbury, Hants, and David N. Jeenes, Devon, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom

Filed Jul. 6, 1992, Ser. No. 908,264

Claims priority, application United Kingdom, Nov. 3, 1989, 8924794

Int. Cl.[5] H01J *29/70*

U.S. Cl. 315—411 **14 Claims**



1. An EHT power supply having a voltage multiplier of a multi-stage Cockroft-Walton type characterised in that the capacitors of each stage are formed by areas of conducting material juxtaposed on either side of a layer of dielectric material, said layers forming an integral part of the mechanical structure of the multiplier and physically supporting the rectifier diodes of the multiplier, wherein the multiplier is formed as a closely-spaced stack, each stage of the multiplier comprising a separate layer of dielectric material and consisting of two capacitors and two diodes, one diode being connected between terminals of the two capacitors of the stage on the same side of the layer and the other diode being connected between terminals of the two capacitors on opposite sides of the layer, wherein the layers are disposable transversely and identically about the neck of a cathode ray tube.

5,331,256

FOCUS YOKE, ELECTROMAGNETICALLY FOCUSED CRT DISPLAY WITH THE FOCUS YOKE, AND NEGATIVE FEEDBACK CIRCUIT WITH STRAY-CAPACITOR-CANCELLATION MEANS USED FOR THE CRT DISPLAY OR THE LIKE

Masanori Ogino; Miyuki Ikeda, and Toshiyuki Kimoto, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 991,488

Claims priority, application Japan, Dec. 26, 1991, 3-356727

Int. Cl.[5] G09G *1/04;* **H01J** *29/06, 29/46*

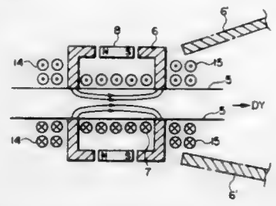
U.S. Cl. 315—382 **19 Claims**

1. A focus yoke used for an electromagnetically focused CRT display comprising:

cylindrical permanent magnet means which is disposed around a neck portion of a CRT and is spaced from the circumference of the neck portion;

core means for defining a toroidal space together with said cylindrical magnet means for substantially surrounding said neck portion and for forming a magnetic path to guide magnetic lines of force generated by said cylindrical permanent magnet means;

dynamic focus winding means disposed in said toroidal space; and



eliminating winding means disposed externally of said toroidal space for eliminating an undesired magnetic field of an inverse polarity generated due to said cylindrical permanent magnet means.

5,331,257

COMMUTATED ELECTRO-DYNAMIC MACHINE SUCH AS A D.C. MOTOR, HAVING AN AUTO-SYNCHRONIZING SENSOR, AND A SCREEN WIPING APPARATUS EMPLOYING SUCH A MOTOR

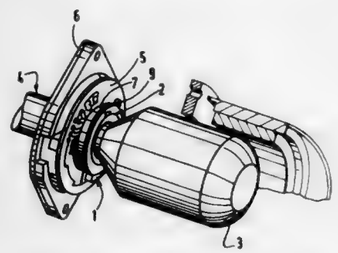
Xavier Materne, Billere, and Richard Dazat, Chatillon, both of France, assignors to Valeo Systemes d'Essuyage, Montigny-le-Bretonneux, France

Filed Dec. 4, 1992, Ser. No. 986,144

Claims priority, application France, Dec. 6, 1991, 91 15162

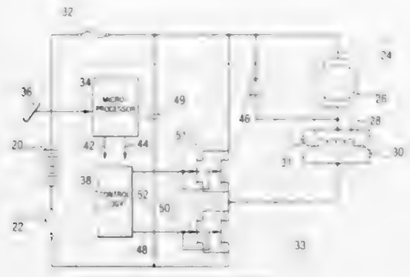
Int. Cl.[5] H02K *23/00*

U.S. Cl. 318—85 **15 Claims**



1. An electro-dynamic machine comprising a stator, a rotor, means mounting the rotor in the stator, a commutator carried by the rotor, automatic synchronising means associated with the rotor and the stator for automatic synchronisation of the machine with another similar machine, wherein the automatic synchronising means includes a wheel coupled to the commutator, said wheel including at least one portion carrying an indication of a recorded angular position of the rotor, and at least one reading device for reading the said indication of position, the reading device being coupled to the stator of the machine.

5,331,258
SYNCHRONOUS-RECTIFICATION TYPE CONTROL FOR DIRECT CURRENT MOTORS AND METHOD OF MAKING
Robert Lankin; Andrew E. Lankin, both of Ontario, and Richard J. Hellinga, Kitchener, all of Canada, assignors to Solaria Research Enterprises, Ltd., Canada
Filed Mar. 30, 1992, Ser. No. 859,226
Int. Cl.[5] H02P *5/00*
U.S. Cl. 318—139 **12 Claims**



1. An electronic control for a direct current traction motor, comprising

a first plurality of parallel-connected power field effect transistors arranged for connection in series with the motor, a field gate electrode of each first field effect transistor being connected to a first common control line for controlling an on-off cycle of conduction through the first field effect transistors to provide drive current to the motor from a direct current source; and

a second plurality of parallel-connected power field effect transistors arranged for connection in parallel with the motor, a field gate electrode of each second field effect transistor being connected to a second common control line for controlling a synchronous-rectification on-off cycle of conduction through the second field effect transistors in synchronism with the on-off cycle of conduction of the first field effect transistors for commuting a motor current when the first parallel-connected field effect transistors are switched off

5,331,259
BRUSHLESS MOTOR DRIVE CIRCUIT
Hayato Naito, Nagano, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan
PCT No. PCT/JP91/01378, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/07420, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 9, 1991, Ser. No. 861,813
Claims priority, application Japan, Oct. 12, 1990, 2-274924
Int. Cl.[5] G05F *3/16*
U.S. Cl. 318—254 **7 Claims**

1. A brushless motor drive circuit which is provided with a plurality of output transistors for switching a DC power supply to driving coils of m phases, comprising that, for each phase, there are provided:

a first transistor for driving a corresponding one of said output transistors connected to a DC power supply side;

a second transistor which constitutes a current mirror circuit in combination with said first transistor;

a reference voltage generating means connected to said second transistor, said means for generating a voltage proportional to a current flowing through said second transistor; and

a current feedback means which is to be turned on when a potential difference between an output terminal of said first transistor and said DC power supply reaches a value close to said voltage generated by said reference voltage generating means; said current feedback means causing a voltage drop nearly equal to a voltage generated by said second transistor, to thereby feed back a portion of an



output current of said first transistor to a stage preceding said reference voltage generating means, so that an input current to said first transistor is reduced.

5,331,260
SYSTEM FOR CONTROLLING POWER WINDOWS OF VEHICLES
Moin Ahmed, Holly, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Jan. 11, 1993, Ser. No. 3,035
Int. Cl.[5] H02P *1/22*
U.S. Cl. 318—282 **7 Claims**



1. A system for operating power windows in a vehicle having left and right front power windows proximate left and right front seats, the left and front power windows being raised and lowered by left and right electric motors, respectively; left and right rear power windows proximate left and right rear seats, the left and right rear power windows being raised and lowered by left and right electric motors, respectively, the system comprising:

a module mounted in a console located proximate the front seats, the module having left and right front operating switches for normally operating the left and right front windows and a mode selection switch movable between a first position in which the system is in a first mode and a second position in which the system is in a second mode;

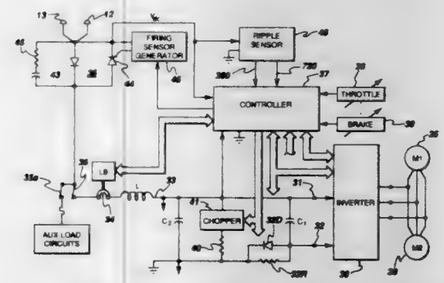
left and right rear operating switches for the left and right rear windows, the left and right rear operating switches being located proximate the rear seats;

a power and control circuit having a power source and ground with the mode selection switch disposed in the power circuit, wherein the power and control circuit includes:

means for connecting each of the motors and the operating switch associated therewith to the power circuit so that the current flows from the power source to ground through the selected operating switches and motors when the mode selection switch is in the first position to select the first mode, and

means for connecting the left and right rear motors for the left and right rear power windows to the power source and to ground through the left and right front operating switches, respectively, while disconnecting the left and right front electric motors from the power circuit and disconnecting the left and right rear operating switches from the power circuit when the mode selection switch is in the second position to select the second mode, whereby the rear windows are operated only by the left and right front operating switches.

5,331,261
REGENERATIVE BRAKING PROTECTION FOR AN ELECTRICALLY-PROPELLED TRACTION VEHICLE
Herbert J. Brown; Ronald F. Griebel; Ajith K. Kumar; Stuart W. McElhenny, all of Erie, Pa., and Dean S. Grinch, Dublin, Ohio, assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 630,698, Dec. 20, 1990, abandoned. This application Feb. 9, 1993, Ser. No. 15,326
Int. Cl.[5] H02P *3/14;* **B61C** *17/12*
U.S. Cl. 318—376 **28 Claims**



1. A braking protective system for an electrical propulsion system, the system comprising:

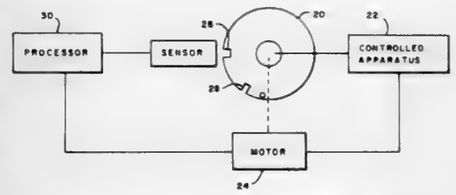
a controllable electric power converter having a set of load terminals adapted to be connected to at least one traction motor and a pair of d-c terminals adapted to be connected to a normally energized wayside electric power station having at least one fundamental frequency, the wayside electric power station being the sole source of such fundamental frequency, the converter having alternative motoring and electrical braking modes of operation, the wayside source comprising electrical conductor means respectively extending along different sections of a right-of-way traveled by the vehicle, with proximate ends of the conductor means in adjacent sections being separated from each other by relatively short, insulating gaps, the vehicle being equipped with at least one current collector in sliding contact with the wayside conductors as the vehicle moves along the right-of-way, the current collector and the converter's d-c terminals being interconnected by controllable electric switch means having alternative conducting and non-conducting states;

voltage ripple detecting means, coupled to the vehicle's current collector, for providing an enable signal if the current collector is in contact with a wayside conductor that is energized by voltage having an a-c ripple component of the fundamental frequency and at least a predetermined threshold amplitude;

means, operative when the converter is operating in its electrical braking mode, for changing the controllable switch means from conducting to non-conducting states in response to the current collector traversing each wayside conductor gap as the vehicle moves from one section of the right-of-way to the next section; and

control means, effective when the converter is operating in a braking mode and the switch means is in a non-conducting state, for returning the switch means to its conducting state in response to an enable signal being provided by the ripple detecting means.

5,331,262
SELF ADJUSTING MOTOR POSITIONING SYSTEM AND METHOD
Robert J. Francisco, New Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 9, 1992, Ser. No. 987,834
Int. Cl.[5] G05B *5/00*
U.S. Cl. 318—452 **4 Claims**



1. A self-adjusting motor positioning system, comprising:

a motor including a shaft extending therefrom;

a disc coupled to said motor shaft and having at least first and second notches;

rotating apparatus coupled to said motor shaft whereby said rotating apparatus is intermittently driven by said motor, said rotating apparatus having a desired starting position from which the rotating apparatus is desired to begin turning, said first notch in said disc corresponding to said starting position of said rotating apparatus;

sensor means adjacent said disc for detecting said first and second notches;

control processing means coupled to said sensor means and said motor for receiving detection signals from said sensor means and for turning said motor on and off, said control processing means including memory means for storing a time delay count representing a time delay for said control processing means to turn off said motor after said second notch is detected by said sensor means;

wherein said control processing means turns said motor off when the time delay expires after said sensor means detects said second notch, said control processing means determining whether said sensor means has detected said first notch as said motor coasts to a stop, and said control processing means decrements said time delay count if said sensing means detected said first notch while said motor coasts to a stop.

5,331,263
VELOCITY CONTROL DEVICE
Koji Sagae, and Tomoyukui Shirai, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 26, 1992, Ser. No. 904,951
Claims priority, application Japan, Jun. 26, 1991, 3-250172
Int. Cl.[5] G05B *11/01*
U.S. Cl. 318—560 **26 Claims**

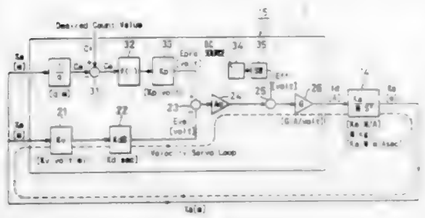
1. A velocity control device for controlling a velocity of a controlled object, said control device comprising:

means for obtaining a velocity profile in which the velocity of the controlled object is proportional to a square root of a distance from a present position of the controlled object to a desired position of the controlled object;

means for forming a velocity servo loop for controlling the velocity of the controlled object so that the velocity of the

controlled object substantially matches said velocity profile; and

means for applying a feedforward signal to said velocity servo loop so that the velocity of the controlled object is more precisely matched with said velocity profile than when controlled by said velocity servo loop alone, said



feedforward signal being applied to said velocity servo loop so that the controlled object is subjected to a constant acceleration in a direction opposite to a direction of movement of the controlled object, said feedforward signal being applied to said velocity servo loop only while the controlled object is decelerating.

5,331,264

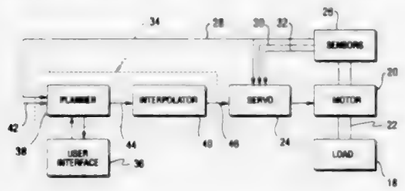
METHOD AND DEVICE FOR GENERATING AN INPUT COMMAND FOR A MOTION CONTROL SYSTEM

Sai-Kai Cheng; H. Dean McGee, both of Rochester Hill; Chi-Ken Tsai, Bloomfield Hills, and Hadi A. Akeel, Rochester Hills, all of Mich., assignors to Fanuc Robotics North America, Inc., Auburn Hills, Mich.

Filed Apr. 15, 1993, Ser. No. 48,654

Int. Cl.[5] B25J *9/18*

U.S. Cl. 318—568.11 **26 Claims**



1. A method for generating an input command for a motion control system, the system including a servo amplifier, a servo motor having motor parameters defining operating limits for torque and velocity and a feedback loop, the servo motor moving a load having a starting inertia at a starting position and a destination inertia at a destination position as seen by the servo motor due to load position and gravity, the method comprising the steps of:

storing the motor parameters in memory; and

calculating an entire third order position profile as a function of the starting and destination positions and inertias motion planning wherein the servo motor parameters include motor torque/velocity for acceleration and deceleration and wherein the step of calculating includes the step of a) defining motor torque/velocity equations for defining limits of motor torque/velocity.

5,331,265

METHOD OF EXECUTING SLIDING-MODE CONTROL INCLUDING TWIST FEEDBACK

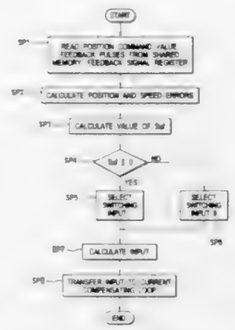
Nobutoshi Torii, Hachioji; Ryo Nihei, and Tetsuaki Kato, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Continuation of Ser. No. 743,343, Aug. 7, 1991, abandoned. This application Mar. 12, 1993, Ser. No. 32,404

Claims priority, application Japan, Dec. 11, 1989, 1-320916

Int. Cl.[5] G05B *5/01*

U.S. Cl. 318—610 **6 Claims**



1. A method of executing sliding-mode control of a servomotor, comprising the steps of:

(a) feeding back an amount of twist, representing a positional difference between a servomotor and a mechanical actuator drivable by the servomotor, to a servo loop of the servomotor; and

(b) performing sliding-mode control of the servomotor with switching surfaces selected by filtering the amount of twist by a filter having a characteristic represented by a numerator and a denominator which are of a first order with respect to a Laplace operator.

5,331,266

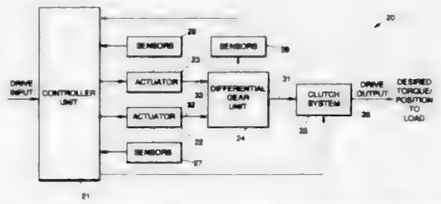
COOPERATIVE DIFFERENTIAL DRIVE SYSTEM

Glenn R. Widmann, Simi Valley, and Bruce S. Widmann, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 24, 1992, Ser. No. 903,307

Int. Cl.[5] G05B *19/19;* **B25J** *9/12*

U.S. Cl. 318—625 **9 Claims**



1. A cooperative differential drive system for controlling the motion of a payload, said drive system comprising:

a controller;

a first actuator coupled to the controller for responding to control signals provided thereby, and wherein the control signals cause the first actuator to rotate at a constant rotational rate in a first selected rotational direction;

a second actuator coupled to the controller for responding to control signals provided thereby, and wherein the control signals cause the second actuator to rotate at a

selected variable rotational rate in a second selected rotational direction;

a first plurality of sensors coupled between the first actuator and the controller that are employed to control the rotational rate of the first actuator;

a second plurality of sensors coupled between the second actuator and the controller that are employed to control the rotational rate of the second actuator;

a differential gear system coupled between the first and second actuators and the load, wherein said differential gear system is responsive to the respective rotational speeds of the first and second actuators and provides a desired load speed.

6. A cooperative differential drive system for controlling the motion of a payload, said drive system comprising:

a controller;

a first actuator coupled to the controller for responding to control signals provided thereby, and wherein the control signals are adapted to cause the first actuator to rotate at a constant rotational rate in a first selected rotational direction;

a second actuator coupled to the controller for responding to control signals provided thereby, and wherein the control signals are adapted to cause the second actuator to rotate at a selected variable rotational rate in a second selected rotational direction;

a first plurality of sensors coupled between the first actuator and the controller that are employed to control the rotational rate of the first actuator;

a second plurality of sensors coupled between the second actuator and the controller that are employed to control the rotational rate of the second actuator;

a differential gear system coupled between the first and second actuators and the load, wherein said differential gear system is responsive to the respective rotational speeds of the first and second actuators and provides a desired load speed; and

a clutch system coupled between the differential gear system and the load, and wherein said controller has on control signal coupled to the clutch system for engaging the clutch system after the first and second actuators have achieved their respective operating speeds and after initial system transients have been overcome.

5,331,267

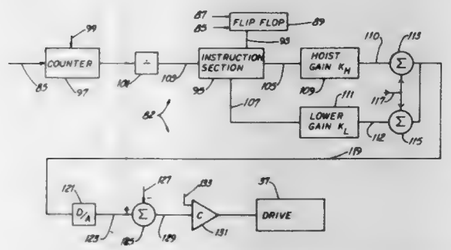
METHOD FOR DETERMINING MOTOR SPEED OF AN INDUCTION MOTOR FOR A HOIST

Kevin J. Anderson, West Allis, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Feb. 11, 1993, Ser. No. 16,699

Int. Cl.[5] H02P *5/00*

U.S. Cl. 318—799 **14 Claims**



1. In a drive using an AC induction motor for moving a load in hoisting and lowering directions, a method for determining motor speed including, in any order, the selecting steps of:

selecting a first voltage signal representing a maximum speed to be attained by the motor at rated output torque in the hoisting direction;

selecting a second voltage signal representing a maximum speed to be attained by the motor at rated output torque in the lowering direction;

selecting a bias voltage;

and further including the steps of:

combining one of the voltage signals with the bias voltage to obtain a feedback signal representing motor speed; and,

comparing the feedback signal with a speed command signal.

5,331,268

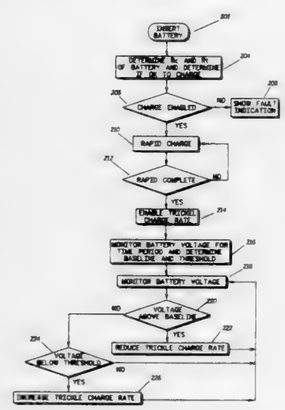
METHOD AND APPARATUS FOR DYNAMICALLY CHARGING A BATTERY

Joseph Patino, Plantation; Daniel M. Nigro, Lauderhill, and John D. Fiske, II, Pompano Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1993, Ser. No. 100,235

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—20 **9 Claims**



1. A method for dynamically charging a battery having a voltage, comprising the steps of:

determining a dynamic baseline voltage for the battery after the battery has been charged for a predetermined period of time;

establishing a voltage range based on the dynamic baseline voltage;

charging the battery at a predetermined charge rate;

monitoring the voltage of the battery; and

adjusting the rate at which the battery is being charged if the voltage of the battery falls outside of the voltage range.

5,331,269

STANDBY CONTROL FOR ELECTROMAGNET

Joseph A. Armond, and Juanito Rodenas, both of 2235 N. Knox Ave., Chicago, Ill. 60639

Filed May 14, 1992, Ser. No. 883,941

Int. Cl.[5] H01F *7/06*

U.S. Cl. 320—39 **18 Claims**

1. Apparatus for charging and controlling a standby battery in circuitry receiving AC from a main power source, the circuitry including a power circuit and a control circuit, the power circuit including an electromagnet and the battery, comprising,

a power rectifier in the power circuit for rectifying AC from the main source to DC,

circuit means in the power circuit connecting the battery in parallel with the rectified DC from the main source and in parallel with the electromagnet,

back-to-back SCRs in the power circuit controlling the AC to the power rectifier,

a control transformer having a primary connected with the AC in the main source and a secondary in the control circuity,

a control rectifier connected with the secondary of the control transformer,



a pulse transformer having a primary connected with the output of the control rectifier and secondaries connected with respective SCR's for energizing the battery, and

first control means for measuring the current in the electromagnet and controlling the pulse transformer and thereby the SCR's and the current to the electromagnet,

the battery remaining in operable connection with the electromagnet upon interruption for the main AC source.

5,331,270

CIRCUIT ARRAY FOR LIMITING A LOAD CURRENT BY REVERSE PHASE ANGLE CONTROL

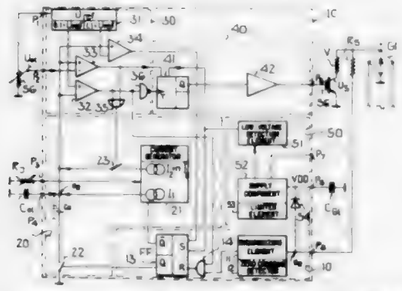
Karl-Diether Nutz, Oedheim, and Berthold Gruber, Bad Rappenau, both of Fed. Rep. of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Mar. 10, 1993, Ser. No. 29,237

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1992, 4210993

Int. Cl.[5] G05F *1/44*

U.S. Cl. 323—237 **19 Claims**



1. A circuit array, adapted to be coupled to a load and a source of a main AC voltage, for reverse phase angle control whereby a current flow in the load is limited to a defined phase angle (α) of the main AC voltage, comprising the following components, for sequential control of the reverse phase angle control;

a switching element, connected to the load and coupled to the source of the main AC voltage, for actuating the current flow in the load;

a time determining component; and

an integrated circuit including:

an actuating circuit, connected to said time determining component, responsive to a first control signal for generating a ramp voltage, and responsive to a second control signal for selecting one of at least two predetermined temporal voltage curves for the ramp voltage;

a synchronizing circuit, coupled to the source of the main AC voltage and connected to said actuating circuit, for detecting a zero crossing of the main AC voltage, for synchronizing the ramp voltage to the main AC voltage, and for generating the first control signal;

an evaluation circuit, connected to the actuating circuit and the synchronizing circuit, for monitoring the ramp voltage during reverse phase angle control and for generating the second control signal and a third control signal;

an output stage, connected between said evaluation circuit and the switching element, and responsive to the third control signal for controlling said switching element; and

a voltage supply circuit coupled to the source of the main AC voltage and connected to said synchronizing circuit.

5,331,271

COMPENSATION SCHEME FOR REDUCING EFFECTIVE TRANSFORMER LEAKAGE INDUCTANCE

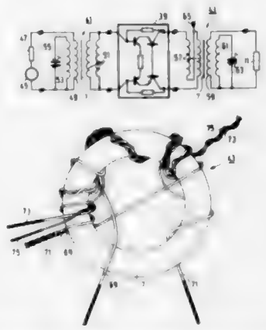
Robbert C. Thuis, Nijmegen, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 751,375, Aug. 28, 1991, abandoned. This application Mar. 10, 1993, Ser. No. 29,289

Claims priority, application Netherlands, Feb. 13, 1991, 9100247

Int. Cl.[5] G05F *3/06*

U.S. Cl. 323—355 **2 Claims**



1. A method of operating a transformer within at least a high frequency range relative to a lower frequency range and having a first winding, a second winding and a third winding, each winding having a conductor twisted over at least a portion of its length with each of the other conductors and a variable capacitor connected across said third winding and characterized by an input impedance and a leakage inductance, said method comprising the steps of:

selecting a frequency within the high frequency range; and

adjusting the capacitance of the variable capacitor based on a measured input impedance to minimize the leakage inductance at that selected frequency.

5,331,272

OPTICAL SENSOR FOR DETECTING AN ELECTRIC FIELD VIA THE PARADAY EFFECT

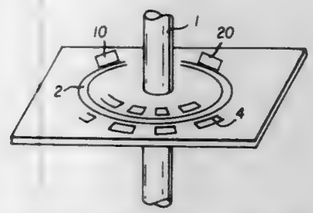
Olivier Parriaux, Lausanne; Patrick DeBergh, Cressier, and Jean-Pascal Chavanne, Bienne, all of Switzerland, assignors to Centre Suisse D'Electronique et de Microtechnique SA, Switzerland

Filed Mar. 30, 1992, Ser. No. 859,858

Claims priority, application Switzerland, Apr. 4, 1991, 00999/91

Int. Cl.[5] G01R *31/00*

U.S. Cl. 324—96 **7 Claims**



7. An optical electric current sensor comprising:

light emitter means for emitting light having a first polarization mode defined by plane polarized light;

light transmitter means for transmission of said light, said light transmitter means being looped around a rectilinear electric current conductor which produces a circular magnetic field having field lines which are substantially collinear with a propagation direction of said light, said light transmitter means being integrated on a substrate, wherein said transmitter means imparts a second polarization mode to said light due to birefringence of said transmitter means;

transducer means for generating a spatial modulation of said magnetic field, said spatial modulation defined by a plurality of modulations, wherein adjacent modulations are spaced apart a distance equal to a spatial period defined by a whole number multiplied by a beat length of said transmitter means, said spatial modulation creating a coupling between said first and second polarization modes, said transducer means comprising magnetic material areas integrated on said substrate and being spaced apart from each other along a loop of said light transmitter means to produce said spatial modulation of said magnetic field by creating areas of concentration of said magnetic field; and

light receiver means for detecting intensities of said first and second polarization modes for determination of a value of current traveling through said electric current conductor.

5,331,273

THERMAL FIXTURE FOR TESTING AN INTEGRATED CIRCUIT

Walter T. Schneider, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1992, Ser. No. 866,920

Int. Cl.[5] G01R *31/02*; H01L *23/44*

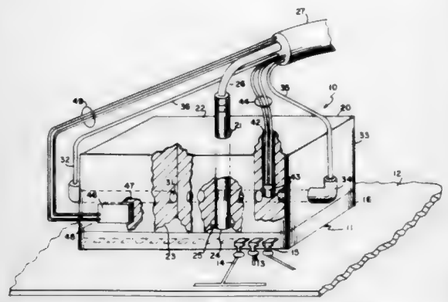
U.S. Cl. 324—158.1 **18 Claims**

1. In apparatus for testing the operation of an assembled electronic circuit board having a plurality of electrically interconnected, physically spaced, integrated circuits with housings and other components mounted thereon, each housing having at least one accessible planar surface having a predetermined shape, the improvement of temperature control apparatus for varying the temperature of an individual integrated circuit independently of other integrated circuits and components on the circuit board, said temperature control apparatus comprising:

a conductive block having a surface shaped to engage at least a portion of the accessible planar surface of one integrated circuit to be controlled and formed with a plurality of passageways therethrough,

means for affixing said conductive block to the selected integrated circuit with said surface abutting the integrated circuit accessible planar surface,

temperature sensing means disposed in a sensor passageway of said conductive block for monitoring the temperature of said conductive block,



fluid delivery means for circulating a fluid through another of said passageways as a fluid passageway, and

fluid temperature control means connected to said temperature sensing means and said fluid delivery means for adjusting the temperature of the fluid circulating through said fluid passageway thereby to control the temperature of said conductive block and the attached integrated circuit independently of the temperature of the other integrated circuits and other components on the circuit board.

5,331,274

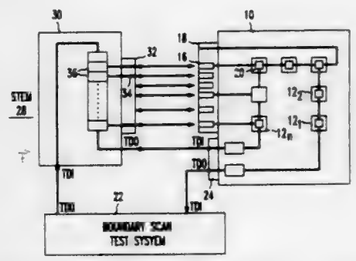
METHOD AND APPARATUS FOR TESTING EDGE CONNECTOR INPUTS AND OUTPUTS FOR CIRCUIT BOARDS EMPLOYING BOUNDARY SCAN

Najmi T. Jarwala, Lawrenceville, N.J., and Chi W. Yau, Holland, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 844,060, Mar. 2, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 80,480

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158.1 **8 Claims**



3. Apparatus for accomplishing testing of a plurality of input/output connections of a circuit board simultaneously with at least one device on the board containing a plurality of first boundary scan registers, comprising:

a plurality of second boundary scan registers coupled in series with the first boundary scan registers to form a single common chain of registers;

means for coupling each second boundary scan register to a separate input/output connection of the circuit board so that each second boundary scan register is responsive to a

signal present at a separate corresponding input/output connection; and

a boundary scan test system for launching a known stream of bits into the chain of first and second boundary scan registers and for shifting a stream of bits therefrom for comparison with a reference stream of bits representing a bit stream shifted from the first and second boundary scan registers when no defects are present.

5,331,275

PROBING DEVICE AND SYSTEM FOR TESTING AN INTEGRATED CIRCUIT

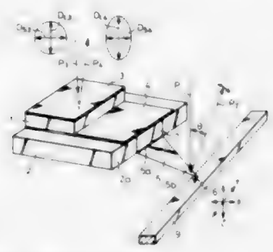
Kazuyuki Ozaki; Shinichi Wakana; Yoshiro Goto; Akio Ito; Kazuo Okubo; Soichi Hama; Akira Fujii, and Yoko Sato, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 9, 1992, Ser. No. 987,959

Claims priority, application Japan, Dec. 9, 1991, 3-324696; Sep. 18, 1992, 4-250261; Dec. 7, 1992, 4-327011

Int. Cl.[5] G01R *1/073, 31/02*

U.S. Cl. 324—757 **51 Claims**



1. A probing device comprising.

a minute probe in which at least an end portion is formed by conductive material;

a cantilever having one end to which the probe is attached, and another end fixed to a moving member movable relatively to a sample in each direction of X, Y and Z;

means for moving the moving member relatively to the sample;

a transducing means for generating information of voltage or current by means of light;

a connecting means having a low electric resistance, for connecting the transducing means and the end portion of the probe;

a detecting means for detecting a change in a physical amount occurring in the cantilever by a force caused between the probe and the sample by a relative proximity of the moving member to the sample; and

a voltage measuring means for measuring a voltage at a measurement point on the sample, which is determined based on an output of the detecting means, by way of the transducing means when the probe is contacted with the measurement point.

5,331,276

APPARATUS FOR PASSIVELY MEASURING THE VELOCITY OF A FERROUS VEHICLE ALONG A PATH OF TRAVEL

Donald G. Polvani, Arnold, and David G. Ellerbrake, Severna Park, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sep. 16, 1992, Ser. No. 945,474

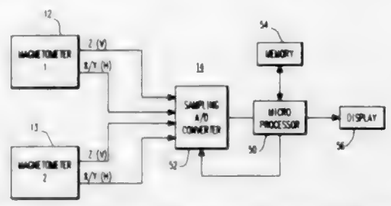
Int. Cl.[5] G01P *3/50;* **G08G** *1/052*

U.S. Cl. 324—160 **10 Claims**

1. Apparatus for passively measuring the velocity of a ferrous vehicle along a path of travel, comprising:

a) first and second magnetometers located adjacent said path of travel and spaced from one another by a distance dx along a line essentially parallel to said path of travel with each said magnetometer being operable to produce a plurality of magnetometer signals indicative of the magnetic induction of said vehicle along respective magnetometer axes, as said vehicle travels along said path in the vicinity of said magnetometers;

b) signal processing means responsive to said magnetometer signals to derive respective simultaneous first and second resultant magnetic induction indicative signals, B_1 and B_2, indicative of the magnetic induction of said vehicle at the respective location of said first and second magnetometers, and being further operable to derive the difference, $B_1 - B_2 = dB_{space}$, between said signals;



c) said signal processing means being operable to repetitively sample said magnetometer signals to derive said magnetic induction indicative signals;

d) said signal processing means being operable to drive the difference, dB_{time}, in magnetic induction indicative signals from one said sampling to a subsequent sampling, for the first of said magnetometers;

e) memory means for storing derived signals;

f) said signal processing means being responsive to said stored signals and operable to derive an indication of the velocity of said vehicle from the ratio of: dB_{time} with respect to the sampling period, and dB_{space} with respect to the distance between said magnetometers.

5,331,277

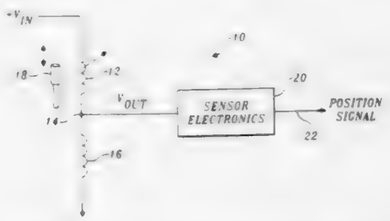
INDUCTIVE DIVIDER POSITION SENSOR WITH FIXED AND VARIABLE IMPEDANCE INDUCTORS

Bernard J. Burreson, Seattle, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

Filed Aug. 7, 1992, Ser. No. 926,838

Int. Cl.[5] G01B *7/14*

U.S. Cl. 324—207.16 **16 Claims**



1. An inductive position sensor that, when coupled to a source of driving voltage, produces an output signal that is related to a position of an object in accordance with a predetermined mathematical formula comprising:

a first inductor having a fixed impedance;

a variable inductor connected in series with the first inductor, the unconnected end of one of the first and variable inductors suitable for being coupled to a source of driving voltage; and

a target element including means for coupling the target element to the object whose position is to be indicated, the target element being movable along an axis that extends into the variable inductor, wherein the variable inductor includes a number of serially connected coils, each coil having a number of windings, N, that are wound such that the variable inductor has an impedance that varies with the position of the target element so that the ratio of the fixed impedance and the variable impedance divides the driving voltage to produce an output signal that varies according to a predetermined mathematical formula, said output signal being produced at a node that joins the first inductor and the variable inductor.

5,331,278

APPARATUS FOR INSPECTING DEGRADATION/DAMAGE OF A MATERIAL USING AN AC MAGNET, A SUPERCONDUCTING DC MAGNET AND A SQUID SENSOR

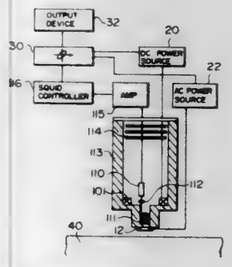
Stephen Evanson, Garden Suburbs Oldham, England; Satoshi Kanno; Masahiro Otaka, both of Hitachi, Japan; Toshihiko Yoshimura, Tsuchiura, Japan; Kunio Hasegawa, Katsuta, Japan, and Kazuo Takaku, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 757,585

Claims priority, application Japan, Sep. 11, 1990, 2-239061; Sep. 11, 1990, 2-240290

Int. Cl.[5] G01N *27/72;* **G01R** *33/12, 33/035;* **G21C** *17/003*

U.S. Cl. 324—232 **17 Claims**



1. An apparatus for inspecting degradation/damage of a material comprising:

a DC magnet for applying a DC magnetic field to an object to be inspected so as to enable measurement of a magnetic hysteresis loop of said object;

an AC magnet for applying a small AC magnetic field to said object to enable measurement of a minor magnetic hysteresis loop of said object;

a magnetic sensor measuring said magnetic hysteresis loop and said minor magnetic hysteresis loop of said object; and

a processing unit for detecting degradation/damage from measurement data of a magnetic characteristic of said object from said magnetic sensor and deciding the degree of degradation/damage;

wherein said DC magnet includes a superconducting magnet and said magnetic sensor includes a SQUID sensor.

5,331,279

METHOD AND APPARATUS FOR IMAGING BLOOD VESSELS EMPLOYING MAGNETIC RESONANCE

Masahiko Hatanaka, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 672,047, Mar. 18, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,452

Claims priority, application Japan, Mar. 20, 1990, 2-71022; Mar. 23, 1990, 2-72003

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—306 **9 Claims**

1. An imaging system for imaging an imaging region containing at least two blood vessels positioned substantially parallel to one another and having blood flowing therein, in substantially opposite directions, said system comprising:

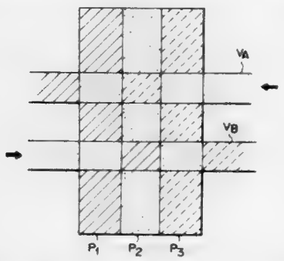
static-magnetic field applying means for applying a static-magnetic field to said imaging region;

gradient magnetic field applying means for applying a slicing gradient magnetic field, a phase encoding gradient magnetic field, and a leading gradient magnetic field to said imaging region;

RF pulse applying means for applying an RF pulse to said imaging region;

collecting means for collecting magnetic resonance signals from said imaging region;

control means for controlling said gradient magnetic field applying means, said RF pulse applying means and said collecting means to collect magnetic resonance signals from a plurality of adjacent, overlapping slicing regions and wherein within each slicing region magnetic resonance signals are collected from a plurality of slices, in a



serial order, with each slice extending transverse to the directions of flow of blood in said blood vessels;

reconstructing means for reconstructing a plurality of magnetic resonance images with each magnetic resonance image being an image of a slice on the basis of said magnetic resonance signals;

subtraction means for subtracting between said magnetic resonance images within the same slicing region to extract at least one of blood vessels of said two blood vessels from each of said images of said plural slices reconstructed by said reconstructing means;

addition means for separately adding the magnetic resonance images of at least one of blood vessels of said two blood vessels from each of said images obtained by said subtraction means to obtain images of at least one of blood vessels of said two blood vessels; and

displaying means for displaying added images of at least one of blood vessels of said two blood vessels obtained by said addition means.

5,331,280

EVOLVING IMAGE

Yuval Zur, Haifa; Haim Rotem, Matay Asher, and Dan Rosenfeld, Haifa, all of Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Dec. 17, 1992, Ser. No. 991,941

Claims priority, application Israel, Dec. 26, 1991, 100530

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **20 Claims**



1. A method for acquiring evolving image data with reduced Gibbs artifacts using a magnetic resonance imaging system, said method comprising the steps of:

acquiring magnetic resonance imaging data from a selected section of a patient,

applying magnetic phase encoding gradient pulses to the patient for encoding data acquired from the selected section of the patient in a sequence that acquires data from a central section of a two-dimensional Fourier transform plane with a first group of phase encoding gradient pulses early in a scan to provide an evolving image having Gibbs artifacts,

applying view magnetic gradient pulses to the patient, and

using optimized controllable parameters stored in the system to reduce the Gibbs artifacts to increase the legibility of the evolving images for diagnostic purposes.

5,331,281

GRADIENT MAGNETIC FIELD GENERATING COIL ASSEMBLY OF MAGNETIC RESONANCE IMAGING APPARATUS

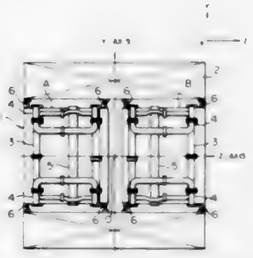
Masayuki Otsuka, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 1, 1992, Ser. No. 937,711

Claims priority, application Japan, Sep. 4, 1991, 3-224347

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 **15 Claims**



1. A gradient magnetic field-generating coil assembly of an MR imaging apparatus, comprising:

a core member disposed in a cylindrical magnet bore of a static magnetic field-generating magnet and divided into at least to cores arranged in a longitudinal or cylindrical Z-axis direction of said magnet bore so as to be spaced apart from each other by a predetermined gap; and

a plurality of gradient magnetic field coils, fixedly carried on said cores, for generating gradient magnetic fields in a cavity of said magnetic bore in three directions which are orthogonal to each other;

wherein each core has a dominant natural vibration frequency sufficiently high that acoustic resonance does not occur between the cores and the gradient magnetic fields generated by the gradient magnetic field coils.

5,331,282

MAGNETIC FIELD GENERATING ASSEMBLY

Ian L. McDougall, Oxon; Peter Hanley, Gloucestershire, and Robert C. Hawkes, Cambridge, all of Great Britain, assignors to Oxford Instruments (UK) Limited, Oxford, Great Britain

PCT No. PCT/GB91/00194, § 371 Date Aug. 7, 1992, § 102(e) Date Aug. 7, 1992, PCT Pub. No. WO91/12538, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 7, 1991, Ser. No. 917,057

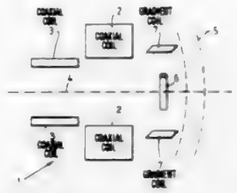
Claims priority, application United Kingdom, Feb. 8, 1990, 9002863

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—319 **14 Claims**

1. A magnetic field generating assembly comprising:

at least two magnetic field generators for generating magnetic fields in the same sense, the generators being arranged such that in use in a working region external to the generators the resultant magnetic field exhibits a gradient extending in a first direction, the generators being substantially coaxial electrical coils with the axis extending in the first direction, and wherein at least second order variations in the fields in directions transverse to the first direction within the region are substantially balanced such that an NMR experiment can be performed on a sample within the working region.



5,331,283

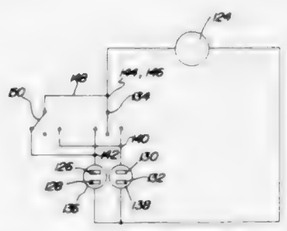
APPARATUS FOR DETECTING A COMPLETED ELECTRICAL CIRCUIT AT AN ELECTRICAL OUTPUT RECEPTACLE

Alan L. Sheldon, 6341 State Rte. 159, New Athens, Ill. 62264

Filed Nov. 23, 1992, Ser. No. 980,329

Int. Cl.[5] G01R *31/04;* **G08B** *21/00*

U.S. Cl. 324—508 **1 Claim**



1. Apparatus for detecting the presence of a completed electrical circuit at an electrical outlet receptacle comprising:

a housing, said housing having

at least one transformer having an input winding and an output winding; and

at least one pair of axially extending conductive blade contacts, each of said at least one pair of axially extending conductive blade contacts having a first end connected to said input winding of said at least one transformer and a second end extending outwardly from said housing; and

audible signal means connected to said output winding of said at least one transformer, for producing an audible sound when said at least one pair of conductive blade contacts is received by an output receptacle and electricity is flowing through said output receptacle,

wherein said housing further comprises:

a second transformer having an input winding and an output winding;

a second pair of conductive blade contacts, each of said second pair of conductive blade contacts having a first end connected to the input winding of said second transformer and a second end extending outwardly from said housing; and

first toggle switch means for connecting the audible signal means alternately to the output windings of said first and second transformers upon actuation of said toggle switch means,

wherein the first toggle switch means has three positions, a first position in which the first toggle switch means forms a connection between said audible signal means and said output winding of said first transformer, a second position in which the toggle switch means forms a connection between the audible signal means and said output winding of said second transformer and a third position in which said audible signal means is not connected to either said output winding of said first and second transformers,

wherein said housing further includes a cable connection means extending from said housing and an electrical cable having first and second ends, said first end of said cable adapted to be connected to said housing cable connection means, said housing cable connection means being connected to said first toggle switch means, and said second end of said cable being connected to second toggle switch means whereby said second toggle switch means is adapted to be located at a location remote from said housing, and

wherein said second toggle switch means has three positions corresponding to said three positions of said first toggle switch means such that actuation of said second toggle switch means is effective to actuate said first toggle switch means to a corresponding position from said remote location.

5,331,284

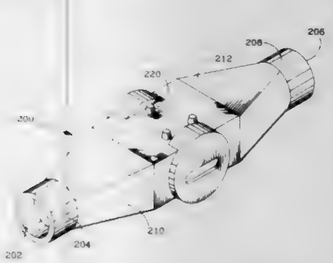
METER AND METHOD FOR IN SITU MEASUREMENT OF THE ELECTROMAGNETIC PROPERTIES OF VARIOUS PROCESS MATERIALS USING CUTOFF FREQUENCY CHARACTERIZATION AND ANALYSIS

Buford R. Jean, Round Rock, Tex.; Gary L. Warren, Cranford, Conn., and F. Lynn Whitehead, Austin, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 21, 1992, Ser. No. 871,339

Int. Cl.[5] G01N *22/04;* **G01R** *27/04*

U.S. Cl. 324—639 **2 Claims**



1. An electromagnetic property meter for the in situ measurement of any parameter of a material which may be inferred by measuring the electromagnetic properties of the material under investigation comprising:

(a) a source for generating controllable electromagnetic energy, the energy generated by said source having stable selectable frequencies and associated wavelengths, said source operable for generating a frequency range,

(b) a material measurement chamber in operative association with said source for receiving the energy generated by said source, said chamber having an energy confining boundary, the boundary having a coupling inlet for receiving the energy from said source into said chamber and a coupling outlet for egressing energy from said chamber, further, the boundary having dimensions so as to exhibit a cutoff condition falling within the operating limits of said source, the cutoff condition being the frequency dependent attenuation characteristic observed when the operating frequency falls below an effective cutoff frequency, the effective cutoff frequency being the frequency for which propagation ceases for an equivalent lossless material filling said chamber, such that a chamber signal is generated in said chamber representative of the material in said chamber affecting the amplitude or phase characteristics of the energy coupled across said chamber,

(c) a detector in operative association with the coupling outlet of the boundary of said chamber for receiving the chamber signal from said chamber, said detector responsive to the chamber signal having interacted with the material in said chamber and having been influenced by the cutoff condition of said chamber such that said detector generates a detector signal which is a function of the interacted and influenced energy, and

(d) a processor for receiving the detector signal from said detector for determining the properties of the material.

5,331,285

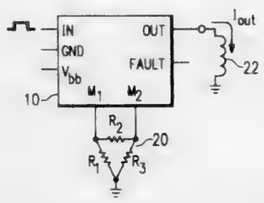
RESISTIVELY PROGRAMMABLE INTERFACE FOR AN ANALOG DEVICE

Andrew Marshall, Dallas, and Frank L. Thiel, Sachse, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 25, 1991, Ser. No. 720,354

Int. Cl.[5] G01R *27/08;* **G05B** *23/02*

U.S. Cl. 324—713 **27 Claims**



10. An interface for controlling an analog device the interface comprising:

input circuitry for accepting three resistive devices, said resistive devices coupled in a triangular configuration, said configuration comprising three nodes, said first node coupled to a voltage level, the second and third nodes coupled to said input circuitry;

control circuitry for switching a first reference voltage between the second and third nodes and for sensing the currents and voltages at said second and third nodes;

driver circuitry operable to generate a first selected current level for a selected period of time and a second selected current level, said current levels and period of time determined by said sensed currents and voltages.

5,331,286

METHOD FOR CONTINUOUSLY MONITORING THE SOUNDNESS OF THE PROTECTIVE COVERING ON UNDERGROUND METAL STRUCTURES, AND DEVICES FOR ITS IMPLEMENTATION

Luigi Rivola, San Donato Milanese, and Sebastiano Di Liberto, San Giuliano Milanese, both of Italy, assignors to Eniricerche S.p.A., Milan, Italy

Continuation of Ser. No. 960,200, Oct. 9, 1992, abandoned, which is a continuation of Ser. No. 557,968, Jul. 25, 1990, abandoned. This application May 20, 1993, Ser. No. 65,520

Claims priority, application Italy, Aug. 1, 1989, 21407 A/89

Int. Cl.[5] G01R *27/02;* **G01N** *27/00*

U.S. Cl. 324—718 **6 Claims**

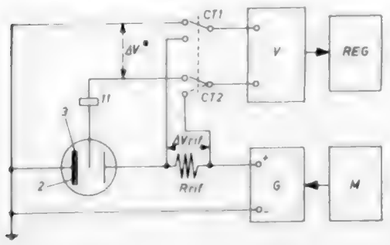
1. A method for continuously monitoring the soundness of a protective covering on an underground or immersed metal conduit subjected to cathodic protection, comprising:

a. modulating the cathodic protection current applied to the conduit with substantially square waves, wherein said modulation is effected symmetrically at a level of modulation below 10%;

b. directly measuring the potential variation due to the

ohmic drop $\Delta V^{\bullet}$ induced in the conduit by said applied modulation current $I^{\bullet}$; and

c. determining the resistance offered by the covering by the relationship $R = \Delta V^{\bullet}/I^{\bullet}$, wherein the monitoring is effected continuously by permanently modulating the cathodic protection current imposed on the conduit and wherein the resistance is measured with the IR drop so that changes in the soundness of the protective covering of the conduit can be detected.

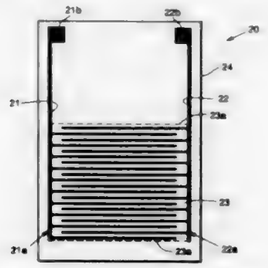


5,331,287

DEVICE AND METHOD FOR SENSING WATER AND/OR ACID IN THE PRESENCE OF WATER IN NON-AQUEOUS MEDIA

Frederick G. Yamagishi; Camille Van Ast, both of Newbury Park, and Leroy J. Miller, West Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 31, 1992, Ser. No. 922,899
Int. Cl.[5] G01N *27/02, 27/30;* **G01R** *27/00*
U.S. Cl. 324—724 **17 Claims**



1. A device for sensing water content in a nonaqueous medium comprising:

an insulating substrate;

interdigitated electrodes deposited on said substrate; and

an insulating form of a conductive polymer, the conductive polymer deposited over the interdigitated electrodes to bridge between adjacent digits of the electrodes, wherein the insulating form is converted to its conductive form by hydration with the water to provide a current which is proportional to the amount of water and which is measurable.

5,331,288

RAILROAD RAIL SIGNAL RECEIVER HAVING FREQUENCY CONVERSION AND A RESONANT TUNED TRANSFORMER SECONDARY

John O. G. Darrow, Murrysville, Pa., assignor to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Mar. 21, 1991, Ser. No. 673,025
Int. Cl.[5] H03B *19/00;* **H03K** *5/00;* **B61L** *21/00;* **G01R** *25/00*
U.S. Cl. 328—13 **25 Claims**



1. A receiver for reception of signals transmitted on railroad rails comprising:

frequency converter means for converting the frequency of said signal into a higher frequency signal;

an input transformer having a primary winding electrically connected to said frequency converter means to conduct said higher frequency signal in said primary winding;

the secondary winding of said input transformer connected as an active circuit element of a resonant circuit having a resonant frequency generally equal to the frequency of said higher frequency signal; and

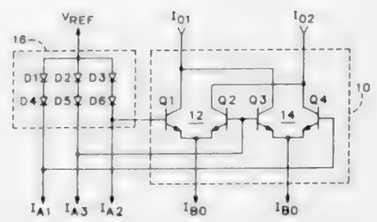
an output transformer having a first winding and a second winding, said first winding being an active circuit element in said resonant circuit and said second winding mechanically coupled to said first winding to provide an output signal corresponding to said higher frequency signal.

5,331,289

TRANSLINEAR F_T MULTIPLIER

Burt L. Price, Brandon, Miss., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Feb. 8, 1993, Ser. No. 14,490
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—252 **3 Claims**



1. A bipolar translinear f_T multiplier of the type having a pair of differential transistor amplifiers with the emitters of each pair coupled together to a constant current source, with the base of one transistor of the first pair being coupled to the base of one transistor of the second pair, and with the collectors cross-coupled to provide a differential output current comprising:

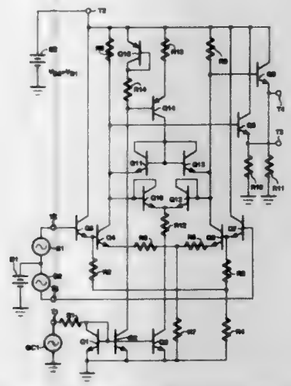
a diode network having three parallel paths coupled between a reference potential and for two of the paths a differential input signal and for the third path a constant current source, the constant current source being coupled to the one base of each transistor pair and the differential input signal being coupled across the other bases of the first and second pairs.

5,331,290

VARIABLE GAIN AMPLIFIER

Jack R. Harford, Flemington, N.J., and Heung B. Lee, Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 8, 1992, Ser. No. 940,220
Int. Cl.[5] H03F *3/45;* **H03G** *3/30*
U.S. Cl. 330—254 **27 Claims**



1. A gain-controlled amplifier stage comprising:

first and second transistors having respective emitter electrodes, respective base electrodes, and respective collector electrodes;

means for connecting said first and second transistors in emitter-coupled differential amplifier configuration, which means includes

means for applying a direct base bias voltage to the base electrode of said first transistor,

means for applying said direct base bias voltage to the base electrode of said second transistor,

means for applying an input signal voltage between the base electrodes of said first and second transistors,

means for coupling the emitter electrodes of said first and second transistors together, and

means for causing similar direct emitter current flows through said first and second transistors;

a first resistance, having a first end connected to conduct the entirety of a direct current flowing through the collector electrode of said first transistor responsive to its said direct emitter current flow, and having a second end;

a second resistance, having a first end connected to conduct the entirety of a direct current flowing through the collector electrode of said second transistor responsive its said direct emitter current flow, and having a second end;

means for receiving a direct operating voltage for application to the second ends of said first and said second resistances;

means for taking an output signal voltage from at least one of the first ends of said first and said second resistances; and

means for providing a controllable conductance between the first ends of said first and said second resistances, which said means for providing a controllable conductance includes:

first and second diodes of unilaterally conductive type, having respective first electrodes respectively connecting to the first end of said first resistance and to the first end of said second resistance, and having respective second electrodes connecting together at a control node; and

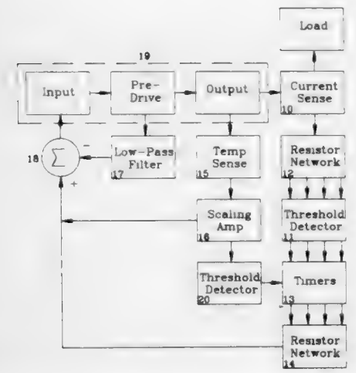
means for supplying a direct control current to said control node for controlling the unilateral conduction of said first and second diodes which direct control current has a value regulated responsive to an electric control signal, said electric control signal being applied to said means for supplying a direct control current through connections other than at the second ends of said first and said second resistances.

5,331,291

CIRCUIT AND METHOD FOR ADJUSTING THE BIAS OF AN AMPLIFIER BASED UPON LOAD CURRENT AND OPERATING TEMPERATURE

Daniel D'Agostino, Orange, and David Goodman, Meriden, both of Conn., assignors to Krell Industries, Inc., Milford, Conn.

Filed Dec. 17, 1992, Ser. No. 992,079
Int. Cl.[5] H03F *1/30*
U.S. Cl. 330—289 **11 Claims**



10. A method for automatically adjusting the operating point of an amplifier by varying the bias current comprising:

a) sensing the current flowing in the load,

b) comparing the level of the said current with reference to preset levels to generate a plurality of signals,

c) triggering timers whose time constant is based upon the said signals,

d) scaling and summing the output of said timers;

e) measuring the temperature of said amplifier output stage devices;

f) scaling said temperature measurement;

g) measuring the bias current in a predriver stage,

h) low pass filtering and scaling said pre driver bias;

i) summing said scaled and summed timer outputs, said scaled temperature measurement, and said scaled pre driver bias and

j) applying said summed value to the input of said amplifier to adjust the bias.

5,331,292

AUTORANGING PHASE-LOCK-LOOP CIRCUIT

Dennis R. Worden, Pleasanton, and Michael A. Brown, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 16, 1992, Ser. No. 915,085
Int. Cl.[5] H03L *7/18*
U.S. Cl. 331—1 A **6 Claims**

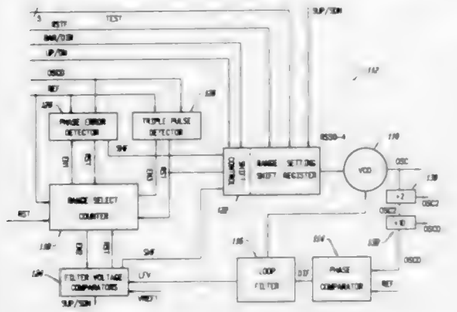
1. An autoranging phase-lock-loop circuit for locking the output of a voltage controlled oscillator onto a reference frequency, the autoranging phase-lock-loop circuit comprising:

range programmable voltage controlled oscillator means for generating a current oscillator output signal in response to one of a plurality of range select signals, each range select signal corresponding to a range of oscillator output frequencies, and for varying a frequency of the current oscillator output signal in response to a loop filter voltage;

counter means for generating a first enable signal a prese-

lected settling time after receiving a reset signal, for removing the first enable signal a preselected turn-off time after generating the first enable signal if the counter means has not received a subsequent reset signal since a most recent first enable signal was generated, and for generating a second enable signal after removing the first enable signal;

phase error detector means for comparing the current oscillator output signal to a reference signal in response to the first enable signal, for generating a shift signal and the reset signal if a phase error is detected, the reset signal being generated a delay time after the shift signal, and for



suspending a comparison of the current oscillator output signal to the reference signal when the first enable signal is removed;

shift register means for selecting a next range of oscillator output frequencies in response to the shift signal by generating a new range select signal from the plurality of range select signals;

phase comparator means for comparing the current oscillator output signal to the reference signal and for generating a difference signal in response thereto; and

loop filter means for generating the loop filter voltage in response to the difference signal.

5,331,293

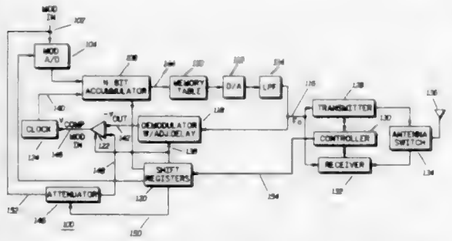
COMPENSATED DIGITAL FREQUENCY SYNTHESIZER

Wayne P. Shepherd, and Joseph P. Heck, both of Ft. Lauderdale, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 2, 1992, Ser. No. 940,259

Int. Cl.[5] **H03L** *7/00;* **H04B** *1/40*

U.S. Cl. 331—1 R **10 Claims**



1. A frequency synthesizer providing an output signal having reduced spurious output, comprising:

a time-delay frequency demodulator responsive to the output signal of the frequency synthesizer for providing a demodulator output signal which is substantially the inverse of the spurious output;

a reference clock means modulated with the demodulator output signal for providing a modulated reference clock signal; and

an accumulator having an input terminal for receiving the modulated reference clock signal and adjusting a value in the accumulator in response to the modulated reference clock signal so that the spurious output found in the frequency synthesizer's output signal is reduced.

5,331,294

OSCILLATION CIRCUIT INCLUDING A RING OSCILLATOR HAVING A CHANGEABLE NUMBER OF INVERTER CIRCUITS

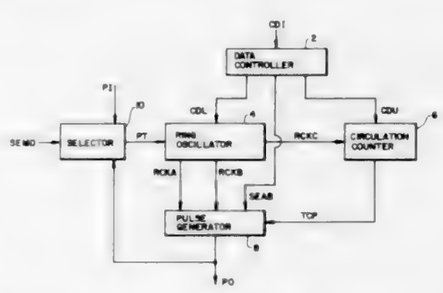
Takamoto Watanabe, Nagoya; Yoshinori Ohtsuka, and Tadashi Hattori, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 2, 1992, Ser. No. 956,955

Claims priority, application Japan, Oct. 4, 1991, 3-258039

Int. Cl.[5] **H03B** *5/00;* **H03L** *7/099*

U.S. Cl. 331—57 **11 Claims**



1. A variable-frequency oscillator whose output frequency is controllable, said oscillator comprising:

a pulse circulating circuit comprising a plurality of inverting circuits directly electrically connected to each other in a ring shape for circulating a pulse signal therein;

first means for changing direct electrical connections between inverting circuits directly electrically connected in said ring shape to include additional inverting circuits in said ring shape or exclude inverting circuits from said ring shape, thereby changing a period of circulation of said pulse signal;

means for controlling said first changing means according to digital data inputted to said controlling means to change direct electrical connections between said inverting circuits directly electrically connected in said ring shape;

means for counting the number of times of circulation of said pulse signal in said pulse circulating circuit and producing an output signal when the counted number equals to a predetermined number; and

means for generating an oscillating signal on the basis of an output signal from a predetermined one of said inverting circuits in response to said output signal from said counting means, whereby the frequency of said oscillating signal is varied by said first and second changing means.

5,331,295

VOLTAGE CONTROLLED OSCILLATOR WITH EFFICIENT PROCESS COMPENSATION

Jules J. Jelinek, San Francisco, and Jay Deng, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 3, 1993, Ser. No. 12,600

Int. Cl.[5] **H03K** *3/354*

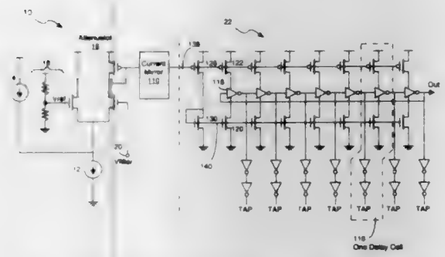
U.S. Cl. 331—57 **13 Claims**

1. A voltage controlled oscillator circuit comprising:

a first current source for providing a substantially constant current independent of process, temperature and supply voltage;

a second current source for providing a variable current that varies in response to process, temperature and supply voltage;

an attenuator, coupled to said first current source and said second current source so as to subtract said second current from said first current to produce a compensated net current, said attenuator including a differentiation circuit that attenuates said compensated net current by splitting said net current into first and second split currents in accordance with an input voltage and a reference voltage



and converting said second split current into a control current signal; and

a multistage ring oscillator including a plurality of series-connected inverter stages, the ring oscillator responsive to said control current signal for controlling the frequency of oscillation of the ring oscillator;

wherein said first current source and said second current source respectively generate said constant current and variable current independent of said input voltage.

5,331,296

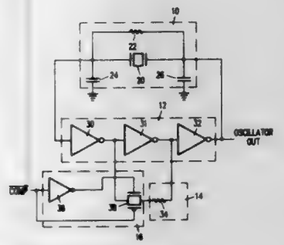
OSCILLATOR HAVING CONTROLLABLE FREQUENCY COMPENSATION FOR SUPPRESSING UNDESIRED FREQUENCY OF OSCILLATION

Timothy D. Davis, Arlington, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 16, 1992, Ser. No. 961,751

Int. Cl.[5] **H03B** *5/32;* **H03L** *3/00*

U.S. Cl. 331—158 **28 Claims**



1. An oscillator circuit comprising:

an amplifier;

a resonant network coupled to the amplifier for defining a transfer function and for generating a resonant signal;

a switch; and

a zero-contributing frequency compensation network controllably coupled to said amplifier through said switch for selectively adding a zero to said transfer function for suppressing oscillation at a frequency greater than said resonant signal.

5,331,297

JOSEPHSON DEVICE A.C. POWER SUPPLY CIRCUIT AND CIRCUIT SUBSTRATE FOR MOUNTING SAME

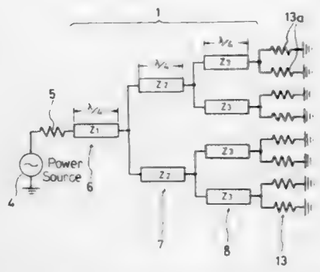
Takanori Kubo, and Shigeo Tanahashi, both of Kagoshima, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Dec. 18, 1992, Ser. No. 993,124

Claims priority, application Japan, Dec. 26, 1991, 3-345314; Sep. 30, 1992, 4-261652

Int. Cl.[5] **H01P** *5/12*

U.S. Cl. 333—127 **29 Claims**



1. An alternating current power supply circuit for supplying alternating current from a source to a plurality of Josephson devices, comprising:

a first impedance-conversion circuit connectable to said source and including a resonant line of length $(2n-1)/4$ of a wavelength of said alternating current power, where n is a positive integer; and

m number of second impedance-conversion circuits which include a resonant line of length $(2n-1)/4$ of said alternating current wavelength, where m is a positive integer greater than 1, each of the second impedance-conversion circuits defining a common end and a remaining end,

the common ends of each of said second impedance-conversion circuits being connected to said first impedance-conversion circuit in parallel, and

the remaining ends of each of said second impedance-conversion circuits being connected to supply input terminals of said plurality of Josephson devices, and

a circuit substrate in which the alternating current supply circuit is provided, and wherein the Josephson devices are mounted on the circuit substrate.

5,331,298

INDUCTIVE DEVICE FOR AN ELECTROMAGNETIC DELAY LINE AND METHOD FOR FABRICATING THE SAME

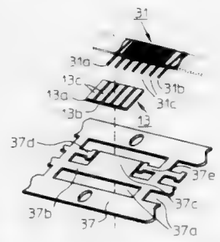
Kazuo Kameya, Tokyo, Japan, assignor to Elmec Corporation, Japan

Filed Jan. 12, 1993, Ser. No. 3,190

Claims priority, application Japan, Jan. 16, 1992, 4-24338

Int. Cl.[5] **H03H** *7/32;* **H01F** *15/10*

U.S. Cl. 333—138 **5 Claims**



3. An electromagnetic delay line, comprising:

a lead frame including a common electrode plate, an input electrode plate, and an output electrode plate;

a composite capacitor having a common electrode on one side thereof and a plurality of capacitive electrodes arranged in a row on the other side of said composite capacitor, said common electrode being placed over and securely attached to said common electrode plate with said capacitive electrode facing away from said lead frame; and

an inductive device including a bobbin having a certain length, a main coil of electroconductive wire would around said bobbin, an extra coil provided adjacent each longitudinal end of said main coil as a continuous extension of said main coil, intermediate taps each formed of a twisted, doubled length of said electroconductive wire extending laterally from an intermediate part of said main coil, and terminal taps each formed by a twisted, doubled, length of a part of said coil wire situated between said main coil and said extra coil;

said terminal taps being connected to said input and output electrode plates of said lead frame, respectively, and said intermediate taps being connected to said capacitive electrodes.

5,331,299

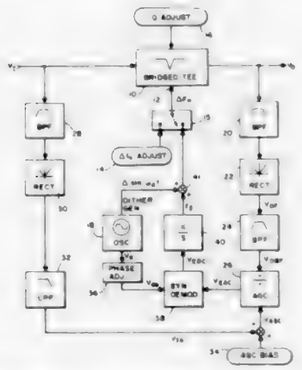
ADAPTIVE TRACKING NOTCH FILTER SYSTEM

Norval P. Smith, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 23, 1990, Ser. No. 483,930

Int. Cl.[5] H03H *7/01, 17/02*

U.S. Cl. 333—175 **34 Claims**



1. A tracking attenuation filter system comprising:

an attenuation filter for filtering an input signal to produce an output signal;

an alternating dither signal applied to the filter to dither a center frequency of the filter; and

a feedback circuit coupled to receive the filter output signal, the feedback circuit responding to a component of the output signal resulting from the dither of the center frequency to generate a feedback signal which is applied to the filter in combination with the dither signal to vary the center frequency of the filter for increase suppression of select frequencies of the input signal.

5,331,300

DIELECTRIC FILTER DEVICE

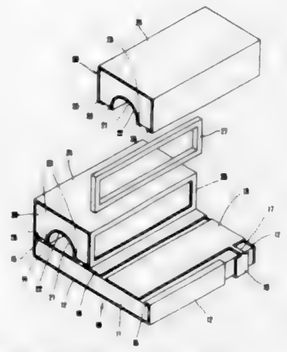
Hiroyuki Shimizu, and Kenji Ito, both of Nagoya, Japan, assignors to NGK Spark Plug Co. Ltd., Aichi, Japan

Filed Apr. 26, 1993, Ser. No. 51,789

Claims priority, application Japan, Apr. 30, 1992, 4-139867

Int. Cl.[5] H01P *1/203, 1/205*

U.S. Cl. 333—202 **5 Claims**



1. A dielectric filter device comprising:

a stripline filter which includes a thin dielectric substrate provided with a plurality of resonance conductors on an upper surface and a first ground conductor at least on a main portion of an outer surface other than said upper surface, said resonance conductors being arranged to form a predetermined pattern and each said resonance conductor having one end connected to said first ground conductor; and

a plurality of dielectric blocks which are thicker than said stripline filter, each said dielectric block being provided with a second ground conductor at least on a main portion of an outer surface, a downwardly open groove on an inner surface, and an inner conductive layer formed on said inner surface such that each said dielectric block is positioned on an associated said resonance conductor of said stripline filter with said inner conductive layer of each said dielectric block being connected with the associated said resonance conductor of said stripline filter.

5,331,301

CIRCUIT BREAKER

Oliver Glennon; James Early, both of Ballinasloe; James Shortt, Malahide; Martin F. Healy, Ballinasloe, all of Ireland; Hendrik A. Bosch, Hengelo; Soedjiemat F. Darmohoetomo, Surinam, both of Netherlands, and Raymond Burke, Ballinasloe, Ireland, assignors to Square D Company, Palatine, Ill.

PCT No. PCT/US91/00380, § 371 Date Oct. 21, 1991, § 102(e) Date Oct. 21, 1991

PCT Filed Jan. 21, 1991, Ser. No. 768,270

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[5] H01H *83/00*

U.S. Cl. 335—20 **19 Claims**

1. A circuit breaker for use in a system having live, neutral and ground leads, comprising:

a housing;

a breaker assembly in the housing for making and breaking an electrical connection between a movable contact and a stationary contact;

an operating handle for the breaker assembly;

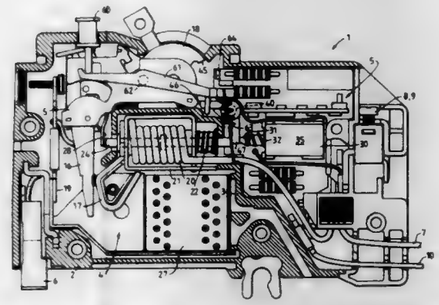
an over-current sensing means for tripping of said breaker assembly; the over-current sensing means including a coil and an armature core in the coil; the armature core having an axial bore extending therethrough;

and an additional tripping mechanism;

the additional tripping mechanism comprising:

a plunger means mounted within the axial bore of the armature core;

an actuating device for controlling the movement of the plunger means from a non-tripping position to a tripping position;



the plunger means being independently movable through the axial bore in the armature core when moving between the non-tripping and tripping positions, and

reset means being provided for re-setting of the plunger means to the non-tripping position.

5,331,302

MINIATURE TRANSFER RELAY

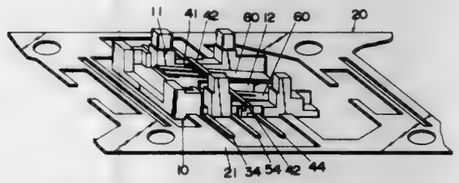
Takashi Yoshimura, Obata; Takayasu Ishizuka, Obihiro; Masayui Shiomi, Tsu; Tomoyoshi Hayashi, Tsu; Hiroaki Aihoshi, Tsu, and Hisanobu Tanaka, Hisai, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 19, 1993, Ser. No. 47,482

Claims priority, application Japan, Aug. 26, 1992, 4-226648; Feb. 10, 1993, 5-022865

Int. Cl.[5] M01H *51/22*

U.S. Cl. 335—78 **11 Claims**



1. A miniature transfer relay comprising:

a molded base carrying a contact assembly which includes a normally-open (NO) fixed contact, a normally-closed (NC) fixed contact, a common conductor, and a movable spring extending from said common conductor and carrying first and second movable contacts disposed in contacting relation respectively with said NO and NC fixed contacts;

an electromagnet block supported on said base over said contact assembly and including coil means and an armature which is movable between set and reset positions upon energization and de-energization of said coil means, said armature being operatively associated with said movable spring for simultaneously closing and opening said NO and NC contacts in response to movement of the armature between said set and reset positions;

said NO fixed contact molded in an upper surface of said base and having an NO terminal lead projecting from said base;

said NC fixed contacts having a portion molded in said base and having an NC terminal lead projecting from said base;

said NC fixed contacts having a portion molded in said base and having an NC terminal leads projecting from said base;

said common conductor molded in the upper surface of said base and having a common terminal lead projecting from said base;

said movable spring comprising an elongated self-biased resilient member which is formed at one longitudinal end thereof with said first movable contact, and which is secured at the other longitudinal end to said common conductor such that said movable spring can resiliently flex in a cantilever fashion to move said first movable contact into and out of contact with said NO fixed contact;

said movable spring carrying said second movable contact at a portion intermediate its longitudinal ends and on a surface opposite of said first movable contact; and said NC fixed contact extending upwardly from said base and being bent over said movable spring to be kept in normally closed relation to said second movable contact;

said NO contact, said NC contact, said common conductor, said NO terminal, said NC terminal, and said common terminal having respective portions molded into a bottom wall of said base, and

said NC contact having a generally U-shaped configuration, wherein a first end of said NC contact is integrally connected to said bottom wall of said base, and an intermediate portion of said NC contact is bent such that a second end of said NC contact is disposed above said movable spring.

5,331,303

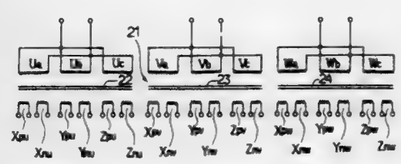
POWER TRANSFORMER FOR CYCLOCONVERTERS

Hiromu Shiota, Mie, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 21, 1992, Ser. No. 871,823

Int. Cl.[5] H01F *33/00*

U.S. Cl. 336—12 **2 Claims**



1. A transformer comprising first and second iron cores each having three legs, nine positive group windings, nine negative group windings, and nine power supply windings,

wherein three of the positive group windings, three of the negative group windings and three of the power supply windings are wound on each leg of each of the first and second iron core,

wherein three parallel winding circuits each formed by connecting the three power supply windings belonging to one and the same phase in one and the same iron core in parallel with one another are connected into a three-phase circuit,

wherein three three-phase winding circuits are formed each by connecting, into a three-phase circuit, the three positive group windings belonging to one and the same phase provided in each leg of one and the same iron core,

wherein three three-phase winding circuits are formed each by connecting, into a three-phase circuit, the three negative group windings belonging to one and the same phase provided in each leg of one and the same iron core, and

wherein manners of the three-phase connection of the power

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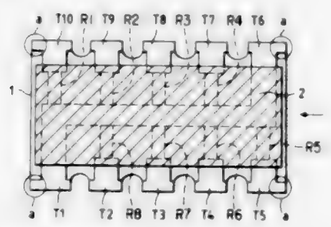
supply windings differ from one another so that a phase difference is induced between the power supply windings of the first iron core and the power supply windings of the second iron core.

5,331,304
AMORPHOUS METAL TRANSFORMER CORE
James V. White, Waukesha; Donald Stachewicz, Muskego, and Robert M. Weier, Waukesha, all of Wis., assignors to Cooper Power Systems, Inc., Coraopolis, Pa.
Filed Sep. 11, 1992, Ser. No. 944,078
Int. Cl.[5] H01F *27/24*
U.S. Cl. 336—234 **8 Claims**



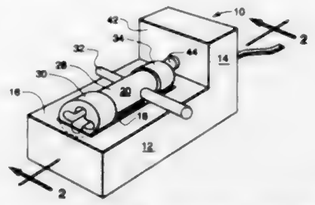
7. A core assembly for an electrical transformer, comprising a core fabricated of a plurality of elongated laminations of an amorphous metal material wound into a shape, said core having two leg portions, a jointed yoke portion, and an unjointed yoke portion opposing the jointed yoke portion, said leg portions connecting the yoke portions, said leg and yoke portions having faces formed by the edges of said amorphous metal laminations, said faces each having a surface area, a bonding agent applied to the entire surface area of the faces of each of said leg portions and said yoke portions so as to completely cover the surface areas, said bonding agent comprising an adhesive permeable to air and transformer oil.

5,331,305
CHIP NETWORK RESISTOR
Shigeru Kanbara, and Toshihiro Hanamura, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Apr. 21, 1993, Ser. No. 51,091
Claims priority, application Japan, Jun. 1, 1992, 4-140445
Int. Cl.[5] H01C *1/14*
U.S. Cl. 338—322 **8 Claims**



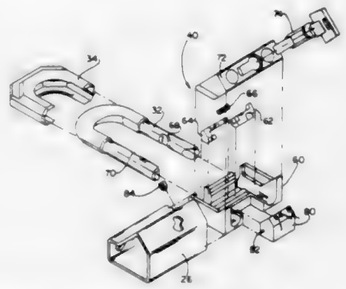
1. A chip network resistor comprising:
a plurality of resistance elements;
at least one common electrode connected to all of the respective resistance elements;
a plurality of discrete electrodes, each connected to a corresponding one of said resistance elements; and
a substrate on which the resistance elements, the common electrode and the discrete electrodes are formed and a protective layer covering the resistance elements;
wherein the common electrode has a width which is larger than that of any of the discrete electrodes and is located at a corner portion of the chip network resistor.

5,331,306
SECURITY TOOL ABSENCE ALARM SYSTEM
John W. Carruthers, II, 1316 Rock Circle Dr., Columbia, Pa. 17512
Continuation of Ser. No. 51,852, Apr. 26, 1993, abandoned. This application Jan. 3, 1994, Ser. No. 176,686
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—425.5 **6 Claims**



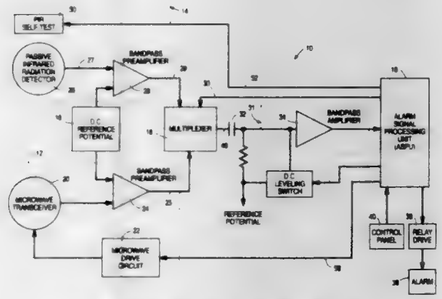
1. In combination with an automotive vehicle having an engine and an electric ignition switch which must be closed to operate the engine:
a. a part removably attached to the vehicle;
b. a security tool configured specifically for use in removing the part, said security tool being mountable on the vehicle for storage and completely detachable from the vehicle for use;
c. a bracket member mounted on the vehicle and constructed to removably hold said security tool in a predetermined storage position on the vehicle; and
d. electric alarm means which produces an alarm signal when the ignition switch is closed and said security tool is not in said storage position in said bracket member.

5,331,307
VEHICLE ANTI-THEFT SYSTEM INCLUDING A GEAR SHIFT LOCK AND AN ANTI-THEFT DEVICE OPERATED THEREBY
Noach Eizen, Rishon Lezion, Israel, assignor to Mul-T-Lock, Ltd., Israel
Filed Nov. 5, 1991, Ser. No. 787,902
Claims priority, application Israel, Nov. 6, 1990, 96262
Int. Cl.[5] B60R *25/00*
U.S. Cl. 340—426 **12 Claims**



1. A vehicle anti-theft system comprising:
a gear shift lock having a lock housing;
a lock yoke for selectable locking engagement with the gear shift lock;
a yoke locking orientation sensor for sensing when said lock yoke is in locking engagement with said gear shift lock; and
an ancillary vehicle anti-theft device which is actuated by positioning of said lock yoke in locking engagement with said gear shift lock and is deactuated by removal of the yoke from locking engagement with the gear shift lock, said ancillary vehicle anti-theft device including electronic circuitry for controlling the operation of the anti-theft device located inside said lock housing.

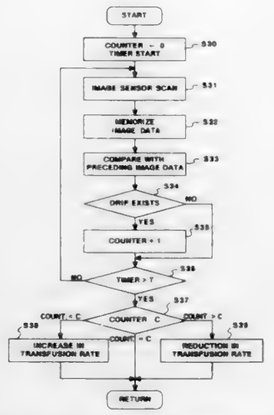
5,331,308
AUTOMATICALLY ADJUSTABLE AND SELF-TESTING DUAL TECHNOLOGY INTRUSION DETECTION SYSTEM FOR MINIMIZING FALSE ALARMS
Charles S. Buccola, Valley Stream, and Lawrence M. Kolb, Coram, both of N.Y., assignors to Napco Security Systems, Inc., Amityville, N.Y.
Filed Jul. 30, 1992, Ser. No. 923,103
Int. Cl.[5] G08B *13/19, 13/187*
U.S. Cl. 340—522 **26 Claims**



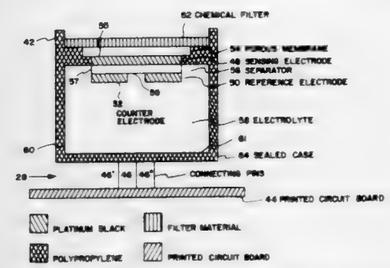
1. An intrusion detection system which comprises:
dual sensing means for monitoring motion within a predetermined volume of space, said dual sensing means having a first sensor for detecting motion within said volume of space and a second sensor for verifying said motion detected by said first sensor so as to activate an alarm; and
processing means interactive with said dual sensing means, such that said processing means increases the stability of said second sensor when said first sensor detects motion for a first predetermined period of time without verification by said second sensor, said stability defining when said second sensor activates said alarm.

5,331,309
DRIP DETECTING DEVICE AND DRIP ALARMING DEVICE AND DRIP RATE CONTROL DEVICE WHICH INCORPORATE DRIP DETECTING DEVICE
Hiroshi Sakai, Kanagawa, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 648,839, Jan. 31, 1991, abandoned. This application Oct. 7, 1992, Ser. No. 957,452
Claims priority, application Japan, Feb. 6, 1990, 2-25128
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—606 **5 Claims**

1. A drip detecting device for detecting drips dropping in a drip cylinder, said device comprising:
a transparent drip cylinder;
light source means for directing a beam of collimated light having a width similar to a diameter of the transparent drip cylinder into the transparent drip cylinder;
image detecting means, comprising an image sensor positioned at an opposite side of the transparent drip cylinder as said light source means, for detecting transmitted light through the drip cylinder as a result of the collimated light directed therein, and for providing image data corresponding to a side view of the drip cylinder from the transmitted light; and
drip detecting means for detecting a drip dropping in the transparent drip cylinder by extracting image data representative of the drip from image data representative of a plurality of images provided by said image detecting means, said plurality of images including at least one image when there is no drip in the transparent drip cylinder, and at least one image when there is a drip therein, and said image data representative of the drip being provided by the difference between image data representative of said at least one image when there is no drip and image data representative of said at least one image when there is a drip.

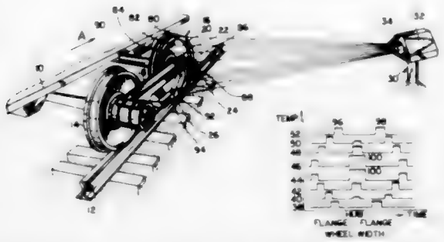


5,331,310
AMPEROMETRIC CARBON MONOXIDE SENSOR MODULE FOR RESIDENTIAL ALARMS
Joseph R. Stetter, Naperville, and Li Pan, Lisle, both of Ill., assignors to Transducer Research, Inc., Naperville, Ill.
Filed Apr. 6, 1992, Ser. No. 864,330
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—632 **20 Claims**



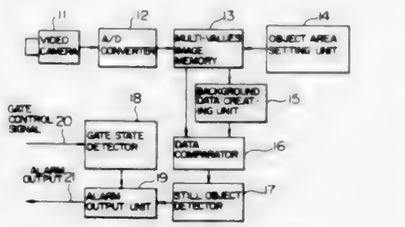
1. A modular component that is adaptable for use in a residential smoke detector alarm so as to permit detection of hazardous or hazard-indicating concentrations of carbon monoxide in air, comprising:
an amperometric sensor having a sensing electrode for detecting carbon monoxide in air and a counter-electrode;
and a current-to-voltage converter circuit that converts the current flowing from said sensing electrode to a voltage signal,
said converter circuit being adaptable to a smoke-detector integrated circuit that converts a voltage signal in excess of a predetermined level into a trigger signal for actuating an alarm.

5,331,311
RAILROAD WHEEL TEMPERATURE SENSOR WITH INFRARED ARRAY
Alan P. Doctor, Sea Cliff, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.
Filed Dec. 9, 1992, Ser. No. 988,216
Int. Cl.[5] B60Q *1/22*
U.S. Cl. 340—463 **17 Claims**



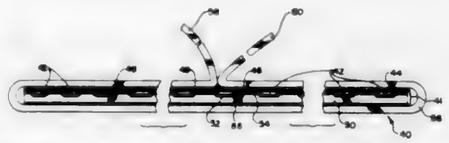
1. A wheel temperature sensor assembly for railroad systems for monitorng the temperature of the wheels of railroad cards, said assembly comprising:
projecting means for projecting an image of an railroad wheel portion;
a detector array consisting of a plurality of infrared temperature detectors, each detector generating a temperature indicative signal, said detector array receiving said image from said projecting means and generating a two-dimensional profile of said wheel portion; and
processing means for processing said temperature indicative signals and for generating an alarm signal when said temperature indicative signals exceed a preselected limit characterizing an abnormal condition for said wheel.

5,331,312
OBSTACLE-DETECTING APPARATUS
Katsuhiro Kudoh, Kawasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 7, 1992, Ser. No. 925,756
Claims priority, application Japan, Aug. 23, 1991, 3-259556
Int. Cl.[5] G08B *13/00*; **H04N** *7/18*
U.S. Cl. 340—541 **6 Claims**



1. An obstacle-detecting apparatus comprising:
a video camera for producing images of a crossing zone;
image storing means having memory sufficient to store first image data based upon multiple images of said crossing zone produced by said video camera;
first means for setting dimensions of the crossing zone in which an object is to be detected;
second means for setting dimensions of a detection area within said crossing zone;
third means for setting background image data of said crossing zone based upon said first image data stored in said image storing means;
means for comparing said first image data with said background image data;
means, responsive to said first means for setting, for determining whether an object is located within said crossing zone based upon an output of said means for comparing;
fourth means for setting background data about the state of said crossing zone;
means for detecting whether a rod of a crossing gate associated with said crossing zone is up or down by comparing a portion of the first image data relating to said detection area and said background data set by said fourth means; and
means for outputting an alarm responsive to (a) a detection by said means for detecting that said rod is down and (b) a determination by said means for determining that an object is within said crossing zone.

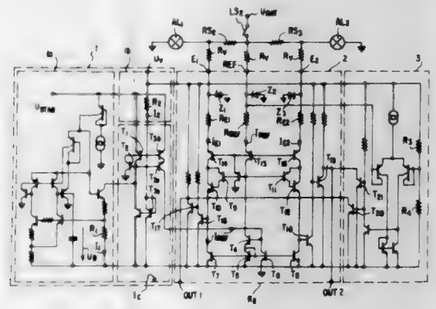
5,331,313
MARKER ASSEMBLY FOR USE WITH AN ELECTRONIC ARTICLE SURVEILLANCE SYSTEM
Norman L. Koning, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 1, 1992, Ser. No. 954,819
Int. Cl.[5] G08B *13/187*
U.S. Cl. 340—551 **8 Claims**



1. A marker assembly adapted for use with an electronic article surveillance system having an interrogation zone for detecting the presence of a premarked article within the zone, comprising a marker adapted to be secured to the article to enable detection of the article within the interrogation zone, the marker including a detectable element having a front surface, an opposed rear surface, and opposed end margins and adhesive means operably carried by the front and rear surfaces for attachment of the marker to the article, wherein said marker assembly further comprises wrapper means removably attached to the adhesive means, and having oppositely directed portions extending continuously over the rear surface of the marker, around respective end margins and along the front surface so as to cover substantially all of the adhesive on both surfaces, terminating with opposed graspable end tabs carried clear of the adhesive means on said front surface, whereby the pulling of the opposed end tabs away from each other will remove the wrapper means from said front surface of the marker thereby exposing the adhesive means carried by that surface and allowing attachment of that surface to the article, and continued pulling of the end tabs will remove the wrapper means from the rear surface, further exposing the adhesive means carried by the rear surface to enable additional attachment.

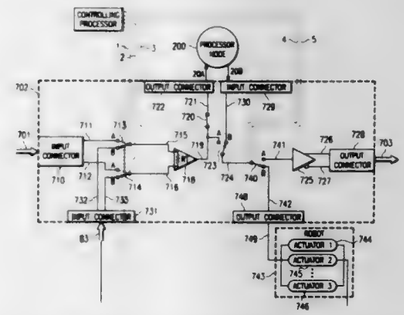
5,331,314
CIRCUIT FOR MONITORING OF LOADS
Anton Koch, Elztal-Auerbach, Fed. Rep. of Germany, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Fed. Rep. of Germany
Filed Feb. 26, 1992, Ser. No. 841,416
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1991, 4107415
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—661 **19 Claims**

18. A method for monitoring loads of a load circuit, in which a measuring resistor is disposed in the load circuit, comprising the steps of:
producing a single reference current which is temperature dependent and voltage dependent, wherein the single reference current includes a voltage dependent and a voltage independent component;
supplying the single reference current to a reference resistor, an input resistor, and a current comparator branch;
inputting a measuring voltage drop of the measuring resistor by coupling the measuring resistor between a reference



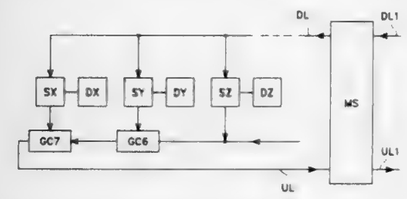
voltage terminal and a measuring voltage terminal to produce an input current through the input resistor to generate an input voltage drop while the single reference current flows through the reference resistor to produce a reference voltage drop;
comparing the input voltage drop to the reference voltage drop by comparing the reference current to the input current; and
producing a comparison output as an output voltage level at an output terminal.

5,331,315
SWITCH FOR SERIAL OR PARALLEL COMMUNICATION NETWORKS
Dario B. Crosetto, DeSoto, Tex., assignor to Universities Research Association, Inc., Washington, D.C.
Filed Jun. 12, 1992, Ser. No. 898,081
Int. Cl.[5] H04Q *3/54, 11/06*; **H04J** *3/16*; **G06F** *13/362*
U.S. Cl. 340—825.02 **22 Claims**



1. A communications switch for transmission of bursts of data for use in a communication network supporting a geographically extensive multi-processor system and having a dynamically reconfigurable topology, comprising:
a master processor of the multi-processor system operative to generate a plurality of control signals for routing of data within the multi-processor system wherein the generation of said plurality of control signals is not based on the information content of said data:
first switch means for coupling a first communication link carrying a first data stream from an uplink source to a host processor of the multi-processor system, the first switch means responsive to a first control signal from the master processor;
second switch means for coupling the host processor to a second communication link for carrying a second data stream to a downlink destination, the second switch means responsive to a second control signal from the master processor; and
third switch means for coupling the first communication link to the second communication link for carrying a third data stream from an uplink source to a downlink destination, the third switch means responsive to a third control signal from the master processor.

5,331,316
COMMUNICATION SYSTEM INCLUDING ALLOCATING FREE SIGNALLING CHANNELS TO INDIVIDUAL SUBSTATIONS HAVING DATA TO TRANSMIT
Denis J. G. Mestdagh, Brussels; Robertus J. Van Engelshoven, St. Antonius Zoersel, and Bart J. G. Pauwels, Borgerhout, all of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands
PCT No. PCT/EP89/00728, § 371 Date May 6, 1991, § 102(e) Date May 6, 1991, PCT Pub. No. WO91/00662, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 23, 1989, Ser. No. 613,512
Int. Cl.[5] H04L *12/28, 12/40*
U.S. Cl. 340—825.03 **23 Claims**



1. A communication system comprising
a main station,
a plurality of substations connected in parallel to a first path on which recurrent first cells are conveyed from the substations to the main station and to a second path on which recurrent second cells are conveyed from the main station to the substations, each of said first and second cells including a plurality of signalling channels smaller than the number of substations and a data channel each of said substations further comprising
a substation transmitter to write information into said first cells including the writing of signalling channel allocation request signals in corresponding signalling channels, and
a substation receiver to read information from said second cells, including an indication of which of said signalling channels of said first cells are currently free,
a main station receiver to read information from said first cells, including said signalling channel allocation request signals,
a main station transmitter to write information into said second cells, including said indication of which of said signalling channels of said first cells are currently free, and for broadcasting said second cells to all said substations,
allocation means in said main station and in each of said substations, for resolving conflicting signalling channel allocating requests and for allocating a free one of said plurality of signalling channels of said first cells to a substation having data to transmit,
request signal transmission means in each substation having,

one of said signalling channels of said first cells allocated to said each substation, for transmitting to said main station a data transmission request signal in said one allocated signalling channel of one of said first cells, and

grant signal means in said main station for transmitting a data transmission grant signal to the requesting substation in a signalling channel of one of said second cells in response to the receipt of said data transmission request signal.

5,331,317

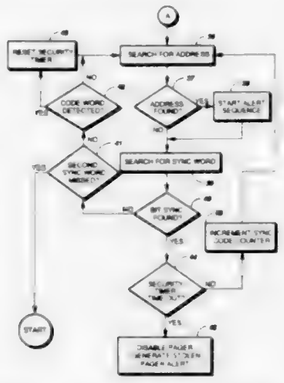
SELECTIVE CALL RECEIVER HAVING ANTI-THEFT DISABLEMENT

Walter L. Davis, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 516,854, Apr. 30, 1990, abandoned. This application Jun. 3, 1991, Ser. No. 709,785

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.44 **8 Claims**



2. In a selective call receiver for presenting an alert in response to a received signal having a preamble and a plurality of frames, each frame including a plurality of bits, a portion of the bits comprising at least one address within selected frames, the method comprising the steps of:

(a) establishing bit and frame synchronization;

(b) providing an alert if an address is received;

(c) disabling the selective call receiver so that further signals will not be received if a security code word has not been received and a sync word counter has reached a predetermined number;

(d) incrementing the sync word counter and returning to step (b) if a first sync word is received within a predetermined time;

(e) resetting the predetermined time and returning to step (b) if the first sync word is not received and a second sync word and the security code word are received; and

(f) returning to step (a) if the first and second sync word are not received.

5,331,318

COMMUNICATIONS PROTOCOL FOR DIGITAL TELEMETRY SYSTEM

Michael A. Montgomery, Cedar Park, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Division of Ser. No. 755,301, Sep. 5, 1991, Pat. No. 5,191,326. This application Feb. 26, 1993, Ser. No. 23,108

Int. Cl.[5] G01V *1/00*

U.S. Cl. 340—855.4 **5 Claims**

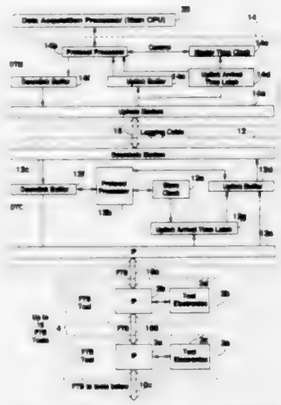
1. A method for controlling access of a plurality of information packets to and from a connecting digital telemetry cartridge, each packet containing data from at least one well-logging tool along a tool bus, comprising the following steps:

providing a transmission window of preprogrammed timed length and a selected starting delay to each information packet of the downhole well-logging tool string;

receiving a frame start command from the digital telemetry cartridge;

activating said starting delay for said provided window;

transmitting continuously the data from connecting tools along the tool bus until said starting delay is completed;



transmitting data continuously from a particular information packet until the end of said time window, thereby repeatingly transmitting information packet data from well-logging tools to the digital telemetry cartridge; and

switching all of the information packets to the receive mode, whereby information transmitted by the digital telemetry cartridge can be received by the well-logging tools along the tool bus.

5,331,319

DEVICE FOR SIGNALLING THE POSITION OF A MOBILE MEMBER

Gérard Ebersohl, La Mulatiere, France, assignor to Gec Alsthom SA, Paris, France

Filed Apr. 16, 1992, Ser. No. 868,952

Claims priority, application France, Apr. 16, 1991, 91 04631

Int. Cl.[5] G08C *19/16*

U.S. Cl. 340—870.28 **8 Claims**

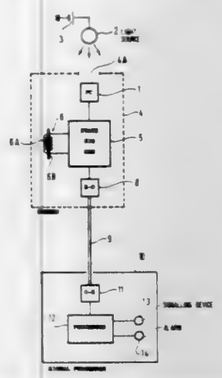
1. Device for signalling remotely the state of an apparatus able to assume a plurality of discrete states, comprising:

means for producing inside a screened enclosure a direct current voltage free of interference, said screened enclosure containing:

first means for producing from said direct current voltage electrical pulses whose duration is proportional to the value of an inductor which can assume distinct values according to the various states of the apparatus,

second means for converting said electrical pulses into optical pulses and an optical fiber for transmitting said optical pulses out of said enclosure to a processor, said first means comprising a circuit for producing rectangular pulses of constant duration separated by equal time intervals, an integrator receiving said rectangular pulses, a first inverter receiving the output signals of said integrator and supplying calibrated pulses at its output, a time constant circuit comprising a resistor and said inductor, the output signals of said first inverter being applied to the input of said time constant circuit and to a second inverter, the

output signals of said time constant circuit and said second inverter being fed to the input of a third inverter whose



output is connected to an amplifier driving said second means.

5,331,320

CODING METHOD AND APPARATUS USING QUATERNARY CODES

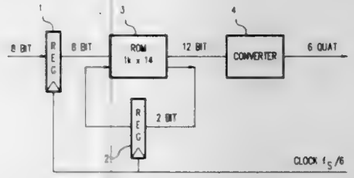
Roy D. Cideciyan, Thalwil, and Evangelos S. Eleftheriou, Zeurich, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,824

Claims priority, application European Pat. Off., Nov. 21, 1991, 91810906.7

Int. Cl.[5] H03M *7/06*

U.S. Cl. 341—56 **19 Claims**



1. A method for encoding k-bit data bytes into m-symbol code words, the symbols being selected from a quaternary alphabet and the rate k/m (bits per symbol) being less than 2, comprising the steps of:

forming a v-state machine according to a v-state transition diagram generating a first set of quaternary symbol sequences, said first set of quaternary symbol sequences being a part of a second set of quaternary symbol sequences derived from a u-state transition diagram, the running digital sum of the sequences of said second set assuming values from a finite set of integers, such that each of the v states is associated with 2^k transitions, each transition corresponding to an m-symbol code word, the number of consecutive identical symbols in any sequence of said m-symbol code words being limited to a first given value, and the running digital sum in a sequence of such m-symbol code words being limited to one of a plurality of second given values, thereby enforcing a spectral null in the code spectrum;

encoding in said v-state machine a k-bit data byte into an m-symbol code word; and

generating a next state of said v-state machine depending on its current state and the last encoded k-bit data byte.

5,331,321

A/D CONVERTER AND D/A CONVERTER EMPLOYING A RODIX SMALLER THAN A TWO, AND CALIBRATION THEREOF

Pentti Mannonen, Vantaa, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland

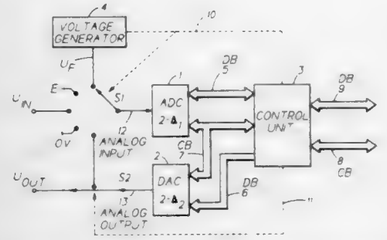
PCT No. PCT/FI91/00209, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/00630, PCT Pub. Date Jan. 9, 1992

PCT Filed Jul. 2, 1991, Ser. No. 965,405

Claims priority, application Finland, Jul. 2, 1990, 903334

Int. Cl.[5] H30M *1/00*

U.S. Cl. 341—110 **14 Claims**



1. A converter system comprising an analog-to-digital converter and a digital-to-analog converter, characterized in that a first base number of a number system used in the analog-to-digital converter is less than 2, further characterized in that a second base number of a number system used in the digital-to-analog converter is less than two, and wherein the first base number does not equal the second base number.

5,331,322

CURRENT CELL FOR DIGITAL-TO-ANALOG CONVERTER

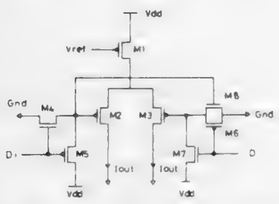
Kwon-Ho Cha, Seoul, and Oh-Bong Kwon, Kyoungki, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki, Rep. of Korea

Filed Dec. 29, 1992, Ser. No. 998,050

Claims priority, application Rep. of Korea, Dec. 31, 1991, 91-25763

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—136 **1 Claim**



1. A current cell for a digital-to-analog converter provided with both p-type MOS transistor M1 for current supply and p-type MOS transistors M2 and M3 for symmetrical operation, comprising of:

an inverting means consisting of p-type and N-type MOS transistors M5 and M4, where the digital input signal of Di is applied to each of gate terminal and where the source terminal is connected to power supply terminal Vdd and ground terminal GND; and

a transmission means consisting of n-type MOS transistor M7, where the digital input signal Di is applied to its gate terminal and power supply voltage Vdd is applied to the source terminal, and p-type and n-type MOS transistor M6 and M8, where the digital input signal Di and the output signal of the said inverting means is applied to each of

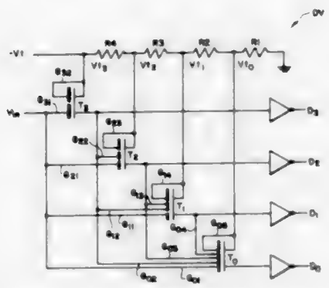
their gate terminal, respectively, whereby the output signal from the said inverting and transmission means is applied to the gate terminals of the said p-type MOS transistors M2 and M3, respectively.

5,331,323

ANALOG-TO-DIGITAL CONNECTER USING MULTI-GATE FIELD EFFECT TRANSISTORS

Makoto Yamamoto, Tokyo, Japan, assignor to Yozan Inc., Tokyo, Japan

Filed May 6, 1993, Ser. No. 57,782
Claims priority, application Japan, May 11, 1992, 4-144783
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—136 **10 Claims**



1. An analog-to-digital converter for generating a digital output in response to an analog input voltage, said converter comprising:

a plurality of FETs each of which corresponds to a bit of said digital output, each FET having a plurality of gates for receiving outputs of FETs corresponding to more significant bits of said digital output, said analog input voltage and an offset voltage of a first polarity;

a voltage divider for generating said offset voltage; and

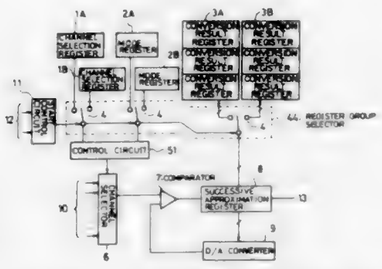
a plurality of inverters, each of which corresponds to an FET, for outputting a constant voltage having a second polarity opposite said first polarity in response to an output of said first polarity of said corresponding FET and for outputting a zero voltage in response to an output of said second polarity of said corresponding FET.

5,331,324

A/D CONVERTER

Toyokatsu Nakajima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,432
Claims priority, application Japan, Mar. 6, 1992, 4-084516
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—141 **8 Claims**



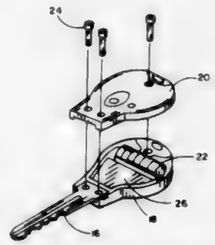
1. An A/D converter comprising a channel selector for selecting one of a plurality of channels having analog input signals, a comparator for comparing the voltage of the analog input signal of a channel selected by said channel selector and a sequentially changing reference voltage, a conversion result storage register for storing the comparison result of said comparator as the result of A/D conversion, a channel selection register for storing channel selection information for said channel selector to select one of the channels, and a mode register for storing mode information such as starting factors, A/D conversion speed and A/D conversion operation modes, wherein, when there are a plurality of starting factors, the same number of said channel selection registers, mode registers and conversion result storage registers as the number of said starting factors are provided and divided into groups, according to the types of said starting factors, each consisting of a channel selection register, a mode register and a conversion result storage register; and a control circuit for specifying a register group for a starting factor when the factor is generated is also provided.

5,331,325

REMOTE CONTROL TRANSMITTER CONFIGURED AS AN ARTICLE OF UTILITY

Howard L. Miller, Chatsworth, Calif., assignor to Crimestopper Security Products Inc., Simi Valley, Calif.

Filed Aug. 14, 1989, Ser. No. 393,500
The portion of the term of this patent subsequent to Dec. 19, 2007, has been disclaimed.
Int. Cl.[5] G08C *17/00*
U.S. Cl. 341—176 **8 Claims**



1. In a transmitter apparatus for remote arming and disarming of vehicle car alarms, the transmitter being of the type having an encoded signal source modulating an oscillator for transmitting an encoded radio frequency signal to a receiver in the vehicle, the improvement comprising:

a key-shaped housing enclosing said signal source and said oscillator; and

a key blank mechanically connected to said housing and electrically connected to said oscillator for radiating said radio frequency signal as an antenna.

5,331,326

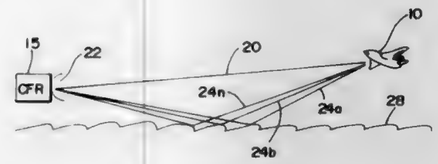
CORRECTING ERRORS IN CROSSFEED RADAR SYSTEMS

Albert Schenkel, Zurich, Switzerland, assignor to Siemens-Albis AG, Zurich, Switzerland

Filed Dec. 21, 1990, Ser. No. 631,982
Claims priority, application Switzerland, Dec. 22, 1989, 04606/89-3
Int. Cl.[5] G01S *13/44*
U.S. Cl. 342—148 **26 Claims**

1. A method for improving the accuracy of radar equipment operating in accordance with a crossfeed principle, in which echo signals are directly received from flying objects and indirectly received from reflections from a surface of the earth, comprising the steps of:

weighting a first correction term with a first correction factor; and



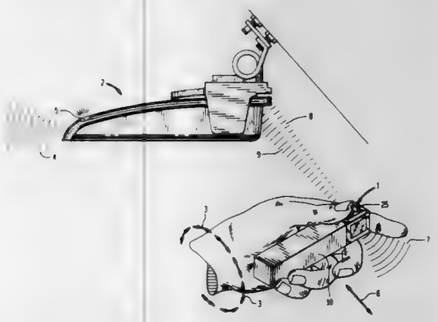
weighting a second correction term with a second correction factor, in which the second correction factor corresponds with a value selected for the first correction factor.

5,331,327

RADAR DETECTOR PERFORMANCE VERIFICATION METHOD AND APPARATUS

Robert W. Brocia, 15 Moore Rd., Bronxville, N.Y. 10708, and Marie Dagata, 406 E. Ninth St., Apt. 12A, New York, N.Y. 10009

Continuation-in-part of Ser. No. 845,588, Mar. 4, 1992, Pat. No. 5,191,348. This application Jan. 6, 1993, Ser. No. 1,029
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—173 **50 Claims**



1. An apparatus for testing a radar detector, said apparatus comprising:

a housing having three sections each with an outer surface and an inner surface, the three sections being configured so that the outer surfaces of each is directed away from the other two surfaces;

three frequency transmitters each mounted on a different one of the three sections of the housing;

means for receiving voltage from a voltage source to power the three transmitters;

voltage indicator means for monitoring voltage of the energy source; and

switch means for connecting the voltage indicator means and the transmitters to the voltage receiving means,

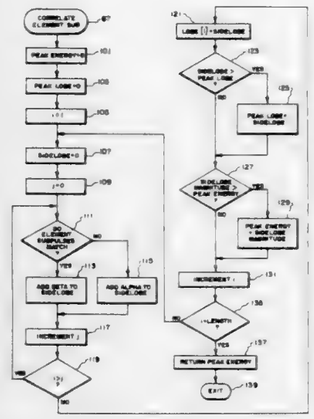
wherein each section acts to shield the housing from the frequency from each of the three transmitters.

5,331,328

METHOD OF PHASED MAGNITUDE CORRELATION USING BINARY SEQUENCES

Michael Pender, Lancaster, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 23,440, Feb. 26, 1993, Pat. No. 5,283,586. This application Nov. 15, 1993, Ser. No. 153,864
Int. Cl.[5] G01S *7/292*
U.S. Cl. 342—189 **9 Claims**



1. A method for determining all binary codes of a predetermined length N for sidelobe suppression in a pulse compression radar system, said method comprising:

selecting said binary codes of length N for correlation, said binary codes having a length of at least three;

each of said binary codes of length N being one of four allomorphic forms, all allomorphic forms of one of said binary codes having the same correlation characteristics;

the allomorphic forms for each of said binary codes of length N consisting of said binary code, an inversion of said binary code, a complement of said binary code and an inverted complement of said binary code;

eliminating three of the four allomorphic forms of each binary code of length N so as to reduce the number of binary codes of length N for correlation;

selecting first and second arbitrary coefficients, said first arbitrary coefficient being an out of phase correlation element having a negative numerical value of at least minus one and said second arbitrary coefficient being an in phase correlation element having a positive numerical value of at least one;

correlating each of the remaining binary codes of length N after eliminating the allomorphic forms of each of said binary codes of length N, said first and second arbitrary coefficients effecting the correlation of each of the remaining binary codes of length N;

the remaining binary codes of length N after the allomorphic forms thereof are eliminated forming a sequential stack of binary elements of length N, said sequential stack of binary elements having at least three binary elements of length N;

creating at least first, second and third groupings of binary compounds of length 2N from a binary element A selected from said at least three binary elements of length N, said binary element A being a different one of said at least three binary elements for each of said at least first, second and third groupings of binary compounds;

said at least first, second and third groupings of binary compounds including a first binary compound A A, a second binary compound A A_I, a third binary compound A A_C,

a fourth binary compound A A_{IC}, a fifth binary compound A_I A and a sixth binary compound A_I A_C wherein A_I is an inversion of said binary element A, A_C is a complement of said binary element A and A_{IC} is an inverted complement of said binary element A;

creating at least fourth, fifth and sixth groupings of binary compounds of length 2N from said binary element A and another binary element B selected from said at least first, second and third binary elements of length N, said binary element A being a different one of said at least three binary elements for each of said at least fourth, fifth and sixth groupings of binary compounds;

said binary element B being a sequential binary element after said binary element A for each of said at least fourth, fifth and sixth groupings of compounds;

said at least fourth, fifth and sixth groupings of binary compounds including a seventh binary compound A B, an eighth compound A B_I, a ninth binary compound A_I B, a tenth binary compound A_I B_I, an eleventh binary compound A_C B, a twelfth binary compound A_C B_I, a thirteenth binary compound A_{IC} B and a fourteenth binary compound A_{IC} B_I wherein B_I is an inversion of said binary element B;

evaluating each of said binary compounds of length 2N of said at least first, second, third, fourth, fifth and sixth groupings of binary compounds for correlation;

correlating at least said first binary compound A A and said third binary compound A A_C from said at least first, second and third groupings of binary compounds;

correlating at least said seventh binary compound A B, and said eleventh binary compound A_C B from said at least fourth, fifth and sixth groupings of binary compounds;

providing a visual image of the correlation of each binary code of length N and the correlation of each binary compound of length 2N from said at least first, second, third, fourth, fifth and sixth groupings of binary compounds.

5,331,329

SATELLITE-AIDED RADIO NAVIGATION POSITIONING METHOD AND RADIO NAVIGATION SYSTEM THEREFOR

Nikolai M. Volkov; Stanislav S. Glazov; Nikolai E. Ivanov; Mikhail A. Ljubimov; Vadim A. Salischev; Boris G. Sergeev; Valery V. Tjubalin, all of Moscow; German M. Alyabina, deceased, late of Moskovskaya oblast by Ljudmila G. Alyabina, administrator ; Valery F. Kovalenko, deceased, late of Moscow; by Tatyana P. Shishkova, administrator, Moscow; Sergei V. Kovalenko, administrator, Moscow; Nikita V. Kovalenko, administrator, Moscow, and Nadezhda V. Kovalenko, administator, Moscow, all of Russian Federation, assignors to Nauchno-Issledovatelsky Institut Kosmicheskogo Priborostoenia, Moscow, Russian Federation

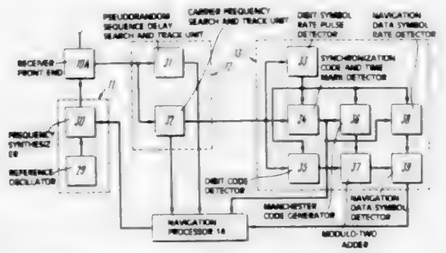
PCT No. PCT/SU90/00033, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO91/11732, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 30, 1990, Ser. No. 930,556

Claims priority, application U.S.S.R., May 25, 1988, 4430342

Int. Cl.[5] G01S *5/02*; **H04B** *15/00*

U.S. Cl. 342—357 **8 Claims**



1. A method for radio navigation positioning with the aid of satellites on several orbital planes (A,B,C), each satellite (1) having an individual number and comprising:

a) generating a carrier frequency from a sinusoidal signal generated by a frequency and time standard, said carrier frequency being unique for each said satellite or for each pair of mutually opposite satellites in an orbital plane;

b) modulating said carrier by a set of signals including an M-sequence pseudorandom sequence common to all of the radio navigation signals generated by each of said satellites and dibit coded signals representing navigation data and a synchronization code;

c) receiving said signal by a receiver at an object-user, each said receiver generating a reference signal the heterodyne frequency thereof being selected according to the carrier frequency of the transmitting satellite desired to be received;

d) correlating reception of said navigation signal; and

e) measuring a pseudodistance and radial pseudospeed of said object-user relative to said satellite for calculating the positioning coordinates and speed of motion of said object-user and the correction factor for a time scale of said object user.

5,331,330

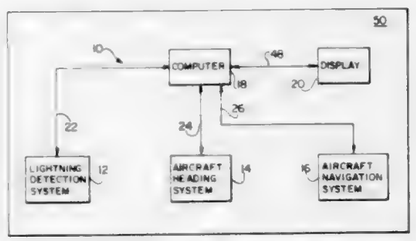
APPARATUS AND METHOD FOR DETECTING AND DISPLAYING LIGHTNING

Kenneth J. Susnjara, 115 Joy Dr., Santa Claus, Ind. 47579

Filed May 18, 1993, Ser. No. 63,868

Int. Cl.[5] G01S *3/02*

U.S. Cl. 342—460 **14 Claims**



1. A system for detecting lightning strikes from an aircraft and for displaying in said aircraft representations of said lightning strikes comprising:

an aircraft;

a computer housed within said aircraft;

a lightning detection means housed within said aircraft for detecting lightning strikes and for providing signals representative of the distance and bearing of said detected lightning strikes to said aircraft, and means for connecting said lightning detection means to said computer;

an aircraft navigation means housed within said aircraft for determining the location of said aircraft relative to earth and for providing signals representative of said location, and means for connecting said aircraft navigation means to said computer;

said computer including means for calculating lightning strike locations relative to earth based upon said signals provided by said lightning detection means and said aircraft navigation means;

said computer including memory means for storing said calculated lightning strike locations; and

a display means for displaying said stored lightning strike locations, and means for connecting said display means to said computer.

5,331,331

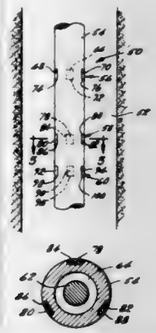
ELECTROMAGNETIC PROPAGATION TOOL USING DIPOLE ANTENNAS

Jian-qun Wu, Meriden, Conn., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 11, 1992, Ser. No. 897,372

Int. Cl.[5] H01Q *1/04*

U.S. Cl. 343—719 **49 Claims**



1. An electromagnetic propagation tool, comprising:

a drill collar segment;

transmitter means, said transmitter means being disposed on said drill collar segment, said transmitter means comprising at least one transmitting magnetic dipole antenna for propagating an electromagnetic wave, said transmitting magnetic dipole antenna having characteristics of a point dipole;

at least one receiver means, said receiver means being disposed on said drill collar segment at an axial distance from said transmitter means, said receiver means comprising at least one receiving magnetic dipole antenna for receiving the electromagnetic wave propagated by said transmitter means, said receiving magnetic dipole antenna having characteristics of a point dipole; and

wherein said transmitting magnetic dipole antenna and said receiving magnetic dipole antenna are disposed within noncircumferential pockets formed in the outer surface of said drill collar segment.

5,331,332

WAVEGUIDE COUPLING STRUCTURE

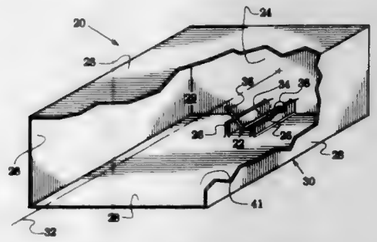
Laurice J. West, Ventura, and Wayne Pyatte, Thousand Oaks, both of Calif., assignors to California Amplifier, Camarillo, Calif.

Continuation-in-part of Ser. No. 831,900, Feb. 6, 1992, Pat. No. 5,216,432. This application Oct. 14, 1992, Ser. No. 961,142

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] H01Q *13/00*

U.S. Cl. 343—786 **12 Claims**



1. A waveguide coupling structure, comprising:

a waveguide comprising a wall including a transverse endwall portion and a sidewall portion extending longitudinally therefrom to define an internal space;

an elongate probe having a transmit/receive portion at a first end, a launch portion at a second end, and a transmission portion connecting said transmit/receive and launch portions;

means for mounting said probe on said wall with said transmission portion extending longitudinally in said internal space and said launch portion extending externally through said wall; and

a partially open transmission member having first and second transmission walls supported by said waveguide wall and oriented longitudinally in said waveguide internal space, said transmission walls being transversely spaced from one another and accommodating said probe transmission portion therebetween.

5,331,333

DISPLAY APPARATUS

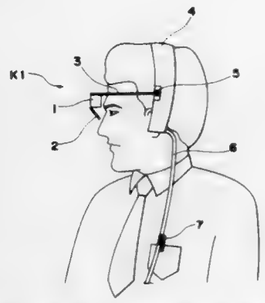
Takao Tagawa, Kashihara, and Hitoshi Nohno, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 773,975, Oct. 8, 1991, abandoned, which is a continuation of Ser. No. 437,902, Nov. 16, 1989, abandoned. This application Oct. 23, 1992, Ser. No. 966,116

Claims priority, application Japan, Dec. 8, 1988, 63-310447; Jan. 31, 1989, 1-23553

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—7 **6 Claims**



5. In a heads-up display apparatus in which light outputted from an LED display arranged in a column is reflected by a vibrating mirror such that a two-dimensional image is obtained, the improvement comprising:

a first half mirror which reflects light from roughly half the visible spectrum, wherein the wavelengths of light reflected include the wavelength of light emitted by said LED array and transmits therethrough visible light having other wavelengths;

said first half mirror being so disposed as to not only transmit therethrough the visible light from outside but also reflect the light proceeding from said LED array via said vibrating mirror such that the two-dimensional image is viewed against a background of those elements of an outer scene containing spectral components transmitted by said first half mirror;

wherein the vibrating mirror is driven by a periodic signal and wherein the apparatus further comprises:

first means for indicating whether the display is oriented upwardly or downwardly; and

LED driving means for driving said LED array, said driving means being responsive to a signal from said first means indicative of whether said display apparatus is oriented upwardly or downwardly such that:

if said first means indicates that the display apparatus is oriented upwardly, said LED driving means drives the LED array during a first portion of the periodic signal

while turning on said LED array in a forward direction; and

if said first means indicates that the display apparatus is oriented downwardly said LED driving means drives the LED array during a second portion of the periodic signal while turning on said LED array in a reverse direction.

5,331,334

VACUUM FLUORESCENT DISPLAY DEVICE

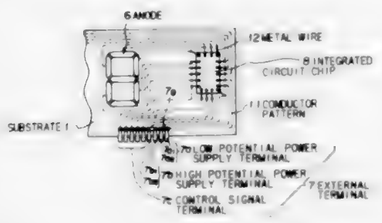
Yoichi Murayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 611,829, Nov. 13, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 998,776

Claims priority, application Japan, Nov. 15, 1989, 1-133230[U]

Int. Cl.[5] G09G *3/20*

U.S. Cl. 345—47 **8 Claims**



1. A vacuum fluorescent display device, comprising:

a substrate having conductive patterns disposed thereon;

a display unit for displaying predetermined patterns, said display unit being mounted on said substrate, said display unit including anodes coated with fluorescent material, grid electrodes disposed at positions which are above said anodes with a spacing therebetween, and cathode wires stretched above said grid electrodes with a spacing therebetween;

a driving circuit for driving said display unit, said driving circuit being an integrated circuit mounted on said substrate and being coupled to the conductive patterns;

at least one external terminal, connected to the conductive patterns to which said driving circuit is coupled, to be supplied with electric power from an external power supply, said at least one external terminal having at least two terminals, including a first terminal for low potential power supply, and a second terminal for high potential power supply, at least one of said first and second terminals including at least two parallel terminals electrically connected together, wherein the parallel terminals are connected to the integrated circuit by no more than one conductor; and

a vacuum envelope which seals said display unit and driving circuit on said substrate.

5,331,335

PANNING CONTROL DEVICE FOR CONTROLLING AREA OF DISPLAY IMAGE IN COMPUTER AIDED DESIGN SYSTEM

Masahiro Iida, Hachioji, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 9, 1991, Ser. No. 744,119

Claims priority, application Japan, Aug. 10, 1990, 2-212423

Int. Cl.[5] G09G *1/06*

U.S. Cl. 345—121 **13 Claims**

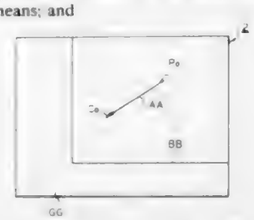
1. A panning control device, comprising:

a memory means for storing image data;

a display means for displaying a part of the image data stored in said memory means, as a display image;

a pointing means for pointing out a specific position of the display image displayed at said display means;

a panning control means, connected to said pointing means, for calculating and outputting guide information concerning a display image to be displayed at said display means, when the specific position pointed out by said pointing means is placed at a center of the image displayed at said display means; and



a display control means connected to said memory means, said display means, said pointing means, and said panning control means, for controlling the display image at said display means to conform to the guide information output from said panning control means such that said guide information includes frame lines of the display image to be displayed and a travel indication line having one end at the specific position pointed out by said pointing means and having its other end at another location on the display means.

5,331,336

Patent Not Issued For This Number

5,331,337

DATA PROCESSING APPARATUS WITH SELF-REPEAT FUNCTION

Noriaki Kabeya, Aichi, and Misao Kataoka, Mie, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 24, 1991, Ser. No. 645,486

Claims priority, application Japan, Apr. 27, 1990, 2-112045

Int. Cl.[5] G06F *3/02*

U.S. Cl. 345—172 **12 Claims**



1. A data processing apparatus, comprising:

a keyboard having a plurality of keys assigned to a plurality of functions;

an executing means for executing a function assigned to a key operated on the keyboard;

an output means for outputting the result of execution performed by the executing means;

a self-repeat means for controlling the executing means in such a manner that the function assigned to a continuously depressed key is executed repeatedly;

a selection routine setting controller for setting a selection routine in which a desired processing routine is selected from among a plurality of processing routines;

a transition effecting means for regarding as a command for transition to the selected processing routine the depression of a key having a certain function in the selected processing routine, thereby effecting transition to the selected processing routine; and

an inhibiting means for inhibiting the operation of the self-repeat means in the selected processing routine if the key, which is regarded as one giving a processing routine selection command when operated, is depressed before transition to the selected processing routine and continues to be depressed in the selected processing routine after transition, wherein the key has a certain function that is to be repeatedly performed by the self-repeat means when the key is continuously depressed after transition to the selected processing routine.

5,331,338

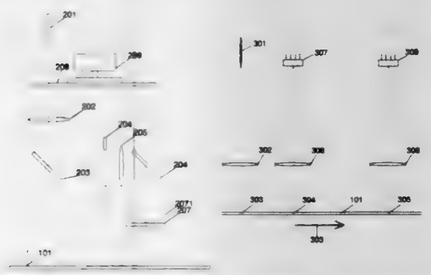
WEB STEERING FOR AN IMAGE RECORDER

Donald V. Mager, Mendota Heights, Minn., assignor to Printware, Inc., Saint Paul, Minn.

Filed Jan. 30, 1992, Ser. No. 828,020

Int. Cl.[5] H01N *1/21;* **B41J** *2/435*

U.S. Cl. 346—108 **17 Claims**



14. A registration method, performed in an imager having a frame that moves an energy-sensitive medium stepwise in position and that exposes the energy-sensitive medium at each successive position with an energy beam, directed to positionally registering successive images successively exposed in successive regions of the medium, one image to the next, the registration method comprising:

stepwise mechanically repositioning the energy-sensitive medium relative to the frame and transversely relative to an energy beam in order that successive regions of the medium may be successively imaged with the energy beam, one region to the next; and, before each stepwise repositioning,

recording optically detectable registration marks upon the energy-sensitive medium at each imaged region thereof; and then, at a time after the medium has been repositioned relative to the frame and transversely relative to the energy beam,

optically sensing the recorded registration marks associated with a region already imaged; and, responsively to the sensed registration marks of this already-imaged region,

controlling a next stepwise mechanical repositioning of the medium responsive to the sensed registration marks in order that, by this controlling, positional errors in this next stepwise mechanical repositioning of the medium may be reduced, this positional error reduction being to the effect that each successively imaged region of the image will be in better positional registration, one region to the next.

5,331,339

INK JET PRINTER

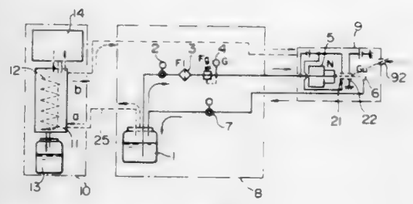
Naoshi Takahashi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 31,194

Claims priority, application Japan, Mar. 12, 1992, 4-053263

Int. Cl.[5] B41J *2/18*

U.S. Cl. 349—89 **14 Claims**



1. An ink-jet printer comprising,

an ink tank for receiving an ink,

a printing head including a nozzle for generating an array of ink-particles, electrode means for charging the ink-particles with electricity, electrically energized deflecting means for deflecting the electrically charged ink-particles so that a part of the ink-particles ejected from the ink-jet printer reaches a desirable position on a work piece to be printed, and a gutter for catching another part of the array of ink-particles which is not used to print the work piece, and

pump means for taking the another part of the array of ink-particles through the gutter into the ink tank,

wherein an air in the printing head is taken into the pump means through the gutter, the air is separated from the ink, and the separated air is returned to an inside of the printing head.

5,331,340

THERMAL HEAD WITH CONTROL MEANS FOR MAINTAINING HEAD TEMPERATURE WITHIN A RANGE

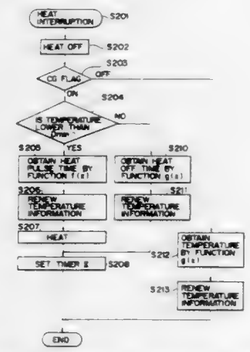
Akihiko Sukigara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 680,038, Mar. 29, 1991, abandoned, which is a continuation of Ser. No. 344,610, Apr. 28, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 960,287

Claims priority, application Japan, May 2, 1988, 63-107600

Int. Cl.[5] B41J *2/325, 2/375*

U.S. Cl. 346—76 PH **14 Claims**



1. A recording apparatus for recording onto a recording medium comprising:

a recording head for recording on said recording medium,

said recording head having a plurality of heat generating elements for generating heat;

detecting means for detecting a temperature of said heat generating elements before recording is started in a first recording operation; and

controlling means for controlling energization and deenergization of each of said heat generating elements based on the following indications

the temperature detected by said detecting means,

a first anticipative temperature of each of said heat generating elements calculated using a predetermined first function, each of said heat generating elements being energized to produce heat until reaching the first anticipative temperature, thereby controlling a heating time of said given heat generating elements, and

a second anticipative temperature of each of said heat generating elements calculated using a predetermined second function, said given heat generating element being deenergized to cool until reaching the second anticipative temperature, thereby controlling a cooling time of each of said heat generating elements,

wherein only the first anticipative temperature is calculated by using said detected temperature with said predetermined first function.

5,331,341

IMAGE FORMING APPARATUS

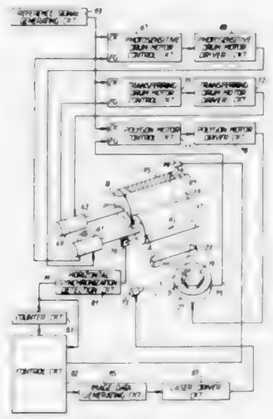
Jiro Egawa; Kenichi Komiya, both of Kanagawa; Kyoichi Okada, Aichi; Hideo Mori, Gifu, and Hirokazu Izawa, Aichi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 20, 1991, Ser. No. 794,892

Claims priority, application Japan, Nov. 28, 1990, 2-323296

Int. Cl.[5] **H04N** *1/21*; **B41J** *2/435*

U.S. Cl. 346—108 **10 Claims**



1. An image forming apparatus, comprising:

a polygonal mirror for deflecting a light beam onto a movable image carrier;

means for forming an image on the image carrier corresponding to the light beam deflected onto the image carrier by the polygonal mirror;

a movable supporting member or supporting an image forming medium and conveying the image forming medium to a position where the image on the image carrier is transferred to the image forming medium;

first driver means for driving the polygonal mirror;

second driver means for driving the image carrier;

third driver means for driving the supporting member;

single generating means for generating a reference signal;

first control means for controlling the first driver means to regulate the rotational speed of the polygonal mirror based on the reference signal generated by the single generating means;

second control means for controlling the second driver means, to regulate the moving speed of the image carrier based on the reference signal generated by the single generating means; and

third control means for controlling the third driver means to regulate the moving speed of the supporting member based on the reference signal generated by the single generating means.

5,331,342

VIDEO CLOCK GENERATING CIRCUIT AND HORIZONTAL SYNCHRONIZING SIGNAL GENERATING DEVICE IN IMAGE FORMING APPARATUS USING LASER BEAM

Akira Shimatani, Sakai, and Takuji Okumura, Tondabayashi, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 4, 1992, Ser. No. 845,656

Claims priority, application Japan, Mar. 12, 1991, 3-047058

Int. Cl.[5] **B41J** *2/435*; **H04N** *1/21*

U.S. Cl. 346—108 **12 Claims**



1. A video clock generating circuit for generating a video clock for defining a data processing operation for each pixel in an image forming apparatus which uses a laser beam, said circuit comprising:

beam detection signal generating means for generating a beam detection signal corresponding to the timing of laser beam scanning;

reference frequency signal generating means for generating a reference frequency signal;

a plurality of phase shifting means for shifting the phase of the reference frequency signal from the reference frequency signal generating means to generate a plurality of output signals which differ in phase by a predetermined amount;

a plurality of inverting means for respectively inverting output signals from the plurality of phase shifting means to provide a plurality of inverted output signals,

selecting means receiving respective output signals of the plurality of phase shifting means and the plurality of inverting means for selecting any one output signal whose phase difference from said beam detection signal is closest to a predetermined phase difference from among the output signals of said plurality of phase shifting means and said plurality of inverting means, the phase difference from the beam detection signal being the time difference between the time when the beam detection signal has a predetermined phase angle and the time when the respective output signals of the phase shifting means and the inverting means have a predetermined phase angle, to output the selected output signal as a video clock.

5,331,343

OPTICAL APPARATUS WITH IMPROVED LENS MOUNTING DEVICE

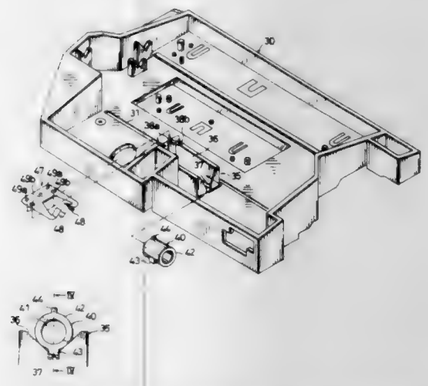
Satoru Ono, and Jun Kohsaka, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 12, 1991, Ser. No. 791,045

Claims priority, application Japan, Nov. 13, 1990, 2-308204; Mar. 12, 1991, 3-046351

Int. Cl.[5] **B41J** *2/435*

U.S. Cl. 346—108 **21 Claims**



1. An optical apparatus comprising:

laser beam emitting means for outputting a laser beam modulated in accordance with image information;

a lens unit including, all formed integral with one another, an effective lens portion, a cylindrical portion surrounding a side surface of said effective lens portion, and projecting means extending from peripheral positions of said cylindrical portion, said effective lens portion having a curved surface with asymmetry of rotation for refracting said laser beam with different powers in at least two directions; and

supporting means including a holder for holding said cylindrical portion of said lens unit to be rotatable and axially slidable on an optical axis of said laser beam, and a groove parallel to the optical axis for receiving said projecting means.

5,331,344

METHOD FOR PRODUCING LIQUID-DISCHARGING RECORDING HEAD, LIQUID-DISCHARGING RECORDING HEAD PRODUCED BY SAID METHOD, AND RECORDING APPARATUS UTILIZING SAID RECORDING HEAD

Masashi Miyagawa; Masanori Takenouchi, both of Yokohama; Katsuhiro Shirota, Inagi; Norio Ohkuma, Yokohama; Yoshihisa Takizawa, Kawasaki; Toshiharu Inui, and Kazuhiro Nakajima, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,126

Claims priority, application Japan, Dec. 19, 1990, 2-411595; Dec. 19, 1990, 2-411740; Dec. 19, 1990, 2-411745; Dec. 19, 1990, 2-411749; Dec. 19, 1990, 2-411759; Dec. 19, 1990, 2-411769; Oct. 31, 1991, 3-286272

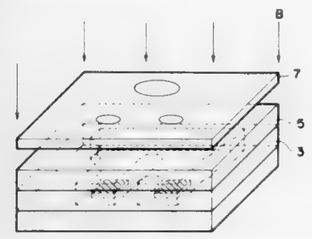
Int. Cl.[5] **G01D** *15/16*

U.S. Cl. 347—63 **49 Claims**

1. A method for producing a liquid discharging recording head including an ink discharge opening, an ink supply opening, an ink channel communicating with said ink discharge opening and said ink supply opening, and an energy generating element provided corresponding to said ink channel and adapted for generating energy to be utilized for ink discharge, comprising the steps of:

forming a first photosensitive material layer for ink channel formation, on a substrate bearing thereon said energy generating element;

pattern exposing said first photosensitive material layer for forming the ink channel;



forming a second photosensitive material layer on said first photosensitive material layer in which a latent image of the ink channel is patterned;

pattern exposing said second photosensitive material layer for forming the ink discharge opening and the ink supply opening; and

developing said first photosensitive material layer and said second photosensitive material layer.

5,331,345

TELEVISION CAMERA DEVICE

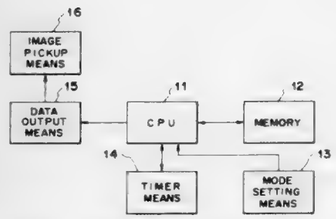
Toshiyuki Akimoto, Tokyo, and Tatsuro Yamazaki, Tachikawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,321

Claims priority, application Japan, Jun. 21, 1991, 3-149148; Sep. 6, 1991, 3-254605; Sep. 6, 1991, 3-254606

Int. Cl.[5] **H04N** *5/232*

U.S. Cl. 348—297 **5 Claims**



1. A television camera device comprising:

image pickup means, having a plurality of control units, for producing an optimum image output signal (i) corresponding to a received object image and (ii) in accordance with one of a plurality of predetermined image pickup environments;

memory means for storing scene files which contain image pickup control data for said plurality of predetermined image pickup environments;

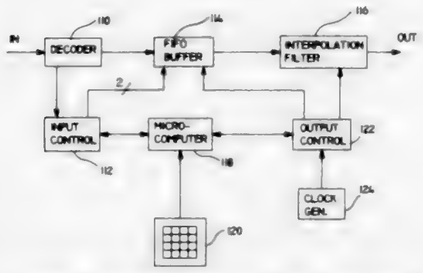
mode setting means for selecting a particular scene file from the scene files stored in said memory;

timer means operable in response to the selection of the scene file by said mode setting means; and

operation means, coupled to said image pickup means, said memory means, said mode setting means, and said timer means, for sequentially outputting to said image pickup means intermediate image pickup control data which is between the control data of the pre-selection scene file

and the control data of the post-selection scene file, by changing said intermediate control data in discrete increments at a frequency determined by said timer means when the scene file is selected by said mode setting means.

5,331,346
APPROXIMATING SAMPLE RATE CONVERSION SYSTEM
Jerome D. Shields, Atco, and Kenneth E. Vavreck, Maple Shade, both of N.J., assignors to Panasonic Technologies, Inc., Secaucus, N.J.
Filed Oct. 7, 1992, Ser. No. 957,721
Int. Cl.[5] H04N *11/20, 7/01*
U.S. Cl. 348—441 **15 Claims**



1. A sample rate conversion system which resamples a first sampled data signal having a first predetermined sample rate to generate a second sampled data signal having a second predetermined sample rate, the sample rate conversion system comprising:

resampling means, responsive to a control signal for alternately resampling the first sampled data signal according to respective first and second approximate sample ratios to produce samples of the second sampled data signal which have respective sample position errors, such that, between any two consecutive samples of the second sampled data signal, an accumulated sample position error changes in a positive sense while resampling according to one of the first and second approximate sample ratios and changes in a negative sense while resampling according to the other of the first and second approximate sample ratios;

monitoring means for accumulating the sample position errors of the samples produced by the resampling means to generate the control signal which causes the resampling means to switch between the first and second approximate sample ratios when the accumulated sample position error has a magnitude greater than a predetermined threshold value.

5,331,347
TELEVISION SYNC AND PHASE DETECTOR DISABLE CIRCUIT
Chun H. Wu, Singapore, Singapore, assignor to Thomson Consumer Electronics S.A., Courbevoie, France
Filed Jun. 15, 1992, Ser. No. 898,880
Int. Cl.[5] H04N *5/12, 5/04*
U.S. Cl. 348—536 **7 Claims**

1. A television apparatus, comprising:

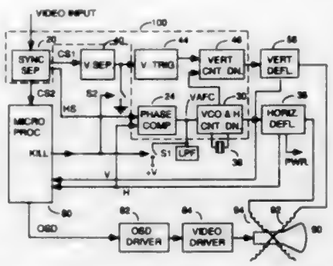
means for generating a sync signal;

a controllable oscillator operable to generate a deflection signal within a range of frequencies;

a comparator having inputs coupled to the sync signal generating means and to the controllable oscillator and having an output for providing a correction signal to the controllable oscillator to vary the frequency of the deflection signal, the sync input of the comparator being supplied with signals from said means for generating a sync signal under a condition of unsuitable sync signal generation;

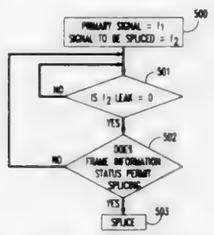
means for sensing said unsuitable sync signal condition;

a first means coupled to said sensing means and to the output of the comparator for producing fixed frequency operation of said controllable oscillator during said unsuitable sync condition; and



a second means coupled to said sensing means and to said sync signal generating means to inhibit coupling thereof to a vertical signal deflection generating means during said unsuitable sync condition.

5,331,348
ADAPTIVE LEAK HDTV ENCODER
Scott C. Knauer, Mountainside; Kim N. Matthews, Watchung; Arun N. Netravali, Westfield; Eric D. Petajan, Watchung, and Robert J. Safranek, New Providence, all of N.J., assignors to AT&T Laboratories, Murray Hill, N.J.
Filed Jul. 27, 1992, Ser. No. 919,792
Int. Cl.[5] H04N *7/137*
U.S. Cl. 348—402 **9 Claims**

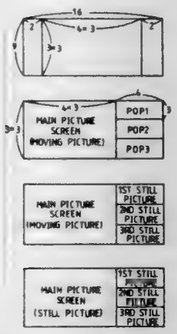


4. A method for combining a first encoded video signal and a second encoded video signal, each of which was created by developing a displaced frame difference image signal from a prediction of an applied image signal multiplied by leak factor and from an actual applied image signal, by encoding the displaced frame difference image signal, and by transmitting the encoded signal and the leak factor, comprising the steps of:

forcing each of the encoded video signals to have a preselected leak factor at least some of the time;

splicing-in the second encoded video signal into the first encoded video signal, to thereby replace the first encoded video signal, at a point in the second encoded video signal where the leak factor of the second encoded video signal is at said preselected value.

5,331,349
PICTURE-OUT-PICTURE CONTROL APPARATUS AND METHOD THEREOF
Jeong H. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Feb. 25, 1993, Ser. No. 22,624
Claims priority, application Rep. of Korea, Feb. 29, 1992, 92-3348
Int. Cl.[5] H04N *5/45*
U.S. Cl. 348—567 **15 Claims**



1. A picture-out-picture control apparatus for converting a first video signal, having a first aspect ratio, into a second video signal adapted for a television receiver having a second aspect ratio which is wider than the first aspect ratio, said picture-out-picture control apparatus comprising:

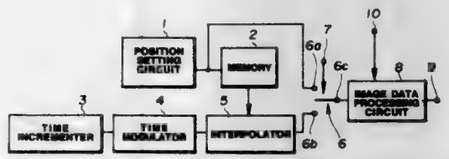
a main picture processor for converting the first video signal, having the first aspect ratio, into a video signal for a main screen of said television receiver;

a picture-out-picture processor for converting the first video signal, having the first aspect ratio, into a video signal for at least one picture-out-picture screen of said television receiver;

a multiplexed picture formation portion for multiplexing the video signals for said main and picture-out-picture screens and forming said second video signal having the second aspect ratio; and

a control signal generator for controlling said picture-out-picture processor and said multiplexed picture formation portion.

5,331,350
IMAGE PROCESSING APPARATUS AND METHOD USING TIME BASE MODULATION TO GIVE MOTION TO AN ARBITRARY IMAGE
Shinichi Fujita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 8, 1992, Ser. No. 957,893
Claims priority, application Japan, Oct. 14, 1991, 3-292009
Int. Cl.[5] H04N *9/74*
U.S. Cl. 348—578 **4 Claims**



1. An image processing apparatus for imparting movement to an input image comprising a plurality of frames, comprising:

position setting means for outputting position data indicating positions of an input image in respective key frames;

memory means for storing the position data output by said position setting means;

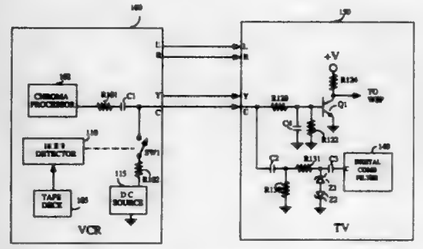
time data generator means for outputting time data representing a time base;

time base modulator means for modulating the time data delivered from said time data generator means such that the time base represented by the modulated time data varies in accordance with a predetermined function;

interpolator means for forming, by interpolation processing, locus data indicating a movement path of the input image on the basis of the position data stored in said memory means and the modulated time data delivered from said time base modulator means; and

image data processing means for implementing movement processing of the input image on the basis of the locus data delivered from said interpolator means and a time signal representing a substantially unvarying time base.

5,331,351
WIDE-SCREEN PICTURE INDICATION SIGNAL DETECTOR FOR A TELEVISION RECEIVER
Kenneth J. Haas, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Feb. 10, 1993, Ser. No. 9,301
Int. Cl.[5] H04N *5/46*
U.S. Cl. 348—558 **3 Claims**



3. A television receiver, comprising:

a widescreen display screen;

an S-Video input connector including a luminance input terminal for receiving a luminance (Y) signal component, and a chrominance input terminal for receiving a chrominance (C) component signal of a video signal from a VCR playing a prerecorded videotape;

said chrominance input terminal also receiving a DC signal when said prerecorded video tape contains images which have been optically horizontally compressed;

lowpass filter means coupled to said chrominance input terminal for separating said DC signal from said chrominance component signal;

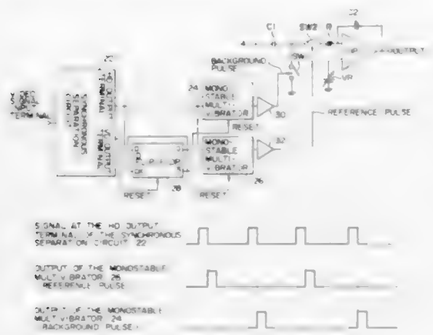
a control circuit responsive to said DC signal for causing said image to be expanded across the entire width of said widescreen display screen.

5,331,352
CONTRAST CONTROL WHEREIN REFERENCE PULSE DETECTION OCCURS EVERY OTHER LINE PERIOD AND WHEREIN CLAMPING OCCURS IN REMAINING LINE PERIODS
Shunji Umemura, Chiba, and Hiroyuki Nakazono, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 29, 1993, Ser. No. 99,964
Claims priority, application Japan, Aug. 4, 1992, 4-228021
Int. Cl.[5] H04N *5/57, 5/52*
U.S. Cl. 348—682 **7 Claims**

3. A contrast control circuit which comprises:

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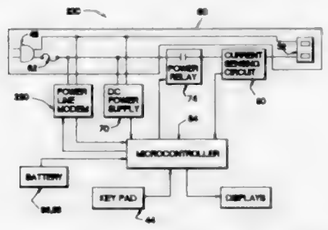
means for extracting a horizontal synchronizing signal from an input video signal each horizontal scanning cycle;
means for generating a background pulse in response to the horizontal synchronizing signal once every N horizontal scanning cycles, where N is an integer not smaller than two;
means for generating a reference pulse in response to the horizontal synchronizing signal once every N horizontal scanning cycles signal other than the horizontal scanning cycle in which said background pulse is generated;



means for inserting said reference pulse in a back porch of the video signal;
means for clamping the video signal so that the potential of the pedestal level is held zero in response to said background pulse;
means for detecting the voltage of said reference voltage inserted in said back porch; and
means for generating a contrast control signal on the basis of the detected voltage and an operator specified voltage;

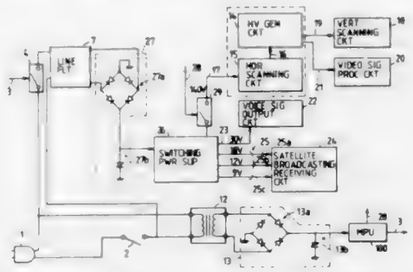
ance for each viewer, said device being connected in the power supply line to the television under control and serving to enable the power connection to the television when an authorized viewer has allowance time remaining, said device being characterized by the ability to sense the on/off status of the television to assure convenient and trustworthy operation of the device in an actual residential setting, said device comprising:
a microcontroller including a stored program, memory for storing an access code and a time account for each of a plurality of viewers, a means for accurately keeping time and means for executing the stored program;
data entry means or supplying user input to the microcontroller;
power input and output means connecting said device to an AC power source and the television under control;
means for enabling the power connection or interrupting power to the television under control according to instructions from the microcontroller;
means for providing information to the microcontroller concerning the on/off status of the television under control; and
means responsive to the television on/off status information for assuring that a viewer's time account is debited only during periods when the television is ON.

5,331,353
DEVICE FOR LIMITING THE AMOUNT OF TIME AN ELECTRICAL APPLIANCE SUCH AS A TELEVISION MAY BE USED
Randal P. Levenson, Miami, Fla.; James D. Kennedy; Zach D. Cox, Jr., both of Raleigh, N.C., and Frank A. Browne, Ardmore, Pa., assignors to Mindmaster Inc., South Miami, Fla.
Continuation-in-part of Ser. No. 26,044, Mar. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 850,358, Mar. 10, 1992, abandoned. This application Mar. 9, 1993, Ser. No. 28,792
Int. Cl.[5] H04N *5/44*
U.S. Cl. 348—725 **19 Claims**



1. A device for limiting the amount of time a television may be viewed by a plurality of viewers to a predetermined allow-

5,331,354
POWER SUPPLY APPARATUS FOR TELEVISION RECEIVER SET AND TELEVISION RECEIVER SET INCLUDING THE SAME
Takeo Koyama, and Takashi Nakano, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 25, 1991, Ser. No. 765,345
Claims priority, application Japan, Sep. 26, 1990, 2-258001; Nov. 5, 1990, 2-300801
Int. Cl.[5] H04N *5/63, 7/20*
U.S. Cl. 348—730 **21 Claims**



1. A power supply apparatus for a television receiver set including a television circuit means and broadcasting receiving

circuit means for receiving broadcasting whose type is different from that of said television circuit means, comprising:
(a) a regenerative type of switching power supply for producing a plurality of supply voltages whose intensities are different from each other; and
(b) switch means for controlling of supplying of a first supply voltage out of said supply voltages to said television circuit means in response to a control signal, wherein said broadcasting receiving circuit means comprises satellite broadcasting receiving means and a second supply voltage out of said supply voltages is supplied to said satellite broadcasting receiving means.

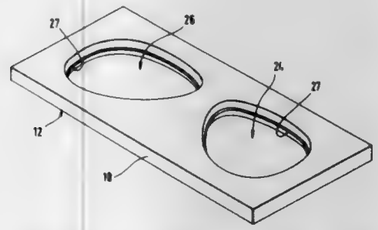
13. A television receiver set comprising:
television circuit means for controlling video outputs of the television set;
broadcasting receiving means for controlling reception of satellite broadcasting transmissions;
a switching power supply of a regenerative type for receiving an input power and producing a plurality of supply voltages having different voltages in order to provide a first supply voltage to said television circuit means and a second supply voltage to said broadcasting receiving means;
a control means for outputting a plurality of control signals to control said plurality of supply voltages being supplied to at least said television circuit means; and
a first switch provided between said switching power supply and said television circuit means, said first switch allowing said first supply voltage of said switching power supply to be supplied to said television circuit means in response to one of said plurality of control signals from said control means.

center portion, said plastic frame having protruding parts in the form of nose cushions at said center portion and hinge supports for said hinges at said center portion and said temples, said plastic frame manufactured by a process comprising the steps of:
cutting said center portion and/or said temples from a plastic bank;
before said step of cutting, applying at least one elevated formed portion of plastic material to the blank such that said formed portion exhibits an intimate connection to the blank, said step of applying comprising the step of positioning said at least one formed portion so as to coincide with said protruding parts of said plastic frame and essentially omogenously injection-molding said plastic material onto the blank; and
finishing the blank together with said at least one formed portion to form said center portion and/or said temples.

5,331,356

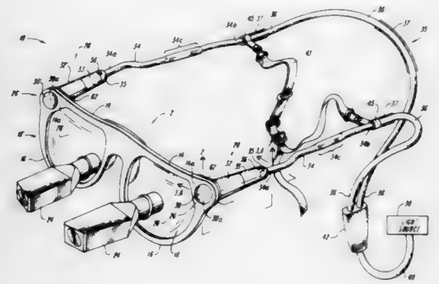
Patent Not Issued For This Number

5,331,355
PLASTIC FRAME FOR EYEGLASSES
Kurt Frank, Schwäbisch Gmünd, and Rolf Malthaner, Maulbronn-Schmie, both of Fed. Rep. of Germany, assignors to Optik Partner AG & Co., Schwabisch Gmünd, Fed. Rep. of Germany
Filed May 13, 1992, Ser. No. 882,349
Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115829
Int. Cl.[5] G02C *13/00*
U.S. Cl. 351—41 **11 Claims**



1. A plastic frame for eyeglasses, comprising a center portion, temples and hinges for connecting said temples to said

5,331,357
ILLUMINATION ASSEMBLY
Denton A. Cooley, Houston, Tex.; Bernard Clark, Arlington, Vt.; Frederick Morris, Shrewsbury, Mass.; Lawrence E. Delaney, Bristol, Pa.; Peter Vari, Newtown, Pa., and William L. Chesterson, Richboro, Pa., assignors to Luxtec Corporation, Worcester, Mass.
Filed Jul. 31, 1992, Ser. No. 922,914
Int. Cl.[5] G02C *1/00*
U.S. Cl. 351—158 **15 Claims**

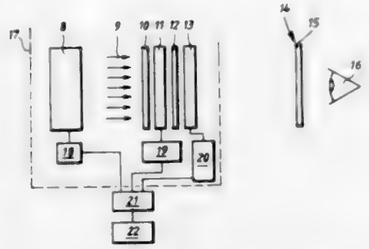


12. A telescopic spectacle comprising:
a spectacle frame having a top bar having a bore therein and a bottom rim coupled to said top bar to provide an aperture;

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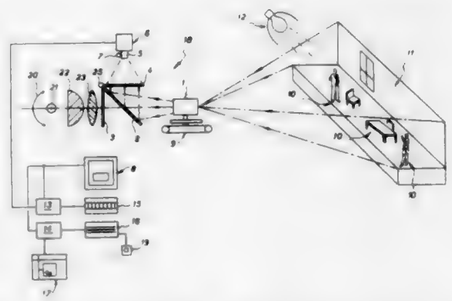
a lens disposed in the aperture of said frame, said lens having a bore therein;
a telescope assembly disposed through the bore of the lens;
an illumination assembly having a first end with a first aperture therein and a second end with a second aperture therein, wherein the first end of said illumination assembly is disposed in the bore of said top bar and said illumination assembly further comprises:
a cane having a first end and a second end, with the first end of said cane disposed in the second end of said illumination assembly adjacent said second aperture;
a first lens having a first surface and a second surface with the first surface of said first lens disposed adjacent the second end of said cane;
a second lens having a first surface and a second surface with the first surface of said second lens disposed adjacent the second surface of said first lens; and
wherein said first lens and second lens are disposed to direct a beam of light from the cane to the first aperture of said illumination assembly and toward a predetermined viewing area.

5,331,358
VISION TESTING SYSTEM FOR TESTING THE SIGHT FUNCTION OF A PATIENT
Hermann Schürle, Aalen; Wolfgang Grimm, Heidenheim, and Hartmut Mennicke, Pullach, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany
Filed May 8, 1992, Ser. No. 879,995
Claims priority, application Fed. Rep. of Germany, May 8, 1991, 4115145
Int. Cl.[5] A61B *3/02*; **G02B** *27/02*; **H04N** *13/00*
U.S. Cl. 351—232 **9 Claims**



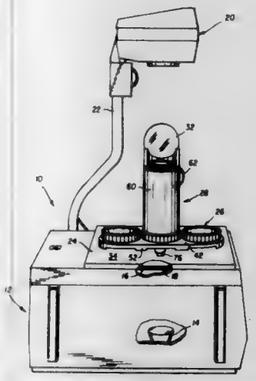
1. A vision testing system for testing the sight functions of a patient, the system comprising:
polarization spectacles having first and second polarization lenses for placement in front of the first and second eyes of the patient, respectively;
said first polarization lens defining a first polarization axis and said second polarization lens defining a second polarization axis perpendicularly to said first polarization axis; and,
a vision testing apparatus including:
a light source for radiating light defining a light axis;
a first LCD-display mounted on said light axis downstream of said light source and including a plurality of first individually drivable liquid-crystal cells;
a second LCD-display mounted on said light axis downstream of said first LCD-display and including a plurality of second individually drivable liquid-crystal cells;
the cells of each of said displays being aligned with respect to each other and being adapted to each other with respect to their size;
a color-neutral transparent first polarizer mounted on said light axis between said light source and said first LCD-display;
a color-neutral transparent second polarizer mounted on said light axis between said first and second LCD-displays;
said first polarizer defining a third polarization axis and said second polarizer defining a fourth polarization axis; said third and fourth polarization axes having different directions relative to each other;
a first drive circuit for individually driving said cells of said first LCD-display;
a second drive circuit for individually driving said cells of said second LCD-display;
switching means connected to said first and second drive circuits for controlling both of said first and second drive circuits; and,
key pad means for issuing commands to said switching means for driving said first and second drive circuits to, in turn, individually drive the cells of said LCD-displays.

5,331,359
METHOD FOR CREATING AND STORING A THEATRICAL DESIGN AND APPARATUS FOR IMPLEMENTING SAME
Didier Leclercq, 115 Rue du Faubourg Poissonière, 75009 Paris, France
PCT No. PCT/FR91/00482, § 371 Date Nov. 24, 1992, § 102(e) Date Nov. 24, 1992, PCT Pub. No. WO91/20050, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 18, 1991, Ser. No. 949,873
Claims priority, application France, Jun. 20, 1990, 90 07714
Int. Cl.[5] G03B *21/26, 29/00*
U.S. Cl. 353—28 **8 Claims**



4. Apparatus for creating and storing a theatrical design adapted to produce scenic effects characterized in that it comprises:
means for forming at least one image of a stage optionally with scenery, props and persons thereon adapted to produce first scenic effects,
a screen for displaying the image of a stage,
a computer-assisted drawing device adapted to prepare a drawn image for producing on the display screen scenic effects complementary and/or supplementary to the image of the stage,
means for storing the drawn image, and
means for producing support plates to project the complementary and/or supplementary scenic effects on the basis of data respective to the stored drawn image.

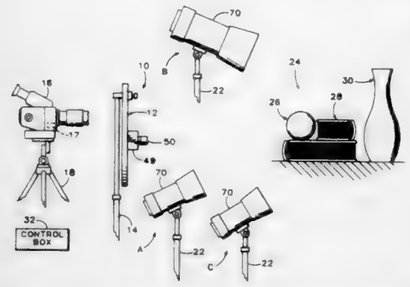
5,331,360
ADAPTOR FOR OVERHEAD PROJECTOR
Paul L. Ruben, Penfield, and Edward J. Walsh, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 22, 1993, Ser. No. 34,970
Int. Cl.[5] G03B *21/54*
U.S. Cl. 353—96 **11 Claims**



11. Apparatus for use with an overhead projector including a platen and a light source for directing illumination along a path through and above the platen and having a fresnel condensing lens including a plurality of circular, concentric lenslets defining a common center, said adaptor comprising:
a base including opaque means for covering the platen and intercepting substantially all of the illumination at the platen from the light source, said covering means defining a center for location over the common center of the lenslets and three apertures disposed in a line, one aperture at the center of the covering means and the other two apertures on opposite sides of the center one, for admitting illumination from the light source through the apertures;
a fresnel disk extending across the one and each of the other two apertures including a plurality of arcuate, concentric lenslets, the lenslets extending across the one aperture being concave toward the center of the covering means and the lenslets extending across the other two apertures being convex toward the center of the covering means;
a slide holder on said base surrounding said aperture for positioning a photographic slide in the illumination admitted by said aperture; and,
a projection lens coupled to said slide holder for projecting magnified images of slides in said holder onto a viewing surface.

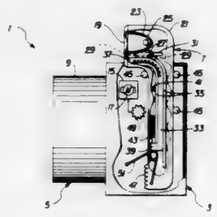
5,331,361
SYNCHRONIZED FILTER DEVICE
Aaron Jones, 3 Vaquero Rd., Santa Fe, N. Mex. 87505
Filed Jul. 15, 1992, Ser. No. 914,859
Int. Cl.[5] G03B *11/00, 15/03, 17/38*
U.S. Cl. 354—132 **11 Claims**

9. An auxiliary shutter for use with a camera, having a flash synchronizer, and plural light sources comprising:
an auxiliary shutter mount having an auxiliary shutter port and a shutter therein;
a remote control for said shutter;
a filter housing having a filter housing port therethrough, wherein said filter housing port is optically aligned with said auxiliary shutter mount port;
a filter holder rotatably mounted in said filter housing for holding plural filters in optical alignment with said filter housing port;
filters located in said filter holder, wherein said filters have various optical properties;
a drive mechanism for rotating said filter holder to position said filters in alignment with said filter housing port, said drive mechanism including a drive motor having a drive shaft, a first drive gear carried on said drive shaft, and an optical encoder disc carried on said drive shaft, and which further includes a filter holder shaft which supports and drives said filter holder, which has a second drive gear carried thereon, wherein said first drive gear and said second drive gear are drivingly connected to one another by a drive belt;



a filter holder position sensor for sensing the position of said filter holder relative to said filter housing port; and
a control circuit for controlling said drive mechanism to rotate said filter holder at a predetermined rate, and for illuminating a specific light source as a specific filter aligns with the subject, wherein said optical encoder generates a light synchronization signal for said specific light source, and wherein said light synchronization signal is transmitted to said control circuit which activates said specific light source upon receipt of a light synchronization signal associated with said specific light source.

5,331,362
PHOTOGRAPHIC CAMERA WITH FLASH UNIT CAPABLE OF CHANGING ILLUMINATION ANGLE AND SEPARATION FROM TAKING LENS
Anthony DiRisio, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 11, 1993, Ser. No. 75,967
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—149.1 **4 Claims**



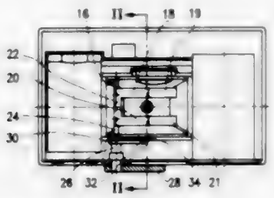
1. A photographic camera comprising a camera body, and an electronic flash unit having a flash lens and light-emitting means capable of being separated to change the illumination angle of said flash unit, is characterized in that:
said flash unit is supported to permit the flash unit to be increasingly extended from said camera body; and
regulating means connects said camera body with one of said flash lens and said light-emitting means for continuously separating the flash lens and the light-emitting means to

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vary the illumination angle of said flash unit as the flash unit is increasingly extended from the camera body

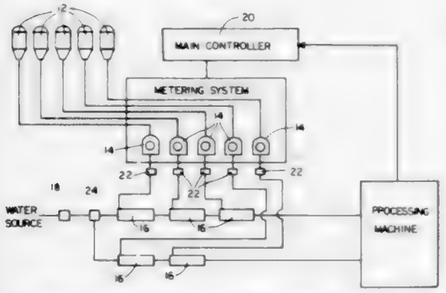
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5,331,363
PHOTOGRAPHIC CAMERA WITH SWITCHABLE FILM MASKING MECHANISM
Vladimir Fridman, New City, N.Y., assignor to Concord Camera Corp., Avenel, N.J.
Filed Mar. 1, 1993, Ser. No. 24,621
Int. Cl.[5] G03B *17/02, 37/00*
U.S. Cl. 354—159 **8 Claims**



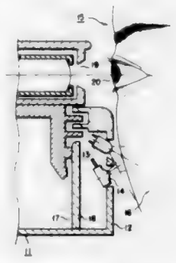
1. A photographic camera, comprising:
a) an exposure aperture for forming a full size picture frame;
b) masking means for partially masking said aperture for forming a panoramic size picture frame, wherein said masking means operates as a flexible unitary element, wherein said unitary element is adapted for pivoting between a first position so that a picture is formed having the full size frame and a second position so that a picture is formed having the panoramic size frame wherein when said unitary element is in said first position said unitary element is flexibly flexed away from said exposure aperture and when said unitary element is in said second position said unitary element is in a substantially straight unflexed position; and
c) actuating means for pivotably moving said masking means between said first position and said second position.

5,331,364
APPARATUS FOR DILUTING AND MIXING CHEMICALS AND AUTOMATICALLY FEEDING THE DILUTED CHEMICALS TO A PHOTOGRAPHIC PROCESSOR ON DEMAND
Robert H. Borden, Salt Lake City, Utah, assignor to Thatcher Chemical Company, Salt Lake City, Utah
Filed Jul. 20, 1992, Ser. No. 918,201
Int. Cl.[5] G03D *3/02, 3/04*
U.S. Cl. 354—324 **8 Claims**



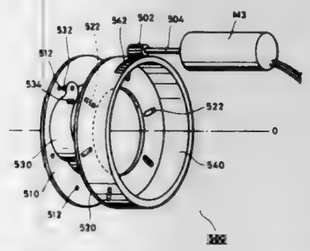
1. Apparatus for (1) metering an amount of at least two concentrated liquid chemical solutions, (2) metering an amount of water, (3) feeding the metered amounts of concentrated chemical solutions and water to a static, inline mixing means and (4) delivering a properly diluted working solution from the mixing member to a processing machine on demand from the processing machine, said apparatus comprising in combination
at least two storage containers, with a separate, distinct storage container being provided for each of the concentrated liquid chemical solutions;
at least two metering devices, with a separate, distinct metering device being connected to each storage container for metering a controlled amount of concentrated liquid chemical solution from the storage container;
mixing means comprising a number of static mixing devices equal to the number of concentrated liquid chemical solutions, with each static mixing device having an inlet and an outlet, wherein said static mixing devices are connected in series such that the inlets of the second and subsequent static mixing devices are connected to a respective outlet of an upstream static mixing device, and the inlet of each static mixing device is connected to a distinct, separate, respective metering device for accepting metered amounts of a concentrated liquid chemical solution from such respective metering device, and further wherein each said static mixing device is of the type that effects mixing of liquids introduced into the static mixing device by turbulent flow of the liquids through the static mixing device;
a water metering device connected in fluid flow communication with a source of water under pressure for metering a controlled amount of water from the source of water under pressure;
means for connecting the water metering device to an inlet of a first static mixing device in the series of static mixing devices so that the controlled amount of metered water from said water metering device flows initially through the first static mixing device and then serially through subsequent static mixing devices in the series of static mixing devices;
means for connecting an outlet of the last static mixing device in the series of static mixing devices to the processing machine for delivering a mixed, diluted working solution from said last static mixing device directly to the processing machine; and
a control unit that controls the operation of the metering devices and water metering device to deliver the proper amount of mixed, diluted working solution from said last static mixing device to the processing machine.

5,331,365
CAMERA SHAKING DETECTION APPARATUS
Azuma Miyazawa; Takeshi Ito, both of Tokyo, Japan, and Yoichi Yoshida, Bethpage, N.Y., assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 21, 1993, Ser. No. 66,585
Claims priority, application Japan, Oct. 15, 1990, 2-275969; Nov. 21, 1990, 2-318417
Int. Cl.[5] G03B *7/00, 29/00*
U.S. Cl. 354—410 **2 Claims**



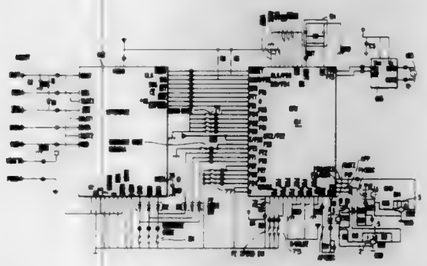
1. A camera shaking detection apparatus comprising:
light-emitting means, arranged in a camera body, for emitting light on part of a user's face;
light-receiving means for receiving light emitted from said light-emitting means and reflected by the user's face; and
detecting means for detecting shaking of said camera body on the basis of a change in photocurrent in said light-receiving means.

5,331,366
CAMERA
Tatsuyuki Tokunaga, Kawasaki, and Masayuki Suzuki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 417,202, Oct. 4, 1989, Pat. No. 5,140,358. This application Apr. 30, 1992, Ser. No. 876,568
Claims priority, application Japan, Oct. 4, 1988, 63-251459; Oct. 4, 1988, 63-251461
Int. Cl.[5] G03B *7/08*
U.S. Cl. 354—412 **10 Claims**



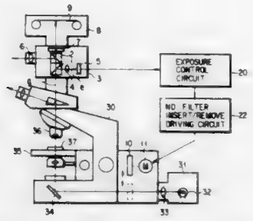
1. A camera comprising:
(a) a specific photographing mode for performing plural photographic operations by shifting a stop value of a diaphragm by a predetermined amount; and
(b) diaphragm control means for driving the diaphragm, without driving the diaphragm to a full open position between successive photographing operations, by an amount of a shift of the stop value of the diaphragm from the stop value at the preceding photographing operation, in a condition that the specific photographing mode has been selected.

5,331,367
CAMERA SYSTEM HAVING POWER ZOOM LENS
Masahiro Kawasaki; Hiroyuki Takahashi, and Yoshinari Tanimura, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 21, 1992, Ser. No. 886,349
Claims priority, application Japan, May 21, 1991, 3-218146; Nov. 29, 1991, 3-342123
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—412 **25 Claims**



1. A camera including a power zoom lens having a zoom mechanism, which supports a zooming lens unit to move in an optical axis direction, and a shutter mechanism, said camera further comprising:
a motor for driving the zoom mechanism; and
control means for actuating said motor when a predetermined period of time has passed after a shutter has been opened, and before the shutter is subsequently closed, wherein said control means actuates said motor for a second predetermined time period after which said control means deactuates said motor.

5,331,368
PHOTOMICROGRAPHIC APPARATUS
Satoru Oosawa, and Motokazu Yamana, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 2, 1993, Ser. No. 41,476
Claims priority, application Japan, Apr. 9, 1992, 4-087398
Int. Cl.[5] G03B *7/08*
U.S. Cl. 354—483 **10 Claims**



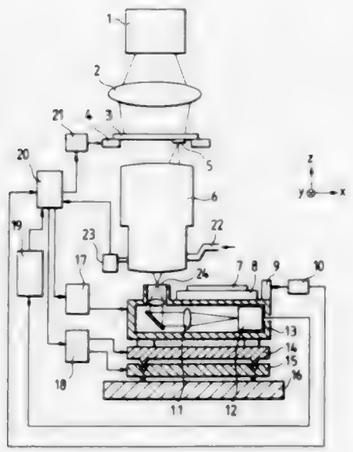
1. A photomicrographic apparatus comprising:
an observation optical system for optically magnifying a specimen;
a photographic apparatus for receiving a luminous flux from the observation optical system and taking a picture of an enlarged image of said specimen;
a light-receiving element for receiving a light flux from the observation optical system and, based on the light-receiving surface illuminance, producing an illuminance signal;
a light source for projecting light on said specimen;
a light intensity-reducing filter which is inserted in and removed from an optical path running from the light source through said observation optical system to said light-receiving element; and
filter insert/remove driving means which, receiving said illuminance signal from said light-receiving element, inserts said light intensity-reducing filter in said optical path when the light-receiving surface illuminance of said light-receiving element exceeds the upper limit of a first photometry enable illuminance range for a case where said light intensity-reducing filter is removed from said optical path, and removes said light intensity-reducing filter from said optical path when the light-receiving surface illuminance of said light-receiving element drops below the lower limit of a second photometry enable illuminance range for a case where said light intensity-reducing filter is inserted in said optical path.

5,331,369

METHOD OF FORMING PATTERNS AND APPARATUS FOR CARRYING OUT THE SAME

Tsuneo Terasawa, Oume; Katsunobu Hama, Katsuta, and Soichi Katagiri, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP92/01200, § 371 Date May 18, 1993, § 102(e) Date May 18, 1993, PCT Pub. No. WO93/06618, PCT Pub. Date Jan. 4, 1993
PCT Filed Sep. 21, 1992, Ser. No. 50,324
Claims priority, application Japan, Sep. 20, 1991, 3-241810; Dec. 25, 1991, 3-342556
Int. Cl.[5] G03B *27/42, 27/72, 27/28*
U.S. Cl. 355—53 9 Claims



1. A pattern forming method for projecting patterns of a first substrate onto the surface of a second substrate via optical projection means in order to form a projection image of said patterns on the second substrate surface, said method comprising the steps of:

furnishing a phase difference pattern on any one of a first and a second plane, said first plane being one where said patterns of said first substrate are located, said second plane being any plane equivalent to said first plane, said phase difference pattern affording a predetermined phase difference to the light passing, therethrough, and then irradiating light at said phase difference pattern via said optical projection means to project said phase difference pattern onto a detecting plane in the position equivalent to the surface of said second substrate, thus forming a projection image of said phase difference pattern on said detecting plane before said patterns are projected onto the surface of said second substrate;

detecting by use of optical detection means the light intensity distribution of said projection image of said phase difference pattern projected onto said detecting plane, the detected light intensity distribution being represented by detection signals;

subjecting said detection signals to signal processing so as to obtain the relative positional relationship between the focal plane of said patterns and said detecting plane by use of said optical projection means; and

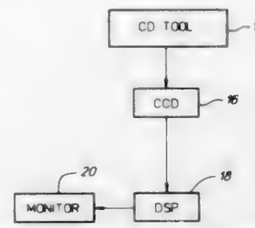
controlling the position of said second substrate so that the position of said detecting plane coincides with the position of said focal plane of said patterns on the basis of said relative positional relationship obtained.

5,331,370

METHOD AND APPARATUS FOR DETERMINING A FEATURE-FORMING VARIANT OF A LITHOGRAPHIC SYSTEM

S. Jeffrey Rosner, Palo Alto; Nader Shamma, Los Altos, and Frederik Sporon-Fiedler, San Mateo, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 3, 1993, Ser. No. 56,099
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 20 Claims



1. A method of setting a feature-forming variant for fabricating a pattern on a substrate comprising:

forming a pattern on a substrate,

forming an image of the pattern,

transforming the image according to spatial frequency of light intensity, thereby forming a transformed optical power spectrum of the image,

determining axes of maximum power along the transformed optical power spectrum,

comparing optical power along at least one of the axes of maximum optical power to optical power between the axes of maximum power, and

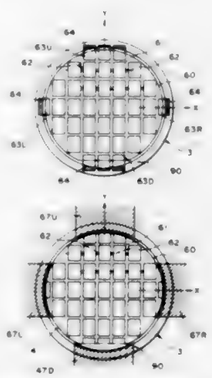
selecting a setting for a feature-forming variant in response to the comparing of optical power.

5,331,371

ALIGNMENT AND EXPOSURE METHOD

Tetsuya Mori, Yokohama, and Akiyoshi Suzuki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 882,762, May 11, 1992, abandoned, which is a continuation of Ser. No. 764,202, Sep. 23, 1991, abandoned. This application Nov. 4, 1993, Ser. No. 145,656
Claims priority, application Japan, Sep. 26, 1990, 2-254250
Int. Cl.[5] G03B *27/42, 27/32*
U.S. Cl. 355—53 15 Claims



1. A semiconductor device manufacturing exposure method for exposing different portions of a semiconductor wafer with radiation in a step-and-repeat manner, said method comprising the steps of:

placing the wafer on a wafer chuck;

detecting a first mark of the water, whereby a wafer mark signal is produced;

controlling a rotational position of the wafer chuck on the basis of the wafer mark signal;

printing an image of a second mark of a mask on a portion of a photosensitive material layer provided on a portion of the wafer chuck outside the wafer;

photoelectrically detecting the image of the second mark of the mask printed on the photosensitive layer, whereby a mask mark signal is produced;

producing data necessary for control of movement of the water chuck through a stage, by using the mask mark signal;

effecting step-and-repeat exposure of the different portions of the wafers by using a radiation beam while controlling the movement of the wafer chuck through the stage of the basis of the produced data; and

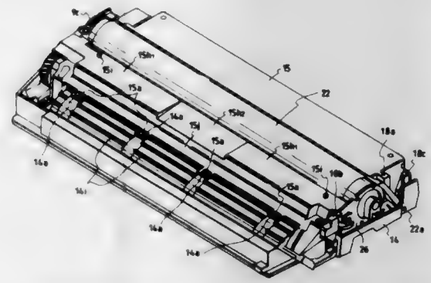
blocking a portion of the radiation beam with use of a blocking member disposed between a source of the radiation beam and the wafer to prevent exposure of the photosensitive material layer during the step-and-repeat exposure, and using the blocking member to change the range of passage of the radiation beam when the portion of the wafer to be exposed changes between when an inside portion of the wafer is to be exposed and when an outside portion of the wafer is to be exposed.

5,331,372

PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS ON WHICH PROCESS CARTRIDGE IS MOUNTABLE

Tadayuki Tsuda; Kazumi Sekine; Isao Ikemoto, all of Kawasaki; Kazushi Watanabe, Yokohama; Yoshikazu Sasago, Tokyo; Shinya Noda, Yokohama; Kazunori Kobayashi, Kawasaki, and Takeo Shoji, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 952,912
Claims priority, application Japan, Jun. 30, 1992, 4-194659; Aug. 4, 1992, 4-226528
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—200 33 Claims



1. A process cartridge mountable to an image forming apparatus, comprising:

an image bearing member;

process means for acting on said image bearing member;

a frame; and

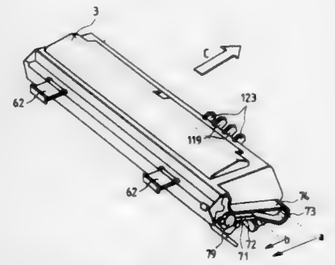
a first guide surface provided on said frame and adapted to guide a recording medium toward said image bearing member when said process cartridge is mounted to an image forming apparatus, and a second guide surface recessed more than said first guide surface and having a width smaller than that of said first guide surface.

5,331,373

IMAGE FORMING APPARATUS, PROCESS CARTRIDGE MOUNTABLE WITHIN IT AND METHOD FOR ATTACHING PHOTOSENSITIVE DRUM TO PROCESS CARTRIDGE

Yoshiya Nomura, Tokyo; Hiroo Kobayashi, Yokohama; Akira Higeta, Hiratsuka; Hironobu Isobe, Yokohama; Kazuo Shishido, Yokohama; Minoru Sato, Yokohama; Shigeo Miyabe, Yokohama, and Koji Miura, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,702
Claims priority, application Japan, Mar. 13, 1992, 4-088284; Jun. 30, 1992, 4-173265
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 34 Claims



1. A process cartridge mountable within an image forming apparatus, comprising:

a frame;

a fitting hole formed in said frame;

an image bearing member;

process means acting on said image bearing member;

a support shaft fitted into said fitting hole for rotatably supporting said image bearing member; and

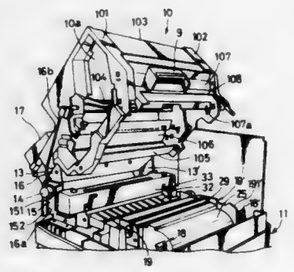
a projection formed on at least one of an outer peripheral surface of said support shaft and an inner surface of said fitting hole, said projection having an elongated configuration extending in a fitting direction of said support shaft.

5,331,374

IMAGE FORMING APPARATUS CAPABLE OF OPENING A MAIN BODY ON ONE SIDE

Yuji Abe; Masuo Kawamoto; Masami Fuchi; Takeshi Uemura; Masahiki Miyazaki; Hiroyuki Ueda, and Shinichi Kotera, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

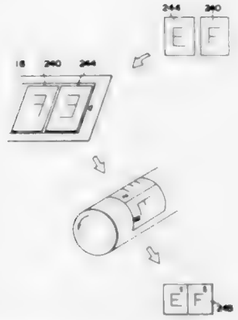
Filed Jul. 8, 1993, Ser. No. 90,448
Claims priority, application Japan, Jul. 13, 1992, 4-185561; Jul. 13, 1992, 4-185562; Jul. 13, 1992, 4-185564; Jul. 13, 1992, 4-185565
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 10 Claims



1. An image forming apparatus comprising:

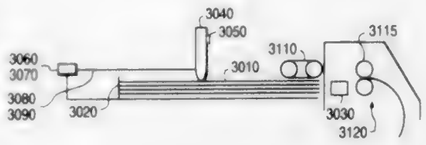
a lower body having a pivot shaft on one side;
an upper body connected to the lower body and rotatable about the pivot shaft between a closed state and an open state, said upper body comprising a front frame member made of resin, a rear frame member made of resin, and a connecting member made of metal between the front frame member and the rear frame member for connecting the front and rear frame members;
image forming means having an image bearing member for forming a toner image on the image bearing member;
paper storage means provided on the lower body for storing sheets; and
paper feeding means provided in the lower body for feeding sheets from the paper storage means to the image forming means;
whereby the paper feeding means is exposed when the upper body is in the opened state.

5,331,375
IMAGE FORMING APPARATUS FOR WRITING A PLURALITY OF ADDITIONAL DATA ON A SINGLE COPY SHEET
Masazumi Ito, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 29, 1992, Ser. No. 875,188
Claims priority, application Japan, May 9, 1991, 3-104156
Int. Cl.[5] G03G *21/00, 15/00*
U.S. Cl. 355—202 **20 Claims**



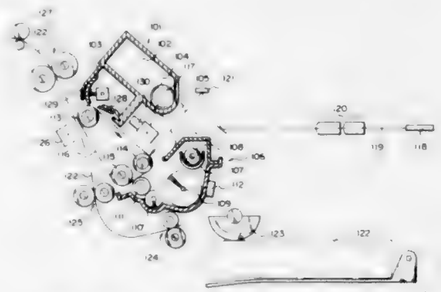
1. An image forming apparatus comprising:
a platen on which an original document is placed;
original image forming means for forming an image of the original document placed on the platen on a copy sheet, said original image forming means including a multiple image forming mode in which a plurality of images of original documents are formed on different sections of a single surface of a copy sheet;
additional data image forming means for forming a plurality of additional data images at different positions onto the same surface of the copy sheet on which said plurality of images of original documents are formed; and
control means for controlling said additional data image forming means so that each of said additional data images may correspond to any one of said plurality of images of the original documents one to one.

5,331,376
SYSTEM AND METHOD FOR EDITING A DOCUMENT IMAGE
Thomas Acquaviva, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 14, 1992, Ser. No. 990,845
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—202 **31 Claims**



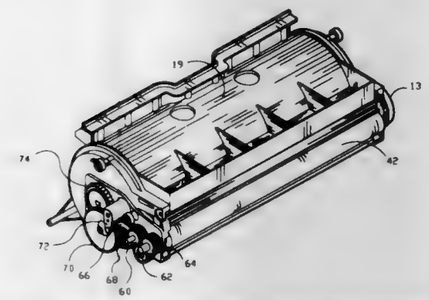
1. A system for processing documents, the system comprising:
means for receiving a stack of documents;
means for designating a location on a document while the document is in the receiving means, without defacing the document;
means for scanning the document; and
means for transporting the document from the receiving means to the scanning means.

5,331,377
TONER SUPPLEMENT CONTROL DEVICE OPERATIVE CONCURRENT WITH IMAGE FORMING APPARATUS ACTIVE STATUS
Yozo Matsuura, Tokyo, and Toshiyuki Nakama, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Nov. 13, 1992, Ser. No. 976,502
Claims priority, application Japan, Nov. 14, 1991, 3-299052; Nov. 29, 1991, 3-315112; May 14, 1992, 4-121943
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **11 Claims**



1. A device incorporated in an image forming apparatus for controlling supplement of a toner from supplementing means to a toner hopper included in a developing unit, said device comprising:
a toner near end sensor associated with the toner hopper for generating a toner near end signal on sensing a near end condition of the toner in the toner hopper; and
control means responsive to the toner near end signal for controlling the toner supplementing means such that the toner supplementing means is operated to feed the toner to the toner hopper only while said image forming apparatus is operating in a particular mode for processing a document image.

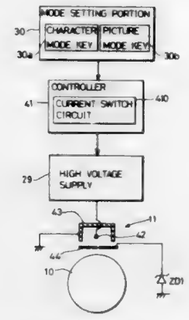
5,331,378
TONER CARTRIDGE WITH INDEPENDENT DRIVEN SYSTEMS
Ronald W. Baker, Versailles; Robert L. Burdick, Nicholasville; Martin V. DiGirolamo, Lexington; David L. Merrifield, Lexington; James J. Molloy, Lexington; Paul D. Horrall, Lexington; Gary M. Tylicki, Georgetown; Earl D. Ward, II, and Bernard L. Wilzbach, both of Lexington, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.
Filed Jul. 29, 1993, Ser. No. 99,813
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—210 **4 Claims**



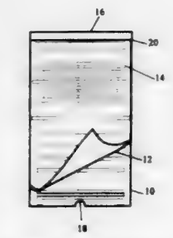
1. An electrophotographic toner cartridge containing an endless, rotatable photoconductive member, a development system having at least a rotatable developer roller, a toner chamber, a rotatable toner paddle in said toner chamber, and a rotatable member intermediate said developer roller and said toner paddle, said cartridge having a first coupling for rotating said photoconductive member by coupling with a driving source from a printer and a second coupling, independent of said first coupling, for rotating said developer roller by coupling with a driving source from said printer, said first and said second couplings being on one side of said cartridge, said second coupling being an integral extension of said intermediate member, a first linkage from said intermediate member to said developer roller to rotate said developer roller by rotation of said second coupling, and a second linkage from said intermediate member to said toner paddle to rotate said toner paddle by rotation of said second coupling, said first linkage and said second linkage being entirely on the side of said cartridge opposite said one side.

5,331,379
IMAGE FORMING APPARATUS CAPABLE OF CHANGING THE SURFACE POTENTIAL OF A PHOTOSENSITIVE MEMBER
Shinsaku Yoneda, Kashihara; Yoshiyuki Ishizuka, Hirakata; Naoki Motobayashi, Tondabayashi, and Takehiko Okada, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Dec. 4, 1992, Ser. No. 985,419
Claims priority, application Japan, Dec. 18, 1991, 3-335089
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—214 **4 Claims**

1. An image forming apparatus comprising:
a photosensitive member;
charger means for charging the surface of the photosensitive member while regulating the surface potential of the photosensitive member, said charger means including:
corona ion generator means for charging the surface of the photosensitive member, and
grid electrode means provided between the photosensitive member and the corona ion generator means for regulating the surface potential of the photosensitive member;
current supply means connected to the corona ion generator means for supplying to the corona ion generator means:
a first current not lower than a specified level for charging the surface of the photosensitive member at a first stabilized voltage at which an image of high contrast can be formed, and
a second current lower than the specified level for charging the surface of the photosensitive member at a second stabilized voltage at which an image having an intermediate gradation thereof can be formed, the second stabilized voltage being lower than the first stabilized voltage; and
current switch means for switching the level of the current to be supplied by said current supply means to the corona ion generator means between said first current when an image of high contrast is to be formed, and said second current when an image having an intermediate gradation thereof is to be formed.



5,331,380
COPY REPRODUCTION HOLDING AND ALIGNMENT LAYOUT APPARATUS
William J. Nasset, 10333 Leverman Rd. SE., Ausmville, Oreg. 97325
Filed Jul. 7, 1992, Ser. No. 909,611
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—230 **10 Claims**



1. A document holding and aligning apparatus, comprising:
a substantially rigid board having a surface with a plurality of non-photogenic alignment marks, and
a substantially transparent and flexible cover sheet positioned over said surface of said board, said cover sheet having an edge attached to said board, whereby one or more pieces of documents can be individually positioned by said alignment marks on said board and securely held between said board and said cover sheet for photo-reproduction or scanning of said documents.

5,331,381

IMAGE FORMING APPARATUS HAVING A TONER REPLENISHING CONTAINER

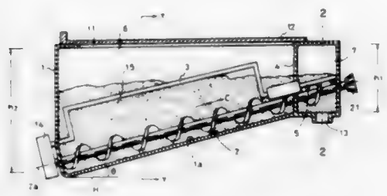
Hiroshi Ota, Tokyo, and Tomokazu Nakamura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

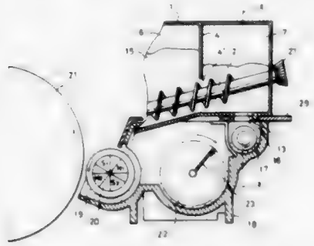
Filed May 25, 1993, Ser. No. 65,909

Claims priority, application Japan, Jun. 19, 1992, 4-161089; Dec. 21, 1992, 4-340516

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **17 Claims**





1. An image forming apparatus comprising:

a developing device for developing an electrostatic latent image formed on an image carrying member, to form a toner image; and

a toner replenishing device for replenishing toner to said developing device, said toner replenishing device comprising:

a container for containing toner, said container having a toner inlet opening, a cover member operable to open and close the toner inlet opening, and a toner outlet opening through which toner stored in said container is replenished to said developing device, said container being longer in a horizontal direction than in a vertical direction, and said toner outlet opening being provided at a first longitudinal end portion of said container;

a toner conveying member disposed in said container along a longitudinal direction of said container, said toner conveying member being rotatable about an axis of rotation to convey toner within said container to said toner outlet opening; and

a rotatable toner stirring member disposed in said container in juxtaposition with said toner conveying member,

wherein a bottom surface of said container is inclined in a downstream direction relative to a direction of toner conveyance by said toner conveying member, wherein the axis of rotation of said toner conveying member is inclined such that the axis of rotation has an upstream end in a direction of toner conveyance, and a downstream end in the direction of toner conveyance that is positioned higher than said upstream end, and wherein an interior height of said container at the second longitudinal end portion is greater than an interior height of said container at the first longitudinal end portion of said container.

5,331,382

TONER CARTRIDGE FOR IMAGE FORMING APPARATUS

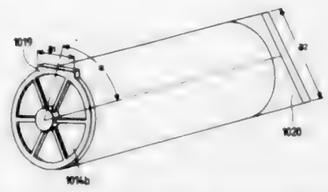
Kanenori Miura; Shiro Suzuki; Yasuhito Takahashi, and Masaru Ono, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 848,873, Mar. 10, 1992, abandoned. This application Oct. 28, 1993, Ser. No. 142,114

Claims priority, application Japan, Mar. 18, 1991, 3-52565

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **5 Claims**



1. A toner cartridge for an image forming apparatus comprising:

a case body having a tubular portion and first and second end walls;

a first positioning means, radially protruding from said first end wall and having a flat end face, for positioning the toner cartridge at the start of loading the toner cartridge into the image forming apparatus, said first positioning means having a first length parallel to said first end wall and perpendicular to the radial direction, and said first positioning means being aligned with a first guide in said image forming apparatus at the start of loading the toner cartridge; and

a second positioning means, radially protruding from said second end wall and having a flat end face, for positioning the toner cartridge at the completion of loading the toner cartridge, said second positioning means having a second length parallel to said second end wall and perpendicular to the radial direction, and said second positioning means being angularly shifted from said first positioning means, wherein the toner cartridge is rotated through an angle α after said first positioning means is aligned with said first guide to align said second positioning means with a second guide in the image forming apparatus, said angle α being defined by the perpendicular bisectors of said first and second lengths.

5,331,383

CONDUCTIVE ROLLER TRANSFER DEVICE WITH IMPROVED TRANSFER EFFICIENCY AND POLLUTION CONTROL

Hiroshi Nou; Masahiro Wanou, both of Kawasaki; Masashi Ogasawara, Zama; Masae Ikeda, Kawasaki; Nobuo Suematsu, Kawasaki; Shino Sakai, Kawasaki; Akihiko Ishii, Kawasaki, and Hideki Kamaji, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 6, 1992, Ser. No. 909,036

Claims priority, application Japan, Jul. 6, 1991, 3-165996; Jul. 6, 1991, 3-165997; Jul. 6, 1991, 3-166012; Jul. 6, 1991, 3-166014; Oct. 25, 1991, 3-278147; Dec. 11, 1991, 3-327267

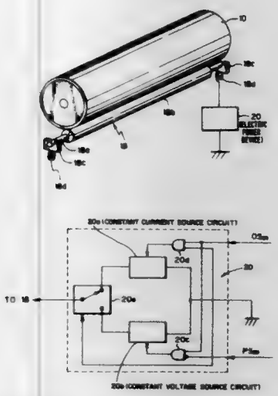
Int. Cl.[5] G03G *15/16*

U.S. Cl. 355—274 **28 Claims**

1. A toner image transferring device for electrostatically transferring a charged toner image electrostatically held by a toner image carrying body means to a sheet or paper, which comprises,

a conductive elastic transfer roller means having a resistivity of more than 10^7 Ωcm and disposed in contact with said toner image carrying body means to form a nip therebetween for passing the sheet or paper; and

an electric source means for applying a substantially constant current output, which has a current of about from 5 to about 15 μa as an absolute value, to said conductive elastic transfer roller means so as to give the sheet or paper an electric charge having a polarity opposite to that of a charge of the toner image, during passage of the sheet



or paper through the nip between said toner image carrying body means and said conductive elastic transfer roller means, whereby the charged toner image can be transferred from said toner image carrying body means to the sheet or paper at a desired toner transfer efficiency regardless of a size of the paper or sheet.

5,331,384

FIXING APPARATUS HAVING TEMPERATURE CONTROLLER WHICH CONTROLS TEMPERATURE ACCORDING TO WIDTH SIZE AND NUMBER OF RECORDING SHEETS

Yasumasa Otsuka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 469,945, Jan. 25, 1990, abandoned. This application Jul. 9, 1992, Ser. No. 912,654

Claims priority, application Japan, Jan. 25, 1989, 1-14058; Apr. 12, 1989, 1-90811

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—290 **24 Claims**

1. An image forming apparatus comprising:

means for forming an unfixed toner image on a recording material;

fixing means including a pair of rotating members at least one of which is heated by a heating source, for fixing the unfixed toner image on the recording material by conveying the recording material past a passing region of the pair of rotating members;

temperature detection means for detecting a surface temperature of at least one of said rotating members, said temperature detection means being provided in a region outside the passing region of a toner image of the largest-sized recording material used in said image forming apparatus;

size detection means for detecting a size of the recording material; and

control means for controlling said heating source so as to adjust the surface temperature detected by said temperature detection means to a predetermined temperature, said control means changing said predetermined temperature in accordance with the recording material width size detected by said size detection means so that progressively smaller width sizes of recording material correspond to progressively higher predetermined temperatures.

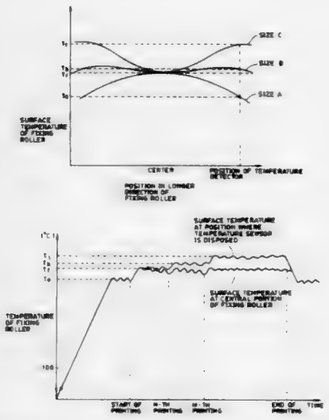
19. An image forming apparatus comprising:

image forming means for forming an unfixed image on a recording material;

a pair of fixing rotating members for fixing the unfixed image onto a recording material carried through a nip formed by said pair of fixing rotating members, wherein at least one of said pair of fixing rotating members is heated by a heating source;

a temperature detecting element for detecting a surface temperature of at least one of said pair of fixing rotating members, said temperature detecting element being provided outside a passing region of a recording material having the largest width;

control means for controlling electricity to said heating source so as to maintain the surface temperature detected



by said temperature detecting element at a predetermined temperature;

counting means for counting each completed fixing operation; and

accumulating means for accumulating the total number of counted completed fixing operations;

wherein said control means raises said predetermined temperature when the accumulated total number of said accumulating means reaches a predetermined value; and

wherein, when the recording material is continuously fed through the nip of said pair of fixing rotating members, a difference between a temperature of a surface region of the fixing rotating member detected by the temperature detecting element and a temperature of the passing region of the recording material increases.

5,331,385

FIXING ROTATABLE MEMBER HAVING CONDUCTIVE PARTING LAYER AND FIXING APPARATUS USING SAME

Yasumasa Ohtsuka; Akihiko Takeuchi, both of Yokohama; Koichi Tanigawa, and Hideo Nanataki, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1991, Ser. No. 700,423

Claims priority, application Japan, May 15, 1990, 2-123177; Sep. 6, 1990, 2-237903; Oct. 9, 1990, 2-272594

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—290 **8 Claims**

1. An image forming apparatus comprising:

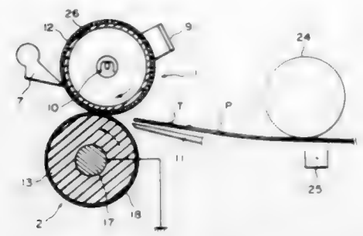
an image bearing member for carrying an unfixed image;

image transfer means for electrostatically transferring the unfixed image from said image bearing member onto a recording material;

a fixing rotatable member contactable with that surface of

the recording material which carries the unfixed image; and

a pressing rotatable member cooperative with said fixing rotatable member to form a nip therebetween, said pressing rotatable member being contactable to that surface of said recording material which has received electric charge



from said image transfer means, wherein said pressing rotatable member comprises a conductive core member, a rubber layer on said core member and a surface fluorine resin layer having a lower volume resistivity than said rubber layer, wherein resistance between the core member of said pressing rotatable member and the nip is 10^8-10^{12} ohm.cm.

5,331,386

RECORDING SHEET CONVEYANCE DEVICE FOR USE WITH AN IMAGE FORMING APPARATUS

Tsuyoshi Mizubata; Susumu Okui; Yasushi Yamada, and Mitsuru Nagoshi, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 927,127
Claims priority, application Japan, Aug. 16, 1991, 3-205964
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—319 **5 Claims**



1. A sheet conveyance apparatus for conveying a sheet so that an image of a document is duplicated on both sides of said sheet by an image forming apparatus, comprising:

a first conveyance path for conveying said sheet to an image forming section of said image forming apparatus;

a second conveyance path for conveying said sheet from said image forming section to a tray means for holding said sheet;

a third conveyance path for conveying said sheet from said tray means to said image forming section; and

holding and forwarding means, positioned in a vicinity of said tray means, for holding said sheet conveyed through said second conveyance path, and for then forwarding said sheet into said third conveyance path;

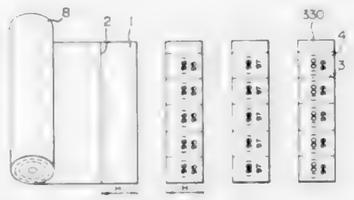
wherein in a first mode of operation of said sheet conveyance apparatus, said sheet is forwarded after being held by said holding and forwarding means, without said sheet being placed on said tray means, into said third conveyance path by said holding and forwarding means, and in a second mode of operation of said sheet conveyance apparatus, said sheet is first placed on said tray means and then forwarded into said third conveyance path by said holding and forwarding means.

5,331,387

PRINTING AND BINDING APPARATUS

Hisao Okada; Kunio Satoh, both of Hitachi, and Takao Umeda, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,171
Claims priority, application Japan, Jan. 31, 1992, 4-015930
Int. Cl.[5] G03G *15/00, 21/00*
U.S. Cl. 355—324 **10 Claims**



1. A printing and binding method for printing a plurality of images on printing paper to make booklets by using an electrophotographic recording apparatus, the printing and binding method comprising:

a printing step in which a first printing operation is conducted to print image information items of the number, which corresponds to the number of booklets which can be printed simultaneously, on predetermined ares of one printing paper sheet for one of the total pages to be contained in each booklet, and said first printing operation is followed by succeeding printing operations on predetermined areas of other printing paper sheets for the rest of the total pages of said booklet so as to print said pages of the booklet which correspond to the contents of the image information of said booklet so that booklets to be bound are printed each of the predetermined areas of each printing paper sheet corresponding to one of the pages of each booklet, the image information items to be printed on the predetermined areas of each of the printing paper sheets being identical with each other, the predetermined areas of respective printing paper sheets being disposed in substantially the same arrangement;

a separation step in which the areas of respective printing paper sheets printed in said printing step are simultaneously separated from one another at boundaries of said number of booklets to form stacks of the thus separated area of the printing paper sheets; and

a binding step in which the separate areas of each stack are bound to form a booklet.

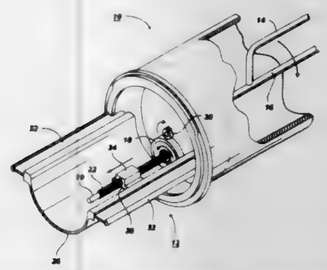
5,331,388

SIMPLE RELIABLE COUNTER ASSEMBLY OF REDUCED PARTS FOR A TONER CARTRIDGE

Joseph J. Marotta, Webster, and Bruce C. Reynolds, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1992, Ser. No. 997,010
Int. Cl.[5] G03G *15/00, 21/00*
U.S. Cl. 355—260 **18 Claims**

12. A toner cartridge comprising a generally circular elongated tube, a rotatable toner agitator extending the length of said tube, a toner dispensing opening in said tube and a counter assembly mounted on one end of said tube said counter assembly comprising a generally circular rotatable actuator member fixedly mounted on one end of a shaft having a screw thread on its surface, a magnet made of a molded compliant magnetic material mounted on said screw thread surface of said shaft adjacent to said actuator member, means to secure said magnet against rotational movement and permit longitudinal movement along the screw thread surface of said shaft, means to rotate said actuator member in a direction to transport said



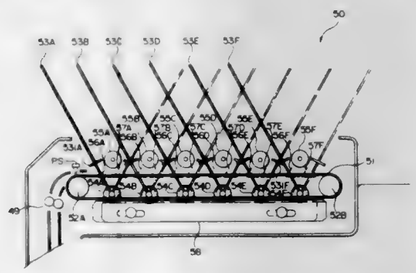
magnet along said screw thread surface of said shaft away from said actuator and wherein the pitch of the screw thread and the direction of rotation of said shaft are selected so that on rotation of said shaft the screw thread surface on said shaft creates a second screw thread in said magnet which tends to drive said magnet away from said actuator.

5,331,389

IMAGE FORMING APPARATUS WITH SHEET DISCHARGING DEVICE

Masakazu Fukuchi; Shizuo Morita; Satoshi Haneda; Hisao Satoh, and Tadayoshi Ikeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 932,361
Claims priority, application Japan, Sep. 19, 1991, 3-239670; Sep. 27, 1991, 3-249539; Dec. 11, 1991, 3-327793; Dec. 13, 1991, 3-330732
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—321 **7 Claims**



1. A sorter for sorting recording sheets in the order of copying thereof, for use with an image forming apparatus, said sorter comprising:

(a) a plurality of bins, both sides of each bin being capable of receiving recording sheets; and

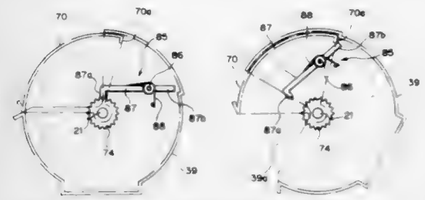
(b) an element means for selecting either side of said bins to receive said recording sheets discharged to said bins with image sides either face upward or face downward.

5,331,390

IMAGE FORMING EQUIPMENT HAVING A REVOLVER TYPE DEVELOPING DEVICE

Noriyuki Kimura, Kawasaki, and Minour Suzuki, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 53,674
Claims priority, application Japan, Apr. 30, 1992, 4-110974
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R **16 Claims**



1. Image forming equipment comprising:

an image carrier;

a revolver type developing device rotatable about a shaft to bring any one of a plurality of developing units to a developing position where the developing unit faces said image carrier for effecting development;

a protective member rotatably accommodating said developing device therein and having an opening which faces said image carrier at the developing position when said protective member is mounted on said equipment; and

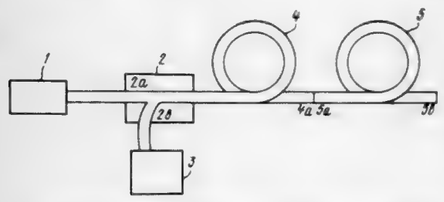
rotation restricting means for selectively inhibiting said developing device from rotating relative to said protective member, said rotation restricting means located inside of said protective member.

5,331,391

METHOD OF DETERMINING THE OPTICAL LOSS IN REFLECTED RADIATION IN A FIBRE-OPTIC LIGHT GUIDE

Mikhail A. Bukhshtab, 2808 Mayfield Rd. #302, Cleveland Hts., Ohio 44118

Filed Jun. 16, 1992, Ser. No. 897,991
Int. Cl.[5] G01N *21/59*
U.S. Cl. 356—73.1 **3 Claims**



1. A method of determining the optical loss in reflected radiation in a fibre-optic light guide under study having input and output end faces, with the use of an idle light guide having an output end face and connected through a splitter with a source and a transducer of radiation, said method comprising the steps of:

providing establishment of a stationary-mode distribution of radiation in forward and return paths thereof through said idle guide, and eliminating non-linearity of conversion by said transducer of the power of radiation reflected by said output end face of said idle guide;

introducing radiation from said source into said idle guide;

measuring by said transducer of the power P_0 of the radiation reflected by said output end face of said idle guide;

mating of said output end face of said idle guide with said

input end face of said guide under study without an air gap at a joint therebetween, so as to obtain the maximum power of the radiation which has entered said guide under study from said idle guide and, after reflection from said output end face of the guide under study, has returned by the same path to said transducer, whereby reducing the optical loss due to double crossing said joint by the radiation to zero;

measuring said maximum radiation power P_1, and

finding the optical loss in the guide under study from said P_0 and P_1 according to the relation

$$A = \frac{P_o - P_1}{2} + lg(n_1 - 1) + lg(n_o + 1) - lg(n_1 + 1) - lg(n_o - 1), \text{ dBm}$$

where

A is the optical loss in said guide under study, dBm,

P_0—the power of radiation reflected by said output end face of said idle guide, dBm,

P_1—the maximum value of the power of radiation which has entered said guide under study from said idle guide and, after reflection from said output end face of the guide under study, has returned by the same path to said transducer, dBm,

n_0—the relative refractive index of the material of said idle guide, and

n_1—the relative refractive index of the material of said guide under study

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5,331,392

METHOD OF IDENTIFYING AN OPTICAL CABLE

Akira Fujisaki, and Shintaro Sentsui, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

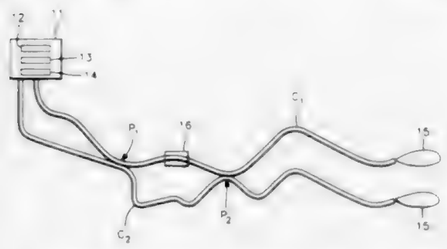
PCT No. PCT/JP91/01656, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO92/09873, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 29, 1991, Ser. No. 915,813

Claims priority, application Japan, Nov. 30, 1990, 2-339253

Int. Cl.[5] G01N *21/00*

U.S. Cl. 356—73.1 **4 Claims**



4. A method for identifying a particular optical cable among a plurality of adjacent optical cables, the method comprising the steps of:

transmitting optical signals in the form of polarized light through the plurality of optical cables;

receiving optical signals transmitted through the plurality of optical cables;

sequentially applying mechanical vibrations at a predetermined frequency to each of a plurality of optical cables, one optical cable at a time, at an intermediary point along a length of optical cables concurrently with transmission of optical signals, thereby modulating transmitted optical signals in the optical cable to which the mechanical vibrations are applied and any adjacent optical cables;

identifying a particular optical cable among the plurality of optical cables by comparing levels of higher harmonics modulated optical signals in the particular optical cable with higher harmonics of modulated optical signals in the remainder of the plurality of optical cables, the particular optical cable being identified as the cable with the greatest level of higher harmonics of modulated optical signals.

5,331,393

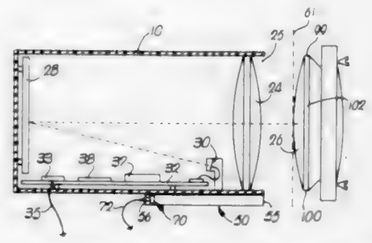
METHOD AND APPARATUS FOR LOCATING A SPECIFIC LOCATION ON A VEHICLE HEADLAMP

Evan L. Hopkins, Emporia; John J. Humbard, Pittsburg, and Michael G. Busby, Emporia, all of Kans., assignors to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed Dec. 11, 1992, Ser. No. 989,123

Int. Cl.[5] G01J *1/00*

U.S. Cl. 356—121 **20 Claims**



1. An apparatus for centering an aiming device with respect to a vehicle headlamp, wherein the aiming device is designed to sense the light intensity across a light beam from the headlamp, compare the light intensity to prescribed standards, and provide an adjustment output which can be used to adjust the headlamp, said centering apparatus comprising:

a hollow enclosure mounted to the aiming device, said hollow enclosure having first and second ends, said first end of said enclosure having an entrance opening designed to have light from an illuminated headlamp incident thereon,

a light detector located at the second end of the enclosure which is designed to receive light traveling through the entrance opening of the enclosure and down the length of the enclosure and provide first output signal indicative of the intensity of light in the enclosure, said enclosure having an inner diameter and a length between said entrance opening and the light detector such that the entrance opening of the enclosure provides a field of view sufficient to result in when first output signal changing with respect to various enclosure positions as the enclosure is moved across the beam pattern of the headlamp to indicate a particular headlamp position within an acceptable tolerance,

signal amplifying circuitry connected to said light detector for receiving the first output signal, amplifying the signal, and providing an amplified first output signal, and

computation means for receiving the amplified first output signal, determining the location of an edge of the headlamp when the enclosure is moved across the plane of the headlamp edge from the rapid change in light intensity level, and providing a second output signal which is indicative of the distance between the enclosure and a predetermined location on the headlamp.

5,331,394

AUTOMATED LENSOMETER

Tadmor Shalon, Brentwood, and Marvin L. Pund, Chesterfield, both of Mo., assignors to Metaphase Corporation, St. Louis, Mo.

Filed Apr. 10, 1992, Ser. No. 867,313

Int. Cl.[5] G01B *9/00*

U.S. Cl. 356—124 **26 Claims**

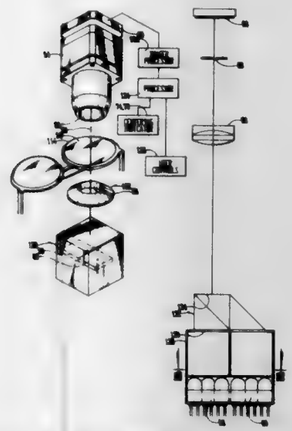
1. A lensometer for measuring refractive power parameters of an eyeglass or contact lens including spherical refractive power, cylindrical refractive power, and prism power, comprising:

means for holding the lens in a fixed position relative to an axis;

means for projecting a pattern of light sources generally along the axis through the lens from a first distance relative to the lens, and through the lens from a second distance relative to the lens;

means for capturing images of the pattern of lights projected from the first and second distances; and

means for analyzing the images and deriving the refractive parameters from a comparison of the images.



5,331,395

DEVICE FOR ALIGNING A LASER LEVELING INSTRUMENT ALONG A BUILDING LINE

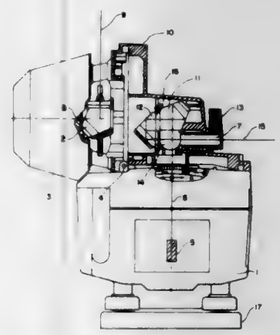
Wilfried Piske, Heerbrugg, and Martin Koeppel, Widnau, both of Switzerland, assignors to Leica Heerbrugg AG, Herbrugg, Switzerland

Filed Oct. 9, 1992, Ser. No. 958,220

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1991, 4133381

Int. Cl.[5] G01C *5/00*

U.S. Cl. 356—138 **10 Claims**



1. A device for aligning a laser leveling instrument along a building line comprising:

an instrument base;

a laser light source, arranged in said instrument base, outputting a laser beam; and

an instrument head tiltable by 90° and has arranged therein;

a rotating prism for generating a vertical plane when said head is tilted, and

an adaptor for use when said head is tilted having a prism positioned in a path of said laser beam between said light source and said rotating prism for deflecting said laser beam from said base onto said rotating prism in said instrument head, wherein said adaptor additionally has a triple reflector selectively brought into said path of said laser beam and to deflect said laser beam coming from said base in a direction perpendicular to said generated vertical plane to project it onto said building line.

5,331,396

FOREIGN MATTER DETECTION DEVICE

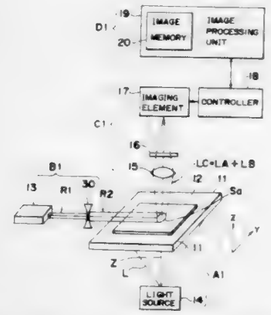
Noriaki Yukawa, Nara; Hideshi Ueda, Higashiosaka, and Daisuke Ookawara, Itami, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 8, 1992, Ser. No. 958,572

Claims priority, application Japan, Oct. 8, 1991, 3-260043

Int. Cl.[5] G01N *21/88*

U.S. Cl. 350—237 **7 Claims**



1. A foreign matter detection device for detecting a foreign matter on a test piece made of a first optically transmissible material with patterns made of a second optically transmissible material which can transmit the light less than said first transmissible material formed thereon, said device comprising:

a first illumination means for emitting a coherent light having a first predetermined diameter to impinge on a first surface of said test piece at a predetermined incidence angle with respect to said first surface and to produce a reflected coherent light reflected from said first surface, said coherent light being polarized in a first direction parallel to said first surface of said test piece, said reflected coherent light being polarized in a second direction perpendicular to said first direction;

a second illumination means for emitting an illumination light to illuminate a second surface opposed to said first surface of said test piece and to produce a transmitted light transmitted from said first surface; and

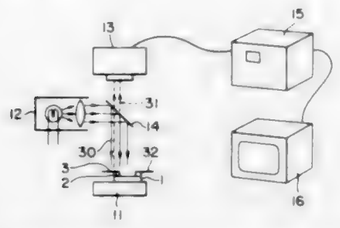
an image forming means for forming a first image of said first surface based on said reflected coherent light and said transmitted light, whereby said reflected coherent light reflected from said pattern edge is added with said transmitted light passing through said pattern such that the light intensity distribution at said pattern edge is smoothed and that at said foreign matter is enhanced.

5,331,397

INNER LEAD BONDING INSPECTING METHOD AND INSPECTION APPARATUS THEREFOR

Kazuyuki Yamanaka, and Mitsusada Shibasaka, both of Fujisawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 617,798, Nov. 26, 1990, abandoned. This application Nov. 9, 1992, Ser. No. 973,543
Claims priority, application Japan, Nov. 24, 1989, 1-306038
Int. Cl.[5] G01N *21/89;* **G01B** *11/24*
U.S. Cl. 356—237 **1 Claim**



1. An inner lead bonding inspection method comprising the steps of:
illuminating with a light a planar surface of an inner lead at a bonding portion between an electrode bump provided on a semiconductor pellet and the inner lead, the illumination from the light being directed normally to the planar surface;
observing with a video camera the inner lead at the bonding portion;
positioning the bonding portion at a predetermined position;
defining a limited area, including a bonding center, on the surface of the inner lead as a window;
measuring with the video camera the quantity of reflected light from said window, the measured reflected light being that light directed normally to the surface of the bonding portion, and
judging whether the inner lead bonding is good or bad by comparing the measured quantity of normally reflected light with a plurality of reference levels with respect to quantities of light.

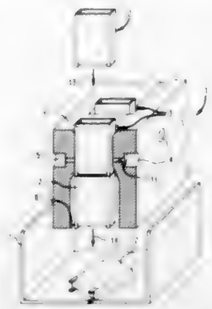
5,331,398

APPARATUS FOR PHOTOMETRIC ANALYSIS

Wilfried Eggl, and Rolf Amelung, both of Lemgo, Fed. Rep. of Germany, assignors to Heinrich Amelung GmbH, Lemgo, Fed. Rep. of Germany

Filed Apr. 16, 1992, Ser. No. 869,791
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1991, 4113330
Int. Cl.[5] G01N *21/13, 35/00*
U.S. Cl. 356—246 **12 Claims**

1. Apparatus for photometric analysis of the coagulation behavior of blood, blood plasma or the like; comprising:
a cuvette container having at least one receptacle for receiving a cuvette from atop, said receptacle having a lower end provided with a discharge opening and a well extending in continuation of said discharge opening and flaring out from said discharge opening so as to have a cross section exceeding the cross section of said cuvette, said cuvette having a height and said receptacle having a depth which is smaller than the height of said cuvette for facilitating a discharge of said cuvette;
a photometric unit arranged in the area of said receptacle for analyzing a test sample in the cuvette; and



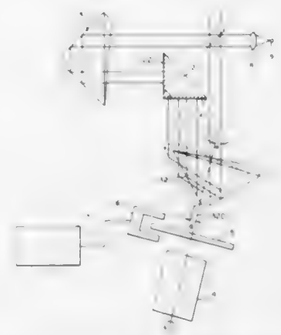
holding means arranged in said receptacle for retaining the cuvette in position during photometric analysis.

5,331,399

METHOD FOR MEASURING AND DETERMINING A ROTATION ANGLE OF A ROTATING OBJECT

Volker Tank, Eching; Helmut Dietl, München; Peter Haschberger, Gauting; Erwin Lindermeir, Augsburg; Oliver Mayer, Neubiberg, and Rainer Thiessen, München, all of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt fur Luft- und Raumfahrt, Cologne, Fed. Rep. of Germany

Filed Apr. 27, 1992, Ser. No. 874,168
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 4113841
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—346 **9 Claims**



1. Method for measuring and determining a rotation angle of a rotating object comprising the steps of:
applying a clock track corresponding to a desired angular resolution on a circular disc storage medium,
rotating the storage medium synchronously with the rotating object,
supplying a pulse sequence corresponding to the clock track when in operation for further processing to following signal electronics in which an actual rotation angle or an actual angular velocity of the rotating object is available for a relative angle measurement,
storing the pulse sequence on the circular disc storage medium,
wherein the track has a maximum write density and is at the extreme outer periphery of the circular disc storage medium to obtain an optimum angular resolution,

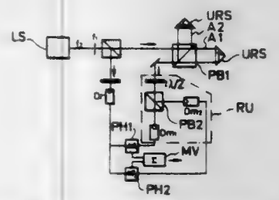
using additional tracks arranged inwardly of the clock track for lower angular resolutions and
temporarily providing an interferometer to generate a clock sequence on the circular disc storage medium and recording a reference path measuring system and a pulse sequence corresponding to the measured path difference by a reference measurement on the clock track of the circular disc storage medium and,
determining the rotation angle of said object based on the reference measurement and the relative angle measurement.

5,331,400

HETERODYNE INTERFEROMETER ARRANGEMENT

Gunther Wilkening, Braunscheig, Fed. Rep. of Germany, and Wenmei Hou, Bern, Switzerland, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 21, 1992, Ser. No. 888,225
Claims priority, application European Pat. Off., May 24, 1991, 91108444.0
Int. Cl.[5] G01B *9/02, 11/02*
U.S. Cl. 356—349 **7 Claims**



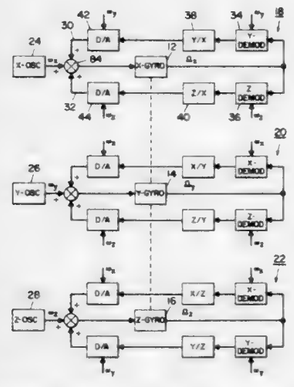
1. A heterodyne interferometer arrangement comprising:
a light source for producing light beams having a phase and first and second frequencies, respectively;
a first splitter coupled to receive said light beams and operative to divide said light beams into first and second beams;
an optical reference branch, which includes a reference transducer being operative to receive the first beam for producing a reference signal representing the phase of the first beam;
an optical measuring branch, which is coupled to receive the second beam and which includes an interferometer unit; wherein said interferometer unit further comprises two paths, each having a respective optical path length; one path for transmitting a portion of said second beam having the first frequency and the other path for transmitting a portion of the second beam having the second frequency; the interferometer unit being so arranged and constructed that after respective portions of the second beam have traversed the two paths and subsequently have been recombined, a resulting optical measuring beam is produced with a phase which is proportional to any change in optical path length occurring between the two paths; said change in optical path length representing a change in a displacement to be measured;
a second splitter coupled to receive and divide the optical measuring beam into two orthogonal light beams each having components which are orthogonal to one another;
a measuring transducer including first and second optoelectric measuring transducer units which respond respectively to the two orthogonal light beams to produce first and second measuring signals;
a phase comparator unit comprising first and second phase comparators, the first phase comparator being responsive to the first measuring signal and the reference signal to produce a first phase comparator signal representing a phase difference between the first measuring signal and the reference signal, the second phase comparator being responsive to the second measuring signal and the reference signal to produce a second phase comparator signal representing a phase difference between the second measuring signal and the reference signal; and
a mean value generation circuit which is arranged to respond to said first and second phase comparator signals for producing an output signal representing a mean value of said first and second phase comparator signals whereby non-linearity errors in the interferometer unit are substantially eliminated.

5,331,401

METHOD AND APPARATUS FOR CONTROLLING DITHER IN A MULTIPLE GYRO SYSTEM

John G. Mark, Pasadena; Ray D. Dykeman, Agoura; Daniel A. Tazartes, Beverly Hills, all of Calif., and William B. Ware, Fairfield, Conn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jun. 3, 1985, Ser. No. 740,731
Int. Cl.[5] G01B *9/02;* **G01C** *19/28;* **H01S** *3/083*
U.S. Cl. 356—350 **13 Claims**



8. Apparatus for controlling cross-coupling in a navigation system of the type wherein a plurality of gyroscopes is dithered about a plurality of axes with respect to an instrument block wherein the improvement comprises:
a) means for driving each of said gyroscopes at a distinct frequency;
b) means for generating a signal responsive q to the resulting movement of each of said gyroscopes;
c) means for demodulating each of said signals to determine the cross-axis frequency content thereof;
d) means for deriving virtual drive signal components at said cross-axis frequencies; and
e) means for combining said virtual drive signal components with said distinct frequencies.

5,331,402

DITHER SIGNAL REMOVER FOR A DITHERED RING LASER ANGULAR RATE SENSOR UTILIZING AN ADAPTIVE DIGITAL FILTER

Douglas R. Geston, Minneapolis, and Albert C. Hrovat, Shoreview, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 5, 1988, Ser. No. 280,106
Int. Cl.[5] G01C *19/68*
U.S. Cl. 356—350 **8 Claims**

1. A dithered angular rate sensor comprising:
means for generating counter-propagating waves along a closed-loop path, each of said waves having a frequency related to the rotation of said sensor;
means for dithering the frequency of at least one of said waves;

means for producing a dither reference signal related to said dithering;

readout means responsive to said waves for producing a readout signal indicative of rotation of said sensor, said readout signal including a dither signal component due to said dithering;

adaptive filter means utilizing a plurality of filter-weights for converting said dither reference signal to a dither correction signal, said adaptive filtering means operating on a plurality of discrete values of said dither reference signal occurring at discrete sample times;

means for subtracting said dither correction signal from said readout signal to provide a corrected sensor output signal; and

means for providing said filter-weights as a function of selected past values of said dither reference signal and at least one past value of said corrected sensor output signal.



5,331,403

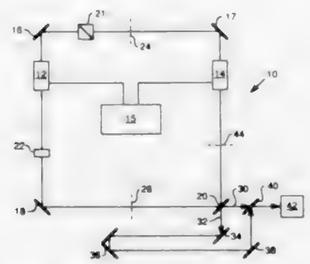
PULSED DIODE RING LASER GYROSCOPE

Mark J. Rosker; William R. Christian, both of Newbury Park, and Ian C. McMichael, Port Heuneme, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Dec. 3, 1991, Ser. No. 802,029

Int. Cl.[5] G01C *19/64*

U.S. Cl. 356—350 **16 Claims**



1. A pulsed ring laser gyroscope, comprising:

an optical ring resonator;

a pair of semiconductor optical amplifiers connected within said ring resonator and separated by a distance not equal to one-half the length of said resonator, said optical amplifiers generating and amplifying counterpropagating optical pulses in said ring resonator, said counterpropagating optical pulses crossing at points in said ring resonator away from said amplifiers;

means for driving said amplifiers simultaneously with current pulses synchronous with said optical pulses, said current pulses having a pulse width much less than a round trip period of said optical pulses in said ring resonator; and

said current pulses turning said amplifiers on simultaneously to transmit and amplify only said counterpropagating optical pulses.

5,331,404

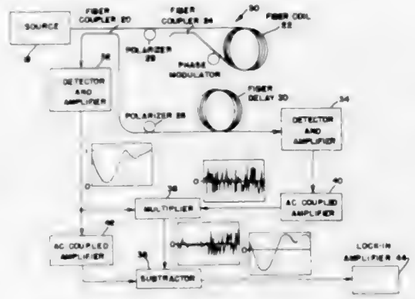
LOW NOISE FIBER GYROSCOPE SYSTEM WHICH INCLUDES EXCESS NOISE SUBTRACTION

Robert P. Moeller, Fort Washington, Md., and William K. Burns, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1992, Ser. No. 983,335

Int. Cl.[5] G01C *19/72*

U.S. Cl. 356—350 **18 Claims**



1. A gyroscope system comprising:

a fiber gyroscope for detecting and amplifying a gyro signal containing a noise component to produce an amplified gyro signal containing a first noise component;

fiber delay means, coupled to said fiber gyroscope, for delaying, detecting, and amplifying a noise component of gyro input light to produce an amplified second noise component; and

noise reduction means for reducing the first noise component of the amplified gyro signal by amplitude-modulating the amplified second noise component with the amplified gyro signal to produce an amplitude-modulated noise component and subtracting the amplitude-modulated noise component from the amplified gyro signal to produce a reduced noise gyro signal.

5,331,405

METHOD AND APPARATUS FOR MEASURING FIBRE FLEXIBILITY

Per-Ivar Fransson; Hakan Karlsson, both of Akersberga, and Lehard Kastre, Uppland Väsby, all of Sweden, assignors to STFI, Stockholm, Sweden

PCT No. PCT/SE91/00642, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO92/05423, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 25, 1991, Ser. No. 859,293

Claims priority, application Sweden, Sep. 26, 1990, 9003056-0

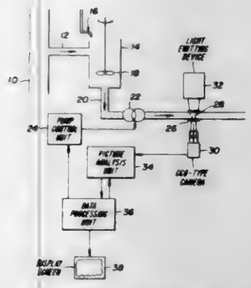
Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—372 **17 Claims**

1. A method for measuring the flexibility of fibres in a flowing suspension, comprising the steps of:

recording a fibre form of a large number of fibres at two different suspension flow states;

calculating, at each of the two different suspension flow states, a predefined fibre form for each of the different suspension flow states based on the recorded fibre forms;



determining a relationship between the predefined fibre forms taken at the two different flow states; and

utilizing this relationship to define fibre flexibility.

5,331,406

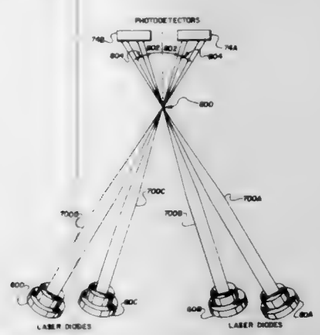
MULTI-BEAM LASER SENSOR FOR SEMICONDUCTOR LEAD MEASUREMENTS

David Fishbaine; John P. Konicek, both of Minneapolis; Steven K. Case, St. Louis Park; Timothy A. Skunes, Columbia Heights, and Jeffrey A. Jalkio, St. Paul, all of Minn., assignors to CyberOptics Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 719,727, Jun. 25, 1991. This application Dec. 11, 1992, Ser. No. 989,519

Int. Cl.[5] G01N *21/88*

U.S. Cl. 356—375 **50 Claims**



1. A multi-beam sensor for determining the height of each element of a multiple element device of the type having each of its elements nominally disposed in a single horizontal plane, wherein the multiple element device is in motion relative to the multi-beam sensor, the multi-beam sensor comprising:

at least one means for providing light;

first means for focusing light from the light providing means into a first beam of light having a focal point at the intersection of the horizontal plane and a vertical reference plane and forming an angle beta of between 5 and 25 degrees with the vertical reference plane;

second means for focusing light from the light providing means into a second beam of light having a focal point at the intersection of the horizontal plane and the vertical reference plane and forming an angle with the vertical reference plane that is greater than the angle beta;

detecting means, located in the path of each of the beams, for detecting the shadow created by occlusion of the first beam by an element edge of the multiple element device and the shadow created by occlusion of the second beam by the element edge;

means for receiving data indicating the instantaneous lateral position of the multiple element device as each shadow created by the element edge of the multiple element device is detected by the detecting means; and

logic means, connected to the detecting means and to the means for receiving data, for calculating the height of the element edge from the horizontal plane whereby the calculation of the height is based on the instantaneous lateral position of the multiple element device as each shadow is created by the element edge, comprising a means for interpolating the received data to obtain the instantaneous lateral position of the multiple element device.

5,331,407

METHOD AND APPARATUS FOR DETECTING A CIRCUIT PATTERN

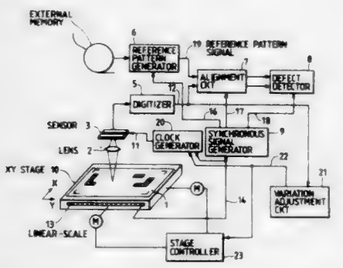
Hideaki Doi, Oota; Yasuhiko Hara, Machida, and Koichi Karasaki, Hadano, all of Japan, assignors to Hitaci, Ltd., Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 845,723

Claims priority, application Japan, Mar. 4, 1991, 3-037142

Int. Cl.[5] G01N *21/88;* **G01B** *7/00*

U.S. Cl. 356—394 **21 Claims**



1. An apparatus for detecting a circuit pattern comprising: a stage for mounting an object under inspection having a circuit pattern to be detected; means of generating a signal in response to the amount of movement of said stage; a detection optical system for detecting the circuit pattern; an opto-electric transducer which receives the image of the pattern provided by said detection optical system and transforms the image into an image signal; and drive control means which produces a clock signal for said opto-electric transducer based on the stage movement signal provided by said signal generation means and varies the clock signal so as to vary the dimension of the detected image arbitrarily.

5,331,408

ON-LINE MICRO FORMATION SENSOR

Byron D. Jordan, Pointe Claire; Nam G. Nguyen, Montreal, and Peter E. Wrist, Baie D'Urfe, all of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

PCT No. PCT/CA90/00172, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992, PCT Pub. No. WO91/19186, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1990, Ser. No. 940,902

Int. Cl.[5] G01N *21/86*

U.S. Cl. 356—429 **1 Claim**

1. An on-line paper micro formation sensor for measuring and recording paper formation descriptors on a first surface of a web of moving paper, said web of moving paper also having a second surface, opposed to said first surface, said formation sensor comprising:

A) optical scanning means, comprising:

i) a light source spaced from said second surface of said web of moving paper for directing a beam of light at said

second surface of said web of moving paper, said beam of light being transmitted through said web of moving paper;

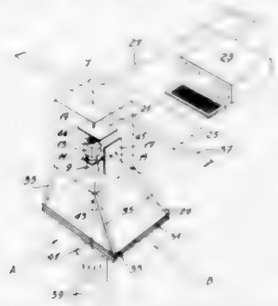
ii) a beam splitter spaced from said first surface of said web of moving paper to receive said transmitted beam of light and to provide a first split beam, travelling in a first direction, and a second split beam, travelling in a second direction different form said first direction;

iii) machine direction sensor means, having an output terminal, placed to receive said first split beam and to provide a machine direction analog signal having a magnitude proportional to the magnitude of the light intensity of said first split beam;

iv) a cross-machine direction sensor means, having an output terminal, placed to receive said second split beam and to provide a cross-machine direction analog signal having a magnitude proportional to the magnitude of the light intensity of said second split beam;

B) data acquisition means, comprising:

i) a machine direction module comprising a machine direction analog-to-digital converter having an input terminal and an output terminal, the input terminal of said machine direction analog-to-digital converter being connected to the output terminal of said machine direction sensor means, machine direction digital data being provided at said output terminal of said machine direction analog-to-digital converter, and machine direction digital storage means having an input terminal and an output terminal, the input terminal of said machine direction digital storage



means being connected to the output terminal of said machine direction analog-to-digital converter;

ii) a cross-machine direction module comprising a cross-machine direction analog-to-digital converter having an input terminal and an output terminal, the input terminal of said cross-machine direction analog-to-digital converter being connected to the output terminal of said cross-machine direction sensor means, cross-machine direction digital data being provided at said output terminal of said cross-machine direction analog-to-digital converter, said cross-machine direction digital storage means having an input terminal and an output terminal, the input terminal of said cross-machine direction digital storage means being connected to the output terminal of said cross-machine direction analog-to-digital converter;

C) feature extraction means, comprising:

i) computation means having input terminals; said input terminals of said computation means being connected to the output terminals of both said machine direction and cross-machine direction digital storage means;

whereby, to compute from both said machine direction and cross-machine direction digital data paper formation descriptors including paper mass variation, floc size statistics and histogram, Fourrier power spectra and paper anisotropy;

said beam splitter, said machine direction sensor means and said cross-machine direction sensor means are mounted in a housing, said housing being reciprocally movable in a cross-machine direction;

and further including a light guide disposed between said light source and said beam splitter in said housing;

said light source being movable with said housing;

and wherein both said machine direction sensor means and said cross-machine direction sensor means comprise charge coupled device linear arrays.

5,331,409

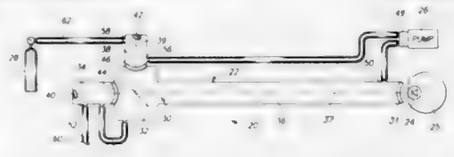
TUNABLE DIODE LASER GAS ANALYZER

George Thurtell, 38 University Ave. West, Guelph, Ontario, Canada N1G 1N4 ; Gary Kidd, 11 Batterswood Ct., Kitchener, Ontario, Canada N2A 3S3 , and Grant Edwards, 378 Willard Ave., Toronto, Ontario, Canada M6S 3R5

Filed Jun. 12, 1992, Ser. No. 897,703

Int. Cl.[5] G01N *21/61*

U.S. Cl. 356—437 **48 Claims**



1. A method of operating a wavenumber-tunable laser to determine light absorption characteristics of a sample gas, wherein the laser emits a laser beam at a wavenumber which is variable in response to the amplitude of the drive current applied to it, the method comprising the following steps:

transmitting the laser beam through the sample gas to a first radiation sensor;

repetitively modulating the drive current amplitude from a beginning ramp current value to an ending ramp current value to cyclicly vary the laser beam wavenumber over a wavenumber modulation band while directing the laser beam through the sample gas, the modulation band at least partially spanning an absorption line of a target gas in the sample gas;

disabling the laser by interrupting the laser drive current before each repetition of the drive current modulating;

overdriving the laser with an increased drive current after the disabling step and before each repetition of the drive current modulating step to shorten the time required to restore the laser to its equilibrium excitation state, the increased drive current being greater than the beginning ramp current;

monitoring background intensity at the first radiation sensor during the disabling step; and

monitoring the intensity of the laser beam at the first radiation sensor during the drive current modulating step.

5,331,410

FIELD EFFECT TRANSISTOR HAVING A SANDWICHED CHANNEL LAYER

Nobuhiro Kuwata, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Kanagawa, Japan

Filed Apr. 21, 1992, Ser. No. 871,706

Claims priority, application Japan, Apr. 26, 1991, 3-096857; Apr. 26, 1991, 3-096858

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] H01L *29/360, 29/680*

U.S. Cl. 257—192 **19 Claims**

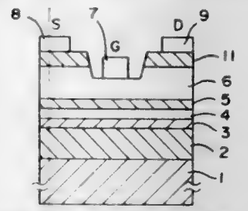
1. A field effect transistor comprising:

an epitaxially grown n-type GaInAs channel layer,

a first updoped GaInAs layer which contacts said channel layer;

a second undoped GaInAs layer which contacts said channel layer, said first and second layers sandwiching said channel layer;

a buffer layer formed of a semiconductor which has an energy band gap wider than that of said first layer, which is lattice-matched with said first layer, which is in contact with one side of said first layer, and which underlies said first layer;



a cap layer formed of an undoped semiconductor which has an energy band gap wider than that of said second layer, which is lattice-matched with said second layer and, which is lattice-matched with said second layer and which is formed on said second layer in contact with said second layer; and

a gate electrode formed to be in Schottky contact with said cap layer.

5,331,411

INTEGRATED CIRCUIT FOR PROCESSING DIGITAL SIGNALS IN VIDEO CAMERA HAVING ELECTRONIC ZOOMING FUNCTION

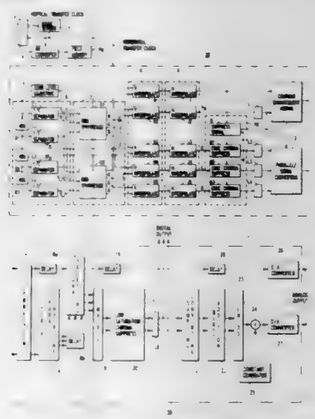
Kiyotada Kawakami; Masao Takuma, both of Osaka; Tooru Asaeda, Nara; Tooru Yamamoto; Haruhiko Murata, both of Osaka; Hirotsugu Murashima, Nara; Tohru Watanabe, Fifu; Masashi Honzawa, Gunma, and Keiichi Tanii, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 29, 1991, Ser. No. 784,228

Claims priority, application Japan, Oct. 31, 1990, 2-295643

Int. Cl.[5] H04N *3/223, 9/04, 5/232*

U.S. Cl. 348—708 **16 Claims**



1. An integrated circuit for processing digital signals for a video camera capable of effecting an electronic zooming function in which an output from a solid state image sensing device spatially modulated by a color filter is A/D converted into a digital signal and temporarily stored in a field memory, during operation of the electronic zooming function the stored digital signal is read from the field memory, said integrated circuit comprising:

first, second and third 1H delay elements for successively delaying the digital signal read from said field memory by 1 horizontal period;

first, second, third and fourth luminance/color signal (Y/C) separating means for separating said digital signal and output signals from each of said first, second and third 1H delay elements, respectively, into luminance components and two types of line sequential color components;

first RGB synthesizing means for forming a first set of three primary color signals based on said output signals from said first, second and third Y/C separating means;

second RGB synthesizing means for forming a second set of three primary color signals based on said output signals from said second, third and fourth Y/C separating means;

luminance signal interpolating means for synthesizing luminance signals corresponding to new display points which are to be formed in carrying out the electronic zooming function, based on output signals from said second and third Y/C separating means; and

color signal interpolating means for synthesizing three primary color signals corresponding to the new display points which are to be formed in carrying out the electronic zooming function, based on said first and second sets of three primary color signals.

5,331,412

TAMPER RESISTANT APPARATUS FOR A CATV SYSTEM

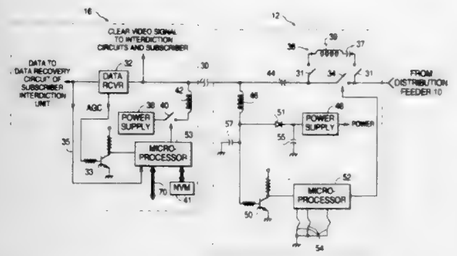
James O. Farmer, Lilburn, and W. Brad Thatcher, Alpharetta, both of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation of Ser. No. 618,687, Nov. 27, 1990, abandoned.

This application Jul. 9, 1993, Ser. No. 88,582

Int. Cl.[5] H04H *1/02*

U.S. Cl. 348—5.5 **20 Claims**



5. An apparatus for preventing the unauthorized reception of television signals in a CATV system comprising:

sending means for sending power and a previously programmed address to a tap via a drop cable, said previously programmed address being stored in a programmable program security device;

receiving means for receiving, at said tap, said power and said previously programmed address;

comparing means for comparing, at said tap, said previously programmed address against a tap address maintained in said tap; and

allowing means, responsive to said comparing means, for allowing, at said tap, said television signals to be transmitted to said programmable program security device when said previously programmed address and said tap address are determined to be the same by said comparing means.

5,331,413

ADJUSTABLE CONTROL STATION WITH MOVABLE MONITORS AND CAMERAS FOR VIEWING SYSTEMS IN ROBOTICS AND TELEOPERATIONS

Daniel B. Diner, Pasadena, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

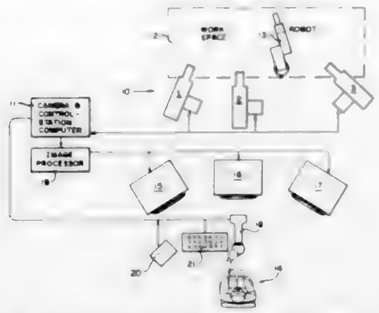
Filed Sep. 28, 1992, Ser. No. 954,109

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—159 **9 Claims**

1. In a real-time video presentation system for robotics and teleoperation using a hand-controller, said system having movable television cameras for optimal viewing of a region of interest surrounding a robot and movable monitors in a control station remote from said robot for presentation of television

images from said cameras, a method of rotating each of said monitors to match the orientation of its corresponding television camera by matching its corresponding camera orientation in pan, tilt and roll, thereby causing an angle between a straight



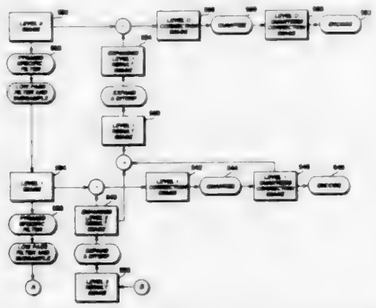
ahead direction of said robot and a straight ahead line of view of said corresponding camera to equal an angle between said hand-controller straight ahead direction and a line between the center of the image on a monitor of said corresponding camera and an observer's point of view.

5,331,414

METHOD AND APPARATUS FOR ENCODING A DIGITAL MOTION VIDEO SIGNAL USING PYRAMID SPECIFIC FILTERING

Stuart J. Golin, East Windsor, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 23, 1991, Ser. No. 813,884
Int. Cl.[5] H04N *7/12*
U.S. Cl. 348—390 **14 Claims**



1. A method for encoding an image having at least one high frequency feature comprising the steps of:

(a) filtering said image with a non-linear filter targeted at said at least one high resolution feature to produce a filtered image, wherein said at least one high resolution feature is selected from a group comprising lines and points, and wherein said filtering is targeted at said at least one high resolution feature and not at edges;

(b) low pass filtering and subsampling said filtered image into at least one lower level of resolution;

(c) encoding a correction image at said at least one lower level of resolution;

(d) producing an expanded result image from said correction image, said expanded result image having the same level of resolution as said image; and

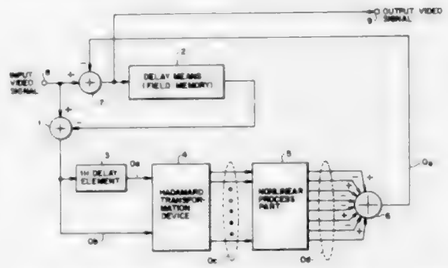
(e) encoding at the level of resolution of said image the difference between said image and said expanded result image.

5,331,415

NOISE REDUCTION APPARATUS FOR REDUCING NOISE IN AN INPUT VIDEO SIGNAL

Takeshi Hamasaki, Yao, and Yoshinori Kitamura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP91/01332, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO92/06559, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 3, 1991, Ser. No. 867,216
Claims priority, application Japan, Oct. 5, 1990, 2-269105; Oct. 23, 1990, 2-286204
Int. Cl.[5] H04N *5/21*
U.S. Cl. 348—607 **7 Claims**



1. A noise reduction apparatus for reducing noise in an input video signal, the input signal containing pixel data, the apparatus comprising:

first delay means for delaying an input video signal to derive a first delayed video signal;

first substraction means for subtracting said first delayed video signal from said input video signal and for outputting a finite difference signal;

second delay means for delaying said finite difference signal output from said first subtraction means by one horizontal scanning period;

transforming means for forming a signal block from the finite difference signal which includes a first predetermined number of pixel data, and in said signal block, for transforming said first predetermined number of pixel data into a second predetermined number of characteristic components based on said finite difference signal and said finite difference signal delayed by said second delay means, and for shifting said signal block one pixel data in a predetermined direction after every transforming operation;

nonlinear calculation means for applying a nonlinear calculation to the characteristic components;

inverse-transformation means for deriving one compensation output corresponding to said signal block based on the output signal of said nonlinear calculation means; and

a second subtraction means for subtracting said compensation output to said input video signal to reduce noise in said input video signal.

5,331,416

METHODS FOR OPERATING GHOST-CANCELATION CIRCUITRY FOR TV RECEIVER OR VIDEO RECORDER

Chandrakant B. Patel, Hopewell, N.J., and Jim Yang, Philadelphia, Pa., assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 2, 1992, Ser. No. 984,486
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—614 **29 Claims**

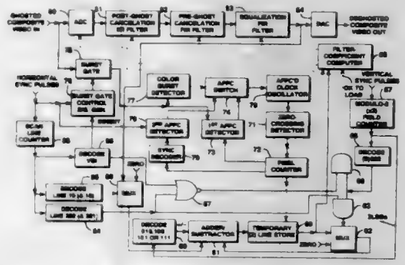
1. A method for operating apparatus comprising a receiver for receiving through a reception channel a video signal with accompanying ghost cancelling reference (GCR) signal both subject at times to being ghosted; a ghost-suppression filter connected for responding to said video signal, said ghost-suppression filter having adjustable filtering parameters; a computer for calculating the adjustable filtering parameters of said ghost-suppression filter, said computer provided with read-only memory for permanently storing data descriptive of ghost-free GCR signal and with further memory for purposes of temporary storage; and a GCR-signal separator for separating a separated GCR signal from the response of said ghost-suppression filter; said method avoiding the erroneous adjustment of the filtering parameters of said ghost-suppression filter during non-stable ghosting conditions such as "aircraft flutter" and comprising the steps of:

a) initializing the adjustable filtering parameters of said ghost-suppression filter;

b) loading said separated GCR signal into said further memory of said computer, for purposes of temporary storage, which loading is done at least after step (a);

c) each time after step (b) is performed, performing calculations within said computer for characterizing the reception channel as described by the separated GCR signal loaded into said computer during that step (b) to generate a set of updated channel characterization results;

d) each time after step (c) is performed, temporarily storing



within the further memory of said computer the set of updated channel characterization results generated by that step (c);

e) each time after step (c) is performed, determining within said computer whether or not ghosting conditions have changed, by comparing each portion of the updated set of channel characterization results with a corresponding portion of the previously temporarily stored set of channel characterization results, ghosting conditions being determined not to have changed only when corresponding portions of the compared sets of channel characterization results in every comparison differ by less than a first threshold value, said method looping back to step (b) when ghosting conditions are determined to have changed when corresponding portions of the compared sets of channel characterization results in any of said comparisons differ by as much as or more than said first threshold value; and

f) each time ghosting conditions are determined not to have changed when step (e) is performed, thereafter performing calculations within said computer for determining the adjustable filtering parameters for said ghost-suppression filter.

5,331,417

SYSTEM AND METHOD OF DISPLAYING A PLURALITY OF DIGITAL VIDEO IMAGES

Kenneth Soohoo, Milpitas, Calif., assignor to Digital Pictures, Inc., Menlo Park, Calif.

Filed Sep. 15, 1992, Ser. No. 944,955
Int. Cl.[5] H04N *5/42*
U.S. Cl. 348—584 **4 Claims**

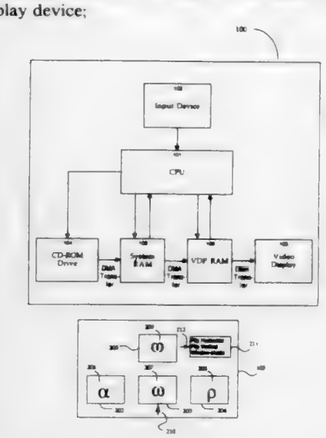
3. A system for displaying a plurality of digital video images, comprising:

a video display device containing a plurality of windows, each window containing at least one card;

character defining means for defining characters;

a character definition storage area, connected to receive defined characters from the character defining means, for storing the defined characters;

screen mapping means for creating a screen map identifying a character definition for each of the cards of the video display device;



a screen map storage area, connected to receive the screen map from the screen mapping means, for storing the screen map; and

means, connected to the character definition storage area, the screen map storage area, and the video display, for displaying each identified character in the corresponding card of the video display device.

5,331,418

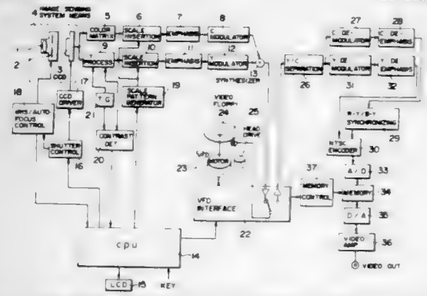
Patent Not Issued For This Number

5,331,419

SIZE DISPLAY SYSTEM FOR ELECTRONIC CAMERA

Tsukasa Yamada, Zama; Hiromasa Hino, Akishima; Shoji Watanabe, Yokosuka, and Shin Yasuhara, Kawasaki, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Mar. 26, 1992, Ser. No. 857,752
Claims priority, application Japan, Mar. 26, 1991, 3-86327; Apr. 22, 1991, 3-116513; Apr. 25, 1991, 3-121787; May 15, 1991, 3-139611; Jul. 19, 1991, 3-203174
Int. Cl.[5] H04N *5/30, 7/18*
U.S. Cl. 348—64 **10 Claims**



2. A size display system for an electronic still camera comprising:

image sensing systems means for converting an image of an object focused on an image sensor through a lens systems into an image signal;

lens and iris control means for obtaining in-focus informa-

tion, zoom information, distance information and iris information about the object image focused on said image sensor;

Non Return to Zero writing means for making conversion into a Non Return to Zero signal;

a recording medium having a special region where a signal other than said image signal of the object is stored by being recorded with a Non Return to Zero recording technique;

a Non Return to Zero reading circuit for making inverse conversion of the Non Return to Zero signal;

select means for selecting whether the size display is to be made or not;

a scale display circuit for generating a scale pattern and numerical values for graduations; and

control means having a function of calculating size display data based on said in-focus and iris information, causing said in-focus information, zoom information, distance information and iris information or said size display data to be the Non Return to Zero-converted by said Non Return to Zero writing means and recorded in the special region of said recording medium in photographing, and causing the contents of the special region of said recording medium to be read out and demodulated into the original signal format by said Non Return to Zero reading circuit in reproduction when size display is selected by said select means, whereby said size display data are sent to said scale display circuit to output the scale pattern and the numerical values for graduations therefrom so that the scale pattern and the numerical values for graduations are displayed on a reproduced screen of said image signal of the object read from the said recording medium in a superposed relation.

5,331,420

PIXEL SIGNAL NON-UNIFORMITY CORRECTING DEVICE

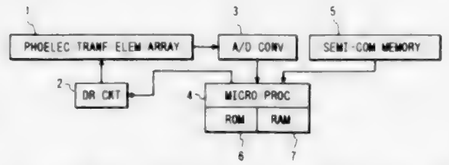
Shozo Yamano, and Shigeyuki Uchiyama, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,396

Claims priority, application Japan, Oct. 29, 1990, 2-291506

Int. Cl.[5] H04N *5/335*

U.S. Cl. 348—246 **5 Claims**



1. A pixel signal correcting device of the type which corrects pixel signals generated by A/D-converting signals output from a plurality of photoelectric sensor element arrays, comprising:

means for storing pixel signals generated when the arrays are exposed to uniform illuminating light in a calibration mode,

reference pixel signal determining means operating to determine a reference pixel signal based on the stored pixel signals,

correction value determining means operating to determine a correction value for each pixel based on a difference between the corresponding stored pixel signal and said reference pixel signal, such that all of the correction values have the same sign,

means operating to store the correction values, and

correction means for correcting pixel signals generated during a normal operation mode, based on the corresponding stored correction values and without individually judging whether the signs of the respective correction values are positive or negative.

5,331,421

SOLID STATE IMAGE PICKUP APPARATUS

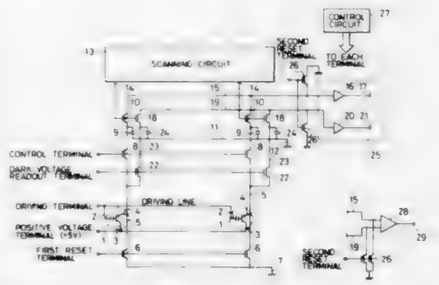
Hayao Ohzu, Fuchu; Toshiji Suzuki, Machida, and Akira Ishizaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 314,275, Feb. 23, 1989, abandoned, which is a continuation of Ser. No. 929,892, Nov. 13, 1986, abandoned, and Ser. No. 460,012, Jan. 2, 1990, which is a continuation of Ser. No. 96,534, Sep. 14, 1987, Pat. No. 4,914,519. This application Jun. 13, 1990, Ser. No. 547,996

Claims priority, application Japan, Nov. 15, 1985, 60-255027; Nov. 29, 1985, 60-269882; Sep. 19, 1986, 61-219666; Sep. 20, 1986, 61-229625; Oct. 8, 1986, 61-238017; Dec. 16, 1986, 61-300802; Dec. 16, 1986, 61-300803

Int. Cl.[5] H04N *3/14, 5/335*

U.S. Cl. 340—262 **5 Claims**



1. A solid state image sensor comprising:

light receiving means including a plurality of light receiving cells arranged in a matrix, each light receiving cell converting light input into electrical signals;

reading and storing means including a first memory for reading bright signals out of light receiving cells arranged in a row and storing the bright signals for a horizontal scanning period, a second memory for reading dark signals out of said light receiving cells arranged in a row and storing the dark signals for a horizontal scanning period, and a readout circuit for reading the bright and dark signals stored in said first and second memories simultaneously, wherein said bright signals are read out of light receiving cells arranged in a row simultaneously during a horizontal blanking period; and

means for removing fixed pattern noises by processing the simultaneously read out bright and dark signals.

5,331,422

VIDEO CAMERA HAVING AN ADAPTIVE AUTOMATIC IRIS CONTROL CIRCUIT

Kazuhito Nishida, Tochigi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1992, Ser. No. 849,673

Claims priority, application Japan, Mar. 15, 1991, 3-051702; Jan. 27, 1992, 4-012140

Int. Cl.[5] H04N *5/238*

U.S. Cl. 348—363 **20 Claims**

1. A video camera comprising:

optical means for gathering incident light from an object to form an image on a predetermined image formation plane;

incident light amount regulating means, responsive to an incident light amount regulating signal, for regulating an incident light amount;

image sensing means for image sensing the image of the object within a predetermined frame formed by said optical means to provide a luminance signal;

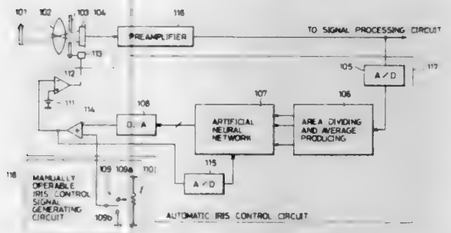
luminance distribution characteristics extraction means, connected to said image sensing means, for dividing said predetermined frame into a predetermined plurality of sub-areas and for extracting a luminance distribution of the image in said predetermined frame as a luminance value for each of said sub-areas according to said luminance signal to provide the extracted luminance distribution as a plurality of luminance distribution signals, said luminance distribution characteristics extraction means including

A/D converting means for A/D converting said luminance signal provided from said image sensing means and for outputting a digital luminance data indicating the luminance of the image, and

average luminance calculating means for integrating said digital luminance data over a predetermined integrating time period for each of said sub-areas to calculate an average luminance for each of said sub-areas as said luminance distribution signals;

means for generating a target value signal for determining a target value of said incident light amount regulating signal that can be arbitrarily set by a user according to the luminance distribution of the image;

adaptive means, coupled to said luminance distribution characteristics extraction means and having an artificial neural network to which said plurality of luminance distribution signals are input, for generating said incident light amount regulating signal in accordance with a predetermined



conversion, the predetermined conversion being made adaptive so that an offset between a teacher signal and said incident light amount regulating signal is minimized; and

manually operable selecting means, responsive to operation by the user, for selecting one of said target value signal and said incident light amount regulating signal as said teacher signal,

said average luminance calculating means including

area dividing signal generating means for producing

a plurality of horizontal dividing signals h0–h3 which are a predetermined first value only during respective predetermined time periods in a horizontal scanning period of each of said luminance signals and which are a predetermined second value, different from said predetermined first value, during a period other than the respective predetermined time period of said horizontal scanning period of each of said luminance signals,

a plurality of vertical dividing signals V0–v3 which are a predetermined third value only during respective predetermined time periods in a vertical scanning period of each of said luminance signals and which are a predetermined fourth value, different from said predetermined third value, during a time period other than the respective predetermined time period of said vertical scanning period of each of said luminance signals, and

a clear pulse CL for each of said integrating time periods, and

a plurality of integrating means, each connected to said digital luminance data output of said A/D converting means and being responsive to a predetermined one of said horizontal dividing signals h0–h3 becoming said predetermined first value and a predetermined one of said vertical dividing signals v0–v3 becoming said predetermined third value, for sampling said digital luminance data at a predetermined timing for integration during said integrating time period, for providing an integrated result.

5,331,423

DISC PLAYER WITH AN AUTOMATIC INITIALIZATION FUNCTION

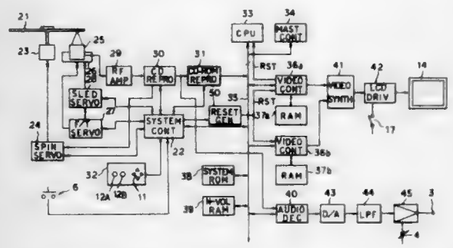
Kiyoshi Ota, Tokyo; Kousuke Misono, and Toshiyuki Ishii, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,941

Claims priority, application Japan, Sep. 30, 1991, 3-278805

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—342 **12 Claims**



1. A disc player for reproducing information recorded on a disc, the disc having a disc type, the disc player comprising:

type identification means for determining the disc type of said disc;

disc reproduction means for reproducing the information recorded on said disc;

disc ejecting means for generating a disc ejecting signal in response to an externally-generated command;

control means for stopping the disc reproducing means when the disc ejecting signal is asserted; and

reset means for initializing the disc reproduction means when the disc ejecting signal is asserted and the disc type determined by the type identification means is a first predetermined type, and for inhibiting initialization of the disc reproducing means when the disc ejecting signal is asserted and the disc type determined by the type identification means is a second predetermined type.

5,331,424

FACSIMILE SYSTEM

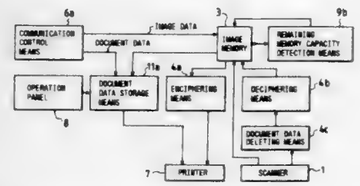
Tsunehiro Matsui; Yoshihiro Maei; Tadahiko Ikegaya; Takashi Sakayama, and Yasuhiro Kamiyama, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 893,401

Claims priority, application Japan, Jun. 4, 1991, 3-159405

Int. Cl.[5] H04N *1/21, 1/44*

U.S. Cl. 358—404 **7 Claims**



1. A facsimile system comprising:

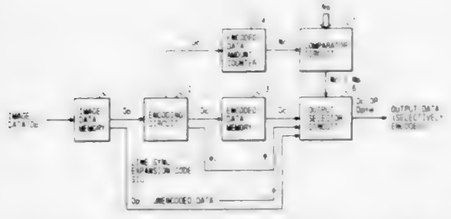
an image memory for storing received image data and image data to be transmitted;
means for detecting a remaining memory capacity in said image memory;
means for storing document data of each of said received image data and said image data to be transmitted;
means for enciphering at least a part of image data stored in said image memory upon detection of an insufficient remaining memory capacity by said remaining memory capacity detection means;
means for recording said enciphered image data on a recording sheet together with said document data thereof;
means for reading said recorded enciphered image data; and
means for deciphering said read enciphered image data

5,331,425

IMAGE DATA ENCODING APPARATUS PROVIDING INCREASED ENCODING EFFICIENCY WITH REDUCED DEPENDENCY ON IMAGE CONTENT

Tohru Ozaki, Tokyo; Hitoshi Horie, Ageo, and Hideyuki Shirai, Ichikawa, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Jan. 9, 1992, Ser. No. 818,572
Claims priority, application Japan, Jan. 14, 1991, 3-2669
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—426 **9 Claims**



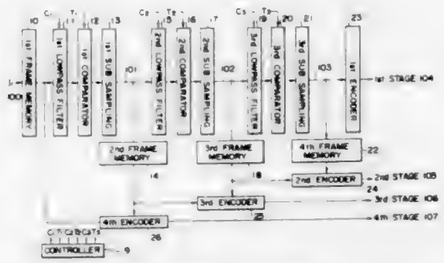
1. An image data encoding apparatus for encoding input image data derived by converting an image to successive picture element data values along each of successive scan lines, comprising:
first memory means (1) for receiving and temporarily storing said input image data;
encoding means (2) for receiving said input image data from said first memory means, and for converting said input image data to encoded data;
second memory means (3) for receiving and temporarily storing said encoded data;
data measurement means (4) for receiving said encoded data from said second memory means and for computing a total amount of said encoded data for each of said scan lines;
comparator means (5) for comparing each of said total amounts of encoded data with a predetermined reference value, said reference value being determined in accordance with a total amount of said input image data in each of said scan lines; and
output selector means (6) coupled to receive said input image data from said first memory means and said encoded data from said second memory means, and controlled by an output signal which is produced from said comparator means in accordance with results of said comparison, said output selector means selecting for each of said scan lines the encoded data for said scan line to be outputted therefrom if the total amount of said encoded data corresponding to said scan line does not exceed said reference value, and selecting the input image data for said scan line to be outputted therefrom if the total amount of said encoded data corresponding to said scan line does exceed said reference value.

5,331,426

IMAGE ENCODING METHOD

Shigeo Kato, Saitama; Yasuhiko Yasuda, Musashino, and Hidefumi Ohsawa, Kawaguchi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 764,059, Sep. 24, 1991, Pat. No. 5,136,396, which is a continuation of Ser. No. 400,103, Aug. 29, 1989, abandoned. This application May 14, 1992, Ser. No. 882,894
Claims priority, application Japan, Aug. 30, 1988, 63-217217; Aug. 30, 1988, 63-217218
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—426 **20 Claims**



1. An image encoding system comprising:
an input unit for inputting image data;
a conversion unit for converting a resolution of the image data input by said input unit and generating low resolution image data; and
an encoding unit for encoding the image data input by said input unit by using both the image data input by said input unit and the low resolution data generated by said conversion unit,
wherein said encoding unit further comprises:
storing means for storing a plurality of tables which are different from each other in varying a prediction parameter;
providing means for providing a prediction parameter for use in predicting a data value of a pixel of interest referring to a plurality of pixels near the pixel of interest by using one of the tables stored in said storing means;
predicting means for predicting the data value of the pixel of interest with reference to the plurality of pixels near the pixel of interest by using the prediction parameter;
encoding means for encoding an image on the basis of coincidence/noncoincidence between the predicted data value and an actual value of the pixel of interest; and
determining means for determining a table which is used by said providing means in accordance with the coincidence/noncoincidence between the predicted data value pixel and the actual value of the pixel of interest.

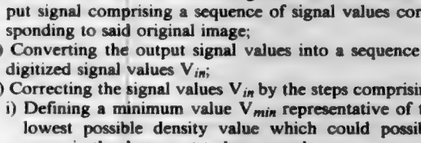
5,331,427

IMAGE REPRODUCING APPARATUS

Yoshiyuki Namizuka, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 4, 1992, Ser. No. 878,335
Claims priority, application Japan, May 8, 1991, 3-131901
Int. Cl.[5] H04N *1/415*
U.S. Cl. 358—433 **17 Claims**

1. An image reproducing apparatus for generating a composite image from (1) image signals indicative of an image and (2) supplementary signals which are not indicative of the image, said apparatus comprising:
a) input means for inputting (1) digital signals indicating the image, and (2) supplementary digital signals which are not indicative of the image;
b) composition means for coding said digital signals through a prescribed coding process so as to generate a matrix of blocks wherein:
1) coded data described by coefficients produced through said coding process is contained in the matrix of blocks, and
2) said blocks are arranged in two-dimensional coordinates depending on a level of a frequency corresponding to each of coded digital signals;



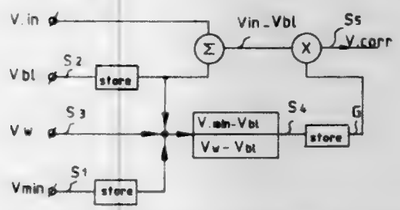
c) first control means for determining a first region of low-frequency blocks in which said coded data corresponding to said digital signals is substantially located within said matrix; and
d) second control means, including:
1) means for placing allocation data defining a location of said first region within said matrix into a maximum-frequency block of said matrix, the maximum-frequency block relating to a higher frequency than the low-frequency blocks, and
2) means for placing data corresponding to said supplementary digital signals into a second region of high-frequency blocks of said matrix.

5,331,428

AUTOMATIC OFFSET AND GAIN CONTROL IN A DOCUMENT SCANNER

Bruno V. Uffel, St. Katelijne-Waver, Belgium, assignor to AGEA-Gevaert N. V., Mortsel, Belgium

Filed Apr. 6, 1993, Ser. No. 42,766
Claims priority, application European Pat. Off., May 11, 1992, 92201227.3
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—446 **5 Claims**



1. A method for correcting an original image carried on a source document which comprises the following steps:
a) Scanning the source document with a light beam;
b) Collecting the light reflected or transmitted from the source document in an optoelectronic sensor element which converts the collected light into an electrical output signal comprising a sequence of signal values corresponding to said original image;
c) Converting the output signal values into a sequence of digitized signal values V_{in};
d) Correcting the signal values V_{in} by the steps comprising:
i) Defining a minimum value V_{min} representative of the lowest possible density value which could possibly occur in the document to be scanned,
ii) Identifying from said digitized signal values by comparison with a calibration reference having a high level density and a low level density, a first sample signal value V_{bi} corresponding to the high level density of said reference and storing in a calibration memory the value thus identified as an offset, wherein said offset = V_{bi},
iii) Identifying from said digitized signal values by comparison with said calibration reference a second sample signal value V_w corresponding to the low level density of said reference,
iv) calculating a gain factor G according to the equation

$$G = \frac{V_{min} - V_{bi}}{V_W - V_{bi}}$$

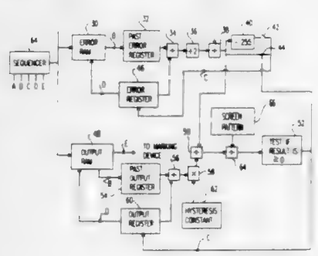
and permanently storing said gain factor G in said calibration memory
v) Correcting the digitized signal values V_{in} by a) first, immediately compensating for offset by calculating the difference in signal values V_{dif} between V_{bi} and V_{in} ($V_{dif} = V_{in} - V_{bi}$) and b) second, continually adjusting V_{dif} for gain by multiplying the same by said gain factor G to yield a corrected signal values V_{corr} ($V_{corr} = V_{dif} G$); and
e) Applying the corrected signal values V_{corr} to a scanning unit to reproduce a corrected image of said original image.

5,331,429

DIGITAL GENERATION OF HALFTONE IMAGES WITH ERROR DIFFUSION AND FREQUENCY MATCHED PERIODIC SCREEN RULINGS

Raphael L. Levien, P.O. Box 31, McDowell, Va. 24458

Filed Feb. 7, 1992, Ser. No. 832,555
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **34 Claims**



1. A method of producing a halftone image comprising:
scanning a plurality of input pixels of an original image and generating a numerical value representing a shade of gray for each input pixel scanned;
generating output pixels forming halftone dots from said input pixels by error diffusion, wherein the error between an input pixel and an output pixel is distributed to at least one adjacent pixel;
generating a periodic screen pattern;
adjusting a frequency so that the frequency of said halftone dots and the frequency of said periodic screen pattern are substantially equal; and
combining said periodic screen pattern with said halftone dots so as to lock the frequency of said halftone dots to substantially equal the frequency of said periodic screen pattern.

5,331,430

ELECTRONIC HIGH-FIDELITY SCREENLESS CONVERSION SYSTEM

Zhenhua Xie, Naperville, and Michael A. Rodriguez, Palatine, both of Ill., assignors to R.R. Donnelley & Sons Company, Lisle, Ill.

Filed Oct. 11, 1991, Ser. No. 775,334
Int. Cl.[5] H04N *1/21, 1/40*
U.S. Cl. 358—456 **60 Claims**



1. A system for converting input values into output values, each of said input values having one of at least M possible levels and each of said output values having one of N possible levels, where M is greater than N, said system converting, in turn, each of said input values into a corresponding output value so that, at a given instant in time, an input value undergoing conversion has before it previously converted input values and after it input values yet to be converted, said system comprising:

error generating means for generating at least first and second errors for said input value undergoing conversion, said first error being based upon an output value corresponding to a previously converted input value, based upon an output value estimated from a corresponding input value yet to be converted, and based upon an output value having a first level assumed for said input value undergoing conversion, and said second error being based upon an output value corresponding to a previously converted input value, based upon an output value estimated from a corresponding input value yet to be converted, and based upon an output value having a second level assumed for said input value undergoing conversion;

output value setting means for setting said input value undergoing conversion to an output value having said first level if the absolute value of said first error is less than the absolute value of said second error or to an output value having said second level if the absolute value of said first error is greater than the absolute value of said second error; and,

diffusing means for diffusing, to a selected number of said input values yet to be converted, said first error if said input value undergoing conversion is set to said output value having said first level or said second error if said input value undergoing conversion is set to said output value having said second level.

5,331,431

METHOD AND APPARATUS FOR TRANSMITTING AND RECEIVING ENCODED DATA

Leon Jasinski, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1992, Ser. No. 937,085
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—462 **18 Claims**

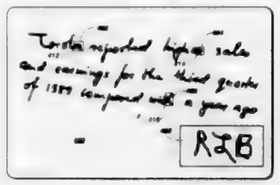
1. A method of transmitting and receiving encoded data derived from input data generated by a user, the input data comprising substantially readable text characters in a radio paging system comprising an optical character recognition element and a graphic encoding element, the radio paging system further comprising a radio transmitter and a selective call radio receiver, the method comprising the steps of:

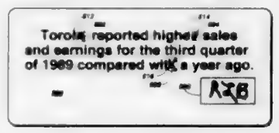
(a) accepting the input data comprising the substantially readable text characters at an input of the radio paging system;

(b) encoding as character code format data the substantially readable text characters received in step (a) that are recognizable by the optical character recognition element;

(c) encoding as graphic code format data the substantially readable text characters received in step (a) that are not recognizable by the optical character recognition element;

(d) assembling the character code format data encoded in





step (b) and the graphic code format data encoded in step (c) into an output data stream, the output data stream including information that describes original sizes and positions relative to one another of the substantially readable text characters;

(e) transmitting an address assigned to the selective call radio receiver, along with the output data stream assembled in step (d) in a radio signal from the radio transmitter;

(f) receiving by the selective call radio receiver the address and the output data stream transmitted in step (e); and

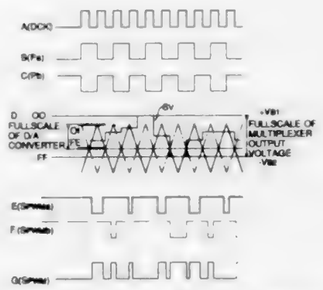
(g) converting within the selective call radio receiver the output data stream received in step (f) into substantially readable text characters.

5,331,432

IMAGE FORMING APPARATUS

Kouichi Sawada; Hiroyuki Yamamoto, both of Hachioji, and Yoshiyuki Ichihara, Chofu, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 42,598
Claims priority, application Japan, Apr. 20, 1992, 4-099758
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—465 **4 Claims**



1. An apparatus for forming an image in accordance with image signals representing density levels that range between a maximum density level and a minimum density level, the apparatus comprising:

means for irradiating a recording member with an image light to form the image; and

means for modulating said image light in accordance with the image signals, said modulating means including

means for generating a reference pattern signal shaped in a wave form having a predetermined amplitude range and frequency, wherein the reference pattern signal represents the density levels between the maximum density level and the minimum density level so that the density level of each image signal is within the amplitude range of the reference pattern signal,

means for discriminating whether the density level of each image signal is the maximum density level or the minimum density level,

means for comparing the density level of said image signal with said reference pattern signal when the density level of said image signal is discriminated as not being the maximum density level or the minimum density level and for generating a pulse width modulation signal to modulate said image light in accordance with results of the comparison, and

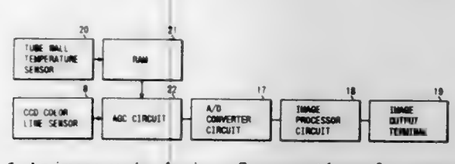
means for shifting the density level of said image signal to a respective predetermined shifted density level that is out of said amplitude range of said reference pattern signal when the density level of said image signal is discriminated to be the maximum density level or the minimum density level so that the comparing means compares the respective predetermined shifted density level with the reference pattern signal when the density level of said image signal is discriminated to be the maximum density level or the minimum density level.

5,331,433

IMAGE READER

Masaaki Sato, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,121
Claims priority, application Japan, Apr. 5, 1991, 3-073245
Int. Cl.[5] G03G *15/00*
U.S. Cl. 358—471 **2 Claims**



1. An image reader, having a fluorescent lamp, for correcting colors in accordance with a quantity of light reflected from a reference white plate before scanning a document, said image reader comprising:

color sensor means for detecting colors of the document;

temperature sensor means for monitoring a tube wall temperature of said fluorescent lamp; and

control means for controlling a gain of the color sensor means,

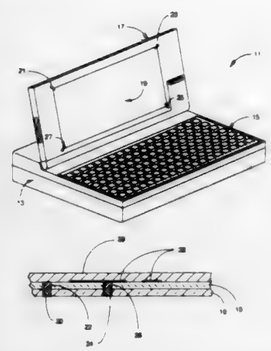
wherein relationships between tube wall temperature and quantity of reflected light are determined in advance, and said control means applies said relationships to said tube wall temperature sensed by said temperature sensor means to control said gain of said color sensor means.

5,331,434

INTEGRAL COMPUTER SCANNING SYSTEM

Dan Kikinis, Sunnyvale, Calif., assignor to Cordata, Inc., Tortola, British Virgin Isls.

Filed Oct. 27, 1992, Ser. No. 967,408
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—474 **15 Claims**



1. A computer display screen system for scanning hard copy documents comprising:

display means including a display surface for illuminating pixel elements in a pattern determined by a host computer;

photosensitive film means overlying a portion of said display surface for intercepting light emitted by said display means and generating a signal as a result of the incident light;

means for positioning a hard copy document on said screen parallel to and adjacent to said photosensitive film means; and

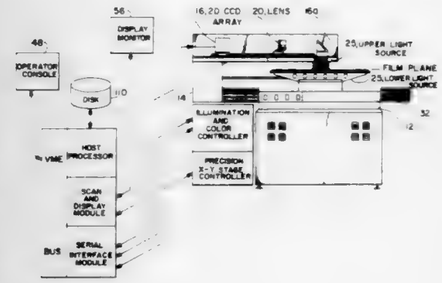
means for communicating signals generated in said photosensitive film means as a result of incident light away from said photosensitive film means.

5,331,435

DIGITIZER FOR RASTER DIGITIZING AN IMAGE

John S. Scott, Melbourne, Fla., assignor to Lenzar Electro-Optics, Inc., Riviera Beach, Fla.

Filed Oct. 4, 1991, Ser. No. 771,223
Int. Cl.[5] H04N *1/10*
U.S. Cl. 358—479 **30 Claims**



1.

A digitizer comprising:

a camera provided in a camera housing;

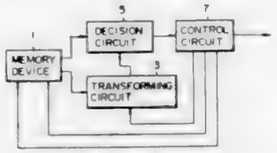
a movable stage for holding an image to be viewed by the camera;

a first linear motor for moving the stage in a first direction;

a second linear motor for moving the stage in a second

direction, said first and second linear motors being gearless and screwless in moving the stage;
control means, operatively connected to the camera and the first and second linear motors, said control means controlling the camera and positioning of the stage relative to the camera;
means for digitizing the image viewed by the camera;
stage controller means operatively connected to said first and second linear motors and said control means for controlling movement of the stage in the first and second directions by the first and second linear motors; and
input means connected to the control means for enabling an operator to selectively control positioning of the stage, said input means enabling an operator to select coordinates for a home position of said image, an amount of movement of the stage relative to the camera, and a time delay after movement of the stage before the digitizing means will process the image.

5,331,436
ENCODER AND DECODER
Takashi Ida, Ichikawa, and Kenshi Dachiku, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 816,651, Jan. 3, 1992, Pat. No. 5,274,466. This application Sep. 29, 1993, Ser. No. 128,144
Claims priority, application Japan, Jan. 7, 1992, 3-278
Int. Cl.[5] H04N *7/12*
U.S. Cl. 358—426 **5 Claims**

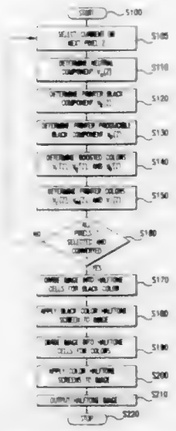


1. A decoder comprising:
first memory means for storing a code including such information on at least a to-be-transformed region and a transformation method that an error of a transformed image signal with reference to a to-be-coded image signal has a value less than a predetermined value, and a mean value of the pixels of a to-be-coded region, said transformed image signal being obtained by transforming a to-be-transformed image signal in accordance with a predetermined transformation method;
designation signal outputting means for transforming the code read out from the first memory means to a to-be-transformed region designation signal and a transformation method designation signal, and outputting the transformed signals;
second memory means for storing the to-be-transformed region image signal and outputting the to-be-transformed region image signal within the to-be-transformed region designated by the to-be-transformed region image designation signal;
transforming means for transforming the to-be-transformed region image signal by means of the transformation method designation signal, outputting the transformation image signal, having the transformation image signal stored in said second memory means as the to-be-transformed region image signal, and repeating transformation until the to-be-transformed image signal is converged; and
a circuit for correcting the transformation image signal by the mean value of the to-be-coded region and outputting the corrected transformation image signal as a decoded signal.

5,331,437

Patent Not Issued For This Number

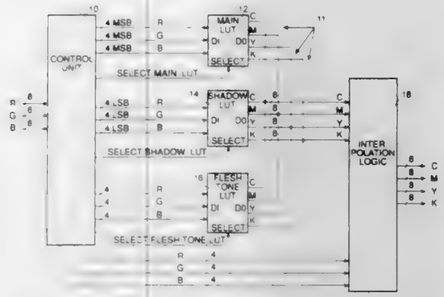
5,331,438
METHOD AND APPARATUS FOR IMPROVING FULL COLOR IMAGES USING PROCESS BLACK AND PRINTER BLACK
Steven J. Harrington, Holley, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 30, 1992, Ser. No. 983,495
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—500 **14 Claims**



1. A method for improving color output images printed on a selected printer, comprising:
(1) inputting an original full color image comprising original color components, the image comprising a plurality of pixels, each pixel having original color component values;
(2) selecting one of the plurality of pixels;
(3) determining original color component values for the original color components of the selected pixel;
(4) determining a neutral component value of the selected pixel;
(5) determining a printer producible black component value of the neutral value component producible by the selected printer;
(6) determining boosted original color component values based on the printer producible black component value;
(7) determining non-black output color component values based on the boosted non-black original color component values of the selected pixel;
(8) repeating steps 2–7 for remaining ones of the plurality of pixels to create a converted image; and
(9) outputting the converted image.

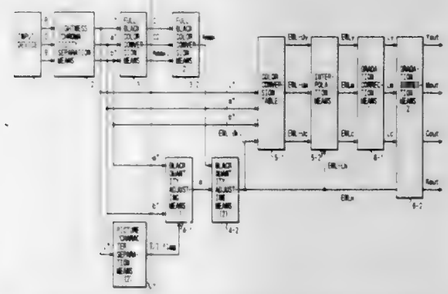
5,331,439
APPARATUS AND METHOD FOR COLOR TRANSFORMATION
Avraham Bachar, Petach Tikya, Israel, assignor to Scitex Corporation Ltd., Herzliya, Israel
Filed Feb. 17, 1993, Ser. No. 18,862
Claims priority, application Israel, Mar. 10, 1992, 101197
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—500 **7 Claims**

1. A color transformation method for operating a color transformation on an input color space, thereby to transform the color space into an output color space and comprising the steps of:
channeling input values included in the first and second portions of the input color space, respectively, to first and second LUTs respectively;
employing the first LUT to transform the first portion of the input color space into a corresponding first portion of the output color space; and
employing the second LUT to transform the second portion of the input color space into a corresponding second portion of the output color space.



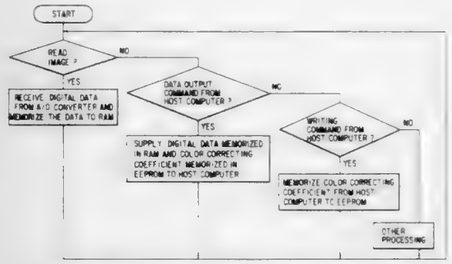
wherein the step of employing a first LUT comprises the step of employing a first interpolation algorithm to interpolate from the first LUT, thereby to compute an output value corresponding to an input value within the first portion of the color space which does not appear in the first LUT.

5,331,440
COLOR IMAGE PROCESSING METHOD AND APPARATUS CAPABLE OF PROPERLY DETERMINING BLACK QUANTITY
Shinji Kita, and Hitoshi Ogatsu, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Apr. 8, 1993, Ser. No. 44,171
Claims priority, application Japan, Apr. 10, 1992, 4-118420
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—529 **14 Claims**



1. A color image processing method for generating from input color separation signals of a first set of three colors representing an input image, output color signals of black and a second set of three colors, the method comprising the steps of:
converting the input color separation signals of the first set of three colors to uniform color signals of three variables on a uniform color space;
determining a first black quantity to be used for substantially converting the uniform color signals of three variables to color signals of black and two colors of the first set of three colors, the first black quantity being a maximum black quantity of the output black signal;
determining a second black quantity based on the first black quantity and a chroma signal obtained from the uniform color signals of three variables, the second black quantity being actually used in the output black signal; and
determining color quantities of the respective output color signals of the second set of three colors based on the uniform color signals of three variables, and the second black quantity.

5,331,441
COLOR IMAGE READING APPARATUS HAVING COLOR CORRECTION COEFFICIENTS
Yoshihide Akuzawa, Shizuoka, and Yukihiko Kambe, Mishima, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1992, Ser. No. 858,181
Claims priority, application Japan, Mar. 28, 1991, 3-089867
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—530 **2 Claims**



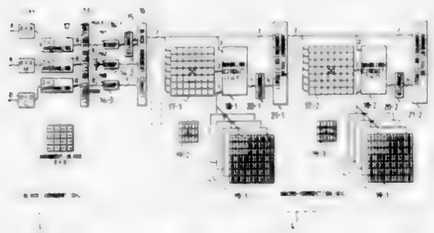
1. A color image data processing system comprising:
an image data processing apparatus for externally receiving a color image data and for processing the received color image data in a predetermined sequence;
a color image reading apparatus, coupled to said image data processing apparatus and for supplying the read-in color image to the image data processing apparatus, the color image reading apparatus including:
photoelectric converting means for receiving a color manuscript image and for converting the received color manuscript image into electrical image data; and
memory means for memorizing a plurality of color correction coefficients, which are used to enable said image data processing apparatus to perform proper color correction, and for selecting one of the plurality of color correction coefficients according to the signal from said image data processing apparatus;
receiving means for receiving an image signal of a reference image;
comparing means for comparing the received image signal of a reference image with an ideal value data of the reference image to determine a color deflection degree of said color image reading apparatus; and
means for calculating a new color correction coefficient according to the color deflection degree by using a multiple integral and for supplying the calculation results to said memory means of said color image reading apparatus, which memorizes the new color correction coefficient.

5,331,442
IDENTIFICATION OF GRAPHIC AND CHARACTER AREAS IN COLOR IMAGE PROCESSOR
Yoshiyuki Sorimachi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Mar. 6, 1991, Ser. No. 665,106
Claims priority, application Japan, Mar. 7, 1990, 2-55768
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—532 **3 Claims**

1. A color image processor comprising:
means for dividing image data of a document into a plurality of blocks each including a plurality of pixels;
block judgment means for producing a judgment value of a

subject block including subject pixels on the basis of a frequency of while pixels among the subject pixels and a density distribution of the subject pixels, the judgment value representing whether the subject block is a white block, a character block or a graphic block;

macro-correction means for performing a macro-correction on the judgment value of the subject block by pattern matching between judgment values of blocks surrounding the subject block, as produced by said block judgment means, and the judgment value of the subject block to produce a macro-corrected judgment value, said macro-



correction means judging whether a macro-corrected judgment value correction of the subject block between a character block and a graphic block should be performed or not on the basis of a distribution pattern of character blocks and graphic blocks in the blocks surrounding the subject block and a judgment whether there exists a graphic area larger than a predetermined size in the distribution pattern; and

image data processing means for selecting, in accordance with the macro-corrected judgment value, image data of a development color or colors required for reproducing the subject block.

5,331,443

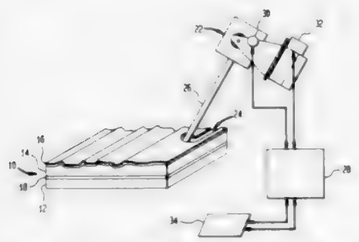
LASER ENGRAVED VERIFICATION HOLOGRAM AND ASSOCIATED METHODS

Joseph J. Stanisci, Locust Valley, N.Y., assignor to Crown Roll Leaf, Inc., Paterson, N.J.

Filed Jul. 31, 1992, Ser. No. 923,834

Int. Cl.[5] G02B *5/18*

U.S. Cl. 359—2 **36 Claims**



1. A method for increasing the authenticating effect of a hologram for affixation to a document comprises the steps of:

(a) forming said hologram, said hologram having an embossable layer, a reflective layer deposited over said embossable layer and a carrier layer; and

(b) selectively etching indicia into said hologram with a computer guided laser beam, said step of etching including removal of said reflective layer, said indicia being engraved through each of said embossable layer, said reflective layer and said carrier layer.

5,331,444

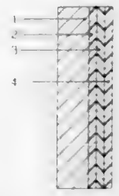
MOISTURE-INSENSITIVE HOLOGRAMS AND METHOD FOR MAKING THE SAME

Jonathan R. Biles, 1422 SE. Knight St., Portland, Oreg. 97202

Continuation of Ser. No. 26,216, Apr. 16, 1987, abandoned. This application May 20, 1991, Ser. No. 703,248

Int. Cl.[5] G03H *1/02, 1/04*

U.S. Cl. 359—3 **7 Claims**



1. A liquid water and water vapor insensitive reflection holographic article to be viewed through the front side of its transparent substrate, the article comprising:

a) a transparent substrate having front and back sides,

b) a layer of image developed, dry holographic recording material, whose image is capable of being destroyed by liquid water and water vapor, attached to the back side of the substrate,

c) a film or organic polymer liquid water and water vapor barrier attached to the back side of the recording material, and

d) an opaque layer attached to the back side of the organic polymer barrier.

5,331,445

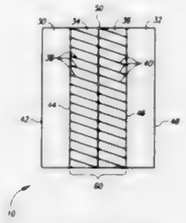
INCREASED BRAGG ANGLE SENSITIVITY HOLOGRAM SYSTEM AND METHOD

LeRoy D. Dickson, Morgan Hill, and Matthias C. Krantz, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1992, Ser. No. 931,635

Int. Cl.[5] G02B *5/32;* **G03H** *1/28;* **G11B** *7/12*

U.S. Cl. 359—15 **36 Claims**



1. A hologram system comprising:

a first volume hologram having a plurality of Bragg planes, each Bragg plane set at an angle Φ_1 relative to an exterior planar surface of the first volume hologram, and each Bragg plane spaced a distance L_1 apart;

a second volume hologram having a plurality of Bragg planes, each Bragg plane set at an angle Φ_2 relative to an exterior planar surface of the second volume hologram, and each Bragg plane spaced a distance L_2 apart, Φ_2 being equal to Φ_1 and L_2 being equal to L_1, the second volume hologram oriented with its Bragg planes parallel with the Bragg planes of the first volume holograms; and

a means for optically coupling the first and second volume holograms.

5,331,446

LIQUID CRYSTAL OPTICAL ELEMENT AND A LASER PROJECTION APPARATUS USING POLYMER DISPERSED LIQUID CRYSTAL

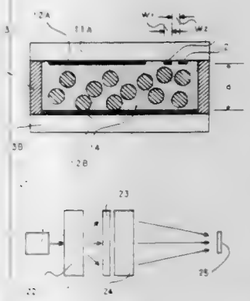
Yoshinori Hirai; Hiroshi Kumai; Takehiko Nishiyama; Satoshi Niiyama, and Tsuneo Wakabayashi, all of Yokohama, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

Filed Jun. 10, 1993, Ser. No. 74,407

Claims priority, application Japan, Jun. 10, 1992, 4-176184; Jun. 10, 1992, 4-176185

Int. Cl.[5] G02F *1/13, 1/37*

U.S. Cl. 359—51 **23 Claims**



1. A liquid crystal optical element of a transparent and scattering type for controlling a laser beam having approximately 1 μm of wavelength interposing a liquid crystal and solidified matrix composite in which nematic liquid crystal is dispersed and held in a solidified matrix between substrates having electrodes at least one of which is transparent, wherein

the refractive index anisotropy Δn of the nematic liquid crystal is 0.18 or higher;

the viscosity η(cSt) thereof is equal to or less than 60;

a mean particle diameter R(μm) of the nematic liquid crystal dispersed and held in the solidified matrix and a gap d(μm) between the electrodes satisfy relationships of

$$0.5 < \Delta n \cdot R < 1.3,$$

$$3.5 < \Delta n \cdot d < 8.0; \text{ and}$$

the refractive index anisotropy Δn of the liquid crystal, the mean particle diameter R(82 m) of the nematic liquid crystal dispersed and held in the solidified matrix and a number D_1 of liquid crystal per optical unit volume satisfy a relationship of

$$0.8(R \cdot \Delta n)^{-3} < D_1 < 1.4(R \cdot \Delta n)^{-3}.$$

5,331,447

TFT ACTIVE MATRIX LIQUID CRYSTAL DISPLAY DEVICES WITH PLURAL TFTS IN PARALLEL PER PIXEL

Sakae Someya, Sanwa; Ryuuzoh Nashimoto; Hirofumi Suzuki, both of Mobara; Katsuhiko Yarita, Ichihara; Shinji Matsumoto, Mobara; Akira Sasano, Hirai Hinode; Hideaki Taniguchi, Mobara, and Ryouji Oritsuki, Shirako, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 205,185, Jun. 10, 1988, Pat. No. 5,132,820. This application Jul. 8, 1992, Ser. No. 910,455

Claims priority, application Japan, Jun. 10, 1987, 62-144913; Sep. 25, 1987, 62-242363; Dec. 9, 1987, 62-309601

Int. Cl.[5] G02F *1/1343*

U.S. Cl. 359—59 **19 Claims**

1. A display device comprising:

a first substrate;

a plurality of first signal lines extending in a first direction, and provided on said first substrate;

a plurality of second signal lines extending in a second direction, and provided on said first substrate; and

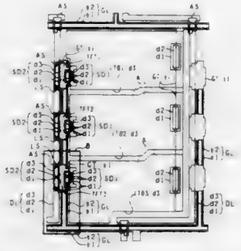
a plurality of picture cells provided on said first substrate, each of said picture cells comprising:

switching means, for turning each of said picture cells ON and OFF, electrically connected to one of said plurality of first signal lines and one of said plurality of second signal lines and,

wherein each of said picture cells is provided in an area surrounded by said one of said plurality of first signal lines and another one of said first signal lines adjacent to said one of said plurality of first signal lines, and by said one of said plurality of second signal lines and another one of said second signal lines adjacent to said one of said plurality of second signal lines,

wherein said switching means comprises first and second thin film transistors, said first and second thin film transistors being provided along said one of said plurality of first signal lines, wherein said one of said plurality of second signal lines is branched in the first direction so as to form a gate portion of said first and second thin film transistors, and said one of said plurality of second signal lines and said branched portion of said one of said plurality of second signal lines forms a T-like configuration, and

wherein said first and second thin film transistors are



provided in parallel so as to provide channel directions of said first and second thin film transistors in said second direction.

10. A display device comprising:

a first substrate;

a plurality of signal lines extending in a first direction, and provided on said first substrate;

a plurality of scanning signal lines extending in a second direction, and provided on said first substrate; and

a plurality of picture cells provided on said first substrate, each of said picture cells comprising:

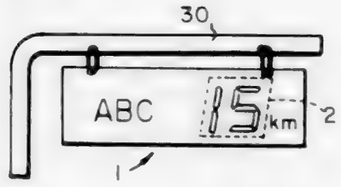
switching means for transferring picture signals, electrically connected to one of said plurality of signal lines an one of said plurality of scanning signal lines; and

a pixel electrode electrically connected to said switching means,

wherein each of said picture cells is provided in an area surrounded by said one of said plurality of signal lines and another signal line adjacent to said one of said plurality of signal lines, and by said one of said plurality of scanning signal lines and another scanning signal line adjacent to said one of said plurality of scanning signal lines, and

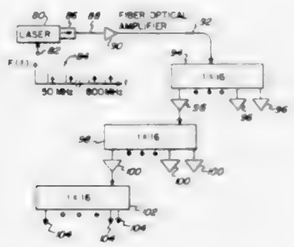
wherein said switching means comprises first and second thin film transistors, said first and second thin film transistors being provided along said one of said plurality of signal lines, and a gate electrode portion of said first and second thin film transistors being protrusively extended from said one of said plurality of scanning signal lines.

5,331,448
LIQUID CRYSTAL DISPLAY DEVICE AND PREPARATION AND USE THEREOF
Tisato Kajiyama, Fukuoka; Junichi Ono, Osaka; Tohru Kashiwagi, Osaka; Kouji Hara, Osaka, and Kensaku Takata, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
PCT No. PCT/JP92/00111, § 371 Date Oct. 5, 1992, § 102(e) Date Oct. 5, 1992, PCT Pub. No. WO92/14185, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 5, 1992, Ser. No. 934,747
Claims priority, application Japan, Feb. 5, 1991, 3-014537; Feb. 5, 1991, 3-014538; Mar. 14, 1991, 3-014883[U]; Aug. 8, 1991, 3-199080
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—103 14 Claims



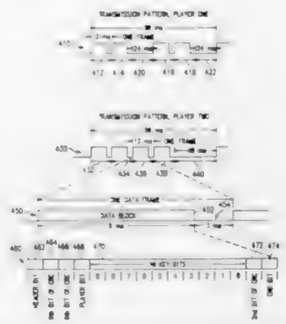
1. A liquid crystal device comprising:
a pair of electrodes at least one of which is transparent; and
a mixture film disposed between said electrodes, said mixture film comprising:
a side chain type liquid crystalline polymer;
at least two low molecular weight liquid crystals; and
an electrolyte which has a weight of 0.005% to 1% of a total weight of said mixture film.

5,331,449
OPTICAL FIBER TREE AND BRANCH NETWORK FOR AM SIGNAL DISTRIBUTION
David R. Huber, Warrington, Pa.; Douglas W. Hall, Corning, and Edward F. Murphy, Painted Post, both of N.Y., assignors to General Instrument Corporation, Hatboro, Pa. and Corning Incorporated, Corning, N.Y.
Division of Ser. No. 454,772, Dec. 22, 1989, Pat. No. 5,210,631.
This application Mar. 15, 1993, Ser. No. 31,633
Int. Cl.[5] H04J *14/02*; H01S *3/00*
U.S. Cl. 359—125 9 Claims



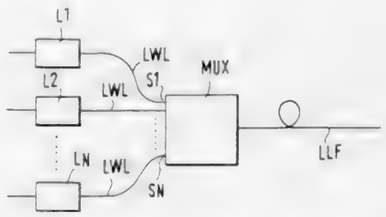
1. An optical fiber tree and branch network for distributing AM subcarrier multiplexed information comprising:
a first optical fiber splitter;
an input on said splitter for receiving a modulated light signal carrying multiplexed AM subcarriers;
a plurality of outputs on said splitter for distributing said modulated light signal; and
means for amplifying the modulated light signal with an optical amplifier.

5,331,450
INFRARED TRANSMITTER AND RECEIVER AND METHOD
Jerry J. Heep, Weatherford, and Steven S. Erickson, Fort Worth, both of Tex., assignors to AST Research, Inc., Irvine, Calif.
Filed Jan. 6, 1992, Ser. No. 818,633
Int. Cl.[5] H04J *14/08, 3/00*; H04Q *11/00*
U.S. Cl. 359—135 20 Claims



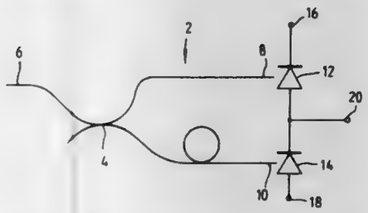
1. An apparatus for transmitting control signals to a receiving device for operating a video system, comprising:
a control signal generator for generating a control signal having a data pattern containing multiple identical data blocks interspersed with quiescent periods, said multiple data blocks being arranged in a pattern unique for the control signal and each of the data blocks being of a predetermined length for receipt by the receiver, with each control signal further including validation information to enable signal validation by the receiver; and,
a transmitter coupled to the control signal generator for transmitting the signal, wherein the unique pattern allows the receiving device to receive at least one data block from the transmitter without interference from signals from at least one other transmitter.

5,331,451
OPTICAL TIME-DIVISION MULTIPLEXING
Albrecht Mozer, Burghausen, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands
Filed Jul. 6, 1992, Ser. No. 907,922
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1991, 4122439
Int. Cl.[5] H04J *14/02, 14/08*
U.S. Cl. 359—139 18 Claims



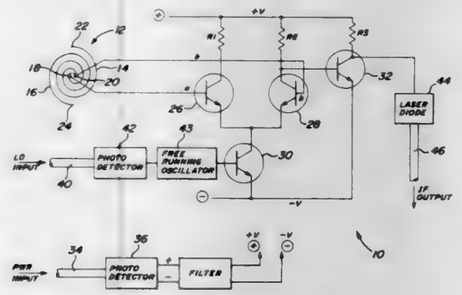
2. An optical time-division multiplexer comprising:
at least one multiplex element having inputs for receiving at least two optical signals, the signals having carriers of different wavelengths, the inputs being connected to an optical signal output via a junction, the element further having switchable filter means for switching the signals applied to the inputs to the signal output in alternation, wherein the multiplex element is controlled so that a switching time interval is shorter than a pulse duration of the input signals.

5,331,452
OPTICAL DETECTOR
Peter P. Smyth, and Brian R. White, both of Woodbridge, England, assignors to British Telecommunications public limited company, London, England
PCT No. PCT/GB90/01416, § 371 Date Apr. 20, 1992, § 102(e) Date Apr. 20, 1992, PCT Pub. No. WO91/04617, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 13, 1990, Ser. No. 848,983
Claims priority, application United Kingdom, Sep. 13, 1989, 8920733.6
Int. Cl.[5] H04B *10/06*
U.S. Cl. 359—189 16 Claims



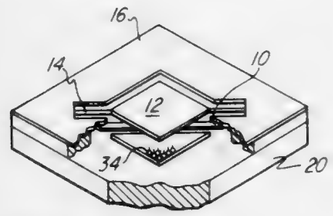
1. An optical detector comprising:
two photodetectors connected in series non-opposed,
an optical splitter for splitting a received optical signal into two portions such that each signal portion impinges on an associated one of the photodetectors, and
a delay means located between the optical splitter and the photodetectors which provides that one signal portion is delayed relative to the other at the photodetectors.

5,331,453
MILLIMETER WAVE FIBER-OPTICALLY LINKED ANTENNA RECEIVER DEVICE
Stephen E. Lipsky, Rydal, Pa., assignor to AEL Defense Corp., Lansdale, Pa.
Filed Jun. 15, 1992, Ser. No. 898,256
Int. Cl.[5] H04B *10/06*
U.S. Cl. 359—191 40 Claims



1. An antenna/receiver device, comprising
(a) a slow-wave antenna for receiving an RF signal, said antenna having a pair of terminals for providing antenna output signals representative of said RF signal, said antenna signals at said terminals being 180° out of current phase with respect to each other,
(b) differential input circuit means for exciting said antenna terminals with odd mode current phase shift between said antenna output signals and for amplifying said antenna output signals,
(c) means for optically coupling a local oscillator-modulated lightwave signal to said antenna/receiver device and converting said lightwave signal to an electronic local oscillator signal,
(d) means for mixing said antenna output signals with said local oscillator signal for generating an intermediate frequency signal,
(e) means for converting said intermediate frequency signal to an intermediate frequency-modulated lightwave signal, and
(f) means for optically coupling said intermediate frequency-modulated lightwave signal out of said antenna/receiver device.

5,331,454
LOW RESET VOLTAGE PROCESS FOR DMD
Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 612,946, Nov. 13, 1990, abandoned.
This application Jan. 16, 1992, Ser. No. 823,580
Int. Cl.[5] G02B *26/02*
U.S. Cl. 359—224 1 Claim



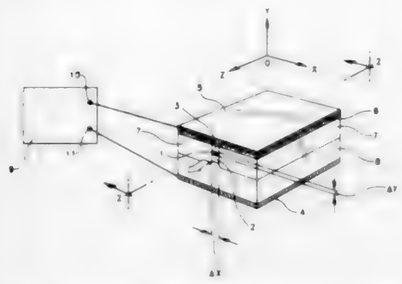
1. An electronic device comprising:
a) at least one address electrode in a substrate;
b) at least one landing electrode in said substrate adjacent said address electrode;
c) a support layer formed upon said substrate such that at least one gap exists in said layer exposing said address electrode and said landing electrode;
d) at least one hinge formed on said support layer such that said hinge is suspended over said gap;
e) at least one deflection element formed upon said at least one hinge, wherein said deflection element is positioned to be suspended over said gap; and
f) an oriented monolayer of perfluordecanoic acid (PFDA) formed upon said landing electrode so that when said address electrode is activated and said deflection element twists about said hinge and touches said landing electrode, said landing electrode and said deflection element do not stick together.

5,331,455
ELECTRICAL PULSE OPERATED LASER SAMPLING LIGHT AMPLIFIER
Sheldon S. L. Chang, Port Jefferson, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.
Filed Oct. 31, 1991, Ser. No. 785,551
Int. Cl.[5] H01L *31/12, 15/00*; H01S *3/20*
U.S. Cl. 359—344 8 Claims

1. A pulsed laser sampling light amplifier, which comprises:
a semiconductor laser light amplifier having an input end and an output end and means defining a resonant cavity situated between and coupled to the input end and the output end; and
means for generating electric current pulses, the current pulse generating means being coupled to the laser light

amplifier to apply electric current pulses to the light amplifier to inject minority carriers into the resonant cavity thereof;

the electric current pulses generated by the pulse generating means being of sufficient magnitude and duration to raise the number of the minority carriers above a critical level temporarily after the application of each of the current



pulses, the current pulses being sufficiently separated in time for the minority carriers to decay below the critical level after the termination of each of the current pulses, said critical level of minority carriers being defined as the minimum number of minority carriers above which an intensity of light in the resonant cavity would rise exponentially with time even without further light input.

5,331,456

RADIATION MICROSCOPE

Yoshiaki Horikawa, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,763
Claims priority, application Japan, Dec. 9, 1991, 3-324589
Int. Cl.[5] H01J *3/14*
U.S. Cl. 359—350 **3 Claims**



1. A microscope comprising:

a radiation source for emitting radiation ranging in wavelength at least from 400 to 600 Å;

a beam splitter;

an objective; and

a detector for detecting said radiation;

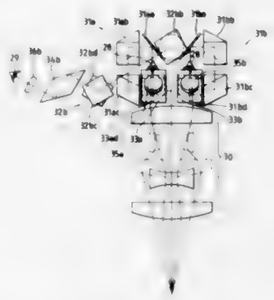
wherein said beam splitter is composed of a film which reflects a part of said radiation emitted from said radiation source and transmits a remaining part of said radiation.

5,331,457

STEREOMICROSCOPE WHEREIN THE DISTANCE BETWEEN A PAIR OF BEAMS REMAINS UNCHANGED WHEN THE MAGNIFICATION IS CHANGED

Toyoharu Hanzawa, Fuchu; Kimihiko Nishioka, Hachiouji; Yoshihiro Kawano, Hachiouji, and Masaaki Yamagishi, Hachiouji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 729,346, Jul. 12, 1991, Pat. No. 5,227,914. This application Mar. 12, 1993, Ser. No. 30,552
Claims priority, application Japan, Jul. 18, 1990, 2-190069; Oct. 19, 1990, 2-280905
Int. Cl.[5] G02B *21/22*
U.S. Cl. 359—377 **7 Claims**



1. A stereomicroscope comprising:

an objective lens having a single optical axis;

a variable magnification optical system having an optical axis common with said single optical axis; and

an eyepiece disposed on an exit side of said variable magnification optical system,

wherein a pair of beams of light emanating from an object at a predetermined stereo angle passes through portions deviating from said optical axis of each of said objective lens and said variable magnification optical system, and is incident on said eyepiece, maintaining a predetermined distance between said pair of beams, and

optical path correcting means disposed between said object and said eyepiece, for moving in association with a change of magnification of said variable magnification optical system so that so that when said pair of beams is incident on said eyepiece, a distance between said pair of beams remains unchanged irrespective of the change of magnification.

5,331,458

COMPACT SPECIMEN INSPECTION STATION

Paul E. Bacchi, and Paul S. Filipski, both of Novato, Calif., assignors to Kensington Laboratories, Inc., Richmond, Calif.

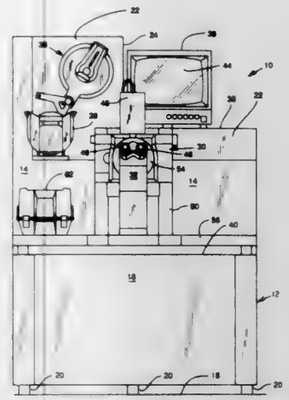
Filed Sep. 11, 1989, Ser. No. 405,343
Int. Cl.[5] G02B *21/26*
U.S. Cl. 359—393 **20 Claims**

1. A specimen inspection station, comprising:

a specimen storage location for storing a specimen in a generally vertical orientation;

a stage for supporting the specimen in a generally vertical orientation;

an automated specimen transporter having a specimen paddle rotatable in a vertical plane for engaging and transporting the specimen from the specimen storage location to the stage; and



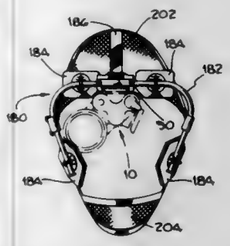
an optical means for viewing a selected region of the generally vertically oriented specimen supported on the stage.

5,331,459

NIGHT VISION SYSTEM AND MOUNTING ASSEMBLY

Amotz Dor, Scottsdale, Ariz., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 10, 1991, Ser. No. 805,187
Int. Cl.[5] G02B *23/12*
U.S. Cl. 359—409 **43 Claims**



8. A night vision system, comprising:

an optical portion for receiving and intensifying an image;

a means for mounting said optical portion to a helmet in either of two fixed operational positions corresponding to a desired one of an operator's eyes and being rapidly switchable between said operational positions;

further comprising a control housing affixed to said optical portion and having an internal battery for powering said optical portion;

wherein said mounting means comprises:

a first dovetail mounting plate affixed to a first surface of said control housing, and a second dovetail mounting plate affixed to a second surface of said control housing; and

a carriage configured to receive as elected one of said dovetail plates and means for securing said selected dovetail plate within said carriage.

5,331,460

OPTICAL ROTATION DEVICE

E. C. George Sudarshan, 5506-B Montview St., Austin, Tex. 78756, and Randall G. Hulet, 1917 Dunstan Rd., Houston, Tex. 77005

Continuation of Ser. No. 772,105, Oct. 7, 1991, abandoned. This application May 3, 1993, Ser. No. 65,785
Int. Cl.[5] G02B *3/06, 27/22*
U.S. Cl. 359—434 **10 Claims**



1. An afocal image rotation device for translating a three dimensional image of an object along, and selectively rotating the image about, an optical axis comprising:

means for inverting the image about a first axis normal to the optical axis;

means for inverting the image about a second axis normal to the optical axis;

means for optically coupling the first inverting means and the second inverting means in series along the optical axis; and

means for selectively rotating the first and second inverting means relative to one another about the optical axis,

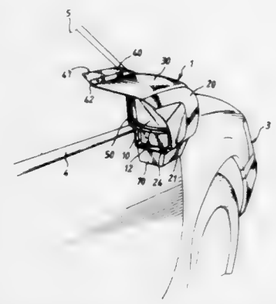
wherein all rays exiting the device bear precisely the same angular and spatial relationship to one another as they did as they entered the device.

5,331,461

RAIN HOOD ASSEMBLY FOR EXTERIORLY MOUNTED REARVIEW MIRROR

Tsong C. Hwang, 54-5, Shin Sheng South Road, Sec. 1, Taipei, Taiwan

Filed Jul. 8, 1992, Ser. No. 910,414
Int. Cl.[5] B60R *1/06;* **G02B** *5/08, 7/18*
U.S. Cl. 359—507 **14 Claims**



1. A rain hood assembly for an exteriorly mounted rearview mirror of the type having a housing adjacent to a side window wherein said assembly is adjustably mounted to said mirror housing, said assembly comprising:

a body having a substantially rectangular cross-sectional shape with rounded corners and comprising a top surface provided with a pair of transverse slots and a longitudinal slot, a bottom surface provided with a pair of longitudinal slots and a transparent side wall;

means for adjustably mounting said body to said mirror housing in a manner that said mirror housing is sandwiched between said top surface and said bottom surface of said body;

a strip of rubber for contacting said window along the edge of the rubber; and

means for adjustably securing said rubber strip to said top

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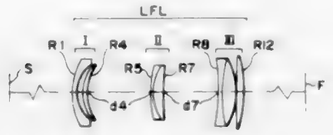
surface of said body, whereby the mirror and the window adjacent to the mirror and below the hood assembly are protected from rain.

5,331,462

ZOOM LENS HAVING A LONG BACK FOCAL LENGTH

Koutaro Yano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1991, Ser. No. 788,285
Claims priority, application Japan, Nov. 8, 1990, 2-303011
Int. Cl.[5] G02B *15/14, 13/18, 9/12*
U.S. Cl. 359—689 **16 Claims**



1. In a retro-focus type lens system divided into three lens units with respect to the widest air spacing and the next widest air spacing between adjacent lens units, the improvement comprising:

a first lens unit disposed on a long conjugate side and having negative refractive power, and including a negative lens and a lens provided with an aspherical surface;

a second lens unit disposed subsequently to said first lens unit and provided with a positive lens block; and

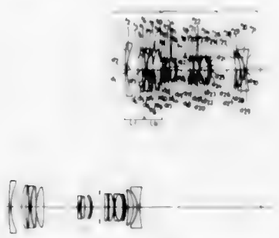
a third lens unit disposed subsequently to said second lens unit and having a positive refractive power, and including a negative lens and a positive lens, wherein both the interval between the first and second lens units and the interval between the second and third lens units are larger than the interval between a foremost lens surface and a rearmost lens surface within each of the three lens units.

5,331,463

WIDE ANGLE ZOOM LENS SYSTEM

Takanori Yamanashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,322
Claims priority, application Japan, Mar. 4, 1991, 3-061077
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—689 **15 Claims**



1. A wide angle zoom lens system comprising, in order from the object side: a first lens unit having positive refractive power, a second lens unit having positive refractive power, and a third lens unit having negative refractive power wherein focal length is varied by varying airspaces reserved between said lens units, and wherein said first lens unit consists of a front subunit and a rear subunit, and said first lens unit satisfies the following condition (1):

$$|\phi f/\phi_1| < 6.0 \quad (1)$$

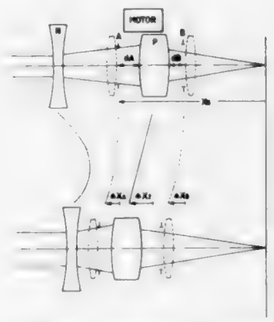
wherein the reference symbol ϕ_1 represent refractive power of said first lens unit and the reference symbol ϕf designates refractive power of said front subunit.

5,331,464

ZOOM LENS SYSTEM

Takayuki Ito, and Sachio Hasushita, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1992, Ser. No. 861,520
Claims priority, application Japan, Apr. 1, 1991, 3-144300
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—691 **15 Claims**



1. A zoom lens system comprising, in order from the object side, a negative first lens group, a diaphragm stop, a positive second lens group and a blocking means capable of moving for blocking deleterious rays of light, said system performing zooming by moving said first and second lens groups, with said diaphragm stop moving independently of said second lens group during zooming, said system satisfying the following conditions:

$$2.5 < Xs/fs < 3.0 \quad (1)$$

$$0 < \Delta XA/fs < \Delta X2/fs \quad (2)$$

$$0 \leq \Delta XB/fs < \Delta X2/fs \quad (3)$$

where Xs is the distance from said diaphragm stop to the image plane at the wide-angle end; fs is the focal length of the overall system at the wide-angle end; ΔXA is the range of movement of the diaphragm stop; ΔXB is the range of movement of the blocking means; and $\Delta X2$ is the range of movement of the second lens group.

5,331,465

MACRO LENS

Hitoshi Miyano, Saitame, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitame, Japan

Filed Nov. 27, 1992, Ser. No. 982,658
Claims priority, application Japan, Nov. 26, 1991, 3-310588
Int. Cl.[5] G02B *15/22*
U.S. Cl. 359—693 **6 Claims**

1. A macro lens comprising, from a subject end to an image end, a first lens group having a positive power, an aperture stop, a second lens group having a positive power and a third lens group having a positive power, said first lens group, said aperture stop and said second lens group remaining fixed with respect to one another and movable as one unit relative to said third lens group, which is stationary with respect to an image plane of the macro lens, along an optical axis of said macro lens for focusing, said macro lens satisfying the following conditions:

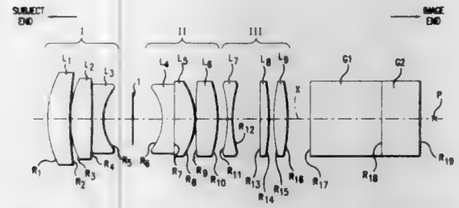
$$F_{12} < 0.5 \times f/M$$

$$Ff_a < d < [fd_d]Ff_b < o$$

where f is an overall focal length of said macro lens;

M is a magnification for a closest focusing distance;

F_{12} is a composed focal length of said first and second lens groups;



Ff_a is a composed focal length of said second and third lens groups for an infinite focusing distance;

Ff_b is a composed focal length of said second and third lens groups for the closest focusing distance; and

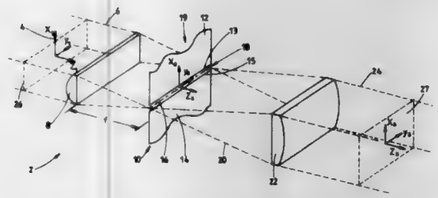
d is the distance between a foremost lens element of the second lens group and the aperture stop.

5,331,466

METHOD AND APPARATUS FOR HOMOGENIZING A COLLIMATED LIGHT BEAM

Paul P. Van Saarloos, Innaloo, Australia, assignor to Lions Eye Institute of Western Australia Inc., Nedlands, Australia

Filed Apr. 23, 1991, Ser. No. 690,104
Int. Cl.[5] G02B *3/00*
U.S. Cl. 359—723 **33 Claims**



1. A method for homogenising a collimated input light beam having a non-uniform cross sectional intensity distribution, comprising the steps of:

generating the input light beam via an excimer laser;

focusing the beam into a line; and

filtering the beam by means of a spatial filter disposed adjacent the line so as to produce an output beam, the spatial filter comprising a longitudinal gap defined between opposing edges of generally coplanar plate members constructed of a material with a high resistance to excimer laser oblation;

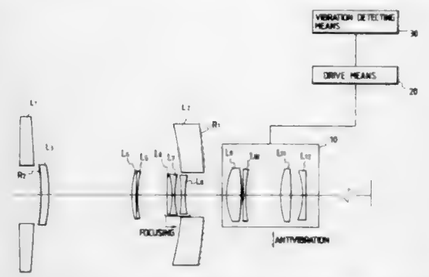
whereby the output beam is homogenised such that the output beam has a relatively uniform cross sectional intensity distribution.

5,331,467

REFLEX LENS SYSTEM HAVING THE ANTIVIBRATION FUNCTION

Susumu Sato, Chiba, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 837,954
Claims priority, application Japan, Feb. 25, 1991, 3-29810
Int. Cl.[5] G02B *17/00, 27/64*
U.S. Cl. 359—731 **9 Claims**



1. A reflex lens system including in order of light incident;

a first lens group having a positive forward unit and a negative rearward unit and constituting a substantially afocal system as a whole;

a second lens group of positive refractive power;

said forward unit in said first lens group having, in order of light incidence, a concave reflecting surface and a convex reflecting surface; and

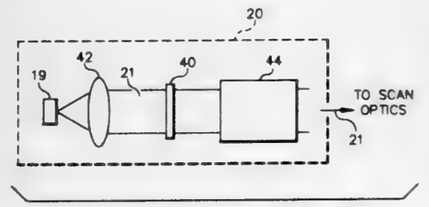
means for displacing at least a part of said second lens group across the optical axis to effect antivibration of an image.

5,331,468

INTENSITY REDISTRIBUTION FOR EXPOSURE CORRECTION IN AN OVERFILLED SYMMETRICAL LASER PRINTER

Mark L. Noethen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1992, Ser. No. 982,322
Int. Cl.[5] G02B *9/00, 26/08*
U.S. Cl. 359—738 **7 Claims**



1. A beam shaper, comprising:

a laser source for producing a beam of light;

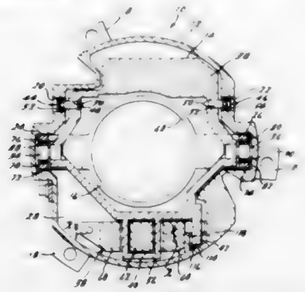
a collimating lens for receiving said beam of light from said laser source and producing a collimated beam of light;

an apodizer for receiving said collimated beam of light and flattening a Gaussian intensity of said collimated beam in one dimension only; and

shaping optics for receiving said beam from said apodizer and producing a beam that is large in a line scan direction.

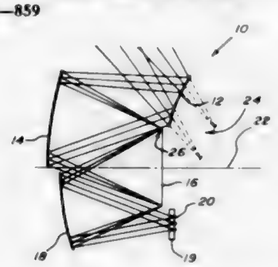
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5,331,469
PRECISION LINEAR ACTUATOR
Harold E. Andrews, Simi Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Mar. 2, 1987, Ser. No. 20,988
Int. Cl.[5] H01R *39/00;* **G02B** *17/00*
U.S. Cl. 359—824 **16 Claims**



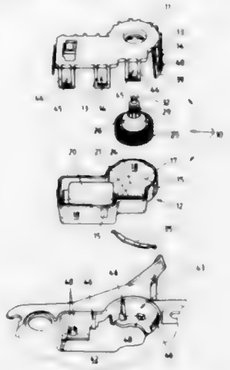
1. A precision linear actuator for controllably positioning a lens element of an imaging system mounted on a vehicle, comprising:
a frame attachable to said vehicle,
a lever,
pivot means for coupling said lever to said frame, thereby enabling said lever to rotate about an axis relative to said frame,
actuator means coupled to said frame and said lever for controlling the position of said lever relative to said frame,
a lens holder for positioning said lens element defining a pair of separated guide portions,
bearing means coupled to said frame and said lens holder and acting on said guide portions for enabling said lens holder to move linearly with respect to said frame, and
hanger means for coupling said lens holder to said lever such that rotation of said lever causes said lens holder to move linearly with respect to said frame.

5,331,470
FAST FOLDED WIDE ANGLE LARGE REFLECTIVE UNOBSCURED SYSTEM
Lacy G. Cook, El Segundo, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 11, 1992, Ser. No. 989,279
Int. Cl.[5] G02B *17/06, 23/06*
U.S. Cl. 359—859 **19 Claims**



1. A wide angle large reflective unobscured system comprising:
a primary reflective element adapted to receive energy;
a secondary reflective element for receiving energy reflected from said primary reflective element, said primary and secondary reflective elements cooperating to reimage a virtual entrance pupil to a real aperture stop;
a tertiary reflective element; and
reflective means for reflecting energy from said secondary reflective element to said tertiary element.

5,331,471
DISCRETE MIRROR DRIVE ASSEMBLY
Robert W. Gilbert, Lonsdale, Australia, assignor to Britax Rainsfords Pty Ltd, Lonsdale, Australia
Filed Oct. 2, 1992, Ser. No. 955,648
Claims priority, application Australia, Oct. 4, 1991, PK 8719
Int. Cl.[5] G02B *7/182;* **B60R** *1/06*
U.S. Cl. 359—874 **16 Claims**

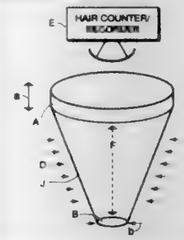


1. A discrete drive assembly for a rear view mirror having a projecting jacking screw which is pivotally coupled to the rear surface of a mirror to effect angular movement of the mirror and an electric motor for effecting variation in the extent of protrusion of the jacking screw so as to adjust the orientation of the mirror, the discrete drive assembly comprising:
a housing formed in two parts comprising a base and a cover;
a first bearing surface formed on the inner surface of the base;
a second bearing surface formed on the inner surface of the cover which aligns with the first bearing surface when the base and cover are assembled together;
a jacking nut positioned between the first and second bearing surfaces which is rotated by the electric motor for operating the jacking screw, the relative dimensions of the base, cover and jacking nut being such that there is clearance between the base and cover to permit the first and second bearing surfaces to abut against the jacking nut; and
resilient coupling means holding the base and cover together with a force allowing the jacking nut to rotate relative to the first and second bearing surfaces, said resilient coupling means comprising a leaf spring having each end coupled to the base with an intermediate portion bearing against the cover so as to urge the two parts of the housing together.

5,331,472
METHOD AND APPARATUS FOR MEASURING HAIR DENSITY
William R. Rassman, 5699 Kanan Rd., #253, Agoura, Calif. 91301
Filed Sep. 14, 1992, Ser. No. 944,405
Int. Cl.[5] G02B *27/00*
U.S. Cl. 359—894 **17 Claims**

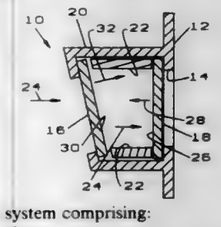
1. A method for measuring hair density, the method comprising the steps of:
identifying an area of skin from a part of the body for which a hair count is desired;
cutting the hair in the area so identified, the hair being cut such that it can be viewed in its entirety at its exit from the skin by a viewing instrument;

viewing the cut area of the skin through an aperture in the viewing instrument; and



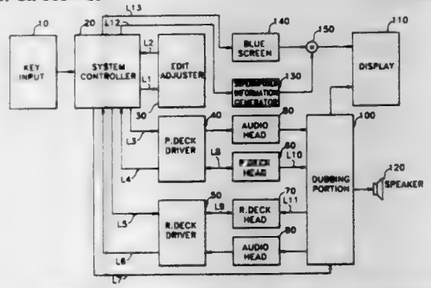
counting the hairs in the aperture to determine the hair count in the aperture.

5,331,473
CONTROLLED REFLECTION VIEWING SYSTEM
T. Douglas Petersen, 17831 Lassen St., #307, Northridge, Calif. 91325
Filed Jul. 19, 1993, Ser. No. 92,906
Int. Cl.[5] G02B *5/00*
U.S. Cl. 359—894 **9 Claims**



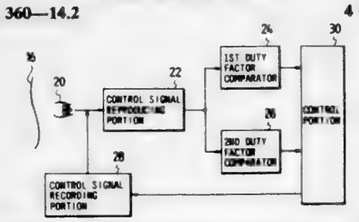
1. A viewing system comprising:
a support member,
a frame mounted on said support member,
a pair of lenses mounted within said frame in optical alignment with each other and with one of said lenses mounted at an angle of at least 05° with respect to the other.

5,331,474
EDITING APPARATUS AND METHOD IN VIDEO TAPE DUPLICATING SYSTEM
Hyeong-ju Lee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Jan. 9, 1992, Ser. No. 818,568
Claims priority, application Rep. of Korea, Mar. 29, 1991, 91-4989
Int. Cl.[5] G11B *27/02, 5/86;* **H04N** *9/79*
U.S. Cl. 360—13 **20 Claims**



1. An editing apparatus used for an audio/video information duplicating system comprising:
key input means for receiving user-designated commands, and for generating a command signal;
playback system means for driving a playback deck, to generate a playback signal from a first recording medium;
recording system means for driving a recording deck, and for recording said playback signal on a second recording medium, said recording system means being formed in a unit together with said playback system means;
edit adjuster means for controlling an editing operation that allows said playback signal within a preset editing section to be recorded onto said recording deck in accordance with said command signal of said key input means, said edit adjuster means;
generating a first toggled signal in response to a start mark information signal,
generating a second toggled signal in response to an end mark information signal,
comparing a record mode signal indicating an editing mode of said editing apparatus and said first toggled signal to generate a first intermediate signal,
comparing said record mode signal and an index information signal indicating setting of said preset editing section to be reproduced to generate a second intermediate signal,
comparing said first and second intermediate signals to generate a third intermediate signal,
comparing said record mode signal and said second toggled signal to generate a fourth intermediate signal,
enabling transfer of said playback signal from said playback system means to said recording system means by comparing said third and fourth intermediate signals to generate a first mode control signal controlling operation of said playback system means and said recording system means,
enabling said playback system means to fast forward said first recording medium to a starting point of said preset editing section;
dubbing means for transferring said playback signal from said playback system means onto said recording system means;
display means for displaying said playback signal from said playback system means; and
system controller means for marking said starting point and an ending point of said preset editing section onto said first recording medium of said playback system means in response to said command signal, and controlling said edit adjuster mean's operation in accordance with a detection of the marking points of said preset editing section in response to said command signal;
said playback system means fast forwarding said first recording medium to said starting point, said first recording medium rewinding a given distance after said first recording medium reaches said starting point, said recording system means recording said preset editing section onto said second recording medium until said ending pint is reached, and said playback system means and said recording system means stopping, during said recording of said playback signal from said first recording medium onto said second recording medium.

5,331,475
ELECTRONIC SPLICING OPERATION CONTROL DEVICE FOR A FOUR HEAD TYPE MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS
Yoriaki Matsunaga, Chigasaki, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Continuation of Ser. No. 572,640, Aug. 27, 1990, abandoned. This application Oct. 22, 1992, Ser. No. 965,034
Claims priority, application Japan, Aug. 31, 1989, 1-225214
Int. Cl.[5] G11B *27/02, 5/09*
U.S. Cl. 360—14.2 **4 Claims**



1. An electronic-splicing-operation control device in a four-

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head type magnetic recording and/or reproducing apparatus, said four-head type magnetic recording and/or reproducing apparatus including:

a) two mutually orthogonal pairs of video heads for recording and/or reproducing video signals on videotape, each of said pairs of video heads having a first video head and a second video head opposite to said first video head;

b) a control head for recording and/or reproducing control signals on the videotape; and

c) control signal reproducing means connected to said control head for reproducing recorded control signals from the videotape,

wherein said electronic-splicing-operation control device is for controlling an electronic splicing operation of said four-head type magnetic recording and/or reproducing apparatus in such a manner as to prevent one of said first and second video heads from reproducing video signals recorded by the other of said first and second video heads, such that video signals are recorded and reproduced by an identical video head, said electronic-splicing-operation control device comprising:

(i) control signal detecting means, connected to receive a control signal reproduced by said control signal reproducing means, for comparing the duty factor of the reproduced control signal with predetermined first to fourth reference values to detect whether the received control signal is a normal code signal having a duty factor the value of which is one of first and second values or is an indication signal corresponding to an electronic splicing operation and having a duty factor the value of which is one of third and fourth values, and for outputting a signal representing information on the results of the detection, the first value being predetermined to be less than the second value, the third value being predetermined to be less than the fourth value and to be nearly equal to the second value, the first reference value being predetermined to be less than the first value, the second reference value being predetermined to be less than the first value and greater than the first reference value, the third reference value being predetermined to normally be greater than each of the first value and the second reference value and less than the second value, said control signal detecting means changing the third reference value to a fifth reference value less than the fourth value and greater than each of the second and third values when said signal detecting means receives a reproduced control signal having a duty factor greater than each of the second and third values, the fourth reference value being predetermined to normally be greater than the third value, said control signal detecting means changing the fourth reference value to a sixth reference value less than each of the second and third values and greater than the first value when said signal detecting means receives a reproduced control signal having a duty factor greater than each of the second and third values;

(ii) control means, connected to receive the signal output by said control signal detecting means, for controlling normal recording of video signals and control signals on the videotape and normal reproducing of the recorded video and control signals from the videotape and for controlling an electronic splicing operation in such a manner as to prevent one of said first and second video heads from reproducing video signals recorded by the other of said first and second video heads according to the signal received from said control signal detecting means and for outputting a signal representing an instruction that a normal code signal or an indication signal should be recorded on the videotape; and

(iii) control signal recording means connected to both of said control means and said control head for receiving the signal outputted by said control means, and for generating normal code signals and indication signals in response to the signal received from said control means, for alternately outputting the generated normal code signal having a duty factor of the first value and the generated normal code signal having a duty factor of the second value to said control head to prevent one of said first and second video heads from reproducing video signals recorded by the other of said first and second video heads so as to perform the recording and reproducing of the video signals by an identical video head, or for alternately outputting the generated indication signal having the duty factor the value of which is the fourth value and the generated normal code signal having the duty factor the value of which is the third value, to said control head.

5,331,476

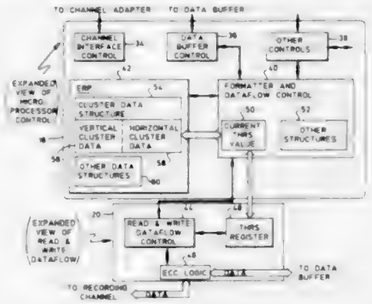
APPARATUS AND METHOD FOR DYNAMICALLY PERFORMING KNOWLEDGE-BASED ERROR RECOVERY

Scott M. Fry; Pamela R. Nylander-Hill, both of Tucson, Ariz.; Michael M. Lee, Foster City, Calif., and Sushama M. Paranjape, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1993, Ser. No. 99,801

Int. Cl.[5] G11B *27/36, 5/09*

U.S. Cl. 360—53 **20 Claims**



1. In a tape drive data storage apparatus including a control system for reading and writing host data on a streaming tape medium, an error correction coding (ECC) system for detecting and correcting data transfer errors, and an error recovery system for performing non-ECC correctable error recovery, a method for dynamically performing knowledge-based error recovery comprising the steps of:

performing read and/or write data transfer operations on a tape medium loaded in the tape drive,

generating during said data transfer operations an error recovery knowledge base representing a tape map of ECC error correction locations on said tape medium;

determining from said tape map upon the initiation of an error recovery event whether one or more error clustering thresholds have been reached in one or more selected regions of said tape medium; and if so

modifying the error recovery performed by the error recovery system in said selected tape medium regions.

5,331,477

LOW VOLTAGE, CONSTANT CURRENT MAGNETIC TRANSDUCER DRIVE SYSTEM FOR DIGITAL RECORDING

Sho Sugiyama, Iruma, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,451

Claims priority, application Japan, Dec. 24, 1991, 3-112007[U]

Int. Cl.[5] G11B *5/00, 5/09, 5/03*

U.S. Cl. 360—59 **3 Claims**

1. A low voltage, constant current digital recording system comprising:

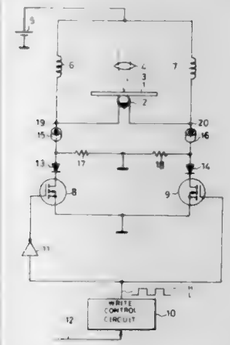
(a) a magnetic transducer having a coil;

(b) a direct current power supply;

(c) a pair of inductance elements connected respectively between a pair of opposite extremities of the transducer coil and a first terminal of the power supply;

(d) a pair of semiconductor switches connected respectively between the pair of opposite extremities of the transducer coil and a second terminal of the power supply;

(e) a write control circuit connected to the pair of semiconductor switches for applying thereto a binary write control signal representative of digital information to be recorded, in order to cause the semiconductor switches to be alternately turned on and off, with the consequent excitation of the transducer coil not only from the power supply but also from the inductance elements;



(f) a pair of reverse blocking diodes connected in series with the pair of semiconductor switches, respectively, in order to prevent current flow, during the excitation of the transducer coil with the closure of either of the semiconductor switches, through the other of the semiconductor switches; and

(g) a pair of antiringing inductance elements connected in series with the pair of semiconductor switches, respectively;

(h) whereby the transducer coil can be excited with a more constant current, and with a lower supply voltage, than heretofore.

5,331,478

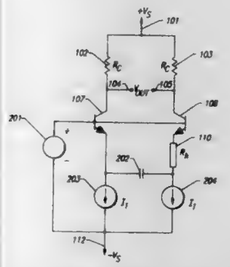
MAGNETORESISTIVE HEAD AMPLIFIER

Anatoly Aranovsky, Tustin, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.

Filed Oct. 7, 1992, Ser. No. 958,037

Int. Cl.[5] G11B *5/02*

U.S. Cl. 360—67 **15 Claims**



5. Apparatus for biasing a magnetoresistive sensor and amplifying signals produced by a magnetoresistive sensor when exposed to a changing magnetic field, said sensor having a steady-state resistance value, said apparatus comprising:

current receiving means for receiving current from said magnetoresistive sensor, and for producing, in response thereto, signals representing a change in sensor resistance arising from changes in a magnetic field to which the sensor is exposed;

amplifying means coupled to said current receiving means for amplifying said signals produced thereby, and having an output for transmitting said amplified signals therefrom, said amplifying means having a differential configuration with a first side of said differential configuration coupled to a second side of said differential configuration, wherein said magnetoresistive sensor is coupled between said amplifying means and a capacitor;

biasing means for providing a bias signal to said amplifying means independent of said output.

5,331,479

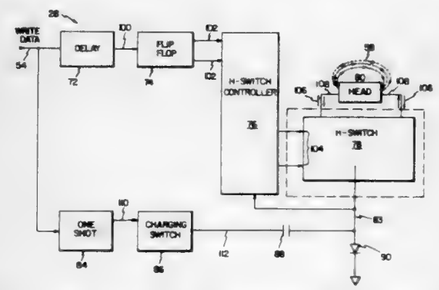
CAPACITOR ASSISTED LOW VOLTAGE WRITE CIRCUIT

Timothy A. Madsen, Bloomington, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 1, 1993, Ser. No. 12,041

Int. Cl.[5] G11B *5/02, 5/03, 5/09*

U.S. Cl. 360—68 **28 Claims**



1. A write circuit in a magnetic disc drive for receiving a write signal and for writing data based on the write signal to a magnetic disc, the write circuit comprising:

a magnetic recording write head;

an H-switch, connected to the magnetic recording write head and having an H-switch input, for switching current polarity through the magnetic recording write head based on the write signal; and

a headroom assistance circuit, connected to the H-switch input, for assisting the H-switch in switching the current polarity through the magnetic recording write head, the headroom assistance circuit, comprising:

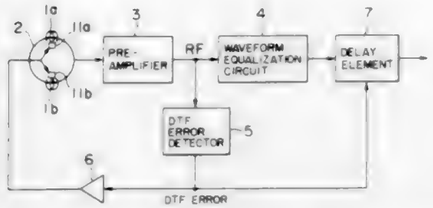
a voltage divider connected to the H-switch input for controlling the voltage across the magnetic recording write head based on the write signal;

a capacitor connected to the voltage divider and the H-switch; and

charging means, connected to the capacitor, for charging and discharging the capacitor, based on the write signal to increase the voltage appearing across the magnetic recording write head during switching of the current polarity by the H-switch.

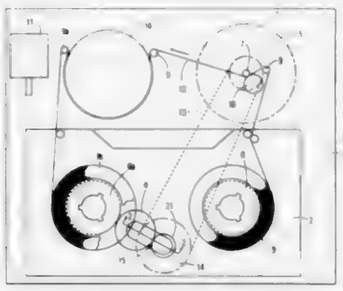
VOL 1164 ISS 3 JL 19 1994 UMI

5,331,480
DYNAMIC TRACKING REPRODUCTION APPARATUS
Yasuhiro Hayashi, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 17, 1992, Ser. No. 870,471
Claims priority, application Japan, Apr. 19, 1991, 3-88725
Int. Cl.[5] G11B *21/10*
U.S. Cl. 360—77.17 **2 Claims**



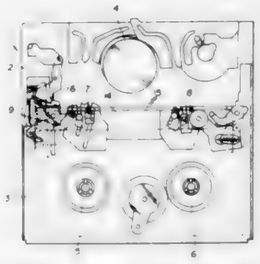
1. A dynamic tracking reproduction apparatus comprising:
an actuator for driving a magnetic head in a width direction of recording tracks formed on a recording and reproducing tape;
error detecting means for detecting an offset of the magnetic head from a reference position in the width direction of the recording tracks and for generating a positional error signal from signals read by the magnetic head;
actuator driving means for driving said actuator so that the magnetic head is directed to the reference position in response to said positional error signal; and
delay means for correcting a time axis of the read signals so that the magnetic head can be located on the reference position in response to said positional error signal.

5,331,481
TAPE DRIVE AND WINDING MECHANISM FOR TAPE PLAYER/RECORDER
Hartmut Schandl, Vienna, and Fritz Weisser, St. Georgen, both of Austria, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany
Filed Oct. 10, 1991, Ser. No. 774,964
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912098; Oct. 21, 1989, 3935150
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **20 Claims**



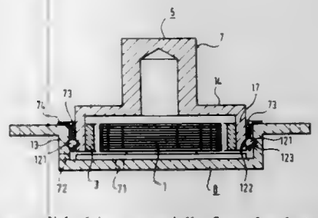
1. In a tape player/recorder device for a tape cassette having at least one winding reel driven by a capstan motor through a tumbler gear, the shaft of said motor being outside said cassette, a plurality of threading elements, an idler roller, and a threading motor for threading a tape in said player/recorder, an improvement comprising:
a planet gear coupled to said capstan motor and in engagement with said tumbler gear; and,
a controllable slip coupling for selectively by-passing said planet gear.

5,331,482
CAM ARRANGEMENT FOR CASSETTE LOADING MECHANISM HAVING REDUCED SLIPPAGE
Saburo Takasaki, and Eiji Ohshima, both of Kanagawa, Japan, assignors to Sony Corporation, Japan
Filed May 22, 1992, Ser. No. 887,057
Claims priority, application Japan, May 31, 1991, 3-129152
Int. Cl.[5] G11B *5/027, 15/00*
U.S. Cl. 360—85 **27 Claims**



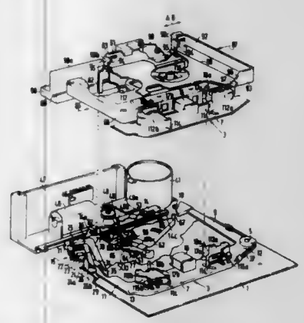
15. A cam arrangement for a video cassette recorder comprising:
a first chassis member;
a second chassis member, slidably disposed on said first chassis member for movement relative thereto;
a fixed cam mounted on said first chassis member, said fixed cam including first and second cam surfaces each having engage and return sides respectively, said first and second cam surfaces defining a first gap therebetween;
a movable cam rotatably mounted on said first chassis member, said movable cam including a third cam surface having engage and return sides thereof, said third cam surface being alignable with said second cam surface so as to be contiguous therewith according to a predetermined positional relationship between said cam arrangement, said second and third cam surfaces defining a second gap therebetween according to an occurrence of a non-aligned positional relationship therebetween;
a tensioning member, mounted on said second chassis member, spring biased in one direction and rotatable according to movement of said movable cam, said tensioning member operatively coupled with a cam pin, said cam pin moving along an engage side of said first, second and third cam surface according to sliding movement of said second chassis member in a first direction and moving along a return side of said third second and first cam surfaces according to movement of said second chassis member in a second direction opposite said first direction;
a return cam surface positioned adjacent a return side of said second cam surface, said cam pin being positioned in said second gap and proximate said return cam surface by said spring biasing in said one direction; and
a return cam formed substantially between said return cam surface and said fixed cam and having a terminal end at said first gap, said cam pin, when in said second gap, moving along said return cam surface and along said return cam.

5,331,483
AXIALLY COMPACT DIRECT DRIVE FOR STORAGE DISK HUB
Uwe Müller, Eisenbach, and Michael Hermann, Villingen, both of Fed. Rep. of Germany, assignors to PAPST Licensing GmbH, Spaichingen, Fed. Rep. of Germany
Filed Jul. 1, 1992, Ser. No. 907,516
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1991, 4121693
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—86 **15 Claims**



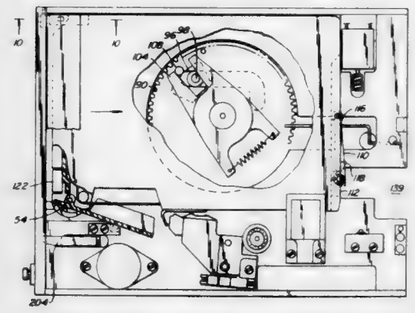
1. A storage disk drive, especially for a hard storage disk, comprising a stator, a rotor, a bearing arrangement (**10, 12; 18, 19**) and a coaxial hub (**5, 7**) having a radially external edge, to the outer surface of which one or more hard disks are secured, characterised in that the bearing arrangement rotatably supports the hub (**5, 7**) exclusively in the region of the radially external edge of the hub.

5,331,484
MAGNETIC TAPE CASSETTE APPARATUS HAVING A CONTROL ROD, SWITCHING TRANSMITTERS, AND A CATCH ROD
Karl Klos-Hein, Wettenberg; Hermann Rumpf, Herborn-Schonbach, and Hans-Georg Hermanni, Sinn, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 425,895, Oct. 23, 1989, abandoned. This application Dec. 10, 1992, Ser. No. 989,488
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1988, 3836247; May 9, 1989, 3915110
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.5 **16 Claims**



1. A magnetic tape apparatus, comprising:
a loading mechanism for loading and ejecting a cassette from said apparatus;
a drive mechanism including a motor, an elongate control rod which is longitudinally displaceable between end points along a path of movement by said motor for providing operating functions of said apparatus, and a catch rod coupled to said control rod and said loading mechanism for displacing the loading mechanism during a part of the movement of the control rod, said catch rod including a recess;
a logic circuit connected to said motor for controlling the operation of said motor and the displacement of said control rod;
a control switch connected to said logic circuit for providing actuation signals thereto, said control switch including a moveable switch element moveable at least between first and second switch positions; and
a pair of fixed guides,
said control rod further including a two-armed detent rocker, said detent rocker being spring loaded whereby one arm of said two-armed detent rocker resides in the recess of said catch rod, said second arm of said two-armed detent rocker cooperating with said fixed guides to cause said first arm of said two-armed detent rocker to be swiveled out of said recess whereby said catch rod and said control rod are decoupled, and
actuation means for moving said switch element of said control switch from one switch position to the other switch position, at different positions of said control rod along said path of movement of said control rod, to cause said control switch to provide control signals to said logic circuit for operating said drive mechanism.

5,331,485
AUTO-LOADING CARTRIDGE TAPE DRIVE
Philip Bryer, Tarzana, Calif., assignor to Wangtek, Inc., Simi Valley, Calif.
Continuation of Ser. No. 851,718, Mar. 16, 1992, Pat. No. 5,204,792. This application Mar. 19, 1993, Ser. No. 33,603
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.5 **19 Claims**



1. A cartridge tape drive for a rectangular cartridge having an access door along an edge thereof which is openable to allow access to a segment of a magnetic tape within the cartridge, comprising:
a housing having an opening dimensioned to receive the cartridge endwise and containing means for supporting the cartridge within said housing;
a magnetic head within said housing;
means for sensing the presence of at least a portion of the cartridge within said housing at a first position;
means responsive to said sensing means for moving the cartridge from said first position at least partially laterally to a second position in operative engagement with said magnetic head;
means for opening the access door of the cartridge as the cartridge is moved from said first position to said second position;
said access door opening means further comprises means for pivotably engaging the access door, and

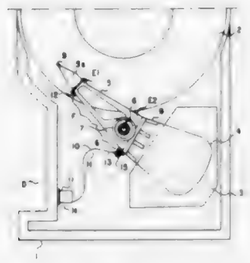
said engaging means further pivoting about an axis substantially parallel to the axis of the cartridge access door.

5,331,486

DISK UNIT WITH A DEVICE TO DIVERT LEADS FROM THE HEAD

Toshiyuki Hachiya, Yokohama, and Kazunori Tochiyama, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 520,412, May 8, 1990, which is a continuation of Ser. No. 979,382, Nov. 19, 1992, Pat. No. 5,245,486. This application May 27, 1993, Ser. No. 67,970
Claims priority, application Japan, May 20, 1989, 1-127508; May 20, 1989, 1-127509
Int. Cl.[5] G11B *5/012*
U.S. Cl. 360—97.01 **8 Claims**



1. A disk unit comprising:
a disk having a rotational axis thereof;
a read/write head, positioned onto said disk, for reading information out and/or writing information on said disk;
an arm, connected at one end to a rotational axis and at the other end to said readwrite head, for rotating said read/-write head to a desired position of said disk;
a printed circuit board;
a flexible printed circuit board connecting said read/write head to said printed circuit board, said flexible printed circuit board having a first position extending along said arm and a second position extending away from said arm to said printed circuit board; and
diverting means, connected to said arm, for changing said flexible printed circuit board from the first position to the second position and for changing a route the second position follows.

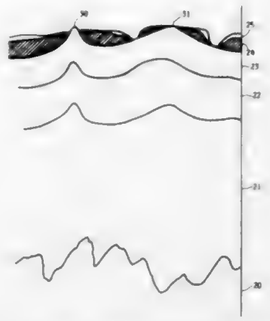
5,331,487

DIRECT ACCESS STORAGE DEVICE WITH VAPOR PHASE LUBRICANT SYSTEM AND A MAGNETIC DISK HAVING A PROTECTIVE LAYER AND IMMOBILE PHYSICALLY BONDED LUBRICANT LAYER

Thomas A. Gregory; Ajay Johary; Christopher G. Keller; Ronald G. Lecander, and James J. Mayerle, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 16, 1992, Ser. No. 822,005
Int. Cl.[5] G11B *5/00*
U.S. Cl. 360—97.02 **22 Claims**

1. An improved lubricant system for thin film magnetic recording disks, comprising:
a DASD containing an enclosure, a lubricant reservoir and a lubricant vapor transport system cooperating with said reservoir to maintain a portion of the lubricant within said enclosure in a vapor phase, and
a thin film magnetic recording disk within said DASD, said disk having a thin film magnetic recording layer at a surface thereof, and having a layer of a lubricant bonded to said thin film magnetic recording layer in a manner to render said lubricant substantially immobile.



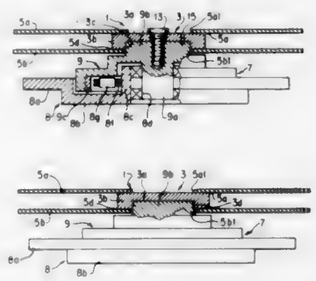
whereby a renewable adsorbed layer of lubricant molecules is continuously provided on the surface of said immobile lubricant layer and to voids in said layer.

5,331,488

FIXED HARD DISK DRIVE HAVING A REMOVABLE INTEGRATED DISC STACK STRUCTURE

Jeffrey S. McAllister, and J. Todd Cramer, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 4, 1992, Ser. No. 893,305
Int. Cl.[5] G11B *5/012*
U.S. Cl. 360—98.08 **10 Claims**



1. In a hard disk drive, a hard disk stack structure comprising:
a. a substantially circular hub having opposite axially spaced surfaces;
b. at least one hard disk having a central circular opening of lesser diameter than the diameter of said circular hub; and
c. a compliant bonding agent bonding said hard disk adjacent said circular opening to one of said axially spaced surfaces, concentrically with respect to the center of said circular hub and functioning as the sole attachment of said hard disk to said hub.

5,331,489

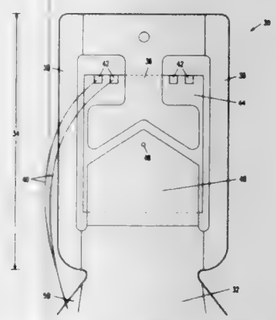
GIMBAL FOR A FLEXURE FOR TOP-TERMINATED HEADS

Lyle G. Johnson, Minneapolis, and Yoshiki Midori, Edina, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 12, 1992, Ser. No. 976,163
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 **2 Claims**

1. In a flexure for supporting a head in cooperative arrangement with a surface of a disc in a disc drive data storage device,

the flexure being formed from a single piece of material and including
attachment means for attaching the flexure to an actuator for moving the head to desired locations on the surface of the disc, and
at least one resilient beam means, attached at a first end to the attachment means, for exerting a downward force on the head in a direction toward the surface of the disc, and
a rigid beam section attached at a second end of the resilient beam means for transferring the downward force from the resilient beam means, the improvement comprising:
a gimbal for mounting a top-terminated head including: a load point tab extending from the rigid beam and having



proximate its distal end a load point button contacting a top surface of the head,
a pair of gimbal beams laterally displaced from the load point tab and having first ends attached near the base of the load point tab,
a cross beam member connecting second ends of the gimbal beams, and
a slider mounting tab connected to the cross beam member and extending toward the load point tab,
the slider mounting tab having, over at least a part of its length a width approximately one-third the width of the head whereby the outer approximate one-third of the head width on either side of the slider mounting tab is unobstructed by the slider mounting tab to allow for attachment of wires to transducer terminations for the head.

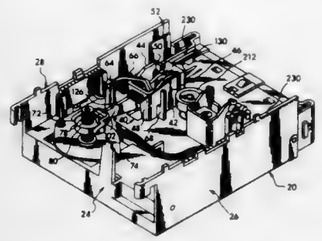
5,331,490

TAPE HEAD FINE POSITIONING SYSTEM FOR A TAPE BACKUP DRIVE

Alan J. Richards, Loveland; William A. Godette, Longmont; Helmuth O. Kroog, Berthoud, and Kevin L. Miller, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1990, Ser. No. 606,887
Int. Cl.[5] G11B *5/58*
U.S. Cl. 360—109 **82 Claims**

1. A tape head fine positioning system for positioning a magnetic tape head in a back-up tape cartridge drive system, said system comprising:
a chassis for mounting said back-up system;
an elongated lever arm engaging said chassis, said elongated lever arm having a first end and a second end an a longitudinal axis passing from the first end to the second end;
means attached to said chassis to move said first end of said lever arm in a vertical axis, wherein said vertical axis intersects and is substantially perpendicular to said longitudinal axis;
means on the first end of said lever arm for engaging said lever arm moving means at a plurality of points wherein said plurality of points lie in a substantially horizontal plane that is perpendicular to and intersects the vertical axis and said plurality of points lie in a substantially vertical plane that includes the vertical axis and is substantially perpendicular to said longitudinal axis of said lever arm so as to balance the force distribution between said lever arm and said lever arm moving means and eliminate cantilevered loading in the system;



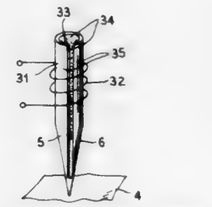
said system further comprising a tape head mounting unit mounted on said chassis to move vertically;
means on the second end of said lever arm for engaging said tape head mounting unit such that said tape head mounting unit is moved vertically as said first end of said lever arm is moved vertically; and
a tape head mounted in said tape head mounting unit.

5,331,491

HIGH-DENISTY MAGNETIC RECORDING AND REPRODUCING HEAD

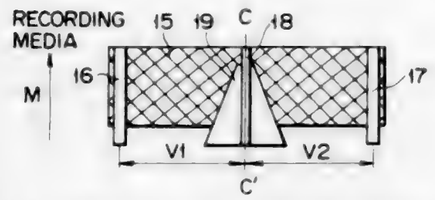
Masatoshi Hayakawa, Miyagi; Yasunari Sugiyama, Tokyo, and Koichi Aso, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 847,923
Claims priority, application Japan, Mar. 7, 1991, 3-041811
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—110 **8 Claims**



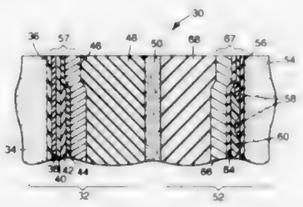
1. A magnetic recording head for recording a signal on a magnetic recording medium having a perpendicularly magnetizable film, comprising:
a magnetic sensing section comprising a slender needle of a soft magnetic material;
exciting means for magnetizing said slender needle to record a signal on the magnetic recording medium as said recording head and said magnetic recording medium are moved relative to each other; and
wherein said slender needle comprises a tapered, pointed needle-shaped dielectric member and a layer of a soft magnetic material deposited on and 360 degrees around said needle-shaped dielectric member.

5,331,492
MAGNETIC DISK SYSTEM HAVING A MAGNETORESISTIVE HEAD PROVIDED THEREIN
Tomoko Komai, Tokyo; Makoto Imamura, Kanagawa; Yuji Sakai, and Tetsuo Inoue, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 27, 1991, Ser. No. 766,326
Claims priority, application Japan, Sep. 27, 1990, 2-255115; Oct. 29, 1990, 2-288352; Jan. 31, 1991, 3-011108
Int. Cl.[5] G11B *5/30, 5/39*
U.S. Cl. 360—113 4 Claims



1. In a magnetic disk system, a magnetic head comprising:
a magnetic film having two ends and magnetoresistance effect and disposed substantially parallel to the direction of the width of a track of a magnetic recording medium;
at least one pair of current supplying electrodes disposed to be in contact with both ends of said magnetic film in the direction of the width of said track; and
at least one signal detecting electrode to be in contact with said magnetic film disposed between said current supplying electrodes and having a width narrower than that of said current supplying electrodes;
means for obtaining a first reproduced output between said signal detecting electrode and one of said current supplying electrodes;
means for obtaining a second reproduced output between said signal detecting electrode and the other one of said current supplying electrodes;
means for calculating a difference between said first reproduced output and said second reproduced output; and
an insulating film that is interposed between said signal detecting electrode and said magnetic film, and only that part of said signal detecting electrode which is adjacent to said recording medium is in contact with said magnetic film.

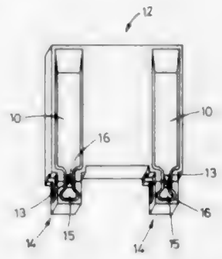
5,331,493
BIDIRECTIONAL THIN-FILM MAGNETORESISTIVE TAPE HEAD ASSEMBLY
Theodore A. Schwarz, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 21, 1992, Ser. No. 933,383
Int. Cl.[5] G11B *5/127, 5/265*
U.S. Cl. 360—113 9 Claims



1. A thin-film magnetoresistive tape head including:
a read module comprised of a first stack of layers, including, in order, a substrate, a first thin insulating layer, a magnetoresistive (MR) sensing layer, at least one conducting layer, a second thin insulating layer, a shield layer, and a thick insulating layer;
a write module comprised of a second stack of layers, including, in order, a substrate, a first thin insulating layer, a conducting layer, a second thin insulating layer, a pole layer, and a thick insulating layer; and
a bonding layer interposed between the thick insulating layer of the read module and the thick insulating layer of the write module whereby the read and write modules are aligned along a direction of travel of a magnetic tape past the tape head and wherein the read and write modules are bonded to each other

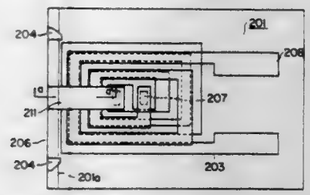
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5,331,494
HEAD CORE SLIDER FOR RIGID MAGNETIC DISK DRIVE
Naoya Fukuda, Aichi; Tadashi Sagara, and Mitsuaki Ishigaki, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Nov. 16, 1992, Ser. No. 977,291
Claims priority, application Japan, Nov. 18, 1991, 3-329514
Int. Cl.[5] G11B *5/187, 5/31, 5/60*
U.S. Cl. 360—103 3 Claims



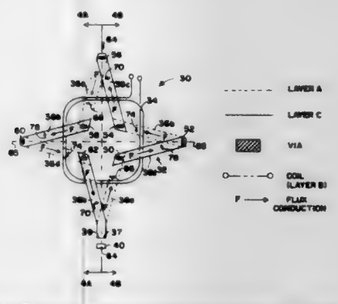
1. A head core slider for a rigid magnetic disk drive, including a slider body having at least one longitudinal air bearing rail formed on an upper surface thereof which faces a magnetic disk during operation of the disk drive, and a head core provided adjacent one of lengthwise opposite ends of said at least one air bearing rail, said head core having a ferrite portion constituting a closed magnetic circuit, and a magnetic gap which intersects said closed magnetic circuit at a point thereof which is to face the magnetic disk, said magnetic gap extending perpendicular to the longitudinal direction of said at least one air bearing rail, wherein the improvement comprises:
said ferrite portion of said head core having a recess formed in at least one of two surface areas thereof which are to face the magentic disk and which are located on opposite sides of said magnetic gap in the longitudinal direction of said at least one air bearing rail;
wherein (i) the width of said recess, measured in a direction perpendicular to the longitudinal direction of said at least one air bearing rial, is at least as wide as the width of said magentic gap, (ii) one of opposite ends of said recess which is adjacent to said magnetic gap is spaced at least 0.5 μm away from said magnetic gap, (iii) the other one of opposite ends of said recess which is remote from said magnetic gap is spaced a maximum distance of 40 μm from said magnetic gap, and (iv) said recess has a depth of at least 0.1 μm.

5,331,495
THIN FILM MAGNETIC HEAD AND METHODS FOR PRODUCING SAME
Satoshi Yoshida, Hachioji; Yoshiaki Kato, Minamiashigara, and Joh Ueoka, Hadano, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 11, 1991, Ser. No. 713,221
Claims priority, application Japan, Jun. 11, 1990, 2-149886; Jul. 2, 1990, 2-172728; Jul. 12, 1990, 2-182589
Int. Cl.[5] G11B *5/31, 5/84*
U.S. Cl. 360—126 14 Claims



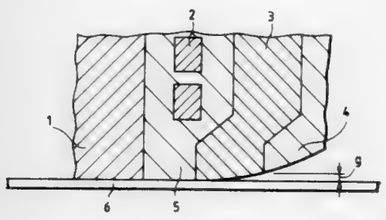
1. A thin-film magnetic head comprising a lower magnetic layer, at least one coil conductor layer disposed over said lower magnetic layer, an upper magnetic layer disposed over said coil conductor layer and constituting a magnetic circuit in cooperation with said lower magnetic layer, and insulating layers interposed between each of said layers to insulate said layers one from the other, and
further comprising a marker for determining the amount of the depth of a magnetic gap of the magnetic head, said marker consisting essentially of a single layer shaped in the form of a polygon, the polygon's shape corresponding to a triangle that has had one or more of its apex regions, including a remote apex, removed along an arc of a circle or along a straight line, whereby one side of the polygon is formed by a facing surface of the magnetic head and the remote apex is disposed within the magnetic gap and remote from the facing surface.

5,331,496
THIN-FILM MAGNETIC TRANSDUCER WITH A MULTITUDE OF MAGNETIC FLUX INTERACTIONS
Andrew L. Wu, and Sharat Batra, both of Shrewsbury, Mass., assignors to Digital Equuipment Corporation, Maynard, Mass.
Filed Feb. 14, 1992, Ser. No. 837,358
Int. Cl.[5] G11B *5/147, 5/17*
U.S. Cl. 360—126 15 Claims



1. A thin film magnetic transducer formed of a film having a plurality of layers and comprising:
a yoke having a plurality of magnetic flux circuits disposed about the center of the transducer such that there exists for each magnetic flux circuit two terminal end portions for coupling magnetic flux into and out of each magnetic flux circuit, each magnetic flux circuit having a first pole piece disposed in one layer of the film coupled at a corresponding distal via to a second pole piece disposed in another layer of the film, said distal via traversing the layers of the film and disposed on a portion of the magnetic flux circuit distal to the terminal end portions relative to the center of the transducer, each terminal end portion of each magnetic flux circuit being magnetically coupled to a corresponding terminal end portion of an adjacent magnetic flux circuit through a corresponding proximal via traversing the layers of the film and disposed proximal to the center of the transducer, each pole piece having an easy axis of magnetization oriented substantially perpendicular to a flux conduction path therein lying among a line of sight between the centers of the corresponding distal and proximal vias at opposite ends thereof, and wherein the line of sight in the first pole piece and the line of sight in the second pole piece intersect at the distal via coupling the first and second pole pieces, said magnetic flux circuits being disposed such that there are at least two pole pieces in each of said layers having non-parallel easy axes;
a first tip pole piece having a pole tip and disposed in said one layer of the film, said first tip pole piece having one end adapted for positioning adjacent to a magnetic medium for coupling magnetic flux between the medium and the yoke, and having its other end magnetically coupled to a corresponding terminal end portion of an adjacent magnetic flux circuit through a corresponding proximal via;
a second tip pole piece having a pole tip and disposed in said other layer of the film, said second tip pole piece having one end adapted for positioning adjacent to the magnetic medium for coupling magnetic flux between the medium and the yoke, and having its other end magnetically coupled to a corresponding terminal end portion of an adjacent magnetic flux circuit through a corresponding proximal via; and
a coil having a plurality of turns intertwined with the yoke and passing between the distal and proximal vias, so that the distal vias are exterior to the coil and the proximal vias are interior to the coil, to provide at least four magnetic flux interactions between the coil and the yoke.

5,331,497
THIN FILM MAGNETIC HEAD
Shoji Fuchigami, Kumamoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 737,146, Jul. 29, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 85,140
Claims priority, application Japan, Jul. 30, 1990, 2-202172
Int. Cl.[5] G11B *5/31, 5/187*
U.S. Cl. 360—126 21 Claims



1. A thin film magnetic head for recording and/or reproducing data on a magnetic recording medium, comprising:
(a) a magnetic substrate;
(b) an upper magnetic core disposed on said magnetic substrate with a gap layer disposed therebetween;
(c) a coil disposed between said upper magnetic core and said magnetic substrate and electrically insulated from said upper magnetic core and said magnetic substrate;

(d) a protective layer disposed on said upper magnetic core; and

(e) said gap layer having a front end face confronting the magnetic recording medium, said upper magnetic core having a front end face confronting the magnetic recording medium, said protective layer having a front end face confronting the magnetic recording medium, said front end face of said upper magnetic core extending from its one end adjacent to said gap layer to its opposite end adjacent to said protective layer so as to provide distance variation therealong between said front end face of said upper magnetic core and said magnetic recording medium such that said front end face of said upper magnetic core progressively retreats relative to the magnetic recording medium in a direction from said one end toward said opposite end, said distance variation continuously provided from said one end to said opposite end.

5,331,498

TAPE CASSETTE INCLUDING A LOCKING SLIDER

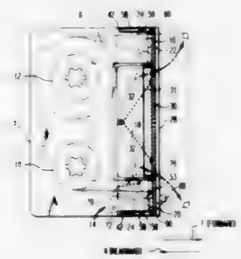
Mitsuo Utsumi, Yawata; Osamu Zaitsu, Neyagawa; Makoto Okuda, Hirakata; Jiro Kajino, and Tatsuhiro Yabuki, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 27, 1992, Ser. No. 842,923

Claims priority, application Japan, Mar. 4, 1991, 3-037246; May 13, 1991, 3-107185; Jun. 20, 1991, 3-148502; Jul. 12, 1991, 3-172531

Int. Cl.[5] G11B *23/087*

U.S. Cl. 242—347.1 **5 Claims**



1. A tape cassette comprising:

a housing including a pair of reels carrying a tape so as to expose the tape in front of said housing;

a slider attached to said housing so as to be slidable forwardly and rearwardly along a direction perpendicular to a tape extending direction, said slider having a recess into which an engaging member of a magnetic recording and reproducing apparatus for sliding said slider is allowed to insert, the slider sliding rearwardly in accordance with an insertion of the engaging member into the recess rearward with respect to the housing:

a front cover supported by said slider and by said housing so as to cover the tape;

a moving mechanism for sliding said front cover away from the tape while rotating said front cover so as to expose the tape, in accordance with a movement of said slider away from the tape; and

a locking member attached to said slider to lock said hosing during loading so as to prohibit said slider from sliding rearwardly, said locking member unlocking said housing by insertion of the engaging member into the recess of the slider; and

wherein said housing includes a pair of projecting parts disposed in opposite side portions along the tape extending direction and an opening defined by the projecting parts so as to allow loading posts to be inserted therein in the opposite direction to a direction of the rotation of the front cover for exposing the tape; said slider includes a pair of surfaces, each covering a side of the opening into which said loading posts are inserted and a side surface of the corresponding projecting part; and said locking member is provided in a pair, each of said locking members being located between the corresponding surface of said slider and the corresponding projecting part; and

wherein each of said locking members includes a locking part projected toward the corresponding projecting part; each projecting part has a first guide groove with which the locking part is engaged so as to be slid in a sliding direction of said slider; and the first guide groove has a recess which the locking part engages so as to prohibit said slider from sliding with respect to said housing.

5,331,499

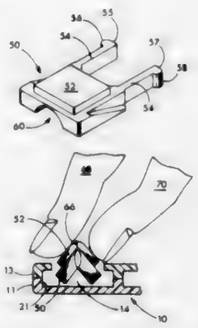
INSTALLABLE WRITE-PROTECT BUTTON FOR FLOPPY DISK

Carroll L. Marcusen, 711 E. Gorham St., Madison, Wis. 53703

Filed Aug. 27, 1992, Ser. No. 937,076

Int. Cl.[5] G11B *23/03, 15/04*

U.S. Cl. 360—133 **2 Claims**



1. A write-protect button for retrofit installation in a write/-read pocket in the jacket of a computer floppy disk, the pocket including a "read only" portion and a "write/read" portion and a channel within the jacket for slidably receiving the write-protect button, the write-protect button comprising:

a. a blocking tab of sufficient size to encompass the "read only" opening, the blocking tab having a first upper end, a second lower end and two sides wherein the blocking tab comprises a flexure area enabling the blocking tab to flex in axial alignment with the sides of the blocking tab such that the sides are urged toward each other under inward pressure of the sides of the blocking tab and return to its original position when the pressure is removed; and

b. a pair of substantially parallel spaced apart opposed legs having first ends and second ends, wherein the first ends of each leg are attached to the sides of the blocking tab, the legs comprising means to slidably engage the write-protect button in the channel.

5,331,500

CIRCUIT BREAKER COMPRISING A CARD INTERFACING WITH A TRIP DEVICE

Vincent Corcoles, St. Martin d'Heres; Christian Tedeschi, Jarrie; Alain Delvecchio, Echirolles, and Didier Fraisse, St. Martin d'Heres, all of France, assignors to Merlin Gerin, France

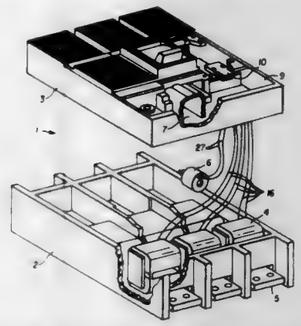
Filed Dec. 23, 1991, Ser. No. 812,289

Claims priority, application France, Dec. 26, 1990, 90 16403

Int. Cl.[5] H02H *3/05*

U.S. Cl. 361—93 **10 Claims**

1. A circuit breaker comprising: a housing body; current measurement means for measuring the current flowing in conductors to be protected; a standard removable electronic trip device comprising a processing circuit for producing a tripping signal when the current measured by the current measurement means exceeds preset tripping thresholds; and an interface card, fixed to the housing body, and connected to the trip device when the trip device is located in the housing body; wherein the interface card comprises means representative of



the circuit breaker type and/or rating and an output connector to which said means are connected, said output connector being connected to a complementary connecting device of the trip device, which is connected to the trip device processing circuit, thereby supplying the processing circuit with information representative of the circuit breaker type and/or rating.

5,331,501

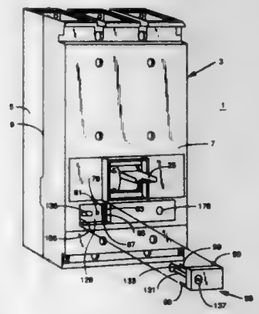
ELECTRICAL SWITCHING APPARATUS WITH DIGITAL TRIP UNIT AND MEMORY RESET

Alan B. Shimp, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1992, Ser. No. 954,913

Int. Cl.[5] H02H *3/08*

U.S. Cl. 361—94 **4 Claims**



1. Electrical apparatus for connecting a load to a power source, said apparatus comprising:

separable contacts selectively connecting said load to the power source when closed and disconnecting the load from the power source when open;

sensing means sensing currents supplied to said load while said separable contacts are closed;

digital control means controlling opening and closing of said separable contacts and including means responsive to said current sensing means opening said separable contacts when said sensed current exceeds preset conditions, said digital control means being powered down when said separable contacts are open;

storage capacitor means charged by said digital control means to a selected voltage;

bleed means connected across said storage capacitor and having a value selected to bleed the voltage on said storage capacitor at a first selected rate when said separable contacts are open and current to said load is interrupted, said digital control means upon reclosing said separable contacts reading said voltage on said storage capacitor; and

reset means selectively connected across said storage capacitor and having a value selected to rapidly bleed off said voltage on said storage capacitor at a rate substantially greater than said selected rate.

5,331,502

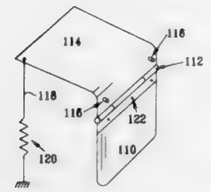
STATIC CHARGE ELIMINATOR FOR PROTECTION OF ELECTRONIC GASOLINE PUMPS AND TELLER MACHINES

Ezzat G. Bakhoum, P.O. Box 2818, Durham, N.C. 27715-2818

Filed Nov. 17, 1993, Ser. No. 153,645

Int. Cl.[5] H05F *3/00*

U.S. Cl. 361—212 **16 Claims**



1. A static dissipative device for the protection of electronic equipment from damage by the presence of static charges on the body of a user, comprising:

a movable, electrically conductive surface placed and arranged in such a manner that said electronic equipment is normally inaccessible to the user;

grounding means connecting said movable, electrically conductive surface to ground;

a fixed supporting structure for said movable, electrically conductive surface, wherein the fixed supporting structure is providing means for the movable, electrically conductive surface to be displaced with respect to the fixed supporting structure when force is applied to the movable, electrically conductive surface, in such a manner that said electronic equipment become accessible to the user when the movable, electrically conductive surface is displaced.

5,331,503

GROUNDED MAGNETIC DEVICE FOR REMOVING STATIC CHARGES

Kevin M. McGarry, 515 Mid Meadows La., Kirkwood, Mo. 63122, and Arnold A. Downs, Mt. Vernon, Ill., assignors to Kevin M. McGarry, St. Louis, Mo.

Filed Jan. 21, 1992, Ser. No. 822,853

Int. Cl.[5] H05F *3/00*

U.S. Cl. 361—214 **1 Claim**

1. Apparatus for removing static electrical charges on a moving web passing therebetween, comprising in combination

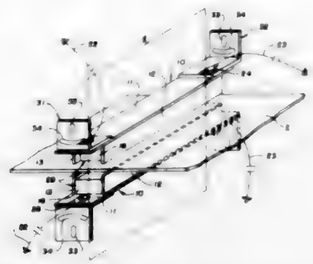
a pair of elongated magnetic devices of substantially equal length, each of said pair of devices including

an elongated end-to-end assembly of substantially rectangular permanently magnetic blocks of equal height and thickness, assembled with magnetic poles of one polarity aligned along the length of one side of said elongated assembly and magnetic poles of the opposite polarity aligned along the length of the opposite side of said elongated assembly;

said assembled blocks having two end surfaces and four side

surfaces, and a means to provide for grounding of each said assembly,

said assembled blocks having magnetic shielding on two opposite side surfaces and on one intermediate side surface, and being exposed on the other intermediate side surface, together with



means to position the two said devices spaced narrowly apart in parallel alignment with their like polarities opposite each other so oriented as to provide a substantially common charge-neutral plane perpendicular to the path of such web.

5,331,504

FILM CAPACITOR AND METHOD FOR MANUFACTURING THE SAME

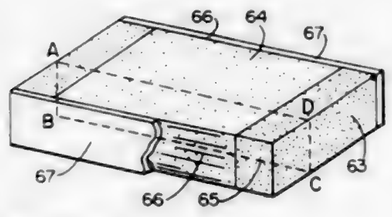
Michiharu Kamiya; Hisaaki Tachihara, both of Matsue; Shuji Otani, Shimane; Kenji Yamada, Matsue; Minoru Kikuchi, Matsue; Kazuo Iwaoka, Matsue, and Kenji Kuwata, Matsue, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 28, 1992, Ser. No. 997,476

Claims priority, application Japan, Dec. 27, 1991, 3-346015; Dec. 27, 1991, 3-346017

Int. Cl.[5] H01G *4/00, 4/06*

U.S. Cl. 361—301.1 **18 Claims**



1. A film capacitor comprising:

a capacitor element having (a) a multilayer structure made of stacked dielectric films or a wound dielectric film, each dielectric film having a metallic layer formed on its surface, and (b) a pair of outer electrodes electrically connected to the metallic layer; and

a coating layer covering at least facets of the multilayer structure of the capacitor element, the coating layer being made from at least one polysiloxane, at least one organometallic compound or a combination of the polysiloxane and the organometallic compound, the organometallic compound being selected from the group consisting of organoaluminum compounds, organosilicon compounds, organotin compounds and organotitanium compounds; and

wherein the organometallic compound has at least one functional group attached to the metallic atom of the organometallic compound, the functional group being reactive to inorganic or organic materials and represented by the formula -OR, R being selected from the group consisting of hydrogen, hydrocarbyl, oxygen-containing hydrocarbyl, nitrogen-containing hydrocarbyl and oxygen- and nitrogen-containing hydrocarbyl.

5,331,505

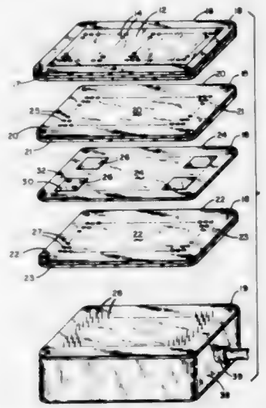
MULTI-COPLANAR CAPACITOR FOR ELECTRICAL CONNECTOR

Timothy J. Wilheim, Peoria, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 8, 1993, Ser. No. 2,296

Int. Cl.[5] H01G *1/14;* **H03H** *7/00*

U.S. Cl. 361—306.3 **13 Claims**



1. A multi-coplanar, multi-layer capacitor array for use as an RFI filter associated with an electrical connector module having a pattern of pin conductor and socket conductor connections, said multi-layer capacitor array comprising:

(a) multi-layer board structure comprising super imposed layers including:

(1) ground plane layers and capacitor plane layers interleaved with one another;

(2) a pattern of continuous apertures formed perpendicular to and extending through the ground plane layers and capacitor layers forming a grid having a center-to-center spacing, said pattern being congruent with a pattern of sockets in the connector module and adapted to receive male conductor pins of a like pattern;

(3) the ground plane layers further being characterized by a continuous conductive layer having clearance holes surrounding the apertures formed therein so as to be electrical insulated from received male pin conductors, the ground plane layers being jointly connected to a common ground; and

(4) each of the capacitor plane layers including a plurality of defined coplanar individual separate capacitor areas encompassing an area occupied by a plurality of terminal pins but being electrically connected to one, the rest being provided with clearance holes surrounding the aperture formed therein, the remaining pins being electrically connected each to a separate capacitor on a different, similarly configured level, thereby associating each pin with an unique capacitive plane;

(b) the separate capacitors providing RFI filtering for any signals on each pin.

5,331,506

ELECTRONIC APPARATUS WHEREIN COMPONENTS ARE DETACHABLY ARRANGED IN A HOUSING HAVING A RECESS WITH A SLIDING AND CLAMPING COVER

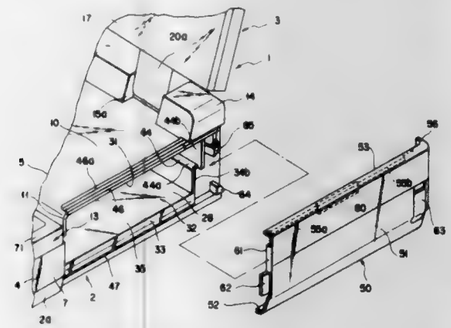
Yuji Nakajima, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1992, Ser. No. 950,645

Claims priority, application Japan, Oct. 11, 1991, 3-263723

Int. Cl.[5] H05K *5/03, 7/14;* **H02J** *7/04;* **G06F** *1/16*

U.S. Cl. 361—683 **27 Claims**



1. An electronic apparatus comprising:

a box-shaped base unit having an upper case having a top wall and a peripheral wall continuous to the top wall, a lower case having a bottom wall and a peripheral wall continuous to the bottom wall, and a storage space between said upper case and said lower case, the peripheral walls of said upper case and said lower case having a loading port communicating with said storage space, the top wall of the said upper case having a first guide section continuous with an upper edge of said loading port, the bottom wall of said lower case having a second guide section continuous with a lower edge of said loading port;

a component removably stored in said storage space through said loading port; and

a cover attached to said base unit and capable of moving between a first position where said cover closes said loading port and a second position where said cover opens said loading port, said cover comprising a top wall portion slidably fitted on an upper surface of said first guide section, and a lower wall portion slidably fitted on a lower surface of said second guide section, said first and second guide sections of said base unit being clamped by said cover.

18. An electronic apparatus comprising:

a housing having side walls and a battery pack storage portion which is positioned inside said side walls of said housing, and which has a pair of side walls opposite to each other, said side walls of said housing having a loading port continuous with said battery storage portion;

a battery pack removably stored in said battery storage portion through said loading port, and having a pair of side walls slidably contacting with and guided by the side walls of said battery storage portion, and a hollow ridge secured to one of said side walls, extending in a direction in which said battery pack is inserted into said battery storage portion, and containing circuit components; and

a recess formed in one of the side walls of said battery storage portion for receiving said hollow ridge of said rectangular case when said battery pack is inserted into said battery storage portion, said recess having an opening communicating with said loading port.

5,331,507

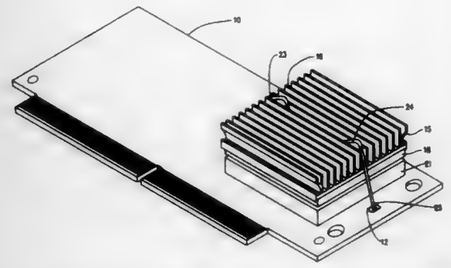
CLIP FOR MOUNTING A HEAT SINK ON AN ELECTRONIC DEVICE PACKAGE

Johnny S. Kyung, and Pearce R. Jones, both of Austin, Tex., assignors to Dell USA L.P., Austin, Tex.

Filed May 15, 1991, Ser. No. 700,782

Int. Cl.[5] H04K *7/20*

U.S. Cl. 361—720 **4 Claims**



1. Apparatus mounting a heat sink on an electronic device package having a plurality of leads connected through a socket mounted on a printed circuit board, to the printed circuit board comprising:

(a) a clip having a pair of legs spaced apart at their first ends by a contiguous connecting member, the member being pressed against the heat sink; and

(b) aperatures in the printed circuit board, receiving and securing the second ends of the legs to provide a firm force by the member against the heat sink.

5,331,508

PORTABLE ELECTRONIC APPARATUS HAVING A REMOVABLE KEYBOARD UNIT

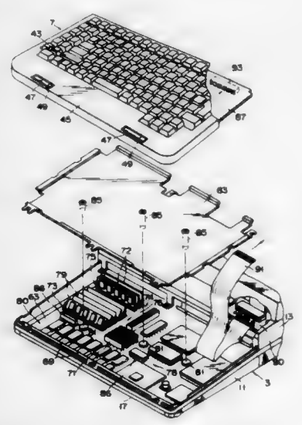
Takashi Hosoi; Keizo Ohgami, and Fumiaki Takeda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 935,901, Aug. 27, 1992, abandoned, which is a division of Ser. No. 695,501, May 6, 1991, Pat. No. 5,255,154. This application Nov. 5, 1993, Ser. No. 147,309

Claims priority, application Japan, May 7, 1990, 2-115810

Int. Cl.[5] H05K *7/02, 9/00;* **G06F** *1/16*

U.S. Cl. 361—680 **6 Claims**

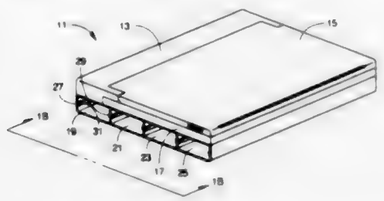


1. A portable electronic apparatus comprising: a housing having a bottom wall;

data input means for inputting data, the data inputting means being removably mounted on the housing so as to face the bottom wall;
a connector attached to the data input means;
a circuit board arranged in the housing;
a shielding plate fixed to the housing and located between the circuit board and the data input means; and
a cable electrically connecting the data input means and the circuit board to each other and extending through the shielding plate, the cable having a first end removably connected to the connector and a second end directly fixed to the circuit board.

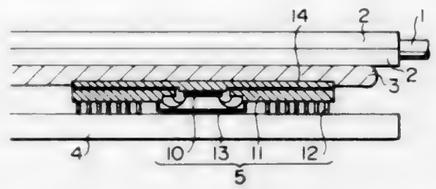
3. A portable electronic apparatus comprising:
a top cover covering the first portion of a bottom case;
data input means removably covering a second portion of the bottom case;
a connector attached to the data input means;
a circuit board arranged in the housing; and
a cable electrically connecting the data input means and the circuit board, the cable having a first end removably connected to the connector and a second end directly fixed to the circuit board at a position which is covered with the top cover.

5,331,509
MODULAR NOTEBOOK COMPUTER HAVING A PLANAR ARRAY OF MODULE BAYS AND A PIVOTALLY ATTACHED FLAT-PANEL DISPLAY
Dan Kikinis, Saratoga, Calif., assignor to Cordata, Inc., Tortola, British Virgin Isls.
Division of Ser. No. 97,946, Jul. 26, 1993, Pat. No. 5,278,730, which is a continuation of Ser. No. 905,480, Jun. 29, 1992, abandoned. This application Nov. 18, 1993, Ser. No. 154,755
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] H05K *7/10*; **G06F** *1/16*
U.S. Cl. 361—686 **17 Claims**



1. A modular computer comprising:
a flat, rectangular case;
a plurality of module bays arranged in a common plane and opening to one or more edges of the case, the module bays for receiving and docking functional modules;
a multi-pin electrical connector at the inboard end of each module bay, for engaging a mating electrical connector on a docked functional module;
a communication bus connecting to each multi-pin electrical connector in each module bay;
a flat-panel display pivotally attached to the case of the modular computer; and
input apparatus for providing user input.

5,331,510
ELECTRONIC EQUIPMENT AND COMPUTER WITH HEAT PIPE
Katsunori Ouchi, Hitachi; Atsushi Morihara, Katsuta; Yoshio Naganuma; Koji Sato, both of Hitachi, and Ryuichi Kaji, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 28, 1992, Ser. No. 936,299
Claims priority, application Japan, Aug. 30, 1991, 3-219593
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—702 **3 Claims**



1. An electronic equipment comprising:
a plurality of electronic parts generating different amounts of heat;
at least one heat pipe having a first portion adjacent one end of said at least one heat pipe for absorbing the heat generated from said electronic parts and a second portion adjacent the other end of said at least one heat pipe for radiating the thus absorbed heat; and
at least one generally flat heat transfer means disposed to cover said first portion of said at least one heat pipe;
said electronic parts being arranged in heat conducting relation with said heat transfer means such that an electronic part generating a greater amount of heat is disposed on said heat transfer means at a first point relatively closer to said second portion of said at least one heat pipe than a second point and another electronic part generating a smaller amount of heat is disposed on said heat transfer means at said second point relative further from said second portion than said first point and between said first point and said one end of said at least one heat pipe, wherein the heat generated by each of said electronic parts and the distance from the other end of said at least one heat pipe to the electronic part has a relationship given by the following equation:

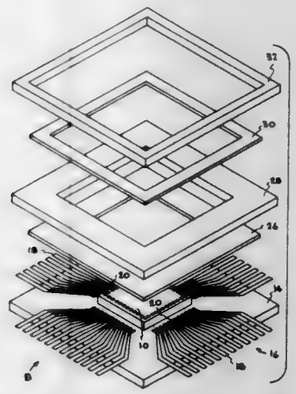
$$\sum_{i=1}^{n} (Q_i \cdot l_i)^2 < (Q \cdot l)^2$$

where Q_i is the amount of head generated from each of said electronic parts, l_i is a distance from the other end of said heat pipe to each of said electronic parts, Q is the amount of heat generated from any one of said electronic parts when a phenomenon of dryout of a heat transfer liquid in said heat pipe takes place, l is a distance from said other end of said heat pipe to the electronic part when the dryout takes place, and i=1 . . . n indicates the number of said electronic parts.

5,331,511
ELECTRICALLY AND THERMALLY ENHANCED INTEGRATED-CIRCUIT PACKAGE
Sang S. Lee, Sunnyvale, and William M. Loh, Fremont, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Mar. 25, 1993, Ser. No. 36,798
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—713 **12 Claims**

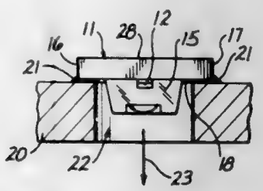
7. An improved thermally-enhanced package assembly for an integrated-circuit die packaged in a molded plastic package, comprising:

an integrated-circuit die;
a thermally conductive, electrically-insulated substrate having a top surface upon which said integrated-circuit die is attached in a die-up configuration at a central portion of said substrate;
a lead frame having inwardly-extending bonding fingers, where the bottom surfaces of said bonding fingers are attached to said top surface of said thermally conductive, electrically-insulated substrate;



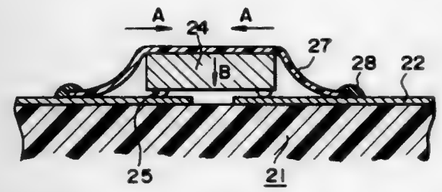
an insulating layer positioned over said bonding fingers of said lead frame along the outer margins of said top surface of said thermally conductive, electrically-insulated substrate;
a conductive layer positioned over said insulating layer; and
one or more bonding wires connected between respective bonding pads on said integrated-circuit die and said conductive layer.

5,331,512
SURFACE-MOUNT LED
Kevin R. Orton, 970 Calle Negocio, San Clemente, Calif. 92672
Filed Apr. 16, 1992, Ser. No. 869,798
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **2 Claims**



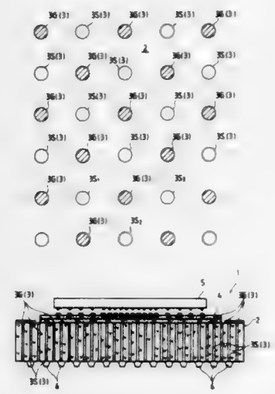
1. An R/C controller front panel assembly, comprising:
a circuitboard having a front side, a reverse side, and a hole extending through the circuitboard from the front side to the reverse side; and
a surface-mount LED device mounted on the circuitboard;
the surface-mount LED device including a base, an LED chip on a first side of the base, and two terminal pads disposed on the first side of the base; and
the surface-mount LED device being surface-mounted on the reverse side of the circuitboard in a position such that the base spans the hole and the first side of the base faces the reverse side of the circuitboard.

5,331,513
METHOD OF MOUNTING ELECTRONIC PART ON CIRCUIT SUBSTRATE AND CIRCUIT SUBSTRATE INCLUDING ELECTRONIC PARTS MOUNTED THEREON
Minoru Hirai, and Osamu Tanaka, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Jul. 6, 1992, Ser. No. 908,993
Claims priority, application Japan, Jul. 12, 1991, 3-198735
Int. Cl.[5] H05K *7/02*; **H01R** *43/00, 9/00*
U.S. Cl. 361—760 **13 Claims**



1. A circuit substrate with at least one electronic part mounted thereon so that the electrodes of said electronic part are electrically connected with a wiring pattern on said circuit substrate, said circuit substrate comprising:
a heat-shrinkable film member fixedly mounted on said circuit substrate at the opposite sides or all the sides thereof, said heat-shrinkable film covering at least a portion of said electronic part on said circuit substrate; and
an electrical connection for electrically connecting the electrodes and the wiring pattern by pressure from heat shrinking said heat-shrinkable film member to press said electronic part against said circuit substrate so that the electrodes of said electronic part are electrically connected with the wiring pattern of said circuit substrate.

5,331,514
INTEGRATED-CIRCUIT PACKAGE
Masao Kuroda, Aichi, Japan, assignor to NGK Spark Plug Co., Ltd., Aichi, Japan
Filed Aug. 3, 1992, Ser. No. 923,512
Claims priority, application Japan, Aug. 5, 1991, 3-195311
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **7 Claims**



1. An integrated circuit package comprising:
a plate-like insulating substrate; and
a plurality of conductive poles including signal conductive

poles and ground conductive poles, said signal and ground conductive poles penetrated into said plate-like insulating substrate,

wherein at least one of said signal conductive poles is surrounded by at least some of said ground conductive poles.

5,331,515

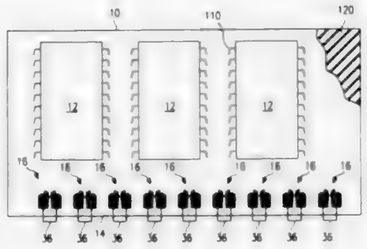
MODULE WITH LEADS FROM MULTIPLE CHIPS SHORTED TOGETHER ONLY AT EDGE CONTACT LOCATIONS

Charles R. Ewers, Phoenix, Ariz., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 761,372, Sep. 18, 1991. This application Mar. 5, 1993, Ser. No. 27,053

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—760 **26 Claims**



1. An electronic device, comprising:

a non-conductive substrate;

a plurality of integrated circuit devices attached to said substrate, each of said integrated circuit devices having a plurality of leads;

a plurality of conductive traces on said substrate and operatively connected to said integrated circuit leads, said traces connected to corresponding integrated circuit leads terminating in designated locations; and

a plurality of conductive means attached to said substrate, each of said conductive means electrically connecting all of said traces terminating in each designated location;

wherein said conductive means are the only connectors operatively connecting the corresponding conductive traces in parallel, whereby the corresponding conductive traces are isolated when said conductive means are removed.

5,331,516

PORTABLE SEMICONDUCTOR APPARATUS

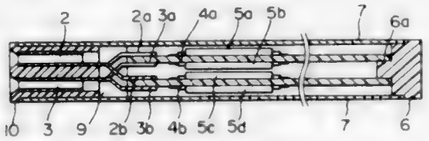
Takayuki Shinohara, and Masatoshi Kimura, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,056

Claims priority, application Japan, Jan. 16, 1992, 4-005780

Int. Cl.[5] H01R *23/68*

U.S. Cl. 361—785 **14 Claims**



1. A portable semiconductor apparatus comprising:

a frame;

at least two board modules, each board module including a circuit board having two opposed sides, electronic parts mounted on both sides of said circuit board, and circuit patterns on both sides of said circuit board, said board modules being housed and fixed within said frame;

a connector having a plurality of connection pins, each pin including a unitary electrode lead divided into a plurality of connection portions, each connection portion being individually electrically connected to one of said board modules, said connector being housed and fixed within said frame for making external electrical connections; and

two protective panels mounted on opposite sides of said frame, covering said board module and said connector.

5,331,517

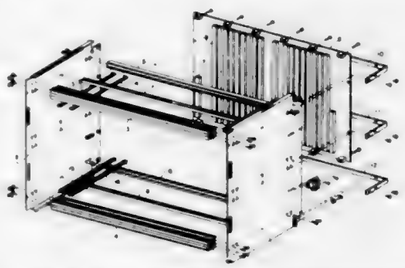
RETROFIT CARD FILE ADAPTER ASSEMBLY

Richard A. Walton, Carol Stream; Zbigniew Kabat, Chicago; George Lenzi, Wheaton, and Herbert A. Didio, Darien, all of Ill., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Aug. 21, 1992, Ser. No. 933,121

Int. Cl.[5] H05K *7/14*

U.S. Cl. 361—796 **10 Claims**



1. An adapter for use with an electronic equipment mounting rack equipped with support means to support a plurality of printed wiring cards of a first size, said adapter supporting a plurality of printed wiring cards of a second size, said adapter comprising:

first and second side plates positioned vertically and parallel with each other;

each of said plates including a top, bottom, front and back;

first, second, third and fourth extrusions each joining said first plate to said second plate;

said first extrusion positioned adjacent the top and the front of said first and second side plates;

said second extrusion positioned adjacent the bottom and the front of said first and second side plates;

said third extrusion positioned adjacent the top and the back of said first and second side plates;

said fourth extrusion positioned adjacent the bottom and the rear of said first and second side plates;

a backplane assembly extending from said first to said second side plate and adjacent to the rear of said side plates;

said backplane secured to said third and fourth extrusions;

a pair of printed wiring card support brackets each extending from said first to said second side plates in parallel to each other;

said adapter dimensioned so as to be supported on said equipment rack by said support means.

5,331,518

VISOR MIRROR COVER ASSEMBLY

Jeffrey O. Roark, Allegan; Peter V. Styke, Holland; Robert L. Mattingly, Holland, and Drew G. Jelgerhuis, Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Sep. 22, 1992, Ser. No. 949,571

Int. Cl.[5] B60Q *3/00*

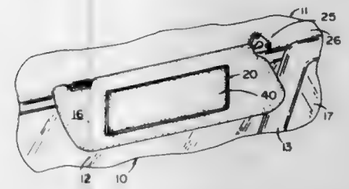
U.S. Cl. 362—61 **33 Claims**

1. A cover assembly for a vehicle accessory comprising:

a vehicle accessory including a support body, said support body including at least one of a pivot axle having an axis of rotation and an axle receiving socket;

a cover for said accessory, said cover including at least one of the other of a pivot axle and an axle receiving socket;

cam means mounted to one of said axle and socket and offset from the axis of rotation of said pivot axle when said pivot axle is extended into said socket; and



spring clip means comprising a generally C-shaped member extending over said cam and socket for compressively engaging said cover and support body and including leg means engaging said cam for selectively urging said cover toward an open and a closed position as said cover is manually moved in a direction toward an open and a closed position, respectively.

5,331,519

AIMING MECHANISM FOR VEHICLE LAMPS

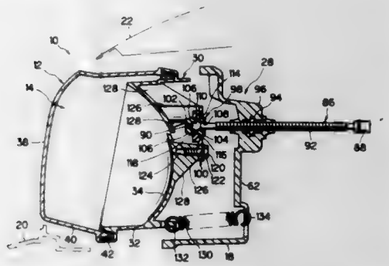
Yuji Fujino, Shimizu, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 47,425

Claims priority, application Japan, Apr. 17, 1992, 4-122911

Int. Cl.[5] B60Q *1/06*; **F21V** *21/00*

U.S. Cl. 362—66 **9 Claims**



1. In an aimable vehicle lamp of the type having a tiltable member which is tiltable in every direction relative to a vehicle for aiming the lamp, a first aiming member for tilting the tiltable member relative to the vehicle in a first direction, and a second aiming member for tilting the tiltable member relative to the vehicle in a second direction at right angles with the first direction, the improvement comprising at least one flexure seat of flexible material flexibly affixed to the tiltable member, at least one of the first and the second aiming members being coupled to the tiltable member through the flexure seat whereby torsional stresses exerted on said aiming members during the tilting of the tiltable member are taken up by the flexure seat.

5,331,520

HEADLIGHTS FOR MOTOR VEHICLES

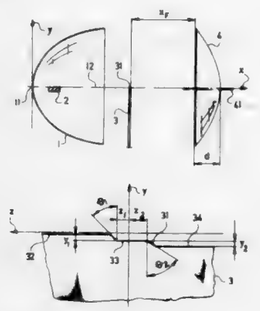
Milan Cejnek, Novy Jicin, Czechoslovakia, assignor to Autopal s.r.o., Novy Jicin, Czechoslovakia

Filed May 24, 1993, Ser. No. 64,864

Claims priority, application Czechoslovakia, May 28, 1992, PV 1616-92

Int. Cl.[5] B60Q *1/16*

U.S. Cl. 362—61 **11 Claims**



1. A headlight for motor vehicles, comprising: a reflector, a light source, a screen and a lens, wherein the screen includes a screen edge having two stepped portions, wherein a distance y_1 between a part of the screen edge on a side of a less distant road edge and a central part of the screen edge is in a range defined as follows:

$$y_1=(0.005 \text{ to } 0.026)\times(x_F+d/3),$$

and wherein a distance y_2 between the central part of the screen edge and a part of the screen edge on a side of a more distant road edge is such that a total distance y_1+y_2 is in a range defined as follows:

$$y_1+y_2=(0.008 \text{ to } 0.004)\times(x_F+d/3)$$

wherein:

x_F is a distance between the screen and the lens, and d is a thickness of the lens.

5,331,521

MOTOR VEHICLE HEADLAMP FITTED WITH IMPROVED FIXING MEANS

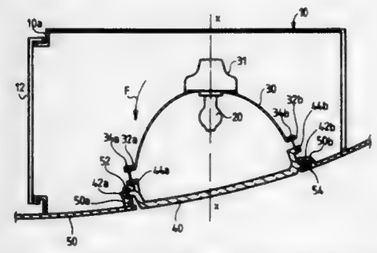
Jean-Paul Ravier, St Maur Les Fosses; Antoine Deslandres, Boissy-St-Leger, and Ghislaine Pinson, Villeneuve La Garenne, all of France, assignors to Valeo Vision, Bobigny, France

Filed Dec. 9, 1992, Ser. No. 987,631

Claims priority, application France, Dec. 13, 1991, 91 15506

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 362—80 **9 Claims**



1. A headlamp for a motor vehicle having a bodywork, said

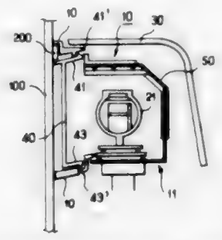
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headlamp comprising a lamp, a reflector in which the lamp is mounted, and a glass suitable for being received in an opening in the bodywork of the vehicle, wherein the glass is fixed directly and solely to the bodywork in the region of said bodywork adjacent to the opening by first mounting means, and wherein second, adjustable, mounting means are provided for mounting the reflector directly and solely on the glass for the purpose of adjusting the orientation of a generated light beam.

5,331,522
SIGNALLING LIGHT MOUNTED ON A BACK SHELF OF A MOTOR VEHICLE

Claude Rives, Evreux, France, assignor to Valeo Vision, Bobigny, France

Filed Apr. 7, 1993, Ser. No. 44,986
Claims priority, application France, Apr. 8, 1992, 92 04293
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—80.1 **4 Claims**

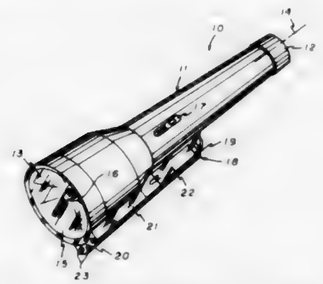


1. A signaling light for mounting on a back shelf of a motor vehicle, and for being covered by a cap, the light comprising a box that is open toward the back window of the vehicle and that contains a filament bulb that extends from one side of said box into said box and that gives off heat while it is alight, the box being closed adjacent to the back window of the vehicle by a closure glass, wherein said box includes a removable portion having a cross-section that is substantially U-shaped and that is located between the filament bulb and the cap and constitutes a heat screen capable of dispersing the heat given off by the said filament bulb to keep the cap at a low temperature, said removable portion constituting an access hatch giving access to the bulb.

5,331,523
GAS DISPENSING FLASHLIGHT APPARATUS

David G. Delzer, 1866 Vining Dr., San Leandro, Calif. 94579

Filed Jul. 9, 1993, Ser. No. 88,372
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—96 **4 Claims**



1. A gas dispensing flashlight apparatus, comprising,
a primary housing, having a housing first end and a housing second end, with the second end having a second end lens, the primary housing symmetrically oriented about a housing axis, and
a reflector lens mounted within the primary housing in adjacency to the second end lens, with the reflector lens including an illumination bulb oriented medially thereof, with the reflector lens and the illumination bulb coaxially aligned relative to the axis, and
a switch mounted to the primary housing to effect selective actuation of an illumination bulb, and
a secondary housing, the secondary housing integrally mounted to the primary housing extending to the primary housing second end, with the secondary housing including a secondary housing first end and a secondary housing second end, the secondary housing first end including an actuator button, and the secondary housing second end including at least one gas port directed therethrough, and
gas dispensing means mounted within the secondary housing operative through the actuator button to effect dispensing of said gas through said at least one gas port, and
the secondary housing first end includes a second end canted wall obliquely oriented relative to said axis to permit ease of manual displacement of an individual's hand along said secondary housing second end, and
the gas means includes a gas canister mounted within said secondary housing, the secondary housing further including a door to permit selective replacement of said gas canister, and a pneumatic valve mounted within said secondary housing in pneumatic communication with said gas canister, and said actuator button including an actuator rod extending from said actuator button to said pneumatic valve, with said pneumatic valve in pneumatic communication with said gas port to permit selective gas flow from said gas canister through said gas port upon projection of said actuator button within said secondary housing, and
the pneumatic valve includes a first gas conduit effecting pneumatic communication between the pneumatic valve and the gas canister, and a second gas conduit mounted in pneumatic communication with said pneumatic valve, and a gas manifold, the gas manifold mounted within said secondary housing in adjacency to said secondary housing second end, including a plurality of further gas ports, wherein said gas port and said plurality of further gas ports are in pneumatic communication with the gas manifold.

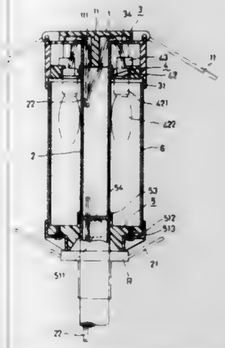
5,331,524
UMBRELLA WITH LIGHTING DEVICE

Chuen-Jong Tseng, Chiayi Hsien, Taiwan, assignor to Shin Yeh Enterprise Co., Ltd., Taiwan

Filed Jul. 6, 1993, Ser. No. 88,224
Int. Cl.[5] A45B *3/02*
U.S. Cl. 362—102 **8 Claims**

1. An umbrella with a lighting device, said umbrella including a shank with an upper end, a plurality of ribs connected pivotably to said upper end of said shank at one end thereof, a slidable ring sleeved on said shank, and a plurality of spreaders which are connected pivotally to a periphery of said ring member at one end and which are connected pivotally and respectively to said ribs at the other end, wherein the improvement comprises:
said shank being hollow and being open at said upper end;
a hollow lamp holder unit which is provided on said upper end of said shank and which has a closed upper end, an open lower end which is formed with a central hole to permit said shank to extend into said lamp holder unit, and a positioning rod which extends from said upper end and into said shank, said positioning rod having a longitudinal groove formed on a periphery thereof, said upper end of said lamp holder unit interconnecting pivotally said shank and said one end of each of said ribs;
a lighting element mounted securely on said lower end of said lamp holder unit adjacent to said central hole;

an electric cable unit disposed inside said shank, said cable unit having a lower end to be connected to a power source and an upper end which extends into said groove of said positioning rod and into said lamp holder unit and which is connected electrically to said lighting element;

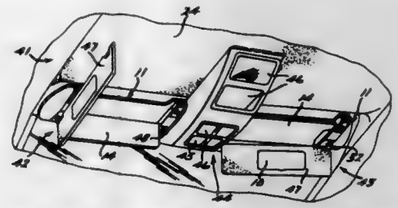


a support member which is secured on said shank between said lamp holder unit and said ring member and which is spaced apart from said lamp holder unit; and
a transparent tubular cover retained removably between said lamp holder unit and said support member to permit removal of said lighting element when said tubular cover is removed.

5,331,525
LOW PROFILE SUN VISOR SYSTEM WITH REMOTE LIGHTING

Abdi R. Lawassani, Waterford; James D. Dowd, Farmington Hills, and Monte L. Falcoff, Beverly Hills, all of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Jan. 14, 1993, Ser. No. 4,463
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—140 **16 Claims**

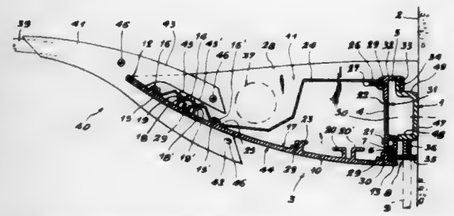


2. A sun visor system for an automotive vehicle, said automotive vehicle having a roof with an inner surface thereof and a front header panel attached thereto, said automotive vehicle further having a headliner covering at least a portion of said inner surface of said roof, said sun visor system comprising:
a primary sun visor;
a primary sun visor elbow rotatably coupled with said primary sun visor;
a tray defined by a pair of lateral surfaces with a central surface therebetween, said lateral and central surfaces being substantially horizontal, a pair of substantially vertical walls connecting said central surface to each adjacent one of said pair of lateral surfaces adjacent thereto, said central surface juxtapositioned substantially against said front header panel with said headliner being clear therebetween, said pair of lateral surfaces vertically offset lower than said central surface;
a center support extending from one of said pair of lateral surfaces, said center support detachably retaining said primary sun visor thereto; and
said primary sun visor juxtapositioned against said tray when in a stowed position thereof.

5,331,526
DEVICE FOR LIGHTING AND SUSPENSION OF A HANGING-ROD AND MODULAR ASSEMBLY FOR LIGHTING AND SUSPENSION OF HANGING-RODS

Alain Girot; Bruno Houssin, and Pierre-Laurent Martin, all of Paris, France, assignors to Zebulon, Paris, France

Filed Jan. 4, 1993, Ser. No. 51
Claims priority, application France, Jan. 8, 1992, 92 00108
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—147 **20 Claims**



1. Device for lighting and suspension of at least one hanging-rod (**9**; **9'**; **9''**), wherein said device comprises
a mounting member (**1**; **1'**; **1''**), a first sectional member (**3**; **3'**) having in cross-section a vertical portion (**4**; **4'**) having an upper end formed with means for hooking (**5**; **5'**) onto said mounting member (**6**; **6'**) for receiving the raised end (**7**) of a support, and a horizontally extending portion (**10**) of upward facing concave shape and provided with first means for supplying electric current to at least a first light source (**38**; **38'**) and having a proximal extremity (**13**) adjacent to said hooked projection and constituting a vertical bearing surface.

5,331,527
DECORATIVE OUTDOOR LIGHT

Dana A. Stokes, 5837 Garland Ct., Pleasanton, Calif. 94588

Continuation-in-part of Ser. No. 989,077, Dec. 11, 1992, Pat. No. 5,226,721. This application Jul. 9, 1993, Ser. No. 89,789
Int. Cl.[5] E01F *9/00*
U.S. Cl. 362—153.1 **2 Claims**

1. An outdoor lighting device, comprising: a section of a bamboo stem;
a jar having a neck and a lid with a central hole in the lid;
a first generally plate shaped food receptacle having a predetermined depth and an outer rim; and
a generally bowl shaped second food receptacle which is deeper than said first food receptacle and the outer rim of which is of lesser diameter than the diameter of the outer rim of said first food receptacle;
a section of a bamboo stem being open at both ends and the lumen diameter thereof being such as to close-fittingly receive said lid;
said lid being fixedly maintained in one end of said section of a bamboo stem;

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an incandescent lamp socket mounted in a central hole passing through said lid; and



said jar and said first and second food receptacles being adhered together to provide a unitary lamp shade and lamp globe

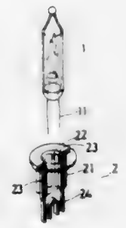
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5,331,528
FLASHLIGHT
Chin-Hsiang Chen, No. 32, Lane 398, Sec. 2, Fu Chiang Road, Yung Kang Hsiang, Tainan Hsien, Taiwan
Filed Apr. 2, 1993, Ser. No. 42,594
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—205 **4 Claims**



1. A flashlight comprising:
a tabular, elongated body including a push button hole near a front end, an inner straight groove extending from the front end to the button hole for a push button of a switch base to fit into and slide along, the push button then protruding up through the button hole;
the elongated body including a female thread in the front end to engage a lamp base;
a switch base consisting of two semi-round half bodies which form a round body which is deposited in the elongated body, the switch base having an annular groove in an intermediate portion to facilitate turning the switch base, and wherein an upper semi-round half body includes point projections and a lower semi-round half body includes holes to receive the projections so that the two halves of the switch base are securely meshed;
the elongated body further including an inner cavity in its front end for a locating ring with a female thread to fit therein, said locating ring contacting a lamp secured in the lamp base so that a conductive point of the lamp is in communication with a front portion of an L-shaped conductor which is urged to a contact position with the locating ring by a spring so that electricity flows stably from batteries deposited in the tubular body to illuminate the lamp, the locating ring being constructed to accommodate multiple types of lamp bases;
a head of a cylindrical shape combined with the front end of the tubular body; and
a tail cap combined with the rear end of the tubular body.

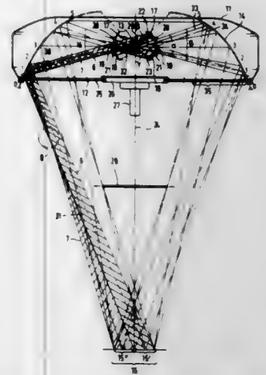
5,331,529
ELECTRICAL LAMP BASE SYSTEM
Shun-Feng Huang, No. 13, Lane 84, Nei Hu Road, Nei Hu Sub-Ward, Hsin-Chu, Taiwan
Filed Mar. 17, 1993, Ser. No. 32,323
Int. Cl.[5] H01R *33/00*
U.S. Cl. 362—226 **1 Claim**



1. An electrical lamp base system comprising:
(a) an elongated electrical bulb having an exterior surface and a pair of electrical leads extending from a lower section of said electrical bulb; and,
(b) a cylindrically contoured longitudinally extended base member for insert into a socket, said base member defining an open internal chamber for insert of said electrical bulb therein and a pair of hollow leg members extending from a lower section of said base member forming a pair of lead wire through passages in open communication with said base member open internal chamber, said base member having a sidewall formed by said open internal chamber, said sidewall having a plurality of longitudinally extending slots passing through said sidewalls, said electrical bulb inserted into said base member internal chamber for contiguous contact with an internal surface of said sidewall for providing structural support for said electrical bulb within said base member and allowing heat dissipation through said slots, said pair of lead wires extending through respective hollow leg members and deformed into electrical contact with said socket.

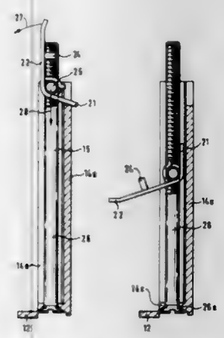
5,331,530
OPERATING THEATRE LAMP
Manfred Scholz, Im Täle 3, Seitingen-Oberflacht, Fed. Rep. of Germany
Filed Dec. 2, 1992, Ser. No. 983,430
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1991, 4140325
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—293 **17 Claims**

1. Operating theatre lamp comprising;
a housing having a light outlet opening;
a main ring concave reflector mounted to the housing;
a light source centrally arranged in the housing, the light source emitting light towards the main ring concave reflector;
the main reflector being configured to deflect the light from the light source towards the light outlet opening and concentrate the light on a site of operation; and
at least one auxiliary ring reflector positioned between the light source and the main reflector and positioned to receive light from the light source which is directed outside of the light rays propagating from the light source to the main reflector and away from the light outlet opening,



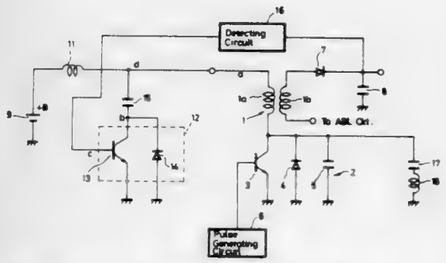
the at least one auxiliary ring reflector being arranged to deflect the light from the light source back toward the main reflector.

5,331,531
MOUNTING ARRANGEMENT FOR RECESSED LIGHTING FIXTURES
Helmut K. Unger, Menden, Fed. Rep. of Germany, and Ludwig Gabrecht, deceased, late of Wickede, Fed. Rep. of Germany by Inge Gabrecht, administrator , assignors to Wila Leuchten GmbH, Fed. Rep. of Germany
Filed May 11, 1993, Ser. No. 59,469
Claims priority, application Fed. Rep. of Germany, May 13, 1992, 4215652
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—365 **8 Claims**



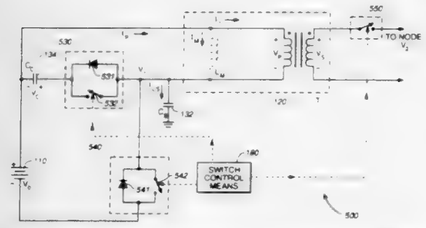
8. A mounting arrangement for recessed lighting fixtures, comprising:
a mounting ring having a cylindrical wall section, said wall section includes at least one compartment;
holding means received in said at least one compartment of said mounting ring for attaching said mounting ring inside a ceiling, said holding means including an angle plate including a short leg, a long leg and a plurality of bushings, a vertex being formed between said short leg and said long leg and a bolt supported in the vertex and the bushings of said angle plate; and
adjusting means connected to said bolt for moving said angle plate between a first position in which said long leg extends coextensive with said adjusting means and said short leg is supported by a top edge of a rear wall of said at least one compartment to allow insertion of said mounting ring in the ceiling and a second position in which said short leg bears against an inside surface of said rear wall and said long leg projects radially outwards from the mounting ring to bear upon a ceiling plate to secure the mounting ring inside the ceiling.

5,331,532
HIGH VOLTAGE REGULATING CIRCUIT
Kenji Iwai; Seiji Kawaberi, both of Kanagawa; Akihiro Ueyama, Tokyo, and Junzo Watanabe, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 27, 1992, Ser. No. 888,497
Claims priority, application Japan, May 30, 1991, 3-155856
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **9 Claims**



1. A high voltage regulating circuit comprising:
a flyback transformer circuit for generating a high voltage at its secondary winding that corresponds to a voltage input to its primary winding;
an inductance connected to said primary winding of said flyback transformer circuit in series;
a series circuit formed of a capacitor and a switching element and connected in parallel to said inductance; and
a detecting circuit for detecting said high voltage from said secondary winding, said switching element being switched by an output from said detecting circuit.

5,331,533
ZERO VOLTAGE SWITCHING POWER CONVERTERS
David A. Smith, Kowloon, Hong Kong, assignor to Astec International, Ltd., Hong Kong, Hong Kong
Continuation-in-part of Ser. No. 668,587, Mar. 13, 1991, Pat. No. 5,173,846. This application Sep. 11, 1992, Ser. No. 944,130
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **39 Claims**



1. In a power converter having an input port for receiving a source of power, a transformer including a primary winding and a secondary winding, said primary winding being capable

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of coupling energy from said power source and the secondary winding coupled to an output port for providing output power to a load, and having a primary switch means coupled in series with said primary winding, said primary switch means when closed causing a first portion of energy from said power source to be coupled through said transformer to said output port by means of said secondary winding and causing a second portion of said energy to be stored in said transformer in the form of magnetic flux having a first direction through the windings of said transformer, said energy stored in said transformer being released from said transformer when said primary switch means is thereafter opened, circuitry for utilizing the energy stored in said transformer to minimize the voltage stress on said primary switch means when said primary switch means closes, said circuitry comprising:

flux reversal means for reversing the direction of said magnetic flux built up in said transformer when said primary switch means is opened;

a secondary switch means coupled in series with said secondary winding of said transformer; and

a switch control means for operating said secondary switch means in relation to the operation of said primary switch means and said flux reversal means, said switch control means opening said secondary switch means substantially when said primary switch means opens and closing said secondary switch means substantially when said primary switch means closes, said secondary switch means being operated such that substantially no current is conducted by said secondary winding during a predetermined interval prior to when said primary switch means is closed, said secondary switch means and said flux reversal means operating to substantially reduce the voltage across said primary switch means when said primary switch means next is caused to close.

5,331,534

POWER SUPPLY APPARATUS

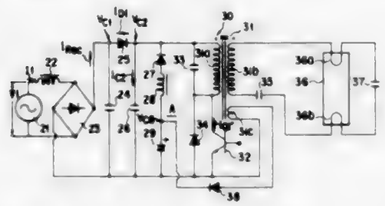
Shigesada Suzuki, Fuji; Masahiro Sugiyama, Gotenba, and Toshiyuki Hiraoka, Numazu, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 977,557

Claims priority, application Japan, Nov. 20, 1991, 3-304946; Dec. 6, 1991, 3-323255; Mar. 30, 1992, 4-074767; Jun. 3, 1992, 4-142876; Oct. 20, 1992, 4-281458

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—20 **11 Claims**



1. A power supply apparatus comprising:

full-wave rectification means for rectifying an AG voltage supplied from an AC power source is output a DC pulsating voltage from first and second output terminals thereof, the potential of the first output terminal being set higher than the potential of the second output terminal;

a first capacitor coupled between said first and second output terminals of said rectification means, for storing a current from said rectification means;

a diode having an anode coupled to said first output terminal of said rectification means, for supplying a current from said first capacitor;

a second capacitor coupled to receive the current supplied through said diode, for storing the current received from said diode;

high-frequency inverter means, coupled between a cathode of said diode and said second output terminal of said rectification means, for receiving an input current supplied from said first and second capacitors when said diode is forward-biased and for receiving an input current from said second capacitor when said diode is reverse-biased, and for performing an oscillating operation in which the received input current is switched at a high frequency, and thereby producing an output voltage to be supplied to a load; and

oscillation means, including a series circuit of an inductor and a third capacitor in which said series circuit is coupled in parallel with said second capacitor, for charging said third capacitor to a predetermined level lower than a peak level of the DC pulsating voltage which is output from said rectification means, and for causing said inductor and said second capacitor to oscillatory resonate under the voltage across said third capacitor when said DC pulsating voltage falls below the voltage across the third capacitor; and

wherein a condition for resonance between said inductor and said second capacitor is set such that an amplitude of a resonant voltage is increased as the DC pulsating voltage output from said rectification means becomes lower than the voltage across said third capacitor.

5,331,535

POWER CONVERSION CONTROL APPARATUS

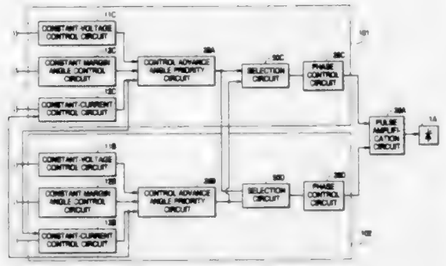
Naomi Nakamura, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 2, 1993, Ser. No. 85,494

Claims priority, application Japan, Aug. 17, 1992, 4-217566

Int. Cl.[5] H02M *5/45*

U.S. Cl. 363—37 **3 Claims**



1. A power conversion system comprising:

a converter; and

first and second control systems providing control signals, each of said control systems including,

voltage control means for calculating a voltage difference between a voltage detection value and voltage reference value and for amplifying said voltage difference, said voltage control means outputting a voltage control signal;

margin angle control means for setting a margin angle and tracking the margin angle of said converter to the set margin angle, said margin angle control means outputting a margin angle control signal;

current control means for calculating a current difference between a current detection value and a current reference value and for amplifying said current difference, said current control means including an input of said amplified current difference from another current control means, said current control means including a selector for selecting between its own amplified current difference and said amplified current difference from said other current control means and outputting said selected current difference as a current control signal;

control advance angle priority means for selecting the output which has the most advanced control angle of the control signals output from the current control means, voltage control means, and margin angle control means, and outputting a control advance angle priority signal;

selection means for selecting one of said control advance angle priority signals output from said first control system and from said second control system according to the condition of the control systems; and

converter control means for controlling the converter in response to the output from the selection means.

5,331,536

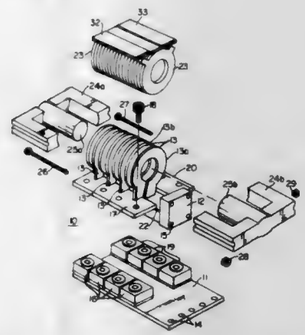
LOW LEAKAGE HIGH CURRENT TRANSFORMER

William E. Lane, Melbourne Beach, Fla., assignor to OPT Industries, Inc., Phillipsburg, N.J.

Filed Nov. 5, 1992, Ser. No. 972,150

Int. Cl.[5] H01F *27/28*

U.S. Cl. 363—126 **7 Claims**



1. A low leakage high current transformer comprising:

a multicoil primary winding,

each coil of said primary winding having two opposed substantially parallel substantially planar major surfaces,

said primary winding coils being coaxially disposed adjacent and spaced apart from each other with the major surfaces of each coil being substantially parallel to the major surfaces of the other coils,

said primary winding coils being electrically connected in parallel with each other;

a multicoil secondary winding,

each coil of said secondary winding having two adjacent single turn coil elements, each of said elements having two opposed substantially parallel substantially planar major surfaces,

said secondary coil elements being coaxially disposed adjacent and spaced apart from each other with the major surfaces of each secondary coil element being substantially parallel to the major surfaces of the other secondary coil elements;

the primary winding coils being intermeshed and coaxial with the secondary winding coil elements, so that the primary winding coils and the secondary winding coil elements are alternately juxtaposed on the axis thereof;

primary terminal means electrically connected to said primary winding coils;

secondary terminal means electrically connected to said secondary winding coils, and including a secondary center tap terminal electrically connected to adjacent ends of the elements of each secondary winding coil; and

a magnetically permeable core having an inner portion extending inside each of said coils and an outer portion surrounding said inner portion and forming two windows therewith, said coils extending through each of said windows.

5,331,537

METHOD OF CONTROLLING ELECTRIC VALVES OF A CONVERTER

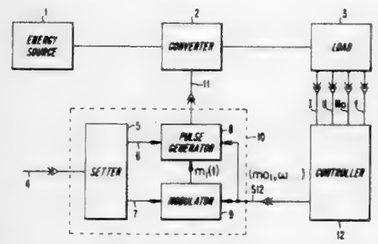
Grzegorz Skarpetowski, Turgi, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Apr. 6, 1992, Ser. No. 864,225

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1991, 4111226

Int. Cl.[5] H02M *7/515*

U.S. Cl. 363—138 **11 Claims**



1. A method for controlling electric valves of a converter which has at least one valve or one valve chain per AC phase, comprising the steps of:

a) driving the valves or valve chains of each AC phase with a mutual phase shift, and

b) commutating the valves of the converter to regulate current output of the converter using control signals generated as a function of a commutation function $KF_j(t)$, where:

$$KF_j(t) = m_i(t) + (2/\pi) \cdot \sum_{n=1}^{n1} \{\sin(n \cdot \pi \cdot m_i(t)) \cdot \cos(n \cdot k \cdot (\omega \cdot t - (\epsilon j + \Phi i + \psi i)))\}/n,$$

wherein t=time, $m_i(t)$=modulation function, n=control variable with $1 \leqq n \leqq n1$, n1=accuracy characteristic, i=control variable for characterizing the AC phase with $1 \leqq i \leqq A\Phi \cdot AG$, $A\Phi$=number of valve chains with fundamental-wave shift, AG=number of valve chains having the same fundamental-wave phase, j=control variable for characterizing a pulse pattern with $1 \leqq j \leqq A\epsilon \cdot A\Phi$, $A\epsilon$=number of independent valve chains with shifted pulse pattern, k=multiplicity of timing, ω=angular frequency of the AC voltage, Φ_i=prescribable phase angle, ψ_i=controller correction angle, and ϵ_j=initial value of the jth pulse pattern of the valve chain circuit with the same index i.

5,331,538

MAIL PROCESSING SYSTEM CONTROLLER

Peter C. DiGiulio, Fairfield; Michael L. Ernandez, Hamden; Frank D. Ramirez, Stamford, and Mark W. Van Gorp, Danbury, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 832,604, Feb. 12, 1992, abandoned, which is a continuation of Ser. No. 425,075, Oct. 23, 1989, abandoned. This application Mar. 19, 1993, Ser. No. 34,198

Int. Cl.[5] G06F *15/46, 15/16*

U.S. Cl. 364—134 **5 Claims**

1. A controller system for providing process control by controlling the operation of a plurality of machine modules to carry out a plurality of programmed processes, each of said machine modules having a plurality of subsystems for executing respective process functions, said controller system comprising:

a first system controller means for controlling a first machine module subsystems common to respective ones of said

plurality machine modules in accordance with programming for said respective machine modules in response to a plurality of selectable machine parameters and process parameters;

a second system controller means for controlling a second machine module subsystem common to respective ones of said plurality of machine modules in accordance with programming for said respective machine modules in response to a plurality of selectable machine parameter and process parameters;

a data bus, said first and second system controller having microprocessor means for transmitting process parameters on said data bus and accessing process parameters along said data bus;

shared memory means having a memory unit, said memory unit having plurality of first addressable registers for storing said process parameters, and having a shared memory controller means for providing said first system controller access over said data bus for access to said first addressable registers bysaid memory unit during a first time interval and for providing said second controller access over said data bus for access to said first addressable registers of said memory during a second time interval said first controller microprocessor means being programmed to restrict said first controller microprocessor read only data from said first registers of said memory unit, and said second controller microprocessor means being programmed to restrict said second controller microprocesor to write only data to said first registers of said memory unit;

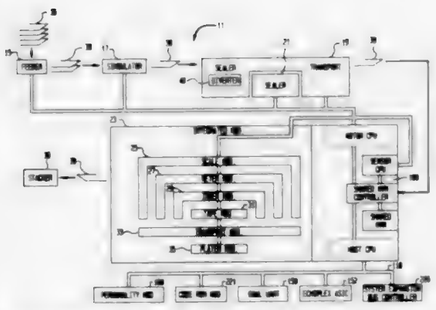
a host controller having microprocessor means for transmitting processor parameters over said data bus;

said memory unit having a plurality of second addressable registers for storing said machine parameters;

said shared memory controller means for further providing said host system controller access to said data bus for access to said first addressable registers of said memory unit during a third time interval;

said host controller microprocessor being programmed to access said first ones of said addressable registers of said memory at a third time interval by said shared memory means;

said first and second controllers being further programmed to read from and write to said second ones of said registers of said memory unit.



5,331,539

MAILING MACHINE INCLUDING MULTIPLE CHANNEL PULSE WIDTH MODULATED SIGNAL CIRCUIT

Thomas M. Pfeifer, Bridgeport, and Richard P. Schoonmaker, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 1, 1992, Ser. No. 983,912
Int. Cl.[5] G05B *11/28*
U.S. Cl. 364—140 **18 Claims**



1. Apparatus for generating a plurality of pulse width modulated signals for separately driving a plurality of electrical loads, comprising:

a. a microprocessor;

b. a plurality of comparator means, each of the comparator means including first and second input terminals and an output terminal;

c. digital to analog converter means connected to the microprocessor for control thereby, the converter means including a plurality of output terminals respectively connected to a different comparator means first terminal for providing separate control signals thereto;

d. means for generating a reference voltage signal having a variable amplitude, the signal generating means connected to each of the comparator means second terminals for providing the reference voltage signal thereto;

e. a plurality of power amplifiers;

f. a plurality of electrical loads respectively connected to a different comparator means output terminal via a different power amplifier for receiving therefrom an amplified comparator means output signal;

g. the microprocessor programmed for selectively addressing the converter means output terminals, the microprocessor programmed for generating said separate control signals, and each of the comparator means responsive to a different separate control signal and said variable reference voltage signal for modulating the pulse width of a comparator means output signal to drive the power amplifier and thus the electrical load connected thereto.

5,331,540

SYMBOL DEFINITION SYSTEM AND METHOD A PROGRAMMABLE MACHINE CONTROLLER

Kunio Tanaka, Akishima, and Yasushi Onishi, Minamitsuru, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Nov. 13, 1991, Ser. No. 776,222
Claims priority, application Japan, Mar. 27, 1990, 2-77692
Int. Cl.[5] G05B *19/05*
U.S. Cl. 364—147 **10 Claims**

10. A symbol definition method for defining symbols in a sequence program of a programmable machine controller, said symbol definition method comprising the steps of:

supplying a first group of symbols, for respective first interface signals between a numerical control apparatus and said programmable machine controller, to a program creation unit as system reservation symbols;

defining, in said program creation unit, a second group of symbols for respective second interface signals between said programmable machine controller and a machine tool, and respective information signals used in said programmable machine controller;

creating said sequence program, comprising selected ones of said first group of symbols and selected ones of a second group of symbols, in said program creation unit; and

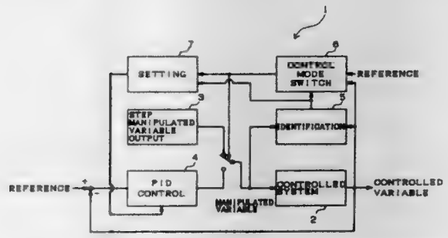
transferring only said selected ones of said first group of symbols, said second group of symbols and said sequence program from said program creation unit to said programmable machine controller.

5,331,541

PID CONTROL UNIT

Tamio Ueda, Takatsuki; Yoshihiro Nagami, Nagaokakyo; Yumi Saito, Yawata, and Zhang Zhiming, Takatsuki, all of Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Sep. 18, 1992, Ser. No. 947,333
Claims priority, application Japan, Sep. 20, 1991, 3-241443
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—162 **4 Claims**



1. A self control type PID control unit for controlling a controlled system comprising:

step manipulated variable output means for outputting a step manipulated variable,

PID control means for generating a manipulated variable based on an error between a reference and a controlled variable obtained from the controlled system,

control mode switching means for applying said step manipulated variable to the controlled system and for stopping the application of the step manipulated variable to move to PID control by said PID control means when idle time and slope successively obtained in accordance with a change of said controlled variable reach a predetermined condition,

identification means for successively computing by a predetermined sampling period the idle time and the slope according to a change of the controlled variable by a step response of the controlled system applied by the step manipulated variable to provide an output, and

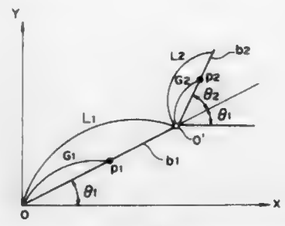
setting means for computing PID control parameters based on said idle time and said slope computed by said identification means after reaching said predetermined condition to be set to said PID control means.

5,331,542

METHOD AND APPARATUS FOR GENERATING ACCELERATION AND DECELERATION PATTERNS FOR ROBOT CONTROL

Ietoshi Itoh, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Mar. 26, 1992, Ser. No. 858,005
Claims priority, application Japan, Apr. 3, 1991, 3-096089
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—167.01 **6 Claims**



1. An apparatus for generating acceleration and deceleration patterns for a servo system having at least a first and second moveable axes, each of said first and second axes having an associated drive means and wherein the motion of one of said moveable axes may exert dynamic interference with regard to motion of the other of said moveable axes, the acceleration and deceleration patterns for said first and second moveable axes having synchronized acceleration start points, velocity peak points and deceleration points, said apparatus comprising:

a constant setting means for setting dynamic constants specific to said servo system;

a command means responsive to displacement instructions for setting predetermined dynamic parameters;

peak time calculating means responsive to said constant setting means and said command means for calculating and setting the peak time required until a velocity peak is reached in the acceleration-deceleration pattern, said peak time calculating means including an energy computing means and peak time setting means, wherein said energy computing means is operable for computing the total kinetic energy required for the commanded displacement, as a function of the peak time on the basis of the dynamic constants and dynamic parameters and for proscribing the power to be contributed by each of said drive means, said energy computing means serving to proscribe which of the driving sources is to supply power to each energy term comprising said total kinetic energy, and for calculating the peak time when the energy from each of the drive means is equal to the maximum power value allowable for said drive means, said peak time setting means being operable to set the maximum of the peak time values calculated by said energy computing means; and

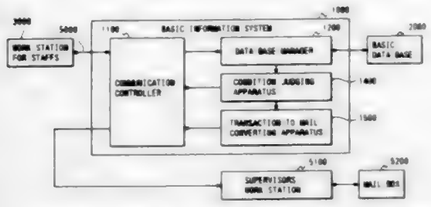
an acceleration-deceleration pattern generating means responsive to the peak time from said peak time setting means for generating an acceleration pattern whereby the time required for a velocity to reach a peak after an acceleration start point, is equal to the peak time from said peak time setting means, and for generating a deceleration pattern which is temporally symmetric with respect to said acceleration pattern.

5,331,543

BUSINESS MONITORING SYSTEM AND METHOD

Hiroshi Yajima, Amagasaki; Sadamichi Mitsumori, Hachioji; Isoji Tabushi, Kamakura; Osamu Akita, Yokohama; Tetsushi Tomizawa, Urawa, and Tetsuya Ushio, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 15, 1991, Ser. No. 642,226
Claims priority, application Japan, Jan. 19, 1990, 2-9977
Int. Cl.[5] G06F *15/22, 15/24;* **G06G** *7/52*
U.S. Cl. 364—401 **22 Claims**



1. A business monitoring computer system in a business processing system, comprising:

a basic information system having at least judgment conditions storage means and communication control means;

a staff work station;

a supervisor work station,

a first communication path connecting said basic information system through said communication control means to said staff work station;

a second communication path connecting said basic information system through said communication control means to said supervisor work station;

means for sending a business process request in the form of a transaction from the staff work station to the basic information system;

means in said basic information system for processing the transaction;

means for sending to said staff work station a result of the transaction processing performed by said processing means, independent of operation of said supervisor work station;

said judgment conditions storage means having conditions stored therein for judging contents of said transaction and extracting means for extracting a selected transaction having contents to be processed, based upon the conditions in the judgment conditions storage means; and,

means for selectively acquiring, by said supervisor work station, the extracted selected transaction.

5,331,544

MARKET RESEARCH METHOD AND SYSTEM FOR COLLECTING RETAIL STORE AND SHOPPER MARKET RESEARCH DATA

Daozheng Lu, Buffalo Grove, Ill.; David A. Kiewit, Palm Harbor, Fla., and Jia Zhang, Mundelein, Ill., assignors to A. C. Nielsen Company, Northbrook, Ill.

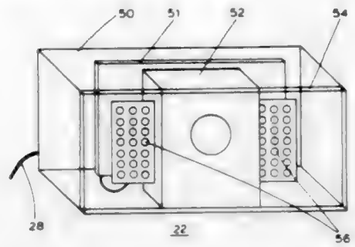
Filed Apr. 23, 1992, Ser. No. 872,881
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—401 **22 Claims**

1. A market research method for a marketing research system including a plurality of cooperating establishments in a market research test area; each said cooperating establishment adapted for collecting and storing market research data, said method comprising the steps of:

monitoring retail sales transactions within each said cooperating establishment;

periodically capturing a video image of a retail customer near a POS terminal within each said cooperating establishment;

combining said monitored retail sales transaction data and said captured video image data; and



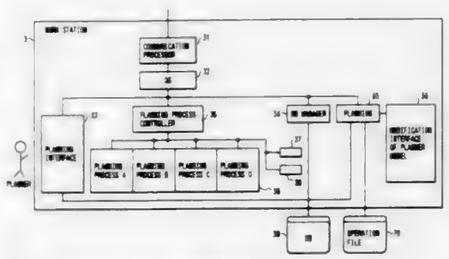
transferring said combined data to a central computer for use by market researchers.

5,331,545

SYSTEM AND METHOD FOR PLANNING SUPPORT

Hiroshi Yajima, Yokohama; Hideaki Shinohara, Nakatsdo; Shoichi Masui, Kawasaki, and Hiroshi Sugimoto, Oosaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 907,403
Claims priority, application Japan, Jul. 5, 1991, 3-165523
Int. Cl.[5] G06F *15/22;* **G06G** *7/52*
U.S. Cl. 364—401 **9 Claims**



1. A planning support system comprising:

a workstation having an operator interface, planning processing means, a data file server, and memory means therein;

a host computer;

a communication line connecting the workstation and the host computer;

a planner model comprising data indicating (i) each of a plurality of planning actions stored in the data file server, (ii) permitted flow sequencing among the planning actions, (iii) a processing time for each of planning actions, and (iv) a start-up time necessary for assembling the data needed to process each of the planning action;

the planning processing means including a means for performing a procedure for minimizing expected processing time of said planner model, in processing a planning action in said planner model, based upon a planning request input through the operator interface;

means for determining a first planning action to be executed, and determining, based upon said planner model and said procedure, a second planning action to be executed following the first planning action; and

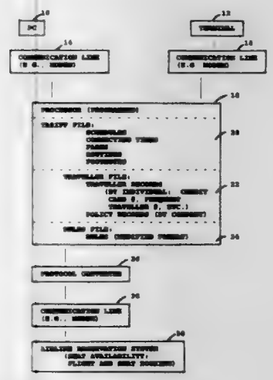
means for storing the data needed to process the second planning action into the memory means before processing of the second planning action is started on the basis of the permitted flow sequencing from the planner model.

5,331,546

TRIP PLANNER OPTIMIZING TRAVEL ITINERARY SELECTION CONFORMING TO INDIVIDUALIZED TRAVEL POLICIES

David W. Webber, Old Greenwich, and Sandra E. Kangas, Greenwich, both of Conn., assignors to Rosenbluth International, Inc., Philadelphia, Pa.

Continuation of Ser. No. 492,260, Mar. 12, 1990, Pat. No. 5,021,953, which is a continuation of Ser. No. 142,843, Jan. 6, 1988, abandoned. This application Jun. 3, 1991, Ser. No. 709,751
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[5] G06F *15/26*
U.S. Cl. 364—407 **12 Claims**
MICROFICHE APPENDIX INCLUDED
(810 Microfiche, 5 Pages)



1. A travel planner method comprising:

A. storing n machine-readable form:

1. a tariff file containing for a selected territory:

a. the applicable individual direct flight schedules;

b. the applicable airport minimum connecting times;

c. the fares for the respective booking classes;

d. the routings specifying if a particular fare can be used for a particular itinerary; and

e. footnotes specifying when a particular fare is in effect;

2. a traveler file containing:

a. travel policy records each specifying:

(1) a set of reasonableness standards, including travel constraints pertaining to itineraries which are to be considered unreasonable regardless of cost;

(2) a set of trip parameter trade-offs between cost and convenience; and

(3) a set of parameters pertaining to elimination of itinerary-with-fare combinations which are more expensive and/or less convenient by a specified factor compared with the itinerary that provides an optimized combination of low cost and of convenience; and

b. traveler records each identifying at least one of:

(1) a respective traveler; and

(2) a policy record applicable to said traveler; and

3. a rules file containing limitations and combinations of limitations in published airline rules relevant to the traveler, in machine-readable form, applicable to the fares to ensure that a particular fare is valid for a particular itinerary;

B. entering travel parameters identifying a trip request;

C. establishing a communication link with an airline booking system providing information on seat availability on specified flights per booking class;

D. processing said trip request by carrying out the computer-implemented steps of:

1. using at least one of the tariff file and prestored file of connecting itineraries to find candidate flights and to construct direct and connecting itineraries for said trip which conform to said unreasonableness standards;

2. using the communications link to find seat availability on said candidate flights and eliminating those candidate flights which have no available seats and any connecting itineraries using those flights;

3. using the tariff file and the rules file to find fares, including constructing sum-of-segments fares, for each remaining itinerary which are both valid and conform to the trip request;

4. using the traveler file for said traveler to find the itinerary-with-fare combinations which gives an optimized combination of low fare and of convenience;

5. using the traveler file to eliminate itinerary-with-fare combinations which do not comply with the traveler record and the applicable policy record for reasons of cost and/or convenience relative to said optimized itinerary-with-fare combination, to thereby leave one or more itinerary-with-fare combinations which are valid and conform to said traveler file; and

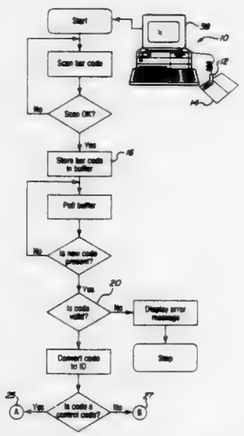
6. displaying at least some of the remaining itinerary-with-fare combinations arranged by departure or arrival.

5,331,547

PROCESS AND COMPUTER SYSTEM FOR CONTROL OF INTERFACE SOFTWARE AND DATA FILES

George Laszlo, White Plains, N.Y., assignor to Clinical Multiphase Research, Inc., Wilton, Conn.

Filed Jan. 29, 1993, Ser. No. 11,309
Int. Cl.[5] G06F *15/403*
U.S. Cl. 364—413.01 **23 Claims**



1. A process for controlling graphic user interface software and accessing data files in a computer system, comprising the steps of:

reading a code symbol using an optical image reading device to create a read-in code, said read-in code comprising an alphanumeric code in at least base 32;

storing the alphanumeric code in a temporary buffer memory;

polling the buffer at periodic intervals to determine whether an alphanumeric code is stored therein;

testing the alphanumeric code using a validation protocol to assure that the stored code is complete;

translating the alphanumeric code into a base 10 code, said base 10 code comprising an object identification;

comparing the object identification with an object table to determine if the object identification is a control code for the graphic user interface software or a document request code; and

if the object identification is a control code, then implementing the following steps:

matching the base 10 control code to a corresponding internal event identification code, and

composing a message from said internal event identification code for detection in a main event loop of the graphic user interface software whereby said graphic user interface software interprets and executes the message to control user interface functions; and

if the object identification is a document request code, then implementing the following steps:

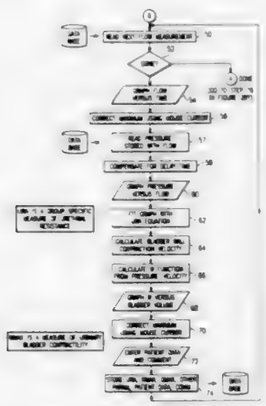
composing a search query using said object identification for execution by a search engine residing in said computer system, and executing said search query to locate and display the requested document on an output device.

5,331,548

METHOD AND SYSTEM FOR ON-LINE MEASUREMENT, STORAGE, RETRIEVAL AND ANALYSIS OF URODYNAMICAL DATA

Harm J. Rollema, St. Josefstraat, 6245 LN Oost - Maarland (Eijsden), and Ron van Mastrigt, Vryland 4, Mijnsheerenland (Dorp) both of Netherlands

Filed Oct. 28, 1991, Ser. No. 783,045
Int. Cl.[5] A61B *10/00*
U.S. Cl. 364—413.02 **9 Claims**



1. A method, using a computer processing system, for preoperative assessment of a patient having prostatism symptoms or other symptoms associated with voiding disorders upon clinical evaluation, comprising the steps of:

(a) measuring the patient's isometric detrusor pressure immediately before voiding and detrusor pressure and flow rate during voiding using pressure and flow rate transducers of a computer processing system, the computer processing system further including a digital processor, storage means, input means, and output means;

(b) inputting and storing, to said computer processing system, the patient's isometric detrusor pressure immediately before voiding and detrusor pressure and flow rate during voiding measured in (a) in the computer processing system;

(c) using the computer processing system to generate a plot of pressure as a function of flow rate during voiding;

(d) adapting a urethral resistance relation to the plot generated in step (c) and using the computer processing system to generate a urethra resistance parameter URA;

(e) using the computer processing system to generate a plot of detrusor contractility as a function of the patient's bladder volume during voiding; and

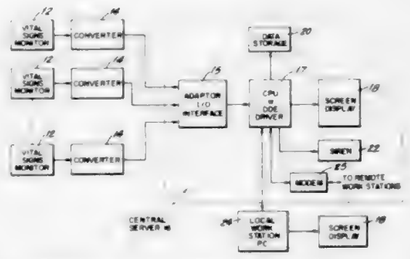
(f) using said processor to calculate a maximum extrapolated rate of rise of the patient's isometric detrusor pressure and generate a contractility parameter U/1.

5,331,549

MEDICAL MONITOR SYSTEM

John M. Crawford, Jr., 15 Water St., Clinton, Hunterdon County, N.J. 08809

Filed Jul. 30, 1992, Ser. No. 922,577
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.02 **18 Claims**



1. A medical monitoring system comprising:

a plurality of individual site vital sign monitors, each of said monitors providing a plurality of vital sign signals for each of said plurality of sites,

a central processing unit, said vital sign signals from each of said site monitors being coupled as inputs to said central processing unit;

a display screen coupled to outputs from said central processing unit;

an overview display on said screen, said display including a topological presentation of each of said sites and a first set of icons, each icon of said first set representing a separate one of said sites,

a plurality of vital sign states for each of said vital signs at each of said individual sites, each of said vital sign states providing an indication of the relative significance of the vital signal being measured by a monitor relative to a predetermined vital sign value limit,

means to set a patient status state at each of said sites,

a set of Notification States to rank the relative importance of the vital state occurring at each of said individual sites as a partial function of said patient status state and a partial function of said vital sign state, and

a set of alarm signals indicating said Notification States, said alarm signal employing said first set of said icons to provide site identification of the Notification State involved.

5,331,550

APPLICATION OF NEURAL NETWORKS AS AN AID IN MEDICAL DIAGNOSIS AND GENERAL ANOMALY DETECTION

Richard G. Stafford, Chadds Ford, Pa.; Daniel J. Mickewich, Arden, and Jacob Beutel, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 664,906, Mar. 5, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,343
Int. Cl.[5] G06F *15/42, 15/70, 15/18*
U.S. Cl. 364—413.02 **8 Claims**

1. A method for computer-aided detection of possible anomalies in a digitized image comprising a plurality of M×N picture elements each representing an optical density in the digitized image, the method comprising the steps of:

a) subdividing the digitized image into a plurality of predetermined regions each comprising m×n picture elements, where m<M and n<N;

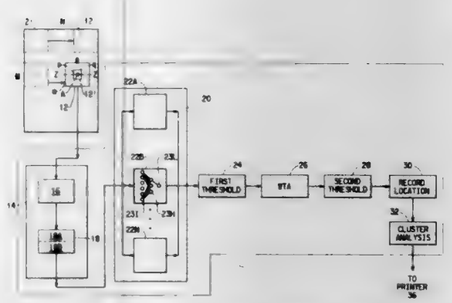
b) subtracting background from each predetermined region of the digitized image;

c) selecting a subregion comprising p×q picture elements, where p<m and q<n;

d) normalizing the image data from the p×q subregion;

e) using a neural network system, analyzing each predetermined subregion of the digitized image to recognize any pattern indicative of an occurrence of a possible anomaly, the neural network system comprising at least two member neural networks each trained to recognize a particular predetermined anomaly type within a predetermined size range and to produce an output signal value indicative of the presence of said predetermined anomaly type;

f) comparing each of the output values of each of the member neural networks to a first predetermined threshold



value corresponding to each member neural network above which the presence of a possible anomaly is indicated;

g) comparing each output value that exceeds each first predetermined threshold to each of the other output values that exceed each corresponding first predetermined threshold to select the maximum signal value;

h) comparing the maximum signal value to a second predetermined threshold value above which the presence of a possible anomaly is indicated;

i) based upon the comparisons of step h), determining the location within the digitized image of each possible anomaly;

j) using a clustering analysis on the locations of possible anomalies of step i), identifying each vicinity on the digitized image at which a cluster of locations of possible anomalies occurs; and,

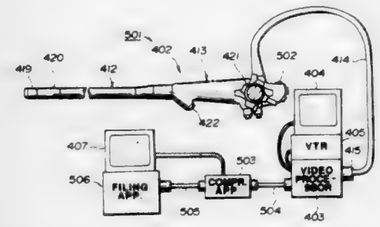
k) creating a marker for each cluster, having a contour that surrounds all of the anomalies in each cluster, corresponding to the digitized location of each cluster.

5,331,551

ENDOSCOPE IMAGE RECORDING SYSTEM FOR COMPRESSING AND RECORDING ENDOSCOPE IMAGE DATA

Takao Tsuruoka, Hachioji; Keiichi Hiyama, Akishima; Kazunari Nakamura, Hachioji; Yutaka Konomura, Tachikawa; Masahide Kanno, and Shinichiro Hattori, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1990, Ser. No. 558,551
Claims priority, application Japan, Oct. 2, 1989, 1-258050; Oct. 2, 1989, 1-258051; Oct. 2, 1989, 1-258052; Oct. 4, 1989, 1-260725; Oct. 5, 1989, 1-260842
Int. Cl.[5] A61B *1/04;* **H04N** *7/18*
U.S. Cl. 364—413.13 **36 Claims**



36. An endoscope image recording system, comprising:

an endoscope having an observing optical system at the distal end of an insert section;

image sensing means for converting an image from said observing optical system of said endoscope to an electric signal;

compression means for receiving an image information signal from said image sensing means and for compressing said image information signal;

digital recording means for recording said image information signal compressed by said compression means; and

release operation means for generating a trigger signal to produce a still picture, said release operation means is operatively connected to said compression means, wherein said compression means compresses the image from said image sensing means in response to said trigger signal and outputs the compressed image to said digital recording means.

5,331,552

METHOD AND APPARATUS FOR PROJECTING DIAGNOSTIC IMAGES FROM NON-ISOTROPIC VOLUMED DIAGNOSTIC DATA

Robert F. Lloyd, Muskego; Thomas E. Kennedy, Whitefish Bay, and Christopher J. Wilbricht, Madison, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 914,175, Jul. 14, 1992, Pat. No. 5,280,428, and a continuation-in-part of Ser. No. 925,544, Aug. 5, 1992, Pat. No. 5,295,488. This application Dec. 4, 1992, Ser. No. 985,389
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.15 **12 Claims**

1. A method of generating a diagnostic image of a body comprising the steps of:

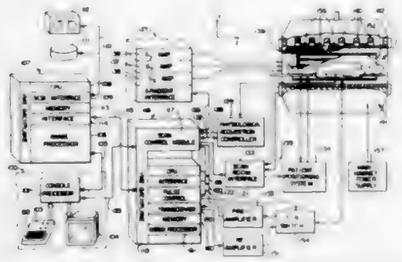
directing a radiated energy through a region of interest of the body;

detecting an interaction of the energy with the body to acquire data at a plurality of voxels, the voxels having actual spatial coordinates in dimensions of a coordinate system and being located within the region of interest of the body wherein a value of the datum of each voxel corresponds to a physical property of the body at the spatial coordinates, wherein the spatial coordinates of the

voxels are not equally spaced along each of the dimensions;

storing the data of the voxels in addresses in an electronic memory wherein the addresses are related to scaled spatial coordinates of the voxels, the scaled spatial coordinates being the actual spatial coordinates of the voxels transformed by multiplying at least one coordinate by a scaling factor;

determining a desired view axis with respect to the actual spatial coordinates of the voxels along which to view the voxels, the desired view axis defined by three rotative coordinates;



calculating an effective view axis from the desired view axis and the scaling factor, so that a ray directed along the effective view axis intersects the same voxels at the scaled spatial coordinates as the desired view axis would intersect the voxels at the actual spatial coordinates;

transforming the scaled spatial coordinates of each voxel by at least one rotation to produce rotated spatial coordinates so that the effective view axis is normal to an imaging plane;

projecting the voxels along the view axis to pixels in the image plane having image coordinates corresponding to the rotates spatial coordinates; and

displaying pixel data at the image coordinates in an image.

5,331,553

THREE DIMENSIONAL IMAGE RECONSTRUCTION FOR A POSITRON EMISSION TOMOGRAPH

Gerd Muehllehner, Wayne, Pa., and Robert M. Lewitt, Stratford, N.J., assignors to UGM Medical Systems, Inc., Philadelphia, Pa.

Filed Apr. 15, 1992, Ser. No. 869,523
Int. Cl.[5] G06F *15/72*; G01T *1/172*
U.S. Cl. 364—413.24 **17 Claims**

1. A computer implemented method for reconstructing images, comprising the steps of:

providing an array of detectors, the detectors being disposed around and having therebetween a transversely and axially extending field of view, the detectors having an axial acceptance angle such as to enable sensing of both transverse and oblique rays;

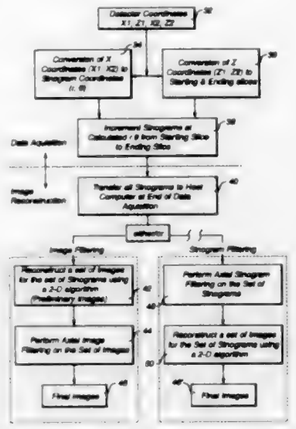
detecting in said field of view both transverse and oblique rays;

converting the detected rays to data in electrical form;

collecting and assembling said data representative of the detected rays;

rebinning said data to create a stack of two-dimensional data sets representative of individual transverse slice images, whereby said slice images signify in the aggregate a three-dimensional image;

reconstructing slice-by-slice from said data sets a three-dimensional image; and



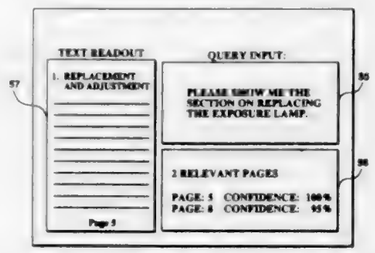
axially filtering said rebinned data to reduce blurring resulting from said rebinning.

5,331,554

METHOD AND APPARATUS FOR SEMANTIC PATTERN MATCHING FOR TEXT RETRIEVAL

James M. Graham, San Jose, Calif., assignor to Ricoh Corporation, Menlo Park, Calif. and Ricoh Company Ltd., Tokyo, Japan

Filed Dec. 10. 1992, Ser. No. 988,729
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.07 **26 Claims**



1. A method for locating information in a natural language text using a computer including a video monitor and a memory device for storing a data structure representing the natural language text,

wherein said data structure has a tree structure having nodes and levels, each node representing information from associated locations in said text, each of said locations having a corresponding location identifier, the information in a node being a categorical subset of information represented by a parent node of that node, each node being one level below its parent node in the tree structure and containing node constituents, said parent node and the nodes at higher levels of the tree structure that represent more general categories of information than the information represented by a node being ancestors of that node,

the method comprising the steps of:

formatting a query regarding information in the text into a query data structure;

comparing the query data structure to a node to produce a comparison value representative of the degree of similarity between the query and the information represented by the node;

enhancing the comparison value by an amount representative of the degree of similarity between the query and the information represented by ancestors of the node to produce an enhanced comparison value; and

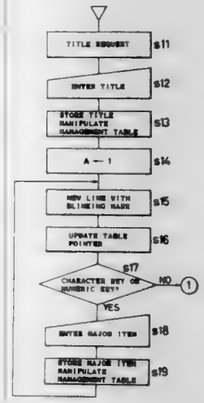
storing the location identifiers associated with the node if the enhanced comparison value exceeds a predetermined lower bound and the node contributes information responsive to the query.

5,331,555

ELECTRONIC APPARATUS

Katsuhiko Hashimoto, Souraku, and Nobutaka Takahashi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 9, 1991, Ser. No. 697,678
Claims priority, application Japan, May 11, 1990, 2-121789; Jun. 1, 1990, 2-145037; Jun. 1, 1990, 2-145038
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.07 **8 Claims**



1. A portable electronic text creation and storage device having a display with a limited display area and a keyboard with a limited number of keys corresponding to various text creation symbols for permitting an operator to create and store text in a hierarchy of text levels beginning with a highest hierarchical text level followed by one or more subordinate hierarchical text levels by selectively depressing the keys on the keyboard, comprising:

a text memory for storing strings of text data entered by the operator using the keyboard;

a text management memory having a hierarchy field for each stored string of text data for storing a corresponding hierarchical text level and having a subordinate field for storing subordinate text information indicating whether a subsequent string of text data at a subordinate hierarchical text level exists;

means for displaying on the display a first indicator near each displayed string of text data in accordance with the corresponding hierarchical text level and a second indicator near each displayed subordinate string of text data in accordance with the corresponding subordinate hierarchical text level;

a selection key on the keyboard actuable by the operator for selecting a hierarchical text level; and

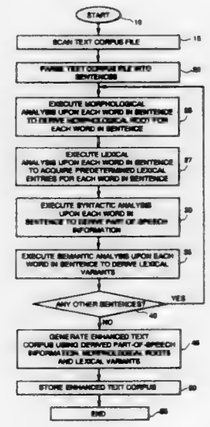
means for storing in the text memory one or more strings of text data entered by the operator and for storing in the text management memory for each entered string of text data the selected hierarchical text level and subordinate text information indicating whether the entered string of text data is followed by a string of subordinate text data.

5,331,556

METHOD FOR NATURAL LANGUAGE DATA PROCESSING USING MORPHOLOGICAL AND PART-OF-SPEECH INFORMATION

James E. Black, Jr., and Uri Zernik, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1993, Ser. No. 82,710
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.08 **26 Claims**



1. A method for constructing an enhanced text corpus file using a computer and comprising the steps of:

providing a text corpus file to said computer, said text corpus file comprising respective electrical signals representative of a predetermined natural language data;

processing said electrical signals to parse said text corpus file into a plurality of sentences each constituted of a respective stream of corpus words;

executing linguistic analysis upon each said stream of corpus words to derive respective part-of-speech information and morphological roots corresponding to respective ones of said corpus words; and

generating an enhanced text corpus file using said derived morphological roots and said derived part-of-speech information.

5,331,557

AUDIO-VIDEO CODING SYSTEM FOR CHINESE CHARACTERS

Zhong-Yi Liu, 79 San Marino Ave., Ventura, Calif. 93003

Filed Jan. 14, 1993, Ser. No. 4,265
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.09 **50 Claims**

1. A computer implemented method for encoding a multiplicity of Chinese characters with English letters, comprising the steps of:

a. selecting a first group of English letters designated to represent a multiplicity of consonants of the Chinese language respectively, the first group consisting of 20 English letters B, C, D, F, G, H, J, K, L, M, N, P, Q, R, S, T, W, X, Y and Z;

b. selecting a second group of English letters designated to represent a multiplicity of vowels of the Chinese language respectively, the second group consisting of all 26 English letters;

c. selecting a third group of English letters designated to

represent a multiplicity of strokes of the Chinese language respectively, the third group consisting of 24 English letters which include all 26 English letters except X and Z;

d. ascertaining a phonetic pronunciation of a particular one of said multiplicity of Chinese characters which has a single syllable formed by a particular one of said multiplicity of consonants and a particular one of said multiplicity of vowels;

e. ascertaining a pictographic configuration of said particular one of said multiplicity of Chinese characters which also has a unitary shape formed by several particular ones of said multiplicity of strokes including an initial stroke and a final stroke; said computer performing the following steps:

i) constructing an audio code element for said particular one of said multiplicity of Chinese characters, the audio code element consisting of a first English letter which is selected from said first group of English letters and is designated for representing said particular one of said multiplicity of consonants, and a second English letter which is selected from said second group of English letters and is designated for representing said particular one of said multiplicity of vowels;

ii) denoting one of four possible accent tones of said syllable of said particular one of said multiplicity of Chinese characters by combining alternate upper and lowercase



letters in said audio code element, using uppercase for both said first and second English letters to denote a first accent tone, using lowercase for said first English letter but uppercase for said second English letter to denote a second accent tone, using uppercase for said first English letter but lowercase for said second English letter to denote a third accent tone, and using lowercase for both said first and second English letters to denote a fourth accent tone;

iii) constructing a video code element for said particular one of said multiplicity of Chinese characters, the video code element consisting of two English letters selected from said third group of English letters, including a third English letter which is designated for representing said initial stroke, and a fourth English letter which is designated for representing said final stroke;

iv) encoding said particular one of said multiplicity of Chinese characters with an integral audio-video code of four English letters, which is constructed by compiling together said audio code element and said video code element of said particular one of said multiplicity of Chinese characters; and

g. repeating steps (d) through (f) until said multiplicity of Chinese characters are all encoded;

h. whereby each one of said multiplicity of Chinese characters is individually encoded and accurately identified by a distinctive audio-video code consisting of four English letters, wherein the first English letter represents the consonant of a particular Chinese Character, the second English letter represents the vowel of the particular Chinese character and together with the first English letter represent the phonetic pronunciation of the particular Chinese character, the third English letter represents the first stroke of the particular Chinese character, the fourth English letter represents the final stroke of the particular Chinese character and together with the third English letter represent the pictographic configuration of the particular Chinese character, and the combination of uppercase and lowercase of the third and fourth English letters represents the accent tones of the particular Chinese character, which audio-video code represents not only phonetic pronunciation but also pictographic configuration as well as accent tone of each one of said multiplicity of Chinese characters.

5,331,558

AUTOPILOT HAVING AN ADAPTIVE DEADBAND FEATURE

Robin C. Hossfield, Medway, and Joseph R. Adamski, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 794,757, Nov. 19, 1991, abandoned.
This application Dec. 14, 1993, Ser. No. 167,438
Int. Cl.[5] G06F *15/50*; G05D *1/00*
U.S. Cl. 364—424.01 **8 Claims**



1. An autopilot adapted for use on a vessel having a steering mechanism, a source of a signal corresponding to the actual speed of the vessel, and a source of a signal corresponding to the actual heading of the vessel, said autopilot comprising:

means responsive to said actual speed signal for providing a velocity scheduling signal inversely related to actual speed;

operator actuable control means for providing a signal corresponding to a desired course for said vessel;

means responsive to said desired course signal and said actual heading signal for providing an error signal corresponding to the deviation between said desired course and said actual heading;

means responsive to said error signal and said velocity scheduling signal for generating an intermediate rudder control signal;

means for generating a deadband threshold signal;

means for actuating said steering mechanism in response to said intermediate rudder control signal when said intermediate rudder control signal exceeds said deadband threshold signal; and

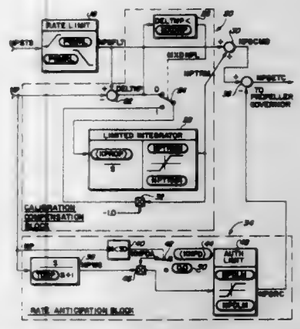
said deadband threshold signal generating means comprising means responsive to said velocity scheduling signal for automatically adjusting the value of said deadband threshold signal.

5,331,559

APPARATUS FOR PREVENTING PROPELLER OVERSHOOT

Glen T. High; Larry C. Prevallet, both of Phoenix, and Joseph W. Free, Mesa, all of Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Sep. 18, 1991, Ser. No. 762,756
Int. Cl.[5] G06F *15/50*; B64C *11/50*
U.S. Cl. 364—431.02 **16 Claims**



1. Apparatus for preventing propeller overshoot in a system that generates a speed command for setting a propeller governor to a desired speed and that receives a feedback signal indicating measured propeller speed, said apparatus comprising:

delta speed means, responsive to said feedback signal, for providing a delta speed signal indicating changes in said measured propeller speed; and

modifying means, responsive to said delta speed signal and said feedback signal, for providing a modified speed command to said propeller governor for modifying said speed command such that said propeller governor changes blade pitch before said feedback signal indicates said desired speed to prevent propeller overshoot, said speed command being modified when said delta speed signal falls outside a first range.

5,331,560

APPARATUS AND METHOD FOR SELF DIAGNOSING ENGINE COMPONENT CONTROLLING SYSTEMS ACCORDING TO PREDETERMINED LEVELS OF PRIORITY

Hideyuki Tamura, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 22, 1992, Ser. No. 824,154
Claims priority, application Japan, Jan. 23, 1991, 3-006050
Int. Cl.[5] F02M *51/00*
U.S. Cl. 364—431.12 **16 Claims**

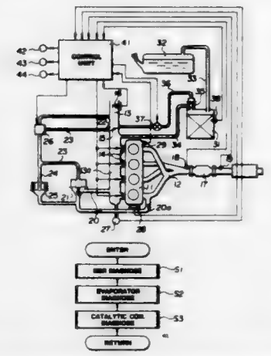
1. An apparatus for self diagnosing a plurality of engine component operation controlling systems applicable to an internal combustion engine, comprising:

a) a plurality of self diagnosing blocks for executing self-diagnosis of the respective engine component operation controlling systems, each self-diagnosis having a predetermined priority according to the kind of self-diagnosis;

b) a plurality of determining blocks for determining whether predetermined diagnostic conditions required for the respective self diagnosing blocks to start the self-diagnosis for the respective engine component operation controlling systems are established;

c) a self-diagnosis order setting block for setting a self-diagnosis order of executing the respective self-diagnosis to a predetermined order according to the kind of each of the engine component operation controlling systems;

d) a plurality of self-diagnosis execution monitoring blocks for monitoring whether one of the other self-diagnosis is being executed on the basis of a value of a flag while one of the self-diagnostic conditions corresponding to one of the engine component operation controlling systems is established, the value of the flag indicating which one of the self diagnosis is being executed; and,



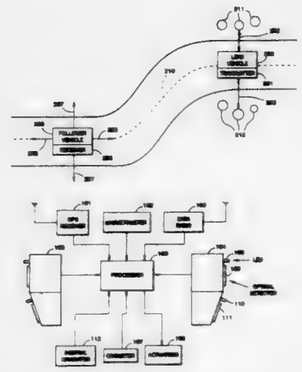
e) determining means for determining whether the execution of a first self-diagnosis having a priority lower than that of a second self-diagnosis is suspended when the second self-diagnosis is being executed according to the value of the flag.

5,331,561

ACTIVE CROSS PATH POSITION CORRELATION DEVICE

William A. Barrett, Shorewood, and Donald G. Krantz, Eden Prairie, both of Minn., assignors to Alliant Techsystems Inc., Hopkins, Minn.

Filed Apr. 23, 1992, Ser. No. 872,497
Int. Cl.[5] G06G *7/64*; G08G *1/16*
U.S. Cl. 364—447 **28 Claims**



1. A system for controlling a follower vehicle based upon data that represents first and second side range profiles along a predefined path, comprising:

a) generation means for gathering data and for generating the first and second side range profiles, comprising:

i) first profile generation means for generating the first side range profile representing first distances between a lead vehicle and objects to a side of the lead vehicle, measured laterally from the predefined path, at various points along the predefined path; and

ii) second profile generation means for generating the

second side range profile representing second distances between the follower vehicle and the objects to a corresponding side of the follower vehicle at various points along the predefined path;

b) correlation means for correlating the first side range profile with the second side range profile and for determining therefrom a location of the follower vehicle along the predefined path; and

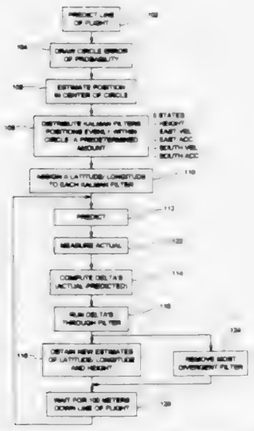
c) control means for controlling the follower vehicle in response to the correlation means such that the follower vehicle traverses the predefined path.

5,331,562

TERRAIN REFERENCED NAVIGATION-ADAPTIVE FILTER DISTRIBUTION

John T. McGuffin, Albuquerque, N. Mex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 16, 1992, Ser. No. 822,031
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **11 Claims**



1. A terrain referenced navigation system for an aircraft comprising:

(a) digitally encoded grid means for generating a circle error of probability having a plurality of grid points, wherein each grid point includes a kalman filter having position parameters; and

(b) processing means for removing the most divergent kalman filter from the circle error of probability, for updating the position parameters and for repeatedly removing subsequent most divergent kalman filters from the circle error of probability and updating position parameters until a last kalman filter is obtained.

5,331,563

NAVIGATION DEVICE AND DIRECTION DETECTION METHOD THEREFOR

Yutaka Masumoto, and Satoshi Odagawa, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 984,207
Claims priority, application Japan, Dec. 10, 1991, 3-325731
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **8 Claims**

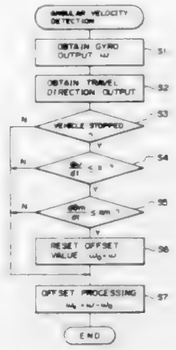
1. A navigation device comprising:

vehicle condition discriminating means for discriminating whether a vehicle is stopped or not;

angular velocity detecting means for detecting change of direction of the vehicle and producing angular velocity data on the basis of the detected change of direction;

absolute direction detecting means for detecting geomagnetism and producing absolute direction data of the vehicle on the basis of the detected geomagnetism;

offset processing means for producing corrected angular velocity data from said angular velocity data and a first reference value; and



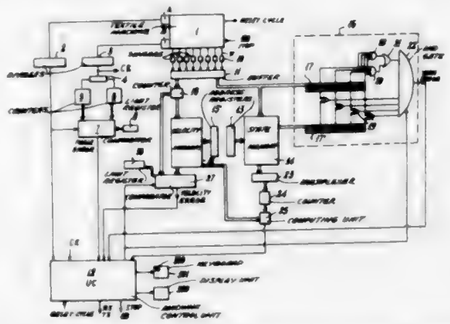
offset reset means for renewing said first reference value with said angular velocity data when the vehicle is discriminated to be stopped, a change rate of the angular velocity data is within a predetermined second reference value and a change rate of the absolute direction data is within a predetermined third reference value.

5,331,564

DEVICE FOR VERIFYING THE CORRECT EMPLOYMENT OF THE YARNS USED IN A TEXTILE MACHINE, IN PARTICULAR A KNITTING OR HOSIERY MACHINE

Tiziano Barea, Busto Arsizio, Italy, assignor to International Trading S.R.L., Italy

Filed Apr. 12, 1991, Ser. No. 684,333
Claims priority, application Italy, Apr. 20, 1990, 20087 A/90
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—470 **19 Claims**



1. A device for verifying the correct employment of yarns used by textile machines, comprising

means for monitoring the movement of the yarns used for forming a fabric,

sensor means for sensing the commencement of a textile machine cycle for producing a fabric article,

means for measuring the operational velocity of the textile machine,

means for memorizing the information regarding yarn movements obtained during the production of a master fabric in an initial cycle of the textile machine,

comparator means for comparing the yarn movements during the production of fabrics subsequent to the master fabric, said comparator means comprising means to evaluate both the movement of the yarn and the velocity of the yarn if any during the master cycle and during a current cycle in which the textile machine is operating subsequent to the master cycle,

means for detecting any error between the yarn movements relating to the master fabric and the subsequent movements, said means for detecting the yarn movement error comprising means for detecting consecutive errors at a same one of said sensor means,

means for determining whether the consecutive errors are of the same type, and indicator means for indicating a general error, a general error being indicated by said indicator means only if an error indication is provided by both said means for detecting consecutive errors at a same one of said sensor means and said means for determining whether the consecutive errors are of the same type,

means for halting the machine,

means for memorizing the length of the master cycle, and

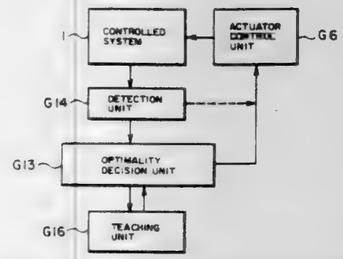
means for determining any error in the cycles subsequent to the master cycle in terms of duration difference between the subsequent cycles and the master cycle.

5,331,565

CONTROL SYSTEM HAVING OPTIMALITY DECISION MEANS

Satoshi Hattori, Hitachi; Shigeru Ueki, Tokyo; Yutaka Saito; Tetsuo Manchu, both of Hitachi; Yasunori Katayama, Mito; Yasuo Morooka, Hitachi; Hiroshi Matsumoto, Ibaraki, and Masaaki Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 490,848, Mar. 9, 1990. This application Oct. 8, 1993, Ser. No. 133,379
Claims priority, application Japan, Mar. 17, 1989, 1-63743; Mar. 20, 1989, 1-66229
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—472 **6 Claims**



1. A control system for controlling a predetermined characteristic of a subject which is controlled by a plurality of actuators, said control system comprising:

a plurality of detection means for detecting a plurality of different data relating to respectively different presentations representing the predetermined characteristic of said subject and for producing output signals used for control of each of said actuators in response to the detected different data; and

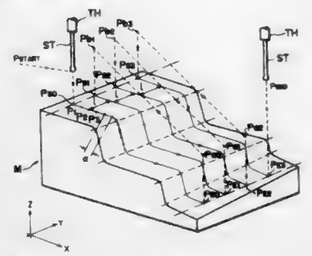
optimality decision means for synthetically judging a state of said characteristic of said subject on the basis of the output signals of said plurality of detection means in accordance with a predetermined rule and for supplying a control command for each of said plurality of actuators on the basis of a result of said judging.

5,331,566

DIGITIZING APPARATUS WITH EXTENSION-INTERSECTION MEASURING FUNCTION

Nobuo Kashima, Niwa, Japan, assignor to Okuma Corporation, Aichi, Japan

Continuation-in-part of Ser. No. 501,138, Mar. 29, 1990, abandoned. This application Nov. 8, 1991, Ser. No. 789,336
Int. Cl.[5] G06F *15/46;* **G05B** *19/42*
U.S. Cl. 364—474.29 **3 Claims**



1. A digitizing apparatus for obtaining form data of a subject three-dimensional model by scanning measurement lines on the surface of said three-dimensional model using a stylus of a tracer head, said digitizing apparatus comprising:

a continuous cycle scanning measuring section for measuring coordinates of points on said measurement lines which are positioned at intervals of a constant scanning distance of said stylus;

a measured-coordinate temporary storage section for temporarily storing the coordinates of the points on said measurement lines;

an extension-intersection calculating section for determining associated sets of points from among the points on said measurement lines which extend along a same respective straight line in accordance with the coordinates read from said measured-coordinate temporary storage section, for extracting straight lines for the associated sets of points, and for calculating an extension-intersection as an intersection of two neighboring straight lines;

an extension-intersection storage section for storing the extension-intersection calculated in said extension-intersection calculating section; and

a data comparison and collation output section for comparing and collating the coordinates of the intersection read from said extension-intersection storage section and previously prepared and stored coordinates of intersections on a drawing so as to output results of said comparison and collation denoting a deviation error between the coordinates of the intersection of the three-dimensional model and the coordinates of intersections on the drawing.

5,331,567

PYRAMIDAL ABSORBER HAVING MULTIPLE BACKING LAYERS PROVIDING IMPROVED LOW FREQUENCY RESPONSE

Hugh T. Gibbons, Louisville, and Edward F. Kuester, Boulder, both of Colo., assignors to The University of Colorado Foundation, Inc., Boulder, Colo.

Filed Aug. 22, 1991, Ser. No. 748,577
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—481 **6 Claims**

1. A method for constructing an electromagnetic wave absorbing wall covering for an anechoic measurement chamber, the wall covering comprising a pyramid cone array having specified S parameter characteristics, said pyramid array being mounted on a plurality of backing layers, and the physical dimensions and material properties of said plurality of backing layers being variable, comprising the steps of;

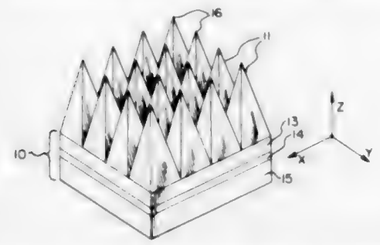
(A) determining said specified S parameter characteristics of said pyramid array,

(B) determining variable thickness, conductivity and permittivity parameters of each individual one of said backing layers,

(C) providing a mathematical objective function which defines low frequency wave reflection from said wall covering as a function of said specified S parameters and said variable thickness, conductivity and permittivity parameters of said backing layers,

(D) providing optimization criteria to said objective function,

(E) optimizing said objective function to define a backing



layer construction that produces minimum weighted low-frequency wave reflection from said wall covering, and

(F) constructing an electromagnetic wave absorbing wall having a pyramid cone array of said specified S parameters and a plurality of backing layers having said defined construction of step (E).

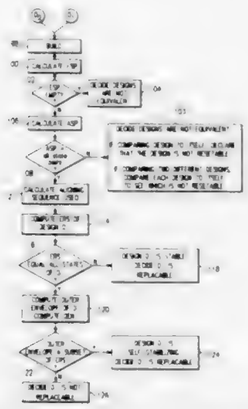
said method operating to select physical dimensions and material properties for said backing layers in a manner so as to not modify high-frequency wave reflection characteristics of said pyramid array, while at the same time providing reduced low-frequency wave reflection from said wall covering.

5,331,568

APPARATUS AND METHOD FOR DETERMINING SEQUENTIAL HARDWARE EQUIVALENCE

Carl Pixley, Austin, Tex., assignor to Microelectronics & Computer Technology Corporation, Austin, Tex.

Filed Jun. 18, 1991, Ser. No. 717,213
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **15 Claims**



1. A method for comparing two sequential hardware designs to determine they are equivalent, comprising the steps of:

providing a first sequential hardware design;

providing a second sequential hardware design compatible to the first

hardware design, having the same number of inputs and the same number of outputs;

comparing the first sequential hardware design to the second sequential hardware design as a design pair to provide a representation of the total sequential behavior of the design pair;

determining the equivalent-state-pair set of state pairs in the design pair that, for any sequence of inputs to the design pair, will result in the outputs of the first and second sequential hardware designs being equivalent for all state pairs reached by the set of inputs within said sequence; and

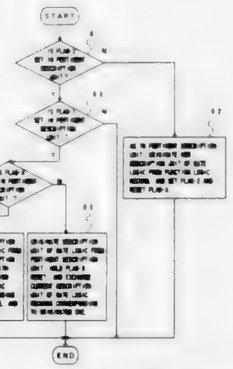
determining if any state pairs of the design pair are included in the equivalent-state-pair set and, if not, indicate that the first sequential hardware design is not equivalent to the second sequential hardware design.

5,331,569

METHOD AND SYSTEM FOR LOGIC CHANGE IN AN AUTOMATIC LOGIC SYNTHESIS SYSTEM

Kazuhiko Iijima, Ebina, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1991, Ser. No. 764,576
Claims priority, application Japan, Sep. 26, 1990, 2-256407
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **6 Claims**



1. A method for logic change in an automatic logic synthesis system, wherein said automatic logic synthesis method synthesizes lower-rank descriptions defining a logic device in terms of expressions of lower abstraction from higher-rank descriptions defining the logic device in terms of expressions of higher abstraction, said logic change method comprising:

providing first identifiers each of which indicates the presence of a description change of the corresponding description unit data of the higher-rank description, and providing second identifiers each of which indicates the presence of a description change of the corresponding description unit data of the lower-rank description;

setting the first identifier of changed description unit data at the change of the higher-rank description, and setting the second identifier of changed description unit at the change of the lower-rank description directly made without any synthesis process from the higher-rank description;

originating new lower-rank description unit data from the higher-rank description unit whose first identifier is set, in the automatic logic synthesis after the higher-rank description change; and

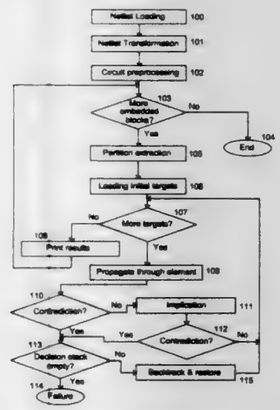
registering the new lower-rank description unit data as lower-rank description unit data on condition that the second identifier of the current lower-rank description unit data corresponding to the new lower-rank description unit data is not set, and merging the new lower-rank description unit data and the current lower-rank description unit data and then registering a merged result as lower-rank description unit data on condition that the second identifier of the current lower-rank description unit data is set.

5,331,570

METHOD FOR GENERATING TEST ACCESS PROCEDURES

Michael Bershteyn, Campbell, Calif., assignor to Mitsubishi Electric Research Laboratories, Inc., Cambridge, Mass.

Filed Mar. 27, 1992, Ser. No. 858,694
Int. Cl.[5] G01R *31/28*
U.S. Cl. 364—489 **14 Claims**



1. A method for generating test access sequences for an embedded block in a digital circuit, said digital circuit having a set of circuit signals including primary inputs for receiving a circuit test sequence, a set of embedded block terminals including inputs and output for the embedded block, primary outputs, and internal signals associated with access circuitry providing a T-path from the primary inputs to the inputs for the embedded block and from the outputs for the embedded block to the primary outputs, said method comprising the steps:

loading a netlist representation of the digital circuit including the embedded block;

identifying a first set and a second set of terminals from the set of embedded block terminals;

loading a set of test targets for the embedded block to create a set of terminal signal values for testing the first set and the second set of terminals, wherein said test target loading step comprises defining a set of initial test targets, which includes the steps of:

specifying in the set of test targets a first test sequence for the first set of terminals, said first test sequences comprising a first set of signal values and a first set of assigned time intervals for applying the first set of signal values; and

specifying in the set of test targets a second test sequence for the second set of terminals, said second test sequence comprising a second set of signal values and a second set of assigned time intervals for applying the second set of signal values; and

calculating a set of primary input signal values for the circuit test sequence in accordance with the set of test targets.

14. A method for generating test patterns for a digital circuit having sequential elements, wherein the test synchronization scheme for the sequential circuits comprises applying a set of data values to data inputs of the digital circuit, latching the set of data values by applying clock signals to clock inputs of the digital circuit, and subsequently reading a set of output values of the digital circuit, said method comprising:

receiving an initial netlist representation of the digital circuit;

transforming the initial netlist representation of the digital circuit to create a model of the digital circuit represented in the form of an iterative array providing model signal values equal to the values expected during testing of the digital circuit under the test synchronization scheme, wherein said transforming step comprises: the steps of:

first marking all signals of the digital circuit passing exclusively through combinational circuit elements to any primary circuit output;

first storing for each circuit signal in the digital circuit a set of all synchronizing clock primary inputs for the circuit signal passing exclusively through combinational elements;

first determining for every data input of every circuit element, a set of flip flops from which the data input can be reached exclusively through combinational elements;

second storing for each data input of every circuit element the union of the sets of primary input clock signals for each of the sets of flip flops identified in said first determining step;

second marking the data input for each circuit element if the intersection of the clock signals from said first storing step with the clock signals from said second storing step is non-empty;

third marking every circuit signal having a path from the signal to any other signal that is identified in said second marking step which passes exclusively through combinational elements;

duplicating every element that has an output identified in said first marking step and either of said second or third marking step into one circuit element that is only combinationally observable and another equivalent circuit element that is only sequentially observable, creating fanout at its input, and if a duplicated element's output is a fanout stem with every branch being either only combinationally observable or only sequentially observable, splitting the fanout by connecting its branches to the corresponding copy of the duplicated element;

assigning for every sequential element whose output is sequentially observable but not combinationally observable the internal model for the element where the output for the element changes one time unit after application of the clock signal; and

assigning for every sequential element whose output is combinationally observable but not sequentially observable the internal model for the element where the output for the element changes during the same time frame as the clock signal.

5,331,571

TESTING AND EMULATION OF INTEGRATED CIRCUITS

Alan P. Aronoff, Pleasanton; Marc S. Birnkrant, Palo Alto; Osamu Matsushima, San Jose, all of Calif.; Kyosuke Sugishita, Kanagawa, Japan; Hisaharu Oba, Sunnyvale, Calif.; Katta N. Reddy, Milpitas, Calif.; Richard I. Olsen, Los Gatos, Calif., and Brent N. Dichter, Boulder Creek, Calif., assignors to NEC Electronics, Inc., Mountain View, Calif.

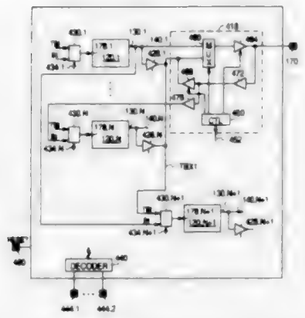
Filed Jul. 22, 1992, Ser. No. 919,417
Int. Cl.[5] G06G *7/48;* **G06F** *15/00*
U.S. Cl. 364—490 **28 Claims**

1. A circuit having a normal mode and a test mode and comprising:

one or more external pins;

a plurality of function blocks, each block having one or more I/O nodes, at least one of said I/O nodes of said blocks being for providing output signals and being inaccessible in normal mode from any external pin of said integrated circuit;

one or more lines for interconnecting said nodes and said external pins in normal mode;
one or more test bus lines for accessing in test mode at least some of said I/O nodes from the external pins; and
for at least one node which is for providing output signals and which in normal mode is inaccessible from any external pin, a tri-state buffer having an input connected to said node and an output connected to one of said test bus lines, said tri-state buffer being always disabled in normal mode, and in test mode said tri-state buffer being enabled during a function block test to allow an output signal on said node to be provided through said one of said test bus lines to an external pin.



5,331,572
INTEGRATED CIRCUIT AND LAYOUT SYSTEM THEREFOR

Naoya Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 871,287
Claims priority, application Japan, Apr. 26, 1991, 3-125567
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—491 **11 Claims**

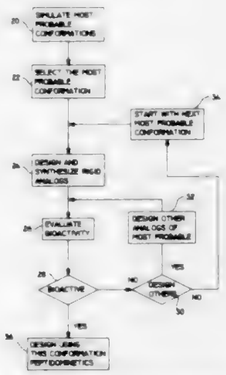


1. An integrated circuit comprising:
a plurality of macro-blocks arranged in an inner region of a semiconductor chip;
a plurality of input/output blocks arranged at a peripheral portion of said macro-blocks;
bonding pads respectively arranged between said input/output blocks and an outer frame of said semiconductor chip;
a first layout obtained by performing predetermined wiring between said macro-blocks and between said macro-blocks and said input/output blocks;
a second layout obtained by performing wiring between said input/output blocks and said corresponding bonding pads,
wherein said bonding pads are arranged near corners of said semiconductor chip, and said second layout has a bent wiring pattern between input/output blocks corresponding to said bonding pads arranged near the corners of said semiconductor chip,
wherein said input/output blocks and said bonding pads corresponding to said input/output blocks respectively include terminals each having a wiring drawing position set on a basis of relationships between said input/output blocks and said bonding pads, and wherein said bonding pads are connected to said input/output blocks such that said terminals are connected to each other through wiring lines,
a shape and a drawing direction of a wiring of said second layout being determined by a positional relationship between said input/output blocks and said bonding pads corresponding to said input/output blocks, said input/output blocks being arranged at positions near said bonding pads corresponding to said input/output blocks.

5,331,573
METHOD OF DESIGN OF COMPOUNDS THAT MIMIC CONFORMATIONAL FEATURES OF SELECTED PEPTIDES

Vitukudi N. Balaji, 1642 Orchard Wood Rd., and Chandra U. Singh, 1213 Orchard Glen Cir., both of Encinitas, Calif. 92024

Filed Dec. 14, 1990, Ser. No. 628,111
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—500 **3 Claims**

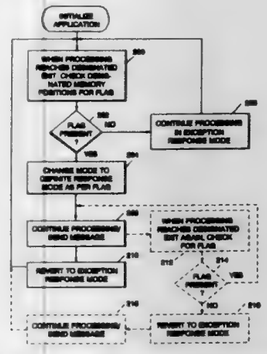


1. A method for producing simulated, chemically modified peptide or peptidomimetic structure(s) which substantially mimic the energetically most probable three-dimensional structure of preselected less constrained polypeptide(s), said method comprising:
(1) determining the ϕ and ψ angles for each residue included in the preselected polypeptide;
(2) comparing the ϕ and ψ angles for each residue obtained in step (i) with the ϕ and ψ angles for each residue of known polypeptide species;
(3) substituting a chemically modified moiety for at least one of the residues of the preselected polypeptide to produce a chemically modified peptide or peptidomimetic structure, wherein said chemically modified moiety has ϕ and ψ angles which are substantially similar to the ϕ and ψ angles of the residue that is replaced; and
(4) chemically synthesizing and testing the bioactivity of the chemically modified peptide or peptidomimetic structure.

5,331,574
SYSTEM AND METHOD FOR COLLECTING RESPONSE TIMES FOR EXCEPTION RESPONSE APPLICATIONS

Leo Temoshenko, Carrboro, and Harry F. Weddington, Jr., Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1991, Ser. No. 741,005
Int. Cl.[5] G01B *21/00*
U.S. Cl. 364—551.01 **9 Claims**

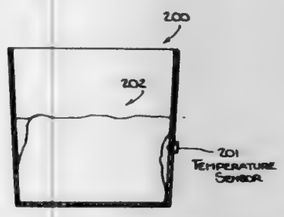


1. A system for obtaining performance data related to an application running in exception response mode, comprising:
means for communicating information to the application running in exception response to switch dynamically to definite response mode for a selected resource for at least one transaction;
means for monitoring for messages related to the at least one transaction; and
means for obtaining performance data based on data from said monitoring means.

5,331,575
SHORTENING MANAGEMENT SYSTEM

Bernard G. Koether, Tequesta, Fla.; Allan E. Witt, Westport, and Charles A. Maher, Jr., Stratford, both of Conn., assignors to Technology Licensing Corporation, Tequesta, Fla.

Filed May 3, 1991, Ser. No. 695,422
Int. Cl.[5] G01K *17/14*
U.S. Cl. 364—557 **18 Claims**

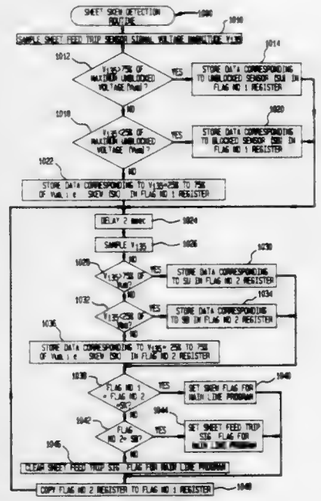


17. Apparatus for determining when a cooking fluid in a cooking apparatus should be changed comprising:
means for monitoring the heat to which said cooking fluid is subjected, wherein said heat monitoring means includes means for integrating temperature of said cooking fluid over a predetermined time interval; and
means for determining that said cooking fluid should be changed when the entire heat to which said cooking fluid has been subjected exceeds a predetermined value.

5,331,576
MAILING MACHINE INCLUDING SKEWED SHEET DETECTION MEANS

Alton B. Eckert, Jr., New Fairfield; Dennis M. Gallagher, Danbury; John R. Nobile, Fairfield, and Thomas M. Pfeifer, Bridgeport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 25, 1992, Ser. No. 841,915
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—589 **18 Claims**



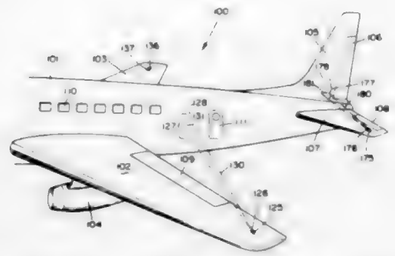
1. A mailing machine base comprising:
(a) means for feeding a sheet in a path of travel, a fence defining a direction of the path of travel and against which the an edge of a sheet is normally registered for alignment therewith and thus in the direction of in the path of travel;
(b) means for controlling the sheet feeding means, the controlling means including a microprocessor connected to the sheet feeding means, the controlling means including means for sensing a sheet fed into and out of blocking relationship with the sensing means and providing a corresponding signal to the microprocessor, the signal having a first magnitude when a sheet is not disposed in blocking relationship with the sensing means, the signal having a second magnitude when a sheet is disposed in blocking relationship with the sensing means, the signal having a variable magnitude between the first and second magnitudes for less than a predetermined time interval when a sheet is fed into blocking relationship with the sensing means and the sheet edge is in alignment with the registration fence, and the signal having a variable magnitude between the first and second magnitudes for at least the predetermined time interval when a sheet is fed out of blocking relationship with the sensing means and the sheet edge is not in alignment with the registration fence; and
(c) the microprocessor programmed for
1. successively alternately obtaining a sample of the magnitude of the signal and delaying sampling thereof for the predetermined time interval,
2. determining whether the magnitudes of any two successive samples are both between the first and second magnitudes, and
3. causing implementation of a shut-down routine if the magnitudes of any two successive samples are both between the first and second magnitudes.

5,331,577

AIRCRAFT WING POSITION INDICATOR

Nickolas H. Grimes, 2344 Port Aberdeen Pl., Newport Beach, Calif. 92660

Filed Aug. 28, 1992, Ser. No. 936,277
Int. Cl.[5] G01B *11/26*
U.S. Cl. 364—559 **9 Claims**



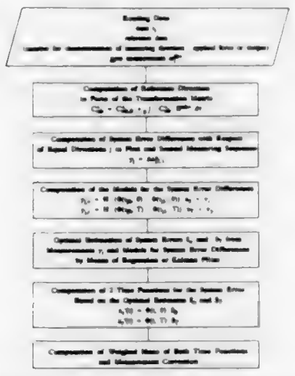
1. An apparatus to monitor the position of the wings of an aircraft relative to the fuselage thereof,
signal producing means mounted on said aircraft, and
signal sensing means mounted on said aircraft to receive signals from said signal producing means,
one of said signal producing means and said signal sensing means is mounted on said wings,
the other one of said signal sensing means and said signal producing means is mounted on said fuselage,
said signals are representative of the position of the wings of said aircraft relative to the fuselage thereof.

5,331,578

PROCEDURE FOR MEASURING ANGLES AND TRAJECTORIES BY MEANS OF GYROS AND INERTIAL SYSTEMS

Bernhard F. M. Stieler, Braunschweig, Fed. Rep. of Germany, assignor to Deutsche Forschungsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Sep. 11, 1991, Ser. No. 757,842
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029215
Int. Cl.[5] G01C *1/00*
U.S. Cl. 364—571.01 **9 Claims**



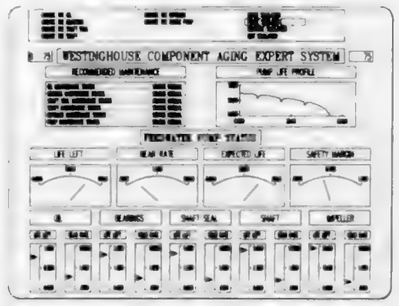
1. A method for measuring spatial angles at at least two different measurement positions by means of an apparatus including three gyros comprising the steps of:
moving said apparatus in a first predetermined order to each of said measurement positions in order to make measurements with respect to predetermined reference directions at said measurement positions, said gyros continuously outputting gyro signals;
continuously registering said gyro signals;
registering reference data at each of said measurement positions, said reference data having a predetermined relationship with said measurement positions at which said spatial angles are to be determined;
registering a first time t at which said reference data are registered;
moving said apparatus in a second predetermined order opposite to said first predetermined order and registering reference data and registering a second time t at which said reference data are registered for each of said measurement positions;
calculating for each of two corresponding reference data, a difference of said first registered time t and said second registered time t at which the reference data are registered, and a difference of said registered gyro signals at which the reference data are registered, said registered time difference and said registered gyro signals difference being used as input for a measurement equation for optimally estimating a system error time function;
optimally estimating said system error time function using said measurement equation; and
correcting said registered gyro signals by means of said estimated system error time function, thereby producing measurements of said spatial angles at said measurement positions.

5,331,579

DETERMINISTIC, PROBABILISTIC AND SUBJECTIVE MODELING SYSTEM

Harold T. Maguire, Jr., Pittsburgh; John S. Wiesemann, Monroeville; David R. Frost, Plum Borough; Raymond J. Nath, Murrysville, and Aristides S. Candris, O'Hara, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 388,086, Aug. 2, 1989, abandoned. This application Apr. 2, 1993, Ser. No. 43,141
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—578 **12 Claims**



1. A modeling system, comprising:
a computer, comprising:
supervisory means for performing supervisory functions of the system;
object means for modeling objects in the system responsive to a simulation cycle initiated by said supervisory means, said object means comprising object models where each object model comprises modeling means for deterministically, probabilistically and heuristically modeling the object and producing object expected life state information over a simulated passage of future time including multiple time points of the future time; and

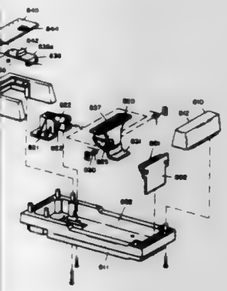
a display connected to said computer and displaying the state information.

5,331,580

DATA CAPTURE SYSTEM WITH COMMUNICATING AND RECHARGING DOCKING APPARATUS, AND MODULAR PRINTER AND HAND-HELD DATA TERMINAL MEANS COOPERABLE THEREWITH

Phillip Miller; Steven E. Koenck; Jerry L. Walter, all of Cedar Rapids, Iowa; Joseph J. Kubler, Nederland, Colo.; Keith K. Cargin, Jr., Cedar Rapids, Iowa; George E. Hanson, Cedar Rapids, Iowa; Patrick H. Davis, Cedar Rapids, Iowa; Steven R. Kunert, Cedar Rapids, Iowa, and Darald R. Schultz, Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 948,034, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 347,602, May 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 305,302, Jan. 31, 1989, abandoned. This application Apr. 12, 1993, Ser. No. 46,048
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—708.1 **12 Claims**



1. In a data capture system,
data communications means for the transmission of data, the data communications means including docking means for removably receiving a portable data device and for coupling a received data device with said data communications means, and
means for securely retaining with the docking means a portable data device when inserted into the docking means, the retaining means comprising a latch pivotally mounted to the docking means, the latch including a device retaining projection disposed to pivot into a device retaining position upon insertion of a portable data device into the docking means, and a foot member disposed to engage a portable data device during an insertion thereof into the docking means, to pivotally move the latch and the device retaining projection toward the device retaining position, and means mounted to the docking means and resiliently movable for snapping into a position blocking the latch from reverse pivotal movement and from release of an inserted portable data device from the docking means.

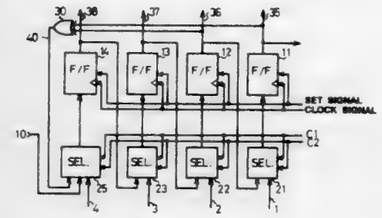
5,331,581

ARTIFICIAL RANDOM-NUMBER PATTERN GENERATING CIRCUIT

Chie Ohkubo, and Yasuhiko Hagihara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 10, 1992, Ser. No. 818,757
Claims priority, application Japan, Feb. 4, 1991, 3-013372
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—717 **8 Claims**

1. An N-bit artificial random-number pattern generator, comprising:
a plurality of N flip-flops, a first to N-th (N≧2), each of which has an input terminal, a set signal input terminal and a clock signal input terminal;
a plurality of (N−1) selectors, a first to (N−1)th, each of which receives an output of said (1+i)th (1≦i≦(N−1)) flip-flop and an i-th input data and selectively forwards its output to said input terminal of said i-th flip-flop;
artificial random-number producing means for receiving outputs from at least two of said N flip-flops, conducting



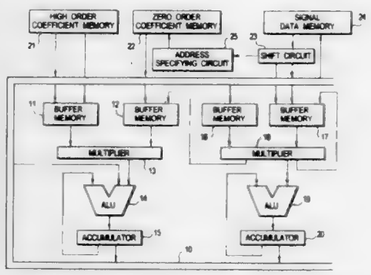
a predetermined logical operation on said outputs, and outputting an artificial random-number data of 1 bit; and
an N-th selector which receives the output data from said artificial random-number producing means, an external output data, and an N-th input data, and which selectively forwards its output to the input terminal of said N-th flip-flop, said N-th selector being directly supplied with a first operation mode signal and a second operation mode signal.

5,331,582

DIGITAL SIGNAL PROCESSOR USING A COEFFICIENT VALUE CORRECTED ACCORDING TO THE SHIFT OF INPUT DATA

Shuhei Sudo, Koufu, and Makio Yamaki, Tokyo, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,168
Claims priority, application Japan, Dec. 16, 1991, 3-331861; Dec. 16, 1991, 3-331862
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—722 **2 Claims**



1. A digital signal processor for computing logarithmic values of data values of an input signal by using an approximation formula expanded into power series, comprising:
a shift circuit for shifting an input data value so that a shifted value falls within a predetermined range of numeric values;
a high-order coefficient memory for storing coefficient values of high order coefficients other than a zero-order coefficient of said approximation formula for data values within said predetermined range of numeric values;
a zero-order coefficient memory for storing a corrected coefficient value of said zero-order coefficient in said

approximation formula, corrected according to the number of digits shifted by said circuit;

an address specifying circuit for specifying a reading address of said zero-order memory corresponding to the number of digits shifted by said shifted circuit;

a first multiplier operatively connected to said shift circuit, for cyclically raising an input data value shifted by said shift circuit, to obtain powers of said input data value;

a second multiplier operatively connected to said first multiplier and said high-order coefficient memory, for multiplying said powers of input data value respectively by corresponding ones of high order coefficients from said high-order coefficient memory; and

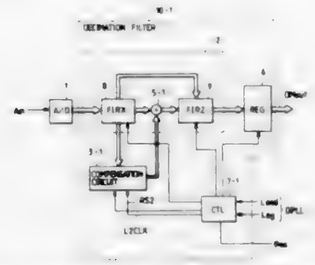
an accumulator means operatively connected to said second multiplier and said zero-order coefficient memory, for accumulating said powers respectively multiplied by corresponding ones of said high-order coefficients by means of said second multiplier, to obtain a high-order accumulation value for orders higher than a first order, and accumulating said corrected coefficient value of zero-order coefficient read-out from said reading address of said zero-order coefficient memory specified by said address specifying circuit on said high-order accumulation value, to obtain a logarithmic value of said input data value by said approximation formula.

5,331,583

RUNNING-AVERAGE/DECIMATION FILTER FOR AN OVERSAMPLING A/D CONVERTER

Hirotaka Hara, Kodaira; Yukihito Ishihara, Ohme, and Masaru Kokubo, Hachiohji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1993, Ser. No. 76,855
Claims priority, application Japan, Jun. 19, 1992, 4-186205
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.01 **16 Claims**



1. A running-average filter for producing a filter output by integrating an input digital signal in accordance with an integration phase and computing a running average of said input digital signal, said running-average filter comprising:

a filter processing unit for processing said input digital signal in a predetermined integration-phase state and producing a plurality of processing results;

a compensation circuit for receiving the processing results and computing a difference in magnitude between one of the processing results with an integration phase lagging behind or leading ahead of said predetermined integration-phase state and another of the processing results with an unchanged integration phase; and

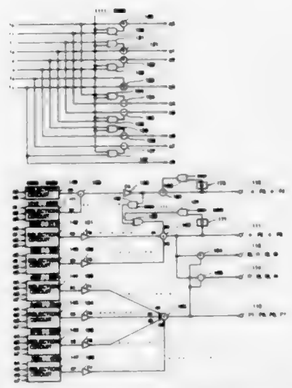
an adder for selectively adding said difference to said one of the processing results for producing the filter output in accordance with external phase-change information.

5,331,584

DISCRETE COSINE TRANSFORMATION PROCESSOR

Toshiaki Kitsuki, and Akira Sawada, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,326
Claims priority, application Japan, Dec. 27, 1991, 3-360287
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—725 **10 Claims**



1. A discrete cosine transformation processor to determine discrete cosine transformation coefficients and inverse cosine transformation coefficients based on input data comprising:

a first addition/subtraction means to subject a plurality of input data arranged to certain combinations to addition or subtraction according to a first control signal every clock so as to output a plurality of combination input data,

a plurality of selection means which receive the data from said first addition/subtraction means assigned to a plurality of groups according to certain combinations for data input group by group and output one of the combination input data according to a predetermined second control signal,

a plurality of multiplication means which respectively receive a plurality of selected data selected by said selection means and multiply the selected data by the predetermined coefficients, and

a plurality of second addition/subtraction means which perform addition or subtraction according to a third control signal every clock using the data output from said multiplication means with different combinations so as to determine cosine transformation coefficients or inverse cosine transformation coefficients.

5,331,585

ORTHOGONAL TRANSFORMATION PROCESSOR FOR COMPRESSING INFORMATION

Masafumi Tanaka, Osaka; Kazuo Sakamoto, Kobe; Tatsuya Fujii, Nishinomiya, and Ryo Fukui, Yao, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 616,418, Nov. 21, 1990, Pat. No. 5,268,853.
This application May 5, 1993, Ser. No. 58,475
Claims priority, application Japan, Dec. 1, 1989, 1-314018; Dec. 18, 1989, 1-328936; Mar. 12, 1990, 2-61984; Mar. 16, 1990, 2-67500; Apr. 25, 1990, 2-110757; Sep. 20, 1990, 2-253573
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—725 **5 Claims**

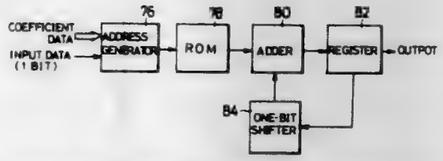
3. An orthogonal transformation processor comprising:

an orthogonal transformation circuit for dividing one image into blocks including a plurality of picture elements and performing an orthogonal transformation processing every block using a ROM table;

an address generator disposed in the orthogonal transformation circuit and responsive to input data received one bit at a time and transformation coefficient data of plural bits to generate data indicative of an address of said ROM table to cause said ROM table to output data therefrom;

an adding circuit receiving data read out of the ROM table and providing output data;

a register disposed in the orthogonal transformation circuit to receive and hold the output data provided by the adding circuit; and



a one-bit shifter disposed in the orthogonal transformation circuit to receive and shift a bit position of the data held in the register in the direction of an upper or a lower position in accordance with a bit position of the input data inputted to said address generator to thereby provide shifted data;

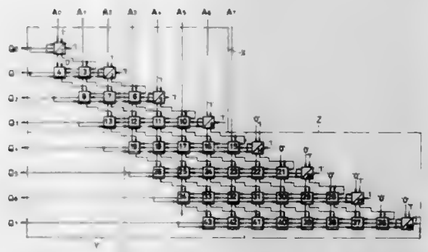
said adding circuit receiving said shifted data and adding the data read out of the ROM table and the shifted data to provide said output data for each one of the bits of the input data received by said address generator.

5,331,586

SQUARE ROOT EXTRACTOR

Yoshitsugu Kitora, Ikeda, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 10, 1992, Ser. No. 833,368
Claims priority, application Japan, Feb. 12, 1991, 3-018727
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—752 **17 Claims**



1. An extractor of a square root of a number represented by bit data having a given bit length comprising:

first arithmetic element means comprising a plurality of identical first arithmetic elements, each of said plurality of first arithmetic elements having respectively different inputs and outputs and each comprising:

an adder for carrying out an addition operation based on respective bit data, respective inverted data obtained by inverting binary one, and respective carry input data input thereto, to output addition result data and respective carry output data,

a first selection circuit for outputting as respective first output data either said addition result data or said respective bit data based on respective selection data, and

a second selection circuit for selecting either one or zero based on said respective selection data and outputting the selected data as respective second output data; and

second arithmetic element means comprising a plurality of identical second arithmetic elements, each of said plurality of second arithmetic elements having respectively different inputs and outputs and each comprising:

an incrementer for receiving respective increment carry input data to effect increment of respective increment input data and outputting respective increment carry output data and respective increment output data,

an adder for carrying out an addition operation based on inverted increment output data output from said incrementer, respective bit data, and respective carry input data input thereto, to output addition result data and respective carry output data, and

a selection circuit for selecting one of said addition result data and said respective bit data based on respective selection data and outputting the selected data as respective output data;

wherein said first and second arithmetic element means are connected in series and in a plurality of rows according to the bit length of the bit data of the number to be extracted and of the square root thereof.

5,331,587

SYSTEM AND METHOD FOR RESTORING A CLIPPED SIGNAL

Jonathan S. Abel, and Julius O. Smith, III, both of Palo Alto, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed May 14, 1992, Ser. No. 882,941
Int. Cl.[5] G06G *7/02*
U.S. Cl. 364—825 **28 Claims**



1. A system for restoring an original signal clipped at a clipping level, said system comprising:

means for providing clipping level information regarding said clipping level;

means for providing bandwidth information regarding said original signal; and

a signal restorer responsive to said clipped original signal, said clipping level information, and said bandwidth information for generating a restored signal providing an approximation of said original signal not clipped at said clipping level.

5,331,588

SEMICONDUCTOR MEMORY DEVICE

Tetsuya Narahara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

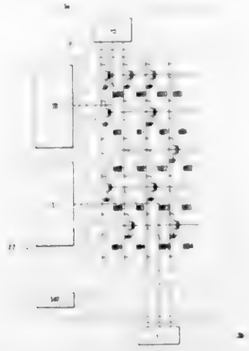
Filed Oct. 29, 1990, Ser. No. 604,280
Claims priority, application Japan, Oct. 27, 1989, 1-281275
Int. Cl.[5] G11C *5/02*
U.S. Cl. 365—51 **17 Claims**

1. A semiconductor memory device, comprising:

a memory cell array region having a plurality of memory cells provided in array fashion, including a plurality of digit lines and word lines that are connected respectively to the memory cells, with the number of the word lines being larger than the number of digit lines, each of said digit lines being arranged in a direction perpendicular to each of said word lines to receive data from the memory cells connected to a selected one of said word lines;

selector formation region for forming selector circuits whose input terminals are connected to a predetermined number of digit lines among said plurality of digit lines; and

a sense amplifier formation region for forming sense amplifiers, said sense amplifier formation region being disposed on the extensions of said word lines and stretching in parallel to said digit lines in said memory cell array region



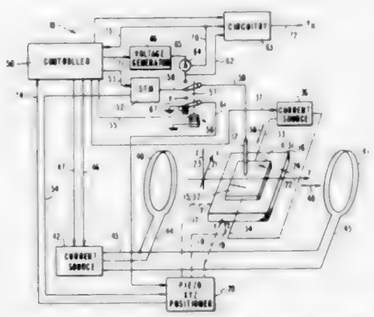
to receive through said digit lines the data from the memory cells connected to the selected on of said word lines, at least a part of a plurality of wirings between said plurality of digit lines and said amplifier formation region being disposed on said memory cell array region.

5,331,589

MAGNETIC STM WITH A NON-MAGNETIC TIP

Richard J. Gambino, Yorktown Heights; Ralph Ruf, New City, both of N.Y., and Elia Zeldov, Rehovot, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,772
Int. Cl.[5] G11C *11/00, 11/18*
U.S. Cl. 365—151 **19 Claims**



1. A method for imaging the magnetic structure and the magnetic domains of a sample comprising the steps of:

passing a current in a first direction through said sample substantially parallel to the surface of said sample,

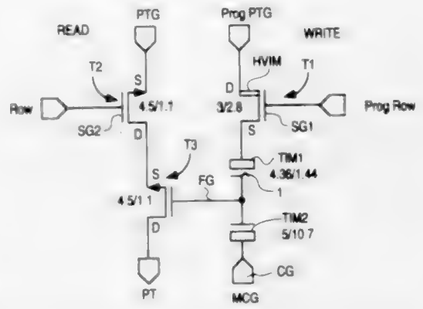
scanning with a scanning tunneling microscope (STM) with its scanning tip clamped to a fixed tunneling gap between said tip and the surface of said sample, varying a voltage between said tip and said sample, monitoring a current between said tip and said sample whereby variations in the Hall potential are obtained with a resolution limited only by the scattering length which is on the order of the mean free path of the current carriers in said sample, said Hall potential being perpendicular to both the direction of magnetization and the direction of said current through said sample.

5,331,590

SINGLE POLY EE CELL WITH SEPARATE READ/WRITE PATHS AND REDUCED PRODUCT TERM COUPLING

Gregg R. Josephson, Aloha; Douglas H. Bower, Beaverton, and David L. Tennant, Salem, all of Oreg., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Filed Oct. 15, 1991, Ser. No. 777,769
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—182 **4 Claims**



1. An electrically erasable and programmable semiconductor memory array in a body of semiconductor material, said array comprising:

a plurality of semiconductor memory cells fabricated with a single layer of polycrystalline silicon arranged in rows and columns along a surface of said body, each of said memory cells comprising an electrically programmable and erasable transistor, a read select transistor coupled to said programmable transistor, said read select transistor including a read select gate for controlling the conduction of said read select transistor, a write select transistor coupled to said programmable transistor, said write select transistor including a write select gate for controlling the conduction of said write select transistor;

a plurality of first electrically conductive members, each associated with a respective single row of said rows of memory cells and connected to the read select gates of the memory cells in its respective single row; and

a plurality of second electrically conductive members, each associated with a respective single row of said rows of memory cells and connected to the write select gates of the memory cells in its respective single row, whereby a first electrical potential is applied to the read select gates of each of said rows of memory cells independently of a second electrical potential applied to the write select gates of each of said rows of memory cells

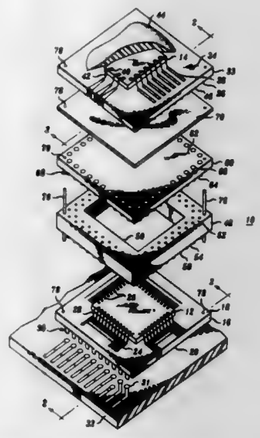
wherein said body of semiconductor material is of a first conductivity type, said read select transistors and write select transistors are defined by regions of a second conductivity type extending into said body from said surface, said array further comprising third electrically conductive members, each having a first level portion for providing electrical connection to said regions of semiconductor material of second conductivity type and a second level portion connected to said first level portion, said second level portion extending substantially parallel to said surface, wherein said first and second electrically conductive members are spaced intermediate said surface of said body and said second level portion of said third electrically conductive members.

5,331,591

ELECTRONIC MODULE INCLUDING A PROGRAMMABLE MEMORY

Mark B. Clifton, Robbinsville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 1, 1993, Ser. No. 11,567
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—182 **9 Claims**



1. An electronic module comprising:

a first device carrier having a plurality of first metallized areas arrayed on a first surface and a plurality of first conductive members depending from a second, opposed surface, each first conductive member electrically connected to a separate first metallized area;

a processor carried on the first surface of the first device carrier and having a plurality of electrical contacts, each electrically coupled to a separate first metallized area;

a second device carrier in spaced registration above the first device carrier, the second device carrier having a plurality of second metallized areas arrayed on a first surface and a plurality of second conductive members extending below a second, opposed surface and arrayed differently than the first metallized areas, each second conductive member electrically connected to a separate second metallized area;

a programmable memory device carried on the first surface of the second device carrier and the device having a plurality of electrical contacts each coupled to a separate second metallized area;

an intermediate layer overlying the first surface of the first device carrier and having an opening sized to receive the processor, the intermediate layer having a plurality of third metallized areas on a first surface arrayed the same as the second conductive members, and a plurality of third conductive members depending from a second, opposed major surface, each aligned for electrical contact with, and attachment to, a separate one of the first metallized areas, each third conductive member electrically connected to a corresponding third metallized area;

a conduction layer interposed between the intermediate layer and the second device carrier for providing a conductive path between each third metallized area and each second conductive member; and

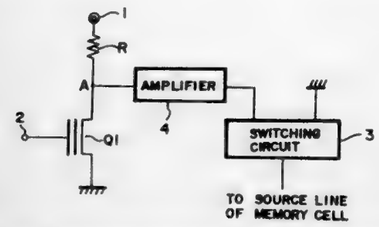
means for releasably securing the second device carrier and the conduction layer to the intermediate layer so that the first and second device carriers are stacked one above the other.

5,331,592

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE WITH ERASURE CONTROL CIRCUIT

Yasushi Yamagata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 17, 1993, Ser. No. 62,396
Claims priority, application Japan, May 15, 1992, 4-148575
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **3 Claims**



1. A non-volatile semiconductor memory device having an erasure control circuit which, during erasure operation, is electrically connected through a switching circuit to a source of a memory cell transistor having a floating gate, said erasure control circuit comprising:

a resistor element having one end connected to a power supply terminal and the other end connected to a node which is electrically connected to the source of said memory cell transistor during the erasure operation; and

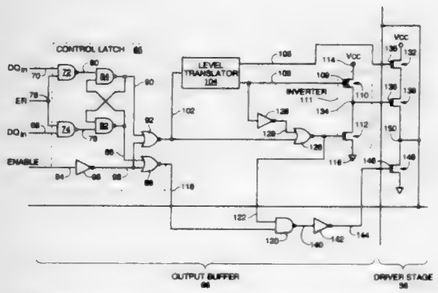
a reference transistor which has the same structure as that of said memory cell transistor, and in which a drain electrode is connected to said node, a gate electrode is connected to a constant-voltage input terminal and a source electrode is grounded, said reference transistor having a floating gate/substrate insulating film formed simultaneously through a common process for forming a floating gate/-substrate insulating film of said memory cell transistor and the floating gate/substrate insulating film of said reference transistor having substantially the same thickness as that of said memory cell transistor.

5,331,593

READ CIRCUIT FOR ACCESSING DYNAMIC RANDOM ACCESS MEMORIES (DRAMS)

Todd A. Merritt, Boise, and Greg A. Blogett, Eagle, both of Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Mar. 3, 1993, Ser. No. 25,554
Int. Cl.[5] H03K *17/08*
U.S. Cl. 365—189.11 **7 Claims**



1. A system for eliminating crossing currents and minimizing switching delays in a dynamic random access memory operation wherein two logic paths are operative with a given logic swing, a level translating stage is connected in a first logic path and to a pull up output driver transistor in an output driver

stage, and a parallel signal processing path is connected as a second logic path and an input of a pull down output transistor in said output driver stage, characterized by: means connected between said level translating stage and said parallel signal processing path for enabling the operation of said parallel signal processing path by an output signal from said level translating stage to thereby ensure that said pull down output transistor is turned on immediately after said pull up output transistor turns off, but not before;

said enabling means includes an enable gate having one input connected in said second logic path and another input connected to an output of said level translating stage to thereby generate an enabling output signal applied to said pull down output transistor only after said pull up output transistor turns off; and

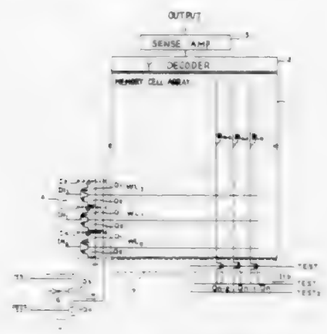
one output line from a level translating stage is connected through an inverter to said pull up output transistor and another output line from said level translating stage is connected through an inverter and then through a logic gate where an inverted signal is combined with an input signal to said level translating stage, and an output line from said logic gate is connected as one input to said enable gate, whereby an output signal from said enable gate may be inverted and applied to said pull down output transistor.

5,331,594

SEMICONDUCTOR MEMORY DEVICE HAVING WORD LINE AND BIT LINE TEST CIRCUITS

Yasuhiro Hotta, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 10, 1991, Ser. No. 776,052
Claims priority, application Japan, Oct. 11, 1990, 2-274803
Int. Cl.[5] H01L *21/00*; G11C *29/00*
U.S. Cl. 365—201 **9 Claims**



1. In a semiconductor memory device comprising a plurality of word lines which are arranged in parallel, and word line drive means for respectively driving said word lines,

said semiconductor memory device further comprises word line test means for receiving a test signal, and for producing an output signal, the voltage level of said output signal being a first level when said test signal is active and a second level when said test signal is not active,

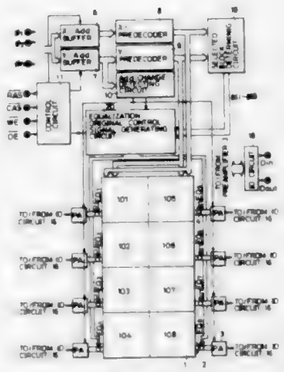
preselected ones of said word line drive means being coupled to an output of said test means such that when the preselected word line drive means are not active, said output signal is applied to said preselected word lines.

5,331,595

SEMICONDUCTOR MEMORY DEVICE HAVING IO LINE PAIR TO BE EQUALIZED AND DIVIDED INTO BLOCKS AND OPERATING METHOD THEREOF

Yoshinori Inoue, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 932,186
Claims priority, application Japan, Feb. 25, 1992, 4-37859
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—203 **17 Claims**



1. A dynamic random access memory, comprising:

a plurality of blocks each including a plurality of memory cells arranged in a matrix of a plurality of rows and columns;

a plurality of output line pairs provided corresponding to said plurality of blocks and each including first and second output liens serving to externally transmit complementary data signals from a corresponding block;

selecting means for selecting any of said plurality of blocks in response to a row address signal;

a plurality of equalizing means provided corresponding to said plurality of blocks and each equalizing the first and second output lines of the corresponding block; and

equalizing control means for releasing equalization of the first and second output lines only of the block selected by said selecting means in response to a change of a column address signal in data reading.

5,331,596

ADDRESS MULTIPLEXED DYNAMIC RAM HAVING A TEST MODE CAPABILITY

Kazuyuki Miyazawa, Iruma; Katsuhiro Shimohigashi, Musashimurayama; Jun Etoh, Hachiohji, and Katsutaka Kimura, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 648,885, Jan. 31, 1991, Pat. No. 5,117,393, which is a continuation of Ser. No. 319,693, Mar. 7, 1989, Pat. No. 4,992,985, which is a division of Ser. No. 41,070, Apr. 27, 1987, Pat. No. 4,811,299. This application May 26, 1992, Ser. No. 887,802
Claims priority, application Japan, Apr. 23, 1986, 61-92056
The portion of the term of this patent subsequent to Mar. 7, 2006, has been disclaimed.
Int. Cl.[5] G11C *29/00, 11/407*
U.S. Cl. 365—201 **33 Claims**

1. An address multiplexed dynamic random access memory (RAM) having both a normal operation mode and a test mode comprising:

a first external terminal for receiving a row address strobe ($\overline{RAS}$) signal;

a second external terminal for receiving a column address strobe ($\overline{CAS}$) signal;

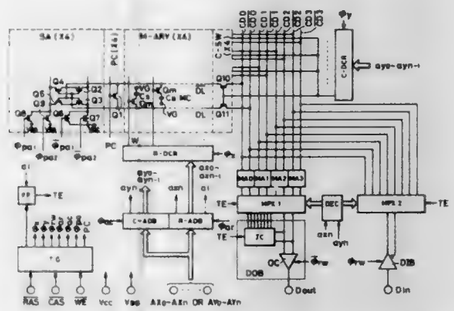
a third external terminal for receiving a write enable ($\overline{WE}$) signal;

external address terminals for receiving row address signals and column address signals;

a row address buffer coupled to said external address terminals; and

a column address buffer coupled to said external address terminals,

wherein said test mode is initiated in response to said $\overline{CAS}$ signal being at a logic "low" level and said $\overline{WE}$ signal being at a logic "low" level when said $\overline{RAS}$ signal is at a transitional logic level corresponding to a falling edge,



wherein, in said test mode, said row address buffer responds to said row address signals in response to said $\overline{RAS}$ signal being at a transitional logic level corresponding to a falling edge and said column address buffer responds to said column address signals in response to said $\overline{CAS}$ signal being at a transitional logic level corresponding to a falling edge, and

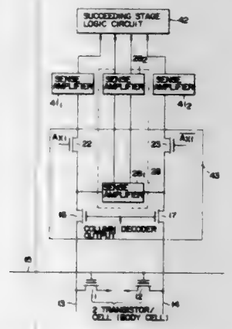
wherein said dynamic RAM is returned to said normal operation mode in response to said $\overline{CAS}$ signal being at a logic "low" level and said $\overline{WE}$ signal being at a logic "high" level when said $\overline{RAS}$ signal is at a transitional logic level corresponding to a falling edge.

5,331,597

SEMICONDUCTOR NONVOLATILE MEMORY APPARATUS INCLUDING THRESHOLD VOLTAGE SHIFT CIRCUITRY

Sumio Tanaka, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1991, Ser. No. 677,450
Int. Cl.[5] G11C *7/06, 11/407*
U.S. Cl. 365—207 **6 Claims**



1. A semiconductor memory device, comprising:

a differential memory cell for storing data and including a first transistor having a first threshold voltage and a second transistor having a second threshold voltage;

a first bit line connected to said first transistor;

a second bit line connected to said second transistor;

a first column selecting transistor having a first terminal connected to said first bit line and a gate thereof receiving a column selection signal;

a second column selecting transistor having a first terminal connected to said second bit line and a gate thereof receiving said column selection signal;

a data reading sense amplifier for reading data from said memory cell and having a first input connected to a second terminal of said first column selecting transistor and a second input connected to a second terminal of said second column selecting transistor;

threshold voltage shift detecting circuitry including first and second threshold voltage shift detecting sense amplifiers for detecting threshold voltage shifts of said first and second transistors, respectively;

a first switching element connected in series between said first threshold voltage shift checking circuit and said first input of said data reading sense amplifier; and

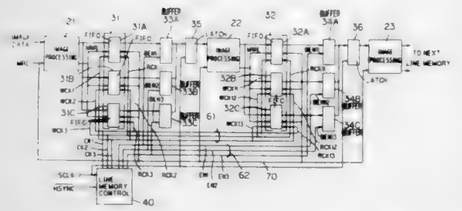
a second switching element connected in series between said threshold voltage shift checking circuit and said second input of said data reading sense amplifier.

5,331,598

MEMORY CONTROL DEVICE

Tsukasa Matsushita, and Akira Shimatani, both of c/o Mita Industrial Co., Ltd., 2-28, 1-chome, Tamatsukuri, Chuo-ku, Osaka 540, Japan

Filed Dec. 8, 1992, Ser. No. 987,159
Claims priority, application Japan, Dec. 9, 1991, 3-324764
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—221 **31 Claims**



1. A memory control device for controlling writing and reading of data in and from storage means including a plurality of FIFO memories, said storage means being interposed between a first function circuit and a second function circuit and capable of storing data transferred between the first and second function circuits, said memory control device comprising:

writing clock generating means for generating a writing clock for writing data in the storage means based upon a specified reference clock, the reference clock being a clock for data transfer;

means for applying the writing clock generated by said writing clock generating means to the plurality of FIFO memories so as to circularly write data in the plurality of FIFO memories;

reading clock generating means for generating a reading clock for reading data from the storage means based upon the specified reference clock;

means for applying the reading clock generated by said reading clock generating means to the plurality of FIFO memories so as to circularly read data from the plurality of FIFO memories;

means for applying a writing authorizing signal commonly to the plurality of FIFO memories so as to authorize the plurality of FIFO memories to write data;

means for applying a reading authorizing signal commonly

to the plurality of FIFO memories so as to authorize the plurality of FIFO memories to read data; and

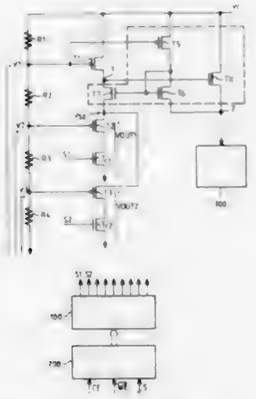
means for organizing the relations between the reading clock and the writing clock so that in response to the writing authorizing signal the first data is written in any FIFO memory where the data is first read in response to the reading authorizing signal.

5,331,599

DYNAMICALLY SWITCHABLE REFERENCE VOLTAGE GENERATOR

Emilio Yero, Aix-en-Provence, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Filed Mar. 17, 1993, Ser. No. 32,599
Claims priority, application France, Mar. 18, 1992, 92 03213
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—226 **33 Claims**



1. An integrated circuit, comprising:

first and second power-supply connections;

first, second, and third mutually matched field-effect transistors of a first channel conductivity type;

at least one bias network, connected to provide three different constant bias voltages to the three respective gates of said transistors;

said first transistor being operatively connected between said second transistor and said first power-supply connection;

said second transistor, and a respective switch in series therewith, being operatively connected between said first transistor and said second power-supply connection;

said third transistor, and a respective switch in series therewith, being operatively connected between said first transistor and said second power-supply connection; and

logic connected to control both said switches, and to turn on no more than one thereof;

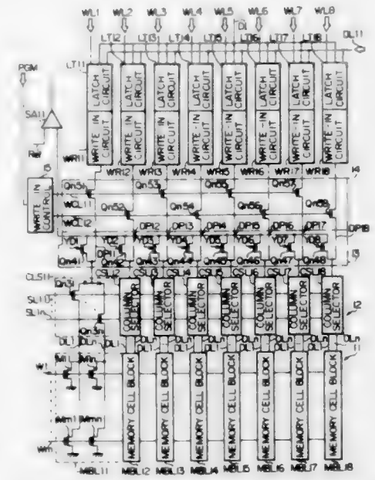
whereby the potential intermediate said first and second transistors provides a reference voltage which is dependent on the state of said switches, but is otherwise substantially constant.

5,331,600

NON-VOLATILE PROGRAMMABLE READ ONLY MEMORY DEVICE HAVING WRITE-IN UNIT SEQUENTIALLY WRITING DATA BITS INTO MEMORY CELLS FOR PROGRAMMING

Misao Higuchi, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed May 24, 1991, Ser. No. 705,595
Claims priority, application Japan, May 31, 1990, 2-142514
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.04 **8 Claims**



1. A non-volatile programmable read only memory device comprising:

a) a plurality of memory cells arranged in rows and columns and divided into a plurality of memory cell blocks each including columns of said memory cells;

b) a plurality of word lines coupled to said rows of said memory cells and driven for selecting one of said rows of said memory cells;

c) a plurality of column selectors respectively associated with said memory cell blocks, each of said column selectors being responsive to a column selecting signal for selecting a column of said memory cells from said associated memory cell block;

d) a plurality of data latching circuits for storing a plurality of write-in data bits, respectively;

e) a plurality of write-in circuits respectively coupled to said plurality of data latching circuits and respectively generating a plurality of write-in signals each being indicative of a respective one of said respective write-in data bits, said plurality of write-in signals being supplied to said column selectors, respectively;

f) a write-in controlling unit responsive to an external controlling signal and sequentially producing a plurality of write-in controlling signals, wherein a time delay is introduced between said plurality of write-in controlling signals; and

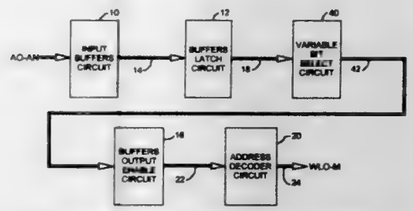
g) a transfer gate array coupled between said plurality of write-in circuits and said plurality of column selectors, said transfer gate array having a plurality of transfer transistors divided into a plurality of transfer gate groups, said transfer gate groups being respectively response to said plurality of write-in controlling signals for sequentially transferring said write-in signals to said plurality of column selectors.

5,331,601

DRAM VARIABLE ROW SELECT

Michael C. Parris, Colorado Springs, Colo., assignor to United Memories, Inc., Colorado Springs, Colo. and Nippon Steel Semiconductor Corp., Chiba, Japan

Filed Feb. 4, 1993, Ser. No. 13,333
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.08 **19 Claims**



8. A bit select circuit for a memory comprising:

a plurality of address buffers coupled to receive a plurality of address bits including a variable bit select circuit coupled to receive at least one of the plurality of address bits and a control signal to provide an address buffer output, the at least one of the address bits being blocked or passed in response to said control signal; and

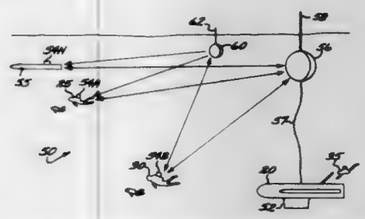
an address decoder coupled to receive said address buffer output to enable access to memory data.

5,331,602

ACOUSTIC NAVIGATION AND DIVING INFORMATION SYSTEM AND METHOD

Craig B. McLaren, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 26, 1993, Ser. No. 53,032
Int. Cl.[5] H04B *1/59, 11/00*; G01S *3/80*
U.S. Cl. 367—6 **33 Claims**



1. An acoustic navigation system for submerged navigation, comprising:

a base unit comprising means for accurately determining the position of said unit, a base transponder means for transmitting and receiving digital acoustic data messages via propagation through the water, wherein said transmitted messages comprise base unit position data specifying the position of said base unit;

a remote unit spatially separated from said base unit, said remote unit comprising means for accurately determining the position of said remote unit, a remote unit transponder means for receiving and transmitting digital acoustic data via propagation through the water, wherein said transmitted message comprises remote unit position data specifying the position of said remote unit; and

a tracking unit whose underwater position is to be determined, comprising:

a tracking unit transponder comprising means for transmitting tracking unit acoustic digital messages and means for receiving acoustic digital messages; and

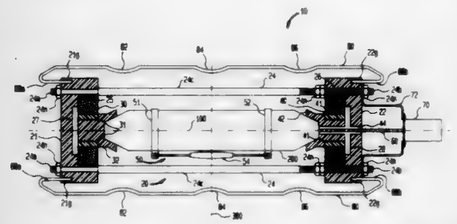
processor means for determining said tracking unit position in dependence on data received from said base and remote units specifying the respective positions of said units and propagation delays in the transmission of said acoustic messages underwater.

5,331,603

MAGNETIC HEADING SENSOR ALIGNMENT AND ROLL REDUCING DEVICE

David N. Strong, East Haddam, and Daniel L. Baker, North Stonington, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1993, Ser. No. 33,224
Int. Cl.[5] G01V *1/38*
U.S. Cl. 367—12 **10 Claims**



1. A magnetic heading sensor alignment and roll reducing device, comprising:

a generally cylindrical non-magnetic assembly having a first end and a second end, said cylindrical assembly further having a plurality of grooves at said first and second ends thereof, said grooves being located equiangularly on a circle with the center thereof located at said cylindrical assembly's center longitudinal axis;

means, positioned at and supported by said first and second ends, for supporting a magnetic heading sensor at either end thereof and for providing the sensor with rotational freedom about said center longitudinal axis, said means further being fabricated from non-magnetic materials;

a non-magnetic counterweight affixed to the sensor and having a center of gravity aligned with the sensor's center of gravity; and

a plurality of longitudinal strips of a non-magnetic material, each of said strips having bent ends for fitting into corresponding ones of said grooves on said first and second ends of said cylindrical assembly.

5,331,604

METHODS AND APPARATUS FOR DISCRETE-FREQUENCY TUBE-WAVE LOGGING OF BOREHOLES

Shu-Kong Chang, West Redding, and Chaur-Jian Hsu, Danbury, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 513,347, Apr. 20, 1990, abandoned.
This application Nov. 24, 1992, Ser. No. 981,948
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—31 **35 Claims**

6. A method of borehole logging, comprising the steps of:

(a) emitting sonic energy at a first location in a borehole of at least one discrete frequency which induces propagation of tube waves in said borehole;

(b) receiving sonic energy of said tube waves at multiple receiver locations in said borehole, said multiple receiver locations being spaced apart from one another and from said first location;

(c) for each said receiver location, detecting a complex pressure response of the received sonic energy of said tube waves; and

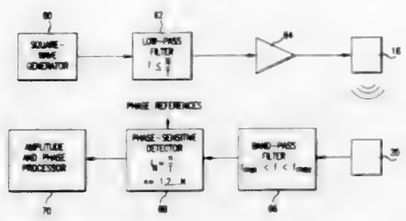
(d) calculating tube wave phase velocity v and tube wave

attenuation constant α from said detected complex pressure response at two of said receiver locations and from the expressions:

$$\alpha(f)^{-1} = [\text{phase}(P(z_1, f)) - \text{phase}(P(z_2, f))]/2\pi f(z_1 - z_2)$$

$$\alpha = \ln [\text{abs}(P(z_2, f)/P(z_1, f))]/(z_1 - z_2)$$

where the tube wave pressure function is expressed as:



$$P(z,f) = A(f)e^{-\alpha z} e^{j2\pi(f/v)z}$$

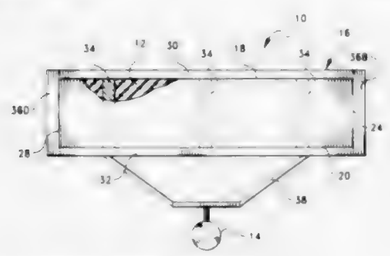
and where P is pressure; A is amplitude as a function of frequency and is independent of spacing between said emitting location and said receiver locations; z is the spacing between said emitting location and a receiver location; f is the discrete frequency at which the tube wave energy is propagated; and z_1 and z_2 are respective said receiver locations.

5,331,605

REINFORCED FOAM CORE ACOUSTIC BAFFLE

James D. Hagerty, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 14, 1993, Ser. No. 121,010
Int. Cl.[5] H04R *1/28*
U.S. Cl. 367—176 **10 Claims**



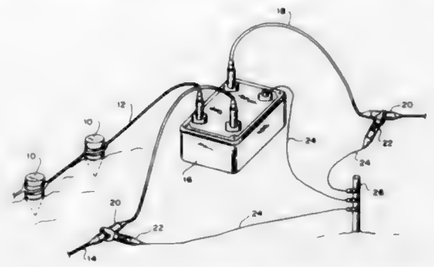
1. An acoustic baffle comprising:
a low-density foam Slab having upper and lower substantially flat surfaces, and a perimetric side edge;
first and second rigid reinforcing plates bonded to said upper and lower surfaces of said foam slab;
a plurality of reinforcing rods extending through said foam slab, joined between said first and second reinforcing plates, and positioned so as to maintain said first and second reinforcing plates in spaced relation; and
a skirt which is bonded to said perimetric edge of said foam slab so as to overlap the terminal edges of said first and second reinforcing plates.

5,331,606

STATIC DISSIPATING DATA CABLE AND SEISMIC APPARATUS

James A. Sackett, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed May 29, 1992, Ser. No. 892,541
Int. Cl.[5] H04R *29/00*; H01B *7/28*
U.S. Cl. 367—178 **5 Claims**



1. An apparatus for use in seismic surveying, comprising:
(a) a plurality of spaced-apart geophones;
(b) a cable coupling the geophones of the plurality of geophones, said cable having:
(i) at least one electrical conductor; and
(ii) a polyurethane jacket placed around the at least one electrical conductor, said jacket doped with a semi-conductive polyethylene material to reduce the bulk sensitivity of the jacket; and
(c) a recording apparatus coupled to the cable for receiving signals from the geophones in said plurality of geophones.

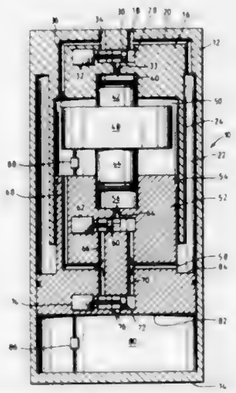
4. A cable for use in seismic surveying, comprising at least one conductor encased in a polyurethane jacket which is doped with a semiconductive polyethylene material to obtain a bulk resistivity of the jacket between 10^5 to 10^9 ohms-cm.

5,331,607

SWEEP FREQUENCY VIBRATOR

Dennis E. Roessler, P.O. Box 42800, Houston, Tex. 77242-8044

Filed Feb. 23, 1993, Ser. No. 23,833
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—189 **17 Claims**



1. A variable frequency seismic wave generator comprising:
an elongate generally cylindrical housing having closed ends and a diameter enabling said housing to be positioned in a well borehole;

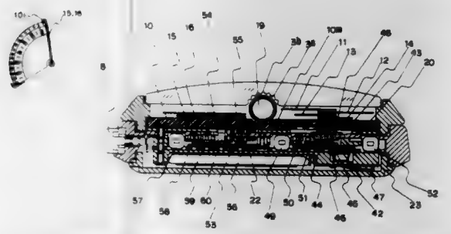
a moveable reactionary mass within said housing, said reactionary mass supported by a pair of opposing piston ends;
a first assembly defining a first fluid filled chamber configured to receive a first of said piston ends; and
a second assembly defining a second fluid filled chamber configured to receive the second of said piston ends; and
means for moving said first and second assemblies relative to one another to alter the relative volumes of said first and second chambers.

5,331,608

ELECTRONIC WATCH WITH AN ANTENNA FOR A RECEIVING DEVICE

Toshio Umemoto; Toshio Hiruta, and Kunikazu Mochida, all of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1993, Ser. No. 36,849
Claims priority, application Japan, Mar. 31, 1992, 4-026505[U]; Oct. 23, 1992, 4-079906[U]; Jan. 8, 1993, 5-002573[U]
Int. Cl.[5] G04C *11/02*
U.S. Cl. 368—10 **17 Claims**



1. An electronic wrist watch equipped with a receiving device comprising:
a watch case,
a glass windshield attached to the watch case for covering the watch case and having an indented section at a side of the watch case,
a timepiece module for calculating time, said timepiece module being situated inside the watch case,
a timepiece display section situated inside the watch case between the glass windshield and the timepiece module, and
an antenna situated between the glass windshield and the time piece display section, said antenna including an antenna core, an antenna wire would around the antenna core, and a conductive antenna terminal sheet fixed to the antenna wire, said antenna core and the antenna wire being located inside the indented section antenna being electrically connected to the timepiece module through the conductive antenna terminal sheet by inserting into the timepiece module from a side of the glass windshield.

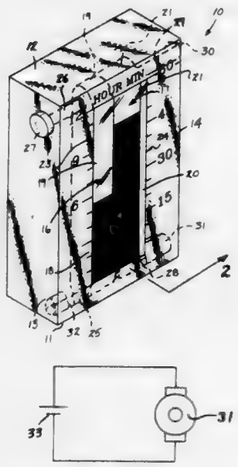
5,331,609

CLOCK APPARATUS

Alexander N. Gubin, 5505 Halpine Pl. #101, Rockville, Md. 20851

Filed Oct. 4, 1993, Ser. No. 130,685
Int. Cl.[5] G04B *19/24*
U.S. Cl. 368—223 **1 Claim**

1. A clock apparatus, comprising,
a housing having a housing bottom wall spaced from a housing top wall, a housing first side wall spaced from a housing second side wall, and a housing front wall and housing rear wall, with a cavity oriented within the housing, and
the front wall having a transparent window directed through the front wall, and
a first endless belt mounted within the cavity, and a second endless belt mounted within the cavity, with the first endless belt and the second endless belt arranged in adjacency relative to one another, with the first endless belt and the second endless belt positioned in adjacency to the window, with the window spanning the first endless belt and the second endless belt, the first belt having a first belt first coloration and a first belt second coloration, the second endless belt having a second belt first coloration and a second belt second coloration, with the first belt first coloration darker than said first belt second coloration, and the second belt first coloration darker than said second belt second coloration, with first gradations positioned on the housing front wall to a first side of the window in adjacency to the first belt, and second gradations directed along the window in the front wall in adjacency to the second belt, with the first drive means mounted within the cavity and in operative communication with the first belt to direct the first belt first coloration along the window in a twelve hour cycle, and further drive means in operative communication with the second belt to direct the second belt first coloration along the window in a sixty minute cycle, and
the drive means includes a first belt self-reversing step motor, and the further drive means includes a second belt self-reversing step motor, with the first belt self-reversing step motor including a first belt first axle mounting the first belt at a first belt first end, whereupon subsequent to a twelve hour cycle, the first step motor reverses to provide for only the first belt second coloration to be positioned adjacent the transparent window, and the second belt self-reversing step motor including a second belt first axle mounting the second belt at a second belt first end, whereupon the completion of a sixty minute cycle, the second self reversing motor reverses itself to only indicate the second belt second coloration adjacent the window, with the first belt having a first belt second axle parallel to said first belt second axle, with the first belt first axle projecting through the housing first side wall, and the second belt having a second belt second end, with the second belt second end including a second belt second axle, with the second belt second axle projecting through the housing second side wall, and
the first belt first coloration includes a first row of chemiluminescent members, and the second belt first coloration includes a second row of chemiluminescent members directed therealong.

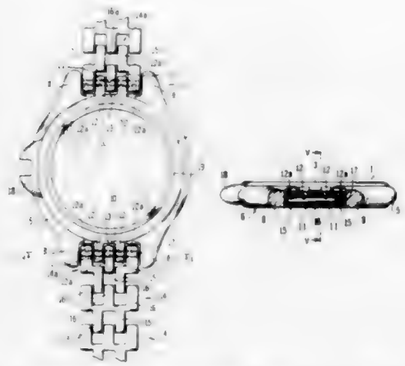


5,331,610

STRUCTURE FOR CONNECTING A BAND TO A WATCH CASE

Tsuyoshi Kikuchi, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1992, Ser. No. 982,507
Claims priority, application Japan, Nov. 29, 1991, 3-105724; Oct. 23, 1992, 4-079905
Int. Cl.[5] G04B *5/02*
U.S. Cl. 368—282 **5 Claims**



1. A structure for connecting end links of a watch band having a plurality of links to a watch case, said structure comprising:

a watch case including an annular middle section and a bezel for mounting a glass,

a pair of band connecting lugs provided on opposite sides of said watch case on one of said bezel and annular middle section, each of said lugs having a through hole in a lateral direction of said band;

a pair of ornamental lugs provided on opposite sides of said watch case on one of said bezel and said annular middle section, a distance between said ornamental lugs being larger than a width of said end links of said band; and

a means for connecting said end links of said watch band to said connecting lugs on said opposite sides of said watch case on one of said bezel or said annular middle section, said bezel and annular middle section being engaged with each other such that said means for connecting said end links of said watch band to said connecting lugs of said watch case is hidden from view externally by said ornamental lugs.

5,331,611

TRANSMISSION MECHANISM FOR MAGNETIC-FIELD GENERATING DEVICE IN PHOTO-MAGNETIC TYPE RECORDING/REPRODUCING APPARATUS

Hiroyuki Matsuba, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 17, 1992, Ser. No. 899,981
Claims priority, application Japan, Jul. 2, 1991, 3-161554
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 **19 Claims**

1. A recording/reproducing apparatus comprising:

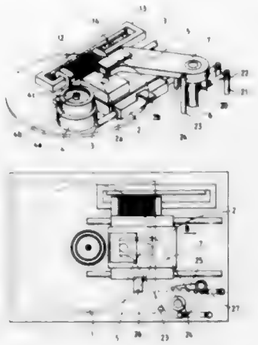
optical pickup means for applying a light beam to a recording medium to receive light reflected from said recording medium;

drive means for linearly and reciprocally moving said optical pickup means relative to said recording medium;

magnetic-field generating means for generating a magnetic field on said recording medium;

arm means for holding said magnetic-field generating means, said arm means being pivotally arranged so as to displace said magnetic-field generating means relative to said recording medium; and

actuating means for converting said linear movement of said optical pickup means caused by said drive means to a



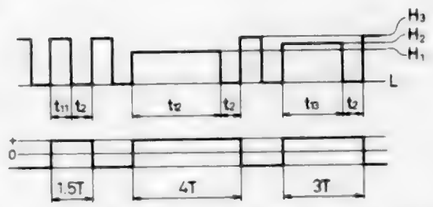
rotational motion of said arm means so as to pivotally move said arm means in response to said linear movement of said optical pickup means caused by said drive means, so as to displace said magnetic-field generating means relative to said recording medium.

5,331,612

MAGNETO-OPTICAL RECORDING APPARATUS USING THE MAGNETIC FIELD MODULATION METHOD

Yoshiteru Murakami, Nishinomiya; Kenji Ohta, Kitakatsuragi, and Akira Takahashi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 31, 1992, Ser. No. 922,854
Claims priority, application Japan, Aug. 2, 1991, 3-194344
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 **8 Claims**



1. A magneto-optical recording apparatus, which is provided with means for irradiating a light beam onto a magneto-optical recording medium having a recording film, made of a magnetic material, whereon information is recorded and means for applying an external magnetic field that is inverted in response to a recording signal onto the recording film that has been subjected to a temperature rise by the light beam, comprising:

light intensity control means for controlling the intensity of the light beam such that, during recording, a light beam with a first light intensity is irradiated upon inversion of the external magnetic field and a light beam with a second light intensity is irradiated during non-inversion of the external magnetic field, the first light intensity, which is not sufficient for recording information, being lower than the second light intensity, the second intensity being sufficient for recording information,

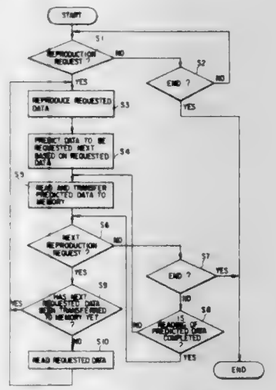
wherein the control means, during recording, further controls the second light intensity according to the lengths in a track direction of recording bits so that the second light intensity corresponding to longer recording bits is lower than the second light intensity corresponding to shorter recording bits.

5,331,613

DATA REPRODUCING METHOD AND APPARATUS CAPABLE OF SHORTENING THE TOTAL TIME OF DATA REPRODUCTION FOR A PLURALITY OF REPRODUCTION REQUESTS

Naoki Yamada, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,385
Claims priority, application Japan, Sep. 27, 1991, 3-248936
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—32 **20 Claims**



1. A data reproducing method comprising the steps of:

causing an optical information recording and reproducing apparatus to read out first data from an optical information recording and reproducing medium when a first reproduction request is received;

storing the read out first data in a temporary storage memory;

causing a host computer to process the stored first data;

predicting second data that is expected to be specified by a second reproduction request, on the basis of a characteristic of the stored first data during at least one of a data processing period of the host computer and a period of time required by the host computer to store the first data in the temporary storage memory; and

reading out the predicted second data from the optical information recording and reproducing medium and then transferring the read out predicted second data to the temporary storage memory, before the second reproduction request is received.

5,331,614

CONTROLLING PLAYING OPERATIONS OF A PLURALITY OF MAGAZINE TYPE DISC PLAYERS EACH HAVING EXCLUSIVE ACCESS TO DISC LOADED THEREIN

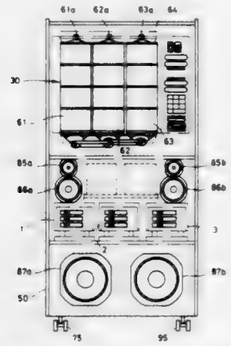
Masaya Ogawa; Takao Yamada; Takeshi Kitaki; Haruyasu Sakata; Kazuo Yajika, and Yoshikiyo Konno, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 579,514, Sep. 10, 1990, abandoned. This application Jun. 4, 1992, Ser. No. 893,947
Claims priority, application Japan, Sep. 11, 1989, 1-234947
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—34 **8 Claims**

1. An apparatus for selectively playing a plurality of discs enclosed therein which has a plurality of magazine type disc players, each of which includes at least one magazine, each of said magazines containing a plurality of discs therein, said plurality of disc players receiving and playing designated music programs in accordance with music program selection operations, said plurality of magazine type disc players including first and second magazine type disc players for playing current and next designated music programs, comprising:

discriminating means for determining which of said plurality of disc players includes a next magazine that has a disc including a next designated music program to be played;

first means for instructing a second magazine type disc player to execute a search operation to find the next designated music program when said discriminating means



determines that said next magazine in includes in said second magazine type disc player and for setting said second magazine type disc player into a playing operation start standby mode once said second magazine type disc player identifies that said next designated music program has been found; and

second means for releasing the playing operation start standby mode of said second magazine type disc player and for starting the playing operation when a playing operation of said first magazine type disc player ends,

wherein each of said magazine type disc players has exclusive access to a predetermined number of magazines.

5,331,615

TRACKING CONTROL APPARATUS FOR AN OPTICAL DISK DEVICE

Shinichi Yamada, Osaka; Mitsuro Moriya, Ikoma; Masayuki Shibano, and Hiroyuki Yamaguchi, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 22, 1992, Ser. No. 964,784
Claims priority, application Japan, May 11, 1991, 3-288332; Oct. 23, 1991, 3-275206
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.32 **17 Claims**

1. A tracking control apparatus for controlling the tracking of a track on a recording carrier by an optical beam comprises:

a track offset detection means for detecting an offset between the optical beam focused on the recording carrier and the actual track position and producing a tracking error signal based on said offset;

a first shifting means for shifting, by a small amount from a neutral position, said optical beam focused on the recording carrier in a direction crossing the tracks, said first shifting means being applied with a biasing force to return to said neutral position;

a first driving means, responsive to said tracking error signal, for driving said first shifting means against said biasing force to cancel said offset, but yielding a quasi-tracking error;

a temperature detection means for detecting the temperature of said first shifting means;

a simulation means, responsive to said tracking error signal, for simulating the movement of said first shifting means and producing a simulation signal indicative of the movement of said first shifting means;

a control means, responsive to said temperature detecting means, for controlling said simulation means to change the



simulation signal relative to the temperature of said first shifting means as detected by said temperature detecting means;

a second shifting means for shifting said first shifting means in a direction crossing the tracks; and

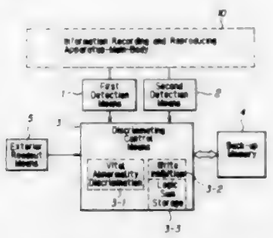
a second driving means, responsive to said simulation signal, for driving said second shifting means to cancel said quasi-tracking error.

5,331,616

INFORMATION RECORDING AND REPRODUCING APPARATUS WITH SELF-DIAGNOSIS INFORMATION STORAGE MECHANISM

Shimya Morita, and Fumiyoshi Abe, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 44,510
Claims priority, application Japan, Apr. 17, 1992, 4-122803
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—53 **6 Claims**



1. An information recording and reproducing apparatus having a self-diagnosis information storage mechanism for storing self-diagnosis information indicative of a result of self-diagnosis of operating conditions of each of sections constituting the apparatus and adapted to record and reproduce an information signal into and from a recording medium, which apparatus comprises:

detection means for detecting abnormalities in each section of said information recording and reproducing apparatus and abnormalities in any signal recorded onto said recording medium and a signal reproduced from said recording medium, and outputting error data indicating a detection result;

storage back-up means for storing said error data;

discrimination/control means for determining whether or not the error data should be stored in said storage means in accordance with the error data outputted from said detection means, and for controlling a storage operation of said storage means; and

control means for reading out the error data stored in said storage means from outside in order to make sure of abnormalities in said information recording and reproducing apparatus, recording signals and reproducing signals, and

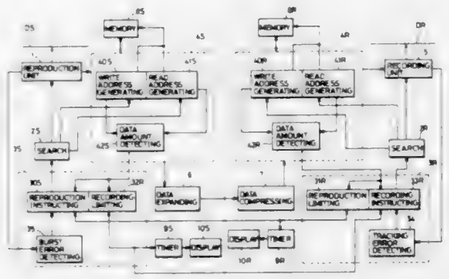
wherein said discrimination/control means operates such that when said error data shows an occurrence of an abnormality vital to said information recording and reproducing apparatus, storage of subsequent error data is inhibited and as regards such storage-inhibited error data, a logic sum of only data incident thereto is stored.

5,331,617

AUDIO DATA RECORDING/REPRODUCTION DEVICE HAVING DIGITAL HIGH SPEED DUBBING FUNCTION AND AUDIO DATA DUBBING SYSTEM USING SUCH DEVICES

Masato Fuma, Ichinomiya; Yutaka Tamura; Nagatoshi Sugihara, both of Gifu; Takao Inoue, Matsudo, and Miyuki Okamoto, Hashima, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 27, 1993, Ser. No. 68,004
Claims priority, application Japan, May 29, 1992, 4-138702
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—54 **19 Claims**



1. A disc recording device used in an audio data dubbing system, said audio data dubbing system including a disc reproduction device for reproducing intermittently from a reproduction side disc compressed audio data on the basis of a predetermined reproducing unit to be stored in a reproduction side memory and then reading out the stored data therefrom continuously to be provided as compressed audio data for recording, and said disc recording device,

wherein said disc recording device comprises

a recording side memory for recording said compressed audio data for recording provided from said disc reproduction device,

means for detecting the data amount in said recording side memory,

means responsive to an output of said data amount detecting means for reading out said compressed audio data for recording from said recording side memory and recording the read out data intermittently in a recording side disc when the data amount in said recording side memory reaches a predetermined recording unit,

means for detecting failure of recording said compressed audio data for recording to said recording side disc for retry of a recording operation, and

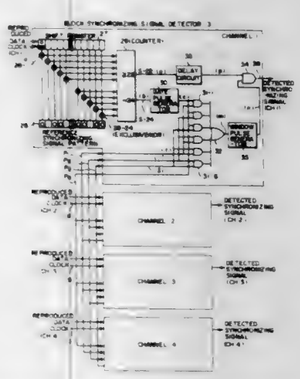
means responsive to an output of said data amount detecting means for suspending the reproduction operation of said compressed audio data from said reproduction side disc in said disc reproduction device when the data amount in said recording side memory increases to exceed a reference value that is greater than said predetermined recording unit and smaller than the capacity of said recording side memory.

5,331,618

SYNCHRONIZING SIGNAL DETECTOR FOR MULTI-BEAM OPTICAL DISK UNIT

Satoshi Nagai, Tachikawa, Japan, assignor to ASACA Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 624,295, Dec. 7, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,384
Claims priority, application Japan, Dec. 14, 1989, 1-324408
Int. Cl.[5] H04N *5/76*; **G11B** *7/00, 5/02*
U.S. Cl. 369—59 **4 Claims**



1. A synchronizing signal detector comprising n detecting circuits for a multi-beam optical disk unit of n optical beams, using integers n, p, m, c, b, q more than one, each of said n detecting circuits comprising:

a register for storing a p-bit reference synchronizing pattern;

p-exclusive-NOR circuits for detecting coincidence between each pulse of p-pulses reproduced from a corresponding one of said n optical beams and each pulse of the p-bit reference synchronizing signal pattern to produce coincident pulses each in response to said coincidence;

a counter for counting a number of said coincident pulses from said p-exclusive-NOR circuits to generate an all-bit coincident signal when bits of the reproduced p-pulses are all coincident with bits of said reference synchronizing signal pattern and to generate a q or more bit coincident signal when q (where $o<q<p$) or more bits reproduced from the corresponding one of said n-optical beams are coincident with bits of said reference synchronizing signal pattern;

pulse means for supplying the all-bit coincident signal to each of other $n-1$ detecting circuits and for receiving said all-bit coincident signal from said other $n-1$ detecting circuits;

window pulse generating means for generating when said all-bit coincident signal is generated by said counter for at least m (where $o<m\leqq n$) of said n-optical beams, a window pulse having an arbitrary width of b-bits, which starts at said all-bit coincident signal;

a delay circuit for delaying a c-bit (where $c=b/2$) period the q or more bit coincident signal to produce an output; and

an AND circuit for ANDing the output of said delay circuit and said window pulse;

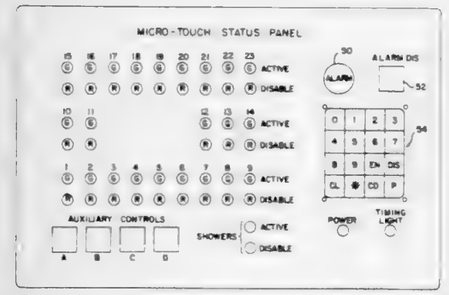
wherein output pulses of said AND circuit are regarded as detected synchronizing signals in the corresponding one of said optical beams.

5,331,619

PROGRAMMABLE CONTROL SYSTEM FOR GAS AND LIQUID DISPENSING DEVICES

Thomas G. Barnum, Fox Point; Lane B. Anderson, West Allis, and Richard S. Missimer, Sussex, all of Wis., assignors to Bradley Corporation, Menomonee Falls, Wis.

Filed Feb. 19, 1992, Ser. No. 838,062
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—132 **47 Claims**



1. A control system that controls the operation of a plurality of valves, said valves controlling a plurality of gas or liquid dispensing devices, said plurality of dispensing devices including at least first and second distinct types of dispensing devices, said plurality of dispensing devices having at least two dispensing devices of said first type and at least two dispensing devices of said second type, said control system comprising:

an input circuit that accepts valve mode data and valve time data for a first valve of said plurality of valves, said valve mode data determining which mode of a plurality of possible modes in which said first valve is to operate, said mode determining whether said valve responds or fails to respond to an input from said control system or from a dispensing device, and said valve time data determining the length of time that said first valve is to be operated or rendered inoperative;

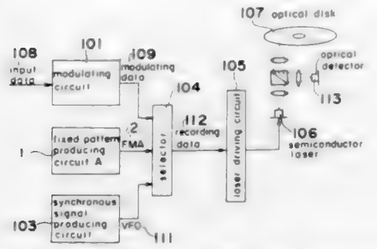
a valve controller that processes said valve mode data and said valve time data and that generates at least one output signal to control said valve in response to said processed valve mode data and said processed valve time data; and

a change circuit that receives changed valve mode data to change said valve mode from a first mode to a second mode, that receives changed valve time data to change the length of time that said first valve is to be operated or rendered inoperative, and that transmits said changed valve mode data and said changed valve time data to said valve controller.

5,331,620
RECORDING METHOD AND RECORDING APPARATUS FOR OPTICAL DISK

Takashi Ishida, Osaka; Shunji O'Hara, Higashiosaka; Kenzo Ishibashi, Moriguchi, and Tadashige Furutani, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 651,618, Feb. 6, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 118,353
Claims priority, application Japan, Feb. 9, 1990, 2-30841
Int. Cl.[5] G11B *7/00, 5/09*
U.S. Cl. 369—59 **8 Claims**



1. A method of generating optical disk recording data formed of successive one bits and zero bits having a run length limited code data format in which at least a predetermined minimum run length of recorded zero bits or at most a predetermined maximum run length of zero bits is located on each side of recorded one bits, said method comprising;

generating a fixed pattern data frame used as a synchronous signal, the fixed pattern data frame having plural successive adjacent run lengths of zero bits with respective one bits located between each successive adjacent run lengths of zero bits and having at least two different run lengths of zero bits including at least one of the minimum run length of zero bits and the maximum run length of zero bits, wherein each run length of zero bits in the fixed pattern data frame which is located adjacent a minimum run length of zero bits has a run length which is less than the maximum run length of zero bits, and wherein each run length of zero bits in the fixed pattern data frame which is located adjacent a maximum run length of zero bits has a run length which is more than the minimum run length of zero bits; and,

combining the fixed pattern data frame with input data in accordance with the run length limited code data format to generate the optical disk recording data;

wherein, in the optical disk recording data, an initial run length of zero bits of said fixed pattern data frame is immediately preceded by a one bit and a last run length of zero bits of said fixed pattern data frame is immediately followed by a one bit.

5,331,621
OPTICAL PICKUP APPARATUS AND A HOLOGRAM ELEMENT USED FOR SAME

Takahiro Miyake, Soraku; Yoshio Yoshida, Nara; Katushiro Kubo, Yamatokoriyama; Tetsuo Ueyama, Nara, and Yukio Kubata, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1992, Ser. No. 983,423
Claims priority, application Japan, Dec. 4, 1991, 3-320226
Int. Cl.[5] G11B *7/13*
U.S. Cl. 369—112 **16 Claims**

16. An optical pickup apparatus comprising:

a light emitting means for emitting light beams;

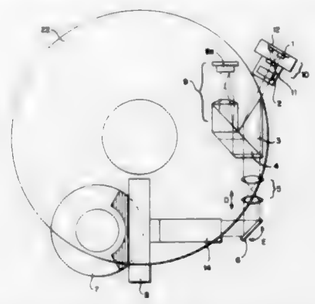
an optical scanning means for scanning a recording medium with said light beams;

a light focusing means for focusing said light beams on said recording medium;

an optical detector for detecting the light beams reflected from said recording medium; and

a first optical system for detecting the light beams reflected from said recording medium to said optical detector;

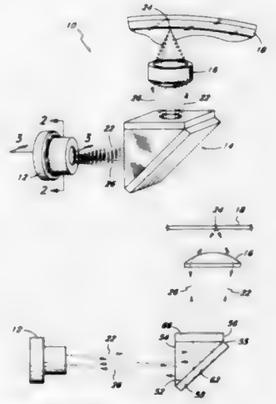
wherein said optical scanning means comprises an optical diffraction means for diffracting the light beams emitted from said light emitting means and a control means for controlling the rotation of said optical diffraction means, said optical diffraction means including a hologram element comprising a light-transmitting substrate having a first surface with a first hologram formed thereon and a second surface with a second hologram formed thereon, wherein the first hologram has a grating of approximately straight lines, and the second hologram has a grating of concentric arcs having a center on an imaginary straight line, said imaginary straight line being perpendicular to the straight lines of the grating of the first hologram and including a center of the rotation of said hologram element.



5,331,622
COMPACT OPTICAL HEAD

Charles H. Ernst, and Curtis A. Shuman, both of Colorado Springs, Colo., assignors to Applied Magnetics Corporation, Goleta, Calif.

Continuation of Ser. No. 705,770, May 28, 1991, abandoned. This application Oct. 5, 1993, Ser. No. 132,129
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—112 **9 Claims**



1. An optical head comprising:

a half-cube beamsplitter, wherein said beamsplitter comprises:

a triangular prism including a first leg having a first length and a second leg having a second length, said first and second legs joined by a hypotenuse;

an optical element positioned adjacent said hypotenuse, said optical element having a front surface and a rear surface defining a thickness which is less than said first and second lengths of said first and second legs of said prism; and

an optically selective coating positioned intermediate said hypotenuse and said front surface of said optical element to form a beamsplitting interface;

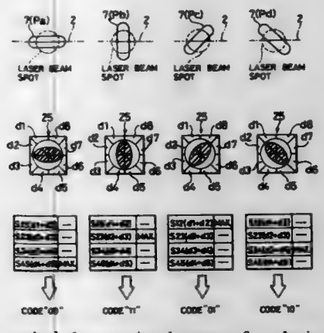
a laser diode and photodetector assembly, comprising a laser emitting diode and a photodetector, said laser diode emitting a beam of light transmitted through said first leg of said prism and incident upon siad beamsplitting interface, said incident light defelcted by said interface toward an optical disc; and

an objective lens positioned intermediate said beamsplitter and said optical disc, wherein said incident light beam is transmitted through said objective lens and focussed on said disc, said incident light beam reflected by said disc to form a reflected light beam, wherein said reflected light beam is transmitted through said lens and said second leg of said prism, said reflected beam incident upon said rear surface of said optical element, wherein said rear surface of said optical element deflects said reflected beam through said first leg of said prism toward said photodetector.

5,331,623
OPTICAL RETRIEVAL SYSTEM FOR ENCODING PIT ANGULAR DATA AND OPTICAL RECORDING ELEMENT THEREFOR

Hirotsugu Matoba, Sakurai; Toshihisa Deguchi, Nara; Shigeo Terashima, Tenri, and Hideyoshi Yamaoka, Matsubara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 453,927, Dec. 19, 1989, Pat. No. 5,200,941. This application Sep. 21, 1992, Ser. No. 948,098
Claims priority, application Japan, Dec. 27, 1988, 63-330952
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—124 **17 Claims**



17. An optical data retrieval system for playing back of information from an optical recording element having a substrate and a plurality of track elements extending end to end in a track direction, each of the track elements having a plurality of elongated pits coplanar with a recording surface parallel to the substrate, each of the pits being angled with respect to the track direction, the angle being selected from a plurality of angles predetermined within 360 degrees so as to assign at least two bits to each of the pits, comprising:

light generation means for converting light in order onto each of the pits;

light receiving means, provided with a plurality of light receiving sections, for receiving light reflected from each of the pits and for detecting a intensity distribution of the reflected light on the light receiving sections;

maximum value detection means for detecting a specific light receiving section of the light receiving sections which detects a maximum value of the intensity distribution;

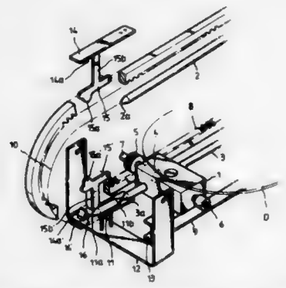
coded data generation means, connected to an output of the maximum value detection means, for generating coded data composed of at least two bits corresponding to the maximum value; and

demodulation means, connected to an output of the coded data generation means, for demodulating the coded data.

5,331,624
PICKUP FEED MECHANISM

Seong-yeon Park, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 28, 1992, Ser. No. 826,793
Claims priority, application Rep. of Korea, May 31, 1991, 91-9093
Int. Cl.[5] G11B *7/08*
U.S. Cl. 369—215 **21 Claims**



1. A pickup feed mechanism having a motor installed inside a pickup and a gear driven by the motor, and provided with a U-shaped rack gear member constantly engaged with the gear, a first guide shaft located on a first side of an optical disc and disposed parallel to the first side of the optical disc, passing through and supporting the pickup during motion of the pickup along the first side of the optical disc, and a second guide shaft located on a second side of the optical disc and disposed parallel to the second side of the optical disc, passing through and supporting the pickup during motion of the pickup along the second side of the optical disc, said pickup feed mechanism comprising:

a moving shaft disposed to contact an end of each of said first guide shaft and said second guide shaft;

said moving shaft, said first guide shaft and said second guide shaft lying within a single plane of reference;

rotation supporting means for rotationally moving said moving shaft along a semicircular path extending from said end of said first guide shaft to said end of said second guide shaft, said semicircular path lying within said single plane of reference;

said moving shaft coupling with said pickup during said rotational movement of said moving shaft along said semicircular path;

locking means for selectively locking and unlocking said rotation supporting means at a first position where said moving shaft meets said end of said first guide shaft and at a second position where said moving shaft meets said end of said second guide shaft;

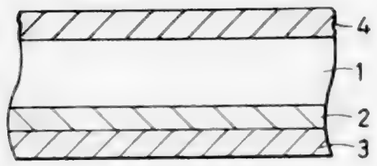
said locking means comprising:

a locking member having a hook to be elastically combined with a hole formed on said rotation supporting means;

a release lever having a nub to intercept said pickup; and

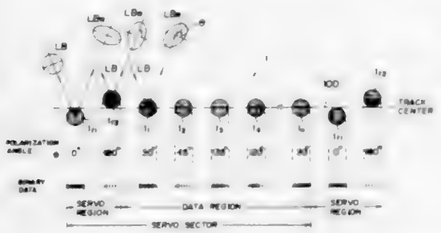
a finger formed to displace said locking member;
wherein said locking member, said release lever and said finger are installed at each location where said moving shaft meets one of said first and second guide shafts.

5,331,625
OPTICAL DISC WITH ANTISTATIC COATING CONTAINING TIN OXIDE AND PHOSPHOROUS
Michinobu Mieda, Shigi; Toshikazu Nagaura; Hirotoshi Takemori, both of Nara; Kenji Ohta, Kitakatsuragi, and Hiroo Yoshidome, Kitakyushu, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 17, 1992, Ser. No. 946,934
Claims priority, application Japan, Sep. 19, 1991, 3-239971
Int. Cl.[5] G02F *1/01*; G11B *7/26*
U.S. Cl. 369—275.1 **5 Claims**



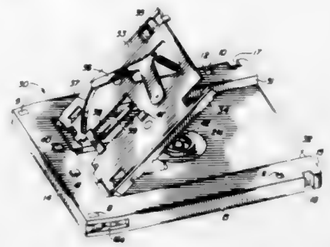
1. An optical disc comprising a plastic substrate upon which an antistatic film of light transmission properties is formed of a synthetic resin, the antistatic film including a tin oxide with a phosphorus as electro-conductive filler and being provided on a side of the plastic substrate of the optical disc opposite the side where an optical beam is applied.

5,331,626
RECORDING MEDIUM AND INFORMATION RECORDING AND REPRODUCING APPARATUS THEREFOR
Satoshi Sugiura, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jan. 14, 1993, Ser. No. 4,252
Claims priority, application Japan, Jan. 20, 1992, 4-07837
Int. Cl.[5] G11B *7/24*
U.S. Cl. 369—275.1 **3 Claims**



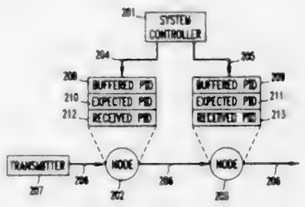
1. A recording medium from which recorded information is reproduced by irradiating the recording medium with a read-out light, comprising:
an information recording surface; and
a plurality of information areas formed on said information recording surface, each of said information areas being formed as a fine diffraction grating having a grating constant (d) less than one half of the wavelength (λ) of said read-out light, each of said fine diffraction gratings having one of a plurality of grating directions, each of said plurality of grating directions corresponding to predetermined information.

5,331,627
CARTRIDGE ADAPTOR
Edwin R. Childers; Dale H. Anderson, both of Tucson, Ariz., and Syed T. Shafaat, Langley, Wash., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 24, 1992, Ser. No. 981,072
Int. Cl.[5] G11B *23/03*
U.S. Cl. 369—291 **19 Claims**



1. A cartridge adaptor for holding a first cartridge containing a disk medium of a small diameter so that said first cartridge can be inserted and used in a disk drive apparatus designed for a second cartridge containing a disk medium of a relatively large diameter, comprising:
an adaptor cartridge body with external dimensions which duplicate the dimensions for said second cartridge (130 mm, for example);
a hollowed out area within said body for containing said first cartridge (for example, 90 mm) when said first cartridge is loaded into said cartridge adaptor;
an adaptor hub located within said body, a first surface of said adaptor hub for simulating a spindle hub for a drive designed for said first cartridge whereby said adaptor hub functions to locate the small diameter medium contained within said first cartridge onto the simulated spindle; a second surface of said adaptor hub for simulating a cartridge hub for said second cartridge whereby said adaptor hub functions to mate with a relatively large spindle hub in a drive for said second cartridge.

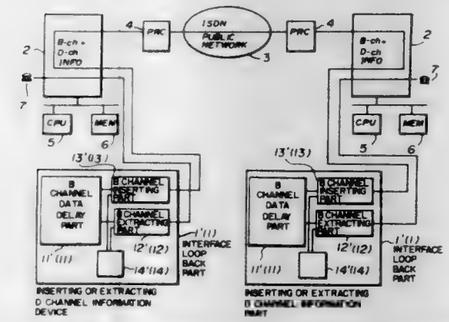
5,331,628
PATH TESTING AND/OR MONITORING WITHIN A MULTIPLE NODE TELECOMMUNICATION SYSTEM
Ying Cheng, and Kao-Shien Liu, both of Holmdel, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Mar. 25, 1993, Ser. No. 37,776
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—14 **2 Claims**



1. In a telecommunication system including:
a system controller;
a transmitter;
a plurality of system nodes, each linked to said system controller and said transmitter;
a first memory location contained within each of said nodes;
a second memory location contained within each of said nodes; and
a third memory location contained within each of said nodes;

a method of effecting path trace within said telecommunication system, comprising the steps of:
transmitting a path trace signal from said system controller to a first memory location within a first system node;
transmitting a path trace signal from said transmitter to said second memory location within said first system node;
comparing the contents of said first memory location of said first system node to the contents of said second memory location of said first system node;
transferring the contents of said first memory location within said first system node to said third memory location within said first system node if the contents of said first memory location of said first system node matches the contents of said second memory location of said first system node.

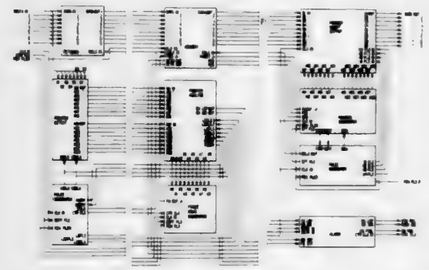
5,331,629
SYSTEM FOR CONNECTING ISDN TIE LINE VIA ISDN OFFICE LINE
Tomio Tabata, Kawasaki, and Tomonori Matoba, Nagoya, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 25, 1992, Ser. No. 982,181
Claims priority, application Japan, Nov. 26, 1991, 3-336151
Int. Cl.[5] H04L *29/10*
U.S. Cl. 370—57 **8 Claims**



1. An ISDN tie line connecting system which connects an ISDN tie line between two private branch exchanges via an ISDN office line using an ISDN primary rate interface, said ISDN tie line connecting system comprising:
a tie line interface connected between the ISDN tie line and each private branch exchange;
a provisional interface connected between the ISDN office line and each private branch exchange;
an interface loop-back part, coupled to each private branch exchange, for carrying out a conversion between the tie line interface and the provisional interface with respect to the ISDN primary rate interface, by looping back at least the tie line interface.

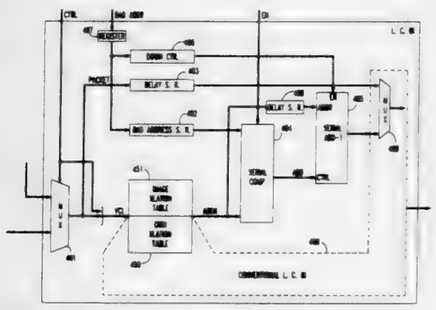
5,331,630
RENEWAL METHOD AND APPARATUS FOR AU-4 AND TU-3 POINTERS OF SYNCHRONOUS DIGITAL HIERARCHY
Yoshitaka Fujita, and Keiichi Tsuda, both of Tokyo, Japan, assignors to Nec Corporation, Tokyo, Japan
Filed Jul. 23, 1992, Ser. No. 917,409
Claims priority, application Japan, Jul. 31, 1991, 3-192329
Int. Cl.[5] H04J *3/07*
U.S. Cl. 370—58.1 **1 Claim**

1. An apparatus for renewing pointers of STM-1 signals received from one or more sources N at a network node interface of synchronous digital hierarchy, effecting a cross-connection between received N signals of STM-1 signal form and an asynchronous signal transmitted from a local station at a rate of 34 Mbit/s or lower in VC signal format, and transmitting each signal as an STM-1 signal, said apparatus comprising:
a memory module for storing inputted data, all of said data being demultiplexed form received N signals of STM-1 format or mapped from an asynchronous VC signal from said local station, as a format of one-third of an STM-1 signal, that is, an STM-$\frac{1}{3}$ signal of a format of blocks of 9 rows×90 bytes, composed of a section overhead of 8 rows×3 bytes, an AU pointer of one row of three bytes, and a payload in TU-3 format in 9 rows×87 bytes;
input pointer analyzing means for detecting a TU-3 pointer from each AU pointer of the respective STM-$\frac{1}{3}$ signals of



said inputted data and analyzing positive or negative stuff of TU-3 level and values of the AU and TU pointers inputted and stored in said memory module;
TU pointer generating means for generating a value for a TU pointer replacing the value of the AU pointer from said memory module and the value of the TU pointer detected by aid input pointer analyzing means; and
means for renewing the value of the TU pointer with the value for the TU pointer generated by said TU pointer generating means, and outputting the stored data with all AU pointers set to one constant value between zero (0) and seven hundred eighty-two (782).

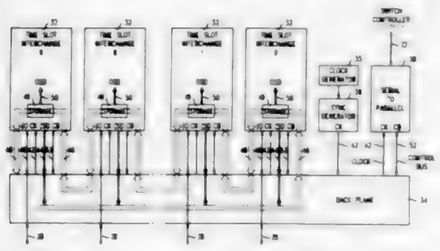
5,331,631
N+K SPARING IN A TELECOMMUNICATIONS SWITCHING ENVIRONMENT
Kari T. Teraslinna, Boulder, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Division of Ser. No. 592,103, Oct. 3, 1990, Pat. No. 5,229,990.
This application Mar. 16, 1993, Ser. No. 33,197
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **6 Claims**



1. In a line circuit for interfacing telecommunications packets having virtual routing addresses, between a telecommunications line and a telecommunications switch, the improvement comprising:
means for connecting the line circuit to both (a) a first telecommunications line served by the line circuit and (b) a

second telecommunications line served by another line circuit;
first means for translating virtual routing addresses of packets incoming on the first telecommunications line into real routing addresses;
second means for replicating a translation function performed by the other line circuit by translating virtual routing addresses of packets incoming on the second communications line into real routing addresses; and
means for selecting for input to the switch one of (a) the packets incoming on the first telecommunications line and having real routing addresses generated by the first means and (b) the packets incoming on the second telecommunications line and having real routing addresses generated by the second means.

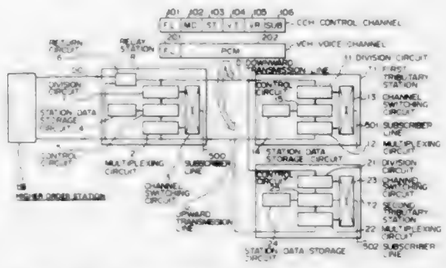
5,331,632
EXPANDABLE TIME SLOT INTERCHANGER
Calvin Aaron, Chicago, and Ronald J. Canniff, Naperville, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 31, 1992, Ser. No. 829,799
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—68 **17 Claims**



1. A time slot interchanger comprising:
time slot interchange (TSI) modules each including means for receiving all time slot data in one TSI time frame via an inbound data bus, means for storing said time slot data, means for transmitting said received time slot data via an outbound data bus, and means for transmitting selected ones of the stored time slot data as output data on communication channels coupled to each TSI module,
transmission channel means for connecting said outbound data bus of each TSI module to said inbound data bus of a next TSI module; and
means for sequentially transferring said received time slot data from each TSI module to the next TSI module via said transmission channel means, said transferring means sequentially transferring all time slot data in a certain TSI time frame from a first TSI module to a last TSI module before starting transfer of time slot data in a next TSI time frame.

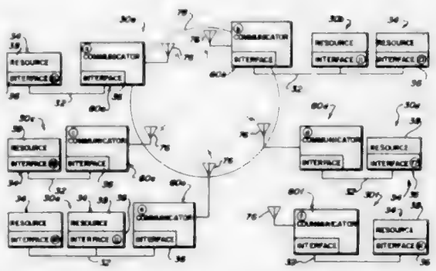
5,331,633
HIERARCHICAL BUS TYPE MULTIDIRECTIONAL MULTIPLEX COMMUNICATION SYSTEM
Koju Arai, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Feb. 25, 1993, Ser. No. 22,115
Claims priority, application Japan, Feb. 27, 1992, 4-076101
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—85.11 **10 Claims**

1. A hierarchical bus type multidirectional multiplex communication system, comprising:
a higher order station;
a relay station connected to the higher order station through a first upward transmission line for transmitting first upward signals and a first downward transmission line for transmitting first downward signals;
a tributary station connected to the relay station through a second upward transmission line for transmitting second upward signals and a second downward transmission line for transmitting second downward signals; wherein,
the second upward transmission line and the second downward transmission line comprise respectively:
a control channel on which control channel use flag data showing a "free" or "engaged" state of the control channel, mode data showing "a control channel retention



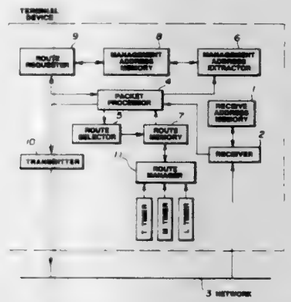
mode" or "a call-out mode," call-out station number data showing "a station number of a call-out tributary station," transmission voice channel number data showing "a channel number of a voice channel for transmission," reception voice channel number data showing "a channel number of a voice channel for reception," and call-in subscriber number data showing "a subscriber number of a call-in subscriber" are multiplexed; and
a plurality of voice channels on each of which voice channel uses flag data showing a "free" or "engaged" state of the voice channel and on which individual data are multiplexed.

5,331,634
TECHNIQUE FOR BRIDGING LOCAL AREA NETWORKS HAVING NON-UNIQUE NODE ADDRESSES
Michael A. Fischer, San Antonio, Tex., assignor to Digital Ocean, Inc., Overland Park, Kans.
Filed Jan. 29, 1993, Ser. No. 11,361
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.130 **38 Claims**



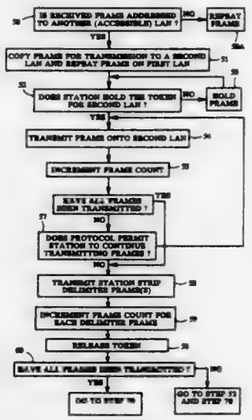
1. Bridging apparatus for communicating LAN packets between at least two separate LAN segments in which at least one node of a local LAN segment has a duplicate identification (ID) of a node of at least one other remote LAN segment, comprising:
LAN interface means adapted to be connected to each LAN segment and operative for communicating LAN packets with the nodes of the connected LAN segment using a LAN protocol, the LAN protocol prohibiting nodes with the same ID only on each LAN segment, the LAN protocol further requiring a source ID (SID) and a destination ID (DID) to be included in each LAN packet to identify a source node sending the LAN packet and a destination node receiving the LAN packet respectively, each LAN packet being one of either a locally destined LAN packet sent by a source node on a local LAN segment and destined for a destination node on the same local LAN segment or a remotely destined LAN packet sent by a source node on one LAN segment and destined for a destination node on a different and remote LAN segment; and
interoperative bridging means operatively connected to and controlling the LAN interface means, the interoperative bridging means functioning in response to a remotely destined LAN packet to communicate the remotely destined LAN packet to the remote LAN segment, the interoperative bridging means further including aliasing means;
the aliasing means responding to the SID of a remotely destined LAN packet received from one LAN segment and determining if the SID is a duplicate of an ID in use on the other LAN segment and if so substituting for the SID an unused ID on the other LAN segment as an alias ID (AID) before sending the LAN packet with the AID as the SID on the other LAN segment, and
the aliasing means communicating LAN packets by use of the AID between the nodes having the duplicate IDs on the LAN segments without changing the LAN protocol.

5,331,635
NETWORK SYSTEM HAVING FUNCTION OF UPDATING ROUTING INFORMATION
Hiromi Ota, Kawasaki, Japan, assignor to Fuji Xerox Co., Ltd., Japan
Filed Feb. 12, 1993, Ser. No. 17,142
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.130 **8 Claims**



1. A network system having a function of updating routing information comprising:
a plurality of networks;
a single or a plurality of terminal devices connected to each of said plurality of networks; and
a plurality of manager units for relaying data transferred between said terminal devices and for transmitting to said networks broadcasting communication data having a destination address for broadcasting and also having its own address to be used as a transmission originator,
each of said terminal devices comprising:
extraction means for receiving the broadcasting communication data transmitted from said manager units and for extracting addresses of said manager units from the broadcasting communication data;
address memory means for storing therein the addresses of said manager units;
request means for requesting, on the basis of the addresses of the manager units stored in said address memory means, said manager units to provide routing information, said routing information having related information;
selection means for selecting, on the basis of the routing information obtained from the manager units as a result of the request from said request means, one of the manager units which is used to relay said data transferred between said terminal devices and a first routing information;
routing information memory means for storing therein said first routing information selected by the selection means, a second information on a time at which said first routing information was acquired and a third information on a time at which the first routing information was utilized, said first, second, and third information being stored in association with each other; and
first deletion means for referring to said third information among said information stored in said routing information memory means and for deleting both said routing information and said related information which have not been utilized for a predetermined period of time.

5,331,636
FRAME REMOVAL MECHANISM USING COUNT OF FRAMES AND DELIMITER FRAME FOR TOKEN RING NETWORKS
Henry Yang, Andover; K. K. Ramakrishnan, Maynard; Barry Spinney, Wayland, and Rajendra K. Jain, Sudbury, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 678,888, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 577,828, Sep. 4, 1990, abandoned, which is a continuation of Ser. No. 483,296, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 231,773, Aug. 12, 1988, abandoned. This application May 11, 1992, Ser. No. 884,321
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—85.5 **63 Claims**



34. A method for operating a station on a computer network, comprising:
granting permission to said station to transmit at least one frame onto said network;
counting each of said at least one frame transmitted onto said network;
transmitting a set of at least one strip delimiter frame onto said network, in response to a grant of permission to said station to transmit and after transmission of at least one information frame;

stripping at least one frame from said network, and counting each frame stripped;

beginning stripping in response to a grant of permission to said station to transmit said at least one frame onto said network; and,

ending stripping when a stop strip condition is satisfied, said condition being satisfied,

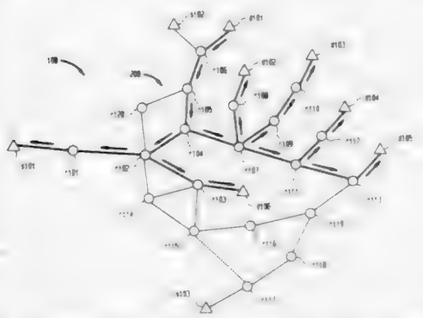
when a number of frames stripped equals a number of frames transmitted, or when at least one of said set of at least one strip delimiter frame is received by said station.

5,331,637

MULTICAST ROUTING USING CORE BASED TREES

Paul T. Francis, Morristown, N.J.; Anthony J. Ballardie, Alstonefield, and Jonathan A. Crowcroft, London, both of England, assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Jul. 30, 1993, Ser. No. 100,634
Int. Cl.[5] H04L *12/44*; H04J *3/08*
U.S. Cl. 370—54 **16 Claims**



12. A method for enabling a particular node to join a particular multicast group of nodes in a network, said multicast group having a multicast tree including a core node, said method comprising the steps of:

transmitting a join request control packet containing a multicast address of said core node from said particular node to a node already on said multicast tree using unicast routing,

at said node already on said multicast tree, writing an address of the node from which said join request control packet was received in an entry of a forwarding table maintained at said node already on said multicast tree, which entry is indexed by said multicast address of said core node, and

transmitting a join acknowledgement control packet to said particular node.

5,331,638

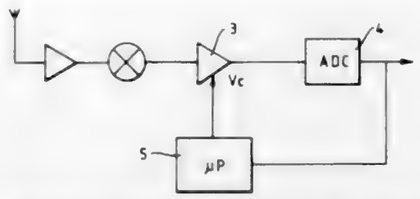
GAIN CONTROL IN A TDMA RADIO-TELEPHONE SYSTEM

Harri Honkasalo, Salo; Harri Jokinen, Hiisi, and Seppo Lamberg, Salo, all of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Jan. 14, 1992, Ser. No. 820,276
Claims priority, application Finland, Jan. 15, 1991, 910212
Int. Cl.[5] H04B *7/26*
U.S. Cl. 370—95.1 **9 Claims**

1. A method for determining AGC gain of a radio-telephone receiver for a concerned reception timeslot in a mobile telephone system based on time division multiple access, in which a local base station transmits either continuously or at least at a given moment, a specific signal having a constant power and having the same frequency as a control signal employed by said local base station, the ratio of the power of said specific signal to the power of a signal in the concerned reception time slot is presumed, characterized in that

during a timeslot preceding the concerned reception timeslot wherein said radio telephone receiver does not monitor transmissions of said control signal from said local base



station, the field strength of the specific signal transmitted by the local base station is measured, and

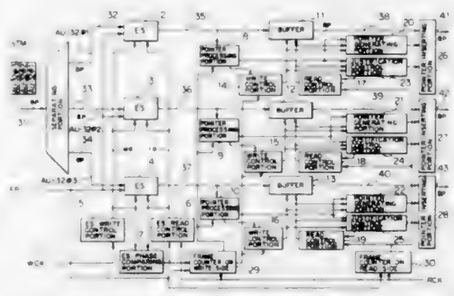
on the basis of the measured field strength and the presumed ratio, the required AGC gain is calculated and the AGC gain is set according to the calculated gain for the time of the concerned reception timeslot.

5,331,639

METHOD AND APPARATUS FOR FRAME PHASE CONVERSION OF SIGNAL HAVING FRAME STRUCTURE

Masahiro Takatori, Kokubunji; Yukio Nakano, Hachioji; Keiichi Ishida, Yokohama; Takashi Mori, Yokohama; Yoshihiro Ashi, Yokohama; Tadayuki Kanno, Yokohama, and Hiromi Ueda, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph and Telephone Corp., both of Tokyo, Japan

Filed Nov. 6, 1990, Ser. No. 609,647
Claims priority, application Japan, Nov. 10, 1989, 1-290997
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—100.1 **35 Claims**



1. A method of converting a frame phase of a signal having a frame structure which contains N (N: an integer 2 or above) pieces of frames applied with time-division/multiplex, comprising steps of:

giving said N pieces of frames to N pieces of memories, respectively;

giving a write address independently to said respective memories so as to write said N pieces of frames in said respective memories in a write phase same as a phase in said signal;

giving a read address independently to said respective memories so as to read said N pieces of frames out of said respective memories in a read phase same as said write phase;

setting a difference between said write and read addresses in each of said respective memories identical with each other under an initial state, said difference corresponding to a difference in phase between said write and read addresses; and

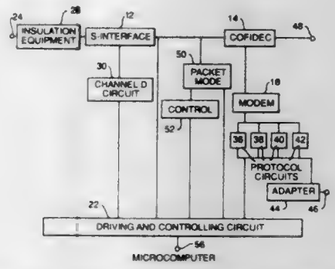
executing a justificating operation on a frame which is read out of a memory in accordance with a difference between existing write and read addresses in each memory.

5,331,640

COMMUNICATION DEVICE BETWEEN A DIGITAL NETWORK AND A TELEMATIC EQUIPMENT

Jacques Ledu, Clamart, France, assignor to Omnitel, France

PCT No. PCT/FR89/00534, § 371 Date May 29, 1990, § 102(e) Date May 29, 1990, PCT Pub. No. WO90/04907, PCT Pub. Date May 3, 1990
PCT Filed Oct. 16, 1989, Ser. No. 460,136
Claims priority, application France, Oct. 17, 1988, 88 13643
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—110.1 **7 Claims**



1. Device for providing communication between an integrated services digital network and telematic equipment, which includes a S-interface to be connected to said network, and a coding-filtering-decoding circuit connected to said S-interface,

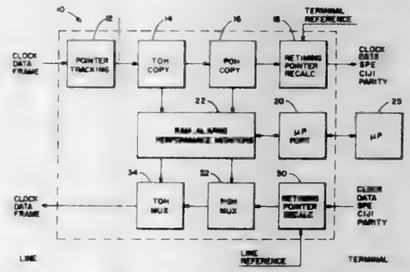
said device further including a modulator-demodulator circuit directly connected to said coding-filtering-decoding circuit and to be connected to said telematic equipment.

5,331,641

METHODS AND APPARATUS FOR RETIMING AND REALIGNMENT OF STS-1 SIGNALS INTO STS-3 TYPE SIGNAL

Bidyut Parruck, Stratford, and Robert W. Hamlin, Jr., Huntington, both of Conn., assignors to TranSwitch Corp., Shelton, Conn.

Continuation-in-part of Ser. No. 559,636, Jul. 27, 1990, Pat. No. 5,142,529. This application Mar. 9, 1992, Ser. No. 848,384
Int. Cl.[5] H04J *14/08*
U.S. Cl. 370—102 **29 Claims**



1. An apparatus for retiming an incoming STS-3 type signal having a first STS-3 rate into a second STS-3 type signal having a second STS-3 rate similar to but not exactly equalling said first STS-3 rate, comprising:

a) demultiplexer means for receiving a synchronous payload envelope data signal of said incoming STS-3 type signal, an associated synchronous clock of said incoming STS-3 type signal, and at least two control signals including a synchronous payload envelope control signal of said incoming STS-3 type signal, and a first byte control signal which is synchronous with one TOH byte of said incoming STS-3 type signal, said demultiplexer means for demultiplexing said incoming STS-3 type signal into three STS-1 type signals each accompanied by a byte control signal related to said first byte control signal which accompanies at least one byte of each of said three STS-1 type signals;

b) three FIFO means coupled to said demultiplexer means, each of said FIFO means for receiving one of said STS-1 type signals;

c) three frame counting means coupled to said demultiplexer means, each frame counting means for counting a number of STS-1 data frames since a last pointer movement relating to said STS-1 type signal;

d) three FIFO depth measurement means, one coupled to each of said FIFO means, each said FIFO depth measurement means receiving said related byte control signal and determining at least therefrom a number of bytes in said FIFO means;

e) logic means coupled to said three FIFO depth measurement means and to said three frame counting means, for generating for a particular one of said STS-1 type signals a destuff signal p−x frames after a determination by said logic means that the number of bytes in a particular one of said FIFO means which receives said particular one of said STS-1 type signals exceeds a first threshold value, where p is a integer greater than two, and x equals the number of frames since the last pointer movement or p−1 whichever is smaller, and for generating a destuff signal q−y frames after a determination by said logic means that the number of bytes in said particular one of said FIFO means exceeds a second threshold value, where q is a integer greater than one, and y equals the number of frames since the last pointer movement or q−1 whichever is smaller, wherein said first threshold is smaller than said second threshold, and q is smaller than p, and wherein said destuff signal triggers a pointer movement; and

f) multiplexer means for reading data from each of said FIFO means according to said second STS-3 signal rate, and multiplexing said data from each of said FIFO means into an STS-3 payload.

5,331,642

MANAGEMENT OF FDDI PHYSICAL LINK ERRORS

Stephen R. Valley, Valatie, and Jeffrey R. Warren, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

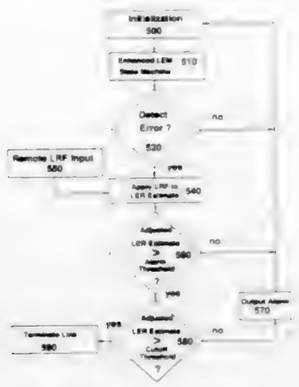
Filed Sep. 1, 1992, Ser. No. 938,785
Int. Cl.[5] G06F *11/16*
U.S. Cl. 371—5.2 **16 Claims**

1. A method of managing link errors in a Local Area Network (LAN), said LAN having a plurality of nodes communicating by physical links connecting said nodes, said method comprising:

detecting occurrences of said errors on at least one of said links;

calculating a Link Error Rate (LER) estimate based upon said occurrences of said errors on said link, said LER estimate being a function of time;

adjusting said LER estimate according to a link specific characteristic function;



comparing said adjusted LER estimate to a link error rate thresholds; and

outputting a decision based upon said comparison.

5,331,643

SELF-TESTING LOGIC WITH EMBEDDED ARRAYS

Gordon L. Smith, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1991, Ser. No. 754,811

Int. Cl.[5] **G01R** *31/28*

U.S. Cl. 371—22.3 **7 Claims**



1. A circuit for providing test signals to a logic block containing an array, said circuit comprising:

a shift register latch scan string;

means to bypass a portion of said scan string;

means to independently cycle the shift register latches in said bypassable scan string portion through a plurality of different states.

5,331,644

DECODER CHECKING CIRCUITS SUITABLE FOR SEMICONDUCTOR MEMORIES

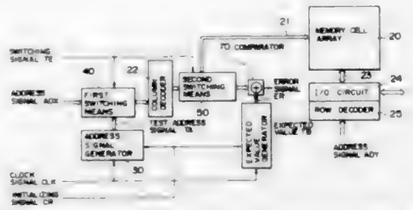
Satoshi Ishii, and Yuki Ushida, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1991, Ser. No. 727,990

Claims priority, application Japan, Jul. 16, 1990, 2-187624

Int. Cl.[5] **G01R** *31/28*

U.S. Cl. 371—25.1 **10 Claims**



1. A semiconductor memory with a decoder checking circuit comprising:

a memory cell array having a plurality of memory cells;

an address signal generator for generating a test address signal;

a first switching means having a first input receiving an address signal, a second input receiving the test address signal, and an output, for connecting selectively the output to either the first input or the second input in response to a switching signal;

a decoder having an input connected to the output of said first switch means and an output;

a second switching means having an input connected to the output of said decoder, a first output connected to said memory cell array, and a second output, for connecting selectively the input to either the first output or the second output in response to the switching signal;

an expected value generator for generating an expected value signal; and

a comparing circuit for comparing a signal outputted from the first output of said second switching means with the expected value signal and outputting an error signal in accordance with the result of the comparison.

5,331,645

EXPANDABLE DIGITAL ERROR DETECTION AND CORRECTION DEVICE

Michael J. Miller, Saratoga; Andy P. Chan, San Jose; Robert W. Stodieck, Santa Clara, and John R. Mick, Los Altos Hills, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Continuation of Ser. No. 466,030, Jan. 17, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 54,346

Int. Cl.[5] **H03M** *13/00*

U.S. Cl. 371—37.1 **10 Claims**

7. An error detection and correction device comprising in combination:

a first device bus (**310**);

a second device bus (**312**);

a third device bus (**318**);

a first, data, latch means (**340**) connected to said first device bus (**310**);

a correction check bit generator (**342**) connected to said first latch means (**340**);

a second, check bit, latch means (**346**) coupled to said second device bus (**312**);

a first multiplexer means (**348**) connected to said second device bus (**312**) and to said second latch means (**346**);

a first gate means (**350**) connected to said correction check bit generator (**342**) and to said first multiplexer means (**348**);

a second multiplexer means (**352**) connected to said correction check bit generator (**342**), to said first gate means (**350**), and to said third device bus (**318**);

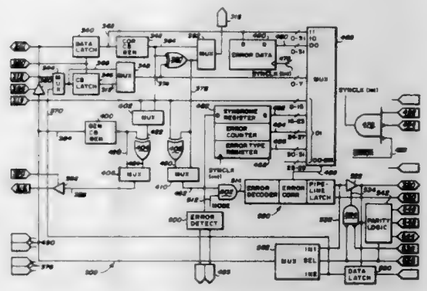
a fourth device bus (**314**);

a fifth device bus (**316**);

a first tri-state buffer means (**380**) connected to said first device bus (**310**);

a second tri-state buffer means (**382**) connected to said fifth device bus (**316**);

a generation check bit generator (**400**) connected to said first tri-state buffer means (**380**);



a third multiplexer means (**402**) connected to said correction check bit generator (**342**) and to said fourth device bus (**314**);

a second gate means (**404**) connected to said third multiplexer means (**402**) and to said generation check bit generator (**400**); and

a fourth multiplexer means (**406**) connected to said second gate means (**404**), to said generation check bit generator (**400**), and to said second tri-state buffer means (**382**).

5,331,646

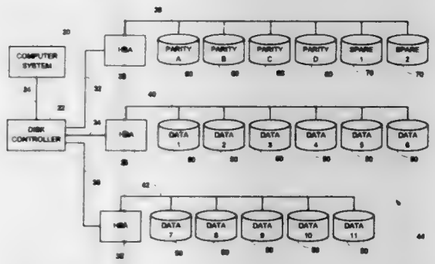
ERROR CORRECTING CODE TECHNIQUE FOR IMPROVING RELIABLILITY OF A DISK ARRAY

Mark S. Krueger, Cypress, and E. David Neufeld, Tomball, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed May 8, 1992, Ser. No. 880,724

Int. Cl.[5] **G06F** *11/10, 11/20;* **G11B** *20/18*

U.S. Cl. 371—40.1 **13 Claims**



1. A data storage system, comprising:

a disk controller; and

a number of disk drives coupled to said disk controller, said number being between $(n(n+1)/2)+1$ and $2n-1$, inclusive, n being a positive integer greater than 2,

wherein n of said disk drives are parity drives and the remaining of said disk drives are data drives, each said parity drive being associated with a parity chain including a subset of less than all of said data drives wherein each byte of each said parity drive is a parity byte for corresponding bytes of said subset of data drives associated with said parity drive, and

wherein said parity chain associations between said parity drives and said data drives are determined by first taking said parity drives two at a time, then taking said parity drives more than two at a time until all of said data drives are associated with at least two of said parity chains and none of said parity chains are the same.

5,331,647

COMMUNICATION APPARATUS HAVING FUNCTION TO RECORD COMMUNICATION HISTORY

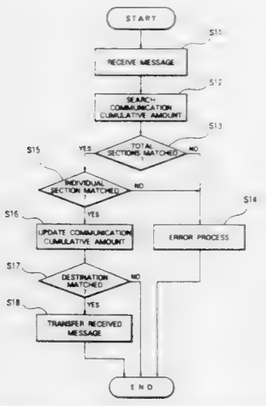
Toshibumi Seki, Odawara; Yasukuni Okataku, and Shinsuke Tamura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 23, 1990, Ser. No. 556,188

Claims priority, application Japan, Jul. 26, 1989, 1-193598

Int. Cl.[5] **G06F** *11/10;* **H03M** *13/00*

U.S. Cl. 371—53 **7 Claims**



1. A communication apparatus for communicating information over a communication path between at least one other communication apparatus, said communication apparatus comprising:

transmitting means for transmitting an information packet to said at least one other communication apparatus over said communication path, wherein said information packet comprises an address section indicating a destination of said information packet, a sender identification section indicating which communication apparatus transmitted said information packet, a communication cumulative amount tab, and a main message section;

receiving means for receiving an information packet transmitted from said at least one other communication apparatus over said communication path, wherein said information packet comprises an address section indicating a destination of said information packet, a sender identification section indicating which communication apparatus transmitted said information packet, a communication cumulative amount tab, and a main message section; and

a comparison process means, said comparison process means including means for storing a communication cumulative table having a plurality of tabs, a tab being added to said table each time said transmitting means transmits a transmit information packet,

wherein each tab comprises a communication cumulative amount individual section and a total section, said communication cumulative amount individual section having communication cumulative vales each representing a quantity of messages transmitted by each said communication apparatus, said total section having a total value representing a sum of said communication cumulative values,

wherein said comparison process means has operational modes, the modes including:

(a) a transmission mode in which said comparison process means transfers a most recently added tab in said stored communication cumulative table to said transmitting means responsive to a communication cumulative amount request from said transmitting means, in which said comparison process means confirms whether said most recently added tab is appended to a message to be transmitted, and in which said comparison process means creates a new tab when transmission of said message is confirmed, a total value in the total section of the new tab and a value corresponding to said communication apparatus in the individual section being incremented, other values in the new tab being the same as the values in the most recently added tab; and

(b) a reception mode in which said comparison process means extracts a sender identification section and a communication cumulative amount tab from a received information packet, in which said comparison process means confirms that a total value in the total section of said extracted communication cumulative amount tab matches the total value in the total section of a tab in the stored communication cumulative table, in which said comparison process means compares the communication cumulative values of the communication cumulative amount individual section of the tab whose total section includes the matched total value with the communication cumulative values of the communication cumulative amount individual section of the extracted communication cumulative amount tab, and in which said comparison process means creates a new tab when both the total section and communication cumulative amount individual section of the tab of the stored communication cumulative table coincide with the total section and communication cumulative amount individual section of the received communication cumulative amount tab, a total value in the total section of the new tab and a communication cumulative value of a communication apparatus corresponding to the sender identification section extracted from the received information packet in the individual section being incremented, other values in the new tab being the same as the values in the most recently added tab.

5,331,648

LASER SYSTEM

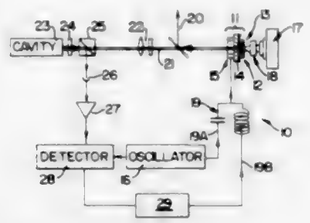
Alister I. Ferguson, Glasgow, Scotland, assignor to University of Strathclyde, Glasgow, Scotland

PCT No. PCT/GB91/00391, § 371 Date Sep. 8, 1992, § 102(e) Date Sep. 8, 1992, PCT Pub. No. WO91/14303, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 13, 1991, Ser. No. 934,685

Int. Cl.[5] H01S *3/098*

U.S. Cl. 372—18 **6 Claims**



1. A laser system comprising:

a microchip laser having a mirror mounted on a piezo-electric mount;

a laser diode which pumps said microchip laser;

an oscillator operating substantially at a mechanical resonance frequency of said piezo-electric mounted mirror and;

coupling means for electrically coupling a first output of said oscillator to said piezo-electric mount;

a reference interferometer having frequency resolution less than said mechanical resonance frequency;

diverting means for diverting at least some of an optical output of the laser to said reference interferometer;

a photo-electric detector for converting an output of the interferometer to an electrical signal output;

a phase-sensitive detector coupled to an output of the photo-electric detector and referenced to a second output of the oscillator to provide a frequency locking signal; and

applying means coupled to an output of the phase sensitive detector for applying the frequency locking signal to said coupling means such that the mirror mount is controlled and functions as both a frequency modulator and a frequency correction element.

5,331,649

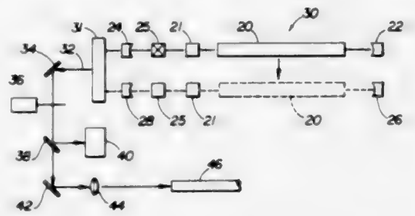
MULTIPLE WAVELENGTH LASER SYSTEM

Bruno Dacquay, Aubiere, and Jean-Paul Chaduc, Clermont Ferrand, both of France, assignors to Alson Surgical, Inc., Fort Worth, Tex.

Filed Jul. 10, 1991, Ser. No. 727,689

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—23 **23 Claims**



14. A laser system adapted for generating plural wavelengths of light, comprising:

a single laser medium for generating a beam of light;

a plurality of pairs of mirrors, each pair responsive to the light beam for extracting a different wavelength of light, and each mirror of a pair being disposed at opposing ends of the laser medium; and

means for moving the laser medium to respective locations between a selected pair of said mirrors; and

means operable by a user of the system to selectively position the laser medium to thereby generate a desired wavelength of light.

5,331,650

LIGHT SOURCE DEVICE AND OPTICAL PICKUP USING LIGHT SOURCE DEVICE

Hideo Maeda, and Kazuya Miyagaki, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 12, 1992, Ser. No. 849,954

Claims priority, application Japan, Mar. 20, 1991, 3-081420; Mar. 20, 1991, 3-081421

Int. Cl.[5] H01S *3/10*

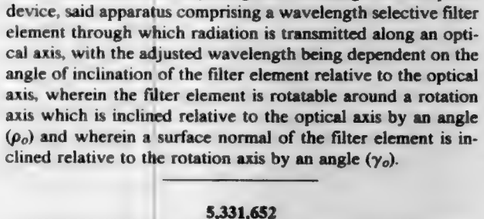
U.S. Cl. 372—26 **12 Claims**

1. An optical pickup using a light source device, said light source device comprising:

a semiconductor laser capable of directly modulating light;

a wavelength converting section for emitting light having a wavelength based on light from said semiconductor laser; and

means for superposing said light from said semiconductor laser on said light emitted by said wavelength converting section having a wavelength based on said light from said semiconductor laser to thereby emit superposed light;



said optical pickup being constructed such that a light beam emitted from said light source device is converged and incident to an optical memory medium.

5,331,651

METHOD AND APPARATUS FOR ADJUSTING THE WAVELENGTH IN AN OPTICAL DEVICE AND LASER USING THE METHOD

Michael Becker, Gaertringen; Wolfgang Reichert, and Emmerich Müller, both of Aldingen, all of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 22, 1993, Ser. No. 7,564

Claims priority, application European Pat. Off., Jan. 24, 1992, 92101168.0

Int. Cl.[5] H01S *3/13*

U.S. Cl. 372—32 **18 Claims**

2. An apparatus for adjusting the wavelength in an optical device, said apparatus comprising a wavelength selective filter element through which radiation is transmitted along an optical axis, with the adjusted wavelength being dependent on the angle of inclination of the filter element relative to the optical axis, wherein the filter element is rotatable around a rotation axis which is inclined relative to the optical axis by an angle (ρ_o) and wherein a surface normal of the filter element is inclined relative to the rotation axis by an angle (γ_o).

5,331,652

SOLID STATE LASER HAVING CLOSED CYCLE GAS COOLED CONSTRUCTION

William R. Rapoport, Bridgewater; Kenrick R. Leslie, Morris Plains; Theodore T. Hadeler, Montvale, and LaValle V. Brummert, Middletown, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Mar. 22, 1993, Ser. No. 34,993

Int. Cl.[5] H01S *3/04*

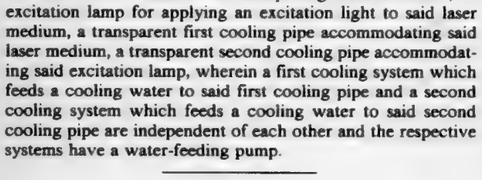
U.S. Cl. 372—34 **17 Claims**

1. In a laser system, a laser resonator, comprising:

(a) a housing having a body portion for enclosing optical components of the laser,

(b) mounting means for mounting optical components of said laser directly to said housing;

(c) said housing having stiffness sufficient for spatial and angular positioning of said optical elements; and



(d) cooling means for transferring heat from said optical components to said housing by forced circulation of a preselected gas therewithin.

5,331,653

SOLID-STATE LASER DEVICE

Minoru Kojima; Mitsugu Terada, both of Sodegaura, and Kazuyoshi Sutoh, Noda, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP92/00828, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO93/01636, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 1, 1992, Ser. No. 975,947

Claims priority, application Japan, Jul. 1, 1991, 3-160684; Jul. 1, 1991, 3-160685

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—35 **6 Claims**

1. A solid-state laser device comprising a laser medium, an excitation lamp for applying an excitation light to said laser medium, a transparent first cooling pipe accommodating said laser medium, a transparent second cooling pipe accommodating said excitation lamp, wherein a first cooling system which feeds a cooling water to said first cooling pipe and a second cooling system which feeds a cooling water to said second cooling pipe are independent of each other and the respective systems have a water-feeding pump.

5,331,654

POLARIZED SURFACE-EMITTING LASER

Jack L. Jewell, and Greg R. Olbright, both of Boulder, Colo., assignors to Photonics Research Incorporated, Longmont, Colo.

Filed Mar. 5, 1993, Ser. No. 26,806

Int. Cl.[5] H01S *3/10*

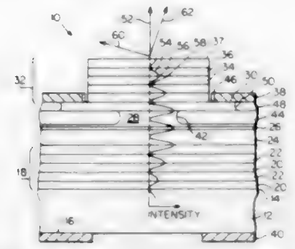
U.S. Cl. 372—45 **28 Claims**

1. A monolithic vertical-cavity surface emitting laser comprising:

a body of a semiconductor material having opposed surfaces and an active region therein which is adapted to generate light and emit the light from one of the surfaces thereof;

a separate reflecting mirror at opposite sides of the active region forming an optical cavity which includes said

active region and reflecting mirrors, at least one of the mirrors being partially transparent to the generated light to allow the light generated in the active region to be emitted therethrough; and

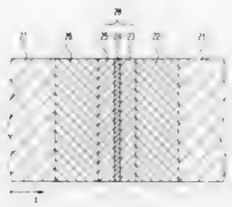


characterized in that the laser is substantially planar by having all vertical projections or holes less than 10 microns deep, and that the laser is structured to give substantial preference for laser emission to be polarized in one predetermined state.

5,331,655
DECOUPLED OPTIC AND ELECTRONIC CONFINEMENT LASER DIODE

Christoph Harder, Zurich; Stefan Hausser, Thalwil, and Heinz Meier, Thalwil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1993, Ser. No. 45,772
Claims priority, application European Pat. Off., Jun. 22, 1992, 92810473.6
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **12 Claims**

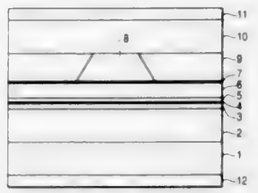


1. In a separate confinement heterostructure semiconductor laser diode with an active region, comprising:
at least one InGaAsP active layer with a bandgap of E_{gA};
a carrier confinement structure comprising at least one InGaAsP carrier confinement layer with a bandgap of E_{gD}, said carrier confinement structure having said at least one InGaAsP active layer embedded therein; and
an upper InGaAsP optical confinement layer with a bandgap of E_{gB}, wherein E_{gD} is greater than E_{gB}, and a lower InGaAsP optical confinement layer with a bandgap of E_{gC}, said optical confinement layers having said carrier confinement structure sandwiched therebetween, wherein there is provided a first bandgap step ΔE_1 between said at least one InGaAsP active layer and said lower InGaAsP optical confinement layer, with ΔE_1 being greater than E_{gC}-E_{gA}, and a second bandgap step ΔE_2 between said at least one InGaAsP active layer and said upper InGaAsP optical confinement layer, with ΔE_2 being greater than E_{gB}-E_{gA}.

5,331,656
VERY SHORT WAVELENGTH SEMICONDUCTOR LASER

Toshiaki Tanaka, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 97,200
Claims priority, application Japan, Jul. 31, 1992, 4-204768
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **15 Claims**

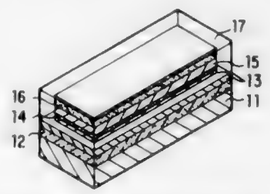


10. A semiconductor laser diode comprising a double heterojunction structure formed on a GaP semiconductor substrate, including an $Al_yGa_{1-y}P$ ($0 \leq y \leq 1$) optical waveguide layer having a predetermined large bandgap energy, and a compressively strained $Ga_xIn_{1-x}P$ ($0<x<1$) active layer with a predetermined small bandgap energy of the direct transition type, wherein at least one of the optical waveguide layer and the active layer is doped with nitrogen as an impurity dopant in addition to a dopant of a conductivity type, and wherein the compressively strained $Ga_xIn_{1-x}P$ active layer is formed on the semiconductor substrate to a thickness less than a critical thickness for a composition "x" (wherein the critical thickness is a maximum thickness of said active layer, above which dislocations will be formed in said active layer due to compressive strain).

5,331,657
HIGH-POWER SEMICONDUCTOR LASER DEVICE

Jae-soo Yoo, Seoul, and Hyun-don Jung, Kyungki, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 22, 1992, Ser. No. 994,901
Claims priority, application Rep. of Korea, May 28, 1992, 92-9225
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **5 Claims**

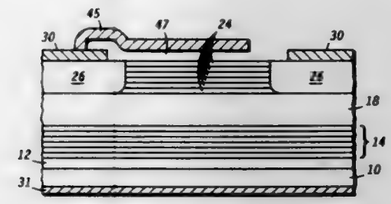


1. A semiconductor laser device comprising:
a semiconductor substrate;
a first clad layer formed no said semiconductor substrate;
an active layer and a second clad layer sequentially stacked on the center of said first clad layer; and
a current-blocking layer formed on said first clad layer and covering the whole surface of said active and second clad layers, said current blocking layer being formed at least on front and back sidewalls of said active layer and second clad layers thereby serving as a mirror facet of the semiconductor laser device.

5,331,658
VERTICAL CAVITY SURFACE EMITTING LASER AND SENSOR

Chan-Long Shieh, and Donald E. Ackley, both of Paradise Valley, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 26, 1992, Ser. No. 935,307
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **27 Claims**

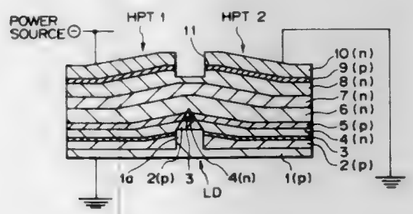


1. A semiconductor laser operating at a particular wavelength and having a threshold current, comprising:
a semiconductor supporting structure;
a first mirror stack positioned above said supporting structure;
an active layer comprised of at least one light emitting region positioned above said first mirror stack;
a second mirror stack positioned above said active layer; and
a means for changing said threshold current of said semiconductor laser upon sensing a change in an environment positioned above said second mirror stack.

5,331,659
OPTICAL SEMICONDUCTOR DEVICE

Toyoharu Ohata; Kazuhiko Nemoto, and Masamichi Ogawa, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 31,098
Claims priority, application Japan, Mar. 13, 1992, 4-089433; Mar. 16, 1992, 4-090277
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **14 Claims**

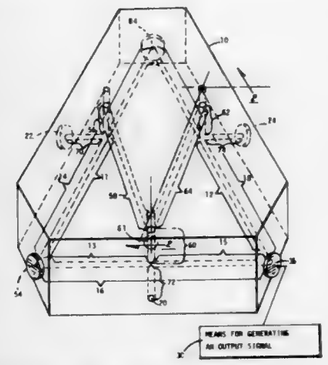


1. An optical semiconductor device, comprising:
a light emitting element;
a first phototransistor; and
a second phototransistor;
said first and second phototransistors being connected in parallel to each other and connected to one end of said light emitting element.

5,331,660
RING LASER GYRO GAS BYPASS WITH AUXILIARY DISCHARGE

James P. Hauck, Santa Ana, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

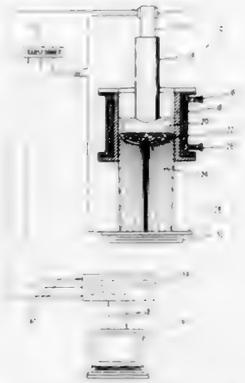
Filed Jul. 24, 1984, Ser. No. 634,328
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—94 **23 Claims**



1. A ring laser gyro, comprising:
a closed envelope containing an optically resonant cavity having a gain bore therein, said envelope containing a gas medium in said cavity, and
a first electrically energizable gain bore electrode means having at least two electrodes at gain bore electrode locations in the envelope, said gain bore providing a path between the electrode locations,
a first current source means coupled to said gain bore electrode means for establishing an electrical discharge to ionize the gas within the gain bore and to form an active gas medium within the gain bore and between said gain bore electrode locations and to excite a pair of counter-propagating light beams along a lasing path through said gain bore, said light beams counter-propagating in said optically resonant cavity,
means for generating an output signal for said gyro responsive to said counter-propagating light beams for measuring a difference in the frequencies of said counter-propagating light beams;
said active gas medium in the gain bore having an axial current driven gas flow and a return gas flow induced by the electrical discharge in said gain bore, said gain bore axial current driven gas flow and said return gas flow being unequal; and
a gas bypass cavity to pneumatically couple said gain bore electrode locations, said gas bypass cavity conducting a part of said return gas flow between said respective electrode locations, said gas bypass cavity having
a second electrically energizable electrode means having at least electrodes at electrode locations within said gas bypass cavity,
a second current source means coupled to said second electrode means for establishing an electrical discharge in said gas medium between said electrode locations within said gas bypass, said gas bypass electrical discharge providing a gas bypass axial current driven gas flow and a gas bypass return gas flow, said gas bypass axial current driven gas flow and said gas bypass return gas flow being unequal and
means for adjusting said gas bypass electrical discharge to adjust the gas bypass gas flow to essentially cancel said gain bore axial current driven gas flow.

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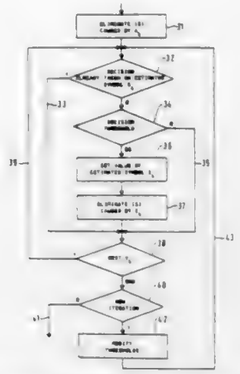
5,331,661
METHOD AND APPARATUS FOR CONTROLLING ELECTROSLAG REMELTING
Michael C. Maguire, Tijeras; Frank J. Zanner, Sandia Park; Brian K. Damkroger, Albuquerque; Mark E. Miszkiel, Tijeras, and Eugene A. Aroason, Albuquerque, all of N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.
Filed Feb. 27, 1992, Ser. No. 843,870
Int. Cl.[5] H05B *7/156*
U.S. Cl. 373—105 **20 Claims**



9. An apparatus for controlling immersion depth of an electrode in a slag pool of an electrode melting furnace, the apparatus comprising:
means for measuring at time intervals values of voltage and current to obtain power spectrum data of an electrical circuit through the electrode and the slag pool;
control computer means for obtaining a measure of phase difference based from imaginary and real components of spectrum data; and
means for adjusting the electrode immersion depth in the slag pool according to the measure of phase difference.

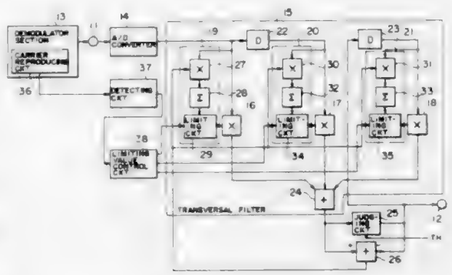
5,331,662
ADAPTIVE EQUALIZATION METHOD REDUCING INTERSYMBOL INTERFERENCE, RECEIVE DEVICE IMPLEMENTING IT AND APPLICATION THEREOF
Lydie Desperben, Bois Colombes; Ouélid Abdesselem, Paris, and Pierre-Francois Kamanou, Colombes, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands
Filed Jul. 21, 1992, Ser. No. 918,854
Claims priority, application France, Jul. 22, 1991, 91 09232
Int. Cl.[5] H03H *7/30;* **H04B** *1/10*
U.S. Cl. 375—14 **24 Claims**

1. An iterative method for equalizing a received digital signal to combat intersymbol interference in which each sample received is associated with an estimated symbol representing the transmitted symbol, each iteration comprising the steps of:
selecting a sample from a set of received samples whose value has not been fixed during a previous iteration;
proceeding with an interference elimination sequence comprising the steps of:
comparing the sample with at least one confidence threshold;
if said sample exceeds any said threshold, the further steps of:
associating with said sample an estimated symbol whose value depends on the threshold thus exceeded, the value of said sample being then fixed; and
using said estimated symbol to eliminate the intersymbol interference caused by the estimated symbol to such samples whose respective values have not already been fixed; and
if said sample does not exceed said threshold, the further steps of:



selecting another received sample which has not been already selected during this iteration and
proceeding with another said interference elimination sequence for said another received sample.

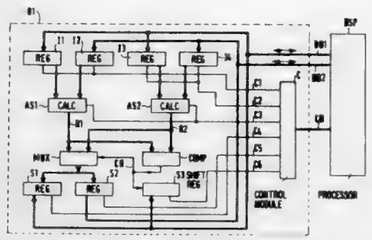
5,331,663
DECISION-FEEDBACK EQUALIZER CAPABLE OF PRODUCING AN EQUALIZED SIGNAL AT A HIGH SPEED WITHOUT A REMAINING FADING
Yuzo Kurokami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 14, 1992, Ser. No. 944,292
Claims priority, application Japan, Sep. 12, 1991, 3-233280
Int. Cl.[5] H03H *7/30, 7/40;* **H03K** *5/159*
U.S. Cl. 375—14 **7 Claims**



1. A decision-feedback equalizer for use in combination with a demodulator section for demodulating a received signal into a demodulated signal, said decision-feedback equalizer comprising:
first filter means for filtering said demodulated signal into a first filtered signal in accordance with first through N-th primary controllable tap gains, where N represents a positive integer;
delay means for delaying said demodulated signal during a predetermined time to produce a delayed signal;
main filter means for filtering said delayed signal into a main filtered signal in accordance with a main controllable tap gain;
second filter means for filtering an input signal into a second filtered signal in accordance with first through M-th subsidiary controllable tap gains, where M represents a positive number;
first producing means for producing a third filtered signal dependent upon said first and said second filtered signals and said main filtered signal;
second producing means for producing an equalized signal as said input signal dependent upon said third filtered signal;
error signal producing means for producing an error signal dependent upon said equalized signal and said third filtered signal; (claim 1 continued)
first generating means for generating first through N-th primary gain values dependent upon said demodulated signal and said error signal;
main generating means for generating a main gain value dependent upon said delayed signal and said error signal;
second generating means for generating first through M-th subsidiary gain values dependent upon said error signal and said equalized signal;
detecting means for detecting whether or not said demodulator section is put in a synchronization state to produce a first detecting signal when said demodulator section is put in said synchronization state, said detecting means producing a second detecting signal when said demodulator section is put out of said synchronization state;
first processing means for processing said first through said N-th primary gain values into said first through said N-th primary controllable tap gains in accordance with first through N-th primary parameters, respectively;
main processing means for processing said main gain value into said main controllable tap gain in accordance with a main parameter;
second processing means for processing said first through said M-th subsidiary gain values into said first through said M-th subsidiary controllable tap gains in (claim 1 twice continued) accordance with first through M-th subsidiary parameters, respectively;
first delivering means responsive to any one of said first and said second detecting signals for delivering a main value as said main parameter to said main processing means;
second delivering means responsive to said first detecting signal for delivering first through N-th primary values and first through M-th subsidiary values as said first through said N-th primary parameters and said first through said M-th subsidiary parameters to said first and said second processing means, respectively, and
third delivering means responsive to said second detecting signal for delivering first through N-th additional primary values and first through M-th additional subsidiary values as said first through said N-th primary parameters and said first through said M-th subsidiary parameters to said first and said second processing means, respectively.

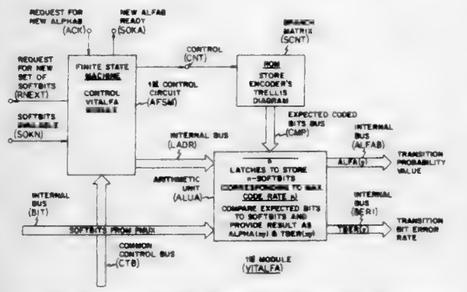
5,331,664
DEVICE FOR PROCESSING THE VITERBI ALGORITHM COMPRISING A PROCESSOR AND A DEDICATED OPERATOR
Lydie Desperben, Bois Colombes; Luc Dartois, Carrieres sous Poissy, and Emmanuel Rousseau, Paris, all of France, assignors to Alcatel Radiotelephone, Paris, France
Filed Nov. 14, 1991, Ser. No. 791,410
Claims priority, application France, Nov. 15, 1990, 90 14230
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 **12 Claims**

1. A device for recovering an original bit stream b(i) from a received bit stream by processing said received bit stream in accordance with a Viterbi algorithm, said device comprising a processor, said Viterbi algorithm being defined by a constraint length of value n+1 and 2^n states associated with streams of bits, characterized in that said device comprises an operator (C, COMP, MUX, S1, S3) coupled to said processor for processing said Viterbi algorithm with said processor for establishing a maximal metric of rank r of a state E_j denoted $Met_r(E_j)$, for r greater than n, where r and n are integers, and the (r-n)th bit of the received bit stream corresponding to said maximal metric from input values which are maximal metrics of rank r-1 of states E_{2k} and E_{2k+1} denoted $Met_{r-1}(E_{2k})$ and $Met_{r-1}(E_{2k+1})$ and the conditional probabilities related to said states E_{2k} and E_{2k+1} that the r-th bit of bit streams associated with these states has a determined valued denoted $Pr(b(r)=O/E_{2k})$



and $Pr(b(r)=O/E_{2k+1})$, where k is equal to 2j for any value of j,j being an integer, less than 2^{n-1}, and has the value $2(j-2^{n-1})$ for any value of j greater than or equal to 2^{n-1}, so that $Met_r(E_j)$ takes the larger of the values of the expressions $Met_{r-1}(E_{2k})+Pr(b(r)=O/E_{2k})$ and $Met_{r-1}(E_{2k+1})+Pr(b(r)=O/E_{2k+1})$.

5,331,665
DECODER DEVICE FOR DECODING CONVOLUTIONALLY ENCODED MESSAGE
Hans J. J. Busschaert, Waasmunster; Peter P. F. Reusens, Laarne, and Ronny M. A. Van Camp, Lint, all of Belgium, assignors to Alcatel N.V., Netherlands
Filed May 5, 1992, Ser. No. 878,731
Claims priority, application Belgium, May 8, 1991, 9100432
Int. Cl.[5] H03D *1/00;* **H04L** *27/06;* **G06F** *11/10;* **H03M** *13/12*
U.S. Cl. 375—94 **10 Claims**



1. Decoder device using the Viterbi algorithm for decoding convolutionally encoded messages, comprising: a first module (VITALFA) for calculating transition probabilities for possible state transitions between two successive states of the decoder, and a second module (VIPROB) for calculating, as a function of said transition probabilities, path probabilities for possible paths constituted by successive state transitions and ending in each of said states, and for selecting, for each of said states, only a path having the highest path probability value, wherein said first module (VITALFA) is for further calculating, for each of said transitions, a transition bit error rate which is a function of a difference between bits (softbits) received in said first module (VITALFA) and the bits (coded bits) expected for a same state transition.

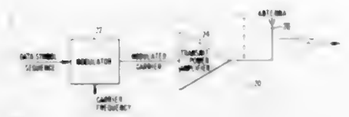
VOL 1164 ISS 3 JL 19 1994 UMI

5,331,666

ADAPTIVE MAXIMUM LIKELIHOOD DEMODULATOR

Paul W. Dent, Stehag, Sweden, assignor to Ericsson GE Mobile Communications Inc., Paramus, N.J.

Filed Jun. 8, 1992, Ser. No. 894,933
Int. Cl.[5] **H03D** *1/00*; **H04L** *27/06*; **G06F** *11/10*; **H03M** *13/12*
U.S. Cl. 375—94 **28 Claims**





3. An apparatus for decoding digital data symbols from a modulated signal in a communication system comprised of:

means for initializing the contents of a predetermined number of electrical state memories corresponding to the possible sequence of data symbols that can precede a new symbol being processed with initial predictions of received signal values corresponding to those sequences followed by all possible values of the new data symbol;

comparing means for comparing received signal values with predicted signal values;

calculating means for determining a mismatch between received and predicted values;

summation means for adding said mismatches to path metrics to generate candidate path metrics;

selecting means for choosing between groups of said candidate path metrics associated with possible predecessor symbol sequences to a new symbol sequence to select one candidate from each group;

storage means for storing said chosen candidate path metric in a new state memory associated with said new symbol sequence;

memory transfer means for copying predecessor symbol sequence associated with said chosen candidate metric to said new state memory associated with said new symbol sequence;

calculating means for updating predicted signal value used in calculating said chosen candidate path metric towards said received signal value; and

memory transfer means for copying predicted signal values including said updated value from predecessor state memory associated with said chosen candidate path metric to said new state memory.

5,331,667

TELEPHONE EXCHANGE APPARATUS WITH COMMUNICATION LINE CLOCKING

Michihiro Izumi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1991, Ser. No. 696,176
Claims priority, application Japan, May 11, 1990, 2-119929
Int. Cl.[5] **H04L** *7/00, 7/02*; **H04J** *3/06*; **H04M** *3/00*
U.S. Cl. 375—107 **9 Claims**

1. A telephone exchange apparatus comprising:

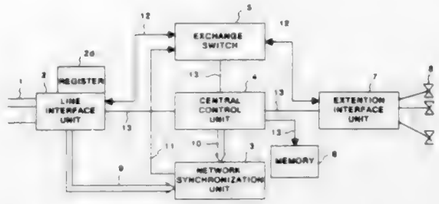
connection means for connecting a plurality of communication lines;

exchange means for exchanging communication between the plurality of communication lines and a plurality of telephone sets;

selection means for selecting one of the plurality of communication lines; and

providing means for providing clocks from said one of the communication lines selected by said selection means to said exchange means,

wherein said selection means does not select another one of



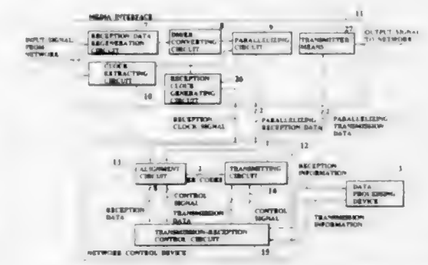
the plurality of communication lines once said one of the plurality of communication lines has been selected until a communication via said one of the plurality of communication lines ends.

5,331,668

COMMUNICATION CONTROL DEVICE

Koichi Tanaka, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 578,457, Sep. 7, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 543
Claims priority, application Japan, Sep. 7, 1989, 1-230319
Int. Cl.[5] **H04L** *7/00*
U.S. Cl. 375—116 **14 Claims**



1. A communication control device for communicating communication data composed of a serial row of bits with a communication network, the communication control device comprising:

(a) converting means for separating reception data composed of a serial row of bits given from the communication network every p bits in order of input to form new data composed of parallel rows of p bits;

(b) clock generating means for generating a constant clock signal which is synchronous to the data composed of parallel rows of p bits;

(c) a holding portion to successively take in and hold the data composed of parallel rows of p bits given from the converting means in synchronism with the constant clock signal generated by the clock generating means;

(d) a discriminating portion which compares a plurality of subsets of data generated from the data composed of parallel rows of p bits held by the holding portion with data start discriminating information and discriminates an alignment mode of the units of the data which accord with the data start discriminating information; and

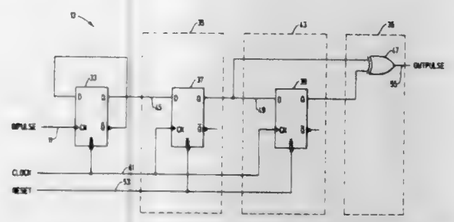
(e) an extracting portion to extract n-bit data in the form of p rows of n parallel bits from the data composed of parallel rows of p bits held by the holding portion in accordance with the alignment mode discriminated by the discriminating portion, wherein the number p is smaller than the number n.

5,331,669

ASYNCHRONOUS PULSE CONVERTER

James H. Wang, and Julia W. Wang, both of Mission Viejo, Calif., assignors to Ologic Corporation, Costa Mesa, Calif.

Filed May 6, 1992, Ser. No. 879,953
Int. Cl.[5] **H04L** *7/00, 25/36, 25/40*; **H03K** *5/13*
U.S. Cl. 375—118 **8 Claims**



1. An electronic pulse converter circuit for converting a sequence of asynchronous pulses of indefinite duration into a sequence of synchronous pulses of predetermined duration having a leading edge and a trailing edge, including:

a. input detection means, having an input coupled to the sequence of asynchronous pulses, for detecting when an asynchronous input pulse to the input detection means transitions from a relatively low voltage state to a relatively high voltage state, or vice versa, and having an output indicative of the transition;

b. synchronization means, coupled to the output of the input detection means, for generating first and second output signals indicative of a beginning time and an ending time of a synchronous pulse corresponding to an asynchronous input pulse, the synchronization means including:

(1) first latching means, having an output, an input coupled to the output of the input detection means, and an input coupled to a reference clock, for outputting a first signal synchronized with a first leading edge of the reference clock and in response to a transition indication from the input detection means;

(2) second latching means, having an output, a signal input coupled to the output of the first latching means, and a clock input coupled to the reference clock, for outputting a second signal synchronized with a second leading edge of the reference clock and in response to the output of the first latching means;

c. difference detection means, having an output, a first input coupled to the output of the first latching means, and a second input coupled to the output of the second latching means, for outputing a pulse synchronous with the reference clock if a difference exists between the logic level of the first and second inputs to the difference detection means.

5,331,670

SYNCHRONIZATION SCHEME FOR A DIGITAL COMMUNICATIONS SYSTEM

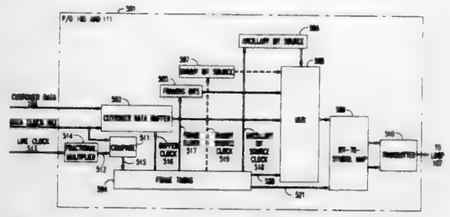
Massimo Sorbara, Freehold, and Jean-Jacques Werner, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 31, 1992, Ser. No. 830,036
Int. Cl.[5] **H04L** *7/04*
U.S. Cl. 375—111 **20 Claims**

1. Apparatus for use in a communications system, said apparatus comprising a transmitter and receiver respectively connected to different ends of a communications channel, said transmitter comprising

means for receiving customer data bits and arranging them into a succession of frames, each frame including a predetermined number of bits, and

means for generating a succession of data symbols representative of said customer data bits in each frame along with a framing symbol which identifies each frame so as to enable delineation of one frame from another in said succession, each framing symbol being different from any of the data symbols and lying outside of a boundary encompassing said plurality of data symbols and formed by interconnecting outermost data symbols in said symbol constellation, and said receiver comprising



means for examining said framing symbols, and

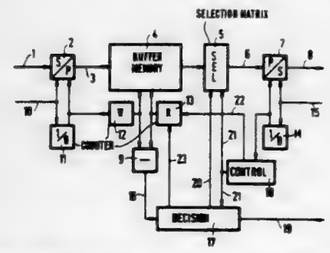
means responsive to the examination of said framing symbols for mapping said data symbols into their representative customer data bits and for identifying each frame in said succession of frames.

5,331,671

CIRCUIT ARRANGEMENT FOR BIT RATE ADJUSTMENT TO TWO DIGITAL SIGNALS

Ralph Urbansky, Schwaig, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 751,268, Aug. 28, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 79,962
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1990, 4027968
Int. Cl.[5] **H04L** *25/36*
U.S. Cl. 375—118 **24 Claims**



1. A circuit arrangement for bit rate adjustment, comprising:

a buffer memory,

a write counter for controlling writing of a first digital signal into said memory at a first bit rate,

a read counter for controlling reading of a second digital signal from said memory at a second bit rate higher than said first bit rate,

means for receiving the second digital signal read from said memory,

a subtractor for forming a difference signal by determining the difference between the counts of said read and said write counters, and

a justification decision circuit for generating stop signals for said read counter,

characterized in that the arrangement includes means for inserting into said second digital signal, in said means for receiving, a number of stuff bits between two of the stop signals,

the justification decision circuit comprises an accumulator having an output signal; time delay means for weighting by a first factor, and delaying by a first given time interval,

at least a portion of said output signal to produce a secondary signal; and means, responsive to said accumulator output signal, for generating one of said stop signals for the read counter and providing a justification signal representing said number of stuff bits, and

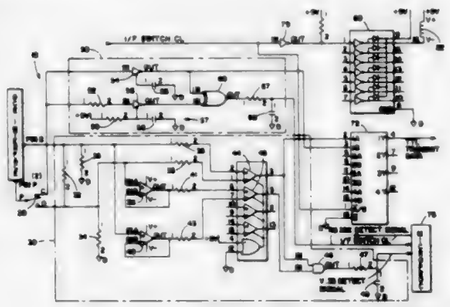
said accumulator comprises means for accumulating, over a second given time interval, said difference signal, said secondary signal and said justification signal.

5,331,672

AUTOMATIC DETECTOR AND SELECTOR OF RS-232 OR V.35 INTERFACE

Patrick A. Evans, Southington, and Eugene Vellucci, Jr., Terryville, both of Conn., assignors to General DataComm, Inc., Middlebury, Conn.

Filed Jul. 9, 1991, Ser. No. 727,822
Int. Cl.[5] H04L *23/00*
U.S. Cl. 375—121 **20 Claims**



1. An automatic detection circuit resident in a DCE and coupled to an interface connector of the CE for detecting receipt by the DCE of V.35 and RS-232 transmit data signals, and distinguished between those signals, the automatic detection circuit comprising:

a) switch means coupled to a first TX data terminal of said DCE interface connector, said switch means having at least a first pole and a second pole;

b) a first line receiving circuit means coupled to said first pole of said switch means and to a second TX data terminal of said DCE interface connector, wherein said first line receiving circuit means provides a first signal indicating that no. V.35 or RS232 transmit data signal is being received when neither said first and second TX data terminals receives an input signal, and provides a second signal indicating that a transmit data signal is being receives when an input signal is present at at least one of said first and second TX data terminals; and

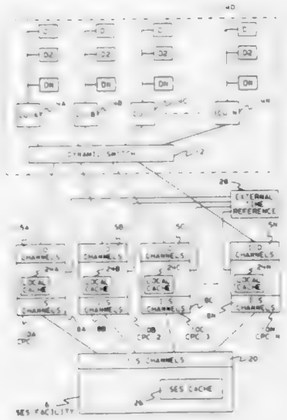
c) a second line receiving circuit means coupled to said second pole of said switch means for providing a third signal indicating that said transmit data signal is a RS-232 signal when a valid RS-232 transmit data signal is detected, and a fourth signal when a valid RS-232 transmit data signal is not detected, wherein the presence of said second signal followed by said fourth signal indicates that said data transmit signal is a V.35 signal.

5,331,673

INTEGRITY OF DATA OBJECTS USED TO MAINTAIN STATE INFORMATION FOR SHARED DATA AT A LOCAL COMPLEX

David A. Elko, Poughkeepsie; Jeffrey A. Frey, Fishkill; Audrey A. Helffrich, Poughkeepsie; Jeffrey M. Nick, Fishkill, and Michael D. Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,800
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **29 Claims**



1. A data processing system comprising:

a central processing complex (CPC) having

a central processor for executing instructions arranged in programs for processing data, and

a main storage connected to said central processor, said main storage for storing said programs and state information for shared data;

a structured external storage facility for storing state information for shared data;

a message path between said CPC and said structured external storage facility for passing data, messages and response therebetween;

error detecting means connected to said message path for detecting an error in said message path;

error state pending indication means in said error detecting means for maintaining an indication that said error has been detected by said error detecting means, said indication being maintained in said error state pending indication means after said error detecting means ceases to detect said error, and

testing means in said CPC responsive to said error state pending indication means for determining if said state information stored in said CPC is to be considered valid.

5,331,674

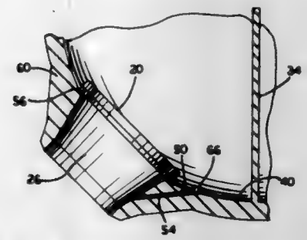
NUCLEAR REACTOR COOLANT SYSTEM INVENTORY CONTROL SYSTEM AND METHOD

Cliff Evans, Newtown, and Jagdish H. Shah, Cheshire, both of Conn., assignors to Rust Industrial Services, Inc., Westchester, Ill.

Filed Dec. 31, 1992, Ser. No. 999,041
Int. Cl.[5] G21C *13/00*
U.S. Cl. 376—204 **12 Claims**

1. In a nozzle dam for hermetically sealing against a wall of a nozzle of the steam generator bowl of a water cooled nuclear reactor primary coolant system against passage of fluids between said nozzle and said bowl, said nozzle dam comprising:

passage means completely through said nozzle dam for releasing gas from the nozzle in the region below the



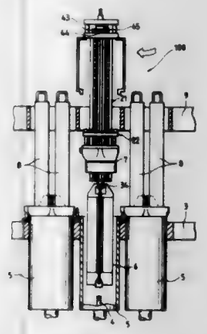
nozzle dam, through the dam, to said bowl when said nozzle dam is mounted sealingly in said nozzle.

5,331,675

APPARATUS AND A METHOD FOR HANDLING A CONTROL ROD

Kiyokazu Hosoya, Mito; Toshihiro Kodama, and Takahiro Konno, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 110,979
Claims priority, application Japan, Aug. 31, 1992, 4-232261
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—260 **6 Claims**



1. A control rod handling apparatus for exchanging a control rod connected to a control rod drive mechanism by bayonet coupling in a nuclear reactor, which comprises:

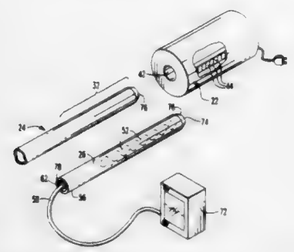
a member for connection attached to a fuel exchange apparatus, a fixing part having guides to be seated at the top face of an upper grid plate in a reactor vessel and to be supported by the upper grid plate, a body provided at the lower part of said fixing part, a control rod handling part having a control rod grasping instrument provided at the bottom part of said body, a fuel support piece handling part having a fuel support piece grasping instrument and means for positioning said fuel support piece grasping instrument which is provided outside said control rod handling part, means for vertically moving said fuel support piece handling part along with the outside of said control rod handling part, and means for rotating said control rod handling part, said fuel support piece handling part and said means for vertical motion.

5,331,676

CALIBRATION FIXTURE FOR INDUCTION FURNACE

David V. Lambert, St. Matthews, S.C., and Mark P. Goldenfield, Irwin, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 6, 1993, Ser. No. 162,246
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—260 **20 Claims**



1. A method for heat treating a workpiece having an at least partly conductive structure, comprising the steps of:

providing a temperature probe with a conductive portion substantially corresponding in response to induction heating to the conductive structure of the workpiece, and a plurality of temperature sensors spaced on the probe;

inserting the probe into an induction furnace, and heating the probe by electromagnetic induction of current in the conductive portion of the probe;

monitoring temperatures of the probe as detected by the temperature sensors;

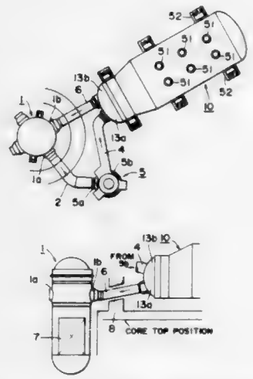
removing the probe and inserting the workpiece in place of the probe, adjusting at least one of a power level and a duration of the electromagnetic induction as a function of the temperatures of the probe as detected by the temperature sensor.

5,331,677

PRESSURIZED WATER REACTOR PLANT

Tsuyoshi Matsuoka, Tokyo, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 22,940
Claims priority, application Japan, Feb. 27, 1992, 4-041558
Int. Cl.[5] G21C *15/00*
U.S. Cl. 376—402 **6 Claims**



1. In a pressurized water reactor plant including a reactor vessel, a reactor coolant pump having an inlet and an outlet, a

coolant pipe connecting an outlet of the reactor vessel to the coolant pump inlet, a horizontal steam generator having U-shaped heat transfer tubes and an inlet and an outlet, a coolant pipe connecting the coolant pump outlet to the steam generator inlet, and a coolant pipe connecting the steam generator outlet to an inlet of the reactor vessel, so that coolant water is pumped by the coolant pump from the reactor vessel through the steam generator heat transfer tubes and returned from the steam generator to the reactor vessel, the improvement wherein:

said reactor vessel comprises a nuclear core formed therein having an uppermost end;

said reactor coolant pump, said steam generator and said coolant pipes are positioned at an elevation higher than said uppermost end of said nuclear core; and

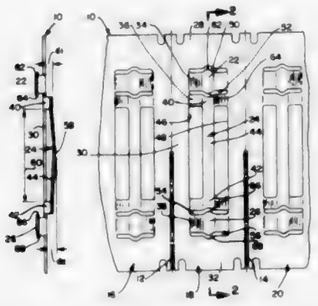
said steam generator comprises a horizontally extending shell, a tube bundle of U-shaped heat transfer tubes supported and extending horizontally in said shell and having straight tube portions and a U-shaped portion, a moisture separator in said shell and disposed above said tube bundle, a vertical partition plate disposed transversely in said shell and dividing the interior of said shell into a U-shaped tube region and a straight tube region, and a drain pipe extending from said moisture separator to said U-shaped tube region for draining impurities from said moisture separator to said U-shaped tube region.

5,331,678

SPACER GRID ROD SUPPORT SYSTEM

Stephen C. Hatfield, and Richard P. Broders, both of Granby, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 27, 1993, Ser. No. 54,189
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—442 **9 Claims**



2. A grid strip for a fuel rod support grid of a nuclear fuel assembly, comprising:

a substantially flat plate of annealed metal having length, height, and width dimensions;

a plurality of slots extending along the height dimension at regular intervals along the length dimension, thereby defining successive cell walls between successive slots along the length dimension;

each cell wall having a substantially flat base area and fuel rod support structure projecting integrally from the base area along the width dimension of the strip;

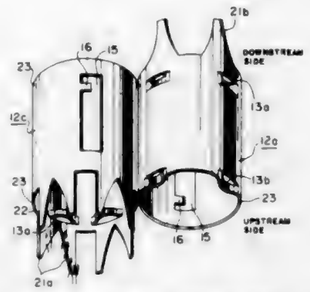
wherein the support structure includes spaced apart pedestals cold-formed to project from the base area and a resilient beam cold-formed to project from the pedestals and to extend between and be rigidly supported by the pedestals, each pedestal forming an arch that bends along the length dimension of the strip with the pedestals being canted away from each other along the height dimension, and the beam forming an arch that bends along the height dimension of the strip.

5,331,679

FUEL SPACER FOR FUEL ASSEMBLY

Koji Hirukawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 8, 1992, Ser. No. 987,195
Claims priority, application Japan, Dec. 9, 1991, 3-324478
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—439 **20 Claims**



1. A fuel spacer assembly for a fuel assembly comprising:

(a) a plurality of tubular ferrules each forming a fuel rod insertion passage in which a fuel rod is inserted;

(b) a support means in the shape of a belt for supporting a periphery of the tubular ferrules bundled in a lattice arrangement; and

(c) a spring means for axially supporting the fuel rods disposed in the ferrules, wherein

(i) each of said ferrules has a cylindrical wall to which an inward projection is formed to support the fuel rod;

(ii) adjoining ferrules are joined together horizontally;

(iii) each of said ferrules has at least one end to which a plurality of cutouts and petals are formed around the end portion by cutting out parts of the end portion, said ferrules being reversely arranged in their axial attitudes; and

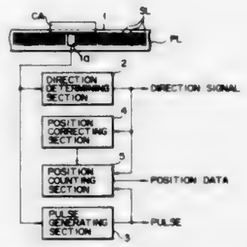
(iv) at least one flat portion is formed between adjoining petal portions, and the adjoining ferrules are spot welded to each other at said flat portions thereof.

5,331,680

POSITION DETECTING APPARATUS

Shigenori Ueno, Numazu, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 838,153
Claims priority, application Japan, Feb. 22, 1991, 3-028214
Int. Cl.[5] G06M *3/02*
U.S. Cl. 377—17 **7 Claims**



1. A position detecting apparatus for use in a bidirectional printer having a carriage and a print head mounted on the carriage, the print head driven to produce printing while the carriage is moving in forward and backward directions along an axis on which coordinate points are set at a predetermined pitch, comprising:

motion detecting means for detecting a first motion of said carriage passing one of the coordinate points during one of forward and backward movements thereof, and for detecting a second motion of said carriage passing one of the coordinate points during the other one of the forward and backward movements thereof;

counting means for storing position data representing a current position of said carriage, for updating the position data by incrementing the position data upon detection of the first motion and by decrementing the position data upon detection of the second motion, thereby causing the print head to be driven each time the position data is updated; and

correcting means for correcting the position data in said counting means when the moving direction of said carriage is reversed from one of the forward and backward directions to the other of the forward and backward directions, the amount of correction being determined to reduce a difference between printing positions set during said forward and backward movements for the same position data.

5,331,681

FUNCTION ADJUSTABLE SIGNAL PROCESSING DEVICE

Nobukazu Doi, Hachioji, and Tohru Setoyama, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,884
Claims priority, application Japan, Apr. 17, 1991, 3-085024
Int. Cl.[5] G06F *13/00*
U.S. Cl. 377—116 **8 Claims**

1. A function adjustable signal processing device integrated on monolithic semiconductor chip comprising:

a first signal processing device comprising:

a plurality of signal processing circuits for executing a plurality of predetermined signal processing stages in series, each of said signal processing circuits having an external input terminal and an external output terminal which are independent of one another;

a plurality of selection means located between said plurality of signal processing circuits each having an additional external signal input terminal and a control input terminal, and each coupled to receive a processed signal applied to one of said external output terminals from a signal processing circuit of a preceding stage and to output one of either said received processed signal applied to said external output terminal by said signal processing circuit of said preceding stage or a signal inputted from said additional external signal input terminal, wherein said output is provided selectively, according to a predetermined state control signal applied to said control input terminal, to one of said plurality of signal processing circuits provided at a succeeding stage; and

a second external signal processing device,

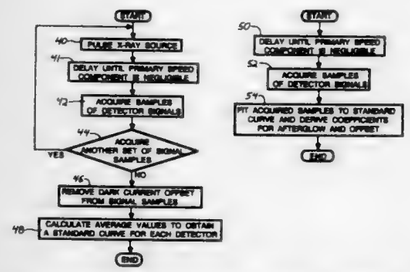
independent from said first signal processing device, integrated on the monolithic semiconductor chip and connected to at least one of said additional external input terminals and at least one of said external output terminals.

5,331,682

RADIATION DETECTOR OFFSET AND AFTERGLOW COMPENSATION TECHNIQUE

Jiang Hsieh, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 25, 1991, Ser. No. 797,641
Int. Cl.[5] A61B *6/03*
U.S. Cl. 378—19 **10 Claims**



5. A method for processing data in a medical imaging system having a source of radiation and a detector that produces an output signal representing the sensed radiation, steps of said method comprising:

acquiring a set of values which define a standard response of the detector to radiation, said acquiring including activating the source to produce a pulse of radiation and producing a set of samples of the output signal from the detector until the output signal has decayed to substantially zero magnitude;

acquiring samples of the output signal periodically from said detector;

determining, for a sample of the output signal, a compensation value derived from the values representing the standard response of the detector to radiation;

arithmetically combining the compensation value and the given sample to produce a compensated sample; and

reconstructing an image from compensated samples.

7. A method for processing data in a medical imaging system having a source of radiation and a detector that produces an output signal representing the sensed radiation, steps of said method comprising:

acquiring a set of values which define a standard response of the detector to radiation;

acquiring samples of the output signal periodically from said detector;

receiving a plurality of samples of the output signal from said detector after extinction of radiation, which plurality of samples represents at least a portion of afterglow of the detector;

fitting the plurality of samples to the set of values defining a standard response and deriving coefficients defining a degree of fit;

determining, for a sample of the output signal, a compensation value derived from a coefficient defining a degree of fit;

arithmetically combining the compensation value and the given sample to produce a compensated sample; and

reconstructing an image from compensated samples.

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DESIGN PATENTS

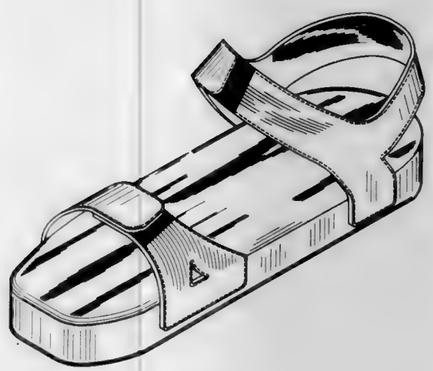
GRANTED JUL. 19, 1994

ERRATA

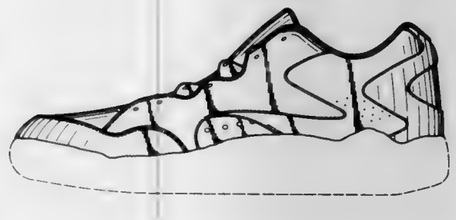
For CLASS	See PATENT NO.
6-631	D 348,769
6-630	D 348,770
34-020	D 348,960

VOL
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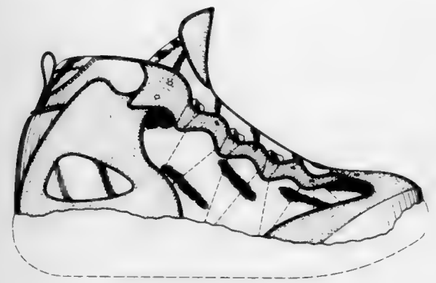
348,763
BATTING SHOE
David L. Judd, and Linda Judd, both of 42040 52nd St., Quartz Hill, Calif. 93536
Filed Jan. 11, 1993, Ser. No. 3,414
Term of patent 14 years
U.S. Cl. D2—916



348,764
SHOE UPPER
Tracy L. Teague, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Continuation-in-part of Ser. No. 006,404, Mar. 26, 1993. This application Oct. 7, 1993, Ser. No. 13,946
Term of patent 14 years
U.S. Cl. D2—969



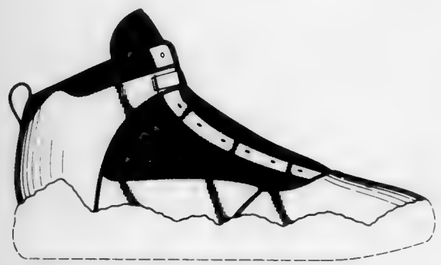
348,765
SHOE UPPER
Sergio G. Lozano, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 13, 1993, Ser. No. 14,113
Term of patent 14 years
U.S. Cl. D2—970



348,766
SHOE UPPER
Joseph Bevier, Tigard, and Daniel Richard, West Linn, both of Oreg., assignors to Avia Group International, Inc., Portland, Oreg.
Division of Ser. No. 010,064, Jun. 29, 1993, Pat. No. Des. 342,824. This application Nov. 9, 1993, Ser. No. 15,172
Term of patent 14 years
U.S. Cl. D2—970



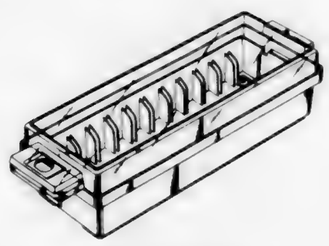
348,767
SHOE UPPER
Tinker L. Hatfield, Portland, and Mark J. Smith, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Nov. 15, 1993, Ser. No. 15,354
Term of patent 14 years
U.S. Cl. D2—970



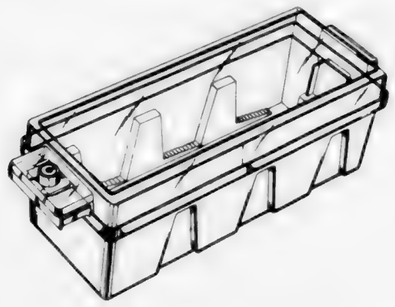
348,768
CROCHET CASE
Hassel R. Irwin, 115 Sycamore Dr., Antioch, Calif. 94509
Filed Jan. 31, 1992, Ser. No. 830,262
Term of patent 14 years
U.S. Cl. D3—20



348,769
COMBINED CASSETTE BOX, LID AND SUSPENSION HANDLE
Per-Åke Roskvist, Malmö , and Lars-Erik Christiansson, Trelleborg, both of Sweden, assignors to ABA Systems Svenska Aktiebolag, Malmö, Sweden
Filed Jun. 18, 1992, Ser. No. 900,334
Claims priority, application Sweden, Dec. 18, 1991, 91 2535
Term of patent 14 years
U.S. Cl. D6—631



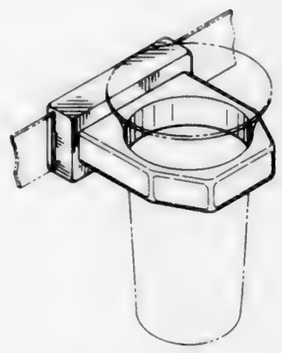
348,770
CASE FOR FLOPPY DISKS
Lars-Erik Christiansson, Trelleborg, Sweden, assignor to ABA Systems Svenska AB, Malmö, Sweden
Filed Sep. 11, 1992, Ser. No. 943,212
Claims priority, application Sweden, Mar. 11, 1992, 92 0542
Term of patent 14 years
U.S. Cl. D6—630



348,771
COMBINED KEY RING AND EXTENDABLE, SELF-DEFENSIVE BATON
Garrett T. Barnes, 511 Morningside, San Antonio, Tex. 78209
Filed Sep. 14, 1992, Ser. No. 948,755
Term of patent 14 years
U.S. Cl. D3—209



348,772
CONTAINER HOLDER
James A. Minx, 18815 S. Avers, Flossmoor, Ill. 60422
Filed Nov. 10, 1992, Ser. No. 1,387
Term of patent 14 years
U.S. Cl. D3—229



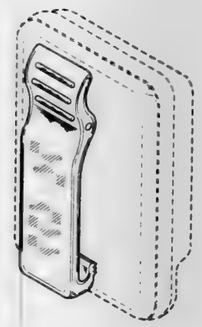
348,773
COMBINED KEY FOB AND BOTTLE CAP OPENER
Detlef Kutzera, Heinsberg, Fed. Rep. of Germany, assignor to Walter Henkels GmbH, Fed. Rep. of Germany
Filed Mar. 30, 1993, Ser. No. 6,538
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1993, DM/024889
Term of patent 14 years
U.S. Cl. D3—207



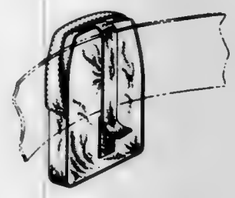
348,774
COMBINED KEY-RETAINER AND PARKING LOT LOCATOR
Jeffrey A. Weber, Minneapolis, Minn., assignor to Peter H. Sammond, Minneapolis, Minn.
Filed May 5, 1993, Ser. No. 8,105
Term of patent 14 years
U.S. Cl. D3—208



348,775
BELT CLIP FOR A RADIO PAGER
William J. Scheid, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 27, 1991, Ser. No. 766,710
Term of patent 14 years
U.S. Cl. D3—218



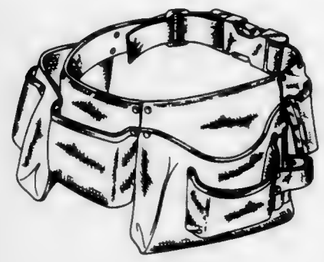
348,776
BODY POUCH
Alberta C. Anderson, P.O. Box, Mesa, Ariz. 85211
Filed Jun. 22, 1992, Ser. No. 903,537
Term of patent 14 years
U.S. Cl. D3—226



348,777
COMBINED NAIL AND TOOL POUCH
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Apr. 14, 1992, Ser. No. 868,585
Term of patent 14 years
U.S. Cl. D3—228



348,778
COMBINED NAIL AND TOOL APRON
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Apr. 14, 1992, Ser. No. 868,590
Term of patent 14 years
U.S. Cl. D3—228



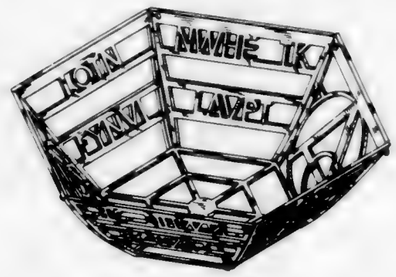
348,779
GOLF BAG WITH EXTERNAL FRAME
R. David Lee, Springfield, and Andrew P. Cimini, Nashville, both of Tenn., assignors to Professional Bags, Inc., Springfield, Tenn.
Filed Nov. 4, 1992, Ser. No. 1,163
Term of patent 14 years
U.S. Cl. D3—259



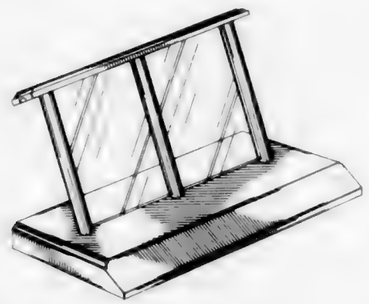
348,780
SUIT CASE
Aoi Masaru, Taipei, Taiwan, assignor to Echolac Company, Ltd., Taipei, Taiwan
Filed Dec. 21, 1992, Ser. No. 2,770
Term of patent 14 years
U.S. Cl. D3—6279



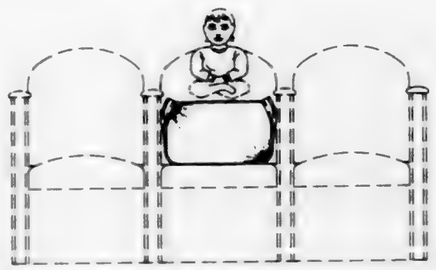
348,781
COLLAPSIBLE BASKET
Jerome L. Asner, 501 SW. 9th, Oklahoma City, Okla. 73109
Filed May 18, 1993, Ser. No. 8,425
Term of patent 14 years
U.S. Cl. D3—305



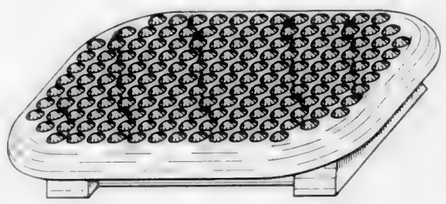
348,782
DISPLAY STAND
Javier Borja, Denver, Colo., assignor to Gary A. Dahl, both of Denver, Colo.
Filed Jun. 26, 1992, Ser. No. 905,841
Term of patent 14 years
U.S. Cl. D6—300



348,783
BOOSTER SEAT
Catherine L. Young, Kansas City, Mo., assignor to Cy Young Industries, Inc., Olathe, Kans.
Filed Mar. 13, 1992, Ser. No. 850,793
Term of patent 14 years
U.S. Cl. D6—333



348,784
ADJUSTABLE FOOT REST
H. Charles Hassel, and Michael J. Rocha, both of Los Angeles, Calif., assignors to Microwave Accessories, Inc., Inglewood, Calif.
Filed Jun. 4, 1992, Ser. No. 894,222
Term of patent 14 years
U.S. Cl. D6—353



348,785
BICYCLE SEAT
Thomas H. White, 26325 SE. 9th St., Issaquah, Wash. 98027
Filed Mar. 12, 1993, Ser. No. 5,835
Term of patent 14 years
U.S. Cl. D6—354



348,786
OFFICE CHAIR
Thomas H. Tolleson, and Gregory M. Saul, both of Charlotte, N.C., assignors to Allsteel Inc., Aurora, Ill.
Filed Mar. 26, 1992, Ser. No. 858,756
Term of patent 14 years
U.S. Cl. D6—366



348,787
CHAIR
Otto W. Zapf, Herzog-Adolph-Strasse 5, D-6240 Königstein, Fed. Rep. of Germany
Filed Oct. 13, 1992, Ser. No. 402
Term of patent 14 years
U.S. Cl. D6—372



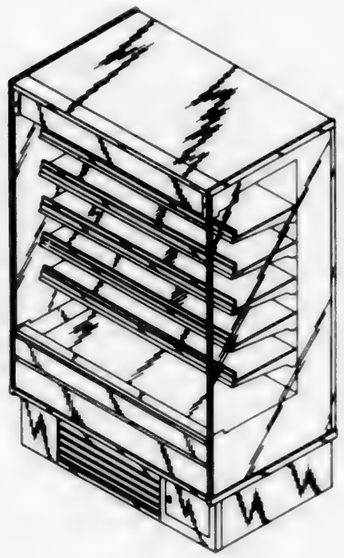
348,788
CHAIR
Philippe Starck, Paris, France, assignor to Fehlbaum & Co., Switzerland
Filed Oct. 9, 1992, Ser. No. 306
Claims priority, application France, Apr. 13, 1992, DM/022613
Term of patent 14 years
U.S. Cl. D6—375



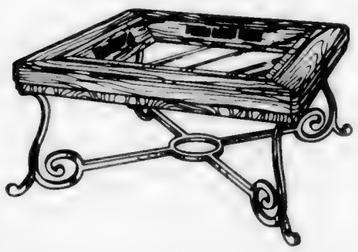
348,789
DISPLAY RACK
George Bezzerides, Benicia, Calif., assignor to Bezzerides Company, Benicia, Calif.
Filed May 23, 1990, Ser. No. 527,724
Term of patent 14 years
U.S. Cl. D6—463



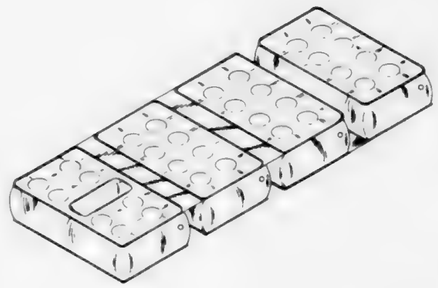
348,790
DISPLAY CASE
Kiyoshi Fujii, Seta, Japan, assignor to Sanden Corporation, Isesaki, Japan
Filed Jan. 21, 1993, Ser. No. 3,903
Claims priority, application Japan, Jul. 22, 1992, D4-21994
Term of patent 14 years
U.S. Cl. D6—479



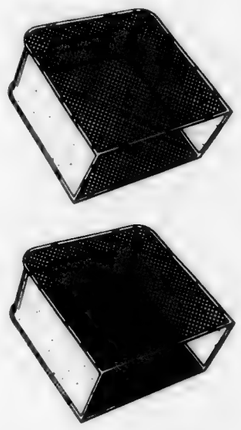
348,791
TABLE
H. Thomas Keller, High Point, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Feb. 23, 1993, Ser. No. 5,040
Term of patent 14 years
U.S. Cl. D6—487



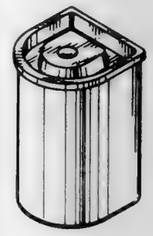
348,792
SEGMENTED INFLATABLE MATTRESS UNIT FOR USE AS A BODY SUPPORT
Linda J. DeGroot, 18204 W. Spring Lake Dr., SE., Renton, Wash. 98508
Continuation-in-part of Ser. No. 557,097, Jul. 25, 1990, Pat. No. 5,086,529. This application Jul. 27, 1990, Ser. No. 558,879
Term of patent 14 years
U.S. Cl. D6—604



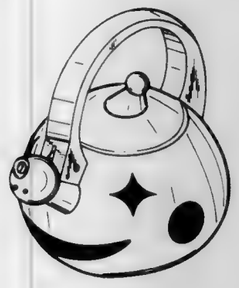
348,793
BOX FAN COVER
Dennis J. Herrick, N2919 Smokey Hollow Rd., Poynette, Wis. 53955
Filed Jul. 19, 1993, Ser. No. 10,767
Term of patent 14 years
U.S. Cl. D6—610



348,794
FILM CASE
Kazunori Mizuno, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 9, 1992, Ser. No. 2,497
Claims priority, application Japan, Jun. 9, 1992, 4-16999
Term of patent 14 years
U.S. Cl. D6—632



348,795
TEAPOT
I-Chen Lin, 11, Lane 328, Kuanghua Road, Luchou Hsiang, Taipei, Taiwan
Filed Nov. 5, 1992, Ser. No. 1,136
Term of patent 14 years
U.S. Cl. D7—302



348,796
EGG POACHER
John E. Davis, and Jim Samartgis, both of Victoria, Australia, assignors to Trend Worldwide Pty. Ltd., Victoria, Australia
Filed Dec. 30, 1991, Ser. No. 814,679
Claims priority, application Australia, Jul. 9, 1991, 1965/91
Term of patent 14 years
U.S. Cl. D7—357

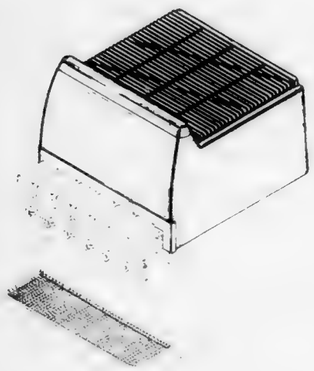


348,797
BLENDER BASE
Martin Brady, Richmond, Va., assignor to Hamilton Beach/-Proctor-Silex, Inc., Glen Allen, Va.
Filed May 3, 1993, Ser. No. 7,872
Term of patent 14 years
U.S. Cl. D7—386



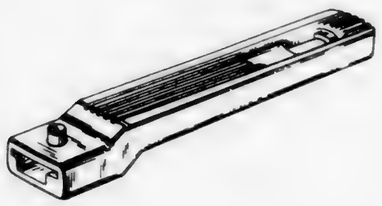


348,798
HOOD FOR A BEVERAGE DISPENSING MACHINE
Richard H. Jacobs, New Brighton, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed Oct. 14, 1992, Ser. No. 418
Term of patent 14 years
U.S. Cl. D7—392

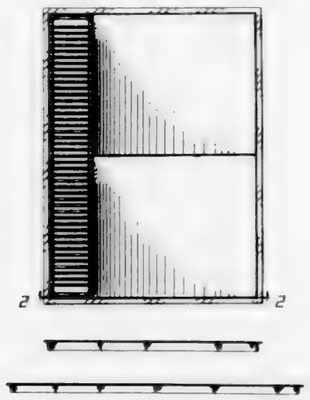


VOL
1164
ISS
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JL
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994
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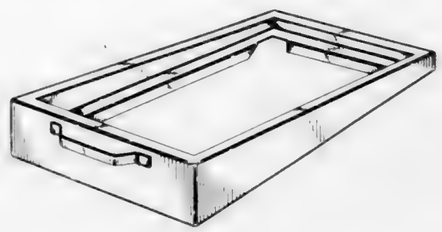
348,799
PAN HANDLE
Francesco Munari, Cardano Al Campo, Italy, assignor to La Termoplastic F.B.M. S.r.l., Italy
Filed Jun. 18, 1993, Ser. No. 9,725
Claims priority, application Italy, Dec. 23, 1992, MI 920 000843
Term of patent 14 years
U.S. Cl. D7—395



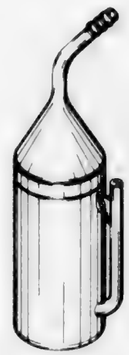
348,800
COVERED STOVE TOP
Roger F. Doty, Connersville, and Mark A. Pickering, Lebanon, both of Ind., assignors to Maytag Corporation, Newton, Ind.
Filed May 23, 1991, Ser. No. 704,644
Term of patent 14 years
U.S. Cl. D7—402



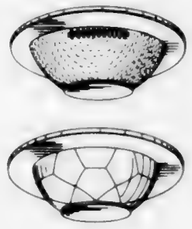
348,801
FRAME FOR SUPPORTING AND DISPLAYING FOOD TRAYS
Kathleen Romano, 43 Second Ave., Secaucus, N.J. 07994
Filed Oct. 19, 1992, Ser. No. 548
Term of patent 14 years
U.S. Cl. D7—402



348,802
REFILLABLE DRINK CONTAINER
Frederick Miller, III, 351 Crossings Blvd. #417, Orange Park, Fla. 32073
Filed Jan. 27, 1993, Ser. No. 4,047
Term of patent 14 years
U.S. Cl. D7—510



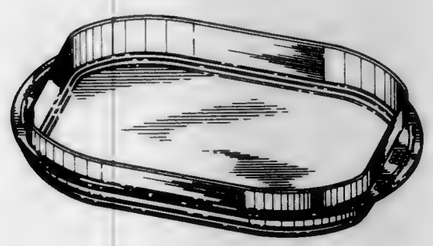
348,803
CEREAL BOWL
Bruce E. Aronson, 156 Fifth Ave., New York, N.Y. 10010
Filed Nov. 9, 1992, Ser. No. 1,297
Term of patent 14 years
U.S. Cl. D7—544



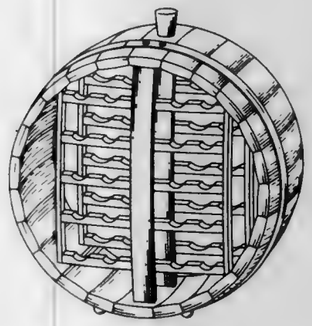
348,804
SERVINGWARE
David L. Feer, Medina, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 23, 1992, Ser. No. 2,950
Term of patent 14 years
U.S. Cl. D7—560



348,805
STACKABLE CONTAINER
Victor J. J. Cautereels, Borsbeek, Belgium, assignor to Dart Industries Inc., Deerfield, Ill.
Filed Dec. 28, 1992, Ser. No. 3,000
Term of patent 14 years
U.S. Cl. D7—602



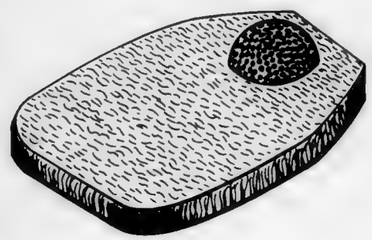
348,806
WINE RACK
Ronald L. Young, 5353 Highway 29, American Canyon, Calif. 94589
Filed Nov. 13, 1992, Ser. No. 1,406
Term of patent 14 years
U.S. Cl. D7—702



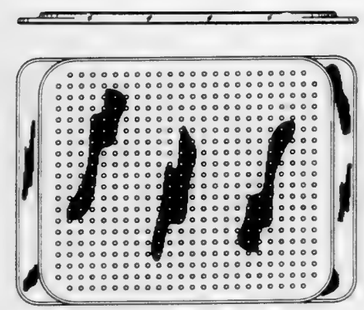
348,807
DRINK HOLDER
Christopher Cobb, 8410 Hawkinsvile Rd. #9, Macon, Ga. 31206
Filed Dec. 11, 1992, Ser. No. 2,385
Term of patent 14 years
U.S. Cl. D7—619



348,808
COASTER
Arthur M. King, 1830 Poplar Estates Pkwy., Germantown, Tenn. 38138, and Sam B. Rosenblum, 5744 Rich Rd., Memphis, Tenn. 38119
Filed Jan. 4, 1993, Ser. No. 3,259
Term of patent 14 years
U.S. Cl. D7—625



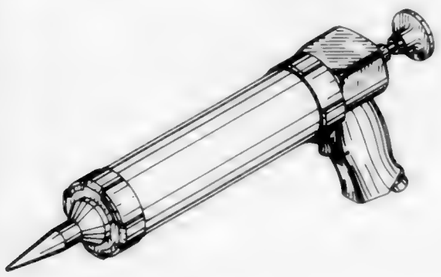
348,809
PERFORATED CUTTING BOARD
Todd O. Ladwig, 5985 Afton Rd., Excelsior, Minn. 55331
Filed Apr. 20, 1993, Ser. No. 7,253
Term of patent 14 years
U.S. Cl. D7—698



348,810
FLANGE SPREADER
Patrick R. Johnson, Clifton, Tex., assignor to Orbix Corporation, Clifton, Tex.
Filed Dec. 18, 1992, Ser. No. 2,665
Term of patent 14 years
U.S. Cl. D8—14



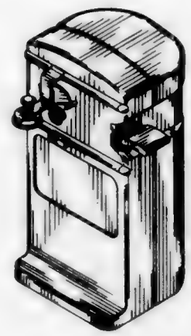
348,811
CAULKING GUN
Terry A. Albers, 22 Chicory Bend Ct., Sacramento, Calif. 95831
Filed Jun. 22, 1993, Ser. No. 10,079
Term of patent 14 years
U.S. Cl. D8—14.1



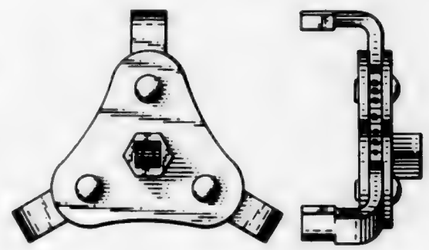
348,812
CAN-OPENING AND BAG-CLOSING TOOL
Per E. Osmar, and Frances L. Osmar, both of Box 38, Clam Gulch, Ak. 99568
Filed Aug. 11, 1993, Ser. No. 11,682
Term of patent 14 years
U.S. Cl. D8—34



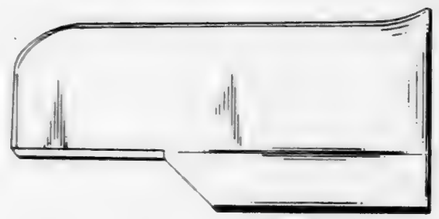
348,813
CAN OPENER
Gary A. Klein, Prairie Village, Kans., assignor to The Rival Company, Kansas City, Mo.
Filed Oct. 22, 1992, Ser. No. 724
Term of patent 14 years
U.S. Cl. D8—36



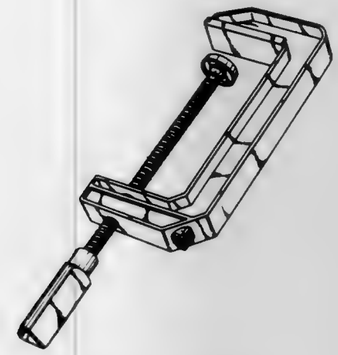
348,814
OIL FILTER WRENCH
Richard A. Pearson, Ellicottville, N.Y., assignor to Stride Tool Inc., Ellicottville, N.Y.
Continuation of Ser. No. 884,081, May 15, 1992, abandoned.
This application Sep. 28, 1993, Ser. No. 13,602
Term of patent 14 years
U.S. Cl. D8—51



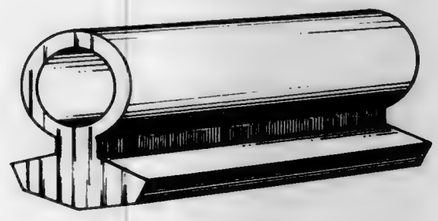
348,815
PORTABLE BELT SANDER HOUSING
Kevin R. Morey, Sayre, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Aug. 5, 1993, Ser. No. 11,469
Term of patent 14 years
U.S. Cl. D8—70



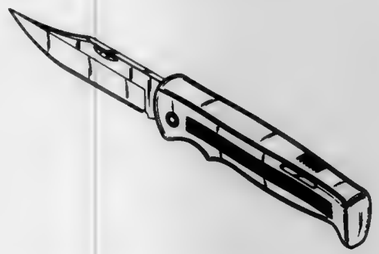
348,816
C-CLAMP
Klemens Degen, Weibern, Fed. Rep. of Germany, assignor to Wolfcraft GmbH, Weibern, Fed. Rep. of Germany
Filed Apr. 28, 1993, Ser. No. 7,588
Term of patent 14 years
U.S. Cl. D8—73



348,817
CONTOUR ABRASIVE TOOL
Michael J. Demers, 75 Cambridge St., Lawrence, Mass. 01843
Filed Jun. 17, 1992, Ser. No. 900,252
Term of patent 14 years
U.S. Cl. D8—90



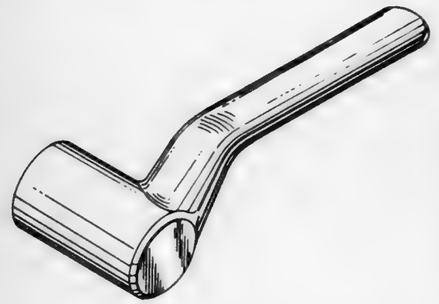
348,818
KNIFE
Katsumi Hasegawa, Sagamihara, Japan, assignor to Kai R&D Center Co., Seki, Japan
Filed Sep. 11, 1992, Ser. No. 948,746
Claims priority, application Japan, Mar. 13, 1992, 4-7275; Mar. 13, 1992, 4-7276
Term of patent 14 years
U.S. Cl. D8—99



348,819
HANDLE GRIP FOR A UTILITY KNIFE
Steven Craig, 6157 Briercrest, Lakewood, Calif. 90713
Filed Aug. 14, 1992, Ser. No. 930,025
Term of patent 14 years
U.S. Cl. D8—107



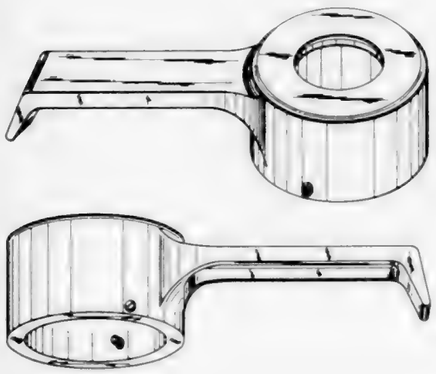
348,820
DOOR LEVER
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 31, 1992, Ser. No. 922,083
Term of patent 14 years
U.S. Cl. D8—308



348,821
DOOR LEVER
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 31, 1992, Ser. No. 922,096
Term of patent 14 years
U.S. Cl. D8—308



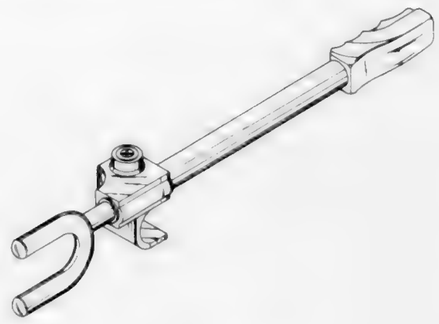
348,822
DOOR HANDLE ADAPTER
Philip J. Donofrio, Oxford, Conn., assignor to Leeverall, Inc., Ansonia and Condor Sales, Orange, both of Conn.
Continuation-in-part of Ser. No. 2,952, Dec. 23, 1992, Pat. No. Des. 343,564. This application Apr. 7, 1993, Ser. No. 6,797
The portion of the term of this patent subsequent to Jan. 25, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—308



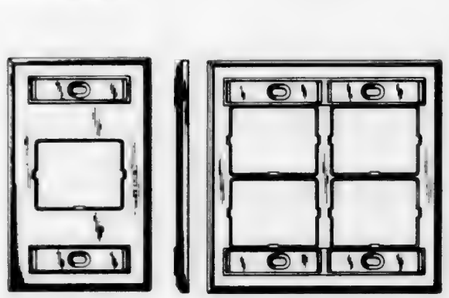
348,823
ADJUSTABLE HINGE
Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.
Continuation of Ser. No. 728,346, Jul. 11, 1991, Pat. No. 5,150,500. This application Oct. 11, 1991, Ser. No. 775,053
Term of patent 14 years
U.S. Cl. D8—323



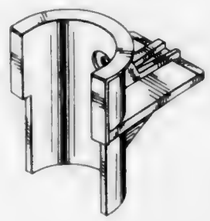
348,824
AUTOMOBILE STEERING WHEEL LOCK
Lien-Tsai Hsu, No. 54, Lane 459, Sec. 1, An-Ho Road, Tainan City, Taiwan
Filed Sep. 9, 1993, Ser. No. 12,730
Term of patent 14 years
U.S. Cl. D8—331



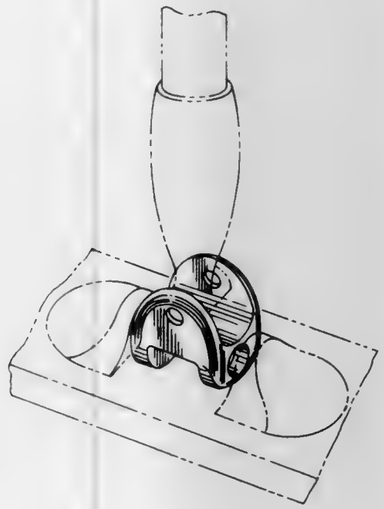
348,825
COVER PLATE
Randall J. Below, Woodbury, Conn., assignor to The Siemon Company, Watertown, Conn.
Filed Nov. 20, 1991, Ser. No. 795,085
Term of patent 14 years
U.S. Cl. D8—353



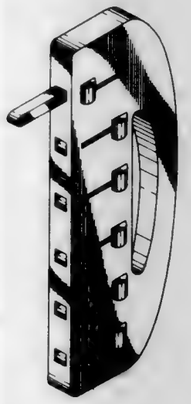
348,826
FURNITURE SHELF SUPPORT BRACKET
Jeffrey T. McCaffrey, Portland, Oreg., assignor to Anthro Corporation, Portland, Oreg.
Filed Dec. 15, 1992, Ser. No. 2,587
Term of patent 14 years
U.S. Cl. D8—354



348,827
HANDLE END PIVOT JOINT YOKE
Enzo Berti, Venice, Italy, and Robert J. Libman, Champaign, Ill., assignors to The Libman Company, Arcola, Ill.
Filed Oct. 7, 1992, Ser. No. 135
Term of patent 14 years
U.S. Cl. D8—382



348,828
WINDOW SUPPORT
Dennis R. Graff, 7895 Old State Rd., Pavilion, N.Y. 41525
Filed Apr. 12, 1991, Ser. No. 684,561
Term of patent 14 years
U.S. Cl. D8—400



348,829
DISPENSING CAP AND TUBE
John W. Hallas, Whale Beach, Australia, assignor to Hallas Trading Co. Pty. Limited, New South Wales, Australia
Filed Mar. 2, 1992, Ser. No. 844,418
Claims priority, application Australia, Sep. 9, 1991, 2658/91
Term of patent 14 years
U.S. Cl. D9—302



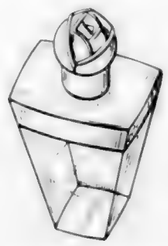
348,830
COSMETIC CAPSULE
Peter Bertolini, Shelton, Conn., assignor to Chesbrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Continuation-in-part of Ser. No. 940,104, Sep. 3, 1992, Pat. No. 5,270,054. This application Sep. 17, 1992, Ser. No. 948,965
Term of patent 14 years
U.S. Cl. D9—302



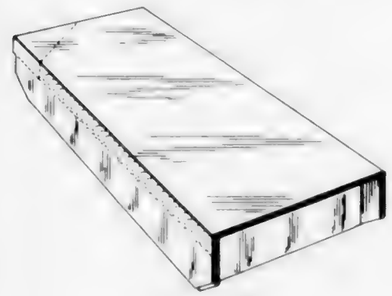
348,831
CONTAINER FOR CONFECTIONARY PRODUCTS
Gloria J. Elam, 4904 Jeannie Pl., Alorton, Ill. 62207
Filed Aug. 21, 1992, Ser. No. 933,068
Term of patent 14 years
U.S. Cl. D9—311



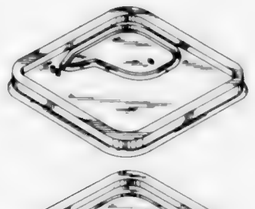
348,832
COMBINED BOTTLE AND CLOSURE
Marc Gobe, New York, N.Y., assignor to Victoria's Secret Stores, Inc., Renyoldsburg, Ohio
Filed Jun. 16, 1993, Ser. No. 9,634
Term of patent 14 years
U.S. Cl. D9—335



348,833
OVEN HEATABLE FOOD PACKAGE
Richard F. Gulliver, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.
Filed Feb. 1, 1993, Ser. No. 6,181
Term of patent 14 years
U.S. Cl. D9—416



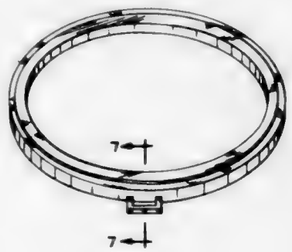
348,834
LID FOR A CHAIN DISPENSER
Myron H. Wardell, Jr., Lititz, Pa., assignor to Cooper Industries, Inc., Houston, Tex.
Filed May 26, 1992, Ser. No. 889,108
Term of patent 14 years
U.S. Cl. D9—435



348,835
WATER BOTTLE TOP COVER
John Cogliandro, 11 Sickle Bar La., Riverside, Conn. 06878
Filed Jul. 16, 1992, Ser. No. 914,607
Term of patent 14 years
U.S. Cl. D9—435



348,836
TRANSPORTATION SAFETY RING FOR CYLINDRICAL CONTAINERS
Duncan J. McCallum, Hinsdale; John P. Williams, Geneva, and Robert C. Jack, Schaumburg, all of Ill., assignors to Armstrong Containers, Inc., Westchester, Ill.
Filed Jun. 6, 1991, Ser. No. 711,433
Term of patent 14 years
U.S. Cl. D9—456



348,837
BOTTLE
Stuart H. Feen, Libertyville, Ill., assignor to Plastic Bottle Corporation, Libertyville, Ill.
Filed Jan. 19, 1993, Ser. No. 3,733
Term of patent 14 years
U.S. Cl. D9—502



348,838
BOTTLE
Stuart H. Feen, Libertyville, and Ronald G. Lump, DesPlaines, both of Ill., assignors to Plastic Bottle Corp., Libertyville, Ill.
Filed Nov. 7, 1979, Ser. No. 788,755
Term of patent 14 years
U.S. Cl. D9—542



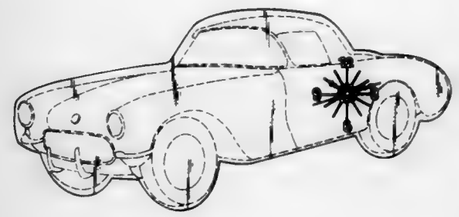
348,839
BOTTLE
Jerry Stoker, Clearbrook, Minn., assignor to Roso Honey, Inc., Clearbrook, Minn.
Filed Apr. 12, 1993, Ser. No. 6,976
Term of patent 14 years
U.S. Cl. D9—548



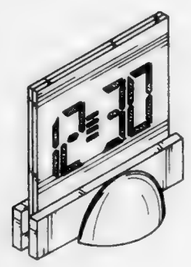
348,840
COMBINED BOTTLE AND CAP
Gene J. Kuzma, 1910 Crown Park Ct., Columbus, Ohio 43236
Filed Sep. 11, 1992, Ser. No. 943,207
Term of patent 14 years
U.S. Cl. D9—575



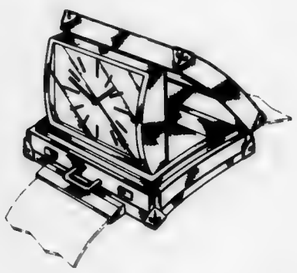
348,841
CLOCK
Thomas P. Roach, 13 E. Knollwood Rd., Edison, N.J. 08817
Filed Sep. 4, 1992, Ser. No. 940,725
Term of patent 14 years
U.S. Cl. D10—12



348,842
CLOCK
Rick Olivadoti, 290 Riverside Dr., New York, N.Y. 10025
Filed Sep. 6, 1990, Ser. No. 578,868
Term of patent 14 years
U.S. Cl. D10—15

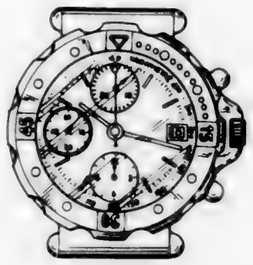


348,843
WATCH
Fabio De Sanctis, Via Stoppani, 10, 00197 Roma, Italy
Filed May 8, 1992, Ser. No. 880,347
Claims priority, application Italy, Nov. 8, 1991, RM910000278
Term of patent 14 years
U.S. Cl. D10—33

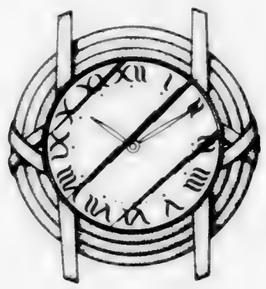


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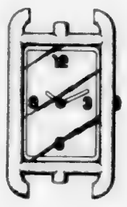
348,844
WRIST WATCH
Menotti Franchi, Corso Italia, 1, 20122 Milan, Italy
Filed Nov. 8, 1991, Ser. No. 792,089
Claims priority, application Hague, May 10, 1991, DM/019602
Term of patent 14 years
U.S. Cl. D10—39



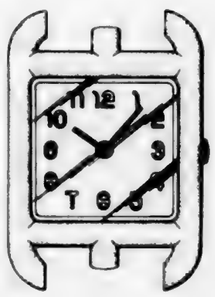
348,845
WRISTWATCH
Jean-Louis Dumas, Paris, France, assignor to La Montre Hermes, Bienne, Switzerland
Filed Feb. 3, 1992, Ser. No. 830,241
Claims priority, application World Int. Prop. O., Aug. 2, 1991, DM/020303
Term of patent 14 years
U.S. Cl. D10—39



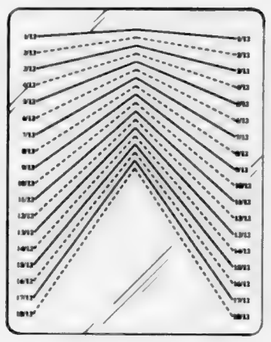
348,846
WRISTWATCH
Jean-Louise Dumas, Paris, France, assignor to La Montre Hermes, S.A., Bienne, Switzerland
Filed Feb. 26, 1992, Ser. No. 841,447
Claims priority, application France, Sep. 9, 1991, DM/020613
Term of patent 14 years
U.S. Cl. D10—39



348,847
WRISTWATCH
Jean-Louis Dumas, Paris, France, assignor to La Montre Hermes, S.A., Bienne, Switzerland
Filed Feb. 26, 1992, Ser. No. 846,449
Claims priority, application France, Sep. 9, 1991, DM 020612
Term of patent 14 years
U.S. Cl. D10—39



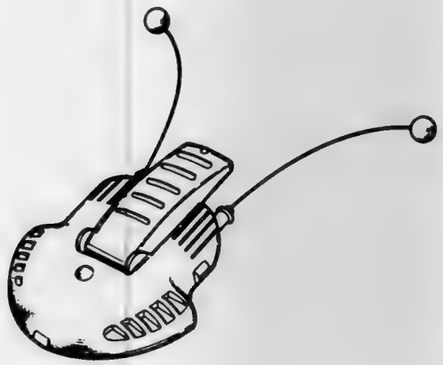
348,848
ROOF PITCH DETERMINATION TOOL
Daniel R. Bauer, 4628 S. Lake Sarah Dr., Maple Plain, Minn. 55359
Filed Sep. 20, 1993, Ser. No. 13,136
Term of patent 14 years
U.S. Cl. D10—64



348,849
HAND-HELD REFRACTOMETER
Shawn E. Thompson, Grand Island, N.Y., assignor to Leica Inc., Buffalo, N.Y.
Filed Apr. 2, 1993, Ser. No. 6,605
Term of patent 14 years
U.S. Cl. D10—78



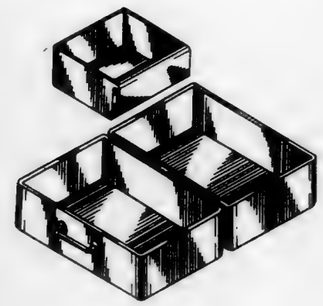
348,850
HOUSING FOR AN AUTOMOBILE BRAKE INDICATOR
Cheng-Ming Chen, No. 91, Tzu Chiang 3 Rd., Ling Ya Zone, Kaohsiung, and An-Chun Chen, No. 15, 280 Alley, Fu Kuo 1 Rd., Yung Kang Country, Tainan Shien, both of Taiwan
Filed Oct. 6, 1992, Ser. No. 189
Term of patent 14 years
U.S. Cl. D10—104



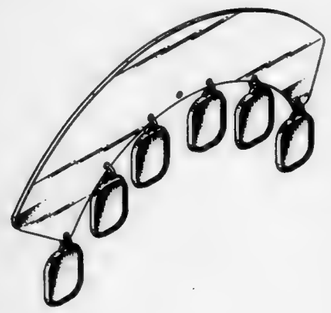
348,851
BEADED JEWELRY PENDANT
Jennifer L. Taylor, 1313 4th Ave., West, Columbia Falls, Mont. 59912
Filed Feb. 3, 1992, Ser. No. 829,339
Term of patent 14 years
U.S. Cl. D11—79



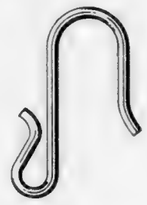
348,852
PORTABLE GARDEN CONTAINER
Lloyd H. Meyer, 50 Plum St., Apt. #F2, Tipton, Iowa 52772
Filed Sep. 23, 1993, Ser. No. 13,374
Term of patent 14 years
U.S. Cl. D11—156



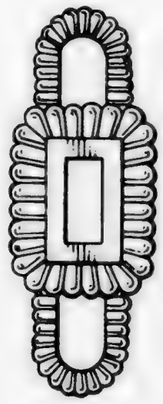
348,853
ORNAMENTAL CHARM
Nickey P. Currie, Fort Worth, Tex., assignor to Audria's Crafts, Inc., Fort Worth, Tex.
Filed Oct. 26, 1992, Ser. No. 825
Term of patent 14 years
U.S. Cl. D11—43



348,854
EARRING SUSPENDER
Pennie F. Salsgiver, 178 Eastland Rd., Berea, Ohio 44017
Filed Sep. 15, 1992, Ser. No. 945,346
Term of patent 14 years
U.S. Cl. D11—86



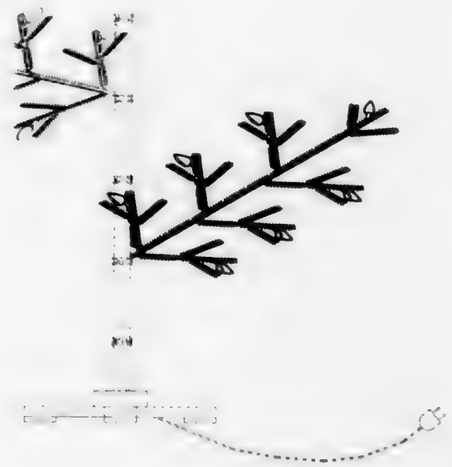
348,855
JEWELRY SETTING
Pepi Kelman, Los Angeles, Calif., assignor to Pepi Kelman, Inc., Los Angeles, Calif.
Filed Mar. 17, 1993, Ser. No. 6,022
Term of patent 14 years
U.S. Cl. D11—91



348,856
CHRISTMAS STOCKING
Amy Frampton, 1051 Cross St., Anoka, Anoka County, Minn. 55303, and Mary Hamacher, 4755 162nd La., NW., Anoka, Anoka County, Minn. 55304
Filed Mar. 25, 1993, Ser. No. 6,309
Term of patent 14 years
U.S. Cl. D11—126



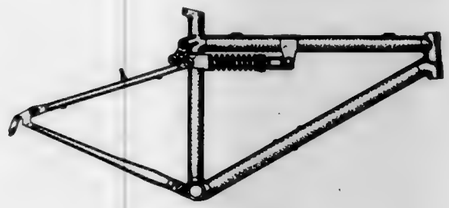
348,857
BRANCH FOR ARTIFICIAL TREE
Kristopher D. Aldrich, 8192 E. Parker Rd., Laingburg, Mich. 48848
Filed Oct. 21, 1991, Ser. No. 779,583
Term of patent 14 years
U.S. Cl. D11—130



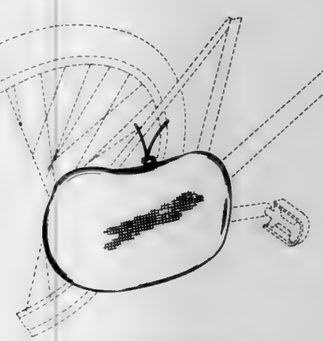
348,858
PLANT SUPPORT
Donald C. Nuosce, 1210-D 37 St. NE., Canton, Ohio 44714
Filed Jun. 23, 1993, Ser. No. 9,748
Term of patent 14 years
U.S. Cl. D11—148



348,859
FRAME FOR A BICYCLE
Makoto Takagaki, Chigasaki, Japan, assignor to Miyata Industry Co., Ltd., Chigasaki, Japan
Filed Mar. 5, 1993, Ser. No. 5,574
Claims priority, application Japan, Oct. 5, 1992, 4-29173
Term of patent 14 years
U.S. Cl. D12—111



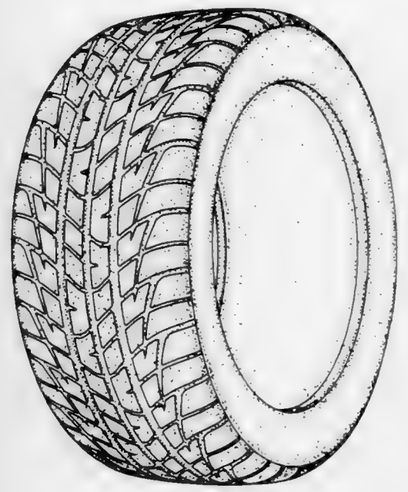
348,860
BICYCLE CHAIN COVER
John S. Reynolds, 1989 Angeloco Cir., Stockton, Calif. 95207
Filed May 12, 1993, Ser. No. 8,244
Term of patent 14 years
U.S. Cl. D12—114



348,861
KICKSTAND ACCESSORY
Jan B. Thomas, Hilton Head, S.C., assignor to Janko U.S.A., Inc., Hilton Head Island, S.C.
Filed Jan. 27, 1993, Ser. No. 4,138
Term of patent 14 years
U.S. Cl. D12—120



348,862
AUTOMOBILE TIRE
Yasujiro Daisho; Susumu Watanabe, both of Hiratsuka; Izumi Kuramochi, and Kohtaroh Iwabuchi, both of Tokyo, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Sep. 15, 1992, Ser. No. 948,710
Claims priority, application Japan, Apr. 21, 1992, 4-11680
Term of patent 14 years
U.S. Cl. D12—147



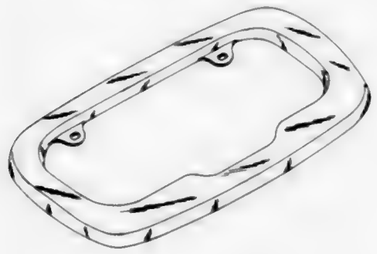
348,863
AUTOMOBILE TIRE
Hiroyuki Narabayashi, Hiratsuka; Izumi Kuramochi, and Kohtaroh Iwabuchi, both of Tokyo, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Sep. 15, 1992, Ser. No. 948,711
Claims priority, application Japan, May 13, 1992, 4-13670
Term of patent 14 years
U.S. Cl. D12—147



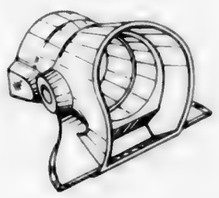
348,864
AUTOMOBILE TIRE
Yoshiaki Hashimura, Isehara, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Nov. 10, 1992, Ser. No. 2,584
Claims priority, application Japan, May 21, 1992, 4-14540
Term of patent 14 years
U.S. Cl. D12—147



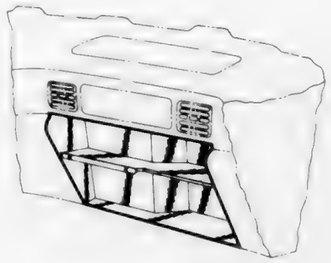
348,865
FRAME FOR INSTALLING A CAR LICENSE PLATE
Yoichi Nagata, Chigasaki, Japan, assignor to Nagata Industries Co., Ltd., Tokyo, Japan
Filed Apr. 8, 1992, Ser. No. 866,226
Term of patent 14 years
U.S. Cl. D12—193



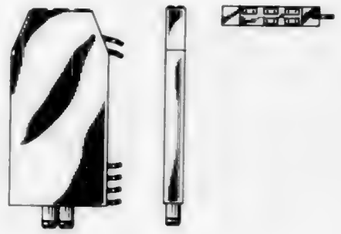
348,866
SKI BOAT DIVERTER WITH TRIM FINS
Jimmy D. Henn, 710 Wedgewood La., La Habra, Calif. 90631
Filed Feb. 16, 1993, Ser. No. 4,872
Term of patent 14 years
U.S. Cl. D12—317



348,867
VEHICLE GLOVE BOX
Bernard G. Snyder, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 29, 1993, Ser. No. 6,511
Term of patent 14 years
U.S. Cl. D12—415



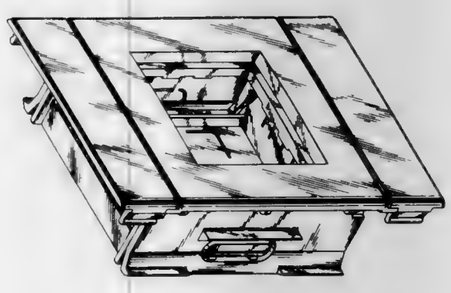
348,868
ELECTRICAL TRANSFORMER
William E. Terlop, Land O Lake, and Serge Casagrande, Lutz, both of Fla., assignors to Top Gulf Coast Corporation, Tampa, Fla.
Filed Apr. 26, 1993, Ser. No. 7,565
Term of patent 14 years
U.S. Cl. D13—110



348,869
POWER AMPLIFIER ENCLOSURE
Sally A. Egger, Elgin; Daniel J. Schaeffer, and Frank J. Gordon, both of Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 9, 1992, Ser. No. 1,226
Term of patent 14 years
U.S. Cl. D13—123



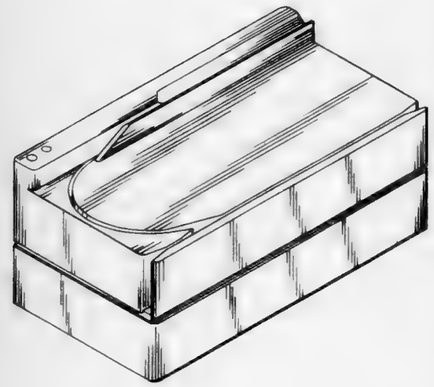
348,870
ADAPTOR BOX TO RECEIVE AN ELECTRICAL ACCESSORY COMPONENT
John Warrington, Ware, England, assignor to M. K. Electric Ltd., London, England
Filed Dec. 29, 1992, Ser. No. 3,056
Claims priority, application United Kingdom, Nov. 11, 1992, 2027030
Term of patent 14 years
U.S. Cl. D13—152



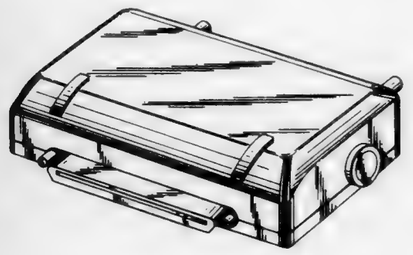
348,871
ADAPTOR BOX TO RECEIVE AN ELECTRICAL ACCESSORY COMPONENT
John Warrington, Ware, England, assignor to M. K. Electric Ltd., London, England
Filed Dec. 29, 1992, Ser. No. 3,057
Claims priority, application United Kingdom, Jul. 1, 1992, 2023969
Term of patent 14 years
U.S. Cl. D13—152



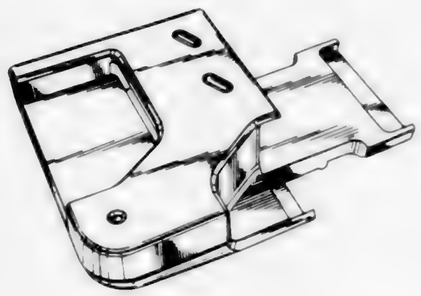
348,872
COMPACT MAGNETIC INK CHARACTER RECOGNITION AND MAGNETIC STRIPE READER
John H. Cherry, Southlake, Tex., assignor to Optowand, Inc., Irving, Tex.
Filed Jan. 6, 1993, Ser. No. 3,422
Term of patent 14 years
U.S. Cl. D14—105



348,873
INTERFACE FOR A FLOPPY DISC DRIVE
Kanji Mizusugi, Mie; Kensho Tsuji, and Hiroshi Yamamizu, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 10, 1992, Ser. No. 849,214
Claims priority, application Japan, Sep. 13, 1991, 3-27849
Term of patent 14 years
U.S. Cl. D14—114



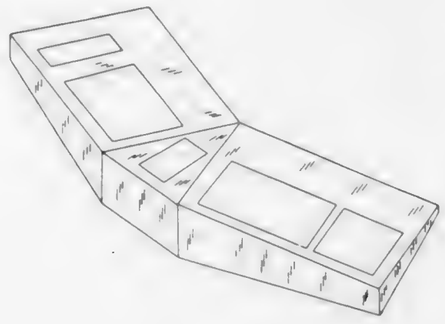
348,874
INTERFACE FOR CONNECTING A COMPUTER GAME CARTRIDGE TO A COMPUTER GAME MACHINE
Martin J. Pemberton, Broom, United Kingdom, assignor to The Codemasters Software Company Limited, London, England
Filed Dec. 10, 1992, Ser. No. 2,454
Claims priority, application United Kingdom, Jun. 10, 1992, 2023404; Nov. 20, 1992, 2027252
Term of patent 14 years
U.S. Cl. D14—114



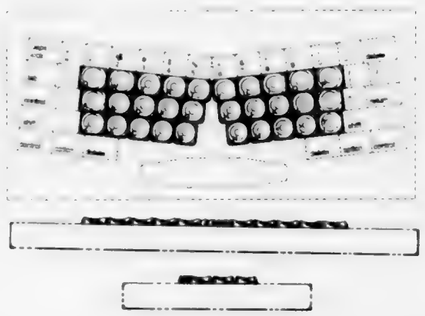
348,875
COMBINED TWO PIECE COMPUTER KEYBOARD UNIT
Min W. Wang, 2742 Turning Row La., Missouri City, Tex. 77459
Filed Nov. 20, 1991, Ser. No. 795,655
Term of patent 14 years
U.S. Cl. D14—115



348,876
KEYBOARD HOUSING
Michael A. Beltz, 1211 Monroe St., Wausau, Wis. 54403
Filed Mar. 26, 1992, Ser. No. 857,809
Term of patent 14 years
U.S. Cl. D14—115



348,877
MAXIMUM COMFORT KEYBOARD
Allan C. Lichtenberg, 399 W. Fullerton Ave., Chicago, Ill. 60614
Continuation of Ser. No. 925,796, Aug. 4, 1992. This application Oct. 30, 1992, Ser. No. 986
Term of patent 14 years
U.S. Cl. D14—115



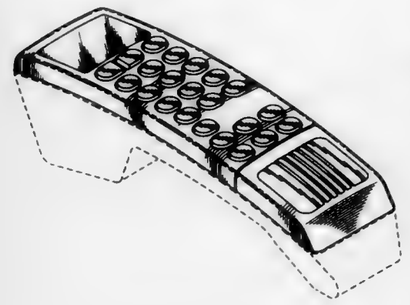
348,878
PORTABLE MARINE RADIO
Phillipe Lindeman, Roselle, and Terrance N. Taylor, Barrington, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 24, 1992, Ser. No. 840,701
Term of patent 14 years
U.S. Cl. D14—137



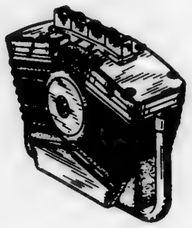
348,879
MONITOR RECEIVER
Eric T. Shuler, Orchard Park, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Filed Apr. 27, 1992, Ser. No. 874,578
Term of patent 14 years
U.S. Cl. D14—137



348,880
TOP-HOUSING FOR A TELEPHONE HANDSET
Allen Wong, Streamwood; George W. Meyer, Buffalo Grove, and Russell Lanzai, Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 19, 1993, Ser. No. 8,584
Term of patent 14 years
U.S. Cl. D14—148



348,881
CASSETTE PLAYER
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Dec. 29, 1992, Ser. No. 3,143
Term of patent 14 years
U.S. Cl. D14—165



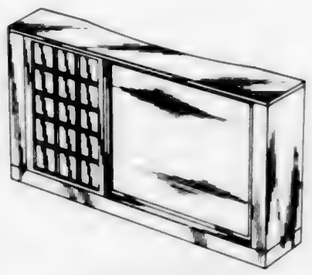
348,882
COMBINED LAMP AND RADIO
John S.-K. Yuen, Kowloon, Rep. of Korea, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Mar. 11, 1992, Ser. No. 851,134
Claims priority, application United Kingdom, Sep. 11, 1991, 2017381
Term of patent 14 years
U.S. Cl. D14—168



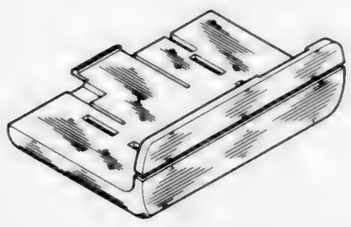
348,883
RADIO
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Pollyflame International B.V., GV Roelofarendsveen, Netherlands
Filed Dec. 29, 1992, Ser. No. 3,147
Term of patent 14 years
U.S. Cl. D14—188



348,884
COMBINED SPEAKER BOX AND SCREEN FOR A TELEVISION PROJECTOR
Osamu Sugihara, Osaka; Tadashi Sumino, Kyoto, and Kenichi Wada, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 27, 1992, Ser. No. 873,749
Claims priority, application Japan, Nov. 7, 1991, 3-33884
Term of patent 14 years
U.S. Cl. D14—204



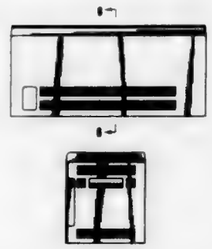
348,885
COMBINED BRACKET AND SUPPLEMENTAL ANTENNA FOR A COMMUNICATION RECEIVER
William R. VanDyke, Jr., Lighthouse Point; Tony Y. Maroun, Boynton Beach; David R. Becker, Boca Raton, and Tonya M. Twine, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 16, 1992, Ser. No. 1,478
Term of patent 14 years
U.S. Cl. D14—230



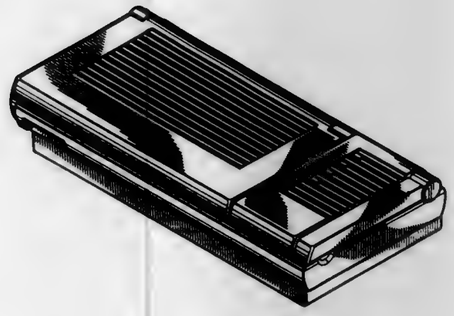
348,886
EXTERIOR MOUNT FOR AN AUTOMOBILE ANTENNA
Hironobu Watanabe, Itabashi, Japan, assignor to Dai-Ichi Denpa Kogyo Co., Ltd., Tokyo, Japan
Filed Dec. 8, 1992, Ser. No. 2,311
Term of patent 14 years
U.S. Cl. D14—238



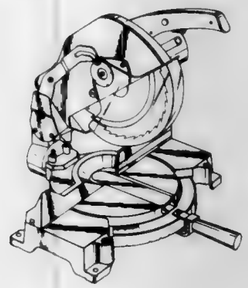
348,887
HOUSING FOR TELEPHONE SWITCHBOARD
Seiji Namba, Inzai, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Dec. 22, 1992, Ser. No. 2,885
Claims priority, application Japan, Jun. 25, 1992, 18614/1992
Term of patent 14 years
U.S. Cl. D14—241



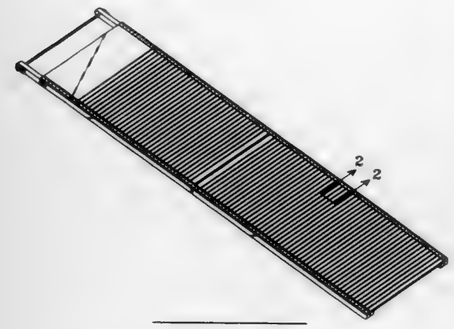
348,888
RADIO PACKET MODEM ADAPTER ACCESSORY FOR PORTABLE COMPUTING DEVICES
William E. Fenton, Port Coquitlam, and Roman P. Rak, Delta, both of Canada, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 18, 1993, Ser. No. 6,207
Term of patent 14 years
U.S. Cl. D14—242



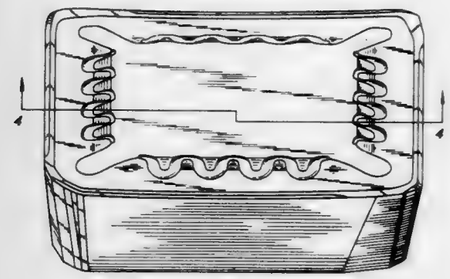
348,889
ELECTRIC SAW
Chiu-Tsun Chang, Taichung, Taiwan, assignor to P & F Brother Industrial Corporation, Taichung, Taiwan
Filed Jun. 17, 1993, Ser. No. 9,553
Term of patent 14 years
U.S. Cl. D15—133



348,890
FOLDING WALLPAPER CUTTING BOARD
Dennis W. Taylor, 900 Canterbury La., Liberty, Mo. 64068
Filed May 28, 1993, Ser. No. 8,895
Term of patent 14 years
U.S. Cl. D15—127



348,891
CUTTING INSERT FOR MILLING CUTTERS
Lars Markusson; Hans Lindberg, and Lars-Gunnar Wallstrom, all of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden
Filed Jul. 17, 1992, Ser. No. 914,143
Term of patent 14 years
U.S. Cl. D15—139



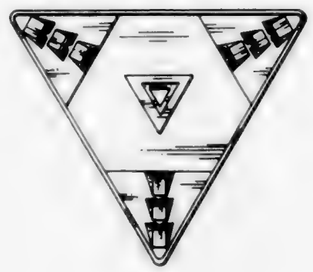
348,892
EYEGLASSES
Adolf Lüzlbauer, Tangastrasse 51, München 82, Fed. Rep. of Germany
Filed Nov. 20, 1992, Ser. No. 1,745
Claims priority, application Fed. Rep. of Germany, May 22, 1992, M9203824.7
Term of patent 14 years
U.S. Cl. D16—102



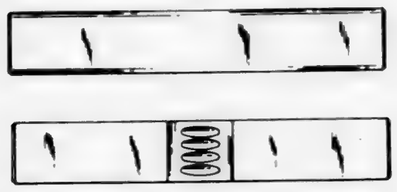
348,893
SEMI-RIMLESS SAFETY FRAME
Richard T. Metcalfe, Sturbridge, Mass., assignor to Cabot Safety Corporation, Southbridge, Mass.
Filed May 1, 1992, Ser. No. 877,602
Term of patent 14 years
U.S. Cl. D16—116



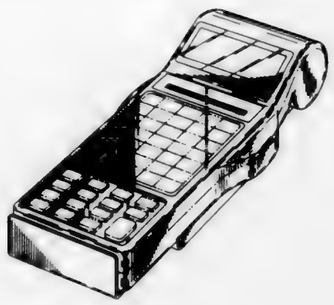
348,894
TRIPOD BRACE
Paul D. Hughen, 2236 N. Gower St., Los Angeles, Calif. 90068
Filed May 28, 1991, Ser. No. 706,084
Term of patent 14 years
U.S. Cl. D16—245



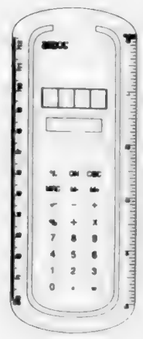
348,895
SOUND BAR FOR A PERCUSSION INSTRUMENT
Kenji Ito, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Jul. 30, 1992, Ser. No. 923,166
Claims priority, application Japan, Feb. 28, 1992, 4-5755
The portion of the term of this patent subsequent to Jun. 28, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D17—22



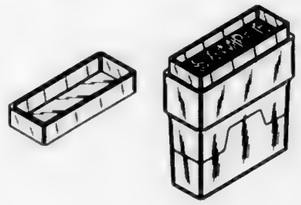
348,896
PORTABLE POINT OF SALE TERMINAL
Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Akron, Ohio
Filed Sep. 27, 1991, Ser. No. 767,269
Term of patent 14 years
U.S. Cl. D18—4



348,897
CLIP-ON CALCULATOR
Mark A. Bedol, 1768 Fillmore Dr., Monterey Park, Calif. 91754
Filed Feb. 8, 1991, Ser. No. 652,770
Term of patent 14 years
U.S. Cl. D18—6



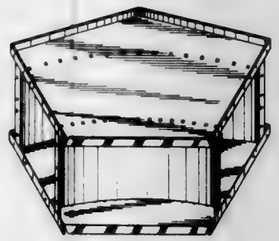
348,898
HAND STAMP
Yasuo Nagasawa, Osaka, Japan, assignor to Tsukahara Industrial Co., Ltd., Osaka, Japan
Filed Jan. 21, 1993, Ser. No. 3,908
Term of patent 14 years
U.S. Cl. D18—15



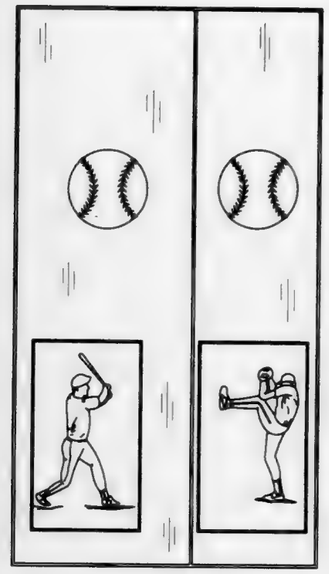
348,899
PRINTER FOR A COMPUTER
Ikuo Masujima, and Hayato Nishikaze, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Mar. 5, 1993, Ser. No. 5,506
Claims priority, application Japan, Sep. 7, 1992, 26416/92
Term of patent 14 years
U.S. Cl. D18—55



348,900
CORNER CONDUIT FOR A PNEUMATICALLY-PROPELLED CARRIER SYSTEM
Victor J. Vogel, Oak Ridge, N.J., assignor to Mosler Inc., Hamilton, Ohio
Filed Sep. 14, 1992, Ser. No. 948,769
Term of patent 14 years
U.S. Cl. D18—35



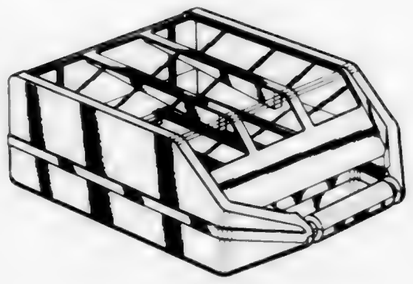
348,901
FOLDER FOR HOLDING CARDS
Joseph L. Mininno, 14 Thornhill Ct., Sicklerville, N.J. 08081
Filed Oct. 6, 1992, Ser. No. 186
Term of patent 14 years
U.S. Cl. D19—28



348,902
CLIP
John P. Beyer, 2481 Kenney, NW., Grand Rapids, Mich. 49504, assignor to John P. Beyer, Grand Rapids, Mich.
Filed Sep. 30, 1992, Ser. No. 954,928
Term of patent 14 years
U.S. Cl. D19—65



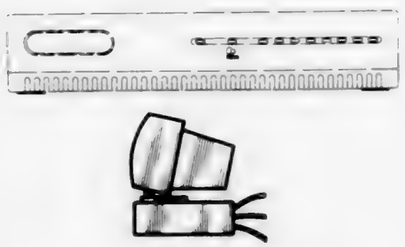
348,903
CARRYING CASE FOR CARDHOLDERS
Morris Fischtein, Downsview, and Ira Carlin, Thornhill, both of Canada, assignors to Pro-Index Corp., Concord, Canada
Filed Nov. 6, 1992, Ser. No. 1,216
Claims priority, application Canada, Jul. 7, 1992, 07-07-92-19
Term of patent 14 years
U.S. Cl. D19—76



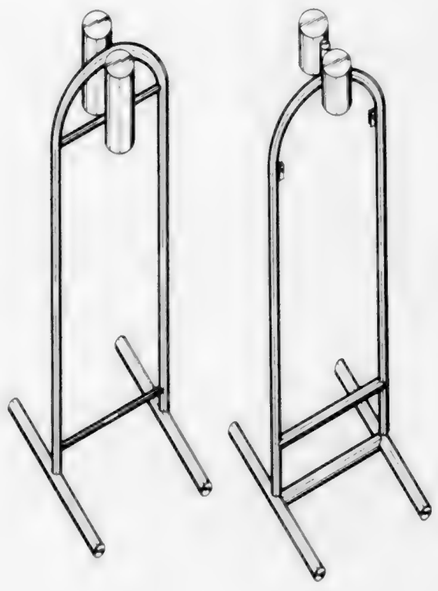
348,904
HORIZONTALLY-MOUNTABLE PAPER TRAY
Steven E. Linder, Portland, Oreg., assignor to Anthro Corporation, Portland, Oreg.
Filed Nov. 24, 1992, Ser. No. 1,949
Term of patent 14 years
U.S. Cl. D19—92



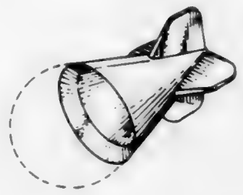
348,905
DECAL FOR IDENTIFICATION OF AN LED INDICATOR ON A DESKTOP COMPUTER
Stacey A. Smid, Manchester, Mo., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Dec. 27, 1990, Ser. No. 634,301
Term of patent 14 years
U.S. Cl. D20—11



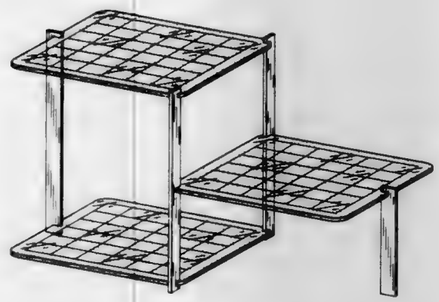
348,906
ILLUMINATED DISPLAY STAND
Filmer Hubble, 359-H Wildwood Park, Winnipeg, Manitoba, Canada R3T 0E6
Filed Sep. 3, 1992, Ser. No. 939,628
Claims priority, application Canada, Mar. 10, 1992, 10-03-92-4
Term of patent 14 years
U.S. Cl. D20—41



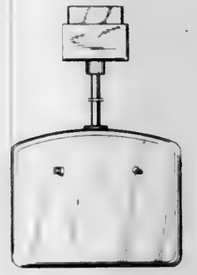
348,907
FINNED PAINTBALL STABILIZER
Thomas R. Prentice, Lake Elmo, and Allan R. Markert, St. Paul, both of Minn., assignors to Fun Gunz Inc., St. Paul, Minn.
Filed Feb. 2, 1993, Ser. No. 4,338
Term of patent 14 years
U.S. Cl. D21—5



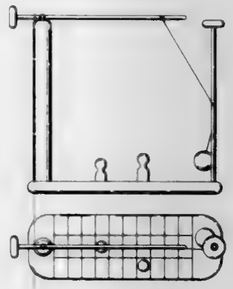
348,908
THREE DIMENSIONAL CHECKERBOARD
Michael Seiler, 10 Elmwood Ct., Plainview, N.Y. 11803
Filed Dec. 21, 1992, Ser. No. 2,764
Term of patent 14 years
U.S. Cl. D21—23



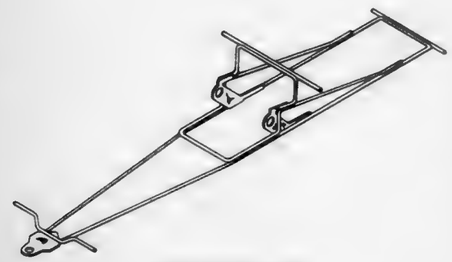
348,909
DISTRIBUTION UNIT FOR MULTIPLE CONTROLLERS FOR VIDEO GAMES
Yutaka Nakanishi, Tokyo, Japan, assignor to Yonezawa Corporation, Tokyo, Japan
Filed Apr. 9, 1993, Ser. No. 6,950
Claims priority, application Japan, Nov. 5, 1992, 4-32375
Term of patent 14 years
U.S. Cl. D21—48



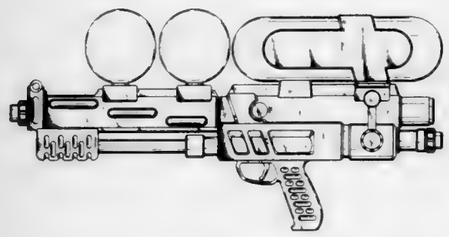
348,910
SWINGING BALL TOY
Frederick Sumner, 537 Elizabeth St., Ann Arbor, Mich. 48104
Filed Apr. 2, 1993, Ser. No. 6,650
Term of patent 14 years
U.S. Cl. D21—62



348,911
TOY RACING CAR CHASSIS
Robert B. Herrick, 2904 Blueberry Ct., Plano, Tex. 75074, and Jesse P. Kensinger, 206 Ocean Dr., Richardson, Tex. 75081
Filed Jan. 8, 1992, Ser. No. 820,945
Term of patent 14 years
U.S. Cl. D21—141



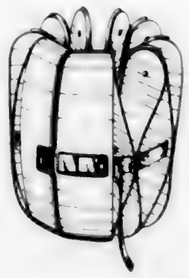
348,912
TRIPLE TANK WATER GUN
Frank Caminos, 124 Christie St., Leonia, N.J. 07605, and Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Sta., N.J. 08889
Filed Jul. 2, 1993, Ser. No. 10,419
Term of patent 14 years
U.S. Cl. D21—146



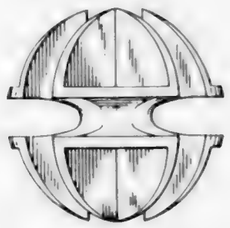
348,913
WATER PISTOL PLANE
Elliot Rudell, Rancho Palos Verdes, Calif., assignor to Meritus Industries, Inc., Livingston, N.J.
Filed Oct. 29, 1992, Ser. No. 917
Term of patent 14 years
U.S. Cl. D21—147



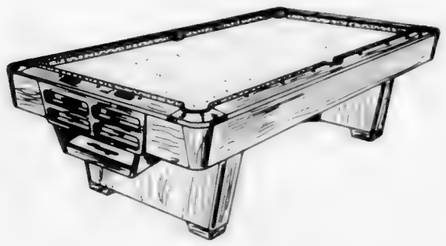
348,914
AQUATIC EXERCISER
Robert N. Shelton, Princeton, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Apr. 5, 1993, Ser. No. 6,850
Term of patent 14 years
U.S. Cl. D21—197



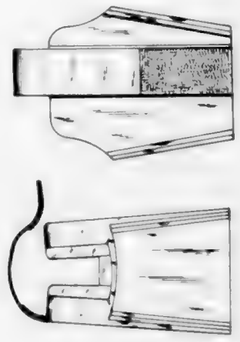
348,915
PLAY BALL
Stanley Fraser, Mapperley, United Kingdom, assignor to S. Fraser Chemicals (Nottingham) Ltd., Nottingdam, United Kingdom
Filed Jul. 8, 1992, Ser. No. 910,595
Claims priority, application United Kingdom, Jan. 11, 1992, 2020160
Term of patent 14 years
U.S. Cl. D21—204



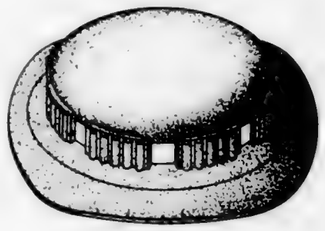
348,916
BILLIARD TABLE
Carl D. Powers, Raymer, Tenn., assignor to Brunswick Corporation, Lake Forest, Ill.
Filed Oct. 30, 1989, Ser. No. 428,735
The portion of the term of this patent subsequent to Aug. 19, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—232



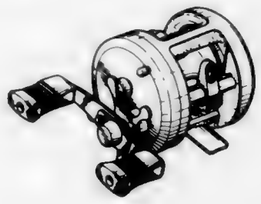
348,917
BUOYANT FOOTWEAR FOR WATER EXERCISE
Diahanne Bedortha, Springfield, and Lewis C. Thorne, Eugene, both of Oreg., assignors to Excel Sports Science, Inc., Eugene, Oreg.
Filed Oct. 16, 1992, Ser. No. 526
Term of patent 14 years
U.S. Cl. D21—239



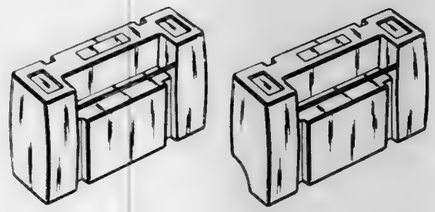
348,918
INSECT TRAP
Wen-Jen Lin, No. 120, Feng-Chou Rd., Fengyuan City, Taiwan
Filed Mar. 31, 1993, Ser. No. 6,503
Term of patent 14 years
U.S. Cl. D22—122



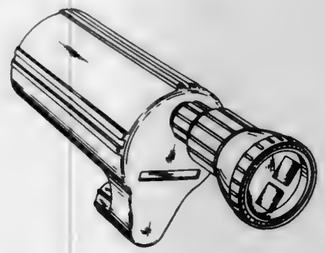
348,919
FISHING REEL
Jun Sato, and Seiji Myojo, both of Sakai, Japan, assignors to Shimano Inc., Osaka, Japan
Filed Jul. 26, 1991, Ser. No. 736,136
Claims priority, application Japan, Feb. 5, 1991, 3-2839; Feb. 5, 1991, 3-2840
Term of patent 14 years
U.S. Cl. D22—140



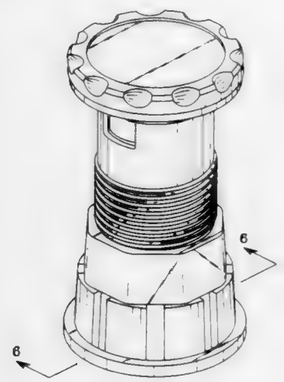
348,920
CARPET CLEANER SOLUTION RESERVOIR
William K. Shero, 96 Ironweed, Pueblo, Colo. 81001
Filed Nov. 12, 1992, Ser. No. 1,449
Term of patent 14 years
U.S. Cl. D23—202



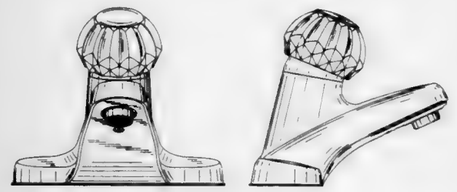
348,921
COMBINED WATER FILTER, FLOW REGULATOR AND SHOWER HEAD
Charles D. Strand, Bedford, and Anthony B. Meehon, Arlington, both of Tex., assignors to International Purity Corporation, Arlington, Tex.
Filed Jun. 4, 1992, Ser. No. 893,510
Term of patent 14 years
U.S. Cl. D23—228



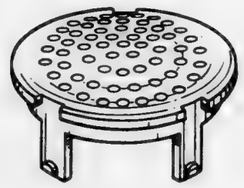
348,922
AIR CONTROL VALVE FOR A SPA OR HOT TUB
Lawrence E. Thrasher, Simi Valley, and Gustavo Mendiola, Moorpark, both of Calif., assignors to KDI American Products Company, Moorpark, Calif.
Filed Apr. 7, 1993, Ser. No. 6,857
Term of patent 14 years
U.S. Cl. D23—233



348,923
LAVATORY FAUCET
Hollis K. Yost, Santa Monica, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 16, 1992, Ser. No. 914,067
The portion of the term of this patent subsequent to Jul. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—238



348,924
SNAP-IN STRAINER
Stanley L. Merrett, Dadeville, Ala., assignor to Schlumberger Industries, Inc., Tallassee, Ala.
Filed May 17, 1991, Ser. No. 702,202
Term of patent 14 years
U.S. Cl. D23—261

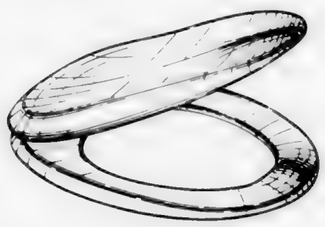


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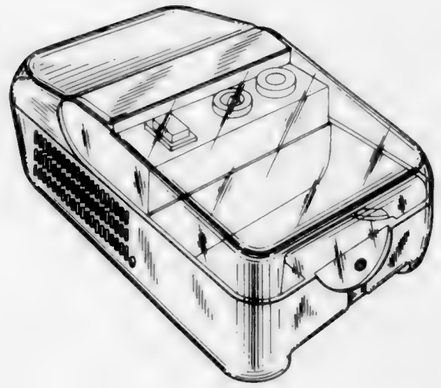
348,925
DRAINAGE TUBE FOR A WATERBED
Drew L. Miller, Littleton, Colo., assignor to Big Sur Waterbeds, Inc., Denver, Colo.
Filed Oct. 1, 1992, Ser. No. 108
Term of patent 14 years
U.S. Cl. D23—266



348,926
COMBINED TOILET SEAT AND COVER
Else J. Rasmussen, Åbyhoj, Denmark, assignor to Pressalit A/S, Ry, Denmark
Filed Mar. 12, 1992, Ser. No. 853,305
Claims priority, application Denmark, Sep. 13, 1991, 0935/1991; Sep. 13, 1991, 0936/1991
Term of patent 14 years
U.S. Cl. D23—311



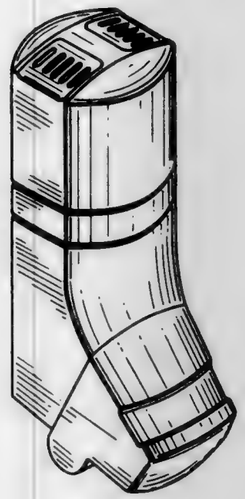
348,927
PORTABLE INHALATOR
Lorenzo Attolini, Parma, Italy, assignor to Medel Italiana S.n.c. di Giancarlo Attolini & C., Italy
Filed Nov. 12, 1991, Ser. No. 792,058
Claims priority, application Italy, Oct. 3, 1991, MI910-000718
Term of patent 14 years
U.S. Cl. D24—110



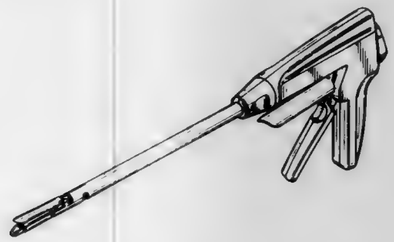
348,928
INHALER
Charles R. Ashley, Pattenberg, N.J.; Ken Wilkinson, Round Lake, Ill., and Charles M. Huck, Pottersville, N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Sep. 21, 1992, Ser. No. 948,336
Term of patent 14 years
U.S. Cl. D24—110



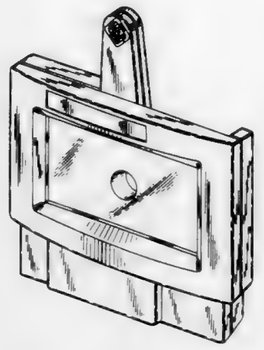
348,929
MEDICAMENT INHALER
Michael Paton, Royston, England, assignor to Norton Healthcare Limited, Essex, England
Filed Oct. 2, 1992, Ser. No. 118
Claims priority, application United Kingdom, Apr. 3, 1992, 2022112
Term of patent 14 years
U.S. Cl. D24—110



348,930
ENDOSCOPIC STAPLER
Todd J. Olson, Loveland, Ohio, assignor to Ethicon, Inc., Somerville, N.J.
Filed Oct. 11, 1991, Ser. No. 775,260
Term of patent 14 years
U.S. Cl. D24—145



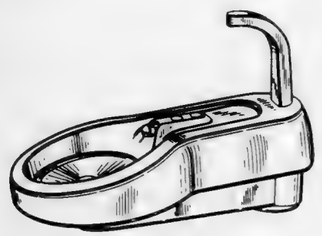
348,931
VISION TESTER
Jonathan G. Torrey, Portland, Oreg., assignor to PRIO Corporation, Portland, Oreg.
Continuation-in-part of Ser. No. 665,902, Mar. 7, 1991, which is a continuation-in-part of Ser. No. 282,596, Dec. 12, 1988, Pat. No. 4,998,820. This application Nov. 9, 1992, Ser. No. 1,294
Term of patent 14 years
U.S. Cl. D24—172



348,932
COMBINED BITE BLOCK AND CUSPS
Frank W. Jackson, Mechanicsburg, Pa., assignor to Chek-Med Systems, Inc., Wormleysburg, Pa.
Filed Nov. 23, 1992, Ser. No. 1,724
Term of patent 14 years
U.S. Cl. D24—176



348,933
CUSPIDOR
Carl G. Nordstrom, Lake Oswego, and William F. Fisher, Beavercreek, both of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Feb. 2, 1993, Ser. No. 4,347
Term of patent 14 years
U.S. Cl. D24—177

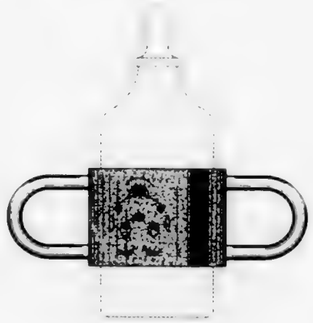


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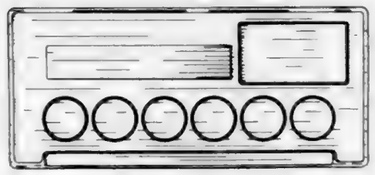
348,934
INCONTINENCE ELECTRODE
Michael T. V. Johnson, Minneapolis, and Donald D. Maurer, Marine St. Croix, both of Minn., assignors to EMPI, Inc., St. Paul, Minn.
Filed Mar. 6, 1992, Ser. No. 849,213
Term of patent 14 years
U.S. Cl. D24—187



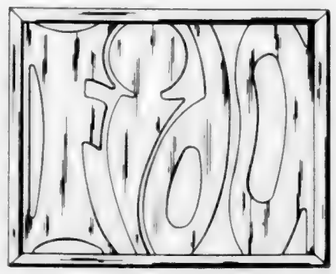
348,935
BABY BOTTLE HOLDER
Paul A. F. Montagnon, 2902 Cumberland Avenue S., Saskatoon, Sask, Canada S7J 2A6
Filed Nov. 2, 1992, Ser. No. 1,047
Term of patent 14 years
U.S. Cl. D24—199



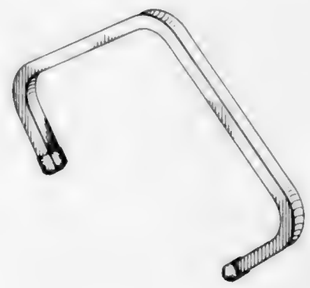
348,936
SPA CONTROL PANEL
Walter M. Swick, Concord Township, Lake County; Matthew A. Davis, Mentor, and Robert J. Infante, Garfield Heights, all of Ohio, assignors to Tridelta Industries, Inc., Mentor, Ohio
Filed Sep. 14, 1992, Ser. No. 948,739
Term of patent 14 years
U.S. Cl. D24—201



348,937
GATE
Connie B. Smith, 8660 W. 130th St., Palos Park, Ill. 60464
Filed Nov. 3, 1992, Ser. No. 1,114
Term of patent 14 years
U.S. Cl. D25—39



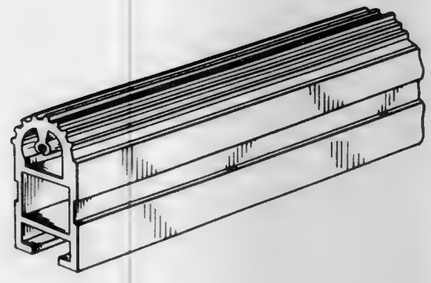
348,938
LADDER STABILIZER
Douglas A. Kennett, 255 Willow St., Woonsocket, R.I. 02895
Filed Nov. 23, 1992, Ser. No. 1,767
Term of patent 14 years
U.S. Cl. D25—68



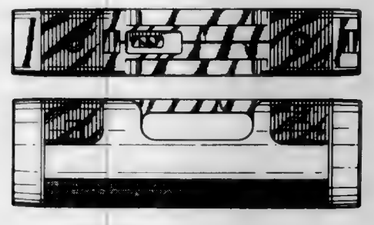
348,939
SEALING EXTRUSION FOR CLEAN ROOM CEILINGS
Bertil Larsson, and John Moren, both of Tyresoe, Sweden, assignors to ABB Flaekt AB, Stockholm, Sweden
Filed Jul. 7, 1992, Ser. No. 909,805
Claims priority, application Sweden, Jan. 8, 1992, 92-0039
Term of patent 14 years
U.S. Cl. D25—122



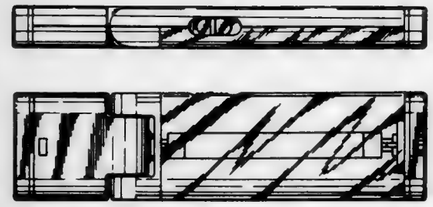
348,940
BOX EXTRUSION
James E. Clark, P.O. Box 85, Carstaat, N.J. 07075, and Peter Kessler, 35 W. 82nd St., Woodridge, N.J. 07075
Continuation-in-part of Ser. No. 319,551, Mar. 6, 1989, abandoned. This application May 13, 1991, Ser. No. 699,555
The portion of the term of this patent subsequent to Feb. 15, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—124



348,941
MULTI-PURPOSE LANTERN
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jul. 14, 1992, Ser. No. 913,537
Claims priority, application United Kingdom, Jan. 22, 1992, 2020439
Term of patent 14 years
U.S. Cl. D26—37



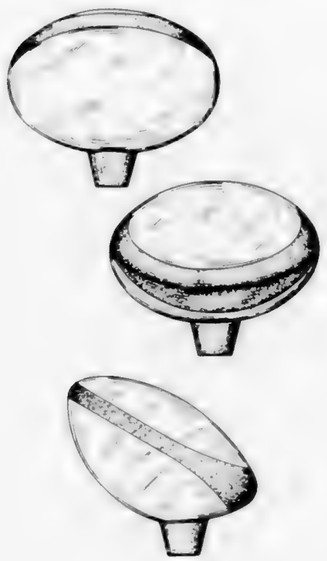
348,942
COMBINED CORDLESS EMERGENCY POWER FAILURE FLUORESCENT LANTERN AND FLASHLIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Aug. 17, 1992, Ser. No. 930,306
Claims priority, application United Kingdom, Feb. 18, 1992, 2021051
Term of patent 14 years
U.S. Cl. D26—42



348,943
ADJUSTABLE DESK LAMP
Randy Chiang, Taipei, Taiwan, assignor to Kar Bow Industries Co., Ltd., Taipei, Taiwan
Filed Dec. 31, 1991, Ser. No. 815,367
Term of patent 14 years
U.S. Cl. D26—65



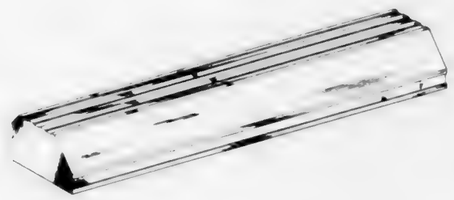
348,944
OUTDOOR LIGHTING FIXTURE
Ram Shalvi, Hong Kong, Hong Kong, assignor to Solar Wide Industrial Ltd., Hong Kong, Hong Kong
Filed Mar. 13, 1992, Ser. No. 851,152
Claims priority, application United Kingdom, Sep. 13, 1991, 2017460
Term of patent 14 years
U.S. Cl. D26—67



348,945
OUTDOOR ROADWAY LIGHTING FIXTURE
David E. Mehaffey, and Douglas S. Hammond, both of Vicksburg, Miss., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Aug. 12, 1993, Ser. No. 11,695
Term of patent 14 years
U.S. Cl. D26—71



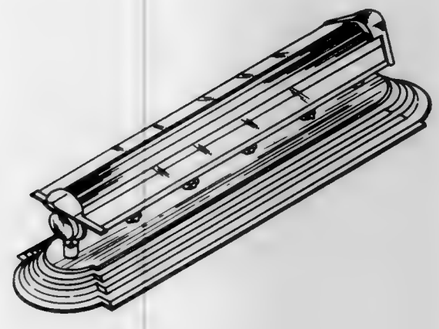
348,946
FLOURESCENT LAMP HOUSING FOR AN AQUARIUM
Jeffrey R. Watters, Rowlett, and Anthony M. Thoes, Dallas, both of Tex., assignors to Oceanic Systems, Inc., Dallas, Tex.
Filed Jul. 16, 1992, Ser. No. 915,108
Term of patent 14 years
U.S. Cl. D26—76



348,947
FLUORESCENT LIGHTING FIXTURE
Joseph H. Holcomb, Stockton, Calif., assignor to Albert L. Kramp, Stockton, Calif.
Filed Sep. 15, 1992, Ser. No. 945,038
Term of patent 14 years
U.S. Cl. D26—76



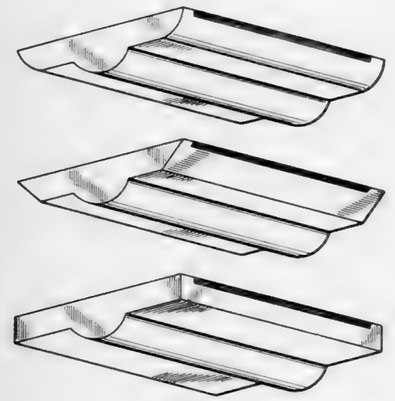
348,948
WALL MOUNTED LIGHTING FIXTURE
Tony Chen, No. 32, Alley 16, Lane 315, Chung-cheng North Road, San Chung City, Taipei Hsien, Taiwan
Filed Dec. 1, 1992, Ser. No. 2,072
Term of patent 14 years
U.S. Cl. D26—80



348,949
CHANDELIER
William Segill, Newton; Mark E. Segill, Framingham; Michael Dangelo, Seekonk, and Jeffrey H. Popcock, Medfield, all of Mass., assignors to American Lighting Fixture Corp., Taunton, Mass.
Filed Jan. 29, 1993, Ser. No. 4,222
Term of patent 14 years
U.S. Cl. D26—81



348,950
INDIRECT LIGHTING FIXTURE
Douglas J. Herst, Ross, and Utkan Salman, Emeryville, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.
Division of Ser. No. 588,971, Sep. 27, 1990, Pat. No. Des. 341,439, and a continuation-in-part of Ser. No. 260,358, Oct. 20, 1988, Pat. No. Des. 311,967, and a continuation-in-part of Ser. No. 502,663, Apr. 2, 1990, abandoned, and a continuation-in-part of Ser. No. 555,146, Jul. 19, 1990, abandoned. This application Aug. 3, 1993, Ser. No. 11,386
Term of patent 14 years
U.S. Cl. D26—85



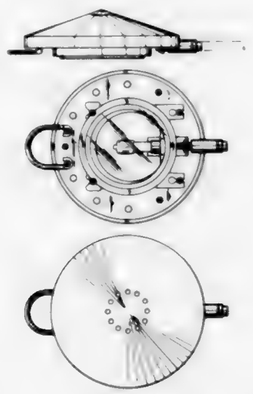
348,951
TORCHIERE LAMP
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Division of Ser. No. 862,270, Apr. 2, 1992, Pat. No. Des. 340,309. This application Jul. 1, 1993, Ser. No. 10,307
Term of patent 14 years
U.S. Cl. D26—106



348,952
TABLE LAMP
John R. Drucker, Atlanta, Ga., assignor to Speer Lamp Corp. of New York, Smyrna, Ga.
Filed Dec. 1, 1992, Ser. No. 2,063
Term of patent 14 years
U.S. Cl. D26—110



348,953
LAMP HEAD FOR AN ADJUSTABLE LIGHTING FIXTURE
Haim Shwisha, Westport, Conn., assignor to Electrix, Inc., New Haven, Conn.
Filed Jan. 6, 1992, Ser. No. 817,416
Term of patent 14 years
U.S. Cl. D26—135



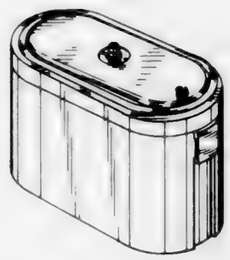
348,954
APPLICATOR FOR FINGERNAIL ART DESIGNS
Michael Magone, 180 Scoles Ave., and Sherry D. Posey, 35 Glen Oaks Ct., both of Clifton, N.J. 07012
Filed Feb. 22, 1993, Ser. No. 5,064
Term of patent 14 years
U.S. Cl. D28—7



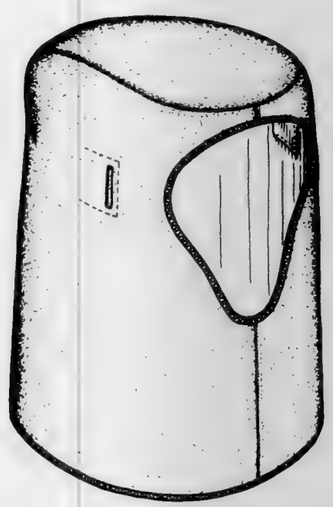
348,955
BAR OF SOAP OR DETERGENT
Andrew P. Crewe; Arthur H. Duncan, both of Wirral, and John D. Wagner, Upton-by-Chester, all of England, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Feb. 27, 1991, Ser. No. 665,132
Claims priority, application United Kingdom, Aug. 28, 1990, 2009283
Term of patent 14 years
U.S. Cl. D28—8.1



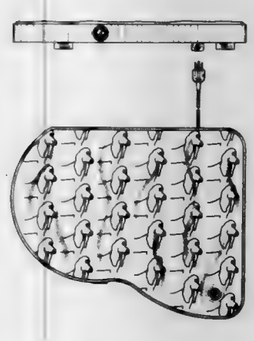
348,956
HAIR CURLER STEAMER
Mark Presser, New York, N.Y., assignor to Celeste Company, Inc., Warminster, Pa.
Filed Jul. 2, 1992, Ser. No. 908,020
Term of patent 14 years
U.S. Cl. D28—38



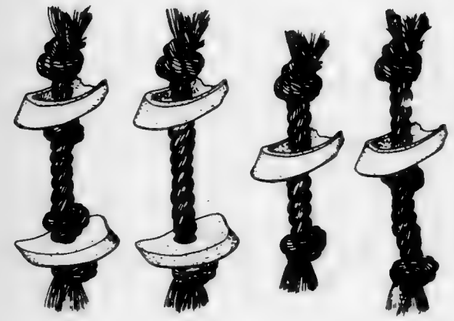
348,957
SURGEON'S HOOD
Tucker Viemeister, New York, N.Y.; Daniel Formosa, Montville, and Steven Russak, Hoboken, both of N.J., assignors to Chicopee, Milltown, N.J.
Filed Apr. 5, 1991, Ser. No. 681,340
Term of patent 14 years
U.S. Cl. D29—15



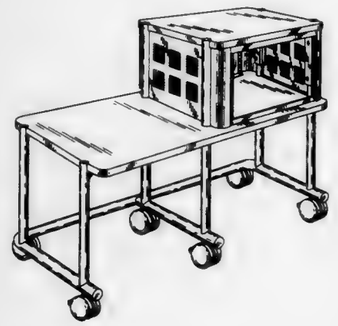
348,958
WATERBED FOR PETS
Wesley E. McLellan, R.R. 3 Box 98, Guelph, Ontario, Canada N1H 6H9
Filed Aug. 19, 1992, Ser. No. 932,025
Term of patent 14 years
U.S. Cl. D30—118



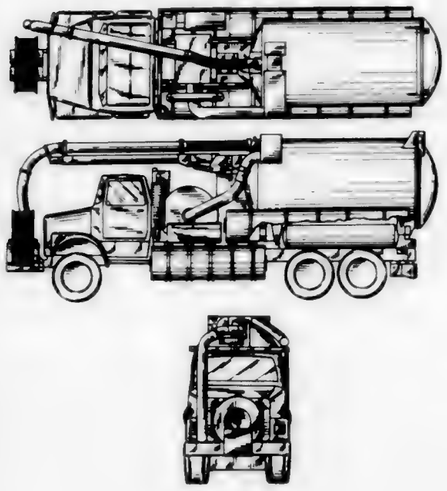
348,959
DOG CHEW TOY
Richard L. Lawson, 3272 N. Greenwood, Sanger, Calif. 93657
Filed Mar. 15, 1993, Ser. No. 5,863
Term of patent 14 years
U.S. Cl. D30—160



348,960
WORKSTATION WITH AN EQUIPMENT RACK
Jeffrey T. McCaffrey, Portland, Oreg., assignor to Anthro Corporation, Portland, Oreg.
Continuation-in-part of Ser. No. 1,920, Nov. 24, 1992. This application Jan. 5, 1993, Ser. No. 3,391
Term of patent 14 years
U.S. Cl. D34—20



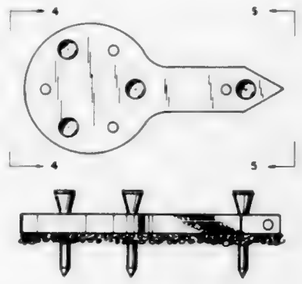
348,961
COMBINED DUAL AXLE SEWER AND CATCH BASIN CLEANER
Kevin M. Kimes, Ottawa, Ill., assignor to Peabody Myers Corporation, Streator, Ill.
Filed Sep. 21, 1990, Ser. No. 586,594
Term of patent 14 years
U.S. Cl. D32—14



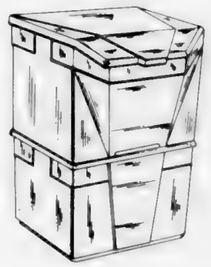
348,962
COMBINED LAUNDRY HAMPER FRAME AND HANGER THEREFOR
Richard M. Delery, 24 Belcrest, Laguna Niguel, Calif. 92677
Filed Apr. 8, 1991, Ser. No. 682,141
Term of patent 14 years
U.S. Cl. D32—36



348,963
GOLF SHOE CLEAT CLEANER
Joseph J. Hammel, 5883 Keystone Dr., Bethel Park, Pa. 15102
Filed May 19, 1992, Ser. No. 885,556
Term of patent 14 years
U.S. Cl. D32—47



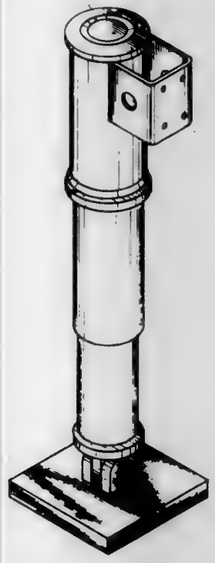
348,964
CONTAINER FOR SEGREGATING WASTE MATERIALS
Pierre J. Roy, Lenoxville, and Denis Houle, Blainville, both of Canada, assignors to Nova Sylva Inc., Canada
Filed Dec. 11, 1992, Ser. No. 2,551
Term of patent 14 years
U.S. Cl. D34—7



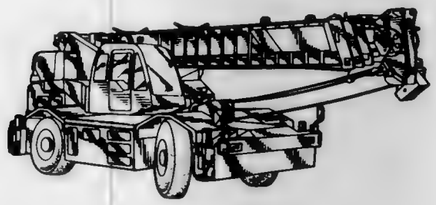
348,965
GOLF MOTORCADDIE
Edmund Machen; Edgar Montague; James Machen, all of Charlotte, N.C., and David Mehaffey, Vicksburg, Miss., assignors to Kangaroo Products Company, Columbus, N.C.
Filed Dec. 4, 1992, Ser. No. 2,325
Term of patent 14 years
U.S. Cl. D34—15



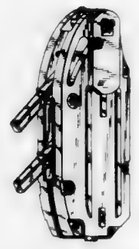
348,966
VEHICLE MOUNTED HYDRAULIC AUTO JACK
Victor Guyton, 307 Northeast St., Tuscumbia, Ala. 35674
Filed Jun. 14, 1993, Ser. No. 9,414
Term of patent 14 years
U.S. Cl. D34—31



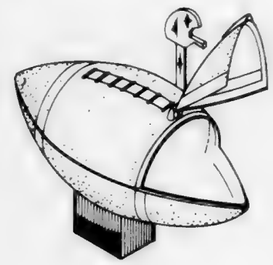
348,967
MOBILE CRANE
Shinji Goto, and Yoshihiro Murakami, both of Hyogo, Japan, assignors to Kabushiki Kaisha Kobe Seikosho, Hyogo, Japan
Filed Oct. 30, 1992, Ser. No. 1,007
Term of patent 14 years
U.S. Cl. D34—34



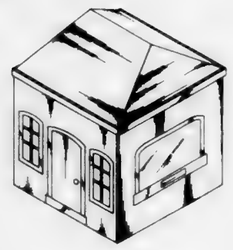
348,968
PULLING AND LIFTING WINCH
José M. Elejaga, Getxo, Spain, assignor to ALBA Maquinaria para la Construccíon S.A., Sondika, Spain
Filed Feb. 27, 1992, Ser. No. 841,454
Claims priority, application Spain, Aug. 28, 1991, 125,768
Term of patent 14 years
U.S. Cl. D34—35



348,969
FOOTBALL MAILBOX
Chris Barbour, 5626 A Andrew Rd., Mobile, Ala. 36619
Filed Dec. 17, 1992, Ser. No. 2,597
Term of patent 14 years
U.S. Cl. D99—30



348,970
COIN BANK
David Gaillard, and Harriet L. Gaillard, both of 3935 Emerald North Dr., Decatur, Ga. 30035
Filed Sep. 11, 1992, Ser. No. 943,214
Term of patent 14 years
U.S. Cl. D99—37



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF JULY, 1994

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See—*
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A. C. Nielsen Company: *See—*
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Abe, Yuji; Kawamoto, Masuo; Fuchi, Masami; Uemura, Takeshi; Miyazaki, Masahiki, Ueda, Hiroyuki; and Kotera, Shinichi, to Mita Industrial Co., Ltd. Image forming apparatus capable of opening a main body on one side. 5,331,374, Cl. 355-200.000.

Abel, Jonathan S.; and Smith, Julius O., III, to Leland Stanford Junior University, The Board of Trustees of the. System and method for restoring a clipped signal. 5,331,587, Cl. 364-825.000.

Abela, George S. Cell treatment apparatus and method. 5,330,467, Cl. 606-15.000.

Ablett, Adrian M.; Draper, Clyde R.; and Steffens, Steven C., to General Electric Company. Combustor dome assembly. 5,329,761, Cl. 60-39.360.

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Abrahamson, Karl R.: *See—*
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Acovic, Alexandre; Hsu, Ching-Hsiang; Wordeman, Matthew R.; and Wu, Being S., to International Business Machines Corporation. Non-volatile DRAM cell. 5,331,188, Cl. 257-298.000.

Acquaviva, Thomas, to Xerox Corporation. System and method for editing a document image. 5,331,376, Cl. 355-202.000.

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Adams, Theodore P.: *See—*
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Adelman, Michael W.; Hallman, Robert W.; Hong, Suck-Ju; Shimazu, Ken-Ichi; and Waxman, Burton H., to Sun Chemical Corporation. Process for producing negative and positive original images on a bilevel printing plate utilizing non-silver halide layer and silver halide overlayer. 5,330,875, Cl. 430-142.000.

Adfiltech Corporation: *See—*
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Adler, Randy W.: *See—*
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Agricura (Private) Limited: *See—*
Toet, Mary J.; and Somers, Amanda, 5,330,912, Cl. 435-254.100.

Ahlman, B. Hakan J.; Bjorck, Stellan; and Dahlstrom, Annica B., to Aktiebolaget Astra. Method for the treatment of ulcerative proctitis and colitis. 5,331,013, Cl. 514-626.000.

Ahlstrom Corporation: *See—*
Hardie, Gregory J.; Ganser, John M.; Webb, Ian D.; Hyppanen, Timo; Myohanen, Karl; and Nopanen, Ismo, 5,330,556, Cl. 75-414.000.

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Ahmed, Iqbal; and Hsieh, Henry L., to Phillips Petroleum Company. Grafted copolymers highly absorbent to aqueous electrolyte solutions used in diapers and paper towels. 5,331,021, Cl. 523-105.000.

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inclined with respect to the horizontal surface. 5,330,614, Cl 156-631.000

Ahuja, Deepak P.: *See—*
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Klimt, Ulrich; Halasy-Wimmer, Georg; Ruckert, Helmut; and Jakob, Matthias, 5,330,035, Cl. 188-73.360

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Seidner, Leonard; Spinelli, Harry J.; Ali, Mohammed I.; and Weintraub, Lester, 5,331,067, Cl. 525-479.000

Alkiewicz, Chester E.: *See—*
Suppon, Frederick C.; and Alkiewicz, Chester E., 5,330,340, Cl. 425-142.000

All American Products, Inc.: *See—*
Bishaf, Morrie; and Faulhaber, John, 5,330,215, Cl. 280-202.000

Allegro Microsystems, Inc.: *See—*
Moody, Kristaan L.; and Latham, Paul W., II, 5,331,218, Cl. 307-521.000

Allen, Eric E., Chakravarty, Prasun K., de Laszlo, Stephen E., Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., to Merck & Co., Inc. Substituted pyridopyrimidinones and related heterocycles as angiotensin II antagonists. 5,330,987, Cl. 514-258.000

Allen Group, Inc., The: *See—*
JuGer, Joseph S., 5,329,988, Cl. 165-153.000.

Allen, Robert P.: *See—*
Park, Vernon K., Ford, Randal R., and Allen, Robert P., 5,330,568, Cl. 106-270.000

Allen, Steven R., and Harriss, David M., to Du Pont de Nemours, E. I., and Company. Process for making high elongation PPD-T fibers. 5,330,698, Cl. 264-184.000

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Park, John Y.; and Cook, James N., 5,330,752, Cl. 424-94.400
Weinschenk, Joseph I., III; and Christ, F. Richard, 5,331,073, Cl. 526-264.000

Allgood, Fred A.: *See—*
Freitas, Michael W.; and Allgood, Fred A., 5,330,497, Cl. 606-185.000

Alliant Techsystems Inc.: *See—*
Barrett, William A.; and Krantz, Donald G., 5,331,561, Cl. 364-447.000

AlliedSignal Inc.: *See—*
Gilman, Paul S., 5,330,704, Cl. 419-60.000
High, Glen T.; Prevallet, Larry C.; and Free, Joseph W., 5,331,559, Cl. 364-431.020
Li, Hsin L.; Lin, Leroy C.; Prevorsek, Dusan C.; and Chin, Hong B., 5,330,820, Cl. 428-113.000
Myers, Geoffrey D.; and Bottlinger, Judy P., 5,329,773, Cl. 60-759.000
Petri, Fred, 5,331,242, Cl. 310-370.000
Rapoport, William R.; Leslie, Kenrick R., Hadeler, Theodore T.; and Brummert, LaValle V., 5,331,652, Cl. 372-34.000
Ravndal, Seth C.; and Patient, Daniel J., 5,330,259, Cl. 303-115.400
Wilson, Robert K.; and Crumb, Donald A., 5,329,769, Cl. 60-549.000

Allison, John G.; and Thompson, Hal J., to Earth Trends, Inc. Synthetic wood mulch. 5,330,804, Cl. 428-15.000.

Allsop, Inc.: *See—*
Allsop, Ivor J.; and Clausen, Eivind, 5,330,312, Cl. 414-462.000

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Allum, Andrew; Jeffery, John; Sayers, Ian C.; and Spence, Michael D., to Scapa Group PLC. Edge jointing of fabrics. 5,330,604, Cl. 156-304.700

Alman, David E.: *See—*
Shaw, Karl G.; Alman, David E.; Cooper, Rene M.; German, Randall M.; and McCoy, Kazuo P., 5,330,701, Cl. 419-10.000

Almond Jewelers Inc.: *See—*
Mandelbaum, Jonathan, 5,329,789, Cl. 63-2.000.

Alson Surgical, Inc.: *See—*
Dacquay, Bruno; and Chaduc, Jean-Paul, 5,331,649, Cl. 372-23.000.

Althausen, Ferdinand: *See—*
Sulzbach, Hans-Michael; Althausen, Ferdinand; and Raffel, Reiner, 5,330,647, Cl. 210-383.000.

Alvin G. & Co.: *See—*
Gottlieb, Alvin J., 5,330,183, Cl. 273-121.00R

Alyabina, German M., deceased: *See—*
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased, Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.

Alyabina, Ljudmila G., administrator: *See—*
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.

Alza Corporation: *See—*
Ayer, Atul D.; and Ridzon, Dana, 5,330,762, Cl. 424-473.000.

AM International, Inc.: *See—*
Hawkes, Richard B., 5,330,169, Cl. 271-101.000.

Amada Company, Ltd.: *See—*
Sartorio, Franco; and Vergano, Stefano, 5,329,795, Cl. 72-21.000.

Amada Engineering and Service Company, Inc.: *See—*
Takahashi, Yutaka, 5,330,241, Cl. 294-86.410.

Amax Inc.: *See—*
May, William A., 5,330,557, Cl. 75-623.000.

AMCO Holding B.V.: *See—*
Ten Vaarwerk, Gerardus J. M., 5,330,347, Cl. 425-406.000.

AMEI Technologies Inc.: *See—*
Crook, David F., 5,330,477, Cl. 606-69.000.

Amelung, Rolf: *See—*
Eggl, Wilfried; and Amelung, Rolf, 5,331,398, Cl. 356-246.000.

American Colloid Company: *See—*
Hynes, Russell E.; and Nebergall, Robert S., 5,330,946, Cl. 502-82.000

American Cyanamid Company: *See—*
Eppler, Cecil M., Zysk, John R.; Corbett, Martin J.; and Shieh, Hong-Ming, 5,331,094, Cl. 530-395.000.
Panzer, Hans P.; and Giovanni, Lino, 5,330,685, Cl. 252-582.000.
Prasad, Janniah S.; Maurer, Robert; Kapralos, Paul; Buzerak, John E.; and Putnam, Charles L., 5,330,441, Cl. 606-222.000.

American Dental Technologies, Inc.: *See—*
Gallant, Ben J., 5,330,354, Cl. 433-88.000.

American Emulsions, Co.: *See—*
Hall, David M., Leonard, Tony M.; Cofield, Charles D.; and Barrow, Hugh W., 5,330,541, Cl. 8-576.000.

American Home Products Corporation: *See—*
Soll, Richard M.; and Kinney, William A., 5,330,989, Cl. 514-258.000

American Magnetics Corp.: *See—*
Saroya, Jagtar S., 5,331,138, Cl. 235-449.000.

American National Red Cross: *See—*
Jackson, Craig M., 5,330,439, Cl. 604-192.000.

American Standard Inc.: *See—*
Gatarz, Gregory M.; and Marsilio, Ronald M., 5,330,339, Cl. 425-116.000.

AMF Bowling, Inc.: *See—*
Stephens, Michael W., 5,330,412, Cl. 473-93.000.

AMFAG S.r.l.: *See—*
Bosio, Orlando, 5,329,958, Cl. 137-269.000.

Amimoto, Yoshio: *See—*
Nogi, Munehiro; Miyazaki, Koichiro; Takubo, Seiji; Amimoto, Yoshio; and Ohashi, Ryutaro, 5,329,948, Cl. 134-25.200.

Ammermann, Eberhard: *See—*
Eicken, Karl; Goetz, Norbert; Harreus, Albrecht; Ammermann, Eberhard; Lorenz, Gisela; and Rang, Harald, 5,330,995, Cl. 514-355.000.

Amoco Corporation: *See—*
Liu, Wen-Feng, 5,330,832, Cl. 428-355.000.
Mossman, Allen B.; Macek, John A.; and Packer, Lawrence G., 5,331,082, Cl. 528-298.000.
Mount, II, Houston B.; and Powers, Jim R., 5,330,364, Cl. 439-190.000

Amos, James. Adjustable golf swing practice device. 5,330,192, Cl. 273-191.00A.

Analog Devices, Inc.: *See—*
Ganesan, Apparajan; Ferguson, Paul F., Jr.; and Robertson, Davis H., 5,331,221, Cl. 307-491.000.

Anderson, Alger J. Storable truck bed weights for improved traction and handling. 5,330,227, Cl. 280-759.000.

Anderson, Dale H.: *See—*
Childers, Edwin R.; Anderson, Dale H.; and Shafaat, Syed T., 5,331,627, Cl. 369-291.000.

Anderson, Janeen D. W.: *See—*
Allen, Timothy P.; Anderson, Janeen D. W.; Mead, Carver A.; Faggin, Federico; Platt, John C.; and Wall, Michael F., 5,331,215, Cl. 307-201.000.

Anderson, Kevin J., to Harnischfeger Corporation. Method for determining motor speed of an induction motor for a hoist. 5,331,267, Cl. 318-799.000

Anderson, Lane B.: *See—*
Barnum, Thomas G.; Anderson, Lane B.; and Missimer, Richard S., 5,330,619, Cl. 364-132.000.

Anderson, Neil: *See—*
Maddison, David S.; Skalsky, Michael; Gotthardt, Gerhard; and Anderson, Neil, 5,330,520, Cl. 607-122.000.

Anderson, Paul C.; and Hibberd, Kenneth A., to MGI Pharma, Inc. Herbicide resistance in plants. 5,331,107, Cl. 800-235.000.

Anderson, Philip M.: *See—*
Fabian, Carl E.; and Anderson, Philip M., 5,329,944, Cl. 128-899.000.

Anderson, Robert J., to Medx, Inc. Fluidized bed scrubber for use in gas cleaning system. 5,330,562, Cl. 95-108.000.

Anderson, Thomas M., to Schwing America, Inc. Transfer tube material flow management. 5,330,327, Cl. 417-53.000.

Andersson, Thorbjorn; and Asp, Ann-Magret, to Tetra Laval Holdings & Finance S.A. Packaging laminate with gas barrier properties. 5,330,845, Cl. 428-487.000.

Ando, Hirosi; and Goto, Masayuki, to Nippondenso Co., Ltd. Method and apparatus for copying and manufacturing hologram plate. 5,330,264, Cl. 359-12.000

Andoh, Mitsuru; and Naruse, Noriyoshi, to Tokyo Yogyo Kabushiki Kaisha; and Akechi Ceramics Co., Ltd. Molten metal pouring pipe for pressure-casting machine. 5,329,987, Cl. 164-306.000.

Andoh, Noboru: *See—*
Kamada, Mamoru; Ibi, Masaei; Sekiguchi, Tomonobu; Yamamoto, Masashi; Andoh, Noboru; and Itakura, Kenichi, 5,330,269, Cl. 383-210.000

Andreas Stihl: *See—*
Schlessmann, Helmut, 5,330,138, Cl. 248-52.000.

Andres, Miguel R.: *See—*
Perez, Augustin A.; Pons, Francesc; Sanz, Juan C. C.; Garcia, Jose R.; Andres, Miguel R.; and Trebitz, Bernd, 5,329,709, Cl. 38-77.700

Andrews, Derek. Connector. 5,330,371, Cl. 439-579.000.

Andrews, Harold E., to Hughes Aircraft Company. Precision linear actuator. 5,331,469, Cl. 359-824.000.

Andruik, Donald R.: *See—*
Chapman, Gordon R.; Andruik, Donald R.; Van Matre, James V.; Stenzel, Andre; Logan, Robert J.; McCrory, Edwin D.; Singleton, Michael W.; and Richmond, Robert M., 5,330,657, Cl. 210-712.000.

Aneja, Arun P.; Drew, James H.; and Moran, Curtis E., Jr., to Du Pont de Nemours, E. I., and Company. Spinneret for the production of hollow filaments. 5,330,348, Cl. 425-461.000.

Angeion Corporation: *See—*
Kroll, Mark W.; and Adams, Theodore P., 5,330,509, Cl. 607-14.000.

Anthogyr, societe anonyme: *See—*
Lietaer, Eric, 5,330,355, Cl. 433-112.000.

Anzai, Yumiko: *See—*
Horigome, Shinkichi; Miyamura, Yoshinori; Anzai, Yumiko; Kato, Keizo; and Shiraishi, Hiroshi, 5,330,880, Cl. 430-321.000.

Aochi, Tak; and Pyle, Robert J., to Lockheed Missiles & Space Company, Inc. Grid structures. 5,330,599, Cl. 156-173.000.

Aoki, Akio, to Trion Corporation. Ice hockey glove with removable palm. 5,329,639, Cl. 2-161.100.

Aoki, Hideo: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ootsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Aoki, Hirofumi, to Nissan Motor Co., Ltd. Upper mounting structure for a wheel suspension. 5,330,166, Cl. 267-220.000.

Aoyagi, Muneo: *See—*
Sotoya, Kohshiro; Aoyagi, Muneo; Ogura, Nobuyuki; and Kaneko, Youhei, 5,330,677, Cl. 252-186.380.

Aoyama, Tadao; Yasumaru, Tetsuo; and Saito, Masayuki, to Tokico Ltd. Saddle supporting device. 5,330,150, Cl. 248-598.000.

APE, Inc.: *See—*
Kaneko, Fukashi, 5,331,141, Cl. 235-462.000.

Apffel, James A., Jr.; and Nordman, Robert G., to Hewlett Packard Company. Combined electrospray/particle beam liquid chromatography/mass spectrometer. 5,331,159, Cl. 250-288.000.

Apogee Medical Products, Inc.: *See—*
Bonutti, Peter M., 5,329,924, Cl. 128-653.100.

Appleton Papers Inc.: *See—*
Copeland, Claude T., 5,330,566, Cl. 106-21.00E.

Applied Chemical Solutions: *See—*
Ferri, Edward T., Jr.; and Geatz, J. Tobin, 5,330,072, Cl. 222-1.000.

Applied Magnetics Corporation: *See—*
Ernst, Charles H.; and Shuman, Curtis A., 5,331,622, Cl. 369-112.000.

Appolonia, Michael D., III. Continuous fiber composite acoustic drumshell. 5,329,837, Cl. 84-411.00R.

Aquafuture, Inc.: *See—*
Goldman, Joshua N.; and Rosenau, John R., 5,330,652, Cl. 210-618.000.

Arai, Koju, to NEC Corporation. Hierarchical bus type multidirectional multiplex communication system. 5,331,633, Cl. 370-85.110.

Arai, Takeo: *See—*
Takamuki, Yasuhiko; Yoshida, Kazuhiro; and Arai, Takeo, 5,330,885, Cl. 430-523.000.

Arakawa Chemical Industries, Ltd.: *See—*
Chihara, Machio; Mizuya, Jiro; Okumura, Tatsuya; and Tanaka, Takashi, 5,330,582, Cl. 134-40.000.

Aranda, Julian: *See—*
Horwell, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S.; Roberts, Edward; Roth, Bruce D.; Tait, Bradley D.; Trivedi, Bharat K.; Trostmann, Uwe; and Unangst, Paul C., 5,331,006, Cl. 514-481.000.

Aranovsky, Anatoly, to Silicon Systems, Inc. Magnetoresistive head amplifier. 5,331,478, Cl. 360-67.000

Ariga, Ikuo: *See—*
Handa, Akio; Takeuchi, Tsutomu; Kajikawa, Tsuneo; Ariga, Ikuo; and Shinada, Masao, 5,330,028, Cl. 180-219.000

Arimatsu, Seiji: *See—*
Kawaguchi, Chitoshi; Arimatsu, Seiji; Konishi, Katsuji; and Kanda, Kazunori, 5,330,882, Cl. 430-327.000

Armando, Lodovico: *See—*
Armando, Valerio; Armando, Lodovico; and Armando, Massimo, 5,330,308, Cl. 414-408.000

Armando, Massimo: *See—*
Armando, Valerio; Armando, Lodovico; and Armando, Massimo, 5,330,308, Cl. 414-408.000

Armando, Valerio; Armando, Lodovico; and Armando, Massimo Automatic refuse container loading device. 5,330,308, Cl. 414-408.000

Armistead, David M.; Boger, Joshua S.; Meyers, Harold V.; Saunders, Jeffrey O.; and Tung, Roger D., to Vertex Pharmaceuticals, Inc. Immunosuppressive compounds. 5,330,993, Cl. 514-330.000

Armond, Joseph A.; and Rodenas, Juanito. Standby control for electromagnet. 5,331,269, Cl. 320-39.000

Armstrong, Charles: *See—*
Hassler, William L., Murray, Thomas; Armstrong, Charles; and Price, Daniel, 5,330,502, Cl. 606-205.000

Arnold, Rudolf; and Schulz, Wilfried, to Claas Saulgau GmbH. Corn harvesting implement for field chopping machine. 5,329,753, Cl. 56-98.000

Arnott, Robert C.; and Cain, James P., to Milliken Research Corporation. Incontinence pad. 5,330,817, Cl. 428-85.000

Aronoff, Alan P., Birnkrant, Marc S.; Matsushima, Osamu, Sugishita, Kyosuke; Oba, Hisaharu; Reddy, Katta N., Olsen, Richard T., and Dichter, Brent N., to NEC Electronics, Inc. Testing and emulation of integrated circuits. 5,331,571, Cl. 364-490.000

Aronson, Eugene A.: *See—*
Maguire, Michael C.; Zanner, Frank J.; Damkroger, Brian K.; Miszkiel, Mark E., and Aronson, Eugene A., 5,331,661, Cl. 373-105.000

Artelli, Laurence J.: *See—*
Morris, Thomas G.; and Artelli, Laurence J., 5,329,858, Cl. 105-178.000

Arthur, Mark T.: *See—*
Lehr, David A.; Roberts, Gordon R.; and Arthur, Mark T., 5,330,161, Cl. 266-158.000

Arvedi, Giovanni; and Gosio, Giovanni, to Arvedi, Giovanni; and Hoogovens Groep BV. Process and plant for obtaining steel strip coils having cold-rolled characteristics and directly obtained in a hot-rolling line. 5,329,688, Cl. 29-527.700

ASACA Corporation: *See—*
Nagai, Satoshi, 5,331,618, Cl. 369-59.000

Asaeda, Tooru: *See—*
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko; Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tani, Keiichi, 5,331,411, Cl. 348-708.000

Asahi Glass Company Ltd.: *See—*
Yaba, Susumu, Kikugawa, Shinya; and Ohta, Yukinori, 5,330,941, Cl. 501-54.000

Asahi Kogaku Kabushiki Kaisha: *See—*
Takahashi, Nagashige, 5,329,935, Cl. 128-4.000

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ito, Takayuki; and Hasushita, Sachio, 5,331,464, Cl. 359-691.000
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, 5,331,367, Cl. 354-412.000
Sagae, Koji; and Shirai, Tomoyukui, 5,331,263, Cl. 318-560.000

Asai, Akira: *See—*
Nishida, Masami; Kurisu, Toru; Ikai, Takashi; Sugiura, Hiroaki; Enomoto, Hiroshi; Kanda, Masunori; Yanagida, Eiichi; Deguchi, Hiroaki; Fukuma, Masaki; and Asai, Akira, 5,329,895, Cl. 123-90.170

Asai, Masahito; and Nakajima, Shinichi, to Sharp Kabushiki Kaisha. Solar battery module. 5,330,583, Cl. 136-251.000

Asano, Isamu: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Toru, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi, Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000

Asano, Toshiya: *See—*
Kuroda, Masao; Imai, Ryuji; and Asano, Toshiya, 5,331,204, Cl. 257-758.000

Asaoka, Masanobu: *See—*
Takao, Hideaki; Asaoka, Masanobu; and Kojima, Makoto, 5,330,803, Cl. 428-1.000

Asea Brown Boveri Ltd.: *See—*
Skarpetowski, Grzegorz, 5,331,537, Cl. 363-138.000

Ashi, Yoshihiro: *See—*
Takatori, Masahiro; Nakano, Yukio; Ishida, Keiichi; Mori, Takashi; Ashi, Yoshihiro; Kanno, Tadayuki, and Ueda, Hiromi, 5,331,639, Cl. 370-100.100

Askins, Paul D., to Eastman Kodak Company. Precision moving stage 5,329,825, Cl. 74-89.150

Asmund S. Laerdal A/S: *See—*
Egelandsdal, Einar, Garth, Geoffrey C.; Hamilton, John; Johnson, David; Laerdal, Tore; and Patterson, Charles A., 5,330,514, Cl. 434-265.000

Aso, Koichi: *See—*
Hayakawa, Masatoshi; Sugiyama, Yasunari; and Aso, Koichi, 5,331,491, Cl. 360-110.000

Aso, Toshiyuki; and Kita, Yuki, to Fanuc Ltd. Upper guide assembly for a wire cut electric discharge machine. 5,331,129, Cl. 219-69.120.

Asp, Ann-Magret: *See—*
Andersson, Thorbjorn; and Asp, Ann-Magret, 5,330,845, Cl. 428-487.000

AST Research, Inc.: *See—*
Heep, Jerry J.; and Erickson, Steven S., 5,331,450, Cl. 359-135.000

Astec International, Ltd.: *See—*
Smith, David A., 5,331,533, Cl. 363-20.000.

AT&T Bell Laboratories: *See—*
Aaron, Calvin; and Canniff, Ronald J., 5,331,632, Cl. 370-68.000.
Cheng, Ying; and Liu, Kao-Shien, 5,331,628, Cl. 370-14.000
Clifton, Mark B., 5,331,591, Cl. 365-182.000
Cunningham, John E.; Jan, William Y., Rentschler, John A.; and Warwick, Colin A., 5,330,629, Cl. 204-192.170.
Jarwala, Najmi T.; and Yau, Chi W., 5,331,274, Cl. 324-158.100.
Lee, Kwing F.; and Yan, Ran-Hong, 5,330,925, Cl. 437-44.000
Sorbara, Massimo; and Werner, Jean-Jacques, 5,331,670, Cl. 375-111.000
Teraslinna, Kari T., 5,331,631, Cl. 370-60.000.

AT&T Laboratories: *See—*
Knauer, Scott C.; Matthews, Kim N.; Netravali, Arun N.; Petajan, Eric D., and Safranek, Robert J., 5,331,348, Cl. 348-402.000

Atkinson, Dexter L.; Frances, Arnold; and Hesler, Lee J., to Du Pont de Nemours, E. I., and Company. Fibrid reinforced elastomers. 5,331,053, Cl. 525-184.000

Atlee, John L., III. Oximetric esophageal probe. 5,329,922, Cl. 128-632.000

Attari, Amir: *See—*
Chao, Sherman S., and Attari, Amir, 5,330,560, Cl. 95-95.000.

Atwell, Graham J.: *See—*
Denny, William A.; and Atwell, Graham J., 5,331,004, Cl. 514-406.000.

Aubry, Jacques A., to Aerospatiale Societe National Industrielle. Cylindrical elastomeric bearing with large angular deflection. 5,330,322, Cl. 416-134.00A

Audett, Jay D.; and Tse, Mun F., to Exxon Chemical Patents Inc. Water-curable, hot melt adhesive composition. 5,331,049, Cl. 525-100.000

Audi AG: *See—*
Krebs, Bernd; and Dulin, Jacques M., 5,330,228, Cl. 280-801.200.

Audousset, Marie-Pascale: *See—*
Hansenne-Richoux, Isabelle; and Audousset, Marie-Pascale, 5,330,758, Cl. 424-450.000.

Augelli-Szafran, Corinne: *See—*
Horweil, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S.; Roberts, Edward; Roth, Bruce D.; Tait, Bradley D.; Trivedi, Bharat K., Trostmann, Uwe; and Unangst, Paul C., 5,331,006, Cl. 514-481.000.

Ausimont S.r.l.: *See—*
Brunetta, Fabio; and Pantini, Giovanni, 5,330,681, Cl. 252-312.000.

Aussedat-Rey: *See—*
Honnorat, Andre ; and Riou, Claude, 5,330,622, Cl. 162-135.000

Auto-Shade, Inc.: *See—*
Shikler, Arie, 5,329,947, Cl. 132-304.000.

Autocontrole Inc.: *See—*
Berteau, Jacques, 5,330,343, Cl. 425-175.000

Autopal s.r.o.: *See—*
Cejnek, Milan, 5,331,520, Cl. 362-61.000.

Ave, Yoshiharu: *See—*
Hosoda, Fumio; Habaguchi, Masayuki; Kakimoto, Kazuhito; Tochizawa, Toru; Uchiyama, Masashi; and Ave, Yoshiharu, 5,329,909, Cl. 123-520.000

Aycock, David F.; and Ting, Sai-Pei, to General Electric Company. Process for compatibilizing polyphenylene ether-polyamide compositions. 5,331,060, Cl. 525-397.000

Ayer, Atul D.; and Ridzon, Dana, to Alza Corporation. Tandospiaine antidepressive therapy. 5,330,762, Cl. 424-473.000

Azuma, Kasufumi; Sonobe, Hideki; Nate, Kazuo; Mizushima, Akiko; Sato, Harunobu; Togawa, Eisei; and Ishizaki, Hiroshi, to Hitachi, Ltd. Process for producing magnetic head slider. 5,329,689, Cl. 29-603.000

Azuma, Makoto: *See—*
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B. F. Goodrich Company, The: *See—*
Dangler, Robert D., and Brannan, Frederick J., 5,330,051, Cl. 206-387.000
Yasuda, Masahiko; Hosokawa, Shigeo; Yokomori, Yorozu, Jimbo, Shinichiro; and Kolycheck, Edmond G., 5,330,669, Cl. 252-62.540

Baalbaki, Oussama: *See—*
Blondin, Jacques; and Baalbaki, Oussama, 5,330,572, Cl. 106-705.000

Babcock & Wilcox Company, The: *See—*
LaRue, Albert D., 5,329,866, Cl. 110-265.000

Bacchi, Paul E.; and Filipski, Paul S., to Kensington Laboratories, Inc. Compact specimen inspection station. 5,331,458, Cl. 359-393.000.

Bachar, Avraham, to Scitex Corporation Ltd. Apparatus and method for color transformation. 5,331,439, Cl. 358-500.000.

Badami, Vivek V.: *See—*
Whipple, Walter, III; Schneider, David A.; Miller, Gregory O.; Dausch, Mark E.; and Badami, Vivek V., 5,330,580, Cl. 134-18.000

Baek, Myung C.; and Chae, Yu S., to Goldstar Co., Ltd. Unitary body for mounting tape transport elements. 5,330,123, Cl. 242-346.100.

Baenziger, Norman C.: *See—*
Martinson, Lee S.; Schweitzer, John W.; and Baenziger, Norman C., 5,330,708, Cl. 420-415.000.

Bagley, Stuart C.; McCanless, Jon L.; and Singleton, Robert W. Blister packaging machinery. 5,329,750, Cl. 53-559.000.

Bagnasco, Dante V. Molded safety pin. 5,329,678, Cl. 24-709.400.

Baichwal, Anand R., to Edward Mendell Co. Inc. Bioadhesive tablet for non-systemic use products. 5,330,761, Cl. 424-469.000.

Baier, Wolfgang: *See—*
Deppert, Reinhard; Lutz, Manfred; Kurz, Walter; and Baier, Wolfgang, 5,330,393, Cl. 475-154.000.

Bair, Willard E. Game board. 5,330,197, Cl. 273-285.000.

Baker, Daniel L.: *See—*
Strong, David N.; and Baker, Daniel L., 5,331,603, Cl. 367-12.000.

Baker, David J., to TI Matrix Engineering Limited. Clutch with torque measuring device. 5,330,039, Cl. 192-30.00W.

Baker Hughes Incorporated: *See—*
Baugh, John L.; Melenyzer, George J.; and Peterson, James, 5,330,001, Cl. 166-138.000.
Jean, Buford R.; Warren, Gary L.; and Whitehead, F. Lynn, 5,331,284, Cl. 324-639.000
Wu, Jian-qun, 5,331,331, Cl. 343-719.000.

Baker, Reid H.: *See—*
Semchuck, Mario E.; and Baker, Reid H., 5,329,957, Cl. 137-218.000

Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Merrifield, David L.; Molloy, James J.; Horrall, Paul D.; Tylicki, Gary M.; Ward, Earl D., II; and Wilzbach, Bernard L., to Lexmark International, Inc. Toner cartridge with independent driven systems. 5,331,378, Cl. 355-210.000.

Bakhoum, Ezzat G. Static charge eliminator for protection of electronic gasoline pumps and teller machines. 5,331,502, Cl. 361-212.000.

Bakula, John J.: *See—*
Schiller, Ronald J.; and Bakula, John J., 5,330,057, Cl. 209-392.000.

Balaji, Vitukudi N.; and Singh, Chandra U. Method of design of compounds that mimic conformational features of selected peptides. 5,331,573, Cl. 364-500.000.

Baldwin-Gegenheimer GmbH: *See—*
Clauditz, Dieter, deceased, 5,330,576, Cl. 118-688.000.

Balkovec, James M.: *See—*
Hammond, Milton L.; Schwartz, Robert E.; and Balkovec, James M., 5,330,973, Cl. 514-11.000.

Ball Corporation: *See—*
Frame, Wayne W., 5,331,165, Cl. 250-370.090.

Ballard Medical Products: *See—*
Palmer, Darrel; and Houghton, William R., 5,330,424, Cl. 604-28.000.

Ballard, Thomas B. Bicycle seat connector member. 5,330,283, Cl. 403-97.000.

Ballardie, Anthony J.: *See—*
Francis, Paul T.; Ballardie, Anthony J.; and Crowcroft, Jonathan A., 5,331,637, Cl. 370-54.000.

Balow, Frank A.: *See—*
Boston, William A.; Balow, Frank A.; and Skipor, Eugene, 5,329,664, Cl. 15-256.500.

Baltz, James P.: *See—*
Grime, Thomas E.; Baltz, James P.; and Cedoz, Roger T., 5,330,108, Cl. 239-578.000.

Balz, Juergen: *See—*
Beer, Wilhelm; and Balz, Juergen, 5,330,021, Cl. 180-79.100.

Banbury, John R.; and Jeenes, David N., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. High voltage power supply. 5,331,255, Cl. 315-411.000.

Bando, Seiji: *See—*
Suzuki, Nobukazu; Bando, Seiji; Ikeda, Satoshi; Tsuda, Tetsuaki; Yakawa, Atsuhisa; and Yoshikawa, Yukihiro, 5,330,850, Cl. 428-623.000.

Bando, Shoichi: *See—*
Aihara, Yoshikatsu; Suzuki, Tomokazu; Shizuki, Yoshiaki; Bando, Shoichi; and Uchimura, Katsunori, 5,330,791, Cl. 427-215.000.

Banerjee, Shoibal, to Du Pont de Nemours, E. I., and Company. Irradiation of polymeric ion exchange membranes to increase water absorption. 5,330,626, Cl. 204-157.150.

Banerjee, Shoibal: *See—*
Grot, Walther G.; and Banerjee, Shoibal, 5,330,860, Cl. 429-42.000.

Bankert, Charles S.: *See—*
Hui, Henry K.; and Bankert, Charles S., 5,330,718, Cl. 422-82.070.

Bantum Tripter Joint Venture: *See—*
Brisson, A. Glen; Cruz, Exequiel D.; and Vickers, Dianne L., 5,329,928, Cl. 128-660.030.

Bar-Or, David; and Solomons, Clive, to Diagnostic Markers, Inc. Method for the very rapid detection of polyamines. 5,330,898, Cl. 435-29.000.

Baranyi, Giuseppa: *See—*
Hsiao, Cheng-Kuo; Hor, Ah-Mee; Mayo, James D.; Baranyi, Giuseppa; Kovacs, Gregory J.; Bluhm, Terry L.; Popovic, Zoran D.; and Yeung, B. W. Anissa, 5,330,867, Cl. 430-76.000.

Barbafieri, Gerard; and Miceli, Henry. Gallows for sport gymnastics with rigid ring suspension. 5,330,398, Cl. 482-23.000.

Barbetta, Angelo J.: *See—*
Mahabadi, Hadi K.; Wright, Denise Y.; Ng, T. Hwee; Barbetta, Angelo J.; and Creatura, John A., 5,330,874, Cl. 430-137.000.

Barco N.V. and Picanol N.V.: *See—*
Bouvyn, Patrick; and Vandenabeele, Frans, 5,329,961, Cl. 139-370.200.

Barea, Tiziano, to International Trading S.R.L. Device for verifying the correct employment of the yarns used in a textile machine, in particular a knitting or hosiery machine. 5,331,564, Cl. 364-470.000.

Baric, Thomas J.: *See—*
Kendra, Robert T.; Weihl, Philip H.; Baric, Thomas J.; Murphy, Kent W.; Bejster, Edward L.; and Dundore, Harry C., 5,330,055, Cl. 206-534.100.

Barinas, Joseph P., to Sanirab Corporation. Clean-in-place process and equipment. 5,329,950, Cl. 134-95.300.

Barkalow, David G.; Muhammad, JaCara R.; and McGrew, Gordon N., to Wm. Wrigley Jr. Company. Use of eugenol in chewing gum as an antioxidant. 5,330,771, Cl. 426-3.000.

Barkalow, David G.; Muhammad, Jacara R.; and Greenberg, Michael J., to Wm. Wrigley Jr. Company. Use of gum guaiac as an antioxidant in chewing gum. 5,330,772, Cl. 426-3.000.

Barker, Riley K.: *See—*
Marsh, Edward K.; and Barker, Riley K., 5,330,360, Cl. 439-76.000.

Barnett, Daniel C.; Fry, John J.; Hall, George R., II; Ross, David F.; Smith, Robert A.; and Woolbert, Gordon D., to Elsag International B.V. Automotive oxygen sensor for use in an industrial process analyzer. 5,330,719, Cl. 422-95.000

Barnum, Thomas G.; Anderson, Lane B.; and Missimer, Richard S., to Bradley Corporation. Programmable control system for gas and liquid dispensing devices. 5,331,619, Cl. 364-132.000.

Barold Technology, Inc.: *See—*
Paske, William C.; Rodney, Paul F.; and Ormsby, Ronald D., 5,330,016, Cl. 175-320.000.

Baron, Richard D., to Wanabe Outdoors, Inc. Enhanced fishing lure. 5,329,720, Cl. 43-44.200.

Baroni, Alessandro; Civitano, Luigi; and Sguerri, Omero, to Enel-Ente Nazionale per l'Energia Elettrica. Method for removing pollutants from a combustion gas. 5,330,733, Cl. 423-235.000.

Baronosky, Richard A., to Dana Corporation. Coil assembly retainer for electric motor. 5,331,246, Cl. 310-194.000.

Barra, Philippe. Closed sling with self-cinching loop. 5,330,240, Cl. 294-74.000.

Barre, Claude, to Siemens Aktiengesellschaft. CMOS/ECL signal level converter. 5,331,229, Cl. 307-475.000.

Barrett, James L.: *See—*
Mehta, Vinay; Barrett, James L.; and Wong, Yuk Ming, 5,329,991, Cl. 165-12.000.

Barrett, William A.; and Krantz, Donald G., to Alliant Techsystems Inc. Active cross path position correlation device. 5,331,561, Cl. 364-447.000.

Barrow, Hugh W.: *See—*
Hall, David M.; Leonard, Tony M.; Cofield, Charles D.; and Barrow, Hugh W., 5,330,541, Cl. 8-576.000.

Barry, Carey N., Jr.: *See—*
Gunnell, Timothy B.; Hines, John B., Jr.; and Barry, Carey N., Jr., 5,331,097, Cl. 549-226.000.

Bartasevich, William E.: *See—*
Bowerman, Leonard E.; Chumley, Eugene K.; Owens, Raymond D.; Bartasevich, William E.; Waldo, Robert L.; and Caterinacci, John R., 5,329,666, Cl. 15-323.000.

Barth, Reinhardt, to Pardes Spezialstrumpfe GmbH. Irrigator for colostomy patients. 5,330,447, Cl. 604-277.000.

Bartimes, George F.; and Stepenske, Lawrence D., to Continental Plastic Containers, Inc. Container with dripless spout and method of forming same. 5,330,083, Cl. 222-571.000.

Bartley, Gary L.; Hopper, Christopher J.; Haddock, Louis A., Jr.; and Messner, John S., to Stryker Corporation. Quick release coupling for head section of a hospital bed. 5,329,657, Cl. 5-617.000.

Bartz, Kenneth W.: *See—*
Lewtas, Kenneth; and Bartz, Kenneth W., 5,330,545, Cl. 44-395.000.

BASF Aktiengesellschaft: *See—*
Eicken, Karl; Goetz, Norbert; Harreus, Albrecht; Ammermann, Eberhard; Lorenz, Gisela; and Rang, Harald, 5,330,995, Cl. 514-355.000.
Eisele, Wolfgang; Etling, Hans; Pfalzgraf, Walter; Pitteroff, Walter; and Wittmann, Otto, 5,330,846, Cl. 428-503.000.
Hansen, Guenter; Lamm, Gunther; Loeffler, Hermann; Reichelt, Helmut; Degen, Helmut; Lange, Arno; and Grund, Clemens, 5,330,543, Cl. 8-662.000.
Kroner, Matthias; Hartmann, Heinrich; Baur, Richard; Schwendemann, Volker; Jaeger, Hans-Ulrich; and Perner, Johannes, 5,330,675, Cl. 252-174.230.
Lausberg, Deitrich; Steinberger, Rolf; Heckmann, Walter; and Schulz, Harald, 5,331,044, Cl. 524-871.000.
Misslitz, Ulf; Meyer, Norbert; Kast, Juergen; Goetz, Norbert; Harreus, Albrecht; Kuekenhoehner, Thomas; Wuerzer, Bruno; Walter, Helmut; Westphalen, Karl-Otto; and Gerber, Matthias, 5,330,965, Cl. 504-244.000.

BASF Corporation: *See—*
Benefiel, James W., Clark, Peter D., and Lanni, Laura M., 5,331,026, Cl. 523-456.000.
Thomson, Walter G.; and Kramer, Jonathan K., 5,330,544, Cl. 23-313.00R.
Turcotte, David E.; Conville, John J.; Lyon, James T.; Holland, Richard J.; and Hirozawa, Stanley T., 5,330,670, Cl. 252-76.000.
BASF Lacke + Farben AG: *See—*
Jung, Werner A., 5,331,052, Cl. 525-155.000.
BASF Magnetics GmbH: *See—*
Bobrich, Michael; Brodt, Gregor; and Roller, Hermann, 5,330,784, Cl. 427-131.000.
Bashkin, James K.: *See—*
Stern, Michael K.; and Bashkin, James K., 5,331,099, Cl. 564-154.000.
Bastyr, Charles A.: *See—*
Toronto, Russell A.; and Bastyr, Charles A., 5,330,419, Cl. 602-27.000.
Batdorf, Vern H.; and Cervin, Craig D., to H. B. Fuller Licensing & Financing. Emulsion based coatings and a method using an emulsion based coating to seal asbestos containing soils. 5,330,795, Cl. 427-393.600.
Bates, Brian L.: *See—*
Gunther, Rolf; and Bates, Brian L., 5,329,942, Cl. 128-898.000.
Bates, David A.: *See—*
Pope, Richard A.; Boling, Clyde W.; and Bates, David A., 5,330,372, Cl. 439-692.000.
Batesville Casket Company, Inc.: *See—*
Rojdev, Ilija, 5,329,679, Cl. 27-13.000.
Batra, Sharat: *See—*
Wu, Andrew L.; and Batra, Sharat, 5,331,496, Cl. 360-126.000.
Battelle Memorial Institute: *See—*
Heath, William O.; Richardson, Richard L.; and Goheen, Steven C., 5,330,291, Cl. 405-128.000.
Baugh, John L.; Melenyzer, George J.; and Peterson, James, to Baker Hughes Incorporated. Lead in guide assembly. 5,330,001, Cl. 166-138.000.
Baugh, John L.: *See—*
Collins, Gary J.; Baugh, John L.; and Benker, Wilhelm E., 5,330,007, Cl. 166-313.000.
Bauman, Therese M.; and Klenk, Todd S., to Dow Corning Corporation. Apparatus for blending and dispensing foamable, curable organosiloxane compositions. 5,330,724, Cl. 422-133.000.
Baur, Richard: *See—*
Kroner, Matthias; Hartmann, Heinrich; Baur, Richard; Schwendemann, Volker; Jaeger, Hans-Ulrich; and Perner, Johannes, 5,330,675, Cl. 252-174.230.
Bausch & Lomb Incorporated: *See—*
Fleenor, Richard J.; and Opdyke, Kenneth L., 5,330,203, Cl. 279-46.300.
Opdyke, Kenneth L., 5,331,131, Cl. 219-121.690.
Baxter International Inc.: *See—*
Mathias, Jean-Marie; Bernes, Jean-Claude; Lavezzo, Ermenegildo; and Debrauwere, Jack, 5,330,464, Cl. 604-415.000.
Baych, Les: *See—*
Jones, Leon; Hoffa, Gerald F.; Wilson, David E.; Baych, Les; and Snyder, David, 5,330,300, Cl. 410-106.000.
Bayer Aktiengesellschaft: *See—*
Blum, Harald; Kubitza, Werner; Probst, Joachim; Sonntag, Michael; and Schneider, Volker, 5,331,039, Cl. 524-507.000.
Gruber, Hermann; Reiff, Helmut; and Kober, Hermann, 5,330,841, Cl. 428-425.500.
Bayer, Juergen; Engelhardt, Dieter; and Halder, Prasanta, to Behr GmbH & Co. Heat exchanger. 5,329,997, Cl. 165-173.000.
Bayless, Ronnie E., to Dotolo Research Corp. Auto body cleaner and all purpose adhesive and urethane cleaner. 5,330,673, Cl. 252-171.000.
Baylink, David J., to IatroMed, Inc. Method for increased production of growth factor in living tissue using an applied fluctuating magnetic field. 5,330,410, Cl. 600-13.000.
Beacon Laboratories, Inc.: *See—*
Fleenor, Richard P., 5,330,469, Cl. 606-40.000.
Beagle, Wayne P.: *See—*
Bush, James W.; and Beagle, Wayne P., 5,330,334, Cl. 418-55.300.
Beales, Jonathan T.; and Stier, David E., to International Paper Company. Container for foodstuffs. 5,330,099, Cl. 229-207.000.
Beall, George H.: *See—*
Aitken, Bruce G.; Beall, George H.; and Quinn, Candace J., 5,330,940, Cl. 501-35.000.
Beattie, John M.; and Sinden, Jimmie D., to TRLI, Inc. Methods for lifting. 5,330,315, Cl. 414-786.000.
Beaubien, Arthur F.: *See—*
Beaubien, David J.; and Beaubien, Arthur F., 5,331,168, Cl. 250-372.000.
Beaubien, David J.; and Beaubien, Arthur F. Reference grade solar ultraviolet band pyranometer. 5,331,168, Cl. 250-372.000.
Becher, Klaus, to Becher Textil-und Stahlbau. Umbrella, in particular stand umbrella. 5,329,953, Cl. 135-31.000.
Becher Textil-und Stahlbau: *See—*
Becher, Klaus, 5,329,953, Cl. 135-31.000.
Beck, Theodora: *See—*
Lavon, Gary D.; and Beck, Theodora, 5,330,459, Cl. 604-385.100.
Becker, Michael; Reichert, Wolfgang; and Muller, Emmerich, to Hewlett-Packard Company. Method and apparatus for adjusting the wavelength in an optical device and laser using the method. 5,331,651, Cl. 372-32.000.
Beckmeyer, Richard F.; and Tsang, Chih-Hao, to General Motors Corporation. Catalyst for treatment of diesel exhaust particulate. 5,330,945, Cl. 502-66.000.
Becton, Dickinson and Company: *See—*
Payne, Donald N., Jr.; Waller, Jess M.; Clarke, Richard P.; Titus, George R.; and Martin, David A., 5,331,019, Cl. 522-75.000.
Beeghly, Craig W.; Ahuja, Deepak P.; Mehrotra, Pankaj K.; and Niebauer, Kenneth L., to Kennametal Inc. Ceramic cutting tool with chip control. 5,330,296, Cl. 407-114.000.
Beer, Wilhelm; and Balz, Juergen, to Alfred Teves GmbH. Power steering system for vehicles. 5,330,021, Cl. 180-79.100.
Behr GmbH & Co.: *See—*
Bayer, Juergen; Engelhardt, Dieter; and Halder, Prasanta, 5,329,997, Cl. 165-173.000.
Bejster, Edward L.: *See—*
Kendra, Robert T.; Weihl, Philip H.; Baric, Thomas J.; Murphy, Kent W.; Bejster, Edward L.; and Dundore, Harry C., 5,330,055, Cl. 206-534.100.
Belanger, Thomas D., Jr., to Ford Motor Company. Method of wave soldering with unique solder pad configuration. 5,330,096, Cl. 228-180.220.
Bell Communications Research, Inc.: *See—*
Francis, Paul T.; Ballardie, Anthony J.; and Crowcroft, Jonathan A., 5,331,637, Cl. 370-54.000.
Bell & Howell Phillipsburg Company: *See—*
Ricciardi, Mario, 5,330,174, Cl. 271-297.000.
Bell, Lawrence E.: *See—*
Nelson, John J.; and Bell, Lawrence E., 5,329,898, Cl. 123-195.00C.
Bell, Michael. Harness with adjustable positioning pad and tool belt. 5,329,884, Cl. 119-857.000.
Bello, Thomas J. Pressure actuated valve assembly. 5,329,960, Cl. 137-467.000.
Belost Technologies, Inc.: *See—*
Roerig, Arnold J., 5,329,849, Cl. 100-162.00B.
Belsito, Kenneth J., to Sencorp Systems, Inc. Nested plastic tray separator apparatus packaging system and method. 5,329,748, Cl. 53-440.000.
Belt, L. Carl: *See—*
Jacobsen, William M. W., Jr., Belt, L. Carl; and De Pass, Ernest, 5,330,828, Cl. 428-286.000.
Belue, John H.: *See—*
McBride, Daniel T.; Pascoe, William M.; and Belue, John H., 5,330,540, Cl. 8-554.000.
Ben-Gurion University of the Negev Research & Development Authority: *See—*
Nathan, Roger H., 5,330,516, Cl. 607-48.000.
Benefiel, James W.; Clark, Peter D.; and Lanni, Laura M., to BASF Corporation. Electrocoating composition comprising the solid pigment dispersion. 5,331,026, Cl. 523-456.000.
Benker, Wilhelm E.: *See—*
Collins, Gary J.; Baugh, John L.; and Benker, Wilhelm E., 5,330,007, Cl. 166-313.000.
Bennett, James L. Cooler door display rack. 5,330,261, Cl. 312-321.500.
Bennett, Tom D.: *See—*
Nichols, Lucy M., Roline, Glenn M., Bennett, Tom D.; and Thompson, David L., 5,330,513, Cl. 607-32.000.
Bennison, Stewart, to Palamatic Handling Systems Limited. Vacuum lifting/lowering head. 5,330,314, Cl. 414-627.000.
Benschoter, Barry R.; and Nehls, Barry L., to Henry Filters, Inc. Filter media hold down mechanism. 5,330,648, Cl. 210-387.000.
Bercaw, John: *See—*
McLean, Andrew; Bercaw, John; Brainerd, Charles; and Woodward, Jonny, 5,329,675, Cl. 24-599.600.
Berg, Charles J.; Lahrman, Frank H.; and Roe, Donald C., to Procter & Gamble Company, The. Particulate, absorbent, polymeric compositions containing interparticle crosslinked aggregates. 5,330,822, Cl. 428-192.000.
Bergamini, Michael V. W.: *See—*
Janoff, Andrew S.; Bolcsak, Lois E.; Weiner, Alan L.; Tremblay, Paul A.; Bergamini, Michael V. W.; and Suddith, Robert L., 5,330,689, Cl. 264-4.300.
Bergsten, Lars: *See—*
Drangel, Hans; Nilsson, Per-Inge; and Bergsten, Lars, 5,329,893, Cl. 123-78.00C.
Berlin, David R.; Rishel, Bonnie A.; and Wolstoncroft, Richard R., to First Brands Corporation. Polish composition forming hydrophilic layer and spray-away polishing process. 5,330,787, Cl. 427-154.000.
Bernardo, Richard G. Slat block and guide track apparatus for rolling truck bed cover. 5,330,246, Cl. 296-98.000.
Bernes, Jean-Claude: *See—*
Mathias, Jean-Marie; Bernes, Jean-Claude; Lavezzo, Ermenegildo; and Debrauwere, Jack, 5,330,464, Cl. 604-415.000.
Berry, Richard M.; Paleologou, Michael; and Liebergott, Norman, to Pulp and Paper Research Institute of Canada. Bleaching pulp with chloric acid. 5,330,620, Cl. 162-29.000.
Bersheidt, Kevin: *See—*
Givens, Kenneth J.; Stenzel, Eric; Hushbeck, Donald; Bersheidt, Kevin; and Bohlen, Jerry T., 5,330,000, Cl. 166-134.000.
Bershteyn, Michael, to Mitsubishi Electric Research Laboratories, Inc. Method for generating test access procedures. 5,331,570, Cl. 364-489.000.
Berteau, Jacques, to Autocontrole Inc. Variable-shape mold. 5,330,343, Cl. 425-175.000.
Berteloot, Alfred; and Brunette, Michel, to Berteloot, Alfred. Electropneumatic apparatus for sampling rapidly predetermined volumes of a mixture, to be connected to a computer. 5,330,717, Cl. 422-68.100.

Bertelsen, Jeffrey A.; and Davis, Robert P., to Tumi Luggage, Inc. Garment bag with reinforcing members. 5,330,049, Cl. 206-279.000.
Bertrand Faure Automobile "BFA": *See—*
Boisset, Bernard, 5,330,245, Cl. 296-65.100.
Bertsch, Roger J.: *See—*
Jarvis, Wilbur W.; and Bertsch, Roger J., 5,330,102, Cl. 239-228.000.
Betche, Hans-Jurgen: *See—*
Horwell, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S.; Roberts, Edward; Roth, Bruce D.; Tait, Bradley D.; Trivedi, Bharat K.; Trostmann, Uwe; and Unangst, Paul C., 5,331,006, Cl. 514-481.000.
Bettis Corporation: *See—*
Owen, Charles D., Rembert, Michael E.; and Davis, Albert S., 5,329,959, Cl. 137-315.000.
Betz, Jurgen; Kissinger, Jurgen; and Heydt, Peter, to Dr. Reutlinger and Sohne Gmbh & Co. KG. Apparatus for turning a body to be balanced into a working position. 5,329,814, Cl. 73-462.000.
Betz Laboratories, Inc.: *See—*
Reid, Dwight K.; and Fields, Daniel E., 5,330,970, Cl. 507-90.000.
Beutel, Jacob: *See—*
Stafford, Richard G.; Mickewich, Daniel J.; and Beutel, Jacob, 5,331,550, Cl. 364-413.020.
Beuter, Werner: *See—*
Kluczynski, Roman; Lutter, Johannes; Beuter, Werner; Treude, Horst; and Burkert, Heinz, 5,330,848, Cl. 428-537.100.
Bevacco, Marc P.; and Hiemsoth, Steven J., to Cherne Industries Incorporated. Drain flusher device. 5,329,646, Cl. 4-255.080.
Biavasco, Raffaella; and Soncini, Cristina, to Minnesota Mining and Manufacturing Company. Cyan chromogenic leuco dyes for photothermographic materials. 5,330,864, Cl. 430-619.000.
Bible, Donald W. Bug light and bag apparatus. 5,329,725, Cl. 43-113.000.
Bichel, Ronald A. Apparatus for waterless hulling of nuts and the like. 5,329,845, Cl. 99-627.000.
Bieberbach, George: *See—*
Sylvester, Robert L.; Johnson, Randall C.; Smith, Gregory V.; Chan, King W.; Middlebrooks, Willis B., III; Visaria, Jawahar K.; Wilson, Robert M.; and Bieberbach, George, 5,329,886, Cl. 122-32.000.
Biles, Jonathan R. Moisture-insensitive holograms and method for making the same. 5,331,444, Cl. 359-3.000.
Billing, Ronald J. Monoclonal antibodies to an autocrine growth factor antigen that binds to activated lymphocytes and cancer cells. 5,330,896, Cl. 435-7.230.
Billings, Zeb: *See—*
Johnson-Williams, Mark; and Billings, Zeb, 5,331,212, Cl. 307-66.000.
Binns, W. Robert: *See—*
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Black, James E., Jr.; and Zernik, Uri, to General Electric Company. Method for natural language data processing using morphological and part-of-speech information. 5,331,556, Cl. 364-419.080.
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Blanding, Douglass L., to Eastman Kodak Company. Shaft coupling utilizing tension springs and radially and axially projecting pins. 5,330,388, Cl. 464-106.000.
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Bodine, Robert C., Jr. Orthotic hand and forearm support device. 5,329,941, Cl. 128-845.000.
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Bohan, William L.: *See—*
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Bohmert, Reiner: *See—*
Grutter, Roland; Bohmert, Reiner; and Reinecke, Rolf, 5,330,627, Cl. 204-181.400.
Bohner, Hubert. Shelf and transportation system, in particular for gastronomic purposes. 5,330,060, Cl. 211-41.000.
Boisset, Bernard, to Bertrand Faure Automobile "BFA". Movable vehicle seat. 5,330,245, Cl. 296-65.100.
Bolanos, Henry: *See—*
Green, David T.; Bolanos, Henry; Sienkiewicz, Henry R.; Toso, Kenneth E.; Kolesa, Michael S.; and Tovey, H. Johnathan, 5,330,442, Cl. 606-232.000.
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Bolin, James A., to I.M.T.E.C. Enterprises, Inc. Glassware forming machine with cooling system. 5,330,551, Cl. 65-265.000

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Pope, Richard A.; Boling, Clyde W.; and Bates, David A., 5,330,372, Cl. 439-692.000

Bolza-Schuenemann, Claus A., and Schaede, Johannes G., to Koenig & Bauer Aktiengesellschaft. Printed sheet monitoring assembly. 5,329,852, Cl. 101-232.000

Bond, Malcolm L. *See*—
Prince, Jeffrey T.; Mangseth, Glen R.; Bond, Malcolm L.; Bouwman, John; and Dempster, Philip T., 5,330,397, Cl. 482-7.000

Bongi, Adolfo, to Comau S.p.A. Inspection system for controlling the laying of a string or layer of a fluorescent material on a metal piece. 5,331,171, Cl. 250-461.100

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Piliero, Rocco; and Meugniot, Nicolas, 5,330,773, Cl. 426-36.000

Bonser, Steven M. *See*—
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Daniels, Edward J.; Jody, Bassam J.; and Bonsignore, Patrick V., 5,330,618, Cl. 159-47.100

Bonutti, Peter M. Tissue press and system. 5,329,846, Cl. 100-50.000

Bonutti, Peter M., to Apogee Medical Products, Inc. Sequential imaging apparatus. 5,329,924, Cl. 128-653.100

Booda Products, Inc.: *See*—
O'Rourke, Anthony, 5,329,881, Cl. 119-710.000

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Booth, Roy E.; Shuford, David M.; and Linck, John S., to Loral Vought Systems Corporation. Conversion coating on carbon/carbon composites with controlled microstructure. 5,330,789, Cl. 427-189.000

Boots Company Plc., The: *See*—
Sheard, Christine; and Fisher, Julia E., 5,330,750, Cl. 424-61.000.

Borden, Inc.. *See*—
Columbus, Peter S.; and Patel, Yogeshbhai B., 5,331,023, Cl. 523-164.000

Borden, Robert H., to Thatcher Chemical Company. Apparatus for diluting and mixing chemicals and automatically feeding the diluted chemicals to a photographic processor on demand. 5,331,364, Cl. 354-324.000

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Borjesson, Fredrik: *See*—
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Caldero Ges, Jose M.; Bosch Rovira, Anna; Roca Acin, Joan Maria; Dalmases Barjoan, Pere; and Marquillas Olondriz, Francisco, 5,331,005, Cl. 514-415.000

Bosco, Paul N., and Fay, Terrance, to Ceram Tech International, Ltd. Room temperature curable surface coatings and methods of producing and applying samecu5,330,794, Cl. 427-387.000

Bosio, Orlando, to AMFAG S.r.l. Single-control mixer cartridge for hot and cold watercu5,329,958, Cl. 137-269.000

Boston Advanced Technologies, Inc.. *See*—
Collins, J. Randall; and Cohn, Ralph F., 5,330,073, Cl. 222-52.000

Boston University, Trustees of: *See*—
Fonger, James D.; and Jonkman, Kenneth R., 5,330,433, Cl. 604-164.000.

Boston, William A., Balow, Frank A.; and Skipor, Eugene, to Rockwell International Corporation. Cleaning device for a threaded shaftcu5,329,664, Cl. 15-256.500

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Myers, Geoffrey D.; and Bottlinger, Judy P., 5,329,773, Cl. 60-759.000.

Bottomley, Ian; and Finch, Duncan, to British Aerospace Public Limited Company. Manufacture of articles by diffusion bonding and superplastic formingcu5,330,093, Cl. 228-157.000

Boute, Willem, to Vitatron Medical B.V. Dual chamber pacemaker with automatically optimized AV delaycu5,330,511, Cl. 607-25.000.

Bouvyn, Patrick; and Vandenabeele, Frans, to Barco N.V. and Picanol N.V. Reed with optical weft detectorcu5,329,961, Cl. 139-370.200

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Bower, Douglas H.. *See*—
Josephson, Gregg R.; Bower, Douglas H.; and Tennant, David L., 5,331,590, Cl. 365-182.000

Bowerman, Leonard E.; Chumley, Eugene K.; Owens, Raymond D.; Bartasevich, William E.; Waldo, Robert L.; and Caternacci, John R., to TRC Aquisition Corporation. Vacuum cleanercu5,329,666, Cl. 15-323.000

Bowman, Karolen C. Medical patient restraint devicecu5,329,934, Cl. 128-845.000

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BP Chemicals (Additives) Limited: *See*—
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Bradley Corporation: *See*—
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Bradley, James A. Cartridge filter cleaning rotatable rackcu5,330,065, Cl. 211-163.000.

Bradley, Jerome R.; and Koblish, Theodore R., to Fuel Systems Textron, Inc. Self-sustaining fuel purging fuel injection systemcu5,329,760, Cl. 60-39.060

Brady, James, to SGS-Thomson Microelectronics, Inc. Output driver circuitcu5,331,228, Cl. 307-473.000

Brady, Michael J.: *See*—
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Brahm, Roger S.; and Lattimore, James D., to Eastman Kodak Company. Reader having cassette locating and unlatching mechanismcu5,330,309, Cl. 414-411.000.

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Brannan, Frederick J.: *See*—
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Braun Aktiengesellschaft: *See*—
Perez, Augustin A.; Pons, Francesc; Sanz, Juan C. C., Garcia, Jose R.; Andres, Miguel R.; and Trebitz, Bernd, 5,329,709, Cl. 38-77.700

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Brazier, Dennis. Wood burning boilercu5,329,920, Cl. 126-344.000.

Brede, Uwe; Kraft, Josef; and Seebeck, Wolfram, to Dynamit Nobel AG. Gas generator for an inflatable impact cushion for protecting an occupant of a motor vehicle from injurycu5,330,730, Cl. 422-305.000

Breezer, Harlon W.; Pintar, Thomas M.; and Wolfe, Michael J., to Penda Corporation. Hoisting palletcu5,329,862, Cl. 108-55.500

Breg, Inc.: *See*—
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Brekner, Michael-Joachim, Osan, Frank; and Rohrmann, Jurgen, to Hoechst Aktiengesellschaft. Cycloolefin block copolymers and a process for their preparationcu5,331,057, Cl. 525-289.000.

Brend, Gary W. Electrical plug locking devicecu5,330,361, Cl. 439-134.000

Bresin, Mark; and Thielen, William. Finger grip insert providing size compliancecu5,330,392, Cl. 473-130.000

Breslow, Ronald: *See*—
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Briceno F., Ana G.: *See*—
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Bridgestone Corporation: *See*—
Hall, James E., 5,331,035, Cl. 524-457.000
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Siegenthaler, Karl J., 5,330,337, Cl. 425-36.000
Takano, Kazuya; and Kojima, Hiroshi, 5,330,164, Cl. 267-140.140.

Brink, Gerhard; and Wierer, Konran A., to Wacker-Chemie GmbH. Process for the preparation of an aqueous dispersions of plastics having a reduced formaldehyde content and use thereofcu5,331,024, Cl. 523-200.000

Brisson, A. Glen; Cruz, Exequiel D.; and Vickers, Dianne L., to Bantum Tripter Joint Venture. Reflected shockwave shielding devicecu5,329,928, Cl. 128-660.030.

Britax Rainsfords Pty Ltd: *See*—
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British Aerospace Public Limited Company: *See*—
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British Petroleum Company p.l.c., The: *See*—
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British Telecommunications public limited company: *See*—
Smyth, Peter P.; and White, Brian R., 5,331,452, Cl. 359-189.000.

Britt, C. Ray: *See*—
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Broadbent, John A., 5,329,780, Cl. 62-72.000.

Broadbent, Craig L.: *See*—
Broadbent, Lynn C.; and Broadbent, Craig L., 5,329,915, Cl. 126-524.000.

Broadbent, John A., to Broad Research. Ice making method and apparatuscu5,329,780, Cl. 62-72.000.

Broadbent, Lynn C.; and Broadbent, Craig L. Gas fireplace capable of being installed without masonry workcu5,329,915, Cl. 126-524.000.

Brocia, Robert W.; and Dagata, Marie. Radar detector performance verification method and apparatuscu5,331,327, Cl. 342-173.000.

Brock, Christopher J.; and Enser, Michael B., to Agricultural & Food Research Council. Methods of emulsification with peptide emulsifierscu5,330,682, Cl. 252-314.000.

Brockner, Henry W.: *See*—
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Broders, Richard P.: *See*—
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Bronstein, Irena Y.; Edwards, Brooks; and Juo, Rouh-Rong, to Tropix, Inc. Chemiluminescent 3-(substituted adamant-2'-ylidene) 1,2-dioxetanescu5,330,900, Cl. 435-6.000.

Brooks, Paul F.; and Lisonbee, Ken D. Simplified steering mechanism for skateboards and the likecu5,330,214, Cl. 280-87.042.

Brooks, Rodney R.: *See*—
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Brother Kogyo Kabushiki Kaisha: *See*—
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Yasui, Tsuneo; Yamamoto, Takemi; Miki, Takashi; and Fuwa, Tetsuji, 5,329,848, Cl. 101-121.000.

Brown, Donald W., Sr., to Brown, John G. Single portion food condiment dispensercu5,330,075, Cl. 222-82.000.

Brown, Geoffrey P., to Vitreous Environmental Group Inc. Impact crushercu5,330,111, Cl. 241-56.000.

Brown, Harvey J., to Get A Gripp II Inc. Beverage bottle with fingergripscu5,330,054, Cl. 206-459.500.

Brown, Herbert J.; Griebel, Ronald F.; Kumar, Ajith K.; McElhenny, Stuart W.; and Grinch, Dean S., to General Electric Company. Regenerative braking protection for an electrically-propelled traction vehiclecu5,331,261, Cl. 318-376.000.

Brown, John G.: *See*—
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Brown, Michael A.: *See*—
Worden, Dennis R.; and Brown, Michael A., 5,331,292, Cl. 331-1.00A.

Brown, Scott S. D.; Hupfield, Peter C.; Lo, Peter Y. K.; and Taylor, Richard G., to Dow Corning Limited. Organosilicon compounds and compositions containing themcu5,331,020, Cl. 522-99.000.

Browne, Frank A.: *See*—
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Browning, James A., to Browning Thermal Systems, Inc. Thermal spray method and apparatus for optimizing flame jet temperaturecu5,330,798, Cl. 427-446.000.

Browning Thermal Systems, Inc.: *See*—
Browning, James A., 5,330,798, Cl. 427-446.000.

Brudermann, Uwe; and Meltsch, Hans-Juergen, to RXS Schrumpftechnik-Garnituren GmbH. Heat shrinkable envelopecu5,330,815, Cl. 428-68.000.

Bruegel, Emil: *See*—
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Bruggendick, Hermann; and Klinginger, Karl, to Steag Aktiengesellschaft. Device for the separation of undesired exhaust gas componentscu5,330,726, Cl. 422-177.000.

Bruker-Franzen Analytik GmbH: *See*—
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Brummert, LaValle V.: *See*—
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Brummet, Robert A.: *See*—
Moy, Michael; Schmidt, Robert W.; and Brummet, Robert A., 5,331,232, Cl. 318-568.110.

Brunetaud, Jean-Marc: *See*—
Mordon, Serge; Brunetaud, Jean-Marc; and Guillet, Hubert, 5,330,517, Cl. 607-89.000.

Brunetta, Fabio; and Pantini, Giovanni, to Ausimont S.r.l. Stable emulsions of perfluoropolyetherscu5,330,681, Cl. 252-312.000.

Brunette, Michel: *See*—
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Brunswick Corporation: *See*—
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Brusa, Massimo: *See*—
Viola, Augusto; Brusa, Massimo; Merighi, Bernardo; and Gubitosa, Giuseppe, 5,330,958, Cl. 502-316.000.

Bryant, Frank R.; and Spinner, Charles R., III, to SGS-Thomson Microelectronics, Inc. Method to improve interlevel dielectric planarizationcu5,331,117, Cl. 174-250.000.

Bryer, Philip, to Wangtek, Inc. Auto-loading cartridge tape drivecu5,331,485, Cl. 360-96.500.

Bryson, Larry W.: *See*—
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Buccola, Charles S.; and Kolb, Lawrence M., to Napco Security Systems, Inc. Automatically adjustable and self-testing dual technology intrusion detection system for minimizing false alarmscu5,331,308, Cl. 340-522.000.

Buchalter, Mark R. Disposable laminate drain covercu5,330,811, Cl. 428-40.000.

Buchanan, Jeffery J.: *See*—
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Buck Chuck Company: *See*—
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Buckhorn Material Handling Group, Inc.: *See*—
Jamison, Barry; and Stein, Eric, 5,330,069, Cl. 220-335.000.

Buckman, Symon P. A.; and Patterson, David L., to NCR Corporation. Sheet handling apparatus and methodcu5,330,316, Cl. 414-790.200.

Budet, Pascal; Flicker, Pierre; Kremer, Guy; and Diederichs, Fabien, to Messier-Bugatti. Method of burnishing metal parts, in particular light alloy wheels, and apparatus for implementing said methodcu5,329,684, Cl. 29-90.010.

Buechler, Kenneth F., to Biosite Diagnostics Incorporated. Phencyclidine derivatives and protein and polypeptide phencyclidine derivative conjugates and labelscu5,331,109, Cl. 530-404.000.

Buehler, Martin G.; Blaes, Brent R.; and Lieneweg, Udo, to California Institute of Technology. Particle sensor arraycu5,331,164, Cl. 250-370.020.

Buell, Kenneth B.; and Richardson, James W., to Procter & Gamble Company, The. Absorbent article with elastic feature having a portion mechnically prestrainedcu5,330,458, Cl. 604-385.100.

Buese, Mark A.; and Poczynok, Dana L., to Temple University-Of The Common Commonwealth System of Higher Education. Functionalized silica particle and use thereof for cross-linking siliconescu5,330,836, Cl. 428-405.000.

Buick, Kurt: *See*—
Geke, Juergen; Zange, Bernhard; Rehm, Hans; Fehr, Hans; Molz, Thomas; Buick, Kurt; Bruegel, Emil; and Huesemann, Lutz, 5,330,564, Cl. 106-2.000.

Bukhshtab, Mikhail A. Method of determining the optical loss in reflected radiation in a fibre-optic light guidecu5,331,391, Cl. 356-73.100.

Bullick, Robert L. Gravel packing system with diversion of fluidcu5,330,003, Cl. 166-278.000.

Burcham, Frank W.; Gilyard, Glenn B.; Conley, Joseph L.; Stewart, James F.; and Fullerton, Charles G., to United States of America, National Aeronautics and Space Administration. Engines-only flight control systemcu5,330,131, Cl. 244-75.00R.

Burdick, Robert L.: *See*—
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Merrifield, David L.; Molloy, James J.; Horrall, Paul D.; Tylicki, Gary M.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,331,378, Cl. 355-210.000.

Burgbacher, Martin; and Hermann, Michael, to Papst Licensing GmbH. Permanent magnet excited electric motor with improved torque ripplecu5,331,245, Cl. 310-186.000.

Burger, Hans-Joachim: *See*—
Thurn, Rudolf; and Burger, Hans-Joachim, 5,329,682, Cl. 29-25.350.

Burke, Edmund R.: *See*—
Weber, Fredric J.; and Burke, Edmund R., 5,330,249, Cl. 297-214.000.

Burke, Karen E. Method for the prevention and reversal of the extrinsic aging of the skin by transdermal application of selenamino acids and compositions thereforecu5,330,757, Cl. 424-449.000.

Burke, Raymond: *See*—
Glennon, Oliver; Early, James; Shortt, James; Healy, Martin F.; Bosch, Hendrik A.; Darmohoetomo, Soedjiemat F.; and Burke, Raymond, 5,331,301, Cl. 335-20.000.

Burkert, Heinz: *See*—
Kluczynski, Roman; Lutter, Johannes; Beuter, Werner; Treude, Horst; and Burkert, Heinz, 5,330,848, Cl. 428-537.100.

Burkhart, Stephen S. Drill guide device for arthroscopic surgerycu5,330,468, Cl. 606-96.000.

Burklund, Sidney A.; and Olson, Terry D., to Filtercorp Partners L.P. Commercial filtering systemcu5,330,638, Cl. 210-108.000.

Burlington Industries: *See*—
Teague, Edward W.; Clark, Jarvis L.; and Hance, Max H., 5,330,538, Cl. 8-114.600.

Burns, William K.: *See*—
Moeller, Robert P.; and Burns, William K., 5,331,404, Cl. 356-350.000.

Burreson, Bernard J., to Eldec Corporation. Inductive divider position sensor with fixed and variable impedance inductorscu5,331,277, Cl. 324-207.160.

Busby, Michael G.: *See*—
Hopkins, Evan L.; Humbard, John J.; and Busby, Michael G., 5,331,393, Cl. 356-121.000.

Bush Boake Allen Limited: *See*—
Humphrey, Anthony M.; and Usher, Gerald E., 5,330,654, Cl. 210-652.000.

Bush, James H.: *See*—
Jahnke, Richard W.; Kocurek, Lawrence J.; and Bush, James H., 5,330,662, Cl. 252-8.551.

Bush, James W.; and Beagle, Wayne P., to Carrier Corporation. Compact Oldham couplingcu5,330,334, Cl. 418-55.300.

Busschaert, Hans J. J.; Reusens, Peter P. F.; and Van Camp, Ronny M. A., to Alcatel N.V. Decoder device for decoding convolutionally encoded messagecu5,331,665, Cl. 375-94.000.

Butkus, John J.; and Bird, Paul R., to Scovill Fasteners Inc. Fastener setting apparatus having reinforcing tape feedercu5,329,683, Cl. 29-34.00R.

Buzerak, John E.. *See*—
Prasad, Jannah S., Maurer, Robert; Kapralos, Paul; Buzerak, John E.; and Putnam, Charles L., 5,330,441, Cl. 606-222.000.

Byrne, Norman E., Marble, Robert A., and Ramesh, Maniam, to Nalco Chemical Company. Dispersion polymers for oil field water clarificationcu5,330,650, Cl. 210-708.000.

Bythewood, Alicia. *See*—
Bythewood, Daniel W.; and Bythewood, Alicia, 5,330,806, Cl. 428-33.000.

Bythewood, Daniel W., and Bythewood, Alicia. Puzzle towel/mat for bath, beach and kitchencu5,330,806, Cl. 428-33.000.

C F P I. *See*—
Schapira, Joseph; Droniou, Patrick; Sudour, Michel; and Lerouge nee Bouaffree, Veronique, 5,330,659, Cl. 210-725.000.

C.V.G. Siderurgica Del Orinoco, C.A.. *See*—
Lozano D., Luis F., and Briceno F., Ana G., 5,329,779, Cl. 62-63.000.

Cadot, Emmanuel; Daubrege, Franck; Herve, Gilbert; and Teze, Andre, to Elf Atochem, S.A. Catalytic system and its application to the oxydehydrogenation of saturated carboxylic acids and the oxidation of aldehydes to acidscu5,330,954, Cl. 502-209.000.

Cagney, Richard D., Jr. Stance and stride training aidcu5,330,176, Cl. 273-26.00R.

Caico, Vincenzo: *See*—
Carlomagno, Giovanni; Caico, Vincenzo; and Tereo, Edoardo, 5,330,549, Cl. 65-182.200.

Caillat, Jean-Luc; and Wang, Karl P., to Copeland Corporation. Scroll compressor with liquid injectioncu5,329,788, Cl. 62-505.000.

Cailluoette, James T.. *See*—
Hood, Larry L.; Klapper, Robert C.; Cailluoette, James T., and Ureche, Alexander, 5,330,481, Cl. 606-99.000.

Cain, James P. *See*—
Arnott, Robert C., and Cain, James P., 5,330,817, Cl. 428-85.000.

Calandra, Thomas P. Method and device for ventilating a homecu5,330,386, Cl. 454-341.000.

Calder, Iain D.. *See*—
Emesh, Ismail T.; Calder, Iain D.; Ho, Vu Q.; Jolly, Gurvinder; and Madsen, Lynnette D., 5,330,931, Cl. 437-60.000.

Caldero Ges, Jose M., Bosch Rovira, Anna; Roca Acin, Joan Maria, Dalmases Barjoan, Pere; and Marquillas Olondriz, Francisco, to Vita-Invest, S.A. Amidines derived from 3-aminoethyl indoles and process for the preparation thereofcu5,331,005, Cl. 514-415.000.

Calderon, Silvia N.. *See*—
Newman, Amy H.; Calderon, Silvia N., and Tortella, Frank C., 5,331,010, Cl. 514-617.000.

Caldwell, Danny R., to Molmec, Inc. Degas tank for engine cooling systemcu5,329,889, Cl. 123-41.540.

California Institute of Technology (JPL): *See*—
Kern, Roger G.; Petersen, Gene R., and Richards, Gil F., 5,330,903, Cl. 435-101.000.

Calgon Corporation: *See*—
Hassick, Denis E., 5,330,656, Cl. 210-708.000.

Calhoun, John. Tube-resizing toolcu5,329,797, Cl. 72-121.000.

California Amplifier. *See*—
West, Laurice J.; and Pyatte, Wayne, 5,331,332, Cl. 343-786.000.

California Institute of Biological Research: *See*—
Lernhardt, Waldemar, 5,331,090, Cl. 530-329.000.

California Institute of Technology: *See*—
Buehler, Martin G.; Blaes, Brent R., and Lieneweg, Udo, 5,331,164, Cl. 250-370.020.

Calkins, Noel C. Impact implantation of particulate material into polymer surfacescu5,330,790, Cl. 427-204.000.

Callaway Golf Company. *See*—
Schmidt, Glenn H., and Heimstetter, Richard C., 5,330,187, Cl. 273-169.000.

Camerlenghi, Emilio, to SGS-Thomson Microelectronics s.r.l. Method of making non-volatile split gate EPROM memory cell and self-aligned field insulationcu5,330,938, Cl. 437-57.000.

Campbell, Arthur A.; Jones, Stephen M., and Doan, Phong D., to Siemens Pacesetter, Inc. Implantable defibrillator patch leadcu5,330,523, Cl. 607-129.000.

Campbell, Curtis B.. *See*—
Wollenberg, Robert H.; Nelson, Richard J.; McDonald, John; Ruelas, Susanne G.; Campbell, Curtis B., and Matera, Kathryn E., 5,330,663, Cl. 252-18.000.
Wollenberg, Robert H.; Nelson, Richard J.; McDonald, John; Ruelas, Susanne G.; Campbell, Curtis B., and Matera, Kathryn E., 5,330,664, Cl. 252-18.000.

Cancer Institute, The. *See*—
Vogelstein, Bert; Kinzler, Kenneth W., White, Raymond; and Nakamura, Yusuke, 5,330,892, Cl. 435-6.000.

Candris, Aristides S.. *See*—
Maguire, Harold T., Jr.; Wiesemann, John S.; Frost, David R., Nath, Raymond J., and Candris, Aristides S., 5,331,579, Cl. 364-578.000.

Cane, Charles; and Garner, Anthony, to BP Chemicals (Additives) Limited. Production of either an alkaline earth metal alkyl phenate or a sulphurised alkaline earth metal alkyl phenatecu5,330,665, Cl. 252-25.000.

Canniff, Ronald J.: *See*—
Aaron, Calvin; and Canniff, Ronald J., 5,331,632, Cl. 370-68.000.

Cannon Industries, Inc.: *See*—
Morrison, Ward D., 5,330,012, Cl. 173-141.000.

Canon Kabushiki Kaisha. *See*—
Akimoto, Toshiyuki; and Yamazaki, Tatsuro, 5,331,345, Cl. 348-297.000.
Izumi, Michihiro, 5,331,667, Cl. 375-107.000.
Kato, Shigeo; Yasuda, Yasuhiko; and Ohsawa, Hidefumi, 5,331,426, Cl. 358-426.000.
Kondo, Kenichi; Yamagata, Shigeo; Sakaegi, Yuji; Kudo, Toshihiko; Matsunaga, Kazuhiro; and Takayama, Tsutomu, 5,331,154, Cl. 250-231.170.
Matsumoto, Shigeyuki; and Ikeda, Osamu, 5,330,633, Cl. 204-298.250.
Miyagawa, Masashi; Takenouchi, Masanori; Shirota, Katsuhiro; Ohkuma, Norio; Takizawa, Yoshihisa; Inui, Toshiharu; and Nakajima, Kazuhiro, 5,331,344, Cl. 347-63.000.
Miyawaki, Mamoru; Ishizaki, Akira; Momma, Genzo; Yuzurihara, Hiroshi; and Kohchi, Tetsunobu, 5,331,197, Cl. 257-530.000.
Mizuno, Toshiyuki; and Shirauwa, Yoshinobu, 5,331,147, Cl. 250-208.200.
Mori, Tetsuya; and Suzuki, Akiyoshi, 5,331,371, Cl. 355-53.000.
Nomura, Yoshiya; Kobayashi, Hiroo; Higeta, Akira; Isobe, Hironobu; Shishido, Kazuo; Sato, Minoru; Miyabe, Shigeo; and Miura, Koji, 5,331,373, Cl. 355-200.000.
Ohtsuka, Yasumasa, Takeuchi, Akihiko; Tamigawa, Koichi; and Nanataki, Hideo, 5,331,385, Cl. 355-290.000.
Ohzu, Hayao; Suzuki, Toshiji; and Ishizaki, Akira, 5,331,421, Cl. 340-262.000.
Ota, Hiroshi; and Nakamura, Tomokazu, 5,331,381, Cl. 355-260.000.
Otsuka, Yasumasa, 5,331,384, Cl. 355-290.000.
Sukigara, Akihiko, 5,331,340, Cl. 346-76.0PH.
Takada, Kunio, 5,330,693, Cl. 264-106.000.
Takao, Hideaki; Asaoka, Masanobu; and Kojima, Makoto, 5,330,803, Cl. 428-1.000.
Tanikawa, Hirohide; Uchiyama, Masaki; Joh, Yoshinobu; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, 5,330,871, Cl. 430-110.000.
Tokunaga, Tatsuyuki; and Suzuki, Masayuki, 5,331,366, Cl. 354-412.000.
Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Noda, Shinya; Kobayashi, Kazunori; and Shoji, Takeo, 5,331,372, Cl. 355-200.000.
Yano, Koutaro, 5,331,462, Cl. 359-689.000.

Canon Sales Co., Inc.: *See*—
Maeda, Kazuo; Ohira, Kouichi; and Hirose, Mitsuo, 5,330,577, Cl. 118-722.000.

Capanna, Rudolfo, to Howmedica GmbH. Humeral endoprosthesiscu5,330,531, Cl. 623-19.000.

Carapezza, Joseph R.; and Ystueta, Linda T., to Niagara Mohawk Power Corporation. Centralizer for internal pipe inspection devicecu5,329,824, Cl. 73-866.500.

Carbone, James. *See*—
Gole, Dilip J.; Levinson, R. Saul; Carbone, James; and Davies, J Desmond, 5,330,763, Cl. 424-484.000.
Gole, Dilip J.; Levinson, R. Saul; Carbone, James; and Davies, J Desmond, 5,330,764, Cl. 424-484.000.

Card, Roger J.; Howard, Paul R.; and Feraud, Jean-Pierre, to Dowell Schlumberger Incorporated. Control of particulate flowback in subterranean wellscu5,330,005, Cl. 166-280.000.

Cardi, Nicoletta. *See*—
Po', Riccardo; Cardi, Nicoletta; Fiocca, Luisa; Gennaro, Antonio; Giannotta, Giorgio; and Occhiello, Ernesto, 5,331,065, Cl. 525-437.000.

Cardiac Pacemakers, Inc.: *See*—
Hauck, John A., and Spinelli, Julio C., 5,330,512, Cl. 607-28.000.

Cardiac Pathways Corporation: *See*—
Imran, Mir A., 5,330,466, Cl. 606-13.000.

Cargin, Keith K., Jr.. *See*—
Miller, Phillip; Koenck, Steven E.; Walter, Jerry L.; Kubler, Joseph J.; Cargin, Keith K., Jr.; Hanson, George E., Davis, Patrick H., Kunert, Steven R., and Schultz, Darald R., 5,331,580, Cl. 364-708.100.

Cargnel, Giuseppe; and Durazzani, Piero, to Zanussi Elettrodomestici S.P.A. Plastic washtubcu5,329,791, Cl. 68-24.000.

Carl-Zeiss-Stiftung. *See*—
Schurle, Hermann; Grimm, Wolfgang; and Mennicke, Hartmut, 5,331,358, Cl. 351-232.000.

Carlomagno, Giovanni; Caico, Vincenzo; and Tereo, Edoardo, to Societa Italiana - SIV - S.p.A. Apparatus for the manufacture of sheets of glass having a complex shapecu5,330,549, Cl. 65-182.200.

Carlstrom, Borge, to Hobas Engineering AG. Coupler for connecting two plastic pipes and process and mold for producing the couplercu5,330,238, Cl. 285-291.000.

Carondelet Foundry Company: *See*—
Culling, John H., 5,330,705, Cl. 420-49.000.

Carpentier, Philip E.: *See*—
Whitlow, Graham A.; Freidhoff, Carl B.; Carpentier, Philip E.; and Wayland, Paul O., 5,330,088, Cl. 229-179.100.

Carr, Philip E.. *See*—
Spiers, Kent; and Carr, Philip E., 5,330,307, Cl. 414-406.000.

Carrau, Juan L.; Dillon, Aldo J. P.; Serafini, Luciana A.; and Pazqual, Miriam S. L-malic acid degrading yeast for wine makingcu5,330,774, Cl. 426-13.000.

Carrier Corporation: *See*—
Bush, James W.; and Beagle, Wayne P., 5,330,334, Cl. 418-55.300.

Carroll, Joseph W., to Kim Manufacturing Company. Two tier framecu5,330,066, Cl. 211-189.000.

Carruthers, John W., II. Security tool absence alarm systemcu5,331,306, Cl. 340-425.500.

Carter, Raymond J.. *See*—
Halverson, Merlin B.; and Carter, Raymond J., 5,330,222, Cl. 280-438.100.

Cartwright, Richard D., to II-Tracker, Inc. Track vehiclecu5,330,019, Cl. 180-9.210.

Case, Sigurd: *See*—
Dey, LaVoyce; and Case, Sigurd, 5,329,995, Cl. 165-153.000.

Case, Steven K.. *See*—
Fishbaine, David; Konicek, John P.; Case, Steven K.; Skunes, Timothy A.; and Jalkio, Jeffrey A., 5,331,406, Cl. 356-375.000.

Casio Computer Co., Ltd.: *See*—
Sato, Jun; and Minamitaka, Junichi, 5,331,112, Cl. 84-609.000.

Cassella Aktiengesellschaft: *See*—
Engelhardt, Friedrich; Funk, Rudiger; Riegel, Ulrich; Ebert, Gerlinde; and Kleiner, Hanss-Jerg, 5,331,059, Cl. 525-340.000.

Cassidy, Mark F.. *See*—
Roberts, Bradley M.; Cassidy, Mark F.; and Zienkiewicz, John W., 5,329,691, Cl. 29-705.000.

Cataler Industrial Co. Ltd.: *See*—
Ishibashi, Kazunobu; Matsumoto, Shinichi; Kondoh, Shiroh; and Utsumi, Yasuhide, 5,330,732, Cl. 423-213.200.

Caternacci, John R.. *See*—
Bowerman, Leonard E.; Chumley, Eugene K.; Owens, Raymond D.; Bartasevich, William E.; Waldo, Robert L.; and Caternacci, John R., 5,329,666, Cl. 15-323.000.

Caterpillar Inc.: *See*—
Tietje, Mark E., 5,330,139, Cl. 248-65.000.
Unseth, Joseph D., 5,330,200, Cl. 277-9.000.

Cattani, Ennio, to Cattani S.p.A. Separator of solid particles for variable discharge fluid flow rates in dental apparatuscu5,330,641, Cl. 210-188.000.

Cattani S.p.A.: *See*—
Cattani, Ennio, 5,330,641, Cl. 210-188.000.

Caulfield, Thomas J.: *See*—
Illig, Carl R.; and Caulfield, Thomas J., 5,330,740, Cl. 424-5.000.

Cavallo, Giovanni: *See*—
Tubaro, Ezio; and Cavallo, Giovanni, 5,330,977, Cl. 514-53.000.

Cavicchi, Bruce T.: *See*—
Chang, Kou-I; and Cavicchi, Bruce T., 5,330,585, Cl. 136-256.000.

Cavicchi, Richard E.: *See*—
Semancik, Stephen; and Cavicchi, Richard E., 5,330,855, Cl. 428-701.000.

Cawley, Clifton M.; and Cawley, Wesley D., to Ohmstede-Cawley, Ltd. Robot means for unloading open boxescu5,330,311, Cl. 414-416.000.

Cawley, Wesley D.: *See*—
Cawley, Clifton M.; and Cawley, Wesley D., 5,330,311, Cl. 414-416.000.

Cedoz, Roger T.: *See*—
Grime, Thomas E.; Baltz, James P.; and Cedoz, Roger T., 5,330,108, Cl. 239-578.000.

Cejnek, Milan, to Autopal s.r.o. Headlights for motor vehiclescu5,331,520, Cl. 362-61.000.

CEMU Bioteknik AB: *See*—
Uhlen, Mathias; and Moks, Tomas, 5,330,914, Cl. 435-270.000.

Centre Suisse D'Electronique et de Microtechnique SA: *See*—
Parriaux, Olivier; DeBergh, Patrick; and Chavanne, Jean-Pascal, 5,331,272, Cl. 324-96.000.

Cepela, Mark A. Orbital implant devicecu5,330,529, Cl. 623-4.000.

Ceram Tech International, Ltd.: *See*—
Bosco, Paul N.; and Fay, Terrance, 5,330,794, Cl. 427-387.000.

Ceramica Filippo Marazzi S.p.A.: *See*—
Marazzi, Filippo; and Paganelli, Mariano, 5,330,939, Cl. 501-32.000.

Ceridis, Anthony A.; Cranfield, John; and Vine, Kyle C., to Heat and Control, Inc. Apparatus for handling elongated productscu5,330,304, Cl. 414-21.000.

Cervin, Craig D.: *See*—
Batdorf, Vern H.; and Cervin, Craig D., 5,330,795, Cl. 427-393.600.

Cha, Kwon-Ho; and Kwon, Oh-Bong, to Hyundai Electronics Industries Co., Ltd.: Current cell for digital-to-analog convertercu5,331,322, Cl. 341-136.000.

Chaduc, Jean-Paul. *See*—
Dacquay, Bruno; and Chaduc, Jean-Paul, 5,331,649, Cl. 372-23.000.

Chae, Yu S.. *See*—
Baek, Myung C.; and Chae, Yu S., 5,330,123, Cl. 242-346.100.

Chaigne, Jerome; and Borel, Ren', to Salomon S.A. Ski bootcu5,329,703,a, Cl. 36-120.000.

Chakravarty, Prasun K.: *See*—
Allen, Eric E.; Chakravarty, Prasun K.; de Laszlo, Stephen E.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,330,987, Cl. 514-258.000.

Chambers, Thomas V.: *See*—
Phillips, Thomas S.; Costa, Kevin D.; Russ, Werner; and Chambers, Thomas V., 5,330,539, Cl. 8-549.000.

Chan, Andy P.. *See*—
Miller, Michael J.; Chan, Andy P.; Stodieck, Robert W.; and Mick, John R., 5,331,645, Cl. 371-37.100.

Chan, Hing C., to Pratt & Whitney Canada, Inc. Method for regulating fuel flow in a gas turbine enginecu5,329,759, Cl. 60-39.060.

Chan, Kevin K.; Dhong, Sang H.; Kern, Dieter P. E.; and Lee, Young H., to International Business Machines Corporation. Asymmetric multilayered dielectric material and a flash EEPROM using the samecu5,331,189, Cl. 257-321.000.

Chan, King W.: *See*—
Sylvester, Robert L.; Johnson, Randall C.; Smith, Gregory V.; Chan, King W.; Middlebrooks, Willis B., III; Visaria, Jawahar K.; Wilson, Robert M.; and Bieberbach, George, 5,329,886, Cl. 122-32.000.

Chan, Tsiu C.; and Bishop, William A., to SGS-Thomson Microelectronics, Inc. Method for fabricating semiconductor circuitscu5,330,933, Cl. 437-193.000.

Chang, Kou-I; and Cavicchi, Bruce T., to Spectrolab, Inc. Gallium arsenide/aluminum gallium arsenide photocell including environmentally sealed ohmic contact grid interface and method of fabricating the cellcu5,330,585, Cl. 136-256.000.

Chang, Kwei T. Expansible cyclone stovecu5,329,919, Cl. 126-275.00E.

Chang, Sheldon S. L., to Research Foundation of State University of New York, The. Electrical pulse operated laser sampling light amplifiercu5,331,455, Cl. 359-344.000.

Chang, Shu-Kong; and Hsu, Chaur-Jian, to Schlumberger Technology Corporation. Methods and apparatus for discrete-frequency tube-wave logging of boreholescu5,331,604, Cl. 367-31.000.

Chang, Suk K.; Seo, In S.; and Hong, Dae W., to Lucky Limited. Polyolefinic resin composition having superior paintabilitycu5,331,046, Cl. 525-71.000.

Chao, Sherman S.; and Attari, Amir, to Gas Research Institute. Supported sorbents for removal and recovery of arsenic from gasescu5,330,560, Cl. 95-95.000.

Chapman, David M.: *See*—
Wu, Jianxin; Chapman, David M.; and Gatte, Robert R., 5,330,736, Cl. 423-709.000.

Chapman, Gordon R.; Andruik, Donald R.; Van Matre, James V.; Stenzel, Andre; Logan, Robert J.; McCrory, Edwin D.; Singleton, Michael W.; and Richmond, Robert M., to Gas Research Institute. System and method for removing asbestos particles from a slurrycu5,330,657, Cl. 210-712.000.

Charbonnages De France (Etablissement Public): *See*—
Blondin, Jacques; and Baalbaki, Oussama, 5,330,572, Cl. 106-705.000.

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Agram, Daniel; Charbonnel, Jean-Louis; Joly, Philippe G. E.; Miraucourt, Gerard G.; Naudet, Jacky S.; and Prato, Jean-Claude, 5,330,324, Cl. 416-220.00R.

Charlton, Thomas J.; Seed, Trent R.; and Seed, Richard W. System for forming and polishing grooves in glass panelscu5,329,735, Cl. 51-283.00R.

Charmot, Dominique; and Reeb, Roland, to Rhone-Poulenc Chimie. Polyoxyalkyleneamine-neutralized, low MFFT aqueous dispersions of ethylenic/carboxylic polymerscu5,331,042, Cl. 524-556.000.

Charron, Francois E.; and Oyen, Gerald O. S. Shock absorbent in-line roller skatecu5,330,208, Cl. 280-11.220.

Chartered Semiconductor Manufacturing Pte Ltd.: *See*—
Chi, Keh-Fei C., 5,330,930, Cl. 437-60.000.

Chavanne, Jean-Pascal: *See*—
Parriaux, Olivier; DeBergh, Patrick; and Chavanne, Jean-Pascal, 5,331,272, Cl. 324-96.000.

Chen, Chao F., to Kalloy Industrial Co., Ltd. Wedge-nut assembly for fastening bicycle stem tube in steerer tubecu5,330,302, Cl. 411-79.000.

Chen, Chin-Hsiang. Flashlightcu5,331,528, Cl. 362-205.000.

Chen, Jen-Chi: *See*—
Lavoie, Alvin C.; Chen, Jen-Chi; Chung, Chao-Jen; Lorah, Dennis P.; Sperry, Peter R.; and Gross, Andrew W., 5,331,025, Cl. 523-437.000.

Chen, Jiann H.; Chen, Tsang J.; and DeMejo, Lawrence P., to Eastman Kodak Company. Polysiloxane containing polyurethane and coated articles useful as toner fusing memberscu5,330,840, Cl. 428-423.100.

Chen, Joseph. Musical boxcu5,331,110, Cl. 84-95.200.

Chen, Kun-Chao. Anti-theft device for a vehiclecu5,329,793, Cl. 70-209.000.

Chen, Kun-Luh: *See*—
Huang, Heng S.; Chen, Kun-Luh; Wu, Te-Sun; and Lo, Han-Shen, 5,330,924, Cl. 437-43.000.

Chen, Shih-Hsin: *See*—
Hsu, Chi-Hsueh; and Chen, Shih-Hsin, 5,330,026, Cl. 180-181.000.

Chen, Su-Min. Dual push-pull induction heating drive circuitcu5,331,127, Cl. 219-661.000.

Chen, Tsang J.: *See*—
Chen, Jiann H.; Chen, Tsang J.; and DeMejo, Lawrence P., 5,330,840, Cl. 428-423.100.

Cheney, William A.; and Spurgin, Wendell P., to United Air Specialists, Inc. Method and apparatus for electrostatically cleaning particulates from aircu5,330,559, Cl. 95-63.000.

Cheng, Boching; and Yang, Rosa L., to Electric Power Research Institute. Hafnium alloys as neutron absorberscu5,330,589, Cl. 148-421.000.

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Narita, Mitsuru; Tamura, Tsuneo; and Kitagawa, Seizou, 5,330,863, Cl. 430-58.000.
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Morigaki, Masakazu; Yoshioka, Yasuhiro; and Seto, Nobuo, 5,330,888, Cl. 430-551.000.
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Fujita, Yoshitaka; and Tsuda, Keiichi, to Nec Corporation. Renewal method and apparatus for AU-4 and TU-3 pointers of synchronous digital hierarchycu5,331,630, Cl. 370-58.100.
Fujitani, Mitsuhiro; Saba, Toshikazu; and Fukuyama, Tatsuo, to Sumitomo Wiring Systems, Ltd. Lever-type connectorcu5,330,411, Cl. 439-157.000.
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Nou, Hiroshi; Wanou, Masahiro; Ogasawara, Masashi; Ikeda, Masae; Suematsu, Nobuo; Sakai, Shino; Ishii, Akihiko; and Kamaji, Hideki, 5,331,383, Cl. 355-274.000.
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Fukuda, Kenichi; Tarumi, Yasuo; Inomata, Hiroshi; and Yamamoto, Yasushi, to Shin-Etsu Chemical Co., Ltd. Siloxane compoundscu5,331,076, Cl. 528-27.000

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Fukuda, Naoya; Sagara, Tadashi; and Ishigaki, Mitsuaki, to NGK Insulators, Ltd. Head core shder for rigid magnetic disk drivecu5,331,494, Cl. 360-103.000

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Funabashi, Hideo; Tanaka, Akira; Ohnishi, Rikuo; Kasahara, Toshikazu; and Yamawaki, Takashi, to Idemitsu Petrochemical Company, Ltd. Method for producing polyolefincu5,330,949, Cl. 502-111.000

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Futamura, Shoji; and Murata, Chikara, to Institute of Technology Precision Electrical Discharge. Cassette changing apparatus for index-feeding machining systemscu5,330,409, Cl. 483-29.000

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Koszyk, Francis J.; and Mueller, Richard A., 5,331,096, Cl. 546-115.000.

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Gallant, Ben J., to American Dental Technologies, Inc. Dental treatment systemcu5,330,354, Cl. 433-88.000.

Gambino, Richard J.; Ruf, Ralph; and Zeldov, Elia, to International Business Machines Corporation. Magnetic STM with a non-magnetic tipcu5,331,589, Cl. 365-151.000.

Ganesan, Apparajan; Ferguson, Paul F., Jr.; and Robertson, Davis H., to Analog Devices, Inc. Gain linearity correction for MOS circuitscu5,331,221, Cl. 307-491.000

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Ray, Glenn A., 5,329,728, Cl. 47-67.000

Gardineer, Bayard; and Vilkomerson, David, to Echo Cath, Inc. Apparatus and method for locating an interventional medical device with a ultrasound color imaging systemcu5,329,927, Cl. 128-660.030

Gardner, Michael J.; Kachlic, Jerry D., and O'Brien, Paul M., to Molex Incorporated. IC pack connector apparatus with switch meanscu5,330,363, Cl. 439-188.000

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Garlick, George F.; and Dunham, Glen C., to Advanced Imaging Systems. Ultrasonic holography imaging method and apparatuscu5,329,817, Cl. 73-605.000

Garner, Anthony: *See—*
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Chao, Sherman S.; and Attari, Amir, 5,330,560, Cl. 95-95.000
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Faulkner, Henry B., Kesseli, James B.; Swarden, Michael C.; and Jansen, Willem, 5,329,757, Cl. 60-39.020

Gatarz, Gregory M.; and Marsilio, Ronald M., to American Standard Inc. Molding apparatuscu5,330,339, Cl. 425-116.000

Gates, Jon A. Dual continuous feed lap joint milling table for papercu5,330,299, Cl. 409-138.000.

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Gec Alsthom SA: *See—*
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Geeraert, Emmanuel H. C. A., to N.V. Recdo S.A. Method for producing glass fiber reinforced plasterboardcu5,330,691, Cl. 264-42.000.

Geishert, Edwin C., Sr. Golf ball and tee positioner apparatuscu5,330,178, Cl. 273-32.500.

Geke, Juergen; Zange, Bernhard; Rehm, Hans; Fehr, Hans; Molz, Thomas, Buick, Kurt; Bruegel, Emil; and Huesemann, Lutz, to Henkel Kommanditgesellschaft auf Aktien. Aqueous coating for protecting spray cabins from enamel overspray and process for producing itcu5,330,564, Cl. 106-2.000.

Geldmacher, Joachim. Apparatus for continuously separating solid and liquid fractions of a mixture of solid and liquid fractionscu5,330,645, Cl. 210-327.000.

Geltz, Charles E., to Zenith Products Corporation. Spinning shower rod mechanismcu5,330,061, Cl. 211-105.400.

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Aycock, David F.; and Ting, Sai-Pei, 5,331,060, Cl. 525-397.000.
Black, James E., Jr.; and Zernik, Uri, 5,331,556, Cl. 364-419.080.
Brown, Herbert J.; Griebel, Ronald F.; Kumar, Ajith K.; McElhenny, Stuart W.; and Grinch, Dean S., 5,331,261, Cl. 318-376.000.
Cocoma, John P.; and Farrall, George A., 5,331,254, Cl. 315-248.000.
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Lloyd, Robert F.; Kennedy, Thomas E.; and Wilbricht, Christopher J., 5,331,552, Cl. 364-413.150.
Northrop, Randy; and Wenderoth, Kent, 5,331,085, Cl. 528-491.000.
Singh, Raj N.; and Morrison, William A., 5,330,854, Cl. 428-698.000.
Sumpter, Chris A.; Lewis, Larry N.; and Lawrence, William B., 5,331,075, Cl. 528-15.000.
Thomas, Lewis J., III; and Harsh, Michael J., 5,329,930, Cl. 128-661.010.
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Doll, Gary L., 5,330,611, Cl. 117-105.000.
Drennen, David B., 5,330,040, Cl. 192-58.00B.
Foster, Michael R., 5,330,728, Cl. 422-177.000.
Haka, Raymond J., 5,330,038, Cl. 192-3.290.
McClanahan, Mark R.; Dinger, Bruce R.; and Duce, Richard W., 5,329,806, Cl. 73-31.050.
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Sawert, Ulf; Coha, Timothy F.; Zimmerman, William S.; and Rasmussen, Gregory K., 5,329,899, Cl. 123-198.0DB.
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Gentry, John T., to Positronic Industries, Inc. Method and apparatus for turning a concave cut in a workpiececu5,329,697, Cl. 29-874.000.

Gentry, Scott B.; Mazur, Joseph F.; and Blackburn, Brian K., to TRW Vehicle Safety Systems Inc. Method and apparatus for detecting an out of position occupantcu5,330,226, Cl. 280-735.000.

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George, Pascal; Marabout, Benoit; Froissant, Jacques; and Merly, Jean Pierre, to Synthelabo. 2-amino-N-[[4-(aminocarbonyl)pyrimidin-2-yl]amino]-alkyl]pyrimidine-4-carboxamide derivatives, their preparation and pharmaceutical compositions containing themcu5,330,985, Cl. 514-252.000.

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Gerstenberg, Klaus W.; and Heitmann, Heinrich, to U.S. Philips Corporation. Magneto-optical memory and method of producing such a memorycu5,330,852, Cl. 428-694.0DE.

Geston, Douglas R.; and Hrovat, Albert C., to Honeywell Inc. Dither signal remover for a dithered ring laser angular rate sensor utilizing an adaptive digital filtercu5,331,402, Cl. 356-350.000.

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Giacin, Kenneth J.; and Joseph Amy L., to Church & Dwight Co., Inc. Liquid mouthwash containing a particulate bicarbonate suspensioncu5,330,749, Cl. 424-49.000.

Giacobbe, James, to Himont Incorporated. Olefin polymer filmscu5,331,047, Cl. 525-88.000.

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Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.
Ikegaya, Tadahiko: *See—*
Matsui, Tsunehiro; Maei, Yoshihiro; Ikegaya, Tadahiko; Sakayama, Takashi; and Kamiyama, Yasuhiro, 5,331,424, Cl. 358-404.000.
Ikemoto, Isao: *See—*
Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Noda, Shinya; Kobayashi, Kazunori; and Shoji, Takeo, 5,331,372, Cl. 355-200.000.
Ikemoto, Manabu; and Kawabata, Hitomi, to Fujicopian Company, Ltd. Transfer printing methodcu5,330,963, Cl. 503-227.000.
Illig, Carl R., to Sterling Winthrop Inc. Iodinated benzoyl acetals and ketals for x-ray imagingcu5,330,739, Cl. 424-5.000.
Illig, Carl R.; and Caulfield, Thomas J., to Sterling Winthrop Inc. Compositions of iodoaniline derivatives in film-forming materials for visualization of the gastrointestinal tractcu5,330,740, Cl. 424-5.000.
Imai, Chizuko: *See—*
Matsumoto, Hiromitsu; and Imai, Chizuko, 5,329,912, Cl. 123-568.000.
Imai, Ryuji: *See—*
Kuroda, Masao; Imai, Ryuji; and Asano, Toshiya, 5,331,204, Cl. 257-758.000.
Imamura, Makoto: *See—*
Komai, Tomoko; Imamura, Makoto; Sekai, Yuji; and Inoue, Tetsuo, 5,331,492, Cl. 360-113.000.
Imamura, Satoru: *See—*
Maeda, Shuichi; Imamura, Satoru; Mitsuhashi, Kazuo; and Tsukahara, Takako, 5,330,542, Cl. 8-639.000.
Imaruoka, Satoko: *See—*
Oda, Mitsunori; Kikkawa, Kazutoshi; Tanaka, Akinori; Imaruoka, Satoko; and Yoshinaka, Shigeo, 5,331,011, Cl. 514-555.000.
Immuno Aktiengesellschaft: *See—*
Philapitsch, Anton; and Schwarz, Hans P., 5,330,907, Cl. 435-217.000.
Impact Products, Inc.: *See—*
Davenport, Robert A., 5,330,081, Cl. 222-207.000.
Imperial College of Science, Technology & Medicine: *See—*
Murphy, Richard J.; Dickinson, David J.; and Turner, Philip, 5,330,847, Cl. 428-537.100.
Imran, Mir A., to Cardiac Pathways Corporation. Control mechanism and system and method for steering distal extremity of a flexible elongate membercu5,330,466, Cl. 606-13.000.
Imran, Mir A.: *See—*
Clauson, William L.; and Imran, Mir A., 5,329,931, Cl. 128-716.000.
Powles, Trevor J.; and Imran, Mir A., 5,330,443, Cl. 604-240.000.
Imthurn, George P.: *See—*
Dubbelday, Wadad B.; Flesner, Larry D.; and Imthurn, George P., 5,330,918, Cl. 437-2.000.
Inagaki, Shoji: *See—*
Enomoto, Minoru; Inagaki, Shoji; Okada, Yasuhiro; Sakamoto, Fumio; Ise, Noritaka; Ito, Masashi; and Yoshikura, Fuyuhiko, 5,330,168, Cl. 269-329.000.
Industrial Technology Research Institute: *See—*
Tseng, Horng-Huei, 5,330,928, Cl. 437-52.000.
Ingenjorsfirman R. Frykhult AB: *See—*
Frykhult, Rune, 5,330,646, Cl. 210-331.000.
Ingersoll-Rand Company: *See—*
Gavigan, William J.; Snyder, Craig L.; Tufano, Frank J.; and Miller, Ronald S., 5,330,587, Cl. 148-212.000.
Kimberlin, Robert R.; and Bodell, Steven W., 5,330,202, Cl. 279-19.100.
Sell, Leslie J., 5,329,827, Cl. 74-553.000.
Sell, Leslie J., 5,329,829, Cl. 74-553.000.
Ingerson, Ralph, Jr.: *See—*
Ransom, George E., Jr.; Ransom, George E., III; and Ingerson, Ralph, Jr., 5,330,351, Cl. 432-103.000.
Inno Design, Inc.: *See—*
Kim, Young S., 5,330,141, Cl. 248-98.000.
Inomata, Hiroshi: *See—*
Fukuda, Kenichi; Tarumi, Yasuo; Inomata, Hiroshi; and Yamamoto, Yasushi, 5,331,076, Cl. 528-27.000.
Inomata, Hiroyuki: *See—*
Tabuchi, Kazuhiro; Inomata, Hiroyuki; and Yamauchi, Takashi, 5,330,053, Cl. 206-455.000.
Inoue, Michio: *See—*
Hiramitsu, Tetsushi; Inoue, Michio; Sonobe, Akihiko; Yamamoto, Tadashi; Ogawa, Hiroshi; and Ikeda, Takanobu, 5,330,223, Cl. 280-728.00A.
Inoue, Shinichiro, to Komatsu Ltd. Hot diffusion welding methodcu5,330,097, Cl. 228-194.000.
Inoue, Shintaro: *See—*
Ohmoto, Hiroshi; Inoue, Shintaro; and Iwamoto, Seiichi, 5,330,894, Cl. 435-7.400.
Inoue, Takao: *See—*
Fuma, Masato; Tamura, Yutaka; Sugihara, Nagatoshi; Inoue, Takao; and Okamoto, Miyuki, 5,331,617, Cl. 369-54.000.
Inoue, Tetsuo: *See—*
Komai, Tomoko; Imamura, Makoto; Sakai, Yuji; and Inoue, Tetsuo, 5,331,492, Cl. 360-113.000.
Inoue, Yoshinori, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having IO line pair to be equalized and divided into blocks and operating method thereofcu5,331,595, Cl. 365-203.000.
Inq. Nino Ferrari USA Inc.: *See—*
Ferrari, Franco, 5,330,288, Cl. 405-55.000.
Inschlag, Josef, to U.S. Philips Corporation. Magnetic tape apparatus with simplified tape reel braking after tape thread-incu5,330,129, Cl. 242-355.100.
Institut Francais Du Petrole: *See—*
Guesnon, Jean, 5,330,294, Cl. 405-224.200.
Institut National De La Sante Et De La Recherche Medicale: *See—*
Mordon, Serge; Brunetaud, Jean-Marc; and Guillet, Hubert, 5,330,517, Cl. 607-89.000.
Institute of Technology Precision Electrical Discharge: *See—*
Futamura, Shoji; and Murata, Chikara, 5,330,409, Cl. 483-29.000.
Instron Corporation: *See—*
McMahon, Stephen M., 5,329,820, Cl. 73-833.000.
Integrated Device Technology, Inc.: *See—*
Miller, Michael J.; Chan, Andy P.; Stodieck, Robert W.; and Mick, John R., 5,331,645, Cl. 371-37.100.
Intel Corporation: *See—*
Golin, Stuart J., 5,331,414, Cl. 348-390.000.
Inter-Source Recovery Systems, Inc.: *See—*
Nemedi, Robert J., 5,330,637, Cl. 210-232.000.
Interlott, Inc.: *See—*
Wells, L. Rogers, 5,330,185, Cl. 273-138.00A.
International Business Machines Corporation: *See—*
Aboelfotoh, Mohamed O.; Brady, Michael J.; and Krusin-Elbaum, Lia, 5,330,592, Cl. 148-536.000.
Acovic, Alexandre; Hsu, Ching-Hsiang; Wordeman, Matthew R.; and Wu, Being S., 5,331,188, Cl. 257-298.000.
Chan, Kevin K.; Dhong, Sang H.; Kern, Dieter P. E.; and Lee, Young H., 5,331,189, Cl. 257-321.000.
Childers, Edwin R.; Anderson, Dale H.; and Shafaat, Syed T., 5,331,627, Cl. 369-291.000.
Chu, Shao-Fu S.; Kim, Kyong-Min; Mei, Shaw-Ning; Nastasi, Victor R.; and Ratanaphanyarat, Somnuk, 5,331,199, Cl. 257-587.000.
Cideciyan, Roy D.; and Eleftheriou, Evangelos S., 5,331,320, Cl. 341-56.000.
Dickson, LeRoy D.; and Krantz, Matthias C., 5,331,445, Cl. 359-15.000.
Dobuzinsky, David M.; Harmon, David L.; Kasi, Srinandan R; Kenney, Donald M.; Van Nguyen, Son; Nguyen, Tue; and Pan, Pai-Hung, 5,330,935, Cl. 437-239.000.
Elko, David A.; Frey, Jeffrey A.; Helffrich, Audrey A.; Nick, Jeffrey M.; and Swanson, Michael D., 5,331,673, Cl. 395-575.000.
Fry, Scott M.; Nylander-Hill, Pamela R.; Lee, Michael M.; and Paranjape, Sushama M., 5,331,476, Cl. 360-53.000.
Gambino, Richard J.; Ruf, Ralph; and Zeldov, Elia, 5,331,589, Cl. 365-151.000.
Gregory, Thomas A.; Johary, Ajay; Keller, Christopher G.; Lecander, Ronald G.; and Mayerle, James J., 5,331,487, Cl. 360-97.020.
Harder, Christoph; Hausser, Stefan; and Meier, Heinz, 5,331,655, Cl. 372-45.000.
Klara, Walter S.; Montegari, Frank A.; and Sager, Gordon S., 5,331,216, Cl. 307-243.000.
Smith, Gordon L., 5,331,643, Cl. 371-22.300.
Temoshenko, Leo; and Weddington, Harry F., Jr., 5,331,574, Cl. 364-551.010.
Valley, Stephen R.; and Warren, Jeffrey R., 5,331,642, Cl. 371-5.200.
International Fuel Cells Corporation: *See—*
Sederquist, Richard A.; Trocciola, John C.; Farris, Paul J.; and Smith, Murdo J., II, 5,330,857, Cl. 429-13.000.
Trocciola, John C.; Schroll, Craig R.; and Lesieur, Roger R., 5,330,727, Cl. 422-177.000.
International Paper Company: *See—*
Beales, Jonathan T.; and Stier, David E., 5,330,099, Cl. 229-207.000.
International Trading S.R.L.: *See—*
Barea, Tiziano, 5,331,564, Cl. 364-470.000.
Intertherapy, Inc.: *See—*
Webler, William E.; and Dinh, Viet P., 5,330,444, Cl. 604-265.000.
Intocast GmbH Feuerfestprodukte und Giesshilfsmittel: *See—*
Eitel, Wilhelm, 5,330,690, Cl. 264-30.000.
Inui, Toshiharu: *See—*
Miyagawa, Masashi; Takenouchi, Masanori; Shirota, Katsuhiro; Ohkuma, Norio; Takizawa, Yoshihisa; Inui, Toshiharu; and Nakajima, Kazuhiro, 5,331,344, Cl. 347-63.000.
Inui, Tsuneo: *See—*
Tanaka, Atsuo; Hanabusa, Tetsuhiro; Kojo, Harunori; and Inui, Tsuneo, 5,330,605, Cl. 156-309.900.
Iowa State University Research Foundation, Inc.: *See—*
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E.; Schwartzkopf, Louis A.; and Sanders, Steven C., 5,330,969, Cl. 505-431.000.
IPSCO Enterprises Inc.: *See—*
Blose, Thomas L.; Britten, David L.; Humphreys, Kevin J.; and Kaiser, Trent M. V., 5,330,239, Cl. 285-328.000.

Irikura, Takayuki; and Suzuki, Minoru, to Japan Tobacco Inc. Apparatus for discharging defective filter cigarettes during the manufacture of filter cigarettescu5,329,945, Cl. 131-94.000.

Isambourg, Patrick: *See—*
Donche, Alain; Vaussard, Alain; and Isambourg, Patrick, 5,330,015, Cl. 175-61.000.

Ise, Noritaka: *See—*
Enomoto, Minoru; Inagaki, Shoji; Okada, Yasuhiro; Sakamoto, Fumio; Ise, Noritaka, Ito, Masashi; and Yoshikura, Fuyuhiko, 5,330,168, Cl. 269-329.000.

Ishibashi, Hideo; Oshima, Toshiyuki; Tamura, Rie; Yamamoto, Satoshi; and Izumo, Takaharu, to Nippon Paint Co., Ltd. Reaction injection molding polyurea resin compositioncu5,331,051, Cl. 525-131.000.

Ishibashi, Kazunobu; Matsumoto, Shinichi; Kondoh, Shiroh; and Utsumi, Yasuhide, to Toyota Jidosha Kabushiki Kaisha; Kabushiki Kaisha Toyota Chuo Kenkyusho; Cataler Industrial Co. Ltd.; and Tosoh Corporation. Method for purifying exhaust gasescu5,330,732, Cl. 423-213.200.

Ishibashi, Kenzo: *See—*
Ishida, Takashi; O'Hara, Shunji; Ishibashi, Kenzo; and Furutani, Tadashige, 5,331,620, Cl. 369-59.000.

Ishida, Keiichi: *See—*
Takatori, Masahiro; Nakano, Yukio; Ishida, Keiichi; Mori, Takashi; Ashi, Yoshihiro; Kanno, Tadayuki; and Ueda, Hiromi, 5,331,639, Cl. 370-100.100.

Ishida, Takashi; O'Hara, Shunji; Ishibashi, Kenzo; and Furutani, Tadashige, to Matsushita Electric Industrial Co., Ltd. Recording method and recording apparatus for optical diskcu5,331,620, Cl. 369-59.000.

Ishida, Tetsurou: *See—*
Togai, Kazuhide; and Ishida, Tetsurou, 5,329,914, Cl. 123-688.000.

Ishigaki, Mitsuaki: *See—*
Fukuda, Naoya; Sagara, Tadashi; and Ishigaki, Mitsuaki, 5,331,494, Cl. 360-103.000.

Ishihara, Hideki; Hatton, Hiroshi; and Ono, Kenichi, to Hoechst Japan Limited. Anti-focosylceramide monoclonal antibodycu5,331,093, Cl. 530-387.500.

Ishihara, Yukihito: *See—*
Hara, Hirotaka; Ishihara, Yukihito; and Kokubo, Masaru, 5,331,583, Cl. 364-724.010.

Ishii, Akihiko: *See—*
Nou, Hiroshi; Wanou, Masahiro; Ogasawara, Masashi; Ikeda, Masae; Suematsu, Nobuo; Sakai, Shino; Ishii, Akihiko; and Kamaji, Hideki, 5,331,383, Cl. 355-274.000.

Ishii, Satoshi; and Ushida, Yuki, to Oki Electric Industry Co., Ltd. Decoder checking circuits suitable for semiconductor memoriescu5,331,644, Cl. 371-25.100.

Ishii, Toshiyuki: *See—*
Ota, Kiyoshi; Misono, Kousuke; and Ishii, Toshiyuki, 5,331,423, Cl. 358-342.000.

Ishikawa, Tsuyoshi: *See—*
Nagaoka, Osamu; and Ishikawa, Tsuyoshi, 5,330,112, Cl. 241-57.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha. *See—*
Sakurai, Akira; Shiotsu, Masahiro; Yano, Toshikazu; Ochi, Masao, and Sugawara, Toshihiro, 5,329,785, Cl. 62-316.000.

Ishino, Tetsuya, to Sanshin Kogyo Kabushiki Kaisha. Jet propulsion systemcu5,330,374, Cl. 440-42.000.

Ishitani, Akihiko, to NEC Corporation. Method of producing a silicon nitride film and method of fabricating a semiconductor devicecu5,330,936, Cl. 437-241.000.

Ishizaki, Akira: *See—*
Miyawaki, Mamoru; Ishizaki, Akira; Momma, Genzo; Yuzurihara, Hiroshi; and Kohchi, Tetsunobu, 5,331,197, Cl. 257-530.000.
Ohzu, Hayao; Suzuki, Toshiji; and Ishizaki, Akira, 5,331,421, Cl. 340-262.000.

Ishizaki, Hiroshi: *See—*
Azuma, Kasufumi; Sonobe, Hideki, Nate, Kazuo; Mizushima, Akiko; Saito, Harunobu; Togawa, Eisei; and Ishizaki, Hiroshi, 5,329,689, Cl. 29-603.000.

Ishizuka, Takayasu: *See—*
Yoshimura, Takashi; Ishizuka, Takayasu; Shiomi, Masayu; Hayashi, Tomoyoshi; Aihoshi, Hiroaki; and Tanaka, Hisanobu, 5,331,302, Cl. 335-78.000.

Ishizuka, Yoshiyuki: *See—*
Yoneda, Shinsaku; Ishizuka, Yoshiyuki; Motobayashi, Naoki; and Okada, Takehiko, 5,331,379, Cl. 355-214.000.

Isobe, Hironobu. *See—*
Nomura, Yoshiya; Kobayashi, Hiroo; Higeta, Akira; Isobe, Hironobu; Shishido, Kazuo; Sato, Minoru; Miyabe, Shigeo; and Miura, Koji, 5,331,373, Cl. 355-200.000.

Isoda, Hiroko; Kawasaki, Yoshihiro; Tanimoto, Morimasa; Dosako, Shunichi; and Idota, Tadashi, to Snow Brand Milk Products Co., Ltd. Bacterial toxin neutralizercu5,330,975, Cl. 514-25.000.

Isover Saint-Gobain. *See—*
Vasseur, Stella, 5,330,591, Cl. 148-427.000.

Istituto Gentili S.p.A.. *See—*
Rosini, Sergio, and Mian, Maurizio, 5,330,981, Cl. 514-159.000.

Itakura, Kenichi: *See—*
Kamada, Mamoru; Ibi, Masaei; Sekiguchi, Tomonobu; Yamamoto, Masashi; Andoh, Noboru; and Itakura, Kenichi, 5,330,269, Cl. 383-210.000.

Ito, Akio *See—*
Ozaki, Kazuyuki; Wakana, Shinichi; Goto, Yoshiro; Ito, Akio; Okubo, Kazuo; Hama, Soichi; Fujii, Akira; and Sato, Yoko, 5,331,275, Cl. 324-757.000.

Ito, Keiichi; Noda, Hirotaka; Hagiwara, Nobutoshi; Taguchi, Naoto; Hatagishi, Yuji; and Matsuura, Toshifumi, to Yazaki Corporation. Low-operating-force connectorcu5,330,362, Cl. 439-157.000.

Ito, Kenji: *See—*
Shimizu, Hiroyuki; and Ito, Kenji, 5,331,300, Cl. 333-202.000.

Ito, Kouichi: *See—*
Hirooka, Kouichi; Ito, Kouichi; and Tanabe, Susumu, 5,330,813, Cl. 156-329.000.

Ito, Masahito; Koujiya, Miyuki; Sarai, Hiroshi; Nakao, Seiya; Nomura, Takao; Kitou, Satoru; Matsuda, Fuminori; Yamada, Susumu; Kuroiwa, Kesato; and Mihara, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Method of producing a metal moldcu5,329,981, Cl. 164-7.200.

Ito, Masashi: *See—*
Enomoto, Minoru; Inagaki, Shoji; Okada, Yasuhiro; Sakamoto, Fumio; Ise, Noritaka, Ito, Masashi; and Yoshikura, Fuyuhiko, 5,330,168, Cl. 269-329.000.

Ito, Masazumi, to Minolta Camera Kabushiki Kaisha. Image forming apparatus for writing a plurality of additional data on a single copy sheetcu5,331,375, Cl. 355-202.000.

Ito, Masumi: *See—*
Danzuka, Toshio; Ito, Masumi; and Tsuchiya, Ichiro, 5,330,548, Cl. 65-3.120.

Ito, Norio; and Mine, Koichi, to Toyota Jidosha Kabushiki Kaisha. Process and apparatus for press-forming tubular container-like article from strip, including forward and backward ironing stepscu5,329,799, Cl. 72-340.000.

Ito, Satoru: *See—*
Kasari, Akira; Ito, Satoru; and Nakamura, Shigeru, 5,330,796, Cl. 427-407.100.

Ito, Takayuki; and Hasushita, Sachio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens systemcu5,331,464, Cl. 359-691.000.

Ito, Takeshi: *See—*
Miyazawa, Azuma; Ito, Takeshi; and Yoshida, Yoichi, 5,331,365, Cl. 354-410.000.

Itoh, Ietoshi, to Sony Corporation. Method and apparatus for generating acceleration and deceleration patterns for robot controlcu5,331,542, Cl. 364-167.010.

Itoh, Kiyoshi, to Fujitsu Limited. Electro-strictive actuatorcu5,331,241, Cl. 310-328.000.

Itoh, Nobuya: *See—*
Yoshimura, Heijiro; Yamazaki, Yukihiro; Takahashi, Yasutsugu; Itoh, Nobuya; Shibayama, Masanobu; Suzuki, Takahisa; and Tsukui, Hiroaki, 5,330,029, Cl. 180-219.000.

Ivanov, Nikolai E.: *See—*
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E., Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.

Iwagawa, Yoshihiro: *See—*
Yahagi, Toshio; Iwagawa, Yoshihiro; Sugimoto, Yoichi; Satoh, Tsuyoshi; and Kojima, Takeshi, 5,329,805, Cl. 73-9.000.

Iwai, Ichiro, to Showa Aluminum Corporation. Brazing agent and a brazing sheet both comprising an aluminum alloy containing a fluxcu5,330,090, Cl. 228-56.300.

Iwai, Kenji; Kawaberi, Seiji; Ueyama, Akihiro; and Watanabe, Junzo, to Sony Corporation. High voltage regulating circuitcu5,331,532, Cl. 363-20.000.

Iwaki Co., Ltd.: *See—*
Kuwabara, Fukuji; Fuse, Akihiro; Iizuka, Hiroshi; and Ogasawara, Akira, 5,330,330, Cl. 417-413.00R.

Iwamoto, Katsuo: *See—*
Komatsubara, Michiro; Hayakawa, Yasuyuki; Iwamoto, Katsuo; Watanabe, Makoto; and Takamiya, Toshito, 5,330,586, Cl. 148-111.000.

Iwamoto, Seiichi: *See—*
Ohmoto, Hiroshi; Inoue, Shintaro; and Iwamoto, Seiichi, 5,330,894, Cl. 435-7.400.

Iwaoka, Kazuo: *See—*
Kamiya, Michiharu; Tachihara, Hisaaki; Otani, Shuji; Yamada, Kenji; Kikuchi, Minoru; Iwaoka, Kazuo; and Kuwata, Kenji, 5,331,504, Cl. 361-301.100.

Iwata, Kinpei: *See—*
Taguchi, Koichi; and Iwata, Kinpei, 5,330,844, Cl. 428-463.000.

Iwaya, Nobuo, to Tokai Rubber Industries, Ltd. Method of patterning a concrete surfacecu5,330,694, Cl. 264-112.000.

Izawa, Hirokazu: *See—*
Egawa, Jiro; Komiya, Kenichi; Okada, Kyoichi; Mori, Hideo; and Izawa, Hirokazu, 5,331,341, Cl. 346-108.000.

Izumi, Michihiro, to Canon Kabushiki Kaisha. Telephone exchange apparatus with communication line clockingcu5,331,667, Cl. 375-107.000.

Izumi Products Company: *See—*
Uchiyama, Hiromi; and Okabe, Masaki, 5,329,702, Cl. 30-346.510.

Izumo, Takaharu. *See—*
Ishibashi, Hideo; Oshima, Toshiyuki; Tamura, Rie; Yamamoto, Satoshi; and Izumo, Takaharu, 5,331,051, Cl. 525-131.000.

J.M. Voith GmbH: *See—*
Schiel, Christian, 5,329,847, Cl. 100-162.00B.
Schweiss, Peter; and Dorfmuller, Hans-Dieter, 5,330,655, Cl. 210-703.000.

Jackson, Craig M., to American National Red Cross. Safety device for use in collecting fluid samplescu5,330,439, Cl. 604-192.000.

Jacobs Chuck Technology Corporation: *See—*
Huff, Robert O.; Jordan, Paul T.; and Forquer, William F., 5,330,204, Cl. 279-62.000.

Jacobsen, Jeffrey: *See—*
Spitzer, Mark B.; and Jacobsen, Jeffrey, 5,331,149, Cl. 250-221.000.

Jacobsen, William M. W., Jr.; Belt, L. Carl; and De Pass, Ernest, to Conwed Fibers, a division of Leucadia Inc. Wood fiber mat for soil applicationscu5,330,828, Cl. 428-286.000.

Jaeger, Hans-Ulrich: *See—*
Kroner, Matthias; Hartmann, Heinrich; Baur, Richard; Schwendemann, Volker; Jaeger, Hans-Ulrich; and Perner, Johannes, 5,330,675, Cl. 252-174.230.

Jaegers, Dirk: *See—*
Hartel, Robert; Hoehne, Karl-Josef; Hermanns, Ferdinand-Josef; Henze, Herbert; Knors, Herbert; Engelhardt, Dietmar; Zitzen, Wilhelm; Veyes, Manfred; Merkens, Herbert; Weissenfels, Wolfram; Ruetten, Hermann; Jaegers, Dirk; and Pommer, Berndt, 5,329,822, Cl. 73-862.610.

Jahnke, Richard W.; Kocurek, Lawrence J.; and Bush, James H., to Lubrizol Corporation, The. Compositions containing combinations of surfactants and derivatives of succinic acylating agent or hydroxyaromatic compounds and methods of using the samecu5,330,662, Cl. 252-8.551.

Jain, Rajendra K.: *See—*
Yang, Henry; Ramakrishnan, K. K.; Spinney, Barry; and Jain, Rajendra K., 5,331,636, Cl. 370-85.500.

Jajima, Kazuyoshi: *See—*
Yamase, Osamu; Makita, Yasuyuki; and Jajima, Kazuyoshi, 5,330,563, Cl. 95-163.000.

Jakob, Matthias: *See—*
Klimt, Ulrich; Halasy-Wimmer, Georg; Ruckert, Helmut; and Jakob, Matthias, 5,330,035, Cl. 188-73.360.

Jalkio, Jeffrey A.: *See—*
Fishbaine, David; Konicek, John P.; Case, Steven K.; Skunes, Timothy A.; and Jalkio, Jeffrey A., 5,331,406, Cl. 356-375.000.

Jamerson, Doug L. Drive system for carding machine doffer, crush and calendar rollscu5,329,669, Cl. 19-98.000.

James River Corporation of Virginia: *See—*
Grischenko, Gregory I., 5,330,126, Cl. 242-559.000.

Jamison, Barry; and Stein, Eric, to Buckhorn Material Handling Group, Inc. Bi-fold lid for containercu5,330,069, Cl. 220-335.000.

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Jan, William Y.: *See—*
Cunningham, John E.; Jan, William Y.; Rentschler, John A.; and Warwick, Colin A., 5,330,629, Cl. 204-192.170.

Janczak, Andrzej, to Krone Aktiengesellschaft. Cutting and clamping terminal elementcu5,330,367, Cl. 439-402.000.

Janoff, Andrew S.; Bolcsak, Lois E.; Weiner, Alan L.; Tremblay, Paul A.; Bergamini, Michael V. W.; and Suddith, Robert L., to Liposome Company, Inc., The. Entrapment of water-insoluble compound in alpha tocopherol-based vesiclescu5,330,689, Cl. 264-4.300.

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Janssen Pharmaceutica Inc.: *See—*
Gole, Dilip J.; Levinson, R. Saul; Carbone, James; and Davies, J. Desmond, 5,330,763, Cl. 424-484.000.
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Meert, Theo F., 5,330,988, Cl. 514-258.000.

Japan Elanco Company Limited: *See—*
Yamamoto, Taizo; and Konishi, Hirokazu, 5,329,749, Cl. 53-525.000.

Japan Tobacco Inc.: *See—*
Irikura, Takayuki; and Suzuki, Minoru, 5,329,945, Cl. 131-94.000.

Jarvis, Wilbur W.; and Bertsch, Roger J., to Whirlpool Corporation. Spray arm inlet for dishwashercu5,330,102, Cl. 239-228.000.

Jarwala, Najmi T.; and Yau, Chi W., to AT&T Bell Laboratories. Method and apparatus for testing edge connector inputs and outputs for circuit boards employing boundary scancu5,331,274, Cl. 324-158.100.

Jasinski, Leon, to Motorola, Inc. Method and apparatus for transmitting and receiving encoded datacu5,331,431, Cl. 358-462.000.

Jason, Inc.: *See—*
Scheider, Alfred E.; and Warner, R. Brown, 5,329,730, Cl. 51-334.000.

Jean, Buford R.; Warren, Gary L.; and Whitehead, F. Lynn, to Baker Hughes Incorporated. Meter and method for in situ measurement of the electromagnetic properties of various process materials using cutoff frequency characterization and analysiscu5,331,284, Cl. 324-639.000.

Jeenes, David N.: *See—*
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Jeffery, John: *See—*
Allum, Andrew; Jeffery, John; Sayers, Ian C.; and Spence, Michael D., 5,330,604, Cl. 156-304.700.

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Roark, Jeffrey O.; Styke, Peter V.; Mattingly, Robert L.; and Jelgerhuis, Drew G., 5,331,518, Cl. 362-61.000.

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Jensen, Scott P.; Gillispie, Mitchel J.; and McLean, Robert A., to Energy Conversions, Inc. Low emission duel fuel valve structurecu5,329,906, Cl. 123-470.000.

Jensen, Soren. Package dimensional volume and weight determination system for conveyorscu5,331,118, Cl. 177-25.140.

Jeong, Seung K.: *See—*
Kwun, Seung G.; Jeong, Seung K.; Park, Jim S.; and Choe, Jae Y., 5,331,239, Cl. 310-68.00R.

Jeong, Tae Y. Fuel activation apparatus using magnetic bodycu5,329,911, Cl. 123-538.000.

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Jewell, Jack L.; and Olbright, Greg R., to Photonics Research Incorporated. Polarized surface-emitting lasercu5,331,654, Cl. 372-45.000.

Jidosha Kiki Co., Ltd.: *See—*
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Jimbo, Shinichiro: *See—*
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Jochmann, Ludwig; and Hess, Josef, to Hesco AG, Industrieconsulting & Industrievertretungen. Method for the reduction of radon load in closed spacescu5,331,022, Cl. 523-136.000.

Jody, Bassam J.: *See—*
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Joh, Yoshinobu: *See—*
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Johnsen, Tyrone A., to Sundstrand Corporation. Apparatus for containment and cooling of a core within a housingcu5,331,238, Cl. 310-58.000.

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Johnson, David: *See—*
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Johnson, Jack W.; and Brody, John F., to Exxon Research and Engineering Company. Silica pillared micascu5,330,734, Cl. 423-328.300.

Johnson, James R.; Orfield, Mary L.; and Mueller, William J., to Hoeganaes Corporation. Method of making lubricated metallurgical powder compositioncu5,330,792, Cl. 427-217.000.

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Johnson, Kimball W. Exercising devicecu5,330,402, Cl. 482-62.000.

Johnson, Lyle G.; and Midori, Yoshiki, to Seagate Technology, Inc. Gimbal for a flexure for top-terminated headscu5,331,489, Cl. 360-104.000.

Johnson, Mark A.; Pokora, Alexander R.; and Henry, Joseph B., to Mead Corporation, The. Method for repulping fibrous materials containing crosslinked polyamide wet strength agents with enzymecu5,330,619, Cl. 162-5.000.

Johnson, Randall C.: *See—*
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Joly, Philippe G. E.: *See—*
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Jones, Aaron. Synchronized filter devicecu5,331,361, Cl. 354-132.000
Jones, Colin H. Cylinder head cleaning machinecu5,329,951, Cl. 134-104.400
Jones, Leon; Hoffa, Gerald F.; Wilson, David E.; Baych, Les; and Snyder, David, to Columbus McKinnon Corporation. Articulated pivoting tie-down devicecu5,330,300, Cl. 410-106.000
Jones, Martin A.. *See*—
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Jones, Pearce R. *See*—
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Jones, Timothy M. Puzzle boxcu5,330,186, Cl. 273-153.00S
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Jordan, Paul T.. *See*—
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Joseph Amy L.. *See*—
Giacin, Kenneth J.; and Joseph Amy L., 5,330,749, Cl. 424-49.000
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Josephson, Gregg R., Bower, Douglas H., and Tennant, David L., to Lattice Semiconductor Corporation. Single poly EE cell with separate read/write paths and reduced product term couplingcu5,331,590, Cl. 365-182.000
Jost, Dieter; and Krude, Werner, to GKN Automotive AG. Roller and track configuration for a tripod jointcu5,330,389, Cl. 464-111.000
JuGer, Joseph S., to Allen Group, Inc., The. Heat exchangercu5,329,988, Cl. 165-153.000
Jung, Hyun-don. *See*—
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Juric, Draco D.; Shaw, Raymond W., Houston, Geoffrey J., and Coad, Ian A., to Comalco Aluminium Limited. Aluminium smelting cellcu5,330,631, Cl. 204-243.00R
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Kabushiki Kaisha Hayashibara Seitbutsu Kagaku Kenkyujo. *See*—
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Kabushiki Kaisha Kobe Seiko Sho. *See*—
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Kabushiki Kaisha Komatsu Seisakusho. *See*—
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Kabushiki Kaisha Morita Seisakusho. *See*—
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
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Hayashi, Yasuhiro, 5,331,480, Cl. 360-77.170
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Hosoi, Takashi; Ohgami, Keizo; and Takeda, Fumiaki, 5,331,508, Cl. 361-680.000
Ida, Takashi; and Dachiku, Kenshi, 5,331,436, Cl. 358-426.000
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Ogimura, Yoshio; and Ookubo, Megumi, 5,330,042, Cl. 198-333.000
Sato, Takeshi; and Ohhashi, Akinami, 5,329,929, Cl. 128-660.650
Seki, Toshibumi; Okataku, Yasukuni; and Tamura, Shinsuke, 5,331,647, Cl. 371-53.000
Shibata, Hideki; and Ikeda, Naoki, 5,330,934, Cl. 437-195.000
Shima, Yasuo; and Ukai, Makoto, 5,331,144, Cl. 235-486.000
Shiota, Hiromu, 5,331,303, Cl. 336-12.000
Tanaka, Koichi, 5,331,668, Cl. 375-116.000
Tanaka, Sumio, 5,331,597, Cl. 365-207.000
Tanimizu, Hiromi, 5,331,146, Cl. 250-208.100
Urakawa, Yukihiro, 5,331,233, Cl. 307-530.000
Yamanaka, Kazuyuki; and Shibasaka, Mitsusada, 5,331,397, Cl. 356-237.000
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Kajino, Jiro: *See*—
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Kakimoto, Kazuhito: *See*—
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Kalan, Robert. Device for mounting photographs and the likecu5,330,281, Cl. 40-73.000
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Kang, Seong T., to Goldstar Co., Ltd. Cooling apparatus of magnetroncu5,331,248, Cl. 315-39.510.
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Kasari, Akira; Ito, Satoru; and Nakamura, Shigeru, 5,330,796, Cl. 427-407.100.
Yasuoka, Yoshio; Kume, Masafumi; Hiraki, Tadayoshi; Kato, Kiyoshi; Haneishi, Hidehiko; and Yamamoto, Masato, 5,330,839, Cl. 428-413.000.
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Fricke, Obed M., 5,330,247, Cl. 297-157.000.
Ovadia, David, 5,331,135, Cl. 219-728.000.
Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Fastener assemblycu5,329,677, Cl. 24-687.000.
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Sotoya, Kohshiro; Aoyagi, Muneo; Ogura, Nobuyuki; and Kaneko, Youhei, 5,330,677, Cl. 252-186.380.
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Doi, Hideaki; Hara, Yasuhiko; and Karasaki, Koichi, 5,331,407, Cl. 356-394.000.
Karathanos, George, to Eurodrip S.A. Drip irrigation emitter embodied in a water conduit pressure compensating with self-regulationcu5,330,107, Cl. 239-533.100.
Karlsrud, Chris E.; Van Woerkom, Anthony G.; Odagiri, Shigeru; and Nagahashi, Isao, to Speedfam Corporation. Wafer polishing method and apparatuscu5,329,732, Cl. 51-131.500.
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Teo, Boon C.; Karta, Tjandra; and Low, Siu W., 5,331,200, Cl. 257-666.000.
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Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Toru, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.
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Kasai, Tadashi; Uchida, Takao; Tanuma, Jiro; Akutsu, Naoji; and Komori, Chihiro, to Oki Electric Industry Co., Ltd. Drive system for wire dot headcu5,330,277, Cl. 400-157.300.
Kasari, Akira; Ito, Satoru; and Nakamura, Shigeru, to Kansai Paint Company, Ltd. Method of forming coating filmscu5,330,796, Cl. 427-407.100.
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Kashiwagi, Tohru: *See*—
Kajiyama, Tisato; Ono, Junichi; Kashiwagi, Tohru; Hara, Kouji; and Takata, Kensaku, 5,331,448, Cl. 359-103.000.
Kashiwagi, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Electronic-components mounting apparatuscu5,329,692, Cl. 29-740.000.
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Kaszczuk, Linda; and Topel, Richard W., Jr., to Eastman Kodak Company. High molecular weight binders for laser ablative imagingcu5,330,876, Cl. 430-269.000.
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Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; Tajima, Yoshio; and Matsuura, Kazuo, to Nippon Oil Co., Ltd. Catalyst components for polymerization of olefinscu5,331,071, Cl. 526-128.000.
Katayama, Yasunori: *See*—
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Kato, Keizo: *See*—
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Kato, Kohichi; and Nishioka, Shigeru, to Satake Chemikal Equipment Mfg., Ltd. Agitating vanecu5,330,325, Cl. 416-227.00R.

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Kato, Tetsuaki. *See—*
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Kato, Yoshiaki. *See—*
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Katz, Joseph. *See—*
Marom, Emanuel, and Katz, Joseph, 5,331,143, Cl. 235-472.000

Katz, Rodney. *See—*
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Kauffman, Thomas F. *See—*
Stauffer, Daniel; Puletti, Paul P., and Kauffman, Thomas F., 5,331,033, Cl. 524-275.000

Kavlico Corporation. *See—*
Park, Kyong M., and Tirmizi, Abrar A., 5,329,819, Cl. 73-724.000

Kawabata, Hitomi. *See—*
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Iwai, Kenji; Kawaberi, Seiji; Ueyama, Akihiro; and Watanabe, Junzo, 5,331,532, Cl. 363-20.000

Kawada, Akira. *See—*
Wakimasu, Mitsuhiro; Mori, Masaaki; and Kawada, Akira, 5,330,978, Cl. 514-80.000

Kawagoshi, Hiroshi. *See—*
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Kawaguchi, Chitoshi; Arimatsu, Seiji; Konishi, Katsuji; and Kanda, Kazunori, to Nippon Paint Co., Ltd. Process for exposing a photosensitive resin composition to lightcu5,330,882, Cl. 430-327.000

Kawaguchi, Yuji; and Kishida, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Fuel injection type internal combustion enginecu5,329,905, Cl. 123-472.000

Kawakami, Kiyotada, Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko, Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tanii, Keiichi, to Sanyo Electric Co., Ltd. Integrated circuit for processing digital signals in video camera having electronic zooming functioncu5,331,411, Cl. 348-708.000

Kawamoto, Masuo. *See—*
Abe, Yuji; Kawamoto, Masuo; Fuchi, Masami; Uemura, Takeshi, Miyazaki, Masahiki; Ueda, Hiroyuki; and Kotera, Shinichi, 5,331,374, Cl. 355-200.000

Kawano, Akihiro. *See—*
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Kawano, Yoshihiro. *See—*
Hanzawa, Toyoharu; Nishioka, Kimihiko; Kawano, Yoshihiro; and Yamagishi, Masaaki, 5,331,457, Cl. 359-377.000

Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera system having power zoom lenscu5,331,367, Cl. 354-412.000.

Kawasaki Steel Corporation. *See—*
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Kawasaki, Yoshihiro. *See—*
Isoda, Hiroko; Kawasaki, Yoshihiro; Tanimoto, Morimasa, Dosako, Shunichi; and Idota, Tadashi, 5,330,975, Cl. 514-25.000.

Kawasaki, Yoshinao. *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio, Toru, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu, Kasahara, Osamu; Enami, Hiromichi, Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000

Kaylor, Joseph B., to Valkyrie Scientific Proprietary, L.C. Aspirating nozzle and accessory systems thereforcu5,330,105, Cl. 239-400.000

Keane, J. Timothy. *See—*
Hanson, Gunnar J.; and Keane, J. Timothy, 5,330,996, Cl. 514-365.000

Keating, James P., Jr., and Knopp, Leslie C., to Hartley Controls Corporation. Apparatus and apparatus for mixing and cooling molding sandcu5,330,265, Cl. 366-7.000.

Keck, Peter C.; Cohen, Charles M.; Huston, James S.; and Ridge, Richard J., to Creative BioMolecules, Inc. Leader sequences for the production of recombinant proteinscu5,330,902, Cl. 435-69.700.

Keller, Christopher G. *See—*
Gregory, Thomas A.; Johary, Ajay; Keller, Christopher G.; Lecander, Ronald G.; and Mayerle, James J., 5,331,487, Cl. 360-97.020.

Keller, Duane C. System for treating periodontal diseasecu5,330,357, Cl. 433-215.000.

Keller, Heinz, to Licinvest AG. Frame for the display of picturescu5,329,712, Cl. 40-152.100.

Keller, Wilhelm A. Dispensing cartridge with reinforced retaining flangecu5,330,079, Cl. 222-135.000.

Kemcast Partners-1989. *See—*
Kemerer, James; and Vassar, Clyde W., 5,330,341, Cl. 425-144.000.

Kemerer, James; and Vassar, Clyde W., to Kemcast Partners-1989. Process and apparatus for continuous three-dimensional forming of heated thermoplastic materialscu5,330,341, Cl. 425-144.000.

Kemmer, Heinrich; and Will, Heinrich, to Wella Aktiengesellschaft. Apparatus for wrapping flexible, elongate objectscu5,330,608, Cl. 156-361.000

Kendra, Robert T., Weihl, Philip H., Baric, Thomas J.; Murphy, Kent W., Bejster, Edward L.; and Dundore, Harry C., to Kennametal Inc. Package assembly for separately packaging, displaying, and dispensing a plurality of articlescu5,330,055, Cl. 206-534.100.

Kennametal Inc. *See—*
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Kennedy, Christopher R.; Sonuparlak, Birol; Fareed, Ali S.; Garnier, John E.; and Schiroky, Gerhard H., to Lanxide Technology Company, LP. Composite materials and methods for making the samecu5,330,849, Cl. 428-552.000.

Kennedy, James D. *See—*
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Kennedy, Robert W., and Stewart, Richard F., to White Consolidated Industries, Inc. Leveling arms for a low profile room air conditionercu5,329,784, Cl. 62-262.000.

Kennedy, Thomas E. *See—*
Lloyd, Robert F., Kennedy, Thomas E.; and Wilbricht, Christopher J., 5,331,552, Cl. 364-413.150.

Kenney, Donald M. *See—*
Dobuzinsky, David M.; Harmon, David L.; Kasi, Srinandan R; Kenney, Donald M.; Van Nguyen, Son; Nguyen, Tue; and Pan, Pai-Hung, 5,330,935, Cl. 437-239.000.

Kensington Laboratories, Inc.. *See—*
Bacchi, Paul E., and Filipski, Paul S., 5,331,458, Cl. 359-393.000.

Kenward, Andrew J.. *See—*
Jones, Michael E., and Kenward, Andrew J., 5,329,963, Cl. 141-6.000

Kern, Dieter P. E. *See—*
Chan, Kevin K.; Dhong, Sang H., Kern, Dieter P. E., and Lee, Young H., 5,331,189, Cl. 257-321.000

Kern, Roger G.; Petersen, Gene R.; and Richards, Gil F., to California Institute of Technology (JPL). Method for producing capsular polysaccharidescu5,330,903, Cl. 435-101.000

Kernek, Gregory P. Multi-level swim fincu5,330,377, Cl. 441-64.000.

Kert, John. *See—*
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Kesseli, James B. *See—*
Faulkner, Henry B., Kesseli, James B.; Swarden, Michael C., and Jansen, Willem, 5,329,757, Cl. 60-39.020

Ketcham, George M. Self-powered towing servomechanismcu5,330,020, Cl. 180-14.200

Kettenbach, Karl, to Passavant-Werke AG. Method for evacuating floating sludge from settling tanks and thickener tankscu5,330,660, Cl. 210-741.000.

Keyes, Paul E., Jr. *See—*
Wensink, Gary L.; and Keyes, Paul E., Jr., 5,330,173, Cl. 271-240.000.

Khabal, Zinovi. *See—*
Krumszyn, Luba M.; and Khabal, Zinovi, 5,330,206, Cl. 279-144.000.

Khare, Ashok K., to National Forge Company. Steel for making very large pipe moldscu5,330,707, Cl. 420-109.000.

Khorshahi, Ferial. *See—*
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Kidd, Gary. *See—*
Thurtell, George; Kidd, Gary; and Edwards, Grant, 5,331,409, Cl. 356-437.000

Kidd, Sarah L. *See—*
Gilbert, Adrienne L., Stewart, James L.; Kidd, Sarah L.; and Dawson, George J., 5,330,893, Cl. 435-7.100.

Kiewit, David A. *See—*
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Kiskila, Erkki. *See—*
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Kikinis, Dan, to Cordata, Inc. Integral computer scanning systemcu5,331,434, Cl. 358-474.000.

Kikinis, Dan, to Cordata, Inc. Modular notebook computer having a planar array of module bays and a pivotally attached flat-panel displaycu5,331,509, Cl. 361-686.000.

Kikkawa, Kazutoshi. *See—*
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Kikkoman Corporation. *See—*
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Kikuchi, Minoru. *See—*
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Kikuchi, Tsuyoshi, to Citizen Watch Co., Ltd. Structure for connecting a band to a watch casecu5,331,610, Cl. 368-282.000.

Kikuchi, Yukio; and Kamaguchi, Ryosei, to Morishita Jintan Co., Ltd. Seamless capsule and process for producing the samecu5,330,835, Cl. 428-402.220.

Kikugawa, Shinya. *See—*
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Kildal, Maurice. *See—*
Muszak, Martin F.; Kissel, Thomas R.; and Kildal, Maurice, 5,330,625, Cl. 204-153.100.

Kildal, Maurice A.; Richardson, Frank A.; Leather, Brendan N.; and Monsees, Claude E., to Eastman Kodak Company. Slide frame and manufacturing processcu5,329,686, Cl. 29-450.000.

Kim, Dae-Il, to Samsung Electron Devices Co., Ltd. Structure and driving method of a plasma display panelcu5,331,252, Cl. 315-169.400.

Kim, Jeong H., to Samsung Electronics Co., Ltd. Picture-out-picture control apparatus and method thereofcu5,331,349, Cl. 348-567.000.

Kim, Kyong-Min. *See—*
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Kim Manufacturing Company. *See—*
Carroll, Joseph W., 5,330,066, Cl. 211-189.000.

Kim, Samuel. Basketball assembly with rotable and linearly displaceable hoopcu5,330,175, Cl. 273-1.50R.

Kim, Soo R. *See—*
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Kim, Won Hoon; Oh, Jung Rok; Cho, Won Man; Oh, Gwang Hwan; and Lee, Tae Ho, to Agency for Defense Development. Method for assembling rocket propulsion motorcu5,329,762, Cl. 60-204.000.

Kim, Young S., to Inno Design, Inc. Garment bag luggage cart attachmentcu5,330,141, Cl. 248-98.000.

Kimbell, Martin J.; and Schwartz, Mark W., to Motorola Inc. Switch operative responsive to positioning of a card membercu5,331,123, Cl. 200-52.00R.

Kimberlin, Robert R.; and Bodell, Steven W., to Ingersoll-Rand Company. Tool retainer for a percussive, fluid-activated apparatuscu5,330,202, Cl. 279-19.100.

Kimoto, Toshiyuki. *See—*
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Kimura, Katsutaka. *See—*
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Kimura Machinery Industrial Co., Ltd.: *See—*
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Kimura, Masatoshi. *See—*
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Kimura, Minoru. *See—*
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Kimura, Noboru, to Shin-Etsu Chemical Co., Ltd. Double-layered ceramic heatercu5,331,134, Cl. 219-543.000.

Kimura, Noriyuki; and Suzuki, Minour, to Ricoh Company, Ltd. Image forming equipment having a revolver type developing devicecu5,331,390, Cl. 355-326.00R.

Kimura, Satoshi; Igarashi, Yasuyuki; Hakomori, Sen-itiroh; Ahmad, Mohammad N.; Okoshi, Hirofumi; and Handa, Kazuko, to Biomembrane Institute, The. Effect of N,N,N-trimethylsphingosine on protein kinase-C activity; melanoma cell growth in vitro; metastatic potential in vivo and human platelet aggregationcu5,331,014, Cl. 514-642.000.

Kimura, Tomoaki. *See—*
Takakura, Yoshio; Kimura, Tomoaki; and Nishino, Tadashi, 5,329,798, Cl. 72-164.000.

King, David C. *See—*
Wirsig, Ralph C.; and King, David C., 5,330,074, Cl. 222-82.000.

King, Jon A.; Houdek, David L.; DePriest, Byron D.; and Phillips, Mark A., to Halliburton Company. One trip TCP/GP system with fluid containment meanscu5,329,998, Cl. 166-51.000.

King, Robert M. *See—*
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King, Robert S. *See—*
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Kinki Pipe Giken Kabushiki Kaisha: *See—*
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Kinney, William A.. *See—*
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Kinzler, Kenneth W. *See—*
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Kippenberg, Horst; and Hauner, Franz, to Siemens Aktiengesellschaft. Process for producing CuCr contact pieces for vacuum switches as well as an appropriate contact piececu5,330,702, Cl. 419-28.000.

Kirker, Eric J., to Odawara Automation, Inc. Method and apparatus for fusing terminal or commutator wire connections on an armature or statorcu5,331,130, Cl. 219-86.510.

Kishida, Makoto. *See—*
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Kiss, Akos. *See—*
Speer, Dietrich; Kiss, Akos; Kleinschmit, Peter; Horst, Jenny; and Zell, Christel, 5,330,571, Cl. 106-450.000.

Kissel, Thomas R.. *See—*
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Kissinger, Jurgen. *See—*
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Kistler Instrumente AG. *See—*
Sonderegger, Hans; Giorgetta, Mario; and Wolfer, Peter, 5,329,823, Cl. 73-862.642.

Kistner, Matthew G.. *See—*
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Kita, Shinji; and Ogatsu, Hitoshi, to Fuji Xerox Co., Ltd. Color image processing method and apparatus capable of properly determining black quantitycu5,331,440, Cl. 358-529.000.

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Kitagawa, Seizou. *See—*
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Kitagawa, Takeshi; Takuma, Hiroshi; Kan, Shoji; Furuichi, Yoichi; and Taki, Takahiro, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Shift control apparatus for automatic transmission for vehiclecu5,329,830, Cl. 477-117.000.

Kitaki, Takeshi. *See—*
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Kitamura, Shigehiro. *See—*
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Kitamura, Yoshinori. *See—*
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Kitano, Norio. *See—*
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Kitora, Yoshitsugu, to Ricoh Company, Ltd. Square root extractorcu5,331,586, Cl. 364-752.000.

Kitou, Satoru. *See—*
Ito, Masahito; Koujiya, Miyuki; Sarai, Hiroshi; Nakao, Seiya; Nomura, Takao; Kitou, Satoru; Matsuda, Fuminori; Yamada, Susumu; Kuroiwa, Kesato; and Mihara, Hiroshi, 5,329,981, Cl. 164-7.200.

Kitsuki, Toshiaki; and Sawada, Akira, to NEC Corporation. Discrete cosine transformation processorcu5,331,584, Cl. 364-725.000.

Kiyomi, Takio. *See—*
Kaneda, Shinichi; and Kiyomi, Takio, 5,330,280, Cl. 402-49.000.

Klapper, Robert C.. *See—*
Hood, Larry L.; Klapper, Robert C.; Caillouette, James T.; and Ureche, Alexander, 5,330,481, Cl. 606-99.000.

Klara, Walter S.; Montegari, Frank A.; and Sager, Gordon S., to International Business Machines Corporation. High speed multiplexercu5,331,216, Cl. 307-243.000.

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Klein, Hans-Christof; Lohberg, Peter; Krause, Hans-Joachim; May, Arno; Oberdorfer, Dietmar; and Pluquett, Ulrich, to Alfred Teves GmbH. Apparatus for determining the condition of a pressure transmitting fluidcu5,330,268, Cl. 374-54.000.

Klein, Walter, to Lenzing Aktiengesellschaft. Method of filtering cellulose acetate solutions as well as a plant for carrying out the methodcu5,330,642, Cl. 210-194.000.

Kleiner, Hanss-Jerg. *See—*
Engelhardt, Friedrich; Funk, Rudiger; Riegel, Ulrich; Ebert, Gerlinde; and Kleiner, Hanss-Jerg, 5,331,059, Cl. 525-340.000.

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Speer, Dietrich; Kiss, Akos; Kleinschmit, Peter; Horst, Jenny; and Zell, Christel, 5,330,571, Cl. 106-450.000.

Klenk, Todd S.. *See—*
Bauman, Therese M.; and Klenk, Todd S., 5,330,724, Cl. 422-133.000.

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Klimt, Ulrich; Halasy-Wimmer, Georg; Ruckert, Helmut; and Jakob, Matthias, to Alfred Teves GmbH. Holding down spring for spot-type disc brakes and associated housing and brake shoescu5,330,035, Cl. 188-73.360.

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Lafferty, Michael; Kline, Daniel; and Slemon, Charles S., 5,329,936, Cl. 128-6.000.

Klinginger, Karl. *See—*
Bruggendick, Hermann; and Klinginger, Karl, 5,330,726, Cl. 422-177.000.

Klingler, Wayne P.; and Leise, Walter F., Jr., to Hollister Incorporated. Ostomy appliance with floating belt-attachment ringcu5,330,454, Cl. 604-338.000.

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Doede, Klaus, 5,330,331, Cl. 417-519.000.

Klos-Hein, Karl; Rumpf, Hermann; and Hermanni, Hans-Georg, to U.S. Philips Corporation. Magnetic tape cassette apparatus having a

control rod, switching transmitters, and a catch rodcu5,331,484, Cl 360-96.500.

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Kmiecik, Daniel J.: *See*—
Duhaime, Daniel M., Henault, Mark R.; and Kmiecik, Daniel J., 5,330,068, Cl. 220-304.000.

Knauer, Scott C.; Matthews, Kim N., Netravali, Arun N., Petajan, Eric D., and Safranek, Robert J., to AT&T Laboratories. Adaptive leak HDTV encodercu5,331,348, Cl. 348-402.000.

Knauss, Donald T.: *See*—
Urbach, Herman B., and Knauss, Donald T., 5,329,758, Cl 60-39.050.

Knoerzer, Anthony R.; Lu, Pang-Chia; Shields, Conway F.; and Whyman, Donald G., to Mobil Oil Corp. Sheet material with improved cut resistancecu5,330,812, Cl. 428-40.000.

Knoerzer, Anthony R., and Reid, Leland W., to Mobil Oil Corp. Printable high barrier multilayer filmcu5,330,831, Cl. 428-353.000.

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Keating, James P., Jr., and Knopp, Leslie C., 5,330,265, Cl 366-7.000.

Knors, Herbert: *See*—
Hartel, Robert, Hoehne, Karl-Josef, Hermanns, Ferdinand-Josef, Henze, Herbert; Knors, Herbert; Engelhardt, Dietmar; Zitzen, Wilhelm; Veyes, Manfred, Merkens, Herbert, Weissenfels, Wolfram; Ruetten, Hermann, Jaegers, Dirk, and Pommer, Berndt, 5,329,822, Cl. 73-862.610.

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Gouge, Samuel T.; McEvoy, Steven F., Knudsen, Glenn C., and Hodakowski, Leonard E., 5,330,047, Cl. 206-205.000.

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Scott, Richard D., and Knutson, Neal R., 5,329,687, Cl. 29-527.200.

Kobayashi, Hiroo: *See*—
Nomura, Yoshiya; Kobayashi, Hiroo; Higeta, Akira; Isobe, Hironobu; Shishido, Kazuo; Sato, Minoru; Miyabe, Shigeo; and Miura, Koji, 5,331,373, Cl. 355-200.000.

Kobayashi, Katsuhiko, to Takata Corporation. Buckle device of seat belt unit and method for connecting buckle cover in said buckle devicecu5,329,676, Cl. 24-633.000.

Kobayashi, Kazunori: *See*—
Tsuda, Tadayuki; Sekine, Kazumi, Ikemoto, Isao, Watanabe, Kazushi; Sasago, Yoshikazu; Noda, Shinya; Kobayashi, Kazunori; and Shoji, Takeo, 5,331,372, Cl. 355-200.000.

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Tsuji, Yoshihisa; Ninomiya, Sigeru; Kato, Kazuo, Kobayashi, Mamoru; Kojima, Akio; Sasaki, Hideaki; and Yokoyama, Tetsuhiro, 5,329,690, Cl. 29-701.000.

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Gruber, Hermann; Reiff, Helmut, and Kober, Hermann, 5,330,841, Cl. 428-425.500.

Koblish, Theodore R.: *See*—
Bradley, Jerome R., and Koblish, Theodore R., 5,329,760, Cl 60-39.060.

Koch, Anton, to Temic Telefunken microelectronic GmbH. Circuit for monitoring of loadscu5,331,314, Cl. 340-661.000.

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Jahnke, Richard W., Kocurek, Lawrence J.; and Bush, James H., 5,330,662, Cl. 252-8.551.

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Hosoya, Kiyokazu; Kodama, Toshihiro; and Konno, Takahiro, 5,331,675, Cl. 376-260.000.

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Miller, Phillip; Koenck, Steven E.; Walter, Jerry L., Kubler, Joseph J., Cargin, Keith K., Jr.; Hanson, George E.; Davis, Patrick H., Kunert, Steven R.; and Schultz, Darald R., 5,331,580, Cl. 364-708.100.

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Bolza-Schuenemann, Claus A.; and Schaede, Johannes G., 5,329,852, Cl. 101-232.000.

Koeppel, Martin: *See*—
Piske, Wilfried; and Koeppel, Martin, 5,331,395, Cl. 356-138.000.

Koether, Bernard G.; Witt, Allan E., and Maher, Charles A., Jr., to Technology Licensing Corporation. Shortening management systemcu5,331,575, Cl. 364-557.000.

Kogano, Takayoshi: *See*—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi, Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ootsuka, Nobuhiro; Shirai, Senchirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki, Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Koh, Hung-Chan, to Samsung Electronics Co., Ltd. Apparatus for driving microwave oven using both A.C. and D.C. currentcu5,331,128, Cl. 219-717.000.

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Ohdomari, Iwao; Sugimori, Masaaki; Murayama, Junichi; Koh, Meishoku; Noritake, Katsunori; Matsukawa, Takashi; and Shimizu, Hiroaki, 5,331,161, Cl. 250-309.000.

Kohata, Takashi: *See*—
Miyashita, Katsuyuki; Yoshizawa, Ryozou; Yoneda, Yukio; and Kohata, Takashi, 5,330,023, Cl. 180-140.000.

Kohchi, Tetsunobu: *See*—
Miyawaki, Mamoru; Ishizaki, Akira, Momma, Genzo; Yuzurihara, Hiroshi; and Kohchi, Tetsunobu, 5,331,197, Cl. 257-530.000.

Kohsaka, Jun: *See*—
Ono, Satoru, and Kohsaka, Jun, 5,331,343, Cl. 346-108.000.

Kohzaki, Shuichi: *See*—
Sasaki, Kei; Okada, Masako; Kohzaki, Shuichi; Funada, Fumiaki; Rieger, Bernhard; Numata, Hiroshi; Hittich, Reinhard; Plach, Herbert; Geelhaar, Thomas; Poetsch, Eike; and Reiffenrath, Volker, 5,330,679, Cl. 252-299.630.

Koito Manufacturing Co., Ltd.: *See*—
Fujino, Yuji, 5,331,519, Cl. 362-66.000.

Koivukunnas, Pekka, Honkala, Juha; Turunen, Risto, Niskanen, Juhani; Korhonen, Ville; and Pirinen, Timo, to Valmet Paper Machinery Inc Calender with pivotally displaceable rollcu5,329,844, Cl. 100-93.0RP.

Kojima, Akio: *See*—
Tsuji, Yoshihisa; Ninomiya, Sigeru; Kato, Kazuo; Kobayashi, Mamoru; Kojima, Akio; Sasaki, Hideaki; and Yokoyama, Tetsuhiro, 5,329,690, Cl. 29-701.000.

Kojima, Hiroshi: *See*—
Takano, Kazuya; and Kojima, Hiroshi, 5,330,164, Cl. 267-140.140.

Kojima, Makoto: *See*—
Takao, Hideaki; Asaoka, Masanobu; and Kojima, Makoto, 5,330,803, Cl. 428-1.000.

Kojima, Minoru; Terada, Mitsugu; and Sutoh, Kazuyoshi, to Mitsui Petrochemical Industries, Ltd. Solid-state laser devicecu5,331,653, Cl. 372-35.000.

Kojima, Shuichi: *See*—
Ohnishi, Kimimasa; Kojima, Shuichi; and Chikuma, Tokayuki, 5,329,962, Cl. 139-450.000.

Kojima, Takeshi: *See*—
Yahagi, Toshio; Iwagawa, Yoshihiro; Sugimoto, Yoichi; Satoh, Tsuyoshi; and Kojima, Takeshi, 5,329,805, Cl. 73-9.000.

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Kojo, Harunori: *See*—
Tanaka, Atsuo; Hanabusa, Tetsuhiro; Kojo, Harunori; and Inui, Tsuneo, 5,330,605, Cl. 156-309.900.

Kokubo, Masaru: *See*—
Hara, Hirotaka; Ishihara, Yukihito; and Kokubo, Masaru, 5,331,583, Cl. 364-724.010.

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Kaneda, Shinichi; and Kiyomi, Takio, 5,330,280, Cl. 402-49.000.

Kolb, Lawrence M.: *See*—
Buccola, Charles S.; and Kolb, Lawrence M., 5,331,308, Cl. 340-522.000.

Kolesa, Michael S.: *See*—
Green, David T.; Bolanos, Henry; Sienkiewicz, Henry R.; Toso, Kenneth E., Kolesa, Michael S.; and Tovey, H. Johnathan, 5,330,442, Cl. 606-232.000.

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Yasuda, Masahiko; Hosokawa, Shigeo; Yokomori, Yorozu; Jimbo, Shinichiro; and Kolycheck, Edmond G., 5,330,669, Cl. 252-62.540.

Komai, Tomoko; Imamura, Makoto; Sakai, Yuji; and Inoue, Tetsuo, to Kabushiki Kaisha Toshiba. Magnetic disk system having a magnetoresistive head provided thereincu5,331,492, Cl. 360-113.000.

Komatsu Ltd.: *See*—
Inoue, Shinichiro, 5,330,097, Cl. 228-194.000.

Komatsubara, Michiro; Hayakawa, Yasuyuki; Iwamoto, Katsuo; Watanabe, Makoto; and Takamiya, Toshito, to Kawasaki Steel Corporation. Method of producing grain oriented silicon steel sheet having very excellent magnetic propertiescu5,330,586, Cl. 148-111.000.

Komiya, Kenichi: *See*—
Egawa, Jiro; Komiya, Kenichi; Okada, Kyoichi, Mori, Hideo; and Izawa, Hirokazu, 5,331,341, Cl. 346-108.000.

Komori, Chihiro: *See*—
Kasai, Tadashi; Uchida, Takao; Tanuma, Jiro; Akutsu, Naoji; and Komori, Chihiro, 5,330,277, Cl. 400-157.300.

Komori, Shigeki: *See*—
Kusunoki, Shigeru; Komori, Shigeki; and Tsukamoto, Katsuhiro, 5,330,923, Cl. 437-40.000.

Komstadius, Sven, Hanberger, Soren; and Ellstrom, Hans. Projectile for the dispersal of a load with time delaycu5,329,854, Cl. 102-505.000.

Konaka, Rhuichiro: *See*—
Matsunobu, Akira; Horishita, Sumio; and Konaka, Rhuichiro, 5,330,781, Cl. 426-632.000.

Kondo, Akira; Naitou, Motoharu; Ota, Toshiaki; Masegi, Mitsuhiko; and Sakurai, Masao, to Nippondenso Co., Ltd. Releasing circuit for actuating vehicular safety devicecu5,331,211, Cl. 307-10.100.

Kondo, Kenichi; Yamagata, Shigeo; Sakaegi, Yuji; Kudo, Toshihiko; Matsunaga, Kazuhiro; and Takayama, Tsutomu, to Canon Kabushiki Kaisha. Rotary encoder for detecting a rotating position of a motorcu5,331,154, Cl. 250-231.170.

Kondoh, Shiroh: *See*—
Ishibashi, Kazunobu; Matsumoto, Shinichi; Kondoh, Shiroh; and Utsumi, Yasuhide, 5,330,732, Cl. 423-213.200.

Konica Corporation: *See*—
Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi; Satoh, Hisao; and Ikeda, Tadayoshi, 5,331,389, Cl. 355-321.000.
Mizubata, Tsuyoshi; Okui, Susumu; Yamada, Yasushi; and Nagoshi, Mitsuru, 5,331,386, Cl. 355-319.000.
Sawada, Kouichi; Yamamoto, Hiroyuki; and Ichihara, Yoshiyuki, 5,331,432, Cl. 358-465.000.
Takamuki, Yasuhiko; Yoshida, Kazuhiro; and Arai, Takeo, 5,330,885, Cl. 430-523.000.
Takeyama, Toshihisa; Kitamura, Shigehiro; and Koshizuka, Kunihiro, 5,330,961, Cl. 503-227.000.

Konicek, John P.: *See*—
Fishbaine, David; Konicek, John P.; Case, Steven K.; Skunes, Timothy A.; and Jalkio, Jeffrey A., 5,331,406, Cl. 356-375.000.

Konig, Helmut. Apparatus for forming doughcu5,330,344, Cl. 425-321.000.

Koning, Norman L., to Minnesota Mining and Manufacturing Company. Marker assembly for use with an electronic article surveillance systemcu5,331,313, Cl. 340-551.000.

Konishi, Hirokazu: *See*—
Yamamoto, Taizo; and Konishi, Hirokazu, 5,329,749, Cl. 53-525.000.

Konishi, Katsuji: *See*—
Kawaguchi, Chitoshi; Arimatsu, Seiji; Konishi, Katsuji; and Kanda, Kazunori, 5,330,882, Cl. 430-327.000.

Konno, Takahiro: *See*—
Hosoya, Kiyokazu; Kodama, Toshihiro; and Konno, Takahiro, 5,331,675, Cl. 376-260.000.

Konno, Toyohiko: *See*—
Nakayama, Takenori; and Konno, Toyohiko, 5,330,851, Cl. 428-627.000.

Konno, Yoshikiyo: *See*—
Ogawa, Masaya; Yamada, Takao; Kitaki, Takeshi; Sakata, Haruyasu; Yajika, Kazuo; and Konno, Yoshikiyo, 5,331,614, Cl. 369-34.000.

Konomura, Yutaka: *See*—
Tsuruoka, Takao; Hiyama, Keiichi; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichiro, 5,331,551, Cl. 364-413.130.

Kopin Corporation: *See*—
Spitzer, Mark B.; and Jacobsen, Jeffrey, 5,331,149, Cl. 250-221.000.

Koplin, Karl-Heinz; Renner, Stefan; Pflueger, Gerhard; and Fasterding, Henning, to Robert Bosch GmbH. Rectifier device for three-phase generators in vehiclescu5,331,231, Cl. 310-68.00D.

Koppens Machinefabriek B.V.: *See*—
Lygum, Poul, 5,329,916, Cl. 126-21.00A.

Korea Advanced Institute of Science and Technology: *See*—
Lee, Jai Y.; and Kim, Soo R., 5,330,709, Cl. 420-422.000.

Korg, Inc.: *See*—
O'Connell, Steven S., 5,331,111, Cl. 84-602.000.

Korhonen, Ville: *See*—
Koivukunnas, Pekka; Honkala, Juha; Turunen, Risto; Niskanen, Juhani; Korhonen, Ville; and Pirinen, Timo, 5,329,844, Cl. 100-93.0RP.

Kornacki, Jeffrey L.: *See*—
Yee, Jeng-Jung; Kornacki, Jeffrey L.; and Narasimhan, Rajagopalan, 5,330,780, Cl. 426-582.000.

Kornrumpf, William P.: *See*—
Wojnarowski, Robert J.; Eichelberger, Charles W.; and Kornrumpf, William P., 5,331,203, Cl. 257-698.000.

Koshizuka, Kunihiro: *See*—
Takeyama, Toshihisa; Kitamura, Shigehiro; and Koshizuka, Kunihiro, 5,330,961, Cl. 503-227.000.

Koskelo, Markku: *See*—
Visuri, Pertti; Kuisla, Erkki; and Koskelo, Markku, 5,330,621, Cl. 162-49.000.

Koslow, Evan E., to Koslow Technologies Corporation. Extruded solid composite articles and compositions for producing samecu5,331,037, Cl. 524-496.000.

Koslow Technologies Corporation: *See*—
Koslow, Evan E., 5,331,037, Cl. 524-496.000.

Koszyk, Francis J.; and Mueller, Richard A., to G. D. Searle & Co. 2- and 3-sulfur derivatives of 1,5-iminosugarscu5,331,096, Cl. 546-115.000.

Kotera, Shinichi: *See*—
Abe, Yuji; Kawamoto, Masuo; Fuchi, Masami; Uemura, Takeshi; Miyazaki, Masahiki; Ueda, Hiroyuki; and Kotera, Shinichi, 5,331,374, Cl. 355-200.000.

Koujiya, Miyuki: *See*—
Ito, Masahito; Koujiya, Miyuki; Sarai, Hiroshi; Nakao, Seiya; Nomura, Takao; Kitou, Satoru; Matsuda, Fuminori; Yamada, Susumu; Kuroiwa, Kesato; and Mihara, Hiroshi, 5,329,981, Cl. 164-7.200.

Kovacs, Gregory J.: *See*—
Hsiao, Cheng-Kuo; Hor, Ah-Mee; Mayo, James D.; Baranyi, Giuseppa; Kovacs, Gregory J.; Bluhm, Terry L.; Popovic, Zoran D.; and Yeung, B. W. Anissa, 5,330,867, Cl. 430-76.000.

Kovalenko, Nadezhda V., administator: *See*—
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.

Kovalenko, Nikita V., administrator: *See*—
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.

Kovalenko, Sergei V., administrator: *See*—
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.

Kovalenko, Valery F., deceased: *See*—
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Kowalik, Martha G.: *See*—
Socaris, Spiro; and Kowalik, Martha G., 5,329,921, Cl. 128-207.140.

Kowol, Ewald: *See*—
Wilson, John R.; and Kowol, Ewald, 5,330,915, Cl. 435-289.000.

Koyama, Takeo; and Nakano, Takashi, to Matsushita Electric Industrial Co., Ltd. Power supply apparatus for television receiver set and television receiver set including the samecu5,331,354, Cl. 348-730.000.

Koyano, Tamotsu; and Mizutani, Uichiro, to Aisin Seiki Kabushiki Kaisha. Method for producing iron-nitride powderscu5,330,554, Cl. 75-348.000.

Koyo Seiko Co., Ltd.: *See*—
Takahata, Ryoichi; and Eguchi, Shoji, 5,330,967, Cl. 505-166.000.

Kozlowski, Zdzislaw J., to E.R.T. Environmental Research Technology K.S.P.W. Inc. Liquid sorbentcu5,331,079, Cl. 528-48.000.

Kraft, Josef: *See*—
Brede, Uwe; Kraft, Josef; and Seebeck, Wolfram, 5,330,730, Cl. 422-305.000.

Kramer, Jonathan K.: *See*—
Thomson, Walter G.; and Kramer, Jonathan K., 5,330,544, Cl. 23-313.00R.

Krantz, Donald G.: *See*—
Barrett, William A.; and Krantz, Donald G., 5,331,561, Cl. 364-447.000.

Krantz, Matthias C.: *See*—
Dickson, LeRoy D.; and Krantz, Matthias C., 5,331,445, Cl. 359-15.000.

Krause, Hans-Joachim: *See*—
Klein, Hans-Christof; Lohberg, Peter; Krause, Hans-Joachim; May, Arno; Oberdorfer, Dietmar; and Pluquett, Ulrich, 5,330,268, Cl. 374-54.000.

Krause, Joseph L., Jr.: *See*—
Morris, Paul H.; and Krause, Joseph L., Jr., 5,331,175, Cl. 250-561.000.

Krauss, Guenther: *See*—
Herrmann, Klaus; Krauss, Guenther; and Noegel, Peter, 5,329,926, Cl. 128-653.100.

Krebs, Bernd; and Dulin, Jacques M., to Audi AG. Safety restraint for motor vehiclescu5,330,228, Cl. 280-801.200.

Kreczko, Gregory: *See*—
Wagner, Ross L.; and Kreczko, Gregory, 5,330,235, Cl. 285-81.000.

Krell Industries, Inc.: *See*—
D'Agostino, Daniel; and Goodman, David, 5,331,291, Cl. 330-289.000.

Kremer, Guy: *See*—
Budet, Pascal; Flicker, Pierre; Kremer, Guy; and Diederichs, Fabien, 5,329,684, Cl. 29-90.010.

Kress, James. Recreational vehicle sewer apparatuscu5,330,233, Cl. 285-9.200.

Kreyenhagen, Paul E., to Siemens Pacesetter, Inc. Ring electrode for a multilumen lead and method of constructing a multilumen leadcu5,330,522, Cl. 607-122.000.

Kreyenhagen, Paul E.: *See*—
Soukup, Thomas M.; and Kreyenhagen, Paul E., 5,330,700, Cl. 419-2.000.

Kriesel, Marshall S.; and Thompson, Thomas N., to Science Incorporated. Mixing and delivery syringe assemblycu5,330,426, Cl. 604-89.000.

Kroll, Mark W.; and Adams, Theodore P., to Angeion Corporation. Method and apparatus for far-field tachycardia terminationcu5,330,509, Cl. 607-14.000.

Krone Aktiengesellschaft: *See*—
Janczak, Andrzej, 5,330,367, Cl. 439-402.000.

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Scott, John S., 5,331,435, Cl. 358-479.000

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Klein, Walter, 5,330,642, Cl. 210-194.000
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Schapira, Joseph; Dronou, Patrick; Sudour, Michel; and Lerouge nee Bouaffree, Veronique, 5,330,659, Cl. 210-725.000.

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Trocciola, John C.; Schroll, Craig R.; and Lesieur, Roger R., 5,330,727, Cl. 422-177.000.

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Rapoport, William R.; Leslie, Kenrick R.; Hadeler, Theodore T., and Brummert, LaValle V., 5,331,652, Cl. 372-34.000

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Leung, Michael: *See*—
Silver, Arnold H., Leung, Michael; Lee, Gregory S.; Simon, Randy W., and Sandell, Robert D., 5,331,162, Cl. 250-336.200.

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Levenson, Randal P.; Kennedy, James D.; Cox, Zach D., Jr.; and Browne, Frank A., to Mindmaster Inc. Device for limiting the amount of time an electrical appliance such as a television may be usedcu5,331,353, Cl. 348-725.000

Lever Brothers Company, Division of Conopco, Inc.: *See*—
Langer, Matthew E., Ellis, Simon R., Hessel, John F.; Khorshahi, Ferial; and Ward, Russell J., 5,330,672, Cl. 252-108.000

Levien, Raphael L. Digital generation of halftone images with error diffusion and frequency matched periodic screen rulingscu5,331,429, Cl. 358-456.000

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Gole, Dilip J.; Levinson, R. Saul; Carbone, James; and Davies, J Desmond, 5,330,763, Cl. 424-484.000.
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Lewis, Royce C., Jr. Grasp analysis apparatuscu5,329,813, Cl 73-379.030

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Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Mernfield, David L.; Molloy, James J.; Horrall, Paul D.; Tylicki, Gary M.; Ward, Earl D., II, and Wilzbach, Bernard L., 5,331,378, Cl. 355-210.000

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Sichmann, Eggo, 5,330,632, Cl. 204-298.180

Li, Chi C.; Mott, Thomas J., Jr.; and Petersen, P. Eric, V, to Producers Color Service, Inc. Magnetic tape cassette with motion limiting fingerscu5,330,128, Cl. 242-345.200

Li, Hsin L., Lin, Leroy C., Prevorsek, Dusan C.; and Chin, Hong B., to AlliedSignal Inc. Ballistic resistant composition article having improved matrix systemcu5,330,820, Cl. 428-113.000

Liang, Simon. Plant irrigation systemcu5,329,729, Cl. 47-81.000.

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Keller, Heinz, 5,329,712, Cl. 40-152.100.

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Berry, Richard M.; Paleologou, Michael; and Liebergott, Norman, 5,330,620, Cl. 162-29.000

Liebert, Tim C.; and Houghland, Frederick. Rider propelled roundaboutcu5,330,390, Cl. 472-23.000

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Moss, Gordon L.; and Liebl, David A., 5,330,460, Cl. 604-280.000.

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Buehler, Martin G., Blaes, Brent R.; and Lieneweg, Udo, 5,331,164, Cl. 250-370.020

Lietaer, Eric, to Anthogyr, societe anonyme. Endodontic anglepiececu5,330,355, Cl. 433-112.000

Lim, Joon Y .*See*—
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Lin, Chih-I. Vertebral locking and retrieving systemcu5,330,474, Cl. 606-61.000

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Grant, David C.; Lahoda, Edward J.; Lin, Ching-Yu; and Talko, Francis, 5,330,658, Cl. 210-717.000.

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Orcutt, John W.; and Lin, Galle, 5,330,089, Cl. 228-1.100.

Lin, Hyh-Cheeng. Double-deck parking devicecu5,330,310, Cl. 414-228.000

Lin, Jyhfong; Shamma, Shihab A.; and Edwards, Thomas G., to University of Maryland. Cochlear filter bank with switched-capacitor circuitscu5,331,222, Cl. 307-520.000.

Lin, Leroy C. *See*—
Li, Hsin L.; Lin, Leroy C.; Prevorsek, Dusan C.; and Chin, Hong B., 5,330,820, Cl. 428-113.000.

Lin, Yu-Shu. Front wheel steering mechanism for electro mobilecu5,330,022, Cl. 180-79.300.

Linck, John S.. *See*—
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Warner, Barry M., 5,330,032, Cl. 187-9.00E.

Lindermeir, Erwin: *See*—
Tank, Volker; Dietl, Helmut; Haschberger, Peter; Lindermeir, Erwin; Mayer, Oliver, and Thiessen, Rainer, 5,331,399, Cl. 356-346.000.

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Kytomaki, Timo; Lindgren, Olli; Alamaki, Jarmo; and Larjola, Jaakko, 5,329,771, Cl. 60-657.000.

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McDarren, Robert; and Truchsess, Joseph, 5,330,380, Cl. 446-397.000

Linss, Gerhard; and Ossberger, Karl-Friedrich, to Ossberger-Turbinenfabrik GmbH & Co. Apparatus for and method of manufacturing of preforms having a longitudinal wall with a variable cross sectioncu5,330,342, Cl. 425-150.000.

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Van Saarloos, Paul P., 5,331,466, Cl. 359-723.000.

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Janoff, Andrew S.; Bolcsak, Lois E.; Weiner, Alan L.; Tremblay, Paul A.; Bergamini, Michael V. W.; and Suddith, Robert L., 5,330,689, Cl. 264-4.300.

Lipsky, Stephen E., to AEL Defense Corp. Millimeter wave fiber-optically linked antenna receiver devicecu5,331,453, Cl. 359-191.000.

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Tanguay, Dennis C.; Dupuis, Gerard E.; and Ha, Bao, 5,329,774, Cl. 62-23.000.

Liron, John E., to Grass Valley Group, Inc., The. Circuit for driving a transmission linecu5,331,206, Cl. 307-270.000.

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Sullivan, Michael J., 5,330,837, Cl. 428-407.000.

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Lisonbee, Ken D.: *See*—
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Litton Systems, Inc.: *See*—
Dor, Amotz, 5,331,459, Cl. 359-409.000.
Mark, John G.; Dykeman, Ray D.; Tazartes, Daniel A.; and Ware, William B., 5,331,401, Cl. 356-350.000.

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Liu, Wen-Feng, to Amoco Corporation. Pressure-sensitive adhesives of polyvinyl methyl ethercu5,330,832, Cl. 428-355.000.

Liu, William U.; Fan, Shou-Kong; Henderson, Timothy S.; and Hill, Darrell G., to Texas Instruments Incorporated. Method for fabricating GaInP/GaAs structurescu5,330,932, Cl. 437-133.000.

Liu, Zhong-Yi. Audio-video coding system for Chinese characterscu5,331,557, Cl. 364-419.090.

Liul, Chia P. Rat and wild animal catchercu5,329,723, Cl. 43-61.000.

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Meloul, Raphael F.; and Lizardi, Jose F., 5,330,480, Cl. 606-80.000.

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Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.

Lloyd, Robert F.; Kennedy, Thomas E.; and Wilbricht, Christopher J., to General Electric Company. Method and apparatus for projecting diagnostic images from non-isotropic volumed diagnostic datacu5,331,552, Cl. 364-413.150.

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Lo, Peter Y. K.: *See*—
Brown, Scott S. D.; Hupfield, Peter C.; Lo, Peter Y. K.; and Taylor, Richard G., 5,331,020, Cl. 522-99.000.

Lo, Tsung-I. Automobile steering lockcu5,329,794, Cl. 70-209.000.

Lo, Wen-Hsiung, to New Paradise Enterprise Co., Ltd. Decorative device for concealing the top of curtains and certain fixturescu5,330,821, Cl. 428-120.000.

Lockheed Corporation: *See*—
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Lockheed Missiles & Space Company, Inc.: *See*—
Aochi, Tak; and Pyle, Robert J., 5,330,599, Cl. 156-173.000.

Loeffler, Hermann: *See*—
Hansen, Guenter; Lamm, Gunther; Loeffler, Hermann; Reichelt, Helmut; Degen, Helmut; Lange, Arno; and Grund, Clemens, 5,330,543, Cl. 8-662.000.

Lofkvist, Bertil: *See*—
Siren, Matti; Lofkvist, Bertil; and Edvinsson, Lars, 5,330,979, Cl. 514-103.000.

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Logothetis, Eleftherios M.: *See*—
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Lohberg, Peter: *See*—
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Lonky, Neal M., to Trylon Corporation, The. Method for endoscopic examination of body cavity using chemilumine-scent light sourcecu5,329,938, Cl. 128-18.000.

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Lopeteguy, Mike L.: *See*—
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Lopez, George A., to ICU Medical, Inc. Medical connectorcu5,330,450, Cl. 604-283.000.

Lorah, Dennis P.. *See*—
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Loral Vought Systems Corporation: *See*—
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L'Oreal: *See*—
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Lorenz, Gisela: *See*—
Eicken, Karl; Goetz, Norbert; Harreus, Albrecht; Ammermann, Eberhard; Lorenz, Gisela; and Rang, Harald, 5,330,995, Cl. 514-355.000.

Lorenz, Heinz, to VAW Aluminium AG. Process and apparatus for manufacturing low-gas and pore-free aluminum casting alloyscu5,330,555, Cl. 75-386.000.

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Lorenzo, John L.: *See*—
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Teo, Boon C.; Karta, Tjandra; and Low, Siu W., 5,331,200, Cl. 257-666.000.

Lowrey, Tyler A.; and Lee, Ruojia, to Micron Technology, Inc. One-time, voltage-programmable, logic elementcu5,331,196, Cl. 257-529.000.

Lozano D., Luis F.; and Briceno F., Ana G., to C.V.G. Siderurgica Del Orinoco, C.A. Method and apparatur for cooling workpiecescu5,329,779, Cl. 62-63.000.

LSI Logic Corporation: *See*—
Garza, Mario, 5,330,883, Cl. 430-513.000.

Lu, Daozheng; Kiewit, David A.; and Zhang, Jia, to A. C. Nielsen Company. Market research method and system for collecting retail store and shopper market research datacu5,331,544, Cl. 364-401.000.

Lu, Pang-Chia: *See*—
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Schumacher, Egon, 5,329,877, Cl. 119-72.500.

Lubrizol Corporation, The: *See*—
Jahnke, Richard W.; Kocurek, Lawrence J.; and Bush, James H., 5,330,662, Cl. 252-8.551.

Lucas Industries public limited company: *See*—
Glover, Douglas W., 5,330,027, Cl. 180-197.000.

Lucchese, Leonard J., II: *See*—
Blake, Kenneth A.; Christner, James E.; and Lucchese, Leonard J., II, 5,330,715, Cl. 422-56.000.

Lucienne, Philippe; and De Pindray, Albert, to Messier-Bugatti. Force-limiting device for an aircraft landing gear shock absorber, and a shock absorber including such a devicecu5,330,132, Cl. 244-104.0FP.

Luckett, Christopher J.; Schroeder, Bruce A.; and Schweitz, Norman W., to Brunswick Corporation. Thermostat housing assembly for a marine enginecu5,329,888, Cl. 123-41.080.

Lucky, Bobby D., Sr. Rotatable hydraulic grapplecu5,330,242, Cl. 294-88.000.

Lucky Limited *See*—
Chang, Suk K.; Seo, In S.; and Hong, Dae W., 5,331,046, Cl 525-71.000

Lundell, Peter, to Menasha Corporation. Label with removable partcu5,329,713, Cl. 40-310.000

Lundquist, Ingemar H. Torquable cathetercu5,329,923, Cl. 128-642.000

Lupke, Manfred A. A., to Corma Inc. Method of modifying corrugated or ribbed pipe to have a smooth outer wallcu5,330,600, Cl 156-242.000

Lutter, Johannes *See*—
Kluczynski, Roman; Lutter, Johannes; Beuter, Werner; Treude, Horst; and Burkert, Heinz, 5,330,848, Cl. 428-537.100

Lutz, Manfred: *See*—
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Luxtec Corporation: *See*—
Cooley, Denton A.; Clark, Bernard; Morris, Frederick; Delaney, Lawrence E.; Van, Peter; and Chesterson, William L., 5,331,357, Cl. 351-158.000

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Lygum, Poul, to Koppens Machinefabriek B.V. Ovencu5,329,916, Cl 126-21.00A

Lyon, James T.: *See*—
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M G K Group Inc.: *See*—
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Macek, John A.: *See*—
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Mack, William J.: *See*—
Graves, Roger A., Jr.; and Mack, William J., 5,329,826, Cl 74-335.000

Maddison, David S.; Skalsky, Michael; Gotthardt, Gerhard, and Anderson, Neil, to Telectronics Pacing Systems, Inc. Implantable electrode and sensor lead apparatuscu5,330,520, Cl. 607-122.000

Madl, Jos., Jr. Air impervious filter support systemcu5,329,739, Cl 52-506.060

Madsen, Lynnette D. *See*—
Emesh, Ismail T., Calder, Iain D.; Ho, Vu Q.; Jolly, Gurvinder; and Madsen, Lynnette D., 5,330,931, Cl. 437-60.000

Madsen, Timothy A., to Seagate Technology, Inc. Capacitor assisted low voltage write circuitcu5,331,479, Cl. 360-68.000

Maeda, Hideo; and Miyagaki, Kazuya, to Ricoh Company, Ltd. Light source device and optical pickup using light source devicecu5,331,650, Cl. 372-26.000

Maeda, Kazuo; Ohira, Kouichi; and Hirose, Mitsuo, to Semiconductor Process Laboratory Co., Inc.; Canon Sales Co., Inc.; and Alcan-Tech Co., Inc. Semiconductor fabrication equipmentcu5,330,577, Cl. 118-722.000

Maeda, Shuichi; Imamura, Satoru, Mitsuhashi, Kazuo; and Tsukahara, Takako, to Mitsubishi Kasei Corporation. Dye-incorporated compositioncu5,330,542, Cl. 8-639.000.

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Mager, Donald V., to Printware, Inc. Web steering for an image recordercu5,331,338, Cl. 346-108.000

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Magnotta, Vincent L.: *See*—
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Maguire, Harold T., Jr.; Wiesemann, John S.; Frost, David R.; Nath, Raymond J.; and Candris, Aristides S., to Westinghouse Electric Corp. Deterministic, probabilistic and subjective modeling systemcu5,331,579, Cl. 364-578.000

Maguire, Michael C.; Zanner, Frank J.; Damkroger, Brian K.; Miszkiel, Mark E.; and Aronson, Eugene A., to Sandia Corporation. Method and apparatus for controlling electroslag remeltingcu5,331,661, Cl 373-105.000

Mahabadi, Hadi K.; Wright, Denise Y., Ng, T. Hwee; Barbetta, Angelo J., and Creatura, John A., to Xerox Corporation. Dry carrier coating and processescu5,330,874, Cl. 430-137.000

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Mahoney, Christopher J.: *See*—
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Mai, Sung-Chuan; and Mai, Kong-Ming, to Sung-Chuan Mai et al. Exhaust pipe assembly for treating the exhaust of an internal combustion enginecu5,329,765, Cl. 60-311.000.

Maivald, Peter. *See*—
Elings, Virgil B.; Gurley, John A.; and Maivald, Peter, 5,329,808, Cl. 73-105.000.

Makino, Takao: *See*—
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Makita, Yasuyuki: *See*—
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Makosinski, Arthur: *See*—
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Malbari, Shabbir A. *See*—
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Malekadeli, Alireza: *See*—
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Malhotra, Shadi L., to Xerox Corporation. Transparent recording sheetscu5,330,823, Cl. 428-195.000

Malinowski, Igor. Ultrasonic fuel injectorcu5,330,100, Cl. 239-102.200

Mallinckrodt Medical, Inc. *See*—
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Maloney, James J.: *See*—
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Malthaner, Rolf: *See*—
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MAN Roland Druckmaschinen AG: *See*—
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Manchu, Tetsuo: *See*—
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Mandelbaum, Jonathan, to Almond Jewelers Inc. Jewelry with tubular appearancecu5,329,789, Cl. 63-2.000.

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Miyagawa, Masashi; Takenouchi, Masanori; Shirota, Katsuhiro; Ohkuma, Norio; Takizawa, Yoshihisa; Inui, Toshiharu; and Nakajima, Kazuhiro, to Canon Kabushiki Kaisha. Method for producing liquid-discharging recording head, liquid-discharging recording head produced by said method, and recording apparatus utilizing said recording headcu5,331,344, Cl. 347-63.000.
Miyaguchi, Miyaguchi: *See—*
Yamamoto, Koei; Miyaguchi, Miyaguchi; Takahashi, Norio; Makino, Takao; and Mori, Keisuke, 5,331,166, Cl. 250-370.110.
Miyakawa, Shinji, to Tokai Rubber Industries, Ltd. Elastic couplingcu5,330,387, Cl. 464-93.000.
Miyake, Takahiro; Yoshida, Yoshio; Kubo, Katushiro; Ueyama, Tetsuo; and Kubata, Yukio, to Sharp Kabushiki Kaisha. Optical pickup apparatus and a hologram element used for samecu5,331,621, Cl. 369-112.000
Miyamori, Takao; Hayashida, Kazuaki; and Kamo, Jun, to Mitsubishi Rayon Co., Ltd. Heat-resisting porous membrane, hydrophilized heat-resisting porous membrane and production processes thereofcu5,330,830, Cl. 428-304.400.
Miyamura, Yoshinori: *See—*
Horigome, Shinkichi; Miyamura, Yoshinori; Anzai, Yumiko; Kato, Keizo; and Shiraishi, Hiroshi, 5,330,880, Cl. 430-321.000.
Miyano, Hitoshi, to Fuji Photo Optical Co., Ltd. Macro lenscu5,331,465, Cl. 359-693.000.
Miyashita, Katsuyuki; Yoshizawa, Ryozou; Yoneda, Yukio; and Kohata, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle steering system with a steering output sensorcu5,330,023, Cl. 180-140.000.
Miyata, Katsuya: *See—*
Suzuki, Hiroshi; Miyata, Katsuya; and Kimura, Minoru, 5,330,237, Cl. 285-281.000.
Miyawaki, Mamoru; Ishizaki, Akira; Momma, Genzo; Yuzurihara, Hiroshi; and Kohchi, Tetsunobu, to Canon Kabushiki Kaisha. Semiconductor memory device including gate electrode sandwiching a channel regioncu5,331,197, Cl. 257-530.000.
Miyazaki, Koichiro: *See—*
Nogi, Munehiro; Miyazaki, Koichiro; Takubo, Seiji; Amimoto, Yoshio; and Ohashi, Ryutaro, 5,329,948, Cl. 134-25.200.
Miyazaki, Masahiki: *See—*
Abe, Yuji; Kawamoto, Masuo; Fuchi, Masami; Uemura, Takeshi; Miyazaki, Masahiki; Ueda, Hiroyuki; and Kotera, Shinichi, 5,331,374, Cl. 355-200.000.
Miyazawa, Azuma; Ito, Takeshi; and Yoshida, Yoichi, to Olympus Optical Co., Ltd. Camera shaking detection apparatuscu5,331,365, Cl. 354-410.000.
Miyazawa, Kazuyuki; Shimohigashi, Katsuhiro; Etoh, Jun; and Kimura, Katsutaka, to Hitachi, Ltd. Address multiplexed dynamic RAM having a test mode capabilitycu5,331,596, Cl. 365-201.000.
Miyoshi, Toshiaki, to Ohta Inc. (A.K.A. Ohta Kabushiki Kaisha). Stick-like means for physically handicapped personcu5,329,954, Cl. 135-71.000.
Mize, James, Jr.; Davis, Kent A.; and Stockley, Henry W., to W. R. Grace & Co.-Conn. Sealed internal package labelcu5,330,777, Cl. 426-383.000.
Mizelle, Louis E., Jr.: *See—*
Riddick, Kenneth B.; Matheson, Joe G., Jr.; and Mizelle, Louis E., Jr., 5,331,012, Cl. 514-626.000.
Mizubata, Tsuyoshi; Okui, Susumu; Yamada, Yasushi; and Nagoshi, Mitsuru, to Konica Corporation. Recording sheet conveyance device for use with an image forming apparatuscu5,331,386, Cl. 355-319.000.
Mizuhara, Howard, to Morgan Crucible Co., PLC, The. Silver-copper-aluminum-titanium brazing alloycu5,330,098, Cl. 228-214.000.
Mizuishi, Koji: *See—*
Oda, Michiaki; and Mizuishi, Koji, 5,330,729, Cl. 117-217.000.
Mizuno, Hajime: *See—*
Fujita, Takashi; Sugano, Toshihiko; Mizuno, Hajime; and Uchino, Hideshi, 5,331,054, Cl. 525-240.000.
Mizuno, Toshiyuki; and Shiraiwa, Yoshinobu, to Canon Kabushiki Kaisha. Scanning optical apparatus having at least one division sensorcu5,331,147, Cl. 250-208.200.
Mizushima, Akiko: *See—*
Azuma, Kasufumi; Sonobe, Hideki; Nate, Kazuo; Mizushima, Akiko; Saito, Harunobu; Togawa, Eisei; and Ishizaki, Hiroshi, 5,329,689, Cl. 29-603.000.
Mizutani, Uichiro: *See—*
Koyano, Tamotsu; and Mizutani, Uichiro, 5,330,554, Cl. 75-348.000.
Mizuya, Jiro: *See—*
Chihara, Machio; Mizuya, Jiro; Okumura, Tatsuya; and Tanaka, Takashi, 5,330,582, Cl. 134-40.000.
Mobil Oil Corporation: *See—*
Hsieh, John T. T., 5,330,950, Cl. 502-113.000.
Knoerzer, Anthony R.; Lu, Pang-Chia; Shields, Conway F.; and Whyman, Donald G., 5,330,812, Cl. 428-40.000.
Knoerzer, Anthony R.; and Reid, Leland W., 5,330,831, Cl. 428-353.000.
Mink, Robert I.; and Nowlin, Thomas E., 5,330,951, Cl. 502-115.000.
Moch, Rockie D.: *See—*
Reddersen, Brad R.; Shepard, Phillip W.; and Moch, Rockie D., 5,330,370, Cl. 439-502.000.
Mochida, Kunikazu: *See—*
Umemoto, Toshio; Hiruta, Toshio; and Mochida, Kunikazu, 5,331,608, Cl. 368-10.000.
Modernfold, Inc.: *See—*
Owens, N. Douglas, 5,329,857, Cl. 104-103.000.
Moeller, Robert P.; and Burns, William K., to United States of America, Navy. Low noise fiber gyroscope system which includes excess noise subtractioncu5,331,404, Cl. 356-350.000.
Moeschler, Heinrich F.: *See—*
Hector, Richard F.; Schaller, Klaus; Moeschler, Heinrich F.; and Plempel, Manfred, 5,330,976, Cl. 514-43.000.
Mogamiya, Hiroyuki: *See—*
Okabe, Nobuhiro; Mogamiya, Hiroyuki; and Yamakawa, Noriko, 5,330,678, Cl. 252-299.620.
Moks, Tomas: *See—*
Uhlen, Mathias; and Moks, Tomas, 5,330,914, Cl. 435-270.000.
Molex Incorporated: *See—*
Gardner, Michael J.; Kachlic, Jerry D.; and O'Brien, Paul M., 5,330,363, Cl. 439-188.000.
Molloy, James J.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Merrifield, David L.; Molloy, James J.; Horrall, Paul D.; Tylicki, Gary M.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,331,378, Cl. 355-210.000.
Molmec, Inc.: *See—*
Caldwell, Danny R., 5,329,889, Cl. 123-41.540.
Molz, Thomas: *See—*
Geke, Juergen; Zange, Bernhard; Rehm, Hans; Fehr, Hans; Molz, Thomas; Buick, Kurt; Bruegel, Emil; and Huesemann, Lutz, 5,330,564, Cl. 106-2.000.
Momma, Genzo: *See—*
Miyawaki, Mamoru; Ishizaki, Akira; Momma, Genzo; Yuzurihara, Hiroshi; and Kohchi, Tetsunobu, 5,331,197, Cl. 257-530.000.
Momot, Stnaley, to Rockwell International Corporation. Fluidic driven self-oscillating printer roller and methodcu5,329,851, Cl. 101-348.000.
Moncourtois, Lane; and Cook, Stephen. Home wash system with radio-controlled infrared motion sensor activatorcu5,329,949, Cl. 134-57.00R.
Monget, Daniel, to Bio Merieux. Process and medium for identification of bacteria of the listeria genuscu5,330,889, Cl. 435-34.000.
Monsanto Company: *See—*
Stern, Michael K.; and Bashkin, James K., 5,331,099, Cl. 564-154.000.
Monsees, Claude E.: *See—*
Kildal, Maurice A.; Richardson, Frank A.; Leather, Brendan N.; and Monsees, Claude E., 5,329,686, Cl. 29-450.000.

Monson, Gary L. *See—*
Fossum, Shirleen D., Monson, Gary L.; Rohde, Janel C.; and Rohde, Kenneth A., 5,329,645, Cl. 4-254.000.

Montag, Eric G. *See—*
Grim, Tracy E.; O'Donnell, Kevin R., and Montag, Eric G., 5,329,705, Cl. 36-88.000.

Montecalvo, David A.; and Rolf, David, to Lec Tec Corporation Multipurpose medical electrodecu5,330,527, Cl. 607-152.000.

Montecatini Technologie S.p.A. *See—*
Viola, Augusto; Brusa, Massimo; Merighi, Bernardo; and Gubitosa, Giuseppe, 5,330,958, Cl. 502-316.000.

Montegari, Frank A.: *See—*
Klara, Walter S.; Montegari, Frank A., and Sager, Gordon S., 5,331,216, Cl. 307-243.000.

Monteiro, Anthony M.; Hilliard, Stephen M., and Ferraro, Ralph L., to United Technologies Corporation. Process for tinning electrically conductive wirecu5,330,801, Cl. 427-560.000.

Montgomery, Michael A., to Schlumberger Technology Corporation Communications protocol for digital telemetry systemcu5,331,318, Cl. 340-855.400.

Moody, Kristaan L.; and Latham, Paul W., II, to Allegro Microsystems, Inc. Switched-capacitor notch filter with programmable notch width and depthcu5,331,218, Cl. 307-521.000.

Moore Business Forms, Inc. *See—*
Raby, James M.; and Williams, Rodney E., 5,330,959, Cl. 503-201.000.
Smith, Douglas M., 5,330,232, Cl. 283-81.000.

Moore, Calvin E. *See—*
Stricklen, Phil M.; Moore, Calvin E., and Glascock, Dennis G., 5,331,086, Cl. 528-493.000.

Moore, Dennis A.: *See—*
Deutsch, Edward A., and Moore, Dennis A., 5,330,742, Cl. 424-9.000.

Moran, Curtis E., Jr. *See—*
Aneja, Arun P.; Drew, James H., and Moran, Curtis E., Jr., 5,330,348, Cl. 425-461.000.

Mordenga, Samuel P.: *See—*
Thayer, Bruce E.; Mordenga, Samuel P., and Walcott, Billy D., 5,329,665, Cl. 134-308.000.

Mordon, Serge, Brunetaud, Jean-Marc; and Guillet, Hubert, to Institut National De La Sante Et De La Recherche Medicale. Device for treating tissue by pulse sequence groupcu5,330,517, Cl. 607-89.000.

Morehead, John H. *See—*
Timp, Richard L.; Schultz, Michael W., and Morehead, John H., 5,329,835, Cl. 83-686.000.

Morella, Angelo M., and Fisher, Mark C., to F. H. Faulding & Co. Limited. Sustained release pharmaceutical compositioncu5,330,766, Cl. 424-490.000.

Morgan Crucible Co., PLC, The *See—*
Mizuhara, Howard, 5,330,098, Cl. 228-214.000.

Morgan, Robert E.: *See—*
Rich, Homer C.; and Morgan, Robert E., 5,330,143, Cl. 248-161.000.

Mori, Hideo *See—*
Egawa, Jiro; Komiya, Kenichi; Okada, Kyoichi, Mori, Hideo; and Izawa, Hirokazu, 5,331,341, Cl. 346-108.000.

Mori, Keisuke *See—*
Yamamoto, Koei; Miyaguchi, Miyaguchi; Takahashi, Norio, Makino, Takao; and Mori, Keisuke, 5,331,166, Cl. 250-370.110.

Mori, Masaaki *See—*
Wakimasu, Mitsuhiro; Mori, Masaaki; and Kawada, Akira, 5,330,978, Cl. 514-80.000.

Mori, Satoshi; and Shibahara, Makoto, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Load control device having abnormal condition detecting for serial signal line, transmitter and receivercu5,331,214, Cl. 307-116.000.

Mori, Shigeo: *See—*
Suzuki, Togi; Mori, Shigeo; and Chujo, Noboru, 5,331,032, Cl. 524-135.000.

Mori, Takashi: *See—*
Takatori, Masahiro; Nakano, Yukio, Ishida, Kenichi, Mori, Takashi; Ashi, Yoshihiro; Kanno, Tadayuki; and Ueda, Hiromi, 5,331,639, Cl. 370-100.100.

Mori, Tetsuya; and Suzuki, Akiyoshi, to Canon Kabushiki Kaisha. Alignment and exposure methodcu5,331,371, Cl. 355-53.000.

Morigaki, Masakazu; Yoshioka, Yasuhiro; and Seto, Nobuo, to Fuji Photo Film Co., Ltd. Silver halide color photographic materialcu5,330,888, Cl. 430-551.000.

Morihara, Atsushi *See—*
Ouchi, Katsunori; Morihara, Atsushi; Naganuma, Yoshio; Sato, Koji; and Kaji, Ryuichi, 5,331,510, Cl. 361-702.000.

Morin, Daniel: *See—*
Dwyer, Daniel; Morin, Daniel; Mazzola, Massimo; and Abrahamson, Karl R., 5,331,126, Cl. 200-83.00P.

Morishita Jintan Co., Ltd. *See—*
Kikuchi, Yukio; and Kamaguchi, Ryosei, 5,330,835, Cl. 428-402.220.

Morita, Shimya; and Abe, Fumiyoshi, to Sony Corporation. Information recording and reproducing apparatus with self-diagnosis information storage mechanismcu5,331,616, Cl. 369-53.000.

Morita, Shizuo: *See—*
Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi, Satoh, Hisao; and Ikeda, Tadayoshi, 5,331,389, Cl. 355-321.000.

Morita, Takeshi, and Hayashi, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing electronic devicecu5,329,696, Cl. 29-841.000.

Moriwaki, Hiroyuki. *See—*
Tabuchi, Hiroki; Iguchi, Katsuji; Tanigawa, Makoto; Taniguchi, Takayuki; and Moriwaki, Hiroyuki, 5,330,862, Cl. 430-5.000.

Moriya, Mitsuro *See—*
Yamada, Shinichi; Moriya, Mitsuro; Shibano, Masayuki; and Yamaguchi, Hiroyuki, 5,331,615, Cl. 369-44.320.

Moriyasu, Katsuyuki: *See—*
Nakagawa, Tadahiro; Tazuke, Shizuma; Hamuro, Mitsuro; Higuchi, Hirokazu; Moriyasu, Katsuyuki; and Takahashi, Akihiko, 5,330,574, Cl. 118-120.000.

Morizuka, Kouhei, to Kabushiki Kaisha Toshiba. Heterojunction bipolar transistor with base electrode having Schottky barrier contact to the emittercu5,331,186, Cl. 257-198.000.

Morooka, Yasuo: *See—*
Hattori, Satoshi; Ueki, Shigeru; Saito, Yutaka; Manchu, Tetsuo; Katayama, Yasunori; Morooka, Yasuo; Matsumoto, Hiroshi; and Nakajima, Masaaki, 5,331,565, Cl. 364-472.000.

Morris, Frederick *See—*
Cooley, Denton A.; Clark, Bernard; Morris, Frederick; Delaney, Lawrence E.; Vari, Peter; and Chesterson, William L., 5,331,357, Cl. 351-158.000.

Morris, Paul H.; and Krause, Joseph L., Jr., to Goodyear Tire & Rubber Company, The. Strand breakage detection system for use with a plurality of strands being fed in unison along a rotating circular array of feed pathscu5,331,175, Cl. 250-561.000.

Morris, Thomas G.; and Artelli, Laurence J., to Joseph T. Ryerson & Son, Inc. Universal telescoping bulkhead door trolley assemblycu5,329,858, Cl. 105-178.000.

Morrison, Ward D., to Cannon Industries, Inc. Feed shell lubrication manifoldcu5,330,012, Cl. 173-141.000.

Morrison, William A. *See—*
Singh, Raj N.; and Morrison, William A., 5,330,854, Cl. 428-698.000.

Morrow, Marvin S.: *See—*
Holcombe, Cressie E., and Morrow, Marvin S., 5,330,942, Cl. 501-87.000.

Mortenson, Mark G. *See—*
Newkirk, Marc S.; and Mortenson, Mark G., 5,329,984, Cl. 164-98.000.

Moscrip, William M., to Wilkins, Gordon A., Trustee. Magnoelectric resonance enginecu5,329,768, Cl. 60-518.000.

Moser, Walter; and Willi, Roland, to Sulzer Brothers Limited; and Protek AG. Screw-nut for screwing implants togethercu5,330,535, Cl. 623-20.000.

Moss, Gordon L.; and Liebl, David A., to Medamicus, Inc. Universal slitter having a slidercu5,330,460, Cl. 604-280.000.

Mossman, Allen B.; Macek, John A.; and Packer, Lawrence G., to Amoco Corporation. Process for manufacture of high molecular weight polyester resins from 2,6-naphthalene dicarboxylic acidcu5,331,082, Cl. 528-298.000.

Motobayashi, Naoki: *See—*
Yoneda, Shinsaku; Ishizuka, Yoshiyuki; Motobayashi, Naoki; and Okada, Takehiko, 5,331,379, Cl. 355-214.000.

Motorola, Inc.: *See—*
Davis, Walter L., 5,331,317, Cl. 340-825.440.
Dunn, William C.; and Roop, Raymond M., 5,329,815, Cl. 73-505.000.
Jasinski, Leon, 5,331,431, Cl. 358-462.000.
Kimbell, Martin J.; and Schwartz, Mark W., 5,331,123, Cl. 200-52.00R.
Patino, Joseph; Nigro, Daniel M., and Fiske, John D., II, 5,331,268, Cl. 320-20.000.
Pfiester, James R.; and Hayden, James D., 5,330,929, Cl. 437-52.000.
Primeaux, William F., 5,331,205, Cl. 257-790.000.
Shepherd, Wayne P.; and Heck, Joseph P., 5,331,293, Cl. 331-1.00R.
Shieh, Chan-Long; and Ackley, Donald E., 5,331,658, Cl. 372-50.000.
Westbrook, Gregory L.; and Williams, William M., 5,330,919, Cl. 437-8.000.
Yu, Chris C., 5,329,734, Cl. 51-283.00R.

Mott, Thomas J., Jr.: *See—*
Li, Chi C.; Mott, Thomas J., Jr., and Petersen, P. Eric, V, 5,330,128, Cl. 242-345.200.

Motta, Vincent C.: *See—*
Ferraro, Frank A.; and Motta, Vincent C., 5,329,700, Cl. 30-41.000.

Mount, II, Houston B., and Powers, Jim R., to Amoco Corporation. Electrical connector for well surveying toolcu5,330,364, Cl. 439-190.000.

Mountain Safety Research, Inc.: *See—*
Fife, James F.; Vorhis, Daniel J.; Laughlen, Kenneth D.; and Dienes, Nancy L., 5,330,640, Cl. 210-170.000.

Moy, James, to Quamco, Inc. Bearing for hatch cover or the likecu5,330,271, Cl. 384-13.000.

Moy, Michael; Schmidt, Robert W.; and Brummet, Robert A., to Storage Technology Corporation. On-the-fly position calibration of a robotic armcu5,331,232, Cl. 318-568.110.

Moyer, William: *See—*
Sigafoos, Robert D.; Moyer, William; and Hazzard, Mary, 5,330,008, Cl. 168-12.000.

Mozer, Albrecht, to Alcatel N.V. Optical time-division multiplexingcu5,331,451, Cl. 359-139.000.

MST, Inc.: *See—*
Martin, Charles E.; and Overby, Kenneth W., 5,330,723, Cl. 422-122.000.

Muehllehner, Gerd; and Lewitt, Robert M., to UGM Medical Systems, Inc. Three dimensional image reconstruction for a positron emission tomographcu5,331,553, Cl. 364-413.240.

Mueller, Manfred; and Winter, Manfred, to Filterwerk Mann & Hummel GmbH. Pivotable jointcu5,329,903, Cl. 123-337.000.

Mueller, Martin, to Robert Bosch GmbH. Hydraulic control devicecu5,329,890, Cl. 123-90.170.

Mueller, Richard A.: *See—*
Koszyk, Francis J.; and Mueller, Richard A., 5,331,096, Cl. 546-115.000.

Mueller, William J.: *See—*
Johnson, James R.; Orfield, Mary L.; and Mueller, William J., 5,330,792, Cl. 427-217.000.

Mues, Willem, to Agfa-Gevaert N. V. Curtain coater with displaceable edge guides and methodcu5,330,797, Cl. 427-420.000.

Muhammad, JaCara R.: *See—*
Barkalow, David G.; Muhammad, JaCara R.; and McGrew, Gordon N., 5,330,771, Cl. 426-3.000.
Barkalow, David G.; Muhammad, Jacara R.; and Greenberg, Michael J., 5,330,772, Cl. 426-3.000.

Mukogawa, Yasukazu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device resistant to slip line formationcu5,331,193, Cl. 257-371.000.

Mul-T-Lock, Ltd.: *See—*
Eizen, Noach, 5,331,307, Cl. 340-426.000.

Muller, Emmerich: *See—*
Becker, Michael; Reichert, Wolfgang; and Muller, Emmerich, 5,331,651, Cl. 372-32.000.

Muller, Gerhard: *See—*
Engelfried, Werner; and Muller, Gerhard, 5,329,790, Cl. 66-221.000.

Muller, Uwe; and Hermann, Michael, to PAPST Licensing GmbH. Axially compact direct drive for storage disk hubcu5,331,483, Cl. 360-86.000.

Mullican, Michael D.: *See—*
Horwell, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S.; Roberts, Edward; Roth, Bruce D.; Tait, Bradley D.; Trivedi, Bharat K.; Trostmann, Uwe; and Unangst, Paul C., 5,331,006, Cl. 514-481.000.

Mullins, Oliver C. *See—*
Hines, Daniel R.; Wada, Noboru; Garoff, Stephen; Mullins, Oliver C.; Hammond, Paul; Tarvin, Jeffrey; Cramer, Stephen P.; and Wiggins, Ralphe, 5,331,156, Cl. 250-256.000.

Multifastener Corporation: *See—*
Sickels, David W., and Sills, Robert E., 5,329,694, Cl. 29-798.000.

Mumalo, Richard A., to Rust Industrial Services Inc. Vacuum truck exhaust gas treatment apparatuscu5,330,725, Cl. 422-170.000.

Munshi, Anil *See—*
Kapoor, Archana; and Munshi, Anil, 5,330,754, Cl. 424-190.100.

Munson, Gregory S.: *See—*
Frick, Roger L.; and Munson, Gregory S., 5,329,818, Cl. 73-708.000.

Murad, George B.; and Polit, Neil A., to Videojet Systems International, Inc. Base having anti-vibration meanscu5,330,171, Cl. 271-131.000.

Murakami, Mikio: *See—*
Dubal, Hans-Rolf; Murakami, Mikio; Herrmann-Schonherr, Otto; and Schneller, Arnold, 5,331,081, Cl. 528-288.000.

Murakami, Yoshiteru; Ohta, Kenji; and Takahashi, Akira, to Sharp Kabushiki Kaisha. Magneto-optical recording apparatus using the magnetic field modulation methodcu5,331,612, Cl. 369-13.000.

Murashima, Hirotsugu: *See—*
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko; Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tanii, Keiichi, 5,331,411, Cl. 348-708.000.

Murata, Chikara: *See—*
Futamura, Shoji; and Murata, Chikara, 5,330,409, Cl. 483-29.000.

Murata, Haruhiko: *See—*
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko; Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tanii, Keiichi, 5,331,411, Cl. 348-708.000.

Murata, Kazuhisa; Matsuda, Akio; and Masuda, Takashi, to Director-General of Agency of Industrial Science & Technology. Organic ferromagnetic substance and process for producing samecu5,330,668, Cl. 252-62.510.

Murata Manufacturing Co., Ltd.: *See—*
Nakagawa, Tadahiro; Tazuke, Shizuma; Hamuro, Mitsuro; Higuchi, Hirokazu; Moriyasu, Katsuyuki; and Takahashi, Akihiko, 5,330,574, Cl. 118-120.000.

Murayama, Junichi: *See—*
Ohdomari, Iwao; Sugimori, Masaaki; Murayama, Junichi; Koh, Meishoku; Noritake, Katsunori; Matsukawa, Takashi; and Shimizu, Hiroaki, 5,331,161, Cl. 250-309.000.

Murayama, Mitsuo, to Sanwa Shoyaku Kabushiki Kaisha. 14-O-p-chlorobenzoylaconine and analgesic/anti-inflammatory agent containing the samecu5,330,983, Cl. 514-216.000.

Murayama, Yoichi, to NEC Corporation. Vacuum fluorescent display devicecu5,331,334, Cl. 345-47.000.

Murphree, Larry. Mobile water agitating and aerating apparatuscu5,330,639, Cl. 210-170.000.

Murphree, Michael L., to White Consolidated Industries, Inc. Light tree display for a horizontal carouselcu5,330,062, Cl. 211-122.000.

Murphy, Edward F.: *See—*
Huber, David R.; Hall, Douglas W.; and Murphy, Edward F., 5,331,449, Cl. 359-125.000.

Murphy, Kent W.: *See—*
Kendra, Robert T.; Weihl, Philip H.; Baric, Thomas J.; Murphy, Kent W.; Bejster, Edward L.; and Dundore, Harry C., 5,330,055, Cl. 206-534.100.

Murphy, Richard F.; DiLauro, John A.; and Urmaza, Matthew G., to Torrington Company, The. Rocker arm assemblycu5,329,891, Cl. 123-90.390.

Murphy, Richard J.; Dickinson, David J.; and Turner, Philip, to Imperial College of Science, Technology & Medicine. Treatment of wood and wood-based materialscu5,330,847, Cl. 428-537.100.

Murray, Michael A.; Love, John F.; Hughett, James D.; Stephens, Randy R.; and Schwemberger, Richard F., to Ethicon, Inc. Rotating head skin staplercu5,330,087, Cl. 227-175.000.

Murray, Thomas: *See—*
Hassler, William L.; Murray, Thomas; Armstrong, Charles; and Price, Daniel, 5,330,502, Cl. 606-205.000.

Murugesu, Benjamin K.: *See—*
Poser, Kimberly J.; and Murugesu, Benjamin K., 5,330,113, Cl. 241-74.000.

Muszak, Martin F.; Kissel, Thomas R.; and Kildal, Maurice, to Eastman Kodak Company. Round potentiometer slide elements and method of using the samecu5,330,625, Cl. 204-153.100.

Muszak, Martin F.: *See—*
Shaw, James D.; Muszak, Martin F.; and Heavner, David A., 5,330,716, Cl. 422-63.000.

Myers, Geoffrey D.; and Bottlinger, Judy P., to AlliedSignal Inc. Turbine combustor cooling systemcu5,329,773, Cl. 60-759.000.

Mylari, Banavara L.; and Zembrowski, William J., to Pfizer Inc. 1H-indazole-3-acetic acids as aldose reductase inhibitorscu5,330,997, Cl. 514-367.000.

Myohanen, Karl: *See—*
Hardie, Gregory J.; Ganser, John M.; Webb, Ian D.; Hyppanen, Timo; Myohanen, Karl; and Nopanen, Ismo, 5,330,556, Cl. 75-414.000.

Myrata Mfg. Co., Ltd.: *See—*
Ogawa, Toshio, 5,331,187, Cl. 257-295.000.

N.A. Taylor Co., Inc.: *See—*
Erskine, Edward J., 5,329,667, Cl. 16-269.000.

Nagahashi, Isao: *See—*
Karlsrud, Chris E.; Van Woerkom, Anthony G.; Odagiri, Shigeru; and Nagahashi, Isao, 5,329,732, Cl. 51-131.500.

Nagai, Satoshi, to ASACA Corporation. Synchronizing signal detector for multi-beam optical disk unitcu5,331,618, Cl. 369-59.000.

Nagaishi, Tatsuoki; Ota, Nobuhiro; and Fujimori, Naoji, to Sumitomo Electric Industries, Ltd. Laser ablation process for preparing oxide superconducting thin filmscu5,330,968, Cl. 505-474.000.

Nagami, Yoshihiro: *See—*
Ueda, Tamio; Nagami, Yoshihiro; Saito, Yumi; and Zhiming, Zhang, 5,331,541, Cl. 364-162.000.

Nagano, Masashi, to Shimano Inc. Apparatus for rotatably fitting a fork stem in a head tube of a bicyclecu5,330,220, Cl. 280-279.000.

Naganuma, Yoshio: *See—*
Ouchi, Katsunori; Morihara, Atsushi; Naganuma, Yoshio; Sato, Koji; and Kaji, Ryuichi, 5,331,510, Cl. 361-702.000.

Nagaoka, Osamu; and Ishikawa, Tsuyoshi, to Mitsui Mining Company, Limited. Crushing apparatuscu5,330,112, Cl. 241-57.000.

Nagasaka, Ichiro: *See—*
Yamaguchi, Masayoshi; Sasaki, Tsuyoshi; Nagata, Hisao; and Nagasaka, Ichiro, 5,329,766, Cl. 60-384.000.

Nagata, Hisao: *See—*
Yamaguchi, Masayoshi; Sasaki, Tsuyoshi; Nagata, Hisao; and Nagasaka, Ichiro, 5,329,766, Cl. 60-384.000.

Nagaura, Toshikazu: *See—*
Mieda, Michinobu; Nagaura, Toshikazu; Takemori, Hirotoshi; Ohta, Kenji; and Yoshidome, Hiroo, 5,331,625, Cl. 369-275.100.

Nagoshi, Mitsuru: *See—*
Mizubata, Tsuyoshi; Okui, Susumu; Yamada, Yasushi; and Nagoshi, Mitsuru, 5,331,386, Cl. 355-319.000.

Naheiri, Tarik: *See—*
Kumar, Ravi; Naheiri, Tarik; and Watson, Charles F., 5,330,561, Cl. 95-101.000.

Nahm, James J. W.; Cowan, Kenneth M.; and Wyant, Reece E., to Shell Oil Company. Oil mud displacement with blast furnace slag/surfactantcu5,330,006, Cl. 166-293.000.

Naito, Hayato, to Sankyo Seiki Mfg. Co., Ltd. Brushless motor drive circuitcu5,331,259, Cl. 318-254.000.

Naito, Noboru: *See—*
Hayashi, Yuichiro; and Naito, Noboru, 5,329,740, Cl. 52-514.000.

Naitou, Motoharu: *See—*
Kondo, Akira; Naitou, Motoharu; Ota, Toshiaki; Masegi, Mitsuhiko; and Sakurai, Masao, 5,331,211, Cl. 307-10.100.

Nakagawa, Tadahiro; Tazuke, Shizuma; Hamuro, Mitsuro; Higuchi, Hirokazu; Moriyasu, Katsuyuki; and Takahashi, Akihiko, to Murata Manufacturing Co., Ltd. Electrode forming apparatuscu5,330,574, Cl. 118-120.000.

Nakajima, Kazuhiro: *See—*
Miyagawa, Masashi; Takenouchi, Masanori; Shirota, Katsuhiro; Ohkuma, Norio; Takizawa, Yoshihisa; Inui, Toshiharu; and Nakajima, Kazuhiro, 5,331,344, Cl. 347-63.000.

Nakajima, Masaaki: *See—*
Hattori, Satoshi; Ueki, Shigeru; Saito, Yutaka; Manchu, Tetsuo; Katayama, Yasunori; Morooka, Yasuo; Matsumoto, Hiroshi; and Nakajima, Masaaki, 5,331,565, Cl. 364-472.000.

Nakajima, Shinichi: *See*—
Asai, Masahito; and Nakajima, Shinichi, 5,330,583, Cl. 136-251.000
Nakajima, Toyokatsu, to Mitsubishi Denki Kabushiki Kaisha. A/D convertercu5,331,324, Cl. 341-141.000
Nakajima, Yuji, to Kabushiki Kaisha Toshiba. Electronic apparatus wherein components are detachably arranged in a housing having a recess with a sliding and clamping covercu5,331,506, Cl. 361-683.000
Nakama, Toshiyuki: *See*—
Matsuura, Yozo; and Nakama, Toshiyuki, 5,331,377, Cl. 355-208.000
Nakamoto, Manabu: *See*—
Yamashita, Nobuhiko; Nakamoto, Manabu, Okura, Ryoichi; and Matsushita, Isao, 5,330,909, Cl. 435-240.270
Nakamura, Kazunari: *See*—
Tsuruoka, Takao; Hiyama, Keiichi; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichiro, 5,331,551, Cl. 364-413.130
Nakamura, Kazuyuki, to NEC Corporation. Semiconductor integrated circuit with selective interfacing on different interface levelscu5,331,219, Cl. 307-475.000
Nakamura, Naomi, to Kabushiki Kaisha Toshiba. Power conversion control apparatuscu5,331,535, Cl. 363-37.000
Nakamura, Shigeru: *See*—
Kasari, Akira, Ito, Satoru; and Nakamura, Shigeru, 5,330,796, Cl. 427-407.100
Nakamura, Tomokazu: *See*—
Ota, Hiroshi; and Nakamura, Tomokazu, 5,331,381, Cl. 355-260.000
Nakamura, Yasushi, to Terumo Kabushiki Kaisha. Multiple bagcu5,330,462, Cl. 604-410.000.
Nakamura, Yusuke: *See*—
Vogelstein, Bert; Kinzler, Kenneth W., White, Raymond, and Nakamura, Yusuke, 5,330,892, Cl. 435-6.000.
Nakanishi, Tsuneo: *See*—
Shundou, Hiroyuki; and Nakanishi, Tsuneo, 5,330,858, Cl. 429-22.000.
Nakano, Eiichi: *See*—
Kajiyama, Naoki; and Nakano, Eiichi, 5,330,906, Cl. 435-189.000.
Nakano, Masayuki; Kuramoto, Ryozo; Otozaki, Shigeo; Kaneko, Katsuaki; Shibasaki, Hideo; and Tamura, Noritoshi, to Onoda Cement Co., Ltd. Molding of calcium silicate having high strength and its manufacturing methodcu5,330,573, Cl. 106-796.000.
Nakano, Motoo: *See*—
Yamada, Masao; Nakano, Motoo; Collins, George J.; Tamura, Tetsuro; and Takazawa, Akira, 5,331,180, Cl. 257-3.000.
Nakano, Takashi: *See*—
Koyama, Takeo; and Nakano, Takashi, 5,331,354, Cl. 348-730.000.
Nakano, Yukio: *See*—
Takatori, Masahiro; Nakano, Yukio; Ishida, Keiichi; Mori, Takashi; Ashi, Yoshihiro; Kanno, Tadayuki, and Ueda, Hiromi, 5,331,639, Cl. 370-100.100.
Nakao, Hironobu: *See*—
Shimoji, Noriyuki; and Nakao, Hironobu, 5,331,190, Cl. 257-324.000.
Nakao, Seiya: *See*—
Ito, Masahito; Koujiya, Miyuki; Sarai, Hiroshi; Nakao, Seiya; Nomura, Takao; Kitou, Satoru; Matsuda, Fuminori; Yamada, Susumu; Kuroiwa, Kesato; and Mihara, Hiroshi, 5,329,981, Cl. 164-7.200
Nakashima, Mitsukane; Nakatsuka, Yasunori; and Sano, Toei, to Meichuseiki Kabushiki Kaisha. Dipping and pouring apparatus for molten metalcu5,330,162, Cl. 266-236.000
Nakata, Kiyoshi; and Hayashi, Seishu, to Toyo Boseki Kabushiki Kaisha. Apparatus for spinning of polyurethane elastic filamentscu5,330,338, Cl. 425-94.000
Nakatani, Masahiro: *See*—
Kanda, Akihiro; Tanaka, Mitsuo; Hirai, Takehiro; and Nakatani, Masahiro, 5,331,198, Cl. 257-555.000.
Nakatani, Yasuhiro: *See*—
Takanoo, Yutaka; Okino, Ikuo; and Nakatani, Yasuhiro, 5,331,066, Cl. 525-438.000
Nakatsuka, Yasunori: *See*—
Nakashima, Mitsukane; Nakatsuka, Yasunori; and Sano, Toei, 5,330,162, Cl. 266-236.000.
Nakayama, Hideo. Method of disrupting the chlorella cell wall by cell rupturecu5,330,913, Cl. 435-259.000.
Nakayama, Takenori; and Konno, Toyohiko, to Kabushiki Kaisha Kobe Seiko Sho. Corrosion resistant Al or Al alloy materialscu5,330,851, Cl. 428-627.000.
Nakazono, Hiroyuki: *See*—
Umemura, Shunji; and Nakazono, Hiroyuki, 5,331,352, Cl. 348-682.000
Nakazyo, Kiyoshi: *See*—
Hasebe, Kazunori; and Nakazyo, Kiyoshi, 5,330,887, Cl. 430-550.000
Nalco Chemical Company: *See*—
Byrne, Norman E.; Marble, Robert A.; and Ramesh, Manian, 5,330,650, Cl. 210-708.000
Ramesh, Manian; Venkatadri, Ram A.; Connelly, Lawerence J.; and Cramm, Jeffrey R., 5,330,546, Cl. 44-620.000.
Sufrin, Barry W., 5,330,683, Cl. 252-387.000.
Syrinek, Allen R., 5,330,581, Cl. 134-22.170.
Namizuka, Yoshiyuki, to Ricoh Company, Ltd. Image reproducing apparatuscu5,331,427, Cl. 358-433.000.
Nanataki, Hideo. *See*—
Ohtsuka, Yasumasa; Takeuchi, Akihiko; Tanigawa, Koichi; and Nanataki, Hideo, 5,331,385, Cl. 355-290.000
Napco Security Systems, Inc.: *See*—
Buccola, Charles S.; and Kolb, Lawrence M., 5,331,308, Cl. 340-522.000
Napier, James J.: *See*—
Griffith, Ronald C.; and Napier, James J., 5,331,007, Cl. 514-522.000
Narahara, Tetsuya, to NEC Corporation. Semiconductor memory devicecu5,331,588, Cl. 365-51.000
Narasimhan, Rajagopalan: *See*—
Yee, Jeng-Jung; Kornacki, Jeffrey L.; and Narasimhan, Rajagopalan, 5,330,780, Cl. 426-582.000
Narayanan, Sarukkai R. Computerized educational and entertainment devicecu5,330,358, Cl. 434-340.000
Narcisco, Hugh L., Jr.: *See*—
Doiron, Daniel R.; Narcisco, Hugh L., Jr.; and Paspa, Paul, 5,330,465, Cl. 606-7.000
Narita, Mitsuru; Tamura, Tsuneo; and Kitagawa, Seizou, to Fuji Electric Co., Ltd. Photosensitive material for electronic photography usecu5,330,863, Cl. 430-58.000
Naruse, Noriyoshi: *See*—
Andoh, Mitsuru; and Naruse, Noriyoshi, 5,329,987, Cl. 164-306.000.
Nashimoto, Ryuuzoh: *See*—
Someya, Sakae; Nashimoto, Ryuuzoh; Suzuki, Hirofumi; Yarita, Katsuhiko; Matsumoto, Shinji; Sasano, Akira; Taniguchi, Hideaki; and Oritsuki, Ryouji, 5,331,447, Cl. 359-59.000.
Nasset, William J. Copy reproduction holding and alignment layout apparatuscu5,331,380, Cl. 355-230.000.
Nastasi, Victor R.: *See*—
Chu, Shao-Fu S.; Kim, Kyong-Min; Mei, Shaw-Ning; Nastasi, Victor R.; and Ratanaphanyarat, Somnuk, 5,331,199, Cl. 257-587.000.
Nate, Kazuo: *See*—
Azuma, Kasufumi; Sonobe, Hideki; Nate, Kazuo; Mizushima, Akiko; Saito, Harunobu; Togawa, Eisei; and Ishizaki, Hiroshi, 5,329,689, Cl. 29-603.000.
Nath, Raymond J.: *See*—
Maguire, Harold T., Jr.; Wiesemann, John S.; Frost, David R.; Nath, Raymond J.; and Candris, Arnstides S., 5,331,579, Cl. 364-578.000.
Nathan, Roger H., to Ben-Gurion University of the Negev Research & Development Authority. Device for generating hand functioncu5,330,516, Cl. 607-48.000.
National Forge Company: *See*—
Khare, Ashok K., 5,330,707, Cl. 420-109.000.
National Semiconductor Corporation: *See*—
Davis, Timothy D., 5,331,296, Cl. 331-158.000.
Jelinek, Jules J.; and Deng, Jay, 5,331,295, Cl. 331-57.000.
Ohannes, James R.; and Clukey, Stephen W., 5,331,224, Cl. 307-443.000
Worden, Dennis R.; and Brown, Michael A., 5,331,292, Cl. 331-1.00A
National Starch and Chemical Investment Holding Corporation: *See*—
Stauffer, Daniel; Puletti, Paul P.; and Kauffman, Thomas F., 5,331,033, Cl. 524-275.000.
Nauchno-Issledovatelsky Institut Kosmicheskogo Priborostoenia: *See*—
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Saltschev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.
Naudet, Jacky S.: *See*—
Agram, Daniel; Charbonnel, Jean-Louis; Joly, Philippe G. E.; Miraucourt, Gerard G.; Naudet, Jacky S.; and Prato, Jean-Claude, 5,330,324, Cl. 416-220.00R.
Naumann, Dirk: *See*—
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NCR Corporation: *See*—
Buckman, Symon P. A.; and Patterson, David L., 5,330,316, Cl. 414-790.200.
Nebergall, Robert S.: *See*—
Hynes, Russell E.; and Nebergall, Robert S., 5,330,946, Cl. 502-82.000.
NEC Corporation: *See*—
Arai, Koju, 5,331,633, Cl. 370-85.110.
Fujita, Yoshitaka; and Tsuda, Keiichi, 5,331,630, Cl. 370-58.100.
Hayashi, Fumihiko, 5,331,170, Cl. 257-377.000.
Higuchi, Misao, 5,331,600, Cl. 365-230.040.
Ichihara, Masaki, 5,331,230, Cl. 307-514.000.
Ishitani, Akihiko, 5,330,936, Cl. 437-241.000.
Kitsuki, Toshiaki; and Sawada, Akira, 5,331,584, Cl. 364-725.000.
Kurokami, Yuzo, 5,331,663, Cl. 375-14.000.
Murayama, Yoichi, 5,331,334, Cl. 345-47.000.
Nakamura, Kazuyuki, 5,331,219, Cl. 307-475.000.
Narahara, Tetsuya, 5,331,588, Cl. 365-51.000.
Ohkubo, Chie; and Hagihara, Yasuhiki, 5,331,581, Cl. 364-717.000.
Okuda, Taneaki; and Tateishi, Kazuo, 5,330,661, Cl. 210-748.000.
Sato, Natsuki, 5,330,926, Cl. 437-52.000.
Takahashi, Naoya, 5,331,572, Cl. 364-491.000.
Yamagata, Yasushi, 5,331,592, Cl. 365-185.000.

NEC Electronics, Inc.: *See*—
Aronoff, Alan P.; Birnkrant, Marc S.; Matsushima, Osamu; Sugishita, Kyosuke; Oba, Hisaharu; Reddy, Katta N.; Olsen, Richard I.; and Dichter, Brent N., 5,331,571, Cl. 364-490.000.
Nehls, Barry L.: *See*—
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Neilson, Bruce H.; Rudie, Eric N.; and Dann, Mitchell, to Urologix, Inc. Method for treating interstitial tissue associated with microwave thermal therapycu5,330,518, Cl. 607-101.000.
Nelsen, Barry F.: *See*—
Materazzi, Peter E.; and Nelsen, Barry F., 5,330,872, Cl. 430-115.000.
Nelson, John J.; and Bell, Lawrence E., to Freudenerg-NOK General Partnership. Shaft seal and bore assemblycu5,329,898, Cl. 123-195.00C.
Nelson, Oliver E.; and Pan, David, to Wisconsin Alumni Research Foundation. Mutant maize variety containing the glt1-1 allelecu5,331,108, Cl. 800-235.000.
Nelson, Paul A.: *See*—
McPheeters, Charles C.; Nelson, Paul A.; and Dees, Dennis W., 5,330,859, Cl. 429-33.000.
Nelson, Richard J.: *See*—
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Wollenberg, Robert H.; Nelson, Richard J.; McDonald, John; Ruelas, Susanne G.; Campbell, Curtis B.; and Matera, Kathryn E., 5,330,664, Cl. 252-18.000.
Nelson, William E., to Texas Instruments Incorporated. Method and apparatus for patterning an imaging membercu5,330,878, Cl. 430-311.000.
Nemedi, Robert J., to Inter-Source Recovery Systems, Inc. Indexable screen for centrifugal separator devicecu5,330,637, Cl. 210-232.000.
Nemoto, Kazuhiko: *See*—
Ohata, Toyoharu; Nemoto, Kazuhiko; and Ogawa, Masamichi, 5,331,659, Cl. 372-50.000.
NessAiver, Moriel S., to Picker International, Inc. Reduced scan time cardiac gated magnetic resonance cine and flow imagingcu5,329,925, Cl. 128-653.200.
Nesseth, Clifford B.; Nesseth, Raymond P.; and Nesseth, Clinton A., to NTH, Inc. Manure transfer systemcu5,330,332, Cl. 417-440.000.
Nesseth, Clinton A.: *See*—
Nesseth, Clifford B.; Nesseth, Raymond P.; and Nesseth, Clinton A., 5,330,332, Cl. 417-440.000.
Nesseth, Raymond P.: *See*—
Nesseth, Clifford B.; Nesseth, Raymond P.; and Nesseth, Clinton A., 5,330,332, Cl. 417-440.000.
Nestec S.A.: *See*—
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Wikstroem, John I. G., 5,330,776, Cl. 426-500.000.
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Neufeld, E. David: *See*—
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Neumayer, Deborah: *See*—
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Neumeyer, Josef: *See*—
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New Covent Garden Soup Company Limited, The: *See*—
Palmer, Roland A., 5,330,775, Cl. 426-61.000.
New Paradise Enterprise Co., Ltd.: *See*—
Lo, Wen-Hsiung, 5,330,821, Cl. 428-120.000.
New Venture Gear, Inc.: *See*—
Eastman, Richard E.; Wilson, Robert J.; Sperduti, David; and Adler, Randy W., 5,330,030, Cl. 180-233.000.
NewCon Co.: *See*—
Ellich, Thomas J.; and Peterson, Dennis J., 5,330,158, Cl. 251-327.000.
Newkirk, Franklin D.: *See*—
Ficken, Leonard A.; and Newkirk, Franklin D., 5,330,078, Cl. 222-129.400.
Newkirk, Marc S.; and Mortenson, Mark G., to Lanxide Technology Company, LP. Method of forming a filler material for use in various metal matrix composite body formation processescu5,329,984, Cl. 164-98.000.
Newman, Amy H.; Calderon, Silvia N.; and Tortella, Frank C., to United States of America, Army. 1-phenyla ikanecarboxylic acid derivatives as anticonvulsant and neuroprotective agentscu5,331,010, Cl. 514-617.000.
Ng, T. Hwee: *See*—
Mahabadi, Hadi K.; Wright, Denise Y.; Ng, T. Hwee; Barbetta, Angelo J.; and Creatura, John A., 5,330,874, Cl. 430-137.000.
NGK Insulators, Ltd.: *See*—
Fukuda, Naoya; Sagara, Tadashi; and Ishigaki, Mitsuaki, 5,331,494, Cl. 360-103.000.
Ohhashi, Tsuneaki; and Tsuno, Nobuo, 5,330,703, Cl. 419-57.000.
Ravi, Jagannathan; Van Bockstal, Gerard; Suzuki, Go; and Shirasu, Kouji, 5,331,250, Cl. 315-71.000.
NGK Spark Plug Co., Ltd.: *See*—
Kuroda, Masao; Imai, Ryuji; and Asano, Toshiya, 5,331,204, Cl. 257-758.000.
Kuroda, Masao, 5,331,514, Cl. 361-760.000.
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Nguyen, Nam G.: *See*—
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Nguyen, Tai Q.: *See*—
Clayman, David A.; and Nguyen, Tai Q., 5,330,485, Cl. 606-130.000.
Nguyen, Tue: *See*—
Dobuzinsky, David M.; Harmon, David L.; Kasi, Srinandan R; Kenney, Donald M.; Van Nguyen, Son; Nguyen, Tue; and Pan, Pai-Hung, 5,330,935, Cl. 437-239.000.
Niagara Mohawk Power Corporation: *See*—
Carapezza, Joseph R.; and Ystueta, Linda T., 5,329,824, Cl. 73-866.500.
Nichia Kagaku Kogyo K.K.: *See*—
Aihara, Yoshikatsu; Suzuki, Tomokazu; Shizuki, Yoshiaki; Bando, Shoichi; and Uchimura, Katsunori, 5,330,791, Cl. 427-215.000.
Nicholas, David A.: *See*—
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Nichols, Lucy M.; Roline, Glenn M.; Bennett, Tom D.; and Thompson, David L., to Medtronic, Inc. Diagnostic function data storage and telemetry out for rate responsive cardiac pacemakercu5,330,513, Cl. 607-32.000.
Nicholson, Michael A. Mechanic's creepercu5,330,211, Cl. 280-32.600.
Nick, Jeffrey M.: *See*—
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Nicol, Glenn A.: *See*—
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Nicolaidis, Raphael; and Hewitt, Peter S. Portable constructional element and a process for its productioncu5,329,741, Cl. 52-725.000.
Niebauer, Kenneth L.: *See*—
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Nigro, Daniel M.: *See*—
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Nihei, Ryo: *See*—
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Nihon Mente Kaihatsu Kabushiki Kaisha: *See*—
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Nikkiso Co., Ltd.: *See*—
Ogawa, Motoyasu, 5,330,318, Cl. 415-1.000.
Nikon Corporation: *See*—
Sato, Susumu, 5,331,467, Cl. 359-731.000.
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Nilsson-Almqvist, Bo: *See*—
Soderkvist, Jan; Nilsson-Almqvist, Bo; Holm, Tony; and Borjesson, Fredrik, 5,329,816, Cl. 73-505.000.
Nilsson, Bjarne. Filter sectorcu5,330,644, Cl. 210-323.100.
Nilsson, Per-Inge: *See*—
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Ninomiya, Sigeru: *See*—
Tsuji, Yoshihisa; Ninomiya, Sigeru; Kato, Kazuo; Kobayashi, Mamoru; Kojima, Akio; Sasaki, Hideaki; and Yokoyama, Tetsuhiro, 5,329,690, Cl. 29-701.000.
Nippon Clean Engine Research Institute Co., Ltd.: *See*—
Onishi, Shigeru, 5,329,901, Cl. 123-254.000.
Nippon Oil Co., Ltd.: *See*—
Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; Tajima, Yoshio; and Matsuura, Kazuo, 5,331,071, Cl. 526-128.000.
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Funabashi, Hideo; Tanaka, Akira; Ohnishi, Rikuo; Kasahara, Toshikazu, and Yamawaki, Takashi, 5,330,949, Cl. 502-111.000

Ohsawa, Hidefumi: *See*—
Kato, Shigeo; Yasuda, Yasuhiko; and Ohsawa, Hidefumi, 5,331,426, Cl. 358-426.000

Ohshima, Eiji: *See*—
Takasaki, Saburo; and Ohshima, Eiji, 5,331,482, Cl. 360-85.000

Ohshita, Shoji: *See*—
Masuda, Teruo; Matsuzaki, Masahiro; and Ohshita, Shoji, 5,330,416, Cl. 601-52.000

Ohta Inc. (A K A. Ohta Kabushiki Kaisha): *See*—
Miyoshi, Toshiaki, 5,329,954, Cl. 135-71.000

Ohta, Kenji: *See*—
Mieda, Michinobu; Nagaura, Toshikazu; Takemori, Hirotoshi, Ohta, Kenji; and Yoshidome, Hiroo, 5,331,625, Cl. 369-275.100
Murakami, Yoshiteru; Ohta, Kenji; and Takahashi, Akira, 5,331,612, Cl. 369-13.000

Ohta, Yukinori: *See*—
Yaba, Susumu; Kikugawa, Shinya; and Ohta, Yukinori, 5,330,941, Cl. 501-54.000

Ohtsuka, Yasumasa; Takeuchi, Akihiko; Tanigawa, Koichi; and Nanataki, Hideo, to Canon Kabushiki Kaisha. Fixing rotatable member having conductive parting layer and fixing apparatus using samecu5,331,385, Cl. 355-290.000

Ohtsuka, Yoshinori: *See*—
Watanabe, Takamoto; Ohtsuka, Yoshinori; and Hattori, Tadashi, 5,331,294, Cl. 331-57.000

Ohzu, Hayao; Suzuki, Toshiji, and Ishizaki, Akira, to Canon Kabushiki Kaisha. Solid state image pickup apparatuscu5,331,421, Cl. 340-262.000

Oi Fong, Conrad T.: *See*—
Germany, Cheryl D.; Oi Fong, Conrad T.; Duke, Steven B., and Vurek, Gerald G., 5,329,804, Cl. 73-1.00G

Oi, Masakazu: *See*—
Ohmori, Hisakazu; Furukawa, Yukio; Oi, Masakazu; and Takada, Akihiko, 5,331,213, Cl. 307-108.000

Okabe, Masaki: *See*—
Uchiyama, Hiromi, and Okabe, Masaki, 5,329,702, Cl. 30-346.510

Okabe, Nobuhiro; Mogamiya, Hiroyuki; and Yamakawa, Noriko, to Showa Shell Sekiyu Kabushiki Kaisha. Liquid crystal compoundcu5,330,678, Cl. 252-299.620

Okada, Hisao; Satoh, Kunio; and Umeda, Takao, to Hitachi, Ltd. Printing and binding apparatuscu5,331,387, Cl. 355-324.000

Okada, Kyoichi: *See*—
Egawa, Jiro; Komiya, Kenichi; Okada, Kyoichi; Mori, Hideo; and Izawa, Hirokazu, 5,331,341, Cl. 346-108.000

Okada, Masako: *See*—
Sasaki, Kei; Okada, Masako; Kohzaki, Shuichi; Funada, Fumiaki, Rieger, Bernhard; Numata, Hiroshi; Hittich, Reinhard; Plach, Herbert; Geelhaar, Thomas; Poetsch, Eike; and Reiffenrath, Volker, 5,330,679, Cl. 252-299.630

Okada, Takehiko: *See*—
Yoneda, Shinsaku; Ishizuka, Yoshiyuki, Motobayashi, Naoki; and Okada, Takehiko, 5,331,379, Cl. 355-214.000

Okada, Yasuhiro: *See*—
Enomoto, Minoru; Inagaki, Shoji; Okada, Yasuhiro; Sakamoto, Fumio; Ise, Noritaka, Ito, Masashi; and Yoshikura, Fuyuhiko, 5,330,168, Cl. 269-329.000

Okajima, Michio: *See*—
Takimoto, Akio; Okajima, Michio; Suzuki, Masaaki; and Ogawa, Hisahito, 5,331,182, Cl. 257-40.000

Okamoto, Miyuki: *See*—
Fuma, Masato; Tamura, Yutaka; Sugihara, Nagatoshi; Inoue, Takao; and Okamoto, Miyuki, 5,331,617, Cl. 369-54.000

Okanda, Koki: *See*—
Enomoto, Nobuo; Wada, Toshio; Umeya, Kazuyoshi; Yamada, Kazuo; and Okanda, Koki, 5,329,801, Cl. 72-456.000

Okataku, Yasukuni: *See*—
Seki, Toshibumi; Okataku, Yasukuni, and Tamura, Shinsuke, 5,331,647, Cl. 371-53.000

Oki Electric Industry Co., Ltd.: *See*—
Fujisawa, Yishimitu; and Shin, Yasuhiro, 5,331,209, Cl. 307-296.400
Ishii, Satoshi; and Ushida, Yuki, 5,331,644, Cl. 371-25.100
Kasai, Tadashi; Uchida, Takao; Tanuma, Jiro; Akutsu, Naoji; and Komori, Chihiro, 5,330,277, Cl. 400-157.300
Tanoi, Satoru, 5,331,207, Cl. 307-272.100

Okino, Ikuo: *See*—
Takanoo, Yutaka; Okino, Ikuo; and Nakatani, Yasuhiro, 5,331,066, Cl. 525-438.000

Okoshi, Hirofumi: *See*—
Kimura, Satoshi; Igarashi, Yasuyuki; Hakomori, Sen-itiroh; Ahmad, Mohammad N.; Okoshi, Hirofumi; and Handa, Kazuko, 5,331,014, Cl. 514-642.000

Okubo, Kazuo: *See*—
Ozaki, Kazuyuki; Wakana, Shinichi; Goto, Yoshiro; Ito, Akio; Okubo, Kazuo; Hama, Soichi; Fujii, Akira; and Sato, Yoko, 5,331,275, Cl. 324-757.000

Okuda, Makoto: *See*—
Utsumi, Mitsuo; Zaitsu, Osamu; Okuda, Makoto, Kajino, Jiro; and Yabuki, Tatsuhiro, 5,331,498, Cl. 242-347.100

Okuda, Taneaki; and Tateishi, Kazuo, to NEC Corporation. Process and apparatus for the decomposition of organochlorine solvent contained in watercu5,330,661, Cl. 210-748.000

Okui, Susumu: *See*—
Mizubata, Tsuyoshi; Okui, Susumu; Yamada, Yasushi; and Nagoshi, Mitsuru, 5,331,386, Cl. 355-319.000

Okuma Corporation: *See*—
Kashima, Nobuo, 5,331,566, Cl. 364-474.290

Okumura, Shigeo, to Sanshin Kogyo Kabushiki Kaisha. Water cooling system for a marine propulsion unitcu5,330,376, Cl. 440-88.000.

Okumura, Takuji: *See*—
Shimatani, Akira; and Okumura, Takuji, 5,331,342, Cl. 346-108.000

Okumura, Tatsuya: *See*—
Chihara, Machio; Mizuya, Jiro; Okumura, Tatsuya; and Tanaka, Takashi, 5,330,582, Cl. 134-40.000

Okura, Ryoichi: *See*—
Yamashita, Nobuhiko; Nakamoto, Manabu; Okura, Ryoichi; and Matsushita, Isao, 5,330,909, Cl. 435-240.270

Olbright, Greg R.: *See*—
Jewell, Jack L.; and Olbright, Greg R., 5,331,654, Cl. 372-45.000

Olenick, John A.: *See*—
Traskos, Richard T.; and Olenick, John A., 5,329,695, Cl. 29-830.000

Olin Corporation: *See*—
Glen, Jeffrey J., 5,330,676, Cl. 252-186.350
Materazzi, Peter E.; and Nelsen, Barry F., 5,330,872, Cl. 430-115.000

Oliva, John H. Apparatus and method for mounting an electrical box between studs in a wallcu5,330,137, Cl. 248-27.100.

Olive, Daniel R.: *See*—
Greves, Kenneth J.; and Olive, Daniel R., 5,330,285, Cl. 404-6.000

Ollfisch, Karl-Josef: *See*—
Kuster, Hans-Werner; Diederen, Werner; and Ollfisch, Karl-Josef, 5,330,550, Cl. 65-260.000

Ologic Corporation: *See*—
Wang, James H., and Wang, Julia W., 5,331,669, Cl. 375-118.000.

Olsen, Richard I.: *See*—
Aronoff, Alan P.; Birnkrant, Marc S.; Matsushima, Osamu; Sugishita, Kyosuke; Oba, Hisaharu; Reddy, Katta N.; Olsen, Richard I.; and Dichter, Brent N., 5,331,571, Cl. 364-490.000

Olson, Terry D.: *See*—
Burklund, Sidney A.; and Olson, Terry D., 5,330,638, Cl. 210-108.000

Olympus Optical Co., Ltd.: *See*—
Hanzawa, Toyoharu; Nishioka, Kimihiko; Kawano, Yoshihiro; and Yamagishi, Masaaki, 5,331,457, Cl. 359-377.000.
Honkawa, Yoshiaki, 5,331,456, Cl. 359-350.000
Miyazawa, Azuma, Ito, Takeshi; and Yoshida, Yoichi, 5,331,365, Cl. 354-410.000
Oosawa, Satoru; and Yamana, Motokazu, 5,331,368, Cl. 354-483.000
Tsuruoka, Takao; Hiyama, Keiichi; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichiro, 5,331,551, Cl. 364-413.130
Yamada, Naoki, 5,331,613, Cl. 369-32.000
Yamanashi, Takanori, 5,331,463, Cl. 359-689.000.

Omnitel: *See*—
Ledu, Jacques, 5,331,640, Cl. 370-110.100

Omron Corporation: *See*—
Ueda, Tamio; Nagami, Yoshihiro; Saito, Yumi; and Zhiming, Zhang, 5,331,541, Cl. 364-162.000

Onishi, Atsuhiro; Matsunami, Koichi; Ebara, Masanao; and Tanaka, Hiroaki, to Toyo Kasei Kogyo Company, Limited. Blowing agents of the tetrazoles and their derivativescu5,331,017, Cl. 521-90.000

Onishi, Shigeru, to Nippon Clean Engine Research Institute Co., Ltd. Hot surface impact ignition type internal combustion engine and method of hot surface impact ignitioncu5,329,901, Cl. 123-254.000.

Onishi, Yasushi: *See*—
Tanaka, Kunio; and Onishi, Yasushi, 5,331,540, Cl. 364-147.000.

Ono, Junichi: *See*—
Kajiyama, Tisato; Ono, Junichi; Kashiwagi, Tohru; Hara, Kouji; and Takata, Kensaku, 5,331,448, Cl. 359-103.000

Ono, Kenichi: *See*—
Ishihara, Hideki; Hattori, Hiroshi; and Ono, Kenichi, 5,331,093, Cl. 530-387.500

Ono, Masaru: *See*—
Miura, Kanenori; Suzuki, Shiro; Takahashi, Yasuhito; and Ono, Masaru, 5,331,382, Cl. 355-260.000

Ono, Masashi; Yasui, Shigeo; Noguchi, Ayashi; Takiguchi, Ryohei; Eguchi, Hiroshi; and Kafuku, Komei, to Dai Nippon Printing Co., Ltd. Heat transfer sheetcu5,330,960, Cl. 503-227.000.

Ono, Satoru; and Kohsaka, Jun, to Minolta Camera Kabushiki Kaisha. Optical apparatus with improved lens mounting devicecu5,331,343, Cl. 346-108.000.

Onoda Cement Co., Ltd.: *See*—
Nakano, Masayuki; Kuramoto, Ryozo; Otozaki, Shigeo; Kaneko, Katsuaki; Shibasaki, Hideo; and Tamura, Noritoshi, 5,330,573, Cl. 106-796.000.

Onoue, Akihiro: *See*—
Tsuju, Eiichiro; and Onoue, Akihiro, 5,330,375, Cl. 440-61.000.

Ookawara, Daisuke: *See*—
Yukawa, Noriaki; Ueda, Hideshi; and Ookawara, Daisuke, 5,331,396, Cl. 350-237.000.

Ookubo, Megumi: *See*—
Ogimura, Yoshio; and Ookubo, Megumi, 5,330,042, Cl. 198-333.000.

Oosawa, Satoru; and Yamana, Motokazu, to Olympus Optical Co., Ltd. Photomicrographic apparatuscu5,331,368, Cl. 354-483.000.

Ootsuka, Fumio: *See*—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Opdyke, Kenneth L., to Bausch & Lomb Incorporated. Scanning technique for laser ablationcu5,331,131, Cl. 219-121.690.

Opdyke, Kenneth L.: *See*—
Fleenor, Richard J.; and Opdyke, Kenneth L., 5,330,203, Cl. 279-46.300.

OPT Industries, Inc.: *See*—
Lane, William E., 5,331,536, Cl. 363-126.000.

Opta Food Ingredients, Inc.: *See*—
Stark, Leonard E.; and Gross, Akiva T., 5,330,778, Cl. 426-531.000.

Optik Partner AG & Co.: *See*—
Frank, Kurt; and Maithaner, Rolf, 5,331,355, Cl. 351-41.000.

Orbiter Royalty Trust: *See*—
Walstead, James W., 5,330,401, Cl. 482-54.000.

Orcutt, John W.; and Lin, Galle, to Texas Instruments Incorporated. Polar bond headcu5,330,089, Cl. 228-1.100.

Oregon Health Sciences University: *See*—
Yount, John E., 5,329,932, Cl. 128-721.000.

Orfield, Mary L.: *See*—
Johnson, James R.; Orfield, Mary L.; and Mueller, William J., 5,330,792, Cl. 427-217.000.

Oriani, Roberto: *See*—
Cipolli, Roberto; Oriani, Roberto; Nucida, Gilberto; and Masarati, Enrico, 5,331,030, Cl. 524-100.000.

Orihiro Co., Ltd.: *See*—
Tsuruta, Orihiro, 5,330,076, Cl. 222-83.000.

Oritsuki, Ryouji: *See*—
Someya, Sakae; Nashimoto, Ryuuzoh; Suzuki, Hirofumi; Yarita, Katsuhiko; Matsumoto, Shinji; Sasano, Akira; Taniguchi, Hideaki; and Oritsuki, Ryouji, 5,331,447, Cl. 359-59.000.

Ormsby, Ronald D.: *See*—
Paske, William C.; Rodney, Paul F.; and Ormsby, Ronald D., 5,330,016, Cl. 175-320.000

O'Rourke, Anthony, to Booda Products, Inc. Dog chew toy for canine dental care and methods for making chew toycu5,329,881, Cl. 119-710.000.

Ortho Pharmaceutical Corporation: *See*—
Weissenburger, Edward A., 5,330,427, Cl. 604-14.000.

ORTO Holding: *See*—
Rabe, Erich, deceased, 5,331,244, Cl. 310-180.000.

Orton, Kevin R. Surface-mount LEDcu5,331,512, Cl. 361-760.000.

Osaka Gas Company Limited: *See*—
Yamashita, Nobuhiko; Nakamoto, Manabu; Okura, Ryoichi; and Matsushita, Isao, 5,330,909, Cl. 435-240.270.
Yokomichi, Yasunori; Tada, Shinichi; Nishino, Hitoshi; and Seki, Kenji, 5,331,072, Cl. 526-258.000.

Osan, Frank: *See*—
Brekner, Michael-Joachim; Osan, Frank; and Rohrmann, Jurgen, 5,331,057, Cl. 525-289.000.

Osawa, Izumi: *See*—
Doi, Isao; Masaki, Kenji; Iino, Shuji; and Osawa, Izumi, 5,330,873, Cl. 430-133.000.

Osborne, Christopher G.: *See*—
Duncum, Simon N.; Edwards, Antony R.; and Osborne, Christopher G., 5,331,105, Cl. 585-800.000.

Oshima, Toshiyuki: *See*—
Ishibashi, Hideo; Oshima, Toshiyuki; Tamura, Rie; Yamamoto, Satoshi; and Izumo, Takaharu, 5,331,051, Cl. 525-131.000.

Oskarsson, Rolf G.: *See*—
Weinl, Gerold, Oskarsson, Rolf G.; and Gustafsson, Per, 5,330,553, Cl. 75-236.000.

Ossberger, Karl-Friedrich: *See*—
Linss, Gerhard; and Ossberger, Karl-Friedrich, 5,330,342, Cl. 425-150.000.

Ossberger-Turbinenfabrik GmbH & Co.: *See*—
Linss, Gerhard; and Ossberger, Karl-Friedrich, 5,330,342, Cl. 425-150.000.

Ossid Corporation: *See*—
Suga, Yasutaka, 5,329,745, Cl. 53-75.000.

Ostenson, Jerome E.: *See*—
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E.; Schwartzkopf, Louis A.; and Sanders, Steven C., 5,330,969, Cl. 505-431.000.

Osterhoudt, Hans W.: *See*—
Wilson, John C.; Bonser, Steven M.; and Osterhoudt, Hans W., 5,330,869, Cl. 430-106.600.

Ostsuka, Nobuhiro: *See*—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Ota, Hiromi, to Fuji Xerox Co., Ltd. Network system having function of updating routing informationcu5,331,635, Cl. 370-85.130.

Ota, Hiroshi; and Nakamura, Tomokazu, to Canon Kabushiki Kaisha. Image forming apparatus having a toner replenishing containercu5,331,381, Cl. 355-260.000.

Ota, Kiyoshi; Misono, Kousuke; and Ishii, Toshiyuki, to Sony Corporation. Disc player with an automatic initialization functioncu5,331,423, Cl. 358-342.000.

Ota, Nobuhiro: *See*—
Nagaishi, Tatsuoki; Ota, Nobuhiro; and Fujimori, Naoji, 5,330,968, Cl. 505-474.000.

Ota, Toshiaki: *See*—
Kondo, Akira; Naitou, Motoharu; Ota, Toshiaki; Masegi, Mitsuhiko; and Sakurai, Masao, 5,331,211, Cl. 307-10.100.

Otaka, Masahiro: *See*—
Evanson, Stephen; Kanno, Satoshi; Otaka, Masahiro; Yoshimura, Toshihiko; Hasegawa, Kunio; and Takaku, Kazuo, 5,331,278, Cl. 324-232.000.

Otani, Shuji: *See*—
Kamiya, Michiharu; Tachihara, Hisaaki; Otani, Shuji; Yamada, Kenji; Kikuchi, Minoru; Iwaoka, Kazuo; and Kuwata, Kenji, 5,331,504, Cl. 361-301.100.

Otari, Inc.: *See*—
Taniguchi, Jun; and Sota, Koichi, 5,330,117, Cl. 242-540.000.

Otozaki, Shigeo: *See*—
Nakano, Masayuki; Kuramoto, Ryozo; Otozaki, Shigeo; Kaneko, Katsuaki; Shibasaki, Hideo; and Tamura, Noritoshi, 5,330,573, Cl. 106-796.000.

Otsuka, Masayuki, to Hitachi, Ltd. Gradient Magnetic field generating coil assembly of magnetic resonance imaging apparatuscu5,331,281, Cl. 324-318.000.

Otsuka, Yasumasa, to Canon Kabushiki Kaisha. Fixing apparatus having temperature controller which controls temperature according to width size and number of recording sheetscu5,331,384, Cl. 355-290.000.

Ottawa Truck, Inc.: *See*—
Halverson, Merlin B.; and Carter, Raymond J., 5,330,222, Cl. 280-438.100.

Ou, Chia-Chih; and Neumayer, Deborah, to W. R. Grace & Co.-Conn. Water resistant vermiculite articles and method of their manufacturecu5,330,843, Cl. 428-446.000.

Ouchi, Katsunori; Morihara, Atsushi; Naganuma, Yoshio; Sato, Koji; and Kaji, Ryuichi, to Hitachi, Ltd. Electronic equipment and computer with heat pipecu5,331,510, Cl. 361-702.000.

Ouchi, Kazuo; and Sugimoto, Masakazu, to Nitto Denko Corporation. Printed circuit substrate with projected electrode and connection methodcu5,330,825, Cl. 428-209.000.

Out of Line Sports, Inc.: *See*—
Mitchell, David N., 5,330,207, Cl. 280-11.200.

Ovadia, David, to Kansas State University Research Foundation. Microwave baking pancu5,331,135, Cl. 219-728.000.

Ovaert, Francis; and Potet, Pierre. Composite structure, especially for buildingcu5,329,738, Cl. 52-410.000.

Overby, Kenneth W.: *See*—
Martin, Charles E.; and Overby, Kenneth W., 5,330,723, Cl. 422-122.000.

Ovonic Battery Company, Inc.: *See*—
Fetcenko, Michael A.; and Ovshinsky, Stanford R., 5,330,861, Cl. 429-57.000.

Ovshinsky, Stanford R.: *See*—
Fetcenko, Michael A.; and Ovshinsky, Stanford R., 5,330,861, Cl. 429-57.000.
Klersy, Patrick J.; and Ovshinsky, Stanford R., 5,330,630, Cl. 204-192.250.

Owada, Nobuo: *See*—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Owen, Charles D.; Rembert, Michael E.; and Davis, Albert S., to Bettis Corporation. Locking devicecu5,329,959, Cl. 137-315.000.

Owens-Corning Fiberglas Technology Inc.: *See*—
Rusek, Stanley J., Jr., 5,330,816, Cl. 428-69.000.

Owens, N. Douglas, to Modernfold, Inc. Track switch for suspended movable wall panelscu5,329,857, Cl. 104-103.000.

Owens, Raymond D.. *See*—
Bowerman, Leonard E.; Chumley, Eugene K.; Owens, Raymond D.; Bartasevich, William E.; Waldo, Robert L.; and Caterinacci, John R., 5,329,666, Cl. 15-323.000.

Oxford Instruments (UK) Limited. *See*—
McDougall, Ian L.; Hanley, Peter; and Hawkes, Robert C., 5,331,282, Cl. 324-319.000.

Oy High Speed Tech Ltd.: *See*—
Kytomaki, Timo; Lindgren, Olli; Alamaki, Jarmo; and Larjola, Jaakko, 5,329,771, Cl. 60-657.000.

Oyen, Gerald O. S. *See*—
Charron, Francois E., and Oyen, Gerald O. S., 5,330,208, Cl. 280-11.220.

Ozaki, Kazuyuki; Wakana, Shinichi; Goto, Yoshiro; Ito, Akio; Okubo, Kazuo; Hama, Soichi; Fujii, Akira; and Sato, Yoko, to Fujitsu Limited. Probing device and system for testing an integrated circuitcu5,331,275, Cl. 324-757.000.

Ozaki, Tatsuhiko: *See*—
Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Suzuki, Toshiharu, 5,331,041, Cl. 524-555.000.

Ozaki, Tohru; Horie, Hitoshi; and Shirai, Hideyuki, to Matsushita Graphic Communication Systems, Inc. Image data encoding apparatus providing increased encoding efficiency with reduced dependency on image contentcu5,331,425, Cl. 358-426.000.

P.E.P. Industries, Ltd.: *See*—
Csen, Zoltan, 5,330,140, Cl. 248-74.200.

Pacific Fitness Corporation: *See*—
Habing, Theodore G.; Chu, Yong S.; and Habing, Douglas J., 5,330,405, Cl. 482-96.000.

Packer, Lawrence G.. *See*—
Mossman, Allen B., Macek, John A.; and Packer, Lawrence G., 5,331,082, Cl. 528-298.000.

Padamsee, Riaz A. Thermally insulated bottle and method of assembly thereofcu5,329,778, Cl. 62-56.000.

Paganelli, Mariano: *See*—
Marazzi, Filippo; and Paganelli, Mariano, 5,330,939, Cl. 501-32.000.

Pagay, Shrikant N., and Stetsko, Gregg, to Sterling Winthrop Inc. Enteric coated soft capsules and method of preparation thereofcu5,330,759, Cl. 424-462.000.

Palamatic Handling Systems Limited: *See*—
Bennison, Stewart, 5,330,314, Cl. 414-627.000.

Paleologou, Michael: *See*—
Berry, Richard M., Paleologou, Michael; and Liebergott, Norman, 5,330,620, Cl. 162-29.000.

Palitex Project Company GmbH: *See*—
Frentzel-Beyme, Johannes; Lorenz, Rainer, and Heiser, Helmut, 5,329,755, Cl. 57-58.360.

Palmer, Darrel; and Houghton, William R., to Ballard Medical Products. Medical lavage apparatus and methodscu5,330,424, Cl. 604-28.000.

Palmer, Roland A., to New Covent Garden Soup Company Limited, The. Sterility control of food product by introducing a harmless non-sterile componentcu5,330,775, Cl. 426-61.000.

Pan, David: *See*—
Nelson, Oliver E.; and Pan, David, 5,331,108, Cl. 800-235.000.

Pan, Li. *See*—
Stetter, Joseph R.; and Pan, Li, 5,331,310, Cl. 340-632.000.

Pan, Pai-Hung: *See*—
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Rivola, Luigi; and Di Liberto, Sebastiano, to Eniricerche S.p.A. Method for continuously monitoring the soundness of the protective covering on underground metal structures, and devices for its implementationcu5,331,286, Cl. 324-718.000.

Rizzo, John M. Method for increasing crop yieldcu5,330,552, Cl. 71-30.000.

Roark, Jeffrey O.; Styke, Peter V.; Mattingly, Robert L.; and Jelgerhuis, Drew G., to Prince Corporation. Visor mirror cover assemblycu5,331,518, Cl. 362-61.000.

Robert Bosch GmbH: *See—*
Hafner, Udo, 5,330,649, Cl. 210-430.000.
Koplin, Karl-Heinz; Renner, Stefan; Pflueger, Gerhard; and Fasterding, Henning, 5,331,231, Cl. 310-68.00D.
Mueller, Martin, 5,329,890, Cl. 123-90.170.
Reiter, Ferdinand, 5,330,153, Cl. 251-129.210.

Roberts, Bradley M.; Cassidy, Mark F.; and Zienkiewicz, John W., to Gemcor Engineering Corporation. Hole probe apparatuscu5,329,691, Cl. 29-705.000.

Roberts, Edward: *See—*
Horwell, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S.; Roberts, Edward; Roth, Bruce D.; Tait, Bradley D.; Trivedi, Bharat K.; Trostmann, Uwe; and Unangst, Paul C., 5,331,006, Cl. 514-481.000.

Roberts, Gordon R.: *See—*
Lehr, David A.; Roberts, Gordon R.; and Arthur, Mark T., 5,330,161, Cl. 266-158.000.

Roberts, Michael C.; and Leonard, John F., to Rolls Royce plc. Rotor shroud assemblycu5,330,321, Cl. 415-136.000.

Roberts, Peter A.; Hayes, Kevin G.; and Peek, Joanne M., to PolyCeramics, Inc. Ceramic building blockcu5,329,737, Cl. 52-245.000.

Roberts, Richard J., to Westinghouse Brake and Signal Holdings Ltd. Railway track circuitscu5,330,135, Cl. 246-34.00R.

Roberts, Wilbert J., to Henkel Corporation. Temporary coating systemcu5,330,788, Cl. 427-154.000.

Robertson, Davis H.: *See—*
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Robertson, William; Blowers, David W.; and Ptacek, Carol J., to University of Waterloo. Treatment of contaminated agricultural runoffcu5,330,651, Cl. 210-617.000.

Robinson, Robin K., to Paragon Trade Brands, Inc. Disposable absorbent panel assemblycu5,330,456, Cl. 604-368.000.

Roca Acin, Joan Maria: *See—*
Caldero Ges, Jose M.; Bosch Rovira, Anna; Roca Acin, Joan Maria; Dalmases Barjoan, Pere; and Marquillas Olondriz, Francisco, 5,331,005, Cl. 514-415.000.

Rockwell International Corporation: *See—*
Boston, William A.; Balow, Frank A.; and Skipor, Eugene, 5,329,664, Cl. 15-256.500.
Hauck, James P., 5,331,660, Cl. 372-94.000.
Momot, Stnaley, 5,329,851, Cl. 101-348.000.
Rosker, Mark J.; Christian, William R.; and McMichael, Ian C., 5,331,403, Cl. 356-350.000.

Rodenas, Juanito: *See—*
Armond, Joseph A.; and Rodenas, Juanito, 5,331,269, Cl. 320-39.000.

Rodgers, Nicholas A. Fishing lurecu5,330,282, Cl. 43-17.600.

Rodney, Paul F.: *See—*
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Rodondi, Andrew F.: *See—*
Selinau, Mark C.; Plyler, Robert G.; and Rodondi, Andrew F., 5,329,809, Cl. 73-115.000.

Rodriguez, Jose L.; Sampico, Robert W.; and Quate, Jeffrey A., to Abbey Etna Machine Company. Automated uncoiling apparatuscu5,330,119, Cl. 242-559.200.

Rodriguez, Michael A.: *See—*
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Rodwell, Donald C. Advertising base and clothes hanger carriercu5,330,244, Cl. 294-143.000.

Roe, Donald C.: *See—*
Berg, Charles J.; Lahrman, Frank H.; and Roe, Donald C., 5,330,822, Cl. 428-192.000.

Roerig, Arnold J., to Beloit Technologies, Inc. Self-loading controlled crown rollcu5,329,849, Cl. 100-162.00B.

Roessler, Dennis E. Sweep frequency vibratorcu5,331,607, Cl. 367-189.000.

Rogers Corporation: *See—*
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Rogers, Sid C.; Sylvester, Charles K.; and Harris, Steve A., to General Motors Corporation. Non-destructive test strip and method for measuring paint film buildcu5,329,810, Cl. 73-150.00R.

Rogge, Mark. Golf tee set apparatuscu5,330,177, Cl. 273-32.500.

Roh, Douglas L.; and Roh, Katrina J. Construction setcu5,330,379, Cl. 446-71.000.

Roh, Katrina J.: *See—*
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Rohde, Janel C.: *See—*
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Rohde, Kenneth A.: *See—*
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Rohm Co., Ltd.: *See—*
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Kanbara, Shigeru; and Hanamura, Toshihiro, 5,331,305, Cl. 338-322.000.
Shimoji, Noriyuki; and Nakao, Hironobu, 5,331,190, Cl. 257-324.000.

Rohm and Haas Company: *See—*
Kung, Ruth; and Driant, Dominique G. G., 5,330,984, Cl. 514-239.500.
Lavoie, Alvin C.; Chen, Jen-Chi; Chung, Chao-Jen; Lorah, Dennis P.; Sperry, Peter R.; and Gross, Andrew W., 5,331,025, Cl. 523-437.000.
Stewart, Thomas; Lekso, Patricia M.; and El A'mma, Anton G., 5,330,537, Cl. 8-94.10R.

Rohrmann, Jurgen: *See—*
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Roline, Glenn M.: *See—*
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Rollema, Harm J.; and van Mastrigt, Ron. Method and system for on-line measurement, storage, retrieval and analysis of urodynamical datacu5,331,548, Cl. 364-413.020.

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Roberts, Michael C.; and Leonard, John F., 5,330,321, Cl. 415-136.000.
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Roper, Renee M.: *See—*
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Rosanio, Louis G., Jr.: *See—*
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Rosemount Inc.: *See—*
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Rosenfeld, Dan: *See—*
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Rosenfeld, John H., to Thermacore, Inc. Porous layer heat exchangercu5,329,996, Cl. 165-168.000.

Rosini, Sergio; and Mian, Maurizio, to Istituto Gentili S.p.A. Arylalkyl esters of 4,5-dihydroxy-9,10-dihydro-9,10-dioxo-2-anthracenecarboxylic acid having therapeutical activitycu5,330,981, Cl. 514-159.000.

Rosker, Mark J.; Christian, William R.; and McMichael, Ian C., to Rockwell International Corporation. Pulsed diode ring laser gyroscopecu5,331,403, Cl. 356-350.000.

Rosner, S. Jeffrey; Shamma, Nader; and Sporon-Fiedler, Frederik, to Hewlett-Packard Company. Method and apparatus for determining a feature-forming variant of a lithographic systemcu5,331,370, Cl. 355-53.000.

Ross, David F.: *See—*
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Roth, Bruce D.: *See—*
Horwell, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S.; Roberts, Edward; Roth, Bruce D.; Tait, Bradley D.; Trivedi, Bharat K.;

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Rousseau, Emmanuel: *See—*
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Grim, Tracy E.; O'Donnell, Kevin R., and Montag, Eric G., 5,329,705, Cl. 36-88.000

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Ransom, George E., Jr.; Ransom, George E., III, and Ingerson, Ralph, Jr., 5,330,351, Cl. 432-103.000

Ruben, Paul L.; and Walsh, Edward J., to Eastman Kodak Company Adaptor for overhead projectorcu5,331,360, Cl. 353-96.000

Ruble, Paul E. Overlay binder including easy-release label leadercu5,330,279, Cl. 402-3.000

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Rudie, Eric N.: *See—*
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Ruelas, Susanne G.: *See—*
Wollenberg, Robert H.; Nelson, Richard J.; McDonald, John, Ruelas, Susanne G.; Campbell, Curtis B., and Matera, Kathryn E., 5,330,663, Cl. 252-18.000
Wollenberg, Robert H., Nelson, Richard J.; McDonald, John, Ruelas, Susanne G.; Campbell, Curtis B., and Matera, Kathryn E., 5,330,664, Cl. 252-18.000

Rueschmann, Klaus: *See—*
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Hartel, Robert; Hoehne, Karl-Josef; Hermanns, Ferdinand-Josef, Henze, Herbert; Knors, Herbert; Engelhardt, Dietmar; Zitzen, Wilhelm; Veyes, Manfred, Merkens, Herbert; Weissenfels, Wolfram; Ruetten, Hermann; Jaegers, Dirk; and Pommer, Berndt, 5,329,822, Cl. 73-862.610

Ruf, Ralph: *See—*
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Rumpf, Hermann: *See—*
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Rushing, J. Carroll, and Stanley, Donald E., to EZE Products, Inc Apparatus and method for spent solvent collectioncu5,330,579, Cl 134-12.000

Russ, Werner: *See—*
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Rust Industrial Services, Inc.: *See—*
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Mumalo, Richard A., 5,330,725, Cl. 422-170.000

Rutecki, Paul; Wernicke, Joachim F.; and Terry, Reese S., Jr., to Cyberonics, Inc. Treatment of pain by vagal afferent stimulationcu5,330,515, Cl. 607-46.000

RXS Schrumpftechnik-Garnituren GmbH: *See—*
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Ryan, Robert M. Fish transfer mechanismcu5,330,383, Cl. 452-182.000

Ryer, Jack: *See—*
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SAAB Automobile Aktiebolag: *See—*
Drangel, Hans; Nilsson, Per-Inge; and Bergsten, Lars, 5,329,893, Cl. 123-78.00C

Saba, Toshikazu: *See—*
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Sackett, James A., to Western Atlas International, Inc Static dissipating data cable and seismic apparatuscu5,331,606, Cl. 367-178.000

Safranek, Robert J.: *See—*
Knauer, Scott C.; Matthews, Kim N.; Netravali, Arun N., Petajan, Eric D., and Safranek, Robert J., 5,331,348, Cl. 348-402.000

Saga, Tatsuo; Hisamatsu, Tadashi; and Matsutani, Toshinobu, to Sharp Kabushiki Kaisha. Solar cellcu5,330,584, Cl. 136-255.000

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Sagara, Tadashi: *See—*
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Sager, Gordon S.: *See—*
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Saint-Gobain Vitrage International: *See—*
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Saito, Chitoshi: *See—*
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Saito, Harunobu: *See—*
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Saito, Yumi: *See—*
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Saitoh, Hachiro; and Matsui, Toshimichi, to Nippon Petrochemicals Company Limited. Active agent-containing printing inkcu5,330,565, Cl. 106-20.00R

Sakaegi, Yuji: *See—*
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Sakaguchi, Noboru, to Shimano Inc. Two-bearing reel having selector mechanism for selecting between toggle mode and momentary modecu5,330,130, Cl. 242-261.000

Sakai, Hiroshi, to Terumo Kabushiki Kaisha. Drip detecting device and drip alarming device and drip rate control device which incorporate drip detecting devicecu5,331,309, Cl. 340-606.000

Sakai, Shino: *See—*
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Sakai, Yuji: *See—*
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Sakakibara, Koji: *See—*
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Sakama, Mitsunori; Fukada, Takeshi; Ichijo, Mitsuhiro; and Abe, Hisashi, to Semiconductor Energy Laboratory Co., Ltd. Plasma treatment apparatuscu5,330,578, Cl. 118-723.00R

Sakamoto, Fumio: *See—*
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Sakamoto, Osamu; Saito, Chitoshi; and Nishimura, Seiichi, to Sanshin Kogyo Kabushiki Kaisha. Cylinder fuel injection type two-cycle internal combustion enginecu5,329,902, Cl. 123-257.000

Sakanishi, Shoichi; Shinbo, Tetsuya; Abe, Tomoyuki; Ichimura, Yasuhiko; Kanemitsu, Yasuo; Shibatani, Kanji; Yamamoto, Masahiko; and Yamaguchi, Hiroaki, to Kabushiki Kaisha Komatsu Seisakusho. System and method for transmitting and calculating data in shield machinecu5,330,292, Cl. 405-141.000

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Sakurai, Akira, Shiotsu, Masahiro; Yano, Toshikazu; Ochi, Masao; and Sugawara, Toshihiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Refractory elementcu5,329,785, Cl. 62-316.000.

Sakurai, Masao: *See—*
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Koh, Hung-Chan, 5,331,128, Cl. 219-717.000.
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Teracuhi, Kiyoshi; Kawano, Akihiro; Satoh, Hideaki; Kitano, Norio; and Yoshii, Yuji, 5,330,335, Cl. 418-55.600.

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Sandvik AB: *See—*
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Sano, Toei: *See—*
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Okumura, Shigeo, 5,330,376, Cl. 440-88.000.
Sakamoto, Osamu; Saito, Chitoshi; and Nishimura, Seiichi, 5,329,902, Cl. 123-257.000.
Tsujii, Eiichiro; and Onoue, Akihiro, 5,330,375, Cl. 440-61.000.

Sant' Anselmo, Carl: *See—*
Sant' Anselmo, Robert; and Sant' Anselmo, Carl, 5,331,176, Cl. 250-566.000.

Sant' Anselmo, Robert; and Sant' Anselmo, Carl, to Veritec Inc. Hand held two dimensional symbol reader with a symbol illumination windowcu5,331,176, Cl. 250-566.000.

Santilli, Domenic; and May, John W., to Eastman Kodak Company. Electrographic fluorescent liquid developercu5,330,868, Cl. 430-106.000.

Sanwa Shoyaku Kabushiki Kaisha: *See—*
Murayama, Mitsuo, 5,330,983, Cl. 514-216.000.

Sanyo Electric Co., Ltd.: *See—*
Fuma, Masato; Tamura, Yutaka; Sugihara, Nagatoshi; Inoue, Takao; and Okamoto, Miyuki, 5,331,617, Cl. 369-54.000.
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko; Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tanii, Keiichi, 5,331,411, Cl. 348-708.000.

Sanz, Juan C. C.: *See—*
Perez, Augustin A.; Pons, Francesc; Sanz, Juan C. C.; Garcia, Jose R.; Andres, Miguel R.; and Trebitz, Bernd, 5,329,709, Cl. 38-77.700.

Sarai, Hiroshi: *See—*
Ito, Masahito; Koujiya, Miyuki; Sarai, Hiroshi; Nakao, Seiya; Nomura, Takao; Kitou, Satoru; Matsuda, Fuminori; Yamada, Susumu; Kuroiwa, Kesato; and Mihara, Hiroshi, 5,329,981, Cl. 164-7.200.

Sariciftci, N. S.; and Heeger, Alan J., to University of California, The Regents of the. Conjugated polymer - acceptor heterojunctions; diodes, photodiodes, and photovoltaic cellscu5,331,183, Cl. 257-40.000.

Saroya, Jagtar S., to American Magnetics Corp. Hybrid card readercu5,331,138, Cl. 235-449.000.

Sartorio, Franco; and Vergano, Stefano, to Amada Company, Ltd. Precision bending press for relatively short pieces of sheet metalcu5,329,795, Cl. 72-21.000.

Sasago, Yoshikazu: *See—*
Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Noda, Shinya; Kobayashi, Kazunori; and Shoji, Takeo, 5,331,372, Cl. 355-200.000.

Sasaki, Hideaki: *See—*
Tsuji, Yoshihisa; Ninomiya, Sigeru; Kato, Kazuo; Kobayashi, Mamoru; Kojima, Akio; Sasaki, Hideaki; and Yokoyama, Tetsuhiro, 5,329,690, Cl. 29-701.000.

Sasaki, Kei; Okada, Masako; Kohzaki, Shuichi; Funada, Fumiaki; Rieger, Bernhard; Numata, Hiroshi; Hittich, Reinhard; Plach, Herbert; Geelhaar, Thomas; Poetsch, Eike; and Reiffenrath, Volker, to Merck Patent Gesellschaft mit Beschrankter Haftung; and Sharp Corporation. Nematic liquid-crystal composition for active matrix applicationcu5,330,679, Cl. 252-299.630.

Sasaki, Noriaki: *See—*
Masaki, Toshio; Sasaki, Noriaki; Torata, Shin-ichiro; Igarashi, Hiroshi; Shimizu, Tetsuya; and Iikubo, Tomohito, 5,330,710, Cl. 420-441.000.

Sasaki, Tsuyoshi: *See—*
Yamaguchi, Masayoshi; Sasaki, Tsuyoshi; Nagata, Hisao; and Nagasaka, Ichiro, 5,329,766, Cl. 60-384.000.

Sasano, Akira: *See—*
Someya, Sakae; Nashimoto, Ryuuzoh; Suzuki, Hirofumi; Yarita, Katsuhiko; Matsumoto, Shinji; Sasano, Akira; Taniguchi, Hideaki; and Oritsuki, Ryouji, 5,331,447, Cl. 359-59.000.

Satake Chemikal Equipment Mfg., Ltd.: *See—*
Kato, Kohichi; and Nishioka, Shigeru, 5,330,325, Cl. 416-227.00R.

Sato, Hiromasa, to Tabata Co., Ltd. Diving face maskcu5,329,643, Cl. 2-428.000.

Sato, Hiroyuki; Watanabe, Kazuhiro; and Watanabe, Toshiya, to Kureha Kagaku Kogyo Kabushiki Kaisha. Resin for bonding polyarylene sulfide and adhesivecu5,331,029, Cl. 524-94.000.

Sato, Jun; and Minamitaka, Junichi, to Casio Computer Co., Ltd. Apparatus for cross-correlating additional musical part to principal part through timecu5,331,112, Cl. 84-609.000.

Sato, Koji: *See—*
Ouchi, Katsunori; Morihara, Atsushi; Naganuma, Yoshio; Sato, Koji; and Kaji, Ryuichi, 5,331,510, Cl. 361-702.000.

Sato, Masaaki, to Fuji Xerox Co., Ltd. Image readercu5,331,433, Cl. 358-471.000.

Sato, Minoru: *See—*
Nomura, Yoshiya; Kobayashi, Hiroo; Higeta, Akira; Isobe, Hironobu; Shishido, Kazuo; Sato, Minoru; Miyabe, Shigeo; and Miura, Koji, 5,331,373, Cl. 355-200.000.

Sato, Natsuki, to NEC Corporation. Method of fabricating semiconductor device having a trenched cell capacitorcu5,330,926, Cl. 437-52.000.

Sato, Susumu, to Nikon Corporation. Reflex lens system having the antivibration functioncu5,331,467, Cl. 359-731.000.

Sato, Takeshi; and Ohhashi, Akinami, to Kabushiki Kaisha Toshiba. Ultrasonic diagnostic apparatuscu5,329,929, Cl. 128-660.650.

Sato, Yoko: *See—*
Ozaki, Kazuyuki; Wakana, Shinichi; Goto, Yoshiro; Ito, Akio; Okubo, Kazuo; Hama, Soichi; Fujii, Akira; and Sato, Yoko, 5,331,275, Cl. 324-757.000.

Satoh, Hideaki: *See—*
Teracuhi, Kiyoshi; Kawano, Akihiro; Satoh, Hideaki; Kitano, Norio; and Yoshii, Yuji, 5,330,335, Cl. 418-55.600.

Satoh, Hisao: *See—*
Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi; Satoh, Hisao; and Ikeda, Tadayoshi, 5,331,389, Cl. 355-321.000.

Satoh, Kunio: *See—*
Okada, Hisao; Satoh, Kunio; and Umeda, Takao, 5,331,387, Cl. 355-324.000.

Satoh, Tsuyoshi: *See—*
Yahagi, Toshio; Iwagawa, Yoshihiro; Sugimoto, Yoichi; Satoh, Tsuyoshi; and Kojima, Takeshi, 5,329,805, Cl. 73-9.000.

Sauer, Axel; and Meyer, Roland, to Hydraulik-Ring GmbH. Piston-slide-valvecu5,329,841, Cl. 92-172.000.

Sauer, Hans, to Varta Batterie Aktiengesellschaft. Process for preparing the porous metallic framework of an electrode carrier for the attachment of a take-off conductorcu5,329,681, Cl. 29-2.000.

Saunders, Brian, to Cooper Industries, Inc. Hanger assemblycu5,330,002, Cl. 166-208.000.

Saunders, Jeffrey O.: *See—*
Armistead, David M.; Boger, Joshua S.; Meyers, Harold V.; Saunders, Jeffrey O.; and Tung, Roger D., 5,330,993, Cl. 514-330.000.

Savio S.p.A.: *See—*
Meroni, Roberto; Gerin, Umberto; Lancerotto, Fabio; and Colussi, Vittorio, 5,329,756, Cl. 57-269.000.

Sawada, Akira: *See—*
Kitsuki, Toshiaki; and Sawada, Akira, 5,331,584, Cl. 364-725.000.

Sawada, Kouichi; Yamamoto, Hiroyuki; and Ichihara, Yoshiyuki, to Konica Corporation. Image forming apparatuscu5,331,432, Cl. 358-465.000.

Sawert, Ulf; Coha, Timothy F.; Zimmerman, William S.; and Rasmussen, Gregory K., to General Motors Corporation. Fuel system pressure fusecu5,329,899, Cl. 123-198.0DB.

Sayers, Ian C.: *See—*
Allum, Andrew; Jeffery, John; Sayers, Ian C., and Spence, Michael D., 5,330,604, Cl. 156-304.700

Scapa Group PLC: *See—*
Allum, Andrew; Jeffery, John; Sayers, Ian C., and Spence, Michael D., 5,330,604, Cl. 156-304.700

Scardovi, Italo, to Sichenia Gruppo Ceramische S p.A. Die for ceramic tilescu5,330,346, Cl. 425-405.100

Schaede, Johannes G.: *See—*
Bolza-Schuenemann, Claus A.; and Schaede, Johannes G., 5,329,852, Cl. 101-232.000

Schaller, Klaus: *See—*
Hector, Richard F.; Schaller, Klaus; Moeschler, Heinrich F.; and Plempel, Manfred, 5,330,976, Cl. 514-43.000

Schandl, Hartmut; and Weisser, Fritz, to Deutsche Thomson-Brandt GmbH. Tape drive and winding mechanism for tape player/recordercu5,331,481, Cl. 360-85.000

Schapira, Joseph; Droniou, Patrick, Sudour, Michel; and Lerouge nee Bouaffree, Veronique, to C F P I. Process for denaturating water-dilutable paints and solvent-based paints and denaturation solution used in this processcu5,330,659, Cl. 210-725.000

Scheider, Alfred E., and Warner, R. Brown, to Jason, Inc. Abrasive finishing toolcu5,329,730, Cl. 51-334.000

Schelhorn, Thomas: *See—*
Fabricius, Dietrich M.; and Schelhorn, Thomas, 5,330,884, Cl. 430-522.000

Schenkel, Albert, to Siemens-Albis AG. Correcting errors in crossfeed radar systemscu5,331,326, Cl. 342-148.000

Scherer, Paul T.: *See—*
Stevenson, Bruce B.; Scherer, Paul T.; Unseld, Bill R.; and Dickens, James W., 5,330,144, Cl. 248-231.900

Schiel, Christian, to J.M. Voith GmbH. Press roll having components exhibiting approximately equal gravity induced flexurecu5,329,847, Cl. 100-162.00B

Schiller, Ronald J.; and Bakula, John J., to Derrick Manufacturing Corporation. Screen and screen cloth for vibratory machine and method of manufacture thereofcu5,330,057, Cl. 209-392.000

Schimmelpfennig, Rolf; and Strohdiek, Heinz, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Printing device having at least two printing stations separated spatially from one anothercu5,330,274, Cl. 400-82.000

Schirmer, Henry G.: *See—*
Gusavage, Gerald G., Hessen, Thomas A.; Hardy, Thomas R., Schirmer, Henry G.; and Flye, Susan R., 5,330,596, Cl. 156-78.000

Schiroky, Gerhard H.: *See—*
Kennedy, Christopher R.; Sonuparlak, Birol; Fareed, Ali S.; Garner, John E.; and Schiroky, Gerhard H., 5,330,849, Cl. 428-552.000

Schlessmann, Helmut, to Andreas Stihl. Cable support for an electrically-operated portable handheld work apparatuscu5,330,138, Cl. 248-52.000

Schlichter, Stefan, to Trutzschler GmbH & Co. KG. Method and apparatus for detaching and mixing fiber tuftscu5,329,668, Cl. 19-97.500.

Schlumberger Technology Corporation: *See—*
Chang, Shu-Kong; and Hsu, Chaur-Jian, 5,331,604, Cl. 367-31.000
Hines, Daniel R.; Wada, Noboru; Garoff, Stephen; Mullins, Oliver C.; Hammond, Paul; Tarvin, Jeffrey; Cramer, Stephen P.; and Wiggins, Ralphe, 5,331,156, Cl. 250-256.000
Montgomery, Michael A., 5,331,318, Cl. 340-855.400

Schmaltzl, Georg: *See—*
Pfahler, Gerhard; and Schmaltzl, Georg, 5,331,034, Cl. 524-386.000.

Schmidt, Glenn H.; and Helmstetter, Richard C., to Callaway Golf Company. Iron golf club head with dual intersecting recessescu5,330,187, Cl. 273-169.000

Schmidt, Robert W.: *See—*
Moy, Michael; Schmidt, Robert W.; and Brummet, Robert A., 5,331,232, Cl. 318-568.110

Schmitz-Rode, Thomas: *See—*
Gunther, Rolf W.; and Schmitz-Rode, Thomas, 5,330,484, Cl. 606-128.000

Schneider, Aaron, to Biological Tissue Reserve, Inc. Device for removing a biopsy fluid sample from a body cavitycu5,330,422, Cl. 604-27.000

Schneider, David A.: *See—*
Whipple, Walter, III; Schneider, David A.; Miller, Gregory O.; Dausch, Mark E.; and Badami, Vivek V., 5,330,580, Cl. 134-18.000

Schneider, Volker: *See—*
Blum, Harald; Kubitza, Werner; Probst, Joachim; Sonntag, Michael; and Schneider, Volker, 5,331,039, Cl. 524-507.000

Schneider, Walter T., to United States of America, Navy. Thermal fixture for testing an integrated circuitcu5,331,273, Cl. 324-158.100

Schnell, Mark, to Adjustable Clamp Co. Wall mounted pipe clampcu5,330,216, Cl. 269-45.000.

Schneller, Arnold: *See—*
Dubal, Hans-Rolf; Murakami, Mikio; Herrmann-Schonherr, Otto; and Schneller, Arnold, 5,331,081, Cl. 528-288.000

Schock & Co., GmbH: *See—*
Frank, Lothar, deceased; and Hieber, Gunter, 5,331,016, Cl. 521-64.000

Scholz, Manfred. Operating theatre lampcu5,331,530, Cl. 362-293.000.

Schoonmaker, Richard P.: *See—*
Pfeifer, Thomas M., and Schoonmaker, Richard P., 5,331,539, Cl. 364-140.000

Schott Glaswerke: *See—*
Dassler, Hans-Ulrich; Haas, Rudiger; and Lang, Johann, 5,331,174, Cl. 250-560.000

Schreiber Foods, Inc.: *See—*
Yee, Jeng-Jung; Kornacki, Jeffrey L.; and Narasimhan, Rajagopalan, 5,330,780, Cl. 426-582.000.

Schroeder, Bruce A.: *See—*
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Schroll, Craig R.: *See—*
Trocciola, John C.; Schroll, Craig R.; and Lesieur, Roger R., 5,330,727, Cl. 422-177.000.

Schuler, Michael: *See—*
Heaven, Malcolm D.; and Schuler, Michael; 5,330,483, Cl. 606-114.000

Schultz, Darald R.: *See—*
Koenck, Steven E.; Miller, Phillip; Hanson, George E.; Schultz, Darald R.; and Krunnfusz, Jeffrey S., 5,331,136, Cl. 235-375.000.
Miller, Phillip; Koenck, Steven E., Walter, Jerry L.; Kubler, Joseph J.; Cargin, Keith K., Jr.; Hanson, George E.; Davis, Patrick H., Kunert, Steven R., and Schultz, Darald R., 5,331,580, Cl. 364-708.100

Schultz, Gregory A.; and Weber, Mark E. Tool for custom fitting slip-ons to golf shoes and a method of use thereforcu5,329,701, Cl. 30-316.000

Schultz, Michael W.: *See—*
Timp, Richard L.; Schultz, Michael W.; and Morehead, John H., 5,329,835, Cl. 83-686.000

Schultz, Roger L.; and Bohan, William L., to Halliburton Company Downhole fluid property measurement toolcu5,329,811, Cl. 73-155.000

Schulz, Harald: *See—*
Lausberg, Dietrich; Steinberger, Rolf; Heckmann, Walter; and Schulz, Harald, 5,331,044, Cl. 524-871.000.

Schulz, Wilfried: *See—*
Arnold, Rudolf; and Schulz, Wilfried, 5,329,753, Cl. 56-98.000.

Schumacher, Egon, to Lubing Maschinenfabrik Ludwig Benign GmbH & Co. KG. Watering valve for small animals having variable flow ratescu5,329,877, Cl. 119-72.500

Schumacher, Robert W., Matossian, Jesse N.; and Goebel, Dan M., to Hughes Aircraft Company. High impedance plasma ion implantation method and apparatuscu5,330,800, Cl. 427-523.000

Schurle, Hermann; Grimm, Wolfgang; and Mennicke, Hartmut, to Carl-Zeiss-Stiftung. Vision testing system for testing the sight function of a patientcu5,331,358, Cl. 351-232.000.

Schwartz, Jean-Charles: *See—*
Duhamel, Pierre; Duhamel, Lucette; Danvy, Denis; Plaquevent, Jean-Christophe; Giros, Bruno; Gros, Claude; Schwartz, Jean-Charles; and Lecomte, Jeanne-Marie, 5,331,008, Cl. 514-513.000

Schwartz, Mark W.: *See—*
Kimbell, Martin J.; and Schwartz, Mark W., 5,331,123, Cl. 200-52.00R

Schwartz, Peter J., to Medtronic, Inc. Implantable electrical vagal stimulation for prevention or interruption of life threatening arrhythmiascu5,330,507, Cl. 607-14.000

Schwartz, Robert E.: *See—*
Hammond, Milton L.; Schwartz, Robert E., and Balkovec, James M., 5,330,973, Cl. 514-11.000.

Schwartzkopf, Louis A.: *See—*
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E., Schwartzkopf, Louis A.; and Sanders, Steven C., 5,330,969, Cl. 505-431.000

Schwarz, Hans P.: *See—*
Philapitsch, Anton; and Schwarz, Hans P., 5,330,907, Cl. 435-217.000

Schwarz, Theodore A., to Minnesota Mining and Manufacturing Company. Bidirectional thin-film magnetoresistive tape head assemblycu5,331,493, Cl. 360-113.000.

Schweiss, Peter; and Dorflinger, Hans-Dieter, to J.M. Voith GmbH. Method of regulating a flotation system with a primary and secondary stagecu5,330,655, Cl. 210-703.000.

Schweitz, Norman W.: *See—*
Luckett, Christopher J.; Schroeder, Bruce A.; and Schweitz, Norman W., 5,329,888, Cl. 123-41.080

Schweitzer, John W.: *See—*
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Schwemberger, Richard F.: *See—*
Murray, Michael A., Love, John F.; Hughett, James D.; Stephens, Randy R.; and Schwemberger, Richard F., 5,330,087, Cl. 227-175.000.

Schwendemann, Volker: *See—*
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Schwing America, Inc.: *See—*
Anderson, Thomas M., 5,330,327, Cl. 417-53.000.

Science Incorporated: *See—*
Kriesel, Marshall S.; and Thompson, Thomas N., 5,330,426, Cl. 604-89.000

Scientific-Atlanta, Inc.: *See—*
Farmer, James O.; and Thatcher, W. Brad, 5,331,412, Cl. 348-5.500.

SciMed Life Systems, Inc.: *See—*
Wang, Lixiao; Rau, Bruce H.; and Sogard, David, 5,330,428, Cl. 604-96.000

Scios Nova Inc.: *See—*
Shadle, Paula J.; Silverness, Kate B.; and King, Robert S., 5,331,095, Cl. 530-399.000.

Scitex Corporation Ltd.: *See—*
Bachar, Avraham, 5,331,439, Cl. 358-500.000.

Scott, John S., to Lenzar Electro-Optics, Inc. Digitizer for raster digitizing an imagecu5,331,435, Cl. 358-479.000.

Scott, Mary V. Disposable urine containercu5,329,644, Cl. 4-144.200.

Scott, Richard D.; and Knutson, Neal R., to Teledyne Industries, Inc. Method of forming a filter with integrally formed resonatorscu5,329,687, Cl. 29-527.200.

Scovill Fasteners Inc.: *See—*
Butkus, John J.; and Bird, Paul R., 5,329,683, Cl. 29-34.00R.

Scripps Research Institute, The: *See—*
Young, Steven; Witztum, Joseph L.; and Curtiss, Linda K., 5,330,910, Cl. 435-240.270.

Seagate Technology, Inc.: *See—*
Johnson, Lyle G.; and Midori, Yoshiki, 5,331,489, Cl. 360-104.000.
Madsen, Timothy A., 5,331,479, Cl. 360-68.000.

Seaver, Gary B.: *See—*
Kang, Jung W.; Seaver, Gary B.; and Hashimoto, Takatsugu, 5,331,036, Cl. 524-474.000.

Secretary of State for Defence in her Britannic Majesty's Government of the U.K. of Gt. Britain and Northern Ireland, The: *See—*
Shepherd, Neil; and Stewart, Malcolm J., 5,331,058, Cl. 525-332.300.

Sederquist, Richard A.; Trocciola, John C.; Farris, Paul J.; and Smith, Murdo J., II, to International Fuel Cells Corporation. Method of generating high-purity nitrogen gascu5,330,857, Cl. 429-13.000.

Seebeck, Wolfram: *See—*
Brede, Uwe; Kraft, Josef; and Seebeck, Wolfram, 5,330,730, Cl. 422-305.000.

Seed, Richard W.: *See—*
Charlton, Thomas J.; Seed, Trent R.; and Seed, Richard W., 5,329,735, Cl. 51-283.00R.

Seed, Trent R.: *See—*
Charlton, Thomas J.; Seed, Trent R.; and Seed, Richard W., 5,329,735, Cl. 51-283.00R.

Seeler, Charles E., to Shure Brothers, Inc. Method of manufacturing diaphrams for dynamic microphonescu5,330,695, Cl. 264-134.000.

Segorski, Michael J.; and Sirtola, Arnold R. Universal off road vehicle snow plowcu5,329,708, Cl. 37-231.000.

Seguin Moreau & Co. Of Zone Industrielle: *See—*
Cordier, Bernard, 5,331,133, Cl. 219-523.000.

Seidner, Leonard; Spinelli, Harry J.; Ali, Mohammed I.; and Weintraub, Lester, to Permeable Technologies, Inc. Silicone-containing contact lens polymers, oxygen permeable contact lenses and methods for making these lenses and treating patients with visual impairmentcu5,331,067, Cl. 525-479.000.

Seki, Keiko: *See—*
Yamashita, Hiroya; Seki, Keiko; Sakka, Sumio; and Yoko, Toshinobu, 5,330,833, Cl. 428-364.000.

Seki, Kenji: *See—*
Yokomichi, Yasunori; Tada, Shinichi; Nishino, Hitoshi; and Seki, Kenji, 5,331,072, Cl. 526-258.000.

Seki, Takashi: *See—*
Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; Tajima, Yoshio; and Matsuura, Kazuo, 5,331,071, Cl. 526-128.000.

Seki, Toshibumi; Okataku, Yasukuni; and Tamura, Shinsuke, to Kabushiki Kaisha Toshiba. Communication apparatus having function to record communication historycu5,331,647, Cl. 371-53.000.

Sekiguchi, Tomonobu: *See—*
Kamada, Mamoru; Ibi, Masaei; Sekiguchi, Tomonobu; Yamamoto, Masashi; Andoh, Noboru; and Itakura, Kenichi, 5,330,269, Cl. 383-210.000.

Sekine, Kazumi: *See—*
Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Noda, Shinya; Kobayashi, Kazunori; and Shoji, Takeo, 5,331,372, Cl. 355-200.000.

Selas Corporation of America: *See—*
Gensler, Wayne C.; Van Eerden, John J.; and Gottschlich, Chad F., 5,329,955, Cl. 137-7.000.

Sell, Leslie J., to Ingersoll-Rand Company. Function selector knob lockcu5,329,827, Cl. 74-553.000.

Sell, Leslie J., to Ingersoll-Rand Company. Indicating positive positioning selector knob lockcu5,329,829, Cl. 74-553.000.

Sellnau, Mark C.; Plyler, Robert G.; and Rodondi, Andrew F., to General Motors Corporation. Non-intrusive cylinder pressure sensorcu5,329,809, Cl. 73-115.000.

Semancik, Stephen; and Cavicchi, Richard E., to United States of America, Commerce. Planar epitaxial films of SnO_2cu5,330,855, Cl. 428-701.000.

Semchuck, Mario E.; and Baker, Reid H., to Emhart Inc. Fluid flow system vacuum breakercu5,329,957, Cl. 137-218.000.

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Sakama, Mitsunori; Fukada, Takeshi; Ichijo, Mitsuhiro; and Abe, Hisashi, 5,330,578, Cl. 118-723.00R.
Yamazaki, Shumpei, 5,330,802, Cl. 427-577.000.
Yamazaki, Shunpei, 5,330,616, Cl. 156-643.000.

Semiconductor Process Laboratory Co., Inc.: *See—*
Maeda, Kazuo; Ohira, Kouichi; and Hirose, Mitsuo, 5,330,577, Cl. 118-722.000.

Sencorp Systems, Inc.: *See—*
Belsito, Kenneth J., 5,329,748, Cl. 53-440.000.

Senecal, Pierre: *See—*
Gendron, Alain; and Senecal, Pierre, 5,331,153, Cl. 250-231.100.

Sener, Ingenieria Y Sistemas, S.A.: *See—*
Ibarreche Mendia, Jose I.; and Rivacoba Urruela, Jose, 5,329,763, Cl. 60-232.000.

Sentsui, Shintaro: *See—*
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Seo, In S.: *See—*
Chang, Suk K.; Seo, In S.; and Hong, Dae W., 5,331,046, Cl. 525-71.000.

Sepracor Inc.: *See—*
Young, James W.; Gray, Nancy M.; and Wechter, William J., 5,331,000, Cl. 514-570.000.

Serafini, Luciana A.: *See—*
Carrau, Juan L.; Dillon, Aldo J. P.; Serafini, Luciana A.; and Pazqual, Mirian S., 5,330,774, Cl. 426-13.000.

Sergan, Anthony J. Bimodal hydraulic reciprocating torque actuatorcu5,329,833, Cl. 81-57.390.

Sergeev, Boris G.: *See—*
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.

Service Tool International, Inc.: *See—*
Herdzina, Frank J.; and Herdzina, Steven F., 5,329,800, Cl. 72-361.000.

Servo Corporation of America: *See—*
Doctor, Alan P., 5,331,311, Cl. 340-463.000.

Seto, Nobuo: *See—*
Morigaki, Masakazu; Yoshioka, Yasuhiro; and Seto, Nobuo, 5,330,888, Cl. 430-551.000.

Setoyama, Tohru: *See—*
Doi, Nobukazu; and Setoyama, Tohru, 5,331,681, Cl. 377-116.000.

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Takamuki, Yasuhiko; Yoshida, Kazuhiro; and Arai, Takeo, to Konica Corporation. Silver halide photographic light-sensitive materialcu5,330,885, Cl. 430-523.000.

Takamura, Toshihiro: *See—*
Ohdake, Takayuki; Ohmori, Toshimichi; Takamura, Toshihiro; Yamada, Takemi; and Sampei, Tetsuya, 5,330,706, Cl. 420-103.000

Takano, Kazuya; and Kojima, Hiroshi, to Bridgestone Corporation Vibration damping apparatuscu5,330,164, Cl. 267-140.140

Takano, Satoshi: *See—*
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Takanoo, Yutaka; Okino, Ikuo; and Nakatani, Yasuhiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for producing polyester ether copolymercu5,331,066, Cl. 525-438.000

Takao, Hideaki; Asaoka, Masanobu; and Kojima, Makoto, to Canon Kabushiki Kaisha. Liquid crystal devicecu5,330,803, Cl. 428-1.000.

Takasaki, Saburo; and Ohshima, Eiji, to Sony Corporation. Cam arrangement for cassette loading mechanism having reduced slippagecu5,331,482, Cl. 360-85.000

Takata Corporation: *See—*
Kobayashi, Katsuhiko, 5,329,676, Cl. 24-633.000.

Takata, Kensaku: *See—*
Kajiyama, Tisato; Ono, Junichi; Kashiwagi, Tohru; Hara, Kouji; and Takata, Kensaku, 5,331,448, Cl. 359-103.000

Takatori, Masahiro; Nakano, Yukio; Ishida, Kenichi; Mori, Takashi; Ashi, Yoshihiro; Kanno, Tadayuki; and Ueda, Hiromi, to Hitachi, Ltd.; and Nippon Telegraph and Telephone Corp. Method and apparatus for frame phase conversion of signal having frame structurecu5,331,639, Cl. 370-100.100

Takayama, Tsutomu: *See—*
Kondo, Kenichi; Yamagata, Shigeo; Sakaegi, Yuji; Kudo, Toshihiko; Matsunaga, Kazuhiro; and Takayama, Tsutomu, 5,331,154, Cl. 250-231.170

Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko, Wada, Hirotaka; and Suzuki, Toshiharu, to Takemoto Yushi Kabushiki Kaisha. Polymerizable compositions and in-mold cured products using samecu5,331,041, Cl. 524-555.000.

Takazawa, Akira: *See—*
Yamada, Masao; Nakano, Motoo, Collins, George J.; Tamura, Tetsuro; and Takazawa, Akira, 5,331,180, Cl. 257-3.000.

Takeda Chemical Industries, Ltd.: *See—*
Wakimasu, Mitsuhiro; Mori, Masaaki; and Kawada, Akira, 5,330,978, Cl. 514-80.000
Yamamoto, Masaki; Takada, Shigeyuki; and Ogawa, Yasuaki, 5,330,767, Cl. 424-497.000

Takeda, Fumiaki: *See—*
Hosoi, Takashi; Ohgami, Keizo; and Takeda, Fumiaki, 5,331,508, Cl. 361-680.000

Takemori, Hirotoshi. *See—*
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Takemoto Yushi Kabushiki Kaisha: *See—*
Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Suzuki, Toshiharu, 5,331,041, Cl. 524-555.000.

Takenaka, Shinya, to Sumitomo Electric Industries, Ltd. Scan velocity detector and code reader using the samecu5,331,142, Cl. 235-466.000.

Takenouchi, Masanori: *See—*
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Takeuchi, Akihiko: *See—*
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Takeuchi, Tsutomu *See—*
Handa, Akio; Takeuchi, Tsutomu; Kajikawa, Tsuneo; Ariga, Ikuo; and Shinada, Masao, 5,330,028, Cl. 180-219.000.

Takeyama, Toshihisa; Kitamura, Shigehiro; and Koshizuka, Kunihiro, to Konica Corporation. Image receiving sheet for thermal transfer recording and process for preparing the samecu5,330,961, Cl. 503-227.000.

Taki, Takahiro: *See—*
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Takiguchi, Ryohei: *See—*
Ono, Masashi; Yasui, Shigeo; Noguchi, Ayashi; Takiguchi, Ryohei; Eguchi, Hiroshi; and Kafuku, Komei, 5,330,960, Cl. 503-227.000.

Takimoto, Akio; Okajima, Michio; Suzuki, Masaaki; and Ogawa, Hisahito, to Matsushita Electric Industrial Co., Ltd. Organic light emitting device and preparation and use thereofcu5,331,182, Cl. 257-40.000.

Takimoto, Hiroshi; and Masuda, Minoru, to Mitsubishi Kasei Corporation. Image protecting film and image protecting methodcu5,330,824, Cl. 428-201.000

Takizawa, Yoshihisa: *See—*
Miyagawa, Masashi; Takenouchi, Masanori; Shirota, Katsuhiro; Ohkuma, Norio; Takizawa, Yoshihisa; Inui, Toshiharu; and Nakajima, Kazuhiro, 5,331,344, Cl. 347-63.000.

Takubo, Seiji: *See—*
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Takuma, Hiroshi: *See—*
Kitagawa, Takeshi; Takuma, Hiroshi; Kan, Shoji; Furuichi, Yoichi; and Taki, Takahiro, 5,329,830, Cl. 477-117.000.

Takuma, Masao: *See—*
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko; Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tanii, Keiichi, 5,331,411, Cl. 348-708.000.

Talko, Francis: *See—*
Grant, David C.; Lahoda, Edward J.; Lin, Ching-Yu; and Talko, Francis, 5,330,658, Cl. 210-717.000.

Tamaki, Tokuhiko. *See—*
Kubota, Masafumi; Nomura, Noboru; and Tamaki, Tokuhiko, 5,330,606, Cl. 156-345.000.

Tamaru, Tsuyoshi: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Tambrands Inc.: *See—*
Tarr, Warren; Child, William M.; and Mendes, Quiteria M., 5,330,421, Cl. 604-18.000.

Tamura, Hideyuki, to Nissan Motor Co., Ltd. Apparatus and method for self diagnosing engine component controlling systems according to predetermined levels of prioritycu5,331,560, Cl. 364-431.120.

Tamura, Noritoshi: *See—*
Nakano, Masayuki; Kuramoto, Ryozo; Otozaki, Shigeo; Kaneko, Katsuaki; Shibasaki, Hideo; and Tamura, Noritoshi, 5,330,573, Cl. 106-796.000.

Tamura, Rie: *See—*
Ishibashi, Hideo; Oshima, Toshiyuki; Tamura, Rie; Yamamoto, Satoshi; and Izumo, Takaharu, 5,331,051, Cl. 525-131.000.

Tamura, Shinsuke: *See—*
Seki, Toshibumi; Okataku, Yasukuni; and Tamura, Shinsuke, 5,331,647, Cl. 371-53.000.

Tamura, Tetsuro: *See—*
Yamada, Masao; Nakano, Motoo; Collins, George J.; Tamura, Tetsuro; and Takazawa, Akira, 5,331,180, Cl. 257-3.000.

Tamura, Tsuneo: *See—*
Narita, Mitsuru; Tamura, Tsuneo; and Kitagawa, Seizou, 5,330,863, Cl. 430-58.000.

Tamura, Yutaka: *See—*
Fuma, Masato; Tamura, Yutaka; Sugihara, Nagatoshi; Inoue, Takao; and Okamoto, Miyuki, 5,331,617, Cl. 369-54.000.

Tanabe, Susumu: *See—*
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Tanahashi, Shigeo: *See—*
Kubo, Takanori; and Tanahashi, Shigeo, 5,331,297, Cl. 333-127.000.

Tanaka, Akinori: *See—*
Oda, Mitsunori; Kikkawa, Kazutoshi; Tanaka, Akinori; Imaruoka, Satoko; and Yoshinaka, Shigeo, 5,331,011, Cl. 514-555.000.

Tanaka, Akira: *See—*
Funabashi, Hideo; Tanaka, Akira; Ohnishi, Rikuo; Kasahara, Toshikazu; and Yamawaki, Takashi, 5,330,949, Cl. 502-111.000.

Tanaka, Atsuo; Hanabusa, Tetsuhiro; Kojo, Harunori; and Inui, Tsuneo, to Toyo Kohan Co., Ltd. Method for production of a copolyester resin film laminated metal sheetcu5,330,605, Cl. 156-309.900.

Tanaka, Hiroaki: *See—*
Onishi, Atsuhiro; Matsunami, Koichi; Ebara, Masanao; and Tanaka, Hiroaki, 5,331,017, Cl. 521-90.000.

Tanaka, Hisanobu: *See—*
Yoshimura, Takashi; Ishizuka, Takayasu; Shiomi, Masayui; Hayashi, Tomoyoshi; Aihoshi, Hiroaki; and Tanaka, Hisanobu, 5,331,302, Cl. 335-78.000.

Tanaka, Kazumoto; Hironaka, Kazuo; and Shimbara, Yoshimi, to Mazda Motor Corporation. Surface inspection method and device with irradiationcu5,331,169, Cl. 250-372.000.

Tanaka, Kazuo, to Yugen Gaisha Shunwa Denshi Kikaku. Efficient auxiliary engine combustion systemcu5,329,910, Cl. 123-536.000.

Tanaka, Kenichi; Yamauchi, Yoshimitsu; and Sakiyama, Keizo, to Sharp Kabushiki Kaisha. Non-volatile semiconductor memorycu5,331,181, Cl. 257-23.000.

Tanaka, Koichi, to Kabushiki Kaisha Toshiba. Communication control devicecu5,331,668, Cl. 375-116.000.

Tanaka, Kunio; and Onishi, Yasushi, to Fanuc Ltd. Symbol definition system and method a programmable machine controllercu5,331,540, Cl. 364-147.000.

Tanaka, Kyoji: *See—*
Hashimoto, Noboru; Tanaka, Kyoji; Kajita, Susumu; and Yoden, Hiroyoshi, 5,330,692, Cl. 264-65.000.

Tanaka, Masafumi; Sakamoto, Kazuo; Fujii, Tatsuya; and Fukui, Ryo, to Ricoh Company, Ltd. Orthogonal transformation processor for compressing informationcu5,331,585, Cl. 364-725.000.

Tanaka, Mitsuo: *See—*
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Tanaka, Osamu: *See—*
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Tanaka, Satoru C.: *See—*
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Tanaka, Shingo; Nishibuchi, Koji; Shimokusa, Koji; and Ueno, Tetsuya, to Kao Corporation. Developer composition for electrophotography for flash fusingcu5,330,870, Cl. 430-109.000.

Tanaka, Sumio, to Kabushiki Kaisha Toshiba. Semiconductor nonvolatile memory apparatus including threshold voltage shift circuitrycu5,331,597, Cl. 365-207.000.

Tanaka, Takashi: *See—*
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Tanaka, Toshiaki, to Hitachi, Ltd. Very short wavelength semiconductor lasercu5,331,656, Cl. 372-45.000.

Tanguay, Dennis C.; Dupuis, Gerard E.; and Ha, Bao, to Liquid Air Engineering Corporation. Method and apparatus for separating C_4 hydrocarbons from a gaseous mixturecu5,329,774, Cl. 62-23.000.

Tanida, Toshifumi, to Fujitsu Limited. Divisional step dot printing devicecu5,330,276, Cl. 400-124.000.

Tanigawa, Koichi: *See—*
Ohtsuka, Yasumasa; Takeuchi, Akihiko; Tanigawa, Koichi; and Nanataki, Hideo, 5,331,385, Cl. 355-290.000.

Tanigawa, Makoto: *See—*
Tabuchi, Hiroki; Iguchi, Katsuji; Tanigawa, Makoto; Taniguchi, Takayuki; and Moriwaki, Hiroyuki, 5,330,862, Cl. 430-5.000.

Taniguchi, Hideaki: *See—*
Someya, Sakae; Nashimoto, Ryuuzoh; Suzuki, Hirofumi; Yarita, Katsuhiko; Matsumoto, Shinji; Sasano, Akira; Taniguchi, Hideaki; and Oritsuki, Ryouji, 5,331,447, Cl. 359-59.000.

Taniguchi, Jun; and Sota, Koichi, to Otari, Inc. Cassette adaptable tape widning apparatus and assemblycu5,330,117, Cl. 242-540.000.

Taniguchi, Takayuki: *See—*
Tabuchi, Hiroki; Iguchi, Katsuji; Tanigawa, Makoto; Taniguchi, Takayuki; and Moriwaki, Hiroyuki, 5,330,862, Cl. 430-5.000.

Tanii, Keiichi: *See—*
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko; Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tanii, Keiichi, 5,331,411, Cl. 348-708.000.

Tanikawa, Hirohide; Uchiyama, Masaki; Joh, Yoshinobu; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, to Canon Kabushiki Kaisha. Toner for developing electrostatic imagecu5,330,871, Cl. 430-110.000.

Tanimizu, Hiromi, to Kabushiki Kaisha Toshiba. Contact-type image sensor for generating electric signals corresponding to an image formed on a documentcu5,331,146, Cl. 250-208.100.

Tanimoto, Morimasa: *See—*
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Tank, Volker; Dietl, Helmut; Haschberger, Peter; Lindermeir, Erwin; Mayer, Oliver; and Thiessen, Rainer, to Deutsche Forschungsanstalt fur Luft- und Raumfahrt. Method for measuring and determining a rotation angle of a rotating objectcu5,331,399, Cl. 356-346.000.

Tanoi, Satoru, to Oki Electric Industry Co., Ltd. Latch circuit with independent propagation delayscu5,331,207, Cl. 307-272.100.

Tanuma, Jiro: *See—*
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Tarr, Warren; Child, William M.; and Mendes, Quiteria M., to Tambrands Inc. Tampon applicatorcu5,330,421, Cl. 604-18.000.

Tarr, Yul J.; and Perr, Julius P., to Cummins Engine Company, Inc. Compressed natural gas injection system for gaseous fueled enginescu5,329,908, Cl. 123-527.000.

Tarumi, Yasuo: *See—*
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Tarvin, Jeffrey: *See—*
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Tasaka, Yoshihiko: *See—*
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Tateishi, Kazuo: *See—*
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Tatumi, Shigezou. Lift device comprising strap-like rail and bearings fitted to helical strap-like railcu5,330,033, Cl. 187-95.000
Taube, John J.: *See—*
Swift, Douglas A.; and Taube, John J., 5,329,980, Cl. 52-209.00R.
Tauscher, Willy, to Gebrueder Sulzer Aktiengesellschaft. Stationary fluid mixer with fluid guide surfacescu5,330,267, Cl. 366-336.000
Taut, Inc.: *See—*
McFarlane, Richard H., 5,330,434, Cl. 604-164.000
Taya, Masaaki: *See—*
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Taylor, Richard G.: *See—*
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Taylor, Ronald K.: *See—*
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Taylor, Timothy E.; Riley, Clyde; and Lacefield, William R., Jr., to McDonnell Douglas Corporation. Preparation of ceramic-metal coatingscu5,330,826, Cl. 428-216.000
Taylor, Wayne A.: *See—*
Heaton, Richard C.; Jamriska, David J., Sr.; and Taylor, Wayne A., 5,330,731, Cl. 423-2.000
Tazartes, Daniel A.: *See—*
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Teac Corporation: *See—*
Nishijima, Takashi, 5,331,223, Cl. 307-529.000
Sugiyama, Sho, 5,331,477, Cl. 360-59.000.
Teague, Edward W.; Clark, Jarvis L.; and Hance, Max H., to Burlington Industries. Salt-and-pepper denimcu5,330,538, Cl. 8-114.600.
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Koether, Bernard G.; Witt, Allan E.; and Maher, Charles A., Jr., 5,331,575, Cl. 364-557.000
Tecle, Haile: *See—*
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Tecnomara Deutschland GmbH: *See—*
Wilson, John R.; and Kowol, Ewald, 5,330,915, Cl. 435-289.000
Tedeschi, Christian: *See—*
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Tegethoff, Ronald E. Pull tab can openercu5,329,832, Cl. 81-3.550
Tegtmeier, Gert, to Krupp Polysius AG. Reciprocating grate coolercu5,330,350, Cl. 432-77.000
Teijin Limited: *See—*
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Tektronix, Inc.: *See—*
McCarroll, Benjamin J., 5,331,210, Cl. 307-351.000
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Telectronics Pacing Systems, Inc.: *See—*
Maddison, David S.; Skalsky, Michael; Gotthardt, Gerhard; and Anderson, Neil, 5,330,520, Cl. 607-122.000
Somerville, William M.; and Wickham, John P., 5,330,504, Cl. 607-5.000.
Teledyne Industries, Inc.: *See—*
Scott, Richard D.; and Knutson, Neal R., 5,329,687, Cl. 29-527.200
Temic Telefunken microelectronic GmbH: *See—*
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Nutz, Karl-Diether; and Gruber, Berthold, 5,331,270, Cl. 323-237.000
Temoshenko, Leo; and Weddington, Harry F., Jr., to International Business Machines Corporation. System and method for collecting response times for exception response applicationscu5,331,574, Cl. 364-551.010
Temple University-Of The Common Commonwealth System of Higher Education: *See—*
Buese, Mark A.; and Poczynok, Dana L., 5,330,836, Cl. 428-405.000
TenBroeke, Dennis J.: *See—*
Haan, Theodore M.; Vandenbrink, Wayne; Forbes, Stephen J.; and TenBroeke, Dennis J., 5,330,149, Cl. 248-549.000
Tennant, David L.: *See—*
Josephson, Gregg R.; Bower, Douglas H.; and Tennant, David L., 5,331,590, Cl. 365-182.000
Tennessee Gas Pipeline Company: *See—*
Abbott, James R., 5,329,698, Cl. 29-890.000
Ten Vaarwerk, Gerardus J. M., to AMCO Holding B.V. Moulding press for an injection moulding devicecu5,330,347, Cl. 425-406.000.
Teo, Boon C.; Karta, Tjandra; and Low, Siu W., to Texas Instruments Incorporated. Lead-on-chip inner lead bonding lead frame method and apparatuscu5,331,200, Cl. 257-666.000.
Teraeuhi, Kiyoshi; Kawano, Akihiro; Satoh, Hideaki; Kitano, Norio; and Yoshii, Yuji, to Sanden Corporation. Horizontally oriented rotary machine having internal lubication oil pumpcu5,330,335, Cl. 418-55.600.
Terada, Kazutoshi: *See—*
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Terada, Mitsugu: *See—*
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Terasawa, Tsuneo; Hama, Katsunobu; and Katagiri, Soichi, to Hitachi, Ltd. Method of forming patterns and apparatus for carrying out the samecu5,331,369, Cl. 355-53.000.
Terashima, Shigeo: *See—*
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Tereo, Edoardo: *See—*
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Termofrost AB: *See—*
Sodervall, Sven-Erik, 5,329,736, Cl. 52-171.300
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Engelfried, Werner; and Muller, Gerhard, 5,329,790, Cl. 66-221.000
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Rutecki, Paul; Wernicke, Joachim F.; and Terry, Reese S., Jr., 5,330,515, Cl. 607-46.000.
Terumo Kabushiki Kaisha: *See—*
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Sakai, Hiroshi, 5,331,309, Cl. 340-606.000
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Tervamaki, Jukka, to Nippon Zeon Company, Ltd. Step pipettecu5,330,721, Cl. 422-100.000
Terwilliger, Donald N.; and Smith, Roger R., to Hardinge Brothers, Inc. Collet chuckcu5,330,224, Cl. 279-51.000
Tesch, Gunter. Fiber aggregates serving as shaped materials or fillers for textiles such as bedspreads, garments or the like, shaped materials and fillers consisting of a plurality of such fiber aggregates, textiles containing this filler material and method for makingcu5,329,868, Cl. 112-262.100
Tetra Laval Holdings & Finance S.A.: *See—*
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Texas Instruments Incorporated: *See—*
Dwyer, Daniel; Morin, Daniel; Mazzola, Massimo; and Abrahamson, Karl R., 5,331,126, Cl. 200-83.00P.
Erdeljac, John P.; and Hutter, Louis N., 5,330,922, Cl. 437-30.000.
Hornbeck, Larry J., 5,331,454, Cl. 359-224.000.
Liu, William U.; Fan, Shou-Kong; Henderson, Timothy S.; and Hill, Darrell G., 5,330,932, Cl. 437-133.000
Marshall, Andrew; and Thiel, Frank L., 5,331,285, Cl. 324-713.000.
Nelson, William E., 5,330,878, Cl. 430-311.000
Orcutt, John W.; and Lin, Galle, 5,330,089, Cl. 228-1.100
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Teze, Andre: *See—*
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TFI Acquistion Corp.: *See—*
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Th. Goldschmidt AG: *See—*
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Thatcher Chemical Company: *See—*
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Thatcher, W. Brad: *See—*
Farmer, James O.; and Thatcher, W. Brad, 5,331,412, Cl. 348-5.500.
Thayer, Bruce E.; Mordenga, Samuel P.; and Walcott, Billy D., to Xerox Corporation. High velocity air and stationary disturber cleanercu5,329,665, Cl. 134-308.000.
Therakos, Inc.: *See—*
Lee, Kyu H., 5,330,420, Cl. 604-4.000.
Thermacore, Inc.: *See—*
Rosenfeld, John H., 5,329,996, Cl. 165-168.000.
Thiel, Frank L.: *See—*
Marshall, Andrew; and Thiel, Frank L., 5,331,285, Cl. 324-713.000.
Thiele Kaolin Company: *See—*
Shi, Joseph C. S.; Alberg, Edwin W.; and Wilson, Geoffrey R., 5,330,943, Cl. 502-62.000.
Thielen, William: *See—*
Bresin, Mark; and Thielen, William, 5,330,392, Cl. 473-130.000.
Thiessen, Rainer: *See—*
Tank, Volker; Dietl, Helmut; Haschberger, Peter; Lindermeir, Erwin; Mayer, Oliver; and Thiessen, Rainer, 5,331,399, Cl. 356-346.000.

Thomas, Lewis J., III; and Harsh, Michael J., to General Electric Company. Phased array sector scanner with multiplexed acoustic transducer elementscu5,329,930, Cl. 128-661.010.
Thomas, Prakash: *See—*
Collier, John P.; Hogel, Richard; Marsh, James G.; and Thomas, Prakash, 5,330,091, Cl. 228-107.000.
Thomas, Remi, to Nestec S.A. Process for the production of an anti-diarrhoeic product based on carobcu5,330,755, Cl. 424-195.100.
Thompson, David L., to Volz, David M.; and Thompson, David L., a part interest. Surface treated vestibule block and process of making the samecu5,330,842, Cl. 428-426.000.
Thompson, David L.: *See—*
Nichols, Lucy M.; Roline, Glenn M.; Bennett, Tom D.; and Thompson, David L., 5,330,513, Cl. 607-32.000.
Thompson, Hal J.: *See—*
Allison, John G.; and Thompson, Hal J., 5,330,804, Cl. 428-15.000.
Thompson, Hugh A.: *See—*
DesMarais, Thomas A.; Stone, Keith J.; Thompson, Hugh A.; Young, Gerald A.; LaVon, Gary D.; and Dyer, John C., 5,331,015, Cl. 521-62.000.
Thompson, Thomas N.: *See—*
Kriesel, Marshall S.; and Thompson, Thomas N., 5,330,426, Cl. 604-89.000.
Thomson Consumer Electronics, Inc.: *See—*
Haas, Kenneth J., 5,331,351, Cl. 348-558.000.
Thomson Consumer Electronics S.A.: *See—*
Wu, Chun H., 5,331,347, Cl. 348-536.000.
Thomson, Walter G.; and Kramer, Jonathan K., to BASF Corporation. Process and apparatus for increasing the size of ammonium sulfate crystalscu5,330,544, Cl. 23-313.00R.
Thorne, Barbara L.; and Traniello, James F. A. System for termite detection and controlcu5,329,726, Cl. 43-124.000.
Thornton, Curtis W.; and Ruckdeschel, Thomas W., to TFI Acquistion Corp. Drive mechanism for surgical instrumentscu5,330,487, Cl. 606-143.000.
Three Bond Co., Ltd.: *See—*
McGinniss, Vincent D.; White, James L.; and Mikuni, Hiroyuki, 5,331,018, Cl. 522-16.000.
Thuis, Robbert C., to U. S. Philips Corporation. Compensation scheme for reducing effective transformer leakage inductancecu5,331,271, Cl. 323-355.000.
Thurn, Rudolf; and Burger, Hans-Joachim, to Siemens Aktiengesellschaft. Method for the production of ultrasound transformerscu5,329,682, Cl. 29-25.350.
Thurtell, George; Kidd, Gary; and Edwards, Grant. Tunable diode laser gas analyzercu5,331,409, Cl. 356-437.000.
TI Interlock Limited: *See—*
Walter, David T., 5,330,109, Cl. 241-30.000.
TI Matrix Engineering Limited: *See—*
Baker, David J., 5,330,039, Cl. 192-30.00W.
Tiballi, Nancy. Extendable personal dive flagcu5,329,873, Cl. 116-173.000.
Tiefenbrun, Jonathan: *See—*
Wilk, Peter J.; and Tiefenbrun, Jonathan, 5,330,490, Cl. 606-153.000.
Tietje, Mark E., to Caterpillar Inc. Mounting apparatus for a fluid conduit assemblycu5,330,139, Cl. 248-65.000.
Tiffany, George M., III; Ryer, Jack; Roper, Renee M.; and Stover, William H., to Exxon Chemical Patents Inc. Two-cycle oil additivecu5,330,667, Cl. 252-49.600.
Timp, Richard L.; Schultz, Michael W.; and Morehead, John H., to Wilson Tool International, Inc. Adjustable length punch set assemblycu5,329,835, Cl. 83-686.000.
Ting, Sai-Pei: *See—*
Aycock, David F.; and Ting, Sai-Pei, 5,331,060, Cl. 525-397.000.
Tioxide Specialties Limited: *See—*
Meina, Dominic G., 5,330,953, Cl. 502-208.000.
Tirmizi, Abrar A.: *See—*
Park, Kyong M.; and Tirmizi, Abrar A., 5,329,819, Cl. 73-724.000.
Titus, George R.: *See—*
Payne, Donald N., Jr.; Waller, Jess M.; Clarke, Richard P.; Titus, George R.; and Martin, David A., 5,331,019, Cl. 522-75.000.
Tjubalin, Valery V.: *See—*
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased; Kovalenko, Valery F., deceased; Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administator, 5,331,329, Cl. 342-357.000.
Tochiyama, Kazunori: *See—*
Hachiya, Toshiyuki; and Tochiyama, Kazunori, 5,331,486, Cl. 360-97.010.
Tochizawa, Toru: *See—*
Hosoda, Fumio; Habaguchi, Masayuki; Kakimoto, Kazuhito; Tochizawa, Toru; Uchiyama, Masashi; and Ave, Yoshiharu, 5,329,909, Cl. 123-520.000.
Toet, Mary J.; and Somers, Amanda, to Agricura (Private) Limited. Production of *Trichoderma harzianum* Rifa CMI CC No. 333646cu5,330,912, Cl. 435-254.100.
Togai, Kazuhide; and Ishida, Tetsurou, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Control device for internal combustion enginecu5,329,914, Cl. 123-688.000.
Togawa, Eisei: *See—*
Azuma, Kasufumi; Sonobe, Hideki; Nate, Kazuo; Mizushima, Akiko; Saito, Harunobu; Togawa, Eisei; and Ishizaki, Hiroshi, 5,329,689, Cl. 29-603.000.
Tokai Kogyo Kabushiki Kaisha: *See—*
Shirahata, Itaru, 5,330,805, Cl. 428-31.000.
Tokai Rubber Industries, Ltd.: *See—*
Iwaya, Nobuo, 5,330,694, Cl. 264-112.000.
Miyakawa, Shinji, 5,330,387, Cl. 464-93.000.
Tokico Ltd.: *See—*
Aoyama, Tadao; Yasumaru, Tetsuo; and Saito, Masayuki, 5,330,150, Cl. 248-598.000.
Tokiwa Seiki Co., Ltd.: *See—*
Suzuki, Hiroshi; Miyata, Katsuya; and Kimura, Minoru, 5,330,237, Cl. 285-281.000.
Tokunaga, Takumi; Ide, Teruhiko; Watanabe, Hiroyuki; and Tsuzuki, Kenji, to Tosoh Corporation. Tetrahydroisoquinoline compounds and fungicides containing the samecu5,330,991, Cl. 514-307.000.
Tokunaga, Tatsuyuki; and Suzuki, Masayuki, to Canon Kabushiki Kaisha. Cameracu5,331,366, Cl. 354-412.000.
Tokuyama Soda Kabushiki Kaisha: *See—*
Yamashita, Hiroya; Seki, Keiko; Sakka, Sumio; and Yoko, Toshinobu, 5,330,833, Cl. 428-364.000.
Tokyo Electric Co., Ltd.: *See—*
Akuzawa, Yoshihide; and Kambe, Yukihiko, 5,331,441, Cl. 358-530.000.
Suzuki, Shigesada; Sugiyama, Masahiro; and Hiraoka, Toshiyuki, 5,331,534, Cl. 363-20.000.
Ueno, Shigenori, 5,331,680, Cl. 377-17.000.
Tokyo Electron Sagami Limited: *See—*
Watanabe, Shingo; and Jintate, Shinichi, 5,330,352, Cl. 432-152.000.
Tokyo Yogyo Kabushiki Kaisha: *See—*
Andoh, Mitsuru; and Naruse, Noriyoshi, 5,329,987, Cl. 164-306.000.
Tomalia, Donald A.: *See—*
Smith, Harry A.; and Tomalia, Donald A., 5,331,100, Cl. 564-468.000.
Tomita, Tsutomu; and Takabatake, Hideo, to Yoshida Kogyo K.K. Slider for slide fastener with automatic stop meanscu5,329,674, Cl. 24-418.000.
Tomizawa, Tetsushi: *See—*
Yajima, Hiroshi; Mitsumori, Sadamichi; Tabushi, Isoji; Akita, Osamu; Tomizawa, Tetsushi; and Ushio, Tetsuya, 5,331,543, Cl. 364-401.000.
Ton Co., Ltd.: *See—*
Matsunobu, Akira; Horishita, Sumio; and Konaka, Rhuichiro, 5,330,781, Cl. 426-632.000.
Topel, Richard W., Jr.: *See—*
Kaszczuk, Linda; and Topel, Richard W., Jr., 5,330,876, Cl. 430-269.000.
Torata, Shin-ichiro: *See—*
Masaki, Toshio; Sasaki, Noriaki; Torata, Shin-ichiro; Igarashi, Hiroshi; Shimizu, Tetsuya; and Iikubo, Tomohito, 5,330,710, Cl. 420-441.000.
Torax Company, Inc., The: *See—*
Lohr, Charles B.; and Heidemann, William J., 5,330,396, Cl. 476-10.000.
Toray Industries, Inc.: *See—*
Noguchi, Noriyasu; Yamazaki, Yoshiharu; Hagio, Mitsuyuki; and Futami, Yasuhiko, 5,330,429, Cl. 604-96.000.
Torii, Kazuyoshi: *See—*
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ootsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.
Torii, Nobutoshi; Nihei, Ryo; and Kato, Tetsuaki, to Fanuc Ltd. Method of executing sliding-mode control including twist feedbackcu5,331,265, Cl. 318-610.000.
Torimitsu, Hiroshi: *See—*
Kojima, Toshio; Toya, Chiyoshi; Hugikawa, Takeshi; Torimitsu, Hiroshi; Suyama, Tomio; and Hirate, Sadayuki, 5,329,952, Cl. 134-133.000.
Toronto, Russell A.; and Bastyr, Charles A., to Smith & Nephew Donjoy, Inc. Orthopedic ankle brace methodcu5,330,419, Cl. 602-27.000.
Torrington Company, The: *See—*
Murphy, Richard F.; DiLauro, John A.; and Urmaza, Matthew G., 5,329,891, Cl. 123-90.390.
Tortella, Frank C.: *See—*
Newman, Amy H.; Calderon, Silvia N.; and Tortella, Frank C., 5,331,010, Cl. 514-617.000.
Toso, Kenneth E.: *See—*
Green, David T.; Bolanos, Henry; Sienkiewicz, Henry R.; Toso, Kenneth E.; Kolesa, Michael S.; and Tovey, H. Johnathan, 5,330,442, Cl. 606-232.000.
Tosoh Corporation: *See—*
Ishibashi, Kazunobu; Matsumoto, Shinichi; Kondoh, Shiroh; and Utsumi, Yasuhide, 5,330,732, Cl. 423-213.200.
Tokunaga, Takumi; Ide, Teruhiko; Watanabe, Hiroyuki; and Tsuzuki, Kenji, 5,330,991, Cl. 514-307.000.
Tovey, H. John; Young, Wayne P.; and Nicholas, David A., to United States Surgical Corporation. Tissue gripping device for use with a

cannula and a cannula incorporating the devicecu5,330,501, Cl. 606-198.000

Tovey, H. Johnathan: *See*—
Green, David T.; Bolanos, Henry; Sienkiewicz, Henry R.; Toso, Kenneth E.; Kolesa, Michael S.; and Tovey, H. Johnathan, 5,330,442, Cl. 606-232.000.

Townsend Industries, Inc.: *See*—
Townsend, Jeffrey H.; and Williams, Robert J., 5,330,418, Cl. 602-26.000.

Townsend, Jeffrey H., and Williams, Robert J., to Townsend Industries, Inc. Multiaxis controlled motion knee brace with a four bar joint and method for producing samecu5,330,418, Cl. 602-26.000.

Toya, Chiyoshi. *See*—
Kojima, Toshio; Toya, Chiyoshi; Hugikawa, Takeshi; Tomitsu, Hiroshi; Suyama, Tomio; and Hirate, Sadayuki, 5,329,952, Cl. 134-133.000.

Toyo Aluminum Kabushiki Kaisha: *See*—
Kamada, Mamoru, Ibi, Masaei; Sekiguchi, Tomonobu; Yamamoto, Masashi; Andoh, Noboru; and Itakura, Kenichi, 5,330,269, Cl. 383-210.000.

Toyo Boseki Kabushiki Kaisha. *See*—
Nakata, Kiyoshi; and Hayashi, Seishu, 5,330,338, Cl. 425-94.000.

Toyo Kaset Kogyo Company, Limited: *See*—
Onishi, Atsuhiro; Matsunami, Koichi; Ebara, Masanao; and Tanaka, Hiroaki, 5,331,017, Cl. 521-90.000.

Toyo Kohan Co., Ltd.: *See*—
Tanaka, Atsuo; Hanabusa, Tetsuhiro; Kojo, Harunori; and Inui, Tsuneo, 5,330,605, Cl. 156-309.900.

Toyoda Gosei Co., Ltd.: *See*—
Hiramitsu, Tetsushi; Inoue, Michio; Sonobe, Akihiko; Yamamoto, Tadashi; Ogawa, Hiroshi; and Ikeda, Takanobu, 5,330,223, Cl. 280-728.00A

Toyoda Koki Kabushiki Kaisha: *See*—
Enomoto, Minoru; Inagaki, Shoji; Okada, Yasuhiro; Sakamoto, Fumio; Ise, Noritaka; Ito, Masashi; and Yoshikura, Fuyuhiko, 5,330,168, Cl. 269-329.000.

Toyota Jidosha Kabushiki Kaisha. *See*—
Ishibashi, Kazunobu; Matsumoto, Shinichi; Kondoh, Shiroh; and Utsumi, Yasuhide, 5,330,732, Cl. 423-213.200.
Ito, Masahito; Koujiya, Miyuki; Sarai, Hiroshi; Nakao, Seiya; Nomura, Takao; Kitou, Satoru; Matsuda, Fuminori; Yamada, Susumu; Kurotwa, Kesato; and Mihara, Hiroshi, 5,329,981, Cl. 164-7.200.
Ito, Norio; and Mine, Koichi, 5,329,799, Cl. 72-340.000.

Tracy, Jere R. Animal waterercu5,329,876, Cl. 119-51.030.

Traniello, James F. A. *See*—
Thorne, Barbara L.; and Traniello, James F. A., 5,329,726, Cl. 43-124.000.

Transducer Research, Inc.: *See*—
Stetter, Joseph R.; and Pan, Li, 5,331,310, Cl. 340-632.000.

Transfer Flow International, Inc.: *See*—
Peters, Chris R., 5,330,262, Cl. 312-140.400.

TranSwitch Corp.: *See*—
Parruck, Bidyut; and Hamlin, Robert W., Jr., 5,331,641, Cl. 370-102.000.

Traskos, Richard T.; and Olenick, John A., to Rogers Corporation. Method of manufacturing a multilayer circuit boardcu5,329,695, Cl. 29-830.000.

TRC Aquisition Corporation: *See*—
Bowerman, Leonard E.; Chumley, Eugene K.; Owens, Raymond D.; Bartasevich, William E.; Waldo, Robert L.; and Caternacci, John R., 5,329,666, Cl. 15-323.000.

Trebitz, Bernd: *See*—
Perez, Augustin A., Pons, Francesc; Sanz, Juan C. C.; Garcia, Jose R.; Andres, Miguel R.; and Trebitz, Bernd, 5,329,709, Cl. 38-77.700.

Tremblay, Paul A.: *See*—
Janoff, Andrew S.; Boicsak, Lois E.; Weiner, Alan L.; Tremblay, Paul A.; Bergamini, Michael V. W.; and Suddith, Robert L., 5,330,689, Cl. 264-4.300.

Trenkamp, Michael J.; and Gravel, Loras F. Shredder attachment for combine corn headcu5,330,114, Cl. 241-101.700.

Treude, Horst. *See*—
Kluczynski, Roman; Lutter, Johannes; Beuter, Werner; Treude, Horst; and Burkert, Heinz, 5,330,848, Cl. 428-537.100.

Triner, James E.. *See*—
Cochran, Don W.; and Triner, James E., 5,331,151, Cl. 250-223.00R.

Trion Corporation: *See*—
Aoki, Akio, 5,329,639, Cl. 2-161.100.

Tripp, Benjamin A. Prefabricated ground coil assemblycu5,329,992, Cl. 165-45.000.

Trivedi, Bharat K.: *See*—
Horwell, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S., Roberts, Edward; Roth, Bruce D.; Tait, Bradley D., Trivedi, Bharat K.; Trostmann, Uwe; and Unangst, Paul C., 5,331,006, Cl. 514-481.000.

TRLI, Inc.: *See*—
Beattie, John M.; and Sinden, Jimmie D., 5,330,315, Cl. 414-786.000.

Trocciola, John C.; Schroll, Craig R., and Lesieur, Roger R., to International Fuel Cells Corporation. Apparatus for removing carbon monoxide from gaseous mediacu5,330,727, Cl. 422-177.000.

Trocciola, John C.: *See*—
Sederquist, Richard A.; Trocciola, John C.; Farris, Paul J.; and Smith, Murdo J., II, 5,330,857, Cl. 429-13.000.

Tropix, Inc.: *See*—
Bronstein, Irena Y.; Edwards, Brooks; and Juo, Rouh-Rong, 5,330,900, Cl. 435-6.000.

Trostmann, Uwe: *See*—
Horwell, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S.; Roberts, Edward; Roth, Bruce D.; Tait, Bradley D.; Trivedi, Bharat K.; Trostmann, Uwe; and Unangst, Paul C., 5,331,006, Cl. 514-481.000

Truchsess, Joseph: *See*—
McDarren, Robert; and Truchsess, Joseph, 5,330,380, Cl. 446-397.000.

Trutzschler GmbH & Co. KG: *See*—
Schlichter, Stefan, 5,329,668, Cl. 19-97.500.

TRW Inc.: *See*—
Silver, Arnold H.; Leung, Michael; Lee, Gregory S.; Simon, Randy W., and Sandell, Robert D., 5,331,162, Cl. 250-336.200.

TRW Vehicle Safety Systems Inc.: *See*—
Gentry, Scott B.; Mazur, Joseph F.; and Blackburn, Brian K., 5,330,226, Cl. 280-735.000.

Trylon Corporation, The: *See*—
Lonky, Neal M., 5,329,938, Cl. 128-18.000.

Tsai, Chi-Ken. *See*—
Cheng, Sai-Kai; McGee, H. Dean; Tsai, Chi-Ken; and Akeel, Hadi A., 5,331,264, Cl. 318-568.110.

Tsai, Lore. Support member for holding up rotating rod in soccer table framecu5,330,273, Cl. 384-215.000.

Tsang, Chih-Hao: *See*—
Beckmeyer, Richard F.; and Tsang, Chih-Hao, 5,330,945, Cl. 502-66.000.

Tse, Mun F.: *See*—
Audett, Jay D.; and Tse, Mun F., 5,331,049, Cl. 525-100.000.

Tseng, Chuen-Jong, to Shin Yeh Enterprise Co., Ltd. Umbrella with lighting devicecu5,331,524, Cl. 362-102.000.

Tseng, Horng-Huei, to Industrial Technology Research Institute. Method for fabricating stacked capacitors with increased capacitance in a DRAM cellcu5,330,928, Cl. 437-52.000.

Tsuchiya, Ichiro: *See*—
Danzuka, Toshio; Ito, Masumi; and Tsuchiya, Ichiro, 5,330,548, Cl. 65-3.120.

Tsuchiya, Osamu: *See*—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Tsuda, Keiichi. *See*—
Fujita, Yoshitaka; and Tsuda, Keiichi, 5,331,630, Cl. 370-58.100.

Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Noda, Shinya; Kobayashi, Kazunori; and Shoji, Takeo, to Canon Kabushiki Kaisha. Process cartridge and image forming apparatus on which process cartridge is mountablecu5,331,372, Cl. 355-200.000.

Tsuda, Tetsuaki: *See*—
Suzuki, Nobukazu; Bando, Seiji; Ikeda, Satoshi; Tsuda, Tetsuaki; Yakawa, Atsuhisa; and Yoshikawa, Yukihiro, 5,330,850, Cl. 428-623.000.

Tsugane, Ken: *See*—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Toru, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Tsuji, Masanori; and Kashiyama, Motohisa, to Yazaki Corporation. Connector with unlocking membercu5,330,366, Cl. 439-352.000.

Tsuji, Shintaro, to Mitsubishi Denki Kabushiki Kaisha. Elevator control apparatuscu5,331,121, Cl. 187-124.000.

Tsuji, Yoshihisa; Ninomiya, Sigeru; Kato, Kazuo; Kobayashi, Mamoru; Kojima, Akio; Sasaki, Hideaki; and Yokoyama, Tetsuhiro, to Hitachi, Ltd.; and Hitachi Computer Engineering Co., Ltd. Printed circuit board assembling systemcu5,329,690, Cl. 29-701.000.

Tsujii, Eiichiro; and Onoue, Akihiro, to Sanshin Kogyo Kabushiki Kaisha. Steering system for marine propulsion unitcu5,330,375, Cl. 440-61.000.

Tsukahara, Takako: *See*—
Maeda, Shuichi; Imamura, Satoru; Mitsuhashi, Kazuo; and Tsukahara, Takako, 5,330,542, Cl. 8-639.000.

Tsukamoto, Katsuhiro: *See*—
Kusunoki, Shigeru; Komori, Shigeki; and Tsukamoto, Katsuhiro, 5,330,923, Cl. 437-40.000.

Tsuku, Hiroaki: *See*—
Yoshimura, Heijiro; Yamazaki, Yukihiro; Takahashi, Yasutsugu; Itoh, Nobuya; Shibayama, Masanobu; Suzuki, Takahisa; and Tsukui, Hiroaki, 5,330,029, Cl. 180-219.000.

Tsuneoka, Masatoshi: *See*—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Torii, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Keisuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.

Tsuno, Nobuo: *See*—
Ohhashi, Tsuneaki; and Tsuno, Nobuo, 5,330,703, Cl. 419-57.000.

Tsuruoka, Takao; Hiyama, Keiichi; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichiro, to Olympus Optical Co., Ltd. Endoscope image recording system for compressing and recording endoscope image datacu5,331,551, Cl. 364-413.130.

Tsuruta, Orihiro, to Orihiro Co., Ltd. Filling connector and dischargeable bagcu5,330,076, Cl. 222-83.000.

Tsuruzono, Masaaki. Apparatus for lighting baseless bulbscu5,330,368, Cl. 439-409.000.

Tsuzuki, Kenji: *See*—
Tokunaga, Takumi; Ide, Teruhiko; Watanabe, Hiroyuki; and Tsuzuki, Kenji, 5,330,991, Cl. 514-307.000.

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Mar, Craig E., 5,330,524, Cl. 607-129.000.
Verdonck, Emiel: *See—*
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Sant' Anselmo, Robert; and Sant' Anselmo, Carl, 5,331,176, Cl. 250-566.000.
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Remmers, Lee E., 5,330,063, Cl. 211-162.000.
Vertex Pharmaceuticals, Inc.: *See—*
Armistead, David M.; Boger, Joshua S.; Meyers, Harold V.; Saunders, Jeffrey O.; and Tung, Roger D., 5,330,993, Cl. 514-330.000.
Veyes, Manfred: *See—*
Hartel, Robert; Hoehne, Karl-Josef; Hermanns, Ferdinand-Josef; Henze, Herbert; Knors, Herbert; Engelhardt, Dietmar; Zitzen, Wilhelm; Veyes, Manfred; Merkens, Herbert; Weissenfels, Wolfram; Ruetten, Hermann; Jaegers, Dirk; and Pommer, Berndt, 5,329,822, Cl. 73-862.610.
VIA Medical Corporation: *See—*
Wong, David K.; and Curry, Kenneth M., 5,330,634, Cl. 204-409.000.
Vici Metronics Incorporated: *See—*
Fenimore, David C.; McHenry, Walter H.; and Blumberg, James L., 5,329,966, Cl. 137-613.000.
Vickers, Dianne L.: *See—*
Brisson, A. Glen; Cruz, Exequiel D.; and Vickers, Dianne L., 5,329,928, Cl. 128-660.030.
Victor Company of Japan, Ltd.: *See—*
Matsunaga, Yoriaki, 5,331,475, Cl. 360-14.200.
Videojet Systems International, Inc.: *See—*
Murad, George B.; and Polit, Neil A., 5,330,171, Cl. 271-131.000.
Vilkomerson, David: *See—*
Gardineer, Bayard; and Vilkomerson, David, 5,329,927, Cl. 128-660.030.
Vine, Kyle C.: *See—*
Ceridis, Anthony A.; Cranfield, John; and Vine, Kyle C., 5,330,304, Cl. 414-21.000.
Viola, Augusto; Brusa, Massimo; Merighi, Bernardo; and Gubitosa, Giuseppe, to Montecatini Technologie S.p.A. Catalyst granules, in particular for the oxidative dehydrogenation of methanol in order to yield formaldehydecu5,330,958, Cl. 502-316.000.
Virginia Tech Intellectual Properties, Inc.: *See—*
Gibson, Harry W.; and Delaviz, Yadollah, 5,331,098, Cl. 549-349.000.
Visaria, Jawahar K.: *See—*
Sylvester, Robert L.; Johnson, Randall C.; Smith, Gregory V.; Chan, King W.; Middlebrooks, Willis B., III; Visaria, Jawahar K.; Wilson, Robert M.; and Bieberbach, George, 5,329,886, Cl. 122-32.000.
Visco, John. Flush valve chockcu5,330,152, Cl. 251-89.500.
Vision Sciences, Incorporated: *See—*
Ailinger, Robert E.; and Herrington, Robert J., 5,329,887, Cl. 128-4.000.
Visuri, Pertti; Kiiskila, Erkki; and Koskelo, Markku, to A. Ahlstrom Corporation. Continuous elemental analysis of process flowscu5,330,621, Cl. 162-49.000.
Vita-Invest, S.A.: *See—*
Caldero Ges, Jose M.; Bosch Rovira, Anna; Roca Acin, Joan Maria; Dalmases Barjoan, Pere; and Marquillas Olondriz, Francisco, 5,331,005, Cl. 514-415.000.
Vitatron Medical B.V.: *See—*
Boute, Willem, 5,330,511, Cl. 607-25.000.
Vitreous Environmental Group Inc.: *See—*
Brown, Geoffrey P., 5,330,111, Cl. 241-56.000.
VLSI Technology, Inc.: *See—*
Lee, Sang S.; and Loh, William M., 5,331,511, Cl. 361-713.000.
Vogelstein, Bert; Kinzler, Kenneth W.; White, Raymond; and Nakamura, Yusuke, to Johns Hopkins University, The; University of Utah; and Cancer Institute, The. MCC gene (mutated in colorectal cancer) used for diagnosis of cancer in humanscu5,330,892, Cl. 435-6.000.
Volcheff, Eric B.; Wacker, Robert W.; and Hemberger, Dale M., to Mayline Company, Inc. Video monitor clampcu5,330,147, Cl. 248-316.400.
Volkov, Nikolai M.; Glazov, Stanislav S.; Ivanov, Nikolai E.; Ljubimov, Mikhail A.; Salischev, Vadim A.; Sergeev, Boris G.; Tjubalin, Valery V.; Alyabina, German M., deceased (by Alyabina, Ljudmila G., administrator); Kovalenko, Valery F., deceased; by Shishkova, Tatyana P., administrator; Kovalenko, Sergei V., administrator; Kovalenko, Nikita V., administrator; and Kovalenko, Nadezhda V., administrator, to Nauchno-Issledovatelsky Institut Kosmicheskogo Priborostoenia. Satellite-aided radio navigation positioning method and radio navigation system thereforcu5,331,329, Cl. 342-357.000.
Volz, David M.: *See—*
Thompson, David L., 5,330,842, Cl. 428-426.000.
Vorhis, Daniel J.: *See—*
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Vreugdenhil, Willem: *See—*
Sherif, Fawzy G.; and Vreugdenhil, Willem, 5,330,944, Cl. 502-64.000.
Vroman, Albert L., to Zing Odor Control, Inc. Method for the reduction of hydrogen sulfide in sewage treatment plantscu5,330,653, Cl. 210-631.000.

Vulhez, Henri. Device for packing protected articles for use in particular with foodstuffs into protective bagscu5,329,746, Cl. 53-111.00R.
Vurek, Gerald G.: *See*—
Germany, Cheryl D.; Oi Fong, Conrad T.; Duke, Steven B., and Vurek, Gerald G., 5,329,804, Cl. 73-1.00G
W. L. Gore & Associates, Inc.: *See*—
Sugar, Thomas G.; and Yalamanchili, Seshamamba, 5,329,807, Cl. 73-40.000.
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Mize, James, Jr.; Davis, Kent A.; and Stockley, Henry W., 5,330,777, Cl. 426-383.000
Ou, Chia-Chih; and Neumayer, Deborah, 5,330,843, Cl. 428-446.000.
Williams, Allen C., Jr., 5,329,747, Cl. 53-413.000.
Wu, Jianxin; Chapman, David M.; and Gatte, Robert R., 5,330,736, Cl. 423-709.000.
W. Schlafhorst AG & Co.: *See*—
Hartel, Robert; Hoehne, Karl-Josef; Hermanns, Ferdinand-Josef; Henze, Herbert; Knors, Herbert; Engelhardt, Dietmar; Zitzen, Wilhelm; Veyes, Manfred; Merkens, Herbert; Weissenfels, Wolfram; Ruetten, Hermann; Jaegers, Dirk; and Pommer, Berndt, 5,329,822, Cl. 73-862.610.
Wacker-Chemie GmbH: *See*—
Braun, Rudolf; and Braunsperger, Karl, 5,331,077, Cl. 528-31.000.
Brink, Gerhard; and Wierer, Konran A., 5,331,024, Cl. 523-200.000.
Wacker, Robert W.: *See*—
Volcheff, Eric B.; Wacker, Robert W.; and Hemberger, Dale M., 5,330,147, Cl. 248-316.400.
Wada, Hirotaka: *See*—
Takayama, Yuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Suzuki, Toshiharu, 5,331,041, Cl. 524-555.000.
Wada, Noboru: *See*—
Hines, Daniel R.; Wada, Noboru; Garoff, Stephen; Mullins, Oliver C.; Hammond, Paul; Tarvin, Jeffrey; Cramer, Stephen P.; and Wiggins, Ralphe, 5,331,156, Cl. 250-256.000.
Wada, Toshio: *See*—
Enomoto, Nobuo; Wada, Toshio; Umeya, Kazuyoshi; Yamada, Kazuo; and Okanda, Koki, 5,329,801, Cl. 72-456.000.
WADA Ventures: *See*—
Williams, Robert M.; and Davis, Bob, 5,330,004, Cl. 166-279.000.
Wadsworth, LeGrand. Ventilating pneumatic animal harnescu5,329,751, Cl. 54-23.000.
Wagner, David A. Power winch-ice auger conversion apparatuscu5,330,014, Cl. 175-18.000.
Wagner, Ross L.; and Kreczko, Gregory, to Swagelok Quick-Connect Co. All plastic quick-connect couplingcu5,330,235, Cl. 285-81.000.
Wakabayashi, Seiichi: *See*—
Minamikata, Hajime; Yagi, Kiyoshi; and Wakabayashi, Seiichi, 5,331,249, Cl. 313-632.000.
Wakabayashi, Tsuneo: *See*—
Hirai, Yoshinori; Kumai, Hiroshi; Nishiyama, Takehiko; Niiyama, Satoshi; and Wakabayashi, Tsuneo, 5,331,446, Cl. 359-51.000.
Wakahara, Atsushi: *See*—
Sugiura, Jun; Tsuchiya, Osamu; Ogasawara, Makoto; Ootsuka, Fumio; Toru, Kazuyoshi; Asano, Isamu; Owada, Nobuo; Horiuchi, Mitsuaki; Tamaru, Tsuyoshi; Aoki, Hideo; Ostsuka, Nobuhiro; Shirai, Seiichirou; Sagawa, Masakazu; Ikeda, Yoshihiro; Tsuneoka, Masatoshi; Kaga, Toru; Shimmyo, Tomotsugu; Ogishi, Hidetsugu; Kasahara, Osamu; Enami, Hiromichi; Wakahara, Atsushi; Akimori, Hiroyuki; Suzuki, Sinichi; Funatsu, Kesuke; Kawasaki, Yoshinao; Tubone, Tunehiko; Kogano, Takayoshi; and Tsugane, Ken, 5,331,191, Cl. 257-336.000.
Wakana, Shinichi: *See*—
Ozaki, Kazuyuki; Wakana, Shinichi; Goto, Yoshiro; Ito, Akio; Okubo, Kazuo; Hama, Soichi; Fujii, Akira; and Sato, Yoko, 5,331,275, Cl. 324-757.000.
Wakimasu, Mitsuhiro; Mori, Masaaki; and Kawada, Akira, to Takeda Chemical Industries, Ltd. Phosphonic acid derivatives and use thereofcu5,330,978, Cl. 514-80.000.
Walcott, Billy D.: *See*—
Thayer, Bruce E.; Mordenga, Samuel P.; and Walcott, Billy D., 5,329,665, Cl. 134-308.000
Walczak, William A.; and DeSimone, Ronald F., to Acme Packaging Corporation. Beveled edge strappingcu5,329,671, Cl. 24-20.00R.
Waldo, Robert L.: *See*—
Bowerman, Leonard E.; Chumley, Eugene K.; Owens, Raymond D.; Bartasevich, William E.; Waldo, Robert L.; and Caterinacci, John R., 5,329,666, Cl. 15-323.000.
Walker, Edward E.; Ferderick, Royce L.; Britt, C. Ray; Kammerer, Gene; and Howard, Barbara, to Ethicon, Inc. Endoscopic suturing devicecu5,330,491, Cl. 606-148.000.
Walker, Joseph W. Fireman's helmet with integral front and rear lightscu5,329,637, Cl. 2-5.000.
Walker, Kevin E., to Whitaker Corporation, The. Socket for stacking integrated circuit chipscu5,330,359, Cl. 439-69.000.
Walker, Peter S. Prosthesis for knee replacementcu5,330,533, Cl. 623-20.000.
Wall Enterprises, Inc.: *See*—
Wall, Gregory A., 5,329,731, Cl. 51-98.0BS.
Wall, Gregory A., to Wall Enterprises, Inc. Mulcher blade grinder and method thereofcu5,329,731, Cl. 51-98.0BS.
Wall, Michael F.: *See*—
Allen, Timothy P.; Anderson, Janeen D. W., Mead, Carver A.; Faggin, Federico; Platt, John C.; and Wall, Michael F., 5,331,215, Cl. 307-201.000.
Waller, Jess M.: *See*—
Payne, Donald N., Jr.; Waller, Jess M.; Clarke, Richard P.; Titus, George R.; and Martin, David A., 5,331,019, Cl. 522-75.000.
Walsh, Edward J.: *See*—
Ruben, Paul L.; and Walsh, Edward J., 5,331,360, Cl. 353-96.000.
Walsh, Thomas F.: *See*—
Allen, Eric E.; Chakravarty, Prasun K.; de Laszlo, Stephen E.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,330,987, Cl. 514-258.000.
Walstead, James W., to Orbiter Royalty Trust. Suspension system for treadmill with resilient surfacecu5,330,401, Cl. 482-54.000.
Walter, David T., to TI Interlock Limited. Control operation of a clutch drive systemcu5,330,109, Cl. 241-30.000.
Walter, Helmut: *See*—
Misslitz, Ulf; Meyer, Norbert; Kast, Juergen; Goetz, Norbert; Harreus, Albrecht; Kuekenhoehner, Thomas; Wuerzer, Bruno; Walter, Helmut; Westphalen, Karl-Otto; and Gerber, Matthias, 5,330,965, Cl. 504-244.000.
Walter, Jerry L.: *See*—
Miller, Phillip; Koenck, Steven E.; Walter, Jerry L.; Kubler, Joseph J.; Cargin, Keith K., Jr.; Hanson, George E.; Davis, Patrick H.; Kunert, Steven R.; and Schultz, Darald R., 5,331,580, Cl. 364-708.100.
Walton, Richard A.; Kabat, Zbigniew; Lenzi, George; and Didio, Herbert A., to AG Communication Systems Corporation. Retrofit card file adapter assemblycu5,331,517, Cl. 361-796.000.
Walton, Robert W. Cat waste elimination system including anti-litter spreading and containment device and also including a device allowing walking kittens to safely enter a kitty litter boxcu5,329,879, Cl. 119-166.000.
Walton, William C., to Sterling Winthrop Inc. Effervescent antacidcu5,330,760, Cl. 424-466.000.
Wanabe Outdoors, Inc.: *See*—
Baron, Richard D., 5,329,720, Cl. 43-44.200.
Wang, James H.; and Wang, Julia W., to Ologic Corporation. Asynchronous pulse convertercu5,331,669, Cl. 375-118.000.
Wang, Julia W.: *See*—
Wang, James H.; and Wang, Julia W., 5,331,669, Cl. 375-118.000.
Wang, Karl P.: *See*—
Cailiat, Jean-Luc; and Wang, Karl P., 5,329,788, Cl. 62-505.000.
Wang, King-Shen. Wheeled travel bag with adjustable handlecu5,330,037, Cl. 190-18.00A.
Wang, Lixiao; Rau, Bruce H.; and Sogard, David, to SciMed Life Systems, Inc. Dilatation catheter having a random copolymer ballooncu5,330,428, Cl. 604-96.000.
Wangtek, Inc.: *See*—
Bryer, Philip, 5,331,485, Cl. 360-96.500.
Wanou, Masahiro: *See*—
Nou, Hiroshi; Wanou, Masahiro; Ogasawara, Masashi; Ikeda, Masae; Suematsu, Nobuo; Sakai, Shino; Ishii, Akihiko; and Kamaji, Hideki, 5,331,383, Cl. 355-274.000.
Ward, Earl D., II: *See*—
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Merrifield, David L.; Molloy, James J.; Horrall, Paul D.; Tylicki, Gary M.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,331,378, Cl. 355-210.000.
Ward, Michael S. Exhaust gas turbine drive system for engine accessoriescu5,329,770, Cl. 60-597.000.
Ward, Russell J.: *See*—
Langer, Matthew E.; Ellis, Simon R.; Hessel, John F.; Khorshahi, Ferial; and Ward, Russell J., 5,330,672, Cl. 252-108.000.
Ware, William B.: *See*—
Mark, John G.; Dykeman, Ray D.; Tazartes, Daniel A.; and Ware, William B., 5,331,401, Cl. 356-350.000.
Warner, Barry M., to Linde Aktiengesellschaft. Lift trucks and extensible mast structures thereforcu5,330,032, Cl. 187-9.00E.
Warner-Lambert Company: *See*—
Ferraro, Frank A.; and Motta, Vincent C., 5,329,700, Cl. 30-41.000.
Horwell, David C.; Aranda, Julian; Augelli-Szafran, Corinne; Betche, Hans-Jurgen; Holmes, Ann; Mullican, Michael D.; Pritchard, Martyn C.; Richardson, Reginald S.; Roberts, Edward; Roth, Bruce D.; Tait, Bradley D.; Trivedi, Bharat K.; Trostmann, Uwe; and Unangst, Paul C., 5,331,006, Cl. 514-481.000.
Pei, Yazhong; and Tecle, Haile, 5,330,994, Cl. 514-340.000.
Warner, R. Brown: *See*—
Scheider, Alfred E.; and Warner, R. Brown, 5,329,730, Cl. 51-334.000.
Warren, Gary L.: *See*—
Jean, Buford R.; Warren, Gary L.; and Whitehead, F. Lynn, 5,331,284, Cl. 324-639.000.
Warren, Jeffrey R.: *See*—
Valley, Stephen R.; and Warren, Jeffrey R., 5,331,642, Cl. 371-5.200.
Warwick, Colin A.: *See*—
Cunningham, John E.; Jan, William Y.; Rentschler, John A.; and Warwick, Colin A., 5,330,629, Cl. 204-192.170.
Washington University: *See*—
Leahey, Harry S.; Binns, W. Robert; Epstein, John W.; and Klarmann, Joseph, 5,331,163, Cl. 250-367.000.
Waste Management of North America, Inc.: *See*—
Parker, Brian G., 5,330,071, Cl. 220-645.000.
Watanabe, Hiroyuki: *See*—
Tokunaga, Takumi; Ide, Teruhiko; Watanabe, Hiroyuki; and Tsuzuki, Kenji, 5,330,991, Cl. 514-307.000.

Watanabe, Junzo: *See*—
Iwai, Kenji; Kawaberi, Seiji; Ueyama, Akihiro; and Watanabe, Junzo, 5,331,532, Cl. 363-20.000.
Watanabe, Kazuhiro: *See*—
Sato, Hiroyuki; Watanabe, Kazuhiro; and Watanabe, Toshiya, 5,331,029, Cl. 524-94.000.
Watanabe, Kazushi: *See*—
Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Noda, Shinya; Kobayashi, Kazunori; and Shoji, Takeo, 5,331,372, Cl. 355-200.000.
Watanabe, Makoto, to Terumo Kabushiki Kaisha. Material for food and method for production thereofcu5,330,779, Cl. 426-549.000.
Watanabe, Makoto: *See*—
Komatsubara, Michiro; Hayakawa, Yasuyuki; Iwamoto, Katsuo; Watanabe, Makoto; and Takamiya, Toshito, 5,330,586, Cl. 148-111.000.
Watanabe, Masao, to Advantest Corporation. Method of fabricating nano-size thin wires and devices made of such thin wirescu5,330,612, Cl. 117-86.000.
Watanabe, Shingo; and Jintate, Shinichi, to Tokyo Electron Sagami Limited; and Mitsubishi Electric Corporation. Oxidation/diffusion processing apparatuscu5,330,352, Cl. 432-152.000.
Watanabe, Shoji: *See*—
Yamada, Tsukasa; Hino, Hiromasa; Watanabe, Shoji; and Yasuhara, Shin, 5,331,419, Cl. 348-64.000.
Watanabe, Takamoto; Ohtsuka, Yoshinori; and Hattori, Tadashi, to Nippondenso Co., Ltd. Oscillation circuit including a ring oscillator having a changeable number of inverter circuitscu5,331,294, Cl. 331-57.000.
Watanabe, Tohru: *See*—
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko; Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tanii, Keiichi, 5,331,411, Cl. 348-708.000.
Watanabe, Toshiya: *See*—
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Watkins, Steve: *See*—
Krstevich, Stephen; Kamienny, Fredrick; Erlich, Frederick; and Watkins, Steve, 5,329,937, Cl. 128-17.000.
Watson, Charles F.: *See*—
Kumar, Ravi; Naheiri, Tarik; and Watson, Charles F., 5,330,561, Cl. 95-101.000.
Wavrin, Dennis L. Matrix bandcu5,330,353, Cl. 433-39.000.
Waxman, Burton H.: *See*—
Adelman, Michael W.; Hallman, Robert W.; Hong, Suck-Ju; Shimazu, Ken-Ichi; and Waxman, Burton H., 5,330,875, Cl. 430-142.000.
Wayland, Paul O.: *See*—
Whitlow, Graham A.; Freidhoff, Carl B.; Carpentier, Philip E.; and Wayland, Paul O., 5,330,088, Cl. 229-179.100.
Weatherchem Corporation: *See*—
Forsyth, Michael J., 5,330,082, Cl. 222-480.000.
Weaver, John D., III: *See*—
Eissenstat, Michael A.; Weaver, John D., III; Kuo, Gee-Hong; and Wentland, Mark P., 5,330,992, Cl. 514-312.000.
Webb, Ian D.: *See*—
Hardie, Gregory J.; Ganser, John M.; Webb, Ian D.; Hyppanen, Timo; Myohanen, Karl; and Nopanen, Ismo, 5,330,556, Cl. 75-414.000.
Webb, Robert M.; and Webb, Thomas M., to T. H. Creears Corporation. Solid/liquid separation apparatus with adjustable screencu5,330,643, Cl. 210-255.000.
Webb, Thomas M.: *See*—
Webb, Robert M.; and Webb, Thomas M., 5,330,643, Cl. 210-255.000.
Webber, David W.; and Kangas, Sandra E., to Rosenbluth International, Inc. Trip planner optimizing travel itinerary selection conforming to individualized travel policiescu5,331,546, Cl. 364-407.000.
Weber, Fredric J.; and Burke, Edmund R., to Spenco Medical Corporation. Cushion for absorbing shock, damping vibration and distributing pressurecu5,330,249, Cl. 297-214.000.
Weber, Mark E.: *See*—
Schultz, Gregory A.; and Weber, Mark E., 5,329,701, Cl. 30-316.000.
Webler, William E.; and Dinh, Viet P., to Intertherapy, Inc. Catheter tip with a low friction lining and method of usecu5,330,444, Cl. 604-265.000.
Wechter, William J.: *See*—
Young, James W.; Gray, Nancy M.; and Wechter, William J., 5,331,000, Cl. 514-570.000.
Weckler, Gene P.; and Tanaka, Satoru C., to EG&G Reticon Corporation. Diode addressing structure for addressing an array of transducerscu5,331,145, Cl. 250-208.100.
Weddington, Harry F., Jr.: *See*—
Temoshenko, Leo; and Weddington, Harry F., Jr., 5,331,574, Cl. 364-551.010.
Wedekind, Werner: *See*—
Dreyer, Hans; and Wedekind, Werner, 5,330,609, Cl. 156-421.000.
Wegman, Richard W., to Union Carbide Chemicals & Plastics Technology Corporation. Carbonylation reaction catalystscu5,330,955, Cl. 502-210.000.
Weier, Robert M.: *See*—
White, James V.; Stachewicz, Donald; and Weier, Robert M., 5,331,304, Cl. 336-234.000.
Weihl, Philip H.: *See*—
Kendra, Robert T.; Weihl, Philip H.; Baric, Thomas J.; Murphy, Kent W.; Bejster, Edward L.; and Dundore, Harry C., 5,330,055, Cl. 206-534.100.
Weijkamp, Clemens T.: *See*—
Leus, Gerardus R. B.; Persoon, Achilles W. M.; and Weijkamp, Clemens T., 5,330,865, Cl. 430-59.000.
Weimann, Wendelin, to Georg Fischer AG. Method and apparatus for the individual marking of green sand moldscu5,329,985, Cl. 164-229.000.
Weiner, Alan L.: *See*—
Janoff, Andrew S.; Bolcsak, Lois E.; Weiner, Alan L.; Tremblay, Paul A.; Bergamini, Michael V. W.; and Suddith, Robert L., 5,330,689, Cl. 264-4.300.
Weinl, Gerold; Oskarsson, Rolf G.; and Gustafsson, Per, to Sandvik AB. Sintered carbonitride alloy with highly alloyed binder phasecu5,330,553, Cl. 75-236.000.
Weinschenk, Joseph I., III; and Christ, F. Richard, to Allergan, Inc. Polymeric compositions and intraocular lenses made from samecu5,331,073, Cl. 526-264.000.
Weinstein, Albert. Steering wheel horn switch assembly including horn ring operatorcu5,331,125, Cl. 200-61.540.
Weintraub, Lester: *See*—
Seidner, Leonard; Spinelli, Harry J.; Ali, Mohammed I.; and Weintraub, Lester, 5,331,067, Cl. 525-479.000.
Weissenburger, Edward A., to Ortho Pharmaceutical Corporation. Prefilled suppository applicatorcu5,330,427, Cl. 604-14.000.
Weissenfels, Wolfram: *See*—
Hartel, Robert; Hoehne, Karl-Josef; Hermanns, Ferdinand-Josef; Henze, Herbert; Knors, Herbert; Engelhardt, Dietmar; Zitzen, Wilhelm; Veyes, Manfred; Merkens, Herbert; Weissenfels, Wolfram; Ruetten, Hermann; Jaegers, Dirk; and Pommer, Berndt, 5,329,822, Cl. 73-862.610.
Weisser, Fritz: *See*—
Schandl, Hartmut; and Weisser, Fritz, 5,331,481, Cl. 360-85.000.
Welch, Gary A.; and Rashleger, Timothy L., to IIC, Inc. Milling machine accessory providing automatic and manual quill controlcu5,330,298, Cl. 409-80.000.
Weldon, Thomas D.; and Larsen, Charles E. Wound treating device using an inflatable membrane and method for treating woundscu5,330,446, Cl. 604-271.000.
Wella Aktiengesellschaft: *See*—
Kemmer, Heinrich; and Will, Heinrich, 5,330,608, Cl. 156-361.000.
Wellcome Foundation Limited, The: *See*—
Tubaro, Ezio; and Cavallo, Giovanni, 5,330,977, Cl. 514-53.000.
Wells, David J.: *See*—
Pindak, Frank F.; Wells, David J.; and Demes, Pavol, 5,330,897, Cl. 435-7.230.
Wells, Julian R. E.; King, Robert M.; and Francis, Geoffrey L., to GroPep Pty. Ltd. Growth hormone fusion proteins, methods of production, and methods of treatmentcu5,330,971, Cl. 514-2.000.
Wells, L. Rogers, to Interlott, Inc. Method and apparatus for random play of lottery gamescu5,330,185, Cl. 273-138.00A.
Weltmer, William R., Jr., to BOC Group, Inc., The. Cryogenic storage and delivery method and apparatuscu5,329,777, Cl. 62-49.200.
Wenderoth, Kent: *See*—
Northrop, Randy; and Wenderoth, Kent, 5,331,085, Cl. 528-491.000.
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Ogawa, Masaya; Yamada, Takao; Kitaki, Takeshi; Sakata, Haruyasu; Yajika, Kazuo; and Konno, Yoshikiyo, 5,331,614, Cl. 369-34.000.
Yamada, Takemi. *See—*
Ohdake, Takayuki; Ohmori, Toshimichi; Takamura, Toshihiro; Yamada, Takemi; and Sampei, Tetsuya, 5,330,706, Cl. 420-103.000.
Yamada, Tsukasa; Hino, Hiromasa; Watanabe, Shoji; and Yasuhara, Shin, to Kyocera Corporation. Size display system for electronic cameracu5,331,419, Cl. 348-64.000.
Yamada, Tsutoo: *See—*
Hoshino, Masaru; and Yamada, Tsutoo, 5,331,167, Cl. 250-372.000.
Yamada, Yasushi: *See—*
Mizubata, Tsuyoshi; Oku, Susumu; Yamada, Yasushi; and Nagoshi, Mitsuru, 5,331,386, Cl. 355-319.000.
Yamagata, Shigeo: *See—*
Kondo, Kenichi; Yamagata, Shigeo; Sakaegi, Yuji; Kudo, Toshihiko; Matsunaga, Kazuhiro; and Takayama, Tsutomu, 5,331,154, Cl. 250-231.170.
Yamagata, Yasushi, to NEC Corporation. Non-volatile semiconductor memory device with erasure control circuitcu5,331,592, Cl. 365-185.000.
Yamagishi, Frederick G.; Van Ast, Camille; and Miller, Leroy J., to Hughes Aircraft Company. Device and method for sensing water and/or acid in the presence of water in non-aqueous mediacu5,331,287, Cl. 324-724.000.
Yamagishi, Masaaki: *See—*
Hanzawa, Toyoharu; Nishioka, Kimihiko; Kawano, Yoshihiro; and Yamagishi, Masaaki, 5,331,457, Cl. 359-377.000.
Yamaguchi, Hiroaki: *See—*
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Yamaguchi, Hiroyuki: *See—*
Yamada, Shinichi; Moriya, Mitsuro; Shibano, Masayuki; and Yamaguchi, Hiroyuki, 5,331,615, Cl. 369-44.320.
Yamaguchi, Masayoshi; Sasaki, Tsuyoshi; Nagata, Hisao; and Nagasaka, Ichiro, to Eaton Corporation. Hydraulic power steering system with input detection capabilitycu5,329,766, Cl. 60-384.000.
Yamaha Corporation: *See—*
Yamashita, Toshinori, 5,329,838, Cl. 84-421.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Matsumoto, Hiromitsu; and Imai, Chizuko, 5,329,912, Cl. 123-568.000.
Nonaka, Kimihiro, 5,329,907, Cl. 123-478.000.
Suzuki, Shigeto; Oguri, Makoto; and Fukudome, Toshinori, 5,329,913, Cl. 123-573.000.
Yamakawa, Noriko: *See—*
Okabe, Nobuhiro; Mogamiya, Hiroyuki; and Yamakawa, Noriko, 5,330,678, Cl. 252-299.620.
Yamakawa, Tomoya: *See—*
Tada, Yasuo; and Yamakawa, Tomoya, 5,329,812, Cl. 73-204.210.
Yamaki, Makio: *See—*
Sudo, Shuhei; and Yamaki, Makio, 5,331,582, Cl. 364-722.000.
Yamamoto, Hiroyuki: *See—*
Sawada, Kouichi; Yamamoto, Hiroyuki; and Ichihara, Yoshiyuki, 5,331,432, Cl. 358-465.000.
Yamamoto, Junichi: *See—*
Akimoto, Koichi; and Yamamoto, Junichi, 5,330,317, Cl 414-797.800
Yamamoto, Koei; Miyaguchi, Miyaguchi; Takahashi, Norio; Makino, Takao, and Mori, Keisuke, to Kabushiki Kaisha Morita Seisakusho; and Hamamatsu Photonics Kabushiki Kaisha. Dental X-ray image detecting device with an automatic exposure functioncu5,331,166, Cl. 250-370.110.
Yamamoto, Makoto, to Yozan Inc. Analog-to-digital connecter using multi-gate field effect transistorscu5,331,323, Cl. 341-136.000.
Yamamoto, Masahiko: *See—*
Sakanishi, Shoichi; Shinbo, Tetsuya; Abe, Tomoyuki; Ichimura, Yasuhiko; Kanemitsu, Yasuo; Shibatani, Kanji; Yamamoto, Masahiko; and Yamaguchi, Hiroaki, 5,330,292, Cl. 405-141.000.
Yamamoto, Masaki; Takada, Shigeyuki; and Ogawa, Yasuaki, to Takeda Chemical Industries, Ltd. Sustained release microcapsulecu5,330,767, Cl. 424-497.000.
Yamamoto, Masashi: *See—*
Kamada, Mamoru; Ibi, Masaei; Sekiguchi, Tomonobu; Yamamoto, Masashi; Andoh, Noboru; and Itakura, Kenichi, 5,330,269, Cl. 383-210.000.
Yamamoto, Masato: *See—*
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Yamamoto, Satoshi: *See—*
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Yamamoto, Tadashi: *See—*
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Yamamoto, Taizo; and Konishi, Hirokazu, to Japan Elanco Company Limited. Tablet encapsulatorcu5,329,749, Cl. 53-525.000.
Yamamoto, Takemi: *See—*
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Yamamoto, Tooru: *See—*
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; Murata, Haruhiko; Murashima, Hirotsugu; Watanabe, Tohru; Honzawa, Masashi; and Tani, Keiichi, 5,331,411, Cl. 348-708.000.
Yamamoto, Yasushi: *See—*
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Yamamoto, Yoshinori: *See—*
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Yamana, Motokazu: *See—*
Oosawa, Satoru; and Yamana, Motokazu, 5,331,368, Cl. 354-483.000.
Yamanaka, Kazuyuki; and Shibasaka, Mitsusada, to Kabushiki Kaisha Toshiba. Inner lead bonding inspecting method and inspection apparatus thereforcu5,331,397, Cl. 356-237.000.
Yamanashi, Takanori, to Olympus Optical Co., Ltd. Wide angle zoom lens systemcu5,331,463, Cl. 359-689.000
Yamano, Shozo; and Uchiyama, Shigeyuki, to Nikon Corporation. Pixel signal non-uniformity correcting devicecu5,331,420, Cl. 348-246.000.
Yamaoka, Hideyoshi: *See—*
Matoba, Hirotsugu; Deguchi, Toshihisa; Terashima, Shigeo; and Yamaoka, Hideyoshi, 5,331,623, Cl. 369-124.000.
Yamase, Osamu; Makita, Yasuyuki; and Jajima, Kazuyoshi, to Showa Shell Sekiyu Kabushiki Kaisha. Process for separating a volatile organic compound from a gascu5,330,563, Cl. 95-163.000.
Yamashita, Hiroya; Seki, Keiko; Sakka, Sumio; and Yoko, Toshinobu, to Tokuyama Soda Kabushiki Kaisha. Tin oxide fiber and a process for producing the samecu5,330,833, Cl. 428-364.000.
Yamashita, Hisao: *See—*
Haga, Tetsuro; Kawagoshi, Hiroshi; and Yamashita, Hisao, 5,330,956, Cl. 502-261.000.
Yamashita, Nobuhiko; Nakamoto, Manabu; Okura, Ryoichi; and Matsushita, Isao, to Osaka Gas Company Limited. Monoclonal antibody specifically recognizing N-terminal portion of human calcitonincu5,330,909, Cl. 435-240.270.
Yamashita, Toshinori, to Yamaha Corporation. Drum with shell less susceptible to influence from drum standcu5,329,838, Cl. 84-421.000.
Yamashita, Yutaka: *See—*
Sakawaki, Kouji; Yoshizumi, Yuji; and Yamashita, Yutaka, 5,330,680, Cl. 252-309.000.
Yamauchi, Takashi: *See—*
Tabuchi, Kazuhiro; Inomata, Hiroyuki; and Yamauchi, Takashi, 5,330,053, Cl. 206-455.000.
Yamauchi, Yoshimitsu: *See—*
Tanaka, Kenichi; Yamauchi, Yoshimitsu; and Sakiyama, Keizo, 5,331,181, Cl. 257-23.000.
Yamawaki, Takashi: *See—*
Funabashi, Hideo; Tanaka, Akira; Ohnishi, Rikuo; Kasahara, Toshikazu; and Yamawaki, Takashi, 5,330,949, Cl. 502-111.000.
Yamazaki, Shumpei, to Semiconductor Energy Laboratory Co., Ltd. Plasma CVD of carbonaceous films on substrate having reduced metal on its surfacecu5,330,802, Cl. 427-577.000.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Electric device provided with carbon pattern structure and manufacturing method for the samecu5,330,616, Cl. 156-643.000.
Yamazaki, Tatsuro: *See—*
Akimoto, Toshiyuki; and Yamazaki, Tatsuro, 5,331,345, Cl. 348-297.000.
Yamazaki, Yoshiharu: *See—*
Noguchi, Noriyasu; Yamazaki, Yoshiharu; Hagio, Mitsuyuki; and Futami, Yasuhiko, 5,330,429, Cl. 604-96.000.
Yamazaki, Yukihiro: *See—*
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Yan, Ran-Hong: *See—*
Lee, Kwing F.; and Yan, Ran-Hong, 5,330,925, Cl. 437-44.000.
Yanagida, Eiichi: *See—*
Nishida, Masami; Kurisu, Toru; Ikai, Takashi; Sugiura, Hiroaki; Enomoto, Hiroshi; Kanda, Masunori; Yanagida, Eiichi; Deguchi, Hiroaki; Fukuma, Masaki; and Asai, Akira, 5,329,895, Cl. 123-90.170.
Yang, Henry; Ramakrishnan, K. K.; Spinney, Barry; and Jain, Rajendra K., to Digital Equipment Corporation. Frame removal mechanism using count of frames and delimiter frame for token ring networkscu5,331,636, Cl. 370-85.500.
Yang, Jim: *See—*
Patel, Chandrakant B.; and Yang, Jim, 5,331,416, Cl. 348-614.000.
Yang, Rosa L.: *See—*
Cheng, Boching; and Yang, Rosa L., 5,330,589, Cl. 148-421.000.
Yang, Ten S., to Fast Maker Enterprise Co., Ltd. Air conditioning apparatuscu5,329,783, Cl. 62-183.000.
Yano, Koutaro, to Canon Kabushiki Kaisha. Zoom lens having a long back focal lengthcu5,331,462, Cl. 359-689.000.
Yano, Toshikazu: *See—*
Sakurai, Akira; Shiotsu, Masahiro; Yano, Toshikazu; Ochi, Masao; and Sugawara, Toshihiro, 5,329,785, Cl. 62-316.000.
Yarita, Katsuhiko: *See—*
Someya, Sakae; Nashimoto, Ryuuzoh; Suzuki, Hirofumi; Yarita, Katsuhiko; Matsumoto, Shinji; Sasano, Akira; Taniguchi, Hideaki; and Orritsuki, Ryouji, 5,331,447, Cl. 359-59.000.
Yasuda, Masahiko; Hosokawa, Shigeo; Yokomori, Yorozu; Jimbo, Shinichiro; and Kolycheck, Edmond G., to Kyowa Hakko Kogyo Co., Ltd.; and B. F. Goodrich Company, The. Magnetic coating formulationscu5,330,669, Cl. 252-62.540.
Yasuda, Yasuhiko: *See—*
Kato, Shigeo; Yasuda, Yasuhiko; and Ohsawa, Hidefumi, 5,331,426, Cl. 358-426.000.
Yasuhara, Shin: *See—*
Yamada, Tsukasa; Hino, Hiromasa; Watanabe, Shoji; and Yasuhara, Shin, 5,331,419, Cl. 348-64.000.
Yasui, Shigeo: *See—*
Ono, Masashi; Yasui, Shigeo; Noguchi, Ayashi; Takiguchi, Ryohei; Eguchi, Hiroshi; and Kafuku, Komei, 5,330,960, Cl. 503-227.000.
Yasui, Tsuneo; Yamamoto, Takemi; Miki, Takashi; and Fuwa, Tetsuji, to Brother Kogyo Kabushiki Kaisha. Stamp device capable of perforating thermal stencil papercu5,329,848, Cl. 101-121.000.
Yasumaru, Tetsuo: *See—*
Aoyama, Tadao; Yasumaru, Tetsuo; and Saito, Masayuki, 5,330,150, Cl. 248-598.000.
Yasuoka, Yoshio; Kume, Masafumi; Hiraki, Tadayoshi; Kato, Kiyoshi; Haneishi, Hidehiko; and Yamamoto, Masato, to Kansai Paint Co., Ltd. Electrocoating composition containing blocked isocyanate, dialkyltin aromatic carboxylate and a bismuth or zirconium compoundcu5,330,839, Cl. 428-413.000.
Yasushi, Mitsuo, to Pioneer Electronic Corporation. Brain wave inducing apparatuscu5,330,414, Cl. 600-27.000.
Yau, Chi W.: *See—*
Jarwala, Najmi T.; and Yau, Chi W., 5,331,274, Cl. 324-158.100.
Yazaki Corporation: *See—*
Ito, Keiichi; Noda, Hirotaka; Hagiwara, Nobutoshi; Taguchi, Naoto; Hatagishi, Yuji; and Matsuura, Toshifumi, 5,330,362, Cl. 439-157.000.
Minamikata, Hajime; Yagi, Kiyoshi; and Wakabayashi, Seiichi, 5,331,249, Cl. 313-632.000.
Tsuji, Masanori; and Kashiyama, Motohisa, 5,330,366, Cl. 439-352.000.
Yeager, William L.: *See—*
Sorathia, Usman A.; Yeager, William L.; and Dapp, Timothy L., 5,331,062, Cl. 525-454.000.
Yeckley, Russell: *See—*
Ellison-Hayashi, Cristan; Zandi, Morteza; Shetty, Dinesh K.; Kuo, Peter; Yeckley, Russell; and Csillag, Frank, 5,330,937, Cl. 501-1.000.
Yee, Jeng-Jung; Kornacki, Jeffrey L.; and Narasimhan, Rajagopalan, to Schreiber Foods, Inc. Cheese and proces and system for making itcu5,330,780, Cl. 426-582.000.
Yero, Emilio, to SGS-Thomson Microelectronics, S.A. Dynamically switchable reference voltage generatorcu5,331,599, Cl. 365-226.000.
Yeung, B. W. Anissa: *See—*
Hsiao, Cheng-Kuo; Hor, Ah-Mee; Mayo, James D.; Baranyi, Giuseppa; Kovacs, Gregory J.; Bluhm, Terry L.; Popovic, Zoran D.; and Yeung, B. W. Anissa, 5,330,867, Cl. 430-76.000.
Yissum Research Development Company of the Hebrew University of Jerusalem: *See—*
Friedman, Michael M.; and Sintov, Amnon, 5,330,746, Cl. 424-49.000.
Yoden, Hiroyoshi: *See—*
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Yoko, Toshinobu: *See—*
Yamashita, Hiroya; Seki, Keiko; Sakka, Sumio; and Yoko, Toshinobu, 5,330,833, Cl. 428-364.000.
Yokomichi, Yasunori; Tada, Shinichi; Nishino, Hitoshi; and Seki, Kenji, to Osaka Gas Company Limited. Polyazopyrroles and electric cells based thereoncu5,331,072, Cl. 526-258.000.
Yokomori, Yorozu: *See—*
Yasuda, Masahiko; Hosokawa, Shigeo; Yokomori, Yorozu; Jimbo, Shinichiro; and Kolycheck, Edmond G., 5,330,669, Cl. 252-62.540.
Yokoyama, Tetsuhiro: *See—*
Tsuji, Yoshihisa; Ninomiya, Sigeru; Kato, Kazuo; Kobayashi, Mamoru; Kojima, Akio; Sasaki, Hideaki; and Yokoyama, Tetsuhiro, 5,329,690, Cl. 29-701.000.
Yoneda, Shinsaku; Ishizuka, Yoshiyuki; Motobayashi, Naoki; and Okada, Takehiko, to Mita Industrial Co., Ltd. Image forming apparatus capable of changing the surface potential of a photosensitive membercu5,331,379, Cl. 355-214.000.
Yoneda, Yukio: *See—*
Miyashita, Katsuyuki; Yoshizawa, Ryozou; Yoneda, Yukio; and Kohata, Takashi, 5,330,023, Cl. 180-140.000.
Yoo, Jae-soo; and Jung, Hyun-don, to Samsung Electronics Co., Ltd. High-power semiconductor laser devicecu5,331,657, Cl. 372-46.000.
Yoo, Wan M.: *See—*
Ra, Jong O.; Lim, Joon Y.; and Yoo, Wan M., 5,330,395, Cl. 475-330.000.
Yoon, InBae. Retractable safety penetrating instrumentcu5,330,432, Cl. 604-164.000.
Yoon, InBae. Spiral suture needle for joining tissuecu5,330,503, Cl. 606-223.000.
Yoshida, Kazuhiro: *See—*
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Yoshida Kogyo K.K.: *See—*
Kanzaka, Yoshihiro, 5,329,677, Cl. 24-687.000.
Tomita, Tsutomu; and Takabatake, Hideo, 5,329,674, Cl. 24-418.000.
Yoshida, Satoshi; Kato, Yoshiaki; and Ueoka, Joh, to Fuji Photo Film Co., Ltd. Thin film magnetic head and methods for producing samecu5,331,495, Cl. 360-126.000.
Yoshida, Takehito; and Ogawa, Shinichi, to Matsushita Electric Industrial Co., Ltd. Method of fabricating semiconductor devicecu5,330,921, Cl. 437-25.000.
Yoshida, Yoichi: *See—*
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Yoshida, Yoshio: *See—*
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Yoshidome, Hiroo: *See—*
Mieda, Michinobu; Nagaura, Toshikazu; Takemori, Hirotoshi; Ohta, Kenji; and Yoshidome, Hiroo, 5,331,625, Cl. 369-275.100.
Yoshii, Yuji: *See—*
Teracuhi, Kiyoshi; Kawano, Akihiro; Satoh, Hideaki; Kitano, Norio; and Yoshii, Yuji, 5,330,335, Cl. 418-55.600.
Yoshikawa, Akira, to Matsushita Electric Industrial Co., Ltd. Tape driving apparatuscu5,330,118, Cl. 242-334.400.
Yoshikawa, Yukihiro: *See—*
Suzuki, Nobukazu; Bando, Seiji; Ikeda, Satoshi; Tsuda, Tetsuaki; Yakawa, Atsuhisa; and Yoshikawa, Yukihiro, 5,330,850, Cl. 428-623.000.
Yoshikura, Fuyuhiko: *See—*
Enomoto, Minoru; Inagaki, Shoji; Okada, Yasuhiro; Sakamoto, Fumio; Ise, Noritaka; Ito, Masashi; and Yoshikura, Fuyuhiko, 5,330,168, Cl. 269-329.000.
Yoshimura, Heijiro; Yamazaki, Yukihiro; Takahashi, Yasutsugu; Itoh, Nobuya; Shibayama, Masanobu; Suzuki, Takahisa; and Tsukui, Hiroaki, to Honda Giken Kogyo Kabushiki Kaisha. Fairing for a motorcyclecu5,330,029, Cl. 180-219.000.
Yoshimura, Takashi; Ishizuka, Takayasu; Shiomi, Masayui; Hayashi, Tomoyoshi; Aihoshi, Hiroaki; and Tanaka, Hisanobu, to Matsushita Electric Works, Ltd. Miniature transfer relaycu5,331,302, Cl. 335-78.000.
Yoshimura, Toshihiko: *See—*
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Yoshinaka, Shigeo: *See—*
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Yoshioka, Yasuhiro: *See—*
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Yoshitake, Kunihiko: *See—*
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Yoshizane, Toshimasa: *See—*
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Yoshizawa, Ryozou: *See—*
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Yoshizumi, Yuji: *See*—
Sakawaki, Kouji; Yoshizumi, Yuji; and Yamashita, Yutaka, 5,330,680, Cl. 252-309.000.

Young, David C. Fire ringcu5,329,917, Cl. 126-29.000.

Young, Gerald A.: *See*—
DesMarais, Thomas A.; Stone, Keith J.; Thompson, Hugh A.; Young, Gerald A.; LaVon, Gary D.; and Dyer, John C., 5,331,015, Cl. 521-62.000.

Young, James W.; Gray, Nancy M.; and Wechter, William J., to Sepracor Inc. Antipyretic and analgesic methods and compositions containing optically pure R(−) ketoprofencu5,331,000, Cl. 514-570.000.

Young, Steven; Witztum, Joseph L.; and Curtiss, Linda K, to Scripps Research Institute, The. Apolipoprotein B-specific monoclonal antibodies produced by two novel hybridomascu5,330,910, Cl. 435-240.270.

Young, Wayne P.: *See*—
Tovey, H. John; Young, Wayne P.; and Nicholas, David A., 5,330,501, Cl. 606-198.000.

Yount, John E., to Oregon Health Sciences University. Methods of and apparatus for monitoring respiration and conductive composition used therewithcu5,329,932, Cl. 128-721.000.

Yozan Inc.: *See*—
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Ysbrand, Floyd. Molded woven cabling and a method of productioncu5,331,115, Cl. 174-117.00M.

Ystueta, Linda T.: *See*—
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Yu, Chris C., to Motorola, Inc. Polishing pads used to chemical-mechanical polish a semiconductor substratecu5,329,734, Cl. 51-283.00R

Yu, Dequan; and Brockner, Henry W., to Ford Motor Company. Automotive fuel pump vapor orifice and channelcu5,330,319, Cl 415-55.100.

Yugen Gaisha Shunwa Denshi Kikaku: *See*—
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Yukawa, Noriaki; Ueda, Hideshi; and Ookawara, Daisuke, to Matsushita Electric Industrial Co., Ltd. Foreign matter detection devicecu5,331,396, Cl. 350-237.000.

Yukihiro, Okeda, to Nippon Steel Corporation. Fuse construction of a semiconductor devicecu5,331,195, Cl. 257-529.000.

Yuzawa, Yukio; Yamamoto, Yoshinori; Ohira, Hiroyuki; Yoshizane, Toshimasa; and Shibasaki, Nobuyuki, to Chichibu Cement Co., Ltd. Ceramic conveyor beltcu5,330,046, Cl. 198-850.000.

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Zaccai, Gianfranco; and Rousmaniere, Arthur S., to Herman Miller, Inc. Shower stall control columncu5,329,650, Cl. 4-605.000.

Zacharias, Ellis M., Jr.: *See*—
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Zaitsu, Osamu: *See*—
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Zandi, Morteza: *See*—
Ellison-Hayashi, Cristan; Zandi, Morteza; Shetty, Dinesh K., Kuo, Peter; Yeckley, Russell; and Csillag, Frank, 5,330,937, Cl. 501-1.000.

Zange, Bernhard: *See*—
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Zanussi Elettrodomestici S.P.A.: *See*—
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Zebulon: *See*—
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Zeldov, Elia: *See*—
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Zell, Christel: *See*—
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Zembrowski, William J.: *See*—
Mylari, Banavara L.; and Zembrowski, William J., 5,330,997, Cl. 514-367.000.

Zenith Products Corporation: *See*—
Geltz, Charles E., 5,330,061, Cl. 211-105.400.

Zernik, Uri: *See*—
Black, James E., Jr.; and Zernik, Uri, 5,331,556, Cl. 364-419.080.

Zhang, Feng-Qiu. Built-up inner floating ceiling, equipped with instant fire extinguishing devices, for use in an oil storage tankcu5,330,009, Cl. 169-66.000.

Zhang, Jia: *See*—
Lu, Daozheng; Kiewit, David A.; and Zhang, Jia, 5,331,544, Cl. 364-401.000.

Zhiming, Zhang: *See*—
Ueda, Tamio; Nagami, Yoshihiro; Saito, Yumi; and Zhiming, Zhang, 5,331,541, Cl. 364-162.000.

Zienkiewicz, John W.: *See*—
Roberts, Bradley M., Cassidy, Mark F.; and Zienkiewicz, John W., 5,329,691, Cl. 29-705.000.

Zikeli, Stefan; Wolschner, Bernd; Eichinger, Dieter; Jurkovic, Raimund; and Firgo, Heinrich, to Lenzing Aktiengesellschaft. Process and arrangement for preparing a solution of cellulosecu5,330,567, Cl. 106-198.000.

Zimmerman, William S.: *See*—
Sawert, Ulf; Coha, Timothy F.; Zimmerman, William S.; and Rasmussen, Gregory K., 5,329,899, Cl. 123-198.0DB.

Zing Odor Control, Inc.: *See*—
Vroman, Albert L., 5,330,653, Cl. 210-631.000.

Zittel, David R., to Lyco Manufacturing, Inc. Combination blancher and coolercu5,329,842, Cl. 99-348.000.

Zitzen, Wilhelm: *See*—
Hartel, Robert; Hoehne, Karl-Josef; Hermanns, Ferdinand-Josef; Henze, Herbert; Knors, Herbert; Engelhardt, Dietmar; Zitzen, Wilhelm; Veyes, Manfred; Merkens, Herbert; Weissenfels, Wolfram, Ruetten, Hermann; Jaegers, Dirk; and Pommer, Berndt, 5,329,822, Cl. 73-862.610.

ZMD Corporation: *See*—
Fincke, Randall W., and Stutz, Rolf S., 5,330,526, Cl. 607-142.000.

Zoltner, John D., to Xerox Corporation. Completed book and a case for making the bookcu5,330,229, Cl. 281-15.100.

Zook, Gerald P. Topical medicating devicecu5,330,452, Cl. 604-307.000.

Zur, Yuval, Rotem, Haim; and Rosenfeld, Dan, to Elscint Ltd. Evolving imagecu5,331,280, Cl. 324-309.000.

Zysk, John R.: *See*—
Eppler, Cecil M.; Zysk, John R.; Corbett, Martin J.; and Shieh, Hong-Ming, 5,331,094, Cl. 530-395.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF JULY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

ASARCO Incorporated: *See*—
Roggero Sein, Carlos E., Re. 34,664, Cl. 205-138.000.

Atlas Europol SpA: *See*—
Frigo, Roberto; Bagaglio, Gian-Carlo; Verhelst, Gabriel; and De Witte, Mireille, Re. 34,669, Cl. 521-163.000.

Bagaglio, Gian-Carlo: *See*—
Frigo, Roberto; Bagaglio, Gian-Carlo; Verhelst, Gabriel; and De Witte, Mireille, Re. 34,669, Cl. 521-163.000.

De Witte, Mireille: *See*—
Frigo, Roberto; Bagaglio, Gian-Carlo; Verhelst, Gabriel; and De Witte, Mireille, Re. 34,669, Cl. 521-163.000.

Frigo, Roberto; Bagaglio, Gian-Carlo; Verhelst, Gabriel; and De Witte, Mireille, to Imperial Chemical Industries PLC; and Atlas Europol SpA. Method for preparing moulded polyureapolyurethane flexible foamscuRe. 34,669, Cl. 521-163.000.

General Electric Company: *See*—
Neumann, Thomas W., Re. 34,667, Cl. 310-216.000.

Imperial Chemical Industries PLC: *See*—
Frigo, Roberto; Bagaglio, Gian-Carlo; Verhelst, Gabriel; and De Witte, Mireille, Re. 34,669, Cl. 521-163.000.

Keller, Robert W. Dual-height wadercuRe. 34,662, Cl. 2-82.000.

Marietta, Robert L.: *See*—
Parks, Robert E.; and Marietta, Robert L., Re. 34,668, Cl. 436-114.000.

Neumann, Thomas W., to General Electric Company. Stator and rotor lamination construction for a dynamo-electric machinecuRe. 34,667, Cl. 310-216.000.

Nitec, Inc.: *See*—
Parks, Robert E.; and Marietta, Robert L., Re. 34,668, Cl. 436-114.000.

Parks, Robert E.; and Marietta, Robert L., to Nitec, Inc. Chemiluminescent nitrogen detection apparatus and methodcuRe. 34,668, Cl. 436-114.000.

Roggero Sein, Carlos E., to ASARCO Incorporated. Method and apparatus for electrolytic refining of copper and production of copper wires for electrical purposescuRe. 34,664, Cl. 205-138.000.

Seale, Joseph B. Non-invasive determination of mechanical characteristics in the bodycuRe. 34,663, Cl. 128-774.000.

Strand, Charles G. Failsafe sensing edge for automatic doors and gatescuRe. 34,665, Cl. 250-221.000.

Super Sagless Corporation: *See*—
Tacker, Bill D., Re. 34,666, Cl. 297-85.000.

Tacker, Bill D., to Super Sagless Corporation. Wall proximity chaircuRe. 34,666, Cl. 297-85.000.

Verhelst, Gabriel: *See*—
Frigo, Roberto; Bagaglio, Gian-Carlo; Verhelst, Gabriel; and De Witte, Mireille, Re. 34,669, Cl. 521-163.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Crowe, Benjamin S.: *See*—
Reading, Michael; Hahn, Brian K.; and Crowe, Benjamin S., B1 5,224,775, Cl. 374-11.000.

Hahn, Brian K.: *See*—
Reading, Michael; Hahn, Brian K.; and Crowe, Benjamin S., B1 5,224,775, Cl. 374-11.000.

Kozel, Charles A.; Scheitz, John T.; and Stefaniu, Michael V., to Methode Electronics, Inc. Chip carrier socket with open aperturecuB1 4,934,944, 7-19-94, Cl. 439-68.000.

Methode Electronics, Inc.: *See*—
Kozel, Charles A.; Scheitz, John T.; and Stefaniu, Michael V., B1 4,934,944, Cl. 439-68.000.

Reading, Michael; Hahn, Brian K.; and Crowe, Benjamin S., to TA Instruments Inc. Method and apparatus for modulated differential analysiscuB1 5,224,775, 7-19-94, Cl. 374-11.000.

Scheitz, John T.: *See*—
Kozel, Charles A.; Scheitz, John T.; and Stefaniu, Michael V., B1 4,934,944, Cl. 439-68.000.

Stefaniu, Michael V.: *See*—
Kozel, Charles A.; Scheitz, John T.; and Stefaniu, Michael V., B1 4,934,944, Cl. 439-68.000.

TA Instruments Inc.: *See*—
Reading, Michael; Hahn, Brian K.; and Crowe, Benjamin S., B1 5,224,775, Cl. 374-11.000.

LIST OF DESIGN PATENTEES

A-Dec, Inc.: *See*—
Nordstrom, Carl G.; and Fisher, William F., 348,933, Cl. D24-177.000.

ABA Systems Svenska AB: *See*—
Christiansson, Lars-Erik, 348,770, Cl. D6-630.000.

ABA Systems Svenska Aktiebolag: *See*—
Roskvist, Per-Åke; and Christiansson, Lars-Erik, 348,769, Cl. D6-631.000.

ABB Flaekt AB: *See*—
Larsson, Bertil; and Moren, John, 348,939, Cl. D25-122.000.

ALBA Maquinaria para la Construccion S.A.: *See*—
Elejaga, Jose M., 348,968, Cl. D34-35.000.

Albers, Terry A. Caulking guncu348,811, 7-19-94, Cl. D8-14.100.

Aldrich, Kristopher D. Branch for artificial treecu348,857, 7-19-94, Cl. D11-130.000.

Allsteel Inc.: *See*—
Tolleson, Thomas H.; and Saul, Gregory M., 348,786, Cl. D6-366.000.

American Lighting Fixture Corp.: *See*—
Segill, William; Segill, Mark E.; Dangelo, Michael; and Popcock, Jeffrey H., 348,949, Cl. D26-81.000.

Anderson, Alberta C. Body pouchcu348,776, 7-19-94, Cl. D3-226.000.

Anthro Corporation: *See*—
Linder, Steven E., 348,904, Cl. D19-92.000.
McCaffrey, Jeffrey T., 348,826, Cl. D8-354.000.
McCaffrey, Jeffrey T., 348,960, Cl. D34-20.000.

Aqua-Leisure Industries, Inc.: *See*—
Shelton, Robert N., 348,914, Cl. D21-197.000.

Armstrong Containers, Inc.: *See*—
McCallum, Duncan J.; Williams, John P.; and Jack, Robert C., 348,836, Cl. D9-456.000.

Aronson, Bruce E. Cereal bowlcu348,803, 7-19-94, Cl. D7-544.000.

Ashley, Charles R.; Wilkinson, Ken; and Huck, Charles M., to Schering Corporation. Inhalercu348,928, 7-19-94, Cl. D24-110.000.

Asner, Jerome L. Collapsible basketcu348,781, 7-19-94, Cl. D3-305.000.

Attolini, Lorenzo, to Medel Italiana S.n.c. di Giancarlo Attolini & C. Portable inhalatorcu348,927, 7-19-94, Cl. D24-110.000.

Audria's Crafts, Inc.: *See—*
Currie, Nickey P., 348,853, Cl. D11-43.000.
Avia Group International, Inc.: *See—*
Bevier, Joseph; and Richard, Daniel, 348,766, Cl. D2-970.000.
Barbour, Chris. Football mailboxcu348,969, 7-19-94, Cl. D99-30.000.
Barnes, Garrett T. Conowned key ring and extendable, self-defensive batoncu348,771, 7-19-94, Cl. D3-209.000.
Bauer, Daniel R. Roof pitch determination toolcu348,848, 7-19-94, Cl. D10-64.000.
Becker, David R.: *See—*
VanDyke, William R., Jr.; Maroun, Tony Y.; Becker, David R.; and Twine, Tonya M., 348,885, Cl. D14-230.000.
Bedol, Mark A. Clip-on calculatorcu348,897, 7-19-94, Cl. D18-6.000.
Bedortha, Diahanne; and Thorne, Lewis C., to Excel Sports Science, Inc. Buoyant footwear for water exercisecu348,917, 7-19-94, Cl. D21-239.000.
Below, Randall J., to Siemon Company, The. Cover platecu348,825, 7-19-94, Cl. D8-353.000.
Beltz, Michael A. Keyboard housingcu348,876, 7-19-94, Cl. D14-115.000.
Berti, Enzo; and Libman, Robert J., to Libman Company, The. Handle end pivot joint yokecu348,827, 7-19-94, Cl. D8-382.000.
Bertolini, Peter, to Chesbrough-Pond's USA Co., Division of Conopco, Inc. Cosmetic capsulecu348,830, 7-19-94, Cl. D9-302.000.
Bevier, Joseph; and Richard, Daniel, to Avia Group International, Inc. Shoe uppercu348,766, 7-19-94, Cl. D2-970.000.
Beyer, John P., to Beyer, John P. Clipcu348,902, 7-19-94, Cl. D19-65.000.
Bezzerides Company: *See—*
Bezzerides, George, 348,789, Cl. D6-463.000.
Bezzerides, George, to Bezzerides Company. Display rackcu348,789, 7-19-94, Cl. D6-463.000.
Big Sur Waterbeds, Inc.: *See—*
Miller, Drew L., 348,925, Cl. D23-266.000.
Bisbing, Robert H., to Southco, Inc. Adjustable hingecu348,823, 7-19-94, Cl. D8-323.000.
Borja, Javier, to Dahl, Gary A.; Anderson; Jeffrey H. Display standcu348,782, 7-19-94, Cl. D6-300.000.
Brady, Martin, to Hamilton Beach/Proctor-Silex, Inc. Blender basecu348,797, 7-19-94, Cl. D7-386.000.
Brunswick Corporation: *See—*
Powers, Carl D., 348,916, Cl. D21-232.000.
Cabot Safety Corporation: *See—*
Metcalfe, Richard T., 348,893, Cl. D16-116.000.
Caminos, Frank; and D'Andrade, Bruce M. Triple tank water guncu348,912, 7-19-94, Cl. D21-146.000.
Carlin, Ira. *See—*
Fischtein, Morris; and Carlin, Ira, 348,903, Cl. D19-76.000.
Carsello, Anthony J., to Emhart Inc. Door levercu348,820, 7-19-94, Cl. D8-308.000.
Carsello, Anthony J., to Emhart Inc. Door levercu348,821, 7-19-94, Cl. D8-308.000.
Casagrande, Serge: *See—*
Terlop, William E.; and Casagrande, Serge, 348,868, Cl. D13-110.000.
Cautereels, Victor J. J., to Dart Industries Inc. Stackable containercu348,805, 7-19-94, Cl. D7-602.000.
Celeste Company, Ic.: *See—*
Presser, Mark, 348,956, Cl. D28-38.000.
Chang, Chiu-Tsun, to P & F Brother Industrial Corporation. Electric sawcu348,889, 7-19-94, Cl. D15-133.000.
Chek-Med Systems, Inc.: *See—*
Jackson, Frank W., 348,932, Cl. D24-176.000.
Chen, An-Chun: *See—*
Chen, Cheng-Ming; and Chen, An-Chun, 348,850, Cl. D10-104.000.
Chen, Cheng-Ming; and Chen, An-Chun. Housing for an automobile brake indicatorcu348,850, 7-19-94, Cl. D10-104.000.
Chen, Tony. Wall mounted lighting fixturecu348,948, 7-19-94, Cl. D26-80.000.
Cherry, John H., to Optowand, Inc. Compact magnetic ink character recognition and magnetic stripe readercu348,872, 7-19-94, Cl. D14-105.000.
Chesbrough-Pond's USA Co., Division of Conopco, Inc.: *See—*
Bertolini, Peter, 348,830, Cl. D9-302.000.
Chiang, Randy, to Kar Bow Industries Co., Ltd. Adjustable desk lampcu348,943, 7-19-94, Cl. D26-65.000.
Chicopee: *See—*
Viemeister, Tucker; Formosa, Daniel; and Russak, Steven, 348,957, Cl. D29-15.000.
Christiansson, Lars-Erik, to ABA Systems Svenska AB. Case for floppy diskscu348,770, 7-19-94, Cl. D6-630.000.
Christiansson, Lars-Erik: *See—*
Roskvist, Per-Åke; and Christiansson, Lars-Erik, 348,769, Cl. D6-631.000.
Chrysler Corporation: *See—*
Snyder, Bernard G., 348,867, Cl. D12-415.000.
Cimini, Andrew P.: *See—*
Lee, R. David; and Cimini, Andrew P., 348,779, Cl. D3-259.000.
Clark, James E.; and Kessler, Peter. Box extrusioncu348,940, 7-19-94, Cl. D25-124.000.
Cobb, Christopher. Drink holdercu348,807, 7-19-94, Cl. D7-619.000.
Codemasters Software Company Limited, The: *See—*
Pemberton, Martin J., 348,874, Cl. D14-114.000.
Cogliandro, John. Water bottle top covercu348,835, 7-19-94, Cl. D9-435.000.
Compaq Computer Corporation: *See—*
Smid, Stacey A., 348,905, Cl. D20-11.000.
Condor Sales: *See—*
Donofrio, Philip J., 348,822, Cl. D8-308.000.
Cooper Industries, Inc.: *See—*
Mehaffey, David E.; and Hammond, Douglas S., 348,945, Cl. D26-71.000.
Wardell, Myron H., Jr., 348,834, Cl. D9-435.000.
Cornelius Company, The: *See—*
Jacobs, Richard H., 348,798, Cl. D7-392.000.
Craig, Steven. Handle grip for a utility knifecu348,819, 7-19-94, Cl. D8-107.000.
Crewe, Andrew P.; Duncan, Arthur H.; and Wagner, John D., to Lever Brothers Company, Division of Conopco, Inc. Bar of soap or detergentcu348,955, 7-19-94, Cl. D28-8.100.
Currie, Nickey P., to Audria's Crafts, Inc. Ornamental charmcu348,853, 7-19-94, Cl. D11-43.000.
Cy Young Industries, Inc.: *See—*
Young, Catherine L., 348,783, Cl. D6-333.000.
Dahl, Gary A.; Anderson; Jeffrey H.: *See—*
Borja, Javier, 348,782, Cl. D6-300.000.
Dai-Ichi Denpa Kogyo Co., Ltd.: *See—*
Watanabe, Hironobu, 348,886, Cl. D14-238.000.
Daisho, Yasujiro; Watanabe, Susumu; Kuramochi, Izumi; and Iwabuchi, Kohtaroh, to Yokohama Rubber Co., Ltd., The. Automobile tirecu348,862, 7-19-94, Cl. D12-147.000.
Dancyger, Michael. Combined nail and tool pouchcu348,777, 7-19-94, Cl. D3-228.000.
Dancyger, Michael. Combined nail and tool aproncu348,778, 7-19-94, Cl. D3-228.000.
D'Andrade, Bruce M.: *See—*
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Dangelo, Michael: *See—*
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Dart Industries Inc.: *See—*
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Davis, John E.; and Samartgis, Jim, to Trend Worldwide Pty. Ltd. Egg poachercu348,796, 7-19-94, Cl. D7-357.000.
Davis, Matthew A.: *See—*
Swick, Walter M.; Davis, Matthew A.; and Infante, Robert J., 348,936, Cl. D24-201.000.
Degen, Klemens, to Wolfcraft GmbH. C-clampcu348,816, 7-19-94, Cl. D8-73.000.
DeGroot, Linda J. Segmented inflatable mattress unit for use as a body supportcu348,792, 7-19-94, Cl. D6-604.000.
Delery, Richard M. Combined laundry hamper frame and hanger thereforcu348,962, 7-19-94, Cl. D32-36.000.
Demers, Michael J. Contour abrasive toolcu348,817, 7-19-94, Cl. D8-90.000.
De Sanctis, Fabio. Watchcu348,843, 7-19-94, Cl. D10-33.000.
Donofrio, Philip J., to Leeverall, Inc.; and Condor Sales. Door handle adaptercu348,822, 7-19-94, Cl. D8-308.000.
Doty, Roger F.; and Pickering, Mark A., to Maytag Corporation. Covered stove topcu348,800, 7-19-94, Cl. D7-402.000.
Drucker, John R., to Speer Lamp Corp. of New York. Table lampcu348,952, 7-19-94, Cl. D26-110.000.
Dumas, Jean-Louis, to La Montre Hermes. Wristwatchcu348,845, 7-19-94, Cl. D10-39.000.
Dumas, Jean-Louis, to La Montre Hermes, S.A. Wristwatchcu348,847, 7-19-94, Cl. D10-39.000.
Dumas, Jean-Louise, to La Montre Hermes, S.A. Wristwatchcu348,846, 7-19-94, Cl. D10-39.000.
Duncan, Arthur H.: *See—*
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Echolac Company, Ltd.: *See—*
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Egger, Sally A.; Schaeffer, Daniel J.; and Gordon, Frank J., to Motorola, Inc. Power amplifier enclosurecu348,869, 7-19-94, Cl. D13-123.000.
Elam, Gloria J. Container for confectionary productscu348,831, 7-19-94, Cl. D9-311.000.
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Emhart Inc.: *See—*
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Carsello, Anthony J., 348,821, Cl. D8-308.000.
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EMPI, Inc.: *See—*
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Excel Sports Science, Inc.: *See—*
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Feen, Stuart H.; and Lump, Ronald G., to Plastic Bottle Corp. Bottlecu348,838, 7-19-94, Cl. D9-542.000.
Feer, David L., to Rubbermaid Incorporated. Servingwarecu348,804, 7-19-94, Cl. D7-560.000.

Fehlbaum & Co.: *See—*
Starck, Philippe, 348,788, Cl. D6-375.000.
Fenton, William E.; and Rak, Roman P., to Motorola, Inc. Radio packet modem adapter accessory for portable computing devicescu348,888, 7-19-94, Cl. D14-242.000.
Fischtein, Morris; and Carlin, Ira, to Pro-Index Corp. Carrying case for cardholderscu348,903, 7-19-94, Cl. D19-76.000.
Fisher-Price, Inc.: *See—*
Shuler, Eric T., 348,879, Cl. D14-137.000.
Fisher, William F.: *See—*
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Viemeister, Tucker; Formosa, Daniel; and Russak, Steven, 348,957, Cl. D29-15.000.
Frampton, Amy; and Hamacher, Mary. Christmas stockingcu348,856, 7-19-94, Cl. D11-126.000.
Franchi, Menotti. Wrist watchcu348,844, 7-19-94, Cl. D10-39.000.
Fraser, Stanley, to S. Fraser Chemicals (Nottingham) Ltd. Play ballcu348,915, 7-19-94, Cl. D21-204.000.
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Fujii, Kiyoshi, to Sanden Corporation. Display casecu348,790, 7-19-94, Cl. D6-479.000.
Fun Gunz Inc.: *See—*
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Gaillard, David; and Gaillard, Harriet L. Coin bankcu348,970, 7-19-94, Cl. D99-37.000.
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Gaillard, David; and Gaillard, Harriet L., 348,970, Cl. D99-37.000.
Gobe, Marc, to Victoria's Secret Stores, Inc. Combined bottle and closurecu348,832, 7-19-94, Cl. D9-335.000.
Gordon, Frank J.: *See—*
Egger, Sally A.; Schaeffer, Daniel J.; and Gordon, Frank J., 348,869, Cl. D13-123.000.
Goto, Shinji; and Murakami, Yoshihiro, to Kabushiki Kaisha Kobe Seikosho. Mobile cranecu348,967, 7-19-94, Cl. D34-34.000.
Graff, Dennis R. Window supportcu348,828, 7-19-94, Cl. D8-400.000.
Gulf States Paper Corporation: *See—*
Gulliver, Richard F., 348,833, Cl. D9-416.000.
Gulliver, Richard F., to Gulf States Paper Corporation. Oven heatable food packagecu348,833, 7-19-94, Cl. D9-416.000.
Guyton, Victor. Vehicle mounted hydraulic auto jackcu348,966, 7-19-94, Cl. D34-31.000.
Hallas, John W., to Hallas Trading Co. Pty. Limited. Dispensing cap and tubecu348,829, 7-19-94, Cl. D9-302.000.
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Hamacher, Mary: *See—*
Frampton, Amy; and Hamacher, Mary, 348,856, Cl. D11-126.000.
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Hammond, Douglas S.: *See—*
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Hasegawa, Katsumi, to Kai R&D Center Co. Knifecu348,818, 7-19-94, Cl. D8-99.000.
Hashimura, Yoshiaki, to Yokohama Rubber Co., Ltd., The. Automobile tirecu348,864, 7-19-94, Cl. D12-147.000.
Hassel, H. Charles; and Rocha, Michael J., to Microwave Accessories, Inc. Adjustable foot restcu348,784, 7-19-94, Cl. D6-353.000.
Hatfield, Tinker L.; and Smith, Mark J., to Nike, Inc. Shoe uppercu348,767, 7-19-94, Cl. D2-970.000.
Henn, Jimmy D. Ski boat diverter with trim finscu348,866, 7-19-94, Cl. D12-317.000.
Henredon Furniture Industries, Inc.: *See—*
Keller, H. Thomas, 348,791, Cl. D6-487.000.
Herrick, Dennis J. Box fan covercu348,793, 7-19-94, Cl. D6-610.000.
Herrick, Robert B.; and Kensinger, Jesse P. Toy racing car chassiscu348,911, 7-19-94, Cl. D21-141.000.
Herst, Douglas J.; and Salman, Utkan, to Peerless Lighting Corporation. Indirect lighting fixturecu348,950, 7-19-94, Cl. D26-85.000.
Holcomb, Joseph H., to Kramp, Albert L. Fluorescent lighting fixturecu348,947, 7-19-94, Cl. D26-76.000.
Houle, Denis: *See—*
Roy, Pierre J.; and Houle, Denis, 348,964, Cl. D34-7.000.
Hsu, Lien-Tsai. Automobile steering wheel lockcu348,824, 7-19-94, Cl. D8-331.000.
Hubble, Filmer. Illuminated display standcu348,906, 7-19-94, Cl. D20-41.000.
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271 5,330,031

CLASS 181

150 5,331,119
207 5,331,120

CLASS 187

9 E 5,330,032
95 5,330,033
124 5,331,121

CLASS 188

71.6 5,330,034
73.36 5,330,035
251 M 5,330,036

CLASS 190

18 A 5,330,037

CLASS 192

3.29 5,330,038
30 W 5,330,039
58 B 5,330,040

CLASS 194

206 5,330,041

CLASS 198

333 5,330,042
346.2 5,330,043
502.1 5,330,044
779 5,330,045
850 5,330,046

CLASS 200

43.19 5,331,122
52 R 5,331,123
61.54 5,331,124
5,331,125
83 P 5,331,126

CLASS 201

19 5,330,623

CLASS 203

4 5,330,624

CLASS 204

153.1 5,330,625
157.15 5,330,626
181.4 5,330,627
192.12 5,330,628
192.17 5,330,629
192.25 5,330,630
243 R 5,330,631
298.18 5,330,632
298.25 5,330,633
409 5,330,634

CLASS 205

138 Re 34,664
204 5,330,635

CLASS 206

205 5,330,047
221 5,330,048
279 5,330,049
386 5,330,050
387 5,330,051
419 5,330,052
455 5,330,053
459.5 5,330,054
534.1 5,330,055
581 5,330,056

CLASS 209

392 5,330,057

CLASS 210

96.1 5,330,636
108 5,330,638
170 5,330,639
5,330,640
188 5,330,641
194 5,330,642
232 5,330,637
255 5,330,643
323.1 5,330,644
327 5,330,645
331 5,330,646
383 5,330,647
387 5,330,648
430 5,330,649
617 5,330,651
618 5,330,652
631 5,330,653
652 5,330,654
703 5,330,655
708 5,330,650
5,330,656
712 5,330,657
717 5,330,658
725 5,330,659
741 5,330,660
748 5,330,661

CLASS 211

4 5,330,058
40 5,330,059
41 5,330,060
105.4 5,330,061
122 5,330,062
162 5,330,063
163 5,330,065
182 5,330,064
189 5,330,066

CLASS 219

69.12 5,331,129
86.51 5,331,130
121.69 5,331,131
5,331,132
523 5,331,133
543 5,331,134
661 5,331,127
717 5,331,128
728 5,331,135

CLASS 220

7 5,330,067
304 5,330,068
335 5,330,069
562 5,330,070
645 5,330,071

CLASS 222

1 5,330,072
52 5,330,073
82 5,330,074
5,330,075
83 5,330,076
95 5,330,077
129.4 5,330,078
135 5,330,079
181 5,330,080
207 5,330,081
480 5,330,082
571 5,330,083

CLASS 224

42.45 R 5,330,084
312 5,330,085

CLASS 227

007 5,330,086
175 5,330,087

CLASS 228

1.1 5,330,089
56.3 5,330,090
107 5,330,091
157 5,330,092
5,330,093
177 5,330,095
180.22 5,330,096
194 5,330,097
214 5,330,098

CLASS 229

167 5,330,094
179.1 5,330,088
207 5,330,099

CLASS 235

375 5,331,136
5,331,137
449 5,331,138
5,331,139
462 5,331,140
5,331,141
466 5,331,142
472 5,331,143
486 5,331,144

CLASS 239

102.2 5,330,100
112 5,330,101
228 5,330,102
242 5,330,103
266 5,330,104
400 5,330,105
526 5,330,106
533.1 5,330,107
578 5,330,108

CLASS 241

30 5,330,109
53 5,330,110
56 5,330,111
57 5,330,112
74 5,330,113
101.7 5,330,114

CLASS 242

18 PW 5,330,115
118.4 5,330,127
158 B 5,330,122
261 5,330,130
334.4 5,330,118
345.2 5,330,128
346.1 5,330,123
347.1 5,331,498
355.1 5,330,129
401 5,330,121
533.2 5,330,116
540 5,330,117
559 5,330,126
559.2 5,330,119
562 5,330,125
588.2 5,330,120

CLASS 244

75 R 5,330,131
104 FP 5,330,132
117 A 5,330,124
145 5,330,133

CLASS 246

34 R 5,330,134
5,330,135
122 R 5,330,136

CLASS 248

27.1 5,330,137
52 5,330,138
65 5,330,139
74.2 5,330,140
98 5,330,141
122 5,330,142
161 5,330,143
231.9 5,330,144
311.2 5,330,145
5,330,146
316.4 5,330,147
499 5,330,148
549 5,330,149
598 5,330,150

CLASS 249

83 5,330,151

CLASS 250

208.1 5,331,145
5,331,146
208.2 5,331,147
221 Re 34,665
5,331,148
5,331,149
222.1 5,331,150
223 R 5,331,151
227.11 5,331,152
231.10 5,331,153
231.17 5,331,154
255 5,331,155
256 5,331,156
282 5,331,157
287 5,331,158
288 5,331,159
5,331,160
309 5,331,161
336.2 5,331,162
367 5,331,163
370.02 5,331,164
370.09 5,331,165
370.11 5,331,166
372 5,331,167
5,331,168
5,331,169
461.1 5,331,171
492.21 5,331,172
556 5,331,173
560 5,331,174
561 5,331,175
566 5,331,176
571 5,331,178
574 5,331,177
591 5,331,179

CLASS 251

89.5 5,330,152
129.21 5,330,153
144 5,330,154
149.6 5,330,155
159 5,330,156
162 5,330,157
327 5,330,158

CLASS 252

8.551 5,330,662
18 5,330,663
5,330,664
25 5,330,665
34 5,330,666
49.6 5,330,667
62.51 5,330,668
62.54 5,330,669
76 5,330,670
88 5,330,671
108 5,330,672
171 5,330,673
174.23 5,330,675
176.17 5,330,674
186.35 5,330,676
186.38 5,330,677
299.62 5,330,678
299.63 5,330,679
309 5,330,680
312 5,330,681
314 5,330,682
387 5,330,683
512 5,330,684
582 5,330,685
586 5,330,686

CLASS 254

29 A 5,330,159

CLASS 257

3 5,331,180
23 5,331,181
40 5,331,182
5,331,183
139 5,331,184
192 5,331,185
5,331,410
198 5,331,186
295 5,331,187
298 5,331,188
321 5,331,189
324 5,331,190
336 5,331,191
368 5,331,192
371 5,331,193
377 5,331,170
498 5,331,194
529 5,331,195
5,331,196
530 5,331,197
555 5,331,198
587 5,331,199
666 5,331,200
5,331,201
698 5,331,203
758 5,331,204
777 5,331,235
790 5,331,205

CLASS 260

665 R 5,330,687

CLASS 261

122.2 5,330,688

CLASS 264

4.3 5,330,689
30 5,330,690
42 5,330,691
65 5,330,692
106 5,330,693
112 5,330,694
134 5,330,695
141 5,330,696
171 5,330,697
184 5,330,698
508 5,330,699

CLASS 266

44 5,330,160
158 5,330,161
236 5,330,162

CLASS 267

140.13 5,330,163
140.14 5,330,164
141 5,330,165
220 5,330,166

CLASS 269

43 5,330,167
45 5,330,216
329 5,330,168

CLASS 270

53 5,330,170

CLASS 271

101 5,330,169
131 5,330,171
204 5,330,172
240 5,330,173
297 5,330,174

CLASS 273

1.5 R 5,330,175
26 R 5,330,176
32 H 5,330,179
32.5 5,330,177
5,330,178
84 R 5,330,181
108 5,330,182
121 R 5,330,183
128 R 5,330,184
138 A 5,330,185
153 S 5,330,186
169 5,330,187
186.1 5,330,188
186.2 5,330,189
5,330,190
187.1 5,330,191
191 A 5,330,192
193 A 5,330,193
201 5,330,194
213 5,330,195
285 5,330,197
317 5,330,198
400 5,330,199

CLASS 277

9 5,330,200
117 5,330,201

CLASS 279

19.1 5,330,202
46.3 5,330,203
51 5,330,224
62 5,330,204
124 5,330,205
144 5,330,206

CLASS 280

11.2 5,330,207
11.22 5,330,208
32.6 5,330,209
5,330,211
33.993 5,330,210
40 5,330,212
43.2 5,330,213
87.042 5,330,214
202 5,330,215
204 5,330,217
245 5,330,218
275 5,330,219
279 5,330,220
293 5,330,221
438.1 5,330,222
477 5,330,196
703 5,330,225
728 A 5,330,223
735 5,330,226
759 5,330,227
801.2 5,330,228

CLASS 281

15.1 5,330,229

CLASS 283

78 5,330,231
81 5,330,230
5,330,232

CLASS 285

9.2 5,330,233
62 5,330,234
81 5,330,235
149 5,330,236
281 5,330,237
291 5,330,238
328 5,330,239

CLASS 294

19.1 5,330,243
74 5,330,240
86.41 5,330,241
88 5,330,242
143 5,330,244

CLASS 296

65.1 5,330,245
98 5,330,246

CLASS 297

85 Re 34,666
157 5,330,247
174 5,330,248
214 5,330,249
229 5,330,250
5,330,251
232 5,330,252
344.15 5,330,253
354.11 5,330,254
391 5,330,255

CLASS 299

56 5,330,257

CLASS 303

113.2 5,330,258
115.4 5,330,259

CLASS 305

12 5,330,260

CLASS 307

10.1 5,331,211
66 5,331,212
108 5,331,213
116 5,331,214
201 5,331,215
243 5,331,216
260 5,331,217
270 5,331,206
272.1 5,331,207
273 5,331,208
296.4 5,331,209
351 5,331,210
443 5,331,224
446 5,331,225
465 5,331,226
5,331,227
473 5,331,228
475 5,331,219
5,331,220
5,331,229
491 5,331,221
514 5,331,230
520 5,331,222

521 5,331,218
529 5,331,223
530 5,331,233
631 5,331,234

CLASS 310

40 MM 5,331,236
44 5,331,237
58 5,331,238
68 D 5,331,231
68 R 5,331,239
71 5,331,240
91 5,331,243
180 5,331,244
186 5,331,245
194 5,331,246
216 Re 34,667
313 B 5,331,247
328 5,331,241
370 5,331,242

CLASS 312

140.4 5,330,262
321.5 5,330,261
328 5,330,263

CLASS 313

632 5,331,249

CLASS 315

39.51 5,331,248
71 5,331,250
82 5,331,251
169.4 5,331,252
209 R 5,331,253
248 5,331,254
382 5,331,256
411 5,331,255

CLASS 318

85 5,331,257
139 5,331,258
254 5,331,259
282 5,331,260
376 5,331,261
452 5,331,262
560 5,331,263
568.11 5,331,232
5,331,264
610 5,331,265
625 5,331,266
799 5,331,267

CLASS 320

20 5,331,268
39 5,331,269

CLASS 323

237 5,331,270
355 5,331,271

CLASS 324

96 5,331,272
158.1 5,331,273
5,331,274
160 5,331,276
207.16 5,331,277
232 5,331,278
306 5,331,279
309 5,331,280
318 5,331,281
319 5,331,282
508 5,331,283
639 5,331,284
713 5,331,285
718 5,331,286
724 5,331,287
757 5,331,275

CLASS 328

13 5,331,288

CLASS 330

252 5,331,289
254 5,331,290
289 5,331,291

CLASS 331

1 A 5,331,292
1 R 5,331,293
57 5,331,294
5,331,295
158 5,331,296

CLASS 333

127 5,331,297
138 5,331,298
175 5,331,299
202 5,331,300

CLASS 335

20 5,331,301
78 5,331,302

CLASS 336

12 5,331,303
234 5,331,304

CLASS 338

322 5,331,305

CLASS 340

262 5,331,421
425.5 5,331,306
426 5,331,307
463 5,331,311
522 5,331,308
541 5,331,312
551 5,331,313
606 5,331,309
632 5,331,310
661 5,331,314
825.02 5,331,315
825.03 5,331,316
825.44 5,331,317
855.4 5,331,318
870.28 5,331,319

CLASS 341

56 5,331,320
110 5,331,321
136 5,331,322
5,331,323
141 5,331,324
176 5,331,325

CLASS 342

148 5,331,326
173 5,331,327
189 5,331,328
357 5,331,329
460 5,331,330

CLASS 343

719 5,331,331
786 5,331,332

CLASS 345

7 5,331,333
47 5,331,334
121 5,331,335
172 5,331,337

CLASS 346

76 PH 5,331,340
108 5,331,338
5,331,341
5,331,342
5,331,343

CLASS 347

63 5,331,344

CLASS 348

5.5 5,331,412
64 5,331,419
159 5,331,413
246 5,331,420
297 5,331,345
363 5,331,422
390 5,331,414
402 5,331,348
441 5,331,346
536 5,331,347
558 5,331,351
567 5,331,349
578 5,331,350
584 5,331,417
607 5,331,415
614 5,331,416
682 5,331,352
708 5,331,411
725 5,331,353
730 5,331,354

CLASS 349

89 5,331,339

CLASS 350

237 5,331,396

CLASS 351

41 5,331,355
5,331,356
158 5,331,357
232 5,331,358

CLASS 353

28 5,331,359
96 5,331,360

CLASS 354

132 5,331,361
149.1 5,331,362
159 5,331,363
324 5,331,364
410 5,331,365
412 5,331,366
5,331,367
483 5,331,368

CLASS 355

53 5,331,369
5,331,370
5,331,371
200 5,331,372
5,331,373
5,331,374
202 5,331,375
5,331,376
208 5,331,377
210 5,331,378
214 5,331,379
230 5,331,380
260 5,331,381
5,331,382
5,331,388
274 5,331,383
290 5,331,384
5,331,385
319 5,331,386
321 5,331,389
324 5,331,387
326 R 5,331,390

CLASS 356

73.1 5,331,391
5,331,392
121 5,331,393
124 5,331,394
138 5,331,395
237 5,331,397
246 5,331,398
346 5,331,399
349 5,331,400
350 5,331,401
5,331,402
5,331,403
5,331,404
372 5,331,405
375 5,331,406
394 5,331,407
429 5,331,408
437 5,331,409

CLASS 358

342 5,331,423
5,331,424
426 5,331,425
5,331,426
5,331,436
433 5,331,427
446 5,331,428
456 5,331,429
5,331,430
462 5,331,431
465 5,331,432
471 5,331,433
474 5,331,434
479 5,331,435
500 5,331,438
5,331,439
529 5,331,440
530 5,331,441
532 5,331,442

CLASS 359

5,331,443
3 5,331,444
12 5,330,264
15 5,331,445
51 5,331,446
59 5,331,447
103 5,331,448
125 5,331,449
135 5,331,450
139 5,331,451
189 5,331,452
191 5,331,453
224 5,331,454
344 5,331,455
350 5,331,456
377 5,331,457
393 5,331,458
409 5,331,459
434 5,331,460
507 5,331,461
689 5,331,462
5,331,463
691 5,331,464
693 5,331,465
723 5,331,466
731 5,331,467
738 5,331,468
824 5,331,469
859 5,331,470
874 5,331,471
894 5,331,472
5,331,473

CLASS 360

13 5,331,474
14.2 5,331,475
53 5,331,476
59 5,331,477
67 5,331,478
88 5,331,479
77.17 5,331,480
85 5,331,481
5,331,482
86 5,331,483
96.5 5,331,484
5,331,485
97.01 5,331,486
97.02 5,331,487
98.08 5,331,488
103 5,331,494
104 5,331,489
109 5,331,490
110 5,331,491
113 5,331,492
5,331,493
126 5,331,495
5,331,496
5,331,497
133 5,331,499

CLASS 361

93 5,331,500
94 5,331,501
212 5,331,502
214 5,331,503
301.1 5,331,504
306.3 5,331,505
680 5,331,508
683 5,331,506
686 5,331,509
702 5,331,510
713 5,331,511
720 5,331,507
760 5,331,512
5,331,513
5,331,514
5,331,515
785 5,331,516
796 5,331,517

CLASS 362

61 5,331,518
5,331,520
5,331,519
80 5,331,521
80.1 5,331,522
96 5,331,523
102 5,331,524
140 5,331,525
147 5,331,526
153.1 5,331,527
205 5,331,528
226 5,331,529
293 5,331,530
365 5,331,531

CLASS 363

20 5,331,532
5,331,533
5,331,534
37 5,331,535
126 5,331,536
138 5,331,537

CLASS 364

132 5,331,619
134 5,331,538
140 5,331,539
147 5,331,540
162 5,331,541
167.01 5,331,542
401 5,331,543
5,331,544
5,331,545
407 5,331,546
413.01 5,331,547
413.02 5,331,548
5,331,549
5,331,550
413.13 5,331,551
413.15 5,331,552
413.24 5,331,553
419.07 5,331,554
5,331,555
419.08 5,331,556
419.09 5,331,557
424.01 5,331,558
431.02 5,331,559
431.12 5,331,560
447 5,331,561
449 5,331,562
5,331,563
470 5,331,564
472 5,331,565
474.29 5,331,566
481 5,331,567
489 5,331,568
5,331,569
5,331,570
490 5,331,571
491 5,331,572
500 5,331,573
551.01 5,331,574
557 5,331,575
559 5,331,577
571.01 5,331,578
578 5,331,579
589 5,331,576
708.1 5,331,580
717 5,331,581
722 5,331,582
724.01 5,331,583
725 5,331,584
5,331,585
752 5,331,586
825 5,331,587

CLASS 365

51 5,331,588
151 5,331,589
182 5,331,590
5,331,591
185 5,331,592
189.11 5,331,593
201 5,331,594
5,331,596
203 5,331,595
207 5,331,597
221 5,331,598
226 5,331,599
230.04 5,331,600
230.08 5,331,601

CLASS 366

7 5,330,265
101 5,330,266
336 5,330,267

CLASS 367

6 5,331,602
12 5,331,603
31 5,331,604
176 5,331,605
178 5,331,606
189 5,331,607

CLASS 368

10 5,331,608
223 5,331,609
282 5,331,610

CLASS 369

13 5,331,611
5,331,612
32 5,331,613
34 5,331,614
44.32 5,331,615
53 5,331,616
54 5,331,617
59 5,331,618
5,331,620
112 5,331,621
5,331,622
124 5,331,623
215 5,331,624
275.1 5,331,625
5,331,626
291 5,331,627

CLASS 370

14 5,331,628
54 5,331,637
57 5,331,629
58.1 5,331,630
60 5,331,631
68 5,331,632
85.11 5,331,633
85.130 5,331,634
5,331,635
85.5 5,331,636
95.1 5,331,638
100.1 5,331,639
102 5,331,641
110.1 5,331,640

CLASS 371

5.2 5,331,642
22.3 5,331,643
25.1 5,331,644
37.1 5,331,645
40.1 5,331,646
53 5,331,647

CLASS 372

18 5,331,648
23 5,331,649
26 5,331,650
32 5,331,651
34 5,331,652
35 5,331,653
45 5,331,654
5,331,655
5,331,656
46 5,331,657
50 5,331,658
5,331,659
94 5,331,660

CLASS 373

105 5,331,661

CLASS 374

1 5,330,318
11 B1 5,224,775
54 5,330,268

CLASS 375

14 5,331,662
5,331,663
94 5,331,664
5,331,665
5,331,666
107 5,331,667
111 5,331,670
116 5,331,668
118 5,331,669
5,331,671
121 5,331,672

CLASS 376

204 5,331,674
260 5,331,675
5,331,676
402 5,331,677
439 5,331,679
442 5,331,678

CLASS 377

17 5,331,680
116 5,331,681

CLASS 378

19 5,331,682

CLASS 383

210 5,330,269

CLASS 384

8 5,330,270
13 5,330,271
26 5,330,272
215 5,330,273

CLASS 395

575 5,331,673

CLASS 400

82 5,330,274
5,330,275
124 5,330,276
157.3 5,330,277

CLASS 402

3 5,330,279
49 5,330,280

CLASS 403

97 5,330,283
370 5,330,284

CLASS 404

1 5,330,278
6 5,330,285
90 5,330,287

CLASS 405

55 5,330,288
74 5,330,289
91 5,330,290
128 5,330,291
141 5,330,292
211 5,330,293
224.2 5,330,294

CLASS 407

42 5,330,295
114 5,330,296

CLASS 408

153 5,330,297

CLASS 409

80 5,330,298
138 5,330,299

CLASS 410

106 5,330,300

CLASS 411

79 5,330,302
344 5,330,303

CLASS 414

21 5,330,304
228 5,330,310
254 5,330,305
286 5,330,306
406 5,330,307
408 5,330,308
411 5,330,309
416 5,330,311
417 5,330,301
462 5,330,312
463 5,330,313
627 5,330,314
786 5,330,315
790.2 5,330,316
797.8 5,330,317

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129 5,330,320
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519 5,330,331

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55.5 5,330,463
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10 5,330,701
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109 5,330,707
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287 5,330,877
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522 5,330,884
523 5,330,885
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551 5,330,888
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307 5,330,991
312 5,330,992
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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Vol. 1164 Number 4

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of the

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PATENTS

July 26, 1994

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 23, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,033,115 through 5,034,997
Reissue Patents based on the above identified patents.

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Attention is drawn to the patents which were issued on July 21, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,680,812 through 4,682,370
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 9, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,393,519 through 4,394,780
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 15, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,576	06/925,673	01/12/88
(4,588,267)	(06/571,820)	(05/13/86)
Re. 32,965	07/076,464	06/27/89
(4,587,940)	(06/730,617)	(05/13/86)
Re. 33,633	07/342,693	07/09/91
(4,589,053)	(06/618,248)	(05/13/86)
Re. 33,995	07/611,406	07/14/92
(4,925,753)	(07/250,109)	(05/15/90)
Re. 34,538	07/696,846	02/08/94
(4,925,734)	(07/191,785)	(05/15/90)
Re. 34,563	07/883,955	03/15/94
(4,925,910)	(07/036,446)	(05/15/90)
4,329,764	06/252,897	05/18/82
4,329,766	06/230,399	05/18/82
4,329,797	06/228,325	05/18/82
4,329,833	06/225,002	05/18/82
4,329,835	06/232,278	05/18/82
4,329,923	06/219,579	05/18/82
4,330,003	06/267,106	05/18/82
4,330,044	06/222,062	05/18/82
4,330,082	06/253,704	05/18/82
4,330,108	06/237,626	05/18/82
4,330,133	06/274,884	05/18/82
4,330,140	06/217,337	05/18/82
4,330,191	06/235,105	05/18/82
4,330,223	06/244,516	05/18/82
4,330,246	06/232,068	05/18/82
4,330,264	06/229,715	05/18/82
4,330,299	06/241,991	05/18/82
4,330,316	06/216,464	05/18/82
4,330,331	06/252,898	05/18/82
4,330,335	06/236,651	05/18/82
4,330,336	06/290,129	05/18/82
4,330,359	06/233,269	05/18/82
4,330,365	06/230,239	05/18/82
4,330,385	06/262,185	05/18/82
4,330,387	06/216,925	05/18/82
4,330,395	06/241,191	05/18/82
4,330,416	06/280,275	05/18/82
4,330,420	06/281,637	05/18/82
4,330,424	06/234,565	05/18/82
4,330,432	06/220,313	05/18/82
4,330,433	06/225,213	05/18/82
4,330,434	06/250,191	05/18/82
4,330,464	06/281,632	05/18/82
4,330,470	06/217,744	05/18/82
4,330,500	06/260,084	05/18/82
4,330,522	06/218,604	05/18/82
4,330,548	06/278,522	05/18/82
4,330,554	06/257,317	05/18/82
4,330,556	06/222,406	05/18/82
4,330,575	06/228,198	05/18/82
4,330,589	06/262,916	05/18/82
4,330,601	06/238,719	05/18/82
4,330,616	06/286,193	05/18/82
4,330,617	06/231,444	05/18/82
4,330,633	06/231,269	05/18/82
4,330,635	06/216,572	05/18/82
4,330,636	06/220,555	05/18/82

Patent Number	Serial Number	Issue Date
4,330,639	06/218,620	05/18/82
4,330,660	06/225,842	05/18/82
4,330,663	06/221,663	05/18/82
4,330,670	06/267,102	05/18/82
4,330,739	06/229,456	05/18/82
4,330,868	06/216,872	05/18/82
4,330,869	06/217,080	05/18/82
4,587,672	06/643,020	05/13/86
4,587,678	06/698,159	05/13/86
4,587,682	06/603,338	05/13/86
4,587,685	06/720,492	05/13/86
4,587,686	06/640,969	05/13/86
4,587,689	06/569,163	05/13/86
4,587,691	06/696,056	05/13/86
4,587,692	06/627,767	05/13/86
4,587,698	06/705,856	05/13/86
4,587,701	06/644,815	05/13/86
4,587,702	06/616,824	05/13/86
4,587,715	06/574,745	05/13/86
4,587,723	06/729,761	05/13/86
4,587,724	06/616,792	05/13/86
4,587,731	06/502,342	05/13/86
4,587,734	06/593,856	05/13/86
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4,587,739	06/756,127	05/13/86
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4,587,742	06/689,897	05/13/86
4,587,744	06/617,089	05/13/86
4,587,745	06/718,440	05/13/86
4,587,746	06/712,333	05/13/86
4,587,747	06/668,267	05/13/86
4,587,752	06/712,673	05/13/86
4,587,755	06/569,314	05/13/86
4,587,756	06/629,990	05/13/86
4,587,757	06/664,531	05/13/86
4,587,758	06/631,332	05/13/86
4,587,772	06/587,021	05/13/86
4,587,776	06/466,471	05/13/86
4,587,779	06/769,794	05/13/86
4,587,780	06/555,452	05/13/86
4,587,781	06/607,582	05/13/86
4,587,782	06/649,179	05/13/86
4,587,784	06/560,392	05/13/86
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4,587,919	06/480,118	05/13/86
4,587,921	06/622,633	05/13/86
4,587,922	06/638,837	05/13/86
4,587,923	06/522,529	05/13/86
4,587,925	06/664,251	05/13/86
4,587,926	06/657,547	05/13/86
4,587,927	06/650,328	05/13/86
4,587,929	06/677,119	05/13/86
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4,587,945	06/551,196	05/13/86
4,587,947	06/629,564	05/13/86
4,587,948	06/713,803	05/13/86
4,587,951	06/706,435	05/13/86
4,587,953	06/647,002	05/13/86
4,587,955	06/663,287	05/13/86
4,587,956	06/650,248	05/13/86
4,587,966	06/531,689	05/13/86
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4,587,973	06/754,193	05/13/86
4,587,976	06/693,683	05/13/86
4,587,980	06/629,485	05/13/86
4,587,983	06/591,954	05/13/86
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4,587,999	06/219,284	05/13/86
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4,588,002	06/656,624	05/13/86
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4,588,140	06/773,525	05/13/86
4,588,142	06/649,274	05/13/86
4,588,146	06/594,658	05/13/86
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4,925,635	07/261,810	05/15/90
4,925,640	07/232,610	05/15/90
4,925,644	07/276,735	05/15/90
4,925,647	07/099,909	05/15/90
4,925,660	07/189,528	05/15/90
4,925,669	07/124,788	05/15/90
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4,925,850	07/306,497	05/15/90
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4,925,879	07/227,869	05/15/90
4,925,890	07/356,204	05/15/90
4,925,893	07/214,127	05/15/90
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4,925,951	07/296,708	05/15/90
4,925,952	07/296,710	05/15/90
4,925,958	07/207,766	05/15/90
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4,926,262	07/228,067	05/15/90
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4,926,287	07/327,939	05/15/90
4,926,290	07/307,022	05/15/90
4,926,291	07/387,703	05/15/90
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NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,444,031	06/292,667	04/24/84	08/13/81	05/25/94
4,504,920	06/292,168	03/05/85	08/12/81	05/26/94
4,520,896	06/596,835	06/04/85	04/04/84	05/25/94
4,544,157	06/486,126	10/01/85	04/18/83	05/17/94
4,563,826	06/664,256	01/14/86	10/24/84	05/25/94
4,572,156	06/654,225	02/25/86	09/25/84	05/25/94
4,573,854	06/565,164	03/04/86	12/23/83	04/11/94
4,742,505	06/799,811	05/03/88	11/20/85	05/25/94
4,801,381	06/874,549	01/31/89	06/16/86	05/25/94
4,817,488	07/207,167	04/04/89	06/15/88	05/25/94
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4,829,792	07/077,889	05/16/89	07/27/87	05/25/94
4,833,048	07/175,782	05/23/89	03/31/88	05/20/94
4,843,642	07/062,887	07/04/89	06/16/87	05/25/94
4,875,767	07/163,799	10/24/89	03/08/88	03/21/94
4,885,495	07/220,739	12/05/89	07/18/88	05/25/94
4,887,536	07/214,315	12/19/89	07/01/88	05/23/94
4,896,541	07/149,475	01/30/90	01/28/88	05/25/94
4,902,169	07/353,253	02/20/90	05/17/89	05/25/94
4,905,742	07/316,283	03/06/90	02/27/89	05/25/94
4,907,845	07/245,227	03/13/90	09/16/88	05/25/94
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b))

4,637,043, Re. S.N. 08/233,904, Apr. 28, 1994, Cl. 378/188, X-RAY SHEET FILM CASSETTE FOR APPLICATION TO ANGULAR BODY PARTS, Walter Bauer, Owner of Record: *Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Karl F. Milde, Jr., Ex. Gp.: 2506

4,834,884, Re. S.N. 08/110,840, Aug. 24, 1993, Cl. 210/401, PRESSURE DEVICE AND SEAL FOR FILTER BELT MACHINES, Dag Bergloff, et. al., Owner of Record: *Maschenfabrik Andritz Actiengesellschaft, Graz, Austria,* Attorney or Agent: Garrett V. Davis, Ex. Gp.: 1303

4,939,358, Re. S.N. 08/248,635, May 23, 1994, Cl. 250, SWITCH APPARATUS INCLUDING A PAIR OF BEAM-TYPE SWITCHES, Jeffrey G. Herman, et. al., Owner of Record: *Break-A-Beam, Inc., Warren, Michigan,* Attorney or Agent: Ernest I. Gifford, Ex. Gp.: 2509

5,089,365, Re. S.N. 08/197,599, Feb. 17, 1994, Cl. 430/59, PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPH WITH THIOPHENE CONTAINING MOIETY ON CHARGE TRANSPORT COMPOUND, Masami Kuroda, et. al., Owner of Record: *Fuji Electric Co., Ltd., Kawasaki-Shi, Japan,* Attorney or Agent: Ashley J. Wells, Ex. Gp.: 1507

5,099,622, Re. S.N. 08/220,001, Mar. 29, 1994, Cl. 52/200, SKYLIGHT, Steve M. Sutton, Owner of Record: *Continuum Developments PTY Limited, Liverpool, Australia,* Attorney or Agent: Julian Cohen, Ex. Gp.: 3504

5,107,208, Re. S.N. 08/229,482, Apr. 19, 1994, Cl. 324/158R, SYSTEM FOR PARTITIONING AND TESTING SUB-MODULE CIRCUITS OF ANY INTEGRATED CIRCUIT, Nai C. Lee, Owner of Record: *North American Phillips Corp., New York, N.Y.,* Attorney or Agent: Anne E. Barschall, Ex. Gp.: 2607

5,112,051, Re. S.N. 08/174,700, Dec. 28, 1993, Cl. 273/148, INTERFACING DEVICE FOR A COMPUTER GAMES SYSTEM, Richard Darling, et. al., Owner of Record: *Code Masters Software Co., LTD., London, England,* Attorney or Agent: Richard P. Bauer, Ex. Gp.: 3304

5,119,102, Re. S.N. 08/250,782, May 27, 1994, Cl. 342/357, VEHICLE LOCATION SYSTEM, Michael E. Barnard, Owner of Record: *U.S. Philips Corp., New York, N.Y.,* Attorney or Agent: Laurie E. Gatham, Ex. Gp.: 2202

5,128,520, Re. S.N. 08/245,892, May 19, 1994, Cl. 235/375, SCANNER WITH COUPON VALIDATION, Joseph F. Rando, et. al., Owner of Record: *Spectra-Physics Scanning Systems, Inc., Eugene, Oregon,* Attorney or Agent: John A. Rafter, Jr., Ex. Gp.: 2309

5,146,193, Re. S.N. 08/246,385, May 20, 1994, Cl. 333, MONOLITHIC CERAMIC FILTER OR DUPLEXER HAVING SURFACE MOUNT CONNECTIONS AND TRANSMISSION ZEROES, Raymond L. Sokola, Owner of Record: *Motorola, Inc., Schaumburg, Ill.,* Attorney or Agent: Gary J. Cunningham, Ex. Gp.: 2502

5,274,356, Re. S.N. 08/247,084, May 20, 1994, Cl. 340/515, METHOD AND APPARATUS FOR THE INSPECTION OF AIR CARGO FOR BOMBS, Todd L. Taricco, Owner of Record: *Inventor,* Attorney or Agent: Ben Yorks, Ex. Gp.: 2617

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a))

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b))

Re. 33,376, Reexam. No. 90/003,408, Apr. 15, 1994, Cl. 428/034.2, NON-FOIL COMPOSITE STRUCTURES FOR PACKAGING JUICE, Charles E. Gibbons, et. al., Owner of Record: *International Paper Co., New York, N.Y.,* Attorney or Agent: Walt Thomas Zielinski, Darby & Darby, New York, N.Y., Ex. Gp.: 1508, Requester: Tetra Pak, Inc., Chicago, Ill.

4,158,922, Reexam. No. 90/003,409, Apr. 15, 1994, Cl. 036/137, FLASHING DISCOSHOES, Alfred Dana, III, Pompano Beach, Fla., Owner of Record: *Inventor,* Attorney or Agent: Robert A. Vanderhye, Nixon & Vanderhye, Arlington, Va., Ex. Gp.: 2404, Requester: E.S. Originals, Inc., New York, N.Y.

5,021,413, Reexam. No. 90/003,434, May 17, 1994, Cl. 514/227.5, ANALGESIC THIOMORPHOLINS THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, Atsusuke Terada, et. al., Owner of Record: *Sankyo Co., Tokyo, Japan,* Attorney or Agent: Richard S. Barth, Frishauf, Holtz, Goodman & Woodward, New York, N.Y., Ex. Gp.: 1205, Requester: Owner

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 10
[Docket No. 940547-4147]
RIN: 0651-AA72

Revision of Patent Cooperation Treaty Provisions

Agency: Patent and Trademark Office, Commerce
Action: Notice of proposed rulemaking
Summary: The Patent and Trademark Office (Office) proposes to amend the rules of practice relating to applications filed under the Patent Cooperation Treaty (PCT) in accordance with revised regulations under the PCT. The proposed changes will result in a procedure whereby international applications improperly filed in the United States Receiving Office (RO/US) will, for a fee, be forwarded for processing by the International Bureau as Receiving Office.
Dates: Written comments must be submitted on or before Aug. 29, 1994.
Addresses: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Charles Pearson, Crystal Park II, Room 919, or by Fax to (703) 308-6459. No oral hearing will be held.
For Further Information Contact: Charles Pearson by telephone at (703) 308-6515or by mail marked to his attention and addressed as above.
Supplementary Information: These proposed rule changes will improve filing and processing procedures for applicants in the filing of international applications.

On September 20 to 29, 1993, representatives of the patent offices of the member countries, in a series of meetings held in Geneva, Switzerland, agreed upon several changes to the PCT regulations which are designed to make the PCT more user-friendly. One of the significant changes to the PCT regulations was the addition of a new section (PCT Rule 19.4) which provides for transmittal of an international application to the International Bureau, acting in its capacity as Receiving Office, in certain instances. Several other changes were agreed upon including modifications to certain existing regulations. Some of these adopted changes require corresponding changes in Title 37, CFR.

Under the regulations currently in effect, an applicant is required, on filing the international application in the United States, to specify an applicant who is a resident or national of the United States.

The practice under the revised PCT regulations permits an international application filed with the United States Receiving Office to be forwarded to the International Bureau for processing in its capacity as a receiving office if the international application has an applicant who is a resident or national of a PCT Contracting State or has no residence or nationality indicated, but does not have an applicant who is indicated as being a U.S. resident or national. The Receiving Office of the International Bureau will consider the international application to be received as of the date accorded by the United States Receiving Office. This practice will avoid the loss of a filing date in those instances where the United States Receiving Office is not competent to act, but where the international application is filed by an applicant who is a national or resident of a PCT Contracting State. Where questions arise regarding residence or nationality, e.g., where residence and nationality are not clearly set forth, the application will be forwarded to the International Bureau as Receiving Office. If all of the applicants are indicated to be residents and nationals of non-PCT Contracting States, PCT Rule 19.4 does not apply and the application is denied an international filing date.

Discussion of Specific Rules

Section 1.412 (c)(6), if added as proposed, would reflect that the United States Receiving Office, where it is not a competent Receiving Office under PCT Rule 19.1 or 19.2, could transmit the international application to the International Bureau for processing in its capacity as a Receiving Office.

Section 1.421(a), if amended as proposed, would clarify that applications filed by applicants who are not residents or nationals of the United States, but who are residents or nationals of a PCT Contracting state or who indicate no residence or nationality, will, upon timely payment of the proper fee, have their application forwarded to the International Bureau for processing in its capacity as a Receiving Office.

Section 1.445(a)(5), if added as proposed, would establish a fee equivalent to the transmittal fee in paragraph (a)(1) of this section for transmittal of an international application to the International Bureau for processing in its capacity as a Receiving Office.

Section 10.9, if amended as proposed, would add a new provision to be consistent with the change to PCT Rule 90.1, clarifying that an attorney or agent having the right to act before the International Bureau when acting as Receiving Office may represent the applicant before the U.S. International Searching Authority or the U.S. International Preliminary Examining Authority. An individual who has the right to practice before the International Bureau when acting as Receiving Office, and who is not registered under section 10.6, may not prosecute patent applications in the national stage in the Office.

Other Considerations:

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. This proposed rule has been determined to be not significant for the purposes of E.O. 12866.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because the proposed rules would affect only a small number of international applications and would provide more streamlined and simplified procedures for filing and prosecuting international applications under the PCT.

The Patent and Trademark Office has also determined that this notice has no federalism implications affecting the relationship between the National government and the States as outlined in Executive Order 12612.

These rule changes will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. The paperwork burden imposed by adherence to the PCT is currently approved by the Office of Management and Budget under control number 0651-0021.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 10

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Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements, Trademarks.

For the reasons set forth in the preamble, 37 CFR Parts 1 and 10 are proposed to be amended as follows, with removals indicated by brackets ([]) and additions by arrows (cb):

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.412 is proposed to be amended by adding new paragraph (c)(6) to read as follows:

§ 1.412 The United States Receiving Office.

* * * * *

(c) The major functions of the Receiving Office include:

* * *

c(6) Reviewing and, where the United States Receiving Office is not the competent Receiving Office under 1.421(a) and PCT Rule 19.1 or 19.2, transmitting the international application to the International Bureau for processing in its capacity as a competent Receiving Office (PCT Rule 19.4).b

3. Section 1.421 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.421 Applicant for International Application

(a) Only residents or nationals of the United States of America may file international applications in the United States Receiving Office. cIf an international application does not include an applicant who is indicated as being a resident or national of United States of America, and at least one applicant:

(1) has indicated a residence or nationality in a PCT Contracting State, or

(2) has no residence or nationality indicated;

applicant will be so notified and, if the international application includes a fee amount equivalent to that required by § 1.445(a)(5), the international application will be forwarded for processing to the International Bureau acting as a Receiving Office. (See also1.412(c)(6)).b

4. Section 1.445 is proposed to be amended by adding new paragraph (a)(5) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a)

* * *

c(5) A fee equivalent to the transmittal fee in paragraph (a)(1) of this section for transmittal of an international application to the International Bureau for processing in its capacity as a competent Receiving Office (PCT Rule 19.4).b

* * * * *

5. The authority citation for 37 CFR Part 10 would continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

6. Section 10.9 is proposed to be amended by revising paragraph (c) to read as follows:

§ 10.9 Limited recognition in patent cases.

* * * * *

(c) An individual not registered under § 10.6 may, if appointed by applicant to do so, prosecute an international application only before the U.S. International Searching Authority and the U.S. International Preliminary Examining Authority, provided: the individual has the right to practice before the national office with which the international application is filed (PCT Art. 49, Rule 90 and § 1.455) c or before the International Bureau when acting as Receiving Office (PCT Rule 90.1)b.

June 23, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Errata

"All reference to Patent No. 5,324,899 to Nicholas J. Stroud, et. al., of Pennsylvania for 'COMBINED INTERRUPTER-DISCONNECT SWITCH BLADE FOR HIGH VOLTAGE SWITCH' appearing in the *Official Gazette* of June 28, 1994 should be deleted since no patent was granted."

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey For with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is important that patent practitioners complete each survey form no later than the time of response to the Office action being surveyed. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificate of Correction Issued Of July 26, 1994

P. 8,381	D. 337,790	D. 345,692	4,856,108
Re. 34,465	D. 338,805	4,641,780	4,883,601
D. 333,111	D. 340,801	4,853,209	4,960,411

4,974,486	5,164,177	5,223,760	5,248,781	5,264,966	5,279,602	5,287,551	5,297,882
4,980,578	5,167,622	5,224,545	5,249,230	5,265,401	5,279,647	5,287,557	5,297,924
4,990,058	5,169,626	5,225,459	5,249,568	5,265,507	5,279,765	5,287,657	5,297,930
4,994,565	5,172,699	5,225,904	5,249,573	5,265,749	5,280,131	5,287,750	5,298,086
4,996,072	5,173,867	5,225,938	5,249,800	5,265,931	5,280,180	5,287,867	5,298,127
4,996,473	5,179,490	5,226,350	5,250,187	5,266,333	5,280,319	5,287,910	5,298,159
4,996,591	5,180,181	5,226,542	5,250,219	5,266,383	5,280,995	5,288,014	5,298,471
5,006,785	5,180,471	5,226,780	5,250,305	5,266,627	5,281,256	5,289,229	5,298,495
5,011,220	5,182,694	5,226,903	5,250,465	5,266,718	5,281,387	5,289,397	5,298,552
5,014,493	5,183,897	5,227,296	5,250,660	5,266,899	5,281,403	5,289,419	5,298,645
5,015,617	5,185,026	5,227,474	5,250,661	5,266,996	5,281,482	5,289,442	5,298,657
5,016,073	5,185,852	5,227,822	5,250,662	5,267,122	5,281,583	5,289,472	5,298,805
5,021,522	5,187,173	5,229,704	5,251,422	5,267,437	5,281,731	5,289,769	5,298,816
5,023,309	5,187,209	5,230,433	5,251,649	5,267,600	5,281,751	5,289,852	5,298,887
5,032,928	5,187,461	5,230,528	5,251,685	5,267,615	5,281,782	5,290,393	5,298,888
5,033,610	5,187,497	5,230,836	5,251,730	5,268,422	5,281,817	5,290,395	5,298,909
5,034,980	5,187,599	5,230,969	5,251,736	5,268,866	5,281,858	5,290,418	5,299,342
5,035,377	5,191,089	5,231,142	5,251,890	5,269,061	5,281,927	5,290,794	5,299,351
5,045,128	5,191,461	5,232,047	5,252,141	5,269,545	5,281,981	5,290,837	5,299,619
5,052,651	5,193,007	5,232,272	5,252,354	5,270,022	5,282,256	5,291,644	5,299,622
5,053,668	5,194,334	5,232,278	5,252,507	5,270,295	5,282,294	5,291,667	5,299,802
5,053,910	5,194,982	5,232,418	5,252,555	5,270,659	5,282,436	5,291,773	5,300,013
5,072,985	5,195,795	5,233,205	5,252,876	5,271,979	5,282,685	5,291,834	5,300,175
5,076,874	5,197,120	5,233,492	5,253,913	5,271,989	5,282,696	5,292,498	5,300,188
5,078,296	5,197,873	5,234,732	5,254,232	5,272,156	5,282,718	5,292,515	5,300,256
5,084,382	5,198,111	5,235,533	5,254,304	5,272,333	5,282,788	5,292,902	5,300,301
5,085,487	5,198,970	5,235,828	5,254,481	5,272,472	5,283,003	5,292,934	5,300,302
5,091,315	5,200,525	5,236,996	5,254,502	5,272,714	5,283,164	5,292,991	5,300,515
5,091,820	5,201,119	5,237,112	5,254,549	5,272,846	5,283,483	5,293,286	5,301,259
5,098,996	5,202,880	5,237,343	5,255,419	5,272,875	5,283,490	5,293,334	5,301,618
5,106,965	5,203,908	5,237,344	5,255,449	5,273,047	5,283,619	5,293,785	5,301,809
5,111,222	5,204,740	5,237,434	5,255,826	5,273,444	5,283,632	5,293,790	5,302,138
5,113,494	5,206,838	5,237,945	5,256,885	5,273,629	5,283,884	5,293,941	5,302,004
5,116,009	5,206,939	5,238,060	5,257,277	5,273,757	5,284,205	5,294,100	5,302,597
5,120,433	5,209,370	5,238,932	5,257,923	5,273,910	5,284,664	5,294,407	5,302,640
5,122,440	5,209,901	5,239,100	5,258,400	5,274,098	5,284,710	5,294,609	5,303,325
5,122,936	5,210,132	5,239,719	5,258,505	5,274,355	5,284,987	5,294,637	5,303,378
5,124,237	5,211,910	5,240,498	5,258,714	5,274,453	5,285,114	5,294,651	5,303,445
5,129,625	5,214,447	5,242,204	5,258,773	5,274,567	5,285,116	5,295,235	5,303,937
5,130,335	5,215,087	5,242,739	5,258,979	5,274,548	5,285,204	5,295,340	5,304,080
5,131,318	5,215,822	5,242,809	5,259,463	5,275,601	5,285,320	5,295,474	5,304,147
5,134,082	5,216,128	5,244,004	5,259,580	5,275,653	5,285,331	5,295,506	5,304,231
5,137,394	5,217,017	5,244,008	5,259,706	5,275,720	5,285,479	5,295,689	5,304,256
5,137,812	5,217,115	5,245,611	5,259,712	5,275,908	5,285,546	5,295,719	5,304,349
5,138,022	5,218,069	5,246,014	5,259,891	5,276,262	5,285,845	5,295,870	5,304,422
5,138,529	5,219,958	5,246,839	5,260,449	5,276,612	5,285,860	5,295,907	5,304,687
5,142,767	5,220,620	5,247,098	5,261,340	5,277,062	5,286,084	5,295,983	5,304,695
5,148,918	5,221,530	5,247,162	5,262,718	5,277,312	5,286,217	5,295,988	5,305,026
5,152,983	5,221,619	5,247,380	5,263,022	5,277,550	5,286,318	5,296,370	5,305,225
5,153,353	5,221,724	5,247,557	5,263,361	5,277,704	5,286,408	5,296,598	5,305,460
5,156,344	5,222,284	5,247,837	5,263,550	5,277,788	5,286,422	5,296,608	5,305,769
5,157,066	5,223,282	5,247,949	5,263,825	5,278,453	5,286,467	5,296,806	5,306,029
5,157,857	5,223,485	5,248,235	5,264,270	5,278,664	5,286,726	5,296,915	5,307,269
5,159,287	5,223,696	5,248,663	5,264,286	5,278,665	5,286,850	5,297,097	
5,163,141	5,223,716	5,248,757	5,264,456	5,279,410	5,287,095	5,297,706	

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

June 6-10, 1994

Date Issued	Type of Proceeding[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examing Atty	Recommended for Publication
6-6	EX	74/272,786	The Breast Cancer Screening Center of Oklahoma, P.C.	2(e)(1)	Refusal Affirmed		"EARLY DETECTION" [pre-recorded video cassette tapes pertaining to breast self-examination techniques]		No
6-6	EX	74/248,043	Proclosure, Inc.	2(e)(1)	Refusal Affirmed		"LASER TISSUE MELDING" [laser and supporting devices for use in surgical procedures]		No
6-6	EX	74/153,146	Inter-Governmental Philatelic Corp.	whether under Rule 2.71(b), the identification of goods may be amended to conform to the specimens of use	Refusal Affirmed		"INTER GOVERNMENTAL PHILATELIC CORPORATION" [consulting services in the philatelic field]		No
6-6	OPP (R)	80,834	Chia-Chi Enterprises, Inc. v. Tzu Wei Chen Food Co. Ltd.	2(d), whether there was bad faith adoption by opposer	Request for Reconsideration Denied [Opposition Sustained]	"HEI CHIAO [processed food]	"BLACK BRIDGE" (and design, including Chinese characters) [processed food]		No
6-6	EX	74/042,116	Super Subby's Inc.	2(d)	Refusal Reversed		"SUPER SUBBY'S [restaurant services]	"TUBBY'S" [restaurant services]	No
6-7	EX	74/141,855	Covenant Communications, Inc.	2(d)	Refusal Reversed		"COVENANT" (and design) [audio cassette recordings featuring music and spoken words, religious books and fiction; publication of religious and fiction books]	"NEW COVENANT" [monthly magazine serving the charismatic renewal in the Catholic Church]	No

(1)EX=EX PARTE APPEAL, OPP=OPPOSITION, C=CANCELLATION, CU=CONCURRENT USE, (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Proceeding[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examing Atty.	Recommended for Publication
6-9	EX	74/149,307	Santa Maria Style Foods, Inc.	2(d)	Refusal Affirmed		"BUCKBOARD BRANDS SANTA MARIA STYLE BARBECUE" [food catering, food concession stands featuring delivery services]	"BUCKBOARD" [canned and smoked meat]	No
6-9	EX	74/108,007	Daniel Prentice	2(e)(1)	Refusal Reversed		"WORLD CUP SPORT KITE CHAMPIONSHIP" [entertainment services in the nature of sport kite flying competitions]		No
6-9	EX	74/247,605	IPS Corp.	Section 6 disclaimer requirement (of words "HOT 'R COLD")	Refusal Affirmed		"IPS WELD-ON HOT 'R COLD" (and design) [multi-purpose bonding adhesives having a plastic or elastomeric base and adapted for use with various materials]		No
6-9	OPP	83,067	Electronics International, Inc. v. J.P. Instruments	genericness; acquired distinctiveness under Section 2(f)	Opposition Dismissed		"SCANNER" [engine temperature indicators]		No
6-9	EX	74/037,972	Richard M. Hines	2(a)[disparagement]	Refusal Affirmed		"BUDDA BEACHWEAR" (and design of seated Buddha figure wearing shorts)		Yes
6-10	EX	74/142,195	Michigan Pharmacists Association	whether applicant's certification mark is registrable under Section 2(f)	Refusal Reversed		"PHARMACY CERTIFIED TECHNICIAN" [certification of pharmacy technician services]		Yes

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

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Date Issued	Type of Proceeding*	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Applicant's/ Respondent's Mark and Goods/Services	Opposer's/ Petitioner's Mark and Goods/Services	Mark and Goods of Registration Cited by Examing Atty	Recommended for Publication
6-10	EX	74/251,860	CBP Merger, Inc	2(d)	Refusal Affirmed	"FRATELLOS" [frozen pizza and frozen lasagna]		"DEI FRATELLI" [canned tomatoes and Italian tomato sauce]	No
6-10	EX	74/162,129	Power Plus Corp	2(e)(1)	Refusal Affirmed	"SMART TANK" [automatic electronic crankcase oil level regulators, and continuous oil changing units]			No
6-10	EX	74/258,268	Hicks Equipment, Inc	2(e)(1)	Refusal Affirmed	"PROOF PAK" [photographic print order forms incorporating a photographic image thereon]			No

*(EX = EX PARTE APPEAL, OPP = OPPOSITION, C = CANCELLATION, CU = CONCURRENT USE, (R) = REQ FOR RECONSIDERATION

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Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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	Springfield: Illinois State Library	(217) 782-5659
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
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Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
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	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
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	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	08/09/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	06/03/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/18/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	08/16/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/03/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/04/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	12/28/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	07/06/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	07/11/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/01/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	12/16/92
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	10/13/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	07/19/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	06/28/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	08/05/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	02/12/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/15/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during June 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 4,027,339 to 4,032,988 inclusive
Plant Patents ..... 4,059 to 4,068

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of June 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/10/93	04/26/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 40, 41, 42	01/06/94	03/14/94
Law Office 5—Mary Sparrow, Managing Atttorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/11/94	02/16/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/14/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/29/93	02/03/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/23/93	04/08/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/06/93	02/22/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/24/94	05/03/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/21/94	01/24/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/13/94	04/18/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/27/94	04/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/27/93	03/21/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/30/93	10/20/93
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jaqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	12/27/93	—0—
Renewals (All Classes)	03/14/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office.
2. Applicants with inquires concerning the status of their applications and a touch tone phone shouldcall (703) 308–8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dateshave either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

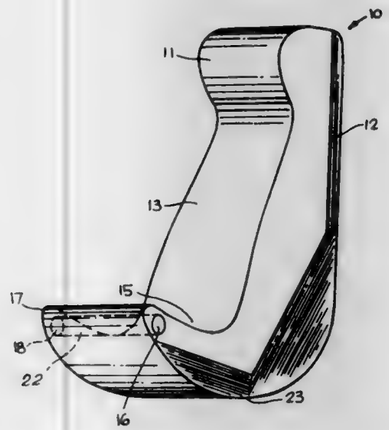
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REEXAMINATIONS

JULY 26, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,109,960 (2340th)
LEGLESS ROCKER-RECLINER CHAIR
Lawrence M. Stinchfield, 539 Beverly Ave., Paso Robles, Calif. 93446
Reexamination Request No. 90/002,930, Jan. 8, 1993.
Reexamination Certificate for Patent No. 4,109,960, issued Aug. 29, 1978, Ser. No. 802,649, Jun. 2, 1977.
Continuation-in-part of Ser. No. 746,476, Dec. 1, 1976, abandoned
Int. Cl.[5] A47C *3/02*
U.S. Cl. 297—258

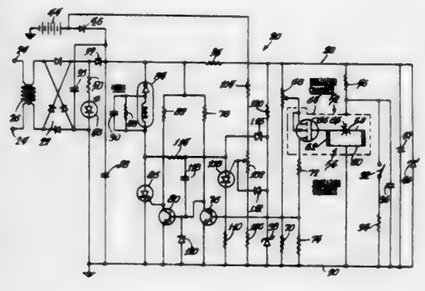


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. A legless rocking and reclining chair comprising,
an inner chair surface having a contour for supporting the back and seat of a seated person,
an arcuate outer surface having a length generally coextensive with said inner surface, but spaced apart from the inner surface, and connected thereto forming a closed chair body, said inner and outer chair surfaces having a smooth curvature along the length thereof, said surfaces defined by a generally upright portion generally corresponding in length, width and curvature to the back of a seated person and a smoothly curved seat portion connected to the upright portion corresponding in length, width and curvature to the seat of a seated person, for reclining to an angle such that the back of a seatedperson may exceed 60° with respect to the vertical,
frame means for spacing said inner surface from said outer surface with maximum spacing at opposite sides of the width of the chair surfaces at least in the seat portion, said chair surfaces having a forward section defining a nose and a rearward section defining a chair back, and
balancing means in the nose of said chair body for maintaining said chair in a stable upright position when not in use.

B1 4,138,670 (2341st)
A.C. POWERED DETECTING DEVICE WITH BATTERY BACKUP
Quentin L. Schneider, Bensenville, and Richard J. Schwarzbach, Naperville, both of Ill., assignors to Pittaway Corporation, Northbrook, Ill.
Reexamination Request Nos. 90/002,999, Mar. 5, 1993 and 90/003,069, May 26, 1993.
Reexamination Certificate for Patent No. 4,138,670, issued Feb. 6, 1979, Ser. No. 756,494, Jan. 3, 1977.
Reexamination Certificate B0 4,138,670, issued Jan. 15, 1991.
Int. Cl.[5] G08B *29/00, 17/10*
U.S. Cl. 340—507



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **8**, **9**, **11–18**, **22**, **24–26** is confirmed.

Claims **1–7**, **10**, **19–21**, **23**, **27–29** are cancelled.

14. In a warning device, a power source comprising a battery; means for emitting a signal; means for detecting the presence of predetermined phenomena; means responsive to said detecting means for causing said emitting means to emit said signal, and means for monitoring the output voltage of said battery and for causing said emitting means to emit said signal when said voltage equals a first predetermined value, said monitoring means including means for establishing a first voltage representative of said battery voltage, means for establishing a reference voltage, a unijunction transistor connected at a gate thereof with said first voltage, a first diode connected at a cathode thereof with said transistor gate and at an anode thereof with said reference potential, a second diode connected at a cathode thereof with said reference potential and at an anode thereof with an anode of said transistor, said transistor comparing said first and said reference voltages and being rendered conductive upon said first voltage differing from said reference voltage by a predetermined amount, said circuit means connected with said transistor and said emitting means and responsive to conduction of said transistor to cause said emitting means to emit said signal.

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B1 4,438,035 (2342nd)
METHOD OF PREPARING BENZOTHIAZEPINE DERIVATIVES

Mitsunori Gaino, Omiya; Ikuo Iijima, Urawa; Shigeru Nishimoto, Minoh; Kuichiro Ikeda, Onoda, and Tokuo Fujii, Yamaguchi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

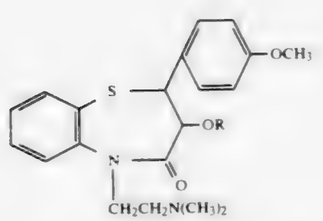
Reexamination Request Nos. 90/003,349, Mar. 1, 1994 and 90/003,044, May 5, 1993.
Reexamination Certificate for Patent No. 4,438,035, issued Dec. 1, 1982, Ser. No. 445,964, Mar. 20, 1984.
Claims priority, application Japan, Dec. 7, 1981, 56-197358
Int. Cl.[5] C07D *281/02*
U.S. Cl. 540—491

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT.

The patentability of claims **1–12** is confirmed.

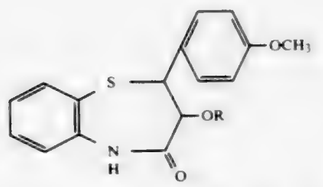
1. A method of preparing a benzothiazepine derivative of the formula:

(I)



wherein R is hydrogen or acetyl, or a pharmaceutically acceptable acid addition salt thereof, which comprises condensing a compound of the formula:

(II)



wherein R is the same as defined above, with 2-(dimethylamino)ethyl halide either in the presence of potassium hydroxide in acetone or in the presence of potassium carbonate in a solvent selected from acetone, lower alkyl acetate, a mixture of acetone and water and a mixture of lower alkyl acetate and water, and if required, further converting the product into a pharmaceutically acceptable acid addition salt thereof.

B1 4,528,481 (2343rd)
TREATMENT OF AMORPHOUS MAGNETIC ALLOYS TO PRODUCE A WIDE RANGE OF MAGNETIC PROPERTIES

Joseph J. Becker; Fred E. Luborsky; Israel S. Jacobs, and Richard O. McCary, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Reexamination Request Nos. 90/002,933, Jan. 8, 1993 and 90/003,002, Mar. 22, 1993.
Reexamination Certificate for Patent No. 4,528,481, issued Jul. 9, 1985, Ser. No. 600,919, Apr. 16, 1984.
Continuation of Ser. No. 201,166, Oct. 27, 1980, abandoned, which is a division of Ser. No. 911,976, Jun. 2, 1978, Pat. No. 4,262,233, which is a division of Ser. No. 719,914, Sep. 2, 1976, Pat. No. 4,116,728
Int. Cl.[5] H05B *41/16, 41/25*
U.S. Cl. 315—248



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–18** is confirmed.

Claim **21** is cancelled.

New claims **19** and **20** are added and determined to be patentable.

1. An improved magnetic core comprising a closed loop body having a generally toroidal shape, said body being formed from a spirally wound ribbon of magnetic amorphous metal alloy, said amorphous metal alloy having a composition which includes iron and boron and which is substantially free of cobalt, with said body having been heated to a temperature sufficient to achieve stress relief of said amorphous metal alloy, said body having been annealed in the presence of a magnetic field.

B1 4,594,359 (2344th)
PHARMACEUTICAL COMPOSITIONS

John M. Padfield, Meldreth, and Cheryl V. Groom, Barnard Castle, both of United Kingdom, assignors to Glaxo Group Ltd., London, England

Reexamination Request No. 90/003,080, May 28, 1993.
Reexamination Certificate for Patent No. 4,594,359, issued Jun. 10, 1986, Ser. No. 593,432, Mar. 26, 1984.
Continuation of Ser. No. 498,724, May 27, 1983, abandoned
Claims priority, application United Kingdom, May 27, 1982, 8215502
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—647

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **3** is cancelled.

Claims **1** and **14** are determined to be patentable as amended.

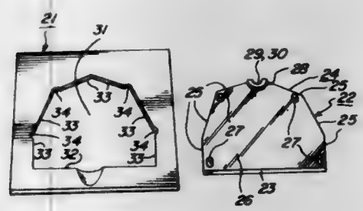
Claims **2** and **4–13**, dependent on an amended claim, are determined to be patentable.

1. A pharmaceutical composition comprising an aqueous dispersion of one or more cellulose derivatives containing salbutamol and/or one or more of its physiologically acceptable salts, wherein the cellulose derivative is an alkyl and/or hydroxyalkyl ether of cellulose; [carboxymethyl cellulose or salts thereof;] and wherein the amount of cellulose derivative present in the composition is a salbutamol stabilizing effective amount of said cellulose derivative.

B1 5,098,290 (2345th)
DENTAL MODELING METHOD AND APPARATUS USING APERTURED MATRIX PLATE

Jerry P. Honstein, 6543 E. Circulo Dali, Anaheim Hills, Calif. 92807; Anthony B. Siragusa, Anaheim Hills, Calif.; Richard Barnes, Mission Viejo, Calif., and Victor M. Barajas, San Gabriel, Calif., assignors to Jerry P. Honstein, Anaheim Hills, Calif.

Reexamination Request No. 90/002,898, Nov. 27, 1992.
Reexamination Certificate for Patent No. 5,098,290, issued Mar. 24, 1992, Ser. No. 579,300, Sep. 7, 1990.
Int. Cl.[5] A61C *19/00*
U.S. Cl. 433—74



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **3** is cancelled.

Claims **1**, **5** and **7** are determined to be patentable as amended.

Claims **2**, **4**, **6**, **8** and **9**, dependent on an amended claim, are determined to be patentable.

1. An apparatus for fabricating a dental model which is a positive replica of teeth and connected soft tissue from a negative impression mold previously made from said teeth and soft tissue, said apparatus comprising:

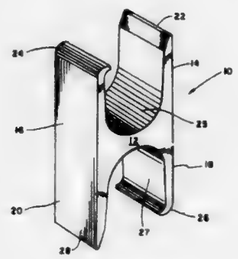
a. a positioning matrix, said positioning matrix comprising a thin matrix plate of generally uniform thickness fabricated from a dimensionally stable material, said matrix plate having a polygonal aperture through its thickness dimension, said aperture having a closed perimeter wall located entirely within said matrix plate, *at least one intersection of adjacent walls of said aperture of said matrix plate having a notch extending through the thickness dimension of said matrix plate, thereby providing a relief passageway for air and liquid die stone when a base plate is inserted into said aperture of said matrix plate*, and

b. a base plate of generally uniform thickness fabricated from a dimensionally stable, transparent material, said base plate having a [perimetric outline] *perimeter* substantially identical in shape to the [perimetric outline] *perimeter* of said aperture in said matrix plate, whereby said base plate may be removably inserted in a direction perpendicular to the plane of said matrix plate, and reinserted in a precisely repeatable location, into said aperture of said matrix plate, and whereby a dental impression may be attached to a lower surface of said matrix plate, said base plate inserted into said aperture of said matrix plate in overlying relationship to said impression, and marks made at those locations on said base plate where dowel pins are desired, said locations being determined in relationship to said impression by viewing said impression through said transparent base plate.

B1 5,162,615 (2346th)
FULL CLOSURE H-SHAPED CONNECTOR

Gary E. Schrader, Manchester, and Urs F. Nager, Hudson, both of N.H., assignors to Burndy Corporation, Norwalk, Conn.

Reexamination Request No. 90/003,096, Jun. 16, 1993.
Reexamination Certificate for Patent No. 5,162,615, issued Nov. 10, 1992, Ser. No. 842,770, Mar. 2, 1992.
Continuation of Ser. No. 665,991, Feb. 15, 1991, abandoned
Int. Cl.[5] H01R *4/18, 43/04*
U.S. Cl. 174—94 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **5**, **9** and **12** are determined to be patentable as amended.

Claims **2–4**, **6–8**, **10** and **11**, dependent on an amended claim, are determined to be patentable.

New claims **13** and **14** are added and determined to be patentable.

1. A compression connector capable of being deformed in a crimping device, comprising a body of compressive material formed in generally an H shape, said connector provided with a central body portion and first and second pairs of opposed parallel legs extending from said central body portion, each leg of said first pair of legs substantially equal in length to each other, and each leg of said second pair of legs substantially equal in length to each other, said first and second pairs of legs extending in opposite directions from said central body portion to form first and second channels therebetween, *each of said legs provided with an inner surface facing said first or second channel and an opposed outer surface, each of said outer surfaces being uniform and continuous for its entire length*, the distal portion of one leg of each of said first and second parallel legs being provided with a portion curved inwardly toward each of said respective first and second channels, wherein when conductors are provided in said first and second channels transverse to the connector and said connector is inserted in a crimping device the direct application of pressure by the crimping device to each leg of said first and second pairs of legs would force each of said legs provided with said curved

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portion under its respective opposed leg to completely close the connector around the conductors provided in said first and second channels.

12. A method of compressing a compressible connector including the steps of:

producing an uncompressed compressible connector of compressible material, formed in generally an H shape with a central body portion and first and second pairs of opposed parallel legs extending from said central body portion, each leg of said first pair of legs substantially equal in length to each other, and each leg of said second pair of legs substantially equal in length to each other, said first and second pairs of legs extending in opposite directions from said central body portion to form first and second channels therebetween *each of said legs provided with an inner surface facing said first or second channel and an opposed outer surface, each of said outer surfaces being uniform and continuous for its entire length*, the distal portion of one leg of each of said first and second parallel legs being provided with a portion curved inwardly toward each of said respective first and second channels;

inserting conductors in each of said first and second channels;

placing said connector in a crimping device having top and bottom curved die surfaces, the top portion of each of the legs initially in contact with one of said die surfaces;

applying pressure to said crimping device to force said top and bottom die surfaces together, said pressure forcing each of said legs provided with said curved portion under its respective opposed leg to completely close the connector around the conducts provided in said first and second channels.

REISSUES

JULY 26, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,670
INOCULANT COMPOSITION FOR PLANTS

Paul M. Williams, and John M. Day, both of Harpenden, England, assignors to Agricultural Genetics Company Limited, Cambridge, United Kingdom

Original No. 4,849,005, dated Jul. 18, 1989, Ser. No. 74,543, Jul. 17, 1987. Continuation of Ser. No. 516,738, Apr. 30, 1990, abandoned. Application for reissue Jan. 6, 1992, Ser. No. 818,472

Claims priority, application United Kingdom, Jul. 17, 1986, 8617496

Int. Cl.[5] **C05F** *11/08*

U.S. Cl. 71—7 **15 Claims**

10. A seed having a coating consisting essentially of at least one species of microorganism selected from the group consisting of bacteria of the genera Rhizobium, Bacillus, Azotobacter, Arthrobacter, Pseudomons, Azospirillium, Cyanobacteria, and mycorrhizal fungi having a beneficial effect in the seed or resulting plant, and a copolymer selected from the group consisting of (1) a copolymer of vinyl pyrrolidone and vinyl acetate in respective proportions by weight of from 50:50 to 70:30, (2) a copolymer of vinyl pyrroldone and styrene, and (3) a copolymer of vinyl pyrroldione and a substituted styrene.

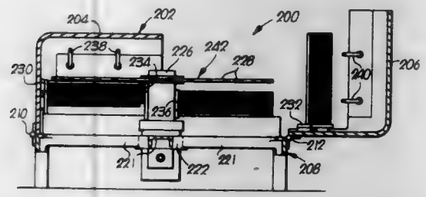
Re. 34,671
CONTINUOUS COOKING GRILL

Marshall Long, 11147 Old Harbour Rd., North Palm Beach, Fla. 33408

Original No. 5,094,155, dated Mar. 10, 1992, Ser. No. 549,910, Jul. 9, 1990. Continuation-in-part of Ser. No. 266,671, Nov. 3, 1988, Pat. No. 4,938,342, which is a continuation-in-part of Ser. No. 82,835, Aug. 6, 1987, Pat. No. 4,796,745, which is a division of Ser. No. 802,705, Nov. 29, 1985, Pat. No. 4,686,894. Application for reissue Mar. 30, 1993, Ser. No. 43,475

Int. Cl.[5] **A47J** *37/04*

U.S. Cl. 99—386 **12 Claims**



9. A cooking grill for reduced smoke cooking of food items comprising:

a food supporting grid

a heating element positioned above the grid for cooking food items supported thereby without any heating element being located below said grid; and

an enclosure having substantially upright sidewalls positioned in surrounding relationship to said grid and extending above and below said grid, a cover substantially spanning said sidewalls over said grid, means elevating said enclosure relative to a supporting surface, said sidewalls defining therebetween substantially open area located below said grid whereby drippings generated during cooking of said food items may drop directly therethrough without substantial contact with heated surface and pass out of said enclosure.

Re. 34,672
PHARMACEUTICAL COMPOSITION CONTAINING A STABLE MODIFICATION OF TORASEMIDE

Fritz Topfmeier, Heidelberg, and Gustav Lettenbauer, Lampertheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Original No. 4,822,807, dated Apr. 18, 1989, Ser. No. 111,439, Oct. 20, 1987. Continuation of Ser. No. 691,340, Apr. 18, 1991, abandoned, which is a division of Ser. No. 895,355, Aug. 11, 1986, Pat. No. 4,743,693. Application for reissue Apr. 8, 1993, Ser. No. 43,631

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1985, 3529529

Int. Cl.[5] **C07D** *213/74, 213/75;* **A61K** *31/44*

U.S. Cl. 514—347 **4 Claims**

1. A diuretic pharmaceutical composition comprising an effective amount of rapidly dissolving *stable* crystalline torasemide of pure modification I (monoclinic, space group $P2_1/c$, melting point [169° C.] *of about 159° C. to about 161.5° C., in prism form*) substantially free of crystalline torasemide of modification II (monoclinic, space group P2/n, melting point [162° C.] *of about 157.5° C. to about 160° C., in leaflet form*) and a pharmacologically acceptable carrier, said torasemide of modification I *being storage stable in tablet form and* having solubility characteristics such that at least 60% is dissolved in water after 15 minutes, and at least 80% is dissolved in water after 30 minutes.

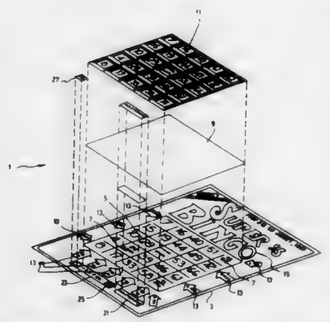
Re. 34,673
TWO LEVEL SCRATCH GAME

Jean P. Desbiens, Montreal, Canada, assignor to Les Technologies Babn Inc., Montreal, Canada

Original No. 5,074,566, dated Dec. 24, 1991, Ser. No. 563,353, Aug. 7, 1990. Application for reissue Apr. 9, 1993, Ser. No. 44,606

Int. Cl.[5] **A63F** *3/06*

U.S. Cl. 273—269 **25 Claims**



1. A method of manufacturing a two-level scratch game, comprising the steps of:

printing a first grid of randomly selected numbers onto a substrate, each number being printed in a separate box forming part of the first grid;

printing onto the substrate at least one instant price in the form of a price amount or of a game symbol in at least one of the boxes of the first grid;

applying a scratchable rub-off coating onto the first grid printed on the substrate to hide the numbers and said at

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least one instant price printed in the boxes of the first grid; and

printing onto said rub-off coating a second grid identical in size to the first grid and containing the same randomly selected numbers,

wherein said printings of said first and second grids are synchronized so that the second grid is printed exactly over the first grid and contains the very same numbers in the very same boxes as said first grid.

Re. 34,674

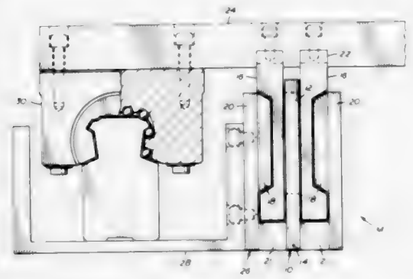
LINEAR MOTOR

Bruce E. Beakley, and Thomas E. Flanders, both of Houston, Tex., assignors to Trilogy Systems, Inc., Houston, Tex.

Original No. 4,839,543, dated Jun. 13, 1989, Ser. No. 152,315, Feb. 4, 1988. Application for reissue Jun. 6, 1991, Ser. No. 711,637

Int. Cl.[5] **H02K** *41/02*

U.S. Cl. 310—12 **40 Claims**



17. A linear motor, comprising:

a plurality of magnets aligned in a row forming a magnet plane and having a longitudinal axis, said magnets aligned with alternating pole orientations on the faces of said magnet plane;

a coil assembly located substantially in a plane substantially parallel to said magnet plane;

said coil assembly being formed of a plurality of individual coil loops having sides and ends, said loop sides being substantially perpendicular to the magnet row longitudinal axis and said loop ends being substantially parallel to the magnet row longitudinal axis, said individual coil loops connected to form at least two phases and at least two poles per phase; and

a magnetic circuit completing means located in a plane substantially parallel to said magnet plane and said coil assembly;

wherein said individual coil loop thickness is approximately said individual coil loop total width divided by two times the number of phases and wherein at least one individual coil loop forming a pole of a phase overlaps portions of said individual coil loops forming two poles of each other.

Re. 34,675

COUPLING AGENT COMPOSITIONS

Edwin P. Plueddemann deceased, late of Midland, Mich. by Mary Margaret Plueddeman, personal representative , assignor to Dow Corning Corporation, Midland, Mich.

Original No. 4,689,085, dated Aug. 25, 1987, Ser. No. 880,528, Jun. 30, 1986. Application for reissue May 1, 1992, Ser. No. 876,990

Int. Cl.[5] **C09K** *3/00*; **C07F** *7/04, 7/08*

U.S. Cl. 106—287.1 **56 Claims**

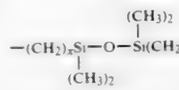
1. A [comprising] *coupling agent and primer mixture consisting essentially of:*

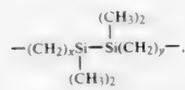
(I) a silane coupling agent; [and]

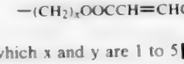
(II) a disilyl crosslinker compound represented by the general formula

$(RO)_3Si R' Si(OR)_3$

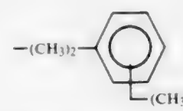
wherein RO denotes an alkoxy radical having 1 to 8 carbon atoms, R' is selected from alkylene groups having 1 to 9 carbon atoms,



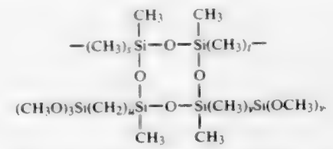




in which x and y are 1 to 5[.],



in which x and y are between 0 and 3 inclusive, or



in which s, t, u, and v are 1 to 3 inclusive and wherein the weight ratio of (I) : (II) is between 1:99 and 99:1 inclusive; *and*

a solvent mutually compatible with said coupling agent (*I*) *and said disilyl crosslinker compound (II), whereby said mixture is effective as both a coupling agent and a primer.*

Re. 34,676

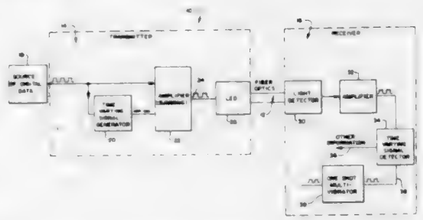
FIBER OPTIC DIGITAL DATA TRANSMITTING SYSTEM

Loughrey R. Kuhn, Silver Spring, Md., assignor to Optical Communications Corp., Silver Spring, Md.

Original No. 4,831,662, dated May 16, 1989, Ser. No. 125,585, Nov. 25, 1987. Continuation of Ser. No. 701,074, May 16, 1991, abandoned, which is a continuation of Ser. No. 799,483, Nov. 19, 1985, abandoned, which is a continuation of Ser. No. 595,510, Dec. 9, 1983, Pat. No. 4,561,117, which is a continuation of Ser. No. 288,111, Jul. 29, 1981, Pat. No. 4,420,842. Application for reissue Sep. 3, 1993, Ser. No. 116,315

Int. Cl.[5] **H04B** *10/04*

U.S. Cl. 359—181 **40 Claims**



11. A digital data system comprising:

a source of digital data;

a source of additional information, responsive to non-zero levels of the digital data, for outputting additional information only within a time interval coincident with the non-zero levels of the digital data; and

a composite signal generator, responsive to the source of digital data and the source of additional information for combining the digital data and the outputted additional information into a composite signal which is a function of the digital data non-zero levels and the outputted additional information.

Re. 34,677

AUTOMATIC EMERGENCY LOCATOR SYSTEM AND METHOD

Donald K. Ray, 609 4th Ave., East Conway, S.C. 29526, and Larry G. Taylor, 27 Peachtree Rd., Myrtle Beach, S.C. 29577

Original No. 4,878,236, dated Oct. 31, 1989, Ser. No. 278,731, Dec. 2, 1988. Application for reissue Oct. 1, 1990, Ser. No. 591,230

Int. Cl.[5] **H04M** *11/04*

U.S. Cl. 379—37 **10 Claims**

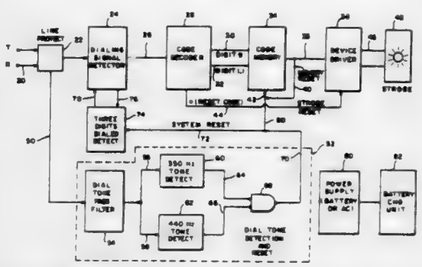
4. An automatic emergency locator system comprising:

(a) dialing signal detecting means operably connected to a telephone line for automatically detecting the dialing of a predetermined emergency telephone number;

(b) decoder means operatively connected to said dialing signal detecting means for discriminating, after detection of an off-hook condition, between (i) said predetermined emergency number and (ii) the digits of said predetermined emergency telephone number when dialed as a portion of a series of digits greater in number than said predetermined emergency number;

(c) off-hook condition detection means for initializing said dialing signal detecting means and said decoder means;

(d) indicator means adapted to be physically located in position to be readily viewed by personnel external of the premises responding to the dialing of said emergency number, said indicator means being operably connected to said decoder means for activation thereby upon detection of said emergency number;



whereby the dialing at the telephone of said emergency number within a premises is automatically detected to activate said indicator means without any further action by the person dialing the emergency number so that personnel external of the premises responding to the dialing of said emergency number may more readily locate said indicator means and thus identify the premises from which said emergency number was dialed.

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PLANT PATENTS

GRANTED JULY 26, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,845

HYBRID TEA ROSE PLANT NAMED 'KRIMONY'

Michel Kriloff, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 10, 1993, Ser. No. 74,760
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive long-lasting very double blossoms which are Scarlet Pink suffused with Primrose Yellow on the upper side and Primrose Yellow slightly edged and suffused with Carmine Rose on the under side,
(b) forms blooms that exhibit a very elegant configuration,
(c) forms dark green adult wood,
(d) exhibits vigorous vegetation,
(e) exhibits an upright growth habit,
(f) exhibits an excellent capacity to be forced under greenhouse conditions and is particularly well suited for cut flower production, and
(g) is not particularly affected by cryptogamic diseases;

substantially as herein shown and described.

8,846

HYBRID TEA ROSE PLANT NAMED 'PAUL HARRIS'

O. L. Weeks, Chino, Calif., assignor to Estrella Rose Company, Litchfield Park, Ariz.

Filed Dec. 23, 1991, Ser. No. 811,985
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant named Paul Harris as described and illustrated.

8,847

ROSE PLANT — MEIMOUSLIN VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jul. 7, 1993, Ser. No. 86,865
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of Grandiflora rose plant characterized by the following combination of characteristics:

(a) forms in abundance on a continuous basis attractive large long-lasting fully double blossoms of relatively stable color-ation which are Strawberry Red on the upper side and Cardinal Red on the under side,
(b) forms blossoms which exhibit a slight fragrance,
(c) forms blossom petals that commonly are indented.
(d) forms medium green adult wood,
(e) exhibits strong and vigorous vegetation,
(f) exhibits a bushy and somewhat regular growth habit,
(g) is particularly suited for growing in parks and gardens, and
(h) is not particularly affected by cryptogamic diseases;

substantially as herein shown and described.

8,848

NEW GUINEA IMPATIENS NAMED BSR-220 BRIGHT CORAL

Mario Guillen, Cartago, Costa Rica, assignor to George J. Ball, Inc., West Chicago, Ill.

Filed Oct. 8, 1993, Ser. No. 133,966
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens named BSR-220 Bright Coral, substantially as herein shown and described, which:

(a) forms attractive very large bright coral blossoms displaying an iridescent appearance,
(b) exhibits a good branching character,
(c) exhibits upright growth habit, and
(d) forms dark green lanceolate foliage.

8,849

SPATHIPHYLLUM PLANT "BOND A"

E. Bond Caldwell, 18444 Townsend House Rd., Dade City, Pasco County, Fla. 33525

Filed Dec. 3, 1993, Ser. No. 162,727
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum, substantially as described and illustrated herein, characterized particularly as to novelty by its exceptional well branching characteristic, attractive dense foliage, and very abundant flowers with relatively dark spadix well contrasting with the spathe, providing a cultivar well suited as a flowering pot plant having no unusual susceptibility to the traditional Spathiphyllum diseases and insects.

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GRANTED JUL. 26, 1994

ERRATA

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180-180	5,331,825
105-030	5,331,900
601-004	5,331,951
601-003	5,331,952
266-172	5,332,139
254-134	5,332,165
248-074	5,332,179
297-344	5,332,241
294-097	5,332,272
414-283	5,332,363
422-291	5,332,388
454-365	5,332,393
204-157	5,332,475
588-020	5,332,531
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525-397	5,332,801
536-021	5,332,812
547-346	5,332,836
558-364	5,332,844
552-607	5,332,847
558-014	5,332,850
558-329	5,332,851
345-121	5,332,995
347-020	5,333,007
348-656	5,333,019
364-489	5,333,032
348-666	5,333,054
348-239	5,333,055
348-738	5,333,056
364-424	5,333,058
361-019	5,333,087
359-144	5,333,088
359-341	5,333,089
359-584	5,333,090
365-208	5,333,127
365-222	5,333,128
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071-007	5,333,138
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379-098	5,333,152

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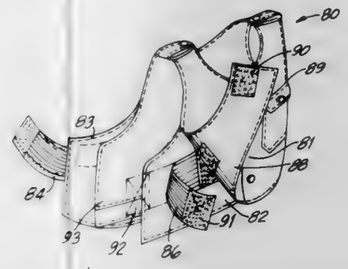
GENERAL AND MECHANICAL

5,331,683

PROTECTIVE BODY ARMOR GARMENT SHELL

Richard Stone, Holbrook, and David R. Hand, Kings Park, both of N.Y., assignors to Point Blank Body Armor, Inc., Amityville, N.Y.

Continuation-in-part of Ser. No. 601,267, Oct. 22, 1990, Pat. No. 5,073,985. This application Nov. 13, 1991, Ser. No. 795,187
Int. Cl.[5] F41H *1/02*
U.S. Cl. 2—2.5 **18 Claims**



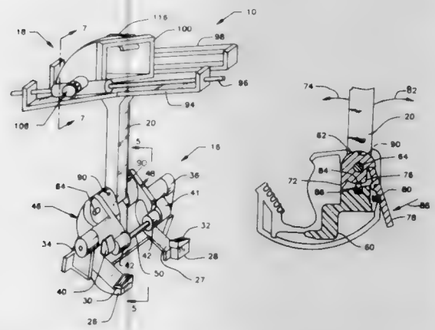
11. A protective body armor garment shell comprising a front portion, a back portion, each portion including pocket means, body armor panels disposed within the pocket means, means for interconnecting side portions over a person's shoulders, belt means extending from the back or front portion for securing the back or front portion to the person's body, the belt means being engaged to secure either one of the back or front portion to the body, beneath the other of the front or back non-secured portion, allowing the non-secured portion to drape over the body, side separable fasteners provided on opposing lower portions of the front and back portions, the front portion side fasteners attached at least along an inner edge of the fastener to the front portion.

5,331,684

HELMET MOUNTING FOR NIGHT VISION ASSEMBLY

Albert M. Baril, Roanoke, and Roy H. Holmes, Salem, both of Va., assignors to ITT Corporation, New York, N.Y.

Filed Feb. 17, 1993, Ser. No. 18,117
Int. Cl.[5] A42B *3/00, 1/24;* **G02B** *23/00*
U.S. Cl. 2—6.2 **14 Claims**



1. A mounting device for selectively mounting a night vision apparatus to a helmet, the helmet having an interior surface, an exterior surface and a peripheral edge, said mounting device comprising:

support means for supporting the night vision apparatus in a desired orientation;

clamping means, pivotably coupled to said support means, for selectively clamping onto the peripheral edge of the helmet above the eyes of a wearer, said clamping means including engaging means for engaging the interior surface and the exterior surface of the helmet with a releasable clamping action, said engaging means including at least one static surface for contacting the interior surface of the helmet and at least one moveable member for engaging the exterior surface of the helmet;

a pivot arm having a first end and a second end, said at least one moveable member being coupled to said first end of said pivot arm;

at least one lever having an end, said second end of said pivot arm being coupled to said end of said at least one lever, wherein movement of said lever in a first direction increases the clamping pressure provided by said at least one moveable member and said at least one static surface, and wherein movement of said lever in a second direction decreases the clamping pressure provided by said at least one moveable member and said at least one static surface, wherein said support means can be pivotably rotated about said clamping means to an operating position where the night vision apparatus is held in front of the eyes of the wearer, and a stowed position, wherein the night vision apparatus is held above the wearer's field of view; and

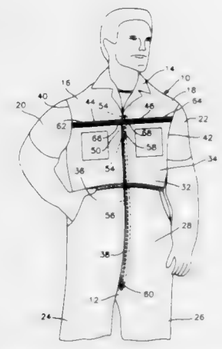
locking means for selectively locking said support means in said stowed position.

5,331,685

JUMPSUIT WITH LATERAL BREAST ZIPPERS

Truly M. Belgard, P.O. Box 470714, Fort Worth, Tex. 76147

Filed Mar. 10, 1993, Ser. No. 29,396
Int. Cl.[5] A41D *1/06*
U.S. Cl. 2—79 **4 Claims**

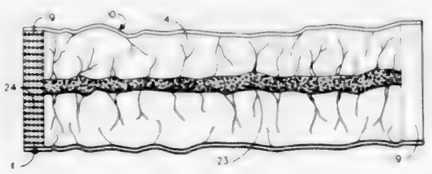


1. A unitary garment for enclosing the torso and at least the upper arm and legs of the wearer and having a crotch portion, a collar portion, shoulder portions on opposite sides of said collar portion and from which sleeve portions project outwardly and downwardly and a front portion extending between said crotch and shoulder portions and interconnecting said sleeve, shoulder and leg portions, said front portion defining a waist area thereof and upper and lower portions above and below, respectively, said waist area and further defining a vertical central opening therein having upper and lower ends and extending downwardly from said collar portion toward said crotch portion, said central opening opening upwardly through said collar portion, first slide fastener means operative

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to close said central opening from said lower end upwardly to a mid-height portion of said upper portion spaced downwardly from said upper end, said sleeve portions being joined to said front portion along vertical opposite side zones of said front portion extending downwardly from said shoulder portions to a level spaced appreciably below said mid-height portion, said upper front portion defining generally horizontal opposite side openings having outer ends closely adjacent the corresponding zones and inner ends opening into said central opening adjacent said mid-height portions, said outer ends of said opposite side openings being disposed substantially two thirds downwardly along said zones from the upper extremities thereof, and second and third slide fastener means releasably closing said opposite side openings.

5,331,686
SINGLE USE SWEAT BAND
J. C. Marshall, P.O. Box 19, Smelterville, Id. 83868
Filed Apr. 6, 1992, Ser. No. 864,040
Int. Cl.[5] A41D *20/00*
U.S. Cl. 2—181 **2 Claims**



1. An elongate sweat band releasably formable into an annular mode for positional maintenance on a portion of the human body to absorb and prevent the passage of perspiration, comprising in combination:

an elongate flexible cover having configurationally similar first and second substantially rectilinear surface elements with longer side edges of the first inner surface element structurally joined to the longer side edges of the second outer surface element and adjacent surfaces of shorter end portions of each surface element joined to form opposed end tabs and to define an enclosed chamber, the first inner surface element being permeable to perspiration and the second outer surface element being impermeable to perspiration, and

a strip of elastic material adherent to and extending between the opposed end tabs on at least one surface element of the cover, said elastic material being placeable in extrudable form and shrinkable upon curing to create tension in the surface element supporting it when that surface element is in extended condition, to aid positional maintenance of the sweat band;

fastening means carried by opposite sides of each end tab to releasably fasten the opposed end tabs to each other to form an annular cylinder-like structure; and

absorbing material carried within the chamber defined by the cover to absorb perspiration comprising absorbent fibers admixed with perspiration absorbing particulate material

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5,331,687
SIZE ADJUSTABLE HEADWEAR PIECE
Robert A. Kronenberger, Deerfield, Ill., assignor to American Needle, Buffalo Grove, Ill.
Filed Aug. 7, 1992, Ser. No. 926,505
Int. Cl.[5] A42B *1/22*
U.S. Cl. 2—195.2 **18 Claims**

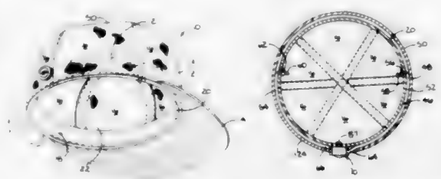
1. A headwear piece comprising:

a crown having an inside and an outside and defining an opening for reception of the head of a wearer.

there being a sweatband on the crown to abut to a wearer's head;

means on the crown for varying the effective diameter of the crown opening to accommodate different size wearer heads,

said crown opening varying means residing at least partially outside of the sweatband; and



actuator means for operating the crown opening varying means,

said actuator means including an actuator switch comprising a dial that is rotatable about an axis to operate the crown opening varying means and reconfigure the sweatband to thereby effect a variation in the effective diameter of the crown opening

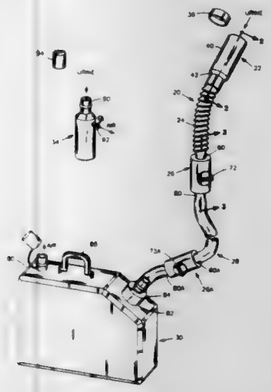
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5,331,688
DISPOSABLE FOOT WARMER
Takashi Kiyohara, 12-16, Tonoyama-cho, Nishinomiya-shi, Hyogo-ken, Japan
Filed Mar. 12, 1993, Ser. No. 30,842
Claims priority, application Japan, Mar. 27, 1992, 4-025917
Int. Cl.[5] A43B *7/02*; **A61F** *7/08*
U.S. Cl. 2—239 **4 Claims**



4. A disposable foot warmer comprising a flexible inner bag which is made of materials having gas permeability and which contains a mixture of powders, main components of which are ferrous powders capable of generating heat when being oxidized with atmospheric oxygen and powders of pro-oxidants for the ferrous powders and an outer bag which is made of materials having no gas permeability and in which said inner bag has been vacuum packaged, said inner bag being capable of warming a foot as being applied to socks or stockings when the inner bag is generating heat, after the inner bag has been taken out of the outer bag, and after a releasing paper has been removed from the surface of a layer of an adhesive, said disposable foot warmer characterized in that the inner bag is shaped to have an area and a thickness which do not protrude out of the space between the plantar arch of a foot and an insole of shoes, so that the inner bag may be used as being applied to socks or stockings at their portion confronting the plantar arch of the foot, and that the inner bag has a front side made of materials having gas permeability and a back side made of materials which do not have gas permeability and which comprise a sheet of insulator and a layer of an adhesive applied to the sheet of insulator whereby to enable the inner bag to be applied to socks or stockings, so that heat emitted through the front side of the inner bag may warm air in the shoes and the insole of the shoes whereby to warm the whole foot, and so that heat conducted to the plantar arch through the back side of the inner bag may warm the sole of the foot without burning the plantar arch, whereby to enable the temperature to be raised in order to elongate the life of the disposable foot warmer.

5,331,689
PORTABLE URINAL
Anwar Haq, 26342-3A Forest Ridge Dr., Lake Forest, Calif. 90630
Filed Apr. 16, 1993, Ser. No. 46,745
Int. Cl.[5] A47K *11/12*
U.S. Cl. 4—144.1 **2 Claims**



1. A portable urinal system which comprises:

(a) a urine-receiving member having an inlet and an outlet, said inlet being sized and shaped for receiving a flow of urine from an individual using the apparatus;

(b) a first flexible fluid conduit having an inlet end and an outlet end, the inlet end being detachably connected to the outlet of said urine receiving member;

(c) a first valve having an inlet and an outlet, said inlet being connected to the outlet end of the first flexible conduit;

(d) a second flexible fluid conduit having an inlet end and an outlet end, the inlet end of said second conduit being detachably connected to the outlet of said first valve;

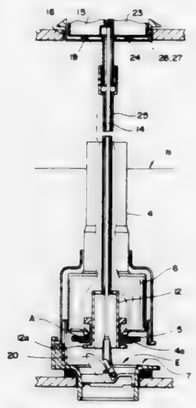
(e) a second valve having an inlet and an outlet, said inlet being connected to the outlet end of the second flexible conduit, a relatively small, detachable urine container being thereby formed by said first and second valves and said second conduit;

(f) a third flexible fluid conduit having an inlet end and an outlet end, the inlet end of said third conduit being detachably connected to the outlet of said second valve;

(g) a urine collecting receptacle having a fluid inlet region, the outlet end of said third conduit being detachably connected to said receptacle fluid inlet region; and

(h) a separate urine specimen container, said container having means enabling the connection thereof to the outlet of said first valve in place of the inlet end of said second conduit.

5,331,690
DUAL CONTROL FLUSHING MECHANISM, ENABLING COMPLETE OR PARTIAL EVACUATION OF A TOILET TANK TO BE OPERATED SELECTIVELY
Michel Pourcier, Marseille, France, assignor to Societe Phoceene De Matieres Plastiques (S.P.M.P.), Marseille, France
Filed Jul. 31, 1992, Ser. No. 922,862
Claims priority, application France, Aug. 9, 1991, 9110383
Int. Cl.[5] E03D *5/09*, *1/00*
U.S. Cl. 4—410 **21 Claims**



1. A dual-control flushing apparatus for selective operation of a complete or partial evacuation of a flushing tank having an evacuation orifice, comprising:

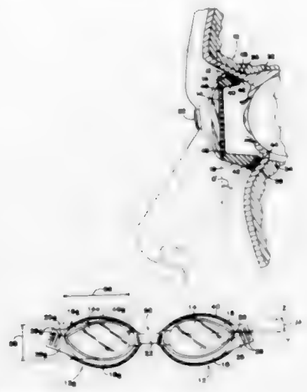
an axially-displaceable mobile assembly having a blocking valve, means for movably mounting said assembly in said flushing tank whereby said blocking valve blocks and unblocks said evacuation orifice of the flushing tank; said assembly further including an overflow tube having an upper portion with an upper orifice and a lower portion with a lower orifice, said lower portion of said overflow tube comprising a float located above said blocking valve, said float being submersible;

a blocking device positioned partially within said float and axially movable therein and adapted to be pressed against a seat formed by an edge of said lower orifice of said overflow tube into a closed position, so as to stop entry of water into said float, first and second push button control systems, said second push button control system including a thruster rod operatively connected to said blocking device for spacing said blocking device from said seat into an open position by a force exerted by said thruster rod associated with said second push-button control system;

said first push-button control system comprising a first transmission system for lifting said mobile assembly to unblock said evacuation orifice for a complete evacuation of the flushing tank, and said second push-button control system comprising a second transmission system including said thruster rod for enabling the positioning of said blocking device into said open position so as to enable entry of water into said float, thereby causing said float to fall and interrupt a flushing process for a partial evacuation of the flushing tank, said first push-button control system and said second push-button control system being arranged so that activation of a first push-button of said first push-button control system for a complete evacuation does not result in any action on said second push-button control system, and activation of a second push-button of said second push-button control system for a partial evacuation activates said first push-button control system for lifting said mobile assembly.

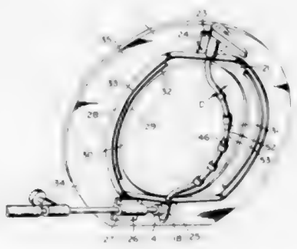
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5,331,691
INTRA-ORBITAL SWIM GOGGLES
John L. Runckel, Lake Oswego, Oreg., assignor to John L. Runckel Trust, Portland, Oreg.
Filed Nov. 2, 1992, Ser. No. 970,933
Int. Cl.[5] A61F *9/02*
U.S. Cl. 2—428 **17 Claims**



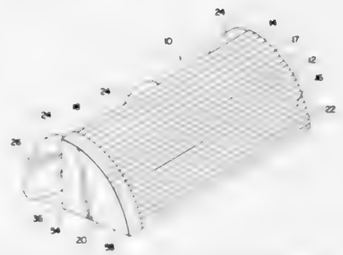
7. Swim goggles comprising
a set of left and right eyepieces, each eyepiece including a substantially planar lens in a frontal plane, a wall extending backward from the lens culminating in a padded rim for engaging a portion of the user's face wherein an upper portion of the rim has a face which slopes downward relative to the frontal plane;
a bridge connecting the eyepieces, wherein the wall of each eyepiece includes top and bottom portions joined along a lateral ridge distal from the bridge and extending backward perpendicularly from the lens toward the user's ears; and
a fastening mechanism for securing the eyepieces over the user's eyes.

5,331,692
SPRAY APPARATUS FOR USE ON A TOILET SEAT
John Alberti, 2345 W. Halladay, Seattle, Wash. 98199
Filed May 5, 1993, Ser. No. 56,874
Int. Cl.[5] A47K *7/08*
U.S. Cl. 4—445 **6 Claims**



1. Apparatus for use on a toilet seat to provide the functions of a bidet in dispensing a liquid, said seat having an undersurface, a front, a back and an axis of symmetry extending from said front to said back, said apparatus comprising
a manifold having a front portion, an arched portion and a back portion, said arched portion extending between said front and back portions of said manifold and having a concave side, said front and back portions being axially aligned, said manifold further comprising a plurality of orifices in said concave side of said arched portion,
means for rotatably attaching said front portion and said back portion of said manifold to said front and back seat undersurface, respectively, with said axially aligned portions aligned with said axis of symmetry,
means for selectively closing off and opening each of said plurality of orifices, said means comprising a plurality of sleeves, one for each of said plurality of orifices, slidably mounted on said manifold such that each one of said orifices can be closed off by sliding one sleeve of said plurality of sleeves over one orifice of said plurality of orifices,
said sleeves being frictionally restrained on said manifold, and
means for conducting said liquid to said manifold.

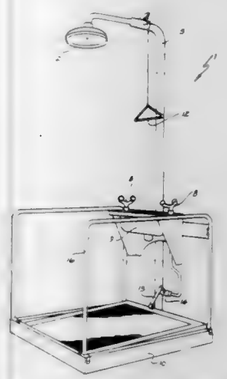
5,331,693
LADY'S FOOTREST FOR USE IN THE BATH
Kimberlee C. Petersen, 2403 SW. 41st St., Lawton, Okla. 73505, and Mary L. Hall, 13101 W. 76th St., Lenexa, Kans. 66216
Filed Sep. 21, 1992, Ser. No. 949,045
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—574.1 **4 Claims**



1. A lady's footrest for use in the shower or bath comprising:
a. an elongated hollow body having a rear wall, a left-hand side wall, a right-hand side wall and an arcuate upper surface;
b. means for mounting a plurality of suction cups on said rear wall; and
c. a plurality of suction cups mounted on said rear wall; and
d. a drawer slidably retained within said elongated hollow body.

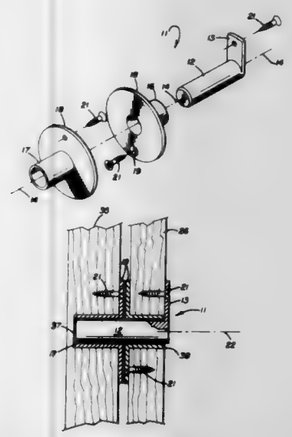
5,331,694
SAFETY SHOWER
Roderick J. Mackenzie, Penshurst, and Ronald W. Slater, Seven Hills, both of Australia, assignors to Safetyman Pty Limited, Kingsgrove, Australia
Filed Oct. 10, 1991, Ser. No. 776,051
Claims priority, application Australia, Oct. 10, 1990, PK2752
Int. Cl.[5] B61H *33/00*
U.S. Cl. 4—620 **4 Claims**

1. A safety shower comprising:
a liquid delivery means,
a rigid liquid supply line to supply liquid to the liquid delivery means by way of a valve,
a flexible porous evaporation sleeve located around and spaced from the supply line so as to define a liquid jacket therearound, and
liquid flow means located in the supply line to allow passage of liquid between the supply line and the liquid jacket;
wherein evaporation of liquid will occur through the flexible porous sleeve, at least when liquid is at rest in the supply line, which will serve to cool the liquid in the supply line



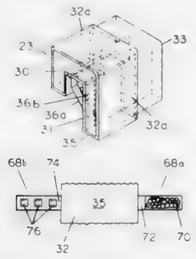
to prevent liquid of excessive temperature from reaching the liquid delivery means.

5,331,695
PIVOT BEARING FOR WOOD FRAME WALL BED SYSTEMS
Roger Bales, 33 Vista View, South San Francisco, Calif. 94080
Filed Mar. 30, 1993, Ser. No. 40,134
Int. Cl.[5] A47C *17/38, 17/40, 17/46;* **E05d** *5/12*
U.S. Cl. 5—136 **10 Claims**



1. In a wood wall bed system including a wood mattress frame comprising a mattress pallet and side frames, said frame coupled to and supported near its head end between wood side walls of a standing frame structure for rotation about a pivot axis between a horizontal sleeping position and a vertical storage position between the walls of the standing frame structure; a pair of improved pivot beatings for coupling the mattress frame and standing frame structure, each comprising,
a cylindrical spindle having a tang at one end extending perpendicular to its axis,
two cylindrical bearing bushings each having an annular facing collar at one end presenting
an annular facing surface dimensioned to journal around the spindle, and
securing means for anchoring the tang of the spindle,
wherein one bearing bushing of each pivot bearing is secured in a hole axially aligned with the pivot axis drilled into an inside surface of each side wall of the standing frame structure with the annular facing collar of the bushing facing in, and the other bearing bushing of each pivot bearing is secured in a hole axially aligned along a common axis drilled through each side member of the mattress frame near its head with the annular facing collar of the bushing facing out, and
wherein the cylindrical spindle of each pivot bearing is received in a cylindrical passageway created by adjacent bearing bushings upon coaxially aligning the bearing bushings secured in the side frame members of the mattress frame with the pivot axis of the wall bed system for pivotally coupling the particular side frame members of the mattress pallet to the adjacent side wall of the standing frame structure with the annular facing collars of adjacent beating bushings in a facing relationship, the securing means anchoring the extending tangs of the respective spindles to the side members of the mattress frame.

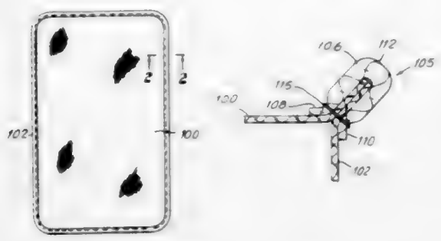
5,331,696
REMOVABLE COVERS FOR WATERBED RAILS
Mark A. Armstrong, 9605 W. Hwy. 90 Lot No. #235, San Antonio, Tex. 78235-9535, and Joel K. Harper, Rte. 4, Box 285, Lubbock, Tex. 79423
Continuation-in-part of Ser. No. 872,543, Apr. 23, 1992, Pat. No. 5,163,197. This application Jan. 13, 1993, Ser. No. 977,582
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] A47G *9/00;* **A47C** *21/00, 31/00*
U.S. Cl. 5—451 **18 Claims**



1. In combination with a waterbed having a frame with a top edge, the frame for containing a water-filled mattress, and with removable padded rails for inserting on the edges:
a flexible cover or wrap, dimensioned to at least partially cover the padded rails, said cover or wrap with integral fastening means capable of removably securing said cover snugly to the outer surface of the padded rail when the same is inserted onto the top edge of the frame of the waterbed,
wherein the fastening means comprises a multiplicity of paired straps, each of said paired straps comprising a first strap of hook fastening material and a second strap of loop fastening material oppositely disposed along opposite edges of said cover or wrap, said first and second straps capable of being removably joined one to the other.

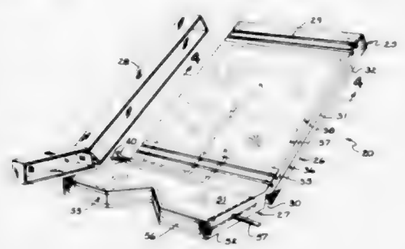
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5,331,697
MATTRESS WITH KNITTED MATTRESS TAPE
Edmond H. Siegel, New York, and Alfred Reisfeld, New Hyde Park, both of N.Y., assignors to CT-Nassau Corporation, Alamance, N.C.
Division of Ser. No. 726,439, Jul. 5, 1991. This application Jul. 7, 1993, Ser. No. 87,592
Int. Cl.[5] A47C *27/00, 31/00*; B32B *3/06*; D03D *23/00*
U.S. Cl. 5—474 45 Claims



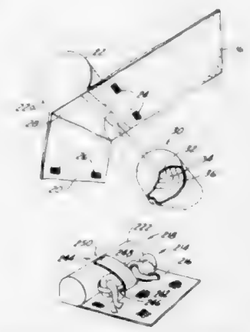
1. A mattress comprising
a panel defining a major surface of the mattress and terminating in an edge;
a border panel defining a side surface of the mattress and terminating in an edge;
a fabric mattress tape for overlying the adjacent edges of said major surface panel and said border panel, said fabric mattress tape comprising a first side section, a second side section and a third center section disposed therebetween, said third section being formed with greater rigidity thickness and shape holding capability than said first and second sections; and
stitch means joining said first and second sections of said fabric mattress tape and said edges of said panels.

5,331,698
MATTRESS FOR BIRTHING BED
David C. Newkirk, Fairfield, Ohio; Sandy M. Richards, Centerville, Ind., and Richard L. Borders, Cincinnati, Ohio, assignors to Hill-Rom Company, Inc., Batesville, Ind.
Continuation of Ser. No. 767,468, Sep. 30, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,695
Int. Cl.[5] A47C *27/18*
U.S. Cl. 5—602 11 Claims



1. A birthing bed comprising:
a base,
a main frame mounted on said base,
body support panels mounted on said main frame and including a seat panel, a head panel pivoted with respect to said seat panel and a footrest movably mounted with respect to said seat panel,
a foam slab covering said seat and head panels,
said seat panel including a bladder embedded in said slab which, when inflated, causes said seat to be firm,
said head panel including inflatable lumbar and upper back bladders mounted in said slab,
means for selectively inflating all said bladders, said head panel bladders each comprising:
a flexible plastic bladder having an approximately two-inch margin that is sealed to said slab

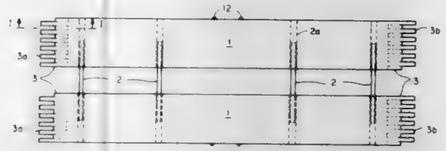
5,331,699
INFANT SLEEP SUPPORT
Jeffrey M. Patton, 8943 Nottingham Dr., Ypsilanti, Mich. 48198, and Charles N. Inniss, 6001 W. Outer Dr., Ste. 420, Detroit, Mich. 48235
Filed Sep. 13, 1993, Ser. No. 120,405
Int. Cl.[5] A47G *9/06*; A47D *15/00*
U.S. Cl. 5—655 8 Claims



1. An infant sleep support for supporting an infant while the infant sleeps, the infant sleep support comprising:
a planar fabric sheet having a topside and an underside, said sheet being of sufficient size for an infant to lay on the topside of said sheet substantially within the boundaries of said sheet;
a pillow cover attached to said sheet to form a juncture between said sheet and said pillow cover, said pillow cover for receiving a pillow therein, said pillow cover having an underside adjacent the underside of said sheet and said pillow cover including a closable opening means located on the underside of said pillow cover, permitting the removal and insertion of said pillow into the pillow covering; and
encircling means for encircling generally the stomach area of the infant and holding the infant in a reclined position against the pillow, thereby maintaining the infant on its side during sleep.

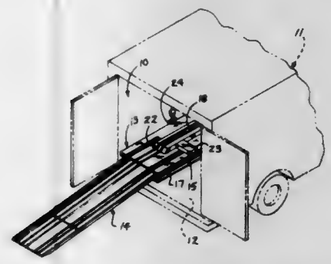
5,331,700
BRIDGING SYSTEM CONSISTING OF TRACK SUPPORTS
Hans-Jürgen Kärcher, Karben, and Walter Kinzel, Mainz, both of Fed. Rep. of Germany, assignors to Man Gutehoffnungshütte AG, Oberhausen, Fed. Rep. of Germany
Filed Aug. 7, 1992, Ser. No. 927,121
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1991, 4126250
Int. Cl.[5] E01D *15/12*
U.S. Cl. 14—2.4 8 Claims

1. A bridging system comprising: a plurality of uniform bridge sections having track supports, at least one bridge section being a bridge; transverse telescoping pipes connecting said track supports; a stationary ramp having comb-shaped slots at each end of a track support to form prong-shaped projections, when ends of two track supports are joined, adjacent prong-shaped projections on said ramp on one track support engage another oppositely-lying track support, and prong-shaped projections on said other track support engage said one track support; said prong-shaped projections being



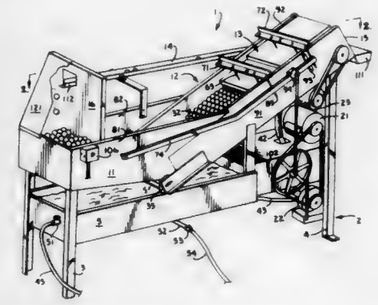
engaged without becoming wedged-in and said track supports being freely connectable in a vertical plane.

5,331,701
VEHICLE CHAIR RAMP APPARATUS
Vearl J. Chase, and Marilyn M. Chase, both of 2400 E. Pleasant Valley Rd., Space 31, Oxnard, Calif. 93033
Filed Sep. 13, 1993, Ser. No. 120,075
Int. Cl.[5] A61G *3/06, 3/08*
U.S. Cl. 14—71.1 4 Claims



1. A vehicle chair ramp apparatus arranged for securement to a vehicle floor, wherein the apparatus comprises,
a housing arranged for securement to the vehicle floor, wherein the housing includes a housing first side wall spaced from a housing second side wall in a parallel relationship, with a housing top wall extending between the housing first side wall and the housing second side wall, and
an extension member having an extension member top wall, an extension member first side wall, and an extension member second side wall, with the extension member received between the housing first side wall, the housing second side wall, and the housing top wall, the housing first side wall having a first slot, the housing second side wall having a second slot, the extension member having an extension member first side wall slot, having a first slot lug received within the extension member first side wall slot and the first slot, with the extension member second slot lug received within an extension member second side wall slot that is positioned within the extension member second side wall, with the extension member second slot lug received through the second slot, with the first slot lug slidably mounted within the first slot and the extension member first side wall slot, and the second slot lug slidably received within the second slot and extension member second side wall slot, and
the housing having a housing first end spaced from a housing second end, and a central plate abutment fixedly mounted to the top wall extending from the first end to a spaced relationship relative to the second end, with the central plate abutment mounted to the top wall at the first end, and an abutment block fixedly mounted to the housing top wall extending from the central plate abutment to the second side wall, with the abutment block adjacent to the central plate abutment, and a first strap housing mounted to the housing first side wall, and a second strap housing mounted to the second side wall, wherein the first strap housing and second strap housing are oriented between the central plate abutment and the abutment block, the first strap housing having a first strap retractably mounted within the first strap housing, and a second strap retractably mounted within the second strap housing, the first strap having a first strap connector, the second strap having a second strap connector, with the first strap connector and the second strap connector arranged for securement relative to one another.

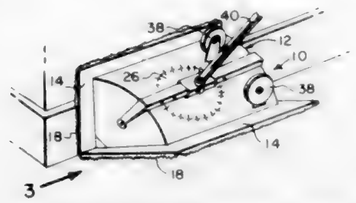
5,331,702
GOLF BALL WASHING APPARATUS AND METHOD
Charles H. Willsey, Rte. 1, Box 310, and Virgil S. Willsey, Rte. 1, Box 304, both of, Maple Hill, Kans. 66507
Filed Dec. 24, 1992, Ser. No. 996,650
Int. Cl.[5] A63B *47/04*
U.S. Cl. 15—21.2 14 Claims



1. A ball washing apparatus comprising:
(a) an inclined ramp means;
(b) a ball storage bin;
(c) a conveyor means for conveying a plurality of balls to be washed up said ramp means, said conveyor means extending into said ball storage bin and picking up rows of balls therefrom, said conveyor means comprising:
(i) an opposed pair of endless chains of corresponding conveyor links, with one of said chains positioned on either side of said ramp means; and
(ii) a plurality of link connecting rods extending between corresponding links on said pair of chains, each adjacent pair of connecting rods being separated a distance such that a row of said balls fits therebetween with space to allow the balls to roll, said chains and said connecting rods being drawn up the top of said ramp means and down the bottom of said ramp means and through said storage bin, with each of said rows of balls being picked up and conveyed up said ramp means between an adjacent pair of said connecting rods, and with each ball in each said row rolling up said ramp between the respective connecting rods;
(d) a brush means disposed above said inclined ramp means, said brush means contacting said balls as they roll up said ramp means;
(e) a return chute positioned between an upper end of said ramp means and said storage bin; and
(f) a gate means positioned within said return chute, said gate means being movable between a return position in which balls on said return chute are returned to said storage bin and an exit position in which balls on said return chute exit said apparatus.

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5,331,703
POWER DRIVEN FLOOR AND WALL SCRUBBER
Rafael Mejia; Rafael Mercado, both of 53 Calistemon St., Guaynabo, P.R. 00966, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279
Filed Apr. 19, 1993, Ser. No. 48,300
Int. Cl.[5] A47L *11/12*
U.S. Cl. 15—98 **8 Claims**



1. A power driven floor and baseboard scrubber which comprises:
a) a triangular frame assembly;
b) a pair of flat elongated plates;
c) means for mounting said plates on said frame for relative longitudinal movement with an angle formed between said plates of substantially ninety degrees;
d) a pair of scrubbing pads, each secured to an external surface of one of said plates; and
e) means for reciprocating in alternate longitudinal directions said plates relative to said triangular frame assembly, so that said pads will clean an area at an intersection of the floor and the baseboard, when in a working position.

5,331,704
MULTI-PURPOSE TOOTHBRUSH
Sidney W. Rosen, #1 Glens Dr. East, Boynton Beach, Fla. 33436, and Jeffrey Ganeles, 2365 NW. 46 St., Boca Raton, Fla. 33431
Filed May 12, 1993, Ser. No. 60,115
Int. Cl.[5] A47L *13/12*; **A46B** *9/04*
U.S. Cl. 15—106 **3 Claims**



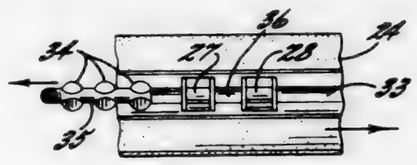
1. A multi-purpose toothbrush comprising:
an elongated handle having an upper surface and a bottom surface and said handle having a working end and a distal end;
a first relatively flat multi-bristled brush fused to said upper surface at said working end and covering less than 25% of the length of said elongated handle;
a member angled outwardly from said bottom surface and said member having an outer end;
a second brush carried by said member at said outer end and having substantially fewer bristles than said first brush;
said member being attached to said bottom surface at a region of said bottom surface including a plane perpendicular to said handle, which plane is transverse said first brush mid-way of its length, and;
said bristles of said first brush being parallel to said plane and said bristles of said second brush are at an acute angle to said plane and free ends of the bristles of the second brush point toward said distal end of said handle.

5,331,705
CLEANING AID
Martin Melov, 256 Malabar Road, Maroubra, New South Wales, Australia
Filed Jun. 11, 1993, Ser. No. 76,006
Claims priority, application Australia, Jun. 15, 1992, PL2944
Int. Cl.[5] A47L *13/12*
U.S. Cl. 15—118 **7 Claims**



1. A cleaning aid comprising:
a hand towel having spaced opposite end portions;
a cleaning cloth partly covering one face of said towel at one of said end portions;
a scouring pad also arranged on said one face and at said one end portion of the towel alongside at least a portion of said cleaning cloth; and
a hanging element at the second end portion of said towel for hanging the cleaning aid from a hook,
the pad, the cloth and the towel being permanently attached to one another.

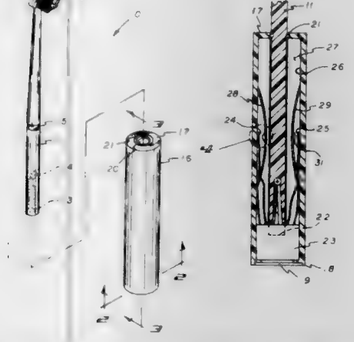
5,331,706
WRINGER-TYPE SPONGE MOP AND SPONGE CLAMP THEREFOR
John W. Graham, Greenville, S.C., assignor to Southern Technologies, Inc., Greenville, S.C.
Filed May 26, 1993, Ser. No. 66,566
Int. Cl.[5] A47L *13/24*
U.S. Cl. 15—119.2 **13 Claims**



1. A wringer type sponge mop comprising:
an elongate handle;

a pair of opposing rollers carried at one end of said elongate handle;
an operating rod having a lower end including a latch hook, said latch hook having a free end portion of a predetermined length defining a longitudinal axis and a non-circular cross-sectional shape in a cross-section taken orthogonally to said longitudinal axis;
a sponge clamp positioned between said rollers, said sponge clamp including an elongate upper wall, a pair of side walls integrally formed with said upper wall and depending therefrom along opposite sides of said elongate upper wall, an arch integrally formed in said upper wall and defining a latch passageway extending longitudinally along said elongate upper wall for receiving the free end portion of said latch hook therein to removably secure said sponge clamp to said operating rod, said latch passageway having a non-circular cross-sectional shape corresponding to the non-circular cross-sectional shape of the free end portion of said latch hook for receiving said free end portion and preventing rotational movement of the sponge clamp about the latch hook, a recess formed in said upper wall adjacent said latch passageway and in longitudinal alignment therewith, said recess having a length at least as long as the predetermined length of the free end portion of said latch hook and defining a guide channel for receiving the free end portion of said latch hook and guiding same into said latch passageway;
a sponge secured to said sponge clamp; and
an operating lever connected to an upper end of said operating rod, said operating lever being movable to squeeze said sponge between said opposing rollers.

5,331,707
PRESSURE ALARM TOOTHBRUSH ASSEMBLY
Joseph Irizarry, HC 89 Box 51, Pocono Pines, Pa. 18350
Filed Jan. 26, 1993, Ser. No. 9,040
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 **4 Claims**



1. A pressure alarm toothbrush assembly, comprising,
a toothbrush shaft, having a first end and a second end, with the first end having a toothbrush head fixedly mounted to the first end, and a shaft cavity directed into the toothbrush shaft through the second end, with a battery member contained within the shaft cavity, and
an annular groove directed into the toothbrush shaft between the first end and the second end, and
a support housing, the support housing having a top wall and a bottom wall, with an audio speaker directed into the support housing through the bottom wall, and
a central opening directed into the support housing through the top wall in communication with a housing cavity within the support housing between the top wall and the bottom wall, and
a housing sprocket coaxially aligned within the support housing relative to the support housing and the central opening, and
an amplifier including connection means for effecting electrical communication between the battery member, the amplifier and the speaker, and
a first switch plate and a second switch plate mounted fixedly within the housing and within the housing cavity, and
a first arcuate spring plate and a second arcuate spring plate directed over the respective first switch plate and the second switch plate, the toothbrush shaft is positioned within the housing cavity and received through the central opening, and the toothbrush second end is received and positioned within the housing socket, the first switch plate and the second switch plate are respectively disposed adjacent the first switch plate and the second switch plate with flexure of the toothbrush shaft directing at least one of the first spring plate and the second spring plate towards the respective first switch plate and the second switch plate for contact of at least one of said first spring plate and the second spring plate with said respective first switch plate and second switch plate such that an electrical completion is made between said connection means, battery, amplifier, and speaker.

5,331,708
INTERDENTAL TOOTH-BRUSH
Eligio Ponzini, Lazzate, Italy, assignor to Ponzini S.p.A., Lazzate, Italy
Filed Apr. 12, 1993, Ser. No. 45,238
Int. Cl.[5] A46B *3/08, 3/18*
U.S. Cl. 15—167.1 **2 Claims**



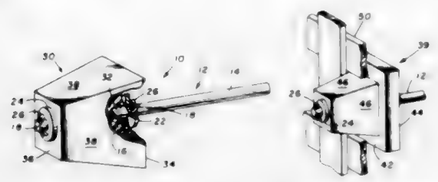
1. Interdental tooth-brush, of the type including a support bar (**1**) having a support head (**2**) with a transversal hole (**2***a*) at one end, a small brush stick (**3**) with a filiform projection (**3***a*) apt to engage into said transversal hole (**2***a*), and retention means to fix said projection (**3***a*) of the brush stick (**3**) into said transversal hole (**2***a*) in an interchangeable manner, characterized in that said retention means comprises:
a cap (**4**) having two diametrically opposite front and rear slots (**4***a*, **4***b*), wherein said transversal hole (**2***a*) formed into said support head (**2**) slightly projects through the front slot (**4***a*) of the cap (**4**), said cap (**4**) being fitted onto the one end of the support head (**2**), axially slidable between a position of release, in which both slots (**4***a*, **4***b*) are aligned with said transversal hole (**2***a*), and a locking position, in which the rear slot (**4***b*) is axially offset with respect to said hole (**2***a*); in this locking position a cavity being formed between the cap (**4**) and the support head (**2**) to house and retain the filiform projection (**3***a*) of the brush stick (**3**) in a bent position;
wherein a lower edge of the front slot (**4***a*) is formed by a top part of a flexible tongue (**4***d*) formed between two parallel slits (**4***c*) in a front wall of the cap (**4**).

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5,331,709
APPLICATOR FOR APPLYING PAINT TO LATTICE WORK

C. Leonard Hudson, 2234 Brookwood Dr., SE., Decatur, Ala. 35601

Filed Mar. 12, 1993, Ser. No. 30,735
Int. Cl.[5] B05C *17/00*; A47L *13/46*
U.S. Cl. 15—176.6 4 Claims



1. An applicator for applying paint to the internal walls of generally square shaped openings in an article, said applicator comprising.

a handle member including a gripping section and a paint pad mounting section;

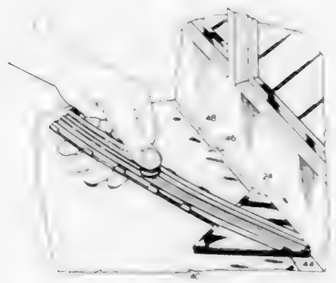
a generally frusto-pyramoidal shaped, flexible, paint pad including a planar base surface, a planar top surface, and four sloped planar side walls, each of said side walls extending between and connecting said planar base surface and said planar top surface, said paint pad being made of an absorbent, resilient material; each of said sloped planar side walls defines an acute angle with respect to said planar base surface and defines an obtuse angle with respect to said planar top surface; and

means for removably and replaceably mounting and securing said paint pad on said paint pad mounting section of said handle member with said pad mounting section extending into said pad for secured relation therewith and said gripping section of said handle member extending in exposed relation outside of said planar base surface

5,331,710
EDGER

Tonis Tollasepp, 120 Applefield Drive, Scarborough, Ontario, Canada M1P 3Y2

Filed Mar. 17, 1993, Ser. No. 32,646
Int. Cl.[5] B05C *17/00*
U.S. Cl. 15—210.1 8 Claims



1. A device for paint edging including.

a paint pad member comprising a paint pad and a longitudinally extending shank, extending rearwardly therefrom,

a spacer member comprising a spacer and a longitudinally extending shank, extending rearwardly therefrom,

said spacer being located adjacent and above said paint pad and said spacer member shank being located just above said paint pad member shank,

means for guiding said spacer member for sliding movement in said longitudinal extending direction relative to said paint pad member,

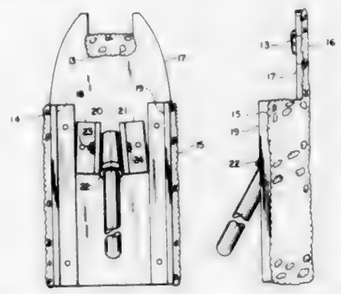
said guiding means guiding said sliding movement between a retracted position where forward edges of said paint pad are at least as far forward as forward edges of said spacer and a continuum of extended positions where forward edges of said spacer are located forwardly of forward edges of said paint pad.

wherein said longitudinally extending paint pad shank and said spacer member shank are together resiliently bendable about axes parallel to said pad surface and perpendicular to said longitudinal extension direction

5,331,711
TOOL FOR CLEANING CROSS CONVEYOR ASSEMBLY AND OTHER PARTS OF A BOWLING MACHINE PINSETTER

Michael W. Kelly, 302 6th St. Apt. 2, Glassport, Pa. 15045

Filed Jun. 25, 1993, Ser. No. 81,168
Int. Cl.[5] A47L *25/00*
U.S. Cl. 15—210.1 4 Claims



1. A cleaning tool for cleaning parts of a bowling machine comprising

a substantially planar base plate having first and second sides;

first and second upstanding side walls extending from the first side of the base plate at opposite peripheral portions thereof,

said base plate having a portion thereof extending beyond said side walls which defines a substantially planar portion extending forwardly of the side walls, said forwardly extending portion of the base plate including a notch formed in a free end thereof;

an elongated handle pivotally secured to the first side of the base plate; and

a cleaning cloth adhered to and substantially covering outwardly facing surfaces of the side walls, the second side of the base plate and the forwardly extending portion thereof

5,331,712
WINDSHIELD-WIPER ASSEMBLY WITH AIR DEFLECTOR

Cedric S. K. Charng, Taipei, Taiwan, assignor to China Wiper Special Rubber Co., Ltd., Taipei, Taiwan

Filed Jun. 22, 1990, Ser. No. 543,136
Claims priority, application United Kingdom, Jan. 22, 1990, 9001392.1
Int. Cl.[5] B60S *1/28*, *1/04*
U.S. Cl. 15—250.41 8 Claims

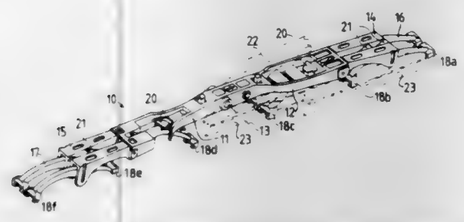
1. A wiper blade assembly for mounting on an end of a wiper arm and engaging a windshield, the assembly comprising:

an elongated main yoke generally pivotable at a central pivot on the wiper arm and having a pair of outer ends each formed with a throughgoing aperture,

respective secondary yokes pivoted at outer axes on the outer ends of the main yoke and having inner ends underlying the respective apertures and outer ends;

mounting means on the secondary-yoke ends for carrying a wiper blade engageable against a windshield; and

at least one wind-deflecting aerodynamic vane carried on at

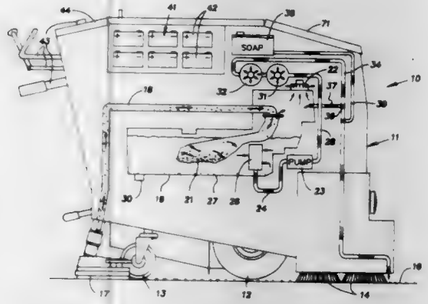


least one of the secondary yokes at the inner end thereof in line with the respective apertures, the one secondary yoke being provided with at least one fin supporting the respective vane up away from the one secondary yoke, whereby airflow through the aperture can directly contact the vane.

5,331,713
FLOOR SCRUBBER WITH RECYCLED CLEANING SOLUTION

Scott Tipton, Elkhart, Ind., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 13, 1992, Ser. No. 912,496
Int. Cl.[5] A47L *7/02*
U.S. Cl. 15—320 11 Claims

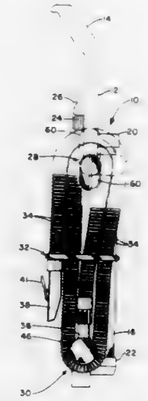


1. A recirculating floor scrubber supported for movement along a floor surface, a floor scrubber frame, a combined liquid supply and recovery tank on said frame for cleaning solution, said tank providing a bottom wall, powered scrubbers on said frame, a first filter, a vacuum means for removing particulate contaminated cleaning solution from a floor and for delivering said contaminated cleaning solution to said tank through said first filter, said first filter operating to trap and contain at least the larger size particulate within said first filter, a second filter within said tank at a location spaced from said bottom wall, a pump, third filter means located between said pump and said scrubbers, said pump operable to draw cleaning solution from said tank through said second filter and to deliver such cleaning solution through said third filter means to said scrubbers, said third filter means operating to remove small particulate from said cleaning solution before delivery thereof to said scrubbers.

5,331,714
STACKED LOOPED HOSE RACK FOR UPRIGHT CLEANER

John D. Essex, North Canton, and Darwin T. McKnight, Louisville, both of Ohio, assignors to The Hoover Company, North Canton, Ohio

Continuation-in-part of Ser. No. 702,710, May 20, 1991, Pat. No. D. 330,615. This application Oct. 1, 1992, Ser. No. 954,821
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—323 13 Claims



1. A hose and rack assembly for an upright vacuum cleaner, comprising:

a) a hose having a first and second ends;

b) support means attached to the vacuum cleaner for receiving and maintaining said hose, said first end of said hose being connected to said support means, said support means including means pivotally mounted to said upright cleaner for pivoting to effect a quick release of said hose from said support means;

c) said support means comprising spaced apart top and bottom hose mounts, said hose being wrapped therebetween;

d) said top hose mount comprising outer and inner spaced apart flanges receiving said hose therebetween, said outer flange being rotatable about an axis;

e) a shaft mounted to a handle of said upright cleaner and extending transversely outwardly therefrom, said outer and inner flanges received upon said shaft outwardly of said handle for said upright cleaner; and

f) said outer flange and said shaft having a mating detent and boss restricting and permitting rotation of said outer flange relative to said shaft about said axis to thereby provide said release means.

5,331,715
TWO MOTOR UPRIGHT VACUUM CLEANER

Milton J. Johnson, Stanford, and William A. Conner, Danville, both of Ky., assignors to Matsushita Floor Care Company, Danville, Ky.

Filed Jun. 4, 1992, Ser. No. 893,267
Int. Cl.[5] A47L *5/30*
U.S. Cl. 15—332 10 Claims
MICROFICHE APPENDIX INCLUDED
(15 Microfiche, 332 Pages)

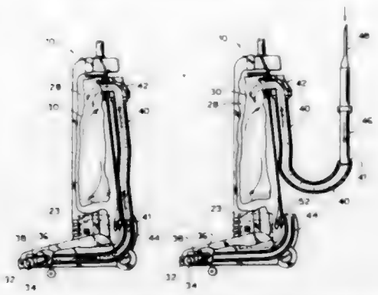
1. A vacuum cleaner comprising:

a canister assembly having an inlet opening;

a nozzle assembly mounted to the canister assembly including a nozzle with an agitator brush driven by an agitator motor, and an air suction passageway terminating at the nozzle, said air suction passageway having an open end opposite the nozzle;

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a hose operatively connecting the inlet opening of the canister assembly to the open end of the air suction passageway during a first mode of operation, said hose having a collar releasably connectable to the open end of the air suction passageway such that said hose can be removed from said open end during a second mode of operation; and



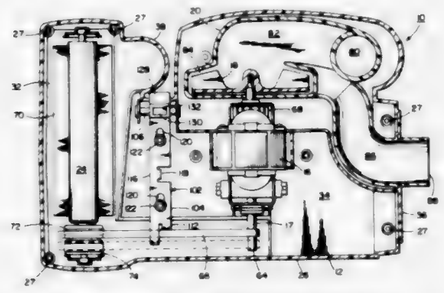
a switch means electrically responsive to the connection of the collar of the hose to the open end of the air suction passageway without regard to the angular orientation of the collar relative to the air suction passageway which deenergizes the agitator motor when the collar is disconnected from the air suction passageway.

5,331,716

VACUUM CLEANER WITH EXTENDABLE HOSE AND BRUSH DISENGAGEMENT

Ronald S. Hemmann, Newington; Kamala J. Sundaram, Milford, and Craig A. DuBois, Trumbull, all of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 8, 1993, Ser. No. 2,132
Int. Cl.[5] **A47L** *5/26*
U.S. Cl. 15—332 **9 Claims**



1. A vacuum cleaner having a source of vacuum, a rotatable brush at an intake section and means for rotating the brush including a drive transmission comprising a drive belt connected to a motor and connected to the brush, the vacuum cleaner further comprising:

a hose having a first end removably connected to the intake section and a second end connected to the source of vacuum, and

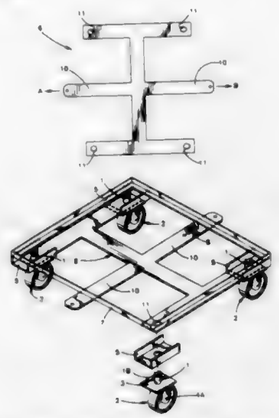
means for automatically disengaging the transmission upon removal of the first end of the hose from the intake section to thereby stop the brush from being driven while the hose is not connected to the intake section said means including a belt guide adapted to move the belt off of a portion of the rotatable brush.

5,331,717

AUTOMATIC LOCKING MECHANISM FOR ENTRAINING CASTORWHEEL VEHICLES

Bradley D. Joslin, Meadville, and Clarence M. Edwards, Jr., Erie, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Jan. 11, 1993, Ser. No. 2,748
Int. Cl.[5] **B60B** *33/02*
U.S. Cl. 16—35 R **5 Claims**



1. An automatic locking mechanism for entraining castorwheel vehicles comprising:

a) a vehicle frame;

b) a plurality of castorwheels swivably mounted to said vehicle frame such that the castorwheels are normally free to swivably rotate about a substantially vertical axis;

c) a locking member mounted on said vehicle frame responsive to an external force applied to said locking member at either end of said vehicle for locking the castorwheels that are distal to the intended direction of motion of said castorwheel vehicle against swiveling; and

d) a means for returning said locking member to a quiescent state upon removal of the external force.

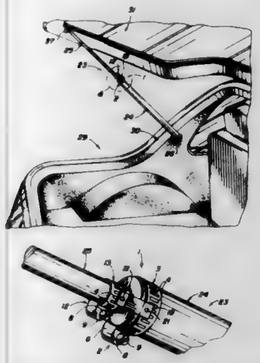
5,331,718

CYLINDER REPAIR BRACKET

Bob W. Gilbert, P.O. Box 3, Spearsville, La. 71277; Bob C. Gilbert Sr., Rt. 2, Box 208, Bernice, Louisiana 71222, Vernard K. Brazzel, Rte. 5, Box 3110, Ruston, La. 71270

Filed Jan. 19, 1993, Ser. No. 5,490
Int. Cl.[5] **E05C** *17/30;* **F16F** *9/32*
U.S. Cl. 16—82 **2 Claims**

1. A fluid-operated cylinder repair bracket for mounting on the cylinder housing and piston of an air-operated cylinder, comprising a first hose clamp having a first band mount, a first slotted band attached to said first band mount and tightly mounted on the cylinder housing adjacent to the piston, and a first screw rotatably mounted in said first band mount in driving relationship with said first slotted band, a second hose clamp having a second band mount, a second slotted band attached to said second band mount and mounted on the piston adjacent the cylinder in spaced relationship with respect to said first hose clamp and a second screw rotatably mounted in said second band mount in driving relationship with said second slotted band, a band connector having a pair of spaced-apart bends joining said first slotted band of said first hose clamp to said second slotted band of said second hose clamp and substantially aligning the openings defined by said first slotted band and said second slotted band, to receive the cylinder housing and the piston, respectively, whereby the sliding tension of the piston into and from the cylinder housing is



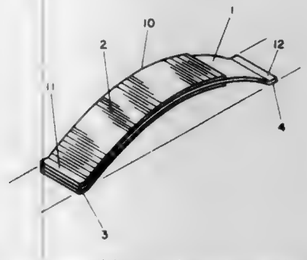
selected by rotatable adjustment of said second screw in said second band mount of said second hose clamp.

5,331,719

DOOR STOP

Tom P. Hum, 10 Plentywood Bay, Regina, Saskatchewan S4R 7L4, and Leon L. Froess, 543 Dorothy Street, Regina, Saskatchewan S4T 5T7, both of Canada

Filed Feb. 22, 1993, Ser. No. 20,980
Int. Cl.[5] **E05C** *17/00, 17/54*
U.S. Cl. 16—85 **4 Claims**



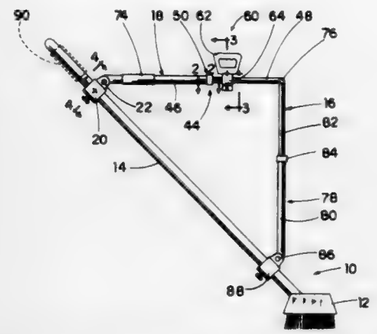
1. A door stop comprising a spring strap member formed of a thin sheet material and shaped to form an arched central portion, a first end portion and a second end portion arranged at opposed ends of the central portion the spring strap member being symmetrical about a central line transverse to the central portion, the central portion being raised relative to a common plane containing the end portions, a top surface of the central portion defining an upwardly facing door engaging surface for engaging a bottom edge of the door to be stopped, the door stop including door engaging means consisting solely of said upwardly facing door engaging surface, the end portions each defining a downwardly facing floor engaging foot surface, the strap member being elastically deformable to compress the central portion to engage under the bottom edge of the door, elastic force from the strap member being arranged to apply upward force onto the bottom edge of the door to provide the sole engagement therewith, the door engaging surface of the central portion and the foot surface of the first end portion having a friction material thereon of higher frictional characteristics than that of the foot surface of the second end portion.

5,331,720

MANUAL IMPLEMENT HANDLE ATTACHMENT

Daryl Beckingham, 631 Nottingham Ave., Winnipeg, Manitoba, R2K 2C4, Canada

Filed Sep. 18, 1992, Ser. No. 946,677
Claims priority, application Canada, Sep. 20, 1991, 2051940
Int. Cl.[5] **A47B** *95/02;* **A47J** *45/00;* **A46B** *5/02;* **A01B** *1/22*
U.S. Cl. 16—114 R **12 Claims**



1. An auxilliary handle for a manual implement having a working head and an elongate implement handle, said auxiliary handle comprising:

a lateral first arm with first and second ends;

first clamp means pivotally connected to the first end of the first arm and adapted to be clamped to the implement handle;

an upright second arm with first and second ends, the second arm comprising two tubes telescopically engaged for altering the length of the second arm and lock means for selectively and temporarily fixing the length of the second arm, the lock means comprising a friction clamp with at least one friction member selectively engageable to prevent relative telescopic movement of the tubes;

pivot means pivotally connecting the second end of the first arm to the second end of the second arm;

second clamp means pivotally connected to the first end of the second arm and adapted to be releasably secured to the implement handle; and

hand grip means mounted on the first arm between the pivot means and the first clamp means.

7. A manual implement comprising:

a working head;

an elongate implement handle;

an auxiliary handle mounted on the implement handle, said auxiliary handle comprising:

a lateral first arm with first and second ends;

first clamp means pivotally connected to the first end of the first arm and clamped to the implement handle;

an upright second arm with first and second ends, the second arm comprising two tubes telescopically engaged for altering the length of the second arm and lock means for selectively and temporarily fixing the length of the second arm, the lock means comprising a friction clamp with at least one friction member selectively engageable to prevent relative telescopic movement of the tubes;

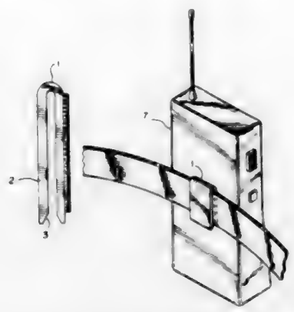
pivot means pivotally connecting the second end of the first arm to the second end of the second arm;

second clamp means pivotally connected to the first end of the second arm and clamped to the implement handle; and

hand grip means mounted on the first arm between the pivot means and the first clamp means.

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5,331,721
UNIVERSAL BELT CLIP
Jeffrey S. Raum, Sr., 446 Henryton S., Laurel, Md. 20707
Filed Jun. 7, 1993, Ser. No. 72,088
Int. Cl.[5] A45F *5/00*; **A44B** *21/00*
U.S. Cl. 24—3 L **6 Claims**



1. A universal U clip having means for connection to the apparel of a user, said means comprising a clip having symmetrical parallel legs of equal length, said legs being equidistant for the extent of their length, said clip being made of a thermoplastic resilient material, said legs having outer sides and a pressure sensitive adhesive adhered to one of said outer sides for a substantial portion of said side, said clip directly supporting a non-porous semi-flat material on one of said legs having said pressure sensitive adhesive, said adhesive having a protective liner when not in use.

5,331,722
STRAP TENSIONING SYSTEM
Alexander R. Allen; Richard A. Allen, and Christopher B. Allen, all of 29 Devens St., Concord, Mass. 01742
Continuation-in-part of Ser. No. 801,439, Dec. 2, 1991, abandoned. This application Aug. 25, 1992, Ser. No. 934,913
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—68 CD **4 Claims**

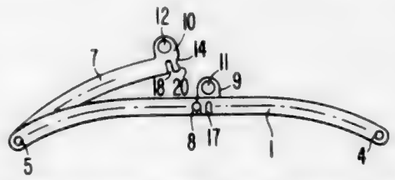
1. A tension assembly for securing a carrier to a motor vehicle, said tension assembly comprising:

a securing means, said securing means being attachable to, and detachable from, the carrier and motor vehicle and providing a means for securing said tension assembly between the carrier and the motor vehicle, said securing means including a first member and a second member, said first member and said second member interconnected for slidable movement relative to each other, said first member having a body including a first opened end and a second closed end, said first opened end of said body having an integral head for attaching said body to one of either the carrier or the motor vehicle, said first opened end being continuous with a guideway channel oriented substantially parallel to an longitudinal axis of said body, an opening being formed in said second end of said body, said second member having an elongated leg that is bent at one end to form a foot, said foot including a tab sized and shaped to be slidable on and along said guideway channel in said body, an opposite end of said leg having means for attaching said leg to the other of either the carrier or the motor vehicle, said leg slidably received in said body, said leg sized and shaped to pass freely in said opening formed in said second end of said body, said tab of said foot limiting movement of said leg in said body, and

a tension means, said tension means being held between said second closed end of said body of said first member of said securing means and said foot of said second member of said securing means, said tension means having expanded and contracted states, said tension means being in tension when contracted,

whereby said tension assembly is under tension when said tension means is in tension, said tension assembly securely mounting the carrier to the motor vehicle when said tension assembly is under tension, said tension assembly operative to secure under tension the carrier to the motor vehicle.

5,331,723
FOLD-OUT CLASP
Francois Mathieu, Saint-Claude, France, assignor to Maier S.A., Saint Claude, France
PCT No. PCT/FR92/00291, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/18029, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 1, 1992, Ser. No. 960,463
Claims priority, application France, Apr. 19, 1991, 91 05084
Int. Cl.[5] A44C *5/00*
U.S. Cl. 24—71 J **20 Claims**

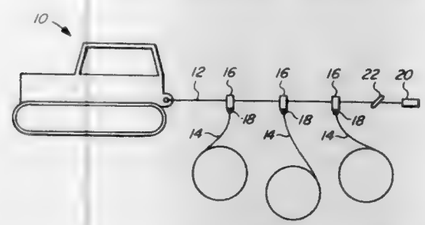


1. A folding clasp for a bracelet, said folding clasp comprising a shank comprising two parallel side members, each of said parallel side members having a first end and a second end wherein the first end of one parallel side member is connected to a first end of another parallel side member and wherein the second end of one parallel side member is connected to the second end of another parallel side member, and at least one transverse element interconnecting each of said parallel side members; a first arm having one end articulated at said first end of each of said parallel side members; and another arm articulated at said second end of each of said parallel side members, said first arm and said another arm folding down and locking in said shank on said at least one transverse element, wherein said first arm and said another arm each comprises a head for receiving a bracelet end and locking the arm inside said shank, wherein each said head comprises on a front face a concavity for compressing on said at least one transverse element and locking the arm, and wherein each said head on a bottom face comprises a recess located behind said concavity.

5,331,724
MAIN LINE TOGGLE
James W. Dillon, Quesnel, Canada, assignor to Baker Cable Ltd., Prince George, Canada
Continuation of Ser. No. 868,884, Apr. 16, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,697
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—114.5 **3 Claims**

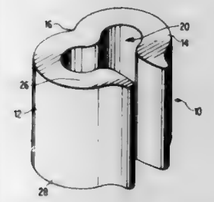
1. Logging apparatus for attachment to a tractor or other pulling means, comprising a main line cable for attachment to said pulling means at a leading end of said main line cable and a retainer at a trailing end of said main line cable, a choker cable slider ring on said main line cable, said slider ring being capable of passing over said retainer and a toggle on said main line cable between said retainer and said slider ring, said toggle comprising a non-cylindrical annular member of elongate shape and having a central opening, through which said main line cable is threaded, which central opening is elongate in cross section, said toggle being held captive on said main line cable by said retainer, the toggle being dimensioned so that it

permits the passage of said slider ring when the toggle is held in a position in which it is substantially in alignment with the



main line cable and prevents the passage of the slider ring when released from said position of alignment.

5,331,725
ROD CLIP
Randolph S. Chou, Taipei, Taiwan, assignor to Design Ideas, Ltd., Springfield, Ill.
Filed Jul. 30, 1992, Ser. No. 922,536
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—545 **8 Claims**



1. A clip for holding two cylindrical members in spaced juxtaposition, both of said cylindrical members having approximately equal diameters, said clip comprising:

an integral, one-piece body;

said body comprises:

a pair of arms joined at one end and open at another, said arms defining an internal chamber and a single opening leading into said internal chamber,

each of said arms having a top surface and a bottom surface, the tops of said arms being coplanar and the bottoms of said arms being coplanar, said internal chamber extending from said tops to said bottoms, and

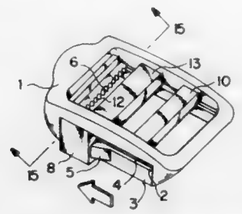
each of said arms having a thickness which varies along its length from a minimum at the open ends of said pair of arms to a substantially constant thickness beyond the intersection of said single opening and said internal chamber; and

the cross-section of said body being approximately heart-shaped with said opening being located at the externally directed apex of said heart, such that said internal chamber comprises a central chamber and a pair of arcuate recesses,

each of said arcuate recesses being partially bounded by internal walls of said internal chamber, and said pair of arcuate recesses having a radius of curvature such that twice said radius of curvature is slightly less than said diameter of said cylindrical members; and

said single opening having a width substantially smaller than said diameter of said cylindrical members.

5,331,726
BAND LINK WITH A SAFETY DEVICE
Sam Am Suh, 245-1 Yong Sun 4 Dong, Yongdoku, Pusan, Rep. of Korea
Filed Jul. 21, 1993, Ser. No. 93,966
Claims priority, application Rep. of Korea, Dec. 3, 1992, 92-24520
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—625 **3 Claims**



1. A band link with a safety device for securing a flexible band, comprising:

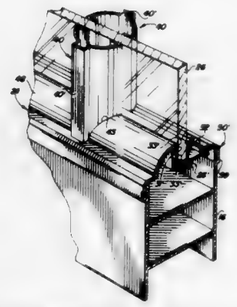
a body for receiving the band having a band-controlling toothed side, said body having a pair of working guide grooves, each groove including a stepped jaw and a guide hole;

a locking piece inserted into said guide holes for movement to a holding position for securing said flexible band against the band-controlling tooth side;

a fixing projection formed in each of the working guide grooves for fixing said locking piece in the holding position;

wherein in the holding position, the band is secured against the body in a recessed space formed below the band-controlling toothed side and the locking piece.

5,331,727
METHOD OF ASSEMBLING COMPONENTS OF A TWO SIDED COLONIAL GRID ASSEMBLY INTO A DOOR, WINDOW OR LIKE CLOSURE
Selig Golen, 5137 NW. 93rd Doral Way, Doral Estates, Miami, Fla. 33178
Filed Oct. 22, 1992, Ser. No. 964,133
Int. Cl.[5] B23P *11/02*; **E06B** *3/70*; **E04C** *2/38*
U.S. Cl. 29—453 **3 Claims**



1. A method of assembling components of a two sided colonial grid assembly into a door or window, wherein said components of said assembly comprise:

a plurality of panes of common size and shape, each pane having a first main face and a second main face being oppositely disposed and bounded by a common peripheral edge,

a rectangular frame of interconnected members including a)

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spaced parallel header and sill members having confronting surfaces and b) a pair of spaced parallel jamb members, said jamb members each having confronting surfaces, each said member defining therebetween a central assembly opening,

the confronting surface of each member having a longitudinally extending recess defining a receiving track,

a peripheral attachment bar sized and configured to be connected to each member and in each track and to extend between confronting surfaces of connected members,

each said attachment bar including a support surface to extend into the central opening and a facing surface to extend away from said central open to said frame,

a plurality of spaced parallel true muntin bars, each having longitudinally extending side surface, each being sized and configured to connect to and extend between the jamb members and to divide the central opening into sub-openings,

each said true muntin bar having a pair of longitudinally extending support surfaces, one of said pair of supporting surfaces to extend a common distance into a subopening along one side of the true muntin bar and the other pair of said supporting surfaces extending a common distance into the sub-opening along the other side of said muntin bar,

a first plurality of false muntin bars mounted on said first main face of said plurality of panes disposed to interconnect adjacent true muntin bars and attachment bars, and

all of said support surfaces being sized and configured to be co-planar in assembly, and each support surface being adapted to abut and to support along the peripheral edge of one of said panes about one main pane face and said panes being sized to close said sub-openings,

a second plurality of false muntin bars connected between adjacent true muntin bars and attachment bars, and each having a surface to contact the second main face of an associated pane,

said second plurality of false muntin bars being sized and configured the same as the first plurality of false muntin bars in each of said second plurality of false muntin bars being adapted to be positioned in aligned, overlying relation to one of the first plurality of false muntin bars, and

a plurality of glazing strips having a surface to contact the other main surface of the panes, said glazing strips being flexible,

wherein the method of assembling the components comprises the steps of:

first positioning and interconnecting said pair of spaced jambs having confronting surfaces and said head and sill members having confronting surfaces in a horizontal attitude defining a frame on a work surface with a central assembly opening to the frame,

connecting a peripheral bar in each track, each of said bars with the support surface of each bar extending a common distance into the central opening,

connecting a plurality of true muntin bars each having a support surface between the spaced jambs dividing the central opening into a plurality of sub-openings, which said true muntin support surfaces extending a common distance into said openings,

connecting a first plurality of false muntin bars in spaced relation between adjacent true muntin bars and attachment bars,

positioning a pane having a peripheral surface in closing relation of each sub-opening with the peripheral surface being supported on said support surfaces,

connecting said second plurality of false muntin bars between adjacent true muntin bars and attachment bars and with one of said second plurality of false muntin bars being in aligned, overlying relation to each of the first plurality of false muntin bars and "pop-fitting" glazing strips along each of said attachment bars between adjacent false muntin bars,

so that the completed assembly has the appearance of a two-sided colonial grid assembly

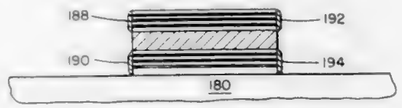
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5,331,728

METHOD OF FABRICATING MAGNETIC THIN FILM STRUCTURES WITH EDGE CLOSURE LAYERS

Bernell E. Argyle, Putnam Valley, N.Y.; Thomas C. Arnoldussen, Los Altos; Thomas J. Beaulieu, Hollister, both of Calif.; Dean A. Herman, Jr., Garrison; Sol Krongelb, Katonah, both of N.Y.; Hin P. E. Lee, San Jose; Daniel A. Nepela, Saratoga, both of Calif.; Bojan Petek, Croton-on-Hudson, N.Y.; Lubomyr T. Romankiw, Briarcliff Manor, N.Y., and John C. Slonczewski, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 432,649, Nov. 7, 1989, Pat. No. 5,032,945.
This application May 13, 1991, Ser. No. 686,782
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 **38 Claims**



1. A method of fabricating a magnetic thin film structure comprising the steps of:

depositing a first layer of magnetic material on a substrate;

depositing a barrier layer on said first layer of magnetic material;

forming a frame on said barrier layer and removing exposed regions of said barrier layer thereby exposing said first layer of magnetic material;

forming a laminate of alternate layers of at least one intermediate layer of magnetic material and at least one layer of nonmagnetic material on said first layer of magnetic material, one layer of said at least one layer of nonmagnetic material being an upper layer of said laminate;

removing said frame; and

depositing a top layer of magnetic material on said upper layer and at least a first edge closure layer of magnetic material on a first side edge of said laminate, said first edge closure layer being in magnetic contact with each of said at least one intermediate layer and said top layer of magnetic material.

5,331,729

METHOD FOR WINDING A TOROID COIL ON A TOROIDAL BODY

Edward A. Moorehead, Edwardsville, Ill., assignor to Basler Electric Company, Highland, Ill.

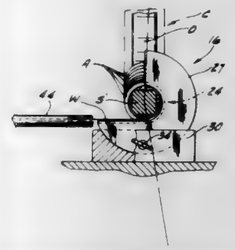
Division of Ser. No. 527,743, May 23, 1990, Pat. No. 5,274,907.
This application Aug. 10, 1993, Ser. No. 104,773
Int. Cl.[5] H01F *5/00*
U.S. Cl. 29—605 **9 Claims**

1. A method for forming a toroid coil on a toroidal body comprising the steps of:

feeding wire forward in the direction of its length toward a toroidal body along a path which at the toroidal body is generally tangent to the surface of the toroidal body, and

constraining the wire at the toroidal body as it is fed forward such that the wire is bent into the convolutions of a helix,

said helix winding around the toroidal body surface with the convolutions extending through the opening in the



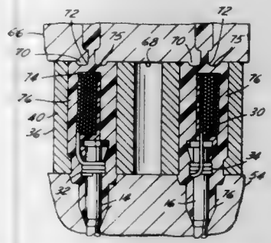
toroidal body and advancing circumferentially around the toroidal body to form the toroid coil.

5,331,730

METHOD OF MAKING A COIL MOLDED INTO A MAGNETIC STATOR

Benjamin F. Brinn, Jr., Williamsburg, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Sep. 3, 1992, Ser. No. 939,802
Int. Cl.[5] H01F *41/10*
U.S. Cl. 29—606 **6 Claims**



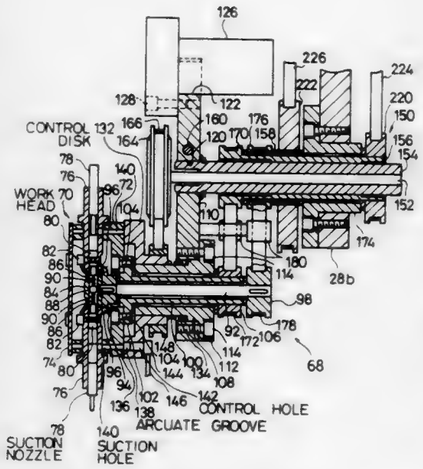
1. A method of making a solenoid coil assembly comprising a bobbin, a pair of electrical terminals having proximal end portions mounted on said bobbin and distal end portions providing for connection with a separable electrical connector, a length of wire disposed as a solenoid coil on said bobbin and having opposite ends attached with said electrical terminals to electrically place the coil across said terminals, a stator comprising an inner tube disposed on the interior of said bobbin and an outer tube disposed on the exterior of said bobbin, and an encapsulant encapsulating the entirety of said coil and bobbin, including the mounting of said terminals' proximal end portions on said bobbin and the attachment of said wire with said terminals, and joining with said stator so that said bobbin, coil, terminals, and stator form a unitary solenoid coil assembly, said method comprising fabricating said bobbin and terminals as a sub-assembly, placing said sub-assembly and said stator in a mold that has first and second mold parts that coact respectively with respective axial ends of both said inner and outer tubes of said stator to define a mold cavity such that said terminals project axially from one end thereof, and then injecting encapsulating material into said mold cavity to fabricate said encapsulant and thereby create the unitary solenoid coil assembly.

5,331,731

CYCLOID MOTION WORK MOUNTING APPARATUS

Hisao Suzuki; Kazuhiro Tokitu; Tadashi Munakata; Yoshinobu Ishikawa, all of Tokyo; Takatomo Izume, Saitama; Masamichi Kato, and Etuo Minamihama, both of Mie, all of Japan, assignors to Japan Tobacco Inc., Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Sep. 25, 1992, Ser. No. 950,883
Claims priority, application Japan, Sep. 26, 1991, 3-248062; Sep. 26, 1991, 3-248064; Sep. 26, 1991, 3-248065
Int. Cl.[5] B23P *19/04*; B65H *5/18*
U.S. Cl. 29—759 **10 Claims**



1. A work mounting apparatus comprising:

a work supply section disposed in a predetermined transportation path and having a supply position which is successively supplied with works;

a work mounting section disposed at a distance from the supply section, in the transportation path, and having a work mounting surface on which the works are to be mounted by the work mounting apparatus;

a carrier repeatedly movable along the transportation path between the mounting section and the supply section, said carrier including a first shaft having a first axis which extends across the transportation path;

a work head provided on the carrier, said work head having a second axis is substantially parallel to said first axis and including an attraction rod projecting from the work head toward the transportation path, said attraction rod having a distal end;

turning means for turning the work head around the first axis in a circular translational manner so as to maintain the work head in a fixed orientation with respect to the transportation path, during the movement of the carrier, and moving the distal end of the attraction rod in a cycloid motion along the transportation path;

attraction means for supplying an attraction force to the rod;

control means for controlling the turning means and the attraction means so as to attract one of the works to the distal end of the rod in the supply position, and then release the attracted work from the distal end of the rod at the mounting surface, so that the work is mounted on the mounting surface; and

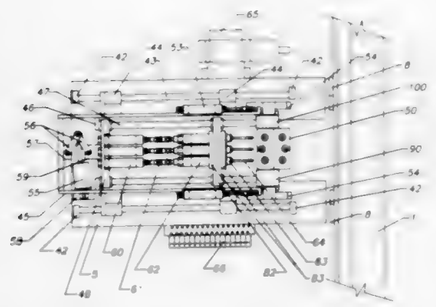
stabilizing means for stabilizing the turning motion of the work head.

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5,331,732
HINGE APPLICATOR WITH GANG SCREWDRIVING UNIT

Andrew M. Kvalheim, Petaluma, Calif., assignor to Kval, Inc., Petaluma, Calif.

Continuation-in-part of Ser. No. 922,353, Jul. 29, 1992, Pat. No. 5,222,290, which is a continuation of Ser. No. 712,979, Jun. 10, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 45,332
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B23P *21/00*
U.S. Cl. 29—787 9 Claims



7. Apparatus for hingedly connecting an adjacent pair of work members each having elongate hinge leaf receiving surfaces, by butt hinges to be seated on said receiving surfaces comprising:

(a) means for supporting said work members so that said receiving surfaces are in position for receiving the leaves of a butt hinge;

(b) a hinge applicator mounted for movement between a hinge applying location adjacent to said hinge leaf receiving surfaces when said work members are in position for receiving hinges and a hinge receiving location, said applicator having

i. a screw receiving side and a hinge applying side with a plurality of apertures extending therebetween, said apertures being adapted for receiving screws at said screw receiving side and for guiding screws therethrough as they are screwed into said hinge leaf receiving surfaces and

ii. hinge supporting means associated with said hinge applying side for releasably supporting a hinge positioned with the screw holes of each leaf in alignment with said apertures until the hinge leaves are screwed to said butt-receiving surfaces,

(c) means for supplying screws individually to said apertures of said hinge applicator, and

(d) a screwdriver unit comprising a gang of screwdrivers, each screwdriver having a rotatable, screwdriver bit, said unit

i. being mounted for movement between a retracted position with the screwdriver bits retracted from said hinge applicator and an engaged position with said screwdriver bits engaged in said apertures of the hinge applicator for driving screws therethrough into said hinge leaf receiving surfaces when said hinge applicator is at the hinge applying location,

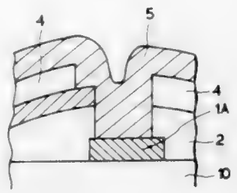
ii. having means for moving said unit between said retracted and hinge applying locations and

iii. having means for rotating said screwdriver bits, each screwdriver having a separate and independently operated air cylinder for urging its respective screwdriver bit forward to screw in a screw.

5,331,733
METHOD FOR MANUFACTURING A CONNECTION DEVICE FOR A SEMICONDUCTOR DEVICE

Jae K. Kim, Kyungki, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Nov. 18, 1991, Ser. No. 793,819
Claims priority, application Rep. of Korea, Nov. 21, 1990, 90-18854
Int. Cl.[5] H01K *3/10*; H01L *21/312*
U.S. Cl. 29—852 4 Claims



1. A method for electrically connecting an internal wired layer of a semiconductor device with an external conducting layer of the semiconductor device through an insulating layer formed on the internal wired layer, the method comprising:

depositing a first conducting layer **1** on a substrate **10**;

forming an internal wired layer **1A** by etching a portion of the first conducting layer **1** utilizing a wired layer mask A and thereby exposing a portion of the substrate not covered by the internal wired layer **1A**;

depositing a first insulating layer **2** on the exposed substrate and the internal wired layer **1A**;

depositing a second conducting layer **3** on the first insulating layer **2**;

forming from the second conducting layer **3** an etch stop layer **3A** on the first insulating layer **2**, said etch stop layer **3A** terminating on the first insulating layer and over the wired layer to define a surface of the wired layer covered by the etch stop layer and a surface of the wired layer not covered by the etch stop layer;

forming a contact hole **20** through the first insulating layer **2** to expose the surface of the underlying wired layer not covered by the etch stop layer such that the etch stop layer covered surface of the wired layer remains covered by the overlying first insulating layer; and

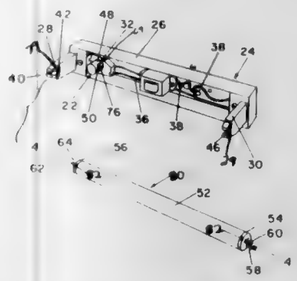
depositing a third conducting layer **5** on the first insulating layer, and into the contact hole formed in the first insulating layer **2**, for electrically connecting the wired layer **1A** with the third conducting layer **5**, thereby forming a connection device for the semiconductor device.

5,331,734
METHOD FOR INSTALLING AN ELECTRICAL DEVICE HAVING PINS INTO PIN SOCKETS

Arthur R. Hunt, 28 Salem Walk, Milford, Conn. 06460

Continuation-in-part of Ser. No. 749,142, Aug. 22, 1991, abandoned, which is a continuation of Ser. No. 492,106, Mar. 12, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 972,985
Int. Cl.[5] H01R *43/16*
U.S. Cl. 29—879 3 Claims

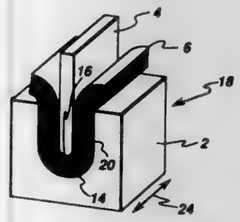
1. A method for the non-visible orientation of multiple pins of a cylindrical electrical device with pin sockets for ease of installation comprising placing the installer's thumb and forefinger on sensible indicators located on said cylindrical electrical device, grasping said cylindrical electrical device between said thumb and forefinger thereby aligning said pins with said pin sockets, inserting said pins of said electrical device into said pin socket, rotating said cylindrical electrical device about its axis to be captured by retaining mechanism in said pin socket to make electrical contact.



5,331,735
METHOD OF FORMING A FLEXIBLE CONNECTOR

William R. Hotaling, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1993, Ser. No. 53,284
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—882 9 Claims



1. A method of forming a flexible connector, comprising:

forming an outer die having a mold surface defining an outer surface of the connector, forming an inner die having an outer surface defining an inner surface of the connector,

forming a compact assembly of the outer die and a plurality of sheets inserted into the mold surface with the inner die, the sheets having surfaces facing the mold surface and inner die, and sheet edges normal to the surfaces,

milling the assembly to align the sheet edges, and

joining the aligned sheet edges in predetermined sections to form the flexible connector.

5,331,736
METHOD OF LOADING A LIVELOAD ASSEMBLY FOR ROTARY OR RECIPROCATING SHAFT PACKING

Steven M. Suggs, 6585 Wright Rd., Atlanta, Ga. 30328

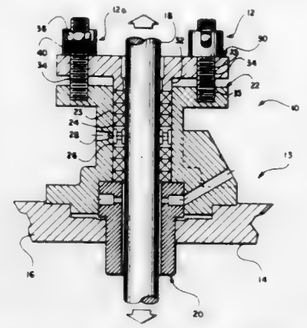
Continuation of Ser. No. 644,966, Jan. 22, 1991, Pat. No. 5,097,595, which is a division of Ser. No. 287,079, Dec. 20, 1988, Pat. No. 5,024,453. This application Oct. 15, 1991, Ser. No. 776,844
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] B21D *53/00*
U.S. Cl. 29—890.124 5 Claims

1. A method of assembling a liveload belleville washer assembly, comprising:

stacking a plurality of belleville washers inside a stack guide;

compressing the belleville washers a predetermined amount; and

positioning a first removable retainer in the stack guide adjacent the compressed belleville washers to hold the belleville washers in compression, said first retainer cooperating with a second independent retainer positioned against the stack of belleville washers when the assembly

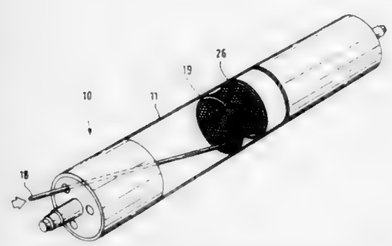


is installed on a liveload assembly, whereby the first retainer is removable without releasing the compressed belleville washers.

5,331,737
METHOD FOR FIXING A BALANCING MATERIAL IN A ROLL

Juha Järvelä, Jyväskylä , Finland, assignor to Valmet Paper Machinery Inc., Finland

Filed Nov. 27, 1992, Ser. No. 982,516
Claims priority, application Finland, Dec. 5, 1991, 915750
Int. Cl.[5] B29C *35/00*
U.S. Cl. 29—895.21 8 Claims



1. A method for fixing a material used for balancing a roll, comprising the steps of:

placing a support and fixing construction into a roll which has an interior and an inner surface, such that the support and fixing construction is in contact with only a portion of the inner surface of the roll,

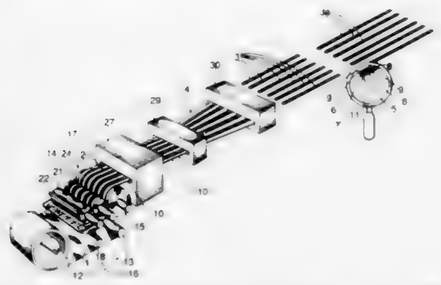
placing a fluidized balancing material inside the roll on the support and fixing construction at a location required for balancing the roll,

allowing the balancing material to adhere to and harden on the support and fixing construction at the location required for balancing the roll, and

providing the support and fixing construction with openings which permit the balancing material to be placed at both sides of the support and fixing construction before the balancing material hardens.

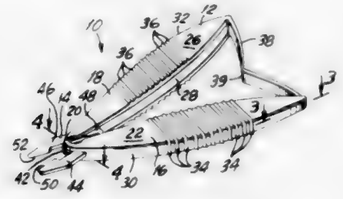
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5,331,738
COLOR-COATED SPACER TUBE FOR INSULATING GLAZINGS, AND METHOD AND APPARATUS FOR ITS PRODUCTION
Horst Lingemann, Wuppertal, Fed. Rep. of Germany, assignor to Helmut Lingemann GmbH & Co., Wuppertal, Fed. Rep. of Germany
Filed May 23, 1990, Ser. No. 527,490
Claims priority, application Fed. Rep. of Germany, May 4, 1990, 4014376
Int. Cl.[5] **B21B** *5/00*
U.S. Cl. 29—897.312 **6 Claims**



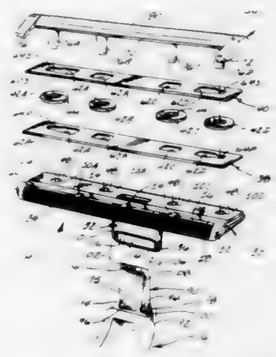
1. Method for the production of a spacer tube of metal for frame or strut bars of an insulating glazing as spacers or drying agent containers between two continuous glass panes, characterized by the steps in chronological order of
(A) printing on the surface of a metal strip several color stripes in juxtaposed arrangement by a rotary printing mechanism;
(B) drying the colored stripes;
(C) cutting the metal strip longitudinally between the color stripes; and
(D) shaping the resulting metal slats to form spacer tubes and cutting them to length, the color strips being disposed on an outer surface of the spacer tube facing the interspace between the glass panes and visible in the insulating glazing.

5,331,739
DISPOSABLE NAIL CUTTING NIPPERS
Lea Basangy, 28 Paerdegat 7th St., Brooklyn, N.Y. 11236
Filed Mar. 20, 1992, Ser. No. 854,855
Int. Cl.[5] **A45D** *29/02*; **B26B** *17/00*
U.S. Cl. 30—28 **15 Claims**



1. Nail cutting nippers comprising
a body member having a one piece construction;
said body member including first and second gripping portions pivoted adjacent to each other;
removable cutting means disposed at front end portions of said first and second gripping portions;
a reduced hinge portion integrally joining said front end portions of said first and second gripping portions together; and
spring means disposed between said first and second gripping portions to tension said first and second gripping portions into an open position so that said cutting means are spaced apart;
whereby said first and second gripping portions are squeezed together against the tension of said spring means to place said cutting means in a closed cutting position.

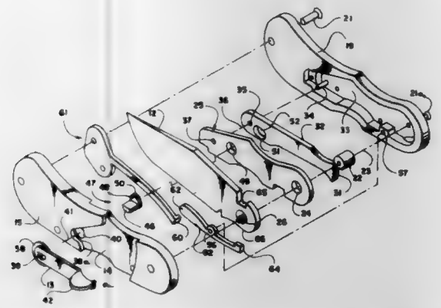
5,331,740
SHAVING SYSTEM
William C. Carson, III, Acton, and Frederick R. Borden, Brockton, both of Mass., assignors to The Gillette Company, Del.
Filed Oct. 8, 1992, Ser. No. 958,500
Int. Cl.[5] **B26B** *21/18, 21/14*
U.S. Cl. 30—50 **18 Claims**



1. A shaving system comprising a shaving head assembly that includes at least one blade member with a cutting edge disposed adjacent guard structure, said shaving head assembly including a socket portion with opposed spaced surfaces, latch structure formed in one of said surfaces and locking edge structure formed in the other of said surfaces opposed to said latch structure, and
a handle portion including a grip portion and a projecting prong portion for insertion into said socket portion of said shaving head assembly, said prong portion being integral with and extending from one end of said grip portion and including a body portion and a tip portion remote from said grip portion with a latch projection protruding from one side of said tip portion and a latch recess in the opposite side of said tip portion for engagement with said latch structure and said locking edge structure respectively such that mating surfaces of said socket portion and said prong portion are fixed in firm engagement.

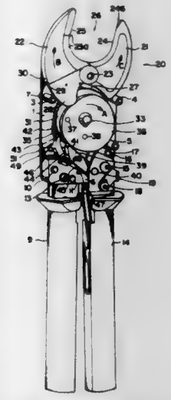
5,331,741
LEVER-ACTUATED FOLDING KNIFE
William J. Taylor, Jr., 109 Teal Ct., Norcross, Ga. 30076
Filed Aug. 10, 1992, Ser. No. 927,595
Int. Cl.[5] **B26B** *3/06*
U.S. Cl. 30—158 **18 Claims**

1. A folding knife having a body and comprising:
a knife blade mounted in the body for pivotable movement between a closed position and an opened position;
a blade opening lever mounted for movement on a first axis relative to the body and operatively interconnected with the blade so that movement of the blade opening lever over a predetermined arc moves the blade between the closed and opened positions;
a manual actuation lever selectively movable on a second axis relative to the body;
means operatively interconnecting the manual actuation lever with the blade opening lever so as to move the blade opening lever on the predetermined arc in a direction to move the blade from closed to opened position, in response to predetermined manual actuation of the actuation lever;



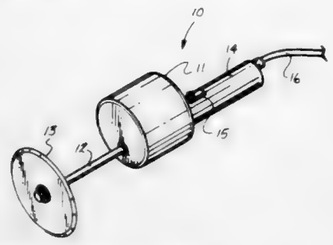
the manual actuation lever being pivotable on the second axis; and
the interconnecting means moving the blade opening lever over the predetermined arc in response to pivoting movement of the manual actuation lever.

5,331,742
END CUTTERS
Hartmut Schmode, Blomberg; Gerd Weber, Detmold, and Ulrich Wiebe, Dörentrup, all of Fed. Rep. of Germany, assignors to Weidmüller Interface GmbH & Co., Detmold, Fed. Rep. of Germany
Filed Mar. 22, 1993, Ser. No. 35,171
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1992, 4209530
Int. Cl.[5] **B26B** *17/00, 17/02*
U.S. Cl. 30—245 **21 Claims**



1. End cutters, especially for cutting through cables, comprising:
two flat loose blades operatively positioned one on top of the other, said blades being rotatably mounted about a common rotation shaft and being selectively driven by means of a drive device;
each loose blade being selectively driven by a dedicated cam disc located in the plane of the blade and being operatively coupled to the drive device.

5,331,743
TILE SAW APPARATUS
Charles A. Lump, 201 S. Main, DeGraff, Ohio 43318
Filed Apr. 26, 1993, Ser. No. 51,774
Int. Cl.[5] **B23D** *45/16*; **B26D** *7/08*
U.S. Cl. 30—388 **1 Claim**



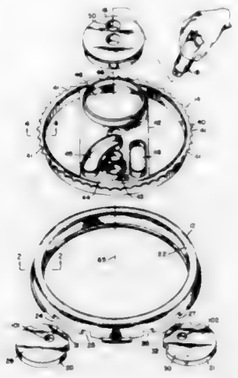
1. A tile saw apparatus, comprising,
a drive motor housing, having a housing front wall spaced from a housing rear wall in a parallel relationship, with an output shaft housing orthogonally mounted to the housing front wall, with a drive shaft rotatably directed through the output shaft housing, with a rotary circular saw blade orthogonally and fixedly mounted to a free distal end of the drive shaft, and
a handle, the handle fixedly and orthogonally mounted to the housing rear wall, and
an on/off switch mounted to the handle, and
a fluid delivery conduit directed through the handle and through the drive motor housing, and the fluid delivery conduit directed through the housing front wall and extending coextensively with the output shaft housing, and a plurality of mounting plates fixedly mounted to the fluid delivery conduit and the output shaft housing along the output shaft housing, with the fluid delivery conduit having a conduit exit port directing fluid onto the saw blade, and
the saw blade includes a plurality of saw blade window openings directed in an annular array about the output shaft housing, and the conduit exit port is arranged for selective orientation in adjacency to the window openings, and
a hood member fixedly mounted to the output shaft housing receiving the saw blade therewithin, with the hood member including a hood socket arranged for reception of the conduit exit port to direct fluid tangentially along the saw blade, and
a mounting collar fixedly and orthogonally mounted to the hood coaxially aligned relative to the drive shaft, with a mounting collar arranged for adjustable securement along the mounting shaft, with the mounting collar including a leg member fixedly and orthogonally oriented relative to the mounting shaft, with the leg member having a pointed support end arranged for anchoring the leg for a radial cut of the saw blade.

5,331,744
MARKER APPARATUS
Royce D. Rumsey, Laguna Beach, Calif., assignor to Bandai America Incorporated, Cerritos, Calif.
Filed May 12, 1993, Ser. No. 59,567
Int. Cl.[5] **B43L** *11/00*
U.S. Cl. 33—27.01 **10 Claims**

1. Apparatus with which a marker may be utilized to make a plurality of different designs on a surface, comprising:
base means for residing stationarily on said surface and providing a first circular bearing surface;
a design ring including an annular member provided with a second circular bearing surface for rotatably engaging said first bearing surface and further including a cross

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member extending generally diametrically across said annular member and provided with a plurality of apertures for holding said marker while said marker is engaging, is being moved with respect to, and is marking on said surface to provide said marker with a plurality of different movements with respect to said surface and to cause said marker to make said plurality of different designs on said surface; and



a pair of knee pads for receiving and protecting the knees of a person from said surface upon said person kneeling upon said knee pads and utilizing said apparatus to make said plurality of different designs on said surface, and wherein such knee include knee supporting portions and outwardly extending mounting portions for mounting said knee pads to said base means.

5,331,745

PROCESS AND APPARATUS FOR SURVEYING A RAILWAY TRACK FOR ANY DEVIATION FROM A TRACK SURVEY PLAN

Heinz Jager, Volketswil, Switzerland, assignor to J. Müller AG, Effretikon, Switzerland

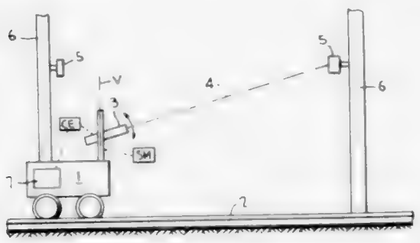
PCT No. PCT/CH92/00165, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO93/06303, PCT Pub. Date Apr. 1, 1993

PCT Filed Aug. 18, 1992, Ser. No. 64,173

Claims priority, application Switzerland, Sep. 26, 1991, 2854/91-2

Int. Cl.[5] E01B *35/04*

U.S. Cl. 33—651.1 **3 Claims**



1. Process for surveying a railway track for any deviation from a track survey plan having values which set forth the desired position of the course of the track relative to first, second and third reference marks spaced sequentially along the track, each reference mark having light reflectors located on upstanding supports in the vicinity of the track, comprising the steps of:

(1) providing a track measurement platform on the track for rolling movement therealong, the platform having a light receiving and laser-emitting head capable of swivelling about vertical and pitch axes;

(2) initially determining the position of the platform on the track relative to the first reference mark by measuring the distance between the platform and the first reference mark;

(3) aligning a laser light beam from the head with the second reference mark such that the laser light beam is reflected by the reflector thereon;

(4) moving the platform along the track and repeatingly measuring the changes, relative to the platform, in the angle of the laser light beam, which remains aligned with the second reference mark by readjusting the head about one or both said axes;

(5) repeatingly determining the relative change in position of the platform to a previous measured position by means of a space-stabilized gyro device mounted on the platform;

(6) repeatingly obtaining values on the change in position of the gyro device for use as correction values for the change in the angular position of the laser light beam;

(7) comparing the values obtained to the desired values of the survey plan to determine any deviations of the track from the desired values for correcting the track on the basis of any of such deviations, and

(8) when the reflector on the second reference mark disappears from a defined window of a visible range of the light-receiving and laser-emitting head, realigning the laser light beam with the third reference mark.

5,331,746

PROCESS AND AN APPARATUS FOR REMOVING WATER FROM ASH

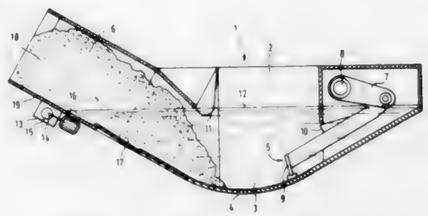
Walter J. Martin, Tegernsee, and Johannes J. E. Martin, Seeshaupt, both of Fed. Rep. of Germany, assignors to Martin GmbH fur Umwelt-und Energietechnik, Munich, Fed. Rep. of Germany

Filed Dec. 20, 1991, Ser. No. 811,795

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 40413891

Int. Cl.[5] F26B *5/14*

U.S. Cl. 34—401 **6 Claims**



1. An apparatus for extracting water from ash that has been quenched in a water bath of an ash discharger comprising:

a discharge ram for expelling the ash from said water bath;

a discharge chute positioned external to said water bath, said discharging chute for receiving the ash expelled by said discharge ram;

a vibration generator attached to said discharge cute for vibrating said discharge chute, the ash on said discharge chute being compressed by extension of said discharge ram in combination with vibration of said discharge chute and being loosened by the vibration during retraction of the discharge ram.

5,331,747

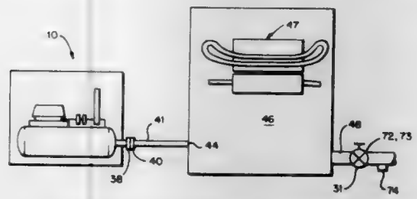
HYDRAULIC TEST APPARATUS AND METHOD FOR STATOR IN ELECTRICAL GENERATOR

Douglas J. Stanton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 845,714, Mar. 4, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 76,156

Int. Cl.[5] F26B *5/04*

U.S. Cl. 34—405 **23 Claims**



1. A stator hydraulic test and dryer apparatus comprising:

an air compressor operatively coupled to an air dryer operatively coupled to a receiver, wherein a first automatic valve is positioned to isolate said compressor from said receiver when closed;

said receiver being operatively couplable to a first port of a water-cooled stator winding so that compressed air in said receiver passes into said stator winding;

a second automatic valve couplable to a second port of the stator winding;

a pressure activated switch being operatively coupled to activate the first and second automatic valves in response to at least one pressure sensor in said receiver or stator winding, and

wherein said first automatic valve being opened and said second automatic valve being closed until the pressure in said receiver and stator windings reaches a predetermined high level, at which point said first automatic valve is closed and said second automatic valve is opened to purge moisture and pressurized air from said receiver and stator winding, said first automatic valve being opened and said second automatic valve being closed when the air pressure in said receiver and stator winding falls to a predetermined low level, wherein said predetermined low level is significantly above atmospheric pressure.

5,331,748

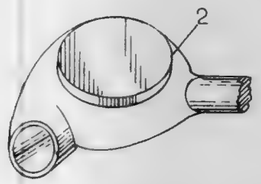
AIR FILTER FOR PORTABLE HAIR BLOW DRYER

Kenneth C. Miller, Jr., 4136 Galbar St., Oceanside, Calif. 92056

Filed Oct. 26, 1992, Ser. No. 910,518

Int. Cl.[5] F24H *3/04*

U.S. Cl. 34—97 **1 Claim**



1. A hand held motor drive hair dryer having an air inlet grid wherein the improvement comprises:

(a), a disc of porous polyurethane foam approximately one eighth of inch thick air filter material placed over the air inlet grid;

(b), the disc removably affixed to the filter disc by transverse strips of double coated polyester film;

(c), said transverse strips protected during shipment and handling by a removable film of polyester adhesive release liner on the exposed surface of said strips; and,

(d), by removing releaser liner from the transverse strips of air filter is temporarily secured to the surface of the air inlet grid.

5,331,749

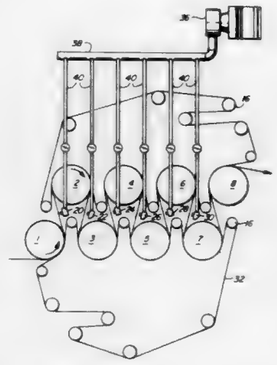
MULTI-FUNCTIONAL NOZZLE BLOW BOX

Eric W. Thiele, W9816 Cedar Rd., Fremont, Wis. 54940

Filed Nov. 9, 1992, Ser. No. 973,622

Int. Cl.[5] F26B *13/20*

U.S. Cl. 34—117 **19 Claims**



1. In a paper machine drying section including a first series of drying cylinders in a top run and a second series of cylinders in a bottom run, upper and lower fabric loops cooperating with the first and second series, respectively, of said drying cylinders for guiding a paper web in a serpentine path around the surface of alternating cylinders of said top and bottom runs of drying cylinders with an open paper draw section between the cylinders of said first series in the top run and the second series of cylinders in the bottom run thereof, the improvement comprising:

apparatus for supplying air directly onto said paper web in said open draw while said paper web is not supported by cylinders, fabric or felt, said apparatus comprising:

at least one nozzle box being located in a dryer pocket adjacent to said paper web and including said means for supplying said air in a manner to inhibit flutter, blow-away or breakage of said web and including a plurality of radial jet reattachment nozzles on said nozzle box and located at spaced locations across the face thereof, and directed towards said paper web.

5,331,750

SHOCK ABSORBING STRUCTURE

Teruo Sasaki, Nishinomiya, and Masahide Fukuda, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 764,104, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 613,963, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 304,847, Feb. 24, 1989, abandoned. This application Jul. 6, 1993, Ser. No. 86,463

Claims priority, application Japan, May 28, 1987, 62-133114; Jul. 8, 1987, 62-104797[U]

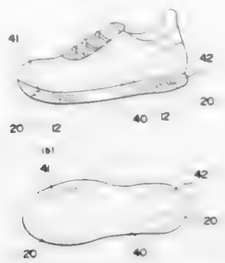
Int. Cl.[5] A43B *13/18*

U.S. Cl. 36—28 **4 Claims**

4. Footwear comprising a composite shock absorbing structure comprising two shock absorbing members superimposed one on the other, each of said shock absorbing members comprising a base, having a plurality of ridges spaced apart in parallel over an entire surface of said base, said shock absorb-

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ing member being comprised of a material having an elasticity similar to that of rubber with a hardness in the range of 5 to 60 according to a JIS-A type hardness meter, such that a tangent ($\tan \delta$) of a phase difference between displacement and stress at a frequency of 10 Hz is not less than 0.2 at a temperature of up to 10° C. and is not more than a half of said tangent at 10° C., wherein a height of said ridges is greater than a thickness of said ridges, and a distance between two centers of adjacent ridges is greater than twice said thickness of said ridges, said ridges having protrusions thereon, and a plurality of hollows in



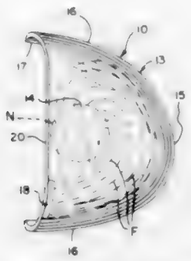
said surface of said base spaced apart intermittently between said ridges, said hollows being of substantially the same shape as said protrusions on said ridges, said protrusions and said hollows having a height equal to a thickness of said base, such that said protrusions of one of said shock absorbing members are inserted into corresponding hollows opposite said protrusions in the base of the other of said shock absorbing members to provide said composite shock absorbing structure, said composite shock absorbing structure being incorporated into a sole of a shoe

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5,331,751
MOLDED PLASTIC TOE CAP

John M. Harwood, 15140 Irene Ct., Elm Grove, Wis. 53122

Continuation-in-part of Ser. No. 798,387, Nov. 26, 1991, Pat. No. 5,210,963. This application May 18, 1993, Ser. No. 63,285
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] **A3C** *13/14*
U.S. Cl. 36—77 R **9 Claims**

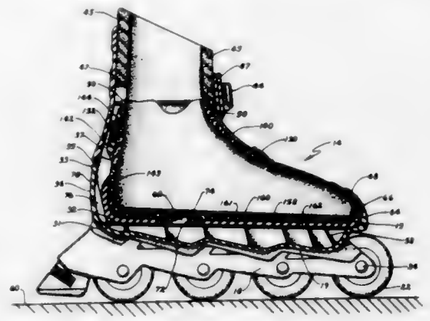


1. An injection molded toe cap for a protective shoe of the type having a rearwardly opening shoe toe-shaped body including a roof which blends smoothly into opposite lateral generally vertical side walls and a generally vertical front wall, and an open rear end defined by a rear edge including the rear edges of the roof and side walls, said toe cap comprising:
a fiber-filled plastic resin body formed in a mold including a mold cavity defining the shape of the toe cap, said body having a major amount of the fibers in the resin portion forming the roof forwardly from the rear edge oriented in a generally laterally direction between the side walls; and,
gate means in the mold adjacent the rear edge of the body for admitting the fiber-filled plastic resin to form the injection molded body, said gate means defining a resin inlet to the mold cavity having a minimum dimension of 0.10 inch (2.5 mm).

5,331,752
SKATE WITH DETACHABLE SHOE

Robert K. Johnson, Blaine; Brennan J. Olson, Minneapolis, both of Minn.; Michel D. Arney, Needham, and Jack J. Curley, Jr., Dunstable, both of Mass., assignors to Rollerblade, Inc., Minnetonka, Minn.

Filed Jan. 14, 1992, Ser. No. 820,382
Int. Cl.[5] **A43B** *5/04*; **A63C** *17/02*
U.S. Cl. 36—115 **11 Claims**



1. In combination, a skate and a detachable shoe, said skate comprising:
a shoe cradle for nestably receiving said shoe, said shoe cradle including an upwardly extending portion girdling the sole of said shoe;
a frame joined to and extending downwardly from said shoe cradle; and
a plurality of ground-engaging members mounted in said frame;
said detachable shoe comprising a sole and an upper;
and wherein said combination further includes means for engagement between said skate and said shoe, said means for engagement provided to secure said shoe in a fixed position in said shoe cradle for substantially preventing movement of said shoe therein along a predetermined line of travel and for substantially preventing the toe of said shoe from lifting upwardly during skating activity;
said means for engagement includes said shoe sole including at least one elongate slot in the forward periphery of said sole and generally coplanar therewith, and a corresponding elongate rib projecting rearwardly from the toe of said shoe cradle to matingly engage said elongate slot when said shoe is nestably received within said shoe cradle; and
said means for engagement further includes a detent extending upwardly from said shoe cradle rearward of said toe and said shoe sole includes an aperture configured to receive said detent as said shoe is inserted into said cradle and wedge said shoe sole forwardly for engagement of said elongate rib with said elongate slot in said shoe sole.

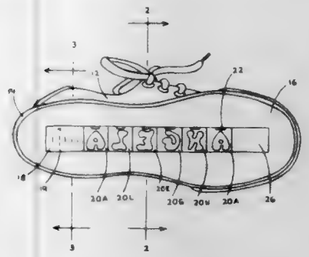
5,331,753
PERSONALIZED SIGNATURE SHOES

Albert C. Rodibaugh, 2770 Bertha St., Bethel Park, Pa. 15102

Continuation of Ser. No. 780,124, Oct. 21, 1991, abandoned.
This application Apr. 13, 1993, Ser. No. 47,249
Int. Cl.[5] **A43B** *23/00*; **A44C** *3/00*
U.S. Cl. 36—136 **10 Claims**

1. An article of footwear for imprinting personalized messages on a ground surface below, comprising:
a. a flexible lower sole which is adapted to flex continually in

use and including an elongated recessed track extending generally longitudinally of said lower sole, said track having closed ends and formed, longitudinally extending and spaced apart insert engaging portions;
b. a plurality of adjoining separate, generally rectangular inserts each having a surface with a symbol, and a pair of generally parallel side portions with respective, opposed

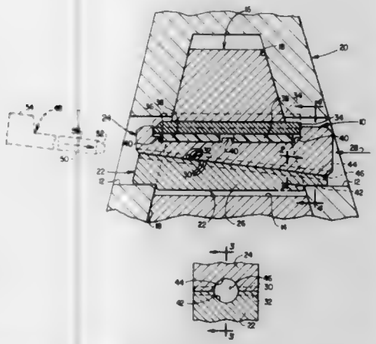


outer surfaces which are cooperable with said insert engaging portions, respectively; and
c. said inserts being received into said recessed track with only said opposed outer surfaces engaging said insert engaging portions of said recessed track, respectively, in a manner that said inserts are retained in said recessed track by only partial perimeteral engagement of said inserts therewith throughout said flexing of said lower sole in use.

5,331,754
RESILIENT, RATCHETED WEDGE AND SPOOL RETAINING STRUCTURE FOR AN EXCAVATION TOOTH

John A. Ruvang, Carrollton, Tex., assignor to GH Hensley Industries, Inc., Dallas, Tex.

Filed Mar. 29, 1993, Ser. No. 38,538
Int. Cl.[5] **E02F** *9/28*
U.S. Cl. 37—457 **21 Claims**

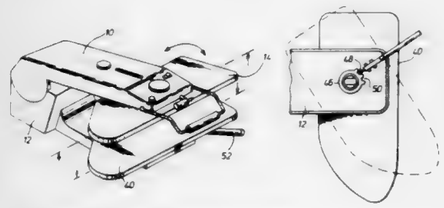


1. For use in captively retaining a replaceable tooth point on an adapter portion of an excavating tooth and adapter assembly in which the adapter portion is removably received in a tapered socket within the tooth point, the tooth point and the adapter portion received therein having generally aligned openings extending therethrough, a resilient wedge and spool retaining structure comprising:
an elongated spool member longitudinally insertable into the tooth point and adapter portion openings, said spool member having:
first and second ends,
a first side on a longitudinally intermediate portion of which a lateral projection is formed, said lateral projection being receivable in the tooth point socket to block longitudinal removal of the inserted spool member from the tooth point and adapter portion openings,
a second side opposite said first side, said second side extending from said first end to said second end and being longitudinally inclined relative to said first side, and
a longitudinally extending series of first ratchet teeth formed on said second side, each of said first ratchet teeth being transverse to the length of said spool member;
an elongated wedge member having:
first and second ends,
a locking side having a recess formed therein and having an inner side surface,
a spool engagement side opposite said locking side, said spool engagement side extending between said first and second ends of said wedge member and being longitudinally inclined relative to said locking side, and
a longitudinally extending series of second ratchet teeth formed on said spool engagement side, each of said second ratchet teeth being transverse to the length of said wedge member;
a locking member received in said recess and projecting outwardly beyond said locking side, said locking member being movable in said recess toward and away from said inner side surface thereof; and
at least one resilient member intersecured between said locking member and said inner side surface of said recess and operative to resiliently resist movement of said locking member toward said inner side surface of said recess,
said wedge member being drivable into the tooth and adapter openings, subsequent to the operative insertion of said spool member therein, to intermesh said first and second ratchet teeth and forcibly engage said locking member with a surface portion of the adapter portion opening in a manner maintaining said at least one resilient member in compression to thereby create resilient reactive forces in said wedge and spool retaining structure which simultaneously act to draw the adapter portion into the tooth socket and forcibly hold said first and second ratchet teeth in intermeshed engagement.

5,331,755
IRONING PRESS WITH HORIZONTALLY ROTATABLE PRESSING MEMBERS

James K. H. Kwok, Quarry Bay, Hong Kong, assignor to The Singer Company NV, Curacao, Netherlands

Filed Nov. 3, 1993, Ser. No. 145,127
Int. Cl.[5] **D06F** *71/08*
U.S. Cl. 38—18 **6 Claims**



1. A steam ironing press comprising:
a frame having a stationary lower section and a horizontally elongated upper section vertically pivotable about the lower section;
a lower horizontally elongated member secured to the lower section and manually rotatable thereabout in a horizontal plane between a position for use at which the lower member extends horizontally at right angles to the direction of elongation of the upper section and a position for shipping at which the lower member extends in the direction of elongation of the upper section;

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an upper horizontally elongated member secured to the upper section and manually rotatable thereabout in a horizontal plane between a position for use at which the upper member extends horizontally at right angles to the direction of elongation of the upper section and a position for shipping at which the lower member extends in the direction of elongation of the upper section, the upper and lower members being in vertical alignment when both members are in the same position;

a first mechanism interconnecting the upper member and the upper section and manually operable to lock the upper member in either selected position or to unlock the upper member to permit manual rotation thereof; and

a second mechanism interconnecting the lower member and the lower section and manually operable to lock the lower member in either selected position or to unlock the lower member to permit manual rotation thereof.

5,331,756

BASKET WALL WITH PLACARD DISPLAY ASSEMBLY

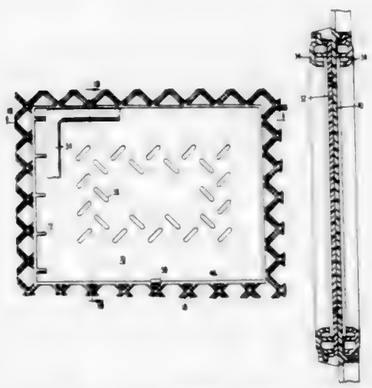
Houston Rehrig, Richmond, Va., assignor to Rehrig International, Inc., Richmond, Va.

Continuation of Ser. No. 579,052, Sep. 7, 1990, abandoned, which is a division of Ser. No. 333,680, Apr. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 190,065, May 4, 1988, Pat. No. 4,922,639. This application Sep. 25, 1992, Ser. No. 951,335

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[5] **G09F** *3/00*

U.S. Cl. 40—308 **40 Claims**



1. A basket wall placard display assembly, comprising:

a basket wall having a wall opening, a wall exterior face and a wall interior face; and

a display card retainer assembly secured to the wall at the wall opening and including a rear. Side generally flush with said wall interior face and a front side recessed at least in part from said wall exterior face so that the retainer assembly is disposed between said interior and exterior wall faces, said display card retainer assembly including (a) slot means through which a display card passes into and out of a display card display position and (b) retaining means for at least partially encircling the display card display position, at least partially defining a display card window frame, and at least partially retaining in the display position a display card inserted thereinto through said slot means.

5,331,757

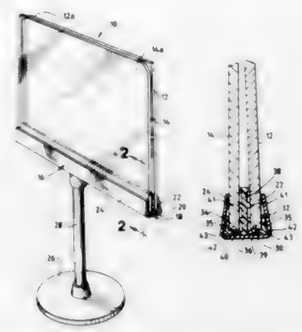
SIGNHOLDER

Richard C. Ernest, Lake Forest, Ill., and P. Paul Retzinger, Cupertino, Calif., assignors to Crown Metal Manufacturing Company, Elmhurst, Ill.

Filed Oct. 5, 1992, Ser. No. 956,627

Int. Cl.[5] **G09F** *15/00*

U.S. Cl. 40—606 **5 Claims**



1. A signholder assembly including a U-shaped retaining bracket and a pair of clear, relatively resilient plastic planar pieces, each of said planar pieces having a face surface and an outside surface and a thickness which may vary slightly between the planar pieces, said planar pieces adapted to be mated to one another along upper portions of said face surface and mounted along a bottom portion in said retaining bracket by said assembly, said assembly further comprising: an insert formed of a relatively hard but resilient plastic material shaped as a channel member having a substantially U-shaped cross-sectional configuration formed by a base and first and second wall members upstanding from said base and a medial interior longitudinal wall member upstanding from said base between said first and second wall members thereby forming two longitudinal channels within said U-shaped channel member, each of said longitudinal channels capable of accepting a respective planar piece therein, each of said first and second wall members being curved in a convex shape facing away from a respective planar piece outer surface but in abutting relation therewith, said medial longitudinal wall having protuberant means extending from opposite sides thereof in contacting relationship with the facing sides of said planar panels, said base having a downwardly extending medial rib flanked by a bowed portion on each side thereof, and an outwardly extending rib at each end of the base at the junction with said first and second wall members whereby when said planar pieces and said channel member are mounted within said retaining bracket, said retaining bracket biases said first and second concave wall members against outer surfaces of said planar pieces to squeeze said planar pieces against said longitudinal wall portuberant means to form a bearing surface for said planar pieces, said biasing force being enhanced by the outwardly extending ribs causing the base to bow.

5,331,758

SINGLE PIECE TRANSPARENT LABEL HOLDER

Jerome M. Romick, 170 N. Drexel Ave., Columbus, Ohio 43209

Filed Jul. 10, 1991, Ser. No. 727,975

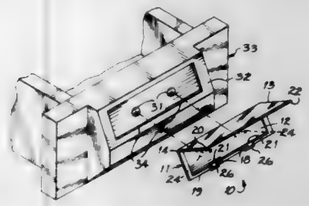
Int. Cl.[5] **G09F** *3/20*

U.S. Cl. 40—661 **9 Claims**

1. A label holder, comprising:

a first panel and a second panel, said panels being connected along adjoining edges by a hinge, one of said panels having a transparent portion, one of said panels having a first edge and the other of said panels having an outer periphery and a second edge defining part of said outer periphery, one of said panels having a depressed area formed therein and the other of said panels having a raised area formed thereon, said raised area at least partially fitting within said depressed area to form a cavity for a label when said holder is in a closed and locked condition, and at least one locking protuberance located along said first edge and having a leading edge, said second edge being adjacent to said leading edge and in contact with said at least one locking protuberance when said holder is in the closed and locked condition,

wherein in order to close and lock said holder and secure a label therewithin, one of said panels is swung along said hinge toward the other of said panels until said second edge makes contact with and is forced past said leading edge, thereby deflecting said at least one locking protuberance, the label being sandwiched between said panels.



5,331,759

EJECTION PORT LOCK FOR FIREARMS

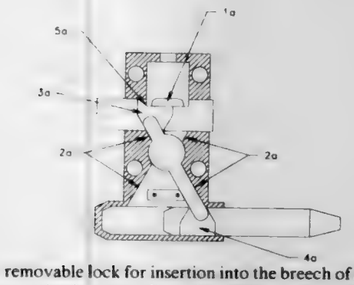
Ian W. Marceau, 3604 Twilight Ct.; Carol A. Marceau, 2604 Twilight Ct., both of Oakton, Va. 22124; Keith F. McHue, and Edith McHue, both of 47 Clarence Street, Glendale, N.S.W., Australia 2285

PCT No. PCT/AU91/00476, § 371 Date Jun. 14, 1993, § 102(e) Date Jun. 14, 1993, PCT Pub. No. WO92/10714, PCT Pub. Date Jun. 25, 1992

PCT Filed Oct. 16, 1991, Ser. No. 66,040

Int. Cl.[5] **F41A** *17/44*

U.S. Cl. 42—70.11 **5 Claims**



1. A removable lock for insertion into the breech of a firearm having an ejection port through which spent cartridges are ejected from the breech, said lock including a body adapted to fit within the ejection port and to extend into the breech, and means within the body for preventing removal of the body from the breech to prevent chambering of a live cartridge, said means comprising:

a lock bolt slidably mounted in the body, and extendable forward from the body into the barrel of the firearm,

an activating slide, slidably mounted in the body and having opposite ends protruding from the body, for moving the lock bolt,

a pivoted lever interconnecting the bolt and the slide, and

a lock cylinder, operable by a key, for preventing movement of the activating slide in a locked condition,

whereby, in an unlocked condition, the activating slide can be moved with respect to the body by applying finger pressure on either end of the slide, to move the lock bolt.

5,331,760

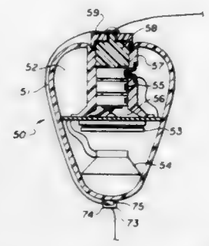
FISH-ATTRACTING FLOAT

Jon A. DuMont, 9573 Woodstate Dr., Cincinnati, Ohio 45251

Filed Sep. 7, 1993, Ser. No. 116,848

Int. Cl.[5] **A01K** *93/00*

U.S. Cl. 43—17.1 **19 Claims**



1. A fishing float for attachment to a fishing line with a hook at said fishing line's end, said float capable of floating on water and noticeably moving in response to a fish strike on the hook and further being capable of attracting fish, said fishing float comprising:

(a) a buoyant body with a water-tight chamber therewithin;

(b) an integrated circuit device mounted within the water-tight chamber of the buoyant doby, said integrated circuit device having recorded on it at least one fish attracting sound;

(c) a speaker operably associated with the integrated circuit device to broadcast the at least one fish attracting sound into the general vicinity of the fishing float; and

(d) a source of electrical power with means to activate the integrated circuit device and speaker.

5,331,761

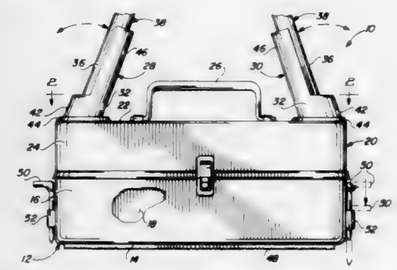
COMBINATION FISHING TACKLE BOX AND FISHING POLE HOLDER DEVICE

Louis Kuthy, 15750 Los Angeles Ave., #104, Moorpark, Calif. 93021

Filed May 13, 1993, Ser. No. 60,670

Int. Cl.[5] **A01K** *97/10*

U.S. Cl. 43—21.2 **12 Claims**



1. An improved combination fishing tackle box and fishing pole holder device, said device comprising, in combination:

a) a fishing tackle box having an interconnected generally horizontal, flat bottom and upstanding sides collectively defining a central, fishing tackle-storing space open at the top, and a lid connected to the upper end of said box for movement between a closed position covering said space and an open position exposing said space, said lid having a generally flat horizontal top surface;

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b) a hollow, generally tubular fishing pole holder connected to said upper surface of said lid and extending upwardly therefrom at an angle, said holder having a base socket adapted to receive and releasably retain the butt of a fishing pole and an upper fishing pole-bracing portion connected to said socket, said portion having an upper and a lower side with said upper side being cut away to enable said pole to be tilted away from said holder while retaining said pole base in said socket; and

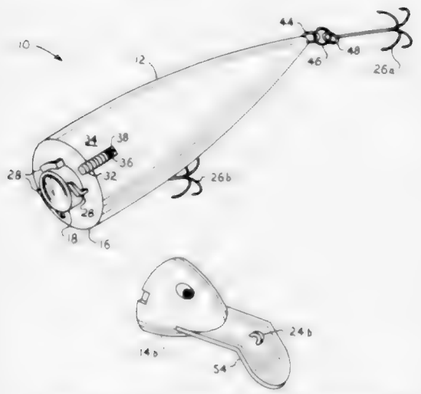
c) wherein said holder slant toward the center of said lid and wherein said cutaway portion of said holder is on the side thereof away from said center of said lid, thereby providing increase stability of said tackle box and holder when a pole is placed therein.

5,331,762

FISHING LURE WITH INTERCHANGEABLE HEADS

Waverly S. Banks, Rte. 3, Box 132 C, Culpeper, Va. 22701

Filed Oct. 26, 1993, Ser. No. 141,104
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—42.09 **13 Claims**



1. A fishing lure providing for the interchangeability of portions thereof, comprising:

a universal body portion including at least one hook attached thereto;

a plurality of head portions each singly attachable to said universal body portion, with each of said head portions including means providing for the attachment of leader thereto and different means affecting the hydrodynamic action and path of said lure; and

said body portion having a forward end and forward side and each of said head portions having a rearward end and rearward side, with said body portion forward end and said rearward end of said each of said head portions including cooperating means providing for the selective and secure attachment of said each of said head portions to said body portion, whereby

a user of said lure may select one of said head portions as desired and according to environmental conditions, and secure the selected said one of said head portions to said body portion to provide a lure suitable for the given conditions;

means providing for the alignment of said each of said head portions with said body portion of said lure,

said means providing for the alignment of said each of said head portions with said body portion comprise

said body portion forward end having a concentric plug extending therefrom with four equally spaced helical ramps disposed about said concentric plug, and said forward side portions of said body portion including two diametrically opposed latches installed therein, and;

said rearward end of said each of said head portions having a concentric socket formed therein with said socket having side walls including four equally spaced slots formed therein and cooperating with said helical ramps of said body portion, and said rearward side portions of said each of said head portions each including two diametrically opposed grooves formed therein and cooperating with said latches of said body portion, whereby;

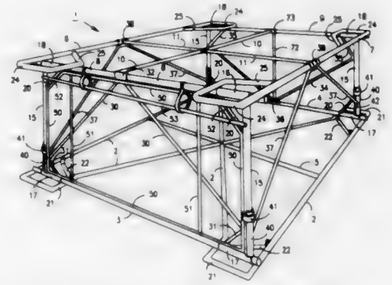
said one of said head portions is aligned upon said body portion by helically threading said one of said head portions upon said body portion by means of said cooperating helical ramps and slots and oriented to provide alignment of said latches with said cooperating grooves, with said alignment of said latches and said grooves precluding improper alignment of said body portion and said one of said head portions when said one of said head portions is helically advanced to seat upon said body portion.

5,331,763

COLLAPSIBLE KING CRAB POT WITH ONE-PIECE NET

George R. Miller, 1 Jackson Pl., Durango, Colo. 81301

Continuation-in-part of Ser. No. 874,737, Apr. 27, 1992, Pat. No. 5,218,781. This application Jun. 23, 1992, Ser. No. 902,655
Int. Cl.[5] A01K *69/00*
U.S. Cl. 43—100 **20 Claims**



1. A collapsible crabpot structure comprising.

a generally flat bottom frame structure for resting on a seabed, and a generally flat top frame structure, at least one of said bottom and top frame structures including a plurality of parallel hinge bar members,

said collapsible crabpot having a folding structure means including a plurality of vertical hinged bar members each extending generally perpendicular to one of the hinge bar members of a respective frame structure, hinge means for pivotably connecting each vertical hinged bar member to its respective frame hinge bar member,

each said hinge means comprising a tube member with the respective hinged bar member being secured thereto, said tube member being rotatably carried by a respective frame bar member,

said hinge means being located at outer corners of the respective frame structure,

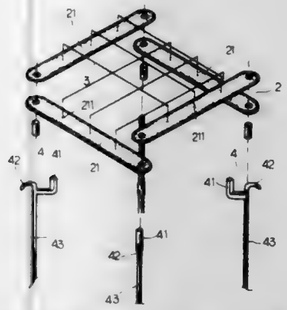
a protective means for each said tube member comprising portions of the respective frame structure extending outwardly, transversely beyond and vertically displaced at the side of the respective tube member, to protect the tube member from damage due to inwardly directed impact forces or other deforming forces on the crabpot structure directed transversely toward the tube member during use of the crabpot structure.

5,331,764

RACK FOR GROWING PLANTS

Han C. Sun, 43, Ta An Road, Tieng Chung Shen, Changhua, Taiwan

Filed Apr. 22, 1993, Ser. No. 51,340
Int. Cl.[5] A01G *17/06*
U.S. Cl. 47—45 **1 Claim**



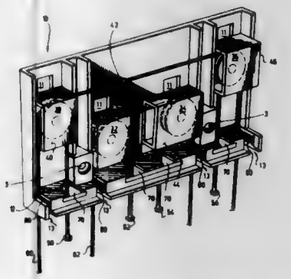
1. A rack for growing plants comprising a collapsible open frame supported on upright supports, and a netting stretched in said collapsible open frame, said collapsible open frame being comprised of a plurality of rods having each two opposite ends respectively and pivotally connected to one another by hollow pivots, each rod having wire holes for inserting a cord in setting up said netting, each upright support comprising an elongated upright rod having a forked top end terminated to a downward hook hooked in either hollow pivot and an upward angle bar to support either rod.

5,331,765

ADJUSTING DEVICE FOR A DOUBLE-HUNG SASH ASSEMBLY, IMPROVED ASSEMBLY SO OBTAINED AND METHOD OF USE

Jean Dupuis, Montréal, and Nick Ganos, St-Louis-de-Terrebonne, both of Canada, assignors to Les Produits ABP, Inc., Quebec, Canada

Filed Nov. 2, 1992, Ser. No. 970,072
Int. Cl.[5] E05F *17/00*
U.S. Cl. 49—121 **17 Claims**



1. In a double-hung sash assembly comprising:

two adjacent first and second pairs of sashes sliding in a window frame, each pair comprising an upper sash and a lower sash;

at least one set of four pulleys operatively mounted in a housing mounted in said window frame, each pulley of a same set being substantially aligned with one of said sashes; and for each set of four pulleys:

a first cable having two ends, one of said ends being fixed to said upper sash of said first pair and the other end being fixed to said lower sash of said second pair, said first cable being supported by two of said pulleys aligned with said sashes having an end of said first cable fixed thereto;

a second cable having two ends, one of said ends being fixed to said lower sash of said first pair and the other end being fixed to said upper sash of said second pair, said second cable being supported by two of said pulleys aligned with said sashes having an end of said second cable fixed thereto;

the improvement wherein for each set of four pulleys adjusting means are provided for modifying the relative distance between at least one pulley of those supporting said first cable and its corresponding sash, and/or modifying the relative distance between at least one pulley of those supporting said second cable and its corresponding sash; and

wherein said adjusting means comprise:

at least two rails provided in the housing;

at least two supports, each support being slidably mounted in a corresponding rail;

at least one pulley of those supporting the first cable, being operatively mounted to a support, and at least one pulley of those supporting the second cable being operatively mounted to a support, and

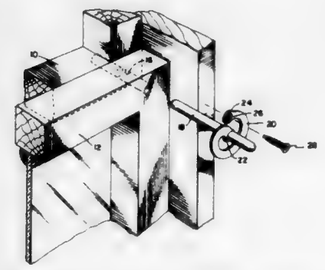
means for individually moving each of said supports along its corresponding rail to adjust the relative distance between a pulley and its corresponding sash.

5,331,766

DEVICE FOR LOCKING WINDOWS

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06612

Filed Jul. 19, 1993, Ser. No. 92,880
Int. Cl.[5] E05F *3/00*
U.S. Cl. 49—449 **2 Claims**



1. A device adapted for use in locking a window in a closed position or in a partially or fully open position, said device comprising:

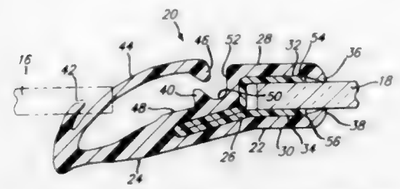
an elongated cylindrical locking pin having two opposed ends;

a flat flexible spiral shaped spring lying in a single plane perpendicular to the direction of elongation of said pin, the spring having an inner end secured to the pin at a position intermediate the ends of the pin, the inner end having an opening through which the pin extends, the pin being secured immovably to the spring, the spring having an outer end with an opening therein; and

a screw removably disposed in the opening in the outer end of the spring.

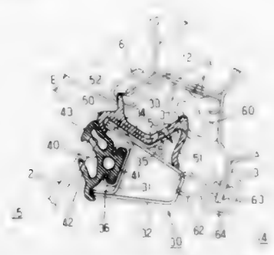
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5,331,767
ENHANCED WEATHERSTRIP MOUNTED ON GLASS WITH OPPOSITE SIDE SEAL
Norio Takeuchi, Plymouth, and Mark D. Faunce, Farmington Hills, both of Mich., assignors to The Standard Products Company, Cleveland, Ohio
Filed Mar. 24, 1993, Ser. No. 36,628
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—490.1 23 Claims



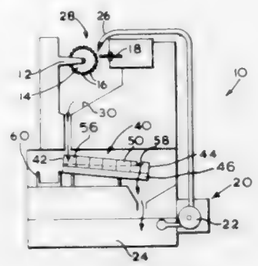
1. A weatherstrip for providing a seal between first and second selectively movable window glass panels, comprising:
a resilient base portion having first and second spaced apart legs having incurved end portions, whereby said incurved end portions tightly engage said first glass panel;
a resilient lip portion integral with and extending from said base portion, said resilient lip including a branched sealing lip portion which extends substantially perpendicularly from the resilient lip and a longer lip portion which extends in the direction of said base portion; and
a substantially rigid core member at least partially embedded in said base portion having a portion which at least partially extends into said resilient lip portion.

5,331,768
DOOR SEAL DEVICE
Norio Takeuchi, Hiroshima, Japan, assignor to Nishikawa Rubber Co., Ltd., Hiroshima, Japan
Filed Mar. 5, 1993, Ser. No. 27,144
Claims priority, application Japan, Mar. 11, 1992, 4-088028
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—493.1 7 Claims



1. A door seal device comprising:
a door sash having a protruding portion which extends substantially perpendicularly relative to a door glass and also extends outwardly over an upper end portion of the door glass;
a protruding flange provided on the protruding portion which faces a body opening end edge;
an inverted V-shaped protruding member of a door cutline seal attached to and covering the protruding flange, the door cutline seal also having a tip end member surrounding a free end of the protruding portion; and
a main seal attached to said body opening end edge and contacting the inverted V-shaped member at the side of the body opening end edge in a closed position of the door sash.

5,331,769
GRINDING APPARATUS AND METHOD
Barry Walton, Rotherham, England, assignor to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 959,191, Oct. 9, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 192,191
Claims priority, application United Kingdom, Oct. 10, 1991, 9121534.3
Int. Cl.[5] B24B 5/00
U.S. Cl. 51—105 SP 15 Claims

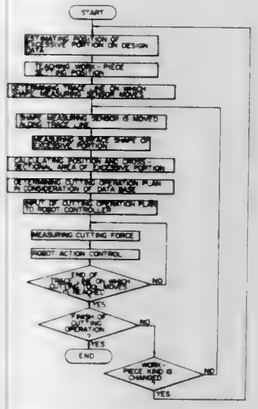


1. Grinding apparatus comprising:
clamping means for clamping a tool, said tool having at least one tungsten carbide tip to be ground by the grinding apparatus;
a rotatable grinding wheel for grinding said tungsten carbide tip and thereby producing fine tungsten carbide particles;
coolant circulating means for directing liquid coolant over said tungsten carbide tip during grinding, said coolant circulating means including a sump and pump means for recirculating coolant from said sump over said tungsten carbide tip;
separation means for separating said tungsten carbide particles from said recirculating coolant as said coolant and particles flow through said separation means;
said separation means comprising elongated flow channel means having a bottom plate and a pair of side walls, said elongated flow channel means having inlet and outlet portions spaced apart along the elongated length of said elongated flow channel means;
said separation means further including flow directing walls extending transverse to said side walls and extending into said elongated flow channel means between said inlet and outlet portions, said transverse flow directing walls forming a labyrinthine flowpath through said elongated flow channel means between said inlet and outlet portions; and
at least one magnetic means for magnetizing said bottom plate of said elongated flow channel means with a sufficient magnetic field to attract and hold a substantial portion of said tungsten carbide particles as said particles flow through said labyrinthine flowpath.

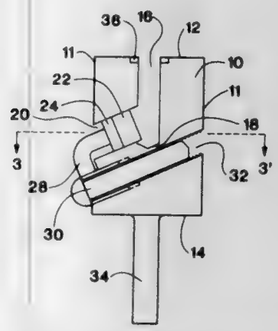
5,331,770
METHOD FOR SCRAPING OFF EXCESSIVE PORTION OF WORKPIECE
Masayuki Ichinohe, Yokohama; Koichi Sugimoto, Hiratsuka; Kazuo Yamaguchi, Sagamihara; Genji Itoh; Kenji Maeda, both of Funabashi, and Kouichiro Ohara, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 24, 1992, Ser. No. 904,002
Claims priority, application Japan, Jul. 26, 1991, 3-187249; Jun. 1, 1992, 4-140259
Int. Cl.[5] B24B 49/00
U.S. Cl. 51—165.71 37 Claims

1. A method for scraping off automatically an excessive portion of a workpiece by a cutting tool, comprising the steps of:
measuring a surface shape of the excessive portion of the workpiece,

calculating a cross-sectional area variation of the excessive portion substantially along a feed course in which the cutting tool will proceed during a cutting operation thereof, from the measured surface shape of the excessive portion, and
scraping off the excessive portion in the feed course with a feed speed of the cutting tool which is changed substantially in accordance with the calculated cross-sectional area variation of the excessive portion along the feed course, so that the larger the calculated cross-sectional area of the excessive portion is, the smaller the feed speed of the cutting tool is, and the smaller the calculated cross-sectional area of the excessive portion is, the larger the feed speed of the cutting tool is.

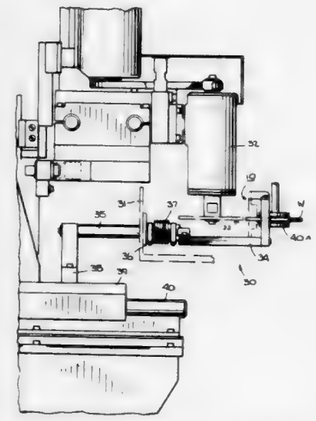


5,331,771
SHARPENING TOOL FOR POINTED OBJECTS
Francis D. Coushman, 3104 Springdale Ave., Wausau, Wis. 54401
Filed Apr. 6, 1993, Ser. No. 47,044
Int. Cl.[5] B24B 23/02
U.S. Cl. 51—170 R 15 Claims



1. An apparatus for sharpening pointed objects comprising:
a cylindrical member with first and second ends and cylindrical lateral surface, said cylindrical member containing a round aperture of selected diameter, centered on the longitudinal axis of said cylindrical member, said aperture extending from said first end and ending short of said second end, producing a closed end therein, said cylindrical member containing a slot extending from said cylindrical lateral surface and intersecting a portion of said aperture near said closed end at a selected angle;
an abrasive member positioned within said slot and extending into said aperture near said closed end;
adjustable retaining means for retaining said abrasive member in said slot and in contact with an end of a pointed object inserted within said aperture; and
means extending from the second end of said cylindrical member along the longitudinal axis thereof, for attachment of a power source for rotating said apparatus.

5,331,772
SEAL ASSEMBLY FOR A WAFER GRINDING MACHINE
Robert E. Steere, III, Boonton, N.J., and Thomas E. Leonard, Vernon, Conn., assignors to Silicon Technology Corp., Oakland, N.J.
Continuation of Ser. No. 700,619, May 15, 1991, abandoned, which is a division of Ser. No. 343,064, Apr. 25, 1989, Pat. No. 5,036,628. This application Jul. 7, 1992, Ser. No. 911,265
Int. Cl.[5] B24B 9/00
U.S. Cl. 51—268 13 Claims



1. In a wafer grinding machine, the combination comprising
a housing having an opening therein;
a rotatable chuck outside said housing for receiving and holding a wafer opposite said opening;
a grinding wheel mounted within said housing for grinding an edge of a wafer on said chuck; and
a seal assembly mounted on said housing over said opening in said housing and between said chuck and said grinding wheel for sealing against planar surfaces of a wafer on said chuck when said wafer is passed through said seal assembly and said opening during grinding of an edge of the wafer to seal the planar surfaces from debris ground from the edge of the wafer within said housing.

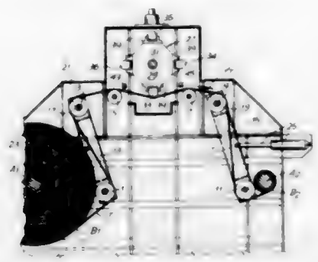
5,331,773
MACHINE AND METHOD FOR THE ABRASIVE TREATMENT OF FABRICS
Fiorenzo Biancalani, Prato, and Luigi Marcora, Vicchio, both of Italy, assignors to Officina Meccanica Biancalani & C. di Fiorenzo Biancalani and Coramtex S.r.l., both of Prato, Italy
Filed Sep. 9, 1992, Ser. No. 942,592
Claims priority, application Italy, Sep. 13, 1991, FI/91/A 224
Int. Cl.[5] B24B 1/00
U.S. Cl. 51—281 R 13 Claims

1. A method for an abrasive treatment of a fabric, the method comprising the steps of:
providing an abrasive unit containing an abrasive material

with a plurality of cavities bounded by walls, a surface of said abrasive material being substantially uniform across a width of the fabric;

moving the fabric at a substantially uniform speed past said abrasive unit,

pressing the moving fabric against sad abrasive material to cause the pressed fabric to undergo abrasive action from said abrasive material and to continuously remove exposed portions of said walls of said abrasive material while



simultaneously exposing new portions of said walls of said abrasive material,

dampening the fabric during one of before and during said pressing of the moving fabric against said abrasive material;

oscillatingly moving said abrasive material transversely across the width of the fabric to substantially uniformly remove said exposed portions of said walls of said abrasive material while substantially uniformly exposing said new portions of said walls of said abrasive material

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5,331,774

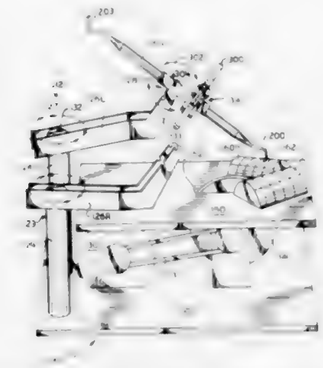
METHOD AND DEVICE FOR SHARPENING CHIRAL BLADES OF DENTAL INSTRUMENTS

David D. Domenella, 9906 N. Rte. #14, Harvard, Ill. 60033

Filed Jul. 9, 1992, Ser. No. 908,038

Int. Cl.[5] **B24B** *1/00*

U.S. Cl. 51—285 **5 Claims**



1. A method for accurately sharpening chiral blades of a dental instrument, the method comprising the steps of:

providing positioning guide means having empirically determined indicia thereon for positioning the dental instrument in a desired predetermined position;

determining a sharpening position for at least one of the chiral blades of the dental instrument by placing the dental instrument in a movable instrument holding means and placing the at least one of the chiral blades in tangential contact with said positioning indicia;

securing the dental instrument in said instrument holding means;

moving said instrument holding means to a rotating sharpening stone; and

placing the at least one chiral blade in contact with said sharpening stone.

5,331,775

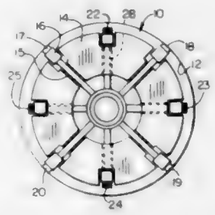
HONING PROCESS WITH ROUGH HONING TOOL AND FINISH HONING TOOL ON SAME ROTATING HEAD

Guy H. Carmichael, Lakewood, and James B. Tyler, Westlake, both of Ohio, assignors to Jason, Inc., Cleveland, Ohio

Filed Sep. 8, 1992, Ser. No. 941,544

Int. Cl.[5] **B24B** *1/00*

U.S. Cl. 51—290 **24 Claims**



1. A method of honing a cylindrical surface having an axis comprising the steps of rough honing the cylindrical surface for a predetermined time by moving a rough honing tool over such surface both rotationally and axially with respect to said surface to impart a cross honing pattern thereto, which pattern comprises crossing helical ridges and grooves forming striations on the cylindrical surface, and after commencement of the rough honing step then finish honing such surface by moving a finishing hone tool over such surface both rotationally and axially with respect to said surface, said finish honing step being completed after the completion of the rough honing step, said finishing hone tool having a working face of tightly compacted tips of abrasive containing plastic monofilaments wherein said rough honing is obtained with a rough honing stone tool, and said finish honing is obtained with a finish honing tool, both tools being mounted in the same rotating head.

5,331,776

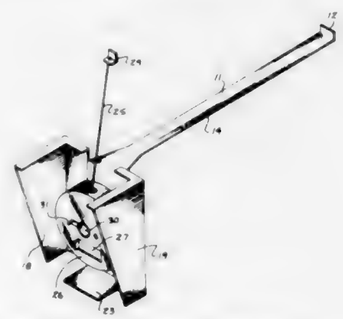
ROOFING ABUTMENT APPARATUS

Brett M. Shelton, and Michael L. Meyer, both of 1427 Phoenix Dr., #5, Fairfield, Calif. 94533

Filed Mar. 15, 1993, Ser. No. 31,263

Int. Cl.[5] **E04G** *3/08*

U.S. Cl. 52—24 **1 Claim**



1. A roofing abutment apparatus, comprising,

at least one abutment member arranged for positioning upon a roof surface, wherein the abutment member includes a first plate having a first length, the first plate including a first plate first side spaced from and parallel a first plate second side, a first plate first end spaced from a first plate second end, and

a second plate, and

the first plate having a first length, with the second plate having a second length less than the first length, with the second plate fixedly and orthogonally mounted to the first plate first end and projecting from the first plate second side, with an abutment plate fixedly and orthogonally mounted to the first plate second end extending from the first plate first end, with the abutment plate including an abutment plate top surface and an abutment plate bottom surface orthogonally oriented relative to the first plate first side, and

the abutment plate including an abutment plate forward edge spaced from and parallel the first plate, with the forward edge including a forward edge plate orthogonally mounted to the forward edge projecting beyond the abutment plate bottom surface, with the forward edge plate and the second plate arranged for engagement of a roof tile, and

a first triangular positioning plate and a second triangular positioning plate arranged in a parallel coextensive relationship relative to one another and orthogonally mounted to opposed sides of the abutment plate projecting beyond the abutment plate bottom surface for affording stability to the abutment plate in its orientation relative to the roof tile, and

a further abutment member of identical construction to said at least one abutment member, and a rigid support plate extending between the further abutment member and said at least one abutment member, and engaging the abutment plate and the first plate, and

at least one abutment member includes a string housing mounted to the abutment plate bottom surface between the first positioning plate and the second positioning plate, with the string housing having a housing cavity and a door plate directed through the housing for access to the housing cavity for positioning powdered chalk within the housing cavity, and a flexible chalk string, with a housing axle rotatably mounted within the housing, and the chalk string wound about the housing axle, and the chalk string including a free end positioned exteriorly of the housing, with the housing having a side wall opening, and the chalk string directed through the side wall opening, and the chalk string free end having a chalk string lug preventing directing of the chalk string free end within the housing, and the axle including an axle handle positioned exteriorly of the housing permitting manual rotation of the axle and winding of the string about the axle.

5,331,777

COLLAPSIBLE FOLDING FRAME ASSEMBLY FOR A COLLAPSIBLE FOLDING VEHICLE BARN

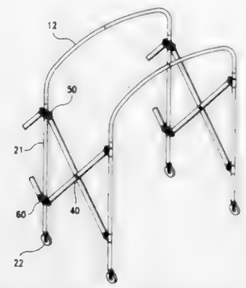
Huang Chi-Yuan, 81-1, Mei-Kuang St., Tao-Yen City, Tao-Yen Hsien, Taiwan

Filed Apr. 26, 1993, Ser. No. 51,754

Int. Cl.[5] **E04B** *7/16;* **E04H** *15/48*

U.S. Cl. 52—64 **1 Claim**

1. A collapsible folding frame assembly for a collapsible folding vehicle barn comprising two collapsible folding frame units vertically disposed at two opposite sides, and a bridge frame unit connected between said two collapsible folding frame units at the top, each collapsible folding frame unit comprising a plurality of upright tubes respectively connected by folding cross frames and slide connectors, said slide connectors being respectively and slidably mounted on each upright tube at different elevations, each folding cross frame having four ends pivotally connected to a coordinate connecting terminal of respective slide connectors, each upright tube having a bottom end coupled with a roller and a top end terminated to a reduced cylindrical extension tube having a spring supported side pin for connecting said bridge frame unit, said bridge frame unit comprising a plurality of bridge frames respectively connected to either upright tube, each bridge frame being consisted of a first tube and a second tube, said first tube



having one end terminated a reduced cylindrical extension tube having a spring supported side pin releasably engaged into a pin hole on one end of said second tube, said first and second tube having each an opposite end made with a side pin hole into which the spring-supported pin on either upright tube engages.

5,331,778

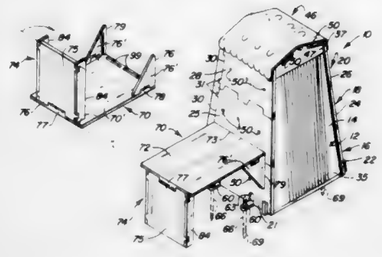
PORTABLE ENCLOSURE ASSEMBLY

Antonio Mazpule, 4711 SW. 133rd Ave., Miami, Fla. 33175, and Geronimo R. Pimienta, 1233 SW. 13th Ct., Miami, Fla. 33175

Filed Jul. 8, 1992, Ser. No. 910,535

Int. Cl.[5] **E04B** *2/72;* **E04H** *1/12*

U.S. Cl. 52—79.5 **16 Claims**



1. A portable enclosure assembly adapted to house at least one person for purposes of taking a shower or like activity said assembly comprising;

a) a wall means adapted for at least partially surrounding and thereby defining a hollow interior portion of sufficient height and overall dimension to house a person therein,

b) said wall means comprising a plurality of wall segments disposed in a substantially stacked array and extending along the length of said hollow interior,

c) said plurality of wall segments comprising a lower most wall segment, an upper most wall segment and at least one middle wall segment disposed there between,

d) each of said wall segments comprising a plurality of panels defined by at least three panels including two opposed, space depart side panels and a back panel interconnecting said side panels, said plurality of panels collectively disposed in at least partially surrounding relation to a portion of said hollow interior,

e) attachment means disposed and adapted for removably connecting correspondingly positioned panels of adjacent wall segments and being formed along an upper peripheral edge of said plurality of panels of said lower most wall

VOL 1164 ISS 4 JL 26 1994 UMI

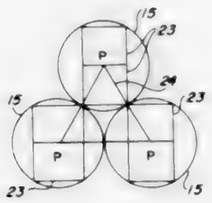
segment and a lower peripheral edge of said plurality of panels of said upper most wall segment; said plurality of panels of said middle wall segment including said attachment means formed along both upper and lower peripheral edges thereof,

f) each peripheral edge of said plurality of wall panels having said attachment means formed thereon being defined by a double row of alternating tongue and groove portions; each of two mating peripheral edges of adjacent panels adapted to removably mount the plurality of tongue portions of one mating peripheral edge into the plurality of grooves of the other mating peripheral edge, and

g) connecting means structurally adapted for interconnecting wall panels of at least one common wall segment

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5,331,779
TRUSS FRAMING SYSTEM FOR CLUSTER MULTI-LEVEL HOUSING
Ally O. Hing, P.O. Box A, Superior, Ariz. 85273
Filed Oct. 23, 1992, Ser. No. 965,712
Int. Cl.[5] E04H *1/00*
U.S. Cl. 52—80.1 **6 Claims**



1. A multi-level cluster housing array comprising.

a plurality of hollow spheres in a stacked array wherein each sphere is tangent to another,

a plurality of identical struts having a predetermined length interconnected in a pattern consisting of a plurality of first octahedron-tetrahedron configurations,

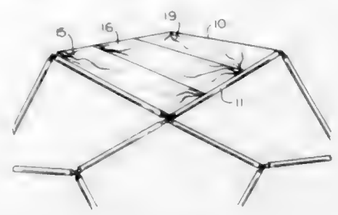
each of said first configurations being positionably in a different one of said spheres, the surface of said sphere being in contact with the corners of said configuration,

said first struts of each of said first configurations defining between them an outline of a rectangular prism defining bi-level cubical housing, and

each of prisms which its outline is enclosed by solid planes defining said bi-level cubical housing.

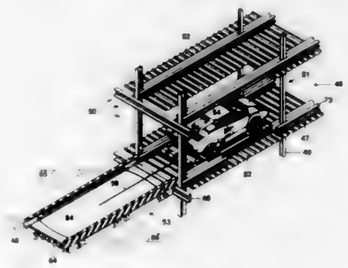
5,331,780
HYPERBOLIC PARABOLOID ROOF AND SIDEWALL SYSTEM
Daniel F. Tully, 110 Ellis Farm La., Melrose, Mass. 02176
PCT No. PCT/US91/09593, § 371 Date Apr. 20, 1992, § 102(e) Date Apr. 20, 1992, PCT Pub. No. WO92/11420, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 18, 1991, Ser. No. 852,122
Int. Cl.[5] E04B *7/08*; **E04D** *1/36*
U.S. Cl. 52—80.2 **3 Claims**

1. A hyperbolic paraboloid roof structure comprising a plurality of identical rectilinear hyperbolic paraboloid roof panels (**10**); each said panel (**10**) comprising at least three prefabricated rectilinear subpanels (**15**, **16**, **17**) arranged to interlock along abutting edges by overlapping tongue (**15***a*, **16***b*) and groove (**15***b*, **16***a*) means and locked together by top and bottom cover means (**8**); said sub-panels including a bottom (**15**), a middle (**16**), and a top (**17**) section of the hyperbolic paraboloidal roof panel (**10**); said panels being mounted on a frame made of a plurality of beams (**11**) having identical cross-sections and having top surfaces (**11***a*) which are semi-circular arcs; the ends of the subpanels (**15**, **16**, **17**) of each panel (**10**)



being attached tangentially by mechanical fixture means (**10***a*) to said top surfaces (**11***a*) of said beams (**11**).

5,331,781
STORAGE APPARATUS
David L. Gilbert, Queensland, Australia, assignor to Ultrapark Australia Pty. Ltd., Queensland, Australia
PCT No. PCT/AU91/00021, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO91/10794, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 18, 1991, Ser. No. 877,179
Claims priority, application Australia, Jan. 19, 1990, PJ8249
Int. Cl.[5] E04H *6/42, 6/00*
U.S. Cl. 52—143 **10 Claims**



1. Storage apparatus comprising:

a) a plurality of storage areas,

b) a substantially horizontal path traversing past the storage areas,

c) a carriage means adapted to move along the path,

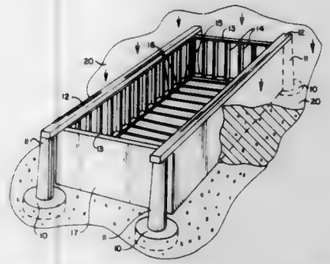
d) transportation means carried by the carriage means and adapted to be moved from a suitably aligned carriage means into and out of a storage area,

e) an unwheeled pallet adapted to carry an article to be stored and adapted to be supported on the transportation means,

f) lifting means on the transportation means capable of raising and lowering a pallet on the transportation means so that the pallet may be deposited in a storage area and the transportation means removed from the storage area, and

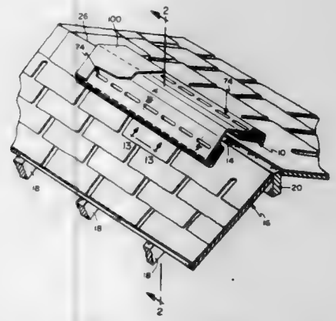
g) the storage areas are each defined by a pair of members each having a lower horizontal flange and an upper horizontal flange which extend inwardly into the storage area, the transportation means being adapted to ride on the lower flanges and the lifting means being adapted to lower the pallet onto the upper flanges.

5,331,782
BASEMENT ENCLOSURE
Franz F. Wohlgemuth, 3467 Broadway St., Grove City, Ohio 43123
Continuation of Ser. No. 283,105, Dec. 12, 1988, abandoned. This application Dec. 17, 1990, Ser. No. 629,965
Int. Cl.[5] E02D *27/00*
U.S. Cl. 52—169.7 **6 Claims**



1. A basement enclosure adapted to be installed below ground level comprising a single floor in a horizontal plane, vertically extending walls attached to said floor at essentially right angles thereto around the entire periphery of said floor and thereby forming an enclosed interior zone with said zone being substantially entirely open at the top of said walls, said floor and walls together forming a rigid, self-supporting structure not requiring additional support to achieve rigidity for final proper installation and use, the top of said walls being so designed so as to be readily adapted to engage horizontal supports extending across from the top of one wall to an oppositely disposed wall, so as to receive a building to be constructed thereon and the exterior of said floor and walls having attached thereto and being completely covered with a separate outer substantially continuous contiguous shell constructed of a material impermeable to moisture and gas.

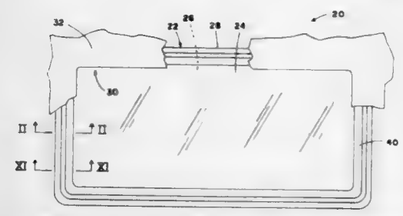
5,331,783
RIDGE CAP TYPE ROOF VENTILATOR
Gary P. Kasner, Eden Prairie; Mark S. Stoll, Deephaven, and Richard J. Morris, Maple Grove, all of Minn., assignors to Liberty Diversified Industries, Inc., New Hope, Minn.
Continuation of Ser. No. 753,301, Aug. 30, 1991, abandoned, which is a division of Ser. No. 479,376, Dec. 13, 1990, Pat. No. 5,094,041. This application Jan. 14, 1993, Ser. No. 4,783
Int. Cl.[5] E04B *7/00*
U.S. Cl. 52—199 **10 Claims**



1. In a roof ventilator for mounting on a peak of a roof having a roof opening, said roof ventilator having a pair of vent parts disposed on opposing sides of said roof opening and a top panel disposed above said pair of vent parts, said top panel being covered by one or more shingles when said roof ventilator is conventionally mounted on said peak of said roof, said roof ventilator defining an interior region and an exterior region surrounding said roof ventilator, said top panel defining a multiplicity of air passages fluidly communicating with said exterior region, said top panel having a centerline, the improvement comprising:

a plurality of apertures defined by an extending at least partially through the top panel and intersecting at least a portion of the multiplicity of air passages defined therein, said plurality of apertures being covered by the one or more shingles when the roof ventilator is mounted on the peak of the roof, said plurality of apertures interrupting at least a portion of the multiplicity of air passages defined by the top panel, each of said plurality of apertures being generally aligned along at least a pair of lines, each of said pair of lines being disposed on the top panel, such that air vented through the roof opening and into the interior region of the roof ventilator can traverse into said plurality of apertures and through the multiplicity of air passages defined within the top panel to the exterior region surrounding the roof ventilator.

5,331,784
VEHICULAR PANEL ASSEMBLY AND METHOD FOR MAKING SAME
Raj K. Agrawal, 13946 Fox Trail Dr., Holland, Mich. 49424, and Doug Crank, 121 E. 25th St., Holland, Mich. 49423
Filed Jun. 12, 1992, Ser. No. 897,764
Int. Cl.[5] E04B *1/62*
U.S. Cl. 52—393 **52 Claims**



1. A method for manufacturing a panel assembly comprising:

providing a sheet-like panel having at least one surface;

supporting a preformed gasket in a predetermined pattern with a bonding surface arranged to face a portion of said panel;

priming at least one of said panel surface and said bonding surface of said gasket by applying an adhesion promoting priming composition thereto;

locating said panel on said preformed gasket following arrangement of said gasket in said predetermined pattern, said gasket and panel forming a contact boundary;

forcing said panel into contact with said gasket; and

heating said contact boundary between said panel and said gasket to bond said gasket to said panel to form said panel assembly, said heating including generating infrared energy, and directing said infrared energy through said panel.

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5,331,785

CLEAN ROOM CEILING

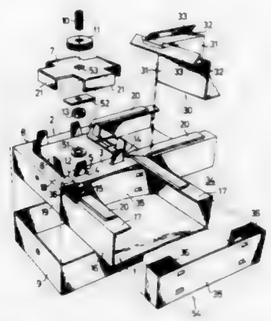
Johan W. Brak, Bergen Op Zoom, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 472,510, Jan. 30, 1990, abandoned. This application Oct. 28, 1992, Ser. No. 967,923

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 3902934; European Pat. Off., Sep. 29, 1989, 89118117.4

Int. Cl.[5] **E04B** *9/00*

U.S. Cl. 52—506.1 **20 Claims**



2. A suspended ceiling, comprising:

an intersecting grid of bearing rails (**1**) defining open regions (**34**) therebetween, said rails having end walls (**15**) with supporting flanges (**3**) extending outwardly and substantially completely across said end walls, wherein said flanges are provided with mitered outward corners (**14**) and sealing means (**20**) extending along an upper surface said rails and around said mitred corners;

at least one nodal element (**2**) for supporting bearing rails (**1**), said nodal elements having substantially horizontal bearing surfaces (**18**), wherein the supporting flanges (**3**) rest on said bearing surfaces (**18**) to support said rails with said sealing means (**20**) lying between said bearing surfaces and said flanges and lying between adjacent flanges (**3**) to seal along said mitred corners (**14**) whereby gaps between said corners, flanges and bearing surfaces are sealed in an air-tight and dust-tight manner; and

insert elements (**30**) resting on said sealing means (**20**) along the upper surface of the bearing rails to seal the open regions also in an air-tight and dust-tight manner.

5,331,786

KNOCKDOWN EARTHQUAKE BRACE FOR RESIDENTIAL GARAGE FRONT WALL

Stephen L. Lippert, 985 Summerfield Dr., San Jose, Calif. 95121

Continuation-in-part of Ser. No. 856,527, Mar. 24, 1992, abandoned. This application Apr. 15, 1992, Ser. No. 869,828

Int. Cl.[5] **E04C** *3/30*

U.S. Cl. 52—731.1 **21 Claims**

1. In combination:

a garage front wall having a garage door opening there through, said garage door opening having a height and a width, and said garage door opening having a left side, a right side, a top edge and a bottom edge,

and a reinforcing brace comprising:

a left hand L bracket, comprising:

a first rigid column member positioned adjacent said left side of said garage door opening, said first rigid column member extending substantially the height of said garage door opening,

a first rigid beam member positioned adjacent said top edge of said garage door opening,

a first removable, rigid, moment transmitting joint means for fastening said first rigid column member to said first rigid beam member,

and means for fastening said left hand L bracket to said garage front wall,

and a right hand L bracket, comprising:

a second rigid column member positioned adjacent said right side of said garage door opening, said second rigid column member extending substantially the height of said garage door opening,



a second rigid beam member positioned adjacent said top edge of said garage door opening,

a second removable, rigid, moment transmitting joint means for fastening said second rigid column member to said second rigid beam member,

and a means for fastening said right hand L bracket to said garage front wall.

5,331,787

METHOD FOR THERMALLY AND/OR ACOUSTICALLY INSULATING BUILDINGS

Werner Paulitschke, Kaarst, and Karl Rudolph, Bottrop, both of Fed. Rep. of Germany, assignors to Deutsche Rockwool Mineralwoll-GmbH, Fed. Rep. of Germany

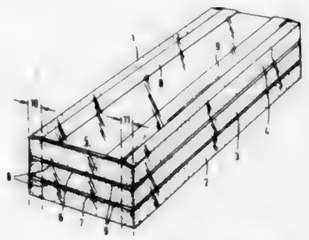
PCT No. PCT/EP90/01968, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO91/09184, PCT Pub. Date Jun. 27, 1991

PCT Filed Nov. 17, 1990, Ser. No. 859,498

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1989, 3941273

Int. Cl.[5] **E04G** *21/00*

U.S. Cl. 52—746 **22 Claims**



1. A method of insulating buildings which include a plurality of support members with adjacent support members being spaced a predetermined maximum distance from each other comprising the steps of:

a) providing a plurality of stacked insulation panels with each insulation panel being formed by a panel of mineral wool insulation material having opposite longitudinal edges spaced a predetermined distance from each other at least equal to the predetermined maximum distance between the adjacent support members and a vapour barrier sheet carried by each insulation material panel with opposite longitudinal edges being folded upon an exterior surface of a central portion of each vapour barrier sheet and being directed in opposing relationship toward each other thereby defining exposed opposite projecting longitudinal edge portions of each insulation material panel with the folded distance being sufficient for the subsequently unfolded vapour barrier sheet longitudinal edges to project beyond the insulation material panel longitudinal edges,

b) enclosing the stacked insulation panels in a wrap, and

c) substantially simultaneously longitudinally severing the wrap and at least one of the longitudinal edge portions of all of the insulation material panels inward of each of their longitudinal edges a distance which creates a severed edge-to-edge distance corresponding generally to a distance between adjacent support members less than the predetermined maximum distance.

5,331,788

DEVICE FOR INDUCING SLACK IN A WRAPPING FILM, ASSOCIATED WITH MEANS FOR CONVEYING PACKS OF ROLLS

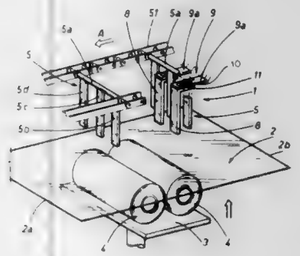
Andrea Cinotti, Bologna, Italy, assignor to Wrapmatic, S.p.A., Bologna, Italy

Filed Oct. 14, 1992, Ser. No. 961,090

Claims priority, application Italy, Oct. 31, 1991, BO91A000410

Int. Cl.[5] **B65B** *11/06*

U.S. Cl. 53—228 **4 Claims**



1. A device for enveloping packs of rolls assembled and packaged by a non-continuous machine, comprising:

an overhead conveyor means;

a first wrapping station, equipped with a vertical elevator by which a pack of rolls is directed upward into contact with a sheet of wrapping film disposed transversely between the elevator and a pair of vertical teeth supported from above by the overhead conveyor means, said vertical teeth disposed parallel to each other and separated by a set distance along a horizontal feed direction, between which the rolls are restrained and supported by pressure on each side together with the sheet of wrapping film and carried along the horizontal feed direction;

at least one additional vertical tooth of fixed embodiment secured to a support afforded by the machine, at said first wrapping station, said first vertical tooth positioned adjacent and offset from a vertical tooth of the conveyor means lying farther from a downstream folding station in relation to the feed direction and separated from a conveyor tooth nearer to the downstream folding station by a distance less than the distance which separates the two conveyor teeth, such that the ascending rolls are restrained at first between the shorter distance located between the movable conveyor tooth closest to the folding station and the fixed vertical tooth so that the partly enveloping sheet of wrapping film is initially drawn taut, whereupon a translatory movement of the conveyor teeth in the feed direction allows for a wider distance in which the rolls are positioned between the two conveyor teeth and creates a partial release of the enveloping film thereby extending the amount of film allowed to lay across the peripheral length of the rolls, prior to folding and heat sealing overlapping edges of said wrapping film.

5,331,789

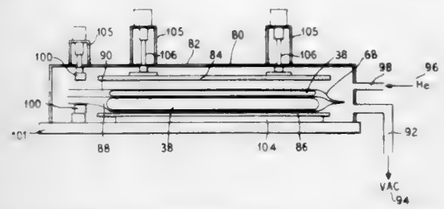
VACUUM PROCESSING MACHINE AND METHOD

Nihat O. Cur, Royalton Township, Berrien County, and Richard W. Kruck, Sodus Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 23, 1993, Ser. No. 35,826

Int. Cl.[5] **B32B** *17/02;* **B65B** *31/02, 1/24*

U.S. Cl. 53—434 **15 Claims**



12. A vacuum processing machine for use in assembling a vacuum insulation panel from a gas impermeable bag and a gas porous pouch filled with a microporous powder comprising:

a housing sealable in an air tight manner;

a pair of substantially parallel plates oriented horizontally within said housing;

said housing being openable to receive said bag between said facing front sides of said plates;

a vacuum source communicatable with an interior of said housing for evacuating gases from said bag and pouch;

heat sealing means positioned within said housing for sealing an edge of said bag after evacuation of said gases from said bag and pouch;

means for moving said plates toward one another to press against said bag after it has been evacuated and sealed; and

means for injecting a trace amount of helium into said bag after it has been evacuated and before it has been sealed.

5,331,790

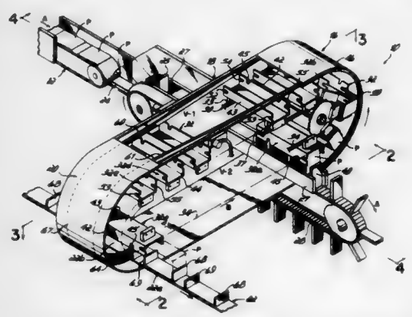
POUCH CONDITIONING METHODS AND APPARATUS

Harold T. Benner, Jr., Cincinnati, Ohio; Gary A. Dunhoft, Burlington, Ky., and Mark D. Smith, Batavia, Ohio, assignors to R. A. Jones & Co. Inc., Crescent Springs, Ky.

Filed Feb. 23, 1993, Ser. No. 21,205

Int. Cl.[5] **B65B** *1/22, 1/24, 35/56*

U.S. Cl. 53—437 **23 Claims**



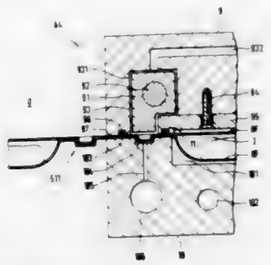
1. A method of conditioning pouches to minimize the maximum thickness of the pouches, including the steps of:

inverting selected pouches;

confining selected inverted pouches in a face-to-face disposition;

conditioning selected inverted pouches;
reinverting selected pouches; and
depositing conditioned pouches into a confined means.

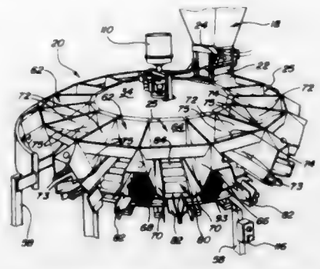
5,331,791
METHOD AND APPARATUS FOR THE MANUFACTURE OF A RESEALABLE PACKAGE
Rudolf Fux, Eschenburg, and Alfred Schmeck, Biedenkopf, both of Fed. Rep. of Germany, assignors to Kraemer + Grebe GmbH & Co. KG Maschinenfabrik, Biedenkopf-Wallau, Fed. Rep. of Germany
Filed Oct. 23, 1992, Ser. No. 966,135
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1992, 4211333
Int. Cl.[5] B65B *7/28, 51/00, 51/20*
U.S. Cl. 53—478 **17 Claims**



1. A method of manufacturing a resealable package having a top foil and a bottom foil which are hot-sealed together at a peripheral edge of the package to form a resealable portion and to seal a packaging material arranged therebetween, the resealable portion having a plurality of pairs of complementary mateable closure elements formed into the peripheral edge of the top foil and the bottom foil, the method comprising the steps of:
clamping the resealable portion at the peripheral edge thereof between a first member and a second member of a forming tool to hermetically isolate the resealable portion from an outer surroundings;
drawing a first surface of at least one of the top and bottom foils of the resealable portion against a plurality of stationary heating elements of said first member by negative pressure;
heating a plurality of areas of the resealable portion drawn against said heating elements to a temperature at which said areas are plasticized;
separating said areas from said heating elements by applying positive pressure to said first surface of the resealable portion while simultaneously drawing said heated areas into a plurality of opposing recesses in said second member; and
cooling and evacuating said recesses to form the closure elements, said recesses being evacuated by applying negative pressure to a second surface of the other of said at least one of the top and bottom foils of the resealable portion.

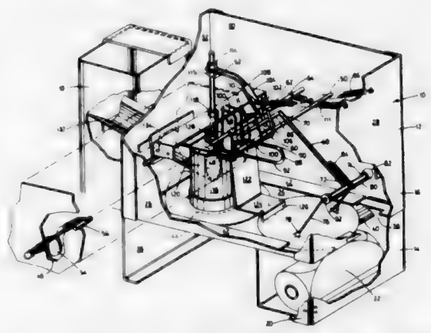
5,331,792
PACKAGING UNIT
Robert W. Kitchen, Elmira, Mich., assignor to Kitchen Farms, Inc., Elmira, Mich.
Filed Dec. 4, 1992, Ser. No. 985,766
Int. Cl.[5] B65B *1/32, 35/24*
U.S. Cl. 53—502 **25 Claims**

1. A packaging assembly for packaging foodstuffs into receptacles, said assembly comprising:
a plurality of transfer conveyors each of said transfer conveyors being adapted to a transfer a pre-measured quantity of said foodstuffs to a receptacle, each of said conveyors having a first end for receiving said pre-measured quantity of said foodstuffs and a second end for discharging said pre-measured quantity of said foodstuffs into one of said receptacles;
a rotatable base upon which said transfer conveyors are mounted;



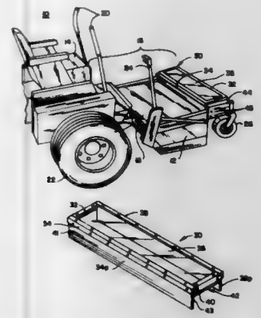
said pre-measured quantity of said foodstuffs being dispersed along each of said conveyors as said conveyors move between said first and second ends such that said pre-measured quantity of said foodstuffs is deposited into one of said receptacles until said foodstuffs are packaged into said receptacles.

5,331,793
APPARATUS FOR FORMING A COFFEE FILTER
Paul E. Pophal, P.O. Box 1072, 312 S. 5th St., and Loren Greenman, 8141 Peters Rd., both of Eagle River, Wis. 54521
Filed Jan. 25, 1993, Ser. No. 8,217
Int. Cl.[5] B65B *47/04*
U.S. Cl. 53—559 **12 Claims**



1. An apparatus for forming a discrete coffee filter from a roll of filter paper, the apparatus comprising:
(a) a suspended floor defining an aperture;
(b) means for indexing the roll of filter paper across the aperture, and wherein the indexing means includes at least one finger which urges the filter paper against, and advances the filter paper across, the suspended floor; and
(c) a plunger having an outside dimension which is matingly received in the aperture which is defined by the floor, the plunger being movable to extend through the aperture in the floor, and wherein the filter paper is comformably sized about the outside dimension of the plunger when the filter paper is indexed to a position across the aperture and the plunger is moved through the aperture in the floor.

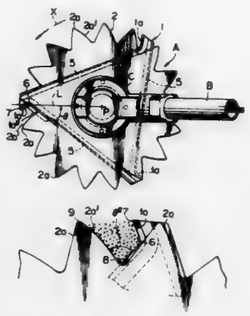
5,331,794
MOWER SHIELD
Andrew L. Reichle, 50 Verdin Ct., Apt. D., Gahanna, Ohio 43230
Filed Dec. 6, 1993, Ser. No. 161,540
Int. Cl.[5] A01D *34/18*
U.S. Cl. 56—17.4 **20 Claims**



1. A mower shield adapted to be attached to a self-propelled lawn mower having a mower frame, a deck mounted in said frame and covering at least one rotating blade, said deck having a leading edge and a trailing edge, and an operator platform positioned rearward from said leading edge, positioned such that the space between said operator platform and said leading edge is generally unobstructed which comprises:
a top panel having a rear portion, a central portion, and a front portion defining a chamber;
at least one supporting element connecting said top panel to said deck;
wherein said at least one supporting element:
positions a section of said top panel over said deck such that said rear portion generally extends across said deck substantially in contact therewith; and
suspends a section of said top panel and said front portion beyond the leading edge of said deck; and wherein
at least part of said top panel of said mower is transparent;
whereby such grass clippings as are expelled forwardly from beneath said deck and travel upward and rearward over said deck, in greatest part enter said chamber and are redirected downwardly thereby, away from said operator platform.

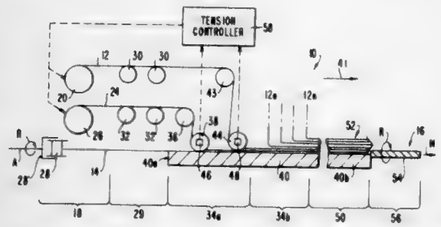
5,331,795
MOWING CUTTER UNIT FOR MOWER
Hachiro Doi, Miyashiro, Japan, assignor to Ahresty Corporation, Tokyo, Japan
Filed Nov. 17, 1992, Ser. No. 977,831
Claims priority, application Japan, Dec. 27, 1991, 3-107882
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—255 **1 Claim**

1. A mowing cutter unit for a mower comprising a rotary cutter and a stationary cutter coaxially overlapped to each other, wherein said rotary cutter is formed with recessed cutting portions each being curved in an approximately doglegged shape toward a rotational direction, and said stationary cutter is formed with a plurality of projecting cutting portions each having an approximately angular shape to be slidably contacted with said recessed cutting portions of said rotary cutter respectively;
wherein said rotary cutter is formed in a polygonal shape in plan view having rising-up portions formed around a whole peripheral edge, each of said recessed cutting portions is formed at each vortex portion at which said rising-up portions are crossed to each other;
wherein each of said recessed cutting portions is formed to be curved in an approximately doglegged shape in such a manner that a grass taking-in portion extending from a central curved portion to a cutting leading edge is directed in the rotational direction of said rotary cutter and a grass pushing-out portion continuous from the central curved portion to the rising-up portion is directed to the outside; wherein said recessed cutting portion is formed such that it is positioned ahead of a radial line passing from the rotational center of said rotary cutter to the central curved portion in the rotational direction of said rotary cutter, wherein said grass pushing-out portion crosses the radial line at acute angles;



wherein each of said projecting cutting portions is formed in such a manner that it is shaped in a loosely circular arc from a cutting base to a cutting leading edge, and a crossing angle at which said projecting cutting portion is rubbed with a grass pushing-out portion of said recessed portion formed on said rotary cutter is larger than a crossing angle at which it is rubbed with a grass taking-in portion of said recessed cutting portion.

5,331,796
METHOD AND APPARATUS FOR APPLYING STACKED OPTICAL FIBER RIBBONS ABOUT A CYLINDRICAL CORE OF A FIBER OPTIC CABLE
Andre Varga, Willowdale, Canada, assignor to Ceeco Machinery Manufacturing Limited, Concord, Canada
Filed Sep. 16, 1992, Ser. No. 946,270
Int. Cl.[5] D01H *13/04*
U.S. Cl. 57—9 **30 Claims**



1. Apparatus for helically winding a plurality of filaments about a cylindrical core comprising first supply means for supplying a rotating central core for longitudinal movement substantially along a machine axis of the apparatus; second supply means for supplying a plurality of filaments to be helically wound about the core; a winding station downstream of said first supply means and arranged substantially along said machine axis; support means having a downstream end arranged substantially along said machine axis and an upstream end offset from said machine axis to define an angle between said support means and said machine axis which substantially equals a desired lay angle of the filaments about the core for supporting and guiding said filaments between said upstream

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and downstream ends; guide means for guiding the filaments from said second supply means to said upstream end of said support means and for positioning the filaments in a predetermined number of adjacent positions along a direction substantially transverse to said support means to form a predetermined number of filament units no greater than the number of helical windings to be applied about the core, said filament units being drawn along said support means by the rotating core for staggered and tangential application of the filament units about the core at said winding station at said downstream end of said support means; sensor means for sensing the individual tensions in each of the filaments; and tension compensating means for controlling tensions in the filaments based on information provided by said sensor means, whereby said filaments are wound on the core when said filaments are moved substantially linearly along said support means with controlled tensions therein.

5,331,797

SPINNING RING FOR A RING SPINNING MACHINE

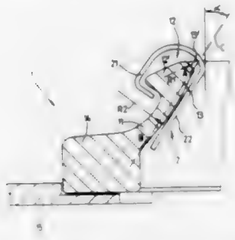
Arthur Wurmli, Winterthur, and Herbert Stalder, Kollbrunn, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed May 28, 1991, Ser. No. 706,021

Claims priority, application Switzerland, May 29, 1990, 01805/90-0

Int. Cl.[5] **D01H** *7/54*

U.S. Cl. 57—119 **5 Claims**



1. A spinning ring for a ring spinning machine constituting an inclined flange spinning ring, comprising

a base portion capable of bearing upon a spinning ring frame;

a travel portion about which revolves a traveller;

an inclined flange located between the base portion and the travel portion;

a rim having a height and a thickness provided at the travel portion for securing the position of the traveller;

the dimensions of the base portion and the travel portion being chosen such that the spinning ring substantially conically tapers from the base portion towards the travel portion, so that the inclined flange approximates a circular truncated cone;

the height of the rim in a meridian section of the spinning ring at most exceeds the thickness of the rim by one-half, wherein the height of the rim is measured substantially parallel to the generatrix of the circular truncated cone and the thickness is measured in a direction transverse thereto;

the thickness of the rim amounts to between 2.0 mm. and 2.6 mm. and the height between 2.2 mm. and 2.8 mm;

a partial travel surface provided for the travel portion and having a radius (R1); and

the radius (R1) of the partial travel surface, measured at a smallest diameter of the spinning ring at an inner surface thereof, amounts to at least 1 mm.

5,331,798

METHOD AND DEVICE FOR JOINING YARN IN AN OPEN-END SPINNING MEANS

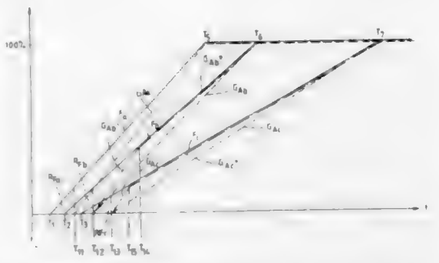
Anthony Ball, Kipfenberg; Karl Rupert, Ingolstadt; Erwin Braun, Ingolstadt, and Ulrich Roediger, Ingolstadt, all of Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Continuation of Ser. No. 431,475, Nov. 2, 1989, abandoned. This application Feb. 11, 1993, Ser. No. 128,783

Claims priority, application Fed. Rep. of Germany, May 3, 1988, 3814966

Int. Cl.[5] **D01H** *4/50*

U.S. Cl. 57—263 **35 Claims**



1. A process for piecing a broken yarn on an open-end spinning device having a fiber collection surface, a fiber opening means, a sliver feeding means, and means for drawing-off spun yarn from said fiber collection surface and winding it onto a package, comprising the following steps:

(a) detecting a broken yarn on said open-end spinning device,

(b) stopping the feeding of fiber to said fiber collection surface by

(c) restarting said sliver feeding and said fiber feeding;

(d) ascertaining the combed-out state of the fiber tuft of said sliver presented to said fiber opening means at the time of said restarting sliver feeding.

(e) restarting said yarn drawing-off; and

(f) controlling the acceleration of said yarn drawing-off as a function of the ascertained combed-out state of said fiber tuft whereby the acceleration rate of said yarn drawing-off is varied according to the combed-out state of said fiber tuft to provide a piecing joint of a predetermined mass

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5,331,799

SYSTEM FOR CUTTING ROVING IN A SPINNING MACHINE

Hans-Peter Weeger, Hattenhofen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Jul. 10, 1992, Ser. No. 911,990

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1991, 4122810

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] **D01H** *9/14*

U.S. Cl. 57—278 **2 Claims**

1. A method of operating a spinning apparatus for winding a roving onto a roving package wherein

roving is fed to a flyer,

the package is rotated in a forward direction about an upright axis,

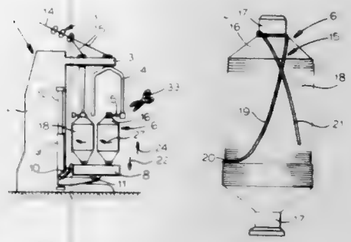
the roving is wound in a succession of turns around the package from a radial innermost first layer to a radial outermost last layer by a flyer finger movable axially relative to the package, and

the package and the flyer are relatively vertically displaced such that each successive layer of turns has an upper end that is below the upper end of the preceding layer to impart to the finished package an axially upwardly tapered upper end portion,

the method comprising the steps after substantially completely forming the package of sequentially:

a) stopping the drive for the relative rotation of the flyer and the package about the axis, stopping feed of the roving, and stopping the flyer in a position with the finger underneath the upper end of the last layer of turns formed on the package;

b) lowering the package until the finger is above the upper end of the last layer of the turns formed on the package



while rotating the package in a reverse direction opposite to the forward direction without feeding more roving to the package.

c) rotating the package in the forward direction through at least one half revolution about the axis without feeding more roving to the package so as to form at least a partial loop of the roving around the package above the upper end of the last layer of the turns;

d) feeding more roving to the package while lowering the package until the finger is below the upper end of the last layer of the turns; and

e) raising the package and severing the roving upstream of the package.

5,331,800

APPARATUS FOR MAKING A CABLE BY ROEBLING RECTANGULAR CROSS-SECTIONED STRANDS

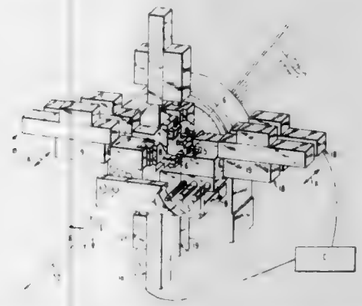
Wilhelm Schaumburg, Arolsen, and Hartmut Gottschling, Arolsen-Mengeringhausen, both of Fed. Rep. of Germany, assignors to Lackdraht Union GmbH, Sulingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 529,908, May 29, 1990, abandoned. This application Mar. 10, 1992, Ser. No. 849,276

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1989, 3923448

Int. Cl.[5] **D07B** *1/06;* **B23P** *19/00*

U.S. Cl. 57—311 **9 Claims**



1. An apparatus for making a cable by roebling individual rectangular cross-sectioned strands, said cable having opposite lateral sides and top and bottom sides and a rectangular cross-section, said apparatus comprising guide means for a plurality of individual rectangular cross-sectioned strands conveyed in two parallel stacks in a conveying direction, the two stacks being conveyed in lateral contact with each other; two pressing elements, each of said pressing elements extending in a direction perpendicular to said conveying direction and one of said pressing elements being engageable with one of said stacks from the top side of the cable and the other of said pressing elements being engagable with the other of said stacks from the bottom side of the cable, said pressing elements being displaceable in opposite directions to move said stacks toward each other; two nonrotatable pushing members, each of said pushing members being mounted on opposite lateral sides of said cable, said pushing members being structured and positioned to move in another direction perpendicular to and across the conveying direction to displace respective individual strands to adjacent ones of said stacks and to simultaneously bend said individual strands; a nonrotatable counterabutment member spaced along said conveying direction from each of said pushing member and being mounted to be moveable oppositely to the pushing member associated therewith; means for adjusting, prior to said roebling, a spacing between each of said nonrotatable pushing members and said nonrotatable counterabutment member associated therewith; and a drive for moveably operating each of said pushing members and said pressing elements and a control device for synchronized timed actuation of the drives for separate displacement of the pressing elements and pushing members to control relative positions of said pushing members and pressing elements during conveying of said two parallel stacks so as to form said cable.

5,331,801

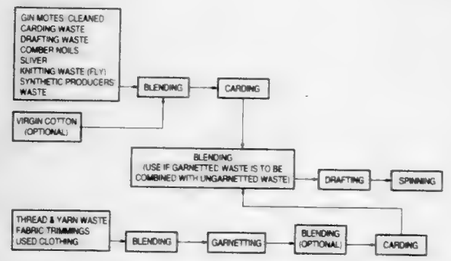
RECYCLED YARNS FROM TEXTILE WASTE AND THE MANUFACTURING PROCESS THEREFOR

David S. Heifetz, Niagara-on-the-Lake, Canada, assignor to Eco Fibre Canada Inc., Niagara-on-the-Lake, Canada

Filed Jan. 24, 1992, Ser. No. 825,152

Int. Cl.[5] **D01H** *4/00;* **D01G** *13/00*

U.S. Cl. 57—400 **14 Claims**



1. A method of processing a combination of virgin cotton fibres and fibrous, woven or spun textile waste as source material, to produce a high quality recycled twisted yarn therefrom, said method comprising the steps of:

(a) providing said source material having a minimum content of recycled cotton waste of not less than 10% of the total source material;

(b) processing said source material using standard blending, carding and drafting equipment;

(c) further processing said material by open end spinning, said spinning operation imparting a minimum of an additional 10% more twists to the processed fibres than in standard spinning processes and producing a twisted yarn having a minimum 10 count size,

where prior to blending the woven or spun textile waste said material is pre-processed by a method comprising the steps of:

(a) manual sorting of the waste materials;

(b) preparing said waste by removal of all buttons, zippers, heavy seams and hard fasteners;

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(c) garnetting said material at a significantly reduced processing rate of approximately 1,000 to 2,500 pounds of material per hour; and

(d) carding said material extensively with the flats set at least 35% closer together than would be used for fibrous waste such as gin motes

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5,331,802

SECURITY CHAIN MADE FROM A SERIES OF LINKS

Simon Varley, Camelot, Chillies Lane, Crowborough, E. Sussex, England

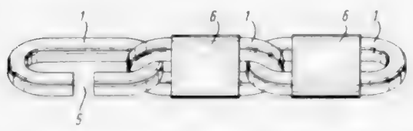
PCT No. PCT/GB91/00075, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO91/10845, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 18, 1991, Ser. No. 910,265

Claims priority, application United Kingdom, Jan. 18, 1990, 9001173

Int. Cl.[5] **F16G** *15/04*

U.S. Cl. 59—85 **9 Claims**



1. A chain comprising an assembly of a plurality of links each formed of an elongate member having an opening which is adapted to receive another link to enable the links to be looped together to form a chain, and a sleeve on each link which serves to close the opening, said sleeve having a length of at least substantially one half a length of said link as measured from an interior of said link, the chain being assembled by sliding a sleeve onto each link after the link is looped onto the preceding link of the chain thereby forcing said sleeve of said preceding link to close said opening of said preceding link, each sleeve being retained on its link by an adjacent link, engaged therewith, the chain being capable of being disassembled by successively removing an end link, and then sleeves and links sequentially

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5,331,803

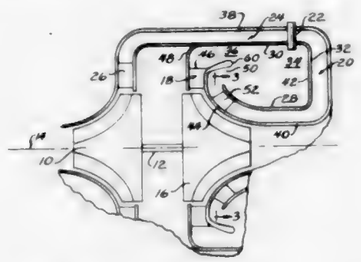
METHOD OF OBTAINING A DESIRED TEMPERATURE PROFILE IN A TURBINE ENGINE AND TURBINE ENGINE INCORPORATING THE SAME

Jack R. Shekleton, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 24, 1989, Ser. No. 384,165

Int. Cl.[5] **F02C** *3/30*

U.S. Cl. 60—39.36 **13 Claims**



1. A turbine engine comprising:

a rotor rotatable about an axis and including a turbine wheel section adapted to receive gases of combustion and be driven thereby;

an annular combustor including radially inner and outer walls about said axis and defining an upstream combustion zone and a downstream outlet;

an annular nozzle disposed about and directed at said turbine wheel and connected to said outlet;

means for introducing dilution air into said combustor at a cooler temperature than gases of combustion therein and at a location immediately upstream and radially inwardly of said outlet, said introducing means further introducing said dilution air in a stream whirling in the circumferential direction about said axis; and

a baffle on the radially inner side of said outlet in spaced relation to said inner wall and extending generally axially toward, but not to said upstream combustion zone to overlie said introducing means and into said swirling stream to thereby increase the length of the path the swirling stream of dilution air must travel to move from said introducing means to said nozzle such that centrifugal force acting on said cooler dilution air will cause the same to move radially outwardly through the gases of combustion to mix therewith prior to application to said nozzle.

5,331,804

SYSTEM FOR STARTING A POWER PLANT

Martin Månsson, Finspong, Sweden, assignor to ABB Carbon AB, Finspong, Sweden

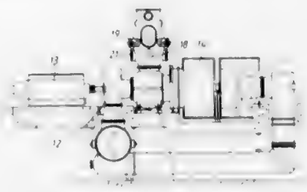
PCT No. PCT/SE91/00827, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO92/10655, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 4, 1991, Ser. No. 66,112

Claims priority, application Sweden, Dec. 5, 1990, 9003866

Int. Cl.[5] **F02C** *7/26*

U.S. Cl. 60—39.02 **4 Claims**



1. An apparatus in a power plant having a combustion chamber for combustion of a fuel at overpressure, a turbine driven by generated combustion gases, a compressor driven by the turbine for compression of combustion air, a generator driven by the turbine and a gas conduit for transfer of combustion gases from the combustion chamber to the turbine, apparatus including:

at least two start-up combustors located radially around the gas conduit, said start-up combustors being supplied upon the start-up, with fuel and with combustion air from the compressor which in turn is rotated by the generator switched into motor operation,

said start-up combustors delivering combustion gases to the turbine which supplies power to the compressor.

5,331,805

REDUCED DIAMETER ANNULAR COMBUSTOR

Geoffrey D. Myers, Phoenix, and Manuel M. Cardenas, Jr., Scottsdale, both of Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Apr. 22, 1993, Ser. No. 52,417

Int. Cl.[5] **F23R** *3/14*

U.S. Cl. 60—39.36 **17 Claims**

1. A gas turbine engine combustor comprising:

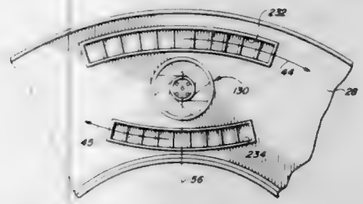
an axially extending combustor case having an opening for receiving pressurized airflow;

an axially extending combustor liner disposed within said case to define a combustion chamber within said liner and

an air supply passage between said case and liner, said liner having a plurality of openings along the axial length thereof to deliver airflow to the combustion chamber;

a dome closing the forward end of said liner, the opposite aft end of said liner being open for exit of hot gas to perform useful work, said dome having first and second arcuately segmented openings therein;

an air blast fuel nozzle secured to said dome between said



first and second segmented openings for delivery of atomized fuel-air mixture to a primary zone of the combustion chamber immediately downstream of said dome; and

a first set of inclined vanes extending across said first segmented opening and a second set of oppositely inclined vanes extending across said second segmented opening, whereby a swirling supply of primary airflow is introduced into said primary zone in circumferentially surrounding relation to said fuel-air mixture.

5,331,806

HYDROGEN FUELLED GAS TURBINE

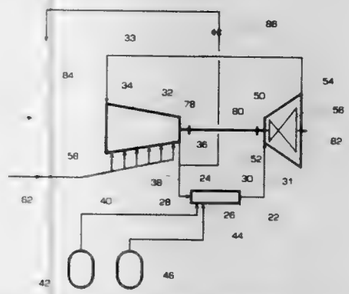
Daniel A. Warkentin, #94 Gilbert Crescent, Red Deer, Alberta, Canada T4P 3L5

Filed Aug. 30, 1993, Ser. No. 114,741

Claims priority, application Canada, Feb. 5, 1993, 2088947

Int. Cl.[5] **F02C** *3/22, 3/30*

U.S. Cl. 60—39.465 **10 Claims**



1. A hydrogen fuelled gas turbine, comprising:

a. a combustion cheer having a steam inlet, an oxygen inlet, a hydrogen inlet, and an outlet;

b. a compressor;

c. means for connecting the steam inlet to the compressor such that the compressor provides steam as a working fluid;

d. means for connecting the hydrogen inlet to a source of hydrogen gas, whereby hydrogen gas serves as a fuel for combustion;

e. means for connecting the oxygen inlet to a source of oxygen gas, whereby oxygen is supplied to oxidize the hydrogen fuel;

f. an igniter disposed within the combustion chamber whereby the hydrogen/oxygen mixture is explosively ignited, the products of combustion combining with the steam and rapidly expanding out through the outlet of the combustion chamber;

g. a turbine having an inlet, an outlet and a rotatable member disposed in a flow path between the inlet and the outlet, the inlet of the turbine being connected to the outlet of the combustion cheer such that expanding steam exerts a force to rotate the rotatable member when passing from the inlet to the outlet;

h. the compressor having an inlet coupled with the outlet of the turbine whereby steam from the outlet of the turbine is recycled, the compressor having a plurality of water injectors adapted for connection to a water source whereby water is injected into the steam such that the water draws heat from the steam thereby triggering a physical volume reduction; and

i. pressure control means.

5,331,807

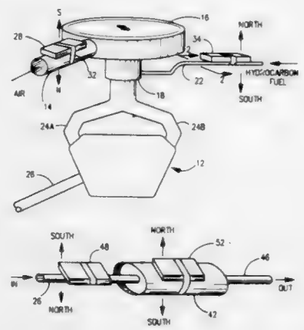
AIR FUEL MAGNETIZER

Richard Z. Hricak, 11607 Nebel St., Rockville, Md. 20852

Filed Dec. 3, 1993, Ser. No. 161,022

Int. Cl.[5] **F02B** *75/10;* **F01N** *3/28*

U.S. Cl. 60—275 **9 Claims**



1. Apparatus for the conditioning of air and fuel being supplied to an internal combustion engine having a hydrocarbon fuel inlet line and an air inlet line comprising:

a. first permanent magnet means mounted on said air inlet line, said magnet means having the shape of a parallepiped with one face containing only one pole of said magnet means adjacent said air inlet line and the magnetic lines of force extending from said one face passing through said air inlet line, the other pole being contained within the face opposite that of said one face of said magnet means, the magnetic lines of force extending from said other pole being directed away from said air inlet line thereby the air flowing through said air inlet line being exposed only to the magnetic field emanating substantially from only one pole;

b. second permanent magnet means mounted on said fuel inlet line, said second magnet means having the shape of a parallepiped with one face containing only one pole of said magnet means from which the magnetic lines of force extend into and through the fuel within said fuel inlet line, the opposite pole of said second magnet means being located in the opposite face of said second magnet, the magnetic lines of force extending therefrom being directed away from said fuel inlet line so that the fuel flowing in said fuel inlet line is subject to the magnetic field from substantially only one pole; and

c. the first and second permanent magnet means being in a bipolar arrangement so that the incloming air and fuel are subject to the magnetic fields from opposite poles.

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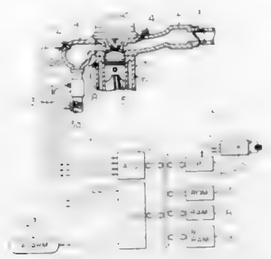
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5,331,808

OXYGEN-SENSOR ABNORMALITY DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINE

Satoshi Koike, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 14, 1993, Ser. No. 46,182
Claims priority, application Japan, Apr. 16, 1992, 4-096673
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—276 9 Claims



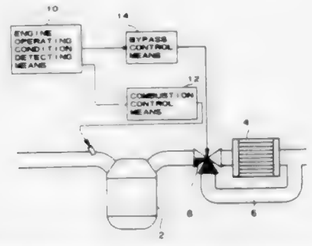
1. A device for detecting abnormalities in an air-fuel ratio sensor for use in internal combustion engines, comprising:
- a catalytic converter installed in an exhaust system of an internal combustion engine;
- air-fuel ratio sensors, installed on upstream and downstream sides of said catalytic converter, for detecting the air-fuel ratio;
- first and second heaters for activating the upstream-side and downstream side air-fuel ratio sensors, respectively;
- means for identifying activity state of said catalytic converter;
- means for identifying activity state of said air-fuel ratio sensors;
- means for controlling heat generation of said heaters; and
- means for detecting abnormalities of one of said air-fuel ratio sensors by comparing outputs of said air-fuel ratio sensors when said catalytic converter is identified to be in inactive state and when said air-fuel ratio sensors are identified to be in active state.

5,331,809

EXHAUST GAS PURIFICATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Sinichi Takeshima, Susono; Kenji Katoh, Shizuoka, and Sinya Hirota, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 4, 1990, Ser. No. 625,893
Claims priority, application Japan, Dec. 6, 1989, 1-315175; Dec. 15, 1989, 1-144133; May 24, 1990, 2-132530; Jun. 25, 1990, 2-164092; Jun. 26, 1990, 2-165775
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—288 22 Claims



1. A system for purifying exhaust gas from an internal combustion engine capable of executing fuel combustion at lean air-fuel ratios comprising:
- a nitrogen oxide reducing catalyst installed in an exhaust conduit of the engine and constructed of zeolite carrying at least one kind of metal selected from transition metals and noble metals, wherein the catalyst produces active species through partial oxidation of the hydrocarbons in an oxidizing gas condition and causes the active species to react with nitrogen oxides included in the exhaust gas to reduce the nitrogen oxides, wherein said catalyst reduces nitrogen oxides more strongly in a catalyst temperature rising condition than in other catalyst temperature conditions; and
- means for systematically producing a catalyst temperature rising condition while the engine is running by repeatedly executing a cycle of cooling the catalyst and then stopping the cooling to allow the catalyst to rise in temperature.

5,331,810

LOW THERMAL CAPACITANCE EXHAUST SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Keith C. Ingermann, and Robert T. Usleman, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed May 21, 1992, Ser. No. 886,963
Int. Cl.[5] F01N *7/10, 7/14*
U.S. Cl. 60—322 21 Claims



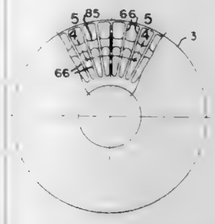
1. An apparatus for delivering combustion product from an engine to an exhaust processor, the exhaust processor having an inlet and a predetermined minimum operating temperature, the apparatus comprising
- a thin-walled pipe conducting hot combustion product from the engine to the inlet of the exhaust processor and having a thermal capacitance per unit length per unit diameter of less than 12,200 $J/m^2 \cdot K$ to minimize the elapsed time during a cold start cycle of the engine until the inlet of the exhaust processor is heated by the combustion product to reach its predetermined minimum operating temperature, the thin-walled pipe including a plurality of serially connected pipe sections and means for slidably coupling adjacent pipe sections to one another to permit relative movement therebetween during thermal expansion of the pipe sections.

5,331,811

FLUID DRIVE

Melbourne F. Giberson, 5 Spring Mill La., Haverford, Pa. 19041

Filed Feb. 11, 1993, Ser. No. 16,784
Int. Cl.[5] F16D *33/00*
U.S. Cl. 60—330 21 Claims



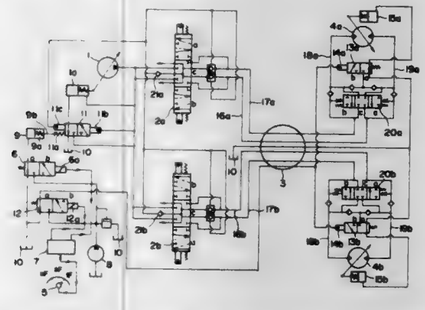
1. In a fluid drive system in which an impeller rotated by an input shaft drives a runner mounted on an output shaft through a fluidic coupling, said fluid drive system transmitting at least 1,000 horsepower per impeller-runner pair at a nominal input speed of at least 3,000 revolutions per minute and being subjected to severe duty application, said impeller and said runner having radially elongated pockets defined by a bottom surface and vanes by which said pockets are separated, the improvement comprising reinforcing elements, integral with said vanes of said impeller, spanning each pocket and being clear of said bottom surface, said impeller being made of forged alloy steel and said pockets, said vanes, and said reinforcing elements being machined from a single blank of said forged alloy steel.

5,331,812

TRAVELING SPEED CHANGEOVER DEVICE FOR HYDRAULIC EXCAVATOR

Hiroshi Imai, Kyoto, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP91/00043, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO91/10784, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 17, 1991, Ser. No. 910,261
Claims priority, application Japan, Jan. 18, 1990, 2-9762
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—450 12 Claims



1. Apparatus for changing the traveling speed of a hydraulically actuated working machine, said apparatus comprising:
- a first hydraulic traveling motor,
- a first traveling motor capacity control cylinder connected to said first hydraulic traveling motor,
- a first traveling motor capacity control valve connected to control said first traveling motor capacity control cylinder,
- a second hydraulic traveling motor,
- a second traveling motor capacity control cylinder connected to said second hydraulic traveling motor,
- a second traveling motor capacity control valve connected to control said second traveling motor capacity control cylinder, each of said first and second traveling motor capacity control valves having a pilot port,
- a hydraulic pump for supplying hydraulic oil to said first hydraulic traveling motor and to said second hydraulic traveling motor to provide driving pressure in said first and second hydraulic traveling motors,
- a first operation valve connected between said hydraulic pump and said first hydraulic traveling motor for determining the rate and direction of rotation of said first hydraulic traveling motor,
- a second operation valve connected between said hydraulic pump and said second hydraulic traveling motor for determining the rate and direction of rotation of said second hydraulic traveling motor,
- a source of hydraulic control pressure,
- a first control pressure changeover valve for controlling the supply of hydraulic pressure from said source to the pilot port of said first and second traveling motor capacity control valves for changing the capacity of said first and second hydraulic traveling motors over two stages in accordance with the operation of the first control pressure changeover valve,
- a capacity control element for controlling the capacity of said hydraulic pump,
- a load sensing valve having first and second pilot chambers and a spring for providing a differential pressure setting force, said load sensing valve being connected to said capacity control element for controlling the capacity of said hydraulic pump,
- a first conduit for applying to said first pilot chamber the pressure of the hydraulic oil discharged by said hydraulic pump,
- a second circuit for applying to said second pilot chamber a pressure representative of the driving pressure in said first and second hydraulic traveling motors,
- an adjusting device capable of changing the differential pressure setting force of said spring, whereby said hydraulic pump is controlled in accordance with the balance of the thrust forces produced in said first and second pilot chambers and the differential pressure setting force of said spring,
- a second control pressure changeover valve for supplying hydraulic control pressure from said source to said adjusting device to vary the differential pressure setting force of said spring,
- a speed changeover switch having at least a first stage speed position, a second stage speed position, and a third stage speed position, and
- a controller responsive to the position of said speed changeover switch for providing a first changeover command to said first control pressure changeover valve to vary the capacity of said first and second hydraulic traveling motors in accordance with said first changeover command, and for providing a second changeover valve to vary the differential pressure setting force of said spring in accordance with said second changeover command, whereby the traveling speed of said hydraulically actuated working machine can be changed over at least three stages corresponding to the first, second and third stage speed positions of said speed changeover switch while for each of said first, second and third stage speed positions of said speed changeover switch said first traveling motor is operated at a rate corresponding to the amount of operation of said first operation valve and said second traveling motor is operated at a rate corresponding to the amount of operation of said second operation valve, to thereby provide an optimum traveling speed according to the condition of the work while improving simultaneous operation characteristic during fine control of the working machine.

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5,331,813

BRAKE ACTUATOR ASSEMBLY FOR MOTOR VEHICLES

Helmut Heibel, Moschheim, and Josef Pickenhahn, Plaidt, both of Fed. Rep. of Germany, assignors to Lucas Industries public limited company, Solihull, Great Britain

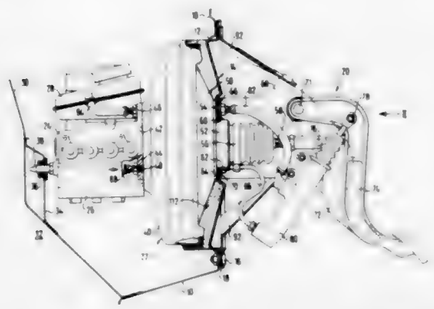
PCT No. PCT/EP92/01779, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO93/02901, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 5, 1992, Ser. No. 984,588

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1991, 9109689[U]

Int. Cl.[5] **B60T** *13/00*

U.S. Cl. 60—547.1 **7 Claims**



1. A brake actuator assembly for mounting in an opening (**12**) in a splash board (**10**) of a motor vehicle, comprising

a pneumatic brake pressure booster (**22**) which includes a rear housing portion (**50**) having a tubular connecting piece (**52**) projecting rearwardly of said rear housing portion,

a mounting plate (**14**) adapted to be fastened to said splashboard (**10**) so as to close said opening (**12**), and

a pedal arrangement (**20**) including support blocks (**68**) adjacent said tubular connecting piece (**52**) , characterized in that

said mounting plate (**14**) is independent of said brake pressure booster (**22**) and has a central hole (**60**) therethrough,

said rear housing portion (**50**) of said brake pressure booster (**22**) having said tubular connecting piece (**52**) passing rearwardly through said central hole (**60**) practically without clearance,

said support blocks (**68**) being formed in one piece with a common stiffening plate (**66**) provided with a central recess (**70**) through which said tubular connecting piece (**52**) passes as well, and means for connecting said stiffening plate to said mounting plate.

5,331,814

GAS TURBINE COMBUSTION CHAMBER WITH MULTIPLE FUEL INJECTOR ARRAYS

Denis J. M. Sandelis, Nangis, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France

Filed Jul. 16, 1993, Ser. No. 92,530

Claims priority, application France, Aug. 5, 1992, 92 09687

Int. Cl.[5] **F23R** *3/34, 3/46*

U.S. Cl. 60—747 **11 Claims**

1. A combustion chamber for a gas turbine engine, the combustion chamber having a generally annular configuration about a central axis and having an outlet and being defined by inner and outer axial walls and an upstream end wall extending between the inner and outer walls, comprising

a) a plurality of first fuel injectors to inject first sprays of fuel directly into the combustion chamber during a first operational mode of a gas turbine engine, the plurality of first fuel injectors arranged in inner and outer first fuel injector arrays about the central axis, the first fuel injectors of each array being circumferentially spaced apart and located such that the first fuel injectors of one first fuel injector array are disposed circumferentially between first fuel injectors of the other first fuel injector array;

b) a plurality of second fuel injectors to inject second sprays of fuel into the combustion chamber during a second operational mode of the gas turbine engine, the plurality of second fuel injectors arranged in inner and outer second fuel injector arrays about the central axis, the second fuel injector of each array being circumferentially spaced apart and located such that the second fuel injectors of one second fuel injector array are disposed circumferentially between second fuel injectors of the other second fuel injector array and

c) first wall means extending axially into the combustion chamber from the upstream end wall and having side edges attached to one of the inner and outer walls so as to define a plurality of chambers into which only the second fuel injectors inject fuel.

5,331,815

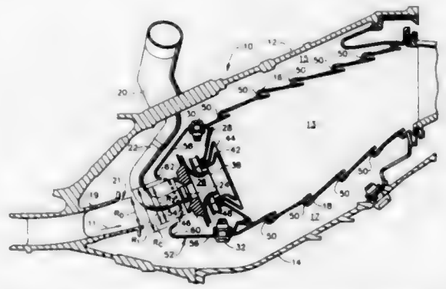
IMPACT RESISTANT COMBUSTOR

James N. Reinhold, Jr., Cincinnati; Mark P. Hammerl, West Chester, and Scott D. Zimmerle, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 855,408, Mar. 23, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 108,150

Int. Cl.[5] **F02C** *1/00*

U.S. Cl. 60—748 **8 Claims**



1. A combustor dome assembly for a gas turbine engine, said combustor dome assembly being downstream of and receiving compressed air from a diffuser having an outlet of a specific area and radial height, comprising:

(a) an annular dome plate having at least one circumferential row of spaced openings therethrough;

(b) a fuel cup assembly attached to each of said dome plate openings, said fuel cup assembly including a venturi, a sleeve, a splash plate, a primary swirler and a secondary swirler;

(c) a one-piece cowl connected to the radially inner and outer ends of said dome plate, said cowl including a central portion concave with respect to said fuel cup assembly which is centered upstream of an substantially in line with said fuel cup assembly, said concave central portion also being centered downstream of and substantially in line with said diffuser outlet; and

(d) a pair of upstream protruding elbow portions bounding said concave central portion, wherein said elbow portions transition into leg portions which flare radially outward in the downstream direction;

wherein said concave central portion has a radial height at least as great as said diffuser radial height in order to capture substantially all debris flowing through said diffuser outlet into said combustor dome assembly.

5,331,816

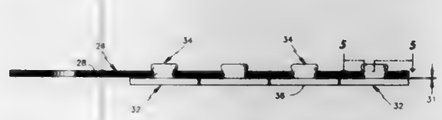
GAS TURBINE ENGINE COMBUSTOR FIBER REINFORCED GLASS CERAMIC MATRIX LINER WITH EMBEDDED REFRACTORY CERAMIC TILES

Edward C. Able, Tolland, and Martin J. Gibler, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 13, 1992, Ser. No. 960,158

Int. Cl.[5] **F23R** *3/00*

U.S. Cl. 60—753 **8 Claims**



1. A combustor liner panel for a gas turbine engine combustor comprising a fiber reinforced glass ceramic matrix composite substrate, said substrate having an inner surface and an outer surface, an array of refractory ceramic tiles substantially covering the inner surface of the substrate to thermally insulate the substrate, said tiles each having a protective region having an inner surface and an outer surface, and a supportive region extending from the protective region toward the outer surface of the substrate and embedded in the substrate to lock the tile immovably to the substrate, so that the supportive region is engaged with and restrained by said substrate around the entire periphery of said supportive region each tile covering a section of the inner surface of the substrate, said tiles each being positioned so as to provide a gap between the outer surface of the protection region of the tile and the inner surface of the substrate.

5,331,817

PORTABLE SELF-COOLING AND SELF-HEATING DEVICE FOR FOOD AND BEVERAGE CONTAINERS

Michael Anthony, Boca Raton, Fla., assignor to The Joseph Company, Los Angeles, Calif.

Filed May 28, 1993, Ser. No. 69,985

Int. Cl.[5] **F25B** *9/02*

U.S. Cl. 62—5 **16 Claims**

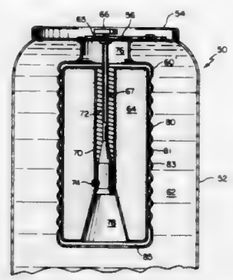
1. A portable heat exchanger for heating or cooling a medium comprising:

a vessel for containing a discrete quantity of a compressed gas,

a vortex generating means,

valve means for controlling the release of said compressed gas from said vessel,

means for introducing said compressed gas released from said vessel into said vortex generating means, said vortex generating means producing a first stream of gas and a second stream of gas, said first stream of gas having a temperature greater than said second stream,



heat exchange means receiving one of said first and second streams of gas from said vortex generating means and absorbing heat from or releasing heat to said medium, and exhaust means for releasing said streams of gas.

5,331,818

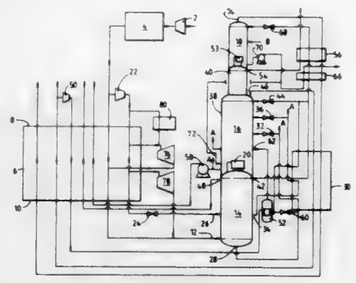
AIR SEPARATION

Thomas Rathbone, Farnham, England, assignor to The BOC Group plc, Windlesham, England

Filed Jun. 23, 1993, Ser. No. 81,359

Int. Cl.[5] **F25J** *3/02*

U.S. Cl. 62—24 **23 Claims**



1. A method of separating air, comprising: rectifying air in a rectification system comprising a higher pressure rectification column, a lower pressure rectification column and an intermediate pressure rectification column; providing each column with liquid nitrogen reflux; employing vapour from the higher pressure rectification column to reboil liquid obtained in the intermediate pressure rectification column and vapour from the intermediate pressure rectification column to reboil liquid obtained in the lower pressure rectification column; introducing a stream of feed air into the higher pressure rectification column; withdrawing a first oxygen product and a first gaseous nitrogen product from the intermediate pressure rectification column; and also withdrawing a second nitrogen product or stream from the lower pressure rectification column.

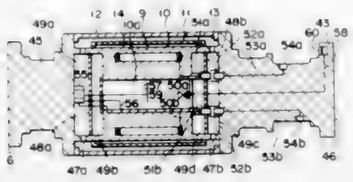
VOL 1164 ISS 4 JL 26 1994 UMI

5,331,819

SUPERCONDUCTING ROTATING APPARATUS

Takeshi Matsuda; Kenichi Suzuki, and Toshiyuki Aiba, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 3, 1991, Ser. No. 770,474
Claims priority, application Japan, Oct. 5, 1990, 2-266289
Int. Cl.[5] H02K *55/04, 9/00;* **F17C** *7/02*
U.S. Cl. 62—51.1 **15 Claims**



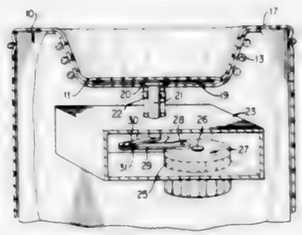
1. A superconducting rotating apparatus comprising:
a superconducting rotor having a cryostat structure and containing a superconducting winding cooled by a coolant,
field current source means for supplying a field current to said superconducting winding; and
a stator disposed at a predetermined interval from said superconducting rotor and having an armature winding;
refrigerating means contained within said superconducting rotor, for cooling the coolant introduced therein which coolant was heated when passed through said superconducting winding; and
photocoupler means for transmitting a field current from said field current source means to said superconducting winding by means of photoelectric conversion.

5,331,820

METHOD AND APPARATUS FOR FORMING AND COLLECTING SURGICAL SLUSH

Durward I. Faries, Jr., McLean, Va.; Bruce R. Heymann, Silver Spring, Md., and Mark Licata, Richmond, Va., assignors to O.R. Solutions, Inc., Reston, Va.

Filed Sep. 23, 1993, Ser. No. 125,279
Int. Cl.[5] F25C *1/00*
U.S. Cl. 62—68 **23 Claims**



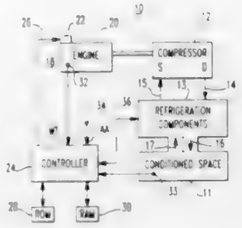
1. In a surgical slush machine of the type wherein a sterile medium in liquid form is contained in a liquid-impervious sterile drape container conformed to a basin having cooled sides causing the sterile medium to freeze and adhere to specific locations on the drape adjacent cooled portions of the basin sides, a method for detaching frozen pieces of the sterile medium from the drape and collecting the detached pieces as sterile slush, said method comprising the step of:
(a) automatically and repetitively manipulating the drape to displace said specific drape locations from the cooled portions of the basin sides.

5,331,821

METHOD OF STARTING AND RUNNING AN INTERNAL COMBUSTION ENGINE CONNECTED TO A REFRIGERANT COMPRESSOR

Jay L. Hanson, Bloomington; Doyle G. Herrig, Elko; James E. Nixon, Woodbury; Gerald J. Ladendorf, Bloomington; Lowell B. Naley, Minnetonka, and Norman F. Spear, Edina, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Aug. 31, 1993, Ser. No. 114,723
Int. Cl.[5] B60H *1/32*
U.S. Cl. 62—133 **8 Claims**



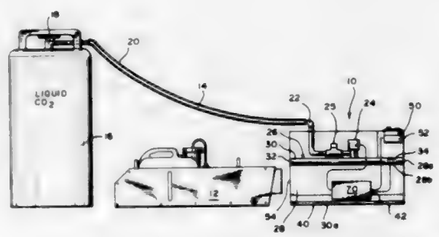
1. A method of starting and running an internal combustion engine connected to drive a refrigerant compressor in a refrigeration system which operates the engine at predetermined first and second speeds in response to a predetermined control algorithm, with the first speed being lower than the second speed, comprising the steps of:
starting the engine at the first speed,
preventing switching from the first to the second speed in response to the control algorithm during an initial dynamic delay period following the step of starting the engine,
determining the length of the initial dynamic delay period as a function of at least one predetermined parameter of the engine,
and selecting the at least one predetermined engine parameter during the initial dynamic delay period.

5,331,822

DEVICE FOR COOLING CHEMICAL SMOKE

Richard S. Belliveau, and Jeffrey Maddox, both of Austin, Tex., assignors to High End Systems, Inc., Austin, Tex.

Filed Feb. 10, 1993, Ser. No. 15,600
Int. Cl.[5] F25D *3/12*
U.S. Cl. 62—168 **28 Claims**



1. A device for cooling chemical smoke for creating a low lying fog effect comprising:
(a) an open ended conduit for receiving chemical smoke through one end and discharging chemical smoke through the other end;
(b) a closed chamber surrounding said open ended conduit;

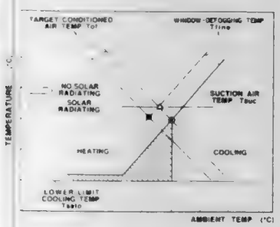
(c) liquid CO_2 input means for connecting a source of liquid CO_2 under pressure to said closed chamber; and
(d) means in said closed chamber for maintaining said chamber at ambient pressure.

5,331,823

HEAT PUMP TYPE AIR CONDITIONER FOR AUTOMOTIVE VEHICLE

Takayoshi Matsuoka, Yokosuka, Japan, assignor to Nissan Motor Co, Ltd., Yokohama, Japan

Filed Apr. 20, 1993, Ser. No. 48,172
Claims priority, application Japan, Apr. 20, 1992, 4-99681
Int. Cl.[5] F25B *29/00*
U.S. Cl. 62—175 **8 Claims**



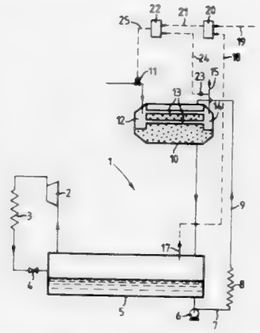
1. A heat pump type air conditioner for an automotive vehicle, comprising:
refrigerant;
a compressor applying a workload to said refrigerant;
an outer heat exchanger connected to a refrigerant discharge side of said compressor and radiating heat of said refrigerant into ambient air;
a blower leading air for air-conditioning the passenger compartment of the automotive vehicle;
a heat-radiating inner heat exchanger connected to the refrigerant discharge side of said compressor and transmitting the heat of said refrigerant to the air led by said blower;
an expansion valve connected to a refrigerant outlet side of said heat-radiating inner heat exchanger;
a heat-absorbing inner heat exchanger connected to a refrigerant outlet side of said expansion valve, said heat-absorbing inner heat exchanger cooling the air led by said blower by transmitting the heat of the air to said refrigerant which is supplied through said expansion valve from at least one of said outer heat exchanger and said heat-radiating inner heat exchanger;
a switching device connecting said compressor with said outer heat exchanger and said heat-radiating inner heat exchanger, said switching device being set at one of a first state in that said compressor is fluidly communicated with said outer heat exchanger and a second state in that said compressor is fluidly communicated with said heat-radiating inner heat exchanger; and
a control unit communicated with said switching device, said control unit selectively controlling the state of said switching device such that a temperature of air fed into the passenger compartment is controlled at a temperature at which clouding of vehicle windows is avoided and which temperature is determined from the relationship between a real compartment temperature and a real ambient temperature.

5,331,824

REFRIGERATION APPARATUS AND METHOD OF REFRIGERATION

Jeremy P. Miller, Mortimer; Charles M. Monroe, High Wycombe; Mark S. Williams, Kingston-Upon-Thames, all of United Kingdom, and Miles P. Drake, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 20, 1992, Ser. No. 979,572
Claims priority, application United Kingdom, Nov. 20, 1991, 9124649.6; Oct. 24, 1992, 9222381.7
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—175 **16 Claims**



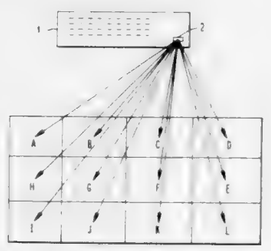
1. A refrigeration apparatus including a buffer vessel, a compressor for compressing gaseous refrigerant from said buffer vessel, a condenser for at least partially condensing refrigerant from said compressor, an expansion device for expanding fluid from said condenser, a line for carrying expanded fluid to said buffer vessel, an evaporator arranged to receive liquid refrigerant from said buffer vessel, and a pipe for returning at least part of the fluid from said evaporator to said buffer vessel, characterized in that said refrigeration apparatus further comprises a heat exchanger arranged to condense gaseous refrigerant from at least one of said evaporator and said buffer vessel and connected or connectable to a source of liquid nitrogen.

5,331,825

AIR CONDITIONING SYSTEM

Tae D. Kim, Suwon-City, Rep. of Korea, assignor to Samsung Electronics, Co., Ltd., Suwon-City, Rep. of Korea

Filed Mar. 8, 1993, Ser. No. 28,532
Claims priority, application Rep. of Korea, Mar. 7, 1992, 92-3783; Mar. 7, 1992, 92-3784
Int. Cl.[5] F25D *17/00;* **G05D** *23/00*
U.S. Cl. 62—180 **12 Claims**



1. A method of controlling an air conditioning system, said method comprising steps of:
detecting a room temperature;
enabling an infrared-ray detecting means to detect infrared

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rays in a total area divided into a predetermined number of divided areas to detect a radiation temperature of each of the divided areas for a predetermined time period;

calculating the difference between the detected radiation temperature and the detected room temperature;

judging whether the temperature difference is above a predetermined temperature difference and, if over a predetermined temperature difference, judging whether said detected radiation temperature is above a predetermined radiation temperature to determine the location of a person,

determining a completion of the detection with respect to the location of a person and the total area;

calculating the difference between the room temperature and a set temperature to determine whether the existence of a person is detected and comparing the temperature of an area in which a person is detected with the temperature of areas adjacent to the area in which a person a detected; and

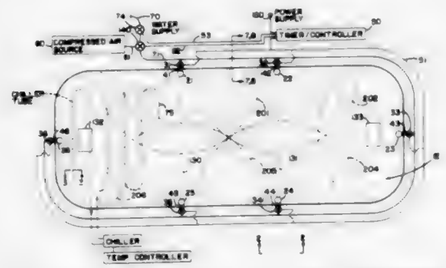
controlling a direction of blowing wind by a louver, an amount of blowing wind of a room blower fan and the operation of a compressor in response to results of said judging and said calculating steps.

5,331,826

ICE RINK MAKING EQUIPMENT AND PROCESS FOR RESURFACING ICE

Patrick J. Stockhaus, Columbia Heights, and Jeffrey D. McCallum, Buffalo, both of Minn., assignors to Icecycle Corporation, Plymouth, Minn.

Filed Oct. 2, 1992, Ser. No. 956,661
Int. Cl.[5] A63C *19/10*; **F25C** *1/00*
U.S. Cl. 62—235 **3 Claims**



1. An ice rink forming apparatus to be used with an ice rink, said ice rink having a rink surface and a means for cooling said rink surface to a temperature sufficient to freeze water, said ice forming apparatus comprising:

(a) the water supply conduit connected to a supply of water, and located adjacent to said rink surface;

(b) a plurality of sprinkle conduits in fluid communication with said water supply, and located along said water supply conduit at preselected locations;

(c) a plurality of sprinkler heads in fluid communication with said sprinkler conduits;

(d) a plurality of sprinkler valves, each of said sprinkler valves having an open position and a closed position, one of said sprinkler valves being located on each of said sprinkler conduits between said sprinkler head, and said water supply conduit;

(e) a timer electrically connected to each of said sprinkler valves, so that said timer is operable to move each of said valves from said open position to said closed position at predetermined intervals;

(f) an inner supply conduit connected to a source of compressed air; and,

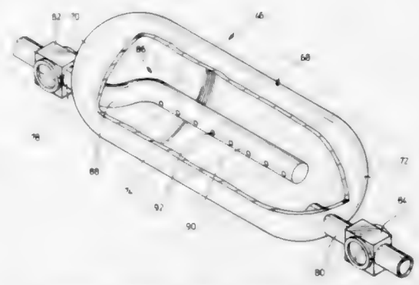
(g) a multi-position valve, having a water input, an air input, and a water output, said multi-position valve having a first position in which said water input is in fluid communication with said water output, and a second position in which said air input is in fluid communication with said water output, said water supply conduit being in fluid communication with said water output, said water supply being in fluid communication with said water input, and said air input being operably attached to said air supply conduit, whereby when said multi-position valve is in said first position water is forced into said water supply conduit, and said timer moves said sprinkler valves between said open position and closed position to sprinkle water onto said rink surface to form ice, and when said multi-position valve is in said second position compressed air is blown into said water supply conduit.

5,331,827

ENHANCING EFFICIENCY OF REFRIGERANT-CIRCULATING COOLING SYSTEM

Ralph Chlebak, 3100 Kirwin Avenue, Apt. 1702, Mississauga, Ontario, Canada M5A 3S6

Filed Mar. 25, 1993, Ser. No. 36,837
Claims priority, application Canada, Apr. 2, 1992, 2064976
Int. Cl.[5] F25B *39/04*
U.S. Cl. 62—509 **23 Claims**



1. A system for cooling a fluid medium in response to evaporation of a refrigerant, comprising:

an evaporating heat exchanger comprising a first flow path for the refrigerant, an expansion valve for discharging liquid refrigerant into the first flow path for evaporation, and a second flow path in thermal communication with the first flow path, the second flow path comprising an inlet for receiving the fluid medium for cooling in response to the evaporation of the refrigerant and an outlet for discharging a flow of cold fluid medium;

a compressor for compressing the refrigerant, the compressor comprising an inlet for receiving gaseous refrigerant and an outlet for discharging compressed refrigerant;

a suction line coupling the compressor inlet to the first flow path of the evaporating heat exchanger for receipt of spent gaseous refrigerant;

a high pressure line coupling the compressor outlet to the expansion valve;

a heat exchanger in the high pressure line for cooling the compressed refrigerant discharged from the compressor; and,

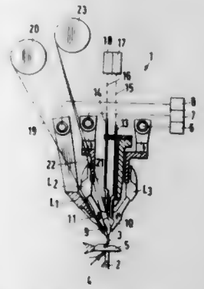
a condenser in the high pressure line between the refrigerant-cooling heat exchanger and the evaporating heat exchanger, the condenser comprising a housing formed of a thermally-conductive material and defining a closed reservoir for accumulating liquid refrigerant, the housing comprising an inlet receiving a refrigerant flow from the high pressure line and an outlet discharging the accumulated liquid refrigerant along the high pressure line toward the expansion valve, the condenser comprising a conduit communicating with the housing inlet and conducting the refrigerant flow to a predetermined region of the reservoir above the housing outlet, the housing comprising a housing portion positioned to immediately confront the cold fluid medium discharged from the evaporating heat-exchanger and the conduit being so apertured in the predetermined region above the housing outlet that substantially all of the refrigerant flow is discharged from the conduit against the housing portion thereby to induce condensing of a gaseous refrigerant component of the refrigerant flow in response to contact with the housing portion.

5,331,828

MACHINE FOR MAKING PATTERNED FABRIC

Joachim Weis, Obertshausen, and Gerhard Bergmann, Heusenstamm, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Division of Ser. No. 978,269, Nov. 18, 1992, Pat. No. 5,284,034.
This application Oct. 21, 1993, Ser. No. 138,974
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, 4138255
Int. Cl.[5] D04B *25/10*
U.S. Cl. 66—204 **6 Claims**



1. Warp knitting machine for the production of warp knitted fabric comprising:

a needle bar having needles;

at least one ground guide bar for laying ground fabric;

two pattern-forming jacquard guide bars for laying a pattern thread system, each of said jacquard guide bars having a plurality of jacquard guides at a spacing of at least twice that of the needles;

a jacquard bar control arrangement coupled to said jacquard guide bars for moving them;

jacquard command arrangement for displacing the jacquard guides; and

a common warp beam for supplying threads to the two jacquard guide bars, the jacquard bar control arrangements and jacquard command arrangement being mutually operable to selectively lay threads of the pattern thread system in (a) cloth lap or (b) in a sequence of different laps, selected from the group consisting of pillar, tricot, cloth, satin, and velvet stitches, and ordered with a predetermined periodicity to make the mean length of the underlap segment substantially equal to the underlap length in a cloth lap.

5,331,829

METHOD AND APPARATUS FOR LIQUID DEFLECTION

Bernhard Zeiler, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 30, 1992, Ser. No. 876,493
Int. Cl.[5] D06B *1/02*
U.S. Cl. 68—205 R **8 Claims**

2. An apparatus for spraying a liquid marking material onto the surface of a substrate utilizing a source of pressurized control fluid and a source of liquid marking material, said apparatus comprising:

(a) a spray applicator means having a plurality of first conduits for delivery of said marking material and a plurality of second conduits for delivery of said pressurized control fluid;

(b) each of said first conduits having an inlet and an outlet for said liquid marking material;

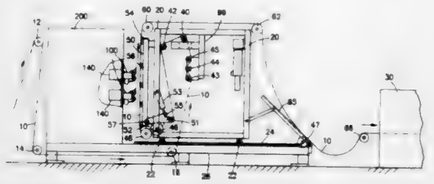
(c) each of said second conduits having an inlet and an outlet for said pressurized control fluid;

(d) said inlet of each of said first conduits arranged for connection to said source of marking material;

(e) said inlet of each of said second conduits arranged for connection to said source of control fluid;

(f) said outlets of said second conduits arranged adjacent to corresponding outlets of said first conduits and cooperating to effect division of a stream of said marking material exiting said outlets of said first conduits into droplets by an impinging stream of said pressurized control fluid exiting said outlets of said second conduits.

(g) a pressurized control fluid valve means interposed between said source of pressurized control fluid and said inlets of said second conduits, said pressurized control fluid valve means capable of controlling the flow of pressurized control fluid to said inlets of said second conduits in a cyclic manner; and



(h) a means for providing a stream of pressurized fluid to said second conduits to deflect liquid marking material therefrom, said means for providing a stream of pressurized fluid is interposed between said source of pressurized control fluid and said inlets of said second conduits wherein said means for providing a stream of pressurized fluid to said second conduits to deflect liquid marking material therefrom further comprises a third conduit having a first end portion and a second end portion, said first end portion of said third conduit is connected to said source of pressurized control fluid and said second end portion of said third conduit is connected to a manifold means, a fourth conduit having a first end portion and a second end portion, said first end portion of said fourth conduit is connected to said manifold means and said second end portion of said fourth conduit is operatively connected to said second conduits between said pressurized control fluid valve means and said inlets of said second conduits.

5,331,830

CYLINDRICAL LOCK

Mao C. Su, 85 Hsin Min Road Ya Liao Village, Lu Chu Hsiang, Kaohsiung Hsien, Taiwan

Filed Feb. 3, 1993, Ser. No. 12,952
Int. Cl.[5] E05B *67/24*
U.S. Cl. 70—38 A **1 Claim**

1. A cylindrical lock comprising;

a cylindrical housing having a longitudinal through hole, two shackle holes spaced apart in line for two ends of a shackle to pass through in, a round hole for a locking pin to fix a lock member and two pin holes respectively in a rear portion and a front portion;

two round pins fitting in the two pin holes of the cylindrical housing;

a lock member shaped as a round post, deposited in a right end of the through hole of the housing and fixed firmly by

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the fixing pin inserted in the round hole of the housing, and having a turning member with a projecting round block extending rearward and an annular key hole in an outer end surface, the projecting round block having a lateral through hole for a slide pin to insert therein, the slide pin having both ends in contact with two inclined grooves in two semi-round elongate plates forming a complete tube deposited in the housing;

a shackle being U-shaped and having two ends shaped as a cone and two inclined notches provided above the ends for two stopping edges of the two elongate semi-round plates to engage;

a seal cap closing up a left end of the longitudinal through hole of the housing;

a locking pin inserting in the round hole of the housing to fix firmly the lock member in the through hole of the housing;

two semi-round elongate plates being combined to form a hollow tube to be deposited in the longitudinal through hole of the housing, and having two notches spaced apart and corresponding to each other in an upper and a lower edge, each said notch having a stopping edge positioned diagonally to that of the other corresponding notch, a slot respectively in a left portion and a right portion of each plate for two pins to pass through to keep the two elongate plates combined with the housing and to limit movement of the plates, an inclined groove between the right notch and the right end of each plate, a round stopper laterally fixed in each plate to form a chamber for depositing a coil spring resting on the stoppers therein after said two elongate semi-round plates are combined together to form a complete tube; and

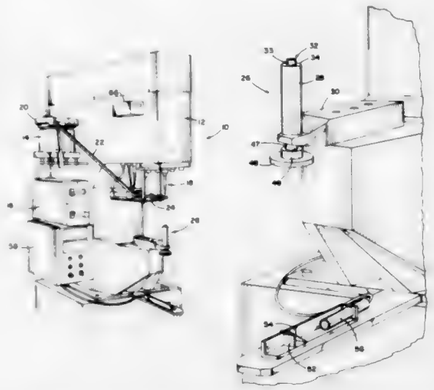
said two ends of the shackle being pushed into the two shackle holes of the housing in case the lock is to be locked, the cone-shaped surface of the said two ends gradually sliding and pushing the stopping edges of the notches in said two elongate semi-round plates so that said plates are moved in opposite directions until the stopping edges fit in and engage the inclined notches of the two ends of said shackle by elasticity of the spring in the chamber in the complete tube formed with said two elongate semi-round plates, said shackle then being kept locked in the housing by the two elongate plates, the lock being in locked position, said turning member of the lock member being turned with a key in case the lock is to be unlocked, said projecting round block being rotated together with the turning member forcing the slide pin to move along the inclined grooves of the two elongate plates so that said two plates move in opposite directions, said stopping edges of the notches in said plates then separating from the inclined notches of the shackle, which can then be taken off of the shackle holes of the housing with the two elongate plates being in unlocked position, said turning member of said lock member being turned from an unlocked position to a locked position so that the projecting round block is rotated, forcing the slide pin to slide along said inclined grooves back to the original lock position, and said stopping edges of said notches of the two plates are moved back to the original lock position pushed by the spring, ready for next locking.

5,331,831

HARDWARE SENSOR

Richard J. Schneider, Rosemount, Minn., assignor to Bermo, Inc., Circle Pines, Minn.

Filed Mar. 19, 1993, Ser. No. 33,834
Int. Cl.[5] B21B *33/02*
U.S. Cl. 72—4 **9 Claims**



1. Apparatus for detecting fault conditions in the operation of a fastener press of the type having a punch assembly for inserting a fastener into a hole in a workpiece comprising:

(a) A workpiece die having a retractable pin aligned generally with said punch assembly and mounted for reciprocal movement along an axis of said die;

(b) spring means biasing said pin toward a first extended position to be received within the hole in said workpiece;

(c) a linear displacement member operatively connected to said pin so that said linear displacement member moves along said axis in concert with the reciprocal movement of said pin;

(d) a sensor disposed to detect the position of said linear displacement member and generate a signal representative of said position, and

(e) means connected to said sensor for processing said signal and generating fault indication when a fault condition exists.

5,331,832

SLEEVE SIZING PROCESSES

Abraham Cherian, Webster, and William G. Herbert, Jr., Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

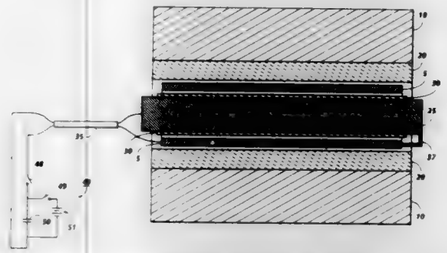
Filed Aug. 23, 1993, Ser. No. 110,748
Int. Cl.[5] B21D *26/14*
U.S. Cl. 72—56 **18 Claims**

1. A metal sizing method comprising:

(a) providing an electrically conductive sleeve and a die, wherein the die has an inner surface at least partially covered by an electrically insulating layer wherein the extent of coverage of the insulating layer over the die inner surface and the thickness of the insulating layer are effective to prevent electrical shorting between the sleeve and the die;

(b) positioning a portion of the sleeve in the die;

(c) positioning a portion of an electrically conductive member inside the sleeve;



(d) forming a direct electrical connection between the sleeve and the member; and

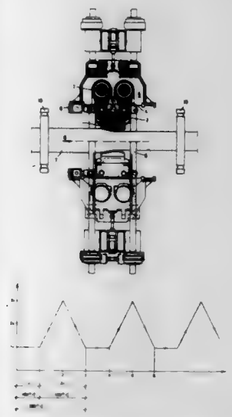
(e) creating a magnetic field to expand the sleeve.

5,331,833

METHOD OF OPERATING AN UPSETTING PRESS

Gerhard Heitze, Netphen, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 2, 1993, Ser. No. 844,252
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1991, 4106490
Int. Cl.[5] B21B *15/00;* **B65H** *20/00;* **B21J** *9/02*
U.S. Cl. 72—184 **5 Claims**



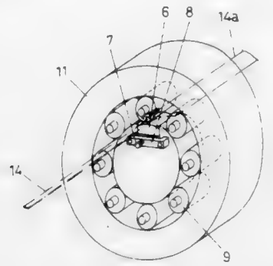
1. In a method of operating an upsetting press for reducing the width of a hot slab cast in a continuous casting plant by laterally pressing the slab between pressing tools of the upsetting press, the method including moving the pressing tools toward each other and away form each other by means of an eccentric lifting member as the slab is moving on a roller conveyor through the upsetting press, the improvement comprising, during a first time phase in which the pressing tools have no contact with the slab, accelerating the slab from a predetermined feeding speed and subsequently decelerating the slab to the predetermined feeding speed, and reducing the upsetting of the slab during a second time phase in which the pressing tools have contact with the slab prior to the acceleration of the slab.

5,331,834

ROLLING METHOD AND APPARATUS USING PLANETARY CROSS-ROLLS

Keiichiro Yoshida, 497, Shimonagayoshi, Mobara, Chiba, Japan

Filed Dec. 3, 1992, Ser. No. 985,212
Claims priority, application Japan, Mar. 16, 1992, 4-090238; Mar. 18, 1992, 4-091970
Int. Cl.[5] B21B *1/42, 13/20*
U.S. Cl. 72—191 **11 Claims**



1. A planetary cross-rolling method for rolling a long metal blank across the width thereof, the method comprising:

providing a sun roller and set of planetary rollers, each of said planetary rollers being mounted for rolling around said sun roller; and

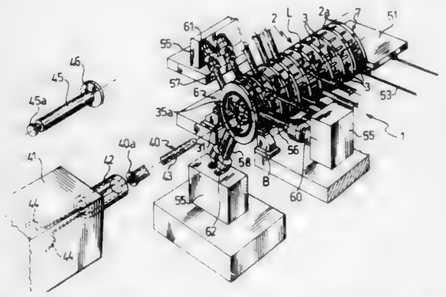
feeding the long metal blank between said sun roller and said set of planetary rollers in a direction parallel to center axial lines through said sun roller nd said set of planetary rollers, thereby rolling the long metal blank into a required thickness and width.

5,331,835

ROLLING STAND, HAVING THREE OR MORE DRIVEN AND ADJUSTABLE ROLLERS

Vincenzo Palma, Sesto San Giovanni; Filippo Cattaneo, Milan; Ettore Cernuschi, Milan; Roberto Brioschi, Milan; Maurizio Brignoli, Romano Di Lombadia, all of Italy, and Roger Bossoney, Bouchillon, Switzerland, assignors to Innse Innocenti Engineering, S.P.A., Genoa, Italy

Filed Nov. 2, 1992, Ser. No. 970,074
Claims priority, application Italy, Apr. 15, 1992, MI 92 A 000917
Int. Cl.[5] B21B *31/00*
U.S. Cl. 74—224 **14 Claims**



1. A rolling stand, having a longitudinal rolling axis, comprising:

at least three driven rollers;

an outer support structure for said rollers;

driving means and associated transmission means for driving said rollers;

a roller-carrier substantially in the form of a cylindrical

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body, wherein said rollers are each supported rotatable about a respective rotation axis via supporting means and carrier means provided in said roller-carrier for supporting each of said rollers in a pivotable manner;

said roller-carrier being slidably supported within said outer support structure such that the roller-carrier is slidable along said longitudinal rolling axis between an operative position locked within said outer support structure and a nonoperative position removed from said outer support structure via sliding means and locking means provided in the rolling stand;

at least one adjuster device for each roller, each adjuster device being operative to set a distance between said rotation axis of a respective roller and said longitudinal rolling axis, each adjuster device comprising a stationary part rigidly connected to said outer structure and a moving part reciprocable along a radial direction relative to said longitudinal rolling axis, said moving operating on said supporting means of the respective roller, and said carrier means holding said supporting means pressed against said moving part of each adjuster device.

5,331,836

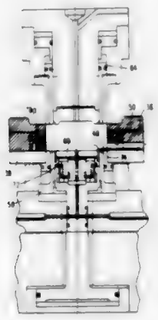
METHOD AND APPARATUS FOR FORMING CAN ENDS

Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 716,715, Jun. 17, 1991, Pat. No. 5,209,098, which is a continuation-in-part of Ser. No. 530,506, May 31, 1990, abandoned, which is a continuation of Ser. No. 104,745, Oct. 5, 1987, abandoned. This application May 10, 1993, Ser. No. 58,852

Int. Cl.[5] B21D *45/04, 51/44*

U.S. Cl. 72—346 **18 Claims**



17. Apparatus for forming metallic can ends in a press, said apparatus comprising:

a) an upper die assembly and a lower die assembly, each of said upper and lower die assemblies having relatively vertically reciprocal die components;

b) a cutting edge with which one of said upper and lower die assemblies cooperates to cut blanks from a sheet of metal stock;

c) means for moving selected ones of said die components such that the die compounds coat with each other under resilient bias means to form said ends from said blanks; and

d) means for locating the upper forming surfaces of all of said lower die components coelevational with each other, after forming, and in elevational alignment with an end ejection slot.

5,331,837

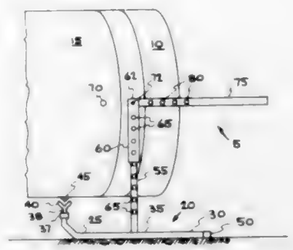
VEHICLE DOOR ALIGNMENT DEVICE

Glen Stuhlmacher, II, 45 Cuenca Ct., San Ramon, Calif. 94583

Filed Jun. 2, 1993, Ser. No. 71,310

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—458 **20 Claims**



1. A device for aligning an associated vehicle door with an associated vehicle body comprising:

a stand of adjustable height having a top and a bottom, the bottom having a foot with a means for securing the stand against vertical movement,

a lever with an end pivotally attached to the top of the stand,

a means carried on the lever for engaging a latch of the door,

a means carried on the lever for clamping the latch engaging means to the door.

5,331,838

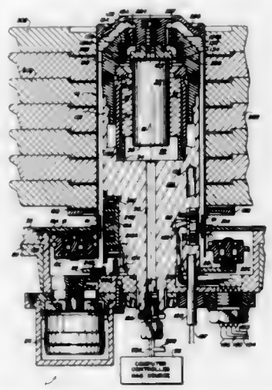
DEAD WEIGHT PISTON DRIVE AND CONTROL SYSTEM

Pierre R. Delajoud, 109 Rue de Longchamp, 92200 Neuilly sur Seine, France

Filed Dec. 3, 1992, Ser. No. 985,848

Int. Cl.[5] G01L *7/16, 27/00*

U.S. Cl. 73—4 D **24 Claims**



1. A dead weight piston pressure measurement device, comprising in combination:

(a) a cylinder;

(b) a piston rotatable in the cylinder, and vertically moveable in the cylinder, the piston supporting a plurality of calibration weights and a cylindrical drive surface coaxial with the piston;

(c) an external fluid source coupled to supply a flow of fluid, the pressure of which is to be measured or calibrated, into or out of a volume between the cylinder and the piston to vertically move the piston in the cylinder, the combined weight of a dead weight piston assembly including the piston and the calibration weights accurately indicating the pressure of the fluid in the volume when the piston is in a free-floating equilibrium condition in the cylinder;

(d) a drive mechanism for rotating the piston, including

i. first, second, and third stationary pulleys supporting a first belt in an equilateral triangle configuration, midpoints of first, second, and third segments of the first belt nearly touching first, second, and third points of the cylindrical drive surface,

ii. drive means for rotating the first pulley, thereby rotating the first belt and thereby rotating the second and third pulleys,

iii. first, second, and third moveable idle wheels symmetrically disposed adjacent to the first, second, and third segments of the first belt, and

iv. means for moving the first, second, and third idle wheels against the first, second, and third segments of the first belt, respectively, displacing them inwardly to symmetrically engage three points of the cylindrical drive surface, respectively, causing the dead weight piston assembly to rotate without producing thereon any sustained vertical displacement forces.

5,331,839

PROCESS FOR DETERMINING THE COEFFICIENT OF FRICTION Mμ

Günther Schmidt, Tamm, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

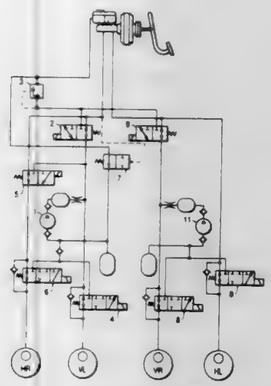
PCT No. PCT/EP91/00099, § 371 Date Jun. 11, 1992, § 102(e) Date Jun. 11, 1992, PCT Pub. No. WO91/15386, PCT Pub. Date Oct. 17, 1991

PCT Filed Jan. 19, 1991, Ser. No. 859,685

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010212

Int. Cl.[5] G01N *19/02*

U.S. Cl. 73—9 **18 Claims**



1. A method for determining a coefficient of friction μ between a tread of a tire of a vehicle, having at least two driven and at least two non-driven wheels, and a road surface, using pressure control devices for application of respective brake pressure at wheel brakes, and using control circuit, which receives signals corresponding to wheel speeds, for controlling the pressure control devices and for varying engine torque, wherein

in the case where the vehicle is not being braked and is not significantly accelerated, the control circuit continuously increases, in response to a trigger signal at a start time, and by means of the pressure control devices, a brake pressure which produces a braking force on a measuring wheel which is not driven;

simultaneously, the control circuit increases engine output to increase a driving force on a first driven wheel on the same side of the vehicle as the measuring wheel such that the braking force of the measuring wheel and the driving force of the first driven wheel approximately compensate each other;

a second driven wheel is braked such that it remains approximately at a given speed; and

a measuring time period required for increasing the brake pressure to produce locking of the measuring wheel is determined and used as a measure for the coefficient of friction.

5,331,840

DETECTION OF A GAS LEAKED INTO A LIQUID WHICH HAS BEEN SAMPLED FROM A PLURALITY OF SPACES

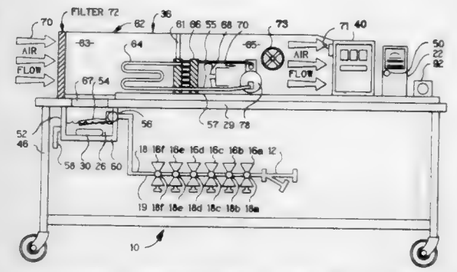
William J. Williams, Indianapolis, Ind., assignor to Sentech Corporation, Indianpolis, Ind.

Continuation of Ser. No. 477,309, Feb. 8, 1990, Pat. No. 5,115,666. This application May 21, 1992, Ser. No. 886,231

The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.

Int. Cl.[5] G01N *1/10;* **G08B** *23/00*

U.S. Cl. 73—19.1 **9 Claims**



1. Apparatus for taking samples of a liquid from a plurality of corresponding spaces and monitoring the samples of liquid to detect a leak into the liquid of a given gas of a given concentration level which is greater than a residual level of the given gas, said apparatus comprising:

a) a plurality of actuable valves, each of said valves in communication with a respective one of said plurality of spaces;

b) a common sampling reservoir in communication with each of said plurality of valves for receiving the sample of the liquid from an actuated one of said plurality of valves;

c) means for separating the given gas present in the liquid of the sample in said sampling reservoir;

d) gas detecting means in communication with said sampling reservoir for detecting the presence of the separated gas of a concentration above the given concentration level to provide an alarm indicative of a valid leak of the given gas into a corresponding liquid sample; and

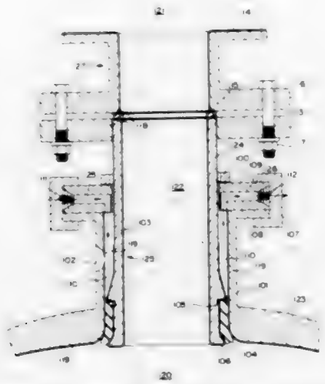
e) controlling means including means coupled with each of said plurality of actuable valves for selectively actuating one of said plurality of valves to permit the introduction of one sample of the liquid at a time from the corresponding one of said plurality of spaces into said sampling reservoir and the subsequent detection by said gas detecting means of the separated given gas in the one sample.

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5,331,841
METHOD AND APPARATUS FOR REPAIRING VESSEL PORTS

Phillip R. Beaver; James R. Meyer, and Thomas E. Henke, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 652,982, Feb. 11, 1991, Pat. No. 5,149,105. This application Jul. 24, 1992, Ser. No. 919,193
Int. Cl.[5] G01M *3/04*
U.S. Cl. 73—49.2 **15 Claims**



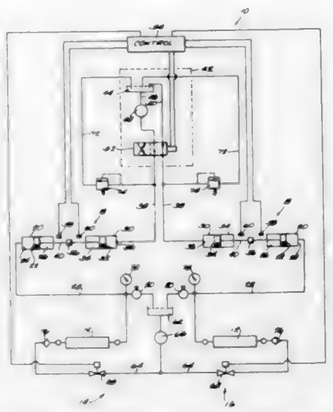
1. A method of repairing a port of a vessel, the port having an inside surface which is damaged, which method comprises:
(1) positioning into the port an apparatus comprising (a) a lining means for providing a passage for materials through the port, (b) one or more chamber forming means for forming, between said lining means and the inner surface of the port, a chamber, (c) an inlet and an outlet, which inlet and outlet are both in gaseous communication with said chamber, and (d) one or more sealing means for securing the lining means into the port and for preventing the flow of materials from the vessel into the chamber;
(2) feeding an inert gas via the inlet;
(3) continually exhausting the fed gas via the outlet.

5,331,842
CYCLICAL PRESSURE TESTING APPARATUS

Robert G. Wellemeyer, Derby, Kans., assignor to Smith Fiberglass Products Inc., Little Rock, Ark.

Filed Aug. 27, 1992, Ser. No. 936,427
Int. Cl.[5] G01M *3/04*; **F04B** *9/10, 17/00, 35/02*
U.S. Cl. 73—49.5 **8 Claims**

1. An apparatus for pressure testing a specimen, said apparatus utilizing different first and second fluids, said first fluid being used to pressurize the specimen and said second fluid being used to pressurize said first fluid, the mixing of said fluids being undesirable, said apparatus comprising a first cylinder, a first piston dividing said first cylinder into first and second chambers, said first chamber containing said first fluid, a second cylinder, a second piston dividing said second cylinder into third and fourth chambers, means connecting said pistons such that the volume of said first chamber increases in response to a decrease in the volume of said fourth chamber and such that the volume of said first chamber decreases in response to an increase in the volume of said fourth chamber, means for selectively supplying said second fluid under pressure to said fourth chamber, a conduit having one end communicating with said first chamber and having an opposite end adapted to communicate with the specimen, and means separate from said first cylinder for supplying an additional amount of said first fluid to the specimen in the event of a leak including means for sensing the distance said first piston moves when said second fluid is supplied to said fourth chamber, and make-up means for

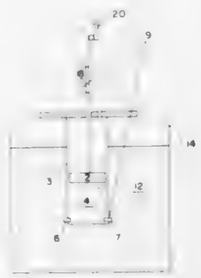


supplying said additional amount of said first fluid when said distance is greater than a predetermined distance.

5,331,843
CAPILLARY VISCOMETER APPARATUS FOR AN UNCOMPLICATED DETERMINATION OF FLOW CHARACTERISTICS OF FLUENT MATERIALS

Horst Gramatte, Rödern; Roland Worlitsch, and Tim Haake, both of Medingen, all of Fed. Rep. of Germany, assignors to Haake Medingen GmbH, Medingen, Fed. Rep. of Germany

Filed May 26, 1993, Ser. No. 67,071
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1992, 4218284
Int. Cl.[5] G01N *11/02*
U.S. Cl. 73—54.09 **12 Claims**

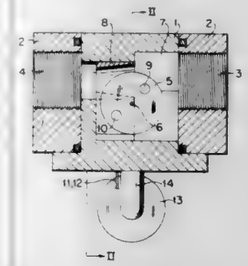


1. A method for determining flow characteristics of a tested fluent material comprising the steps of:
inserting a measuring cylinder into the tested fluent materials having at least one capillary opening and a differential pressure gauge arranged in a cylinder wall thereof for interconnecting a measuring space in said measuring cylinder with the tested fluent material;
moving a piston in the cylinder for pumping said tested fluent material into and out of said cylinder through said capillary opening;
measuring the differential pressure with said differential pressure gauge between the tested fluent materials in the cylinder and the tested fluent materials outside the cylinder.

5,331,844
METHOD AND DEVICE FOR MEASURING THE VISCOSITY OF A FLOWING FLUID

Anders Noren, Fafnervagen 30, Djursholm, S-182 65, Sweden

Continuation-in-part of Ser. No. 689,841, May 23, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 82,552
Claims priority, application Sweden, Dec. 1, 1988, 8804354-2
Int. Cl.[5] G01N *11/00*
U.S. Cl. 73—54.33 **11 Claims**

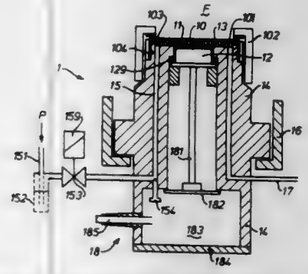


1. A device for determining the viscosity of a fluid flowing in a closed passage, said device comprising:
a rotor which, in use of the device, is surrounded by the fluid and the speed of rotation of which is directly dependent on the flow rate of the fluid, said rotor being carried symmetrically by a shaft which extends substantially at right angles to the longitudinal axis of the passage, said rotor shaft being located asymmetrically in relation to the longitudinal axis of said passage so that when fluid flows at constant velocity through the conduit the rotor will rotate at constant velocity, said rotor having the form of circular plate or cylinder;
brake means for applying a braking force to the rotor, the braking force being sufficient to cause the rotor to rotate at a reduced constant speed in relation to the constant speed of an unbraked rotor or of a rotor braked with a smaller braking force; and
rotational speed measuring means for measuring the resulting different constant rotational speeds of the rotor, a difference in said constant rotational speeds being representative of the viscosity of the fluid.

5,331,845
PROBE AND METHOD FOR DETECTING ALCOHOL

Ion Bals, Cologny; John M. Hale, Meinier; Eugen Weber, Hinwil; Antoine Gagnebin, Geneva, all of Switzerland, and Gérard R. Stehle, Machilly, France, assignors to Orbishpere Laboratories Neuchatel SA, Switzerland

Filed Jan. 19, 1993, Ser. No. 5,264
Int. Cl.[5] G01N *7/10*
U.S. Cl. 73—61.43 **20 Claims**

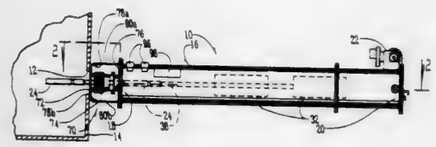


1. A probe for measuring a concentration of a normally volatile alcohol in a liquid comprising:
(A) a membrane that is permeable to vapors of said alcohol but substantially impermeable to said liquid;
(B) a measuring chamber having an open end closed against said liquid by said membrane and having an inlet and an outlet;
(C) a pressure means for feeding a purge gas via said inlet into said measuring chamber and out of said chamber by means of said outlet, and at least one valve for controlling passage of said purge gas through said measuring chamber; and
(D) a detector arranged within said measuring chamber capable of an essentially quantitative detection of said alcohol and of generating an electrical signal in proportion with said detection.

5,331,846
LONG DURATION ASH PROBE

John P. Hurley; Don P. McCollor, both of Grand Forks, N. Dak., and Stanley J. Selle, Grand Forks, Minn., assignors to Energy & Environmental Research Center Foundation, Grand Forks, N. Dak.

Filed May 19, 1992, Ser. No. 885,655
Int. Cl.[5] G01N *17/00*
U.S. Cl. 73—86 **14 Claims**



1. A probe with retractable coupon, comprising:
a hollow, elongated pressure shell having forward and rearward ends;
connecting means on the forward end of said shell for connecting the shell forward end to a port in a combustor such that the interior of the shell will communicate with the interior of the combustor;
a carriage having forward and rearward ends, operably mounted within said shell for longitudinal movement between an extended position, located at the forward end of said shell, and a retracted position, located rearwardly of the forward end of the shell;
a sample coupon removably connected to said carriage for movement therewith, and located forwardly of the carriage so as to be positioned forwardly of the connecting means when in the extended position, and located within the shell when in the retracted position;
drive means connected to said carriage for moving said carriage forwardly and rearwardly;
said drive means including:
at least one guide rail from the forward to rearward end within said shell; and
said carriage having wheel means for engaging said rail to guide the carriage therealong.
14. A probe with retractable coupon, comprising:
a hollow, elongated pressure shell having forward and rearward ends;
connecting means on the forward end of said shell for connecting the shell forward end to a port in a combustor such that the interior of the shell will communicate with the interior of the combustor;
a carriage having forward and rearward ends, operably mounted within said shell for longitudinal movement between an extended position, located at the forward end of said shell, and a retracted position, located rearwardly of the forward end of the shell;
a sample coupon removably connected to said carriage for movement therewith, and located forwardly of the carriage so as to be positioned forwardly of the connecting

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means when in the extended position, and located within the shell when in the retracted position;
drive means connected to said carriage for moving said carriage forwardly and rearwardly;
an operative valve means operably mounted at the forward end of said shell for selectively sealing the interior of the shell from the combustor port;
control means connected to said valve means and connected to said drive means, said control means operable to operate the drive means and move said carriage to the retracted position and thence close said valve means to seal the sample coupon within said pressure shell; and
a heating element mounted within the said pressure shell proximal the forward end thereof, for heating the interior of the pressure shell;
said heating element connected to said control means for actuation by said control means when said coupon is retracted within said shell and said valve is closed

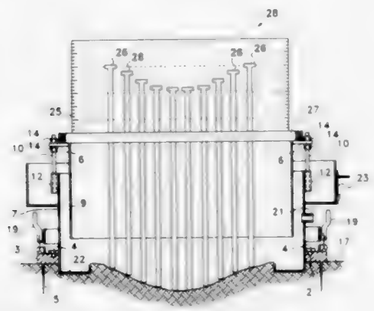
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5,331,847

SOIL ERODIBILITY TESTING

Gregory J. Hanson, Stillwater, Okla., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 972,399, Nov. 6, 1992, Pat. No. 5,243,850. This application Apr. 16, 1993, Ser. No. 47,138
Int. Cl.[5] G01N *17/00*
U.S. Cl. 73—86 **5 Claims**



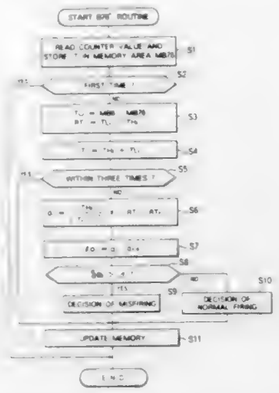
1. An apparatus comprising:
an outer backwater tank defining a first aperture at an upper portion thereof, said tank also defining a second aperture at a lower portion thereof through which soil may be exposed to the interior of said outer backwater tank;
an inner liner positioned at least partially within said outer backwater tank, said inner liner defining a first aperture at an upper portion thereof, said inner liner also defining a second aperture in a lower portion thereof through which soil may be exposed to the interior of said inner liner, and;
a pin profiler means, including a plurality of pins and holding means for holding said plurality of pins such that each said pin is individually displaceable along its longitudinal center axis, at least a portion of each of said plurality of pins being positioned within said outer backwater tank proximate to the lower portion thereof, such that each said pin may contact said soil which has been eroded.

5,331,848

MISFIRING DETECTING METHOD AND APPARATUS

Akihiro Nakagawa, and Akira Demizu, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 819,743
Claims priority, application Japan, Jan. 14, 1991, 3-015967
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **24 Claims**



1. A method of detecting the occurrence of misfiring in an internal combustion engine including at least one cylinder and a crankshaft operatively coupled to said cylinder, said method comprising the steps of:
providing a pulse signal, representing angular positions of said crankshaft and having a first duration of a first level before a predetermined angular reference position of said crankshaft and a second duration of a second level after said predetermined angular reference position;
successively determining an angular acceleration of said crankshaft at a predetermined crank position for said cylinder in accordance with a ratio of time amounts of said first and second durations of said pulse signal;
determining a change between a current angular acceleration and a preceding angular acceleration of said crankshaft;
comparing said change between the current and preceding angular accelerations with a predetermined value; and
deciding the occurrence of misfiring in said cylinder when said change in the angular acceleration exceeds said predetermined value.

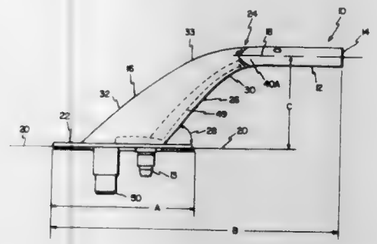
5,331,849

AERODYNAMICALLY SHAPED PROBE

Eric A. Hedberg, St. Paul, and Jeffrey M. Setterholm, Lakeville, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Jul. 20, 1992, Ser. No. 916,498
Int. Cl.[5] G01C *21/00*; G01F *1/46*
U.S. Cl. 73—182 **13 Claims**

11. A pressure sensing probe for mounting on an air vehicle comprising:
a cylindrical barrel having a generally circular cross section, a central axis centered on a diameter of an outer surface of the barrel, and a length along the central axis, and having a pressure sensing port thereon;
a mounting base;
a strut extending between said mounting base and the barrel comprising curved leading and trailing edges that define a plane and that extend outwardly from the base and curve in a forward direction at location spaced from the base such that the edges merge with the outer surface of the barrel and are generally parallel to the central axis where they merge with the barrel, the edges also converging from the base toward the barrel, the edges being spaced apart substantially at the base and said edges spaced apart in said plane a distance substantially equal to the barrel diameter where they merge with the barrel, the converging edges extending to space the barrel from the mounting base, the strut having a generally ogival cross sectional



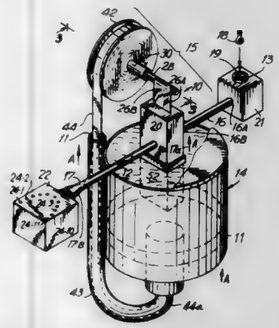
shape with a maximum dimension measured perpendicular to the plane less than the diameter of the barrel in the region adjacent the barrel; and
a short transition section interposed between the strut and the barrel from the ogival cross sectional shape to the cylindrical shape barrel in a distance along the central axis less than two times the diameter of the barrel, with the transition section having surface curving smoothly at all regions of the junction between the strut and the barrel.

5,331,850

APPARATUS FOR INDICATING THE LEVEL OF A MATERIAL IN A CONTAINER

George J. Loos, North Wales, Pa., assignor to Arkwin Industries Incorporated, Westbury, N.Y.

Filed Mar. 5, 1993, Ser. No. 27,006
Int. Cl.[5] G01F *23/02*; G01N *21/85*
U.S. Cl. 73—293 **17 Claims**



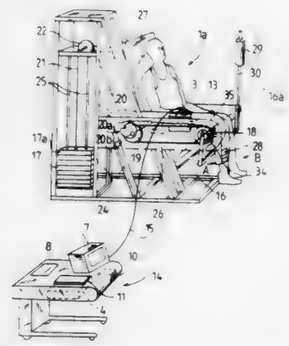
1. An apparatus for indicating a level of a material in a container having a moveable member for moving in a predetermined direction in relation to the level of the material in the container, said apparatus comprising:
a plurality of electromagnetic wave guides having respective first and second ends, wherein said first ends of said plurality of electromagnetic waves guides are disposed for receiving energy from an electromagnetic wave source and said second ends of said plurality of electromagnetic wave guides are disposed for indicating the presence of energy received by respective ones of said first ends; and
interrupting means disposed between the electromagnetic wave source and said first ends, said interrupting means comprising:
an interrupter,
moving means operatively engageable with the moveable member for moving said interrupter in a predetermined direction in relation to the level of the material in the container for interrupting the transmission of energy from the electromagnetic wave source to a number of said plurality of electromagnetic waves guides dependent on the level of material in said container, and
temperature compensating means for adjusting the displacement of said interrupter with respect to said plurality of electromagnetic wave guides to compensate for a change in volume of the material in the container due to a change in temperature of said material relative to a predetermined reference temperature, whereby the number of second ends of said plurality of electromagnetic wave guides receiving electromagnetic energy indicates the level of material in the container.

5,331,851

METHOD FOR MEASURING THE WORKING CONDITION OF MUSCLES AND MEASURING AND TRAINING SYSTEM FOR MEASUREMENTS OF THE WORKING CONDITION OF MUSCLES AND FOR MUSCLE TRAINING

Arno Parviainen, Vantaa, and Jukka Lyömiö, Espoo, both of Finland, assignors to David Fitness & Medical Ltd. Oy, Vantaa, Finland

PCT No. PCT/FI90/00077, § 371 Date Sep. 23, 1991, § 102(e) Date Sep. 23, 1991, PCT Pub. No. WO90/11049, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 23, 1990, Ser. No. 761,986
Claims priority, application Finland, Mar. 23, 1989, 891420
Int. Cl.[5] A61B *5/00*
U.S. Cl. 73—379.010 **18 Claims**



1. A method for measuring the working condition of muscles, wherein muscles are placed under load by mechanical training devices, the working condition of the muscles is measured, and the results obtained are registered, comprising the steps of:
providing a mechanical training device for placing the muscles of a subject under load, and for measuring the working condition of the muscles;
providing a data processing unit having a measuring program corresponding to said mechanical training device and including a plurality of measurements of the working condition of the muscles;
connecting said data processing unit to said mechanical training device;
identifying said mechanical training device for said data processing unit; and
activating said measuring program to obtain a desired mea-

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surement of the working condition of the muscles, wherein said load is generated by said mechanical training device by a counterbalance weight, and said load is opposed by the action of the subject against a balanced lever arm, and wherein said plurality of measurements of the working condition of muscles includes a range of motion measurement, wherein the ranges of motion of the joints of the extremities are measured as angles of rotation; an isometric force measurement, wherein the variable measured is torque; and a fatigue test, wherein the muscles are strained by a standard load.

5,331,852

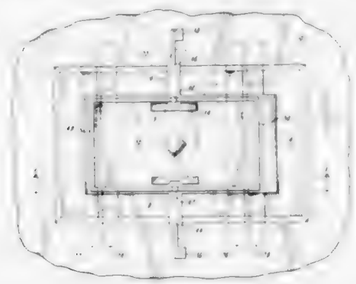
ELECTROMAGNETIC REBALANCED MICROMECHANICAL TRANSDUCER

Paul Greiff, Wayland, and Burton Boxenhorn, Chestnut Hill, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 757,706, Sep. 11, 1991. This application Dec. 16, 1991, Ser. No. 807,726

Int. Cl.[5] G01P *9/04, 15/13*

U.S. Cl. 73—505 **19 Claims**



1. A micromechanical transducer formed from a mass of semiconductor material, comprising

a displaceable transducer element having at least one planar surface;

a current carrying conductor disposed on said at least one planar surface;

a plurality of electrodes integral to said mass of semiconductor material and disposed proximate to said displaceable transducer element and proximate to said current carrying conductor; and

at least one current generator providing a fixed current through said current carrying conductor, a first electrode current through one of said plurality of electrodes, and a second electrode current through another of said plurality of electrodes, magnetic fields formed by said first electrode current, said second electrode current and said fixed current, interacting to produce motion of said displaceable transducer element

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5,331,853

MICROMACHINED RATE AND ACCELERATION SENSOR

Rand H. Hulsing, II, Redmond, Wash., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 653,533, Feb. 8, 1991, Pat. No. 5,241,861. This application Jan. 21, 1992, Ser. No. 823,102

Int. Cl.[5] G01P *9/04*

U.S. Cl. 73—505 **21 Claims**

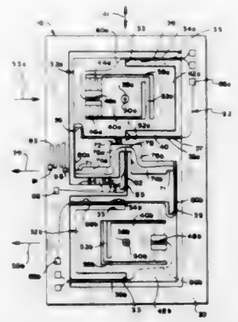
1. A substrate for use in an acceleration and angular rate sensor comprising

first and second accelerometers formed in said substrate, said first and second accelerometers having generally parallel force sensing axes;

a dither frame formed in said substrate;

mounting means formed in said substrate for mounting said first and second accelerometers to said dither frame, said mounting means adapted to allow said first and second accelerometers to dither along a dither axis, said dither axis being perpendicular to said force sensing axes of said first and second accelerometers;

a linking means interconnecting said first and second accelerometers for allowing said first and second accelerometers to dither at the same frequency; and



said linking means further providing means for imparting a reaction force on said first accelerometer along said dither axis when an action force is imparted on said second accelerometer along said dither axis, said action and reaction forces being of substantially equal magnitude and being oppositely directed

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5,331,854

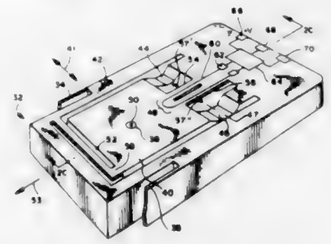
MICROMACHINED RATE AND ACCELERATION SENSOR HAVING VIBRATING BEAMS

Rand H. Hulsing, II, Redmond, Wash., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 653,533, Feb. 8, 1991, Pat. No. 5,241,861. This application Jun. 8, 1993, Ser. No. 73,818

Int. Cl.[5] G01P *9/04, 15/10*

U.S. Cl. 73—505 **17 Claims**



12. An accelerometer for measuring specific force of acceleration of a moving body, comprising:

a) a monolithic substrate having first and second substantially planar surface disposed substantially parallel to each other;

b) an accelerometer formed of said substrate and having a force sensing axis for producing an output signal indicative of the acceleration of the moving body along said force sensing axis;

c) said accelerometer comprising an accelerometer frame, a proof mass, hinge means interconnected between said frame and said proof mass for allowing said proof mass about a hinge axis when the moving body is subjected to a force long said force sensing axis, said proof mass having a first end interconnected by said hinge means to said frame and a free end permitted to rotate freely about said hinge axis with respect to said frame, said proof mass further having a center of gravity and a pendulous axis aligned to intersect said center of gravity and said hinge axis, flexible means interconnected between said frame and said free end of proof mass for flexibly restraining the pivoting of said proof mass about said pendulous axis, at least one vibrating beam having first and second ends respectively coupled to said frame and said proof mass and a longitudinal axis, and conductive path disposed long said vibrating beam; and

d) signal generator means for producing and applying to said conductive path a periodic drive signal having a resonant frequency that is a function of the force applied along said force sensing axis to the moving body.

5,331,855

ULTRASONIC INSPECTION SYSTEM

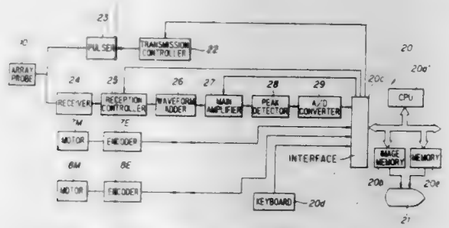
Yoshihiko Takashita, and Souji Sasaki, both of Ibaraki, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Japan

Filed Feb. 4, 1992, Ser. No. 886,381

Claims priority, application Japan, Aug. 7, 1989, 1-202807

Int. Cl.[5] G01N *29/26, 29/10*

U.S. Cl. 73—602 **4 Claims**



1. An ultrasonic inspection system comprising:

an array probe having a number of array element oscillators arranged in at least one row, at least some of said oscillators being transmit oscillators for transmitting radiating ultrasonic waves, and at least some of said oscillators being receive oscillators for receiving any reflected waves reflected from an object and then converting the reflected waves into a data signal,

a memory unit for receiving and storing said data signals from said oscillators obtained by ultrasonic scanning of a surface of an object by the array probe,

a display unit for showing an ultrasonic image based on the data stored in the memory unit,

first computing means for computing an average value of individual reference data obtained by said oscillators of the array probe during ultrasonic scanning of a reference material of defect-free uniform quality, each said individual reference datum and said average value being stored in said memory unit,

second computing means for multiplying individual inspection date of a test object obtained by ultrasonic scanning of the test object by the array probe with the average value and the inverse of the reference data corresponding to the inspection data; and

output means for outputting the results of the computation by the second computing means to the display unit so that a corrected ultrasonic image is displayed.

5,331,856

PRESSURE DEVICES

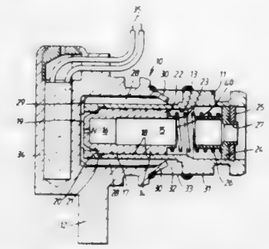
Ronald F. Cassidy, Waterlooville, England, assignor to Pall Corporation, Glen Cove, N.Y.

Filed May 1, 1992, Ser. No. 877,193

Claims priority, application United Kingdom, May 1, 1991, 9109382.3

Int. Cl.[5] G01L *7/16, 9/10*

U.S. Cl. 73—745 **11 Claims**



1. A device for indicating when a pressure differential between fluid at a higher pressure and a fluid at a lower pressure reaches a predetermined value, comprising:

a housing;

a bore formed within the housing and having first and second ends;

a piston slidable within the bore;

a first port leading to the first end of the bore and for connection to a source of fluid at high pressure;

a first face on the piston, located towards the first end of the bore and having an area acted on by the higher pressure fluid and having a first portion and a second portion surrounded by the first portion;

a second face on the piston, directed oppositely to the first face, located towards the second end of the bore, and having an area acted on by the lower pressure fluid; and

a sealing surface provided on the housing and engaging the first portion of the first face, when the piston is in an inoperative position, to form a face seal inhibiting fluid flow between the first and second ends of the bore and to reduce the area of the first face acted on by the higher pressure fluid, the second portion of the first face of the piston projecting past the sealing surface toward the first end of the bore when the piston is in the inoperative position, the piston moving in the bore at the predetermined value to break the face seal and increase the area of the first face acted on by the higher pressure fluid.

5,331,857

PRESSURE TRANSDUCER

Mark Levine, Plainview, N.Y.; William T. Holmes, Jackson; Edward W. Baumgartner, Somerset, both of N.J.; Herman W. Erichsen, Holliston, and Louis J. Panagotopulos, Walpole, both of Mass., assignors to General Automotive Specialty Co., Inc., North Brunswick, N.J.

Filed Aug. 21, 1992, Ser. No. 934,185

Int. Cl.[5] G01L *21/12*

U.S. Cl. 73—756 **20 Claims**

9. A pressure transducer comprising:

a beam structure having a unitary axially symmetrical body with a hollow generally cylindrical side wall and a flat end disk, said side wall terminating at one end with said end disk;

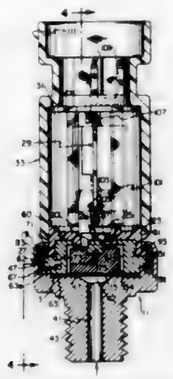
said side wall terminating at its end opposite said end disk in a generally planar annular surface;

said end disk having two parallel spaced slots extending through said end disk symmetrically on either side of a diameter of said end disk, to form a beam between said slots joined at each end to said body and deflectable upon application of force against said end disk;

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said beam adapted to be deflected in response to pressure to be detected.

a piezo-resistive strip mounted on and extending along said beam on one side of the center of said beam, said piezo-resistive strip having a terminal pad at each end and a terminal pad at the center, whereby upon deflection of said beam, the resistance between said center pad and one



end pad increases while the resistance between said center pad and the other end pad decreases;

a header generally of cylindrical conformation adjacent said beam, and having three contacts held thereby, each connected to a respective one of said terminals pads; and

a circuit board, said board having a set of input terminals connected respectively to said contacts, and a set of output terminals.

5,331,858

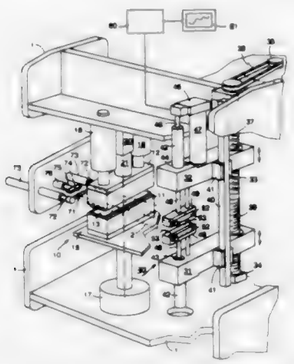
HOT TACK TESTER

Hutton W. Theller, Petaluma, Calif., assignor to H. W. Theller Inc., Petaluma, Calif.

Filed Nov. 24, 1992, Ser. No. 980,853

Int. Cl.[5] G01N *19/04*

U.S. Cl. 73—827 **13 Claims**



1. A method of testing the hot tack properties of a strip of heat sealable material which comprises overlaying a portion of said strip with another portion of said strip, creating a heat seal on a segment of said overlaid portion by subjecting said segment to heat and pressure, removing the heat sealed segment from said heat and pressure, pulling apart said heat seal at a constant rate to progressively delaminate said heat seal, cooling said heat seal during said delamination and measuring and capturing for retrieval the pulling force on the strip with time as delamination progresses and wherein the ends of said strip are each affixed to a respective gripper prior to overlaying of said strip in opposed directions with said grippers positioned sufficiently close to each other to provide adequate slack in said strip for portions thereof to be overlaid for heat sealing, said grippers following heat sealing of said portions are moved rapidly apart a distance to quickly move the heat sealed segment from said heat and pressure and take up the slack in said test strip and then said grippers are moved apart at a slower substantially constant rate to effect said progressive delamination of said seal.

5,331,859

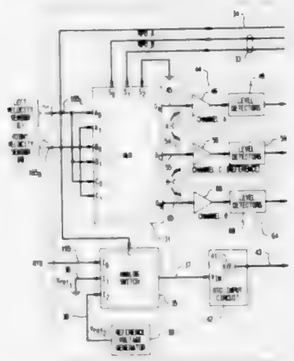
TECHNIQUE FOR SUBSTANTIALLY ELIMINATING TEMPERATURE INDUCED MEASUREMENT ERRORS FROM A CORIOLIS METER

Michael J. Zolock, Longmont, Colo., assignor to Micro Motion, Inc., Boulder, Colo.

Division of Ser. No. 728,546, Jul. 11, 1991, Pat. No. 5,231,884. This application Feb. 8, 1993, Ser. No. 14,618

Int. Cl.[5] G01F *1/84*

U.S. Cl. 73—861.38 **15 Claims**



1. Circuitry for measuring first and second input signals comprising:

first, second and third input channels, having first, second and third channel inputs, for respectively producing first, second and third channel output signals in response to a predetermined characteristic of said first, second and third channel inputs;

measurement means comprising:

means, responsive to said first, second and third channel output signals for determining first and second internal offset values respectively associated with first and second pairs of said input channels and for respectively measuring first and second signal values through said first and second pairs so as to produce first and second measured signal values; and

means, responsive to said first and second measured signal values and said first and second internal offset values, for respectively compensating said first and second measured signal values by said first and second internal offset values to yield first and second compensated values, respectively, as measurements of said first and second input signals;

means for selectively routing said first or second input signals to corresponding inputs of said first, second and third input channels; and

control means, connected to said selectively routing means and to said measurement means, for specifying which one of said input signals is to be simultaneously applied as input to each one of the input channels and for operating said selectively routing means and said first and second pairs of the input channels in conjunction with said measurement means such that while the first pair is determining the first internal offset delay value the second pair is measuring the second signal value and for reversing operation of said channel pairs after a pre-defined interval of time has elapsed such that the first pair will measure the signal value while the second pair will determine the second internal offset delay value so as to continuously measure the first and second input signals and compensate measurements of the first and second input signals produced by each of the channel pairs by the value of the internal offset associated with that particular channel pair.

5,331,860

THROW LIMITING DEVICE FOR A STARTER HEAD OF AN INTERNAL COMBUSTION ENGINE

André Demoule, Diemoz; Hugues Pawlik, Lyons, and Christian Mornieux, Oullins, all of France, assignors to Valeo Systems D'Essuyage, Montigny-le-Bretonneux, France

Filed Jan. 13, 1993, Ser. No. 3,797

Claims priority, application France, Jan. 13, 1992, 92 00245

Int. Cl.[5] F02N *15/00*

U.S. Cl. 74—7 R **2 Claims**

1. A starter for an internal combustion engine, comprising a motor shaft having a free end, and a starter head carried by the motor shaft, the starter head having a starter pinion with a first end closer to the free motor shaft end and a second end opposite to the first end; a free wheel carried by the second end of the starter pinion, the free wheel including a driving sleeve; a shroud securing the driving sleeve and the free wheel to the starter pinion, the starter pinion having a bore extending the full length of the pinion, the pinion also having a semicylindrical groove formed in the bore surface thereof, with means in the bore mounting the pinion on the motor shaft for axial sliding throw of the pinion on the motor shaft, the starter further including a throw limiting device having a stop ring fitted in the semicylindrical groove, and a further ring carried on the free end of the motor shaft adjacent the first end of the pinion for cooperation with the stop ring, whereby to limit the axial throw of the pinion; a closure cap carried by the pinion and covering the pinion bore at the first end, the closure cap and further ring together forming a space within the bore, the starter having air circulation means for ciculation of air contained in the space from the space to the pinion second end, between the space and the second end of the starter pinion; the further ring having a cylindrical collar, the collar having peripheral longitudinal grooves formed in the surface thereof, the circulation means including the longitudinal grooves.

5,331,861

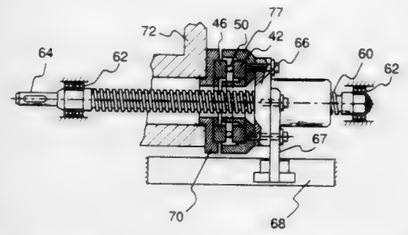
ROTATING DRIVE MAGNETICALLY COUPLED FOR PRODUCING LINEAR MOTION

Benjamin Joffe, 22314 James Alan Cir., Chatsworth, Calif. 91311

Continuation of Ser. No. 532,743, Jun. 4, 1990, abandoned. This application Sep. 28, 1992, Ser. No. 952,471

Int. Cl.[5] F16H *25/20*

U.S. Cl. 74—89.15 **21 Claims**



18. A rotatable drive mechanism for producing linear motion of an object, comprising:

driving and driven members, one of which is elongated, and which through frictional engagement cooperatively produce longitudinal motion of the driven member when the driving member operates;

a magnetic coupling including at least first and second magnetizable members having mutually facing flat annular surfaces, a set of balls disposed in a generally annular arrangement between said flat surfaces, and magnetic means attracting said magnetizable members to each other to forcibly clamp the balls therebetween and eliminate longitudinal play between the surfaces while accommodating lateral displacements between the driving and driven members by transverse rolling motion of the balls between the surfaces;

means fixedly securing respective ends of said magnetic coupling to said driven member and to the object, respectively; and

means for restraining undesired rotation of any part of said magnetic coupling.

5,331,862

LINEAR DRIVE FOR CONVERTING A ROTATIONAL DRIVE MOVEMENT INTO A LINEAR OUTPUT MOVEMENT

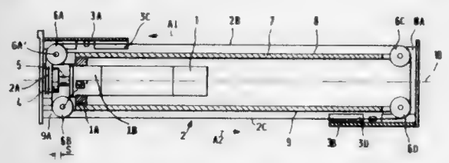
Ralf Baginski, Neetze, and Roland Felkai, Bremen, both of Fed. Rep. of Germany, assignors to ERNO Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany

Filed Oct. 30, 1992, Ser. No. 969,406

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1991, 4136119

Int. Cl.[5] F16H *55/52*

U.S. Cl. 74—89.22 **13 Claims**

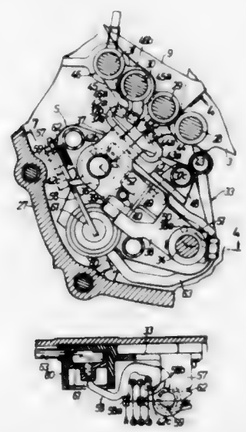


1. A linear drive, particularly for use in an aircraft or spacecraft, comprising an electromotor for providing a rotational power output, a runner for performing a linear movement, and means coupling said runner to said rotational power output of said electromotor for converting rotation into said linear movement, said coupling means comprising a flexible member

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and guide means supporting said flexible member at least at one location away from said electromotor and so that said flexible member extends in a first plane, said flexible member positioning said runner, said guide means changing the movement direction of said flexible member, said electromotor comprising a drive element for engaging and driving said flexible member, longitudinal mounting means having a first longitudinal axis, said mounting means supporting said guide means thereby forming an endless loop of said flexible member, and means for securing said electromotor to said mounting means inside said endless loop, said electromotor having a second longitudinal axis extending in the same direction as said first longitudinal axis of said mounting means (7), said drive element defining a second plane extending perpendicularly to said first plane and perpendicularly to said first and second longitudinal axis, whereby said drive element drives said flexible member crosswise of said longitudinal axis.

5,331,863
MANUAL TRANSMISSION FOR VEHICLE
Shogo Kobayashi; Shinji Fujimoto; Hideo Udoh, and Keiji Nemoto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1992, Ser. No. 970,995
Claims priority, application Japan, Nov. 6, 1991, 3-090714[U]
Int. Cl.[5] F16H *61/16*; B60K *20/00*
U.S. Cl. 74—476 **17 Claims**



1. A manual transmission for a vehicle comprising:
a shifting means for selectively establishing one of a plurality of forward shift stages and a reverse shift stage in the transmission, said shifting means comprising a shift member operatively associated with a change lever;
a restraining means for restraining actuation of said shifting means;
a drive means for urging said restraining means to an operative position during forward travelling of the vehicle,
wherein said restraining means includes an engage portion contacting said shift member for restraining the movement of said shift member to a position for selecting the reverse shift stage when in the operative position, said restraining means further including an abutment portion against which said shift member is abuttable, and
wherein a predetermined movement of said shift member in response to the operation of said change lever urges said shift member against said abutment portion when said restraining means is in the operative position to forcibly return said restraining means to an inoperative position.

5,331,864
BICYCLE HEADSET
Yi-Chen Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan
Filed Oct. 16, 1992, Ser. No. 962,528
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[5] B62K *21/12*
U.S. Cl. 74—551.1 **11 Claims**



1. A headset for use in a wheeled vehicle comprising a steerer tube, a head tube engaged on said steerer tube by a lower bowl engaged in an upper portion of said head tube and engaged between said steerer tube and said head tube, a bearing rotatably engaged on said lower bowl, a sleeve engaged on said steerer tube and located above said lower bowl and including a slit vertically formed along the length thereof and a first tapered surface formed in an outer peripheral portion thereof, an upper bowl engaged on said bearing and including a second tapered surface formed in an inner peripheral portion thereof for engagement with said first tapered surface of said sleeve and arranged wherein said upper bowl applies a downward and radially inward force to said sleeve when said upper bowl moves downward toward said lower bowl, means for compressing said upper bowl downward toward said lower bowl, wherein, said sleeve is forced radially inward by said upper bowl in order to stably couple said upper bowl and said sleeve and said steerer tube together.

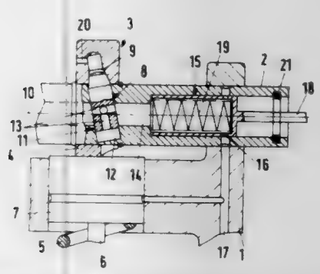
5,331,865
ADJUSTABLE HANDLEBAR STEM
Willem Oskam, Heerenveen, Netherlands, assignor to Batavus B.V., Heerenveen, Netherlands
Filed Jul. 14, 1992, Ser. No. 913,113
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—551.3 **14 Claims**

1. A handlebar stem for connecting a handlebar with a means to be steered, which handlebar stem comprises a shank, a front extension extending at an angle relative to the shank, said front extension comprising means for mounting the handlebar, while the angle at which the front extension extends relative to the shank is adjustable and the handlebar stem comprises a bolt to be inserted through the shank in longitudinal direction for clamping the handlebar stem in a means to be steered, in which the bolt extends through the front extension,



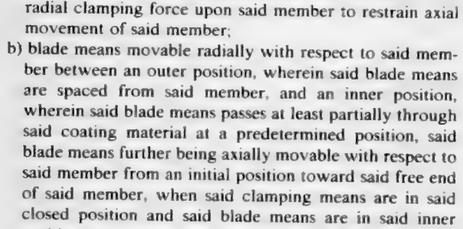
in such a manner that the front extension can be fixed relative to the shank by means of the bolt.

5,331,866
CAMSHAFT ARRANGEMENT HAVING A DEACTIVATABLE CAM
Dieter Voight, and Horst-Günter Hilderts, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 896,625, Jun. 10, 1992, Pat. No. 5,239,885. This application Apr. 28, 1993, Ser. No. 54,894
Claims priority, application Fed. Rep. of Germany, May 9, 1992, 4215298
Int. Cl.[5] F01L *1/04*; F16H *53/00*
U.S. Cl. 74—567 **8 Claims**



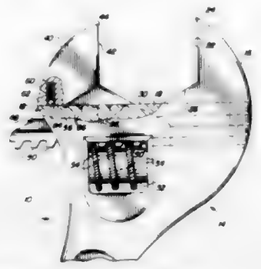
1. A camshaft arrangement having at least one deactivatable cam comprising a camshaft, a cam rotatably supported on the camshaft and having a coupling recess facing the camshaft with a pressure relief opening, a hydraulically actuatable coupling for selective establishment of a rotationally fixed connection between the cam and the camshaft including a transverse recess in the camshaft, a coupling pin displaceable in the transverse recess between a coupling position in which it engages the coupling recess in the cam to establish the rotationally fixed connection with the cam and a release position in which it is retracted from the coupling recess to disconnect the rotationally fixed connection, the coupling pin having a surface facing the bottom of the camshaft transverse recess which, together with the camshaft transverse recess, forms a pressure chamber, connecting passage means to supply hydraulic fluid to the pressure chamber, an axially displaceable control piston forming a variable-volume compression chamber communicating with the connecting passage means to control the pressure in the pressure chamber, and pressure relief passage means for relieving the hydraulic pressure in the compression chamber when the control piston has moved to a position reducing the volume of the compression chamber.

5,331,867
WIRE INSULATION CUTTING AND STRIPPING APPARATUS
Thomas S. Carpenter, and David D. Hand, both of New York, N.Y., assignors to Carpenter Manufacturing Co., Inc., Manlius, N.Y.
Filed Oct. 19, 1992, Ser. No. 962,851
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.51 **31 Claims**



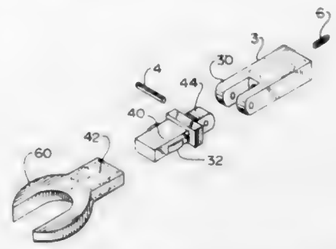
1. Apparatus for severing a layer of coating material surrounding a coated, elongated filamentary member and partially or fully stripping the severed portion of said material from a free end of said member, said apparatus comprising:
a) clamping means movable radially with respect to said member between an open position, wherein said member may be axially wherein said clamping means exerts a radial clamping force upon said member to restrain axial movement of said member;
b) blade means movable radially with respect to said member between an outer position, wherein said blade means are spaced from said member, and an inner position, wherein said blade means passes at least partially through said coating material at a predetermined position, said blade means further being axially movable with respect to said member from an initial position toward said free end of said member, when said clamping means are in said closed position and said blade means are in said inner position, to exert an axial force severing said material at said predetermined position and moving the severed portion axially on said member toward said free end thereof;
c) motive power means for moving said clamping means and said blade means;
d) first means connecting said power means to said clamping means to effect movement of said clamping means from said open to said closed position and to vary said clamping force exerted by said clamping means on said member;
e) second means connecting said power means to said blade means to effect movement of said blade means from said outer to said inner position;
f) third means connecting said power means to said blade means to effect movement thereof axially with respect to said member from said initial position toward said free end thereof;
g) fixed frame means having a longitudinal axis; and
h) resilient means providing a locking force between said fixed frame means and said third means connecting means permitting movement of said blade means away from said initial position only in response to application of a force by said motive means to said third connecting means sufficient to overcome said locking force.

5,331,868
CRESCENT WRENCH
Thomas Elmore, 21811 NW. 6th St., Pambroke Pines, Fla. 33029
Filed Aug. 2, 1993, Ser. No. 100,291
Int. Cl.[5] B25B *13/16*
U.S. Cl. 81—165 7 Claims



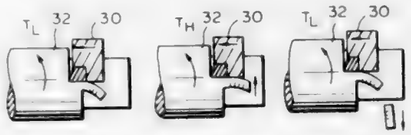
1. An adjustable wrench comprising:
a main body, said main body including an elongate handle portion and a head portion,
said head portion including a fixed primary jaw, said primary jaw including a fixed grasping face having a distal segment and a proximal segment,
said head portion further including a pair of spaced parallel track segments extending from said proximal segment of said fixed grasping face, said track segments each including an upper slide face and defining a central channel therebetween,
a sliding secondary jaw, said secondary jaw including a sliding grasping face having an upper segment and a lower segment, said lower segment being substantially narrower than said upper segment such that said lower segment is slidably disposed between said track segments,
said sliding secondary jaw further including an elongate gear member extending tangentially from said lower segment of said sliding grasping face and being axially and slidingly disposed within said central channel such that sliding of said gear member within said channel results in corresponding sliding of said secondary jaw along said track segment, thereby positioning said sliding secondary jaw a desired distance from said fixed primary jaw,
said gear member including a plurality of gear teeth,
a worm gear disposed within said head portion, said worm gear being structured and disposed to engage said gear teeth on said gear member such that rotation of said worm gear results in corresponding axial movement of said gear member within said central channel,
said wider upper segment of said sliding grasping face including a pair of parallel jaw slide faces disposed on opposite sides of said lower segment of said sliding grasping face, said jaw slide faces slidingly and matingly confronting said upper slide faces of said parallel track segments,
a vertical bore extending through at least one of said jaw slide faces into said sliding secondary jaw,
a vertical spring disposed within said vertical bore,
a plurality of spaced recesses disposed along a corresponding one of said upper slide faces of said parallel track segments, said recesses being spaced predetermined distances from one another, and
a ballbearing disposed between said vertical spring and said corresponding one of said upper slide faces of said parallel track segments, said spring exerting an outwardly biasing force on said ballbearing such that upon positioning of said vertical bore atop one of said spaced recesses, said ballbearing is urged partially into said one recess thereby resulting in removable locked engagement of said ballbearing within said one recess and a substantially audible sound being made so as to signal locked engagement at one of said plurality of recesses.

5,331,869
ADJUSTABLE WRENCH HEAD AND HANDLE SYSTEM
Daniel S. Webb, 5909 S. Clayton, Littleton, Colo. 80121
Continuation-in-part of Ser. No. 874,955, Apr. 15, 1992, abandoned. This application Mar. 30, 1993, Ser. No. 40,082
Int. Cl.[5] B25B *23/16*
U.S. Cl. 81—177.1 3 Claims



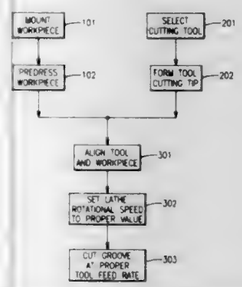
1. A two piece wrench handle and adapter piece for joining to one another in order to provide for the attachment of multiple wrench heads to said adapter piece and for placing said wrench head in a plurality of positions at an angle to said adapter comprising:
a first handle piece having a front and rear, a shank portion of square cross section in connection with said front and having a front face and four side walls, said shank portion having a means for providing resilient extensions from two of said side walls that are opposite one another;
a first adapter piece having front and rear ends and a middle portion between said ends, said rear end having a four sided cavity adapted to fit around said shank portion, two of said side walls opposite one another having curved wall portions so as to be adapted to fit said resilient extensions, said front end having two projecting portions and a space between them so that said wrench head may be pivotally connected to said front end by a pin placed through said projecting portions and said wrench head, said middle portion having a threaded aperture in connection with said cavity and said space between said projecting portions, so that a set screw may be placed in said threaded aperture in order to secure said wrench head at an angle to said adapter piece.

5,331,870
APPARATUS AND METHOD FOR USE IN CONTROLLING MACHINING CHIP AND LENGTH OF SUCH MACHINING CHIP
Wu Chin-Long, No. 136-12, Young Ho Road, Ta Ya Hsiang, Taichung Hsien, Taiwan
Filed Oct. 29, 1992, Ser. No. 968,324
Int. Cl.[5] B23B *1/00, 29/00*
U.S. Cl. 82—1.11 8 Claims



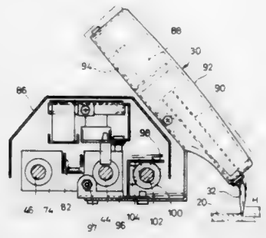
5. A method for controlling machining chips and the length of such chip while using a machining tool against a moving workpiece comprising the steps of
positioning the machining tool through an electromagnetic coil on a lathe tool support stationary relative said lathe tool support;
producing a shearing force by moving the workpiece against the machining tool to shear a chip from said workpiece;
and simultaneously periodically magnetizing and demagnetizing the machining tool by providing an oscillating electrical current to the electromagnetic coil to thereby in turn periodically magnetize a machining chip;
thereby breaking the machining chip by magnetically induced thrust in conjunction with the shearing force.

5,331,871
METHOD OF TURNING GROOVES
Daniel V. Viens, Coventry, Conn., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 16, 1992, Ser. No. 991,605
Int. Cl.[5] B23B *1/00*
U.S. Cl. 82—1.11 3 Claims



1. A method, using a precision or ultraprecision lathe, of lathe turning a groove (**13**) into a circumferential surface (**11**) of a hardened tool steel workpiece (**10**) that has been mounted on said lathe and dressed so as to eliminate, within the tolerance limits of said lathe, runout, comprising the steps of
selecting a cutting tool (**40**) having a longitudinal axis (A) and a cutting tip (**46**) comprised of a cubic boron nitride material according to the criteria
(a) if said hardened tool steel contains relatively large carbide particles (on the order of 25 to 50 microns), select a cutting tip having a cubic boron nitride material having high fracture toughness and
(b) if said hardened tool steel contains relatively smaller carbide particles (less than 25 microns), select a cutting tip having a cubic boron nitride material having high hardness and wear resistance;
forming said cutting tip to a shape suitable to cutting said grove;
aligning said cutting tool with said circumferential surface so that said longitudinal axis is precisely perpendicular to said circumferential surface;
setting the rotational speed of said workpiece so that the linear velocity of a point on said circumferential surface is between 80 and 200 meters per minute; and
cutting said groove into said circumferential surface at a tool feed rate of between five and 20 microns per revolution of said workpiece.

5,331,872
MARK CUTTING APPARATUS AND METHOD OF CONTROLLING SAME
Shinichi Fuchigami, Fussa; Shingi Suzuki; Takeshi Kongo, both of Hachioji; Tetsuo Nakada, Sagamihara; Takehiro Kodama, Hino, and Sachie Sato, Machida, all of Japan, assignors to Kabushiki Kaisha Tokyo Horaisha, Tokyo, Japan
Filed Oct. 2, 1991, Ser. No. 769,802
Int. Cl.[5] B26D *7/10*
U.S. Cl. 83—171 6 Claims



1. An apparatus for cutting marks out of a mark sheet, comprising:
a housing having a base for supporting a mark sheet thereon;
a first carriage movable in a first direction over said base;
a second carriage supported on said first carriage for movement in a second direction transverse to said first direction;
a thermal cutter for thermally cutting marks out of the mark sheet supported on said base, said thermal cutter being supported on said second carriage, whereby said thermal cutter can be moved over said base two-dimensionally by said first and second carriages;
a mechanism mounted on said second carriage for moving said thermal cutter in a third direction transverse to said first and second directions, between an upper position in which said thermal cutter is lifted off the mark sheet supported on said base and a lower position in which said thermal cutter is lowered in contact with the mark sheet supported on said base;
said mechanism comprising:
a stepping motor mounted on said second carriage;
an eccentric shaft rotatably mounted on said second carriage parallel to said second direction, said eccentric shaft being operatively coupled to said stepping motor whereby said eccentric shaft can be rotated by said stepping motor;
a roller fitted over said eccentric shaft for sliding movement therealong;
an abutment arm resting on said roller for movement therewith along said eccentric shaft;
a support arm angularly movably mounted on said second carriage and coupled to said abutment arm; and
an attachment fixed to said support arm and connected to said thermal cutter; and
means for energizing said thermal cutter to thermally cut marks out of the mark sheet while said thermal cutter is in said lower position.

5,331,873
TRIM MACHINE FOR TRIMMING FORMED SHEET MATERIAL
Ronald G. Lancaster, Springfield, Mo., assignor to Custom Metalcraft, Inc., Springfield, Mo.
Division of Ser. No. 863,721, Apr. 3, 1992, Pat. No. 5,287,717. This application Mar. 4, 1993, Ser. No. 26,690
Int. Cl.[5] B23D *21/00*
U.S. Cl. 83—193 3 Claims

1. A trim machine for use in trimming a formed sheet of material having a bottom wall and formed side walls, whereby

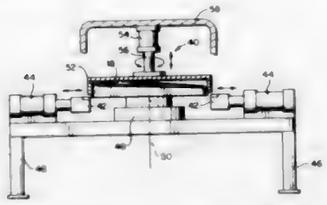
said formed side walls may be finish trimmed to exact dimensions so as to facilitate the merging and assembly of the formed side walls with the main side walls of a tank, comprising:

a frame member;

a pedestal base rotatably mounted on said frame member for rotation about a vertical axis;

a pair of horizontally reciprocating shear blades mounted on opposite ends of said frame member so as to finish trim the opposite side walls of the formed sheet material;

means for rotating the pedestal base by 90 degrees in either direction about its vertical axis;



means for mounting the formed sheet on said pedestal base; and

means for holding the formed sheet in a stabilized position during the trimming operation, said holding means including a clamp frame mounted for vertical movement on a cylinder and piston arrangement, with the clamp frame being rotatable about the vertical axis of said cylinder and piston arrangement, so that said clamp frame will rotate with the formed sheet on said pedestal base

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5,331,874

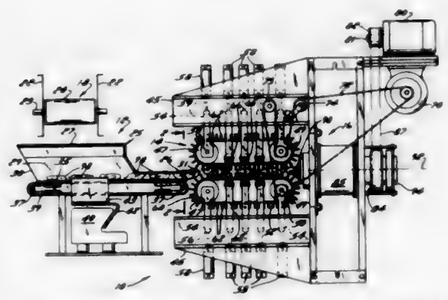
CUTTING APPARATUS

Clyde E. Foster, and George R. Alcorn, both of Pasco, Wash., assignors to Universal Frozen Foods, Inc, Twin Falls, Id.

Continuation of Ser. No. 979,427, Nov. 19, 1992, abandoned, which is a continuation of Ser. No. 778,300, Oct. 16, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 118,999

Int. Cl.[5] B26D *3/11*

U.S. Cl. 83—423 **12 Claims**



1. A cutting apparatus for food items comprising a knife for cutting the food items into a desired configuration and means for feeding the food items to the knife and for urging the food items therethrough, the feed means including:

an upper endless belt made from a flexible material and mounted about an upper idler roll and an upper drive roll, the upper idler roll and upper drive roll being spaced from each other;

a lower endless belt made from a flexible material and mounted about a lower idler roll and a lower drive roll, the lower idler roll and lower drive roll being spaced from each other, wherein the upper and lower endless belts each extend into proximity with the knife and are spaced from each other to generally define a flow path for the food items;

means for providing the belts with a contour having a profile generally matching that of the food items to be cut as food items are passed between the belts, the endless belts each comprising an elongate generally planar belt and the providing means comprising a plurality of contoured resilient paddles carried by the endless belts, the paddles defining the contour having a profile generally matching that of the food items to be cut; and

means for driving the upper and lower drive rolls.

5,331,875

ANTI-KICK FORWARD DEVICE FOR POWER DRIVEN SAWS

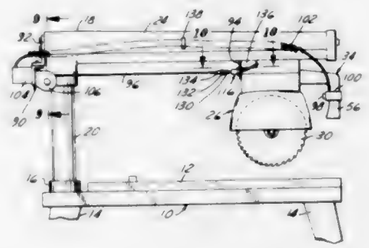
Alfred B. Mayfield, Halstead, Kans., assignor to Ryobi America Corporation, Anderson, S.C.

Continuation of Ser. No. 616,670, Nov. 21, 1990, Pat. No. 5,152,207, which is a continuation-in-part of Ser. No. 545,279, Jun. 28, 1990, Pat. No. 5,063,806. This application Oct. 6, 1992, Ser. No. 957,251

The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.

Int. Cl.[5] B26D *1/18*

U.S. Cl. 83—485 **17 Claims**



1. In a radial arm saw including a mounting arm, a carriage mounted on the arm for linear movement in first and second directions along the arm, the carriage being adapted to support a saw blade for rotational movement relative to the carriage about an axis of rotation extending in a direction transverse to the linear direction of travel of the carriage, and power means for rotating the saw blade about the axis of rotation for carrying out a sawing operation, the improvement comprising:

kick-preventing means for limiting the maximum speed at which the carriage may be moved in the first direction along the mounting arm to a predetermined speed, the kick preventing means permitting free unrestricted movement of the carriage in the first direction at any speed equal to or less than the predetermined speed while preventing movement of the carriage in the first direction at a speed greater than the predetermined speed;

wherein the kick-preventing means includes a drive means, an over-running clutch, and a carriage-movement control assembly mounted on the arm and connected to the carriage, the over-running clutch having an input shaft connected to the drive means and an output shaft connected to the carriage-movement control assembly and being operable to prevent rotational movement of the output shaft of the clutch in at least one direction at a speed greater than the speed of rotation of the input shaft of the clutch such that the carriage-movement control assembly limits the maximum travel speed of the carriage to the predetermined speed; and

wherein the drive means includes a motor.

5,331,876

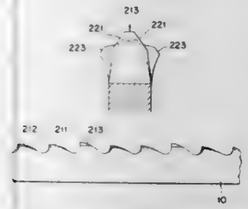
SAW BLADE FOR CUTTING METAL

Robert C. Hayden, Sr., Branford, Conn., assignor to Sandvik AB, Sandviken, Sweden

Filed Jul. 30, 1992, Ser. No. 921,947

Int. Cl.[5] B23D *61/12;* **B27B** *33/02*

U.S. Cl. 83—661 **4 Claims**



1. A saw blade for cutting metal, comprising a body having first and second sides and carrying a plurality of sets of three cutting teeth, said first and second sides defining respective parallel side planes, said cutting teeth of said body being separated by gullets, at least the tips of said teeth of each set being formed of a carbide material harder than said body, a thickness of each carbide tip being no greater than a thickness of said body, each set of teeth consisting of a non-set tooth substantially aligned with a center plane of said blade lying parallel to said side planes, a first set tooth set to said first side, and a second set tooth set to said second side, said non-set teeth projecting up from said gullets farther than each of said set teeth, each non-set tooth including side edge portions which are chamfered such that a first end of said chamfer is located closer to said gullets than a second end of said chamfer, said first end of said chamfer forming a corner lying within a border formed by the set teeth as said saw blade is viewed in a direction parallel to a direction of cutting, whereby said corner is shielded from cutting forces during a cutting operation, each of said set teeth having a top transverse edge which slopes outwardly toward and beyond a respective one of said side planes such that said top transverse edge includes an outer portion situated outside of said respective side plane of, and an inner corner situated between said first and second sides, said outer portion of said transverse edge being located closer to said gullets than said inner corner of said transverse edge, said outer portion of each set tooth having a chamfer which is smaller than said chamfers of said non-set teeth and which forms two corners on said outer portion, both of said corners of each said set tooth chamfer lying outside of said respective side plane.

5,331,877

ROTARY BLADE ASSEMBLY FOR A TILE CUTTER

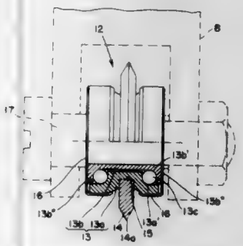
Akinori Ishii, Hyogo, Japan, assignor to Ishii Chokokogu Mfg. Co., Ltd., Hyogo, Japan

Filed Jul. 27, 1993, Ser. No. 97,435

Claims priority, application Japan, Jun. 2, 1993, 5-029347[U]

Int. Cl.[5] B26D *3/08;* **B28D** *1/22*

U.S. Cl. 83—886 **2 Claims**



1. A rotary blade assembly for use in a tile cutter which includes an operating lever that moves while being guided by guide rails installed above a base and a blade installed at a lower end of a base part of the operating lever so as to make a cut in a tile surface before a tile is split by pressing, said blade assembly comprising a bearing part and an annular cutting blade part wherein a circular groove is formed in a center of an outside surface of an outer race of the bearing part, and the cutting blade part is provided in the circular groove of the outer race and comprises a cutting blade which has a V-shaped cross section formed on a rim of the cutting blade part.

5,331,878

CONNECTING UNIT OF A STAND FOR PERCUSSION MUSICAL INSTRUMENTS

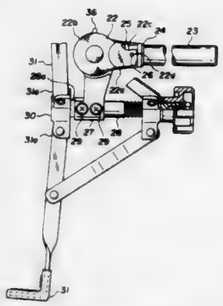
Makoto Kurosaki, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Continuation-in-part of Ser. No. 970,261, Nov. 2, 1992. This application Dec. 3, 1992, Ser. No. 985,585

Claims priority, application Japan, Oct. 31, 1991, 3-89933

Int. Cl.[5] G10D *13/02*

U.S. Cl. 84—421 **2 Claims**



1. A connecting unit of a stand for percussion musical instruments comprising

a first connecting element attached at a first end to one of two supporting elements are adapted to be combined with each other at a selected cross angle, said first connecting element being provided at a second end with a circular bore,

a second connecting element attached at a first end to the other of said two supporting elements and coupled at a second end to one side of said second end of said first connecting element, said second connecting element being provided on said second end with a cylindrical projection inserted into said center bore in said first connecting element and an angled projection protruding from said cylindrical projection beyond said center bore in said first connecting element,

a locking element coupled to the other side of said second end of said first connecting element and provided with an angled depression tightly receptive of said angled projection on said second connecting element, said angled depression and said angled projection each being square in transverse cross section, and

means for fastening a combination of said three elements in the direction of combination.

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5,331,879

ELECTROTHERMAL FIRING DEVICE AND CARTOUCHE FOR USE IN SUCH DEVICES

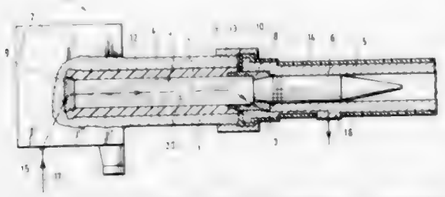
Markus Löffler, Unterluss, Fed. Rep. of Germany, assignor to TZN Forschungs-und Entwicklungszentrum Unterluss GmbH, Unterlüss, Fed. Rep. of Germany

Filed Oct. 1, 1992, Ser. No. 955,023

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1991, 4132657

Int. Cl.[5] F41B 6/00

U.S. Cl. 89—8 8 Claims



1. An electrothermal firing device comprising: a tube including a charge chamber containing portion and a projectile path portion connected to the charge chamber containing portion and coaxial with the charge chamber; a breechblock for closing a breech end of the charge chamber; a first grounded electrode disposed in said charge chamber at said breech end; a second high voltage electrode disposed in said charge chamber at its end adjacent said projectile path portion; a sleeve of an electrically insulating material disposed in said charge chamber between said electrodes and separating said electrodes from one another; means for electrically insulating said second electrode from at least said charge chamber containing portion of said tube; and further electrical insulating means for electrically insulating said charge chamber containing portion from said projectile path portion of said tube

5,331,880

WEDGE-TYPE BREECHBLOCK FOR A GUN

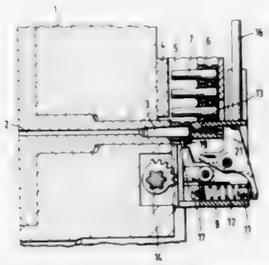
Rolf Bartolles, Korschenbroich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 24, 1992, Ser. No. 933,801

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4128055

Int. Cl.[5] F41A 3/12

U.S. Cl. 89—24 11 Claims



1. In a gun having a breech end, an arrangement comprising:

a wedge-type breechblock disposed at the breech end of the gun;

a cartridge chamber having a length L1 in said wedge-type breechblock for accommodating a propellant igniter;

a propellant igniter magazine disposed adjacent said wedge-type breechblock and including a guide chute and individual propellant igniters lined up in a row in said guide chute, said individual propellant igniters each being at least partially encased by an exterior casing and having a length L2 which is longer than the length L1 of said cartridge chamber so that when one of said propellant igniters is loaded in said cartridge chamber in a firing position, a rear portion of said propellant igniter remains within said casing;

loading means for loading one of said propellant igniters into said cartridge chamber from said magazine, said loading means including an engaging lever having a front, spring tensioned portion pivotably fastened to said breechblock for engaging one of a respective one of said casings and its associated said propellant igniter and for pushing the associated said propellant igniter into and out of said cartridge chamber; and

a firing mechanism operatively disposed at said wedge-type breechblock for detonating a respective one of said propellant igniters in said cartridge chamber, with said firing mechanism being mounted for displacement relative to said breechblock, said engaging lever including grooves, and said firing mechanism including two pins which engage in said grooves so that, when said firing mechanism is displaced relative to said breechblock, said engaging lever is caused to rotate and to displace said associated said propellant igniter.

5,331,881

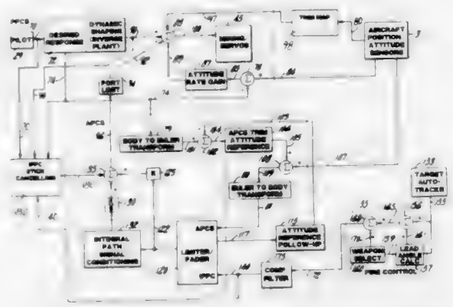
HELICOPTER INTEGRATED FIRE AND FLIGHT CONTROL HAVING AZIMUTH AND PITCH CONTROL

Donald W. Fowler, Oxford; Nicholas D. Lappos, Milford, both of Conn.; James B. Dryfoos, Wallingford, and James F. Keller, Media, both of Pa., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 19, 1992, Ser. No. 885,702

Int. Cl.[5] F41G 3/22

U.S. Cl. 89—41.21 8 Claims



1. An aircraft flight control system for providing control surface command signals to the aircraft control surfaces thereby controlling the yaw, pitch, roll and lift attitude axes of the aircraft in flight, comprising:

fire control means for providing an azimuth command signal and an elevation command signal respectively indicative of the change in aircraft yaw attitude and pitch attitude for an aircraft reference axis to be aligned with an aiming line of sight, said fire control means including:

target tracking means for providing a target azimuth signal and a target elevation signal respectively indicative of the azimuth and elevation of a line of sight to a target being tracked with respect to said aircraft reference axis;

means for providing a range signal indicative of the range to said target; and

means responsive to said range signal, said target azimuth signal and said target elevation signal for providing said azimuth command signal and said elevation command signal;

coupled aiming mode indicating means for providing a coupled aiming signal in response to activation of a flight control system coupled aiming mode; and

signal processing means responsive to the presence of said coupled aiming signal for providing control surface command signals for driving the magnitude of said azimuth command signal and said elevation command signal to zero, thereby aligning said aircraft reference axis with said aiming line of sight.

5,331,882

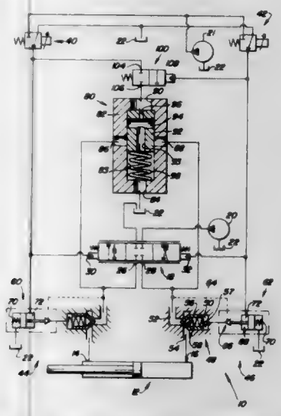
CONTROL VALVE SYSTEM WITH FLOAT VALVE

Matthew T. Miller, Hudson, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 5, 1993, Ser. No. 43,059

Int. Cl.[5] F15B 11/08, 13/042

U.S. Cl. 91—461 9 Claims



1. A hydraulic control system for controlling a hydraulic actuator having a pair of actuator ports, the system having a pump, a reservoir, a pilot operated main control valve for controlling fluid communication between the actuator, the pump and the reservoir, the main control valve having a pair of work ports communicated with the actuator ports, and first and second pilot valves for controlling operation of the main control valve, one of the pilot valves being operable to move the main control valve from a neutral position holding the actuator stationary to a first position causing the actuator to move in one direction, and the other pilot valve being operable to move the main control valve from the neutral position to a second position causing the actuator to move in a second direction, characterized by:

a float valve responsive to both pilot valves and communicated with both actuator ports, the float valve being separate from the main control valve and being operable to communicate both actuator ports to sump in response to actuation of both pilot valves.

5,331,883

HYDRAULIC VALVE MEANS

Bo Andersson, 11 Venusvägen, Ljungsbro S-590 60, Sweden

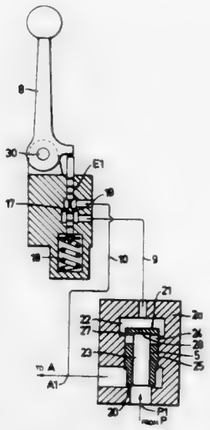
Continuation of Ser. No. 902,486, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 698,334, May 7, 1991, abandoned, which is a continuation of Ser. No. 582,137, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 139,110, Dec. 23, 1987, abandoned, which is a continuation of Ser. No. 31,188, Mar. 27, 1987, abandoned, which is a continuation of Ser. No. 743,351, Jun. 10, 1985, abandoned, which is a continuation of Ser. No. 503,131, May 27, 1983, Pat. No. 4,535,809. This application Apr. 8, 1993, Ser. No. 44,382

Claims priority, application Sweden, Sep. 28, 1981, 8105719

The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.

Int. Cl.[5] F15B 13/042; F16K 31/363

U.S. Cl. 91—461 3 Claims



1. A hydraulic seat valve arrangement for use in a high pressure hydraulic system, comprising a valve housing having a main supply flow passage, inlet port means formed in the valve housing for communicating flow from a source of fluid pressure, a valve seat surrounding the main supply flow passage within the valve housing, a valve body slidably located within a cylindric space of the valve housing for movement from a closed position to an open position along a direction of flow through said inlet port means and being pilot operable independent of the pressure by a pilot flow through a variable pilot flow restriction, a pilot flow chamber located at the valve body and remote from the valve seat, said variable pilot flow restriction comprising at least one channel formed in the outer side of the valve body and connection the main supply flow passage upstream of the valve seat to said pilot flow chamber for conveying pressure medium to said pilot flow chamber even when the valve body is in its closed position abutting the valve seat, said channel having a throughflow area which increases with increasing distance of the valve body from the valve seat, and a first pilot flow passage communicating the pilot flow chamber with an inlet of a pilot valve, and a second pilot flow passage communicating an outlet of said pilot valve with the main supply flow passage downstream of the valve seat, said pilot valve having means for gradually opening and closing said pilot valve to create a controllable pilot flow from the main supply flow passage upstream of the valve seat through the pilot flow chamber and the pilot valve to said main supply flow passage downstream of the valve seat for controlling the position of the valve body and, thus, the main flow through the main supply flow passage independent of the pressure and as a function of the pilot flow.

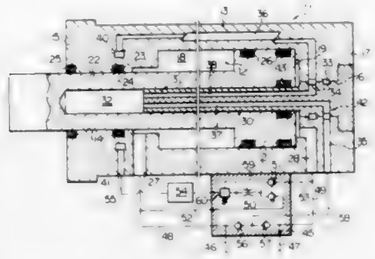
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5,331,884

FLUID CYLINDER WITH COOLING PASSAGES

Etuo Ando, Tokyo, Japan, assignor to Ando Seisakujo Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,902
Claims priority, application Japan, Jun. 4, 1992, 4-170228
Int. Cl.[5] F01B *31/08*; F16J *15/16*
U.S. Cl. 92—108 4 Claims



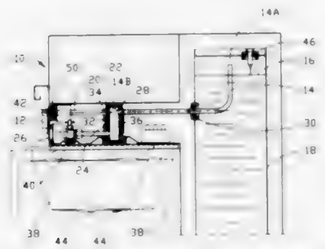
1. A fluid cylinder comprising
a cylinder case having a front wall at a front end and a rear wall at a rear end and a cylinder chamber formed within said case;
a piston slideably received in said cylinder chamber;
a piston rod connected to said piston and passing through a through-hole in said front wall of said cylinder case;
a front sealing member mounted on an internal surface of said through-hole for sealing a clearance between said front wall and said piston rod;
means defining a fitting hole in said piston and piston rod;
a fitting rod mounted in said rear wall and extending forwardly from an inside face of said rear wall, said fitting rod being slidably received in said fitting hole in said piston and piston rod;
said fitting hole including a space positioned radially inside said sealing member between a front end face of said fitting rod and an inner end of said fitting hole; and
said fitting rod including means defining a feed passage for feeding fluid into said space and a separate discharge passage for discharging fluid from said space while fluid is being fed into said space

5,331,885

SEMIAUTOMATIC BEVERAGE MAKER AND METHOD

Zbigniew G. Lassota, DesPlaines, Ill., assignor to Food Equipment Technologies Company, Inc., Glenview, Ill.

Continuation of Ser. No. 570,861, Aug. 22, 1990, abandoned, which is a continuation of Ser. No. 352,754, May 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 224,754, Jul. 27, 1988, Pat. No. 5,000,082. This application Apr. 6, 1993, Ser. No. 44,112
Int. Cl.[5] A47J *31/46*
U.S. Cl. 99—283 30 Claims



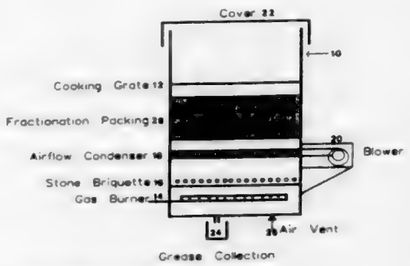
1. In a beverage maker having a supply tank for holding liquid to be selectively passed to a beverage container, the improvement being a semiautomatic dispenser valve assembly, comprising:
a valve assembly with a valve member movable between
an open position in which liquid in the supply tank flows through the valve and into the beverage container and
a closed position in which liquid does not flow through the valve;
means for manually moving the valve member to the open position;
means for producing a return force to automatically return the valve member to the closed position;
means for selecting a time period; and
means for holding the valve member against return to the closed position for the selected time period after manual movement of the valve member to the open position, said valve member being automatically returned to the closed position by said return force producing means upon release of the valve member by said holding means at the end of the selected time period, said holding means including
an electromagnet,
a ferromagnetic material carried by the valve member, and
means for mounting said electromagnet relative to a path of movement of the ferromagnetic material to be engaged thereby when the valve member is moved to the open position.

5,331,886

GRILL APPARATUS FOR REDUCING CARCINOGENS IN GRILLED FOODS

Richard M. Basel, 10760 W.C.R. 18, Fostoria, Ohio 44830

Filed Apr. 8, 1992, Ser. No. 865,225
Int. Cl.[5] A47J *37/07*
U.S. Cl. 99—446 9 Claims



1. A grill apparatus comprising:
(a) a grill for supporting food,
(b) a heating source, and
(c) a fractionating medium located below said grill and above said heating source, wherein said fractionating medium (i) prevents flames from said heating source from contacting said grill, (ii) allows drippings from the food supported on said grill to pass through said fractionating medium, contact said heating source and produce smoke compounds, and (iii) separates said smoke compounds on the basis of boiling point.

5,331,887

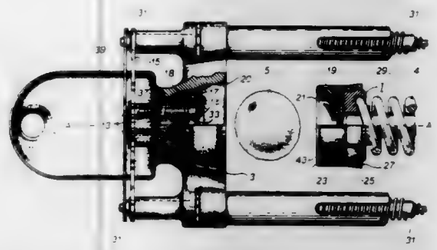
APPARATUS FOR EXTRACTING JUICE FROM FRUITS HAVING A RIND

James D. Beck, 1930 Kauai Pl., Costa Mesa, Calif. 92626

Filed Dec. 26, 1991, Ser. No. 813,535
Int. Cl.[5] A23N *1/02*
U.S. Cl. 99—496 8 Claims

1. In an apparatus for extracting the juice from whole fruit having a rind comprising axially aligned, spaced-apart piston and pressing head arranged to move reciprocally toward and away from each other, means for loading a fruit therebetween,

at least one perforated coring knife slidingly received in said pressing head for advancing into the fruit in preparation of collecting the extracted juice separate from the rind, and including an elastomeric head positioned over the front portion of said piston, defined by a circular concave portion centered over said piston and extending forward about its circumferencial edge an upstanding rim, and a skirt portion extending from said rim rearward along the outside of said piston to a terminal edge, wherein a ram, slidingly carried in said piston is hydraulically driven to advance beyond said piston to avert said center portion of said elastomeric head against said fruit during compression of the fruit between the ram and the pressing head, the improvement comprising at least one groove formed in said skirt portion of said elastomeric head beginning at said rim extending rearward along the outside of said skirt portion and terminating short of said terminal edge to provide an enclosed reservoir for receipt of peel oil expressed from the fruit during the squeezing operation for later disposal separate from said juice.

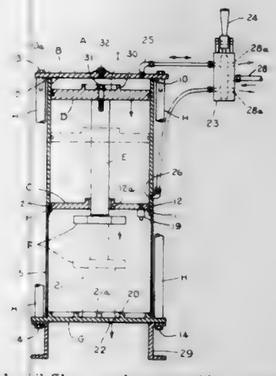


5,331,888

OIL FILTER CRUSHER ASSEMBLY

David B. Brown, Jr., 204 Trinity Way, Greenville, S.C. 29608

Filed Nov. 20, 1992, Ser. No. 979,660
Int. Cl.[5] B30B *9/04*, *9/32*
U.S. Cl. 100—125 7 Claims



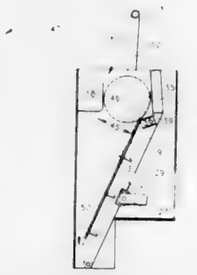
1. An upright oil filter crusher assembly comprising:
a substantially horizontal head plate;
a substantially vertical cylindrical wall;
means securing an upper end of said cylindrical wall in sealed relation to said head plate so that said cylindrical wall is suspended therefrom;
a substantially horizontal air cylinder base carried in sealed relation with said cylindrical wall at an end thereof opposite said head plate;
a piston carried in said cylindrical wall between said head plate and said cylinder base;
a piston rod secured on one end thereof to said piston and extending slidably through said cylinder base;
a ram head carried by said piston rod beneath said cylinder base on a free end of said piston rod opposite said one end thereof;
a substantially horizontal platen support carried beneath said ram head for positioning an oil filter for engagement by said ram head;
a plurality of tie rods circumferentially spaced about said cylindrical wall extending between the head plate and said horizontal platen support;
respective first means for connecting each said tie rod on an upper end thereof to said head plate for supporting said head plate and the cylindrical wall suspended therefrom, each said first connecting means supporting said head plate against downward movement on said tie rods;
means connecting said tie rods on a lower end thereof to said horizontal platen support for supporting said tie rods, head plate and the cylindrical wall suspended therefrom;
a first air inlet connection for receiving pressurized air into said cylindrical wall above said piston for forcefully lowering said ram head exerting a crushing action on an oil filter; and
a second air inlet connection for receiving pressurized air into said cylindrical wall beneath said piston for raising said ram head;
whereby said cylindrical wall is fixed at an upper end of said head plate suspending said therefrom, and said horizontal platen support and said head plate are joined by said tie rods supporting said head plate and the cylindrical wall suspended therefrom in compression and acting as tension members during a crushing action of the ram head thus providing strength to the assembly.

5,331,889

MANUAL MULTIPLE SIZE CAN CRUSHER

Laurence Bartlett, Colchester; John Cowan, Richmond; Harold Coyle, No. Ferrisburg, and Robert DeGuise, Milton, all of Vt., assignors to Edlund Company, Inc., Burlington, Vt.

Filed Sep. 25, 1992, Ser. No. 951,383
Int. Cl.[5] B30B *9/32*
U.S. Cl. 100—137 14 Claims



1. A manual can crusher for crushing variously sized cans, comprising:
a housing having a top opening for receiving a can to be crushed, a bottom opening for discharging a crushed can, and an interior crushing wall with a creasing block mounted thereon;
a crushing ram including a step disposed within said housing, said crushing ram and said step being pivotable between an open position where said ram is opposite said crushing wall, with said step and said creasing block defining a predetermined clearance therebetween, and a closed position where said ram and said step are adjacent said crushing wall;
wherein said step and said creasing block cooperatively support a can to be creased by said creasing block; and

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a longitudinally extending handle rotatably mounted on said housing, and linkage means for coupling said handle to said ram, whereas a can to be crushed is placed into the top opening and selectively retained adjacent said creasing block by said step based on the size of the can with respect to said clearance, said handle is rotated to move said ram between the open and closed positions via said linkage means, to

(i) selectively precrush the can against said creasing block, and

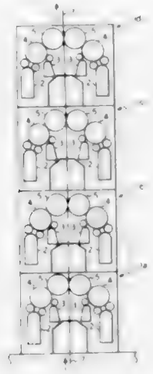
(ii) crush the can against said interior crushing wall, until it is sufficiently crushed to be discharged through the bottom opening.

5,331,890

MULTICOLOR PRINTING PRESS

Masahiko Miyoshi, Ayase; Kiyohisa Asanuma, Kawasaki, and Kazuhiro Soutome, Zama, all of Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Continuation of Ser. No. 889,788, May 28, 1992, abandoned.
This application Jun. 9, 1993, Ser. No. 74,712
Claims priority, application Japan, Nov. 14, 1991, 3-353537
Int. Cl.[5] B41F *5/08, 13/14*
U.S. Cl. 101—177 **9 Claims**



1. A multicolor printing press comprising:

a plurality of printing sections arranged in vertical alignment, a plurality of said printing sections including a first printing section having a first printing assembly which includes at least one first plate cylinder positioned below a first blanket cylinder, a first ink arrangement and a first dampening arrangement which said first ink arrangement and said first dampening arrangement are positioned at lower position relative to said first plate cylinder, and at least one second printing section having a second printing assembly which includes at least one second plate cylinder positioned below a second blanket cylinder, a second ink arrangement and a second dampening arrangement which said second ink arrangement and said second dampening arrangement are positioned at lower position relative to said second plate cylinder;

a drive train for driving said plate cylinders and said blanket cylinders in synchronism with each other with maintaining desired phase relationship therebetween, said drive train establishing a path for power transmission so that the driving power is first transmitted to one of said plate cylinders and said blanket cylinders having smaller finished diameter and subsequently to the other,

means for rotatably supporting said first plate cylinder in a fixed register position for providing reference position in adjustment of register position in said second printing section,

means for rotatably supporting said second plate cylinder in a movable position for adjustment of register position thereof relative to said reference position defined by said first plate cylinder;

said drive train comprising:

respective shafts supporting said blanket cylinders;

a pair of engaged first transfer gears rigidly mounted on respective first axial ends of said shafts of said blanket cylinders;

a pair of engaged second transfer gears rigidly mounted on said respective first axial ends of said shafts of said blanket cylinders;

respective shafts supporting said first plate cylinder components;

a pair of first driven gears rigidly mounted on respective axial ends of said shafts of said first plate cylinder components, and said first driven gears engaged with the first transfer gears respectively;

respective shafts supporting said second plate cylinder components;

a pair of second driven gears rigidly mounted on respective axial ends of said shafts of said second plate cylinder components, and said second driven gears engaged with the second transfer gears respectively;

an intermediate gear connectable to a power source and engaged with one of the first transfer gears for delivery of driving torque thereto;

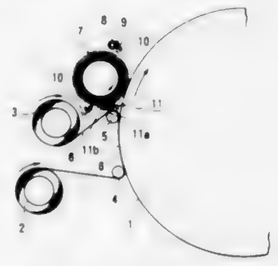
said driving power transmission path being established by, transferring driving torque on said one of said first transfer gears to one of said first drive gears and to the other of the transfer gears, transferring driving torque on said other of said first transfer gears to the other of said first driven gears transmitting driving torque on said both of the first transfer gears to the second transfer gears through the shafts of the blanket cylinders, and transferring the driving torque on the second transfer gears to respective of said second driven gears.

5,331,891

PRINTING CYLINDER/ROLLER CLEANING APPARATUS FOR PRINTING PRESS AND METHOD OF CLEANING PRINTING CYLINDER/ROLLER

Hiroyuki Sugiyama, and Toshihiko Ebina, both of Ibaraki, Japan, assignors to Komori Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,640
Claims priority, application Japan, Jan. 22, 1992, 4-6274[U]; Jan. 22, 1992, 4-6275[U]; Jan. 27, 1992, 4-34053
Int. Cl.[5] B41F *35/00*
U.S. Cl. 101—424 **10 Claims**



1. A cleaning apparatus in combination with a rotating printing cylinder/roller of a printing press, comprising:

a brush roller, pressed against a circumferential surface of said printing cylinder/roller, for scraping contamination therefrom;

a cleaning cloth, provided below said brush roller and pressed against said circumferential surface of said printing cylinder/roller, for wiping scraped contamination;

a nozzle having a plurality of spray holes for spraying a solvent onto said brush roller; and

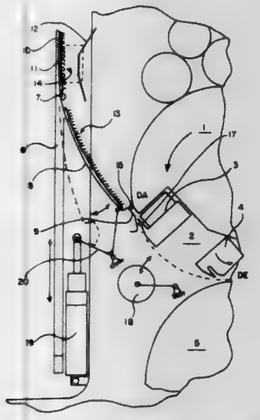
a scraping member, engaged with a lower end of said brush roller, for causing waste liquid carried by said brush roller to drop onto said cleaning cloth.

5,331,892

DEVICE FOR FEEDING PRINTING PLATES ONTO THE PLATE CYLINDER OF PRINTING MACHINES, ESPECIALLY SHEET-FED OFFSET PRINTING MACHINES

Berthold Seib, Rodgau; Georg Hartung, Seligenstadt, and Helmut Schild, Steinbach/Tannus, all of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed May 18, 1993, Ser. No. 64,752
Claims priority, application Fed. Rep. of Germany, May 18, 1992, 4215969
Int. Cl.[5] B41L *47/14*
U.S. Cl. 101—477 **9 Claims**



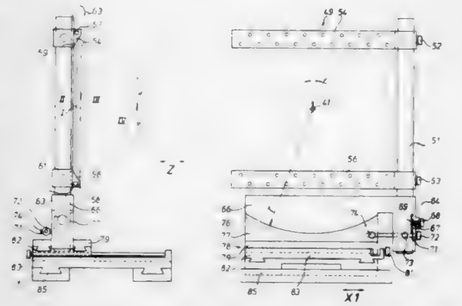
1. A device for feeding a printing plate onto the plate cylinder of a printing machine and especially a sheet-fed offset printing machine, the plate cylinder having a channel and a print start region, a tension rail located in said channel adjacent said print start region and having an openable and closable gripping region for receiving a front edge of the printing plate, the gripping region being in the form of a gap extending over the format width of the plate cylinder and opening substantially tangentially with respect to the outer circumference of the cylinder, a sheet metal section extending over the format width of the print cylinder, said device being characterized by an introduction rail on said sheet metal section and extending across the format width of the plate cylinder, means supporting said introduction rail for movement between retracted and active positions, said introduction rail engaging the outer circumference of the plate cylinder in the vicinity of the print start region when said introduction rail is in said active position, said introduction rail having an introduction face which, when said introduction rail is in said active position, coacts with the plate cylinder to define a second gap aligned with the gap of the opened gripping region of said tension rail and guiding the front edge of the printing plate into the opened gripping region.

5,331,893

METHOD AND APPARATUS FOR THE ACCURATE REGISTERING AND MOUNTING OF PRINTING PLATES

Erich G. Wieland, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed May 28, 1993, Ser. No. 69,186
Claims priority, application Fed. Rep. of Germany, May 30, 1992, 4217941
Int. Cl.[5] B41L *3/02*
U.S. Cl. 101—486 **8 Claims**



1. A method for accurately registering and mounting a flexible printing plate on a plate cylinder of a printing press, said method including the steps of:

providing a shiftable suction fork assembly having spaced upper and lower suction arms for supporting a flexible printing plate;

placing a flexible printing plate on said shiftable suction fork assembly so as to be supported by said upper and lower suction arms;

using a registration screen to shiftably position said suction fork assembly for accomplishing accurate registering of said printing plate using said registering screen as a guide;

shifting said suction fork assembly with said printing plate thus supported and registered thereon into adjacency with a printing cylinder;

moving said suction fork assembly until said printing plate contacts a peripheral surface of said plate cylinder along a line of contact;

positioning a pressure applying device adjacent said printing plate; and

using said pressure applying device to apply uniform application pressure to said printing plate starting at said line of contact and extending about a circumferential surface of said plate cylinder.

5,331,894

EXPLOSIVE RELEASE COUPLING

Steven G. Wassell, West Hartford; Steven L. Renfro, Windsor Locks, both of Conn.; Harry W. Densmore, Agawam, Mass., and Scott T. Reeves, Winsted, Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Filed Jun. 25, 1993, Ser. No. 82,611
Int. Cl.[5] C06C *5/06*
U.S. Cl. 102—275.12 **6 Claims**

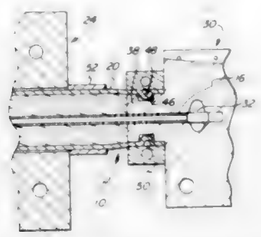
1. A detonation manifold for use with a separation device containing an expansion member disposed in a frangible joint, the expansion member comprising a flattened containment tube having in cross section an oblong configuration having a major axis and a minor axis and having therein a detonation fuse, the manifold comprising:

a body portion having at least one initiation port for receiving an initiator device; and

at least one coupling flange mounted on the body portion for

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engaging the expansion member and having a flange bore for receiving the fuse, the flange bore being in detonation communication with the initiation port,



wherein the coupling flange has in cross section an oblong configuration having a major axis and a minor axis and is dimensioned and configured so that the containment tube can be flared for receiving the flange while maintaining an oblong configuration of the containment tube.

5,331,895

SHAPED CHARGES AND THEIR MANUFACTURE

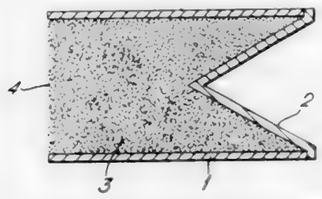
Brian Bourne; Peter N. Jones, both of Sevenoaks, and Roger H. Warren, Wrothan, all of England, assignors to The Secretary of State for Defence in Her Britanic Majesty's Government of the United Kingdon of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 314,698, Feb. 10, 1989, abandoned. This application Oct. 11, 1990, Ser. No. 595,672

Claims priority, application United Kingdom, Jul. 22, 1982, 8220767

Int. Cl.[5] **F42B** *1/02*

U.S. Cl. 102—307 **9 Claims**



1. A liner for a shaped charge consisting of a solid, substantially non-porous metallic material with isotropic properties having a crystal structure of substantially equi-axed grains with a grain size of 25 microns or less.

5,331,896

PROCESS FOR VISUALIZATION OF A DETONATION WAVE

John D. Sullivan, Jr., Edgewood, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 16, 1993, Ser. No. 93,163

Int. Cl.[5] **F42B** *3/00, 25/12*

U.S. Cl. 102—322 **3 Claims**

1. A process for detecting a detonation wave in a fuel-air mixture for use in a detection structural arrangement including a high-speed photographic camera means and a fuel-air explosive apparatus; said apparatus including a standard sized, plastic beverage bottle; a liquid fuel; a plastic burster tube; a detonator; a detonating cord; and a sealant tape; wherein said bottle contains therein said liquid fuel; wherein said burster tube contains therein said detonator and said detonating cord, wherein said burster tube and its content are inserted into the open end of said bottle; and wherein said sealant tape facilitates a snug fit of said burster tube within said bottle; said process including the steps of:

said fuel-air explosive apparatus being operatively mounted in an elevated horizontal location whereby the longitudinal axis of said bottle is in a plane parallel to the earth plane;

said camera means being operatively mounted at a location in the range of 50 to 150 feet from said fuel-air explosive apparatus with the line-of-sight axis of said camera means substantially parallel to and adjacent to the longitudinal axis of said bottle;

directing and focusing said camera means at the bottom or top end of said bottle until a speed in the range of 3500 to



4500 frames/second for said camera means being achieved and continuous filming being commenced operatively firing said burster tube, resulting in a burster tube explosion and the breakage of said bottle, a burster tube explosion, and a growth formation of a white disk-shaped fuel-air cloud continuing until the force of said burster explosion being dissipated and said growth fuel-air cloud being in a tentative detonation condition; firing a proximate charge within said growth fuel-air cloud whereby a detonation wave condition occurring within said fuel air mixture; and

recording and processing said photographic film for proving or disproving the existence of a detonation wave

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5,331,897

SHIP DECOY

George S. Handler, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 603,895, Aug. 7, 1975, abandoned. This application Oct. 7, 1977, Ser. No. 842,633

Int. Cl.[5] **F41H** *11/02;* **F42B** *12/46, 30/00*

U.S. Cl. 102—341 **7 Claims**

1. A decoy device adapted for attachment to a delivery device for the protection of ships from enemy infra-red homing missiles comprising:

a canister adapted to be delivered to a desired location from a ship;

said canister having means on one end for attachment to the delivery device and a sealed nose closure at the other end;

an initiating device in said canister;

a gas source associated with said initiating device adapted to be initiated thereby;

a fuel chamber in said canister;

a fuel contained in said fuel chamber;

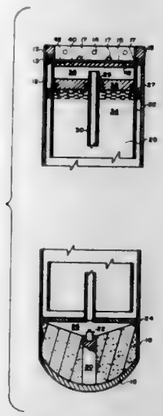
said fuel being a low-cost hydrocarbon;

an inner canister within said fuel chamber having a forward open end and an aft closed end and forming with said first named canister an annular passageway substantially coextensive with said fuel chamber; and

means communicating between said gas source and said fuel chamber near the closed end of said inner canister;

whereby, when gases are produced by said gas source and

disseminated through said communicating means, pressurization of said fuel chamber will be accomplished and fuel



will be forced outwardly between said inner canister and said first named canister in a desired pattern.

5,331,898

VEHICLE FOR THE AUTOMATIC LAYING OF A TRACK BY A VEHICLE TRAVELLING ON SAID TRACK AND TRACK DESIGNED FOR INSTALLATION BY SUCH A VEHICLE

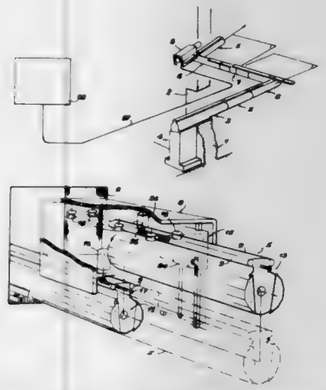
Eric Villedieu, Saint Michel-sur-Orge, and Daniel Francois, Vendome, both of France, assignors to Commissariat a l'Energie Atomique, France

Filed Nov. 20, 1992, Ser. No. 979,827

Claims priority, application France, Nov. 29, 1991, 91 14829

Int. Cl.[5] **E01B** *29/00*

U.S. Cl. 104—2 **14 Claims**



1. Vehicle for laying a track composed of elements (**5**, **6**, **7**) joined at ends and comprising a rail system (**9**, **17**) on which said vehicle is guided and advanced, said rail system being continuous over the track, wherein said vehicle comprises a chassis (**99**) provided with guiding and advancing means (**14**, **16**) engaged on the rail system of said track elements and a carriage (**12**) for transporting a carried track element (**5**) to be laid down at a free end of said track, said carried track element comprising a rail system, said vehicle and said carriage having means for guiding said carriage moving vertically on the chassis toward and away from the track, said carriage comprising guiding and advancing means (**18**, **26**) engaged on the rail system of said carried track element.

5,331,899

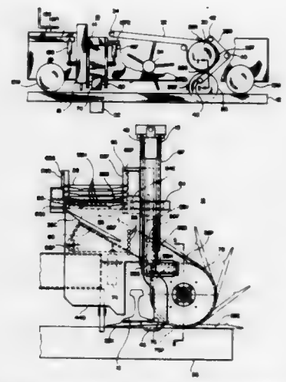
TIE PLATE MANIPULATOR VEHICLE AND METHOD

John D. Holley, Montgomery, Ala., assignor to Holley Engineering Company, Inc., Montgomery, Fla.

Filed May 25, 1993, Ser. No. 66,245

Int. Cl.[5] **E01B** *29/32*

U.S. Cl. 104—16 **20 Claims**



1. A tie plate manipulator vehicle comprising:

a frame and at least four rail engagement wheels mounted thereto for moving the tie plate manipulator vehicle along a pair of rails;

a rail lifter mounted to said frame and operable to lift a rail, which extends in a rail direction, away from a tie disposed therebelow;

a tie plate manipulator assembly supported by said frame and including a magnetic wheel rotatable about an axis extending along said rail direction, a support movably mounted to said frame and attached to said magnetic wheel and supporting said magnetic wheel just above a tie and adjacent said rail lifter, and a motor connected to rotate said magnetic wheel such that said magnetic wheel moves tie plates between a top position above said magnetic wheel and a track position on a tie underneath a rail, while said rail lifter has lifted the rail.

5,331,900

OVERHEAD TROLLEY WITH SPRING BIASED LOAD DEPENDENT TRACTION CONTROL

Udo Gersemsky, Herdecke, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 22, 1993, Ser. No. 35,354

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1992, 4209565

Int. Cl.[5] **B61C** *11/00, 15/00*

U.S. Cl. 105—30 **9 Claims**

1. A trolley system including a rail, the rail having a lower flange, the trolley system comprising travel wheels traveling on an upper surface of the lower flange of the rail, further comprising a support frame and a lifting mechanism mounted on the support frame, a friction wheel, drive means for driving the friction wheel, and a spring element for pressing the friction wheel from below against the lower flange, the travel wheels including a first travel wheel, a rocker member connected to the first travel wheel and the friction wheel for a load-dependent increase of the frictional engagement between the lower flange and the first travel wheel and the friction

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wheel, the friction wheel being mounted at a distance in a travel direction from the first travel wheel, the rocker member being mounted on a side next to the lower flange, a first axis for pivotally connecting the rocker member to the support frame, the first travel wheel being mounted on a second axis, a distance being defined between the second axis and the lower flange, an adjusting means mounted between the support frame and the rocker member for changing the distance between the second axis and the lower flange, wherein the drive means for the friction wheel is connected to drive means for the first travel wheel



5,331,901

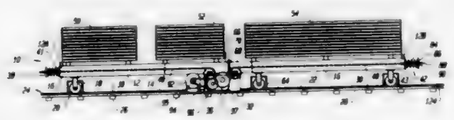
STOCK SUPPLY TRAIN HAVING RECIPROCATING TRACTION CHAIN DRIVE

Douglas T. Avery, 44 S. Lake Dr., Antioch, Calif. 94509

Filed Feb. 4, 1993, Ser. No. 13,621

Int. Cl.[5] **B61J** *3/08*

U.S. Cl. 104—172.1 **11 Claims**



1. A stock supply train system for delivery of materials to a work station, the supply train system comprising:

a railway train and a railway having a predefined path for back and forth movement of the railway train on the railway, the railway having a length of railway track including a pair of spaced, parallel rails forming the track on which the railway train rolls, wherein the railway train includes opposite, first and second ends with a flat-bed carriage supported on railway wheels on each rail of the railway track, and at least one railway car,

a stationary chain drive located on a support bed between the rails, the chain drive having a drive mechanism and a feed chain that engages the drive mechanism at the chain drive, the feed chain extending in opposite directions from the chain drive under the railway car carriage of each car with ends directly connected to the opposite, first and second ends of the railway train without intermediate idler rollers, the feed chain engaging the drive mechanism of chain drive between the ends, wherein the feed chain is suspended between the drive mechanism and the ends of the railway train, and wherein the chain drive is positioned midway on the predefined path and has control means for selectively operating the chain drive in a forward and reverse direction for reciprocal displacement of the railway train on the track, wherein the train is selectively positionable at the stationary chain drive at any positioned between the ends of the train.

5,331,902

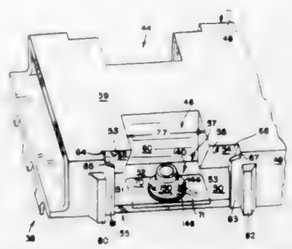
TRUCK BOLTSER WITH LATERALLY WIDER FRICTION SHOW POCKET AND MECHANISM FOR LATERAL TRAVEL OF THE FRICTION SHOE

V. Terrey Hawthorne, Lisle; Anthony R. Hiatt, St. Charles, both of Ill., and Franklin S. McKeown, St. Louis, Mo., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Jul. 6, 1993, Ser. No. 88,070

Int. Cl.[5] **B61F** *5/50*

U.S. Cl. 105—198.2 **19 Claims**



18. A railway car truck bolster which promotes displacement of a friction shoe assembly along a lateral axis of a bolster friction shoe pocket while said assembly is retained within said pocket, said bolster transversely extending between a pair of longitudinally spaced truck assembly sideframes, said bolster comprising:

an extended box like structure having a top wall, a bottom wall, a first side wall, sand a second sidewall, each of said first and second sidewall joining said top and bottom walls, said structure including distal ends at each lateral end of said structure;

a first pair of spaced gibs on said first sidewall and a second pair of spaced gibs on said second sidewall, said first and second pairs of gibs proximate to each of said distal ends and in a opposed relationship such that said sideframe is held in position between said first and second pair of gibs;

a friction shoe pocket located between each pair of spaced gibs, each of said friction shoe pockets extending inwardly from said top and respective said sidewall and defining a lateral distance which a friction shoe assembly can travel,

wherein said spacing between each of said gib pairs defines a second lateral distance, said second lateral distance equal to said lateral distance which said friction shoe assembly can travel when inside said friction shoe pocket wherein said friction shoe assembly includes means for promoting lateral sliding of said friction shoe so that travel of said friction shoe assembly within said bolster friction shoe pocket decouples said truck assembly from said railcar at the bolster.

5,331,903

SYSTEM FOR CONTROLLING THE ROTATION OF THE BODY OF A RAILWAY VEHICLE ABOUT ITS LONGITUDINAL AXIS

Alessandro Elia, Turin, Italy, assignor to Fiat Ferroviaria S.p.A., Turin, Italy

Filed Feb. 19, 1993, Ser. No. 19,769

Claims priority, application Italy, Feb. 24, 1992, TO92A000144

Int. Cl.[5] **B61F** *5/00*

U.S. Cl. 105—199.2 **6 Claims**

1. A system for a first control unit (**8**) for controlling rotation of a body (**5**) of a railway vehicle about its longitudinal axis (L) for reducing non-compensated transverse acceleration acting in a transverse direction on passengers in the body, the rotation being controlled by at least one actuator (**6**) actuated by a servo valve (**7**) controlled by a first control signal from the first control unit (**8**), the system comprising:

at least one gyroscope means (**10**) having two degrees of freedom for fixing to a carriage (**1**) of a vehicle and having a first axis (x) of sensitivity disposed in the longitudinal axis of the vehicle and a second axis (z) of sensitivity disposed in a vertical direction, the gyroscope means being arranged for generating a first signal indicating an angular velocity ω_x of the carriage about the first axis (x) and a second signal indicating an angular velocity ω_z of carriage about the second axis (z);

at least one tachometric detector means (**13**) for generating a third signal indicating a longitudinal speed (v) of the vehicle;

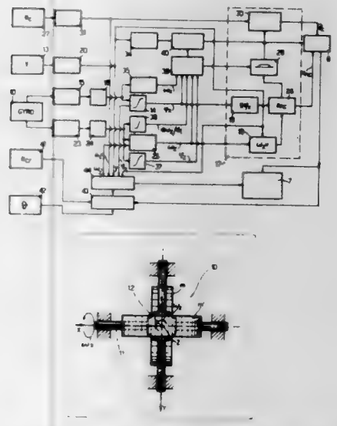
at least one first integrator means (**14**) for integrating the first signal over time intervals dt to generate a fourth signal $\int \omega_x dt$ indicating an angle of rotation ϕ_x of the carriage about the first axis (x);

first calculation means (**18**) for forming a first product of the fourth signal and acceleration g due to gravity;

second calculation means (**19**) for forming a second product of the third signal and the second signal;

third calculation means (**26**) for taking a difference between the second product and the first product as a fifth signal indicative of a non-compensated transverse acceleration a_{nc}:

$$a_{nc} = \omega_z v - g\omega_x,$$



whereby the fifth signal is used in the first control unit (**8**) to generate the first control signal;

at least one first accelerometric detector means (**27**) for fixing to the carriage (**1**) and generating a sixth signal indicating a transverse acceleration of the carriage, a diagram of the transverse acceleration of the carriage as a function of time comprising substantially a first substantially rectilinear section the value of which increases with an increase in time, a second substantially rectilinear section the value of which remains constant with time, and a third rectilinear section the value of which decreases with time;

low pass filter means (**31**) for filtering the sixth signal into a seventh signal which is delayed by a delay time interval Δt with respect to the sixth signal;

whereby the seventh signal is used in the first control unit (**8**) to generate the first control signal;

signal-forming means (**28**) for forming a supplementary signal a variation of which with time has a form of two waves of trapezoidal form of opposite sign in which an initial inclined section of each wave coincides with a corresponding section of the fifth signal, a duration of each of the initial inclined sections being substantially equal to the delay time interval Δt;

further calculation means (**30**) for forming at each instant a sum of seventh signal and the supplementary signal as a resultant signal;

whereby the resultant signal is used in the first control unit (**8**) to generate the first control signal.

5,331,904

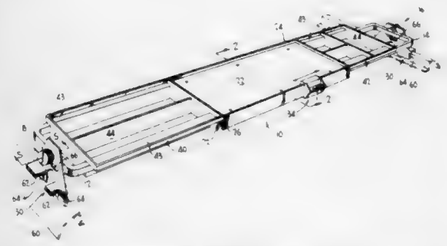
MECHANIC'S TOOL TRAYS AND SUPPORT ASSEMBLY

Robert P. DiSimone, 1263 Shadow Oak Dr., Malvern, Pa. 19355, and Leonard R. Clark, Jr., Oreland, Pa., assignors to Robert P. DiSimone, Malvern, Pa.

Filed Nov. 29, 1991, Ser. No. 800,007

Int. Cl.[5] **A47B** *37/00*

U.S. Cl. 108—44 **48 Claims**



1. A tool tray support assembly for fitting between opposed edge surfaces of an engine compartment of a motor vehicle, comprising:

first and second substantially identical extendable lateral support members each of said members comprising spaced parallel rails and having an end section connecting distal ends of said parallel rails;

a center member, having a substantially planer work surface, and comprising a set of spaced bearing members for receiving proximal ends of said spaced parallel rails, such that said at least one lateral support member is slidably received within said set of spaced bearing members;

first and second end supports, for mating with end sections of said extensible lateral support members at opposite lateral ends of said tool tray support assembly;

at least one tool tray adapted to be supported on said spaced parallel rails of said at least one lateral support member, between said end section thereof and said center member;

wherein said center member comprises two substantially identical sets of said spaced bearing members for receiving said extensible lateral support members from opposite lateral ends thereof, and all members of said substantially identical sets of spaced bearing members are disposed in a single plane parallel to said work surface; and wherein said sets of spaced bearing members receiving parallel rails of said lateral support members are disposed along opposed edges of said work surface; and said identical sets of spaced bearing members comprise two sections of a continuous extrusion, defining two longitudinal channels, each for slidably receiving one of said parallel rails of one of said lateral support members.

5,331,905

MOTORCYCLE TIRE TABLE CONSTRUCTION

Sarah E. Hammers, and Roy E. Hammers, both of 507 N. Madison, Apt. B, Siloam Springs, Ark. 72761

Filed Mar. 1, 1993, Ser. No. 24,281

Int. Cl.[5] **A47B** *83/00*

U.S. Cl. 108—50 **3 Claims**

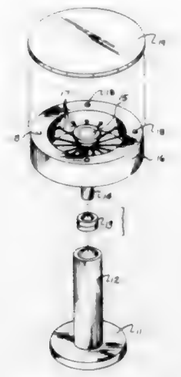
1. A motorcycle tire table construction, comprising,

a table supporting leg assembly including a support plate acting as a footing and a support plate tube fixedly and

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orthogonally mounted to the support plate medially of the support plate, and

an axle shaft received within the support plate tube, the axle shaft including a hub mounted to the axle shaft spaced from the support plate, with a wheel member mounted



concentrically relative to the hub, with a plurality of spokes directed radially from the hub to the wheel member for support of the wheel member relative to the hub, and

a planar transparent table plate mounted on the wheel member.

5,331,906

COAL COMBUSTOR AND SLAG EXHAUSTING DEVICE THEREIN

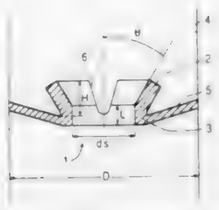
Keisuke Sonoda; Yoshinori Kobayashi, both of Nagasaki; Fumiya Nakashima, Tokyo, and Kimishiro Tokuda, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,301

Claims priority, application Japan, May 1, 1992, 4-112687

Int. Cl.[5] F23D *1/02*

U.S. Cl. 110—264 **2 Claims**



1. In a coal combustor in which coal is burnt while swirling, and an ash content of the coal is blown against a peripheral wall of a combustion chamber of the combustor due to centrifugal forces and drops to a bottom wall of the combustion chamber, a slag exhausting device disposed at the bottom wall of the combustion chamber, said slag exhausting device comprising: a cylindrical lower portion extending from the bottom wall of the combustion chamber and defining a slag opening therethrough, and an upper bank flaring outwardly from an upper end of said cylindrical lower portion, said upper bank flaring outwardly from said cylindrical lower portion at a flare angle of 30°–45°, a ratio of the inner diameter of the cylindrical lower portion to the inner diameter of the peripheral wall of the combustion chamber being 0.2–0.4, a ratio of the height of an inner cylindrical vertical wall of said cylindrical lower portion to the inner diameter of said cylindrical lower portion being 0.2–0.6, and a ratio of a height in the slag exhausting device, taken from where an upper surface of the bottom wall of the combustion chamber intersects said cylindrical lower portion to the top of the upper bank, to the diameter of the peripheral wall of the combustion chamber being 0.05–0.15.

5,331,907

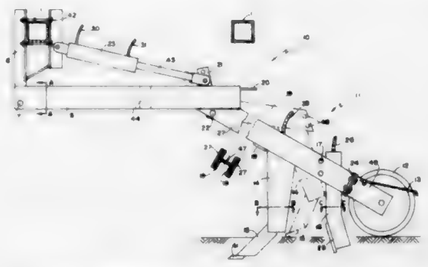
APPARATUS FOR DEPOSITING SEED AND FERTILIZER

Norbert F. Beaujot, Box 123 L, Langbank, Saskatchewan, Canada S0G 2X0

Filed May 20, 1992, Ser. No. 885,450

Int. Cl.[5] A01C *5/00*

U.S. Cl. 111—52 **29 Claims**



1. A seeding apparatus for applying seed and fertilizer to the ground comprising in combination, a frame means including a central frame, a first wing frame pivotally connected to a first side of said central frame, a second wing frame pivotally connected to a second side of said central frame, a seed supply means mounted on said central frame, a fertilizer supply means mounted on said central frame, wheels attached to said central frame and to said first and second wing frames to support and assist in transporting said seeding apparatus over the ground, a fluid pressure source means mounted on said frame means, frame biasing means pivotally connected to said central frame and to said first and second wing frames and operated by said fluid pressure source means to groundwardly bias said first and second wing frames simultaneously and to pivot said first and second wing frames to a substantially vertical position for travel, a combination adjustable pressure and release valve connected to said fluid pressure source and to said frame biasing means for controlling fluid flow between said fluid pressure source means and said frame biasing means, multiple seed row assemblies separately pivotally connected to said central frame and to said first and second wing frames to deposit and pack seed from said seed supply means and fertilizer from said fertilizer supply means in the ground, each seed row assembly of said multiple seed row assemblies including a frame mounting means, an elongated draw arm pivotally connected to said frame mounting means, a ground engaging assembly fixed to said elongated draw arm, said ground engaging assembly including a mounting arm, a ground engaging seed dispensing means adjustably mounted thereon, a ground engaging fertilizer dispensing means pivotally mounted thereon so that it pivots relative to said seed dispensing means and a laterally adjustable packing and depth gauge means rotatably mounted thereon, a seed row fluid biasing means included in each seed row assembly and pivotally connected to said frame mounting means and to said ground engaging fertilizer dispensing means to operatively bias said seed row assembly groundwardly, a further combination adjustable pressure and release valve connected to and controlling fluid flow between, said fluid pressure source means and said seed row fluid biasing means, a seed conveying means and a fertilizer conveying means carrying seed and fertilizer to said ground engaging seed dispensing means and said ground engaging fertilizer dispensing means respectively from said seed supply means and said fertilizer supply means whereby optimum seed and fertilizer ground

depth and placement are achieved while maintaining a uniform and adequate packing pressure.

5,331,908

METHOD OF GROWING PERENNIALS

Carl F. Loeb, 1879 Cascade Ridge Dr., Mount Vernon, Wash. 98273, assignor to Carl F. Loeb and Duane A. Melcher, both of Mount Vernon, Wash.

Filed May 14, 1992, Ser. No. 883,105

Int. Cl.[5] A01C *1/00*

U.S. Cl. 111—114 **7 Claims**



1. A method of growing a perennial having a growing season and a dormant season, said method comprising:

providing a container having an at least substantially continuous sidewall, an open top, and an open bottom; and substantially filling said container with a growing medium;

planting a perennial starter plant in said growing medium, and placing said container on a support surface;

allowing said plant to grow in said container until a point in said growing season when roots of said plant are sufficiently developed to hold said growing medium within said container when said plant and said container are removed as a unit from said surface;

then, during said growing season, planting said plant and said container as a unit in soil in a field;

allowing said plant to grow in said field, including allowing foliage to grow above said soil, a densely rooted basal plate to form within said container, and feeder roots to grow outwardly from the bottom of said container into soil below said container; and

harvesting said plant during the dormant season by undercutting said feeder roots and removing said plant and said container as a unit from said field.

5,331,909

PRESSER FOOT AND NEEDLE DRIVE DEVICE IN AN EMBROIDERY MACHINE

Ikuo Tajima; Satoru Suzuki, and Youichi Mizuguchi, all of Kasugai, Japan, assignors to Tokai Kogyo Mishin Kabushiki Kaisha, Kasugai, Japan

Filed Jan. 21, 1993, Ser. No. 6,972

Claims priority, application Japan, Jan. 20, 1992, 4-030196

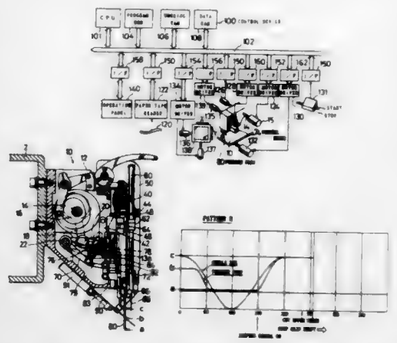
Int. Cl.[5] D05B *21/00, 29/02*

U.S. Cl. 112—103 **4 Claims**

1. A presser foot and needle drive device in an embroidery machine for moving the presser foot in response to the vertical reciprocating movement of a needle bar and sewing needle, comprising:

drive means for vertically reciprocally moving a presser foot; and

control means operable for controlling said drive means to effect patterns of movement of said presser foot for various sewing conditions; means to effect plural strokes of vertical reciprocating movement of said needle bar;



said control means operating to determine a pattern of vertical movement of the presser foot with respect to each stroke of vertical reciprocating movement of a needle bar based on a sewing start command signal and a thread cutting command signal, said control means controlling said drive means to effect said determined pattern.

5,331,910

SEWING MACHINE WITH AUXILIARY TRANSPORT ROLLERS, BELT, AND CUTTER

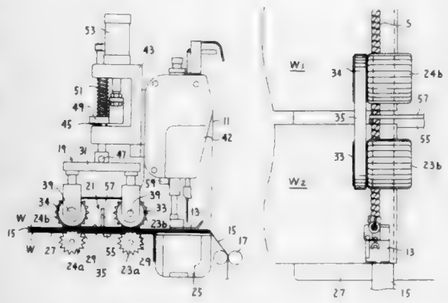
Hirochika Mukai, and Tomoyuki Nakajo, both of Osaka, Japan, assignors to Pegasus Sewing Maching Mfg. Co., Ltd., Osaka, Japan

Filed Jan. 19, 1993, Ser. No. 5,654

Claims priority, application Japan, Jun. 24, 1992, 4-165622

Int. Cl.[5] D05B *27/12, 35/06, 37/06*

U.S. Cl. 112—121.26 **3 Claims**



1. A sewing machine with an auxiliary transport device for transporting and cutting a tape to be sewn on a plurality of workpieces, said auxiliary transport device comprising:

a tape feed device provided at a feed side of a presser foot of the sewing machine, said tape feed device comprising a pair of rollers for feeding the tape at a lower speed than the sewing speed of the sewing machine so that a tension is applied to the tape;

a front roller and a rear roller provided at a delivery side of the presser foot for engaging with and transporting sewn workpieces, said front and rear rollers being rotated and driven in synchronism with the driving of the sewing

machine with one of said front and rear rollers driving the other of said front and rear rollers through a belt transmission device, a belt of said belt transmission device being disposed near a sewing line of the sewing machine and pressed against a delivery surface of the sewing machine; and

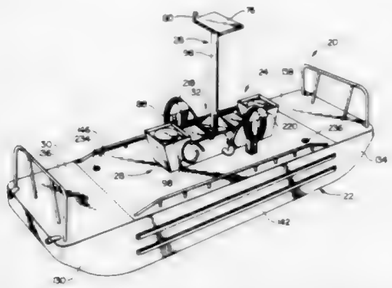
a tape cutting device provided between the front and rear rollers for cutting the tape between the workpieces.

5,331,911

MARINE SANITATION HOLDING VESSEL

Merlin Bost, and Glen Fredholm, both of Anacortes, Wash., assignors to American Eagle Aluminum Manufacturing, Inc., LaConner, Wash.

Filed Aug. 12, 1992, Ser. No. 929,661
Int. Cl.[5] B63B *35/28*
U.S. Cl. 114—26 **19 Claims**



1. A marine sanitation holding vessel for collecting and storing waste material, comprising:

a. a barge having an upper deck, the barge defining first and second end compartments and a storage compartment, where the first and second end compartments are filled with material that provides buoyancy to the barge;

b. waste removal means mounted on the upper deck for removing waste from temporary holding tanks off of the barge and depositing the waste in the storage compartment of the barge;

c. a rechargable battery means for providing energy to the waste removal means; and

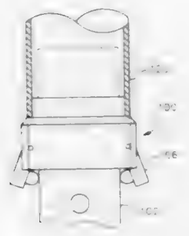
d. solar powered means for recharging the rechargable battery.

5,331,912

SELF-RELEASING MAST BASE COLLAR

Brian Clark, 15914 Juanita Dr. NE., Kenmore, Wash. 98011

Filed Sep. 21, 1992, Ser. No. 947,562
Int. Cl.[5] B63B *15/00*
U.S. Cl. 114—90 **18 Claims**



1. A mast base collar, comprising:

circular support means for supporting a mast and surrounding and affixing to a mast base; and

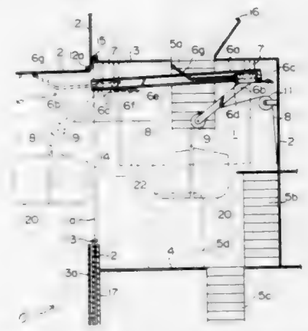
compressive means, attached to the support means by a hinge, for transmitting a compressive force from the support means at the hinge through the compressive means to engage the mast base.

5,331,913

ENCLOSED SHELTER FOR STORING BOATS AND LIFE RAFTS IN MARINE STRUCTURES

Tokumi Tanaka; Takaya Hayata; Ilkka Penttinen, and Jarmo Seppälä, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,757
Claims priority, application Japan, Feb. 27, 1991, 3-055852
Int. Cl.[5] B03B *35/40*
U.S. Cl. 114—259 **7 Claims**



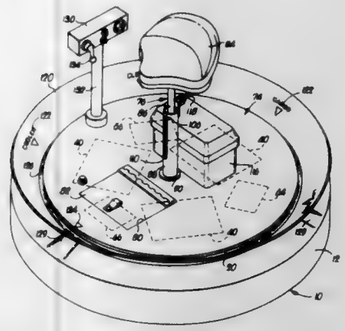
1. A storage structure for one or more crafts in a marine structure including an upstanding side which extends downwardly from the storage structure to a normal water line, said storage structure including a recess inwardly of said side for containing said craft, said recess being openable and closable relative to said side above said water line by shiftable gate means, craft support means in said recess supporting said craft therefrom, mounting means in said recess for moving said craft therefrom, mounting means in said recess for moving said craft support means together with said crafts from a storing position wholly within said recess to a launching position outwardly of said recess and side, said craft support means including means for lowering and hoisting said craft between said launching position and said water line, said recess opening outwardly of said side through a port formed therein including upper, lower and opposite side margins, said gate means including upper and lower gates operatively associated with said port and movably supported from said side for movement between open and closed positions opening and closing, respectively, the upper and lower portions of said port, said upper gate being pivotally supported along an upper margin thereof from the upper margin of said port for swinging in a generally vertical plane for movement between the open and closed positions thereof with said upper gate being generally coextensive with said lower gate when both of said gates are in the closed positions thereof and said upper gate projecting generally horizontally outwardly of the upper marginal portion of said port when said upper gate is in the open position thereof with said craft support means maintaining said upper gate propped in the open position thereof when said craft support means is in said craft launching position, said lower gate being supported from said side for generally vertical guided movement between a lowered open position and a raised closed position.

5,331,914

HIGHLY STABLE ONE-MAN BOAT

Larry W. Salmons, 25945 Kisker Rd., Platte City, Mo. 64079

Filed Nov. 25, 1992, Ser. No. 981,254
Int. Cl.[5] B63B *3/00*
U.S. Cl. 114—346 **35 Claims**



22. In a boat, the improvement comprising:

means defining a plurality of open top compartments arranged in an arcuate pattern about an upright axis;

a deck overlying said compartments in covering relationship therewith and supported for rotation about said upright axis;

an operator's seat secured to the deck for rotation therewith; and

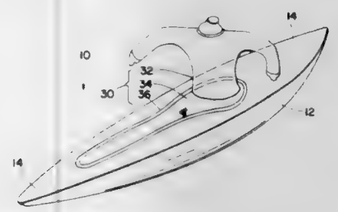
an access opening in the deck adapted to permit access by the operator to any selected one of said compartments by rotating the deck into a position in which the opening is aligned vertically with the open top of the selected compartment.

5,331,915

KAYAK COCKPIT COVER

James E. Snyder, Rte. 1, Box 30, Albright, W. Va. 26519

Filed Dec. 7, 1992, Ser. No. 986 622
Int. Cl.[5] B63B *35/71*
U.S. Cl. 114—347 **14 Claims**



1. A kayak cockpit cover comprising:

a waist closure means for watertight encirclement of the waist of a paddler occupying a cockpit in a kayak;

a fabric covering section for spanning the cockpit around the paddler, the covering section having an uppermost topside, an inner margin joined to the waist closure means and an outer margin;

a doubled portion of fabric at the outer margin of the covering section, the doubled fabric forming an endless fabric sleeve around the outer margin of the covering section;

an endless resilient inflatable tube carried within the fabric sleeve;

a valve element integral with the inflatable tube; and

a linear flexible core element inside the inflatable tube.

5,331,916

INSERT FOR CONVERTING KAYAK TO CANOE AND MODIFIED KAYAK FOR USE THEREWITH

John Martin, P.O. Box 4829, Kanehoe, Hi. 96744

Filed Mar. 15, 1993, Ser. No. 30,906
Int. Cl.[5] B63B *35/71*
U.S. Cl. 114—347 **3 Claims**



2. Apparatus for converting a kayak having a seat-shaped well in an upper deck thereof into which a paddler's derriere fits during use into an outrigger canoe where a paddler sits on the upper deck and requiring an outrigger for stability comprising:

a) a removable insert having a bottom surface which is a mating fit to the well and a top surface flush with the upper deck upon which a paddler sits during use of the kayak as an outrigger canoe;

b) an outrigger comprising at least one float attached at the ends of a pair of arms extending laterally outward from the kayak; and,

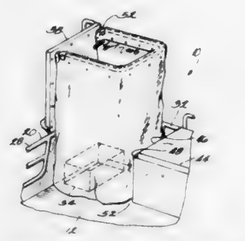
c) attachment means carried by the kayak for releasably attaching said outrigger to the kayak.

5,331,917

PRIVACY ENCLOSURE AND ENTRYWAY FOR A BOAT

Mark S. Magers, Lebanon, Mo., assignor to Outboard Marine Corporation, Waukegan, Ill.

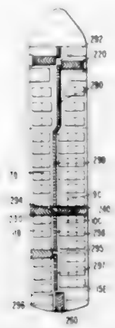
Filed Jun. 10, 1993, Ser. No. 75,072
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—361 **17 Claims**



1. A boat comprising a substantially planar deck, a hull supporting the deck, a railing extending around at least a portion of the periphery of said deck, said railing having an aft section, a side section, and a corner section connecting said aft section and said side section, a door in one of said railing aft section and side section adjacent said corner section, said door swinging on a vertical axis, a ledge mounted to pivot in a horizontal axis on the other of said railing side section and aft section in proximity to said corner section and said door, said ledge pivoting from a horizontal orientation to a vertical upright orientation, said ledge having a bottom surface, a U-shaped curtain rod adapted to hold a curtain pivotally attached to said ledge bottom side for pivoting from a closed condition substantially parallel to said ledge bottom side to an open position perpendicular to said ledge bottom side.

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5,331,918
TACTIOVISUAL EXIT FINDING SYSTEM FOR AIRCRAFT CABINS AND THE LIKE
Richard F. Honigsbaum, A-21 Barry Gardens, 245 Passaic Ave., Passaic, N.J. 07055
Filed Jan. 14, 1993, Ser. No. 4,716
Int. Cl.[5] G08B *1/00*
U.S. Cl. 116—205 **33 Claims**



26. A family of passive tactiovisual exit aids for a structure having a plurality of fixed seats arranged in rows served by at least one main aisle and at least one exit accessed from said at least one main aisle by an exit passageway, said exit passageway being flanked by at least one flanking seat of said seats, and in which said family of passive tactiovisual aids comprises at least one family member, each of said family members being tactiovisually identifiable as a member of said family of passive tactiovisual aids on the basis of tactiovisual familiarity with any other family member, said family of passive tactiovisual aids comprising

an exit-passageway-floor-based passive tactiovisual exit passageway identifier having a plurality of passive unidirectional tactiovisual first flooring means for both singly and collectively and both tactilely and visually identifying the direction to said at least one exit and for facilitating an identification of said exit-passageway-floor-based passive tactiovisual exit passageway identifier as one family member of said family of passive tactiovisual exit aids; and at least one of

(a) a main-aisle-floor-based passive tactiovisual main aisle guide strip at least a portion of which has a plurality of passive unidirectional tactiovisual second flooring means for both singly and collectively and both tactilely and visually identifying the direction to said exit passageway and for facilitating an identification of said main-aisle-floor-based passive tactiovisual main aisle guide strip portion as one family member of said family of passive tactiovisual exit aids;

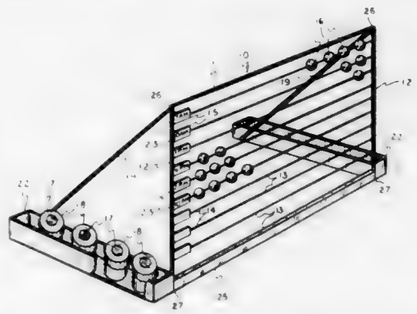
(b) at least one of said seats comprising an armrest having a plurality of passive unidirectional tactiovisual first strip means for both singly and collectively and both tactilely and visually identifying the direction to said exit passageway and for facilitating an identification of said armrest as one family member of said family of passive tactiovisual exit aids;

(c) at least one of said seats comprising a side panel having a plurality of passive unidirectional tactiovisual second strip means for both singly and collectively and both tactilely and visually identifying the direction to said exit passageway and for facilitating identification of said aisle-side panel as one family member of said family of passive tactiovisual exit aids;

(d) at least one of said seats comprising a tray table having a plurality of passive tactiovisual embossed means for both singly and collectively and both tactilely and visually identifying the direction to said exit passageway and for facilitating identification of said tray table as one family member of said family of passive tactiovisual exit aids; and

(e) at least a portion of said at least one exit passageway-flanking seat facing said passageway comprising upholstery having a plurality of passive unidirectional tactiovisual upholstery means for both singly and collectively and both tactilely and visually identifying the direction to said exit, and for facilitating identification of said upholstery as one family member of said family of passive tactiovisual exit aids.

5,331,919
MEDICATION SCHEDULING DEVICE
John Root, R.R. #1 Box 214, Anamosa, Iowa 52205, and Deana N. Root, 756 Hillard St., Springfield, Ohio 45506
Filed Aug. 3, 1992, Ser. No. 923,518
Int. Cl.[5] G09F *9/00*
U.S. Cl. 116—323 **1 Claim**



1. A medication dosage scheduling device comprised of.

a) a substantially rectangular frame comprised of upper and lower straight rigid horizontal members spaced apart by paired parallel straight rigid upright members defining paired upper and lower corners, said upper member being disposed rearwardly with respect to said lower member,

b) a plurality of horizontally disposed rails removably associated with said upright members,

c) an information panel associated with each rail adjacent an upright member and corresponding to a prescribed time for administration of a medication dosage.

d) a plurality of color coded dosage markers slidably disposed upon each rail, each marker corresponding to a unit of medication dosage, and

e) adhesive labels color-coded to correspond with the color code of said markers, and adapted to be affixed to medication containers,

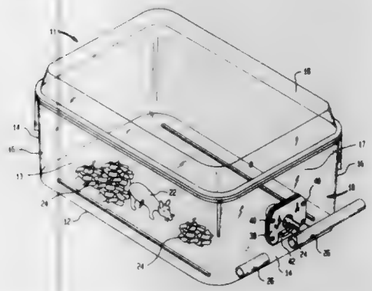
f) paired elongated trays extending in parallel relationship horizontally rearward from said paired lower corners, and trays configured to hold containers of medication, and

g) a support leg extending diagonally between each tray and said upper horizontal member.

5,331,920
COMBINATION CAGE AND WATERING DEVICE PERMITTING AUTOMATIC REMOVAL OF BEDDING THEREFROM
Michael A. Coiro, Sr., Jacobstown, and Dale R. Murray, Burlington, both of N.J., assignors to Allentown Caging Equipment Co., Inc., Allentown, N.J.
Filed Oct. 28, 1992, Ser. No. 967,714
Int. Cl.[5] A01K *1/00, 7/00*
U.S. Cl. 119—18 **18 Claims**

1. A combination cage and watering apparatus which allows the supply of water from an outside watering system to an animal confined in an isolation cage containing animal bedding while preventing the entrance of airborne contaminants and which passes through an aperture in a cage defined by a top, a bottom, an interior and an exterior surface, two opposing ends, each opposing end having a top and a bottom portion, and two opposing sides, said apparatus comprising:

an internal cup having a front end and a back end, which tapers outwardly from said back end toward said front end, and which passes through said aperture, said internal cup including a slot located at said back end for allowing said animal to receive water from an outside watering valve;

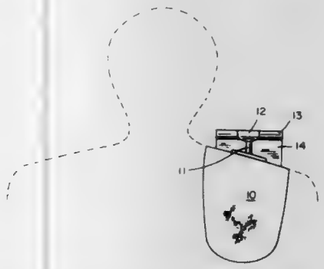


access port means in said internal cup for receiving said outside watering system to supply water to said animal; and,

bedding removal means,

wherein when said animal bedding is stuffed through said slot by said animal, it automatically passes through said bedding removal means thereby preventing said outside watering valve from becoming clogged with said animal bedding.

5,331,921
SHOULDER-MOUNTED BIRD PERCH HAVING REMOVABLE WASTE COLLECTING RECEPTACLE
Karl T. vanVonno, 31 Valencia Cir., Safety Harbor, Fla. 34695
Filed Mar. 31, 1993, Ser. No. 40,856
Int. Cl.[5] A01K *31/12*
U.S. Cl. 119—26 **3 Claims**



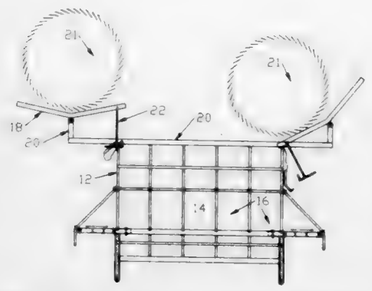
1. A shoulder-mounted bird perch comprising:

a flexible cover adapted to fit onto a person's shoulder having front and rear segments for draping to the front and rear, respectively, of the person's shoulder,

a bird perch assembly mounted in the center of said flexible cover between the front and rear segments thereof, and

a demountable waste receptacle mounted upon the rear segment of said flexible cover.

5,331,922
FEEDER FOR BALES OF FEED MATERIAL
Steven Olynyk, Box 6352, Drayton Valley, Alberta, Canada T0E 0M0
Filed Jun. 3, 1993, Ser. No. 72,314
Claims priority, application Canada, Jun. 26, 1992, 2072539
Int. Cl.[5] A01K *1/10*
U.S. Cl. 119—60 **3 Claims**

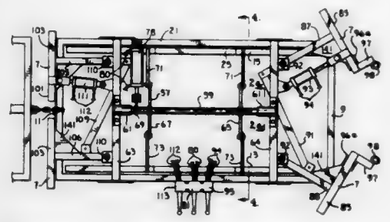


1. A feeder for bales of feed material, comprising:

a. a wall structure defining an enclosure adapted to receive one or more bales of feed material, the wall structure having openings whereby animals gain access to the feed material;

b. at least one reserve bale support mounted on a top peripheral edge of the wall structure, the at least one bale support being pivotally moveable from a substantially horizontal supporting position to a substantially inwardly inclined unloading position, such that in the unloading position the inclined at least one bale support serves as the means for moving a reserve bale from the at least one bale support into the enclosure as the reserve bale slides down the incline into the enclosure, means being provided for maintaining the at least one bale support in a supporting position until the reserve bale is required.

5,331,923
PORTABLE SQUEEZE CHUTE APPARATUS AND METHOD
Jon D. Mollhagen, Rt. 1, Box 63, Lorraine, Kans. 67459
Continuation of Ser. No. 881,737, May 11, 1992, abandoned. This application Oct. 20, 1993, Ser. No. 141,422
Int. Cl.[5] A01K *1/062;* **A61D** *3/00*
U.S. Cl. 119—734 **39 Claims**



1. A livestock working apparatus, including:

(a) a chute having an entrance end, an exit end, opposing sidewalls, a base having a floor, and a superstructure;

(b) lateral immobilizing means for selectively immobilizing lateral movement of the livestock, said lateral immobilizing means associated with said opposing sidewalls;

(c) exit gate means associated with said exit end, said exit gate means including fore-and-aft immobilizing means for selectively immobilizing fore-and-aft movement of the animal relative to the apparatus; and

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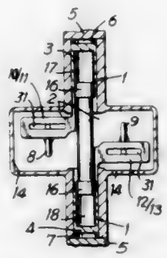
(d) said exit gate means is pivoted intermediately between said exit end and said entrance end such that said exit gate closes generally transversely to said chute.

5,331,924
CATALYTIC LIQUID INJECTION SYSTEM FOR EMISSION CONTROL
Gregory A. Kraus, 7061 Atlantic Pl., Long Beach, Calif. 90805
Filed Mar. 12, 1992, Ser. No. 849,730
Int. Cl.[5] F02B *75/12*
U.S. Cl. 123—1 A **12 Claims**



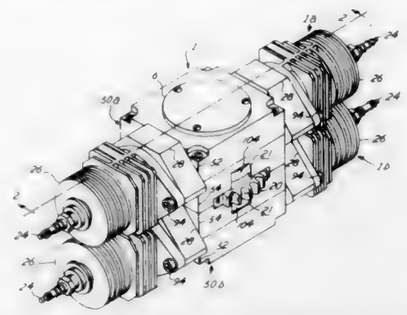
1. A device for injecting a catalytic liquid for reducing unhealthful emissions into the combustion zone of an internal combustion engine wherein said catalytic liquid comprises a dissolved catalytic compound selected from the group consisting of tetraamine platinum dichloride, tetraamine palladium dichloride and nickel chloride, comprising:
a storing means for storing said catalytic liquid in a reservoir:
a controlling means to accurately meter the amount of said catalytic liquid into said combustion zone of said internal combustion engine; and
a transporting means for conveying catalytic liquid from said reservoir through said controlling means into said combustion zone of said internal combustion engine.

5,331,925
INTERNAL COMBUSTION ENGINE
Mikhail Tsepenyuk, 22 Fort Hamilton Pkwy., Brooklyn, N.Y. 11218
Filed Jan. 4, 1993, Ser. No. 370
Int. Cl.[5] F02B *75/28*
U.S. Cl. 123—56 AC **9 Claims**



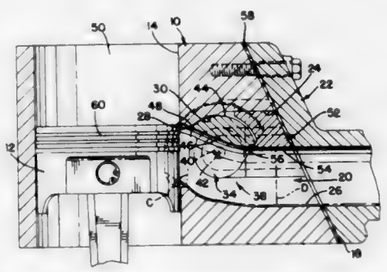
1. An internal combustion engine, comprising a plurality of cylinders; two pistons located in each of said cylinders and forming two combustion chambers with the latter; and two output shafts, each of said cylinders having two windows through which said two pistons of each of said cylinders are connected with said two output shafts, each of said pistons being connected to both output shafts.

5,331,926
DWELLING SCOTCH YOKE ENGINE
Melvin A. Vaux, Kingman, Ariz., and Thomas R. Denner, Clark County, Nev., assignors to Denner, Inc., Las Vegas, Nev.
Filed Jul. 23, 1993, Ser. No. 96,790
Int. Cl.[5] F02B *75/24*
U.S. Cl. 123—56 BC **18 Claims**



1. An engine comprising a housing which includes a central crank case having a chamber therein and two oppositely located cylinders, one of said cylinder on each side of said crank case with said crank case chamber therebetween, a piston shiftably supported in each cylinder, a yoke connected between said pistons and extending through said crank case chamber, said yoke being shiftable between first and second reciprocal positions within said crank case chamber upon alternating movement of said pistons within said cylinders, a flywheel journalled in said crank case chamber, means carried by said flywheel accessible from a crank case opening for imparting driving power to a power input mechanism during flywheel rotation, said yoke including a cam member located generally centrally between said pistons, said flywheel including means engaging said yoke cam member for imparting rotation to the flywheel upon movement of said yoke between its said first and second positions, said yoke cam member having camming means contacting said flywheel means for imparting controlled movement to each piston during fuel detonation within its said cylinder, and means for detonating said fuel within each cylinder.

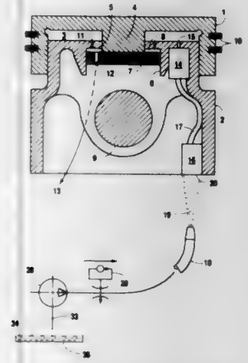
5,331,927
EXHAUST PORT INSERT
James G. Solomon, Grosse Pointe W, Mich.; Thaddeus B. Lilly, Palm Harbor, Fla., and Robert A. Bolton, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 7, 1993, Ser. No. 132,974
Int. Cl.[5] F02B *75/02*
U.S. Cl. 123—65 PE **7 Claims**



1. In a two stroke cycle engine having
an engine block,
means defining a cylinder bore in the engine block and

means defining an exhaust port through the engine block along an exhaust port axis from the cylinder bore to an outside of the engine block, an exhaust port control valve mechanism comprising:
a valve pivotally mounted in the exhaust port between the cylinder bore and the outside for rotation between an open position and a closed position and defining a timing edge of the exhaust port, and
an insert filling a volume in the exhaust port between the valve and the outside thereby improving flow efficiency of the exhaust port.

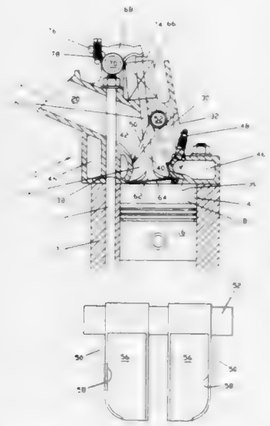
5,331,928
VARIABLE COMPRESSION PISTON
Charles D. Wood, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.
Filed Jun. 3, 1992, Ser. No. 892,570
Int. Cl.[5] F02B *75/04*
U.S. Cl. 123—78 B **2 Claims**



1. A variable compression engine comprising:
a first reciprocal piston cap element;
a second piston element reciprocally disposed to said first reciprocal piston cap element to define a first variable volume chamber there-between and a third piston element at the end of a centrally located means attached to said first reciprocal piston cap element to form a second variable volume chamber between said third piston element and said second piston element;
means for supplying hydraulic fluid to said variable volume fluid chambers;
a fluid communicating orifice between said first variable chamber and said second variable chamber; and
a fluid communicating orifice for draining said second variable chamber.

5,331,929
CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINE AND A PROCESS OF OPERATING SAME
Ronald S. Plantan, 10315 Thomas Payne Cir., Charlotte, N.C. 28277, assignor to Ronald S. Plantan; Gregory N. Clements and Dewayne Demus, all of Charlotte, N.C., a part interest
Filed Oct. 16, 1991, Ser. No. 777,654
Int. Cl.[5] F01L *1/28*
U.S. Cl. 123—79 R **16 Claims**

1. A cylinder head for an internal combustion engine comprising:
(a) a block forming at least a portion of a combustion chamber;
(b) a dual-function chamber in said block and communicating with said combustion chamber;
(c) intake means for passing either a fuel/air mixture or air through said block to said dual-function chamber;
(d) exhaust means in said block for passing exhaust gases from said dual-function chamber through said block;
(e) a partition wall centrally located in a portion of said dual-function chamber, said intake means, and said exhaust means;
(f) first valve means positioned in said portion of a combustion chamber for controlling the fuel/air mixture or air flowing from said dual-function chamber to said combustion chamber and for controlling the exhaust gases flowing from said combustion chamber to said dual-function



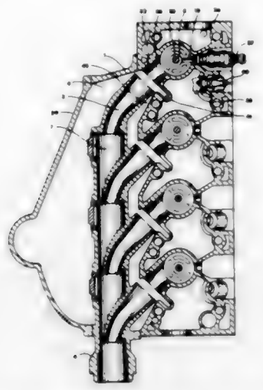
chamber, said first valve means having a stem extending through said partition wall; and
(g) second valve means positioned within said dual-function chamber for controlling the flow of the fuel/air mixture or air flowing from said intake means to said dual-function chamber and simultaneously aiding in sweeping out exhaust gases, and for controlling the exhaust gases flowing from said dual-function chamber through said exhaust means, said second valve means designed to have an increased closing force sealing said intake means from said dual-function chamber upon the flow of exhaust gases from the combustion chamber, through said dual-function chamber through said exhaust means.

5,331,930
UNIVALVE ENGINE
Edward M. McWhorter, 6931 Greenbrook Cir., Citrus Heights, Calif. 95621
Filed Apr. 5, 1993, Ser. No. 42,695
Int. Cl.[5] F01L *1/28*
U.S. Cl. 123—79 R **9 Claims**

1. In engine of the character described as having a single valve for controlling the air induction to said engine and the exhaust gas from said engine through a port channel leading from said valve to a nozzle, said nozzle discharging exhaust gases into a diffuser inlet during the exhaust stroke of the piston of said engine, said diffuser being fixedly attached and manifolded to an exhaust pipe holding a plurality of said diffusers attached and manifolded in the same manner, the internal flow axis of said diffusers being curved such that said axis of the outlets of said diffusers are aligned with the flow axis of the said exhaust pipe and the direction of flow in said exhaust pipe and said aligned diffuser outlets is toward the exist of said

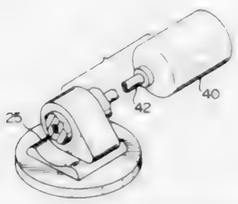
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exhaust pipe, the said exhaust pipe and said diffusers being positioned within an airchest, a plenum covering the air inlets



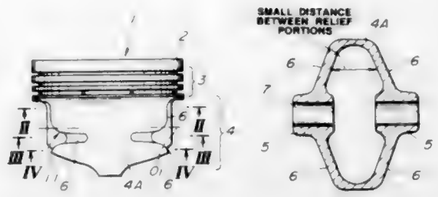
of said airchest, said air plenum having an opening to admit air into said air plenum.

5,331,931
VARIABLE INTAKE VALVE
Nelson A. Blish, 302 Cove Creek, Houston, Tex. 77042, and Ronald L. Chichester, 2746 Sherwood Hollow La., Kingwood, Tex. 77339
Continuation-in-part of Ser. No. 674,107, Mar. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 360,320, Jun. 2, 1989, Pat. No. 5,016,583, which is a division of Ser. No. 144,549, Jan. 13, 1988, Pat. No. 4,864,984, which is a continuation-in-part of Ser. No. 902,633, Sep. 2, 1986, abandoned. This application Jun. 1, 1993, Ser. No. 70,595
Int. Cl.[5] F01L *1/04*
U.S. Cl. 123—90.11 **7 Claims**



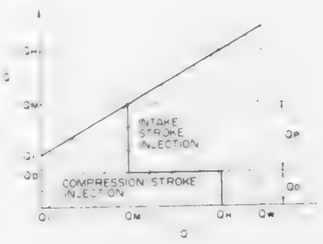
1. A poppet valve operating mechanism for an internal combustion engine comprising:
- a poppet valve;
- a cam having a raised portion for depressing and opening said poppet valve;
- a holding means, on a cam follower which contacts said poppet valve, interacting with said cam to maintain said poppet valve in one of two stable positions; and
- a stepper motor for rotating said cam wherein said poppet valve may be maintained in at least one of an open position and a shut position without maintaining said motor energized.

5,331,932
ENGINE PISTON
Hiroaki Watanabe, and Masaharu Kitamura, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan
Filed Jul. 23, 1993, Ser. No. 96,614
Claims priority, application Japan, Aug. 11, 1992, 4-56479[U]
Int. Cl.[5] F02F *3/02*
U.S. Cl. 123—193.6 **12 Claims**



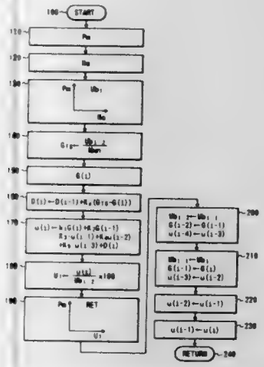
1. A piston for an internal combustion engine, comprising a piston skirt and piston bosses formed with piston pin holes, wherein said piston skirt is so shaped as to define therewithin a cavity having a width parallel to said piston pin holes that vertically varies in such a manner as to become smaller adjacent said piston bosses and larger above and below said piston bosses.

5,331,933
CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE
Souichi Matsushita, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Oct. 23, 1992, Ser. No. 965,578
Claims priority, application Japan, Oct. 25, 1991, 3-279844
Int. Cl.[5] F02D *41/40*; **F02B** *17/00*
U.S. Cl. 123—295 **15 Claims**



1. A control device for an internal combustion engine having a cylinder and a spark plug, said control device comprising:
- a fuel feeding means for feeding fuel into the cylinder, feeding a part of an amount of fuel to be injected during an intake stroke to form an air-fuel premixture, and feeding the remaining part of said amount of fuel to be injected during a compression stroke to form an air-fuel mixture around the spark plug for ignition;
- a torque fluctuation detecting means for detecting an amount of torque fluctuation of the internal combustion engine; and
- a fuel feeding control means for controlling a ratio of said part of said amount of fuel to be injected to said amount of fuel to be injected so that said amount of torque fluctuation detected by said torque fluctuation detecting means decreases.

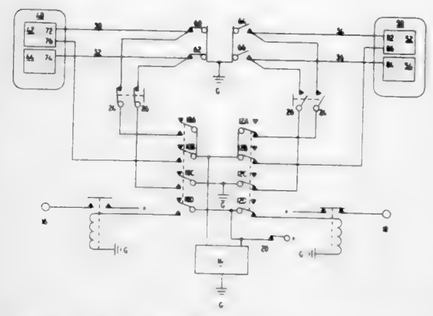
5,331,934
SPARK TIMING CONTROL SYSTEM FOR A VEHICLE-DRIVING INTERNAL COMBUSTION ENGINE
Hidehiko Asama; Kouichi Aoyama; Shuziro Morinaga; Shigenori Isomura, and Toshio Kondo, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Continuation of Ser. No. 838,111, Feb. 20, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 91,451
Claims priority, application Japan, Feb. 20, 1991, 3-026542; Mar. 4, 1991, 3-037580
Int. Cl.[5] F02P *5/00*
U.S. Cl. 123—417 **37 Claims**



1. A spark timing control system for reducing vehicle vibration, comprising:
- detection means for detecting at least one parameter of an engine;
- vehicle vibration detecting means for detecting a vibration of a vehicle in a longitudinal direction with respect to said vehicle;
- target vehicle vibration value calculating means for calculating a target vehicle vibration based on at least one of said detected vehicle vibration and at least of said detected engine parameters;
- error signal generating means for generating an error signal based on a comparison of said detected vehicle vibration to said target vehicle vibration;
- gain selecting means for selecting a gain based on at least one of said detected engine parameters, said gain representing a proportional amount by which said error signal influences spark timing control;
- control quantity setting means for determining a spark timing control quantity based on said error signal as modified by said selected gain; and
- spark timing control means for controlling said spark timing in accordance with said control quantity.

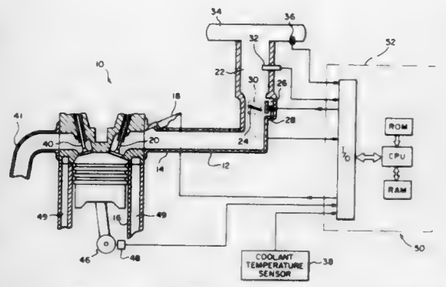
5,331,935
AUXILIARY IGNITION SYSTEM AND METHOD FOR AIRCRAFT ENGINES
John Daino, Wallingford, Pa., assignor to ASAP - Aircraft Service and Parts, Inc., New Castle, Del.
Filed Mar. 31, 1993, Ser. No. 40,900
Int. Cl.[5] F02P *1/08*
U.S. Cl. 123—424 **12 Claims**

1. An auxiliary ignition system, comprising: a first magneto having a normal operating mode and a start-up mode; a second magneto having a normal operating mode and a start-up mode; a start switch operably wired to said first and second magnetos, engagement of said start switch activates said second magneto start-up mode and activates said first magneto start-up mode; and auxiliary ignition switches operably connected to said start switch, engagement of said auxiliary ignition switches and said



start switch causes said first and second magnetos to initiate engine ignition in their respective normal operating mode.

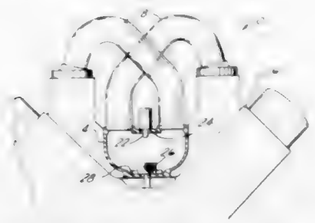
5,331,936
METHOD AND APPARATUS FOR INFERRING THE ACTUAL AIR CHARGE IN AN INTERNAL COMBUSTION ENGINE DURING TRANSIENT CONDITIONS
Isis A. Messih, Troy; Lawrence H. Buch, Farmington Hills, and Michael J. Cullen, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 10, 1993, Ser. No. 16,322
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—480 **21 Claims**



1. A method for controlling the operation of an internal combustion engine comprising the steps of:
- measuring the rotational speed of said engine;
- measuring air mass flow being inducted into said engine;
- measuring the temperature of the air entering said engine;
- measuring the temperature of a coolant circulating through said engine;
- determining barometric pressure surrounding said engine;
- inferring a cylinder air charge value based upon said measured rotational speed of said engine, said measured air mass flow, said measured air temperature, said measured coolant temperature, and said determined barometric pressure; and
- controlling the operation of said engine by employing said inferred cylinder air charge value.

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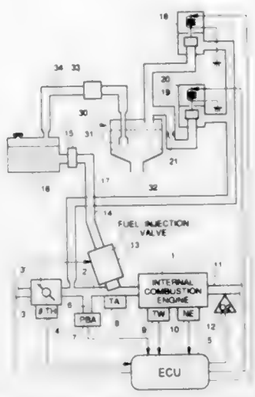
5,331,937
CHARGE INLET SYSTEM FOR INTERNAL COMBUSTION ENGINE
James R. Clarke, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 7, 1993, Ser. No. 1,695
Int. Cl.[5] F02M *31/06, 31/125*
U.S. Cl. 123—491 **16 Claims**



1. A charge inlet system for a reciprocating, spark-ignited internal combustion engine, comprising:
a plenum for receiving intake air;
a plurality of intake runners extending from said plenum to the intake valves of the engine;
a plurality of primary fuel injectors, with one such injector being mounted in each of said runners, so as to discharge fuel into the air being conducted to the engine cylinders; and
a startup fuel injector mounted so as to discharge within said plenum when said engine is being started, so as to provide additional fuel to assist in starting with said startup injector being located within the top wall of said plenum, and with said inlet system further comprising a reservoir located in the floor of the plenum such that fuel discharged by the startup injector is contained in the reservoir until being at least partially vaporized, with said reservoir further comprising an electrically operated means for heating and at least partially vaporizing fuel contained within the reservoir.

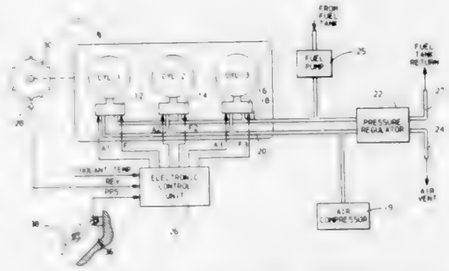
5,331,938
EVAPORATIVE EMISSION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Hiroaki Muramatsu; Shinichi Kitajima; Teruo Wakashiro; Hiroshi Kitagawa; Toshikatu Takanohashi, all of Wako, and Yoshihiko Kobayashi, Tochigi, all of Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan
Filed Mar. 30, 1993, Ser. No. 39,855
Claims priority, application Japan, Mar. 31, 1992, 4-105534
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—520 **7 Claims**

1. In an evaporative emission control system for an internal combustion engine having a fuel tank, an intake passage, and a throttle valve arranged in said intake passage, said evaporative emission control system including a charcoal canister for adsorbing evaporative fuel generated from said fuel tank, a communication passage communicating between said charcoal canister and a portion of said intake passage downstream of said throttle valve, and a first control valve arranged in said communication passage for controlling supply of said evaporative fuel at a flow rate dependent on an operating parameter of said engine,
the improvement comprising:
a bypass passage bypassing said first control valve and having a maximum flow rate smaller than the maximum flow rate of said first control valve;
a second control valve arranged in said bypass passage for controlling opening and closing of said bypass passage; and



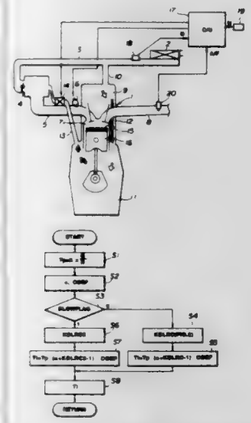
control means for closing said first control valve and at the same time opening said second control valve, when said engine is in a warming up state.

5,331,939
TRANSIENT FUELING COMPENSATION
Douglas E. Trombley, Grosse Pointe; Kenneth J. Buslepp, Shelby Township, Macomb County, and William C. Albertson, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 1, 1993, Ser. No. 69,334
Int. Cl.[5] F02M *67/02*
U.S. Cl. 123—533 **5 Claims**



1. A method for compensating a fuel command issued to a fuel injector of an internal combustion engine having pneumatic fuel injection wherein pressurized air is provided to inject a fuel quantity held within the fuel injector into the engine while the injector is opened during a cylinder injection period, comprising the steps of:
generating the fuel command;
sensing a rate of change in the fuel command;
determining a compensation value as a predetermined function of the sensed rate of change; and
calculating a compensated fuel command as a predetermined function of the generated fuel command and of the compensation value.

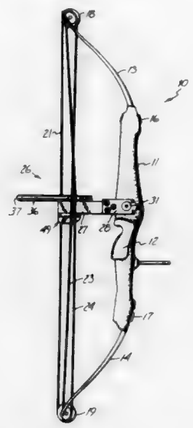
5,331,940
ENGINE CONTROL WITH POSITIVE CRANKCASE VENTILATION
Kengo Takayama, Atsugi, Japan, assignor to Unisia Jecs Corporation, Ayase, Japan
Filed Mar. 9, 1993, Ser. No. 29,246
Claims priority, application Japan, Mar. 9, 1992, 4-050361
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—679 **8 Claims**



1. An internal combustion engine, comprising:
a combustion chamber;
an intake passageway for admission of intake air to said combustion chamber;
an exhaust passageway for discharge of exhaust gas resulting from combustion in said combustion chamber;
a crankcase;
a positive crankcase ventilation system for admission of blowby gas to said combustion chamber;
means for detecting concentration of a component of the exhaust gas and generating a sensor signal indicative of said detected concentration;
means for effecting a closed loop control wherein
a state in which the engine operates is determined,
a feedback correction coefficient is determined in response to said sensor signal,
a basic amount of fuel to be admitted to said combustion chamber is determined against said determined state,
a final amount of fuel to be admitted to the combustion chamber is determined after correcting said basic amount of fuel by said feedback correction coefficient in such a direction as to reduce a deviation of said sensor signal from a reference value toward zero, and
a fuel injection signal indicative of said final amount of fuel is generated;
means for supplying fuel to the combustion chamber in response to said fuel injection signal; and
means for determining that there has been supply of blowby gas to said combustion chamber in response to variation in said feedback correction coefficient.

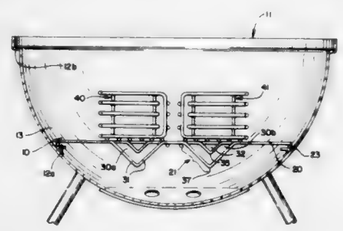
5,331,941
ADJUSTABLE OVERDRAW FOR COMPOUND BOW
John P. Schaffer, R.R. 1, Box 105B, Emerado, N. Dak. 58228
Filed Jan. 25, 1993, Ser. No. 8,295
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—44.5 **20 Claims**

11. An overdraw apparatus for a bow used to shoot an arrow, said bow having a riser, limbs secured to the riser, and cable means and a bow string extended under tension between and operably connected to the limbs comprising: a bar extended rearwardly from the riser toward the cable means, connector means attaching the bar to the riser, an elongated cable guard means mounted on top of said bar and extended rearwardly from the bar and cable means, first means for connecting the cable guard means to the bar, slide means engageable with the cable guard means for movement along the



length of the cable guard means, said slide means having means for accommodating portions of the cable means to locate said portions of the cable means laterally of the bow string, arrow rest means located adjacent said bar for positioning an arrow relative to the bow string, and second means connecting the arrow rest means to said bar.

5,331,942
FUEL SUPPORT GRILL RACK
Ross McDonald, Leabrook; Alan Royce, Adelaide, both of Australia, and James C. Stephen, Arlington Heights, Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Aug. 14, 1992, Ser. No. 930,067
Int. Cl.[5] A47J *37/00;* **F24B** *3/00*
U.S. Cl. 126—25 R **8 Claims**



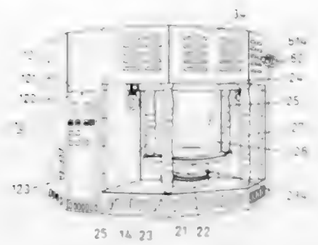
1. A fuel support element for use with a barbecue grill comprising:
a substantially horizontal first surface;
a first trough having at least two walls angularly depending downwardly from said first surface and positioned below said first surface; and,
a second trough parallel to said first trough, said second trough including at least two walls angularly depending downwardly from said first surface so as to form a generally V-shaped configuration, said first and second troughs being spaced apart with a substantially horizontal intermediate surface being disposed between said troughs.

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5,331,943
WOOD PELLET STOVE

Wen-Hsiung Ko, 9, Lane 339, Pei-Yang Road, Fong-Yuan, Taichung Hsien, Taiwan

Filed Mar. 17, 1993, Ser. No. 32,253
Int. Cl.[5] F24B *13/04*
U.S. Cl. 126—73 **15 Claims**



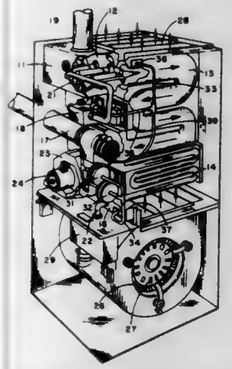
1. A wood pellet stove comprising:
a body having:
a bottom sheet;
a left sheet mounted on the left side of said bottom sheet and having a plurality of holes for ventilation;
a right sheet mounted on the right side of said bottom sheet;
a rear sheet mounted on the rear edge of said bottom sheet, left sheet and right sheet, and
a top sheet mounted on the top edges of said left sheet and right sheet;
a burning means having:
a seat member mounted on said bottom sheet, said seat member having a horizontal plate with a mounting hole and a box engaged under said mounting hole, and a vertical plate engaged to said horizontal plate;
a container having a pot portion with a plurality of holes, a horizontal circle portion extending outward from a top edge of said pot portion, a vertical tub portion extending downward from an outer edge of said horizontal circle portion and engaged in said mounting hole of said seat member and two handles respectively secured on the two opposite sides of said vertical tub portion;
a bottom member having a reverse truncated-cone portion having a fuel inlet hole and an ignition hole, a cap covering said ignition hole, a mounting portion extending downward from a bottom edge of said truncated-cone portion engaged to said container, a bottom plate portion extending outward from a top edge of said truncated-cone portion, a bottom flange portion extending upward from an outer edge of said bottom plate portion, and a pivoting cap covering said fuel inlet hole fixed above said fuel inlet hole;
a top member having a top plate portion having a hole and a top flange portion extending from an outer edge of said top plate portion;
two first pillars respectively having a first end engaged to said bottom plate portion and a second end engaged to said top plate portion;
a tub made from heat-resistant and transparent glass material having a bottom end engaged to a top surface of said bottom plate portion and a top end engaged under said hole of said top member;
a first fire-resistant cotton rope wrapped around an outer surface of said bottom end of said tub;
a second fire-resistant cotton rope wrapped around an outer surface of said top end of said tub; and
an air inlet pipe having an end spaced from said vertical tub portion, said air inlet pipe passing through said box, said middle sheet and said rear sheet to an outside atmosphere,
a heat exchanger means having
a main member including a bottom plate having a rear edge engaged to a top edge of said middle sheet, a first rectangular hole at a center of said bottom plate, two vertical plates respectively having holes engaged around opposite ends of twelve pipes, said pipes disposed in three vertical rows of four pipes of said twelve pipes, said twelve pipes located above a right edge of said first rectangular hole, three screw holes dispose at a middle section of a right vertical plate of said two vertical plates, said three screw holes having three guide pipes threaded therein, a first front plate fixed to a front edge of said first rectangular hole, a rear plate fixed to a rear edge of said first rectangular hole, a horizontal passage member integrally formed to a middle section of said rear plate and having a half circle cross section and a opening portion disposed at a right side, and a top plate having a shape similar to said bottom plate and engaged to a top edge of said two vertical plates, said first front plate and said rear plate;
a second front plate having a middle plate portion, a left plate portion extending from the left edge of said middle plate portion, a right plate portion extending from the right edge of said middle plate portion, and a plurality of ventilation holes disposed on said middle plate portion, said left plate portion and said right plate portion;
a closing member having a middle plate portion, a left plate portion extending from a left edge of said middle plate portion, a plurality of holes for ventilation dispose on said left plate portion, and a right plate portion extending from a right edge of said middle plate portion,
a connecting member having a truncated-cone portion, a ring plate portion extending outwardly from the outer edge of an first end of said truncated-cone portion;
a first induced draft device mounted on said bottom sheet and behind said middle sheet, and having a draw portion near said ventilation holes in said left sheet; and
a first guide pipe having a first end connecting to an exit portion of said first induced draft device and a second end engaged to a second end of said truncated cone-portion:
a waste gas exhaust means having.
a second induced draft device mounted on said bottom sheet and near said right sheet;
a second guide pipe having a first end passing through said closing member and connected to said opening portion of said horizontal passage member and a second end engaged to a draw portion of said second induced draft device; and
a third guide pipe having a first end passing through said rear sheet and connected to an exit portion of said second induced draft device and a second end extending to said outside atmosphere;
a feeding means having.
a feeding device including a fixing portion engaged to the back of said middle sheet, a pipe body portion penetrating said fixing portion and passing through said middle sheet and having a front end engaged to said fuel inlet, a sustain portion formed on a rear section of said pipe body portion and communicating with the middle section of an axis hole of said pipe body portion, a screw lift shaft rotatably engaged within said pipe body portion, and a driving device mounted on a back of said pipe body portion to drive said screw lift shaft; and
a container mounted under said top sheet and having a fall portion slanted toward said sustain portion, and having a receiving space for wood pellets;
a control system means for controlling the quantity of wood pellets fed into said feeding means.

5,331,944
VARIABLE SPEED INDUCER MOTOR CONTROL METHOD

Matthew Kujawa, Danville, and Kevin D. Thompson, Indianapolis, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 8, 1993, Ser. No. 89,791
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 R **6 Claims**

1. In a fixed-firing rate induced draft furnace, having a heat exchanger and an integrated control inducer motor, an improved method of controlling excess air comprising the steps of:
providing at least one pressure switch that is responsive to a preselected pressure drop level in the heat exchanger, said pressure drop level being selected so as to be commensurate with a theoretically desired excess air level under firing operating conditions;
accelerating said integrated control inducer motor until said pressure switch closes and thereupon recording a first motor speed and a first current level;

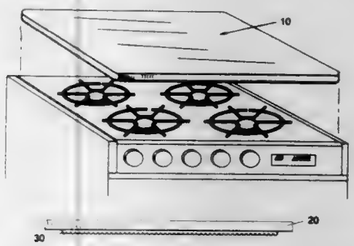


calculating a first torque value based on said first motor speed and said first current level using the equation:
TORQUE $1 = K1 * [AMP * RPM1/RPM (act.)] + K2$
where: K1 and K_2 are inducer wheel constants;
RPM1 is the inducer motor speed when a low pressure switch makes;
AMP1 is a current measurement when the low pressure switch makes; and RPM (act) is a most recently measured RPM; and
maintaining a constant CFM by controlling the torque applied to said integrated control inducer motor in accordance with said first torque value.

5,331,945
COMBINATION STOVE TOP COVER AND CUTTING BOARD FOR RECREATIONAL VEHICLES

Michael G. Somerton, Goodlettsville, Tenn., assignor to Camco Manufacturing, Inc., Greensboro, N.C.

Filed Feb. 5, 1993, Ser. No. 14,403
Int. Cl.[5] F24C *15/10*
U.S. Cl. 126—211 **15 Claims**

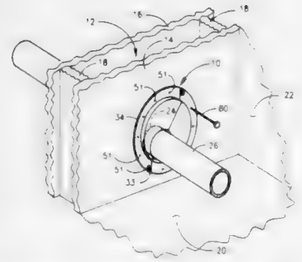


1. A stove top cover in combination with a stove designed to conceal and silence the stove top burners in recreational vehicles, the combination comprising:
(a) a stove top cover, said stove top cover comprising a generally rectangular platform having planar top and bottom surfaces
(b) a high-friction backing affixed to substantially all of said bottom surface of said platform such that said high-friction material is sandwiched between said platform and said stove top burners when said platform is in place on top of said stove so that said high-friction backing extends uninterrupted and in a contiguous manner among said stove top burners.

5,331,946
APPARATUS AND METHOD FOR SEALING AN OPENING IN A FIRE PARTITION THROUGH WHICH A COMBUSTIBLE CONDUIT EXTENDS

Khashayar Yamini, 725 Montroyal Boulevard, North Vancouver, British Columbia V7R 2G4 ; Paul R. Bailey, 9020 Dixon Ave., Richmond, British Columbia, Canada V6Y 1E4 ; Al Redl, 1403 - 730 Spadina Crescent, Saskatoon, Saskatchewan, Canada S7K 4H7 , and Edwin J. R. Bailey, Scott Point, Wakaw, Sasakatchewan, Canada S0K 4P0

Filed Oct. 2, 1992, Ser. No. 955,194
Int. Cl.[5] F23J *13/00;* **E04H** *9/00;* **E04B** *1/94*
U.S. Cl. 126—314 **19 Claims**



1. An apparatus for sealing a conduit opening or the like in a fire partition wherein an existing combustible conduit extends through the conduit opening, the apparatus including:
a) a first non-combustible enclosure capable of being fastened to the fire partition on one side of the conduit opening, and having a first recess therein;
b) a second non-combustible enclosure capable of being fastened to the fire partition on a side of said conduit opening opposite said one side, the second non-combustible enclosure having a second recess therein, the first and second enclosures lying in a common plane and being pivotally connected together such that the first and second enclosures can be spread apart for installation over said existing conduit and closed together such that a recess-formed opening is defined about the conduit by the first and second recesses;
c) first and second shutter doors slidable in the first and second enclosures respectively, the first and second shutter doors being slidable between a first, open position in which the recess-formed opening is unobstructed by the shutter doors and a second, closed position in which the recess-formed opening is obstructed by the shutter doors;
d) urging means for urging the first and second shutter doors into the closed position when the combustible conduit is burned away due to fire.

5,331,947
INFLATABLE SHEATH FOR INTRODUCTION OF ULTRASONIC CATHETER THROUGH THE LUMEN OF A FIBER OPTIC ENDOSCOPE

Leonid Shturman, Minneapolis, Minn., assignor to Shturman Cardiology Systems, Inc., Minnetonka, Minn.

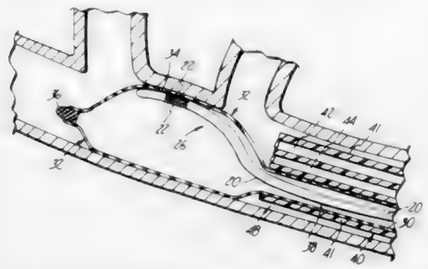
Filed May 1, 1992, Ser. No. 877,692
Int. Cl.[5] A61B *1/00*
U.S. Cl. 126—4 **17 Claims**

1. An ultrasound imaging apparatus for use with an endo-

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scope for imaging a bodily passageway or cavity area of interest, the endoscope being of the type having proximal and distal ends and an open lumen therein, the ultrasound imaging apparatus comprising an elongated ultrasound transducer-bearing catheter or guide wire adapted to be disposed within the open lumen of the endoscope, the ultrasound catheter or guide wire having proximal and distal ends, wherein the improvement comprises

an inflatable, substantially readily distensible, distally closed sheath being of a sufficient length to cover substantially the entire length of the ultrasound catheter or guide wire, the sheath being adapted to be advanced through the open lumen of the endoscope so that a distal end portion of the sheath may be positioned distally of the endoscope;



the ultrasound catheter or guide wire being adapted to be disposed within the sheath so that the ultrasound transducer is disposed in the sheath's distal end portion positioned distally of the endoscope; and

means for selectively inflating the sheath to expand it against the open lumen of the endoscope and to form an expanded, substantially readily distensible balloon distally of the endoscope to engage a wall of the bodily passageway or cavity area of interest;

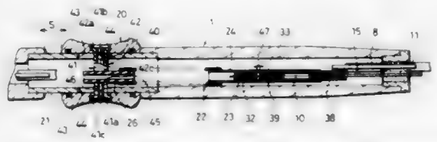
whereby an ultrasound image of the area of interest may be obtained through the sheath in its inflated, distended condition.

5,331,948

TIP ARTICULATION MECHANISM FOR ENDOSCOPES

Atsushi Utsumi, and Masahiro Miura, both of Itami, Japan, assignors to Mitsubishi Cable Industries, Ltd., Amagasaki, Japan

Filed Dec. 7, 1992, Ser. No. 985,658
Claims priority, application Japan, Dec. 17, 1991, 3-353604
Int. Cl.[5] H01B *1/00*
U.S. Cl. 128—4 **12 Claims**



5. A tip articulation mechanism for endoscopes, comprising:

a grip section located at a base end portion of an endoscope having an engaging protruding portion with which a base end side holding portion of a pulling wire is engaged as a result of a movement of an articulation controlling section towards the base end side of said controlling section to draw the pulling wire in the direction of the base end side of said wire; and

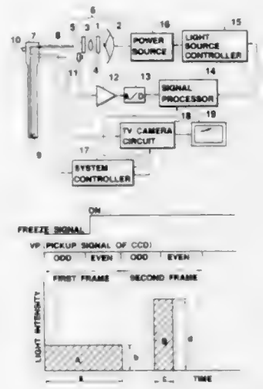
an overload preventing spring having first and second axial end portions, said first axial end portion being connected to said engaging protruding portion and said second axial end portion being connected to the articulation controlling section, wherein a spacing is provided between the base end side holding portion of the pulling wire and the engaging protruding portion in a free state of said wire.

5,331,949

ENDOSCOPE HAVING ILLUMINANCE RATIO ADJUSTING DEVICE BETWEEN MOVING AND STILL PICTURE IMAGES

Toshio Funakoshi, and Katsuya Kikuchi, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 409,661, Sep. 20, 1989, abandoned. This application Jul. 8, 1991, Ser. No. 728,055
Claims priority, application Japan, Sep. 20, 1988, 63-233439
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—6 **13 Claims**



1. An endoscope having a scope in which moving and still image pickup operations are alternatively carried out, comprising:

light source means for selectively emitting a continuous light and a pulsed light in moving and still pickup operations;

brightness detecting means for detecting brightness of both the continuous light and the pulsed light to obtain brightness signals of both the continuous light and the pulsed light;

brightness signal processing means for processing both of said continuous light brightness signal and said pulsed light brightness signal to obtain a light control signal; and

light source controlling means for controlling the luminous energy of said light source means by varying a current of a light valve employed in said light source means in response to said light control signal in order to substantially equalize the brightness of the moving image with the brightness of the still image.

5,331,950

VIDEO LAPAROSCOPE WITH HIGH-ILLUMINANCE LOW-WATTAGE LIGHT SOURCE

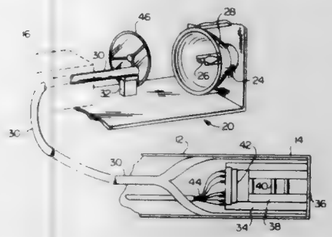
Robert J. Wood, Sr., Syracuse, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Oct. 22, 1991, Ser. No. 780,762
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—6 **5 Claims**

1. A video laparoscope which comprises an elongated insertion tube which includes a lens assembly for focussing light which enters a distal end of said insertion tube onto a miniature video imager which produces an image signal that represents a target located distally of the insertion tube, a video processor unit coupled to said insertion tube for processing said image signal and providing a video signal to a video monitor which

reproduces an image of said target, and a light source providing illumination which is carried by a fiber optic bundle from said light source and through said insertion tube to its distal end from which the illumination is incident on said target, wherein said fiber optic bundle has a very small predetermined diameter;

wherein said light source includes a low-wattage metal halide discharge lamp with a power of about 20 to 50 watts and a small arc gap, which serves as a point source



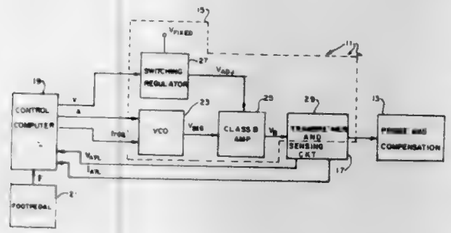
that produces white light comprised of red, green and blue wavelengths but does not produce appreciable amounts of infrared radiation, and ellipsoidal focussing reflector means for focusing the light produced by the lamp onto a small focal spot of a diameter of 0.1 inches or less at which a proximal end of the fiber optic bundle is disposed, the small spot matching the diameter of the fiber bundle so that substantially all of the light energy produced by the lamp and reflected from the reflector means is directed into the proximal end of the fiber bundle.

5,331,951

PHACOEMULSIFICATION PROBE DRIVE CIRCUIT

Kevin P. Kepley, Dellwood, Mo., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 4, 1992, Ser. No. 940,980
Int. Cl.[5] A61B *8/10*
U.S. Cl. 601—4 **10 Claims**



1. A phacoemulsification probe system comprising:

an ultrasonic handpiece having a distal end of a size suitable for insertion into a patient's eye for emulsifying cataracts, said handpiece including a transducer for converting electrical power to ultrasonic power for application to the patient;

drive circuit means for supplying electrical power to the ultrasonic handpiece transducer;

means for sensing the electrical power supplied by the drive circuit means to the ultrasonic handpiece transducer and for supplying electrical signals indicative of the magnitude of said electrical power supplied by the drive circuit means;

manually operable input means for providing a signal indicative of a transducer power level desired by the user of the phacoemulsification probe system; and

control circuit means responsive to the signal indicative of the desired transducer power level and to the signals indicative of the magnitude of the supplied electrical power for providing control signals to the drive circuit means to control the power applied and to control the efficiency of the application of power;

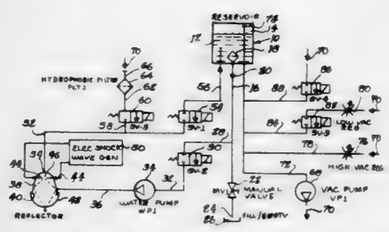
said drive circuit means including amplifier means responsive to at least one of the control signals to apply power at the desired level, and regulator means for supplying a supply voltage to the amplifier means, said regulator means being responsive to a second control signal from the control circuit means to vary the magnitude of the supply voltage supplied by the regulator means to the amplifier means to substantially minimize the amplifier's power consumption.

5,331,952

WATER SYSTEM FOR LITHOTRIPTER

A. Glen Brisson, Kildeer; Exequiel D. Cruz, Arlington Heights, and Dianne L. Vickers, Cary, all of Ill., assignors to Bantum Tripter Joint Venture Partners, Columbus, Ohio

Filed Mar. 23, 1992, Ser. No. 856,352
Int. Cl.[5] A61B *17/22*
U.S. Cl. 601—3 **10 Claims**



1. A water system for a lithotripter comprising a reflector aimed downwardly and having an open lower end and said reflector having a focus point and means in said reflector for generating a shock wave at said focus point, a rubber diaphragm spanning said reflector open lower end, a water reservoir, means for transporting water from said reservoir to said reflector and back to said reservoir and means for maintaining pressure below ambient air pressure in said reflector, said reservoir and said transporting means to control downward ballooning of said diaphragm.

5,331,953

DEVICE IN CONNECTION WITH AN INHALER

Jan A. R. Andersson, S. Sandby; Nils G. Nilsson, Lund; Per-Olof S. Fagerström, Bjärred, and Thomas M. Wendel, Genarp, all of Sweden, assignors to Aktiebolaget Draco, Sweden

PCT No. PCT/SE90/00137, § 371 Date Jan. 7, 1991, § 102(e) Date Jan. 7, 1991, PCT Pub. No. WO90/10470, PCT Pub. Date Sep. 20, 1990
Continuation of Ser. No. 603,686, Jan. 7, 1991. This PCT application Mar. 2, 1990, Ser. No. 88,628
Claims priority, application Sweden, Mar. 7, 1989, 8900793-4
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.14 **11 Claims**

1. A portable inhaler device including medication storage means and including a passage through which inhalation air flows, said device having dispensing means for dispensing medication into said passage, said device comprising:

a single detector means disposed in said passage for detecting air flow as well as the availability of medication dispensed into said passage for inhalation and for generating electrical signals responsive thereto; and

electronic means disposed in said device for recording the inhalation of medication responsive to predetermined

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values of said signals indicating adequate inhalation of medication in a prescribed manner to permit periodic determination of whether a prescribed dosage of medicine has been effected.



5,331,954

DEVICE FOR NASAL DELIVERY OF LIQUID MEDICATIONS

Jorn Rex, Roskilde; Kim Steengaard, Hvidovre, and Svend Elk, Birkeroed, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 793,412, Jan. 13, 1992, abandoned. This application Apr. 27, 1993, Ser. No. 54,913

Claims priority, application Denmark, Dec. 21, 1990, 3028/90

Int. Cl.[5] **A61M** *15/08, 11/00, 5/00;* **A62B** *7/00*

U.S. Cl. 128—200.22 **16 Claims**



1. A device for nasal administration of a number of measured doses of a liquid, medicine, especially insulin, comprising a first and a second housing element and means coupling said housing elements together to allow rotation but no axial displacement of the first housing element (**1**) with respect to the second housing element (**2**), said first housing element (**1**) comprising a cartridge containing liquid medicine and being sealed by a piston (**21**) at a first end coupled to the second housing element (**2**) and being at its other end closed by a valve (**7,9**) to communicate the liquid medicine in the cartridge with a spray nozzle (**12**) upon opening of said valve characterized in that the device further comprises a threaded piston rod (**22**) engaging the piston (**21**) of the cartridge irrotational with respect to the first housing element (**1**) and disposed in the second housing element (**2**) to move axially therein, a nut element (**27**) mounted irrotational but axially displaceably in the second housing element (**2**) and engaging the thread of the piston rod (**22**), a helical spring (**32**) abutting at one end an internal annular abutment on the second housing element (**2**) and at its other end a shoulder on the nut element (**27**) to press the nut element and thereby the piston rod (**22**) and the piston (**21**) in the direction towards an outlet end of the cartridge to set the liquid medicine therein under pressure, means for spraying out a dose of the liquid medicine under pressure upon opening said valve, the housing elements (**1,2**), the piston rod (**22**), and the nut element (**27**) cooperating so that relative rotation between the housing elements (**1,2**) in a selected direction causes relative rotation between the rod (**22**) and the nut element, making the nut element move axially in the second housing element (**2**) in a direction to compress the helical spring (**32**).

5,331,955

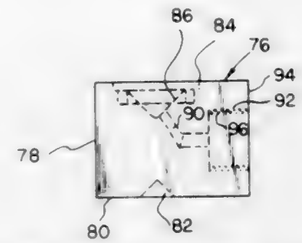
AIR TANK ADAPTER FOR CONVERTING A SELF-CONTAINED BREATHING APPARATUS TO A SELF-CONTAINED UNDERWATER BREATHING APPARATUS

Albert L. Lewis, RD#3, Box 6741, Barre, Vt. 05641

Filed Feb. 5, 1992, Ser. No. 831,166

Int. Cl.[5] **A61M** *15/00*

U.S. Cl. 128—200.24 **4 Claims**



1. A new and improved air tank adaptor for allowing a self-contained air breathing apparatus (SCBA) air tank to be used as a self-contained underwater breathing apparatus (SCUBA) air tank, said air tank adaptor comprising:

a yoke adapter to which a conventional first stage SCUBA air pressure regulator may be attached to receive air from a conventional SCBA air tank;

said yoke adapter comprising a block member having at least first, second and third sides;

said first side of said block member having a first conical indent;

said second side of said block member having a threaded receptacle;

said third side of said block member having a second conical indent larger than said first conical indent whereby said conventional first stage SCUBA air pressure regulator may be attached to said first and second conical indents of said block member;

a conduit in said block member extending between said second conical indent in said second side of said block member and said threaded receptacle in said second side of said block member; and

coupling means attachable to said block member between said threaded receptacle and the outlet of said conventional SCBA air tank.

5,331,956

AIRLINE SEAT SAFETY BLANKET

Mickey M. Bailey, P.O. Box 1641, Paradise, Calif. 95967

Filed May 28, 1992, Ser. No. 889,270

Int. Cl.[5] **A61M** *15/00;* **A62C** *8/00;* **A47C** *27/00*

U.S. Cl. 128—202.13 **2 Claims**



1. An airline seat safety blanket, comprising,

a seat member, the seat member having a seat back, with the seat back including a seat back upper end portion, with a door flap pivotally mounted to the upper end portion, and

a storage cavity mounted within the upper end portion below the door flap, and

a flexible blanket formed of flame retardant material positioned within the storage cavity in a furled configuration in a first position arranged for extension to a second position overlying the seat extending from the storage cavity, the blanket having a first end spaced from a second end, the storage cavity including an entrance opening receiving the door flap, with the first end secured within the cavity adjacent the entrance, and

the blanket second end including a plurality of handles, and

the door flap includes a first fastener, and the storage cavity includes a second fastener cooperative with the first fastener, with the second fastener positioned at the entrance of the storage cavity, and

the blanket includes a mouthpiece, the mouthpiece including a tether line, the tether line having a tether line first end secured to the mouthpiece, the tether line second end secured to the blanket adjacent to and spaced from the blanket second end.

5,331,957

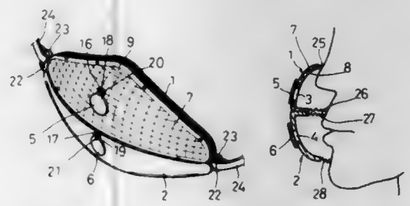
RESPIRATOR FOR ONLY FILTERING AIR INHALED

Chin-Chia Liu, 4 Fl., No. 23, Alley 8, Lane 57, Yu-Ch'i St., Yung-Ho City, Taipei Hsien, Taiwan

Filed Feb. 5, 1993, Ser. No. 14,355

Int. Cl.[5] **A62B** *7/10, 18/08, 23/02, 19/00*

U.S. Cl. 128—206.15 **4 Claims**



1. A respirator for only filtering air inhaled comprising a nose-cover portion and a mouth-cover portion, each of said portions having a lug at each side, a strap, said strap passing through each of said lugs to fasten said portions together to form a single mask; both said nose-cover portion and said mouth-cover portion having identical exhausting holes, and each said exhausting hole having a valve flap which serves as a check valve to prevent inhalation through the exhausting hole; said mouth-cover portion being made of an airtight material; said nose-cover portion including an upper and lower layer of plastic net; said upper layer of plastic net being liftable to facilitate the clamping of a filter, such as gauze, between said two layers so as to filter air inhaled through the nose.

5,331,958

SPECTROPHOTOMETRIC BLOOD ANALYSIS

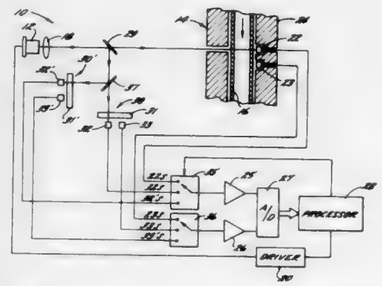
Luis Oppenheimer, Winnipeg, Canada, assignor to University of Manitoba, Winnipeg, Canada

Filed Mar. 25, 1993, Ser. No. 39,583

Claims priority, application United Kingdom, Mar. 31, 1992, 9206954; Mar. 31, 1992, 9206967; Mar. 31, 1992, 9206970

Int. Cl.[5] **A61B** *5/00*

U.S. Cl. 128—633 **21 Claims**



1. A method for optically determining blood parameters, said method comprising directing a light beam into a patient's blood, detecting and measuring the light emerging from the blood, and compensating for any change in light beam geometry induced by any change in blood electrolyte composition.

5,331,959

LOW IMPEDANCE, LOW DUROMETER, DRY CONFORMING CONTACT MEMBER

Mir A. Imran, Palo Alto, Calif., assignor to Physiometrix, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 582,749, Sep. 14, 1990, Pat. No. 5,211,174. This application Aug. 16, 1991, Ser. No. 745,863

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] **A61B** *5/04;* **A61N** *1/05*

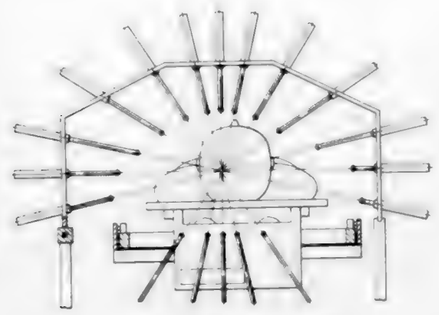
U.S. Cl. 128—639 **10 Claims**



1. A contact member comprised of a non-drying mass of nonconductive material having a low durometer and conductive elements dispersed in the mass of material in sufficient quantity to establish contact between the elements to provide a resistivity of less than 100 ohm-cm, said conductive elements having a length ranging from 100 to 200 microns and a diameter ranging from 5 to 20 microns and comprising more than 30% by weight of the contact member.

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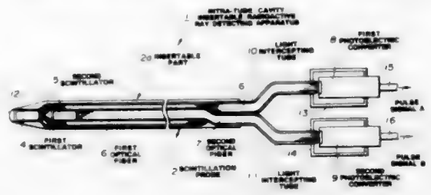
5,331,960
EVALUATION METHOD FOR EKG MAPPING
Gerhard Krenzke, Berlin, Fed. Rep. of Germany, assignor to Fehlikng Medical AG, Karlstein, Fed. Rep. of Germany
Filed Dec. 4, 1992, Ser. No. 984,121
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—644 **3 Claims**



1. A method for EKG mapping comprising:
(a) measuring, by a plurality of electrodes m at the thorax of a patient at known distances from the center of the heart of the patient, voltages produced by the heart,
(b) calculating, from the measured voltages and the distances from the electrodes to the electrical center of the heart, voltages projected onto the surface of a sphere, the center of which coincides with the electrical center of the heart;
(c) correcting the projected voltages with a correction factor including factors for influence of the conductivity inhomogeneity of medium surrounding the heart and change in location of the electrical center of the heart to obtain corrected voltages;
(d) converting the corrected voltages into parameters, the values of which are assumed to be constant over the surface of the sphere, assuming a dipole field;
(e) calculating the mean value of said parameters;
(f) calculating differences between the parameters and the mean value of said parameters over the spherical surface; and
(g) plotting said differences as isointensity lines on a sphere.

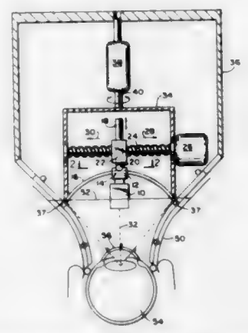
5,331,961
SCINTILLATION PROBE AND INTRA-TUBE CAVITY INSERTABLE RADIOACTIVE RAY DETECTING APPARATUS
Makoto Inaba, Hino; Masakazu Gotanda, Kanagawa; Hiromu Takahashi, Sendai; Takashi Nakamura, Sendai; Masatoshi Itoh, Sendai; Masaki Matsumoto, Sendai, and Hiroshi Watabe, Sendai, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 19, 1992, Ser. No. 853,622
Claims priority, application Japan, Jul. 3, 1991, 3-163123
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—659 **23 Claims**

1. A scintillation probe insertable into a tube cavity of a living body, comprising:
an insertable portion extending in a longitudinal direction, said insertable portion having a tip portion;
a plurality of scintillators disposed in said tip portion, shielded from external light, and positioned adjacent to each other, each of said plurality of scintillators individually emitting light in response to a detection of radioactive rays;
a plurality of light transmitting means respectively connected to carry light emitted by each of said plurality of scintillators; and
a plurality of photoelectric converting means receiving respectively the light carried by said plurality of light transmitting means, for converting the light to electric



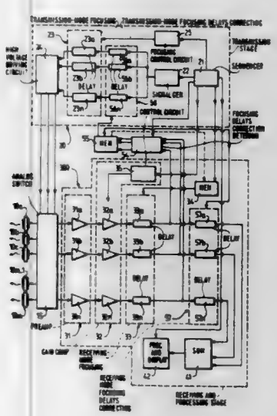
signals; and an analyzer means connected to an output of the photoelectric converting means to count the radiation emitted from the vicinity of the tip portion of the probe.

5,331,962
ULTRASOUND SYSTEM FOR CORNEAL BIOMETRY
Donald J. Coleman, Haworth, N.J., and Ronald H. Silverman, Brooklyn, N.Y., assignors to Cornell Research Foundation Inc., Ithaca, N.Y.
Filed Apr. 16, 1993, Ser. No. 48,786
Int. Cl.[5] A61B *8/10*
U.S. Cl. 128—660.09 **6 Claims**



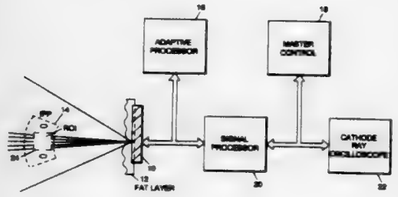
1. An ultrasonic biometer for imaging a structure of a cornea, said biometer comprising:
means for establishing a liquid bath in contact with a surface of said cornea;
curved track means having a path that approximates a surface curvature of said cornea;
ultrasonic transducer means having a central axis;
connector means for movably mounting said ultrasonic transducer means on and for movement along said curved track means so as to position said transducer means in communication with said liquid bath, said connector means operative, upon movement of said ultrasonic transducer means along said curved track means, to maintain said central axis of said ultrasonic transducer means perpendicular to tangents to said curved track means at a plurality of locations along said curved track means; and
means for causing said connector means to move along said curved track means so as to enable an ultrasonic signal transmitted by said ultrasonic transducer means to interrogate areas of said cornea.

5,331,963
APPARATUS FOR EXAMINING OBJECTS BY ULTRASONIC ECHOGRAPHY
Raoul Mallart, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 29, 1992, Ser. No. 906,084
Claims priority, application France, Jun. 28, 1991, 91 08061
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.01 **5 Claims**



1. Apparatus for examining objects by ultrasonic echography, comprising an array of m ultrasonic transducer elements, where m is a positive integer, a transmission stage, having n transmission channels, where n is a positive integer less than or equal to m, associated with n transducer elements, among said m elements, defining an ultrasonic aperture, said transmission stage together with said array of transducer elements being means for transmission of ultrasonic signals to the object to be examined, a receiving and processing stage, having n receiving channels associated with said n transducer elements, said receiving and processing stage together with said array of transducer element being means for receiving and processing echographic signals returned to said n transducer elements by the object being examined, said transmission stage comprising transmission-mode means for focusing by the provision of suitable delays in said n transmission channels and said receiving and processing stage comprising receiving-mode means for focusing by the provision of suitable delays in said n receiving channels, the receiving and processing stage further comprising:
associated with said n receiving channels, means for determining (n−1) correction values for the focusing delays; and
means for correcting said focusing delays as a function of the (n−1) correction values thus determined;
wherein said determining means comprises, in parallel, (n−1) correction circuits each correction circuit being coupled for receiving two focused echographic signals from a different pair of outputs, in i^{th} and $(i+1)^{th}$ adjoining channels, where i is a positive integer less than n, of the receiving-mode focusing means and each of said correction circuits being means for determining an ith of said (n−1) correction values, each correction circuit comprising:
means for generating a time window signal defining a time window during with the ith correction value is determined; and
means for determining, during said time window, a phase shift between the two focused echographic signals received by said correction circuit, said phase shift constituting the ith correction value or being directly related to it, said determining means not including any correlators.

5,331,964
ULTRASONIC PHASED ARRAY IMAGING SYSTEM WITH HIGH SPEED ADAPTIVE PROCESSING USING SELECTED ELEMENTS
Gregg E. Trahey, Hillsborough, N.C.; Paul D. Freiburger, Dubuque, Iowa; Stephen W. Smith, Durham, N.C., and Stewart S. Worrell, Lexington, Va., assignors to Duke University, Durham, N.C.
Filed May 14, 1993, Ser. No. 62,060
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.01 **25 Claims**



1. A method of ultrasonic imaging utilizing an ultrasonic transducer array having a plurality of transducer elements, said method comprising the steps of:
(a) receiving a first set of phased array echo data corresponding to a region of interest in the scan from said ultrasonic transducer array wherein each member of said set of phased array echo data corresponds to one of said plurality of transducer elements;
(b) calculating an optimal phase aberration correction for all elements of said transducer array from phased array echo data from a preselected subset of said transducer array elements specific to each of all said elements; and
(c) correcting a subsequent set of phased array scan control data for said ultrasonic transducer array with said optimal phase aberration correction.

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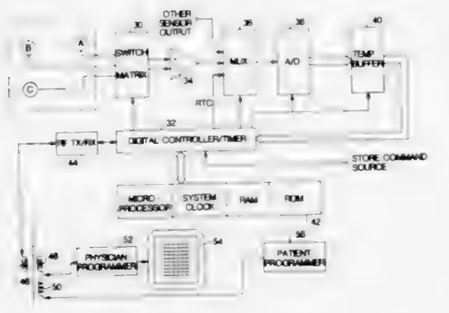
SUBCUTANEOUS MULTI-ELECTRODE SENSING SYSTEM, METHOD AND PACER

Tom D. Bennett, Shoreview; William J. Combs, Eden Prairie; Kallok, Michael J., New Brighton; Brian B. Lee, Golden Valley; Rahul Mehra, Stillwater, all of Minn., and George J. Klein, London, Canada, assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 70,008, May 28, 1993, abandoned, which is a continuation of Ser. No. 681,235, Apr. 5, 1991, abandoned. This application Dec. 16, 1993, Ser. No. 168,725

Int. Cl.[5] A61B *5/0428*

U.S. Cl. 128—696 **29 Claims**



1. An apparatus for monitoring cardiac signals, comprising:

a hermetically sealed housing;

first and second pairs of electrodes mounted to said housing;

sensing means, located within said housing, for sensing cardiac signals;

command means, located outside said housing, for providing command signals indicative of which of said first and second electrode pairs are to be coupled to said sensing means;

selecting means, located within said housing and responsive to said command signals, for selectively coupling said first and second electrode pairs to said sensing means;

processing means, located within said housing, for processing and converting said sensed cardiac signals into data signals; and

means for storing said data signals

5,331,967

TRACHEAL INTUBATION MONITORING APPARATUS AND METHOD

Steve H. Akerson, Puntarenas, Costa Rica, assignor to Playa de los Vivos S.A., Costa Rica

Filed Feb. 5, 1993, Ser. No. 15,405

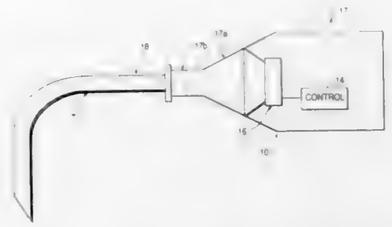
Int. Cl.[5] A61B *5/08*

U.S. Cl. 128—716 **8 Claims**

1. A monitoring apparatus comprising: a tube and means for determining a position of the tube in a patient having;

signal generator means for generating a plurality of signals, each signal having a predetermined frequency, wherein said signal generator means is operatively connected to said tube so that said plurality of signals are propagated into said tube;

signal amplitude determining means for individually determining a signal amplitude for each of said plurality of signals;



resonant frequency determining means responsive to said signal amplitude determining means for determining a resonant frequency of said tube;

first memory means for storing the determined resonant frequency; and

second memory means for storing a signal amplitude associated with said resonant frequency.

5,331,968

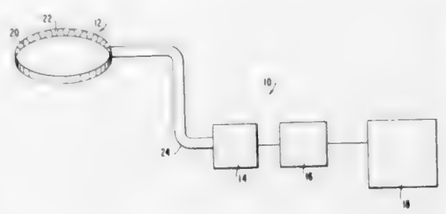
INDUCTIVE PLETHYSMOGRAPHIC TRANSDUCERS AND ELECTRONIC CIRCUITRY THEREFOR

Gerald Williams, 485 Ridgewood Rd., Key Biscayne, Fla. 33149; Herman Watson, 105 11 S.W. 12 Ct., Miami, Fla. 33186; Marvin A. Sackner, 300 Rivo Alto Dr., Miami Beach, Fla. 33139; Chu Pak, 6525 Chapman Field Dr., Miami, Fla. 33156, and James W. Chong, 10650 S.W. 69th Ave., Miami, Fla. 33156

Continuation of Ser. No. 601,168, Oct. 19, 1990, abandoned. This application Mar. 10, 1993, Ser. No. 32,835

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—721 **31 Claims**



1. In an apparatus comprising at least one inductive plethysmograph for disposition about a subject and incorporating a conductor, said conductor comprising the inductance component of an LC oscillator circuit, said conductor being electrically connected to said oscillator circuit through an impedance matching transformer with a secondary winding of the transformer being electrically connected to said conductor and a primary winding thereof being electrically connected to said oscillator circuit, the improvement comprising:

said conductor being electrically connected to said transformer via a connecting cable, said connecting cable being sufficiently long that said oscillator circuit and said transformer are disposed sufficiently remote from said plethysmograph to prevent said oscillator circuit and said transformer from contact with said plethysmograph or said subject when said subject is lying on said connecting cable; and

said transformer primary winding having an inductance greater than about ten times the reflected inductance of said conductor and said cable, whereby attenuation of changes in the inductance of said conductor and connecting cable is reduced.

5,331,969

EQUIPMENT FOR TESTING OR MEASURING BRAIN ACTIVITY

Richard B. Silberstein, Victoria, Australia, assignor to Swinburne Limited, Victoria, Australia

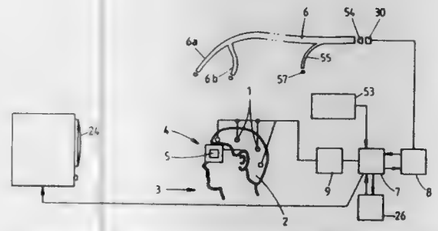
Continuation-in-part of Ser. No. 35,610, Mar. 30, 1987, Pat. No. 4,955,388. This application Aug. 2, 1990, Ser. No. 561,976

Claims priority, application Australia, Dec. 22, 1989, PJ8006/89; Jun. 26, 1990, PK0824/90

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—731 **45 Claims**



1. Apparatus for assessing electrical activity of a brain of a subject comprising:

first stimulus means for generating and applying a repetitive stimulus to the brain;

second stimulus means for generating and applying to the brain a time varying stimulus relating to a cognitive task; and

detection means for distinguishing and detecting a steady state response of the brain to said first stimulus, and for detecting a change or changes in said response during a data acquisition period when the repetitive stimulus and a time varying cognitive task stimulus are simultaneously applied to the brain of the subject, wherein the detection means can detect time variations in brain activity of the subject which occur during the data acquisition period.

5,331,970

EEG SPATIAL ENHANCEMENT METHOD AND SYSTEM

Alan S. Gevins, San Francisco, and Jian Le, Daly City, both of Calif., assignors to SAM Technology, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 578,880, Sep. 7, 1990, Pat. No. 5,119,816. This application Apr. 14, 1992, Ser. No. 868,724

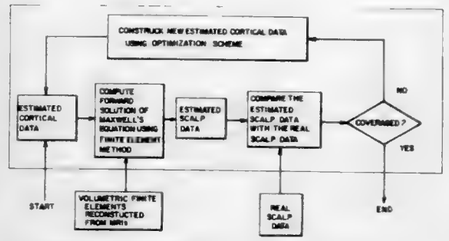
Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—731 **13 Claims**

1. The method of obtaining and analyzing data recorded from a plurality of electroencephalograph (EGG) electrodes removably and electrically connected to the scalp of a subject, including the steps of:

(a) amplifying brain waves detected at the electrodes, converting the amplified brain waves into digital data and entering the data into computer system means to analyze the data;

(b) measuring a thickness of the skull of the subject, the thickness of the scalp of the subject and the head shape of the subject;



(c) measuring physical locations of the electrodes on the scalp of the subject;

(d) estimating an electrical conductivity of the skull, scalp and cerebral spinal fluid of the subject; and

(e) entering measurements derived from (b), the electrode locations derived from (c) and the conductivity estimate derived from (d) into the computer system means to analyze the entered brain wave data.

5,331,971

ENDOSCOPIC SURGICAL INSTRUMENTS

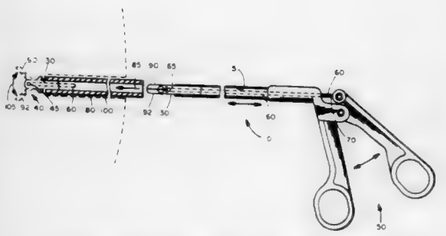
Thomas O. Bales; John W. Box, both of Miami; Gregory J. Murphy, Sunrise; Frank A. Scarfone, Boca Raton; Charles R. Slater, Fort Lauderdale, and Kevin W. Smith, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 521,766, May 10, 1990, Pat. No. 5,133,727, and a continuation of Ser. No. 680,392, Apr. 4, 1991, Pat. No. 5,192,298, Ser. No. 680,391, Apr. 4, 1991, Pat. No. 5,152,778, Ser. No. 680,399, Apr. 4, 1991, Pat. No. 5,141,519, Ser. No. 682,203, Apr. 4, 1991, Pat. No. 5,133,735, Ser. No. 680,390, Apr. 4, 1991, Pat. No. 5,156,633, Ser. No. 680,389, Apr. 4, 1991, Pat. No. 5,275,612, Ser. No. 680,403, Apr. 4, 1991, Pat. No. 5,133,736, and Ser. No. 680,381, Apr. 4, 1991, Pat. No. 5,171,256. This application Jul. 28, 1992, Ser. No. 922,023

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—751 **13 Claims**



1. A surgical instrument adapted for insertion through a trocar tube, comprising:

a) an elongated tube having a longitudinal axis, proximal and distal ends and an outer surface;

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b) electrically insulating shrink wrap covering a portion of said outer surface of said tube other than said proximal end of said tube;

c) at least one end effector member of a grasping, cutting, clamping, dissecting, or extracting type, said end effector member being operatively connected to said hollow metal tube;

d) an actuating member operatively coupled to said end effector through said tube, said actuating member having a housing with a distal portion closely surrounding said covering said proximal end of said tube, wherein said outer surface of said tube is exposed intermediate said shrink wrap covered portion of said tube and said distal portion of said housing;

e) an indicating ferrule member extending over said exposed outer surface of said tube and over said distal portion of said housing, said ferrule member being of predetermined color to indicate what said type of end effector member is operatively coupled to said hollow metal tube.

5,331,972

BONE MARROW BIOPSY, ASPIRATION AND TRANSPLANT NEEDLES

Suresh Wadhwani, Valencia, and Greg Smith, Newhall, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Dec. 3, 1992, Ser. No. 984,748

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—754 **7 Claims**



1. A needle assembly, comprising:

a handle;

a cannula, said cannula having a first end connected to said handle and a second end extending outwardly from said handle; and

a removable stylet having first and second ends, said stylet extending through said cannula from said handle, and said second end of said stylet extending beyond said second end of said cannula, said second end of said stylet having a tip having first and second tip surfaces which form an obtuse angle, and first and second cutting surfaces which connect said tip surfaces, said cutting surfaces forming an acute angle.

5,331,973

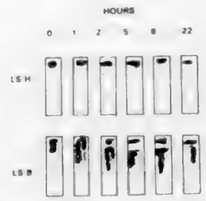
METHOD FOR OBTAINING STOOL SAMPLES FOR GASTROINTESTINAL CANCER TESTING

Paul N. Fiedler, 200 Hemlock Rd., New Haven, Conn. 06515; Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437, and Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405

Filed Mar. 15, 1993, Ser. No. 31,533

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—760 **16 Claims**



1. A method for obtaining a stool sample to test for the presence of chemical markers associated with gastrointestinal cancer comprising:

administering a laxative purge to a patient being tested for gastrointestinal cancer;

collecting a watery stool sample from the patient after administering said laxative purge; and

subjecting said collected watery stool sample to a diagnostic assay which tests for the presence of chemical markers associated with gastrointestinal cancer.

5,331,974

MULTI-PURPOSE SEXUAL DEVICE WITH DISPOSABLE CONDOM USAGE

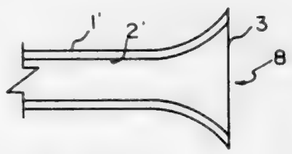
Kim H. Sook, 94-4, Maesanro 3 ga, Kwonseon-ku, Suwon-City, Kyunggi-do, Rep. of Korea

Filed Jan. 14, 1993, Ser. No. 4,593

Claims priority, application Rep. of Korea, Apr. 16, 1992, 92-6351

Int. Cl.[5] A61F *6/02, 6/04*

U.S. Cl. 128—842 **15 Claims**



1. An inflatable multipurpose sexual device which can be used as a condom, said device comprising:

an inner sheet sized and shaped to fit around a penis;

an outer sheet, at least partially surrounding and sealingly joined to said inner sheet at a sealing line, said inner and outer sheets defining an air inflation chamber, said chamber, when inflated, comprising a means for separating said inner and outer sheets except at said sealing line; and

an air inflation valve connected to said chamber for inflating said chamber.

5,331,975

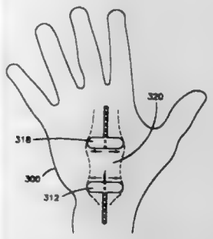
FLUID OPERATED RETRACTORS

Peter M. Bonutti, 1 Lamkin Pl., Watson, Ill. 62473

Filed Mar. 2, 1990, Ser. No. 487,645

Int. Cl.[5] A61M *29/02*

U.S. Cl. 128—898 **10 Claims**



1. A method of performing carpal tunnel surgery, comprising the steps of:

inserting a retractor to approximately the location where the carpal tunnel surgery is to be performed, the retractor including a stalk having proximal and distal end portions and an expansible bladder connected with the stalk at or near the distal end portion of the retractor stalk for expanding tissue radially outwardly;

expanding the retractor by introducing fluid under pressure to the expansible portion of the retractor to move body tissue radially outwardly at approximately the location where the carpal tunnel surgery is to be performed to facilitate performance of the carpal tunnel surgery; and

performing the carpal tunnel surgery.

5,331,976

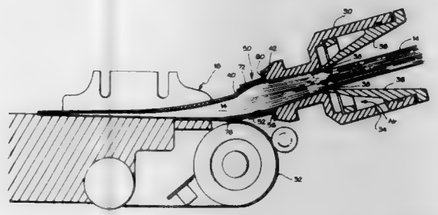
TRANSPORT JET ADAPTER

Richard E. St. Pierre, Charlotte, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 21, 1992, Ser. No. 964,237

Int. Cl.[5] A24C *5/36;* **B31C** *13/00;* **D01D** *11/02*

U.S. Cl. 131—96 **22 Claims**



1. Apparatus for forming cigarette filter rods from cigarette filter tow comprising:

(a) means for opening a cigarette filter tow;

(b) a source of pressurized transport gas;

(c) a pneumatic transport jet having a first open end operatively connected to said tow opening means for receiving opened tow, a second open end, and a passageway therebetween connected to said source of transport gas;

(d) a cigarette filter rodmaker having a garniture for forming cigarette filter rods, a garniture tongue for compressing an opened cigarette filter tow, and a garniture tongue intake for receiving the filter tow; and

(e) means for operatively interconnecting said second open end of said transport jet and said garniture tongue intake, said means having:

(i) a first open end substantially coextensive and communicating with said second open end of said transport jet;

(ii) a second open end communicating with said garniture tongue intake;

(iii) an annular wall defining a passageway between said first and second open ends and having a multiplicity of radial apertures therein for the passage of transport gas radially outwardly therethrough; and

(iv) a flange-like collar including an integral fixed sleeve adjacent said first end of said means and integral with said annular wall, said collar and fixed sleeve mounting said means on the transport jet at the second end thereof.

5,331,977

DISTRIBUTOR FOR CIGARETTE MANUFACTURING MACHINE

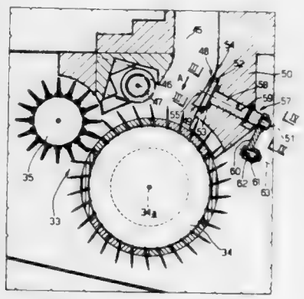
Fiorenzo Draghetti, Medicina, Italy, assignor to G. D. Societa' Per Azioni, Bologna, Italy

Filed Jan. 15, 1993, Ser. No. 5,224

Claims priority, application Italy, Jan. 15, 1992, BO92A000014

Int. Cl.[5] A24C *5/39*

U.S. Cl. 131—109.1 **4 Claims**



1. A shredded tobacco distributor for use in a cigarette manufacturing machine, comprising:

a duct defined by walls and having an inlet portion and an output portion;

means for feeding shredded tobacco to said inlet portion of said duct to flow through said duct in a tobacco feed direction;

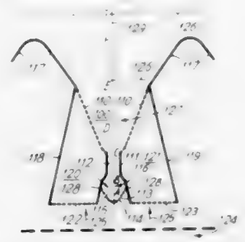
means for withdrawing the tobacco from said output portion of said duct, said withdrawal means comprising a rotating withdrawal roller having its axis of rotation perpendicular to the feed direction of the tobacco in said duct;

agitating means comprising a plurality of agitating bodies, each of said bodies having an axis perpendicular to the axis of said withdrawal roller and to the feed direction of the tobacco in said duct and each of said bodies being mounted for rotation about its axis on one of the walls in said output portion of said duct;

and activating means connected to said agitating means for oscillating said agitating bodies about their axes.

VOL 1164 ISS 4 JL 26 1994 UMI

5,331,978
METHOD AND APPARATUS FOR SEPARATION OF HEAVY AND LIGHT PARTICLES FROM PARTICULATE MATERIAL
Michael P. Parker, Leighton Buzzard, England, assignor to Rothmans International Services Limited, United Kingdom
Filed Dec. 19, 1991, Ser. No. 810,315
Claims priority, application United Kingdom, Dec. 20, 1990, 9027714.6; May 24, 1991, 9111334.0
The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.
Int. Cl.[5] A24B *3/06, 3/18*
U.S. Cl. 131—109.2 22 Claims



1. Apparatus for the separation of heavy and light particles from fibrous particulate material which includes means for continuously fluidizing and agitating the fibrous particulate material to cause heavy particles to sink from the light particles comprising a deck adapted to receive material at a reception end thereof, means for vibrating said deck thereby causing the material to move longitudinally along said deck to a discharge end thereof; said deck having a number of longitudinally extending troughs each defined by an upper trough portion, a lower trough portion and a bottom; means for supplying pressurized air to each trough to cause an upwardly directed air flow therein in a direction from each bottom upwardly to each upper trough portion,

(a) means for creating a first air velocity at a first upper separation zone in each said upper trough portion which causes separation of the heavy and light particles by lifting the light particles and allowing the heavy particles to fall through the first upper separation zone into a second lower separation zone, and

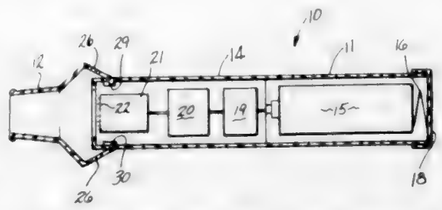
(b) means for creating a second air velocity at the second lower separation zone in each said lower trough portion which gradually increases in velocity toward the first upper separation zone to cause a second separation of heavy and light particles in the second lower separation zone by lifting at least some of the light particles back into the first upper separation zone and allowing the heavy particles to fall down toward the bottom of each lower trough portion into a region of still lower air velocity

5,331,979
IONTOPHORETIC CIGARETTE SUBSTITUTE
Julian L. Henley, 38 Munger Rd., Guilford, Conn. 06437
Filed Jul. 27, 1992, Ser. No. 919,261
Int. Cl.[5] A24F *47/00*
U.S. Cl. 131—273 9 Claims

1. An iontophoretic drug delivery device comprising in combination.

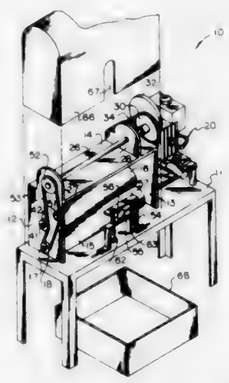
(a) a first driver unit comprising an electrical power source; and

(b) a second mouthpiece unit detachably connectable to the driver unit having an external surface, the external surface



having electrodes thereon and a coating containing the drug to be delivered to a user of the device.

5,331,980
TOBACCO STRIPPER APPARATUS
Haskel Bailey, P.O. Box 264, Salyersville, Ky. 41465
Filed Oct. 28, 1992, Ser. No. 967,851
Int. Cl.[5] A24B *1/00*; A01D *45/16*
U.S. Cl. 131—290 5 Claims



1. A tobacco stripper apparatus, comprising,

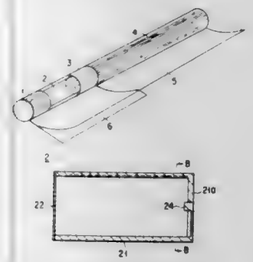
a support table, the support table including first and second parallel plates orthogonally mounted to the support table mounting a first roller and a second roller therebetween, wherein the first roller and second roller are arranged for contiguous communication to define a roller nip therebetween, the first roller having a first roller shaft directed orthogonally through the first support plate and the second support plate, and the second roller having a second roller shaft directed through the first support plate, and the second support plate having a second support plate arcuate slot receiving the second roller shaft therethrough, and

biasing means mounted to the second roller shaft extending through the second plate arcuate slot to bias the first roller into communication with the second roller, and

drive means for effecting simultaneous rotation of the first roller and the second roller, and

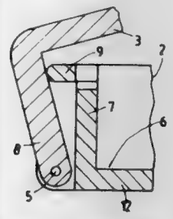
stripper plate means mounted to the support table between one end of the support table and the first roller shaft and the second roller for stripping a tobacco stalk directed through the stripper plate means.

5,331,981
SMOKING ARTICLE HAVING FLAVOR SOLUTION RELEASABLY HOUSED IN A PLASTIC CONTAINER
Akimichi Tamaoki; Shizuo Suhara, and Morio Kondoh, all of Yokohama, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan
PCT No. PCT/JP91/00675, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO92/01487, PCT Pub. Date Feb. 6, 1992
PCT Filed May 21, 1991, Ser. No. 835,924
Claims priority, application Japan, Jul. 18, 1990, 2-187924
Int. Cl.[5] A24D *3/06*
U.S. Cl. 131—337 3 Claims



1. A smoking article, comprising a flexible casing which is liquid-tight and tubular, a mouth portion formed at an end of said casing, a cylindrical plastic container which can be elastically deformed and is arranged within said casing, a flavour solution housed in said plastic container and having a viscosity of 520 cP or less, a thin wall portion formed at one end wall of said plastic container, said thin wall portion being broken when said plastic container is elastically deformed upon receipt of force applied from outside said casing so as to permit release of said flavour solution, and a water absorbing layer formed adjacent to said end wall having said thin wall portion formed therein so as to hold the flavour solution released from the plastic container, said water absorbing layer being formed of an unwoven fabric shaped from a mixture consisting of a water absorbing fiber and a heat fusible composite fiber.

5,331,982
COSMETICS COMPACT
Dietrich Machelett, Meinerzhagen, Fed. Rep. of Germany, assignor to Wilhelm Koopmann KG, Meinerzhagen, Fed. Rep. of Germany
Continuation of Ser. No. 920,038, Jul. 27, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,816
Claims priority, application Fed. Rep. of Germany, May 11, 1992, 9206291[U]
Int. Cl.[5] A45D *42/02*
U.S. Cl. 132—301 7 Claims



1. A cosmetics compact comprising:

a shell-shaped housing lower part and a lid coupled to said housing lower part by a hinge;

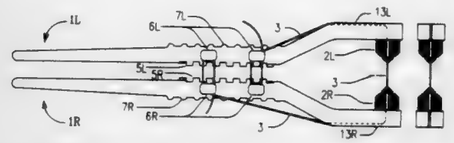
a pre-tensioned element;

a presser for opening the lid;

said pre-tensioned element bearing against the hinge and acting to pre-tension said lid in a direction of opening, said pre-tensioned element being integrally formed with a wall of an insert of said housing lower part and being spaced from an axis formed by said hinge;

said pre-tensioned element being a means for partially opening said lid when said lid is unlocked by said presser.

5,331,983
COMBINED TOOTHBRUSH AND DENTAL FLOSSING TOOL
Richard M. Father, P.O. Box 33918, Seattle, Wash. 98133
Filed Mar. 18, 1993, Ser. No. 33,579
Int. Cl.[5] A45D *44/18*
U.S. Cl. 132—309 7 Claims



1. A dental hygiene tool combining brushing and flossing comprising:

a first handle means;

a second handle means;

a first bristle brush means;

a second bristle brush means;

each said first and second bristle brush means defining a periphery;

slot means terminating within said first and second bristle brush means;

a length of dental floss;

an attachment means for securing an end of said dental floss to said first and second handle means;

said first and second handle means being joined together to form a Y shape, said Y shape having distal ends and supporting said first and second bristle brush means at said distal ends of said Y shape and said slot means terminating within the periphery of each said bristle brush means;

whereby said slot means co-operate to support said length of dental floss strung between said first and second bristle brush means.

5,331,984
DISHWASHER
Akira Isagawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 8, 1993, Ser. No. 43,926
Claims priority, application Japan, Apr. 8, 1992, 4-086970
Int. Cl.[5] A47L *15/22, 15/46*
U.S. Cl. 134—57 11 Claims

1. A dishwasher comprising:

a) a chamber having a portion for containing articles to be cleaned;

b) a liquid containing portion located on the bottom of the chamber for containing water;

c) heating means, located in the liquid containing portion, for heating the water;

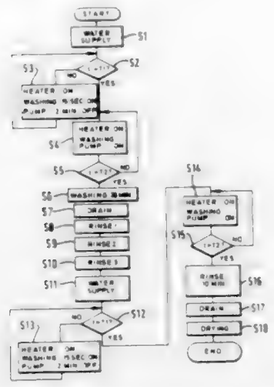
d) spray means for spraying the water to the articles to be cleaned;

e) a washing pump, connected to the liquid containing portion and the spray means, for supplying the water from the liquid containing portion to the spray means, so that the water is circulated through the chamber, the liquid containing portion and the spray means;

f) temperature detecting means for detecting temperature of the water in the chamber; and

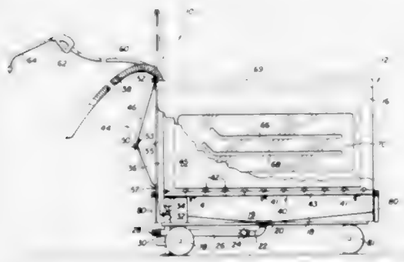
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g) control means, responsive to the temperature detecting means, for actuating the heating means, and for actuating the washing pump intermittently, until the temperature



detected by the temperature detecting means reaches a predetermined temperature at a beginning of a washing operation.

5,331,985
CLEANING APPARATUS
Richard C. Lyons, 7734 Seminary Ridge, Worthington, Ohio 43235
Filed Aug. 21, 1992, Ser. No. 933,333
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—66 **11 Claims**



1. A portable apparatus for cleaning an air conditioning unit, a heat/cool system, or a heat exchanger coil with a cleaning agent, the apparatus comprising.

a chamber for receiving the air conditioning unit, heat/cool system, or heat exchanger coil and for containing the cleaning agent during cleaning, said chamber including,

a sump for collecting used cleaning agent within the chamber;

opposing side walls;

a first access means located at one end of the chamber between the opposing side walls for permitting the air conditioning unit, heat/cool system, or heat exchanger coil to be transferred into the chamber;

a second access means, including apertures located on the opposing side walls of the chamber, for dispensing the cleaning agent to clean the air conditioning unit, heat/-cool system, or heat exchanger coil; and

a means for supporting the air conditioning unit, heat/cool system or heat exchanger coil over the sump, including a first roller conveyor means for conveying the air conditioning unit, heat/cool system, or heat exchanger coil into and within the chamber;

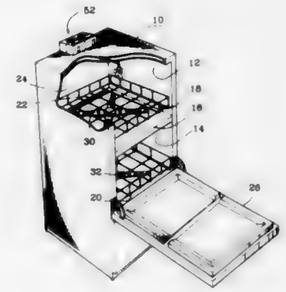
a first work station associated with the one end of the chamber, said first work station having a second roller means substantially coplanar with the first roller means and operating therewith for conveying the air conditioning unit, heat/cool system, or heat exchanger coil between the first work station and the chamber, a means for connecting one end of the first work station to one end of the chamber, and a transport means upon which the first work station is mounted for allowing the first work station to move in association with the chamber;

a transport means upon which the chamber is mounted;

a spray means for introducing the cleaning agent in the chamber through the second access means; and

a means for removing the cleaning agent from said sump.

5,331,986
DISHWASHING MACHINE
Moo-Seang Lim; Jong-Man Yun, both of Seoul; Chan-Kyu Park, Incheon; Sang-Dae Lee, Incheon; Sun-Chae Ma, Incheon; Seung-Seob Oh, Incheon; Eui-Sik Jeong, Incheon, and Kwang-Sun Paek, Incheon, all of Rep. of Korea, assignors to Daewoo Eelctronics Company, Ltd., Seoul, Rep. of Korea
Filed Mar. 1, 1993, Ser. No. 24,158
Claims priority, application Rep. of Korea, Sep. 4, 1992, 92-16115
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—88 **9 Claims**



1. A dishwashing machine for use in cleaning soiled dishes with washing water, comprising:

a housing including a first washing compartment and a second washing compartment separated from each other by a partition wall;

first spray means for spraying the washing water onto the dishes within the first compartment;

second spray means for spraying the washing water onto the dishes within the second compartment, the first and the second spray means operable independently of one another to permit selective washing of the dishes accomodated in the first and the second compartments;

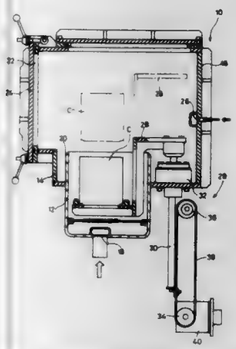
a water holding tank underlying the first and the second compartments for receiving the washing water sprayed by the first and the second spray means;

a drainpipe for allowing the washing water to be drained therethrough at the termination of a washing operation;

a fluid pump communicating with the water holding tank for drawing the washing water out of the tank to pressurize the washing water; and

a multi-way valve, responsive to a particular mode of operation of the dishwashing machine for selectively coupling the pressurized water to the first spray means, the second spray means and the drainpipe, wherein the multi-way valve includes an upper casing having an inlet port connected to the pump; a lower casing combined with the upper casing to form a fluid chamber therebetween, the lower casing including first to third outlet ports, the first outlet port connected to the first spray means, the second outlet port connected to the second spray means, the third outlet port connected to the drainpipe; a lower valve body fixedly mounted on the bottom of the lower casing, the lower valve body having a plurality of passage holes which coincide with the corresponding outlet ports of the lower casing; an upper valve body coming into frictional contact with the lower valve body for rotational movement with respect thereto, the upper valve body having an arcuate slot which is selectively registered with one or more of the passage holes of the lower valve body to establish a flow path for the pressurized washing water; and means responsive to the operation mode of the dishwashing machine for causing the upper valve body to rotate to a predetermined angular position.

5,331,987
APPARATUS AND METHOD FOR RINSING AND DRYING SUBSTRATE
Eiichiro Hayashi, and Kazunori Fujikawa, both of Shiga, Japan, assignors to Dainippon Screen Mfg. Co. Ltd., Japan
Filed Nov. 16, 1992, Ser. No. 977,067
Claims priority, application Japan, Nov. 14, 1991, 3-328262
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—102.1 **16 Claims**



14. An apparatus for rinsing and drying a substrate, comprising:

a hermetically sealable process chamber;

a rinsing bath for containing a rinsing solution;

said rinsing bath being in said process chamber, and having a first opening at a lower portion thereof and a second opening at an upper portion thereof;

said second opening being proportioned to permit the substrate to pass therethrough;

means for supplying rinsing solution into said rinsing bath through said first opening;

means for discharging rinsing solution that overflows from said rinsing bath through said second opening to the outside of said process chamber;

means for discharging rinsing solution from said rinsing bath to the outside of said process chamber;

means provided in said process chamber for elevating and lowering the substrate through said second opening, between a first position above said rinsing bath and a second position within said rinsing bath;

means for supplying a predetermined gas which is ionized and heated into said process chamber; and

means for reducing pressure in said process chamber to dry the rinsed substrate;

said means for discharging the rinsing solution to the outside of said process chamber including means for discharging the rinsing solution from said first opening to the outside of said process chamber;

said means for supplying said predetermined gas including means for supplying ionized and heated inactive gas into said process chamber;

said process chamber including an opening for introducing said inactive gas into an interior thereof,

said means for supplying said inactive gas including

a gas flow line having two ends, one of said two ends being connected to said opening of said process chamber,

a gas source connected to the other end of said flow line for feeding out said inactive gas to said flow line with a predetermined pressure,

means for heating said inactive gas flowing in said flow line, and

means for ionizing said inactive gas flowing in said flow line;

means for discharging air from said process chamber to the outside of said process chamber;

said process chamber includes

a bottom face having an exhaust outlet;

a sidewall formed integrally with said bottom face; and

an upper face covering the upper portion of said sidewall, and

said means for discharging air from said process chamber includes

an exhaust flow line having two ends, one of said two ends being connected to said exhaust outlet; and

discharging means operatively connected to the other end of said exhaust flow line.

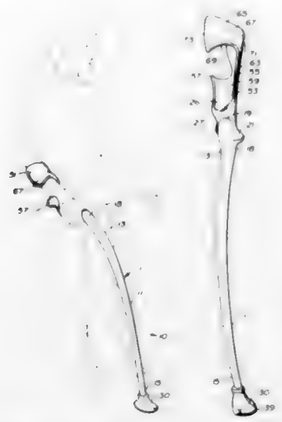
5,331,988
WALKING CANE WITH ALTERNATIVE DECORATIVE COVER
Diane M. Harmon, 10338 Longford Dr., South Lyon, Mich. 48178
Filed Jul. 6, 1992, Ser. No. 908,068
Int. Cl.[5] A45B *1/00*
U.S. Cl. 135—65 **3 Claims**



1. A cane for walking, comprising a) one substantially linear portion, cylindrical in cross section, said linear portion extending for a substantial fraction of the overall length of said cane, and said portion of cylindrical cross section having an outer circumference and an outer diameter; b) a decorative sleeve removably mounted upon the linear portion of said cane (a), the length of said sleeve being a substantial fraction of the length of said linear portion (a) of said cane, wherein said sleeve comprises a non-closed cylinder of resilient plastic having one and only one slit along its length, and having an inner circumference and a mean inside diameter, to fit snugly against the linear portion (a) of said cane, wherein the mean inside diameter of said sleeve is less than the outside diameter of said cane.

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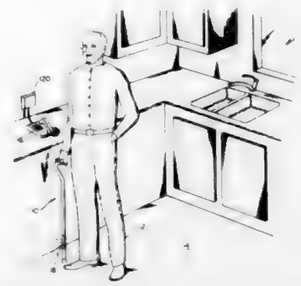
5,331,989
WALKING AID
Thomas P. Stephens, HCR 6, Box 47B, Priest River, Id. 83856
Filed Jul. 30, 1992, Ser. No. 922,200
Int. Cl.[5] A45B *1/00, 9/04*
U.S. Cl. 135—65 **24 Claims**



1. A walking aid comprising
an elongated shaft having an upper and a lower end, said shaft being curved along its longitudinal axis in the plane of the forward direction of said walking aid;
a handgrip having a forward end disposed rearwardly from the upper end of said elongated shaft and being contoured to support a substantial portion of the width of the hand of the user, said handgrip having a thumb-supporting portion in the form of a stop and a fingers-engaging portion disposed at its forward end on opposite sides of its longitudinal axis, said handgrip also having at its rearward end a portion for engaging the heel of a hand, said handgrip being upwardly inclined from its forward to its rearward end;
an elongated cuff having a lower forearm support portion joined to the rearward end of said handgrip and an upper forearm engaging portion disposed at an upper end of said elongated cuff and connected to said lower forearm support portion by a connecting portion of said cuff, said elongated cuff defining an opening for the removal of a forearm in the rearward direction of the walking aid; and
a foot member disposed at the lower end of said elongated shaft, said foot member having a bottom portion formed of resilient material for frictionally engaging a surface during use of the walking aid.

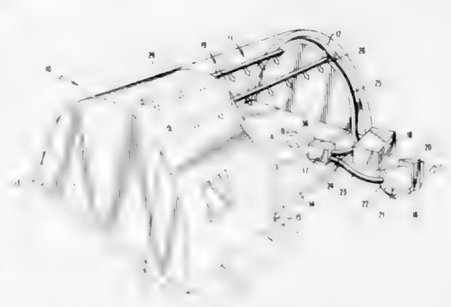
5,331,990
SAFETY CANE
H. Eugene Hall, 10029 NE. 27th St., Bellevue, Wash. 98004, and Ray Beddo, 23303 64th Ave. W., Mountlake Terrace, Wash. 98043
Filed Oct. 6, 1992, Ser. No. 957,245
Int. Cl.[5] A45B *7/00*
U.S. Cl. 135—65 **16 Claims**

1. A safety cane, comprising:
an elongated tubular support structure having telescoping upper and lower sections and a handle at one end, a ground engaging tip at an other end, and a power source located therebetween;
an ambient light sensing device substantially within the support structure and operatively connected to the power source for determining the ambient light level of an environment surrounding the cane; and
a light emitting device positioned substantially within the lower section of the support structure, and operatively connected to the power source, to the ambient light sensing device and to a manually operable first switch in the vicinity of the handle so as to illuminate a path ahead of the cane when the first switch is activated and when the



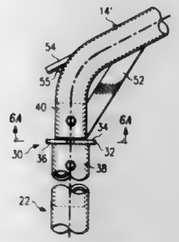
ambient light conditions are low, wherein the support structure has two radially directed, acutely, angulary displaced detente mechanisms for vertically adjusting the height of the cane and for directing the light emitting device for ambidextrous operation.

5,331,991
VENTILATION METHOD AND MEANS FOR THE SAME
Jan G. I. Nilsson, Malmö, Sweden, assignor to AB Ventilatorverken, Malmo, Sweden
Filed Oct. 8, 1992, Ser. No. 958,178
Claims priority, application Sweden, Nov. 15, 1991, 9103371
Int. Cl.[5] E04H *15/14*
U.S. Cl. 135—93 **9 Claims**



1. A method of establishing and sustaining in sealed tents or similar mobile units an environment which is independent of the external surroundings with regard to temperature and contamination, comprising:
receiving air from the external surroundings that has been filtered in a manner to extract contaminating particles and gas therefrom and passing the air directly into the mobile unit so as to establish a predetermined air pressure which is higher than the external ambient air pressure;
mixing filtered air with air recycled from within the mobile unit when said predetermined air pressure is reached, and continuing said mixing process for as long as an air pressure equal to or higher than said predetermined air pressure prevails within the mobile unit;
heating or cooling the air mixture to a predetermined temperature; and
subsequently distributing the air mixture substantially uniformly in the mobile unit while, in conjunction therewith, filtering said air mixture to extract any remaining particles and gas therefrom.

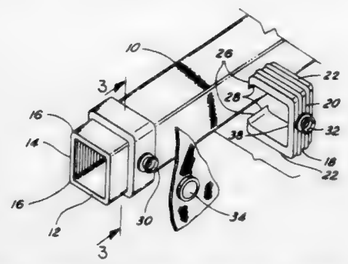
5,331,992
CANOPY STRUCTURE
Boris Gremont, 7715 Applecross La., Dallas, Tex. 75248
Continuation of Ser. No. 795,846, Nov. 21, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 157,231
Int. Cl.[5] E04H *15/36*
U.S. Cl. 135—102 **7 Claims**



1. A canopy structure, comprising:
a plurality of upstanding column members, each column member having an upper end and a lower end and each having an inner diameter and an outer diameter, the lower end adapted to be supported on a support surface;
a cover framework comprising:
a plurality of structural members, each of the structural members having an angled end, a second end and a plurality of intermediate sections separated by angled portions, wherein at least one of the structural members includes a gusset member racing the angled end thereof;
an apex structural member adapted to be supported by the second ends of the plurality of the structural members;
a cover supported over the cover framework;
tension means for securing the cover over the cover framework; and
a joint assembly located between the upper end of at least one of the upstanding column members and the angled end of one of the structural members to increase the structural integrity of the canopy structure, the joint assembly comprising:
a platform having an upper surface and a lower surface;
a sleeve rigidly attached to the lower surface of the platform and depending therefrom for being received in the upper end of the column member to create a lightweight, reinforced joint; and
at least one stub rigidly attached to the upper surface of the platform for receiving the angled end of the structural member to create a second lightweight, reinforced joint, wherein the joint assembly provides structural resistance against wind conditions.

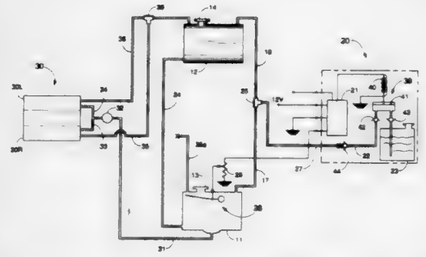
5,331,993
COVER FASTENING DEVICE
Ronald R. Billbury, 7239 Cardinal, Algonac, Mich. 48001
Filed Aug. 27, 1992, Ser. No. 936,251
Int. Cl.[5] E04H *15/64*
U.S. Cl. 135—119 **6 Claims**

1. In combination, a railing formed from elongated tubing having at least a top side, a bottom side, a back side and a pair of edges adjacent said back side, and a fastening device, said fastening device comprising:
a base wall member, and a pair of resilient arms extending outwardly from one common side of said base wall member at an angle substantially perpendicular to said base wall member and extending substantially along said top and bottom sides of said railing toward said back side of said railing in a gripping relation to said railing;
each of said resilient arms having a gripping hook on the distal end thereof depending inwardly toward one another, each said hook curving around a respective one of said pair of railing edges toward each other; and



a fastener attached to said base wall member affixing a cover or the like to said frame member.

5,331,994
FUEL ADDITIVE DISPENSING SYSTEM
John F. Bryan, III, 561 N. 64th St., Wawatosa, Wis. 53213; Brian W. Petersen, 1504 North Jackson, Milwaukee, Wis. 53202, and Harley B. Martin, Rte. 2 Box 209B, Aliceville, Ala. 35442
Continuation of Ser. No. 46,453, Apr. 13, 1993, abandoned. This application Sep. 29, 1993, Ser. No. 128,323
Int. Cl.[5] F02B *75/12*
U.S. Cl. 137—1 **14 Claims**



1. A system for automatically dispensing additive to a motor vehicle fuel supply, independent of vehicle operation, so as to maintain a predetermined additive concentration in said fuel supply through a series of random fuel depletion and refueling cycles comprising:
refillable tank means for containing a fuel supply in a quantity measured by the level thereof;
a supply of additive for treatment of said fuel;
pumping means for transferring additive from said additive tank to said fuel supply at a fixed rate;
means for gradual fuel depletion of said fuel supply;
means for periodically sensing the level of said fuel supply;
means for comparing a current level and the two consecutive prior levels to establish a lowest level of said fuel supply and for recognizing a refueling and the amount of fuel added; and
means for activating and controlling said pumping means when said fuel supply level is increased so as to transfer a quantity of additive proportional to said amount of fuel added.

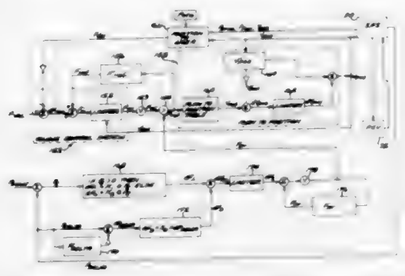
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5,331,995

FLOW CONTROL SYSTEM FOR MEDICAL VENTILATOR

Thomas P. Westfall, Riverside; Alberto Ruiz-Vela, Alta Loma; Anthony J. Caterina, Riverside, and Clyde R. Visser, Upland, all of Calif., assignors to Bear Medical Systems, Inc., Riverside, Calif.

Filed Jul. 17, 1992, Ser. No. 916,344
Int. Cl.[5] G05D 7/06
U.S. Cl. 137—8 22 Claims



1. A method for controlling the flow of a pressurized gas through a flow control valve in a pressurized gas conduit system in response to a volume input signal indicative of the desired flow rate comprised of the steps of:

generating a flow signal in a feedback loop indicative of the actual flow rate of gas flow through said flow control valve,

subtracting said flow signal from said volume input signal to generate a correction signal which is indicative of the magnitude and direction of the difference between said flow signal and said volume input signal,

forming a flow reference signal by adding said correction signal to the immediately previous flow reference signal,

generating a control valve position signal from said flow reference signal based on a first predetermined relationship,

inputting said control valve position signal to valve control means for varying the effective orifice flow area in said flow control valve in response to a control valve position signal to change the flow rate through said flow control valve,

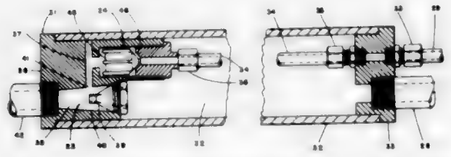
after a predetermined short time interval repeating the steps by first generating a new flow signal and subtracting it from the then current input signal so as to continually correct the flow rate through said flow control valve based on the difference between the actual flow rate through the flow control valve and the desired flow rate.

5,331,996

DUAL MODE HOT WATER CIRCULATION APPARATUS

Raymond G. Ziehm, 6650 S. Sheridan Blvd., Littleton, Colo. 80123

Filed Oct. 8, 1993, Ser. No. 134,307
Int. Cl.[5] F17D 1/16
U.S. Cl. 137—14 5 Claims



2. A dual mode hot water circulation apparatus for installation in a water supply pipe of a building upstream of a water heater to provide instantaneous heated water to one or more remote hot water faucets in the building that are served by a common hot water pipe, said apparatus comprising:

heat exchanger means including a cold water chamber, the cold water chamber having positioned therein a cooling tube having an inlet end connected to a water return line from a most remotely located one of said one or more hot water faucets to induce convective water flow in a water return loop that comprises said water return line, said hot water circulation apparatus, a portion of said water supply pipe that is downstream of said hot water circulation apparatus, said water heater, and said common hot water pipe;

a check valve positioned at an outlet end of said cooling tube to prevent reverse flow in said water return loop; and

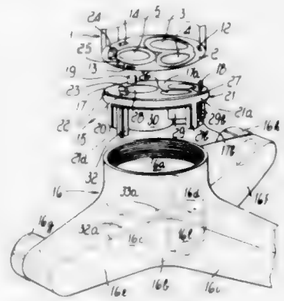
aspirator means to create a reduced pressure positioned at an outlet end of said cold water chamber so as to cause an increased flow rate in said water return loop any time water flows in said water supply pipe.

5,331,997

FLOW CONTROL DEVICE FOR A SINGLE-CONTROL MIXER CARTRIDGE PARTICULARLY SUITABLE FOR A BATHTUB UNIT

Orlando Bosio, Casaloldo, Italy, assignor to Amfag S.r.l., Castelgoffredo, Italy

Filed May 27, 1993, Ser. No. 67,917
Claims priority, application Italy, Jun. 1, 1992, MN92A000015
Int. Cl.[5] F16K 11/074
U.S. Cl. 137—270 13 Claims



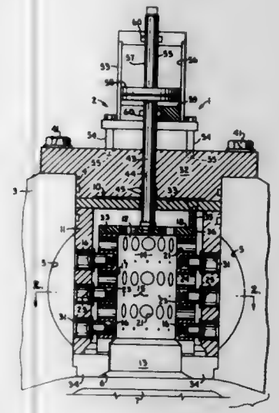
1. Device for the separate inflow of hot and cold water and for the outflow of hot, cold or mixed water in a single-control mixer cartridge particularly suitable for a bathtub unit, said bathtub unit comprising a cavity for accommodating said cartridge which is shaped like a well with a cylindrical side wall and a flat base and has, at its side wall, outlets of ducts for the inflow of hot and cold water respectively, said cavity being furthermore provided with at least one outflow opening for hot, cold or mixed water, comprising a disk which is provided with two holes for the inflow of hot and cold water respectively into the cartridge, and with a hole for the outflow of hot, cold or mixed water, and has two faces, the first face being substantially flat and arrangeable facing the cartridge, the second face being adjacently provided with a tunnel for connecting the outflow hole present in the disk to the at least one opening for the outflow of hot, cold or mixed water from the well, said tunnel forming two separate chambers together with portions of the side wall and of the base of the well; the well outlet of the hot water inflow duct and the hole for the inflow of hot water into the cartridge present in the disk are formed in the first chamber, and the well outlet of the cold water inflow duct and the hole for the inflow of cold water into the cartridge present in the disk are formed in the second chamber; a gasket comprising a circumferential part at the peripheral region of the disk and contacting the side wall of the well; portions extend monolithically from said circumferential part, and are inserted in seats formed on the walls of the tunnel and contact said side wall and the base of the well to delimit said two separate chambers; registration pins extend from said second face of the disk to fit in seats provided in the base of the well.

5,331,998

RADIAL VALVE WITH UNLOADER ASSEMBLY FOR GAS COMPRESSOR

Lauren D. Sperry, 1112 S. 17th St., Blue Springs, Mo. 64015

Filed Feb. 1, 1993, Ser. No. 11,894
Int. Cl.[5] F16K 15/06, 15/18
U.S. Cl. 137—512.1 24 Claims



1. In a valve apparatus comprising a valve seat means including at least one valve seat and a valve guide cage comprising at least one valve means normally aligned with said valve seat in alternative closed and open positions, an unloader comprising;

(a) actuator means for moving said guide cage and said valve seat means relative to each other to an unloaded position in which said valve means and said valve seat are misaligned and said valve is unloaded.

5,331,999

PNEUMATIC PRESSURE RELIEF ASSEMBLY

William F. Jorgensen, 897 Wescott Sq., Eagan, Minn. 55123

Division of Ser. No. 792,242, Nov. 14, 1991, Pat. No. 5,211,192.
This application Jan. 15, 1993, Ser. No. 5,020
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] F16K 21/02
U.S. Cl. 137—513.5 4 Claims

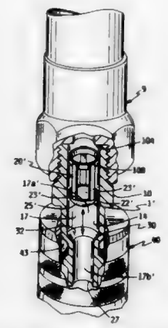
1. A pressure relief assembly for use in a supply line which carries compressed gas from a source to a tool or the like to prevent the supply line from fishtailing when said supply line is disconnected from said source and compressed gas contained in said supply line is suddenly released, said assembly comprising:

(a) a housing attachable to said supply line and having first and second ends; wherein said housing includes a first passageway extending between said first and second ends, said first passageway comprising first and second sections, each having a cross sectional area, said first section having a cross sectional area which is larger than the cross sectional area of said second section;

(b) an annular surface connecting said first and second passageway sections;

(c) restriction means for partially restricting flow of compressed gas through said first passageway from the direction of said tool; wherein said restriction means allow essentially free flow of compressed gas through said first passageway in a direction toward said tool;

(d) said restriction means comprising a movable member having a cross sectional area which is less than the cross sectional area of said first section of said first passageway and greater than the cross sectional area of said second section, wherein said movable member moves toward said



annular surface when said supply line is disconnected from said compressed gas source;

(e) said movable member including a curved portion; and

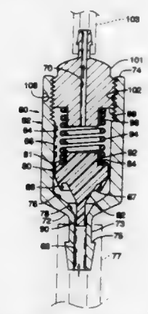
(f) at least one spacer member operably positioned between said curved portion and said annular surface when they are juxtaposed opposite one another to form a defined open area between said first passageway first and second portions when said curved portion seats against said annular surface such that the normal flow of compressed gas through said second portion is restricted.

5,332,000

LOW PRESSURE SENSITIVE VALVE

Paul B. Gassner, Portland, Oreg., assignor to Gassner, Inc., Portland, Oreg.

Filed Jan. 5, 1993, Ser. No. 669
Int. Cl.[5] F16K 15/06
U.S. Cl. 137—543.23 25 Claims



1. A fluid pressure responsive valve comprising:

a valve body defining an internal chamber, inlet and outlet fluid passages communicating with the chamber at opposite inlet and outlet ends of the body;

a valve poppet within the chamber for controlling fluid communication between the inlet passage and the chamber;

the poppet including a stem projecting into the inlet passage to guide the poppet between open and closed positions;

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the poppet including a lip for making line contact with a valve seat surface at the inlet end when the poppet is in the closed position;

the seat surface being spherically tapered;

the poppet comprising a one-piece member composed of a monolithic resilient sealing material, the member including an annular integral said sealing lip for engaging the seat surface at the inlet end and sealing the chamber from fluid communication with the inlet passage.

5,332,001

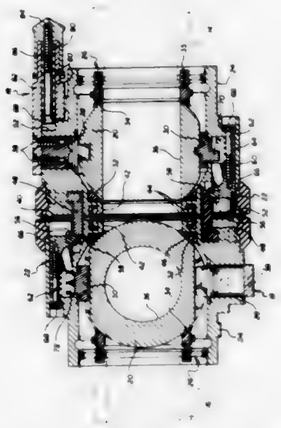
SEXLESS BALL VALVE COUPLING

Albert W. Brown, Newport Beach, Calif., assignor to J. C. Carter Company, Inc., Glendale, Calif.

Filed Aug. 2, 1993, Ser. No. 100,374

Int. Cl.[5] **F16L** *37/28*

U.S. Cl. 137—614.06 **16 Claims**



1. In a ball valve coupling including first and second ball valve units having interengageable lug means for releasibly connecting said ball valve units in face-to-face relation, said first ball valve unit including a ball valve movable between open and closed positions, the improvement comprising:

a safety lock-out key mounted on said first ball valve unit for movement from a first position toward a second position in response to partial engagement of said lug means on said first and second ball valve units; and

a stem pin mounted on said first ball valve unit for movement with said ball valve between said open and closed positions;

said safety lock-out key engaging said stem pin when said lock-out key is moved from said first position and when said ball valve is in said closed position to prevent movement of said ball valve to said open position;

said stem pin engaging said lock-out key when said lock-out key is in said first position and when said ball valve is in the open position to prevent movement of said lock-out key from said first position.

5,332,002

GATE VALVE

Larry E. Reimert, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Sep. 21, 1993, Ser. No. 125,031

Int. Cl.[5] **F16K** *3/00*

U.S. Cl. 137—614.11 **10 Claims**

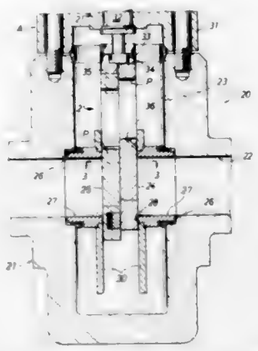
1. A gate valve, comprising:

a body having a flowway therethrough, and a cavity therein intersecting the flowway intermediate its ends,

means forming annular seating surfaces in the body cavity at its intersection with the inner ends of the flowway,

means for opening and closing the flowway including

a pair of gates each having parallel sides and guidably slidable within the cavity between the seating surfaces between positions opening and closing the flowway,



means for moving a first gate from its closed toward its open position prior to moving the second gate from its closed toward open position and then moving the gates together to their open position, and

means for venting the cavity to the flowway on the outer side of one of the gates prior to movement of the second gate from its closed toward its open position.

5,332,003

SANITARY WATER VALVE

Hans Nikolayczik, Minheim, Fed. Rep. of Germany, assignor to Ideal Standard GmbH, Bonn, Fed. Rep. of Germany

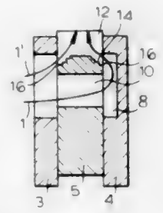
PCT No. PCT/EP91/01183, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO92/04570, PCT Pub. Date Mar. 19, 1992

PCT Filed Jun. 25, 1991, Ser. No. 988,941

Claims priority, application Austria, Aug. 31, 1990, 1787/90

Int. Cl.[5] **F16K** *47/02*

U.S. Cl. 137—625.17 **8 Claims**



1. A valve comprising:

a housing;

a fixed inlet disk in the housing formed with through-going water-inlet ports;

a fixed outlet disk transversely spaced in the housing from the inlet disk and formed with deflecting chambers aligned transversely with the inlet ports;

a movable valve disk in the housing between the fixed disks, formed with throughgoing passages alignable transversely between the respective inlet ports and deflecting chambers, and having a side forming with the housing an outlet recess; and

toothed steps formed on the side of the movable valve disk.

5,332,004

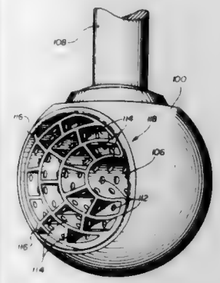
ROTARY NOISE ATTENUATOR

Douglas P. Gethmann, Gladbrook; Allen C. Fagerlund; Charles R. Kuhlman, both of Marshalltown, all of Iowa; Ronnie L. Smith, Whitesboro; Alan D. Thomas, Sherman, both of Tex., and Larry J. Weber, Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Del.

Continuation-in-part of Ser. No. 753,648, Aug. 30, 1991, Pat. No. 5,193,583. This application Feb. 23, 1993, Ser. No. 21,493

Int. Cl.[5] **F16K** *47/04*

U.S. Cl. 137—625.32 **5 Claims**



1. A rotary valve noise attenuator device for fluid valves having a passageway for communicating a fluid flow stream through said valve, and a sealing member in said passageway, said rotary valve noise attenuator device comprising:

a rotary ball fluid control member for rotatable mounting in said passageway adjacent said sealing member to control the flow stream through said passageway, said rotary ball fluid control member comprising a full ball having a ball sealing portion sealingly engageable with said sealing member corresponding to closing of said valve, and a bore extending through said full ball with opposite bore inlet and bore outlet ends for selective insertion of said bore inlet end into the flow stream corresponding to selective opening of said valve;

a noise attenuator member mounted in said bore for rotation therewith to progressively insert said noise attenuator member into the flow stream during opening of said valve,

said noise attenuator member formed with a plurality of elongated, perforated channels extending across substantially said entire bore inlet end and said sealing member during opening of said valve, each channel having a front end and a rear end with a longitudinal axis extending through said front and rear ends and each channel formed with four side walls having perforations;

said plurality of channels disposed and maintained in said bore with each of said longitudinal axes being parallel to each other and with said channel front ends rotatable into the flow stream during opening of said valve for initially receiving said flow stream;

said channel front ends splitting said flow stream into several respective smaller flow streams and guiding said respective smaller flow streams into respective channels, and said smaller flow streams being dispersed through said perforated channels.

5,332,005

LAMINAR FLOW ELEMENT AND METHOD FOR METERING FLUID FLOW

Tibor Baan, Monsey, N.Y., assignor to Aalborg Instruments & Controls, Inc., Monsey, N.Y.

Filed Nov. 6, 1992, Ser. No. 973,172

Int. Cl.[5] **F15D** *1/02*; **G01F** *5/00*

U.S. Cl. 138—43 **3 Claims**

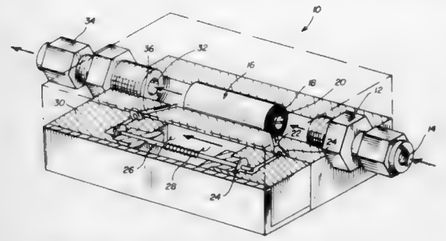
1. A laminar flow element for facilitating the achievement of an adjustable, laminar fluid flow for a thermal mass flowmeter, comprising:

(a) a conduit within said laminar flow element for fluid flow;

(b) said conduit having an inlet and an outlet for said fluid flow;

(c) said conduit containing a porous, open celled, flexible material;

(d) said porous, open celled, flexible material creating a labyrinthine fluid flow path for a fluid as said fluid flows from said inlet of said conduit to said outlet of said conduit, thereby facilitating the achievement of said laminar fluid flow within said conduit when said fluid flows



through said labyrinthine fluid flow path within said porous, open celled, flexible material;

(e) means for adjusting said labyrinthine fluid flow path within said porous, open celled, flexible material so that the achievement of said laminar fluid flow is facilitated over an extended fluid flow range of possible rates of fluid flow;

(f) said porous, open celled, flexible material being a metal mesh; and

(g) said laminar flow element having means for removing solvents from said fluid.

5,332,006

CENTER CONNECTOR, FOR METALLIC WEAVING SHAFTS

Rudi Gaisser, Reutlingen, Fed. Rep. of Germany, assignor to Grob & Co Ltd., Horgen, Switzerland

PCT No. PCT/EP90/02273, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/10764, PCT Pub. Date Jul. 25, 1991

PCT Filed Dec. 21, 1990, Ser. No. 853,763

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1990, 4001264

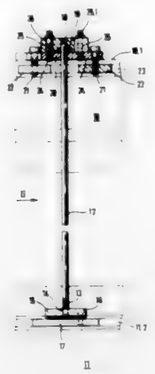
Int. Cl.[5] **D03C** *9/06*

U.S. Cl. 139—91 **6 Claims**

1. Weaving shaft and center connector, comprising an upper shaft rod having an upper longitudinal side and a lower shaft rod; a round rod having a threaded lower end and an upper end guided through said upper shaft rod; means for anchoring said threaded lower end of said round rod in said lower shaft rod; a stop collar connected with said upper longitudinal side of said upper shaft rod; a cap covering said upper end of said round rod and said stop collar and having through-holes on opposite sides of said round rod; clamping screws extending through said through-holes of said cap for anchoring said cap

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on said upper shaft rod to secure said stop collar on said upper shaft rod; means for engaging a tool provided on said upper



end of said round rod, wherein said stop collar has a diameter corresponding at most to a thickness of said upper shaft rod.

5,332,007

FAULTY WEFT CONTROL ON AIR NOZZLE LOOMS

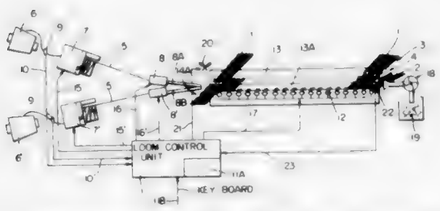
Adnan Wahhoud, Lindau/B., Fed. Rep. of Germany, assignor to Lindauer Dornier GmbH, Lindau, Fed. Rep. of Germany

Filed Mar. 24, 1993, Ser. No. 36,465

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209686

Int. Cl.[5] D03D *47/34*

U.S. Cl. 139—116.2 **10 Claims**



1. A method for removing a faulty weft thread length from a weft thread in an air nozzle loom and preventing a beat-up of the faulty weft thread length in a fabric being woven on said air nozzle loom, comprising the following steps:

(a) passing a weft thread through a weft thread quality sensor prior to said weft thread entering into a weft insertion channel, for producing a weft fault signal upon detecting a fault in said weft thread,

(b) supplying said weft fault signal to a central loom control having a memory with a weft fault removal program stored in said memory, for starting said fault removal program in response to said weft fault signal,

(c) stopping, in response to said weft fault signal, the weaving operation of said loom and causing an opening of a loom shed,

(d) causing, in response to said weft fault removal program, the insertion of a number of weft thread lengths through said loom shed while preventing a weft cutting operation and preventing a beat-up motion, said number being at least one,

(e) removing said faulty weft thread length at an exit end of said loom shed,

(f) providing an end signal signifying that said number of weft thread lengths has been inserted for terminating said fault removal program,

(g) cutting said weft thread in response to said program termination, and

(h) producing a restart signal and resuming normal weaving in response to said restart signal.

5,332,008

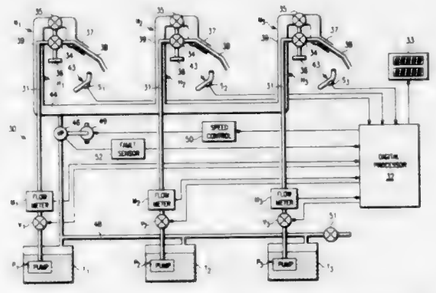
GASOLINE DISPENSER WITH ENHANCED VAPOR RECOVERY SYSTEM

John A. Todd, and William H. Constantine, both of Salisbury, Md., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 4, 1993, Ser. No. 13,582

Int. Cl.[5] B65B *3/18*

U.S. Cl. 141—5 **20 Claims**



1. In a system for dispensing volatile liquids into a tank through a nozzle and having closely associated with the nozzle a vapor recovery intake, a method for operating a vacuum to assist in recovering flow vapors from the tank displaced by the liquid comprising the steps of:

operating a vacuum pump prior to commencement of dispensing to establish a prestart vacuum at the vapor intake;

turning on a fuel pump for pumping liquid from a storage tank to the nozzle in response to a demand for dispensing;

opening a control valve coupled between the fuel pump and the nozzle after the establishment of the prestart vacuum, the prestart vacuum enabling the vapor intake to recover an initial displacement vapor immediately upon commencement of a flow of liquid through the nozzle; and

operating the vacuum pump, upon commencement of the flow of liquid through the nozzle, at a predetermined relationship with the flow of the liquid.

5,332,009

PRESSURIZED CANISTER RECYCLING APPARATUS AND METHODS

Larry W. Van Etten, 124 Cherry La., Tampa, Fla. 33610

Filed Jul. 22, 1993, Ser. No. 95,881

Int. Cl.[5] B65B *31/00*

U.S. Cl. 141—7 **25 Claims**

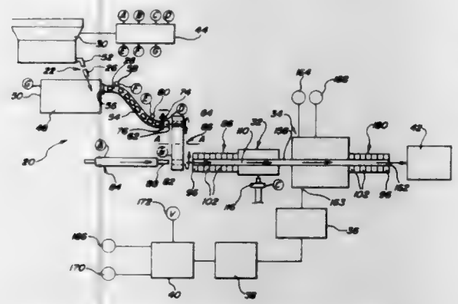
1. A method for recycling contents of a plurality of pressurized canisters, comprising the steps of:

releasing the canisters from a hopper;

feeding the canisters to a rotator;

moving the canisters from said rotator, advancing the canisters with each said moving step;

isolating the canisters from an outside environment;



opening the canisters after said isolating step; and

evacuating the canisters after said opening step.

5,332,010

METHOD OF RECOVERING FUEL FROM THE FUEL TANK OF A LIQUID-FUEL POWERED VEHICLE

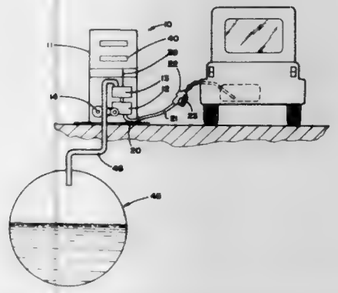
Thomas A. Thompson, Spring Lake, and Delos J. Loomis, Muskegon, both of Mich., assignors to Bennett Pump Company, Muskegon, Mich.

Continuation of Ser. No. 834,940, Feb. 13, 1992, Pat. No. 5,257,651. This application Aug. 10, 1993, Ser. No. 105,336

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] B65B *3/04*

U.S. Cl. 141—7 **19 Claims**



1. A method of withdrawing liquid fuel from the fuel tank of a liquid-fuel powered vehicle for the purpose of draining the tank, including:

providing a liquid-fuel pump having an inlet and a discharge conduit, a hose connected at one end with said inlet, and a liquid-fuel storage tank connected with said discharge conduit, said hose including a hand-held shut-off valve and nozzle assembly at an opposite end of the hose and a hose extension connected with said nozzle assembly and having a sufficient length and flexibility to be inserted through the filler pipe of a tank and extend to the bottom of the tank;

inserting said hose extension into the vehicle's fuel tank through the filler pipe of the tank and extending to the bottom of the tank;

operating said pump by actuating said shut-off valve to withdraw fuel from the fuel tank and deposit the withdrawn fuel in the liquid-fuel storage tank; and

measuring the quantity of fuel withdrawn from the tank.

5,332,011

GASOLINE DISPENSER WITH VAPOR RECOVERY SYSTEM

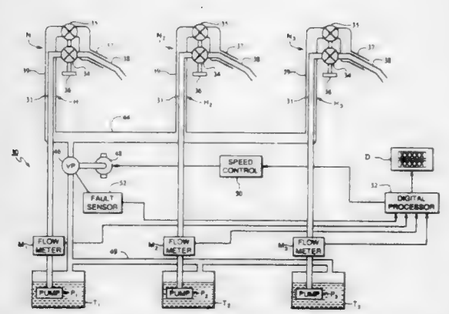
Robert G. Spalding, Salisbury, Md., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 693,549, Apr. 30, 1991, Pat. No. 5,195,564. This application Jan. 8, 1993, Ser. No. 1,787

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] B65B *1/04*

U.S. Cl. 141—59 **21 Claims**



1. A dispensing system for dispensing volatile liquids such as hydrocarbon fuel for vehicles into a tank having a filler neck while collecting the vapors to reduce atmospheric pollution comprising:

at least one liquid dispensing means including a hand-held nozzle and liquid valve means disposed at the end of a flexible hose for flowing liquid into the fuel tank of a vehicle under the control of an operator operating the liquid valve;

vapor collection means including:

a vapor intake means manipulated with the hand-held nozzle so as to be positioned closely adjacent, but not sealed with, the fuel tank during delivery of fuel to the tank;

a normally closed vapor valve operable when liquid is flowing through the liquid valve of the nozzle; and

vapor suction means including a vapor pump driven by an electrical motor and coupled to draw vapor through the vapor intake and the vapor valve and deliver the vapor to vapor storage means;

a flow meter for producing a first electrical signal representative of the rate of flow of liquid being dispensed from the nozzle; and

digital processing means for receiving the first electrical signal and operating the electric motor at a controlled rate to draw vapors through the vapor intake at a volumetric rate slightly greater than the volumetric rate at which liquid is being flowed from the nozzle whereby substantially all fuel vapor displaced from the tank will be delivered to the vapor storage means while minimizing delivery of air to the vapor storage means.

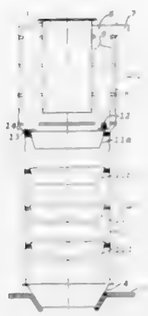
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5,332,012

DEVICE WITH A TELESCOPIC OR COLLAPSIBLE CHUTE FOR DELIVERING FLOWABLE BULK CARGO

Borge Svendsen, Herning, Denmark, assignor to Th. Rasmussen Molle - Og Maskinbyggeri A/S, Herning, Denmark

PCT No. PCT/DK91/00272, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO92/05098, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 16, 1991, Ser. No. 974,593
Claims priority, application Denmark, Sep. 17, 1990, 2235/90
Int. Cl.[5] B65G *11/08*
U.S. Cl. 141—93 10 Claims



1. Apparatus for delivering flowable bulk material substantially free of dust, said apparatus comprising:

a chute having elongated and contracted states in a vertical direction, said chute having an open upper end for supply of flowable bulk material thereto and a lower end with outlet means for delivery of said flowable bulk material, and

an inlet assembly above said chute, said inlet assembly having an upper inlet end for receiving the flowable bulk material from an outside source and a lower outlet end for delivery of the flowable bulk material to said open upper end of said chute, said inlet assembly having a suction chamber for air flow from the apparatus as the bulk cargo flows through the inlet assembly and the chute,

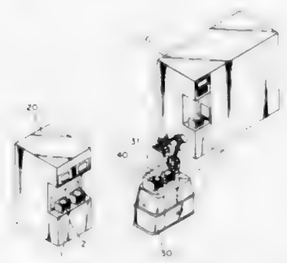
said inlet assembly including a filter assembly for filtering dust from the air before the air leaves the apparatus, said filter assembly having elongated and contracted states in the vertical direction.

5,332,013

UNMANNED CONVEYING DEVICE IN CLEAN ROOM

Masanao Sugita; Hitoshi Kawano, and Teppei Yamashita, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 850,668
Int. Cl.[5] H05K *3/00*; B60L *11/00*
U.S. Cl. 141—98 10 Claims



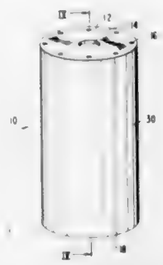
1. An apparatus for a clean room, comprising: an unmanned conveying device provided with a container for accommodating an object to be conveyed thereon, the container being connected to an inert gas source through a gas supply passage so that the atmosphere in the container can be replaced by a nitrogen gas, wherein the unmanned conveying device has a coupler device with a first coupler unit which is connected to the gas supply passage and the inert gas source is located on the ground and connected to a second coupler unit of a coupler device on the ground through a pipe, the gas supply passage being connected to the inert gas source when the coupler units are releasably coupled to each other, wherein the coupler device on the ground has a reciprocating mechanism for permitting the second coupler unit thereof to reciprocate relative to the first coupler unit of the coupler device on the unmanned conveying device, wherein the second coupler unit on the ground has first connectors electrically coupled to a first circuit disposed in the coupler device on the ground and has a first gas passage coupling which communicates with the inert gas source, wherein the first coupler unit of the coupler device on the unmanned conveying device has second connectors electrically coupled to a second circuit disposed in the unmanned conveying device and engageable with the first connectors and has a second gas passage coupling which communicates with the gas supply passage and is engageable with the first gas passage coupling, and wherein when the first and second coupler units are releasably coupled the gas supply passage communicates with the inert gas source through the first and second gas passage couplings and the first and second circuits are electrically coupled through the first and second connectors.

5,332,014

CONTROLLED-RELEASE SOAP DISPENSER

Steven J. Feig, Dix Hills, N.Y., assignor to Cleanse Tec Division of F&N Chemical Co., Inc., Brooklyn, N.Y.

Filed Nov. 6, 1992, Ser. No. 973,075
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—110 25 Claims



1. A device for the controlled delivery of a soapy water liquid concentrate solution to a sink as the sink is filled by a stream of water from a source of fill water, the device comprising:

a container having a base predeterminately configured so as to allow said container to be placed in a stationary operative position within the sink beneath the source of fill water and in the path of the stream of water;

said container containing a predetermined quantity of water soluble, semi-solid detergent, said detergent comprising a substantially homogeneous, malleable mass of high density, semi-solid detergent, said mass being substantially affixed to an interior surface of said container and having an exposed surface portion within said container, said exposed surface being exposed to said stream of fill water entering said container through said first aperture;

said container having a first aperture defined therethrough in spaced relation to said base, said first aperture being predeterminately sized and oriented such that when said container is in said operative position, the stream of water from the source of fill water enters said container through said first aperture and agitates against said exposed surface and commingles with said semi-solid detergent in the container so as to dissolve a predetermined fractional quantity of the semi-solid detergent in the fill water entering the container and thereby form a soapy water liquid concentrate;

said container having a height defined by the spacing between said base and said first aperture;

said container having defined therethrough a second aperture from which said soapy water concentrate is ejected from the container by increased pressure developed within the container in response to the entry of the stream of fill water into the container through said first aperture, said ejection gradually filling the sink with the ejected soapy water concentrate; and

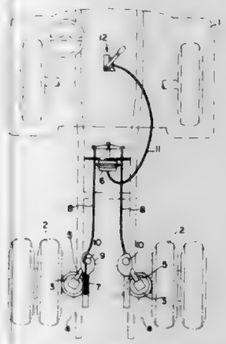
said container height being selected such that when the sink is filled to a level in excess of the height of said container, said agitation of the fill water within the container substantially ceases and said ejection of soapy water liquid concentrate through said second aperture substantially ceases so that, upon further filling of the sink with water from the fill source, the soapy water concentrate in the sink is diluted to a desired soap concentration level.

5,332,015

ANTI-SKID DEVICE FOR MOTOR VEHICLES

Erich P. A. Zeiser, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to RUD-Kettenfabrik Rieger & Dietz GmbH. u. Co, Aalen, Fed. Rep. of Germany

Filed May 6, 1993, Ser. No. 58,584
Claims priority, application Fed. Rep. of Germany, May 8, 1992, 4215370
Int. Cl.[5] B60C *27/02*
U.S. Cl. 152—208 17 Claims



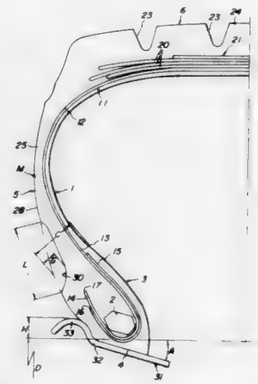
1. An anti-skid device for motor vehicles, said device comprising a plurality of chain strands (**4**) fastened to a holder (**3**) capable of being set in rotational movement and whose ends facing away from the holder (**3**), with the holder (**3**) rotating in an operating position, are propelled away from the holder (**3**) under the effect of centrifugal force into the region of the ground contact surface of a rotating vehicle tire (**2**), with a carrier (**5**) mounted on a vehicle for the holder (**3**), and with a drive unit (**6**) which , from a driver's cab (**1**) of the vehicle, can be subjected by way of a compressed-gas pipe (**11**) to the pressure of a gaseous medium and by means of which the carrier (**5**) can be moved out of a rest position and into its operating position, wherein the compressed-gas pipe (**11**) can be connected to a compressed-gas reservoir formed by an exchangeable compressed-gas cartridge (**13**), said anti-skid device further comprising means for opening said compressed-gas cartridge arranged int eh driver's cab of said motor vehicle, said means for opening including a magazine for a plurality of said compressed-gas cartridges (**13**).

5,332,016

PNEUMATIC TIRES WITH SIDEWALL RECESSES

Makoto Tsuruta; Hiroyuki Iida; Yasuhiko Kobayashi, and Hiroyuki Koseki, all of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 10, 1991, Ser. No. 774,224
Claims priority, application Japan, Oct. 16, 1990, 2-276677
Int. Cl.[5] B60C *13/02*
U.S. Cl. 152—523 10 Claims



1. A pneumatic tire comprising; a pair of beads, a carcass ply, said carcass ply having a main body located axially inside the beads and outer ply portions extending along the main body of the carcass ply and axially outside each of the beads, a number of circumferentially spaced recesses being provided in an outer surface of the tire between a radially outer end of each of the outer ply portions and a location corresponding to a maximum width of the tire, said recesses having a depth equal to 1/10 to ½ times as large as a thickness of those portions of the tire which are provided with the recesses, an inclined angle at a base portion of each of the beads being about 15° relative of a rotary axis of the tire, wherein $0.4P \leqq W \leqq 0.8P$ and $B \leqq 0.06D$ in which P is a circumferential pitch of the recesses, B a minimum distance between the adjacent recesses, W a circumferential width of each of the recesses which is obtained by deducting the minimum distance B from the pitch P, and D a diameter of a portion of a tire located at a same radial level as that of a rim base of a normal rim when said tire is fitted and mounted to such a normal rim.

5,332,017

PNEUMATIC RADIAL TIRE REINFORCED WITH SINGLE WIRE STEEL CORDS OF SPECIFIC SPIRAL SHAPE

Susumu Imamiya; Eiji Igarashi; Hisao Kato, and Tomohiko Kogure, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 70,914
Claims priority, application Japan, Jun. 5, 1992, 4-145446
Int. Cl.[5] B60C *9/18, 9/20, 9/22*
U.S. Cl. 152—527 5 Claims

1. A pneumatic radial tire comprising a tread portion, a carcass ply laid to turn about a pair of bead cores, and at least one circumferentially extending belt layer reinforced with an array of steel cords and interposed between said tread portion and said carcass ply, each of said steel cords consisting of a single steel wire and positioned in said belt layer at an angle with respect to the circumference of the tire, each of said steel

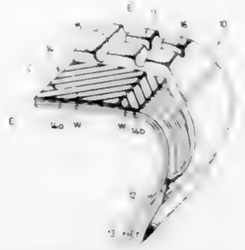
wires being spirally preformed to meet the structural requirements set forth by the equation

$$F = (D-d)/P$$

where

$0.01 \leqq F \leqq 0.05$;

$0.28\ (mm) \leqq d \leqq 0.05\ (mm)$ and



$2.0\ (mm) \leqq P \leqq 8.0\ (mm)$

wherein F is the determinant parameter of the optimal spiral of said steel wire, D is the diameter of the spiral of said steel wire measured in a direction perpendicular to the longitudinal direction thereof, d is the diameter of said steel wire and P is the pitch of the spiral along the length of said steel wire

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5,332,018

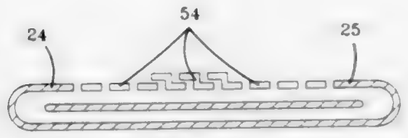
FOLDED BELT REINFORCING ASSEMBLY INCLUDING SPIRALLY WOUND STRIP FOR A PNEUMATIC TIRE

Alain Roesgen, Grevenknapp, and Pierre Kummer, Bereldange, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 1, 1989, Ser. No. 401,709

Int. Cl.[5] **B60C** *9/26*

U.S. Cl. 152—528 **1 Claim**



1. A pneumatic tire comprising a radial ply carcass, a tread disposed radially outwardly of the crown region of the carcass, a belt assembly including at least a first belt ply and a second belt ply, interposed between the tread portion and the crown region in circumferential surrounding relation to the carcass, whereby at least one of the plies of the belt assembly has folded back portions on at least one lateral side, so that there is one folded back portion on the opposed lateral sides of the belt assembly, each of the belt plies comprising reinforcement cords extending parallel to one another in each belt ply, and the cords in the first belt ply making with the cords in the second belt ply opposed angles with respect to the equatorial plane of the tire, characterized in that a spirally wound strip, made from cord reinforced elastomeric material, is located in the proximity of the belt plies and extends at least transversely between free edges of the folded back portions, and spiral convolutions of the strip make an angle of between 0° and 5° with the tire's equatorial plane, and wherein the spiral convolutions of the spirally wound strip are in abutment with the adjacent convolutions in a region of the edges of the folded back portions and have an overlapping relationship in a region of the equatorial plane of the tire.

5,332,019

PNEUMATIC TIRE HAVING A RIM INTERFACING BEAD PROFILE FOR IMPROVED FIT

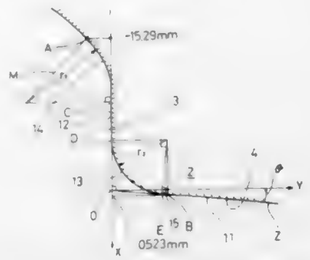
Masanao Yoshida, Akashi, and Yoshiaki Uemura, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd, Kobe, Japan

Filed Feb. 18, 1993, Ser. No. 19,448

Claims priority, application Japan, Feb. 21, 1992, 4-072615

Int. Cl.[5] **B60C** *15/024*

U.S. Cl. 152—544 **6 Claims**



1. A pneumatic tire, whose nominal tire width in the tire size designation is in the range of 135 to 275 millimeters, for mounting on a rim comprising

a pair of axially spaced bead portions, each of said pair of bead portions having, in cross section including the tire axis, a bead profile, said bead profile interfacing with the rim,

a tread portion with axial edges, and

a pair of sidewall portions extending from the tread edges to the bead portions,

said bead profile including a curved line being within a range between a locus of

$$Y = f(x) + 1\ mm$$

and a locus of

$$y = f(x) - 1\ mm$$

which are made when x-value is varied from −15.29 to 0.523 mm, wherein

$$f(x) = 3.789 + 2.4273x + 0.73024x^2 + 0.12736x^3 + 0.012774x^4 + 6.659 \times 10^{-4}x^5 + 1.36 \times 10^{-5}x^6$$

f(x) is a function of x,

x is a variable indicating a relative radial distance in millimeter based on a reference point, said reference point being set at the heel point of each said bead portion, defining the direction of increase of the x-value as being radially inward of the tire, and

y is a variable indicating a relative axial distance in millimeter based on said reference point, defining the direction of increase of the y-value as being axially inward of the tire, wherein

the heel point is an intersecting point between the straight bead bottom line being inclined at five degrees to the tire axial direction and the straight bead side line being parallel to the tire radial direction.

5,332,020

TIRE CHANGING APPARATUS

Larry F. Brunner, R.R. 2, Box 77, Springfield, Vt. 05156

Filed Nov. 5, 1992, Ser. No. 972,148

Int. Cl.[5] **B60B** *30/00*

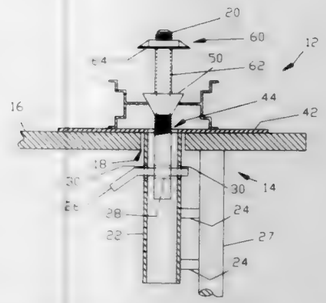
U.S. Cl. 157—14 **12 Claims**

1. A tire changing device for mounting and dismounting

tires from a rim for use in combination with a bench having a bench top, comprising:

a threaded rod;

a sleeve which is slidably engaged by said threaded rod, said sleeve guiding said threaded rod from a below bench top position to an above bench top position wherein a portion of said threaded rod is above a bench top;



means for coupling said sleeve to a bench;

means for positioning and locking said threaded rod with respect to said sleeve in said above bench top position;

a friction pad for placement on a bench top through which said rod passes;

a hub restrainer through which said threaded rod passes; and

a torque nut for engaging with said threaded rod.

5,332,021

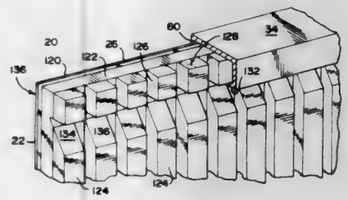
FLEXIBLE RETRACTABLE DOOR

John M. Todd, 30 Pardon Drive, Downsview, Ontario, Canada M3H 4X1 , and James A. Grieve, 248C Broadway Avenue, Toronto, Ontario, Canada M4P 1V9

Continuation-in-part of Ser. No. 757,602, Sep. 11, 1991, abandoned. This application May 8, 1992, Ser. No. 880,491

Int. Cl.[5] **E06B** *9/08*

U.S. Cl. 160—133 **17 Claims**



1. A flexible retractable closure assembly for an opening comprising:

a flexible sheet having front and rear end edges and side edges extending laterally between the end edges,

said sheet having a permanent memory set to gather itself automatically into a compact configuration proximate said rear edge,

locating means retaining said compact configuration at one side of said opening,

guide means guiding said sheet from the locating means across the opening,

retaining means for holding the sheet in an extended position whereby the sheet extends at least partially over said opening,

and wherein by the sheet moving from said locating means, the sheet is movable between:

(a) a retracted position with the front end edge near the locating means and the substantial entirety of the sheet in a compact state, and

(b) said extended position with the front end edge spaced from the locating means and a substantial portion of the sheet extending across the opening

said sheet includes stiffening means, wherein said stiffening means comprise vertically extending slats attached to said sheet in side-by-side fashion, said slats providing a tambour effect to said sheet.

5,332,022

COMPOSITE CASTING METHOD

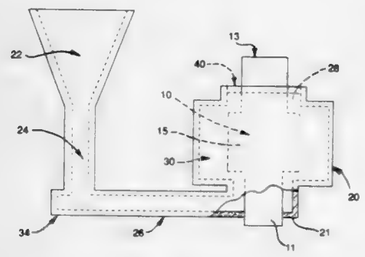
Gregory N. Colvin, Muskegon, Mich., assignor to Howmet Corporation, Greenwich, Conn.

Filed Sep. 8, 1992, Ser. No. 942,020

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[5] **B22D** *19/02*

U.S. Cl. 164—98 **12 Claims**



1. A method of making a casting having a preformed reinforcement insert therein, comprising:

a) positioning a preformed metallic or intermetallic reinforcement insert in a melt-receiving cavity of a casting mold,

b) solidifying a melt introduced into the melt-receiving cavity about the insert to form a composite casting having an interface between the insert and melt solidified about the insert, said interface communicating with an exterior surface of said casting.

c) separating said mold and said casting,

d) fluid-tight sealing said interface at said exterior surface, and

e) subjecting the composite casting to elevated temperature and elevated isostatic fluid pressure to form a metallurgical bond between the insert and solidified melt, said sealed interface preventing the fluid pressure from migrating from said exterior surface between said insert and said melt solidified thereabout.

5,332,023

LEACHING OF CERAMIC MATERIALS

David Mills, Bristol, England, assignor to Rolls-Royce plc, London, Great Britain

Filed Apr. 28, 1993, Ser. No. 53,263

Claims priority, application United Kingdom, May 8, 1992, 9210008.0; Mar. 15, 1993, 9305293.4

Int. Cl.[5] **B22D** *29/00*

U.S. Cl. 164—132 **16 Claims**

1. A method of leaching a ceramic material from a passage within an article, the method comprising the steps of,

(a) placing the article together with the ceramic material in situ therein in a sealable enclosure, in which there is provided a leaching liquor at a temperature immediately below its normal atmospheric boiling point,

(b) sealing the enclosure,

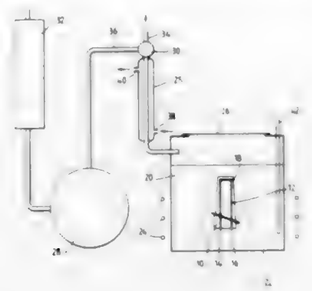
(c) for a first period of time, maintaining the liquor in a quiescent state in contact with the ceramic material,

(d) reducing the pressure within the enclosure to less than atmospheric pressure so as to induce boiling and agitation of the leaching liquor within said passage within the arti-

VOL 1164 ISS 4 JL 26 1994 UMI

cle for a second period of time, thereby to enhance leaching of the ceramic material within the passage,

(e) raising the pressure within the enclosure to atmospheric pressure, and returning the liquor to a quiescent state,



(f) removing spent leaching liquor together with leached ceramic material from within the article.

5,332,024

MULTIPURPOSE MOLD

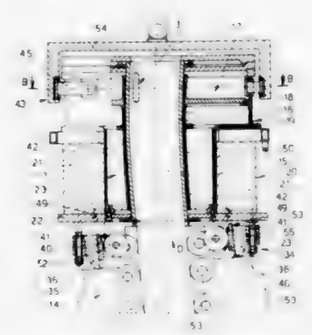
Fulvio Fasano, Udine, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Mar. 4, 1992, Ser. No. 845,657

Claims priority, application Italy, Mar. 5, 1991, UD91 A 000029

Int. Cl.[5] **B22D** *11/16*

U.S. Cl. 164—449.1 **12 Claims**



1. A multipurpose mold which cooperates at its lower end with a discharge roller conveyor having a first removable segment, comprising

a longitudinally extending crystallizer;

at least one level control system for controlling a level of liquid metal in said crystallizer;

a jacket surrounding and spaced from said crystallizer for at least a portion of a length of said crystallizer, said jacket and said crystallizer defining an interspace, said interspace being means for accelerated flow of cooling fluid;

an outer sidewall forming at least one chamber around said jacket and crystallizer, at least a lower part of said outer sidewall comprising a substantially circular enclosure defining a space, said space being means for providing an electromagnetic stirrer therein;

a closure bottom, said closure bottom being means for operatively closing a lower end of said space and being means for supporting thereon said electromagnetic stirrer;

a positioner provided at a lower portion of said closure bottom, said positioner being means for positioning and alignment of said mold with a guide positioned substantially above said first removable segment of said discharge roller conveyor; and

attachment means for attaching said mold to a connection means positioned substantially above said first removable segment of said discharge roller conveyor, wherein the attachment means is provided at a lower portion of said closure bottom.

5,332,025

METHOD OF AND APPARATUS FOR PRODUCING A SERIES OF CASTING MOLDS OR MOLD PARTS

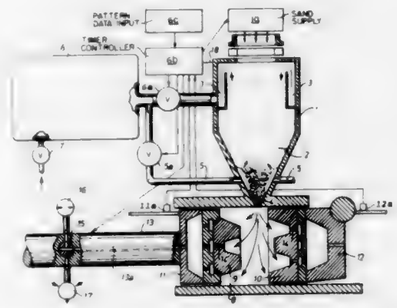
Jens P. Larsen, Albertslund, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

PCT No. PCT/DK90/00079, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO91/14525, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 20, 1990, Ser. No. 934,458

Int. Cl.[5] **B22C** *11/10, 15/28*

U.S. Cl. 164—456 **6 Claims**



1. A method of producing a series of casting molds or casting mold parts comprising a compacted particle material, said method comprising the steps of:

a) adding uncompacted particle material to a molding cavity adapted for forming a casting mold or mold part and bounded by at least two walls, at least one of said walls being movable towards the other of said walls, and at least one of said walls carrying a pattern, a shape of said pattern corresponding to a shape of a corresponding part of a casting to be cast using said mold or mold part;

b) measuring or computing a volume of the molding cavity and storing said volume;

c) pressing said walls toward each other so that the particle material therein is compacted;

d) measuring or computing a volume of the compacted molding cavity and storing said volume of the compacted molding cavity;

e) moving said walls apart;

f) removing the compacted starting mold or mold part from the molding cavity;

g) computing a compaction ratio of the mold or mold part by subtracting the volume of the compacted molding cavity from the volume of the molding cavity before said step of pressing and then dividing the result by the volume of the molding cavity before said step of pressing;

h) comparing the compaction ratio to a desired value to determine whether the compaction ratio is greater or less than a desired compaction ratio and reducing or increasing, respectively, compacting pressure used during said step of pressing and/or quantity of uncompacted particle material introduced during said step of adding; and

i) repeating the above-recited steps to form a desired number of casting molds or casting mold parts in the series.

5. An apparatus for automatically producing a series of casting molds or casting mold parts comprising:

a) a molding cavity adapted for forming a casting mold or a mold part, said cavity being bounded by at least two walls, at least one of said walls being movable towards the other wall, and at least one of said walls carrying a pattern, the shape of said pattern corresponding to a shape of a corresponding part of a casting to be cast using said mold or mold part;

b) filling means adapted to introduce particle material into said molding cavity;

c) pressing means adapted to press said walls toward each other to compact particle material introduced into the molding cavity;

d) measuring means for measuring or computing volume of said molding cavity before and after said step of pressing;

e) control means for calculating a compaction ratio of the casting mold or mold part by subtracting the volume of the compacted molding cavity from the volume of the molding cavity before said step of pressing and then dividing the result by the volume of the molding cavity before said step of pressing, said control means further providing means for computing a difference between said compaction ratio and a desired value of compaction ratio and for adjusting compacting pressure and/or quantity of introduced particle material to reduce said difference.

5,332,026

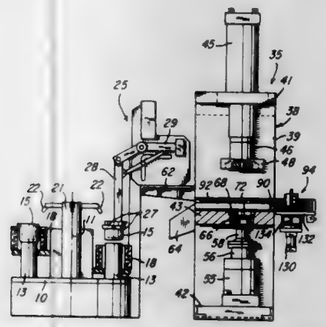
PRODUCTION OF COPPER DIE CAST ROTORS FOR ELECTRIC MOTORS

Ted H. Thieman, and Richard J. Kamm, both of Dayton, Ohio, assignors to THT Presses Inc., Dayton, Ohio

Filed Sep. 28, 1992, Ser. No. 951,804

Int. Cl.[5] **B22D** *17/12, 19/00*

U.S. Cl. 164—493 **15 Claims**



1. A method of producing a die-cast rotor for increasing the efficiency of an electric motor, comprising the steps of induction heating a predetermined volume of copper material including electrolytic copper and boron copper master alloy to a temperature of over 2,000° F. within a crucible until the material is in a molten state, transferring the crucible and the volume of molten copper material within the crucible to a die cast press including a charging cylinder enclosing a charging piston connected to a hydraulic cylinder, clamping end ring molds and a stack of rotor laminations against the charging cylinder, actuating the hydraulic cylinder to inject the molten copper material with the charging piston into corresponding cavities within the end ring molds and into peripherally spaced bar slots within the stack of rotor laminations, and cooling the molds to solidify the molten copper material within the cavities and slots.

14. Apparatus for producing a die-cast rotor for increasing the efficiency of an electric motor, comprising a crucible for receiving a predetermined volume of copper material, an induction heater for heating said crucible and the copper material therein to a temperature of over 2,000° F. until the material is in a molten state, a vertical die cast press including a vertical charging cylinder enclosing a charging piston connected to a hydraulic cylinder, means for transferring said crucible and the molten copper material within said crucible from said induction heater to said charging cylinder, a stack of rotor lamination defining peripherally spaced bar slots and positioned between a set of end ring molds defining corresponding cavities and gates connecting said cavities to said charging cylinder, means for clamping said set of end ring molds and rotor laminations downwardly against said charging cylinder, and means for actuating said hydraulic cylinder for moving said charging piston upwardly for injecting the molten copper material from said charging cylinder and through said gates at a velocity of at least 2000 inches per second and into said cavities and bar slots.

5,332,027

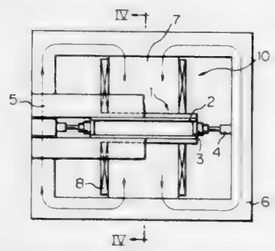
ELECTROMAGNETIC BRAKING APPARATUS FOR CONTINUOUS CASTING MOLD

Ryuichi Kageyama, and Toshio Kikuchi, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 28,814

Int. Cl.[5] **B22D** *27/02*

U.S. Cl. 164—502 **6 Claims**



1. An electromagnetic braking apparatus for a continuous casting mold, comprising:

a casting mold with a rectangular cross section including wide side walls and narrow end walls;

electromagnets each of which comprises a core disposed along the side wall of said casting mold and a coil wound around said core for applying a magnetic field in the direction across the side walls of said casting mold; and

a support frame for supporting a width changing means for changing the width of said casting mold and cooling boxes for cooling said casting mold, said support frame extending to surround said casting mold and said electromagnets and connected to the cores of said electromagnets to thereby form the magnetic path of said electromagnets.

5,332,028

METHOD AND APPARATUS FOR CONTROLLING SUPPLEMENTAL ELECTRIC HEAT DURING HEAT PUMP DEFROST

Derrick A. Marris, Mooresville, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 12, 1993, Ser. No. 31,155

Int. Cl.[5] **F25B** *29/00*

U.S. Cl. 165—1 **14 Claims**

1. An improved method of defrosting an outdoor coil of a heat pump system having a supplemental heater for heating the air stream passing from an indoor coil to an air supply duct during defrost operation, comprising the steps of:

providing at least one additional heater for heating air passing from the indoor coil to the air supply duct during defrost operation;

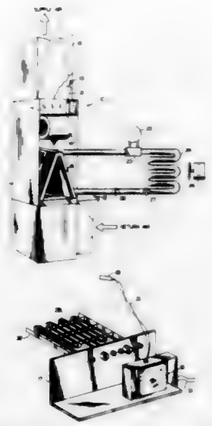
sensing when the temperature of the air being delivered to the air supply duct decreases to a predetermined level; and

responsively turning on said at least one additional heater when said predetermined level is so sensed.

6. An improved heat pump system of the type having out-

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door and indoor heat exchange coils with associated fans, a compressor, an expansion device, means for reversing the flow of refrigerant for purposes of selecting between heating, cooling, and defrost modes of operation and a supplemental heater for heating an air stream passing from the indoor coil to an air supply duct during defrost operation, wherein the improvement comprises:

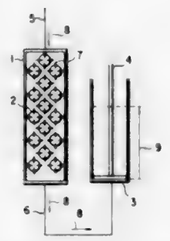


at least one additional heater for heating air passing from the indoor coil to the air supply duct during defrost operation;
sensing means for sensing when the temperature of the air being delivered to the air supply duct decreases to a predetermined level;
and control means for responsively turning on said at least one additional heater when said predetermined level is so sensed.

5,332,029
REGENERATOR

Yoichi Tokai, Yokohama, and Akiko Takahashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 31, 1992, Ser. No. 999,715
Claims priority, application Japan, Jan. 8, 1992, 4-001375; Sep. 30, 1992, 4-261862
Int. Cl.[5] F28D *17/02*
U.S. Cl. 165—4 **20 Claims**



1. A regenerator filled with a heat regenerative material comprising at least one compound represented by the following formula:

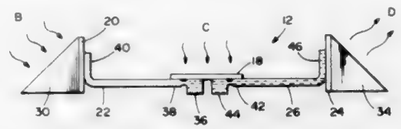
$$RM_{0.5}$$

where R is at least one rare earth element selected from the group consisting of Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu; and M is at least one metal selected from the group consisting of Al, Ga, In and Tl.

5,332,030
MULTI-DIRECTIONAL COOLER

Alan L. Spencer, Cupertino, and Ying-Yan Kuo, Palo Alto, both of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Jun. 25, 1992, Ser. No. 903,895
Int. Cl.[5] F28D *15/02*; **B64G** *1/50*
U.S. Cl. 165—32 **14 Claims**

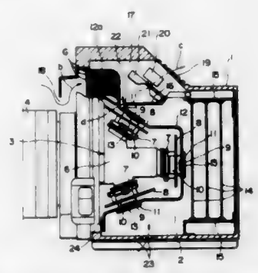


1. A passive thermal control system comprising:
at least two diode heat pipes, each of the pipes having a reservoir area;
means for transferring heat from a heat load to the diode heat pipes comprising the reservoir areas being located proximate the heat load;
a first radiator connected to one of the diode heat pipes opposite its reservoir area; and
a second radiator connected to another of the diode heat pipes opposites its reservoir area, the second radiator being orientated away from the first radiator.

5,332,031
COOLING SYSTEM FOR COOLING A SOLID-STATE IMAGING DEVICE

Kazuyoshi Kiga, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 42,783
Claims priority, application Japan, Apr. 10, 1992, 4-116689
Int. Cl.[5] H01L *23/427*
U.S. Cl. 165—86 **6 Claims**

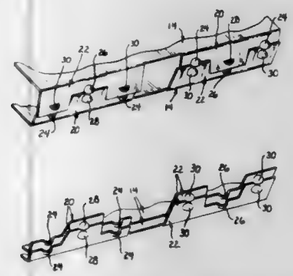


1. A cooling system for cooling heat-producing electronic devices included in an electronic apparatus having a body with a chamber therein containing the heat-producing electronic devices, said cooling system comprising:
electronic cooling devices disposed respectively near the heat-producing electronic devices;
buffering heat conducting mechanisms connecting the heat-producing electronic devices respectively to the electronic cooling devices and each including first and second members of highly heat-conductive material having mating, part-spherical surfaces which are universally slidable relative to each other about a common center, elastic means urging said part-spherical surfaces toward each other so as to maintain efficient heat conduction thereacross in the event of the angular shifting of said heat-producing electronic devices relative to the respective electronic cooling devices, and highly heat-conductive connecting means between said first member and the respective heat-producing electronic device and between said second member and the respective electronic cooling device, one of said connecting means having mating cylindrical surfaces which are slidable relative to each other in an axial direction passing through said common center for accommodating relative bodily movements of each of said heat-producing electronic devices and the respective electronic cooling device in said axial direction;
a partition wall extended in said chamber of the body so as to form an air passage for forced-air cooling;
a motor-driven fan disposed in said air passage; and
a heat radiating coil unit formed of a small tube coiled in loops and a heat conveying fluid sealed in the small tube, said coil unit having heat absorbing portions with heat-conductive connections to the electronic cooling devices, and a heat radiating portion disposed in said air passage.

5,332,032
LAMINATED HEAT EXCHANGER WITH STACKABLE TUBE PLATES

David W. Beddome, Amherst, and Gary S. Vreeland, Medina, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1993, Ser. No. 134,454
Int. Cl.[5] F28D *9/00*
U.S. Cl. 165—153 **3 Claims**



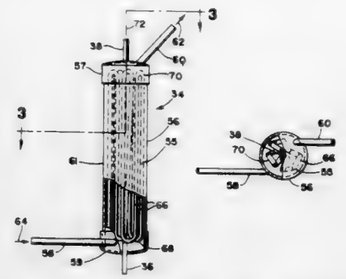
1. In a laminated heat exchanger of the type having a plurality of tubes made up of pairs generally planar tube plates with protruding integral cups at a first end and interfitting spacer flanges at the opposite end, said cups and flanges abutting at each plate end to space said tubes apart by a first predetermined distance, said integral cups partially nesting together to maintain said first plate ends spaced apart by a second, lesser predetermined distance when said tube plates are stacked prior to assembly, the improvement comprising,
projections on said spacer flanges located so as to contact a portion of each consecutive stacked plate and spaced from the plane of said tube plate sufficiently to maintain said opposite ends of consecutive stacked plates spaced apart by substantially the same lesser distance.

5,332,033
METHOD AND APPARATUS FOR FILTERING AND COOLING SURFACE FINISHING COMPOUNDS

George L. Metzger, 323 Eighth St., Downers Grove, Ill. 60515

Division of Ser. No. 697,399, May 9, 1991, Pat. No. 5,203,121.
This application Jan. 6, 1993, Ser. No. 1,071
Int. Cl.[5] F28D *7/08*
U.S. Cl. 165—163 **4 Claims**

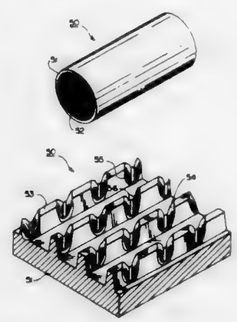
1. An intercooler for controlling the temperature of recycled finishing compounds used in surface machine finishing processes, the intercooler having an intercooler inlet, an intercooler outlet, chamber for receiving and maintaining the finishing compound in a constant flow, spiral circulation, and cooling tubes having a circulating fluid inlet and a circulating fluid outlet, the cooling tubes receiving circulating fluid having a preset temperature from a temperature control unit, the intercooler further includes a cylindrical chamber having an axis and a cylindrical chamber sidewall, the cooling tubes have multiple legs and loops connected continuously with the circulating fluid inlet and circulating fluid outlet for receiving substantially the same flow of circulation fluid through each of the loops and legs, the legs and loops of the cooling tubes further connected and looped continuously in a substantially parallel, spaced relationship along the axis of the cylindrical chamber, the cooling tubes further arranged in a spaced relationship from the chamber sidewall, the finishing compound circulating about the cooling tubes during which the temperature of the finishing compound is changed to a predetermined level.



5,332,034
HEAT EXCHANGER TUBE

Robert H. L. Chiang, Liverpool, and Jack L. Esformes, N. Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,777
Int. Cl.[5] F28F *1/40*
U.S. Cl. 165—184 **6 Claims**



1. An improved heat exchanger tube (**50**) having
a wall (**51**) having an inner surface,
an inner diameter (D_i),
a longitudinal axis a_r) and
a plurality of ribs (**53**) formed on said inner surface,
each of said ribs having
two opposite sides and
a height (H_r) and
extending substantially parallel to said longitudinal axes,
in which the improvement comprises:
a pattern of parallel notches (**54**), each notch having opposite first and second faces (**56**) opposite and inclined to each other and that portion of said notch where said first

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face is closest to said second face being proximal to said inner surface, impressed into said ribs to a depth (H_n) of at least 40 percent of said rib height and at an angle (β) oblique to said longitudinal axis;

the ratio of said rib height to said tube inner diameter being between 0.02 and 0.04; and

the ratio between the interval (S_n) between notches in a rib and said tube inner diameter being between 0.025 and 0.07

5,332,035

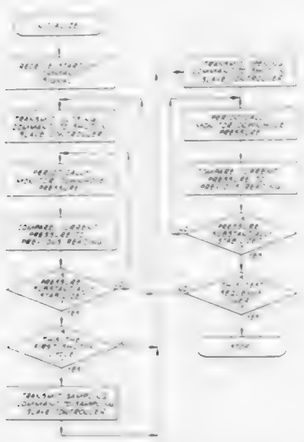
SHUT-IN TOOLS

Roger L. Schultz, Richardson; Craig L. Zitterich, Corinth; Harold K. Beck, Copper Canyon, and William L. Bohan, Garland, all of Tex., assignors to Halliburton Company, Houston, Tex.

Division of Ser. No. 868,832, Apr. 14, 1992, Pat. No. 5,234,057, which is a continuation-in-part of Ser. No. 730,211, Jul. 15, 1991, abandoned. This application May 27, 1993, Ser. No. 69,351

Int. Cl.[5] **E21B** *47/06, 43/12, 34/10, 49/08*

U.S. Cl. 166—53 **12 Claims**



1. A controller for a downhole apparatus, comprising:

means for providing signals representing values of a downhole parameter changing over time;

means, responsive to said signals, for comparing a later one of said values with an earlier one of said values and for providing a plurality of output signals indicating when said later value is within different predetermined ranges of said earlier value; and

means for providing a control signal to the downhole apparatus in response to a selected one of said output signals.

5,332,036

METHOD OF RECOVERY OF NATURAL GASES FROM UNDERGROUND COAL FORMATIONS

Arthur I. Shirley, Piscataway, and Ramakrishnam Ramachandran, Allendale, both of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 883,504, May 15, 1992, abandoned. This application Dec. 4, 1992, Ser. No. 986,842

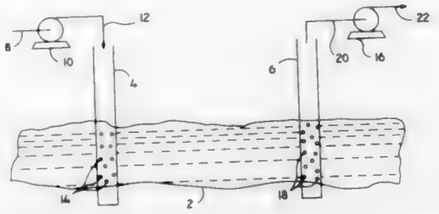
Int. Cl.[5] **E21B** *43/00*

U.S. Cl. 166—268 **12 Claims**

1. A process for recovering an adsorbed fuel gas from an underground deposit comprising:

(a) injecting a first stream comprising as major components one or more strongly adsorbable fluids into said deposit;

(b) injecting a second stream comprising one or more weakly adsorbable gases into said deposit, thereby causing said one or more strongly adsorbable components to flow



through said deposit and desorb said fuel gas therefrom; and

(c) withdrawing said fuel gas from said deposit.

5,332,037

SQUEEZE CEMENTING METHOD FOR WELLS

Joseph H. Schmidt; Lamar L. Gantt, and William H. Smalstig, all of Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 16, 1992, Ser. No. 976,602

Int. Cl.[5] **E21B** *33/14*

U.S. Cl. 166—276 **8 Claims**



1. A method for sealing at least one of perforation tunnels and voids in an earth formation in communication with a deviated wellbore by way of perforations in a casing disposed in said wellbore, which tunnels and voids cannot retain a cement slurry along, comprising the steps of:

injecting a resin-coated particulate material into said one of said perforation tunnels and voids through said perforations and causing said particulate material to consolidate and bond to form a substantially rigid, permeable mass; and

injecting a cement slurry into said well and into said one of said perforation tunnels and voids through said perforations to fill the interstices formed by said particulate material and allowing said cement slurry to set to substantially prevent flow of fluids between said formation and said wellbore through said one of said perforation tunnels and voids.

5,332,038

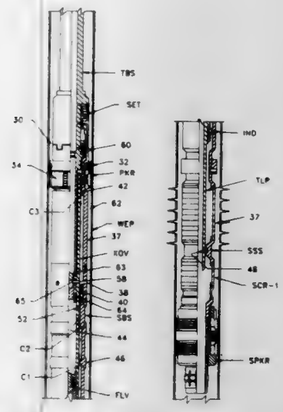
GRAVEL PACKING SYSTEM

Wiliam T. Tapp, Yorktown; Marvin B. Traweek, and Richard A. Mollicone, both of Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Aug. 6, 1992, Ser. No. 925,173

Int. Cl.[5] **E21B** *33/124, 43/04*

U.S. Cl. 166—278 **33 Claims**



1. A method for operating a hydraulically actuated packer and a connected tubular gravel packing screen tool in a wellbore containing a liquid at hydrostatic pressure comprising the steps of:

running the packer and the gravel packing screen tool into the wellbore with a string of tubing and an attached setting tool which is releasably connected to the packer and where the setting tool has an attached crossover tool within the gravel screen tool for providing liquid flow paths between the string of tubing and the crossover tool to the wellbore below the packer and to an upper annulus between the tubing and the wellbore above the packer and where the crossover tool includes an elongated bore section with a lower float valve, an upper axial gravel port and an intermediate valve member where the valve member has a ball valve seat above said axial gravel port and a fluid bypass extending from below said valve member to said gravel port so that liquid in the wellbore is not trapped between said float valve and said valve member;

at a desired location, closing said ball valve seat with a ball member and closing off said axial port;

applying a first pressure to said ball member to move said valve member to a first position and close off said bypass passage and to trap hydrostatic pressure below said bypass passage;

applying a second higher pressure to said ball member to hydraulically set said packer;

after said packer is set, applying a third higher pressure to said ball member to move said valve member to a second position where the axial port is opened.

5,332,039

SELECTIVE DUAL GRAVEL PACK

Kurt P. Primeaux, Mandeville, and John M. Guidry, Luling, both of La., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 7, 1992, Ser. No. 986,205

Int. Cl.[5] **E21B** *43/00*

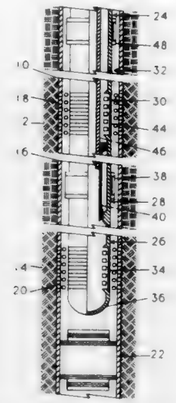
U.S. Cl. 166—278 **5 Claims**

1. A method for sequentially producing vertically spaced hydrocarbon containing zones penetrated by a single well bore comprising:

providing upper and lower production assemblies;

providing isolation tubing extending through said upper production assembly;

setting said upper and lower production assemblies in a well substantially aligned with upper and lower zones to be produced;



producing the lower zone to depletion;

setting a plug in said isolation tubing between said zones;

perforating said tubing in said upper zone; and

producing said upper zone to depletion.

5,332,040

PROCESS TO CEMENT A CASING IN A WELLBORE

James J. W. Nahm; Arthur H. Hale, both of Houston, and Kenneth M. Cowan, Sugar Land, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,976

Int. Cl.[5] **E21B** *33/14*

U.S. Cl. 166—293 **15 Claims**

1. A method for cementing a wellbore, the method comprising the steps of:

a) first placing a cementitious slurry comprising granulated water-quenched blast furnace slag in a wellbore;

b) inserting a casing into the wellbore after said cementitious slurry is placed in said wellbore, said casing being substantially centralized in said wellbore;

c) allowing the cementitious slurry to harden in the annulus surrounding the casing.

5,332,041

SET-ACTIVATED CEMENTITIOUS COMPOSITIONS AND METHODS

David D. Onan, Lawton; Dralen T. Terry, Duncan, and Wendell D. Riley, Marlow, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 30, 1992, Ser. No. 998,276

Int. Cl.[5] **E21B** *33/14*

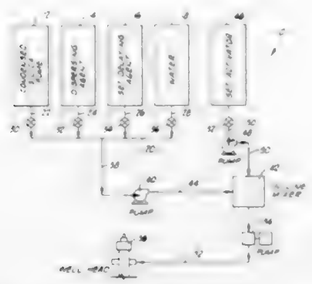
U.S. Cl. 166—295 **12 Claims**

1. A method of cementing a subterranean zone penetrated by a well bore comprising the steps of:

forming a pumpable cementitious composition consisting essentially of water, particulate condensed silica fume consists essentially of particles having diameters less than about 1 micrometer suspended in said water in a weight ratio of condensed silica fume to water in the range of from about 1:2 to about 1.5:1, a dispersing agent for facilitating the dispersal of said silica fume particles in said water and maintaining said particles in suspension therein, a set-activator selected from calcium hydroxide, magnesium oxide, or mixtures thereof, and a set delaying addi-

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tive for increasing the time in which said composition sets after said set-activator is combined therewith;



pumping said cementitious composition into said zone by way of said well bore; and

allowing said cementitious composition to set in said zone.

5,332,042

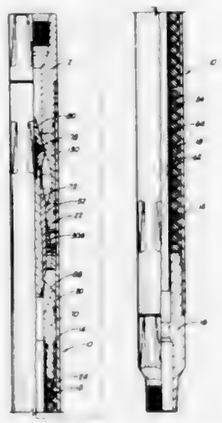
FLUID CONTROL VALVE

Jeffrey S. Walter; Kenneth D. Caskey, and Clinton W. Cole, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 21, 1991, Ser. No. 780,676

Int. Cl.[5] E21B *34/06*

U.S. Cl. 166—321 **11 Claims**



1. A fluid flow control valve for use in a well bore having a string of conduit therein, said valve to control the flow of fluids through said string of conduit into said well bore, said fluid flow control valve comprising:

a valve case adapted to be connected to said string of conduit in said well bore so that fluid flowing down through said string of conduit flows through said fluid flow control valve;

a valve piston assembly located in a portion of the valve case, the valve piston assembly including a first sacrificial component to be worn away by said flow of fluids through said string of conduit and through said fluid flow control valve while the remaining components of the valve piston assembly remain substantially free of wear by said flow of fluids;

a valve seat assembly located in a portion of the valve case, the valve seat assembly surrounding a portion of the valve piston assembly and including a second sacrificial component to be worn away by said flow of fluids through said conduit string and through said fluid flow control valve while the remaining components of the valve seat assembly remain substantially free of wear, said second sacrificial component being operatively associated with said first sacrificial component to define a flow path therebetween when said valve is open; and

a resilient biasing spring to bias the valve piston assembly in an initial closed position having a portion thereof contacting a portion of the valve seat assembly and to bias the valve piston assembly towards the closed position when forced open by said flow of fluids through said string of conduit and through said fluid flow control valve.

5,332,043

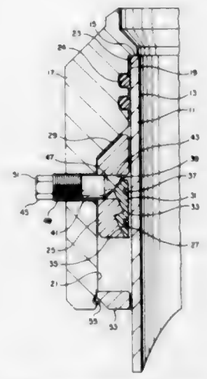
WELLHEAD CONNECTOR

Bobby L. Ferguson, Friendswood, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Jul. 20, 1993, Ser. No. 94,810

Int. Cl.[5] E21B *17/02, 33/03*

U.S. Cl. 166—379 **16 Claims**



1. A connector for a tubular conduit, comprising in combination:

a tubular head having an annular recess;

the head adapted to be placed over the conduit with the recess encircling the conduit;

an annular housing located in the recess;

gripping means carried by the housing for movement relative to the housing between a retracted position and a gripping position in engagement with the conduit;

the gripping means having an exterior wedge surface;

the head and the housing having at least one set of holes which are alignable with each other and with the wedge surface of the gripping means;

lock pin means for extending through the set of holes when aligned with each other into removable engagement with the wedge surface for moving the gripping means to the gripping position;

a cam surface on an exterior surface of the housing; and

means for enabling the cam surface to be engaged from the exterior of the head, for forcing the housing downward relative to the gripping means after the lock pin means has been removed from engagement with the wedge surface, to release the gripping means from engagement with the conduit for removal of the head.

5,332,044

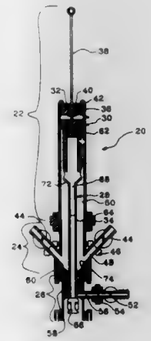
WELLHEAD ISOLATION TOOL AND METHOD OF USE

L. Murray Dallas, 801 New England Ct., Allen, Tex. 75002, and Boyd B. English, Grand Prairie, Canada, assignors to L. Murray Dallas, Allen, Tex.

Filed Oct. 8, 1992, Ser. No. 958,502

Int. Cl.[5] E21B *43/00*

U.S. Cl. 166—386 **12 Claims**



1. A wellhead isolation tool to permit the injection of fluids, solid particles or mixtures thereof through a wellhead having a vertical passage therethrough and including at least one valve and into a well having a production tubing or well casing aligned with the vertical passage, the wellhead isolation tool comprising:

means for attaching the tool to the wellhead;

a pressure relief valve located adjacent the means for attaching the tool to the wellhead;

a high pressure valve located above the pressure relief valve;

a hollow cylinder located above the high pressure valve, the cylinder having a piston forcibly reciprocatable therein;

a mandrel reciprocatable with the piston in a sealed bore defined by the tool, the mandrel including an axial bore and an injection port which communicates with the axial bore so that the injection port aligns with a high pressure bore selectively closed by the high pressure valve when the mandrel is extending through the wellhead and a pack-off nipple attached to a bottom end of the mandrel sealingly engages the production tubing or the casing; and

packing means for engaging a periphery of the mandrel in a fluid tight seal which permits reciprocal movement of the mandrel, the packing means being located between the pressure relief valve and the high pressure valve.

5,332,045

APPARATUS AND METHOD FOR PLACING AND FOR BACKWASHING WELL FILTRATION DEVICES IN UNCASED WELL BORES

Colby M. Ross, Carrollton, and Henry L. Restarick, Plano, both of Tex., assignors to Halliburton Company, Houston, Tex.

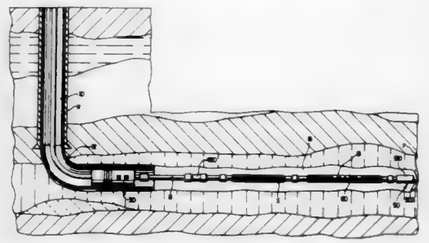
Continuation of Ser. No. 743,792, Aug. 12, 1991, Pat. No. 5,180,016. This application Jan. 6, 1993, Ser. No. 1,020

The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.

Int. Cl.[5] E21B *23/04*

U.S. Cl. 166—387 **4 Claims**

1. An expendable plug for inhibiting the unintentional introduction of fluid power into a flow bore of a well completion apparatus comprising an external mounting collar having a longitudinal flow passage therethrough, mounted within said flow bore so that said flow passage is in flow registration with said flow bore; sealing means about the exterior of said collar and an internal C-Ring comprising an outwardly biased split ring having a bore hole therethrough, said C-Ring being restrained within the bore of said mounting collar by shearable means protruding from said mounting collar into said C-Ring.



5,332,046

AGRICULTURAL MACHINE WITH PLOW HAVING CHANGEABLE PENETRATING ANGLE

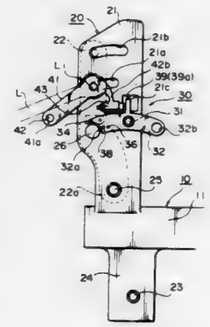
Mikio Tanimizu, and Kouichi Kawano, both of Ibaraki, Japan, assignors to Sugano Farm Machinery Mfg. Co., Ltd., Hokkaido, Japan

Filed Sep. 11, 1992, Ser. No. 943,871

Claims priority, application Japan, Dec. 13, 1991, 3-351194; Apr. 9, 1992, 4-115223

Int. Cl.[5] A01B *15/12*

U.S. Cl. 172—739 **18 Claims**



1. An agricultural machine having a frame and a mast through which a top link of a tractor is mounted to the frame to perform a plowing operation of soil through a running of the tractor, including:

a fixed mast secured to said frame so as to be projected from a front end portion of said frame;

a movable mast which is pivotably mounted to said fixed mast so as to be arcuately movable in an agricultural working direction relatively to said fixed mast and has a mount portion to which the top link is mounted; and

means for changing a penetrating angle of said agricultural machine into the soil, said means for changing the penetrating angle comprising a mode selecting mechanism provided between said movable mast and said fixed mast for changing and fixing a positional relationship between said movable mast and said fixed mast interlockingly with a lifting operation of said agricultural machine, thereby to freely change the penetrating angle of said agricultural machine into the soil.

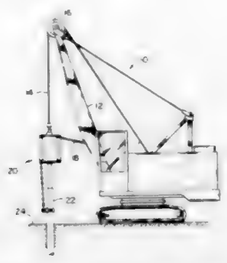
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5,332,047

PILE DRIVING APPARATUS AND METHOD

Walter Hignite, West Bend, Wis., assignor to John Marino, River Hills, Wis., a part interest

Filed Oct. 1, 1992, Ser. No. 955,502
Int. Cl.[5] E02D *7/08*
U.S. Cl. 173—1 9 Claims



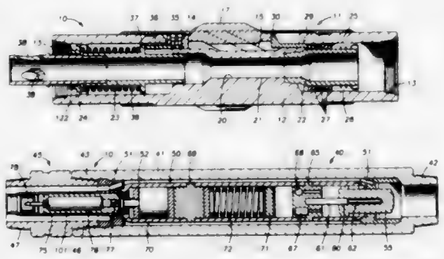
1. A method of driving a pile, comprising the steps of:
providing a crane or the like having a line adapted for lifting and lowering in response to operation of the crane;
connecting a hammer to the line, the hammer including guide structure;
engaging the hammer guide structure with the pile; and
driving the pile by raising the hammer and guide structure upwardly relative to the pile and dropping the hammer downwardly onto the pile, by operation of the crane, while maintaining the guide structure in engagement with the pile during both upward and downward movement of the hammer, whereby the pile functions to guide the hammer during upward and downward movement of the hammer, and wherein engagement of the hammer guide structure with the pile provides substantially the sole means for maintaining the position of the hammer relative to the pile during upward and downward movement of the hammer by operation of the crane.

5,332,048

METHOD AND APPARATUS FOR AUTOMATIC CLOSED LOOP DRILLING SYSTEM

Lance D. Underwood, Spring; Harold D. Johnson, and Charles H. Dewey, both of Houston, all of Tex., assignors to Halliburton Company, Dallas, Tex.

Filed Oct. 23, 1992, Ser. No. 965,200
Int. Cl.[5] E21B *7/04*
U.S. Cl. 175—26 26 Claims



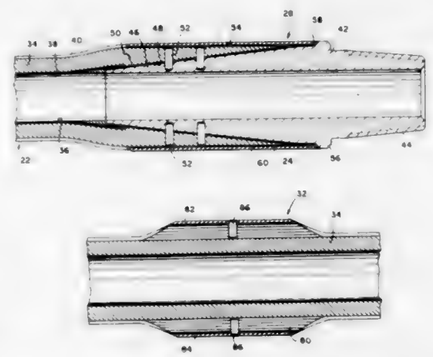
1. A drilling system for a bottomhole assembly, comprising:
a drill bit;
a first stabilizer positioned near said drill bit, said first stabilizer having a generally tubular configuration with a particular cross-sectional diameter;
a second stabilizer positioned in the bottom hole assembly a predetermined distance above said first stabilizer, said second stabilizer having a generally tubular configuration with a particular cross-sectional diameter,
wherein the diameter of at least one of said first or second stabilizers is adjustable, between a retracted position and a plurality of extended positions, in response to a position control signal;
sensors for determining formation properties and for generating signals indicative thereof;
a microcontroller receiving the signals from said sensors, said microcontroller being located in said bottomhole assembly and being preprogrammed to respond to the signals from said sensor;
said microcontroller generating the position control signal when the sensed formation properties are outside a predetermined range;
wherein said position control signal from said microcontroller is used to adjust the diameter of the first or second stabilizer to alter the inclination angle at which said drill bit is drilling.

5,332,049

COMPOSITE DRILL PIPE

Craig Tew, Lincoln, Nebr., assignor to Brunswick Corporation, Lake Forest, Ill.

Filed Sep. 29, 1992, Ser. No. 953,013
Int. Cl.[5] E21B *17/04, 17/10, 17/20*
U.S. Cl. 175—320 18 Claims



1. A pipe for drilling a well bore, comprising:
a fiber reinforced synthetic tube, the tube having a leading end and a trailing end spaced axially from the leading end,
the leading end of the tube being adapted to engage means for drilling a bore through the earth when a force is applied to the trailing end of the tube; and
centralizer means on the tube to align the tube in the bore and to prevent contact between the tube and sidewalls or the bore when the tube is advanced therethrough, the centralizer means being a buildup of non-metallic material around the periphery of the tube, the buildup being surrounded by a metal sleeve.

13. A drilling string for drilling a well bore, comprising:
a plurality of fiber reinforced synthetic tubes, each tube having a leading end and a trailing end spaced axially from the leading end,
the leading end of the first one of the tubes being engageable with a bit for drilling a bore through the earth when a force is applied to the trailing end of the last one of the tubes;
coupling means associated with the adjacent ends of each successive pair of tubes for serially connecting the tubes and defining a drilling string of desired length, the coupling means including a pair of interchangeable fittings respectfully attached to the pair of tubes, the end of one of the pair of tubes having an internal taper and its respective fitting having an external taper; and
an adhesive bond between the internal taper of the tube and the external taper of the fitting.

5,332,050

WELL DRILLING TOOL

Ronald J. Huval, Youngsville, La., assignor to Tri City Services, Inc., Youngsville, La.

Division of Ser. No. 760,178, Sep. 16, 1991. This application Jul. 2, 1993, Ser. No. 85,098
Int. Cl.[5] E21B *43/00*
U.S. Cl. 175—320 5 Claims

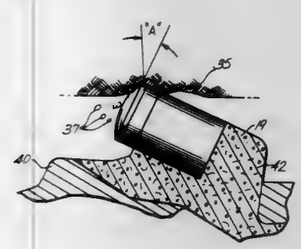
1. A well drilling tool, comprising:
a ferrous core and a coating for preventing adherence of well drilling fluids and fluid particles in subterranean locations, said coating forming a substantially uniform nickel-phosphorus layer which comprises from about 7% to about 12% phosphorus and from about 88% to about 93% nickel deposited by electroless plating.

5,332,051

OPTIMIZED PDC CUTTING SHAPE

R. Helene Knowlton, Houston, Tex., assignor to Smith International, Inc., Houston, Tex.

Continuation of Ser. No. 774,775, Oct. 9, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 23,513
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—430 3 Claims



1. A diamond rock bit having one or more diamond inserts secured within a first cutting face formed by a rock bit body, the body further forming a second open threaded pin end, a fluid chamber and one or more nozzle passages through said cutting face, said one or more diamond insert comprising:
a diamond cutter end, an intermediate cylindrical body and a base end, said cutter end forming a convex surface with a radius about six times the radius of said cylindrical body, the convex diamond cutter end provides optimum rock shearing ability with a positive and negative side rake angle to deflect detritus from the curved diamond face and to help cool and clean the diamond cutters while drilling an earthen formation.

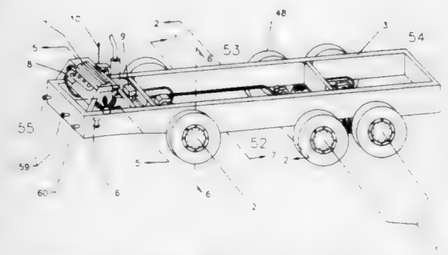
5,332,052

DETACHABLE ALL TERRAIN TRAILER

Louis Carnevale, P.O. Box 389, Center Moriches, N.Y. 11934

Filed Oct. 19, 1992, Ser. No. 962,658
Int. Cl.[5] B62D *61/12*
U.S. Cl. 180—14.2 2 Claims

1. A self-propelled independently controlled semi-trailer, whereby commercial cargoes can be safely and efficiently transported over roadways and then delivered to off-road sites without first transferring the cargo onto off-road type straight-trucks, comprising:
(a) a semi-trailer chassis having a plurality of permanently mounted stationary and retractable axles with non-steerable rotatable wheels attached, said wheels positioned at either exterior side of said semi-trailer chassis for enabling said semi-trailer chassis to roll on a surface;
(b) an engine mounted in said semi-trailer chassis for producing rotational energy;
(c) a retractable axle, with steerable wheels attached at either end of said retractable axle and located on either exterior side of said semi-trailer chassis, said retractable axle mounted far enough forward to allow it to balance and support said semi-trailer chassis and its cargo once said semi-trailer chassis detached from its pulling truck-tractor and begins its detached mode operation;
(d) means for controllably coupling rotational energy from said engine to one or more of said permanently mounted, stationary and retractable, steerable and non-steerable,



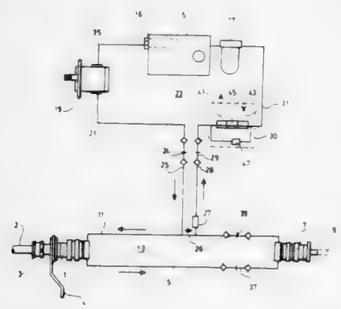
rotatable semi-trailer chassis wheels, during said semi-trailer chassis detached mode operation;
(e) means for controlling all operations of said semi-trailer chassis in its detached mode operation independently of the operation of its pulling truck-tractor, which includes:
(i) starting or shutting-off said engine,
(ii) accelerating/deaccelerating said engine,
(iii) causing said semi-trailer wheels to rotate at variable speeds in either forward or reverse direction thus propelling said semi-trailer chassis,
(iv) steering of said steerable wheels,
(v) braking said rotatable steerable and non-steerable wheels,
(vi) controlling all functions of any particular cargo body mounted on said semi-trailer chassis.

5,332,053

HYDRAULIC DRIVE SYSTEM

Bertrand Vachon, Thetford Mines, Canada, assignor to Aquilon Technologies Inc., Québec, Canada

Filed Jan. 26, 1993, Ser. No. 9,087
Int. Cl.[5] B60K *17/28*
U.S. Cl. 180—53.4 3 Claims



1. In a motorized equipment comprising:
an engine-driven vehicle including a hydraulic circuit comprising:

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a first hydraulic pump driven by said engine,
a hydraulic fluid reservoir,
a filter,
a control valve assembly for supplying hydraulic equipments on said vehicle, and
a first set of hydraulic lines connecting together said first hydraulic pump, said reservoir and said filter for forming a first loop in which a hydraulic fluid is circulated by the first hydraulic pump, said first loop including a pressurized fluid outlet and a fluid return inlet to which an external hydraulic accessory is operatively connectable; and
a hydraulically powered implement detachably connectably to the vehicle and including another hydraulic circuit comprising:
a second hydraulic pump having a fluid inlet and a fluid outlet,
power means connectable to said second hydraulic pump for driving the same,
a hydraulic device having a fluid inlet and a fluid outlet, and
a second set of hydraulic lines connecting together said second hydraulic pump and said device for forming a second loop;
the improvement wherein said second set of hydraulic lines consists of
a pressure hose for directly connecting the fluid outlet of said second hydraulic pump to the fluid inlet of said hydraulic device,
a suction hose for directly connecting the fluid outlet of said hydraulic device to the fluid inlet of said second hydraulic pump,
an inlet hose for connecting the pressurized fluid outlet of the first loop to the suction hose,
an outlet hose for connecting the suction hose to the return inlet of the first loop, said outlet hose being connected to the suction hose between said inlet hose and said hydraulic device, and
a low pressure relief valve mounted in-line onto said outlet hydraulic hose;
whereby, in use, the hydraulic fluid circulating within said first loop is supplied to said second loop by said first hydraulic pump under pressure through said inlet hose and is circulated through said second loop by said second hydraulic pump for driving said hydraulic device, any fluid in excess being automatically returned to said reservoir of said first loop through said return hose and thus making it unnecessary for the second loop to have a fluid reservoir and a filter.

5,332,054

CONNECTION OF FRAME PARTS WITH PROFILED PANELS IN GRATINGS

Günter Dieterich, Dortmund; Karlheinz Piel, Schwerte; Paul-Werner Reinehr, Iserlohn-Rheinen, and Hans-Werner Schulte, Schwerte, all of Fed. Rep. of Germany, assignors to Fried. Krupp AG Hoesch-Krupp, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 755,016, Sep. 4, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 22,802
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1990, 4028124
Int. Cl.[5] B60K *11/04*
U.S. Cl. 180—68.6 **1 Claim**

1. A grating arrangement for removal of foreign matter from air streams flowing in off-road motor vehicles, comprising: means for directing air streams through an off-road vehicle, said airstreams having foreign matter to be removed from said airstreams; a plurality of parallel strips of structural section in the path of an air stream and having a predetermined contoured surface and cross-section along said strips for preventing transmission of said foreign matter past said strips; and frame members for supporting and mounting said parallel strips; said frame members having contoured apertures corresponding to said predetermined cross-section so that said strips are insertable into and through said apertures and held firmly in place by said frame members free from welds, so that said strips are freely replaceable without cutting and non-manual detaching operations, said strips having a length free of welds and transmitting air streams undisturbed fully along said length and at ends of said length, said contoured apertures corresponding to contours of said strips for removal of said foreign matter from said air streams; additional frame members located on outer sides of said first-mentioned frame members and having apertures identical in shape and location to said aper-



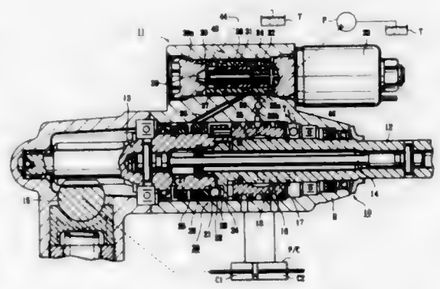
tures of said first-mentioned frame members; said strip having ends inserted impermanently through both the apertures of said first-mentioned frame members and being securely held in said apertures of both said first-mentioned frame and said additional frame members by substantial displacement of the apertures of said additional frame members relative to the apertures of said first-mentioned frame members; and fastening means for fastening said additional frame members to said first-mentioned frame members after displacement of the apertures of said additional frame members relative to the apertures of said first-mentioned frame members.

5,332,055

POWER STEERING APPARATUS HAVING HYDRAULIC REACTION MECHANISM

Yasuyoshi Emori; Ikuo Nomura, and Tetsuya Koike, all of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed May 17, 1993, Ser. No. 63,215
Claims priority, application Japan, May 29, 1992, 4-161868
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—132 **3 Claims**



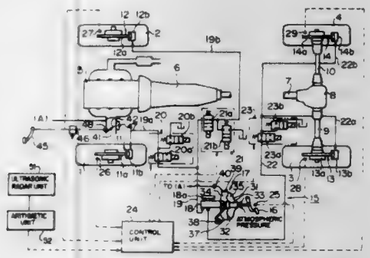
1. A power steering apparatus comprising:
a main hydraulic path for supplying an oil pressure from a pump to a flow path switching valve connected to a power cylinder;
a reactive oil pressure supply path branching from a portion of said main hydraulic path; and
a hydraulic reaction mechanism for introducing part of the oil pressure, caused to diverge by said reactive oil pressure supply path, into a hydraulic reaction chamber for generating a steering reaction through a hydraulic reaction control valve mechanism comprising at least a first restrictor and a second restrictor and in which a path for a reaction force is provided from the portion between the path linking the first restrictor and the second restrictor to the hydraulic reaction chamber, the hydraulic reaction control valve mechanism being controlled in accordance with a traveling condition of a vehicle,
wherein a restriction smaller in diameter than said main hydraulic path is arranged between a branch portion branching from said main hydraulic path and said hydraulic reaction control valve mechanism, midway along said reactive oil pressure supply path.

5,332,056

AUTOMATIC BRAKING SYSTEM FOR MOTOR VEHICLE

Tadayuki Niibe; Hiroki Uemura, and Tohru Yoshioka, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 28, 1993, Ser. No. 10,042
Claims priority, application Japan, Jan. 31, 1992, 4-015652; Jan. 31, 1992, 4-015653; Jan. 31, 1992, 4-015654; Jan. 31, 1992, 4-015655; Jan. 31, 1992, 4-015656
Int. Cl.[5] B60T *8/58*
U.S. Cl. 180—169 **22 Claims**



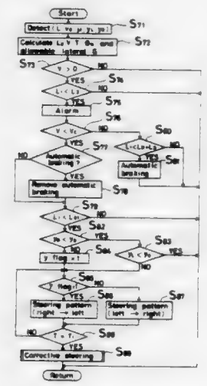
1. An automatic braking system for a motor vehicle having a plurality of wheels comprising:
means for detecting a distance and a relative speed between the motor vehicle and an obstacle in front of the motor vehicle;
judging means for judging an alarm sounding region and a region in which the vehicle has a possibility of contact with the obstacle based on the distance and the relative speed detected;
an automatic brake for automatically braking said wheels when the judging means judges the region in which the motor vehicle has the possibility of contact with the obstacle in front of the motor vehicle, said automatic brake including a vacuum-type booster which has a first chamber, to which negative pressure is introduced, and a second chamber, to which atmospheric pressure is introduced, said first chamber being connected to a portion of an intake path of an engine downstream from a throttle valve disposed within said intake path of an engine, said booster using a pressure difference between the negative pressure and the atmospheric pressure;
means for increasing the negative pressure in the first chamber of the vacuum-type booster prior to operation of the automatic brake, said means for increasing the negative pressure including throttle valve control means for closing the throttle valve for a predetermined time so as to increase the negative pressure in the first chamber of the booster; and
means for detecting a steering operation by a driver, the throttle valve control means not closing the throttle valve when the means for detecting a steering operation detects the steering operation.

5,332,057

CONTACT PREVENTIVE APPARATUS FOR VEHICLES

Tetsuro Butsuen; Toshihiro Hara; Kazuki Fujise; Takeshi Takagi; Satoshi Morioka; Satoru Matsuoka; Naoyuki Hikida, and Ayumu Doi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 934,324, Aug. 25, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 120,223
Claims priority, application Japan, Aug. 27, 1991, 3-215539
Int. Cl.[5] B60T *7/12*
U.S. Cl. 180—169 **11 Claims**



1. A contact preventive apparatus for vehicles, comprising:
an automatic steering device for performing steering to prevent a vehicle from coming in contact with an obstacle;
an automatic braking device for automatically braking wheels of the vehicle;
contact forecasting means for forecasting the contact of the obstacle with the vehicle and generating an output signal;
automatic braking control means for receiving the output signal of said contact forecasting means and operating the automatic braking device when the contact of the obstacle is forecasted;
environment detecting means for detecting a change of environment acting on the vehicle and generating an output signal indicative of the change; and
automatic steering control means for operating the automatic steering device to alter the advance direction of the vehicle when receiving the output signal of said environment detecting means during automatic braking.

5,332,058

SNOWMOBILE FOR TRANSPORTING PEOPLE ON SNOW AND/OR ICE

Nunziato Bianco, Via San Donato 9, 66016 Guardiagrele (Prov. of Chieti), Italy

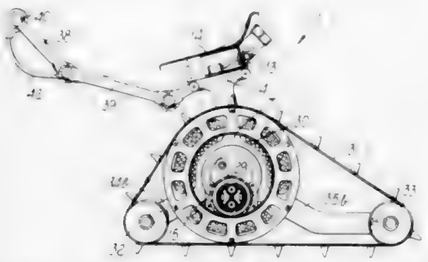
Filed Jan. 25, 1993, Ser. No. 8,434
Claims priority, application Italy, Jan. 27, 1992, PE92 U 000001
Int. Cl.[5] B62M *27/02*
U.S. Cl. 180—180 **2 Claims**

1. Self-propelled scooter for transporting and carrying uphill

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one or more persons on snow and/or ice, comprising a supporting structure, a gearmotor unit supported by said supporting structure, a roller having an internal surface and being actuated by said gearmotor unit, said roller having a horizontal axis and being rotatably supported by said supporting structure, said gearmotor unit being arranged inside said roller, said roller having a cylindrical surface provided with means for increased grip on snow and/or ice, a seat being arranged above said roller and connected to said supporting structure,

wherein said gearmotor unit comprises an internal-combustion engine having an output shaft, an epicyclic reduction unit, and a clutch unit arranged between said internal combustion engine and said epicyclic reduction unit, and



wherein said epicyclic reduction unit is constituted by a two-stage epicyclic reduction unit including a first stage having a sun gear connected, by means of said clutch, to said output shaft of said internal combustion engine and meshing with first stage planetary gears, said planetary gears meshing with a fixed ring gear and being rigidly coupled and coaxial to second stage planetary gears of said reduction unit, said second stage planetary gears meshing with a rotatable ring gear connected to a toothed gear, said toothed gear meshing with a toothed ring gear coaxially connected to said internal surface of said roller.

5,332,059
CONTROL SYSTEM FOR A DIFFERENTIAL OF A MOTOR VEHICLE

Kiminaga Shirakawa, Yamanashi; Satoru Watanabe, Tokyo; Kouji Matsuno, and Kazuya Morota, both of Gunma, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,783
Claims priority, application Japan, Apr. 26, 1991, 3-123036; Apr. 26, 1991, 3-123037
Int. Cl.[5] B60K *17/34*
U.S. Cl. 180—197 **5 Claims**



1. A control system for a rear differential mounted on two rear axles which are connected to respective left and right rear drive wheels of a motor vehicle having an engine, and a transmission connected to said engine, an output member of said transmission operatively connected to said differential for transmitting power from said engine to said axles, the control system comprising

a differential operation restricting clutch connected between one of said wheels and said rear differential and responsive to a control signal for restricting differential operation of said rear differential,

wheel speed sensors for detecting left and right rear wheel speeds and for generating rear wheel speed signals,

a longitudinal G-sensor for detecting acceleration in a longitudinal direction of said motor vehicle and for generating a longitudinal acceleration signal,

a lateral G-sensor for detecting acceleration in a lateral direction of said motor vehicle and for generating a lateral acceleration signal, and

a steering angle sensor for sensing steering angle and for producing a steering angle signal, and the control system further comprises:

vehicle speed calculating means responsive to said rear wheel speed signals and said longitudinal acceleration signal for calculating vehicle speed and for producing a vehicle speed signal;

torque setting means responsive to said vehicle speed signal, said longitudinal acceleration signal and said lateral acceleration signal for setting a restricting torque of said clutch and for producing a restricting torque signal;

slip determining means responsive to said rear wheel speed signals for determining wheel slipping and for producing a slip signal;

steering angle determining means responsive to said vehicle speed signal and said steering angle signal for determining a large steering angle at a low vehicle speed for producing a large steering angle signal; and

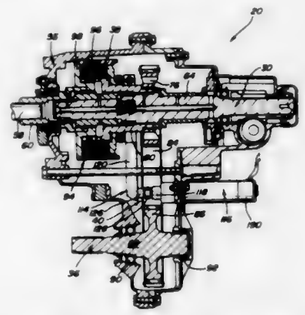
converting means responsive to said slip signal, said restricting torque signal and said large steering angle signal for setting the control signal of the clutch in order to obtain an optimum control of said clutch so as to improve steady driving, steady steering, acceleration performance and traction control and preventing tight corner breaking;

said clutch being completely engaged at a maximum restricting torque signal so as to provide a torque distribution to said rear wheels in accordance with weight distribution on said rear wheels.

5,332,060
LINEAR ACTUATION MECHANISM FOR ELECTRONICALLY-CONTROLLED TORQUE MODULATED TRANSFER CASE

David Sperduti, Auburn; Robert J. Wilson, Warners; Richard E. Eastman, Central Square; Randy W. Adler, Seneca Falls, and Sankar K. Mohan, Syracuse, all of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Filed Mar. 10, 1993, Ser. No. 28,956
Int. Cl.[5] B60K *17/34*
U.S. Cl. 180—197 **20 Claims**



1. A power transfer system for a motor vehicle having an engine and first and second sets of wheels, comprising:

a transfer mechanism for transmitting drive torque from the engine to the first set of wheels and selectively transmitting drive torque to the second set of wheels through a transfer clutch capable of varying the torque transmitted therethrough by varying a clutch engagement force;

a drive mechanism including an intermediate member for generating said clutch engagement force;

linear actuator means having a linearly extendable member acting on said intermediate member for producing a linearly directed output force that is exerted thereon to move said intermediate member between a first position for generating a minimum clutch engagement force and a second position for generating a maximum clutch engagement force;

first sensor means for sensing the rotational speed of the first set of wheels and generating a first speed signal indicative thereof;

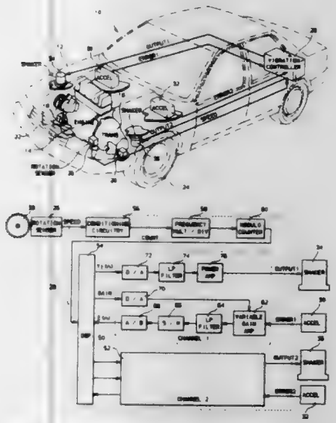
second sensor means for sensing the rotational speed of the second set of wheels and generating a second speed signal indicative thereof; and

control means for receiving said first and second speed signals and generating a speed differential signal that is indicative of a speed differential between the first and second sets of wheels, said control means operable for controlling actuation of said actuator means for varying the torque transmitted through said transfer clutch in response to the position of said drive mechanism lever between said first and second positions in accordance with said speed differential signal.

5,332,061
ACTIVE VIBRATION CONTROL SYSTEM FOR ATTENUATING ENGINE GENERATED VIBRATIONS IN A VEHICLE

Kamal N. Majeed; John F. Hoying, both of Centerville, and Joan B. Arwine, Vandalia, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 12, 1993, Ser. No. 30,965
Int. Cl.[5] B62D *131/00*; B60K *5/12*
U.S. Cl. 180—312 **10 Claims**



1. An active vibration control system for a motor vehicle, the motor vehicle including a body, an engine mounted to the body, wherein the motor vehicle is characterized by at least one defined frequency range embracing a natural resonant frequency at which the body vibrates when the motor vehicle is driven over an undulating road surface, and operation of the engine generates vibrational frequency components that are transferred to the vehicle body causing vibration thereof, the active vibration control system comprising:

means for generating an input signal representative of at least one of the vibrational frequency components transferred from the engine to the body causing vibration thereof;

an adaptive filter having adjustable filtering characteristics for filtering the generated input signal to produce an output signal;

an actuator attached to the body and responsive to the output signal generated by the adaptive filter for inversely vibrating the body with respect to at least one of the vibrational frequency components transferred from the engine to the body;

a sensor for monitoring vibration of the body and for developing an error signal representative thereof;

an error filter for filtering the error signal to produce a filtered error signal, the error filter including at least one notch filter having a notch frequency in the defined frequency range embracing the natural resonant frequency characterizing the motor vehicle;

means for adaptively adjusting the filtering characteristics of the adaptive filter based upon the filtered error signal to minimize vibration of the vehicle body caused by at least one of the vibrational frequency components transferred to the body from the engine.

5,332,062
SIMPLIFIED SCAFFOLD LADDER

Paul Revere, P.O. Box 55, Huntington Station, N.Y. 11746

Filed Mar. 12, 1991, Ser. No. 662,944
Int. Cl.[5] E04G *1/00*
U.S. Cl. 182—27 **9 Claims**



1. A convertible scaffold and ladder apparatus comprising a prop, a ladder structure including a top step connecting two side rails, said two side rails being attachable in an interfittable relationship with a plurality of support members, said support members being pivotable by pivoting means, said two side rails being interconnected by a plurality of steps, said ladder structure being joinable to said prop by said top step of said ladder structure, said ladder structure and said prop being connected near their respective centers by a plurality of braces, said plurality of support members supporting said prop and said ladder structure when said convertible scaffold and ladder apparatus is in a scaffold mode, and said plurality of support members being further connected to said two side rails by a plurality of further braces, said plurality of support members being two pairs, said plurality of support members of each pair being interconnected by one of a plurality of partial step/pull-out bars, said support members being generally H-shaped and said two pairs being interfittable with at least one indentation in said ladder structure.

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5,332,063

LADDER STAND

Joseph A. Amacker, 1212 Main St., Delhi, La. 71232

Continuation-in-part of Ser. No. 977,158, Nov. 16, 1992, Pat. No. 5,285,868, and Ser. No. 818,262, Jan. 8, 1992, Pat. No. 5,249,644, and Ser. No. 818,120, Jan. 8, 1992. This application Dec. 31, 1992, Ser. No. 999,165
Int. Cl.[5] A45F 3/26
U.S. Cl. 182—116 14 Claims



1. Apparatus for securely engaging an upright columnar member for supporting a user above the ground, at a height beyond the user's reach when the user is standing on the ground comprising:

a ladder;

a platform secured to said ladder for accommodating the body of a user above the ground, said platform having a gripping device for securing said platform to the columnar member at a height beyond the user's reach when the user is standing on the ground;

said gripping device comprising a first jaw member for confronting a first side of said columnar member, said first side being the side from which said platform extends outwardly therefrom, a second jaw member for gripping a second side of said columnar member, said second side being substantially opposite to said first side, wherein said first and second jaws only partially encircle the columnar member so as to define an opening through which said columnar member may be engaged or disengaged;

an adjustment device including a resilient member for automatically moving one of said jaws towards the other jaw so as to engage said columnar member there between;

a releasable locking member for fixing movement of said jaws, said locking member being remotely actuatable by the user while standing on the ground; a member for remotely actuating said locking member;

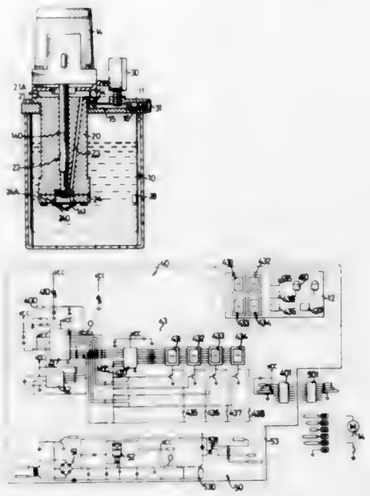
whereby the user can secure the jaws of said apparatus and said platform to the columnar member before ascending said ladder and can thereafter release the jaws and platform from said columnar member after descending to the ground to disengage the apparatus from said columnar member.

5,332,064

CONTROL APPARATUS FOR LUBRICATION PUMP

Jung-Hsun Liu, No. 12, Lane 74, Tung Hsin Rd., Taichung, Taiwan, Taiwan

Filed Jun. 3, 1993, Ser. No. 71,658
Int. Cl.[5] F01M 1/18
U.S. Cl. 184—6.4 3 Claims



1. A control apparatus for a lubrication pump to supply lubrication oil to a plurality of working machines comprising

a tank (**10**) for storing lubrication oil;

a cover (**11**) being covered on said tank (**10**) having a control panel (**12**), an oil inlet (**13**), and a motor (**14**) formed thereon;

a pump (**20**) in said tank (**10**) being connected to said motor (**14**);

a first oil passage (**21**) being horizontally formed at an upper portion of said pump (**20**) having two outlets (**21A**, **21B**) at two distal ends thereof each of which is connected to an external pipe which further provides oil to a plurality of working machines connected thereto;

a second oil passage (**23**) being formed in said pump (**20**) and in communication between said first oil passage (**21**) and a lower inner space of said tank (**10**);

a third oil passage (**25**) being obliquely formed at the upper portion of said pump (**20**) and in communication with said first oil passage (**21**) at an top end thereof;

a fourth oil passage (**15**) horizontally formed in said cover (**11**) having a left end thereof in communication with said third oil passage (**25**) and a right end;

a pressure-adjusted valve **31** being rotatably engaged inside said fourth oil passage (**15**) from the left end thereof having an L-shaped hole (**32**) therein for in communication with said fourth oil passage (**15**);

a hole (**16**) being formed at an lower surface of said cover (**11**) and in communication with said L-shaped hole (**32**);

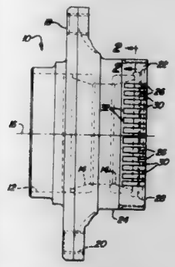
a control circuit comprising a control/setting unit (**40**) which is electrically connected to a power driving unit (**50**) which is connected to said motor (**14**) for driving the latter, said control/setting unit (**40**) comprising a microprocessor (**41**) and a displaying/setting means (**43**) for setting an intermittent time interval to intermittently actuate said power driving unit (**50**), which in turn actuates said motor (**14**) to rotate intermittently, thus providing oil to said working machines intermittently.

5,332,065

INTEGRAL ABS EXCITER RING FOR CAST IRON HUB

David R. Steele, Farmington Hills, and Thomas Stimson, Commerce Township, Oakland County, both of Mich., assignors to The Budd Company, Troy, Mich.

Continuation of Ser. No. 14,088, Feb. 4, 1993, abandoned, which is a continuation of Ser. No. 682,098, Apr. 5, 1991, abandoned. This application Sep. 21, 1993, Ser. No. 125,010
Int. Cl.[5] B60T 8/60
U.S. Cl. 188—18 R 6 Claims



1. An integral hub and exciter ring assembly for a motor vehicle having an anti-lock braking system comprising:

a cast iron hub having means for affixing a wheel to said hub and means for rotatably mounting said hub to a suspension structure of a motor vehicle, said hub defining an exterior substantially cylindrical surface;

a ring bonded to said cast iron hub and being of a material having a magnetic permeability greater than cast iron, said ring including a surface coincidental with said substantially cylindrical surface of said hub; and

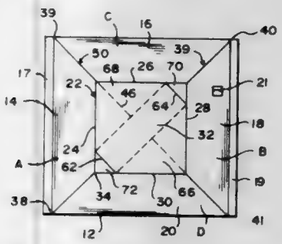
spaced teeth formed in said ring, said teeth including a radial surface coincidental with said substantially cylindrical surface of said hub, said teeth formed by grooves in said ring between said teeth, said teeth joined to one another by a base portion of said ring extending between said teeth at said grooves.

5,332,066

BOAT TRAILER REST

George R. Pickernal, 25 Jefferson Dr., White Plains, Md. 20695

Filed May 14, 1993, Ser. No. 60,835
Int. Cl.[5] B60T 3/00
U.S. Cl. 188—32 8 Claims



1. A boat trailer rest comprising:

a base having a pair of major axes between opposed diagonal corners;

walls extending upwardly from the base and terminating in a top;

said top having a pair of major axes between opposed diagonal corners;

a cradle in the top extending diagonally along a line coincident with one of said major axes in the top and having longitudinal sides extending perpendicularly of said other of said major axes in the top; and

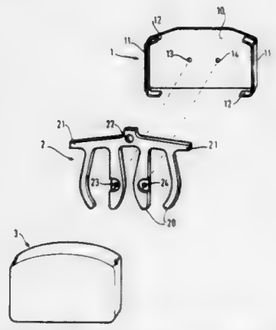
a trailer jack wheel supported on the cradle substantially above the base near the top and in alignment with said coincident line whereby the weight of the trailer jack wheel is concentrated on the cradle along said line coincident with said major axis.

5,332,067

DISK-BRAKE PAD DEVICE ESPECIALLY WITH A CARBON-CARBON LINING

Guy Prud'homme, Ste Foy-les-Lyon, France, assignor to Carbone Industrie, Bagnolet Cedex, France

Continuation of Ser. No. 773,445, Oct. 9, 1991, abandoned. This application May 7, 1993, Ser. No. 58,041
Claims priority, application France, Jun. 28, 1991, 91 08079
Int. Cl.[5] F16D 65/00, 65/10
U.S. Cl. 188—73.1 2 Claims



1. In a disk-brake pad device including a lining pad for mounting on a caliper and having at least one lining pad-positioning surface, from which emerges at least one lining pad-actuating piston, a front face of the piston forming a pressure face, the improvement comprising:

a first plate element (**1**) of heat-insulating material, called a screen element, for location against the caliper positioning surface,

at least one second element (**2**) of heat-insulating material, called a spacer element, of adequate thickness, with reduce front contacts and located against the first element (**1**),

and wherein said first lining pad is a carbon-carbon high-temperature friction material lining pad (**3**), said first element (**1**) comprising retaining means for retaining the lining pad (**3**), and at least one of the first element (**1**) and the second element (**2**) comprising fixing means engaging the pad device with the caliper, said spacer element (**2**) being formed by small arms **20** shaped such that major parts thereof are sandwiched between the first element (**1**) and the lining pad (**3**), opposite the pressure face of said at least one piston, acting on the first element (**1**), and

said retaining means comprising bent tongues (**12**) fixedly attached to the first element (**1**), and supporting said lining pad (**3**) between said tongues (**12**) and against the face of said arms of said second element without rigid attachment between the lining pad and said second element.

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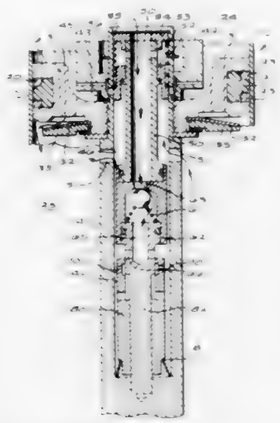
SELF CONTAINED AUTOMATIC TERRAIN CONDITION ADJUSTING SHOCK ABSORBER

Donald G. Richardson, Valencia, and J. Guy Cazort, Coron del Mar, both of Calif., assignors to Richardson Technologies, Ltd., Sutter Creek, Calif.

Continuation of Ser. No. 798,036, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 503,881, Apr. 3, 1990, abandoned. This application Apr. 22, 1993, Ser. No. 51,264

Int. Cl.[5] F16F *9/34*

U.S. Cl. 188—275 23 Claims



1. A shock absorber comprising

a tubular body including an end fitting securing the body end of the shock absorber to the body of a vehicle;

said tubular body defining a cylinder;

a piston assembly including a piston and a piston rod;

said piston rod secured to said piston and extending out of the opposite end of said tubular body from said end fitting;

said piston in sealed longitudinal movement engagement within said cylinder and defining two fluid holding chambers within said cylinder;

an outer fitting on said piston rod securing the piston rod end of said shock absorber to the wheel supporting suspension of a vehicle;

means sealing said piston rod with respect to said cylinder;

said piston assembly including first port means for defining a restricted passage for a fluid between opposite sides of said piston for one direction of fluid flow in said shock absorber, and second port means for defining a restricted passage for a fluid flowing in the opposite direction between opposite sides of said piston;

one of said directions of flow of fluid being during a compression stroke of said shock absorber and the opposite direction of flow of fluid being during extension stroke of said shock absorber;

means for variably controlling the rate of flow of fluid through said piston assembly in the extension stroke; and

said variable controlling means comprising an inertial responsive member including a sleeve in longitudinal sliding relationship with said piston assembly and normally positioned against a stop below the inertial responsive member in flow restricting relationship with the restrictive passage for flow of fluid through said first port means and axially shiftable to a less flow restricting relationship with the passage upon downward acceleration of the wheel of the vehicle; and

spring means within said piston assembly engaging said piston assembly and said sleeve and urging said sleeve in a generally upward direction when said shock absorber is mounted for operation on a vehicle and selected in spring rate to substantially neutralize the weight component of said sleeve whereby said sleeve responds to inertia forces to rapidly change the flow resistance during a rapid downward acceleration of the wheel.

5,332,069

SHOCK ABSORBER

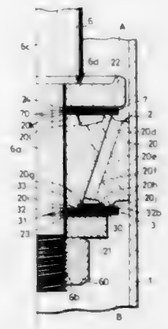
Tomoharu Murakami, Gifu, Japan, assignor to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 575,201, Aug. 30, 1990, abandoned. This application Mar. 25, 1992, Ser. No. 857,710

Claims priority, application Japan, Aug. 31, 1989, 1-102277[U]; Nov. 28, 1989, 1-136789[U]

Int. Cl.[5] F16F *9/50*

U.S. Cl. 188—282 12 Claims



1. A hydraulic shock absorber, comprising:

a cylinder; a partition wall member disposed in said cylinder and cooperating with said cylinder to define a pair of oil chambers in said cylinder, a first oil chamber being on one side of said wall member and a second oil chamber being on a second side of said wall member; a port formed in said wall member providing communication between said first oil chamber and said second oil chamber; low speed attenuating valve means located at an exit end of said port for acting against fluid flowing in said port toward said exit end and including a leaf valve seated with respect to said exit end and movable to form a gap between said port exit end and said second chamber allowing fluid to flow from said first chamber through said port and through said gap, said low speed attenuating valve means including a valve stopper resiliently supporting a rear face of an inner peripheral portion of said leaf valve in an axial direction, said valve stopper holding said inner peripheral portion against said exit end of said port during a low speed range and said valve stopper being compressible during a medium or high hydraulic fluid speed range thereby allowing axial movement of both said inner peripheral portion and an outer peripheral portion of said leaf valve away from said exit end of said port; high speed valve means spaced from said low speed valve means by a predetermined distance and including another leaf valve seated on a valve seat portion of said wall and movable by hydraulic fluid from said port acting on said another leaf valve with a force corresponding to said medium or high hydraulic fluid speed range, said another leaf valve defining at least one opening with said valve seat portion allowing hydraulic fluid to pass between said another valve and said valve seat at said low speed range and said another leaf valve being moved with respect to said valve seat at said low speed range and said another leaf valve being moved with respect to said valve seat under hydraulic force corresponding to said medium or high speed range.

5,332,070

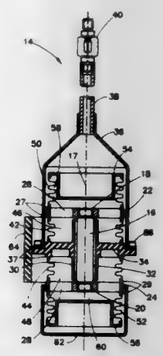
THREE PARAMETER VISCOUS DAMPER AND ISOLATOR

Lawrence P. Davis, Phoenix; David C. Cunningham, Carefree, and Damon H. Duncan, Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 21, 1993, Ser. No. 51,110

Int. Cl.[5] F16F *5/00*

U.S. Cl. 188—298 23 Claims



15. A vibration damping and isolation apparatus, comprising:

a shaft having an axis therethrough, said shaft having a first and second end;

a first extension extending radially from said first end of said shaft, said first extension having a first fluid path therethrough;

a second extension extending radially from said second end of said shaft, said second extension having a second fluid path therethrough;

a piston having an axial bore coaxially positioned with said shaft to form a damping path therebetween, said piston having a flange extending radially therefrom for coupling the apparatus to a load;

first primary bellows connected between said first extension and said flange for forming a first fluid chamber;

second primary bellows connected between said second extension and said flange for forming a second fluid chamber, said first fluid chamber connected to said second fluid chamber by said damping path;

first secondary bellows connected to said first extension and a first sealing member to form a third fluid chamber, said third fluid chamber connected to said first fluid chamber by said first fluid path; and

second secondary bellows connected to said second extension and a second sealing member to form a fourth fluid chamber, said fourth fluid chamber connected to said second fluid chamber by said second fluid path.

5,332,071

SHOCK ABSORBER FOR SAFETY CABLE SYSTEM

Charles W. Duncan, Costa Mesa, Calif., assignor to SINCO Incorporated, East Hampton, Conn.

Filed Mar. 9, 1993, Ser. No. 28,393

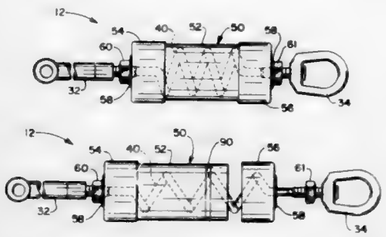
Int. Cl.[5] F16F *7/12*

U.S. Cl. 188—371 21 Claims

1. A shock absorber for a safety cable system having a safety cable, said shock absorber comprising:

coil means comprising at least one coil and opposite first and second axially spaced end segments wherein said coil means has an elastic deformation range and said coil means functions as a spring to exert a tension force to maintain the cable in a taut configuration in the elastic deformation range; and

housing means comprising a housing enclosing said at least one coil and having an axial end portion,



so that when an axial force exerted between said end segments exceeds a preestablished threshold, said at least one coil plasticly deforms and said axial end portion separates from the rest of said housing.

5,332,072

STRUT ASSEMBLIES

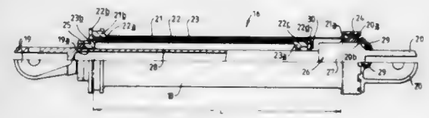
Mark A. Crannage, Somerton, England, assignor to Westland Helicopters Limited, England

Filed Nov. 3, 1992, Ser. No. 970,826

Claims priority, application United Kingdom, Nov. 13, 1991, 9124081

Int. Cl.[5] F16F *7/10*

U.S. Cl. 188—378 6 Claims



1. A strut assembly for interconnecting two parts of a structure for transmitting operational loads between the parts, and for inputting periodic forcing loads into at least one of the parts as part of an active vibration control system, said strut assembly including an axially elastically deformable tube assembly comprising a plurality of nested concentric tubes arranged in series, and each tube rigidly attached to one end of an adjacent tube for a rigid attachment respectively to said parts and an axially extensible actuator rigidly fixed co-axially within and to the tube assembly between said parts, the tubes being manufactured from material having mechanical strength and elastic properties selected to provide a predetermined axial stiffness capable of transmitting operational loads and so that reciprocal axial extensions of the actuator cause elastic longitudinal displacements of the strut assembly to input said periodic loads.

5,332,073

SYSTEM FOR AND METHOD OF CONTROLLING LOCKUP CLUTCH

Naonori Iizuka, Fuji, Japan, assignor to JATCO Corporation, Fuji, Japan

Filed Jan. 8, 1993, Ser. No. 2,453

Claims priority, application Japan, Jan. 9, 1992, 4-020606

Int. Cl.[5] B60K *41/02*

U.S. Cl. 192—3.3 4 Claims

1. A method of controlling a lockup clutch, the lockup clutch allowing connection of a pump impeller side with a turbine runner side in a hydraulic power transmission, the lockup clutch being controlled by a solenoid having a duty ratio which, upon engagement of the lockup clutch, is changed continuously and in accordance with a time by a control means, the method comprising the steps of:

measuring an actual time required from a start of engage-

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ment of the lockup clutch until a completion of engagement of the lockup clutch and generating an actual time indicative signal indicative of said actual time measured.

setting a reference time required from said start of engagement of the lockup clutch until said completion of engagement of the lockup clutch and generating a reference time indicative signal indicative of said reference time set; and

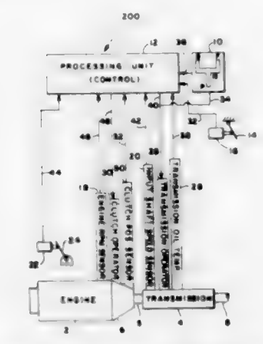
modifying a change rate of the duty ratio so as to reduce a difference between said actual time indicative signal and said reference time indicative signal.

5,332,074

INCIPIENT CLUTCH CONTROL SYSTEM

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 6, 1992, Ser. No. 817,161
Int. Cl.[5] B60K *41/22*
U.S. Cl. 192—3.63 **14 Claims**



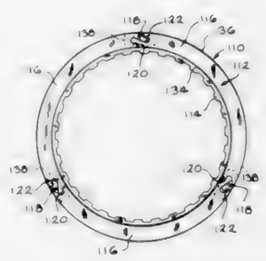
1. A method for optimizing a clutch engagement starting position of a clutch for coupling a vehicle engine to a transmission input shaft, said method including the step of providing an information processing unit having means for receiving a plurality of input signals including (1) a signal indicative of engine speed, (2) a signal indicative of actual clutch position, (3) a signal indicative of transmission input shaft speed and, (4) a signal indicative of whether or not the transmission is in a neutral position, said processing unit including means for processing said input signals according to a predetermined program for determining an optimum clutch engagement starting position and for issuing an output command signal instructing a clutch operator to move the clutch thereto and further operative to reduce the optimum clutch engagement starting position by a predetermined amount whenever the change from a previous clutch engagement starting position when expressed as a fraction of said position is greater than a predetermined fraction that is less than one.

5,332,075

FRICTION DISC WITH SEGMENTED FRICTION FACING

James Quigley, Lombard; Gerald Gronowski, Hoffman Estates; Richard Veit, Addison, and Shawn Hyken, Carol Stream, all of Ill., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jan. 6, 1993, Ser. No. 1,102
Int. Cl.[5] F16D *13/60*
U.S. Cl. 192—107 R **10 Claims**



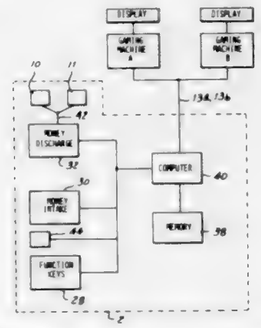
1. A friction disc (**110**) for use in a clutch or brake assembly comprising: an annular core plate (**114**) and at least one substantially annular friction facing (**112**) adhered to said annular core plate (**114**), said friction facing (**112**) being composed of at least three arcuate segments (**116**) joined together at match lines (**118**), each arcuate segment (**116**) defining an inside arcuate edge (**134**) and an outside arcuate edge (**136**), and porous tape applied across the match line (**118**) formed by the joinder of said arcuate segments (**116**), whereby said friction facing (**112**) is oriented with respect to said core plate (**114**) such that said tape is interposed between said friction facing (**112**) and said core plate (**114**).

5,332,076

MONEY HANDLING APPARATUS AND METHOD FOR USE WITH GAMING MACHINES

Werner Ziegert, Wedemark, Fed. Rep. of Germany, assignor to Bally Wulff Automaten GmbH, Berlin, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 947,630
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131832
Int. Cl.[5] G07F *5/22*; **G06F** *15/28*
U.S. Cl. 194—217 **16 Claims**



1. A money handling apparatus for managing the receipt and storage of money for a plurality of money-activated gaming machines, said gaming machines adapted for generating game results corresponding to winnings and losses comprising:

a housing adapted for securely receiving the plurality of gaming machines;

money intake means for receiving a deposit of money from a player, determining the value of said deposit, and storing the money;

memory means for recording a plurality of credit balances, each of said credit balances being associated with one of said plurality of gaming machines;

booking selection means for selecting a target credit balance that is one of said credit balances;

control means for incrementing said target credit balance by the value of the deposit; and

communications means for enabling communication of data between said control means and said plurality of machines, said data including said credit balances and said game results;

wherein said money intake means includes at least one money intake slot and blocking means operatively associated with said intake slot for selectively blocking and unblocking the insertion of money into said intake slot, said blocking means being actuated to unblock said slot when the player selects one of said credit balances with said booking selection means;

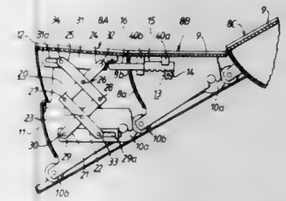
and wherein said control means increments and decrements said each credit balance in accordance with the game results generated by its respective gaming machine.

5,332,077

ESCALATOR APPARATUS

Yoshio Ogimura, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 22, 1992, Ser. No. 901,969
Claims priority, application Japan, Jun. 28, 1991, 3-158601
Int. Cl.[5] B66B *23/12*
U.S. Cl. 198—333 **9 Claims**



1. An escalator apparatus which transports wheeled conveyances in addition to passengers comprising:

a first specialized step having a moveable tread which can rise and fall included as one of multiple steps which are arranged to move on an outward path and a return path formed in an endless loop between upper and lower floors;

a second specialized step having lift means for lifting the first specialized step and being set adjacent to the first specialized step; and

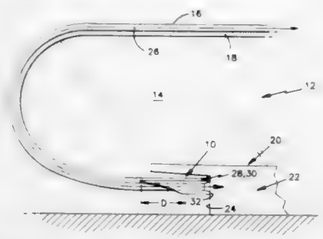
guide means for supporting and tilting the moveable tread of the first specialized step with respect to the second specialized step when the lift means lifts the first specialized step to the same height as the second specialized step.

5,332,078

BALUSTRADE HANDRAIL ENTRY GUARD

Gerald E. Johnson, Farmington, and James A. Rivera, Bristol, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Sep. 27, 1993, Ser. No. 127,214
Int. Cl.[5] B66B *29/08*
U.S. Cl. 198—338 **8 Claims**



1. A handrail entry guard, for a balustrade assembly having a handrail and a handrail guide, wherein the handrail has a longitudinal axis extending along the centerline of the handrail, comprising:

a pair of symmetrically opposed elastomeric halves, for substantially surrounding a handrail of a balustrade if said guard is in a normal position, each half having a rear edge, a forward edge, and a top surface;

wherein said top surface of each half is attached the handrail guide, and said forward edge extends from said top surface to said rear edge along an arcuate path, wherein an acute angle is formed between said forward edge and the longitudinal axis of the handrail, and said forward edge tends to deflect foreign objects away from said handrail; and

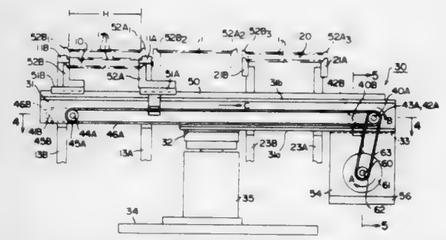
wherein either or both said halves may be deflected away from said handrail to facilitate the deflection of foreign objects away from said handrail.

5,332,079

APPARATUS FOR CONVEYING PLATE-FORM ARTICLES

Hisashi Ueda; Nobuyuki Aoyagi, and Tadayuki Ueda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed May 19, 1993, Ser. No. 64,392
Claims priority, application Japan, May 19, 1992, 4-150105
Int. Cl.[5] B65G *47/12*
U.S. Cl. 198—457 **1 Claim**



1. A conveyor apparatus for plate-form articles comprising a conveyor line which conveys plate-form articles in a lengthwise direction of said plate-form articles and a subconveyor means which conveys said plate-form articles in a direction perpendicular to said conveyor line wherein,

said sub-conveyor means comprises: first and second workholders which support both sides of said plate-form arti-

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cles which are in a perpendicular direction relative to a conveying direction of said sub-conveyor means; a vertical driving mechanism which raises and lowers said work-holders; and a conveyor mechanism which moves said work-holders in a direction perpendicular to said conveyor line, and

said conveyor mechanism comprises: a first belt conveyor system which is installed perpendicular to said conveyor line and to which said first work-holders are linked; a second belt conveyor system which is installed perpendicular to said conveyor line and to which said second work-holders are linked; and a motor which drives said first and second belt conveyor systems, said first belt conveyor system being connected so as to be driven by an output shaft of said motor, and said second belt conveyor system being connected so as to be driven by said output shaft of said motor via a braking means and a clutch means.

5,332,080

APPARATUS FOR CONVEYING INSULATING GLASS PANES

Karl Lenhardt, Neuhausen-Hamberg, Fed. Rep. of Germany, and Rudolf Bernhardt, Bützberg, Switzerland, assignors to Lenhardt Maschinenbau GmbH, Neuhausen-Hamberg, Fed. Rep. of Germany

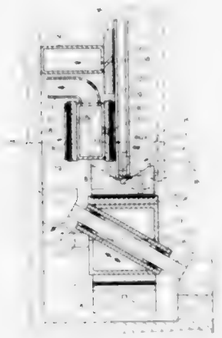
PCT No. PCT/EP91/01777, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993, PCT Pub. No. WO92/05333, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 18, 1991, Ser. No. 30,072

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1990, 4029669

Int. Cl.[5] B65G *45/00, 21/10*

U.S. Cl. 198—497 **24 Claims**



1. An apparatus for conveying insulating glass panes comprising a horizontal conveyor (**2**), which defines a horizontal direction of conveyance comprises an endless conveying element (**5**) having supporting surfaces (**11**, **12**), on which the insulating glass panes (**20**) stand,

and backing means (**16**, **38**), which extend above the horizontal conveyor (**2**) and are parallel thereto and by means of one or more backing elements, which are contacted by the insulating glass panes (**20**) standing on the horizontal conveyor (**2**), define a plane of travel (**34**) for the panes, wherein said supporting surfaces (**11**, **12**) are aligned with two planes, which are parallel to said direction of conveyance (**10**) and define an upwardly flaring wedge, the angle bisector (**35**) of which is a plane that is parallel to said plane of travel (**34**) for the panes,

and wherein said horizontal conveyor (**8**) is displaceable in a direction which is at right angles to said direction of conveyance (**10**) and parallel to the surface of that supporting surface (**11**) which is adjacent to said plane of travel (**34**) for the panes.

5,332,081

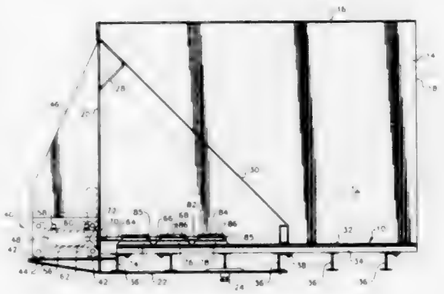
RECIPROCATING CONVEYOR HAVING DETACHABLE DRIVE UNIT

Manfred W. Quaeck, 1515 - 210th Ave. NE., Redmond, Wash. 98053

Continuation-in-part of Ser. No. 978,913, Nov. 19, 1992, Pat. No. 5,222,590. This application Apr. 6, 1993, Ser. No. 45,525

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—750 **37 Claims**



1. A reciprocating floor conveyor comprising:

a slat-supporting frame,

a plurality of individually reciprocatable groups of slats on said slat-supporting frame, each of said slats having an end;

drive means adjacent said ends of said slats, said drive means being detachably connected to said slats; and

a drive-supporting frame being detachably mounted to said slat-supporting frame such that said drive supporting frame releasably engages said slat supporting frame, said drive means remaining with said drive-supporting frame when said drive-supporting frame and said slat-supporting frame are detached.

5,332,082

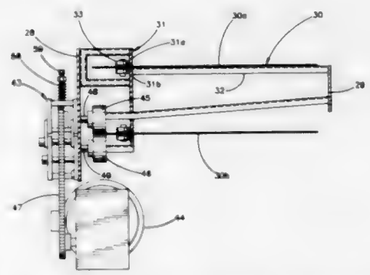
CONVEYOR TURN DRIVE

Ronald L. Sommerfield, 4660 Paper Birch La., Traverse City, Mich. 49684

Filed Mar. 23, 1993, Ser. No. 35,724

Int. Cl.[5] B65G *15/02*

U.S. Cl. 198—831 **2 Claims**



1. A conveyor having a frame including a belt-supporting means defining a turn, arcuate endless belt means carried by said supporting means and providing upper and lower courses, said belt means having inner and outer edges with respect to said turn, said belt means also including a plurality of guide rollers spaced radially inward from said outer edges, and drive means for said belt means, wherein the improvement comprises:

an assembly constituting said drive means and including

pinch rollers normally gripping at least one of said courses between them radially outward from said guide rollers, and motor means adapted to drive said pinch rollers in a direction to advance said belt means around said turn.

5,332,083

CURVED BELT CONVEYOR

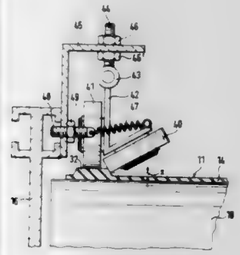
Norbert Axmann, Sinsheim-Ho, Fed. Rep. of Germany, assignor to Axmann-Fördertechnik GmbH, Sinsheim-Steinsfurt, Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 46,211

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1992, 4213035

Int. Cl.[5] B65G *15/02*

U.S. Cl. 198—831 **10 Claims**



1. A curved belt conveyor comprising: a continuous belt with upper and lower strands advanced over deflection rollers by a motor; an elevation secured to an edge of said belt and being an outer circumference of a curve and traveling along with said belt, said curve having a center of curvature resiliently mounted smooth-out rollers distributed at intervals along said outer circumference and forced at constant pressure against a side of said elevation facing said center of curvature for compensating longitudinal and transverse forces deriving from the curvature; said elevation projecting out beyond said belt; angled levers, said smooth-out rollers rotating freely on said angled levers; said levers pivoting on brackets extending outside said curve on pivots remote from levels of the upper and lower strands of the belt; a distance between said pivots and said strands being adjustable.

5,332,084

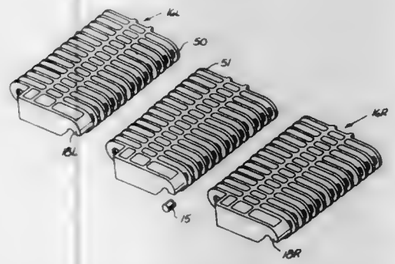
PIVOT ROD OCCLUSION SYSTEM FOR PLASTIC MODULAR LINK BELTS

Christopher G. Greve, Covington, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Sep. 15, 1993, Ser. No. 126,215

Int. Cl.[5] B65G *17/06*

U.S. Cl. 198—853 **9 Claims**



1. In a modular link plastic belt system, the improvement for retaining pivot rods axially confined within the belt, in combination comprising: flexible headless cylindrical plastic pivot rods, plastic belt modules having a set of apertured link ends forming a pivot rod journal through a set of apertures axially aligned to receive a said pivot rod, a set of said pivot rods journalled in said apertures for pivotally connecting modules end to end in a belt configuration, and occlusion means adapted to guide and bend said pivot rods for entry into a confined position journalled in the apertures comprising an occluding end piece disposed in a member on the modules at one edge of the belt and spaced from an outermost pivot rod apertured link end and positioned to partially occlude the aligned apertures for intercepting and retaining a journalled pivot rod in the belt, said occlusion means further defining a curved occlusion notch partly cylindrical in shape disposed in a mating position to guide the pivot rods, with the occlusion means covering a segmental portion of the aligned apertures in which a said pivot rod is journalled thereby to intercept and retain a journalled said pivot rod confined in the belt.

5,332,085

SHIPPING AND DISPLAY CONTAINER FOR LAWN IMPLEMENT

Ronald A. Fraser, Chandler, Ariz., assignor to Ryobi Outdoor Products, Chandler, Ariz.

Filed Jan. 19, 1993, Ser. No. 6,375

Int. Cl.[5] B65D *5/50, 71/08*

U.S. Cl. 206—45.14 **20 Claims**



1. In a point-of-sale display and access arrangement including a tool having a motor, a driven working end remote from and driven by the motor, and a tubular shaft connecting the motor to the remote working end, the improvement comprising:

a C-shaped folded-up cardboard display carton having a first portion and a second portion and a body portion connecting the first and second portions, the first and second portions extending from the body portion to thereby define the C-shape;

the body portion having a rear panel and a pair of side panels which at least partially define an open channel, each side panel including a first side section and a second side section, the first side sections extending generally perpendicularly from the rear panel and the second side sections extending from the first side sections back toward the rear panel to enhance the structural rigidity of the body portion; and

a first retainer and a second retainer located within the first and second portions, the motor of the tool extending into and being held by the first retainer and the working end extending into and being held by the second retainer;

wherein the arrangement may be oriented in an upright position with the second portion resting upon a horizontal surface and the first portion being maintained vertically thereabove so that the tool may be stably displayed with the motor being maintained vertically above the working end; and

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wherein the tubular shaft and at least a portion of the motor lie adjacent to the open channel between the first and second portions so that the at least a portion of the motor and the tubular shaft are displayed and are tactilely accessible at the point of sale and the arrangement of the carton and the tool can be carried in a generally horizontal fashion by using the tool as a handle.

10. A system for shipping a plurality of elongated motor driven lawn implements having upper and lower ends, the system comprising

a plurality of shipping containers, each container including

a body portion defining an elongated cavity having an open central region adapted for receiving a lawn implement in an upright orientation, the body portion having a rear panel and a pair of side panels, each side panel having a first side section and a second side section, the first side sections extending generally perpendicular to the rear panel and the second side sections integrally connected to the first side sections and folded toward the rear panel;

a top portion contiguous with the side panels of the body portion, the top portion having a pair of side sections extending outwardly from the rear panel beyond the first side sections and a face section extending between and perpendicular to the side sections of the top portion and spaced from the rear panel;

a bottom portion contiguous with the side panels of the body portion and opposite the top portion, the bottom portion adapted for supporting the container in a generally vertical orientation when placed upon a flat horizontal surface;

a first retainer in the top portion adapted for removably retaining an upper end of the lawn implement; and

a second retainer in the bottom portion for removably retaining a lower end of the lawn implement, the first retainer and the second retainer cooperating with the central open region to allow the lawn implement to be displayed at the point of sale in a vertical orientation so as to locate the upper end of the lawn implement above the lower end and to allow an individual container to be carried by utilizing the lawn implement as a handle;

a rectangular base with four corners receiving the bottom portions of the plurality of shipping containers therein in a generally vertical orientation with at least two shipping containers oriented face-to-face with one another and with four of the rear panels of the containers respectively oriented adjacent the four corners of the base;

a lid receiving the top portions of the shipping containers therein; and

a wrap substantially surrounding the lid, the base and the plurality of shipping containers to form an integral unit.

5,332,086

FLOPPY DISC STORAGE CASE

Kou S. Chuang, 8F-6, No. 100, Sec. 2, Hoping E. Rd., Taipei, Taiwan

Filed Apr. 2, 1993, Ser. No. 41,984
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—45.15 **1 Claim**

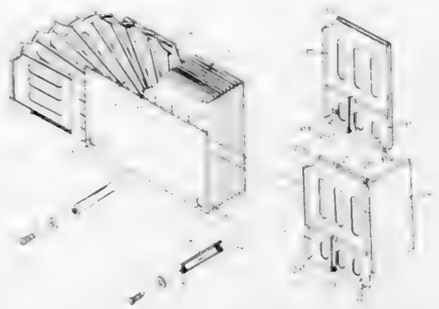
1. A floppy disc storage case comprising

a substantially U-shaped casing divided into two opposite open chambers by a middle division wall, having two through holes at two opposite corners thereof;

two stop plates respectively received in said open chambers and pivotally connected to said casing, each stop plate comprising a peripheral flange, a ¼ round notch at a top corner thereof, a plurality of finger slots, a stop strip at an opposite top corner thereof, a groove on a back of each of said two stop plates near a bottom of said stop plates, and an extension wall perpendicularly extended from one longitudinal side thereof.

a plurality of partition boards arranged into two sets respectively received in either open chamber and stopped by the extension wall of either stop plate, each partition board comprising finger slots, a ¼ round notch, a peripheral flange, and a through hole respectively disposed at locations corresponding to the finger slots, ¼ round notch, peripheral flange and through hole on said stop plates, and a projecting rod at a back of each of said plurality of partition boards;

two pivots respectively inserted into respective through holes on said casing, said stop plates, and said partition boards for permitting said stop plates and said partition boards to be reversibly and bilaterally spread out of said



open chambers, each pivot having two screw holes on two opposite ends thereof respectively fastened to either side wall of said casing by screws;

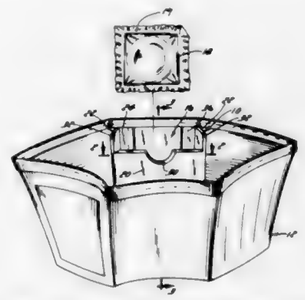
whereby turning either stop plate outwards from the respective open chamber causes the groove and peripheral flange on the respective stop plate and said partition boards to turn the respective projecting rod outwards in spreading out the respective partition boards.

5,332,087

PROTECTIVE DEVICE FOR CONDOMS

Phillip J. McMahon, 1767 Monterey Dr., Apt. 106, Palm Bay, Fla. 32905

Continuation-in-part of Ser. No. 888,853, May 27, 1992, abandoned. This application Oct. 28, 1992, Ser. No. 967,833
Int. Cl.[5] B65D *85/14*; **A45C** *1/06, 11/00*
U.S. Cl. 206—69 **4 Claims**



1. A portable receptacle usable in a bill fold in combination with a flexible condom package housing a condom,

said condom package having a flat central body portion of predetermined thickness with the sides thereof tapering at an angle to a perimeter having edges with a thickness less than said predetermined thickness, and

said portable receptacle comprising

(a) a first planar surface having a width above the same as the width of said condom package;

(b) a second surface;

(c) a plurality of side wall portions joined to said first surface and converging from said first surface to said second surface at an angle approximately equal to said taper angle of said condom package thereby forming a pair of parallel guides near the juncture of said first surface and said side wall portions for the guiding of said perimeter edges of said condom package when said condom package is inserted into said container,

said second surface and side wall portions thereof forming a concavity facing said first surface approximating the configuration of one side of the condom package where the vertical distance from the top of the concavity to said first surface is about the same as the predetermined thickness of said condom package; and

(d) a bottom wall downwardly inclined from said first surface to said second surface,

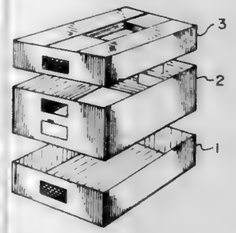
said first surface, second surface, side wall portions and bottom wall collectively defining said receptacle with an open end opposite said bottom wall, said condom package when inserted into said open end along said guides having abutting contact of at least a portion of the surface area of said central portion with said second surface and having abutting contact of said perimeter edges of said condom package with said side wall portions at about the juncture of said side wall portions with said first surface thereby flexing said condom package.

5,332,088

FRUIT DISPLAY BOX WITH HAND HOLES

Harry A. Schreiber, 105 Doubloon Dr., Slidell, La. 70461

Filed Dec. 19, 1991, Ser. No. 810,145
Int. Cl.[5] B65D *5/46*
U.S. Cl. 206—44 R **4 Claims**



1. A shipping and displaying package comprising: a base member having four side walls and a bottom wall in connection with said side walls, sleeve member having four side walls, a cover member having four side walls and an upper wall in connection with the side walls flexed, said sleeve member having a first and a second pair of hand holding means, each pair of said hand holding means having a first and second hand holding means placed in a pair of said side walls of said sleeve member that are opposite one another, said base and cover members being about half the height of said sleeve member.

5,332,089

STORAGE PACKAGE FOR RECORDING MEDIUM

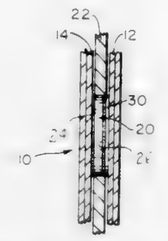
Jerry J. Tillett, Van Nuys, and Ronald W. Womack, Fullerton, both of Calif., assignors to Ivy Hill Corporation, New York, N.Y.

Filed Jun. 23, 1993, Ser. No. 81,975
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—310 **15 Claims**

1. A storage package for a recording medium defining a central aperture therethrough, comprising:

(A) a plurality of non-rigid, resiliently bowable panels formed of paperboard movable between an open orientation and a closed orientation, each of said plurality of panels being overlapping in said closed orientation, and at least some of said plurality of panels being non-overlapping in said open orientation; and

(B) a holder for a storage medium fixedly secured to one of said panels and extending intermediate a pair of said panels when said plurality of panels is in said closed orientation, said holder being formed of an easily but resiliently compressible foamed material and being configured and dimensioned as a cylinder to extend snugly through the central aperture of the recording medium, thereby to retain the recording medium on said holder until the recording medium is forcibly removed therefrom, said holder having a pair of opposed end surfaces, one of said opposed end surfaces being adhesively secured to said one panel and the other of said opposed end surfaces being free.

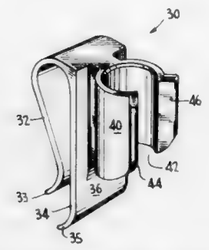


5,332,090

GOLF PUTTER HOLDER

Richard B. C. Tucker, Baltimore, Md., assignor to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Filed Jan. 22, 1987, Ser. No. 5,890
Int. Cl.[5] A63B *55/00*
U.S. Cl. 206—315.3 **5 Claims**



1. A golf putter holder comprising a clip portion for attachment of said holder to a golf bag and a body portion integral with said clip portion for receiving and retaining a golf putter in an upright position, said clip portion comprising a first and second leg with the opening between the legs being constructed and arranged to receive the rim of a golf bag and wherein said first and second legs of said clip portion are of different lengths with each of the legs having a curvature at their extremities, said body portion being integral with said second leg of said clip portion, being elongated and having a generally tubular configuration having an opening at one side and wherein said side opening is flared with extension legs, said opening being sized to permit the free passage of the smaller diameter putter end section of a tapered putter shaft and to retain the larger diameter handle end section of a tapered putter shaft and wherein the diameter of said body portion is greater than that of said smaller diameter section of said tapered putter shaft.

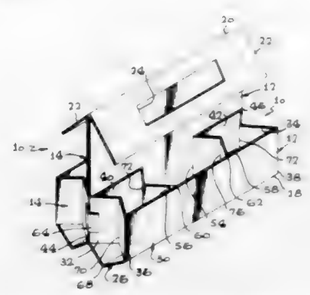
VOL 1164 ISS 4 JL 26 1994 UMI

5,332,091

BEVERAGE CONTAINER CARRIER

Donald Gugler, 10208 Swinton Ave., Sepulveda, Calif. 91343

Filed Jul. 20, 1992, Ser. No. 915,135
Int. Cl.[5] B65D 75/00
U.S. Cl. 206—167 14 Claims



1. A beverage container carrier comprising:

a central panel comprising a sheet of material having first and second sides,

panels formed of the same sheet of material as said central panel for defining a plurality of pockets on each said first and second sides of said central panel, said pockets being sized so that each said pocket can receive a single beverage container, said central panel extending upward between said pockets and terminating substantially at the top of beverage containers in said pockets;

said panels including a first bottom panel formed of said sheet of material and joining said central panel at a fold line and underlying said pockets on said first side to support beverage containers in said pockets on said first side, said panels including first and second outer wall panels formed of said sheet of material and joining said first and second bottom panels at fold lines, said first and second outer wall panels respectively forming the sides of said pockets opposite said central panel so as to close the outer side of each said pocket;

said panels including a series of panels formed of said sheet of material and joining said outer wall panels at fold lines to define said pockets and attach said outer wall panel to said central panel;

said series of panels attached to said outer wall panels including an end wall panel on each end of each said series of panels, an attachment panel attached to said outer wall panel and an interior wall panel attached to each said attachment panel, said wall panels and said attachment panels being sized to define three pockets of substantially equal size, said bottom panel and said wall panels having creases therein to permit folding of said beverage container carrier so that in the folded position said outer wall panel lies adjacent said central panel and said pockets are substantially closed; and

first and second handle panels attached at fold lines to the top of said central panel substantially at the top of the beverage containers in said pockets, said handle panels having first and second positions, said first position being an upright position wherein said handle panels lie substantially together in the plane of said central panel so that said handle panels can be grasped to raise said carrier, and said second position of said handle panels being a lowered position wherein said handle panels are folded down on said fold lines to substantially overlie said pockets and extend over the top of the beverage containers in said pockets.

5. A beverage container carrier comprising:

first and second blanks, each of said blanks having a central panel portion, said central panel portions each having a handle panel contiguously formed therewith for carrying said beverage container carrier, said central panel portions being secured together to form a central panel, three pockets on each side of said central panel, said pockets being substantially square and of sufficient size so that each pocket receives a single beverage container and said central panel being sufficiently tall so that it substantially reaches the top of the beverage containers in said pockets, each said blank having a bottom panel joined to its respective central panel portion at a fold line, said bottom panels forming the bottoms of said pockets on opposite sides of said central panel, each of said blanks having an outer wall panel thereon with said outer wall panel joined to said bottom panel at a fold line, said outer wall panels being positioned so that they form the outer wall of said pockets, end wall panels joined to said outer wall panels at a fold line to define the end walls of said pockets, attachment panels joined to on said end wall panels at a fold line for attachment to said central panel to secure said end wall panels, interior wall panels joined to said attachment panels at a fold line, said interior wall panels being attached to said outer wall panels to define said three pockets on each side of said central panel, said handle panels being joined to its respective central panel portion at fold lines, said handle panels being sized so that when in a first position they substantially lie over the top of beverage containers in said pockets, each of said handle panels having a cutout therein, said handle panels being foldable together on said fold lines into a second position, said handle panels lying together in the second position so that said handle panels can be manually grasped at said cutouts to carry said beverage container carrier, said end wall panels and said interior wall panels being creased to permit folding of said carrier to close said pockets to reduce the size of said carrier when no beverage containers are carried therein.

5,332,092

PROTECTIVE SYRINGE SHEATH AND METHOD OF USE

Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Filed Feb. 16, 1993, Ser. No. 19,263
Int. Cl.[5] A61M 5/32
U.S. Cl. 206—365 10 Claims



1. A protective covering in combination with a syringe having a removable tip, a barrel in which material to be extruded is housed, and a plunger in communication with the barrel for pushing the material to be extruded through the barrel, the removable tip having a connecting portion removably connecting the tip to the syringe and an extruding portion through which material is extruded from the syringe, the protective covering comprising two thin, flexible sheets bonded at the edges thereof so as to form an essentially flat, collapsible sleeve of thermoplastic material that is heat sealable and that together form a covering means for enclosing the entire syringe except for the extruding portion of the removable tip so as to provide a barrier to protect the entire syringe except for the extruding portion of the removable tip from contamination by an environment, said covering means comprising:

an inner surface which contacts the syringe when the syringe is inserted into said covering means;

an outer surface with which the syringe does not come into contact when the syringe is inserted into said covering means;

a first portion through which the syringe can be inserted, said first portion having a width greater than the widest section of the syringe;

a second portion having a width smaller than the width of said first portion and sized so as to snugly fit around the barrel of the syringe, and having a length corresponding to the length of the barrel of the syringe, said second portion conforming to the shape of the barrel such that excess material around the barrel and tip of the syringe is minimized; and

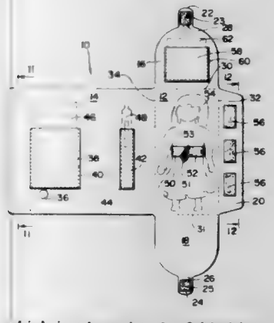
tip receiving means positioned on said second portion of said covering means for receiving the tip of the syringe and for allowing passage of the extruding portion of the tip of the syringe through said covering means into an outside environment such that the extruding portion of the tip of the syringe is exposed to the outside environment while the remainder of the syringe is enclosed with said covering means.

5,332,093

MAILBOX SHAPED DOLL AND ACCESSORY CARRIER AND BLANK THEREFORE

Fred Littlepage, 8017 Langbrook Rd., Springfield, Va. 22152

Filed Feb. 12, 1993, Ser. No. 17,387
Int. Cl.[5] A45C 7/00, 11/00
U.S. Cl. 206—457 20 Claims



1. A blank which is adapted to be folded into a carrier for holding at least one article, said blank comprising:

(a) a base panel having a first side edge, a second side edge, a first end edge, and a second end edge;

(b) means, attached to said base panel, for releasably retaining at least one article on said base panel;

(c) a first, single side panel foldably attached to said base panel, said single side panel being adapted to be folded over said retaining means, said single side panel having one side edge foldably connected to said first side edge of said base panel, and a second, free side edge;

(d) a second side panel having a first side edge and a second side edge, said second side panel first side edge being foldably connected to said second side edge of said base panel, said side panels having complementary means for detachably connecting said side panels to each other when said blank is folded into a container;

(e) a first end panel foldably attached to said first end edge of said base panel, and a second end panel foldably attached to said second end edge of said base panel; and

(f) a first closure attached to said first end panel and a second closure attached to said second end panel.

11. A container in the shape of a mailbox, said container comprising a carrier for detachably holding at least one article, said container comprising:

(a) a base having an outer surface and an inner surface, a first side edge and a second side edge, said side edges being oppositely disposed with respect to each other, a first end edge, and a second end edge, said first and second end edges being oppositely disposed with respect to each other;

(b) means for detachably retaining at least one article on said inner surface of said base;

(c) a wall extending from said first side edge of said base to said second side edge of said base, said wall overlying said base and defining open first and second ends of the container, said wall comprising a first section which is foldably attached to said first side edge of said base, and which comprises an arcuate cover overlying said base, and a second section which is smaller than said first section and which is foldably attached to said second side edge of said base, said wall sections each including complementary means for detachably connecting said wall sections to each other; and

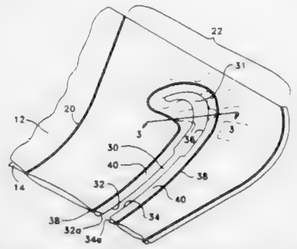
(d) means for closing said open first and second ends.

5,332,094

HEAT SHRINKABLE HANDLE BAG ARTICLE

Philip F. Cilia, Palos Hills, and Vytautas Kupcikevicius, Oaklawn, both of Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed Jul. 23, 1993, Ser. No. 95,465
Int. Cl.[5] B65D 65/00
U.S. Cl. 206—497 2 Claims



1. A heat shrinkable bag with an integral handle forming portion comprising:

a) generally rectangular front and rear bag panels of a thermoplastic, heat shrinkable film superimposed and laying flat one against the other, said panels being generally symmetrical about a longitudinal midline;

b) a transverse heat seal joining said panels, said heat seal defining the closed bottom of said bag;

c) each of said superimposed panels extending from said heat seal to provide a skirt along said closed bottom which is two plies thick over its entire extent;

d) said skirt having a slit which extends transverse said longitudinal midline, the opposite ends of said slit being arcuate and curved inwards towards said heat seal;

e) said slit being cold cut through both of said plies for a major portion of the slit length such that said panels along said major portion are loose and unsealed one from another;

f) said arcuate slit ends each being hot cut through both of said panels such that said panels along said arcuate ends are fused one to another; and

g) said skirt upon the heat shrinking of the bag about a product sealed therein being biaxially shrinkable to form a

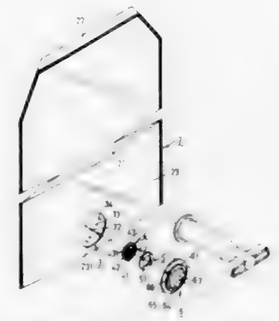
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bag carrying handle wherein said slit forms a hand opening for said carrying handle and a portion of said panels along said cold cut length shrinking and curling back over said plies to form a relatively smooth appearing handle edge.

5,332,095
BAG WITH MEANS FOR VACUUMING AN INTERNAL SPACE THEREOF

Hans Wu, 2F, No.2, Alley 97, Lane 226, Sec.3, Tung-Men Rd., Tainan City, Taiwan

Filed Nov. 2, 1993, Ser. No. 147,141
Int. Cl.[5] B65D *81/20*
U.S. Cl. 206—524.8 **7 Claims**



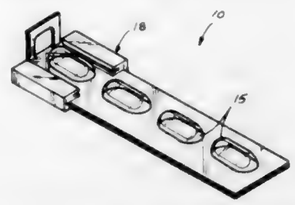
1. A bag with means for vacuuming an internal space thereof, said bag comprising:
an air impermeable bag body confining said internal space for receiving things therein and having an opening formed therethrough for communicating an exterior of said bag body and said internal space;
a fixing seat which is secured to said bag body and which covers a periphery of said opening, said fixing seat having a through-hole formed therethrough and communicated with said internal space;
a check valve made of flexible material and comprising a first portion substantially fixedly mounted on said fixing seat, said check valve including a covering unit, said covering unit comprising a second portion of said check valve movably mounted with respect to said first portion of said check valve, wherein said covering unit is movable between a first position that covers hermetically said through-hole of said fixing seat when pressure within said internal space is lower than that at the exterior of said bag body, thereby preventing air from entering into said internal space via said through-hole, and a second position wherein said through-hole is uncovered for permitting air within said internal space to be released through the exterior of said bag body through said through-hole; and
a bowl-shaped cover member enclosing hermetically said check valve and having a flat plate which is spaced and parallel to said covering unit so as to define a space between said flat plate and said covering unit, said flat plate having at least one passage hole formed therethrough.

5,332,096
MOUTHWASH CAPSULE AND PACKAGE APPARATUS

Anna D. Battaglia, 14 Bergen Trail, Hopatcong, N.J. 07843

Filed Jun. 14, 1993, Ser. No. 75,403
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—532 **2 Claims**

1. A mouthwash, capsule, and package apparatus, comprising,
a package having at least one transparent top layer, the top layer including a top layer pocket, the pocket including a water soluble gel capsule having a capsule cavity, with the capsule cavity including a mouthwash therewith, and
the apparatus further includes a cutting assembly, the cutting assembly including a floor plate, the floor plate having a first side wall spaced from and parallel a second side wall, with the first side wall and the second side wall spaced in a parallel relationship relative to one another, and the first side wall having a first slot in contiguous communication with a floor plate, the second side wall having a second slot in contiguous communication with the floor plate, the

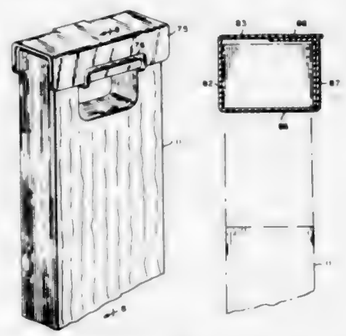


first slot and the second slot arranged in a parallel coextensive relationship relative to one another defining a gap therebetween, and a third slot superimposed upon the first slot spaced therefrom, and a fourth slot superimposed upon the second slot, wherein the third slot and the fourth slot are arranged in a coplanar relationship on opposed sides of said gap, and the pocket oriented within the gap, wherein the top layer is received within the first slot and the second slot, and a cutter blade received within the third slot and the fourth slot, the cutter blade including a cutter blade handle.

5,332,097
BAG DISPENSING SYSTEM

Richard M. Wile, Medfield, Mass., assignor to BPI Environmental, Inc., Taunton, Mass.

Continuation-in-part of Ser. No. 811,692, Dec. 20, 1991, Pat. No. 5,184,728. This application Dec. 15, 1992, Ser. No. 987,972
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—554 **7 Claims**

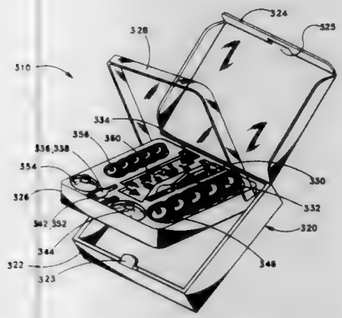


1. A bag pack comprising:
a stack of T-shirt type plastic film bags having a mouth and loop handles extending upwards on either side of the mouth, the handles being linked at their upper ends by a tearaway strip extending between them;
a stiff web member which is folded to provide front and back parallel panels bridged at their upper ends by a top panel thereby to form an inverted U shaped channel which encloses the upper ends of said loop handles and said tearaway strips, said front panel having a tongue which is narrower than said top, front, and back panels and which is folded forward under said tearaway strips to retain them as individual bags are torn downwardly from the pack.

5,332,098
PORTABLE PREPARATION TOOL KIT FOR AUTOMOBILE BODY WORK

Steven M. Fisher, Los Angeles, Calif., assignor to Fisher Tool Co., Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 719,948, Jun. 24, 1991, Pat. No. 5,259,914. This application Dec. 29, 1993, Ser. No. 175,112
Int. Cl.[5] B32B *35/00*
U.S. Cl. 206—576 **18 Claims**

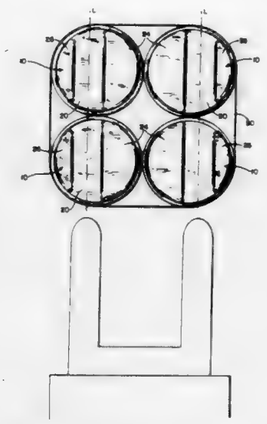


1. A portable preparation tool kit for automobile body work or the like, comprising:
a. a portable case for containing a multiplicity of tools;
b. said multiplicity of tools including a portable rotary tool, a multiplicity of abrasive tools, and a multiplicity of sand tools;
c. said portable rotary tool being an angle head rotary pneumatic motor having a cylindrical main housing and an angle head housing, a throttler assembly assembled in a lower portion of the main housing and controlled by a pivoted lever, a rotor assembly assembled in an upper portion of the main housing and having a rotor with blades and a pinion connected to the rotor and extending into the angle head housing, a spindle assembly assembled inside the angle head housing and having a pinion geared with the pinion and extending out of the angle head housing;
d. said multiplicity of abrasive tools including at least one abrasive tool set which includes at least one elongated shaft, at least one abrasive wheel base, and a multiplicity of abrasive wheels;
e. said multiplicity of sand tools including at least one sand tool set which includes a multiplicity of different shaped sand stones having identical stems; and
f. said pneumatic motor having at least one collet attached to said spindle and being suitable for receiving said elongated shaft of said at least one abrasive tool set and said identical stems of said at least one sand tool sets;
g. whereby said multiplicity of abrasive and sand tools can be interchangeably used with said pneumatic motor, and when high pressure compressed air is sent into said main housing and said lever is pressed, the compressed air will be gushed into said rotor assembly through said throttler assembly and blow said rotor blades to make said rotor rotate, and the rotation is transmitted to said spindle through said pinion, which in turn drives said abrasive wheel or sand stone attached to said pneumatic motor.

5,332,099
FEED BARREL

Robert Thornberg, Walhalla, N. Dak., assignor to Harvest Fuel, Inc., Walhalla, N. Dak.

Filed Jan. 17, 1992, Ser. No. 822,298
Int. Cl.[5] B65D *19/08*
U.S. Cl. 206—595 **6 Claims**



6. A transportable container comprising:
a) a generally cylindrical wall having upper and lower ends; and
b) a generally circular floor adjoining the wall to define an interior cavity, the lower end of the wall meeting the periphery of the floor to define a curved edge of the container;
c) the wall having a pair of downwardly open notches positioned adjacent the lower end of the wall, the notches defining opposed ends of a downwardly open channel of the container, the channel having a center line disposed away from the center of the generally circular floor.

5,332,100
COLUMN FLOTATION METHOD

Graeme J. Jameson, New Lambton, Australia, assignor to The University of New Castle Research Associates Limited of University of New Castle, Australia

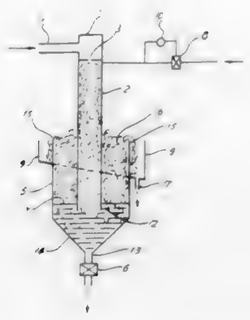
Continuation-in-part of Ser. No. 839,253, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 704,700, May 17, 1991, abandoned, which is a continuation of Ser. No. 547,626, Jul. 2, 1990, abandoned, which is a continuation of Ser. No. 100,956, Sep. 25, 1987, Pat. No. 4,938,865. This application Oct. 27, 1992, Ser. No. 967,197
Claims priority, application Australia, Sep. 25, 1986, PH08216
Int. Cl.[5] B03D *1/02, 1/24*
U.S. Cl. 209—164 **14 Claims**

1. A method of separating particulate material from slurries or suspensions in a liquid, said method comprising the steps of:
introducing the liquid containing the particulate material in a downwardly facing jet into an upper part of a first column having a lower end opening into a second column or chamber at a point between upper and lower ends of the second column or chamber, the upper part of the first column having a controlled gas inlet;
plunging the jet into a foam bed in the first column causing gas from the first column to be entrained by the jet into the foam bed and generate more foam;
allowing the foam level to rise in the first column until the pressure at the lower end of the first column is greater than the pressure in the second column adjacent the lower

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end of the first column causing the foam bed to move downwardly in the first column and issue from the lower end into the second column or chamber;

controlling the flow of gas through the controlled gas inlet to maintain the foam level in the first column such that the pressure at the lower end of the first column is greater than the pressure in the second column adjacent the lower end of the first column;



allowing froth from the foam to separate from liquid in the second column forming a liquid/froth interface;

removing the froth with entrained particulate materials from the upper part of the second column; and

removing remaining liquid from the lower part of the second column or chamber.

5,332,102

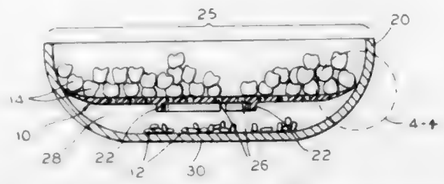
DEVICE FOR DE-SEEDING POPCORN

Abbe Sennett, Deerfield; John Chap, Lemont; Paul Green, Deerfield, and Ken Streit, Mt. Prospect, all of Ill., assignors to Amco Corporation, Chicago, Ill.

Filed Mar. 6, 1992, Ser. No. 846,833

Int. Cl.[5] B07B *1/49*

U.S. Cl. 209—417 **10 Claims**



1. A device for separating unpopped popcorn kernels from popped popcorn comprising:

a flat disc having a tapering perimeter surface for wedging the disc inside of a bowl with a tapering diameter;

the disc having holes formed therein, said holes having a size which unpopped popcorn kernels may pass through, said holes further having a size which popped popcorn cannot pass through; and

means for supporting an elevating said disc above the bottom surface of said bowl, said means for supporting and elevating said disc extending downwardly from the underside of said disc and located inwardly from said perimeter.

5,332,103

BEAN GRADER

David R. Zittel, Columbus, Wis., assignor to Lyco Manufacturing, Inc., Columbus, Wis.

Filed Dec. 31, 1992, Ser. No. 999,392

Int. Cl.[5] B07B *13/075*

U.S. Cl. 209—664 **7 Claims**

5,332,101

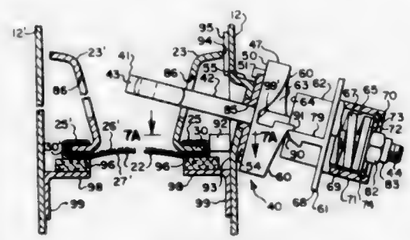
SCREEN ALIGNING, TENSIONING AND SEALING STRUCTURE FOR VIBRATORY SCREENING MACHINE

John J. Bakula, Grand Island, N.Y., assignor to Derrick Manufacturing Corporation, Buffalo, N.Y.

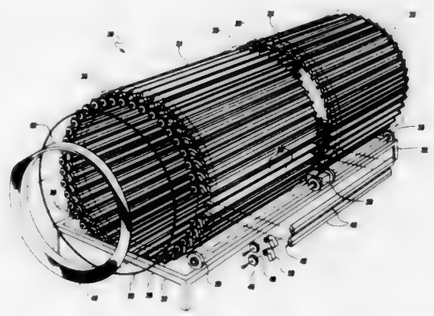
Filed May 6, 1992, Ser. No. 879,859

Int. Cl.[5] B07B *1/49*

U.S. Cl. 209—403 **31 Claims**



28. An alignment structure for a screen of a vibratory screening machine comprising a vibratory screen, channel means on the end of said vibratory screen, a drawbar, flange means on said drawbar for entering said channel means, and interfitting means between said channel means and said flange means for aligning said channel means with said flange means, said interfitting means comprising cooperating tab means and notch means.



1. A vegetable grader comprising:

a) a rigid frame;

b) a drum rotatably mounted to the frame, wherein the drum has first and second end plates with fixed grader bars which extend between the end plates;

c) a plurality of rotatable grader bars mounted between the end plates, wherein each grader bar is rotatable about an axis;

d) an arm mounted to each rotatable grader bar and extending radially from the axis of grader bar rotation;

e) a cam following roller rotatably mounted to each arm about an axis, wherein the axis of roller rotation is offset from the axis of grader bar rotation;

f) an adjustable cam mounted to the frame for displacement towards and away from the first end plate, the cam having a frustoconical portion engaged with the cam following rollers such that the displacement of the cam causes radial displacement of the cam following rollers which in turn causes the rotation of the rotatable grader bars; and

g) an elastic looped belt which encircles all the arms and retains the cam following rollers engaged against the cam.

5,332,104

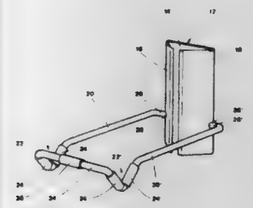
BICYCLE RACK

Michael Santella, C.P. 1323 Place Bonaventure, Montreal, Canada H5A 1H1

Filed Jun. 2, 1992, Ser. No. 892,140

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—18 **5 Claims**



1. A bicycle storage device comprising a housing bracket, a stop member, and first and second bicycle support members, each of said bicycle support members comprising an elongated arm portion having a bicycle retaining means located at one end thereof, an intermediate portion joining an opposite end of said elongated arm portion, the intermediate and arm portions having an axis in the same plane and substantially perpendicular to each other and a base portion joined to the opposed end of the intermediate portion, said base portion having an axis in a plane substantially perpendicular to said intermediate and arm portions, each of said intermediate portions being rotatably journalled by said housing bracket, the arrangement being such that when in a bicycle support position, said elongated arm portions extend horizontally outwardly from said housing bracket and said base portion contacts said housing bracket to support said arm portions, and when said arm members are rotated to a vertical storage position, said base portions are supported by said stop member to thereby retain said members in the storage position.

5,332,105

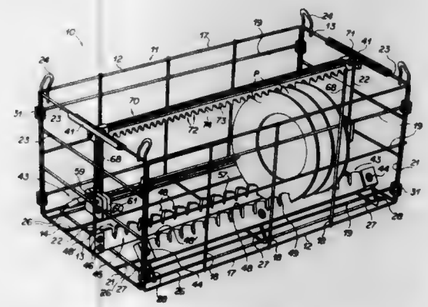
PORTABLE DISH RACK

John Stanfield, 425 Riverhill Dr., Atlanta, Ga. 30328

Filed Oct. 13, 1992, Ser. No. 959,792

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—41 **5 Claims**



1. A portable dish rack comprising a frame defining a space in which a set of dishes may be supported uprightly, said frame having an open top through which dishes may be inserted and withdrawn, a plurality of generally parallel lower dish supports mounted to said frame and having a series of notches each having a first portion sized to receive and hold dishes of a selected thickness and a second portion sized to receive and hold dishes of a thickness greater than said selected thickness, and an upper dish support movably mounted to said frame for movement between a position engaging dishes supported upon said lower dish supports and a position withdrawn from the dishes and unobstructing their removal from said frame space, whereby the peripheries of dishes may be supported upon the lower dish support and maintained in position by engagement of the upper dish support with the peripheries of dishes.

5,332,106

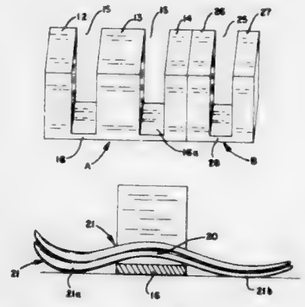
SPOON AND FORK HOLDER

Alice M. Schlotte, and Virgil H. Schlotte, both of 17483 64th St. SW., Cokato, Minn. 55321

Filed Dec. 17, 1992, Ser. No. 991,752

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—70.7 **3 Claims**



1. A device for holding a plurality of fork and spoon eating utensils in stabilized stacked relation on a table top, said eating utensils being of the type having an arched neck portion with a utility end portion and a handle end portion respectively extending outwardly in opposite directions from said arched neck portion, said device comprising

at least one pair of spaced apart, upstanding stabilizing elements, defining at least one stacking slot therebetween, the width of each stacking slot being slightly greater than the width of the respective neck portions of the utensils being stacked therein,

connector means connecting the bottom of the stabilizing elements and having a vertical thickness less than the height of the arch portion of the utensils to be placed in the slot, and having a length less than the length of the arch of the utensil to permit the bottom of the utility portion and bottom of the handle portion to rest on the surface of the table supporting the holding device.

5,332,107

DENTAL CARE CENTER

Kenneth A. Williams, Cape Town, South Africa, assignor to Camps Limited, Channel Islands, United Kingdom

Filed Jul. 27, 1992, Ser. No. 919,856

Claims priority, application South Africa, Jul. 29, 1991, 91/5912; Oct. 4, 1991, 91/7966

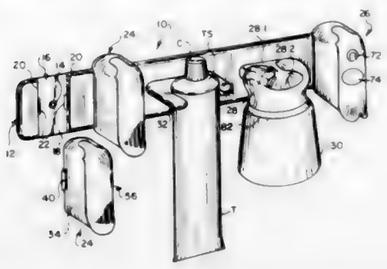
Int. Cl.[5] A47K *1/09*

U.S. Cl. 211—88 **11 Claims**

1. A tooth brush head enclosure comprising walling defining a space for receiving a tooth brush head from which a handle protrudes, the walling comprising a bottom wall having a front edge and two spaced side walls having front edges which bound a front entrance to said space, a recess in said front edge of said bottom wall for allowing passage therethrough of the

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handle of the tooth brush so that the head of the tooth brush can reside in said space, and so that the handle can hang down below said enclosure, a cradle comprising protrusions extending upwardly from said bottom wall for supporting the tooth brush head which is within said space in such manner that the bristles of the tooth brush head are spaced from said bottom

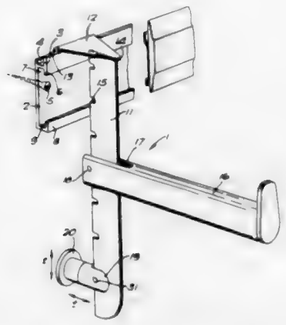


wall, a water drainage slot which forms an extension of said recess, said bottom wall sloping down to said slot to promote draining of the enclosure, and a door for closing off said entrance, the door having a first position in which it closes said entrance and a second position in which said entrance is open to enable the tooth brush head to be placed in said space for support by the cradle or removed from said space.

5,332,108
SHELVING/DISPLAY SYSTEM

Clive J. Blass, Edgware, Great Britain, assignor to Cil Shopfitters Ltd., London, Great Britain

PCT No. PCT/GB91/00420, § 371 Date Sep. 18, 1992, § 102(e) Date Sep. 18, 1992, PCT Pub. No. WO91/14388, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 19, 1991, Ser. No. 923,973
Claims priority, application United Kingdom, Mar. 19, 1990, 9006152.4
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—90 **21 Claims**



1. A merchandising system comprising: an anchor rail for attachment in a substantially horizontal disposition to a substantially vertical upright surface, said rail being constructed and arranged to receive a releasable engagement means located on at least one hanger so that the hanger is demountably attachable to the rail at any location along a length of the rail, wherein the hanger hangs freely from the rail in contact with the upright surface at a predetermined location thereon remote from the rail and the hanger being free of permanent attachment to the upright surface at the predetermined location, and the hanger being supported only by the anchor rail, the hanger comprising an upright portion which extends substantially vertically with respect to the rail when the hanger is attached to the rail and a support arm that extends outwardly from the upright surface.

5,332,109
WET CLOTHES HANGING DEVICE

Sandra C. Johnson, 1355 Brookside Dr., Venice, Fla. 34292

Filed Jul. 13, 1993, Ser. No. 90,514
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—96 **5 Claims**

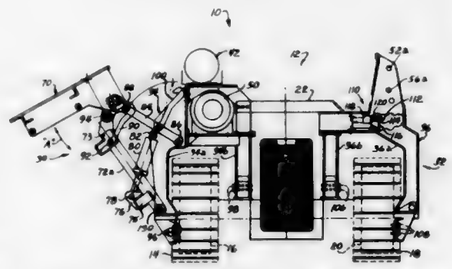


1. A wet clothes hanging device for drip-drying wet clothes and for directing water drippage from the wet clothes into a laundry tub comprising:
an upright splash panel connectable to a wall adjacent the laundry tub;
said splash panel including forwardly extending side panels and a lower forwardly extending drip deflector panel;
a hanging rod connected to and horizontally extending in a forwardly direction from an upper point of said splash panel, said hanging rod structured to supportively receive wet clothing, as on a clothes hanger, hung therefrom;
said drip deflector panel being positioned immediately adjacent and just above a rim of the laundry tub directing water dripped from the wet clothing into the laundry tub;
said side panels preventing the water dripped from the wet clothing from splashing or running onto the wall.

5,332,110
TRACTOR MOUNTED HYDRAULIC PIPELAYER WITH SIDE BOOM

Raymond Forsyth, North Vancouver, Canada, assignor to Vanguard Hydraulic Pipelayer, Canada

Filed Feb. 22, 1993, Ser. No. 20,652
Int. Cl.[5] B66C *13/42*
U.S. Cl. 212—258 **5 Claims**

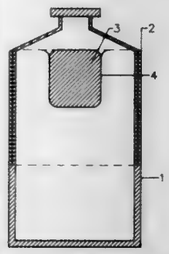


1. Apparatus mounted to a tractor for laying pipe, wherein said tractor includes a center frame with an engine and first and second track frames mounted to respective sides of said center frame, wherein each of said first and second track frames has a respective segmented, endless track attached thereto, said apparatus comprising: first and second support frames respectively coupled to the center frame and the first track frame and to the center frame and the second track frame; a boom pivotally coupled to said first support frame; a counterweight; coupling means for pivotally attaching said counterweight to said second support frame for moving said counterweight over an arc-like path between a first extended, upraised position and a second retracted, lower position relative to the tractor's center frame; a hydraulic control system including a hydraulic cylinder connected to said coupling means and a boom winch and a load winch respectively coupled to said boom and to a load for raising a lower said boom and said load and for moving said counterweight in accordance with the weight of said load and the inclination of said boom, wherein each of said boom and load winches is double acting in providing positive drive in raising and lowering said boom and said load, respectively, and wherein said load may be lowered in a controlled free-fall manner; and sensor means for detecting retraction of said boom to a full-up position and automatically preventing further retraction of said boom, wherein said sensor means includes, in combination, a movable member directly engaged by and responsive to said boom in the full-up position, a release valve connected to said hydraulic control system for dumping hydraulic pressure when said boom is in the full-up position, and mechanical kickout valve couplings said movable member to said release valve, and wherein said movable member comprises a shaft coupled to said first support frame and movable along its longitudinal axis when directly engaged by said boom.

5,332,111
BOTTLE THAT FUNCTIONS UPRIGHT AND INVERTED USING THE SIDES OF THE BOTTLE FOR SUPPORT

John H. Bowen, 3345 Westhaven Ct., Eau Claire, Wis. 54701

Filed Aug. 23, 1993, Ser. No. 109,911
Int. Cl.[5] B65D *23/12*
U.S. Cl. 215—100 R **5 Claims**



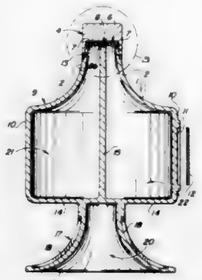
1. A system for maintaining a bottle in an inverted position comprising:
a bottle having a top, a bottom and a sidewall therebeteen, said bottle having a slidable sleeve about said sidewall, said sleeve having a top portion with a peripheral edge, said sleeve slidable from a normal position between said top and bottom to an extended position in which said top portion edge extends above the bottle top, said bottle and sleeve including means for locking the bottle to the sleeve in said extended position, said means including a projection on said sidewall formed by an area of increased wall thickness relative to the surrounding area of the bottle, said means further including a cutout in the sleeve, said cutout surrounding the projection in the normal position and said projection pressing against the sleeve in the extended position.

5,332,112
PARTITIONED BOTTLE

Elisha Blocker, 4888 Naff Ave., Bastrop, La. 71220-7452

Filed May 19, 1993, Ser. No. 64,717
Int. Cl.[5] B65D *1/04*
U.S. Cl. 215—6 **20 Claims**

1. A partitioned bottle comprising an enclosure having a hollow interior, a bottom; a neck shaped in said enclosure; at least one partition provided in said enclosure, said partition extending from said bottom into said neck and dividing the interior of said enclosure into at least two compartments; and

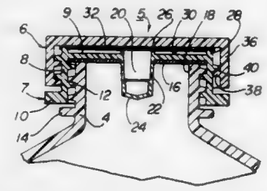


at least two seal means hingedly disposed in said neck, whereby said compartments are selectively opened and closed responsive to opening and closing said seal means.

5,332,113
CAP ASSEMBLY

John E. Kusler, III, Newburyport, Mass., Leonard W. Cooke, Newton, MA., assignor to Elan Pharmaceutical Research Corporation, Gainesville, Ga.

Continuation of Ser. No. 443,920, Nov. 30, 1989, abandoned. This application Sep. 10, 1991, Ser. No. 758,364
Int. Cl.[5] B65D *41/32*
U.S. Cl. 215—249 **15 Claims**



1. A cap assembly for an enteral feeding container comprising
an inner cap, said inner cap including means forming a disinfected chamber having a tray forming a first wall of said chamber and an outer annular lip defining the outer perimeter of said tray and means within said chamber for receiving a spike of an enteral feeding tube assembly,
means for securing said inner cap to said enteral feeding container,
an outer cap, said outer cap having means for removably securing said outer cap over said chamber and means for removeably sealing said disinfected chamber, and
means or at least partially opening said sealed chamber to expose said spike receiving means.

5,332,114
CONTAINER

Yasumasa Sano, and Takao Ohsugi, both of Fuji, Japan, assignors to Jatco Corporation, Fuji, Japan

Filed Mar. 15, 1993, Ser. No. 31,365
Claims priority, application Japan, Mar. 17, 1992, 4-060659
Int. Cl.[5] B65D *6/02*
U.S. Cl. 220—4.24 **18 Claims**

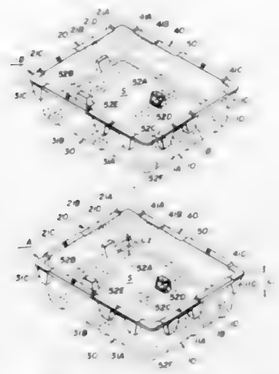
1. A container comprising:
first and second cases which are identical in shape, each of said cases having a front and a bottom wall constituting a back;
a first group of coupling portions possessed by each case, said first group of coupling portions establishing a cou-

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pling of said first and second cases when said first and second cases are mated in a front-to-front manner;

a second group of coupling portions possessed by each case, said second group of coupling portions establishing a coupling of said first and second cases when said first and second cases are mated in a back-to-back manner; and

a third group of coupling portions possessed by each case, said third group of coupling portions establishing a coupling of said first and second cases when said first and second cases are mated in a front-to-back manner;



wherein said third group of coupling portions includes a plurality of hollow projections, formed as part of the bottom wall of each case, which project into an interior of said case and define a concave depression on an exterior face of said bottom wall, wherein said hollow projections of said first case are snugly received by the concave depressions in said second case when said first and second cases are mated front-to-back.

5,332,115

BOX-SHAPED CONTAINER MADE FROM A PLASTIC MATERIAL

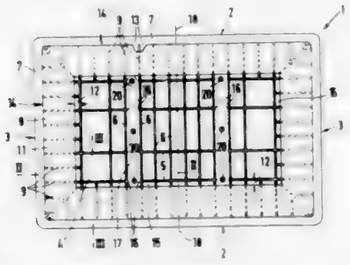
Gerhard Schäfer, Salchendorf, Fed. Rep. of Germany, assignor to Fritz Schafer Gesellschaft mit beschrankter Haftung, Neunkirchen, Fed. Rep. of Germany

Continuation of Ser. No. 887,334, May 22, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,942

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1991, 9112561

Int. Cl.[5] B65D *1/38*

U.S. Cl. 220—608 **3 Claims**



1. A plastic container, comprising:

a base having a top side defining a planar commodity supporting surface, which is limited by two longitudinal walls and two transverse walls defining together an inner space of said container, a bottom side, and an edge portion, which is defined by a portion of said base projecting beyond said two longitudinal walls and said two transverse walls;

first and second stiffening ribs located on said bottom side and extending, respectively, parallel to said longitudinal walls and said transverse walls for stabilizing said base;

a plurality of flat straps, which extend along a perimeter of said edge portion inward thereof and substantially parallel to said base in a spaced relationship thereto and parallel to said longitudinal walls and said transverse walls, wherein said flat straps form a foot surface of said container;

a plurality of third stiffening ribs which extend along the perimeter of said edge portion inwardly thereof and transverse to said bottom side and parallel to said longitudinal walls and said transverse walls, for connecting said flat straps with said bottom side;

wherein respective portions of said bottom side of said base, said flat straps, outer ribs of said first and second stiffening ribs and said third stiffening ribs form a plurality of pocket-like free spaces each having opposite lateral sides, which are defined by outer and inner boundary edges of a respective flat strap, an opening formed between said bottom side and a respective boundary edge of the respective flat strap at one of said opposite lateral sides, and a downwardly open passage at another of said opposite lateral sides, which is formed by a clearance between another boundary edge of the respective flat strap and a respective outer rib.

5,332,116

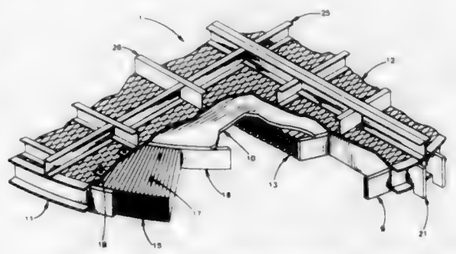
CERAMIC FIBER INSULATION STRUCTURE WITH READILY REPAIRABLE PERIMETER INSULATION

William A. Nutter, Stow; William A. Siwierka, Elyria, and Alan J. Ruth, Lorain, all of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Filed Sep. 23, 1991, Ser. No. 763,698

Int. Cl.[5] B65D *6/10*; **B32R** *3/10*; **F27B** *14/08*

U.S. Cl. 220—215 **18 Claims**



1. In an insulation cover for retaining heat in a heated container, wherein the cover has a frame member sized at least substantially to an aperture of the container and contains ceramic fiber insulation within said frame member, which fiber insulation is secured to a foraminous member of said cover, the improvement comprising:

a main body of ceramic fiber insulation blankets situated in a transverse manner at least generally within the central area of said cover;

a plurality of ceramic fiber insulation bundles, prepared by binding together a group of fiber blankets, said bundles being situated around the perimeter of said cover and positioned in varying relationship to the transverse direction of said main body insulation; and

a layer of ceramic fiber packing blankets in snug fit between said main body of ceramic fiber and said perimeter insulation bundles.

5,332,117

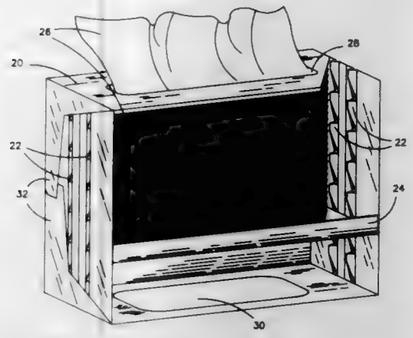
ADJUSTABLE TISSUE BOX

Iraj Yadegar, P.O. Box 1635, Studio City, Calif. 91604

Filed Mar. 3, 1993, Ser. No. 25,972

Int. Cl.[5] B65H *1/04*

U.S. Cl. 221—33 **2 Claims**



1. An adjustable tissue box comprising:

(a) a top wall of sufficient size and strength having an opening formed therein for picking up tissues therethrough;

(b) a bottom wall of sufficient size and strength having an opening formed therein for recharging and manually advancing the tissues toward said top wall;

(c) adequate side walls of sufficient size and strength joined by said top and said bottom walls with at least two of said side walls of opposite preferable sides each having at least one opening formed therein, each said opening having positioned therein a step which extends into an interior of said tissue box for holding the tissues in place as the tissues are advanced toward the top wall of the box; and

(d) a tray of sufficient size and strength placed beneath the tissues and resting on a pair of said steps to support the tissues as said tray is driven from said bottom wall toward said top wall to rest on progressively higher pairs of said steps to advance the tissues toward the top wall of the box.

5,332,118

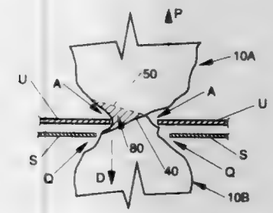
POP-UP TOWEL DISPENSING SYSTEM

Delmar R. Muckenfuhs, Middletown, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 17, 1993, Ser. No. 108,206

Int. Cl.[5] A47K *10/24*

U.S. Cl. 221—48 **20 Claims**



1. In a web comprising a plurality of separate sheets suitable for use in a pop-up dispensing system, each of said sheets having two opposing side regions and two opposing end regions joining said opposing side regions, said sheets having a longitudinal direction which extends between said side regions and a transverse direction which is perpendicular to said longitudinal direction, and said end regions each including an end edge which extends across said sheets between said opposing side regions and defines a maximum longitudinal length of said sheets, the improvement comprising:

(a) said sheets being associated with one another to form said web such that the end regions of each sheet overlie end regions of adjoining sheets in a co-extensive relationship so as to form at least one pair of adjacent sheets having at least one overlapping region bounded at least partially by an opposing end edge of each sheet of said at least one pair of adjacent sheets; and

(b) said opposing end edges being at least partially non-parallel with one another, and said at least one overlapping region having at least one point of greatest overlap and at least one point of least overlap measured in said longitudinal direction, said at least one point of greatest overlap being greater than said at least one point of least overlap.

5,332,119

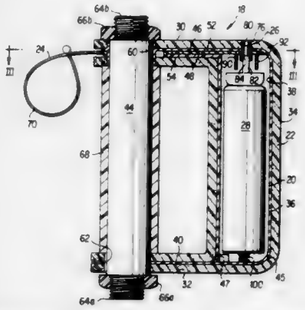
PERSONAL DEFENSE APPARATUS AND COMBINED EXERCISE WEIGHT

Richard C. Davis, 3384 Tarpon Woods Blvd., Palm Harbor, Fla. 34685

Filed Mar. 24, 1993, Ser. No. 37,827

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—78 **9 Claims**



1. A combination exercise weight and personal defense apparatus comprising:

an exercise weight having a handgrip to be gripped by one using the exercise weight;

a personal defense apparatus comprising:

an attaching means for attaching said personal defense apparatus to said exercise weight;

a housing for containing a canister of a pressurized defense fluid, but for defining an opening for allowing said defense fluid to escape from a nozzle of said canister;

a trigger means for being manipulated to activate said nozzle for allowing defense fluid to escape from said canister;

wherein said personal defense apparatus is formed as a handguard, for extending about a hand gripping said handgrip.

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5,332,120

WATER ARROW PROJECTING BOW

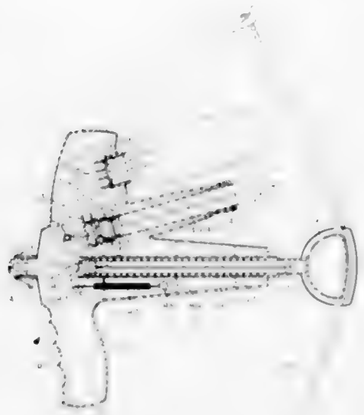
Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889, and Lonnie G. Johnson, 4030 Ridgehurst Dr., Smyrna, Ga. 30080

Continuation-in-part of Ser. No. 841,762, Feb. 28, 1992, Pat. No. 5,150,819, which is a continuation of Ser. No. 680,247, Apr. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,145, Sep. 6, 1990, Pat. No. 5,074,437. This application Jun. 22, 1992, Ser. No. 902,089

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] A63H *33/30, 33/18;* B67D *3/00*

U.S. Cl. 222—78 20 Claims



1. An air pressurized toy water bow for firing water, which comprises

(a) a housing shaped generally like an archery bow;

(b) a water storage reservoir for storing water, attached to said housing and having an orifice through which water and gasses pass from said reservoir to said housing;

(c) an attachment means located on said water bow housing for attaching said water storage reservoir to said water bow housing with a seal impervious to water;

(d) a pressurizing means for pressurizing said water storage reservoir with air, said means being an integral part of said water bow housing and remotely located from said water storage reservoir;

(e) an avenue of release for any stored water displaced by said pressurized air, said avenue of release extending from said attachment means to a nozzle on said bow housing;

(f) a water release means for regulating the fluid flow through said avenue of release, said water release means being attached to said housing and attached to a pull mechanism and actuated by the movement of said pull mechanism;

(g) a pull mechanism attached to said housing and functionally connected to said release means such that movement of said pull mechanism will actuate said water release means; and,

(h) a nozzle located on said housing, said nozzle being connected to said avenue of release.

5,332,121

SQUEEZABLE MULTI-LAYER DISPENSING CONTAINER WITH ONE-WAY VALVE

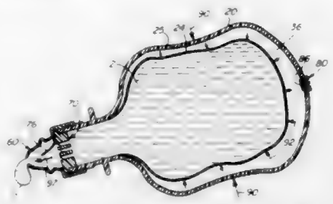
Steven L. Schmidt; Wayne N. Collette, both of Merrimack, and Suppayan M. Krishnakumar, Nashua, all of N.H., assignors to Continental PET Technologies, Inc., Florence, Ky.

Continuation-in-part of Ser. No. 814,923, Jan. 8, 1992, Pat. No. 5,301,838, which is a continuation-in-part of Ser. No. 644,624, Jan. 23, 1991, abandoned, and Ser. No. 698,931, May 13, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 994,681

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[5] B65D *35/14*

U.S. Cl. 222—95 28 Claims



1. A squeezable container for dispensing a product comprising

a dispensing container having a resilient outer body and a flexible collapsible inner bag with the inner bag holding a product to be dispensed, the container having an open end from which the product is dispensed and a closed end, the inner bag and outer body being inner and outer layers respectively of a unitary multilayer expanded plastic perform container, wherein the inner layer is continuous and separate from the outer layer at the closed end of the container and joined thereto at least at the open end, and an aperture is provided in the outer layer at the closed end to enable air to enter between the inner and outer layers to facilitate collapse of the inner layer and form a chamber between the inner and outer layers;

a valve positioned in the aperture having an open position wherein a flow of air into the chamber is allowed and a closed position wherein a flow of air out of the chamber is restricted; and

wherein when squeezed, the outer layer deforms inwardly and the valve remains closed to increase the pressure in the chamber and cause the inner layer to collapse and dispense product out the open end of the container, and when released, the resilient outer layer returns to substantially its original shape causing a reduction in pressure within the chamber which opens the valve and allows air to flow into the chamber to maintain the inner layer in its collapsed state

5,332,122

CONTAINER FOR FLOWABLE SUBSTANCES

Wolf-Dietrich Herold, Seefeld; Guenter Rehfeld, Diessen, and Gerd Brandhorst, Munich, all of Fed. Rep. of Germany, assignors to Thera Patent GmbH & Co. KG Gesellschaft für Industrielle Schutzrechte, Seefeld, Fed. Rep. of Germany

Filed Nov. 5, 1992, Ser. No. 971,551

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, 9114084; Jan. 17, 1992, 9200521

Int. Cl.[5] B65D *35/56*

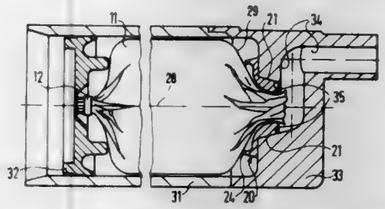
U.S. Cl. 222—105 7 Claims

1. A container for a flowable substance for use in a sanitary environment, comprising

a film tube for receiving said substance and closed at one end with a clip, said tube having a longitudinal axis, an outer periphery, and a dispensing end, a ring mounted at the dispensing end of the tube, and

a cylindrical housing including a movable piston and a rigid cap for receiving said tube between said piston and said cap, said cap forming an end wall of said housing for retaining said tube and having a dispensing opening through which the substance is dispensed,

wherein said ring has a conical sealing surface, and said cap has an annular counter surface surrounding said dispensing opening, which counter surface co-operates with the conical sealing surface of said ring, and wherein said ring has a circumferential sealing edge sealingly engaging said dispensing end of said tube between said longitudinal axis and said outer periphery in the direction of said dispensing end portion.



5,332,123

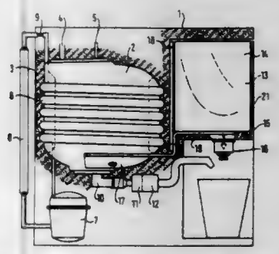
DEVICE FOR THE MEASURED DISPENSING OF LIQUIDS OUT OF A STORAGE CONTAINER AND SYNCHRONOUS MIXING WITH A DILUENT

Karlheinz Färber, Giengen/Brenz; Walter Eichler, Gentetter; Anton Deininger, Bachhagel; Heinz-Werner Giefer, Bergenweiler/Brenz, and Alfred Raab, Attenhofen, all of Fed. Rep. of Germany, assignors to The Coca-Cola Company, Atlanta, Ga. and Bosch-Siemens Hausgerate GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 900,797, Jun. 22, 1992, abandoned. This application Sep. 22, 1992, Ser. No. 948,305

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—129.4 2 Claims



1. Apparatus for mixing two liquids in a dispensing system in predetermined proportions at a mixing station, comprising:

a volume dosing piston pump for delivering a relatively smaller portion of a first liquid to said mixing station in a plurality of individual volumetrically controlled pulsed doses of substantially equal volume during a delivery cycle;

a flow regulated time controlled electromagnetic delivery valve having an inherent turn-on and turn-off characteristic and which is flow regulated with respect to volume for synchronously delivering a respective same plurality of relatively larger pulsed doses of substantially equal volume of a second liquid to said mixing station during the same said delivery cycle;

a selectively adjustable flow-through regulator connected to an input side of the delivery valve for controlling the flow rate of said second liquid through said time controlled delivery valve whereby the turn-on and turn-off time of said delivery valve is compensated for during each delivery cycle by selectively varying the flow rate of each said larger dose of second liquid so that a precisely controlled total volume of said second liquid is delivered during each said delivery cycle; and

an electromechanical drive mechanism for synchronously controlling the actuation of both the time controlled electromagnetic delivery valve and the volume dosing piston pump to provide a precise and variable control of a predetermined control of a mixed liquid at said mixing station.

5,332,124

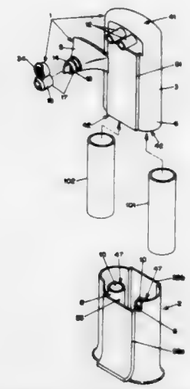
MULTI-CAVITY DISPENSING REFILL CARTRIDGE

Lewis P. Cancro, Trumbull, and David R. Williams, Monroe, both of Conn., assignors to Chesebrough-Pond's, USA Co., A Division of Conopco, Inc., Greenwich, Conn.

Filed May 17, 1993, Ser. No. 62,993

Int. Cl.[5] B67D *5/52*

U.S. Cl. 222—137 3 Claims



2. A refill cartridge for use with a refillable multi-cavity dispenser for the coextrusion of at least two flowable materials, comprising a hollow refill cylinder for being telescopically and sealingly accommodated within parallel outer dispensing cylinders of a reusable dispensing head, said refill cylinder containing one of said flowable materials, said refill cylinder having an open top end said top end of said refill cylinder comprising a flange for providing a seal between said inner refill cylinder and a corresponding one of said outer dispensing cylinders, said flange having an outer diameter greater than the diameter of said inner cylinder and providing frictional engagement to said outer cylinder, and said refill cylinder having a bottom end telescopically and slidingly accommodating a piston head which conforms to ride sealingly along the interior walls of said refill cylinder so as to force said flowable materials to flow toward said top end of said refill cylinder upon relative compression of said refill cylinder and piston head, said piston head being compressibly engagable with a piston rod of a reusable base unit; and means for temporarily sealing said top end of said inner refill cylinders.

5,332,125

METHOD & APPARATUS FOR METERING FLOW OF A TWO-COMPONENT DISPENSING SYSTEM

James W. Schmitkons, Lorain, and Jeffrey Noss, Bay Village, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Continuation of Ser. No. 640,060, Jan. 11, 1991, abandoned. This application Sep. 10, 1992, Ser. No. 943,105

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—1 34 Claims

12. A method of mixing and dispensing different polymeric

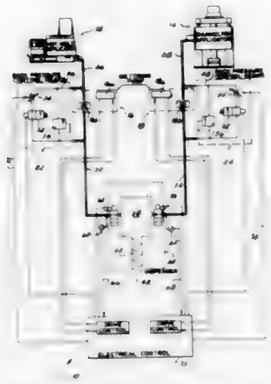
VOL 1164 ISS 4 JL 26 1994 UMI

materials which react chemically with one another when combined, which method comprises:

supplying a first pressurized liquid polymeric material to a dispenser,

supplying a second pressurized liquid polymeric material to said dispenser,

intermittently starting and stopping the flow of said materials from said dispenser, and



controlling the steady state flow pressures at which both said first and second liquid materials are inlet to said dispenser when said liquid materials are flowing through said dispenser, and controlling the inlet pressure of each of said first and second materials by adjustably regulating each inlet pressure to a pressure which is determined by adjustable pressure regulators contained in bypass flow paths for said first and second liquid materials and is a predetermined function of said steady state flow pressures when said flow of materials through said dispenser is terminated.

5,332,126

AUTOMATIC PASTE CONTAINER CLOSURE DEVICE

Piero Battegazzore, Alessandria, Italy, assignor to Guala S.p.A., Alessandria, Italy

Filed Jun. 15, 1993, Ser. No. 77,561

Claims priority, application European Pat. Off., Jul. 1, 1992, 92830341.1

Int. Cl.[5] **B65D** *35/08*

U.S. Cl. 222—107 **20 Claims**



1. A device for automatically opening and closing a container for pastes, comprising a tubular body, deformable by compression, with a closed end and an open end, and dispenser head attached at the open end for dispensing the paste, in which the dispenser head includes a dispensing duct with an inlet orifice inside the tubular body and in communication with the paste contained within the tubular body and an outlet orifice in communication with an external environment, a plate-like element for opening and closing the outlet orifice capable of movement tangential to the outlet orifice between a closed position and a open position, a support arm for the plate-like element connected to the dispense head, and resilient means for biasing the plate-like element to the closed position, wherein the dispensing duct includes a first and a second portion with respective internal tubular surfaces, that first and second portions intersecting at an angle to form an intersection aperture, and a piston positioned in the first portion sealingly slidable axially along the inner surface of the first portion between a first position in which the piston completely covers the intersection aperture and a second position in which the piston leaves the intersection aperture at least partly open and in communication with the first portion, the piston being in engagement with the resilient biasing means for the plate-like element.

5,332,127

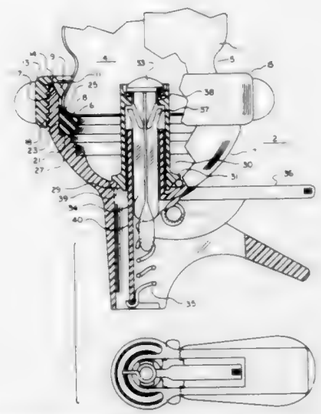
VENTED LIQUID DISPENSER AND ATTACHMENT CAP THEREFOR

Jonathan Z. White, 2208 Falcon Hill Pl., Lynchburg, Va. 24503

Continuation-in-part of Ser. No. 766,093, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 597,491, Oct. 10, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 961,629

Int. Cl.[5] **F04F** *10/00*

U.S. Cl. 222—214 **10 Claims**



1. A liquid container in combination with a main cap, said container having side walls and an outlet comprising a mouth and a neck of standard shape, said neck having a conical part with an outside diameter increasing downstream relative to said container, said main cap removeably attached to said container mouth by means of:

a) a skirt comprising a threaded outer surface, a cylindrical inner surface sized to fit slidingly over said mouth, and an open end bevelled conically outward; and,

b) a nut in threaded engagement with said skirt threaded outer surface, comprising an internal threaded surface defining a diameter and open to one end, and a ring part extending normal to said internal threaded surface and having a bearing surface facing said open one end; and,

c) a split compression ring of resilient material, with a section removed to provide for decreasing diameter during compression, having a downstream outer surface in sliding contact with the bevelled open end of said skirt, an upstream end surface in circular sliding contact with the bearing surface of said ring part, and a downstream end surface of lesser diameter than said upstream end surface in angular contact with said conical part of said neck.

5,332,128

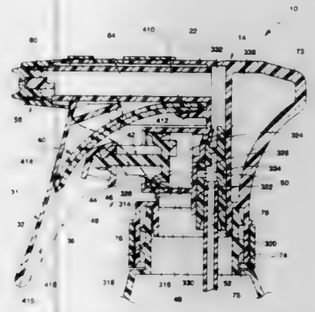
FLAP VALVE ASSEMBLY FOR TRIGGER SPRAYER

Wilhelmus J. J. Mass, and Petrus L. W. Hurkmans, both of Someren, Netherlands, assignors to AFA Products, Inc., Forest City, N.C.

Filed Feb. 24, 1992, Ser. No. 840,761

Int. Cl.[5] **B67D** *5/40*

U.S. Cl. 222—383 **17 Claims**



1. A trigger operated pumping mechanism for a fluid dispensing device comprising a body, said pumping mechanism comprising:

a piston having a rearwardly facing moveable wall;

a trigger movably mounted to said body;

said piston being coupled to said trigger for moving said moveable wall;

said body having a hollow cylinder therein which receives said piston and which extends to a fixed back wall in said body, whereby the space between said back wall and said moveable piston wall defines a variable volume pumping chamber;

said cylinder having a fluid inlet valve and a fluid outlet valve associated with said back wall;

said valves being pressure controlled; and

the volume of said pumping chamber at the end of an ejection stroke of said piston being minimized by constructing and arranging said inlet and outlet valves as plastic flap valves which are each located in or adjacent said back wall of said cylinder for arcuate movement about a hinge line and by constructing and arranging said movable wall and said cylinder to have a minimum remaining space between said back wall and said movable wall at the end of the ejection stroke of said piston, thereby to facilitate the creation of high vacuum and high pressure during intake and ejection strokes of said piston and to facilitate priming with a minimum of strokes.

5,332,129

SOAP DISPENSER ASSEMBLY

Michael A. Brattoli, and Roy W. Burns, both of Elyria, Ohio, assignors to Moen Incorporated, Elyria, Ohio

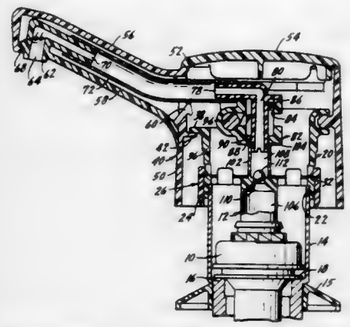
Filed Jun. 16, 1993, Ser. No. 76,975

Int. Cl.[5] **B67D** *5/00*

U.S. Cl. 222—321 **12 Claims**

1. A soap dispenser including a pump assembly having a reciprocal plunger extending outwardly therefrom, a handle assembly having an outwardly projecting handle, handle assembly mounting means attached to said pump assembly, said handle assembly being pivotally mounted on said handle assembly mounting means, a discharge tube in said handle assembly having an outlet adjacent a distal end of said outwardly projecting handle, a connector seated on said pump assembly plunger and attached to said handle assembly,

said discharge tube being attached to said connector, said discharge tube, connector and plunger providing a soap passage, normally filled with soap, between said pump assembly and said outlet, a check valve in said soap passage,



downward pressure on the distal end of said handle causing pivotal movement of said handle assembly about the pivotal mounting on said handle assembly mounting means causing said connector to move said plunger inwardly of said pump assembly resulting in a measured amount of soap being moved through said passage and discharged from said outlet.

5,332,130

BOX-LIKE PACKAGING WITH DISPENSING OPENING

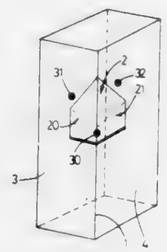
Johannes F. Spronk, Lelystad-Haven; Jan G. Abbing, Huizen, and Jacobus P. J. Laanen, Loosdrecht, all of Netherlands, assignors to 'S-Gravelandseweg 6, The Netherland, Netherlands

Filed Jan. 26, 1993, Ser. No. 9,216

Claims priority, application Netherlands, Jul. 8, 1992, 9201217

Int. Cl.[5] **B67D** *3/00*

U.S. Cl. 222—528 **28 Claims**



1. A box-like packaging comprising:

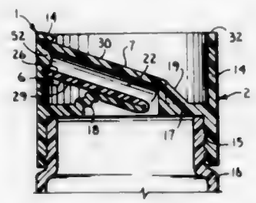
a plurality of walls joined together through a plurality of edges thereof; and

a dispensing opening, wherein the dispensing opening is, constructed on the basis of the corners of a hexagon, of which a first and fourth corner are located on an edge of the packaging and a second and a third corner are provided in a first wall bounding the edge, and a fifth and a sixth corner are provided in a second wall bounding the edge, wherein, to form a semiregular hexagon, the second and sixth corners and the third and fifth corners, respec-

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tively, are provided symmetrically relative to the edge, wherein the first and second, the second and third, the first and sixth, the fifth and sixth corners are connected through bending lines, wherein the third and fifth corners are each connected with a first common point on the edge through a cutting line, such that the bending lines and cutting lines and the edge define two closed wall portions each located in one of the walls bounding the edge, and wherein no bending lines are incorporated within the closed wall portions.

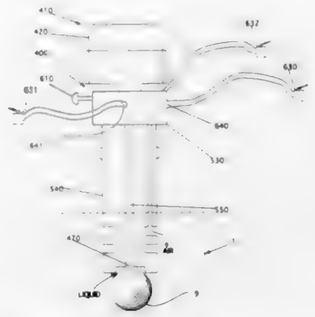
5,332,131
KICKER LATCH FOR CONTAINER CLOSURES
Harold T. Pehr, 3920 W. 96th St., Shawnee Mission, Kans. 66207
Filed Sep. 28, 1992, Ser. No. 951,877
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—505 **26 Claims**



1. In a container including a closure member adapted to close said container in a closed position of said closure member, said closure member in said closed position having an outer surface facing away from said container and an inner surface facing toward said container, the improvement comprising:
(a) a kicker latch including a latch wall connected to means on said container to enable pivotal movement of said kicker latch relative to said container;
(b) a latch tab extending from said latch wall toward said closure member and positioned to engage said outer surface of said closure member in said closed position to retain said closure member in said closed position;
(c) a kicker lever extending from said latch wall toward said closure member in spaced relation to said latch tab and positioned to engage said inner surface of said closure member in said closed position; and
(d) said kicker latch, upon being pivoted away from said closure member, withdrawing said latch tab from retaining said closure member in said closed position and revolving said kicker lever to urge said closure member away from said closed position.

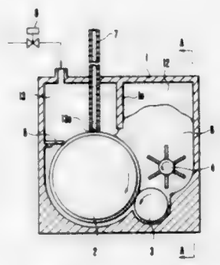
5,332,132
MULTI SPOUT BEER VALVE
John Schuske, 930 Quinn St., Boulder, Colo. 80303
Filed Dec. 29, 1992, Ser. No. 998,365
Int. Cl.[5] B65D *88/54*
U.S. Cl. 222—330 **2 Claims**

1. An improvement to a keg dispensing apparatus having a keg, a tap tube extending therein, a spring loaded plunger ball releasably sealing the top of the tap tube, a coupling neck atop the plunger ball, a keg coupler releasably mounted inside the coupling neck, the improvement comprising:
a self contained portable dispensing apparatus which includes;
a shaft slidingly engaged inside the keg coupler;
said shaft further comprising an exit tube having a diameter of approximately or greater than 7 mm, a gas inlet tube, a tip to release the plunger ball, and means to lock the keg coupler to the coupling neck;
a tap head affixed to the shaft;
said tap head further comprising means for supplying gas pressure to said gas inlet tube, and multiple exit fittings to provide for fluid flow from the keg and up the exit tube and



said means for supplying gas pressure to said gas inlet tube further comprising a manual air pump affixed to said tap head.

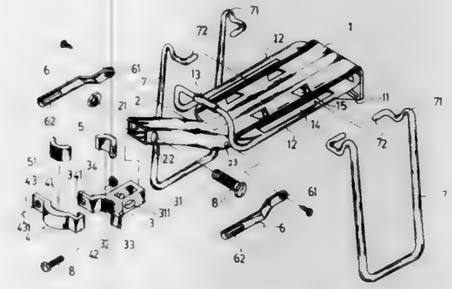
5,332,133
POWDER SUPPLYING APPARATUS AND POWDER SPRAYING APPARATUS
Hiroshi Murata; Kimio Miyagawa; Eiji Shinoda, all of Saitama, and Hideo Moriyama, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd. and Nisshin Engineering Co., Ltd., both of Tokyo, Japan
Filed Oct. 30, 1992, Ser. No. 969,365
Claims priority, application Japan, Nov. 1, 1991, 3-287879; Jun. 24, 1992, 4-166258
Int. Cl.[5] B05B *7/00*
U.S. Cl. 222—630 **7 Claims**



1. A powder supplying apparatus, comprising:
a powder storage section;
a rotary member rotatable about a fixed axis and having a circumferential groove formed in the peripheral surface thereof, said groove extending in the direction of rotation and being adapted to be charged with powder;
powder charging means for charging said circumferential groove with said powder from said powder storage section continuously at a constant rate in accordance with the rotation of said rotary member;
a powder discharging elongated tube having an open end facing the opening of said circumferential groove leaving a minute gap therebetween;
a vessel which defines a space which accommodates said rotary member and the open end of said elongated tube and which is sealed from the ambient air; and

means for establishing a predetermined gas pressure differential between the other end of said elongated tube and the interior of said vessel so as to create a continuous flow of gas from the interior of said vessel towards said other end of said elongated tube.

5,332,134
BICYCLE LUGGAGE-CARRIER
Ming-Yung Chen, No. 7, Fu Kong Rd., Fu Hsin Industrial Area, Fu Hsin Hsiang, Chang Hua Hsien, Taiwan
Filed Aug. 11, 1993, Ser. No. 104,635
Int. Cl.[5] B62J *7/00, 9/00*
U.S. Cl. 224—39 **1 Claim**



1. A bicycle luggage-carrier comprising:
a carrier plate adapted to be supported above a rear wheel of a bicycle for carrying objects, said carrier plate comprising non-skid stripes on a top surface thereof, a tail bent downward and having a plurality of oblong through holes adapted for mounting a reflector plate thereto, two elongated rods disposed on two opposite long sides thereof, said elongated rods having each a front end turned upward and then inward and then connected to each other by a sleeve, two elongated slots bilaterally disposed between said two elongated rods, two pairs of downward trapezoidal projections bilaterally disposed between said two elongated slots and made through a punching process, a front extension tube disposed below said sleeve and obliquely extended upward, said front extension tube comprising a front opening, two screw holes bilaterally aligned near a rear end thereof, two mounting holes bilaterally aligned near a front end thereof in communication with said front opening, and two splits vertically aligned between said mounting holes and longitudinally extended to the front end thereof;
a mounting plate comprising a rectangular connecting frame fitted into said front opening of said front extension tube, said rectangular connecting frame having two through holes on two opposite sides thereof respectively aligned to said mounting holes on said extension tube, a toothed half round plate having two opposite ends respectively terminated to a left stop plate and a right stop plate, said right stop plate having a screw hole;
a clamping plate fastened to the toothed half round plate adapted of said front mounting plate adapted to hold said front mounting plate to a seat tube of said bicycle, said clamping plate comprising a toothed half round plate adapted to be mounted around the seat tube of said bicycle, the toothed half round plate of said clamping plate having one end terminated to a hook hooked on the right stop plate of said front mounting plate and an opposite end terminated to a flat stop plate with a screw hole, the screw hole on the flat stop plate of said clamping plate being fastened to the screw hole on the left stop plate of said front mounting plate by a screw bolt;
two half round lining plates adapted to be fastened around the seat tube of said bicycle and retained between the toothed half round plate of said clamping plate and the toothed half round plate of said front mounting plate, each half round lining plate having a toothed portion on an outer side engaged with the teeth on the toothed half round plate of said clamping plate or said front mounting plate;
two seat stay connecting bars each having a screw hole on one end connected to the screw hole on either side of the rear end of said front extension tube of said carrier, and an oblong hole on an opposite end adapted to be connected to either side a pair of seat stays of said bicycle; and
two brackets respectively made in a substantially U-shaped configuration and fastened to said carrier plate on either side for carrying backpacks, each bracket having two opposite ends formed into two curved bends and then respectively terminated to a respective tip turned inwards toward each other, the curved bends of each bracket being inserted into either elongated slot on said carrier plate from the top surface, the tip of either curved bend being hooked on an adjacent downward trapezoidal projection.

5,332,135
APPARATUS FOR PROTECTING WATCHES AND THE LIKE
Stephen R. Fletcher, P.O. Box 1444, Layton, Utah 84041-6444
Filed Nov. 24, 1992, Ser. No. 981,175
Int. Cl.[5] G04B *37/00*
U.S. Cl. 224—164 **3 Claims**



1. An apparatus for protecting an instrument having an attaching band which encircles an upper limb of a user, the apparatus comprising:
a first length of material having inner and outer sides;
a loop fastener component positioned on the inner side of the first length of material, the loop fastener component having a channel formed along the length of the first length of material, the channel having a width to accommodate the band of the instrument;
a second length of material having inner and outer sides;
a hook fastener component positioned on the outer side of the second length of material such that the hook fastener component and the loop fastener component can be releasably joined together to encircle the limb of the user;
a third length of material having inner and outer sides, the third length of material attached between the first and second lengths of material such that the adjoining ends of the first and third lengths of material and the second and third lengths of material are partially unjoined so that the instrument can be positioned on the outer side of the third length of material away from the user's limb and the attaching band can be positioned on the inner side of the first and second lengths of material against the user's limb such that the attaching band is shielded from the surrounding environment when worn by the user;
means for covering the instrument such that the instrument is concealed from the surrounding environment, the means for covering having a closed position and an open position;
means for locking the instrument in a position between the

VOL 1164 ISS 4 JL 26 1994 UMI

third length of material and the means for covering such that both the instrument and the attaching band may be protected by the apparatus or the apparatus removed from the instrument and the attaching band.

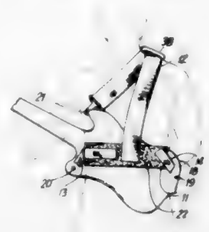
5,332,136
SUPPORT APPARATUS FOR AN OPTICAL INSTRUMENT
John H. Rudolph, 1685 Arroyo Dr., Laguna Beach, Calif. 92651
Continuation-in-part of Ser. No. 68,515, May 26, 1993, abandoned. This application Nov. 26, 1993, Ser. No. 158,161
Int. Cl.[5] F16M *11/04*; **G03B** *29/00*
U.S. Cl. 224—185 **11 Claims**



1. A support apparatus for an instrument comprising:
a generally rectangular mounting platform including an upwardly facing horizontal mounting surface having an elongated slot for removable attachment of the instrument to the platform and a pair of horizontal engagement slots in two opposing sides of the platform;
a brace arm including a pivotal engagement tongue at one end thereof and an extension leg slidably contained within the arm and adjustably extendible from the other end of the arm, the tongue adapted for engaging either one of the horizontal engagement slots of the platform such that the arm is pivotally positionable for assuming a desired angle with respect to the platform for support of the platform against a near vertical surface, the brace arm further being pivotally positionable into a horizontal orientation under the platform for support thereof on a near horizontal surface;
a stabilizer bar pivotally, rotatably attached to the brace arm and positionable in line with the brace arm for storage of the stabilizer bar, and alternately positionable in approximate orthogonal alignment with the brace arm such that with the brace arm folded under the platform, the stabilizer bar provides lateral stability to the platform and instrument.

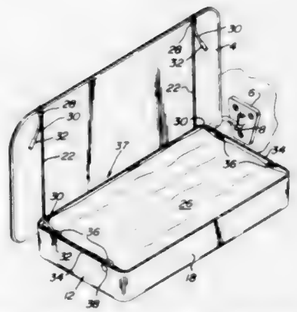
5,332,137
MUSICAL INSTRUMENT HARNESS
Michael Violette, 17 Huntsman La., Commack, N.Y. 11725
Filed May 5, 1993, Ser. No. 57,624
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—257 **2 Claims**

1. A musical instrument harness capable of being adjusted to the particular physical characteristics and desires of a musician comprising:
a. a waist band member capable of being selectively affixed about the waist of a musician;
b. a shoulder strap member having one end selectively attachable to said waist band member;
c. a first side band member having one end selectively attachable to said waist band member;
d. a second side band member having one end selectively attachable to said waist band member;
e. a first snapping means capable of being adjustably affixed to the end of said shoulder strap member not selectively attachable to said waist band member;



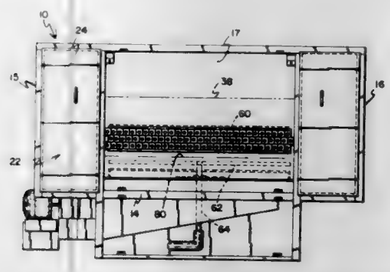
f. a second snapping means capable of being adjustably affixed to the end of said first side band member not selectively attachable to said waist band member;
g. a third snapping means capable of being adjustably affixed to the end of said second side band member not selectively attachable to said waist band member.

5,332,138
TISSUE CONTAINER FOR AUTOMOBILE VISOR
Sheldon H. Gross; Alan R. Tripp, both of Bryn Mawr, and Michael J. Leonard, Philadelphia, all of Pa., assignors to Tishumate, Inc., Bryn Mawr, Pa.
Filed May 5, 1993, Ser. No. 57,284
Int. Cl.[5] F16M *13/02*
U.S. Cl. 224—312 **10 Claims**



1. A tissue container and dispenser comprising a housing defining a volume and at least one elastic cord for removably connecting said housing to a visor, said housing comprising an open back and a plurality of fastening members, said at least one elastic cord circumscribing said visor, said at least one elastic cord being releasably connected to said plurality of fastening members so that by disconnecting said at least one elastic cord from said plurality of fastening members along one side of the housing, said one side of said housing is movable away from said visor while said housing remains attached to said visor to expose the open back for refilling of tissues without removing the housing from said visor, said at least one elastic cord being stretchable to allow said tissue container and holder to hold a volume of tissues greater than the volume of said housing.

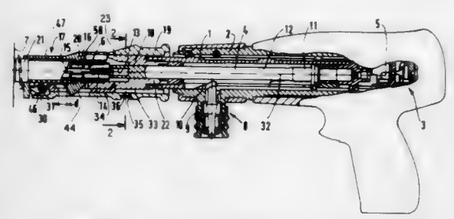
5,332,139
FLUIDIZED BED APPARATUS AND METHOD USING SAME
James E. Heath, Fridley; John R. Eppeland, St. James, and James S. Nelson, Mounds View, all of Minn., assignors to BGK Finishing Systems, Inc., Blaine, Minn.
Continuation of Ser. No. 956,834, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 598,415, Oct. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 535,468, Jun. 8, 1990, abandoned. This application May 3, 1993, Ser. No. 56,566
Int. Cl.[5] B02C *21/00*
U.S. Cl. 266—172 **15 Claims**



1. A method for reclaiming used foundry sand within a retort having walls for defining a volume for receiving a bed of said sand disposed within said volume, said method comprising the steps of:
admitting used foundry sand, containing binders, into said volume so as to define a bed of said foundry sand within said volume;
disposing a plurality of electrically powered infrared radiation generating lamps, for generating infrared radiation heat for heating said bed of said used foundry sand, within said bed with each of said lamps disposed submerged within said bed and surrounded by said sand for said sand surrounding said lamps to be exposed to infrared radiation generated by said lamps;
energizing said lamps so as to generate infrared radiation for said radiation from said lamps to project onto opposing sand and with said lamps having an intensity for said radiation to heat said sand to separate said sand from said binders to as to reclaim said sand;
fluidizing said bed of said used foundry sand while heating said bed of said used foundry sand by means of said lamps; and
discharging said heat treated reclaimed sand from said bed of said used foundry sand such that said reclaimed foundry sand can again be used as foundry sand in forming sand casting molds.

5,332,140
APPARATUS FOR APPLYING FIXING ELEMENTS, WITH PLUNGER, PLUNGER RETURN CATCH AND PIVOTING PLUG GUIDE
Roland Almeras, and Patrick Herelier, both of Tournon, France, assignors to Societe de Prospection et d'Inventions Techniques (S.P.I.T.), Bourg-Les-Valence Cedex, France
Filed Apr. 22, 1993, Ser. No. 50,798
Claims priority, application France, Apr. 24, 1992, 92 05087
Int. Cl.[5] B25C *1/14*
U.S. Cl. 227—9 **16 Claims**

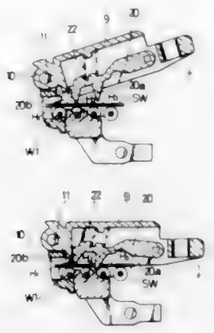
1. Apparatus for inserting a fastening element into a substrate, comprising:
a barrel (**1**);
a propellant charge (**5**) disposed rearwardly of said barrel (**1**);
a plunger (**4**) movable within said barrel (**1**) under the action of combustion gases of said propellant charge (**5**) for driving a fastening element (**6**) into a substrate (**7**), said plunger (**4**) having a recess (**13**) defined within a front end portion thereof for receiving a head portion (**14**) of said fastening element (**6**);
a rocker (**20**) pivotably mounted upon said barrel (**1**), about a shaft (**31**) disposed orthogonally to a longitudinal axis (**32**) of said barrel (**1**), between a first open position at which said rocker (**20**) has an axis thereof inclined with respect to said axis (**32**) of said barrel (**1**) for receivably loading a fastening element (**6**) into said apparatus, and a second closed position at which said rocker **20** and said fastening element (**6**) loaded within said apparatus are coaxially disposed with respect to said axis (**32**) of said barrel (**1**); and
an element guide (**21**) disposed within said rocker (**20**) so as to be pivotably movable therewith, between said first and second positions, and also being movable in axial translation relative to said rocker (**20**) and said barrel (**1**) as a result of a first end portion of said element guide (**21**) being pressed against said substrate, said element guide being axially movable between said second closed position at which said fastening element (**6**) is loaded within a second end portion of said element guide (**21**) and a third firing position at which said head portion (**14**) of said fastening element (**6**) is disposed within said recess (**13**) of said plunger (**4**) and said second end portion of said element guide (**21**) surroundingly envelops said front end portion of said plunger (**4**) within which said recess (**13**) is defined and within which said head portion (**14**) of said fastening element (**6**) is disposed, so as to accurately guide said plunger (**4**), and said fastening element (**6**) disposed within said recess (**13**) thereof, during said third firing position.



5,332,141
NAILING MACHINE
Kenji Mukoyama, and Nobuyuki Kakuda, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Oct. 5, 1993, Ser. No. 131,606
Claims priority, application Japan, Oct. 7, 1992, 4-296378
Int. Cl.[5] B25C *1/04*
U.S. Cl. 227—136 **6 Claims**

1. A nailing machine comprising:
a body;
a driver guide mounted on said body and having therein a nail guide channel through which a driver for driving nails is reciprocally driven;
a nail feeding channel member having therein a nail feeding channel connected to said nail guide channel for feeding a nail-carrying strip stored in a magazine to said nail guide channel, the nail-carrying strip including strip and a plurality of nails carried thereon by a predetermined pitch, the strip having a plurality of engaging holes spaced from each other by the same pitch as the nails;
nail feeding means for feeding the nail-carrying strip into said nail guide channel;
a door member mounted on said nail feeding channel member for closing and opening said nail feeding channel; and
an engaging pawl and a strip-retaining pawl mounted on said door member:

said engaging pawl being operable to engage one of said engaging holes of the nail-carrying strip set in said nail feeding channel, as said door member is closed, for preventing movement of the nail-carrying strip in a direction opposite to the feeding direction of the nail-carrying strip; and



said strip-retaining pawl being operable to abut en the nail-carrying strip prior to engagement of said engaging pawl with said one engaging hole, as said door member is closed, for preventing floating of the nail-carrying strip.

5,332,142

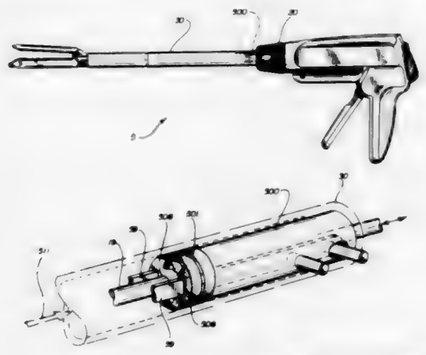
LINEAR STAPLING MECHANISM WITH CUTTING MEANS

Stephen C. Robinson, Cincinnati; Todd Olson, Loveland, both of Ohio; Dan Meiser, Butler, Ky.; Gary Steed, Cleves, Ohio; Eric Huffman, Loveland, Ohio; Matthew Otten, Cincinnati, Ohio; Ronald VanOverloop, West Chester, Ohio; Darrel Powell, Cincinnati, Ohio; Thomas Knodell, Loveland, Ohio; Edward Rhad, Fairfield, Ohio; Ralph Chen, Loveland, Ohio, and Robert Cook, Mason, Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 917,636, Jul. 20, 1992, which is a continuation of Ser. No. 779,436, Oct. 18, 1991, abandoned. This application Jun. 24, 1993, Ser. No. 82,331

Int. Cl.[5] A61B *17/072*

U.S. Cl. 227—178 **9 Claims**



1. A surgical stapler for endoscopic application comprising a stapling portion, a handle portion, and a shaft portion, the stapling portion connected to the handle portion by means of the shaft portion, and the stapling portion comprising a stapling assembly containing staples and an anvil assembly, such that the anvil assembly is pivotally attached to the stapling assembly, said handle portion containing a firing trigger and a closure trigger, such that said closure trigger is capable of pivoting said anvil assembly into proximity of said stapling assembly, and said firing trigger is capable of firing said staples contained in said stapling assembly toward said anvil assembly, said stapler assembly containing a knife mechanism actuable by said firing trigger, and said shaft portion containing a sealing assembly to obstruct the flow of gas through said stapler, said sealing assembly including an elastomeric sealing membrane and spacing means adjacent to said membrane for cushioning the movement of said membrane when said stapler is fired.

5,332,143

SELF-PROPELLING APPARATUS FOR AUTOMATIC HORIZONTAL POSITION WELDING OF BIG SIZE SQUARE STEEL COLUMN

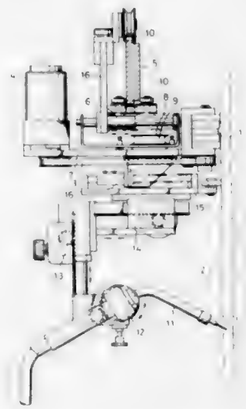
Kazutoshi Furukawa, and Keiji Ono, both of Tokyo, Japan, assignors to Aichi Sangyo Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1993, Ser. No. 107,243

Claims priority, application Japan, Aug. 25, 1992, 4-247214

Int. Cl.[5] B23K *37/02*

U.S. Cl. 228—8 **2 Claims**



1. A self-propelling apparatus for automatic horizontal position welding of a large-sized square steel column, comprising:

a welder unit, travelling rollers and a seam tracking device, wherein said travelling rollers are magnet-based rollers (**1**, **1'**) which are arranged so as to hold the upper surface of said steel column and are mounted on a mounting plate (**7**), said mounting plate (**7**) being connected to said seam tracking device (**6**) through a rotational pivot (**8**) which is preloaded by a spring (**9**).

5,332,144

CONCAVE SOLDERING IRON TIP AND METHOD OF SOLDERING USING SAME

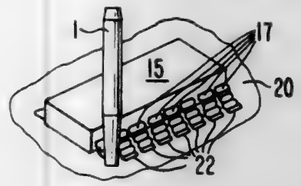
Mark Cannon, Karlsruhe, Fed. Rep. of Germany, assignor to Pace, Incorporated, Laurel, Md.

Filed Mar. 17, 1993, Ser. No. 33,410

Int. Cl.[5] B23K *1/00*; **H05K** *3/34*

U.S. Cl. 228—52 **8 Claims**

1. A soldering tip for a hand-held soldering device, comprising a rod of thermally conductive material having an oblique surface formed at one end thereof, and a concavity formed in said oblique surface, wherein said concavity has an elliptical perimetric shape and an arcuate cross-sectional shape, and



wherein said concavity forms a reservoir means for holding a quantity of solder therein by surface tension.

5,332,145

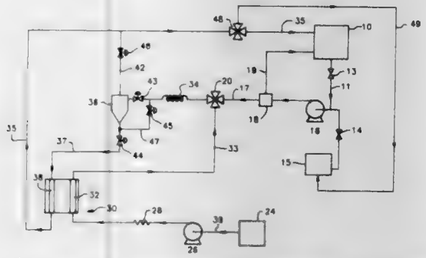
METHODS FOR CONTINUOUSLY CONTROLLING FLUX COMPOSITION DURING MANUFACTURE OF PRINTED CIRCUITS

David R. Bell, Spring, and Paul V. Brownell, Houston, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 7, 1993, Ser. No. 73,157

Int. Cl.[5] B23K *1/20*

U.S. Cl. 228—105 **3 Claims**



1. A method of determining and controlling the solvent concentration of a flux for soldering circuit boards, the method comprising:

(a) sampling flux being used in a solder process for circuit boards, said flux comprising a solvent, said solvent having a specific gravity close to the flux specific gravity;

(b) analyzing the sampled flux by ultra-violet absorbance to determine solvent content;

(c) comparing analyzed solvent content with a control solvent content;

(d) determining an amount of solvent to be added to the flux being used in the process so that solvent concentration of said flux is substantially equal to the control solvent content; and

(e) adding the determined amount of solvent to the flux being used in the process.

5,332,146

RIGHT PARALLELEPIPED PACKAGE INCLUDING NON-LINEAR FOLD LINE

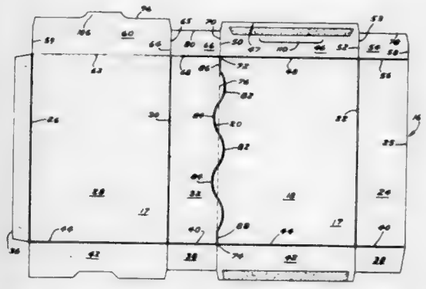
Arne H. Brauner, Minnetonka, and Marsha D. Thompson, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jun. 14, 1993, Ser. No. 75,423

Int. Cl.[5] B65D *5/02*

U.S. Cl. 229—8 **10 Claims**

1. Tubular carton movable between a collapsed condition and an erect condition in the shape of a parallelepiped, comprising, in combination: a front panel having first and second side edges; a first side panel having first and second side edges, with the second side edge of the front panel and the first side panel abutting at all points and being integrally connected together about a fold line, with the front panel overlying the first side panel in the collapsed condition; a back panel having first and second side edges, with the first side edges of the back panel and the first side panel abutting at all points and being integrally connected together about a fold line, with the back panel and the first side panel being planar in the collapsed condition; a second side panel having first and second side edges, with the second side edges of the back panel and the second side panel abutting at all points and being integrally



connected together about a fold line, with the back panel underlying the second side panel in the collapsed condition, with the first side edges of the front panel and the second side panel abutting at all points and being continuously integrally connected together about a fold line, with the front and second side panels being planar in the collapsed condition, with at least the front panel and the second side panel having top and bottom edges, with the fold line between the front and second side panels extending in a non-linear manner between the top and bottom edges of the front panel and the second side panel, with the side panels extending generally perpendicular between the front and back panels in the erect condition.

5,332,147

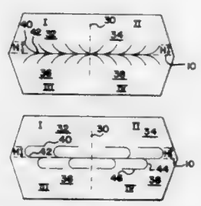
BUCKLE-PROOF CLAMSHELL CARTON

John F. Sorenson, Naperville, Ill., assignor to Persecn Division Of The Havi Group LP, Oak Brook, Ill.

Continuation-in-part of Ser. No. 898,026, Jun. 12, 1992, Pat. No. 5,221,040. This application Apr. 23, 1993, Ser. No. 51,533

Int. Cl.[5] B65D *5/66*

U.S. Cl. 229—114 **54 Claims**



1. In a clamshell type container having a top cover portion, a bottom tray portion and an integral back panel, wherein said cover portion and said tray portion are hingedly connected through a hinge line extending across said back panel, the improvement comprising:

a first cut along said hinge line;

a second cut in said back panel positioned to one side of said first cut, wherein said second cut is a continuous curve having a first end point located in said back panel and a second end point intersecting said first cut.

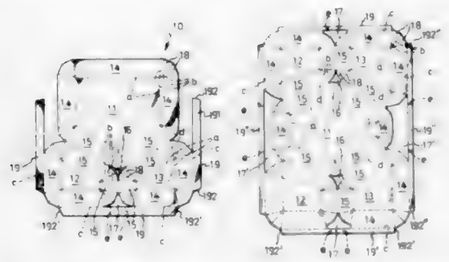
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5,332,148

PAPER BOARD FOLDABLE INTO A CONTAINER WITH MULTIPLE COMPARTMENTS

Yuan-Hsin Liu, 11th-1 Floor, No. 90, Fu Hsin S. Road, Sec. 1, Tah An District, Taipei, Taiwan, and Richard C. H. Chang, 19, Alley 2, Lane 685, Chung Cheng Road, Faun Yuan City, Taichung Hsien, Taiwan

Filed Aug. 18, 1993, Ser. No. 107,994
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.17 6 Claims



1. A paper board foldable into a container with multiple compartments, the paper board formed from a polyethylene coated laminate of fibers and additives, and including a pattern comprising:

a) first and second precut openings within the pattern;

b) a plurality of first folding lines defining a larger bottom section and a first pair of smaller bottom sections, and the bottom sections not adjoining each other;

c) a plurality of pairs of partitioning wall sections, each pair of partitioning wall sections being located between two adjacent bottom sections and provided with a second folding line extending transversely therebetween, whereby each pair of partitioning wall sections may be folded about the second folding line to form an erected partitioning wall for separating the two adjacent bottom sections from each other;

d) a plurality of peripheral wall sections, each peripheral wall section adjoining one edge of a bottom section;

e) a plurality of corner connection sections, each corner connection section being disposed between either two adjacent peripheral wall sections, two adjacent partitioning wall sections or one peripheral wall section and one partitioning wall section, and each corner connection section being defined by a plurality of third folding lines for forming two adjacent equiangular triangles which may be folded, overlapped and heat-sealed to a wall section; and

f) two longitudinal top edge strip sections and at least one transverse top edge strip section, each top edge strip section adjoining a peripheral wall section at a fourth folding line therebetween for permitting the top edge strip section to be outwardly folded about the fourth folding line towards and heat-sealed to the adjacent peripheral wall section to form the top edges of the container.

5,332,149

GLUED FLAP PARTITION FOR VISIBLE CONTAINER

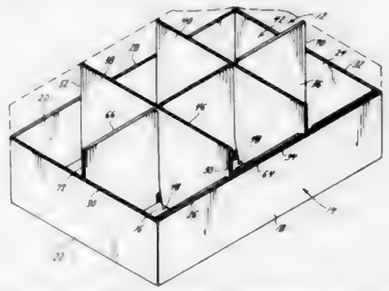
Richard E. Gepfer, Norcross, Ga., assignor to Rock-Tenn Company, Norcross, Ga.

Filed Jun. 25, 1993, Ser. No. 83,016
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.36 16 Claims

1. A lattice of partition panels for use in a carton having an interior with a longitudinal length and a lateral length, the interior being defined by a bottom surrounded by laterally opposite front and back walls and longitudinally opposite left and right side walls, the walls all having substantially equal vertical heights, the lattice comprising:

an intermediate panel having a longitudinal length substantially equal to the longitudinal length of the carton interior enabling the intermediate panel to be placed in the carton interior spanning the longitudinal length of the carton, the intermediate panel having a vertical height greater than the vertical height of the carton walls;

a front panel spaced laterally from the intermediate panel, the front panel having a longitudinal length substantially equal to the longitudinal length of the intermediate panel and having a vertical height less than the vertical height of the intermediate panel and substantially equal to the vertical height of the carton walls enabling the front panel to be placed in the carton interior against the front wall and spanning the longitudinal length of the carton without the front panel projecting above the front wall and obstructing a view of the carton interior; and



a left side panel and a right side panel substantially identical to each other, each said side panel having a lateral length substantially equal to the lateral length of the carton interior enabling each said side panel to be placed in the carton interior spanning the lateral length of the carton, the left and right panels having vertical heights greater then the vertical height of the carton walls and substantially equal to the vertical height of the intermediate panel; and,

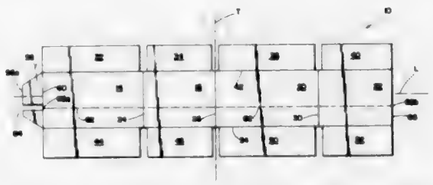
a flap secured to a forward edge of the left side panel and a flap secured to the forward edge of the right side panel, each said flap being secured to the front panel thereby securing the left and right side panels to the front panel, and each side flap having a vertical height less than the vertical height of the left and right side panels and substantially equal to the vertical height of the front panel.

5,332,150

EASY-OPEN SHIPPING/DISPLAY CONTAINER, AND A BLANK FOR ERECTING THE SAME

Norman W. Poirier, Dorion Quebec, Canada, assignor to Kraft General Foods Canada Inc., Don Mills, Canada

Filed May 11, 1993, Ser. No. 60,281
Int. Cl.[5] B65D *5/54*
U.S. Cl. 229—235 13 Claims



1. A blank for erecting an easy-open shipping/display container, comprising:

a plurality of side panels foldably connected together in a longitudinal series, said plurality of panels forming an upper edge, a lower edge, and longitudinally opposed first and second end edges,

at least one bottom flap connected to said lower edge;

at least one top flap connected to said upper edge; and

a connecting flap foldably connected to one of the side panels, along the first end edge, and extending outward therefrom,

the plurality of side panels forming a line of weakness extending substantially completely across each of said side panels between longitudinally aligned first and second end points, said line of weakness being formed by a multitude of closely spaced through slits formed in the side panels of the blank and positioned along the line of weakness at a rate of approximately eight slits per inch;

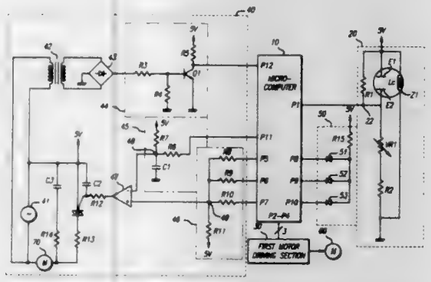
the connecting flap forming a notch extending from said first end edge, and longitudinally aligned with said first and second end points.

5,332,151

COOLING/HEATING APPARATUS HAVING AUTOMATIC VENTILATING FUNCTION AND ITS CONTROL METHOD

Byung K. Kwak, Busan, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 10, 1992, Ser. No. 973,005
Claims priority, application Rep. of Korea, Nov. 12, 1991, 91/20036
Int. Cl.[5] F24F *7/08*
U.S. Cl. 236—49.3 18 Claims



1. In a cooling/heating apparatus having an automatic ventilating function; an apparatus comprising:

a first motor for rotating a cooling/heating fan;

a first motor driving means for driving said first motor;

a second motor for rotating a ventilating fan;

a second motor driving means for driving said second motor;

a means for sensing an air pollution state within a room; and

a control means (a) for alternately and selectively controlling said first motor driving means and said second motor driving means in response to the output of said pollution sensing means, and (b) for controlling a speed of rotation of said ventilating fan in response to the output of said pollution sensing means, said control means comprising a micro-computer.

5,332,152

SANDS CARPET

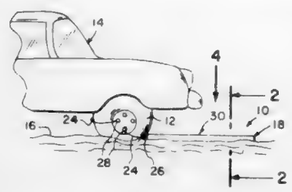
Mohammed G. Alwafaie, P.O. Box 3854, Alkhobar 31952, Saudi Arabia, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Jun. 21, 1993, Ser. No. 79,398
Int. Cl.[5] E01B *23/00*; B60C *27/00*
U.S. Cl. 238—14 3 Claims

1. A traction mat for use under a wheel of a motor vehicle on a soft sand terrain which comprises:

a) a generally rectangular hollow housing with means for inflation placed upon the soft sand terrain;

b) a plurality of spaced apart treads on a top surface of said housing, so that said wheel can ride thereupon; and



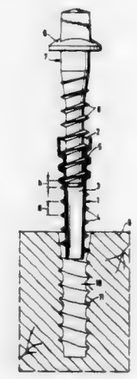
c) a pair of wires extending from one end of said housing and connected to two lug nuts on said wheel, so that when said wheel is driven slowly said housing will go under said wheel with said treads providing traction for said wheel.

5,332,153

SLEEVE FOR INCREASING RETENTION VALUE OF A SCREW

Erich Leibhard, Munich; Franz Popp, Buchloe; Wolfgang Ludwig, Landsberg, all of Fed. Rep. of Germany, and Thomas Schwaninger, Nenzing, Austria, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Dec. 8, 1992, Ser. No. 987,222
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140563; Sep. 12, 1992, 4230428
Int. Cl.[5] F16B *13/06*
U.S. Cl. 238—373 12 Claims



1. Sleeve for increasing the retention value of a screw (7) in a structural component, said sleeve being axially elongated and having a leading end to be inserted first into a bore and a trailing end, said sleeve having an exterior surface and an interior surface, said exterior surface having a radially outwardly extending external thread (**4**, **24**) terminating in a radially outer tip of constant external diameter with a thread pitch (H), said interior surface forming an axially extending internal bore (**3**, **23**) including an internal thread (**5**, **25**) at least in an axially extending section adjacent the trailing end of the sleeve, said internal thread having a thread pitch (H) the same as the thread pitch (H) of the external thread, wherein the improvement comprises that said internal bore (**3**, **23**) tapers inwardly from the trailing end toward the leading end and in the trailing end-leading end direction said external thread (**4**, **24**) follows said internal thread (**5**, **25**) and said external thread (**4**, **24**) and internal thread (**5**, **25**) are offset in the trailing end-leading end direction by half (h) the thread pitch (H).

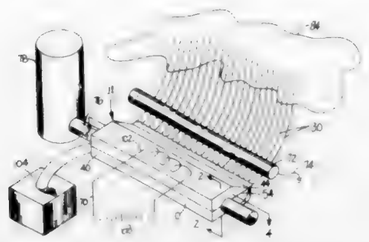
VOL 1164 ISS 4 JL 26 1994 UMI

5,332,154

SHOOT-UP ELECTROSTATIC NOZZLE AND METHOD

Barry G. Maier, and Bruce A. Hunnicutt, both of Anderson, Ind., assignors to Lundy and Associates, Ft. Wayne, Ind.

Filed Feb. 28, 1992, Ser. No. 843,007
Int. Cl.[5] B05B 5/035
U.S. Cl. 239—3 58 Claims



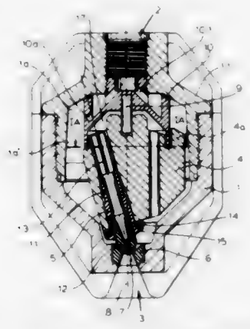
1. A nozzle for emitting flowable material upwardly comprising a nozzle body having an upper emitting end and a lower bottom end, said body having a hollow interior and a slot extending between said emitting end and said interior, a shim within said slot, at least one channel defined by said shim and said slot extending between said interior and said emitting end, and an electrode secured to said body adjacent to and below said emitting end to bend the Taylor cones of said material upwardly, a voltage source being electrically connected to said shim and said electrode, and a flowable material source in communication with said slot to provide said material in said slot at very small pressures, whereby flowable material flows through said channel to be electrostatically propelled upwardly from said emitting end once the Rayleigh charge of the flowable material is exceeded.

5,332,155

ROTOR NOZZLE FOR HIGH PRESSURE CLEANING APPARATUS

Anton Jäger, Krautgartenweg 12, D-7913 Senden/Hittistetten, Fed. Rep. of Germany

Filed Mar. 25, 1993, Ser. No. 37,616
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1992, 4210239; Nov. 25, 1992, 4239542
Int. Cl.[5] B05B 3/04
U.S. Cl. 239—240 24 Claims



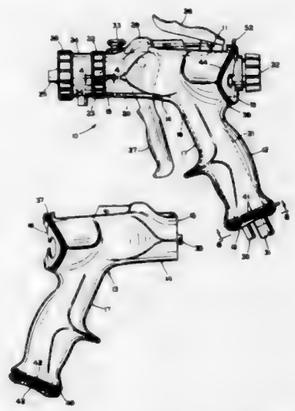
1. A rotor nozzle assembly for a high-pressure cleaning apparatus, comprising:
- a nozzle housing defining a rotation axis, an outlet orifice along said axis at one end of said housing, and an inlet for a cleaning liquid at an opposite end of said housing;
- a rotor body in said housing rotatable about said axis;
- an elongated nozzle rigidly fixed in said rotor body and having an outlet end proximal to said orifice and an inlet end communicating with said inlet and remote from said orifice, said nozzle being oriented at an acute angle to said axis to generate a jet emerging from said orifice with a conical configuration upon rotation of said rotor body about said axis;
- a pocket bearing in said housing surrounding said orifice, said outlet end of said nozzle engaging said pocket bearing; and
- means in said housing for journaling said rotor body on a part of said housing opposite said orifice in a one-sided journal.

5,332,156

SPRAY GUN WITH REMOVABLE COVER AND METHOD FOR SECURING A COVER TO A SPRAY GUN

Roger D. Wheeler, Holland, Ohio, assignor to Ransburg Corporation, Indianapolis, Ind.

Filed Oct. 25, 1993, Ser. No. 142,825
Int. Cl.[5] B25F 5/02
U.S. Cl. 239—288 15 Claims



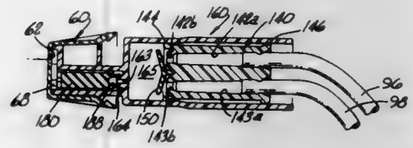
1. A removable cover for a spray gun having a frame including a body and a handle having a free end, said cover comprising first and second cover halves, said cover halves having a shape and size for enclosing at least a portion of the body and the handle of the gun frame when positioned together, each of said cover halves having tab means projecting from a front end portion for engaging a notch on the gun to secure said front end portion of such cover half to the gun, each of said cover halves having a first groove adjacent a rear end portion, first spring retainer clip means for positioning in said first grooves when said cover halves are positioned together for holding said rear end portions together, each of said cover halves having a second groove adjacent a handle end portion of said cover halves, and second spring retainer clip means for positioning in said second grooves when said cover halves are positioned together for holding said handle end portions together.

5,332,157

HAND OPERATED FLUID DISPENSER FOR MULTIPLE FLUIDS AND DISPENSER BOTTLE

Rudy R. Proctor, Anaheim, Calif., assignor to Take 5, Anaheim, Calif.

Continuation-in-part of Ser. No. 591,526, Oct. 1, 1990, Pat. No. 5,152,461. This application Apr. 8, 1992, Ser. No. 865,001
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] B05B 7/04, 9/043, 11/00
U.S. Cl. 239—304 19 Claims



1. A fluid dispensing apparatus for mixing and dispensing a first fluid from a first chamber and a second fluid from a second chamber, comprising:
- a fluid dispensing head, including (a) a discharge outlet, (b) a pump chamber, (c) pumping means for (i) drawing fluid from the first and second chambers into the pump chamber at a desired fluid ratio and (ii) discharging fluid out the pump chamber to the discharge outlet, and (d) actuation means for actuating the pumping means, wherein during actuation of the pumping means, volume of the pump chamber is reduced forcing fluid from the pump chamber out through the discharge outlet such that substantially all the fluid in the pump chamber is discharged out the discharge outlet;
- a first fluid passage providing fluid communication for the first fluid from the first chamber to the pump chamber; and
- a second fluid passage providing fluid communication for the second fluid from the second chamber to the pump chamber, the second fluid passage being independent from the first fluid passage.

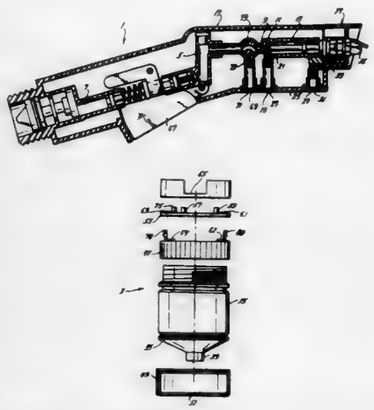
5,332,158

SPRAYING DEVICE WITH AN INTERCHANGEABLE CARTRIDGE

James J. Styne, San Ramon; Michelle Pillers, Cupertino, and Michael Greaney, Castro Valley, all of Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 16, 1992, Ser. No. 992,386
Int. Cl.[5] B05B 7/30
U.S. Cl. 239—310 13 Claims

1. A spraying apparatus comprising:
- a spraying head further comprising:
  - a fluid inlet conduit having a first end and a second end;
  - a mixing conduit having a first open end in fluid communication with said second end of said fluid inlet conduit and a second open end extending through a housing;
  - an aspirator passage having a first, open end in communication with said mixing conduit and a second open end extending through the bottom edge of said housing so that when a first fluid is directed to enter said first end of said fluid inlet conduit, said first fluid can draw a second fluid through said aspirator passage into said mixing conduit, and that a resulting mixed fluid is discharged through said second end of said mixing conduit into the environment, said housing sealed to permit flow only through said conduits and passage; and
- an interchangeable cartridge containing said second fluid therein, said cartridge further comprising:
  - a cartridge housing for containing said second fluid therein, having a top end and a closed bottom end;
  - a cap lid fixedly attached to said cartridge housing, said cap lid having an aspirator opening and a vent opening;
  - a dip tube, open at both ends, connected to and in communication with said aspirator opening and extending downward from said cap lid nearly to said bottom end of said cartridge housing;



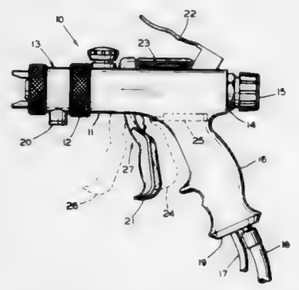
  - an upper cap plate rotatably attached to said cap lid, said upper cap plate having an aspirator nipple and a vent nipple that align with and sealably communicate with said aspirator opening and said vent opening respectively upon rotation, said aspirator nipple sealably mateable to said aspirator passage and said vent nipple sealably mateable to a vent passage; and
  - a means for attaching said cartridge to said sprayer head.

5,332,159

SPRAY GUN WITH DUAL MODE TRIGGER

Thomas E. Grime, Temperance, Mich.; James P. Baltz, Waterville, Ohio; Roger T. Cedoz, Curtice, Ohio, and John F. Schaupp, Toledo, Ohio, assignors to Ransburg Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 894,730, May 27, 1992, Pat. No. 5,236,129. This application Apr. 14, 1993, Ser. No. 48,277
Int. Cl.[5] B05B 7/02
U.S. Cl. 239—412 17 Claims



1. A hand held liquid spray gun including a gun body having first and second ends, a liquid atomization nozzle assembly secured to said first end, a handle extending from adjacent said second end for holding said spray gun, and a main trigger for controlling the discharge of liquid from said spray gun, said spray gun being characterized by said trigger having first and

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second operating modes, first means responsive to trigger movement for varying the amount of liquid discharged from said spray gun as a function of trigger movement between fully off and a predetermined maximum liquid flow when said trigger is in said first operating mode, and second means responsive to a predetermined small trigger movement when said trigger is in said second operating mode for controlling the flow of liquid discharged from said spray gun between fully off and said predetermined maximum liquid flow, and wherein said trigger is moveable over a greater range of movement in said first operating mode than in said second operating mode.

5,332,160

MULTI-LAYER DRIP IRRIGATION CONDUIT

Rodney R. Ruskin, San Francisco, Calif., assignor to Agrifim Irrigation International N.V., Curacao, Netherlands Antilles

Filed Oct. 26, 1992, Ser. No. 965,963

Int. Cl.[5] **B05B** *1/30;* **A01G** *25/02*

U.S. Cl. 239—542 **37 Claims**



1. A water transmission tubing for controlling the flow of water under pressure comprising:

a multiple-wall conduit comprising at least a tubular inner wall having an inner surface in contact with water traveling in the conduit and a tubular outer wall exposed to the exterior of the conduit and bonded to and surrounding the inner wall, the tubular inner and outer walls each extending continuously for the length of the multiple-wall conduit and each being substantially continuous around the cross-section of the conduit,

a tubular inner wall comprising a polymeric material containing a biocide dispersed throughout the inner wall so as to kill slime-forming bacteria in the water traveling in the conduit and for preventing the growth of slime on the inner surface of the tubular inner wall,

the tubular outer wall comprising a polymeric material substantially devoid of said biocide and having a thickness sufficient to form a continuous barrier for inhibiting the migration of the biocide from the inner wall through the outer wall to the exterior of the conduit.

5,332,161

BURNER NOZZLE ASSEMBLY

Ronald D. Schweitzer; Ludwig E. Schenk, and David E. Shook, all of Mansfield, Ohio, assignors to Manasco, Inc., Mansfield, Ohio

Filed Nov. 30, 1992, Ser. No. 982,782

Int. Cl.[5] **B05B** *1/00*

U.S. Cl. 239—600 **2 Claims**

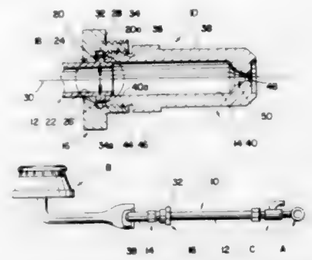
1. A gas burner tube assembly comprising:

a gas supply means including a first cylindrical tube member terminating in a first end;

an annular coupling nut having a central opening through which the first end of said tube member extends, said coupling nut having a cylindrical counterbore which extends axially inward of said central opening about the first end of said tube member and terminates in a transversely extending shoulder;

a radially outward extending circumferential bead formed integrally with the tue and located within the counterbore adjacent the first end of the tube member and positioned in engagement with the transversely extending shoulder;

a generally cylindrical gas orifice nozzle having an inlet end with a transverse end face and an axially extending throughbore, said bore having an inlet end receiving the first end of the tube member, said throughbore having an outer terminal end defining a gas outlet orifice which is substantially smaller in diameter than the diameter of the bore at the inlet end, a circumferential exterior portion of the nozzle about the inlet end being threadedly received in the coupling nut with the end face sealingly engaging the bead;



said bead further including first and second opposed end surfaces with the first end surface extending generally parallel to and in engagement with the transversely extending shoulder in said coupling nut, the second opposed end surface being inclined toward the first opposed end surface at an angle of 45° relative thereto and sealing engaging the end force of the nozzle in a narrow circumferentially continuous band.

5,332,162

ELECTROSTATIC SPRAY APPARATUS INCLUDING A SPRAY HOOD HAVING AN ELECTRODE

Arthur G. E. Peck, deceased, late of Hull, Great Britain, and by Margaret Peck, legal representative, 3 Wood Drive, North Ferriby, North Humberside, Great Britain

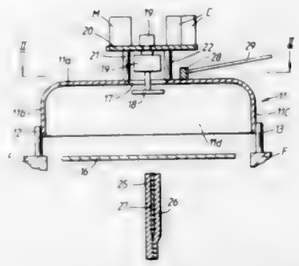
PCT No. PCT/GB90/00877, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO90/14894, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 6, 1990, Ser. No. 778,132

Claims priority, application United Kingdom, Jun. 7, 1989, 8913121.3

Int. Cl.[5] **B05B** *5/08*

U.S. Cl. 239—690 **13 Claims**



1. A spray hood, for an electrostatic spray apparatus, comprising a first hood element having substantially planar surfaces defining a top region with a downwardly depending skirt, which extends downwardly a given distance, and an electrode supported within said first hood element, characterized in that the hood includes a second hood element within the first hood element, the electrode is sandwiched between said first and said second hood elements and extends across the top region and extends downwardly for more than half of said given distance, and the spray hood does not have any junction of its planar surfaces, other than at the lowermost regions of said skirt, having a radius of less than one hundred and fifty millimeters throughout its construction.

5,332,163

MOTOR-DRIVEN MACHINE

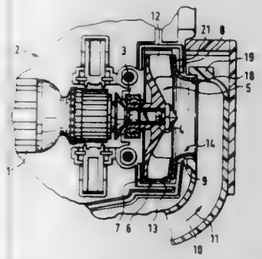
Albrecht Schnizler, Nürtingen, Fed. Rep. of Germany, assignor to Metabowerke GmbH & Co., Nurtingen, Fed. Rep. of Germany

Filed Jan. 27, 1993, Ser. No. 9,730

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1992, 4202195

Int. Cl.[5] **B25F** *3/00;* **B26B** *5/00;* **B02C** *13/00*

U.S. Cl. 241—56 **10 Claims**



1. A motor-driven machine with integrated suction duct removal of chips drawn or sucked into the machine, comprising:

a drive motor;

a suction removal fan including a fan wheel connected to and driven by said drive motor, said fan wheel having a plurality of blades;

an air guide housing within which said plurality of blades rotate, said air guide housing having an inlet and an outlet, and defining a front wall;

a suction conduit associated with the inlet of said air guide housing, said suction conduit serving to conduct air and chips to said air guide housing; and

a disintegrating element situated at the inlet of said air guide housing and in communication with said suction conduit, and extending between said front wall of said air guide housing and said plurality of blades, said disintegrating element being fixed relative to said air guide housing, wherein:

the disintegrating element comprises an annular element disposed coaxially with respect to said fan wheel and through which the sucked-in air and chips axially flow, said disintegrating element being formd as a nozzle-like component having a narrower end which receives the sucked-in air and chips from the suction conduit at its narrower end;

the plurality of blades of said fan wheel extend axially, face said front wall and define a gap with said disintegrating element;

at least one cutting edge-like raised portion is formed on said disintegrating element in said gap; and

sucked-in chips are disintegrated in said gap by means of said plurality of blades and said at least one cutting edge-like raised portion.

5,332,164

MATERIALS GRINDER

James H. Page, Bottineau, N. Dak., assignor to Rexworks, Inc., Milwaukee, Wis.

Filed Dec. 31, 1990, Ser. No. 636,505

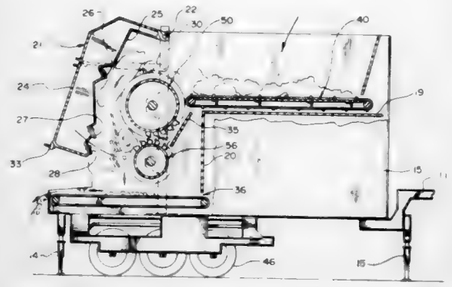
Int. Cl.[5] **B02C** *18/14, 18/28*

U.S. Cl. 241—239 **7 Claims**

1. A materials grinder comprising in combination:

a vertically disposed, upwardly opening chamber provided with an access door and having the materials guiding breaker bar means mounted on said door;

a plurality of materials grinding cutting drums disposed in vertically spaced relationship for rotation within said chamber;



means for conveying materials to be ground into the top of said chamber; and

said materials guiding breaker bar means disposed in said chamber, adjacent to said material grinding drums, whereby materials to be ground are successively supplied to each of said material grinding drums.

5,332,165

TRANSMISSION CABLE TERMINATION BOX, AND TRANSMISSION CABLE INSTALLATION AND RECOVERING METHOD

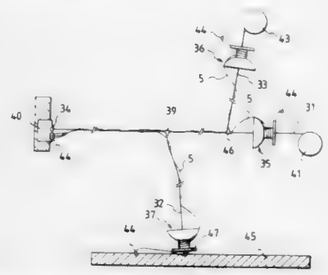
Hiroaki Sano; Yoshinobu Kitayama; Shigeru Tanaka, all of Kanagawa; Shigeru Tomita, and Hiroyuki Akimoto, both of Ibaraki, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph & Telephone Corporation, Tokyo, both of Japan

Filed Apr. 9, 1992, Ser. No. 865,612

Claims priority, application Japan, Apr. 10, 1991, 3-104832; May 25, 1991, 3-149801; Jun. 12, 1991, 3-167701; Dec. 20, 1991, 3-355928

Int. Cl.[5] **G02B** *6/44*

U.S. Cl. 254—134.3 R **2 Claims**



1. A method of installing a transmission cable on a strength wire, wherein said transmission cable is stored on a stationary winding barrel of a termination apparatus, the method comprising the steps of:

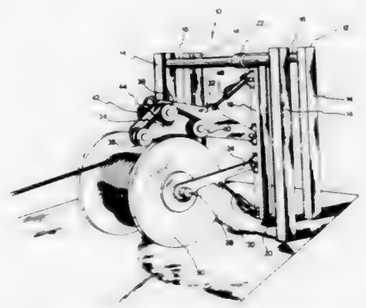
passing a first end of said transmission cable outside said termination apparatus via a transmission cable guide;

connecting said first end of said transmission cable to a transmission supply point;

passing an end of a strength wire, supplied by a strength wire barrel positioned behind said termination apparatus, through said termination apparatus via a strength wire supplying hole along a central axis of said stationary winding barrel;

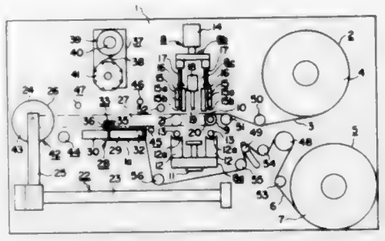
retaining said end of said strength wire at said transmission supply point;
moving said termination apparatus and strength wire barrel to a transmission receiving point so that said transmission cable unwinds from said stationary winding barrel onto said strength wire;
cutting said strength wire at a point before said strength wire enters said termination apparatus and removing strength wire barrel;
retaining a cut end of said strength wire connected to said transmission supply point at said transmission receiving point; and
connecting a second end of said transmission cable to said transmission receiving point.

5,332,166
METHOD AND APPARATUS FOR WINDING OR UNWINDING CABLE ONTO A REEL
George Kepes, 8110 Arcadian Road, Cote-St-Luc, Quebec H4X 1A1, Canada
Filed Jul. 15, 1992, Ser. No. 913,409
Int. Cl.[5] **B65H** *75/30*
U.S. Cl. 242—390.2 **15 Claims**



1. An apparatus for winding or unwinding cable from a reel, the reel comprising an elongated core on which cable is received in a coiled condition, and a generally circular flange mounted to the core and extending generally transversely to the core, said apparatus comprising:
an assembly for rotatably supporting the reel;
a reel drive, comprising:
a) a pair of rotatable pulleys in a spaced apart relationship;
b) a flexible belt passing over said pulleys, said pulleys establishing a path of travel for said flexible belt, said pulleys rotating as said flexible belt advances along said path of travel, said flexible belt including a run engaging a peripheral edge of the flange of the reel in a driving relationship, whereby advancement of said flexible belt along said path of travel causes the reel to rotate;
c) a motor in a driving relationship with said flexible belt to advance said flexible belt along said path of travel and cause rotation of the reel in either one of a winding and unwinding directions, in said winding direction cable being wound on the reel and in said unwinding direction cable being wound off the reel.

5,332,167
APPARATUS FOR AUTOMATICALLY CUTTING AND ATTACHING LENGTHS OF LEADER TAPE TO LENGTHS OF MAGNETIC TAPE AND WINDING THEM ONTO SUPPLY AND TAKE UP REELS
Koichi Sota, Chohu, Japan, assignor to Otari Inc., Tokyo, Japan
Filed Dec. 17, 1991, Ser. No. 809,305
Claims priority, application Japan, Dec. 27, 1990, 2-416148; Jul. 26, 1991, 3-187223
Int. Cl.[5] **G65H** *18/00, 21/00*
U.S. Cl. 242—527 **2 Claims**

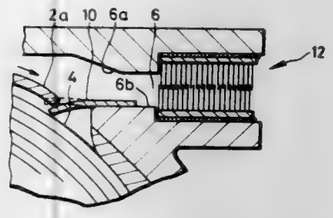


1. A method of winding lengths of magnetic tape and leader tape onto a pair of hubs, comprising the steps of:
a) drawing out by one end a leader tape supplied from a leader tape supply reel and clamping a hub to the end of the leader tape;
b) taking the hub which is clamped onto the end of the leader tape from the leader tape supply reel as the first hub and moving the first hub along a traveling path to a winding position;
c) cutting the leader tape at a splicing position which is located a predetermined distance from the first hub, splicing the cut, first end of the leader tape portion connected to the first hub with an end of a length of magnetic tape from a supply reel, and retaining the unspliced, second end of the cut leader tape at the splicing position;
d) revolving the first hub at the winding position to wind the spliced together length of leader tape and a predetermined length of magnetic tape onto the first hub;
e) retaining the magnetic tape at the splicing position;
f) clamping two new hubs to the leader tape between the second end of the cut leader tape and the leader tape supply reel and cutting the leader tape between the two new hubs, the hub which is clamped onto the portion of the leader tap retained at the splicing position thereafter being considered as the second hub;
g) cutting the magnetic tape retained at the splicing position and splicing the cut end of the magnetic tape to the second end of the leader tape;
h) winding the magnetic tape and spliced-on leader tape onto the first hub; and
i) removing the first hub and the second hub.

5,332,168
PHOTOGRAPHIC FILM CASSETTE WITH IMPROVED SEPARATOR CLAW
Tadayoshi Shibata, and Masuhiko Hirose, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 30, 1992, Ser. No. 859,888
Claims priority, application Japan, Apr. 1, 1991, 3-094701; Nov. 27, 1991, 3-312393
Int. Cl.[5] **G03B** *1/00*
U.S. Cl. 242—348.3 **16 Claims**

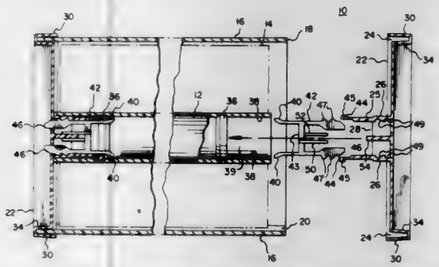
1. A photographic film cassette comprising:
a cassette shell having a roll chamber defined therein, said cassette shell being formed of a first material having a first elasticity;

a spool having photographic film wound in a roll thereon, said spool being rotatably contained in said roll chamber;
a separator member attached to said cassette shell proximate said roll chamber and a film passageway defined in said cassette shell, said film passageway extending between said roll chamber and an exterior of said cassette sell, said separator member being in contact with an outside of said roll of said film so as to abut upon a leading end of a leader



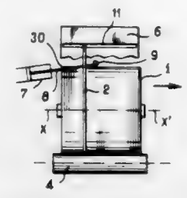
of said film when said spool is rotated in an unwinding direction, said leader being separated from said roll by said separator member, when said said spool is rotated, so as to advance said leader to said exterior of said cassette shell through said film passageway, said separator member being formed of a second material having a second elasticity which is higher than said first elasticity so as to be flexible in response to contact with said leader.

5,332,169
METHOD OF PREVENTING CLOCKSPRINGING OF A WOUND WEB WITHIN A CASSETTE
Clark E. Harris, Fairport; Raymond D. Hulbert, Penfield; Andrew E. Dominesey; Thomas C. Healey, both of Rochester, and Joel R. Shaw, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 1, 1992, Ser. No. 955,552
Int. Cl.[5] **G03B** *17/26*
U.S. Cl. 242—611 **3 Claims**



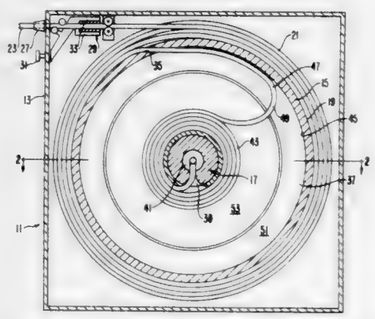
1. A method for preventing clockspringing of a wound roll of web material within a cassette during storage and shipment, in which the roll of web material is wound on a web core having sleeve portions arranged to rotate on axially aligned central tubular hub members on a pair of cassette end caps, one hub member being provided on each end cap, comprising the steps of:
providing at least one flexible lock on at least one of said hub member in sliding engagement with the respective sleeve portion of said web core; and
slidably mounting at least one flexible fork having a graspable finger on one end and camming ramps on the opposite end within the hub member for movement between a core-braked position in which the camming ramps engage and forces said flexible lock into braking engagement with a core groove inside said sleeve portion for preventing rotation of said web core relative to said end caps and clockspringing of the roll of web material, and a core-released position in which said camming ramp releases said flexible lock from said core groove to allow rotation of said web core and roll of web material.

5,332,170
METHOD AND DEVICE FOR FASTENING THE YARN END OF A BOBBIN
Claude Dittly, Kingersheim, France, assignor to Superba, Mulhouse, France
Filed Aug. 20, 1992, Ser. No. 932,566
Int. Cl.[5] **B65H** *65/00, 55/00*
U.S. Cl. 242—18 EW **9 Claims**



2. Apparatus for fastening a yarn end on a bobbin, comprising a suction nozzle which opens in proximity to the bobbin, means for causing rotation of the bobbin in order to bring the yarn end opposite to the suction nozzle to suck the yarn end into the suction nozzle, means to move the suction nozzle toward and away from the bobbin, a support which carries a needle which carries an end hook, and means for moving the support such that said end hook moves through a corner of the bobbin in the direction of the yarn which is engaged in the suction nozzle to pick up the yarn end and then carries the yarn end back through said corner of the bobbin thereby to fasten the yarn end on the bobbin.

5,332,171
WINDING DEVICE FOR WINDING UP AND UNWINDING A TUBE, CABLE OR HOSE
Josef Steff, Hagenbuchring 19, 8831 Meinheim, Fed. Rep. of Germany
Filed Mar. 13, 1992, Ser. No. 852,623
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1991, 4108534
Int. Cl.[5] **B65H** *75/48*
U.S. Cl. 242—378 **11 Claims**



1. A winding device for winding and unwinding a cable comprising:
(a) a rotatable drum in the form of a hollow cylinder around an outer circumference of which a pull-out length of the cable can be wound or unwound therefrom, by turning the rotatable drum;
(b) a hub arranged within the rotatable drum which does not

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turn with the rotatable drum during the winding and unwinding process;

(c) a supporting disc device which supports the cable and extends radially between the hub and the rotatable drum;

(d) a turning drive for turning the rotatable drum at least in the winding direction, wherein a cable end at the hub side is guided out of the winding device and a part of the cable is spirally arranged in a radial interstice between the rotatable drum and the hub and is supported by the supporting disc device, said part of the cable allowing a pull-out length of the cable to be wound and unwound despite a relative turning of the rotatable drum relative to the cable end at the hub side;

(e) wherein the supporting disc device is provided with at least one inner supporting disc arranged concentrically around the hub, independent of rotation of the rotatable drum and an outer supporting ring which is arranged concentrically around the inner supporting disc and turns with rotatable drum; and

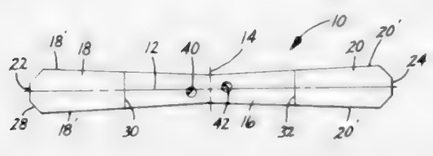
(f) wherein the inner supporting disc is freely rotatable relative to the hub and relative to the rotatable drum.

5,332,172

TAPERED REEL PRESSURE SPRING

Dale T. Tollefson, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 6, 1990, Ser. No. 562,883
Int. Cl.[5] G11B *23/02*
U.S. Cl. 242—345.2 **10 Claims**



1. A reel spring for use in a tape cassette, the reel spring having a longitudinal central axis and a transverse central axis wherein the longitudinal central axis is longer than the transverse central axis, the reel spring comprising first and second arms extending longitudinally from the transverse central axis and culminating in first and second ends, wherein the reel spring has the smallest transverse dimension at the transverse central axis and the first and second arms increase uniformly in transverse dimension from the transverse central axis toward the first and second ends to form a bow-tie shape, and wherein at a first location on the first and second arms the transverse dimension is less than that at a second location on the first and second arms closer to the respective ends than the first location.

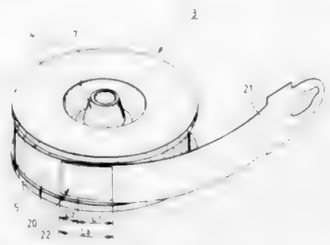
5,332,173

MAGNETIC TAPE CARTRIDGE HAVING RETENTION OF LEADER TAPE

Kazuo Kubota; Hideki Uchikura, and Hiroshi Ozawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 15, 1992, Ser. No. 961,336
Claims priority, application Japan, Oct. 15, 1991, 3-091895[U]
Int. Cl.[5] G11B *3/68, 5/84*
U.S. Cl. 242—348.300 **2 Claims**

1. In a magnetic tape cartridge wherein a single reel having a magnetic tape would thereon is housed in said cartridge, a leader tape is connected to an end of said magnetic tape, said leader tape can be drawn out from an opening of said cartridge by tape-drawing means of a recording/reproducing unit to enable tape travel along a tape travel path in said recording-reproducing unit defined by at a plurality of guide rollers, and said magnetic tape and said leader tape are connected together through a splicing tape, the improvement wherein a length of a portion of said splicing tape bonded to said leader tape is longer than a length of contact between said tape in said tape



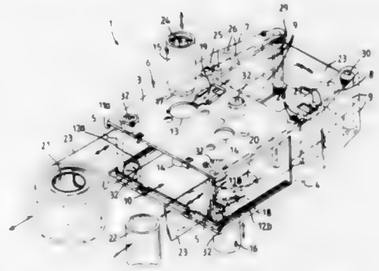
travel path and one of said guide rollers which changes a direction of said tape travel path at a sharpest angle along said tape travel path among said plurality of guide rollers.

5,332,174

REUSABLE RIBBON CASSETTE

John C. Cook, Transvaal, South Africa, assignor to Telkor (Proprietary) Limited, South Africa

Filed Dec. 21, 1992, Ser. No. 993,710
Claims priority, application South Africa, Dec. 19, 1991, 91/9989
Int. Cl.[5] B41J *35/28*
U.S. Cl. 242—348 **8 Claims**



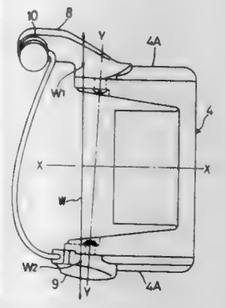
1. A cassette casing adapted to receive a replaceable spool of ribbon, said spool having a bore, the casing comprising two spaced sides, two spaced spool carrier shafts rotatably mountable within the casing, each spool carrier shaft being journaled in opposed pairs of holes provided in the opposed sides of the casing, one hole of each pair being smaller than the other and each spool carrier shaft having an area of reduced diameter at one end terminating axially thereof in a peripheral shoulder, said one end of each shaft being journaled in the smaller hole while the opposite end of the shaft is journaled in the larger hole, at least one of the spool carrier shafts being retractable from the casing through a larger hole in the axial direction thereof, means for locking the retractable shaft in the casing against retraction, means providing a guide path for the ribbon to travel in the casing from a spool on one spool carrier shaft to a spool on the other shaft, and a loading aperture in the casing through which said spool of ribbon may be inserted into the cassette between said two sides in a direction transverse to the axis of the spool and be positioned in the casing for insertion of said retractable spool carrier shaft through the bore of said spool of ribbon to hold the spool of ribbon within the casing for rotation.

5,332,175

SPINNING REEL HAVING ROTATIONAL BALANCE MECHANISM FOR ROTOR

Yoshiyuki Furomoto, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jul. 29, 1992, Ser. No. 921,062
Claims priority, application Japan, Aug. 6, 1991, 3-195670
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—231 **4 Claims**



1. A spinning reel comprising:

a reel body;

a rotor attached to said reel body forwardly of said reel body, said rotor being rotatable about an axis;

a first arm portion and a second arm portion fixed to said rotor;

an arm lever mounted on said first arm portion to be pivotable about a first pivot axis;

a pivotable arm mounted on said second arm portion to be pivoted about a second pivot axis;

a bail fixed between said arm lever and said pivotable arm, said bail being pivotable with said arm lever and said pivotable arm between a line retrieving position and a line releasing position;

wherein said first pivot axis and said second pivot axis are on a pivot line which is sufficiently inclined from a plane normal to said axis of said rotor to balance said rotor during rotation, with a line connecting the center of gravity of said arm lever and the center of gravity of said pivotal arm being substantially normal to said axis of said rotor when the bail is in the line retrieving position.

5,332,176

CONTROLLED INTERLACE FOR TOW MISSILES USING MEDIUM WAVE INFRARED SENSOR OR TV SENSOR

John R. Wootton; Gary Waldman, both of St. Louis, and Gregory L. Hobson, St. Peters, all of Mo., assignors to Electronics & Space Corp., St. Louis, Mo.

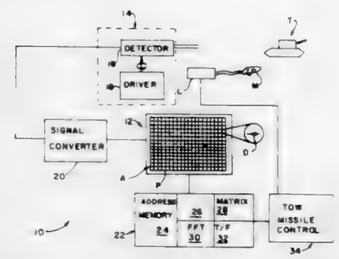
Filed Dec. 3, 1992, Ser. No. 984,966
Int. Cl.[5] G01B *11/26*
U.S. Cl. 244—3.11 **28 Claims**

12. In a weapon systems for use in a battlefield environment to locate and destroy enemy vehicles, apparatus for detecting an object located within a defined field of view comprising:

search means defining the field of view in which the object may be located, said search means including an array of individual elements each of which comprises one pixel of an observed display of the field of view, said field of view being in the visible portion of the light spectrum thereby to be displayable to an observer, and said pixel array being comprised of a plurality of diodes each of which has a unique address within the array;

sensing means for repetitively scanning the field of view and for detecting the presence of an object therein, said scanning means including means for detecting the object by a characteristic thereof which occurs in either the visible or infrared portion of the spectrum and driver means for repetitively moving the detecting means through the field of view, said detecting means being capable of detecting the object regardless of which area of the spectrum in which the characteristic occurs, and said detecting means is an infrared detector adapted to detect an object having characteristics in both the infrared and visible portions of the spectrum;

conversion means responsive to the scanning means for activating pixels in the array in response to a scan of the field of view; and,



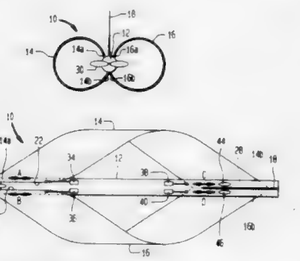
processing means for searching all the pixels within the array to identify a signature which matches a predetermined characteristic of the object, identification of such signature, being by a single pixel and signifying the presence of the vehicle in the field of view whereby the object is identifiable at a distance from the weapons system, said processing means including means responsive to the presence of the object by defining a set of pixels within the array which includes said pixel, and focusing on said set during subsequent scans thereby to track the object.

5,332,177

AIRCRAFT

James J. Boyle, Jr., 2957 Longleat Woods, Sarasota, Fla. 34235

Filed Sep. 9, 1993, Ser. No. 118,871
Int. Cl.[5] B64C *3/10, 3/38*
U.S. Cl. 244—34 A **32 Claims**



1. An aircraft comprising:

an elongated fuselage having a length along the direction of travel;

a wing positioned along each of two opposing sides of said fuselage and being in a form of an elongated flat panel having a width substantially greater than a thickness thereof and having a length substantially greater than the width thereof;

each said wing being spiral wound about an imaginary cylinder having a longitudinal axis positioned along the length of each side of said fuselage, each said wing being generally circular when viewed in the direction of travel;

a forward end of each said wing connected in side-by-side arrangement to a forward lengthwise area of said fuselage;

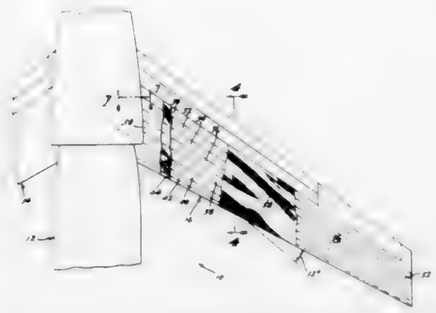
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a rearward end of each said wing connected in side-by-side arrangement to a rearwardly lengthwise area of said fuselage.

5,332,178
COMPOSITE WING AND MANUFACTURING PROCESS THEREOF

Sam B. Williams, Bloomfield Hills, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed Jun. 5, 1992, Ser. No. 894,455
Int. Cl.[5] B64C *3/20*
U.S. Cl. 244—123 **1 Claim**



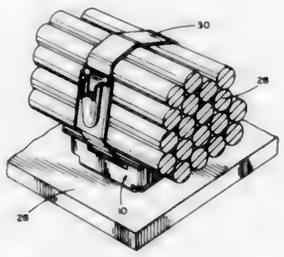
1. A forwardly swept composite wing for an aircraft comprising:

a plurality of discrete elongated hollow one-piece composite spars having hollow interiors, respectively, extending from wing root to wing tip, said spars being arranged in juxtaposed generally parallel relation in an array defining an airfoil, each of said spars having at least one surface defining a portion of the airfoil and a vertical surface, said spars being arranged so as to present said vertical surfaces to one another in close juxtaposed relation, and a composite skin bonded to the one surface of each of said spars, said composite skin being reinforced by fibers wound about said spar assembly at a forwardly swept angle of approximately 12° to a laterally extending central axis of the wing to minimize aeroelastic divergence of said wing.

5,332,179
2-WAY BOX MOUNT

Gregory L. Kuffel, Shaumburg, and Joseph S. Follenweider, Tinley Park, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Dec. 30, 1992, Ser. No. 998,694
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—743 **14 Claims**



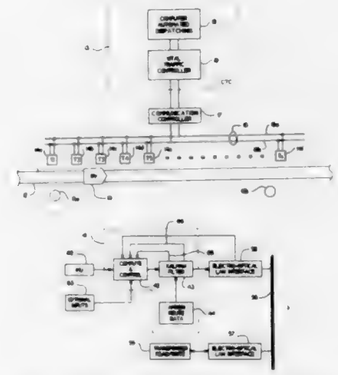
1. A box mount comprising:

an integrally formed mount member having a floor and at least two opposing side walls including slots for permitting a cable tie strap to be inserted, and reversely bent extended portions of the side walls integrally formed as rolled top portions.

5,332,180
TRAFFIC CONTROL SYSTEM UTILIZING ON-BOARD VEHICLE INFORMATION MEASUREMENT APPARATUS

Robert A. Peterson, Pittsburgh; Theo C. Giras, Harmanville; Larry C. Mackey, Unity Township, Westmoreland County; Daniel R. Disk, Murrysville, all of Pa.; Robert G. Brown, Hillpoint, Wis.; Barry W. Johnson, Charlottesville, Va., and Joseph A. Profeta, Pittsburgh, Pa., assignors to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Dec. 28, 1992, Ser. No. 997,603
Int. Cl.[5] G08G *1/00*
U.S. Cl. 246—3 **53 Claims**



1. A railway traffic control system for facilitating traffic flow of a plurality of railway vehicles travelling a predetermined track route, said system comprising:

an inertial measurement apparatus carried on-board each respective vehicle of said plurality of railway vehicles;

said inertial measurement apparatus including at least one inertial measurement sensor for detecting a corresponding inertial variable;

said inertial measurement apparatus further including processing means for deriving a current position estimate of said respective vehicle based on said inertial variable detected by said at least one inertial measurement sensor;

vehicle control means for determining a desired traffic flow of said plurality of railway vehicles based on respective current position estimates of said vehicles; and

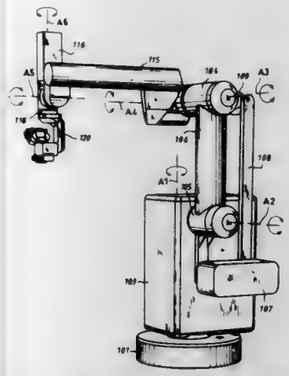
communication means for communicating respective current position estimates from each of said plurality of railway vehicles to said control means.

5,332,181
MOTORIZED STAND

Jurgen Schweizer, Westerbofen; Hartmut Gartner, Oberkochen, and Joachim Luber, Essingen-Forst, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jan. 19, 1993, Ser. No. 6,248
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1992, 4202922
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—123.1 **39 Claims**

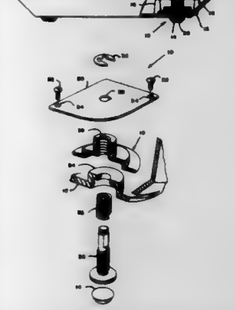
1. Motorized stand for positioning medical instruments, comprising a multi-joined mechanism having integrated angle transducers and individual drive units for individual joints of said multi-jointed mechanism, and a control unit, said multi-jointed mechanism being balanced at lest coarsely by mechanical balancing means, said mechanical balancing means comprising balancing weights and coordinated gear frictions of said drive units.



5,332,182
ADJUSTABLE LEVELING FOOT ASSEMBLY

Sandor F. Weisz, Stamford; Thomas J. Pendleton, Danbury, and David A. Demar, Trumbull, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 8, 1993, Ser. No. 43,693
Int. Cl.[5] F16M *11/24*
U.S. Cl. 248—188.4 **12 Claims**



1. An apparatus for providing adjustable level support for a base, said apparatus comprising:

a threaded support shaft;

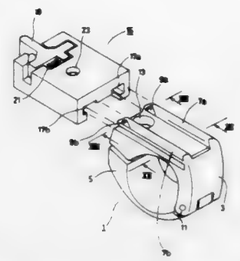
a leveling wheel having a threaded passage for receiving and mating with said threaded support shaft and having a bearing surface for supporting said base wherein when said leveling wheel is rotated, said leveling wheel and said base move in a vertical plane with respect to said support shaft; and

a retaining means for preventing the rotational movement of said shaft.

5,332,183
ATTACHMENT APPARATUS FOR TWO-WHEELED VEHICLE PARTS FOR ENABLING HIGHLY RELIABLE ATTACHMENT

Joe K. Kagayama, Osaka, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan

Filed Feb. 18, 1992, Ser. No. 837,864
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—222.1 **7 Claims**



1. An attachment apparatus of parts for a two-wheeled vehicle, comprising:

first attachment means detachably attached to component parts of a two-wheeled vehicle;

second attachment means fixed to parts for the two-wheeled vehicle;

a pair of fitting means fitting with each other, wherein one fitting means is provided in one of said first and second attachment means, and the other fitting means is provided in the other of said first and second attachment means; and

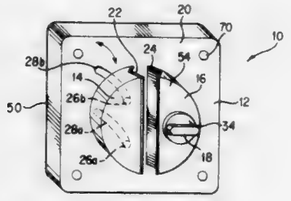
preventing means movably provided in one of said fitting means pair, for preventing a release of the fitting of said fitting means in a predetermined moving position,

said one of said fitting means pair having a single rail-shaped projection having at least one end open, and the other of said fitting means pair having a single groove having at least one end open and slidably fitting on said rail-shaped projection, wherein a recess is formed in a portion of said projection, and a jutted portion is formed on the other of said fitting means pair, said jutted portion being engaged with said recess for preventing release of the fitting of said pair of fitting means.

5,332,184
POLE CLAMP ASSEMBLY AND A METHOD OF ITS USE

Richard C. Davis, Palm Harbor, Fla., assignor to TREK Medical Corporation, Tampa, Fla.

Filed Feb. 16, 1993, Ser. No. 18,283
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—231.4 **18 Claims**



1. A pole clamp assembly comprising:

a base frame;

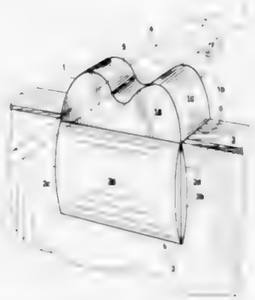
two jaws mounted on said base frame, said base frame and said jaws including a movement-allowing means for allowing at least the first of said jaws to be movable between a closed position in which it is relatively close to the

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second jaw and an open position in which it is spaced further from the second jaw;

a selectively actuatable biasing means linked to said movable jaw for being selectively switched between a biasing mode in which it allows said movable jaw to be held in one of said closed and open positions, while urging said movable, first, jaw towards said other position and a non-biasing mode in which it allows said movable jaw to be in said one of the closed and open positions without substantially urging said movable jaw towards said other position.

5,332,185
GUN REST
Fred M. Walker, III, P.O. Box 791456, San Antonio, Tex. 78279
Filed Jun. 8, 1993, Ser. No. 71,757
Int. Cl.[5] A47B *91/00*
U.S. Cl. 248—346 **3 Claims**



1. A portable gun support apparatus, comprising:

a first, front compartment constructed from flexible material;

a second compartment constructed from flexible material and connected by a first hinge to the first compartment;

a third, rear compartment constructed from flexible material and connected by a second hinge, generally parallel to the first hinge, to the second compartment, with;

said second compartment having a top surface with a recess, said recess shaped so that a gun barrel rests in said recess generally perpendicular to said second compartment and to the first and second hinges of said second compartment; and

each of said compartments having a releasable filling and closure means for filling said compartment with particulate matter of high density and retaining the particulate matter therein.

5,332,186
COMBINED ADJUSTABLE OUTSIDE MIRROR WITH SWING LOCK MECHANISM
Russell Lutz, Warrington, Pa., assignor to Delbar Products, Inc., Perkasie, Pa.
Filed Nov. 16, 1992, Ser. No. 977,095
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—549 **8 Claims**

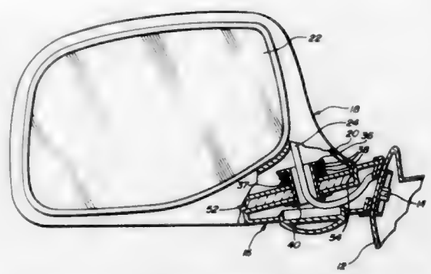
1. A mirror swing lock mechanism of the type comprising an arm (**16**) adapted to be mounted at one end to the exterior surface (**12**) of a vehicle, said arm projecting from said vehicle surface and laterally spaced therefrom; a mirror head assembly (**18**); means (**32**) having an axis (**42**) for pivotally supporting the mirror head assembly upon the arm whereby the assembly may be rotated between a first non-rearward viewing position proximate said vehicle surface and a second rearward viewing position laterally spaced outwardly of the vehicle surface; and a detent mechanism for retaining said mirror head assembly in either of said positions; the improvement including:

(a) said mirror head assembly having a planar base portion (**26**);

(b) a first set of detent elements (**50**) integrally formed in said planar base portion and radially spaced about the axis (**42**) of the pivotal support means;

(c) a recess (**54**) formed in said arm;

(d) a deformable and compressible member (**52**) disposed in said recess and including a planar surface (**53**) adapted to be abuttingly disposed opposite the planar base portion (**26**) of the mirror head assembly and having a second set of detent elements (**56**) of complementary shapes and sizes

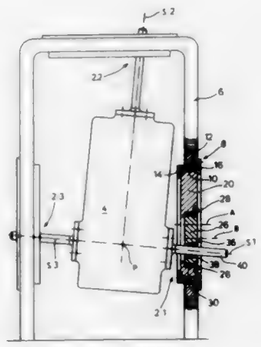


to said first set of detent elements, said first and second detent elements coacting to locate the mirror head between its first and second positions;

(e) the means (**32**) for pivotally supporting the mirror head assembly extending through both the head assembly planar base portion (**26**) and the planar surface (**53**) of the deformable member;

(f) the pivotal support means (**32**) including spring means (**38**) biasing said head assembly base portion (**26**) against the planar surface (**53**) of the deformable member to provide the primary load bearing surfaces as the mirror head assembly is rotated between the first and second positions.

5,332,187
ADJUSTING ARRANGEMENT
Arno Voit, Hausham, and Franz Sperber, Kolbermoor, both of Fed. Rep. of Germany, assignors to Deutsche Aerospace AG, Fed. Rep. of Germany
Filed May 19, 1993, Ser. No. 63,312
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1992, 4220634
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—659 **20 Claims**



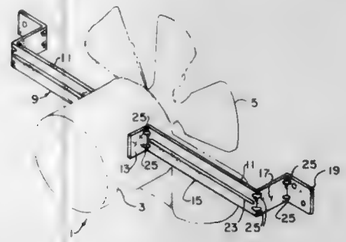
1. An arrangement for adjusting a mounting part on carrier in a statically determined position adjustable in three axes in a rotatory and translatory manner with respect to the carrier, the arrangement comprising:

at least three adjusting units arranged in an offset manner with respect to one another between the carrier and the mounting part, each of said adjusting units including two connecting parts translatorily adjustable in two axes with respect to one another, said adjusting units being constructed freely movable rotatorily in three axes and translatorily in one axis in a sloped manner to the adjusting plane of the two connecting parts;

a double disk arrangement adjustably coupling the two connecting parts with one another in two axes, said double disk arrangement including a primary disk disposed on one connecting part in an adjusting plane of the two connecting parts so that the rotating position can be adjusted and, a secondary disk, enclosed by the primary disk, and disposed so that its rotating position on the primary disk can be adjusted about an axis (B) eccentric to its axis of rotation (A);

wherein the other connecting part is arranged on the secondary disk at a distance (a) from the axis of rotation (B) of the secondary disk.

5,332,188
MOTOR MOUNTING BRACKET
William L. Davis, Murfreesboro, Tenn., and Daniel R. Messner, St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Aug. 10, 1992, Ser. No. 927,008
Int. Cl.[5] F16F *15/02*
U.S. Cl. 248—674 **7 Claims**



1. A mounting bracket for a motor, the motor including a motor housing, the bracket comprising at least two independent, one-piece arms, each of said arms being attached to the motor housing, each of said arms including:

a mounting plate for attaching each of said arms to said motor housing;

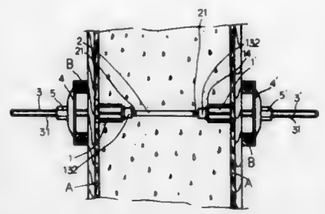
an extender having a first end connected to said mounting plate, said extender having a predetermined length, being generally perpendicular to said mounting plate and extending outwardly from said mounting plate;

a riser generally parallel to said mounting plate extending outwardly from said extender at a second end of said extender remote from said extender first end; and

a mounting flange for mounting said bracket to a support, said mounting flange extending outwardly from said riser generally parallel to said extender;

said extender including a rib for providing vibration isolation between said motor and any associated mounting for said motor.

5,332,189
FASTENER OF CONSTRUCTION MOLDBOARD
Cheng-Tzu Tseng, 3R 2th Fl, No. 6, Ta-An West St, Taichung, Taiwan
Filed Nov. 12, 1992, Ser. No. 974,947
Int. Cl.[5] E04G *17/065*
U.S. Cl. 249—40 **5 Claims**



1. A fastener of construction moldboard comprising:

an inner pull rod,

at least two shower heads constructed of high strength concrete,

at least two outer pull rods,

at least two washers, and

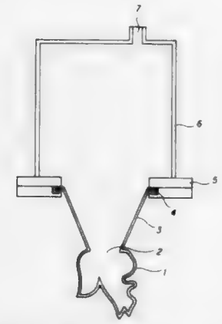
a plurality of nuts; wherein

the construction moldboard is held in place by the inner pull rod arranged between and fastened to the shower heads, and with the outer pull rods being fastened to the shower heads by the washers and the nuts; and wherein

the fastener includes a rod body received within a hollow area in the shower heads, the rod body being received in the hollow area and extending beyond an inner surface of the shower head; and

the rod body includes threads adapted for engaging with the inner and outer pull rods.

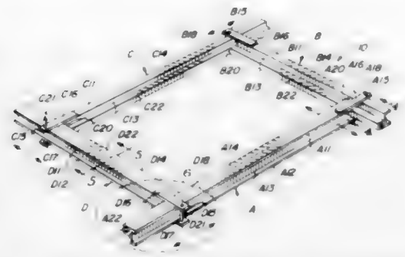
5,332,190
ELASTIC MOLDING DIE
Akinori Watanabe, Tokyo; Itaru Horiguchi, Ryugasaki; Tsuguyo Ando, Kasukabe, and Atsushi Sato, Ryugasaki, all of Japan, assignors to Okamoto Industries, Inc., Tokyo, Japan
Filed Jun. 18, 1992, Ser. No. 900,264
Claims priority, application Japan, Jun. 18, 1991, 3-171926; Jun. 18, 1991, 3-171927; Aug. 6, 1991, 3-219296; Jan. 21, 1992, 4-008507
Int. Cl.[5] A23G *1/21;* **B28B** *7/34;* **B29C** *33/50*
U.S. Cl. 249—115 **7 Claims**



1. An expandable elastic molding die comprising an elastomer laminate film in the shape of a female mold, having an outer layer comprising elastomer and filler and an innermost layer comprising an elastomer not containing fillers.

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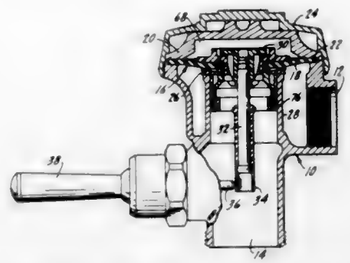
5,332,191
APPARATUS FOR MAKING CONCRETE SLABS
Terry L. Nolan, P.O. Box 367, Humboldt, Ariz. 86329
Filed Oct. 26, 1992, Ser. No. 966,517
Int. Cl.[5] B28B *7/04*
U.S. Cl. 249—155 14 Claims



1. An adjustable device for producing concrete slabs comprising:
a plurality of identically configured channel shaped sections similarly oriented in interlocking arrangement to define a form unit;
each section including vertically spaced upper and lower arms and a vertical web connecting of said arms;
each section including a main body portion and a fork joint extension thereof on at least one end thereof;
said fork joint extension comprising upper and lower tines spaced apart at a distance substantially equal to the cross-sectional depth of said sections, so that the body portion of an adjoining section may be accepted between said tines;
said upper and lower tines each being provided with opposing holes in vertical registration with each other, said holes being spaced apart from the end of said main section body portion for a distance substantially equal to the effective cross-sectional width of an adjoining section, so that said adjoining section may be accepted between the end of said main body portion and said holes;
pins disposed through said opposing holes in said tines in each section, for retaining said adjoining section which is slidably accepted between said tines;
said interlocking arrangement of said plurality of sections being one in which the body portion of each section is inserted, at a predetermined point along its body, in a fork-jointed end of an adjoining section, to provide an enclosed geometric figure having predetermined dimensions.

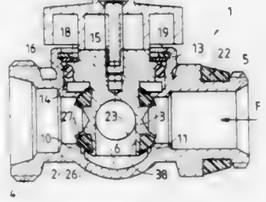
5,332,192
FLUSH VALVE FILTER AND BYPASS ORIFICE
John F. Whiteside, Franklin Park, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed May 24, 1993, Ser. No. 65,705
Int. Cl.[5] F16K *31/385, 31/145*
U.S. Cl. 251—40 16 Claims

1. A diaphragm-type of flush valve for use with toilet devices such as urinals and water closets including a body having an inlet and an outlet, a valve seat between said inlet and outlet and a valve member movable to a closing position on said valve seat to stop flow between said inlet and outlet, said valve member including a diaphragm peripherally attached to said body, a refill ring attached to said diaphragm for controlling water flow to said outlet, and a retaining disc attaching said refill ring to said diaphragm,
a pressure chamber above said diaphragm for holding said valve member on said valve seat, a filter and bypass orifice connecting said inlet and pressure chamber, said bypass



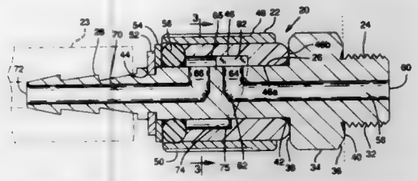
orifice being formed in said retaining disc and said filter being formed in part by a portion of said diaphragm.

5,332,193
BALL VALVE WITH SEALING MEANS FOR THE CLOSURE PART
Mario Giacomini, Boleto, Italy, assignor to Giacomini Industriale, S.p.A., Italy
Filed Aug. 17, 1993, Ser. No. 107,507
Claims priority, application Italy, Nov. 27, 1992, MI92A-002725
Int. Cl.[5] F16K *5/06*
U.S. Cl. 251—315 BC 9 Claims



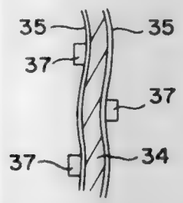
1. A ball valve, comprising:
a) a housing having a duct extending along a longitudinal axis between an inlet and an outlet, and an annular valve seat within the duct;
b) a ball mounted in the duct for turning movement, and having a bore and a pair of annular projections extending outwardly of, and being of one-piece with, the ball, said projections bounding an annular groove therebetween;
c) an annular sealing ring mounted in the groove;
d) said projections being constituted of a bendable material that is deformable from an initial position in which the projections are concentric with the longitudinal axis and spaced radially apart to receive the sealing ring, to a final position in which the projections are bent towards each other to engage and fixedly secure the sealing ring in the groove; and
e) means for jointly turning the ball and the ring secured thereon between open and closed positions in which the bore is aligned and misaligned, respectively, with the duct, said ring sealingly engaging the valve seat in the closed position.

5,332,194
FLUID FLOW CONTROLLER
George K. Austin, Jr., Newberg; Sandor Johannes, West Linn, and Theodore E. Schmidt, Carlton, all of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Feb. 4, 1993, Ser. No. 13,310
Int. Cl.[5] F16K *31/00*
U.S. Cl. 251—345 16 Claims



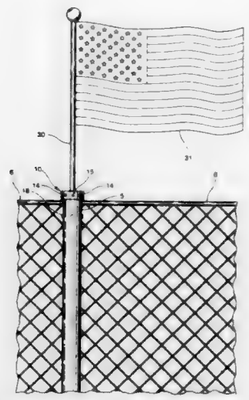
1. A fluid flow controlling valve assembly comprising:
a body including a first conduit having an aperture opening to a surface of said body, and a second conduit having an aperture opening to a surface of said body; and
a sleeve mounted on the body forming a chamber therebetween defining a fluid flow passage between said first conduit and said second conduit, the sleeve being rotatable around the body and operable to change the dimension of the fluid flow passage to control fluid flow between said first and second conduits, said sleeve including a variable cross-section closure element therein having a helical configuration extending about a major portion of the closure element operable upon rotation of the sleeve to a first position to open said fluid flow passage and upon rotation of the sleeve to a second position to restrict such fluid flow passage.

5,332,195
ROPE TRACTION DEVICE
Yutaka Sugiyama, Tokyo, Japan, assignor to Nitton Biso Co., Ltd., Tokyo, Japan
Filed Jan. 22, 1993, Ser. No. 7,750
Int. Cl.[5] B66D *1/30*
U.S. Cl. 254—371 4 Claims



1. A rope traction device having a sheave which is driven and rotated to cause a traction rope to be wound on the sheave and said rope traction device thereby moving along the traction rope, said device being characterized in that said rope traction device comprises a pair of annular side plates made of an elastic material and provided at the side of the sheave in such a manner that the space between the inner surfaces of the side plates is made smaller than the diameter of the rope by a predetermined value and the side plates are secured to the side of the sheave by means of boltheads of bolts positioned alternately on opposite sides of the sheave in the circumferential direction of the sheave to permit the adjacent side plate portion opposite to the boltheads to flex freely outwardly to create a wedging force about a traction rope.

5,332,196
FENCE POST END CAP
Richard P. Wright, 311 Cumberland Cove Rd., Monterey, Tenn. 38574
Filed Dec. 30, 1992, Ser. No. 999,285
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—47 10 Claims



1. A fence post end cap for a hollow fence post, comprising:
a bottom portion sized to be received in the fence post;
means for securing said bottom portion to the fence post;
a top portion integral with said bottom portion and adapted to extend above the fence post when said bottom portion is secured to the fence post;
said end cap having a main bore extending through said top portion;
at least one threaded bore through said end cap substantially orthogonal to and intersecting said main bore; and
a set screw in each said threaded bore capable of extending into said main bore.

5,332,197
ELECTROSLAG REFINING OR TITANIUM TO ACHIEVE LOW NITROGEN
Mark G. Benz, Burnt Hills, and Thomas F. Sawyer, Stillwater, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 2, 1992, Ser. No. 969,900
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] C21C *1/00*
U.S. Cl. 266—201 16 Claims

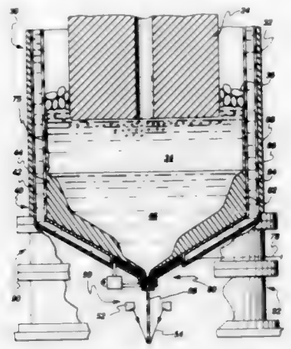
1. Apparatus for producing refined titanium base alloy containing a low concentration of nitrogen which comprises:
electroslag refining apparatus comprising a refining vessel adapted to receive and to hold a molten slag,
a body of molten slag in said vessel adapted to the electroslag refining of titanium base metal,
means for positioning an ingot of a titanium base alloy as an electrode in said vessel in touching contact with said molten slag,
electric supply means adapted to supply refining current to said ingot electrode and through said molten slag to a body of refined metal beneath said slag to keep said refining slag molten and to melt the end of said ingot electrode which is in contact with said slag,
means for maintaining a low partial pressure of nitrogen in contact with the surface of said molten slag and in contact with the portion of said ingot electrode in contact with said slag,
means for advancing said ingot electrode toward and into

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contact with said molten slag at a rate corresponding to the rate at which the contacted surface of said ingot electrode is melted as the refining thereof proceeds,

a cold hearth vessel beneath said electroslag refining apparatus, said cold hearth being adapted to receive and to hold electroslag refined molten titanium base alloy in contact with a solid skull of said refined alloy formed on the walls of said cold hearth vessel,

a body of refined molten titanium base alloy in said vessel beneath said body of molten slag,



a cold finger apparatus below said cold hearth adapted to receive and to dispense as a stream refined molten titanium base alloy processed through said electroslag refining process and through said cold hearth, said cold finger apparatus having a bottom pour orifice,

a skull of solidified refined titanium base alloy in contact with said cold hearth and said cold finger apparatus including said bottom pour orifice, and means for converting the stream of molten metal passing from said bottom pour orifice into an article of refined titanium base alloy having a low concentration of nitrogen.

5,332,198

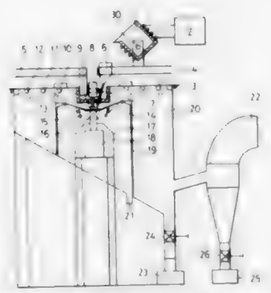
METHOD FOR PRODUCING RAPIDLY-SOLIDIFIED FLAKE-LIKE METAL POWDER AND APPARATUS FOR PRODUCING THE SAME

Jien-Wei Yeh; Kuo-Shung Liu; Kuang-Yuan Shue, and Yung-Chiun Ho, all of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Division of Ser. No. 847,593, Mar. 5, 1992, Pat. No. 5,259,861. This application Nov. 3, 1992, Ser. No. 971,075

Int. Cl.[5] B22F *9/10*

U.S. Cl. 266—202 **9 Claims**



1. An apparatus for producing metal flake particles from molten metal, comprising

(a) means for melting metal;

(b) a first rotating disk for atomizing molten metal;

(c) a second rotating disk having an annular planar upper surface surrounding said first rotating disk for splat cooling;

(d) a first rotating means for driving said first rotating disk, and an independent, second rotating means for driving said second rotating disk independently with respect to said first rotating disk;

(e) means for guiding the molten metal onto said first rotating disk positioned to cause said molten metal to disintegrate into molten droplets on the periphery of the first disk;

(f) means for impinging said molten droplets onto said annular planar surface in a manner to cause each of said molten droplets to be converted into a liquid film on said annular planar surface;

(g) means for maintaining said annular planar surface at a temperature substantially lower than that of said molten metal to cause said liquid film to solidify on the annular planar surface as a flake particle;

(h) means for applying a centrifugal force to each said flake particle in a manner to force the flake particles to leave said annular planar surface; and

(i) means for collecting said flake particles.

5,332,199

METALLURGICAL VESSEL

Hubert Knapp, Bühl, and Peter Hoffman, Schwelm, both of Fed. Rep. of Germany, assignors to Fuchs Systemtechnik GmbH, Wellstatt-Legelshurst, Fed. Rep. of Germany

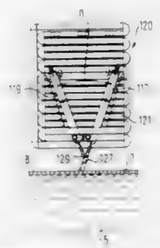
Filed Aug. 28, 1991, Ser. No. 750,908

Claims priority, application European Pat. Off., Sep. 5, 1990, 90117098.5

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] C21C *5/32*

U.S. Cl. 266—225 **15 Claims**



1. Metallurgical vessel adapted for supplying fine-grain solid material to a molten metal bath from above the surface thereof, said vessel comprising:

a container portion for receiving a molten metal bath and a side wall portion positioned above a highest level normally attained by the molten bath within the container portion, the side wall portion being formed by a plurality circumferentially arranged side wall panels,

a first lance having a first outlet opening for ejecting gas towards said container portion of said vessel,

a second lance having a second outlet opening for supplying fine-grain solid material into the container portion of said vessel,

said lances being passed through said side wall portion such that the outlet openings of the lances are located above the highest level normally attained by the molten bath within the container portion,

said lances being arranged at an acute angle α relative to the horizontal and an angle β relative to one another, said angle β having a vertex located above said highest level whereby fine-grain solid material supplied from said second

outlet opening intersects the path of ejection of gas from said first outlet opening at said vertex of angle β, and whereby said material is deflected and carried by said gas toward the container portion.

5,332,200

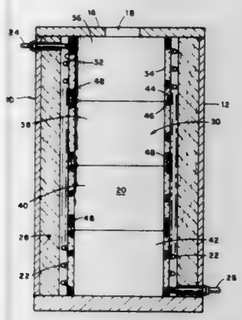
SEGMENTED CERAMIC LINER FOR INDUCTION FURNACES

Andrew H. Gorin, and Cressie E. Holcombe, both of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Oct. 13, 1992, Ser. No. 959,580

Int. Cl.[5] C21B *7/04*

U.S. Cl. 266—280 **14 Claims**



1. In a furnace comprising an upright shell having top and bottom closure means and containing electric heating mean, thermal insulating means intermediate to the heating means and the shell, and an improved substantially cylindrical liner disposed radially inwardly from the heating means, said liner comprising a plurality of elongated substantially cylindrical ring-shaped liner segments with circumferential inner and outer surface regions and stacked open end to open end upon one another within said shell with end surface regions of adjacently disposed liner segments being disposed in an abutting relationship and with end surface regions at opposite longitudinal ends of each liner segment being disposed in substantially parallel planes, each end surface region of each liner segment having a shaped vertically offset surface portion complementary to a shaped vertically offset surface portion on the end region of an adjacently disposed liner segment for defining a tortuous path between the inner and outer surface regions at the interface between the adjacently disposed liner segments, and with each of said liner segments being of a substantially cellular construction provided by a fiber-free structural form selected from the group consisting of bonded-together hollow ceramic spheres in a ceramic matrix, reticulated ceramic foam, and a ceramic honeycomb and with said structural form being of at least one ceramic material selected from the group consisting of alumina, mullite, partially stabilized zirconia, magnesium oxide, clay, spinel, cordierite, yttrium oxide, zirconia-opacified mullite, and mixtures thereof.

5,332,201

SYSTEM OF SIZED BRICKS

Johann Pöschl, Auersthal, Austria, assignor to Veitscher Magnesitwerke-Actien-Gesellschaft, Austria

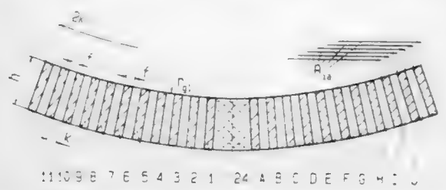
Filed Jan. 29, 1993, Ser. No. 11,333

Claims priority, application Austria, Jan. 31, 1992, 166/92

Int. Cl.[5] C21B *7/04*

U.S. Cl. 266—283 **4 Claims**

1. A lining of a spherical bottom of a metallurgical vessel, comprising a system of sized bricks wherein the individual sized bricks are defined by six, essentially flat surfaces, namely, the fire-side surface, the cold-side surface, the two lateral surfaces, as well as the inner and outer surfaces, and the said sized bricks are arranged in concentric rings, wherein the sized bricks within each of these rings join each other with their lateral surfaces, and wherein the outer surfaces of the sized bricks of one ring border on the inner surfaces of the sized bricks of the next ring, wherein two basic sizes of sized bricks are provided, wherein the sized bricks of the first basic size have a defined distance (r) between the imaginary intersection line of the inner surface with the outer surface and the fire-side surface, and wherein the sized bricks of the second basic size



have a defined distance, which is greater than in the case of the first basic size, between the imaginary intersection line of the inner surface with the outer surface and the fire-side surface, and that at least three positions are provided within each basic size, wherein the sized bricks of different positions have lateral surfaces which are inclined differently to one another, and wherein the sized bricks of one position have parallel lateral surfaces.

5,332,202

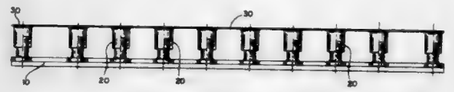
PNEUMATIC MEMBER AND RELATED ATTACHMENT ELEMENTS FOR CUSHIONS, SEATS, FOUNDATIONS AND THE LIKE

Robert F. Wagner, Medina, and Philip J. Pisczak, Novelty, both of Ohio, assignors to The Ohio Mattress Company Licensing And Components Group, Cleveland, Ohio

Filed Feb. 6, 1991, Ser. No. 651,583

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—82 **39 Claims**



1. A pneumatic cushioning and load-supporting spring-device for use in the construction of bedding and seat cushions, each spring-device being an independent unit a plurality of which units can be arranged together and mounted on a base to form the aforesaid bedding and set cushions, comprising:

a first elongated member,

a second elongated member having a hollow defined therein into which said first member is received to move along a longitudinal axis defined by said members when joined,

means for forming an air seal between said first and second members to define an air cavity within said hollow within which air is compressed upon relative axial movement of said first and second members,

means for biasing said first and second members apart and

at least one air vent communicating with said hollow for venting and admitting air thereto.

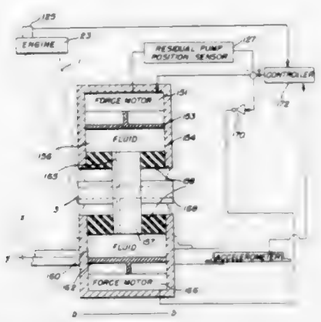
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5,332,203

DUAL CHAMBERED, ACTIVE VIBRATION DAMPER WITH REACTIVE FORCE PRODUCING PISTONS

William E. Gossman, Silver Spring, and Michael J. Burke, Annapolis, both of Md., assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.

Division of Ser. No. 506,202, Apr. 9, 1990. This application Mar. 8, 1993, Ser. No. 28,898
Int. Cl.[5] F16F 9/50; F16M 13/00
U.S. Cl. 267—140.15 7 Claims



1. A hydraulic system for use in a system for actively-controlling and compensating for dynamic forces exerted from a vibrating element, comprising

a mounting bushing supporting the vibrating element,

a substantially cylindrical outer housing,

first and second fluid filled compensatory force generating chambers, provided in said housing in opposed connection with said mounting bushing therebetween, said first and second fluid filled compensatory force generating chambers each including a force producing means for generating first and second opposed forces in an uniaxial direction, respectively, through flow of the fluid to opposing sides of said opposed connection, said first and second forces being equal in magnitude but opposite in phase and being generated in response to

detection of relative static and dynamic forces exerted by the vibrating element,

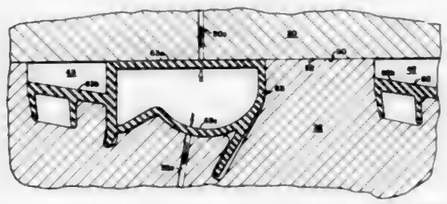
said first and second forces being uniaxially exerted to thereby compensate for the static and dynamic forces exerted by the vibrating element

5,332,204

HOLLOW GASKET WELDER

Giuseppi Puppin, Bayport, Minn., assignor to Andersen Corporation, Bayport, Minn.

Continuation of Ser. No. 917,787, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 865,642, Apr. 9, 1992, abandoned, which is a continuation of Ser. No. 336,077, Apr. 11, 1989, abandoned. This application Dec. 1, 1993, Ser. No. 161,171
Int. Cl.[5] B25B 11/00
U.S. Cl. 269—21 1 Claim



1. A method of cooperatively connecting a first flexible hollow article to a second flexible hollow article, each of said articles having a profile comprising:

(a) placing a first flexible hollow article in a jig;

(b) placing a second flexible hollow article in the jig;

(c) positioning the jig to place the first and second articles in a working position;

(d) applying a vacuum to the articles through a passageway in the jig to maintain the profiles of the articles;

(e) moving the first article to proximate the second article such that their profiles are in alignment; and

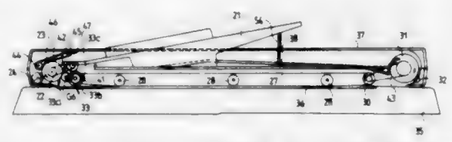
(f) cooperatively connecting the articles to each other for form a single article while the vacuum maintains the profiles of the articles.

5,332,205

AUTOMATIC DOCUMENT FEEDERS FOR COPYING MACHINES AND METHOD FOR AUTOMATICALLY CONTROLLING SUCH

Jae H. Chung, Uijongbu; Young S. Park, Sungdong; Seung M. Chang; Yangchun; Dong S. Joo, Seodaemun, and Young J. Kwon, Sungbuk, all of Rep. of Korea, assignors to Sindo Ricoh Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 2, 1992, Ser. No. 908,211
Claims priority, application Rep. of Korea, Jul. 5, 1991, 1991-11418; Jul. 5, 1991, 1991-11420; Jul. 23, 1991, 1991-11586; Sep. 2, 1991, 1991-15268
Int. Cl.[5] B65H 5/22
U.S. Cl. 271—6 8 Claims



1. An automatic document feeder for a copying machine comprising:

a. document feeding base means for permitting a plurality of documents to be copied to be consecutively set thereon;

b. drive power source means for providing forward and reversed directional drive power useful for document feeding, document conveying and document recovering operations of said document feeder;

c. document feeding means for separating and feeding one by one the documents set on said document feeding base means using the forward directional drive power transmitted from said drive power source means, said document feeding means being applied with only the forward directional drive power by means of an one way clutch and being selectively operated using a part of the forward directional drive power which is selectively transmitted thereto by means of a clutch gear;

d. document conveying means for conveying using the forward directional drive power the document in the forward direction and exactly setting using the reversed directional drive power the document on a predetermined reference copying position of the copying machine, said document conveying means being directly applied with the forward and reversed directional drive power from the drive power source means; document recovering means for recovering using the forward directional drive power of the drive power source means the document after a copying operation; and

e. recovered document base means for permitting a plurality of recovered documents to be consecutively piled up thereon, said recovered document base means being formed as disposed below the document feeding base means and being lower than a document ejection position of said document recovering means, thereby causing the recovered documents to be neatly piled up thereon;

f. wherein said document conveying means comprises:

(1) a conveyor belt for conveying forwards and backwards the document laid thereon, said conveyor belt being supported and driven by a plurality of rollers, said plurality of rollers comprising:

(2) a conveyor roller for driving using the forward and reversed directional drive power of the drive power source means said conveyor belt to move forwards and backwards, said conveyor roller being mounted on a conveyor roller drive shaft which is directly applied with the forward and reversed directional drive power of the drive power source means;

(3) a conveyor driven roller for supporting, in cooperation with the conveyor roller, the conveyor belt to move forwards and backwards, said conveyor driven roller being mounted on a conveyor driven shaft; and

(4) at least one intermediate conveyor roller for improving the document conveyance efficiency, said intermediate conveyor roller being mounted on at least one intermediate shaft which is disposed between said conveyor roller drive shaft and said conveyor driven shaft and of which the number being determined in consideration of the document conveyance efficiency;

g. wherein said document recovering means comprises:

(1) an ejection roller drive belt for transmitting the drive power of said drive power source means to an ejection roller drive shaft of the document recovering means, said ejection roller drive belt being supported between a pulley mounted on an end of said ejection roller drive shaft and a pulley mounted on an end of said conveyor driven shaft of the document conveying means;

(2) at least one ejection roller for ejecting the copied document therefrom, said ejection roller being mounted on the ejection roller drive shaft and having a relatively larger outer diameter than those of rollers equipped in said document feeding means and said document conveying means; and

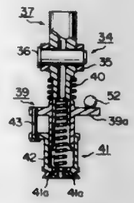
(3) at least one driven roller for ejecting the copied document therefrom in cooperation with the ejection roller, said driven roller contacting with the ejection roller and being rotated together therewith.

5,332,206

PAPER FEED SUCTION APPARATUS

Norio Hirose, and Masaaki Ishida, both of Ibaragi, Japan, assignors to Komori Corporation, Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 112,434
Claims priority, application Japan, Sep. 3, 1992, 4-067551
Int. Cl.[5] B65H 3/08
U.S. Cl. 271—90 1 Claim



1. A paper feed suction apparatus comprising:

a cylindrical guide nozzle supported on a frame side and having an inner hole connected to an air source;

a cylindrical intermediate nozzle with a collar, fitted on an outer circumferential surface of said guide nozzle to be vertically movable;

a tension coil spring, having an upper end portion fixed on said guide nozzle side and a lower end portion fixed on said intermediate nozzle side, for biasing said intermediate nozzle upward;

a bottomed-cylindrical suction port member fitted on an outer circumferential surface of said intermediate nozzle to be vertically movable and having a suction hole in a lower end face thereof;

a compression coil spring, interposed between said suction port member and said guide nozzle, for biasing said suction port member downward; and

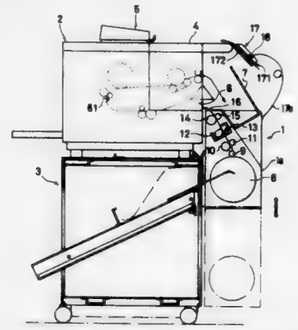
a stopper, supported on said frame side to be vertically movable and located above said collar of said intermediate nozzle, for regulating an upper end limit of said intermediate nozzle.

5,332,207

PAPER FEEDER AND AN IMAGE FORMING APPARATUS PROVIDED WITH THE SAME

Kunihio Oonishi, Osaka, and Eiji Gotou, Higashiosaka, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 792,551, Nov. 15, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 987,108
Claims priority, application Japan, Nov. 30, 1990, 2-339110; Nov. 30, 1990, 2-339112
Int. Cl.[5] B65H 7/08
U.S. Cl. 271—110 7 Claims



1. A paper feeder for use with an image forming apparatus wherein said paper feeder is provided independently of the image forming apparatus, said paper feeder comprising:

paper transport means for transporting copy paper to a discharge outlet, said paper transport means being positional juxtaposed to said image forming apparatus such that copy paper discharged from said discharge outlet is fed to said image forming apparatus;

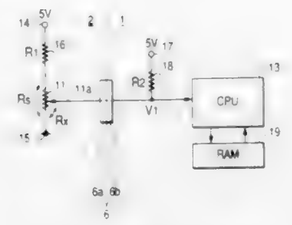
document detection means positionable on said image forming apparatus and operable to detect whether a document to be imaged by said image forming apparatus is properly set on said image forming apparatus; and

control means connected between said paper transport means and said document detection means, said control means comprising prohibition means for prohibiting transport of copy paper by said paper transport means when said document detection means detects that a document has not been properly set on said image forming apparatus, said control means further comprising warning means for notifying an operator when said document detection means detects that a document has not been properly set on said image forming apparatus;

whereby said paper feeder is provideable independently of said image forming apparatus.

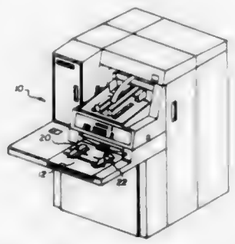
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5,332,208
PAPER-SUPPLYING DEVICE
Hiroyuki Tsuji; Shigeo Kurand; Yoshihiro Tohnai; Yukio Hashimoto, and Hidekazu Sakagami, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Oct. 19, 1993, Ser. No. 137,977
Claims priority, application Japan, Nov. 7, 1992, 4-322497; Nov. 7, 1992, 4-322498
Int. Cl.[5] B65H *1/00*
U.S. Cl. 271—171 **4 Claims**



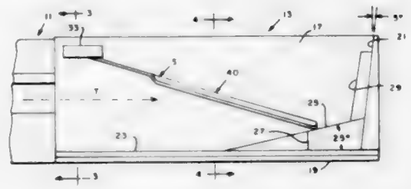
1. A paper supplying device comprising:
a body;
paper supplying deck insertable into and withdrawable from a paper supplying portion of said body and having a paper carrying portion with a paper width setting mechanism and a variable resistor a resistance value of which changes in an interlocked relation with said paper width setting mechanism to output a paper width detecting voltage in dependence on said resistance value;
a drawer-type connector electrically connecting a side of said paper supplying deck with a side of said body when said deck is mounted in said body.
a limit voltage avoiding resistance, which prevents said paper width detecting voltage from amounting to a power source voltage even though said resistance value of said variable resistor reaches a maximum value, connected in series with said variable resistor on said side of said deck; and
a pull up resistance connected with said connector on said side of said body to discriminate voltages in said connector on said side of said body between a voltage there at when said deck is mounted in said body and a voltage when said deck is not mounted in said body

5,332,209
ADJUSTABLE FEED TRAY ASSEMBLY
John A. Romansky, Hilton, and Randall R. Maysick, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 27, 1993, Ser. No. 145,056
Int. Cl.[5] B65H *1/00*
U.S. Cl. 271—171 **6 Claims**



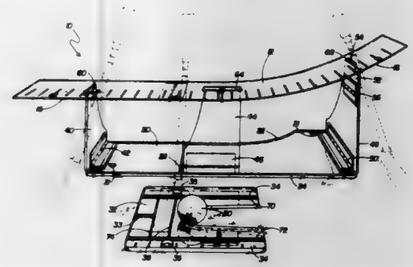
1. An adjustable stack holding apparatus for retaining a quantity of sheet material in line with a predetermined center line, said apparatus comprising:
a support tray having a pair of edge guides supported thereby and adapted for lateral movement relative to a center line;
gear racks carried by said support tray and attached to said edge guides;
a pair of pinion gears carried by said support tray and adapted to engage respective gear racks so that rotational movement of said pinion gears effects equidistant lateral movement of said edge guides;
means for controlling slippage between said pair of pinion gears such that independent rotational movement of said pinion gears is permitted when the forces on said edge guides exceeds a predetermined force thereby allowing for the establishment of a new and different center line.

5,332,210
VARIABLE SIZE ENVELOPE DROP STACKER HAVING MEANS FOR ASSURING ENVELOPE SEALING
Morton Silverberg, Westport, and Steven A. Supron, New Haven, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Nov. 18, 1992, Ser. No. 978,011
Int. Cl.[5] B65H *31/26*
U.S. Cl. 271—220 **6 Claims**



1. An improved envelope stacking apparatus for receiving envelopes ejected from a mail processing apparatus in a seriatim manner to said stacking apparatus. said mail processing apparatus to eject said envelopes from a exist along an exist plane, said stacking apparatus having an entrance aligned to said mail processing apparatus exist, wherein the improvement comprises:
said stacker having an elongated deck extending generally parallel to and vertically below said plane, and an elongated registration wall extending vertically from said deck and lateral to said exist;
a bi-sectional deflector strip, having a first end pivotally mounted to the registration wall vertically elevated above said exist plane and locating a first section, a skew section translating said first section to a second section and producing a negative skew of said second section relative to said exist plane;
said deflector located for encountering said envelope's leading edge ejected upon ejection of said envelope from said apparatus along said plane, said encounter of said envelope with said second section of said deflector strip to cause a resulting load on said envelope and thereby negatively skewing the trajectory of said envelope to cause said envelope to be registered against said registration wall;
said skew section being set at a negative 5° to 15° skew;
said deflector strip having a weight between 1.5 ounces and 3.0 ounces, and;
said exist plane is set at a angle of between 90° to 110° relative to said registration wall, said registration wall be set at an angle of between 90° and 95° relative to said deck and said deck be set at an angle of 5° relative to the horizontal.

5,332,211
DEVICE FOR PRACTICING PUTTING AND CHIPPING STROKES
Guerin D. Rife, 1230 Via Salerno, Winter Park, Fla. 32789; Michael D. Bentley, 2428 Lake Vista Ct., Unit 300, Casselberry, Fla. 32707, and David B. N. Leadbetter, 9100 Chiltern Dr., Orlando, Fla. 32827
Filed Mar. 22, 1993, Ser. No. 35,306
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.6 **13 Claims**



1. A simulator enabling a golfer to practice his putting skills and at the same time become more aware of the optimum motion of his shoulders and arms during a putting effort, said simulator comprising an elongate guide plane of flexible material having a mid portion as well as end portions, said guide plane having an active edge, along which a lower portion of the shaft of a putter may pass during efforts by the golfer to putt a golf ball into a nearby cup, and means for supporting said guide plane at a selected height above a playing surface, said supporting means for said guide plane being adjustable, so as to enable the respective heights of said mid and end portions of said guide plane above the playing surface to be independently adjusted, which at the same time determines the positioning of said active edge with respect to the playing surface.

5,332,212
COATED HOCKEY STICK BLADE
Michael F. Susi, Newington, and William H. Stevenson, Bolton, both of Conn., assignors to DSB Industries, Inc., Middletown, Conn.
Filed Jan. 22, 1993, Ser. No. 8,568
Int. Cl.[5] A03B *59/12*
U.S. Cl. 273—67 A **8 Claims**

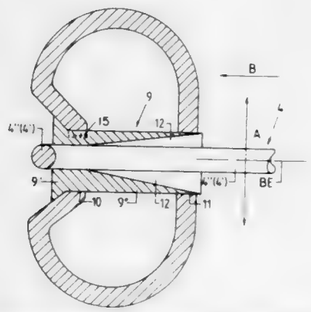
1. A hockey stick comprising a handle and a stick blade, said stick blade having an elastomeric coating covering the surface of the said stick blade, the elastomeric coating being applied as an aerosol spray composition comprising:

Toluene	40–45
Methyl Ether	40
Acetone	10
Elastomeric polymer	<5
Carbon Black - pigment and reinforcing filler	<5
Zinc Oxide	<1
Magnesium Oxide	<1
Napthenic Oil	<1
Benzenamine, N-Phenyl	<1
Stearic Acid	<1
Sodium Acetate	<1

said elastomeric coating having the following characteristics:

Elongation (%)	200 minimum
Hardness (Durometer - Shore A)	about 40–90
Resiliency (Height on Shore Resiliometer)	20 minimum
Water Absorption (% by weight)	<1

5,332,213
BALL-GAME RACKET, PARTICULARLY A TENNIS RACKET
Volker Klose, deceased, late of Straubing, Fed. Rep. of Germany by Gabriele Klose, heir , assignor to Franz Volkl GmbH & Co. Ski Und Tennis Sport-Artikelfabrik KG., Fed. Rep. of Germany
Filed Jan. 28, 1993, Ser. No. 10,413
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202476; Feb. 8, 1992, 4203682; Sep. 8, 1992, 4229898
Int. Cl.[5] A63B *49/14*
U.S. Cl. 273—73 D **13 Claims**



1. A ball-game racket, particularly a tennis racket, said racket comprising:
a hollow, outwardly closed racket body which forms a racket handle and a racket frame including a racket head,
a stringing formed of intersecting string lengths on the racket head and defining a stringing plane,
openings in said frame, said openings being provided with sleeves which close the frame tightly off from the outside at the openings, said sleeves having sleeve openings through which the string lengths are passed from the inside of the frame to the outside of the frame and vice versa for obtaining a string attachment holding the stringing on the frame, and
for at least a part of the string lengths, said string attachment is such that said string lengths, have, on the inside of the frame, at least in an axial direction perpendicular to the stringing plane, a mobility which is substantially greater than a corresponding mobility of the outer side of the racket frame, and
for said string attachment, each of the corresponding sleeves having a sleeve opening which widens in cross section towards the inside of the racket frame and has, on the inside of the racket frame, at least in an axial direction perpendicular to the stringing plane a size which is greater than the cross section of the string lengths.

5,332,214
GOLF PUTTER
Richard B. C. Tucker, Sr., Baltimore, Md., assignor to STX, Inc., Baltimore, Md.
Filed Aug. 18, 1993, Ser. No. 107,590
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—78 **7 Claims**

1. A putter having a shaft and a multi-component head secured to said shaft, said multi-component head comprising a body member, a weight, an elastomeric face member, a support

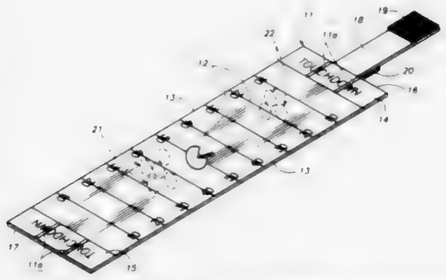
VOL 1164 ISS 4 JL 26 1994 UMI

member for said face member, and connecting members for changeably securing said head components in operable association, said body member having a recessed area substantially co-extensive with the front of the body for receiving said support member; a central cavity extending through said body member for receiving said weight, and hole means for passing said connecting members through said body member; said support member having a front and rear surface constructed



and arranged to be changeably secured in said recessed area of said body member and including a central recessed area at its rear surface for positioning said weight, and means for receiving said connecting members which are passed through said body member; said weight being mated to the recess in said support member and to the central cavity of said body member; and said elastomeric member secured to the front surface of said support member; said body member, weight, and support member being held in place by said connecting means.

5,332,215
FOOTBALL BOARD GAME
David J. Gonzales, P.O. Box 432, Patterson, Calif. 95363
Filed Mar. 15, 1993, Ser. No. 31,277
Int. Cl.[5] A63F *7/06*
U.S. Cl. 273—94 **2 Claims**



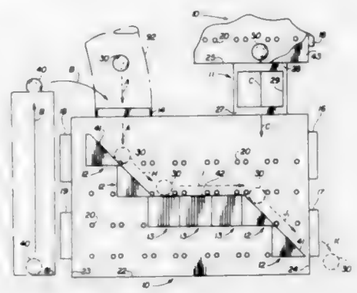
1. A football board game arranged for employing conventional football rules and including a flexible game board, having a representative football playing field imparted thereon, with the game board including spaced parallel side borders, with parallel indicia directed orthogonally between the side borders, and a game board first end spaced from a game board second end, and a first end zone indicated between the indicia and the game board first end and a second end zone indicated between the indicia and the game board second end, and representative first and second goal post members imparted upon the respective first and second end zones, and

a first category of players and a second category of players, and

a bat member, and a game ball, wherein the bat member is directed to strike the game ball to strike the second category of players to complete a pass to the second category of player, and wherein the first category of player is positioned upon the game board and upon the indicia to interfere with said pass, and

the game board includes a flexible strap extending from the game board first end, with the flexible strap having a first hook and loop fastener spaced from a second hook and loop fastener, and further including a cylindrical mandrel having spaced parallel discs spaced apart in a predetermined spacing, and wherein the game board side boards are spaced apart said predetermined spacing to permit furling of the game board between the discs and securement of the game board by securing the first hook and loop fastener to the second hook and loop fastener when the game board is furled about the mandrel between the discs.

5,332,216
TOY APPARATUS FOR CONSTRUCTING PATHWAY FOR MARBLE
Thomas D. Whipple, 5-9-16 Ogikubo, Apt. #402, Suginami-Ku, Tokyo, Japan
Filed Apr. 23, 1993, Ser. No. 51,370
Int. Cl.[5] A63F *7/00*
U.S. Cl. 273—120 R **3 Claims**



1. A toy apparatus comprising:

(a) a plurality of housings each having

(i) a back having a vertically oriented face,

(ii) at least one side attached to and extending outwardly from said vertically oriented face, and,

(iii) at least one opening formed through said side;

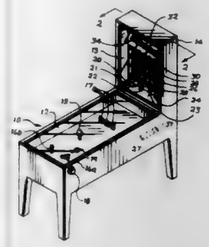
(b) a plurality of directional elements each having at least one peripheral surface;

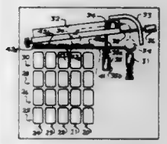
(c) means for attaching said directional elements to said vertically oriented face during play to position said directional elements on said face such that a path may be defined along said peripheral surfaces of said directional elements;

(d) freely movable means for traveling along said paths defined by said peripheral surfaces; and,

(e) connecting means for removably connecting one of said housings to another of said housings such that said opening in one housing opposes said opening in the other housing and said freely movable means can travel from said one of said housings through said opposing openings into the other of said housings.

5,332,217
PINBALL GAME WITH MOVEABLE TRACK MECHANISM
Alvin J. Gottlieb, 290 Cottage Hill Ave., Elmhurst, Ill. 60126
Filed Mar. 10, 1993, Ser. No. 29,155
Int. Cl.[5] A63F *7/02, 7/36*
U.S. Cl. 273—121 A **12 Claims**





1. A pinball game comprising:

a ball;

a plurality of visual targets, each target having a representative game attribute;

a track positioned above a plurality of sensors, each sensor being associated with a respective target; said track having a first position wherein said ball rolls on said track and a second position wherein said ball rolls off said track;

a ball positioning mechanism for positioning said ball onto the track;

a player actuation button that causes movement of said track from said first position to said second position dropping the ball off the track into detecting engagement with one of the sensors;

memory means including a first and second set of memory locations, the memory means operatively connected to receive a signal from the sensors and store each game attribute associated with each engaged sensor in the first set of memory locations; and

said second set of memory locations having stored therein combinations of said game attributes and points associated with each combination.

5,332,218
AUTOMATED GOLF SWEEPSTAKES GAME
Trevor C. Lucey, 9322 Wister Dr., La Mesa, Calif. 91941
Continuation-in-part of Ser. No. 303,123, Jan. 30, 1989, Pat. No. 5,043,889. This application Aug. 23, 1991, Ser. No. 749,259
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[5] A63F *9/22;* **G06F** *15/44*
U.S. Cl. 273—138 A **11 Claims**

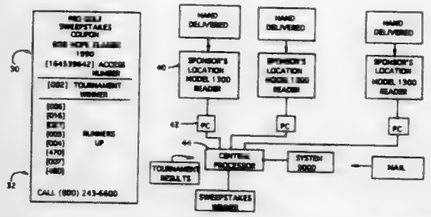
1. Apparatus for participation by a plurality of participants in a sweepstakes-type game where said participants seek to win said sweepstakes by accurately predicting a portion of the results of a golf tournament said apparatus comprising:

(a) a coding means whereby said participants' predictions of said portion of the results of the tournament are coded to produce a coded prediction comprising a set of numbers,

(b) a processor entry means adapted to accept said coded predictions and communicate said coded predictions to a processor means,

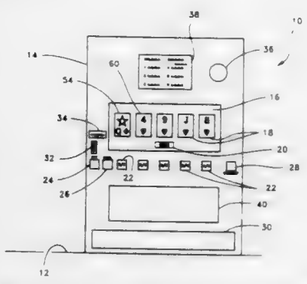
(c) a means for determining at least one set of winning numbers where said at least one set of winning numbers is based at least in part on an identification of a plurality of golfers who have the lowest scores in the tournament,

(d) a processor means communicating with said processor



input means and adapted to compare said coded predictions with said at least one set of winning numbers and to determine identification of the winning participant or participants.

5,332,219
APPARATUS AND METHOD FOR PLAYING AN ELECTRONIC POKER GAME
Anthony A. Marnell, II, and Cary A. Rehm, both of Las Vegas, Nev., assignors to Rio Properties, Inc., Las Vegas, Nev.
Filed Oct. 8, 1992, Ser. No. 957,772
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—138 A **8 Claims**



1. An electronic poker gaming apparatus comprising:

user-actuatable input means;

electronic game control means connected to said input means and responsive to user input to simulate play of a poker game, said game control means including a random signal generating means for generating a plurality of signals representing a plurality of randomly selected cards from a deck of cards for creation of a poker hand;

bonus signal generator means electrically connected to said game control means and responsive to the selection of a predetermined one of said signals representing a predetermined card to randomly effect one of:

(i) replacement of said predetermined one of said signals with a bonus signal, and

(ii) retention of said predetermine one of said signals, said bonus signal generator randomly effecting one of replacement and retention in accordance with known odds less than unity; and

display means electrically connected to said game control means for visual display of card symbols corresponding to the randomly selected signals and, upon the presence of said bonus signal, visual display of a bonus card symbol, and wherein,

said game control means includes game winning criteria means responsive to completion of selection of said ran-

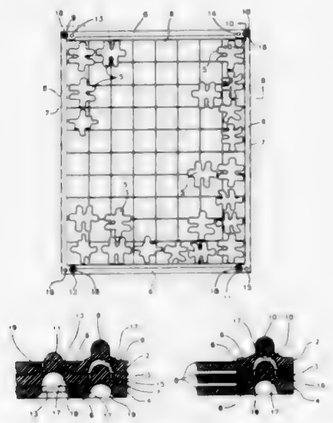
VOL 1164 ISS 4 JL 26 1994 UMI

domly selected signals to compare said randomly selected signals against predetermined game winning combinations of signals and to produce an poker hand signal in response to said randomly selected signals matching one of said predetermined game winning combinations of signals,

said poker hand signal produced by said game winning criteria means including a common amount when said bonus signal is present and said randomly selected signals matches one of said predetermined game winning combinations of signals, and

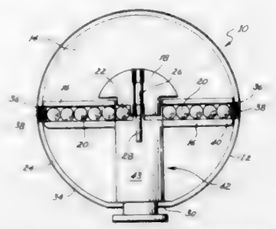
said game winning criteria means produces said poker hand signal including said bonus amount only when said bonus signal is present in and forms a part of one of said predetermined game winning combinations of signals.

5,332,220
JIGSAW PUZZLE PIECE ORGANIZER
William A. Leavy, 12506 Madeley La., Bowie, Md. 20715
Filed Jun. 8, 1993, Ser. No. 73,034
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—148 R **6 Claims**



1. A jigsaw puzzle piece organizer comprising a plurality of trays, each tray having a main body portion providing a surface for supporting a plurality of various colored and shaped puzzle pieces, connector means mounted on each tray, said connector means including a plurality of posts extending upwardly from the tray and a plurality of apertures extending through the tray, said apertures being positioned adjacent said posts, said connector means being constructed and arranged for selectively stacking said plurality of trays to provide a clearance between adjacent trays, or into a substantially no clearance compact stack, whereby when the trays are stacked to provide a clearance between adjacent trays, the end portions of the posts on one tray engage the bottom surface of the next adjacent tray, and when the trays are stacked into a substantially no clearance stack, the posts on one tray extend through the apertures in the next adjacent tray

5,332,221
MULTI-CHANNEL GAME PUZZLE WITH MOVABLE BASE
Brian Reed, 8 Carlos Dr., Berkley, Mass. 02779
Continuation-in-part of Ser. No. 667,032, Mar. 7, 1991, Pat. No. 5,221,085, and a continuation of Ser. No. 901,371, Jul. 28, 1992, Pat. No. 5,251,899. This application Jun. 22, 1993, Ser. No. 81,497
Claims priority, application European Pat. Off., Mar. 6, 1992, PCT/US92/01783
Int. Cl.[5] A63F *9/12*
U.S. Cl. 273—153 S **14 Claims**



1. A game puzzle comprising in combination:

a) a housing having a shell adapted for manual tilting with a transparent surface and defining a main chamber having a vertical axis and a horizontal axis;

b) a plurality of channels positioned in a common plane within the main chamber, and extending radially outward from the vertical axis of the main chamber, each channel having an inner end and an outer end, the outer end being attached to the shell;

c) movable base means for supporting the housing comprising a column element having a central bore, a flat base member for supporting the game puzzle on a flat surface, a groove member with shoulder configured to associate with a bottom aperture of the housing for permitting reciprocal movement along the vertical axis of the housing relative to the base member, the column element extends from the base member base of the housing upwardly to the midpoint of the housing for supporting a hub means;

d) hub means for selectively connecting adjacent channels for transferring game pieces comprising a dome shaped hub mounted on a central shaft disposed within the bore of the column element for permitting free rotation about the vertical axis defining a plurality of cavities forming a movable passageway, said hub means, being mounted on the column, is adapted for reciprocal movement relative to the inner ends of the channels for movement between a lower free swiveling position and an upper locking position and is responsive to manual pressure exerted on the base means.

e) pivot means comprising a central shaft configured for rotably mounting the hub means within the main chamber for rotation about a vertical axis, common with the vertical axis of the housing for permitting free swiveling in both directions upon manual tilting of the housing of said hub means, when in the lower free swiveling position;

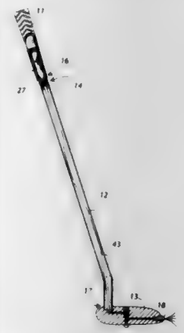
f) a plurality of sets of game pieces, each set being visually different;

g) annular means positioned on the shell at the outer ends of the channels for accessing game pieces;

h) closure plug means for providing removable closure for the annular means; and

i) a unitary blocker piece, having distinctive marking characteristics, wherein the shell of the housing is manually grasped by a player for play, by titling, to move selectively the game pieces from one channel to another via the hub means by releasing the base means to permit the hub means to move from the upper locking position to the lower swivel position by force of gravity, thence by manually rotating the hub means mounted on the column relative to the inner ends of the channels, thereby permitting the hub means to accept and discharge player pieces for rearrangement.

5,332,222
GOLF CLUB INCLUDING PUTTING PATH CLEANING MEANS
Daniel A. Perry, Macon, Ga., assignor to The Dash Corporation, Macon, Ga.
Filed May 25, 1993, Ser. No. 67,047
Int. Cl.[5] A63B *69/36, 53/00;* **A47L** *5/14*
U.S. Cl. 273—162 F **11 Claims**



4. A golf club including apparatus for cleaning a golf putting path and comprising;

a hand grip portion;

an elongate shaft having a first end and a second end opposite said first end, said first end of said elongate shaft being secured to said hand grip portion and extending from one end of said hand grip portion;

a club head having a ball striking face and secured to said second end of said shaft and extending generally transverse thereto and comprising a gas discharge nozzle for discharging gas for cleaning the putting path;

compressed gas storage means for storing compressed gas for supplying gas to said gas discharge nozzle; and

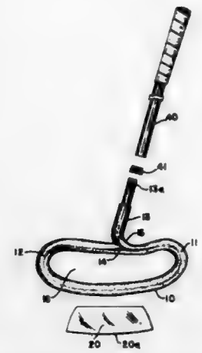
valve means in fluid communication with said compressed gas storage means and said gas discharge nozzle for controlling the flow of gas from said compressed gas storage means to said gas discharge nozzle.

5,332,223
GOLF CLUB PUTTER AND METHOD OF MANUFACTURE
Norman E. Johnson, N2162 80th St., Plum City, Wis. 54761-8622
Filed Sep. 20, 1993, Ser. No. 123,059
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169 **4 Claims**

1. A golf putter, comprising

a rod bent to form the outer periphery of a putter head and defining an open area therewithin,

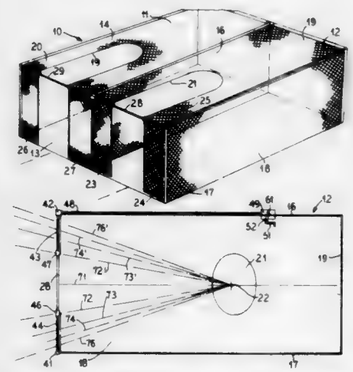
a striking plate inserted into the open area,



means for securing the plate to the bent rod, and

means for attaching a putter head to the bottom of a putter shaft.

5,332,224
CONVENIENT GOLF GAME WITH ADJUSTABLE OUT-OF-BOUNDS MARKERS
Jeffrey M. Libit, 13244 Circulo Largo Court, N.E., Albuquerque, N. Mex. 87112, and Sidney Libit, Long Boat Key, Fla., assignors to Jeffrey M. Libit, Albuquerque, N. Mex.
Filed Nov. 18, 1992, Ser. No. 977,903
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—176 AB **4 Claims**



1. An enclosed golf tee area comprising, an enclosure with a floor and first and second opposite side walls and an adjustable front wall defined by two moveable screen doors which are respectively connected to said first and second opposite side walls and can be moved to different positions, a golf tee position on said floor, a plurality of out-of-bound lines printed no said floor and extending from said tee position to said adjustable front wall and associated pairs of said plurality of out-of-bound lines which subtend different angles at said tee position and define different out-of-bound limits, and means for moving said two front screen doors so that the position of adjacent edges of said two front screen doors are respectively aligned with selected associated pairs of said plurality of out-of-bound lines so as to allow a selected out-of-bound angle to be selected.

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5,332,225

EQUIPMENT FOR BALL HITTING PRACTICE

Mitsuo Ura, 8-10, Koyahata 3-chome, Odawara-shi, Kanagawa-ken, Japan

Filed Jan. 13, 1993, Ser. No. 3,542

Claims priority, application Japan, Apr. 22, 1992, 4-127969; Jul. 20, 1992, 4-214499

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—186.2 1 Claim



1. A device for ball hitting practice comprising,

a ball hitting stick including a transmission site of the device,

a gyro mechanism mounted in the transmission site on said ball hitting stick and structured and arranged to generate a signal;

amplification circuit means for amplifying said signal generated by said gyro mechanism;

a receiver box including a receiving site of the device, said receiver box being separate from said ball hitting stick,

a wireless transmission circuit arranged in the transmission site and a wireless receiving circuit arranged in said receiver box,

display means for outputting said signal as an angle of unintentional movement of a ball hitting face of said ball hitting stick, said display means being arranged in said receiver box and comprising an angle display meter,

power circuit means comprising a first power circuit arranged in the transmission site and a second power circuit arranged in said receiver box, and

said amplification circuit means comprising a first amplification circuit arranged in the transmission site and a second amplification circuit arranged in said receiver box,

said ball hitting stick including a hollow shaft having a cartridge detachably mounted therein, said gyro mechanism, said first amplification circuit, said wireless transmission circuit and said first power circuit being housed in said cartridge,

said wireless receiving circuit, said second amplification circuit, said angle display meter and said second power circuit being housed in said receiver box

5,332,226

GOLF BALL

Chun-Sik Kim, Kwangju, Rep. of Korea, assignor to Kumho & Co, Inc., Seoul, Rep. of Korea

Filed Dec. 14, 1992, Ser. No. 990,258

Claims priority, application Rep. of Korea, Apr. 21, 1992, 6705/1992

Int. Cl.[5] A63B *37/14*

U.S. Cl. 273—232 5 Claims

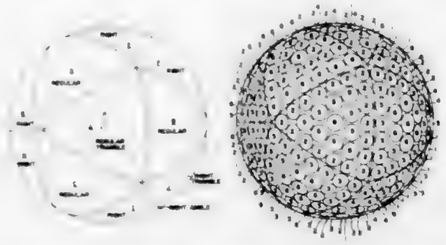
1. A golf ball comprising:

a spherical body having a mold parting line at the equator thereof by which said body is divided into a top half sphere and a bottom half sphere of equal dimensions, said molded partition line having no dimples thereon;

an axis passing through the center of the plane which is defined by said mold parting line, said axis defining two poles at the intersection thereof with each of aid half spheres, and being perpendicular to the plane;

a first set of four identical spherical regular triangles and six identical spherical right triangles distributed over the surface of the top half-sphere, and serving as a constraining pattern for dimple distribution;

a second set of four identical spherical regular triangles and six identical spherical right triangles distributed over the surface of the bottom half sphere and serving as a constraining pattern for dimple distribution, said second set of spherical triangles being a mirror image of the first set of



spherical triangles but rotated by 60 degrees centering around said axis; and

a series of dimples whose configuration being determined so as to fit in said constraining patterns, at least one of said configurations being determined to exhibit optimum performance with a tailwind, one being determined to exhibit optimum performance into a headwind, one being determined to exhibit optimum performance under no wind and other configurations being determined to exhibit optimum performance under low altitude, high altitude, low temperature, and high temperature conditions, respectively.

5,332,227

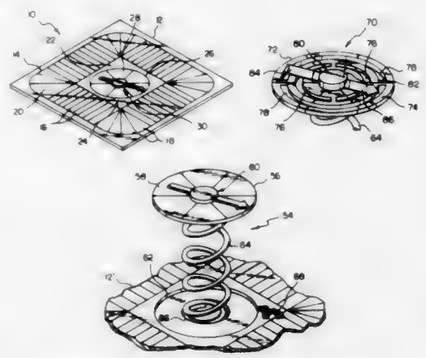
QUESTION AND ANSWER BOARD GAME

Raymond J. Passero, 94 Hill St., Mahopac, N.Y. 10541

Filed May 26, 1993, Ser. No. 67,025

Int. Cl.[5] A63F *3/00, 9/18*

U.S. Cl. 273—243 9 Claims



1. A question and answer board game comprising:

a game board having a planar playing surface, said game board having a central recess therein, wherein said planar playing surface has a playing track imprinted thereon, wherein said playing track is divided into a plurality of first area sectors, wherein each of said first area sectors is labeled with the name of one of the states of the United States;

a random topic question selector which includes a topic question member mounted on said game board, wherein said topic question member is divided into a plurality of second area sectors, and a topic question indicator rotatably connected to said topic question member in overlaying relationship therewith for randomly marking one of said second area sectors and identifying a topic question to be posed to one game player after said indicator has been manually spun by an opponent game player, wherein said topic question member includes a disc and a circle imprinted on a planar surface of said disc, means for releasably securing said disc in a closed position in said central recess, and means connected to said disc and said central recess for removing said topic question selector from said central recess and vertically elevating said topic question selector relative to said planar playing surface causing spinning of said rotatable topic question indicator and random identification of said topic question on said circle upon manual release of said disc securing means;

a plurality of game pieces, wherein each of said game pieces is configured in a different shape and sized to be positioned on said first area sectors of said playing track, and wherein one of said game pieces is provided for each game player;

a plurality of sets of board markers, wherein each set of said board markers includes a plurality of said board markers, wherein said board markers of each set are commonly shaped and each set of said board markers is configured in a different shape, wherein the shapes of said game pieces are different from each other, and wherein one set of said board markers is provided for each game player;

a set of cards, one card for each of said states, each of said cards having topic questions and answers printed thereon for each of said topic question identified by each of said second area sectors; and

means for randomly determining an order-of-play sequence for said game players and for determining and marking movement of each of said game player's game piece along said playing track.

5,332,228

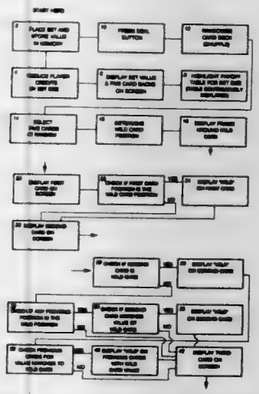
STUD POKER GAME WITH VARIABLE POSITION WILD CARD

Phillip C. Schultz, W. Bloomfield, Mich., assignor to M P Software Inc., W. Bloomfield, Mich.

Filed Jul. 16, 1993, Ser. No. 93,175

Int. Cl.[5] A63F *1/00*

U.S. Cl. 273—292 14 Claims



1. A method for playing a game of poker, using game apparatus selected from the group that includes, first, playing cards and, second, a computer for playing a video card game, along with a video screen and a means to receive and dispense tokens, comprising the steps of:

(a) receiving and storing a bet from a player,

(b) receiving a signal means from the player to begin play of the hand,

(c) displaying a payoff table,

(d) displaying a plurality of card positions to the player with each position corresponding to a card which will become part of the player's hand,

(e) determining, by a selection means, which single card position out of the plurality of positions will be the wild card position for the hand,

(f) indicating to the player, by a communication means, the wild card position selected in step (e),

(g) determining, by a selection means, the player's hand of cards which consist of the plurality of cards, referred to in step (d), selected from a deck of cards or from two or more combined decks of cards,

(h) displaying the plurality of cards selected in step (g) to the player in a manner such that each of the cards coincides with one of the card positions displayed in step (d),

(i) indicating to the player, by a communication means, that the card displayed in the wild card position, and all other cards in the hand that match the value of the wild card, are wild cards,

(j) determining a rank value of the poker hand using the wild card, and any additional cards discovered via step (i) to be wild, to maximize the rank value,

(k) determining a payoff from the payoff table in step (c) using the rank value determined in step (j) and the amount of the bet received in step (a) as indices to the payoff table,

(l) awarding a payoff to the player as determined in step (k),

(m) in successive hands, steps (a) through (l) are repeated; whereas the player's enjoyment is substantially increased as newly determined wild card positions are indicated in step (f) and newly chosen wild cards are displayed in the newly determined positions in step (h).

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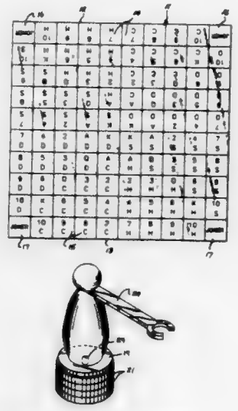
BOARD GAME APPARATUS

Phillip D. Fielder, and Shelley L. Fielder, both of 1411 McEwen St., Burton, Mich. 48509

Filed Jul. 26, 1993, Ser. No. 96,899

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—271 1 Claim



1. A board game apparatus, comprising,

a game board, the game board including a matrix of first spaces and a matrix of second spaces,

and

at least one playing card deck, having playing cards in each

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of the first spaces and each of the second spaces, and indicative of playing cards of said playing card deck,

and

a plurality of tokens arranged for positioning upon individual spaces of said first spaces and said second spaces in association with cards selected from said playing card deck,

and

the tokens include a token base, a token body, and a token head, with a connecting web extending from a junction of said token head and said token body, wherein the connecting web is oriented parallel to said token base projecting laterally of said token, wherein the token web terminates in a resilient C-shaped connector end defining an arc greater than 180 degrees having an entrance gap of a predetermined spacing, wherein the connecting web is of a predetermined width substantially equal to the predetermined spacing permitting securement of adjacent tokens, wherein an individual entrance gap receives a further junction of an adjacent token therewithin,

and

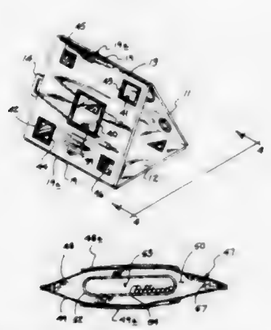
token chips, wherein each of the token chips includes a chip top wall and a chip bottom wall, the chip top wall includes a chip projection, the chip bottom wall includes a chip recess, wherein the chip projection and the chip recess are coaxially aligned relative to said chip, and the token base includes a token base recess to receive said chip projection.

5,332,230

BAG TOSS GAME APPARATUS

Michael L. Benedict, 1585 Homer Rd. #107, Winona, Minn. 55987

Filed Oct. 4, 1993, Ser. No. 130,689
Int. Cl.[5] A63B *63/00, 67/00*
U.S. Cl. 273—346 **3 Claims**



1. A bag toss game apparatus, comprising,

at least one flexible bag member and target means arranged for receiving said bag member, said target means includes a first game plate, a second game plate, and a third game plate arranged for securement together from a first position, with the first game plate, the second game plate, and the third game plate in a parallel relationship relative to one another to a second position, with the first game plate, the second game plate, and the third game plate arranged in a triangular cross-sectional configuration, the first game plate having first game plate targets, the second game plate having second game plate targets, and the third game plate having third game plate targets, and

a first hinge securing the first and second game plates together, and first hinge plates secured to the first game plate, second hinge plate secured to the second game plate, and third hinge plates and fourth hinge plates secured to the third game plate, wherein the third hinge plates and the fourth hinge plates are mounted on opposed ends of the third game plate, and the fourth hinge plates are arranged for securement to the second hinge plates, and the third hinge plates are arranged for securement to the first hinge plates, and a plurality of hinge pins arranged for reception orthogonally through the first game plate, the second game plate, and the third game plate when in the first position and at least one of said hinge pins arranged for reception through the first hinge plates and the fourth hinge plates, and a further one of said plurality of hinge pins arranged for reception through the third hinge plates and the second hinge plates, and

the at least one flexible bag member includes a bag first side wall and a bag second side wall, wherein the bag first side wall includes first side wall hook and loop fastener patch structure, and the bag second side wall includes second side wall hook and loop fastener patch structure, with the first game plate having first game plate hook and loop fastener means for adherence to the bag member, the second game plate having second hook and loop fastener means for securement to the bag member, and the third game plate including third hook and loop fastener means for securement to the bag member, and

the bag member includes a cavity, the bag cavity having a flexible cavity fill member, with a central rigid bag housing positioned medially of the fill member within the bag member, and the bag housing having a central housing chamber, with a plurality of spheres mounted for movement within the central housing chamber.

5,332,231

EXECUTIVE BALANCE TOY

Elvin R. McIntosh, 5461 Mildred Cir., Cypress, Calif. 90630

Filed Mar. 10, 1993, Ser. No. 28,964
Int. Cl.[5] A63F *9/00;* **A63H** *33/04, 33/00*
U.S. Cl. 273—450 **15 Claims**



12. An executive balance toy comprising:

a balance plate with an upper surface and a lower surface which are substantially planar and substantially parallel to each other, the balance plate including a slot beginning at the upper surface and continuing through the balance plate to end at the lower surface, the slot being located an offset distance from a center of gravity of the balance plate;

a base plate with a top surface and a bottom surface which are substantially planar and substantially parallel to each other, the top surface including an opening beginning at the top surface and continuing through the base plate to end at the bottom surface;

a support plate with a top edge fitting within said balance plate slot and a bottom edge fitting within said base plate opening, the support plate further including a front surface and a back surface, both surfaces being adjacent to the top edge and the bottom edge, the front surface and the back surface being substantially planar and substantially parallel to each other, the support plate supporting said balance plate above said base plate in a substantially horizontal position, said balance plate being rotated out of the substantially horizontal position by one of said balance plate pivoting about the top edge of the support plate or the support plate pivoting about said base plate opening, when a sufficient net force is applied to said balance plate upper surface, said balance plate lower surface and the support plate front surface defining a first angle and said base plate top surface and the support plate back surface defining a second angle which is substantially the same as the first angle when said balance plate is in said substantially horizontal position; and

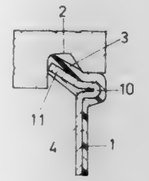
a plurality of play pieces which a player strategically places on said balance plate upper surface in an effort to place as many of the play pieces on said balance plate as possible without said balance plate pivoting beyond said substantially horizontal position in response to said net force created by the plurality of play pieces placed upon said balance plate upper surface.

5,332,232

SEALING SYSTEM FOR BEARINGS, PARTICULARLY RADIAL-TYPE BEARINGS

Isao Kurose, Okayama, Japan, assignor to Uchiyama Manufacturing Corp., Okayama, Japan

Continuation of Ser. No. 789,081, Nov. 7, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 109,468
Claims priority, application Japan, Nov. 7, 1990, 2-117540[U]
Int. Cl.[5] F16J *15/54*
U.S. Cl. 277—9 **6 Claims**



1. A sealing device for use in sealing a bearing assembly having an inner race, an outer race and an annular groove formed in one of the inner and outer races, said sealing device comprising:

an annular metal ring having a central axis;

a resilient seal formed about said metal ring;

wherein said metal ring includes a radially inner portion, a marginal outer end portion, and a U-shaped intermediate portion with a curved base section and first and second leg sections, each of said first and second leg sections extending away from said curved base section and parallel to said central axis of said annular metal ring, said first leg section being integrally connected to an outer part of said radially inner portion and said marginal outer end portion being integrally connected to said second leg section and extending away therefrom at an angle so as to define an elbow between said second leg section of said U-shaped portion and said marginal outer end portion;

wherein said marginal outer end portion defines an engaging and sealing means for automatically engaging said sealing device in the annular groove of the bearing assembly and forming a sealing relation with the bearing assembly when said sealing device is pressed into the bearing assembly; and

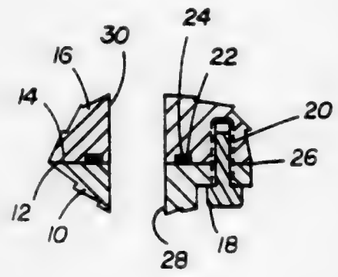
wherein said U-shaped portion defines a means for allowing said marginal outer end portion to be expanded in diameter when said sealing device is pressed into the bearing assembly while preventing significant deformation of said radially inner portion.

5,332,233

FACE SEAL MEANS

Paul W. Futa, Jr., North Liberty, Ind., and George S. Wieger, Niles, Mich., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 19, 1992, Ser. No. 979,091
Int. Cl.[5] F16L *23/00*
U.S. Cl. 277—27 **1 Claim**



1. In a system having a first member with a first face thereon which engages a second face on a second member, said first member having a first passage therein in alignment with a second passage in said second member to communicate pressurized fluid P_x from said first passage to said second passage, said second passage in said second member having a first diameter separated from a second diameter section by a first shoulder and a third diameter section separated from said second diameter section by a second shoulder, the improvement in seal means for preventing leakage of pressurized fluid P_x along a flow path between said first and second faces comprising:

a cylindrical body having a first end and a second end, said cylindrical body having a first groove located in said first end, a second groove located on a peripheral surface that engages said second diameter section of said second passage adjacent said second end and an annular projection located on said peripheral surfaces and engaging said first diameter section of said second passage;

a first elastomeric ring located in said first groove which engages said first face to form a first effective area A_1 on said cylindrical body;

a second elastomeric ring located in said second groove which engages said second member to form a second effective area A_2 on said cylindrical body;

a backup ring located in said second groove to prevent said pressurized fluid from extruding said second elastomeric ring from said second passage;

retainer means attached to said second member in said first diameter to engage said annular projection to retain said cylindrical body in said second passage;

fastener means for securing said second member to said first member to bring said first face into engagement with said second face; and

resilient means being caged between said second shoulder in said second passage and said second end of said cylindrical body to provide an initial closure force for urging said first elastomeric ring into initial engagement with said first face to prevent fluid communication along a flow path created between said first and second faces, said pressurized fluid P_x acting on the difference between the first and second effective areas (A_2-A_1) to create an additional closure force for urging said first end of said cylindrical member into engagement with said first face to further prevent communication of pressurized fluid P_x along said flow path.

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SEALING ARRANGEMENT

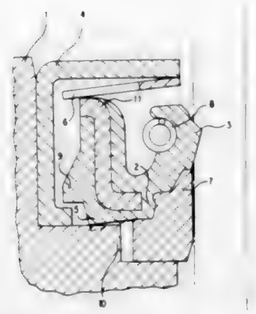
Hans Forch, and Martin Granfmüller, both of Birkenau, Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 11, 1993, Ser. No. 16,335

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1992, 4205862

Int. Cl.[5] F16J *15/32*

U.S. Cl. 277—48 **10 Claims**



1. A sealing arrangement for sealing off a rod from a housing surrounding the rod with a radial clearance, comprising:

a sealing ring of a resilient material, said sealing ring comprising a radially movable sealing lip, said sealing ring being accommodated in a sealing housing, said sealing ring comprising an auxiliary sealing lip, said auxiliary sealing lip being formed in one piece with said sealing ring;

a compression spring operative in the axial direction to bias the auxiliary sealing lip against said sealing housing;

a guide ring, said guide ring bracing said sealing ring against said rod, said guide ring further supporting said sealing ring in said housing for radial movement, said guide ring being located on a side of said sealing ring opposite said compression spring.

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MECHANICAL FACE SEALS

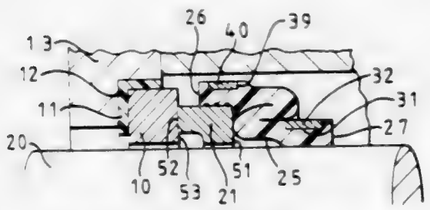
Christopher J. Fone, Reading; James Gilbert, Amersham, and Paul Martin, Slough, all of United Kingdom, assignors to John Crane UK Limited, United Kingdom

Filed Jul. 6, 1992, Ser. No. 909,144

Claims priority, application United Kingdom, Jul. 24, 1991, 9115991

Int. Cl.[5] F16J *15/32*

U.S. Cl. 277—88 **24 Claims**



1. A mechanical face seal for providing a seal between a pair of relatively rotatable components comprising a first seal face member mounted in fixed rotational and axial relationship and sealed with respect to one component, a second seal face member mounted in fixed rotational relationship but movable axially of the other component, said second seal face member being sealed with respect to said other component and permanently urged axially into sealing engagement with the first seal face member solely by means of an elastomeric bellows unit, the elastomeric bellows unit defining an axially compressible convoluted section comprising a pair of axially extending portions, one axially extending portion being spaced radially of the other axially extending portion, the axially extending portions being interconnected by a radially extending portion, the radially extending portion being disposed at an acute angle to each axially extending portion, the bellows unit being formed from an elastomeric composition with reinforcing fibres embedded therein, the reinforcing fibres being orientated axially of the bellows unit, and the bellows unit being axially compressed when at its working length.

5,332,236

SEALING MECHANISM FOR A ROTARY ACTUATOR

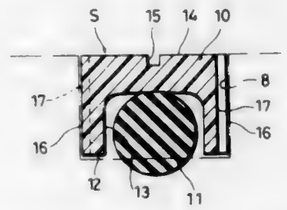
Nobuo Kastuhara, Nara; Norizi Maeda; Motohiro Hashimoto, both of Wakayama, and Fumio Iwamoto, Hyogo, all of Japan, assignors to Sumitomo Precision Products, Co., Ltd., Amagasaki, Japan

Filed Aug. 6, 1992, Ser. No. 925,118

Claims priority, application Japan, Aug. 26, 1991, 3-075736

Int. Cl.[5] F16J *9/06*

U.S. Cl. 277—165 **12 Claims**



1. A sealing mechanism for a rotary actuator, comprising a cap means in an overall sectional configuration of a cramp and a resilient sealing body also in an overall sectional configuration of a cramp, said cap means comprising a body portion and two depending leg portions, the cap means having an inner surface defined by the surface of the body portion between the leg portions and surfaces of the leg portions continuous with the surface of the body portion, a plane-shaped outer surface opposed to the inner surface, and two plane-shaped side surfaces between the inner surface and the outer surface, the inner surface of the cap means including an inserting groove into which the sealing body is fitted with a part of the sealing body protruding from said inner surface of the cap means, the plane-shaped outer surface of the cap means having longitudinal lubricating slots, and both of the plane-shaped side surfaces of the cap means respectively having a plurality of notches which extend from the outer surface of the cap means to the inner surface of the cap means.

5,332,237

METAL GASKET WITH WELDED SHIM

Yoshiyuki Hagiwara, Okazaki; Osamu Jinno, Nagoya; Takeshi Kitamura, Toyota; Akio Kuramoto, Okazaki; Yukio Kawai; Kenichi Yamaguchi, both of Toyota, and Hirotaka Kakuta, Toyoake, all of Japan, assignors to Taiho Kogyo Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Toyota, Japan

Division of Ser. No. 736,323, Jul. 26, 1991. This application Apr. 7, 1993, Ser. No. 43,555

Claims priority, application Japan, Jul. 26, 1990, 2-198183; Jul. 31, 1990, 2-202999; Aug. 3, 1990, 2-206026

Int. Cl.[5] F16J *15/12*

U.S. Cl. 277—180 **6 Claims**

1. A metal gasket disposed between a cylinder head and a cylinder block of a multicylinder internal combustion engine having at least three cylinders arranged in series comprising:

a metallic base plate defining a plurality of combustion openings adapted to said cylinders, and having a plurality of beads formed around said combustion openings respectively; and

a plurality of annular metallic shims welded on said base plate around said combustion openings, respectively, and along an inner circumference of said plurality of beads, respectively,

said shims being welded on said base plate such that weld zones, formed on said shims around at least two of said combustion openings at opposite ends of said gasket, have widths which are greater than the widths of weld zones formed around remaining, inner combustion openings.

5,332,238

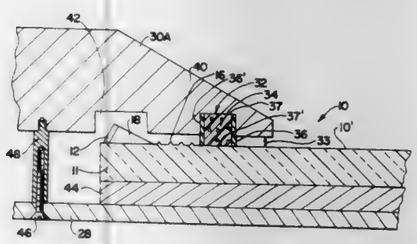
SURFACE ACOUSTIC WAVE TOUCHSCREEN SEALING SYSTEM

Gregory Borucki, Hinsdale, Ill., assignor to Restaurant Technology, Inc., Oak Brook, Ill.

Continuation of Ser. No. 738,079, Jul. 30, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 515

Int. Cl.[5] C16J *15/32*

U.S. Cl. 277—228 **20 Claims**



1. A sealing system for forming a liquid impermeable seal and barrier between the surface of a surface acoustic wave touchscreen and a housing comprising:

at least one elongated body of resiliently compressible self-supporting foam material having an open cell surface disposed on the surface of the surface acoustic wave touchscreen, said open cell surface being substantially transmissive to surface acoustic wave energy, said body having at least one liquid impermeable membrane surface portion, said membrane surface portion forming a liquid impermeable barrier extending between said surface acoustic wave touchscreen surface and said housing;

means for maintaining said body in position between said surface acoustic wave touchscreen and said housing so that said membrane surface portion contacts the surface acoustic wave touchscreen surface and extends away from said surface acoustic wave touchscreen; and

means for compressing said body between said surface acoustic wave touchscreen and said housing to form a liquid impermeable seal at the interface of said membrane surface portion and the surface of said surface acoustic wave touchscreen.

5,332,239

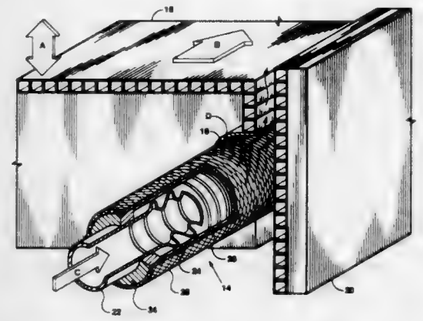
HIGH-TEMPERATURE, BELLOWS HYBRID SEAL

Bruce M. Steinetz, Broadview Heights, and Paul J. Sirocky, Middleburg Heights, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 22, 1993, Ser. No. 7,874

Int. Cl.[5] F16J *15/16*

U.S. Cl. 277—230 **13 Claims**



1. Apparatus for sealing a gap between a movable panel and an adjacent sidewall spaced therefrom to inhibit leakage of gases from a high pressure side to a low pressure side, said apparatus comprising

a centrally disposed bellows having a plurality of convolutions,

a braided sheath covering said bellows, and

an outer abrasion resistant sheath covering said braided sheath, said outer abrasion resistant sheath comprising braided superalloy metal wires and ceramic fibers combined with said metal wires.

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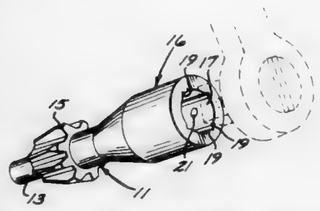
DRILL CHUCK KEY TOOL

Paul Bedoian, 25077 Avocet Cir., Hemet, Calif. 92544

Filed May 17, 1993, Ser. No. 61,723

Int. Cl.[5] B25B *13/44*

U.S. Cl. 279—147 **8 Claims**



1. A chuck key for tightening the jaws of a drill chuck of the type including a tightening collar and chuck key pin hole and being adapted for use with a socket wrench handle of the type including a drive lug of a predetermined configuration and comprising:

an elongated shank having a longitudinal central axis formed on one extremity with a chuck-engaging pin and gear teeth arrayed concentrically around said central axis at the periphery of the intermediate portion of said shank for meshing with the gear teeth of a chuck collar;

a cup formed on the extremity of said shank opposite said one extremity and including a socket arranged centrally

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on said central axis for releasable telescopical receipt of said lug; and

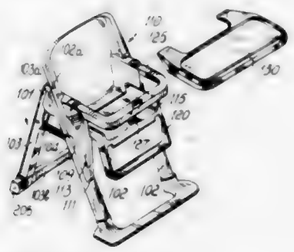
said socket being formed with a polygonal transverse cross section for non-rotational engagement with said drive lug whereby said socket may be engaged over said drive lug of said socket wrench and said pin and gear portion engaged with said chuck and said socket wrench utilized as a lever to act through said tool to tighten said chuck.

5,332,241

BABY'S HIGH-CHAIR WITH FOLDABLE STRUCTURE

Angelo Rho, Via IV Novembre 10/D - 24060 Telgate, (Province of Bergamo), Italy

Division of Ser. No. 491,917, Mar. 12, 1990, Pat. No. 5,165,755.
This application Jul. 6, 1992, Ser. No. 909,498
Claims priority, application Italy, Mar. 15, 1989, 19781 A/89; Jan. 19, 1990, 19099 A/90
Int. Cl.[5] **A47C** *3/20*
U.S. Cl. 297—344.14 **12 Claims**



3. Baby's high chair comprising:

a front arm;

a rear arm pivotally connected to said front arm;

a chair body slideably supported on said front arm;

a back connected to said chair body;

guiding elements connected to said back and slideably mounted on said arms;

a seat hinged to said back;

a foot-rest hinged to said seat and foldable toward said back;

guide means provided on said front arm;

recess means defined by said guide means;

an actuation body oscillatably mounted on said chair body;

pin means defined on said actuation body and engaging said guide means;

said pin means being continuously slideable along said guide means in a direction of lifting said chair body, said actuation body being oscillatable on said chair body for successively engaging said pin means in said recess means during movement along said guide means in a direction of lowering said chair body

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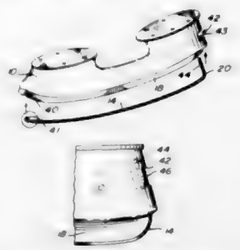
5,332,242

ICE SKATE BLADE ASSEMBLY AND REMOVABLE RUNNER FOR SAME

Brian G. Cann, and Richard C. Hampton, both of 12 Farm House Pl., Chatham, Ontario, Canada N7M 5C6

Filed Aug. 23, 1991, Ser. No. 749,265
Claims priority, application Canada, Feb. 24, 1989, 592006
Int. Cl.[5] **A63C** *1/30*
U.S. Cl. 280—11.18 **5 Claims**

1. An ice skate blade assembly comprising a holder having a front end and a rear end, said rear end comprising a rear wall member, said holder carrying a replaceable runner formed as a flexible strip arranged to be secured to the holder, said runner having a front end portion, an ice contacting portion and a rear end portion, said front end portion, ice contacting portion and rear end portion defining a runner length, said front end portion having a bent over end part engageable with the front end of said holder for securing the front end portion of the runner to the front end of the holder, said rear end portion of the runner having an upwardly extending terminal end part, said upwardly extending terminal end part comprising a screw threaded section, said rear wall member defining an upwardly extending bore for receiving said screw threaded section, said bore having opposed ends, said bore being interrupted between



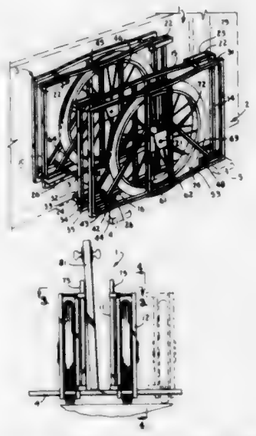
said opposed ends by a recess in said rear wall member for seating a nut and said assembly further comprising said nut which when threaded onto said screw threaded section, is capable of being rotated in the recess for releasably tightening the runner on the blade holder so as to longitudinally tension the runner along said length.

5,332,243

LOAD CARRYING CRADLE WITH SEPARABLE WHEEL ASSEMBLIES

Alexander J. Berry, 7020 Millcreek, Shawnee, Kans. 66217

Filed Dec. 10, 1992, Ser. No. 988,740
Int. Cl.[5] **B62B** *1/00, 5/00*
U.S. Cl. 280—35 **25 Claims**



25. A wheel assembly for a load carrying cradle, said assembly comprising:

(a) a pair of interconnected, generally rectangular frames with an axle connected therebetween, a bicycle-type wheel positioned between said frames and being rotatably mounted on said axle, each of said frames having a height which substantially encompasses the diameter of said wheel and a length which is greater than said wheel diameter;

(b) a pair of horizontally oriented slots, one of said slots positioned in front of and one of said slots positioned behind said wheel, each of said horizontally oriented slots including an opening which extends through each of said frames and thus completely through the wheel assembly from side to side in a direction parallel to the rotational

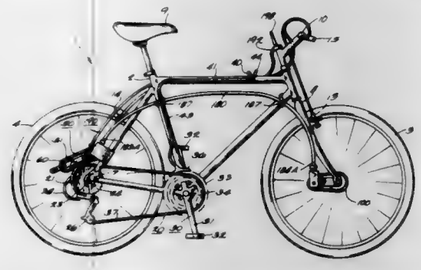
axis of said wheel, each said opening being sized and positioned to removably accommodate a horizontal load support extending completely through said opening.

5,332,244

BICYCLE WITH SELECTABLY ENGAGEABLE SINGLE OR DUAL WHEEL DRIVE

Patrick E. Turner, and Lawrence K. O'Dell, both of Rogers, Ark., assignors to Turner Drive Systems, Inc., Rogers, Ark.

Filed Oct. 5, 1992, Ser. No. 956,915
Int. Cl.[5] **B62M** *17/00*
U.S. Cl. 280—230 **17 Claims**



1. A kit for converting a bicycle from a single wheel drive to a selectable single or dual wheel drive; said bicycle including a frame having a normally non-driven wheel and a drive wheel rotatably mounted thereon, a driven element mounted for rotation in response to driving rotation of said drive wheel, and a prime mover means connected in driving relation with said drive wheel comprising:

a power take off means connectable for positive transmission of drive power from said driven element to said normally non-driven wheel, said power take off means including a first power transmission means mountable on said frame for selective movement into either a drive position in positive power transmitting engagement with said driven element or to a disengaged position removed from engagement with said driven element, a second power transmission means mountable on said frame in positive drive power transmitting engagement with said normally non-driven wheel, and a power transfer means mountable for receiving power from said first power transmission means and for transmitting power to said second power transmission means, said power transfer means including a rotary flexible drive shaft having power input and output ends thereon;

a coupling means operatively connected with said power take off means and selectably actuatable to place said first power transmission means in either said drive position connecting said driven element in positive drive power transmitting relation with said normally non-driven wheel or in said disengaged position wherein driving power is not transmitted to said normally non-driven wheel, said coupling means including a support means mountable on said frame for movement toward and away from said driven element, spaced drive and idler sprockets rotatably mounted on said support means with said drive sprocket connected to said power input end of said rotary flexible drive shaft, and a first endless chain trained about said drive and idler sprockets; and

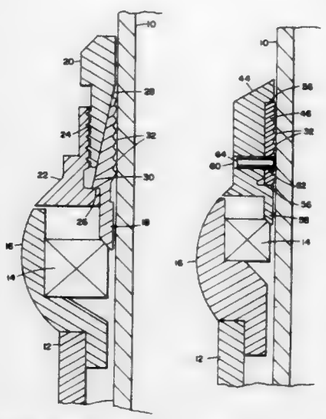
an actuator means for selectively moving said support means either to said drive position wherein said first endless chain is placed in driven engagement with said driven element or to said disengaged position wherein said first endless chain is removed from driven engagement with said driven element.

5,332,245

BICYCLE STEERING FORK BEARING SYSTEM

Christopher D. King, 503 Consuelo Dr., Santa Barbara, Calif. 93110

Filed Jan. 26, 1993, Ser. No. 9,898
Int. Cl.[5] **B62K** *21/18*
U.S. Cl. 280—279 **16 Claims**



1. A bearing securing system for relatively rotatable concentric tubes such as used in bicycle steering structure comprising in combination:

a head tube on the bicycle structure;

a steering tube disposed for rotation within said head tube;

a bearing support housing carried by said head tube;

a bearing means carried by said support housing so as to be positioned around said steering tube and proximate to said steering tube;

compressible ring means adapted to encircle and slide along said steering tube so as to locate said bearing means and support said steering rube relative to said bearing means, said ring means having an interior surface that contacts said steering tube and an exterior circumferential surface;

movement resisting means on at least a portion of said interior surface, said movement resisting means operable to resist movement of the ring means away from said bearing means; and

compressing means disposed about said exterior surface of said compressible ring means, operable to compress the ring means against said steering tube and thereby urge engagement of said movement resisting means with the steering tube, said compressing means further operable to compress the ring means sufficiently to prevent any movement of said ring means relative to said steering tube.

5,332,246

SINGLE SIDED CYCLE REAR SUSPENSION SYSTEM WITH VERTICAL WHEEL MOUNTING MEANS

Erik F. Buell, Mukwonago, Wis., assignor to Buell Motor Company, Inc., East Troy, Wis.

Filed Jun. 15, 1992, Ser. No. 898,140
Int. Cl.[5] **B62K** *25/30*
U.S. Cl. 280—284 **12 Claims**

1. A single-sided rear suspension system for a cycle having a main frame and a rear wheel, said suspension system comprising:

a pivotable rear frame assembly including:

a single primary swingarm pivotally connected at its front end on a first axis to the main frame, extending along one side only of said rear wheel,

a junction member pivotally connected on a second axis to the rear end of said primary swingarm,

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said junction member having means for fitment of said rear wheel from said one side only,

said swingarm junction member and wheel fitment means pivoting to allow for up and down movement of said rear wheel relative to the main frame, and

a single secondary swingarm having one end pivotally connected to said junction member on a third substantially parallel axis spaced below said second axis, said secondary swingarm extending forward along said one side only of said rear wheel, and being attached by a fourth parallel axis to a pivot connection at the main frame, spaced below said first axis connection; and

biasing means mounted at one end to a portion of the main frame and connected at the opposite end to the pivotable rear frame assembly

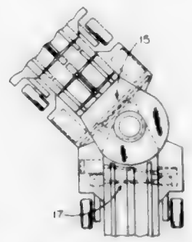


5,332,247

ARTICULATED JOINT

Michael Etherington, Abingdon, Va., assignor to Dosco Overseas Engineering Ltd., Notts, England

Filed Apr. 27, 1993, Ser. No. 54,150
Int. Cl.[5] B60D *1/01*; **B62D** *12/00*
U.S. Cl. 280—400 **11 Claims**



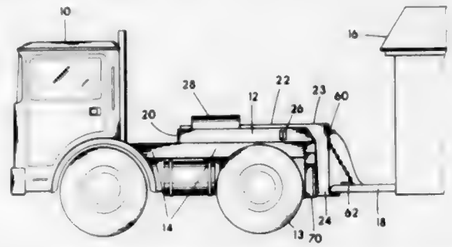
1. An articulated joint adapted to pivotally connect two adjacent sections of a vehicle, said joint comprising an upper slewing ring and a lower slewing ring, each of said slewings rings having an outer annular member and an inner annular member connected to said outer annular member, a bearing race located between said outer annular member and said inner annular member of each of said slewing rings to permit relative rotation of said outer and inner annular members of said slewing rings, means for connecting said outer annular member of each of said slewing rings to one section of a vehicle including an annular vertical cylinder attached to said one section of said vehicle and a substantially horizontal radially inwardly extending annular tongue attached to and coaxial with said annular vertical cylinder, said tongue having an upper surface and a lower surface and a plurality of circumferentially spaced threaded blind bores extending from said upper surface and from said lower surface of said tongue parallel to the central axis of said annular vertical cylinder, said outer member of each of said slewing rings having a plurality of circumferentially spaced through bores formed therein aligned with said threaded blind bores in said upper and lower surfaces of said tongue and threaded connecting bolts passing through said through bores in said outer member of each of said slewing rings into said threaded blind bores extending from said upper and lower surfaces of said tongue to secure said outer member of each of said slewing rings to said tongue and means for connecting said inner annular member of each of said slewing rings to another section of the vehicle to form a rotatable connection between said two adjacent sections of the vehicle.

5,332,248

HITCH FOR TOWING A TRAILER

T. Pat Higginbotham, 6465 County Rd. 20, Orland, Calif. 95963

Filed May 21, 1993, Ser. No. 64,594
Int. Cl.[5] B60P *1/00*, *3/00*, *3/12*
U.S. Cl. 280—402 **9 Claims**



1. A power operated hitch mountable to a truck for towing a trailer, said hitch including a main support frame structured for mounting to a back frame section of the truck and for supporting a hitch boom, said boom having an elongated generally horizontally disposed section, and a generally vertically disposed downward extension connected to the horizontally disposed section of said boom,

a main bearing pivotally supporting the horizontally disposed section of said boom on said main support frame, said bearing adapted to support said boom in a manner as to allow lateral and vertical changes in said boom relative to said main support frame,

a support arm affixed to the horizontally disposed section of said boom in the area of the pivotal supporting of said boom by said bearing, track means supported by said main support frame for providing movement of said support arm, said support arm extending from the horizontally disposed section of said boom with a distal end of said support arm slidably retained in said track means, means in communication with said support arm for preventing upward and down movement force in said distal end of said support arm upon vertical change in the horizontally disposed section of said boom relative to said main support frame, said track means structured to permit horizontal sliding movement of said distal end of said support arm, said track means further structured to prevent substantial vertical movement of said distal end of said support arm and thereby add overall stabilizing strength to said boom,

a hitch ball attached to a downward distal end of said downward extension,

said hitch including first powering means and controls means for said first powering means for providing vertical changes in said boom and thus said hitch ball relative to said main support frame,

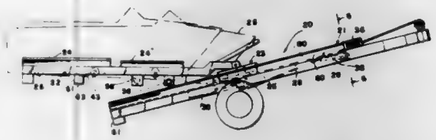
said hitch including second powering means and controls means for said second powering means for providing lateral changes in said boom and thus said hitch ball relative to said main support frame.

5,332,249

TRAILER DEVICE

Dean C. Solberg, 628 24th Ave. NW., and Dennis W. Eklund, R.R. 1, both of Minot, N. Dak. 58701

Filed Apr. 24, 1992, Ser. No. 873,444
Int. Cl.[5] B60P *3/10*
U.S. Cl. 280—414.1 **3 Claims**



1. A boat trailer comprising an elongated mobile frame having a forward and rearward end; an elongated floatation frame having a forward and rearward end; a tractor pivotally mounted to the forward end of the floatation frame; said mobile frame having parallel elongated rails extending along the length on opposite lateral sides of the mobile frame; said tractor and mobile frame each having a bottom and rollers along each respective bottom at intervals aligned with the rails of the mobile frame to enable the floatation frame and tractor to roll on the rollers on the rails along the length of the mobile frame; float members attached to the rearward end of the mobile frame for keeping the rearward end of the floatation frame afloat upon a surface of a body of water; brake means on the tractor actuatable to brake and lock the tractor at a location along the length of the rails of the mobile frame; float means connected to the brake means and carried with the brake means on the tractor to actuate the brake means whereby the mobile frame may be rolled rearward into a body of water to submerge the rearward end of the mobile frame in the water; and thereafter, the brake means, when deactuated, may allow the floatation frame and tractor to roll rearward along the mobile frame until the float means of the brake means reaches the surface of the body of water, so that the water will cause the float means on the brake means to float upward relative to the floatation frame and actuate the brake means to lock the tractor and forward end of the floatation frame in an actuate position on the mobile frame, with the rearward end of the floatation frame afloat on the water; said brake means being deactuatable upon engagement with a bottom forward edge of a boat, so that the boat may be powered onto the floatation frame to the tractor and said forward bottom edge may engage means on the brake means to unlock the tractor so that the boat may be powered further forward in combination with the floatation frame and tractor onto the mobile frame, until substantially all the boat, floatation frame and tractor rest over the mobile frame.

5,332,250

PINTLE HOOK

Gregory R. Thorwall, and Gerald W. Hungerink, both of Holland, Mich., assignors to Holland Hitch Company, Holland, Mich.

Filed Dec. 28, 1992, Ser. No. 997,672
Int. Cl.[5] B60D *1/28*
U.S. Cl. 280—507 **2 Claims**

1. A pintle hook hitch requiring a sequential three-step process to open, comprising:

a body having means for mounting said body to a tow vehicle;

an outwardly upwardly curved, fixed horn integrally extending from said body and terminating in a contact face;

an outwardly extending latch arm pivotally attached by a first pivot pin to said body and movable between a lower, closed condition over said horn at said contact face of said horn, and a raised open condition spaced from said contact face to allow release of a connecting eye;

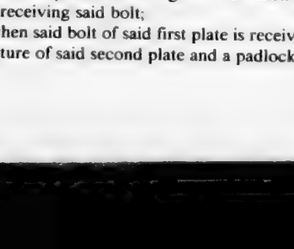
said body having a jamb face for engagement by a primary lock;

said primary lock pivotally mounted by a second pivot pin on said latch arm and shiftable between a lowered locked position for abutment with said jamb face, and an unlocked position pivotally raised away from said jamb face;

vertical spring means between said primary lock and said latch arm for biasing said lock toward said lowered locked position;

said primary lock also being laterally shiftable with said second pivot pin between a first lateral position and a second lateral position;

lateral spring means between said lock and said latch arm for biasing said primary lock laterally toward said first lateral position;



said latch arm having a slot through which said pivotal primary lock is vertically movable when in said second lateral position, and having an interference ledge engaging said pivotal primary lock and preventing it from pivoting to said unlocked position when in said first lateral position;

said second pivot pin extending beyond said latch arm and terminating in a push button; and

said second pin having a lock engager located such that lateral pressure on said push button will laterally shift said second pivot pin and said primary lock from said first position to said second position whereby, to pivotally open said latch arm, it is necessary to perform a three-step process of first pushing said second pivot pin laterally via said push button against the bias of said lateral spring means to thereby laterally shift said primary lock from said first position to said second position, then lift said primary lock through said slot against the bias of said vertical spring means, and then lift said latch arm.

5,332,251

TRAILER HITCH LOCK

Michael F. Farquhar, 2784 Cravey Dr., Atlanta, Ga. 30345

Filed Jul. 15, 1993, Ser. No. 91,975
Int. Cl.[5] B60D *1/28*
U.S. Cl. 280—507 **4 Claims**

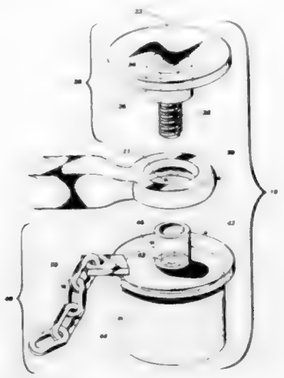
1. A trailer hitch lock, comprising:

a first plate having a downwardly projecting bolt having a fixed and a distal portion, said bolt having a transverse hole in said distal portion; and

a second plate having a central aperture for receiving said bolt of said first plate and having a shield which surrounds the area receiving said bolt;

whereby when said bolt of said first plate is received within said aperture of said second plate and a padlock is placed

through said transverse hole of said bolt, said shield of said second plate surrounds the padlock; and wherein said



distal portion of said bolt is threaded and said aperture of said second plate is conversely threaded.

5,332,252

SHOCK ABSORPTION DEVICE FOR A SKI

Jacques Le Masson, Cran Gevrier, and Alex Phelipon, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Jun. 18, 1992, Ser. No. 900,296
Claims priority, application France, Jul. 4, 1991, 91 08633
Int. Cl.[5] A63C *5/07*
U.S. Cl. 280—602 **2 Claims**



1. An apparatus comprising:

a ski;

a device for dampening vibration of said ski, said device comprising:

a longitudinally extending front flexible blade having a front end and a rear end;

at least one fixed connection device for affixing said front end of said front flexible blade against longitudinal movement with respect to a front part of said ski;

a longitudinally extending rear flexible blade having a front end and a rear end;

at least one fixed connection device for affixing said rear end of said rear flexible blade against longitudinal movement with respect to a rear part of said ski;

said rear end of said front flexible blade and said front end of said rear flexible blade overlapping in a central zone of said ski and being connected by means of an elastic connection piece;

a first dampening connection device affixed to said ski for allowing an intermediate portion of said front flexible blade to move longitudinally with respect to said ski upon ski flexion, said first dampening device comprising a first frictional connection, whereby said intermediate portion of said front flexible blade comprises a surface in a longitudinal frictional sliding relationship with respect to a surface of said first dampening connection device affixed to said ski, during use of said ski; and

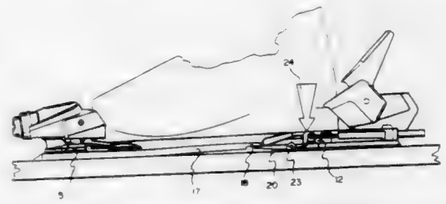
a second dampening connection device affixed to said ski for allowing an intermediate portion of said rear flexible blade to more longitudinally with respect to said ski upon ski flexion, said second dampening device comprising a second frictional connection, whereby said intermediate portion of said rear flexible blade comprises a surface in a longitudinal frictional sliding relationship with respect to a surface of said second dampening connection device affixed to said ski, during use of said ski.

5,332,253

DEVICE FOR THE MODIFYING THE PRESSURE DISTRIBUTION OF A SKI ALONG ITS SLIDING SURFACE

Bernard Couderc, Annecy; Pierre Szafranski, Pringy, and Alain Bejean, Alby sur Cheran, all of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Jul. 10, 1992, Ser. No. 911,702
Claims priority, application France, Aug. 27, 1991, 91 10895
Int. Cl.[5] A63C *5/07*
U.S. Cl. 280—602 **20 Claims**



1. Device for modifying the pressure distribution of an alpine ski along a sliding surface of the ski, the ski having a front end and a rear end, the ski being equipped with a first binding element and a second binding element adapted to retain a boot, and at least one support element on which the sole of the boot rests, said device comprising:

a sensor element for contact with the sole of the boot, movable along a vertical direction;

flexion means to generate a flexional moment on at least one of said front end and said rear end of the ski, tending to make said one end plunge toward the sliding surface of the ski; and

means connected between the sensor element and the flexion means for transmitting at least a portion of a vertical thrust of the boot captured by the sensor element to the flexion means for generating said flexional moment.

5,332,254

SKI DEVICE

Paul R. Juhasz, Troy Tower No. 410, 380 Mountain Rd., Union City, N.J. 07087

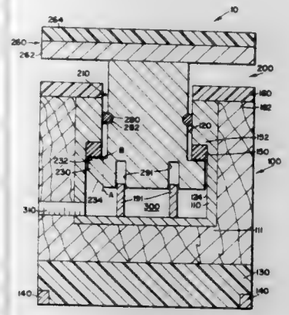
Continuation of Ser. No. 950,929, Sep. 24, 1992, Pat. No. 5,213,355, which is a division of Ser. No. 385,729, Jul. 26, 1989, Pat. No. 5,156,413. This application Mar. 15, 1993, Ser. No. 30,848
Int. Cl.[5] A63C *5/07*
U.S. Cl. 280—602 **39 Claims**

1. A ski body having a ground contacting bottom surface, said ski body comprising:

a bottom member having an exposed top surface and a ground contacting bottom surface, said ground contacting bottom surface of said bottom member forming said ground contacting bottom surface of said ski body;

a housing attached to said exposed top surface of said bottom member, said housing having an immovable top surface and side walls and defining a cavity having an opening along said immovable top surface, said immovable top surface and said side walls of said housing above the top surface of said bottom member, and that portion of said top surface of said bottom member surrounding the housing, together, forming an immovable top surface to said ski body;

a movable member extending into said cavity, said movable member extending along a portion of said ski body occupied by the boot and binding of the skier, said movable member having a top surface which forms a movable top surface to said ski body;



means adapted to said ski body for limiting the upward movement of said movable member;

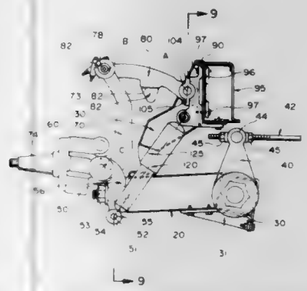
sealed compressible fluid under pressure disposed in said housing between said bottom member and said movable member for controlling the relative movement of said movable member with respect to said ski body.

5,332,255

FRONT SUSPENSION ASSEMBLY

Alfonso Velazquez, Hidalgo, Mexico, assignor to Dina Autobuses, S.A. De C.V., Mexico City, Mexico

Filed Apr. 20, 1992, Ser. No. 871,797
Claims priority, application Mexico, Apr. 19, 1991, 25447
Int. Cl.[5] B60G *3/00*
U.S. Cl. 280—700 **18 Claims**



1. An independent front suspension assembly for vehicles comprising:

a lower frame support pivotally coupled to a vehicle frame at a first end of said frame support;

a yoke coupled to a second end of said frame support;

a vertical arm pivotally coupled to said yoke at a lower end of said vertical arm;

an upper control arm pivotally coupled at a first end to an upper end of said vertical arm and pivotally coupled at a second end to said vehicle frame;

a torsion spring assembly coupling said first end of said lower frame support to said vehicle frame, comprising an inner tubular shaft, a rubber torsion spring body fixed to an outer face of said tubular shaft and spaced from ends of said shaft, an outer sheath having a substantially square cross section fixed to said spring body, a hexagonal lug fixed to each end of said tubular shaft, a removable tension adjustment lever removably coupled to each of said lugs, said outer sheath being clamped to said first end of said frame support, and said tubular shaft being pivotally coupled to said vehicle frame, and an adjustable tension bar coupled to said adjustment lever and to said vehicle frame to adjust the angular position of said tubular shaft with respect to said vehicle frame;

said yoke having a pair of spaced apart arms extending from an upper end of the yoke, each of said arms having a transverse aperture coaxially aligned, said lower end of said vertical arm having a conical aperture therein and being disposed between said arms of said yoke, bolt means extending through said apertures in said arms of said yoke and said conical aperture in said vertical arm, said bolt means having first and second cylindrical end sections complementing an inner surface of each aperture in said arms of said yoke and a conical shaped section disposed between said first and second sections complementing said conical aperture in said vertical arm, said first cylindrical section of said bolt having a diameter larger than a diameter of said second cylindrical section;

said yoke further comprising a lower extension;

shock absorber means having a lower end coupled to said extension of said yoke and an upper end coupled to said frame;

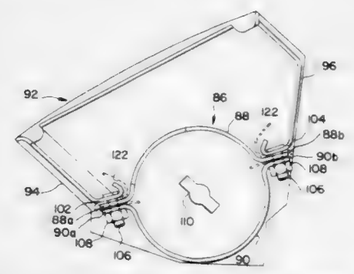
said second end of said upper control arm being coupled to a rubber torsion bushing, said rubber torsion bushing comprising a central shaft, a vulcanized rubber torsion body fixed to said shaft, and an outer casing fixed to said rubber torsion body and being fixed to said vehicle frame.

5,332,256

CONTINUOUS CIRCUMFERENCE DIFFUSER REACTION CANISTER

Donald R. Lauritzen, Hyrum, and Bradley W. Smith, Ogden, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Feb. 24, 1992, Ser. No. 840,238
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—728 A **6 Claims**



1. For use in an inflatable restraint system reaction canister built in the instrument panel of an automobile by the automobile manufacturer, a soft pack assembly comprising:

a diffuser tube of the clamshell type having a diffuser portion and a cap portion each of which has opposed sides from which mating flanges extend,

said diffuser portion having a plurality of spaced inflating gas exit slots formed therein,

an inflatable bag having an inflating gas inlet opening positioned in folded relation against said diffuser portion of said diffuser tube with said inflating gas inlet opening positioned in communicating relation with said inflating gas inlet slots formed in said diffuser portion, with peripheral portions of said inflating gas inlet opening being positioned between said mating flanges for retention therebetween.

an elongated inflator positioned in said diffuser tube in sub-

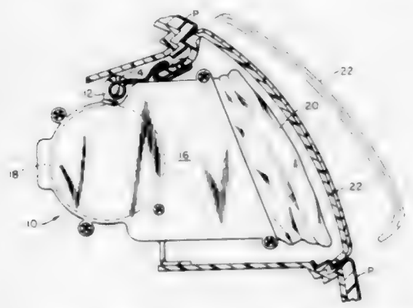
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stantially concentric relation therewith, means for retaining said inflator securely in said diffuser tube, and
means including studs extending through said mating flanges and said peripheral portions of said inflatable bag for securing said mating flanges of said diffuser portion and said cap portion with said peripheral portion of said inflatable bag crimped therebetween, and for mounting said diffuser tube and inflatable bag in assembled relation in the reaction canister built in the instrument panel of an automobile by the automobile manufacturer

5,332,257
TETHER RETENTION SYSTEM FOR AIRBAG MODULE COVER

Mark Rogers, Roy, and Larry D. Rose, Layton, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Aug. 9, 1993, Ser. No. 103,972
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **6 Claims**



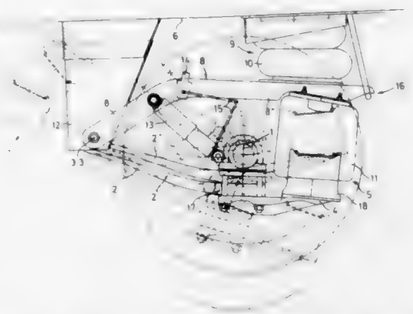
1. In an airbag module for use in a motor vehicle including a reaction canister housing an airbag and an airbag inflator and a module cover displaceable by said airbag upon inflation, the improvement which comprises:
a tether having first and second ends, the first end being secured to said module cover and the second end forming a loop;
a retainer rod extending through said loop; and
a channel enclosing said retainer rod and loop in a fixed position in said motor vehicle to anchor said tether during displacement of said module cover.

5,332,258
MOTOR VEHICLE AXLE SUSPENSION

Josef Büttner, Waldaschaff, Fed. Rep. of Germany, assignor to Otto Sauer Achsenfabrik Keilberg, Bessenbach-Keilberg, Fed. Rep. of Germany

Filed Mar. 6, 1991, Ser. No. 665,226
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1990, 4007634
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—704 **28 Claims**

1. In a motor vehicle including a chassis, an axle, and a suspension arrangement for suspending said axle from said chassis and including a lifting mechanism for moving said axle from extended operating positions relatively spaced from said chassis to a retracted position relatively closely adjacent said chassis, the improvement wherein said suspension arrangement further comprises:
a leaf spring assembly on each of two opposite sides of a longitudinal median plane of the vehicle, said leaf spring assembly having a front end hinged about a first bearing axis stationary to said chassis and a rear end clamped rigidly to a rigid axle body of said axle;
a supporting arm rigid with said rear end of said leaf spring assembly and extending rearwardly from said axle body;
a fork member hinged about a second bearing axis stationary to said chassis, such that said fork member is pivotable relative to said chassis about said second bearing axis in a plane parallel to said longitudinal median plane;
an air spring supported at a bottom thereof by said supporting arm and having a top braced upwardly against said fork member;
a control element for regulating the pivot position of said fork member about said second bearing axis relative to said chassis and thereby for regulating an extended operating position of said axle relative to said chassis, said control element comprising an air spring bellows positioned between said chassis and said fork member and braced



upwardly by said chassis and downwardly by said fork member, said air spring bellows being operable upon pressurization thereof to pivot said fork member away from said chassis and thereby to move said axle via said air spring to said extended operating position;
a mechanical stop fixedly and nonremovably positioned to limit, upon pressurization of said air spring bellows, the maximum pivot position of said fork member away from said chassis; and
said lifting mechanism being operable, upon actuation thereof and upon depressurization of said air spring bellows, for moving said axle toward said retracted position thereof.

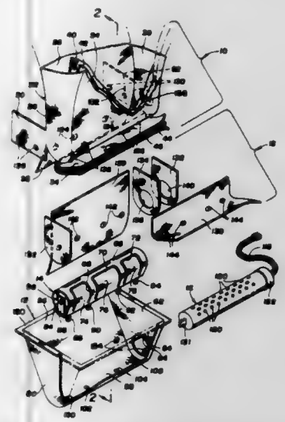
5,332,259
VENT CONTROL DEVICE FOR AIR BAG HOUSING

James K. Conlee, Dayton, and Jeffrey A. Shepherd, Fairborn, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1993, Ser. No. 6,282
Int. Cl.[5] B60R *21/30*
U.S. Cl. 280—738 **6 Claims**

1. An occupant restraining inflatable cushion apparatus comprising:
a housing having a closed end and an open end with side walls connecting the open and closed ends, at least one side wall having at least one venting aperture;
a cushion bag placed within the housing in a collapsed condition;

means for expanding the cushion bag to an expanded condition located within the cushion bag; and

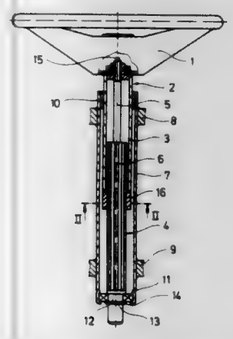


wherein the cushion bag has a penetrating aperture for registration with the housing venting aperture.

5,332,260
TELESCOPICALLY LENGTH VARIABLE STEERING COLUMN ARRANGEMENT

Heinz-Josef Heinrichs, Koblenz-Metternich; Udo Wagner, Dachsenhausen, and Reiner Wendling, Koblenz, all of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Continuation of Ser. No. 791,031, Nov. 12, 1991, abandoned, which is a division of Ser. No. 576,368, Aug. 31, 1990, Pat. No. 5,071,163. This application Dec. 8, 1992, Ser. No. 988,035
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1989, 3930372
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.
Int. Cl.[5] B62D *1/18;* **F16F** *5/00, 9/32*
U.S. Cl. 280—775 **41 Claims**

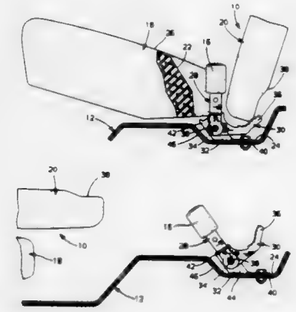


1. A telescopically length variable steering column arrangement for a motor vehicle having an axis and comprising:
at least two telescopically and torque transmittingly interengaging steering column elements rotatably mounted in a bearing system;
a steering wheel allocated to a first one of said steering column elements for connection through a second one of said steering column elements with steering control means;
fluid locking means provided within at least one of said at least two steering column elements for locking said steering column elements in a plurality of selectable relative axial positions;
locking valve means operatively coupled to said fluid locking means for selectively locking and unlocking said fluid locking means;
locking control means operatively coupled to said locking valve means and accessible to the vehicle operator for controlling said locking valve means; and
fluid release means coupled to said fluid locking means for unlocking said steering column elements in a respectively relative position thereof in response to a predetermined axial load.

5,332,261
BUCKLE POSITIONING APPARATUS FOR IMPROVING OCCUPANT ACCESS IN A MOTOR VEHICLE

Michael A. Siepierski, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1993, Ser. No. 14,918
Int. Cl.[5] B60R *22/00*
U.S. Cl. 280—801.1 **3 Claims**



1. A buckle positioning apparatus for improving occupant access to a buckle of a sat belt system in a motor vehicle having a seat bottom and a seat back, and said seat back having a back side, and said seat bottom and said seat back moving between a normal seating position, wherein said seat bottom is substantially perpendicular to said seat back, and a cargo position, wherein said seat back folds onto said seat bottom, and both said seat back and said seat bottom move away from said buckle comprising:
an anchor bracket connected to said vehicle;
a buckle pivotally connected to said anchor bracket to permit said buckle to pivot between a stowed position and an occupant accessible use position;
a lever operatively connected to said buckle and extending into the path of movement of the seat back and poised for engagement with said back side of said seat back only when the seat back moves to the seating position and being disengaged by the seat back when the seat back moves to the cargo position; and
means for biasing said lever toward a stowed position, and said biasing means yielding to said lever upon said back side of said seat back engaging said lever and pivoting said buckle towards said use position without interfering with the movement of said seat bottom and said seat back between said cargo position and said normal seating position.

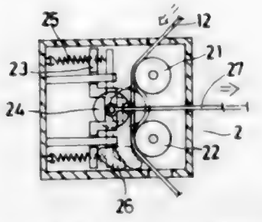
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5,332,262

AUTOMOBILE SAFETY BELT DEVICE

Hung-Tu Chou, No. 62, Chin Hsueh Road, Shan Hua Chen, Tainan Hsien, Taiwan

Filed Apr. 6, 1993, Ser. No. 42,773
Int. Cl.[5] B06R *22/42*
U.S. Cl. 280—806 3 Claims



1. An automobile safety belt device comprising:
a belt housing being fixed on a post in an automobile and containing some length of a safety belt and one end of said safety belt,
a fixing member being fixed with an outer end of said safety belt and mounted on a rear portion of a seat side;
a retaining member mounted on a wall near said belt housing, having a slot for said safety belt to pass through freely;
a hook movably combined on said safety belt to be locked in a hook retainer mounted on a rear portion of said seat side opposite to said fixing member;
a retract unit having two fixing wheels arranged in a vertical direction, an adjusting wheel beside and between said two fixing wheels, a passageway formed between said two fixing wheels and said adjusting wheel for said safety belt to pass through, a double bent connecting rod having each end fixed with one end of a respective coil spring, the other end of each respective coil spring being hooked on an inner wall of a housing of said retract unit, said adjusting wheel having its center fixed on the middle of said connecting rod and said adjusting wheel being connected to a motor through a rope, a stop block fixed on a lower end of said connecting rod,
said motor rotating to pull said rope, said adjusting wheel and said connecting rod in said retract unit when activated by a plurality of automatic sensors;
said plurality of automatic sensors mounted spaced apart on a front and a rear bumper for sensing a shock and then functioning to activate said motor; and,
said safety belt being pinched immovable between said adjusting wheel and said two fixing wheels in said retract unit when said adjusting wheel is pulled by said rope when said motor is activated by any of the plurality of said automatic sensors sensing a shock.

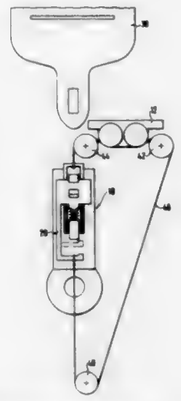
5,332,263

ACTUATING MEANS FOR A BUCKLE IN A SAFETY BELT SYSTEM

Thomas Mödinger, Vordersteinenberg, and Ulrich Gölz, Schechingen, both of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Division of Ser. No. 823,900, Jan. 22, 1992, Pat. No. 5,275,437.
This application Jun. 23, 1993, Ser. No. 81,515
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1991, 9102006[U]
Int. Cl.[5] B60R *22/46*
U.S. Cl. 280—806 5 Claims

1. An assembly for use in a vehicle safety belt system, said assembly comprising:
buckle for receiving a tongue to which belt webbing is connectable, said buckle being movable away from a rest position in a direction towards the vehicle floor to eliminate slack in the belt webbing;
a movable release member associated with said buckle and for, when moved, allowing the tongue to be released from said buckle;
actuating means for moving said release member said actuating means including an actuatable element and a force-transmitting connection which connects said actuatable element to said release member and which permits a relative movement between said buckle and said actuating element;



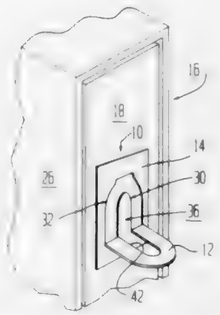
a plurality of deflecting elements;
said force-transmitting connection comprising a cable formed by a pulling cable which is guided via said deflecting elements and held tensioned in a closed loop;
said pulling cable having one end thereof connected to said release member and the other end thereof connected to said buckle so that said one end connected to said release member follows movement of said release member upon movement of said buckle from said rest position towards the vehicle floor.

5,332,264

BOOK PULL TAB WITH RETRACTABLE GRIPPING MEMBER

Joseph Chiarella, 111 Herman Ave., Lemoyne, Pa. 17043-1936

Filed Feb. 16, 1993, Ser. No. 18,182
Int. Cl.[5] B42D *3/00*
U.S. Cl. 281—51 19 Claims



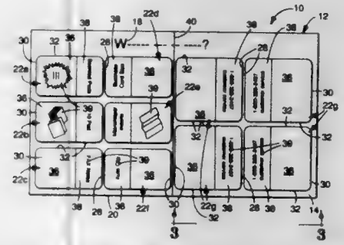
1. The combination of a book having a front cover, a back cover and a spine joining the covers and a pull tab affixed to the spine, the pull tab including a base having a front surface and a back surface, a mounting means for bonding the back surface of the base to the spine, a flat U-shaped grip member having a top and two legs extending away from the top, said legs being spaced apart from each other to define a pull recess between the legs to facilitate manual engagement of the grip and movement of the book from a storage position, a pair of hinges integrally joining the ends of said legs away from the top of the grip member to said base, said base including a finger located between the legs of said U-shaped grip, a U-shaped cut out recess formed within the base conforming to the shape of the grip member, said grip member being movable about said hinges from a retracted position in which the grip member is positioned within the flat base with the edges of the grip member frictionally engaging the sides of the U-shaped cutout to retain the grip member in place and an extended position in which the grip member is rotated about said hinges away from the base.

5,332,265

ADVERTISING ASSEMBLY

Michael S. Groess, Oakdale, and Douglas P. Bodziak, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 22, 1993, Ser. No. 8,612
Int. Cl.[5] G09F *3/00*
U.S. Cl. 283—56 14 Claims



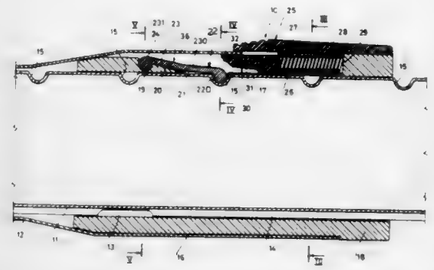
1. An advertising assembly, said assembly comprising:
a paper backing layer having opposite first and second major printable surfaces, said major surfaces being free of release coatings;
advertising indicia printed on at least one of said surfaces and printed in register with said one surface; and
a plurality of sheets, each of said sheets comprising a layer of flexible polymeric material, having opposite major side surfaces, first and second opposite ends, opposite edge surfaces between said major side surfaces and said first and second opposite ends, and having a coating of repositionable pressure sensitive adhesive on one of said side surfaces along a second end portion adjacent said second end while being free of adhesive on both of said side surfaces along a first end portion thereof adjacent said first end, said first end portion being visually distinctive, and said adhesive coated second end portion, when free of printing, being generally transparent when adhered to a substrate;
said sheets being releasably adhered in parallel rows of the sheets to the first surface of the backing layer by said coatings of pressure sensitive adhesive with said sheets in each row of the sheets being positioned with the edge surfaces of adjacent sheets in the row of sheets adjacent to each other and with their first end portions aligned.

5,332,266

TELESCOPIC EXTENSION FOR A VACUUM CLEANER

Giuseppe Canale, Gorla Minore, Italy, assignor to OMEC S.p.A., Italy

Filed Jun. 9, 1992, Ser. No. 895,858
Claims priority, application Italy, Jun. 28, 1991, MI91 A 001775; Nov. 14, 1991, MI91 A 003035
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—7 29 Claims



1. A telescopic handle extension for a vacuum cleaner comprising:
an external tube having a longitudinal axis;
an internal tube situated in selective sliding relation to the external tube, an exterior surface of the internal tube having a plurality of notches provided thereon, the notches being spaced apart in a direction parallel to the longitudinal axis;
a sleeve at least partially retained between the external tube and the internal tube;
a constraining element, the constraining element including:
a distal end configured to mate with the notches provided on the internal tube;
a proximal end which is pivotally engaged by the sleeve; and
a plate intermediate the distal and proximal ends of the constraining element; and
a manually operated actuator element, the actuator element having a thrust wall which is resiliently biased against at least a portion of a surface of the plate of the constraining element to force the distal end of the constraining element into a desired one of the plurality of notches and thereby prevent movement of the constraining element along the longitudinal axis, wherein the application of force to the actuator element in a direction parallel to the longitudinal axis to overcome the resilient biasing causes the actuator element to disengage the constraining element whereby the distal end of the constraining element is free to exit the one of the plurality of notches with which it has been mated, and thereby permitting the application of force to the internal tube to cause the internal tube to slide along the longitudinal axis for facilitating alignment of the distal end of the constraining element with a selected one of the plurality of notches.

5,332,267

TUBE COUPLING

Donald G. Harrison, 4433 E. Earll Dr., Phoenix, Ariz. 85018

Filed Jul. 15, 1993, Ser. No. 91,433
Int. Cl.[5] F16L *27/047*
U.S. Cl. 285—23 6 Claims

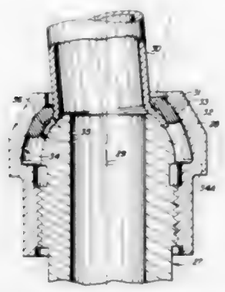
1. A tube coupling comprising male and female members having threaded engagement with each other,
said male member having a spherical outside surface at one end forming a seat adapted to extend into the flared end of a tube,
said female member being threadedly connected to said male member to provide a clearance space between the spheri-

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cal surface of said male member and an appropriately configured and sized inside sur face of said female member,

a ferrule mounted within said clearance space between said inside surface of said female member and the flared end of the tube when said spherical seat of said male member is within the flared end of the tube,

said ferrule comprising an elongated member having a spherical outer surface in contact with said inside surface of said female member and a pair of concentric, spaced



apart contact surfaces defining a space therebetween on an opposite surface of said ferrule for engaging the flared end of the tube,

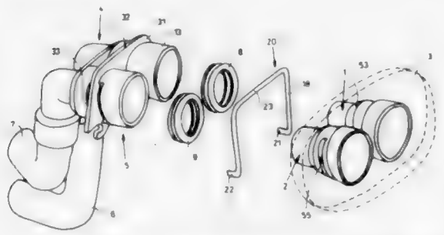
whereby upon tightening of said female member on said male member increases the pressure said ferrule on the flared end of the tube and said space between said pair of concentric, spaced apart contact surfaces accommodate the flared surface or the tube as it is deformed between the two contact surfaces of said ferrule to match the spherical surface of said male member.

5,332,268

RAPID COUPLING DEVICE FOR SNAP-FASTENING A TUBULAR MEMBER OR A SET OF TUBULAR MEMBERS TO ONE OR MORE ENDPIECES

Denis Godeau, Vielles Maisons/Joudey, and Philippe Exandier, Montargis, both of France, assignors to Hutchinson, Paris, France

Filed May 19, 1993, Ser. No. 63,904
Claims priority, application France, May 21, 1992, 92 06195
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—26 **7 Claims**



1. A rapid coupling device comprising:

at least one tubular member, each tubular member having a longitudinal axis, an open end and at least one radial opening directed substantially perpendicularly to said longitudinal axis;

a corresponding endpiece for each said tubular member, each endpiece having a cylindrical free end positioned within the corresponding tubular member, a smaller diameter portion adjacent said cylindrical free end, a frustoconical ramp adjacent to said smaller diameter portion, a larger diameter portion adjoining said frustoconical ramp, and at least one radial groove formed in said larger diameter portion adjacent to said frustoconical ramp and positioned to correspond with said at least one radial opening in said tubular member;

a planar uniting element, means for affixing said planar uniting element to said tubular member and said planar uniting element disposed transversely to said longitudinal axis in the vicinity of said radial opening, said planar uniting element having a plurality of tabs, said tabs defining a plurality of notches adjacent thereto;

at least one sealing gasket interposed between and sealingly engaging each said tubular member and its corresponding endpiece and located inwardly from said open end beyond said radial opening; and

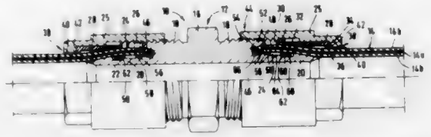
at least one spring clip, said clip having a web portion and branches extending from the web portion, one of said branches extending into said at least one radial opening of said tubular member and penetrating into said at least one radial groove in said endpiece to thereby snap fasten the endpiece to the tubular member, and the ranch terminating at its free end in a bent-back lug, the lug engaging and cooperating with one of said notches adjacent said tabs of said uniting element.

5,332,269

CONNECTING DEVICE FOR PLASTIC TUBES AND METHOD FOR CONNECTING A PLASTIC TUBE

Karl G. Homm, Marl, Fed. Rep. of Germany, assignor to Hewing GmbH, Fed. Rep. of Germany

Filed Feb. 28, 1992, Ser. No. 843,022
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106378
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—39 **27 Claims**



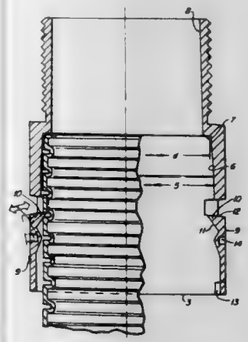
1. A connecting device for plastic tubes comprising a connecting body (**12**) which includes at least one connecting piece (**20**) having slid thereon an end portion (**24**) of a plastic tube (**14**), an outer diameter of said connecting piece (**20**) being larger than an inner diameter of the plastic tube (**14**), the connecting body (**12**) having formed therein an annular receiving groove (**46**) surrounding the connecting piece (**20**) and being opened in a direction toward a free end of the connecting piece (**20**) for receiving the end portion (**24**) of the plastic tube (**14**), the receiving groove (**46**) having a diameter decreasing with increasing depth of the receiving groove (**46**), and pressing sleeve means (**28**; **72**) having an inner diameter selected such that the pressing sleeve means (**28**; **72**) is axially movable relative to the connecting piece (**20**) for moving the end portion (**24**) of the plastic tube (**14**) axially on the connecting piece (**20**) until the end portion (**24**) of the plastic tube (**14**) is received in the receiving groove (**46**).

5,332,270

CORRUGATED PIPE CONNECTOR AND METHOD OF MOLDING

John Petty, Bonnet Bay, and Sandy McNeil, Hunters Hill, both of Australia, assignors to Elconnex Pty Limited, New South Wales, Australia

Continuation of Ser. No. 796,047, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 668,706, Mar. 12, 1991, Pat. No. 5,150,930, which is a continuation of Ser. No. 342,515, May 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 137,539, Nov. 17, 1987, Pat. No. 4,923,227. This application Aug. 19, 1993, Ser. No. 109,210
Claims priority, application Australia, Apr. 9, 1987, PI3598
Int. Cl.[5] F16L *37/12*
U.S. Cl. 285—319 **35 Claims**



1. A one-piece plastic connector, for affixing to a conduit, having a ridge located adjacent to its end, comprising:

a body open at one end to receive a conduit in a bore communicating with said open end, said bore having an axis;

locking means located in said body so as to project into the said bore so as to lock onto the ridge of conduit in said bore, so as to hold in said bore said conduit, wherein said locking means comprises an axially extending resilient finger, having a projection located at its free end being remote from the open end and which projects into the bore; an axially extending recess located in the bore which extends from the base of the finger towards the open end, such recess acting to move the moment arm of the finger radially outwardly to enhance the over-center action of the finger; and a laterally extending, relative to said axis, recess formed therein forming a line of weakness contributing to the resiliency of said finger; wherein a force attempting to withdraw the conduit from the connector causes the projection of the finger to more firmly and deeply resiliently engage and retain said ridge such that a greater withdrawal force results in a firmer and deeper engagement with said ridge.

5,332,271

HIGH TEMPERATURE CERAMIC NUT

Robert W. Grant, 6454 Murray Hill Rd., Excelsior, Minn. 55331; Richard E. Novak, 2000 Fountain La., Plymouth, Minn. 55447, and James S. Molinaro, 1441 Deerfield Dr., #150, Allentown, Pa. 18104

Filed Oct. 2, 1991, Ser. No. 769,778
Int. Cl.[5] F16L *15/04, 25/00*
U.S. Cl. 285—334.5 **1 Claim**

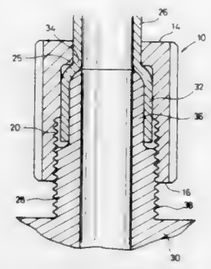
1. In combination, a ceramic nut, a flared tube and a configured male threaded member secured together for high temperature fluid applications in semiconductor processing applications, comprising:

a. a flared tube with a portion having a first diameter and a flared axially extending portion having a second diameter larger than said first diameter;

b. a male fitting including a cylindrical portion of the diameter of said flared second diameter portion of said flared tube and a threaded portion and an end terminating said cylindrical portion;

c. a ceramic nut including a body, a top surface and a bottom surface;

d. a generally inner threaded lower interior portion of said nut threadedly receiving said threaded portion;



e. a hole in said top surface of said nut; and,

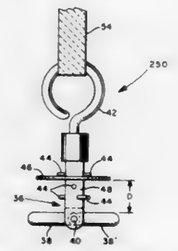
f. a geometrically configured inner upper portion of said nut having a cylindrical inner surface extending from adjacent said hole to said inner threaded portion and of a diameter slightly smaller than said inner threaded lower interior portion and of a diameter larger than said hole receiving said flared axially extending cylindrical portion and engaging said flared tube over said cylindrical shaped portion of said male threaded member and said first diameter portion sealingly against said end.

5,332,272

HOISTING SLING

Dorris W. Prince, 14811 Sylvia Dr., Brookpark, Ohio 44142

Continuation-in-part of Ser. No. 969,587, Oct. 30, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 75,415
Int. Cl.[5] B66C *1/66*
U.S. Cl. 294—97 **8 Claims**



1. A hoisting sling comprising at least one elongate flexible lifting element secured to an end of a stationary member of a pivot assembly having at least one cross bar pivotally mounted thereto;

said cross bar operative to pivot to a position effective to enable the cross bar to be inserted through an opening through an object to be hoisted and thence pivot to a position enabling the cross bar to bridge thereacross to enable the lifting element to hoist the object;

said stationary member having a plurality of protuberances extending therefrom in respective axial spaced-apart relationship to each other and to the cross bar;

a locking plate axially movable along the stationary member and having at least one slot extending outwardly from an

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inner periphery surrounding an opening therewith through which the stationary member is received;

said protuberances respectively operative to prevent the locking plate from moving axially away from the object when not in registration with the slot; and

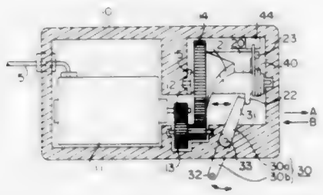
said protuberances respectively operative to be received through the slot upon registration therewith to enable the locking plate to be moved axially away from the object so as to enable the cross bar to be pivoted for removal from the object opening.

5,332,273

ACTUATOR FOR DOOR LOCK MECHANISM

Hiroshi Komachi, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,935
Int. Cl.[5] E05C *3/06*; F16H *57/00*
U.S. Cl. 292—336.3 **2 Claims**



1. An actuator for a door lock mechanism comprising:

a motor that rotates reciprocally in response to a control signal supplied thereto;

a columnar body driven to rotate by said motor, said columnar body having, on the peripheral surface, a first spiral stage, which provides an upward gradient in a first direction along a center axis of said columnar body when said columnar body rotates in a forward direction, and a second spiral stage, which provides an upward gradient in a second direction along said center axis of said columnar body when said columnar body rotates in a reverse direction; and

a displacement component, one end of said displacement component being driven to move in said first direction by said first spiral stage when said columnar body makes said forward rotation and also being driven to move in said second direction by said second spiral stage when said columnar body makes said reverse rotation, thus causing another end of said displacement component to actuate a door lock latch mechanism; and

wherein said columnar body is rotated to return to its original position via a rebounding force of a spring after being driven to rotate a specific angle by said motor, and said displacement component, first spiral stage and second spiral stage are set for their mutual positional relations so as to prevent said one end of said displacement component from coming into contact with said first and second spiral stages at least when said columnar body is in said original position after rotating back thereto.

5,332,274

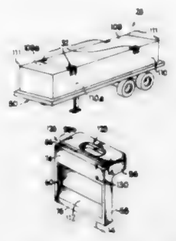
CONTAINER HANDLE AND CONTAINER

James A. Baumann, 16413 Grant Ave., Orland Park, Ill. 60462

Continuation-in-part of Ser. No. 945,747, Sep. 16, 1992. This application Nov. 9, 1992, Ser. No. 973,723
Int. Cl.[5] B65D *88/12*
U.S. Cl. 294—68.3 **22 Claims**

1. A handle for mounting on a container for use with a releasable latch mechanism, the container handle comprising, an integral body including a substantially horizontal member and a substantially vertical member having an outwardly facing surface having a lower engagable portion having a lower engagement surface and an upper engagable portion having an upper engagement surface;

said outwardly facing surface facing outwardly away from the substantially vertical member further including side target means for releasably receiving a latch mechanism from a side in a substantially inwardly direction with respect to the substantially vertical member defined by a recess, said side target means being substantially centrally



located on said outwardly facing surface including a plurality of communicating boundaries including (i) an upper boundary defined by said lower engagement surface, (ii) a substantially planar base section of the recess and (iii) side boundaries defined by side sections, and said boundaries being located substantially within the substantially vertical member of the body thereby allowing handling from a side.

5,332,275

MICROGRIPPER

Patrick J. Conway, Charleston, W. Va., and George E. Mauro, Windham, N.H., assignors to Microscience Group, Inc., St. Albans, W. Va.

Filed Nov. 27, 1991, Ser. No. 799,121
Int. Cl.[5] B25J *15/12*
U.S. Cl. 294—100 **20 Claims**



1. A microgripper for gripping and releasing an object, comprising:

(a) support block;

(b) two cantilevered flexible arms, an end of each of said flexible arms being mounted on an end of said support block, another end of each of said flexible arms being free and being capable of being flexed toward and away from each other, the free ends of the two cantilevered flexible arms normally being in substantially close proximity to each other;

(c) motor means affixed to said support block, the motor means being selected from the group consisting of a stepper motor and a servomotor with an encoder which is integral with the servomotor, the servomotor having a shaft, said encoder being adapted to control the rotational speed of the servomotor and the shaft thereof; and

(d) slide means driven by said motor means and which is adapted to move the free ends of the flexible arms toward or away from each other, in a flexing manner, thereby providing, respectively, a gripping or releasing movement, and the slide means has a protrusion which extends between the two flexible arms, the protrusion being in sliding contact with the two flexible arms and being adapted to force apart the two flexible arms so that the free ends of the two flexible arms move away from each other when the protrusion of the slide means is moved relative to the free ends.

5,332,276

CABLE-DRIVEN EXTENSION MECHANISM FOR TRAILER SLIDE-OUT

Raymond W. Blodgett, Jr., Norco, Calif., assignor to RBW Industries, Inc., Corona, Calif.

Filed Feb. 21, 1992, Ser. No. 839,595
Int. Cl.[5] B60R *27/00*
U.S. Cl. 296—26 **35 Claims**



1. Apparatus for selectively extending and withdrawing a slide-out portion of a trailer body, comprising:

first and second substantially parallel hollow channel members mounted on the underside of the trailer body;

first and second substantially parallel rails slidably supported in the first and second channel members, respectively, for longitudinal translation therein, each of the rails having an outer end and an inner end, the outer end including means for attachment to the slide-out portion;

a transverse structural member connecting the channel members;

a sheave rotatably mounted on the structural member between the channel members;

drive means for selectively driving the sheave to rotate in first and second directions.

first pulley means located adjacent the juncture between the first channel member and the structural member;

second pulley means located adjacent the juncture between the second channel member and the structural member;

a first cable wrapped around the sheave and passing through the first pulley means and having a first end attached to the outer end of the first rail and a second end attached to the inner end of the first rail; and

a second cable wrapped around the sheave and passing through the second pulley means and having a first end attached to the outer end of the second rail and a second end attached to the inner end of the second rail;

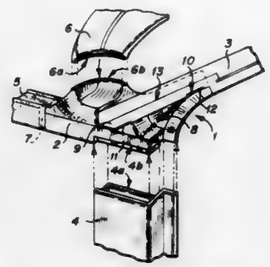
whereby the rotation of the sheave in the first direction causes the first and second cables to pull the first and second rails, respectively, in a first longitudinal direction through the first and second channel members, respectively, and the rotation of the sheave in the second direction causes the first and second cables to pull the first and second rails, respectively, in a second longitudinal direction through the first and second channel members, respectively.

5,332,277

BEARER JOINT FOR VEHICLE BODYWORK

Norbert Enning, Denkendorf; Ulrich Klages, Lenting, and Heinrich Timm, Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi A.G., Ingolstadt, Fed. Rep. of Germany

Filed Jun. 14, 1993, Ser. No. 75,564
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040981
Int. Cl.[5] B62D *25/00*
U.S. Cl. 296—29 **15 Claims**



1. In a vehicle bodywork of the type which includes a bearing structure having a plurality of bearer members connected by joining elements, an improved bearer joint comprising in operative combination:

a) at least one joining element having at least one surface with a medial concave region, said concave region having opposed end portions;

b) at least one elongated bearer member having an end segment disposed spanning said concave region of said joining element; and

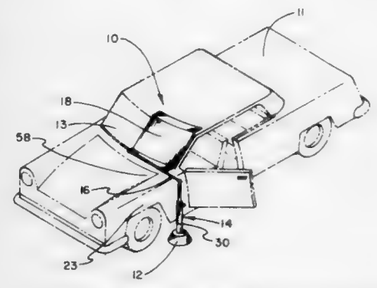
c) means for connecting said end segment of said elongated bearer member to each of said opposed end portions of said concave region, and said portion of said elongated bearer member is unconnected to said concave region to act as a tension member when an applied load on said elongated bearer member is in tension and as a steadying strut for the bearer joint when an applied load is in compression.

5,332,278

WINDSHIELD PROTECTION APPARATUS

William L. Berry, 833 Cottage Rd., Bonne Terre, Mo. 63628

Filed Jul. 26, 1993, Ser. No. 96,304
Int. Cl.[5] E04H *15/04*; B60J *1/20*
U.S. Cl. 296—95.1 **17 Claims**



1. A new and improved windshield protection apparatus, comprising:

a ground-supported base,

a height adjusting assembly connected to said ground-supported base,

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a transverse support assembly connected to said height adjusting assembly,

a windshield-contacting protective member connected to said transverse support assembly, and

tilt adjustment assembly means, connected to said windshield-contacting protective member, for adjusting a tilt of said windshield-contacting protective member with respect to an automobile windshield.

5,332,279

POWER DOOR OPERATOR FOR MULTI-PASSENGER MASS TRANSIT VEHICLES

Fotios Golemis, Skokie, and Michael A. O'Neill, Round Lake Beach, both of Ill., assignors to Mark IV Transportation Products Corp., Niles, Ill.

Filed May 17, 1993, Ser. No. 62,663

Int. Cl.[5] B60J *5/04*

U.S. Cl. 296—146.4 **9 Claims**





4. In an electrically driven power door operator mounted overhead of an opening in a vehicle side wall, for moving a pair of bi-parting door panels from open to closed positions over said opening, the improvement comprising:

electric drive means having a housing and an output shaft extending therefrom;

means for controlling said drive means for reciprocal output shaft rotary motion, said motion being less than one-half shaft revolution;

the pair of door panels, each said panel being upright and rectangular and including an exterior surface, first and second vertical edges, and first and second horizontal edges, said first vertical edges abutting when said door panels are in said closed position;

a door drive bar coupled to said shaft by a clutch, said bar having oppositely disposed arms extending from said shaft;

coupling means on said arms, said arms having variable arm operating lengths by said coupling means being movable along said arms, said variable arm operating lengths establishing individually variable opening and closing door panel motion;

means for mounting said door panels over said opening for said door panel motion, said door panel motion being pivotal about said second vertical edges; and

means for connecting said coupling means and said door panel mounting means;

whereby said door panel motion of each said door panel in response to said rotary motion is individually varied in accordance with varying of respective said arm operating length.

5,332,280

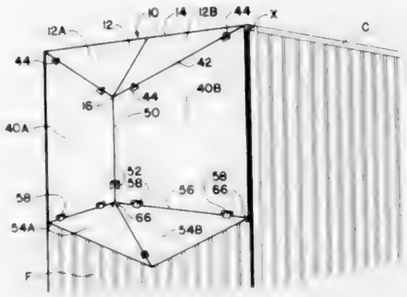
DEMOUNTABLE DEFLECTOR FOR SHIPPING CONTAINERS AND THE LIKE

DuPont, deceased Jacques, late of Quebec, and by Alain DuPont, legal representative, 141 Des Noyers, Levis, Quebec S6V-8W7

Filed Oct. 9, 1992, Ser. No. 958,822

Int. Cl.[5] B62D *35/00*

U.S. Cl. 296—180.1 **14 Claims**



1. An air deflector for a shipping container or the like having a fixed face and opposed upper corners thereto with openings therein; said air deflector being demountable from said container for storage in a generally two dimensional condition and comprising;

a first, planar isosceles triangular panel having a base, two equal sides, and apex;

hook means located adjacent opposed ends of said base for engaging said corner openings for suspending said triangular panel therefrom;

a frame including a strut portion releasably couplable to said triangular panel to depend downwardly therefrom in oblique relationship;

said frame including at least one portion for bearing on said fixed face to retain said strut portion in spaced apart relationship from said fixed face;

second and third similar planar panels each having at least three sides, a first side thereof having a length generally identical one of the sides of said first triangular panel;

cooperating hook means on said first triangular panel and each of said second and third panels for releasably connecting each of said second and third panels to said first triangular panel when suspended with said one side of each of said second and third panels contiguous to respective ones of the sides of said first triangular panel;

said second and third panels being proportioned such that when a second side of each of said second and third panels when connected to said first triangular panel is contiguous with said fixed face to said container, third sides of each of said second and third panels are adjacent along the length thereof and reside in a vertical plane containing the apex of said first triangular panel;

and means for releasably retaining said third sides in adjacent relationship.

5,332,281

SPACE FRAME CONSTRUCTION

Adam M. Janotik, Grosse Ile, and Lawrence P. Kazyak, Novi, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 30, 1992, Ser. No. 876,156

Int. Cl.[5] B62D *25/20*

U.S. Cl. 296—209 **15 Claims**

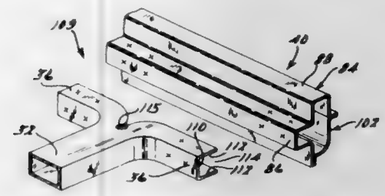
1. A rocker construction for a space frame on an automotive vehicle, comprising:

at least one elongated rocker member including means forming an open portion;

an elongated cover member adapted to close said open portion;

means for securing said rocker member and said cover member together;

said rocker member including means forming at least a pair



of channels, said channels being located on adjacent sides of said rocker member;

said means forming an open portion comprising a first flange extending outwardly on at least two side edges thereof; and

said cover member comprising an arcuate base wall having a second flange extending outwardly on at least two edges thereof.

5,332,282

SUN-ROOF HOUSING

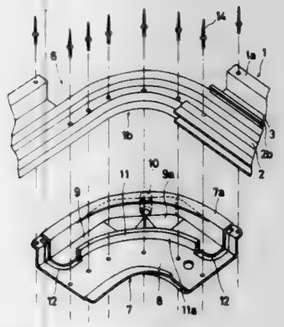
Kenji Maeda, Kariya; Kenichiro Hayashi, Okazaki; Mitsuyoshi Masuda, Nagoya; Hirofumi Nishikawa, Okazaki, and Kasuhiro Suzuki, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 5, 1991, Ser. No. 802,577

Claims priority, application Japan, Dec. 7, 1990, 2-400188[U]

Int. Cl.[5] B60J *7/00*

U.S. Cl. 296—213 **4 Claims**



1. A sun-roof housing comprising:

a main body of U-shaped configuration with two corners and having a first gutter portion and a pair of laterally spaced rail portions for guiding a roof member, said first gutter portion having laterally spaced, generally vertical inner and outer walls;

a cut-out portion at each of said corners and dividing said first gutter portion, including said generally vertical inner and outer walls, into separated segments; and

a pair of covers, each having a second gutter portion defined by an inner side wall and an outer side wall and set to be fixed respectively to each corner of said main body so that said second gutter portion is located in each of said cut-out portions to be in fluid communication with said separated segments and so that said inner side wall is in fluid tight engagement with the inner one of said generally vertical inner and outer walls at each corner of said main body.

5,332,283

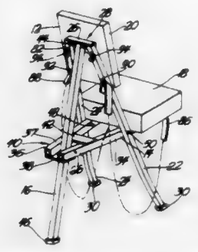
THREE LEGGED FOLDING CHAIR

Donald F. Gray, 5992 Seymour Rd., Owosso, Mich. 48867

Filed Jul. 8, 1992, Ser. No. 910,684

Int. Cl.[5] A47C *4/00*

U.S. Cl. 297—58 **20 Claims**



1. A foldable multipurpose chair with a primary frame comprising a generally V-shaped structure with a right leg and a left leg joined together at an apex; a secondary frame comprising a generally V-shaped structure with right arm and a left arm joined together at an apex; a pivot assembly pivotally connecting the secondary frame to the primary frame and operable to allow pivotal movement of the secondary frame between a position in which the secondary frame is generally in the same plane as the primary frame and is inside the outer periphery of the primary frame and a position in which the secondary frame is generally perpendicular to the primary frame; the pivot assembly including a bore through the right leg, a bore through the right arm, a pivot pin which passes through the bores through the right leg and the right arm, a bore through the left leg, a bore through the left arm and a pivot pin which passes through the bores through the left leg and the left arm, the bores through the right leg and the right arm being conical, the small diameter ends of bores through the right leg and the right arm being adjacent to each other, the bores through the left leg and the left arm being conical, and the small diameter ends of the bores through the left leg and the left arm being adjacent to each other; a third leg pivotally attached to the primary frame and having a mid-section that releasably supports the secondary frame when the secondary frame is pivoted relative to the primary frame to said position that is generally perpendicular to the primary frame; a back rest attached to the primary frame; and a support seat attached to the secondary frame.

5,332,284

PASSENGER CAR SEAT ASSEMBLY WITH INTEGRAL CHILD SEAT

Robert D. Elton, Ann Arbor; Randy D. Hurn, Livonia, and DeWitt R. Mulhearn, Detroit, all of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Aug. 5, 1992, Ser. No. 925,023

Int. Cl.[5] A47C *15/00*

U.S. Cl. 297—238 **11 Claims**

1. A seat back for use in a passenger car in a generally upright position, said seat back extending transversely side to side in said passenger car, said passenger car having a horizontal shelf rearward of said seat back and a lower floor pan, said seat back comprising:

a generally rectangular peripheral frame member including generally horizontal top and bottom portions and upright posts therebetween at transverse ends of said frame;

a pair of upright columns having upper ends attached to said top portion of said peripheral member and lower ends having mounting portions adapted to be attached to said

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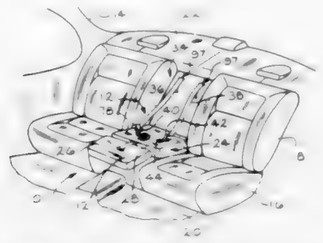
vehicle floor pan below the bottom portion of said peripheral frame member;

upper and lower vertically spaced intermediate members extending between said upright columns and having ends attached thereto;

means for securing said upper intermediate member to said vehicle shelf;

a panel mounted to said upright columns for rotation about a pivot axis adjacent said bottom portion of said peripheral frame member, said panel having a first position extending generally upright from said pivot axis and a second position extending generally forwardly from said pivot axis forming a support platform for use as a child seat lower portion; and

restraint means for restraining a child occupant seated on said panel, said restraint means including one or more belts forming a closed loop surrounding said upper and lower intermediate members and said occupant seated on said panel whereby a portion of the restraining loads applied by said occupant on said one or more belts are applied directly from said one or more belts to said intermediate members and from there to said shelf and floor pan



5,332,285

CHILD SEAT ARRANGED TO BE MOUNTED ON A VEHICLE SEAT

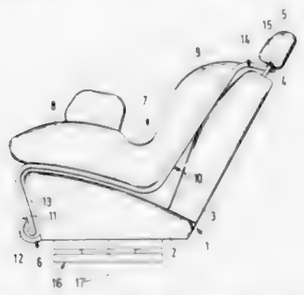
Ruprecht Sinnhuber, Gifhorn, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg

Filed Sep. 29, 1992, Ser. No. 953,523

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1991, 4132458

Int. Cl.[5] **A47D** *1/10*

U.S. Cl. 297—250.1 **4 Claims**



1. A child seat arranged to be mounted on a vehicle seat having a main frame with a front end, a backrest and a headrest mounted on the backrest by means of a linkage comprising a separate child seat having a frame and having a backrest, the frame having a front end and being mountable on and attachable to the vehicle seat so that a back of the child seat backrest rests against the backrest of the vehicle seat, at least one hook connection in the region of the front ends of the main frame and of the frame of the child seat capable of being released by a swinging motion of the child seat in a direction to move its backrest away from the backrest of the vehicle seat, and a releasable child seat restraint comprising a coupling connecting the headrest and an upper end portion of the backrest of the child seat.

5,332,286

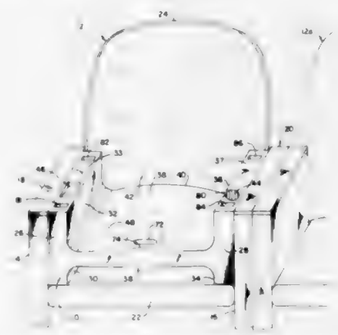
BOOSTER SEAT APPARATUS

Jessica A. Atherton; Ann Atherton, both of 759 Cal Cove Dr., Fort Myers, Fla. 33919, and Kimberly S. Brown, 17220 Terraverde Cir., #206, Fort Myers, Fla. 33908

Filed Oct. 7, 1992, Ser. No. 958,017

Int. Cl.[5] **A47C** *1/08*

U.S. Cl. 297—256.11 **11 Claims**



1. An invertible booster seat apparatus for use with a chair having a supporting seat and a laterally concavely curved seat back, said booster seat comprising:

a pair of spaced apart side supports, each having a first support portion for engaging the supporting seat and a second support portion for defining an armrest, said side supports being invertible such that said second support portions engage said supporting seat and said first support portions define armrests;

a seat section that interconnects said side supports between said first support portions and said second support portions, said seat section having a first seat surface for supporting a person thereon when said first support portions engage said supporting seat and an opposite second seat surface for supporting a person thereon when said second support portions engage said support seat; said seat section further having a horizontally, convexly curved rearward edge for conformably engaging the laterally concavely curved seat back of the chair;

each said seat surface having a raised rim portion formed along said rearward edge and having a height that is less than the height of said side supports;

a substantially fully open first back region formed adjacent said first seat surface and between said second side support portions for cooperating with said curved seat back of said chair to define a seat back for a person seated on said first seat surface; and

a substantially fully open second back region formed adjacent said second seat surface and between said first side support portions for cooperating with said curved seat back of said chair to define a seat back for a person seated on said second seat surface.

5,332,287

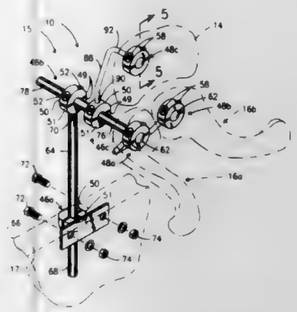
ARTICULATING HEADREST

Jody J. Whitmyer, Tallahassee, Fla., assignor to Whitmyer Biomechanix, Inc., Fla.

Filed Jun. 5, 1992, Ser. No. 894,441

Int. Cl.[5] **A47C** *7/36*

U.S. Cl. 297—405 **8 Claims**



1. An articulating headrest of a type suitable for use in combination with a seating device for a person wherein said headrest comprises:

an occipital pad and a pair of curvilinear sub-occipital pads, each of said pads being adjustably connected to the seating device, said occipital pad and said sub-occipital pads being adjacent to one another and at least a portion of each said sub-occipital pad being located generally directly below said occipital pad, such that at least a portion of said occipital pad is adapted for engagement with at least a portion of an occiput region of a head of a person occupying the seating device, and each sub-occipital pad of said pair of sub-occipital pads comprising a first segment and a second segment wherein said first segment is adapted for engagement with at least a portion of a sub-occipital region of the head of the person and said second segment extending forwardly of said first segment.

5,332,288

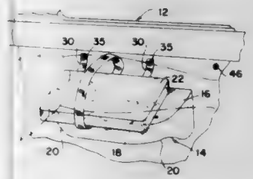
DETACHABLE ARM CUSHION FOR AUTOMOBILE ARM REST

John H. Coates, 1044 Phoenix St., Greenwood, S.C. 29646

Filed Sep. 16, 1993, Ser. No. 121,510

Int. Cl.[5] **A47C** *7/54;* **B60N** *2/46*

U.S. Cl. 297—411.21 **6 Claims**



1. An arm cushioning automotive accessory for detachable association with the arm rest of an automotive vehicle mounted on an inside panel of the vehicle, said accessory comprising an generally elongated cushion adapted to rest on the top surface of said arm rest and having a yieldable resilient interior pad adapted to fit on the top surface of said arm rest and a flexible exterior cover substantially snugly enclosing said resilient pad; and anchoring means for detachably anchoring said cushion to said vehicle side panel, said anchoring means comprising at least two generally short anchoring straps fastened at one end thereof to said cushion at points which are separated in the lengthwise direction of the cushion a generally predetermined distance, said anchoring straps carrying adjacent each of the other ends thereof an attachment means for detachable attachment to one of at least two cooperating attachment members mounted on said vehicle panel above the top surface of said vehicle arm rest, said cooperating attachment members being arranged on said panel in a row at points separated a distance substantially the same as said predetermined distance.

5,332,289

READY-TO-ASSEMBLE FURNITURE WITH IMPROVED FASTENING MEANS

John R. Nottingham; John W. Spirk, both of Moreland Hills; Jeffrey M. Kalman, Cleveland Heights; Robert G. Taylor, Strongsville; Roland A. Stenta, Shaker Heights, and Emily P. Stenta, Cincinnati, all of Ohio, assignors to Galsten Trading, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 531,878, May 31, 1990, Pat. No. 5,088,180. This application Nov. 19, 1991, Ser. No. 794,410

Int. Cl.[5] **A47C** *7/00*

U.S. Cl. 297—440.1 **10 Claims**



1. A multi-part article of furniture, comprising:

a) an essentially planar member having an upper surface and a lower surface;

b) multiple aprons, each apron having end walls, the aprons being attached lengthwise to the lower surface of the planar member and with the end walls of the aprons spaced a predetermined distance from each other in at least three locations;

c) multiple support members for supporting said planar member above a solid surface, the support members having at least one dimension substantially equal to the distance between the end walls of the multiple aprons;

d) an elongated dowel slideably engageable with an elongated U-shaped mating slot for rigidly but removably affixing the support members to the aprons.

5,332,290

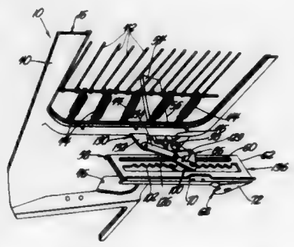
SEAT BELT LOAD TRANSFER MECHANISM FOR BENCH SEAT

Hans J. Borlinghaus, Mt. Clemens; Joseph T. Galea, Auburn Hills, and Thomas B. Blake, Mt. Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1992, Ser. No. 937,047

Int. Cl.[5] **A62B** *35/04*

U.S. Cl. 297—473 **3 Claims**



1. A fore and aft adjustable bench-type vehicular seat assem-

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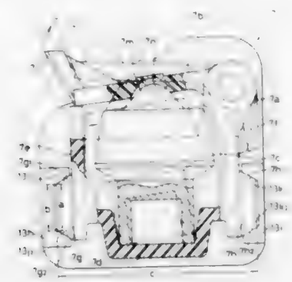
bly having a seat belt buckle moveable with the seat during adjustment, said assembly comprising: a vehicular underbody including a transversely extending #2 reinforcement bar and a #3 reinforcement bar spaced parallel from said #2 reinforcement bar; a seat having an opening therein; a pair of adjustment tracks slideably interconnecting said seat and said #2 and #3 reinforcement bars for adjusting the fore and aft position of said seat relative to said underbody in directions perpendicular to said #2 and #3 reinforcement bars; a seat belt buckle operatively extending through said opening in said seat; and buckle anchor means spaced from said adjustment tracks and interconnecting said seat belt buckle and said #3 reinforcement bar for translating said seat belt buckle with said seat during fore and aft position adjustment to consistently orient said seat belt buckle at an optimum elevation above said seat.

5,332,291

SEAT BELT RETRACTOR

Yoshiichi Fujimura, Shiga, and Shizutaka Matsuura, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,518
Claims priority, application Japan, Jan. 30, 1992, 4-015385
Int. Cl.[5] B60R *22/40*
U.S. Cl. 297—480 **1 Claim**



1. A seat belt retractor for a vehicle including a reel shaft for winding up a webbing, a frame rotatably supporting both ends of said reel shaft, lock means disposed in between said frame and said reel shaft and arranged to allow rotation of said reel shaft under normal circumstances and to be activated, when need arises, so as to prevent rotation of said reel shaft in at least a direction in which said webbing is unwound, deceleration sensing means operating when deceleration exceeding a predetermined value acts on the vehicle, and means for activating said lock means in response to the operation of said deceleration sensing means, wherein the improvement is characterized that:

said lock activating means has a lock means activating member that rotates together with said reel shaft under normal circumstances and that activates said lock means by relative rotation caused between the same and said reel shaft by the operation of said deceleration sensing means;

said deceleration sensing means has a casing and an actuator that is provided on said casing so as to be pivotable between an inoperative position where it allows rotation of said lock means activating member and an operative position where it prevents rotation of said lock means activating member in at least the direction in which said webbing is unwound, said actuator including a lever and a pawl provided on said lever, and an inertia member that is accommodated in said casing and held in an erect position under normal circumstances so as to set said actuator in said inoperative position and that tilts when deceleration exceeding a predetermined value acts on the vehicle so as to set said actuator into said operative position;

said inertia member has a large-mass portion as a top portion thereof, a small-mass portion as a bottom portion thereof, and an actuating projection formed on said top portion to pivot said lever toward said operative position when said inertia member tilts;

said large-mass portion of said inertia member has a frustoconical configuration, and the bottom portion of said small-mass portion of said inertia member has a cylindrical or columnar configuration;

said inertia member is formed so that when it tilts to such an extent that said inertia member abuts on a front wall of said casing, an outer peripheral side surface of said large-mass portion of said inertia member substantially coincides with the front wall of said casing;

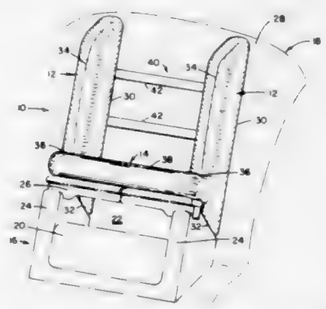
a pair of horizontally extending ridges having a trapezoidal cross-sectional configuration are formed on said front and rear walls, respectively, of said casing, and a pair of recesses having a trapezoidal cross-sectional configuration, which are fitted with said pair of ridges, respectively, are formed on said housing of said deceleration sensing means, which is provided on said frame, wherein said trapezoidal cross-sectional configuration of said ridges and that of said recesses are substantially similar to each other, and the trapezoidal cross-section of said ridges is little larger than that of said recesses.

5,332,292

PORTABLE PROTECTIVE CUSHION ARRANGEMENT FOR A TODDLER'S CAR SEAT

Pamela A. Price, Rte. 2, Box 617, Mosheim, Tenn. 37818, and Eva D. Jones, Rte. 8, Box 233B, Greeneville, Tenn. 37743

Filed Jan. 10, 1994, Ser. No. 179,331
Int. Cl.[5] B60N *2/28*
U.S. Cl. 297—488 **11 Claims**



1. A portable protective cushion arrangement for positioning on a toddler's car seat detachably secured to an automobile seat, said protective cushion arrangement located on each side of and at the front of a child sitting in said toddler's car seat and wherein said toddler's car seat has a seat, right and left side members connected to said toddler's car seat for enclosing the sides of said child, and a front support extending forwardly of and between said side members to protect the child against forward movement from said toddler's car seat; said portable protective cushion arrangement comprising:

a pair of side wing cushion means, a rearward portion for positioning against the front surface of the seat back of said automobile seat, a lower portion for sitting on top of one of said side members of said toddler's car seat adjacent the intersection of the lower portion with the front surface of the seat back of said automobile seat, and a forward portion facing away from the front surface of the seat back of said automobile seat;

flexible strap means of predetermined length connected to and between the rearward portions of each said side wing cushion means for positioning said rearward portions at a spaced distance from each other and for retaining each said rearward portion at essentially right angles to said front surface of the seat back of said automobile seat; and

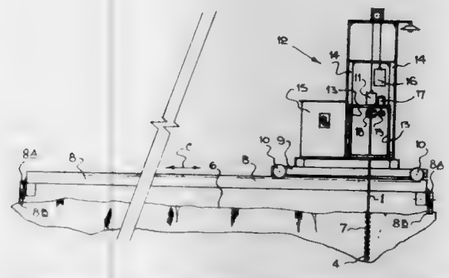
flexible tubular cushion means having a predetermined length and being connected to and between said forward portions of said side wing cushion means at a location intermediate the height of said side wing cushion means to connect the latter at a spaced distance from each other and for resting along and on top of said front support of said toddler's car seat.

5,332,293

APPARATUS FOR CUTTING EROSIVE MATERIALS USING HIGH PRESSURE WATER DEVICE

Christopher L. Higgins, and Stanley R. Burgess, both of Arcadia, Australia, assignors to Australian Stone Technology Pty. Ltd., Vaucluse, Australia

PCT No. PCT/AU90/00270, § 371 Date Mar. 23, 1992, § 102(e) Date Mar. 23, 1992, PCT Pub. No. WO91/01432, PCT Pub. Date Feb. 7, 1991
PCT Filed Jun. 26, 1990, Ser. No. 807,878
Claims priority, application Australia, Jul. 21, 1989, PJ 5387
Int. Cl.[5] E21C *25/60, 47/10*
U.S. Cl. 299—15 **13 Claims**



1. Apparatus for accurate cutting of erosive materials, using hydraulic means along, comprising a rigid high velocity, high pressure water lance, said water lance including a water directing cutting head at the lower end thereof,

means for selectively translocating said lance and head about 3 independent axes with respect to a surface of the material to be cut, and

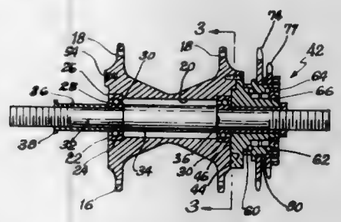
wherein said water lance is further supported by a truss which is able to be swung into at least three different positions relative to said water lance.

5,332,294

BICYCLE HUB FREEWHEEL ASSEMBLY

John Haeussinger, 10330 Everell Pl., Santee, Calif. 92071

Filed Sep. 21, 1992, Ser. No. 947,795
Int. Cl.[5] B60B *27/02*
U.S. Cl. 301—110.5 **4 Claims**



1. For mounting on a bicycle hub with an axle bore therethrough defining a rotational axis and having an endwall defining endwall keying structure, a freewheel comprising:

(a) an annular core having a bore therethrough coaxial with said axial bore when said freewheel is mounted to said hub and having a gear spindle coaxially and unidirectionally rotationally mounted around said core;

(b) said core defining a sidewall having sidewall keying structure which keys to the endwall keying structure of said hub to positively prevent any rotational motion between said hub and spindle when said freewheel sidewall is mated against an endwall of said hub; and,

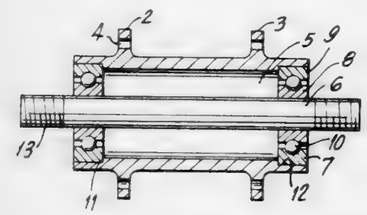
(c) direct fastening means for releasibly fastening said sidewall directly to said endwall substantially independently of any other axially compressive freewheel mounting structure and any axle-concentric threaded mounting connections with other structure between said sidewall and endwall.

5,332,295

BICYCLE HUB

David Vogel, 12 Clark Rd., Barrington, R.I. 02806, and Jonathan M. Glick, 6505 Marsol Rd., Mayfield Heights, Ohio 44124

Filed Oct. 22, 1991, Ser. No. 780,358
Int. Cl.[5] B60B *27/00*
U.S. Cl. 301—110.5 **2 Claims**



1. A wheel hub for a bicycle comprising an elongated cylinder, the cylinder having a central passage therethrough and having means for mating with one or more bearings for rotationally supporting the hub, and, a pair of spoke flanges 2, 3 located on the hub and spaced apart at from about 32–42 millimeters, each spoke flange having means for attaching at least one spoke end thereto, said spoke flanges being positioned inboard from said means for mating with bearings.

5,332,296

APPARATUS AND METHOD FOR CONTROLLING REAR WHEEL BRAKING FORCE OF VEHICLE

Takao Morita, Toyota; Tsutomu Matsukawa, Okazaki; Hiromichi Yasunaga, Okazaki; Tadao Tanaka, Okazaki; Akihiko Togashi, Okazaki; Yasutaka Taniguchi, Hoi, and Masanori Tani, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,363
Claims priority, application Japan, Nov. 29, 1991, 3-315655
Int. Cl.[5] B60T *15/00*
U.S. Cl. 303—9.62 **20 Claims**

1. In a rear wheel braking force control apparatus of a vehicle comprising proportioning valves (**571**, **572**) disposed in passages (**56**, **59**) for supplying a hydraulic pressure generated by a master cylinder (**53**) to wheel cylinders (**553**, **554**) of right and left rear wheels for controlling wheel cylinder pressure so that increasing rate of the wheel cylinder pressure is smaller than increasing rate of master cylinder pressure;

electromagnetic valves (**62**, **63**) disposed in the passage to effect or invalidate the action of said proportioning valves;

said electromagnetic valves being ON/OFF valves disposed in passages (**60**, **61**) for bypassing said proportioning valves and transmitting the master cylinder pressure to said wheel cylinders; and

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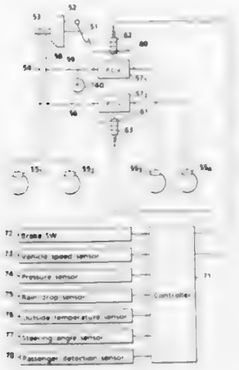
control means (71) for controlling operation of said electromagnetic valves;

said apparatus further comprises:

braking degree detection means for detecting degree of braking during braking of the vehicle; and

turning condition detection means for detecting turning condition of the vehicle;

said proportioning valves and said electromagnetic valves being provided for the individual right and left rear wheels;



said control means operating said electromagnetic valves to invalidate the action of said proportioning valves when the braking degree detected by said braking degree detection means is weaker than a setting degree, and effect the action of said proportioning valves when the braking degree is stronger than the setting degree; and

during turning of the vehicle, the setting degree being corrected so that the setting degree of said electromagnetic valve at the outer wheel side of turning is relatively higher than the setting degree of said electromagnetic valve at the inner wheel side of turning

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5,332,297

CHARGING CUT-OFF VALVE ARRANGEMENT FOR MICROPROCESSOR-BASED ELECTROPNEUMATIC LOCOMOTIVE BRAKE CONTROL SYSTEM

Brian L. Cunkelman, Wilmerding; Richard F. Balukin, Pittsburgh, and George B. Neilson, Greensburg, all of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 26, 1993, Ser. No. 51,963

Int. Cl.[5] B60T *15/14*

U.S. Cl. 303—15 **7 Claims**

1. A brake pipe charging cut-off arrangement for a microprocessor-based locomotive brake control system comprising:

(a) a source of fluid under pressure;

(b) a brake pipe;

(c) regulator means between said source of fluid pressure and said brake pipe for controlling the pressure of fluid carried in said brake pipe in accordance with a certain chosen pressure;

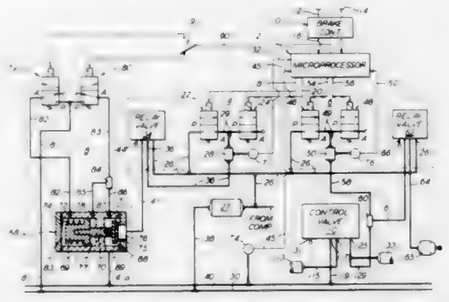
(d) charging cut-off valve means having an open position for providing fluid pressure communication between said regulator means and said brake pipe, and a closed position for interrupting fluid pressure communication therebetween;

(e) selector means for establishing said open and closed positions of said charging cut-off valve means, in accordance with a desired controlling or non-controlling mode of operation of said locomotive;

(f) microprocessor means for providing electric power to said regulator means and said selector means, said selector means comprising:

(i) a lead and a trail electropneumatic valve device each having a supply port to which said fluid pressure source is connected and a delivery port communicated with said supply port in an energized condition thereof and to atmosphere in a de-energized condition thereof; and

(ii) switch means for connecting electric power from said microprocessor means to either one of said lead and trail electropneumatic valve means, while concurrently cutting off electric power from said microprocessor means to the other of said lead and trail electropneumatic valve means to establish said controlling and non-controlling modes of locomotive operation, said



lead electropneumatic valve device being energized in said controlling mode of operation and said trail electropneumatic valve device being energized in said non-controlling mode;

(g) bias means for urging said charging cut-off valve means toward said closed position, so that in the absence of electric power at said regulator means and both said lead and trail electropneumatic valve devices, fluid pressure communication between said brake pipe and said regulator means is interrupted; and

(h) sensing means for maintaining said charging cut-off valve means in said open position in opposition to said bias means in accordance with loss of electric power from said microprocessor when said locomotive is in a controlling mode of operation.

5,332,298

DECELERATION FEEDBACK ELECTRONIC CONTROL SYSTEM FOR USE IN A BRAKE SYSTEM

Hideaki Fujioka, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 29, 1993, Ser. No. 158,401

Claims priority, application Japan, Dec. 2, 1992, 4-323151

Int. Cl.[5] B60T *13/68*

U.S. Cl. 303—20 **3 Claims**

1. A brake control system for obtaining an optimum braking deceleration corresponding to a brake pedal stroke in which a braking force is controlled so that a braking effect corresponding to a human brake operation input quantity is obtained by electronically controlling an auxiliary power other than a human power, said brake control system comprising:

operation input detecting means for detecting a human operation input quantity;

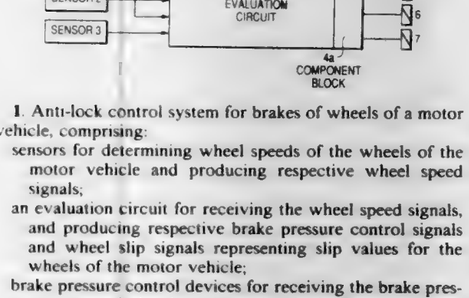
operation input start time detecting means for detecting a human operation input start time;

current deceleration detecting means for detecting a current deceleration of a car speed;

initial deceleration detecting means for detecting an initial deceleration of the car based on the deceleration derived from said current deceleration detecting means in response to the human operation input start time detected by said operation input start time detecting means;

control target addition quantity setting means for setting up a control target addition quantity based on a signal of the human operation input quantity detected by said operation input detecting means;

control target quantity setting means for setting a control target quantity by adding the initial deceleration detected



by said initial deceleration detecting means and the control target addition quantity set up by said control target addition quantity setting means; and

control command output means for generating a control command signal by subtracting the control target quantity set up by said control target quantity setting means from the deceleration derived from said current deceleration detecting means.

5,332,299

ANTI-LOCK CONTROL SYSTEM

Jochen Schäfer, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

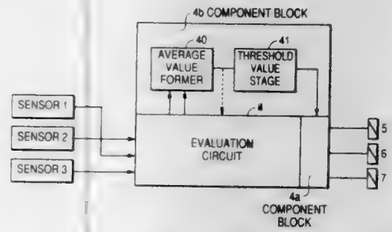
PCT No. PCT/EP91/00097, § 371 Date May 24, 1992, § 102(e) Date May 24, 1992, PCT Pub. No. WO91/11354, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 19, 1991, Ser. No. 915,834

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1990, 4002091

Int. Cl.[5] B60T *8/66*

U.S. Cl. 303—94 **5 Claims**



1. Anti-lock control system for brakes of wheels of a motor vehicle, comprising:

sensors for determining wheel speeds of the wheels of the motor vehicle and producing respective wheel speed signals;

an evaluation circuit for receiving the wheel speed signals, and producing respective brake pressure control signals and wheel slip signals representing slip values for the wheels of the motor vehicle;

brake pressure control devices for receiving the brake pressure control signals and varying brake pressure at the respective brakes of the wheels of the motor vehicle; and

a component block, within the evaluation circuit, having a slip combination means for receiving the wheel slip signals produced in the evaluation circuit and producing a slip combination signal representing a slip combination value formed from an average value or a sum of at least the slip values for the wheels of one axle, and further having a threshold value means for receiving the slip combination signal and producing an output enable signal which is combined with a predetermined instability criterion, formed in the evaluation circuit from the wheel slip signals and the slip combination signal, to trigger production of the brake pressure control signals, the output enable signal making triggering of the brake pressure control signals more difficult if a disturbance other than wheel locking has occurred.

5,332,300

PROCESS FOR CONTROLLING THE STABILITY OF VEHICLES

Uwe Hartmann, Stuttgart, and Anton van Zanten, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

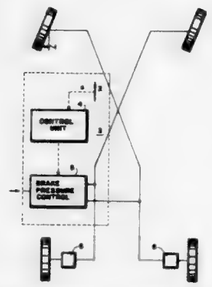
PCT No. PCT/EP88/00842, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO89/02842, PCT Pub. Date Apr. 6, 1989

PCT Filed Sep. 15, 1988, Ser. No. 392,957

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1987, 3731756

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—100 **22 Claims**



1. A process for controlling stability of a vehicle during travel through curves, said process comprising the steps of:

determining steering angle δ, vehicle yaw speed Φ, vehicle forward speed v_F, and coefficient of friction μ between tires and road;

calculating a lower limiting value curve of the yaw speed Φ as a function of the steering angle δ and in dependence upon the vehicle speed v_F and the coefficient of the friction μ; and

reducing brake pressure if the yaw speed falls lower limiting value curve.

5,332,301

ABS PRESSURE REDUCTION WHEN WHEEL DECELERATION EXCEEDS A THRESHOLD RELATIVE TO VEHICLE DECELERATION

Georg Roll, Heusenstamm, and Heinz-F. Ohm, Weiterstadt, both of Fed. Rep. of Germany, assignors to Fahrzeumgtechnik Ebern GmbH, Fed. Rep. of Germany

Filed Mar. 10, 1993, Ser. No. 28,975

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1992, 4208048

Int. Cl.[5] B60T *8/32*; **G01P** *3/00*; **G05D** *16/00*

U.S. Cl. 303—103 **17 Claims**

1. An anti-lock braking control system for automotive vehicles, said system including:

first and second inductive sensors (5, 6) that generate signals

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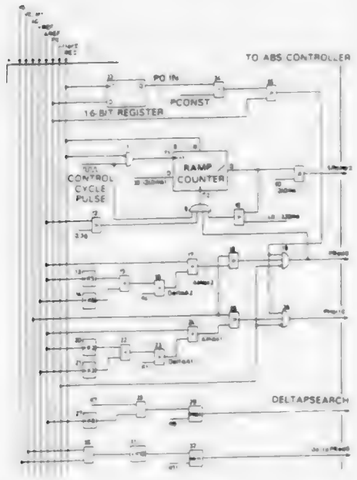
indicative of conditions at wheels of a vehicle having said system,

an ABS controller (3) which recognizes conditions of wheel overbraking from said signals and produces corresponding control signals, and

a pressure modulator (1) which is caused by the control signals to adjust the brake pressures on the wheels of said vehicle, with first and second and third pressure-setting phases being passed cyclically through to each wheel so that when overbraking is recognized, in each case a pressure reduction takes place, and when sufficient wheel acceleration occurs again pressure maintenance is effected, and

after the wheel enters a stable slippage region a pressure build-up again takes place until another overbraking again introduces a pressure reduction phase, with steepness of the pressure build-up being increased abruptly by activation of a search ramp if the pressure build-up does not lead to overbraking of the wheel, within a predetermined period of time TP on;

the ABS controller (3) being provided with an additional internal auxiliary circuit (4) which, on the basis of measured wheel decelerations and calculated vehicle reference decelerations AREF, superimposes adaptively in relation to physical circumstances, a fine pressure modulation on the normal pressure modulations;



for each controlled wheel, the auxiliary circuit (4) produces a pressure-maintenance signal if wheel deceleration is greater than the vehicle reference deceleration increased by a threshold DeltaA1, and produces a pressure reduction signal if wheel deceleration is greater than the vehicle reference deceleration increased by a threshold DeltaA2 (DeltaA2 >DeltaA1), whereby

the ABS controller maintains the brake pressure of the wheel in question or even reduces it when wheel 40 speed is still in a stable slippage region;

the auxiliary circuit (4) increases the time TS for activating of the search ramp in the absence of a wheel-locking tendency whenever a pressure-release signal has been given during the pressure build-up; and

as a function of the vehicle reference deceleration AREF reached the auxiliary circuit (4), currently calculates a variable slope DeltaPSearch for the search ramp, with the variable slope decreasing as AREF increases.

5,332,302

MASTER CYLINDER LOW/HIGH PRESSURE COMBINATION VALVE WHICH OPERATES INDEPENDENTLY OF BRAKE PEDAL POSITION

Joachim Maas, Bad Vilbel, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

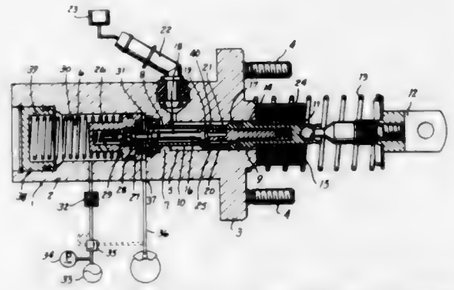
PCT No. PCT/EP91/02028, § 371 Date Jul. 8, 1992, § 102(e) Date Jul. 8, 1992, PCT Pub. No. WO92/08631, PCT Pub. Date May 29, 1992

PCT Filed Oct. 26, 1991, Ser. No. 867,715

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1990, 40359096

Int. Cl.[5] **B60T** *8/44, 13/14*

U.S. Cl. 303—114.1 **12 Claims**



1. A brake pressure control for a brake circuit of a hydraulic vehicle brake system comprising: a housing; a high pressure valve and a low pressure valve combination disposed in said housing; an actuator rod adapted to be advanced by a brake pedal from a rest position; an actuator piston slidably mounted in said housing adapted to be engaged at one end by said actuator rod to be advanced in an actuation direction; a hydraulic fluid outlet connected to said brake circuit; an unpressurized reservoir; a pressure source; said high pressure valve when opened connecting said fluid outlet to said pressure source; said low pressure valve when open connecting said unpressurized reservoir to said hydraulic fluid outlet; a valve piston, and means carrying said valve piston within said actuator piston as said actuator piston is advanced by said actuator rod, said means allowing relative movement of said valve piston in said actuator piston in a direction opposite to said actuation direction of movement of said actuator piston upon application of a predetermined force to said valve piston; means causing said low pressure valve to be closed and said high pressure valve to be successively opened as said valve piston moves with said actuator piston in said actuation direction; electromagnetic means energizable to exert a force on said valve piston effective to move said valve piston within said actuator piston independently of the actuating position of said actuator rod to open said low pressure valve and cause said hydraulic fluid outlet to be connected to said reservoir.

5,332,303

ANTI-LOCK-CONTROLLED BRAKE SYSTEM

Hans Wupper, Friedrichsdorf/Ts., Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankurt am Main, Fed. Rep. of Germany

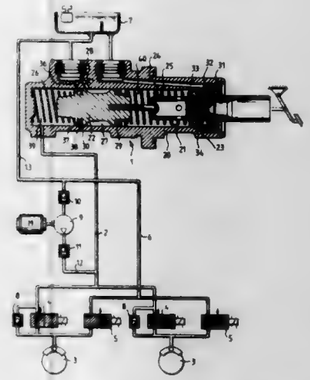
PCT No. PCT/EP91/01842, § 371 Date Jun. 16, 1992, § 102(e) Date Jun. 16, 1992, PCT Pub. No. WO92/06873, PCT Pub. Date Apr. 30, 1992

PCT Filed Sep. 26, 1991, Ser. No. 860,508

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1990, 4032874; Dec. 14, 1990, 4039988

Int. Cl.[5] **B60T** *13/18, 11/232;* **F16J** *9/20, 9/28*

U.S. Cl. 303—116.1 **11 Claims**



1. An anti-lock-controlled brake system including at least one wheel brake, a brake pedal, a master brake cylinder having a housing with an internal bore formed therein, at least one working piston and one working chamber, said working chamber defined in part by one end of said working piston and by said internal bore, said working piston slidably movable in said master cylinder housing, said internal bore of said brake pedal engaged with said working piston, a return spring acting on said working piston in opposition to said brake pedal engagement, said working piston movable towards and away from a retracted position by actuation by said brake pedal and return by said return spring, a storage reservoir, means for communicating said working chamber with said reservoir, including a valve arrangement opening communication when said master brake cylinder is not operated, and closing said communication when said master brake cylinder is operated, a controllably operable pump having a suction side inlet connected to said storage reservoir and a delivery side outlet connected to said working chamber and said at least one wheel brake, a brake line connected to said working chamber and said pump outlet and said wheel brake and a return line connecting said reservoir to said wheel brake, an inlet valve associated with said wheel brake and controlling communication of said wheel brake with said working chamber and pump outlet via said brake line and an outlet valve controlling communication of said reservoir and said wheel brake via said return line and enabling a slip-dependent wheel brake pressure control, said valve arrangement including a primary seal provided on said working piston and retained in an external groove in said working piston adjacent said one end thereof defining said working chamber, said seal comprised of an inner first elastic ring and of an outer second ring of harder material, said outer second ring expanded by said inner first ring to engage said internal bore in said master brake cylinder housing to be in sliding engagement therewith as said working piston is moved in said bore; a narrow hole in said master cylinder directly leading into said working chamber, located just ahead of said seal when said working piston is in said retracted position to allow flow through said narrow hole and past said one end of said piston into said working chamber; said pump open to free fluid flow therethrough from said reservoir to said working chamber when said pump is not operated and said brake pedal is released.

5,332,304

ABS HYDRAULIC CIRCUIT WITH A VARIABLY OPEN INLET VALVE

Joachim Maas, Bad Vilbel, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Fed. Rep. of Germany

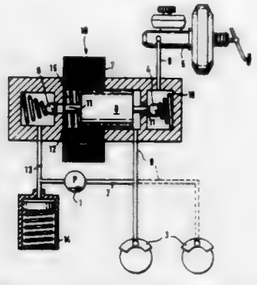
PCT No. PCT/EP92/01065, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/22451, PCT Pub. Date Dec. 23, 1992

PCT Filed May 14, 1992, Ser. No. 976,985

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4118951

Int. Cl.[5] **B60T** *8/32, 8/48, 8/36*

U.S. Cl. 303—116.2 **23 Claims**



6. A hydraulic brake system with anti-lock control for controlling the brake system during a lock-up condition that includes an undesirable frictional engagement between a road surface and a vehicle wheel, comprising:

a master cylinder interconnected through a flow control valve to a wheel brake; and

an auxiliary pressure means connected to said wheel brake, said flow control valve including

a normally open inlet valve having a variable open position to permit fluid communication between said master cylinder and said wheel brake, said inlet valve being adapted to close when lock-up occurs thereby isolating said master cylinder from said wheel brake; and

a normally closed outlet valve for controlling flow from said wheel brake to said auxiliary pressure means; said outlet valve opening to allow auxiliary pressure to communicate with said wheel brake during lock-up.

5,332,305

TOOL CHEST WITH TOOL PALLET

George R. Slivon, Kenosha; Nancy C. R. Gasperi, Racine; Kenneth C. Happ, Burlington, all of Wis.; Erick E. Alfaro, Thornhill, Canada; Roman L. Bauer, Toronto, Canada; Alex F. Burns, Scarborough, Canada; Chak C. Chan, Richmond Hill, Canada; Alois Kadlecek, Bradford, Canada, and George A. Niles, Toronto, Canada, assignors to Snap-on Tools Corporation, Kenosha, Wis.

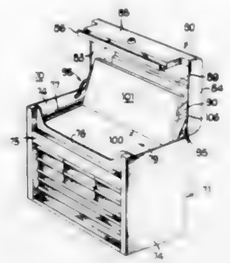
Filed Mar. 12, 1992, Ser. No. 850,434

Int. Cl.[5] **A47B** *88/00*

U.S. Cl. 312—328 **6 Claims**

1. In a tool chest including a bottom wall and peripheral wall structure having a forward end and a rearward end and upstanding from said bottom wall for cooperation therewith to define an open-top storage compartment therein, and a cover coupled to the peripheral wall structure adjacent to the rearward end thereof for movement between a closed position to close the storage compartment and an upstanding open position exposing the storage compartment, the improvement

comprising: a tool pallet having an obverse side for supporting tools thereon and a reverse side and disposed in the tool chest and shiftable between first and second positions relative thereto, coupling means permanently connecting said pallet to said tool chest and accommodating movement of said pallet between said first and second positions, said pallet in its first position overlying and covering the storage compartment with said obverse side facing away from the bottom wall, said pallet in its second position being inclined with respect to the bottom



wall with the cover in its open position and with said obverse side facing toward the forward end of the wall structure and with said reverse side facing the cover so as to uncover the storage compartment and permit access thereto, and support means on the tool chest for supporting said pallet in each of its first and second positions, said support means including a pair of elongated guide rails disposed on opposite sides of the peripheral wall structure, and means on said pallet engageable with said guide rail

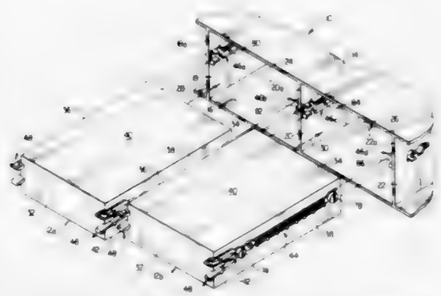
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5,332,306

COMPUTER DISK DRIVE MOUNTING APPARATUS

James F. Babb, and Roberta M. Madsen, both of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 5, 1992, Ser. No. 894,117
Int. Cl.[5] H01R *13/62*; **H05K** *7/16*
U.S. Cl. 312—334.16 **12 Claims**



1. Apparatus for securing a side portion of a disk drive to a computer chassis wall, comprising

an elongated guide channel member having an open side portion, a front end portion, and a generally U-shaped cross-section along its length, said guide channel member being mountable on said chassis wall with said open side portion of said guide channel member facing away from the wall,

retainer means supportable in said guide channel member, said retainer means being configured to be longitudinally inserted through the interior of said guide channel member and being securable to said side portion of a disk drive, said retainer means including an elongated retainer member having a front end portion and being rearwardly insertable into said guide channel member through said front end portion thereof; and

cooperating means, associated with said front end portions of said retainer member and said guide channel member, for releasably interlocking said retainer means and said guide channel member in response to insertion of said retainer means a predetermined longitudinal distance through the interior of said guide channel member,

said guide channel member having an elongated rectangular base wall positionable against said computer chassis wall, and a pair of opposite side walls projecting transversely outwardly from opposite side edges of said base wall, said side walls having forwardly and outwardly angled front end portions disposed forwardly adjacent a pair of notches formed in said side walls, and

said front end portion of said retainer member being bifurcated and defined by a pair of opposed, resiliently deflectable arms having front ends positioned forwardly of a pair of projecting bosses carried by said arms,

said bosses being positioned to be cammed inwardly toward one another by said front end portions of said side walls, and then snap outwardly into said side wall notches, as said bifurcated front end portion of said retainer member is moved rearwardly into said guide channel member,

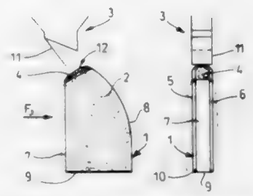
said opposed arms being manually deflectable toward one another to inwardly remove said bosses from said notches to permit forward removal of said retainer member from said guide channel member by forwardly pulling on the deflected arms.

5,332,307

MEASUREMENT CELL FOR GRANULAR OR POWDERED PRODUCTS

Dominique Le Gigan, Parmain, France, assignor to Star Partners, Chicago, Ill.

Continuation of Ser. No. 897,270, Jun. 11, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 124,352
Claims priority, application France, Jun. 11, 1992, 91 07217
Int. Cl.[5] G01R *27/02*
U.S. Cl. 324—664 **19 Claims**



1. A measurement cell for measuring granular or powdered products, comprising:

a base located at a lower portion of the measurement cell;

a fill opening located in an upper portion of the measurement cell, wherein the fill opening comprises two opposite and inclined sides and the fill opening defines a plane and which forms an acute dihedral angle with a horizontal plane when the measurement cell is in an operational position;

a middle portion of the measurement cell connected to said base and said fill opening, wherein said middle portion comprises two lateral plane and parallel wall connected to the two opposite and inclined sides of the opening and defines horizontal cross-sections taken parallel to said horizontal plane which vary in size continuously from said base to said fill opening, thereby limiting the size of the dome formed by the products after filling due to the force of gravity; and

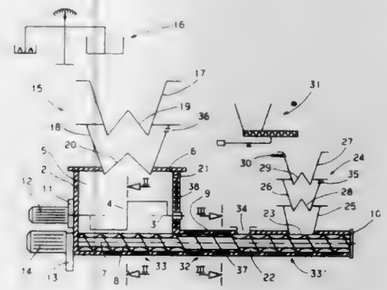
wherein said two plane and parallel walls of said cell comprise plates of a measurement capacitor for capacitive measurement of the moisture content of cereals, oleaginous or proteaneceous products.

5,332,308

PROCESS AND APPARATUS FOR PRODUCTION OF PLASTICS CONTAINING ADDITIVES

Bernhard Scheuring, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 27, 1992, Ser. No. 967,103
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 4135675
Int. Cl.[5] B01F *7/08*; **B28C** *7/06*
U.S. Cl. 366—76 **12 Claims**



1. A process for the production of plastic material containing an additive, said process comprising,

providing a mixing tank having a rotatable extruder screw at a bottom of the tank, said extruder screw extending from said tank into a conveying cylinder which is connected to said tank,

supplying plastic material into said conveying cylinder at an inlet spaced from the mixing tank,

conveying the plastic material in said cylinder, by said extruder screw, towards said mixing tank,

heating the plastic material in said conveying cylinder to melt the plastic material therein and supply the melted plastic material to said mixing tank,

introducing additive into said mixing tank to mix the additive with the melted plastic material in said mixing tank,

reversing the direction of rotation of said extruder screw to advance the now mixed additive and melted plastic material from said mixing tank into said conveying cylinder in a direction opposite the direction of travel of the plastic material when the plastic material traveled from said inlet to said mixing tank, and

advancing the mixed additive and plastic material in said conveying cylinder to a discharge outlet thereof.

5,332,309

REACTIVE COMPONENT MIXING WITH METERED DRY FILLER

Dario J. Ramazzotti, Grand Rapids; Ronald J. Ranalli, Caledonia, and David N. Deboer, Greenville, all of Mich., assignors to Edge-Sweets Company, Grand Rapids, Mich.

Filed Apr. 23, 1992, Ser. No. 872,438
Int. Cl.[5] B29B *7/00*
U.S. Cl. 366—88 **47 Claims**

1. An apparatus for combining at least one dry filler with at least one liquid component comprising:

a feeder for dry filler;

a compression chamber having an inlet in communication with said dry filler feeder to receive dry filler therefrom and an outlet a spaced distance from the inlet;

a compression auger received within the compression chamber;

a first drive motor linked to said compression auger for imparting rotation thereto for moving the dry filler from the compression chamber inlet to the compression chamber outlet;

a mixing chamber having an inlet in communication with said compression chamber outlet to receive the dry filler therefrom and an outlet a spaced distance from the mixing chamber inlet;

a mixing element rotatively mounted within the mixing chamber;

a second drive motor linked to the mixing element for imparting rotation thereto for mixing the dry filler and liquid component and conveying the mixture out of the mixing chamber outlet;

at least one liquid component inlet in fluid communication with one of said mixing chamber and compression chamber for injecting a liquid component therein;

a pressure sensor mounted to the compression chamber for measuring the relative pressure of the dry filler within the compression chamber and for generating a signal representative of the pressure of the dry filler in the compression chamber; and

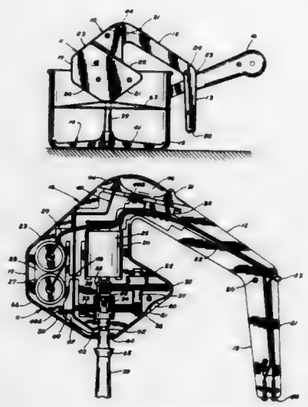
a controller connected to the first drive motor and to the pressure sensor, the controller being responsive to the signal representative of the pressure of the dry filler in the compression chamber to control the speed of the first drive motor to maintain the pressure within the compression zone within a predetermined range.

5,332,310

SELF-SUPPORTING HOUSEHOLD STIRRING APPLIANCE

Andrew J. Wells, 6257 Star La. NW., Bemidji, Minn. 56601

Filed Feb. 24, 1992, Ser. No. 840,025
Int. Cl.[5] B01F *7/20*, *15/00*
U.S. Cl. 366—129 **20 Claims**



1. A self-supporting cordless rechargeable battery operated household stirring appliance for use in a saucepan, said appliance comprising:

A) a molded synthetic resinous housing body defining outer edges,

B) a battery operated motor and at least one rechargeable battery electrically connected thereto, said motor and battery being held within cavities formed in said housing,

C) a drive gear journaled in a cylindrical bearing cavity formed in said housing,

D) a speed-reducing gear train journaled in cylindrical bearing cavities formed in said housing and operatively connecting said drive gear to said motor,

E) an ejectable stirring paddle at the bottommost end of a central vertical shaft, said shaft extending into said hous-

ing and engaging said drive gear, said paddle having at least one horizontally extending blade, said paddle defining distal outer edges, said distal outer edges of said paddle extending beyond the outer edges of the overlying housing and lying generally in a common plane, whereby said paddle, when resting on the bottom of the saucepan, and the vertical shaft, solely and exclusively support and hold the housing body upright during use.

F) a handle integral with said housing body and extending outwardly at one end from the top edge of the body, the length of said handle being greater than the radius of the saucepan with which the appliance is used,

G) a downwardly directed extension of the handle extending from the end of said handle opposite from the end which is integral with the housing body, said extension being spaced from and generally parallel to the shaft of the stirring paddle,

H) recharger electrical contacts in the end of said extension, and

I) circuitry extending from said contacts to said battery.

5,332,311

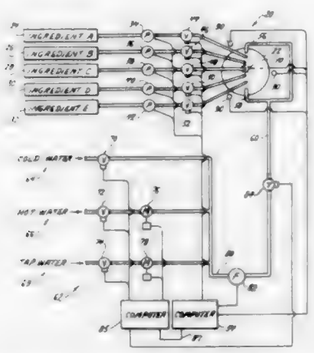
LIQUID SCALE AND METHOD FOR LIQUID INGREDIENT FLUSH THEREOF

Joseph A. Volk, Jr., Creve Coeur; Mark R. Kniepmann, Florissant, and Thomas M. Harvengt, St. Louis, all of Mo., assignors to Beta Raven Inc., Earth City, Mo.

Filed Oct. 9, 1991, Ser. No. 774,699

Int. Cl.[5] **B01F** *15/02, 15/04*

U.S. Cl. 366—134 **40 Claims**



1. In an industrial process system having means for preparing a batch of ingredients for a foodstuff, said batch comprising a large number of servings of said foodstuff, the improvement comprising a hopper, said hopper having a discharge, means for feeding a measured amount of each of a plurality of liquid ingredients into said hopper, and means for flushing substantially all of said pre-fed liquid ingredients out of said hopper discharge with a liquid ingredient.

5,332,312

CHEMICAL HANDLING AND MIXING SYSTEM

Mark A. Evanson, Phoenix, Ariz., assignor to Environmental Considerations, Ltd., Litchfield Park, Ariz.

Division of Ser. No. 635,268, Dec. 28, 1990, Pat. No. 5,240,326. This application Oct. 13, 1992, Ser. No. 959,673

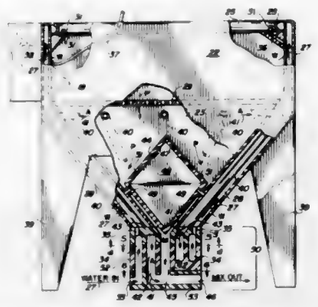
Int. Cl.[5] **B01F** *5/04, 5/20*

U.S. Cl. 366—136 **10 Claims**

1. A chemical mixing system, comprising:

a first tank having an inner wall and an outer wall defining an inter-wall space therebetween and a central interior opening, said interior opening further having an upper and lower chamber defined therein, wherein said upper chamber defines a large open area for direct loading of bulk chemicals and said lower chamber terminates in a fluid outlet;

fluid introduction means for introducing a fluid flow into and through said inter-wall space of said first tank and into said upper chamber of said first tank;



a perforate member substantially subtending and dividing said interior opening into said upper and said lower chambers; and

a second tank having means for agitating fluids and dispensing an agitated fluid from said second tank, said second tank being in fluid flow communication with said fluid outlet of said first tank.

5,332,313

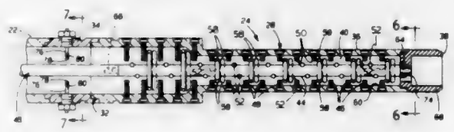
NOZZLE MIXER ASSEMBLY

David J. Cimbalik; Daniel N. Kemp; Timothy W. Mitin, and Christopher C. Shirk, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 12, 1993, Ser. No. 30,962

Int. Cl.[5] **B01F** *5/00;* **B05B** *7/04*

U.S. Cl. 366—303 **15 Claims**



1. A nozzle assembly (**24**) for filling a container with a homogeneous mixture of viscous liquids, said assembly comprising:

a housing (**28**) including an inner passageway (**40**) extending therethrough defining a longitudinal axis (**42**) of said housing (**28**);

an axially rotatable drive shaft (**44**) supported by said housing (**28**) and extending through said passageway (**40**) along said longitudinal axis (**42**); and

folding means for folding the liquids flowing through said passageway (**40**) while preventing columns of unmixed liquid from flowing axially along said drive shaft (**44**); said folding means including stationary pin members (**46**) disposed along said passageway (**40**) and extending into said passageway (**40**) from said housing (**28**) and moving pins (**52**) attached to said drive shaft (**44**) at respective attachment points and extending into said passageway (**40**), said moving pins (**52**) each being mounted nonradially on said drive shaft (**44**) in a plane extending generally tangential to said drive shaft (**44**) at said respective point of attachment.

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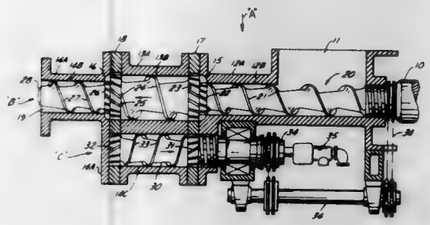
EXTRUSION APPARATUS WITH A BACKFEED EXTRUDER FOR MIXING AND EXTRUDING OF THERMO-PLASTIC AND THERMO-SETTING MATERIALS

Paul Geyer, 210 B. North Lindell Rd., Greensboro, N.C. 27403

Filed Jul. 6, 1992, Ser. No. 909,235

Int. Cl.[5] **B01F** *7/08;* **B29B** *7/46*

U.S. Cl. 366—82 **4 Claims**



1. An apparatus for the extrusion of natural and synthetic rubber stocks, which comprises:

a barrel defining a longitudinal supply bore and a parallel longitudinal backfeed bore;

a supply rotor rotatably disposed within the supply bore;

a backfeed rotor rotatably disposed within the backfeed bore;

the supply bore and the supply rotor cooperatively defining a supply extruder designed to masticate, warm, pressurize and to otherwise work the stock introduced therein, the supply extruder having a feed section with feed section helical grooves in the supply rotor operably advancing a first stream of stock toward an enlarged rotor section of the supply rotor with enlarged rotor section helical grooves providing a double extrusion capacity;

the backfeed bore and the backfeed rotor cooperatively defining a backfeed extruder having a first end and an oppositely disposed second end and having helical grooves therebetween in the backfeed rotor operably advancing a second stream of stock toward the first end for entry into the enlarged rotor section; and

means for communicating the first stream of stock from the feed section to the enlarged rotor section and for communicating the second stream of stock from the first end of the backfeed extruder to the enlarged rotor section, including

multiple rotor grooves in the feed section of the rotor at an end of the feed section being longitudinally open toward the helical grooves of the feed section of the rotor and operably receiving stock therefrom,

multiple barrel grooves in a feed section of the barrel being radially open toward the feed section rotor grooves and defining a first shear area therebetween and operably receiving stock therethrough and being longitudinally open toward the enlarged rotor section to direct stock thereto,

multiple rotor grooves in an enlarged rotor section of the supply rotor corresponding to the enlarged rotor section and at a first end of the enlarged rotor section longitudinally open toward the feed section multiple barrel grooves and defining a second shear area therebetween and operably receiving stock therethrough and the multiple rotor grooves in the enlarged rotor section being radially open to a first connecting cavity and receiving stock therein and the multiple rotor grooves in the enlarged rotor section being longitudinally open toward the helical grooves of the enlarged rotor section of the rotor and directing stock thereto, and

multiple rotor grooves in the backfeed rotor at a first end of the backfeed rotor longitudinally open toward helical grooves of the backfeed rotor and for operable receiving stock therefrom and being radially open to the first connecting cavity and directing stock thereto.

5,332,315

APPARATUS AND SENSOR UNIT FOR MONITORING CHANGES IN A PHYSICAL QUANTITY WITH TIME

John F. C. Baker, West Midlands, and John M. Phillips, Cardiff, both of United Kingdom, assignors to GEC Avery Limited, Warley-West Midlands and Industrial Electronic Automation Limited, Cardiff, both of United Kingdom, a part interest

Filed Apr. 27, 1992, Ser. No. 873,944

Claims priority, application United Kingdom, Apr. 27, 1991, 9109161

Int. Cl.[5] **G01K** *1/08, 13/00, 3/00*

U.S. Cl. 374—102 **31 Claims**

1. Apparatus, for monitoring changes in a physical quantity with time, said apparatus including a reader unit and at least one sensor unit, said reader unit including an r.f. power source, said sensor unit comprising a plastic body hermetically encapsulating a means arranged for measuring said physical quantity at predetermined time intervals and a data storage means arranged to store measurements of said physical quantity with corresponding time data, said plastic body also hermetically encapsulating communication means for transferring said measurements of said physical quantity and said time data from said sensor unit to said reader unit, and said sensor unit also carrying inductive coupling means arranged to receive energy from said r.f. power source of said reader unit to power said communication means.

26. A method of recording changes in the temperature of a consignment of goods over a period of time, including packing a hermetically sealed sensor unit with said consignment of goods, using the sealed sensor unit to measure the temperature of said consignment of goods for a very short period of time at predetermined relatively long time intervals, recording within the sensor unit the measured temperature and time data using a source of power within said sealed sensor unit, and subsequently retrieving the temperature and time data from the sealed sensor unit by using a second source of power from outside the sealed sensor unit.

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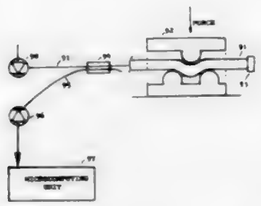
FIBER OPTIC SYSTEMS FOR SENSING TEMPERATURE AND OTHER PHYSICAL VARIABLES

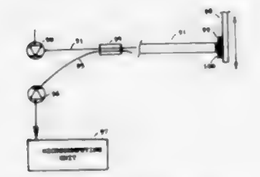
Marcos Y. Kleinerman, 24 Jerome St., Southbridge, Mass. 01550

Division of Ser. No. 812,050, Dec. 23, 1991, Pat. No. 5,222,810, which is a continuation-in-part of Ser. No. 516,532, Apr. 30, 1990, Pat. No. 5,090,818, which is a division of Ser. No. 711,062, Mar. 12, 1985, Pat. No. 5,004,913, which is a continuation-in-part of Ser. No. 608,932, May 14, 1984, Pat. No. 4,708,494, which is a continuation of Ser. No. 405,732, Aug. 6, 1982, abandoned. This application Jan. 28, 1993, Ser. No. 10,585 The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.

Int. Cl.[5] G01K *11/20, 13/00*

U.S. Cl. 374—161 **17 Claims**





1. A fiber optic device for sensing temperature changes in an object or environment, including:

(a) a probe comprised of photoluminescent material characterized by an ability to absorb a fraction αP_o of the intensity P_o of interrogating radiation of suitable pre-selected wavelengths injected into the probe and emit luminescence radiation of wavelengths λ_1 different from the wavelength of the interrogating radiation and an intensity which varies as a known function of α, where α is a fraction smaller than unity and increases with increasing temperature within at least part of the temperature range of operation of the device, said material including luminescence centers chosen from the group of $3d^3$ transition metal ions consisting of divalent vanadium, trivalent chromium and tetravalent manganese ions, the probe being further so characterized that, when excited with transient or periodic optical radiation of wavelengths within an absorption band of said material, it emits luminescence radiation with an intensity which decreases after termination of the excitation radiation with a decay time which decreases substantially with increasing temperature within a range of temperatures;

(b) a source of said transient or periodic optical radiation;

(c) fiber optic means for directing said transient or periodic optical radiation to said probe;

(d) fiber optic means for directing a fraction of the intensity of the luminescence radiation emitted from said probe to photodetector means; and

(e) photodetector and associated electronic means for measuring the decay time of the luminescence emitted from said probe, said decay time being an indicator of the probe temperature.

10. An optical method for measuring the temperature of an object or environment, comprising the steps of:

(a) exposing a probe to the temperature to be measured, said probe including a photoluminescent material characterized by an ability to absorb a fraction αP_o of the intensity P_o of interrogating radiation of suitable pre-selected wavelengths injected into the probe and emit luminescence radiation of wavelengths λ_1 different from the wavelength of the interrogating radiation and an intensity which varies as a known function of α, where α is a fraction smaller than unity and increases with increasing temperature within at least part of the temperature range of operation of the device, said material including luminescence centers chosen from the group of $3d^3$ transition metal ions consisting of divalent vanadium, trivalent chromium and tetravalent manganese ions, the probe being further so characterized that, when excited with transient or periodic optical radiation of wavelengths within an absorption band of said material, it emits luminescence radiation with an intensity which decreases after termination of the excitation radiation with a decay time which decreases substantially with increasing temperature within a range of temperatures;

(b) illuminating said probe with said interrogating radiation generated by a suitable source, thereby generating luminescence radiation emitted by the probe;

(c) directing a fraction of the intensity of said luminescence radiation to photodetector means; and

(d) measuring the decay time of said luminescence radiation, said decay time being an indicator of the probe temperature.

5,332,317

SLIDING/ROLLING BEARING HAVING ROLLING ELEMENTS

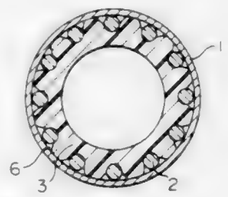
Kosaburo Niwa, and Hideyumi Matsumura, both of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Apr. 9, 1993, Ser. No. 45,595

Claims priority, application Japan, Apr. 10, 1992, 4-090991

Int. Cl.[5] F16C *19/24, 21/00*

U.S. Cl. 384—548 **2 Claims**



1. A sliding/rolling bearing comprising:

an outer cylinder made of an austenitic stainless steel;

a pre-formed inner cylinder made of a fiber reinforced plastic material and having an outer peripheral surface, said plastic material being selected from the group consisting of polyether ether ketone, polyether sulfone, polyether nitrile, polyphenylene sulfide, polyacetal, polyether imide, and polyamide imide; and

a plurality of rollers made of steel wire provided between said outer and inner cylinders, said inner cylinder having a plurality of steel roller receiving and holding grooves on said outer peripheral surface, said steel roller receiving grooves each being generally complementary in shape to no more than approximately 50% of the cross-section of its respective steel roller and said grooves extending along the axis of said inner cylinder parallel to one another, and said steel rollers being rotatably and slidably held in said grooves so as to be rotatable against said outer cylinder while being held in contact therewith.

5,332,318

ROLLER BEARING UNIT FOR PLANETARY GEAR

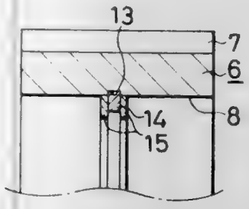
Moichi Chiba, Yokosuka, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Feb. 3, 1993, Ser. No. 12,937

Claims priority, application Japan, Feb. 3, 1992, 4-010637[U]

Int. Cl.[5] F16C *33/58*

U.S. Cl. 384—569 **3 Claims**



1. A roller bearing unit for a planetary gear comprising a support member, a retaining collar, a support shaft having a first end fixedly attached to said support member and a second end fixedly attached to said retaining collar with an outer peripheral surface of a central portion formed with a cylindrically convex inner raceway, a planetary gear having an outer peripheral surface formed with a gear and an inner peripheral surface formed with a cylindrically concave outer raceway, provided so as to rotate freely on said outer peripheral surface of said support shaft between said retaining collar and aid support member, a double row of free floating rollers provided between said inner raceway and outer raceway, and a guide ring provided between said two rows of rollers for guiding the axially inner ends of said plurality of rollers, wherein said guide ring is fixed to ne of said outer peripheral surface of said support shaft and said inner peripheral surface of said planetary gear, thereby preventing axial displacement of the guide ring, wherein said guide ring comprises a cylindrical shaped spacer press fitted into said outer raceway at an intermediate portion thereof and floating rings each being provided on each side of said spacer, respectively.

5,332,319

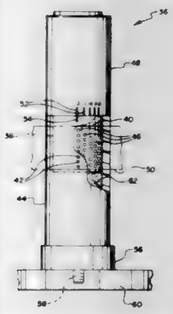
UNIVERSAL RIBBON RE-INKING APPARATUS

William R. Brueck, Chatfield, Minn., assignor to Ribbon Recyclers, Inc., Rochester, Minn.

Filed Dec. 31, 1992, Ser. No. 999,090

Int. Cl.[5] B41J *31/14*

U.S. Cl. 400—200 **18 Claims**



1. A universal ribbon re-inking apparatus for re-inking a ribbon utilized in a typewriter, computer printer or cash register, said universal ribbon re-inking apparatus including a ribbon, said ribbon further including a carrier having said ribbon wound thereon of left hand or right hand design comprising:

(a) a base including an upper planar surface having therein a plurality of generally parallel-spaced channels parallel to a forward edge of said base;

(b) ribbon drive means fixedly mounted proximate said forward edge;

(c) means for supporting said carrier in a plane generally parallel to said upper planar surface, wherein said ribbon is extended from said carrier through said ribbon drive means, said means for supporting said carrier being releasably secured to said upper planar surface in a disposition within said plurality of generally parallel-spaced channels;

(d) a take-up motor releasably secured to said planar surface in a disposition within said plurality of generally parallel-spaced channels, and having means for rotatably coupling a take-up spool of said carrier, as supported in said horizontal plane, with said ribbon extending from said carrier through said ribbon drive means and back to said take-up spool; and

(e) means for applying ink to said ribbon, said means releasably secured proximate said upper planar surface and in contact with said ribbon extending from said carrier to said take-up spool.

5,332,320

PRINTING APPARATUS WITH MODE SELECTION

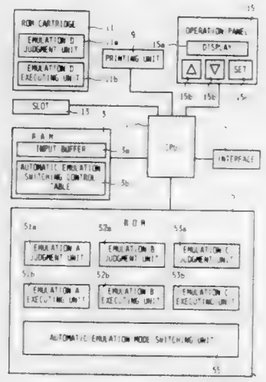
Kiyotaka Ohara, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 24, 1993, Ser. No. 36,385

Claims priority, application Japan, Aug. 27, 1992, 4-228698

Int. Cl.[5] B41J *11/42*

U.S. Cl. 400—76 **20 Claims**



1. A printing apparatus for printing characters by entering printing information including at least a control code and character codes, converting the control code by one of emulation modes corresponding to the control code, and printing characters corresponding to the character codes according to the converted control code, comprising:

emulation mode internal memory means built into the printing apparatus for storing an internal execution unit and an internal judgment unit, the internal execution unit storing an emulation mode, the internal judgment unit storing judgment data corresponding to the emulation mode stored in the internal execution unit and executing a judging operation which judges whether the control code detected by said control code detection means is compatible with the emulation mode stored in the internal execution unit according to the judgment data;

emulation mode external memory means structured to be freely inserted into and removed from the printing apparatus for storing an external execution unit and an external judgment unit, the external execution unit storing an emulation mode different from that stored in the internal

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execution unit, the external judgment unit storing judgment data corresponding to the emulation mode stored in the external execution unit and executing a judging operation which judges whether the control code detected by said control code detection means is compatible with the emulation mode stored in the external execution unit according to the judgment data;

control code detection means for detecting the control code from the entered printing information;

emulation mode selection means for selecting one of the emulation modes which corresponds to the control code, based on a result of the judging operation in one of the internal judgment unit and the external judgment unit, when said emulation mode external memory means is inserted; and

emulation mode execution means for converting the control code of the entered printing information into a control code peculiar to the printing apparatus according to the emulation mode selected by said emulation mode selection means.

5,332,321

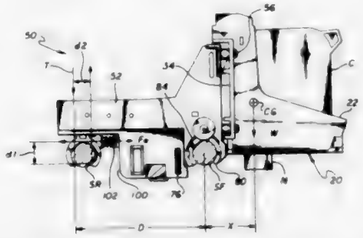
TWO LINE CONTACT BUSHING MOUNTING OF A PLOTTER CARRIAGE WITH PRE-LOAD

Robert W. Beauchamp, Carlsbad, Calif., and Michael A. Nguyen, Singapore, Singapore, assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 965,480, Oct. 23, 1992. This application Apr. 30, 1993, Ser. No. 57,240

Int. Cl.[5] **B41J** *11/22*

U.S. Cl. 400—354 **9 Claims**



1. A printer carriage comprising a frame having a plurality of print cartridge receptacles and a support system thereon, said support system comprising a front slider rod channel, a pair of bushings in said front slider rod channel for supporting said carriage for sliding movement on a front carriage slider rod, a rear slider rod bushing mounted on said carriage for supporting said carriage for sliding movement on a rear carriage slider rod, means for moveably mounting said rear bushing on said printer carriage to allow movement of said rear bushing relative to said front bushings, means for resiliently biasing said rear bushing in a direction away from said front bushings, said front and rear bushings each having first and second arcuately spaced contact surfaces for contacting the respective slider rods along two spaced parallel lines, said first contact surfaces on each bushing being proximate a top center portion thereof and said second contact surfaces of said front bushings substantially facing said second contact surface of said rear bushing.

5,332,322

ERGONOMIC THUMB-ACTUABLE KEYBOARD FOR A HAND-GRIPPABLE DEVICE

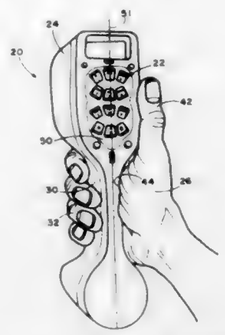
Thomas L. Gambaro, 3231 SE. 36th Ave., Portland, Oreg. 97202

Continuation-in-part of Ser. No. 711,760, Jun. 6, 1991, Pat. No. 5,178,477. This application Jan. 11, 1993, Ser. No. 3,118

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[5] **B41J** *5/14*; **H04M** *7/00*

U.S. Cl. 400—489 **5 Claims**



1. A hand-held device for entering information into an electronic system via a keyboard, the device comprising:

a housing having a grippable portion which permits the device to be held in one hand with the thumb free to move at least temporarily to a predetermined key-actuation position while the device is held,

a concavity in said housing at said key-actuation position, and

a thumb-associable cluster of keys forming a keyboard within said concavity, each of the plurality of keys in said cluster being selectively actuable via mixed lateral, and slight endo, translation of a thumb within said concavity, whereby information is entered into an electronic system.

5,332,323

PAPER INSERT DEVICE FOR PRINTER

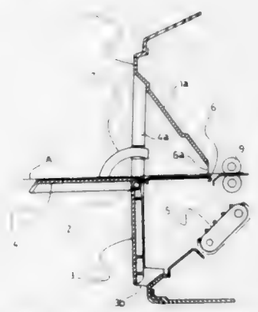
Shunji Murai, Chita, and Satoshi Yanagisawa, Aichi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 13, 1992, Ser. No. 959,542

Claims priority, application Japan, Feb. 24, 1992, 4-017395[U]

Int. Cl.[5] **B41J** *11/50, 13/10*

U.S. Cl. 400—605 **14 Claims**



1. A paper insert device for a printer, comprising:

a front wall provided with a first opening for manual insertion of cut paper;

a second opening for setting of continuous paper;

a tractor located behind said second opening for feeding the continuous paper;

a tractor cover for operably covering said second opening, said tractor cover pivotally supported for opening and closing so as to permit setting of the continuous paper to said tractor when said tractor cover is open;

a cut paper guide located above said tractor and behind said first opening for guiding the cut paper inserted from said first opening;

a cut paper supporter for operably covering said first opening and supporting the cut paper to be fed to said cut paper guide in an open condition of said cut paper supporter; and

a common support shaft, said tractor cover pivotally supported by said common support shaft to allow opening and closing of said tractor cover and said cut paper supporter pivotally supported by said common support shaft to allow opening and closing of said cut paper supporter.

5,332,324

ERGONOMIC INSTRUMENTS

Michael A. Hochstetler, 1123 Miami Trail, Bremen, Ind. 46506

Continuation of Ser. No. 708,767, May 31, 1991, Pat. No. 5,228,794. This application Feb. 11, 1993, Ser. No. 16,463

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] **A46B** *5/02*

U.S. Cl. 401—6 **16 Claims**



1. An ergonomic, hand held instrument comprising a shell having a longitudinal axis having opposite ends and a hollow interior, an instrument positioned within said interior of said shell with its operational end extending from one of said shell ends, said shell having a groove therein extending from adjacent said one shell end axially of said shell, said groove having a bottom surface and an upstanding wall adapted for the fingers and the thumb of the hand holding the instrument to be positioned in said groove against said upstanding wall to apply a force in the axial direction during use, said groove spiraling around said shell, said bottom surface having a width greater than the size of the pad of said fingers, said groove having at least one partial turn adjacent to said one end and between said opposite shell ends, said bottom surface extending from said wall axially toward said other shell end, said fingers having no walls therebetween when placed in said groove, whereby one can pick up said instrument and easily grip said instrument correctly with a lighter grip than with conventional instruments and yet use without hand fatigue, cramps or calluses normally associated with use of the instrument for long periods of time.

5,332,325

APPLICATOR TUBE FOR LIQUID OR SEMI-LIQUID PRODUCTS

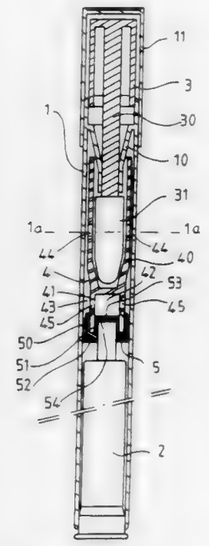
Daniel Crosnier, 14, rue Jacques Lanty,, 76550 Offranville, and Jean-Marie Dulery, 52, rue Pierre Semard, 94210 La Varenne Saint Hilaire, both of France

Filed Dec. 28, 1992, Ser. No. 997,495

Claims priority, application France, Jan. 3, 1992, 92 00098

Int. Cl.[5] **A45D** *34/00, 40/26*

U.S. Cl. 401—119 **30 Claims**



1. A device for dosaging measured quantities of liquid or semi-liquid cosmetic products from a removable container having a cosmetic product stored therein, the device comprising:

an outer body including means for receiving the removable container so that contact between air outside the removable container and the product inside the container is substantially prevented at all times;

an applicator for applying the cosmetic product, the applicator being disposed inside the outer body and removable therefrom to apply the cosmetic product;

providing means inside the outer body for providing the applicator with a measured quantity of the product, the providing means including a part formed with a predetermined space therein corresponding to the measured quantity; connecting means for connecting the predetermined space to the applicator so that the measured quantity of product can pass from the predetermined space through the connecting means to the applicator; and

deformable means associated with the providing means for drawing product from the removable container into the predetermined space;

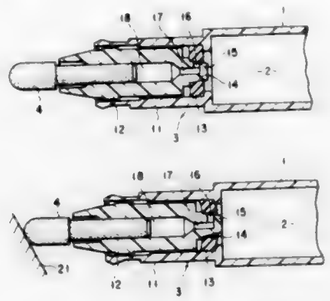
wherein the providing means cooperates with the deformable means so that when the deformable means is deformed, the aforementioned measured quantity of the product passes from the predetermined space into the connecting means and toward the applicator, and when the deformable means is released a suction is formed in the predetermined space so that the measured quantity of product is drawn from the container into the predetermined space.

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WRITING INSTRUMENT

Jiro Hori, 61-2, Kamihiroya, Tsurugashima-shi, Saitama-ken, Japan

Filed Jul. 31, 1992, Ser. No. 922,380
Claims priority, application Japan, Feb. 17, 1992, 4-029245; Jul. 15, 1992, 4-187709
Int. Cl.[5] B43K *5/18*
U.S. Cl. 401—148 **1 Claim**



1. A writing instrument including a pen barrel having an interior, a distal end portion and a proximal end portion; an ink reservoir formed in said pen barrel and directly filled with liquid ink; and a slide plug sladable in said ink reservoir in a liquid tight fashion according to consumption of ink in said ink reservior, for dividing said interior of said pen barrel into an air region and an ink region defining said ink reservoir, said writing instrument further comprising:

a writing tip provided in said distal end portion of said pen barrel so as to be movable axially of said pen barrel;

a diaphragm member made of elastic material, and dividing said interior of said pen barrel into a writing tip region and said ink region, said diaphragm member being adapted to be elastically deformed toward said ink reservoir to reduce the volume of said ink reservoir when a writing pressure is applied to said writing tip; and

an opening formed in said diaphragm member and opened to cause said ink reservoir to communicate with aid writing tip when said diaphragm member is elastically deformed toward said ink reservoir,

said pen barrel being provided with an axially slidable slide holder having a distal portion and a proximal end,

said writing tip being attached to said distal portion of said slide holder,

said slide holder having an engagement projection axially extending from said proximal end of said slide holder such that said engagement projection is elastically engaged with a central portion of said diaphragm member,

said writing tip being retracted together with said slide holder so as to elastically deform said diaphragm member toward said ink reservoir when a writing pressure is applied to said writing tip,

said opening being a hole formed in said central portion of said diaphragm member,

said engagement projection extending through said opening and elastically fitted therein,

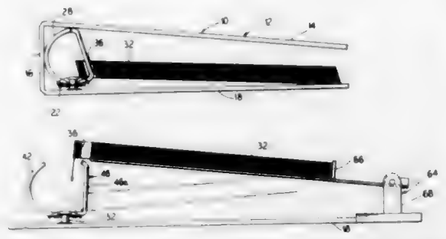
said engagement projection being provided in an outer peripheral surface thereof with another opening communicating with said writing tip, and

said opening being expanded to be separated from said outer peripheral surface of said engagement projection and said another opening being opened to cause said writing tip to communicate with said ink reservoir, when said diaphragm member is elastically deformed toward said ink reservoir.

5,332,327
D RING BINDER

Steve Gillum, Fairhaven, Mass., assignor to U.S. Ring Binder, New Bedford, Mass.

Filed Sep. 23, 1991, Ser. No. 763,520
Int. Cl.[5] B42F *13/26, 13/42*
U.S. Cl. 402—31 **21 Claims**



1. In a D-ring binder having a ring for holding a plurality of pages having ring engaging apertures, wherein said ring is held on a ring carrier, said ring carrier itself held on an inside surface of a cover of a ring binder, the ring having

a first ring arm portion extending from a first base end at said ring carrier upwardly away from said inside surface of said cover of said ring binder and terminating in a first distal end; and

a second ring arm portion, said second ring arm portion extending from a second base end at said ring carrier upwardly away from said inside surface of said cover and terminating in a second distal end, said second ring arm portion hingedly held onto said ring carrier and pivotable into an open position away from said first ring arm portion, said ring closeable by pivoting said second ring arm portion with said first distal end closeable to said second distal end, said ring carrier having means for resiliently urging said first distal end and said second distal end closed together, the improvement comprising:

said second ring arm portion having a substantially straight length, with a short portion adjacent said second distal end, said short portion turned toward said first ring arm portion, said second ring arm portion hingedly held onto said ring carrier and pivotable into an open position away from said first ring arm portion, with the straight length in a substantially vertical position, said short portion having a horizontal profile in an open position less than a corresponding horizontal clearance of said apertures for vertical downward loading of said pages, onto said second ring arm portion, said ring closable by pivoting said second ring arm portion with said fist distal end engageable to said second distal end.

20. A method of loading pages into a ring binder comprising the steps of:

providing a D-shaped ring having an arcuate first leg and a substantially straight second leg, said first and second legs connected at base ends to a ring carrier, said substantially straight second leg having a short turned portion at a free end thereof, said arcuate leg and said substantially straight leg being pivotable at said ring carrier to selectively spread apart or close together with said short turned portion mating with a free end of said arcuate leg, said ring carrier providing means for resiliently urging said short turned portion and said free end together to hold closed said ring;

with the D-shaped ring in the open condition, loading a substantially horizontally positioned stack of pages having punched holes in vertical alignment substantially vertically downward onto the substantially straight leg, the straight leg extending substantially vertically and penetrating the holes; and

closing said D-shaped ring.

5,332,328
UNIVERSAL WINDSHIELD WIPER ARM CONNECTOR FOR MULTIPLE WIPER ARMS

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuan St., Panchiao, Taipei Hsien, Taiwan

Filed Aug. 26, 1993, Ser. No. 111,931
Int. Cl.[5] B60S *1/40;* **F16C** *11/04*
U.S. Cl. 403—154 **1 Claim**



1. A universal windshield wiper arm connector for connecting a windshield wiper to a plurality of different types of windshield wiper arms, the connector comprising:

a) an elongated body having a top, a bottom, opposite sides, a first end portion and a second end portion, the first end portion defining a strip slot extending into the body to receive an end of a bayonet type wiper arm, the top of the body defining two threaded openings and an elongated slot communicating with the strip slot, the bottom of the body forming a first resilient leaf spring defining a portion of the strip slot;

b) a path of side plates extending parallel to each other and extending from the opposite sides of the body proximate to the second end portion, the side plates extending above the top of the body and beyond the second end portion of the body so as to define therebetween a space having a first width adapted to receive and end of a hook-type wiper arm having a first width, each side plate having a retaining tab extending therefrom, said tabs extending toward one another, each side plate having a lower edge portion which defines a single necked slot;

c) step strips located in the first width and extending along the top of the body adjacent to each side plate, the step strips defining therebetween a second width that is less than the first width and is adapted to receive therebetween an end of a hook type wiper arm having a second width;

d) a tab member protruding outwardly from one of the side plates, away from the body;

e) a first hole defined by the tab member and the side plates, said first hole having a first diameter;

f) a second hole defined by the tab member and the side plates, said second hole is adjacent to the first hole and has a second diameter larger than the first diameter;

g) a second resilient leaf spring defined by the top of the body having a portion extending into the first hole; and

h) a third resilient leaf spring defined by the top of the body having a portion extending into the second hole.

5,332,329
ANTI-TWIST BUSHING

Thomas R. Hill, P.O. Box 149, Flippin, Ark. 72634, and Danny M. Nelson, Rte. 2, Box 225, Mountain Home, Ark. 72653

Filed May 14, 1992, Ser. No. 884,415
Int. Cl.[5] F16B *9/02*
U.S. Cl. 403—261 **1 Claim**

1. An anti-twist bushing system for installation within a predefined orifice in a workpiece to nondestructively secure a cord against axial or torsional displacement relative to said orifice, said system comprising:

an exteriorly threaded tubular pipe adapted to penetrate said orifice and extend from the outside of said workpiece to the inside of said workpiece;

an interiorly threaded gland nut adapted to be screwed onto said pipe exteriorly of said workpiece, said nut comprising:

a top defining a beveled opening;

an integral flange spaced apart from said top and parallel and concentric therewith;

an integral, internally threaded tubular body extending from said top to said flange defining a passageway concentric with said beveled opening and said flange;

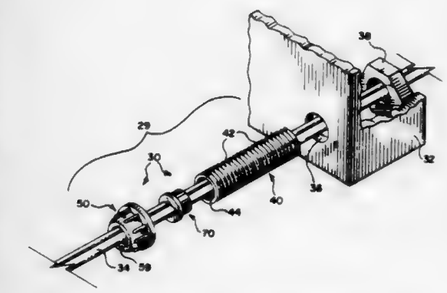
an underside of said top defining an integral, beveled shoulder spaced apart from said flange and coaxially disposed interiorly within said passageway; and,

a plurality of radially spaced apart, longitudinally extending raised ribs defined on an exterior of said body;

an insert adapted to be installed externally of said workpiece, said insert wedged into said pipe by said gland nut when said nut is mated to said pipe, said insert comprising:

two separate substantially mirror image halves adapted to be folded together before said insert is forced into said pipe;

a circular collar defining a cored compressive opening,



said collar adapted to be forcibly contacted by said beveled shoulder when said gland nut is secured to said pipe;

an integral coupling hinge extending between said halves and of approximately the same width as said collar, said hinge adapted to guide said halves into proper alignment, said hinge being in the form of a slice of a cylinder;

an open end spaced apart from said collar;

an integral, generally cylindrical shank extending from said collar to said end;

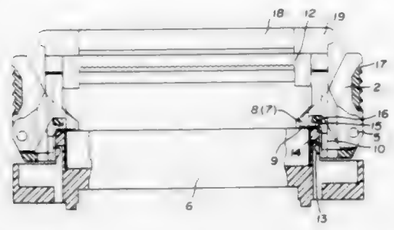
a taper adjacent said open end defined on said shank aimed toward said collar adapted to facilitate entry of said insert into said pipe;

an interior parallelepiped-shaped cavity defined within said shank extending between said open end and said collar and bounded by two flat spaced apart faces for surrounding and compressing the entire area of said faces against said cord within said cavity for holding said cord immobile, said cavity comprising a pair of aligned, spaced apart guide slots defined upon opposite internal faces of each half; and,

a securing nut screwed on said pipe on an end opposite said gland nut affixing said pipe to said workpiece.

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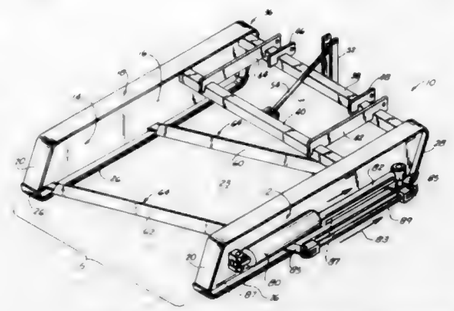
5,332,330
CONNECTOR
Tetsuya Kaneko, Tokyo, Japan, assignor to Yamaichi Electric Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 769,643, Oct. 1, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 93,990
Claims priority, application Japan, Oct. 2, 1990, 2-264773
Int. Cl.[5] F16B *1/04*
U.S. Cl. 403—321 2 Claims



1. A connector comprising:
a first connector member having opposite end portions;
a second connector member movably engageable with and disengageable from said first connector member by movement toward and away from said first connector member;
a pair of latch members mounted on said first connector member, one at each of said opposite end portions of said first connector member and each latch member having a latching projection thereon and a pressure bearing portion thereon and normally being resiliently urged toward said connector members and being movable away from said connector members;
said second connector member having latch recesses therein in which corresponding latching projections are engaged when said latch members are urged toward said connector members for holding said connector members in a locked condition; and
a pair of shutter members, one pivotally mounted on said first connector member at each opposite end portion and each having an end movable toward and away from said first connector member when the shutter member is pivoted, and each having an eject portion engageable with said pressure bearing portion when said shutter members are pivoted toward said one connector member for urging said latch members away from said connector members for disengaging said latching projections from said latch recesses to free said first and second connector members for separation from each other.

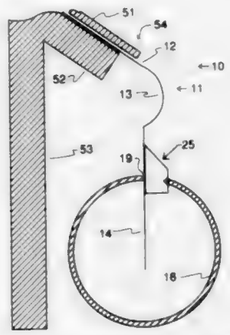
5,332,331
COMBINATION SPREADER/GRADER APPARATUS
Barry L. Critz, P.O. Box 1622, and Richard A. Seal, 9002 Road 297, both of Picayune, Miss. 39466
Filed Mar. 17, 1993, Ser. No. 32,804
Int. Cl.[5] E01C *19/22*; E02F *3/76*
U.S. Cl. 404—96 11 Claims

1. An improved apparatus for spreading or grading a land surface, and to be pulled by a tractor or like vehicle, the apparatus comprising:
a) a principal frame portion attachable to the tractor, including first and second parallel side walls engaging the surface to be spread or graded;
b) at least one blade positioned between the sidewalls, for cutting into the surface as the apparatus is pulled along the surface; and
c) means for moving at least one end of the blade to various positions along a length of one of the sidewalls, so that the blade may be positioned between a position perpendicular



to a length of the sidewalls, to angulated positions in relation to a length of the sidewalls.

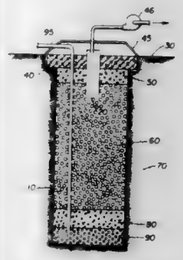
5,332,332
RAIN GUTTER
Howard N. Kenyon, Jr., 12790 Rte. 144, West Friendship, Md. 21794
Filed Aug. 5, 1992, Ser. No. 924,968
Int. Cl.[5] E04D *13/06*
U.S. Cl. 405—118 7 Claims



1. A rain gutter for mounting under a building's roof edge comprising in combination:
a) a collector plate, a strainer and a separate pipe;
b) said collector plate having a first flat section fitting between the roof sheathing and the shingles;
c) said collector plate having a second arcuate section extending from the lower edge of the flat section to the vertical and past the vertical inwardly toward the building;
d) said collector plate having a third down lead section extending from the lower edge of the arcuate section;
e) the down lead section having vertical strips at the lower portion of the down lead section, said vertical strips twisted to end at a position normal to the upper portion of the down lead section, said twisted strips of a length sufficient to allow the pipe to assume a slight angle to the horizontal;
f) said pipe extending generally horizontally with a slight angle toward the downspout along and below the roof edge and having an opening to receive the lower portion of the vertical strips; and,
g) said strainer formed by the intersection of the down lead section and the pipe;
whereby the rain exiting the roof is transferred to the collector plate, is then led into a vertical path by the arcuate

section, is accelerated by the down lead section, and the debris which is entrained with the rain is separated by the strainer, preventing the debris from entering the pipe.

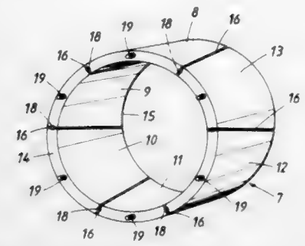
5,332,333
VACUUM EXTRACTION METHOD AND APPARATUS FOR REMOVING VOLATILE CONTAMINANTS FROM THE VADOSE LAYER OF CONTAMINATED EARTH
Harold W. Bentley, 6850 Moonglow Dr., Tucson, Ariz. 85718
Filed Jan. 27, 1993, Ser. No. 9,797
Int. Cl.[5] B09B *1/00*
U.S. Cl. 405—128 20 Claims



1. An apparatus for removing non-naturally-occurring volatile liquid contaminant from a contaminated area of vadose earth comprising;
(a) an extraction borehole into said vadose earth;
(b) a layer of material having high gas permeability disposed within said borehole at the level of at least a portion of said contaminated area of vadose earth;
(c) a sealing layer of material having low gas permeability disposed within said borehole beneath said layer of material having high gas permeability;
(d) a layer of material having medium to high gas permeability disposed within said borehole beneath said layer of material having low gas permeability;
(d) means for maintaining the bottom of said extraction borehole below said sealing layer at substantially atmospheric pressure;
(e) a vacuum source connected to the top of said borehole whereby a gaseous stream containing volatile contaminants is pulled from said borehole and the surrounding contaminated area of vadose earth toward said vacuum source;
(f) means for removing volatile contaminants from said gaseous stream.

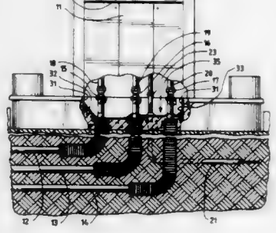
5,332,334
TUNNEL WALL WITH LINING
Harald Wagner, Mauthausen, and Alfred Schulter, Linz, all of Austria, assignors to Ingenieure Mayreder, Kraus & Co. Consult Gesellschaft M.b.H., Linz, Austria
Filed Feb. 18, 1993, Ser. No. 19,245
Claims priority, application Austria, Feb. 21, 1992, 323/92
Int. Cl.[5] E21D *11/05*
U.S. Cl. 405—153 5 Claims

1. A tunnel wall with a lining comprising a succession of tubbing rings each comprised of an even number of like, substantially trapeze- or trapezoid-shaped tubbing stones complementing each other to form respective ones of the tubbing rings, each tubbing stone having opposite end faces and oblique longitudinally extending side faces, the end faces of the tubbing stones of adjacent ones of the tubbing rings defining respective annular gaps between the adjacent tubbing stones and the side faces of adjacent ones of the tubbing stones of each tubbing ring defining respective longitudinal grooves between the adjacent tubbing stones, a dowel plug connection between each tubbing stone and an adjacent tubbing stone of the adjacent tubbing ring, the dowel plug connection permitting a limited transfer of shearing forces therebetween, and compressible springs having a circular cross section arranged in the longitudinal grooves, the longitudinal grooves having a mating cross section to form groove-spring connections holding the



adjacent tubbing stones at a distance in the unstressed condition of the springs and permitting the width of the longitudinal gaps to be reduced upon compression of the springs under the pressure of the rock formation through which the tunnel extends.

5,332,335
SECONDARY CONTAINMENT SYSTEM
Charles M. Daul, Libertyville, Ill., assignor to Amoco Corporation, Chicago, Ill.
Filed Mar. 8, 1993, Ser. No. 27,415
Int. Cl.[5] B32B *35/00*; B65G *5/00*; E04B *1/16*
U.S. Cl. 405—53 3 Claims



1. A method for fabricating in place a secondary containment system for hazardous liquid escaping from a primary containment system, comprising:
providing a support surface for bottom and side portions of the secondary containment system which support surface is below the primary containment system;
providing a thermoset resin material which, prior to being set, is applied to the support surface as a fluid and thus shaped by the support surface and which, when it is set, forms a substantially rigid, durable, insoluble, liquid-tight, and chemical, corrosion and decomposition-resistant monolithic solid layer which forms a liquid-tight seal or bond with metallic, plastic or concrete material in contact therewith and which retains the shape in which it was applied;
applying the provided thermoset resin material as a fluid to the provided support surface to form a monolithic layer of the shaped thermoset resin material on the support surface; and

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allowing the applied and shaped thermoset resin material to set to thereby form in place on the support surface the secondary containment system for hazardous liquid escaping from the primary containment system, which secondary containment system comprises the substantially rigid, durable, insoluble, liquid-tight, and chemical, corrosion, and decomposition-resistant monolithic solid layer which forms the liquid-tight seal or bond with metallic, plastic or concrete material in contact therewith

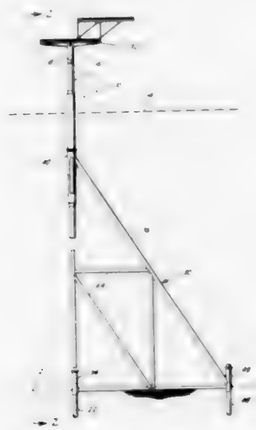
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5,332,336

OFFSHORE BASE-SUPPORTED COLUMN STRUCTURE AND METHOD OF INSTALLATION

Roger E. Lewis, Houston, Tex., assignor to Kvaerner Earl And Wright, Inc., Houston, Tex.

Filed Nov. 16, 1992, Ser. No. 976,731
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—204 **15 Claims**



1. An offshore base-supported column structure for installation in the water on an offshore floor comprising,

a column foundation supported from the offshore floor,

an elongate column having a top and a foot, said foot contacting and vertically supported entirely by the column foundation, and said foot being releasably engaged to the foundation, said top extending upwardly above the offshore water level,

a column support base supported from the offshore floor for engaging and providing lateral support for the column, said base including a structural framework extending upwardly from the floor to an intermediate portion of the column and the top of the base having a column support slidably engaging the column in the vertical direction against lateral movement, and

a support structure connected to the top of the column above the water level.

5,332,337

PARTICLE FEEDING DEVICE AND METHOD FOR PYROLYTIC CARBON COATERS

David S. Wilde; Billie F. Hightower, both of Austin, and James A. Accuntius, Georgetown, all of Tex., assignors to Carbon Implants, Inc., Austin, Tex.

Filed Jan. 14, 1992, Ser. No. 821,472
Int. Cl.[5] B65G *53/66*
U.S. Cl. 406—24 **14 Claims**

1. A system for feeding precise amounts of granular material to a desired location, which system comprises

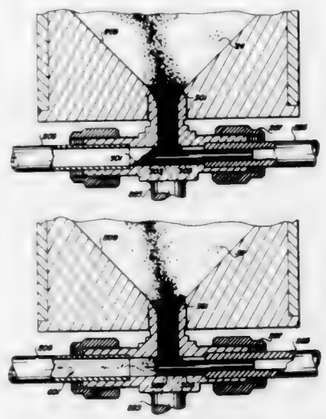
hopper means for holding a supplying of granular material, said hopper means having a lower outlet,

a connector unit attached to said hopper means in the region of said lower outlet which includes means providing a generally horizontal passageway communicating with said outlet,

said connector unit including delivery conduit means for receiving granular material for feeding to said desired location,

gas jet means extending into said passageway to a location below said outlet and oriented to deliver a gas stream past said outlet and toward said delivery conduit means,

means for determining the weight of at least said supply of granular material,



means for discharging pulses of gas under pressure through said gas jet means so as to blow granular material from the region below said outlet, which material falls thereunto via gravity, into said delivery conduit means, and

control means for actuating said pulse-discharging means in response to said weight-determining means, said control means actuating or not actuating said pulse discharging means, so to as to discharge pulses of gas under pressure, in response to per-unit-time changes in the weight of at least said supply of granular material, said control means thereby causing precise amounts of granular material to be fed to said delivery conduit per unit time.

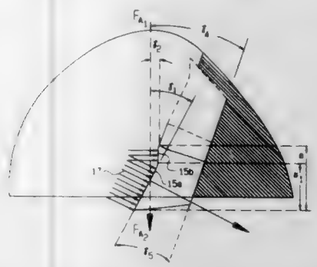
5,332,338

EXCHANGEABLE HARD METAL CUTTING INSERTS IN MILLING CUTTER

Amir Satran, Kfar Havradim, and Moshe Rudko, Nahariya, both of Israel, assignors to Iscar Ltd., Migdal Tefen, Israel

Filed Dec. 2, 1992, Ser. No. 984,160
Claims priority, application Israel, Dec. 16, 1991, 100383
Int. Cl.[5] B23C *5/08, 5/20*
U.S. Cl. 407—42 **10 Claims**

1. A cutting insert in a rotary milling cutter tool and having a cutting edge defined between a cutting rake surface and a relief flank and having a base edge defined between said relief flank and a base surface wherein said cutting edge comprises first and second successive component cutting edges which merge continuously with each other; said first and second component cutting edges having respective axial rake angles γ_1 and γ_2 with respect to an axis of rotation of the cutting tool wherein γ_1 is significantly greater than γ_2; γ_1 lies substantially within the range 4°–30° and γ_2 lies substantially within the range ±15°; wherein said cutting edge projects a length a with respect to the axis of rotation, whilst the first component cutting edge projects a length a_1 with respect to the axis of rotation wherein a_1 lies within the range 0.6–0.9a and wherein said relief flank and the component cutting edges are so shaped and



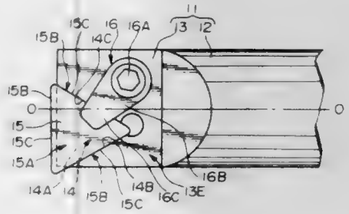
disposed that the intersection of a plane passing through the rotational axis of the milling cutter tool with a surface milled by said cutting edge is substantially rectilinear.

5,332,339

THROW-AWAY CUTTING TOOL

Masaaki Nakayama; Masayuki Okawa; Junichi Saito, and Tatsuo Arai, all of Ibaraki, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,490
Claims priority, application Japan, Jun. 19, 1991, 3-046307[U]; Jun. 28, 1991, 3-050119[U]; Jul. 31, 1991, 3-060542[U]; Jul. 31, 1991, 3-060543[U]; Jul. 31, 1991, 3-060544[U]
Int. Cl.[5] B23P *15/30*; B23B *27/18*
U.S. Cl. 407—101 **5 Claims**



1. A through-away cutting tool comprising:

a tool body having a front end and a rear end, said tool body having a rod-like shank made of cemented carbide and a bit mounting component made of at least one of steel and sintered metal arranged at the front end of said tool body, said shank having a mounting wall extending toward the front end of the tool body, said bit mounting component being in the shape of a plate having an upper face and a lower face;

a bit mounting seat formed at the front end of the bit mounting component and having a bottom wall recessed from the upper face;

an indexable cutter insert being mounted to the bit mounting seat;

a protrusion projecting from said lower face of the bit mounting component;

a tapped hole formed in the protrusion at the bottom wall of the bit mounting seat;

a hole formed at the mounting wall of the shank and arranged so as to fit to the protrusion;

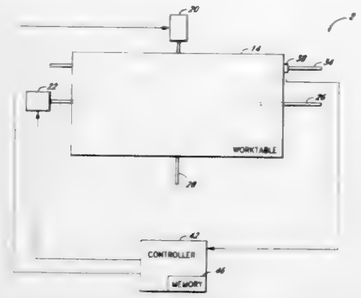
wherein said bit mounting component being secured to the shank adhering the lower face thereof to the mounting wall of the shank and fitting the protrusion in the hole so as to bear cutting force exerted on the indexable cutter insert by the mounting wall.

5,332,340

DRILLING METHOD AND APPARATUS USING VARIABLE DWELL TIMES

Dennis M. Pumphrey, Torrance, Calif., assignor to Excellon Automation, Torrance, Calif.

Filed Jul. 27, 1992, Ser. No. 919,874
Int. Cl.[5] B23B *35/00*
U.S. Cl. 408—1 R **12 Claims**



1. In a printed circuit board drilling machine having a worktable movable in a horizontal plane, a worktable movement assembly on said drilling machine for moving said table in said horizontal plane, and a controller for controlling the operation of the drilling machine, said controller transmitting movement instructions to said movement assembly to move said worktable toward a target position comprising a predetermined desired hole drilling location on a printed circuit board, a method of rapidly drilling holes in a printed circuit board mounted on said worktable at a series of drill sites, wherein each of said series of drill sties comprises an actual location where a given hole is drilled, said method maintaining a sufficient degree of hole placement accuracy and quality, said method comprising the steps of:

inputting data into said controller, said data comprising a plurality of dwell times wherein each of said plurality of dwell times comprises a predetermined time delay which must elapse while said worktable remains within a given deadband comprising a predetermined zone surrounding each said target position before said drilling machine initiates a drill stroke, wherein said dwell times are selected to provide a relatively short delay time between said worktable entering a given deadband and initiating said drill stroke while achieving sufficient hole placement accuracy and wherein said dwell times depend upon and are determined by one or more drilling parameters, including at least one of:

a given diameter of a given drill tool; and

a desired degree of placement accuracy of a given hole to be drilled;

selecting a first drill tool for drilling a first hole in said printed circuit board wherein said first drill tool has a first diameter;

mounting said first drill tool into a spindle on the drilling machine;

automatically setting a dwell time for delaying drilling said first hole, wherein said setting step includes a step of selecting said dwell time from said plurality of dwell times;

moving said worktable using said worktable movement assembly toward said target position on said printed circuit board for drilling said first hole;

delaying drilling said first hole for the duration of said dwell time so that said movement assembly has sufficient time to position said worktable in order to achieve said sufficient hole placement accuracy;

drilling said first hole after said dwell time has elapsed; and

repeating said inputting, selecting, mounting, setting mov-

ing, delaying and drilling steps for each of said series of drill steps.

5,332,341

PRESSURE FOOT OF PRINTED CIRCUIT BOARD DRILLING APPARATUS

Kunio Arai, Atsugi; Yasuhiko Kanaya, Machida, and Kazunori Hamada, Inagi, all of Japan, assignors to Hitachi Seiko Ltd., Japan

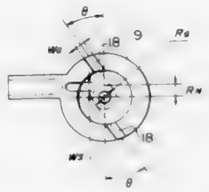
PCT No. PCT/JP92/00690, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO92/21481, PCT Pub. Date Dec. 10, 1992

PCT Filed May 28, 1992, Ser. No. 966,192

Claims priority, application Japan, May 30, 1991, 3-127539; Mar. 13, 1992, 4-054686

Int. Cl.[5] **B23B** *47/00*

U.S. Cl. 408—61 **1 Claim**



1. A pressure foot of a printed circuit board drilling apparatus, which is supported on a spindle of the printed circuit board drilling apparatus slidably in the axial direction, and which includes a pressing face which presses a printed circuit board at the time of drilling operation, and a discharge port formed in a side wall so as to discharge chips produced by drilling operation, said discharge port being connected to a suction device, characterized in that a fluid supply circuit for ejecting a cooling fluid toward a drill bit of the printed circuit board drilling apparatus is formed in said side wall, and at least one groove extending in a tangential direction of said drill bit is formed in said pressing face so as to allow the air to be drawn into said pressure foot,

wherein said fluid supply conduit extends in a tangential direction of said drill bit.

5,332,342

ELECTRODE TIP DRESSER AND CUTTER FOR ELECTRODE TIP DRESSER

Hiroyuki Kizaki; Kazuo Arai; Sadao Kamei; Toyoji Yamada; Takeshi Okubo; Kenji Takahashi; Yukihiro Yaguchi, all of Sayama, Japan, and Tadashi Takeo, deceased, late of Sayama, Japan by Kimie Takeo, Chiaki Takeo, Shiho Takeo, heirs , assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,240

Claims priority, application Japan, Apr. 26, 1991, 3-029748[U]; Apr. 26, 1991, 3-029749[U]; Apr. 26, 1991, 3-029750[U]; Apr. 26, 1991, 3-097611; May 9, 1991, 3-032048[U]

Int. Cl.[5] **B23C** *3/12*; **B23K** *11/36*

U.S. Cl. 409—140 **8 Claims**

1. A cutter for use in an electrode tip dresser which has a cutter holder for holding said cutter and dresses an electrode tip for a resistance welding apparatus, said cutter comprising:

a rising portion which has a cutting tooth for cutting a front peripheral portion of the electrode tip; and

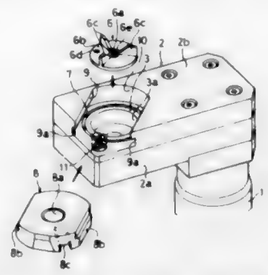
a flat portion which faces a front end surface of the electrode tip;

said flat portion comprising a single cutting tooth for cutting the front end surface of the electrode tip;

said single cutting tooth extending from a central point of said cutter as an origin which coincides with an axis of rotation of said cutter holder towards a predetermined radial direction;

an origin portion of said single cutting tooth further extending beyond said central point towards a direction which is opposite to said radial direction;

a base plate seated on said cutter holder, said base plate comprising a plurality of cutter blades which are integrally and vertically provided on said base plate in radial directions, each of said cutter blades forming said rising portion; a chip-discharging hole formed in a central portion of said base plate; and a bridge formed for bridging diametrically internal ends of predetermined two pieces of cutter blades of said plurality of cutter blades across said chip-discharging hole to thereby form said flat portion.



5,332,343

COOLING AND DUST COLLECTING APPARATUS FOR MACHINE TOOL

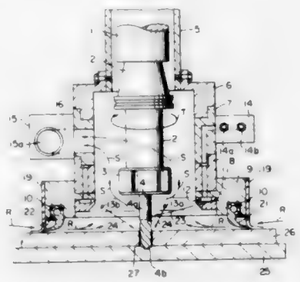
Fumio Watanabe, Utsunomiya, and Masanori Hosoi, Tochigi, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1993, Ser. No. 100,417

Claims priority, application Japan, Aug. 6, 1992, 4-210464

Int. Cl.[5] **B23Q** *11/10*

U.S. Cl. 409—136 **4 Claims**



1. A cooling and dust collecting apparatus for machine tool for cooling a cutter mounted on a rotating spindle and for sucking and exhausting cutting chips to the outside of said apparatus, said apparatus comprising:

a cooling and dust collecting housing surrounding said spindle and said cutter;

cold air passage means defined inside said housing for supplying cold air of a pressurized cold air supply portion disposed as an external device to a first cold air delivery hole and a plurality of second cold air delivery holes;

cutting chip exhaust passage means defined in said housing for connecting a cutting chip sucking device disposed as an external device to an inner space of said housing;

an elastic hood downwardly extending from the lower end of said housing, said elastic hood defining slits at the lower end thereof,

said first cold air delivery hole being adapted to blow pressurized cold air toward a shaft portion of said cutter, and

said second cold air delivery holes are adapted to blow pressurized cold air in downwardly inclined tangent direction of the outer periphery of the cutting portion of said cutter.

5,332,344

SPINDLE HEAD FOR TOOL TURRET

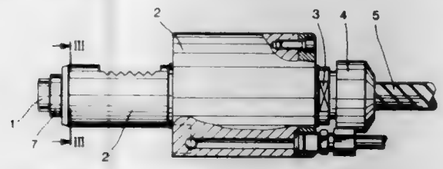
Helmut Thumm, and Friedrich Handel, both of Metzingen, Fed. Rep. of Germany, assignors to Sauter Feinmechanik GmbH, Metzingen, Fed. Rep. of Germany

Filed Aug. 19, 1993, Ser. No. 109,074

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1992, 4228946

Int. Cl.[5] **B23Q** *5/00*

U.S. Cl. 409—230 **7 Claims**



1. A spindle head for a tool turret, comprising:

a housing having a first securing element;

a spindle rotatably mounted in said housing;

a bushing coupled to said spindle to be longitudinally slidable, but nonrotatable, relative to said spindle, said bushing having a second securing element engaging said first securing element in a work setting of said bushing, axial movement of said bushing relative to said housing being limited in one axial direction by engagement of said first and second securing elements;

a prebiased spring biasing said bushing in said one axial direction, but allowing axial movement of said bushing in an opposite axial direction against a biasing force of said spring to disengage said first and second securing elements; and

cooperating surfaces on said first and second securing elements precluding self-locking of said first and second securing elements in the work setting, at least one of said surfaces of said first or second securing elements being inclined relative to said axial directions.

5,332,345

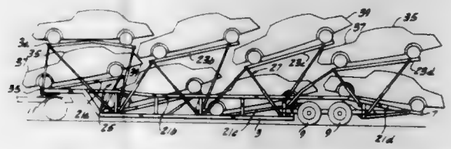
VEHICLE CARRIER

Dale R. Lillard, Rte. 1, Box 512, Lebanon, Mo. 65536

Filed Apr. 9, 1992, Ser. No. 865,965

Int. Cl.[5] **B60P** *3/08*

U.S. Cl. 410—29.1 **7 Claims**



7. A vehicle carrier for carrying vehicles, the vehicle carrier comprising:

a chassis having a front end and a rear end;

wheels mounted on the chassis for rotation relative thereto and for supporting at least a portion of the chassis low to the ground for easy loading or unloading of the vehicles;

vehicle support means disposed generally above the chassis, said vehicle support means comprising a plurality of platforms;

means mounting said vehicle support means on the chassis for movement of each of the platforms relative the chassis independently of the other platforms between a lowered position adjacent the chassis, a raised position spaced above the chassis, a forwardly tilted position and a rearwardly tilted position relative the chassis; and

power means associated with said mounting means for powering the movement of the platforms;

said means mounting the platforms comprising a plurality of support arms, each support arm including at least two telescopically interconnected arm sections such that each support arm may be lengthened by extension of one of the arm sections from the other and shortened by retraction of one of the arm sections into the other, a first pair of the support arms having a lower of their arm sections pivotally mounted to the chassis on respective laterally opposite sides thereof, and having a higher of their arm sections pivotally mounted to one of the platforms on respective laterally opposite sides thereof generally at the forward end of said one platform, a second pair of the support arms having a lower of their arm sections pivotally mounted to the chassis on respective laterally opposite sides thereof, and a higher of their arm sections pivotally mounted to said one platform on respective laterally opposite sides thereof generally at the rearward end of said one platform, and a third pair of support arms having a lower of their arm sections pivotally mounted on the chassis generally below the rearward end of said one platform, and having a higher of their arm sections pivotally mounted to said one platform on respective laterally opposite sides thereof generally at the forward end of said one platform.

5,332,346

CONCRETE ANCHOR

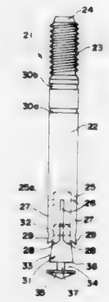
Katsumi Shinjo, Osaka, Japan, assignor to Yugenkaisha Shinjo Seisakusho, Osaka, Japan

Filed Apr. 8, 1993, Ser. No. 43,936

Claims priority, application Japan, Apr. 22, 1992, 4-130201

Int. Cl.[5] **F16B** *13/04, 13/06*

U.S. Cl. 411—31 **5 Claims**



1. A concrete anchor comprising an anchor body in combination with a tapered plug, the anchor body comprising:

a connection structure and a striking head formed at one of opposite ends of a rod-shaped member;

a cylindrical portion formed at the other end of the rod-shaped member so as to define an axial bore, and having an open end and a closed end;

slots each extending axially from the open end towards the closed end of the cylindrical portion;

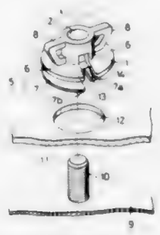
expandable feet each defined between two adjacent slots of the cylindrical portion, the ends of said feet being formed with saw-toothed scratching tips; and

the tapered plug having one of opposite ends inserted in the

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axial bore of the cylindrical portion of the anchor body, wherein said saw-toothed scratching tips are formed to be acute ends of the expandable feet of the body, and an annular recess defined by said tapered plug between a retaining shoulder formed as a circular sharp and acute edge of the largest diameter of a tapered portion of said tapered plug and a root at the other end of the tapered plug, with the annular recess providing a cavity to receive concrete scrapings and said retaining shoulder biting the inner surface of end portions of said expandable feet when the concrete anchor is inserted in and fixed to a concrete body to prevent the tapered plug from slipping off the anchor body.

5,332,347
MAT FASTENER
Toshihide Kimisawa, Utsunomiya, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Jun. 8, 1993, Ser. No. 73,330
Claims priority, application Japan, Jun. 10, 1992, 4-050353[U]
Int. Cl.[5] F16B *37/04*
U.S. Cl. 411—182 **12 Claims**



1. A mat fastener for securing a mat to a support panel, comprising:

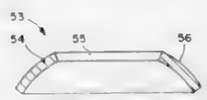
a cylindrical main body having a central insertion hole defined therethrough, such that said cylindrical main body comprises a tubular body for receiving and passing therethrough a stud bolt projecting from said support panel; and engagement claws, projecting radially inwardly from inner peripheral surface portions of said tubular body defining said central insertion hole, for engaging said stud bolt;

a retainer provided around a lower, outer peripheral portion of said main body and comprising a pair of upper and lower flange-like retaining members axially spaced apart with respect to each other by a distance which corresponds to the thickness of said mat to be fastened to said support panel, said lower retaining member having a guide notch, of a width greater than said thickness of said mat, extending radially inwardly from an outer peripheral portion of said lower retaining member; and

radially outwardly extending operating means mounted upon upper, oppositely disposed, outer peripheral portions of said tubular body for rotating said main tubular body and said retainer such that said lower retaining member can be entirely disposed beneath said mat, whereby said mat is interposed between said upper and lower retaining members, after a peripheral edge portion of a hole of said mat has been inserted within said guide notch of said lower retaining member, and said tubular body and said retainer have been rotated substantially a complete turn by said radially outwardly extending operating means.

5,332,348
FASTENING DEVICES
Jerome H. Lemelson, 868 Tyner Way, Incline Village, Nev. 89450
Continuation-in-part of Ser. No. 489,499, Mar. 7, 1990, Pat. No. 5,096,352, which is a continuation-in-part of Ser. No. 32,353, Mar. 31, 1987, Pat. No. 4,949,149. This application Mar. 10, 1992, Ser. No. 849,155
The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.
Int. Cl.[5] F16B *37/00, 43/02;* **B01J** *3/06*
U.S. Cl. 411—427 **18 Claims**



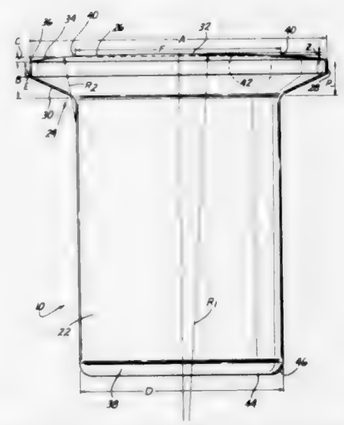


1. A washer adapted to be compressively engaged between work surfaces comprising:

a) a washer base of circular configuration fabricated of a solid material having a central opening permitting the washer to be assembled with and surrounded by a shank or the like and to be compressed between two adjacent parallel surfaces of work in an assembly with such work,

b) the entire outer surface of said washer base being coated with a synthetic diamond-like material which serves to protect the washer from corrosion.

5,332,349
FLUSH RIVET WITH COMPOUND RADIUS DOMED HEAD
Jon R. Gerwin, 5449 Abbeyfield, Long Beach, Calif. 90815
Filed Aug. 19, 1993, Ser. No. 109,091
Int. Cl.[5] F16B *19/06*
U.S. Cl. 411—507 **20 Claims**



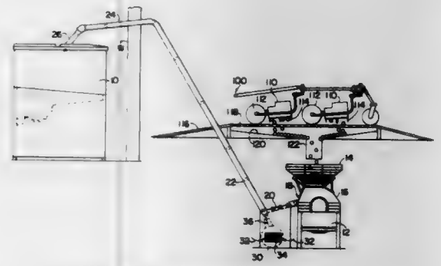
1. A flush rivet, for joining first and second overlapping structural members together, the structural members defining a bore comprising a cylindrical main bore, a cylindrical counterbore and a frustoconical intermediate bore between the cylindrical counterbore and the main bore, the rivet comprising:

a cylindrical shank, having a constant shank diameter, radially dimensioned to be received in the main bore, and having a proximal end and a distal end, the distal end formed as a tail portion that projects distally from the main bore and that is configured and positioned to be upset against the second structural member; and

a head integral and contiguous with the proximal end of the shank, the head comprising a cylindrical section having a diameter that is slightly less than the diameter of the cylindrical counterbore, a frustoconical section between the shank and the cylindrical section, the frustoconical head section being configured to seat in the intermediate bore, and an end face on the proximal end of the head;

wherein the end face comprises a central convexly-curved region having a first radius of curvature and a peripheral convexly-curved region concentrically surrounding the central convexly-curved region and having a second radius of curvature that is less than the first radius of curvature, the first radius of curvature being at least about 9 times the shank diameter and no more than about 25 times the shank diameter.

5,332,350
GOLF BALL HANDLING SYSTEM
Richard H. Hollrock, Simsbury, Conn., and J. Richard Hollrock, South Deerfield, Mass., assignors to Hollrock Engineering, Inc., Simsbury, Conn.
Filed Dec. 15, 1992, Ser. No. 995,023
Int. Cl.[5] B65G *69/00*
U.S. Cl. 414—376 **8 Claims**



1. A golf ball handling system comprising:

mobile means for gathering golf balls at a driving range or the like, said mobile means including golf ball receptacle means adapted to store golf balls that are so gathered, said receptacle means having an opening through which golf balls are gravity fed,

means defining a golf ball unload station, said unload station having means for receiving golf balls gravity fed from said golf ball receptacle means associated with said mobile golf ball gathering means,

golf ball storage means including a hopper for accepting golf balls from said unload station.

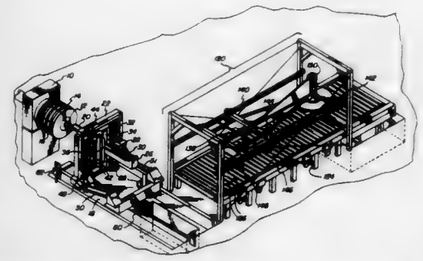
5,332,351
COIL UNLOADING AND TRANSPORTATION APPARATUS AND METHOD
Jacqueline S. Nelson, 118 Eastgate La., Hamden, Conn. 06514; Louis J. Wither, 20 Tanglewood Dr., Branford, Conn. 06405; Daniel J. Cummings, 35 Sheffield Rd., North Haven, Conn. 06473, and Elliot R. Lang, 1730 State St., Hamden, Conn. 06517
Continuation of Ser. No. 720,898, Jun. 25, 1991, abandoned. This application Aug. 11, 1992, Ser. No. 929,462
Int. Cl.[5] B66F *11/00*
U.S. Cl. 414—684 **25 Claims**

1. A coil unloading and transporting apparatus for a coil mounted on a storage shaft having a horizontal axis and having a top surface comprising:

a carriage supporting a shaft for receiving said coil, said receiving shaft having an axis and a top surface, said carriage being movable from a position adjacent said storage shaft to a position remote from said storage shaft;

a platform for supporting the coil, said platform being mounted on said carriage, said platform being located in a plane transverse to the axis of the receiving shaft, said receiving shaft and said platform being movable relative to each other from an extended position wherein the receiving shaft protrudes from the platform to a withdrawn position where the shaft is withdrawn below the plane of the platform;

means for pivoting said platform and said receiving shaft from a position wherein said receiving shaft is horizontal and the coil is supported on the receiving shaft to a position wherein said receiving shaft is vertical and the coil is supported on the platform;



means for aligning the top surface of said receiving shaft with the top surface of the storage shaft to enable transfer of said coil from said storage shaft to said receiving shaft; and

means for moving said carriage adjacent to said storage shaft;

means for activating the alignment means to align said receiving shaft with said storage shaft to receive said coil;

means for moving said carriage to a remote position;

means for pivoting said platform and said receiving shaft from a horizontal position to a vertical position wherein the coil is supported on said platform; and means for moving said receiving shaft from said extended position to said withdrawn position to permit said coil to be transported laterally with respect to said platform.

5,332,352
ROBOT PREALIGNER
Noel S. Poduje, Needham Heights, and Roy S. Mallory, Bedford, both of Mass., assignors to ADE Corporation, Newton, Mass.
Continuation of Ser. No. 320,276, Mar. 7, 1989, Pat. No. 5,102,280. This application Apr. 6, 1992, Ser. No. 863,819
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] B25J *9/06*
U.S. Cl. 414—225 **22 Claims**

16. A system for combined element transport to and from a station and alignment comprising:

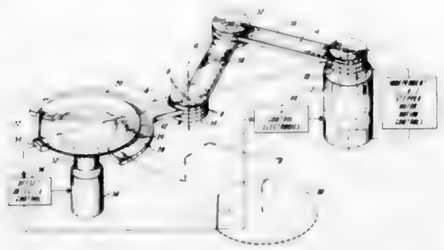
means for dimensionally characterizing a misalignment of an element on a pedestal, said misalignment including the position of the element centroid relative to the center of rotation of said pedestal;

means for positioning the element on the pedestal so that misalignment occurs along a predetermined straight line direction;

a linear manipulator having an element holder on an articulated two leg arm, means for angling the legs of the arm to produce a first direction of motion for said holder along a straight line, and having means for maintaining the angular position of the holder relative to said straight line during motion of the holder in the first direction;

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means coupled to the linear manipulator and cooperative with the station and the pedestal for providing a controlled relative motion of said holder and station and said holder and pedestal in a second direction of motion about an axis and a third direction of motion in elevation; and



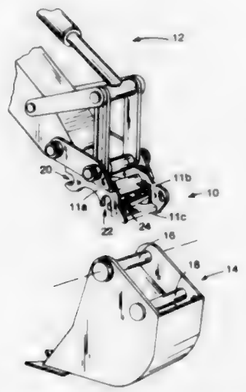
means for controlling the means for positioning to align the first direction of motion along said predetermined straight line direction when said element misalignment is therealong and means cooperative with the linear manipulator for moving said element on said holder in the straight line direction as a function of the misalignment thereof.

5,332,353

QUICK COUPLER FOR EXCAVATION EQUIPMENT

Carroll H. Arnold, Westminster, Mass., assignor to Wain Roy, Inc., Hubbardston, Mass.

Filed Feb. 16, 1993, Ser. No. 18,028
Int. Cl.[5] E02F *3/28*
U.S. Cl. 414—723 **7 Claims**



1. A quick coupler for attaching a tool to an excavator comprising:

a coupler body comprising a pair of spaced parallel plates, said plates defining means for fixed attachment of said quick coupler at the end of the excavator, said plates defining a first slot facing in a first direction, said first slot adapted for engagement upon a first pin on the tool, and a second slot facing in a second direction, said second slot adapted for engagement upon a second pin on the tool, the first pin and the second pin being substantially parallel, and a third plate, mounted between and substantially perpendicular to said pair of spaced parallel plates; and

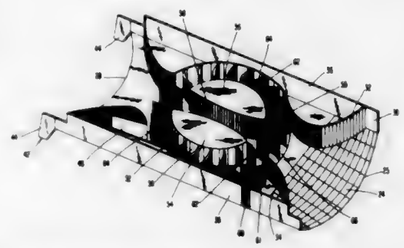
a latch mechanisms mounted to said coupler body for securing engagement of said second slot upon the second pin, said latch mechanism comprising a coupler gate rotatably mounted on an axis transverse to a longitudinal axis of the second pin, so that the gate pivots about said transverse axis between a first position in which engagement of said second slot upon the second pin is secured by said gate, and a second position in which said gate is clear of said second slot; and a latch lever mounted upon said coupler gate, said latch lever comprising a tab portion for engaging in a third slot defined by said third plate, said latch lever being rotatably mounted to pivot between a first position, in which said tab engages in said third slot, in a manner to resist rotation of said coupler gate, and a second position in which said tab is clear of said slot, thereby to allow rotation of said coupler gate.

5,332,354

WIND TURBINE APPARATUS

John S. Lamont, 3000-360 Main St., Winnipeg, Manitoba, Canada R3C 4G1

Filed Jul. 15, 1993, Ser. No. 91,432
Int. Cl.[5] F03D *3/04*
U.S. Cl. 415—4.2 **12 Claims**



1. A wind driven turbine device comprising:

a housing having a primary inlet opening, a secondary inlet opening, an outlet opening, and guidance means for orienting the primary inlet opening into general alignment with atmospheric wind;

annular turbine means for generating rotary power from atmospheric wind, rotatably mounted within the housing for movement in response to atmospheric wind movements;

baffle means for directing wind through the housing and the turbine means, the baffle means connecting the primary inlet opening, secondary inlet opening, and the outlet opening of the housing while defining an annular path for the turbine means, directing a first portion of wind from the primary inlet through a first portion of the annular path, directing wind from the secondary inlet through a second portion of the annular path and into confluence with a second portion of wind from the primary inlet, and directing confluent second portion of wind from the primary inlet and wind from the secondary inlet outwardly through the turbine means to the outlet; and

mounting means attached to the housing for rotatably supporting the housing while permitting movement of the housing about an axis.

5,332,355

IMPELLING APPARATUS

Eldon L. Lyda, Jr., Athens, Tex., assignor to Pamela Kittles, Athens, Tex.

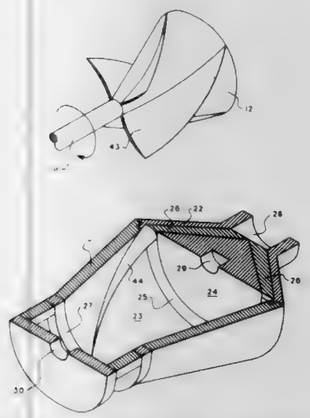
Filed Dec. 7, 1992, Ser. No. 986,453
Int. Cl.[5] F04D *3/00*
U.S. Cl. 415—74 **6 Claims**

1. An impelling apparatus for impelling a fluid, comprising:

a suction casing, including an axially located intake port, having a conically shaped suction cavity which diverges conically from the intake port;

a plurality of stator blades having divergent ends, said stator blades being attached to the suction casing, extending into the suction cavity, and extending divergently from the intake port; and

an impeller, rotatably mounted about an axis within said conically shaped suction cavity, including a conically shaped impeller hub having a suction section, a transition section, and an outer surface, wherein the impeller hub diverges conically in an axial direction from the suction section to the transition section, and a plurality of vanes having divergent ends, extending radially outward from the outer surface of the impeller hub and extending divergently along the outer surface of the impeller hub from the suction section to the transition section;



wherein the radial extension of the vanes from the axis is equal to the radius of the impeller hub at the transition section and the radial dimension of the vanes from the outer surface of the impeller hub decreases to zero at the transition section;

wherein the cross-sectional area of the annular space between the suction section of the impeller hub and the casing adjacent the suction section is at least equal to the cross-sectional area of the annular space between the transition section of the impeller hub and the casing adjacent the transition section.

5,332,356

PROCESS AND A DEVICE FOR DETERMINING THE EROSION CAUSED BY CAVITATION IN COMPONENTS THROUGH WHICH FLUID FLOWS

Johann Friedrich Gülich, Burgstrasse 62b, Winterthur, Switzerland 8408

Filed Jan. 11, 1993, Ser. No. 3,078
Claims priority, application European Pat. Off., Feb. 7, 1992, 92810090.8
Int. Cl.[5] F04D *29/66*
U.S. Cl. 415—118 **32 Claims**

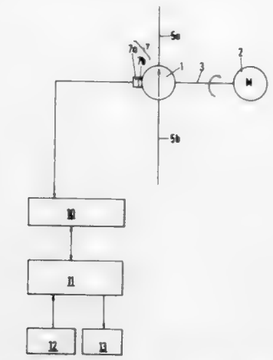
1. A method for determining the erosion rate caused by cavitation in components through which fluid flows, comprising the steps of:

measuring the vibration of an outer wall of the component of at least one point;

calculating a fluid-borne noise using the vibration; and

calculating an erosion rate using the fluid-borne noise and an empirically determined relationship between the fluid-borne noise and the erosion rate.

4. A method according to claim **1** wherein:



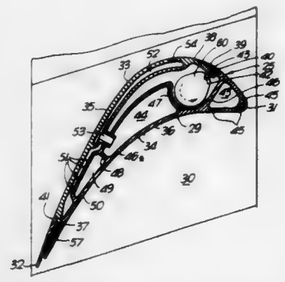
the empirically determined relationship between the fluid-borne noise and the erosion rate includes a metallurgical structure factor.

5,332,357

STATOR VANE ASSEMBLY FOR CONTROLLING AIR FLOW IN A GAS TURBINE ENGIEN

Henry Tubbs, Tetbury, Great Britain, assignor to Industria de Turbo Propulsores S.A., Zamudio, Spain

Filed Apr. 23, 1993, Ser. No. 52,550
Claims priority, application Spain, Apr. 23, 1992, 9200855
Int. Cl.[5] F01D *17/16*
U.S. Cl. 415—160 **7 Claims**



1. A gas turbine engine stator vane assembly comprising an annular array of substantially radially extending stator vanes circumferentially spaced apart so that throats are defined between circumferentially adjacent stator vanes, each of said stator vanes comprising an aerofoil cross-sectional portion having a leading edge, a trailing edge, a pressure flank and a suction flank, each of said flanks interconnecting said leading and trailing edges, wherein at least a portion of the suction flank of each of said vanes is pivotally attached to the pressure flank of that vane to pivot about a line which is normal to the general direction of gas flow to provide variations in the cross-sectional areas of said throats between adjacent stator vanes, mechanical actuation means for pivoting said portions of said suction flank about respective pivot lines to facilitate said variations in throat cross-sectional area, wherein said pivot line is located adjacent to said trailing edge of its respective stator vane.

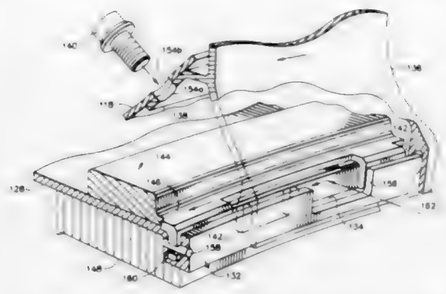
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UNCOUPLED SEAL SUPPORT ASSEMBLY

Robert J. Hemmelgarn, Mason; Jeffrey A. Kress, Evendale, and Richard W. Albrecht, Fairfield, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 24,581, Mar. 1, 1993. This application Aug. 26, 1993, Ser. No. 112,035
Int. Cl.[5] F01D *11/00*
U.S. Cl. 415—174.5 9 Claims



1. A gas turbine engine seal support assembly comprising:
a stator seal support;
an annular seal backing extending axially away from said seal support and having an integral retention flange at one end thereof, said retention flange having a radially outwardly facing retention groove;
an annular seal block supported radially inwardly of said seal backing for defining with rotor seal teeth positionable adjacent thereto a seal for restricting fluid flow therebetween;
a control ring disposed radially outwardly of said seal backing and supported thereby, said control ring having at one end thereof a plurality of radially inwardly extending and circumferentially spaced apart retention tabs cooperating with said retention flange for axially retaining said control ring on said seal backing; and
an annular heat shield fixedly joined at one end to said seal support, and having at a radially inner end a plurality of radially inwardly extending and circumferentially spaced apart retention tabs cooperating with said retention flange for axially retaining said heat shield to said seal backing while permitting unrestrained differential radial movement therebetween.

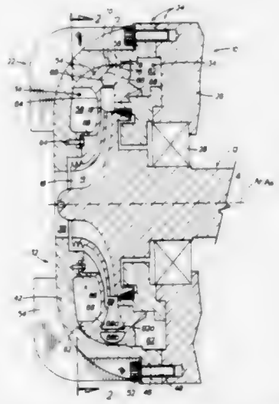
5,332,359

STATOR ASSEMBLY FOR A ROTARY MACHINE HAVING A CENTRIFUGAL ON IMPELLER AND VOLUTE

Alfred M. Palgon, Coral Springs, and Jerry H. Moore, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 12, 1993, Ser. No. 134,726
Int. Cl.[5] F01D *9/00*
U.S. Cl. 415—182.1 14 Claims

1. A stator assembly for a rotary machine having a centrifugal impeller disposed about an axis of rotation A_r and a discharge region for the impeller radially outwardly of the impeller, which comprises:
a first portion of the stator assembly which includes an outer pressure vessel extending circumferentially about the axis A_r and which is spaced radially from the centrifugal impeller leaving an annular cavity therebetween, the pressure vessel including a passage for pressurized fluid discharged from the impeller which is in flow communication with the cavity;
a second portion of the stator assembly which includes a manifold housing disposed in the cavity and dividing the cavity into a first pressure region and a second pressure region, the manifold housing having a first sidewall and a second sidewall extending radially and circumferentially about the housing, the walls being spaced apart leaving a second circumferentially extending passage therebetween which is in flow communication with the discharge region of the impeller, the manifold housing including
a base which is circumscribed by the outer pressure vessel and which has a third passage extending therethrough for placing the circumferentially extending passage in the manifold housing between the sidewalls, in flow communication with the passage in the outer pressure vessel;
the first sidewall extending radially inwardly from the base and being spaced axially from at least part of the outer pressure vessel to bound part of the first pressure region;
the second sidewall extending radially inwardly from the



base and being spaced axially from at least part of the first portion of the stator assembly to bound part of the second pressure region, the second pressure region being in flow communication with the discharge region of the impeller; and
a guide vane which is circumferentially oriented and which extends axially between the first sidewall and second sidewall to divide at least a portion of the second circumferential passage in the manifold housing into an inner part and an outer part;
wherein the first and second pressure regions are pressurized under operative conditions to decrease the difference in pressure between the passage in the manifold housing and the exterior of the manifold housing in comparison to constructions having a lower pressure in regions adjacent to the first sidewall and second sidewall and to dispose regions adjacent the outer pressure vessel of lower pressure in comparison to the pressure on the interior of the manifold housing.

5,332,360

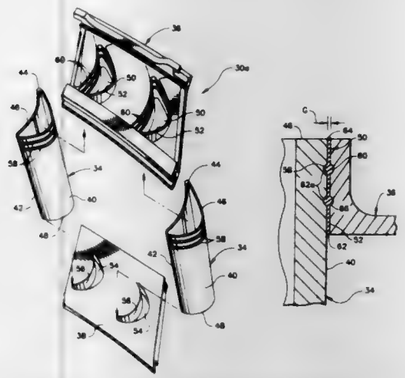
STATOR VANE HAVING REINFORCED BRAZE JOINT

Victor H. S. Correia, Scotia, N.Y., and Kevin G. McAllister, West Chester, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 8, 1993, Ser. No. 117,853
Int. Cl.[5] F01D *9/02*
U.S. Cl. 415—209.3 11 Claims

1. A gas turbine engine stator vane comprising a hollow airfoil having an outer surface extending laterally between a leading edge and a trailing edge and longitudinally between

first and second opposite ends, said outer surface adjacent said first end having at least one groove therein extending at least in



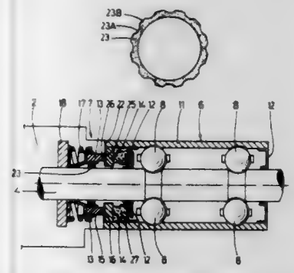
part laterally between said leading and trailing edges for receiving a brazing material.

5,332,361

SHAFT SEAL ARRANGEMENT FOR WATER PUMP

Johan C. M. Bras, Tricht; Edwin H. Tummers, Ede; Syme D. Van Ballegooy, Ijsselstein; Hubertus L. M. Peek, Hilversum; Vedran A. Tadic, Culemborg; Martin B. Verburgh, Amersfoort, all of Netherlands, and Armin Olschewski, Schweinfurt, Fed. Rep. of Germany, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Dec. 8, 1992, Ser. No. 989,789
Claims priority, application Netherlands, Dec. 11, 1991, 9102064; May 7, 1992, 9200816
Int. Cl.[5] F04D *29/10*
U.S. Cl. 415—231 11 Claims



1. In a water pump having a housing with a space for fluid which contains a pump device on a shaft, the shaft projecting from the housing and being rotatably supported by a bearing assembly, the bearing assembly having a stationary outer ring on the housing, the fluid space being sealed with respect to the shaft by a sealing unit having a first ring, a second ring and means mounting the second ring to the outer ring of the bearing ring of the assembly, said first and second rings having sealing surfaces that face one another, and means for resiliently biasing the first ring in the direction of the second ring, and further comprising an inner ring having an outer circumferential surface which contacts the inner circumferential surface of said first ring and an inner circumferential surface engaging said shaft, for connecting said first ring to the shaft, the improvement wherein:
said inner ring comprises an elastic dampening and centering ring located between the inner circumference of the first ring and the outer circumference of the shaft; and further comprising
means for providing an interrupted contact at one of the circumferential surfaces of said inner ring to inhibit axial forces between said first and second rings from being absorbed by friction forces between the first ring and said inner ring.

5,332,362

BLADE FOR AIRCRAFT ROTARY WINGS, WITH SWEPT-BACK TIP

Francois V. Toulmay, Vitrolles, and Danièle A. Falchero, Ventabren, both of France, assignors to Societe Anonyme dite: Eurocopter France, Marseille, France

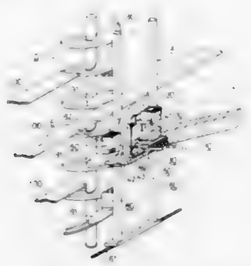
Filed Mar. 24, 1993, Ser. No. 36,498
Claims priority, application France, Apr. 9, 1992, 92 04353
Int. Cl.[5] B64C *11/18*
U.S. Cl. 416—223 R 12 Claims



1. Blade with a swept-back tip for aircraft rotary wings, intended to form part of a rotor whose hub (2) is linked to said blade (1), which is capable of being driven in rotation around the axis of said hub, said blade (1) including a leading edge (5) and a trailing edge (6) and being formed by successive elementary transverse sections (7), identified by the distance r separating each of them from the axis of rotation of said hub, and each exhibiting a defined chord profile and an aerodynamic center whose offset with respect to the pitch variation axis, orthogonal to each of said sections, determines the sweepback of said wing, wherein said blade (1) being subdivided, along its longitudinal extent, into four areas, namely a first area extending from the inner edge of the blade R0 to a first section R1 situated between 75% and 875 of the total length of the blade, measured from the axis of rotation of the hub, a second area extending from the first section R1 to a second section R2 situated between 87% and 93% of the total length of the blade, a third area extending from the second section R2 to a third section R3 situated between 93% and 97% of the total length of the blade and a fourth area extending from the third section R3 to the free outer edge R of the blade, the length of the chord L increases generally linearly in said first area, changes according to a cubic function in said second area, is constant in said third area, and changes according to a parabolic function in said fourth area so that the blade (1) exhibits a double progressive taper toward the inner and outer edges of the blade, the variation in the length of the chord being such that the leading edge (5) and the trailing edge (6) of the blade, along its longitudinal extent, exhibit no break, the leading edge including only convex and straight-line segments and the trailing edge only concave and straight-line segments, and the offset Y'f of the aerodynamic center with respect to the pitch variation axis varies linearly in said first area so that the aerodynamic center is offset toward the leading edge (5) in this area, changes according to a cubic function in said second area, varies linearly in said third area, and changes according to a parabolic function in said fourth area so that the blade (1) exhibits a rearward sweepback, the variation in the offset of the aerodynamic center being such that the leading edge (5) and the trailing edge (6) of the blade, along its longitudinal extent, exhibit no break.

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5,332,363
METHOD FOR SHIFTING GOODS AND APPARATUS THEREFOR
Nobuhiro Tanaka, Saitama, and Eiji Hirata, Koshigaya, both of Japan, assignors to KAO Corporation, Tokyo, Japan
Division of Ser. No. 672,339, Mar. 20, 1991, Pat. No. 5,181,818, which is a division of Ser. No. 341,856, Apr. 24, 1989, Pat. No. 5,020,965. This application Nov. 4, 1992, Ser. No. 971,538
Claims priority, application Japan, Apr. 28, 1988, 63-106168; Jul. 21, 1988, 63-182050; Nov. 21, 1988, 63-151583; Dec. 26, 1988, 63-167860; Jan. 23, 1989, 1-6305; Jan. 24, 1989, 1-14776; Jan. 26, 1989, 1-16927; Jan. 30, 1989, 1-20584
Int. Cl.[5] B65G *1/04*
U.S. Cl. 414—283 21 Claims

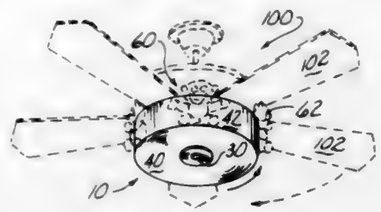


1. An apparatus for shifting goods in which the goods are arranged in a predetermined manner within a container having an opening portion, the goods are taken out of the container corresponding to an arrangement of a storing state of the goods, said apparatus comprising:
a goods take-out tool including crisscrossing partitions for separating the goods contained in the container according to the arrangement of the storing state of the goods by inserting foremost ends of the partitions into the opening portion of the container, the goods take-out tool having a shutter on an end thereof opposite to an end having the foremost ends of the partitions, the shutter being openable and closeable and the goods being removable from the goods take-out tool when the shutter is opened, the goods entering the goods take-out tool through the end having the foremost ends of the partitions and the goods exiting the goods take-out tool through the end having the shutter; and
an inverting device for inverting the container and goods take-out tool and taking the goods from the container into the goods take-out tool, the partitions maintaining the goods in the arrangement of the storing state, said inverting device including a superposing device for superposing the goods take-out tool on the container by inserting the foremost ends of the partitions of the goods take-out tool into the container through the opening portion of the container

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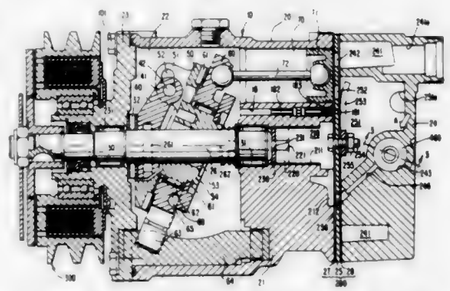
5,332,364
ROTATABLE CEILING FAN ACCESSORY
Larry Rodarmer, 278 Overstreet Ct., Palm Harbor, Fla. 34683
Filed Jan. 25, 1993, Ser. No. 8,123
Int. Cl.[5] F04N *29/00*
U.S. Cl. 416—146 R 2 Claims

1. An accessory for ceiling fans having a plurality of fan blades rotating around a stationary ceiling fan hub housing which is suspended from a ceiling wherein the accessory comprises:
a housing unit including a base member surrounded by raised sidewalls, wherein the exterior surface of the raised sidewalls are provided with visual elements; and,
means for rotatably suspending said housing unit from the ceiling fan hub housing; means for rotating said housing unit both independently of, and in cooperation with, the rotation of said fan blades; such that the visual elements will present a changeable appearance to a stationary viewer; wherein, said means for rotatably suspending said housing unit from the ceiling fan hub housing comprises:
a hub unit operatively associated with said housing unit; and,



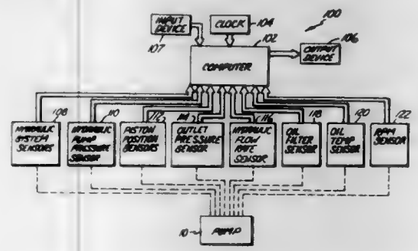
an axle rod member having one end operatively connected to, and disposed in a relatively rotatable relationship with, said hub unit; and, having another end that is secured in a stationary fashion relative to said ceiling fan hub housing.

5,332,365
SLANT PLATE TYPE COMPRESSOR WITH VARIABLE CAPACITY CONTROL MECHANISM
Yukihiko Taguchi, Maebashi, Japan, assignor to Sanden Corporation, Isesaki, Japan
Filed Oct. 7, 1992, Ser. No. 957,370
Claims priority, application Japan, Oct. 23, 1991, 3-275824
Int. Cl.[5] F04B *1/26*
U.S. Cl. 417—222.2 5 Claims



1. A slant plate type refrigerant compressor comprising:
a compressor housing enclosing a crank chamber, a suction chamber and a discharge chamber therein, said compressor housing comprising a cylinder block having a plurality of cylinders formed therethrough;
a piston slidably fitted within each of said cylinders;
drive means coupled to said pistons for reciprocating said pistons within said cylinders, said drive means including a drive shaft rotatably supported in said housing and coupling means for drivingly coupling said drive shaft to said pistons such that rotary motion of said drive shaft is converted into reciprocating motion of said pistons, said coupling means including a slant plate having a surface disposed at an adjustable inclined angle relative to a plane perpendicular to said drive shaft, the slant angle changing in response to a change in pressure in said crank chamber relative to pressure in said suction chamber to thereby change the capacity of said compressor;
a first communication path linking said crank chamber with said suction chamber;
a first valve control mechanism disposed within said first communication path, said first valve control mechanism controlling fluid communication through said first communication path in response to changes in pressure in said suction chamber;
a second communication path linking said crank chamber with said discharge chamber, said first and second communication paths sharing a common portion linked to said crank chamber; and
a second valve control mechanism disposed within said second communication path, said second valve control mechanism responding to an external signal to open said second communication path to increase the pressure in said crank chamber to thereby reduce the capacity of the compressor, fluid communication through said first communication path being continuously controlled by said first valve control mechanism to maintain pressure in said suction chamber at a predetermined constant value as long as said second communication path is closed, said second communication path being continuously opened as long as said first communication path is closed and said common portion being selectively coupled to the open one of said first or second communication paths.

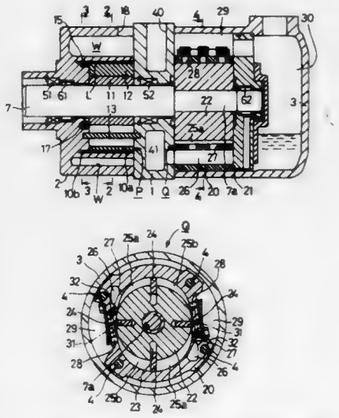
5,332,366
CONCRETE PUMP MONITORING SYSTEM
Thomas M. Anderson, White Bear Lake, Minn., assignor to Schwing America, Inc., White Bear, Minn.
Filed Jan. 22, 1993, Ser. No. 7,747
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—63 13 Claims



1. A method of monitoring operation of a positive displacement concrete pump having an inlet for receiving concrete and an outlet at which concrete is delivered under pressure, the method comprising:
sensing a parameter which bears a known relationship to an actual volume of concrete delivered under pressure from a material cylinder of the pump;
determining velocity information as a function of the parameter sensed, the velocity information being related to a velocity of concrete delivered under pressure from the material cylinder of the pump; and
predicting wear on pump components as a function of the determined velocity information.

5,332,367
AUTOMOTIVE AIR CONDITIONING APPARATUS
Shigeru Suzuki; Nobuaki Hoshino; Takahisa Ban, and Kunifumi Goto, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed Jul. 27, 1993, Ser. No. 97,876
Claims priority, application Japan, Aug. 6, 1992, 4-210525
Int. Cl.[5] F04B *49/08*
U.S. Cl. 417—286 9 Claims

1. An automotive air conditioning apparatus, comprising:
an input shaft for coupling to an engine;
a pump unit disposed on said input shaft;
a compressor unit disposed on said input shaft; and
a separator wall disposed between said pump unit and said compressor unit and adapted to seal therebetween in the axial direction of said input shaft;
said pump unit including:
a first rotary driving member installed to said input shaft and accommodated in an enclosed space formed therein;
a viscous fluid sealed in said enclosed space;
a suction space and a discharge space which said viscous fluid is sucked into and discharged out as said first rotary member rotates, and which are communicated with each other by way of a throttle;
a first short-circuiting passage communicating said suction space and said discharge space; and
a water jacket disposed outside said enclosed space and adapted to convert heat generated by said viscous fluid into temperature increments of circulating water;
said compressor unit including:
a second rotary driving member installed to said input shaft and accommodated in an enclosed area formed therein;

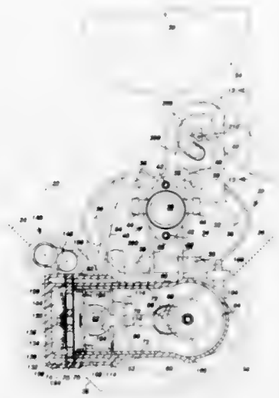


a suction chamber and a discharge chamber which a refrigerant gas is sucked into and discharged out from;
a suction area and a discharge area which are defined in said enclosed area, and which vary volumetrically as said second rotary member rotates, the suction area adapted to suck said refrigerant gas from said suction chamber, the discharge area adapted to compress and discharge said refrigerant gas to said discharge chamber; and
a second short-circuiting passage communicating said suction chamber and said discharge chamber or said suction area and said discharge area;
said first short-circuiting passage including a first control valve adapted to selectively open and close said first short-circuiting passage;
said second short-circuiting passage including a second control valve adapted to selectively open and close said second short-circuiting passage.

5,332,368
AIR COMPRESSOR HAVING A HIGH PRESSURE OUTPUT
John E. Macier, Beach Park, Ill.; John M. Mahoney, III, Bristol, Wis., and Harold K. Wade, Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Jul. 22, 1992, Ser. No. 918,582
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—362 56 Claims

1. An air compressor comprising:
a housing having an elongated cylindrical bore and a generally closed crankcase chamber;

a piston having a head end portion and a connecting rod end portion and a side wall of predetermined length, said piston being adapted for reciprocating movement in said cylindrical bore;
a rotatable crankshaft means in said crankcase chamber;
a connecting rod for interconnecting said crankshaft means and said piston, rotation of said crankshaft means causing reciprocating movement of said piston;
a head means attached to said housing at the outer end of said cylindrical bore, and having an output chamber therein;
valve means located adjacent to said outer end of said cylindrical bore, said valve means being normally closed but adapted to open and pass air to said output chamber responsive to compressed air produced by the movement of said piston in said bore toward said head means;

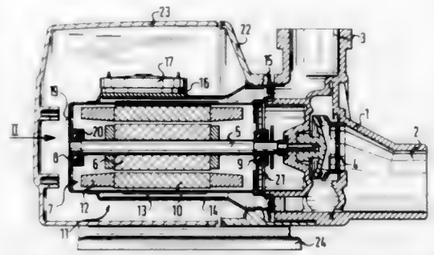


inlet means for admitting air through at least one opening in said housing into the side of said cylindrical bore, said opening being in communication with the exterior of said housing;
an outlet means adapted to discharge air from said crankcase chamber, said outlet means having a hollow cylindrical extension adapted to have a conduit means attached thereto;
means connected to said crankshaft means for rotating the same, incremental rotation of said crankshaft means causing said piston to move away from said head means and permit air to enter said cylindrical bore, further rotation causing said piston to move toward said head means while compressing the air, the air causing said valve means to open and pass into said output chamber and then close

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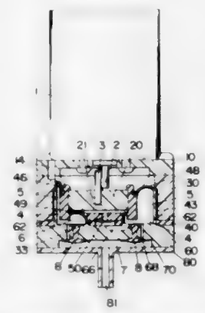
5,332,369
PUMP UNIT WITH COOLING JACKET FOR ELECTRIC MOTOR
Niels D. Jensen, Bjerringbro, Denmark, assignor to Grundfos A/S, Bjerringbro, Denmark
Filed Jun. 26, 1992, Ser. No. 904,786
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121430
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—369 **10 Claims**

1. A pump unit, comprising
a rotary pump for producing a stream of fluid to be conveyed by the pump unit;
an electric motor having a rotor drivingly connected to the rotary pump and being sealed against ingress of said fluid;
a cooling jacket circumferentially surrounding the electric motor for receiving fluid diverted from said fluid stream as cooling fluid;
a frequency converter for controlling the speed of the electric motor and being connected to an exterior portion of the cooling jacket in heat conducting relationship therewith; and



a common motor housing receiving the frequency converter and the electric motor.

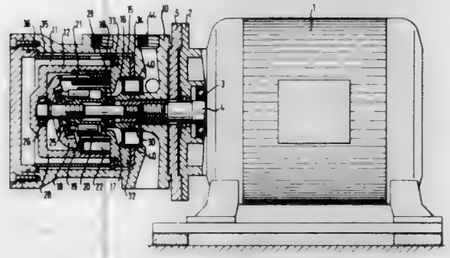
5,332,370
MINIATURE DIAPHRAGM PUMP
Satoshi Nakayama, Hirakata; Yoshie Watari, Nagara-Higashi; Mitsuo Nakatani, Sakai, and Makoto Fujiwara, Hirakata, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Apr. 21, 1993, Ser. No. 49,378
Claims priority, application Japan, Apr. 23, 1992, 4-103374; Sep. 25, 1992, 4-255235
Int. Cl.[5] F04B *43/00*
U.S. Cl. 417—413 R **10 Claims**



1. A miniature diaphragm pump comprising:
a motor having an output shaft rotating about its axis;
an eccentric pin connected in eccentric relation to the axis of said output shaft;
a drive element connected to said eccentric pin to be driven thereby to reciprocate in a direction perpendicular to the axis of said output shaft;
at least one pump chamber disposed radially outwardly of said drive element with respect to the axis of said output shaft and having inlet and outlet valves;
said pump chamber provided with a diaphragm having a rigid joint section at which said diaphragm having a drive element so that said diaphragm is caused to curve in response to the reciprocation of said drive element for effecting a pumping action of alternately drawing and discharging fluid in and out of said pump chamber through said associated inlet and outlet valves, respectively; and
said diaphragm comprising an upper flange and a lower flange which are arranged to define within said pump chamber corresponding first and second sub-chambers on the opposite sides of said joint section, one of said first and second sub-chambers having a larger compression and

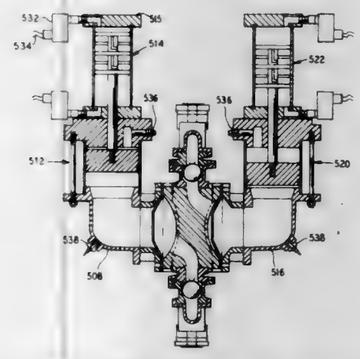
expansion volume that the other one so as to be predominantly responsible for said pumping action, and is compressed when the other one is expanded.

5,332,371
HYDRAULIC SYSTEM
Jörg Dantlgraber, Lohr-Sackenbach, and Reiner Püschel, Lohr-/Main, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany
Filed Feb. 4, 1993, Ser. No. 13,694
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203619
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—363 **10 Claims**



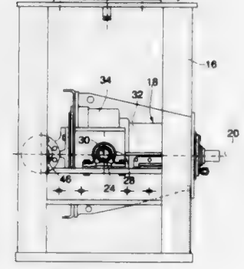
1. In a hydraulic system including a drive motor having an output shaft at a front end, a block mounted on the front end of the motor and defining a cavity, and a hydraulic machine disposed in the cavity and coupled to the output shaft, the improvement comprising: an annular flange on the hydraulic machine, first and second noise dampening elements respectively disposed against opposite sides of said flange, and cover structure mountable on the block for closing the cavity, said cover structure including a clamping portion cooperating with the block for clamping therebetween said flange and said noise dampening elements, thereby to securely mount the hydraulic machine on the block.

5,332,372
MODULAR DOUBLE-DIAPHRAGM PUMP
Steven M. Reynolds, Mansfield, Ohio, assignor to Warren Rupp, Inc., Mansfield, Ohio
Filed Apr. 20, 1992, Ser. No. 871,191
Int. Cl.[5] F04B *43/06*
U.S. Cl. 417—393 **34 Claims**



21. In a modular double diaphragm pump receiving a drive fluid for moving two diaphragms to displace a pumped fluid, a central housing block comprising:

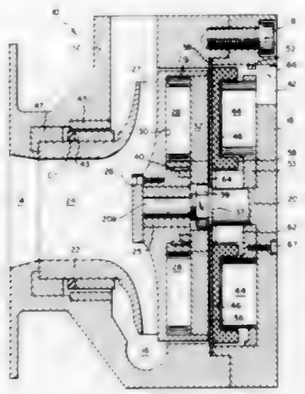
5,332,373
VERTICAL PUMP AND METHOD FOR ACCESSING SAME
Dennis M. Schendel, Orangevale, Calif., assignor to Baker Hughes Incorporated, Houston, Tex.
Filed Jul. 30, 1993, Ser. No. 99,957
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—360 **15 Claims**



1. A pump comprising:
a pump superstructure;
a housing having a longitudinal axis;
mounting means for pivotably mounting said housing on said superstructure for enabling a swinging of said housing and said impeller between said operational orientation and a maintenance orientation, said longitudinal axis being substantially vertical in said operational orientation of said housing and at an angle to the vertical in said maintenance orientation;
an impeller rotatably disposed in said housing for rotation about said longitudinal axis in an operational orientation of said housing;
drive means fixed to said superstructure in a stationary location for rotatably driving said impeller; and
coupling means on said superstructure for enabling a connection of said drive means to said impeller upon a pivoting of said housing from said maintenance orientation to said operational orientation and for alternately enabling a disconnection of said drive means from said impeller prior to a pivoting of said housing from said operational orientation to said maintenance orientation.

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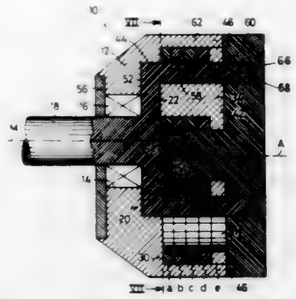
5,332,374
AXIALLY COUPLED FLAT MAGNETIC PUMP
Ralph Kricker, 362 Mulberry Point Rd., Guilford, Conn. 06437, and Sheldon Childs, 360 Tolland Turnpike, Willington, Conn. 06279
Filed Dec. 30, 1992, Ser. No. 999,523
Int. Cl.[5] **F04B** *17/00*
U.S. Cl. 417—420 **11 Claims**



1. An axially coupled flat magnetic pump comprising,
a pump housing having a fixed stub shaft projecting thereinto centrally thereof,
a pump rotor mounted in said housing on said stub shaft and including an impeller having axial and centrifugal flow channels on one side of said rotor,
said rotor including a circumferential series of magnets on the other side thereof,
a seal plate extending between the periphery of said housing and said stub shaft adjacent said rotor to preclude leakage of fluid outwardly of said housing axially past said rotor,
a stator having a series of energizable stator coil magnet windings in circumferential array adjacent said seal plate to effect rotation of said rotor and impeller upon energization thereof,
a cup-like cover plate receiving and peripherally enclosing said stator magnet windings,
means detachably securing said cover plate to said housing,
a magnetic sensor disposed in axial proximity to said rotor magnets, and,
means for positioning said sensor adjacent said stator, said means including an annulus disposed about said stub shaft carrying said sensor on the axially inward face thereof.

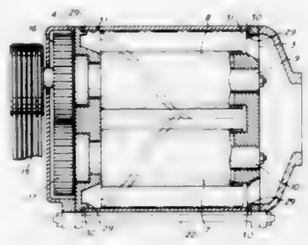
5,332,375
ROTARY PISTON MACHINE
Jurgen Kuechler, An den Alten Graben 9, W-3556 Weimar/-Niederwalgern, Fed. Rep. of Germany
Filed May 26, 1993, Ser. No. 67,095
Claims priority, application Fed. Rep. of Germany, May 26, 1992, 9207087
Int. Cl.[5] **F01C** *19/00*
U.S. Cl. 418—138 **14 Claims**

1. A rotary piston machine (1) comprising in combination
(a) a casing (12, 40, 60),
(b) a central annular body (20) mounted for rotation within said casing (12, 40, 60) said central annular body (20) comprising a cylindrical array of arc-shaped elements (24),
(c) a drive shaft (18) supported by said casing (12, 40, 60) and coaxially joined to said central annular body (20) so as to rotate said central annular body (20) about a first axis (M),
(d) swiveling fulcrum slides (28) located in said arc-shaped elements (24), which slides are parallel to said first axis (M),
(e) a plurality of ring and vane members (a-f) mounted in a stack (30) in said casing (12, 40, 60) for rotation around a second axis (A) that is offset from said first axis (M), said ring and vane members:
(i) each comprising a pair of concentric rings including an inner ring (32) and an outer ring (36),



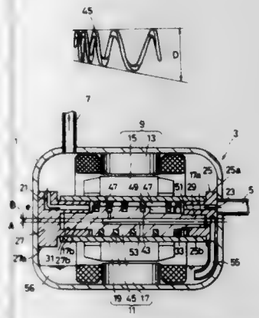
(ii) each comprising a vane (34) that extends between and is integral with both the inner ring (32) and the outer ring (36) of each ring pair, each vane (34) being slidable within one of said swiveling fulcrum slides (28) so as to thereby define a plurality of separate and spaced apart chambers (k) within said casing (12, 40, 60),
(iii) being peripherally offset and movable relative to each other within said ring stack (30),
(iv) being stacked by intervals of at least one ring width (w) each.

5,332,376
SCREW COMPRESSOR FOR INTERNAL COMBUSTION ENGINES
Benny Lindbrandt, Johanneshov, Sweden, assignor to Opcon Autorotor AB, Nacka, Sweden
PCT No. PCT/SE90/00864, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/10045, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 2, 1990, Ser. No. 853,762
Claims priority, application Sweden, Dec. 22, 1989, 8904359
Int. Cl.[5] **F01C** *21/00*
U.S. Cl. 418—179 **16 Claims**



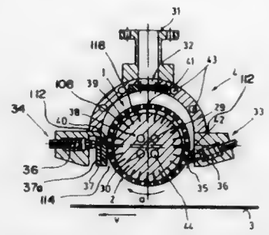
1. A screw compressor comprising:
an extruded housing including a barrel section (2) and two end sections (3, 4) at opposite end portions of said barrel section (2);
said housing enclosing a working space, said working space including two intersecting bores (5, 6);
said barrel section (2) having an opening at each opposite end portion thereof;
a pair of intermeshing rotors (7, 8) mounted in said housing, each rotor being mounted in a respective one of said bores, and each rotor having intermeshing helical lands and intervening grooves;
inlet and outlet ports (18, 19) formed in said housing and in communication with respective bores of said working space;
each of said end sections (3, 4) having a projection (29) shaped correspondingly to a respective opening of a transverse section of the opposite end portions of said barrel section (2), and said projections being dimensioned so as to be inserted into respective openings of said barrel section (2) by forced fit between outer surfaces (30) of the projections (29) and inner surfaces (31) of said end portions of said barrel section (2) to improve rigidity of said housing;
wherein at least one of said outer surfaces (30) of said projections (29) and said inner surfaces (31) of said end portions of said barrel section, which are pressed together, is a straight tapered surface; and
at least one screw joint (20–22; 25) at each of said end sections (3, 4) for securing said respective end sections (3, 4) to said barrel section (2).

5,332,377
COMPRESSOR WITH OVERSIZED BLADE
Takuya Hirayama, and Masayuki Okuda, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 6, 1992, Ser. No. 879,005
Claims priority, application Japan, May 9, 1991, 3-104523
Int. Cl.[5] **F01C** *21/08*
U.S. Cl. 418—220 **5 Claims**



1. A fluid compressor for drawing, compressing, and discharging a fluid, comprising:
(a) a cylinder rotated by drive means and having a suction port for drawing the fluid and a discharge port for discharging the fluid;
(b) a cylindrical piston eccentrically disposed inside said cylinder so that the periphery of said piston is partly in contact with the inner face of said cylinder, said piston being movable relative to said cylinder;
(c) a spiral groove formed around the periphery of said piston at pitches that gradually reduce from the suction port side toward the discharge port side; and
(d) a spiral blade fitted in said groove so that said blade is outwardly and inwardly movable in said groove, said blade defining a plurality of work chambers between the inner face of said cylinder and the periphery of said piston;
wherein the outer diameter of at least part of said blade is larger than the inner diameter of said cylinder and said blade is tapered so that the outer diameter of said blade gradually increases from the discharge port side toward the suction port side where said blade has a largest pitch.

5,332,378
APPARATUS FOR THE METERED DOSING OF FLOWABLE MASSES
Rupert Harreither, Baden, Austria, assignor to Berndorf Band Gesmbh, Berndorf, Austria
Filed Mar. 19, 1992, Ser. No. 854,009
Int. Cl.[5] **B30B** *11/20;* **B01J** *2/20*
U.S. Cl. 425—8 **37 Claims**



1. An apparatus for the metered dosing of fluent material masses, comprising:
a drum member having a substantially horizontal lengthwise axis and rotatable about the substantially horizontal lengthwise axis;
the drum member comprising a substantially cylindrical outer shell provided with a plurality of openings;
the substantially cylindrical outer shell of the drum member having an inner surface;
a roller member having a lengthwise axis rotatably arranged within the drum member;
the lengthwise axis of the roller member and the lengthwise axis of the drum member being arranged substantially parallel and eccentric to one another;
a transport device for receiving metered material mass portions of the processed material mass arranged beneath the drum member;
the roller member comprising a cell wheel provided with lamellae retained against the inner surface of the substantially cylindrical outer shell, to form a cell through a region of travel throughout the rotation of the cell wheel, prior to the metered dosing of the fluent material mass; and
a container for the material mass partially encircling the drum member while leaving free a lower region.

5,332,379
EXTRUSION HEAD FOR SHEATHING ELONGATED OBJECTS
Wilfried Baumgarten, Pattensen, Fed. Rep. of Germany, assignor to Paul Troester Maschinenfabrik, Hanover, Fed. Rep. of Germany
Filed Dec. 16, 1991, Ser. No. 808,093
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040882
Int. Cl.[5] **B29C** *47/94*
U.S. Cl. 425—107 **11 Claims**

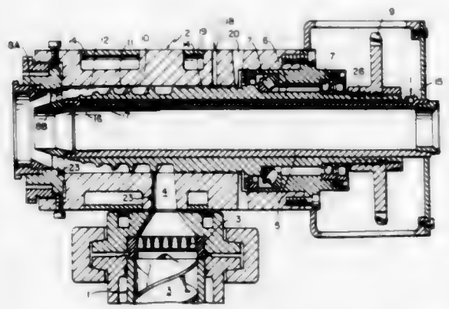
1. An extrusion head for sheathing elongate objects with an extruded mass, comprising
a housing having an elongate bore and an opening in a side of said housing,
a hollow mandrel disposed concentrically in said bore and affixed to said housing with an annular space between said mandrel and said housing, said mandrel being of size for passage therethrough of an object to be sheathed,
a forming tool at a discharge end of said hollow mandrel, said forming tool comprising an annular forming tool part on said discharge end of said hollow mandrel and an annular forming tool part at an end of said bore of said housing,
an extruder for forcing sheathing materials through said

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opening in a side of said housing and into said annular space between said mandrel and said housing and out between said forming tool parts as a sheath on an object passing through said hollow mandrel,

a rotor disposed in said annular space and rotatable on said hollow mandrel, said rotor having on its circumference a screw thread web for exerting a force on said material in a direction toward said forming tool,

said housing being provided with a channel for supplying lubricant between an outer surface of said rotor and an inner surface of said bore of said housing,



in which at least one circumferential groove is provided in an outer surface of said rotor in the vicinity of said lubricant supply channel in said housing, said groove being a helical groove for propelling lubricant in a direction away from said forming toward a discharge space in said housing,

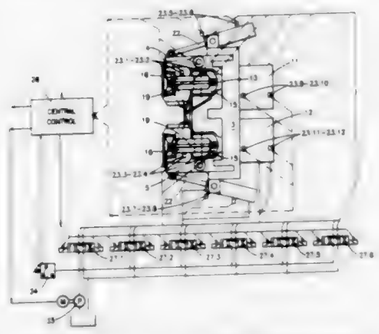
said web progressively decreasing in height and the radial space between said web and an inner wall surface of said bore of said housing progressively increasing in a direction toward said forming tool to produce flow of said material in an axial direction.

5,332,380

EXTRUSION HEAD FOR AN EXTRUSION INSTALLATION OF THE RUBBER OR PLASTIC PROCESSING INDUSTRY

Eckhard Unland, Hanover, Fed. Rep. of Germany, assignor to Paul Troester Maschinenfabrik, Hanover, Fed. Rep. of Germany

Filed Nov. 23, 1993, Ser. No. 157,610
Int. Cl.[5] B29C *47/12, 47/92*
U.S. Cl. 425—135 **3 Claims**



1. An extrusion head for an extrusion installation for extruding plastic material comprising at least one extruder cylinder having a discharge end portion, said extrusion head comprising

a stationary part fixedly mounted on said discharge end portion of said extruder cylinder and defining at least one guide channel for guiding extrudate from said cylinder to an extrusion location and providing a seat for an extrusion die for shaping said extrudate,

an extrusion die positioned on said seat,

two movable extrusion head parts hingedly mounted on said stationary part for movement between a closed position for defining an extrusion orifice for said extrudate and for holding said extrusion die on said seat and an open position for cleaning, each of said movable extrusion head parts having an abutment face, and

actuating means for moving each of said movable extrusion head parts between said open position and said closed position, said actuating means comprising a first piston-cylinder unit acting between said stationary extrusion head part and said movable extrusion head part for moving said movable extrusion head part between said open position and said closed position, a second piston-cylinder unit comprising a cylinder mounted on said stationary extrusion head part and a piston having a piston rod extending from said cylinder and having an end portion formed as a draw bar, a tie rod having one end pivotally connected to said draw bar and having at another end an enlarged head portion, and a third piston-cylinder unit having one end pivotally connected with said draw bar and another end pivotally connected with said enlarged head portion of said tie rod, said third piston-cylinder unit acting to press said head portion of said tie rod against said abutment face of enlarged head portion of said movable extrusion head part to clamp said movable extrusion head part in closed position, and

an electrical-hydraulic control system for actuating said piston-cylinder units, said system comprising a hydraulic supply system for supplying hydraulic pressure fluid, an electro-magnetic valve for controlling flow of hydraulic pressure fluid from said hydraulic supply system to each of said piston-cylinder units respectively, an electric circuit for controlling said electromagnetic valves and including a central control unit for individually controlling said electromagnetic valves to activate respective piston-cylinder units in sequence and programmed for moving said movable extrusion head parts from closed position to open position by firstly activating said third piston-cylinder units to free said enlarged head portions of said tie rods from said abutment faces of said movable extrusion head parts, then secondly activating said second piston-cylinder units to move said draw bars and said tie rods away from said movable extrusion head parts and thirdly activating said first piston cylinder units to move said movable extrusion head parts from closed position to open position, said first, second, and third piston-cylinder units being activated sequentially in reverse order to move said movable extrusion head parts from open position to closed position for operation of said extrusion installation.

5,332,381

TWO PIECE CROWN LINER PUNCH

Michael Shapcott, Hometown, Pa., assignor to ZapatA Technologies, Inc., Hazleton, Pa.

Filed Feb. 22, 1993, Ser. No. 20,962
Int. Cl.[5] B29C *63/00*
U.S. Cl. 425—127 **16 Claims**

1. A molding device for forming a liner on an inside surface of an inverted closure shell having a liner material thereon, comprising:

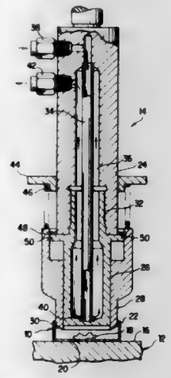
a support surface for supporting an inverted closure shell having a base and a sidewall;

a main body having a first lower end portion;

a center punch having a lower surface fixed to the first lower end portion with the lower surface of the center punch adapted to be positioned opposite to a central portion of the inside surface of a closure shell supported on the supporting surface;

an elevator mechanism for moving the main body with respect to the supporting surface; and

an annular bushing positioned externally of the center punch, said annular bushing being movable with respect to the main body and having a second lower end portion defining a mold cavity and a plurality of flow passages, wherein said second lower end portion of said annular



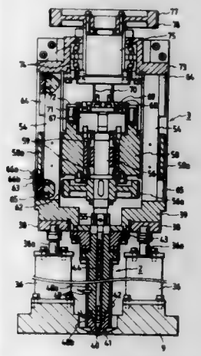
bushing includes an inner diameter for contacting the base of the closure shell and an outer diameter for contacting the sidewall of the closure shell and preventing the escape of liner material from the mold cavity, said flow passages extending through the inner diameter of the second lower end portion, but not extending to the outer diameter of the second lower end portion.

5,332,382

MOTOR-DRIVEN VERTICAL TYPE INJECTION MOLDING APPARATUS

Shozo Kasai, Kawasaki; Yozo Tohbo, Yokohama; Norio Nikaido, Tsuchiura, and Hirofumi Sugawara, Chichibu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 951,755
Claims priority, application Japan, Sep. 30, 1991, 3-252395
Int. Cl.[5] B29C *45/18*
U.S. Cl. 425—145 **1 Claim**



1. A motor-driven vertical injection molding apparatus including;

a screw holding member for rotatably holding a screw accommodated in a heated barrel, said screw extending in a vertical direction;

a vertical driving mechanism for converting torque into a rectilinear force to rectilinearly move said screw,

said vertical driving mechanism comprising;

a ball screw integrally provided on said screw holding member and extending in the vertical direction;

a ball nut rotatably provided internally in a molding apparatus body and screwed to said ball screw; and

rotation transferring means, provided on an upper part of said ball nut and formed with a through-hole into which said ball screw is loosely fitted, for transferring the torque to said ball nut,

wherein a length of said ball screw is set so that an upper end of said ball screw does not protrude from said rotation transferring means even when said ball screw rises up to an uppermost limit thereof; and

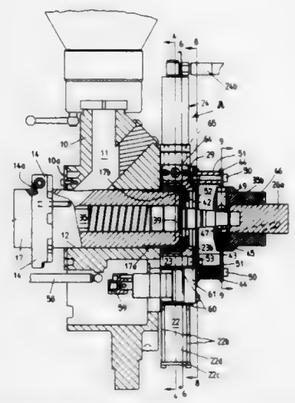
an injection motor connected to said screw holding member through said vertical driving mechanism and providing torque thereto.

5,332,383

INJECTING UNIT FOR USE IN AN INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Str. 32, D-7298 Lossburg 1, Fed. Rep. of Germany

Filed Dec. 11, 1992, Ser. No. 989,539
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142928
Int. Cl.[5] B29C *45/17*
U.S. Cl. 425—190 **20 Claims**



1. In an injecting unit for use in an injection molding machine, which unit comprises

a carrying block,

a plasticizing cylinder, which has a longitudinal axis and is axially movably mounted in said carrying block,

a rotary feed screw motor having a rotatable profiled coupling section,

a feed screw, which is rotatably mounted in said plasticizing cylinder and is axially movable relative to said plasticizing cylinder and is adapted to be relatively non-rotatably coupled to said profiled coupling section, and

locking means for locking said plasticizing cylinder to said carrying block and for locking said feed screw in a coupling position to said profiled coupling section,

the improvement residing in that said locking means comprise

a stop, which is provided on said carrying block and axially faces said plasticizing cylinder,

screw threads, which are formed on said plasticizing cylinder and are centered on said longitudinal axis,

a nut, which is screwed on said screw threads and is rotat-

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able in sliding engagement with said carrying block to axially move said plasticizing cylinder to said carrying block and has a periphery formed with engageable parts,

drive means, engaging said engageable parts and operable to rotate said nut, and

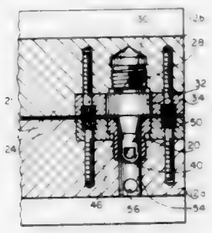
means for axially locking said feed screw in said coupling position to said profiled coupling section when said plasticizing cylinder has thus been locked to said carrying block.

5,332,384

BLOW MOLD GUIDE PIN AND ALIGNMENT DEVICE

Gerhard Abramat, 4232 Fern Hill Rd., Belvidere, Ill. 61008

Filed Jul. 29, 1992, Ser. No. 922,044
Int. Cl.[5] B29C *49/56*
U.S. Cl. 425—522 **27 Claims**



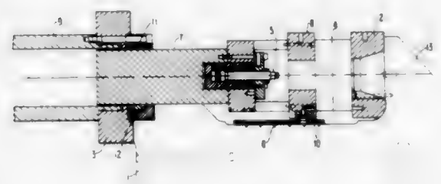
10. A system for aligning halves of a blow mold during creation of an abutting engagement therebetween, the system including alignment pins having a cylindrical tip section and conical following section on one blow mold half, the cylindrical tip section having a rounded head and the conical following section being angulated relative to the cylindrical tip section, and cooperating sockets for said pins in a cooperating blow mold half, the sockets each having a corresponding configuration for snugly engaging a corresponding pin in one end thereof and an open end extending outwardly of the cooperating blow mold half and the cooperating blow mold half having a channel therein aligning with the open end of each socket.

5,332,385

INJECTION MOLDING MACHINE INCLUDING LATERALLY DISPLACEABLE PISTON

Heinz Leonhartsberger, Schwertberg, Austria, assignor to Engel Maschinenbau Gesellschaft m.b.H., Schwertberg, Austria

Filed Mar. 18, 1993, Ser. No. 33,758
Claims priority, application Austria, Mar. 24, 1992, A 599/92
Int. Cl.[5] B29C *45/64*
U.S. Cl. 425—589 **3 Claims**



1. In an injection molding machine including a machine frame, a stationary mold fixing plate fixed to said machine frame, a cylinder plate fixed to said machine frame, a piston-cylinder unit carried by said cylinder plate and including a fixed cylinder having an axis and a piston axially movable relative to said cylinder in opposite rectilinear directions toward and away from said stationary mold fixing plate, a movable mold fixing plate carried by said piston for axial movement thereby to a mold closing position locked together with said stationary mold fixing plate, said cylinder plate and said stationary mold fixing plate being connected together exclusively by said machine frame such that a closing force generated by said piston-cylinder unit tilts said locked together mold fixing plates slightly out of a plane perpendicular to said axis, the improvement wherein:

said cylinder is rigidly connected to said machine frame by said cylinder plate; and

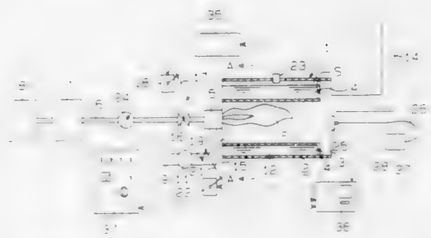
said piston is rigidly connected to said movable mold fixing plate and is displaceable relative to said cylinder in a direction laterally to said axis thereof.

5,332,386

COMBUSTION CONTROL METHOD

Kazunari Hosome, Toyota; Syuzi Iida, Aichi; Katsutoshi Kimura, Toyota; Kazuya Tomathu, Toyota, and Toshiji Tachibana, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 30, 1993, Ser. No. 83,592
Claims priority, application Japan, Jul. 1, 1992, 4-174533; Oct. 14, 1992, 4-276333
Int. Cl.[5] F23N *5/08*
U.S. Cl. 431—12 **19 Claims**



1. A method for controlling combustion condition in a combustion facility, the combustion facility including a combustion apparatus having a burner, a fuel feeding pipe connected to the burner and having a fuel control valve for controlling the feeding of fuel, an air feeding pipe connected to the burner and having an air control valve for controlling the feeding of air; a detection device for detecting radiated light originating in a combustion flame of the burner, and a combustion controller for controlling an open position of the air control valve based on detection data from the detection device, the method comprising the steps of:

A) converting the radiated light detected by the detection device into a first electric signal, wherein said first electric signal includes an intensity signal element corresponding to the intensity of the detected light and an oscillation signal element corresponding to fluctuations of the combustion flame caused by the feeding of air to the burner;

B) extracting said oscillation signal element from said first electric signal;

C) extracting an intensity factor, representative of a real intensity of the radiated light originating in only the combustion flame, from said first electric signal;

D) generating a second electric signal by dividing said oscillation signal element by said intensity factor, so as to compensate said oscillation signal element which is influenced by the intensity of radiated light;

E) applying frequency analysis to said second electric signal;

F) calculating an oscillation power based on the result of the frequency analysis, wherein said oscillation power is related to the state of the combustion flame; and

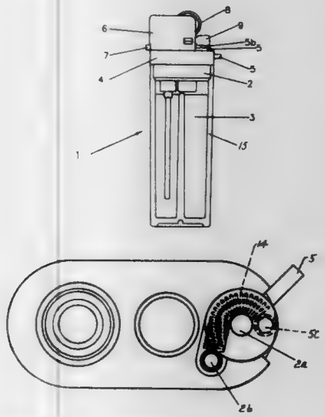
G) performing feedback-control of the open position of the air control valve, in such a manner that said calculated oscillation power approaches a predetermined optimum oscillation power.

5,332,387

CIGARETTE LIGHTER

Andy W. Sheng, 16429 Berwyn St., Cerritos, Calif. 90701

Filed Aug. 27, 1993, Ser. No. 112,888
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 **8 Claims**



1. A cigarette lighter comprising:

(a) a tank for a combustible fluid;

(b) a normally closed feed valve connected to the tank for preventing exit of the combustible fluid from the tank, the feed valve being openable in response to external force for feeding the fluid for combustion thereof;

(c) a base fixedly supported relative to the valve;

(d) a valve actuator movably supported relative to the base for opening the valve, the actuator transmitting the external force when opening the valve;

(e) ignition means for igniting fluid being fed from the tank when the valve is engaged and opened by the valve actuator;

(f) a safety device movably supported relative to the base and operable from a normal position for holding the valve actuator disengaged from the valve to a released position for enabling the valve actuator to engage and open the valve, the actuator being movable in a first path relative to the base in response to the external force in the released position of the safety device for actuating the valve and in a second path in the normal position of the safety device, at least a portion of the second path being laterally shifted relative to the first path whereby movement of the actuator in response to the external force does not produce contact with the valve; and

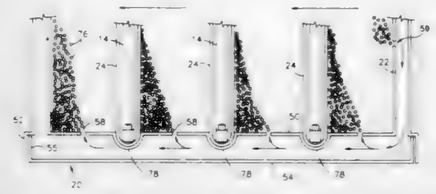
(g) biasing means for automatically returning the safety device to the normal position whereby the valve actuator is prevented from engaging the valve after use of the cigarette lighter.

5,332,388

ULTRAVIOLET DISINFECTION MODULE

Peter Schuerch, Mechanicville; Richard K. Weltz, Richmond, both of Va.; Joseph E. Zuback, Camarillo, Calif.; Mervyn W. Bowen, Severna Park, Md., and James DiFalco, Irvington, N.Y., assignors to Infilco Degremont, Inc., Richmond, Va.

Filed Dec. 4, 1992, Ser. No. 986,849
Int. Cl.[5] B08B *3/00*; **C02F** *1/32*
U.S. Cl. 422—291 **31 Claims**



1. An immersible and portable module for irradiating fluids and capable of in situ self cleaning comprising:

a multiplicity of ultraviolet light producing lamps;

a first header for receiving and maintaining in position said multiplicity of ultraviolet light producing lamps; and

a second header for receiving and maintaining in position said multiplicity of lamps and having an opening to receive cleaning fluids, said multiplicity of lamps being positioned between said headers;

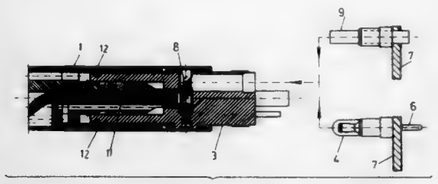
said second header having a multiplicity of cleaning fluid exit holes proximate said lamps to permit said cleaning fluids to flow into said opening and outwardly from said holes and into contact with said lamps.

5,332,389

DENTAL HANDPIECE CONNECTING PORTION RECEIVING ALTERNATIVE ILLUMINATION MEMBERS

Otto Rosenstatter, Seeham, Austria, assignor to Imtec Innovative Medizintechnik Gesellschaft m.b.H., Salzburg, Austria

Filed Sep. 28, 1992, Ser. No. 952,267
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1991, 9115186[U]
Int. Cl.[5] A61C *1/00, 3/00, 1/08*
U.S. Cl. 433—29 **12 Claims**



1. A dental handpiece comprising:

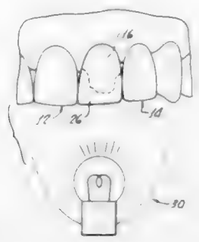
a handle portion having at a first end thereof a holder for a driven tool and a second end;

a connecting portion having a first end rotatably connected to said second end of said handle portion and a second end to be connected to a supply hose for supply of media to said dental handpiece;

a recess formed in said second end of said connecting portion, said recess having an open end directed in a direction to be toward the supply hose; and

an illumination member, to enable light to be supplied to the region of the tool, removably positioned in said recess and insertable into and removable therefrom through said open end thereof.

5,332,390
SHELL TOOTH FORM
Davey G. Rosellini, 1950 Balearic Dr., Costa Mesa, Calif. 92626
Continuation of Ser. No. 760,980, Sep. 17, 1991, Pat. No. 5,192,207. This application Oct. 5, 1992, Ser. No. 956,374
Int. Cl.[5] A61C *9/00, 5/08*
U.S. Cl. 433—34 10 Claims



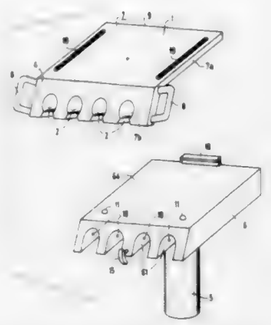
1. A transparent shell tooth form made by:
coating a tooth form with a light setting resin that is transparent when set;
illuminating the light setting resin on said tooth form to cause setting of the light setting resin and formation of a shell tooth form on said tooth form; and
removing the set shell tooth form from the tooth form.

5,332,391
HOLDER FOR DENTAL HAND PIECE
Arthur C. Jermyn, 15914 Overview Rd., Poway, Calif. 92064
Filed Jul. 9, 1993, Ser. No. 87,452
Int. Cl.[5] A61C *3/02, 1/02, 1/08*
U.S. Cl. 433—76 2 Claims



1. A device for supporting any one of a plurality of dental hand pieces at the free end of a movable linkage, each dental hand piece having a different contra-angle relative to the rotational axis of its respective burr, and for maintaining the axis of the burr normal to the plane of occlusion of the teeth, comprising in combination:
a holder for carrying any one of the dental hand pieces;
a parallelogram linkage having a free end and the other end releasably supported for movement about a vertical axis and extendable in a vertical plane passing through the vertical axis;
pivotal means detachably secured to the free end of the linkage for movement therewith to maintain constant the orientation of the axis of the burr relative to the plane of occlusion; and
means arranged intermediate the pivotal means and the holder for coupling the holder to the pivotal means including a member releasably connected at opposite ends thereof to the pivotal means and the holder, respectively, whereby the holder is selectably releasable from the pivotal means and the member

5,332,392
DENTAL INSTRUMENT DEPOSIT TABLE
Thomas Bierbaum, Bensheim; Heinz Schulz, Bensheim-Zell, and Klaus Stoeckl, Bensheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Aug. 19, 1992, Ser. No. 932,256
Claims priority, application European Pat. Off., Aug. 29, 1991, 91114558.9
Int. Cl.[5] A61G *15/00*
U.S. Cl. 433—77 12 Claims



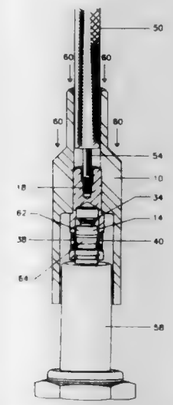
1. A dental instrument deposit table comprising a base member having mounting means, a structural unit having a planar deposit surface for the instruments and containing holder means for receiving handpieces including handpieces connected to hoses and handpieces connected to cables extending from one edge of the deposit surface, said structural unit being a one-piece housing and being composed of a material at least resistant to cleaning agents and disinfectants, and clamping means for releasably mounting the structural unit on the base member to cover the base member in at least the regions of the deposit surface and holder means.

5,332,393
VENTILATOR CAP
Fritz Gödl, Ennetborgen, Switzerland, assignor to Norm A.M.C. AG, Erstfeld, Switzerland
Filed Aug. 13, 1993, Ser. No. 105,965
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 4226817
Int. Cl.[5] F24F *7/02*
U.S. Cl. 454—365 20 Claims



1. Ventilator cap for ventilation of a ridge, hip or arris area of a roof, comprising a fastening area, an edge area and an intermediate area connecting the fastening area and the edge area with one another, the intermediate area have air passage openings and the edge area having an elastically flexible sealing element extending over the length of the cap on an underside thereof, and the sealing element being in the form of a fine-fiber brush with a carrier part and a plurality of elastic brush fibers in as flowtight a packing as possible; wherein at least one protective element that influences the elasticity of brush fibers as little as possible is provided on an outer side of sealing element.

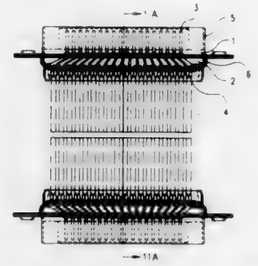
5,332,394
ELECTRICAL CONNECTOR FOR CONNECTING A VOLTAGE SOURCE TO A SPARK PLUG TERMINAL
Edwin L. Frost, Tequesta, Fla., assignor to The BG Service Co., Inc., West Palm Beach, Fla.
Filed Oct. 12, 1993, Ser. No. 133,931
Int. Cl.[5] H01R *13/18*
U.S. Cl. 439—125 2 Claims



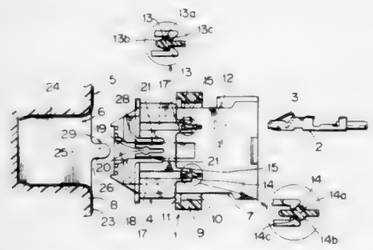
1. An electrical connector for mechanically and electrically connecting a voltage source to a spark plug terminal, comprising:
(a) a conducting part having a first end suitable for receiving a voltage source and a second end suitable for connecting to said spark plug terminal; said second end comprising a hole creating a cavity to receive the spark plug terminal and a plurality of lateral thruholes,
(b) a spring located in said hole whereby axial spring pressure is applied against the spark plug terminal end providing improved electrical contact,
(c) a means of applying lateral spring pressure through said plurality of lateral thruholes; said lateral spring pressure being applied to the sides of the spark plug terminal whereby said electrical connector becomes mechanically secured to the spark plug terminal when applied thereto,
(d) an insulating sleeve of variable shape and composition; said insulating sleeve wholly or partially surrounding said conducting part,
(e) a means of securing the conducting part to said insulating sleeve.

5,332,395
COMPUTER CABLE CONNECTORS
Tang Wen-Yu, No. 16, Chung-Hwa St., Kuei-Shan Hsiang, Tao-Yuan Hsien, Taiwan
Filed Feb. 16, 1993, Ser. No. 18,263
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—405 1 Claim

1. A computer cable connector, comprising:
a front insulator, said front insulator having a plurality of holes for inserting contacts;
a rear insulator, said rear insulator having two resilient hooks at two opposite ends and a plurality of holes for inserting contacts;
a plurality of contacts, said contacts each having one end inserted through the holes on said front insulator and an opposite end forked and inserted through the holes on said rear insulator;
a front metal shell covered on said front insulator;
a rear metal shell covered on said rear insulator;
a locating insulator secured to said rear insulator by said two resilient hooks;
a flat cable retained between said rear insulator and said locating insulator, said flat cable having a plurality of wires covered by an insulator and respectively disposed in contact with the forked end of each of said contacts; and
characterized in that said contacts are consisted of two separate parts, a bar of contact terminals and a bar of connecting terminals, each contact terminal comprising a straight body having a unitary rectangular frame at a tail thereof, each connecting terminal being made in a flat structure including a body, a unitary, flat projecting strip extending from said body at one end and a flat, forked tail extending from said body at an opposite end, said flat projecting strip being inserted into said rectangular frame and secured in place through a rivet joint respectively, the body, the projecting strip and the forked tail of the connecting terminal at the middle of said bar of connecting terminals being longitudinally aligned, the projecting strips of the other connecting terminals being biased from respective central axes through different angles permitting a constant pitch to be maintained between any two adjacent projecting strips.



5,332,396
TERMINAL COVER STRUCTURE FOR CONNECTOR
Tohru Kaneko, and Isao Kameyama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jul. 7, 1993, Ser. No. 86,912
Claims priority, application Japan, Jul. 13, 1992, 4-185197
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—141 12 Claims



1. A terminal cover structure, comprising:
a connector;
a protective cover provided on the connector, slidable in a direction parallel to an axis of the connector to be drawn out to cover exposed terminals of the connector or to be retracted;
a mating connector which is matable with said connector;

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a first engagement member provided on one of the protective cover and the mating connector;

a second engagement member provided on the other of the protective cover and the mating connector, the second engagement member being adapted to releasably engage with the first engagement member,

said terminal structure having a fully mating position wherein said connector and said mating connector are mated together and wherein said protective cover is in an open retracted position and wherein said first engagement member is engaged with said second engagement member;

said terminal structure also having a disconnected position wherein said connector and said mating connector are disconnected and wherein said protective cover is in a closed drawn out position and wherein said first engagement member is disengaged from said second engagement member;

said connector having a first locking surface which provides sufficient force against said protective cover to enable said first and second engagement members to engage one another as said terminal structure is moved into said fully mating position;

said connector having a second locking surface which provides sufficient force against said protective cover to enable said first and second engagement members to disengage from one another as said terminal structure is moved to said disconnected position,

wherein electrical connection between the exposed terminals of the connector and terminals of the mating connector is made in said fully mating position and is disconnected in said disconnected position with the protective cover drawn out to protect the exposed terminals

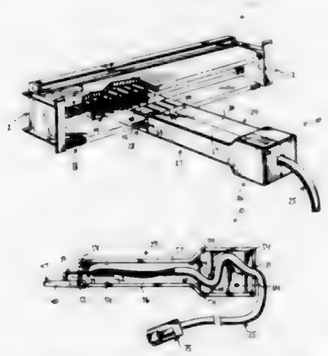
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5,332,397

TEST CORD APPARATUS

David L. Ingalsbe, Hastings, Minn., assignor to Independent Technologies, Inc., Eagan, Minn.

Filed Jan. 15, 1993, Ser. No. 5,230
Int. Cl.[5] H01R *23/00*
U.S. Cl. 439—76 **17 Claims**



1. A telecommunications adapter for connecting a modular connector to the mating end of a telecommunications interface terminal, comprising:

a. modular connection means;

b. a printed circuit board having exposed electrical contact disposed within the plane of the printed circuit board which are electrically connected to said modular connection means; and

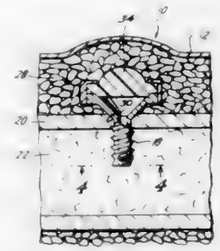
c. a housing structure having a central cavity enclosing a predetermined portion of said printed circuit board, said housing structure further having a plug end for mating contact with the telecommunications interface terminal and which comprises an aperture through which said electrical contacts of said printed circuit board outwardly extend for electrical connection with the telecommunications interface terminal, said plug end further comprising a distal face adjacent said housing interior cavity and on which said plug end aperture is disposed, and a plurality of elongated mating prongs extending longitudinally outwardly from said distal face and arranged in two spacially parallel rows separated a predetermined distance, said plug end aperture being oriented spacially parallel and centered between said two prong rows.

5,332,398

INTRAMEDULLARY CATHETER

Larry J. Miller, Spring Branch, and Ruben Zamorano-Gamez, San Antonio, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 648,624, Feb. 1, 1991, Pat. No. 5,122,114. This application Apr. 10, 1992, Ser. No. 866,992
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—175 **23 Claims**



1. A device for passing fluid through bone, comprising.

an elongated tubular conduit insertable into said bone and having a distal end and a proximal end with threads extending along said conduit from said distal end to said proximal end;

a conical head attached to the proximal end of said conduit, said head having an internal saucer cavity for receiving a needle placed therein;

rotating means releasably attachable to said head for inserting said distal end through said bone and into underlying bone marrow; and

seal means adapted to retain a sealing member on said head and over said cavity for permitting repetitive insertion of said needle through said sealing member and into said cavity to pass fluid between said needle and said bone marrow, and to seal the conduit after withdrawal of the needle to prevent infection from entering the bone marrow.

5,332,399

SAFETY PACKAGING IMPROVEMENTS

Richard W. Grabenkort, Barrington, and Ralph M. Quinn, Ingleside, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 20, 1991, Ser. No. 811,588
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—415 **5 Claims**

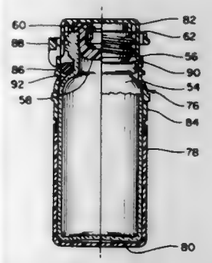
1. A packaging arrangement for mixing a medicament with a diluent in a multiple treatment bag having an inlet port with a closure member, comprising:

a vial having a neck portion with a shoulder and defining an opening for containing said medicament;

stopper means for sealing said opening of said vial, said stopper means defining means for connecting said closure member of said multiple treatment bag with said stopper means for removing said stopper means from said opening;

plastic cover means for encasing said vial and said stopper, said cover means including an imperforate bottom shroud portion, a lower cover portion and an upper cover portion so that said vial is completely encased by said cover means,

said upper cover portion being frangibly removable for uncovering said stopper to permit said vial to be connected with the inlet port of said multiple treatment bag so that said medicament can be mixed with said diluent,



said upper cover portion including a non-pierceable wall adjacent said stopper of said vial to preclude insertion of an associated needle into said stopper without removal of said upper cover portion; and

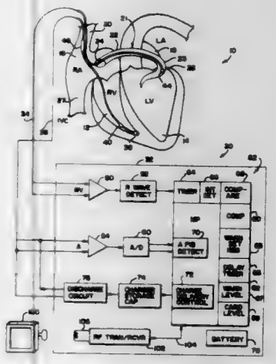
an annular sealing member positioned at the shoulder of said neck portion between said vial and said lower cover portion at a region of separation of said removable upper cover portion, said annular sealing member effecting sealing between said vial and said inlet port of said multiple treatment bag after removal of said upper cover portion and connection of said vial to said inlet port.

5,332,400

ATRIAL DEFIBRILLATOR AND METHOD FOR PROVIDING PRE-CARDIOVERSION WARNING

Clifton A. Alferness, Redmond, Wash., assignor to InControl, Inc., Redmond, Wash.

Filed Dec. 24, 1992, Ser. No. 996,656
Int. Cl.[5] A61B *5/04*
U.S. Cl. 607—5 **28 Claims**



1. An implantable cardiac device for providing cardioverting electrical energy to at least one chamber of a patient's heart in need of cardioversion, said device comprising:

detecting means for detecting activity of the at least one chamber of the patient's heart;

determining means responsive to said detecting means for determining when the at least one chamber of the patient's heart is in need of cardioversion;

cardioverting means responsive to said determining means for applying said cardioverting electrical energy to the at least one chamber of the patient's heart when the at least one chamber is in need of cardioversion; and

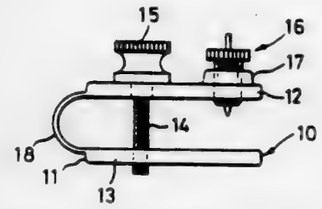
warning means for applying warning electrical energy to the at least one chamber of the patient's heart prior to said cardioverting means applying said cardioverting electrical energy to said at least one chamber, said warning electrical energy being of insufficient quantity to cardiovert the at least one chamber but of sufficient quantity so as to be discernable by the patient.

5,332,401

APPARATUS AND METHOD FOR TRANSCRANIAL ELECTROTHERAPHY

Ronald W. Davey, 1 Upper Wimpole Street, London, W1M 7TD, and Ifor D. Capel, Ty Derw, 53 Chaldon Common Road, Chaldon, Surrey, CR 3, both of Great Britain

PCT No. PCT/GB90/01670, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO91/06340, PCT Pub. Date May 16, 1991
PCT Filed Oct. 31, 1990, Ser. No. 859,478
Claims priority, application United Kingdom, Nov. 1, 1989, 8924559.1
Int. Cl.[5] A61N *1/05, 1/36*
U.S. Cl. 607—116 **14 Claims**



1. An electrode for providing TCET, comprising:

an electrical conductor for application to an ear of a patient, connected to a lead for supplying a TCET signal from a signal generating device, the conductor comprises a generally conical needle point capable of only penetrating the epidermis, so as to provide good electrical contact over a very small area of the epidermis; and

means on the conductor for controlling the pressure at which the needle point penetrates into the epidermis.

5,332,402

PERCUTANEOUSLY-INSERTED CARDIAC VALVE

George P. Teitelbaum, 12138 Laurel Terrace Dr., Studio City, Calif. 92604

Filed May 12, 1992, Ser. No. 881,969
Int. Cl.[5] A61F *2/24*
U.S. Cl. 623—2 **8 Claims**



1. A method of implanting an expansible cardiac valve within a heart wherein the expansible cardiac valve is com-

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prised of a recovery metal having memory and which is capable of expanding to a desired shape comprising:

releasably coupling a cardiac valve in a compressed form to a positioning device while maintaining a cool temperature sufficient to maintain the cardiac valve in said compressed form and which is capable of passing through heart within which the cardiac valve is to be implanted;

manipulating the positioning device within the heart so as to position the cardiac valve at a desired location with the heart;

ceasing maintaining cool temperature to effect expansion of the cardiac valve to a desired shape wherein the valve engages the walls of the heart.

disengaging the positioning device from the expanded cardiac valve; and

removing the positioning device to leave the cardiac valve implanted within the heart.

8. A mitral cardiac heart valve comprising a stent and ball and cage formed of a shaped memory alloy which has a transition temperature of from about 90° to about 96° F

5,332,403

LVAD WITH T-SHAPE AND UNIDIRECTIONAL VALVE

Jack Kolff, 1 Lauren La., Johnstown, Pa. 15905-4803

Filed Aug. 17, 1992, Ser. No. 930,186

Int. Cl.[5] **A61F** *2/22*

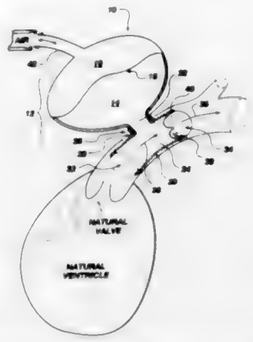
U.S. Cl. 623—3 **10 Claims**

1. A ventricular assist device comprising.

an artificial ventricle including a blood compartment, a pumping compartment and a pumping membrane separating the respective blood and pumping compartments;

a connecting, T-shaped conduit having an interconnected vertical leg portion and a horizontal portion with flow communication therebetween and being coupled at a free end of the leg portion to the blood compartment, said horizontal portion having opposing open ends formed along an axial flow line, one of said opposing open ends including a rigid ring attached to the conduit, said horizontal portion being adapted for connection within the circulatory system of a patient in common blood flow;

a unidirectional valve coupled to the rigid ring and positioned within and near one end of the horizontal portion



of conduit for limiting blood flow to a single direction at the valved end, the remaining end of the horizontal portion remaining open and unobstructed and capable of receiving blood flow from an attached natural ventricle; and

means for coupling the pumping compartment of the artificial ventricle to a pumping source capable of powering the artificial ventricle with periodic pumping action.

5,332,404

DISPERSE DYE MIXTURES

Kiyoshi Himeno, Munakata; Toshio Hihara, Kitakyushu; Hirotsugu Tsumura, Kitakyushu, and Yoshiharu Hamano, Kitakyushu, all of Japan, assignors to Hoechst Mitsubishi Kasei Co., Ltd., Tokyo, Japan

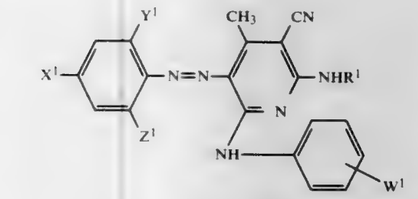
Filed Dec. 10, 1992, Ser. No. 988,813

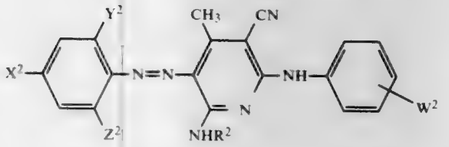
Claims priority, application Japan, Dec. 13, 1991, 3-330726; Jun. 18, 1992, 4-159784; Jul. 10, 1992, 4-183822; Oct. 2, 1992, 4-265191

Int. Cl.[5] **C09B** *67/22*

U.S. Cl. 8—639 **13 Claims**

1. A disperse dye mixture comprising a monoazo dye of the following formula (1) and a monoazo dye of the following formula (2) blended thereto in a ratio of from 1:9 to 7:3 by weight:





wherein each of X^1 and X^2 which are independent of each other, is nitro, cyano, sulfomethyl or halogen, each of Y^1, Y^2, Z^1 and Z^2 which are independent of one another, is hydrogen, cyano, nitro, trifluoromethyl, halogen or sulfomethyl, each of W^1 and W^2 which are independent of each other, is hydrogen, halogen, C_1–C_2 alkyl or alkoxy, and each of R^1 and R^2 which are independent of each other, is C_1–C_4 alkyl, or C_2–C_4 alkyl which is substituted by cyano, halogen, hydroxy, hydroxyalkoxy, C_1–C_4 alkoxy, hydroxyalkoxyalkoxy, acyloxyalkoxy, acyloxyalkoxyalkoxy or alkoxyalkoxy.

5,332,405

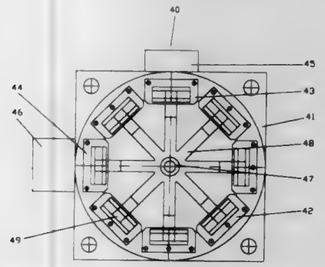
APPARATUS FOR MANUFACTURING SEMICONDUCTOR LEAD FRAMES IN A CIRCULAR PATH

Mark S. Golomb, 22231 Bitter Oak St., Cupertino, Calif. 95014

Filed Sep. 1, 1992, Ser. No. 938,931

Int. Cl.[5] **H01L** *21/68*; **B23P** *23/00*; **B26D** *5/00, 7/06*

U.S. Cl. 29—25.01 **18 Claims**



1. An apparatus for processing semiconductor lead frame comprising:

(a) a plurality of stations arranged in a substantially circular path for processing said lead frames;

(b) processing means located at each end of said stations for processing a lead frame, said processing means including a die module removably secured to said stations, said die module comprising a frame defining a plurality of cavities for holding a plurality of tool kits for working on said lead frames; and

(c) transferring means for transferring said lead frames between said stations.

5,332,406

APPARATUS FOR PRODUCING SEMICONDUCTOR DEVICE

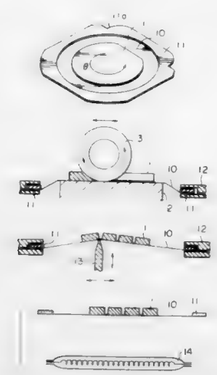
Toshio Takeuchi; Ichiro Hayashi, and Shuichi Osaka, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 554,436, Jul. 19, 1990, Pat. No. 5,238,876. This application Apr. 16, 1993, Ser. No. 46,808

Claims priority, application Japan, Jul. 21, 1989, 1-187430

Int. Cl.[5] **H01L** *21/56*

U.S. Cl. 29—25.03 **5 Claims**



1. An apparatus for producing semiconductor devices by dividing a semiconductor wafer having a surface into a plurality of dice comprising:

a wafer mounting means for adhering a semiconductor wafer to an ultraviolet sensitive tape which is adhered to a ring frame;

dicing means for scribing cut lines in said semiconductor wafer for dividing said semiconductor wafer into a plurality of dice;

a breaking jig for breaking said semiconductor wafer along the cut lines scribed therein by plunging against the ultraviolet sensitive tape opposite the cut lines scribed in said wafer;

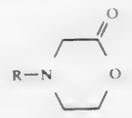
ultraviolet irradiation means for irradiating said ultraviolet sensitive tape with ultraviolet rays to reduce the adhesion of said ultraviolet sensitive tape; and

conveying means for conveying said semiconductor wafer from said wafer mounting means to said ultraviolet irradiation means through said dicing means and said breaking jig while said semiconductor wafer is adhered to said ring frame.

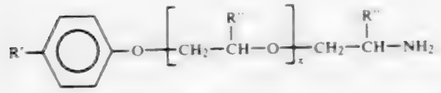
VOL 1164 ISS 4 JL 26 1994 UMI

5,332,407
DIESEL FUEL ADDITIVE PROVIDING CLEAN UP DETERGENCY OF FUEL INJECTORS
Sheldon Herbstman, New City, N.Y., assignor to Texaco Inc., White Plains, N.Y.
Filed Oct. 19, 1992, Ser. No. 962,550
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] C10L *1/10*
U.S. Cl. 44—419 28 Claims

1. A diesel fuel composition comprising a major portion of a middle distillate fuel oil and a minor portion, effective to clean deposits from diesel fuel injectors, of a diesel fuel detergent comprising the reaction product of:
(a) a 4-alkyl-2-morpholinone represented by the formula:



in which R represents a monovalent aliphatic radical having from 1 to 10 carbon atoms, and
(b) an alkylphenoxypolyoxyalkylene amine represented by the formula:

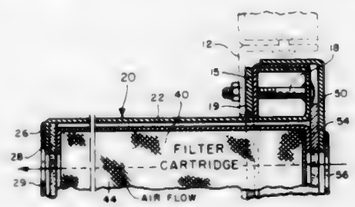


in which R' represents a hydrocarbyl radical having from 4 to 30 carbon atoms, x has a value from 4 to 50, and R'' represents a methyl radical or a mixture of hydrogen and methyl radicals.

5,332,408
METHODS AND REAGENTS FOR BACKCROSS BREEDING OF PLANTS
Laurens J. Mets, Wilmette; Sharon A. Rogers, Grayslake, and Mark J. Reichardt, LaGrange Park, all of Ill., assignors to Lakeside Biotechnology, Inc., Chicago, Ill.
Filed Aug. 13, 1992, Ser. No. 929,789
Int. Cl.[5] A01H *1/00*; C12Q *1/68*
U.S. Cl. 47—58 11 Claims

1. A method for obtaining plants with a desired trait or combination of traits comprising:
a. performing a genetic cross between a donor plant of a first species, subspecies or variety, having a desired trait or combination of traits and a recipient plant of a second species, subspecies or variety, respectively, to form a viable hybrid plant;
b. backcrossing the hybrid plant of subpart (a) with a plant of the recipient species, subspecies or variety, respectively, to form a viable backcross progeny plant;
c. quantitatively annealing DNA from individual backcross progeny plants produced in subpart (b) with a detectably-labeled probe or multiplicity of detectably-labeled probes that specifically binds to a plurality of probe binding sites in the DNA from the donor plant species, subspecies or variety and does not bind to the DNA of the recipient plant species, subspecies or variety, respectively;
d. determining the amount of DNA in each backcross progeny plant inherited from the donor species, subspecies or variety, respectively, that binds to the detectably-labeled probe or multiplicity of detectably-labeled probes, scored as a pool and independent of a physical or genetic map of probe binding sites; and
e. selecting for further propagation the backcross progeny plants having the desired trait or combination of traits that have inherited the least amount of DNA from the donor species, subspecies or variety.

5,332,409
AIR FILTRATION SYSTEM
James R. Dralle, Lemont, Ill., assignor to A. J. Dralle, Inc., Lemont, Ill.
Filed Mar. 29, 1993, Ser. No. 38,114
Int. Cl.[5] B01D *46/10*
U.S. Cl. 55—484 28 Claims

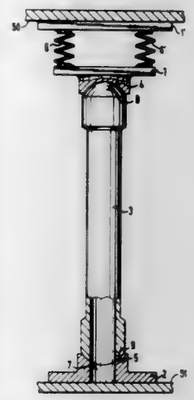


1. A system for filtering air comprising:
a) a plurality of mounting frames arranged to support a bank of filtration units;
b) a holding frame in the form of a rectangular box with four side walls in each mounting frame, the holding frame having a header for engaging the mounting frame, the holding frames each being sealed with respect to the mounting frames to prevent air from passing between the mounting frames and the holding frames;
c) a replaceable filtration cartridge within each holding frame and containing filtration media, the media being sealed within the filtration cartridge so as to assure that air passing through the cartridge is filtered by said media, the cartridge having four side walls;
d) a seal between each cartridge and its respective holding frame to prevent air from passing between the holding frames and the cartridges; and
e) spacers between at least two of the side walls of the holding frame and the respective side walls of the cartridge.

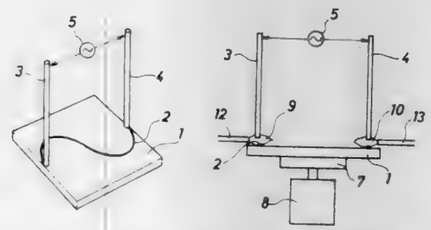
5,332,410
SHOCK RESISTANT AND TEMPERATURE-STRAIN RESISTANT MOUNTING FOR TUBULAR PARTICLE FILTERS
Helmut Heybutzki, Julich; Horst Stechemesser, Linnich-Tetz, and Walter Renftle, Duren, all of Fed. Rep. of Germany, assignors to Forschungszentrum Jülich GmbH, Jülich, Fed. Rep. of Germany
Filed Mar. 23, 1993, Ser. No. 35,648
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209685
Int. Cl.[5] B01D *46/24*
U.S. Cl. 55—490 10 Claims

1. A mounting for a tubular particle filter, comprising first and second holders respectively adjacent to opposite ends of said filter, one of which holders contains a bore (7) for feeding or removal of gaseous or other fluid material to or from the inside of said tubular filter, and resilient fastening means on one of said holders by which the tubular filter, when mounted is subjected to a bias force which opposes loosening the mounting of said filter, wherein
said tubular particle filter is closed at its end adjacent to said first holder;
said first holder (1), instead of being rigidly fixed in place, is mounted by a spring attachment to a structure within which said closed end of said tubular filter (3) is mounted and said filter end adjacent to said second holder (2) is thereby pressed against said second holder (2) said structure within which said closed end of said tubular filter is mounted being a first wall of a gas duct,

said second holder (2) is mounted on a second wall of said gas duct opposite said first wall of said gas duct has a spherically curved surface (5) facing said filter end adjacent thereto and said same filter end fits snugly, with at least a circle of contact, against said spherical curved surface (5) of said second holder (2).

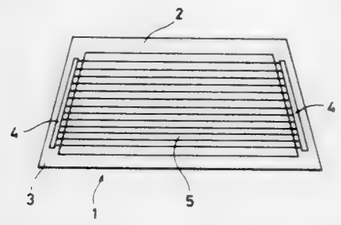


5,332,411
GLASS ARTICLE CUTTING METHOD
Haruhiko Ogata, Kanagawa; Hidetoshi Komiya, and Katumi Ohgaki, both of Tokyo, all of Japan, assignors to Toyo Glass Company Limited, Tokyo, Japan
Filed Nov. 17, 1992, Ser. No. 977,856
Claims priority, application Japan, Dec. 2, 1991, 3-341744
Int. Cl.[5] C03C *17/02, 17/28*; C03B *33/09*
U.S. Cl. 65—60.1 5 Claims



1. A method of cutting a glass article, comprising the steps of:
applying a conductive coating material including one of a colloidal carbon and a conductive glass paste in a linear or curved line on a surface of a glass article to be cut; and
applying a high voltage across the line of the conductive coating material using a pair of positive and negative electrodes to energize the conductive coating material to generate heat so as to cut the glass article by thermal stress caused by the heat, wherein said positive and negative electrodes are spaced away from the conductive coating material to respectively define spaces therebetween, and the high voltage applying step includes the step of respectively blowing a flame from a pair of burners into the spaces between the conductive coating material and said positive and negative electrodes so that the conductive coating material may be energized by way of the flame.

5,332,412
PROCESS FOR PRODUCING A GLASS SHEET WITH A CERAMIC COLOR COMPOSITION AND A CONDUCTIVE STRIP
Tsuneo Manabe; Jiro Chiba, and Eiji Ichikura, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Filed Apr. 21, 1992, Ser. No. 871,536
Claims priority, application Japan, Apr. 24, 1991, 3-122263; Apr. 24, 1991, 3-122265
Int. Cl.[5] C03B *1/00*
U.S. Cl. 65—60.2 8 Claims



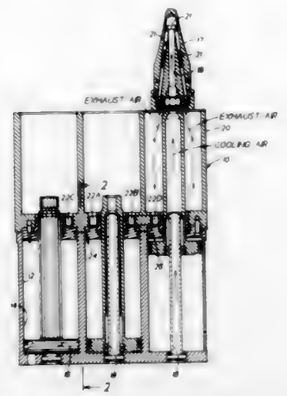
1. A process for producing a sheet glass, which comprises:
preparing a ceramic color paste containing a ceramic color composition comprising, as inorganic components, from 40 to 95 wt. % of a glass powder, from 4 to 40 wt. % of a powdered pigment and from 1 to 30 wt. % of a boride, a nitride, titanium carbide, silicon carbide, lead sulfide or a mixture thereof;
forming a layer of said ceramic color paste on a portion of a blank sheet glass surface; and
forming a layer of a silver paste to cover at least a portion of the layer of said ceramic color paste, followed by heating and baking, thereby preparing a sheet glass having a ceramic color layer laminated on a portion of the blank sheet glass surface and a silver layer laminated on at least a portion of the ceramic color layer.

5,332,413
PLUNGER MECHANISM FOR AN I.S. MACHINE
Albert J. Trahan, Vernon Court; Vaughan Abbott, East Hartland, and Michael J. Stankosky, Windsor, all of Conn., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.
Continuation of Ser. No. 824,741, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 619,051, Nov. 28, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 24,887
Int. Cl.[5] C03B *9/38, 11/12*
U.S. Cl. 65—319 7 Claims

1. A plunger mechanism for an individual section glass container forming machine comprising
an upper cylinder portion having a plurality of cylindrical chambers,
a lower cylinder portion supporting said upper cylinder portion and having a corresponding plurality of cylindrical chambers with a selectively displaceable cylindrical piston disposed each therein, having a rod portion piston displaceable within a corresponding one of said upper cylinder chambers,
said pistons each including an axially extending cooling air conduit,
a base plate for supporting said lower cylinder portion, said base plate having an exhaust air passage,
said upper cylinder portion including exhaust air exit ports at the bottom thereof for venting exhaust air from said upper cylinder portion and
at least one tubular sleeve extending vertically from the top of said lower cylinder portion to said base plate for receiving exhaust air vented from said exhaust air exit ports and for conveying the received exhaust air to said base plate exhaust air passage,

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said tubular sleeve being spaced from said lower cylinder portion substantially from the top of said lower cylinder portion to the bottom thereof and said spacing communi-



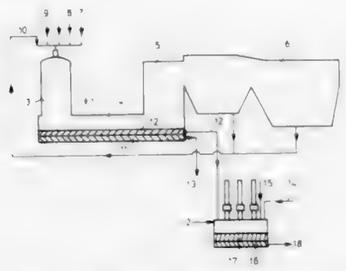
cating with the air surrounding said lower cylinder portion whereby the air surrounding the lower cylinder portion will insulate each of said tubular sleeves from said lower cylinder portion.

5,332,414

METHOD FOR PRODUCING HIGH-GRADE NICKEL MATTE AND METALLIZED SULFIDE MATTE

Tuula S. M. Mäkinen, Ulvila, Finland, assignor to Outokumpu Harjavalta Metals Oy, Harjavalta, Finland

Filed Jun. 11, 1993, Ser. No. 76,242
Claims priority, application Finland, Jun. 18, 1992, 922843
Int. Cl.[5] C22B *15/00*
U.S. Cl. 75—10.1 **2 Claims**



1. A method for producing high-grade nickel matte and metallized sulfide matte, including the following steps:

a) feeding nickel sulfide concentrate and a reaction gas together with flux and flue dust, into a reaction shaft of a flash smelting furnace;

b) in the flash smelting furnace, there are created high-grade nickel matte and slag;

c) granulating the high-grade nickel matte;

d) hydrometallurgically treating the high-grade nickel matte after the granulating step for recovery of nickel therefrom;

e) conducting the slag created in the flash smelting furnace into an electric furnace together with a reductant and with a sulfur bearing or other material lowering the melting point or improving fluidity, so that in the electric furnace there are created metallized sulfide matte and waste slag; and

f) hydrometallurgically treating the metallized sulfide matte.

5,332,415

COMPACTED AND CONSOLIDATED ALUMINUM-BASED ALLOY MATERIAL AND PRODUCTION PROCESS THEREOF

Kazuhiko Kita, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 14, 1992, Ser. No. 930,734
Claims priority, application Japan, Sep. 5, 1991, 3-225975
Int. Cl.[5] B22F *3/00*; **C22C** *21/00*
U.S. Cl. 75—249 **8 Claims**

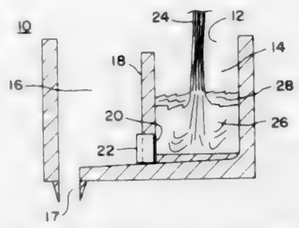
1. A compacted and consolidated aluminum-based alloy material which has been obtained by compacting and consolidating a rapidly solidified material having a composition represented by the general formula: $Al_aNi_bX_c$, wherein X is one or two elements selected from Zr and Ti and a, b, and c are, in atomic percentages, $87 \leqq a \leqq 93.5$, $5 \leqq b \leqq 10$, and $0.5 \leqq c \leqq 5$.

5,332,416

METHOD FOR SEPARATING SLAG AND NONMETALLIC PARTICLES DURING MOLTEN METAL TEEMING OPERATIONS USING MELTABLE DAM

James D. Calos, Lockport, N.Y., assignor to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Filed Apr. 23, 1992, Ser. No. 872,464
Int. Cl.[5] C22B *9/00*
U.S. Cl. 75—414 **10 Claims**



1. A method for transferring molten metal without any slag and nonmetallic particles, the method comprising the steps of:

a) transferring molten metal into a first chamber of a vessel, said first chamber being interconnected with a second chamber of said vessel by an opening;

b) temporarily preventing the flow of the molten metal through said opening with a sealing means until said molten metal forms a level in said first chamber which rises above a top of said opening;

said sealing means comprising a meltable dam made of one or more layers of metal foil having sufficient strength to withstand the hydrostatic pressure of the molten metal;

c) transferring the molten metal from said first chamber to said second chamber through said opening;

d) transferring the molten metal from said second chamber to a desired other vessel;

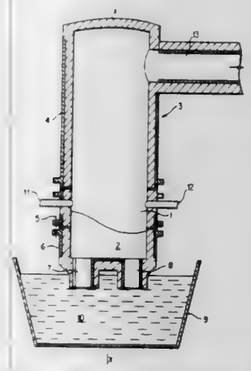
whereby slag and nonmetallic particles floating on the molten metal in said first chamber will be retained in said first chamber until the last flow of the molten metal through said opening.

5,332,417

METHOD FOR DECARBURISATION OF STEEL IN A VACUUM TREATMENT CHAMBER AND VACUUM TREATMENT CHAMBER FOR IMPLEMENTING THE METHOD

Bernard Bauvois, Loon Plage, France, assignor to Sollac, Puteaux, France

PCT No. PCT/FR92/00416, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO92/20986, PCT Pub. Date Nov. 26, 1992
PCT Filed May 7, 1992, Ser. No. 966,060
Claims priority, application France, May 13, 1991, 91 05753
Int. Cl.[5] C21C *7/10*
U.S. Cl. 75—510 **5 Claims**



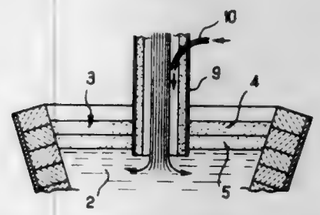
1. A method for decarburisation of steel in a vacuum treatment chamber consisting of an upper part (**4**) in the shape of a bell, of an intermediate ring (**5**) and of a lower part (**6**) in which a bath of metal to be treated (**2**) is located and which is equipped with two legs (**7**, **8**) immersed in a steel ladle (**9**) containing all the metal (**10**) to be treated, comprising blowing oxygen horizontally over the bath of metal to be treated (**2**), at the level of the intermediate ring (**5**) of said chamber.

5,332,418

COVERING FOR MOLTEN METAL AND PROCESS FOR PRODUCING THE SAME

Jean-Charles Daussan, Metz; Gérard Daussan, and André Daussan, both of Longeville-les-Metz, all of France, assignors to Daussan et Compagnie, Longeville-Les-Metz, France

Filed Mar. 25, 1993, Ser. No. 36,733
Claims priority, application France, Mar. 22, 1991, 91 03515
Int. Cl.[5] C22B *9/10*
U.S. Cl. 75—303 **15 Claims**



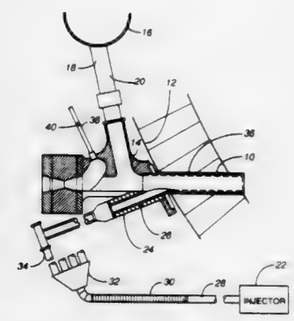
1. A pulverulent insulating and purifying covering (**3**) for the surface of liquid metal (**2**) contained in a metallurgical receptacle (**1**), comprising an upper layer (**4**) which includes at least one metallic oxide of basic character, capable of reacting with oxide inclusions contained in the liquid metal; and a lower layer (**5**) in direct contact with the liquid metal and covered by said upper layer (**4**) and including at least one said metallic oxide and additionally a flux (**6**) in a quantity sufficient to render fluid said first layer (**5**) under the influence of the heat of the liquid metal (**2**), said lower layer containing substantially more said flux (**6**) than said lower layer.

5,332,419

PNEUMATIC INJECTION OF POWDER OR GRANULE THROUGH SUBMERGED TUYERES

Raymond Lemay, and Robert A. Vos, both of Rouyn-Noranda, Canada, assignors to Noranda Inc., Toronto, Canada

Filed Jun. 15, 1993, Ser. No. 76,851
Claims priority, application Canada, Jul. 13, 1992, 2073707
Int. Cl.[5] C21B *7/16*
U.S. Cl. 75—533 **6 Claims**



1. A method of injecting powdered material into converters or other metallurgical vessels equipped with at least one submerged tuyere and a gas flow line interconnecting said tuyere to a bustle pipe or other source for blowing converting gas into the tuyere, the gas flow line comprising a check valve to prevent back flow of the powdered material into the bustle pipe in case of tuyere blockage, said method comprising the steps of:

a) providing an injection pipe fitted into the tuyere at an acute angle with respect to the centre line of the tuyere and intersecting the tuyere at a point downstream of such gas flow line entrance; and

b) introducing fluidized powdered material into said tuyere through said injection pipe.

5,332,420

CHEMICAL PROCESS OF SEPARATING METALS FROM AN ORGANIC COMPLEX

Domenico C. Cupertino, Wirral, and Peter A. Tasker, Oldham, both of England, assignors to Zeneca Limited, London, United Kingdom

Filed Feb. 24, 1993, Ser. No. 21,901
Claims priority, application United Kingdom, Feb. 25, 1992, 9204018; Feb. 25, 1992, 9204020
Int. Cl.[5] C22B *58/00*; **C01G** *15/00*
U.S. Cl. 75—710 **10 Claims**

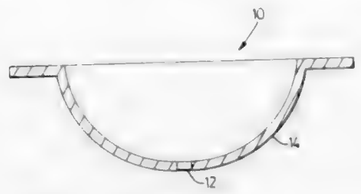
1. A method for separating a metal selected from the group consisting of chromium, manganese, cobalt, copper, titanium, iron, zinc, germanium, arsenic, zirconium, niobium, molybdenum, ruthenium, palladium, silver, tin, tellurium, tantalum, tungsten, osmium, platinum, gold, mercury, lead, antimony and bismuth from an organic complex thereof, said method comprising treating the complex with a weakly acid aqueous solution of an alkali metal or alkaline earth metal chloride having a chloride content of at least 4 molar and an acid strength of up to 0.5 molar above the stoichiometric requirement for stripping the metal whereby said complex is decomposed and metal ions are transferred to the aqueous solution.

5,332,421

PROCESS FOR EXTRACTING ALUMINUM FROM ORE

William J Stoughton, deceased, late of Gooderham, Canada by Clifford J. Stoughton, administrator , assignor to Clifford J. Stoughton, Gooderham, Canada

Filed Feb. 10, 1993, Ser. No. 15,589
Int. Cl.[5] C22B *21/02*
U.S. Cl. 75—673 20 Claims



1. A method of smelting aluminum from aluminum ore comprising

providing aluminum containing ore in the form of a coarse powder.

mixing said powdered ore with a flux containing substantial amount of borax, sodium bicarbonate and a copper compound in a mixed state and placing the mixture of powdered ore and flux in a suitable vessel capable of withstanding high temperatures and having an outlet hole in a bottom thereof.

heating said mixture of powdered ore and flux in said vessel to a temperature sufficient to melt said mixture of powdered ore and flux and thereby produce a molten material containing aluminum; and

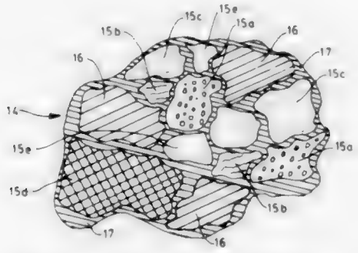
permitting said molten material to flow out of said outlet hole and to cool outside of said vessel, said aluminum separating out as said molten material cools.

5,332,422

SOLID LUBRICANT AND HARDENABLE STEEL COATING SYSTEM

V. Durga N. Rao, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 88,014
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—252 9 Claims



1. A thermally sprayable powder, comprising:

(i) solid lubricant particles comprising at least two materials selected from the group consisting of graphite, MoS_2, BN, CaF_2, NaF, WS_2, and LiF;

(ii) a major proportion of fusible particles distributed throughout said solid lubricant particles, said fusible particles being air-hardenable upon friction-promoting use of the powder to a hardness of at least 60 Rc; and

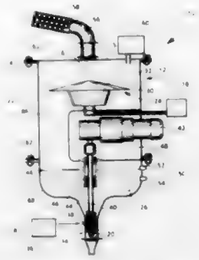
(iii) a low melting medium binding said solid lubricant particles and fusible particles together in agglomerated grains.

5,332,423

VERTICAL CONTINUOUS DEGASSING APPARATUS

Jerry A. Gisko, 3725 S. East Ave., Berwyn, Ill. 60402-0515, and Larry J. Farrell, 675 Grove Ter., Elk Grove, Ill. 60007

Filed Aug. 12, 1992, Ser. No. 929,753
Int. Cl.[5] B01D *19/00*
U.S. Cl. 95—248 11 Claims



9. A method for degassing a mix of at least one member selected from the group consisting of a liquid, a mix of liquids, a mix of a liquid and solids, and combinations thereof comprising the steps of:

(a) exposing in a vacuum chamber a quantity of the mix to a vacuum to evacuate entrapped air or gases in the mix;

(b) allowing the mix to free fall by gravity in the vacuum;

(c) interrupting the free falling mix by diverting the mix outwardly;

(d) degassing the mix by forming a thin layer of film comprising the diverted mix and vibrating and oscillating the diverted thin layer of the mix, while continuing to expose the diverted mix to the vacuum; and

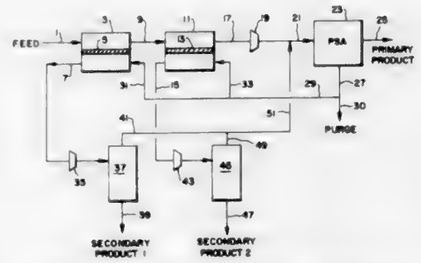
(e) discharging the degassed mix.

5,332,424

HYDROCARBON FRACTIONATION BY ADSORBENT MEMBRANES

Madhukar B. Rao, Allentown; Shivaji Sircar, Wescosville; Joseph M. Abrardo, Schnecksville, and William F. Baade, Breinigsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 28, 1993, Ser. No. 98,654
Int. Cl.[5] B01D *53/04, 53/22*
U.S. Cl. 95—47 17 Claims



1. A method for separating a gas mixture containing one or more primary components and two or more secondary components, wherein said secondary components are more strongly adsorbed on an adsorbent material than said primary components, and wherein the relative adsorptive characteristics of said secondary components on said adsorbent material range from most strongly adsorbed secondary components to least strongly adsorbed secondary components, said method comprising:

(a) passing a feed stream comprising said gas mixture successively through two or more membrane zones in series, each membrane zone having a permeable adsorbent membrane comprising said adsorbent material which divides the zone into a feed side and a permeate side, wherein said feed stream passes successively in series through the feed side of each membrane zone such that the nonpermeate gas from a given membrane zone provides the feed to the succeeding membrane zone, wherein said feed stream is depleted of the most strongly adsorbed secondary components in the first of said membrane zones and the least strongly adsorbed secondary components in the last of said membrane zones, and withdrawing from the feed side of the last of said membrane zones a final membrane product stream substantially depleted of said secondary components; and

(b) withdrawing from the permeate side of each successive membrane zone a secondary component permeate stream, wherein the permeate stream from the first of said membrane zones is enriched in the most strongly adsorbed secondary components and the permeate stream from the last of said membrane zones is enriched in the least strongly adsorbed secondary components;

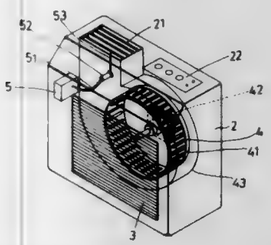
wherein portions of said secondary components are adsorbed from said feed stream in said successive membrane zones by said adsorbent membranes, diffuse through the membranes as an adsorbed fluid phase, and are withdrawn from the permeate sides of said successive membrane zones to yield said secondary component permeate streams.

5,332,425

AIR PURIFIER

Ping Huang, Tainan Hsien, Taiwan, assignor to Hung Hsing Electric Co., Ltd., Tainan Hsien, Taiwan

Filed Feb. 22, 1993, Ser. No. 21,016
Int. Cl.[5] B03C *3/41*
U.S. Cl. 96—26 1 Claim



1. An air purifier comprising:

(a) a purifier housing having an air exit opening formed through a wall thereof for passage of high pressure air therethrough in a predetermined direction;

(b) an operating and display panel mounted on said purifier housing having a plurality of signal lamps;

(c) a multi-layer filter unit mounted within said purifier housing for cleaning air contained within said purifier housing;

(d) an air way housing mounted within said purifier housing for guiding said high pressure air through said air exit opening in said predetermined direction;

(e) a fan mounted within said air way housing, said fan having a cylindrical whirlpool fan leaf construction, said fan being rotatively coupled to a fan motor;

(f) a high voltage generator mounted within said purifier housing for generating a high voltage; and,

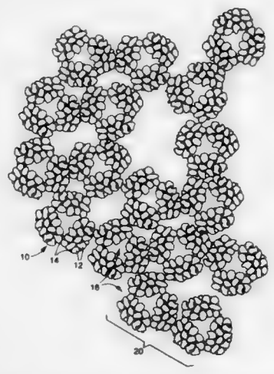
(g) an extended and tapered discharging copper needle electrically coupled to said high voltage generator for producing negative ions, said discharging needle having an apex end and an opposing end fixedly coupled to an insulating rod, said apex end of said discharging needle being positionally located adjacent said air exit opening and said discharging needle extending in said predetermined direction to allow said discharging needle to vibrate responsive to the flow of said high pressure air for increasing the amount of said negative ions being mixed with said high pressure air passing from said purifier housing.

5,332,426

AGGLOMERATED ACTIVATED CARBON AIR FILTER

Yuan-Ming Tang, New Brighton; John C. Kostecki, Cottage Grove, and Eric G. Graeve, Eagan, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 921,234, Jul. 29, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 87,629
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—153 29 Claims



1. A porous gas filter for use as a vehicle compartment filter, or the like, said filter in the form of a unified molded body, said filter body comprising;

adsorbent particles and particulate thermoplastic binder particles fused into agglomerate particles having a range of particle sizes of random and irregular shapes, and an average particle size of about 15 mesh or larger, said binder particles having an average particles size less than said adsorbent particles;

said agglomerates fused into said molded filter body providing open interstices between said agglomerates.

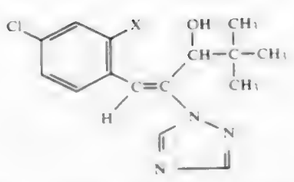
5,332,427

WOOD PRESERVATIVES

Yoko Hayashi, Toyonaka, and Takaaki Itoh, Nishinomiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 10, 1992, Ser. No. 943,019
Claims priority, application Japan, Sep. 13, 1991, 3-234633
Int. Cl.[5] C09D *5/14;* C07D *249/08*
U.S. Cl. 106—18.32 4 Claims

1. A method of preserving wood comprising applying to a wooden surface, a fungicidally effective amount of a wood preservative comprising a styryl triazole derivative of the formula (I)



(I)

wherein X represents chlorine or hydrogen as an active ingredient and an inert carrier;

wherein the wood preservative is in the form of an oil formulation;

wherein the wood preservative is applied to the wooden surface in an amount of 50–200 g of the oil formulation per m^2 of the surface area of wood and in an amount of 0.1–10 g of the active ingredient per m^2 of surface area of wood

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5,332,428

IMPREGNATING WATERPROOF COMPOSITION

Hiroshi Yoshioka, Tokyo; Ichiro Ono, Annaka; Akio Furihata, Sakura, and Yasushi Nakaida, Narita, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,702

Claims priority, application Japan, Dec. 24, 1991, 3-356416

Int. Cl.[5] C09K *3/18*; **C04B** *41/64*

U.S. Cl. 106—2 **11 Claims**

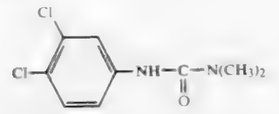
1. An impregnating waterproof composition, comprising:

(A) an organic silicon compound of the general formula (1):

$$R^1_a Si(OR^2)_b(OH)_c O_{(4-a-b-c)/2} \quad (1)$$

wherein R^1 is independently a monovalent hydrocarbon group having 1 to 18 carbon atoms, R^2 is independently a monovalent hydrocarbon group having 1 to 4 carbon atoms, letters a, b and c are $0.2 \leqq a \leqq 1.5$, $1 \leqq b \leqq 3$, $0 \leqq c \leqq 1$, and $1 < a+b+c \leqq 4$, and

(B) an anti-algae agent Selected from the group consisting of hydrolyzable silyl group-containing compounds and a compound of the formula (2):



(2)

wherein said anti-algae agent is contained in an amount of from 0.1 to 10 parts, by weight, per 100 parts by weight of said components (A) and (B).

5,332,429

METHOD FOR TREATING FLUOROALUMINOSILICATE GLASS

Sumita B. Mitra, West St. Paul; Scott R. Culler, Burnsville, and Bing Wang, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 708,467, May 31, 1991, abandoned. This application May 22, 1992, Ser. No. 887,619

Int. Cl.[5] A61K *5/00*; **C03C** *17/00*

U.S. Cl. 106—35 **37 Claims**

27. A method of making a glass ionomer cement, comprising the steps of:

a. treating finely-divided fluoroaluminosilicate glass with an aqueous silanol solution;

b. mixing the treated glass with a polyalkenoic acid; and

c. allowing the mixture of step b) to harden.

5,332,430

USE OF THIADIAZOLE COMPOUNDS AS AN ANTIFOULING ACTIVE INGREDIENT

Ursula Gerigk, Datteln, and Dirk Ventur, Bochum, both of Fed. Rep. of Germany, assignors to Witco GmbH, Bergkamen, Fed. Rep. of Germany

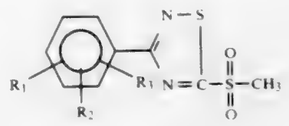
Filed Sep. 15, 1993, Ser. No. 123,185

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1992, 4230955

Int. Cl.[5] C09D *5/14*

U.S. Cl. 106—18.33 **39 Claims**

1. An antifouling composition comprising an antifouling effective amount of a biocide having the formula



and a biocidal carrier therefor

wherein

R_1, R_2 and R_3 are independently hydrogen, CN, CF_3 halogen, NO_2, COOR, or alkyl having 1–4 carbon atoms which is unsubstituted or substituted with halogen, carboxy, hydroxy, or nitro, or R_1, R_2 and R_3 are alkoxy having 1–4 carbon atoms, and

R is hydrogen or alkyl groups having 1–4 carbon atoms.

5,332,431

ANTIFOULING PAINT

Junji Yokoi, Ikoma; Akio Harada, Nara, and Hiroharu Ohsugi, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 31, 1993, Ser. No. 40,980

Claims priority, application Japan, Jul. 1, 1992, 4-214475; Aug. 19, 1992, 4-264044; Mar. 31, 1993, 4-124037

Int. Cl.[5] C09D *5/14*, *5/16*

U.S. Cl. 106—15.05 **5 Claims**

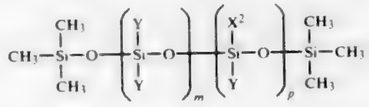
1. An antifouling paint consisting essentially of an alkyl-phenoxy group containing an organo-silicon compound in an amount of 5 to 100% by weight of total solid content of the paint, and a solvent in an amount of 5 to 80% by weight of the paint, said alkyl-phenoxy group containing organo-silicon compound being one of the following members:

(A) an alkylphenoxy bis-silyl compound of the formula:

$$X^1_3Si-(CH_2)n-SiX^1_3$$

wherein each of the X radicals is selected from the group consisting of a hydrogen atom, a hydroxy group, a lower alkyl group having 1 to 5 carbon atoms, a lower alkoxy group having 1 to 5 carbon atoms, a phenyl group, a phenoxy group, a vinyl group, an acetoxy group, a propenyloxy group, a methyl ethyl ketoxim group, and an alkyl-phenoxy group in which the alkyl substituent represents a straight or branched C_7–C_{12} alkyl or 1-methyl-1-phenylethyl, providing that at least one of the X^1 radicals is the defined alkyl-phenoxy group, and n is an integer of 1 to 10;

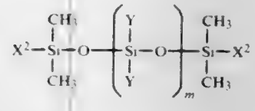
(B) an alkylphenoxy polysiloxane represented by the formula:



having a number average molecular weight of less than

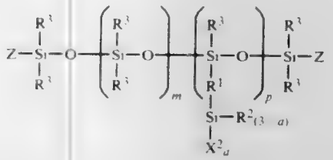
100,000, wherein each of the Y radicals is selected from the group consisting of C_1–C_3 alkyl, vinyl and phenyl groups; each X^2 in the formula is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, an alkoxy group, an acyl group, an oxime group, an amido group, a propenoxy group, and an alkyl-phenoxy group in which the alkyl substituent represents a straight or branched C_7–C_{12} alkyl or 1-methyl-1-phenylethyl, providing that at least one of said X^2 radicals is the defined alkyl-phenoxy group; m is 0 or an integer of 1 or more; and p is an integer of 1 or more;

(C) an alkylphenoxy polysiloxane represented by the formula:



having a number average molecular weight of less than 100,000, wherein each of the Y radicals is selected from the group consisting of C_1–C_3 alkyl, vinyl and phenyl groups; each of the X^2 radicals is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, an alkoxy group, an acyl group, an oxime group, an amido group, a propenoxy group, and an alkyl-phenoxy group in which the alkyl substituent represents a straight or branched C_7–C_{12} alkyl or 1-methyl-1-phenylethyl, providing at least one of said X^2 radicals is an alkyl-phenoxy group; and m is 0 or an integer of 1 or more; and

(D) an alkylphenoxy polysiloxane represented by the formula:



having a number average molecular weight of less than 100,000, wherein Z is an $-R^3$ or an

$-R^1-Si-R^2_{(3-a)}$ group:
X^2_a

R^1 is an alkylene or aralkylene having 2 to 20 carbon atoms which may include an ether, a thioether, an ester or a urethane bond; R^2 is an alkyl having 1 to 6 carbon atoms, phenyl or cycloalkyl having up to 6 carbon atoms; R^3 is an alkyl having 1 to 10 carbon atoms, aryl or aralkyl group; each of the X^2 radicals is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, an alkoxy group, an acyl group, an oxime group, an amido group, a propenoxy group, and an alkyl-phenoxy group in which the alkyl substituent represents a straight or branched C_7–C_{12} alkyl or 1-methyl-1-phenylethyl, providing at least one of said X^2 radicals should be the defined alkyl-phenoxy group; m is 0 or an integer of 1 or more; p is an integer of 1 or more; and a is an integer of 1 to 3.

5,332,432

INORGANIC ADHESIVE COMPOSITION

Ken-ichi Okubi; Akira Kitajima; Hisayuki Sato, and Kiyomi Ema, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 565,236, Aug. 10, 1990, Pat. No. 5,238,518. This application Feb. 16, 1993, Ser. No. 18,307

Claims priority, application Japan, Aug. 14, 1989, 1-209856; Feb. 6, 1990, 2-26794

Int. Cl.[5] C04B *28/24*

U.S. Cl. 106—287.13 **8 Claims**

1. An adhesive composition comprising:

(a) an aqueous silica sol having a mean particle size of from 5 to 200 millimicrons and a molar ratio of SiO_2/M_2O (where M represents an alkali metal atom, an amine molecule or a quaternary ammonium group) of from 30 to 2,000 in an amount of 100 parts by weight as SiO_2;

(b) an inorganic refractory powder having a particle size of from 0.5 to 1,000 microns in an amount of from 100 to 100,000 parts by weight;

(c) a fine powdery silica in amorphous form having a particle size of from 5 to 200 millimicrons in an amount of from 0.5 to 500 parts by weight, said fine powdery silica remaining in particle form in said composition,

(d) an aqueous solution of an alkali silicate having a molar ratio of SiO_2/M'_2O (where M' represents Na, K, Li, an amine molecule or a quaternary ammonium group) of from 1 to 30 and having an alkali silicate concentration of from 1 to 60% by weight in an amount of from 0.1 to 500 parts by weight as the alkali silicate component; and

(e) one or more coupling agents selected from the group consisting of a silane compound of a general formula (I):

$$R^1Si(OR)_3 \quad (I)$$

where OR represents an alkoxy or acyloxy group having from 1 to 3 carbon atoms, and R^1 represents a monovalent organic group having from 2 to 9 carbon atoms, or a hydrolysate thereof, and a silane compound of a general formula (II):

$$R^1SiCH_3(OR)_2 \quad (II)$$

where OR and R^1 have the same meanings as defined above, or hydrolysate thereof, in an amount of from 0.05 to 100 parts by weight, said composition has a viscosity of from 1 to 10,000 poise at 20° C. and a solids content of from 40 to 95% by weight.

5,332,433

TITANIUM DIOXIDE DISPERSIBILITY

Phillip Story, Yukon; Kelly A. Green, Edmond, and John E. Halko, Okarche, all of Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Nov. 24, 1993, Ser. No. 156,743

Int. Cl.[5] C09C *1/36*

U.S. Cl. 106—442 **27 Claims**

1. A method of producing a titanium dioxide product comprising the steps of:

(a) forming a mixture comprising a titanium dioxide material in a liquid medium, said titanium dioxide material being an agglomerated titanium dioxide material which has been produced by a reaction process and wherein, other than any inorganic oxides formed in said reaction process along with said titanium dioxide material, substantially no inorganic oxides have been deposited on said titanium dioxide material;

(b) wet milling said agglomerated titanium dioxide material in said liquid medium;

(c) after step (b), reducing the pH of said mixture to a value not exceeding 4.0;

(d) after step (c), adding an effective amount of a base to said mixture to cause said titanium dioxide material to flocculate;

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(e) after step (d), removing said titanium dioxide material from said mixture; and

(f) after step (d), washing said titanium dioxide material,

wherein, other than any redeposited inorganic oxides originally formed in said reaction process along with said titanium dioxide material, substantially no inorganic oxides are deposited during said method on said titanium dioxide material

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5,332,434

METHOD FOR ADJUSTING CONSISTENCY

Eiichi Yooda, Tokyo, and Fumitaka Itoh, Saitama, both of Japan, assignors to Masahisa Terao, Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 935,103

Claims priority, application Japan, Nov. 27, 1991, 3-312153; Dec. 4, 1991, 3-320436

Int. Cl.[5] **C04B** *26/00*

U.S. Cl. 106—724 **2 Claims**

1. A method for adjusting the consistency of previously-mixed concrete having a slump value of 8 cm which comprises adding water-absorbing polymeric materials comprising one of a copolymer of acrylic acid with vinyl alcohol, and a polymer of sodium acrylate to the previously-mixed concrete in a ratio of 1–2 kg water-absorbing polymeric material per m^3 of said previously-mixed concrete to adjust the consistency of said previously-mixed concrete to a slump value of lower than 3 cm before hardening.

5,332,435

HIGH BOND STRENGTH CEMENT ADDITIVES

Bruce T. Wright, Mt. Pleasant, and Peter Schilling, Charleston, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Nov. 12, 1993, Ser. No. 151,360

Int. Cl.[5] **C04B** *24/00*

U.S. Cl. 106—727 **9 Claims**

1. A hydraulic cement mix comprising a hydraulic cement, aggregate in an amount of up to 80 percent by weight based upon the total weight of said cement mix, sufficient water to effect hydraulic setting of the cement, and a polyamidoamine additive comprising the reaction product of:

(a) a polymerization reaction wherein 1–99% by weight of a member selected from the group consisting of styrene, α-methyl styrene, and combinations thereof is reacted with 1–99% by weight of acrylic acid to produce a co-polymer; and

(b) a further condensation reaction wherein 20–80% by weight of said copolymer is reacted with 20–80% by weight of a polyamine dissolved in a polyglycol solvent to produce the polyamidoamine additive,

wherein said polyaminoamine additive is present in an amount sufficient to increase the bonding strength of the hardened cement mix.

5,332,436

METHOD OF INCREASING THE SURFACE AREA AND PLASTIC PROPERTIES OF HYDRATED LIME

Daniel D. Walker, Jr., and Joseph L. Oliphant, both of Henderson, Nev., assignors to Chemical Lime Company, Fort Worth, Tex.

Continuation of Ser. No. 753,822, Sep. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,363, Nov. 21, 1990, abandoned. This application Apr. 5, 1993, Ser. No. 42,837

Int. Cl.[5] **C04B** *2/04*

U.S. Cl. 106—792 **6 Claims**

1. A method for producing a controlled temperature lime hydrate characterized as having a surface area in excess of 20 m^2/g and as having particles in the shape of thin, flat platelets, the method comprising the steps of:

combining water and quicklime in a slaking operation to thereby form a lime hydrate, the water to quicklime ratio being in the range from 2.0:1 to 3.0:1, so that the resulting lime hydrate is a wet product having a percent solids ranging from about 40 to 55%, the step of combining the water and quicklime producing an exothermic chemical reaction which, in turn, produces a heated water of hydration;

the slaking operation being carried out in the presence of a chemical modifier selected from the group consisting of ethylene glycol, diethyleneglycol, triethylene glycol, monoethanolamine, diethanolamine, triethanolamine and mixtures thereof, the chemical modifier to quicklime ratio



being in the range from 0.003:1 to 0.040:1, the chemical modifier being present in an amount effective to control the heat of the heated water of hydration sufficiently to prevent the formation of steam, whereby a hydrated lime particle results having a particle size in the range from about 0.2 to 0.35 microns, having a surface area in excess of 20 m^2/g and having particles shaped as thin, flat platelets.

5,332,437

AIR KNIFE DEVICE FOR REGULATING A METAL DEPOSIT

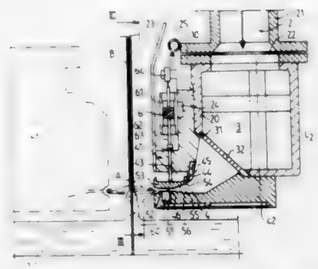
Jean Davene, Marly le Roi; Laurent Dondin, St Georges de Mons; Joseph Michalon, Cellieu, and Fernando Yanez, St Chamond, all of France, assignors to Clecim, Cergy-Pontoise, France

Filed Apr. 16, 1993, Ser. No. 47,210

Claims priority, application France, Apr. 17, 1992, 92 04819

Int. Cl.[5] **B05B** *1/04*

U.S. Cl. 118—63 **17 Claims**



1. Device for regulating the thickness of a metal deposit formed on a strip emerging from a galvanization bath, said device comprising at least one nozzle for blowing a gaseous fluid, said nozzle having a distribution chamber connected to an air supply circuit and opening into a slot extending transversely over the entire width of said strip, said slot being delimited by narrowly spaced, facing ends of first and second jaws converging towards each other from an outlet of said distribution chamber up to said slot in order to form an air knife, in a direction transverse to a feed plane of said strip, at least one of said first and second jaws comprises a deformable lip made up of a shaped element of elastically deformable material, and having means distributed over the entire length of said at least one of said first and second jaws to adjust a width of said slot, said slot being delimited by first and second flat parallel faces of said jaws determining a direction of said air knife, said first flat face being provided on the deformable lip, said slot extending to an inside of a recess provided at an end of said first jaw and delimited, on the upstream side of an air flow, by a flat retaining face of said jaw substantially perpendicular to the direction of an air knife, said shaped element comprising, on said upstream side, a corresponding guide and sealing face, which bears against said retaining face, said shaped element deforming with planar displacement of said flat face and sliding of said guide face along said retaining face of said first jaw.

5,332,438

VERTICAL TYPE DIP TREATING DEVICE

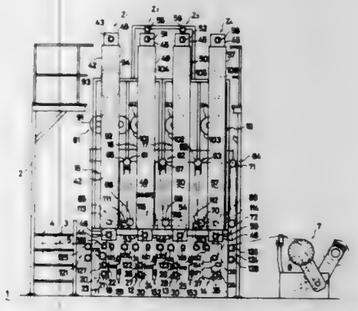
Takaaki Ueda; Yuji Takahara; Mitumori Kasada; Toshiharu Taniguchi, and Fukuiti Siyama, all of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Continuation of Ser. No. 658,381, Feb. 20, 1991, abandoned. This application Jun. 19, 1992, Ser. No. 900,764

Claims priority, application Japan, Feb. 21, 1990, 2-41733; Feb. 21, 1990, 2-41734; Feb. 21, 1990, 2-41735; Feb. 21, 1990, 2-41736; Feb. 23, 1990, 2-43348; Mar. 28, 1990, 2-79970; Dec. 25, 1990, 2-405703

Int. Cl.[5] **B05C** *11/00, 3/12;* **B65H** *59/00, 54/02*

U.S. Cl. 118—65 **22 Claims**



1. A vertical type dip treating device for applying adhesives to a cord to be used as a tension member of a belt, said device comprising:

dip tank means for applying an adhesive to a cord;

heating and drying means arranged above said dip tank means for heating and drying the cord having adhesive applied thereto by said dip tank means;

cooling means positioned adjacent to said heating and drying means for cooling the cord which is heated and dried by said heating and drying means and removed from said heating and drying means;

hot air supplying means linked with said heating and drying means for supplying hot air to said heating and drying means; and

exhausting means linked with said heating and drying means and arranged at a position shifted in a vertical direction from said hot air supplying means for discharging exhaust from said heating and drying means;

wherein the heating and drying means includes an oven having an upper part and a lower part including fluted turn rollers arranged at the upper part and the lower part of said oven and the dip tank means has at least one dip roller which is arranged rotatably in the dip tank and around which the cord to be dip treated is wound, an axis member which carries an axis part to be fitted in a center hole of said dip roller and supports the dip roller rotatably, and a coil spring disposed rotatably between the center hole of the dip roller and the axis part of the axis member.

5,332,439

SCREEN PRINTING APPARATUS FOR FILLING THROUGH-HOLES IN CIRCUIT BOARD WITH PASTE

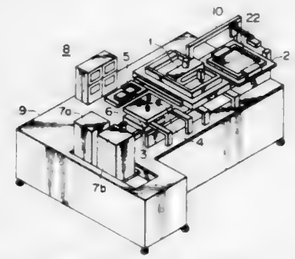
Hiroyuki Watanabe, Hadano, and Tetsuji Machita, Ibaraki, both of Japan, assignors to Hitachi Techno Engineering Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1992, Ser. No. 931,308

Claims priority, application Japan, Aug. 23, 1991, 3-211768

Int. Cl.[5] **B05C** *11/02*

U.S. Cl. 118—213 **7 Claims**



1. A screen printing apparatus comprising: a support on which a circuit board having through-holes formed therein is placed with a filter interposed there between; a screen mask through which the through-holes in the circuit board are filled with paste; means for storing filters together in stacked relationship; adhesion means for taking the uppermost one of the stacked filters by adhesion; means for separating the filter adhering to said adhesion means therefrom; filter attraction/-dropping means for attracting by suction the filter adhering to the adhesion means and for causing the thus attracted filter to fall by releasing the suction; and means for moving said attraction/dropping means to a position above said support.

5,332,440

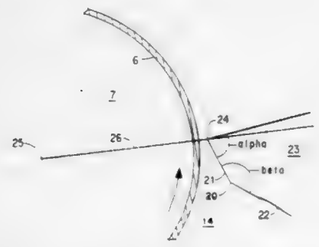
COATING LIP GEOMETRY FOR SLIDE BEAD COATING

Robert I. Hirshburg, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 823,696, Jan. 21, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 103,838

Int. Cl.[5] **B05C** *3/02*

U.S. Cl. 118—411 **5 Claims**



1. A slide bead coating apparatus comprising:

a means for continuosly supplying a liquid layer or layers simultaneously to a slide surface of a coating head;

a bead region wherein the liquid layer or layers is continuously applied to a moving substrate;

a roller, and associated drive means, for conveying said substrate longitudinally through said bead region; and

a coating lip tip at the terminus of said slide surface of said coating head and within said bead region;

said coating apparatus further comprising:

an upper lip land which is 0.05 mm to 0.50 mm long and

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extends downward from the coating lip tip of said coating head within said bead region, wherein an alpha angle between said upper lip land and an imaginary plane which contains both the rotational axis of said roller and said coating lip tip is 45° to 90°;

a lower lip surface extending from said upper lip land at an angle of no more than 155° wherein the intersection of said lower lip surface and said upper lip land form a land edge; and

a means for supplying a differential pressure to a bead of said liquid layer or layers between said substrate and said land edge.

5,332,441

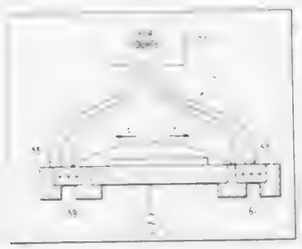
APPARATUS FOR GETTERING OF PARTICLES DURING PLASMA PROCESSING

Michael S. Barnes, Mahopac; Dennis K. Coultas, Hopewell Junction; John C. Forster; John H. Keller, both of Poughkeepsie, and James A. O'Neill, New City, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,628

Int. Cl.[5] **C23C** *16/00, 14/00;* **B05C** *5/00*

U.S. Cl. 118—723 **10 Claims**



1. In a plasma processing system used in the manufacture of semiconductor circuits wherein a semiconductor wafer is mounted on a negative electrode and exposed to a radio frequency generated plasma discharge, an apparatus for gettering negatively charged particles and ions trapped in a plasma sheath comprising

at least one positive electrode adjacent said negative electrode on which the semiconductor wafer is mounted, said positive and negative electrodes generating an electric field;

means for generating a magnetic field transverse to the electric field, negatively charged particles and ions being drawn to said positive electrode and thereby gettered from the plasma and the semiconductor wafer, said negatively charged particle being negatively charged by said plasma; and

means for turning said plasma discharge off at periods which are short to the process time for a period which is long to the plasma decay time.

5,332,442

SURFACE PROCESSING APPARATUS

Masao Kubodera; Masaki Narushima; Masahito Ozawa, all of Yamanashi; Hiromi Kumagai, Tokyo; Tomihiro Yonenaga, and Sumi Tanaka, both of Yamanashi, all of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Japan

Filed Nov. 12, 1992, Ser. No. 973,915

Claims priority, application Japan, Nov. 15, 1991, 3-326676; Nov. 28, 1991, 3-339912

Int. Cl.[5] **C23C** *16/00*

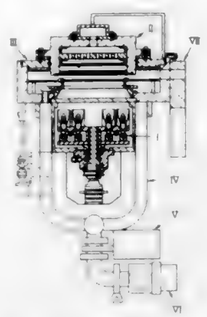
U.S. Cl. 118—725 **14 Claims**

1. A surface processing apparatus which performs heat processing of a single object for processing inside a process chamber, said surface processing apparatus comprising

a stationary mounting means, located inside the process chamber, for horizontally mounting an object for processing.

a plurality of heat lamps located so as to oppose a rear surface, opposite a processing surface, of an object for processing,

a unit which has a rotatable turntable, said plurality of lamps being mounted to said turntable in a ring shape;



a drive unit which rotatably drives said turntable; and

a transparent window means for airtightly isolating the process chamber from an area containing said rotatable turntable and said lamps, said window means being transparent to radiation from said lamps for heating a rear surface of and object for processing mounted on said mounting means.

5,332,443

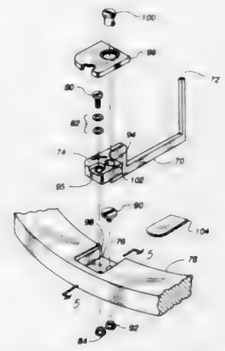
LIFT FINGERS FOR SUBSTRATE PROCESSING APPARATUS

Sandy M.S. Chew, Fremont; Shane D. Clark, Livermore; Ron L. Rose; Dale R. DuBois, both of Los Gatos; Cissy Leung, Fremont; Alan F. Morrison, and Manus K. Wong, both of San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 9, 1993, Ser. No. 73,958

Int. Cl.[5] **C23C** *16/00*

U.S. Cl. 118—729 **20 Claims**



1. A substrate processing apparatus comprising:

a thermal reactor including a substrate processing chamber; and

lifting apparatus for lifting a substrate within the chamber including

(i) at least one substrate lifting element having a substrate engaging end and a securing tab;

(ii) a lifting element support having a seat formed therein, wherein the seat is sized to receive the tab of the lifting element;

(iii) a fastener for securing the tab into the seat; and

(iv) an adjuster located between the tab and the seat and operable to adjust the position of the substrate engaging end,

whereby, when the tab is secured in the seat and the adjuster is operated, the lifting element is caused to move in a plane parallel to a plane formed through the center of the fastener and the adjuster.

5,332,444

GAS PHASE CLEANING AGENTS FOR REMOVING METAL CONTAINING CONTAMINANTS FROM INTEGRATED CIRCUIT ASSEMBLIES AND A PROCESS FOR USING THE SAME

Mark A. George, Allentown, and David A. Bohling, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 25, 1992, Ser. No. 982,196

Int. Cl.[5] **H01L** *21/306;* **B08B** *5/00;* **C09K** *13/00*

U.S. Cl. 134—1 **22 Claims**

1. A cleaning agent for removing metal-containing contaminants from a surface of a substrate, the cleaning agent comprising an effective amount of hexamethyldisilazane which is dispersed in a reducing atmosphere wherein the cleaning agent and the metal-containing contaminants are capable of reacting to form a volatile metal-ligand complex.

5,332,445

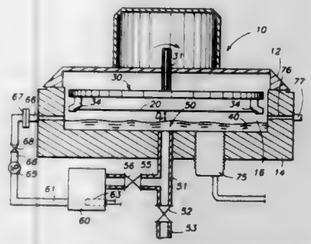
AQUEOUS HYDROFLUORIC ACID VAPOR PROCESSING OF SEMICONDUCTOR WAFERS

Eric J. Bergman, Kalispell, Mont., assignor to Semitool, Inc., Kalispell, Mont.

Continuation of Ser. No. 526,052, May 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 524,239, May 15, 1990. This application Sep. 30, 1992, Ser. No. 954,976

Int. Cl.[5] **H01L** *21/306*

U.S. Cl. 134—3 **72 Claims**



1. A process for etching semiconductor wafers using hydrofluoric acid vapor, comprising:

containing a wafer within a substantially enclosed processing chamber;

producing a vapor mixture of hydrofluoric acid vapor and water vapor to provide a substantially homogeneous etchant gas; said producing a vapor mixture being accomplished by providing a pool of liquid etchant source comprising a substantially homogeneous mixture of hydrofluoric acid and water within the enclosed processing chamber;

contacting the substantially homogeneous etchant gas against a processed surface of the wafer which is to be etched;

spinning the wafer to provide uniform dispersion of the etchant gas across the wafer surface and to facilitate circulation and transfer of the etchant gas to the processed surface;

enhancing production of said vapor mixture from said pool of liquid etchant source by spinning a member within the enclosed processing chamber to effect circulation of gases therewithin.

5,332,446

METHOD FOR CONTINUOUS PICKLING OF STEEL MATERIALS ON A TREATMENT LINE

Paul Didier, Gueugnon, and Dominique Henriet, Chambourcy, both of France, assignors to Ugine S.A., Puteaux, France

Filed Nov. 6, 1992, Ser. No. 972,644

Claims priority, application France, Nov. 7, 1991, 91 13752

Int. Cl.[5] **C23G** *1/08*

U.S. Cl. 134—3 **16 Claims**

1. Method for pickling steel materials consisting essentially of a shot-blasting operation, a preparation operation and then at least one pickling operation and at least one passivation operation, characterized in that the preparation operation is carried out by bringing the materials into contact with at least one 2 to 10N sulphuric acid solution at a temperature higher than 50° C., the metals content being below the saturation level, and in that the pickling operation is carried out by bringing the materials into contact with at least one solution which has a temperature of between 40° and 95° C. and consists essentially of 1 to 10% by weight of hydrofluoric acid, and Fe^{2+} and Fe^{3+} such that the Fe^{3+} ion concentration is between 1 and 190 g/l and that the redox potential is between −200 and +800 mV, this potential being measured using a platinum electrode with respect to an Ag/AgCl electrode.

5,332,447

METHOD OF CLEANING USING A BLAST MEDIA CONTAINING A SURFACTANT-CLATHRATE COMPOUND

Anthony E. Winston, East Brunswick; Benny S. Yam, Holmdel, both of N.J., and Keith A. Jones, Yardley, Pa., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jan. 21, 1993, Ser. No. 6,659

Int. Cl.[5] **B08B** *7/00*

U.S. Cl. 134—7 **20 Claims**

1. A method of blast cleaning a solid surface comprising; propelling an abrasive blast media against a solid surface by means of a water-containing pressurized fluid stream to strip contaminants therefrom, said blast media comprising abrasive particles and a surfactant-clathrate compound formed of a surfactant and a water soluble compound having clathration capability.

5,332,448

APPARATUS FOR CLEANING AIR FILTERS

Larry H. Phillips, Box 142 Weyburn,, Saskatchewan, Canada S4H 2J9

Filed Jul. 15, 1993, Ser. No. 91,274

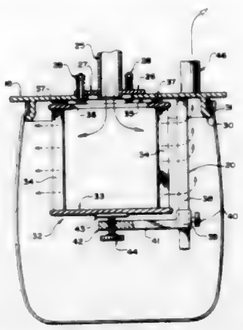
Int. Cl.[5] **B08B** *9/093*

U.S. Cl. 134—22.18 **11 Claims**

10. A method for cleaning an air filter including an end face having an air passage therein, a filter wall and a hollow interior between the end face and the filter wall, the method comprising providing a support plate, butting the end face of the air filter against the support plate, engaging a collection bag around the air filter, charging an air supply tank with compressed air to provide a charge of compressed air, providing an opening in the support plate for communicating through the air passage in the end face of the filter into the hollow interior of

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the filter, substantially instantaneously releasing the charge of air from the tank to pass into the hollow interior of the filter



and through the filter wall, and venting air from inside the collection bag and outside the filter

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5,332,449

IMMERSION SENSOR FOR MOLTEN METALS

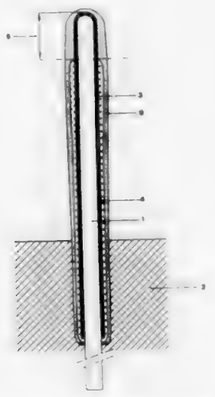
Paul C. Verstreken, Rotselaar-Heikant, and Guido J. Neyens, Opoeteren, both of Belgium, assignors to Heraeus Electro-Nite International N.V., Antwerp, Belgium

Filed Oct. 8, 1992, Ser. No. 958,421

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1991, 4135510

Int. Cl.[5] H01L *35/02*

U.S. Cl. 136—234 **19 Claims**



1. An immersion sensor for molten metals, comprising an electrically conductive support pin (**1**), one end of said pin being mounted in a refractory mounting material (**2**) and the other end being free, said free end having a first coat of a reference material (**3**) and thereover a second coat of a solid electrolyte material (**6**), said pin further having in the area of its mounted end a third coat of a refractory material (**4**), said third coat on the one side extending into said mounting material (**2**) and on the other side extending into the solid electrolyte material (**6**), whereby the solid electrolyte material (**6**) covers at least the end area of the refractory material (**4**) nearest the free end of said pin, and the free end is uncoated with refractory material for a distance which is large enough to measure the EMF which arises between the sensor and molten metal upon immersion, said distance being small enough that temperature differences along the distance do not practically influence the measured EMF.

5,332,450

PHOTOELECTRIC CONVERSION DEVICE

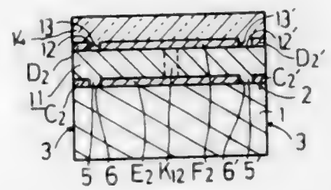
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 839,067, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 800,666, Nov. 22, 1985, abandoned, which is a division of Ser. No. 630,063, Jul. 12, 1984, Pat. No. 4,594,471. This application Feb. 1, 1993, Ser. No. 13,209

Claims priority, application Japan, Jul. 13, 1983, 58-128270; Oct. 31, 1983, 58-204441; Mar. 26, 1984, 59-57713

Int. Cl.[5] H01L *31/042*

U.S. Cl. 136—249 **4 Claims**



1. A photoelectric conversion device comprising:

an elongated substrate having an insulating surface thereon; and

a plurality of photoelectric conversion cells formed on said elongated substrate and connected in series, each of said photoelectric cells comprising a first electrode formed on said substrate, a semiconductor layer formed on said first electrode, and a second electrode formed on said semiconductor layer,

said first electrodes having a groove formed completely therethrough inwardly from both side edges of said first electrodes in the direction of elogation of said substrate on which said plurality of photoelectric conversion cells are arranged, said semiconductor layer filling said groove and said substrate forming a bottom wall of said groove;

wherein said elongated substrate comprises a synthetic resin and side edges of said semiconductor layer in each cell are coextensive with the side edges of said elongated substrate and said second electrode.

5,332,451

EPITAXIALLY GROWN COMPOUND-SEMICONDUCTOR CRYSTAL

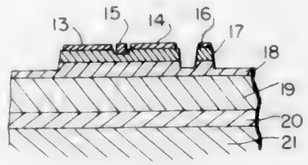
Masahiko Hata, Urbana, Ill.; Noboru Fukuhara, Ibaraki, and Takayoshi Maeda, Mie, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 29, 1992, Ser. No. 875,410

Claims priority, application Japan, Apr. 30, 1991, 3-099006

Int. Cl.[5] H01L *29/36*

U.S. Cl. 148—33.2 **17 Claims**



1. An epitaxially grown compound-semiconductor crystal comprising a substrate, a buffer layer formed directly or indirectly on said substrate, and an active layer formed on said buffer layer, said buffer layer comprising (A) a high-resistivity AlGaAs or AlGaInP layer doped with oxygen or/and a transition metal and, formed thereon, (B) a layer consisting of high-purity GaAs, InGaP, or AlGaAs.

5,332,452

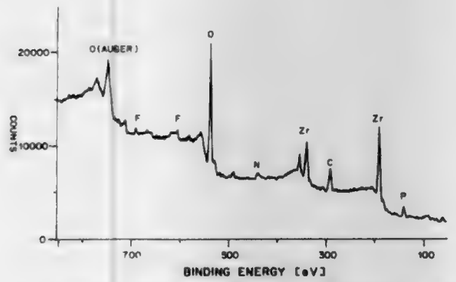
COATING COMPOSITION AND METHOD FOR THE TREATMENT OF FORMED METAL SURFACES

Narayan Das, Libertyville, Ill., assignor to Coral International, Inc., Waukegan, Ill.

Division of Ser. No. 653,715, Feb. 11, 1991, Pat. No. 5,139,586. This application May 28, 1992, Ser. No. 889,785

Int. Cl.[5] C23C *22/34*

U.S. Cl. 148—247 **27 Claims**



1. A method for treating an aluminum or an aluminum alloy surface, the method comprising applying an aqueous, acidic composition to the aluminum or aluminum alloy surface, the composition comprising a source of zirconium ions, a source of fluoride ions, a source of phosphate ions, a phosphate acid ester, a polyethylene glycol ester of a fatty acid, and nitric acid wherein the concentration of zirconium ions is from about 10 ppm to about 100 ppm, the concentration of fluoride ions is from about 20 ppm to about 200 ppm, and the concentration of the phosphate ions is from about 5 to about 75 ppm.

5,332,453

HIGH TENSILE STEEL SHEET HAVING EXCELLENT STRETCH FLANGING FORMABILITY

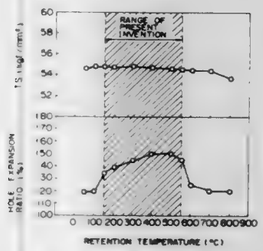
Susumu Okada, Okayama; Kouichi Hirata; Susumu Sato, both of Chiba; Masahiko Morita, and Tsuguhiko Nakagawa, both of Okayama, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Mar. 5, 1993, Ser. No. 27,182

Claims priority, application Japan, Mar. 6, 1992, 4-049825

Int. Cl.[5] C22C *38/14, 38/12*

U.S. Cl. 148—320 **4 Claims**



1. A high tensile steel sheet having excellent stretch flanging formability which is of a composite texture composed of a ferrite phase and a second phase selected from the group consisting of at least one of martensite, bainite, pearlite, retained austenite and low-temperature transformed ferrite,

wherein said second phase has a volume fraction not less than about 1.3 times higher at (A) an outer position extending from a location adjacent the surface of the steel sheet to a depth of about ¼ of the sheet thickness, than in (B) an inner region extending from a depth corresponding to ¼ of the sheet thickness to the center of the sheet.

5,332,454

TITANIUM OR TITANIUM BASED ALLOY CORROSION RESISTANT TUBING FROM WELDED STOCK

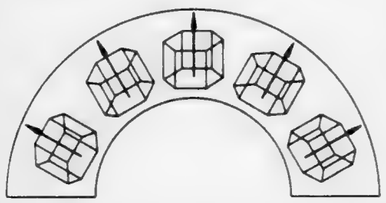
Steven E. Meredith, and James F. Benjamin, both of Kennewick, Wash., assignors to Sandvik Special Metals Corporation, Kennewick, Wash.

Continuation of Ser. No. 826,876, Jan. 28, 1992, Pat. No. 5,226,981. This application Mar. 9, 1993, Ser. No. 28,153

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—421 **8 Claims**



1. A seam welded tube of titanium or titanium based alloy having a longitudinally extending weld seam, a radially oriented crystallographic texture throughout the tube an a completely recrystallized grain structure in a weld area along the weld seam.

5,332,455

RAPIDLY SOLIDIFIED ALUMINUM-MAGNESIUM BASE BRAZING ALLOYS

Chin-Fong Chang, Morris Plains; Santosh K. Das, and Michael S. Zedalis, both of Randolph, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 712,372, Jun. 10, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 994,057

Int. Cl.[5] C22C *21/06;* **B32B** *15/10*

U.S. Cl. 148—440 **5 Claims**



1. A rapidly solidified brazing alloy consisting essentially of about 14 to 45 weight percent magnesium and 0 to 10 weight percent of at least one element selected from the group consisting of silicon, bismuth, strontium, lithium, copper, calcium, zinc and tin, the balance being aluminum and incidental impurities, said alloy having a microcrystalline structure containing uniformly distributed intermetallic particles.

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SUPERPLASTIC ALUMINUM-BASED ALLOY MATERIAL AND PRODUCTION PROCESS THEREOF

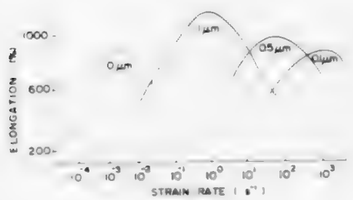
Tsuyoshi Masumoto, 3-8-22 Kamisugi, Aoba-ku, Sendai-shi, Miyagi; Akihisa Inoue, 11-806, Kawauchijutaku, Mubanchi, Kawauchi, Aoba-ku, Sendai-shi, Miyagi; Kenji Higashi, 3-4-9, Teraikedai, Tondabayashi-shi, Osaka; Katsumasa Ohtera, Yamato, and Makoto Kawanishi, Kurobe, all of Japan, assignors to Tsuyoshi Masumoto; Akihisa Inoue, both of Miyagi; Kenji Higashi, Osaka and Yoshida Kogyo K.K., Toyko, all of Japan

Filed Sep. 25, 1992, Ser. No. 951,197

Claims priority, application Japan, Sep. 26, 1991, 3-247523; Dec. 6, 1991, 3-323178

Int. Cl.[5] C22F *1/00*

U.S. Cl. 148—564 **18 Claims**



7. A process for producing a superplastic aluminum-based alloy material which exhibits a large elongation at high strain rates of $10^{-1}s^{-1}$ or larger, the process comprising:

forming an aluminum-based alloy consisting of an amorphous phase, a microcrystalline phase or a mixed phase thereof by rapidly quenching an alloy material having a particular composition, said particular composition being represented by the general formula: $Al_aM_{1b}X_e$, wherein M_1 is at least one element selected from the group consisting of Mn, Fe, Co, Ni and Mo; X is at least one element selected from the group consisting of Nb, Hf, Ta, Y, Zr, Ti, rare earth elements and a mixture of rare earth elements; and a, b and e are, in atomic percentages, $75 \leqq a \leqq 97$, $0.5 \leqq b \leqq 15$ and $0.5 \leqq e \leqq 10$;

optionally, heat treating the aluminum-based alloy; and

subjecting the aluminum-based alloy to a single or combined thermo-mechanical treatment to provide a material having a microstructure suitable for superplastic working, in which said microstructure consists of a matrix formed of aluminum or a supersaturated aluminum solid solution, whose average crystal grain size is 0.005 to 1 μm, and particles made of a stable or metastable phase of various intermetallic compounds formed of a main alloying element making up the matrix and other alloying elements and/or of various intermetallic compounds formed of the other alloying elements and distributed evenly in the matrix, said particles having a mean particle size of 0.001 to 0.1 μm.

5,332,457

PROCESS FOR PRODUCING CARPET

Naoyuki Katoh, Mie, and Kenzou Ichihashi, Osaka, both of Japan, assignors to Mitsubishi Yuka Badische Co., Ltd., Yokkaichi, Japan

Filed Mar. 9, 1993, Ser. No. 28,144

Claims priority, application Japan, Mar. 12, 1992, 4-087474; Mar. 12, 1992, 4-087475; Nov. 26, 1992, 4-337875; Dec. 9, 1992, 4-351530

Int. Cl.[5] D06N *7/00*; **C04B** *24/26*

U.S. Cl. 156—072 **12 Claims**

1. A process for producing a carpet comprising the steps of:

a) coating a a carpeting surface base material with a coating composition comprising an aqueous emulsion of a resin having a glass transition point of from −10° to 30° C.;

b) subsequently laminating a backing material composition comprising 100 parts by weight, on a resin solid basis, of an aqueous emulsion of a resin having a glass transition point of not higher than 5° C., from 120 to 400 parts by weight of a hydraulic inorganic cement, and up to 600 parts by weight of a non-hydraulic inorganic filler on said carpeting surface base material which has been previously coated with said coating composition; and

c) heating the laminate to harden and dry the backing material composition.

5,332,458

CORRUGATED PAPERBOARD STRENGTH ENHANCING PROCESS

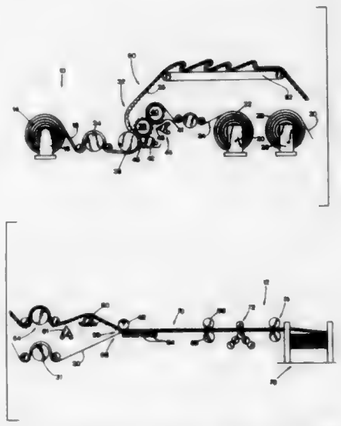
Scott A. Wallick, 17848 3rd Pl. SW., Seattle, Wash. 98166

Filed Apr. 29, 1991, Ser. No. 692,861

The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.

Int. Cl.[5] B31F *1/28*

U.S. Cl. 156—210 **20 Claims**



1. A process for increasing the strength of combined corrugated paperboard using a strength enhancing resin, comprising:

providing a fluted medium directly from an in-line corrugator following fluting of the medium by the in-line corrugator, the fluted medium having side edges and flutes with flute tips, flute troughs and flute side walls, the flutes extending transversely between the side edges and moving the fluted medium in a direction with the flutes extending transverse to the direction of motion of the fluted medium;

applying a preselected amount of uncured strength enhancing isocyanate resin to the flute tips, flute troughs and flute walls on at least one surface of the moving fluted medium after it has been fluted, the resin being applied at higher concentrations to the flute tips than to the flute side walls;

applying an adhesive to the surface of the fluted medium to which the isocyanate resin has been applied after applying the isocyanate resin;

combining the fluted medium with at least a first liner; and

allowing the resin to cure for a period of time sufficient to harden and provide enhanced strength to the paperboard.

5,332,459

THERMAL TRANSFER PRINTING METHOD USING INTERMEDIATE SHEETS

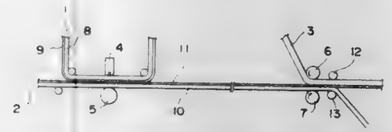
Akihiro Imai, Ikoma; Yasuo Fukui, Kadoma, and Nobuyoshi Taguchi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 3, 1991, Ser. No. 725,669

Claims priority, application Japan, Jul. 4, 1990, 2-176720; Oct. 30, 1990, 2-293839

Int. Cl.[5] B41M *5/26*

U.S. Cl. 156—234 **7 Claims**



1. A thermal transfer printing process comprising:

heating a thermal ink film with a printing head to print dye transferring images onto an intermediate sheet which comprises a substrate and a printing layer thereon,

heaping an image receive sheet on said printing layer, and

transferring said printing layer onto said image receive sheet by pressure or heat;

wherein said thermal ink film comprises a substrate and a color layer comprising:

a dye, and

a polymer binder which is selected from the group consisting of acrylonitrile-styrene copolymer, polystyrene, styrene-acryl copolymer, polyvinyl chloride, chlorinated polyvinyl chloride, polyvinyl acetate, vinyl chloride-vinyl acetate copolymer, vinyl chloride-acrylic ester copolymer, saturated polyester, polyester urethane, cellulose resin, rubber chloride, chlorinated polypropylene, polycarbonate and a mixture thereof, and wherein said printing layer is formed from polyvinyl acetal, and either said color layer or said printing layer or both contain a fluorine or siloxane-containing moisture curable resin.

5,332,460

METHOD OF MANUFACTURING A SEAL RING FOR MAGNETIC FLUID SEAL DEVICE

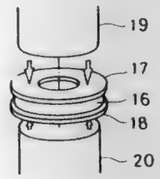
Masachi Hosoya, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 391,149, Aug. 8, 1989, abandoned. This application Oct. 2, 1990, Ser. No. 591,595

Claims priority, application Japan, Aug. 9, 1988, 63-197054

Int. Cl.[5] B29B *13/02*

U.S. Cl. 156—242 **2 Claims**



1. A method of manufacturing a seal ring for a magnetic fluid seal device comprising

providing an annular magnet,

applying a covering film of a heat activated resin to the magnet in a film thickness in a range of 5–30 um,

stacking the magnet coaxially between a pair of annular pole pieces, and

pressing the pole pieces against the magnet while heating the resin to a temperature at least about that at which resin in the film thereof is caused to melt and function as an adhesive for bonding the pole pieces to the magnet therewith forming a seal ring for a magnetic fluid seal device.

5,332,461

METHOD OF MAKING A SOLID WOOD SPRING BLADE

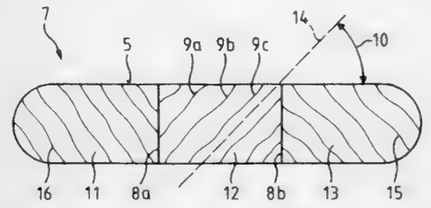
Beat Huesler, Vezely, France, assignor to Studio Huesler AG, Zug, Switzerland

Filed Dec. 21, 1992, Ser. No. 992,328

Claims priority, application Switzerland, Dec. 20, 1991, 03808/91; Aug. 24, 1992, 02621/92

Int. Cl.[5] A47C *23/06*; **B27M** *3/00*

U.S. Cl. 156—264 **11 Claims**



1. A process for producing spring blades comprising the steps of

forming a plurality of solid wood layers (**58**) each having annual rings (**57**) which extend in a frontal direction and approximately tangentially to major surfaces (**95**) of said layers,

gluing the plurality of solid wood layers (**60, 61, 62**) together with the major surfaces of adjacent solid wood layers parallel and facing each other, and

cutting the glued solid wood layers (**60, 61, 62**) transversely to the annual rings and perpendicular to the major surfaces of the solid wood layers to form spring blades (**71**) having solid wood layers of a thickness of 4 mm to 12 mm and wherein the annual rings are substantially perpendicular to the cut surfaces.

5,332,462

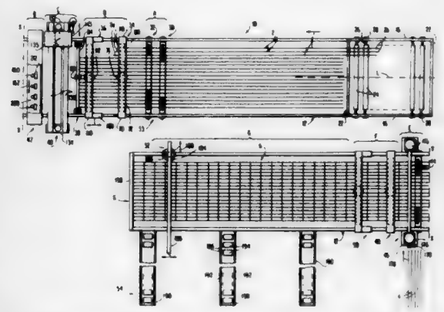
APPARATUS FOR ASSEMBLING FIBERGLASS GRATING FROM PULTRUDED FIBERGLASS GRATING BARS

Robert E. Myers, 18507 Prince William La., Nassau Bay, Tex. 77058

Filed Sep. 8, 1992, Ser. No. 941,950

Int. Cl.[5] B29C *65/52*

U.S. Cl. 156—353 **31 Claims**



1. An apparatus for assembling fiberglass grating from pultruded first and second sets of mutually parallel, laterally spaced, interlocking fiberglass reinforced molding resin bars

with the sets extending transversely to one another, including an underlying set of bearing bars having longitudinally spaced notches within an upper edge thereof, and an overlying set of cross bars fittable to said notches, said apparatus comprising:

means for supporting a set of bearing bars, in laterally spaced, longitudinal alignment for movement along a path parallel to the axis of said bearing bars;

means for incrementally advancing said bearing bars in unison as an array periodically along said path in steps equal to a desired spacing between cross bars;

means for holding said bearing bars stationary in said laterally spaced longitudinal alignment after incremental advancement of said bearing bars;

means responsive to terminating of each incremental advancement of said bearing bars for sequentially notching the tops of said st of bearing bars at laterally aligned positions for receiving bottoms of said cross bars for interlocked coupling therebetween; and

means for forcing a cross bar, when extended across laterally aligned notches of said set of laterally spaced bearing bars into said respective laterally aligned notches to mechanically interlockingly couple said cross bar to each of said bearing bars

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5,332,463

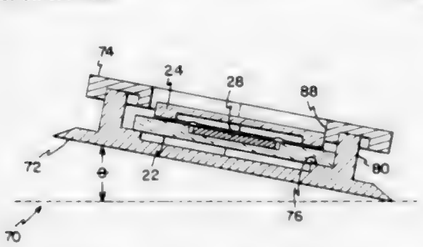
SELF-ALIGNED SEALING FIXTURE FOR USE IN ASSEMBLY OF MICROELECTRONIC PACKAGES

Delvin D. Eberlein, Altoona, and Peter J. Wehner, Eau Claire, both of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Continuation of Ser. No. 821,005, Jan. 15, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 128,050

Int. Cl.[5] **B32B** *31/00*; **H05K** *3/30*

U.S. Cl. 156—556 **8 Claims**



1. An apparatus for use in sealing integrated circuit packages, comprising:

a body having at least one alignment cavity located within said body for receiving components of the integrated circuit packages;

alignment cap means for aligning at least one of the components of the integrated circuit packages in the at least one alignment cavity;

inclining means for inclining said body at an angle between 10° and 30° relative to a horizontal reference plane to align said components in said at least one alignment cavity;

wherein at least one alignment cavity comprises a rectangular alignment cavity rotated at a 45° angle relative to a length-wise axis of said body; and

wherein the rectangular alignment cavity includes:

a first chamber having a base for receiving a package lid, said first chamber having walls extending from said base for aligning said package lid within the alignment cap means within the rectangular alignment cavity; and

a second chamber extending from said first chamber for receiving a chip carrier, said second chamber having walls extending from said walls of said first chamber for aligning said chip carrier within the rectangular alignment cavity relative to said package lid.

5,332,464

SEMICONDUCTOR DEVICE MANFUACTURING APPARATUS

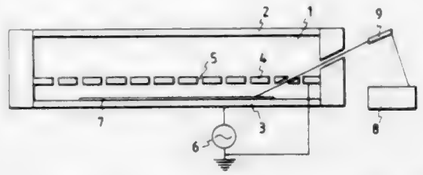
Isamu Namose, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 774,850, Oct. 11, 1991, Pat. No. 5,200,016. This application Jan. 28, 1993, Ser. No. 10,167

Claims priority, application Japan, Oct. 12, 1990, 2-273623; Sep. 26, 1991, 3-247302

Int. Cl.[5] **H01L** *21/00*

U.S. Cl. 156—626 **1 Claim**



1. A method of detecting an end point of an etching operation of a three-electrode type dry etching apparatus comprising an upper electrode, an intermediate electrode and a lower electrode arranged parallel to one another, said intermediate electrode having at least one hole which has a central axis neither perpendicular nor parallel to a central axis of said intermediate electrode, and wherein said at least one hole extends along a straight line connecting a material to be etched and a detection section of an optical end point detecting device so as to be parallel to an optical path, said method comprising the steps of:

performing said etching operation on sad material to be etched with said three-electrode type dry etching apparatus;

detecting an intensity of plasma light generated from an etching reaction through said at least one hole during said etching operation; and

determining said end point of said etching operation based upon said intensity of plasma light detected by said detecting section of said optical end point detecting device.

5,332,465

PROCESS FOR PREPARING PLASTIC SURFACES TO BE PLATED

John J. Kuzmik, Torrington; Massimo DiMarco, Watertown, both of Conn.; Howard L. Morris, New Palestine, Ind., and Dennis R. Boehm, Fort Thomas, Ky., assignors to MacDermid, Incorporated, Waterbury, Conn.

Filed Sep. 8, 1993, Ser. No. 117,993

Int. Cl.[5] **B05D** *3/10*

U.S. Cl. 156—628 **21 Claims**

1. A process for treating a plastic prior to etching to enhance the coverage and adhesiveness of subsequent plating on the etched plastic surface comprising:

a) contacting the plastic with a sensitizer composition comprising p-mentha-diene;

b) etching said sensitized plastic and

c) metal plating said etched plastic.

5,332,466

LIQUID JET RECORDING HEAD MANUFACTURING METHOD

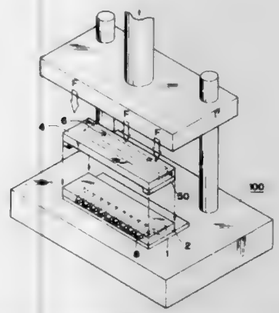
Minoru Nozawa, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 799,546, Nov. 27, 1991, abandoned. This application Aug. 24, 1993, Ser. No. 111,270

Claims priority, application Japan, Nov. 28, 1990, 2-322446; Nov. 28, 1990, 2-322447

Int. Cl.[5] **B44C** *1/22*; **B29C** *37/00*

U.S. Cl. 156—633 **19 Claims**



1. A method for manufacturing a liquid jet recording head, comprising the steps of coating a path wall forming member on a solid layer disposed on a substrate plate and having a liquid path pattern communicating with liquid discharge openings, binding a lid plate to said substrate plate via said path wall forming member, and removing said solid layer, thereby forming liquid paths;

characterized in that, in said binding step, said lid plate is bound to said substrate plate via spacer means having a thickness greater than that of said solid layer and disposed at an area which does not correspond to said path pattern and via said path wall forming member, while applying a pressure toward a binding position.

5,332,467

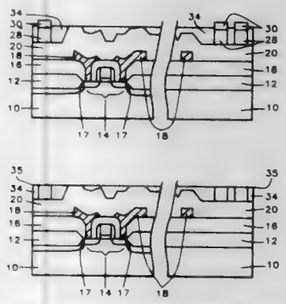
CHEMICAL/MECHANICAL POLISHING FOR ULSI PLANARIZATION

Ching-Tzong Sune, and Chih-Yuan Lu, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 20, 1993, Ser. No. 122,948

Int. Cl.[5] **H01L** *21/306*; **B44C** *1/22*; **C03C** *15/00*; **C23F** *1/00*

U.S. Cl. 156—636 **20 Claims**



1. A method of forming a planar surface on a semiconductor wafer, on which there is a rugged surface with broad indentations, comprising the steps of:

forming a first layer over said rugged surface;

forming a hard film layer over said first layer;

patterning said first layer and said hard film layer to form polishing stop islands in the broad indentations;

forming a second layer over said rugged surface and said polishing stop islands, to create a top surface for polishing, said top surface and said rugged surface being less hard than said hard film layer;

polishing said top surface in a vertical direction to remove portions of said top surface, until said top surface is co-planar with top of said polishing stop islands; and

removing the remainder of said hard film layer to complete said planar surface.

5,332,468

METHOD FOR STRUCTURING A LAYER USING A RING ELECTRODE AND MULTIPLE RF POWER SOURCES

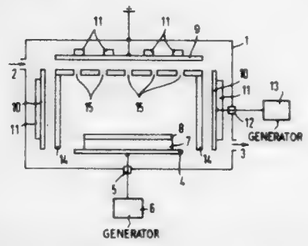
Manfred Engelhardt, Feldkirchen-Westerham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 953,937

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1991, 4135033

Int. Cl.[5] **H01L** *21/00, 21/306*; **B44C** *1/22*; **C03C** *15/00*

U.S. Cl. 156—643 **19 Claims**



1. A method for structuring a layer, comprising the steps of:

implementing an anisotropic plasma etching process in an etching reactor having at least one wafer holder and a ring electrode that annularly surrounds the wafer holder, two RF power sources of different frequencies being supplied independently of one another via the wafer holder and via the ring electrode, respectively;

introducing into the etching reactor a substrate having a layered structure that contains at least one lower layer composed of a first material different from a second material of the layer to be structured and that contains the layer to be structured;

providing a target that contains the first material of the lower layer in the etching reactor;

setting the RF power at the ring electrode such that the first material is sputtered from the target and such that the first material deposits on surfaces of the lower layer that are exposed during the etching process to substantially the same degree to which the lower layer is attacked by the etching process.

5,332,469

CAPACITIVE SURFACE MICROMACHINED DIFFERENTIAL PRESSURE SENSOR

Carlos H. Mastrangelo, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 974,570, Nov. 12, 1992, Pat. No. 5,258,079. This application Feb. 5, 1993, Ser. No. 14,025

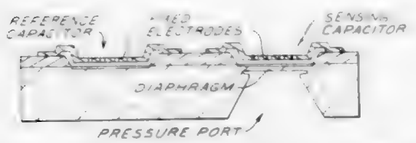
Int. Cl.[5] **H01L** *21/306*; **B44C** *1/22*; **C03C** *15/00*; **C23F** *1/00*

U.S. Cl. 156—643 **18 Claims**

1. A method for fabricating a micromachined capacitive differential pressure sensor on a substrate, comprising the steps of:

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selectively implanting a doping material into the substrate so as to define a first etch-stop layer,
depositing a surface layer of semiconductor material over the substrate so as to at least cover said first etch-stop layer for defining a diaphragm thereon,
depositing a passivating conductive layer over said diaphragm to form a diaphragm electrode,
selectively depositing a sacrificial layer over said diaphragm and said passivating conductive layer thereon,
anchoring a conductive structural layer to said surface layer such that said sacrificial layer is located between the substrate and said structural layer so as to form a second electrode,
selectively etching said substrate from the side opposite said structural layer so as to form an open backside aperture that terminates at said first etch-stop layer,



selectively removing said first etch-stop layer such that such backside aperture couples to said diaphragm on the side opposite said structural layer,
forming at least one temporary post extending through said structural layer toward said surface layer for reducing the deflection therebetween,
removing said sacrificial layer so as to form a diaphragm cavity into which said diaphragm may deflect in response to the pressure to be measured, and
removing said temporary posts,
whereby pressure exerted through said backside aperture causes a deflection of said diaphragm and a corresponding change of the capacitance between said first and second electrodes

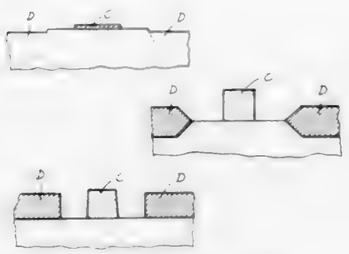
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5,332,470

PROCESS FOR MANUFACTURING CALIBRATION STRUCTURES PARTICULARLY FOR THE CALIBRATION OF MACHINES FOR MEASURING ALIGNMENT IN INTEGRATED CIRCUITS IN GENERAL

Pier L. Crotti, Landriano, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 896,822, Jun. 11, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 149,707
Claims priority, application Italy, Jun. 24, 1991, MI91A001727
Int. Cl.[5] **H01L** *21/306*; **B44C** *1/22*; **C03C** *15/00, 25/06*
U.S. Cl. 156—659.1 **18 Claims**



1. A process for manufacturing a calibration structure, particularly for the calibration of machines for measuring the degree of misalignment in integrated circuits in general, said process comprising the following steps, performed on at least one calibration structure arranged in a preset position on a substrate:
a preparation step, whereat a first layer of a first material is selectively grown and deposited on a substrate and a first layer of radiation-sensitive material is deposited thereon;
a first masking step, whereat said radiation-sensitive material is masked, a soluble part thereof is removed, said first layer is etched, uncovering a portion said substrate, and the remainder of said radiation-sensitive material is removed;
a first deposition step, during which a second layer of a second material is deposited on said first layer and on said portion of said substrate, a second layer of radiation-sensitive material being then deposited on said second layer;
a second masking step, whereat said second radiation sensitive material layer is masked and a soluble part thereof is removed, leaving portions thereof above said second layer at said portion of said substrate and at said first layer; and
a first etching step, whereat said second layer is etched at uncovered portions thereof and said portions of said second radiation-sensitive material are eliminated, said first etching leaving uncovered portions of said first layer and the overlaying portions of said second layer and a further portion of said second layer at said substrate.

5,332,471

DYE STRIPPING BY OXYGEN IN SECONDARY FIBER RECOVERY

Ronald C. Naddeo, Kempton; Konstantinos Hristofas, Allentown, and Vincent L. Magnotta, Wescosville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 703,547, May 21, 1991, Pat. No. 5,211,809. This application Mar. 3, 1993, Ser. No. 25,688
Int. Cl.[5] **D21C** *5/02, 9/147*
U.S. Cl. 162—6 **4 Claims**

1. A method for the preparation of a secondary pulp from waste paper material containing color bodies including dye comprising comminuting said waste paper material with water to form a pulp comprising cellulosic fibers and said dye while controlling the pH during said comminuting at values below 8 or above 10, and contacting said pulp with an oxygen-containing gas in one or more subsequent stages wherein said oxygen reacts with said dye to yield decolorized pulp.

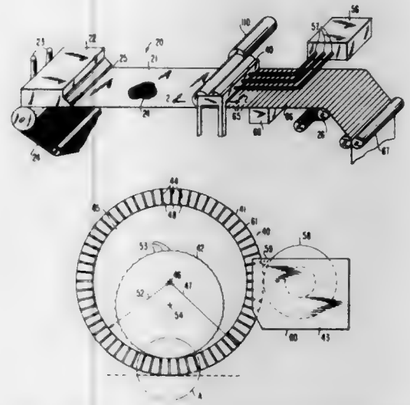
5,332,472

APPLICATION OF FLUIDIZED MATERIAL TO A SUBSTRATE USING DISPLACEMENT TRANSFER

Edwin L. Cutright, Powhatan; G. Robert Scott, Midlothian, and Howard W. Vogt, Jr., Providence Forge, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 30, 1992, Ser. No. 983,378
Int. Cl.[5] **D21H** *23/02, 25/00*
U.S. Cl. 162—139 **42 Claims**

31. A displacement transfer applicator for applying a fluidized material to a web moving in a direction of travel during a series of application cycles, said displacement transfer applicator comprising:
an application drum located above said web, said application drum having a circumferential periphery, axis, inner diameter, outer diameter and a hollow interior, said application drum having at least one slot machined in said circumferential periphery, said at least one slot in communication with said hollow interior and extending parallel to said axis of said application drum, said application drum adapted for rotation; wherein:
said at least one slot is filled with deformable material from said inner diameter to just inside said outside diameter, said deformable material having an inner surface facing toward said hollow interior and an outer surface facing away from said hollow interior, said at least one slot having a cavity located between said outer surface of said deformable material and said circumferential periphery of said application drum; said displacement transfer applicator further comprising:
a compression drum mounted eccentrically within said hollow interior of said application drum, said compression drum having a circumferential periphery and axis, said compression drum having at least one compression tip extending outwards from said circumferential periphery and parallel to said axis of said compression drum, said compression drum adapted for rotation;
fluidized material application means, said fluidized material application means located adjacent to said application drum, said fluidized material application means filling said



cavity with said fluidized material between each of said application cycles; and
driving means for rotating said application drum and said compression drum whereby said compression tip impinges said inner surface of said deformable material in said at least one slot in said application drum at a point where said slot is immediately adjacent to said web, said compression tip temporarily collapsing said cavity and temporarily displacing said outer surface of said deformable material to a position beyond said outer diameter of said application drum where said fluidized material on said outer surface of said deformable material contacts said web and adheres to said web.

5,332,473

VESICULATED POLYMER GRANULES AND PAPER MADE THEREFROM

Loreen D. Ferguson, Mississauga, Canada, assignor to ICI Canada Inc., Ontario, Canada

Continuation of Ser. No. 735,690, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 410,466, Sep. 21, 1989, abandoned. This application Nov. 9, 1992, Ser. No. 973,525
Int. Cl.[5] **D21H** *17/74*
U.S. Cl. 162—164.1 **7 Claims**

1. An alkaline paper comprising a fibrous cellulosic material, 1.0 to 10.0% by weight of polymeric vesiculated granules, and 5 to 35% precipitated calcium carbonate filler, said granules having a mean diameter of 1 to 100 microns, the ratio of the granule to the mean vesicle diameter being at least 5:1, the maximum diameter of the vesicles being 20 microns, and the volume of the vesicles being from 5 to 95% of the volume of the granule.

5,332,474

CONVERSION OF PULP AND PAPER MILL WASTE SOLIDS TO A PAPERMAKING FILLER PRODUCT

John V. Maxham, 65 S. Meadows Dr., Appleton, Wis. 54915

Filed Jan. 19, 1993, Ser. No. 4,841
Int. Cl.[5] **D21C** *5/02*
U.S. Cl. 162—189 **11 Claims**

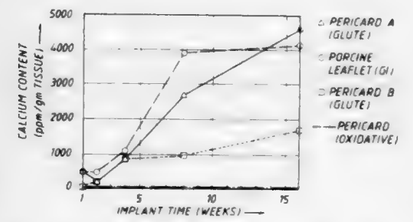
1. A process for improving the drainage characteristics of the fiber fines/clay fraction of waste solids generated by a pulp, paper, paperboard or deinking mill such that it is more suitable as a filler for paper, paperboard, and other fibrous product manufacture, said process comprising the steps of:
a. separating the fiber fines/clay fraction of the waste solids from the other solids;
b. concentrating the fiber fines/clay fraction; and,
c. reacting the fiber fines/clay concentrate with sufficient acid to maintain a Ph not more than 5.0 to improve the drainage characteristics of the fiber fines/clay fraction.

5,332,475

CROSS-LINKING COLLAGENOUS PRODUCT

Gerald L. Mechanic, Chapel Hill, N.C., assignor to University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 557,639, Jul. 30, 1990, Pat. No. 5,147,514, and a continuation-in-part of Ser. No. 388,003, Aug. 2, 1989, abandoned. This application Mar. 12, 1992, Ser. No. 849,898
Int. Cl.[5] **C07K** *3/00*
U.S. Cl. 204—157.68 **9 Claims**



1. The stuble cross-linked collagenous product produced by the process comprising the steps of:
soaking a collagenous tissue sample in an aqueous medium;
immersing the soaked sample in an aqueous buffer including a photooxidative catalyst capable of donating electrons to the amino acids comprising the collagen fibrils of the collagenous tissue sample when excited by incident light to form either inter- or intramolecular or inter- and intramolecular cross-links; and
irradiating the soaked sample in an aqueous buffer including the catalyst with light while maintaining the oxygen concentration of the aqueous buffer so as to sensitize the catalyst into an excited state which is reduced by oxidative cross-linking of the amino acids comprising the collagenous tissue sample, the pH being maintained at between about 6.8 and about 8.6 and the temperature being maintained at between about −2° and about 50° C.

5,332,476

WATER DISTILLATION AND AERATION APPARATUS

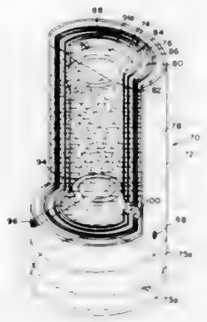
Naisin Lee, 862 Garland Dr., Palo Alto, Calif. 94303

Continuation of Ser. No. 615,945, Nov. 20, 1990, abandoned, which is a division of Ser. No. 456,080, Dec. 22, 1989, Pat. No. 4,976,824, which is a continuation of Ser. No. 207,572, Jun. 16, 1988, abandoned. This application Nov. 17, 1992, Ser. No. 978,302
Int. Cl.[5] **B01D** *3/02*
U.S. Cl. 202—172 **1 Claim**

1. Water distillation apparatus comprising:
a housing having means forming a compartment for receiv-

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ing water to a predetermined level in the housing, said housing having an upper space above the water level, the housing including a cylindrical outer side wall, said housing having a number of cylindrical, spaced inner walls concentric with each other and with the outer wall, said inner walls being arranged and of sufficient number to form a pair of cylindrical compartments and a central cylindrical space for receiving water to a predetermined level in the housing, and a pair of cylindrical fluid passages concentric with the compartments;



means near the lower end of the housing for presenting a fluid receiving lower chamber, said passages being wholly within said outer side wall and extending between and in fluid communication with said upper space and the lower chamber;

a ring-like heater in the housing adjacent to and below the upper level of the water for heating the water to form water vapor in said upper space; and

a ring-like aerator in the space below the heater for aerating the water as the water is heated, said heater and said aerator being concentric with said outer side wall.

5,332,477

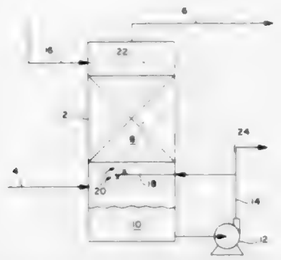
METHOD FOR REDUCING PRESSURE DROP IN A PACKED COLUMN

Sundareswaran P. Iyer; Robert H. Jones, Jr., both of Baton Rouge, La., and David R. Smith, Bright's Grove, Canada, assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 14, 1993, Ser. No. 136,964

Int. Cl.[5] **B01D** *1/02, 3/34*

U.S. Cl. 203—20 **20 Claims**



1. A method for reducing pressure drop in a packed column containing at least one packed section and having (i) at least one circulating, foamable liquid stream; and (ii) at least one gaseous stream whereby contact between (i) and (ii) in the packed column produces a foam sufficient to increase pressure drop across the packed section of the column and wherein the column has a flooding pressure drop, which method comprises injecting a non-foamable liquid into the column at a location, in an amount, and at a temperature which are sufficient to reduce the pressure drop in the packed column to less than 90 percent of the flooding pressure drop.

5,332,478

SEPARATION OF 1-PROPANOL FROM 2-BUTANOL BY AZEOTROPIC DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Jan. 14, 1994, Ser. No. 180,969

Int. Cl.[5] **B01D** *3/36*

U.S. Cl. 203—58 **1 Claim**

1. A method for recovering 1-propanol from a mixture of 1-propanol and 2-butanol which comprises distilling a mixture of 1-propanol and 2-butanol in the presence of an azeotrope forming agent, recovering the 1-propanol and the azeotrope forming agent as overhead product and obtaining the 2-butanol as bottoms product, wherein said azeotrope forming agent consists of one material selected from the group consisting of ethyl acetate, isopropyl acetate, isobutyl acetate, t-butyl acetate, isopropyl ether, t-butyl methyl ether, ethyl ether, acetone, methyl ethyl ketone, methyl isobutyl ketone, methyl isopropyl ketone, 3-pentanone, 4-methyl-2-pentanone, 3,3-dimethyl-2-butanone, methyl formate, ethyl formate, propyl formate, acetol, 1,4-dioxane, 2,2-dimethoxy propane, acetonitrile and tetrahydrofuran.

5,332,479

BIOSENSOR AND METHOD OF QUANTITATIVE ANALYSIS USING THE SAME

Harumi Uenoyama, Osaka, and Hisashi Okuda, Kyoto, both of Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto, Japan

Filed May 15, 1992, Ser. No. 883,367

Claims priority, application Japan, May 17, 1991, 3-113030

Int. Cl.[5] **G01N** *27/26*

U.S. Cl. 204—153.12 **2 Claims**

1. A method for the quantitative analysis of a material comprising:

(a) providing a biosensor comprising a pair of electrodes, a mediator, and a biologically active material located at a distance from one of said electrodes, wherein the said biologically active material is impregnated into an absorbing material, and dried, and wherein said absorbing material containing said dried biologically active material is placed at a distance from said electrode;

(b) supplying a liquid sample of said material, comprising the object substance to be analyzed and an interfering substance, to said biosensor;

(c) reading a first electrochemical signal from said electrode within a time period to allow said mediator to react with said interfering substance and the product of that reactions to reach said electrode, but time period being short enough that a reaction product of said biologically active material and said object substance does not reach said electrode;

(d) reading a second electrochemical signal from said electrode after a time period to allow said reaction product of said biologically active material and said object substance to reach said electrode;

(e) determining a concentration of said interfering substance from said first electrochemical signal, and a combined concentration of said interfering substance and said reaction product from said second electrochemical signal;

(f) subtracting said concentration of said interfering substance from said combined concentration of said interfering substance and said reaction product; and

(g) obtaining thereby a concentration of said object substance.

5,332,480

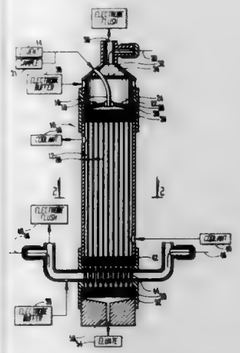
CAPILLARY BED ELECTROPHORESIS

Ravindra Datta, and Robert A. Beardsley, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Oakdale, Iowa

Filed Jun. 16, 1993, Ser. No. 78,577

Int. Cl.[5] **G01N** *27/26, 27/447*

U.S. Cl. 204—180.1 **20 Claims**



13. A method of large-scale separation and collection of components by electrical charge, said method comprising:

placing a multi-component sample in a feed receiving end of a capillary bed electrophoresis device;

said electrophoresis device having an anticonvective packing comprising of plurality of axially disposed capillary tubes for receiving said sample;

separating said components by their charge along an axial electrical gradient created within said tubes;

forcing said components by bulk fluid flow of an eluent through said tubes by means of a pressure differential; and

collecting said separated components at a sample discharge end of the capillary bed electrophoresis device.

5,332,481

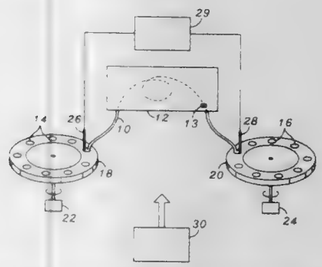
CAPILLARY ELECTROPHORESIS USING REPLACEABLE GELS

Andras Guttman, Palo Alto, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 647,071, Jan. 29, 1991, abandoned. This application Nov. 13, 1991, Ser. No. 793,256

Int. Cl.[5] **G01N** *27/26, 27/447*

U.S. Cl. 204—182.8 **11 Claims**



1. A method of forming a gel filled capillary useful for capillary electrophoresis comprising the steps of:

providing a capillary

providing polymerized gel; and

filling the capillary with polymerized gel.

5,332,482

METHOD AND APPARATUS FOR DEPOSITING AN OXIDE FILM

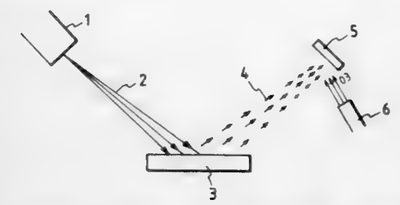
Katsumi Sameshima, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 826,075, Jan. 27, 1992, abandoned. This application Mar. 26, 1993, Ser. No. 37,730

Claims priority, application Japan, May 25, 1991, 3-149416

Int. Cl.[5] **C23C** *14/34*

U.S. Cl. 204—192.11 **5 Claims**



1 A method for depositing an oxide film by ion-beam sputtering comprising sputtering particles from a target toward a surface on which an oxide film is to be formed and supplying ozone adjacent to the surface from an ozonizer to produce a blanket of ozone without oxygen ions adjacent to the surface to oxidize particles that have been sputtered from the target at a location close to the surface before the particles are deposited on the surface while avoiding damage to the deposited film resulting from the presence of ionized oxygen.

5,332,483

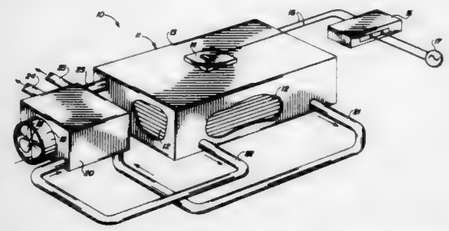
GAS SEPARATION SYSTEM

Arnold Z. Gordon, Beachwood, Ohio, assignor to IGR Enterprises, Inc., Cleveland, Ohio

Continuation of Ser. No. 549,467, Jul. 6, 1990, abandoned. This application Jan. 15, 1992, Ser. No. 821,458

Int. Cl.[5] **C25B** *1/02*

U.S. Cl. 204—265 **26 Claims**



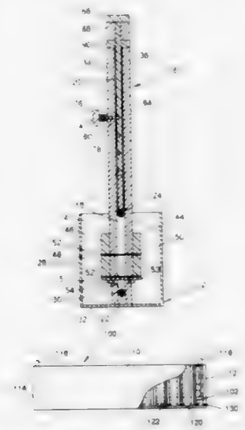
1. An oxygen generator comprising an oxygen separator module, air intake means, oxygen egress means and spent air egress means, said oxygen separation module comprising: a first solid electrolyte composite cell, said cell having a center sheet of a flexible, ductile solid electrolyte composite, said flexible, ductile solid electrolyte composite comprising a ceramic phase and a ductile metallic phase, said metallic phase extending substantially throughout the body of said ceramic phase, said metallic phase composed of a regular, ordered, continuous, repeating array of ductile interconnected metallic ligaments in intimate contact with and substantially surrounded by an ionically conductive ceramic matrix; said flexible, ductile composite sheet having an upper surface and an opposing lower surface, a layer of electronically conductive, gas porous material coating said upper and lower surfaces of said composite sheet whereby a cathode is formed on one of said surfaces and an anode is formed on the opposing surface of said cell; a power source in cooperative association with said oxygen separation module whereby when air is passed through

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said oxygen separation module, the air is separated into oxygen and oxygen depleted air

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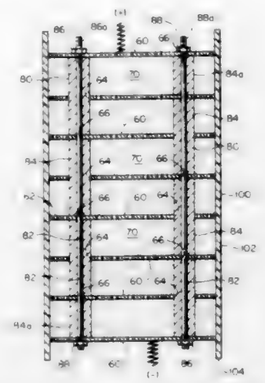
5,332,484
APPARATUS AND PROCESS FOR THE LARGE SCALE SEPARATION AND RETRIEVAL OF PROTEINS FROM CELLULAR EXTRACTS
Craig R. Hilt, Milwaukee, Wis., assignor to Hi-Tech Bio-Tech, Inc., Milwaukee, Wis.
Filed Aug. 2, 1993, Ser. No. 100,836
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—301 18 Claims



1. An electrophoretic device comprising:
A. a lower reservoir defining a lower buffer chamber for storing a first conductive medium;
B. a first electrode in electrical communication with the interior of said lower buffer chamber;
C. an upper reservoir defining an upper buffer chamber for storing a second conductive medium, said upper buffer chamber being positioned in and extending above said lower buffer chamber;
D. a second electrode which can be placed in electrical communication with the interior of said upper buffer chamber; and
E. a slide which is removably insertable in said upper buffer chamber.

8. A pretreatment device for separating a mass of cellular extract into a crude mixture of proteins amenable to further purification, said device comprising.
A. a receptacle for storing a conductive buffer solution, said receptacle having a generally horizontal floor;
B. first and second electrodes positioned in said receptacle; and
C. a plurality of cassettes disposed in said receptacle between said first and second electrodes and extending upwardly from said floor, each of said cassettes including
(1) first and second semipermeable membranes, and
(2) a layer of a conductive gel matrix sandwiched between said first and second membranes.

5,332,485
ELECTROSTATIC FILTER
Donald E. Thompson, Modesto, Calif., assignor to Contamco Corporation, Alexandria, Va.
Filed Jun. 18, 1991, Ser. No. 717,255
Int. Cl.[5] B01D *35/06*
U.S. Cl. 204—302 3 Claims

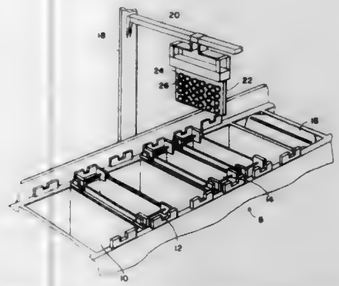


1. A filter cartridge for an electrostatic filter, including:
a non-conductive cylindrical shell, said shell having a longitudinal axis;
a plurality of electrically-conductive electrode members within said shell, said electrode member spaced from each other along the longitudinal axis of said shell to form a stacked array, each electrode member having a substantially planar body with a pair of apertures therethrough in spaced relation to each other and providing edge portions on said electrodes, one of said apertures being larger than the other of said apertures, said electrode members stacked with the smaller aperture of one electrode in axial alignment with the larger aperture of an adjacent electrode;
a plurality of porous filter media pads individually disposed between adjacent electrodes;
a plurality of electrically conductive buss bars for applying a voltage potential to said electrodes extending axially of said shell, the diameter of said buss bars being substantially that of said smaller aperture of the electrodes, each buss bar passing through the aligned holes in said electrode members and through the filter media pads, said buss bars being in electrical contact with said edge portion of said smaller apertures and spaced from said edge portions of said larger apertures; and
a plurality of non-conductive spacers disposed coaxially of said buss bars adjacent said larger apertures, said spacers filling the space formed between said buss bars and the edge portions of said larger aperture to electrically insulate said buss bar from said electrode.

5,332,486
ANTI-OXIDANT COATINGS FOR COPPER FOILS
Dino F. DiFranco, Mayfield Village, Ohio, assignor to Gould Electronics Inc., Eastlake, Ohio
Filed Jan. 29, 1993, Ser. No. 11,367
Int. Cl.[5] C25D *7/06*
U.S. Cl. 205—50 15 Claims

1. A method for increasing oxidation protection and decreasing the nonuniformities in an electrodeposited layer of a treated copper foil or treated copper-based alloy foil, comprising electrodepositing a protective anti-oxidation coating onto at least one surface of said foil from a solution comprising ions of chromium and arsenic.

5,332,487
METHOD AND PLATING APPARATUS
David J. Young, Jr., Phoenix; Scott L. Randall, Mesa; Scott D. Shaw, Chandler, and Andrew F. Wylde, Tempe, all of Ariz., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 22, 1993, Ser. No. 52,495
Int. Cl.[5] C25D *5/02, 21/06, 17/08, 21/10*
U.S. Cl. 205—80 29 Claims



17. A method for electroplating a member comprising:
immersing a holder having a non-rotatably mounted member into an electroplating liquid;
generating ions in the electroplating liquid;
moving ions to the member for deposition onto a surface thereof;
producing relative oscillatory motion between the liquid and the non-rotatably mounted member by imparting relative oscillatory motion to the holder to promote a uniform thickness of plating material at the outer boundary of the member as compared to the thickness of plating material deposited elsewhere on the member.

5,332,488
SURFACE TREATMENT FOR IRON-BASED PERMANENT MAGNET INCLUDING RARE-EARTH ELEMENT
Katsuo Mitsuji, Alma, Mich., assignor to Hitachi Magnetics Corporation, Endmore, Mich.
Continuation of Ser. No. 750,609, Aug. 27, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,519
Int. Cl.[5] C25D *5/00*
U.S. Cl. 205—181 7 Claims

1. A surface treatment for a R—TM—X type of permanent magnet material comprising:
mechanically working said permanent magnet to form a magnet substrate;
degreasing said magnet substrate;
removing a surface layer of said magnet substrate, whose quality is changed in the step of mechanically working, by a first etching, using from 0.2 to 10 vol % of a nitric acid, and a second etching, using a mixture of 0.2 to 10 vol % oxygenated water and from 10 to 30 vol % of an acetic acid;
forming a non-bright nickel-plating, of from about 5 to about 25 μm thickness, on said magnet substrate;
forming a copper layer on said magnet substrate prior to the step of forming said non-bright nickel layer;
forming a semi-bright nickel plating, of from about 1 to about 15 μm thickness, on said non-bright nickel plating;
forming a chromate layer, of from about 0.0001 to about 10 μm thickness, on said semi-bright nickel plating;
said step of forming a chromate layer includes a chromate treatment comprising dipping said magnet in a chromate solution, wherein said chromate solution is acidic consisting essentially of at least one of chromic acid anhydride and dichromic acid with a chrome concentration of at least 0.01 mol/l; and
neutralizing said chromate layer using alkalines;
said step of neutralizing said chromate layer includes immersing said magnet in a deliquescent solution containing at least one of a sodium hydroxide and potassium hydroxide;
where R is at least one of about 5 to 40 wt % of an element and a mixture of Nd, Pr, and Dy, TM comprises of iron and one of from about 0.5% to about 15 wt % of Co and from about 0.5 wt % of Al, and X is at least one of about 0.2 to 8 wt % of an element and a mixture of elements comprising B and N.

5,332,489
HYDROCONVERSION PROCESS FOR A CARBONACEOUS MATERIAL
Lavanga R. Veluswamy, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Jun. 11, 1993, Ser. No. 75,711
Int. Cl.[5] C10G *45/08, 1/00, 1/06*
U.S. Cl. 208—56 9 Claims

1. A process for hydroconverting a carbonaceous material comprising
forming a mixture of carbonaceous material and hydrogen donor solvent;
reacting the mixture in the presence of a hydrogen containing gas, under hydroconversion conditions, to form a hydroconversion product stream;
separating a liquid fraction of the hydroconversion product stream, wherein the liquid fraction has an initial boiling point of about 350° F., into a clarified fraction and ash residuum; and
hydrocracking the clarified fraction in the presence of hydrogen and a catalyst consisting of an activated metal prepared from an oil soluble or oil dispersible metal compound, under hydrocracking conditions, wherein the metal has a concentration of about 2–20 wt % on the basis of the clarified fraction being hydrocracked, and is selected from the group consisting of Groups II, III, IV, V, VIB, VIIB and VIII of the Periodic Table of Elements, to form a hydrocarbon product stream.

5,332,490
CATALYTIC PROCESS FOR DEWAXING HYDROCARBON FEEDSTOCKS
Robert J. Taylor, Jr.; Pei-Shing E. Dai, both of Port Arthur; Randall H. Petty, Port Neches, and Joseph A. Durkin, Groves, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Sep. 28, 1992, Ser. No. 952,037
Int. Cl.[5] C10G *47/20*
U.S. Cl. 208—111 18 Claims

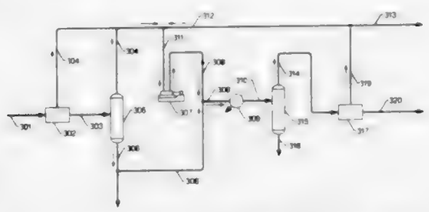
1. A process for hydrodewaxing a hydrocarbon oil feedstock boiling above about 350° F. which comprises contacting said feedstock and hydrogen at a hydrogen pressure of from about 300 to about 2000 psig, a temperature of from about 400 ° to about 900° F. and a space velocity of about 0.1 to about 10 LHSV, with a catalyst comprising about 0.1 to about 23 wt. %, based on the total weight of the catalyst, of at least one metal oxide selected from the group consisting of a Group VIII metal and an oxide of a Group VIB metal supported on a porous support comprising alumina containing about 50 to about 85 wt. % of a crystalline aluminosilicate zeolite based on the weight of the support, and wherein the catalyst is further characterized by having greater than about 60% of the pore volume of pores having diameters between 45–600 Angstroms in the 70 to 200 Angstrom range and having about 50 to about 60% of the total pore volume in pores having diameters less than 100 Angstroms.

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5,332,491
IRON SULFIDE DISPERSING AGENTS
Sherri L. Fisher, Sugarland, and Bradley D. Mercer, Houston, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.
Filed May 4, 1993, Ser. No. 57,506
Int. Cl.[5] C10G *17/10;* **C07C** *7/00*
U.S. Cl. 208—251 R **6 Claims**

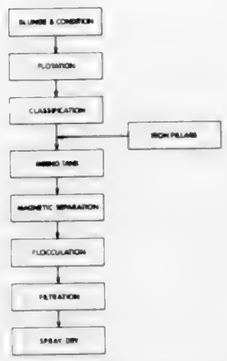
1. A method for dispersing iron sulfide in hydrocarbon and halogenated hydrocarbon streams, wherein the hydrocarbon stream contains iron sulfide precursors, the precursors being reactive with one another such that iron sulfide particles are immediately formed within the hydrocarbon streams when the precursors react, comprising:
providing a dispersant comprising a copolymer of an α-olefin having from about 10 to about 35 carbon atoms and mixtures thereof and maleic anhydride, wherein the weight ratio of said α-olefin to said maleic anhydride is from about 1:1 to about 1:5 and the weight average molecular weight of said copolymer is from about 5000 to about 100,000 ; and
injecting the dispersant into a hydrocarbon stream

5,332,492
PSA PROCESS FOR IMPROVING THE PURITY OF HYDROGEN GAS AND RECOVERY OF LIQUEFIABLE HYDROCARBONS FROM HYDROCARBONACEOUS EFFLUENT STREAMS
Richard T. Maurer, Nanuet; Michael J. Mitariten, Peekskill; Roger J. Weigand, Croton On Hudson, all of N.Y., and Michael Whysall, Wilrijk, Belgium, assignors to UOP, Des Plaines, Ill.
Filed Jun. 10, 1993, Ser. No. 74,629
Int. Cl.[5] C10G *35/04, 67/06, 25/06*
U.S. Cl. 208—340 **26 Claims**



1. A process for producing a hydrogen-rich gas stream by treating an effluent comprising hydrogen and hydrocarbon from a catalytic hydrocarbon conversion reaction zone comprising the steps of:
(a) passing at least a portion of said effluent to a first vapor-liquid separation zone and recovering therefrom a first hydrogen-rich gas stream having an initial hydrogen purity and a first liquid stream comprising hydrocarbons;
(b) admixing a portion of the first hydrogen-rich gas stream, at least a portion of a tail gas stream, and at least a portion of the first liquid stream to produce a first admixture;
(c) passing the first admixture to a second vapor-liquid separation zone to produce a second hydrogen-rich gas stream and a second liquid stream;
(d) passing said second hydrogen-rich gas stream to a pressure swing adsorption zone containing an adsorbent selective for the separation of hydrogen from hydrocarbons and separating said second hydrogen-rich gas stream into a third hydrogen-rich stream and the tail gas stream; and,
(e) recovering at least a portion of said third hydrogen-rich stream as a high purity hydrogen product.

5,332,493
METHOD FOR IMPROVING RHEOLOGICAL PROPERTIES OF KAOLIN CLAYS
Michael W. Ginn, Wrightsville, and Gary L. Cobb, Davisboro, both of Ga., assignors to ECC International Inc., Atlanta, Ga.
Filed Apr. 28, 1992, Ser. No. 875,041
Int. Cl.[5] B03B *1/04, 7/00;* **B03C** *1/02*
U.S. Cl. 209—164 **9 Claims**

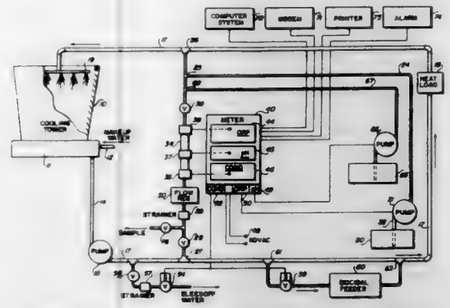


1. A method for beneficiating a kaolin clay which includes quantities of smectite contaminants to reduce the low and high shear viscosities of high solids aqueous slurries of said kaolin, comprising:
converting the smectite into a pillared smectite by intercalating said smectite with a polymeric cationic hydroxy metal complex wherein said metal is ferromagnetic or diamagnetic;
subjecting the said kaolin and pillared smectite as an aqueous slurry to high intensity magnetic separation, to separate the pillared smectite from the remaining kaolin clay; and
recovering the beneficiated kaolin as product.

5,332,494
WATER CONTROL SYSTEM USING OXIDATION REDUCTION POTENTIAL SENSING
Todd R. Eden, Scottsdale, and Jerome H. Ludwig, Phoenix, both of Ariz., assignors to h.e.r.c. Incorporated, Phoenix, Ariz.
Continuation-in-part of Ser. No. 59,514, May 17, 1993, Pat. No. 5,268,092, which is a continuation of Ser. No. 829,762, Feb. 3, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 99,738
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[5] B01D *17/12*
U.S. Cl. 210—96.1 **11 Claims**

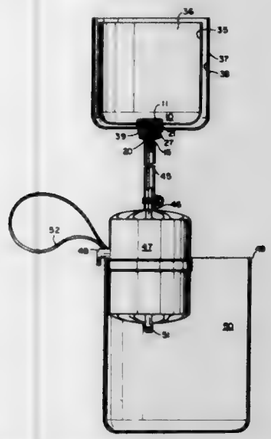
1. An automatic control system adapted for controlling scale formation in a water circulating system comprising:
first sensing means for measuring the oxygen reduction potential (ORP) of the circulating water, the water containing a soap having a 1:1 stoichiometric equivalent of a mineral acid and a base selected from the group consisting of an amine and ammonia for controlling scale formation in said system and

supply means for automatically supplying said soap in response to a predetermined ORP measured by said first



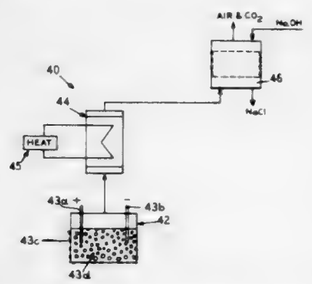
sensing means substantially corresponding to a pH higher or lower than a selected range for controlling said scale.

5,332,495
CONNECTOR APPARATUS
Richard T. Williams, P.O. Box 39, Uwchland, Chester County, Pa. 19480
Filed Apr. 16, 1992, Ser. No. 869,761
Int. Cl.[5] B01D *35/00*
U.S. Cl. 210—172 **6 Claims**



2. A detachable connector apparatus for use with a flexible plastic film bag, said bag having a wall, to provide an outlet through the wall of the bag for fluid flow, comprising
nipple means for pushing through the wall of the plastic film bag for providing an outlet through the wall for fluid flow,
said nipple means having a base and a tapered stem projecting from said base, said stem having an outer tapered surface,
a passageway extending through said base and said stem,
a groove formed on said stem,
an O-ring positioned in said groove of said stem, and
seal creating means for creating a seal between a portion of the wall of the plastic bag and the stem,
said seal creating means including
a nipple clamp having a tapered passageway removably engaging the outer tapered surface of said stem for compressing a portion of the wall of the plastic bag and said O-ring between said nipple clamp and said stem,
the flange means of the base of the nipple means being an outwardly extending annular flange,
the nipple clamp having a base having an outwardly extending annular flange, said base of the nipple means including outwardly extending flange means positioned proximate the base of the nipple clamp for bracketing the flexible plastic film bag between the flange of the nipple means and the flange of the nipple clamp, said stem having an outer tapered surface, and
the annular flange of the base of the nipple means and the annular flange of the base of the nipple clamp forming opposed walls for positioning a portion of the wall of the plastic bag between.

5,332,496
SYSTEM FOR PERFORMING CATALYTIC DEHALOGENATION OF AQUEOUS AND/OR NON-AQUEOUS STREAMS
Firooz Rasouli, Northbrook, and Edwin K. Krug, Wheeling, both of Ill., assignors to ElectroCom Gard, Ltd., Niles, Ill.
Filed Apr. 12, 1993, Ser. No. 44,730
Int. Cl.[5] C02F *1/461, 1/70*
U.S. Cl. 210—180 **9 Claims**



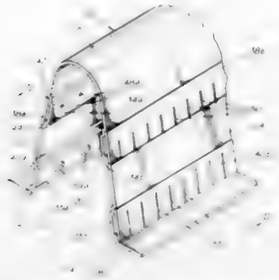
1. A system for removing contaminants from a solution comprising:
a device having a noble metal catalyst therein, the device further having a contaminated solution therein and further having hydrogen and electrodes for generating the hydrogen in situ from said contaminated solution to produce first vapor phase reactants;
a reactor constructed and arranged to receive the first vapor phase reactants wherein the reactor oxidizes the first vapor phase reactants resulting in second vapor phase reactants; and
a scrubber constructed and arranged to receive the second vapor phase reactants wherein the scrubber removes a portion of the second reactants.

5,332,497
NOZZLELESS UNDERDRAIN FOR GRANULAR FILTRATION SYSTEM
Edward M. Shea, and J. Holland Scott, both of Salt Lake City, Utah, assignors to Baker Hughes Incorporated, Houston, Tex.
Filed Oct. 25, 1991, Ser. No. 782,136
Int. Cl.[5] B01D *24/42*
U.S. Cl. 210—274 **39 Claims**

1. A self-supporting underdrain member for use in a liquid filtration system, comprising:
a main body including a plurality of longitudinally extending side walls connected by an upper wall to define a chamber for guiding an effluent to an outlet during a filtering operation and a backwash fluid from a fluid source during a cleaning operation, at least one of said side walls being provided with a substantially longitudinally coextensive recess;
a cover plate attached to said one of said side walls over said

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recess to form a plenum at such wall, said one of said side walls being formed with a plurality of first orifices to establish communication between said chamber and said plenum, said cover plate being provided with a plurality of second orifices to establish communication between said plenum and a filter-medium-containing space overlying the underdrain member in the liquid filtration system; and



attachment means for attaching said main body to a floor surface including a first flange and a second flange, said first flange defining a recess for matingly receiving the second flange of another underdrain in the filtration system.

5,332,498

INTEGRATED HOLLOW FIBER MEMBRANE PERMEATORS AND METHOD OF FABRICATING INTEGRATED PERMEATORS

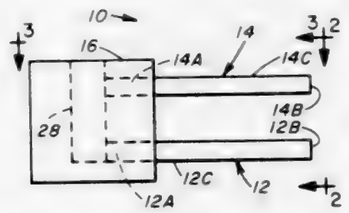
Jan Rogut, Boulder, Colo., assignor to Transfair Corporation, Wheatridge, Colo., a part interest

Continuation-in-part of Ser. No. 961,140, Oct. 13, 1992, Pat. No. 5,238,562. This application May 11, 1993, Ser. No. 60,345

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] **B01D** *63/02*

U.S. Cl. 210—321.8 **37 Claims**



1. An integrated hollow fiber membrane permeator, comprising:

(a) at least first and second groups of hollow fibers of permeable membrane material, each of said hollow fibers of said groups having first and second spaced opposite end portions and an elongated main portion extending between and interconnecting said first and second opposite end portions, each of said hollow fibers of each group also having an internal flow channel extending through said main portion, said internal flow channel having first and second ends at said first and second opposite end portions of said hollow fiber; and

(b) at least one elongated solid non-permeable support body encapsulating and supporting interiorly one of said first and second opposite end portions of said hollow fibers of said groups and containing interiorly at least first and second flow distribution passages communicating respectively with corresponding ones of said first and second ends of said internal flow channels of said hollow fibers of said groups, said one elongated solid non-permeable support body also having at least one external port opening to the exterior thereof and containing at least one flow feed passage communicating said first and second flow distribution passages to said one external port.

5,332,499

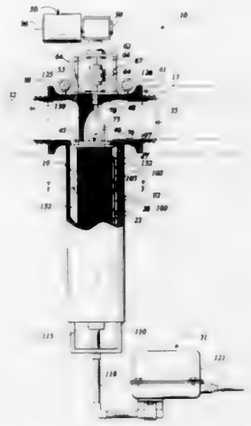
SELF-CLEANING FILTER

Glenn E. Spencer, Box 8204 Hwy. 403, Charlestown, Ind. 47111

Filed Oct. 28, 1992, Ser. No. 967,401

Int. Cl.[5] **B01D** *33/00*

U.S. Cl. 210—396 **8 Claims**



1. A self-cleaning filter for removing solid particles from a liquid slurry comprising agglomerates of solid particles, the self-cleaning filter comprising:

a casing having an inlet for receiving material to be filtered and an outlet for discharging filtered material;

a tubular filter screen disposed in the casing and having a length, a circumference, an exterior surface and an interior surface, the tubular filter screen being rotatable in a direction and forming an inlet chamber between the casing and the exterior surface in flow communication with the casing inlet and an outlet chamber within the interior surface in flow communication with the casing outlet, so that the slurry is filtered from the exterior surface of the tubular filter screen to the interior surface;

first means for breaking-up a first portion of agglomerates deposited on the exterior surface of the tubular filter screen, forcing a first portion of the solid particles through the tubular filter screen, and suspending in the slurry a second portion of agglomerates deposited on the tubular filter screen, the first means comprising a first cleaning blade disposed in the inlet chamber and removably fixed to the casing, the first cleaning blade (1) having a leading edge biased against the exterior surface of the filter screen, (2) extending from a first blade holder toward the leading edge of the, first cleaning blade in a direction substantially opposing the direction of rotation of the tubular filter screen, and (3) extending along the length of the filter screen;

a second means for catching and breaking-up the second portion of agglomerates and forcing a second portion of solid particles through the tubular filter screen, the second means comprising a second cleaning blade disposed in the inlet chamber and removably fixed to the casing, the second cleaning blade (1) having a leading edge biased against the exterior surface of the filter screen, (2) extending from a second blade holder toward the leading edge of the second cleaning blade in a direction substantially opposing the direction of rotation of the tubular filter screen, and (3) extending along the length of the filter screen, the second cleaning blade being spaced from the first cleaning blade at a position about the circumference of the tubular filter screen from about 75° to about 115° from the first cleaning blade; and

means for rotating the tubular filter screen relative to the first and second cleaning blades.

5,332,500

THREE-PHASE CYCLONE SEPARATOR

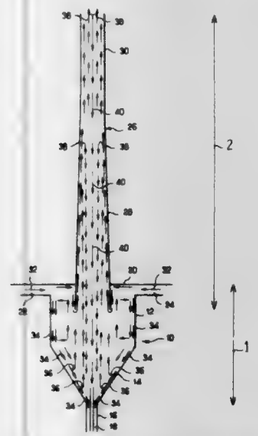
Jacques Seureau, Aulon; Bu-Feng Ma, Toulouse; Yves Aurelle, Aucamville, and Dimitre Hadjiev, Toulouse, all of France, assignors to Elf Aquitaine Production, France

Filed Apr. 12, 1993, Ser. No. 45,116

Claims priority, application France, Apr. 14, 1992, 92 04608

Int. Cl.[5] **B04C** *7/00;* **B01D** *21/26*

U.S. Cl. 210—512.1 **4 Claims**



1. Three-phase cyclone separator for separating a mixture or an emulsion into a low density phase, a high density phase and an intermediate density phase, comprising a body formed by a cylindrical part extended at one of its ends by a converging, substantially conical part, at least one intake mounted tangentially on the cylindrical part and a substantially tubular element mounted on the body and communicating hydraulically therewith, wherein the substantially tubular element is mounted on an annular element closing the end of the cylindrical part opposite the substantially conical part, the substantially tubular element projecting into the body beyond the annular element, and the substantially conical part is fitted, towards its apex, with a first outlet for said low density phase and a second outlet for said high density phase and the substantially tubular element defines, at its end opposite to said body, a third outlet for said intermediate density phase and wherein the substantially tubular element, the body and the three outlets are arranged coaxially.

5,332,501

APPARATUS FOR REMOVING LIQUID FROM AN AIR-LIQUID SEPARATOR

John K. Mangialardi, Seabrook, Tex., assignor to Grumman Aerospace Corporation, Bethpage Long Island, N.Y.

Filed Jul. 20, 1992, Ser. No. 915,255

Int. Cl.[5] **B01D** *19/00, 21/26*

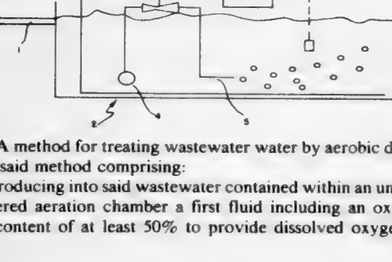
U.S. Cl. 210—512.3 **8 Claims**

1. Apparatus for removing liquid from an air-liquid separator having a liquid collecting portion and an air discharge tube, the device comprising:

a) means defining a chamber having a peripheral wall and an interior space in communication with the liquid collecting portion of the air-liquid separator such that liquid in the liquid collecting portion may enter the interior of the chamber;

b drive means operatively associated with the chamber so as to rotate the chamber about an axis to thereby cause liquid within the chamber to be displaced against the peripheral wall;

c) a pitot tube having a first end located within the chamber adjacent to the peripheral wall such that liquid collected



on the peripheral wall will pass through the pitot tube as the chamber rotates, and a second end located exteriorly of the chamber and the air-liquid separator;

d) means operatively associated with the chamber means to draw liquid from the liquid collecting portion of the air-liquid separator into the chamber as the chamber rotates wherein the chamber means has an end wall and wherein the means to draw liquid into the chamber comprises a plurality of radially extending vanes protruding from the end wall into the chamber means; and,

e) air bleed passage means communicating with the interior of the chamber to allow air to pass from the interior of the chamber means wherein the air bleed passage means is operatively connected with the air discharge tube.

5,332,502

WASTEWATER TREATMENT

Denys A. Wickens, Flagtown, N.J.; Brian J. Johnson, Gladesville, and Mervyn R. Ogston, Rocklea, both of Australia, assignors to The Commonwealth Industrial Gases Ltd., St. Leonards, Australia

Continuation of Ser. No. 946,252, Sep. 16, 1992, abandoned, which is a continuation of Ser. No. 785,740, Oct. 31, 1991, abandoned. This application Jun. 4, 1993, Ser. No. 72,659

Claims priority, application Australia, Nov. 2, 1990, PK3149

Int. Cl.[5] **C02F** *3/26, 3/30*

U.S. Cl. 210—605 **17 Claims**

1. A method for treating wastewater water by aerobic digestion, said method comprising:

introducing into said wastewater contained within an uncovered aeration chamber a first fluid including an oxygen content of at least 50% to provide dissolved oxygen in

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accordance with a selected base load aerobic digestion capacity wherein said first fluid is produced on-site in conjunction with said wastewater treatment; and

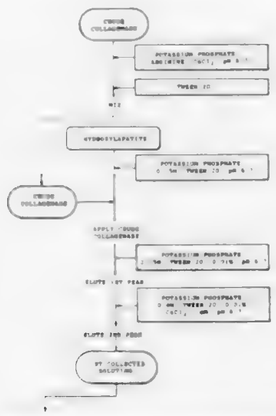
substantially simultaneously selectively introducing into said wastewater within the same aeration chamber in response to a reduction in the dissolved oxygen content of the wastewater, a second fluid to provide an additional variable load aerobic digestion capacity, wherein said base load and said variable load capacity in total provide a selected total aerobic digestion capacity.

5,332,503

PROCESS FOR PURIFYING COLLAGENASE

Catherine Lee, Laguna Hills; Cynthia Hornacek, Trabuco Cyn., and Tan T. Dinh, Garden Grove, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Apr. 16, 1993, Ser. No. 73,272
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 **16 Claims**



10. An process for purifying collagenase compositions comprising the steps of:

digesting a crude collagenase solution containing collagenase, pigment, toxins, bacterial materials, and proteolytic enzyme impurities, including clostripain, trypsin, and caseinase, in a solution comprising magnesium chloride, potassium phosphate, and deoxyribonuclease;

dialyzing the digested crude collagenase solution against a solution comprising about 0.15 M potassium phosphate, about 5 mM arginine, and about 1 mM $CaCl_2$, buffered to about pH 6.7, to provide a dialysate;

centrifuging said dialysate to provide a supernatant;

applying said supernatant to a hydroxylapatite packed chromatography column;

eluting pigment with a first solution comprising about 0.15 M potassium phosphate, about 0.01 wt. % nonionic surfactant, and about 1 mM $CaCl_2$, buffered to about pH 6.7;

eluting proteolytic enzyme impurities and collagenase with a second solution comprising about 0.4 M potassium phosphate, about 0.01 wt. % nonionic surfactant, and about 1 mM $CaCl_2$, buffered to about pH 6.7, to provide a first collected solution;

applying said first collected solution to a gel filtration packed chromatography column;

eluting collagenase and clostripain with a third solution comprising about 1.5 M NaCl, about 5 mM $CaCl_2$, and about 5mM Tricine, buffered to about pH 7.5, to provide a second collected solution;

applying said second collected solution to a Reactive Red 120-Agarose packed chromatography column; and

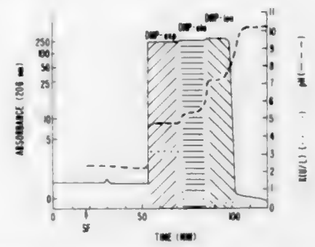
eluting purified collagenase with a fourth solution comprising about 1.5 M NaCl, about 5mM $CaCl_2$, and about 5 mM Tricine, buffered to about pH 7.5.

5,332,504

PH-ZONE-REFINING COUNTERCURRENT CHROMATOGRAPHY

Yoichiro Ito, Bethesda, and Adrian Weisz, Silver Spring, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 5, 1993, Ser. No. 26,939
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 **16 Claims**



1. A method for separating a quantity of an acidic compound from other compounds in a mixture using pH-zone-refining countercurrent chromatography, comprising:

(a) adding acid to a first liquid phase of two pre-equilibrated immiscible liquid phases and charging a countercurrent chromatographic centrifuge column with said first liquid phase, thereby producing a countercurrent chromatographic centrifuge column charged with said thus acidified first liquid phase;

(2) adding base to a second liquid phase of said two pre-equilibrated immiscible liquid phases to form a basic mobile phase;

(3) introducing said mixture into said countercurrent chromatographic centrifuge column thus charged with said acidified first liquid phase; and

(4) passing said basic mobile phase through said countercurrent chromatographic centrifuge column thus charged with said mixture and said acidified first liquid phase, to elute said acidic compound from said countercurrent chromatographic centrifuge column.

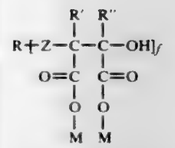
5,332,505

METHOD FOR INHIBITING SILICA AND SILICATE DEPOSITION

William S. Carey, Ridley Park; Andrew Solov, Holland, and Libardo A. Perez, Morrisville, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 2, 1992, Ser. No. 955,569
Int. Cl.[5] C02F *5/14*
U.S. Cl. 210—697 **14 Claims**

1. A method of inhibiting the deposition of silica and silicate compounds on the metal surfaces in contact with an aqueous system comprising adding to the system a sufficient amount for the purpose of a water soluble compound having the formula:



wherein R is an alkyl or aryl moiety or a repeat unit obtained after polymerization of an ethylenically unsaturated compound; R′ and R″ are hydrogen, C_{1-4} alkyl or C_{1-4} substituted alkyl; Z is NH, NR, O or S; f is a positive integer; and M is H, a water soluble cation or a C_1–C_3 alkyl group.

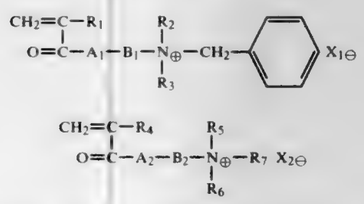
5,332,506

WATER CLARIFICATION

Robert A. Marble, Sugar Land, Tex., and Timothy L. Sweeney, Houma, La., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Dec. 13, 1993, Ser. No. 165,690
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—705 **7 Claims**

1. A method of recovering water during or after an acid workover which includes dispersed solids and emulsified oil, the method comprising the step of treating the water with an effective amount of a dispersion of a water-soluble cationic polymer, said dispersion of the water-soluble cationic polymer being prepared by polymerizing a water-soluble monomer mixture containing at least 5 mole % of a cationic monomer represented by general formula (I) and at least 5 mole % of acrylamide or methacrylamide in an aqueous solution of a polyvalent anionic salt, said polymerization is carried out in the presence of a dispersant polymer, said dispersant polymer being a water-soluble cationic polymer which is soluble in said aqueous solution of the polyvalent anionic salt and which contains at least 20 mole % of cationic monomer units represented by a general formula (II):



(I)

(II)

wherein R_1 and R_4 are each H or CH_3; R_2, R_3, R_5 and R_6 are each an alkyl group having 1 to 2 carbon atoms; R_7 is a hydrogen atom or an alkyl group having 1 to 2 carbon atoms; A_1 and A_2 are each an oxygen atom or NH; B_1 and B_2 are each 2 to 4 carbon atoms or a hydroxypropyl group and X_1— and X_2— are each a counter anion.

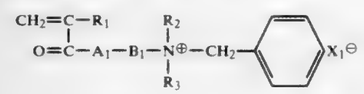
5,332,507

RECOVERY OF OIL FROM WASTE OIL FLUIDS

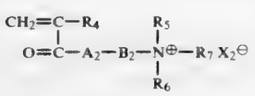
Michael L. Braden, Stafford, Tex.; Wayne M. Carlson, Batavia, Ill.; Manian Ramesh, and Ananthasubramanian Sivakumar, both of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Mar. 1, 1993, Ser. No. 24,560
Int. Cl.[5] B01D *17/05*
U.S. Cl. 210—708 **7 Claims**

1. A method of recovering or recycling waste oil fluids which include at least about 40% oil, dispersed solids and emulsified water, the method comprising the step of treating the waste oil with an effective amount of a surfactant and a dispersion of a water-soluble cationic polymer, said dispersion of the water-soluble cationic polymer being prepared by polymerizing a water-soluble monomer mixture containing a least 5 mole % of a cationic monomer represented by general formula (I) and at least 5 mole % of acrylamide or methacrylamide in an aqueous solution of a polyvalent anionic salt, said polymerization is carried out in an aqueous solution including from about 1 to about 10 percent by weight based on the total weight of the monomers of a dispersant polymer, said dispersant polymer being a water-soluble cationic polymer which is soluble in said aqueous solution of the polyvalent anionic salt and which contains at least 20 mole % of cationic monomer units represented by a general formula (II):



(I)



(II)

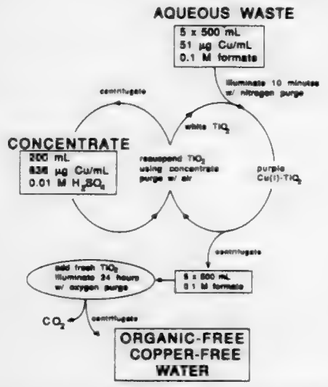
wherein R_1 and R_4 are each H or CH_3; R_2, R_3, R_5 and R_6 are each an alkyl group having 1 to 2 carbon atoms; R_7 is a hydrogen atom or an alkyl group having 1 to 2 carbon atoms; A_1 and A_2 are each an oxygen atom or NH; B_1 and B_2 are each 2 to 4 carbon atoms or a hydroxypropyl group and X_1- and X_2- are each a counter anion once treated, the emulsified water and dispersed solids flocculate; and removing the flocculated emulsified water and dispersed solids from the treated waste oil.

5,332,508

REVERSIBLE PHOTODEPOSITION AND DISSOLUTION OF METAL IONS

Nancy S. Foster, Boulder; Carl A. Koval, Golden, and Richard D. Noble, Boulder, all of Colo., assignors to Regents of the University of Colorado, Boulder, Colo.

Filed Sep. 20, 1993, Ser. No. 123,730
Int. Cl.[5] C02F *1/32*
U.S. Cl. 210—711 **11 Claims**



1. A photocatalytic method for removing metal contaminants from an aqueous phase comprising:

a) contacting a first solution containing metal contaminants with a semiconductor photocatalyst;

b) illuminating said first solution whereby said metal is photodeposited onto said photocatalyst forming a metal-photocatalyst complex;

c) separating said metal-photocatalyst complex from said first solution;

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d) contacting said metal-photocatalyst complex with a second solution whereby said metal is resolubilized;
e) separating said resolubilized metal and photocatalyst, and
f) reusing said separated photocatalyst in step a.

5,332,509

CHEMICAL PROCESS FOR REMOVING ORGANOMETALLIC COMPOUNDS FROM WATER

Andrew P. Murphy, Littleton, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 24, 1993, Ser. No. 21,437
Int. Cl.[5] C02F *1/62*
U.S. Cl. 210—719 **6 Claims**

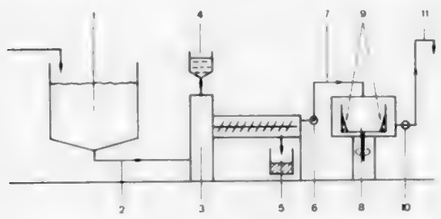
1. In a chemical process for selectively removing organometallic compounds from water supplies where said organometallic compounds contain an element selected from the group consisting of arsenic, cadmium and zinc, the improvement comprising adding to said water supplies, a combination of metals consisting of a transition metal selected from the group consisting of nickel, copper, iron and zinc, and an electropositive metal selected from the group consisting of magnesium and aluminum, one gram of each metal in said combination being added to about 20 mL of said water supplies to react with said organometallic compounds, and removing said organometallic compounds and said combination of metals from said water supplies.

5,332,510

PROCESS FOR CLEANING ROLLING OILS

Rudolf Baur; Hanspeter Krähenbühl; Urs Giger, and Emil Merki, all of Kreuzlingen, Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Oct. 18, 1993, Ser. No. 138,758
Claims priority, application Switzerland, Nov. 10, 1992, 03 470/92
Int. Cl.[5] C02F *1/54*
U.S. Cl. 210—729 **8 Claims**



1. Process for cleaning rolling oils which comprises: providing rolling oil contaminated with aluminum rolling fines originating from aluminum metals; adding from 2 to 8 g of dimeric oleic acid to each 1000 g of contaminated oil to form a mixture; and coagulating the mixture.

5,332,511

PROCESS OF SANITIZING SWIMMING POOLS, SPAS AND, HOT TUBS

Walter A. Gay, Cheshire; Bonnie B. Sandel, Milford, and Jayne F. Carney, Wolcott, all of Conn., assignors to Olin Corporation, Stamford, Conn.

Filed Jun. 25, 1993, Ser. No. 81,899
Int. Cl.[5] C02F *1/50, 1/78*
U.S. Cl. 210—755 **10 Claims**

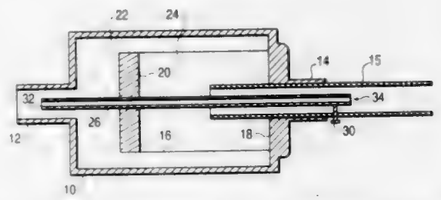
1. A process for sanitizing water in swimming pools, spas, and hot tubs whereby the level of bacteria in said water is lowered comprising:
treating said water with a bactericidal effective amount of a combination of di-isodecyl dimethyl ammonium chloride and copper (II) ions, the concentration of di-isodecyl dimethyl ammonium chloride in said water being less than about 60 parts per million parts of water by weight; and
treating said water at least intermittently with an oxidant selected from the group consisting of available chlorine and ozone; wherein if said oxidant is available chlorine, then about 0.5 to about 30 ppm by weight of said available chlorine is added to said water at least once every thirty days; and wherein if said oxidant is ozone, then the amount of ozone added to the water is sufficient to meet the required oxidant demand for said water and is sufficient to result in at least 0.1 mg/liter residual ozone at the ozone discharge into said water.

5,332,512

ISOKINETIC DILUTER FOR PARTICLE MEASURING INSTRUMENT

David Wells, Arlington, Va., assignor to Pacific Scientific Company, Newport Beach, Calif.

Continuation of Ser. No. 810,134, Dec. 19, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 43,147
Int. Cl.[5] B01D *37/00;* **G01N** *1/18*
U.S. Cl. 210—790 **20 Claims**



9. A method of determining the size distribution of particles in a flowing fluid sample containing particles suspended therein, comprising dividing the flowing fluid sample into a first and second sub-stream, filtering the particles from said first sub-stream to form said first sub-stream into a filtered steam while leaving particles suspended in said second sub-stream in the same size distribution as in said fluid sample, and then mixing said filtered stream and said second sub-stream together into a combined stream and measuring the size distribution of the particles in said combined stream.

5,332,513

PARTICULATE FABRIC SOFTENING AND DETERGENT COMPOSITIONS

Jan R. P. Doms, Tongeren; Marcel J. E. G. Gillis, Argenteau; Pierre M. Lambert, Cortil-Wodon; Paul A. Heckles, Tilff, all of Belgium; Eduardo E. Puentes-Bravo, Concepción, Chile; Anita Hermosilla M, Othee, Belgium; Jean-Paul M. H. F. Grandmaire, Andrimont, Belgium, and Viviane E. A. Tack, Ayeneux, Belgium, assignors to Colgate-Palmolive Co., New York, N.Y.

Continuation-in-part of Ser. No. 755,965, Sep. 6, 1991, abandoned, and a continuation-in-part of Ser. No. 756,030, Sep. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 638,945, Jan. 9, 1990, Pat. No. 5,126,060. This application May 15, 1992, Ser. No. 884,499
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] D06M *10/08*
U.S. Cl. 252—8.6 **19 Claims**

1. A particulate agglomerated fabric softening composition of improved fabric softening action and reduced tendency to objectionably discolor dark colored laundry washed in cold wash water in which the fabric softening composition is present, which comprises 50 to 90% by weight of a fabric softening clay powder agglomerated into particles with a normally solid co-melt of a mixture of a pentaerythritol ester of a higher fatty acid of 12 to 18 carbon atoms and nonionic surfactant, with the melting point of said mixture being in the range of 30° to 45° C. and the proportions being such that said fabric softening composition comprises 5 to 30% of said pentaerythritol ester of higher fatty acid and 5 to 45% of said nonionic surfactant.

5,332,514

CONTINUOUS PROCESS FOR PREPARING OVERBASED SALTS

Kenneth L. Kreuz, Cold Spring; Tze-Chi Jao, Fishkill; Brian L. Papke, Wappingers Falls, and Edward R. Arndt, Glenham, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 6, 1990, Ser. No. 563,600
Int. Cl.[5] C10M *135/10*
U.S. Cl. 252—25 **7 Claims**

1. A continuous method of preparing an overbased calcium sulfonate which comprises repeating the following steps until a desired TBN is obtained, said method comprising:
(a) contacting $Ca(OH_2$ and methanol with a normal calcium sulfonate hydrocarbon solution at a temperature ranging from about 60° C. to about 100° C. to solubilize at least a portion of the $Ca(OH)_2$;
(b) filtering the sulfonate solution to separate and remove the non-solubilized $Ca(OH)_2$ from the solubilized $Ca(OH)_2$ contained in an obtained sulfonate filtrate;
(c) treating said sulfonate filtrate with gaseous CO_2 in a mole ratio of CO_2 to sulfonate of about 1.0:1.0 to convert the solubilized $CA(OH)_2$ to solubilized $CACO_3$;
(d) blowing said solubilized $CaCO_3$ with nitrogen to remove therefrom any excess CO_2 and the aqueous phase generated therein to obtain an overbased sulfonate liquid;
(e) adding more of said normal calcium sulfonate solution to said overbased sulfonate liquid and contacting said overbased sulfonate liquid with said non-solubilized $Ca(CO)_2$ and additional fresh $Ca(OH)_2$ to obtain an overbased sulfonate liquid product;
(f) repeating steps (b) through (e) until the desired TBN ranging from about 200 to about 500 of the sulfonate liquid product is obtained, and removing an amount of sulfonate liquid product after step (d) equal to the additions of normal calcium sulfonate and $Ca(OH)_2$ in step (e); and
(g) stripping the methanol and hydrocarbon solvent from the sulfonate liquid removed after step (d) to obtain the overbased calcium sulfonate product.

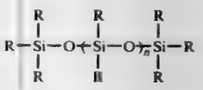
5,332,515

FLUID FOR VISCOUS COUPLING

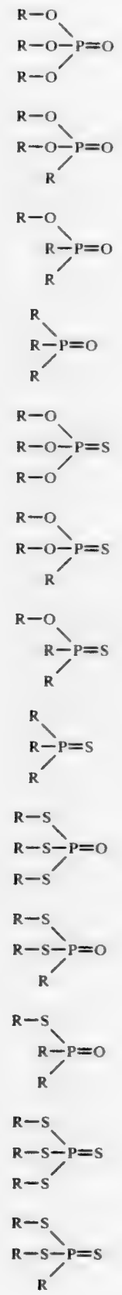
Hirotaka Tomizawa; Noboru Umemoto, and Hitoshi Ohenoki, all of Ooi, Japan, assignors to Tonen Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 520,926, May 9, 1990, abandoned. This application Dec. 4, 1992, Ser. No. 984,731
Claims priority, application Japan, May 10, 1989, 1-116265; Nov. 30, 1989, 1-312700; Feb. 7, 1990, 2-28700; Feb. 9, 1990, 2-30990; Feb. 13, 1990, 2-33368
Int. Cl.[5] C10M *105/76*
U.S. Cl. 252—49.6 **7 Claims**

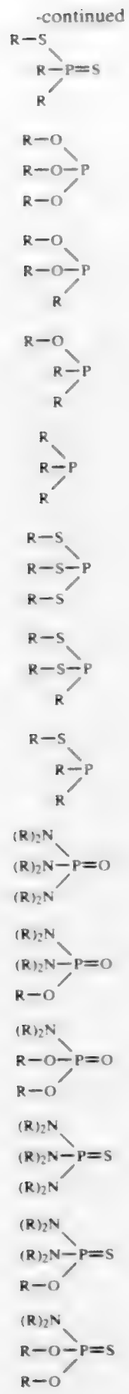
1. A fluid for viscous coupling, consisting essentially of:
an organopolysiloxane having a viscosity of from 1,000 to 500,000 mm^2/s (25° C.) represented by the formula:



where R of said organopolysiloxane represents a hydrocarbon group have 1 to 18 carbon atoms and may be the same or different, and may be halogenated, an n represents an integer of 130 to 1,500; and
at least 0.01 to 5 weight %, based on said polyorganosiloxane, of one or more types of substances selected from the following groups:



-continued



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(15)

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(24)

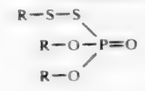
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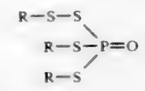
(27)

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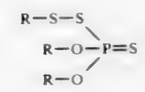
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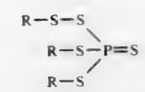
(29)



(30)



(31)



where R of said groups represents hydrogen, alkyl group, aryl group or benzyl group, and may be the same or different; and

up to 5 wt. % of an antioxidant based on the organopolysiloxane.

5,332,516

FRICTION REDUCING COMPOSITION AND LUBRICANT FOR MOTORS

James C. Stephens, 495 Kurtz Rd., NE., Marietta, Ga. 30066

Filed Apr. 27, 1992, Ser. No. 874,008

Int. Cl.[5] C10M *131/04, 131/14*

U.S. Cl. 252—54 **12 Claims**



1. A friction reducing composition consisting essentially of;

(a) between 75 and 98 volume percent of a chlorinated hydrocarbon selected from the group consisting of chlorinated paraffins, chlorinated polyvinyl chlorides and chlorinated polyethylenes;

(b) between 2 and 25 volume percent of a rust-inhibiting compound selected from the group consisting of compounds which inhibit the corrosion of chlorinated paraffins substituted phenol or polyphenol, and long-chain saturated or unsaturated di- or tri-carboxylic acids; and

(c) up to 0.02 volume percent of an antimicrobial compound.

5,332,517

METHOD FOR PRODUCING CARBONACEOUS POWDER FOR ELECTRORHEOLOGICAL FLUID

Takayuki Torii; Takashi Haraoka; Katsuhiro Nagayama; Hitomi Hatano; Noriyoshi Fukuda, all of Chiba; Yuichi Ishino, Kodaira; Takayuki Maruyama, Kodaira, and Tasuku Saito, Kodaira, all of Japan, assignors to Kawasaki Steel Corporation and Bridgestone Corporation, Japan

Filed Dec. 8, 1992, Ser. No. 987,121

Claims priority, application Japan, Dec. 10, 1991, 3-326110; Dec. 13, 1991, 3-330303; Apr. 28, 1992, 4-109693

Int. Cl.[5] C10M *171/00*

U.S. Cl. 252—73 **5 Claims**

1. A method for producing a carbonaceous powder for electrorheological fluid, which can be used as dielectric fine particles to be dispersed in an electrical insulating oily medium having an electrical insulating property to produce the electroreheological fluid, comprising the steps of

subjecting a starting material comprising an organic compound selected from the group consisting of coal tar, coal tar pitch, liquified coal, coke, petroleum, petroleum tar, petroleum pitch, and resins to a heat treatment at a maximum temperature of 300° to 800° C. to produce a carbonaceous material;

pulverizing and classifying the material to produce carbonaceous particles having a mean particle size of 0.5 to 40 μm and a maximum particle size of up to 50 μm; and

subjecting the particles to an additional treatment at a reduced pressure in the range of 0 to 200 mm Hg, said additional treatment being carried out at a temperature lower than said maximum temperature of the heat treatment.

5,332,518

STABLE SLURRY-COATED SODIUM PERCARBONATE, PROCESS FOR PRODUCING THE SAME AND BLEACH DETERGENT COMPOSITION CONTAINING THE SAME

Mutsumi Kuroda; Akira Suzuki, both of Tochigi; Hideo Kikuchi; Masahiro Saito, both of Fukushima, and Nobuyoshi Yamaguchi, Wakayama, all of Japan, assignors to Kao Corporation and Nippon Peroxide Co., Ltd., both of Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,907

Claims priority, application Japan, Apr. 23, 1992, 4-104504

Int. Cl.[5] C11D *3/04, 3/395, 11/00, 17/06*

U.S. Cl. 252—99 **29 Claims**

1. A process for producing a stable sodium percarbonate, which comprises a step of treating sodium percarbonate on the surface with at least one coating agent selected from the group (A) consisting of boric acids, borates and alkali metal silicates and at least one coating agent selected from the group (B) consisting of carbonates, hydrogencarbonates and alkali metal or alkaline earth sulfates, wherein at least one coating agent selected from the group consisting of coating agents belonging to groups (A) and (B) is present in the form of an aqueous coating slurry thereof, the total amount of the coating agents belonging to groups (A) and (B) is 0.1 to 30% by weight based on the amount of sodium percarbonate and the weight ratio of coating agents (A) to (B) is between 1/20 and 20/1.

22. A bleach detergent composition comprising detergent component particles containing a cleaning effective amount of a surfactant as an essential component and a bleaching effective amount of a stable sodium percarbonate produced by a process which comprises a step of treating sodium percarbonate on the surface with at least one coating agent selected from the group (A) consisting of boric acids, borates and alkali metal silicates and at least one coating agent selected from the group (B) consisting of carbonates, hydrogencarbonates and alkali metal or alkaline earth sulfates, wherein at least one coating agent selected from the group consisting of coating agents belonging to groups (A) and (B) is present in the form of an aqueous coating slurry thereof, the total amount of the coating agents belonging to groups (A) and (B) is 0.1 to 30% by weight based on the amount of sodium percarbonate and the weight ratio of coating agents (A) to (B) is between 1/20 and 20/1.

5,332,519

DETERGENT COMPOSITION THAT DISSOLVES COMPLETELY IN COLD WATER, AND METHOD FOR PRODUCING THE SAME

Louis Mazzola, Mahwah, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed May 22, 1992, Ser. No. 887,548

Int. Cl.[5] C11D *17/00, 1/66, 3/10*

U.S. Cl. 252—174 **10 Claims**

1. A particulate detergent composition capable of dissolving completely in water, said composition comprising:

(a) 75–90% by weight of water soluble alkali metal carbonate, bicarbonate or sesquicarbonate builder salts;

(b) 1–15% by weight of non-ionic surfactants, and

(c) 1–15% by weight of water, said composition being in the form of, and consisting essentially of particles having a weighted average particle size of from about 1300–2100 microns, a bulk density of form about 600–1050 grams/-liter, and a weighted average particle diameter to bulk density ratio of from about 1.39–2.60 (microns) (liter)/-gram.

5,332,520

LIQUID-CRYSTALLINE POLYMERS OF VIRTUALLY UNIFORM MOLECULAR WEIGHT

Volker Bach, Neustadt; Karl-Heinz Etzbach, and Karl Siemensmeyer, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludgwigshafen, Fed. Rep. of Germany

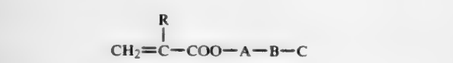
Filed May 8, 1992, Ser. No. 880,578

Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115415

Int. Cl.[5] C09K *19/52;* **C08F** *22/10;* **G11B** *7/24*

U.S. Cl. 252—299.01 **7 Claims**

1. A liquid-crystalline polymer of virtually uniform molecular weight, obtained by polymerizing identical or different monomers of the formula I



I

where

R is hydrogen, chlorine or methyl,

A is a flexible, long-chain moiety which acts as a spacer,

B is a mesogenic moiety built up from at least two aromatic rings which are linked to one another in a linear or approximately linear manner, and

C is an optically active, chiral moiety, in from 0.01 to 0.1 molar solution in an inert organic solvent in the presence of from 1 to 40 mol %, based on the monomers, of a free-radical initiator, at from 40° to 60° C. for from 100 to 140 hours, and subsequently isolating the polymerization product from the reaction mixture.

5,332,521

FERROELECTRIC LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL OPTICAL DEVICE PRODUCED BY USING THE FERROELECTRIC LIQUID CRYSTAL COMPOSITION, AND METHOD OF PRODUCING THE LIQUID CRYSTAL OPTICAL DEVICE

Kimihiro Yuasa; Satoshi Hachiya; Kazuharu Morita, and Kenji Hashimoto, all of Kimitsu, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

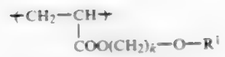
Division of Ser. No. 384,785, Jul. 25, 1989, Pat. No. 5,200,108. This application Dec. 3, 1992, Ser. No. 985,139

Claims priority, application Japan, Jul. 26, 1988, 63-184673; Sep. 9, 1988, 63-224715; Feb. 22, 1989, 1-40287

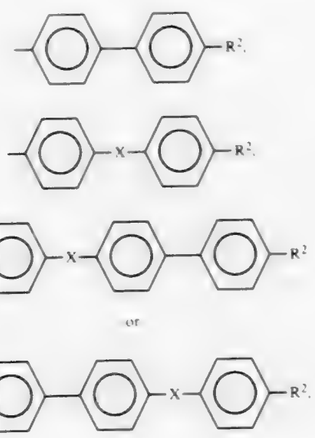
Int. Cl.[5] C09K *19/52;* **G02F** *1/13*

U.S. Cl. 252—299.01 **24 Claims**

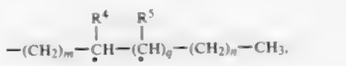
1. A ferroelectric liquid crystal composition comprising from 40 to 97% by weight of (A) a ferroelectric liquid crystal material and from 3 to 60% by weight of (B) a non-liquid-crystalline polymeric material selected from the group consisting of a thermoplastic resin, a crosslinkable resin and a mixture thereof; the (A) ferroelectric liquid crystal material comprising at least 3 mol % of at least one ferroelectric polymeric liquid crystal having a number average molecular weight of at least 1,000 and being selected from the group consisting of a polyacrylate-type ferroelectric polymeric liquid crystal having the repeating units represented by the following general formula:



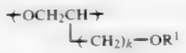
wherein
k is an integer having a value of 1 to 30,
R^1 is



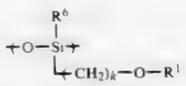
X is —COO— or —OCO—,
R^2 is $—COOR^3$, $—OCOR^3$, $—OR^3$ or $—R^3$,
wherein R^3 is



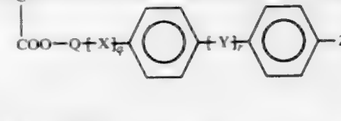
wherein
each of m and n is independently an integer having a value of 0 to 9,
q is an integer having a value of 0 or 1,
each of R^4 and R^5 is independently $—CH_3$, a halogen atom or —CN, with the proviso that when R^5 is $—CH_3$, n is not an integer having a value of 0, and that when q is 0 and R^4 is $—CH_3$, n is not an integer having a value of 0, and C* represents an asymmetric carbon atom;
a polyether-type ferroelectric polymeric liquid crystal having the repeating units represented by the following general formula:



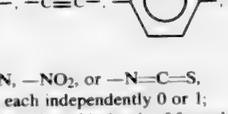
wherein k and R^1 are as defined above;
a polysiloxane-type ferroelectric polymeric liquid crystal having the repeating units represented by the following general formula:



wherein R^6 is a lower alkyl radical and k and R^1 are as defined above; and
polyester-type ferroelectric polymeric liquid crystals having the repeating units represented by the following general formula:



wherein
R^7 is —H, $—CH_3$ or $—C_2H_5$,
s is an integer having a value of 1 to 20,
A is —O— or —COO—,
t is an integer having a value of 0 or 1, and
R^1 and k are as defined above or



wherein s, A, t, R^1 and k are as defined above.

5,332,522

THERMOTROPIC CHIRAL NEMATIC LIQUID CRYSTALLINE COPOLYMERS

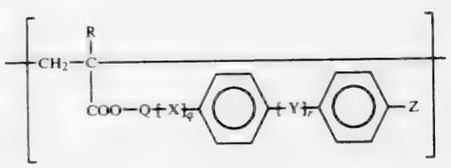
Shaw H. Chen, Penfield; John C. Mastrangelo, Frankfort; Hongqin Shi, Rochester, all of N.Y., and Sushil Krishnamurthy, Sunnyvale, Calif., assignors to The University of Rochester, Rochester, N.Y.

Filed Apr. 29, 1993, Ser. No. 55,120
Int. Cl.[5] C09K *19/52, 19/30, 19/12;* **G02F** *1/13*
U.S. Cl. 252—299.01 **25 Claims**

1. A chiral nematic liquid crystalline copolymer composition comprised of the repeating units of formula

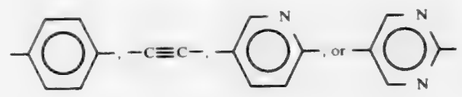
(I)

wherein —NEM— and —NEM'— are each independently nematogenic units of formula

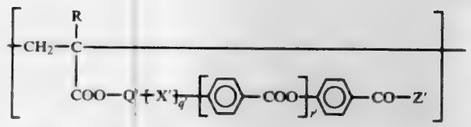


(II)

wherein R is H or CH_3,
—Q— is an alkylene radical having 1 to about 8 carbon atoms,
—X— is —O—, —S—, or $—CH_2—$,
—Y— is



—Z is —CN, $—NO_2$, or —N=C=S,
q and r are each independently 0 or 1;
wherein —CHI— is a chiral unit of formula



(III)

wherein R is H or CH_3,
—Q'— is an alkylene radical having 1 to about 8 carbon atoms,
—X'— is —O—, —S—, or $—CH_2—$,
—Z' is an alkoxy, aralkoxy, alkylamino, or aralkylamino radical having 4 to about 12 carbon atoms and containing at least one asymmetric carbon atom,
q' and r' are each independently 0 or 1;
and wherein x is the mole fraction of chiral units, and (y+y') is the total mole fraction of nematogenic units in said copolymer composition, and the ratio of x to (y+y') is from about 1:50 to 1:1.

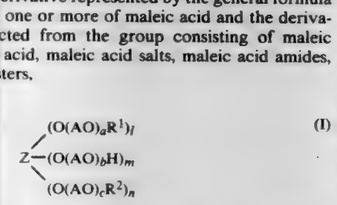
5,332,523

DISPERSION-STABILIZING AGENT FOR INORGANIC POWDER IN OILY MATERIAL

Taizo Igarashi, Hyogo; Susumu Honda, Tokyo; Tohru Yasukohchi, Kanagawa, and Show Onodera, Hyogo, all of Japan, assignors to Nippon Oil & Fats Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 442,762, Nov. 29, 1989, abandoned. This application Apr. 15, 1992, Ser. No. 869,057
Claims priority, application Japan, Nov. 29, 1988, 63-299510
Int. Cl.[5] B01J *13/00;* **C08F** *122/04*
U.S. Cl. 252—309 **4 Claims**

1. A liquid composition consisting of an inorganic powder, an oil, said inorganic powder being compatible with said oil, and a polymer component which is a vinyl copolymer of (i) a polyoxyalkylene derivative represented by the general formula (I) below with (ii) one or more of maleic acid and the derivatives thereof selected from the group consisting of maleic anhydride, maleic acid, maleic acid salts, maleic acid amides, and maleic acid esters,



(I)

where Z is a residue of a compound having 2–8 hydroxyl groups, AO is an oxyalkylene group having 2–18 carbon atoms, R^1 is an unsaturated hydrocarbon group having 2–5 carbon atoms, R^2 is a hydrocarbon group having 1–40 carbon atoms, a=0 to 1000, b=0 to 1000, c=0 to 1000, l=1 to 8, m=0 to 2, n=0 to 7, (l+m+n)=2 to 8, (al+bm+cn)=1 to 1000, $m/(l+n) \leqq \frac{1}{2}$.

5,332,524

METHODS FOR DISSOLVING WATER SOLUBLE POLYMERS AND COMPOSITIONS USING SAME

Joseph B. Kaylor, Manassas, Va., assignor to Valkyrie Scientific Proprietary, L.C., Manassas, Va.

Filed Apr. 20, 1992, Ser. No. 871,070
Int. Cl.[5] B01F *3/20*
U.S. Cl. 252—363.5 **19 Claims**

1. A particulate polymer formulation comprising particles of a water soluble polymer selected from the group consisting of poly(olefin oxides), vinyl addition polymers, and copolymers and mixtures thereof arranged in intimate association with particles of at least two other compounds, said other compounds being non-reactive toward said polymer but reacting to produce a gas upon being wetted with water, one of said other compounds being basic and another of said compounds being acidic, the particles of said basic compound arranged as a first layer on and in closer proximity to said polymer particles than are particles of said acidic compound, the particles of said acidic compound arranged as a second layer exterior to said first layer, said polymer formulation characterized by readily dissolving without agglomeration when contacted with water.

5,332,525

VAPOR PHASE CORROSION INHIBITOR-DESICCANT MATERIAL

Boris A. Miksic, North Oaks; Joseph M. Foley, Maplewood, and Tsi-Zong Tzou, Woodbury, all of Minn., assignors to Cortec Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 905,953, Jun. 29, 1992, Pat. No. 5,209,869, which is a continuation-in-part of Ser. No. 594,357, Sep. 27, 1990, Pat. No. 5,139,700, which is a continuation-in-part of Ser. No. 417,238, Oct. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 235,120, Aug. 23, 1988, abandoned. This application Aug. 13, 1992, Ser. No. 929,621
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] C23F *11/18*
U.S. Cl. 252—389.54 **3 Claims**



1. A vapor phase corrosion inhibitor-desiccant formulation comprising a vapor phase corrosion inhibitor component and a desiccant component, wherein the corrosion inhibitor component comprises, by weight, from about 50% to about 97% cyclohexylamine benzoate, from about 1% to about 20% ethylamine benzoate, from about 1% to about 20% dicyclohexylamine benzoate, and from about 1% to about 10% benzotriazole, and wherein the desiccant component comprises a granular silica gel, with said corrosion inhibitor component deposited upon said granular silica gel.

5,332,526

MULTI-PURPOSE PAINT AND VARNISH STRIPPER

Donald E. Stanley, 2435 Wheeler Rd., Bay City, Mich. 48706

Filed Mar. 15, 1993, Ser. No. 31,337
Int. Cl.[5] B08B *7/00;* **C09D** *9/04;* **C11D** *7/26, 7/32*
U.S. Cl. 252—542 **8 Claims**

1. An environmentally acceptable composition for stripping paint and varnish consisting essentially of from 10 to 25 weight percent N-methyl-2-pyrrolidone, from 2 to 35 weight percent of a mixture of propylene glycol n-butyl ether and dipropylene glycol dimethyl ether, from 5 to 10 weight percent of ethyl 3-ethoxypropionate, from 5–15 weight percent of isopropyl alcohol, from 10–25 weight percent of a lower aliphatic ketone, from 1 to 5 weight percent of a surfactant and from 1 to 5 weight percent of an odorant.

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5,332,527

AMINO-FUNCTIONAL COMPOUNDS AS BUILDER/DISPERSANTS IN DETERGENT COMPOSITIONS

Stephen W. Heinzman, Cincinnati; Michael J. Eis, West Chester, and Molly P. Armstrong, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 282,329, Dec. 13, 1988, Pat. No. 5,221,711, which is a continuation-in-part of Ser. No. 144,823, Jan. 14, 1988, Pat. No. 4,959,409. This application Mar. 30, 1993, Ser. No. 40,051
Int. Cl.[5] C11D *3/33, 3/37*
U.S. Cl. 252—546 9 Claims

1. A compound of the formula $(MAO)_nE$ wherein n is an integer from 1 to about 2,500, M is H or a salt-forming cation; A is selected from the group consisting of 2-(sec-substituted-amino)-4-oxobutanoate of the formula $\ominus C(O)C(L)HCH_2(O)C$— wherein L is a sec-amino moiety, 2-(tert-substituted-amino)-4-oxobutanoate of the formula $\ominus OC(O)C(L)HCH_2(O)C$— wherein L is a tert-amino moiety, 3-(sec-substituted-amino)-4-oxobutanoate of the formula $\ominus OC(O)CH_2C(L)H(O)C$— wherein L is a sec-amino moiety, 3-(tert-substituted-amino)-4-oxobutanoate of the formula $\ominus OC(O)CH_2C(L)H(O)C$— wherein L is a tert-amino moiety, and mixtures thereof; and E is a moiety having molecular weight in the range from about 15 to about 170,000 and is structurally characterized as the fully or partially dehydroxylated product of a dihydric or polyhydric alcohol; wherein said dihydric or polyhydric alcohol is selected from the group consisting of pentaerythritol; saccharide selected from mono, di-, oligo- and polysaccharides; glucoside selected from alcohol glucosides and glycol glucosides; alkylene glycol selected from C_2–C_6 alkylene glycols; sorbitol; and mixtures thereof; and wherein, when L is a sec-amino moiety, L is selected from the group consisting of aspartate, glutamate, glycinate, beta-alanate, taurine, aminoethyl-sulfate, alanate and 6-aminohexanoate; and when L is a tert-amino moiety, L is selected from the group consisting of sarcosinate, iminodiacetate and N-methylasparatate.

6. A laundry detergent composition comprising a detersive surfactant and from about 0.1% to about 35% by weight of the compound of the formula $(MAO)_nE$ wherein n is an interger from 1 to about 2,500, M is H or a salt-forming cation; A is selected from the group consisting of 2-(sec-substituted-amino)-4-oxobutanoate of the formula $\oplus OC(O)C(L)HCH_2(O)C$— wherein L is a sec-amino moiety, 2-(tert-substituted-amino)-4-oxobutanoate of the formula $\ominus OC(O)C(L)HCH_2(O)C$— wherein L is a tert-amino moiety, 3-(sec-substituted-amino)-4-oxobutanoate of the formula $\ulcorner OC(O)CH_2C(L)H(O)C$— wherein L is a sec-amino moiety, 3-(tert-substituted-amino)-4-oxobutanoate of the formula $\ominus OC(O)CH_2C(L)H(O)C$— wherein L is a tert-amino moiety, and mixtures thereof; and E is a moiety having molecular weight in the range from about 15 to about 170,000 and is structurally characterized as the fully or partially dehydroxylated product of a dihydric or polyhydric alcohol; wherein said dihydric or polyhydric alcohol is selected from the group consisting of polyvinyl alcohol; pentaerythritol; saccharide selected from mono-, di-, oligo- and polysaccharides; glucoside selected from alcohol glucosides and glycol glucosides; alkylene glycol selected from C_2–C_6 alkylene glycols, sorbitol; and mixtures thereof; and wherein, when L is a sec-amino moiety, L is selected from the group consisting of aspartate, glutamate, glycinate, ethanolamino, beta-alanate, taurine, aminoethyl-sulfate, alanate and 6-aminohexanoate; and when L is a tert-amino moiety, L is selected from the group consisting of sarcosinate, N-methylethanolamino, iminodiacetate diethanolamino and N-methylasparatate.

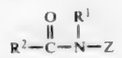
5,332,528

POLYHYDROXY FATTY ACID AMIDES IN SOIL RELEASE AGENT-CONTAINING DETERGENT COMPOSITIONS

Robert Y. Pan, Blue Ash, and Eugene P. Gosselink, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 756,092, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 590,637, Sep. 28, 1990, abandoned. This application Jun. 17, 1993, Ser. No. 78,493
Int. Cl.[5] C11D *1/52, 1/83, 3/32, 3/37*
U.S. Cl. 252—548 1 Claim

1. A detergent composition, comprising at least about 4% by weight of an anionic surfactant, from about 3% to about 50% by weight of a polyhydroxy fatty acid amide surfactant of the formula:



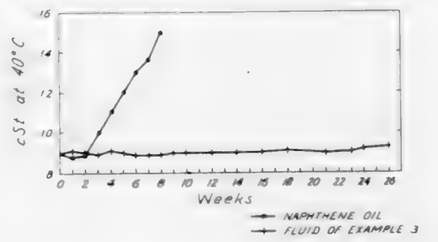
wherein R^1 is H, C_1–C_4 hydrocarbyl, 2-hydroxy ethyl, 2 hydroxy propyl, or a mixture thereof, R^2 is C_5–C_{31} hydrocarbyl, and Z is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to said chain, or an alkoxylated derivative thereof; from about 0.1% to about 10% by weight of a member selected from the group consisting of: anionic oligomeric esters or anionic polyesters comprising sulfophthaloyl, sulfoiso-phthaloyl or sulfobenzoyl groups acting as a soil release agent; and
the balance of the composition comprising additional detersive ingredients and carriers.

5,332,529

ELECTRIC DISCHARGE MACHINE PROCESS AND FLUID

Theodore C. Mead, and Douglas H. Culpon, Jr., both of Port Neches, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 5, 1992, Ser. No. 846,106
Int. Cl.[5] H01B *3/24, 3/20;* B23H *1/08*
U.S. Cl. 252—570 14 Claims



1. An electric discharge machining process in which a workpiece is machined by an electric discharge generated between said workpiece and an electrode, and a dielectric fluid is applied to both of said workpiece and said electrode, characterized by:
said dielectric fluid comprising a major portion of a mineral oil and a minor portion of a phenolic compound of the formula:



wherein:
R is a ditertiarybutyl-4-hydroxylphenyl radical,
x ranges from 4 to 12, and
y ranges from 1 to

wherein the phenolic compound comprises 0.5% or more by weight of the dielectric fluid.

5,332,530

SOLID GEL ELECTROLYTIC MATERIAL FOR MODULATING LIGHT

Bernard A. G. Eid, Champagne/Seine, and Pascal J. J. Marque, Fontainebleau, both of France, assignors to Corning Incorporated, Corning, N.Y.

Filed Aug. 31, 1992, Ser. No. 937,168
Claims priority, application France, Nov. 29, 1991, 91 14778
Int. Cl.[5] G02F *1/00, 1/15*
U.S. Cl. 252—583 19 Claims

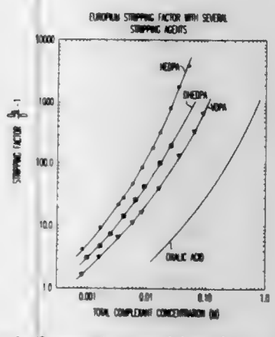
1. An electrolytic material in the form of a solid gel for the modulation of light comprising a homogeneous mixture of:
(A) at least one organic solvent;
(B) at least one salt of an electrodepositable metal;
(C) at least one organic acid; and
(D) at least one salt of a non-electrodepositable metal that facilitates the solubilization of metal salt (B);
characterized in that it comprises in addition:
(E) at least one agent gelling said mixture to a non-flowing, transparent, solid gel state.

5,332,531

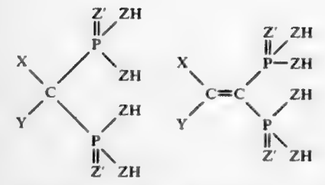
EXTRACTING METAL IONS WITH DIPHOSPHONIC ACID, OR DERIVATIVE THEREOF

Earl P. Horwitz; Ralph C. Gatrone, and Kenneth L. Nash, all of Argonne, Ill., assignors to Arch Development Corporation, Chicago, Ill.

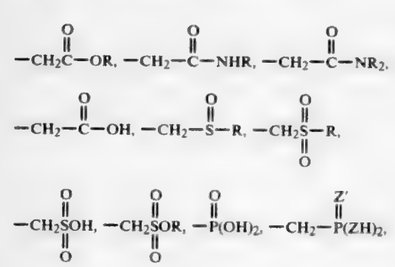
Division of Ser. No. 351,402, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 265,608, Nov. 1, 1988, abandoned. This application Jun. 10, 1992, Ser. No. 898,386
Int. Cl.[5] C01G *56/00, 1/00*
U.S. Cl. 588—20 34 Claims



1. A method of removing metal ions from a non-aqueous medium comprising
(a) reacting the metal ions with a thermodynamically-unstable water soluble complexing agent in an aqueous solution to form a water-soluble metal complex, thereby removing metal ions from the non-aqueous medium into the aqueous solution; and thereafter
(b) decomposing the complexing agent into inorganic compounds thereby to destroy the water-soluble complex and release the metal ions in a substantially organic free form; and
wherein the thermodynamically-unstable complexing agent has the formula:



wherein the X and Y substituents are each selected from the group consisting of —H, halogen, —Z″H, $—CO_2H$, $—CH_2Z''H$, $—CH_3$, $—CH_2CH_3$, $—CH_2NH_2$, $—CONH_2$, $—CH_2Cl$, $—CH_2Br$, $—CH_2F$, $—CH_2I$, $—CH_2NO_2$, $—CH_{12}CN$, $—CH_2OR$, $—CH_2SR$,



and $—CH(PO_3H_2)_2$, wherein

R is an alkyl group with one to three carbon atoms;
Z is oxygen or sulphur;
Z′ is oxygen or sulphur; and
Z″ is oxygen or sulphur;
or a water soluble salt thereof.

5,332,532

METHOD FOR DISPOSING OF RADIOACTIVELY LABELED ANIMAL CARCASSES

Gordon I. Kaye, Troy, and Peter B. Weber, Delmar, both of N.Y., assignors to Waste Reduction by Waste Reduction, Inc., Troy, N.Y.

Filed Dec. 9, 1992, Ser. No. 988,209
Int. Cl.[5] G21F *9/16*
U.S. Cl. 588—16 19 Claims

1. A method for producing a safely disposable solution from animal tissue containing radioactive materials comprising the steps of:
providing a highly basic solvent;
heating said highly basic solvent;
immersing said animal tissue containing radioactive materials in said highly basic solvent;
allowing said animal tissue to remain within said highly basic solvent until substantially digested; and
forming a solution containing a substantially de minimis concentration of
radioactive materials.

5,332,533

ALKYLLITHIUM PROCESS

James A. Schwindeman, Charlotte; Robert C. Morrison, Gastonia; B. Troy Dover, Kings Mountain; John F. Engel, Belmont; Conrad W. Kamienski, Gastonia; Randy W. Hall, and Douglas E. Sutton, both of Kings Mountain, all of, assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 6, 1993, Ser. No. 87,582
Int. Cl.[5] C07F *1/02*
U.S. Cl. 260—665 R 14 Claims

1. In the process for producing alkyllithium compounds by

reacting in a liquid hydrocarbon solvent selected from liquid saturated aliphatic hydrocarbons containing 5 to 12 carbon atoms, saturated liquid cycloaliphatic hydrocarbons containing 5 to 12 carbon atoms and liquid aromatic hydrocarbons containing 6 to 12 carbon atoms and mixtures thereof, an alkyl halide containing 3 to 16 carbon atoms with lithium metal particles of less than 300 microns in size in which the improvement consists of producing the alkyllithium compounds in high yields of at least 90% and high purity, containing less than 300 ppm dissolved lithium halide, by conducting the reaction under conditions selected from: conducting the reaction under reflux conditions in hydrocarbon solvents which reflux at temperatures between 50° C. and 100° C.; and conducting the reaction under non-reflux conditions at temperatures between 50° C. and 125° C. and recovering the alkyllithium compound.

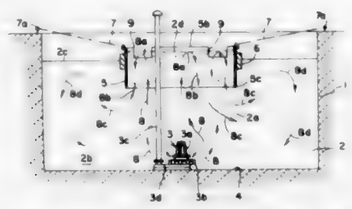
12. An alkyllithium composition consisting of alkyllithium compound of high purity, containing 3 to 16 carbon atoms, in a liquid hydrocarbon solvent selected from liquid saturated aliphatic hydrocarbons containing 5 to 12 carbon atoms, saturated liquid cycloaliphatic hydrocarbons containing 5 to 12 carbon atoms and liquid aromatic hydrocarbons containing 6 to 12 carbon atoms containing 3 to 16 carbon atoms and mixtures thereof, and containing less than 300 ppm dissolved lithium halide.

5,332,534

PROCESS AND SYSTEM FOR INCREASING THE GAS UPTAKE BY A LIQUID BEING AERATED

Heinrich Ebner, Linz, Austria, assignor to Heinrich Frings GmbH & Co KG, Bonn, Fed. Rep. of Germany

Filed Feb. 16, 1993, Ser. No. 17,760
Claims priority, application Austria, Feb. 21, 1992, 325/92
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—87 **18 Claims**



1. A process for increasing, through a control of the liquid circulation in a liquid-containing aeration basin, the uptake of oxygen by the liquid, with the size of the basin and the air bubbles emission characteristics of the associated aerator being such that only a portion of the total cross-section of the basin near its floor is intensively aerated by the aerator; wherein the improvement comprises the steps of:

(a) permitting waste air reaching the surface of the body of liquid to escape without restraint from the latter into the atmosphere about the body of liquid; and

(b) completely or partly inhibiting the quantity of liquid,

(i) which is displaced upwardly in the basin through the expansion work of the rising quantity of the aerating air bubbles and

(ii) which through such upward displacement accelerates the rising movement of the air bubbles so as to tend to shorten their residence time in the body of liquid and have the effect of reducing oxygen uptake,

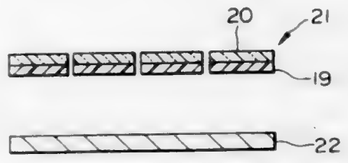
from flowing laterally outwardly from the region of its arrival at the surface of the body of liquid in the basin, so that by virtue of such inhibition of lateral outward flow of liquid the oxygen uptake-reducing effect is counteracted.

5,332,535

METHOD OF FABRICATING A DIELECTRIC MULTILAYER FILTER

Taisuke Oguchi; Hiroaki Hanafusa, both of Mito; Juichi Noda, Machida; Yamada Noriyoshi, Tokyo; Shiro Nishi, Kodaira, and Nobuo Tomita, Johoku, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Division of Ser. No. 654,010, Feb. 12, 1991, Pat. No. 5,234,772.
This application Apr. 30, 1993, Ser. No. 54,319
Claims priority, application Japan, Feb. 13, 1990, 2-31766
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.7 **6 Claims**



1. A fabrication method for a dielectric multilayer filter including the steps of:

applying liquid fluorinated polyimide material over a smooth surface to a predetermined thickness, wherein fluorine atoms constitute at least 10, but less than 31, weight % of said fluorinated polyimide material

drying and hardening said liquid fluorinated polyimide material so as to form a fluorinated polyimide layer;

forming a dielectric multilayer over said fluorinated polyimide layer, said dielectric multilayer comprising multiple layers of differing indices of refraction and having a coefficient of thermal expansion greater than that of said fluorinated polyimide material; and

stripping said fluorinated polyimide layer and overlying dielectric multilayer away from the underlying smooth surface, thereby producing a dielectric multilayer filter consisting of said fluorinated polyimide layer and said overlying dielectric multilayer.

5,332,536

MOLDING RESINS AND UV-TRANSPARENT MOLDS MADE FROM THE RESINS FOR MAKING FIBER REINFORCED ARTICLES

Rudolph H. Boeckeler, Grafton, Wis., assignor to Cook Composites and Polymers Co., Port Washington, Wis.

Filed Jan. 22, 1992, Ser. No. 823,830
Int. Cl.[5] C08F *20/36, 20/26;* **B29C** *35/02*
U.S. Cl. 264—22 **20 Claims**

1. In the method of making a rigid, fiber reinforcement preform for use in making fiber reinforced molded articles, the method comprising:

(A) applying a layer of reinforcing fibers coated with an ultraviolet light curable composition which contains a photohardenable material polymerizable under UV light and a polymerization photoinitiator onto a preform mold surface which has a configuration corresponding to at least a portion of the final molded article, and

(B) exposing the coated fibers to UV light to cure substantially all of the composition to form an essentially rigid preform, the UV light passed through the preform mold surface,

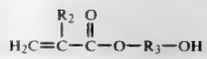
the improvement comprising using a preform mold surface made from a heat-cured casting of a liquid molding resin comprising in weight percent based on the total weight of the resin:

(i) at least about 25% of a urethane acrylate which is a reaction product of:

(a) at least one organic isocyanate compound having two reactive isocyanate groups, the compound represented by the formula OCN—R_1—NCO where R_1 is an inert-

ly-substituted or unsubstituted divalent aliphatic or cycloaliphatic radical of at least four carbon atoms;

(b) at least one alpha,beta-ethylenically unsaturated alcohol represented by the formula



where R_2 is H or CH_3, and R_3 is an alkylene group of caprolactone group; and

(c) at least one of a glycol or polyhydroxy polymer;

(ii) at least about 10% of an alpha,beta-ethylenically unsaturated monomer of three to twelve carbon atoms; and

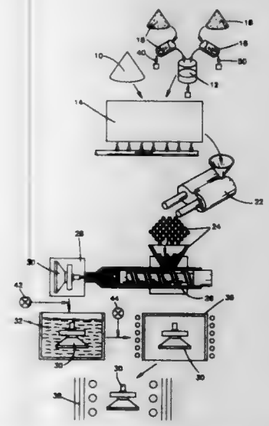
(iii) a catalytic amount of a perioxide initiator.

5,332,537

METHOD AND BINDER FOR USE IN POWDER MOLDING

Karl F. Hens; Donald M. Kupp, both of St. College, Pa.; Ricky A. Alexander, Highland Heights, and Karl-Heinz Schofalvi, Cleveland, both of Ohio, assignors to PCC Airfoils, Inc., Cleveland, Ohio

Filed Dec. 17, 1992, Ser. No. 991,990
Int. Cl.[5] C04B *38/04*
U.S. Cl. 264—22 **9 Claims**



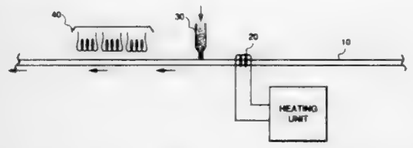
1. A method comprising the steps of forming a binder, said step of forming a binder including forming a uniform mixture by mixing a first binder component which is soluble in water and a second binder component which is insoluble in water, mixing the binder and a powder, molding the powder and binder mixture to form a compact, partially debinding the compact by at least partially removing the first component of the binder from the compact, said step of at least partially debinding the compact including exposing the compact to water, thereafter, further debinding the compact to at least partially remove the second component of the binder, sintering the powder in the compact to form an article, and cross linking polymer units of the insoluble binder component which is adjacent to the surface of the compact while leaving the polymer units of the insoluble binder component in the interior of the compact substantially free of polymer cross linking, said step of cross linking polymer units of the binder being performed after performance of said step of molding the powder and binder mixture and prior to performance of said step of sintering the powder.

5,332,538

METHOD FOR MAKING A SPACER ELEMENT FOR A MULTI-PANE SEALED WINDOW

Lionel M. Levinson, Schenectady; William N. Schultz, Niskayuna; Larry N. Lewis; Chris A. Sumpter, both of Scotia; Judith Stein, Schenectady, and Michael A. Zumbrum, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,429
Int. Cl.[5] B29C *35/08*
U.S. Cl. 264—25 **8 Claims**



1. A method which comprises,

(1) dispensing into a semi-rigid thermoplastic or metal spacer having a V-shaped or U-shaped channel and useful for a multi-pane sealed window, an infrared radiation sensitive heat curable silicone composition, and thereafter

(2) exposing the dispensed infrared radiation curable silicone composition to infrared radiation have a wavelength of 700 to 10,000 nm and an intensity of at least 0.5 to 100 watts per cm^2 until it is substantially cured, where the infrared sensitive heat curable silicone composition comprises by weight,

(A) 100 parts of a poly(alkenylorganosiloxane),

(B) 1 to 20 parts of a silicon hydride siloxane,

(C) 0.0001 to 10.0 parts of an infrared radiation absorbent or scattering material,

(D) an effective amount of a platinum group metal curing catalyst, and

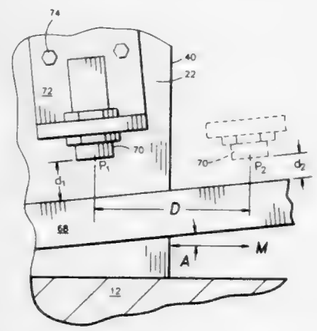
(E) 120 to 220 parts of a zeolite.

5,332,539

NON-CONTACT LINEAR POSITION TRANSDUCER FOR AN INJECTION MOLDING MACHINE AND METHOD OF USING

Ronald M. Sparer, Madeira, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 26, 1993, Ser. No. 37,758
Int. Cl.[5] B29C *45/04, 45/80*
U.S. Cl. 264—40.1 **6 Claims**



1. In an injection molding machine having multiple machine elements, apparatus for determining the distance between first and second machine elements that are disposed for relative linear movement comprising:

(a) a reference member associated with the first machine

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element, the reference member having a straight surface positioned at an oblique angle with respect to a line defined by the relative movement of the first and second machine elements;

(b) a sensing device associated with the second machine element for generating output signals representative of the distance between the sensing device and the straight surface of the reference member, the sensing device being positioned in proximity to the straight surface of the reference member such that the distance between the sensing device and the surface varies proportionately with the distance between the first and second machine elements; and

(c) control means for receiving the output signals from the sensing device and determining the distance between the first and second machine elements as a function of the distance measured by the sensing device and the angle of the reference member to the line of movement.

6. In an injection molding machine having first and second machine elements that are disposed for relative linear movement, a reference member having a straight surface associated with the first machine element, and a sensing device associated with the second machine element for generating output signals representative of the distance between the sensing device and the straight surface of the reference member, a method for determining the distance between the first and second machine elements comprising the steps of:

(a) aligning the straight surface of the reference member at an oblique angle with respect to a line defined by the relative movement of the first and second machine elements,

(b) positioning the sensing device in proximity to the straight surface of the reference member such that the distance between the sensing device and the surface varies proportionately with the distance between the first and second machine elements,

(c) measuring the distance between the sensing device and the straight surface of the reference member at a first position of the machine elements,

(d) measuring the distance between the sensing device and the straight surface of the reference member at a second position after relative movement between the machine elements, and

(e) determining the distance between the first and second machine elements as a function of the distance measured by the sensing device and the angle of the reference member to the line of movement.

5,332,540

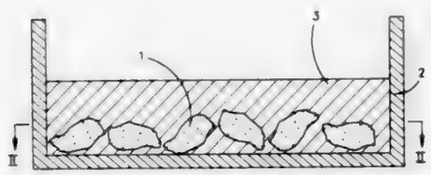
REFRACTORY OXYCOMPOUND/REFRACTORY HARD METAL COMPOSITE

Jean-Jacques Duruz, Geneva, Switzerland, assignor to Moltech Invent S.A., Luxembourg

Division of Ser. No. 350,478, Apr. 28, 1989, Pat. No. 5,004,524. This application Feb. 11, 1991, Ser. No. 653,545

Int. Cl.[5] **C04B** *35/00*

U.S. Cl. 264—60 **4 Claims**



1. A method of producing an aluminum-wettable composite material of a refractory oxycompound and a Refractory Hard Metal (RHM) selected from the group consisting essentially of borides of titanium, zirconium, hafnium, vanadium, niobium and tantalum, comprising:

distributing pieces or a powder of said RHM boride in a mold, separated from one another or in scattered distribution,

casting molten refractory compound consisting essentially of alumina or refractory oxycompound of aluminum into the mold, and

allowing the molten oxycompound to solidify into a solid block containing said pieces or powder as discrete RHM boride inclusions which are cast in and extend to the surface of the block.

5,332,541

METHOD OF MANUFACTURING WINDOW MOLDING MEMBERS

Tatsuya Tamura, Yokohama, Japan, assignor to Hashimoto Forming Industry Co., Ltd., Japan

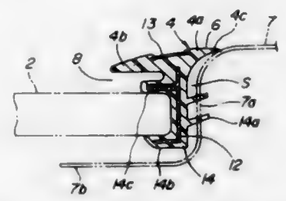
Continuation of Ser. No. 789,962, Nov. 12, 1991, abandoned, which is a division of Ser. No. 233,049, Aug. 17, 1988, Pat. No. 5,107,646. This application Apr. 15, 1993, Ser. No. 48,952

Claims priority, application Japan, Sep. 29, 1987, 245371

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] **B29C** *53/40*

U.S. Cl. 264—149 **19 Claims**



1. A method of manufacturing window moldings, for vehicle window plates, said window plates each having an outer surface and peripheral edges, which method comprises the steps of:

forming a main body composed of at least partly of a continuous elongate material, including an upper portion to extend along an upper edge of a window plate, at least one side portion to extend along a side edge of the window plate, and at least one corner portion integrally connecting said upper portion and said side portion with each other, the main body further having a integral ridge to face toward a width-wise center region of the outer surface of said window plate and formed to extend over the entire length of said molding; and

deforming a predetermined location of said main body such that the ridge has a first cross-section along said upper portion of the main body, a second cross-section along said side portion of the main body, a transitional cross-section substantially along said corner portion where the first cross-section gradually changes to the second cross-section, one of said first and second cross-sections defining at least one weir when the molding member is mounted in place, said weir extending along said upper portion or said side portion so that rain water can be guided along the weir and prevented from flowing across the molding member, and

injection-molding a spacer element positioned between said ridge and the outer surface of said window plate, for cooperating with said ridge to define said weir.

5,332,542

PROCESS FOR PRODUCING LABELED HOLLOW CONTAINER

Masaaki Yamanaka, and Takashi Yamanobe, both of Ibaraki, Japan, assignors to Oji Yuka Goseishi Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1992, Ser. No. 906,651

Claims priority, application Japan, Jul. 3, 1991, 3-162940

Int. Cl.[5] **B29C** *49/20*

U.S. Cl. 264—509 **5 Claims**

1. A process for producing a labeled hollow container, which comprises:

inserting a label having a multi-layer structure into a hollow mold and blow molding a molten parison of a thermoplastic polypropylene or high-density polyethylene resin (designated thermoplastic resin C) in the mold, wherein said label is composed of a base layer comprising a thermoplastic polypropylene resin (designated thermoplastic resin A) having on one side thereof a heat-sealable resin layer comprising a mixture of at least two thermoplastic resins (designated lower-melting thermoplastic resin B and higher-melting- thermoplastic resin (B'), wherein said mixture is constituted from 10 to 55% by weight component (B') of a linear low-density polyethylene having a density of from 0.88 to 0.94 g/cm^3 and a melt index of from 0.05 to 30 g/10 min and from 45 to 90% by weight of component (B) which is at least one resin selected from the group consisting of low-density polyethylene, an ethylene-methacrylic acid copolymer, an ethylene-acrylic acid copolymer, and an ethylene-vinylacetate copolymer, each of (B') and (B) having a melting point which is at least 20° C. lower than that of said thermoplastic resin A, said mixture of thermoplastic resins B and B' satisfying the relationships:

$$5<T_{mC}-T_{mB'}<80$$

$$15<T_{mB'}-T_{mB}<50$$

wherein T_{mC} is the melting point of thermoplastic resin C constituting the parison; $T_{mB'}$ is the melting point of higher-melting thermoplastic resin B'; and T_{mB} is the melting point of lower-melting thermoplastic resin B, and lower-melting thermoplastic resin B being present in a proportion of from 10 to 60% by weight based on said heat-sealable resin layer.

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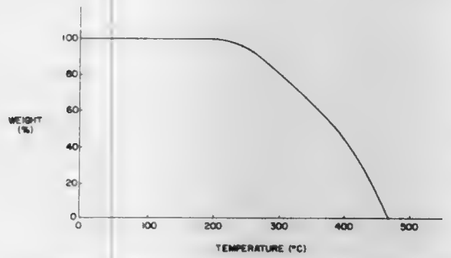
METHOD FOR PRODUCING ARTICLES FROM PARTICULATE MATERIALS USING A BINDER DERIVED FROM AN IDEALIZED TGA CURVE

Jian G. Zhang; Dunstan H. Peiris; Jun W. Zhao, and Sow W. Loh, all of Singapore, Singapore, assignors to Advanced Materials Technologies Pte Ltd, Singapore

Filed Aug. 26, 1992, Ser. No. 935,818

Int. Cl.[5] **B22F** *1/00*

U.S. Cl. 419—36 **4 Claims**



1. A method of formulating a binder employing a weight loss versus temperature profile as set forth in FIG. 1 to determine the formulation of the binding materials so that the mixture of said materials has a compound weight loss versus temperature profile comprising the profile in FIG. 1 in the range of 200° to 500° C.

5,332,544

HIGH-ALUMINUM-CONTAINING FERRITIC STAINLESS STEEL HAVING IMPROVED HIGH-TEMPERATURE OXIDATION RESISTANCE

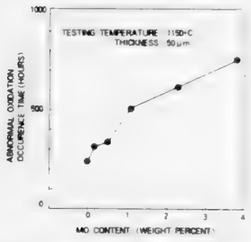
Yoshihiro Uematsu; Katsuhisa Miyakusu, and Naoto Hiramatsu, all of Yamaguchi, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 852,647, Mar. 17, 1992, Pat. No. 5,286,442. This application Aug. 16, 1993, Ser. No. 106,800

Claims priority, application Japan, May 29, 1991, 3-154085

Int. Cl.[5] **C22C** *38/22*

U.S. Cl. 420—40 **2 Claims**



1. A ferritic stainless steel excellent in high temperature oxidation resistance consisting by weight of less than 0.03% carbon, less than 1% silicon, less than 1% manganese, less than 0.04% phosphorus, less than 0.03% sulphur, from 15% to 25% chromium, less than 0.03% nitrogen, from 3% to 6% aluminum, more then 1.5% to 4% molybdenum, from 0.01% to 0.15% at least one rare-earth elements and yttrium, and the balance being Fe except for inevitable impurities.

5,332,545

METHOD OF MAKING LOW COST TI-6A1-4V BALLISTIC ALLOY

William W. Love, LaHabra Heights, Calif., assignor to RMI Titanium Company, Niles, Ohio

Filed Mar. 30, 1993, Ser. No. 39,901

Int. Cl.[5] **C22C** *14/00*

U.S. Cl. 420—420 **13 Claims**

1. An improved method for providing equivalent or superior ballistic performance of Ti-Al-4V armor plates, which comprises:

(a) providing a titanium alloy wherein the composition limits of said titanium alloy are 5.5 to 6.75% Al; 3.5 to 4.5% V; 0.20 to 0.30% O_2; 0.50 Max. Fe; and 0.50% Max. of other impurities;

(b) β-processing said titanium alloy by heating said alloy to a temperature within the beta phase field and then working said alloy; and

(c) cooling said worked alloy to room temperature.

5,332,546

WORKING FLUID FOR ABSORPTION HEAT PUMPS OPERATING AT VERY HIGH TEMPERATURES

Pierre Le Goff; Bai Q. Liu, both of Nancy; Dimitrios Antonakas, Saint Antonin sur Bayon, and Gabriel Marbach, Manosque, all of France, assignors to Commisariat A l'Energie Atomique, France

Filed Dec. 10, 1991, Ser. No. 805,312

Claims priority, application France, Dec. 14, 1990, 90 15697

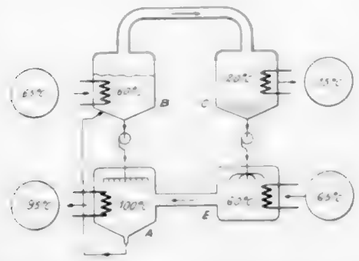
Int. Cl.[5] **C22C** *7/00*

U.S. Cl. 420—526 **1 Claim**

1. In a method of using a working fluid in absorption heat pumps operating at very high temperatures in the range of 200°

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to 1000° C., said working fluid being a mixture of at least two constituents circulating in known manner during an operating cycle of the heat pump, firstly through a separator formed by a desorber and a condenser where a diluted solution having a low concentration of solute is separated by evaporation-condensation into a first liquid phase constituted by a pure or almost pure solvent and a second liquid phase constituted by a concentrated solution, then through a mixer formed by an evaporator and an absorber where the solvent and the concentrated solution are remixed by evaporation-condensation in order to re-form the diluted solution, wherein the working fluid is constituted by a mixture of two metals, whereof the first acts as a solvent and is much more volatile than the second which acts as solute, and the volatile solvent metal is mercury and the less volatile solute metal is sodium, the sodium concentration used as the solute being between 0.10 and 0.20 kg of solute per kg of mercury in the concentrated solution and between 0.05 and 0.15 kg per kg of mercury in the diluted solution.



5,332,547

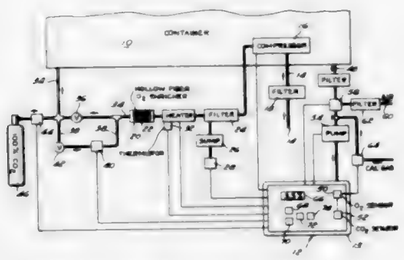
CONTROLLED ATMOSPHERE STORAGE CONTAINER

Robert J. Olson, Santa Rosa; Max D. Liston, Irvine, and Todd I. Harrison, Santa Ana, all of Calif., assignors to Prolong Systems, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 686,174, Apr. 16, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,829

Int. Cl.[5] G05B *15/00*; **A61L** *9/00*; **B01J** *19/00*; **A01K** *43/00*

U.S. Cl. 422—3 **18 Claims**



1. A controlled atmosphere system, comprising:

a sealed transport container;

a first inlet line having a first end in fluid communication with ambient air from outside said container and a second end disposed within said container;

a compressor having an intake port fluidly coupled to the second end of said first inlet line and an exhaust port, said compressor being disposed within said container;

an exhaust line having a first end fluidly coupled to said exhaust port and a second end disposed outside of said container;

a gas separation means disposed outside of said container and having an entrance port fluidly coupled to the second end of said exhaust line and an exit port;

a first outlet line having a first end fluidly coupled to said exit port and a second end fluidly coupled to said container for placing said exit port into fluid communication with gas inside said container;

a second outlet line having a first end fluidly coupled to said container for receiving gas samples from within said container and a second end disposed outside of said container;

a gas analyzing means disposed outside of said container and fluidly coupled to the second end of said second outlet line for determining the oxygen level of gas within said container; and

a programmable control means electrically interfaced to said compressor, said gas separation means and said gas analyzing means, said control means being programmed to increase the oxygen level of gas inside said container in response to an electrical signal generated by said gas analyzing means indicating that the oxygen level of the gas within the container as determined form the gas samples is below a predetermined oxygen range, and decrease the oxygen level of the gas inside said container in response to an electrical signal generated by the gas analyzing means indicating that the oxygen level within said container as determined from the gas samples is above the predetermined oxygen range;

said compressor being operable to introduce gas into the container in quantities sufficient to internally pressurize the container.

5,332,548
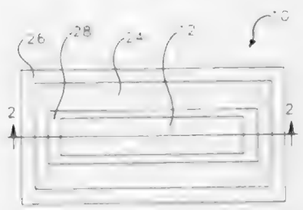
ANALYTICAL DEVICE AND METHOD OF USING SAME

Robert E. Moore, 2865 Danbe Rd., Oshkosh, Wis. 54904

Filed Dec. 30, 1991, Ser. No. 814,720

Int. Cl.[5] G01N *31/22*

U.S. Cl. 422—56 **36 Claims**



1. An analytical device for detecting a gaseous or volatile analyte emitted in situ from a component incorporated into a solid material, said device adaptable to be applied directly to a surface of a said solid material from which said analyte is emitted, comprising: a substrate for disposition adjacent a surface of said solid material, said substrate having applied thereto (a) an analyte-reactive component which reacts with said analyte, and (b) an indicator in sufficient quantity to produce a detectable signal selective to the reaction thereby detecting said analyte; an overlay for said substrate outwardly disposed relative to said surface of said solid material, said overlay being substantially impermeable to said analyte and being substantially inert to said analyte and to said analyte-reactive component; and said analytical device requiring no exogenous reagent.

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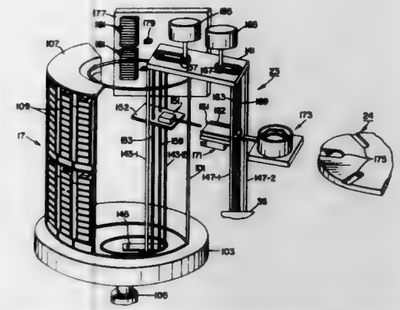
ASSAY MODULE TRANSPORT APPARATUS FOR USE IN AN AUTOMATED ANALYTICAL INSTRUMENT

Robert C. MacIndoe, Jr., Linwood, Mass., assignor to PB Diagnostic Systems, Inc., Westwood, Mass.

Filed Jul. 1, 1992, Ser. No. 908,191

Int. Cl.[5] G01N *35/04*

U.S. Cl. 422—63 **9 Claims**



1. An automated analytical instrument for use in conducting assays for a component of interest in a fluid sample, said automated analytical instrument comprising:

a) an assay module supply unit for holding magazines, said magazines including open-faced vessels wherein a supply of assay modules are disposed at different vertical levels, and each of said open-faced vessels having a layer of material covering an open face thereof;

b) a testing system for assaying a fluid sample for a component of interest using an assay module;

c) an assay module transport assembly for transporting an assay module from said assay module supply unit to said testing system, said assay module transport assembly comprising

i) an assay module receiving platform disposed next to said assay module supply unit for receiving an assay module removed from said assay module supply unit,

ii) an assay module ejector mechanism for pushing an assay module from said assay module supply unit onto said assay module receiving platform,

iii) an assay module transfer mechanism for transferring an assay module from said assay module receiving platform to said testing system;

iv) a cutter assembly for cutting said layer of material so as to permit access to said assay module disposed within said open-faced vessel, said cutter assembly being carried by said assay module receiving platform;

v) means for moving said assay module receiving platform and said cutter assembly vertically and means for moving said assay module ejector mechanism vertically whereby said assay modules disposed at different vertical levels in said assay module supply unit may be accessed; and

d) a microprocessor for controlling the operation of said automated analytical instrument.

5,332,550

AEROSOL SAMPLER

David R. Booker, Weymouth, United Kingdom, assignor to United Kingdom Atomic Energy Authority, Harwell, United Kingdom

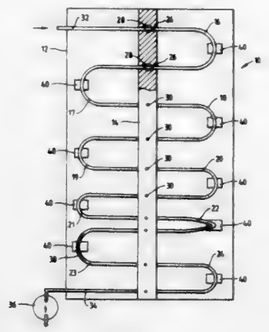
Filed Aug. 2, 1993, Ser. No. 100,440

Claims priority, application United Kingdom, Sep. 1, 1992, 9218659

Int. Cl.[5] G01G *3/14*

U.S. Cl. 422—83 **11 Claims**

1. An aerosol sampler comprising support means, at least one U-tube whose ends are fixed to the support means, means for causing an aerosol to flow continuously through the U-tube, means for causing the U-tube to vibrate, means for detecting the resonant frequency of the U-tube, means for measuring the rate of change of the resonant frequency, and means for determining from the rate of change of resonant frequency the rate at which aerosol particulates are deposited within the U-tube.



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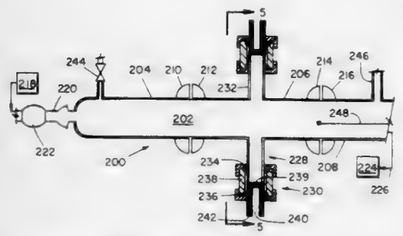
ATOMIC OXYGEN REACTOR HAVING AT LEAST ONE SIDEARM CONDUIT

Steven L. Koontz, League City, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 894,505, Jun. 2, 1992, Pat. No. 5,215,790, which is a division of Ser. No. 429,739, Oct. 31, 1989, Pat. No. 5,141,806. This application Feb. 23, 1993, Ser. No. 997,265

Int. Cl.[5] B01J *15/00, 19/08*

U.S. Cl. 422—129 **5 Claims**



2. An atomic oxygen reactor, comprising:

a gas chamber having an inlet and an outlet and comprising means for flowing gas therethrough in an axial direction;

a source of gas, containing atomic oxygen, connected to the inlet of said chamber for introduction of said gas into said chamber;

at least one sidearm conduit in fluid communication with said gas chamber between said inlet and said outlet and extending transversely relative to the axis upon which gas is caused to flow through said gas chamber; and

means for positioning a sample to be exposed to said atomic oxygen within said at least one sidearm conduit in a portion of said sidearm conduit spaced from said chamber for substantially uniform reaction with said atomic oxygen;

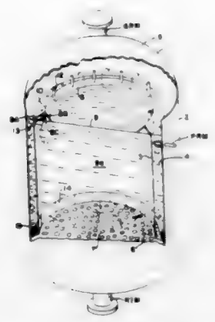
wherein said at least one sidearm conduit is constructed and arranged such that a characteristic diffusional relaxation time of said at least one sidearm conduit is substantially less than the time required for all atomic oxygen in the sidearm conduit to recombine.

5,332,552

ENHANCED GAS SEPARATION FOR BUBBLE COLUMN DRAFT TUBES

Min Chang, Warren, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 18, 1992, Ser. No. 992,984
Int. Cl.[5] F27B *15/08*; B01J *8/20*
U.S. Cl. 422—140 3 Claims



1. A slurry bubble column reactor comprising a double walled vessel defined by an inner vessel wall having a peripheral circumferential top rim and a bottom edge, and an outer main containment vessel wall surrounding said inner vessel wall, said outer main containment vessel having a top and a bottom, and wherein the inner vessel wall and the outer vessel wall are substantially co-axial and have a space between them forming an annulus between said respective walls, the outer main containment vessel wall having a synthesis gas inlet means at the bottom, gas outlet means and product recovery means at the top, and a floor above the gas inlet means which floor is fitted with gas distribution means, the inner vessel wall serving as a main reactor zone, the peripheral circumferential top rim of the inner vessel wall having attached to it an inverted channel having an apex and two edges, the point of attachment of the inverted channel to the inner wall being along a first one of said two edges of said inverted channel, a second of said two edges of said inverted channel extending over the main reaction zone thereby creating a gas space within its inverted contour and which inverted channel has a gas vent extending out of, and upwardly from, said inverted channel, and having a liquid by-pas pipe extending from a point on one side of the inverted channel below the apex of said inverted channel and between said apex and the edge of attachment to the inner vessel wall, to under said top rim of said inner vessel wall and which by-pass pipe empties into the annulus, and liquid exit means at the bottom of the annulus defined by openings in the bottom edge of the interior vessel wall and above the gas distributor means of the main containment vessel.

5,332,553

METHOD FOR CIRCULATING SOLID MATERIAL IN A FLUIDIZED BED REACTOR

Timo Hyppanen, Karhula, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Apr. 5, 1993, Ser. No. 41,571
Int. Cl.[5] F27B *15/08*; B01J *8/18*; F26B *17/00*
U.S. Cl. 422—147 10 Claims

1. In a method for circulating solid material in a fluidized bed reactor, including a rector chamber, having side walls defining the interior of the reactor chamber and a grid at the bottom of the reactor chamber, a gas discharge opening adjacent the upper end of the reactor chamber, the fluidized bed having an internal circulation of solid particles; said improvement comprising the steps of:

(a) gathering solid particles from the internal circulation of solid particles into a particle chamber, the particle chamber having an upper end wall with inlet openings allowing particles to flow into the particle chamber;

(b) causing particles having a horizontal cross sectional area A to flow in the internal circulation of solid particles toward the upper end wall;



(c) causing particles from the flow of particles to flow into the particle chamber through the inlet openings in the upper end wall, the inlet openings having a total open area B, significantly smaller than the cross sectional area A; and

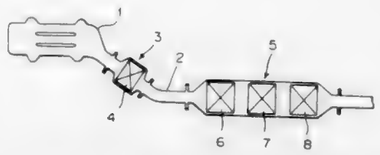
(d) recirculating at least a portion of the particles thus introduced into the particle chamber into the reactor chamber.

5,332,554

EXHAUST PURIFYING CATALYST FOR USE IN AN INTERNAL COMBUSTION ENGINE AND METHOD OF MANUFACTURING SAME

Shigeru Yasaki, Tokyo; Yasutaka Yoshino, Machida, and Kazunori Ihara, Iwakuni, all of Japan, assignors to Tokyo Roki Co., Ltd., Kanagawa and Mazda Motor Corporation, Hiroshima, both of Japan

Continuation of Ser. No. 634,350, Dec. 26, 1990, abandoned.
This application Oct. 14, 1992, Ser. No. 961,200
Claims priority, application Japan, Dec. 29, 1989, 1-341172; Nov. 16, 1990, 2-312530
Int. Cl.[5] B01D *53/36*
U.S. Cl. 422—180 17 Claims



1. An exhaust gas purifying device for use in an internal combustion engine, said device comprising:

an exhaust gas manifold;

a first converter disposed downstream from said exhaust gas manifold and communicating therewith, said first converter accommodating a catalyst for performing pretreatment with respect to exhaust gases; and

a second converter disposed downstream from said first converter and communicating therewith, said second converter accommodating at least one exhaust gas purifying catalyst comprising:

a porous monolithic carrier having opposite exhaust gas inlet and outlet ends and a longitudinal axis;

a catalyst coating layer formed on a surface of said monolithic carrier and containing a catalytic material capable of purifying exhaust gases; and

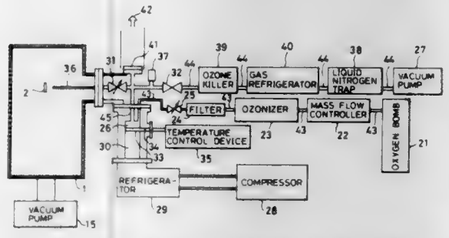
said catalyst coating layer including, at an upstream side thereof relative to a direction of flow of exhaust gases and at a location at said exhaust gas inlet end of said monolithic carrier, a palladium-supporting layer having a thickness of from 2 mm to 7 mm in a direction of said longitudinal axis and having palladium as a catalytic material, said palladium-supporting layer having an upstream end located at said exhaust gas inlet end of said monolithic carrier, said palladium being distributed substantially uniformly in said palladium-supporting layer at a high concentration in an amount of from 0.35 g/l to 1.0 g/l, said catalyst coating layer further including a non-palladium layer adjoining said palladium-supporting layer at said downstream end thereof, said non-palladium layer including at least one catalytic material other than palladium, and the palladium concentration of said catalyst coating layer being greatest in said palladium-supporting layer.

5,332,555

OZONE BEAM GENERATION APPARATUS AND METHOD FOR GENERATING AN OZONE BEAM

Shunsuke Hosokawa, Tsukuba; Masakuni Kawada, Ushiku; Shingo Ichimura, Tsukuba, and Hiroshi Murakami, Ushiku, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jul. 22, 1991, Ser. No. 733,327
Claims priority, application Japan, Jul. 27, 1990, 200612
Int. Cl.[5] C23C *14/02*
U.S. Cl. 422—186.05 11 Claims



1. An ozone beam generation apparatus comprising;

ozonizing means for forming an ozone-containing gas through the ozonization of an oxygen-containing gas;

storing means for liquefying or solidifying ozone in said ozone-containing gas, storing the liquified or solidified ozone, and gasifying said liquified or solidified ozone;

refrigerating means having a cold head in thermal contact with said storing means for liquefying or solidifying only ozone present in said ozone-containing gas while leaving gas other than ozone contained within said ozone containing gas in a gaseous state and further for gasifying said liquified or solidified ozone;

means for controlling the temperature of said storing means via said cold head for liquefying ozone in said storing means and for gasifying the liquefied or solidified ozone;

means for evacuating said gas other than ozone from said storing means; and

a piping system for transporting the gasified ozone to a desired device.

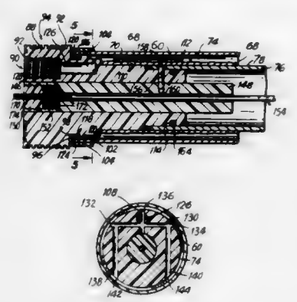
5,332,556

OZONE PRODUCTION ELECTRODE ASSEMBLY

Timothy G. Coakley, Rock Hill; Alfred J. Horton, Jr., Howells, and Bruce E. Kaplan, Woodridge, all of N.Y., assignors to Rez-Tek International, Inc., Hopkinton, Mass.

Division of Ser. No. 685,544, Apr. 15, 1991, Pat. No. 5,236,673.
This application Jun. 4, 1993, Ser. No. 72,244
Int. Cl.[5] C01B *13/11*; C02F *1/78*
U.S. Cl. 422—186.18 8 Claims

1. An ozone production electrode assembly comprising first outer and second inner tubular electrode elements mounted concentrically to each other to form a tubular air gap therebetween; a dielectric tube concentric with said electrode elements mounted therebetween within said air gap whereby a dielectric-electrode air gap is created between the outer surface of said dielectric tube and the inner surface of said first outer electrode element; a first stepped end cap at a first end of said first and second electrode elements and said dielectric tube having means for introducing oxygen-bearing gas into said dielectric-electrode air gap and for supporting said electrode elements and dielectric tube in a concentric relationship; and a second end cap at a second end of said first and second electrode elements and dielectric tube having means removing gas including ozone formed by the electrode assembly from said second end when an ozone-creating potential is placed across said first and second electrode elements and for supporting said electrode elements and dielectric tube in a concentric relationship, said gas introduction and removing means each being in the form of a passageway network through the respective end cap, each of said passageway networks having a first end at the exterior of said respective end cap and a plurality of second ends within said tubular air gap, the diameter of each of said second ends being proportional to the distance of said each of said second ends from the respective first end.

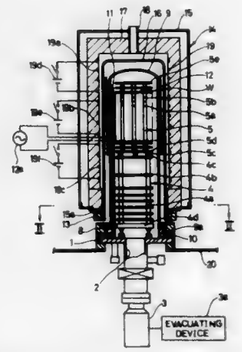


5,332,557

HEATING APPARATUS

Tsutomu Sahoda; Hideyuki Mizuki; Hidenori Miyamoto; Hisashi Hori, and Hiroyoshi Sago, all of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1993, Ser. No. 5,602
Claims priority, application Japan, Jan. 22, 1992, 4-031452
Int. Cl.[5] F28D *21/00*; G05D *23/19*; H05H *1/24*
U.S. Cl. 422—199 25 Claims



1. A heating apparatus for curing films coated on workpieces, the apparatus comprising:

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a base plate having an opening defined therein which is connected to an evacuating device;
a workpiece holder disposed over said opening for holding workpieces;
a reaction chamber vertically movable with respect to said baseplate between a lowered position in which said reaction chamber defines a closed space which accommodates the workpieces therein and a lifted position in which the workpieces are exposed out of the reaction chamber;
a heating device vertically movable with respect to said base plate between a lowered position in which the heating device surrounds said reaction chamber for heating the reaction chamber to cure films coated on the workpieces and a lifted position in which said reaction chamber is exposed out of the heating device;
means for vertically moving said reaction chamber with respect to said workpiece holder between said lowered and lifted positions of the reaction chamber; and
means for vertically moving said heating device independently of said reaction chamber between said lowered and lifted positions of said heating device

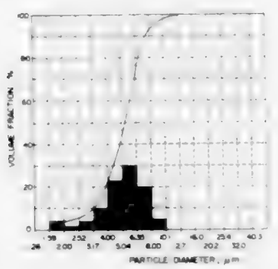
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5,332,558

RARE EARTH OXIDE POWDER AND METHOD FOR THE PREPARATION THEREOF

Masami Kaneyoshi; Tomoyuki Yamada, and Norifumi Yoshida, all of Fukui, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 813,012, Dec. 24, 1991, abandoned. This application May 10, 1993, Ser. No. 58,134
Int. Cl.[5] **C01F** *17/00*; **C07F** *5/00*
U.S. Cl. 423—21.1 **5 Claims**



1. A method for the preparation of an oxide powder of a rare earth element or a combination of two or more rare earth elements which comprises the steps of:
(a) admixing an aqueous solution of a water-soluble inorganic salt of the rare earth element and an aqueous solution of ammonium oxalate or a combination of oxalic acid and ammonia in such an amount that the molar ratio of the carboxyl groups from said oxalic acid in the form of free carboxyl groups and from said ammonium oxalate in the form of an ammonium salt to the rare earth atoms is at least 2 and the molar ratio of ammonia in the form of ammonia molecules and ammonium ions to the rare earth atoms is at least 1, to precipitate a rare earth ammonium oxalate in the aqueous medium at a temperature not exceeding 40° C., the pH value of the aqueous medium being 1 or higher;
(b) collecting the precipitate of the rare earth ammonium oxalate by solid-liquid separation;
(c) washing the precipitate of the rare earth ammonium oxalate with deionized water at a temperature not exceeding 30° C. for a period of a lower limit of either 1.5 hours or until no nitrate ions are detected up to 2 hours as an upper limit;
(d) dispersing the precipitate of the rare earth ammonium oxalate in a bath of deionized water at a temperature of 50° C. or higher for at least 15 minutes;
(e) collecting the precipitate of the rare earth ammonium oxalate by solid-liquid separation from the bath of deionized water; and
(f) calcining the precipitate of the rare earth ammonium oxalate into an oxide powder of the rare earth element.

5,332,559

BIOOXIDATION PROCESS FOR RECOVERY OF METAL VALUES FROM SULPHUR-CONTAINING ORE MATERIALS

James A. Brierley, Sandy, Utah, and David L. Hill, Elko, Nev., assignors to Newmont Gold Co. and Newmont Mining Corp., Denver, Colo.

Continuation-in-part of Ser. No. 851,988, Mar. 13, 1992, which is a continuation-in-part of Ser. No. 778,521, Oct. 18, 1991, Pat. No. 5,246,486, which is a continuation-in-part of Ser. No. 728,126, Jul. 10, 1991, abandoned. This application Jun. 3, 1992, Ser. No. 894,059
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] **C22B** *11/00, 1/08*
U.S. Cl. 423—27 **29 Claims**



1. A process for the recovery of one or more metal values from a metal ore material in the presence of clays and/or fines material, said ore material being comprised of one or more metal values and a matrix material having a sulfur content wherein sulfur is present in an oxidation-reduction state of zero or less, said process comprising forming particulates from particles comprising said ore material, particles comprising said clays and/or fines material, an acid-resistant polymeric agglomeration aid having an acid resistance at a pH of about 1.3 to less than 2.5, and an inoculate comprising bacteria capable of at least partially biooxidizing the sulfur content; forming a heap of said particulates; biooxidizing the sulfur content and recovering one or more metal values from said ore material.

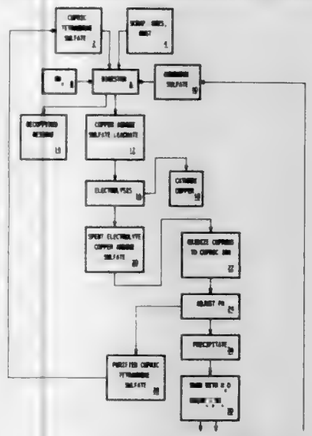
5,332,560

PROCESS FOR THE REMOVAL OF ZINC AND NICKEL FROM COPPER AMMINE SULFATE SOLUTIONS

William H. Kruesi, and Paul R. Kruesi, both of Golden, Colo., assignors to Cato Research Corporation, Wheat Ridge, Colo.

Continuation of Ser. No. 530,834, May 30, 1990, abandoned. This application Mar. 5, 1993, Ser. No. 27,554
Int. Cl.[5] **C01G** *3/14*; **C22B** *15/00, 19/00, 23/00*
U.S. Cl. 423—32 **12 Claims**

1. A method for separating materials selected from the group consisting of zinc-containing materials, nickel-containing materials and mixtures thereof, from an aqueous copper ammine sulfate solution, comprising the steps of:
(a) providing an aqueous copper ammine sulfate solution comprising cuprous ions, ammine ions, and sulfate ions and materials selected from the group consisting of zinc-containing materials, nickel-containing materials and mixtures thereof, ammonium sulfate, and free ammonia;
(b) oxidizing said cuprous ions in said copper ammine sulfate solution to cupric ions to form a first cupric ion-containing solution; and
(c) adjusting the pH of said cupric ion-containing solution to within the range from about pH 7.5 to about pH 8.0 to form a precipitate comprising zinc-containing materials, nickel-containing materials, and mixtures thereof, and to



form a second cupric ion-containing solution relatively free of nickel and zinc.

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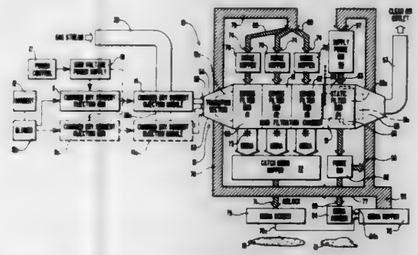
Patent Not Issued For This Number

5,332,562

METHOD FOR REMOVING PARTICULATE MATTER AND GASES FROM A POLLUTED GAS STREAM

Larry M. Kersey, 8501 E. Camino Vivaz, Scottsdale, Ariz. 85255, and Richard A. Steinke, 2164 Three Kings Ct., Park City, Utah 84060

Filed Jun. 18, 1993, Ser. No. 77,740
Int. Cl.[5] **B01J** *8/08*
U.S. Cl. 423—210 **14 Claims**



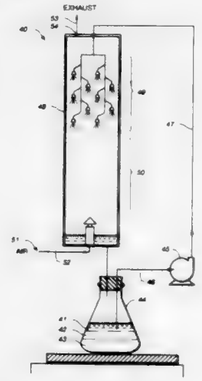
1. A method for removing particulate matter and gaseous pollutants from a polluted gas stream comprising the steps of, injecting a flow of electrostatically charged sorbent particles into a polluted gas stream, which said sorbent is selected for the particular pollutants in said gas stream with the volume of said sorbent particles selected for the quantity of pollutants in said gas stream and the charging voltage applied to said sorbent particles is variable to provide a maximum charge on each sorbent particle; passing the gas stream containing said charged sorbent particles into a transition section of a collection chamber housing, which said transition section widens from its inlet to its exhaust end, providing for a reduction in gas stream velocity passing therethrough causing heavy particulates to fall out of said gas stream; distributing said gas stream over and passing said gas stream through a first moving bed filter containing a media material that is maintained vertically in said collection chamber housing across said transition section exhaust end wherein agglomerized pollution and sorbent particulates are removed during passage through said media material, which said media material in said first moving bed upon sensing of a set pressure drop across said filter is changed for clean media material by operation of a rotary discharge valve that passes said media material out of a bottom end of said first moving filter bed, with clean media material passing from a media material hopper above said first moving filter bed through a top of said first moving filter bed, replenishing said media material as has passed through said rotary discharge valve; passing said gas stream through at least one additional moving filter bed containing a media material that is arranged vertically in said collection chamber housing, is opposite and parallel to said first moving filter bed and is essentially the same as and functions like said first moving filter bed, may include the same or different media material as used in said first moving filter bed and is for removing additional agglomerized pollution and sorbent particulates from said gas stream; passing said gas stream through a static filter bed that contains the same or different filter media material as used in the first and additional moving filter beds and is vertically maintained in said collection chamber housing parallel to and immediately opposite to a last of said additional moving filter beds, and said static filter bed media material is not changed during system operation and is to finally remove essentially all remaining pollution and sorbent particulates from said gas stream; and venting said gas stream as has passed from said static filter bed to atmosphere.

5,332,563

YELLOW PHOSPHORUS PROCESS TO CONVERT TOXIC CHEMICALS TO NON-TOXIC PRODUCTS

Shih-Ger Chang, El Cerrito, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 518,722, May 4, 1990, Pat. No. 5,106,601, and a continuation-in-part of Ser. No. 261,229, Oct. 24, 1988, Pat. No. 5,164,167. This application Jan. 13, 1992, Ser. No. 819,758
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] **B01J** *8/00*; **C10H** *23/00*; **C01C** *3/00*; **C01B** *25/16*
U.S. Cl. 423—245.1 **28 Claims**



1. A process for reducing the concentrations of organic compounds, inorganic compounds of combinations thereof in a feed stream in the gas phase, which method comprises:
A. reacting air or oxygen with an aqueous emulsion of molten P_4 producing oxidizing gaseous reagent, itself comprising O, ozone, phosphoric acid, PO, or PO_2, and
B. concurrently or subsequently reacting the gaseous product of step (A) with a mixture at least one organic compound selected from the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons, unsaturated aliphatic hydrocarbons, unsaturated aromatic hydrocarbons, aliphatic halogen compounds, aromatic halogen com-

pounds, polychlorinated biphenyls, polybrominated biphenyls, nitroaromatics, aliphatic amines, aromatic amines, aliphatic acids, aromatic acids, aliphatic alcohols, aromatic alcohols, cyclic ketones, linear ketones, aromatic ketones, nitro-aliphatics, nitro-aromatics, aliphatic chlorides, aromatic chlorides, aromatic N-heterocyclics, dialkyl sulfides, chlorinated benzodioxins, organophosphorus pesticides, azo dyes, FREON®s, or combinations thereof, at least one inorganic compound selected from cyanide, hydroxylamine, nitrosoamine, dithionate, hydroxylamine disulfonate, amine trisulfonate, amine disulfonate, sulfamate, nitrosodisulfonate or mixtures thereof or combinations thereof, all in the gas phase for a time and at a temperature effective to reduce the concentration of at least one organic compound, the at least one inorganic compound or combinations thereof present in the gas;

C. removing the gas produced in step B now reduced in content of the at least one organic compound, the at least one inorganic compound or combinations thereof;

wherein the yellow phosphorus is present in between about 0.01 and 20% by weight of the water and the organic compound or inorganic compound to yellow phosphorus is present in between about 0.01 to 10% by weight;

wherein in each of step A and B, the reaction is performed in each at of a temperature between about 43° and 100° C.; and

wherein the ozone produced in step A is reacted with the at least one organic compound, at least one inorganic compound or combinations thereof for between about 0.1 and 500 minutes in either a batch or a continuous flow reaction system.

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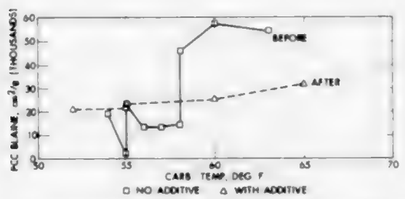
PROCESS FOR PRODUCTION OF RHOMBIC SHAPED PRECIPITATED CALCIUM CARBONATE

Vasant D. Chapnerkar, Tampa, Fla., and Mohan N. Badgujar, Milledgeville, Ga., assignors to ECC International Inc., Atlanta, Ga.

Filed Jul. 10, 1992, Ser. No. 911,417

Int. Cl.[5] **C01F** *5/24, 11/18*

U.S. Cl. 423—432 **14 Claims**



1. An improved process for producing rhombic shaped precipitated calcium carbonate comprising:

(a) slaking quicklime to form slaked lime in an aqueous solution containing about 0.01% to about 2% by weight of sugar, based on the weight of the calcium carbonate to be produced, to form a slaked lime slurry; and

(b) adding carbon dioxide to the slaked lime slurry at an initial temperature in the range of about 40° F.–80° F. until the pH drops from about 11–12 to about 7–8 to precipitate the rhombic shaped calcium carbonate having a surface area of 2–20 m^2/g.

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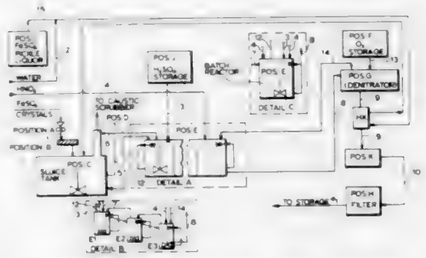
MANUFACTURE OF FERRIC SULPHATE COMPOUNDS

Jaroslav R. Derka, Pearlington, Miss., assignor to B.P.M. Industries, Inc., Schererville, Ind.

Continuation-in-part of Ser. No. 765,498, Sep. 26, 1991, Pat. No. 5,194,240, and a continuation-in-part of Ser. No. 718,780, Jun. 21, 1991, Pat. No. 5,194,241, which is a continuation-in-part of Ser. No. 623,264, Dec. 6, 1990, abandoned, said Ser. No. 765,498, is a continuation of Ser. No. 623,264, Dec. 6, 1990, abandoned, which is a continuation of Ser. No. 494,808, Mar. 14, 1990, abandoned, which is a continuation of Ser. No. 281,332, Dec. 8, 1988, abandoned. This application Dec. 4, 1992, Ser. No. 986,025

Int. Cl.[5] **C01G** *49/14, 49/02*

U.S. Cl. 423—558 **37 Claims**



1. A process for the manufacture of ferric sulphate compounds from ferrous sulphate in a closed vessel containing a liquid phase and a vapour phase, the process comprising the oxidation of Fe^{++} to Fe^{+++} under pressure utilizing commercial oxygen in the closed vessel using NOx as a catalyst where x is a number between 1 and 2 inclusive of 1 and 2 and wherein the process comprises the following reactions:

1) $NO + \frac{1}{2} O_2 \rightarrow NO_2$, and

2) $nFeSO_4 + \left(\frac{n-y}{2}\right)H_2SO_4 + \frac{n}{2} NO_2 \rightarrow$

$$Fe_n(SO_4)_{\left(\frac{3n-y}{2}\right)}(OH)_y + \left(\frac{n-2y}{2}\right)(H_2O) + \frac{n}{2} NO$$

wherein n is any integer greater than or equal to two (2) and y is any integer which is equal to, or greater than zero (0) and less than 3n and wherein the oxidation of Fe^{++} is affected by spraying the liquid phase including a solution containing Fe^{++} introduced to the closed vessel, through a reacting cloud comprising NO, NO_2 and O_2 enclosed in the vapour space of the closed vessel and wherein substantially only Ferric ions is present in the liquid phase in the closed vessel relative to the amounts of Ferric and Ferrous ions prior to the addition of $FeSO_4$.

5,332,566

SYNTHESIS OF CRYSTALLINE ZSM-23

Ahmad Moini, Lawrenceville, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

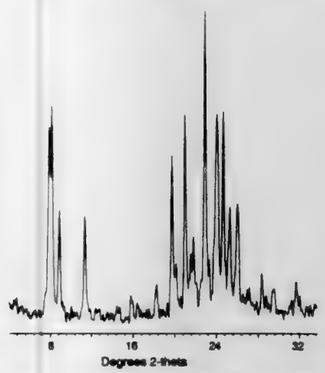
Filed Jul. 16, 1993, Ser. No. 92,093

Int. Cl.[5] **C01B** *33/34;* **B01J** *29/28*

U.S. Cl. 423—705 **17 Claims**

1. A method for synthesizing crystalline material exhibiting a characteristic X-ray diffraction pattern including d-spacing maxima values as shown in Table 1, which comprises (i) preparing a mixture capable of forming said material, said mixture comprising sources of alkali or alkaline earth metal (M), an

oxide of trivalent element (X), an oxide of tetravalent element (Y), water and directing agent (R) of the formula



$(CH_3)_3N^+CH_2CH_2CH_2N^+(CH_3)_2CH_2CH_2CH_2N^+(CH_3)_3$,

and having a composition, in terms of mole ratios, within the following ranges;

YO_2/X_2O_3	30 to 300
H_2O/YO_2	20 to 100
OH^-/YO_2	0.1 to 0.4
M/YO_2	0.05 to 1.0
R/YO_2	0.02 to 1.0

(ii) maintaining said mixture under sufficient conditions including a temperature of from about 150° C. to about 190° C. until crystals of said material are formed; and (iii) recovering said crystalline material from step (ii), said recovered crystalline material containing said R.

5,332,567

DETECTION AND TREATMENT OF INFECTIONS WITH IMMUNOCONJUGATES

M. David Goldenberg, Short Hills, N.J., assignor to Immunomedics, Morris Plains, N.J.

Continuation of Ser. No. 840,591, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 399,566, Aug. 24, 1989, abandoned. This application Mar. 22, 1993, Ser. No. 37,659

The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.

Int. Cl.[5] **A61K** *43/00, 49/00, 39/00;* **G01N** *1/00*

U.S. Cl. 424—1.49 **29 Claims**

20. A polyspecific diagnostic antibody conjugate for targeting a focus of infection, comprising an immunoreactive composite of a plurality of chemically linked antibodies or antibody fragments which specifically bind to a plurality of epitopes on a single species of pathogen or an antigen shed by said pathogen or resulting from the fragmentation or destruction of said pathogen, wherein said conjugate further comprises at least one diagnostic agent.

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S-TRIAZINE DERIVATIVES HAVING LIGHT-PROTECTING ACTION

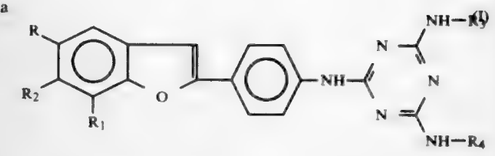
Giuseppe Raspanti, Bergamo, Italy, assignor to 3V Inc., Weehawken, N.J.

Filed May 20, 1993, Ser. No. 63,748

Int. Cl.[5] **A61K** *7/42;* **C07D** *405/12*

U.S. Cl. 424—59 **8 Claims**

1. Compounds of formula (I)

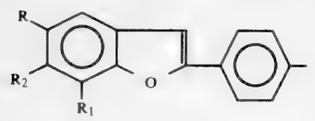


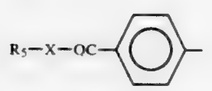
in which

R and R_1, which are the same or different, are hydrogen or C_1–C_8 straight or branched alkyl;

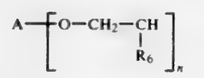
R_2 is hydrogen or C_1–C_8 straight or branched alkoxy;

R_3 and R_4, which are the same or different, are C_1–C_{18} straight or branched alkyl, C_5–C_{12} cycloalkyl optionally substituted with groups C_1–C_8 alkyl, optionally substituted aryl groups or a group of formula (II) or (III)





in which R, R_1 and R_2 have the meanings defined above, R_5 has the same meaning as R_3 and X is oxygen or the —NH— group or when X is oxygen R_5 can represent a group of formula (IV)



in which A is C_1–C_8 straight or branched alkyl, C_5–C_8 cycloalkyl, optionally substituted aryl, R_6 is hydrogen or methyl and n can be an integer from 1 to 10.

5,332,569

HAIR CARE COMPOSITION FOR CONDITIONING HAIR WITH SILICONE OIL

James L. Wood, Elmhurst, and Andrea Mariahazy, Westchester, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Continuation-in-part of Ser. No. 861,319, Mar. 31, 1992, abandoned. This application May 20, 1993, Ser. No. 65,212

Int. Cl.[5] **A61K** *7/06, 7/00*

U.S. Cl. 424—70 **16 Claims**

1. A liquid hair care composition for conditioning hair with silicone oil, comprising a stable emulsion of a water-insoluble hair conditioning silicone oil dispersed in a liquid carrier composed essentially of polyoxyalkylene glycol selected from polyoxyethylene and copolymers of polyoxyethylene and polyoxypropylene, at least 60 parts by weight of said polyoxyalkylene glycol being present per 100 parts of said composition, and said composition further containing an effective emulsifying amount of a complex formed from (i) and anionic copolymer of dimethylpolysiloxane and polyoxyethylene wherein the siloxane chain contains from 20 to 40 dimethylsiloxy units and the oxyethylene chain contains from 3 to 15 oxyethylene units and terminates in an anionic phosphate or sulfate group, and (ii) a cationic hair conditioner compound which contains at least one cationic quaternary nitrogen or

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amido amine group and at least one hydrophobic aliphatic or silicone polymer chain.

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REDUCING SOLUTION FOR PERMANENT WAVE

Joan M. Bergstrom, Minneapolis, and James M. Wilmott, Plymouth, both of Minn., assignors to Dowbrands Inc., Indianapolis, Ind.

Filed Oct. 19, 1992, Ser. No. 963,168
Int. Cl.[5] A61K *7/09, 7/11*
U.S. Cl. 424—72 11 Claims

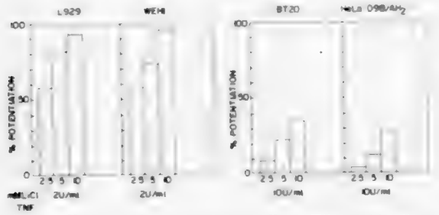
1. An aqueous reducing solution comprising: a) from about 1.0% to about 11.0% by weight of cysteamine hydrochloride; b) from about 1.0% to about 24% by weight of a thio compound selected from a group consisting of salts and esters of thioglycolic acid, L-cysteine, thiolactic acid, and thiomaleic acid, dithioerythreitol, and dithiothyreitol; c) from about 0.5% to about 7% by weight of isoascorbic acid; d) a base in amounts sufficient to adjust the pH from about 7.0 to about 8.0; and e) water in amount sufficient to total 100 percent of the solution; the weight percents being based upon the total weight of the solution.

5,332,571

PRODUCTS CONTAINING A LITHIUM SALT AND A TUMOR NECROSIS FACTOR

Joachim Kempeni, Neustadt-Duttweiler; Michael Kluge, Kallstadt, and Walter Fiers, Destelbergen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP90/00324, § 371 Date Nov. 2, 1990, § 102(e) Date Nov. 2, 1990, PCT Pub. No. WO90/10455, PCT Pub. Date Sep. 20, 1990
PCT Filed Feb. 27, 1990, Ser. No. 613,518
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1989, 3907244
Int. Cl.[5] A61K *45/06, 37/02*
U.S. Cl. 424—85.1 2 Claims



1. In a product for the treatment of malignant tumors in humans and their associated phenomena, which product comprises a combination product for simultaneous or sequential use and which product includes a tumor necrosis factor, the improvement wherein the combination product includes a lithium salt

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5,332,572

METHOD FOR PROTECTION OF SWINE AGAINST *PLEUROPNEUMONIA*

Richard F. Ross, Ames, Iowa; Yu-Wei Chaing, St. Joseph, Mo.; Theresa F. Young, Ames, Iowa, and Vicki Rapp-Gabrielson, Fargo, N. Dak., assignors to Iowa State University Research Foundation, Ames, Iowa

Continuation-in-part of Ser. No. 269,799, Nov. 10, 1988, abandoned. This application Nov. 20, 1990, Ser. No. 616,238
Int. Cl.[5] A61K *39/102, 35/74, 31/715*
U.S. Cl. 424—234.1 8 Claims

1. The method of increasing the resistance of swine to infection by serotypes of *Actinobacillus (Haemophilus) pleuropneumoniae*, comprising prior to infection parenterally administering to the swine at least one dose of a respiratory mucosa sensitizing-effective amount of a protease lysate of the outer membrane (OM) of *Actinobacillus (Haemophilus) pleuropneumoniae* cells, said lysate containing native OM lipopolysaccharide together with an antigenic protease digest of OM protein essentially free of protein of molecular weight above 20,000.

5,332,573

STRAINS OF DRECHSLERA SSP FOR CONTROLLING GRASS

Kenichi Yamaguchi, Mobara; Masanobu Arita, Kanagawa; Masatoshi Gohbara, Mobara; Tatsuo Shinmi, Mobara; Keiko Fukui, Mobara, and Emi Tohyama, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

Continuation of Ser. No. 764,675, Sep. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 711,529, Jun. 10, 1991, abandoned, and a continuation-in-part of Ser. No. 435,024, Nov. 13, 1989, abandoned. This application Jun. 15, 1993, Ser. No. 76,689
Claims priority, application Japan, Nov. 21, 1988, 63-292466; Jun. 13, 1990, 2-152711
Int. Cl.[5] A01N *63/00*; C12N *1/00*
U.S. Cl. 504—117 4 Claims

1. A method of controlling a wild type barnyard grass selected from the group consisting of *Echinochloa-crus*-galli var. crus-galli, *Echinochloa-crus*-galli var. formosensis, *Echinochloa-crus*-galli var. praticola, *Echinochloa oryzicola* and *Echinochloa colonum*, which method comprises applying to the locus of the wild type barnyard grass to control the growth of the wild type barnyard grass an effective growth controlling amount of at least one strain selected from the group consisting of *Drechslera monoceras* FERM BP-2652, FERM BP-3410, FERM BP-2653, FERM BP-2656, FERM BP-3413, FERM BP-3414, FERM BP-3415, FERM BP-3411, FERM BP-3412, FERM BP-3417 and FERM BP-3416, *Drechslera ravenelli* FERM BP-2659, FERM BP-2657 and FERM BP-3408, and *Drechslera poae* FERM BP-2655, FERM BP-3407 and FERM BP-3409.

5,332,574

COMPOUNDS PRODUCED BY A STRAIN OF *STREPTOMYCES EXFOLIATUS*

Koko Sugawara, Saitama; Koji Tomita, Tokyo, both of Japan; Michael R. Kozlowski, Noank, Conn., and Yosuke Sawada, Tokyo, Japan, assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Feb. 11, 1993, Ser. No. 16,380
Int. Cl.[5] A61K *35/74*; C12P *1/06*
U.S. Cl. 424—121 7 Claims

1. Compound BU-4726G-A having the following characteristics:

(1) readily soluble in chloroform, ethyl acetate, methanol, acetone and dimethyl sulfoxide; essentially insoluble in benzene, n-hexane, and water,

(2) characteristic UV absorption maxima (UV λ_{max}nm(E)) at 236 nm (524) and 445 nm (83) in neutral and acidic methanol,

(3) a molecular formula of $C_{52}H_{50}O_{20}$,

(4) a dimer type structure containing a naphthoquinone chromophore,

(5) molecular weight as determined by mass spectroscopy (FAB-MS (m/z)) of 995 $(M+H)^+$,

(6) an optical rotation ($[\alpha]_D$) of 160±10° (concentration 0.5%, methanol),

(7) infrared spectrum having absorption bands occurring at the following frequencies (IR$\nu^{KBr}{}_{max}cm^{-1}$): 3450, 2980, 1780, 1760, 1700, 1670, 1640, and 1320,

(8) positive responses to iodine vapor, ferric chloride, ammonium molybdate-sulfuric acid; negative responses to ninhydrin, Ehrlich and anthrone reagents,

(9) melting point of greater than 200° C. (decomposition), and

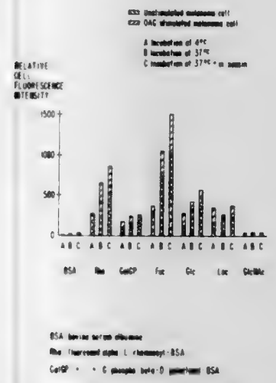
(10) elemental analysis:
Calculated for $C_{52}H_{50}O_{20}.H_2O$:C; 61.66, H; 5.17,
Found: C; 61.42, H; 5.10.

5,332,575

METHOD OF TARGETING MELANOCYTES WITH A COMPOUND CONTAINING A FUCOSE RESIDUE

Gérard Redziniak, St Cyr en Val; Dominique Cerdan, Sully-sur-Loire; Claudine Kieda, Orleans, and Michel Monsigny, Saint-Cyr-en-Val, all of France, assignors to Parfums Christian Dior, Paris, France

Filed Apr. 2, 1992, Ser. No. 861,780
Claims priority, application Japan, Oct. 3, 1991, 3-283587
Int. Cl.[5] A61K *9/127*
U.S. Cl. 424—450 21 Claims



1. A method of binding a product to the membrane of a melanocyte by means for a ligand-receptor bond, comprises applying to melanocytes a product comprising at least one ligand comprising an oside portion accessible to the melanocytes membrane receptors, said oside being a fucose portion.

5,332,576

COMPOSITIONS AND METHODS FOR TOPICAL ADMINISTRATION OF PHARMACEUTICALLY ACTIVE AGENTS

Juan A. Mantelle, Miami, Fla., assignor to Noven Pharmaceuticals, Inc., Miami, Fla.

Division of Ser. No. 813,196, Dec. 23, 1991, Pat. No. 5,234,957, which is a continuation-in-part of Ser. No. 661,827, Feb. 27, 1991, abandoned. This application May 21, 1993, Ser. No. 64,587
Int. Cl.[5] A61K *9/70, 47/32*
U.S. Cl. 424—443 15 Claims

1. A method for administering one or more local anesthetic agents to a subject comprising the steps of:

(a) providing a composition comprising a therapeutically effective amount of at least one local anesthetic; a pharmaceutically acceptable solvent for the anesthetic, in an amount from about 5 to about 70 weight percent based on the weight of the whole composition;

and in admixture with the anesthetic agent in the solvent, a flexible, finite, pharmaceutically acceptable polysaccharide bioadhesive carrier in an amount from about 20 to about 50 weight percent based on the weight of the whole composition; wherein said composition is substantially free of water is substantially water insoluble and is a bioadhesive; and

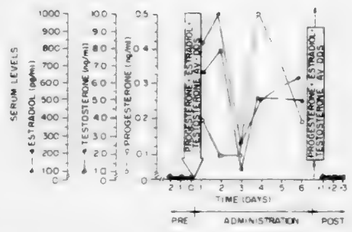
(b) contacting an area of skin or mucous membrane with the composition to administer the local anesthetics.

5,332,577

TRANSDERMAL ADMINISTRATION TO HUMANS AND ANIMALS

Avi Gertner, Kfar Saba, and Yosef Rubinstein, Nes Ziona, both of Israel, assignors to Dermamed, Nes Ziona, Israel

Continuation-in-part of Ser. No. 710,981, Jun. 6, 1991, abandoned, Ser. No. 727,217, Jul. 9, 1991, and Ser. No. 653,393, Feb. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 451,679, Dec. 18, 1989, Pat. No. 5,049,143, said Ser. No. 710,981, is a continuation-in-part of Ser. No. 653,393, Dec. 18, 1989, said Ser. No. 727,217, is a division of Ser. No. 451,679, Dec. 18, 1989. This application Apr. 30, 1992, Ser. No. 876,153
Claims priority, application Israel, Dec. 27, 1988, 88808; Jun. 14, 1990, 94737; Aug. 28, 1990, 95508; Feb. 11, 1991, 97215
Int. Cl.[5] A61K *9/70*
U.S. Cl. 424—449 8 Claims



1. A pharmaceutical composition for use in the transdermal administration of a medicament, whereby said medicament is detectable in the bloodstream within two hours after administration, which composition comprises

a medicament adapted for transdermal administration and a pharmaceutically acceptable carrier for the medicament; the improvement being that the carrier consists essentially of at least one compound selected from the group consisting of esters of C_{8-24} fatty acids with at least one aliphatic hydroxy compound containing 2–12 carbon atoms and 2–3 hydroxy groups and the acid component of the ester is selected from caprylic, capric, lauric palmic, stearic, arachidic, behenic, lignoceric, oleic, claidic, petroselinic, linoleic, alpha-linolenic, (9,12,15-octadecatrienoic acid), gamma-linolenic, linolelaidic, arachidic, 11-eicosenoic, 11,14-eicosadienoic, 11,14,17-eicosatrienoic, 8,11,14-eicosatrienoic, arachidonic, 5,8,11,14,17-eicosapentaenoic, erucic and nervonic acids, provided that when said hydroxy compound is glycerol, the esters thereof are selected from diglycerides and triglycerides of at least one C_{8-24} fatty acid.

5,332,578

PLATELET MEMBRANE MICROPARTICLES

Francis Chao, Newton, Mass., assignor to PRP, Inc., Watertown, Mass.

Continuation of Ser. No. 508,832, Apr. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 337,916, Apr. 14, 1989, Pat. No. 5,185,160. This application Jun. 25, 1992, Ser. No. 905,152
The portion of the term of this patent subsequent to Aug. 7, 2010, has been disclaimed.
Int. Cl.[5] A61K *35/14*; C12N *7/04*
U.S. Cl. 424—532 14 Claims

1. A platelet membrane product derived from platelets of a mammalian species having a platelets comprising:

isolated platelet membrane fragments that have procoagulant activity but are nonreactive with alloantibodies to HLA antigens of the species from which the platelets are derived.

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5,332,579

NUTRITIONAL SUPPLEMENT FOR OPTIMIZING CELLULAR HEALTH

Anthony J. Umbdenstock, c/o Kern Enterprises, Inc., 1081 Whitebridge La, Hanover Park, Ill. 60103-2671

Continuation-in-part of Ser. No. 564,131, Aug. 7, 1990, abandoned. This application Nov. 20, 1992, Ser. No. 979,802
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[5] **A61K** *33/32, 35/78, 33/14, 33/06, 31/555, 31/595, 31/355, 31/34, 31/195, 31/07*
U.S. Cl. 424—639 **10 Claims**

1. A method for aiding in the recovery of addicts by the oral administration of a nutritional supplement for utilization by cells to reestablish normal cellular biochemistry comprising the step of orally administering a supplement comprising the following elements on a daily basis for at least 30 days:

About 1500 IU to about 15000 IU Vitamin A;
About 5000 IU to about 45000 IU Beta-carotene;
About 33 mg to about 300 mg Vitamin B1;
About 50 mg to about 1000 mg Vitamin B6;
About 30 mcg to about 300 mcg Vitamin B12;
About 20 mg to about 500 mg Niacin;
About 100 mg to about 2000 mg Niacinamide;
At least about 100 mg Vitamin C;
About 5 mg to about 100 mg Magnesium;
About 10 mg to about 100 mg Zinc;
About 50 to about 1000 mg Valerian Root;
At least two additional minerals selected from the group of calcium, chromium, copper, iron, manganese, and selenium; and
At least four additional Vitamins, herbs, and amino acids selected from the group consisting of Vitamin D3, Vitamin E, Vitamin B2, biotin, pantothenic acid, choline, inositol, glutamic acid, glutamine, and echinachea.

5,332,580

FUMIGATION METHOD EMPLOYING AN AQUEOUS SOLUTION COMPRISING A HEXAMETAPHOSPHATE, A THIOCARBONATE, AND A SULFIDE

Donald C. Young, Fullerton, and James A. Green, II, Chino, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 663,362, Feb. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 262,961, Oct. 28, 1988, Pat. No. 5,041,240, and Ser. No. 262,962, Oct. 28, 1988, abandoned, and Ser. No. 128,146, Dec. 3, 1987, Pat. No. 5,022,912, which is a continuation-in-part of Ser. No. 685,454, Nov. 16, 1984, Pat. No. 4,726,144, which is a continuation-in-part of Ser. No. 315,492, Oct. 27, 1981, Pat. No. 4,476,113. This application Nov. 25, 1992, Ser. No. 982,155
The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.
Int. Cl.[5] **A01N** *59/02, 59/04, 59/26*
U.S. Cl. 424—703 **35 Claims**

1. A method for fumigating soil, which comprises applying to the soil through irrigation means an aqueous solution comprising:

(a) an amount of sodium hexametaphosphate sufficient to inhibit the deposition of hard water deposits on the irrigation means;
(b) a fumigation effective amount of a thiocarbonate selected from the group consisting of alkali and alkaline earth metal tri- and tetrathiocarbonates, and combinations thereof; and
(c) an amount of a sulfide sufficient to increase the chemical stability of the thiocarbonate in the solution, the sulfide being selected from the group consisting of alkali and alkaline earth metal sulfides of the formula M_nS_x, wherein M is selected from alkali and alkaline earth metals and combinations thereof, x is at least 1, n is 2 when M is alkali metal, and n is 1 when M is an alkaline earth metal, and combinations thereof.

5,332,581

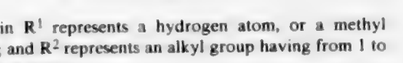
KERATINOUS FIBER TREATING COMPOSITION

Toru Yoshihara; Takayoshi Kajino, and Emi Chugun, all of Tokyo, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,630
Claims priority, application Japan, Aug. 30, 1991, 3-219952
Int. Cl.[5] **A61K** *7/075*
U.S. Cl. 424—70 **4 Claims**

1. A keratinous fiber treating composition comprising the following components (a), (b) and (c):

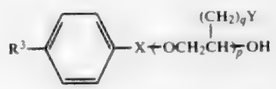
(a) 2 to 20% by weight based on the total weight of said composition of a dialkylene glycol monoalkyl ether represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom, or a methyl group; and R^2 represents an alkyl group having from 1 to 5 carbon atoms;

(b) 2 to 20% by weight based on the total weight of said composition of an aromatic alcohol represented by formula (II):



(II)

wherein R^3 represents a hydrogen atom, a methyl group, or a methoxy group; X represents a single bond, a straight-chain or branched-chain alkylene group having from 1 to 3 carbon atoms, or a straight-chain or branched-chain alkenylene group having from 1 to 3 carbon atoms; Y represents a hydrogen atom, or a hydroxyl group; and p and q each represents 0 or an integer of from 1 to 5; and

(c) 2 to 8% by weight based on the total weight of said composition of a weak acid.

5,332,582

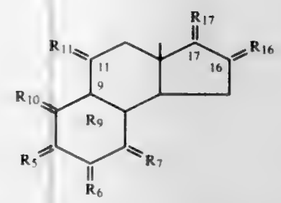
STABILIZATION OF AMINOSTEROIDS FOR TOPICAL OPHTHALMIC AND OTHER APPLICATIONS

John C. Babcock, Olga, Wash.; Jon R. Polansky, Mill Valley, Calif.; Lyle M. Bowman, Pleasanton, Calif.; Sheng-Wan Tsao, San Carlos, Calif.; Erwin C. Si, Alameda, Calif., and Santosh K. Chandrasekaran, Moraga, Calif., assignors to Insite Vision Incorporated, Alameda, Calif.

Continuation-in-part of Ser. No. 933,574, Aug. 24, 1992, Pat. No. 5,209,926, which is a continuation of Ser. No. 838,875, Feb. 19, 1992, abandoned, which is a division of Ser. No. 537,062, Jun. 12, 1990, Pat. No. 5,124,154. This application Dec. 2, 1992, Ser. No. 984,445
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[5] **A61K** *47/28, 31/59, 37/22, 37/52*
U.S. Cl. 424—78.04 **36 Claims**

1. A topical opthalmic composition comprising:

(a) from about 0.01 to about 10% by weight of at: arnino-substituted steroid therapeutic agent selected from the group consisting of the C_{20} through C_{26} aminosteroids of the formula XI



(XI)

where:

(A-I) R_6 is α-R_{61}:β-R_{62}, R_{10} is α-R_{101}:β-R_{102} and R_7 is α-H: β-H, where one of R_{61} and R_{62} is —H, and the other is —H, —F, or C_1–C_3 alkyl, R_{102} is $—CH_3$, R_{101} and R_5 taken together are $—(CH_2)_2—C(—R_{33})—CH=$ or $—CH—CH—CO—CH=$, where R_{33} is =O or α-H: β-OR_{34} or α-OR_{34}: β-H, where R_{34} is —H, $—P(=O)(OH)_2$, $—CO—CH_3$, $—CO—C_2H_5$, $—CO—C_6H_5$, $—CO—O—CH_3$ or $—CO—O—C_2H_5$;

(A-II) R_5 is α-R_{53}:β-R_{54}, R_6 is α-R_{63}:β-R_{64}, R_{10} is α-R_{103}: β-R_{104} and R_7 is α-H: β-H, where one of R_{63} and R_{64} is —H, and the other taken together with one of R_{53} and R_{54} forms a second bond between C_5 and C_6,R_{104} is $—CH_3$, R_{103} and the other of R_{53} and R_{54} taken together are $—CH_2)_2—C(H)(OH)—CH_2—$ or $—(CH_2)_2—C[H-][OP(=O)—(OH)_2]—CH_2—$

(A-III) R_{10} and R_5 taken together are $=CH—CH=C(OR_3-)—CH=$ where R_3 is —H, $—P(=O)(OH)_2$, C_1–C_3 -alkyl, $—CO—H$, C_2–C_4 alkanoyl or benzyl, R_6 is α-R_{65}:β-R_{66} where one of R_{65} and R_{66} is —H, and the other is —H, —F, or C_1–C_3 and R_7 is α-H: β-H;

(A-IV) R_5 is α-R_{57} :β-R_{58} , R_6 is α-R_{67}:β-R_{68} , R_7 is α-H: β-H and R_{10} is α-R_{107}:β-R_{108}, where one of R_{57} and R_{58} is —H, R_{107} and the other of R_{57} and R_{58} taken together are $—(CH_2)_2—C(=R_{33})—CH_2$, where R_{33} is as defined above, R_{108} is $—CH_3$, where one of R_{67} and R_{68} is —H and the other is —H, —F, or C_1 -C_3 alkyl;

(A-V) R_6 is R_{69}:R_{610}, R_7 is R_{79}:R_{710}, R_{10} is α-R_{109}:R_{1010}, where one of R_{69} and R_{610} is —H and the other taken together with one of R_{79} and R_{710} forms a second bond between C_6 and C_7, and the other of R_{79} and R_{710} is —H, R_{1010} is $—CH_3$, R_{109} and R_5 taken together are $—(CH_2-)_2—C(=R_{33})—CH=$ or $—CH=CH—CO—CH=$, where R_{33} is as defined above; where:

(C-I) R_{11} is α-R_{111}:β-R_{112}, where one of R_{111} and R_{112} is taken together with R_9 to form a second bond between C_9 and C_{11} and the other of R_{111} and R_{112} is —H;

(C-II) R_9 is $\rightarrow$Cl and R_{11} is =O or α-H:β-R_{114} where R_{114} is—Cl or $\rightarrow$OH;

(C-III) R_9 is $\leftarrow$H or —F and R_{11} is =O or α-R_{115}:β-R_{116}, where one of R_{115} and R_{116} is —H, and the other of R_{115} and R_{116} is —H, —OH or C_1 –C_{12} alkoxy;

(C-IV) R_9 is $\leftarrow$H or —F and R_{11} is α-O—CO—R_{117}: β-H, where R_{117} is

(A) C_1 –C_3 alkyl,
(B) C_1–C_{12} alkoxy,
(C) furanyl,
(D) $—NR_{122}R_{123}$, where one of R_{122} and R_{123} is —H, methyl or ethyl and the other is —H, C_1–C_4 alkyl or phenyl,
(E) $—X_3—X_1$, where X_3 is —O— or a valence bond, where X_1 is phenyl optionally substituted with 1 through 2 —Cl, —Br, C_1–C_3 alkoxy, —COOH, $—NH_2$, C_1–C_3 alkyl-amino, di(C_1 -C_3)alkylamino, where the alkyl groups are the same or different, 1-pyrrolidinyl-, 1-piperidinyl, 1-hex-amethylenimino-, 1-heptamethylenimino-, C_2–C_4 acyl-amino and $\leftarrow$NH— CHO or with 1 —F or $—CF_3$;

where:

(D-I) R_{16} is R_{161}:R_{162} and R_{17} is R_{171}:R_{172}, where one of R_{161} and R_{162} is —H or $—CH_3$ and the other taken together with one of R_{171} and R_{172} forms a second bond between C_{16} and C_{17}, and the other of R_{171} and R_{172} is $—C(=Z)—(CH_2)_n—NR_{21}R_{210}$, where Z is =O, $=CH_2$ or R_{179}:—H where R_{179} is —H or $—CH_3$, where n is 0 through 6, where

(A) R_{21} is

(1) $—(CH_2)_m—NR_{211}—X_2$, where m is 2, 3 or 4, where R_{211} is —H or C_1–C_3 alkyl, where X_2 is: [A]

(a) pyridin-2-, 3- or 4-yl or the N-oxide thereof optionally substituted by 1 or 2 R_{212}, being the same or different, where R_{212} is
(i) —F,
(ii) —Cl,
(iii) —Br,
(iv) C_1–C_5 alkyl,
(v) $—CH_2—CH=CH_2$,
(vi) $—X_1$, where X_1 is as defined above,
(vii) $—NR_{213}R_{213}$ where the R_{213}'s are the same or different and are —H, C_1–C_3 alkyl or —CH-$_2$—$CH=CH_2$,
(viiiα) $•CH_2—(CH_2)_q—CH_2—N•—$ where the atoms marked with an asterisk (•) are bonded to each other resulting in the formation of a ring, where q is 1 through 5,
(viiiβ) $•CH_2—CH_2—(CH_2)_c—G—(CH_2)_d—CH$-$_2—CH_2—N•—$ where the atoms marked with an asterisk (•) are bonded to each other resulting in the formation of a ring, where G is —O—, —S—, —SO—, $—SO_2—$ or $—NHR_{214}$, where R_{214} is —H, C_1–C_3 alkyl, or X_1 as defined above, where c and d are the same or different and are 0 through 2 with the proviso that the total number of ring carbon atoms is 4, 5 or 6, [a]
(ix) 3-pyrrolin-1-yl, [b]
(x) pyrrol-1-yl optionally substituted with C_1–C_3 alkyl, [c]
(xi) piperidin-1-yl optionally substituted with 1 or 2 C_1–C_3 alkyl, [d]
(xii) 1,2,3,6-tetrahydro-pyridin-1-yl, [e]
(xiii) 1-hexamethyleneimino containing a 3- or 4-double bond or 3- and 5-double bonds, [f]
(xiv) 1,4-dihydro-1-pyridinyl substituted in the 4 position by two C_1–C_3 alkyl being the same or different, [g]
(xv) —OH,
(xvi) C_1–C_3 alkoxy,
(xvii) $—NR_{217}—(CH_2)_e—Q$ where Q is 2-pyridinyl where R_{217} is —H or C_1–C_3 alkyl and e is 0 through 3 (1)
(xviii) pyridin-2-, 3- or 4-yl,

(b) 1,3,5-triazin-4-yl or the N-oxide thereof optionally substituted at the 2- and/or 6-position with R_{212} as is defined above, (4)
(c) pyrimidin-4-yl or the N-oxide thereof optionally substituted at the 2- and/or 6-position with R_{212} as is defined above, (5)
(d) pyrimidin-2-yl optionally substituted at the 4- and-/or 6-position with 1 or 2 R_{212} as is defined above, (6)
(e) pyrazin-2-yl optionally substituted with 1 or 2 R_{212} as is defined above, (7)
(f) imidazol-2-yl optionally substituted in the 1 position with C_1–C_3 alkyl or $—X_1$, where X_1 is as defined above, and further optionally substituted with 1 or 2 R_{212} as defined above, (8)
(g) 1,3,4-triazol-2-yl optionally substituted in the 1 position with C_1–C_3 alkyl or $—X_1$, where X_1 is as defined above, and further optionally substituted with R_{212} as defined above, (9)
(h) imidazol-4- or 5-yl optionally substituted in the 1 position with C_1–C_3 alkyl or $—X_1$, where X_1 is as defined above, and further optionally substituted with 1 or 2 R_{212} as defined above, (10)
(i) benzo[b]thien-2-yl, (12a)
(j) indol-2-yl, (12b)
(k) benzo[b]thiazol-2-yl, (12c)
(l) benzimidazol-2-yl, (12d)

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(m) 4-[2-[4-[2,6-bis(1-pyrrolidinyl)-4-pyrimidinyl]-1-piperazinyl]ethyl]piperazinyl, (13)
(n) 1,2,4-triazin-3-yl optionally substituted at the 5- and/or 6-position with R_{212} as is defined above, (14)
(2) (1-piperazinyl)-(C_2–C_4)alkyl optionally substituted in the 4-position with —X_1 or —X_2 as defined above, [B]
(3) —X_2, as defined above, [O]
(4) —$(CH_2)_m$—X_4 where m is as defined above and where X_4 is
(a) —O—CH_2CH_2—Y, where Y is C_1–C_3 alkylamino, di(C_1–C_3)alkylamino where the alkyl groups are the same or different, C_3–C_6alkyleneimino, optionally substituted with 1 or 2 C_1–C_3 alkyl,
(b) —$NR_{220}CH_2CH_2$—Y, where R_{220} is —H or C_1–C_3 alkyl and Y is as defined above,
(c) —$(CH_2)_g$—$N(R_{220})$—X_2, where g is 2, 3 or 4, and where R_{220} and X_2 are as defined above, [H]
(5) —$(CH_2)_m$—$NR_{222}R_{223}$, where R_{222} is —H or C_1–C_3 alkyl and R_{223} is —X_1 or —X_2 as defined above, or R_{222} and R_{223} are taken together with the attached nitrogen atom to form a saturated mono-nitrogen C_3–C_6 heterocyclic ring and where m is as defined above, [I]
(6) —$(CHCH_3)_b$—$(CH_2)_f$—R_{224}, where b is 0 and f is 1 through 3 or b is one and f is 0 through 3, where R_{224} is phenyl substituted with 1 through 3 —OH, C_1–C_3 alkoxy, —$NR_{225}R_{226}$ where R_{225} and R_{226} are the same or different and are —H, C_1–C_3 alkyl or are taken together with the attached nitrogen atom to form a C_4–C_7 cyclic amino ring, [J]
(7) —$(CH_2)_i$—X_2, where i is 1 through 4 and X_2 is as defined above, [K]
(8) (1-piperazinyl)acetyl substituted in the 4-position by X_2 where X_2 is as defined above, [L]
(9) (1-piperazinyl)carbonylmethyl substituted in the 4-position by —X_2 where X_2 is as defined above, and [M]45-152
(B) R_{210} is
(1) —H,
(2) C_1–C_3 alkyl,
(3) C_5–C_7 cycloalkyl,
(4) —$(CH_2)_m$—NR_{211}—X_2, where m, R_{211} and X_2 are as defined above, [A]
(5) (1-piperazinyl)-(C_2–C_4)alkyl optionally substituted in the 4-position with —X_1 or —X_2 as defined above, [B]
(6) —$(CH_2)_m$—X_4, where m and X_4 are as defined above, [H]
(7) —$(CH_2)_m$—$NR_{222}R_{223}$, where m, R_{222} and R_{223} are as defined above, [I]
(8) —$(CHCH_3)_b$—$(CH_2)_f$—R_{224}, where b, f and R_{224} are as defined above, [J]
(C) R_{21} and R_{210} are taken together with the attached nitrogen atom to form a heterocyclic ring selected from the group consisting of
(1) 2-(carboxy)-1-pyrrolidinyl optionally as the C_1–C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-1]
(2) 2-(carboxy)-1-piperidinyl optionally as the C_1–C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-2]
(3) 2-(carboxy)- 1-hexamethyleneimino optionally as the C_1–C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-3]
(4) 2-(carboxy)-1-heptamethylene-imino optionally as the C_1–C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-4]
(5) 1-piperazinyl substituted in the 4-position with R_{228}—CO—$(CH_2)_j$— where R_{228} is —X_1, —$NR_{229}X_1$ or 2-furanyl, where R_{229} is —H or C_1–C_3 alkyl, where j is 0 through 3 and X_1 is as defined above, [D]
(6) 1-piperazinyl substituted in the 4-position with X_2—$(CH_2)_j$—, where X_2 and j are as defined above, [E]
(7) 1-piperazinyl substituted in the 4-position with X_1—(CH_2)j—, where X_1 and j are as defined above, [F]
(8) 4-hydroxy-1-piperidinyl substituted in the 4-position with X_1 as defined above, [G]
(9) 1-piperazinyl substituted in the 4-position with X_2—NR_{229}—CO—$(CH_2)_i$—, where X_2, R_{229} and i are as defined above; [N]
(D-II) R_{16} is α-R_{163}:β-R_{164} where one of R_{163} and R_{164} is —H and the other is —H, —F, —CH_3 or —OH, and R_{17} is —CH—$(CH_2)_p$—$NR_{21}R_{210}$, where p is 1 or 2, where R_{21} and R_{210} are as defined above;
(D-III) R_{16} is α-R_{165}:β-R_{166} and R_{17} is α-R_{175}:β-R_{176}, where R_{165} is —H, —OH, —F or —CH_3 and R_{166} is —H, —OH, —F, or —CH_3, with the proviso that at least one of R_{165} and R_{166} is —H, where R_{175} is —H, —OH, —CH_3, —CH_2CH_3, C_2CH_7, alkanoyloxy or —O—CO—X_1, where X_1 is as defined above, and where R_{176} is —C(=Z)—(CH_2) n—$NR_{21}R_{210}$, where Z, n, R_{21} and R_{210} are as defined above;
(D-IV) the 16,17-acetonide of a compound where R_{165} is —OH, R_{166} is —H, R_{175} is —OH and R_{176} is —C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, where Z, n, —R_{21} and R_{210} are as defined above;
and the pharmaceutically acceptable salts, hydrates and solvates thereof;
with the following overall provisos that:
(I) one of R_{161} or R_{162} is taken together with one of R_{171} or R_{172} to form a second bond between C_{16} and C_{17}, only when R_{10} is α-R_{101}:β-R_{102}, α-R_{103}:β-R_{104} α-R_{107}:β-R_{108} or α-R_{109}:β-R_{1010},
(II) R_{17} is —CH—$(CH_2)_p$—$NR_{21}R_{210}$, only when R_{10} is α-R_{101}:β-R_{102}, a-R_{103}:β-R_{104}, α-R_{107}: β-R_{108} or α-R_{109}:β-R_{1010},
(III) R_5 and R_{10} taken together are =CH—CH=C(OR_3.)—CH=, only when R_{17} is α-R_{175}:β-R_{176} or the 16,17-acetonide of a compound where R_{16} is α-OH: β-H and R_{17} is α-OH: β-C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, and
(IV) R_5 is α-R_{57}:β-R_{58}, only when R_{17} is α-R_{175}:β-R_{176} or α-OH: β-C—(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, or the 16,17-acetonide thereof; and
(b) an opthalmically acceptable carrier therefor comprising lightly cross-linked carboxy-containing polymer and water.

5,332,583

VACCINE CONTAINING GENETICALLY-DETOXIFIED PERTUSSIS HOLOTOXIN

Michel H. Klein, Willowdale; Heather A. Boux, Aurora; Stephen A. Cockle, Richmond Hill; Sheena M. Loosmore, Aurora, and Gavin R. Zealey, Concord, all of Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Division of Ser. No. 589,423, Sep. 28, 1989, Pat. No. 5,244,657, which is a continuation-in-part of Ser. No. 275,376, Nov. 23, 1988, Pat. No. 5,085,862. This application Nov. 5, 1991, Ser. No. 788,314

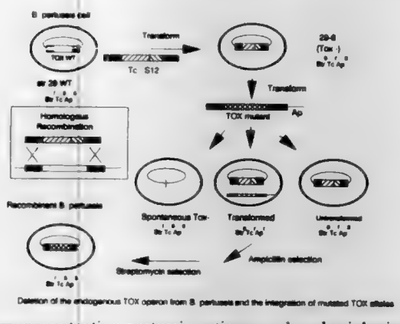
Claims priority, application United Kingdom, Nov. 24, 1987, 8727489

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] **C07K** *3/00;* **C12N** *1/20;* **A61K** *39/00, 39/02*

U.S. Cl. 424—190.1 **2 Claims**

1. A vaccine against *Bordetella pertussis*, comprising an effective amount of an immmunoprotective genetically-detoxified mutant of pertussis holotoxin wherein at least one specific amino acid residue which contributes to pertussis toxin toxicity has been removed or replaced and at least one other immunoprotective pertussis antigen, and a physiologically-acceptable carrier therefor.



Deletion of the endogenous TOX operon from B. pertussis and the integration of mutated TOX alleles

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5,332,584

MICROCAPSULES

Herbert B. Scher, Moraga, and Marius Rodson, El Cerrito, both of Calif., assignors to Zeneca Inc., Wilmington, Del.

Continuation of Ser. No. 540,560, Jun. 20, 1990, abandoned, which is a continuation of Ser. No. 151,048, Feb. 1, 1988, Pat. No. 4,956,129, which is a continuation-in-part of Ser. No. 595,136, Mar. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 499,973, Jun. 1, 1983, abandoned, which is a continuation-in-part of Ser. No. 201,686, Oct. 30, 1980, abandoned. This application Dec. 9, 1991, Ser. No. 803,870

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] **A01N** *25/28, 37/18;* **B01J** *13/18*

U.S. Cl. 424—408 **15 Claims**

1. A microcapsule comprising a liquid core material which is substantially insoluble in water, enclosed within a solid permeable shell of self-condensed etherified urea-formaldehyde polymer, said shell comprising from about 1 to about 25 weight percent of the microcapsule.

2. A microcapsule according to claim 1 wherein the liquid core material is a pesticide.

5,332,585

PREPARATION OF A GRANULAR FOOD PRODUCT

Robert G. Odermatt, Frauenfeld, and David Roeschli, Pfungen, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

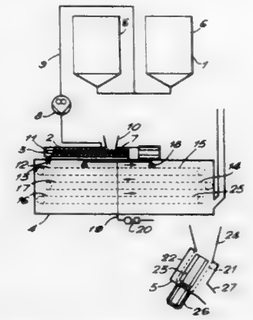
Filed Nov. 21, 1991, Ser. No. 795,766

Claims priority, application Switzerland, Dec. 7, 1990, 3878/90

Int. Cl.[5] **A23L** *1/0522*

U.S. Cl. 426—96 **14 Claims**

1. A process for preparing a granular food product comprising heating a fat to obtain a molten fat, mixing the molten fat and an amylaceous material to obtain a mixture of the fat and material, extruding the mixture to obtain extruded strands, conveying and cooling the strands on a first conveyor belt to harden the strands, dropping the hardened strands from the first conveyor belt onto a second conveyor belt to subdivide the hardened strands into sections and projecting the sections through a grill to obtain granules.



5,332,586

PAPER POUCH FOR FLOWABLE FOOD PRODUCTS

Andre Di Mino, Woodcliff Lake, N.J., assignor to ADM Tronics Unlimited, Inc., Northvale, N.J.

Filed Jun. 30, 1992, Ser. No. 906,431

Int. Cl.[5] **B32B** *27/10, 27/30;* **B65D** *85/72*

U.S. Cl. 426—87 **9 Claims**

1. A pouch for enclosing a small supply of a flowable material, said pouch being recyclable in a paper recycling facility, said pouch comprising two superposed plies each formed by at least one sheet of paper, each ply having an inner face coated with a layer of a water-based acrylic polymer that is recyclable in said facility and has a low glass transition temperature, and an outer face coated with a water-based acrylic polymer that is recyclable in said facility and has a relativley high glass transition temperature, the layer on the inner faces of the plies being in abutting relationship, said superposed plies bieng sealed together in a predetermined sealing pattern by heat and pressure applied thereto which brings about fusion of the inner layers but does not affect the outer layers, said sealing pattern defining an interior pocket for accommodating the flowable material and a spout communicating with the pocket and leading to an outlet adjacent a sealed margin of the pouch and blocked thereby, and a weakened line intersecting the outlet which when the pouch is torn along the line, opens the outlet to permit expulsion of the material from the pocket.

5,332,587

ACID STABILIZED PASTA

John G. Howard, Watlington King's Lynn, England; Harvey J. Reiter; Dale Fritsch, both of Houston, Tex.; Bryan Scherer, Spring, Tex., and Theodore J. LaFleur, Missouri City, Tex., assignors to Mars, Incorporated, McLean, Va.

PCT No. PCT/US90/04990, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO91/03169, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 31, 1990, Ser. No. 836,007

Claims priority, application United Kingdom, Sep. 1, 1989, 8919820

Int. Cl.[5] **A23L** *1/16, 3/10*

U.S. Cl. 426—128 **63 Claims**

1. A method for the preparation of an acid-stabilized pasta, which comprises contacting the pasta with an aqueous solution or suspension of at least one polymeric food-acceptable acid in an amount sufficient to effect acid-stabilization such that said pasta has a pH below about 4.6 and substantial freedom from acid flavor notes, and wherein said pasta is shelf-stable.

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5,332,588
CHOCOLATE CONCHING
Roberto A. Capodieci, Glen Ellyn, Ill., assignor to Mars, Incorporated, McLean, Va.
Continuation of Ser. No. 862,972, Apr. 3, 1992, Pat. No. 5,200,220. This application Mar. 1, 1993, Ser. No. 24,268
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] **A23G** *1/00*; **B23Q** *15/00*
U.S. Cl. 426—231 **41 Claims**



1. A process for producing chocolate by a procedure including a conching operation, the process comprising the steps of:
passing ingredients for making chocolate, including chocolate refinings, into a conching apparatus having agitators and a motor controlled by a variable speed drive;
moving the conching agitators into and through the ingredients, said moving step including moving the conching agitators at a conching agitator speed;
conching said ingredients by continuing said moving step for a length of time until the ingredients produce a chocolate product;
monitoring viscosity of the ingredients during the moving step in order to generally continuously detect an ingredients viscosity;
modulating said conching agitator speed to provide a variable conching agitator speed which substantially maintains a predetermined power input to the ingredients substantially throughout said conching step, said modulating step being substantially ongoing, the conching agitator speed being a function of the ingredients viscosity monitored during said monitoring step such that the conching agitator speed increases as said ingredients viscosity decreases and such that said conching agitator speed decreases as said ingredients viscosity increases, whereby said predetermined power input is maintained substantially constant substantially throughout the conching step;
controlling the length of time of the conching step in response to the monitoring step whereby a finished chocolate product is provided having a preselected maximum viscosity characteristic; and
removing the finished chocolate product from the conching apparatus.

5,332,589
TOMATO CALCIFICATION PROCESS
Larry C. Hinnergardt, Newton, and Earl C. Eichelberger, Chesire, both of Conn., assignors to Van Den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.
Continuation-in-part of Ser. No. 998,209, Dec. 30, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 48,994
Int. Cl.[5] **G01N** *33/00*; **A23B** *7/00*
U.S. Cl. 426—231 **13 Claims**

1. A method for processing a fruit or vegetable comprising continuously exposing the fruit or vegetable to a solution including calcium chloride at a first location, recovering the calcium chloride solution at a second location downstream from said first location, measuring the concentration of calcium chloride in said recovered solution, comparing the concentration of calcium chloride in said recovered calcium chloride solution to a predetermined concentration, adjusting the calcium concentration in said calcium chloride solution to the



predetermined amount, and feeding the solution having the adjusted concentration to said first location.

5,332,590
METHOD OF ABSORBING OXYGEN BY EMPLOYING A PARTICULATE ANNEALED ELECTROLYTICALLY REDUCED IRON
George E. McKedy, Williamsville, N.Y., assignor to Multiform Desiccants, Inc., Buffalo, N.Y.
Division of Ser. No. 888,966, May 26, 1992, Pat. No. 5,262,375. This application Jul. 26, 1993, Ser. No. 97,291
Int. Cl.[5] **B65B** *55/00*
U.S. Cl. 426—398 **5 Claims**

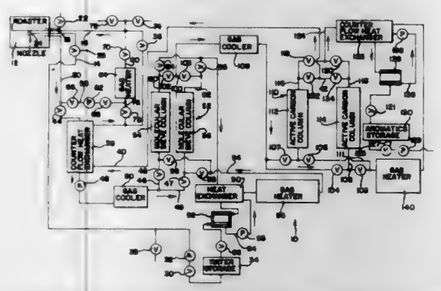


1. A method of absorbing oxygen in a container containing a product which can be deleteriously affected by oxygen and which is subjected to temperatures below about 50° F. for storage comprising the steps of placing said product into a container which is to be subjected to temperatures below 50° F., adding an oxygen permeable envelope containing an oxygen-absorbing composition containing both particulate annealed electrolytically reduced iron and a salt to said container, and sealing said container containing said product and said oxygen-absorbing composition, said particulate annealed electrolytically reduced iron and said salt of said composition being present in said container in sufficient proportions for said salt to combine with moisture in said container to form an electrolyte which in turn activates said iron to absorb oxygen in said container.

5,332,591
METHOD AND APPARATUS FOR MAKING INSTANT COFFEE
Ralph Ogden, 8803 Parkway Dr., Highland, Ind. 46322
Filed Sep. 8, 1992, Ser. No. 941,810
Int. Cl.[5] **A23F** *5/26*
U.S. Cl. 426—386 **8 Claims**

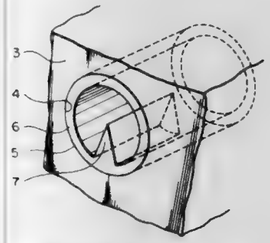
1. A method of making instant coffee comprising the steps of:
a) providing a quantity of coffee beans;
b) grinding said coffee beans;
c) removing moisture from said ground coffee beans;
d) roasting said ground coffee beans in the absence of oxygen and collecting aromatic compounds generated during roasting;

e) extracting and collecting water soluble compounds from said ground roast coffee beans;
f) mixing said water soluble compounds and said aromatic compounds to form instant coffee; and



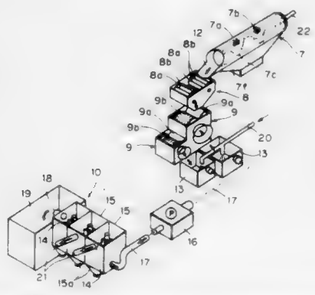
g) packaging said instant coffee in an oxygen free environment.

5,332,592
PROCESS FOR PRODUCING EXTRUDED NOODLE CAPABLE OF BEING INSTANTLY COOKED
Takayoshi Ishigaki, Tokyo; Hiroshi Saito, Utsunomiya, and Akio Fujita, Tsurugashima, all of Japan, assignors to Ishigaki Foods Company Limited, Tokyo, Japan
PCT No. PCT/JP89/00995, § 371 Date May 24, 1991, § 102(e) Date May 24, 1991, PCT Pub. No. WO90/03120, PCT Pub. Date Apr. 5, 1990
PCT Filed Sep. 29, 1989, Ser. No. 689,876
Claims priority, application Japan, Sep. 29, 1988, 63-245192
Int. Cl.[5] **A23L** *1/16*
U.S. Cl. 426—451 **10 Claims**



1. A process for producing extruded, grooved, and oil-fried noodles capable of being instantly cooked, said process comprising:
(i) providing a starting powder mixture comprising raw tapioca starch and at least one wheat-derived member selected from the group consisting of durum semolina, strong wheat flour and semi-strong wheat flour, said tapioca starch being present in an amount of 15–45% by weight based on the weight of the powder mixture and said wheat-derived member being present in an amount of from 85–55% by weight based on the weight of the powder mixture;
(ii) mixing said starting powder mixture with water added in an amount of 25 to 35% by weight based on the weight of the starting powder mixture;
(iii) kneading the resultant uniform admixture to obtain a kneaded dough material;
(iv) passing the kneaded dough material through an extruder to obtain extruded raw noodle strings each having at least one groove extending longitudinally in the noodle string;
(v) steaming said raw noodle strings in a first steaming stage;
(vi) treating the steamed noodle strings with water so as to absorb water therein to increase the water content of the noodle strings to a water content of 38 to 50% by weight;
(vii) steaming the noodle strings having absorbed water in a second steaming stage; and
(viii) thereafter frying the steamed noodle strings in oil.

5,332,593
METHOD OF PRODUCING MINCED FISH MEAT
Sumito Goto; Fumio Tsujii; Hideki Okada, and Takeshi Suzuki, all of Otemachi, Japan, assignors to Taiyo Fishery Co., ltd., Tokyo and Toyo Suisan Kikai Co., Ltd., Osaka, both of Japan
Filed Feb. 5, 1993, Ser. No. 14,452
Claims priority, application Japan, Feb. 5, 1992, 4-056437
Int. Cl.[5] **A23L** *1/00*
U.S. Cl. 426—479 **8 Claims**



1. A method of producing minced fish meat comprising the steps of:
cutting fish bodies into a plurality of cut, bone-containing, fish body pieces;
washing said cut pieces to remove therefrom impurities adhered to said cut pieces to provide washed, bone-containing cut fish body pieces;
crushing the washed, cut, bone-containing fish body pieces to break the skin of the cut pieces, to cut or break bones into small pieces, and to soften the fish meat;
feeding the crushed, bone-containing fish meat to a fish meat collecting means comprising a fish meat collection member having a number of fish meat collecting holes in a wall thereof;
pressing the crushed, bone-containing fish meat against the fish meat collecting member to cause fish meat to pass through said fish meat collecting holes; and
recovering, as minced fish meat, the fish meat which passes through said fish meat collecting holes.

5,332,594
BRAN BASED SNACK PRODUCT AND PROCESS OF MAKING
Harry E. Heller, 26 Ivy Way, Port Washington, N.Y. 11050
Filed Oct. 2, 1989, Ser. No. 415,666
Int. Cl.[5] **A23L** *1/10*; **A23P** *1/12*
U.S. Cl. 426—549 **8 Claims**

1. A process for making oat bran based snack products comprising the steps of preparing a doughlike mixture comprising:
a) 30% to about 40%, by weight of the doughlike mixture, masa;
b) 15% to about 20%, by weight of the doughlike mixture, oat bran; and
c) 40% to about 55%, by weight of the doughlike mixture, water, heated to a temperature range of 100° F. to 115° F.;
extruding and cutting desired shapes from said doughlike mixture; and
frying the desired shapes in hot cooking oil having a temperature of from about 355° F. to about 365° F. for a period

of two to three minutes, wherein snack products in desired shapes are obtained

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5,332,595

STABLE MULTIPLE EMULSIONS COMPRISING INTERFACIAL GELATINOUS LAYER, FLAVOR-ENCAPSULATING MULTIPLE EMULSIONS AND LOW/NO-FAT FOOD PRODUCTS COMPRISING THE SAME

Anilkumar G. Gaonkar, Vernon Hills, Ill., assignor to Kraft General Foods, Inc., Northfield, Ill.

Continuation of Ser. No. 670,713, Mar. 18, 1991, Pat. No.
Int. Cl.[5] A23D *7/00*
U.S. Cl. 426—602 43 Claims

1. A stable, edible water-in-oil-in-water emulsion comprising an internal aqueous phase, an intermediate lipid phase which includes a lipophilic emulsifier, and an external aqueous phase, the internal aqueous phase being dispersed in the external aqueous phase, said multiple emulsion further comprising a substantially continuous gelled layer at an interfacial region between the internal aqueous phase and the lipid phase, said substantially continuous gelled layer being formed by the reaction of a gellable polysaccharide which is soluble in said internal aqueous phase and a lipophilic surface active agent which comprises a metal cation present in said intermediate lipid phase which is reactive with said polysaccharide to form said gelled layer to provide an edible multiple emulsion for use in a food product.

5,332,596

METHOD FOR ANTI-OXIDIZING TREATMENT OF COPPER POWDER

Hiroji Tani, Nagaokakyo, and Kanehito Honma, Shiga, both of Japan, assignors to Murata Mfg. Co., Ltd., Japan

Filed Jan. 19, 1993, Ser. No. 6,266
Claims priority, application Japan, Jan. 17, 1992, 4-006535
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—216 7 Claims

1. A method for anti-oxidizing treatment of copper powder, comprising the steps of:

immersing copper powder in a solution containing boric acid;

separating the resultant copper powder from the solution; and

heating said copper powder covered with a layer of said solution at a temperature of 50° to 260° C.

5,332,597

METHOD FOR MANUFACTURING INORGANIC MEMBRANES BY ORGANOMETALLIC CHEMICAL VAPOR INFILTRATION

Michael F. Carolan; Paul N. Dyer, both of Allentown; Stephen M. Fine, Emmaus; Alexander Makitka, III, Stroudsburg; Robin E. Richards, Chalfont, and Leslie E. Schaffer, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 816,195, Jan. 2, 1992. This application Nov. 9, 1992, Ser. No. 973,490
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—243 24 Claims

1. A method for manufacturing an inorganic membrane capable of separating oxygen from an oxygen-containing gaseous mixture, the method comprising the steps of:

(a) depositing a porous multicomponent metallic oxide layer onto a porous support to form a porous composite having a network of pores capable of transporting gases;

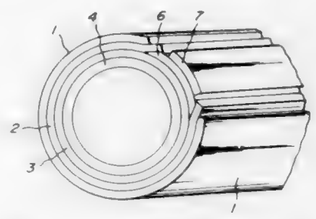
(b) contacting a first surface of the porous composite with a vaporized organometallic complex and a second surface of the porous composite with a gaseous reactive agent comprising an oxidizing or reducing agent at a temperature ranging from 300° to 600° C. and a pressure sufficient to react the organometallic complex and the gaseous reactive agent to form plugs in the pores of the porous multicomponent metallic oxide layer to form an inorganic membrane having essentially no through porosity.

5,332,598

PROCESS FOR THE PRODUCTION OF LANTHANUM CHROMITE FILMS BY PLASMA SPRAYING

Shinji Kawasaki; Makoto Murai, and Yasufumi Aihara, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 2, 1992, Ser. No. 984,456
Claims priority, application Japan, Dec. 4, 1991, 3-320584; Nov. 24, 1992, 4-313584
Int. Cl.[5] B05D *1/08, 5/12*
U.S. Cl. 427—453 12 Claims



1. A process for the production of a lanthanum chromite film, said process comprising the steps of preparing a plasma spray powder by mixing 1–15 parts by weight of powdery chromium oxide to 100 parts by weight of powdery lanthanum chromite, said lanthanum chromite having a composition ratio of A-sites to B-sites being in a range of 1:1 to 1:0.9, forming a plasma sprayed film by plasma spraying said plasma spray powder onto a substrate, and forming the lanthanum chromite film by heat treating the resulting plasma sprayed film.

5,332,599

AQUEOUS CORRECTION FLUID

Norman G. Sanborn, South Weymouth, Mass., assignor to The Gillette Company, South Boston, Mass.

Filed Jul. 19, 1993, Ser. No. 93,818
Int. Cl.[5] C09D *10/00*; B32B *35/00*
U.S. Cl. 427—259 19 Claims

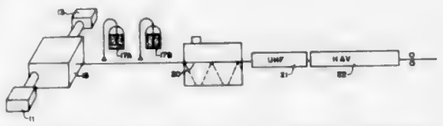
1. An aqueous correction fluid comprising a latex binder, an opacifying pigment, a protective colloid, a nonionic surfactant, an anionic dispersant, and water.

5,332,600

PRODUCTION METHOD FOR GLASS RUNS

Tadanobu Iwasa, Ichinomiya, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 673,898, Mar. 25, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 22,396
Claims priority, application Japan, Mar. 24, 1990, 2-73889; Mar. 24, 1990, 2-73890; Mar. 24, 1990, 2-73891
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—393.5 2 Claims



1. A method of producing a glass run substrate of ethylene-1-olefin-nonconjugated diene rubber along with a urethane slip layer on a glass sliding area of said glass run substrate which comprises:

co-extruding said glass run substrate with a primer layer on the glass sliding area of the glass run substrate, said primer layer comprising a polymer blend of nitrile rubber 40–80%, ethylene-1-olefin-nonconjugated diene rubber 20–60% and aromatic vinyl compound diene rubber 0–35% weight, respectively;

applying a solventless urethane coating material on said primer layer immediately after said co-extruding to form a urethane coat;

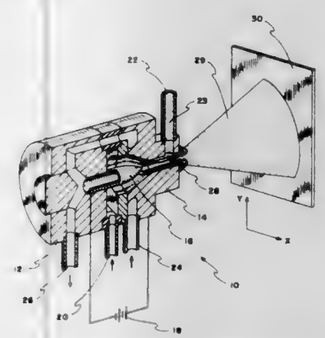
vulcanizing said glass run substrate and simultaneously curing said urethane coat thereby forming said urethane slip layer.

5,332,601

METHOD OF FABRICATING SILICON CARBIDE COATINGS ON GRAPHITE SURFACES

Dominic J. Varacalle, Jr., Idaho Falls, Id.; Herbert Herman, Port Jefferson, N.Y., and Timothy D. Burchell, Oak Ridge, Tenn., assignors to The United States as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 10, 1992, Ser. No. 988,598
Int. Cl.[5] C23C *4/00*
U.S. Cl. 427—452 8 Claims



1. A method of forming a silicon carbide coating on a graphite substrate comprising the steps of:

a. vacuum plasma spraying the graphite substrate with a silicon powder within a vacuum plasma spray chamber thereby forming a silicon coating on the substrate, further comprising:

i. evacuating a plasma spray gun within the vacuum chamber to a pressure of between 20 and 200 mbar;

ii. mixing and injecting a gas mixture of about 85% argon and 15% hydrogen within the plasma spray gun;

iii. generating an electric arc within the plasma spray gun;

iv. passing the mixture through the electric arc, thereby creating a plasma environment; and then

b. removing the as-sprayed graphite substrate from the vacuum chamber;

c. heating the as-sprayed graphite substrate and silicon coating in an inert gas atmosphere oven to 1600° C.; and then

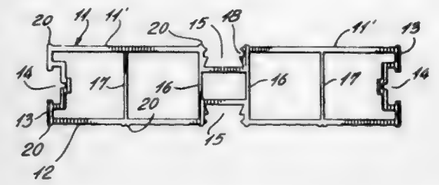
d. cooling the oven to ambient temperatures, wherein the 1600° C. temperature causes a conversion of the silicon coating on the substrate to the silicon carbide coating, said silicon carbide coating having a porosity in the range of 0.35 to 1.1%, a Vickers hardness in the range of 902 to 968 HV, and a thickness of over 200 μm.

5,332,602

SYNTHETIC WOOD BOARD

Guy Barré, 250 Beaconsfield Blvd., Beaconsfield, Quebec, Canada H9W 4A5 , and Rémi Vigneault, 2500 Avenue Pierre-Dupuis, Montreal, Quebec, Canada H3C 4L1

Division of Ser. No. 787,123, Nov. 4, 1991, Pat. No. 5,271,699. This application May 7, 1993, Ser. No. 57,890
Int. Cl.[5] B32B *3/06, 3/08*
U.S. Cl. 428—99 6 Claims



1. A synthetic wood board comprising an extrusion of plastics material having opposed elongated top and bottom flat parallel walls spaced apart by transverse walls, a wood grain simulation pattern formed in at least one of said top and bottom flat parallel surfaces, two of said transverse walls being end walls, each said end walls having integrally formed elongated connector means which interconnect with connector means of an adjacent one of said synthetic wood boards, a central fastener receiving channel extending longitudinally in said top and bottom walls and aligned back to back, a transverse wall on each side of said fastener receiving channel, said fastener receiving channel of at least said top wall has a cover strip removably connectable across a top opening thereof to conceal fastener heads of fasteners secured therein.

5,332,603

LIQUID CRYSTAL DISPLAY DEVICE

Fumie Nozawa, and Masami Ubukata, both of Tokorozawa, Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 38,003
Claims priority, application Japan, Mar. 31, 1992, 4-077512
Int. Cl.[5] G02F *1/1337*
U.S. Cl. 428—1 1 Claim

1. A liquid crystal display device having a liquid crystal layer between a pair of substrates each having a transparent electrode and an alignment film formed in this order on the inner surface thereof, characterized in that a polyester having one or both of the following repeating units I and II and, optionally, further containing at least one repeating unit which is capable of forming an ester bond with one of said repeating units I and II or both for use as a material for the alignment film provided on at least one inner surface of the facing substrates; the repeating unit I being represented by the formula:

$$-X^1-Ar^1-\underset{\displaystyle R^2}{\overset{\displaystyle R^1}{C}}-Ar^2-Y- \quad (I)$$

wherein Ar^1 and Ar^2, which may be the same as or different from one another, each represents an aromatic ring which may have at least one substituent selected from the group consisting of an alkyl group having from 1 to 12 carbon atoms, an alkoxy group having from 1 to 12 carbon atoms, an amino group, a halogen atom, a phenyl group and a substituted phenyl group; R^1 and R^2, which may be the same as or different from one another, each represents an alkyl group having from 1 to 4 carbon atoms substituted with halogen atom; X^1 and Y^2, which may be the same as or different from one another, each represents —O— or

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$$-C-\\ \|\\ O$$

and one polyester molecule may contain two or more same or different repeating unit I; the repeating unit II being represented by the formula:

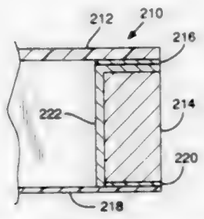
$$-X^2-\underset{\underset{R^4}{|}}{\overset{\overset{R^3}{|}}{C}}-Ar^3-\underset{\underset{R^6}{|}}{\overset{\overset{R^5}{|}}{C}}-Y^2- \quad \text{(II)}$$

where Ar^3 represents an aromatic ring which may have at least one substituent selected from the group consisting of an alkyl group having from 1 to 12 carbon atoms, an alkoxy group having from 1 to 12 carbon atoms, an amino group, a halogen atom, a phenyl group and a substituted phenyl group and may be the same as or different from Ar^1 or Ar^2; R^3, R^4, R^5 and R^6, which may be the same or different respectively, each represents an alkyl group having from 1 to 4 carbon atoms substituted with halogen atom and may be the same as or different from R^1 or R^2; X^2 and Y^2, which may be the same as or different from one another, each represents —O— or

$$-C-\\ \|\\ O$$

and may be the same as or different from X^1 and Y^1, and the one polyester molecule may contain two or more of the same or different repeating unit II.

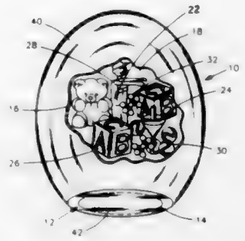
5,332,604
ADHESIVE SYSTEM FOR REDUCING THE LIKELIHOOD OF PARTICULATE
Yung-Tsai Yen, 196 Tuscaloosa Ave., Atherton, Calif. 94025
Filed Apr. 1, 1993, Ser. No. 41,500
Int. Cl.[5] B32B *3/08*
U.S. Cl. 428—14 **9 Claims**



1. In a pellicle having a pellicle membrane with an underside and an upper side and a pellicle frame having inner, outer, top and bottom sides, with the underside of the pellicle membrane tensed and extending over the top of the pellicle frame, an adhesive layer comprising:

a first adhesive layer comprised of a single adhesive applied to the inner side of the pellicle frame and continuously extending over the top of the pellicle frame between the pellicle membrane and the top of the pellicle frame, such that there is no abrupt interface in the first adhesive layer which is adjacent the underside of the pellicle member.

5,332,605
HOLLOW, DECORATIVE OBJECT CONTAINING NOVELTIES
Kristen DeLamar, 24355 Marquis Ct., Laguna Hills, Calif. 92653
Filed Mar. 24, 1993, Ser. No. 36,531
Int. Cl.[5] A63H *33/04*
U.S. Cl. 428—15 **8 Claims**



1. A hollow decorative object containing inside thereof, one or more novelty objects, said hollow decorative object being formed of a hard unfired clay material, said material being capable of being cut so as to form an opening into said hollow decorative object through which said one or more novelty objects can be removed without destroying said hollow decorative object.

5,332,606
FILAMENT-WOUND TUBULAR ELEMENT MANUFACTURING METHOD AND PRODUCT
Terry V. Pearce, Sandy, Utah, assignor to Edo Sports, Inc., Salt Lake City, Utah
Division of Ser. No. 824,000, Jan. 22, 1992, Pat. No. 5,261,980.
This application Oct. 18, 1993, Ser. No. 138,914
Int. Cl.[5] A63B *53/10*; **B32B** *1/08, 33/00*
U.S. Cl. 428—36.3 **3 Claims**

1. A product made in accordance with the method of manufacturing filament wound tubular elements comprising

(a) dry winding with a filament at least one elongate mandrel which tapers from a wide end to a narrow end,

(b) heating a mold complex to a predetermined temperature, the mold complex comprising a block of heat-conductive material in which is formed at least one tapered elongate hollow mold having sidewalls, and a plurality of conduits positioned adjacent said mold, by conveying a heated, heat-carrying medium through said conduits to transfer heat to the mold complex and thus to the hollow mold,

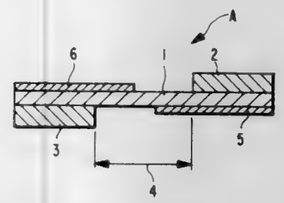
(c) inserting the filament-wound mandrel tightly into the mold so that the sides of the mold press against and compact the filament on the mandrel, to thereby allow transfer of heat to the filament-wound mandrel,

(d) injecting resin under pressure into the hollow mold to thereby cause said resin to be heated and to contact the filament and the sidewalls of the mold so that the resin is cured to thereby form a composite tubular element,

(e) removing the mandrel and tubular element from the hollow mold, and

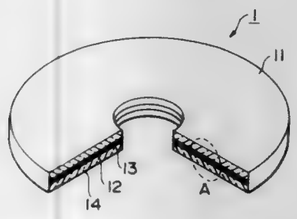
(f) removing the mandrel from the tubular element.

5,332,607
WATER-SOLUBLE DOUBLE-FACED ADHESIVE TAPE FOR SPLICING
Koichi Nakamura; Hiroshi Wada, and Naoki Matsuoka, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan
Filed Feb. 10, 1993, Ser. No. 15,577
Claims priority, application Japan, Feb. 10, 1992, 4-057453
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 **1 Claim**



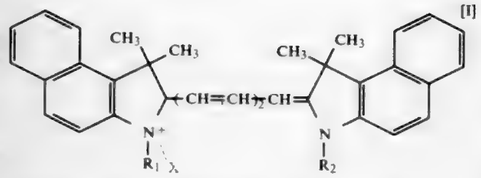
1. A water-soluble double-faced adhesive tape for splicing which comprises a water-disintegratable substrate, a first water-soluble adhesive layer formed on one side of said substrate in a 5–50 mm width from one edge of said substrate, and a second water-soluble adhesive layer formed on the other side of said substrate in a 5–50 mm width from the other edge of said substrate, said two adhesive layers being positioned a distance apart greater than the web thickness plus twice the tape thickness plus an allowance such that they do not overlap in the width direction, each adhesive layer having a thickness of 20–100 μm, with a protective release layer being present on a non-adhesive surface of each side of the substrate at a location to prevent an adhesive layer from sticking to the substrate when the tape is wound up into a roll without needing any release paper for protecting the adhesive surface.

5,332,608
INFORMATION RECORDING MEDIUM
Taishi Tsuji; Yasushi Araki; Atsushi Yoshizawa, and Fumio Matsui, all of Tsurugashma, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Aug. 16, 1993, Ser. No. 106,657
Claims priority, application Japan, Aug. 27, 1992, 4-228376
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 **4 Claims**



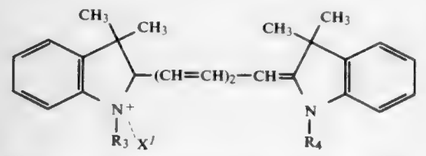
1. An information recording medium having a recording layer formed on a substrate and a reflective layer formed on said recording layer, said recording layer containing at least one cyanine dye selected from those represented by the following general formulae [I] and [II] given below, and a benzotriazole type compound represented by the following general formula [III]:

[I]



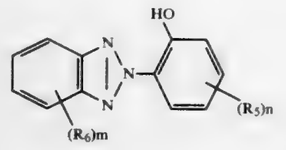
wherein R_1 and R_2 independently represent an alkyl group having 1 to 8 carbon atoms, and X^- represents a counter ion;

[II]



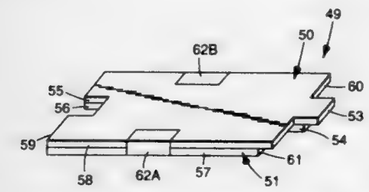
wherein R_3 and R_4 independently represent an alkyl group having 1 to 8 carbon atoms, and X^- represents a counter ion; and

[III]



wherein R_5 represents a hydrogen or a substituted or unsubstituted alkyl group, and R_6 represents a halogen or an alkyl group, m and n independently represent integers 0 to 4, when each of m and n is 2 or more the substituents for R_5 and R_6 may be the same or different from each other.

5,332,609
INTUMESCENT MOUNTING MAT
Stewart H. Corn, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 25, 1993, Ser. No. 36,999
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—77 **20 Claims**



1. A catalytic converter comprising a metallic casing, a catalytic converter element disposed within said metallic casing, and an intumescent mounting mat disposed between said catalytic converter element and said metallic casing for positioning said catalytic element within said metallic casing and for absorbing mechanical and thermal shock, said intumescent mounting mat comprising a first and a second intumescent sheet each having a major surface, and a second surface opposite said major surface, said intumescent sheets being held together by mechanical fastening means which contacts each

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of said second surfaces and urges said sheets together in forced contact with one another, said sheets being positioned in said mounting mat with at least a portion of said major surface of said first sheet being in contact at an interface area with at least a portion of a major surface of said second sheet, and said mechanical fastening means being adhesive tape.

5,332,610

SELF ADHERING WRAPPING MATERIAL FOR WRAPPING FLOWER POTS AND METHOD OF USING SAME

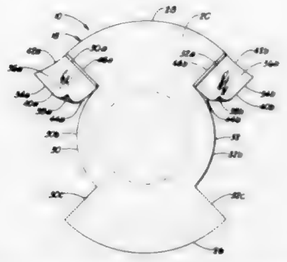
Donald E. Weder, Highland; William F. Straeter, Breese; Joseph G. Straeter, Highland, all of Ill.; Franklin J. Craig, Valley Park, Mo.; Wilma M. Donnelly, Highland, Ill., and Jack W. Redditt, Nashville, Tenn., assignors to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 677,225, Mar. 29, 1991, Pat. No. 5,199,242, which is a continuation-in-part of Ser. No. 368,597, Jun. 20, 1989, Pat. No. 5,007,229, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, and a continuation-in-part of Ser. No. 232,541, Aug. 11, 1988, Pat. No. 4,835,834, which is a continuation of Ser. No. 876,405, Jun. 20, 1986, abandoned. This application May 27, 1992, Ser. No. 889,654

The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.

Int. Cl.[5] A01G *9/02*

U.S. Cl. 428—99 **12 Claims**



1. A flower port wrapping material for wrapping about at least a portion of a flower pot, comprising:

a sheet of material having an upper surface and a lower surface sized to wrap at least a portion of the flower pot; and

a plurality of cling materials, wherein a portion of a surface of each cling material overlaps and connects to a portion of a surface of the sheet of material, and

wherein the cling material is capable of connecting to the sheet of material and itself upon contacting engagement and wherein the sheet of material with the cling material connected thereto is wrappable about the flower pot whereby portions of the cling material contactingly engage and connect to other portions of the wrapping material for generally securing the sheet of material wrapped about at least a portion of the flower pot.

5,332,611

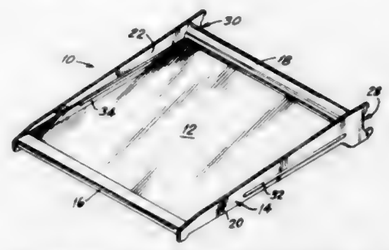
SHELF EDGE TRIM

William Shanok, New York, N.Y.; Daniel Shanok; Frederick Shanok, both of Warren, N.J.; Ronald Good, Bloomfield Hills, Mich.; Joseph Limansky, East Brunswick, N.J.; Victor Shanok, and Jesse P. Shanok, both of New York, N.Y., assignors to Silvatrim Associates, South Plainfield, N.J.

Filed Mar. 8, 1993, Ser. No. 27,844

Int. Cl.[5] E06B *7/16*

U.S. Cl. 428—122 **20 Claims**



1. A shelf edge trim for an assembly including a shelf supported by spaced apart front and rear bars, and a slide-out storage drawer depending from the assembly, comprising:

a longitudinally extending plastic strip having an upper leg portion, a lower leg portion and a bight portion to provide a substantially U-shaped body portion;

said upper and lower leg portions removably receiving an edge portion of the shelf therebetween;

said bight portion providing bar engaging means for removably securing said body portion to an associated one of the front and rear bars in a gripping engagement to support the edge portion of the shelf with respect to the associated one of the front and rear bars; and

bin sealing means provided on said body portion for sealing a space between the shelf and the slide-out storage drawer, said bin sealing means having a substantially V-shaped configuration to provide a longitudinally extending thick end connected to an end portion of said lower leg portion, and a free pointed longitudinal edge extending outwardly and downwardly from said end portion of said lower leg portion.

5,332,612

PROCESS FOR DEPOSITING A LATEX COATING ON AN ARTICLE MADE OF ELASTOMER AND COMPOSITE ARTICLE BASED ON SILICONE ELASTOMER COMPRISING A LATEX COATING

Gerard Payet, Chuzelles, and Constantin Tsangarakis, Lyons, both of France, assignors to Isoform, Puteaux, France

Filed Apr. 29, 1993, Ser. No. 53,672

Claims priority, application France, Apr. 30, 1992, 92 05387

Int. Cl.[5] D06N *7/04*

U.S. Cl. 428—148 **14 Claims**

1. A process for depositing a latex coating on an article made of elastomer, wherein a continuous layer of a hydrophilic inorganic pulverulent material is deposited at the surface of the elastomer and said article is immersed in an aqueous latex suspension.

5,332,613

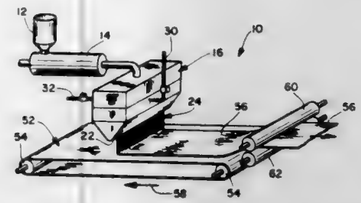
HIGH PERFORMANCE ELASTOMERIC NONWOVEN FIBROUS WEBS

Jack D. Taylor, and Jon E. Tinsley, both of Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 9, 1993, Ser. No. 74,080

Int. Cl.[5] B32B *27/14*

U.S. Cl. 428—152 **24 Claims**



1. An elastic nonwoven web comprising a coherent matrix of fibers formed from an extrudable blend comprising:

an elastomeric A-B-A-B tetrablock copolymer where A is a thermoplastic polymer block and where B is an isoprene monomer hydrogenated to substantially a poly(ethylene-propylene) monomer unit;

wherein the web is adapted to have an elastic modulus of less than about 1.25 which is locally constant during elongation of the web up to about 250 percent.

5,332,614

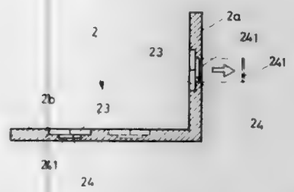
ANGLED STRUCTURAL MEMBER WITH RECESSED THIN WALL FOR DRILLING OR KNOCK-OUT

Yung-Ching Chiang, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan

Filed Mar. 5, 1993, Ser. No. 26,734

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—156 **7 Claims**



1. A structural member extending in a longitudinal direction having a substantially L-shaped cross-sectional contour forming a pair of substantially orthogonally directed leg members, each of said leg members having opposing sides forming an inner surface and an outer surface defining a thickness dimension of said leg members, each of said leg outer surfaces forming a planar contour and each of said inner surfaces having formed therethrough a plurality of blind openings defined by a plurality of first recesses having a first opening recess dimension and a plurality of second recesses aligned with respective ones of said first recesses and having a second opening recess dimension less than said first opening recess dimension, each of said first and second recesses in combination having a thickness dimension less than said thickness dimension of said leg members.

5,332,615

STRETCHED POLYETHYLENE MULTILAYER FILM

Hisazumi Watanabe, Tokyo, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1992, Ser. No. 861,148

Claims priority, application Japan, Apr. 10, 1991, 3-103490

Int. Cl.[5] B32B *27/32, 27/08*

U.S. Cl. 428—215 **6 Claims**

1. A stretched polyethylene multilayer film which exhibits excellent low-temperature heat-sealability and which is prepared by stretching a laminated film consisting essentially of two outer layers of an ethylene-α-olefin copolymer (A) having a melt index of not less than 6 g/10 min and not more than 50 g/10 min and one intermediate layer of an ethylene-α-olefin copolymer (B) having a melt index of not less than 0.1 g/10 min and less than 6 g/10 min, by 2 to 7 times both lengthwise and crosswise, and thereafter heat treating the stretched polyethylene multilayer film at a temperature of 80° to 140° C., wherein the ethylene-α-olefin copolymer (A) is a copolymerization product of ethylene and an α-olefin of 4 to 20 carbon atoms and has a density of 0.891 to 0.925 g/cm^3 and the ethylene-α-olefin copolymer (B) is a copolymerization product of ethylene and an α-olefin of 4 to 20 carbon atoms and has a density of 0.910 to 0.960 g/cm^3, and wherein the ratio of the thickness of each layer of the ethylene-α-olefin copolymer (A) and the thickness of the layer of the ethylene-α-olefin (B), (A/B), is not less than (2/96), the ratio of the total thickness of the layers of the ethylene-α-olefin copolymer (A) and the thickness of the layer of the ethylene-α-olefin copolymer (B), (A+A)/(B), is from 4/96 to 98/2, and the ratio of the thickness of each layer of the ethylene-α-olefin copolymer (A) and the total thickness of the layers of the ethylene-α-olefin copolymer (A) and the layer of the ethylene-α-olefin copolymer (B), A/(A+B+A), is not less than 2/100.

5,332,616

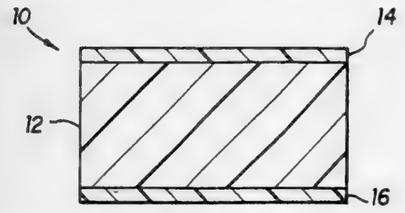
PRODUCE PACKAGING FILM

Ray E. Patrick, Pelzer, and Solomon Bekele, Taylors, both of S.C., assignors to W. R. Grace & Co. - Conn., Duncan, S.C.

Continuation of Ser. No. 699,858, May 14, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 967,924

Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—218 **10 Claims**



1. An oriented multilayer film comprising:

a) a core layer comprising a blend of ethylene butyl acrylate copolymer and very low density polyethylene; and

b) two outer layers comprising a blend of ethylene alpha olefin copolymer having a density of at least about 0.916 grams per cubic centimeter, and ethylene vinyl acetate copolymer.

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5,332,617

POLYMERIC FILM

Paul D. A. Mills, Darlington; Anton R. Olek, Guisborough, both of England, and Junaid A. Siddiqui, Richmond, Va., assignors to Imperial Chemical Industries PLC, London, England

Filed May 15, 1992, Ser. No. 883,871

Claims priority, application United Kingdom, May 16, 1991, 9110591.6

The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.

Int. Cl.[5] B32B *27/08, 5/16*

U.S. Cl. 428—215 7 Claims

1. A polymeric film consisting essentially of an unfilled primary layer of a synthetic film-forming polymeric material having on at least one surface thereof a secondary layer consisting essentially of a synthetic film-forming polymeric material including, based upon the weight of the polymer in the secondary layer, 100 to 1000 ppm of glass particles having a volume distributed median particle diameter of 1.0 to 7.0 μm.

5,332,618

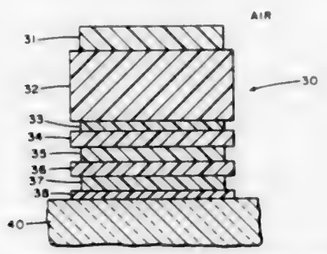
ANTIREFLECTION LAYER SYSTEM WITH INTEGRAL UV BLOCKING PROPERTIES

R. Russel Austin, Novato, Calif., assignor to Tru Vue, Inc., Chicago, Ill.

Filed Feb. 7, 1992, Ser. No. 832,790

Int. Cl.[5] G02B *5/22*

U.S. Cl. 428—216 8 Claims



1. An antireflection and ultraviolet light absorbing coating, comprising:

eight layers wherein adjoining layers alternate between high and low refractive index materials;

the index of refraction of said high refractive index materials greater than about 2.10 at a wavelength of 520 nanometers and greater than about 2.50 at a wavelength of about 330 nanometers,

the index of refraction of said low index materials less than about 1.50 at a wavelength of about 520 nanometers;

the layer adjacent of a surface on which the coating may be deposited having said high refractive index;

the two layers of low index material nearest said surface each having an optical thickness at a wavelength of about 330 nanometers of about one-quarter of a wavelength; and

said eight layers together having a total optical thickness between about 1.27 and 1.7 wavelengths at a wavelength of about 520 nanometers.

5,332,619

PROCESS FOR ANTI-OXIDATION PROTECTION OF A MATERIAL OF WHICH AT LEAST A SURFACE IS MADE OF A CERAMIC FORMED FROM A SILICON COMPOUND, AND A MATERIAL OBTAINED BY SAID PROCESS

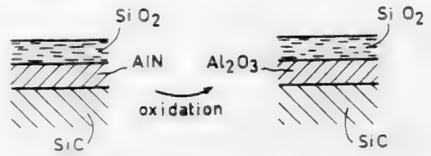
Marc Lacoste, Villenave D'Ornon; Michel Laxague, Bordeaux Cauderan, and Jacques Thebault, Bordeaux, all of France, assignors to Societe Europeenne De Propulsion, Suresnes, France

Filed Feb. 19, 1992, Ser. No. 838,488

Claims priority, application France, Feb. 21, 1991, 91 02104

Int. Cl.[5] B32B *7/02*

U.S. Cl. 428—245 11 Claims



1. A material which is protected against oxidation having at least a layer which is composed of a ceramic made from a silicon compound, wherein said material comprises:

an intermediate layer formed over said layer composed of a ceramic made from a silicon compound, and

a silica-based vitreous outer layer formed over said intermediate layer,

wherein said intermediate layer is made of alumina or an alumina precursor and is free of the element silicon so as to constitute a reaction barrier between said silicon compound and said silica-based vitreous outer layer, and to trap silica that may be formed by an oxidation of said silicon compound, whereby anti-oxidation protection is achieved under both an active oxidation condition of said silicon compound and a passive oxidation condition of said silicon compound.

5,332,620

THERMOPLASTIC POLYESTER SERIES RESIN FOAMED MATERIAL AND PRODUCTION PROCESS THEREOF

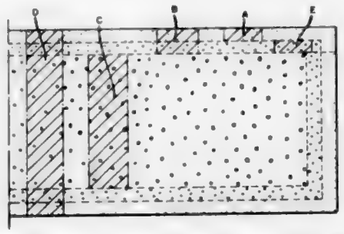
Motoshige Hayashi; Norio Amano; Takaaki Hirai; Takeshi Taki, and Masatoshi Ishibashi, all of Nara, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Division of Ser. No. 802,668, Dec. 5, 1991, which is a division of Ser. No. 633,851, Dec. 26, 1990, Pat. No. 5,134,028. This application Jan. 19, 1993, Ser. No. 5,259

Claims priority, application Japan, Dec. 27, 1989, 1-344249; Dec. 27, 1989, 1-344250; Jul. 9, 1990, 2-182371

Int. Cl.[5] B32B *5/22, 27/00*

U.S. Cl. 428—316.6 4 Claims



1. A thermoplastic polyester resin structural material obtained by bringing the surface of a thermoplastic polyester resin foamed material having a thickness of at least 3 mm and an apparent density of from 0.05 to 0.7 g/cm^3, wherein the

crystallinity of the resin in the surface portion within 0.5 mm from the surface of the foamed material is not more than 30% and at least 1% lower than the crystallinity of the resin in the central portion of the foamed material into contact with an uncured thermosetting resin containing fibers and curing the thermosetting resin to form a laminate.

5,332,621

COMPOSITE ARTICLES BY COMBINING A THERMOPLASTIC MOLDING AND FOAM

Friedrich-Georg Schmidt; Herbert Knipp, both of Haltern, and Wilhelm Müninghoff, Troisdorf, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 12, 1993, Ser. No. 31,287

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1992, 4207897

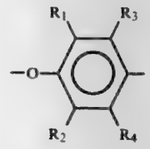
Int. Cl.[5] C08L *71/12*

U.S. Cl. 428—318.4 9 Claims

1. A composite article, comprising:

a thermoplastic molded object whose surface is bonded to a foamed latex material as the wet foamed latex material in contact with said thermoplastic molded object is vulcanized, said thermoplastic molded object constituted of the following components:

a) 10–100 parts by weight (ppw) of polyphenylene ether (PPE) which is essentially made up of units having the structural formula:



wherein R_1 and R_2 each is an n-alkyl group of up to 6 carbon atoms or R_1 represents hydrogen and R_2 a tertiary alkyl of up to 6 C atoms; R_3 and R_4 represent, independently of each other, a methyl group or hydrogen;

b) 0–80 ppw of styrene polymer;

c) 0–30 ppw of impact modifiers;

d) 0–40 ppw of reinforcing agents and/or fillers;

e) 0–30 ppw of flame retardants; and

f) 0–15 ppw of customary additives, the formulation having a heat deflection temperature, according to ISO 75, Method B, of greater than 90° C.;

and the foamed latex consisting of, relative to the total rubber content of the foamed latex,

I) 20–100% by weight of SBR latex with a minimum proportion of more than 15% by weight of styrene in the solid polymer, and

II) 80–0% by weight of natural-rubber latex or at least one other synthetic latex, with the remaining constituents being vulcanizing agents, processing agents and gelling agents.

5,332,622

MOLDABLE DENTAL MATERIAL FOR FORMING OR REPAIRING A DENTAL RESTORATION

Itzhak Shoher, 50 Shlomo Hamelech St., Tel-Aviv, Israel 64386 , and Aharon E. Whiteman, J.L. Peretz St. 13, Petach Tikvah, Israel 49206

Filed Jan. 19, 1993, Ser. No. 5,595

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—323 8 Claims

1. A moldable dental composition for forming or repairing a dental restoration comprising: high fusing temperature metal particles having a melting temperature above the temperature at which said moldable dental composition is selected to be heat treated to form said dental restoration; low fusing temperature metal particles in a volume relationship relative to the high fusing temperature metal particles in said composition of between 20% to 80% and having a melting temperature equal to or below said heat treatment temperature; carbonaceous particles in a concentration above at least 0.005 wt % of the dental composition and a volatile binder, such that upon heat treatment of the dental composition at said heat treatment temperature, a porous metal structure is formed having a capillary network of voids with a high void volume of between thirty to eighty percent.

5,332,623

PHOTOGRAPHIC SUPPORT MATERIAL

Ralf-Burkhard Dethlefs, Osnabruck, Fed. Rep. of Germany, assignor to Felix Schoeller jr. Papierfabrik GmbH & Co. KG, Osnabruck, Fed. Rep. of Germany

Filed May 18, 1993, Ser. No. 63,281

Claims priority, application Fed. Rep. of Germany, May 23, 1992, 4217196

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—326 5 Claims

1. A photographic support material comprising:

a photographic support base material;

at least one polyolefin layer on said base material and containing a white light reflecting pigment therein; and

a methyl substituted chinacridone red pigment in said polyolefin layer, said red pigment comprising a chinolino (2,3-b) acridine-7,14-dione-5,12-dihydro-3,10-dimethyl having a particle size of >100 nm, a density of <1.4 g/cm^3, and a specific surface of <65 m^2/g as measured by the BET procedure.

5,332,624

SLIP-RESISTANT POLYOLEFIN FILM AND PROCESS FOR PREPARATION THEREOF

Kenneth Nichols, Erin, Canada, assignor to Wastecorp, International Investments Inc., Ontario, Canada

Filed Nov. 24, 1993, Ser. No. 156,731

Int. Cl.[5] C08L *23/00, 17/00;* B29C *47/88;* B29D *7/00*

U.S. Cl. 428—327 18 Claims

1. A method of producing a slip-resistant polyolefin thin film comprising the steps of:

forming a mixture of comminuted rubber material and a thermoplastic low molecular weight polyolefin polymer;

feeding the mixture into an extrusion means to melt said polymer and thereafter pumping said mixture through an extrusion die to plasticize said mixture;

providing a pair of parallel, counter-rotating first and second rolls in pre-set operatively close spaced relation, said first roll providing a generally smooth first outer circumferential surface and said second roll providing a generally smooth second outer circumferential surface, the circumferential surfaces together defining a nip between the rolls;

extruding said plasticized mixture from said die onto said first and second surfaces so as to produce an inventory of said plasticized mixture atop said nip;

cooling said inventory so as to cause the temperature of the inventory contacting said first outer circumferential surface to be between 75 to 150 degrees Fahrenheit cooler than the inventory contacting the second outer circumferential surface;

drawing said inventory into said nip so as to form a thin film of ordered thickness having opposite first and second surfaces respectively contacting the first and second outer circumferential surfaces of said first and second sizing rolls;

drawing the thin film thus formed from said nip through one or more cooling stages to further cool and stabilize said thin film;

collecting the thin film thus stabilized on one or more winder rolls adapted for such collection;

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wherein the first surface of said thin film thus produced is relatively more slip-resistant than the second surface of said thin film.

11. A slip-resistant, flexible polyolefin thin film having first and second opposed, generally planar surfaces, the film comprised of:

a) vulcanized comminuted rubber particles of between 20 to 30 mesh size; and,

b) a thermoplastic low molecular weight polyolefin polymer;

wherein the rubber particles are generally evenly distributed in planar orientation throughout the film, and, wherein the rubber particles are biased in their transverse placement within the thin film toward said second surface of the thin film.

5,332,625

POLYMER WITH CROSSLINKED SURFACE ZONES

Douglas S. Dunn, Maplewood; Edward C. Yu, St. Paul, and Andrew J. Ouderkirk, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 665,691, Mar. 7, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 924,104

Int. Cl.[5] **C08J** *3/28*

U.S. Cl. 428—409 **4 Claims**

1. A polymeric polyester material comprising polyethyleneterephthalate, said material having a quasi-amorphous surface zone of 1 to 500 nm which is crosslinked to a depth of less than 100 nm and the bulk of said polymeric polyester material underneath each surface zone being uncrosslinked.

5,332,626

PORES OF CONTROLLED GEOMETRY ON A THERMOPLASTIC POLYMER

Stanley R. Conston, San Carlos, and Glenn C. Buchanan, Belmont, both of Calif., assignors to Vitaphore Corporation, Menlo Park, Calif.

Division of Ser. No. 580,947, Sep. 11, 1990, Pat. No. 5,213,742. This application Jan. 25, 1993, Ser. No. 8,278

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—409 **3 Claims**



1. A nonwoven, nonbiodegradable tissue ingrowth-inducing, tissue-interfacing thermoplastic substrate having surface pores of a substantially uniform density, diameter and depth, said pore density in the range of about 20 to 10,000 pores per square centimeter; said uniform pore diameter being in the range of about 50 to 500 microns, said pores characterized by substantially cylindrical shape with substantially flat or slightly curved bottom surfaces.

5,332,627

FIELD EMISSION TYPE EMITTER AND A METHOD OF MANUFACTURING THEREOF

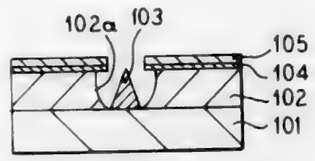
Hidetoshi Watanabe; Hiroshi Komatsu; Toshiaki Hasegawa, and Toshiyuki Ishimaru, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 28, 1991, Ser. No. 783,165

Claims priority, application Japan, Oct. 30, 1990, 2-293182; Oct. 30, 1990, 2-293183; Oct. 30, 1990, 2-293184; Jan. 14, 1991, 3-014726

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—426 **7 Claims**



1. A field emission type emitter comprising:

a conductive substrate;

an insulating film formed on the conductive substrate;

a cavity formed in the insulating film;

a cathode formed on the conductive substrate in the cavity; and

a gate electrode formed over the insulating film,

wherein the gate electrode is made of refractory metal silicide.

5,332,628

IRON BASED DUCTILE WIRE FOR FORMING A SURFACING ALLOY SYSTEM

Richard O. Drossman, Aliquippa, Pa., assignor to Wear Management Services, Inc., Aliquippa, Pa.

Filed Jan. 7, 1993, Ser. No. 1,335

Int. Cl.[5] **B22F** *7/04*

U.S. Cl. 428—558 **7 Claims**

1. An iron base wear-resistant surfacing alloy characterized by the absence of cobalt and being in the form of a hollow ductile wire having a powdered metal core, said ductile wire comprising a mild steel, the composition of said wire and said core, taken together, consisting essentially of, by weight, from about 3% to about 5% boron; up to about 10% chromium; from about 27% to about 43% nickel; from about 0.1% to about 5% silicon; from about 0.2% to about 1.5% carbon; from about 0.1% to about 2% manganese; from about 0.1% to about 0.5% nitrogen; with iron comprising the balance and in amounts greater than 43%, said alloy being further characterized by excellent high temperature lubricity.

5,332,629

BORON NITRIDE SYSTEM INCLUDING AN HBN STARTING MATERIAL WITH A CATALYST AND A SINTERED CNB BODY HAVING A HIGH HEAT CONDUCTIVITY BASED ON THE CATALYST

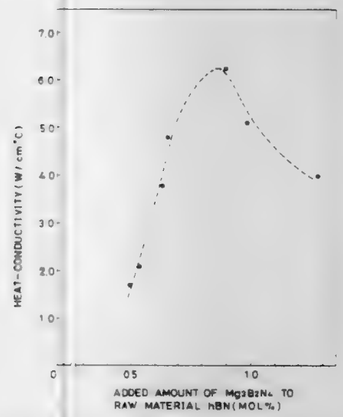
Hitoshi Sumiya; Shuichi Sato, and Shuji Yazu, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 483,268, Feb. 16, 1990, abandoned, which is a continuation of Ser. No. 192,392, May 10, 1988, abandoned, which is a division of Ser. No. 106,911, Oct. 5, 1987, abandoned, which is a continuation of Ser. No. 815,987, Jan. 3, 1986, abandoned. This application Apr. 13, 1993, Ser. No. 46,422

Claims priority, application Japan, Jan. 11, 1985, 60-2565; May 30, 1985, 60-117179

Int. Cl.[5] **B32B** *15/04*

U.S. Cl. 428—627 **8 Claims**



1. A boron nitride system produced from a starting material including a hexagonal, non-pyrolytic boron nitride having diffused therein, as an additive, a member selected from the group consisting of an alkaline earth metal boron nitride ($Me'_3B_2N_4$) and an alkali boron nitride (Me_3BN_2) in an amount within the range of 0.6 mol % to 1.3 mol % of said hexagonal, nonpyrolytic boron nitride, and wherein after conversion of said hexagonal, non-pyrolytic boron nitride by sintering, said system comprises a sintered body comprising cubic boron nitride within the range of 99.9% by weight up to 99.3% by weight of said sintered body and a metal remainder in the form of said metal of said additive, said metal remainder being present in said sintered cubic boron nitride body within the range of 0.1% by weight when said additive is 0.6 mol %, and 0.7% by weight when said additive is 1.3 mol %, except for minute quantities of naturally occurring impurities, said cubic boron nitride sintered body having a thermal conductivity of at least 4 W/cm.°C. due to the presence of said metal remainder, said system further comprising on a surface of said cubic boron nitride sintered body, a coating having a thickness of 1 μm or less made of at least one transition metal selected from the group consisting of groups IVa, Va, and VIa of the periodic table and alloys thereof, and an interface between said sintered body of cubic boron nitride and said coating, said interface including a member selected from the group consisting of boride, nitride and boron nitride formed by a reaction between said transition metal of said coating with said cubic boron nitride, said reaction forming a reaction bond between said sintered body of cubic boron nitride and said coating for an improved adherence between the cubic boron nitride body and said coating.

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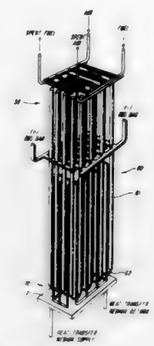
ON-BOARD RECHARGING SYSTEM FOR BATTERY POWERED ELECTRIC VEHICLES

Michael S. Hsu, Round Hill Rd., Lincoln, Mass. 01773

Filed Nov. 4, 1991, Ser. No. 787,218

Int. Cl.[5] **H01M** *16/00*

U.S. Cl. 429—20 **17 Claims**



8. A fuel cell assembly for converting fuel to electricity in response to a varying load, the assembly comprising

at least one fuel cell head comprising

a cooling jacket defining a fuel cell chamber,

a fuel cell stack arranged within said fuel cell chamber, and

a thermal control cylinder movable within said fuel cell chamber between a deployed position wherein said cylinder presents a high thermal resistance to said fuel cell stack and a stowed position wherein

said cylinder presents a low thermal resistance to said fuel cell stack, means for positioning said thermal control cylinder, and means for delivering a mixture of fuel and air to said fuel cell stack.

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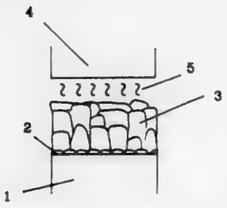
SOLID POLYMER ELECTROLYTES TO ALLEVIATE VOLTAGE DELAY OF LITHIIUM CELLS

Kuzhikalail M. Abraham, Needham; Mohamed Alamgir, Dedham, both of Mass., and David M. Pasquariello, Pawtucket, R.I., assignors to E.I.C. Corp., Norwood, Mass.

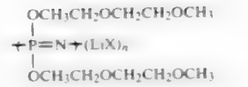
Continuation-in-part of Ser. No. 604,834, Oct. 24, 1990, abandoned. This application Apr. 19, 1991, Ser. No. 689,085

Int. Cl.[5] **H01M** *6/14*

U.S. Cl. 429—48 **9 Claims**



1. An electrochemical cell comprised of a cathode, a liquid electrolyte comprising one or more lithium salts dissolved in sulfur oxyhalides, and a lithium anode coated with a solid polymer electrolyte comprised of a lithium salt complex of a polymer which contains an electron donating heteroatom such as oxygen through which the polymer complexes with the lithium salt, wherein said polymer is a polyphosphazene of the formula



where LiX is a lithium salt, m is the number of repeating polyphosphasphazene monomer in the polymer electrolyte.

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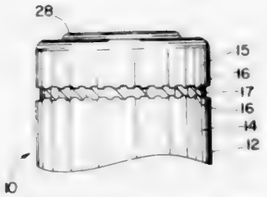
ELECTROCHEMICAL CELLS HAVING MEANS FOR INDICATING THE DEGREE OF CELL BULGING

Harry R. Huhndorff, Bay Village, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Continuation of Ser. No. 289,656, Dec. 22, 1988, abandoned. This application Nov. 29, 1989, Ser. No. 442,889

Int. Cl.[5] H01M *2/00*

U.S. Cl. 429—61 **30 Claims**



1. An electrochemical cell comprising a positive electrode and a negative electrode and an electrolyte contained in a cell container in a manner to establish an effective electrical circuit, the container having a means for responding to bulging of the container and having a wrap disposed about the periphery of the container, wherein the wrap has a first wrap section having means for securing to the container, and a second wrap section having means for separating from the first wrap section and also having means for coacting with the bulge responsive means so that the second wrap section is noticeably separated from the first wrap section upon effective bulging of the cell container.

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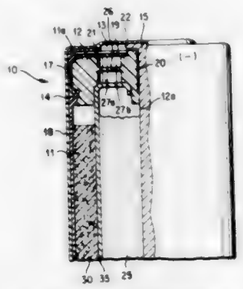
CELL SEALANT

David V. Adamson, Surrey, and Richard H. Dawson, Crawley, both of England, assignors to Duracell Inc., Bethel, Conn.

Filed Mar. 16, 1993, Ser. No. 33,663

Int. Cl.[5] H01M *2/08*

U.S. Cl. 429—174 **18 Claims**



1. An electrochemical cell comprising an open ended cell casing; an anode active material; a cathode active material; a separator; and an electrolyte disposed in operative association within the cell casing; a closure member closing said open end; and a current collector member extending through an opening in said closure member so that a portion of the current collector penetrates into one of the anode and cathode active materials, wherein an interface is formed between the current collector member and the closure member; said cell further comprising a sealant material located within said interface, said sealant material consisting essentially of thermoplastic elastomeric material selected from the group consisting of styrene-isoprene-styrene (SIS), styrene-butadiene-styrene (SBS), oil extended styrene-butadiene-styrene, styrene-ethylene/butylene-styrene (S-EB-S), styrene-ethylene/propylene-styrene (S-EP-S) and mixtures thereof.

5,332,634

METHOD OF MAKING LEAD ELECTRODES

Georgi T. Stoilov; Vladimir G. Stoilov, both of Sofia, Bulgaria; Boiko G. Stoilov, Malaga, Spain; Christo T. Chervenkov, and Pavel A. Lazov, both of Sofia, Bulgaria, assignors to Kamina, Ltd., Sofia, Bulgaria

Filed Oct. 13, 1992, Ser. No. 960,132

Int. Cl.[5] H01M *4/68*

U.S. Cl. 429—234 **10 Claims**

1. A method for making a porous lead electrode, which comprises:

providing a non-metallic grid;

coating the non-metallic grid with a very thin layer of conductive acid resistant base metal;

coating the conductive acid resistant base metal layer of the grid with a thin layer of lead;

covering the layer of lead coated on the conductive acid resistant base metal layer with a paste containing a halogenated lead compound;

submerging the paste-covered grid solution;

providing an anode in the solution which is electrically coupled to the paste covered grid; and

reducing the halogenated lead compound to form an electrode having a porous elemental crystalline lead layer.

5,332,635

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS, DEVICE UNIT, AND FACSIMILE MACHINE EMPLOYING THE SAME

Hisami Tanaka, Yokohama, Japan, assignor to Canon Kabushik Kaisha, Tokyo, Japan

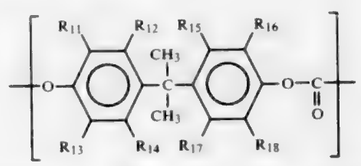
Filed Oct. 21, 1992, Ser. No. 964,299

Int. Cl.[5] G03G *5/05*

U.S. Cl. 430—96 **20 Claims**

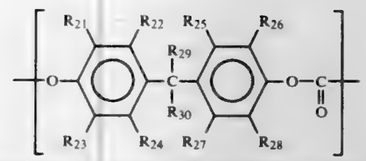
1. An electrophotographic photosensitive member comprising an electroconductive support and a photosensitive layer formed thereon, said photosensitive layer containing at least one polycarbonate selected from the group consisting of polycarbonates (1) to (3)below; and a charge-transporting substance having the structure represented by the formula (4)or (5) and having an oxidation potential of not less than 0.6 eV, (1) a copolymerized polycarbonate having the symmetric constitutional unit (a) below:

(a)



where R_{11} to R_{18} are respectively a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryl group, or a halogen atom, and the asymmetric constitutional unit (b) below:

(b)

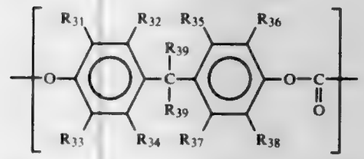


where R_{21} to R_{28} are respectively a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryl group, or a halogen atom, and R_{29} and R_{30} are respectively a hydrogen atom, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group, or R_{29} and R_{30} may form a substituted or unsubstituted cycloalkylidene group by linking together;

(2) a copolymerized polycarbonate having two or more asymmetric constitutional units represented by the formula (b) above;

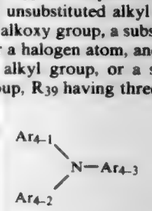
(3) a polycarbonate having a symmetric constitutional unit represented by the formula (c) below:

(c)



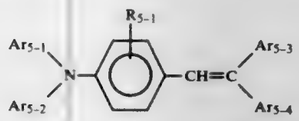
where R_{31} to R_{38} are respectively a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryl group, or a halogen atom, and R_{39} is a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group, R_{39} having three or more carbons;

(4)



wherein Ar_{4-1}, Ar_{4-2} and Ar_{4-3} are respectively a substituted or unsubstituted aryl group, where the substituent is an alkyl group, an alkoxy group or a halogen atom;

(5)



where Ar_{5-1}, Ar_{5-2}, and Ar_{5-3} are respectively a substituted or unsubstituted aryl group; Ar_{5-4} is a hydrogen atom or a substituted or unsubstituted aryl group; Ar_{5-3} and Ar_{5-4} may form a ring by linking together; R_{5-1} is a hydrogen atom, a substituted or unsubstituted alkyl group, or a halogen atom.

5,332,636

TONER COMPOSITIONS WITH ALUMINUM NEGATIVE CHARGE ENHANCING ADDITIVES

Beng S. Ong, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

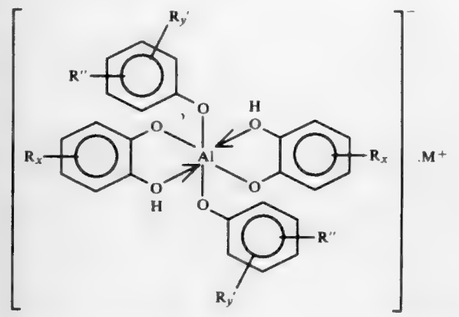
Filed Apr. 19, 1993, Ser. No. 47,903

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—106.6 **27 Claims**

1. A negatively charged toner composition consisting essentially of resin, colorants comprised of color dyes or pigment particles, optional surface additives, and an aluminum charge enhancing additive obtained from the reaction of aluminum ions with either four molar equivalents of an ortho-hydroxyphenol and a base, or two molar equivalents, each of an ortho-hydroxyphenol and a phenol, and a base.

10. A negatively charged toner composition consisting essentially of resin or resins, pigment particles, optional surface additives, and an aluminum charge enhancing additive represented by the following formula



wherein R and R′ are independently selected from the group consisting of hydrogen, alkyl, aryl, alkoxy, aryloxy, hydroxy, halogen, amino, cyano, and nitro; R″ is hydrogen or hydroxy; M+ is a proton, an ammonium ion, a substituted ammonium ion or a metal cation; and x and y are the numbers 1 or 2.

5,332,637

ELECTROSTATOGRAPHIC DRY TONER AND DEVELOPER COMPOSITIONS WITH HYDROXYPHTHALIMIDE

John C. Wilson, Rochester; Steven M. Bonser, Fairport, and Hans W. Osterhoudt, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1993, Ser. No. 114,890

Int. Cl.[5] G03G *9/107, 9/097*

U.S. Cl. 430—106.6 **19 Claims**

10. A dry, electrostatographic developer composition comprising a mix of toner particles comprised of a binder polymer and a charge-control agent wherein the binder polymer comprises a copolymer of styrene and an alkyl acrylate or methacrylate in which the styrene content is at least 60 weight percent of the total weight of the copolymer and the charge-control agent is N-hydroxyphthalimide and carrier particles wherein each of the carrier particles comprises a core particle having an overcoat of a polymer comprising poly(methyl methacrylate) or a copolymer of p-t-butylstyrene and a C_1–C_4 alkyl methacrylate.

5,332,638

DEVELOPER COMPOSITIONS WITH THERMOSET POLYMER COATED CARRIER PARTICLES

John A. Creatura, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1993, Ser. No. 39,598

Int. Cl.[5] G03G *9/113*

U.S. Cl. 430—108 **20 Claims**

1. A carrier composition consisting essentially of a core with a coating thereover comprised of a thermoset polymer, and which coating contains a charge control component thereby enabling the triboelectric charge on the carrier particles to be

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preselected and wherein the conductivity thereof is from about 10^{-6} to about 10^{-17} (mho-cm)$^{-1}$.

5,332,639

TONER FOR USE IN ELECTROPHOTOGRAPHY AND ITS MANUFACTURING PROCESS COMPRISING A CHARGE CONTROL ADDITIVE OF AN OXIDE COATED WITH A MIXTURE OF TIN OXIDE AND ANTIMONY

Tadashi Nakamura, Nara, and Shougo Iwai, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 558,298, Jul. 26, 1990, abandoned. This application Jan. 6, 1992, Ser. No. 79,796

Claims priority, application Japan, Aug. 8, 1989, 1-205164; Aug. 8, 1989, 1-205165; Aug. 8, 1989, 1-205166

Int. Cl.[5] **G03G** *9/00*

U.S. Cl. 430—110 **26 Claims**

1. A toner for use in electrophotography comprising:

toner particles, and

an external additive which comprises a fine powder composed of coated particles wherein said particles are selected from the group consisting of silica, aluminum oxide, and cerium oxide, and wherein said coating on said particles comprises a mixture of homogeneously distributed tin oxide and antimony for controlling the electrostatic charge of said toner, wherein said external additive is attached on the surface of said toner particles.

5,332,640

TONER COMPOSITIONS WITH DENDRIMER CHARGE ENHANCING ADDITIVES

James M. Duff, Mississauga; Francoise M. Winnik, Toronto; Guerino G. Sacripante, Oakville, and Anthony R. Davidson, Agincourt, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 922,420, Jul. 31, 1992, Pat. No. 5,256,516. This application Jul. 20, 1993, Ser. No. 93,917

Int. Cl.[5] **G03G** *9/097*

U.S. Cl. 430—110 **10 Claims**

1. A dry toner composition consisting essentially of resin particles, pigment particles, and a dendrimer charge enhancing additive microparticle; and wherein said dendrimer is a radially symmetrical molecule comprising an initiator core, interior layers attached to the core, said layers comprising arms composed of repeating units, and terminal functional groups attached to the outermost repeating unit of each arm; wherein said dendrimer is of the first generation with 6 terminal amino groups and said microparticle has an average particle diameter of about 10.8 Angstroms or said dendrimer is of the third generation with 24 terminal amino groups and said microparticle has an average diameter of about 22 Angstroms.

5,332,641

FUSER MEMBER WITH AN AMINO SILANE ADHESIVE LAYER

Patrick J. Finn, Webster; George J. Heeks, Rochester; Arnold W. Henry, Pittsford, and Alan R. Kuntz, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 27, 1992, Ser. No. 874,165

Int. Cl.[5] **G03G** *13/20, 9/00;* **B32B** *15/04*

U.S. Cl. 430—124 **20 Claims**

1. A fuser member for fusing thermoplastic resin toner images to a substrate in a fuser system of the type wherein a polymeric release agent having functional groups is applied to the surface of the fuser member, the fuser member comprising an aluminum base member and an elastomer fusing surface comprising poly(vinylidenefluoride-hexafluoropropylene-tetrafluoroethylene) where the vinylidenefluoride is present in an amount less than 40 mole percent, said elastomer having been cured from a solvent solution thereof with a nucleophilic curing agent soluble in said solution and in the presence of up to 9 parts by weight of inorganic base per 100 parts of polymer, said inorganic base being effective to at least partially dehydrofluorinate the vinylidenefluoride, and an adhesive layer between the surface of said aluminum base member and said elastomer fusing surface, said adhesive layer having been cured from a solvent solution of a poly(vinylidenefluoride-hexafluoropropylene-tetrafluoroethylene) where the vinylidenefluoride is present in an amount less than 40 mole percent and from about 6 to 20 parts by weight per 100 parts by weight of said poly(vinylidenefluoride hexafluoropropylene-tetrafluoroethylene) of an amino silane represented by the formula:



$$[R'-(O)_q\frac{(R)_b}{}_h Si-Y$$

where R can be an alkyl group having 1 to 7 carbon atoms; R' can be an alkyl group having 1 to 7 carbon atoms or a polyalkoxyalkyl group of less than 7 carbon atoms; Y is an amino group or an amino substituted alkyl, or a polyamino substituted alkyl, or an alkenylalkoxy amino, or an aryl amino group of less than 15 carbon atoms, h is 1 to 3, b is 0 to 2, q is 1 or 2 and $h+b=3$.

5,332,642

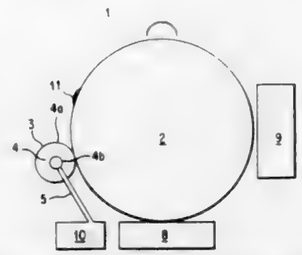
VACUUM ASSISTED DISPERSANT REDUCTION SYSTEM

Robert Simms, Downingtown, Pa.; Henry Till, E. Rochester, N.Y.; Robert K. Waring, Downington, Pa.; John Gardner, Penfield; Tab Tress, Henrietta, both of N.Y., and James Simpson, Reading, Pa., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 779,556, Oct. 18, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,453

Int. Cl.[5] **G03G** *13/10, 21/00*

U.S. Cl. 430—125 **26 Claims**



1. A method for removing toner dispersant from an image formed by depositing a liquid developer comprising toner and toner dispersant on a movable image carrying member of an electrostatographic printing system using a developer station, said toner dispersant being removed before said image is transferred to a receiving medium from said movable image carrying member by a transfer station, said method comprising:

contacting an outer, absorptive surface of an absorption material to said image on said image carrying member, so that said absorption material absorbs at least some of said toner dispersant from said image, said absorption material having an inner surface and being capable of passing absorbed toner dispersant therethrough from said outer surface to said inner surface, said absorption material located between the developer station and the transfer station of the electrostatographic printing system; and

vacuuming absorbed dispersant through and out of the absorption material by applying a vacuum to the inner surface of said absorption material, a vacuum pressure of said vacuum being less than a capillary pressure of pores of the absorption material so that said absorption material remains filled with said dispersant and so that substantially no air is introduced into said pores by said vacuum during removal of said dispersant.

15. An electrostatographic printing system comprising:

a movable image carrying member;

a developer station for depositing a toner dispersant laden image on said image carrying member;

a transfer station for transferring said image formed on said imaging member to a receiving medium;

an absorption material, located between said developer station and said transfer station, capable of absorbing toner dispersant from the image formed on said image carrying member from a liquid developer, said absorption material having an outer surface in contact with said image carrying member and an inner surface, said absorption material capable of passing toner dispersant therethrough from said outer surface to said inner surface; and

a vacuum source in fluid communication with said inner surface of said absorption material, said vacuum source applying a vacuum to said absorption material having a vacuum pressure less than a capillary pressure of pores of the absorption material so that said absorption material remains filled with said dispersant and so that substantially no air is introduced into said pores by said vacuum during removal of said dispersant.

5,332,643

METHOD OF WET HONING A SUPPORT FOR AN ELECTROPHOTOGRAPHIC PHOTORECEPTOR

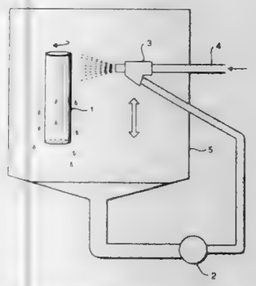
Yusuke Harada; Hidekazu Aonuma; Kazuyoshi Shimoyama, and Yasuo Sakaguchi, Kanagawa, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 409,688, Sep. 20, 1989, abandoned. This application Sep. 14, 1993, Ser. No. 120,399

Claims priority, application Japan, Sep. 26, 1988, 63-238877

Int. Cl.[5] **G03G** *5/04*

U.S. Cl. 430—127 **17 Claims**



1. A process for making an electrophotographic photoreceptor for producing a line-scanning image comprising:

providing a substrate composed of a metal or a metal alloy;

uniformly roughening the substrate by a wet honing process using an abrasive agent composed of an alumina-containing material, said uniformly roughened surface being formed with an effective diffuse reflection and a minimal glossiness effective to eliminate an interference fringe pattern from the line-scanning image without forming spots; and

disposing a photosensitive layer on the uniformly roughened surface.

5,332,644

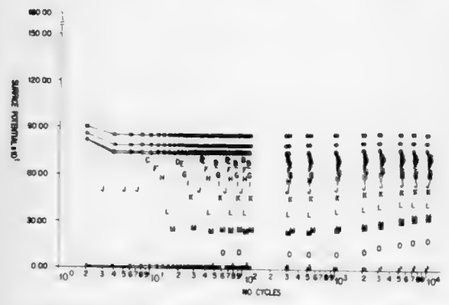
CHARGE GENERATOR LAYERS FORMED BY POLYMERIZATION OF DISPERSION OF PHOTOCONDUCTIVE PARTICLES IN VINYL MONOMER

Robert McNamara, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 634,587, Dec. 27, 1990, abandoned. This application Oct. 22, 1992, Ser. No. 965,049

Int. Cl.[5] **G03G** *5/05*

U.S. Cl. 430—134 **6 Claims**



1. A process for preparing an electrophotographic imaging member comprising the steps of:

a) providing a supporting substrate having a conductive layer and a charge blocking layer;

b) coating said substrate with a film forming photoconductive dispersion comprising photoconductive particles made of benzimidazole perylene and a dispersion medium consisting essentially of a polymerizable film forming vinyl monomer;

c) polymerizing said photoconductive film forming dispersion by autocatalysis to form a charge generating layer; and

d) forming a charge transport layer on top of said charge generating layer.

5,332,645

LOW DUSTING CARRIERS

Bijay S. Saha, and James H. Anderson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 28, 1992, Ser. No. 952,250

Int. Cl.[5] **G03G** *5/00*

U.S. Cl. 430—137 **15 Claims**

1. A method of producing hard magnetic strontium or barium ferrite carrier particles of substantially uniform particle size and substantially spherical shape suitable for magnetic brush development of electrostatic charge patterns and having a reduced tendency towards early life dusting which comprises:

(i) mixing unreacted particles of Fe_2O_3 and unreacted particles of barium or strontium oxide or a salt of barium or strontium convertible to the corresponding metal oxide upon subsequent firing in a mole ratio of Fe_2O_3 to the metal oxide or salt of 5.95 to 6.0:1 with an organic binder and water, as a solvent, to form a slurry;

(ii) spray drying the slurry to obtain green beads of substantially uniform particle size and substantially spherical shape, and

(iii) firing the beads at a temperature ranging from 1150° to 1175° C. for a period of time of 10 hours to obtain hard

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magnetic ferrite carrier particles of substantially uniform particle size and substantially spherical shape having a reduced tendency toward early life dusting.

5,332,646
METHOD OF MAKING A COLLOIDAL PALLADIUM AND/OR PLATINUM METAL DISPERSION

Robin E. Wright, Dakota, and Hsin H. Chou, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 21, 1992, Ser. No. 964,450
Int. Cl.[5] G03G 5/00; G03C 1/52
U.S. Cl. 430—137 **27 Claims**

1. A method of making a colloidal palladium and/or platinum metal dispersion that can be used as a toner fluid, which method comprises:

reducing a palladium and/or platinum metal of a metallo-organic palladium and/or platinum metal salt which lacks halide functionally in a dispersing medium comprising an organic carrier liquid and a soluble surfactant, the palladium and/or platinum metal of the metallo-organic metal salt being reduced in the dispersing medium to form colloidal elemental palladium and/or platinum metal particles, the soluble surfactant being present in the dispersing medium in an amount sufficient to charge and stabilize the elemental palladium and/or platinum metal particles as a colloidal metal dispersion.

5,332,647
POSITIVE-WORKING QUINONE DIAZIDE COMPOSITION CONTAINING N,N',N''-SUBSTITUTED ISOCYANURATE COMPOUND AND ASSOCIATED ARTICLE

Hayato Ohno, Ebina; Nobuo Tokutake; Satoshi Niikura, both of Samukawa; Hidekatsu Kohara, and Toshimasa Nakayama, both of Chigasaki, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

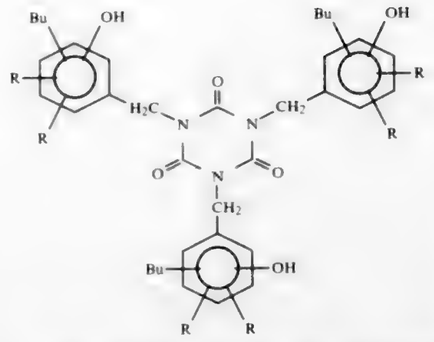
Filed Aug. 24, 1993, Ser. No. 111,179
Claims priority, application Japan, Aug. 26, 1992, 4-248947
Int. Cl.[5] G03F 7/09, 7/023; G03C 1/61
U.S. Cl. 430—165 **10 Claims**

6. A positive-working photoresist comprising a semiconductor silicon wafer coated with a photosensitive resin composition which comprises, as a uniform mixture:

(a) a photosensitive amount of a quinone diazide group-containing compound as a photosensitizing agent;

(b) for each 10 parts by weight of the photosensitizing agent, from 5 to 200 parts by weight of an alkali-soluble, film forming novolac resin; and

(c) for each 100 total parts by weight of film forming novolac resin and photosensitizing agent, from 0.5 to 15 parts by weight of an N, N', N''-substituted isocyanurate compound represented by the general formula:

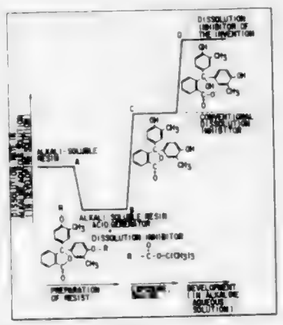


in which Bu denotes a tert-butyl group and the groups denoted by R are, each independently from the others, a hydrogen atom, a hydroxy group or an alkyl group having 1 to 4 carbon atoms.

5,332,648
POTOSENSITIVE COMPOSITION AND METHOD OF FORMING A PATTERN USING THE SAME

Naoko Kihara, Matsudo; Fumihiko Yuasa, Tokyo; Tohru Ushirogouchi, Yokohama; Tsukasa Tada, Tokyo; Osamu Sasaki, Sagamihara; Takuya Naito, Tokyo, and Satoshi Saito, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1991, Ser. No. 813,694
Claims priority, application Japan, Dec. 27, 1990, 2-418772; Jun. 24, 1991, 3-151942
Int. Cl.[5] G03C 1/73; G03F 7/039
U.S. Cl. 430—270 **21 Claims**



1. A photosensitive composition comprising:

an alkali-soluble polymer;

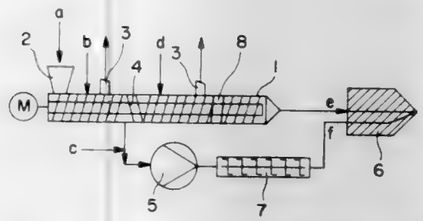
a compound which generates an acid when exposed to chemical radiation; and

an acid-decomposable compound having (a) at least one substituent which is an ester moiety, tetrahydropyranyl ether, an alkoxycarbonyl or a silyl ether, which substituent is decomposed by acid which is generated when said compound is exposed to chemical radiation, and (b) at least one group which is converted into a $-COO^-$ or $-SO_3^-$ group by reaction with an alkaline solution.

5,332,649
PRODUCTION OF A PHOTOSENSITIVE RECORDING ELEMENT

Gerhard Bleckmann, Lampertheim; Thomas Loerzer, Neustadt, and Thomas Telser, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 21, 1992, Ser. No. 994,256
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142576
Int. Cl.[5] G03C 1/76
U.S. Cl. 430—270 **4 Claims**



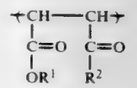
1. A process for the production of a photosensitive recording element having a photopolymerizable recording layer comprising at least two individual layers having the same composition or different compositions, located one on top of the other and firmly bonded to one another, in which components used for the production of the individual layers are melted, homogeneously mixed and freed from gaseous constituents in a self-purging, twin-screw extruder, the component mixture is transported as separate material streams and the latter are combined in an adapter or a multilayer die with formation of the individual layers and said layers are then calendered, wherein the components which are obligatory for all individual layers are melted and mixed together in a screw extruder and, after removal of gaseous constituents, the component mixture is divided into two or more material streams, at least one of which is removed from the screw extruder and is transported by means of a delivery pump to the adapter or to the multilayer die, further components being mixed with this material stream during this transport.

5,332,650
RADIATION-SENSITIVE COMPOSITION

Makoto Murata; Mikio Yamachika; Yoshiji Yumoto, and Takao Miura, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 941,264
Claims priority, application Japan, Sep. 6, 1991, 3-254225
Int. Cl.[5] G03F 7/004, 7/023; G03C 1/52
U.S. Cl. 430—270 **3 Claims**

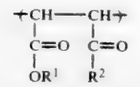
1. A radiation-sensitive composition comprising (A) a polymer having a recurring unit represented by formula (1):



(1)

wherein R^1 represents a silyl group selected from the group consisting of a trimethylsilyl group, a triethylsilyl group, a tert-butyldimethylsilyl group, an isopropyldimethylsilyl group and a phenyldimethylsilyl group, and R^2 represents $-OR^3$ or $-NR^4R^5$ in which R^3 is a silyl group selected from the group consisting of a trimethylsilyl group, a triethylsilyl group, a tert-butylsilyl group, an isopropyldimethylsilyl group and a phenyldimethylsilyl group, and R^4 and R^5, which may be the same or different, are hydrogen atoms, straight-chain alkyl groups, cyclic alkyl groups, aralkyl groups or aryl groups, and (B) a radiation-sensitive acid-forming agent.

2. A radiation-sensitive composition comprising (A) a polymer having a recurring unit represented by formula (1):



(1)

wherein R^1 represents a germyl group selected from the group consisting of a trimethylgermyl group, a triethylgermyl group, a tert-butyldimethylgermyl group, an isopropyldimethylgermyl group and a phenyldimethylgermyl group, and R^2 represents $-OR^3$ or $-NR^4R^5$ in which R^3 is a germyl group selected from the group consisting of a trimethylgermyl group, a triethylgermyl group, a tert-butyldimethylgermyl group, an isopropyldimethylgermyl group and a phenyldimethylgermyl group, and R^4 and R^5, which may be the same or different, are hydrogen atoms, straight-chain alkyl groups, cyclic alkyl groups, aralkyl groups or aryl groups, and (B) a radiation-sensitive acid-forming agent.

3. A radiation-sensitive composition comprising (A) a polymer consisting only of a recurring unit represented by formula (1):



(1)

wherein R^1 represents a substituted methyl group, a substituted ethyl group, a silyl group, a germyl group or an alkoxycarbonyl group, and R^2 represents $-OR^3$ or $-NR^4R^5$ in which R^3 is a hydrogen atom, a straight-chain alkyl group, a cyclic alkyl group, an aryl group, an aralkyl group, a substituted methyl group, a substituted ethyl group, a silyl group or an alkoxycarbonyl group, and R^4 and R^5, which may be the same or different, are hydrogen atoms, straight-chain alkyl groups, cyclic alkyl groups, aralkyl groups or aryl groups, and (B) a radiation-sensitive acid-forming agent.

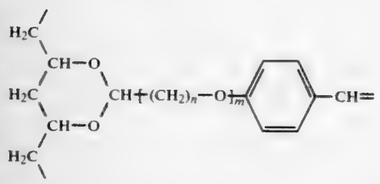
5,332,651
PHOTOCURABLE COMPOSITIONS COMPRISING GRAFTED POLYVINYL ALCOHOL DERIVATES

Peter Dickinson, Broadstairs; Julie E. Pratt, Broadstairs, and Fereidoun Abbasi, Margate, all of England, assignors to Sericol Limited, United Kingdom

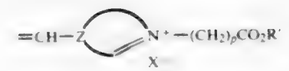
Filed Feb. 3, 1993, Ser. No. 12,918
Claims priority, application United Kingdom, Feb. 3, 1992, 9202246.6
Int. Cl.[5] G03C 7/28; C08F 2/46; C08G 8/38
U.S. Cl. 430—270 **8 Claims**

1. Photopolymerizable grafted polyvinyl alcohols including groups of formula

(II)



-continued



wherein n represents zero or an integer from 1 to 6, m represents zero or 1 (with the proviso that m represents zero when n represents zero), Z together with the nitrogen and carbon atoms to which they are attached represent a heterocyclic ring optionally fused to one or more benzenoid or heterocyclic rings, X^- represents an anion, R' represents an alkyl group, and p represents an integer from 1 to 4.

5,332,652

METHOD FOR MAKING LITHOGRAPHIC PRINTING PLATE

Shigeyoshi Suzuki, and Akira Furukawa, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 496,157, Mar. 19, 1990, abandoned, which is a continuation of Ser. No. 140,559, Jan. 4, 1988, abandoned. This application Aug. 21, 1991, Ser. No. 750,737

Claims priority, application Japan, Mar. 9, 1987, 62-54450; Apr. 14, 1987, 62-92436

Int. Cl.[5] G04F *7/00*

U.S. Cl. 430—302 **9 Claims**

1. A method for making a lithographic printing plate which comprises placing, opposite to each other, (i) a printing sheet comprising a conductive support selected from the group consisting of a metal sheet, a metal-deposited film and a metal foil-laminated film, having thereon a dielectric non-photosensitive layer, and a photoreceptor comprising a film support having a conductive layer on which an organic photoconductive compound is provided, imagewise exposing the photoreceptor from a light transmitting side while applying a direct voltage between said conductive support and said conductive layer by a direct current source to form a positive electrostatic latent image on said non-photosensitive layer of the printing sheet and then subjecting the image to wet developing and fixation.

5,332,653

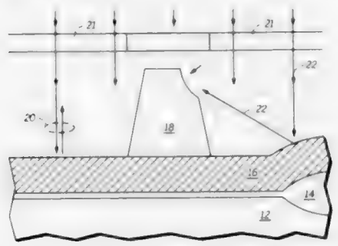
PROCESS FOR FORMING A CONDUCTIVE REGION WITHOUT PHOTORESIST-RELATED REFLECTIVE NOTCHING DAMAGE

Mark J. Cullen, Sunnyvale, Calif., and Sean Hunkler, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1992, Ser. No. 907,076

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—323 **22 Claims**



1. A process for forming a region of conductive material comprising the steps of:

providing a semiconducting substrate;

forming a conductive layer overlying the semiconducting substrate;

forming a photoresist material overlying the conductive layer;

forming openings in the photoresist material which expose portions of the conductive layer and form a sidewall of the photoresist material;

performing a pre-conditioning etch on the conductive layer to clean a surface of the conductive layer;

exposing the photoresist layer to an ion bombardment environment to harden a sidewall surface of the photoresist material to form a hardened polymer veil layer adjacent the sidewall of the photoresist material; and

removing the portions of the conductive layer which are exposed by the openings in the masking material to form said region of conductive material.

5,332,654

REVERSIBLE REDOX-CONTROLLED IMAGING METHOD

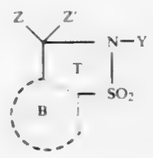
Myron S. Simon, West Newton; Marcis M. Kampe, Brookline, and David P. Waller, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 708,679, May 31, 1991, Pat. No. 5,258,279. This application Jun. 11, 1993, Ser. No. 74,580

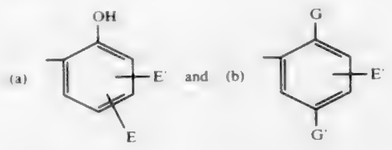
Int. Cl.[5] G03C *1/72*

U.S. Cl. 430—332 **10 Claims**

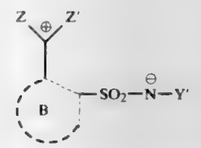
1. A method of forming color which comprises contacting an oxidizing agent and a substantially color less compound of the formula



wherein B is a carbocyclic ring or carbocyclic rings; T is a 5- or 6-membered ring; Y is a carbocyclic moiety selected from



wherein E, positioned ortho or para to said —OH group, is selected form —OH, $-NH_2$, —NHR', —NR'R'' and $-NHSO_2R'$ wherein R' and R'' each are lower alkyl groups having 1 to 6 carbon atoms or aralkyl wherein said aralkyl includes an aryl portion which may be substituted with alkyl groups having 1 to 24 carbon atoms, and E' is hydrogen or a monovalent groups that is substituted on one of the remaining carbon atoms of said carbocyclic moiety; G and G' each are hydroxy or methoxy, provided one is hydroxy and the other is methoxy; and Z and Z' taken individually represent the moieties to complete the chromophoric system of a triarylmethane dye when said N-containing ring, T, is open and Z and Z' taken together represent the bridged moieties to complete the chromophoric system of a bridged triarylmethane dye when said N-containing ring, T, is open to give a colored compound of the formula



wherein B, Z and Z' have the same meaning given above and Y' represents the quinoid form of Y.

5,332,655

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Akiko Shono, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Nov. 26, 1991, Ser. No. 797,908

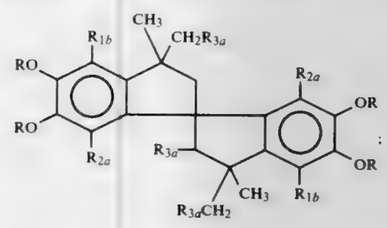
Claims priority, application Japan, Nov. 27, 1990, 2-324605; Nov. 27, 1990, 2-324613

Int. Cl.[5] G03C *1/815*

U.S. Cl. 430—512 **6 Claims**

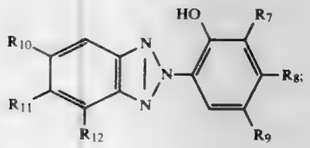
1. A silver halide color photographic element, comprising a support having thereon at least one photosensitive silver halide emulsion layer and at least one non-photosensitive hydrophilic colloid layer, wherein the photosensitive silver halide emulsion layer furthest from said support, or a non-photosensitive hydrophilic colloid layer above the photosensitive silver halide emulsion layer furthest from the support comprises, in the same layer, a combination of (i) at least one compound represented by formula (I-i) as set forth below, and (ii) at least one ultraviolet absorber of formula (II) below wherein said at least one ultraviolet absorber is present in a total coated weight of from about 0.1 to 10.0 g/m^2, and the compound represented by formula (I-i) is present in an amount of from about 0.01 to 1.00 gram per gram of ultraviolet absorber:

(I-i)



wherein the R groups of formula (I-i), which may be the same or different, each represents an alkyl group, an alkenyl group, an aryl group, a heterocyclic group, an $R_{1a}CO-$ group, and $R_{5a}SO_2-$ group or an $R_{6a}NHCO-$ group wherein R_{4a}, R_{5a} and R_{6a}, which may be the same or different, each represents an alkyl group, an alkenyl group, an aryl group or a heterocyclic group, R_{1b} and R_{2a} each represents a hydrogen atom, a halogen atom, an alkyl group, an alkenyl group, an alkoxy group or an alkenoxy group, and wherein R_{3a} represents a hydrogen atom, an alkyl group, an alkenyl group or an aryl group;

(II)



wherein R_7, R_8, R_9, R_{10}, R_{11} and R_{12}, which may be the same or different, each represent a hydrogen atom, a halogen atom, a nitro group, a hydroxy group, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, an acylamino group, a carbamoyl group or a sulfo group, and wherein R_{11} and R_{12} may be joined together to form a six membered ring.

5,332,656

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Massimo Bertoldi, Fossano, and Vinicio Busatto, Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

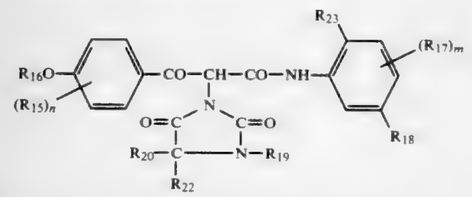
Filed Mar. 22, 1993, Ser. No. 34,726

Claims priority, application Italy, Apr. 7, 1992, MI92A00839

Int. Cl.[5] G03C *7/36*

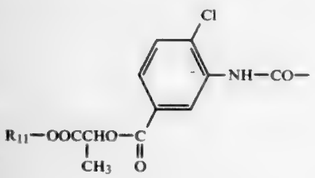
U.S. Cl. 430—544 **3 Claims**

1. A silver halide color photographic light-sensitive material which comprises a support having coated thereon at least one silver halide emulsion layer containing a) a diacylaminomethylene yellow dye forming coupler having, bonded directly to the coupling active position, a group which provides a compound having a development inhibiting property when the group is released from the coupler active position upon the color development reaction, wherein said group is a 4,7-dihalogen-2-benzotriazolyl group and b) an alkoxybenzoyl acetanilide yellow die forming coupler having a 3-hydantoinyl leaving group bonded to the coupling active position, wherein said alkoxybenzoyl acetanilide yellow dye forming coupler is represented by the general formula (VI):

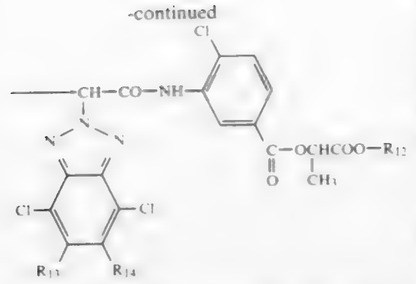


wherein R_{15} and R_{17} each represents an alkyl group of 1 to 4 carbon atoms, a phenyl or naphthyl group, chloro atom, bromo atom or alkoxy group of 1 to 4 carbon atoms; m and n are individually 0, 1 or 2; R_{16} is an alkyl group of 1 to 4 carbon atoms; R_{18} is a ballast group; R_{19} represents a hydrogen atom, an alkyl group of 1 to 6 carbon atoms, a phenyl or naphthyl group or an acyl group; R_{20} is an alkoxy group of 1 to 16 carbon atoms; R_{22} is hydrogen atom, an alkyl group of 1 to 16 carbon atoms or a phenyl or naphthyl group; R_{23} is a halogen atom, and wherein said diacylaminomethylene yellow dye forming coupler is represented by the general formula (III):

(III)



-continued



wherein R_{11} and R_{12} each represents an alkyl group having 1 to 20 carbon atoms, and R_{13} and R_{14} each represents a lower alkyl group having 1 to 4 carbon atoms

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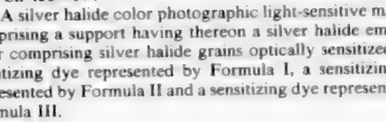
5,332,657

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL OFFERING EXCELLENT COLOR REPRODUCTION

Yasushi Irie, Inagi; Hiroshi Shimazaki, Hachioji, and Shinri Tanaka, Urawa, all of Japan, assignors to Konica Corporation, Tokyo, Japan

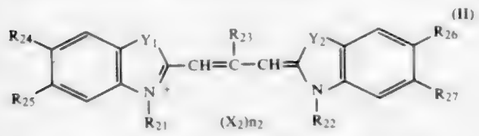
Filed Dec. 3, 1992, Ser. No. 985,112
Claims priority, application Japan, Dec. 27, 1991, 3-346867
Int. Cl.[5] G03C *1/18, 1/29*
U.S. Cl. 430—574 **5 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer comprising silver halide grains optically sensitized by a sensitizing dye represented by Formula I, a sensitizing dye represented by Formula II and a sensitizing dye represented by Formula III.



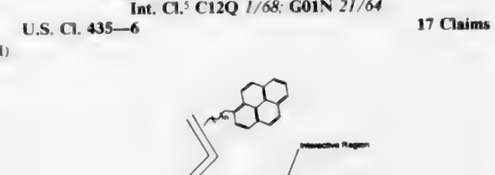
(I)

wherein R_1 and R_2 are independently an alkyl group having 1 to 10 carbon atoms or an alkenyl group having 3 to 10 carbon atoms; R_3 is a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; R_4 and R_5 are independently an alkyl group; Z_1 is a group of non-metal atoms necessary to form a monocyclic 5-membered nitrogen-containing heterocyclic ring or a bicyclic condensed ring structure including such a 5-membered nitrogen-containing heterocyclic ring; X_1 is a counter ion and n_1 is the number of counter ions, provided that when an intramolecular salt is formed in the dye, n_1 is 0



(II)

wherein R_{21} and R_{22} are each an alkyl or an aryl group; R_{23} is a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; R_{24} and R_{26} are each a hydrogen atom, an alkyl group, an aryl group, a halogen atom, a hydroxy group, an amino group, an acyl group, an acylamino group, an acyloxy group, an aryloxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkoxycarbonylamino group, a sulfonyl group, a carbamoyl group or a cyano group; R_{25} and R_{27} are each a hydrogen atom, an alkyl group, an aryl group, a halogen atom, a hydroxy group, an amino group, an acyl group, an acylamino group, an acyloxy group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkoxycarbonylamino group, a sulfonyl group, a carbamoyl group or a cyano group, the groups represented by R_{24} and R_{25}, and R_{26} and R_{27} may bind together to form a ring; Y_1 and Y_2 are each a sulfur atom or a selenium atom; X_2 and n_2 have the same definition as X_1 and n_1 in Formula I;



(III)

wherein R_{31}, R_{32}, R_{33} and R_{34} are each an alkyl group or an aryl group; R_{35} is a hydrogen atom, an alkyl group or an aryl group; R_{36}, R_{37}, R_{38} and R_{39} are each a hydrogen atom, an alkyl group, an aryl group, a halogen atom, a hydroxy group, an amino group, an acyl group, an acylamino group, an acyloxy group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkoxy carbonylamino group, a sulfonly group, a carbamoyl group or a cyano group; groups represented by R_{36} and R_{37} and R_{38} and R_{39} may bind together to form a ring, and X_3 and n_3 have the same definition as X_1 and n_1 in Formula I.

5,332,658

RECOMBINANT HUMAN ROTAVIRUS VP7 SEROTYPE 4

Michael L. Dyall-Smith, Kew; Chris Hum, Boronia; Ian H. Holmes, Canterbury; Michael A. Johnson, North Ryde, and Peter R. Reeves, Glebe, all of Australia, assignors to The University of Melbourne, Victoria, Australia

Continuation of Ser. No. 473,959, Aug. 10, 1988, abandoned. This application Jun. 16, 1992, Ser. No. 899,216
Claims priority, application Australia, Aug. 10, 1987, PI3643
Int. Cl.[5] C12Q *1/68, 1/70;* **C12N** *15/33, 15/63;* **A61K** *39/12*
U.S. Cl. 435—5 **16 Claims**

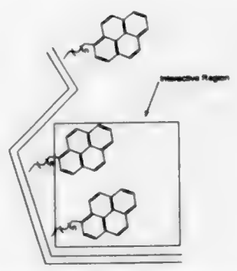
1. An isolated gene encoding a VP7 protein of human rotavirus serotype 4.

5,332,659

LIGHT EMISSION-OR ABSORBANCE-BASED BINDING ASSAYS FOR POLYNUCLEIC ACIDS

David A. Kidwell, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 865,526, Nov. 10, 1992. This application Jan. 15, 1993, Ser. No. 4,009
Int. Cl.[5] C12Q *1/68;* **G01N** *21/64*
U.S. Cl. 435—6 **17 Claims**



1. A method for detecting the presence of a target polynucleic acid strand having a specified nucleotide sequence in a matrix suspected of including said target polynucleic acid strand, comprising the steps of:

adding to the matrix a strand of polynucleic acid complementary to said target polynucleic acid strand, said complementary polynucleic acid strand having attached thereto, at least two labels comprising fluorophore moieties, each attached to a corresponding internucleotide phosphate group, or between the phosphorus atoms of said complementary polynucleic acid, so that when said complementary polynucleic acid strand is not bound with said target polynucleic acid strand, said at least two fluorophore moieties are significantly more likely to electronically interact with each other to form an excimer and thus vary the wavelength dependence of their spectra than they would be if said complementary polynucleic acid strand were bound to said target polynucleic acid; and

detecting said variation in the emission or absorption spectra, wherein the absence of, or a decrease in the intensity of, said variation in the emission or absorption spectra indicates the presence of said target polynucleic acid strand.

10. A method for detecting the presence of a target polynucleic acid strand having a specified nucleotide sequence in a matrix suspected of including said target polynucleic acid strand, comprising the steps of:

adding to the matrix a strand of polynucleic acid complementary to said target polynucleic acid strand, said complementary polynucelic acid strand having attached thereto, at least two labels comprising fluorophore moieties, each attached to a corresponding internucleotide phosphate group and spaced sufficiently close together along said complementary strand so that when said complementary polynucelic acid is bound with said target polynucleic acid strand, said at least two fluorophore moieties are significantly more likely to electronically interact with each other to form an excimer and thus vary the wavelength dependance of their spectra than they would be if said complementary polynucleic acid strand were unbound to said target polynucleic acid strand; and

detecting said variation in the emission or absorption spectra, wherein an increase in the intensity of said variation in the emission or absorption spectra indicates the presence of said target polynucleic acid strand.

5,332,660

GENE ENCODING ASPARTIC ACID SECRETORY PROTEINASE OF *CANDIDA ALBICANS* AND A METHOD OF USING THE GENE FOR THE DETECTION OF *CANDIDA ALBICANS*

Osamu Takeda, Otsu; Hiroyuki Mukai, Moriyama; Kiyozo Asada, Otsu; Hideyo Yamaguchi, Kawasaki, and Ikunoshin Kato, Uji, all of Japan, assignors to Takara Shuzo Co., Ltd., Japan

Continuation of Ser. No. 729,414, Jul. 12, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 32,393
Claims priority, application Japan, Jul. 26, 1990, 2-196226; Apr. 22, 1991, 3-116596
Int. Cl.[5] C12N *15/52*
U.S. Cl. 435—6 **2 Claims**

1. An isolated and purified gene from *Candida albicans* encoding a secretory aspartic acid proteinase and consisting of the DNA sequence described by SEQ ID No. 1.

5,332,661

REAGENTS AND METHODS FOR THE QUANTIFICATION OF TOTAL DOXEPINS IN BIOLOGICAL FLUIDS

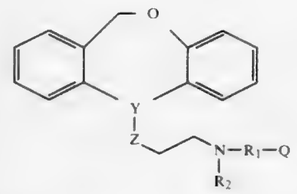
Maciej Adamczyk, Gurnee; Jeffrey R. Fishpaugh, Chicago; Donald Johnson, Lindenhurst, and Robert E. Hruska, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 738,400, Jul. 31, 1991, abandoned. This application Jul. 24, 1992, Ser. No. 916,066
Int. Cl.[5] G01N *33/542, 33/533*
U.S. Cl. 435—7.93 **57 Claims**

1. An immunoassay method for the quantification of total doxepins in a test sample, wherein said total doxepins comprise one or more of E-doxepin, Z-doxepin, E-desmethyldoxepin, and Z-desmethyldoxepin, said method comprising the steps of:

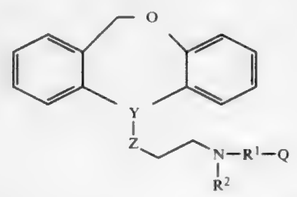
(a) contacting said test sample with the E-isomer and the Z-isomer of a labeled reagent and an antibody reagent to form a reaction solution therewith, said antibody reagent comprising antibodies which are capable of binding to said total doxepins, wherein

(i) said antibodies are produced with one or more immunogens prepared from a doxepin derivative of the formula:



wherein Y—is N—CH_2 or C═CH, R^1 is a linking group comprising from 1 to 6 carbon atoms and 0 to 2 heteroatoms, R^2 is H or CH_3, and Q is an immunogenic carrier material, and wherein

(ii) said labeled reagent is a doxepin derivative of the formula:



wherein Y—Z is N—CH_2 or C═CH, R^1 is a linking group comprising from 1 to 6 carbon atoms and 0 to 2 heteroatoms, R^2 is H or CH_3, and Q is a detectable moiety; and

(b) measuring the amount of said labeled reagent in said reaction solution which either has or has not participated in a binding reaction with said antibodies as a function of total doxepins in said test sample.

5,332,662

METHODS FOR DETERMINING PEROXIDATIVELY ACTIVE SUBSTANCES

Edwin F. Ullman, Atherton, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 31, 1992, Ser. No. 923,080
Int. Cl.[5] C12Q *1/28;* **G01N** *33/542, 33/536*
U.S. Cl. 435—28 **8 Claims**

1. A kit for detecting a peroxidatively active substance

(PAS) in a sample or medium suspected of containing said PAS, said kit comprising in packaged combination:

a compound of the formula F-L-Q wherein F is a fluorescer capable of producing a fluorescent signal, Q is a quencher capable of quenching by energy transfer said signal when linked to F, and L is a bond or linking group containing a bond wherein said bond is capable of being cleaved by an oxidation-reduction reaction of said PAS with a substrate of said PAS and a hydrogen donor wherein said cleavage substantially reduces said quenching; and

a hydrogen donor.

5,332,663

PROCESS FOR THE ENZYMATIC PREPARATION OF 7-AMINO-CEPHALOSPORANIC ACIDS

Ezio Battistel, La Spezia; Pietro Cesti, Trecate; Giuliana Franzosi, Calvignasco, and Vilhelmus van der Goes, Caluso, all of Italy, assignors to Ministero dell'Universita' e della Ricerca Scientifica e Tecnologica, Rome, Italy

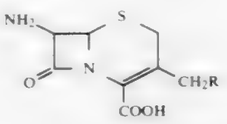
Filed Jul. 14, 1992, Ser. No. 913,041

Claims priority, application Italy, Jul. 24, 1991, MI91A002039

Int. Cl.[5] C12P *35/02, 35/00, 1/04*

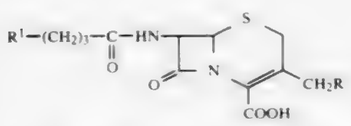
U.S. Cl. 435—51 **7 Claims**

1. A process for the enzymatic preparation of 7-amino-cephalosporanic acids having the formula



(I)

wherein R represents H, OH, O—CO—R", R" being an alkyl radical with a number of carbon atoms ranging from 1 to 4, comprising selectively de-acylating compounds of the formula



(II)

wherein R' is —COOH, by contacting said compound with a microorganism selected from the group consisting of:

Achromobacter Xylosoxidans 13/D7, NCIMB 40407,

Pseudomonas paucimobilis 4S/E7, NCIMB 40408,

Pseudomonas sp. 13/F7, NCIMB 40409,

Bacillus sp. 13/F8, NCIMB 40410,

Bacillus cereus 146/1, NCIMB 40411

Pseudomonas sp. 13/D7B, NCIMB 40473, **and**

Pseudomonas sp. 146/H9, NCIMB 40474 or an acylase enzyme, in free form or immobilized, derived from said microorganism, and recovering said 7-amino-cephalosporanic acids.

5,332,664

HUMAN CALCITONIN PRECURSOR POLYPROTEIN STRUCTURAL GENE

Roger K. Craig, and Iain MacIntyre, both of London, England, assignors to Celltech Limited, Berkshire, England

Continuation of Ser. No. 588,483, Sep. 24, 1990, abandoned, which is a continuation of Ser. No. 233,892, Aug. 12, 1988, abandoned, which is a continuation of Ser. No. 885,312, Jul. 14, 1986, abandoned, which is a continuation of Ser. No. 482,999, Mar. 11, 1983, abandoned. This application Dec. 8, 1992, Ser. No. 987,724

Claims priority, application United Kingdom, Jul. 15, 1981, 8121699; Nov. 26, 1981, 8135738

Int. Cl.[5] C12P *21/02;* **C07K** *7/38;* **A61K** *37/00*

U.S. Cl. 435—69.4 **11 Claims**

1. A process for the production of authentic human calcitonin comprising the steps of:

i) preparing a polypeptide having the amino acid sequence of human calcitonin-X where —X is an amino acid residue attached by a peptide bond to the proline residue at the C-terminus of the human calcitonin 32 amino acid sequence and is enzymatically processable to $—NH_2$ to produce C-terminal amidated authentic human calcitonin, by culturing a host organism transformed with a vector comprising a structural gene encoding said polypeptide;

ii) recovering said polypeptide having the amino acid sequence of calcitonin-X; and

iii) enzymatically processing —X to $—NH_2$ in vitro, to produce authentic human calcitonin.

5,332,665

SPECIES SPECIFIC, HIGH AFFINITY MONOCLONAL ANTIBODIES

Guy L. Reed, Winchester, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 809,175, Dec. 18, 1991. This application Mar. 11, 1993, Ser. No. 31,019

Int. Cl.[5] A61K *35/16;* **C07K** *15/28*

U.S. Cl. 435—70.21 **5 Claims**

1. A method for screening a hybridoma supernatant for monoclonal antibodies which are completely species specific for the immunoglobulin of a first species (hereinafter "S1-Ig") comprising:

(a) incubating said supernatant with S1-Ig and immunoglobulin from a second species (hereinafter "S2-Ig") wherein,

(i) the concentration of S2-Ig is at least 100,000 times greater than the concentration of S1Ig; and

(ii) the concentration of S2-Ig is equal to or greater than the concentration normally found in the serum of said second species;

(b) after the incubation of step (a) , quantitating the amount of S1-Ig bound by antibody; and

(c) selecting those supernatants having antibodies which bind S1-Ig despite the presence of S2-Ig.

5,332,666

METHOD, SYSTEM AND REAGENTS FOR DNA SEQUENCING

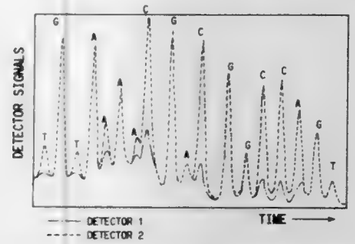
James M. Prober, Wilmington, Del.; Rudy J. Dam, Landenberg, Pa.; Charles W. Robertson, Jr., Rockland; Frank W. Hobbs, Jr., Wilmington, both of Del., and George L. Trainor, Glen Mills, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 057,566, Jun. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 881,372, Jul. 2, 1986, abandoned. This application Oct. 22, 1991, Ser. No. 780,347

Int. Cl.[5] C12P *19/34*

U.S. Cl. 435—91.5 **14 Claims**

1. A process of DNA sequence analysis by chain elongation comprising reacting a template of DNA contained in an appropriate sequencing vector, a primer, a polymerase, a first mixture of DNA nucleotides or their analogs, and a second mixture of radiation omitting reporter-labeled chain terminators corresponding to the DNA nucleotides or their analogs to produce fragments of DNA having reporters covalently attached to their 3' terminal residues introduced by chain termination events, and analyzing the fragments so produced for the presence of reporters, thereby identifying the DNA sequence.



5,332,667

METHOD FOR PRODUCING BIOLOGICALLY ACTIVE POLYSACCHARIDE RON SUBSTANCE

Hisao Kado; Yasuo Yoneta; Suguru Takeo; Yutaka Mitani, and Nobuhiro Watanabe, all of Yaizu, Japan, assignors to Sapporo Breweries Limited, Tokyo, Japan

Continuation of Ser. No. 912,204, Jul. 10, 1992, abandoned, which is a continuation of Ser. No. 807,968, Dec. 11, 1991, abandoned, which is a continuation of Ser. No. 469,298, Jan. 24, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 116,210

Claims priority, application Japan, Feb. 8, 1989, 1-29381

Int. Cl.[5] C12N *1/20;* **C12P** *19/04*

U.S. Cl. 435—101 **14 Claims**

1. A process for the preparation of a biologically active polysaccharide RON substance which comprises

(a) culturing a microorganism belonging to the genus Leuconostoc, which has an ability of producing a physiologically active polysaccharide RON substance, said microorganism being at least one strain of *Leuconostoc mesenteroides* subsp. dextranicum, said strain selected from the group consisting of strain BL-75 (FERM BP-2242), strain NCFB 517 (FERM BP-2711), strain NCFB 531 (FERM BP-2712), strain NCFB 861 (FERM BP-2713), strain NCBF 864 (FERM BP-2714), strain 46-1 (FERM BP-2670), to form a polysaccharide RON substance having the following properties:

(1) form: the substance is a white amorphous powder having no taste and no smell;

(2) solubility: the substance is soluble in water, but the solution becomes milky white and viscous when the concentration is elevated; the substance is soluble in formamide and dimethylsulfoxide, but the substance is insoluble in alcohols, acetone, benzene, ethyl acetate, hexane, chloroform and carbon tetrachloride;

(3) pH of aqueous solution: the aqueous solution is neutral to weakly acidic;

(4) constituent saccharide: the substance comprises solely glucose;

(5) elementary analysis values: the substance comprises 44.0 to 45.0% of C and 6.1 to 6.3% of H;

(6) structure: the substance is an α-1,6-glucan and comprises a small amount of 3,6-branched side chains;

(7) proteins: the substance comprises almost no proteins;

(8) molecular weight: the substance does not permeate through a dialysis membrane and the molecular weight is presumed to be higher than 10,000 daltons;

(9) specific rotation: $(\alpha)_D^{25} = +190° \sim +220°$ (C=0.5, formamide);

(10) color reaction: the substance is positive to an anthrone sulfuric acid reaction and a phenol sulfuric acid reaction, but negative to a biurette reaction, the Lowry-Folin reaction, the Elson-Morgan reaction and an iodine reaction;

(11) melting point: the substance has no definite melting point;

(12) ultraviolet absorption spectrum: the substance has no characteristic absorption;

(13) infrared absorption spectrum: the substance shows a characteristic absorption of α-glucan;

(14) ^{13}C-NMR spectrum: the substance shows characteristic chemical shift values of α-1,6-glucan in the main signals; and

(15) biological activity: the substance has an antitumor activity against mice having a transplantable tumor, and

(b) collecting said substance from a culture broth.

5,332,668

PROTEASE WITH LOW THERMOSTABILITY DERIVED FROM *MUCOR PUSILLUS*

Takashi Yamashita, Hachioji; Susumu Higashi, Higashi Murayama; Toshihiko Higashi, Hachioji; Haruo Machida; Shinjiro Iwasaki, both of Hino, and Teruhiko Beppu, Tokyo, all of Japan, assignors to Meito Sangyo Co., Ltd., Aichi, Japan

Filed Oct. 8, 1992, Ser. No. 958,222

Claims priority, application Japan, Oct. 11, 1991, 3-263878

Int. Cl.[5] C12N *9/50, 9/58*

U.S. Cl. 435—223 **3 Claims**

3. An isolated protease having an amino acid sequence represented by amino acid numbers from 1 to 361 in SEQ ID NO:2, wherein amino acid 186 is substituted by an amino acid selected from the group consisting of aspartic acid, alanine, cysteine, isoleucine, serine, arginine and valine.

5,332,669

PROSTATE-DERIVED MITOGEN

Thomas F. Deuel, St. Louis, Mo., assignor to The Jewish Hospital of St. Louis, St. Louis, Mo.

Continuation-in-part of Ser. No. 815,685, Jan. 2, 1986, abandoned. This application May 24, 1989, Ser. No. 356,739

Int. Cl.[5] C12N *5/00;* **A61K** *37/36*

U.S. Cl. 435—240.2 **2 Claims**

1. A purified rat prostate tissue-derived growth factor having the following characteristics:

(a) molecular weight of 25 kDa as determined by non-reduced sodium dodecylsulfate polyacrylamide gel electrophoresis,

(b) an amino terminal sequence identical to the amino terminal sequence of FIG. 5A of the 6 kDa mature rat epidermal growth factor,

(c) potent mitogenic activity against NRK cells without additional carboxy terminal processing to the mature 6 kDa epidermal growth factor species,

(d) cross-reacts with antisera against rat epidermal growth factor, and

(e) mitogenic activity is blocked by anti-epidermal growth factor receptor antisera.

5,332,670

MONOCLONAL ANTIBODY AGAINST HUMAN PLATELETS

Harvey R. Gralnick, Kensington, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 432,380, Nov. 3, 1989, abandoned. This application Jan. 7, 1992, Ser. No. 815,882

Int. Cl.[5] C12N *5/12;* **C07K** *15/28*

U.S. Cl. 435—240.27 **2 Claims**

1. A cell line consisting of cells which secrete an antibody having all of the identifying characteristics of the antibody secreted by the hybridoma deposited as HB 10273.

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5,332,671

PRODUCTION OF VASCULAR ENDOTHELIAL CELL GROWTH FACTOR AND DNA ENCODING SAME

Napoleone Ferrara, Belvedere, and David W.-H. Leung, Foster City, both of Calif., assignors to Genetech, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 369,424, Jun. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 351,117, May 12, 1989, abandoned. This application Aug. 4, 1989, Ser. No. 389,722

Int. Cl.[5] C12N *15/00, 15/12, 15/18, 5/00*

U.S. Cl. 435—240.1 12 Claims

1. An isolated DNA sequence comprising a nucleotide sequence encoding the amino acid sequence shown in FIG. 2 for bovine mature vascular endothelial cell growth factor

2. An expression vector comprising the DNA sequence of claim 1 operably linked to control sequences that are operable in a host cell transformed with the vector

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5,332,672

PREVENTION OF ES CELL DIFFERENTIATION BY CILIARY NEUROTROPHIC FACTOR

Joanne Conover, and George D. Yancopoulos, both of Tarrytown, assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 801,562, Dec. 2, 1991. This application Apr. 9, 1992, Ser. No. 865,878

Int. Cl.[5] C12N *5/06*

U.S. Cl. 435—240.2 1 Claim

1. A method of preventing the differentiation of ES cells comprising:

a) obtaining ES cells

b) culturing said ES cells in the presence of at least about 10 ng/ml ciliary neurotrophic factor.

5,332,673

APPLICATION OF NATIVE SOIL BACTERIA AS SELECTIVE BIOLOGICAL CONTROL AGENTS OF THE WEEDS DOWNY BROME, JAPANESE BROME, AND JOINTED GOATGRASS IN WHEAT

Pamela A. Harris, and Phillip W. Stahlman, both of Hays, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Mar. 8, 1993, Ser. No. 28,556

Int. Cl.[5] C12N *1/20*; A01N *63/02*

U.S. Cl. 435—253.3 4 Claims

1. An isolated strain of bacteria having the ability to control the weeds downy brome, Japanese brome and/or jointed goatgrass, said bacteria strain being selected from the group consisting of *Pseudomonas putida* ATCC Accession No. 55392, *Enterobacter taylorae* ATCC Accession No. 55391, *Xanthomonas maltophilia* ATCC Accession No. 55390, mutants thereof having the ability to control said weeds and mixtures thereof

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5,332,674

PROCESS FOR PREPARING (R) AND (S)-1,2-ISOPROPYLIDENEGLYCEROL BY CRYSTALLIZING RACEMIC BENZOYL ESTER

Daniele Bianchi, Milan; Aldo Bosetti, Vercelli; Pietro Cesti, Trecate; Paolo Golini, Turbigo, and Carlo Pina, Milan, all of Italy, assignors to Ministero Dell'Universita' E Della Ricerca Scientifica E Tecnologica, Rome, Italy

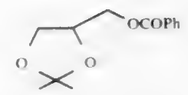
Filed Feb. 12, 1993, Ser. No. 16,882

Claims priority, application Italy, Feb. 17, 1992, MI92 A 000331

Int. Cl.[5] C12P *41/00*

U.S. Cl. 435—280 16 Claims

1. A process for separating the optical isomers from a racemic mixture of 1,2-isopropylideneglycerol benzoyl ester of the formula (II):



comprising the steps of:

(a) hydrolyzing partially, enantioselectively and enzymatically 1,2-isopropylideneglycerol benzoyl ester of the formula (II), wherein said hydrolysis is catalyzed by a free or immobilized lipase in an aqueous buffered solution, with a cosolvent selected from the group consisting of linear aliphatic ethers, branched aliphatic ethers and heterocyclic ethers;

(b) separating the (S) enantiomerically enriched benzoyl ester (II) fraction from the (S) enantiomerically enriched alcohol; and

(c) crystallizing (R,S) benzoyl ester (II) in racemic form from the (S) enantiomerically enriched benzoyl ester fraction derived in step (b) from C_5–C_8 aliphatic hydrocarbons which leaves, predominately, the selectively obtained (S) enantiomer of the benzoyl ester (II) in the mother liquor.

5,332,675

OPTICALLY ACTIVE AROMATIC CARBOXYLIC ACID DERIVATIVES AND PROCESS FOR PRODUCING THE SAME

Masayoshi Minai, Moriyama, and Takayuki Higashii, Kishiwada, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

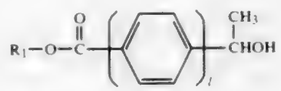
Continuation of Ser. No. 667,745, Mar. 11, 1991, abandoned, which is a division of Ser. No. 186,020, Apr. 25, 1988, Pat. No. 5,019,298. This application Jul. 27, 1992, Ser. No. 920,159

Claims priority, application Japan, Apr. 30, 1987, 62-109513; Sep. 22, 1987, 62-238191; Mar. 4, 1988, 63-52454

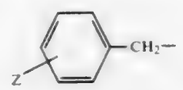
Int. Cl.[5] C12P *41/00*; C07C *69/76*

U.S. Cl. 435—280 8 Claims

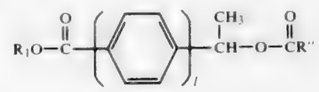
1. A process for preparing an optically active alcohol of the formula:



(wherein R_1 represents a lower alkyl group or



wherein Z represents a hydrogen atom, a halogen atom or a lower alkyl or lower alkoxyl group; l represents a number of 1 or 2; and * indicates asymmetric carbon atom) comprising subjecting an ester represented by the formula:



(wherein R_1 and l are as defined above, and R'' represents a lower alkyl group) to asymmetric hydrolysis by using an esterase having the ability to hydrolyze one of the enantiomers of said ester, said esterase being derived from an animal or a plant and selected from the group consisting of swine liver esterase, steapsin, pancreatin and wheat germ esterase.

5,332,676

AVIPOX VIRUS PROMOTER

Matthew M. Binns; Michael E. G. Boursnell, both of Huntingdon, England, and Joan I. A. Campbell, Lagos, Nigeria, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB90/01156, § 371 Date Jan. 17, 1992, § 102(e) Date Jan. 17, 1992, PCT Pub. No. WO91/02072, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 26, 1990, Ser. No. 820,656

Claims priority, application United Kingdom, Jul. 26, 1989, 8917059.1

Int. Cl.[5] C12N *15/11, 15/86, 15/39, 7/01*

U.S. Cl. 435—320.1 8 Claims

1. An isolated DNA consisting essentially of the promoter sequence which is located immediately to the 5'-end of a gene in the fowlpox virus genome, said gene being designated the FP4a gene and identified as that which encodes a protein of 800–1000 amino acids in a sequence beginning with the sequence

Met Met Leu Ile Lys Asn Ile Val Thr Leu Asp Gln Leu Glu Ser
1 5 10 15

Ser Asp Tyr Leu Tyr.
20

5,332,677

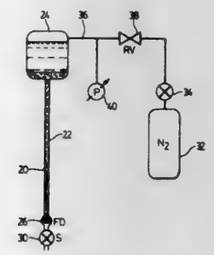
DYNAMICAL DESTABILIZATION OF SYSTEM CHARACTERIZED BY ACTIVATION/INHIBITION KINETICS USING A DIFFERENTIAL FLOW

Michael Menzinger, 46 Brunswick Avenue, Toronto, Ontario M5S 2L7, and Arkady Rovinsky, 3886 Bathurst Street, Apt. 106, Toronto, Ontario M3H 3N5, both of Canada

Filed Aug. 20, 1992, Ser. No. 932,560

Int. Cl.[5] G01N *33/00, 37/00*

U.S. Cl. 436—35 8 Claims



1. A method of inducing spatiotemporal structures in systems being characterized by coupled activation and inhibition kinetics, the method comprising the steps of:

providing a system having an activation means and an inhibition means;

inducing spatiotemporal structures in said system by producing a differential flow between the activation means and the inhibition means, said differential flow being greater than a predeterminable threshold differential flow.

5,332,678

PROCESS FOR LIBERATING AN ANALYTE FROM ITS BINDING PROTEIN

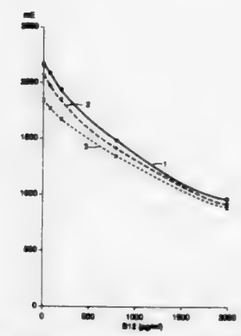
Nicholas R. Hoyle, Tutzing, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Jan. 10, 1990, Ser. No. 463,188

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1989, 3900649

Int. Cl.[5] G01N *1/00*

U.S. Cl. 436—175 9 Claims



1. A process for liberating an analyte bound to a binding protein consisting of breaking down the binding protein by an agent which cleaves S—S bonds in said protein into SH groups in an alkaline range of pH 10–14, wherein the analyte is selected from the group consisting of vitamin B_{12}, T_3, T_4 and testosterone and the S—S group-cleaving agent is lipoic acid.

5,332,679

METHOD FOR SPECIFIC BINDING ASSAYS USING A RELEASABLE LIGAND

Donald M. Simons, Wilmington; Susan Y. Tseng, Hockessin, both of Del., and David M. Obzansky, Elkton, Md., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 670,459, Mar. 12, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 29,971

Int. Cl.[5] G01N *33/543*

U.S. Cl. 436—518 19 Claims

1. A non-competitive specific binding assay for an analyte comprising the steps of:

A. preparing an immobilized sandwich structure consisting essentially of:

1. a solid support having a first binding partner attached thereto wherein the first binding partner is selected from the group consisting of nucleic acid and antibody;

2. a second binder partner:analyte complex; and

3. a releasable ligand, wherein said releasable ligand is attached through a temporary bond to a third binding partner having detectable reporter thereon and through a covalent bond to the second binding partner of the second binding partner:analyte complex;

by contacting said solid support having a first binding partner capable of binding to the analyte attached thereto with:

1. liquid sample suspected of containing the analyte;

2. releasable ligand attached through a covalent bond to the second binding partner which is capable of binding to the analyte; and

3. the third binding partner capable of binding to the releasable ligand and having detectable reporter thereon;

B. separating the immobilized sandwich structure from soluble components;

C. breaking the temporary bond by:

1. adding an excess of a displacer ligand relative to the releasable ligand; or
2. adding a displacer ligand wherein the affinity of the displacer ligand to the third binding partner is greater than the affinity of the releasable ligand to the third binding partner;

D. measuring the detectable reporter in solution; and

E. relating the measured detectable reporter to the amount of analyte in the liquid sample.

5,332,680

METHOD OF MAKING PHOTOELECTRIC CONVERSION DEVICE

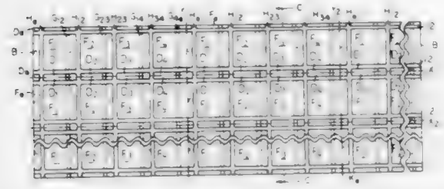
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 839,066, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 800,668, Nov. 22, 1985, abandoned, which is a division of Ser. No. 720,291, Apr. 5, 1985, Pat. No. 4,603,470, which is a division of Ser. No. 630,063, Jul. 12, 1984, Pat. No. 4,594,471. This application Jan. 15, 1993, Ser. No. 5,170

Claims priority, application Japan, Jul. 12, 1983, 58-128270; Oct. 31, 1983, 58-204441; Mar. 26, 1984, 59-57713

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—2 **19 Claims**



1. A method of manufacturing a plurality of photoelectric conversion devices, said method comprising the steps of:

forming a plurality of said photoelectric conversion devices on a substrate, each of said device comprising a plurality of interconnected photo-electric transducers, wherein each of said transducers comprises a first electrode, a photoelectric conversion semiconductor layer formed on said first electrode, and a second electrode formed on said semiconductor layer, wherein isolation grooves are formed through said first electrodes, respectively, along opposite sides thereof; and

severing said substrate together with said photoelectric transducers in order to form said plurality of photoelectric conversion devices,

wherein side edges of said semiconductor layer in each device are coextensive with side edges of at least one of said first and second electrodes

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5,332,681

METHOD OF MAKING A SEMICONDUCTOR DEVICE BY FORMING A NANOCHANNEL MASK

Ronald J. Tonucci, Temple Hills, Md., and Brian L. Justus, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 12, 1992, Ser. No. 897,630

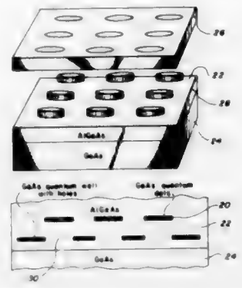
Int. Cl.[5] H01L *21/263*

U.S. Cl. 437—16 **6 Claims**

1. A method for depositing a pattern of deposited material on or within a substrate, comprising the steps of

interposing a glass mask between a source and a substrate, the mask having channels therethrough which are arranged in a pattern which have an average diameter of less than about 400 Å; and

depositing a material selected from the group of sources consisting of ions, electrons, photons, metals and semiconductor materials through the glass masks into or onto the substrate.



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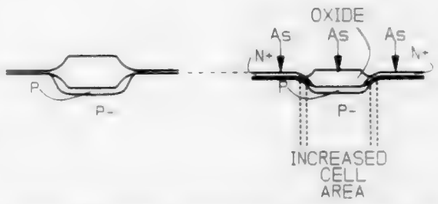
LOCAL ENCROACHMENT REDUCTION

Tyler A. Lowrey, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Continuation of Ser. No. 861,344, Mar. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 571,557, Aug. 31, 1990, abandoned. This application Apr. 30, 1993, Ser. No. 55,416

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—28 **20 Claims**



1. Method of forming semiconductor circuit devices which include, as a part of each device, a plurality of cells and active circuit elements to control signals, the cells and active circuit elements forming a repeating pattern on the device, the method comprising:

a) preparing a silicon wafer and establishing the wafer as a substrate;

b) forming oxide on the wafer to define field oxide and active areas;

c) photomasking to define regions of field isolation oxide to be reduced in thickness;

d) etching said defined regions of field isolation oxide to be reduced in thickness to remove a fraction of field oxide present, wherein said fraction of oxide removed is greater than 50% of the field oxide thickness; and

e) after defining the regions of field isolation oxide to be reduced in thickness and after said etching said defined regions of field isolation oxide, implanting the wafer with a boron implant wherein the boron is implanted with energy levels which are optimized for penetration through the field oxide remaining after said etching of said defined regions of field isolation oxide to be reduced in thickness, but kept safely below the point of increasing junction leakage, the optimization of the energy levels for the implantation of the wafer resulting from said boron implant, including locating the active area peak distribution just below a junction depth of subsequent N+ cell bottom plate formation, thereby enhancing isolation integrity between said cells, said implant also functioning as a cell high capacitance implant for increasing the unction capacitance and providing a barrier to minority substrate electrons.

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METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE HAVING ELEMENTS ISOLATED BY TRENCH

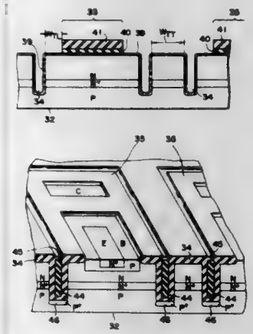
Naoto Miyashita, Yokohama; Koichi Takahashi, and Hironori Sonobe, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 726,730, Jul. 2, 1991, abandoned, which is a continuation of Ser. No. 534,479, Jun. 7, 1990, abandoned. This application Feb. 9, 1993, Ser. No. 15,672

Claims priority, application Japan, Jun. 14, 1989, 1-151542

Int. Cl.[5] H01L *21/265, 29/70*

U.S. Cl. 437—33 **3 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

anisotropic etching a monocrystalline silicon substrate to form a plurality of trenches therein each having a width of 1 to 2 μm and surrounding each of a plurality of element forming regions wherein a bipolar transistor is formed, said trenches being positioned at intervals of approximately 3 μm;

forming a nonoxide film on said element forming regions with an interval between an end portion of said nonoxide film and a side wall of each said trench at a side thereof near said element forming regions of said trenches being approximately 2 μm;

forming an oxide film having a film thickness no greater than 9,000 Å on a surface of said substrate including an inside portion of each of said trenches using said nonoxide film as a mask, with each of said trenches not being completely filled by said oxide film;

completely filling said trenches with a polysilicon layer having an exposed portion; and

oxidizing said exposed portion of said polysilicon layer.

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METHOD FOR FABRICATING THIN-FILM CAPACITOR WITH RESTRAINED LEAKAGE CURRENT AT SIDE AND END PORTIONS OF ELECTRODES IN A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Shintaro Yamamichi; Toshiyuki Sakuma, and Yoichi Miyasaka, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,375

Claims priority, application Japan, Jun. 28, 1991, 3-183496; Aug. 31, 1991, 3-246995

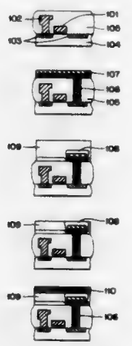
Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 **9 Claims**

3. A method for fabricating a semiconductor device including a thin-film capacitor formed by successively depositing a dielectric film and an upper electrode on a lower electrode, said lower electrode protruding from a surface of a first interlayer insulating film deposited on a semiconductor substrate, comprising the steps of:

forming a barrier metal layer on the lower electrode;

forming said dielectric film on an entire surface of said lower electrode and said first interlayer insulating film, said dielectric film being made of a material having a dielectric constant;



forming a second interlayer insulating film deposited on said dielectric film in conformity with a profile of said dielectric film until a surface of said dielectric film is buried in said second interlayer insulating layer;

removing said second interlayer insulating film by etching-back with said second interlayer insulating film partly remaining at only side portions of said dielectric film; and

forming said upper electrode extending entirely on surfaces of said dielectric film and said second interlayer insulating film partly remaining.

5,332,685

METHOD OF MANUFACTURING A DRAM CELL

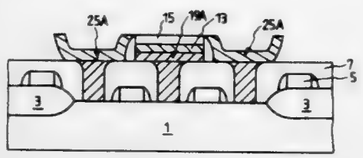
Young J. Park, and Seok H. Lee, both of Seoul, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Jun. 24, 1993, Ser. No. 82,276

Claims priority, application Rep. of Korea, Jun. 24, 1992, 92-10994

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **8 Claims**



1. A method of manufacturing a DRAM cell comprising the steps of:

forming a word line having an oxide layer spacer on its side wall, on a silicon substrate;

forming a first insulating layer on the entire silicon substrate;

forming several contact holes by etching out some portions of the first insulating layer using contact masks for bit line and storage electrode;

forming a contact plug by filling the contact holes with a conductive material;

depositing a conducting layer fox bit line and a second insulating layer on the substrate including said first insulating layer and contact plug, and forming a second insulating

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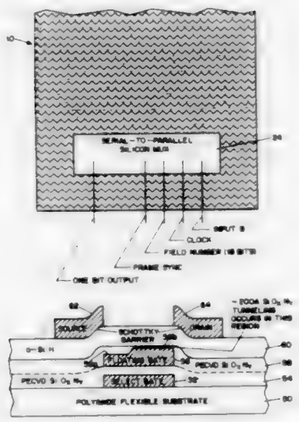
layer pattern and bit line pattern on the contact plug for bit line by the etching process using a bit line mask;
forming an insulating layer spaces on the side walls of the bit line pattern and the second insulating layer pattern;
forming a third insulating layer over the entire substrate, and etching back until the underlying second insulating layer is exposed;
forming a photoresist layer pattern for storage electrode contact mask on the third insulating layer;
isotropically etching the third insulating layer that has been exposed to the contact plug for storage electrode, and removing the photoresist layer pattern for storage electrode contact mask;
depositing a conducting layer for storage electrode over the entire substrate, and coating a photoresist layer over it;
forming a storage electrode pattern by etching back the photoresist layer and conducting layer for storage electrode until the third insulating layer and the second insulating layer are exposed;
removing the remaining photoresist layer, and wet etching out third insulating layer to expose the storage electrode; and
forming a capacitor dielectric layer and plate electrode on top of the storage electrode.

5,332,686

METHOD OF MANUFACTURING LARGE CAPACITY SOLID-STATE MEMORY

William E. Glenn, Fort Lauderdale, Fla., assignor to Florida Atlantic University, Boca Raton, Fla.

Division of Ser. No. 780,248, Oct. 22, 1991, Pat. No. 5,274,602. This application Sep. 29, 1993, Ser. No. 129,454
Int. Cl.[5] H01L *21/72*
U.S. Cl. 437—52 **4 Claims**



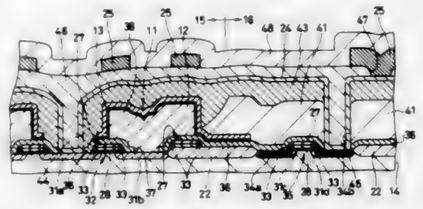
1. Method for manufacturing large capacity, random access, solid-state memory apparatus which is digitally addressable by an n-bit code comprising the steps of:
(a) fabricating on a thin, flexible elongate substrate in a continuous process a large-area memory element comprising a multiplicity of matrices of memory cells, address circuits for addressing the matrices and an output circuit for deriving output signals from said matrices to obtain a large-area memory device in the form of a tape;
(b) repeating step (a) n times to obtain a plurality of said large-area memory devices equal in number to the number of bits in the n-bit code; and
(c) winding said plurality of tapes one upon the other into a compact cylindrical spool.

5,332,687

METHOD OF MANUFACTURING A SEMICONDUCTOR MEMORY HAVING A MEMORY CELL ARRAY AND A PERIPHERAL CIRCUIT PORTION SO AS TO IMPROVE THE CHARACTERISTICS OF THE DEVICE

Hideaki Kuroda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 73,523
Claims priority, application Japan, Jun. 12, 1992, 4-179174
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **9 Claims**



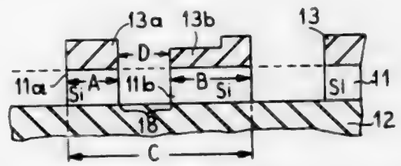
1. A method of manufacturing semiconductor memory device having a memory cell array portion and a peripheral circuit portion wherein each memory cell comprises a transistor and a capacitor, comprising steps of:
forming said transistors on a semiconductor substrate of said memory cell array portion;
forming said capacitors on said substrate of said memory cell array portion, each capacitor comprising a storage node electrode and a plate electrode provided on said node electrode;
forming a first insulator film on the whole of said substrate on which said transistors and said capacitors are provided;
forming a photo resist on said first insulator film which corresponds to said peripheral circuit portion;
removing said first insulator film provided on said memory cell portion by using said photo resist as a mask; and
forming a second insulator film on said plate electrodes of said capacitor and said first insulator film of said peripheral circuit portion.

5,332,688

METHOD OF MANUFACTURING FULL CMOS TYPE SRAM

Makoto Hashimoto; Yoshihiro Miyazawa, and Takeshi Matsushita, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 23, 1992, Ser. No. 855,663
Claims priority, application Japan, Mar. 23, 1991, 3-083129; Mar. 23, 1991, 3-083130
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—57 **3 Claims**
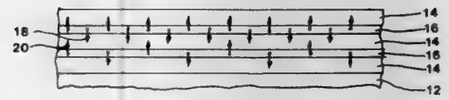


1. A method of manufacturing a full CMOS type SRAM, comprising the steps of:
forming a first mask layer on a semiconductor layer, and patterning said first mask layer by photolithography to form semiconductor island layers where a driver MOS transistor and a load MOS transistor are formable while being slightly spaced apart from each other;
forming a second mask layer on said semiconductor layer inclusive of said first mask layer, and patterning said second mask layer by photolithography in such a manner as to overlap the region where one of the driver MOS transistor and the load MOS transistor in said first mask layer is formed, but not to overlap the isolating region between the driver MOS transistor and the load MOS transistor;
masking, with a resist film, the region where the other of the driver MOS transistor and the load MOS transistor in said first mask layer is formed, and etching said first mask layer while masking the same with said resist film and said second mask layer; and
etching said semiconductor layer while masking the same with said first mask layer, thereby forming mutually isolated semiconductor island layers where the driver MOS transistor and the load MOS transistor are formed respectively.

5,332,689

METHOD FOR DEPOSITING LOW BULK RESISTIVITY DOPED FILMS

Gurtej S. Sandhu, and Charles L. Turner, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 17, 1993, Ser. No. 18,632
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—109 **10 Claims**



1. In semiconductor manufacture an LPCVD method for forming an arsenic doped polysilicon thin film having a low bulk resistivity on a substrate, comprising:
placing the substrate in a LPCVD reaction chamber;
maintaining the substrate and the reaction chamber under a vacuum pressure;
introducing and thermally decomposing a silicon deposition gas in the reaction chamber for depositing a polysilicon deposition film layer on the substrate;
introducing and thermally decomposing an arsenic dopant gas in the reaction chamber for depositing an arsenic film layer on the substrate;
pulsing the silicon deposition gas flow and the arsenic dopant gas flow by switching the silicon deposition gas and the arsenic dopant gas on and off in opposite phase so that arsenic will not poison the deposition of the polysilicon film layer such that a multi-layer stack is formed including single species polysilicon film layers and single species arsenic film layers; and
diffusing arsenic dopants from the arsenic film layers into the polysilicon film layers such that a uniformly doped film layer is formed.

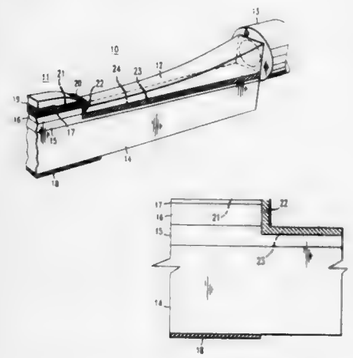
5,332,690

METHOD OF MAKING AN INTEGRATED OPTICAL PACKAGE FOR COUPLING OPTICAL FIBERS TO DEVICES WITH ASYMMETRIC LIGHT BEAMS

Alfred Y. Cho, Summit; Deborah L. Sivco, Warren, and Daryoosh Vakhshoori, Scotch Plains, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 881,020, May 8, 1992, Pat. No. 5,265,177. This application Aug. 17, 1993, Ser. No. 107,541
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—126 **5 Claims**

1. A method of fabricating an integrated optical package, said package comprising an optical device with an asymmetric modal area and an elongated lens for coupling the device to an optical component having large modal area relative to said asymmetric modal area, which comprises:
beginning with a substrate having a compound semiconductor structure thereon comprising an active layer and a bottom and a top cladding layers,
etching a trench in said structure so as to expose a facet of a device on each side of the trench, said etching removing a modal thickness of the lower cladding layer and all of the other layers of the structure above said lower cladding layer while refilling those portions of said structure which are intended to be used as the optical device,
forming in said trench centrally between two facets a diamond-shaped elevated form the length of which is equal to a half of the width of the trench between the facets, the thickness of the diamond shaped form being equivalent to at least the diameter of the core of a fiber to be optically coupled to the device,
coating the whole of the structure with a thin layer of a polymeric material in a thickness equivalent to the height of the active layer in said device,
converting the profile of the combined polymeric material to a profile with a gentle slope between said center portion and said facet-adjoining portion, and
removing an excess of thickness of said polymeric material adjacent each facet so as to reduce this thickness to that corresponding to the height of the active layer in said device.

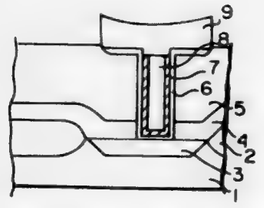


5,332,691

METHOD OF FORMING A CONTACT

Takao Kinoshita, and Satoshi Saito, both of Fukuyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 11, 1993, Ser. No. 59,310
Claims priority, application Japan, May 14, 1992, 4-121802
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—192 **8 Claims**

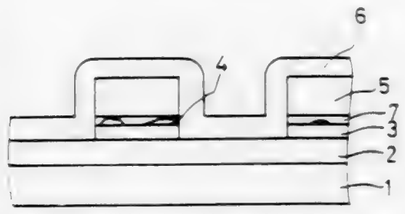


1. A method of forming a contact comprising the steps of:
forming an insulating layer on an impurity doped silicon;
forming a contact hole in said insulating layer, said contact hole reaching said impurity doped silicon;
forming at least one layer of a refractory material film on an

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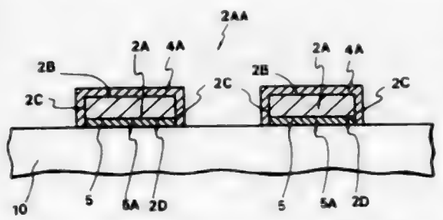
inner wall of said contact hole and on a surface of said insulating layer;
forming a silicon containing tungsten layer on said refractory material film by CVD; and
growing tungsten on said silicon containing tungsten layer by CVD, to fill said contact hole with said tungsten, and wherein said silicon containing tungsten layer contains silicon in the range of 0.6 wt. % to 20 wt. %

5,332,692
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A POLYCIDE STRUCTURE
Kenji Saitoh, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 841,060, Feb. 25, 1992, abandoned. This application Apr. 19, 1993, Ser. No. 47,632
Claims priority, application Japan, May 31, 1991, 3-129394
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—193 **5 Claims**



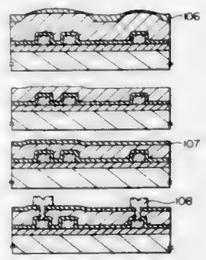
1. A method of manufacturing a semiconductor device, comprising:
(i) preparing a semiconductor substrate;
(ii) forming a first polycrystal silicon film on said semiconductor substrate by a CVD technique;
(iii) forming a second polycrystal silicon film on said first polycrystal silicon film by a sputtering technique within a vacuum vessel; and
(iv) forming a silicide film on said second polycrystal silicon film by a sputtering technique which is conducted within said vacuum vessel to be continuous with said step (iii);
to form a polycide structure composed of said first and second polycrystal silicon films and said silicide film.

5,332,693
METHOD FOR MANUFACTURING ALUMINUM WIRED LAYER FOR INTERCONNECTING DEVICE TO DEVICE IN A SEMICONDUCTOR DEVICE
Jae K. Kim, Kyungki-do, Rep. of Korea, assignor to Hyundai Electronics, Industries Co., Ltd., Kyungki-do, Rep. of Korea
Continuation of Ser. No. 554,788, Jul. 18, 1990, abandoned. This application May 14, 1992, Ser. No. 884,037
Claims priority, application Rep. of Korea, Jul. 20, 1989, 89-10258
Int. Cl.[5] H01L *21/48*
U.S. Cl. 437—194 **12 Claims**



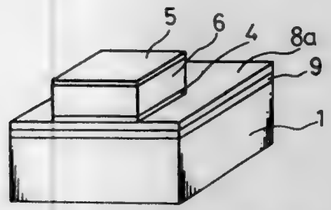
1. A method for manufacturing an aluminum wired layer for interconnecting device to device comprising a plurality of aluminum wired layers formed on an insulating layer of a semiconductor device, to prevent the formation of hillock on the surface of each aluminum wired layer during heat treatment, and to prevent electromigration phenomenon in each aluminum wired layer when the semiconductor device is in operation, wherein the improvement of the aluminum wired layer comprises:
depositing an aluminum layer on the insulating layer;
etching the aluminum layer deposited on the surface of the insulating layer by a mask patterning process to form a plurality of aluminum wired layers on the insulating layer with each aluminum wired layer being spaced apart relative to each other on the insulating layer exposed by the formation of the plurality of aluminum wired layers formed by the mask patterning process, and with each aluminum wired layer having a top and side walls;
depositing a titanium layer on the entire surface of the structure including each aluminum wired layer and the exposed portion of the insulating layer;
heating the titanium layer thereby reacting the titanium of the titanium layer positioned on each aluminum wired layer with the aluminum of each aluminum wired layer, to provide a first Al-Ti compound metal layer on the top and side walls of each aluminum wired layer; and
selectively removing the titanium layer remaining on the exposed portion of the insulating layer by etching the remaining titanium layer in an etchant of $NH_4OH/H_2O_2/-H_2O$ having a temperature of about 18°–40° C.

5,332,694
PROCESS FOR MANUFACTURING A SEMICONDUCTOR DEVICE
Mieko Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Feb. 23, 1993, Ser. No. 21,076
Claims priority, application Japan, Feb. 26, 1992, 4-038926
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **11 Claims**



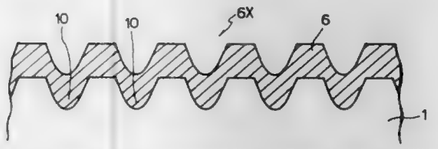
1. A process for manufacturing a semiconductor device including steps of: forming a first level interconnect on an insulation layer covering semiconductor active elements fabricated on a substrate; forming a first silicon oxide layer on said first level interconnect and said insulation layer; forming a second silicon oxide layer by atmospheric-pressure CVD on said first silicon oxide layer using tetraethoxysilane ($Si(OC_2H_5)_4$) and oxygen containing ozone, the ratio of the flow-rate of ozone to the flow-rate of tetraethoxysilane being above about 10:1; forming an organic compound coating layer on said second silicon oxide layer by spin-coating; etching-back said organic compound coating layer and said second silicon oxide layer by dry etching to remove the organic compound coating layer; after said etching-back, forming a third silicon oxide layer on said second silicon oxide layer; and forming a second level interconnect on said third silicon oxide layer.

5,332,695
METHOD OF MANUFACTURING SEMI CONDUCTOR DEVICE MOUNTED ON A HEAT SINK
Kimio Shigihara; Yutaka Nagai, and Toshitaka Aoyagi, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 649,062, Feb. 1, 1991, Pat. No. 5,247,203. This application May 24, 1993, Ser. No. 65,761
Claims priority, application Japan, Jun. 5, 1990, 2-147761
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 **9 Claims**



1. A method for manufacturing a semiconductor device radiating heat generated by the semiconductor device comprising:
depositing a first metal film on a heat sink for radiating heat;
depositing an amorphous semiconductor film on said first metal film;
depositing a second metal film on said amorphous semiconductor film;
placing a semiconductor element on said second metal film; and
pressing said semiconductor element against said heat sink while heating so that alloys are formed at the boundaries between said first and second metal films and said amorphous semiconductor film, thereby bonding said semiconductor element to said heat sink.

5,332,696
METHOD FOR MANUFACTURING A SILICON LAYER HAVING INCREASED SURFACE AREA
Jae K. Kim, Kyungki, and Chul G. Ko, Seoul, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Division of Ser. No. 781,992, Oct. 23, 1991, Pat. No. 5,232,876. This application May 14, 1993, Ser. No. 62,966
Claims priority, application Rep. of Korea, Oct. 25, 1990, 17094/1990
Int. Cl.[5] H01L *21/469*
U.S. Cl. 437—233 **7 Claims**

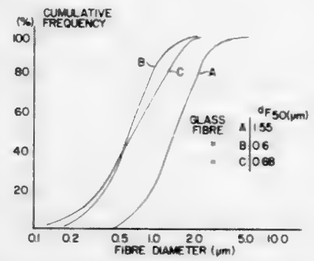


1. A method for manufacturing a silicon layer having an increased surface area, the method comprising:
depositing a first insulating layer **1** on a substrate;
depositing an alloy layer **2** comprising two materials **2X**,**2Y** on the first insulating layer **1**;
heating the alloy layer **2** to enable one material **2X** to be melted and to enable the other material **2Y** not to be melted, thereby dividing one material **2X** from the other material **2Y** of the alloy layer to partitively form the other material **2Y** on the first insulating layer **1**;
removing the material **2X** partitively formed from the other material **2Y** of the alloy layer **2** to expose a portion of the first insulating layer **1**, thereby remaining the material **2Y** on the first insulating layer **1** and simultaneously providing a highly granulated surface **1X**;
etching the exposed portion of the first insulating layer **1** to unevenly erode the first insulating layer **1** such that a plurality of cavities **10** is formed in the first insulating layer **1**;
removing the remaining material **2Y** deposited on the first insulating layer **1**; and,
depositing a silicon layer **5** on the entire surface of the resulting structure to form a granulated silicon layer having an increased surface area.

5,332,697
FORMATION OF SILICON NITRIDE BY NITRIDATION OF POROUS SILICON
Rosemary L. Smith, and Scott D. Collins, both of 667 Adams, #3, Davis, Calif. 95616
Division of Ser. No. 359,354, May 31, 1989, abandoned. This application Oct. 16, 1991, Ser. No. 776,991
Int. Cl.[5] H01L *21/02*
U.S. Cl. 437—242 **9 Claims**

1. A method for fabricating low residual stress insulating films in a silicon substrate comprising the steps of:
a) forming a porous silicon layer in a silicon layer or silicon substrate,
b) nitriding the porous silicon layer in a non-oxidizing ambient of nitrogen, ammonia, a nitrogen-containing chemical, or combinations thereof, at a temperature less than 1000° C.,
c) continuing step (b) for a time sufficient to convert the porous silicon layer to a silicon nitride layer with a thickness greater than one micron.

5,332,698
GLASS FIBRES WITH IMPROVED BIOLOGICAL COMPATIBILITY
Peter R. Nyssen; Wolfram Wagner, and Geert Christoph, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 707,727, May 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 518,380, May 3, 1990, abandoned. This application Jul. 30, 1993, Ser. No. 100,640
Claims priority, application Fed. Rep. of Germany, May 25, 1989, 3917045
Int. Cl.[5] C03C *13/00*
U.S. Cl. 501—35 **3 Claims**



1. Glass fibres with improved biological compatibility, comprising fibres having a length of from 5µto 150 µm, an average diameter of ≦8 µm and more than 10% of which have a diameter of ≦3 µm, and wherein the glasses used for producing the fibres consist essentially of the following compounds in the proportions give in mol %:

SiO_2	55-70

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-continued

B_2O_3	0–4
Al_2O_3	0–1
TiO_2	0–6
Iron oxides	0–2
MgO	0–5
CaO	12–20
Na_2O	10–20
K_2O	0–5
Fluoride	0–2

5,332,699

INORGANIC FIBER COMPOSITION

Leonard E. Olds, 977 S. Lake Gulch Rd., Castle Rock, Colo. 80104, and William H. Kielmeyer, 3374 W. Chenango Ave., Englewood, Colo. 80110

Continuation of Ser. No. 356,595, May 24, 1989, abandoned, which is a continuation of Ser. No. 201,513, Jun. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 16,041, Feb. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 894,175, Aug. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 831,217, Feb. 20, 1986, abandoned. This application Apr. 23, 1993, Ser. No. 52,825

Int. Cl.[5] C03C *13/06*

U.S. Cl. 501—36 28 Claims

1. A process for decomposing a silica-containing fiber comprising the steps of

1. providing an inorganic fiber prepared from a composition consisting essentially of:
   (a) 0–6 wt % of Al_2O_3;
   (b) 50–70 wt % SiO_2;
   (c) 0–30 wt % MgO; and
   (d) the remainder consisting essentially of CaO, the total being 100% by weight;
2. subjecting the silica-containing fiber to a physiological saline fluid; and
3. extracting the silica at a rate of at least 5 parts per million (ppm) of silicon in 5 hours, thereby decomposing the silica-containing fiber.

5,332,700

HIGH DISPERSION OPTICAL GLASS

Katsuhiko Yamaguchi; Futoshi Ishizaki; Naoyuki Goto; Hisao Yatsuda; Goro Enomoto, and Hideo Yasui, all of Sagamihara, Japan, assignors to Kabushiki Kaisha Ohara, Kanagawa, Japan

Filed May 26, 1993, Ser. No. 67,227

Int. Cl.[5] C03C *3/112, 3/097, 4/00*

U.S. Cl. 501—57 8 Claims

1. A high dispersion optical glass which comprises in weight percent:

SiO_2	47–70%
Al_2O_3	0–15%
Nb_2O_5	15.5–35%
TiO_2	0–15%
ZrO_2	0–10%
$Li_2O + Na_2O + K_2O$	10–35%
in which	
Li_2O	0–10%
Na_2O	0–20%
K_2O	0–20%
$ZnO + MgO + CaO + SrO + BaO$	0–2%
and a fluoride or fluorides of a metal element or elements contained in one or more of the above metal oxide or oxides, said fluoride or fluorides substituting for said metal oxides partially or entirely, and a total amount of F contained in the fluoride or fluorides	0.1–10%

5,332,701

CERAMIC SYNTHESIS BY PYROLYSIS OF METAL-CONTAINING POLYMER AND METAL

Nathan Bryson, Haguenau, France; Dietmar Seyferth, Lexington, Mass.; Henry J. Tracy, Portsmouth, N.H., and David P. Workman, Somerville, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 14, 1990, Ser. No. 628,532

Int. Cl.[5] C04B *35/56, 35/58*

U.S. Cl. 501—87 18 Claims

1. A process for forming a ceramic consisting essentially of the pyrolysis product of a particulate metallic material and an organometallic polymer, said process consisting essentially of
   (A) mixing a particulate metallic material and an organometallic polymer containing a metal different than that of the metallic material; and
   (B) pyrolyzing said mixture.

5,332,702

LOW SODIUM ZIRCON REFRACTORY AND FUSED SILICA PROCESS

Daniel R. Sempolinski, and Latha I. Swaroop, both of Painted Post, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Apr. 16, 1993, Ser. No. 48,454

Int. Cl.[5] C04B *35/48*

U.S. Cl. 501—106 5 Claims

1. A fired, porous, zircon refractory body consisting essentially of zircon and having a sodium ion content, as an impurity, of less than 30 ppm.

5,332,703

BATCH COMPOSITIONS FOR CORDIERITE CERAMICS

David L. Hickman, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Mar. 4, 1993, Ser. No. 26,467

Int. Cl.[5] C04B *35/16, 35/18, 35/20*

U.S. Cl. 501—119 18 Claims

1. A batch for a ceramic product consisting principally of cordierite which comprises a mineral component and a chemical component, the mineral component comprising clay and talc and the chemical component consisting essentially of a combination of the powdered oxides, hydroxides, or hydrous oxides of magnesium, aluminum and silicon, the batch having an overall oxide composition effective to yield a principal cordierite phase on firing and the chemical component of the batch constituting 5–50% by weight of the batch.

5,332,704

FLUIDIZED PROCESS FOR IMPROVING THE QUALITY OF A PARTICULATE REGENERATED SOLID

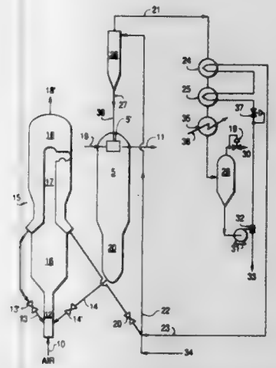
David B. Bartholic, Watchung, N.J., assignor to Bar-Co Processes Joint Venture, Houston, Tex.

Filed Mar. 19, 1993, Ser. No. 39,570

Int. Cl.[5] B01J *38/30, 38/72;* C10G *11/18, 9/32*

U.S. Cl. 502—41 23 Claims

1. In a fluidized solid process wherein a fluidized particulate solid is contacted in a contacting zone with a hydrocarbon feedstock and becomes spent as a result of accumulating carbonaceous deposits thereon, fluidized spent solid is circulated to a regenerator in which the carbonaceous deposits are burned so as to regenerate the solid and regenerated solid is circulated to the contacting zone, the improvement comprising:
   (a) withdrawing hot fluidized regenerated solid and entrained combustion products from the regenerator;
   (b) introducing the withdrawn regenerated solid and entrained combustion products into a lower portion of an elongated vertical lift pipe;
   (c) introducing a fluid lift medium into a lower portion of said lift pipe to intimately contact the regenerated solid therein;
   (d) passing a stream of the fluidized regenerated solid, entrained combustion products and lift medium upwardly in said lift pipe to an upper portion thereof;



   (e) passing said stream to a separation zone and separating therein regenerated solid from said lift medium and combustion products;
   (f) passing the separated regenerated solid having a reduced amount of entrained combustion products to said contacting zone for contact therein with said hydrocarbon feedstock; and
   (g) recycling separated lift medium to said lift pipe to intimately contact the regenerated solid therein.

5,332,705

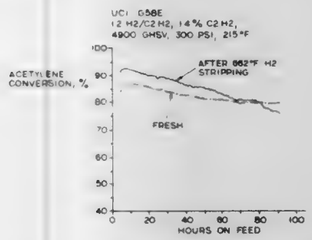
REGENERATION OF ACETYLENE CONVERTER CATALYSTS BY HYDROGEN STRIPPING

Yao-Jyh Huang, Houston, Tex.; Chong F. Shun, Bridgewater, N.J.; Lawrence G. Daniel, Crosby; Edgar L. Mohundro, Baytown, both of Tex., and John E. Hartgerink, Baton Rouge, La., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jun. 19, 1992, Ser. No. 901,321

Int. Cl.[5] B01J *23/96, 38/10;* C07C *5/08, 7/167*

U.S. Cl. 502—53 6 Claims



1. A method of substantially completely regenerating a catalyst comprising about 0.01 to 0.5% palladium that has been used to remove acetylenic impurities from an olefin stream and which has become at least partially deactivated for that use and whereby the selectivity of said catalyst to produce ethylene is enhanced consisting essentially of substantially stripping said catalyst of carbonaceous deposits using hydrogen at a linear velocity of at least about 15.2 cm/second (0.5 feet per second) and at a temperature in the range of about 600°–700° F. wherein said stripping occurs in the absence of an oxygenation step.

5,332,706

PROCESS AND A CATALYST FOR PREVENTING REACTOR FOULING

Thomas E. Nowlin, West Windsor; Frederick Y. Lo; Ronald S. Shinomoto, both of Edison, and Pradeep P. Shirodkar, Somerset, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 28, 1992, Ser. No. 997,421

Int. Cl.[5] C08F *4/646*

U.S. Cl. 502—107 57 Claims

1. A process for forming a carrier material impregnated with alumoxane and derivatives thereof comprising
   (1) providing silica which is porous and has a particle size of 1 to 250 microns, having pores which have an average diameter of 50 to 500 Angstroms and having a pore volume of 0.5 to 5.0 cc/g;
   (2) providing a volume of a solution comprising alumoxane of formula (a) or (b)

wherein (a) is $R—(Al(R)—O)_x—AlR_2$ for oligomeric, linear alumoxanes and (b) is $(—Al(R)—O—)_y$ for oligomeric cyclic alumoxane wherein x is 1–40, y is 3–40, and R is a C_1–C_8 alkyl group and a solvent for said alumoxane, wherein the volume of solution ranges from less than the pore volume of the silica up to a maximum volume of solution which is equal to the total pore volume of the silica, wherein the concentration of alumoxane, expressed as Al weight percent is 5 to 20;

   wherein the alumoxane provides aluminum in an amount sufficient to provide a ratio of Al to silica (wt/wt) from 0.10 to 0.40;
   (3) contacting the silica with said volume of said solution and allowing the solution to impregnate the pores of silica, having a pore volume of 0.5 to 5.0 cc/g, containing alumoxane within said pores, without forming a slurry of the silica in the solvent,
   (4) after said contacting, recovering dry particles of silica impregnated with alumoxane.

5,332,707

OLEFIN POLYMERIZATION AND COPOLYMERIZATION CATALYST

Nicholas M. Karayannis; Steven A. Cohen, both of Naperville, and Julie L. Ledermann, Geneva, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 31, 1992, Ser. No. 923,036

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—113 20 Claims

1. A solid, hydrocarbon-insoluble catalyst or catalyst component for the polymerization of propylene or copolymerization of propylene with up to 20 mole percent of ethylene or a higher alpha-olefin, comprising a product formed by:
   A. forming a solution of a magnesium-containing species in a liquid, wherein the magnesium-containing species is formed by reacting a magnesium-containing compound with carbon dioxide or sulfur dioxide;
   B. precipitating solid particles from the solution of the magnesium-containing species by treatment with a titanium compound or complex; and
   D. treating the precipitated particles with a titanium compound and an electron donor;

wherein the treated precipitated particles from Step D comprise a magnesium component and at least one of a hafnium component or a zirconium component, and wherein at least one of hafnium or zirconium is introduced into at least one of (i) the aforesaid magnesium-containing species in Step A by reacting the magnesium-containing compound or species with carbon dioxide or sulfur dioxide and at least one of a hafnium-containing or zirconium-containing compound or complex, or (ii) the aforesaid solid particles precipitated in Step B by treatment of the magnesium-containing species with a titanium

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compound or complex and at least one of a hafnium or zirconium compound or complex; or (iii) the aforesaid precipitated particles treated in Step D by treatment of the precipitated particles with a titanium compound, an electron donor and at least one of a hafnium or zirconium compound or complex.

5,332,708

CATALYST COMPOSITIONS AND CATALYTIC PROCESSES

Ronald D. Knudsen, Bartlesville; Gil R. Hawley, Dewey, and Margie F. Jackson, Ochelata, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 23, 1992, Ser. No. 979,989

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] **B01J** *31/00, 29/04, 21/16*

U.S. Cl. 502—154 **24 Claims**

1. A catalytic composition produced by the process comprising contacting an organonickel compound, wherein the nickel is in the zero valence state or able to be reduced to the zero valence state and the organic component is unsaturated, with a cyclicazacarbyl compound.

5,332,709

STABILIZED AQUEOUS SOLUTIONS FOR PREPARING CATALYSTS AND PROCESS FOR PREPARING CATALYSTS

Thomas E. Nappier, Parma, and Michele A. Glink, Vienna, both of Ohio, assignors to OM Group, Inc. (Mooney Chemicals, Inc.), Cleveland, Ohio

Filed Mar. 22, 1993, Ser. No. 34,721

Int. Cl.[5] **B01J** *37/16, 37/02, 27/185, 27/19*

U.S. Cl. 502—211 **27 Claims**

1. A method of preparing a catalyst comprising at least one first metal or metal oxide selected from molybdenum and tungsten and at least one Group VIII metal or metal oxide which comprises the steps of

(A) impregnating a foraminous carrier with an aqueous solution comprising water, at least one first element selected from molybdenum and tungsten, at least one Group VIII element, an inorganic phosphorus-containing acid, and an amount of a reducing agent selected from hydrazine compounds or hydroxylamine compounds effective to dissolve the first and Group VIII elements and stabilize the solution, wherein said first and Group VIII elements are present as salts capable of being converted to their oxides upon calcination, wherein the solution used in step (A) contains a sufficient amount of the first and Group VIII metal salts to provide a catalyst containing from about 10% to about 35% by weight of combined metal; and

(B) thereafter drying and calcining the impregnated carrier to convert the first and Group VIII elements to their oxides.

5,332,710

VINYL ACETATE CATALYST PREPARATION METHOD

Ioan Nicolau; Philip M. Colling, and Leland R. Johnson, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 14, 1992, Ser. No. 961,738

Int. Cl.[5] **B01J** *37/03, 21/08, 23/44, 23/52*

U.S. Cl. 502—243 **19 Claims**

1. In a method of preparing a catalyst composed of a porous support containing thereon precious metals which comprises impregnating said support with water soluble compounds of said precious metals, converting said water soluble precious metal compounds to water insoluble precious metal compounds by immersing said impregnated support in a fixing solution containing a compound reactive with said water soluble compounds to precipitate on said support said water insoluble precious metal compounds, washing said support, and reducing said water insoluble precious metal compounds with a reducing gas to form free precious metals on said support, the improvement which comprises tumbling said impregnated support by rotation at from about 1 to about 10 rpm at least 0.5 hour while said impregnated support is immersed in said fixing solution, thereby completing precipitation of said water insoluble compounds.

5,332,711

THERMAL TRANSFER IMAGE-RECEIVING SHEET

Ryohei Takiguchi; Hitoshi Saito; Masanori Torii; Jun Hasegawa, all of Tokyo; Tetsuo Shiraiwa, Osaka; Eriko Hayashi, Kyoto; Michiyuki Kono, Kyoto, and Shigeo Mori, Kyoto, all of Japan, assignors to Dai Nippon Printing Co., Ltd. and Dai-Ichi Kogyo Seiyaku Co., Ltd., Japan

Filed Dec. 22, 1992, Ser. No. 996,200

Claims priority, application Japan, Dec. 27, 1991, 3-358240

Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **5 Claims**

1. A thermal transfer image-receiving sheet comprising a substrate sheet and a dye-receiving layer formed on at least one surface of the substrate sheet, wherein said dye-receiving layer comprises a product of a reaction of a polyoxyalkylene polyol with an organic polyisocyanate.

5,332,712

IMAGE RECEIVING SHEET FOR THERMAL TRANSFER RECORDING

Hideo Shinohara, Yokohama; Yukichi Murata, Sagamihara, and Tsutomu Taki, Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 649,043, Feb. 1, 1991, Pat. No. 5,187,144 This application Feb. 12, 1993, Ser. No. 17,000

Claims priority, application Japan, Feb. 2, 1990, 2-24222; Aug. 23, 1990, 2-222176; Aug. 23, 1990, 2-222177

Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **15 Claims**

1. An image receiving sheet for thermal transfer recording, which comprises a substrate and an image receiving layer formed thereon for receiving a sublimable dye, wherein the image receiving layer comprises, as the main component, a product formed by thermosetting a composition comprising an active hydrogen-containing resin, a silicone resin, a modified silicone oil and a polyfunctional isocyanate compound.

5,332,713

THERMAL DYE TRANSFER DYE-DONOR ELEMENT CONTAINING TRANSFERABLE PROTECTION OVERCOAT

Mary Catherine S. Oldfield, Rochester, and Kin K. Lum, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1993, Ser. No. 163,250

Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **20 Claims**

7. A process of forming a protection layer on top of a thermal dye transfer image comprising:

(a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising an image dye in a binder, said dye-donor being in contact with a dye-receiving element, thereby transferring a dye image to said dye-receiving element to form said dye transfer image; and

(b) thermally transferring a protection layer on top of said transferred dye image, said protection layer being applied from an element which contains a layer comprising poly(vinyl formal), poly(vinyl benzal) or poly(vinyl acetal) containing at least about 5 mole % hydroxyl.

5,332,714

DEFOAMER FOR LIQUID WETTING AGENTS AND LOW-FOAM LIQUID PLANT PROTECTION AGENTS

Konrad Albrecht, Kelkheim, and Jean Kocur, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 6, 1990, Ser. No. 549,210

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 3922500; Jun. 15, 1990, 4019084

Int. Cl.[5] **A01N** *57/12, 25/30;* **B01D** *19/04*

U.S. Cl. 504—116 **17 Claims**

1. An aqueous preparation which contains an anionic wetting agent selected from the group consisting of the sulfato- or sulfonato-containing surfactants (wetting agents) in combination with a surfactant (defoamer) selected from the group consisting of salts of perfluoro(C_6–C_{18})alkylphosphinic or -phosphonic acids with C_1–C_{18}-alkylamines, C_1–C_{18}-alkylamino-oxyethylates or ethylene diamine ethoxylates or mixtures of the defoamers.

5,332,715

PLANT-PROTECTING SUBSTITUTED ISOXAZOLINES, ISOXAZOLES, ISOTHIAZOLINES AND ISOTHIAZOLES, AND ALSO PROCESSES FOR THEIR PREPARATION AND THEIR USE

Heinz-Josef Löher, Liederbach; Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 952,895

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017665

Int. Cl.[5] **C07D** *231/06, 231/12;* **C07F** *7/02*

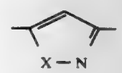
U.S. Cl. 504—193 **14 Claims**

1. A compound of the formula (I) and salts thereof

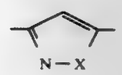
$$(R^1)(R^2)(R^3)Si—A—Het—B—CO—Z \quad (I)$$

in which

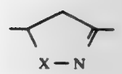
Het is a divalent heterocyclic radical from the group comprising the isothiazolines, isothiazoles or isoxazoles, and isoxazolines of the formulae (Ia) to (Id),



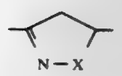
(Ia)



(Ib)



(Ic)



(Id)

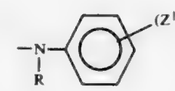
in which

X is an oxygen or sulfur atom,

A and B independently of one another in each case are a single bond or C_1–C_4-alkylene which is unsubstituted or monosubstituted or polysubstituted by C_1–C_4-alkyl,

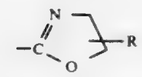
R^1, R^2 and R^3 independently of one another are alkyl, alkenyl, alkynyl or cycloalkyl, it being possible for the four last-mentioned radicals to be unsubstituted or mono- or polysubstituted by radicals from the group comprising alkoxy, alkylthio, mono- or dialkylamino, alkoxycarbonyl, alkylcarbonyloxy, cyano and halogen, furthermore phenylalkyl or phenyl which in each case are unsubstituted or mono- or polysubstituted in the phenyl radical by radicals from the group comprising alkyl, alkoxy, alkylthio, mono- and dialkylamino, alkoxycarbonyl, cyano and halogen,

Z is hydroxyl or alkoxy, alkenyloxy, alkynyloxy, alkylthio, cycloalkoxy, phenoxy or benzyloxy, the 7 last-mentioned radicals being unsubstituted or mono- or polysubstituted by radicals from the group comprising alkoxy, alkylthio, mono- and dialkylamino, phenyl, substituted phenyl, cyano, halogenoalkyl, halogenoalkoxy and halogen, furthermore trialkylsilylmethoxy, a radical of the formula (Ie) or (If)



(Ie)

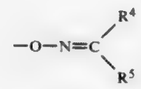
or



(If)

where R is hydrogen or alkyl, Z^1 radicals independently of one another are halogen, haloalkyl, haloalkoxy, alkyl, alkoxy or alkylthio and n is an integer from 0 to 5, or

Z is furthermore amino, mono- or dialkylamino, cycloalkylamino, hydrazino, alkyl- or dialkylhydrazino, pyridino, morpholino, dimethylmorpholino, a radical of the formula (Ig),



(Ig)

where R^4 and R^5 independently of one another are alkyl radicals or R^4 and R^5 together with the carbon atom linking them forte a cycloalkyl radical,

furthermore a radical of the formula (Ih),

where R^6 and R^7 independently of one another are hydrogen or a saturated or unsaturated acyclic hydrocarbon radical.

5,332,716

POLLEN SUPPRESSANT COMPRISING A 5-OXY- OR AMINO-SUBSTITUTED CINNOLINE

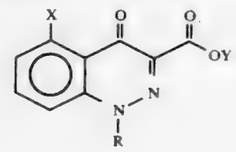
Jeffrey Labovitz, 185 Waverley St., Palo Alto, Calif. 94301; William J. Guilford, 1032 Ocho Rios Dr., Danville, Calif. 94526; Yi Liang, 1054 Hyde Ave., San Jose, Calif. 95129; Lawrence Fang, 1321 Halibut St., Foster, Calif. 94404, and Thomas G. Patterson, 4202 Echo Ct., Pleasanton, Calif. 94566

Filed Sep. 13, 1988, Ser. No. 243,895

Int. Cl.[5] **A01N** *43/58;* **C07D** *237/28*

U.S. Cl. 504—238 **10 Claims**

1. A pollen suppressant of the formula



wherein:

X represents a group of the formula OR^1 wherein R^1 repre-

sents a C_1–C_4 alkyl group substituted with 1 to 3 halogen atoms, or a C_2–C_4 alkenyl group substituted with 1 to 3 halogen atoms;

Y is hydrogen, C_1–C_{22} linear alkyl or alkenyl containing up to four carbon-carbon double bonds, C_3–C_6branched alkyl or alkenyl, C_1–C_4 alkoxyalkyl, cyclohexylmethyl, halogenated C_1–C_4 alkyl, phenyl, benzyl, $—(CH_2CH_2O)_mCH_2CH_3$ in which m is an integer from 1 to 5, or $—CH(CH_2OR^4)CH_2OR^5$ or $—CH_2CHOR^4CH_2OR^5$ in which either R^4 or R^5 but not both represent a C_1–C_{22} linear alkyl- or alkenylcarbonyl group containing up to four carbon-carbon double bonds and the remainder of $R^4$and R^5 is H; and

R represents C_1–C_4 alkyl, phenyl, naphthyl, or phenyl or naphthyl substituted with one to three substituents selected from the group consisting of halogen, trihalomethyl, $—CONH_2$, C_1–C_4 alkoxy, C_1–C_4 alkyl, and cyano;

or an agronomically acceptable salt thereof.

5,332,717

HETEROCYCLIC COMPOUNDS

Christoph Lüthy, Schwerzenbach, and Jean-Pierre Obrecht, Zurich, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

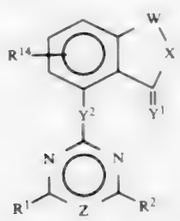
Continuation of Ser. No. 689,059, Aug. 12, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 47,888

Claims priority, application Switzerland, Oct. 12, 1989, 3716/89-5

Int. Cl.[5] **C07D** *409/12, 407/12;* **A01N** *43/54*

U.S. Cl. 504—242 **21 Claims**

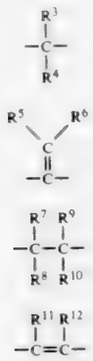
1. A compound of the formula



I

wherein

W is one of the divalent groups a)–d)



X, Y^1 and Y^2 are each oxygen or sulfur,

Z is CR^{13},

R^1 is hydrogen, fluorine, chlorine, C_{1-3}alkyl, halomethyl, methoxymethyl, C_{1-3}alkoxy, difluoromethoxy or methylthio,

R^2 is methyl, C_{1-2}alkoxy, C_{1-2}fluoroalkoxy, C_{1-2}alkylamino, di(C_{1-2}alkyl)amino or N-methoxymethylamino,

R^3 is hydrogen, fluorine, chlorine, bromine, C_{1-6}alkyl or C_{1-6}alkyl substituted by halogen or nitro, C_{2-3}alkenyl, C_{2-3}alkynyl, phenyl, hydroxy, C_{1-6}alkoxy or C_{1-6}alkoxy substituted by halogen, C_1-C_2-alkylthio, N-(C_1-C_2-alkyl)-carbamoyl, or C_1-C_2-alkoxy, C_{1-6}alkylthio, phenoxy, phenylthio, cyano, thiocyano, formyl, carboxy, C_{2-5}alkoxycarbonyl, carbamoyl, formyloxy, C_{2-5}alkanoyloxy, C_{2-5}alkoxycarbonyloxy, C_{2-3}alkylcarbamoyloxy, di(C_{1-2}alkyl)-carbamoyloxy or di(C_{1-2}alkoxy)phosphonyl,

R^4 is hydrogen, C_{1-6}alkyl or trifluoromethyl,

R^5 is hydrogen, C_{1-6}alkyl, phenyl or phenyl substituted by methoxy,

R^6 is hydrogen or methyl,

R^7, R^8 and R^9 each independently of the others is hydrogen or C_{1-3}alkyl,

R^{10} is hydrogen or C_{1-3}alkoxy,

R^{11} and R^{12}, each independently of the other, is hydrogen or C_{1-3}alkyl,

R^{13} is hydrogen, fluorine, chlorine or methyl and

R^{14} is hydrogen, halogen, C_{1-2}alkyl or C_{1-2}alkoxy.

5,332,718

HERBICIDAL SUBSTITUTED BICYCLIC TRIAZOLES FOR PLANTATION CROPS

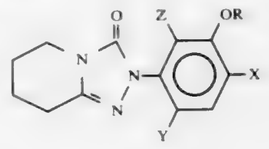
Kofi S. Amuti, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1993, Ser. No. 30,099

Int. Cl.[5] **A01N** *43/42, 43/653*

U.S. Cl. 504—246 **12 Claims**

1. A method for controlling weeds in plantation crops which comprises applying to the locus of the weeds a herbicidally effective amount of



I

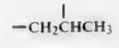
wherein

R is isopropyl, allyl, propargyl or $—CH(CH_3)C{\equiv}CH$;

X is Cl or Br;

Y is F or Cl;

a) Z is H or can be taken together with R as



b)

such that the linking oxygen is attached to the methine carbon.

5,332,719

SUBSTITUTED TRIAZOLINONES

c) **Kurt Findeisen; Dietmar Kuhnt, both of Leverkusen; Klaus-Helmut Müller, Duesseldorf; Klaus König, Odenthal; Klaus Lürsaen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany**

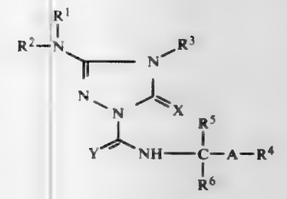
d) **Continuation of Ser. No. 847,139, Mar. 6, 1992, abandoned. This application Jan. 4, 1993, Ser. No. 539**

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108187

Int. Cl.[5] **A01N** *43/653;* **C07D** *249/12*

U.S. Cl. 504—273 **4 Claims**

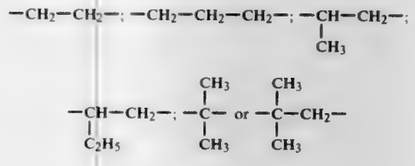
1. A substituted triazolinone of the formula (I)



(I)

in which

A represents a radical of the formula



X represents oxygen or sulphur,

Y represents oxygen or sulphur,

R^1 represents methyl,

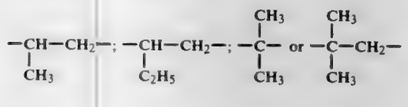
R^2 represents methyl,

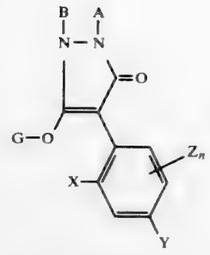
R^3 represents methyl,

R^4 represents phenyl which is optionally substituted by C_{1-4}-alkyl,

R^5 represents hydrogen, and

R^6represents C_{4-5}-alkyl or





(I)

in which

A and B together represent a propylene radical,

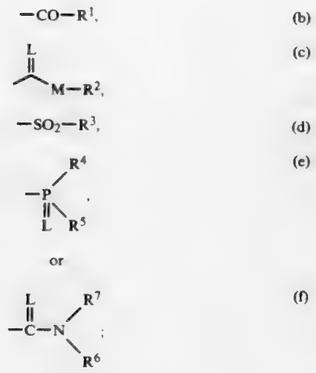
X represents alkyl, halogen or alkoxy,

Y represents hydrogen, alkyl, halogen, alkoxy or halogenoalkyl,

Z represents alkyl, halogen or alkxoy,

n represents a number 0, 1, 2 or 3,

G represents the group



(b)

(c)

(d)

(e)

or

(f)

in which

L and M represent oxygen and/or sulphur,

R^1 represents optionally halogen-substituted alkyl, alkenyl, alkoxyalkyl, alkylthioalkyl, polyalkoxyalkyl or cycloalkyl which can be interrupted by hetero atoms, optionally substituted phenyl, optionally substituted phenylalkyl, substituted hetaryl, substituted phenoxyalkyl or substituted hetaryloxyalkyl,

R^2 represents optionally halogen-substituted alkyl, alkenyl, alkoxyalkyl, polyalkoxyalkyl or optionally substituted phenyl or benzyl,

R^3, R^4 and R^5 independently of one another represent optionally halogen-substituted alkyl, alkoxy, alkylamino, dialkylamino, alkylthio, alkenylthio, alkynylthio or cycloalkylthio, and optionally substituted phenyl, phenoxy or phenyl thio, and

R^6 and R^7 independently of one another represent hydrogen, optionally halogen-substituted alkyl, alkenyl, alkoxy or alkoxyalkyl, optionally substituted phenyl, optionally substituted benzyl,

or

R^6 and R^7 together represent an alkylene radical which is optionally interrupted by oxygen.

5,332,720

3-HYDROXY-4-ARYL-5-OXO-PYRAZOLINE DERIVATIVES

Bernd-Wieland Krüger, Bergisch-Gladbach; Reiner Fischer, Monheim; Heinz-Jürgen Bertram, Holzminden; Thomas Bretschneider, Siegburg; Stefan Böhm, Leverkusen; Andreas Krebs, Odenthal-Holz; Thomas Schenke, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen; Klaus Lürssen; Robert R. Schmidt, both of Bergisch Gladbach; Christoph Erdelen, Leichlingen; Ulrike Wachendorff-Neumann, Monheim, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 849,863, Mar. 12, 1992, abandoned. This application Dec. 16, 1992, Ser. No. 968,888

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109208

Int. Cl.[5] **A01N** *43/56;* **C07D** *231/54*

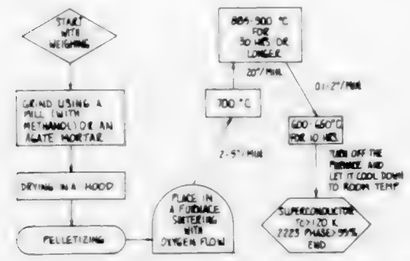
U.S. Cl. 504—281 **9 Claims**

1. A 3-hydroxy-4-aryl-5-oxo-pyrazoline derivative of the formula (I)

5,332,721
METHOD OF FABRICATING THALLIUM-CONTAINING CERAMIC SUPERCONDUCTORS

Ying Xin, Lawrence, Kans.; Zhengzhi Sheng, and Yufang Li, both of Fayetteville, Ark., assignors to Midwest Superconductivity, Inc., Lawrence, Kans. and The University of Arkansas, Fayetteville, Ark.

Continuation-in-part of Ser. No. 791,892, Nov. 13, 1991, abandoned. This application Oct. 21, 1992, Ser. No. 964,555
Int. Cl.[5] C01F *11/02;* **C01G** *3/02, 15/00;* **H01L** *39/24*
U.S. Cl. 505—492 **12 Claims**



1. A method of fabricating polycrystalline thallium-containing 2223 superconducting oxides using starting, non-superconducting oxides, said method comprising the steps of:

providing quantities of said non-superconducting starting oxides for the fabrication of a final polycrystalline thallium 2223 superconducting oxide;

forming a powdered, homogeneous mixture of said starting oxides;

forming a self-sustaining body from said mixture;

sintering said formed, self-sustaining body in an oxygen-rich atmosphere comprising at least about 50% by weight oxygen by initially sintering said body at a first, low heating rate to an intermediate temperature of from about 650° to about 750° C., and thereafter further sintering said body at a second heating rate higher than said first rate to a maximum temperature level of from about 850° to about 930° C., and maintaining said body at said maximum temperature level for a period of at least about 24 hours,

said sintering being carried out for fabrication of a polycrystalline thallium 2223 superconducting oxide which comprises at least about 90% by weight 2223 phase; and

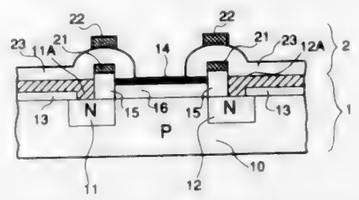
cooling said body.

5,332,722
NONVOLATILE MEMORY ELEMENT COMPOSED OF COMBINED SUPERCONDUCTOR RING AND MOSFET

Mitsuka Fujihira, Yokohama, Japan, assignor to Sumitomo Electric Industries, LTD, Osaka, Japan

Continuation of Ser. No. 921,409, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 660,989, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 279,115, Dec. 2, 1988, abandoned. This application Mar. 8, 1993, Ser. No. 28,632
Claims priority, application Japan, Dec. 2, 1987, 62-304940
Int. Cl.[5] G11C *11/44, 11/063;* **H01L** *27/18*
U.S. Cl. 505—170 **14 Claims**

1. A nonvolatile memory element or cell comprising a memory means consisting of at least one ring formed of a superconductor material so that when the ring is put in a superconducting state, the ring can circulate a permanent electric current therethrough and a detector means consisting of a MOSFET formed in a substrate, said MOSFET including a source region and a drain region formed in a principal surface region of said substrate separated from each other along a principal surface of said substrate, and a channel zone formed between said source region and said drain region, the ring being arranged above and adjacent to said channel zone of said MOSFET in such a manner that a magnetic flux created by current in said ring penetrates and passes through said channel zone of said MOSFET so as to modify a conduction state of said channel zone and wherein said ring is in a plane which is parallel to said

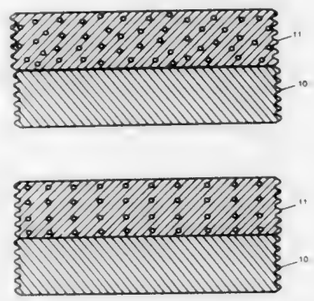


principal surface of said substrate and said magnetic flux passes through said channel zone perpendicular to said principal surface of said substrate.

5,332,723
SUPERCONDUCTING THIN FILM WITH FULLERENES AND METHOD OF MAKING

Walter Eidelloth, deceased, late of Yorktown, N.Y.; James T. Busch, heir, Arlington, Va.; Richard J. Gambino, Yorktown Heights, N.Y.; Rodney Ruoff, Menlo Park, Calif., and Claudia D. Tesche, Helsinki, Finland, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1993, Ser. No. 98,094
Int. Cl.[5] H01L *39/12*
U.S. Cl. 505—125 **3 Claims**



1. An improved high temperature superconductor comprising a matrix of a cuprate high temperature superconductor in which is dispersed isolated molecules of one or more of the fullerene compounds, where the volume fraction occupied by the fullerene molecules is at least in an amount sufficient to increase the critical current density of said cuprate high temperature superconductor less than 25%.

5,332,724
LOST CIRCULATION MATERIAL WITH CORN COB OUTERS

Boyce D. Burts, Jr., Maurice, La., assignor to Bottom Line Industries, Inc., Lafayette, La.

Continuation-in-part of Ser. No. 676,944, Mar. 28, 1991, Pat. No. 5,118,664. This application May 29, 1992, Ser. No. 891,409
Int. Cl.[5] C09K *7/00*
U.S. Cl. 507—104 **11 Claims**

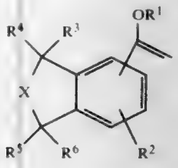
1. A drilling fluid additive suitable for lost circulation control comprising comminuted corn cob outers wherein the corn cob outers are that portion of the corn cob which holds corn kernels to the cob.

5,332,725
ODORANTS

Josianne Baudin, Annemasse, France, assignor to Givaudan-Roure Corporation, Clifton, N.J.

Filed Oct. 12, 1993, Ser. No. 135,146
Int. Cl.[5] A61K *7/46;* **C07C** *43/168*
U.S. Cl. 512—14 **15 Claims**

1. Compounds of the general formula



I

wherein

R^1 is C_{1-4} alkyl or C_{2-4} alkenyl

R^2 signifies H or C_{1-4} alkyl

R^3, R^4, R^5 and R^6 each independently signify H, CH_3, C_2H_5, $CH_2—CH_2—CH_3$ or $CH(CH_3)_2$,

X is methylene, ethylidene, propylidene, ethylene, propylene, isopropylidene or 1,2-dimethylethylene,

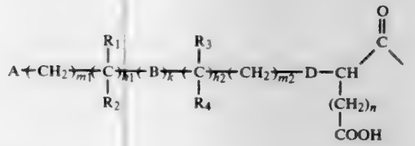
and the total number of carbon atoms of R^3, R^4, R^5 and R^6 is ≦6.

5,332,726
ANTITHROMBOTIC PEPTIDES AND PSEUDOPEPTIDES

Scott I. Klein, Mont Clare; Bruce F. Molino, Hatfield; Mark Czekaj, Sellersville; Charles Gardner, Royersford; Michael R. Becker, Norristown; Jeffrey M. Dener, King of Prussia, and Jeffrey C. Pelletier, Lansdale, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

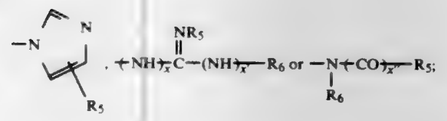
Continuation-in-part of Ser. No. 415,006, Sep. 29, 1989, Pat. No. 4,952,562, Ser. No. 677,006, Mar. 28, 1991, abandoned, and Ser. No. 534,385, Jun. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 415,006, Jun. 7, 1990, and Ser. No. 460,777, Jan. 4, 1990, abandoned, said Ser. No. 677,006, is a continuation-in-part of Ser. No. 534,385, Jan. 4, 1990, Ser. No. 460,777, Jan. 4, 1990, and Ser. No. 415,006, Jan. 4, 1990. This application Mar. 30, 1992, Ser. No. 859,779
The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.
Int. Cl.[5] C07K *5/06, 5/08, 5/10;* **A61K** *37/02*
U.S. Cl. 514—18 **21 Claims**

1. A compound of the formula

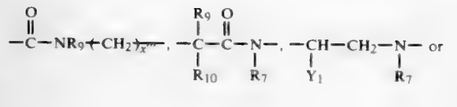


wherein:

A is

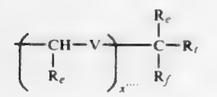


B and D are independently $—CH_2—NH—$, $—CH_2—S—$, $—CH_2—O—$,

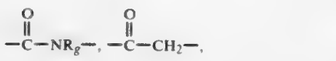


B may also be 5-tetrazol-1-yl or $—CR_7═CR_8—$;

Z is $—OR_a$, a D- or L-isomer of an α-amino acid bonded at the α-nitrogen, a dipeptide bonded at the N-terminal α-amino acid, or $—NR_aR_x$, where R_x is H or

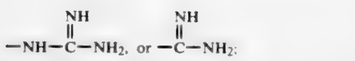


where V is



$—(CH_2)_p—$, $—CH═CH—$, $—CH_2NH—$, $—CH_2—O—$, or $—CH_2—S—$;

R_e and R_f are independently H, alkyl, cycloalkyl, cycloalkylmethyl, or $—(CH_2)_s—R_z$ where R_z is $—COOR_n$, $—OR_n$, $—SR_n$, $—NR_nR_o$,



R_{1-10}, and R_n are independently H, alkyl, cycloalkyl, cycloalkylmethyl, aryl, substituted aryl, aralkyl or substituted aralkyl;

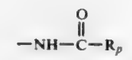
R_a, R_g, $R_{n'}$, and R_o are independently H, alkyl, cycloalkyl, cycloalkylmethyl;

R_f is —H, —COOH, —$COOR_k$, carbamoyl, or



where R_k and R_m are independently H, alkyl, cycloalkyl, cycloalkylmethyl;

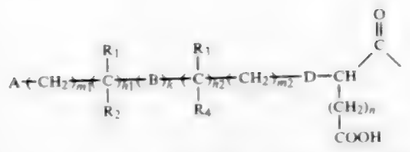
Y_1 is H, amino or



where R_p is H, alkyl, cycloalkyl, cycloalkylmethyl, aryl, substituted aryl, aralkyl or substituted aralkyl;

x, x', x'', x''' and x'''' are independently 0 or 1; m_1 and m_2 are independently 0 to 9; h_1, h_2, and k are independently 0 or 1; n is 1 to 3; q is 1 to 5; and p and s are independently 0 to 6;

provided that when



is arginyl-glycyl-aspartyl, then Z is other than a naturally occurring amino acid or a dipeptide composed of two naturally occurring amino acids;

and provided that Z is other than serine or a pharmaceutically acceptable salt thereof.

5,332,727

STABLE, INGESTABLE AND ABSORBABLE NADH AND NADPH THERAPEUTIC COMPOSITIONS

Joerg G. D. Birkmayer, Vienna, Austria, assignor to Birkmayer U.S.A., New York, N.Y.

Filed Apr. 29, 1993, Ser. No. 55,049
Int. Cl.[5] **A61K** *31/70, 37/48, 37/50*
U.S. Cl. 514—52 **11 Claims**

1. A stable, ingestable and intestine-absorbable therapeutic composition comprising NADH or NADPH, or a physiologically acceptable salt thereof, and a stabilizer selected from the group consisting of $NaHCO_3$, ascorbic acid, sodium ascorbate, tocopherols, tocopherol acetates and polyvinylpyrolidone, in a pill form, said pill having an outer surface covered by an acid stable protective coating.

5,332,728

METHOD FOR TREATING A FUNGAL INFECTION

Scott A. Biller, Ewing, N.J., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Nov. 23, 1992, Ser. No. 980,417
Int. Cl.[5] **A61K** *31/66*
U.S. Cl. 514—107 **20 Claims**

1. A method for treating a fungal infection, which comprises administering to a mammalian species in need of treatment a therapeutically effective amount of a phosphorus containing squalene synthetase inhibitor, wherein the squalene synthetase inhibitor is a bisphosphonate, α-phosphonosulfonate or a phosphinylformic acid.

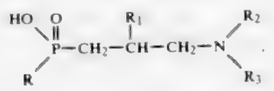
5,332,729

N-ARALKYL- AND N-HETEROARALKYL-AMINOALKANEPHOSPHINIC ACIDS

Stuart J. Mickel, Lausen; Wolfgang Fröstl, Basel, both of Switzerland, and Pascal Furet, Thann, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 3, 1993, Ser. No. 56,082
Claims priority, application Switzerland, May 8, 1992, 1480/92
Int. Cl.[5] **B01J** *31/00;* **A61K** *31/66;* **C07F** *9/30, 9/58*
U.S. Cl. 514—114 **19 Claims**

1. A N-aralkyl-aminoalkanephosphinic acid of formula I



(I)

wherein R is an aliphatic, cycloaliphatic, cycloaliphatic-aliphatic or radical having at least 2 carbon atoms, R_1 is hydrogen or hydroxy, R_2 is an araliphatic or radical substituted by free or functionally modified carboxy that is bonded directly or by way of a spacer, and R_3 is hydrogen, lower alkyl or a group R_2, or a salt thereof.

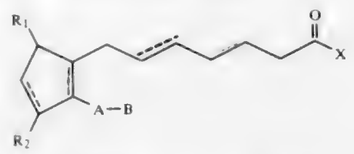
5,332,730

AZIDO DERIVATIVES OF CYCLOPENTANE HEPTANOIC OR HEPTENOIC ACID

Ming F. Chan, San Diego, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Oct. 16, 1992, Ser. No. 962,179
Int. Cl.[5] **C07C** *247/12;* **A61K** *31/557*
U.S. Cl. 511—151 **30 Claims**

1. A method of treating ocular hypertension which comprises administering an effective amount of a derivative of cyclopentane heptanoic or heptenoic acid, 2-aliphatic or arylaliphatic represented by the formula I



wherein A is an alkylene or alkenylene radical having from two to seven carbon atoms, which radical may be substituted with one or more hydroxy, oxo, alkyloxy or alkylcarboxy groups wherein the alkyl moiety has from 1 to 10 atoms, the dashed bonds represent a single bond or a double bond which can be in the cis or trans configuration, B is a methyl radical or a cycloalkyl radical having from three to seven carbon atoms, or an aryl radical selected from the group consisting of carbon aryl and monoheteroaryl radicals having from 4 to 10 carbon atoms wherein the heteroatom is selected from the group consisting of nitrogen, oxygen and sulfur atoms, any of the groups defining B may be substituted by radicals from the group consisting of halo, nitro, amino, thiol, hydroxy, alkyloxy and alkylcarboxy having from 1 to 10 atoms in the alkyl moiety , R_1 and R_2 are independently selected from the group consisting of hydroxy, 1–10 carbon ester derivatives thereof and azido radicals, provided that at least one of R_1 and R_2 is an azido group and X is hydroxyl or 1 to 10 carbon alkyloxy and pharmaceutically-acceptable salts thereof.

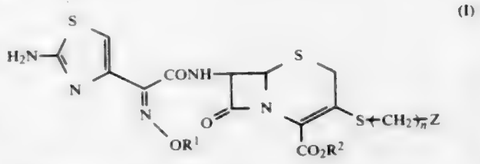
5,332,731

CEPHALOSPORIN DERIVATIVES

Yuichi Yamamoto; Tsuneo Okonogi; Seiji Shibahara, and Shigeharu Inoue, all of Yokohama, Japan, assignors to Meiji Seika Kaisha, Ltd., Japan

Filed Dec. 6, 1990, Ser. No. 623,215
Claims priority, application Japan, Dec. 7, 1989, 1-316423
Int. Cl.[5] **C07D** *501/36*
U.S. Cl. 514—206 **5 Claims**

1. A cephalosporin derivative of formula (I):



(I)

wherein R^1 is a hydrogen atom or a lower alkyl group, R^2 is a hydrogen atom or an ester-forming group capable of being cleaved easily with an esterase existing in the digestive tracts; n is an integer of zero or 1; Z is a tetrahydrofuranyl, tetrahydropyranyl, 1,3-dioxolanyl or 1,3-dioxanyl group which may be substituted by one or more lower alkyl groups, or a pharmaceutically acceptable salt thereof.

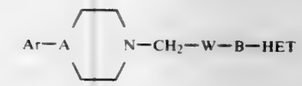
5,332,732

THIOPHENE AND PYRIDINE ANTIPSYCHOTIC AGENTS

Malcolm K. Scott; Allen B. Reitz, both of Lansdale; Frank J. Villani, Jr., Perkasie, and C. Royce Rasmussen, Lansdale, all of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Filed Sep. 11, 1992, Ser. No. 943,662
Int. Cl.[5] **A61K** *31/495;* **C07D** *401/14*
U.S. Cl. 514—212 **22 Claims**

1. A compound of the formula I:



I

wherein

A is N

Ar is aryl substituted aryl or benzofuranyl, wherein the aryl substituents are seleted from C_1–C_8 alkoxy;

B is CO or CH_2;

W is thiophene or pyridine;

HET is selected from any of piperizine, piperidine, hexahydroazepine, morpholine, thiomorpholine or pyrrolidine, which may be substituted with one or more oxo groups, or the pharmaceutically acceptable salt thereof.

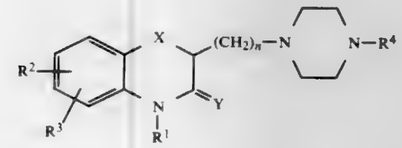
5,332,733

HETEROCYCLICALLY SUBSTITUTED PIPERAZINOAKYLBENZOXAZINE AND PIPERAZINOALKYLBENZOTHIAZINE COMPOUNDS, PROCESSES FOR PREPARING THEM, AND MEDICAMENTS CONTAINING THEM

Daniel Jasserand, Lyons; Francois Floc'h, Limonest, and Richard White, Bourg en Bresse, all of France, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 792,395, Nov. 15, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 977,859
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1990, 4037427
Int. Cl.[5] **A61K** *31/54, 31/535;* **C07D** *513/02, 498/04*
U.S. Cl. 514—224.2 **11 Claims**

1. A compound corresponding to the formula I



wherein

X denotes oxygen or sulfur,

Y denotes oxygen or sulfur,

R^1 denotes hydrogen or lower alkyl,

R^2 denotes hydrogen, lower alkyl, halogen, lower alkoxy, hydroxy, nitro or trifluoromethyl, and

R^3 denotes hydrogen, lower alkyl, halogen or lower alkoxy, or

R^2 and R^3 are bonded to adjacent carbon atoms and together denote an alkylenedioxy group having 1–2 carbon atoms,

n is an integer from 0 to 4, and

R^4 is a 6-membered unsaturated heterocycle containing 1 or 2 nitrogen atoms not directly bonded to the piperazine ring, said heterocycle being substituted by 0 to 2 substituents bonded to carbon atoms selected from the group consisting of lower alkyl, lower alkoxy and halogen,

and physiologically acceptable acid addition salts thereof.

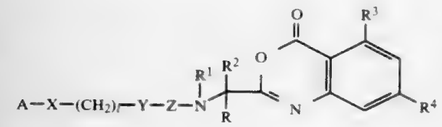
5,332,734

OXAZINONE DERIVATIVE

Koji Kobayashi; Shunichi Manabe; Yoshihiro Watanabe; Kazuhide Hayakawa, and Itsuo Uchida, all of Yokohama, Japan, assignors to Japan Tobacco, Incorporated, Tokyo, Japan

PCT No. PCT/JP92/00444, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO92/18488, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 9, 1992, Ser. No. 956,029
Claims priority, application Japan, Apr. 10, 1991, 3-164060
Int. Cl.[5] **C07D** *239/95, 239/72;* **A61K** *31/54, 31/535*
U.S. Cl. 514—225.2 **4 Claims**

1. An oxazinone derivative represented by formula (I) or a pharmaceutically acceptable acid-addition salt thereof:



(I)

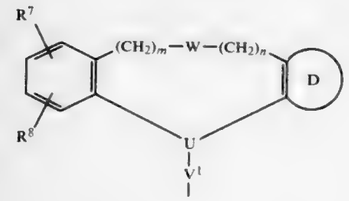
wherein,

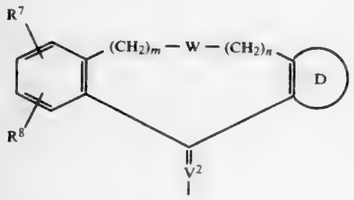
R^1 is a hydrogen atom, lower alkyl group or lower acyl group;

R and R^2, which are the same or different, are a hydrogen atom, lower alkyl group or lower alkylthio lower alkyl group, and optionally together they may form an alicyclic ring;

R^3 is a hydrogen atom, lower alkyl group which may be optionally substituted with fluorine, lower alkoxy group or halogen atom;

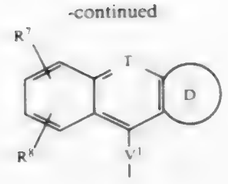
R^4 is a hydrogen atom, lower alkyl group, hydroxyl group, halogen atom, lower alkoxy group, lower alkoxy-carbonyl group, carboxyl group, lower alkylthio group, nitro group, lower acyloxy group or $—NR^5R^6$ (R^5 and R^6, which are the same or different, being hydrogen atom, lower alkyl group or lower acyl group, or R^5 and R^6 optionally forming a hetero ring together with the adjacent nitrogen atom, said hetero ring optionally having a substituent);





or

-continued



wherein

W is —O—, —S—, —CH=CH—, or NR^9— (R^9 being hydrogen atom, lower alkyl group or lower acyl group) or W means that $(CH_2)_m$ is directly bonded to $(CH_2)_n$.

U is

or nitrogen atom;

V^1 is —O—, —S—, —CO—, $—CHR^{10}$— (R^{10} being hydrogen atom, lower alkyl group, lower acyl group), or $—NR^{11}$— (R^{11} being hydrogen atom, lower alkyl group or lower acyl group), with the proviso that when U is nitrogen atom, V^1 is —CO—, or $—CHR^{10}$— (R^{10} being as defined above) or $—NR^{11}$— (R^{11} being as defined above);

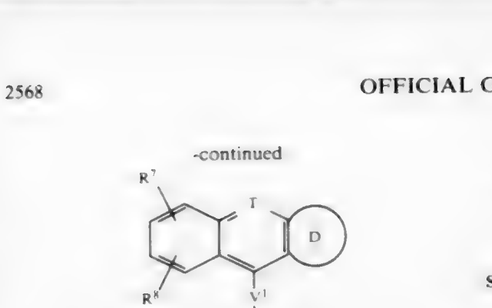
V^2 is $=CR^{12}$— (R^{12} being hydrogen atom, lower alkyl group or lower acyl group) or =N—;

T is =CH— or =N—;

R^7 and R^8, which are the same or different, are hydrogen atom, lower alkyl group that may be optionally substituted with fluorine, lower acyl group, halogen atom, hydroxyl group, lower alkoxy group, lower acyloxy group, carboxyl group or $—NR^{13}R^{14}$ (R^{13} and R^{14}, which are the same or different, being hydrogen atom, lower alkyl group or lower acyl group);

m and n are independently integers of 0 to 2, with the proviso that $m+n \leq 2$; and

D is selected from the group consisting of



wherein R^{17} and R^{18}, which are the same or different, are hydrogen atom, lower alkyl group that may be optionally substituted with flourine, lower acyl group, halogen atom, hydroxyl group, lower alkoxy group, lower acyloxy group, carboxyl group or $—NR^{19}R^{20}$ (R^{19} and R^{20}, which are the same or different, being hydrogen atom, lower alkyl group or lower acyl group);

X is —O—, —S—, —CO— or $—NR^{15}$— (R^{15} being hydrogen atom, lower alkyl group or lower acyl group) or X means that A is directly bonded to $(CH_2)_l$;

Y is —O—, —CH=CH— or $—NR^{16}$— (R^{16} being hydrogen atom, lower alkyl group or lower acyl group) or Y means that $(CH_2)_l$ is directly bonded to Z;

Z is $—CH_2$ or —CO—, with the proviso that when Z is $—CH_2$—, $(CH_2)_l$ is directly bonded to Z; and

l is an integer of 0 to 4.

5,332,735

COMPOUNDS OF N-BENZOYLPYROLINE

Sylvain Rault, Moult; Marie P. Foloppe, Vimoutiers; Max Robba, Paris; Michel Boulouard, Caen; Pierre Renard, Versailles; Michelle Devissaguet, Neuilly sur Seine, and Gérard Adam, Le Mesnil le Roi, all of France, assignors to Adir et Compagnie, Courbevoie, France

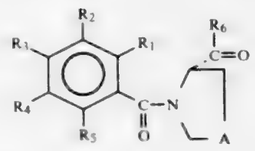
Filed Nov. 14, 1991, Ser. No. 792,238

Claims priority, application France, Nov. 14, 1990, 90 14087

Int. Cl.[5] **C07D** *207/12;* **A61K** *31/40*

U.S. Cl. 524—235.5 **23 Claims**

1. A compound selected from those of formula (I):



(I)

wherein

A represents a CHOH,

R_1, R_2, R_3, R_4, R_5, which are identical or different, represent independently of one another a hydrogen, lower-alkyl, or hydroxyl, lower alkoxy group, or alternatively two adjacent groups selected from R_1, R_2, R_3, R_4, R_5, namely R_1 and R_2, or R_2 and R_3 or R_3 and R_4 or R_4, and R_5 together form an $—O—CH_2—O$, $—O—CH_2—CH_2—O$— bridge, it being understood that:

R_1, R_2, R_3, R_4, R_5 cannot simultaneously represent hydrogen,

R_6 represents hydroxyl or lower alkoxy, amino, NR_7R_8, or $—O—B—NR_7R_8$ group with B representing lower alkyl and R_7, R_8, which are identical or different, represent hydrogen lower alkyl, cycloalkyl, cycloalkyl(lower alkyl), phenyl, lower phenylalkyl, substituted phenyl, or substituted lower phenylalkyl or R_7 and R_8 form with the nitrogen which carries them a monocyclic or bicyclic heterocyclic system, each ring comprising five or six atoms and optionally integrating in its skeleton one or two hetero atoms chosen from nitrogen, oxygen, and sulfur, and optionally substituted by lower alkyl, phenyl, lower phenylalkyl, substituted lower phenylalkyl, or substituted phenyl, the term substituted phenylalkyl, meaning that the aromatic nucleus of the group may be substituted by one or more lower alkyl, lower alkoxy, or trifluoromethyl groups,

it being understood that cycloalkyl means a group with 3 to 8 carbon atoms inclusive and that lower alkyl means a linear or branched group with 1 to 6 carbon atoms inclusive,

as well as, when appropriate, their isomers and their addition salts with a pharmaceutically, acceptable acid or base.

5,332,736

ANTI-CONVULSANT AROYL AMINOACYLPYRROLES

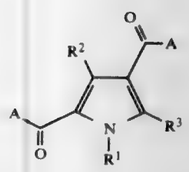
Richard J. Carmosin, Quakertown; John R. Carson, Norristown, and Philip M. Pitis, North Wales, all of Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Nov. 1, 1993, Ser. No. 149,094

Int. Cl.[5] **A61K** *31/40, 31/535;* **C07D** *207/30, 413/06*

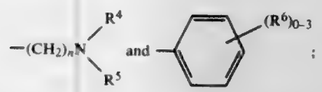
U.S. Cl. 514—235.5 **11 Claims**

1. A compound having anti-convulsant activity of the formula:



wherein,

A is simultaneously both

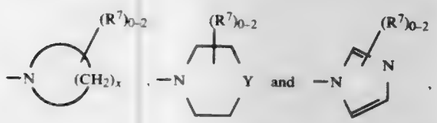


n is an integer from 1 to 5;

R^1 is selected from the group consisting of H and C_{1-4}alkyl;

R^2 and R^3 are selected from the group consisting of H and C_{1-4}alkyl;

R^4 and R^5 are independently selected from the group consisting of H, C_{1-4}alkyl, phenyl C_{1-4}alkyl and substituted phenyl C_{1-4} alkyl where the substituent is on phenyl and selected from the group consisting of methyl and methoxy, or in the alternative, are fused and together with said nitrogen form a heterocyclic ring selected from the group consisting of:



wherein Y is S or O, x is 3 to 7 and R^7 is selected from the group consisting of methyl and hydroxymethyl; and

R^6 is selected from the group consisting of halo, C_{1-4} alkyl, C_{1-4}alkoxy, hydroxy, nitro, amino, C_{1-4}acylamino, cyano, trihaloC_{1-4}alkyl, C_{1-4}alkylsulfonyl, C_{1-4}alkylsulfinyl, and C_{1-4}acyl,

including pharmaceutically acceptable acid addition salts thereof.

5,332,737

AMINO-1,3,5-TRIAZINES AND THEIR ANHYDROBASE DERIVATIVES AS AGENTS FOR CARDIOVASCULAR SYSTEM

Stuart D. Mills, Macclesfield; Rodney B. Hargreaves, Poynton, and Bernard J. McLoughlin, Macclesfield, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

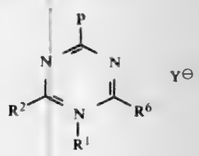
Filed Dec. 3, 1990, Ser. No. 621,677

Claims priority, application United Kingdom, Dec. 5, 1989, 8927462.5; Dec. 22, 1989, 8929020.9

Int. Cl.[5] **A61K** *31/53;* **C07D** *251/40, 251/48*

U.S. Cl. 514—245 **10 Claims**

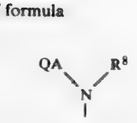
1. A compound of the formula I



(I)

wherein:

P is a group of formula



III

R^1 is (1–10C)alkyl, (3–8C)cycloalkyl, (3–8C)cycloalkyl-(1–4C)alkyl, phenyl or phenyl(1–4C)alkyl;

R^2 is hydrogen, (1–4C)alkyl, amino or (1–4C)alkylamino;

R^6 is (1–4C)alkyl, amino or (1–6C) alkylamino;

R^8 is hydrogen, (3–6C)cycloalkyl-(1–4C)alkyl, (1–6C)alkyl, (3–6C)alkenyl, (3–6C)alkynyl or phenyl(1–4C)alkyl; or R^8 is a (1–4C)alkylene or (2–4C)alkenylene linked to the nitrogen atom of the group Q.A.N—, either of which linking groups may optionally bear a (1–4C)alkyl, phenyl or phenyl(1–4C)alkyl substituent and either of which linking groups thereby completes a ring including two adjacent carbon atoms of ring Q, any carbon atoms in A and the adjacent nitrogen atom of the group —A.N—;

A is a direct bond to the group $—N(R^8)—$ or is (1–6C)alkylene;

Q is a phenyl or pyridyl moiety;

Y is a physiologically acceptable anion;

and wherein any one or more of said phenyl, benzene or pyridyl moieties in R^1, R^8 and Q may optionally be unsubstituted or bear one or more substituents independently selected from halogeno, (1–4C)alkyl, (3–6C)alkenyl, (1–4C)alkoxy, cyano, trifluoromethyl, nitro, amino, hydroxy, (1–4C)alkylamino, dialkylamino of up to six carbon atoms, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl and (1–4C)alkylenedioxy;

but excluding compounds in which Q is phenyl, A is a direct bond, R^1 is phenyl, R^8 is hydrogen, R^2 and R^6 are both amino, and Y is a physiologically acceptable anion.

5,332,738

IMIDAZOLIDINE ANTIPSYCHOTIC AGENTS

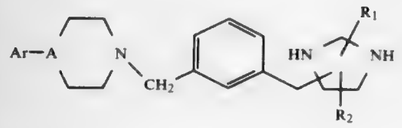
Malcolm K. Scott, and Allen B. Reitz, both of Lansdale, Pa., assignors to NcNeilab, Inc., Spring House, Pa.

Filed Sep. 11, 1992, Ser. No. 943,663

Int. Cl.[5] **A61K** *31/495, 31/445;* **C07D** *403/10, 401/10*

U.S. Cl. 514—252 **16 Claims**

1. A compound represented by



I

where

A is N;

Ar is aryl or substituted aryl; wherein the substituents for the aryl are selected from any of C_1–C_8 alkyl, C_3–C_{10} cycloalkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 alkoxy, aryloxy, hydroxyl, trifluoromethyl, trifloromethoxy, cyano, C_1–C_6 alkythio, halogen nitro, C_1–C_6 haloalkyl, amino or C_1–C_6 mono- or di-alkylamino;

R_1 and R_2 may be the same or different and are selected from either =O (oxo group) or =S (thioxo group);

or the pharmaceutically acceptable salts thereof.

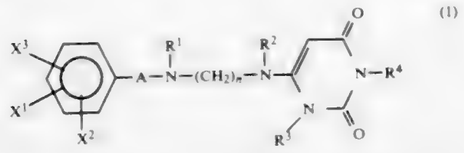
VOL
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5,332,739
PYRIMIDINEDIONE DERIVATIVES AND ANTIARRHYTHMIC AGENTS CONTAINING SAME

Tsutomu Katakami; Tatsuro Yokoyama; Michihiko Miyamoto; Haruki Mori; Nobuya Kawauchi; Tadahito Nobori; Joji Kamiya, and Masaaki Ishii, all of Mobara, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

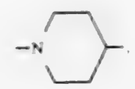
Continuation of Ser. No. 690,821, Apr. 24, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 971,059
Claims priority, application Japan, Apr. 27, 1990, 2-112710; Nov. 13, 1990, 2-336080
Int. Cl.[5] A61K *31/50, 31/505;* C07D *403/04, 239/42*
U.S. Cl. 514—252 11 Claims

1. A pyrimidinedione derivative which is represented by the formula (I)

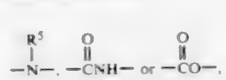


(I)

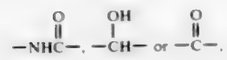
wherein A is $-(CH_2)_m-$, $-B-(CH_2)_k-$, $D-(CH_2)_l-$ or



B is an oxygen atom, sulfur atom,



and D is



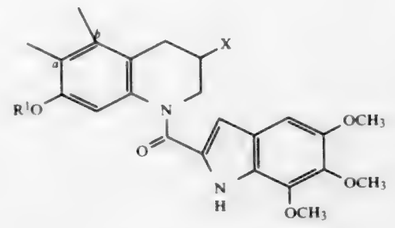
R^1 and R^2 are so linked with each other as to make an alkylene chain and thus form a heterocyclic structure,
each of R^3 and R^4 is independently a hydrogen atom or lower alkyl group,
each of X^1, X^2 and X^3 is independently a hydrogen atom, $-CO-R^6$, halogen atom, lower alkyl group, halogen-substituted lower alkyl group, hydroxyl group, lower alkyloxy group, lower alkylthio group, lower alkyloxycarbonyl group, carboxyl group, cyano group, amino group, lower alkanoyloxy group, lower alkanoylamino group, lower alkylsulfonamido group, lower alkylsulfonyl group, ureido group, lower alkylsulfinyl group, sulfamoyl group, heterocyclic ring, mono- or di-lower alkylamino group, phenyl-substituted lower alkylamino group, trifluoroacetylamino group, trifluoromethylsulfonamido group, phenylsulfonamido group or unsaturated lower alkyloxy group,
R^5 is a hydrogen atom, lower alkylsulfonyl group or lower alkyl group,
R^6 is a lower alkyl group (which may be substituted by a halogen atom, phenyl group or lower alkyloxycarbonyl group), unsaturated lower alkyl group (which may be substituted by a phenyl group or substituted phenyl group), cycloalkyl group, phenyl group or heterocyclic ring,
n is 2 or 3, m is 0, 1, 2, 3 or 4, k is 2, 3 or 4, and l is 0, 1, 2, 3 or 4.

5,332,740
DC-89 DERIVATIVES

Hiromitsu Saito, Sagamihara; Satoru Nagamura, Machida; Akira Asai, Fujisawa; Eiji Kobayashi, Numazu, and Katsushige Gomi, Susono, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 732,752, Jul. 19, 1991, abandoned. This application Apr. 13, 1993, Ser. No. 46,365
Claims priority, application Japan, Jul. 26, 1990, 2-198747
Int. Cl.[5] A61K *31/435, 31/495;* C07D *487/04*
U.S. Cl. 514—253 5 Claims

1. A DC-89 derivative represented by general formula (I):

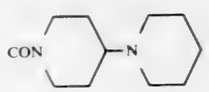


(I)

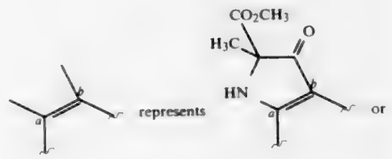
wherein X represents Cl or Br; R^1 represents



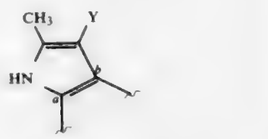
(in which R^4 represents oxygen, $N-CH_3$ or $N-CH_2CH_2NH_2$), or;



and



represents



or

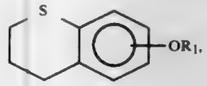
(in which Y represents hydrogen or CO_2CH_3); or a pharmaceutically acceptable salt thereof.

5,332,741
THIOCHROMAN COMPOUNDS

Gérald Guillaumet; Gérard Coudert, both of Orleans; Tchao Podona, Orleans la Source; Béatrice Guardiola-Lemaitre, Neuilly sur Seine; Pierre Renard, Versailles; Gérard Adam, le Mesnil le Roi, and Daniel Henri-Caignard, Paris, all of France, assignors to Adir et Compagnie, Courbevoie, France

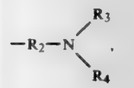
Filed May 17, 1993, Ser. No. 62,424
Claims priority, application France, May 18, 1992, 92 05960
Int. Cl.[5] A61K *31/495;* C07D *409/12, 403/12*
U.S. Cl. 514—253 28 Claims

1. A compound selected from those of formula (I):



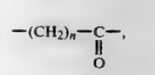
(I)

in which:
R_1 represents:
a group of formula (B):

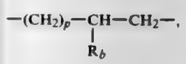


(B)

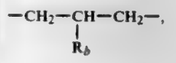
in which
$\rightarrow R_2$ is a group selected from:
$-R'_2-$, wherein R'_2 represents a group $-(CH_2)_n-$ or



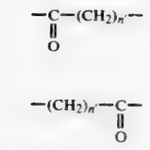
wherein n is 1 to 6, inclusive R'_2 being unsubstituted or substituted in the alkylene moiety by lower alkyl, aryl or aryl-lower alkyl, and



wherein p is 1, 2 or 3 and R_b represents a radical selected from hydroxy, lower alkoxy, lower alkylcarbonyloxy, aryloxy, and aryl-lower alkoxy,
R_3 and R_4, together with the nitrogen atom carrying them, form:
an unsubstituted or substituted piperazine, with the proviso that, when R_2 represents a group



R_3 and R_4 may not form, together with the nitrogen atom carrying them, a piperazine group substituted at the 4-position by diphenylmethyl that is unsubstituted or substituted in the phenyl nuclei by one or more radicals selected from halogen, lower alkyl, lower alkoxy, and trifluoromethyl,
wherein, unless indicated otherwise:
the expression "substituted" associated with the term "piperazine" indicates that the piperazine is substituted by one or more radicals selected from:
and groups $-(CH_2)_{n'}-E$,



and

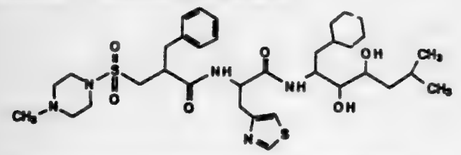
wherein n' is 0 or 1 to 4 inclusive and E represents a radical selected from phenyl, benzhydryl, pyrimidinyl, and dicycloalkyl-lower alkyl, it being possible for the group E to be unsubstituted or substituted by one or more groups selected from halogen, lower alkyl, lower alkoxy, and trifluoromethyl,
the term "cycloalkyl" represents a cyclic group having 3 to 8 carbon atoms inclusive,
the term "acyl" represents a lower alkylcarbonyl, arylcarbonyl or aryl-lower alkylcarbonyl group,
the term "aryl" means a phenyl or naphthyl group,
and the terms "lower alkyl" and "lower alkoxy" indicate linear or branched groups containing 1 to 6 carbon atoms inclusive,
an optical isomer, in pure form or in the form of a mixture, and an addition salt thereof with a pharmaceutically-acceptable acid or base.

5,332,742
RENIN INHIBITORS

Saul H. Rosenberg, Libertyville, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 928,190, Aug. 14, 1992, Pat. No. 5,284,849, which is a continuation-in-part of Ser. No. 564,925, Aug. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 522,349, May 11, 1990, abandoned. This application Nov. 3, 1993, Ser. No. 147,208
Int. Cl.[5] A61K *31/495, 37/00;* C07D *417/00*
U.S. Cl. 514—253 6 Claims

1. A method for treating glaucoma or reducing and/or controlling intraocular pressure comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of the formula:



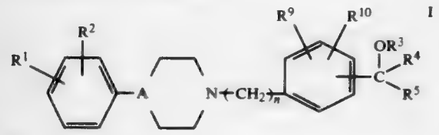
or a pharmaceutically acceptable salt or ester thereof.

5,332,743
BENZYL AND BENZHYDRYL ALCOHOLS

Ellen W. Baxter, and Allen B. Reitz, both of Lansdale, Pa., assignors to McNeilab, Inc., Spring House, Pa.

Filed Jun. 12, 1992, Ser. No. 897,487
Int. Cl.[5] A61K *31/495, 31/445;* C07D *295/096, 211/12*
U.S. Cl. 514—255 20 Claims

1. A compound of the formula I:



I

wherein
R^1 and R^2 are independently selected from any of H, C_1–C_8 alkyl, C_4–C_{10} cycloalkyl, C_2–C_6 hydroxyalkyl, C_1–C_8 alkoxyl, aryloxy, hydroxyl, trifluoromethyl, trifluoromethoxy, cyano, C_1–C_8 alkythio, halogen, nitro, C_1–C_8 halo-

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alkyl, amino or C_1–C_8 mono- or di-alkylamino, with the proviso that R^1 and R^2 can not both be H at the same time;
variable n has a value of 1–4;
A is N;
R^3 is selected from any of H, C_1–C_8 acyl, C_1–C_8 alkyl, C_4–C_8 cycloalkyl or aralkyl wherein the alkyl portion is C_1–C_8;
R^4 and R^5 are independently selected from any of H, C_1–C_8 alkyl, phenyl, substituted phenyl, aralkyl wherein the alkyl portion is C_1–C_8, C_4–C_8 cycloalkyl; wherein the phenyl is substituted with one or more of C_1–C_8 alkyl, C_1–C_8 alkoxy, halogen, trifluoromethyl, C_1–C_8 alkylthio, dialkylamino (wherein each alkyl is C_1–C_8), C_1–C_8 alkylamino, nitro, or mono- or di-alkylamino sulfonyl (wherein each alkyl is C_1–C_8); R^9 and R^{10} are independently selected from any one of H, C_1–C_8 alkyl, C_1–C_8 alkoxy, nitro, halogen, haloalkyl, C_1–C_8 alkylthio, amino, or C_1–C_8 mono- or di-alkylamino or a pharmaceutically acceptable salt thereof.

5,332,744

SUBSTITUTED IMIDAZO-FUSED 6-MEMBERED HETEROCYCLES AS ANGIOTENSIN II ANTAGONISTS

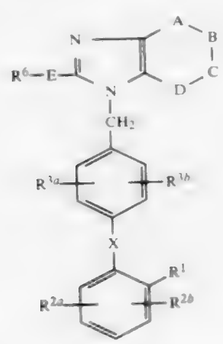
Prasun K. Chakravarty, Edison; William J. Greenlee, Teaneck; Nathan B. Mantlo, Westfield; Arthur A. Patchett, Westfield, and Thomas F. Walsh, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 358,971, May 30, 1989, abandoned. This application May 4, 1990, Ser. No. 516,286

Int. Cl.[5] **C07D** *471/04, 473/00;* **A61K** *31/52, 31/435*

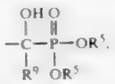
U.S. Cl. 514—261 **21 Claims**

1. A compound of structural formula:



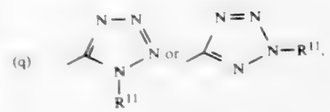
(I)

or a pharmaceutically acceptable salt thereof, wherein:
R^1 is
(a) $—CO_2R^4$,
(b) $—SO_3R^5$,
(c) $—NHSO_2CF_3$,
(d) $—PO(OR^5)_2$,
(e) $—SO_2NHR^9$,
(f) —CONHOR[5],

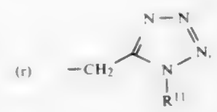


(g)

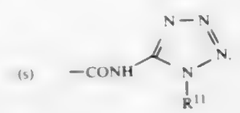
(h) $—SO_2NH$-heteroaryl,
(i) $—CH_2SO_2NH$-heteroaryl,
(j) $—SO_2NHCOR^{23}$,
(k) $—CH_2SO_2NHCOR^{23}$,
(l) $—CONHSO_2R^{23}$,
(m) $—CH_2CONHSO_2R^{23}$,
(n) $—NHSO_2NHCOR^{23}$,
(o) $—NHCONHSO_2R^{23}$,
(p) $—SO_2NHCONR^{23}$,



(q)

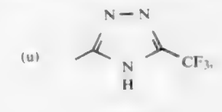


(r)

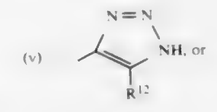


(s)

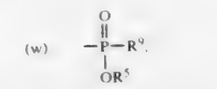
(t) $—CONHNHSO_2CF_3$,



(u)



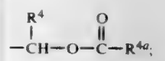
(v)



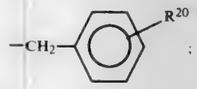
(w)

wherein heteroaryl is an unsustituted, monosubstituted or disubstituted five- or six-membered aromatic ring which contains 1 to 3 heteroatoms selected from the group consisting of O, N or S and wherein the sustituents are members selected from the group consisting of —OH, —SH, —C_1–C_4 alkoxy, halo, $—NO_2$, $—CO_2H$, $—CO_2—C_1$–C_4 alkyl, $—NH_2$, —NH(C_1–C_4 alkyl) and —N(C_1–C_4 alkyl)$_2$;
R^{2a} and R^{2b} are independently H, halo, $—NO_2$, $—NH_2$, C_1–C_4 alkylamino, di(C_1–C_4 alkyl)amino $—SO_2NHR^9$, CF_3, C_1–C_4 alkyl, or C_1–C_4 alkoxy;
R^{3a} is
(a) H,
(b) halo,
(c) C_1–C_6 alkyl,
(d) C_1–C_6 alkoxy, or
(e) C_1–C_6 alkoxyalkyl;
R^{3b} is
(a) H,
(b) halo,
(c) NO_2,
(d) C_1–C_6 alkyl,
(e) C_1–C_6 acyloxy,
(f) C_1–C_6 cycloalkyl,
(g) C_1–C_6 alkyoxy,
(h) $—NHSOR^4$,
(i) hydroxy C_1–C_4 alkyl,
(j) aryl C_1–C_4 alkyl,
(k) C_1–C_4 alkylthio,
(l) C_1–C_4 alkylsulfinyl,
(m) C_1–C_4 alkylsulfonyl,
(n) NH_2,
(o) C_1–C_4 alkylamino,
(p) C_1–C_4 dialkylamino,

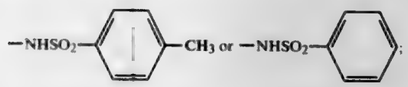
(q) fluoro C_1 –C_4 alkyl,
(r) $—SO_2NHR^9$,
(s) aryl, or
(t) furyl;
wherein aryl is phenyl or naphthyl either unsubstituted or substituted with one or two substituents selected form the group consisting of halo, C_1–C_4 alkyl, C_1–C_4 alkoxy, NO_2, CF_3, C_1–C_4alkylthio, OH, NH_2, NH(C_1–C_4 alkyl), N(C_1–C_4 alkyl)$_2$, CO_2H, and $CO_2—C_1$–C_4 alkyl;
R^4 is H, straight chain or branched C_1–C_6 alkyl, aryl or $—CH_2$aryl where aryl is as defined above;
R^{4a} is C_1 –C_6 alkyl, aryl or $—CH_2$aryl where aryl is as defined above;
R^5 is H,



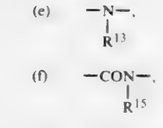
E is a single bond, $—NR^{13}CCH_2)_s$**13** , $—S(O)_x—(CH_2)_s—$, where x is 0 to 2 and s is 0 to 5, —CH(OH)—, —O—, —CO—;
R^6 is
(a) aryl as defined above which is unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of halo, $—OC_1$–C_4 alkyl, C_1–C_4 alkyl, $—NO_2$, $—CF_3$, $—SO_2NR^9R^{10}$, $—SC_1$–C_4 alkyl, —OH, $—NH_2$, C_3–C_7 cycloalkyl, C_3–C_{10} alkenyl;
(b) straight chain or branched C_1**1** $\propto C_9$ alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl each of which is unsubstituted or substituted with a substituent selected from the group consisiting of aryl as defined above, C_3–C_7 cycloalkyl, halo, —OH, $—NH_2$, —NH(C_1–C_4 alkyl), $—CF_2CF_3$, —N(C_1–C_4 alkyl)$_2$, $—NH—SO_2R^4$, $—COOR^4$, $—CF_3$, $—CF_2CH_3$, $—SO_2NHR^9$; or
(c) an unsubstituted, monosubstituted or disubstituted aromatic 5 or 6 membered ring which contains one or two members selected from the group consisting of N, O, S, and wherein the substituents are members selected from the group consisting of —OH, —SH, C_1–C_4 alkyl, C_1–C_4 alkyloxy $—CF_3$, halo, or NO_2,
(d) perfluoro C_1–C_4 alkyl,
(e) C_3–C_7 cycloalkyl which is unsubstituted mono- or disubstituted with C_1–C_4 alkyl or $—CF_3$;
R^9 is H, C_1–C_5 alkyl, aryl or $—CH_2$aryl, where aryl is as defined above;
R^{10} is H, or C_1–C_4 alkyl;
R^{11} is H, C_1–C_6 alkyl, C_2–C_4 alkenyl, C_1–C_4 alkoxy—C_1–C_4 alkyl,



R^{12} is —CN, $—NO_2$ or $—CO_2R^4$;
R^{13} is H, —CO(C_1–C_4 alkyl), C_1–C_6 alkyl, allyl, C_3–C_6 cycloalkyl, phenyl or benzyl;
R^{14} is H, C_1–C_8 alkyl, C_1–C_8 perfluoroalkyl, C_3–C_6 cycloalky, phenyl or benzyl;
R^{15} is H, C_1–C_6 *alkyl.*
R^{16} is H, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, phenyl or benzyl;
R^{17} is $—NR^9R^{10}$, $—OR^{10}$, $—NHCONH_2$, $—NHCSNH_2$,



R^{18} and R^{19} are independently C_1–C_4 alkyl or taken together are $—(CH_2)_q—$, where q is 2 or 3;
R^{20} is H, $—NO_2$, —OH or $—OCH_3$;
R^{23} is
(a) aryl as defined above,
(b) neteroaryl as defined above,
(c) C_3–C_4 cycloalkyl,
(d) C_1–C_4 alkyl which is unsubstituted or substituted wiht a substituent that is a member selected from the group consisting of aryl as defined above, heteroaryl as defined above, —OH, —Sh, —C_1–C_4 alkyl, —O(C_1–C_4 alkyl), —S(C_1–C_4 alkyl), $—CF_3$, halo $—NO_2$, $—CO_2H$, $—CO_2—C_1$–C_4 alkyl, $—NH_2$, NH(C_1–C_4 alkyl), —NHCOR[4a], —N(C_1–C_4 alkyl)$_2$, $—PO_3H$, —PO(OH)(C_1–C_4 alkyl), —PO(OH)(aryl) or —PO(OH)(O—C_1–C_4alkyl),
(e) perfluoroC_1–C_4 alkyl;
X is
(a) a carbon-carbon single bond,
(b) —CO—,
(c) —O—,
(d) —S—,

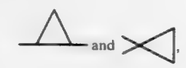


(e)

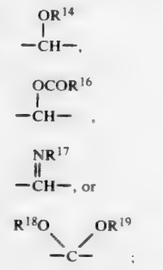
(f) —CON—.
|
R^{15}

(g) —NCO—.
|
R^{15}

(h) $—OCH_2—$,
(i) $—CH_2O—$
(j) $—SCH_2—$,
(k) $—CH_2S—$,
(l) $—NHC(R^9)(R^{10})—$.
(m) $—NR^9SO_2—$,
(n) $—SO_2NR^9—$,
(o) $—C(R^9)(R^{10})NH—$,
(p) —CH=CH—,
(q) —CF=CF—,
(r) —CH=CF—,
(s) —CF=CH—,
(t) $—CH_2CH_2—$,
(u) $—CF_2CF_2—$,



(v) and .



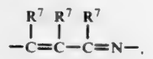
(w)

(x)

(y) , or

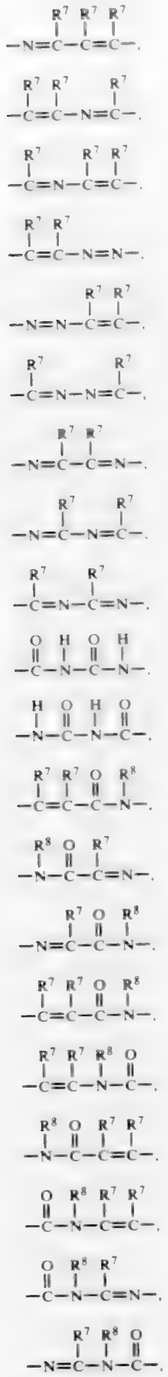
(z) ;

—A—B—C—D— represents the constituent atoms of a 6-member saturated or unsaturated heterocyclic ring with the imidazole to which they are attached containing 1 to 3 nitrogen atoms and is selected from the following:



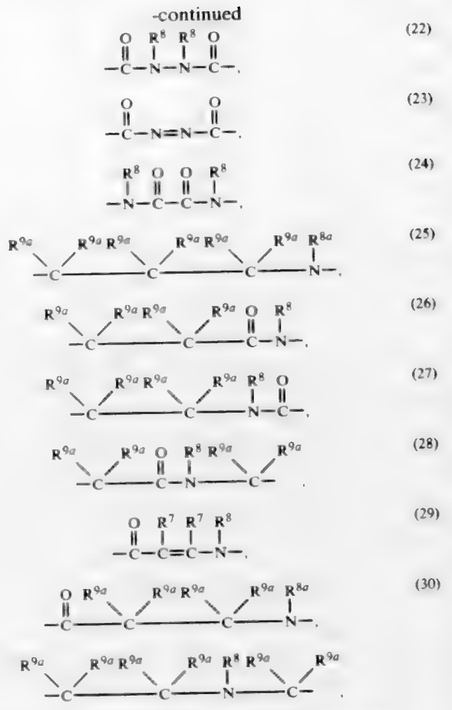
(1)

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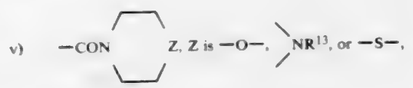
(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21)

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(22) (23) (24) (25) (26) (27) (28) (29) (30)

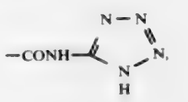
R^7 groups can be the same or different and represent:
a) hydrogen,
b) C_1–C_6 straight or branched chain alkyl, or C_2–C_6 alkenyl, or alkynyl each of which is unsubstituted or substituted with:
i) —OH
ii) C_1–C_4 alkoxy,
iii) $—CO_2R^4$,
iv) $—OCOR^4$,

v) 
Z, Z is —O—, NR^{13}, or —S—,

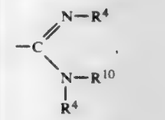
vi) $—CON(R^4)_2$

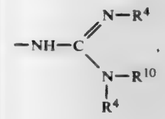
vii) 

vii) $—N—CR^4$
viii) $—N(R^4)_2$,
ix) aryl as defined above,
x) heterocyclic as defined in (o) below,
xi) $—S(O)_xR^{23}$,
xii) tetrazol—5—yl,
xiii) $—CONHSO_2R^{23}$,
xiv) $—SO_2NH—$heteroaryl,
xv) $—SO_2NHCOR^{23}$,

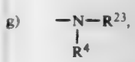
xvi) 

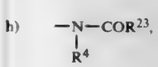
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xvii) 

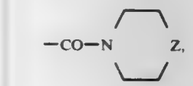
xviii) 

xix) $—PO(OR^4)_2$,
xx) $—PO(OR^4)R^9$,
c) chloro, bromo or iodo,
d) perfluoro—C_1–C_4 alkyl,
e) —OH,
f) $—NH_2$,

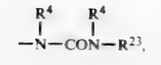
g) 

h) 

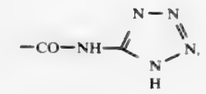
i) $—OR^{23}$,
j) $—CO_2R^4$,
k) $—CON(R^4)_2$,
l) $—NHC_3$–C_7 cycloalkyl,
m) C_3–C_7 cycloalkyl,
n) aryl as defined above, or
o) heterocyclic which is a five- or six- membered saturated or unsaturated ring containing up to three heteroatoms selected from the group consisting of O, N or S wherein S may in the form of sulfoxide or sulfone and which is unsubstituted or substituted with one or two substituents which are members selected from the group consisting of halo, C_1–C_4 alkyl, C_1–Chd **4** alkoxy, C_1–C_4 alkyl—S-$(O)_x$— where x is as defined above, CF_3, NO_2, OH, CO_2H, $CO_2—C_1$–C_4 alkyl, NH_2, $NH(C_1$–C_4 alkyl) or $N(R^4)_2$;
p) —CN,
q) $(CH_2)_nN—$ where n is 4 to 6,
r) $—SO_2N(R^4)_2$;
s) tetrazol-5-yl,
t) $—CONHSO_2R^{23}$,
u) $—PO(OR^4)_2$,
v) $—NHSO_2CF_3$,
w) $—SO_2NH—$heteroaryl,
x) $—SO_2NHCOR^{23}$,
y) $—S(O)_xR^{23}$,

z) 

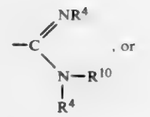
aa) $—PO(OR^4)R^9$,
bb) $—NHSO_2R^{23}$,
cc) $—NHSO_2NHR^{23}$,
dd) $—NHSO_2NHCOR^{23}$,
ee) $NHCONHSO_2R^{23}$,
ff) $—N(R^4)CO_2R^{23}$,

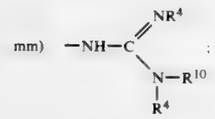
gg) 

hh) —CO—aryl,

ii) 

jj) $—COC_1$-C_4 alkyl,
kk) $—SO_2NH—CN$,

ll) 
, or

mm) 
;

R^8 groups can be the same or different and represent:
a) hydrogen,
b) C_1–C_6 alkyl or alkenyl either unsubstituted or substituted with hydroxy, C_1–C_4 alkoxy, $—N(R^4)_2$, $—CO_2R^4$, or C_3–C_5 cycloalkyl,
c) C_3–C_5 cycloalkyl,
R^{8a} is R^8 or C_1–C_4 acyl; and
R^{9a} groups can be the same or different and represent:
a) hydrogen,
b) C_1–C_6 alkyl either unsubstituted or substituted with
i) hydroxy,
ii) $—CO_2R^4$,
iii) $—CONHR^4$, or
iv) $—CON(R^4)_2$.

5,332,745

TETRAHYDROPYRIMIDINE DERIVATIVES

Paul A. Carter; Nicholas J. Daniels, both of Sittingbourne, and Steven J. Tapp, Faversham, all of England, assignors to Shell Research Limited, United Kingdom

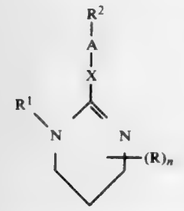
Continuation of Ser. No. 727,049, Jul. 9, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,377

Claims priority, application United Kingdom, Jul. 31, 1990, 9016800.6

Int. Cl.[5] **A61K** *31/505;* **C07D** *239/12*

U.S. Cl. 514—275 **10 Claims**

1. A compound of the formula I


(I)

or an acid-addition salt or metal salt complex thereof in which n is 0, 1, 2 or 3;

VOL 1164 ISS 4 JL 26 1994 UMI

R represents an optionally substituted alkyl, aryl or benzyl group;

R^1 represents a hydrogen atom or an optionally substituted alkyl or benzyl group;

R^2 represents an optionally substituted phenyl group; and

X represents a group $—NR^3—NR^3—$ where each R^3 independently represents hydrogen atom or an optionally substituted alkyl, aryl or benzyl group; and

A represents a group $—(CR^6R^7)_m—$ where m is 0, 1, 2, 3 or 4 and each of R^6 and R^7 is independently selected from a group consisting of hydrogen atoms and optionally substituted alkyl groups, optional substituents being selected from the group consisting of halogen atoms, nitro, cyano, hydroxyl, cycloalkyl, alkyl, haloalkyl, alkoxy, haloalkoxy, amino, alkylamino, dialkylamino, formyl, alkoxycarbonyl, carboxyl, alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, carbamoyl and alkylamido groups.

5,332,746

8,9-ANNELATED-β-CARBOLINES AND 8,9-ANNELATED 3,4-DIHYDRO-β-CARBOLINES

Derk Hamminga; Hans H. Haeck; Ineke van Wijngaarden, and Johannes W. C. M. Jansen, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

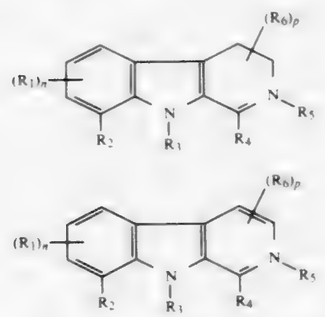
Continuation of Ser. No. 366,535, Jun. 15, 1989, abandoned. This application May 8, 1991, Ser. No. 700,058

Claims priority, application Netherlands, Jun. 20, 1988, 8801565; Jan. 20, 1989, 8900136

Int. Cl.[5] A61K *31/445*; **C07D** *471/14*

U.S. Cl. 514—278 **6 Claims**

1. A compound of formula 1 or 2



(1)

(2)

wherein the symbols have the following meanings:

R_1 independently of each other are straight or branched alkyl having 1–4 C-atoms, fluorinated or hydroxylated alkyl having 1–4 C-atoms, or R_1 is cycloalkyl having 3–6 C-atoms, or R_1 is straight or branched alkoxy, alkylthio or alkylsulphonyl having 1–4 C-atoms which may be substituted with one or more fluorine atoms or with one phenyl group, or R_1 is a cycloalkoxy group or a cycloalkylthio group having 3–6 C-atoms, or R_1 is straight or branched alkoxy-, alkylthio- or alkylsulphonylalkyl having 2–6 C-atoms, or R_1 is hydroxy, halogen, cyano, straight or branched alkoxycarbonyl having 1–4 C-atoms in the alkoxy group;

n has the value 0–2;

R_2+R_3 together with the carbon atoms and the nitrogen atoms to which they are bound and the intermediate carbon atoms constitute a piperidine ring which may be substituted with alkyl groups which can form a spiroalkyl group;

R_4 is hydrogen, straight or branched alkyl having 1–8 C-atoms, alkoxy- or alkylthioalkyl, alkenyl or alkynyl, which groups may be substituted with one or more fluorine atoms, or with a cycloalkyl group, or with a phenyl group which may be substituted with one or two substituents selected from the group consisting of lower alkyl and lower alkoxy, or R_4 is a cycloalkyl having 3–8 C-atoms, or cycloalkenyl having 5–7 C-atoms which rings may be substituted with methyl groups, or R_4 is a straight or branched alkoxycarbonylalkyl having 1–6 C-atoms, or R_4 is a group $R_7R_8N—CO—R_9—$ or $R_7R_8N—SO_2—R_9—$, wherein R_7 and R_8 independently of each other are hydrogen, alkyl having 1–3 C-atoms, and R_9 is alkyl having 1–3 C-atoms, or R_4 is alkylsulphonylalkyl having 1–3 C-atoms per alkyl group, or a phenylsulphonylalkyl group having 1–3 C-atoms in the alkyl group or R_4 is a phenyl group substituted with 0–3 groups R_{10}, wherein R_{10} independently of each other are straight or branched alkyl having 1–6 C-atoms which may be substituted with one or more fluorine atoms, or with one cyano group, or with straight or branched alkoxycarbonyl having 1–6 C-atoms in the alkoxy group, or with a group $R_7R_8N—CO—$ or $R_7R_8N—SO_213$, wherein R_7 and R_8 have the above-mentioned meanings, or two groups R_{10} bonded to adjacent carbon atoms form a carbocyclic ring which consists of 5–7 ring atoms and is annelated with the phenyl groups, or R_{10} is straight or branched alkyl(1–4 C)-oxy-alkyl(0–3 C) or alkyl (1–4 C)-thioalkyl(0–3 C), which groups may comprise one or more fluorine atoms, or R_{10} is cycloalkoxy, cycloalylthio or cycloalkylsulphonyl having 3–6 C-atoms, or R_{10} is cycloalkyl having 3–6 C-atoms, or R_{10} is straight or branched alkoxycarbonyl, a group $R_7R_8N—CO—$ or $R_7R_8N—SO_2—$ wherein R_7 and R_8 have the above-mentioned meanings, or R_{10} is halogen or hydroxy;

R_5 is absent or R_5 is alkyl (with an anion as counter ion), or oxygen;

p has a value 1 or 2; and

R_6 independently or each other are hydrogen, on the understanding that at least one group R_6 is alkyl having 1–6 C-atoms, a halogen atom, a nitrile group, an amino group, an acylamino group, an alkoxycarbonylamino group, a group $—NH—CO—NR_7R_8$, wherein R_7 and R_8 have the above-mentioned meanings, a straight or branched alkoxycarbonyl group having 1–8 C-atoms in the alkoxy group, hydroxy-(1–2 C) alkoxycarbonyl, (1,3 C) alkoxy-(1,2 C)alkoxycarbonyl, a benzyloxycarbonyl group, a group $R_7R_8N—SO_2—$ or $R_7R_8N—CO—$, wherein R_7 and R_8 have the above-mentioned meanings, or R_6 is hydroxymethyl, esterified hydroxymethyl, alkoxymethyl having 1–6 C-atoms in the alkoxy group, a benzyloxymethyl group, or an alkyl (1–6 C)—SO_2— group, or

a pharmaceutically suitable salt thereof.

5,332,747

METHOD FOR POTENTIATING PRIMARY DRUGS IN TREATING MULTIDRUG RESISTANT PARASITIC DISEASE CELLS

Knox Van Dyke, Morgantown, W. Va., assignor to Cancer Biologics of America, Inc., Lexington, Ky.

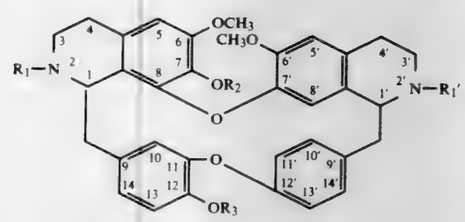
Continuation-in-part of Ser. No. 413,710, Sep. 28, 1989, abandoned, and a continuation-in-part of Ser. No. 413,711, Sep. 28, 1989, Pat. No. 5,025,020. This application Jun. 13, 1990, Ser. No. 537,481

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—280 **7 Claims**

1. A method for potentiating a primary drug to treat cell multidrug resistance in Trypanosoma comprising:

exposing multidrug resistant Trypanosoma cells to effective concentrations of a compound having the following formula:



wherein R_1 and R_1' are the same or different short chained carbon based ligand; R_2 is CH_3 is and R_3 is CH_3 or hydrogen, and the isomeric configuration at the C-1′ chiral carbon location is "S" and at least one of R_2 and R_3 comprises CH_3.

5,332,748

SUBSTITUTED DERIVATIVES OF 20,21-DINOREBURNAMENINE, THEIR PREPARATION PROCESS AND THE NEW INTERMEDIATES THUS OBTAINED, THEIR USE AS MEDICAMENTS AND THE PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Nurgun Aktogu, Le Plessis-Robinson; Francois Clémence, and Claude Oberlander, both of Paris, all of France, assignors to Roussel-Uclaf, France

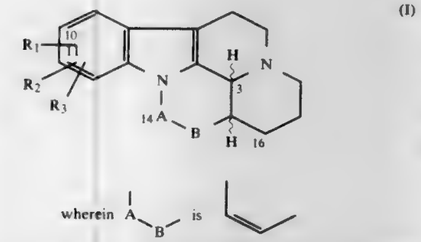
Division of Ser. No. 776,079, Oct. 11, 1991, abandoned, which is a division of Ser. No. 391,511, Jul. 18, 1989, Pat. No. 5,093,337. This application Jan. 19, 1993, Ser. No. 5,662

Claims priority, application France, Nov. 19, 1987, 87 15980

Int. Cl.[5] A61K *31/44*; **C07D** *461/00*

U.S. Cl. 514—283 **12 Claims**

1. A compound in all possible racemic or optically active isomer forms selected from the group consisting of a compound of the formula



(I)

and R_1, R_2 and R_3 are individually selected from the group consisting of hydrogen, halogen, alkyl of 1 to 5 carbons atoms, alkoxy of 1 to 5 carbon atoms, —OH, $—CF_3$, $—NO_2$, $—NH_2$, mono- and dialkylamino of 1 to 5 carbon atoms and acyl of an aliphatic carboxylic acid of 1 to 6 carbon atoms with the proviso that at least two are other than hydrogen and their non-toxic, pharmaceutically acceptable acid addition salts.

5,332,749

QUINOLONES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Claude Perrin, Orsay, France, assignor to Bouchara, France

PCT No. PCT/FR92/00177, § 371 Date Oct. 30, 1992, § 102(e) Date Oct. 30, 1992, PCT Pub. No. WO92/15574, PCT Pub. Date Sep. 17, 1992

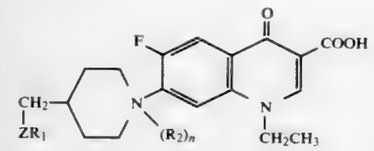
PCT Filed Feb. 27, 1992, Ser. No. 946,315

Claims priority, application France, Mar. 1, 1991, 91 02585

Int. Cl.[5] A61K *31/47*; **C07D** *215/16*

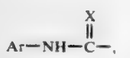
U.S. Cl. 514—312 **5 Claims**

1. A compound selected from the group consisting of a compound of the formula



(I)

wherein Z is amino, R_1 is selected from the group consisting of linear alkyl, hydroxy lower alkyl, acyl of an organic carboxylic acid, alkylcarbonic acid and alkyl sulfonic acid and



Ar is a mono-or bicyclic aryl optionally substituted with 1 to 3 substitutents selected from the group consisting of lower alkyl, halogen and $—CF_3$, R_2 is oxygen bound with a semi-polar valency and n is 0 or 1 and their non-toxic, pharmaceutically acceptable salts with a base or an acid when R_1 is hydrogen, lower alkyl or hydroxy lower alkyl X is O or S.

5,332,750

1,2-DIHYDRO-2-OXOPYRIDINES

Werner Mederski, Erzhausen; Norbert Beier, Reinheim; Pierre Schelling, Mühltal; Ingeborg Lues, Darmstadt, and Klaus-Otto Minck, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

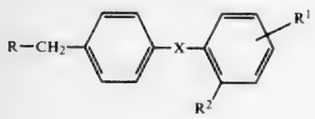
Continuation-in-part of Ser. No. 940,417, Sep. 3, 1992, abandoned. This application Apr. 22, 1993, Ser. No. 50,800

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129340

Int. Cl.[5] A61K *31/44*; **C07D** *401/04*

U.S. Cl. 514—340 **25 Claims**

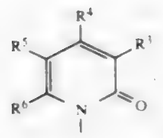
1. A 1,2-dihydro-2-oxopyridine compound of formula I



I

wherein

R is the radical



R^1 is H, Hal, A, OA or NO_2;
R^2 is COOH, COOA, CN, NO_2, NH_2, $NHCOR^7$, $NHSO_2R^7$ or tetrazol-5-yl;
R^3 is $CH_2NR^{10}R^{11}$, or tetrazol-5-yl;
R^4 is H or A;
R^5, R^6 and R^{10} are in each case independently H, A, alkenyl having 2–6 C atoms, alkynyl having 2–6 C atoms, Ar or Ar-alkyl having 1–6 C atoms in the alkyl moiety;
R^7 is A or A monosubstituted or polysubstituted by F;
R^{11} is H, A, A monosubstituted or polysubstituted by F, Ar, Ar-alkyl having 1–6 C atoms in the alkyl moiety, CO-A, CO-Ar, CO-alkyl-Ar having 1–6 C atoms in the alkyl moiety, COOA, COOAr, COO—alkyl—Ar having 1–6 C atoms in the alkyl moiety, $CONR^{12}R^{13}$, SO_2R^7 or SO_2Ar, $NR^{10}R^{11}$ can also be pyrrolidino, piperidino, morpholino, succinimido or phthalimido;
R^{12} and R^{13} are in each case independently H, A, cycloalkyl having 3–8 C atoms, alkenyl having 2–6 C atoms, alkynyl having 2–6 C atoms, or Ar;
X is absent or is —CO—, —O—, —NH—CO—, —CO—NH—, $—CH_2—O—$ or $—O—CH_2—$;
A is alkyl having 1–6 C atoms;
Ar is phenyl which is unsubstituted or monosubstituted by A, OA, CF_3, Hal or NO_2; and
Hal is F, Cl, Br or I; or
a physiologically acceptable salt.

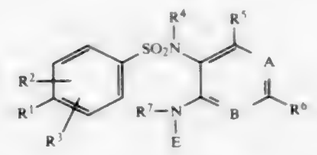
5,332,751

PYRIDINE CARBOXAMIDE COMPOUNDS WHICH HAVE USEFUL AS PHARMACEUTICAL UTILITY

Hiroshi Yoshino, Chiba; Norihiro Ueda, Ibaraki; Hiroyuki Sugumi, Ibaraki; Jun Niijima, Ibaraki; Yoshihiko Kotake, Ibaraki; Toshimi Okada, Ibaraki; Nozomu Koyanagi, Ibaraki; Tatsuo Watanabe, Osaka; Makoto Asada, Ibaraki; Kentaro Yoshimatsu, Ibaraki; Atsumi Iijima, Ibaraki; Takeshi Nagasu, Ibaraki; Kappei Tsukahara, Ibaraki, and Kyosuke Kitoh, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

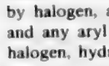
Division of Ser. No. 923,345, Jul. 31, 1992, Pat. No. 5,292,758, which is a division of Ser. No. 742,618, Aug. 8, 1991, Pat. No. 5,250,549. This application Jun. 30, 1993, Ser. No. 85,962
Claims priority, application Japan, Aug. 20, 1990, 218710; Mar. 5, 1991, 38509; May 27, 1991, 121041
Int. Cl.[5] **C07D** *213/02*; **A61K** *31/44*
U.S. Cl. 514—355 **4 Claims**

1. Sulfonamide derivatives of the formula (I) or pharmacologically acceptable salts thereof:



(I)

wherein,
R^1 represents a hydrogen atom, halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group, nitro group, phenoxy group, cyano group, acetyl group, amino group or a protected amino group, R^2 and R^3 may be the same or different from each other and each represent a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group, R^4 and R^7 may be the same or different from each other and each represents a hydrogen atom or a lower alkyl group, R^5 and R^6 may be the same or different from each other and each represents a hydrogen atom, halogen atom, lower alkoxy group,amino group or amino group substituted with a lower alkyl or a phenyl group, A is=CH—, B is=CH—, and E is



in which Q represents an oxygen atom or a sulfur atom and R'' is a pyridyl group or a pyridyl group having from 1 to 3 substituents, said substituents being the same or different from one another and selected from the group consisting of a halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group, protected hydroxyl group, carboxyl group, esterified carboxyl group, amidated carboxyl group, lower alkylthio group and phenoxy group.

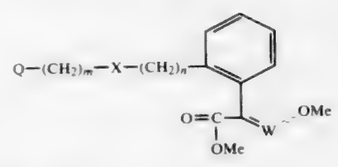
5,332,752

ACRYLATE FUNGICIDES

Geoffrey R. Cliff, Whittlesford, and Ian C. Richards, Haverhill, both of England, assignors to Schering Agrochemicals Limited, England

Continuation of Ser. No. 463,399, Jan. 11, 1990, abandoned. This application Oct. 4, 1991, Ser. No. 771,519
Claims priority, application United Kingdom, Jan. 11, 1989, 8900578.9; Jan. 11, 1989, 8900579.7; Jan. 11, 1989, 8900581.3
Int. Cl.[5] **C07D** *277/14*; **A01N** *43/78*
U.S. Cl. 514—369 **10 Claims**

1. A compound of formula I



(I)

wherein
X is oxygen or sulphur,
W is CH or N,
m is 0 or 1,
n is 1, and
Q is thiazol-2-in-2-yl containing one to four substituents other than methylene selected from the group consisting of alkyl, alkenyl, alkynyl, alkoxy, haloalkoxy, alkythio, haloalkylthio, halo, alkoxycarbonyl, oxoalkyl, aryl and amino in which any alkyl group is optionally substituted by halogen, alkoxy, alkylthio, alkoxycarbonyl and aryl and any aryl group is phenyl optionally substituted by halogen, hydroxy, alkoxy, alkyl, trifluoromethyl and nitro.

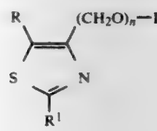
5,332,753

THIAZOLE DERIVATIVES, THEIR PREPARATION AND THEIR USE AS FUNGICIDES

Ernest Haddock, and Susan M. Webb, both of Kent, England, assignors to Shell Research Limited, United Kingdom

Continuation of Ser. No. 560,567, Jul. 31, 1990, abandoned. This application Sep. 1, 1992, Ser. No. 938,687
Claims priority, application United Kingdom, Aug. 4, 1989, 8917849
Int. Cl.[5] **C07D** *417/04*; **A01N** *43/78*
U.S. Cl. 514—370 **15 Claims**

1. A thiazole derivative of the formula I



(I)

in which:
R represents a triazol-1-yl group; R^1 represents a hydrogen atom or a C_{1-6} alkyl group; n is 0 or 1; and R^2 represents a phenyl group optionally substituted by up to 3 substituents selected from halogen atoms, phenyl, nitro, cyano, amino, mono- or di(C_{1-4} alkyl)amino, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} haloalkyl groups and groups of formula MR where M represents an oxygen or sulfur atom and R^7 represents a hydrogen atom, C_{1-8} alkyl, C_{1-4} haloalkyl or phenyl group; and acid addition salts, N-oxides, S-oxides and metal salt complexes thereof.

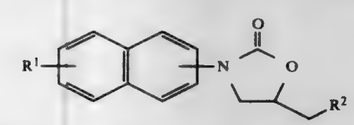
5,332,754

NAPHTHYLOXAZOLIDONE DERIVATIVES

Hideo Naksi, Takarazuka; Koichiro Yamada, Saitama; Sumihiro Nomura, Misato; Mamoru Matsumoto, Nara, and Hiroshi Iwata, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Continuation of Ser. No. 599,564, Oct. 18, 1990, Pat. No. 5,182,296. This application Oct. 15, 1992, Ser. No. 961,873
Claims priority, application Japan, Oct. 26, 1989, 1-279305
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] **A61K** *31/42*
U.S. Cl. 514—376 **11 Claims**

1. A naphthyloxazolidone compound of the formula:



wherein R^1 is a hydrogen atom, a hydroxy group, a lower alkenyloxy group, a lower alkanoyloxy group or a lower alkoxy group which is unsubstituted or has a substituent selected from the group consisting of a cycloalkyl group of 3 to 6 carbon atoms, a hydroxy group, a lower alkoxy group, a cyano group, a lower alkanoyloxy group, and a lower alkylthio group; and R^2 is a hydroxy group or a lower alkoxy group; or a pharmaceutically acceptable salt thereof.

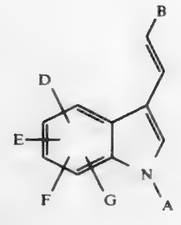
5,332,755

NEW INDOLE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN MEDICAMENTS

John E. Butler, Wuppertal, Fed. Rep. of Germany, and Nigel J. Cuthbert, Prestwood Great Missenden, United Kingdom, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 547,560, Jul. 2, 1990, Pat. No. 5,118,700. This application Jan. 13, 1992, Ser. No. 820,109
Claims priority, application United Kingdom, Jul. 21, 1989, 8916774
Int. Cl.[5] **A61K** *31/41*
U.S. Cl. 514—415 **2 Claims**

1. A method for antagonizing leukotriene in a patient in need thereof which comprises administering to such patient an amount effective therefor of an indole derivative of the formula:



(I)

in which
A represents straight-chain or branched alkyl having up to 10 carbon atoms, which is unsubstituted or substituted by cyclopropyl, cyclopentyl, cyclohexyl, fluorine, chlorine, bromine, hydroxyl, carboxyl, cyano, straight-chain or branched alkoxy or alkoxycarbonyl, each having up to 8 carbon atoms;
represents straight-chain or branched alkyl or alkenyl each having 12 to 16 carbon atoms, each of which is unsubstituted or substituted by fluorine, chlorine, bromine, carboxyl, hydroxyl, straight-chain or branched alkoxy, acyl or alkoxycarbonyl each having up to 8 chain atoms, or by phenyl which may in turn be monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, carboxyl, cyano and hydroxyl, or by a group of the formula $—Y—(CH_2)_n—X—R^3$;
in which
X and Y are identical or different and represent oxygen, sulfur or a direct bond;
n represents a number 1,2,3,4,5 or 6; and
R^3 represents phenyl or naphthyl, each of which is unsubstituted or substituted by hydroxyl, carboxyl, cyano, fluorine, chlorine, bromine or by straight-chain or branched alkoxy, acyl or alkoxycarbonyl, each having up to 8 carbon atoms; or
B represents phenyl, which is unsubstituted or monosubstituted or disubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, nitro and hydroxyl, or by a group of the formula $—Y—(CH_2)_n—X—R^3$;
D,E,F and G are identical or different and represent hydrogen, fluorine, chlorine, bromine, cyano, carboxyl, straight-chain or branched alkyl, acyl or akoxycarbonyl each having up to 8 carbon atoms, thienyl, furyl, pyrryl or tetrazolyl; or represent a group of the formula $—CO—NH—SO_2—R^1$,
in which
R^1 represents phenyl or naphthyl, each of which is unsubstituted or monosubstituted or disubstituted by identical or different substituents selected from the group consisting of carboxyl, fluorine, chlorine, bromine, cyano, nitro or by straight-chain or branched alky, alkoxy or alkoxycarbonyl, each having up to 8 carbon atoms, or by phenyl or naphthyl, which are in turn monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of carboxyl, straight-chain or branched alkyl, alkylthio, alkoxy or akloxycarbonyl, each having up to 8 carbon atoms, or by a group of the formula $—NH—R^2$;
in which
R^2 represents hydrogen, straight-chain or branched alkyl or acyl each having up to 6 carbon atoms; or a salt thereof.

VOL 1164 ISS 4 JL 26 1994 UMI

5,332,756

3-DEOXY-MANNOSAMINE DERIVATIVES

Nicola Mongelli; Alberto Bargiotti; Nuccia Oneto, and Cristina Geroni, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

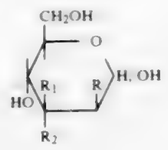
Filed Jul. 31, 1992, Ser. No. 922,229

Claims priority, application United Kingdom, Aug. 6, 1991, 9116896

Int. Cl.[5] A01N *43/16*; C07H *5/04, 5/06*

U.S. Cl. 514—459 5 Claims

1. A compound of formula (I)



(I)

wherein

R is —NH_2 or a C_2-C_5 alkanoyl-NH— or CF_3CONH— group;

each of R_1 and R_2 independently is C_1-C_4 alkyl, or R_1 is hydrogen, halogen, C_1-C_4 alkyl or C_1-C_4 alkoxy, and

R_2 is hydrogen or both of R_1 and R_2 are fluorine; and wherein, when R_1 is methoxy and R_2 is hydrogen then R is other than —NH_2, or a pharmaceutically acceptable salt thereof.

5,332,757

OXIME DERIVATIVES

Thomas G. C. Bird, Witry-les-Reims, and Patrick Ple, Reims, both of France, assignors to Zeneca Limited, London, England and Zeneca PHARMA S A, Cergy Cedex, France

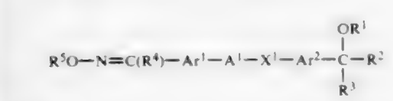
Filed Feb. 8, 1993, Ser. No. 14,564

Claims priority, application European Pat. Off., Feb. 7, 1992, 92400318.9; Oct. 9, 1992, 92402764.2

Int. Cl.[5] A61K *31/35, 31/34*; C07D *309/10, 307/20*

U.S. Cl. 514—459 12 Claims

1. An oxime derivative of the formula I



I

wherein

R^4 is hydrogen, carboxy, carbamoyl, amino, cyano, trifluoromethyl, (1–4C)alkylamino, di-(1–4C)alkylamino, (1–4C)alkyl, (2–5C)alkanoyl, (1–4C)alkoxycarbonyl, N-(1–4C)alkylcarbamoyl, N,N-di-(1–4C)alkylcarbamoyl, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, hydroxy-(1–4C)alkyl, (1–4C)alkoxy-(1–4C)alkyl, (1–4C)alkylthio(1–4C)alkyl, phenyl, phenyl-(1–4C)alkyl or heteroaryl and wherein each phenyl or heteroaryl group may optionally bear one or two substituents selected from hydroxy, amino, halogeno, cyano, trifluoromethyl, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylamino, di-(1–4C)alkyamino, (1–4C)alkylthio, (1–4C)alkylsulphinyl and (1–4C)alkylsulphonyl;

R^5 is hydrogen, (1–4C)alkyl, (3–4C)alkenyl, (3–4C)alkynyl, (2–5C)alkanoyl, halogeno-(2–4C)alkyl, hydroxy-(2–4C)alkyl, (1–4C)alkoxy-(2–4C)alkyl, carbamoyl, N-(1–4C)alkylcarbamoyl, N,N-di-(1–4C)aikylcarbamoyl, amino-(2–4C)alkyl, (1–4C)alkylamino-(2–4C)alkyl, di-(1–4C)alkylamino-(2–4C)alkyl, (1–4C)alkylthio-(2–4C)alkyl, (1–4C)alkylsulphinyl-(2–4C)alkyl, (1–4C)alkylsulphonyl-(2–4C)alkyl, cyano-(1–4C)alkyl, carboxy-(1–4C)alkyl, (1–4C)alkoxycarbonyl-(1–4C)alkyl, carbamoyl-(1–4C)alkyl, N-(1–4C)alkylcarbamoyl-(1–4C)alkyl, N,N-di-(1–4C)alkylcarbamoyl-(1–4C)alkyl, (2–5C)alkanoylamino-(2–4C)alkyl, (2–5C)alkanoyl-(1–4C)alkyl, phenyl-(1–4C)alkyl, heteroaryl-(1–4C)alkyl or heteroarylthio(2–4C)alkyl and wherein each phenyl or heteroaryl group may optionally bear one or two substituents selected from halogeno, cyano, trifluoromethyl, carboxy, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkoxycarbonyl, carboxy-(1–4C)alkyl and (1–4C)alkoxycarbonyl-(1–4C)alkyl;

and wherein said heteroaryl group in R^4 or R^5 is a 5-membered or 6-membered heterocyclic moiety containing up to four nitrogen heteroatoms and optionally containing a further heteroatom selected from oxygen and sulphur;

Ar^1 is phenylene or a 6-membered heteroaryl diradical containing one or two nitrogen heteroatoms which may optionally bear one or two substituents selected from halogeno, cyano, trifluoromethyl, hydroxy, amino, (1–4C)alkyl, (1–4C)alkoxy, phenyl-(1–4C)alkoxy, (1–4C)alkylamino and di-(1–4C)alkylamino;

A^1 is a direct link to X^1, or A^1 is (1–4C)alkylene;

X^1 is oxy, thio, sulphinyl or sulphonyl;

Ar^2 is phenylene, pyridinediyl, pyrimidinediyl, thiophenediyl, furandiyl, thiazolediyl, oxazolediyl, thiadiazolediyl or oxadiazolediyl which may optionally bear one or two substituents selected from halogeno, cyano, trifluoromethyl, hydroxy, amino, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylamino and di-(1–4C)alkylamino;

R^1 is (1–4C)alkyl, (3–4C)alkenyl or (3–4C)alkynyl; and R^2 and R^3 together form a group of the formula -A^2-X^2-A^3- which together with the carbon atom to which A^2 and A^3 are attached define a ring having 5 or 6 ring atoms, which each of A^2 and A^3 is independently (1–3C)alkylene and X^2 is oxy, and which ring may optionally bear one or two substituents selected from hydroxy, (1–4C)alkyl and (1–4C)alkoxy;

or a pharmaceutically-acceptable salt thereof.

5,332,758

COLLAGEN METABOLISM AMELIORANT AND ITS USE

Masanori Nakata; Shintaro Inoue; Mikio Sotomura, all of Odawara; Junsei Taira, Hadano, and Itaru Miyamoto, Chigasaki, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 838,706, Mar. 12, 1992, abandoned. This application Jan. 13, 1993, Ser. No. 4,107

Claims priority, application Japan, Jul. 13, 1990, 2-186762; Jul. 13, 1990, 2-186763

Int. Cl.[5] A61K *31/195*

U.S. Cl. 514—561 5 Claims

1. A method of ameliorating collagen metabolism in a human patient, said method comprising the step of administering N-methyl-L-serine in a dosage between 0.1 and 1,000 mg to said patient.

5,332,759

NAPHTHALENE AMIDES AND SULPHONAMIDES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Patrick Depreux, Armentieres; Daniel Lesieur, Gondecourt; Habib Abdellaoui, Cuincy; Béatrice Guardiola, Neuilly sur Seine; Gérard Adam, Le Mesnil le Roi; Pierre Renard, Versailles, and Bruno Pfeiffer, Eaubonne, all of France, assignors to Adir et Compagnie, Courbevoie, France

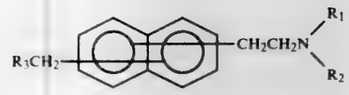
Filed Jan. 21, 1993, Ser. No. 9,922

Claims priority, application France, Jan. 22, 1992, 92 00608

Int. Cl.[5] A61K *31/18*; C07C *311/03*

U.S. Cl. 514—603 11 Claims

1. A compound selected from those of the formula (I):



(I)

it being possible for each of the two substituents, independently of the other, to be located on either one of the two naphthalene rings, and wherein

R_1 and R_2, which are the same different, each represents, independently of the other, a radical selected from:

hydrogen,

straight-chain or branched alkyl having 1 to 6 carbon atoms, inclusive,

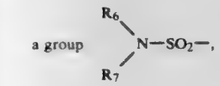
cycloalkyl, having 3 to 7 carbon atoms, inclusive, or cycloalkyl(C1–C4)alkyl,

straight-chain or branched alkyl having 2 to 6 carbon atoms inclusive,

optionally substituted aryl,

and optionally substituted aralkyl of which the alkyl chain has 1 to 3 carbon atoms, inclusive,

R_3 represents:



a group

wherein

R_6 and R_7, which are the same or different, have the same definition as R_1 and R_2,

an optical isomer therefore,

and an addition salt with a pharmaceutically-acceptable mineral or organic acid;

"aryl" meaning a group selected from phenyl, naphthyl;

the expression "optionally substituted meaning that the aromatic nucleus or nuclei may be substituted by one or more radicals selected from hydroxy, halogen, trifluoromethyl, nitro, straight-chain or branched alkyl having 1 to 6 carbon atoms, inclusive, and straight-chain or branched alkoxy having 1 to 6 carbon atoms, inclusive.

5,332,760

MODIFIED LOW-DENSITY POLYURETHANE FOAM BODY

Morey Weisman, 147-23 B Charter Rd., Jamaica, N.Y. 11435-1239

Division of Ser. No. 44,199, Apr. 8, 1993, Pat. No. 5,272,001. This application Aug. 16, 1993, Ser. No. 106,572

Int. Cl.[5] C08J *9/236*

U.S. Cl. 521—54 7 Claims

1. A low-density, open-cell polyurethane body modified to impart resilience and enhanced shock-absorbing properties thereto, the cells having entrapped therein expanded microspheres of a vinylidene chloride polymer each defined by a soft, gas proof polymeric shell enclosing a compressible isobutane gas whereby the expanded microspheres act as miniature springs which are dispersed throughout the body which when the body is subjected to pressure and is deformed thereby are compressed and when the pressure is released cause the body to recover its normal form.

5,332,761

FLEXIBLE BIMODAL FOAM STRUCTURES

Andrew N. Paquet, and Kyung W. Suh, both of Granville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 52,855, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 895,970, Jun. 9, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 161,946

Int. Cl.[5] C08J *9/12*

U.S. Cl. 521—79 8 Claims

1. A process for making a closed-cell styrenic polymer foam structure comprising a foam having relatively larger primary cells with an average cell size range of about 0.05 to about 1.2 millimeters and relatively smaller secondary cells ranging in cell size from about 5 percent to about 50 percent of the average cell size of the primary cells, the primary and secondary cells constituting at least about 90 percent of the total volume of the foam structure, the primary and secondary cells having pinholes between 1 and 30 percent by number of the total number of primary and secondary cells, comprising:

a) heating a styrenic polymer material comprising greater than 50 percent by weight of styrenic monomeric units to form a melt polymer material;

b) incorporating into the melt polymer material at an elevated pressure a blowing agent in liquid or gaseous form comprising at least about 3 weight percent water based upon the total weight of the blowing agent and at least about 0.3 parts per hundred parts of the styrenic polymer material by weight to form a foamable gel;

c) cooling the foamable gel to a selected foaming temperature; and

d) expanding the foamable gel at a reduced pressure to form the foam structure.

5,332,762

BLOWING AGENT COMPOSITIONS AND COMPOSITIONS CURABLE TO GIVE ELASTOMERIC SILICONE FOAMS

Adolf Maschberger, and Christian Freyer, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 44,423

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1992, 4235309

Int. Cl.[5] C08J *9/00*

U.S. Cl. 521—91 4 Claims

1. A blowing agent composition (a) which may be used to form elastomeric silicone foams consisting essentially of an aqueous emulsion containing organopolysiloxanes (1), emulsifiers (2), water (3) and thickener (4).

5,332,763

STABLE DISPERSIONS AND THEIR USE IN THE PREPARATION OF POLYURETHANE FOAMS

Mark A. Koshute, Beaver, Pa., assignor to Miles Inc., Pittsburgh, Pa.

Filed Jul. 10, 1992, Ser. No. 911,838

Int. Cl.[5] C08J *9/00*; C08G *18/32*

U.S. Cl. 521—129 2 Claims

1. An improved process for preparing foams comprising reacting a polyisocyanate with a dispersion of polyurea and/or polyhydrazodicarbonamide in a hydroxyl-group containing material dispersing agent wherein the dispersion is prepared by reacting:

(a) an organic polyisocyanate with

(b) a member selected from the group consisting of (i) a polyamine containing primary and/or secondary amino groups, (ii) a hydrazine, (iii) a hydrazide, and (iv) a mixture thereof, in

(c) a hydroxyl-group-containing material wherein the hydroxyl group is secondary in an instance when (b) contains a primary hydroxyl group; the improvement wherein said

dispersion contains from 1 to 19% by weight of in situ formed low solids content

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5,332,764
POLYETHER POLYOL PRODUCTION OF A FLEXIBLE URETHANE FOAM AND SHAPED ARTICLE THEREFROM

Yoshihiko Tairaka, Sakai; Mitsuhiro Nishimura, Osaka, and Katsuhisa Kodama, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 28, 1993, Ser. No. 141,942
Claims priority, application Japan, Oct. 28, 1992, 4-290087
Int. Cl.[5] C08G *18/00*
U.S. Cl. 521—174 8 Claims

1. A process for producing a flexible urethane foam characterized by reacting a polyol comprising the polyether polyol obtained by addition polymerization of an ethylene oxide to an N-aminoethylpiperazineethylene oxide adduct as an initiator, said polyether polyol having a molecular weight of about 2000 to 7000 with an organic polyisocyanate in the presence of a surfactant and a blowing agent

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5,332,765
MICROBICIDAL AGENTS

Jens-Peter Lorentzen, Cologne; Georg-Wilhelm Ludwig, and Wilfried Paulus, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 9, 1992, Ser. No. 988,079
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1991, 4141953
Int. Cl.[5] C09D *5/14*
U.S. Cl. 523—122 11 Claims

1. A microbicidal composition for the protection of aqueous functional fluids comprising iodopropargyl N-butylcarbamate (IPBC) and benzyl alcohol mono(poly)hemiformal (BHF).

5,332,766
WATER-DISPERSIBLE RESIN COMPOSITION, WATER-DISPERSIBLE COATING COMPOSITION AND COATING METHOD USING THE COATING COMPOSITION

Yasuo Takaya, Kanagawa; Masaru Mitsuji, Zama, and Mitsugu Endo, Kanagawa, all of Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan

Division of Ser. No. 641,632, Jan. 17, 1991, Pat. No. 5,288,771, which is a continuation of Ser. No. 365,862, Jun. 14, 1989, abandoned. This application Mar. 1, 1993, Ser. No. 24,083
Claims priority, application Japan, Jun. 15, 1988, 63-147304; Sep. 30, 1988, 63-248474
Int. Cl.[5] C08L *83/00;* C08F *265/04;* C08G *77/00*
U.S. Cl. 523—201 6 Claims

1. A water-dispersible coating composition comprising a cross-linking agent selected from the group consisting of methylolated amino resins and these resins as etherified with alkyl, and a water-dispersible resin composition prepared by a process comprising:

(I) reacting a silane monomer (A) having hydrolytic functional groups and/or silanol groups and a polymerizable unsaturated bond with a hydroxy-containing vinyl monomer selected from the group consisting of hydroxy C_{2-10} alkyl acrylates and methacrylates and another vinyl monomer (B) in an aqueous medium to obtain a three-dimensional cross-linked particulate polymer, (II) reacting the obtained particulate polymer with the silane monomer (A) and/or an allyl acrylate or allyl methacrylate (C), and (III) copolymerizing the resulting reaction product with a vinyl monomer component comprising a carboxyl-containing vinyl monomer (D), followed by neutralizing the carboxyl group, whereby a particulate polymer having a core/shell structure is obtained.

5,332,767
SYNTHETIC RESIN-COATED METAL PIGMENT, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF

Wolfgang Reisser, Schnaittach, and Guenter Sommer, Lauf, both of Fed. Rep. of Germany, assignors to Eckart-Werke Standard Bronzpulver-Werke Carl Eckart GmbH & Co., Fuerth, Fed. Rep. of Germany

Filed Jan. 25, 1991, Ser. No. 647,511
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1990, 4030727
Int. Cl.[5] C08K *5/54;* C09C *1/62, 1/64, 3/12*
U.S. Cl. 523—209 29 Claims

1. A synthetic resin-coated pigment of non-oxidized elemental metal having a protective sealing structure, comprising

a siloxane coating covalently bonded to the surface of said elemental metal pigment particles, the siloxane coating having a minimum thickness which corresponds to a monomolecular covering on the surface of said elemental pigment particles, said siloxane coating being formed from a silane derivative silicon-organic compound having at least one organic reactive group selected from the group consisting of amino, epoxy, acryl, methacryl, vinyl and mercapto, and

a three dimensionally cross-linked synthetic resin coating covalently bonded to the siloxane coating, said synthetic resin comprising reaction product of at least one low molecular weight, cross-likable compound, containing functional groups selected from the group consisting of epoxy, isocyanate, phenol, amine, acryl, methacryl, vinyl, allyl, olefin and isocyanate, reacted with said siloxane coating,

wherein said silicon-organic compound organic reactive group is

amino, when said low molecular weight compound functional groups are selected from the group consisting of epoxy, isocyanate and phenol;

epoxy, when said low molecular weight compound functional groups are amine;

mercapto, when said low molecular weight compound functional groups are selected from the group consisting of epoxy, isocyanate and olefin; or

is a reactive group selected from the group consisting of acryl, methacryl and vinyl, when said low molecular weight compound functional groups are selected from the group consisting of acryl, methacryl, vinyl and allyl.

5,332,768
METHOD OF REDUCING THE CONCENTRATION OF A LIQUID RESIN IN AN AQUEOUS COMPOSITION

Roy E. Quartermaine, Wadenswil, Switzerland, and Yvonne M. Goerlach-Doht, Hamburg, Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1993, Ser. No. 13,602
Claims priority, application United Kingdom, Mar. 3, 1992, 9204600.2
Int. Cl.[5] C08K *3/20;* C08L *63/02*
U.S. Cl. 523—402 20 Claims

1. A method of reducing the concentration of a liquid resin in an aqueous composition containing an emulsified liquid resin and at least one ionic compound, which method comprises contacting the aqueous composition with a solution of a non-ionic cellulose ether in a liquid diluent to produce an agglomerate of the cellulose ether and the liquid resin.

5,332,769
ELECTRON RADIATION CURING TYPE ADHESIVE AND POLYESTER FILM LAMINATED METAL PLATE THEREOF

Michiyuki Kakimoto; Ryuichi Eguchi; Atsushi Kobayashi, all of Shimizu; Tadashi Nishimoto, Hiratsuka; Shozo Iseki, Hiratsuka, and Tsutomu Maruyama, Hiratsuka, all of Japan, assignors to Daiwa Can Company, Tokyo and Kansai Paint Co., Ltd., Hyogo, both of Japan

Filed Jan. 14, 1993, Ser. No. 2,767
Claims priority, application Japan, Jan. 31, 1992, 4-059845
Int. Cl.[5] C08K *3/00, 3/34, 3/20*
U.S. Cl. 523—513 9 Claims

1. An electron radiation curing adhesive composition comprising 0.5 to 250 PHR of a stress relaxation agent, and a resin composition having 0.3 to 5.0 mol/kg molecule of polymeric unsaturated double-bonds, said resin composition containing 100 weight parts of a thermoplastic polyester resin having a number-average molecular weight of 7,000 to 40,000 blended with 2 to 200 weight parts of a polyester group oligomer having a number-average molecular weight of 300 to 5,000.

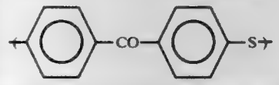
5,332,770
ELECTRONIC DEVICE SEALING RESIN COMPOSITIONS AND SEALED ELECTRONIC DEVICES

Toshitaka Kouyama; Keiichiro Suzuki; Toshio Enoki, and Yasuo Sakaguchi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 431,119, Nov. 3, 1989, abandoned. This application Aug. 6, 1992, Ser. No. 925,331
Claims priority, application Japan, Nov. 12, 1988, 63-284836; Sep. 26, 1989, 1-248087
Int. Cl.[5] C08K *5/24*
U.S. Cl. 524—262 8 Claims

1. An electronic device sealing resin composition comprising:

(A) 40–25 parts by weight of a thermoplastic resin composed of (i) 100–10 wt. % of a poly(arylene thioether-ketone) having at least 50 wt. % of recurring units of the formula

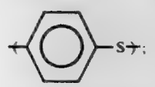


wherein the —CO— and —S— are in the para position to each other, and having the following physical properties (a)-(c):

(a) a melting point, Tm, of 310°–380° C.;

(b) a melt crystallization temperature, Tmc (420° C./10 min), of at least 210° C., and a residual melt crystallization enthalphy, Δ Hmc (420° C./10 min) of at least 10 J/g, wherein ΔHmc (420° C./10 min) and Tmc (420° C./10 min) are determined by a differential scanning calorimeter at a cooling rate of 10° C./min. after the poly(arylene thioether-ketone) is held at 50° C. for 5 minutes in an inert gas atmosphere, heated to 420° C. at a rate of 75° C./min and then held for 10 minutes at 420° C.; and

(c) a reduced viscosity, η_{red} being 0.2–2 dl/g as determined by viscosity measurement at 25° C. and a polymer concentration of 0.5 g/dl in 98% by weight sulfuric acid; and (ii) 0–90 wt. % of a poly(arylene sulfide) containing at least 50 wt. % of recurring units of the formula



(B) 60–75 parts by weight of silica; and

(C) 1.5–5 parts by weight, per 100 parts by weight of the thermoplastic resin (A) and the silica (B) combined, of a silicone oil having a viscosity of 10–10,000 centistokes at 25° C.

5,332,771
HIGH-PERFORMANCE WATER-BASED CHLOROPRENE POLYMER ADHESIVE COMPOSITION

Lance A. Christell, Prospect, Ky., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 7, 1992, Ser. No. 986,449
Int. Cl.[5] C08L *9/10;* C08K *5/36*
U.S. Cl. 524—270 10 Claims

1. An adhesive composition particularly suitable for use in applications requiring postforming consisting essentially of about 100 parts of a copolymer of 2-chloro-1,3-butadiene with 2,3-dichloro-1,3-butadiene, the proportion of 2,3-dichloro-1,3-butadiene being 2% to 20% based on the total weight of the copolymer, 15 to 75 parts of rosin ester; 1 to 10 parts of a metal oxide selected from the group consisting of zinc oxide and magnesium oxide, all parts being by weight; and a sufficient amount of water to make the solids content of the composition 40–65 weight percent;

with the proviso that said copolymer of 2-chloro-1,3-butadiene with 2,3-dichloro-1,3-butadiene is prepared by free radical emulsion copolymerization of the comonomers in the presence of 0.05 to 0.3 weight percent of a dialkylxanthogen disulfide, based on the total weight of the two comonomers, at a temperature within the range of about 0° C. to 35° C.

5,332,772
COMBINATION HEAT STABILIZER/LUBRICANT FOR PVC PROCESSING AND METHOD FOR PRODUCING THE SAME

George F. Beekman, Middletown; Lionel R. Price, and Keith A. Mesch, both of Cincinnati, all of Ohio, assignors to Morton International, Inc., Chicago, Ill.

Filed May 5, 1993, Ser. No. 57,724
Int. Cl.[5] C08K *5/36*
U.S. Cl. 524—301 6 Claims

1. A method for the preparation of a zinc mercaptoester comprising heating a mixture of zinc oxide, a mercaptoester having the formula HS-[$CH_2C(=O)OR]_x$—$(CH_2)_y$—C(=O)OR] wherein R is a straight or branched chain saturated or unsaturated alkyl radical having from 1 to 20 carbon atoms, x=0 or 1, y=1 or 2, and y=1 when x=1, and paraffin wax to a temperature at least equal to the melting range of the wax, and removing water as it forms.

5,332,773
HIGHLY FILLED THERMOPLASTIC CARPET PRECOAT COMPOSITIONS

Franklin R. Baker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 784,244, Oct. 29, 1991, abandoned. This application Sep. 1, 1993, Ser. No. 113,917
Int. Cl.[5] C08K *5/09, 3/30, 3/26;* C08L *31/04*
U.S. Cl. 524—322 7 Claims

1. A precoat composition comprising a blend of

(A) 18–28 wt. % total ethylene/vinyl acetate copolymer comprising at least one ethylene/vinyl acetate copolymer wherein at least 30 wt. % of the total ethylene/vinyl acetate copolymer is an ethylene/vinyl acetate copolymer with a melt index of greater than 300, prepared using a substantially non-incorporating chain transfer agent, selected from the group consisting of acetone and propane, wherein the average vinyl acetate content of the total ethylene/vinyl acetate copolymer is from 20–32 wt. %, and wherein the vinyl acetate content of any one ethylene/vinyl acetate copolymer is from 10 to 40 wt. %,

(B) 4–12 wt. % processing oil,

(C) 60–80 wt. % of a filler,

(D) 0–1 wt. % of an organic acid selected from stearic, oleic,

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palmitic and dimers and trimers thereof, wherein the melt index of the blend is from 60 to 300; the total of (A), (B), (C), (D) equalling 100%.

5,332,774

POLYVINYL ACETAL RESINS BASED ON HYDROXYALDEHYDES AND USE OF THE RESINS IN LAMINAR STRUCTURES

Jeffrey A. Klang, Exton; Michael J. Cannarsa, West Chester; Frank J. Liotta, Jr., Collegeville, all of Pa., and Scott E. Smyth, Riverton, N.J., assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Oct. 16, 1992, Ser. No. 963,298

Int. Cl.[5] C08F *8/28, 16/06;* **C08K** *5/05*

U.S. Cl. 524—377 **6 Claims**

1. A plasticized polyvinyl acetal composition comprising:

(a) a polyvinyl acetal resin derived from polyvinyl alcohol and 4-hydroxybutanal; and

(b) a plasticizer selected from the group consisting of C_2-C_{30} aliphatic mono-, di-, and polyfunctional alcohols, ethers, and glycol ethers; polyoxyalkylene polyols; and ethers derived from polyoxyalkylene polyols.

5,332,775

Patent Not Issued For This Number

5,332,776

COATING COMPOSITIONS

Robert D. M. Best, Brussels, Belgium, and Jean F. Brument, Rouen, France, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 801,315, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 395,047, Aug. 17, 1989, abandoned. This application Oct. 7, 1992, Ser. No. 957,573

Claims priority, application United Kingdom, Aug. 18, 1988, 88-19653.0

Int. Cl.[5] C08K *3/26, 3/30*

U.S. Cl. 524—419 **16 Claims**

1. A blend, having a solids content of greater than 60 weight percent, and consisting essentially of from 10 to 90 parts by weight of basic, colloidal disperse, non-thixotropic calcium sulphonate composition comprising calcium carbonate having substantially no infra-red absorbance at 884 cm^{-1} and from 90 to 10 parts by weight of a polymer, which has the following properties:

i a low degree of crystallinity of less than 50%,

ii a number average molecular weight in the range of from about 3,000 to about 1 million, and

iii a high solubility in predominantly aliphatic hydrocarbon solvents.

5,332,777

UNREINFORCED POLYAMIDE MOLDING MATERIALS

Walter Goetz, and Walter Betz, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 25, 1992, Ser. No. 950,496

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 4131986

Int. Cl.[5] C08K *3/10*

U.S. Cl. 524—437 **7 Claims**

1. An unreinforced polyamide molding material, consisting essentially of

A) from 60 to 100% by weight of a mixture consisting of

A_1) from 97.5 to 99.85% by weight of one or more polyamides,

A_2) from 0.05 to 0.5% by weight of aluminum hydroxide and

A_3) from 0.1 to 2% by weight of one or more esters or amides of saturated or unsaturated aliphatic carboxylic acids of 10 to 40 carbon atoms with aliphatic saturated alcohols or a/nines of 2 to 40 carbon atoms

and, based on the total weight of the polyamide molding material,

B) from 0 to 40% by weight of an elastomeric polymer.

5,332,778

PRODUCTION OF REINFORCED POLYTETRAMETHYLENEADIPAMIDE

Gunter Pipper, Bad Durkheim, and Walter Goetz, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 747,327, Aug. 20, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 97,909

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1990, 4026404

Int. Cl.[5] C08L *77/06;* **C08K** *3/40;* **C08G** *69/30*

U.S. Cl. 524—606 **6 Claims**

1. A process for preparing nylon-4,6 filled with a reinforcing agent by mixing a reinforcing agent with nylon-4,6 in the melt, comprising the steps of

a) polycondensing a salt of 1,4-diaminobutane and adipic acid in the presence of excess 1,4-diaminobutane and water at polyamide-forming temperatures under superatmospheric pressure to give a precondensate having a relative viscosity ≤ 1.60,

b) polycondensing the precondensate of a) in solid phase in the presence of steam at 220°–270° C. to obtain a nylon-4,6 having a relative viscosity of from 2.0 to 2.6,

c) incorporating a reinforcing agent in the melt into nylon-4,6 from stage b) to obtain a nylon-4,6 filled with a reinforcing agent,

d) polycondensing said filled nylon-4,6 in solid phase in the presence of steam at 220°–270° C. to a relative viscosity of at least 3.2.

5,332,779

POLYMERIZABLE SILICA SOL, ADAMANTANE DERIVATIVE FOR USE IN THE SOL AND CURED RESIN PREPARED USING THE SAME

Taizo Mohri; Katsuhiko Takagi; Yoshihiro Naruse, all of Chiba, and Yukio Asami, Tokyo, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Filed May 31, 1991, Ser. No. 708,699

Claims priority, application Japan, Jun. 4, 1990, 2-145993; Jun. 18, 1990, 2-159489; Jun. 18, 1990, 2-159490; Jun. 18, 1990, 2-159491

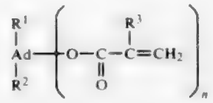
Int. Cl.[5] C08K *3/34*

U.S. Cl. 524—790 **29 Claims**

1. A polymerizable silica sol comprising a colloidal silica dispersed in a dispersion medium, wherein the dispersion medium comprises:

at least one compound selected from the group consisting of compounds represented by the formulae

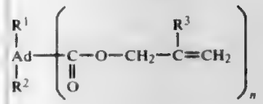
(I)



and

-continued

(II)



and wherein Ad is an adamantane group R^1 and R^2 are independently selected form hydrogen, methyl or ethyl, R^3 is hydrogen or methyl and n is an integer of 1 or 2; and at least one compound selected from non-hydroxy containing (meth) acrylate-based monomer.

5,332,780

COMPOSITIONS CONTAINING ALLYLFORMAMIDE COPOLYMERS

Naoki Kitazawa; Manabu Kikuta; Hiroshi Hotta; Yutaka Nakayama, all of Kyoto, and Hideyuki Sumi, Osaka, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Apr. 8, 1993, Ser. No. 44,591

Claims priority, application Japan, Apr. 10, 1992, 4-090582; Jul. 14, 1992, 4-186535

Int. Cl.[5] C08L *77/00, 69/00, 67/02, 33/24*

U.S. Cl. 525—64 **16 Claims**

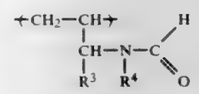
9. A thermoplastic resin composition including the following component A, component B and component C:

(A) a polymer component having a functional group capable of reacting with an amino group;

(B) a thermoplastic resin component that is essentially non-reactive with an amino group under conditions required to mold the resin composition; and

(C) a copolymer including, in the molecule, a formamide constituent repeating unit (II) expressed by the following chemical formula, and a repeating unit of an ethylenic unsaturated monomer

(II)



wherein R^3 and R^4, the same or different, represent a hydrogen atom, an alkyl group with 1 to 8 carbon atoms, a cycloalkyl group with 6 to 10 carbon atoms, an aryl group with 6 to 10 carbon atoms, or an aralkyl group with 6 to 10 carbon atoms.

5,332,781

STORAGE-STABLE SUSPENSION OF TOUGHENERS IN EPOXY RESIN HARDENERS

Sameer H. Eldin, Courtepin; Robert P. Peyer, Lausen, both of Switzerland, and Frans Setiabudi, Bad Krozingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 22, 1993, Ser. No. 80,797

Claims priority, application Switzerland, Jun. 25, 1992, 2008/92-3

Int. Cl.[5] C08L *51/04, 9/04, 13/02, 63/02*

U.S. Cl. 525—65 **7 Claims**

1. A storage-stable suspension consisting of a solid or liquid epoxy resin hardener and homogeneously dispersed therein particles of a toughener which does not contain groups that react with the hardener wherein the suspension is subsequently mixed with an epoxy resin.

5,332,782

IMPACT STRENGTH MODIFIERS FOR THERMOPLASTIC POLYMERS

Wan-Li Liu, Levittown, and Susan M. Liwak, Langhorne, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 346,296, May 1, 1989, abandoned, which is a continuation of Ser. No. 900,878, Aug. 27, 1986, abandoned. This application Feb. 26, 1993, Ser. No. 23,732

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—66 **7 Claims**

1. A toughened composition comprising from about 95 to about 5% by weight of a polyamide and from about 5 to about 95% by weight of a polymer modifier which comprises

A) from about 80 to about 99 parts by weight of a core-shell impact-property-modifier polymer having

i) from about 50 to about 90 parts by weight of a rubbery core polymer of conjugated diolefin or alkyl acrylate having 2 to 8 carbon atoms in the alkyl group, or mixture thereof, having a glass-transition temperature below −20° C., and

ii) from about 10 to about 50 parts by weight of one or more shells of polymer, each shell being different from the core or any adjacent shell, at least one of the shells being a copolymer of

a) a monomer selected from styrenic monomers, acrylonitrile, methacrylonitrile, or alkyl esters of acrylic or methacrylic acid, the alkyl group having from 1 to 8 carbon atoms with

b) from about 0.5 to about 25%, based on the total weight of the copolymer, of a first copolymerizable unsaturated carboxylic acid, anhydride or mixture thereof, and

B) from about 1 to about 20 parts by weight of an additive copolymer consisting essentially of about 5 parts by weight of an alkyl acrylate having from 1 to 8 carbon atoms in the alkyl group, with about 57 parts by weight of methyl methacrylate, and about 38 parts by weight of a second copolymerizable unsaturated carboxylic acid, wherein the Notched Izod of the additive copolymer is about 9 joules/meter, at 23° C. and the tensile modulus of the additive copolymer is about 678,000 psi.

5,332,783

COMPATIBLE BLENDS OF EPOXY RESINS AND EPOXIDIZED POLYDIENES

Steven H. Dillman, Houston; Michael A. Masse, Richmond, and James R. Erickson, Katy, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 12, 1993, Ser. No. 90,856

Int. Cl.[5] C08L *53/00, 63/00, 63/08*

U.S. Cl. 525—92 **7 Claims**

1. A polymer blend having sufficient compatibility to form a homogeneous mixture comprising:

(a) a curable aromatic epoxy resin,

(b) up to 60% by weight of an epoxidized polydiene polymer, and

(c) an anhydride or polycarboxylic acid curing agent;

wherein the epoxidized polydiene has the formula

$$(A—B—A_p)_n—Y—(A_q—B)_m$$

wherein Y is a coupling agent or coupling monomers or initiator, and A and B are polymer blocks which are homopolymer blocks of conjugated diolefin monomers, copolymer blocks of conjugated diolefin monomers, copolymer blocks of diolefin monomers and monoalkenyl aromatic hydrocarbon monomers or homopolymer blocks of monoalkenyl aromatic hydrocarbon monomers; and the A blocks have a peak molecular weight as measured by Gel Permeation Chromatography of from 100 to 3000 and the B blocks have a peak molecular weight as measured by Gel Permeation Chromatography of from 1000 to 15,000; and n is greater than 0, r is 0 or 1, m is

greater than or equal to 0, the sum of n and m ranges from 1 to 100, and p and q may be 0 or 1.

5,332,784

TERMINAL-MODIFIED BLOCK COPOLYMER AND COMPOSITIONS CONTAINING THE SAME

Toshinori Shiraki, Yamato, and Yasuo Hattori, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

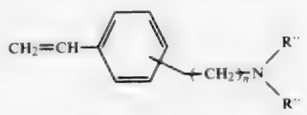
Division of Ser. No. 373,677, Jun. 29, 1989, Pat. No. 5,115,035, which is a continuation of Ser. No. 939,483, Nov. 25, 1986, abandoned. This application May 13, 1992, Ser. No. 882,020

Claims priority, application Japan, Oct. 11, 1985, 60-224086; Nov. 19, 1985, 60-257739; Jan. 31, 1986, 61-181951; Jun. 5, 1986, 61-129179

Int. Cl.[5] **C08F** *297/04*; **C08L** *53/02*

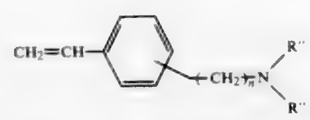
U.S. Cl. 525—98 **18 Claims**

1. A terminal-modified block copolymer having a terminal-treating agent bonded to the polymer terminal which is obtained by treating an active terminal of a block copolymer which comprises conjugated dienes and vinyl-aromatic hydrocarbon compounds and which is obtained by use of at least one member selected from alkali metals or organoalkali metals as a polymerization initiator and has a vinyl aromatic hydrocarbon content of 5 to 95% by weight and a number average molecular weight of 5,000 to 1,000,000 with at least one terminal-treating agent selected from the group consisting of compounds having at least one >C=N— linkage in their molecule, compounds having at least one —N=C=N— linkage in their molecule, compounds having at least one >N—C=N linkage in their molecule, and compounds represented by the general formula



wherein R'' is an alkyl group of 1 to 22 carbon atoms, cycloalkyl group, arylalkyl group, aryl group, or substituted aryl group; and n is an integer of 0 to 6.

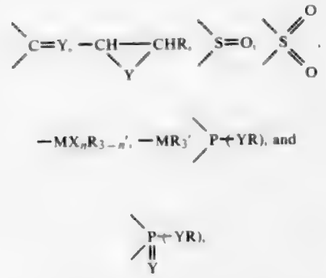
9. A process for producing a terminal-modified block copolymer having a terminal-treating agent bonded to the polymer terminal which comprises treating an active terminal of a block copolymer comprising conjugated dienes and vinylaromatic hydrocarbon compounds which is obtained in a hydrocarbon solvent by use of at least one member selected from the group consisting of alkali metals and organo-alkali metals as a polymerization initiator, with at least one terminal-treating agent selected from the group consisting of compounds having at least one >C=N— linkage in their molecule, compounds having at least one —N=C=N— linkage in their molecule, compounds having at least one >N—C=N linakage in their molecule, and compounds represented by the general formula



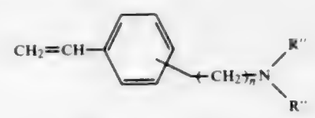
wherein R'' is an alkyl group of 1 to 22 carbon atoms, cycloalkyl group, arylalkyl group, aryl group, or substituted aryl group; and n is an integer of 0 to 6, in a proportion of 0.7 to 2 molecules of said terminal-treating agent relative to one atom of the alkali metal present at the polymer terminal.

10. A composition which comprises:

(a) 2 to 98 parts by weight of a terminal-modified block copolymer having a terminal-treating agent bonded to the polymer terminal which is obtained by treating an active terminal of a block copolymer which comprises conjugated dienes and vinylaromatic hydrocarbon compounds and which is obtained by use of at least one member selected from the group consisting of alkali metals and organo-alkali metals as a polymerization initiator and has a vinylaromatic hydrocarbon content of 5 to 95% by weight and a least one terminal-treating agent selected from the compounds containing at least one functional group represented by the following general formula



wherein R is hydrogen, an alkyl group of 1 to 22 carbon atoms, cycloalkyl group of 4 to 22 carbon atoms, aryl group of 6 to 22 carbons, or arylalkyl group, R' is the same as R or is an alkoxy group; M is silicon or tin; X is a halogen; Y is sulfur, Z is oxygen, sulfur or nitrogen, and n is an integer of 1 to 3, or compounds represented by the following general formula



wherein R'' is an alkyl group of 1 to 22 atoms, cycloalkyl group, arylalkyl group, aryl group, or substituted aryl group; and n is an integer of 0 to 6, and

(b) 98 to 2 parts by weight of a resinous substance which comprises (1) at least one highly water-absorbing crosslinking resin selected from the group consisting of the crosslinking product of the reaction product of a copolymer of maleic acid or the anhydride thereof and α-olefin with an alkali metal compound, alkaline earth metal compound, ammonia or amine; the crosslinking product of the reaction product of a copolymer of maleic acid or the derivative thereof and a vinyl of vinylidene compound with an alkali metal compound, alkaline earth metal compound, ammonia or amine; and the crosslinking product of the reaction product of a copolymer of acrylic or methacrylic acid and a vinyl or vinylidene compound with an alkali metal compound, alkaline earth metal compound, ammonia or amine; or (2) at least one polar thermoplastic polymer selected from the group consisting of aliphatic unsaturated carboxylic acid-containing polymer, polyamide polymer, polyester polymer, thermoplastic polyurethane polymer, vinyl alcohol polymer, polyoxymethylene polymer, polycarbonate polymer, polysulfone polymer, polyphenylene ether polymer, polyarylene sulfide polymer and polyvinyl chloride polymer.

5,332,785

LIQUID COATING COMPOSITION COMPRISING ACETOACETATE MODIFIED EPOXY RESIN AND BLOCKED POLYAMINE

Gerhard Brindoepke, Sulzbach/Ts., Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 39,948

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1992, 4210333

Int. Cl.[5] **C08F** *8/32*; **C09D** *3/727*

U.S. Cl. 525—111 **12 Claims**

1. A liquid coating composition comprising a polymer containing acetoacetate groups and a polyamine in the form of its corresponding aldimine or ketimine, wherein the polymer containing acetoacetate groups is obtained by reacting a polyepoxide containing hydroxyl groups, or a polyepoxide which is partially reacted with monocarboxylic acids, with acetoacetic acid esters, diketene or 2,26-trimethyl-1,3dioxane-4-one.

5,332,786

REACTIVE HOTMELT ADHESIVE COMPOSITION

Mitsuo Nagata, Saitama; Toshiyuki Adachi, and Masatoshi Asakura, both of Shiga, all of Japan, assignors to Sekisui Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 587,918, Sep. 25, 1990, abandoned. This application Mar. 19, 1993, Ser. No. 34,618

Claims priority, application Japan, Sep. 27, 1989, 1-250964

Int. Cl.[5] **C08L** *45/02, 75/04, 93/04*

U.S. Cl. 525—130 **7 Claims**

1. A reactive hotmelt adhesive composition consisting of a urethane prepolymer having a melt viscosity in the range of 1,000 to 30,000 cps at 85° C. and an isocyanate group at each of its opposite ends, and obtained by reacting a diisocyanate with a polyolefin diol having a hydroxy group at each of its opposite ends; and a tackifier substantially unreactive with the urethane prepolymer and compatible therewith; said adhesive composition having a melt viscosity in the range of 3,200 to 40,000 cps at 100° C.

5,332,787

VULCANIZATION PROCESS USING BASIC ZINC CARBONATE HYDROXIDE

Irwin J. Gardner, Scotch Plains, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 753,489, Sep. 3, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,114

Int. Cl.[5] **C08L** *25/16, 23/28*; **C08F** *8/34, 8/18*

U.S. Cl. 525—134 **11 Claims**

1. A process for vulcanizing a halogen-containing copolymer of a C4 to C7 isomonoolefin and a para-alkylstyrene, which comprises the step of contacting said copolymer at vulcanization conditions with a vulcanization mixture comprising (a) a zinc compound selected from the group consisting essentially of basic zinc carbonate hydroxides being present in a molar ratio to said halogen-containing copolymer in a range of from about 0,05:1 to about 5:1, and (b) a component selected from the group consisting of a dialkyldithiocarbamate, a diaryldithiocarbamate, an alkyl thiuram sulfide, an aryl thiuram sulfide, a phenolformaldehyde resin, and mixtures thereof.

5,332,788

PROCESS FOR PRODUCING GRAFT-MODIFIED ALPHA-OLEFIN COPOLYMER

Masuzo Yokoyama; Shinichi Yamauchi; Hiroshi Nakano; Michiharu Kihira, and Hiroshi Omori, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Continuation of Ser. No. 677,777, Mar. 29, 1991, abandoned, which is a division of Ser. No. 264,433, Oct. 28, 1988, Pat. No. 5,037,890. This application Apr. 3, 1992, Ser. No. 864,204

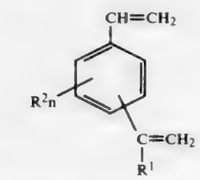
Claims priority, application Japan, Nov. 2, 1987, 62-277687; Nov. 6, 1987, 62-280737

Int. Cl.[5] **C08F** *255/02, 255/08, 4/46*

U.S. Cl. 525—250 **7 Claims**

1. The process for producing a graft-modified α-olefin copolymer, which comprises the following steps (a) and (b):

Step (a) which is a step of copolymerizing, with the use of a Ziegler-Natta catalyst comprising a transition metal compound and an organometal compound, an α-olefin having 2 to 20 carbon atoms with a dialkenylbenzene represented by the formula:



wherein, R^1 represents a hydrogen atom or a methyl group, R^2 represents a hydrocarbyl group having 1 to 6 carbon atoms and n represents 0 or 1, thereby to prepare a random copolymer of the α-olefin with the dialkenylbenzene such that a first alkenyl group is utilized in the copolymerization with a second alkenyl group in the dialkenylbenzene remaining unpolymerized, the amount of the dialkenylbenzene in the copolymer being in an amount of 0.001 to 10% by weight; and

Step (b) which is a step of graft-polymerizing, with the use of an anion-polymerization initiator, an anionically polymerizable monomer which is styrene onto said copolymer obtained in the step (a), said anion-polymerization initiator being selected from the group consisting of organometallic compounds having a metal-carbon bond of an alkali metal or an alkaline earth metal, the step (b) being conducted by adding the catalyst after the addition of styrene to the copolymer in the step (a), thereby to produce a graft copolymer such that styrene has been polymerized onto the unpolymerized alkenyl group on the copolymer prepared in the step (a).

5,332,789

POLYPROPYLENE BLOCK COPOLYMER RESIN AND COMPOSITIONS

Akira Tanaka; Masaru Nakagawa; Hideo Kusuyama; Sueto Miyazaki, and Tatsuya Housaki, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00807, § 371 Date Feb. 26, 1993, § 102(e) Date Feb. 26, 1993, PCT Pub. No. WO93/00375, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 25, 1992, Ser. No. 974,591

Claims priority, application Japan, Jun. 27, 1991, 3-183257; Jun. 28, 1991, 3-183629; Jun. 28, 1991, 3-183630; Jun. 28, 1991, 3-183631; Jun. 28, 1991, 3-183633; Jun. 28, 1991, 3-183634

Int. Cl.[5] **C08F** *210/06*

U.S. Cl. 525—323 **5 Claims**

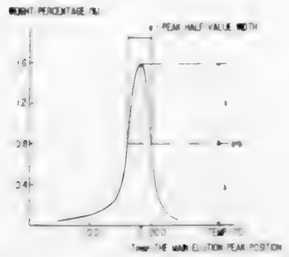
1. A polypropylene block copolymer of a preformed propylene homopolymer copolymerized with at least one other α-olefin, wherein:

(1) said preformed propylene homopolymer has a content of

alpha-olefin other than propylene of not more than 4 mole percent, and the following properties (2), (3) and (4):

(2) a pentad fraction (mmmm fraction) measured by ^{13}C-MNR of not less than 96.0 percent,

(3) a main elution fraction peak position of not less than 118.0° C. and a peak half value width of less than 4.0, these



values being measured by a temperature raising separation method, and

(4) an intrinsic viscosity of not less than 0.5 dl/g, but not more than 5.0 dl/g; and

wherein said polypropylene block copolymer has

(5) a rubber content measured by pulse NMR of more than 25 percent.

5,332,790

LIQUID-PHASE FLUORINATION

Thomas R. Bierschenk; Timothy Juhlke, both of Round Rock; Hajimu Kawa, and Richard J. Lagow, both of Austin, all of Tex., assignors to Exfluor Research Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 822,637, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 414,119, Sep. 28, 1989, Pat. No. 5,093,432, which is a continuation-in-part of Ser. No. 250,376, Sep. 28, 1988, abandoned. This application Mar. 8, 1993, Ser. No. 28,682

Int. Cl.[5] C07C *17/02, 19/02*

U.S. Cl. 525—331.6 **28 Claims**

1. A fluorination method for replacing essentially all of the hydrogen atoms of a hydrogen-containing compound with fluorine atoms, comprising:

a) continuously introducing said hydrogen-containing compound into a liquid perfluorocarbon, perhalogenated chlorofluorocarbon or chlorofluoroether medium while agitating the medium so that the hydrocarbon-containing compound is dissolved or dispersed within the liquid medium;

b) introducing fluorine gas diluted with an inert gas into the liquid medium without illumination with ultraviolet light to establish fluorination conditions wherein the liquid medium and fluorine in the vapor space above the liquid medium do not form a flammable mixture at the fluorination conditions, the fluorination conditions being sufficient to replace hydrogen atoms in said hydrogen-containing compound with fluorine atoms; and

c) continuing the introduction of fluorine gas diluted with an inert gas under the fluorination conditions without illumination with ultraviolet light until essentially all of the hydrogen atoms of the hydrogen-containing compound have been replaced with fluorine atoms without substantial oligomerization and/or polymerization of the hydrogen-containing compound.

5,332,791

POLYISOBUTYLENE HYDROCARBON OR POLYMER CONTAINING A DOUBLE BOND ALLYLIC TO AN END AMINO GROUP

Konrad Knoll, Mannheim; Klaus Bronstert, Carlsberg, and Dietmar Bender, Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 744,743, Aug. 14, 1991, Pat. No. 5,212,248. This application Nov. 16, 1992, Ser. No. 977,084

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025961; Sep. 29, 1990, 4030914

Int. Cl.[5] C08F *110/10, 8/30*

U.S. Cl. 525—333.7 **2 Claims**

1. A polyisobutylene polymer having an end group of the formula

$$-CH_2-CH=CH-CH_2-R^1$$

where R^1 is a radical formed by reacting a polymer thereof having the structure

$$R-C(CH_3)_2-CH_2-C(CH_3)_2-CH_2-CH=CH-CH_2-Cl$$

where R is a polyisobutylene radical in a solvent with an excess of ammonia or a compound with primary or secondary amino groups or polyamine, amino alcohol, amino ether hydrazine or substituted hydrazine in the presence of a base.

5,332,792

COATING COMPOSITIONS CONTAINING OXIDIZED ETHYLENE-CARBON MONOXIDE COPOLYMERS AS RHEOLOGY MODIFIERS

Michael Jablon, Elizabeth, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Aug. 19, 1993, Ser. No. 109,139

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—539 **22 Claims**

1. An improved coating composition having one or more polymeric binders dispersed in a liquid medium wherein said one or more polymeric binders is selected from the group consisting of drying oils, alkyds, allylics, amino resins, epoxies, acrylics, phenolics, silicones, polyurethanes, coumarone indene resins, polamides, polycarbonates. polymers derived from the polymerization of α,β-unsaturated monomers, vinyl polymers and copolymers, cellulosic polymers, and rubbers, wherein the improvement comprises an anti-sag and anti-settling effective amount of an oxidized ethylene-carbon monoxide copolymer having an acid number as determined by a standardized titration of KOH of between about 4 and about 30 and a Brookfield viscosity at a temperature of 140° C. of between about 50 and about 800 centipoises.

5,332,793

ETHYLENE/PROPYLENE COPOLYMER RUBBERS

Kevin J. Cann, Rocky Hill, N.J., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 28, 1993, Ser. No. 84,287

Int. Cl.[5] C08F *2/34*

U.S. Cl. 526—129 **11 Claims**

1. A process for the production of EPRs comprising contacting ethylene, propylene, and, optionally, a diene, under polymerization conditions, with a catalyst system comprising:

(A) a catalyst precursor comprising:

(i) a vanadium compound, which is the reaction product of

(a) VX_3 wherein each X is independently chlorine, bromine, or iodine; and

(b) an electron donor, which is a liquid, organic Lewis base in which VX_3 is soluble;

(ii) a modifier having the formula BX_3 or $AlR_{(3-a)}X_a$ wherein

each R is independently alkyl having 1 to 14 carbon atoms; each X is as defined above; and a is 1 or 2; and

(iii) a support for said vanadium compound and modifier,

said catalyst precursor being in an independent or prepolymerized state,

wherein said independent catalyst precursor or said prepolymerized catalyst precursor have been pre-oxidized with an oxidant in an amount sufficient to increase the oxidation state of the vanadium by at least one;

(B) a cocatalyst consisting essentially of a compound having the formula $AlR_{(3-a)}X_a$ wherein R, X, and a are as defined above; and,

(C) optionally, a promoter, which is a chlorinated ester having at least 2 chlorine atoms; a saturated or unsaturated aliphatic halocarbon having at least 3 carbon atoms and at least 6 halogen atoms; or a haloalkyl substituted aromatic hydrocarbon wherein the haloalkyl substituent has at least 3 halogen atoms.

5,332,794

PROCESS OF PREPARING BUTADIENE-STYRENE COPOLYMER WITH NICKEL COMPOUND AND ALKYLALUMINOXANE COMPOUND CATALYSTS

Takayuki Ohtsu, Nara, and Kiyoshi Endo, Osaka, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 47,455

Claims priority, application Japan, Apr. 20, 1992, 4-099917

Int. Cl.[5] C08F *4/52, 236/10*

U.S. Cl. 526—169.1 **11 Claims**

1. A process for preparing a butadiene-styrene copolymer which comprises polymerizing a butadiene monomer and styrene monomer in the presence of a catalyst, wherein said catalyst comprises:

(A) a nickel compound, wherein said nickel compound is selected from the group consisting of a nickel salt of an organic carboxylic acid and an organic complex compound of nickel, wherein said nickel salt of an organic carboxylic acid is represented by the following formula:

$$(R^6-CO-O)_pNi$$

wherein R^6 is selected from the group consisting of an aliphatic-hydrocarbon, an alicyclic-hydrocarbon and an aromatic-hydrocarbon and p is the valence of nickel, and

(B) an alkylaluminoxane compound, wherein said alkylaluminoxane compound is a compound represented by formulas (I) or (II), or a mixture thereof:

$$R^1(Al(R^2)O)_nAl(R^3,R^4) \quad (I)$$

$$(Al(R^5)O)_m \quad (II)$$

wherein R^1, R^2, R^3, R^4 and R^5 are each an alkyl having from 1 to about 10 carbon atoms, n is an integer from 1 to about 100, and m is an integer from 2 to about 50, and wherein formula (I) represents a linear structure and formula (II) represents a cyclic structure, and

wherein said nickel compound is present in an amount of 0.001 to 10 mmole per 100 g of the combined amount of said butadiene monomer and said styrene monomer, and a molar ratio of aluminum in said alkylaluminoxane compound to nickel in said nickel compound is 1 to about 1×10^5.

5,332,795

SILICONE GEL COMPOSITION EXCELLENT IN DAMPING PROPERTY

Hironao Fujiki, Takasaki, and Hiroyasu Hara, Annaka, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,275

Claims priority, application Japan, Sep. 13, 1991, 3-262971

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—15 **4 Claims**

1. A silicone gel composition which will be cured to form a gel, comprising as essential components:

(A) 92 to 97 mol % of $(CH_3)_2SiO$ units, 3.0 to 5.0 mol % of $(C_6H_5)(CH_3)SiO$ units, 0.1 to 1.0 mol % of $(CH_3)SiO_{1.5}$ units, 0.1 to 1.5 mol % of $(CH_3)_2(CH_2{=}CH)SiO_{0.5}$ units, and 0.5 to 4.0 mol % of $(CH_3)_3SiO_{0.5}$ units,

(B) a hydrogenpolysiloxane containing at least one silicon-bonded hydrogen atom per molecule in such an amount that the number of the silicon-bonded hydrogen atoms is 0.5 to 1.5 per vinyl group bonded to silicon atoms in the component (A), and

(C) a platinum catalyst.

5,332,796

ORGANOPOLYSILOXANES AND METHODS FOR MAKING

Yuji Yoshikawa, Annaka, and Mitsuhiro Takarada, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

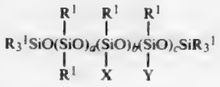
Filed May 7, 1993, Ser. No. 57,631

Claims priority, application Japan, May 8, 1992, 4-143226

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—15 **12 Claims**

1. An organopolysiloxane of the average compositional formula (1):



(1)

wherein X is an acryloxypropyl or methacryloxypropyl group,

Y is an organic group selected from the group consisting of carboxyethyl, carboxypropyl and carboxydecyl groups,

R^1 is an alkyl group having 1 to 6 carbon atoms or a phenyl group,

letters a, b and c are integers in the range: $0\leqq a\leqq 100$, $1\leqq b\leqq 20$, and $1\leqq c\leqq 20$.

5,332,797

SILICONE RELEASE COMPOSITIONS

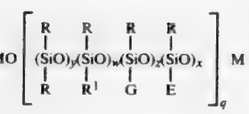
Carl R. Kessel, and Maureen C. Nelson, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 1, 1992, Ser. No. 861,647

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—27 **1 Claim**

1. An oligomeric epoxypolysiloxane of the formula



wherein

R is a lower alkyl group having one to three carbon atoms,

R' is a monovalent hydrocarbon group of 4 to 20 carbon atoms,

E is a monovalent linear or branched aliphatic epoxy group;

G is a monovalent cycloaliphatic epoxy group;

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M is a silyl group selected from the group consisting of R_3Si—, R_2R^1Si—, $RR^1{}_2Si$—, $R^1{}_3Si$—, R_2ESi—, RE_2Si—, E_3Si—, $R^1{}_2ESi$—, R^1E_2Si—, RR^1ESi—, R_2GSi, RG_2Si—, G_3Si—, $R^1{}_2GSi$—, R^1G_2Si—, RR^1GSi—, $REGSi$—, E_2GSi—, G_2ESi—, and R^1EGSi—, in which R, R^1, E and G are defined above;

y is zero or a number having a value of up to about 200;

w is zero or a number having a value of up to about 200-y;

x is zero or a number having a value of up to about 185;

z is zero or a number having a value of up to about 135; and

q is a number having a value of 1 to about 75; with the proviso that said epoxypolysiloxane comprises at least one G group and one E group, the ratio of G to E groups is from about 1:10 to 2:1, and the total number of E and G groups is about 5 to 50% of the total number of siloxane units.

5,332,798

FLUORINATED POLYURETHANES AND POLYURETHANE-UREAS, AND METHODS FOR PREPARING THEM

Enrico Ferreri, Pescara; Francesco Giavarini, Bergamo; Claudio Tonelli; Tania Trombetta, both of Milan, all of Italy, and Ronald E. Zielinski, Fort Wayne, Ind., assignors to Ausimont S.p.A., Milan, Italy

Filed Dec. 22, 1992, Ser. No. 994,667

Claims priority, application Italy, Dec. 23, 1991, MI91-A003467

Int. Cl.[5] C08G *18/10*

U.S. Cl. 528—61 **14 Claims**

1. Heat-processable, elastomeric fluorinated polyurethanes constituted by rubber-like blocks and hard blocks, comprising segments derived from:

(a) a diol of polyether or polyester type, or polybutadienediol, having an average molecular weight comprised within the range of from 500 to 4,000;

(b) a perfluoropolyether- or fluoropolyether-diol having an average molecular weight comprised within the range of from 400 to 10,000, of formula:

$$HO(CH_2CH_2O)_n—CH_2—Q—CH_2(OCH_2CH_2)_nOH$$

wherein:

n is comprised within the range of from 1 to 5, and

Q is a perfluoropolyether or fluoropolyether chain selected from the group consisting of:

$$(1)\ —CF_2—O—(CF_2CF_2O)_m(CF_2O)_p—CF_2— \qquad (I)$$

wherein (CF_2CF_2O) and (CF_2O) units are randomly distributed along the chain, and the ratio of m/p is comprised within the range of from 0.2 to 2;

$$(2)\ —CF_2CH_2—(OCF_2CF_2CH_2)_r—O—R^1—O—(CH_2CF_2CF_2O)_s—CH_2CF_2— \qquad (II)$$

wherein R^1 is a fluoroalkylene radical of from 1 to 10 carbon atoms, and the ratio of r/s is comprised within the range of from 0.8 to 1.2;

$$(3)\ —CF_2—(CF_2—\underset{\displaystyle CF_3}{CFO})_t—(CF_2CF_2O)_u—(CFXO)_v—CF_2— \qquad (III)$$

in which the units

$$(CF_2—\underset{\displaystyle CF_3}{CFO}),\ (CF_2CF_2O) \text{ and } (CFXO)$$

are randomly distributed along the chain;

X = F or CF_3;

t/u = 0.6–2.0;

u/v is higher than 10;

$$(4)\ —\underset{\displaystyle CF_3}{CF}+OCF_2\underset{\displaystyle CF_3}{\underset{|}{CF}}\frac{}{z}OCF_2—R^2—CF_2O+\underset{\displaystyle CF_3}{\underset{|}{CF}}—CF_2O\frac{}{y}\underset{\displaystyle CF_3}{\underset{|}{CF}}— \qquad (IV)$$

in which R^2 is a perfluoroalkylene radical of from 1 to 10 carbon atoms, and c/f = 0.8–1.2,

(c) an aromatic, aliphatic or cycloaliphatic diisocyanate having a molecular weight not higher than 500;

(d) an aliphatic, cycloaliphatic or aromatic diol of from 2 to 14 carbon atoms;

with said fluorinated polyurethanes being furthermore characterized in that:

(i) the hard components (c) and (d) represent, together, from 10 to 60% of total components, by weight;

(ii) the molar ratio of the rubber-like component (b) to the rubber-like component (b) is comprised within the range of from 2 to 20;

(iii) the amount of rubber-like component (b) is such that the polymer contains from 4 to 30% by weight of fluorine;

(iv) at least 80% of perfluoropolyether or fluoropolyether segments deriving from (b) component are connected, at at least one of their sides, through a segment deriving from a diisocyanate component (c), with a rubber-like segment deriving from an (a) component.

5,332,799

SOLUTIONS OF POLYIMIDE-FORMING STARTING MATERIALS

Rainer Blum, Ludwigshafen; Hans J. Heller, and Klaus Lienert, both of Hamburg, all of Fed. Rep. of Germany, assignors to BASF Lacke+Farben Aktiengesellschaft, Muenster, Fed. Rep. of Germany

Filed Nov. 2, 1992, Ser. No. 970,391

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] C08G *69/26, 73/10*

U.S. Cl. 528—353 **10 Claims**

1. A solution of polyimide-forming starting materials, comprising at least one aromatic or partly aromatic diamine containing at least one aromatic group and at least one aromatic or partly aromatic tetracarboxylic diester containing at least one aromatic ring, wherein at least 2 mol % of the ester groups in the tetracarboxylic diester are derived from alcohols of the general formula

$$HO—Z—O—X \qquad I$$

or

$$HO—Z—\!\!-X \qquad II$$

where Z is a straight-chain or branched aliphatic radical of from 1 to 15 carbon atoms which can be interrupted by from 1 to 4 ether groups —O— and X is an aromatic radical of from 5 to 20 carbon atoms which can also contain nitrogen, oxygen, or sulfur as hereto atoms in the aromatic ring system, excepting a solution comprising both benzyl alcohol and at least one aromatic or partly aromatic diamine containing at least one aromatic group and having a basicity constant of less than or equal to 10^{-11}.

5,332,800

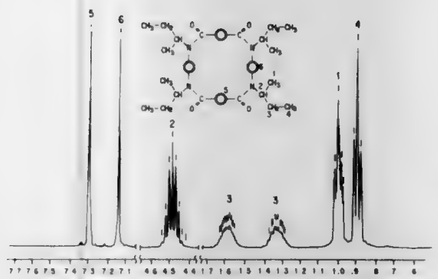
CYCLIC AROMATIC AMIDE OLIGOMERS

Anthony J. Arduengo, III, and Wesley Memeger, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

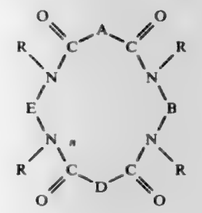
Division of Ser. No. 963,198, Oct. 19, 1992, abandoned, which is a division of Ser. No. 690,758, Apr. 24, 1991, Pat. No. 5,189,160. This application Oct. 12, 1993, Ser. No. 134,141

Int. Cl.[5] C08G *69/16, 73/00*

U.S. Cl. 528—371 **5 Claims**



1. A process for the preparation of high molecular weight aramid polymers which method comprises polymerizing cyclic compounds of the formula:



wherein:

A, B, D and E are independently selected from the group consisting of benzene or benzene derivatives where the substituents on the benzene are alkyl of 1 to about 8 carbon atoms, halide, or alkoxy of 1 to about 8 carbon atoms 3,3′-biphenylene, 4,4′-biphenylene, 1,4-naphthalenediyl, 2,6-naphthalenediyl, oxy-3,4′-diphenyldiyl, oxy-4,4′-diphenyldiyl, methylene-3,4′-diphenyldiyl, methylene-4,4′-diphenyldiyl, sulfonyl-3,4′-diphenyldiyl, and sulfonyl-4,4′-diphenyldiyl;

R is alkyl of 1 to about 8 carbon atoms or cycloalkyl of 3 to about 8 carbon atoms or aralkyl with ar- being phenylene or naphthylene and the alkyl portion of 1 to about 8 carbon atoms; and

n is an integer from 0 to about 12, in the presence of a highly nucleophilic catalyst selected from the group consisting of thiourea, aromatic amines, methyl-3-butylimidazole-2-thione and N-benzoyl-p-phenylene diamine.

5,332,801

PROCESS FOR PREPARING MODIFIED-POLYPHENYLENE ETHER

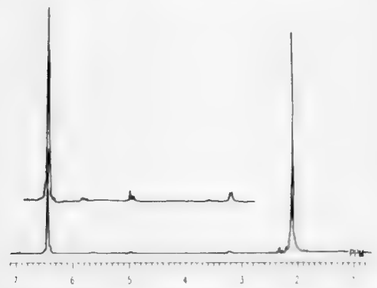
Toru Tsukahara, and Mitsutoshi Aritomi, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 841,412, Feb. 26, 1992, abandoned, which is a continuation of Ser. No. 681,057, Apr. 5, 1991, Pat. No. 5,120,800. This application Feb. 10, 1993, Ser. No. 16,090

Claims priority, application Japan, Apr. 10, 1990, 2-92997; May 16, 1990, 2-124040; May 30, 1990, 2-138593; Jul. 11, 1990, 2-181672; Aug. 23, 1990, 2-219987; Sep. 6, 1990, 2-234591

Int. Cl.[5] C08G *61/00, 75/00*

U.S. Cl. 525—397 **5 Claims**



1. A process for preparing a carbonyl group-modified polyphenylene ether which comprises reacting a mercaptan having a carbonyl group and represented by the formula:

$$(HS)_m—R^3—(COR^4)_n$$

wherein m and n each represent an integer of 1 to 4, R^3 represents a divalent to hexavalent saturated aliphatic hydrocarbon group having one to 29 carbon atoms or an aromatic hydrocarbon group, and R^4 represents an alkali metal oxy group, a hydroxyl group, an aryloxy group, an alkyloxy group or a hydrocarbonoxy group, with a polyphenylene ether having a carbon-carbon unsaturated bond in a substituent.

5,332,802

HUMAN COLLAGEN PROCESSING AND AUTOIMPLANT USE

Charles D. Kelman, Floral Park, N.Y., and Dale P. DeVore, Chelmsford, Mass., assignors to Autogenesis Technologies, Inc., Acton, Mass.

Continuation of Ser. No. 572,052, Aug. 23, 1990, abandoned, which is a division of Ser. No. 157,638, Feb. 18, 1988, Pat. No. 4,969,912. This application Jun. 11, 1992, Ser. No. 897,562

Int. Cl.[5] A61K *37/12;* **A61F** *13/00*

U.S. Cl. 530—356 **21 Claims**

1. Autoimplantable, cross-linkable, telopeptide-containing, naturally crosslinked human collagen composition comprising a chemically modified collagenous substance produced by reacting comminuted intact human tissue containing native telopeptide-containing collagen with an amine reactive acylating agent, a carboxylic acid reactive esterifying agent or a combination thereof to at least partially solubilize said native telopeptide-containing collagen, wherein said comminuted intact human tissue has been treated to remove non-collagenous proteins.

VOL 1164 ISS 4 JL 26 1994 UMI

5,332,803

PROCESSES FOR THE PREPARATION OF AMYLASE INHIBITOR

Toshiyuki Miyazaki, Fujimi; Ryuji Murayama, Hyogo, and Toshihisa Morimoto, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo and Nagata Sangyo Co. Ltd., Shiso, both of Japan

Filed Apr. 19, 1993, Ser. No. 49,180

Claims priority, application Japan, Apr. 22, 1992, 4-127970

Int. Cl.[5] **C07K** *3/02, 3/24, 3/28, 15/10*

U.S. Cl. 530—375 **6 Claims**

1. A process for the preparation of an amylase inhibitor which comprises the steps of

(a) extracting wheat, wheat flour or wheat gluten with water, a dilute acid, a dilute alkali or an aqueous alcohol to produce a solution containing the amylase inhibitor;

(b) adding a polysaccharide to said solution to form an insoluble complex of the amylase inhibitor with the polysaccharide and separating the insoluble complex from the solution;

(c) dissolving or dispersing said complex in a solution, the separating the polysaccharide from the solution to collect a solution containing the amylase inhibitor; and

(d) treating the collected solution with a cation exchanger and recovering the amylase inhibitor from fractions that have not been adsorbed on the cation exchanger.

5,332,804

HIGH MOLECULAR WEIGHT HUMAN ANGIOGENIC BASIC FIBROBLAST GROWTH FACTORS

Robert Z. Florkiewicz, Poway, Calif., and Andreas Sommer, Boulder, Colo., assignors to Synergen, Inc., Boulder, Colo.

Division of Ser. No. 267,966, Nov. 7, 1988, abandoned. This application Apr. 16, 1991, Ser. No. 687,496

Int. Cl.[5] **A61K** *37/36;* **C07K** *13/00*

U.S. Cl. 530—399 **5 Claims**

1. A purified CTG-initiated high molecular weight form of human bFGF-18, selected from the group consisting of bFGF-22, bFGF-23, and bFGF-24, wherein said high molecular weight form has at least one active site possessing mitogenic activity

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5,332,805

PROCESS FOR THE RECOVERY OF RECOMBINANTLY PRODUCED CHYMOSIN FROM INSOLUBLE AGGREGATE

Norman H. Carey, Chinnor; Michael T. Doel, Studley Green; Timothy J. R. Harris, Bracknell, and Peter A. Lowe, Reading, all of England, assignors to Celltech Limited, Berkshire, England

Filed Mar. 29, 1991, Ser. No. 677,415

Int. Cl.[5] **C07K** *3/12, 15/06*

U.S. Cl. 530—423 **10 Claims**

1. In the process for the production of bovine chymosin comprising the steps of producing an insoluble aggregate form of the chymosin precursor preprochymosin, methionine-prochymosin or methionine-chymosin from a bacterial host cell transformed with a vector including a coding sequence for said chymosin precursor, solubilizing said insoluble aggregate form of said chymosin precursor to produce a soluble native form of said chymosin precursor to produce bovine chymosin, the improvement wherein said solubilizing is carried out by a combination of:

1) denaturing said insoluble aggregate form of said chymosin precursor in an aqueous solution comprising urea at a concentration of at least 7M, and

2) denaturing said insoluble aggregate form of said chymosin precursor in an aqueous solution of alkali hydroxide between pH 10 and pH 11.5, and, subsequent to steps (1) and (2), reducing the concentration of urea and reducing the pH of the solution below a pH effective to denature said chymosin precursor to produce the soluble native form thereof.

5,332,806

DISAZO DYES WHICH CONTAIN 2-HYDROXYNAPHTHYL MOIETY

Rudolf Hurter, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

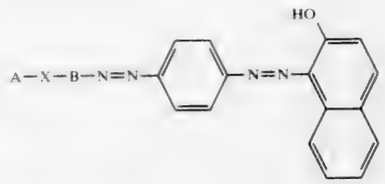
Continuation of Ser. No. 793,057, Nov. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 700,003, May 14, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,735

Claims priority, application Switzerland, May 18, 1990, 1700/90-7

Int. Cl.[5] **C09B** *31/02*

U.S. Cl. 534—834 **14 Claims**

1. An azo dye of the formula



(1)

wherein

A is unsubstituted phenyl or naphthyl, or is phenyl or naphthyl, each of which is substituted by one or more of the substituents selected from the group consisting of C_1–C_8alkyl, C_1–C_8alkoxy, C_2–C_8alkanoylamino, C_2–C_8alkoxycarbonylamino, C_2–C_8alkanoyl, nitro, cyano, trifluoromethyl, chlorine, fluorine, bromine, carbamoyl, sulfamoyl, ureido, hydroxyl, carboxyl, sulfo, sulfato, unsubstituted phenylaminosulfonyl and naphthylaminosulfonyl, and phenylaminosulfonyl or naphthylaminosulfonyl, each of which is substituted by one or more of the substituents selected from the group consisting of C_1–C_8alkyl, C_1–C_8alkoxy, chlorine, fluorine, bromine, carboxy and sulfo; B is unsubstituted phenyl or is phenyl which is substituted by one or more of the substituents selected from the group consisting of C_1–C_4alkyl, C_1–C_4alkoxy, chlorine, fluorine, bromine, carboxyl and sulfo; and

X is $—N(R_1)—SO_2—$, $—O—SO_2—$ or $—SO_2—N(R_1)—$, where R_1 is hydrogen or C_1–C_8alkyl.

5,332,807

PROCESS OF PRODUCING 8A- AND 9A-AZALIDE ANTIBIOTICS

Sherman T. Waddell, Westfield, and Timothy A. Blizzard, Rahway, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 14, 1993, Ser. No. 48,048

Int. Cl.[5] **C07D** *273/01;* **C07H** *17/08*

U.S. Cl. 536—7.4 **9 Claims**

1. A process of producing an 8a- or 9a-azalide compound comprising reacting an 8a- or 9a-azalide eastern fragment or a derivative thereof with a compound of the formula: X—A'—Y wherein X and Y are appropriate reactive groups and A' is a compound which forms the western portion of the azalide, and cyclizing to form the 8a- or 9a-azalide compound.

5,332,808

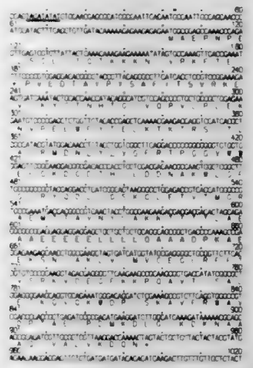
DNA ENCODING A RIBOSOME INACTIVATING PROTEIN

Rebecca S. Boston, Raleigh, N.C.; Henry W. Bass, Oakland, Calif., and Gregory R. OBrian, Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Sep. 8, 1992, Ser. No. 941,651

Int. Cl.[5] **C07H** *17/00;* **C12N** *15/00*

U.S. Cl. 536—23.6 **5 Claims**



1. Isolated DNA encoding a ribosome-inactivating protein, said DNA being selected from the group consisting of:

(a) isolated DNA having the sequence given herein as SEQ ID NO:1; and

(b) isolated DNAs differing from the isolated DNA of (a) above in nucleotide sequence due to the degeneracy of the genetic code, and which encode a ribosome inactivating protein encoded by isolated DNA of (a) above.

5,332,809

PARTIAL ESTERS OF GELLAN

Francesco Della Valle, Padova; Vittorio Crescenzi, Rome, and Lanfranco Callegaro, Ponte di Brenta, all of Italy, assignors to Fidia S.p.A., Abano Terme, Italy

Filed Feb. 11, 1992, Ser. No. 833,517

Int. Cl.[5] **C07H** *13/02*

U.S. Cl. 536—119 **3 Claims**

1. A partial ester of gellan in which gellan is esterified with an araliphatic alcohol having one benzene residue and an aliphatic chain of from 1 to 4 carbon atoms and wherein the benzene residue can be substituted by 1-3 substituents selected from the group consisting of methyl, methoxy, hydroxy and a halogen atom, and wherein the aliphatic chain can be substituted by one or two groups selected from the group consisting of free or mono- or diethylated amino groups, a pyrrolidine and a piperidine group, or a salt thereof with alkali metals, alkaline earth metals, ammonium, aluminum or organic bases.

5,332,810

SOLUBILIZED ANIONIC POLYMERIZATION INITIATOR AND PREPARATION THEREOF

David F. Lawson, Uniontown; Mark L. Stayer, Jr., Mogadore, and H. James Harwood, Stow, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 955,969

Int. Cl.[5] **C07D** *295/02;* **C08F** *4/08*

U.S. Cl. 540—450 **11 Claims**

1. An anionic polymerization initiator soluble in acyclic alkane solvents, comprising:

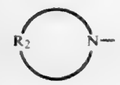
a solubilized lithio amine having the general formula

$(A)Li(SOL)_y$

where y is from about 1 to about 3; SOL is a solubilizing component selected from the group consisting of dienyl and vinyl aromatic polymers and copolymers having from 3 to about 300 polymerization units; and, A is selected from the group consisting of alkyl, dialkyl and cycloalkyl amine radicals having the general formula



and cyclic amine radicals having the general formula



where R_1 is selected from the group consisting of alkyls, cycloalkyls or aralkyls having from 1 to about 12 carbon atoms, and R_2 is selected from the group consisting of an alkylene, oxy- or amino-alkylene group having from about 3 to about 7 methylene groups.

5,332,811

ETOPSIDE ANALOGS

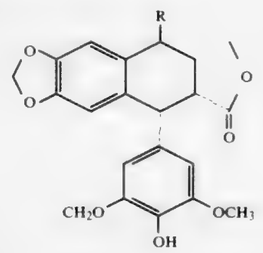
Kuo-Hsiung Lee, Chapel Hill; Xiao-Ming Zhou, Carrboro; Zhe-Qing Wang, Durham, all of N.C.; Jang-Yang Chang, North Haven, Conn.; Hong-Xing Chen, New Haven, Conn.; Yung-Chi Cheng, Woodbridge, Conn.; Ya-Ching Shen, San Diego, Calif.; Fu-Shen Han, New Haven, Conn.; Hong Hu, and Yi-Lin Zhang, both of Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Continuation-in-part of Ser. No. 406,330, Sep. 12, 1989, Pat. No. 5,132,322. This application May 1, 1991, Ser. No. 693,300

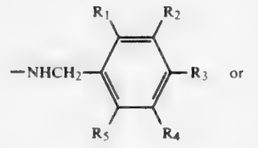
Int. Cl.[5] **C07D** *413/02, 307/77*

U.S. Cl. 544—148 **4 Claims**

1. A compound having the formula II:



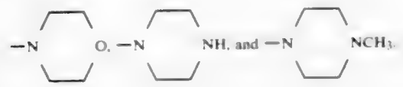
wherein R is



or

wherein R_1, R_2, R_3, R_4 and R_5 are each independently selected from H, CH_3, C_2H_5, C_3H_7, i—C_3H_7, C_4H_9, CF_3, OCH_3, OC_2H_5, OC_3H_7, OC_4H_9, O—i—C_3H_7, O—i—C_4H_9, —OCH_2O—, —OCH_2CH_2O—, CH_2OH, C_2H_4OH, CH_2Cl C_2H_4Cl, CH_2F, C_2H_4F, CH_2OCH_3, $COCH_3$, COC_2H_5, CO_2CH_3,

$CO_2C_2H_5$, NO_2, NH_2, NH_2·HCl, NH_2·HAc, NH_2·$\frac{1}{2}H_2SO_4$, NH_2·$\frac{1}{3}H_3PO_4$, $N(CH_3)_2$, $N(C_2H_5)_2$, OH, CN, N_3, SO_2H, SO_2NH_2, SO_2Cl, phenyl, phenoxy, anilinyl, cyclohexyl, piperidine,



5,332,812

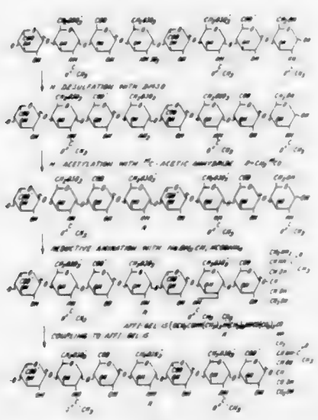
SOLID-PHASE SUBSTRATE CONTAINING MODIFIED HEPARIN

Garth L. Nicolson, Kingswood, Tex.; Motowo Nakajima, Houston, and Tatsuro Irimura, Bellaire, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 377,015, Jul. 7, 1989, abandoned, which is a division of Ser. No. 12,860, Feb. 20, 1987, Pat. No. 4,859,581, which is a continuation-in-part of Ser. No. 839,890, Mar. 10, 1986, abandoned. This application Oct. 15, 1991, Ser. No. 776,691

Int. Cl.[5] **C07H** *1/00*; **C08B** *37/10*

U.S. Cl. 536—21 **30 Claims**



12. A solid-phase substrate which yields radio-isotopically labeled glycosaminoglycan fragments upon hydrolysis by a heparan sulfate endoglycosidase, said substrate being produced by a process consisting essentially of:

(a) at least partially N-desulfating a quantity of heparan sulfate;

(b) radiolabeling the at least partially N-desulfated heparan sulfate with radioisotopically labeled acetic anhydride or acetyl chloride to produce radioisotopically labeled heparan sulfate;

(c) completely N-acylating the radioisotopically labeled heparan sulfate with an acyl anhydride or acyl halide;

(d) reductively aminating a reducing terminal end of said radioisotopically labeled heparan sulfate to produce radioisotopically labeled amine-terminal heparan sulfate; and

(e) coupling, through its terminal amine, the radioisotopically labeled amine-terminal heparan sulfate to an amine-reactive slid phase support to produce said solid phase substrate.

5,332,813

PROCESS FOR THE CONTINUOUS REACTION OF DIFLUOROTRIAZINYL COMPOUNDS WITH AMINES

Manfred Hoppe, Kürten; Wolfgang Müllers, Bergisch Gladbach; Hans-Georg Frosch, Köln; Richard Sommer, Odenthal; Siegbert Arnold, Bonn, and Wolfram Reddig, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

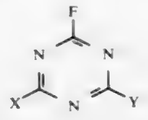
Filed Nov. 3, 1992, Ser. No. 971,165

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137292

Int. Cl.[5] **G07D** *251/50*

U.S. Cl. 544—204 **6 Claims**

1. A process for the preparation of a compound of the formula



(II)

in which X and Y each independently is

i)



in which

R_3 is a hydrogen atom or an optionally substituted C_1–C_4 aliphatic radical and

R_4 is a hydrogen atom, optionally substituted C_1–C_4 aliphatic radical or C_1–C_4 alkoxy group, cyano or an amino group, at least one of R_3 and R_4 not being hydrogen and carrying as a substituent at least one member selected from the group consisting of acetylamino, hydroxyl, sulphato, β-sulphatoethyl-sulphonyl, $O—(CH_2)_2—SO_2—CH=CH_2$, β-thiosulphatoethyl-sulphonyl, lower alkoxy, sulpho, carboxyl, phenyl, naphthyl or phenyl substituted by sulpho, carboxyl, β-sulphatoethylsulphonyl, β-thiosulphatoethylsulphonyl, methyl, ethyl, methoxy, ethoxy, chlorine, sulphamoyl and carbamoyl, or

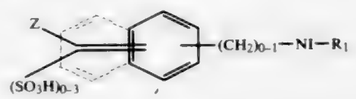
ii)



in which

R_3 and R_4, together with the nitrogen atom, form a morpholine, piperidine or piperazine ring, or

iii) an amine radical of the formula



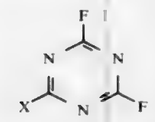
(IV)

in which

R_1 is H or C_1–C_4-alkyl optionally substituted by OR, OSO_3H, SO_3H, COOR or halogen,

R is H, CH_3 or C_2H_5, and Z is H, R, OH, Cl, OR, NH-acyl, NHR, $SO_2—CH=CH_2$, $SO_2—CH_2—CH_2—OSO_3H$, $SO_2—CH_2—CH_2—Cl$, $CONH(CH_2)_2O(CH_2)_2—SO_2—CH=CH_2$ or O-acyl, or

iv) a chromophore-containing amine, which comprises continuously reacting a difluorotriazinyl compound of the formula



(I)

in an aqueous or aqueous/organic solution or in suspension, with an amine of the formula

Y—H

the starting materials being passed simultaneously and continuously into a

1) reactor at different velocities and achieving intensive mixing by means of the difference in flow velocities, or

2) rotor/stator mixer and achieving highly intensive mixing therein in a short period of time as a result of the high rotary speed and the small reaction volume,

the reaction being carried out with substantially no backmixing.

5,332,814

PROCESS FOR THE PREPARATION OF CARBACYCLIC NUCLEOSIDES, AND INTERMEDIATES

Heinz Moser, Möhlin, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

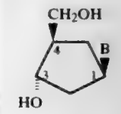
Filed Oct. 30, 1992, Ser. No. 969,631

Claims priority, application Switzerland, Nov. 12, 1991, 3292/91

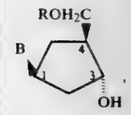
Int. Cl.[5] **C07D** *473/18, 473/02, 239/47, 239/553*

U.S. Cl. 544—229 **37 Claims**

1. A process for the preparation of an enantiomer of the formula (Ia) or (Ib)

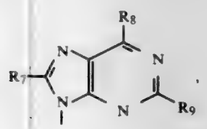


(Ia)

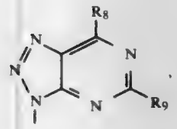


(Ib)

or the racemate thereof; in which R is H or a protective group, R_1, and B is a radical of the formula V, Va, Vb, Vc, Vd or Ve

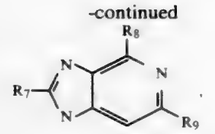


(V)

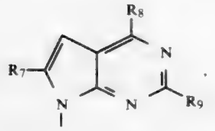


(Va)

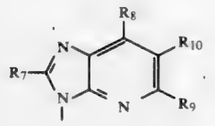
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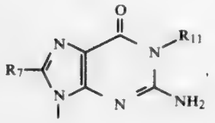
(Vb)



(Vc)

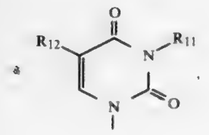


(Vd)

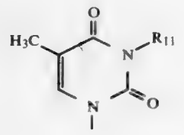


(Ve)

in which R_7 is H, Cl, Br, NH_2 or OH, and R_8, R_9 and R_{10} independently of one another are H, OH, SH, NH_2, $NHNH_2$, NHOH, NHOalkyl having 1 to 12 C atoms, F, Cl, Br, alkyl or hydroxyalkyl or aminoalkyl or alkoxy or alkylthio having 1 to 12 C atoms, the hydroxyl and amino groups being unsubstituted or substituted by a protective group, phenyl, benzyl, secondary amino having 1 to 20 C atoms or tertiary amino having 2 to 30 C atoms, wherein the secondary amino and tertiary amino are radicals of the formula $R_{14}R_{15}N$, in which R_{14} is H or independently has the meaning of R_{15}, and R_{15} is C_1–C_{20}alkyl, -aminoalkyl, -hydroxyalkyl; carboxyalkyl or carbalkoxyalkyl, the carbalkoxy group containing 2 to 8 C atoms and the alkyl group containing 1 to 6 C atoms; C_2–C_{20}alkenyl; phenyl, mono- or di(C_1–C_4alkyl- or C_1–C_4-alkoxy-)phenyl, benzyl, mono- or di(C_1–C_4alkyl- or C_1-C-alkoxy)benzyl; or R_{14} and R_{15} together are tetra- or pentamethylene, 3-oxa-1,5-pentylene, —$CH_2—NR_{16}—CH_2CH_2$— or —$CH_2CH_2—NR_{16}—CH_2CH_2$—, in which R_{16} is H or C_1–C_4alkyl, the amino group in aminoalkyl being unsubstituted or substituted by one or two C_1–C_4alkyl or -hydroxyalkyl groups, and the hydroxyl group in hydroxyalkyl is free or ethefified with C_1–C_4alkyl and R_{11} is H or C_1–C_4alkyl; or B is a radical of the formulae VI, VIa or VIb, or the dihydro derivative thereof;



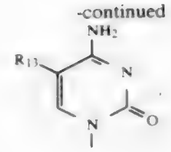
(VI)



(VIa)

VOL 1164 ISS 4 JL 26 1994 UMI

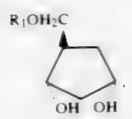
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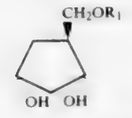
(VIb)

in which R_{11} is H or C_1–C_4alkyl and R_{12} and R_{13} independently of one another are as defined for R_8 above and the hydrogen atoms of the NH_2 group in formula VIb can be substituted by C_1–C_6alkyl or benzoyl; which comprises the steps of

(a) reacting an enantiomer of the formula IIa or IIb, or the racemate thereof,

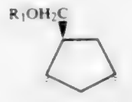


(IIa)

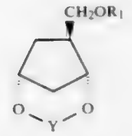


(IIb)

in which R_1 is a protective group, with a compound of the formulae X—CO—X, X—CS—X, X—SO—X, X—SO_2—X, X_2P—R_6 or $X_2P(O)$—R_6, in which X is a leaving group, R_2 is linear or branched C_1–C_{18}alkyl, C_5–C_8cycloalkyl, phenyl, benzyl, or phenyl or benzyl which are substituted by C_1–C_6alkyl or C_1–C_6alkoxy, R_3 and R_4 independently of one another are H, linear or branched C_1–C_{18}alkyl, C_5–C_8cycloalkyl, phenyl, benzyl, or phenyl or benzyl which are substituted by $C_1$14 C_6alkyl or C_1–C_6alkoxy, or R_3 and R_4 together are tetramethylene, pentamethylene or 3-oxa-1,5-pentylene, R_5 is H, linear or branched C_1–C_{12}alkyl, C_5–C_8cycloalkyl, phenyl, benzyl, or phenyl or benzyl which are substituted by C_1–C_6alkyl or C_1–C_6alkoxy, and R_6 is linear or branched C_1–C_2alkyl or C_1–C_{12}alkoxy, C_5–C_8cycloalkyl or C_5–C_8-cycloalkoxy, phenyl, or phenyloxy, benzyl or benzyloxy, or R_6 is phenyl or phenyloxy or benzyl or benzyloxy which are substituted by C_1–C_6alkyl or C_1–C_6alkoxy, to give an enantiomer of the formula IIIa or IIIb, or the racemate thereof,



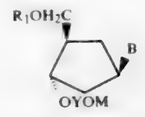
(IIIa)



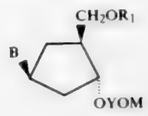
(IIIb)

in which Y is selected from the group consisting of —C(O)—, —C(S)—, —SO—, —SO_2—, R_6P= and $R_6(O)P$= in which R_1 to R_6 are as defined above,

(b) reacting the product of step (a) with a nucleic base corresponding to a radical of formula V, Va, Vb, Vc, Vd or Ve, or the alkali metal salt thereof, or a nucleic base corresponding to a radical of formula VI, VIa or VIb, or the dihydro derivative or alkali metal salt thereof, in the presence or absence of a non-nucleophilic base, to give an enantiomer of the formula IVa or IVb, or the racemate thereof,



(IVa)



(IVb)

in which M is H, an alkali metal or a non-nucleophilic base and Y is as defined above, and

(c) converting the product of step (b) into the compound of the formula Ia or Ib, or the racemate thereof, by eliminating the group YOM, and, when R is H, the protective group, R_1.

5,332,815

PROCESS FOR THE PREPARATION OF ALKALINE EARTH METAL SALTS OF (6R)-N(10)-FORMYL-5,6,7,8-TETRAHYDROFOLIC ACID

Attilio Melera, Montagnola, and Fabrizio Marazza, Sorengo, both of Switzerland, assignors to Sapec S.A. fine chemicals, Lugano, Switzerland

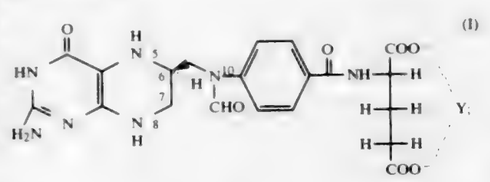
Filed Oct. 2, 1992, Ser. No. 955,445

Claims priority, application Switzerland, Oct. 4, 1991, 2933/91

Int. Cl.[5] **C07D** *475/04*

U.S. Cl. 544—258 **10 Claims**

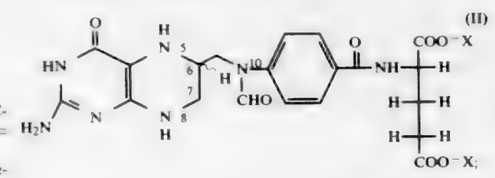
1. A process for preparing an alkaline earth metal salt of (6R)-N(10)-formyl-5,6,7,8-tetrahydrofolic acid of the following formula (I):



(I)

wherein Y is Ca^{2+} or Mg^{2+}, said process comprising:

(i) under an inert atmosphere and temperature conditions of about 20° C. to about 60° C., adding a calcium or magnesium halide or acetate, either in the form of an aqueous solution or a solid, to an ammonium salt of, or alkali metal salt of, (6RS)-N(10)-formyl-5,6,7,8-tetrahydrofolic acid dissolved in water or in an aqueous buffer solution, said salt of (6RS)-N(10)-formyl-5,6,7,8-tetrahydrofolic acid having the following formula (II):



(II)

wherein X is an alkali metal cation or NH_4^+;

(ii) under temperature conditions of about 20° C. to about 40° C., allowing the mixture obtained from step (i) to crystallize; and

(iii) separating a solid obtained from step (ii), said solid characterized by formula (I).

5,332,816

PIPERAZINE-PIPERIDINE COMPOUNDS FOR USE AS STABILIZERS FOR ORGANIC MATERIALS

Graziano Vignali, and Valerio Borzatta, both of Bologna, Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

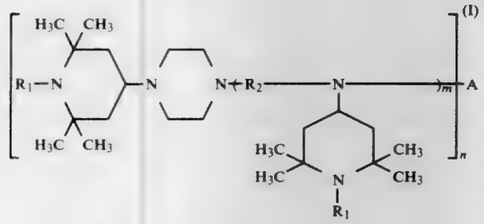
Filed Jul. 19, 1990, Ser. No. 555,283

Claims priority, application Italy, Jul. 28, 1989, 21380 A/89

Int. Cl.[5] **C07D** *401/04, 401/14*

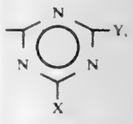
U.S. Cl. 544—360 **8 Claims**

1. A compound of the formula (I)



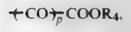
(I)

in which R_1 is hydrogen, C_1–C_8alkyl, O•, NO, OH, CH_2CN, C_1–C_{18}alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_6alkenyl, $C_7$14 C_9phenylalkyl which is unsubstituted or mono-, di-or tri-substituted on the phenyl by C_1–C_4alkyl, C_1–C_8acyl or C_2–C_4alkyl substituted by OH in the 2-, 3- or 4-position, R_2 is C_2–C_6alkylene, m is zero or 1, n is 1, 2, 3 or 4 and, if n is 1, A is hydrogen, C_1–C_{18}alkyl, C_3–C_{18}alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl, or A is one of the groups of the formulae (IIa)–(IId)



(IIa)

$$-COR_3, \quad \text{(IIb)}$$



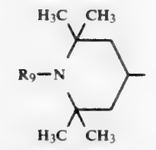
(IIc)

$$-SO_2R_5 \quad \text{(IId)}$$

in which X and Y which can be identical or different are a group —OR_6, —SR_6 or



where R_6, R_7 and R_8 which can be identical or different are hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, C_3–C_1.$_8$alkenyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl or by C_1–C_4alkoxy, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl, C_2–C_4alkyl substituted in the 2-, 3- or 4-position by OH, by C_1–C_8alkoxy or by di-(C_1–C_4alkyl)-amino, tetrahydrofurfuryl or a group of the formula (III)



(III)

where R_9 is as defined for R_1, or

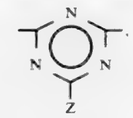


is a 5-membered to 7-membered heterocyclic group, R_3 is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di-or tri-substituted by C_1–C_4alkyl, C_2–C_1.$_8$alkenyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl or by C_1–C_4alkoxy and/or by an OH group, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl and/or by an OH group, p is zero or 1, R_4 is C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C-$_4$alkyl, C_3–C_{18}alkenyl or a group of the formula (III) and R_5 is C_1–C_{18}alkyl or phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, and, if n is 2, A is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms, 2-hydroxytrimethylene, xylylene or one of the groups of the formulae (IVa)–(IVe)

$$+CH_2\overline{)_q}CO-, \quad \text{(IVa)}$$

$$-CO-R_{10}-CO-, \quad \text{(IVb)}$$

$$-COO-R_{11}-OOC-, \quad \text{(IVc)}$$

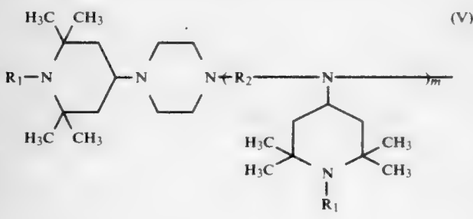


(IVd)



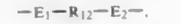
(IVe)

in which q is zero or an integer from 1 to 10, R_{10} is a direct bond, C_1–C_{12}alkylene, cyclohexylene or phenylene, R_{11} is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms, cyclohexylene, cyclohexylenedimethylene, methylenedicyclohexylene, isopropylidenedicyclohexylene, phenylene, isopropylidenediphenylene or xylylene, Z is as defined above for X and Y or is a group of the formula (V)

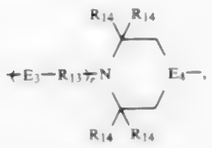


(V)

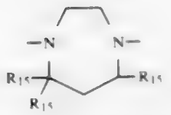
with R_1, R_2 and m being as defined above, D_1 is one of the groups of the formulae (VIa)–(VIc)



(VIa)



(VIb)



(VIc)

in which E_1, E_2 and E_3 which can be identical or different are —O— or

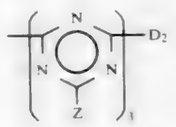


R_{12} is as defined above for R_{11} or C_4–C_{12}alkylene interrupted by 1 or 2 groups

R_{13} is C_2–C_6alkylene, E_4 is >N—(R_{13}—E_3)$_s$—, >CH—O— or

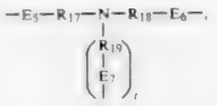


r and s which can be identical or different are zero or 1, R_{14} is hydrogen or also methyl if r is 1 and E_4 is >CH—O—, R_{15} is hydrogen or methyl and R_{16} is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl, or a group of the formula (III), and, if n is 3, A is aliphatic C_4–C_{18}triacyl, aliphatic C_6–C_{18}triacyl containing a trisubstituted nitrogen atom, aromatic C_9–C_{18}triacyl, heterocyclic triacyl containing up to 18 carbon atoms, or A is a group of the formula (VII)



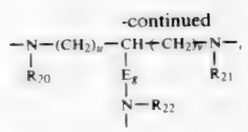
(VII)

in which Z is as defined above and D_2 is one of the groups of the formulae (VIIIa)–(VIIId)

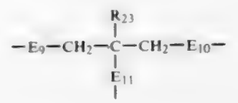


(VIIIa)

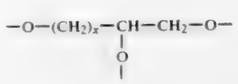
-continued



(VIIIb)



(VIIIc)



(VIIId)

in which E_5, E_6, E_7, E_9, E_{10} and E_{11} which can be identical or different are as defined above for E_1, E_2 and E_3 and, if E_9 and E_{10} are —O—, E_{11} is also a —CH_2—O— group, R_{17}, R_{18} and R_{19} which can be identical or different are C_2–C_6alkylene, t is zero or 1, R_{20}, R_{21} and R_{22} which can be identical or different are as defined above for R_{16}, E_8 is a direct bond or —CH_2—, u, v and x which can be identical or different are integers from 2 to 6 and R_{23} is hydrogen or C_1–C_8alkyl, and, if n is 4, A is aliphatic C_6–C_{18}tetraacyl, aliphatic C_{10}–C_{18}tetraacyl containing 2 trisubstituted nitrogen atoms, aromatic C_{10}–C_{18}tetraacyl, cycloaliphatic C_{10}–C_{22}tetraacyl or a group of the formula (IX)

(IX)

in which Z is as defined above and D_3 is a group of the formula (Xa) or (Xb)

(Xa)

(Xb)

in which E_{12} is as defined above for E_1, E_2 and E_3, R_{24} and R_{25} which can be identical or different are C_2–C_6alkylene, y is zero or 1 and R_{26} is C_4–C_{12}alkanetetrayl.

5,332,817

3-AMINOPIPERIDINE DERIVATIVES AND RELATED NITROGEN CONTAINING HETEROCYCLES

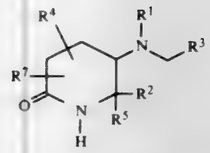
Manoj C. Desai, Mystic, and Terry J. Rosen, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 724,268, Jul. 1, 1991, Pat. No. 5,232,925, which is a continuation-in-part of Ser. No. 619,361, Nov. 11, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 14,970

Int. Cl.[5] **C07D** *211/76*

U.S. Cl. 546—16 **2 Claims**

1. A compound of the formula

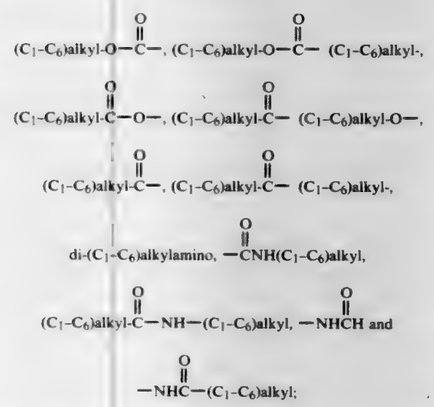


VII

wherein

R^1 is hydrogen or (C_1–C_8) alkyl optionally substituted with hydroxy, alkoxy or fluoro;

R^2 is a radical selected from hydrogen, (C_1–C_6) straight of branched alkyl, (C_3–C_7) cycloalkyl wherein one of the carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; aryl selected from phenyl and naphthyl; heteroaryl selected from indanyl, thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; phenyl (C_2–C_6) alkyl, benzhydryl and benzyl, wherein each of said aryl and heteroaryl groups and the phenyl moieties of said benzyl, phenyl (C_2–C_6) alkyl and benzyhydryl may optionally be substituted with one or more substituents independently selected from halo, nitro, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, trifluoromethyl, amino, (C_1–C_6)-alkylamino,

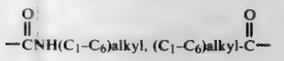


and wherein one of the phenyl moieties of said benzhydryl may optionally be replaced by naphthyl, thienyl, furyl or pyridyl;

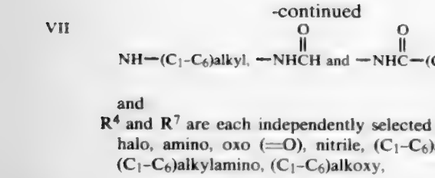
R^5 is hydrogen, phenyl or (C_1–C_6)alkyl; or

R^2 and R^5, together with the carbon to which they are attached, form a saturated carbocyclic ring having from 3 to 7 carbon atoms wherein one of said carbon atoms may optionally be replaced by oxygen, nitrogen or sulfur;

R^3 is aryl selected from phenyl and naphthyl; heteroaryl selected from indanyl, thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; and cycloalkyl having 3 to 7 carbon atoms wherein one of said carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; wherein each of said aryl and heteroaryl groups may optionally be substituted with one or more substituents, and said (C_3–C_7) cycloalkyl may optionally be substituted with one or two substituents, each of said substituents being independently selected from halo, nitro, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, trifluoromethyl, phenyl, amino, (C_1–C_6) alkylamino,

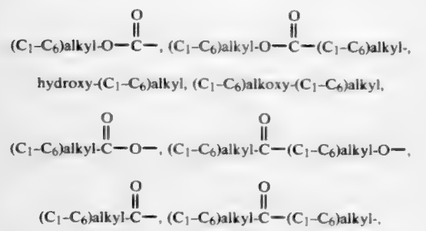


-continued



and

R^4 and R^7 are each independently selected from hydroxy, halo, amino, oxo (=O), nitrile, (C_1–C_6)alkylamino, di-(C_1–C_6)alkylamino, (C_1–C_6)alkoxy,



and the radicals set forth in the definition of R^2;

with the proviso that (a) neither R^4 nor R^7 can form, together with the carbon to which it is attached, a ring with R^5, (b) when R^4 and R^7 are attached to the same carbon atom, then either each of R^4 and R^7 is independently selected from hydrogen, fluoro and (C_1–C_6) alkyl, or R^4 and R^7, together with the carbon to which they are attached, form a (C_3–C_6) saturated carbocyclic ring that forms a spiro compound with the nitrogen-containing ring to which they are attached, and (c) R^2 and R^5 cannot both be hydrogen.

2. (2S,3S)-3-amino-2-phenylpiperidine.

5,332,818

IMMUNOSUPPRESSIVE AGENT AND PROCESS OF PRODUCING THE SAME

Hiroshi Nagase; Koji Kawai; Shu Matsumoto, all of Kamakura; Takashi Endoh, Chigasaki; Yoshiaki Katsura, Otsu, and Kohei Arakawa, Kyoto, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 721,639, Jul. 26, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,669

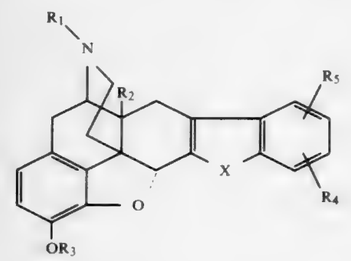
Claims priority, application Japan, Nov. 28, 1989, 1-308491; Dec. 11, 1989, 1-322160; Dec. 15, 1989, 1-326941

Int. Cl.[5] **C07D** *721/72*

U.S. Cl. 546—37 **10 Claims**

1. A method for effecting immunosuppression in a subject, which comprises administering to a subject in need of immunosuppression, an amount of a δ-opioid receptor antagonist, or a pharmaceutically acceptable salt thereof, in an amount sufficient to effect immunosuppression in said subject chlorine, bromine, amino, nitro, C_1–C_5 alkyl, C_1–C_5 alkoxy or R_4 and R_5 together represent benzo.

wherein said δ-opioid antagonist is a compound represented by the formula (1):



[1]

wherein R_1 represents C_1–C_5 alkyl, C_3–C_6 cycloalkylalkyl, C_5–C_7 cycloalkenylalkyl, aryl, aralkyl, C_4–C_5 trans-alkenyl, allyl or furan-2-ylalkyl, R_2 represents hydrogen, hydroxy or C_1–C_5 alkanoyloxy, R_3 represents hydrogen, C_1–C_5 alkyl or C_1–C_5 alkanoyl, X represents oxygen, sulfur or nitrogen to which a radical Y is attached, wherein Y represents hydrogen or C_1–C_5 alkyl, R_4 and R_5 individually represent hydrogen, fluorine.

5,332,819

PHOTOBLEACHABLE INITIATOR SYSTEMS

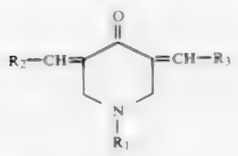
William K. Smothers, Hockessin, Del., assignor to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 714,224, Jun. 11, 1991, Pat. No. 5,217,846. This application Mar. 19, 1993, Ser. No. 39,560

Int. Cl.[5] **C07D** *451/04, 401/04*

U.S. Cl. 546—94 **16 Claims**

1. A compound suitable for use as a photobleachable sensitizer having the following structure:

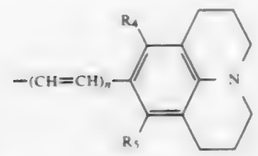


wherein

R_1 is (1) hydrogen, (2) substituted or unsubstituted alkyl of 1 to 8 carbon atoms, or (3) $R_{15}CO$—, where R_{15} is a substituted or unsubstituted aryl or heteroaryl of 5 to 10 atoms or a substituted or unsubstituted alkyl of 1 to 8 carbon atoms; and

R_2 and R_3, alike or different, are selected from the group consisting of

(I)

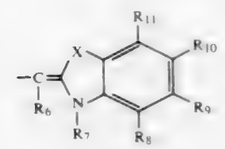


wherein

n is 0 or 1;

R_4 and R_5 are each independently hydrogen, hydroxyl, halogen, alkyl of 1 to 6 carbon atoms, and alkoxyl of 1 to 6 carbon atoms; and

(II)



wherein:

X is 0, S, Se, NR_{12}, or $CR_{13}R_{14}$, where R_{12}, R_{13}, and R14 are each independently alkyl of 1 to 6 carbon atoms or substituted or unsubstituted phenyl;

R_6 is hydrogen or substituted or unsubstituted alkyl of 1 to 4 carbon atoms;

R_7 is (1) substituted or unsubstituted alkyl or cycloalkyl of 1 to 8 carbon atoms or (2) substituted or unsubstituted aryl or heteroaryl of 5 to 10 atoms; or

R_6 and R_7 are joined together to form a 5- to 7-membered substituted or unsubstituted heterocyclic ring;

R_8, R_9, R_{10}, and R_{11} each independently hydrogen, halogen, dialkylamino, substituted or unsubstituted alkyl or cycloalkyl of 1 to 6 carbon atoms, or substituted or unsubstituted alkoxyl of 1 to 6 carbon atoms; or (R_8 and R_9), (R_9 and R_{10}), or (R_{10} and R_{11}) are joined in a substituted or unsubstituted aromatic ring of 5 to 10 atoms.

5,332,820

DIBENZOBICYCLO(2.2.2) OCTANE ANGIOTENSIN II ANTAGONISTS

John J. V. Duncia, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

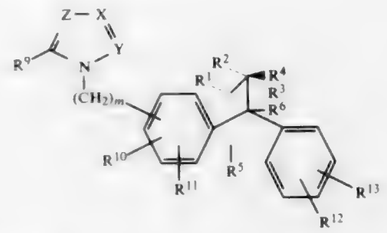
Filed May 20, 1991, Ser. No. 702,281

Int. Cl.[5] **C07D** *403/02, 471/04;* **A61K** *31/41, 31/415*

U.S. Cl. 546—118 **10 Claims**

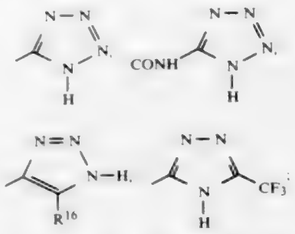
1. A compound of formula I:

(I)

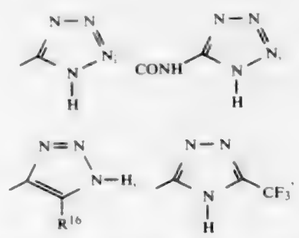


wherein

R^1, R^2, R^3, and R^4 are independently —H, —COOH, —$CONHOR^{14}$, —$CONHNHSO_2CF_3$; —$NHSO_2CF_3$; —$CH_2NHSO_2CF_3$;

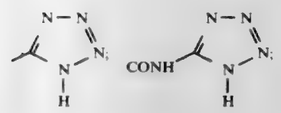


alkyl of 1 to 5 carbon atoms; perfluoroalkyl of 1 to 5 carbon atoms; CN, —CO_2R^{15}, phenyl; or where R^1 and R^2 or R^3 and R^4 are taken together to form an aliphatic ring of 3 to 6 carbon atoms; provided that at least one of R^1, R^2, R^3, and R^4 is always an acidic group defined by —COOH, —$CONHOR^{14}$; —$CONHNHSO_2CF_3$; —$NHSO_2CF_3$; —$CH_2NHSO_2CF_3$;



and further provided that if Z, X and Y are not all N then

at least one of R^1–R^4 or R^{10}–R^{13} is always a tetrazolyl group as defined by



R^5 and R^6 are independently H, CH_3, Cl, Br, I, F, —OCH_3, —$OCOCH_3$;

R^7 is H, F, Cl, Br, I, NO_2, perfluoroalkyl of 1 to 5 carbon atoms; CN; COR^{17}; straight or branched alkyl of 1 to 6 carbon atoms; phenyl; phenylthio; alkenyl of 2 to 10 carbon atoms; alkynyl of 2 to 10 carbon atoms; phenylalkenyl where the alkenyl portion is 2 to 6 carbon atoms; phenylalkynyl where the alkynyl portion is 2 to 6 carbon atoms; heteroaryl selected from 2- and 3-thienyl, 2- and 3-furyl, and substituted phenyl, phenylalkenyl, phenylalkynyl, and heteroaryl selected from 2- and 3-thienyl, 2- and 3-furyl substituted with one or two substituents selected from halogen, alkoxy of 1 to 5 carbon atoms, alkyl of 1 to 5 carbon atoms, —NO_2, —CN, —CF_3, —COR^{15}, —CH_2OR^{18}, and —$NHCOR^{18}$ where R^{18} is other than H; 1- or 2-naphthyl; 2-, 3-, 4-, 5-, 6-, or 7-benzofuryl, unsubstituted or substituted with one or two substituents selected from halogen, alkoxy of 1 to 5 carbon atoms, alkyl or 1 to 5 carbon atoms, —NO_2, —CN, —CF_3, —COR^{15}, —CH_2OR^{18}, and —$NHCOR^{18}$ where R^{18} is other than H;

R^8 is H; CN; COR^{17}; —$(CH_2)_{n-1}CH(OR^{18})R^{19}$; —$(CH_2)_nO(CO)R^{18}$ where R^{18} is other than H; —$(CH_2)_nCOR^{17}$;

R^9 is alkyl of 2 to 6 carbon atoms; alkenyl or alkynyl of 2 to 6 carbon atoms; cycloalkyl of 3 to 8 carbon atoms; cycloalkylalkyl of 4 to 8 carbon atoms; alkylthio where the alkyl portion is of 2 to 5 carbon atoms;

R^{10}, R^{11}, R^{12}, R^{13} are independently H, Cl, Br, I, F, NO_2, CN, OH, alkyl of 1 to 4 carbon atoms; alkylcarbonyloxy of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; —CO_2H; —CO_2R^{15}; —$NHSO_2CF_3$; —$CONHOR^{14}$; phenyl;



R^{14} is H, methyl or benzyl;

R^{15} is H; alkyl of 1 to 5 carbon atoms; branched alkyl of 1 to 5 carbon atoms; phenyl;

R^{16} is CN, NO_2or CO_2R^{15};

R^{17} is H, alkyl of 1 to 6 carbon atoms; —OR^{15}, —$NR^{18}R^{19}$;

R^{18} and R^{19} are independently H, alkyl of 1 to 5 carbon atoms; phenyl;

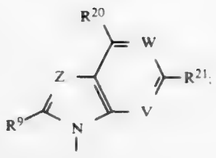
R^{20} and R^{21} are independently —H; Cl; Br; I; —SR^{15}; —R^{17}; —CN; —OR^{15}; phenyl; substituted phenyl where the substituents are alkoxy of 1 to 5 carbon atoms, alkyl of 1 to 5 carbon atoms, fluorine;

Z is N; CH;

X is C-R^7; C-R^8; N;

Y is C-R^8; C-R^7; N;

X and Y are carbon atoms and Z is N when they are part of the following ring system;



V is CH or N when W is CH;

W is CH or N when V is CH;

m is 1,2;

n is 1–5.

5,332,821

PROCESS FOR PREPARING ISOQUINOLINES

Philippe Peter, Visp, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 504,823, Apr. 5, 1990, abandoned, which is a continuation of Ser. No. 167,076, Mar. 11, 1988, abandoned. This application Jan. 15, 1992, Ser. No. 821,105

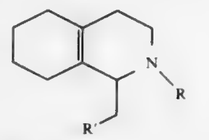
Claims priority, application Switzerland, Mar. 20, 1987, 1064/87

Int. Cl.[5] **C07D** *217/20*

U.S. Cl. 546—144 **10 Claims**

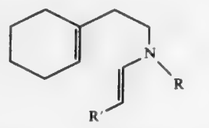
1. A process for preparing isoquinolines of the formula

I



wherein R is methyl or benzyl and R′ is phenyl, p-hydroxyphenyl or p-methoxyphenyl, which process comprises reacting a solution of an enamine of the formula

II



wherein R and R′ are as described above, in a hydrocarbon with an anhydrous solution of p-toluenesulphonic acid in toluene or xylene at an elevated temperature.

5,332,822

HETEROAROMATIC AND THIOHETEROAROMATIC SUBSTITUTED SULFONAMIDE THROMBIN INHIBITORS

Raj N. Misra, Hopewell, N.J., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

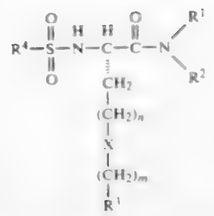
Filed Dec. 24, 1992, Ser. No. 996,755

Int. Cl.[5] **C07D** *215/36, 215/58, 215/02*

U.S. Cl. 546—164 **15 Claims**

1. A compound of the structure

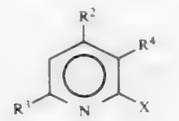
VOL 1164 ISS 4 JL 26 1994 UMI



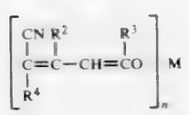
including all stereoisomers thereof,
wherein
X is —S—;
m is 0, 1 or 2;
n is 1, 2 or 3;
R^1 and R^2 may be the same or different and are independently hydrogen, lower alkyl, cycloalkyl, aryl, heteroaryl, or heteroarylalkyl, or R^1 and R^2 can be taken together with the nitrogen atom to which they are attached to form a 5- to 8-membered N-containing heterocyclic ring, which may optionally contain an additional N, O or S atom in the ring, which may be unsubstituted or substituted on the N-atom or a carbon atom with lower alkyl, carboxy, amido, carboalkoxy, aryl, cycloalkyl, hydroxy, alkoxy, amino, alkylamino or dialkylamino;
R^3 is heteroaryl;
R^4 is aryl, quinolinyl, or tetrahydroquinolinyl; wherein the term "heteroaryl" by itself or as part of another group refers to a 5- or 6 -membered monocyclic aromatic ring which includes 1 or 2 hetero atoms which are nitrogen, oxygen or sulfur any of which may optionally include 1 or 2 substituents which is halogen, lower alkyl, lower alkoxy, cyano, hydroxy, carboxy, amido, carboalkoxy, aryl, cycloalkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, arylthio, arylsulfinyl, arylsulfonyl, amino, lower alkylamino and/or di-lower alkylamino; and pharmaceutically acceptable salts thereof.

5,332,823
CERTAIN THREE COMPONENT IONIC SUBSTITUTED PYRIDINE COMPOUNDS AS INTERMEDIATES
Charles D. Adams, Newark; Greg A. Bullock, Hockessin, and George C. Chiang, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 728,446, Jul. 11, 1991, Pat. No. 5,235,060. This application May 13, 1993, Ser. No. 61,394
Int. Cl.[5] C07D *213/70, 213/56*
U.S. Cl. 546—291 **11 Claims**

1. A compound according to Formula I and IV



I



IV

wherein:
R^2 is selected from the group hydrogen, C_1–C_3 alkyl optionally substituted with methoxy or 1–3 fluorine and C_1–C_2 alkoxy optionally substituted with 1–3 fluorine;
R^3 is selected from the group C_1–C_3 alkyl substituted with methoxy or 1–3 fluorine;
R^4 is selected from the group SO_2R^5 and $C(O)N(R^6)_2$;
R^5 is selected from the group C_1–C_2 alkyl optionally substituted with C_1–C_2 alkoxy or 1–3 halogens independently selected from the group chlorine and fluorine;
R^6 is C_1–C_2 alkyl;
M is selected from the group Li, Na, K, Mg, Ca, NH_4 and alkyl substituted NH_4;
X is selected from the group Br and OH; and
n is 1 or 2.

5,332,824
PROCESS FOR THE PREPARATION OF 2-AMINO-5-METHYL-PYRIDINE
Eric Rivadeneira, Leverkusen, and Klaus Jelich, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Apr. 6, 1993, Ser. No. 43,648
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1992, 4212596; Sep. 25, 1992, 4232175
Int. Cl.[5] C07D *213/73, 213/18, 213/20*
U.S. Cl. 546—304 **9 Claims**

1. A process for the preparation of 2-amino-5-methylpyridine of the formula



(I)

which comprises in a first step reacting 3-methyl-pyridine 1-oxide of the formula

(II)

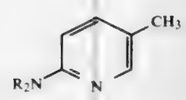
with a trialkylamine of the formula

(III)

in which
R is C_1–C_4-alkyl,
and with an electrophilic compound selected from the group consisting of acetyl chloride, propionyl chloride, acetic anhydride, propionyl anhydride, benzoyl chloride, benzotrichloride, phosgene, oxalyl chloride, benzene sulfonyl chloride, p-toluene sulfonyl chloride, phosphorous (111)chloride, phosphorous oxy chloride, phosphorous (V) chloride, thionyl chloride, sulfonyl chloride dichloromethylene-dimethylimmonium chloride, cyanuric chloride and chlorotrimethylsilane, in the presence or absence of a diluent, to given the ammonium salt of the formula

(IV)

in which
Z is an anion from the electrophilic compound,
optionally isolating the compound (IV), optionally purifying the compound (IV), optionally cleaving the compound (IV) into an alkyl compound RZ and a 2-dialkylamino-5-methylpyridine of the formula



(V)

and then in a second step reacting the compound (IV) or (V) with hydrogen bromide at a temperature between 150° and 300° C.

5,332,825
SINGLE VESSEL SYNTHESIS OF AMINOACETONITRILES
Paul R. Buckland, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 13, 1993, Ser. No. 136,435
Int. Cl.[5] C07C *253/16, 253, 30;* **C07D** *213/57*
U.S. Cl. 546—330 **4 Claims**

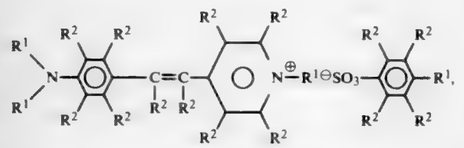
1. A process for preparing aminoacetonitriles under anhydrous conditions comprising the steps of:
(A) reacting trimethylsilyl cyanide and an aldehyde having the formula RCHO in a water miscible amide solvent to obtain a silyl blocked cyanohydrin solution, wherein R is selected from the group consisting of hydrogen, C_1–C_{20} alkyl, C_3–C_8 cycloalkyl, C_3–C_8 alkenyl, C_3–C_8 alkynyl, and C_6–C_{14} aryl, excluding 3-nitrobenzaldehyde, and the water miscible amide solvent is selected from the group consisting of N,N-dimethylformamide, N,N-diethylformamide, N,N-dimethylacetamide, N,N-diethylacetamide, N,N-dimethylpropionamide, N,N-diethylpropionamide, formamide, and combinations thereof;
(B) adding 0.5 milligrams to 10 milligrams of water per gram of water miscible amide solvent to the silyl blocked cyanohydrin solution from step (A); and
(C) passing ammonia through the solution from step (B) to obtain an aminoacetonitrile,
provided steps (A), (B), and (C) are conducted at a temperature of 20° C. to 50° C., and
further provided that steps (A), (B), and (C) are conducted in the same reaction vessel wherein the silyl blocked cyanohydrin is not isolated and wherein anhydrous means no water is present except that added in step (B).

5,332,826
PROCESS FOR PREPARING AMINOACETONITRILES IN ONE VESSEL
Paul R. Buckland, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 13, 1993, Ser. No. 136,432
Int. Cl.[5] C07C *253/16, 253/30;* **C07D** *213/57*
U.S. Cl. 546—330 **3 Claims**

1. A process for preparing aminoacetonitriles comprising the steps of:
(A) reacting an alkali metalcyanide with an aldehyde having the formula RCHO at a temperature of −10° C. to 25° C. in water to form a cyanohydrin, wherein R is selected from the group consisting of hydrogen, C_1–C_{20} alkyl, C_3–C_8 cycloalkyl, C_3–C_8 alkenyl, C_3–C_8 alkynyl, and C_6–C_{14} aryl, excluding 3-nitrobenzaldehyde;
(B) adding a water immiscible solvent to the cyanohydrin formed in Step (A) to form a two phase system comprising a water immiscible phase containing the cyanohydrin and an aqueous phase;
(C) removing at least 50 weight percent, based on the weight of the water immiscible phase, of the water immiscible solvent from the water immiscible phase thereby concentrating the cyanohydrin;
(D) adding a water miscible amide solvent to the concentrated cyanohydrin to form a cyanohydrin solution; and
(E) passing ammonia through the cyanohydrin solution to obtain an aminoacetonitrile,
provided steps (B), (C), (D), and (E) are conducted at a temperature of 20° C. to 50° C, and further provided that steps (A), (B), (C), (D), and (E) are conducted in the same reaction vessel wherein the cyanohydrin is not isolated.

5,332,827
DEUTERATED ORGANIC SALTS USEFUL IN NONLINEAR OPTICAL APPLICATIONS
Kevin R. Stewart, Schenectady; Eugene P. Boden, Scotia, and Christopher P. Yakymyshyn, Saratoga Springs, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 67,929, May 27, 1993. This application Aug. 23, 1993, Ser. No. 109,897
Int. Cl.[5] C07D *211/70*
U.S. Cl. 546—347 **4 Claims**

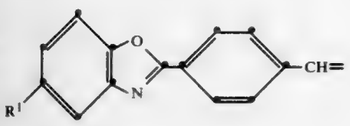
1. A deuterated organic salt having the formula

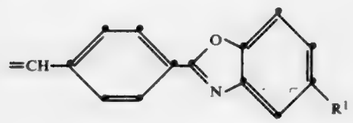


wherein each R^1 is independently an aliphatic, alicyclic or aromatic radical and R^2 is deuterium.

5,332,828
PROCESS FOR THE PREPARATION OF BIS (2-BENZOXAZOLYL) STILBENES
Richard H. S. Wang, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 22, 1993, Ser. No. 20,914
Int. Cl.[5] C07D *263/54*
U.S. Cl. 548—219 **3 Claims**

1. Process for the preparation of 4,4′-bis(2-benzoxazolyl)stilbene compounds having the formula





which comprises the step of reacting 4,4′-stilbenedicarboxylic acid with one or more 2-aminophenol compounds having the formula in the presence of a tin or titanium catalyst and an inert organic solvent having a boiling point above 200° C. selected from alkyl-substituted naphthalenes having 11 to 20 carbon atoms, wherein each R^1 is independently selected from hydrogen, alkyl of up to 12 carbon atoms and alkoxy of up to 12 carbon atoms.

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5,332,829

PROCESS FOR REDUCING 5-(2-THENYLIDENE) HYDANTOIN TO 5-(2-THENYL) HYDANTOIN

Christian Sidot, Ezanville, and Yani Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Feb. 8, 1993, Ser. No. 14,495
Claims priority, application France, Feb. 7, 1992, 92 01414
Int. Cl.[5] C07D *409/06, 233/74*
U.S. Cl. 548—315.1 14 Claims

1. A process for preparing 5-(2-thenyl) hydantoin comprising reacting 5-(2-thenylidene) hydantoin in acetic acid with a phosphorous compound selected from the group consisting of red phosphorus and phosphonic acid, in the presence of catalytic quantities of an iodine compound selected from the group consisting of iodine and hydroiodic acid.

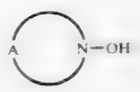
5,332,830

PREPARATION OF N-HYDROXYAZOLES

Klaus H. von Locquenghien, Neuhofen; Wolfgang Hoelderich, Frankenthal; Ulf Baus, Dossenheim; Wolfgang Reuther, and Erwin Hahn, both of Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,910
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1992, 4214174
Int. Cl.[5] C07D *249/08, 233/56, 231/12*
U.S. Cl. 548—262.2 5 Claims

1. A process for the preparation of an N-hydroxyazole of the formula I

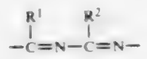


(I)

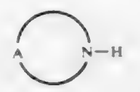
where A is



and



and R^1, R^2 and R^3 are each hydrogen, C_1–C_4-alkyl or halogen, wherein an azole of the formula II



(II)

where A, R^1, R^2 and R^3 have the abovementioned meanings, is reacted with hydrogen peroxide or an alkyl peroxide in the presence of a zeolite catalyst at from −20° to 150° C. and from 0.1 to 150 bar.

5,332,831

BENZOFURAN DERIVATIVES

Michael D. Dowle, and Duncan B. Judd, both of Ware, Great Britain, assignors to Glaxo Group Limited, Greenford, United Kingdom

Filed May 15, 1992, Ser. No. 883,378
Claims priority, application United Kingdom, May 16, 1991, 9110636
Int. Cl.[5] A61K *31/415;* C07D *405/02*
U.S. Cl. 548—315.4 19 Claims

1. The compound 1-[[3-bromo-2-[2-[[(trifluoromethyl)sulphonyl]amino]phenyl]-5-benzofuranyl]methyl]-4-cyclopropyl-2-ethyl-1H-imidazole-5-carboxamide, or a physiologically acceptable salt or solvate thereof.

5,332,832

NITROFURANTOIN CRYSTALS

Frederick D. Cazer, Earlville; Michael J. Kane; Barry L. Scott, both of Norwich, all of N.Y., and Vijay Shahi, New Bombay, India, assignors to Procter & Gamble Pharmaceuticals, Inc., Norwich, N.Y.

Continuation of Ser. No. 707,232, May 20, 1991, abandoned, which is a continuation of Ser. No. 386,050, Jul. 25, 1989, abandoned. This application Aug. 11, 1992, Ser. No. 928,140
Int. Cl.[5] C07D *233/40;* A61K *9/52, 31/415*
U.S. Cl. 548—316.1 10 Claims

1. Nitrofurantoin particulates, wherein:
(a) said particulates are larger than about 200 mesh size;
(b) the BET surface area of said particulates is at least about 0.2 M^2/g;
(c) the surface of said particulates consists essentially of nitrofurantoin monohydrate crystalline forms; and
(d) the remaining, inner portion of said particulates is comprised of anhydrous nitrofurantoin, nitrofurantoin monohydrate, or mixtures thereof.

7. A method of making nitrofurantoin particulates, wherein said particulates are larger than about 200 mesh size, the BET surface area of said particulates is at least about 0.2 M^2/g, and the surface of said particulates consists essentially of nitrofurantoin monohydrate crystalline forms, comprising the steps of:
(a) preparing a saturated aqueous solution of nitrofurantoin monohydrate;
(b) adding to said solution anhydrous nitrofurantoin having a particle size larger than about 200 mesh;
(c) mixing said solution for at least about 5 minutes; and
(d) filtering said solution.

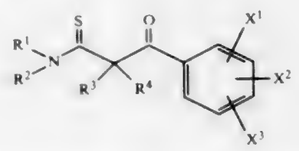
5,332,833

β-OXO-β-BENZENEPROPANETHIOAMIDE COMPOUNDS

Tetsuo Sekiya; Mikio Tsutsui, both of Kanagawa; Tetsuro Shimpuku, Tokyo; Tatsuo Nagano, Tokyo; Junko Hayashi, Tokyo, and Asami Seino, Kanagawa, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,404
Claims priority, application Japan, Dec. 26, 1991, 3-345657
Int. Cl.[5] C07C *327/38, 327/48;* C07D *233/96;* A61K *31/165*
U.S. Cl. 548—338.5 10 Claims

1. A β-oxo-β-benzenepropanethioamide derivative of the formula:



wherein R^1 and R^2 independently represent hydrogen, alkyl or

1–6 carbon atoms or cycloalkyl of 3–6 carbon atoms, or R^1 and R^2 taken together represent alkylene of 3–6 carbon atoms; R^3 represents hydrogen, alkyl of 1–6 carbon atoms or cycloalkyl of 3–6 carbon atoms; R^4 represents alkyl of 1–6 carbon atoms or cycloalkyl of 3–6 carbon atoms; or R^3 and R^4 taken together represent alkylene of 2–5 carbon atoms; X^1, X^2 and X^3 independently represent hydrogen, halogen, alkyl of 1–6 carbon atoms, cycloalkyl of 3–6 carbon atoms, alkoxy of 1–6 carbon atoms, trifluoromethyl, cyano, nitro, dialkylamino of 2–12 carbon atoms, sulfamoyl or a five-membered or six-membered heterocyclic group containing 1–3 nitrogen atoms as the heteroatom, which group is unsubstituted or is substituted by alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, halogen, cyano, phenyl, alkylthio of 1–6 carbon atoms or haloalkyl of –6 carbon atoms, except for the case where R^1 represents hydrogen, R^2 represents n-propyl, R^3 represents hydrogen, R^4 represents methyl and X^1, X^2 and X^3 represent hydrogen; and the case where R^1 represents hydrogen, R^2, R^3 and R^4 represent methyl, and X^1, X^2 and X^3 represent hydrogen, or a pharmaceutically acceptable acid addition salt thereof.

5,332,834

RACEMIZATION OF AN ENANTOMERICALLY ENRICHED α-ARYL CARBOXYLIC ACID

Apurba Bhattacharya; John R. Fritch; Carl D. Murphy; Larry D. Zeagler, and Carina Araullo-McAdams, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 2, 1992, Ser. No. 985,083
Int. Cl.[5] C07D *233/64;* C07B *55/00, 57/00;* C07C *51/487*
U.S. Cl. 548—339.1 3 Claims

1. A process for racemization of an enantiomerically enriched α-arylcarboxylic acid, said process comprising heating said enantiomerically enriched α-arylcarboxylic acid at about 100°–300° C. for about 1–10 hours, in the substantial absence of other components.

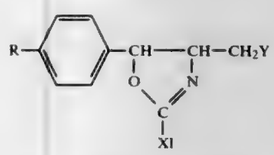
5,332,835

PROCESS FOR FLUORINATING 1-PHENYL-2-AMINO-1,3-PROPANEDIOL COMPOUNDS AND NEW OXAZOLINE COMPOUNDS USEFUL IN THIS PROCESS

Giancarlo Jommi, Milan; Dario Chiarino, Monza, and Roberto Pagliarin, San Giorgio Su Legnano, all of Italy, assignors to Zambon S.p.A., Vicenza, Italy

Continuation of Ser. No. 913,466, Jul. 15, 1992, abandoned, which is a division of Ser. No. 870,777, Apr. 21, 1992, Pat. No. 5,153,328, which is a continuation of Ser. No. 545,145, Jun. 28, 1990, abandoned, which is a continuation of Ser. No. 158,682, Feb. 22, 1988, abandoned, which is a division of Ser. No. 697,568, Feb. 1, 1985, Pat. No. 4,743,700. This application May 24, 1993, Ser. No. 65,521
Claims priority, application Italy, Feb. 3, 1984, 19435 A/84
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] C07D *263/10*
U.S. Cl. 548—239 1 Claim

1. A compound of the formula



wherein R is CH_3S—, CH_3SO—, or CH_3SO_2—; X1 is phenyl; and Y is OH.

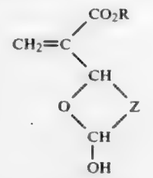
5,332,836

ACRYLATES, CONTAINING AN ALCOHOL, ALDEHYDE AND/OR ETHER FUNCTIONAL GROUP, PROCESS FOR THEIR MANUFACTURE AND THEIR APPLICATION TO THE PRODUCTION OF NEW POLYMERS AND COPOLYMERS

Marie-Christine Berthe; Paul Caubere, and Yves Fort, all of Vandoeuvre les Nancy, France, assignors to Atochem, Paris, France

Division of Ser. No. 721,751, Jun. 27, 1991, Pat. No. 5,206,389. This application Feb. 25, 1993, Ser. No. 22,226
Claims priority, application France, Jun. 27, 1990, 90 08108
Int. Cl.[5] C07D *313/00, 307/78, 307/02*
U.S. Cl. 549—346 8 Claims

1. An acrylates the formula



(III)

in which:
R is a radical chosen from alkyl radicals containing from 1 to 12 carbon atoms, cycloalkyl radicals containing from 5 to 12 carbon atoms, and aryl, arylalkyl and alkylaryl radicals,
Z is a hydrocarbon radical containing at least two carbon atoms forming with the oxygen and the two adjacent carbons a ring containing from 4 to 8 members.

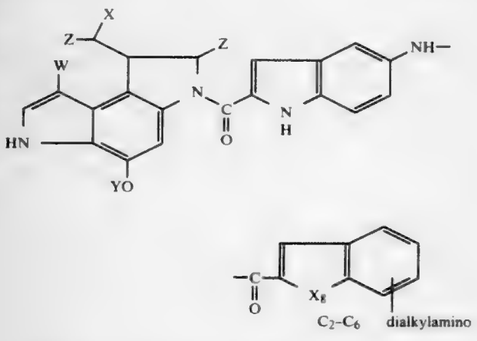
5,332,837

CC-1065 ANALOGS

Robert C. Kelly, Augusta; David G. Martin, Kalamazoo, and Paul A. Aristoff, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 845,762, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 674,422, Mar. 22, 1991, abandoned, which is a continuation of Ser. No. 554,931, Jul. 18, 1990, abandoned, which is a continuation of Ser. No. 382,159, Jun. 8, 1989, abandoned, which is a continuation of Ser. No. 944,633, Dec. 19, 1986, abandoned. This application Jan. 22, 1993, Ser. No. 10,526
Int. Cl.[5] C07D *487/04, 487/08;* A61K *31/40*
U.S. Cl. 548—433 20 Claims

1. A compound of formula



where X_8 is —O—, —S— or —NH—;
wherein W is selected from C_1–C_5 alyl, phenyl or hydrogen;
wherein X is selected from azido, a halogen atom, cyanate, thiocyanate, isocyanate, thioisocyanate, phosphate diester

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(—$PO(OR)_2$), phosphonyl (—O—PO_2R), thiophosphonyl (—O—PSOR), sulfinyl (—O—SOR) or sulfonyl (—O—SO_2R);

wherein Y is selected from —C(O)R, —C(S)R, —C(O)OR_1, —$S(O)_2R_1$, —C(O)NR_2R_3, —C(S)NR_2R_3, or —C(O)N-HSO_2R_4;

wherein Z is selected from the group consisting of C_1–C_5 alkyl, phenyl or hydrogen;

wherein R is selected from the group consisting of C_1–C_{20} alkyl; C_2–C_6 alkenyl; C_2–C_6 alkynyl; phenyl optionally substituted with one, two or three C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, C_1–C_3 alkylthio, trifluoromethyl, C_2–C_6 dialkylamino, or nitro; naphthyl optionally substituted with one or two C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, trifluoromethyl, C_2–C_6 dialkylamino, C_1–C_3 alkylthio or nitro;

wherein R_1 is selected from C_1–C_{20} alkyl or phenyl optionally substituted with one, two or three C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, C_1–C_3 alkylthio, trifluoromethyl, C_2–C_6 dialkylamino, or nitro;

wherein R_2 and R_3, being the same or different, are selected from hydrogen, C_1–C_{20} alkyl or phenyl optionally substituted with one, two or three C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, C_1–C_3 alkylthio, trifluoromethyl, C_2–C_6 dialkylamino, or nitro; with the proviso that both R_2 and R_3 cannot be phenyl or substituted phenyl; and

wherein R_4 is selected from C_1–C_{10} alkyl; phenyl optionally substituted with one, two or three C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, C_1–C alkylthio, trifluoromethyl, C_2–C_6 dialkylamino, or nitro; naphthyl optionally substituted with one or two C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, trifluoromethyl, C_2–C_6 dialkylamino, C_1–C_3 alkylthio or nitro.

5,332,838

CYCLIZATION PROCESS UTILIZING COPPER ALUMINUM BORATE AS A CATALYST

Patrick E. McMahon, and Larry C. Satek, both of Wheaton, Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 29, 1988, Ser. No. 174,822
Int. Cl.[5] C07D *209/04*
U.S. Cl. 548—508 **32 Claims**

1. A cyclization process utilizing the catalyst copper aluminum borate which comprises the step of contacting (1) a compound having a fragment in which a carbon-containing chain of at least three atoms in sequence is bonded at one end thereof to a nitrogen, oxygen, or sulfur atoms, and at the opposite end to a carbon, nitrogen, oxygen, of sulfur atom, where the latter are bonded to at least one hydrogen atom; with (2) a catalyst consisting essentially of at least one member selected from the group consisting of (a) crystalline copper aluminum borate having the significant x-ray diffraction lines set forth in Table A and (b) zero valent copper on a support comprising at least one member selected from the group consisting of $Al_4B_2O_9$ and said crystalline copper aluminum borate, the zero valent copper on the support being formed by the reduction of the crystalline copper aluminum borate, said cyclization process being conducted under conditions sufficient to effect ring closure between the ends of the fragment to obtain a compound comprising a heterocyclic ring.

5,332,839

CATALYTIC PRODUCTION OF LACTIDE DIRECTLY FROM LACTIC ACID

Herman P. Benecke; Richard A. Markle, and Richard G. Sinclair, all of Columbus, Ohio, assignors to BioPak Technology, Ltd., Golden, Colo.

Filed Sep. 18, 1990, Ser. No. 584,466
The portion of the term of this patent subsequent to Oct. 26, 2009, has been disclaimed.
Int. Cl.[5] C07D *319/12*
U.S. Cl. 549—274 **18 Claims**

1. A method for making lactide from aqueous lactic acid feed enriched primarily in L_1A, and L_2A, and some L_3A, and depleted in higher L_nA oligomers which comprises the steps of:

(a) converting aqueous lactic acid feed to its vapor phase;

(b) passing said feed vapors through a vapor phase reaction zone maintained at elevated temperature; and

(c) withdrawing from said reaction zone lactide, water, and unreacted aqueous lactic acid feed.

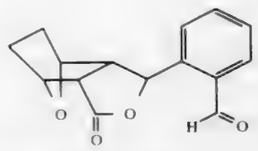
5,332,840

METHOD FOR PREPARING A BENZALDEHYDE INTERMEDIATE

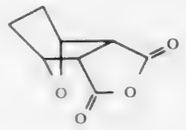
Sharon D. Real, Pennington, N.J., and David R. Kronenthal, Yardley, Pa., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed May 27, 1993, Ser. No. 67,885
Int. Cl.[5] C07D *493/08*
U.S. Cl. 549—300 **3 Claims**

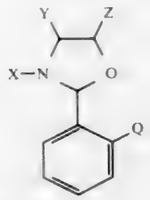
1. A method for preparing an aldehyde intermediate of the structure



which comprises, reacting an anhydride of the structure



with an oxazolidine of the structure



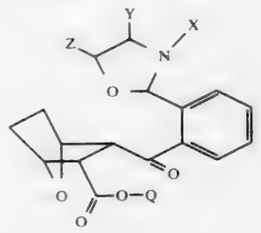
wherein Q is Li or MgHal,

X is lower alkyl or aralkyl,

Y is lower alkyl, aryl or aralkyl, and

Z is aryl or H,

to form a keto acid salt of the structure



reacting the keto acid salt with a hydride reducing agent and then with a strong acid to form the aldehyde intermediate.

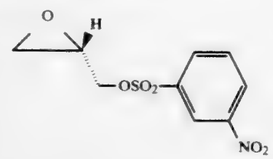
5,332,843

OPTICALLY ACTIVE DERIVATIVES OF GYCIDOL

Karl B. Sharpless, Brookline, and Tetsuo H. Onami, Somerville, both of Mass., assignors to Masssachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 563,793, Aug. 3, 1990, Pat. No. 5,153,338, which is a continuation of Ser. No. 878,176, Jun. 25, 1986, abandoned. This application Jul. 21, 1992, Ser. No. 917,499
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] C07D *303/34*
U.S. Cl. 549—551 **8 Claims**

1. A compound of the formula



purified to at least about 96.0% e.e.

5,332,844

METHOD OF PRODUCING STRAIGHT-CHAIN ACRYLONITRILE DIMERS

Ryoji Sugise; Kouichi Kashiwagi; Masashi Shirai, and Toshihiro Shimakawa, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Mar. 4, 1993, Ser. No. 26,487
Claims priority, application Japan, Mar. 6, 1992, 4-097512; Nov. 6, 1992, 4-296972; Nov. 13, 1992, 4-303912
Int. Cl.[5] C07C *253/30*
U.S. Cl. 558—364 **25 Claims**

1. A method of producing straight-chain acrylonitrile dimers including 1,4-dicyanobutene, 1,4-dicyanobutadiene and adiponitrile, comprising dimerizing acrylonitrile in the presence of a catalyst consisting essentially of at least one ruthenium compound selected from the group consisting of inorganic ruthenium compounds, ruthenium carboxylates and ruthenium coordination compounds and in the additional presence of an organic carboxylic acid having 1 to 20 atoms.

5,332,841

PREPARATION OF 2,3-DIHYDRO-2,2-DIMETHYL-7-BENZOFURANYL CHLOROFORMATE WITH AQUEOUS PHASE REMOVAL

Harry W. Weber, Jr., Newtown, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 30, 1993, Ser. No. 85,239
Int. Cl.[5] C07D *307/86*
U.S. Cl. 549—470 **13 Claims**

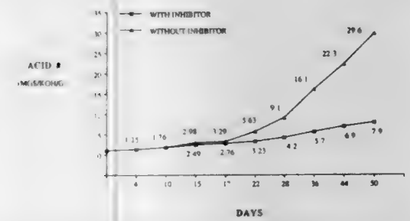
1. An improved process for the production of 2,3-dihydro-2,2-dimethyl-7-benzofuranyl chloroformate which comprises treating, in a reaction zone, a mixture of 2,3-dihydro-2,2-dimethyl-7-benzofuranol and phosgene in a water immiscible organic medium with aqueous base forming an organic phase and an aqueous phase, and removing aqueous phase from the organic phase during the process.

5,332,842

PROCESS FOR INHIBITING OXIDATION AND POLYMERIZATION OF FURFURAL AND ITS DERIVATIVES

Ghazi Dickakian, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed May 13, 1993, Ser. No. 60,871
Int. Cl.[5] C07D *307/48*; C10G *21/16, 29/22*
U.S. Cl. 549—490 **14 Claims**



1. A method of inhibiting oxidation of furfural which comprises the steps of (a) adjusting the pH of the furfural to between 6.6 and 7.2, and (b) introducing into the furfural an effective amount of an inhibitor selected from the group consisting of dialkylphenylenediamines, diarylphenylenediamines, dialkylnaphthalenediamines, and diarylnaphthalenediamines.

9. In the solvent refining of lubricating oils wherein a continuously circulating furfural stream is brought into contact with lubricating oil to extract constituents therefrom, a process for inhibiting oxidation of the furfural which comprises (a) adjusting the pH of the furfural stream to between 6.6 and 7.2 and (b) injecting into the stream an effective amount of a dialkylphenylenediamine to inhibit the oxidation of the furfural.

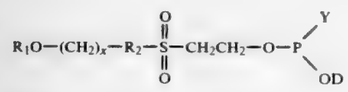
5,332,845

PHOSPHORYLATING REAGENTS

Michael S. Ureda, Alamo, and Thomas Horn, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 87,158, Aug. 18, 1987, Pat. No. 5,260,760, which is a continuation-in-part of Ser. No. 891,789, Jul. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 845,290, Mar. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 717,206, Mar. 28, 1985, abandoned. This application Feb. 26, 1993, Ser. No. 23,932
Claims priority, application Canada, Mar. 27, 1986, 504420; European Pat. Off., Mar. 27, 1986, 861042505; Japan, Mar. 27, 1986, 61-067385
Int. Cl.[5] C07F *9/09, 9/141*
U.S. Cl. 552—105 **20 Claims**

1. A phosphorylating reagent having the structure of Formula I



Formula I

wherein

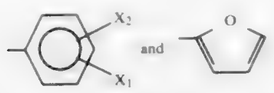
(a) R_1 is a colorimetrically detectable species selected from

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the group consisting of trityloxyacetyl, substituted phenoxyacetyl, unsubstituted phenoxyacetyl, and



wherein the R, R′ and R″ are independently selected from the group consisting of



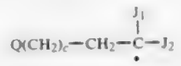
wherein X_1 and X_2 are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, nitro, phenyl, sulfonated, amino substituted with from 0 to 2 lower alkyl or lower alkoxy substituents, and carbon atoms which represent part of an aromatic system having from one to five rings;

(b) R_2 is selected from the group consisting of methylene that is mono-substituted with lower alkyl, methylene that is di-substituted with lower alkyl, phenyl, phenyl substituted with lower alkyl, and phenyl substituted with nitro;

(c) Y is selected from the group consisting of amino substituted from 0 to 2 alkyl groups having from 1 to 6 carbon atoms, halogen and trialkylsilyl of from 3 to 12 carbon atoms;

(d) x is an integer in the range of 1 and 50 inclusive; and

(e) D has the structure



in which J_1 and J_2 are independently selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, c is 0 or 1, and Q is selected from the group consisting of hydrogen, alkyl of from 1 to 9 carbon atoms, nitro, lower alkylsulfonyl, cyano, p-nitrophenyl, lower alkylthio, arylthio, trihalomethyl, phenyl, β-naphthyl, 9-fluoroenyl and 2-anthraquinonyl, and the • represents the point of attachment to the remainder of the molecule.

6. The phosphorylation reagent of claim 1, wherein Y is morpholino.

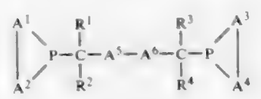
5,332,846

HYDROFORMYLATION PROCESS USING NOVEL PHOSPHINE-RHODIUM CATALYST SYSTEM

Thomas J. Devon; Gerald W. Phillips; Thomas A. Puckette; Jerome L. Stavinoha, and Jeffrey J. Vanderbilt, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1993, Ser. No. 69,478
Int. Cl.[5] C07F *15/00*
U.S. Cl. 556—21 **17 Claims**

1. A phosphine compound having the formula



wherein:

each of A^1, A^2, A^3 and A^4 is a carbocyclic arylene radical containing 6 to 10 ring carbon atoms wherein (i) each phosphorus atom P is bonded to a ring carbon atom of A^1 and A^2 and to a ring carbon atom of A^3 and A^4, (ii) A^1 and A^2, and A^3 and A^4 are bonded to each other by ring carbon atoms and (iii) each of the residues

constitutes a 5-membered ring;

each of A^5 and A^6 is a carbocyclic arylene radical containing 6 to 10 carbon atoms wherein A^5 and A^6 are bonded to each other and to residues R^1—C—R^2 and R^3—C—R^4 by ring carbon atoms and R^1—C—R^2 and R^3—C—R^4 are connected to each other through a chain of 4 carbon atoms; and

R^1, R^2, R^3 and R^4 each represents hydrogen or a hydrocarbyl radical containing up to about 8 carbon atoms.

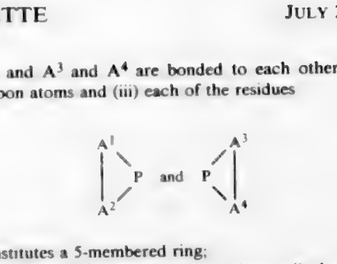
5,332,847

PROCESS FOR THE PREPARATION OF 21-BROMO-4-PREGNENE-3,20-DIONE DERIVATIVES

Gerhard Hempel, deceased, late of Werne, Fed. Rep. of Germany by Gabriele M. K. Hempel, heiress , assignor to Schering Aktiengesellschaft, Berlin und Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE90/00329, § 371 Date Mar. 11, 1991, § 102(e) Date Mar. 11, 1991, PCT Pub. No. WO90/13558, PCT Pub. Date Nov. 15, 1990
PCT Filed May 7, 1990, Ser. No. 663,913
Claims priority, application Fed. Rep. of Germany, May 12, 1989, 3915951
Int. Cl.[5] C07J *63/00, 7/00*
U.S. Cl. 552—607 **5 Claims**

1. A process for the preparation of a 21-bromo-4-pregnene-3,20-dione compound of formula I



wherein

R_1 is a hydrogen atom, a hydroxy group, or an alkanoyl group of up to 6 carbon atoms;

R_2 is a hydrogen atom or a methyl group; or

R_1 and R_2 jointly are an isopropylidenedioxy group;

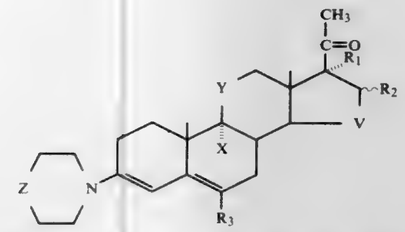
R_3 is a hydrogen atom, a fluorine atom, or a methyl group;

V is a methylene group or ethylene group;

X is a hydrogen atom, a fluorine atom, or a chlorine atom; and

Y is a methylene group, a hydroxymethylene group, or a carbonyl group;

comprising brominating an enamine of formula II

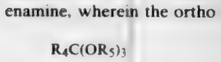


(II)

wherein R_1, R_2, R_3, X, Y and V have the meanings given above; and

Z is a carbon-to-carbon bond, a methylene group, or an oxygen atom;

with elemental bromine in a lower alcohol of maximally 4 carbon atoms, wherein prior to brominating the enamine, adding 1–2 moles of methanesulfonic acid per mole of the enamine and 0.01–1 moles of an ortho ester per mole of the enamine, wherein the ortho ester is of formula III



(III)

wherein

R_4 is a hydrogen atom or an alkyl residue of 1 to 4 carbon atoms, and

R_5 is an alkyl group of 1 to 4 carbon atoms.

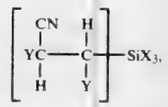
5,332,848

β-CYANOALKYLSILANE PREPARATION USING TETRAALKYLAMMONIUM HALIDE SUPPORTED ON SILICA GEL AS CATALYST

Howard M. Bank, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 23, 1993, Ser. No. 155,735
Int. Cl.[5] C07F *7/10*
U.S. Cl. 556—415 **17 Claims**

1. A process for preparation of beta-cyanoalkylsilanes described by formula

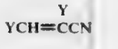


the process comprising:

contacting a silicon hydride described by formula



with an unsaturated olefinic nitrile described by formula



in the presence of tetraalkylammonium halide described by formula



supported on silica gel as catalyst, at a temperature within a range of about 50° C. to 250° C. where each R is an independently selected alkyl comprising one to 20 carbon atoms, X is a halogen, and each Y is independently selected from a group consisting of hydrogen and lower alkyl radicals comprising one to eight carbon atoms.

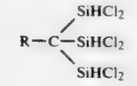
5,332,849

TRIS(SILYL) ALKANES AND THEIR PREPARATION METHODS

Il N. Jung, Seoul; Seung H. Yeon, Kyungki, and Joon S. Han, Seoul, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jan. 3, 1994, Ser. No. 176,442
Int. Cl.[5] C07F *7/08*
U.S. Cl. 556—435 **16 Claims**

1. Tris(silyl)alkanes represented by formula III



Formula III

wherein R represent independently hydrogen or methyl.

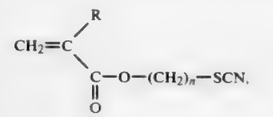
5,332,850

(METH)ACRYLIC COMPOUNDS CARRYING A THIOCYANATE GROUP

Marie-Christine Berthe, Vandoeuvre les Nancy; Paul Caubere, Nancy, and Yves Fort, Vandoeuvre les Nancy, all of France, assignors to Atochem, Paris, France

Filed Jul. 9, 1991, Ser. No. 725,810
Claims priority, application France, Jul. 9, 1990, 90 08698
Int. Cl.[5] C07C *331/04*
U.S. Cl. 558—14 **4 Claims**

1. An acrylic or methacrylic compound of the formula:



(I)

wherein:

n is an integer ranging from 2–20 inclusive, and

R is a hydrogen atom, methyl or CHOHR′, wherein R′ is a straight-chain or branched alkyl optionally substituted by hydroxyl, alkoxy, or ester substituents; straight-chain, branched, or cyclic alkenyl; aryl radicals optionally substituted by halogen, nitro, or alkoxy; unsaturated heterocyclic radicals; alkylaryl; or arylalkyl radicals, with the proviso that R does not represent methyl in the formula (I) when n is 2 or 4.

5,332,851

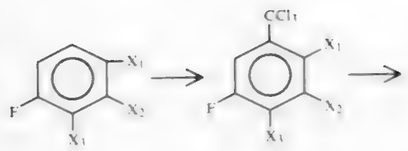
PROCESSES FOR PRODUCING 5-FLUOROBENZOIC ACIDS AND THEIR INTERMEDIATES

Seisaku Kumai, Fujisawa; Masao Ohashi; Yutaka Yaginuma, both of Chigasaki, and Katsuhiko Takeda, Fujisawa, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo and Seimi Chemical Co., Ltd., Chigasaki, both of Japan

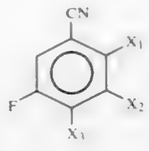
Division of Ser. No. 614,598, Nov. 15, 1990, Pat. No. 5,241,111. This application May 4, 1993, Ser. No. 56,395
Claims priority, application Japan, Nov. 17, 1989, 1-297609; Nov. 17, 1989, 1-297610
Int. Cl.[5] C07C *253/00, 19/08*
U.S. Cl. 558—329 **4 Claims**

1. A process for producing a 5-fluorobenzonitrile, which comprises trichloromethylating a fluorobenzene of the formula (I) to obtain a 5-fluorobenzotrichloride of the formula (II), and then reacting it with aqueous ammonia to obtain a 5-fluorobenzonitrile of the formula (III):

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(I) (II)



(III)

wherein each of X_1 and X_3 is a halogen atom, and X_2 is hydrogen or a halogen atom.

5,332,852

1,4-O-METALLATION PROCESS

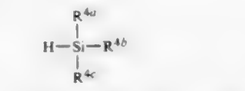
Salvatore A. Bruno, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 266,891, Nov. 3, 1988, abandoned, which is a division of Ser. No. 727,813, Apr. 26, 1985, abandoned. This application Jun. 3, 1991, Ser. No. 713,531

Int. Cl.[5] C07F *7/08, 7/10, 7/18*

U.S. Cl. 512—446 **16 Claims**

1. A process for the production of a predominantly 1,4-O-metallation product which comprises reacting a silicon hydride, of the formula:



halogen branched or straight chain alkyl, aralkyl or aryl groups, with an α,β-unsaturated carbonyl compound in the presence of a heterogeneous noncomplexed rhodium containing catalyst.

5,332,853

CATALYTIC ALKYLATION PROCESS

Robert C. Morrison, Gastonia; Randy W. Hall; B. Troy Dover, both of Kings Mountain; Conrad W. Kamienski, Gastonia, and John F. Engel, Belmont, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 842,902, Feb. 27, 1992, abandoned, which is a division of Ser. No. 736,660, Jul. 26, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 92,319

Int. Cl.[5] C07F *7/04*

U.S. Cl. 556—478 **28 Claims**

1. A catalytic process for alkylating chlorosilanes by reacting an alkyllithium compound of the formula RLi wherein R is an alkyl group containing 1 to 20 carbon atoms with a chlorosilane comprising conducting the reaction in a hydrocarbon solvent in the presence of 0.01 to 10 mole percent, based on alkyllithum of a catalytic compound selected from the group consisting of

(A) a compound represented by the formula

$$(R^3)_x(RR^1R^2M^a)_yA(H)_z \quad (I)$$

wherein R, R^1 and R^2 are independently selected from hydrogen, alkyl and alkenyl groups containing 1 to 13 carbon atoms, cycloalkyl groups containing 3 to 10 carbon atoms, aryl groups containing 6 to 18 carbon atoms, R^3 is independently selected from aryl groups containing 6 to 18 carbon atoms, four to six-membered heterocyclic carbon containing groups containing one to two hetero atoms selected from oxygen, nitrogen, and sulfur; hydroxyalkyl, alkoxyalkyl, and mono- and dialkylaminoalkyl groups containing 2 to 13 carbon atoms, M^a is a group iv metal selected from silicon, carbon, germanium and tin, A is selected from oxygen, sulfur and nitrogen, x and y independently have values from zero to two and z has a value of one or two

(B) a compound represented by the formula

$$[(R^3)_x(RR^1R^2M^a)_yA(H)_z]_wM^b \quad (II)$$

wherein R, R^1 and R^2 are independently selected from hydrogen, alkyl and alkenyl groups containing 1 to 13 carbon atoms, cycloalkyl groups containing 3 to 10 carbon atoms, aryl groups containing 6 to 18 carbon atoms, R^3 is independently selected from alkyl groups containing 1 to 10 carbon atoms and alkylene groups containing 2 to 5 carbon atoms, aryl groups containing 6 to 18 carbon atoms, four to six-membered heterocyclic carbon containing groups containing one to two hetero atoms selected from oxygen, nitrogen, and sulfur; hydroxyalkyl groups and alkoxyalkyl groups containing 2 to 13 carbon atoms and mono- and dialkylaminoalkyl groups containing 2 to 13 carbon atoms; M^a is a group iv metal selected from silicon, carbon, germanium, and tin; A is selected from oxygen, sulfur and nitrogen; M^b is selected from lithium, sodium, potassium and magnesium; x and y independently have values from zero to two and z has a value of zero or one and w has a value of 1 or 2;

(C) a compound represented by the formula

$$(RR^1R^2M^a)_yA(R^3)_x \quad (III)$$

wherein R, R^1 and R^2 are independently selected from hydrogen, halogen, alkyl and alkenyl groups containing 1 to 13 carbon atoms, cycloalkyl groups containing 3 to 10 carbon atoms, aryl groups containing 6 to 18 carbon atoms, R^3 is independently selected from alkyl groups containing 1 to 10 carbon atoms and alkylene groups containing 2 to 5 carbon atoms aryl groups containing 6 to 18 carbon atoms, four to six-membered heterocyclic carbon containing groups containing one to two hetero atoms selected from oxygen, nitrogen, and sulfur; hydroxyalkyl groups and alkoxyalkyl groups containing 2 to 13 carbon atoms and mono- and dialkylaminoalkyl groups containing 2 to 13 carbon atoms; M^a is selected from silicon, carbon, germanium, and tin, A is selected from oxygen, sulfur and nitrogen, and x and y independently have values from zero to three, and;

(D) mixtures of (A) , (B) , and (C) above.

5,332,854

SURFACTANT

Kinya Yokota, Shiga; Akinobu Ichihara, and Hitoshi Shinike, both of Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

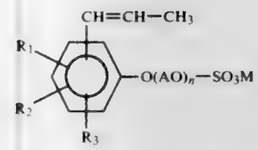
Continuation of Ser. No. 715,946, Jun. 14, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 98,010

Claims priority, application Japan, Jun. 20, 1990, 2-162287

Int. Cl.[5] C07C *305/12*

U.S. Cl. 558—33 **1 Claim**

1. A compound of the following general formula (I)



(I)

wherein R_1 is an alkyl, alkenyl or aralkyl group containing 6 to 18 carbon atoms; R_2 is a hydrogen atom or an alkyl, alkenyl or aralkyl group containing 6 to 18 carbon atoms; R_3 is a hydrogen atom or a propenyl group; A is an alkylene group of 2 to 4 carbon atoms; n is an integer of 1 to 200; M is an alkali metal, an ammonium ion or an alkanolaminecation.

5,332,855

AMMOXIDATION OF SATURATED HYDROCARBONS

Gilbert Blanchard, Belleville, and Gilbert Ferre, Livry Gargan, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Feb. 12, 1993, Ser. No. 17,295

Claims priority, application France, Feb. 20, 1992, 92 02195

Int. Cl.[5] C07C *253/24*

U.S. Cl. 558—319 **22 Claims**

1. A process for the ammoxidation of a saturated hydrocarbon into an α,β-ethylenically unsaturated nitrile, by reacting an acyclic alkane containing at least 3 carbon atoms per molecule with ammonia and oxygen, in vapor phase, and in the presence of a catalytically effective amount of a solid catalyst, said catalyst having an active phase represented by the empirical formula (I):

$$VSb_aM_bO_x \quad (I)$$

in which a is a number equal to or greater than 1, M is iron, gallium, indium or mixtures thereof, b is a number equal to or greater than 0.5, and x is a number provided by the oxidation number of the other elements of said at least one active catalytic phase and said active catalytic phase represented by formula (I) being the sole ammoxidation component catalyst in the process.

5,332,856

BI-AROMATIC ESTERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN HUMAN OR VETERINARY MEDICINE AND IN COSMETIC COMPOSITIONS

Braham Shroot, Antibes; Jean-Michel Bernardon, Nice, and William R. Pilgrim, Valbonne, all of France, assignors to Centre International de Recherches Dermatologiques Galderma (CIRD Galderma), Valbonne, France

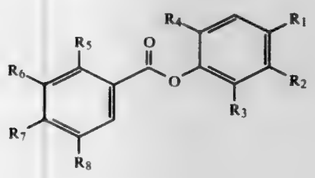
Division of Ser. No. 553,087, Jul. 17, 1990, Pat. No. 5,200,550. This application Dec. 16, 1992, Ser. No. 991,192

Claims priority, application France, Jul. 18, 1989, 89 09652

Int. Cl.[5] C07C *321/00*

U.S. Cl. 560—18 **8 Claims**

1. A bi-aromatic ester having the formula



(I)

wherein

R_1 represents —$COOR_9$,

R_9 represents hydrogen, alkyl having 1–6 carbon atoms, monohydroxyalkyl or polyhydroxyalkyl,

R_2 represents hydrogen, alkyl having 1–6 carbon atoms, OR_9, fluorine or —CF_3,

R_3, R_4 and R_5 represent hydrogen, fluorine, OH, —CH_3, —OCH_3 —CH_3, —COOH or —CH_2OH,

R_6 and R_8 represent hydrogen, α-substituted alkyl having 3–15 carbon atoms, α,α'-disubstituted alkyl having 4–12 carbon atoms, cycloalkyl having 3–12 carbon atoms, mono- or polycyclic cycloalkyl having 5–12 carbon atoms whose linking carbon is trisubstituted, —SR_{11}, —SO_2R_{11} or —SOR_{11},

R_{11} represents alkyl having 1–6 carbon atoms or cycloalkyl, with the proviso that R_6 and R_8 do not simultaneously represent hydrogen,

R_7 represents OR_{12}, SR_{13}, SOR_{14} or SO_2R_{14},

R_{12} is monohydroxyalkyl, polyhydroxyalkyl or —$(CH_2)_n$—COR_{15}, wherein n is 0.1 or 2, and R_{15} represents hydrogen, OH, alkyl having 1–6 carbon atoms or alkoxy having 1–6 carbon atoms,

R_{13} represents hydrogen, alkyl having 1–6 carbon atoms or aralkyl,

R_{14} represent OH, alkyl having 1–6 carbon atoms or aralkyl,

with the proviso that when R_2 represents hydrogen then:

(i) either R_3 and R_4 are other than hydrogen or —CH_3,

(ii) or R_7 is other than OR_{12} and R_6 or R_8 is cycloalkyl having more than 7 carbon atoms,

(iii) or R_7 represents OR_{12}, but R_6 or R_8 is other than hydrogen,

(iv) or R_7 represents OR_{12} but R_5 is other than hydrogen.

5,332,857

3,5-DIHYDROXY-6,8-NONADIENOIC ACIDS AND DERIVATIVES AS HYPOCHOLESTEROLEMIC AGENTS

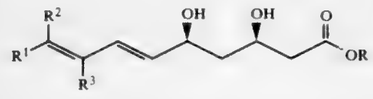
Peter A. McCarthy, Pawcatuck, and Frederick J. Walker, Preston, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 499,489, Mar. 27, 1990, Pat. No. 5,151,545. This application Jul. 6, 1992, Ser. No. 909,254

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—60 **11 Claims**

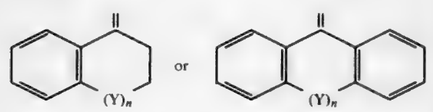
1. A compound having the following stereochemical formula



wherein R is hydrogen, $(C_1$–$C_3)$alkyl, phenyl, benzyl or a conventional radical forming an ester group which is hydrolyzable under physiological conditions;

R^1 and R^2, when taken separately, and R^3 are each independently hydrogen, $(C_1$–$C_3)$alkyl, benzyl, naphthyl, phenyl or phenyl mono or disubstituted with the same or different substituents selected from the group consisting of F, Cl, Br, I, $(C_1$–$C_3)$alkyl, CF_3, $(C_1$–$C_3)$alkoxy, benzyl and phenyl; with the proviso that at least one of R^1 and R^2 is other than hydrogen or $(C_2$–$C_3)$alkyl; and

R^1 and R^2, when taken together, are combined with the double bonded carbon atom to which they are attached to form a diradical ylidene group of the formula



wherein n is 0 or 1 and Y is oxygen, OCH_2, sulfur, SCH_2, methylene or ethylene; with the proviso that R^1 and R^2

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are taken together when R is hydrogen, (C_1-C_3) alkyl, phenyl or benzyl; or
a pharmaceutically acceptable cationic salt thereof when R is hydrogen.

5,332,858
ESTER COMPOSITION

Feike De Jong, and Jan H. H. Meurs, both of CM Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 17, 1992, Ser. No. 914,395
Claims priority, application United Kingdom, Jul. 22, 1991, 9115752.9
Int. Cl.[5] C07C *67/14, 69/80, 69/86, 57/70*
U.S. Cl. 560—67 **9 Claims**

1. A method for preparing an ester which comprises reacting a molecule having at least one activated phenolic ether group and a least one chloroformyl group with a molecule having at least one chloroformyl group and at least one activated phenolic group.

5,332,859
PROCESS FOR PRODUCING TETRABROMOPHTHALIC DIESTERS

Brian Tarbit, Northumberland, Great Britain, assignor to Great Lakes Chemical Europe, Ltd., Trauenfild, Switzerland

Filed Nov. 3, 1992, Ser. No. 970,919
Int. Cl.[5] C07C *67/08, 67/48*
U.S. Cl. 560—83 **30 Claims**

1. A batchwise process for producing a tetrabromophthalic diester composition while recycling solvent, comprising:
(a) preparing a first batch by reacting, in an inert organic solvent at a temperature in the range of up to about 150° C., tetrabromophthalic anhydride (TBPA) , a C_2 to C_6 polyhydric aliphatic alcohol (PAA) and an alkylene oxide (AO) selected from tile group consisting of ethylene oxide and propylene oxide, said reacting being in a PAA:AO:TBPA mole ratio of 1.6–1.9:1.3–1.5:1, so as to obtain a reacted mixture including the tetrabromophthalic diester composition and the organic solvent;
(b) recovering the organic solvent from the reaction mixture by distillation;
(c) analyzing the recovered organic solvent to determine the level of its AO content;
(d) preparing a second batch by repeating step (a) above wherein the organic solvent used includes the recovered organic solvent from the previous batch and wherein its determined AO level is accounted for in achieving the PAA:AO:TBPA mole ratio.

5,332,860
POLYOLS USEFUL FOR PREPARING POLYURETHANE FOAMS HAVING IMPROVED RETENTION OF INSULATIVE PROPERTIES, POLYURETHANE FOAMS PREPARED THEREWITH AND METHODS FOR THE PREPARATION THEREOF

Douglas R. Moore, Clute; Warren A. Kaplan, Lake Jackson; Ricky L. Tabor, Lake Jackson, and Alan K. Schrock, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 29, 1993, Ser. No. 85,331
Int. Cl.[5] C07C *69/03, 69/76, 69/82*
U.S. Cl. 560—91 **4 Claims**

1. A polyester polyol useful for preparing polyurethane foams having improved retention of insulative properties comprising the product of
(1) admixing ethylene carbonate and one or more hydroxyl functional compounds under reaction conditions sufficient to react the ethylene carbonate and the hydroxyl functional compounds to produce a polyol precursor, and
(2) admixing the polyol precursor with diethylene glycol and an anhydride, a dicarboxylic acid, a tricarboxylic acid or mixtures thereof, optionally in the presence of a catalyst, under reaction conditions sufficient to prepare a polyester polyol, wherein the hydroxyl functional compounds are selected from glycerine, trimethylpropane, sugars and sugar derivatives.

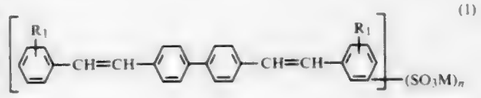
5,332,861
PROCESS FOR PREPARING DISTYRYLBIPHENYL COMPOUNDS

Leonardo Guglielmetti, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 30, 1993, Ser. No. 114,129
Claims priority, application Switzerland, Sep. 3, 1992, 2764/92
Int. Cl.[5] C07C *247/00*
U.S. Cl. 562—87 **16 Claims**

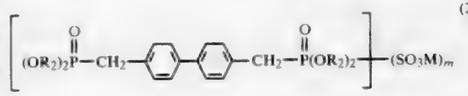
1. A process for preparing distyrylbiphenyl compounds of the formula (1)

(1)



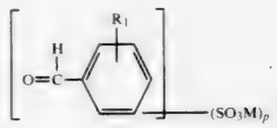
by condensation of a compound of the formula (2)

(2)



with a compound of the formula (3)

(3)

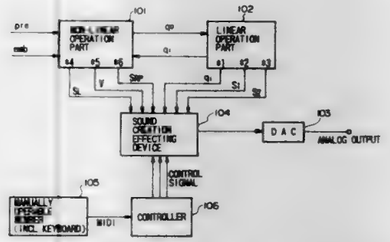


in which
R_1 is hydrogen, C_1-C_5alkyl or halogen;
R_2 is C_1-C_8alkyl;
M is a salt-forming colourless cation;
n is 2 or 4;
m is 0 or 2; and
p is 0 or 1; provided m+p is 2 or 4,
which comprises carrying out the condensation in liquid ammonia in the presence of strongly alkaline substances.

5,332,862
MUSICAL TONE SYNTHESIZING APPARATUS INCLUDING MODULATOR ON ITS NON-LINEAR/LINEAR OUTPUTS

Masahiro Kakishita, and Toshifumi Kunimoto, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Shizuoka, Japan

Filed Oct. 7, 1992, Ser. No. 957,714
Claims priority, application Japan, Nov. 1, 1991, 3-288111
Int. Cl.[5] G10H *1/06*
U.S. Cl. 84—659 **14 Claims**

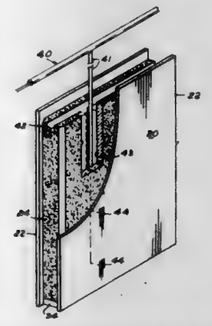


13. A method for synthesizing a musical tone signal, the method comprising the steps of:
generating a progressive wave signal based on a non-linear operation with respect to a feedback signal;
progressing and delaying the progressive wave signal by means of a loop circuit which performs a linear operation and generating a processed progressive wave signal, said processed progressive wave signal being fed back as the feedback signal;
extracting the progressive wave signal and the processed progressive wave signal;
creating a first signal based on the progressive wave signal and a second signal based on the processed progressive wave signal; and
modulating one of the first signal and the second signal according to the other one of the first signal and the second signal, and providing the modulated signal as a musical tone signal.

5,332,863
WIRING INSTALLATION METHOD FOR MODULAR BUILDING STRUCTURES

Raymond L. Emmert, 8028 NW 20th, Oklahoma City, Okla. 73127

Division of Ser. No. 724,072, Jul. 1, 1991, Pat. No. 5,216,854.
This application May 7, 1993, Ser. No. 58,300
Int. Cl.[5] H02G *3/28*
U.S. Cl. 174—48 **3 Claims**

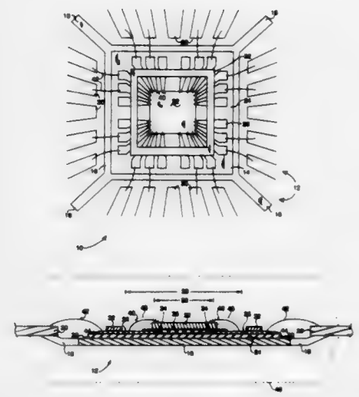


1. The method of electrical wiring the walls of a modular building structure formed by a plurality of upstanding juxtaposed sandwich panels, each panel having a core and having an upwardly open groove in the uppermost end surface of the core forming a coextensive wire receiving horizontal channel and having vertical wire receiving slots in selected panels communicating with the channel and open at their respective depending end through a wall of the respective panel, comprising the steps of:
a) providing a building structure wiring harness unit having a continuous length, between terminal ends, substantially equal with a predetermined portion of a wall to be wired and having longitudinally spaced laterally extending runs equal in number with the selected number of vertical slots open at their depending ends through a panel wall; and,
b) inserting said lateral runs into the vertical wall slots while simultaneously laying the continuous length of wiring harness unit in the horizontal channel.

5,332,864
INTEGRATED CIRCUIT PACKAGE HAVING AN INTERPOSER

Louis Liang, Los Altos; Sang S. Lee, Sunnyvale, and Young I. Kwon, San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

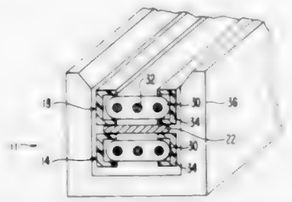
Filed Dec. 27, 1991, Ser. No. 815,097
Int. Cl.[5] H01L *23/02, 23/28*
U.S. Cl. 174—52.4 **17 Claims**



1. An integrated circuit lead frame assembly comprising:
(a) a lead frame including a die attach pad and a plurality of bonding fingers positioned proximate to said die attach pad; and
(b) interposer means including
(i) a thin, flexible, planar insulator having a first side attached to said die attach pad; and
(ii) a plurality of conductive traces provided on a second side of said insulator which extend from a centrally located die attach area of said assembly towards the edges of said insulator, each of said conductive traces having an inner end and an outer end, wherein said inner ends terminate proximate said die attach area and said outer ends terminate proximate to said edges of said insulator, and wherein said inner ends are narrower in width than said outer ends.

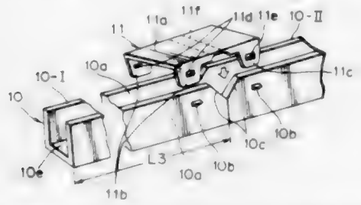
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5,332,865
LINE GUIDING ASSEMBLY
Theodore E. Jensen, Scottsdale, Ariz., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed Oct. 2, 1992, Ser. No. 955,568
Int. Cl.[5] H02G *11/00*
U.S. Cl. 174—99 E 11 Claims



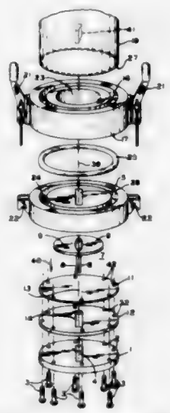
1. A line guiding assembly having a stationary piece of equipment and a moving piece of equipment comprising:
(a) a plurality of cables held together within an encapsulant and further held within reinforcement channels to form a reinforced line assembly;
(b) a trough holding said reinforced line assembly wherein said reinforced line assembly is positioned within the trough and looped back onto itself thereby forming a lower length, an upper length and a loop of the reinforced line assembly, wherein one of said lengths has an end which is affixed to the stationary piece of equipment and the other said length has an end which is affixed to the moving piece of equipment which is capable of moving in a longitudinal direction;
(c) a ribbon material located between and intermediate said upper and lower lengths of the reinforced assembly, said ribbon material capable of extending and retracting as said upper and lower lengths move so that the ribbon material prevents said upper and lower lengths from touching, and wherein the material comprising the ribbon material is different from the encapsulant and reinforcement channel of the line assembly; and
(d) a drum located within said loop of the line assembly wherein said ribbon material is affixed to the drum and wherein the drum rotates so as to roll up and unroll the ribbon material as the upper and lower lengths move within the channel.

5,332,866
WIRE HARNESS PROTECTOR ASSEMBLY
Naohito Sawamura, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Dec. 15, 1992, Ser. No. 990,461
Claims priority, application Japan, Dec. 20, 1991, 3-105532[U]
Int. Cl.[5] H02G *3/04*
U.S. Cl. 174—101 5 Claims



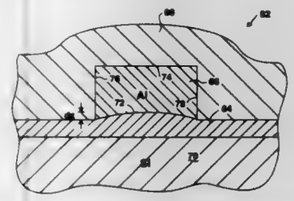
1. A harness protector assembly for accommodating and protecting a desired length of a wire harness, said harness protector assembly comprising:
at least two protectors each having engaging means in the proximity of one end thereof;
at least one connector having retaining means for retaining therein said engaging means of said protectors for connection of said two protectors, said connector also having a hinge means formed intermediately thereof; and
wherein each of said two protectors has a bottom plate and a pair of opposed side walls extending upwards from respective sides of said bottom plate, said engaging means of said each protector including two projections, each of which is formed on an outer surface of said each side wall, said connector having an upper plate to be overlaid on said opposed side walls at said one end of each protector and having two pairs of opposed tabs extending downwards from said upper plate, said retaining means including a plurality of receiving means formed in respective tabs, and said hinge means including a thin-wall portion susceptible to bending;
whereby said harness protector assembly can be bent about said hinge means at a given angle.

5,332,867
SEAL ASSEMBLY FOR SUPERCONDUCTING MAGNET TAPE OVENS
Frank D. Shaffer, Quimby, and Malvin L. Dennis, Lake City, both of S.C., assignors to General Electric Company, Milwaukee, Wis.
Filed Aug. 3, 1992, Ser. No. 923,427
Int. Cl.[5] H01B *17/26*
U.S. Cl. 174—151 19 Claims



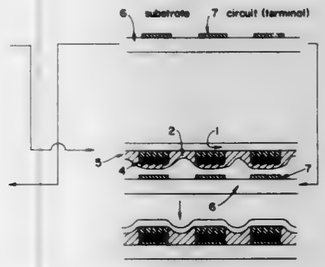
1. A replaceable seal for a pressurized constant process oven through which a filament is passed and which seals the interior of the oven from the surrounding atmosphere during the movement of the filament through the oven and adapted to conform to the passage of abnormalities in the filament through the seal comprising:
an end member including a first aperture therethrough;
at least two opposed flexible members passing through said first aperture including opposed flap surfaces extending in the direction of said movement of said filament and forming a resilient second aperture therebetween and a planar surface transverse to said direction of movement; and
said resilient aperture conforming to and enabling the passage of abnormalities therethrough;
means to selectively compress said planar surface to enable installation and replacement of said resilient second aperture;
said movement of said filament being sequentially through said resilient aperture and between said opposed flexible members in a direction tending to close said resilient aperture about said filament through the friction generated by the movement of said filament against said flap surfaces.

5,332,868
METHOD AND STRUCTURE FOR SUPPRESSING STRESS-INDUCED DEFECTS IN INTEGRATED CIRCUIT CONDUCTIVE LINES
Vivek Jain, Milpitas, and Dipankar Pramanik, Cupertino, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Jun. 22, 1992, Ser. No. 902,182
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—256 5 Claims



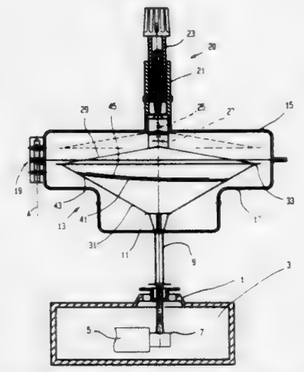
1. A method for reducing defects in an integrated circuit conductive line comprising:
providing a conductive line; and
contacting said conductive line with a layer over said conductive line comprising a siloxane spin-on-glass (SOG) which reduces stress in said conductive line.

5,332,869
PRINTED CIRCUIT BOARD, A METHOD OF ITS FABRICATION AND A METHOD OF ATTACHING ELECTRONIC PARTS THERETO
Youshichi Hagiwara, Kanagawa, Japan, assignor to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Oct. 17, 1990, Ser. No. 600,042
Claims priority, application Japan, Oct. 27, 1989, 1-281595
Int. Cl.[5] H05K *1/09*
U.S. Cl. 174—257 10 Claims



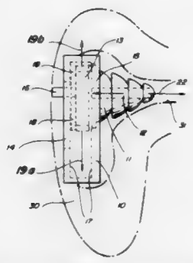
1. A method of fabricating printed circuit boards, the method comprising
(a) forming a circuit pattern with an electrically conductive composition on a substrate wherein the circuit pattern has terminal pads, and wherein the circuit pattern comprises an electrically conductive composition containing light-curable resin and electrically conductive particles or powder,
(b) shielding the terminal pads in said circuit pattern and exposing the unshielded portion of the circuit pattern to light,
(c) scattering electrically conductive particles or powder onto the circuit pattern whereby the particles or powder are selectively adhered to the uncured terminal pads,
(d) removing conductive particles which are not adhered to the uncured terminal pads,
(e) covering at least said terminal pads, and electrically conductive particles or powder adhered thereon, with an insulating adhesive, and
(f) curing the uncured terminal pads with light and/or heat after either Step (c) or (d) or (e).

5,332,870
PRECISION BALANCE
Ernst Strickler, Wolfhausen, Switzerland, assignor to Mettler-Toledo AG, Greifensee, Switzerland
Filed Nov. 6, 1992, Ser. No. 972,602
Claims priority, application Switzerland, Jun. 5, 1992, 1815/92-5
Int. Cl.[5] G01G *21/22*
U.S. Cl. 177—262 12 Claims



1. A precision balance for weighing a flat filter, the precision balance comprising a funnel-shaped weighing dish, whereby the flat filter rests partially on the weighing dish during weighing, wherein the weighing dish has a wall composed of one of metal netting and very thin perforated sheet steel.

5,332,871
SLIDING VALVE EAR PLUG
Noel L. Carrigan, 1713 W. Hwy. 50, Lot 88, O'Fallon, Ill. 62269
Filed Dec. 23, 1991, Ser. No. 811,626
Int. Cl.[5] A61B *7/02*
U.S. Cl. 181—135 2 Claims



1. A hearing protection device comprising:
a pair of earplugs each having a hole therethrough,
a body defining an enclosure connected to each earplug, said body having a longitudinal slot and guide means, said slot and said hole together defining a sound passage,
a movable valve disposed inside said enclosure,
a fingerlatch supported in said slot and connected to said movable valve for sliding said valve along said guide

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means from one position to another to open and close said sound passage,

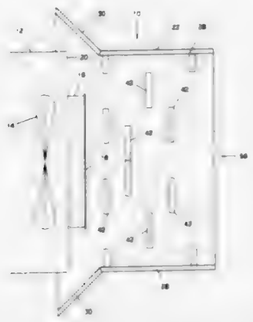
a sound deadening material covering a portion of said movable valve for keeping out sound when said sound passage is closed, and a cord to attach said pair of earplugs together.

5,332,872

NOISE REDUCTION UNIT FOR GAS COMPRESSORS

Nestor Ewanek, 227 Oakside Road S.W., Calgary, Alberta, Canada T2V 4H7

Filed Aug. 30, 1993, Ser. No. 113,200
Int. Cl.[5] E04F *17/04*
U.S. Cl. 181—224 **5 Claims**



1. A sound reduction unit for a compressor, the compressor having a cooling fan, the cooling fan having a front face in which is disposed an air inlet, the sound reduction unit comprising:

a sound absorbing housing attached to the cooling fan front face and surrounding the air inlet;

the housing forming a passageway about the air inlet, the passageway being defined by a bottom wall, first and second side walls and a top wall and at least one of the walls being separated from the cooling fan front face to form an opening for the free flow of air into the air inlet;

a plurality of sound absorbing baffles attached to the housing to block direct passage of sound from the air inlet while allowing free flow of air into the air inlet; and

a flange baffle extending from at least the one of the side walls and the top wall to a point behind a lateral projection of the front face of the cooling fan.

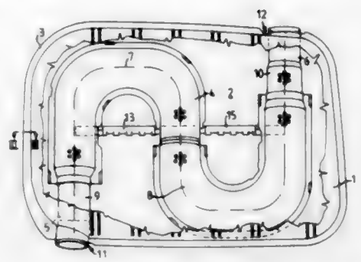
5,332,873

MOTOR VEHICLE MUFFLER

Urban Kullander, Angered, and Karl Bergquist, Harestad, both of Sweden, assignors to AB Volvo, Gothenburg, Sweden

PCT No. PCT/SE91/00745, § 371 Date Jul. 2, 1993, § 102(e) Date Jul. 2, 1993, PCT Pub. No. WO92/08881, PCT Pub. Date May 29, 1992
PCT Filed Nov. 5, 1991, Ser. No. 50,107
Claims priority, application Sweden, Nov. 9, 1990, 9003571
Int. Cl.[5] F01N *7/18*
U.S. Cl. 181—243 **4 Claims**

1. A motor vehicle muffler comprising a housing comprising two half shells, an exhaust conduit having two ends, said conduit being disposed within said housing and securely joined to the housing at said two ends, filler material within the housing surrounding the exhaust conduit, the exhaust conduit being in contact only with the filler material between said two ends of the exhaust conduit, said housing having a length and a width and a depth, said length and width being greater than said depth, and at least one means extending in the direction of said



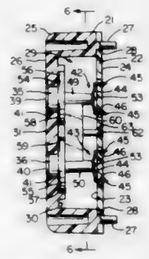
depth between the half shells and securely joined to the half shells without touching the exhaust conduit.

5,332,874

CONTROL DEVICE AND METHOD OF MAKING THE SAME

Kenneth J. Orr, Caledonia, and Brian J. Kadwell, Holland, both of Mich., assignors to RobertShaw Controls Company, Richmond, Va.

Filed Jan. 14, 1993, Ser. No. 4,683
Int. Cl.[5] H01H *3/12*
U.S. Cl. 200—58 **5 Claims**



1. In a control device comprising a support means, two switch means carried by said support means in spaced apart relation and each having a movable part thereof that actuates the respective switch means when that said part is axially moved a certain distance in a certain direction, and movable actuator means carried by said support means for operating said parts of said two switch means, said support means comprising a generally flat surface means having said switch means thereon, said support means comprising a cover means carried by said surface means and having a part thereof spaced from said surface means with said part of said cover means having opposed surfaces, said actuator means being disposed between said surface means and said part of said cover means and normally being held against one of said opposed surfaces by said switch means, the improvement wherein said actuator means comprises a single member having two spaced apart plungers respectively operatively associated with and in axial alignment with said parts of said two switch means and having two actuator buttons thereon respectively in axial alignment with said plungers and said parts of said switch means, said member having two circular disc-like portions respectively disposed between the axially aligned actuator buttons and their respective plungers and in axially aligned relation therewith while extending radially outwardly from the respective actuator buttons, said part of said cover means having two separate openings passing therethrough and receiving said actuator buttons therein, said part of said cover means having two circular recesses in said one of said opposed surfaces thereof

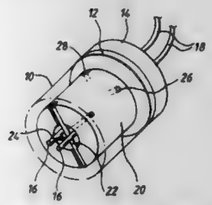
and respectively receiving said disc-like portions of said member therein, said member being pivotally mounted to said support means by said disc-like portions and their respective recesses so that said member actuates only one of said two switch means when said member is moved to one pivoted position thereof by an axial force applied in said certain direction to one of said buttons that is in axial alignment with said part of said one switch means and actuates only the other of two two switch means when said member is moved to another pivoted position thereof by an axial force applied in said certain direction to the other of said buttons that is in axial alignment with said part of said other switch means.

5,332,875

SHOCK SENSOR SWITCH

John T. Grant, Reepham, England, assignor to Grant Design Limited, Reepham, England

Filed Nov. 13, 1992, Ser. No. 976,390
Claims priority, application United Kingdom, Nov. 13, 1992, 9124052
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.45 R **12 Claims**



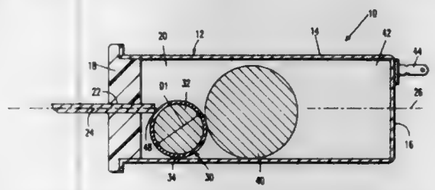
1. A vibration sensitive switch comprising a body part and a movable mass part, the body part including a pair of electrical contracts for connection in an electrical circuit, and the mass part including a bridging conductor for providing a bridging connection between the contacts which is interrupted when relative movement between the body part and the mass part occurs due to vibrations to be detected, wherein the bridging conductor comprises at least one pair of mutually inclined and electrically interconnected bars which form opposite sides of a wedge which is received in a receptacle defined by the contacts, the wedge being arranged to bear against opposite sides of the receptacle such that the mass part is supported with respect to the body part, and wherein the contacts and the bridging conductor are associated with interengaging surfaces of the wedge and the sides of the receptacle, whereby movement of the wedge out of engagement with the receptacle aides results in the interruption of the bridging connection.

5,332,876

ELECTRICAL TILT SWITCH EMPLOYING MULTIPLE CONDUCTIVE SPHERES

Robert P. Romano, Glen Ridge, and James L. Weaver, Passaic, both of N.J., assignors to Comus International, Nutley, N.J.

Filed May 6, 1993, Ser. No. 58,902
Int. Cl.[5] H01H *35/02, 35/14*
U.S. Cl. 200—61.52 **14 Claims**



1. A tilt switch for opening or closing an electric circuit in accordance with the angle of inclination of said switch, comprising:

a housing means having a hollow cavity disposed therein;

a first free moving weight, having a core fabricated from a dense material with a conductive circumferential surface, positioned within said cavity, said first free moving weight moving to an operating position within said cavity when said first free moving weight is biased by gravity to said operating position by the angle of inclination of said housing means;

at least one second free moving weight, fabricated from said dense material, positioned within said cavity and sized in proportion to said cavity so that said first free moving weight cannot pass said at least one second free moving weight within said cavity, said at least one second free moving weight biasing said first free moving weight into said operating position when said at least one second free moving weight is biased toward said operating position by gravity; and

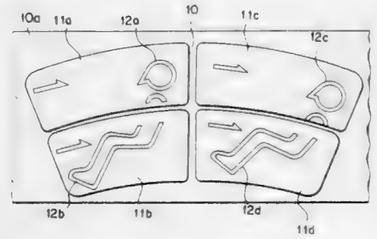
a terminal means disposed at said operating position, said first free moving weight contacting and electrically coupling with said terminal means when said first free moving weight is at said operating position.

5,332,877

PICTORIAL SYMBOL SWITCH

Takao Oura; Hideki Okada; Tatsuki Iwasaki; Nobuaki Iwabuchi, all of Kanagawa; Keishi Fujii, and Hideo Mitsui, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 796,920, Nov. 22, 1991, abandoned, which is a continuation of Ser. No. 544,257, Jun. 26, 1990, abandoned. This application Dec. 3, 1993, Ser. No. 161,079
Claims priority, application Japan, Jun. 30, 1989, 1-76342[U]
Int. Cl.[5] H01H *9/00*
U.S. Cl. 200—308 **6 Claims**



1. A pictorial symbol switch, comprising:

a first switch unit having a first pictorial symbol on a surface thereof pictorially representing a first operation of an automotive forced air apparatus which is to take place at a first location in an enclosed environment of an automobile when said first switch unit is depressed; and

a second switch unit disposed adjacent said first switch unit and having a second pictorial symbol on a surface thereof pictorially representing a second operation of said automotive forced air apparatus which relates to the first operation and is to take place at a second location in said enclosed environment when said second switch unit is depressed,

each of said first and second pictorial symbols symbolically depicting how depression of a respective one of said first and second switch units is designed to affect said enclosed environment,

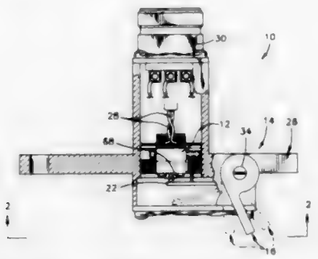
wherein said first and second pictorial symbols, when viewed in combination, form a third pictorial symbol which symbolically depicts the enclosed environment and a relation of the first and second operations thereto; and

wherein further, disposition of said first switch unit relative to said second switch unit corresponds to disposition of

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said first location relative to said second location in said enclosed environment.

5,332,878
SWITCH AND ACTUATOR ASSEMBLY
James A. Borst, Sandy Hook; Donald G. Williams, Sherman; Mark A. Chantry, Cheshire, and James S. Laflam, Bethel, all of Conn., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 7, 1993, Ser. No. 72,884
Int. Cl.[5] H01H *3/00*
U.S. Cl. 200—329 **8 Claims**

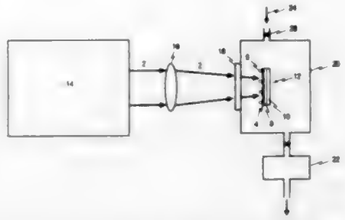


1. A apparatus for actuating a switch, said apparatus comprising a base, a stop surface connected with said base, an input shaft rotatably mounted on said base, a switch actuator member mounted on said input shaft, said input shaft and switch actuator member being rotatable relative to each other, an overtravel spring connected with said input shaft and switch actuator member, and a return spring connected with said input shaft and base, said input shaft, overt ravel spring, and switch actuator member being rotatable together relative to said base to move said switch actuator member from a first position to a second position to actuate the switch, said switch actuator member being spaced from said stop surface when said switch actuator member is in the first position, said switch actuator member being disposed in engagement with said stop surface when said switch actuator member is in the second position, said return spring being effective to urge said switch actuator member toward the first position when said switch actuator member is in the second position, said input shaft being rotatable relative to said base and switch actuator member to an overtravel position when said switch actuator member is in the second position to accommodate overtravel rotation of said input shaft, said overtravel spring being effective to apply force to said input shaft and switch actuator member to urge said input shaft away from the overtravel position when said input shaft is in the overtravel position.

5,332,879
METHOD FOR REMOVING TRACE METAL CONTAMINANTS FROM ORGANIC DIELECTRICS
Gouri Radhakrishnan, Los Angeles, Calif., and Heinrich G. Müller, Austin, Tex., assignors to The Aerospace Corporation, El Segundo, Calif.
Filed Dec. 2, 1992, Ser. No. 984,605
Int. Cl.[5] B23K *26/16*
U.S. Cl. 219—121.69 **15 Claims**

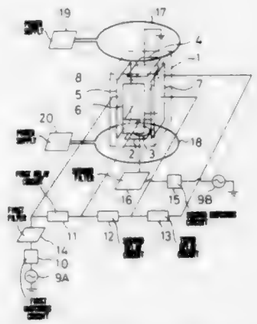
1. A method for selectively removing trace metal contaminants from organic dielectrics, comprising the steps of:

a. adjusting the fluence of a laser beam to a value that selectively ablates trace metal contaminants on an organic dielectric while leaving intact simultaneously exposed features of bulk metal;



b. exposing an area of the contaminated organic dielectric to the laser beam, thereby causing the removal of the trace metal contaminants.

5,332,880
METHOD AND APPARATUS FOR GENERATING HIGHLY DENSE UNIFORM PLASMA BY USE OF A HIGH FREQUENCY ROTATING ELECTRIC FIELD
Masafumi Kubota; Kenji Harafuji; Tokuhiko Tamaki; Mitsuhiro Ohkuni, all of Osaka; Noboru Nomura, Kyoto, and Ichiro Nakayama, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 30, 1993, Ser. No. 40,348
Claims priority, application Japan, Mar. 31, 1992, 4-077720
Int. Cl.[5] B23K *9/00;* **H01L** *21/306*
U.S. Cl. 219—121.52 **19 Claims**



1. A plasma generating method comprising the steps of:

disposing three or more lateral electrodes at lateral sides of a plasma generating part in a vacuum chamber such that said three or more lateral electrodes surround said plasma generating part, and further disposing a sample stage at a lower part of said plasma generating part;

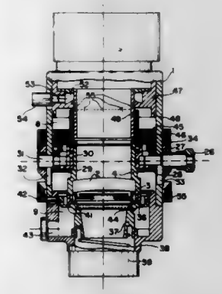
supplying a first high frequency electric power from a high frequency power supply to one of said three or more lateral electrodes;

respectively supplying, to other lateral electrodes of said three or more lateral electrodes, high frequency electric powers which are supplied from said high frequency power supply through delay means, of which frequencies are the same as the frequency of said first-mentioned high frequency electric power and of which respective phases are successively different from the phase of said first-mentioned high frequency electric power; and

supplying, to said sample stage, second high frequency electric power of a second frequency which is lower than said first frequency;

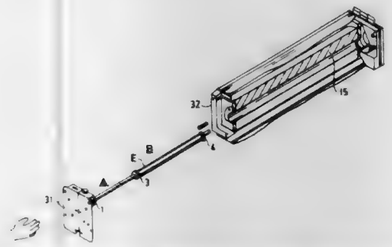
whereby there is excited, in said plasma generating part, a rotational electric field to cause electrons therein to present rotational motions.

5,332,881
TOOL HEAD WITH AN AUTOMATICALLY ADJUSTABLE OPTICAL FOCUSING SYSTEM
Ahmet Topkaya, Karlsruhe; Josef Illik, Gaggenau; Jörn Steinhauer, Karlsruhe; Jürgen Walz, Baden-Baden, and Jürgen Volpel, Gernsbach, all of Fed. Rep. of Germany, assignors to Weidmüller Interface GmbH & Company, Detmold, Fed. Rep. of Germany
Filed Sep. 1, 1992, Ser. No. 937,742
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1991, 4129278
Int. Cl.[5] B23K *26/06*
U.S. Cl. 219—121.75 **24 Claims**



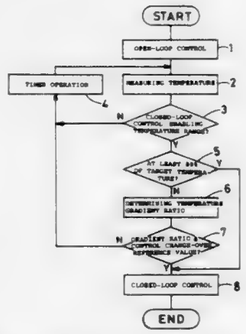
1. A tool head for machining a workpiece by means of a laser beam which passes through an optical focusing system which is disposed within the tool head and which is carried by a lens mounting and which can be positioned only by displacement of the lens mounting relative to the tool head in the direction of the laser beam, wherein the lens mounting (3) is displaceable using automatic setting means (8, 9; 23) and a space is subdivided by the lens mounting (3) into two pressure chambers (8, 9) which are situated in front of and behind it in the direction of the laser beam and which can be filled in each instance with a fluid for the displacement of the lens mounting (3).

5,332,882
DEVICE FOR HEATING A YARN IN MOTION WITH REMOVABLE HEATER BLOCK
Carlos M. Gabalda, Granges les Valence, and Pierre Mirabel, Roanne, both of France, assignors to ICBT Roanne, France
Filed Jun. 28, 1993, Ser. No. 83,347
Claims priority, application France, Jul. 8, 1992, 92 08691
Int. Cl.[5] F27D *11/02;* **F27B** *9/06, 9/28;* **D02J** *13/00*
U.S. Cl. 219—388 **1 Claim**



1. In a device for heating a yarn in motion, said device of the type consisting of an insulating enclosure (15) which surrounds a heater block (E) with which it defines a lengthwise channel inside which the yarn (5) to be treated runs, means for guiding said yarn being provided to ensure its positioning, said heater block (E) consisting of a unit comprising at least two cylindrical sections (A, B) which have different diameters and are arranged in cascaded fashion and which support, over their length, rings (1, 3, 4) equipped with guiding members making it possible to keep the yarn at a constant distance from the surface of small diameter, and making it possible to make the yarn describe a tangent helically with the cylindrical surface of large diameter, characterized in that one of the outermost faces (31) of the cowling surrounding the insulating enclosure and the heater block is removable and carries all the connections which make it possible to provide the electrical supply to the oven and its control etc., the heater block (E) being fastened by one of its ends to said removable face (31).

5,332,883
TEMPERATURE CONTROL SYSTEM FOR LAMP ANNEALER
Hideki Higashira, Ikoma, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan
Filed Jun. 29, 1992, Ser. No. 905,433
Claims priority, application Japan, Jun. 28, 1991, 3-158495
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—492 **4 Claims**



1. A system for controlling the temperature of a lamp annealer comprising:

(a) a group of lamps for heating an article

(b) a radiation thermometer for measuring the temperature of the article;

(c) a lamp output controller for controlling the heat output of the lamps as a function of the temperature measurement of the radiation thermometer, wherein said lamp output controller comprises:

(1) means for determining and selecting a desired target temperature control pattern and a desired lamp output control pattern;

(2) means for storing said target temperature control pattern;

(3) means for storing said lamp output control pattern;

(4) means for determining a measured temperature gradient from the temperature measurements of the radiation thermometer;

(5) means for determining a target temperature gradient from a portion of said target temperature control pattern that approximates the temperature measurements of the radiation thermometer;

(6) means for calculating a temperature gradient ratio equal to said measured temperature gradient divided by said target temperature gradient;

(7) open-loop control means for controlling the heat output of the lamps according to said lamp output control pattern when said temperature gradient ratio is smaller than a predetermined reference value; and

(8) closed-loop control means for controlling the heat

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output of the lamps according to a comparison of the temperature measurements of the radiation thermometer with said target temperature control pattern when said temperature gradient ratio is larger than or equal to said predetermined reference value.

5,332,884

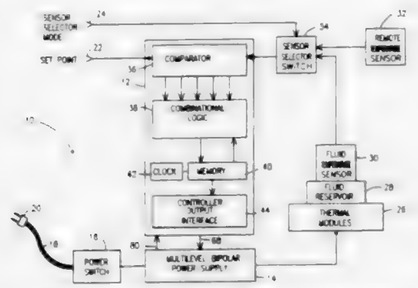
DYNAMIC TEMPERATURE CONTROL FOR USE WITH A HEATING AND/OR COOLING SYSTEM INCLUDING AT LEAST ONE TEMPERATURE SENSOR

David F. Bailey, 9921 Kenda Dr., Riverview, Fla. 33569

Continuation of Ser. No. 891,427, May 29, 1992, Pat. No. 5,266,788. This application Jun. 30, 1993, Ser. No. 85,556

Int. Cl.[5] **H05B** *1/02*

U.S. Cl. 219—494 **30 Claims**



1. A dynamic temperature control system for use with a fluid circulating system operable in a cooling state including a control panel to select the system operating parameters including a selected fluid temperature and means to generate a fluid temperature control signal corresponding to the selected fluid temperature, a fluid temperature sensor to sense the actual fluid operating temperature and generate an operating temperature signal corresponding to the actual fluid operating temperature and a thermal module to selectively cool the fluid, said temperature control system comprises a multilevel direct current voltage power supply capable of generating one of a plurality of discrete predetermined direct current voltage levels and logic circuitry to receive the selected fluid temperature control signal from the control panel and the actual fluid operating temperature signal from the temperature sensor and means to generate one of a plurality of voltage level control signals fed to said multilevel voltage power supply, said multilevel voltage power supply including means to selectively generate one of said plurality of discrete predetermined direct current voltage levels fed to the thermal module to cool the fluid, said plurality of voltage level control signals comprising at least a first, second and third power supply control signal, said first power supply control signal being generated when the difference between actual fluid operating temperature and selected fluid temperature is greater than the change of the fluid operating temperature during a predetermined interval of time by a first predetermined temperature range such that the voltage level output of said multilevel power supply increases to the next discrete predetermined direct current voltage level, said second power supply control signal being generated when the change of the actual fluid operating temperature during a predetermined interval of time is greater than the difference between the actual fluid operating temperature and selected fluid temperature by said first predetermined temperature range such that the voltage level output of the multilevel power supply decreases to the next discrete predetermined direct current voltage level, said third power supply control signal being generated when the difference between the actual fluid operating temperature and selected fluid temperature is within said first predetermined temperature range relative to the change of the fluid operating temperature during a predetermined interval of time such that the voltage level output of said multilevel power supply remains constant.

5,332,885

PLASMA SPRAY APPARATUS FOR SPRAYING POWDERY OR GASEOUS MATERIAL

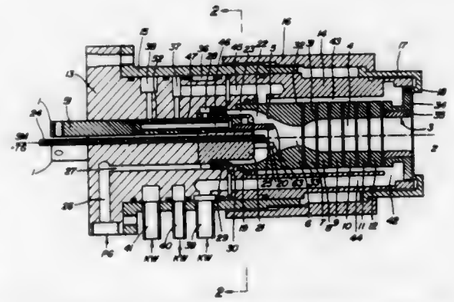
Klaus Landes, Melchiorstrasse 23, D-8000 München 71, Fed. Rep. of Germany

Filed Feb. 12, 1992, Ser. No. 836,037

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1991, 4105407

Int. Cl.[5] **B23K** *9/00*

U.S. Cl. 219—121.47 **21 Claims**



1. A plasma spray apparatus for spraying powdery or gaseous material, comprising:

an plasmatron adapted to create an elongated plasma torch;

means for axially feeding said powdery or gaseous material into said plasma torch;

said plasmatron comprising a cathode assembly, an annular anode member located distantly from said cathode assembly and a plasma channel extending from said cathode assembly to said anode member;

said plasma channel being delimited by said annular anode member as well as by a plurality of annular neutrode members which are electrically insulated from each other;

said plasma channel having a zone with a reduced diameter located in that region of said plasma torch which is near to said cathode assembly and thereby forming a plasma channel inlet nozzle;

said cathode assembly comprising a central electrically insulating member arranged in a fixed position with regard to said plasma channel inlet nozzle and further comprising a plurality of cathode elements embedded in said insulating member, said cathode elements being located and evenly distributed along the periphery of a circle around a central axis of the apparatus;

each of said cathode elements comprising a cathode pin having an active end on which the plasma torch is created and which extends out of said insulating member into said plasma channel inlet nozzle; and

said means for axially feeding said powdery or gaseous material into said plasma torch comprising a supply tube for the supply of powdery or gaseous spray material into said plasma channel inlet nozzle, said supply tube being located coaxially to said central axis of the apparatus and being fixed in said central insulating member.

5,332,886

SENSOR CORRECTING TEMPERATURE REGULATOR FOR ELECTRIC HEATING APPARATUSES

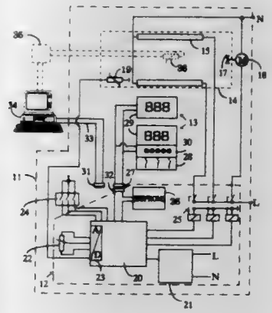
Wilfried Schilling, Kraichtal-Mü ; Volker Brennenstuhl, Zaberfeld, and Paul-Peter Wilhelm, Oberderdingen, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Apr. 13, 1992, Ser. No. 868,021

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1991, 4111784

Int. Cl.[5] **H05B** *1/02*

U.S. Cl. 219—506 **9 Claims**



1. A regulator for an electric heating apparatus, comprising at least one temperature sensor associated with the electric heating apparatus, an electronic computer component and input means for the computer component for controlling the regulator during use, the input means being connected to the computer component via a connector;

a data line coming from an external source for communicating of additional process data, and a programmable, non-volatile memory operatively associated with the computer component for storing the additional process data;

the connector being a dual purpose connector, to which, in exchange for the input means, the data line can be connected, forming a read-in connection for inputting of the additional process data into the non-volatile memory.

5,332,887

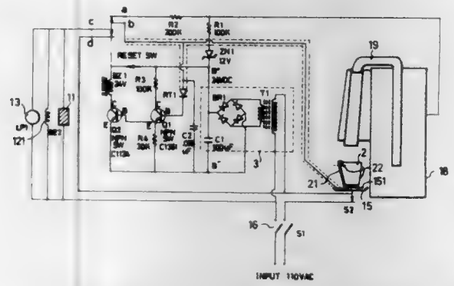
ELECTRIC THERMOS BOTTLE CAPABLE OF AUTOMATIC WATER RELEASE AND WATER CUTOFF

Yuan Shiaw-Shing, 4th Fl., 29, 127 Alley, Lin Sen Rd., Guei Shan Shiang, Taoyuan County, Taiwan

Filed Oct. 1, 1991, Ser. No. 769,241

Int. Cl.[5] **H05B** *1/02*; **B67D** *5/62*; **B05B** *7/00*

U.S. Cl. 219—518 **6 Claims**



1. An electric thermos bottle capable of automatic water release and cutoff, comprising:

an insulated metal housing having a top head;

an automatic water release/cutoff power switch;

an electric air pump for pumping air through an air communicating pipe into said metal housing to cause water to exit said housing through a water exit, said air communicating pipe including a steam exhaust passage and an air valve actuated by an air valve relay for cutting off a supply of air from said pump to said housing and permitting steam in said housing to exhaust through to said exhaust passage, said pump and relay being disposed inside said top head and connected to said automatic water release/cutoff power switch by a control circuit;

a cup having an electrically conductive element arranged thereon such that when (1) said cup is placed under the water exit of said thermos bottle and on said automatic water release/cutoff power switch, (2) water is poured into said cup in response to actuation of said pump by said power switch being closed under the weight of said cup, and (3) said water poured into said cup reaches a high level mark inside said cup, then said water and conductive element together complete an automatic water cutoff circuit parallel to said control circuit to override said control circuit and cut off power to said pump while simultaneously opening said valve, thereby cutting off the supply of air to said housing while permitting steam in said housing to exhaust through said exhaust passage.

5,332,888

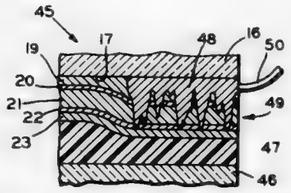
SPUTTERED MULTI-LAYER COLOR COMPATIBLE SOLAR CONTROL COATING

Peter J. Tausch, Perrysburg, and Ronald D. Goodman, Toledo, both of Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Continuation-in-part of Ser. No. 223,681, Jul. 25, 1988, Pat. No. 4,943,484, which is a continuation of Ser. No. 898,098, Aug. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 147,015, Feb. 5, 1988, Pat. No. 4,786,784, which is a continuation-in-part of Ser. No. 14,984, Feb. 17, 1987, abandoned. This application Nov. 7, 1988, Ser. No. 267,988

Int. Cl.[5] **H05B** *3/10*

U.S. Cl. 219—547 **12 Claims**



1. A transparent, laminated window having improved defrosting capability comprising, in combination:

A) an optical element having a sheet resistivity of less than about 3 ohms per square containing:

(i) at least two electrically conductive metal layers;

(ii) at least one dielectric spacing layer between said conductive layers; and

(iii) a transparent substrate; and

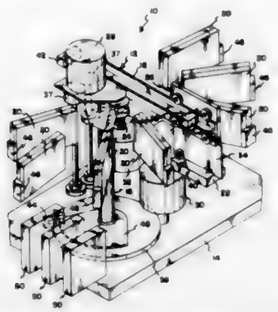
(B) a bus bar electrically conductively associated with each conductive layer.

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5,332,889
INTEGRATED CIRCUIT CARD PROGRAMMING DEVICE

Robert W. Lundstrom, Plymouth; Steven A. Miller, Mahtomedi, and Eric J. Sorensen, Apple Valley, all of Minn., assignors to DataCard Corporation, Minnetonka, Minn.

Filed Dec. 18, 1992, Ser. No. 993,105
Int. Cl.[5] G06K 5/00
U.S. Cl. 235—380 4 Claims



1. An integrated circuit card programming device for programming an integrated circuit card, the integrated circuit card programming device comprising:

a base;

a card input platform;

a transport operably connected to the base and rotatably mounted about a rotational axis, the transport including a transport arm radially disposed from the rotational axis, the transport arm having a distal end and a proximal end, the proximal end being proximate the axis, and a card picker carriage being mounted on the arm for movement between a first position proximate the distal and a second position proximate the proximal end; and

one or more personalization stations radially disposed about the rotational axis, so that the picker carriage in the first position can grasp a card from the input platform, then the picker carriage can be moved toward the second position and the transport rotated about the rotational axis to a position in radial alignment with one of the personalization stations and the picker carriage can be moved toward the first position to deposit the card in the personalization station to program the card.

5,332,890
HYBRID CARD AND ITS RECORDING/REPRODUCING APPARATUS

Toshihiro Kitahara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 923,213
Claims priority, application Japan, Aug. 8, 1991, 3-199591; Sep. 24, 1991, 3-243463
Int. Cl.[5] G06K 19/08, 7/10
U.S. Cl. 235—440 3 Claims

1. A recording/reproducing apparatus for a hybrid card, wherein said hybrid card comprises:

a substrate having a surface;

an IC chip mounted to said substrate for electrically recording information;

a contact region electrically connected to said IC chip, said contact region being exposed on the surface of said substrate; and

an optical recording region located in said substrate and having a plurality of information tracks, said tracks being in the form of respective straight tracks in which information is optically recorded, said tracks extending substantially parallel to each other in a first direction, and said tracks being formed on the surface of said substrate with a space between said contact region and said tracks;

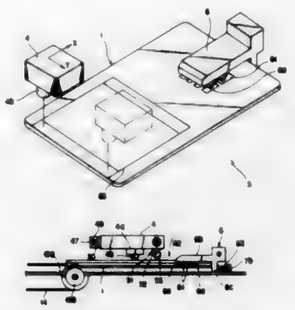
said contact region and said tracks being arranged in line along said first direction with said space located therebetween, said space extending in said first direction; and

said recording/reproducing apparatus comprising:

holding means for holding the hybrid card;

an optical head for recording/reproducing information to/from said tracks, said optical head being located so as to be spaced from the hybrid card;

means for mounting said optical head to said holding



means such that said optical head is movable relative to a hybrid card held in said holding means along both said first direction which is identical with the extending direction of said tracks, and a second direction which is perpendicular to said first direction; and

a contacting member for electrically coupling with said IC chip of the hybrid card held in said holding means, said contacting member being mounted on said holding means and being arranged for mechanically contacting with said contact region of the hybrid card held in said holding means, and spaced from said optical head in said first direction.

5,332,891
CARD LOADING APPARATUS HAVING RELEASING MEANS FOR RELEASING PRESSURE TO AN OPTICAL CARD

Tsuyoshi Togawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 846,561
Claims priority, application Japan, Mar. 25, 1991, 3-83004
Int. Cl.[5] G06K 13/00
U.S. Cl. 235—485 8 Claims

7. A card loading apparatus for loading thereon an information recording card having two opposite surfaces and two opposite side edges and for moving the card relative to a head to read/write information from/on the card, comprising:

a base;

a first guide member coupled to the base and abutting against said one side edge of the card to guide the card;

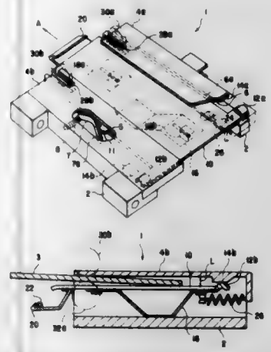
a second guide member coupled to the base and abutting against said one surface of the card to guide the card;

a support member mounted to the base to be movable relative to the base, and abutting against the other surface of the card to support the card with the card being interposed between the support member and the second guide member;

means for pressing the card against the first guide member by abutting against the other side edge of the card; and

means for releasing the card from pressure of the pressing means when the supporting member moves with respect to the base;

wherein said pressing means includes a press plate movable to abut the other side edge of the card and thereby press said one side edge of the card against said first guide member, and a spacing member connected to the support member and brought into contact with the press plate,

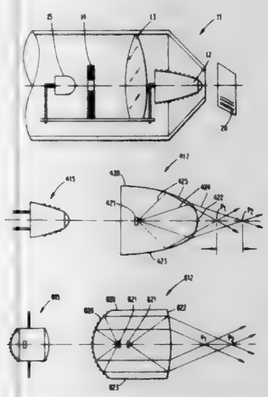


when the support member moves with respect to the base, to place the press plate into abutment with the other side edge of the card, and said releasing means includes resilient means urging said press plate away from the other side edge of the card.

5,332,892
OPTICAL SYSTEMS FOR BAR CODE SCANNERS

Yajun Li, Oakdale; Edward Barkan, S. Setauket; David P. Goren, Ronkonkoma, and Joseph Katz, Stony Brook, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 735,573, Jul. 25, 1991. This application Dec. 24, 1991, Ser. No. 812,924
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—462 43 Claims



1. An emitter and optics assembly for emitting light to illuminate optically encoded information, comprising:

a molded optical device; and

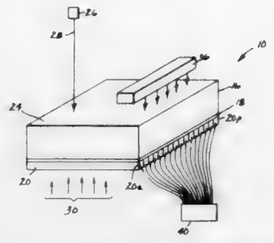
a light emitting means embedded within the molded optical device for emitting light through the molded optical device to illuminate the optically encoded information;

wherein said molded optical device comprises a refractive front surface and an internally reflective surface which cooperate to provide two different focal lengths for the emitted light.

5,332,893
IMAGING SYSTEM AND DEVICE HAVING A SIMPLIFIED ELECTRODE DESIGN

John E. Potts, Woodbury; Owen L. Nelson, St. Paul, both of Minn., and Naoum Araj, Montreal, Canada, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 22, 1992, Ser. No. 918,660
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—208.1 24 Claims



1. A system for producing an image created by radiation incident upon an imaging device, comprising:

(a) an imaging device comprising, in this order, a photoconductive insulative layer having a certain thickness, an electrically blocking layer, and a single conductive layer which consists essentially of a segmented array of at least one group of elongated, striped, conductive electrodes lying in a first direction;

(b) means for charging a first surface of the photoconductive insulative layer such that first charge carriers created in the imaging device by first incident radiation are subsequently separated to create a first current, resulting in the formation of a latent electrostatic image near the charged first surface of the photoconductive insulative layer;

(c) a scanner which, in a first time-ordered pattern, utilizes a second incident radiation to initiate a second current, comprising second charge carriers, within the imaging device; and

(d) detection electronics connected to, and sensitive to motion of the second charge carriers in, each electrode;

in which:

(e) the scanner scans the array in a second direction; and

(f) each conductive electrode of a group is addressed in a second, time-ordered pattern such that only one electrode in a group is monitored at one time for motion of the charge carriers, while adjacent electrodes of that group are held at a voltage level representing a virtual ground as measured relative to the monitored electrode, and the detection electronics interprets a coincidence of the first and second patterns as a pixel of the image created by the radiation.

5,332,894
OPTICAL OUTPUT CONTROL IC AND OPTICAL INPUT AMPLIFIER IC

Takashi Fujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 52,838
Claims priority, application Japan, May 6, 1992, 4-113285; May 6, 1992, 4-113286
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—208.2 5 Claims

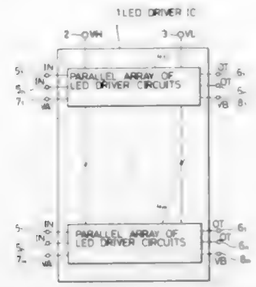
1. An IC for use in an optical transmission system comprising:

a plurality of parallel arrays of functional circuits;

means for supplying reference voltages of a high level and a low level to said functional circuits belonging to selec-

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tively designated parallel array of said functional circuits and



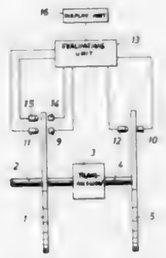
means for supplying circuit driving power to each functional circuits belonging to said selectively designated parallel arrays of functional circuits.

5,332,895

ANGLE ENCODER WITH INCREMENTAL AND ABSOLUTE TRACKS

Heinz Rieder, Oberndorf, and Max Schwaiger, Ostermiething, both of Austria, assignors to RSF-Elektronik Gesellschaft m.b.H., Tarsdorf, Austria

Filed Feb. 10, 1993, Ser. No. 16,008
Claims priority, application Austria, Feb. 20, 1992, 307/92
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.14 **7 Claims**



1. An angle encoder for detecting angular positions of a rotatably mounted encoder disk of the angle encoder and the number of revolutions of the disk upon rotation thereof, wherein the encoder disk comprises an incremental scale extending on a first circular track and comprising increments having radial boundaries, and an absolutely coded scale extending on a second circular track radially spaced from the first track and comprising a serial bar code having radial side edges radially aligned with said radial boundaries and representing multi-digit code words corresponding to absolute positions of the encoder disk, the angle encoder further comprising

(a) reading means for scanning the incremental scale and the absolutely coded scale and for generating position-dependent signals in response to the scanning of the scales, the reading means comprising

(1) a multi-line detector adapted optoelectronically to scan the absolutely coded scale and entirely to read one of the code words in any angular position of the detector relative to the encoder disk,

(b) illuminating means energizable to emit a light flash illuminating the absolutely coded scale, and

(c) evaluating means for processing the position-dependent signals, said evaluating means being operable to derive an instantaneous position of the encoder disk from the position-dependent signals, to determine absolute positions of the encoder disk in response to the scanning of the absolutely coded scale during the light flashes and to store the absolute positions and, upon rotation of the encoder disk from one of the absolute positions, to determine the angular position of the encoder disk with reference to the one absolute position in response to the scanning of the incremental scale, and said evaluating means comprises

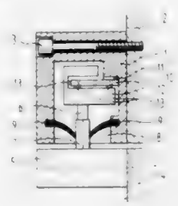
(1) counting means operable independently of an external power source and adapted to indicate the number of revolutions performed by the encoder disk.

5,332,896

INSTRUMENT FOR PRODUCING HARMONICS-FREE PERIODIC SIGNALS

Wolfgang Holzapfel, Obing, Fed. Rep. of Germany, assignor to Dr. Johanness Heidenhain GmbH, Fed. Rep. of Germany

Filed Nov. 4, 1992, Ser. No. 884,484
Claims priority, application European Pat. Off., Nov. 4, 1991, 91118747.4
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—237 G **15 Claims**



1. An instrument for obtaining harmonics-free signals up to a predeterminable bandwidth, comprising:

a periodic measurement graduation comprising a plurality of periodically spaced measurement graduation markings;

a scanning graduation comprising one or more scanning graduation markings which are offset from one another nonperiodically, such that the spacing of the scanning graduation marking centers is staggered by a modified arcsin function.

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UNIVERSAL ELECTRODE FOR CORONA DISCHARGE SURFACE TREATING

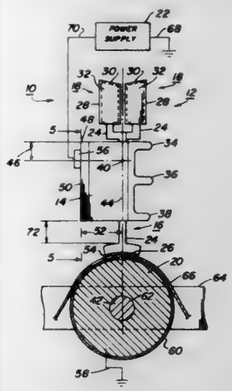
Bruce D. Stobbe, Winsted; Ronald L. Seaman, New Hartford; Richard S. Prechtl, Simsbury, and William S. Bednarcyk, Winsted, all of Conn., assignors to Corotec Corporation, Collinsville, Conn.

Filed Feb. 26, 1993, Ser. No. 23,281
Int. Cl.[5] H01T *19/04*
U.S. Cl. 250—305 **44 Claims**

5. In a corona discharge system for corona discharge treatment of continuous webs of film materials, the system having at least one generally cylindrical electrode mounted for rotation about a central axis thereof, a pivotable but fixed electrode assembly comprising:

first electrode means configured for corona discharge treatment of non-conductive film materials and second electrode means configured for corona discharge treatment of conductive film materials, and

common support means for the first and second electrode means, the common support means having a pivot point disposed parallel to and spaced apart from the central axis of the generally cylindrical electrode, the common support means being pivotable about the pivot point for selectably positioning a selected one of the first and second electrodes in spaced corona discharge treatment relation to the generally cylindrical electrode, thereby defining a gap between the generally cylindrical electrode and the selected one of the first and second electrode means for the passage of materials to be treated between the generally cylindrical electrode and the selected one of the first and second electrode means.

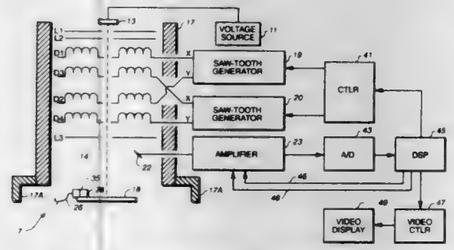


5,332,898

PRECISION MEASUREMENT USING PARTICLE BEAM DEVICES

Guillermo L. Toro-Lira, Sunnyvale, and Robert Zmrzli, San Jose, both of Calif., assignors to Metrologix, Santa Clara, Calif.

Filed Jun. 14, 1993, Ser. No. 75,515
Int. Cl.[5] G01N *23/225;* **H01J** *37/256*
U.S. Cl. 250—307 **6 Claims**



1. A method of improving the precision of measurements of feature dimensions of objects using a particle beam device, comprising the steps of:

setting upper and lower signal reference levels and a signal offset level;

performing a preliminary scan of said object using said particle beam device to produce a time-quantized and level-quantized signal indicative of a surface profile of said object;

determining a percentage of time intervals during which said signal lies outside a range defined by said upper and lower reference level; and

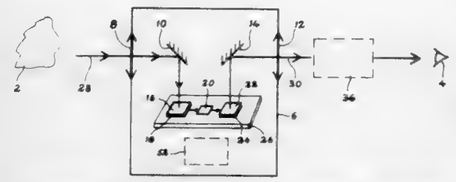
adjusting at least one of said signal reference levels and said offset level such that said percentage is made substantially equal to a predetermined percentage during a subsequent scan.

5,332,899

SYSTEM FOR CONVERTING AN INFRARED IMAGE INTO A VISIBLE OR NEAR INFRARED IMAGE

Michel Wolny, and Daniel Amingual, both of Grenoble, France, assignors to Commissaeiat A l'Energie Atomique, Paris, France

Filed May 19, 1993, Ser. No. 63,333
Claims priority, application France, May 21, 1992, 92 06209
Int. Cl.[5] H01L *31/14*
U.S. Cl. 250—332 **15 Claims**



1. System for the conversion of an infrared image into a visible or near infrared image, the system comprising:

optical input means;

optical output means;

an infrared detector on which is formed an infrared image of a scene supplied to the detector by the optical input means;

a circuit for reading signals supplied by the detector;

a circuit for processing signals supplied by the reading circuit;

a near infrared or visible light emitter for supplying, in conjunction with the optical output means, the image in a form of visible or near infrared light, from signals supplied by the processing circuit and a circuit for addressing the emitter, the addressing circuit being controlled by the processing circuit;

a semiconductor substrate, the semiconductor substrate having a face forming a focal plane common to the optical input means and the optical output means; and

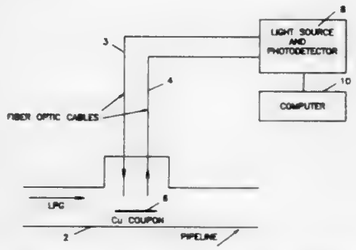
the detector, the reading circuit, the processing circuit, the addressing circuit, and the emitter being integrated in the focal plane on the semiconductor substrate.

5,332,900

ON-LINE CORROSIVITY MONITOR FOR PETROLEUM PRODUCTS

Horst Witzke, Flemington, and Joshua Varon, Marlboro, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 16, 1993, Ser. No. 17,588
Int. Cl.[5] G01N *21/75, 17/00, 33/28*
U.S. Cl. 250—341 **12 Claims**



1. A method for on-line monitoring the corrosivity of a petroleum feedstream for the presence of a corrosive constituent comprising:

(a) irradiating a metal that reacts with said corrosive constituent, said metal installed in said feedstream;

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(b) detecting the reflected radiation from said metal;
(c) converting said reflected radiation to an electrical signal indicative of the magnitude of the reflected radiation;
(d) repeating steps (a), (b), and (c) to give the change in reflectivity over a period of time;
(e) determining a change in said electrical signal and relating it to the corrosivity of said feedstream of said metal from said reflectivity over a period of time

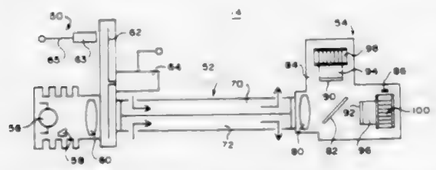
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5,332,901

GAS ANALYZING APPARATUS AND METHOD FOR SIMULTANEOUS MEASUREMENT OF CARBON DIOXIDE AND WATER

Robert D. Eckles, Malcom; Dayle K. McDermitt, and Jonathan M. Welles, both of Lincoln, all of Nebr., assignors to Li-Cor, Inc., Lincoln, Nebr.

Filed Mar. 15, 1991, Ser. No. 670,342
Int. Cl.[5] G01N *21/35, 21/05*
U.S. Cl. 250—345 **11 Claims**



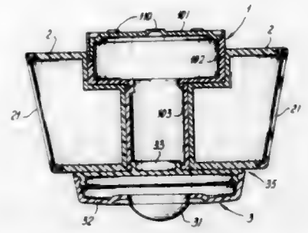
1. Apparatus, comprising:
a source of light having a spectrum of wavelengths including longer wavelengths and shorter wavelengths;
means for transmitting light from said source of light through a gas sample cell containing a mixture of two gases, one of which has a high absorbance at said longer wavelength and the other of which has a high absorbance at said shorter wavelength;
a dichroic beam splitter with a high transmission for one of said longer and shorter wavelengths and a high reflectance of the other of said longer and shorter wavelengths;
a first detector positioned to receive light transmitted through said beam splitter;
a second detector positioned to receive light reflected from said beam splitter, whereby one of said detectors receives principally light within the high absorbance frequency of one of said gases and other receives light within the high absorbance frequency of the other of said gases;
a first narrow band pass filter between said beam splitter and said first detector for passing only light of said one wavelength and a second narrow band pass filter between said beam splitter and said second detector for passing only light of said other wavelength;
said light source being an infrared light source, said first and second filters being 50 nanometer band pass filters, said first and second detectors being linear, said first filter having a center point at 4.26 microns and said second filter having a center point at 2.59 microns;
a reference cell substantially free of said two gases;
said means for transmitting light including means for transmitting light through said reference cell to said dichroic beam splitter, whereby a reference signal and a sample signal are generated by each of said first and second detectors; and
means for receiving said reference and sample signals;
said means for receiving said reference and sample signals including means for maintaining each respective reference signal constant by adjusting a corresponding scaling factor and means for multiplying each sample signal by their corresponding reference signal's scaling factor.

5,332,902

MODULE DETECTION UNIT INCLUDING INFRARED DETECTORS

Freddy L. Bellis, Noord 27, NL-1741 BA Schagen, Netherlands

Filed Aug. 19, 1992, Ser. No. 932,269
Claims priority, application Netherlands, Aug. 23, 1991, 9101431
Int. Cl.[5] G08B *13/18*
U.S. Cl. 250—349 **14 Claims**



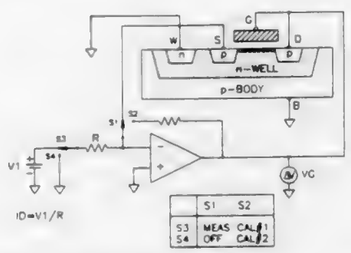
1. A detection unit comprising: a support element; means for fixing said support element on a wall or ceiling of a space to be monitored; a preselected number of detector modules, each module including a housing and at least one infrared detector fitted therein; means for releasably connecting a plurality of such detector modules to said support element in a plane parallel to and around said support element; wherein said connected modules circumferentially enclose said support element and each connected module has a defined position and detection field relative to said support element and wherein a detection field pattern desired for the space to be monitored is achieved by said preselected number of detector modules.

5,332,903

P-MOSFET TOTAL DOSE DOSIMETER

Martin G. Buehler, LaCanada, and Brent R. Blaes, San Dimas, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 956,252, Oct. 5, 1992, which is a continuation-in-part of Ser. No. 672,705, Mar. 19, 1991. This application Nov. 30, 1992, Ser. No. 983,380
Int. Cl.[5] H01L *31/119*
U.S. Cl. 250—370.14 **12 Claims**



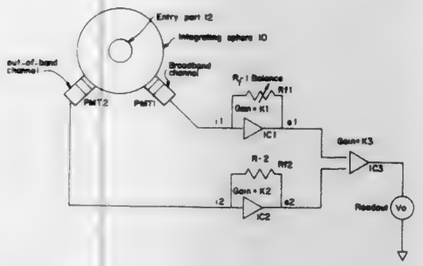
1. A total dose dosimeter comprising:
a p-MOSFET configured in a zero-biased n-WELL;
an operational amplifier having a feedback loop;
said p-MOSFET being connected into said feedback loop, the gate and drain of said p-MOSFET being connected to the output of said operational amplifier and the source of said p-MOSFET being connected to an input of said operational amplifier;
the gate voltage of said p-MOSFET being proportional to total radiation dose incident upon said p-MOSFET.

5,332,904

BROADBAND RADIOMETER

Theodore W. Cannon, Golden, Colo., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Oct. 28, 1992, Ser. No. 967,481
Int. Cl.[5] G01J *5/06*
U.S. Cl. 250—372 **9 Claims**



1. A broadband radiometer comprising:
(a) an optical integrating sphere having a generally spherical integrating chamber therein; wherein said chamber includes an entry port for receiving light comprising broadband radiation;
(b) first optical radiation detector means adapted to receive light from said sphere; wherein said first detector means detects said broadband radiation and produces a first electrical output signal comprising a first electrical current corresponding to said broadband radiation;
(c) second optical radiation detector means adapted to receive light from said sphere; wherein said second detector means detects a predetermined wavelength fraction of said broadband radiation and produces a second electrical output signal comprising a second electrical current corresponding to said wavelength fraction; and
(d) output means comprising a differential amplifier for comparing said first and second electrical output signals and being capable of producing a third electrical output signal which is proportional to the difference between said first and second electrical output signals;
(e) first and second operational amplifiers; wherein said first amplifier converts said first electrical current to a first voltage signal which is proportional to said first electrical current; and wherein said second amplifier converts said second electrical current to a second voltage signal which is proportional to said second electrical current; and
(f) a variable resistor for adjusting the voltage-to-current ratio of said first amplifier in a manner such that said third electrical output signal is zero in the presence of said predetermined wavelength fraction.

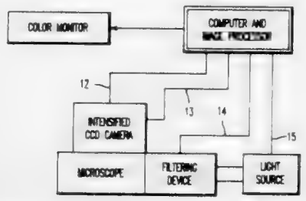
5,332,905

APPARATUS AND METHOD FOR MULTIPLE EMISSION RATIO PHOTOMETRY AND MULTIPLE EMISSION RATIO IMAGING

Gary Brooker, Potomac; J. Scott McDonald, Germantown, both of Md., and Jeffrey S. Brooker, Herndon, Va., assignors to Atto Instruments, Inc., Rockville, Md.

Filed Aug. 26, 1992, Ser. No. 935,873
Int. Cl.[5] G01N *21/64*
U.S. Cl. 250—458.1 **16 Claims**

14. An apparatus for producing multiple luminescence ratio images, comprising:
(A) a light source providing a light beam of sufficient energy to electronically excite at least one luminescent compound in a sample,
(B) a light filter positioned in the path of the light beam to filter out selected wavelengths of the light beam,
(C) a dichroic mirror positioned in the path of the filtered light beam to reflect said filtered light beam in the direction of said sample,
(D) a mounting platform for said sample positioned such that the reflected light beam strikes said sample so that said luminescent compound becomes electronically excited and produces luminescent emissions,



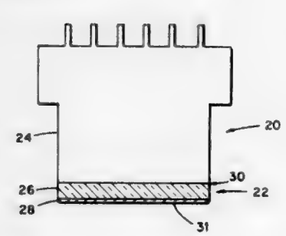
(E) a detector positioned to receive the reflected luminescent emissions and having an electronic switching device for adjusting the sensitivity of said detector at least four times within a period of time of from about one microsecond to one minute.

5,332,906

SCINTILLATOR ASSEMBLY FOR ALPHA RADIATION DETECTION AND AN ASSOCIATED METHOD OF MAKING

Robert J. Lauf; Stephanie A. McElhaney, and John B. Bates, all of Oak Ridge, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Aug. 12, 1992, Ser. No. 928,999
Int. Cl.[5] G01T *1/202*
U.S. Cl. 250—483.1 **21 Claims**



1. A scintillator assembly for the detection of alpha radiation comprising:
a multicrystalline scintillating film of cerium doped yttrium aluminum garnet; and
a chemically inert, to cerium doped yttrium aluminum garnet, optically transparent substrate upon which the multicrystalline scintillating film is deposited.

5,332,907

METHOD FOR RECORDING AND REPRODUCING A RADIATION IMAGE, APPARATUS USING SAID METHOD, PHOTOSTIMULABLE PHOSPHOR PANEL FOR STORING SAID RADIATION IMAGE

Romano Morlotti, Varazze, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 6, 1993, Ser. No. 86,089
Claims priority, application Italy, Jul. 28, 1992, MI92A001829
Int. Cl.[5] G01N *23/04;* **C09K** *11/85*
U.S. Cl. 250—484.4 **21 Claims**

1. A method for recording and reproducing a radiation image comprising the steps of (i) causing a visible or infrared radiation-stimulable phosphor to absorb a high energy radiation passing through an object, (ii) stimulating said phosphor with visible or infrared radiations to release the energy stored

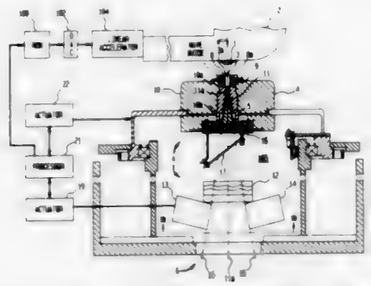
VOL 1164 ISS 4 JL 26 1994 UMI

as fluorescent light, and (iii) detecting said fluorescent light with light detecting means, characterized in that said phosphor is selected from the group consisting of green-emitting trivalent erbium activated barium ytterbium halides, trivalent erbium activated barium fluorohalides and solid solutions thereof.

5,332,908
METHOD FOR DYNAMIC BEAM PROFILE GENERATION

Georg A. Weidlich, Concord, Calif., assignor to Siemens Medical Laboratories, Inc., Concord, Calif.

Continuation of Ser. No. 860,945, Mar. 31, 1992, abandoned. This application Feb. 11, 1993, Ser. No. 17,459
Int. Cl.[5] G21K *1/04*
U.S. Cl. 250—492.1 **17 Claims**



1. A method for applying a desired radiation treatment in a system having: 1) a radiation source which generates a radiation beam having an intensity along an axis and 2) a collimator assembly having a plurality of independently movable sets of plates disposed in the path of the radiation beam and oriented in a direction perpendicular to said beam axis, each set having two movable plates, the method comprising the steps of:

a) defining a continuous and continuously derivable function to control the intensity of the radiation beam as a function of plate position to achieve said desired radiation treatment having any desired isodose curve and without the use of rotation of the path of said radiation beam;

b) actuating each of said plates independently during the treatment, at a respective predetermined velocity to cause sad beam to change in width and intensity over time in accordance with said function so as to produce the desired radiation treatment.

5,332,909
RADIATION IMAGE CONVERTING APPARATUS

Kenji Ishiwata; Siro Takeda; Fumihiro Namiki; Takahiro Haraki, and Hideyuki Hirano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 904,655, Jun. 26, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 115,671
Claims priority, application Japan, Jul. 2, 1991, 3-161915
Int. Cl.[5] G03B *42/02*
U.S. Cl. 250—584 **6 Claims**

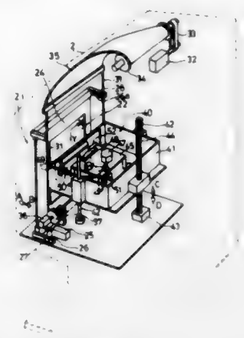
1. A radiation image converting apparatus, comprising:

a photographing and recording unit having an accelerated phosphorescence fluorescent plate on which a radiation image is accumulated and recorded;

a reading unit irradiating excitation light upon said accelerated phosphorescence fluorescent plate on which said radiation image is accumulated and recorded and receiving accelerated phosphorescence light emitted from said accelerated phosphorescence fluorescent plate, to produce an image signal carrying the radiation image;

a flexible lead containing sheet for absorbing radiation which has passed through said accelerated phosphorescence fluorescent plate; and

a sheet moving mechanism which is operative, prior to said radiation image being accumulated and recorded onto said accelerated phosphorescence fluorescent plate, to move said lead containing sheet to a first position interposed

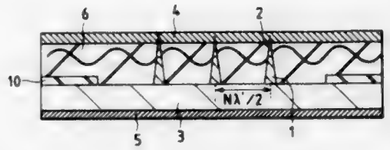


between said accelerated phosphorescence fluorescent plate and said reading unit, and which is operative, prior to reading the radiation image by said reading unit, to obtain said image signal and to move said lead containing sheet from said first position to a second position withdrawn from said first position.

5,332,910
SEMICONDUCTOR OPTICAL DEVICE WITH NANOWHISKERS

Keiichi Haraguchi, Kokubunji; Kenji Hiruma, Tokorozawa; Kensuke Ogawa, Hachioji; Toshio Katsuyama, Ome; Ken Yamaguchi, Fuchu; Toshiyuki Usagawa, Yono; Masamits Yazawa, Yokohama; Toshiaki Masuhara, Hinode, all of Japan; Gerard P. Morgan, Co. Galway, Northern Ireland, and Hiroshi Kakibayashi, Nagareyama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 856,135, Mar. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 686,780, Apr. 17, 1991. This application Nov. 30, 1993, Ser. No. 159,343
Claims priority, application Japan, Mar. 22, 1991, 3-058570
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—13 **24 Claims**



1. A semiconductor optical device comprising:

a semiconductor substrate;

a plurality of semiconductor nanowhiskers each having a pn junction, formed on a main surface of said semiconductor substrate in the direction substantially perpendicular to said main surface, said plurality of semiconductor nanowhiskers each having a first conductivity type region and a second conductivity type region;

a first electrode electrically connected with said first conductivity type regions of said semiconductor nanowhiskers; and

a second electrode electrically connected with said second

conductivity type regions of said semiconductor nanowhiskers;

wherein at least a portion of said plurality of semiconductor nanowhiskers are arranged at substantially equal distances; and

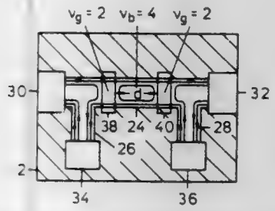
wherein desired semiconductor nanowhiskers can be selectively operated by selectively applying power or potential to the desired semiconductor nanowhiskers,

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5,332,911
SEMICONDUCTOR COMPONENT WITH ADIABATIC TRANSPORT IN EDGE CHANNELS

Klaus von Klitzing, Stuttgart; Gerhard Mueller, Meitingen; Edgar Diessel, and Dieter Weiss, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften, e.V., Goetting, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,299
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1991, 4101389
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—187 **38 Claims**

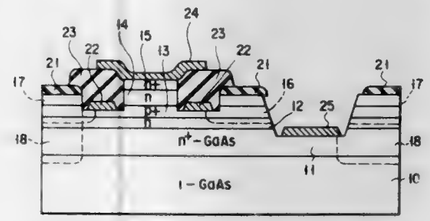


1. Semiconductor radiation detector having a layered construction and comprising a conductive region having a two-dimensional or quasi one-dimensional electron or hole gas in which an adiabatic transport takes place at least regionally in edge channels, and with at least two contacts to the conductive region, wherein the transport in the edge channels is disturbed by interaction with the electromagnetic radiation to be detected so that an increase of the scattering rate between the edge channels is caused to change the resistance measurable between the contacts, and means for detecting the change in resistance.

5,332,912
HETEROJUNCTION BIPOLAR TRANSISTOR

Tetsuro Nozu, Tokyo; Norio Iizuka, Yokohama; Junko Akagi, Kawasaki; Torakiti Kobayashi, Yokohama, and Masao Obara, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 23, 1993, Ser. No. 51,617
Claims priority, application Japan, Apr. 24, 1992, 4-106763
Int. Cl.[5] H01L *29/61*
U.S. Cl. 257—197 **16 Claims**



1. A heterojunction bipolar transistor comprising:

a semiconductor support layer;

a collector region of a first conductivity type, formed of a low-resistance part of a first semiconductor film formed on said support layer;

a first high-resistance region, formed of a high-resistance part of said first semiconductor film surrounding and defining said collector region, said first high-resistance region containing ion-implanted impurities for attaining a high-resistance;

a collector electrode contacting said collector region;

a base region of a second conductivity type, formed of a low-resistance part of a second semiconductor film formed on said collector region, and located substantially within plan view area of the collector region defined by said first high-resistance region;

a second high-resistance region, formed of a high-resistance part of said second semiconductor film surrounding and defining said base region, said second high-resistance region containing ion-implanted impurities for attaining a high-resistance;

a base electrode contacting said base region;

an emitter region of the first conductivity type, formed of a third semiconductor film formed on said base region, said emitter region forming a heterojunction along with said base region, said emitter region being formed as an emitter mesa on the base region by dry etching and also located substantially within plan view area of the collector and base regions defined by said first and second high-resistance regions, respectively, such that said first and second high-resistance regions do not contact any junction between said emitter region and said base region;

an insulating film surrounding and defining said emitter region, said insulating film being formed independently of said third semiconductor film; and

an emitter electrode contacting said emitter region.

5,332,913
BURIED INTERCONNECT STRUCTURE FOR SEMICONDUCTOR DEVICES

Joseph Shappir, Jerusalem, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 17, 1991, Ser. No. 811,453
Int. Cl.[5] H01L *27/02, 23/48, 29/46, 29/62*
U.S. Cl. 257—305 **30 Claims**



1. A buried interconnect on a semiconductor substrate, said substrate having a first conductive region, a nonconductive region, and a second conductive region, said first conductive region a being a diffusion region, comprising:

a) a buried conductor which at least partially overlies said nonconductive region;

b) a silicon layer which partially overlies said buried conductor and which includes a nonconductive silicon segment, said nonconductive silicon segment at least partially overlying said buried conductor;

c) a first conductive segment electrically coupled to said buried conductor and electrically coupled to said first conductive region so as to couple electrically said first conductive region with said buried conductor;

d) a second conductive segment electrically coupled to said buried conductor and electrically coupled to said second conductive region so as to electrically couple said diffusion area with said second conductive region; and

e) A non-connected conductive structure, said non-connected conductive structure at least partially overlying said nonconductive silicon segment, said non-connected conductive structure not being electrically connected to

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said buried conductor at that portion of said non-connected conductive structure which overlies said nonconductive silicon segment.

5,332,914

EEPROM CELL STRUCTURE AND ARCHITECTURE WITH INCREASED CAPACITANCE AND WITH PROGRAMMING AND ERASE TERMINALS SHARED BETWEEN SEVERAL CELLS

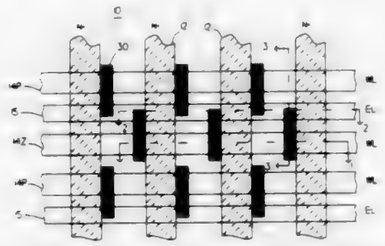
Emanuel Hazani, 1210 Sesame Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 377,311, Jul. 10, 1989, Pat. No. 5,099,297, and a continuation-in-part of Ser. No. 613,235, Nov. 14, 1990, Pat. No. 5,162,247, which is a division of Ser. No. 326,924, Mar. 22, 1989, Pat. No. 5,040,036, said Ser. No. 377,311, is a continuation-in-part of Ser. No. 327,663, Mar. 22, 1989, Pat. No. 4,047,814, which is a continuation-in-part of Ser. No. 152,702, Feb. 5, 1988, Pat. No. 4,845,538. This application Oct. 17, 1991, Ser. No. 778,573

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

Int. Cl.[5] **H01L** *29/68*

U.S. Cl. 257—320 **51 Claims**



1. An EEPROM memory, formed on a semiconductor substrate of a first conductivity type having a major surface, said memory comprising:

an array of M×N EEPROM cells organized in to M horizontally directed rows and N vertically directed columns;

a set of impurity bit line regions of a second conductivity type integrally formed within said substrate, with a first impurity bit line region in a given pair of adjacent impurity bit line regions forming a drain region for a given cell and a second impurity bit line region of said given pair forming a source region for said given cell;

a first set of first control lines and a second set of first control lines disposed over the major surface of the substrate, separated therefrom by a layer of a first thin insulator, and oriented in a substantially horizontal direction, said sets forming plurality of pairs of first control lines, with each of said pairs including one first control line from said first set and one adjacent first control line from said second set, with each of said first control lines in said pairs being exclusively associated with a given row in said array and with the substrate area disposed below said first control line associated with a given cell being a channel region of said given cell, with said channel region including a drain area adjacent to said drain region and a source area adjacent to said source region of said given cell;

a set of M×N floating gates, with each floating gate included in a given one of the cells in said array, with each floating gate including a first section disposed below said first control line associated with a given cell and disposed over said drain area and not over said source area of said channel region, and with each floating gate including a second section spaced apart from said channel region of said given cell; and

a set of second control lines, spaced apart from said channel regions in associated said given cells each of said second control lines insulatively disposed directly over said conductive bit line regions in an area of said substrate associated with memory cells of rows that are associated with one of said pairs of said first control lines and disposed over said second sections of said floating gates associated with said pair of associated first control lines.

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SEMICONDUCTOR MEMORY APPARATUS

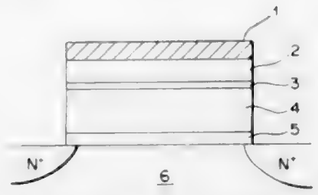
Noriyuki Shimoji; Takanori Ozawa, and Hironobu Nakao, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 21, 1992, Ser. No. 964,043

Claims priority, application Japan, Oct. 30, 1991, 3-284585

Int. Cl.[5] **H01L** *29/78, 29/94*

U.S. Cl. 257—325 **3 Claims**



1. A semiconductor memory apparatus comprising a tunnel oxidizing film formed on a Si substrate, a mixed film composed of a high dielectric constant insulating film and an amorphous insulating film formed on the tunnel oxidizing film, a metallic film formed on the mixed film, a high dielectric film formed on the metallic film, and a gate electrode formed on the high dielectric film.

5,332,916

TRANSMISSION GATE

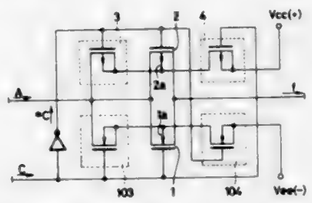
Jun Hirai, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 28, 1992, Ser. No. 951,852

Claims priority, application Japan, Sep. 30, 1991, 3-278738

Int. Cl.[5] **H01L** *27/02*

U.S. Cl. 257—369 **19 Claims**



1. A transmission gate comprising,

a CMOS circuit which is formed by connecting in parallel an N channel MOS transistor and a P channel MOS transistor between an input signal line and an output signal line; and

a separation layer which separates a transistor formation region for one of the P channel MOS transistor and the N channel MOS transistor formed in a substrate from the substrate,

wherein the respective back gates of the transistors are constituted to receive an input signal from the input signal line, when the transistor and the other transistor of the P channel MOS transistor and the N channel MOS transistor are rendered conductive.

5,332,917

SEMICONDUCTOR MEMORY NAND WITH WIDE SPACE BETWEEN SELECTION LINES

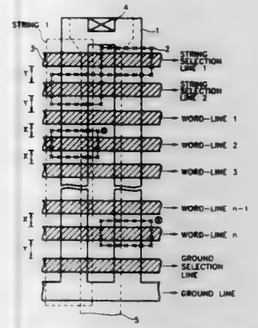
Hyong-gon Lee; Jung-dal Choi, both of Suwon, and Sok-guen Chang, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki

Filed Dec. 21, 1993, Ser. No. 170,884

Claims priority, application Rep. of Korea, Dec. 28, 1992, 92-25763

Int. Cl.[5] **H01L** *29/68*

U.S. Cl. 257—390 **7 Claims**



1. A semiconductor memory device having a NAND-type memory cell structure where string selection transistors and cell transistors are serially connected so as to form a single string,

characterized in that a space between string selection lines of said string selection transistor is wider than that of between word-lines of said cell transistors.

5,332,918

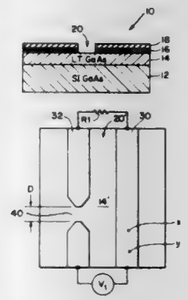
ULTRA-HIGH-SPEED PHOTOCONDUCTIVE DEVICES USING SEMI-INSULATING LAYERS

Frank W. Smith, Cambridge; Mark A. Hollis, Concord; Arthur R. Calawa, Wellesley; Vicky Diadiuk, Lincoln, and Han Q. Le, Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 312,133, Feb. 17, 1989, Pat. No. 5,168,069, which is a continuation-in-part of Ser. No. 157,806, Feb. 19, 1988, Pat. No. 4,952,527. This application Aug. 31, 1992, Ser. No. 938,385

Int. Cl.[5] **H01L** *27/14, 31/00, 23/485*

U.S. Cl. 257—431 **13 Claims**



8. A III-V photoconductive device comprising:

a) a homoepitaxial crystalline layer of a compound of III material and V material formed on a substrate, one of the materials being more volatile than the other material;

b) the homoepitaxial layer incorporating an excess of the more volatile of the materials in the homoepitaxial layer having a resistivity equal to or greater than 10^7 ohm-cm;

c) a stabilizing layer of III-V material formed over the homoepitaxial layer to minimize out diffusion of the more volatile of the materials; and

d) ohmic contacts on the stabilizing layer, the contacts separated by a gap.

5,332,919

PHOTODETECTOR WITH SURROUNDING REGION

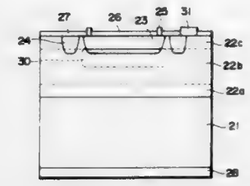
Yasushi Fujimura, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Feb. 22, 1993, Ser. No. 20,712

Claims priority, application Japan, Feb. 24, 1992, 4-036472

Int. Cl.[5] **H01L** *27/14*

U.S. Cl. 257—434 **28 Claims**



1. A photodetector including a package having a window disposed in a light incident part, and a light detecting element installed in the package, the light detecting element comprising:

a first conduction-type semiconductor layer;

a first region formed of a second conduction-type semiconductor and embedded in the first conduction-type semiconductor layer;

a second region formed of the second conduction-type semiconductor and embedded so as to be spaced from the first region and so as to surround the first region; and

a conductor layer provided both on at least one part of a top surface of the first conduction-type semiconductor layer and on at least one part of a top surface of the second region.

5,332,920

DIELECTRICALLY ISOLATED HIGH AND LOW VOLTAGE SUBSTRATE REGIONS

Akio Nakagawa, Hiratsuka; Kazuyoshi Furukawa, Kawasaki; Tsuneo Ogura, and Katsujiro Tanzawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 732,575, Jul. 18, 1991, Pat. No. 5,097,314, which is a continuation of Ser. No. 486,395, Feb. 28, 1990, Pat. No. 5,049,968, which is a continuation-in-part of Ser. No. 307,770, Feb. 8, 1989, abandoned. This application Mar. 11, 1992, Ser. No. 850,964

Claims priority, application Japan, Feb. 8, 1988, 63-26787; Sep. 30, 1988, 63-246441; May 16, 1989, 1-122311; Aug. 7, 1989, 1-202936; Dec. 11, 1989, 1-318980

Int. Cl.[5] **H01L** *29/70*

U.S. Cl. 257—501 **26 Claims**

1. A semiconductor device, comprising:

a composite substrate formed comprising a first semiconductor substrate serving as an element region bonded to a second semiconductor substrate serving as a supporting member with a first insulating film interposed therebetween;

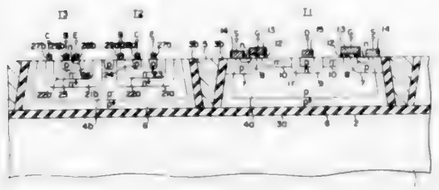
a plurality of low breakdown voltage elements formed in said first semiconductor substrate; and

a high breakdown voltage element formed in said first semiconductor substrate;

said first semiconductor substrate comprising first and sec-

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ond island regions which are isolated from each other by a dielectric material in a first groove, said second island region including a plurality of element regions, said high breakdown voltage element being formed in said first island region, said low breakdown voltage elements being formed in said second island region, said second island region comprising an isolated region which is isolated



from the remainder of said second island region by a dielectric material in a second groove, and at least one of said low breakdown voltage elements being formed in said isolated region; and

a high impurity concentration region being formed over an entire side surface of at least one of said first and second grooves.

5,332,921

RESIN-SEAL TYPE SEMICONDUCTOR DEVICE

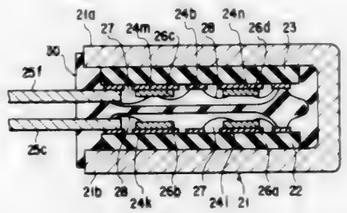
Noriaki Dousen; Nobuyuki Sato, and Kouji Araki, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 27, 1993, Ser. No. 52,610

Claims priority, application Japan, Apr. 27, 1992, 4-107786

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—685 **23 Claims**



1. A resin-seal type semiconductor device comprising:

a main substrate divided into a first surface, a second surface, and a third surface, said first surface and said second surface being positioned opposite to one another and spaced apart by a distance equal to a length of said third surface such that a surface area of said first surface is exactly aligned with a surface area of said second surface and connected thereto via said third surface;

a first insulating substrate provided on said first surface of said main substrate;

a second insulating surface provided on said second surface of said main substrate;

first and second semiconductor circuits respectively provided on said first and second insulating substrates, said first and second semiconductor circuits being electrically connected to one another;

first and second outer leads having first end portions thereof respectively provided on said first and second insulating substrates, said first and second outer leads being respectively electrically connected to said first and second semiconductor circuits; and

a resin for sealing a gap between said first surface and said second surface of said main substrate, wherein second end portions of said first and second outer leads are exposed from said resin.

5,332,922

MULTI-CHIP SEMICONDUCTOR PACKAGE

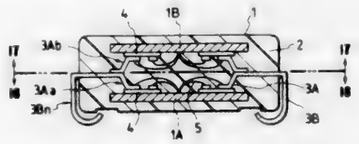
Satoshi Oguchi, Ohme; Masamichi Ishihara; Kazuya Ito, both of Hamura; Gen Murakami, Tama; Ichiro Anjoh, Koganei; Toshiyuki Sakuta; Yasunori Yamaguchi, both of Ohme; Yasuhiro Kasama, Tokyo; Tetsu Udagawa, Iruma; Eiji Miyamoto, Ohme; Youichi Matsuno, Koganei; Hiroshi Satoh, Kodaira, and Atsusi Nozoe, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1991, Ser. No. 691,985

Claims priority, application Japan, Apr. 26, 1990, 2-108621; Mar. 13, 1991, 3-074530

Int. Cl.[5] H01L *23/16, 23/48*

U.S. Cl. 257—723 **16 Claims**



1. A semiconductor device comprising:

a first and a second semiconductor chip each having a plurality of external terminals arranged in a row centrally of a main surface thereof, and said first and said second semiconductor chips having same function;

a body for sealing said first and second semiconductor chips;

a plurality of leads disposed in said body and protruding from said body, each of said plurality of leads having a first branch lead and a second branch lead; and

a plurality of first wires each one thereof electrically connecting a first end of a respective said first branch lead to one of said external terminals on said first semiconductor chip, and a plurality of second wires each one thereof electrically connecting a first end of a respective said second branch lead to one of said external terminals on said second semiconductor chip,

wherein the main surface of said first and said second semiconductor chips are disposed in an opposing relation to each other,

wherein each one of said plurality of leads includes a mutual connection of a second, opposing end of a corresponding said first branch lead and a second, opposing end of a corresponding said second branch lead, and

wherein said first and second branch leads and mutual connections thereof corresponding to each of said plurality of leads are disposed within said body.

5,332,923

SEMICONDUCTOR MEMORY

Kiyoshi Takeuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,167

Claims priority, application Japan, Aug. 6, 1991, 3-196327

Int. Cl.[5] H01L *27/02, 23/48, 29/68*

U.S. Cl. 257—758 **14 Claims**

1. A semiconductor memory having a folded bit-line structure, comprising:

a plurality of memory cell regions disposed on a semiconductor substrate;

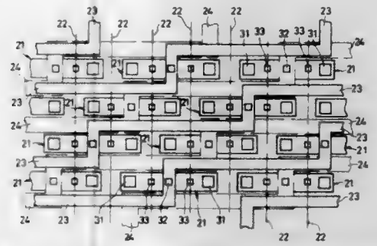
a plurality of word lines which are connected respectively to memory cells in said memory cell regions,

said word lines being arranged along a first direction at given intervals;

a plurality of first bit lines which are formed in a first layer over said substrate and connected respectively to said memory cells, said first bit lines being arranged along a second direction at given intervals,

said second direction being substantially perpendicular to said first direction; and

a plurality of second bit lines which are formed in a second



layer over said first layer and connected respectively to said memory cells,

said second bit lines being arranged substantially along said second direction at given intervals, and

said second layer being electrically insulated from said first layer.

5,332,924

SEMICONDUCTOR DEVICE AND PRODUCTION METHOD THEREOF

Migaku Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,473

Claims priority, application Japan, Sep. 13, 1991, 3-262838

Int. Cl.[5] H01L *29/34, 21/465*

U.S. Cl. 257—760 **22 Claims**

1. A semiconductor device comprising:

a lower conductive layer formed on a surface of or over a semiconductor substrate;

a lower insulating layer formed on said lower conductive layer and having a first through-hole for wiring;

an intermediate conductive layer formed on said lower insulating layer;

a first inter-layer insulating layer formed on said intermediate conductive layer and having a second through-hole for wiring;

a second inter-layer insulating layer formed on said first inter-layer insulating layer and having a third through-hole for wiring communicated to said second through-hole of said first inter-layer insulating layer;

a third inter-layer insulating layer formed on said second inter-layer insulating layer and having a fourth through-hole communicated to and larger in opening area than said third through-hole of said second inter-layer insulating layer; and

an upper conductive layer formed on said third inter-layer insulating layer and electrically connected through said first, second, third and fourth through-holes of said lower insulating layer, first inter-layer insulating layer, second inter-layer insulating layer and third inter-layer insulating layer to said lower conductive layer and not electrically connected to said intermediate conductive layer;

said second inter-layer insulating layer having a property which limits a removal action when said third inter-layer insulating layer is selectively removed by etching thereby to form said fourth through-hole;

wherein said upper conductive layer is in contact with an upper face of said first inter-layer insulating layer in said fourth through-hole of said third inter-layer insulating layer.

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VERTICAL WINDMILL WITH OMNIDIRECTIONAL DIFFUSION

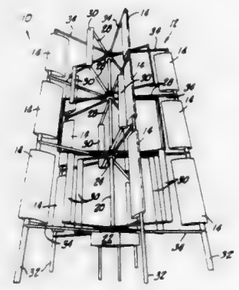
Robert N. Thomas, Ventura, Calif., assignor to Wind Harvest Co., Inc., Ventura, Calif.

Continuation of Ser. No. 645,968, Jan. 25, 1991, Pat. No. 5,057,696. This application Sep. 16, 1991, Ser. No. 762,863

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] F03D *7/06*

U.S. Cl. 290—44 **30 Claims**



1. A windmill comprising:

a support frame;

a central shaft rotatably mounted on the support frame;

an airfoil rotatably mounted at a fixed radial distance from the central shaft;

a stator mounted at a fixed radial distance from the central shaft;

means for allowing the stator to rotate about an axis and for biasing rotational movement of the stator;

brake means for slowing the rotational speed of the central shaft; and

means for transferring power from the central shaft.

5,332,926

STARTER MOTOR ELECTROMAGNETIC SWITCH

Hirokazu Ueno, and Hiroyuki Morikane, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1992, Ser. No. 999,083

Claims priority, application Japan, Jan. 31, 1992, 4-045897

Int. Cl.[5] F02N *11/04*

U.S. Cl. 307—10.6 **7 Claims**

1. A starter motor electromagnetic switch, comprising:

a) an excitation coil (**1**) wound around a bobbin (**2**), and having a lead wire (**1***a*) extending axially outwardly from one end thereof,

b) a yoke (**4**) surrounding the coil,

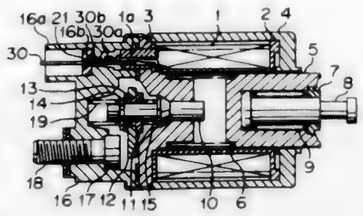
c) an insulation cap (**16**) fixed to one end of the yoke, defining an outwardly extending sleeve member (**16***a*) adapted to receive an inserted coupler (**22**), and having a guide hole (**16***b*) formed therein,

d) an elongate coil terminal (**30**) having an inner end attached to the lead wire, and a mid-portion extending

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through the guide hole such that an outer end is disposed within the sleeve for engagement by the coupler, and

e) means for preventing resonant vibrations of the coil terminal and attendant severing or detachment of the lead wire,



said preventing means comprising projection means (30*b*; 30*c*) upstanding from said mid-portion of the coil terminal a sufficient distance to engage an inner surface of the guide hole and to firmly wedge said coil terminal therein.

5,332,927

POWER SUPPLY SYSTEM FOR A TELECOMMUNICATION SYSTEM

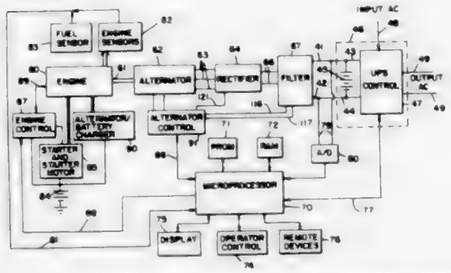
Steven Paul, Tomah; Murray Leonard, Wisconsin Rapids; Mark Schultz; Kevin Mengelt, both of Mauston, and Robert Colburn, Green Bay, all of Wis., assignors to Best Power Technology, Inc., Necedah, Wis.

Continuation of Ser. No. 653,793, Feb. 11, 1991, Pat. No. 5,198,698. This application Feb. 25, 1993, Ser. No. 23,367

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] H02J *9/00*

U.S. Cl. 307—66 **9 Claims**



1. A power supply system for a telecommunications system comprising:

(a) DC bus lines which are connectable to a telecommunications system;

(b) a storage battery connected across the DC bus lines;

(c) an internal combustion engine and means for responding to a control signal to start the engine;

(d) an alternator coupled to the engine to be driven by it and having AC output terminals;

(e) a rectifier connected to the output terminals of the alternator for rectifying the AC output of the alternator to a DC voltage;

(f) e means for filtering the DC voltage from the rectifier to provide a filtered DC voltage to the DC bus lines;

(g) means for controlling the alternator when the engine is running to provide a controlled DC output voltage from the rectifier and the means for filtering to the DC bus lines so that the voltage across the DC bus lines is maintained at a selected voltage level;

(h) a charger connected to receive power from an AC power system and connected to supply DC power to the DC bus lines when AC power is available from the AC power system;

(i) control means connected to monitor the voltage on the DC bus lines for providing a control signal to turn on the engine when the voltage across the DC bus lines drops belows a predetermined value and for controlling the means for controlling the alternator for activating the alternator to provide the DC output power from the rectifier and filter means to the DC bus lines.

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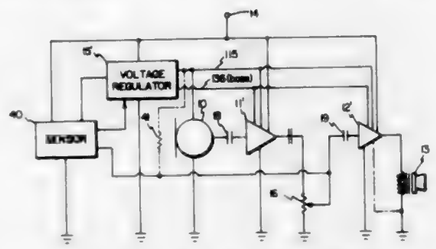
BATTERY DRAIN REDUCER

William A. Johnson, Minneapolis, Minn., assignor to Threepenny Electronics Corporation, Minneapolis, Minn.

Filed Dec. 10, 1992, Ser. No. 988,710

Int. Cl.[5] G05F *3/08*; **H04R** *25/00*

U.S. Cl. 307—296.6 **16 Claims**



1. A current drain reducer for reducing current drain in selected electronic circuit systems, said current drain reducer comprising:

a controlled current path system in a said electronic circuit system having first and second power supply connection regions and at least one operation direction region between selected pairs of which a plurality of electrical circuit branches are electrically connected such that selected ones of said electrical circuit branches electrically connected between said first and second power supply regions each include a corresponding one of a plurality of controlled conductivity means electrically connected in series therein at first and second terminating regions thereof, said plurality of controlled conductivity means each having a control region therein by which it is capable of being directed, through electrical energization thereof, to effectively provide a conductive path of a selected conductivity between its said first and second terminating regions, said plurality of controlled conductivity means each having its control region electrically coupled to a said operation direction region at which a shutdown signal can be provided directing such controlled conductivity means to provide occurrences of relatively low conductivity, and to alternatively provide occurrences of relatively high conductivity, between said first and second terminating regions thereof, said plurality of electrical circuit branches having at least one thereof with a potentiometer means electrically connected in series therewith at end terminals thereof, said potentiometer means effectively having a wiper variably electrically contacting a resistor means electrically connected between said end terminals thereof and having said wiper electrically connected to another of said electrical circuit branches;

a wiper position sensing means having an input electrically connected to said wiper and having an output, said wiper position sensing means being capable of sensing said wiper taking a position sufficiently close to one of said end terminals and of providing an output signal at said output thereof having indicators therein of such occurrences; and

a non-mechanical switched shutdown generation means having an input electrically connected to said wiper position sensing means output and having a corresponding output for each said operation direction region with there being an electrical interconnection therebetween, said shutdown signal generation means being capable of receiving said wiper position sensing means output signal and of providing said shutdown signal in correspondence therewith.

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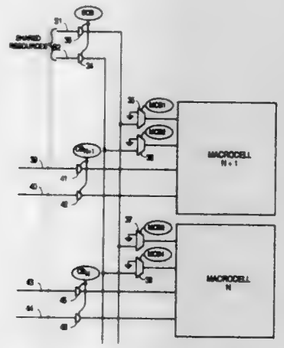
POWER MANAGEMENT FOR PROGRAMMABLE LOGIC DEVICES

David Chiang, Saratoga, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Apr. 8, 1993, Ser. No. 55,807

Int. Cl.[5] H03K *19/01*

U.S. Cl. 307—296.3 **15 Claims**



1. A programmable circuit comprising:

a plurality of circuit blocks for performing logic functions on input signals, each block receiving the input data signals on at least one private input line connected to that block and to no other block, and on at least one shared input line also connected to at least one other block;

at lest one current regulating circuit for regulating said at least one shared input line, each current regulating circuit having two states, a first state causing said at least one shared input line to output a first current for providing a first operation speed of a logic function of a data signal thereon and a second state causing said at least one shared input line to output a second current greater than the first for providing a second higher operation speed of said logic function of the same data signal thereon; and

a control circuit for setting the state of the current regulating circuit.

5,332,930

PHASE LOCKED LOOP CIRCUITRY WITH VARIABLE GAIN AND BANDWIDTH

Andrew M. Volk, Loomis, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 24, 1993, Ser. No. 82,280

Int. Cl.[5] H03L *7/16*, *7/08*

U.S. Cl. 307—270 **15 Claims**

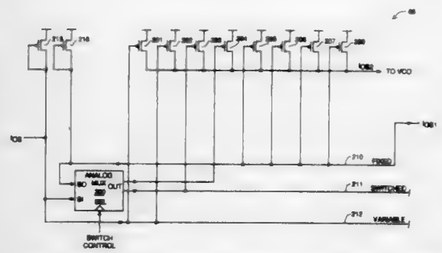
1. An adjustable current source circuit of a phase locked loop (PLL) circuitry fabricated on a single substrate for providing a first current that is a function of an error voltage proportional to an amount of a phase difference of a comparison of a reference signal and a feedback signal, comprising:

(A) a first current source coupled to receive a second current from a reference source of the PLL circuitry for providing a first portion of the first current under control of the second current, wherein the first portion of the first current is proportional to the second current;

(B) a second current source coupled to receive a third current proportional to a frequency controlled voltage of the PLL circuitry for providing a second portion of the first current under control of the third current, wherein the second portion of the first current is proportional to the third current;

(C) a third current source for providing a third portion of the first current selectively proportional to one of the second and third currents;

(D) a switching circuit coupled to receive the second and



third currents for selectively controlling the third current source to couple to one of the second and third currents in order to cause the third portion of the first current proportional to a selected one of the second and third currents such that the first current can be switched to have one of a first current ratio and a second current ratio between the second and third currents and therefore the PLL circuitry can be switched between a first and a second bandwidth and loop gain.

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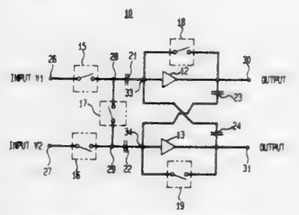
HIGH SPEED DIFFERENTIAL COMPARATOR

Finbarr J. Crispie, Sunnyvale, and Geert P. Rosseel, Stanford, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 24, 1991, Ser. No. 720,082

Int. Cl.[5] H03K *5/24*

U.S. Cl. 307—355 **22 Claims**



1. A differential comparator comprising:

a first and a second input terminal for receiving first and second input signals, respectively, which are to be compared;

first and second amplifying means, each amplifying means having an input and an output and further including selective coupling means for selectively coupling the input and output of the amplifying means for auto-zeroing the amplifying means;

a first capacitor having a first plate connected to the first input terminal and a second plate connected to the input of the first amplifying means;

a second capacitor having a first plate connected to the second input terminal and a second plate connected to the input of the second amplifying means;

a third capacitor connected between the output of the first amplifying means and the input of the second amplifying means;

a fourth capacitor connected between the output of the

second amplifying means and the input of the first amplifying means; and

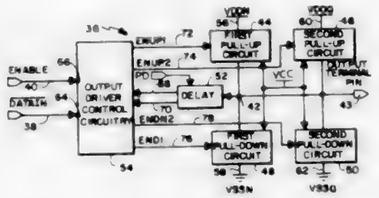
first selective connecting means for selectively connecting the first plate of the first capacitor to the first plate of the second capacitor.

5,332,932

OUTPUT DRIVER CIRCUIT HAVING REDUCED VSS/VDD VOLTAGE FLUCTUATIONS

Thomas J. Runaldue, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 16, 1991, Ser. No. 760,310
Int. Cl.[5] H03K *17/16, 19/0948*
U.S. Cl. 307—443 **12 Claims**



1. An output buffer driver circuit which significantly reduces the effects of voltage fluctuations in the upper and lower power supply potentials on an output signal, comprising:

first pull-up circuit means (**44**) responsive to a first control signal for generating quickly a low-to-high transition of the output signal at an output terminal (**43**);

said first pull-up circuit means being coupled to a noisy upper power supply potential (VDDN) and the output terminal (**43**);

second pull-up circuit means (**46**) responsive to a second control signal for maintaining the output signal at a high logic level after the low-to-high transition has been completed;

said second pull-up circuit means being coupled to a quiet upper power supply potential (VDDQ) and the output terminal;

first pull-down circuit means (**48**) responsive to a third control signal for generating quickly a high-to-low transition of the output signal at the output terminal (**43**);

said first pull-down circuit means being coupled between a noisy lower power supply potential (VSSN) and the output terminal (**43**);

second pull-down circuit means (**50**) responsive to a fourth control signal for maintaining the output signal at a low logic level after the high-to-low transition has been completed;

said second pull-down circuit means being coupled to a quiet lower power supply potential (VSSQ) and the output terminal;

delay circuit means (**52**) responsive to the logic level of the output signal for generating a first delayed logic signal and a second delayed logic signal; and

control circuit means (**54**) responsive to a data input logic signal, said first delayed logic signal, and said second delayed logic signal for generating said first through fourth control signals,

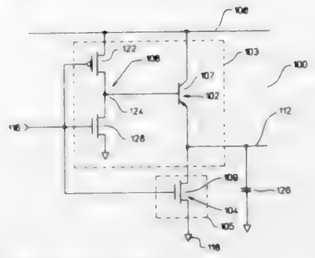
whereby the output signal at the output terminal is connected to the noisy upper power supply potential during the low-to-high transition and is connected to the noisy lower supply potential during the high-to-low transaction.

5,332,933

BIPOLAR-MOS CIRCUITS WITH DIMENSIONS SCALED TO ENHANCE PERFORMANCE

Prasad A. Raje, Fremont, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 21, 1993, Ser. No. 6,418
Int. Cl.[5] H03K *19/01*
U.S. Cl. 307—446 **14 Claims**



1. A logic circuit comprising:

a pull-up section including

bipolar pull-up means connected between a first terminal and an output of the circuit;

MOS pull-up means, characterized by a first dimension, driving the bipolar pull-up means and responding to an input signal to force the bipolar pull-up means to provide a low resistance current path for establishing a first logic level at the output if the input signal assumes a second logic level; and

a pull-down section including

MOS pull-down means, characterized by a second dimension, connected between the output of the circuit and a second terminal, the MOS pull-down means responding to the input signal to provide a low resistance current path for establishing the second logic level at the output if the input signal assumes the first logic level,

such that

the first and the second dimension are elated by an optimum ratio that substantially minimizes a propagation delay of the circuit;

the sum of the first and the second dimension is proportional to an input capacitance of the circuit; and

the optimum ratio is independent of a fanout which is defined as a load capacitance of the circuit divided by the input capacitance, the load capacitance being connected to the output of the circuit.

5,332,934

SMALL TO FULL SWING CONVERSION CIRCUIT

Masashi Hashimoto, Onogaw 14-32, Tsukuba-shi, Ibaraki-ken, Japan, and Deog-Kyoon Jeong, 244-2 Gyosu Apt. Gu-201, Bongchung-Dong, Gwanak-ku, Seoul, Rep. of Korea

Filed Jan. 4, 1993, Ser. No. 430
Int. Cl.[5] H03K *17/10*
U.S. Cl. 307—475 **16 Claims**

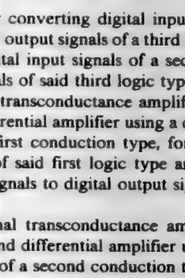
1. A signal receiver circuit for converting a small swing signal into a full swing signal comprising:

an input stage, having a first power input terminal, a second power input terminal, a small swing signal input terminal and an intermediate output terminal, said input stage producing an intermediate signal at said intermediate output terminal;

an output stage having an intermediate signal input terminal for receiving said intermediate signal, and an output terminal, said output stage producing the full swing signal on said output terminal;

a first feedback stage, having a first power supply terminal for receiving a voltage at a first level, a first feedback terminal and a first control signal terminal for receiving the full swing signal and for providing a first control signal to said first power input terminal; and

a second feedback stage, having a second power supply for receiving a voltage at a second level different from said



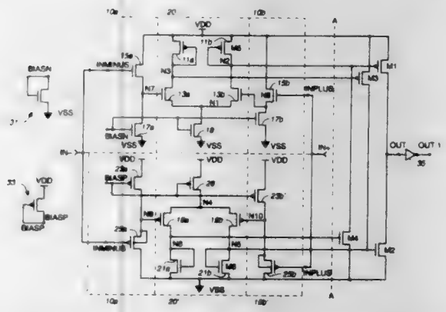
first level, a second feedback terminal, and a second control signal terminal coupled to said second power input terminal, said second feedback stage providing a second control signal to said second power input terminal.

5,332,935

ECL AND TTL TO CMOS LOGIC CONVERTER

Jyn-Bang Shyu, Cupertino, Calif., assignor to Sierra Semiconductor, Calif.

Filed Apr. 12, 1993, Ser. No. 45,101
Int. Cl.[5] H03K *19/094*
U.S. Cl. 307—475 **7 Claims**



1. Apparatus for converting digital input signals of a first logic type to digital output signals of a third logic type and also for converting digital input signals of a second logic type to digital output signals of said third logic type, comprising:

first operational transconductance amplifier means, including a first differential amplifier using a differential transistor pair of a first conduction type, for receiving digital input signals of said first logic type and converting the digital input signals to digital output signals of said third logic type;

second operational transconductance amplifier means, including a second differential amplifier using a differential transistor pair of a second conduction type, for receiving digital input signals of said second logic type and converting the digital input signals to digital output signals of said third logic type; and

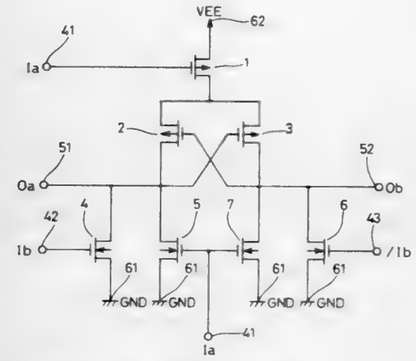
means for causing only one of said first differential amplifier and said second differential amplifier to be active at a time depending on which logic type of digital input signals is being received.

5,332,936

COMPOSITE LOGIC CIRCUIT

Tomoaki Nakao, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1993, Ser. No. 45,708
Claims priority, application Japan, Apr. 14, 1992, 4-093987
Int. Cl.[5] H03K *19/094*
U.S. Cl. 307—475 **4 Claims**



1. A composite logic circuit comprising:

a first input node to which a first logic signal having a logic level changing between a first potential and a second potential is supplied,

a second input node to which a second logic signal having a logic level changing between said first potential and a third potential is supplied,

a third input node to which a third logic signal which is an inverted signal of said second logic signal is supplied,

a first output node for providing a first output signal representing an NOR of said first and second logic signals,

a second output node for providing a second output signal representing an NOR of said first and third logic signals,

a first power supply node for receiving a potential equal to said first potential,

a second power supply node for receiving a potential equal to said second potential,

first switching means having one end connected to said second power supply node, and opened and closed in response to said first logic signal,

second switching means connected between the other end of said first switching means and said first output node, and opened and closed in response to said second output signal,

third switching means connected between the other end of said first switching means and said second output node, and opened and closed in response to said first output signal,

fourth switching means connected between said first power supply node and said first output node, and opened and closed in response to said second logic signal,

fifth switching means connected between said first power supply node and said first output node, and opened and closed in response to said first logic signal,

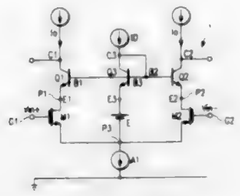
sixth switching means connected between said first power supply node and said second output node, and opened and closed in response to said third logic signal, and seventh switching means connected between said first power supply node and said second output node, and opened and closed in response to said first logic signal.

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5,332,937
TRANSCONDUCTOR STAGE FOR HIGH FREQUENCY FILTERS

Rinaldo Castello, Arcore; Roberto Alini, Stradella; Andrea Baschirotto, Tortona, and Gianfranco Vai, Pavia, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Sep. 9, 1992, Ser. No. 942,678
Claims priority, application Italy, Nov. 13, 1991, MI91A003018
Int. Cl.[5] H03K *5/24*
U.S. Cl. 307—520 **22 Claims**

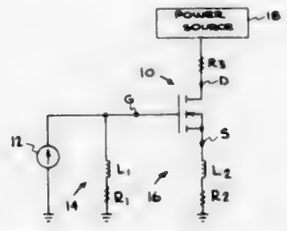


1. An integrated circuit, comprising:
first and second matched current sources, and a third current source;
first and second matched insulated-gate field-effect transistors (IGFETs), each connected to receive a respective side of a complementary input signal on a gate thereof; and
first and second matched bipolar transistors;
a current sink controlled to sink a current equal to the sum of said first, second, and third current sources;
said first IGFET, first bipolar, and first current source all being connected in series, and connected to said current sink, and operatively connected to a first output terminal;
said second IGFET, second bipolar, and second current source all being connected in series, and connected to said current sink;
a third bipolar transistor which is diode-connected, and connected to sink current from said third current source; and
a voltage source connected between said third bipolar transistor and said current sink;
said first, second, and third bipolar transistors all having respective bases thereof connected together.

5,332,938
HIGH VOLTAGE MOSFET SWITCHING CIRCUIT

Thomas E. McEwan, Livermore, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Apr. 6, 1992, Ser. No. 863,914
Int. Cl.[5] H03K *17/687, 17/56*
U.S. Cl. 307—572 **7 Claims**

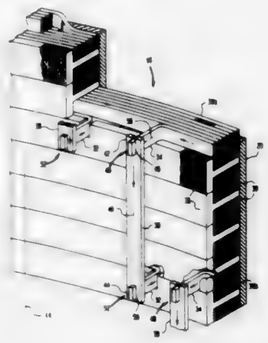


1. A MOSFET switching circuit comprising:
a MOSFET transistor having a drain D connected to a high voltage source through a load, a source S connected to ground through a source circuit including source lead inductance L2, and a gate G connected to a current source, wherein the source lead inductance L2 produces a source lead inductive drop;
a gate circuit connected from the gate G to ground, the gate circuit including a compensating inductor L1 having a value selected to produce an inductive spike in the gate circuit to compensate for the source lead inductive drop;
wherein the source circuit further includes a series resistance R2 in series with source lead inductance L2 and the gate circuit further includes a series resistance R1 in series with compensating inductor L1 and L1 =(R1/R2) L2.

5,332,939
ELECTRICAL STATOR

Alan W. Fanning, San Jose, and Eugene E. Olich, Aptos, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jan. 15, 1993, Ser. No. 4,011
Int. Cl.[5] H02K *11/00, 3/46*
U.S. Cl. 310—71 **9 Claims**

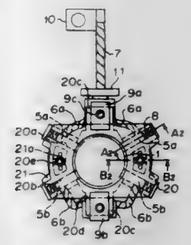


1. An electrical stator of an electromagnetic pump comprising:
first and second annular coils disposed coaxially about a stator longitudinal axis and spaced axially relative to each other, each of said coils comprising an electrical conductor wound to form a plurality of turns and bent radially inward at each end to form radially extending input and output terminals for carrying electrical current to and from said coils;
an elongate electrical connector having a connector longitudinal axis disposed parallel to said stator longitudinal axis, and including first and second opposite ends, said first connector end having a first slot receiving therein said first coil output terminal to define therewith a first joint, and said second connector end having a second slot receiving therein said second coil input terminal to define therewith a second joint; and
each of said first and second joints including a braze filler fixedly joining said first and second connector ends to said first coil output terminal and said second coil input terminal, respectively, and being effective for carrying electrical current through said first and second joints.

5,332,940
BRUSH DEVICE

Akira Kuragaki, and Shigeru Shiroyama, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1993, Ser. No. 1,745
Claims priority, application Japan, Jan. 31, 1992, 4-045891; Jan. 31, 1992, 4-045892; Jan. 31, 1992, 4-045893; Jan. 31, 1992, 4-045894
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—239 **2 Claims**



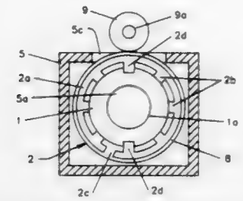
1. A brush device comprising:
a brush holding frame made of an insulation material provided with a plurality of brush accommodating portions, said brush accommodating portions being open at end portions in an axial direction and at inner peripheral portions in a radial direction, and a pair of protruded portions at opposing outer ends of said brush holding frame in the radial direction;
brushes accommodated in said brush accommodating portions along with brush springs, press-contacting a commutator of a direct current machine;
an insulation plate touching an end face of said brush holding frame in the axial direction, covering the open portions at said end portions of the brush accommodating portion;
a pair of attaching pieces mounted on and pinching both end faces of each pair of protruded portions of the brush holding frame thereby fixing said insulation plate to said end face of the brush holding frame in the axial direction;
a pair of stopper protrusion portions protruded in the axial direction provided at intermediate positions situated between said pair of protruded portions, equidistant from said protruded portions, in the peripheral direction on the end face of the brush holding frame; and
a pair of engaging holes in the insulation plate, provided in correspondence with said stopper protrusions, for pressing in and fixing said pair of stopper protrusions, to thereby reduce vibration.

5,332,941
ULTRASONIC DRIVING MOTOR

Keisuke Honda, Aichi, Japan, assignor to Honda Electronics Co., Ltd., Aichi, Japan

Filed Feb. 17, 1993, Ser. No. 18,879
Claims priority, application Japan, Feb. 21, 1992, 4-072569; Feb. 25, 1992, 4-073601; Feb. 25, 1992, 4-073602
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **17 Claims**

1. An ultrasonic driving motor comprising:
a stator comprising a piezoelectric vibrator having a circular portion with an edge face and said plurality of electrodes arranged at on each side, the piezoelectric vibrator being fixedly arranged in a case;
and a rotor comprising a resilient split ring frame arranged in contact with the circular portion of the stator, through a plurality of sliding projections held in contact with the

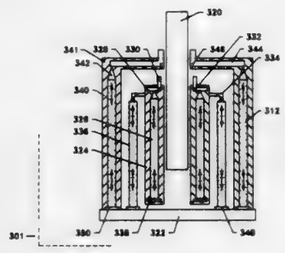


edge face of the piezoelectric vibrator by the resilience of the split ring frame.

5,332,942
INCHWORM ACTUATOR

Brian G. Rennex, 431 Muddy Branch Rd., #101, Gaithersburg, Md. 20878

Filed Jun. 7, 1993, Ser. No. 72,855
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 **27 Claims**



1. An inchworm actuator comprising:
a driven element,
a driver base,
a driver assembly comprising a driver actuator, wherein said driver actuator has a length that is greater than its width or depth, wherein said driver actuator is oriented so that said driver actuator length is parallel to the direction in which said driven element is driven, wherein a bottom end of said driver actuator is fixedly attached to said driver base,
a moving clamp assembly comprising a moving clamp actuator, a moving clamp, and a moving clamp support fixedly attached at its top end to the top of said driver actuator, wherein said moving clamp actuator has a length that is greater than its width or depth, wherein said moving clamp actuator is oriented so that said moving clamp actuator length is parallel to the direction in which said driven element is driven, wherein the bottom of said moving clamp actuator is fixedly attached to the bottom of said moving clamp support, wherein said moving clamp is attached to the top of said moving clamp support, wherein said moving clamp actuator drives said moving clamp to clamp said driven element,
a second clamp assembly, the bottom of which is fixedly attached to said driver base, wherein said second clamp assembly has a length that is greater than its widths or depths, wherein said second clamp assembly is oriented so that said length is parallel to the direction in which said driven element is driven, wherein said second clamp assembly may be activated to clamp said driven element, and
a wiring system for activation of said driver actuator, said moving clamp actuator, and said second clamp assembly

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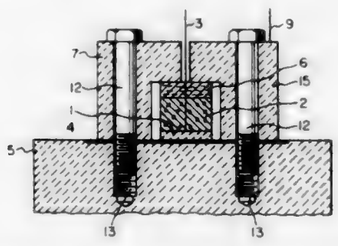
for driving said inchworm actuator to expand or contract, wherein said expansion occurs when the following actuator stroke cycle is enacted: in a first period of time said second clamp assembly releases said driven element and said moving clamp assembly engages said driven element, at which time said driver actuator changes length to drive said moving clamp assembly and said driven element in an expanding direction; and in a second period said moving clamp assembly releases said driven element at which time said second clamp assembly engages said driven element, after which time said driver actuator undergoes its return stroke in the direction of contraction, wherein said contraction occurs when the following actuator stroke cycle is enacted: in a first period of time said second clamp assembly releases said driven element and said moving clamp assembly engages said driven element, at which time said driver actuator changes length to drive said moving clamp assembly and said driven element in a contracting direction; and in a second period said moving clamp assembly releases said driven element at which time said second clamp assembly engages said driven element, after which time said driver actuator undergoes its return stroke in the direction of expansion.

5,332,943

HIGH TEMPERATURE ULTRASONIC TRANSDUCER DEVICE

Mahesh C. Bhardwaj, 238 E. Doris Ave., State College, Pa. 16801

Filed Oct. 21, 1993, Ser. No. 140,270
Int. Cl.[5] H04R *17/00*
U.S. Cl. 310—326 3 Claims



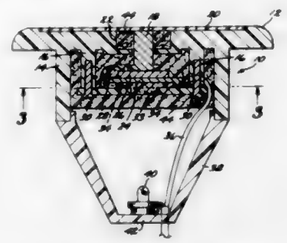
1. A hard faced contact ultrasound transducer device for transmitting ultrasound pulses into a workstructure at temperatures substantially above room temperature comprising:
- a ceramic protection block having inner and outer surfaces, said outer surface being configured to contact the workstructure,
- a piezoelectric element having a front side and a back side, the front side being bonded to the inner surface of the protecting block,
- a damping substrate having front and back sides, the front side being adjacent the back side of the piezoelectric element,
- a ceramic clamping block having a contact face for being positioned facing the back side of the damping substrate and standoff portions that limit the approach of the clamping block toward the ceramic protecting block,
- fastener means to draw the clamping block toward the protecting block forcing the damping substrate against the piezoelectric element and the protecting block,
- whereby the piezoelectric element is mechanically held against the protecting block.

5,332,944

ENVIRONMENTALLY SEALED PIEZOELECTRIC SWITCH ASSEMBLY

David J. Cline, 5471 Sorrento Dr., Long Beach, Calif. 90803

Filed Oct. 6, 1993, Ser. No. 133,653
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—339 9 Claims



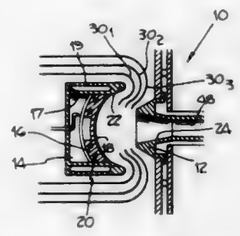
1. An electrical switch assembly comprising:
- enclosure means defining a cavity, and including an access opening;
- circuit board means fixed to the enclosure means within the cavity, and including an opening generally aligned with the access opening in the enclosure means;
- piezoelectric means overlying the circuit board means in spaced relationship to define a flexure space, the piezoelectric means having interiorly extending contact elements engaged upon the circuit board means around the opening in the circuit board means, the piezoelectric means being characterized on deformation by generation of an electrical signal;
- first electrical conductor means coupled between the piezoelectric means and the circuit board means;
- second electrical conductor means coupled to the circuit board means and extending into the cavity for carrying a signal to the exterior of the enclosure means;
- an actuating element extending through the access opening in the enclosure means and interiorly movable for deforming the piezoelectric means; and
- resiliently deformable potting means filling the cavity, the flexure space, and the openings in the enclosure means and the circuit board means to block entry of moisture into the flexure space, the cavity and the openings, the resilient deformability of the potting means enabling flexure of the piezoelectric means for generating the signal.

5,332,945

PIERCE GUN WITH GRADING ELECTRODE

Richard B. True, Sunnyvale, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 11, 1992, Ser. No. 881,041
Int. Cl.[5] H01J *29/46, 1/46*
U.S. Cl. 313—452 4 Claims



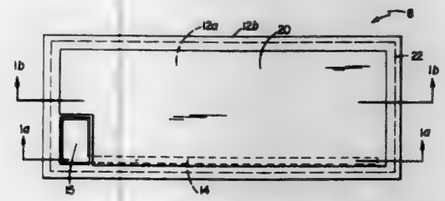
1. An electron gun having a cathode, a focusing electrode adjacent the cathode, and an anode disposed a fixed distance from said cathode, the electron gun further comprising:
- at least one grading electrode disposed between said focusing electrode and said anode as to be non-coincident with equipotential lines of an electric potential difference provided between said cathode and said anode, the grading electrode controlling position of said equipotential lines to reduce surface field gradient levels formed by said electric potential difference.

5,332,946

ELECTROLUMINESCENT LAMP WITH NOVEL EDGE ISOLATION

Rodney T. Eckersley, Tempe; Will M. Hooke, Phoenix; Sharlyn R. Stocker, Mesa, and Ralph McGuigan, Tempe, all of Ariz., assignors to Durel Corporation, Tempe, Ariz.

Continuation-in-part of Ser. No. 720,224, Jun. 24, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 903,600
Int. Cl.[5] H05B *33/00*
U.S. Cl. 313—506 28 Claims



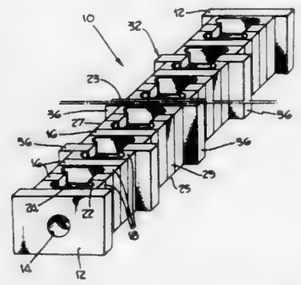
1. In an electroluminescent sheet-form lamp comprising a transparent insulation layer, a transparent first conductive layer below said transparent insulation layer forming a first electrode, a layer of phosphor material below said transparent first conductive layer, a layer of dielectric material below said phosphor layer, a second conductive layer below said dielectric layer forming a second electrode, and electrical connection means for applying an electrical potential between the conductive layers to cause the phosphor to transmit light through the transparent first conductive layer and said transparent insulation layer, one of said conductive layers having been formed as a general conductive coating preapplied over a panel of larger dimension than said lamp, from which said lamp has been cut,
- there being an edge region of said lamp susceptible to formation of a detrimental, electrically conductive path,
- the improvement wherein a main portion of said one of said conductive layers is isolated from the susceptible edge region by isolation provided along at least a portion of the perimeter of the lamp as a result of removal of said preapplied general conductive coating such that, at the region of said isolation, said main portion of said one of said conductive layers which forms the respective electrode commences at a line spaced inwardly from the outer edge of said lamp,
- said electrical connection for said one of said conductive layers being made to said main portion of said one of said conductive layers and being electrically isolated from said susceptible edge region, whereby a lamp formed by cutting its outline from said panel of larger dimension provides a lamp for which the formation of said conductive path in said edge region does not cause an adverse effect, and wherein
- said preapplied general conductive coating has been removed to form a line of interruption that leaves in place a narrow margin of conductive coating in said edge region which is electrically isolated from the main portion of the coating forming the first electrode.

5,332,947

INTEGRAL POLEPIECE RF AMPLIFICATION TUBE FOR MILLIMETER WAVE FREQUENCIES

Alan J. Theiss, Redwood City, and Douglas B. Lyon, San Carlos, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 13, 1992, Ser. No. 882,298
Int. Cl.[5] H01J *23/00*
U.S. Cl. 315—3.5 35 Claims



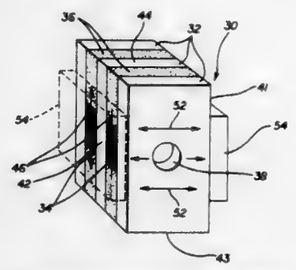
1. An RF amplification tube for amplifying a microwave signal, comprising:
- a laminate structure comprising a plurality of magnetic plates and a plurality of electrically conductive non-magnetic plates which are alternatingly and integrally formed together;
- a means for inducing a magnetic field in said laminate structure having lines of flux which flow through said magnetic plates;
- a planar surface provided on at least one side of said laminate structure, said planar surface permitting the attachment of a heat sink thereto; and
- a beam tunnel provided through said structure and permitting projection of an electron beam therethrough, said magnetic plates extending to said beam tunnel.

5,332,948

X-Z GEOMETRY PERIODIC PERMANENT MAGNET FOCUSING SYSTEM

Richard B. True, Sunnyvale; Alan J. Theiss, Redwood City, and Douglas B. Lyon, San Carlos, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 13, 1992, Ser. No. 883,426
Int. Cl.[5] H01J *25/34*
U.S. Cl. 315—3.5 30 Claims

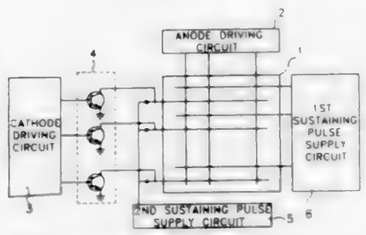


1. An X-Z PPM focusing system for focusing an electron beam, comprising:
- a tube having a plurality of magnetic polepieces interposed by non-magnetic spacers, an axially disposed beam tunnel permitting projection of said electron beam therethrough, and a thermal surface disposed on at least one side of said tube; and

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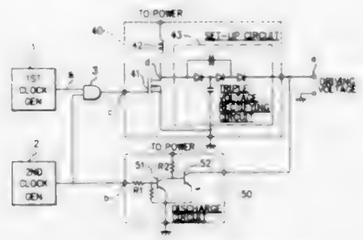
means for inducing a magnetic field in said tube having lines of flux which flow through said polepieces in a first axial direction and which jumps through said beam tunnel to focus said beam;
wherein, heat formed within said tube flows through said spacers to said thermal surface in a second axial direction which is non-coincident with said first direction.

5,332,949
STRUCTURE AND DRIVING METHOD OF A PLASMA DISPLAY PANEL
Dae-il Kim, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea
Filed Nov. 16, 1992, Ser. No. 977,029
Claims priority, application Rep. of Korea, Mar. 4, 1992, 92-3565
Int. Cl.[5] G09G *3/10*
U.S. Cl. 315—169.4 **11 Claims**



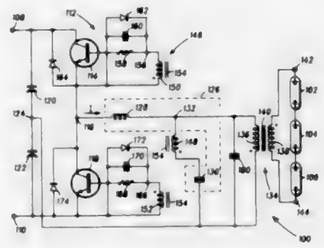
1. A plasma display panel comprising:
a first plate;
stripe-like anodes and barrier ribs disposed on said first plate;
a second plate having an inner surface;
first sustaining electrodes disposed on the inner surface of said second plate for sustaining a discharge;
dielectric layers respectively disposed on said first sustaining electrodes;
stripe-like cathodes respectively disposed on said dielectric layers and serving as second sustaining electrodes for sustaining the discharge; and
external capacitors, each including first and second terminals, said strip-like cathodes being respectively connected to said first terminals at respective common nodes.

5,332,950
DRIVER CIRCUIT FOR LONG LUMINESCENCE LIFE DISPLAY DEVICE AND METHOD OF DRIVING SUCH DEVICE
Motoyoshi Komoda, Tokyo, and Minoru Katsumata, Kanagawa, both of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Sep. 25, 1992, Ser. No. 951,129
Claims priority, application Japan, Oct. 2, 1991, 3-282117
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—205 **6 Claims**



1. A driver circuit for applying a driving voltage to a display device, comprising:
first clock generator means for generating a first clock pulse having a first frequency;
second clock generator means for generating a second clock pulse having a second frequency lower than said first frequency;
gate means for receiving said first and second clock pulses and outputting said first clock pulse when said second clock pulse is present;
high voltage pulse generation means for generating a high voltage pulse in synchronism with said first clock pulse output from said gate means;
voltage multiplication rectifying means for performing a voltage multiplication rectifying of said high voltage pulse to obtain a high voltage output; and
reset means for resetting said voltage multiplication rectifying means when said second clock pulse is off.

5,332,951
CIRCUIT FOR DRIVING GAS DISCHARGE LAMPS HAVING PROTECTION AGAINST DIODE OPERATION OF THE LAMPS
Thomas W. Turner, Hanover Park, and Mihail S. Moisin, Lake Forest, both of Ill., assignors to Motorola Lighting, Inc., Buffalo Grove, Ill.
Filed Oct. 30, 1992, Ser. No. 968,885
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—209 R **2 Claims**

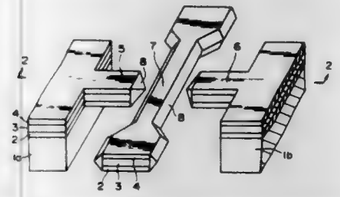


1. A circuit for powering gas discharge lamps from a DC power source comprising:
a two transistor DC to AC inverter, the input of the inverter coupled to the DC power source;
a transformer having a primary winding and a secondary winding, the primary winding coupled to the output of the inverter, the secondary winding coupled to the gas discharge lamps;
the transformer further having a permeance inductance;
a control circuit having an input and an output, the control circuit for controlling the conductivity of the inverter transistors;
a bandpass filter having an input and an output, the input coupled to the output of the inverter, and the output coupled to the input of the control circuit;
the bandpass filter comprised of a capacitor and the permeance inductance of the transformer, the bandpass filter tuned to the operating frequency of the inverter.

5,332,952
QUANTUM PHASE INTERFERENCE TRANSISTOR
Ryuichi Ugajin, and Akira Ishibashi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 819,492, Jan. 10, 1992, Pat. No. 5,204,588.
This application Oct. 7, 1992, Ser. No. 957,530
Claims priority, application Japan, Dec. 22, 1990, 2-413323; Jan. 14, 1991, 3-014727; Jan. 18, 1991, 3-018328; Jan. 23, 1991, 3-022779; Jan. 31, 1991, 3-031643
Int. Cl.[5] H01J *11/04*
U.S. Cl. 315—349 **1 Claim**

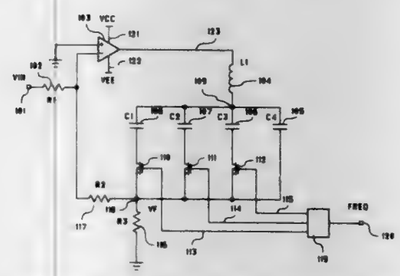
1. A quantum phase interference transistor comprising: an

emitter for emitting electron waves into a vacuum; a gate electrode for controlling the phase difference between a plural-



ity of electron waves; and a collector for collecting the plurality of electron waves;
characterized in that the collector is formed of a thin film.

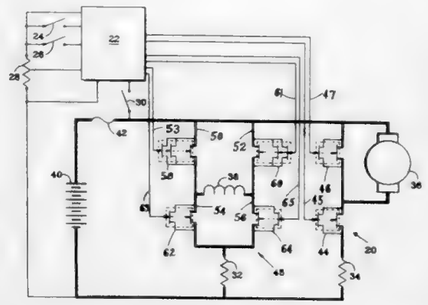
5,332,953
POWER SAVING CIRCUIT FOR MAGNETIC FOCUS AMPLIFIER USING SWITCHABLE RESONANCE CAPACITORS
Gregory P. Hartman, Kitchener, and Francois Desjardins, Ontario, both of Canada, assignors to Electrohome Ltd., Kitchener, Canada
Filed Feb. 4, 1993, Ser. No. 13,315
Int. Cl.[5] G09G *1/04*; H01J *29/58*
U.S. Cl. 315—382 **7 Claims**



1. A circuit for driving a focus coil in response to receiving a focus control signal and a horizontal scan rate signal, each of said focus control signal and horizontal scan rate signal being of identical frequency, said circuit comprising:
(a) variable capacitance means connected to said focus coil to form a series combination of said focus coil and said variable capacitance means;
(b) amplifier means for receiving and amplifying said focus control signal and in response applying an amplified focus control signal to said series combination; and
(c) control means for receiving said horizontal scan rate signal and in response setting said variable capacitance to a predetermined value such that said series combination of said focus coil and said variable capacitance means forms a series resonant circuit with respect to a first harmonic of said focus control signal and horizontal scan rate signal.

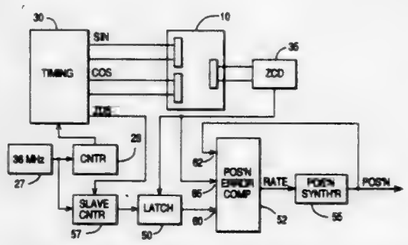
5,332,954
OPTIMAL DC MOTOR/CONTROLLER CONFIGURATION
Robert Lankin, Waterloo, Canada, assignor to Solaria Research Enterprises Ltd., Canada
Filed Mar. 30, 1992, Ser. No. 859,590
Int. Cl.[5] H02P *1/00*
U.S. Cl. 318—139 **18 Claims**

1. An electronic controller for a direct current traction motor, comprising:
an H-bridge circuit for controlling a field current of the motor, the H-bridge circuit including four legs arranged in opposite pairs of an upper leg and a lower leg in each pair, each leg comprising a plurality of parallel connected power field effect transistors arranged for connection in series with the field; and



a field gate electrode of the power field effect transistors in each said plurality is connected to a discrete common control line for switching each said plurality of field effect transistors in an on/off cycle of conduction through each said plurality of field effect transistors.

5,332,955
POSITION SENSING APPARATUS WITH CONTINUOUS UPDATE
Michael G. Hopper, Alameda, Calif., assignor to Carco Electronics, Menlo Park, Calif.
Filed Jul. 24, 1991, Ser. No. 735,141
Int. Cl.[5] G05D *23/275*
U.S. Cl. 318—632 **23 Claims**



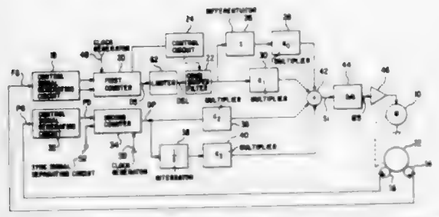
1. Apparatus for producing an output signal at an output terminal, the output signal being a representation of an actual position signal that is updated at intervals, comprising:
position error means, responsive to the output signal and to the actual position signal, for generating a rate signal that changes in accordance with the difference between the actual position signal and the output signal; and
position computation means, responsive to said rate signal and coupled to the output terminal, for generating the output signal, for changing the output signal at a rate representative of said rate signal, and for updating the output signal a plurality of times for each time that the actual position signal is updated;
said position error means changing said rate signal in a manner tending to null the difference between the actual position signal and the output signal at the times when the actual position signal is updated.

5,332,956

MOTOR ROTATION CONTROLLING DEVICE

Young G. Oh, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 5, 1992, Ser. No. 971,640
Claims priority, application Rep. of Korea, Nov. 8, 1991, 91-19845
Int. Cl.[5] H02P 5/28
U.S. Cl. 318—799 18 Claims



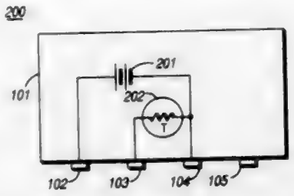
1. A rotation controlling device for controlling a rotation speed of a motor comprising:
- a rotation detecting means for detecting a rotation speed of a motor,
- a signal processing means for generating a control signal for constantly controlling said motor rotation speed in response to the rotation speed detected by said rotation detecting means;
- a comb-shaped filter means for removing a rotation period component and its harmonic component included in a control signal supplied from said signal processing means;
- a control means for varying a transfer function of said comb-shaped filter means at a transient response and a normal response according to said motor rotation speed;
- a driving means for driving said motor in response to said filtered control signal supplied from said comb-shaped filter means; and
- a limit means connected between said signal processing means and said comb-shaped filter means, for limiting the level of said control signal, wherein said limit means comprises:
  - an upper limit value generating means for generating an upper limit value;
  - a first comparing means for comparing a control signal supplied from said signal processing means with an upper limit value supplied from said upper limit value generating means;
  - a first switching means for switching a control signal supplied from said signal processing means and an upper limit value supplied from said upper limit value generating means according to a logic state of a comparing signal supplied from said first comparing means;
  - a lower limit value generating means for generating a lower limit value;
  - a second switching means for switching an output of said first switching means and a lower limit value supplied from said lower limit value generating means to said comb-shaped filter means; and
  - a second controlling means for making said second switching means select a lower limit value while a predetermined logic state of a comparing signal generated in said first comparing means exceeds a first predetermined interval.

5,332,957

BATTERY MODULE AND CHARGER

Steven S. Lee, Northbrook, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1992, Ser. No. 937,569
Int. Cl.[5] H02J 1/00
U.S. Cl. 320—2 6 Claims



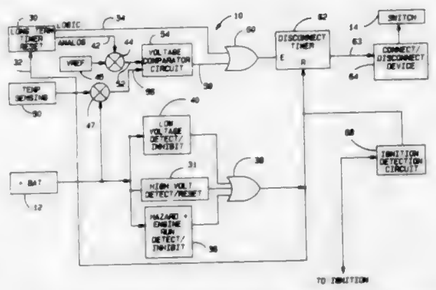
1. A battery module comprising:
- a housing having an interior and an exterior;
- a plurality of battery apparatus materials, including a battery, disposed within the interior of the housing;
- a plurality of discrete electrodes electrically accessible from within the housing interior, and accessible on the exterior to corresponding electrodes within a charging pocket of a compatible battery charger; wherein at least a preselected one of the discrete electrodes is electrically uncoupled with respect to the battery apparatus materials.

5,332,958

BATTERY DISCONNECT DEVICE

Jeffrey M. Sloan, 312 George St., Birmingham, Mich. 48009

Continuation-in-part of Ser. No. 481,894, Feb. 20, 1990, Pat. No. 5,089,762, which is a continuation-in-part of Ser. No. 272,427, Nov. 17, 1988, Pat. No. 4,902,956, which is a continuation-in-part of Ser. No. 940,863, Dec. 12, 1986, abandoned. This application Feb. 18, 1992, Ser. No. 837,068
Int. Cl.[5] H02G 3/00; H02H 7/18; H02J 7/00
U.S. Cl. 320—13 26 Claims



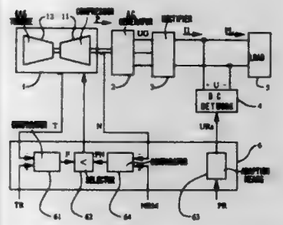
1. A battery protection device for disconnecting a battery from an electrical load comprising:
- means for generating a voltage signal corresponding to the battery voltage;
- means responsive to at least one operating parameter of said battery for generating a cut-off voltage, said cut-off voltage comprising a value which increases in time;
- means for comparing said voltage signal with said cut-off voltage and for generating a disconnect signal in response to said battery voltage being equal to or less than said cut-off voltage;
- means responsive to a mechanical input for generating a reconnect signal;
- means for disconnecting said battery from said electrical load in response to said disconnect signal and for reconnecting said battery to said load in response to a subsequently generated reconnect signal.

5,332,959

CONTROL OF CONSTANT SPEED AND CONSTANT MAXIMUM TEMPERATURE OF A GAS TURBINE

Anders Malmquist, Täby, and Johnny Rehn, Höllviken, both of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

Filed Jan. 7, 1993, Ser. No. 1,660
Claims priority, application Sweden, Jan. 29, 1992, 9200243-5
Int. Cl.[5] F02C 9/00
U.S. Cl. 322—14 28 Claims



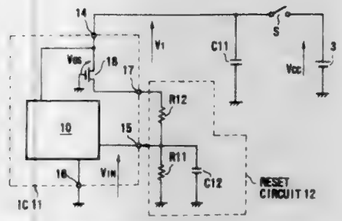
1. A method for control of power generated by a gas turbine which drives an electric generator with a rectifier connected thereof, a direct-voltage network with a controllable voltage being connected to said rectifier, the gas turbine having a fuel supply and a temperature sensing means for sensing the inlet temperature of the gas turbine, comprising the steps of:
- sensing said inlet temperature;
- controlling said fuel supply so that said inlet temperature is caused to substantially correspond to a predetermined value; and
- varying said controllable voltage to control said power.

5,332,960

POWER SUPPLY CIRCUIT HAVING RESET CIRCUIT

Kazuhiro Kudoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 647,344, Jan. 29, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,187
Claims priority, application Japan, Jan. 30, 1990, 2-20330
Int. Cl.[5] G05F 5/00
U.S. Cl. 323—299 12 Claims



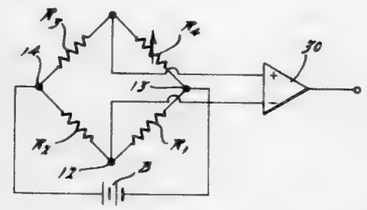
1. A power supply circuit comprising:
- a power supply stabilizing circuit, receiving a power supply voltage from a power supply, for stabilizing the power supply voltage;
- a main circuit, receiving the power supply voltage without a substantial voltage drop, connected in parallel with the power supply stabilizing circuit;
- a reset circuit for outputting a reset signal to the main circuit when the power supply voltage rises; and
- reset circuit control means, receiving said power supply voltage for interrupting supply of power from the power supply to said reset circuit when the power supply voltage applied to said main circuit decreases to a value not more than a predetermined value after supply of power is interrupted.

5,332,961

RESISTIVE OIL QUALITY SENSOR

Robert H. Hammerle, Franklin, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1986, Ser. No. 927,618
Int. Cl.[5] G01R 27/02
U.S. Cl. 324—700 1 Claim



1. A sensor for use in an internal combustion engine to measure the corrosive effects of lubricating oil, comprising:
- a substrate having a thermally conductive and electrically insulative surface;
- a first electrically resistive copper element mounted on said substrate surface, having a surface of said copper exposed;
- a second electrically resistive element mounted on said substrate, having a thermal coefficient of resistance equal to that of said first resistive element; and
- a protective coating of a material that is impervious and inert with respect to the corrosive effects of said lubricating oil, deposited over a portion of said substrate and said second electrically resistive element to seal said second element and prevent its corrosion by said oil;
- said first and second resistive elements being immersed in oil of said internal combustion engine so that said first resistive element is exposed to said oil and the resistance value of said first resistive element increases due to corrosion as said oil deteriorates from usage;
- said sensor further includes a four leg Wheatstone bridge, in which said first and second resistive elements are electrically connected to define first and second legs, for comparing the resistance values of said first and second resistive elements and outputting an electrical signal corresponding to the difference in said values; and
- said Wheatstone bridge further includes third and fourth resistors electrically connected to define third and fourth legs of the bridge and physically remote from said first and second resistive elements, and one of said third and fourth resistors is adjustable so as to provide a balanced bridge when said oil is changed or said substrate, bearing said first and second resistive elements, is substituted with a new one.

5,332,962

PEAK VOLTAGE DETECTOR WITH FERROELECTRIC ELEMENT

Katsumi Sameshima, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

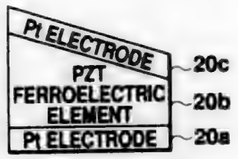
Filed Oct. 2, 1992, Ser. No. 956,102
Claims priority, application Japan, Oct. 8, 1991, 3-260375
Int. Cl.[5] G01R 1/04
U.S. Cl. 324—103 P 6 Claims

1. A peak voltage detector having a ferroelectric body, the detector comprising:
- (a) a ferroelectric element having a thickness, the thickness

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becoming progressively greater from a first end of the element to a second end of the element;

(b) a reset circuit generating a maximum spontaneous polarization in said ferroelectric element by applying an electric field across said ferroelectric element; and



(c) a polarization detection circuit detecting a reverse polarization generated in said ferroelectric element, the reverse polarization being caused by an externally-input sensing voltage.

5,332,963

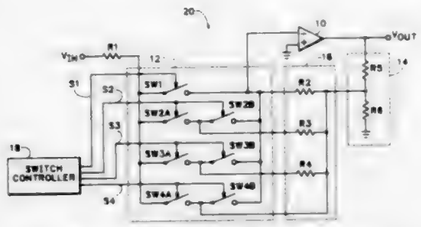
HIGH INPUT IMPEDANCE BUFFER WITH LOW FEEDBACK RESISTANCE

Marshall L. Hightower, Mountlake Terrace, and James F. Allen, Seattle, both of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Continuation of Ser. No. 861,348, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 746,851, Aug. 19, 1991, abandoned, which is a continuation of Ser. No. 480,223, Feb. 15, 1990, abandoned. This application Jun. 15, 1993, Ser. No. 77,970

Int. Cl.[5] **G01R** *1/30, 15/08*

U.S. Cl. 324—123 R **6 Claims**



1. A high impedance, high frequency input circuit for an instrument suitable for measuring ac signals whose frequencies are within a predetermined frequency range, comprising:

(a) an input terminal for receiving the ac electric signals that are to be measured and an output terminal;

(b) an input resistor having a first end coupled to said input terminal;

(c) an operational amplifier having an amplifier input coupled to a second end of said input resistor and an amplifier output coupled to said output terminal; and,

(d) a feedback path coupled from said amplifier output to said amplifier input, said feedback path having a first resistor and a voltage divider, wherein said input resistor, first resistor and voltage divider determine the gain for said input circuit and both the resistance of said first resistor and the total resistance of said voltage divider are significantly less than the resistance of said input resistor such that when said ac electric signals are within said predetermined frequency range said gain of said input circuit is unaffected by stray capacitance associated with said first resistor and voltage divider.

5,332,964

ROLLING BEARING UNIT WITH PERMANENT MAGNET, COIL AND BACK YOKE FOR SENSING ROTATIONAL SPEED OF AUTOMOTIVE WHEEL

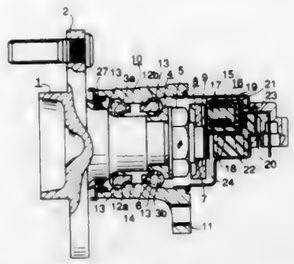
Hideo Ouchi, Sagamihara, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,468

Claims priority, application Japan, Oct. 16, 1991, 3-294824

Int. Cl.[5] **G01P** *3/488;* **F16C** *32/00*

U.S. Cl. 324—174 **2 Claims**



1. A rolling bearing unit for sensing rotational speed of a rotatable member, comprising:

said rotatable member which is of a magnetic material and has a shaft terminating in an end face,

a first rotating ring means secured to the rotatable member and having a first raceway on a peripheral surface thereof,

a second stationary ring means having a second raceway on a peripheral surface thereof so as to oppose the first raceway with a space therebetween,

a plurality of rolling bodies provided in the space between the first raceway and the second raceway so that the first and second ring means may rotate freely relative to each other,

an annular pulse rotor fixedly attached to the shaft of said rotatable member proximate said end face and adapted to rotate in a coaxial relationship with the rotatable member, and

a sensor for sensing said rotational speed of said rotatable member and being supported on the second stationary ring means so as to axially face the pulse rotor, and comprising a pole piece of magnetic material with a first axial end face thereof facing the pulse rotor, a coil wound around the pole piece, a permanent magnet with a first axial end face in contact with a second axial end face of the pole piece, and a back yoke made of a magnetic material having a base end portion thereof in contact with a second axial end face of the permanent magnet and a tip end portion thereof arranged in proximity to and facing the end face of the shaft.

5,332,965

CONTACTLESS LINEAR ANGULAR POSITION SENSOR HAVING AN ADJUSTABLE FLUX CONCENTRATOR FOR SENSITIVITY ADJUSTMENT AND TEMPERATURE COMPENSATION

Ronald J. Wolf, Goshen, and Larry Hedeen, Howe, both of Ind., assignors to Durakool Incorporated, Elkhart, Ind.

Filed Jun. 22, 1992, Ser. No. 902,075

Int. Cl.[5] **G01B** *7/14;* **G01R** *35/00*

U.S. Cl. 324—207.12 **6 Claims**

1. An angular position sensor for sensing the angular position of a pivotally mounted device comprising:

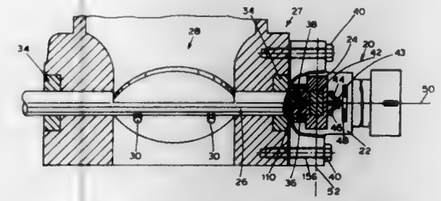
a housing;

a magnet for generating magnetic flux defining a magnetic axis through opposing North and South magnetic poles;

a drive arm, rotatably carried relative to said housing, said drive arm including means for providing a mechanical coupling to said pivotally mounted device and means for carrying said magnet;

means disposed adjacent said magnet for sensing the magnetic flux density generated by said magnet;

means for mechanically adjusting said sensing means;



means for carrying said sensing means at a predetermined fixed air gap relative to said magnet;

means for providing temperature compensation for said sensors, wherein said temperature compensation providing means includes a flux concentrator.

5,332,966

METHOD OF COMPENSATING FOR THE TEMPERATURE OF INDUCTIVE SENSORS

Reinhold Berberich, Frankfurt, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,738

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141065

Int. Cl.[5] **G01B** *7/14;* **G01R** *27/26*

U.S. Cl. 324—207.12 **5 Claims**

1. A method of compensating for the temperature of an inductive sensor comprising a coil, the inductance of the coil serving to form an output variable which serves as a measurement for a physical variable which is to be measured, the method comprising

connecting a resistor in series with the coil to form a series circuit of the resistor and the coil;

applying a first pulse of reference voltage to the series circuit, a resultant voltage drop across the coil being characterized by an internal overshoot pulse followed by a decay to a steady value, the overshoot pulse having a width less than a width of the first pulse;

measuring the width of the overshoot pulse, the width of the overshoot pulse being dependent on a resistance of the coil and a rate of reduction of the coil voltage drop during decay of the overshoot pulse to the steady state value of the coil voltage drop;

measuring the steady state value of voltage;

providing a set of correction values for the output variable, the set of correction values being addressable by an address having the steady state value of the coil voltage drop as a first component of the address and the width of the overshoot pulse as a second component of the address; and

reading a correction value corresponding to an address of the set of correction values for correction of the output variable.

5,332,967

WELL LOGGING TOOL FOR BORE HOLE INVESTIGATIONS

Mordechai Shporer, Rehovot, Israel, assignor to Bruker Analytische Messtechnik GmbH, Fed. Rep. of Germany

Filed May 7, 1993, Ser. No. 59,209

Claims priority, application Fed. Rep. of Germany, May 11, 1992, 4215454

Int. Cl.[5] **G01R** *33/20*

U.S. Cl. 324—303 **18 Claims**



1. Well logging tool for insertion into a borehole with an elongated cylinder-shaped permanent magnet which is magnetized perpendicularly to its cylinder axis, to produce a magnetic field outside the borehole, which in an axial range is directed essentially perpendicular to the cylinder axis and whose magnitude in this range depends essentially only on the radial distance from the cylinder axis, with at least one high frequency transmission and detection coil to transmit and to detect high frequency signals for the excitation and the detection, respectively, of proton nuclear resonance signals in material outside the borehole, whereby a high frequency magnetic field which is produced by the transmission coil comprises components which are inside that range perpendicular to the cylinder axis as well as to the magnetic field

characterized in that

transmission and detection coils are used whose axes are essentially perpendicular to the cylinder axis and perpendicular to each other, that means are provided to apply to the transmission coil a continuous high frequency excitation current with the Larmor frequency of the hydrogen nuclei of the material at a predetermined distance from the cylinder axis, and that the magnetization direction of the permanent magnet is at least intermittently at an angle of about 45° between the axes of the transmission and detection coil.

5,332,968

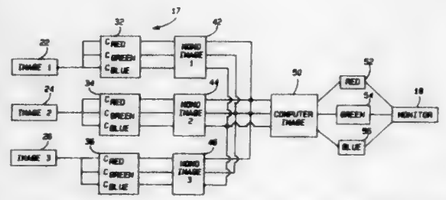
MAGNETIC RESONANCE IMAGING COLOR COMPOSITES

Hugh K. Brown, Temple Terrace, Fla., assignor to University of South Florida, Tampa, Fla.

Filed Apr. 21, 1992, Ser. No. 871,406

Int. Cl.[5] **G01V** *3/00*

U.S. Cl. 324—309 **20 Claims**



1. A method of producing a single color composite image

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from a plurality of multiparameter magnetic resonance images, the method including the steps of:

obtaining a plurality of spatially aligned gray-tone magnetic resonance images at a plurality of predetermined pulse sequences to provide data of the spatial location and contrast discrimination of tissue voxels in the form of pixels having varied intensities;

identifying selected regions of interest in each image representing similar tissues, and

characterized by plotting average signal intensities of pixels within each region of interest for each image,

assigning a different monochrome color to each of the images based on the signal intensities and on a desired final color rendition of a composite image formed of the plurality of images,

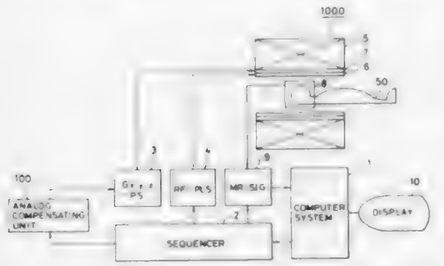
combining the plurality of gray-tone images with the monochrome color assigned to each image into a single composite image having pixels of varying hue, saturation and intensity based on the intensity of the original gray-tone images and on the assigned monochrome colors forming the composite image having semi-natural anatomic appearance.

5,332,969

MAGNETIC RESONANCE IMAGING METHOD AND APPARATUS CAPABLE OF COMPENSATING FOR DISTURBED GRADIENT FIELD CAUSED BY EDDY CURRENT

Daihachirou Tsuruno; Hiromi Kawamoto, and Motohiro Miura, all of Tochigiken, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 18, 1992, Ser. No. 948,152
Claims priority, application Japan, Sep. 19, 1991, 3-239829
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **17 Claims**



1. A method for imaging a biological body under medical examination in an aircore by applying gradient magnetic fields and RF pulses in a static magnetic field to cause a magnetic resonance (MR) for creating an MR image of said biological body on a plane where said magnetic resonance takes place, said gradient magnetic fields being induced by gradient magnetic field generating means which is driven by a first drive current, wherein

an eddy current field compensating current is superimposed on said first drive current in order to compensate the deformation of said gradient magnetic field due to eddy current generated in response to application of said gradient magnetic field, and

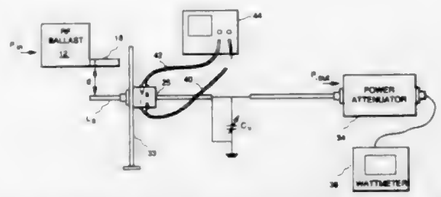
vibrating-field compensating current is superimposed on said first drive current in order to compensate the deformation of said gradient magnetic field due to vibration of a conductor portion in the vicinity of said aircore.

5,332,970

METHOD FOR MEASURING THE IMPEDANCE OF AN ELECTRODELESS ARC DISCHARGE LAMP

Sayed-Amr A. El-Hamamsy, Schenectady, N.Y.; Michael M. Secen, Mentor, Ohio; Mark E. Duffy, Shaker Heights, Ohio, and Gerald E. Duffy, Mentor, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1992, Ser. No. 904,287
Int. Cl.[5] G01R *31/24*
U.S. Cl. 324—414 **5 Claims**



1. A method for measuring the impedance of the arc discharge of an electrodeless discharge lamp of the type having an arc tube and an excitation coil for exciting an arc discharge in an ionizable fill contained therein when coupled to a radio frequency ballast, said ballast including an impedance matching circuit coupled to said excitation coil, comprising:

(a) coupling said discharge lamp to said ballast and operating said discharge lamp at a predetermined operating frequency and tuning said impedance matching circuit to obtain a predetermined ballast load impedance value;

(b) disconnecting said discharge lamp from said ballast and coupling a simulated load circuit to said ballast for simulating the impedance of the arc discharge of said electrodeless discharge lamp, said simulated load circuit comprising: a secondary coil spaced apart from said excitation coil such that the distance between said secondary coil and said excitation coil is variable, a load resistance electrically connected to said secondary coil, and a variable matching network electrically connected to said load resistance;

(c) varying the distance between said secondary coil and said excitation coil in order to vary the coupling coefficient between said secondary coil and said excitation coil, said simulated load circuit further comprising a scale for providing a value for said coupling coefficient corresponding to the distance between said secondary coil and said excitation coil;

(d) varying the impedance of said matching network in order to vary the ratio of reactance to resistance of said simulated load circuit;

(e) performing steps (c) and (d) until said predetermined ballast load impedance value is obtained, such that the combined impedance of the excitation coil and the simulated load circuit is substantially equivalent to the combined impedance of the excitation coil and the arc discharge when operating the lamp;

(f) determining said coupling coefficient between said secondary coil and said excitation coil from said scale;

(g) measuring the combined impedance of said load resistance and said variable matching network; and

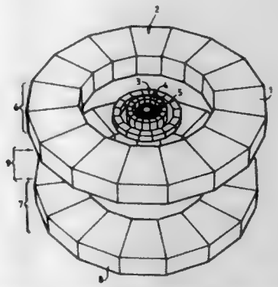
(h) calculating the coupling coefficient between said excitation coil and said arc discharge and calculating the ratio of reactance to resistance of the arc discharge from the measurements obtained in steps (f) and (g) and thereby determining the impedance of said arc discharge.

5,332,971

PERMANENT MAGNET FOR NUCLEAR MAGNETIC RESONANCE IMAGING EQUIPMENT

Guy Aubert, Grenoble, France, assignor to Universite Joseph Fourier, Grenoble Cedex, France

PCT No. PCT/FR91/00617, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/02827, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 25, 1991, Ser. No. 961,699
Claims priority, application France, Jul. 30, 1990, 90 09698
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—319 **10 Claims**



1. A permanent magnet for nuclear magnetic resonance imaging equipment, comprising:

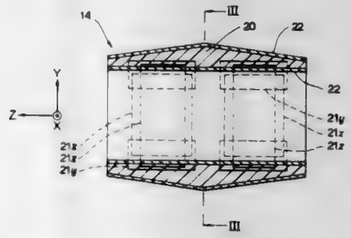
a set of rings comprising two sub-sets of rings of magnctized blocks for producing an intense and homogeneous magnetic field in a region of space, the rings within each sub-set being substantially concentric the rings in each subset being complementary in terms of magnetization, each ring of a sub-set being separated from its complementary ring in a facing sub-set by a height of this region, said height being substantially the same for all pairs of complementary rings, wherein the rings have a regular polygonal structure and are comprised of blocks, the number of blocks in each ring being substantially greater than or equal to four times the number of rings in a subset of rings.

5,332,972

GRADIENT MAGNETIC FIELD GENERATOR FOR MRI SYSTEM

Eisuke Takenouchi, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 5, 1992, Ser. No. 878,824
Claims priority, application Japan, May 9, 1991, 3-104449
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 **21 Claims**



1. A gradient magnetic field generator for a magnetic resonant imaging system, the generator comprising:

a bobbin, formed of a non-magnetic material and formed into a substantially hollow cylindrical shape, having radially inner and outer peripheral surfaces, an axial central portion of the bobbin being larger in radial thickness than axial end portions of the-bobbin; and

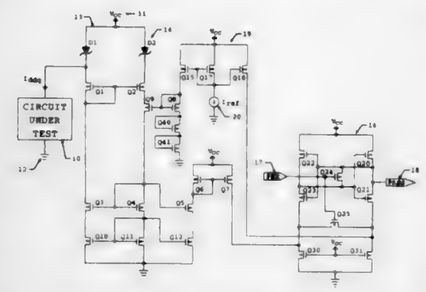
gradient coils embedded between the inner and outer peripheral surfaces of the bobbin for generating gradient magnetic fields when electric currents are supplied to the gradient coils.

5,332,973

BUILT-IN FAULT TESTING OF INTEGRATED CIRCUITS

Bradley D. Brown, Oakbank; Robert D. McLeod, and Douglas J. Thomson, both of Winnipeg, all of Canada, assignors to The University of Manitoba, Winnipeg, Canada

Filed May 1, 1992, Ser. No. 876,790
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—537 **15 Claims**



1. A semiconductor integrated circuit comprising a substrate, a main circuit assembly provided on the substrate, first conductor means for providing a circuit voltage to the main circuit assembly, second conductor means providing a ground connection for said main circuit assembly arranged such that circuit current flows from said first conductor means to said second conductor means through said main circuit assembly, the magnitude of the circuit current varying from a quiescent circuit current when the main circuit assembly is not switching to a higher transient value when the main circuit assembly is switching, and a fault testing circuit assembly provided on the substrate arranged for detection of faults in the main circuit assembly, said fault testing circuit assembly including test means for generating a test current having a magnitude directly proportional to and less than that of said circuit current, means for receiving a timing signal, generator means for generating a reference current having a magnitude related to that of an expected quiescent circuit current, and comparator means responsive to said timing signal for comparing instantaneous magnitudes of said test current and said reference current and for generating a first signal when the test current has a magnitude less than that of the reference current and a second different signal when the test current has a magnitude greater than that of the reference current.

5,332,974

NETWORK ANALYZER PERFORMANCE VERIFICATION

Daniel R. Harkins; Paul R. Hernday; Roger W. Wong; William T. Pike, and Paul S. Stafford, all of Santa Rosa, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1990, Ser. No. 518,042
Int. Cl.[5] G01R *35/00*
U.S. Cl. 324—606 **18 Claims**

1. A verification method for monitoring hardware performance of a network analyzer system, used to perform electrical measurements, to detect deviations, or changes, over time as compared to the system status at the time of factory or other reference calibration, comprising the steps of:

providing an initial calibration for the system during a first time period;

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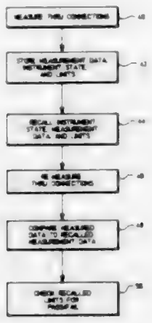
connecting an RF cable between an RF signal output port and an RF signal input port during the first time period after the initial calibration of the system;

performing a measurement on the RF cable and an associated measurement path in the system during the first time period to produce first RF thru measurement data comprising an RF thru measurement trace of the system measured using the RF cable during the first time period;

storing the first RF thru measurement data;

disconnecting the RF cable;

reconnecting the RF cable between the RF signal output port and the RF signal input port during a second time period after the first time period;



repeating a measurement on the RF cable and the associated measurement path in the system during the second time period to produce second RF thru measurement data comprising an RF thru measurement trace of the system measured using the RF cable during the second time period; and

comparing the first and second RF thru measurement data, without modifying the initial calibration for the system, to determine differences therebetween to indicate whether the system is reproducing the RF thru measurement conditions determined during the first time period when it is initially calibrated.

5,332,975

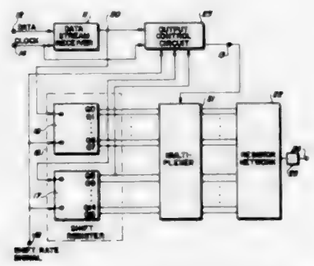
SINE WAVE GENERATOR UTILIZING VARIABLE ENCODING FOR DIFFERENT FREQUENCY SIGNALS

James R. Young, and William J. Gleeson, III, both of Tucson, Ariz., assignors to NetMedia Inc., Tucson, Ariz.

Filed Dec. 1, 1992, Ser. No. 983,878

Int. Cl.[5] H03K *5/08;* **H03B** *19/00*

U.S. Cl. 328—14 **11 Claims**



1. A system for synthesizing a sine wave signal wherein the frequency of the sine wave signal is varied in accordance with a stream of data received in bit cells at a data rate, said system employing different encoding patterns in generating sine wave signals of different frequencies, said system comprising:

a) storage means for receiving and serially storing a digital data signal, said means having a plurality of stages;

b) means for providing a shift rate signal to said storage means to advance the digital data signal at a rate greater than the data rate;

c) control signal generating means coupled to selected stages of the storage means for recognition of a pattern of signals in the selected stages;

d) means for providing the digital data signal to the control signal generating means, said generating means providing a frequency control signal in response to a change in data upon recognition of said pattern in the selected stages; and

e) encoding means responsive to the frequency control signal and coupled to the storage means for generating a plurality of signal segments in response to the output signal of said generating means, said encoding means having an output summing terminal with the magnitude of the segments appearing at the summing terminal being determined by the states of stages in the storage means and the duration of the segments being determined by the shift rate signal, the signal appearing at the summing terminal being formed as a synthesized sine wave having a frequency determined by the output signal of the control signal generating means.

5,332,976

SOUND SIGNAL AMPLIFIER WITH LOW POWER DISSIPATION

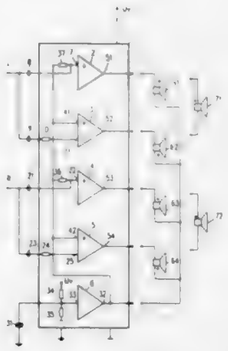
Joachim Dünnebacke, Herborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1993, Ser. No. 10,230

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1992, 4203353

Int. Cl.[5] H03F *3/68*

U.S. Cl. 330—124 R **9 Claims**



1. An amplifier for sound signals comprising: an even number of power amplifiers each of which has an output, wherein each power amplifier output can be switched to a first terminal of an associated loudspeaker and in which second terminals of the loudspeakers can be switched to an output of a buffer amplifier, wherein the buffer amplifier supplies at its output a DC voltage which is about half the value of a supply voltage of the power amplifiers, and half the number of the power amplifiers supply output signals that are inverted relative to their input signals and other half the number of the power amplifiers supply output signals that are non-inverted relative to their input signals.

5,332,977

POWER SUPPLY CIRCUIT FOR AN ACTIVE ANTENNA OF A VEHICLE RADIO

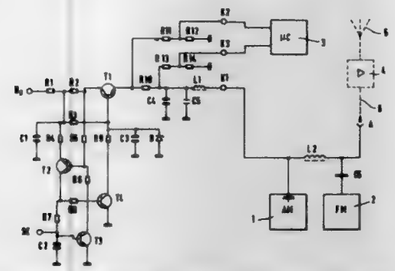
Knut Fritsche, Celle, and Hans-Günther Scholz, Hildesheim, both of Fed. Rep. of Germany, assignors to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Feb. 19, 1993, Ser. No. 20,104

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, 4206731

Int. Cl.[5] H03F *3/04*

U.S. Cl. 330—297 **5 Claims**



1. A circuit for supplying power to an antenna amplifier (4) of a vehicle radio, comprising

a filter circuit (R1, C1; R3, C3) including a first transistor (T1) having a base, a collector, and an emitter;

the collector-emitter path of said first transistor being interposed in a current path of said first transistor being interposed in a current path between an operating voltage terminal (U_B) of the radio, through a first inductance (L1) and past a first signal terminal (K1), to an antenna bushing (A) of the vehicle radio; and

a protective circuit, containing further transistors (T2,T3,T4) which, whenever a predetermined current is exceeded, blocks said first transistor (T1) and thereby cuts off power supply to an antenna amplifier (4) being supplied with power via said antenna bushing (A);

said protective circuit having a control input (SE) for switching said circuit into one of two stable states; and

wherein a measuring resistance (R10) arranged in said current path has a pair of terminals which are connected respectively to second and third signal terminals (K2,K3), from which information, about the type of attached antenna and about its operating state, can be picked up.

5,332,978

FREQUENCY SYNTHESIZER

Hiroyuki Yabuki, Kawasaki, and Mitsuo Makimoto, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 3, 1993, Ser. No. 25,467

Claims priority, application Japan, Mar. 11, 1992, 4-052533; Mar. 11, 1992, 4-052534; Jun. 15, 1992, 4-154701; Jun. 26, 1992, 4-168831

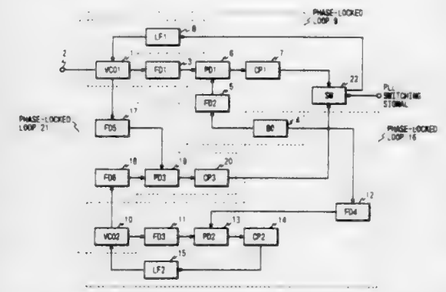
Int. Cl.[5] H03L *7/00*

U.S. Cl. 331—2 **24 Claims**

1. A frequency synthesizer comprising first, second, and third phase-locked loops and a switch:

said first phase-locked loop including a first voltage-controlled oscillator, a first frequency divider which divides an output frequency of said first voltage-controlled oscillator, a second frequency divider which divides an output frequency of a basic oscillator, a first phase detector which detects a phase difference between an output of said first frequency divider and an output of said second frequency divider, a first charge pump which transforms an output of said first phase detector into a drive signal for a first integrator, and a first loop filter serving as said first integrator, which feeds an output of said first charge pump back to said first voltage-controlled oscillator;

said second phase-locked loop including a second voltage-controlled oscillator, a third frequency divider which divides an output frequency of said second voltage-controlled oscillator, a fourth frequency divider which divides the output frequency of a basic oscillator, a second phase detector which detects a phase difference between an output of said third frequency divider and an output of said fourth frequency divider, a second charge pump which transforms an output of said second phase detector into a drive signal for a second integrator, and a second loop filter serving as said second integrator, which feeds an output of the second charge pump back to the second voltage-controlled oscillator;



said third phase-locked loop including a fifth frequency divider which divides the output frequency of said first voltage-controlled oscillator, a sixth frequency divider which divides the output frequency of said second voltage-controlled oscillator, a third phase detector which detects a phase difference between an output of said fifth frequency divider and an output of said sixth frequency divider, a third charge pump which transforms an output of said third phase detector into a drive signal for said first loop filter which feeds an output of said third charge pump back to said first voltage-controlled oscillator; and

said switch being disposed before said first loop filter so as to select said first phase-locked loop or said third phase-locked loop.

5,332,979

COMPACT RADIO-FREQUENCY POWER-GENERATOR SYSTEM

Janusz Roskewitsch, Evlenweg 13, 6551 Wallertheim/Bundesrepublik, and Matthias Hüttl, Wilhelm Leuschner Str. 39, 6087 Büttelborn 2/Bundesrepublik, both of Fed. Rep. of Germany

Filed Sep. 13, 1991, Ser. No. 759,229

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1991, 4104064

Int. Cl.[5] H03B *5/36;* **H05K** *5/04*

U.S. Cl. 331—68 **42 Claims**

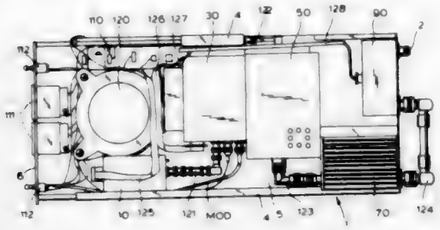
37. An RF power-generator system, comprising:

a shielded housing;

a plurality of electronic units in the form of modules disposed in the housing, the units including an oscillator and push-pull MOS broad-band amplifier means coupled to the oscillator; and

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a plurality of other units disposed in the housing, the other units including an output filter coupled to the amplifier



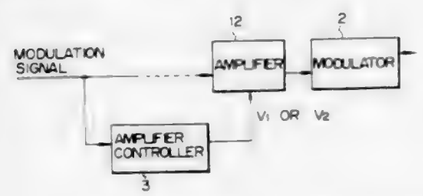
means, a directional coupler coupled to the output filter and a processor for controlling the electronic units.

5,332,980

MODULATION CIRCUIT HAVING FREQUENCY SENSITIVE POWER SUPPLY VOLTAGE

Imao Usimaru, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Sep. 23, 1992, Ser. No. 950,436
Int. Cl.[5] H03C 3/00; H03L 7/08
U.S. Cl. 332—117 **9 Claims**



1. A modulation circuit including an amplifier for amplifying a modulation signal having a frequency band from a first frequency f_1 to a second frequency f_2, and a modulator having a voltage-controlled oscillator, for generating a frequency modulation signal corresponding to the modulation signal; comprising

an amplifier control means for supplying a first constant predetermined direct current voltage V_1 as a power source voltage of the amplifier when a frequency of the modulation signal is detected to be lower than a predetermined third frequency f_3 which is mid way between the first frequency f_1 and the second frequency f_2; and for supplying a second constant predetermined direct current voltage V_2, being higher than the first constant predetermined direct current voltage V_1, as a power source voltage of the amplifier when a frequency of the modulation signal is detected to be higher than the predetermined third frequency f_3;

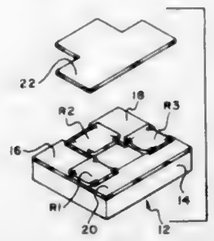
whereby, when the frequency of the modulation signal is lower than the predetermined third frequency f_3, an amplitude of the modulation signal which is supplied to the voltage-controlled oscillator is lower by a predetermined amount than that of when the frequency of the modulation signal is higher than the third frequency f_3.

5,332,981

TEMPERATURE VARIABLE ATTENUATOR

Joseph B. Mazzochette, Cherry Hill, and John R. Steponick, Clayton, both of N.J., assignors to EMC Technology, Inc., Cherry Hill, N.J.

Filed Jul. 31, 1992, Ser. No. 923,862
Int. Cl.[5] H01P 1/22
U.S. Cl. 333—81 R **13 Claims**



1. A temperature variable microwave attenuator comprised of at least first and second resistors, said first resistor having temperature coefficient of resistance which is different from the temperature coefficient of resistance of said second resistor, the temperature coefficients of said resistors being such that the attenuation of said attenuator changes at a controlled rate with changes in the ambient temperature but wherein the impedance of said attenuator remains substantially constant as said attenuation changes.

5,332,982

LADDER-TYPE ELECTRIC FILTER DEVICE

Kenji Kawakami, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Japan

Filed Jul. 8, 1992, Ser. No. 910,729
Claims priority, application Japan, Jul. 10, 1991, 3-197033
Int. Cl.[5] H03H 9/00
U.S. Cl. 333—189 **5 Claims**

SAMPLE	1	2	3	4
COMBINATION	S1 (180) S2 (80) P1 P2	S1 (110) S2 (110) P1 P2	S1 (180) S2 (110) P1 P2	S1 (110) S2 (180) P1 P2
GROUP DELAY TIME (±12KHz)	10μsec	4μsec	10μsec	2μsec

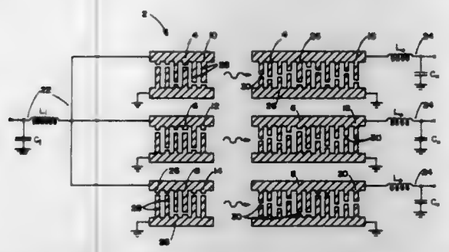
1. A ladder-type electric filter comprising an input terminal, an output terminal and a plurality of resonator units connected between said input terminal and said output terminal, each resonator unit including a series-resonator and a parallel-resonator which are L connected, the series-resonators of said resonator units connected in series between said input terminal and said output terminal having capacitance values which increase in magnitude from the series-resonator of one of said plurality of resonator units arranged closest to said input terminal to the series-resonator of further one of said plurality of resonator units arranged closest to said output terminal.

5,332,983

FILTERBANK USING SURFACE ACOUSTIC WAVE TECHNOLOGY

Robert C. Peach, Cambridge, Canada, assignor to Com Dev Ltd., Cambridge, Canada

Filed Jan. 26, 1993, Ser. No. 10,073
Claims priority, application Canada, May 25, 1992, 2069369-0
Int. Cl.[5] H03H 9/64
U.S. Cl. 333—193 **7 Claims**



1. A filterbank using surface acoustic wave technology, said filterbank having an input and an output, said filterbank comprising a plurality of filters, each filter having an input transducer and an output transducer, each output transducer having a separate matching circuit, the matching circuits of all of the output transducers being identical to one another, said output transducers having identical impedances, each transducer being formed by a thin film of metal pattern on a piezoelectric substrate and having electrodes extending between two busbars, the input transducers being interconnected, each filter having a bandwidth that is dissimilar from the bandwidth of other filters in the filterbank, the bandwidth of the filters together providing an overall bandwidth for the filterbank, each transducer having a weighting function a radiation conductance, an output amplitude and a capacitance, the weighting function of each input transducer being scaled to equalize the radiation conductances and provide a constant impedance across the bandwidth of the filterbank, the weighting function of each output transducer being scaled to equalize the output amplitudes of all of the output transducers and biased to equalize the capacitances of the output transducers, thereby producing matched output signals with regard to amplitudes and phases with temperature and producing a continuous response across the bandwidth of the filterbank.

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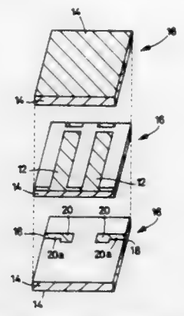
DIELECTRIC RESONATOR OR FILTER FOR MICROWAVE APPLICATION, AND METHOD OF PRODUCING THE DIELECTRIC RESONATOR OR FILTER

Masahiro Abe; Tatsumi Sugiura; Tsutomu Nanataki, and Shinsuke Yano, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 971,179, Nov. 3, 1992, Pat. No. 5,290,740. This application Nov. 3, 1993, Ser. No. 145,082
Claims priority, application Japan, Nov. 6, 1991, 3-319786; Mar. 18, 1992, 4-92184; Mar. 23, 1992, 4-97184; Oct. 27, 1992, 4-312970
Int. Cl.[5] H01P 7/08
U.S. Cl. 333—219 **2 Claims**

1. A dielectric resonator for microwave application or a dielectric filter comprising a plurality of dielectric resonators, comprising:

a dielectric ceramic obtained by firing a dielectric ceramic composition consisting essentially of a main ceramic composition comprising a major components barium oxide and titanium oxide, or barium oxide, titanium oxide and at least one of strontium oxide, calcium oxide, zirconia and the zinc oxide, which composition is represented by $(1-a-b)BaO.aSrO.bCaO.x[(1-c)TiO_2.cZrO_2].yZnO$, wherein $3.1 \leqq x = 5.4$, $0 \leqq y \leqq 2.9$, $0 \leqq a+b \leqq 0.4$, $0 \leqq c \leqq 0.2$; and a secondary component at least a part of which consists of a B_2O_3 material or a glass material containing B_2O_3 as one of glass components, said secondary component being added to said main ceramic composition in an amount of 0.1–7.5 parts by weight of B_2O_3 per 100 parts by weight of said main ceramic composition; and



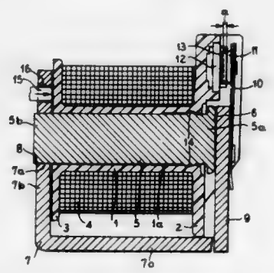
a conductor pattern which is formed by co-firing with said dielectric ceramic so that said conductor pattern is incorporated in said dielectric ceramic, said conductor pattern being formed of a material selected from the group consisting of Ag, Cu, an alloy containing Ag as a major component, and an alloy containing Cu as a major component.

5,332,985

ELECTROMAGNETIC SWITCHING SYSTEM AND PROCESS FOR PRODUCING THE SAME

Horst Hendel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktingesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP91/00836, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/18408, PCT Pub. Date Nov. 28, 1991
PCT Filed May 2, 1991, Ser. No. 952,728
Claims priority, application Fed. Rep. of Germany, May 14, 1990, 90109037
Int. Cl.[5] H01H 51/22
U.S. Cl. 335—78 **5 Claims**



1. An electromagnetic switching system, comprising:

a coil former of insulating material carrying a winding,

a core arranged in an axial cutout of the coil former, said core having a pole face on a first end of the core on a pole side and a second end of the core on a yoke side firmly joined to a yoke,

an armature mounted on the yoke and forming a working air gap with the pole face of the core,

at least one movable contact element that is operatively connected to the armature,

at least one counter-contact element fastened on a flange of the coil former on the pole side, and

holding lugs, which penetrate into the material of the coil

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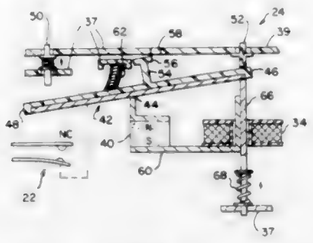
former, impressed on the core in the first end on the pole side, said holding lugs securing the core and the coil former against relative axial displacement.

5,332,986

OVERLOAD RELAY MECHANISM

Christopher J. Wieloch, Brookfield, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Apr. 13, 1993, Ser. No. 46,680
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 **9 Claims**



1. A bi-stable relay comprising:
a switch conducting electrical current when closed and preventing the conduction of electrical current when open;
an actuator bar means for moving between a first and second position and linked to the switch to close and open the switch with such movement;
a spring means for biasing the actuator bar means to the second position;
a yoke member abutting the actuator bar means in the first position and magnetically attracting the same against the bias of the spring means when the actuator bar means is in the first position;
a coil in proximity with the yoke member wherein an electrical current passing through the coil may produce a magnetic field reducing the magnetic attraction between the yoke member and the actuator bar means when the later is in the first position thereby allowing the latter to move to the second position under the influence of the spring;
a test means communicating with the actuator bar for moving the actuator bar from the first position to the second position regardless of electrical current passing through the coil;
a follower attachable by magnetic attraction to the actuator bar means so as to be able to move with the movement of the actuator bar means between the first and second positions; and
a reset means for moving the follower when so attached to the actuator bar means so as to move the actuator bar means from the second position to the first position.

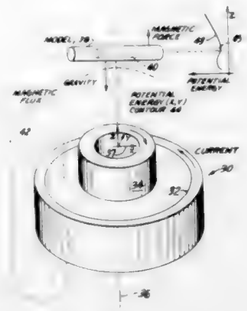
5,332,987

LARGE GAP MAGNETIC SUSPENSION SYSTEM WITH SUPERCONDUCTING COILS

Michael J. Hennessy, Ballston Lake; Richard T. Woods, Scotia; Hung B. Zou, Troy; Robert E. Wilcox, Westerlo, and F. Scott Murray, Schenectady, all of N.Y., assignors to Intermagnetics General Corporation, Guilderland, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,328
Int. Cl.[5] H01F *1/00;* **H02K** *7/09;* **H01H** *47/00*
U.S. Cl. 335—216 **31 Claims**

1. A magnetic suspension system comprising:
a lift magnet comprising a first superconducting coil and a second superconducting coil arranged about a common vertical axis and being energized with counter rotating currents to generate a magnetic field gradient which lifts an object above said magnet, said first and said second coils producing a potential energy surface above said magnet with a depression on said vertical axis for urging said object under forces of gravity and magnetism to a stable location at the depression;
an assembly of control coils disposed about said vertical axis for adjusting orientation of said object;



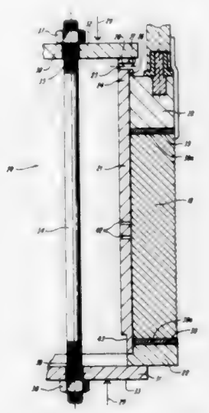
first energizing means coupled to said first and said second superconducting coils for operating said first and said second superconducting coils in a steady state mode; and
second energizing means for energizing said control coils to adjust said magnetic field gradient for directing said object to the axis and adjusting orientation and position of said object.

5,332,988

REMOVABLE COIL FORM FOR SUPERCONDUCTING NMR MAGNETS AND A METHOD FOR ITS USE

Alexander Zhukovsky, Brighton; Yukikazu Iwasa, Weston; Emanual Bobrov, Cambridge, and John E. C. Williams, Wayland, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 15, 1992, Ser. No. 884,634
Int. Cl.[5] H01F *1/00, 27/30;* **B65H** *54/00*
U.S. Cl. 335—216 **21 Claims**



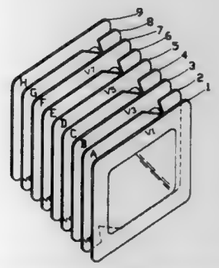
1. A refractory metal coil form for a superconducting coil capable of assembly and disassembly, comprising:
a bore tube having a terminal end and an opposite end, the bore tube comprised of steel;
a terminal flange adjacent to the terminal end of the bore tube, the terminal flange comprised of a non-magnetic refractory material capable of withstanding temperatures of about 700° C. without softening;
a first means for securing the terminal flange to the bore tube;
an end flange removably positioned adjacent to the opposite end of the bore tube, the end flange comprised of a refractory material capable of withstanding temperatures of about 700° C. without softening;
a second means for securing the end flange to the bore tube, such that a superconductor wire can be wound around the outer surface of the bore tube to form a superconducting coil and such that the form can be disassembled after the superconducting coil is wound.

5,332,989

HORIZONTAL COMPARTMENTIZED SQUARE BOBBIN OF HIGH-VOLTAGE TRANSFORMER

Chiu S. Ching, No. 90, Pao Chung Rd., Hsin Tien City, Taipei Hsien, Taiwan

Filed Aug. 17, 1992, Ser. No. 930,939
Int. Cl.[5] H01F *27/30*
U.S. Cl. 336—208 **3 Claims**



1. A high-voltage transformer winding bobbin made from a heat-resisting, insulative plastic material through the process of injection molding having a plurality of square flanges equidistantly spaced around a hollow, cylindrical, square in cross section core and a plurality of winding grooves respectively defined between each adjacent pair square flanges for winding an enamel wire, said square flanges including a stop flange at one end and a plurality of wire guiding flanges, each of said wire guiding flanges having each a V-shaped wire guiding notch on a respective peripheral edge each notch extending to a depth of and aligned with a corner of said core and having a first side contained in a plane disposed at a first angle to the horizontal and a second side contained in a plane disposed perpendicular to the plane containing the diagonal of said core passing through said corner and a diagonal corner.

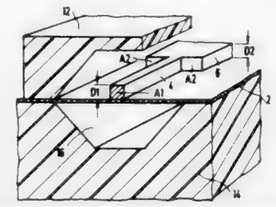
5,332,990

HIGH-FREQUENCY SAFETY FUSE

Wilhelm Duerr, and Gerhard Temmel, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 24, 1993, Ser. No. 80,820
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1992, 4223621
Int. Cl.[5] H01H *85/04*
U.S. Cl. 337—290 **36 Claims**

1. A high-frequency safety fuse comprising:
a fusible conductor having a cross-sectional area for carrying a high-frequency current, said current having a frequency giving said current a penetration depth in said fusible conductor, said conductor having a dimension in at least one direction which is substantially twice said penetration depth of said high-frequency current, said fusible conductor having opposite ends; and



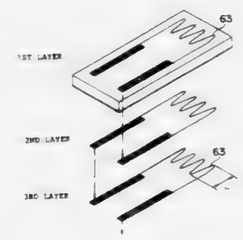
two electrical terminals respectively connected to said opposite ends of said fusible conductor.

5,332,991

RESISTOR TYPE PHYSICAL QUANTITY SENSOR HAVING MIGRATION INHIBITING PATTERN

Takao Kojima, Aichi; Yoshiyuki Ohtake, Gifu, and Satoshi Sugaya, Aichi, all of Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Nov. 20, 1992, Ser. No. 980,409
Claims priority, application Japan, Nov. 22, 1991, 3-332959
Int. Cl.[5] H01C *3/04*
U.S. Cl. 338—25 **13 Claims**



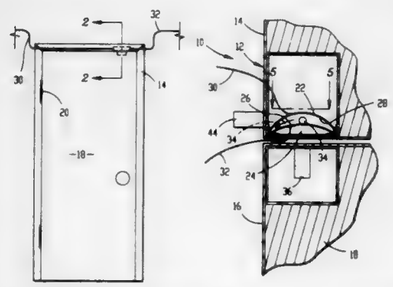
1. A physical quantity sensor comprising a resistor pattern having its resistance changed with temperature and a ceramic support for supporting said resistor pattern, said resistor pattern having a branched conductor pattern for retaining ionizing components which is branched at a negative terminal side thereof.

5,332,992

SECURITY ALARM SWITCH

Randall Woods, 1569 Eagle Rd., Prescott, Ariz. 86301

Filed Apr. 6, 1993, Ser. No. 43,216
Int. Cl.[5] G08B *13/08;* **H01H** *9/00, 3/16*
U.S. Cl. 340—547 **11 Claims**



1. A magnetic switch assembly for detecting relative move-

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ment between first and second adjacent members, and for defeating attempted magnetic manipulation of the switch assembly so as to permit said relative movement without detection thereof, said switch assembly comprising:

a pair of adjacent, superposed, upper and lower switch elements for mounting on said first member, said lower switch element presenting a sloped surface;

a shiftable, ferromagnetic body disposed between said elements and movable along said sloped surface between spaced upper and lower switch operating positions; and

a magnet for mounting on said second member and oriented for retaining said body in said upper switch operating position when said members are in one relative position, and, upon movement of the members to a second relative position, for permitting shifting of said body along said sloped surface to said lower switch operating position for retention thereat under the influence of gravity,

said switch elements being located for movement of said body from said upper to said lower switch operating position, when said members are in said one relative position and an external magnet is applied to said first member in an attempt to magnetically manipulate the switch assembly.

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POWER CONTROLLING APPARATUS WITH A POWER FAILURE DETECTING FUNCTION

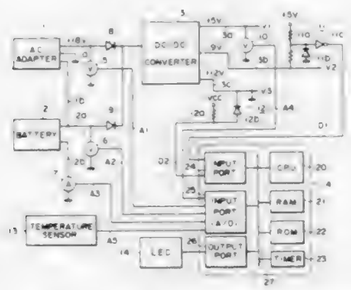
Ryozi Ninomiya, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1991, Ser. No. 784,710

Claims priority, application Japan, Nov. 7, 1990, 2-301690

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—635 **7 Claims**



1. A power controlling apparatus with a power failure detecting function comprising:

detecting means for detecting a power failure condition of a power source circuit and putting out a failure detection signal;

failure data processing means, having an input means for receiving the failure detection signal from the detecting means, identifying the failure condition of the power source circuit based on the failure detection signal received at the input means, generating a failure status data corresponding to the kind of the failure condition, and having a register means for storing the failure status data;

blinker means for emitting light at intervals in which on/off durations correspond to the kind of the failure condition;

blinker control means, having an LED counter for holding an LED count value obtained by counting a number of bits of the failure status data and a timer counter for setting an on/off duration for the blinker means, for lighting up the blinker means for every bit of the failure status data based on the LED count value of the LED counter, and controlling to set a lighting duration of the blinker means in accordance with each bit data based on the timer count value of the timer counter.

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RADIO PAGER WITH POWER-BACKUP MEMORY FOR STORING UNCOMPLETED MESSAGES

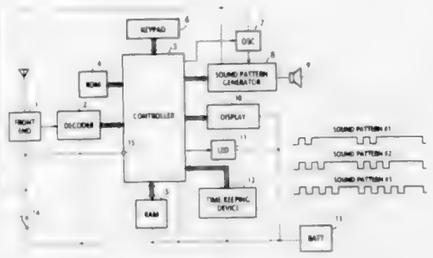
Shinichi Kawashima, and Hiroaki Shibayama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,330

Claims priority, application Japan, Feb. 14, 1991, 3-040757; Feb. 28, 1991, 3-057773

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.44 **2 Claims**



1. A radio pager, comprising:

receiver means for detecting a paging signal addressed to the pager;

a battery;

a manually operated power switch for activating said receiver means with said battery when the pager is in use and deactivating said receiver means when the pager is not in use;

a memory constantly activated by the battery;

control means for storing into said memory a message transmitted by said paging signal, classifying the stored message with a first label indicating that the stored message is a pre-alert message, and changing the label of the stored message to a second label indicating that the stored message is an unanswered message, if the stored message is not answered within a prescribed period of time, and changing the label of the stored message to a third label indicating that the stored message is an answered message, if the stored message is answered within said prescribed period of time, said control means being responsive to said power switch for sensing that said receiver means is activated by the battery for searching through said memory to detect messages therein;

means for generating first, second and third sound patterns;

means for alerting a user with the first sound pattern if the control means detects a message having said first label, and alerting the user with the second or third sound pattern if the control means detects a message having said first or second label, respectively; and

means for displaying the answered message.

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GRAPHIC PATTERN PROCESSING APPARATUS

Koyo Katsura; Hideo Maejima, and Hisashi Kajiwara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co. Ltd., Ibaraki, both of Japan

Division of Ser. No. 350,254, May 11, 1989, Pat. No. 5,043,713, which is a division of Ser. No. 686,039, Dec. 24, 1984, Pat. No. 4,862,150. This application Jul. 29, 1991, Ser. No. 736,780

Claims priority, application Japan, Dec. 26, 1983, 58-246986; Feb. 17, 1984, 59-27155; Jun. 14, 1984, 59-120679

Int. Cl.[5] G09G *5/38*

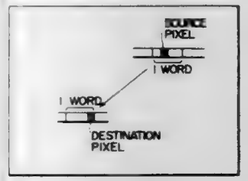
U.S. Cl. 345—121 **11 Claims**

1. A graphic data generating apparatus comprising:

means for outputting graphic data of a plurality of pixels of an image;

a display memory connected to said outputting means for storing pixel data defining said graphic data for each of the pixels, each of said pixel data having a plurality of bits; and

a graphic data processing apparatus performing readout of word data having a plurality of pixel data at a word position of said display memory specified by a source memory



address, selecting pixel data specified by a source pixel address in the readout word data, and writing the selected pixel data in said display memory at a pixel position specified by a destination pixel address of word data which is specified by a destination memory address.

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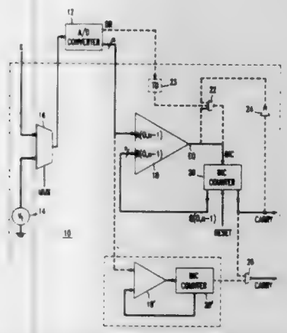
METHOD AND APPARATUS FOR ALL CODE TESTING

Miroslaw Guzinski, Lawrenceville; James L. Lewandowski, Plainsboro; Victor J. Velasco, Montgomery, and Shianling Wu, Lawrenceville, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 30, 1993, Ser. No. 84,855

Int. Cl.[5] H03M *1/10*

U.S. Cl. 341—120 **9 Claims**



1. A method for testing an n-bit-wide analog-to-digital converter which generates a separate one of a set of codes, each in response to a corresponding amplitude of analog voltage applied thereto, to determine if the converter can generate all of its codes, comprising the steps of:

(a) applying to the converter a voltage V_t having an amplitude which varies from 0 to V volts over time such that when the converter is operating properly, the applied voltage V_t causes the converter to successively generate all of its codes sufficiently often;

(b) comparing each code generated by the converter to a count of an n-bit counter initialized at zero;

(c) incrementing the count of the counter each time the code generated by the converter matches the count of the counter;

(d) checking, after a prescribed interval, whether the counter has generated a carry bit to signify an overflow condition, which will occur when the converter is operating properly.

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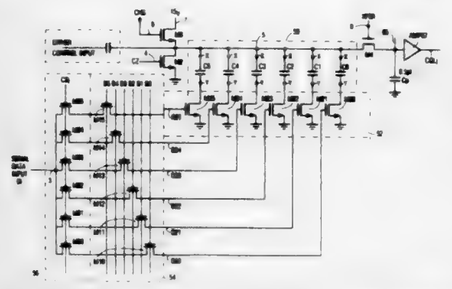
SWITCHED CAPACITOR D/A CONVERTER

Andrew G. F. Dingwall, Princeton, and Sherman Weisbrod, Skillman, both of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

Continuation of Ser. No. 971,104, Nov. 4, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 124,679

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—150 **20 Claims**



16. A digital-to-analog converter (DAC) for converting a set of N data bits to an analog voltage comprising:

N capacitors and N switching transistors, one capacitor and an associated switching transistor for each one of said N data bits;

each capacitor having first and second plates;

means connecting the first plate of each capacitor to an output node;

each one of said N switching transistors having first and second electrodes defining the ends of a conduction path and a control electrode, each control electrode having associated therewith a relatively small capacitance;

means connecting the conduction path of each switching transistor between the second plate of its associated capacitor and a first power terminal;

an input node adapted to receive serially supplied digital data signals during a data load interval and a precharge signal during a precharge interval;

N selectively enabled data transfer paths, one data transfer path per each one of said N switching transistors, each data transfer path connected between said input node and the control electrode of its associated switching transistor;

means for selectively turning-on said N data transfer paths, one at time, during said data load interval for selectively sampling the digital data signals and for applying and storing a voltage corresponding to each one of said digital data signals on the gate of a corresponding one of said N switching transistors; and

means for selectively applying a voltage across said capacitors for charging them in accordance with the data responsive voltage levels present on the gate of their respective switching transistors.

5,332,998

PROCEDURE FOR DETECTION AND LOCALIZATION OF OBJECTS ON RELATIVELY FLAT GROUND AND A DEVICE FOR APPLICATION OF THE PROCEDURE

Bruno Avignon, Palaiseau, and Yves Canal, Antony, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Apr. 29, 1993, Ser. No. 53,654

Claims priority, application France, Apr. 30, 1992, 92 05370

Int. Cl.[5] G01S *13/89*

U.S. Cl. 342—64 **10 Claims**

1. A Procedure for detecting and localizing objects surrounded by a substantially flat surface and having at least one substantially flat face inclined at an angle of more than about 10° with respect to the substantially flat surface, by an airborne

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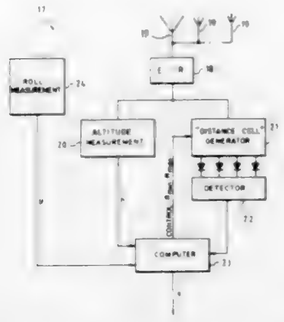
vehicle over-flying the substantially flat surface, comprising the steps of:

scanning the substantially flat surface in front of the airborne vehicle with electromagnetic waves at predetermined angles of incidence;

detecting reflected electromagnetic wave signals of the scanning electromagnetic waves reflecting off the substantially flat scanned surface;

analyzing fluctuations of the reflected electromagnetic wave signals;

selecting for each angle of incidence of the scanning electromagnetic wave a range of distances centered on a value equal to a height of the airborne vehicle divided by a



cosine of the each angle of incidence as measured from a vertical from the airborne vehicle to the substantially flat surface; and

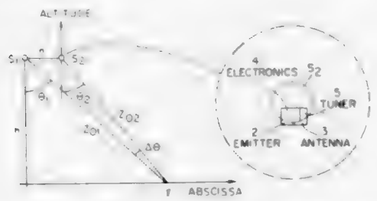
analyzing in the range of distances an intensity of the electromagnetic wave signals reflected by the substantially flat scanned surface, and when a maximum intensity of the reflected electromagnetic wave signals exceeds a predetermined threshold by reflecting off a reflecting face of the object, greater than that measured for the reflected electromagnetic wave when it is reflected from a surrounding surface at the same angle of incidence, determining a distance and azimuth of the reflecting face of the object, corresponding to the measured maximum intensity.

5,332,999

PROCESS FOR GENERATING SYNTHETIC APERTURE RADAR INTERFEROGRAMS

Claudio Prati, and Fabio Rocca, both of Milan, Italy, assignors to Agence Spatiale Europeenne, Paris, France

Filed Feb. 5, 1993, Ser. No. 14,240
Int. Cl.[5] **G01S** *13/90*
U.S. Cl. 342—25 **6 Claims**



1. A process for generating synthetic aperture radar interferograms comprising the steps of:

generating a first and a second radar image of a scene from a first and a second position spaced apart by a given baseline,

recording a first signal of said first image within a first radio frequency band of the spectrum,

recording a second signal of said second image within a second radio frequency band of the spectrum having a frequency shift relatively to said first detecting band, said frequency shift being such that it ensures or maximizes correlation between the first and the second images,

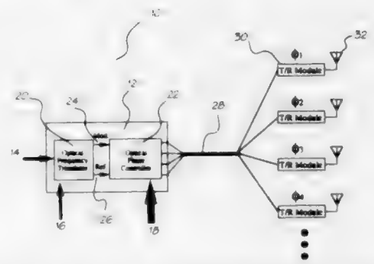
combining said first and second signals for generating an interferogram of said scene.

5,333,000

COHERENT OPTICAL MONOLITHIC PHASED-ARRAY ANTENNA STEERING SYSTEM

Vincent M. Hietala; Stanley H. Kravitz, both of Placitas, and Gregory A. Vawter, Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 3, 1992, Ser. No. 864,825
Int. Cl.[5] **H01Q** *3/22;* **G01B** *11/00*
U.S. Cl. 342—368 **39 Claims**



1. A coherent optical monolithic phased-array antenna steering system apparatus comprising:

means for generating a reference lightwave signal;

photonic integrated circuit means for generating a primary frequency-shifted lightwave signal from said reference lightwave signal;

photonic integrated circuit means for dividing and phase-shifting under voltage control said reference lightwave signal and dividing said frequency-shifted lightwave signal to form a plurality of pairs of lightwave signals, each of said pairs comprising a collateral frequency-shifted lightwave signal and a phase-shifted lightwave signal;

means for heterodyning each pair of said plurality of pairs of lightwave signals and thereby generating a plurality of RF signals; and

means for transmitting said plurality of RF signals.

5,333,001

MULTIFREQUENCY ANTENNA ARRAY

Charles E. Profera, Jr., Cherry Hill, N.J., assignor to Martin Marietta Corporation, East Windsor, N.J.

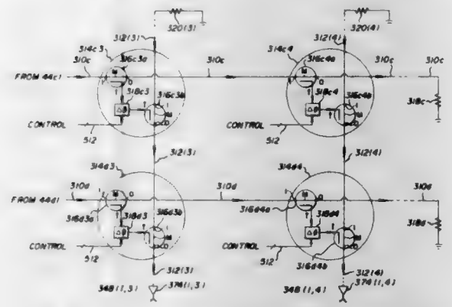
Filed May 18, 1993, Ser. No. 62,832
Int. Cl.[5] **H01Q** *3/22, 3/24, 3/26*
U.S. Cl. 342—373 **13 Claims**

1. A multichannel array antenna, comprising:

a plurality M of information signal sources, each of said sources being at a different operating frequency within a frequency band;

a plurality M of N-way power dividers, each of said N-way power dividers including an input port and N output ports, for dividing signal power applied to said input port into N portions, each of which N portions appears at a different one of said output ports of said N-way power divider, each of said N-way power dividers having its input port coupled to a different one of said signal sources, for generating power-divided channelized signals:

a plurality N of N×P beam phasing matrices, each of said beam phasing matrices including N input ports and P output ports, and also including a node interconnecting each of said input ports with each of said output ports, whereby each of said input ports is coupled by one of said nodes to each of P of said output ports, each of said N input ports of each of said beam phasing matrices being coupled to an output port of a different one of said power dividers, each of said nodes comprising first and second couplers and a phase shifter, each of said first couplers being coupled to an associated one of said input ports for generating a sample of said power-divided channelized signals, said phase shifter of each node being coupled to



said first coupler of each node for controllably phase shifting said sample for generating a phase-shifted signal sample, and said second coupler of each node being coupled to said phase shifter of said node and to one of said output ports, for coupling at least a portion of said phase-shifted signal sample to said one of said output ports; and

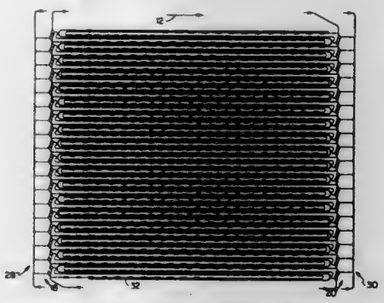
a plurality N×P of antenna elements, each of said antenna elements being coupled to a different one of said output ports of said beam phasing matrices, for radiating in response to that one of said phase-shifted signal sample from said one of said output ports of said beam phasing matrices.

5,333,002

FULL APERTURE INTERLEAVED SPACE DUPLEXED BEAMSHAPED MICROSTRIP ANTENNA SYSTEM

Lawrence S. Gans, Sparta, and Leonard Schwartz, Montville, both of N.J., assignors to GEC-Marconi Electronic Systems Corp., Wayne, N.J.

Filed May 14, 1993, Ser. No. 62,061
Int. Cl.[5] **H01Q** *1/38, 11/02*
U.S. Cl. 343—700 MS **7 Claims**



1. A planar microstrip antenna system for a Doppler radar navigation system of aircraft having separate arrays of radiating patch elements for the transmit and receive functions and which is compensated for temperature, frequency and over-water shifts, said antenna system filling a defined rectangular aperture having a pair of sides parallel to a defined direction of forward travel of the aircraft, said antenna system comprising:

a transmit antenna including:

a first array group including a first plurality of parallel lines of serially interconnected radiating rectangular patch elements wherein each of the first plurality of lines is parallel to the defined direction;

a second array group including a second plurality of parallel lines of serially interconnected radiating rectangular patch elements wherein each of the second plurality of lines is parallel to the defined direction, the second plurality of lines of said second array group being interleaved with the first plurality of lines of said first array group, with each of the second plurality of lines being connected at a first end to a first end of a corresponding adjacent one of said first plurality of lines; and

transmit antenna feed means for feeding said first and second array groups from the second end of each of said first and second pluralities of lines to create a pair of forwardly directed beams and a pair of rearwardly directed beams; and

a receive antenna including;

a third array group including a third plurality of parallel lines of serially interconnected radiating rectangular patch elements wherein each of the third plurality of lines is parallel to the defined direction;

a fourth array group including a fourth plurality of parallel lines of serially interconnected radiating rectangular patch elements wherein each of the fourth plurality of lines is parallel to the defined direction, the fourth plurality of lines of said fourth array group being interleaved with the third plurality of lines of said third array group, with each of the fourth plurality of lines being connected at a first end to a first end of a corresponding adjacent one of said third plurality of lines; and

receive antenna feed means for feeding said third and fourth array groups from the second end of each of said third and fourth pluralities of lines to create a pair of forwardly directed beams and a pair of rearwardly directed beams;

wherein said transmit and receive antennas are interleaved so that between adjacent connected pairs of lines of said transmit antenna there is a connected pair of lines of said receive antenna, said transmit antenna feed means is adjacent the first end of the receive antenna lines, and said receive antenna feed means is adjacent the first end of the transmit antenna lines; and

wherein the antenna system further comprises:

isolation means positioned between the lines of the transmit and receive antennas for reducing the mutual coupling between the transmit and receive antennas.

5,333,003

LAMINATED COMPOSITE SHELL STRUCTURE HAVING IMPROVED THERMOPLASTIC PROPERTIES AND METHOD FOR ITS FABRICATION

John S. Archer, Brownfield, Tex., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jan. 21, 1992, Ser. No. 823,419
Int. Cl.[5] **H01Q** *15/14, 1/36*
U.S. Cl. 343—914 **10 Claims**

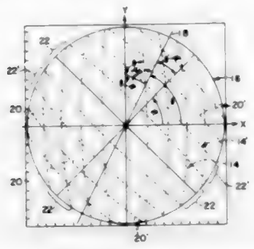
1. A laminated composite shell structure having improved thermoelastic properties, comprising:

multiple layers of overlapping strips of composite material conforming to an axisymmetric doubly-curved surface, the fibers in the multiple layers being arranged at different relative angular orientations;

wherein the composite strips are shaped to maintain the

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fibers at a constant relative angular orientation throughout the shell structure, thus providing a shell structure having



quasi-isotropic thermal expansion and contraction characteristics.

5,333,004

ACTIVE MATRIX FLAT DISPLAY

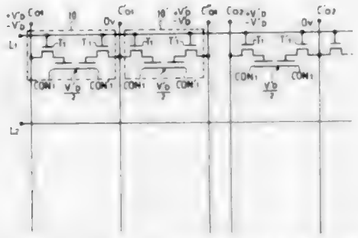
Bruno Mourey, Palaiseau, and Bernard Hepp, Grenoble, both of France, assignors to Thomson-LCD, Puteaux, France

Filed Nov. 12, 1991, Ser. No. 791,000

Claims priority, application France, Nov. 23, 1990, 90 14624

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—92 **6 Claims**



1. An active matrix flat display in which the pixels (10, 10') are placed at the intersection of two mutually-perpendicular sets of conductors known as rows (L1 to LN) and columns (C1 to CM) in which each pixel comprises a pair of capacitors (CON1, CON'1) connected in series and formed by electro-optical components, this pair of capacitors being connected between two control transistors (T1, T'1), these transistors being connected to a common row (L1) and to two different columns respectively (C1, C'1 or C01, C'01, C'01), each individual pixel further comprising an individual counter electrode which is common only to the two capacitors contained in the pixel.

5,333,005

APPARATUS FOR RAISING AND LOWERING PLOTTER MARKING DEVICES

John C. Venthem, Georgetown, and James A. Parnell, Austin, both of Tex., assignors to Summagraphics Corporation, Seymour, Conn.

Filed Jul. 10, 1991, Ser. No. 728,096

Int. Cl.[5] G01D *5/02*

U.S. Cl. 346—139 B **14 Claims**

1. Apparatus comprising:

a carriage and means for supporting said carriage for movement along a first axis;

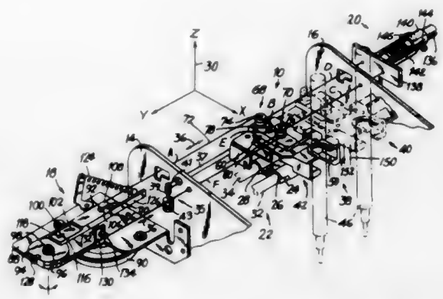
marking means for marking a surface;

support means for supporting said marking means from said carriage for movement with said carriage along said axis and for supporting said marking means for movement transverse to said axis between first and second positions thereof; and

means for moving said support means so as to move said marking means between said first and second positions without affecting movement of said carriage along said axis, said means for moving comprising:

a cable;

first means pivotally supported by said carriage and engaged by said cable so as to pivot upon movement of said cable;



means coupled to said cable for moving said cable along a path thereof so as to pivot said first means; and

means for coupling said first means to said support means to move said support means so as to move said marking means between said first and second positions in response to pivoting of said first means.

5,333,006

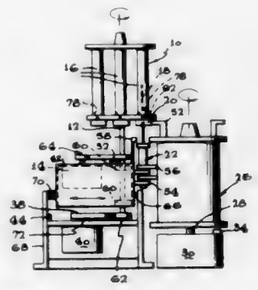
LEAD LOADER MECHANISM FOR A PENCIL PLOTTER

Patrick Nguyen, Diamond Bar, Calif., assignor to CalComp Inc., Anaheim, Calif.

Filed Mar. 9, 1992, Ser. No. 848,588

Int. Cl.[5] G01D *15/16;* **B43L** *13/00*

U.S. Cl. 346—139 R **12 Claims**



1. A lead loader mechanism for a pencil plotter comprising:

a lead stocker containing a plurality of leads for use in a pencil plotter;

at least one lead actuator mechanism coupled to said lead stocker for releasing said leads;

support means for holding at least one lead holder, said support means including engaging means for engaging said at least one lead actuator mechanism to cause said leads in said lead stocker to be released into said lead holder; and

means for causing said means and said at least one lead actuator mechanism to engage to cause said leads to be released into said at least one lead holder.

5,333,007

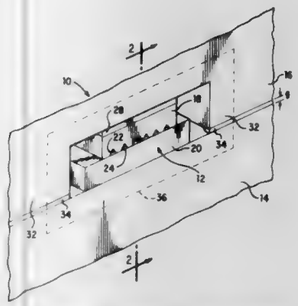
MOISTURE LEAKAGE RESISTANT CAPPING SURFACE FOR INK JET PRINTHEAD

Gary A. Kneezel, Webster; Peter J. John; Bobbie A. Rice, both of Rochester; Herman A. Hermanson, Penfield, and Almon P. Fisher, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 778,535, Oct. 17, 1991, abandoned. This application Aug. 11, 1993, Ser. No. 116,816

Int. Cl.[5] G01D *15/16*

U.S. Cl. 347—20 **28 Claims**



1. An ink jet printhead assembly, comprising:

a printhead die having an upper face, a lower face, opposed sides and a front face with nozzles therein;

a substrate having a front face and being coupled to said lower face of said printhead die;

an ink manifold having a front face and being coupled to said upper face of said printhead die, said manifold having a pair of flanges which extend adjacent said opposed sides of said printhead die toward said substrate, wherein a gap is defined between each of said flanges of said manifold and said substrate; and

spreadable sealing filler material disposed within said gap to provide a generally continuous sealing surface with said front face of said manifold and said front face of said substrate around said printhead die.

5,333,008

IMAGING MODULE MOUNTING APPARATUS

William J. Nowak, Webster, and William J. Cecchi, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1992, Ser. No. 964,692

Int. Cl.[5] G01D *15/06, 15/14;* **F16M** *13/00*

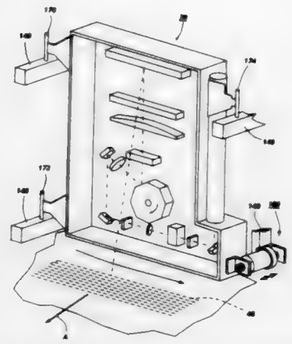
U.S. Cl. 346—160.1 **8 Claims**

1. An imaging module mounting apparatus for minimizing distortion of images created by the module, comprising:

a frame;

means for rigidly supporting the module to said frame; and

means for movably supporting the module to said frame, said movable supporting means being variably flexible in response to different frequency rates of movement between



the module and said frame so as to minimize misregistration and distortion of an image due to module distortion.

5,333,009

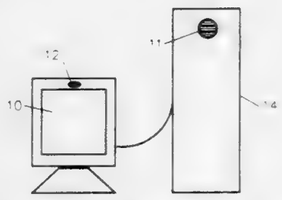
METHOD AND APPARATUS FOR INDUCING REFLEX BLINK REACTIONS

Harold A. Gell, Jr., 13720 Lockdale Rd., Silver Spring, Md. 20906-2117, and Constantine Haralambopoulos, 709 English Rd., Rochester, N.Y. 14616

Filed Aug. 5, 1993, Ser. No. 102,224

Int. Cl.[5] A61H *1/02*

U.S. Cl. 348—61 **31 Claims**



1. A method for reducing the eye irritation in video terminal users, including the steps of:

stimulating the involuntary reflex blinking response of a person observing the display of a video terminal monitor; and

said step of stimulating said involuntary reflex blinking response includes the step of creating a stimulus, selected from the group comprising visual, audible, subaudible, or tactile stimuli which cause the involuntary reflex blinking of said person.

5,333,010

COLOR MISREGISTRATION EASING SYSTEM FOR A FIELD SEQUENTIAL ELECTRONIC ENDOSCOPE SYSTEM

Kazunari Nakamura, Hino; Kenji Matsunaka, and Akira Watanabe, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 925,578

Claims priority, application Japan, Aug. 12, 1991, 3-201970; Sep. 17, 1991, 3-236624; Sep. 17, 1991, 3-236628

Int. Cl.[5] H04N *9/093*

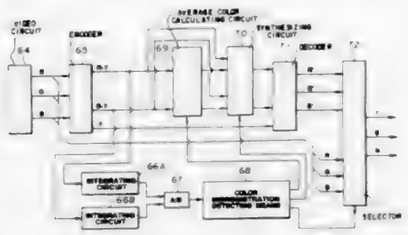
U.S. Cl. 348—263 **21 Claims**

1. A color misregistration easing system for inputting a color image signal of a subject imaged by a field sequential imaging

means and carrying out color misregistration easing, comprising:

a detecting means for using said color image signal to calculate a quantity of a change of color information of time-series screens before and after, and detecting color misregistration or an event leading to said color misregistration according to the calculated quantity;

an average color information producing means for using said color image signal to produce an average of color information of part or the whole of a screen, and updating said average color information according to a quantity of a



change of varying color information of said time-series screens before and after in response to an instruction from said detecting means;

a means for generating a correction image signal of said subject using said average said average color information producing means provides; and

a switching means for outputting said correction image signal generated by said generating means when said detecting means determines that color misregistration is present, and outputting said color image signal when said detecting means determines that color misregistration is absent.

5,333,011

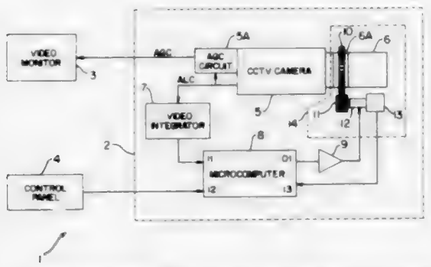
ELECTRONIC IRIS CONTROL FOR SURVEILLANCE CAMERAS

Edwin Thompson, Loxahatchee, and Philip A. Robertson, Boca Raton, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Continuation of Ser. No. 803,095, Dec. 5, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 88,100

Int. Cl.[5] H04N *5/238*

U.S. Cl. 348—363 **14 Claims**



1. An automatic iris control device for automatically controlling an adjustable iris of a camera system, the camera system comprising a camera for providing a video signal output and means responsive to said video signal output for generating a further signal indicative of the average video level of the video signal output, the camera system being responsive to reference level adjustment signals transmitted to the camera system from a control station remote from the camera system, the setting of the adjustable iris affecting the average video level of the video signal output from the camera system, the automatic iris control device comprising:

a microcomputer for:

receiving said reference level adjustment signals;

adjusting an adjustably settable reference level in response to the reference level adjustment signals received;

receiving said further signal indicative of the average video level of the video signal output of the camera system;

comparing the average video level of the video signal output of the camera system indicated by said received further signal with said adjustably settable reference level and outputting a comparison result; and

generating iris control signals for controlling the adjustable iris of the camera system based upon said comparison result.

5,333,012

MOTION COMPENSATING CODER EMPLOYING AN IMAGE CODING CONTROL METHOD

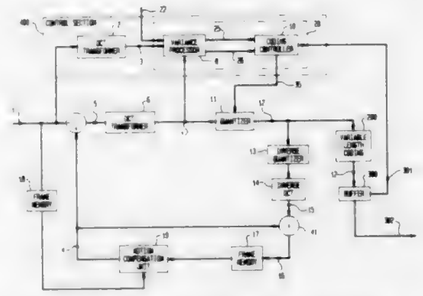
Sharad Singhal, Mendham, N.J., and Hiroshi Watanabe, Kanagawa, Japan, assignors to Bell Communications Research, Inc., Livingston, N.J. and Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 961,110

Claims priority, application Japan, Dec. 16, 1991, 3-331933

Int. Cl.[5] H04N *7/12*

U.S. Cl. 348—405 **14 Claims**



1. An image coder employing motion-compensation techniques for coding input signals having multiple textures, comprising:

means for coding input signals including

means for generating a prediction signal of the input signal,

means, connected to said generating means, for combining the input signal and said prediction signal,

first circuitry connected to said combining means and including means for transforming and means for quantizing said combined signals, said transforming means generating coefficients representing said combined signal, and

second circuitry connected to said first circuitry and including means for encoding and means for buffering said transformed and quantized signal, said buffering means generating buffer occupancy information; and

a control section connected to said quantizer means and said buffering means and including means for receiving the input signal, for generating a quantizer step size based upon said buffer occupancy information received from said buffering means and the texture of the input signal, and for applying said quantizer step size to said quantizing means, wherein said control section further includes means, responsive to the input signal, for transforming the input signal and generating coefficients representing the input signal and

a variance processor which receives and processes said coefficients of said input signal transforming means and produces a first variance for said coefficients of the input signal, said first variance indicating the texture of the input signal.

5,333,013

IMAGE ENCODING APPARATUS

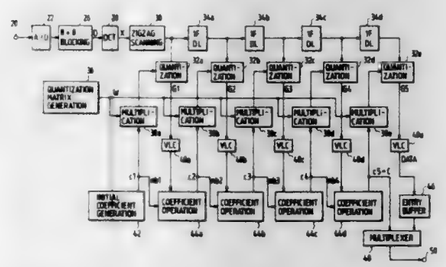
Masahiko Enari, Yokohama; Kenichi Nagasawa; Akihiro Shikakura, both of Kawasaki; Yuushi Kaneko, Yokohama; Yoshifumi Satake, Yokohama, and Hiroshi Takizawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 829,404, Feb. 3, 1992, Pat. No. 5,251,029. This application Mar. 17, 1993, Ser. No. 32,633

Claims priority, application Japan, Feb. 7, 1991, 3-016466; May 17, 1991, 3-113189; May 17, 1991, 3-113226; Oct. 30, 1991, 3-284956; Oct. 30, 1991, 3-284957

Int. Cl.[5] H04N *7/133*

U.S. Cl. 348—405 **8 Claims**



1. A coding apparatus, comprising:

a) block forming means for dividing sample values of an input signal into blocks;

b) conversion means for orthogonally converting the blocks formed said block forming means, block by block;

c) extraction means for extracting a D.C. component of the converted data output from said conversion means;

d) a plurality of code amount estimation means for estimating code amount of coding of at least an A.C. component of the converted data output from said conversion means, by different quantization steps, said plurality of code amount estimation means each estimating the code amount by a predetermined number of blocks;

e) control means for, in response to an output of one of said plurality of code amount estimation means, controlling the quantization step of another of said plurality of code amount estimation means or the quantization step used for coding of the A.C. component of the converted data;

f) coding means for coding the A.C. component of the converted data by using the quantization step controlled by said control means; and

g) output means for multiplexing the converted data coded by said coding means and the converted data extracted by said extraction means and outputting the multiplexed data.

5,333,014

NON-SHARP CUT FILTERS FOR ASSEMBLING AND SPLITTING IN WESTON CLEAN PAL

John O. Drewery, Sutton, and Nicholas D. Wells, Brighton, both of United Kingdom, assignors to British Broadcasting Corporation, London, United Kingdom

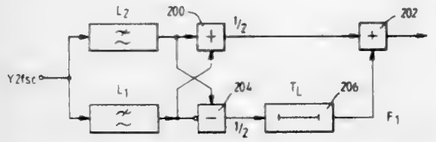
PCT No. PCT/GB92/00143, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO92/13425, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 24, 1992, Ser. No. 923,966

Claims priority, application United Kingdom, Jan. 24, 1991, 9101529.7; Mar. 5, 1991, 9104559.1

Int. Cl.[5] H04N *9/64, 9/78*

U.S. Cl. 348—453 **18 Claims**



1. A system for transmitting and receiving a Weston Clean PAL (W-PAL) video signal in which a luminance signal Y is sampled at twice a color sub-carrier frequency f and chrominance components U, V are sampled at the color sub-carrier frequency and carried as sum (U+V) and difference (U−V) signals on alternate video lines, comprising, at a transmitter:

an assembler for assembling co-phased or quadrature 2fsc luminance signals and fsc chrominance signals to form a W-PAL signal for transmission and having:

a first filter means (F_1) for filtering the 2fsc luminance signal; and

a second filter means (F_2) for filtering the fsc chrominance signals;

and at a receiver

a third filter means (F_3) for filtering a received 2fsc luminance signal; and

a fourth filter means (F_4) for filtering received fsc chominance signals; wherein:

the fourth filter means (F_4) is a shifted mirror of the first filter means (F_1), the third filter means (F_3) is a shifted mirror of the second filter means (F_2) and the product $F_1 F_3$ of the first and third filter means and the product $F_2 F_4$ of the second and fourth filter means are Nyquist filters N_y, N_c.

5,333,015

IMAGE SIGNAL PROCESSING APPARATUS HAVING NOISE ELIMINATING AND SPECIAL EFFECT MODE

Isao Harigaya; Hisataka Hirose, and Koji Takahashi, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 742,165, Aug. 1, 1991, abandoned, which is a continuation of Ser. No. 389,979, Aug. 7, 1989, abandoned. This application Mar. 3, 1993, Ser. No. 25,737

Claims priority, application Japan, Oct. 31, 1988, 63-273356

Int. Cl.[5] H04N *5/21*

U.S. Cl. 348—578 **6 Claims**

1. An image signal processing apparatus for processing image signals comprising:

(A) storage means for storing image signals;

(B) image signal processing means for receiving an input first image signal and a second image signal output from said storage means, forming a third image signal by using the input first image signal and the second image signal, and outputting the third image signal;

(C) operation mode selecting means, having a first operation mode to execute a noise eliminating process for eliminating a noise element of the first image signal and a second operation mode to execute an image process for a special

effect on the first image signal, for selecting either one of the two modes; and

(D) image signal supply means, to which the first image signal and the third image signal output from said image signal processing means are input for supplying the third

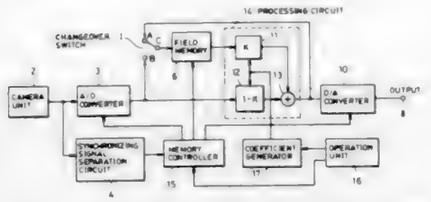
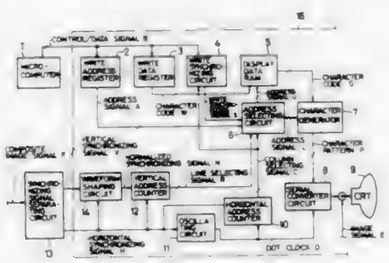


image signal output from said image signal processing means to said storage means when the first operation mode is selected in said operation mode selecting means or the first image signal to said storage means when the second operation mode is selected in said operation mode selecting means.

5,333,016
IMAGE DISPLAY APPARATUS
Kunihiro Tsutsumi, Kawasaki, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Jun. 5, 1992, Ser. No. 894,851
Claims priority, application Japan, Jun. 7, 1991, 3-163506
Int. Cl.[5] **H04N** *5/262, 5/272*
U.S. Cl. 348—589 **2 Claims**



1. An image display apparatus, comprising:

a synchronizing signal separating circuit for generating vertical and horizontal synchronizing signals on receiving a composite image signal;

a vertical address counter for starting to count said horizontal synchronizing signals on receiving the trailing edge of said vertical synchronizing signal at a reset input terminal thereof, wherein a vertical display position on a display is determined in accordance with the count given by said vertical address counter; and

a first and a second D-type flip-flop and either a positive logical OR gate or a negative logical AND gate, said first D-type flip-flop receiving said horizontal synchronizing signal at a clock input terminal thereof and said vertical synchronizing signal at a data input terminal thereof, said second D-type flip-flop receiving said horizontal synchronizing signal at a clock input terminal thereof and the positive logical output signal of said first D-type flip-flop at a data input terminal thereof, wherein either gate receives said vertical synchronizing signal at first input terminal thereof and the negative logical output signal of said second D-type flip-flop at a second input terminal thereof to deliver the output of either gate to said reset input terminal of said vertical address counter.

5,333,017
INDIRECT OPHTHALMOSCOPY LENS FOR USE WITH SLIT LAMP BIOMICROSCOPE
Donald A. Volk, 7893 Enterprise Dr., Mentor, Ohio 44060
Filed Nov. 6, 1992, Ser. No. 973,988
Int. Cl.[5] **A61B** *3/10;* **G02B** *3/02*
U.S. Cl. 351—205 **19 Claims**



1. An indirect ophthalmoscopy lens for use with a slit lamp or other biomicroscope in the examination of a patient's eye, comprising,

at least one lens element having first and second convex aspheric surfaces of revolution, said first and second surfaces being coaxial and non-symmetrical with respect to one another, with the magnitude and shape of each of said first and second surfaces defined by the polynomial expressed as follows:

$$y=(2rx+(e^2-1)x^2)^{\frac{1}{2}}+Ax^F+Bx^G+Cx^H$$

where r equals the apical radius of curvature of each surface, e equals the apical eccentricity of each surface, and coefficients A, B, and C equal successive terms in the polynomial, and F, G, and H equal exponents in the successive terms respectively, with the ratio of the apical radius of curvature and apical eccentricities of said first and second surfaces chosen to satisfy optical correction of image aberrations including curvature, astigmatism, and distortion while concomitantly satisfying optical correction for pupil aberrations, such that the chief rays emerging from a patient's eye which originate at the fundus of the eye and converge at the entrance pupil thereof will be conveyed by said at least one lens element to a focal area substantially coinciding with the pupil aperture of the objective lens system of the slit lamp or other biomicroscope.

5,333,018
BINOCULAR OPHTHALMOSCOPE
Helmut A. Heine; Otto H. Schmidt, both of Herrsching, and Helmut Rosenbusch, Welthelm, all of Fed. Rep. of Germany, assignors to Heine Optotechnik GmbH, Herrsching, Fed. Rep. of Germany and Propper Manufacturing Co., Inc., Long Island City, N.Y.
Continuation of Ser. No. 637,909, Jan. 7, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,178
Int. Cl.[5] **A61B** *3/10*
U.S. Cl. 351—221 **12 Claims**

1. A multi-user binocular stereoscopic viewing device for examining an eye, comprising:

a housing;

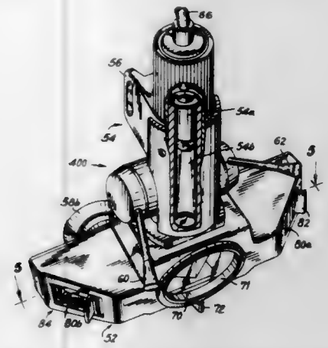
light source means for supplying light to illuminate the eye and positioned in said housing;

first light guide means for reflecting light supplied by said light source means and representing the image of the eye, said first light guide means positioned in said housing;

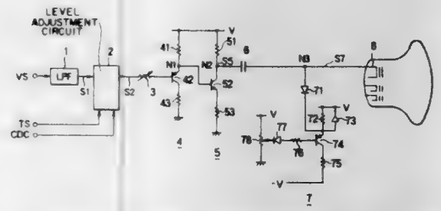
second light guide means for reflecting and transmitting said light produced by said first light guide means, said second light guide means positioned in said housing

binocular viewing means positioned on said housing for receiving said light reflected by said second light guide means, said reflected light representing a stereoscopic image of the eye suitable for binocular viewing by a first user through the binocular viewing means, and

window means positioned on said housing for receiving said light transmitted by said second light guide means, said transmitted light representing a non-stereoscopic image of the eye suitable for viewing by at least a second user through the window means.



5,333,019
METHOD OF ADJUSTING WHITE BALANCE OF CRT DISPLAY, APPARATUS FOR SAME, AND TELEVISION RECEIVER
Nobuyuki Okamoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 28, 1993, Ser. No. 53,228
Claims priority, application Japan, May 6, 1992, 4-141019
Int. Cl.[5] **H04N** *9/64*
U.S. Cl. 348—656 **7 Claims**



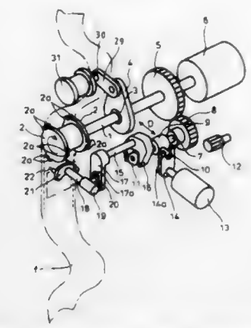
1. A method of adjusting a white balance of a CRT display system which enables an adjustment of a background and an adjustment of a drive voltage of a CRT display unit in the CRT display system to be performed substantially simultaneously, comprising:

adjusting a ratio of a level of a synchronous signal and a level of a video signal so that the level of the synchronous signal is minimized in order to optimize the background; and

adjusting the drive voltage while keeping the ratio of the level of the synchronous signal and the level of the video signal substantially constant in order to optimize the drive voltage.

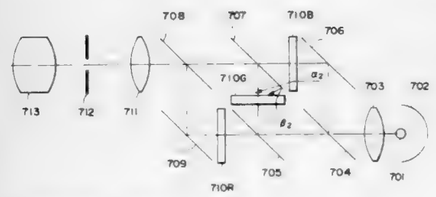
5,333,020
SPROCKET WHEEL FOR ADVANCING FILM AND DEVICE FOR ADVANCING FILM USING SAID SPROCKET WHEEL
Makoto Tsukada, and Yutaka Tokue, both of Tokyo, Japan, assignors to Imagica Corp., Kyoto, Japan
Filed Jul. 20, 1993, Ser. No. 93,689
Claims priority, application Japan, Apr. 2, 1993, 5-077058
Int. Cl.[5] **G03B** *1/00*
U.S. Cl. 352—166 **3 Claims**

3. A sprocket wheel for advancing a film, said sprocket wheel having a periphery and teeth projecting radially from said periphery for engagement with perforations of said film, said teeth being circumferentially spaced about said periphery that for predetermined periods of rotation of said sprocket



wheel no tooth is in engagement with a film perforation and advancement of said film is stopped during said periods for frame-by-frame advancement of said film.

5,333,021
PROJECTOR PROVIDED WITH A PLURALITY OF IMAGE GENERATORS
Hideaki Mitsutake, Tokyo; Hidetoshi Suzuki, Atsugi; Katsumi Kurematsu, Kawasaki; Kazuo Yoshinaga, Machida, and Nobuo Minoura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 20, 1991, Ser. No. 811,020
Claims priority, application Japan, Dec. 27, 1990, 2-415302
Int. Cl.[5] **G03B** *21/00*
U.S. Cl. 353—122 **13 Claims**



1. A projector having;

means for supplying first and second radiation beams;

first image generating means for modulating a plurality of portions of said first radiation beam individually and forming a diffused beam and a non-diffused beam to generate a first image;

second image generating means for modulating a plurality of portions of said second radiation beam individually and forming a diffused beam and a non-diffused beam to generate a second image, said second image generating means being provided next said first image generating means; and

means for projecting said first and second images onto a predetermined plane by the use of one of said diffused beams and said non-diffused beams from said first and second image generating means, said first and second image generating means being designed such that said diffused beams have a rotation-asymmetric orientation characteristic, to direct most of said diffused beams from one of said generating means in a direction different from the direction toward the other generating means.

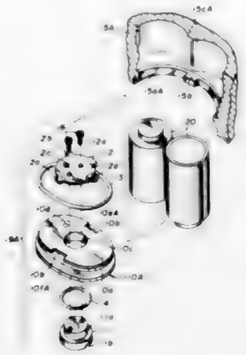
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5,333,022

BATTERY HOUSING FOR A COMPACT ELECTRIC APPARATUS

Moriya Katagiri, Hachioji, and Kazuhiro Satoh, Sagamihara, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,367
Claims priority, application Japan, Feb. 26, 1992, 4-008799[U]
Int. Cl.[5] G03B *17/08, 17/02*
U.S. Cl. 354—64 18 Claims



1. A battery housing for a compact electric apparatus that includes a battery casing having a cavity for storing a plurality of batteries so that the batteries line up in side-by-side parallel fashion with an axis in the midst thereof, and a battery cover for shielding the battery casing, comprising:

locking projections formed in a vicinity of a mounting opening of said battery casing and inside said cavity for mounting said battery cover;

an operating member, part of which is exposed along an outer surface of said battery cover being arranged in said battery cover so as to be freely rotatable; and

a rotary member arranged along an inner surface of said battery cover to rotate in unison with said operating member and located at a position facing batteries to be loaded inside said battery cover; and

said rotary member including:

engagement chips for selectively engaging shoulders of said locking projections when in said given angular position;

a plurality of contacts each contacting at least one of a plurality of batteries to be loaded; and

a clicking member for restricting rotation of the rotary member when in said given angular position.

5,333,023

CAMERA QUICK RELEASE

Jerry J. Oxford, 61 Jordan Ct., Lawrenceville, Ga. 30244

Filed Oct. 2, 1992, Ser. No. 955,642
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—81 16 Claims

1. A camera quick release tripod fastener comprising:

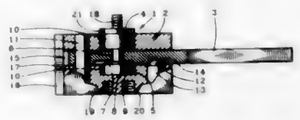
a fastener housing having a cylindrical stud bearing positioned in a camera attachment surface of the fastener housing,

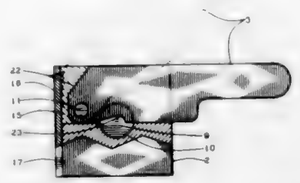
a fastener stud with a rotational adjustment end and a camera attachment end having cylindrical walls with circumferential outside peripheral surfaces positioned in rotational contact with inside cylindrical bearing walls of the cylindrical stud bearing,

a circumferential attachment groove having a camera end wall and a rotational adjustment end wall between the camera attachment end and the rotational adjustment end of the fastener stud,

an attachment lever pivotally attached to the fastener housing at a position in which the attachment lever is pivotal in and out of the circumferential attachment groove on a lever pivot axis parallel to the cylindrical stud bearing,

a lever channel in which the attachment lever is pivotal in and out of the circumferential attachment groove,





a camera attachment boss on the camera attachment end of the fastener stud, and

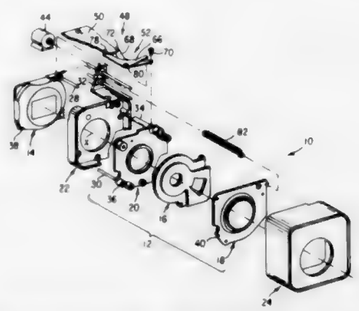
at least one tripod attachment bay in a tripod attachment surface of the fastener housing.

5,333,024

OPTICAL APPARATUS FOR CHANGING FOCUS AND FOCAL LENGTH

Peter Labaziewicz, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,033
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.12 9 Claims



1. Apparatus having first and second lens groups moveable along an optical axis, and a cam and follower mechanism for communicating relative axial displacement to said second lens group in response to axial movement of said first lens group for changing the focal length of the optical system; characterized in that:

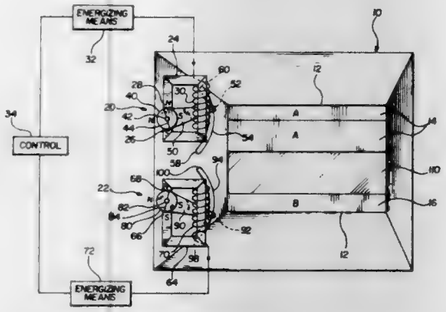
said cam and follower mechanism includes a plurality of cam steps each having first means for maintaining said relative axial displacement constant in response to axial movement of said first lens group, and second means for changing said relative axial displacement in response to axial movement of said first lens group.

5,333,025

ROTATING MAGNET FOCAL PLANE SHUTTER USABLE IN A CAMERA AND HAVING AN IMPROVED DEVICE FOR HOLDING THE SHUTTER IN A CLOSED POSITION

David R. Dowe, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1991, Ser. No. 652,843
Int. Cl.[5] G03B *9/08*
U.S. Cl. 354—234.1 23 Claims



1. A focal plane shutter comprising:

a) first and second shutter curtains movably supported for opening and closing an exposure opening;

b) first electromagnetic driver means operatively coupled to said first shutter curtain for moving said first curtain between open and closed positions when said first electromagnetic driver means is energized to cause movement in one direction, said first electromagnetic driver means having a home operating position and an intermediate operating position from which said first electromagnetic driver means tends to move toward said home position;

c) stop means positionally and operatively associated with said first electromagnetic driver means for physically holding said first electromagnetic driver means against further movement in said one direction when said first shutter curtain reaches an open or closed position, said stop means being located so as to stop movement of said first electromagnetic driver means at a hold position prior to said home operating position so that said first electromagnetic driver means and said first shutter curtain remain at said hold position whereupon said first shutter curtain is in one of the open or closed positions;

d) second electromagnetic driver means operatively coupled to said second shutter curtain for moving said second curtain between open and closed positions when said second electromagnetic driver means is energized to cause movement in one direction, said second electromagnetic driver means having a home operating position and an intermediate operating position from which said second electromagnetic driver means tends to move toward said home position;

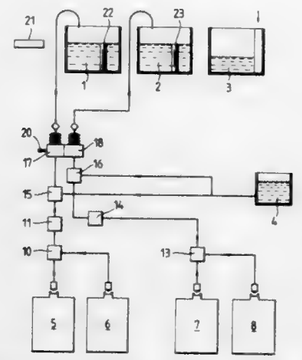
e) stop means positionally and operatively associated with said second electromagnetic driver means for physically holding said second electromagnetic driver means against further movement in said one direction when said second shutter curtain reaches an open or closed position, said stop means being located so as to stop movement of said second electromagnetic driver means at a hold position prior to said home operating position so that said second electromagnetic driver means and said second shutter curtain remain at said hold position whereupon said second shutter curtain is in one of the open or closed positions.

5,333,026

PHOTOGRAPHIC MATERIAL PROCESSOR

Barrie A. Freeman, Wilmslow, Great Britain, assignor to Ilford Limited, Cheshire, England

Filed Aug. 21, 1992, Ser. No. 934,173
Claims priority, application United Kingdom, Sep. 4, 1991, 9118883
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 3 Claims



1. A photographic material processor having at least two processing solution tanks used in the processing of photographic material, and one positive displacement pump for each processing solution tank for transferring concentrated processing solutions and water to said processing tanks, the processor comprising:

means for connecting each pump to a concentrated solution container and to a water source;

means for measuring the area of photographic material processed;

means for activating said pumps when a predetermined area of photographic material has been processed to perform a replenishment cycle; and

means for controlling said means for connecting so that during each replenishment cycle a first predetermined volume of concentrate processing solution and a second predetermined volume of water are pumped to each of said processing tanks by each pump, said controlling means being operable to individually set both said first predetermined volume of concentrate and said second predetermined volume of water.

5,333,027

CAMERA HAVING AUTOMATIC EXPOSURE BRACKETING DEVICE

Hiroshi Matsushima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

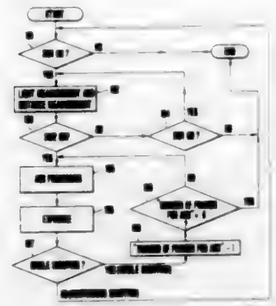
Continuation of Ser. No. 707,834, May 30, 1991, abandoned.
This application Jan. 19, 1993, Ser. No. 4,646
Int. Cl.[5] G03B *7/00, 13/36*
U.S. Cl. 354—400 18 Claims

1. A camera provided with an automatic exposure bracketing photography controlling circuit for performing photography while automatically altering an exposure value for exposure of each frame, comprising:

a) a setting circuit for setting a photographic condition; and

b) a selecting circuit for selectively determining a control state of said automatic exposure bracketing photography controlling circuit in accordance with the photographic condition set by said setting circuit, said automatic exposure bracketing photography controlling circuit having a first mode for performing continuous photography for a predetermined number of frames while altering an expo-

sure value for each of the frames by a single operation of a release operation member and a second mode for continuously performing photography while alternating an exposure value for each frame as long as the release operation member is being operated, said selecting circuit selecting the first mode if the set photographic condition is



a single shooting mode in which photography of each frame is performed each time the release operation member is operated and the second mode if the set photographic condition is a continuous shooting mode in which photography is continuously performed while the release operation member is being operated.

5,333,028

AUTOMATIC FOCUSING APPARATUS DETECTING FOCUS FOR A PLURALITY OF AREAS AND USING CONTRAST LEVELS

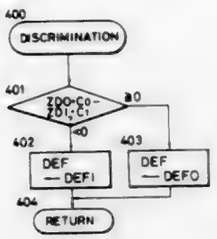
Akira Akashi, and Terutake Kadohara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 742,475, Aug. 5, 1991, Pat. No. 5,151,732, which is a continuation of Ser. No. 400,924, Aug. 30, 1988, abandoned. This application Jun. 26, 1992, Ser. No. 904,939

Claims priority, application Japan, Aug. 31, 1988, 63-216903; Aug. 31, 1988, 63-216904

Int. Cl.[5] **G03B** *13/36*

U.S. Cl. 354—402 **10 Claims**



1. A focus detection apparatus or a camera having said focus detection apparatus which includes a plurality of sensor sections for receiving light from different areas of a scene and which detects a focus state, comprising:

(a) a calculating circuit for calculating a plurality of contrast levels represented by outputs from said sensor sections; and

(b) a selector for selecting one of the outputs from said sensor sections on the basis of focus detection characteristic data respectively predetermined for said sensor sections and the contrast levels of said sensor sections, said selector including a comparison circuit which compares the contrast levels of each sensor section in consideration of data corresponding to the focus detection characteristic data of said each sensor section, said selector selecting at least said one of the outputs based on the comparison of the plurality of sensor section outputs by said comparison circuit.

5,333,029

CAMERA CAPABLE OF DETECTING EYE-GAZE

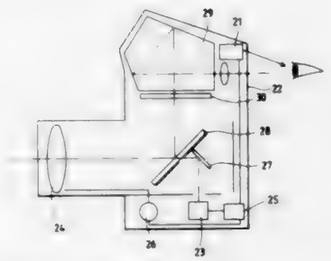
Shigeyuki Uchiyama, Tokyo; Tadao Takagi, Yokohama; Daisuke Saya, Urayasu; Yuji Katano, Kawasaki; Shigemasa Sato, Chiba, and Toshimi Watanabe, Machida, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 773,726

Claims priority, application Japan, Oct. 12, 1990, 2-272174; Oct. 25, 1990, 2-287723; Oct. 29, 1990, 2-291434

Int. Cl.[5] **G03B** *7/08, 3/00, 13/02*

U.S. Cl. 354—410 **6 Claims**



1. A camera including:

a photo-taking lens;

automatic focus adjusting means for effecting automatic focus adjustment of said photo-taking lens;

eye-gaze detecting means for detecting a photographer's eye-gaze position in a finder field corresponding to a photographing picture plane, and producing an eye-gaze detection signal corresponding to said eye-gaze position;

focus adjustment signal producing means for outputting a plurality of focus adjustment signals corresponding to a plurality of detection areas in said photographing picture plane; and

control signal producing means for producing a control signal for controlling said automatic focus adjusting means on the basis of said eye-gaze detection signal and said plurality of focus adjustment signals corresponding to said plurality of detection areas when said eye-gaze position indicated by said eye-gaze detection signal is at a position between said plurality of detection areas.

5,333,030

CAMERA SYSTEM

Yoshiiku Kikukawa, Kishiwada; Masayuki Nakase, Sennan; Tadahiro Yoshida, Takatsuki; Mashio Kitaura, Tondabayashi; Masaaki Nakai, Kawachinagano; Takanobu Omaki, Sennan, and Nobuyuki Taniguchi, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 655,287, Feb. 14, 1991, abandoned, which is a continuation of Ser. No. 328,281, Mar. 24, 1989, abandoned, which is a continuation of Ser. No. 820,656, Jan. 21, 1986, Pat. No. 4,816,853. This application Nov. 6, 1992, Ser. No. 972,739

Claims priority, application Japan, Jan. 21, 1985, 60-9717; Feb. 13, 1985, 60-27398

Int. Cl.[5] **G03B** *17/00*

U.S. Cl. 354—412 **2 Claims**

1. A camera system including a camera body and a camera accessory attachable to the camera body, comprising:

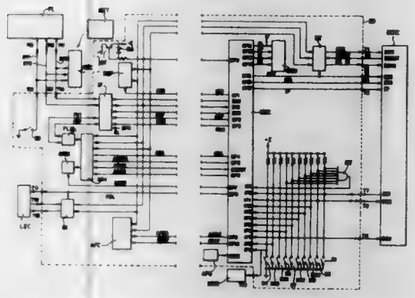
first means, provided in the camera body, for controlling operation of the camera body;

second means, provided in the camera accessory, for controlling operation of the camera accessory;

first means, provided in the camera body, for actuating the first controlling means in accordance with a manual operation so as to initiate the operation of the camera body;

second means, provided in the camera accessory, for actuating the second controlling means in accordance with another manual operation so as to initiate the operation of the camera accessory;

means, provided in the camera body, for generating a first actuating signal and sending said first actuating signal to the camera accessory in response to the actuation of the first controlling means in order to actuate the second



controlling means thereby initiating the operation of the camera accessory simultaneously with the operation of the camera body when the first controlling means is actuated by the first actuating means; and

means, provided in the camera accessory, for generating a second actuating signal and sending said second actuating signal to the camera body in response to the actuation of the second controlling means in order to actuate the first controlling means thereby initiating the operation of the camera body simultaneously with that of the camera accessory when the second controlling means is actuated by the second actuating means.

5,333,031

CAMERA HAVING A LIQUID CRYSTAL FOCUSING SCREEN

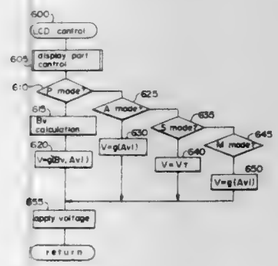
Hiromu Mukai, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 18, 1992, Ser. No. 931,930

Claims priority, application Japan, Aug. 21, 1991, 3-235384

Int. Cl.[5] **G03B** *13/02*

U.S. Cl. 354—442 **24 Claims**



1. A camera comprising:

light measuring means for measuring a brightness of an object and for outputting a brightness value;

means for calculating a shutter speed and an aperture value on the basis of the brightness value outputted by said light measuring means, wherein the calculating means includes the capability of calculating a plurality of exposure modes and the shutter speed and the aperture values are calculated by different procedures, depending on the particular exposure mode;

a focusing screen having a liquid crystal whose diffusion degree is changed when an applied voltage to the liquid crystal is changed;

means for judging which exposure mode is selected; and

means, according to the selected exposure mode, for selecting a control mode for the applied voltage, wherein a control mode suitable for the selected exposure mode is selected by the selecting means.

5,333,032

LOGIC DESIGN SYSTEM AND METHOD IN THE SAME

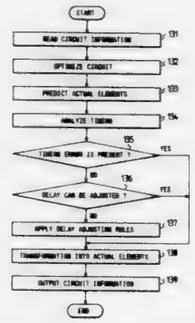
Noriko Matsumoto, Kyoto; Shoji Takaoka, Osaka; Masahiko Ueda, Osaka, and Tamotsu Nishiyama, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 12, 1991, Ser. No. 667,987

Claims priority, application Japan, Aug. 20, 1990, 2-219249

Int. Cl.[5] **G06F** *15/60*

U.S. Cl. 364—489 **6 Claims**



1. A circuit design apparatus for systematically transforming an input first logic circuit into a second logic circuit configuration of actual circuit elements, comprising:

display means for displaying a schematic diagram of a first logic circuit composed of circuit elements;

timing check means for executing a timing check on the first logic circuit displayed by the display means;

designating means for designating a delay adjustment portion of the schematic diagram displayed by the display means; and

timing adjustment means operating responsively to the designating means for automatically executing a timing adjustment on the delay adjustment portion designated by the designating means, and thereby transforming the first logic circuit into a second logic circuit configuration of a plurality of actual circuit elements,

input means for receiving said input first logic circuit, programmed central processing means including said timing check means, said designating means and said timing adjustment means, and storage means,

said storage means including first storage for storing circuit transformation rules for use by the circuit design apparatus and said timing adjustment means, second storage for storing logic design programs, and third storage for storing a library of signal delays in said logic circuit of actual elements for use by said timing check means,

wherein said timing adjustment means comprises:

first means for reading information from said storage means describing an actual circuit element logic circuit represented by said delay adjustment portion,

second means for feeding the information read by said first means to said timing check means,

third means for receiving timing check information from

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said timing check means pertaining to said delay adjustment portion,

fourth means for transforming said actual circuit element logic circuit in response to said timing check information to obtain a timing adjustment therein, and

fifth means for outputting information representing a transformed circuit provided by said fourth means, wherein said timing check means comprises:

first sub-means for receiving said information from said second means of said timing adjustment means,

second sub-means for calculating a signal delay in a designated portion of said actual circuit element logic circuit of said delay adjustment portion based on delay information from said third storage of said storage means, and for calculating a longest signal flow path and a shortest signal flow path in said designated portion of said actual circuit element logic circuit,

third sub-means for detecting a signal flow path failing to meet predetermined circuit restrictions, and

fourth sub-means for outputting said timing check information to said third means of said timing adjustment means, said timing check information including a signal flow path detected by said third sub-means, a type of timing error represented thereby, and a path length calculated by said second sub-means for said signal flow path detected by said third sub-means.

5,333,033

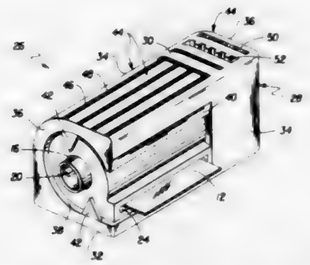
APPARATUS FOR TRANSPORTING A FILM CARTRIDGE THROUGH A PHOTOFINISHING PROCESS

Robert J. Blackman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 8, 1992, Ser. No. 957,852

Int. Cl.[5] G03B *17/26*

U.S. Cl. 355—27 **10 Claims**



1. A movably transportable pallet for transporting a film cartridge having a spool end, a film ingress/egress slot and containing a photographic film, said pallet being designed to hold and transport a film cartridge to, from and through a photofinishing process and comprising means for holding the film cartridge in a fixed relationship to said pallet and means for exposing the film ingress/egress slot and spool end of a held cartridge to permit the spool end to be rotated to thrust the photographic film out of said film cartridge and to return the photographic film to said film cartridge.

5,333,034

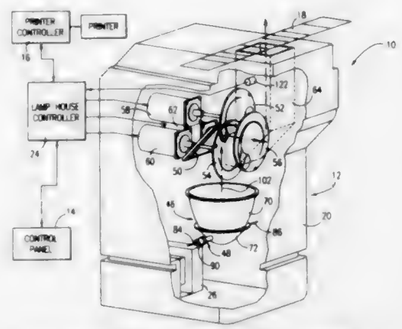
SYSTEM FOR SELECTIVELY CONTROLLING THE SPECTRAL MAKE-UP OF VISIBLE LIGHT FROM A SOURCE THEREOF

Xue M. Gu, Shawnee; David B. Johnson, Leawood; Michael S. Haines, Prairie Village, and Louis P. Armstrong, Kansas City, all of Kans., assignors to Bremson Data Systems, Inc., Lenexa, Kans.

Filed Jan. 31, 1992, Ser. No. 829,779

Int. Cl.[5] G03B *27/32, 27/72*

U.S. Cl. 355—32 **20 Claims**



1. A photographic printing apparatus comprising:

a light source operable for emitting a beam of visible light;

a means for directing said light beam along a light path for interacting with a medium carrying an image and for subsequent impingement on an image sensitive medium for producing a representation of said image;

at least one light filter including a single substrate having filter material operable for filtering a component of the visible spectrum from said beam when placed in the path thereof;

means for positioning and maintaining said light filter in a selected one of a plurality filtering positions relative to said beam path for filtering said spectral component from a portion of said beam without filtering said component from the remaining portion thereof for achieving a desired intensity of said component in said beam,

said filter material including a pair of spaced filter material sections with an open area therebetween, said sections cooperating to filter said component from said beam portion, said open area being devoid of filter material for passage of said remaining beam portion therethrough without filtering of said spectral component therefrom,

said open area presenting an arcuate configuration extending along an arc adjacent the periphery of said light filter,

said open area further presenting a width between said sections and presenting opposed ends with said width gradually narrowing from one of said ends toward the other said ends,

said positioning means including means for selectively shifting said filter and thereby said open area relative to said beam to a selected one of a plurality of filtering positions for achieving a selected intensity of said spectral component the shape of said open area being defined so that said intensity of spectral component in the spectral beam varies substantially linearly with said filtering positions.

5,333,035

EXPOSING METHOD

Naomasa Shiraishi, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 11, 1993, Ser. No. 59,328

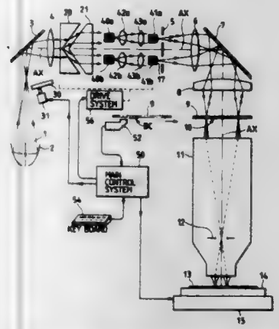
Claims priority, application Japan, May 15, 1992, 4-123313

Int. Cl.[5] G03B *27/32, 27/42*

U.S. Cl. 355—77 **9 Claims**

1. An exposing method utilizing an exposure apparatus provided with an illuminating optical system and a projection optical system, wherein said illuminating optical system is adapted to illuminate a mask from an inclined direction with a predetermined incident angle, said mask being provided with a periodic pattern including opaque portions and transparent portions, in which the width of said opaque portions is larger than that of said transparent portions; and

wherein said projection optical system is adapted form an image of said pattern on an object of exposure on which coated in a photosensitive material subjected to a surface insolubilizing treatment, said exposing method comprising:



a first step of illuminating said periodic pattern with a light beam passing through an area eccentric from and not including the optical axis of said illuminating optical system, on a Fourier transformation plane of said periodic pattern or a conjugate plane thereto within said illuminating optical system; and

a second step of causing a relative movement or a relative vibration between said image of the periodic pattern and said object of exposure, in the axial direction of said projection optical system, during the illumination of said periodic pattern in said first step.

5,333,036

MOUNTING MECHANISM OF PROCESS CARTRIDGE FOR IMAGE FORMING APPARATUS

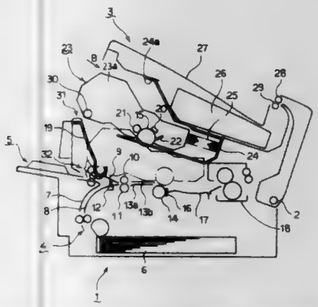
Yuji Koga, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 20, 1993, Ser. No. 63,978

Claims priority, application Japan, Jul. 28, 1992, 4-058640

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **21 Claims**



1. A mounting mechanism for an image forming apparatus having a lower unit and an upper unit hinged to the lower unit, the upper unit and the lower unit defining a sheet transfer path, the mounting mechanism comprising:

a holder adapted to be disposed in the upper unit, said holder including a body shaped to receive a removable cartridge, said body having an open front portion shaped to receive the cartridge, a back portion, side portions extending from said front to said back and a bottom portion with an opening shaped larger than an image recording sheet;

an urging member disposed in said holder and coupled to said back portion facing said front portion adapted to urge the cartridge out of said body; and

at least one guide member adapted to be disposed in the lower unit including a sloped surface adapted to guide the cartridge into the image forming apparatus and a receiving portion adapted to hold the cartridge in operating position within the image forming apparatus.

5,333,037

IMAGE-QUALITY STABILIZER FOR AN ELECTROPHOTOGRAPHIC APPARATUS

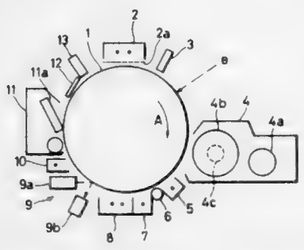
Katsushi Inoue, Yamatokoriyama; Jitsuo Masuda, Yamatotakada; Teruhiko Noguchi, Sakai, and Itaru Kawabata, Kashiba, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1993, Ser. No. 22,740

Claims priority, application Japan, Mar. 26, 1992, 4-039781; Jun. 25, 1992, 4-167653

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—203 **17 Claims**



1. An image-quality stabilizer for an electrophotographic apparatus comprising electrophotographic processing means, said electrophotographic processing means including a photoreceptor and transfer means, said image-quality stabilizer comprising:

optical detecting means for optically detecting an amount of toner deposited on said photoreceptor;

process control means for controlling said electrophotographic processing means so that an amount of toner forming a reference toner image on said photoreceptor is equal to a predetermined reference value;

transfer control means for controlling said transfer means so as to transfer a reference toner image formed after controlling said electrophotographic processing means to a transfer sheet; and

reference-value adjusting means for adjusting the reference value based on a value detected by said optical detecting means after transferring the reference toner image to the transfer sheet.

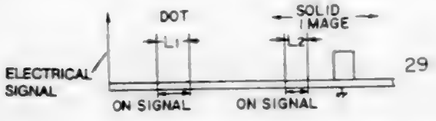
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5,333,038

IMAGE FORMING APPARATUS FOR CONTROLLING A SIZE OR A COLOR TONE OF A TONER IMAGE

Yoshimi Mizoguchi; Hiroshi Ishii; Kiyoshi Kimura; Masakazu Fukuchi, and Makoto Takeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,001
Claims priority, application Japan, Oct. 17, 1991, 3-269594; Jul. 16, 1992, 4-189570; Jul. 24, 1992, 4-198747
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **21 Claims**



1. An apparatus for forming an image on a transfer sheet, comprising:

image carrying means having an imaging surface on which an electrostatic latent image is formed;

charging means for charging in the imaging surface to an electrical potential;

exposing means for exposing the imaging surface with a image exposure beam which is modulated by an image signal so as to form a dot-shaped electrostatic latent image on the imaging surface;

developing means for developing the latent image to form a dot-shaped toner image;

transferring means for transferring the dot-shaped toner image onto the transfer sheet;

fixing means, responsive to a plurality of fixing conditions, for fixing the dot-shaped toner image on the transfer sheet;

first control means for changing at least one of the plurality of fixing conditions to which the fixing means is responsive; and

second control means for controlling at least one of a charging condition of the charging means, an exposure condition of the exposing means and a developing condition of the developing means to change a toner amount in the dot-shaped toner image on the imaging surface in accordance with the change of the at least one of the plurality of fixing conditions by the first control means so that a change in a size of the dot-shaped toner image to be fixed is prevented regardless of the change in the at least one of the plurality of fixing conditions by the first control means.

5,333,039

IMAGE FORMING APPARATUS WITH CONTROL FOR VARIABLY SETTING THE AMOUNT OF BLANK SPACE ON A RECORDING MEDIUM

Seiji Sagara, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1992, Ser. No. 979,060
Claims priority, application Japan, Nov. 25, 1991, 3-334579
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—218 **5 Claims**

1. An image forming apparatus comprising:

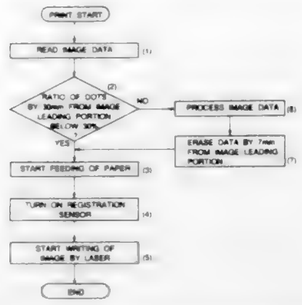
means for forming a visible image onto an image holding material on the basis of input image information;

means for transferring the developed visible image onto a recording medium;

means for fixing the visible image transferred onto the recording medium;

means for specifying a density of the visible image in accordance with the input image information; and

control means for variably setting an amount of blank space to be left on said recording medium, said amount of blank



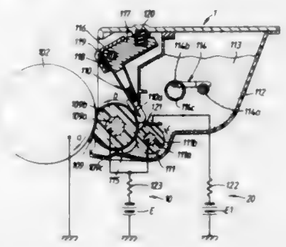
space being set in accordance with the density specified by said specifying means.

5,333,040

DEVELOPING DEVICE HAVING IMPROVED TONER TRANSPORT CAPACITY FOR USE IN AN IMAGE FORMING APPARATUS

Koji Imamiya, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 24, 1992, Ser. No. 950,206
Claims priority, application Japan, Sep. 27, 1991, 3-248991
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—246 **8 Claims**



1. A device for developing a latent image on an image carrier in an image forming apparatus, comprising:

a developing roller positioned adjacent to the image carrier for transferring a developing agent to the image carrier;

a supply roller, positioned adjacent to the developing roller, for supplying the developing agent to the developing roller, the supply roller having a soft foam layer on the surface of the supply roller;

first applying means for applying a specified bias voltage to the supply roller so that the supply roller transfers the developing agent;

a conductive plate positioned in contact with the soft foam layer the supply roller, a contact depth between the soft foam layer of the supply roller, a contact depth between the soft foam layer and the conductive plate being more than 0.5 mm and less than 2.0 mm; and

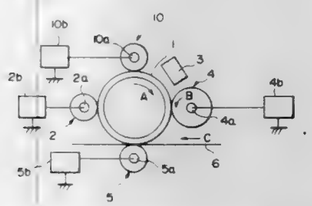
second applying means for applying a voltage to the conductive plate to generate an electric field on the supply roller to adhere the developing agent onto the surface of the soft foam layer, the voltage applied from the second applying means to the conductive plate being set to be the same voltage as or greater than the bias voltage applied from the first applying means to the supply roller.

5,333,041

IMAGE FORMING APPARATUS FOR COLLECTING TONER WITH THE DEVELOPING ROLLER

Katsuyuki Ito; Toshiro Murano; Masato Sakai, and Toru Ishihara, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Japan

Filed Apr. 15, 1993, Ser. No. 47,324
Claims priority, application Japan, May 13, 1992, 4-120253
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—270 **5 Claims**



1. An image forming apparatus comprising:

an image carrier for being formed with an electrostatic latent image;

a charging device for uniformly charging a surface of said image carrier to a necessary voltage;

a photo-writing device for forming an electrostatic latent image on said surface of said image carrier by emitting light onto said surface of said image carrier;

a developing device for making toner adhere to said electrostatic latent image on said surface of said image carrier to form a toner image;

a transferring device for transferring said toner image onto a transfer material; and

a toner uniforming member, disposed on a downstream side of said charging device in a rotary direction of said image carrier and pushed toward said image carrier with a predetermined pressure, for making remaining toner adhere slightly and uniformly to said surface of said image carrier;

said developing device being adapted to contact said image carrier and to be applied with a necessary voltage for collecting the toner remaining on said image carrier;

said toner uniforming member being adapted to eliminate said toner remaining on said image carrier temporarily and to be applied with a necessary voltage for making the toner, which is remained and eliminated temporarily, adhere again to said surface of said image carrier; and

said necessary voltage applied to said toner uniforming member being a negative DC voltage, the negative DC voltage having a magnitude between the voltage of the charging device and necessary voltage of the developing device.

5,333,042

COLD FUSING AGENT

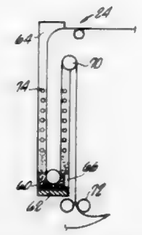
Michael W. Brennan, Oak Park, and Frank J. LaChapelle, Bell Caynon, both of Calif., assignors to Interscience Computer Corporation, Agoura Hills, Calif.

Filed Dec. 14, 1992, Ser. No. 990,134
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—292 **9 Claims**

1. A method for cold fusion of a toner to a medium utilizing a fusing agent, comprising the steps of:

(a) generating representations of characters by transferring toner to selected areas of the medium;

(b) forming a vapor cloud of hydrochlorofluorocarbon as the sole fusing agent; and



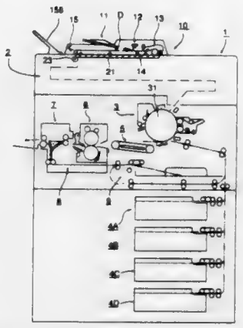
(c) transporting the medium through the vapor cloud to fuse the toner to the medium.

5,333,043

IMAGE FORMING APPARATUS EQUIPPED WITH AUTOMATIC DOCUMENT FEEDER

Yasushi Yamada, Tachikawa, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 42,000
Claims priority, application Japan, Apr. 16, 1992, 4-096712
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—309 **2 Claims**



1. An apparatus for forming an image, the apparatus comprising:

a document stand on which a plurality of documents can be placed;

means for detecting the presence of the documents on said document stand,

means for scanning an original image on each document;

means for forming an image on the basis of the scanned original image form each document, wherein the image is formed on a recording sheet;

means for conveying the documents from said document stand individually to said scanning means so that each document has a leading edge and a trailing edge when conveyed, said conveying means having a passage in which a waiting position is provided so that, when a first document is located at said scanning means, a second document is located at said waiting position, wherein said detecting means is arranged relative to said passage such that, when said second document is located at said waiting position, the trailing edge of said second document has passed said detecting means; and

means for feeding recording sheets to the image forming means, wherein, before the second document is stopped at the waiting position and after a third document is detected by the detecting means, the feeding means starts feeding a

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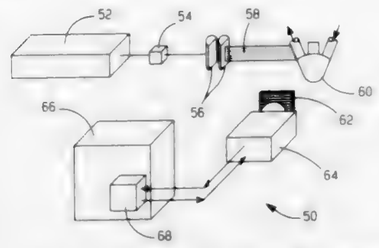
subsequent recording sheet to be used for said third document.

5,333,044

FLUORESCENT IMAGE TRACKING VELOCIMETER

Franklin D. Shaffer, Library, Pa., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 24, 1992, Ser. No. 980,894
Int. Cl.[5] G01P *3/36*; A61B *5/00*; G01F *1/00*
U.S. Cl. 356—28 **17 Claims**



1. Apparatus for determining the flow field of a fluid near a fluid confining wall of a transparent body, said apparatus comprising:

a plurality of neutrally buoyant fluorescent particles suspended in the fluid;

a source of pulsed monochromatic light for directing a monochromatic light beam on the fluid and the confining wall for illuminating said fluorescent particles at predetermined time intervals, wherein said monochromatic light beam has a frequency λ_1 capable of exciting said particles to a pulsed state of fluorescence at a frequency λ_2;

filter means for receiving light scattered from said confining wall having said frequency λ_1 and said fluorescent light having said frequency λ_2 and for removing said scattered light and passing said fluorescent light; and

optical means cooperating with said filter means for receiving pulsed fluorescent light from said excited fluorescing particles having a frequency λ_2 and for tracking displacement of said fluorescent particles in the fluid over time in providing a velocity map of said particles in the fluid adjacent to the confining wall of the body.

5,333,045

PROCESS AND APPARATUS FOR ABSOLUTE INTERFEROMETRIC MEASUREMENT OF PHYSICAL MAGNITUDES UTILIZING A VARIABLE CENTER FREQUENCY PASS-BAND FILTER LOCATED DOWNSTREAM OF A LIGHT BEAM SOURCE

Valeria Gusmeroli, Milan, and Mario Martinelli, San Donato Milanese, both of Italy, assignors to CISE s.p.a., Milan, Italy

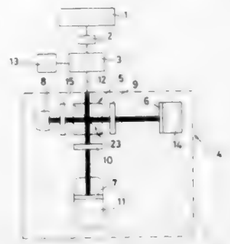
Filed Feb. 21, 1992, Ser. No. 838,886
Claims priority, application Italy, Feb. 27, 1991, MI91-A000509
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **11 Claims**

1. Process for absolute interferometric measurements of physical magnitudes, comprising the steps of:

providing a wide-band light beam from a source,

frequency modulating said light beam by means of a pass-band filtering process located downstream of the light beam source and centered on a frequency that is made to vary with a predetermined law,

phase shifting of components of the light beam as a function of the physical magnitude to be measured, and



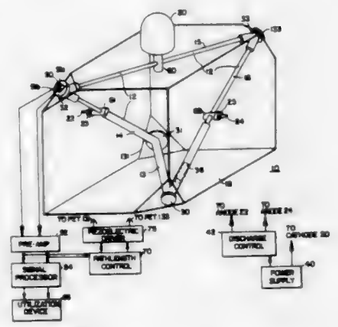
detecting and measuring the phase shift of said components of the light beam.

5,333,046

DIAGONAL PATHLENGTH CONTROL

Irl W. Smith, Newton; Terry A. Dorschner, Newton Centre, and Vincenzo D. Pitruzzella, Maynard, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 27, 1982, Ser. No. 412,457
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **3 Claims**



1. In combination:

a ring resonator comprising four reflectors forming a path having four segments, such path being symmetrical about a plane, a first two of said path segments having a first nominal length and being incident on a first one of the four reflectors, and a second two of said path segments having a second nominal length, the second nominal length being different from the first nominal length, said second two path segments being incident on a second one of the four reflectors, said first and second reflectors being disposed on the symmetry plane of the path; and

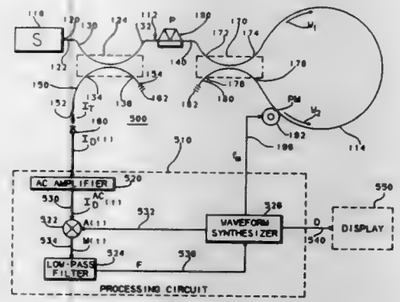
means for controlling the length of the path, such means comprising means for moving the first and second reflectors.

5,333,047

OPTICAL FIBER SENSOR HAVING DIGITAL INTEGRATING DETECTION SYSTEM UTILIZING ELECTRONIC PHASE LOCK LOOP

Keiichiro Toyama, Los Altos, Calif., and Byoung Y. Kim, Seoul, Rep. of Korea, assignors to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

Continuation-in-part of Ser. No. 603,801, Oct. 25, 1990, abandoned. This application Aug. 30, 1991, Ser. No. 753,434
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **17 Claims**



1. A sensing apparatus for producing a sensor output signal, said apparatus comprising:

an interferometer which produces an interferometer output signal responsive to a phase difference between first and second optical signals propagating in said interferometer;

a generator that generates a reference signal; and

a circuit which is connected to receive said reference signal and said interferometer output signal, and which produces a feedback signal in response to said reference signal and said interferometer output signal, said generator receiving said feedback signal and modifying a parameter of said reference signal in response to said feedback signal to null said feedback signal, the amount of modification of said parameter being related to a quantity sensed by said interferometer, said generator generating said sensor output signal, said sensor output signal having a coarse value that varies in response to said modification of said parameter, said generator further responsive to said feedback signal to further alter said sensor output signal by a fine value to cause said sensor output signal to more accurately indicate said quantity sensed by said interferometer.

5,333,048

POLARIZING INTERFEROMETRIC DISPLACEMENT MEASURING ARRANGEMENT

Dieter Michel, and Erwin Spanner, both of Traunstein, Fed. Rep. of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

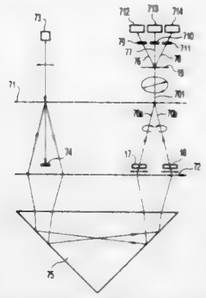
Continuation of Ser. No. 777,747, Oct. 16, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 50,733
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1990, 4033013
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—351 **11 Claims**

1. A polarizing optical arrangement for generating phase-shifted signals in interferometric measuring instruments comprising:

means for generating a linearly polarized signal beam cluster from interfering partial beam clusters, said polarized signal beam cluster having an azimuth of oscillation dependent upon the mutual phase relationship of said interfering partial beam clusters;

a splitter grating for splitting said polarized signal beam cluster to generate at least two beam clusters; and

means for detecting said generated beam clusters created by said splitter grating to create detected signals, said detected signals having a mutual phase relationship dependent upon the orientation of analyzers located between said splitter grating and said means for detecting in the path of said generated beam clusters.

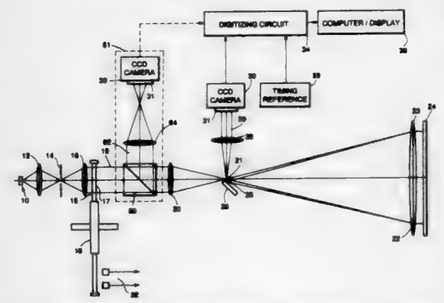


5,333,049

APPARATUS AND METHOD FOR INTERFEROMETRICALLY MEASURING THE THICKNESS OF THIN FILMS USING FULL APERTURE IRRADIATION

Anthony M. Ledger, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 6, 1991, Ser. No. 804,872
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—355 **42 Claims**



1. An apparatus for measuring the thickness of a layer of material having front and rear surfaces, said material having the ability to transmit radiation, said apparatus comprising:

means for irradiating a full aperture area of the layer with radiation so that reflected radiation from said front and rear surfaces has characteristics corresponding to the thickness of the layer in the area;

means for receiving the reflected radiation and for detecting said characteristics; and

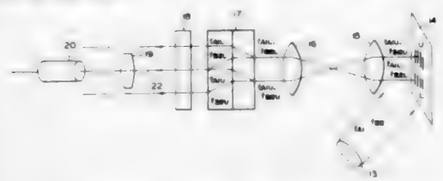
means for comparing said characteristics of the received radiation with a set of reference characteristics corresponding to known thicknesses to provide an output corresponding to the thickness of the layer in the area.

5,333,050

MEASURING METHOD AND APPARATUS FOR MEAUSRING THE POSITIONAL RELATIONSHIP OF FIRST AND SECOND GRATINGS

Noriyuki Nose, Machida; Kenji Saitoh, Yokohama; Koichi Sentoku, Atsugi, and Minoru Yoshii, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1991, Ser. No. 675,277
Claims priority, application Japan, Mar. 27, 1990, 2-080002
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—356 16 Claims



1. An apparatus for measuring positional relationship between first and second diffraction gratings, said apparatus comprising:

light producing means for producing first and second light beams;

a light projecting optical system for projecting a first portion of the first light beam to the first diffraction grating and for projecting a first portion of the second light beam to the second diffraction grating;

a light receiving optical system for causing a first diffraction light beam, diffracted by the first diffraction grating, and a second portion of the second light beam to interfere with each other to produce a first interference light beam, and also for causing a second diffraction light beam, diffracted by the second diffraction grating, and a second portion of the first light beam to interfere with each other to produce a second interference light beam, said light receiving optical system comprising a light separating element for deflecting at least one of the first and second interference light beams, at a position substantially optically conjugate with at least one of the first and second diffraction gratings, to separate the one of the first and second interference light beams from the other;

a first light receiving element for detecting the first interference light beam and for producing a first output signal;

a second light receiving element for detecting the second interference light beam and for producing a second output signal; and

signal processing means for detecting a phase difference between the first and second output signals to determine the positional relationship between the first and second diffraction gratings.

5,333,051

Patent Not Issued For This Number

5,333,052

METHOD AND APPARATUS FOR AUTOMATIC OPTICAL INSPECTION

Moshe Finarov, Rehovot, Israel, assignor to Orbotech Ltd., Yanne, Israel

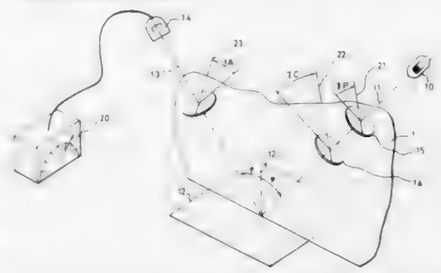
Filed Nov. 25, 1991, Ser. No. 796,954
Claims priority, application Israel, Nov. 27, 1990, 96483
Int. Cl.[5] G01N *21/21*
U.S. Cl. 356—369 36 Claims

1. A method of optically inspecting a surface of an article particularly a thin film multilayer structure including at least two materials, comprising the steps of:

illuminating the article with light from a light source, collecting the light leaving the article using a light sensor, forming an image responsive to light collected by the light sensor, and analyzing said images for defects, the improvement wherein the light source is a source of intense polychromatic light of wide spectral range; and wherein the method further comprises the following additional steps:

disposing a polarizer device in the optical axis between the source and the article, to linearly polarize the incident light to have a P-plane component parallel to the plane of incidence of said light, and an S-plane component perpendicular to the P-plane;

disposing an analyzer device in the optical axis between the article and the sensor;



disposing a phase compensator device in one of said optical axes for compensating the phase shift between the P-plane component and the S-plane component caused by one of said materials; and

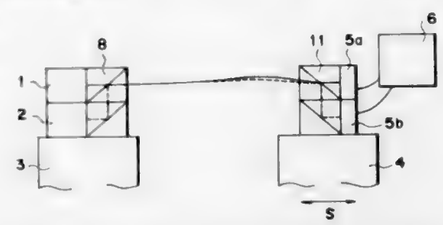
rotating at least two of said polarizer, analyzer and phase compensator devices around the corresponding optical axes to obtain the maximum contrast between the two materials in an image of said article formed responsive to light collected by said sensor.

5,333,053

APPARATUS FOR MEASURING STRAIGHTNESS

Akira Ishida, Tsuchiura, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,825
Claims priority, application Japan, Apr. 26, 1991, 3-096592
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—400 3 Claims



1. An apparatus for measuring straightness, comprising:

light source means for emitting first light of a wavelength λ_1 and second light of a different wavelength λ_2;

dividing means for dividing each of said first light and said second light into two portions;

phase inverting means for inverting the phase of deviation in a first direction of one of said two portions of each of said first light and said second light relative to a predetermined direction, inverting the phase of deviation in a second direction substantially orthogonal to said first direction of the other of said two portions of each of said first light and said second light relative to said predetermined direction, and emitting the two portions of each of said first light and said second light toward a movable stage;

an optical system for mounting on the movable stage, and including light position detecting means for receiving the emitted first light and second light and outputting a value D_1 corresponding substantially to a centroid position of said two portions of said first light received at said light position detecting means and a value D_2 corresponding substantially to a centroid position of said two portions of said second light received at said light position detecting means; and

calculating means for calculating an amount of deviation d_s of the stage from a state of straightness in accordance with the output values D_1 and D_2 from said light position detecting means and the following equation:

$$d_s = D_2 - K(D_2 - D_1),$$

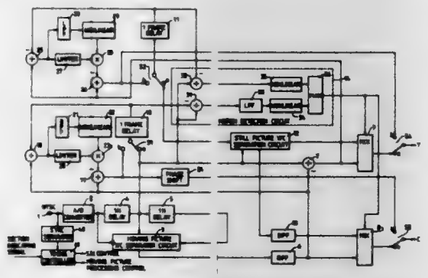
where $K=(n_2-1)/(n_2-n_1)$, and n_1 and n_2 are the respective refractive indices, for said first light and said second light, of a medium through which said first light and said second light travel to said light position detecting means.

5,333,054

APPARATUS FOR REDUCING NOISE IN A VIDEO SIGNAL BY PROCESSING A LUMINANCE AND CHROMINANCE COMPONENT

Seiichi Tanaka, and Masahiko Mawatari, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 9, 1992, Ser. No. 987,829
Claims priority, application Japan, Dec. 10, 1991, 3-326019
Int. Cl.[5] H04N *9/78*
U.S. Cl. 348—666 9 Claims



1. A video signal processing apparatus comprising:

means for receiving a composite video signal;

first separation means for separating a first luminance signal and a first chrominance signal in response to a correlation among n frames (n is a positive integer) of the composite video signal;

second separation means for separating a second luminance signal and a second chrominance signal in response to an in-frame correlation of the composite video signal;

means for detecting a motion of the composite video signal in response to a non-correlation among n frames (m is a positive integer) of the composite video signal, and to provide a motion detection signal therefrom;

first mixing means for mixing the first and second luminance signals at a mixing ratio responsive to said motion detection signal so as to provide a third luminance signal therefrom;

second mixing means for mixing said first and second chrominance signals at a mixing ratio responsive to the motion detection signal so as to provide a third chrominance signal therefrom;

means for reducing noise in the second luminance signal and the second chrominance signal in response to the n-frame correlation, and outputting signals as a fourth luminance signal and a fourth chrominance signal; and

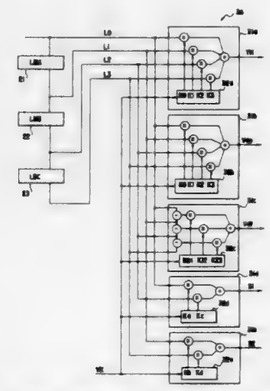
a selection means for selectively outputting the third luminance signal and the third chrominance signal or the fourth luminance signal and the fourth chrominance signal.

5,333,055

VIDEO CAMERA CIRCUIT FOR PROCESSING IMAGE SIGNALS FROM AN IMAGE PICKUP DEVICE HAVING A MOSAIC COLOR FILTER

Haruhiko Murata, Moriguchi; Yukio Mori, Yawata; Akihiro Maenaka, Moriguchi; Masao Takuma, Toyonaka; Kiyotada Kawakami, Osaka; Toru Yamamoto, Daito, and Toru Asaeda, Ikoma, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 23, 1993, Ser. No. 21,473
Claims priority, application Japan, Feb. 24, 1992, 4-036076; Feb. 27, 1992, 4-040802; Mar. 26, 1992, 4-068361
Int. Cl.[5] H04N *9/04, 3/223*
U.S. Cl. 348—239 11 Claims



3. A video camera circuit for producing a video signal at a predetermined vertical position in an image area by vertical interpolation based on a CCD output signal obtained by converting an output from a solid image pickup device (CCD) to a digital signal, the video camera circuit comprising:

first, second and third line memory means connected in series with an output terminal for the CCD output signal, and

vertical interpolation filter means for receiving the CCD output signal and output signals from the respective first, second and third line memory means as output signals of four lines and effecting vertical interpolation at a vertical position between the middle two of the four lines based on the output signals of the four lines.

5,333,056

TELEVISION SIGNAL CONVERTER PROVIDING SEPARATE STEREO SOUND OUTPUTS

Roger A. Powell, 1740 Hollins Rd., Bensalem, Pa. 19020

Filed Apr. 9, 1991, Ser. No. 682,549
Int. Cl.[5] H04N *5/60*
U.S. Cl. 348—758 6 Claims

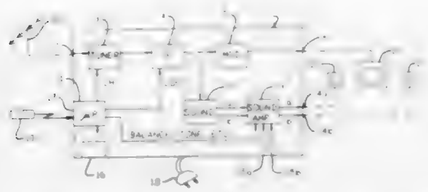
1. A television signal converter box for processing a television signal having a video portion and a stereo sound portion in standard broadcast frequency and format, comprising;

an external input connection for receiving said television signal coupled to a tuner, said tuner receiving said television signal and receiving channel selection information, said tuner transmitting an intermediate frequency signal to an intermediate frequency amplifier, said intermediate frequency amplifier amplifying said intermediate frequency signal and transmitting said signal to a modulator, said modulator converting said amplified intermediate

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frequency signal to a standard television format signal on a predetermined frequency and transmitting said standard television format signal to an external video output terminal, said standard television format signal at said external video output terminal being suitable for direct connection as input to a standard television set having a video display tube and monaural sound capability,

a sound section coupled to said intermediate frequency amplifier, said sound section separating said stereo sound portion into a plurality of sound signals on a plurality of electrical conductors, said sound section amplifying and transmitting said plurality of sound signals to a plurality of



external sound output connections, said sound section providing sufficient amplification of said plurality of sound signals to allow direct connection and acceptable performance of commercially-available sound speakers to said plurality of external sound output connections,

an external box enclosing said tuner, said intermediate frequency amplifier, said modulator, and said sound section, said external box providing structural mounting support for said external input connection, said external video output terminal, and said plurality of external sound output connections, said external box being separate from said standard television set.

5,333,057

PHOTOCOPIER

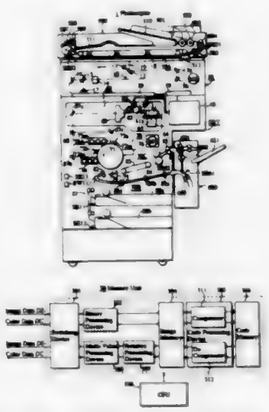
Takeshi Morikawa, Toyokawa, and Masahito Niikawa, Okazaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1993, Ser. No. 114,457

Claims priority, application Japan, Aug. 31, 1992, 4-232331

Int. Cl.[5] H04N *1/21*

U.S. Cl. 358—296 **11 Claims**



1. An image forming apparatus for reading an image on at least one document to form an image on a recording medium, comprising:

image reading means for reading the images on the documents to obtain image data;

storing means for storing a plurality of said image data;

judging means for judging whether said storing means is in a memory-full condition where it has stored the image data to its full;

first control means for controlling readout of said plurality of said image data stored in said storing means;

second control means for controlling readout of said plurality of said image data stored in said storing means in a different way from said first control means;

selecting means for selecting one of said first and said second control means in accordance with a judging result of said judging means; and

image forming means for forming the images corresponding to the image data read out by the selected control means on the recording medium.

5,333,058

YAW MOTION CONTROL DEVICE

Shuji Shiraishi, and Hironobu Kiryu, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

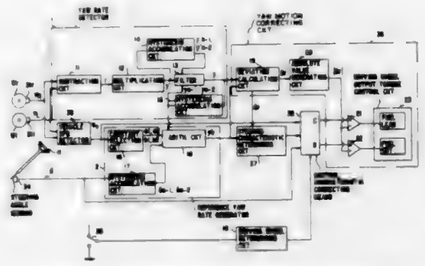
Division of Ser. No. 403,068, Sep. 5, 1989, Pat. No. 5,001,636.

This application Oct. 9, 1990, Ser. No. 594,906

Claims priority, application Japan, Mar. 9, 1987, 62-053501; Mar. 9, 1987, 62-053502; Mar. 9, 1987, 62-053503; Oct. 3, 1987, 62-250167; Oct. 3, 1987, 62-250168; Oct. 3, 1987, 62-250169

Int. Cl.[5] B60T *8/32*

U.S. Cl. 364—424.05 **8 Claims**



1. A sensor for detecting a dynamic vehicle condition corresponding to yaw motion, comprising:

a detecting means for detecting wheel speed of left and right trailing wheels of the vehicle;

a calculating means for receiving the wheel speeds from said detecting means and calculating the difference therebetween; and

a filter means, receiving the output of said calculating means, for eliminating signal noise caused by vibration of vehicle wheels and suspension.

5,333,059

ELECTROSTATIC IMAGING APPARATUS AND FACSIMILE APPARATUS EMPLOYING TONER WITH LOW ALDEHYDE CONTENT

Yoshihiko Hyosu, Machida; Seiichi Takagi, Yokohama; Hiroyuki Suematsu, Yokohama; Manabu Ohno, Yokohama; Tetsuhito Kuwashima, Yokohama; Eiichi Imai, Narashino, and Yoshinobu Nagai, Kobe, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

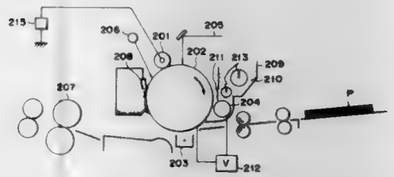
Division of Ser. No. 582,328, Sep. 14, 1990, Pat. No. 5,126,224.

This application Mar. 25, 1992, Ser. No. 857,584

Claims priority, application Japan, Sep. 14, 1989, 1-239298; Sep. 14, 1989, 1-239299

Int. Cl.[5] H04N *1/23;* **G03G** *9/083, 9/087*

U.S. Cl. 358—300 **91 Claims**



1. An apparatus unit comprising

an electrostatically chargeable member for supporting thereon an electrostatic image,

a means for electrostatically charging the chargeable member, and

a developing means for developing an electrostatic image supported on said chargeable member; wherein

said developing means has a toner for developing an electrostatic image, comprising a styrene type binder resin and a coloring agent; wherein an aldehyde is contained in said toner in an amount of not more than 0.005% by weight based on a weight of the toner, and

said charging means and developing means are integrally held together with said chargeable member to form a unit so that a single unit capable of being freely mounted on and detected from an apparatus main body is formed.

5,333,060

VIDEO SIGNAL PROCESSING CIRCUIT OF A VIDEO SIGNAL RECORDER/REPRODUCER

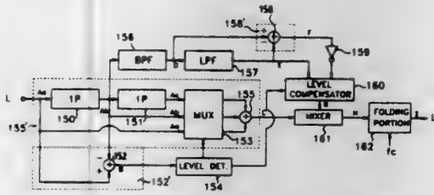
Jong-kyung Yun, Kyunggi-do, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 21, 1991, Ser. No. 780,000

Claims priority, application Rep. of Korea, Nov. 14, 1990, 90-18408; Sep. 10, 1991, 91-15774

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—310 **29 Claims**



10. A luminance signal processing circuit, comprising:

level detecting means for generating control signals indicative of detected levels of input luminance signals;

first low pass filtering means for low pass filtering said input luminance signals;

band pass filtering means for band pass filtering in response to said input luminance signals;

first means for high pass filtering being responsive to n output of said band pass filtering means;

second means or low pass filtering being responsive to an output of said band pass filtering means; level compensating means, responsive to outputs of said second low pass filtering means and said first high pass filtering means, for level compensating in dependence upon said control signals; and

means for mixing being responsive to outputs of said first low pass filtering means and said level compensating means.

5,333,061

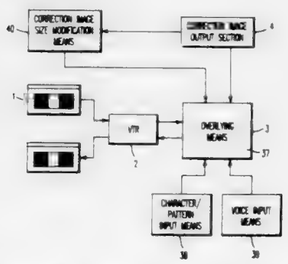
METHOD AND APPARATUS FOR PRODUCING AN INSTRUCTIONAL VIDEO ANALYZING A GOLF SWING

Shinji Nakashima, Kashihara, and Muneomi Katayama, Tokyo, both of Japan, assignors to Midori Katayama, Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,093

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **20 Claims**



1. An apparatus for producing an instructional video from a videotape of a golfer swinging a golf club, comprising:

means for converting video images from a videotape of a golfer's swing into a plurality of still images representing predetermined phases of the golfer's swing;

a display screen for displaying said still images;

a correction picture output section for outputting a video image corresponding to each of said still images, each said correction picture comprising an arrangement of lines, said arrangement of lines corresponding to geometric relationships between at least two reference points, wherein said at least two reference points include a first body part of said golfer and at least one of: a second body part of the golfer which is not immediately adjacent said first body part, and a part of the golf club which is not immediately adjacent said first body part;

and further wherein said arrangement of lines includes one of: a straight line directly connecting said two reference points, and an ellipse having an axis defined by a spacing between aid two reference points;

overlying means for overlying each of said still images over its corresponding correction picture to produce a resultant picture; and

means for recording said resultant picture;

wherein one of said still images is a side view of the golfer addressing a golf ball, with the corresponding correction picture including a line directly connecting a shoulder position of the golfer with a club head position.

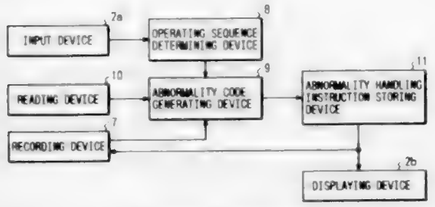
VOL 1164 ISS 4 JL 26 1994 UMI

5,333,062

APPARATUS FOR INSTRUCTING THE HANDLING OF ABNORMALITIES AND MISOPERATIONS IN A FACSIMILE DEVICE

Kenji Hara; Mutsuhiro Karube; Kazuhiro Iihara; Shinichiro Nagoya, and Akihito Yamauchi, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 757,029
Claims priority, application Japan, Sep. 10, 1990, 2-237144
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—437 **2 Claims**



1. An abnormality-handling instructing apparatus for use in facsimile, comprising:

abnormality information memory means for storing abnormality codes indicative abnormalities and operator's misoperations together with abnormality information in the form of an image signal and in the form of a voice signal, said abnormality information being sent to a transmitter side;

transmitter-condition determining means for determining whether the transmitter is in an automatic mode or in a manual mode;

means for generating abnormality codes in accordance with an abnormality or an operator's misoperation when abnormality or operator's misoperation of the facsimile occurs; and

control means for reading out said abnormality information in the form of the image signal according to the abnormality code if the transmitter is in the automatic mode, and for reading out said abnormality information in the form of the voice signal according to the abnormality code if the transmitter is in the manual mode, said image signal and said voice signal read from said memory means being sent to the transmitter to notify the occurrence of abnormality at receiving end.

5,333,063

IMAGE PROCESSING SYSTEM AND DATA MODULATION/DEMODULATION METHOD THEREOF

Jae Chern Yoo, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 11, 1991, Ser. No. 683,712
Claims priority, application Rep. of Korea, Sep. 29, 1990, 90-15853
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—448 **30 Claims**

1. An image processing system, comprising:

a transmitter comprising:

an image processing circuit for providing input image data to a single information channel,

an analog-to-digital converter connected to an output stage of said image processing circuit,

data compression means connected to an output stage of said analog-to-digital converter, for generating compressed data by compressing a level of the input image data to an audio data level,

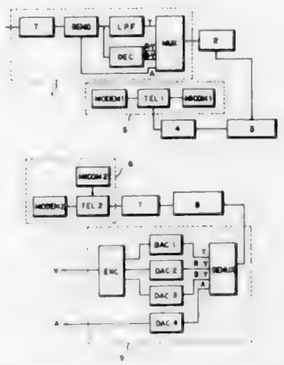
a first memory connected to an output stage of said data compression means, for storing the compressed data, and

a transmitting circuit connected to an output stage of said first memory,

for providing transmitted data by transmitting said compressed data through a conventional communication network; and

a receiver comprising:

a receiving circuit for receiving said transmitted data from said transmitting circuit in said transmitter,



a second memory connected to an output stage of said receiving circuit, for storing said transmitted data,

data reconstruction means connected to an output stage of said second memory, for providing reconstructed data by reconstructing original image data from said transmitted data, and

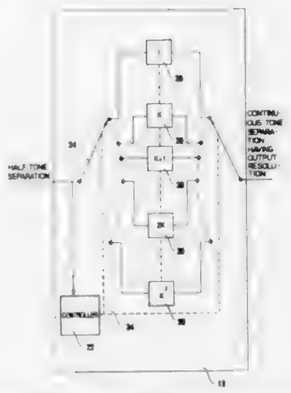
a data processing circuit connected to said data reconstruction means, for displaying said reconstructed data on a screen.

5,333,064

APPARATUS & METHOD FOR DESCREENING

Daniel Seidner, Herzliya, and Dan Eylon, Tel Aviv, both of Israel, assignors to Scitex Corporation, Ltd., Herzliya, Israel

Filed Aug. 27, 1991, Ser. No. 750,515
Claims priority, application Israel, Apr. 30, 1991, 98004
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **61 Claims**



1. Apparatus for descreening and for performing resolution changes on a half-tone image in order to produce a continuous tone image comprising:

filter means for removing screen information from said half-tone image comprising a plurality of different filters each providing interpolation and screen removal functions; and

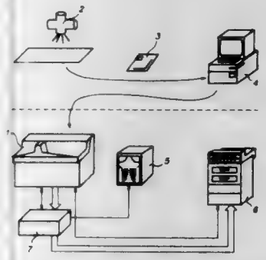
a controller for selecting per pixel of said continuous tone image and as a function of desired output resolution, one of said filters for operation on a neighborhood of said pixel.

5,333,065

SIGNAL TO DENSITY MAPPING WITH CONTROLLED CONTRAST

Pieter Vuylsteke, Antwerpen, Belgium, assignor to AGFA-Gevaert, Mortsel, Belgium

Filed Nov. 17, 1992, Ser. No. 978,091
Claims priority, application European Pat. Off., Dec. 9, 1991, 91203209.1
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—456 **14 Claims**



1. An image reproducing method comprising the steps of:

(a) scanning a stimulable phosphor screen storing a radiation image with stimulating rays;

(b) detecting the light emitted upon simulation;

(c) converting said detected emitted light into a digital signal representation;

(d) creating a gradation curve for mapping the signal values of said digital signal representation onto corresponding density values, said gradation curve being created by the steps of:

(i) defining a canonical monotonical non-constant function Y(x) in an orthogonal coordinate system (x,y) between arbitrary values x_0 and x_1 and y_{min} and y_{max};

(ii) determining minimum and maximum density values D_{smin} and D_{smax};

(iii) determining minimum and maximum signal values S_{min} and S_{max} constituting a range wherein the gradation is defined by the canonical form and outside of which signal values will be mapped onto D_{smin} or D_{smax};

(iv) defining the gradation curve as

$$D(s)=D_{smin}+(Y(x(s))-y_{min})\cdot(D_{smax}-D_{smin})/(y_{max}-y_{min})$$

wherein D(s) is the density in the reproduction as a function of the signal value s

$x(s)=x_0$ if s is smaller than or equal to S_{min}

$x(s)=x_0+(s-S_{min})\cdot(x_1-x_0)/(S_{max}-S_{min})$ if s is comprised between S_{min} and S_{max} and

$x(s)=x_1$ if s is larger than or equal to S_{max}

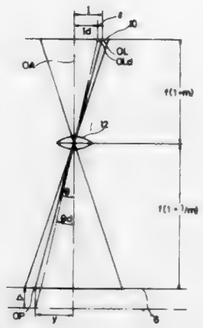
(e) recording a hard copy image reproduction of said digital signal on a recording material utilizing said gradation curve to control density values in said hard copy image.

5,333,066

IMAGE READING APPARATUS

Takeshi Sugata, Hikone, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Sep. 7, 1993, Ser. No. 117,898
Claims priority, application Japan, Sep. 11, 1992, 4-243411
Int. Cl.[5] H04N *7/167*
U.S. Cl. 358—471 **20 Claims**



1. An image reading apparatus for reading image information by scanning an original divided into a plurality of regions in a main scanning direction, comprising:

an original retainer for retaining said original;

a light source for irradiating said original with light;

a plurality of solid-state imaging devices corresponding to pixels and arranged in said main scanning direction; and

a plurality of lenses arranged in said main scanning direction corresponding to said plurality of regions, for forming an image of the original on said solid-state imaging devices, and with a focal length f of said lens satisfying the following formula, that is,

$$f\geq(L_n\times y-n)\times P\times L_n\times\Delta/\{n\times(1+P\times L_n)\}$$

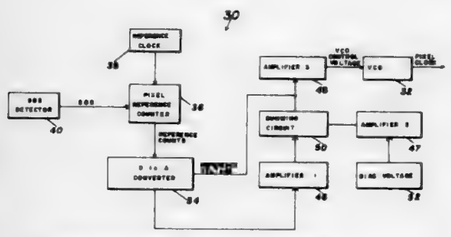
where L_n is the number of lines to be read, y is a length from an optic axis to the end of said region, P is a pitch between said solid-state imaging devices, n is allowable displacement in pixel number on said solid-state imaging devices, and Δ is displacement of said original in the direction of the optic axis.

5,333,067

APPARATUS AND METHOD FOR VELOCITY COMPENSATION OF THE SCANNING SPOT IN NON-LINEAR SCANNING SYSTEMS

Yee-Ming Chung, South Pasadena, Calif., assignor to Olive Tree Technology, Inc., Calif.

Filed Oct. 29, 1991, Ser. No. 784,567
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—474 **20 Claims**



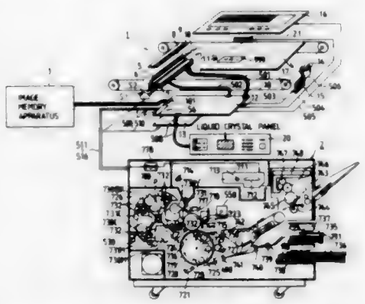
13. An optical scanning device comprising:

a light source generating a light beam;

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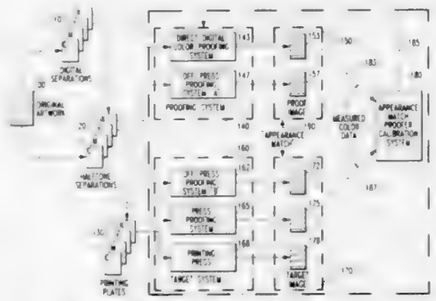
means for directing said light beam along a scan line on a surface;
pixel location reference means for determining the location of a pixel on said scan line, and for generating an electrical pixel location signal representative of the location of said pixel;
amplifier means responsive to said pixel location signal for amplifying said pixel location signal and generating a timing control signal;
feedback means responsive to said timing control signal for providing a reference voltage signal as an input signal to said amplifier means, said reference voltage signal adapted for continuously altering the gain of said amplifier means;
voltage controlled oscillator means responsive to said timing control signal for generating a pixel clock timing signal having a frequency that varies in a predetermined relationship with said timing control signal; and,
control means responsive to said pixel clock timing signal and a pixel data pulse signal for controlling said light beam to produce a pixel on said scan line.

5,333,068
IMAGE PROCESSING SYSTEM
Masanori Sakai, Yokohama; Saburo Nakazato, Tokyo; Takayuki Komine, Fussa; Norio Nakajima, Hachioji; Tetsuya Ohnishi, Yokohama; Toshio Honma, Kawasaki; Yasutomo Suzuki, Yokohama, and Toshihiro Kadowaki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 767,550, Sep. 27, 1991, abandoned, which is a continuation of Ser. No. 409,950, Sep. 20, 1989, abandoned. This application Aug. 24, 1993, Ser. No. 111,273
Claims priority, application Japan, Sep. 20, 1988, 63-236997
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—500 **20 Claims**



1. A color image processing system comprising:
an image pickup apparatus comprising:
image pickup means for converting an object optical image into an image signal and for recording the image signal onto an exchangeable storage medium; and
reproducing output means for reading out the image signal recorded on the exchangeable storage medium by said image pickup means and for outputting the recorded image signal to an external terminal; and
a color image forming apparatus that is separated from said image pickup apparatus, comprising:
indicating means for outputting a reproduction indicating signal to said image pickup apparatus to indicate the reproduction of the image signal recorded on the exchangeable storage medium by said reproducing output means;
storage means for storing the recorded image signal from the external terminal read out by said reproducing output means in response to the indication of said indicating means; and
applying means for reading the image signal stored in said storage means and for applying the read image signal to color image forming means.

5,333,069
TECHNIQUE FOR USE IN CONJUNCTION WITH AN IMAGING SYSTEM FOR PROVIDING AN APPEARANCE MATCH BETWEEN TWO IMAGES AND FOR CALIBRATING THE SYSTEM THERETO
John P. Spence, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 834,076, Feb. 10, 1992. This application Jun. 26, 1992, Ser. No. 905,598
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—517 **31 Claims**

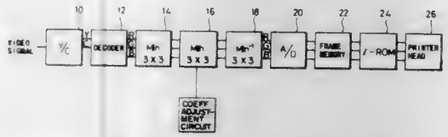


1. In imaging apparatus having first and second different imaging systems, wherein said first and second imaging systems generate respective first and second image depictions of a common original image, wherein said first imaging system comprises either a press or a first proofing system and said first image depiction comprises a target image; and said second imaging system comprises a second proofing system and said second image depiction comprises a proof image, a method for obtaining an appearance match between said first and second image depictions and for generating operational settings for said second imaging system so as to calibrate a response of the second imaging system to a response of the first imaging system, the method comprising the steps of:
obtaining data values for corresponding portions of said first and second image depictions in a pre-determined manner that substantially parallels color perception of a viewer; and
determining, in response to said data values and through a pre-defined model of said second imaging system and pre-determined matching principles, operational settings for said second imaging system to produce an image, through said second imaging system, that is an appearance match to said first image depiction, wherein said matching principles comprise a plurality of pre-defined rules that collectively define an appearance match between corresponding image depictions produced by said first and second imaging systems in response to a common source image applied to both systems.

5,333,070
APPARATUS FOR ADJUSTING HUE, CHROMINANCE, AND LUMINANCE OF A VIDEO SIGNAL USING MATRIX CIRCUITS
Koji Ichikawa, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 25, 1992, Ser. No. 857,262
Claims priority, application Japan, Apr. 5, 1991, 3-072708
Int. Cl.[5] H04N *9/64*
U.S. Cl. 358—518 **4 Claims**

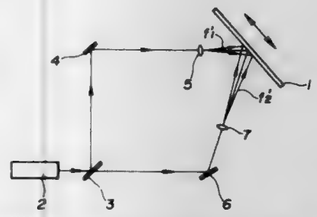
1. An apparatus for processing a video signal for color correction comprising:

a first color-correcting matrix circuit for converting a signal of an RGB coordinate system based on an input video signal into a signal of an SfY coordinate system comprising a skin color S, a green color f, and a luminance Y;
a second color-correcting matrix circuit for correcting said converted signal so that the colors S and f in said SfY coordinate system provide desired hue, chrominance, and luminance, respectively,



said second color-correcting matrix circuit including coefficient adjusting means for altering matrix coefficients in said second color-correcting matrix circuit during correction of said converted signal; and
a third color-correcting matrix circuit for converting said corrected converted signal into a signal of said RGB coordinate system.

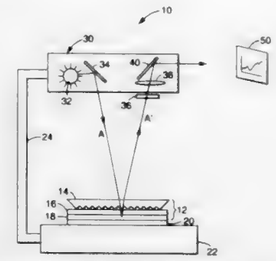
5,333,071
HOLOGRAPHIC DISPLAY APPARATUS
Tomohisa Ishikawa; Yoshinori Akamatsu, both of Mie; Junichi Fukano, and Masayuki Hori, both of Kanagawa, all of Japan, assignors to Central Glass Co., Ltd., Ube and Nissan Motor Co., Ltd., Yokohama, both of Japan
Filed Dec. 23, 1991, Ser. No. 811,437
Claims priority, application Japan, Dec. 28, 1990, 2-409311
Int. Cl.[5] G02B *5/32;* **G03H** *1/28;* **B60Q** *1/44*
U.S. Cl. 359—15 **9 Claims**



1. A holographic display apparatus, comprising:
a holographic sheet of a transparent type including a plurality of holograms therein, said holograms being formed from a first lens at a first distance f1 (mm) from said holographic sheet and a second lens at a second distance f2 (mm) from said holographic sheet which are in a relationship such that $f1 \leqq f2/28+50$ and $f1 < f2$; and
a luminous source which illuminates said holograms which form an image recorded in said holographic sheet.

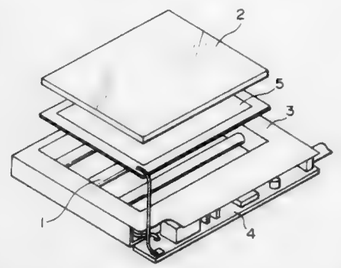
5,333,072
REFLECTIVE LIQUID CRYSTAL DISPLAY OVERHEAD PROJECTION SYSTEM USING A REFLECTIVE LINEAR POLARIZER AND A FRESNEL LENS
Stephen J. Willett, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 31, 1992, Ser. No. 999,089
Int. Cl.[5] G02F *1/1335*
U.S. Cl. 359—41 **6 Claims**

1. An optical stack for use in a reflective liquid crystal display projection system comprising a reflective micro-prism array MacNeille polarizer, a phase modulating liquid crystal display provided on the polarizer, and a transmissive fresnel lens provided on the liquid crystal display, wherein unpolarized light rays directed toward the fresnel lens pass through the fresnel lens and the liquid crystal display, are then reflected and polarized by the polarizer, pass back through the liquid



crystal display where the phase of the light rays is modulated, and pass back through the fresnel lens.

5,333,073
BACKLIGHT DEVICE AND LIQUID CRYSTAL DISPLAY HAVING CONDUCTIVE FILM ON ELECTROMAGNETIC SHIELD OR DIFFUSER BETWEEN FLUORESCENT TUBES AND DISPLAY
Mitsuhiro Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Dec. 29, 1992, Ser. No. 997,939
Claims priority, application Japan, Jan. 9, 1992, 4-001965
Int. Cl.[5] G02F *1/1335, 1/1333*
U.S. Cl. 359—50 **7 Claims**



1. A backlight device comprising a plurality of fluorescent lamps arranged in parallel relationship to one another on a back side of a liquid crystal display panel as a backlight of said display panel, an electromagnetic shielding means mounted between the fluorescent lamps and the display panel, two transparent conductive films, one on each side of the electromagnetic shielding means, and a light diffusion plate between the display panel and the electromagnetic shielding means for diffusing the light irradiated from said fluorescent lamps to the liquid crystal display panel.

5,333,074
DISPLAY DEVICE COMPRISING LIQUID CRYSTALLINE MATERIAL LOCALLY FORMED INTO A POLYMER NETWORK
Rifat A. M. Hikmet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 4, 1992, Ser. No. 987,912
Claims priority, application European Pat. Off., Dec. 9, 1991, 91203208.3
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—51 **5 Claims**

1. A display device with a display cell which comprises a substrate which is formed by two oppositely located plates whose facing sides are provided with electrode layers to which

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an orientation layer is applied and a sealing material which is provided between the end portions of the plates, a liquid crystalline material being provided in the space between the plates and the sealing material, characterized in that the liquid crys-



talline material comprises polymerizable liquid crystalline molecules and in that the liquid crystalline material is locally formed into a polymer network in accordance with a desired pattern.

5,333,075

FERROELECTRIC LIQUID CRYSTAL MIXTURES CONTAINING LIPOHILIZING, LIPOPHILIC OR AMPHIPHILIC COMPOUNDS FOR ELIMINATING IONIC IMPURITIES

Takamasa Harada, Chiba, Japan; Claus Escher, Hofheim, Fed. Rep. of Germany; Gerd Illian, Tokyo, Japan; Anke Kaltbeitzel, Rüsselsheim, and Norbert Rösch, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main

Filed Apr. 15, 1993, Ser. No. 47,688
Claims priority, application Japan, Apr. 20, 1992, 4-144734
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—100 **6 Claims**

1. Ferroelectric liquid crystal mixtures having a spontaneous polarization of $Ps > 20nC.cm^{-2}$ and a natural helical pitch of less than one half of the cell thickness, and comprising at least one lipophilizing, lipophilic and/or amphiphilic compound.

5,333,076

STABILIZED IMAGING SYSTEM

Ralph Wight, Northport, N.Y., assignor to Fairchild Weston Systems, Inc., Syosset, N.Y.

Filed Jan. 21, 1988, Ser. No. 147,358
Int. Cl.[5] G02B *27/64, 23/08, 5/04*
U.S. Cl. 359—556 **25 Claims**



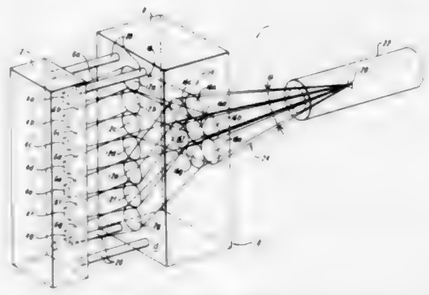
1. A reconnaissance system, for mounting in an air vehicle, comprising:
an optical train,
positioned to define a fixed focal plane
and comprising at least one reflector rotatable to change the external solid angle imaged onto said focal plane;
sensors connected to sense multiple parameters corresponding to attitude components of said air vehicle;
an electro-optic imager, movable within the focal plane defined by said lens; and
a controller, actuator and linkage which are connected to move said imager within said focal plane
in response to outputs of said sensors, to compensate for motions of the air vehicle in at least one rotational axis,
and also to compensate for image orientation changes due to rotation of said rotatable reflector,
wherein said rotatable reflector is mounted to rotate about an axis which is substantially parallel to the roll axis of the air vehicle, and wherein said imager is moved in accordance with pitch axis motions of the air vehicle.

5,333,077

METHOD AND APPARATUS FOR EFFICIENT CONCENTRATION OF LIGHT FROM LASER DIODE ARRAYS

James R. Legar, 162 Flavell Rd., Groton, Mass. 01450, and William C. Goltsos, 6 Hallmark Gardens, Apt. 2, Burlington, Mass. 01803

Continuation of Ser. No. 429,417, Oct. 31, 1989, abandoned.
This application Dec. 18, 1991, Ser. No. 809,850
Int. Cl.[5] G02B *27/10*
U.S. Cl. 359—619 **37 Claims**



1. A lens system for use with a light beam having a spatial cross-sectional distribution which is extended predominantly in one direction, the system comprising:
a first optical element for receiving and redirecting different portions of the light beam to different locations on an imaginary plane wherein at least two portions of said light beam are directed along two non-parallel paths so as to generate a two-dimensional pattern of light on the imaginary plane; and
a second optical element located at the imaginary plane and aligned with said two-dimensional pattern of light for redirecting each portion of said two-dimensional pattern of light to a focal point.

5,333,078

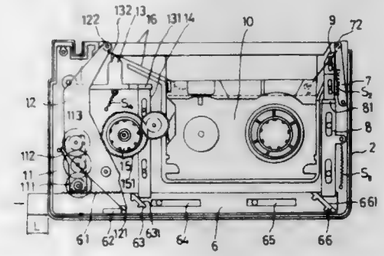
DEVICE TO PERMIT USE OF A CAMERA VIDEO TAPE CASSETTE IN CONVENTIONAL VIDEO PLAYERS

Stephen Chen, Changhua, Taiwan, assignor to E Lead Electronic Co., Ltd., Changhua, Taiwan

Filed Feb. 18, 1993, Ser. No. 19,425
Int. Cl.[5] G11B *23/00, 15/665*
U.S. Cl. 360—94 **2 Claims**

1. A device to permit use of a camera-used video tape cassette in a conventional video player, said device comprising:
a box body (2),
a front cover (5) pivotably connected to a front side of said box body (2),
a back cover (4) secured to a back side of said box body (2),
a drive lever (6),
a left fixing seat (9) slidably mounted in said box body and a right fixing seat (13) rotatably mounted in said box body,
said left-fixing seat (9) and said right fixing seat (13) being spaced apart from said drive lever (6),

a left arm member (7) and a right arm member (12) rotatably mounted in said box body,
a left fixing seat pushing plate (8) and a right fixing seat pushing plate (14) slidably mounted in said box body,
a winding mechanism (15) mounted in said box body,
a gear set rotatably mounted on a gear lever (112), said gear lever rotatably engaged to said drive lever and selectively engaged to said winding mechanism (15),
said drive lever (6) being slidably engaged in a port (22) extending through a lower right end portion of a front side of said box body (2),
said drive lever having a left slant pushing block (66), a right slant pushing block (63), a right arm pushing block (62) and a lateral rack section (61),
such that as said camera-used video tape cassette is loaded into said box body and said drive lever (6) is pushed inward, and drive lever (6) simultaneously causes:



1) said left-slant pushing block (66) to push said left fixing seat pushing plate (8) to rotate said left arm member (7) into an extension position and to push said left fixing seat (9) to fix said left arm member (7) into said extension position,
2) said right arm pushing block (62) to rotate said right arm member (12) into an extension position,
3) said right slant pushing block (63) to push said right fixing seat pushing plate (14) to rotate said right fixing seat (13) to fix said right arm member (12) into said extension position, and
4) said lateral rack section (61) to rotate said gear lever (112) out of engagement with said winding mechanism (15),
wherein, as said right arm member (12) and said left arm member (7) are each in said extension position, a tape of said camera-used video tape cassette is in a stretched position ready for use in a conventional video player.

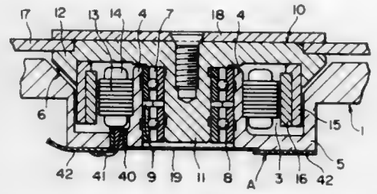
5,333,079

LOW PROFILE HARD DISK APPARATUS

Kiyoyoshi Takegami, Omihachiman; Itsuo Miyaji, Yokaichi; Hiroyuki Yonei, Shiga, and Kihachiro Ohta, Naka, all of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed Jul. 28, 1992, Ser. No. 920,776
Claims priority, application Japan, Aug. 5, 1991, 3-220903; Aug. 19, 1991, 3-232258; Sep. 30, 1991, 3-280859
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—99.08 **13 Claims**

1. A hard disk apparatus comprising:
a base;
a cover member defining a disk chamber in cooperation with the base;
a spindle motor disposed in the disk chamber;
a hard disk to be rotated by the spindle motor;
a circuit substrate to control the spindle motor, the circuit substrate defining a hole to surround the spindle motor;
a hollow cylindrical portion extending in a direction transverse to that of surfaces of the base and the cover member, the cylindrical portion having an inner portion defining an axially extending armature recess opening for supporting a shaft of a spindle motor;
a projection portion provided on the base and concentrically surrounding the cylindrical portion, the projection portion extending downwardly relative to the base and in a direction parallel to that of the cylindrical portion, the projection portion and the cylindrical portion cooperating with one another to define an annular recess;
the spindle motor comprising a shaft extending through the



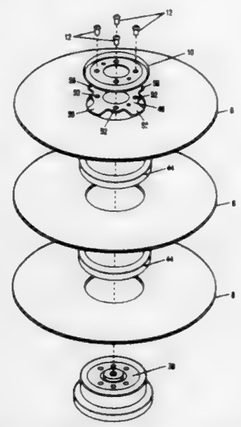
armature recess, a pair of bearings for rotatably supporting the shaft, a rotor hub to rotate with the shaft and to support the hard disk, field means mounted on the rotor hub, and an armature mounted on an outer portion of the cylindrical portion, the armature being in opposition to the field means; and
the annular recess accommodating the pair of bearings, the field means, the armature, and a substantial portion of the shaft to reduce the height of the hard disk apparatus in an upward/downward direction.

5,333,080

DISC CLAMP SHIM FOR A RIGID DISC DRIVE

Ernst W. Ridinger, Soquel, and Ronald F. Fasano, Saratoga, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Apr. 6, 1993, Ser. No. 44,440
Int. Cl.[5] G11B *17/022, 17/038*
U.S. Cl. 360—99.12 **5 Claims**



1. In a disc drive data storage device comprising at least one disc mounted for rotation on a hub of a spindle motor and a disc clamp for securing the disc to the hub, the disc clamp comprising a contact surface near its outer extreme for engaging the inner portion of the disc, the disc clamp being fastened to the hub by a plurality of screws equidistantly spaced circumferentially about the disc clamp:
a plurality of shim members interposed between the contact surface of the disc clamp and the disc, the shim members

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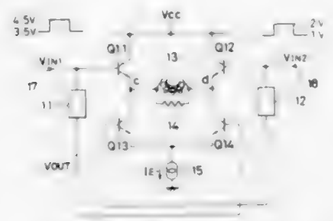
being equal in number to the number of screws and each shim members centered circumferentially between adjacent screws.

5,333,081

MAGNETIC HEAD DRIVING CIRCUIT WITH DELAY ELEMENTS BETWEEN THE SWITCHING COMPONENTS

Kazuo Mitsui, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 28, 1992, Ser. No. 952,605
Claims priority, application Japan, Sep. 27, 1991, 3-248680
Int. Cl.[5] G11B *5/09, 5/02*
U.S. Cl. 360—46 **6 Claims**



1. A magnetic head driving circuit comprising:
a first transistor having a base connected to a first input terminal and a collector supplied with a power source voltage;
a second transistor having a base connected to a second input terminal and a collector supplied with said power source voltage;
a third transistor having a collector connected to an emitter of said first transistor;
a fourth transistor having a collector connected to an emitter of said second transistor;
a constant current source connected commonly to the emitter of said third transistor and the emitter of said fourth transistor;
a magnetic head connected between the emitter of said first transistor and the emitter of said second transistor;
a surge absorbing resistor connected in parallel with said magnetic head;
a first delay circuit connected between said first input terminal and the base of said fourth transistor; and
a second delay circuit connected between said second input terminal and the base of said third transistor.

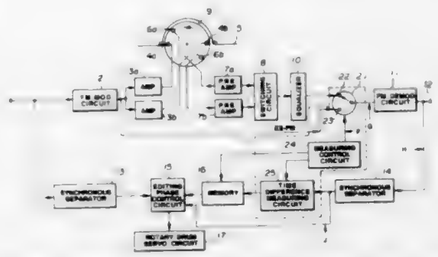
5,333,082

VIDEO SIGNAL RECORDING/REPRODUCING APPARATUS

Shigeo Kizu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 400,144, Aug. 29, 1989, abandoned. This application Aug. 11, 1992, Ser. No. 928,125
Claims priority, application Japan, Aug. 30, 1988, 63-215606
Int. Cl.[5] G11B *21/04, 5/09, 27/02*
U.S. Cl. 360—70 **30 Claims**

1. A video signal recording/reproducing apparatus using different heads for recording and reproducing video signals, comprising:
a rotary drum on which a video tape is loaded;
a rotary drum servo circuit for controlling a phase of rotation of the rotary drum to maintain the phase of rotation at a predetermined target phase;
recording heads mounted on the rotary drum;
reproducing heads mounted on the rotary drum at a position staggered in the rotating direction of the rotary drum from the recording heads;
recording signal processing means for recording through the recording heads input video signals having a predetermined signal phase on the video tape loaded on the rotary drum rotating at the predetermined rotational phase of the rotation;
reproducing signal processing means for demodulating signals reproduced by the reproducing heads to generate reproduced video signals;
first synchronous signal extraction means for extracting a synchronous signal that timing directly indicates the phase of recording signal onto tape;
second synchronous signal extraction means for extracting a synchronous signal from the reproduced signal;



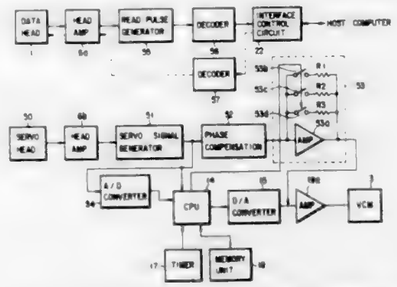
memory means for storing a time difference which represents the elapsed time between when the recording heads pass a given location on the video tape and when the reproducing heads pass the given location; and
recording phase control means for controlling the phase of the input video signals recorded on the video tape through the recording signal processing means so that the phase of the synchronous signal extracted by the first synchronous signal extraction means and the phase of the synchronous signal extracted by the second synchronous signal extraction means are maintained in relation to the time difference stored in the memory means.

5,333,083

STORAGE APPARATUS HAVING SERVO SYSTEM FOR PERFORMING POSITIONING CONTROL OF HEAD

Yasumasa Nakano, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 5, 1993, Ser. No. 56,894
Claims priority, application Japan, May 6, 1992, 4-112938
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.04 **6 Claims**



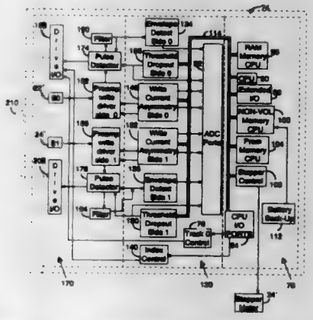
1. A storage apparatus having a servo system for performing positioning control of a head employed, comprising:
memory means storing offset data to be used to correct offset occurring when the head is moved to a target track on a disk by use of the servo system;
timer means for detecting a settling time period required to move the head to the center of the target track at the time of performing head positioning by the servo system;
determination means for determining whether or not the settling time period detected by the timer means is appropriate; and
correction means for correcting the offset data stored in the memory means when the determination means determines that the settling time period is inappropriate.

5,333,084

ELECTRONICALLY ALIGNABLE FLEXIBLE DISK DRIVE

Gregory M. Galloway, 1617 Canary Dr., Sunnyvale, Calif. 94087; Titus E. Davis, Santa Clara, and Roger O. Williams, Fremont, both of Calif., assignors to Gregory M. Galloway, Santa Clara, Calif.

Filed Jul. 13, 1990, Ser. No. 611,962
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.07 **5 Claims**



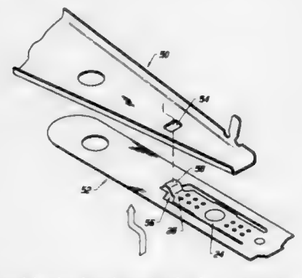
1. An electronically alignable floppy disk drive comprising:
a first transducer means for reading and writing information on a magnetic alignment disk recorded along with a plurality of concentric data tracks;
a transducer positioning means for moving the first transducer means relative to the magnetic disk in microstep increments of less than the distance separating adjacent concentric data tracks;
an envelope detector means for generating an analog data signal from information read by said first transducer means; and
a system control means for;
controlling said transducer positioning means to position said first transducer means such that said first transducer means is correctly positioned relative to at least one of the concentric data tracks of the magnetic alignment disk to optimize the analog data signal read from the magnetic alignment disk for an alignment parameter; and
storing data pertaining to the quantity and direction of the microstep increments required to so correctly position said first transducer relative to the magnetic alignment disk such that, when the magnetic alignment disk is removed from the floppy disk drive and a conventional floppy disk substituted therefor, said system control means can use the data to again position said first transducer means such that said first transducer means is positioned relative to the conventional floppy disk in like orientation as when said first transducer means was previously positioned relative to the magnetic alignment disk using the analog data signal obtained from the magnetic alignment disk, wherein;
said alignment parameter is the radial alignment of the first transducer means; and
said system control means determines the correct position for said first transducer means relative to a radial alignment track of the magnetic alignment disk by slaving said transducer positioning means in microstep increments until the envelope of a first lobe of a radial alignment signal is equal in magnitude to a second lobe of the radial alignment signal, the radial alignment signal being the analog data signal read by said first transducer means from the radial alignment track.

5,333,085

READ/WRITE GIMBAL WITH LIMITED RANGE OF MOTION

Thomas R. Prentice, Hunt County, Tex.; Robin O. Hammar, and Sanjoy Ghose, both of Santa Cruz County, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 18,331, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 610,379, Nov. 6, 1990, abandoned. This application Oct. 13, 1993, Ser. No. 136,488
Int. Cl.[5] G11B *21/20, 21/21*
U.S. Cl. 360—104 **18 Claims**



1. In a read/write head assembly for a disc drive, said disc drive containing a plurality of spinning magnetic storage discs and an actuator mechanism suitable for controllably moving a plurality of said read/write head assemblies in co-operative arrangement with said discs, said read/write head assembly including a load beam having first and second ends, the first end of said load beam being adapted for mounting said assembly to said actuator, said read/write head assembly also including a gimbal having first and second ends, said first end of said gimbal being fixedly attached to said load beam at a point located between said first end of said load beam and said second end of said load beam, said second end of said gimbal extending in the direction of said second end of said load beam, said gimbal including a U-shaped cutout portion having a closed end and an open end and oriented such that said closed end of said U-shaped cutout is toward said first end of said gimbal and said open end of said U-shaped cutout is toward said second end of said gimbal, said U-shaped cutout defining a tongue having an attached end at said open end of said U-shaped cutout and a free end at said closed end of said U-shaped cutout, said U-shaped cutout also defining, between the outside edges of said U-shaped cutout and the outside edges of said gimbal, a pair of side arms extending in parallel with said tongue, said gimbal being shaped to displace said tongue away from said load beam, said tongue having a dimple formed therein extending toward said load beam and dimensioned to contact said load beam at a dimple point of contact and maintain said tongue in a plane substantially parallel to said load beam, said read/write head assembly further comprising a head/slider sub-assembly incorporating a read/write head suitably mounted on a slider-body adapted to carry said read/-write head into co-operative arrangement with said discs, said head/slider sub-assembly being attached to said tongue and facing away from said load beam; the improvement comprising:
motion-restricting means for limiting the extent of relative motion between said load beam and said gimbal tongue due to accelerative forces to a range of motion smaller

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than the range of motion that will cause a permanent deformation of said gimbal so that relative motion between said load beam and said gimbal due to accelerative forces sufficient to cause permanent deformation of said gimbal is prevented, said motion restricting means comprising means integral with said free end of said tongue connecting said free end of said tongue and said load beam at a region of said load beam intermediate between said gimbal attachment point and said dimple point of contact to limit motion of said tongue relative to said load beam, and thus preventing permanent deformation of said gimbal by said forces.

5,333,086

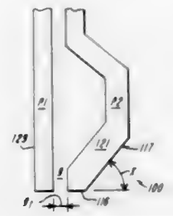
THIN FILM TWO-POLE INDUCTIVE MAGNETIC HEAD WITH MINIMIZED SECONDARY PULSES

Karl A. Frey, Melrose, and Michael Mallary, Berlin, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 988,370, Dec. 9, 1992, which is a continuation of Ser. No. 617,999, Nov. 26, 1990. This application Mar. 29, 1993, Ser. No. 38,330

Int. Cl.[5] G11B *5/147*

U.S. Cl. 360—126 **20 Claims**



1. A thin film two-pole inductive magnetic head, comprising:
a substrate;
a first pole formed over the substrate;
a gap layer formed over the first pole; and
a second pole formed over the gap layer, the first and second poles being formed such that distal ends thereof are coupled together in a yoke region, proximal ends thereof terminate at their tips in an air bearing surface, the pole tips have parallel facing internal surface defining therebetween a magnetic gap and a throat running from the air bearing surface toward the yoke region having a throat height, and a leading surface of the first pole extends back toward the yoke region at an acute angle to the air bearing surface.

5,333,087

SUPERCONDUCTING MAGNET APPARATUS WITH A MAGNETIC SHIELD

Moriaki Takechi, and Tatsuya Oue, both of Ako, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

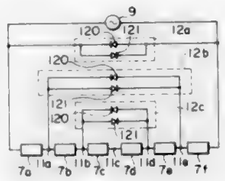
Continuation of Ser. No. 747,586, Aug. 20, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 80,099

Claims priority, application Japan, Aug. 24, 1990, 2-223091

Int. Cl.[5] H01F *7/22*

U.S. Cl. 361—19 **5 Claims**

1. A superconducting magnet apparatus with a magnetic shield comprising:
a superconducting field coil divided into two or more superconducting coils which are connected in series and arranged sequentially, said superconducting coils forming symmetric pairs such that the superconducting coils corresponding to respective symmetric pairs are positioned on opposite sides of a center point of said superconducting field coil at equal distances from said center point, said superconducting field coil further including connection points disposed between each of said superconducting coils;
a permanent current switch connected between both ends of said superconducting field coil;
a plurality of protective circuits connected respectively between both ends of the superconducting field coil and between each pair of the connection points positioned symmetrically with respect to said center of the superconducting field coil such that said superconducting coils are arranged in symmetrical pairs with respect to the center of the superconducting field coil when connected to said protective circuits, each of said protective circuits having a predetermined turn-on voltage for protecting the superconducting coils against an overvoltage;
a cryostat for housing said superconducting coil; and
a magnetic shield for enclosing said cryostat.



5,333,088

DATA TRANSMISSION SYSTEM

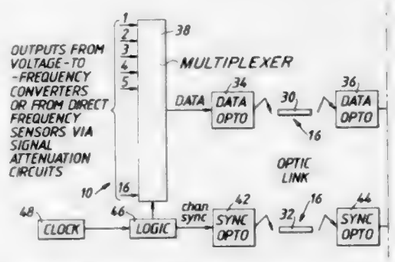
George A. Sweet, Ashington, United Kingdom, assignor to British Gas plc, England

Filed Dec. 11, 1991, Ser. No. 804,660

Claims priority, application United Kingdom, Dec. 12, 1990, 9026923

Int. Cl.[5] H04J *14/02;* **H04B** *10/12*

U.S. Cl. 359—144 **6 Claims**



1. A data transmission system comprising:
primary sensing circuits to be located in a hazardous environment;
a master transmitter to be located in a hazardous environment;
a master receiver to be located in a safe environment having a demultiplexer; and
a fiber optic data link connecting said master transmitter and said master receiver, said master transmitter including
a power restrictor unit,
secondary circuits receiving analog signals output from said primary sensing circuits, and
a multiplexer for receiving frequency signals derived by said secondary circuits from analog outputs from said primary sensing circuits and for outputting signals to said demultiplexer over said fiber optic data link, said power restrictor unit supplying energy to said primary and said second circuits,
said frequency signals being produced by voltage-to-frequency converters in said secondary circuits, each converter being driven by a voltage originally developed across a respective resistor in a respective primary sensing circuit; and
said power restrictor unit comprising a respective power supply for each of said primary sensing circuits, each said power supply comprising first and second sides, said first side being connected to one end of the corresponding primary sensing circuit and said second side being connected to one end of the resistor forming the other end of said corresponding primary sensing circuit.

5,333,089

OPTICAL COMMUNICATIONS SYSTEM EMPLOYING FIBER-OPTIC AMPLIFIERS AND CONTROL OF THE TRANSMITTER WAVELENGTH

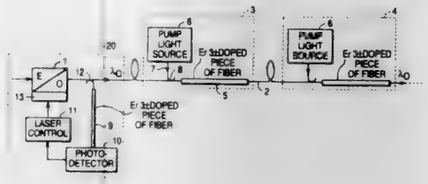
Rolf Heidemann, Tamm, Fed. Rep. of Germany, assignor to ALCATEL N.V., Amsterdam, Netherlands

Filed Feb. 19, 1993, Ser. No. 20,084

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208857

Int. Cl.[5] H01S *3/103*

U.S. Cl. 359—341 **10 Claims**



1. An optical communications system comprising:
an optical transmitter including a semiconductor laser for generating a light signal;
a light waveguide path for transmitting the generated light signal; and
an optical receiver for receiving the transmitted light signal from the light waveguide path and having at least one fiber-optic amplifier including an amplifying light waveguide piece,
wherein the optical transmitter includes a control device having a reference waveguide piece, which regulates an emission wavelength of the semiconductor laser in dependence on absorption of the light signal in the reference light waveguide piece, the reference waveguide piece having a maximum in absorption at a wavelength at which the amplifying light waveguide piece of the at least one fiber-optic amplifier has a maximum in emission.

5,333,090

OPTICAL COATING FOR REFLECTING VISIBLE AND LONGER WAVELENGTH RADIATION HAVING GRAZING INCIDENCE ANGLE
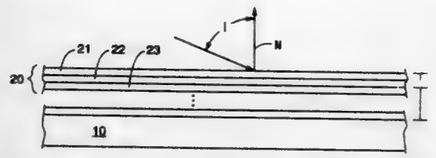
Philip Baumeister; Dennis Fischer, both of Auburn, and David Trost, San Francisco, all of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Filed Oct. 13, 1992, Ser. No. 959,699

Int. Cl.[5] G02B *1/10, 5/28, 6/00;* **B32B** *3/00*

U.S. Cl. 359—584 **24 Claims**

1. An optical reflector, including:
a substrate reflective of electromagnetic radiation having a first wavelength and a second wavelength, wherein the first wavelength is shorter than the second wavelength; and
a multi-layer stack of alternating high and low refractive index dielectric layers on the substrate, wherein each pair of adjacent ones of the layers has a combined matched optical thickness substantially equal to the first wavelength multiplied by a factor M/2, where M is a positive integer, and wherein the stack has an overall matched optical thickness for enhancing reflection of radiation having the second wavelength.



5,333,091

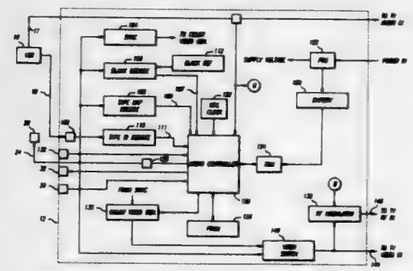
METHOD AND APPARATUS FOR CONTROLLING A VIDEOTAPE PLAYER TO AUTOMATICALLY SCAN PAST RECORDED COMMERCIAL MESSAGES

Jerry Iggulden, Santa Clarita, and Alan McFarland, North Hollywood, both of Calif., assignors to Arthur D. Little Enterprises, Inc., Cambridge, Mass.

Filed Jan. 8, 1993, Ser. No. 2,782

Int. Cl.[5] G11B *27/02;* **H04N** *9/79*

U.S. Cl. 360—14.1 **9 Claims**



1. A method of automatically editing a videotape comprising the steps of:
(a) recording a video signal on a videotape;
(b) monitoring the video signal as it is recorded to detect event markers therein;
(c) storing data representative of a time of occurrence of each event marker;
(d) analyzing the data to classify the video signal between event markers as one of a first and second type;
(e) storing a time-based map of the video signal containing a plurality of entries, each of said plurality of entries comprising an event time and classification information for the video signal associated with said event time;
(f) playing the videotape to reproduce the video signal recorded thereon;
(g) retrieving the stored time-based map of the video signal;
(h) determining a time value for the videotape being played;
(i) comparing the time value for the videotape being played with the event time of a next entry in the time-based map to detect coincidence therebetween;
(j) playing the videotape following said coincidence at a fast rate if the classification information of said next entry in the time-based map corresponds to the second type; and
(k) repeating steps (g)–(j) for each entry in the time-based map.

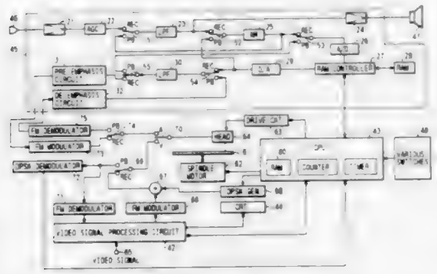
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5,333,092

MAGNETIC RECORDING AND REPRODUCING SYSTEM FOR RECORDING AND REPRODUCING VIDEO SIGNALS CORRESPONDING TO AN AUDIO SIGNAL

Yoshiaki Sato, and Nobuya Sakai, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1991, Ser. No. 658,276
Claims priority, application Japan, Feb. 20, 1990, 2-39366
Int. Cl.[5] H04N 5/781, 5/91; C11B 5/02
U.S. Cl. 360—35.1 34 Claims



1. A recording device having an audio/video mode in which a plurality of video signals corresponding to an audio signal are recorded on coaxial tracks of a recording disk, which are adjacent to a coaxial track for the audio signal, comprising:

a measuring means for measuring an actual period of time for recording the audio signal;

a recording means for recording the video signals and the corresponding audio signal selectively to the coaxial tracks of the recording disk; and

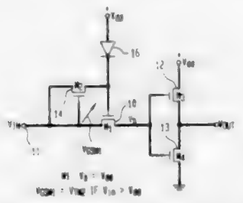
a control means for controlling said recording means so as to record each video signal together with distinguishing data representing presence or absence of a following video track where a next video signal corresponding to the audio signal is to be recorded, said control means controlling said recording means so as to record the audio signal together with data as to the measurement result of said measuring means and a start video track where a first of said plurality of video signals is to be recorded.

5,333,093

PROTECTION APPARATUS FOR SERIES PASS MOSFETS

Wolfgang H. Krautschneider, and Mike A. Killian, both of Burlington, Vt., assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 6, 1991, Ser. No. 788,642
Int. Cl.[5] H02H 9/00; H03K 5/08
U.S. Cl. 361—56 15 Claims



8. A protection apparatus for protecting the input of a series pass-through FET transistor from excessive voltages applied to the input source or drain terminal electrode of the FET where the source to drain path of said FET transistor is connected between an input terminal and output terminal, comprising:

a protection FET transistor connected as a FET diode and with said diode connected between said input drain or source terminal and said gate electrode of said pass-through transistor; and

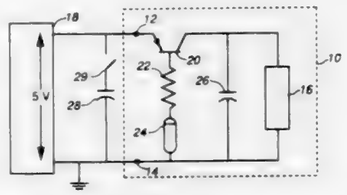
an inverter including a P and an N channel FET each having a source, drain and gate electrode, with the source electrode of said P channel FET coupled to a source of operating potential, with the drain electrodes of said P and N channel FETs coupled together to an output, with the source electrode of said N channel FET coupled to a point of reference potential, and with the gate electrodes of said N and P channel FETs connected together and coupled to said drain electrode of said pass-through FET.

5,333,094

TRANSIENT REDUCTION CIRCUIT

Dermot T. Fucito, Norcross, Ga., assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 17, 1992, Ser. No. 899,867
Int. Cl.[5] H02H 7/20
U.S. Cl. 361—91 4 Claims



1. In a circuit card having a resistive load for connection to a power supply shared with other circuit cards, a transient reduction circuit, comprising:

inputs for connection to the power supply output and a reference potential;

a transistor having an emitter connected to the power input, a collector connected to the load and a base;

a resistor connected between the base and the reference potential input; and

a decoupling capacitor connected between the collector and the reference potential input;

whereby a sudden decrease in power supply voltage output is prevented from discharging the decoupling capacitor by a reverse biased junction in the transistor.

5,333,095

FEEDTHROUGH FILTER CAPACITOR ASSEMBLY FOR HUMAN IMPLANT

Robert A. Stevenson, Canyon Country, Calif., and Donald N. Pruett, Carson City, Nev., assignors to Maxwell Laboratories, Inc., Sierra Capacitor Filter Division, Carson City, Nev.

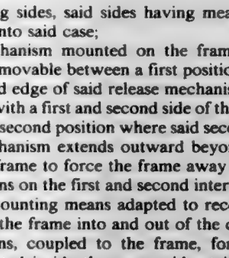
Filed May 3, 1993, Ser. No. 55,981
Int. Cl.[5] H01G 4/42
U.S. Cl. 361—302 21 Claims

1. A feedthrough filter capacitor assembly for use in an implantable medical device, said assembly comprising:

at least one conductive terminal pin;

means for mounting said terminal pin for passage through an opening formed in a conductive substrate with said terminal pin and substrate in nonconductive relation; and

a feedthrough filter capacitor adapted for mounting axially at one outer side of said terminal pin mounting means and having a central opening formed therein for pass-through reception of said terminal pin;



said capacitor having first and second sets of electrode plates adapted for electrical connection respectively to said terminal pin and substrate.

5,333,096

Patent Not Issued For This Number

5,333,097

DISK DRIVE HOLDER AND INTERCONNECTION SYSTEM

Gordon Christensen, Manteca, and John Marceca, San Jose, both of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 18, 1992, Ser. No. 900,329
Int. Cl.[5] H05K 7/10, 7/14
U.S. Cl. 361—685 18 Claims

1. A system for storing and interconnecting a plurality of disk drives, said system comprising:

a case defining a first cavity with first and second interior walls;

a frame having sides, said sides having means for guiding said frame into said case;

a release mechanism mounted on the frame, said release mechanism movable between a first position where a first and a second edge of said release mechanism are substantially flush with a first and second side of the frame respectively and a second position where said second edge of the release mechanism extends outward beyond said second side of the frame to force the frame away from the case;

mounting means on the first and second interior walls of the case, said mounting means adapted to receive the means for guiding the frame into and out of the case; and

retaining means, coupled to the frame, for retaining the frame mounted inside the case, said retaining means including an aperture in the first interior wall and a protrusion on the release mechanism which extends beyond the sides of the frame into the aperture when the frame is positioned inside the case.

15. A mounting device for a disk drive, said mounting device comprising:

a frame having sides, said sides having means for guiding said frame into a case, said frame adapted for attachment to said disk drive; and

a release mechanism mounted on the frame, said release mechanism movable between a first position where a first and a second edge of said release mechanism are substantially flush with a first and second side of the frame respectively and a second position where said second edge of the release mechanism extends outward beyond said second side of the frame; and

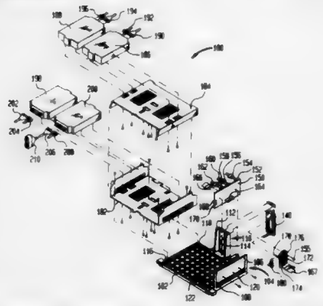
a retaining mechanism coupled to the frame for retaining the frame in a mounted position.

5,333,098

SHOCK ABSORBING APPARATUS FOR MOUNTING A PLURALITY OF STORAGE DEVICES IN A STACKED CONFIGURATION

Alfred E. DeLuca, Harvard; Stanley W. Stefanick, Uxbridge; Cosmo L. Leo, Watertown; Thomas J. Orr, Sudbury; David T. Symmes, Danvers, and Henry Wright, Ipswich, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 829,645, Feb. 3, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 166,284
Int. Cl.[5] H05K 7/12; G06F 1/16; F16M 13/00
U.S. Cl. 361—685 24 Claims



19. An apparatus storing storage devices, comprising:

a base;

a plurality of storage devices;

a storage device supporter for supporting the plurality of storage devices, the storage device supporter including at least two trays, each of the at least two trays for supporting one or more of the plurality of storage devices, each of the at least two trays being stacked, being in contact with, and being connected to an adjacent one of the at least two trays; and

a movable connector for connecting the storage device supporter to the base, with the movable connector including a shock absorber.

5,333,099

ELECTRICAL COMPONENT HAVING A SANDWICH-LIKE SUB-ASSEMBLY

Karl-Heinz Bauer, Bad Neustadt, and Ulrich Brüggemann, Heustreu, both of Fed. Rep. of Germany, assignors to Preh-Werke GmbH & Co. KG, Bundesrepublik, Fed. Rep. of Germany

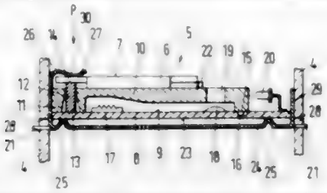
Filed Oct. 25, 1993, Ser. No. 141,026
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1992, 4236353
Int. Cl.[5] H05K 7/02; H02B 1/01
U.S. Cl. 361—760 8 Claims

1. An assembled electrical component having a sandwich-like sub-assembly which comprises at least a circuit board, a liquid crystal display, and a device to mount and make contact with the liquid crystal display, and having a sheet-metal screen on a rear side of the sub-assembly for receiving the sub-assembly, with a holding end portion of the sheet-metal screen extending about an edge of the sub-assembly for holding the sub-assembly together;

wherein the sub-assembly is only held together along one

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edge thereof while at an opposite edge it clampingly abuts on a flange bend in the sheet-metal screen and wherein the



holding end portion of the sheet-metal screen has a flexure therein which springingly engages the sub-assembly at a position spaced from an edge of the sub-assembly

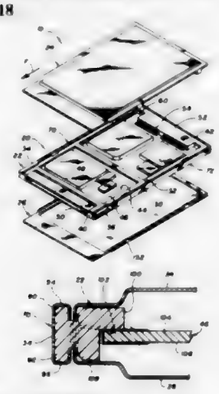
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5,333,100

DATA CARD PERIMETER SHIELD

John W. Anhalt, Orange; William H. Doose, Anaheim Hills, and William Galarza, Jr., Laguna Hills, all of Calif., assignors to ITT Corporation, Secaucus, N.J.

Filed Jun. 29, 1992, Ser. No. 906,179
Int. Cl.[5] H05K *9/00, 1/14*
U.S. Cl. 361—818 **10 Claims**



1. A data card comprising:

a frame which includes a body molded of plastic material that has a conductivity at least about two orders of magnitude less than that of copper, said body having opposite side portions, opposite end portions, and top and bottom portions, said frame also having electrically conductive top and bottom covers;

a circuit board assembly mounted on said body and lying in said frame, said assembly including a board having a ground plane;

at least one electrically conductive elongated rail which lies over more than half of the area of at least a first of said body sides, said rail being formed of sheet metal and having top and bottom portions that are each bent around at least part of a corresponding one of said body side portions to attach to said body, said rail being electrically connected to said ground plane of said circuit board and to said top and bottom covers.

5,333,101

BICYCLE LIGHT

Paul McEvoy, San Marcos, Calif., assignor to Western Crown Management Inc., Sechelt, Canada

Filed Mar. 8, 1993, Ser. No. 27,680
Int. Cl.[5] B62J *6/00*
U.S. Cl. 362—72 **9 Claims**

1. A self-containing bicycle light mountable on a bicycle wheel and comprising:

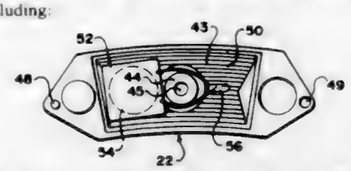
a housing at least partially of a light transmitting material;

mounting means for mounting the housing on the bicycle wheel;

an electronically operable light source within the housing and positioned to transmit light through the housing;

electric battery means within the housing; and

circuit means within the housing electrically joining the light source and the battery means, the circuit means including:



(a) flasher means actuable to close the circuit means intermittently so as to cause the light source to flash intermittently;

(b) motion sensor means responsive to motion of the housing in any direction to actuate the flasher means, and

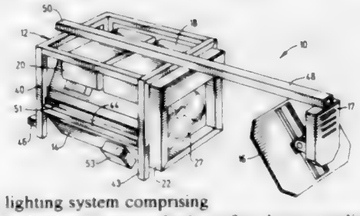
(c) time delay means for sustaining the operation of the flasher means for a predetermined duration after actuation of the flasher means by the motion sensor means.

5,333,102

THEATRICAL SEARCH LIGHTING SYSTEM

Dave Oberman, 3609 Paseo del Campo, Palos Verdes Estates, Calif. 90274, and Richard J. Ramano, 2478 Peacock La., Corona, Calif. 91720

Filed Nov. 17, 1993, Ser. No. 154,165
Int. Cl.[5] F21V *21/00;* **G03B** *15/02*
U.S. Cl. 362—382 **2 Claims**



1. A lighting system comprising

a frame having a rectangular base, four legs extending from said base, two support beams each connecting a pair of said legs, two projections each connected to a respective leg, and an elongated top beam connected to the base and extending beyond said base;

a light source connected to said frame and positioned between said base and said four legs; and

a mirror connected to an extend portion of said elongated top beam.

5,333,103

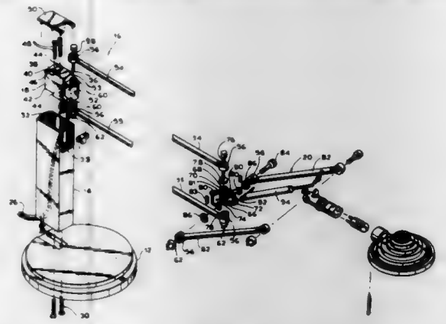
HALOGEN LAMP

Sava Cvek, Boston, Mass., assignor to Luxo Lamp Corporation, Port Chester, N.Y.

Continuation-in-part of Ser. No. 677,259, Mar. 29, 1991, Pat. No. 5,097,400. This application Nov. 20, 1991, Ser. No. 795,339
Int. Cl.[5] F21S *1/12*
U.S. Cl. 362—413 **16 Claims**

1. A mounting assembly for a lamp comprising a hollow elongated post having open ends and at least two internal channels adjacent each other in generally parallel relation, said at least two internal channels having open end portions and being adapted to receive mounting screws therein; a mounting block received in one end of said hollow elongated post and having first and second mounting sections, said first mounting section having a pair of throughbores formed therein for receiving mounting screws therethrough which are adapted to

be received respectively in said at least two internal channels; said hollow elongated post having an open face adjacent said one end thereof and said second mounting section having a front face located in said open face of the hollow elongated post and a pivot boss formed thereon on said front face includ-



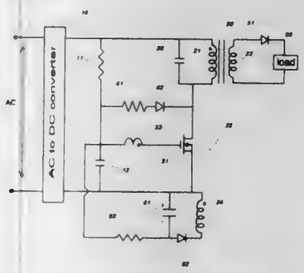
ing a pivot opening formed therein for receiving a pivot mounting shaft of a lamp arm assembly.

5,333,104

INVERTER POWER SOURCE

Hideki Tamura, Moriyama, and Kaoru Furukawa, Hikone, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 19, 1993, Ser. No. 63,327
Claims priority, application Japan, May 22, 1992, 4-131129; Aug. 12, 1992, 4-215163; Sep. 21, 1992, 4-251213
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—19 **9 Claims**



1. An inverter power supply for driving an electrical device comprising:

a DC supply providing a DC voltage;

a transformer having a primary winding, a secondary winding, and a feedback winding;

a self-excited oscillator comprising a FET transistor which is connected in series with said primary winding across said DC supply and energized by said DC supply to generate a high frequency voltage across said primary winding, a high frequency feedback voltage across said feedback winding and a resulting output AC voltage across said secondary winding, said output AC voltage being applied to a load circuit of said device;

a biasing capacitor connected in series with said feedback winding across a gate-source path of said FET transistor for providing an offset voltage which is additive to said high frequency feedback voltage developed across said feedback winding to give a bias voltage applied to a gate of said FET transistor so as to alternately turn on and off said FET transistor for driving said self-excited oscillator;

bias stabilizing circuit which lowers said offset voltage by discharging said biasing capacitor through said FET transistor being turned on, thereby driving said FET transistor turned on only for substantially a constant ON-time period irrespective of an increase in said DC voltage within a limited range; and

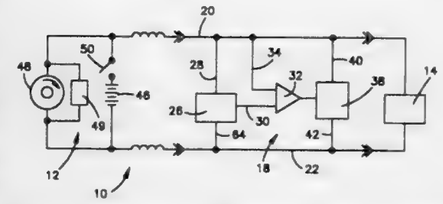
bias compensation means comprising an auxiliary feedback winding coupled to said primary winding and connected in parallel with said biasing capacitor to induce a voltage of opposite polarity to said feedback voltage induced at said feedback winding, said bias compensation means producing a negative voltage and superimposing said negative voltage to said offset voltage, thereby permitting said offset voltage to be lowered to negative so as to correspondingly lower the bias voltage when said DC voltage increases over said limited range.

5,333,105

TRANSIENT VOLTAGE PROTECTOR

G. Clark Fortune, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 27, 1993, Ser. No. 68,531
Int. Cl.[5] H02H *7/122, 9/00*
U.S. Cl. 363—56 **3 Claims**



1. An apparatus for use in a vehicle to protect an electrical device against transient changes in voltage provided by a power source disposed in the vehicle, said apparatus comprising a conductor for conducting electrical current from the power source to the electrical device, and load protector means responsive to the rate of change of voltage in said conductor for decreasing the electrical current in said conductor when the rate of change of voltage in said conductor exceeds a predetermined rate of change, said load protector means including transient voltage responsive means for providing an output voltage which varies as a function of the rate of change of voltage in said conductor, a comparator for comparing an output voltage from said transient voltage responsive means to the voltage in said conductor and for providing an output signal when the output voltage from said transient voltage responsive means is a predetermined function of the voltage in said conductor, and control switch means for decreasing the electrical current in said conductor in response to the output signal from aid comparator.

5,333,106

APPARATUS AND VISUAL DISPLAY METHOD FOR TRAINING IN THE POWER USE OF AEROSOL PHARMACEUTICAL INHALERS

Ted W. Lanpher, Atherton, Calif.; Gregory B. Lanphey, York, Pa.; David J. Mishelevich, Cupertino, and Steven H. Minar, El Granada, both of Calif., assignors to Circadian, Inc., San Jose, Calif.

Filed Oct. 9, 1992, Ser. No. 958,868
Int. Cl.[5] G06F *15/00;* **A61M** *15/00*
U.S. Cl. 364—413.01 **21 Claims**

1. An interactive inhaler training device for maximizing delivery of an airborne medication to a target site in a patient's lungs comprising:

an inhaler means including a source of airborne medication for inhalation by a patient;

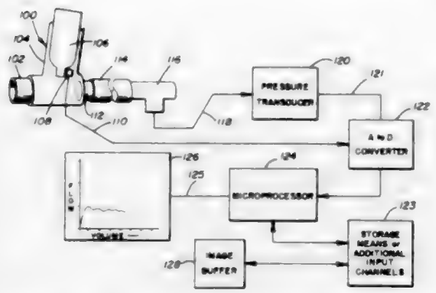
a flow measurement means coupled with said inhaler means for measuring the flow of air through said inhaler means;

a microprocessor means coupled with said flow measure-

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ment means for producing a measure of flow as a function of inhaled volume;

storage means, coupled with said microprocessor means, for storing said flow and volume values and for storing additional parameters determining medication distribution to said target site;



display means, coupled with said microprocessor means for providing a visual display based on at least flow versus volume feedback to a patient for enabling a patient to maximize delivery of medication to said target site.

5,333,107

PROCESS AND APPARATUS FOR THE RECONSTRUCTION OF THREE-DIMENSIONAL IMAGES OF AN OBJECT USING TWO PATHS HAVING A COMMON AXIS

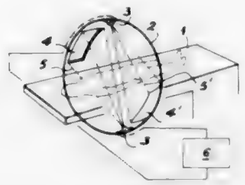
Pierre Grangeat, Saint Ismier, and Patrick Le Masson, Villard de Lans, both of France, assignors to Commissariat A L'Energie Atomique, France

Filed Nov. 5, 1991, Ser. No. 788,172

Claims priority, application France, Nov. 29, 1990, 90 14957

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.19 **6 Claims**



1. A process for reconstructing a three-dimensional image of an object with at least one two-dimensional array of sensors, said image expressing a property, varying in the object, of a radiation, comprising the steps of:

moving the sensors in at least two trajectories around the object, said trajectories consisting of at least portions of circles having centers joined by a line perpendicular to planes in which the trajectories are comprised;

focussing the sensors of each array to a common focal point beyond the object so as to view a conical space, the focal point having a constant position with respect to the array of sensors;

taking measurements with the sensors consisting of sums of the property along rays passing through the object and directed to the focal point;

summing measurements of the rays belonging to summation planes to obtain summations associated with the summation planes, the summation planes being defined by coordinates in an object reference frame;

reconstructing the image by combining the summations.

5,333,108

DRIVE SLIP CONTROL SYSTEM

Ulrich Hessmert, Schwieberdingen; Manfred Meissner, Unterriexingen; Martin Meurer, Cochem, and Reiner Folke, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

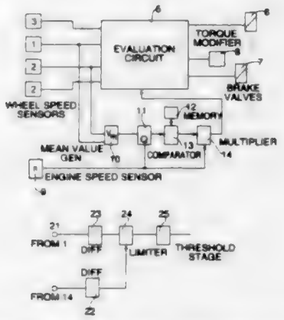
PCT No. PCT/EP89/00506, § 371 Date Oct. 10, 1991, § 102(e) Date Oct. 10, 1991, PCT Pub. No. WO90/00120, PCT Pub. Date Jan. 11, 1990

PCT Filed May 9, 1989, Ser. No. 635,137

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1988, 3821769

Int. Cl.[5] G06F *15/48*; **B60T** *8/58*

U.S. Cl. 364—426.03 **2 Claims**



1. Drive slip control system for a vehicle having an engine which transmits torque to the driven wheels through a transmission having a plurality of gear ratios, said system comprising

wheel speed sensors for determining speeds of the driven wheels and generating sensed wheel speed signals corresponding to the determined speeds,

means for determining an average wheel speed of the driven wheels from said sensed wheel speed signals,

means for determining engine speed,

means for generating an actual quotient from the average wheel speed and the engine speed,

means for determining and storing a plurality of constant values based on respective gear ratios,

means for comparing the actual quotient to the closest constant value and generating an output signal corresponding to said closest constant value when a prescribed deviation between said actual quotient and said closest constant value is exceeded,

means for generating a reference wheel speed signal from said closest constant value and said engine speed, and

evaluation circuit means which receives said sensed wheel speed signals, determines slippage of said driven wheels therefrom, and generates control signals for at least one of braking at least one of said driven wheels and decreasing the engine torque when slippage is determined, said slippage being determined from said reference wheel speed signal when said prescribed deviation is exceeded.

5,333,109

VEHICLE SPEED CONTROL SYSTEM WITH ADAPTIVE LEARNING

Kah S. Oo, Farmington Hills, and Gary M. Klingler, Milford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 9, 1991, Ser. No. 743,540

Int. Cl.[5] B60K *31/00*

U.S. Cl. 364—426.04 **3 Claims**

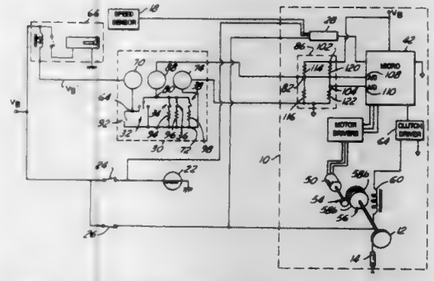
1. A speed control method for achieving and maintaining a

desired vehicular speed by controlling an engine throttle, comprising the steps of:

computing an initial throttle position for approaching the desired speed upon operator actuation of speed control operation by multiplying the desired speed by a constant and adding an updatable offset value;

moving the throttle to said initial throttle position;

adjusting the throttle in relation to a deviation of the desired



speed from vehicle speed for maintaining the desired speed;

providing an indication of actual throttle position while the desired speed is being maintained; and

updating said updatable offset value by subtracting a product of said constant times the desired speed from said indication of actual throttle position to provide an updated offset value to said computing step during a subsequent operator actuation of speed control operation.

5,333,110

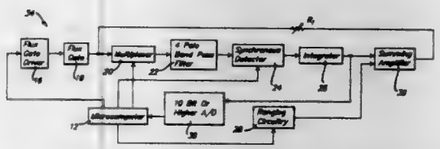
ELECTRONIC MAGNETIC COMPASS SYSTEM AND METHOD FOR INTERPRETING DIRECTIONS OF A VEHICLE

Rafi A. Al-Attar, Troy, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1991, Ser. No. 815,274

Int. Cl.[5] G01C *17/38*

U.S. Cl. 364—449 **13 Claims**



1. A vehicle electronic compass system for determining vehicle heading as a function of the earth's magnetic field, said system comprising:

magnetic sensing means for sensing the earth's magnetic field and generating a signal in accordance therewith;

signal conditioning means for receiving said signal and for converting said signal into a corresponding degree heading value, said degree heading value being one of eight predetermined heading values describing a predetermined range of degrees of the earth's magnetic field, a first heading value corresponding to a first range of degrees indicating a North direction, a second heading value corresponding to a second range of degrees indicating a Northeast value, a third heading value corresponding to a third range of degrees indicating an East direction, a fourth heading value corresponding to a fourth range of degrees indicating a Southeast direction, a fifth heading value corresponding to a fifth range of degrees indicating a South direction, a sixth heading value corresponding to a sixth range of degrees indicating a Southwest direction, a seventh heading value corresponding to a seventh range of degrees indicating a West direction, and a eighth heading value corresponding to an eighth range of degrees indicating a Northwest direction, wherein at least one of said first, third, fifth or seventh ranges is greater than forty-five degrees;

said signal conditioning means further adapted for generating a directional heading signal in accordance with said predetermined degree range within which said degree heading value falls within; and

means for providing an indication to an occupant of said vehicle of said directional heading signal.

5,333,111

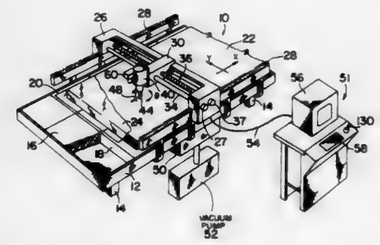
GARMENT CUTTING SYSTEM HAVING COMPUTER ASSISTED PATTERN ALIGNMENT

Craig L. Chaiken, Vernon, and John A. Fecteau, Manchester, both of Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

Filed May 2, 1991, Ser. No. 694,871

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—470 **16 Claims**



1. A system for use in cutting garment segments from a sheet of fabric, said fabric having a geometric design therein, said system comprising:

a table adapted to receive said fabric sheet on an upper surface thereof;

a carriage moveable about said table surface in response to command signals;

a cutting head having a moveable blade affixed to said carriage, said blade configured to pierce said fabric sheet in response to blade control signals;

a video sub-system moveable about said table surface in response to position signals configured to receive light from a portion of said fabric sheet in registration with said cutting head forming a fabric sheet image and provide electrical signal equivalents thereof; and

a controller including:

a means for generating said carriage command signals to move said carriage to a commanded position above said fabric sheet and for providing said blade command signals to operate said blade and pierce said fabric sheet and for generating said video sub-system position signals,

a means for receiving marker signals corresponding to a marker having a plurality of garment segment patterns configured at selected positions in a plane to be registered with said fabric sheet, said marker signals further including a reference signal corresponding to a reference location in said marker to be registered with said fabric design,

an image processing means for receiving said video sub-system signals including signals corresponding to said fabric sheet and for generating therefrom an array of pixel signal values indicative of said fabric sheet image;

said controller for generating compensation signals to adjust a garment segment pattern location in said marker to remove any difference in position between a measured

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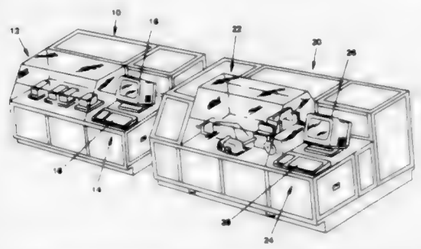
fabric design location and said reference location determined in accordance with a method including the steps of:
moving said video sub-system in dependence on said marker signals to approximately center said fabric sheet image over said reference location;
creating a first subarray of pixel signal values configured from said marker signals approximately centered on said reference location;
creating a second subarray of pixel signal values from said fabric sheet image array approximately centered on said fabric sheet image array center;
determining a first aggregate pixel value error from a sum of pixel value errors found by a comparison between corresponding first and second array values;
creating a third subarray of said fabric sheet image array pixel signal values indexed from said fabric sheet image array center a select amount;
determining a second aggregate pixel value error from a sum of pixel value errors found by a comparison between corresponding first and third array values;
identifying as a match that subarray whose comparison with said first array yielded the lessor of said first and second aggregate pixel value errors.

5,333,112

AUTOMATIC FLOW GRIND SYSTEM AND METHOD

Jimmy L. Bybee, Mission Viejo, Calif., assignor to AAI/ACL Technologies, Inc., Santa Ana, Calif.

Filed Mar. 25, 1993, Ser. No. 37,032
Int. Cl.[5] G06F *15/46*; B24B *49/00*
U.S. Cl. 364—474.06 **14 Claims**



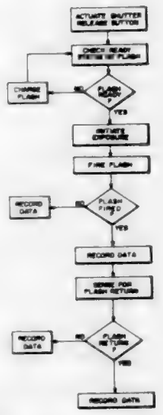
1. An automated system for machining servo-valves, comprising:
(a) a computer-controlled measurement console, comprising means for testing a particular servo-valve comprising a spool and sleeve set using automatic flow, pressure, and displacement measurements, means for generating data for use in flow-gain and removal calculations to determine flow and pressure gain performance characteristics for the servo-valve, means for performing the flow-gain and removal calculations, and means for storing results thereof in a memory corresponding to a unique identifier for the spool and sleeve set; and
(b) a computer-controlled grind console, coupled to the computer-controlled measurement console, comprising means for machining the particular servo-valve according to the results of the flow-gain and removal calculations, further comprising contact gaging means for measuring a land width and a gap between the land edges of the spool, and means for precisely grinding the spool's land edges so as to exactly match these edges with the sleeve slots to meet overlap/underlap requirements and performance requirements of the servo-valve, wherein the results of the flow-gain and removal calculations, the overlap/underlap requirements, and the performance requirements of the servo-valve are stored in a memory corresponding to the unique identifier for the spool and sleeve set.

5,333,113

METHOD AND APPARATUS FOR DETECTING, RECORDING AND USING SCENE INFORMATION IN A PHOTOGRAPHIC SYSTEM

Robert P. Cloutier, Spencerport, N.Y., and John J. Breen, Southbourough, Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 380,707, Jul. 13, 1989, abandoned, which is a continuation of Ser. No. 181,935, Apr. 15, 1988, abandoned. This application Mar. 9, 1990, Ser. No. 494,890
Int. Cl.[5] G03B *7/16*
U.S. Cl. 364—525 **21 Claims**



1. A method of operating a photographic camera to record data relating to flash illumination in correspondence with recording a latent image of a subject onto a picture frame of a photographic film, comprising the steps of:
actuating a shutter to expose said frame to record said image;
triggering an electronic flash to provide flash illumination during said exposure;
sensing to determine if said triggered flash is fired;
sensing to determine if illumination generated by said flash firing is reflected back from said subject during said exposure; and
in response to sensing said firing of said flash, recording data on said film in association with said frame to indicate if said reflected illumination is sensed.

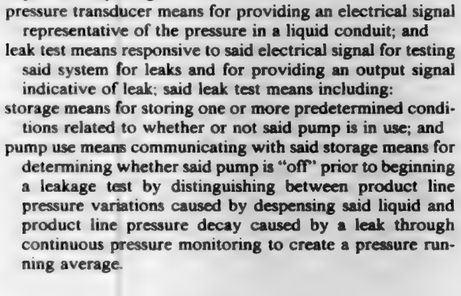
5,333,114

FIELD MOUNTED CONTROL UNIT

Jogesh Warrior, Chanhassen; Vincent C. Jacobson, Minnetonka; Kelly M. Orth, Apple Valley, and Craig R. Tielens; Jane B. Lanctot, both of Minneapolis all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Continuation of Ser. No. 2,257, Jan. 8, 1993, abandoned, which is a continuation of Ser. No. 785,168, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 416,180, Oct. 2, 1989, abandoned. This application Jul. 1, 1993, Ser. No. 86,167
Int. Cl.[5] G05B *19/00*
U.S. Cl. 364—550 **37 Claims**

1. A smart field-mounted control unit for coupling to a two-wire process control loop comprising:
a single enclosure;
input means carried in the single enclosure coupled to the two-wire process control loop for receiving power over the two-wire process control loop, the input means comprising:
receiving means for receiving process signals representative of more than one process variable sent by a master unit over the two-wire process control loop, and for sending information over the two-wire process control loop to the master unit;
means for storing process signals received from the master unit which are representative of more than one process variable; and



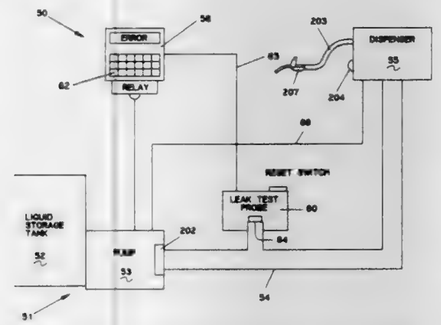
controlling means carried in the single enclosure coupled to the input means for providing a command output for controlling a process and for storing previous values of the command output where the command output is a function of the stored process signals and a stored previous value of the command output.

5,333,115

LINE LEAK TEST APPARATUS RESPONSIVE TO PUMP USE

Michael T. Clouser, and Laurence S. Slocum, both of Indianapolis, Ind., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 491,107, Mar. 9, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 837,093
Int. Cl.[5] G06F *15/20*; G01M *3/32*
U.S. Cl. 364—558 **11 Claims**



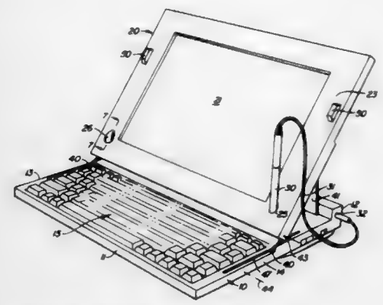
1. A line leak test probe for use in a liquid storage and despensing system which includes a pump for pumping said liquid, said probe comprising:
pressure transducer means for providing an electrical signal representative of the pressure in a liquid conduit; and
leak test means responsive to said electrical signal for testing said system for leaks and for providing an output signal indicative of leak; said leak test means including:
storage means for storing one or more predetermined conditions related to whether or not said pump is in use; and
pump use means communicating with said storage means for determining whether said pump is "off" prior to beginning a leakage test by distinguishing between product line pressure variations caused by despensing said liquid and product line pressure decay caused by a leak through continuous pressure monitoring to create a pressure running average.

5,333,116

COMBINATION LAPTOP AND PAD COMPUTER

Jeff C. Hawkins, Redwood City, and John J. Daly, San Carlos, both of Calif., assignors to AST Research, Inc., Irvine, Calif.

Continuation of Ser. No. 932,515, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 839,004, Feb. 14, 1992, Pat. No. 5,200,913, which is a continuation of Ser. No. 519,031, May 4, 1990, abandoned. This application Mar. 3, 1993, Ser. No. 25,900
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—708.1 **7 Claims**



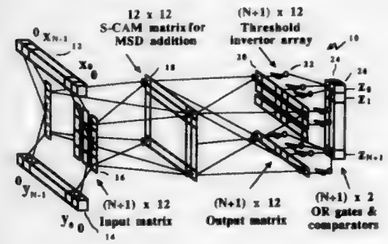
1. A portable computer comprising:
a computer housing;
a keyboard carried by said computer housing;
a display device having an obverse viewing surface an a reverse surface; and
mounting means for coupling said display device to said computer housing, said mounting means having a first portion pivotally connected to said computer housing and a second portion pivotally connected to said display device, said display device being adjustable between a closed position in which the display covers the keyboard with said reverse surface and an open position in which the keyboard is uncovered and the display device is positioned rearwardly of the keyboard at a viewing angle.

5,333,117

PARALLEL MSD ARITHMETIC USING AN OPTO-ELECTRONIC SHARED CONTENT-ADDRESSABLE MEMORY PROCESSOR

Berlin Ha, New York, N.Y., and Yao Li, Monmouth Junction, N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Oct. 4, 1993, Ser. No. 131,146
Int. Cl.[5] G06E *1/04*; G06F *7/00*
U.S. Cl. 364—713 **15 Claims**



1. An opto-electronic shared content-addressable memory processor comprising:
an input matrix containing optical data associated with MSD numbers to be arithmetically combined;
a MSD S-CAM matrix;

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an output matrix containing data corresponding to optical matrix multiplication of said input matrix data and said MSD S-CAM matrix matrices; and

means coupled to said output matrix for converting the data in said output matrix to obtain MSD result of the numbers arithmetically combined.

5,333,118

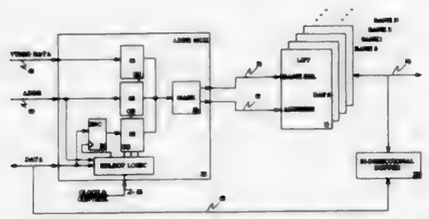
FLEXIBLE COMPUTER CONTROLLED NON-LINEAR TRANSFORM GENERATOR

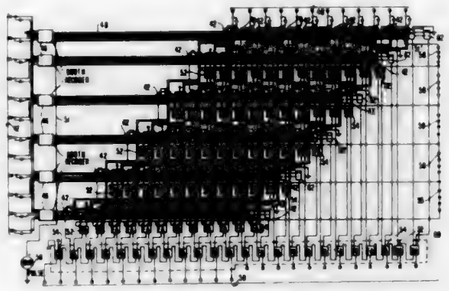
David Rossmere; O. F. Morgan, both of San Jose, and Michael Polatnick, Oakland, all of Calif., assignors to Sony Electronics, Inc., Park Ridge, N.J.

Filed Jan. 27, 1992, Ser. No. 826,094

Int. Cl.[5] G06F *15/332*

U.S. Cl. 364—725 **27 Claims**





1. A non linear transform generator for selectively transforming a digitized input signal into a digitized output signal in accordance with a plurality of functions, each function represented by a set of transform data, said transform generator switching said functions in real time, comprising:

memory means for storing said sets of transform data in a series of memory locations, each of said memory locations having an address and a stored transform data value such that said stored transform data value equals a function of said address, said memory means receiving said digitized input signal and generating said digitized output signal;

multiplexer means for selectively partitioning said memory means into a plurality of banks, said multiplexer means receiving said sets of transform data and selectively storing said sets of transform data in said banks;

means for selectively switching between said functions by selectively accessing said banks of stored transform data according to a transfer function select command.

5,333,119

DIGITAL SIGNAL PROCESSOR WITH DELAYED-EVALUATION ARRAY MULTIPLIERS AND LOW-POWER MEMORY ADDRESSING

Donovan L. Raatz, New Germany, and Gerald E. Sobelman, Minnetonka, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Sep. 30, 1992, Ser. No. 954,571

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—760 **8 Claims**

1. A digital signal processor for processing a digital input signal, comprising:

a memory containing a plurality of processing coefficients;

delay means receiving the digital input signal and producing a plurality of delayed input signals;

multiplier means connected respectively to said plurality of delayed input signals and connected to receive a processing coefficient from said memory;

accumulator means for adding outputs from said multiplier means to form a filtered output signal, wherein said multiplier means comprises:

an adder array formed of a plurality of dynamic CMOS adders arranged in a plurality of rows;

a plurality of modified Booth recorders each receiving respectively selected bits of one of the coefficients from said memory and each producing outputs in accordance with the modified Booth algorithm;

a plurality of selector means arranged in a number of rows equal in number to said plurality of modified Booth recorders and each receiving said outputs from said modified Booth recorders, selector means in a first of said rows receiving the one of said coefficients from said memory or said plurality of delayed input signals not input to said modified Booth recorders and producing respective partial products therefrom, and selector means in a remainder of said rows receiving outputs from said adder array and producing respective partial products therefrom;

delay means receiving and delaying a clock signal input thereto for producing a plurality of delayed clock signals;

said adder array formed of said plurality of dynamic CMOS adders arranged in said plurality of rows receiving said respective partial products from respective rows of said selector means and each dynamic CMOS adder being directly enabled respectively by said plurality of delayed clock signals for adding said partial products from said selector means; and

dynamic CMOS adder means receiving said adder partial products form said adder array and producing a digital output signal therefrom fed to said accumulator means.

5,333,120

BINARY TWO'S COMPLEMENT ARITHMETIC CIRCUIT

Joseph R. Gilber't, 1802 W. Cholla St., Unit 210, Phoenix, Ariz. 85029-3769

Filed Nov. 17, 1992, Ser. No. 977,652

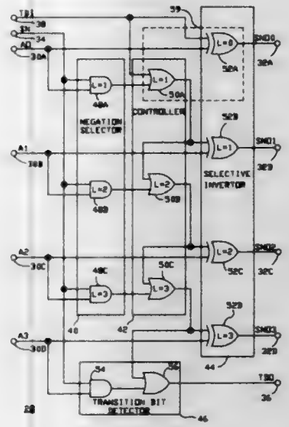
Int. Cl.[5] G06F *7/50*

U.S. Cl. 364—786 **26 Claims**

1. A binary two's complement arithmetic circuit for performing arithmetic operations on an incoming number expressed as N bits, where N is an integer number, where each of said N bits exhibits either a logic zero or a logic one, and where a transition bit of said N bits is the least significant one of said N bits to exhibit a logic one, said circuit comprising:

input means having N terminals adapted to receive said N bits of said incoming number in a one-to-one correspondence;

a combinatorial logic circuit coupled to said input means, said combinatorial logic circuit being configured to invert all bits of said incoming number having greater significance than said transition bit and to transfer, without inverting, said transition bit and all bits having less significance than said transition bit; and



output means, coupled to said combinatorial logic circuit, having N−1 terminals corresponding to the N−1 most significant ones of said N bits of said incoming number.

5,333,121

DYNAMIC SEMICONDUCTOR MEMORY HAVING LOCAL READ AMPLIFIER DRIVER CIRCUITS WHICH ARE OPTIMIZED WITH RESPECT TO THEIR DRIVE FUNCTION

Heribert Geib, Grafing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

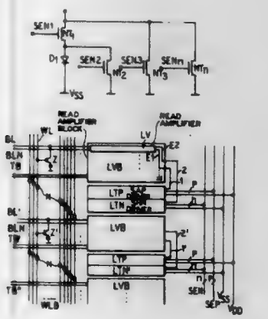
PCT No. PCT/DE91/00695, § 371 Date Mar. 9, 1993, § 102(e) Date Mar. 9, 1993, PCT Pub. No. WO92/05557, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 2, 1991, Ser. No. 984,579

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1990, 4029856

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—205 **40 Claims**



1. A dynamic semiconductor memory, comprising:

a memory cell array which has at least one block of memory cells connected to a group of word lines;

read amplifiers, each having an n-channel part and a p-channel part;

at least one SAN driver per block of memory cells connected to a group of word lines for driving the n-channel parts of the read amplifiers;

at least one SAP driver per block of memory cells connected to a group of word lines for driving the p-channel parts of the read amplifiers;

at least one block of memory cells connected to a group of word lines which is subdivided into a plurality of memory blocks, each memory block connected to a group of bit lines, said memory blocks connected to a group of bit lines in turn having a plurality of bit line pairs;

said word lines having an electrical contact with superimposed conductor tracks which are of low impedance relative to the word lines via word line pins, the bit line pairs respectively located between two respective word line pins of a word line forming a memory block connected to a group of bit lines;

a single SAN driver for each memory block connected to a respective group of bit lines, forming a local SAN driver and being driven such that a voltage at its output decreases in a piecemeal manner, with different gradients, to enable a fast and at the same time reliable reading; and

one local SAN driver driving the n-channel parts of all read amplifiers belonging to a memory block via a local SAN line.

5,333,122

ELECTRICALLY ERASABLE AND PROGRAMMABLE NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING WORD LINE VOLTAGE CONTROL CIRCUIT USING INTERNAL VOLTAGE BOOSTER CIRCUIT

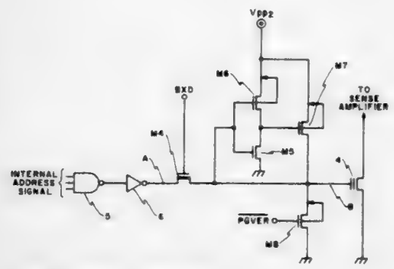
Kazuhisa Ninomiya, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 19, 1992, Ser. No. 978,986

Claims priority, application Japan, Nov. 29, 1991, 3-317110

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.11 **4 Claims**



1. A flash memory comprising:

memory cells for storing data;

an internal booster circuit for generating a first voltage for data writing, higher than a supply voltage upon reception thereof; and

a voltage control circuit connected to said memory cells and said internal booster circuit, said voltage control circuit receiving an address signal,

said voltage control circuit including first means for supplying the first voltage to a gate of a memory cell which is specified by the received address signal at a time of data writing, and

second means for dropping the first voltage to a second voltage which is lower than the first voltage but higher than the supply voltage,

said second means supplying the second voltage to the gate of said memory cell at a write verifying time, said second means comprising a transistor having a gate supplied with a control signal, a source connected to the gate of said memory cell and a drain connected to a ground terminal, said control signal having a first level that renders said transistor non-conductive at the time of data writing, and at the write verifying time said second level being lower than said second voltage by a threshold level of said tran-

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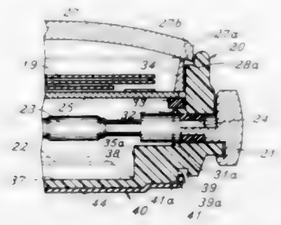
sistor in order to cause said transmitter to drop the first voltage to the second voltage

5,333,123

CONTINUOUS WATERPROOF TIMEPIECE CASE WITH INTEGRAL CASE BACK BLANK

Michel Plancon, Watertown, Conn., and Jean L. Cuinet, L'Osnom, France, assignors to Timex Corporation, Middlebury, Conn.

Filed Jul. 23, 1993, Ser. No. 96,355
Int. Cl.[5] G04B 37/00
U.S. Cl. 368—276 17 Claims



1. Improvement in a water-resistant timepiece of the type including a crystal, a timepiece dial and movement assembly, and a long-life energy cell, which comprises:

a continuous case of plastic having:

(a) a first outer peripheral member adapted to receive said dial and movement assembly and said long-life energy cell, and further adapted to receive said crystal to form a water-resistant seal therewith;

(b) a thin substantially flat case back wall integral with said peripheral member to form an annular edge;

(c) a first peripheral groove located in the bottom of said peripheral member; and,

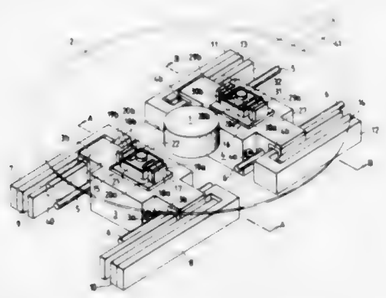
a case back blank composed of high strength material of substantially uniform thickness and having a substantially flat central portion and an integral peripheral side wall and cooperating with said peripheral groove of said case to integrally attach said case back blank to said case.

5,333,124

MAGNETIC OPTICAL DISK PLAYER HAVING IMPROVED SERVORESPONSE SENSITIVITY

Ikuya Kikuchi, and Ryo Sato, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 18, 1990, Ser. No. 524,932
Claims priority, application Japan, Sep. 22, 1989, 1-246900
Int. Cl.[5] G11B 13/04, 11/12
U.S. Cl. 369—13 8 Claims



1. A magnetic optical disk player comprising:

a turn table for turning a magnetic optical disk;

recording head means and erasing head means movable along a plane including a disk support surface of said turn table in two different radial directions of said turn table; and

bias magnetic field generating means for generating bias magnetic fields distributed along moving areas of said recording and erasing head means, said bias magnetic field generated by said recording head being in the opposite direction of said bias magnetic field generated by said erasing head,

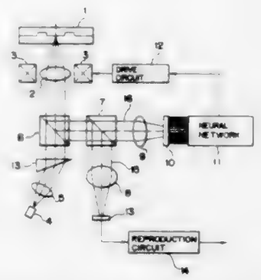
wherein said recording head means and said erasing head means include an objective lens, movable coils coupled with said object lens, and drive magnetic field generating means for generating a drive magnetic field applied to said movable coils to drive the position of said objective lens, said drive magnetic field of said recording head means and said erasing head means being in the same direction as that of said bias magnetic fields of said recording head means and erasing head means, respectively.

5,333,125

OPTICAL INFORMATION PROCESSING APPARATUS HAVING A NEURAL NETWORK FOR INDUCING AN ERROR SIGNAL

Masakuni Yamamoto, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 704,602, May 23, 1991, abandoned.
This application Nov. 5, 1993, Ser. No. 147,447
Claims priority, application Japan, May 25, 1990, 2-133901
Int. Cl.[5] G11B 7/13
U.S. Cl. 369—44.34 31 Claims



1. An optical information processing apparatus for at least one of recording and reproducing information by irradiating a converged light beam on a recording medium, comprising:

a light detector for receiving a light beam which has been reflected or transmitted by the medium;

a neural network for receiving an output signal of said light detector and for outputting at least one of a tracking error signal and a focusing error signal, said neural network comparing said at least one of the tracking error signal and the focusing error signal with an instructor signal, and performing a learning operation so that the compared signals coincide; and

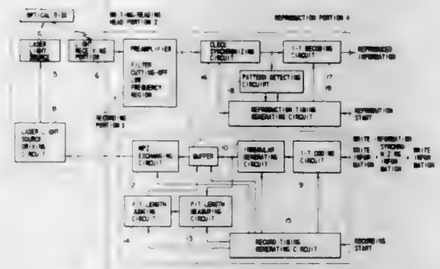
servo means for performing at least one of a tracking servo operation in accordance with the tracking error signal induced by said neural network and a focusing servo operation in accordance with the focusing error signal induced by said neural network.

5,333,126

INFORMATION RECORDING METHOD AND OPTICAL DISK APPARATUS USING SAME

Yasushi Fukuda, Odawara; Hiroshi Ide, Kodaira; Atsushi Saito, Ichikawa; Takeshi Maeda, Kokubunji; Fumiyoshi Kirino, Tokyo, and Tsuyoshi Toda, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 460,370, Jan. 3, 1990, Pat. No. 5,233,589, and Ser. No. 588,361, Sep. 26, 1990, Pat. No. 5,229,986. This application Feb. 12, 1993, Ser. No. 16,897
Claims priority, application Japan, Feb. 13, 1992, 4-026510; Feb. 13, 1992, 4-026519
Int. Cl.[5] G11B 5/76, 5/09
U.S. Cl. 369—59 20 Claims



1. A method for recording information on a recording medium comprising the steps of:

(a) converting write information for every record unit determined, depending on said recording medium, into coded data according to a format previously determined,

said coded data consisting of a series of run length limited codes, into which said write information is converted according to a predetermined coding rule, a synchronizing signal for synchronizing a reproduced clock added at the beginning of said write information, and a synchronizing signal for resynchronization inserted into said write information inserted for every specified data length,

said resynchronizing signal being selected between at least one sort of first resynchronizing code patterns, in which the number of symbols "1" included therein is even, and at least one sort of second resynchronizing code patterns, in which said number of symbols "1" is odd;

each of said first and second resynchronizing code patterns including at least a specified code pattern, which does not meet said coding rule,

either one selected between said first resynchronizing code pattern and said second resynchronizing code pattern so that an accumulated charge obtained from a run length of said coded data approaches zero being used for said resynchronizing signal;

(b) obtaining record waveform data, in which a level is inverted at each symbol "1" in said coded data, from said coded data; and

(c) forming record marks corresponding to said coded data.

5,333,127

MEMORY CIRCUIT WITH DUAL SENSE AMPLIFIER AND AMPLIFIER CONTROL CIRCUITRY

Toshiyuki Hiraki, and Masayuki Hata, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 900,216
Claims priority, application Japan, Jun. 17, 1991, 3-171672
Int. Cl.[5] G11C 11/34
U.S. Cl. 365—208 5 Claims

1. A semiconductor integrated circuit comprising:

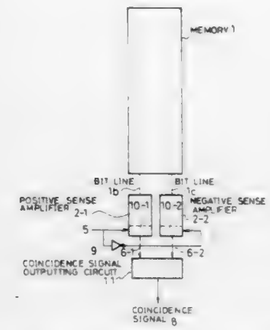
a memory cell whereby stored data are output as non-inversion logical data and inversion logical data;

a true sense amplifier responsive to said non-inversion logical data to output a non-inversion logical result;

an inversion sense amplifier responsive to said inversion logical data to output an inversion logical result;

an activating and selection circuit responsive to a sense signal

(a) for controlling and selecting one of said non-inversion sense amplifier or said inversion sense amplifier to output one of said non-inversion logical data or said inversion logical data respectively as a selected logical result and



(b) for causing an output terminal of a remaining one of said non-inversion sense amplifier or said inversion sense amplifier to be at a given potential;

wherein said activating and selection circuit activates only one of said non-inversion sense amplifier or said inversion sense amplifier; and

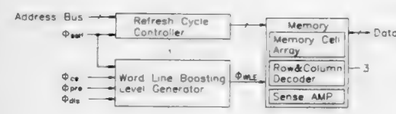
an output selection circuit responsive to said sense signal to select one of said non-inversion logical result from said non-inversion sense amplifier or said inversion logical result from said inversion sense amplifier.

5,333,128

SEMICONDUCTOR MEMORY DEVICE HAVING A CIRCUIT FOR REDUCING FREQUENCY OF PROCEEDING REFRESH IN DATA RETENTION MODE

Seiseung Yoon, Seoul, and Moongone Kim, Kyungki, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jul. 13, 1992, Ser. No. 912,313
Claims priority, application Rep. of Korea, Jul. 16, 1991, 91-12172; May 6, 1992, 92-7670
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—222 4 Claims



4. A semiconductor memory device comprising:

a memory including a plurality of word lines for accessing data stored in the memory;

a refresh cycle controller for controlling the frequency of refresh cycles in data retention mode based on at least one row address bit and a self-refresh signal; and

a word line boosting level generator for increasing a boosting level of said word lines to said memory in data retention mode in response to said self-refresh signal and a clock-enable signal, said word line boosting level generator comprising:

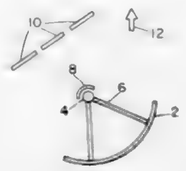
VOL 1164 ISS 4 JL 26 1994 UMI

a fourth inverter receiving said self-refresh signal;
a fifth inverter receiving said clock-enable signal;
a sixth inverter having an input terminal connected to an output terminal of said fifth inverter;
a transmission gate having a control terminal connected between the self-refresh signal and an output terminal of the fourth inverter, and an input terminal connected to an output terminal of the sixth inverter;
a first field effect transistor having a gate terminal connected to the output terminal of the fourth inverter, a drain terminal connected to a voltage supply Vcc, and a source terminal connected to an output terminal of the transmission gate;
a second field effect transistor having a drain terminal connected to the voltage supply Vcc and a gate terminal and a source terminal connected to the output terminal of the transmission gate;
a first metal oxide semiconductor capacitor having one terminal connected to the output terminal of the transmission gate;
a second metal oxide semiconductor capacitor having one terminal connected to the output terminal of the sixth inverter, and another terminal connected to another terminal of the first MOS capacitor;
a third field effect transistor having a drain terminal connected to the voltage supply Vcc, a gate terminal connected to a precharge signal line, and a source terminal connected to a node formed by said another terminals respectively of the first and second metal oxide semiconductor capacitors; and
a fourth field effect transistor having a drain terminal connected to the node of the first and second metal oxide semiconductor capacitors, a source terminal connected to a voltage supply Vss, and a gate terminal connected to an output disable signal.

5,333,129
ACOUSTIC IMAGING IN THE OCEAN USING AMBINET NOISE

Michael J. Buckingham, La Jolla, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Feb. 3, 1993, Ser. No. 12,894
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—7 **24 Claims**

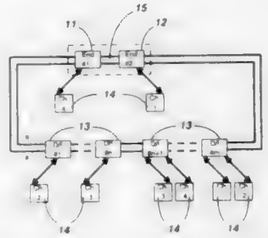


1. A method for generating a pixel of an acoustic image of a target object in an ocean environment, comprising:
defining a detection beam between said target object and an acoustic detector, wherein a region of intersection of said detection beam and a surface of said target object corresponds to the pixel;
detecting ambient noise reflected from said region of intersection and generating a first electrical signal comprising frequency and amplitude information;
detecting ambient noise outside of said region of intersection and generating a second electrical signal comprising frequency and amplitude information;
comparing said first electrical signal and said second electrical signal to determine a contrast therebetween of both frequency and amplitude information corresponding to acoustic albedo of said region of intersection on said target object; and
generating the pixel corresponding to a level of the acoustic albedo.

5,333,130
SELF-HEALING DROP AND INSERT COMMUNICATION NETWORK

Emanuel Weissmann, Richmond Hill, and Ian M. Alexander, Pickering, both of Canada, assignors to Alcatel Canada Wire, Inc., North York, Canada

Filed May 18, 1993, Ser. No. 62,899
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—16 **7 Claims**



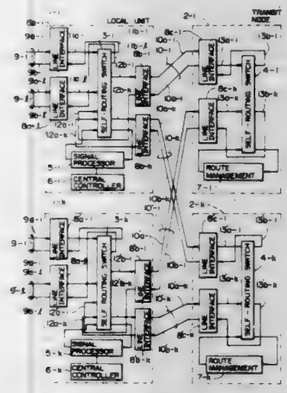
1. A self-healing drop and insert communication network comprising two end stations and a chain of drop and insert multiplexer stations, said two end stations being connected by two lines to said chain of intermediate drop and insert multiplexer stations so as to provide communication in both directions, east and west, for multiple data or voice channels between any of the stations, characterized in that, in the event of a break or failure in the communication network, said two end stations are interconnected to form one drop and insert multiplexer station, whereas the stations on each side of the break or failure become new end stations, and means are provided for redirecting communication transmitted by said data or voice channels away from the point of break or failure when it occurs, wherein the means for redirecting communication transmitted by the channels away from the point of break or failure comprise channel access circuits which can be oriented east or west by electrical control and which are configured to automatically change direction as required in case of break or failure in the network, wherein the means for redirecting communication transmitted by the channels are provided for redirecting individual channels in case of break or failure, thereby allowing the network to self-heal and remain operational after the occurrence of the break or failure.

5,333,131
PACKET SWITCHING METHOD AND SYSTEM WITH SELF-ROUTING SWITCH

Shiro Tanabe, Saitama; Akinori Kubo, Yokohama, both of Japan, and Taihei Suzuki, Norcross, Ga., assignors to Hitachi, Ltd., Tokyo and Hitachi Software Engineering Co., Ltd., Yokohama, both of Japan

Filed Aug. 19, 1991, Ser. No. 747,144
Claims priority, application Japan, Aug. 17, 1990, 2-215712
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—54 **13 Claims**

6. A packet network comprising:
a plurality of local switching units each connected to a plurality of packet lines; and
a plurality of transit units each connected to the individual local switching units through at least one transit line having a predetermined transmission capacity;
each of said local switching units comprises:
a plurality of first label conversion means each connected to one of said plurality of packet lines and being responsive to a logical channel identifier contained in an incoming packet received from the packet line to add first switching information to said incoming packet,
a plurality of second label conversion means each connected to one of said transit lines and being responsive to a logical channel identifier contained in an outgoing packet received from the transit line to add second switching information to said outgoing packet,
a self-routing switch connected to said first and second label conversion mean and operative to switch the incoming packet received from each of said first label conversion means to one of said transit lines selected on the basis of the first switching information contained in the incoming packet and to switch the outgoing packet received from each of said second label conversion means to one of said packet lines selected on the basis of the second switching information contained in the outgoing packet, and
control means connected to said self-routing switch and operative to terminate a control packet and perform call processing control;
each of said transit units comprises:
a plurality of third label conversion means each connected to one of said transit lines and being responsive to a logical path identifier contained in an incoming packet received from the transit line to add third switching information to said incoming packet, and

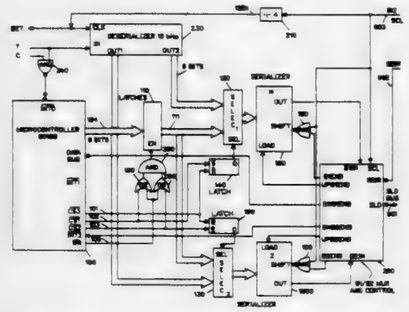


a self-routing switch connected to said plurality of third label conversion means and operative to switch the incoming packet received from each of said third label conversion means to one of said transit lines as an outgoing packet on the basis of said third switching incoming packet;
said control means of each local switching unit comprises:
means for establishing a plurality of logical paths having bandwidths unfixed in advance between the local switching unit and a desired different local switching unit through different transit units,
means for managing an available bandwidth for each transit line on which at least one logical path is established, and
means for checking, when a request for setting a call is originated from any subscriber line connected to the local switching unit, the available bandwidth of a transit line on which a logical path exists on which said call is to be established to determine whether the available bandwidth has a portion not yet assigned and whether the portion not yet assigned is wide enough to accept the assignment of the bandwidth requested by said call and establishing, if said transit lines have the available bandwidth portion not yet assigned that is wide enough, a logical channel for said call on said logical path.

5,333,132
CONNECTING APPARATUS FOR PLURAL CHANNEL DIGITAL COMMUNICATION NETWORK

Rene Chuniaud, Cagnes sur Mer; Marc Lamberton, Antibes; Jean-Francois Le Pennec, Nice; Patrick Michel, La Guade, and Patrick Sicsic, La Colle sur Loup, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1992, Ser. No. 925,065
Claims priority, application European Pat. Off., Aug. 29, 1991, 91480136.0
Int. Cl.[5] H04L *5/02*
U.S. Cl. 370—58.1 **7 Claims**



1. Apparatus for connecting data communicating equipment to a digital communication network providing at least first and second digital communication channels, said first channel having a first transmission delay and said second channel having a second transmission delay, said apparatus comprising:
a transmit part comprising:
means for separating a single high rate data signal received from said data communication equipment into two distinct low rate data signals, each of said low-rate data signals being transmitted through a different one of said digital channels, and
means for adding to each low rate signal a unique identifier characterizing the associated digital channel;
a receive part comprising:
storage means for storing the data received from said digital network,
means for measuring the difference between the two transmission delays,
addressing means for addressing said storage means in order to extract the data received through both digital channels,
detecting means for detecting the reception of said identifiers which are received from said digital network, and
control means responsive to the reception of said identifiers and the difference between said transmission delays for controlling said addressing means in order to provide a high-rate data signal which is not affected by the difference in transmission delays introduced by both digital channels.

5,333,133
CALL PROCESSING CONTROL SYSTEM

G. Wayne Andrews, Dunstable; Jeffrey A. Fried, Somerville; Jerry Gechter, Lincoln, and Norvel L. Patton, Jr., Burlington, all of Mass., assignors to Teloquent Communications Corporation, Billerica, Mass.

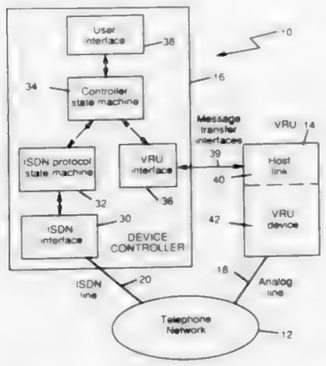
Filed Apr. 28, 1992, Ser. No. 875,069
Int. Cl.[5] H04M *3/56;* **H04L** *5/18*
U.S. Cl. 370—58.2 **98 Claims**

1. A control system for processing a call over a network comprising:
a call handling device connected to said network via first

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call connection interface, said first call connection interface permitting establishing and releasing a network connection to said call over said network and participation with a second call connection interface in said network connection to said call over said network, said call handling device being programmed to receive control messages over message transfer interfaces and being capable of actively engaging said call over said first call connection interface, and

a device controller connected to said network via said second call connection interface, said second call connection



interface permitting establishing and releasing said network connection to said call over said network, participation with said first call connection interface in said network connection to said call over said network, and control over said network connection when said second call connection interface is the sole interface participating in said network connection to said call over said network,

said device controller being connected to said call handling device via said message transfer interfaces and being programmed to provide a control message to said call handling device regarding at least one of establishing and releasing said network connection.

5,333,134

CONNECTION HOLD CONTROL SYSTEM

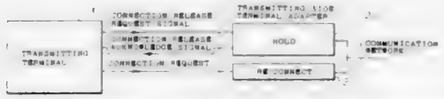
Ryoichi Ishibashi; Tohio Irie, and Eisuke Iwabuchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 23, 1992, Ser. No. 824,284

Claims priority, application Japan, Jan. 24, 1991, 3-006801

Int. Cl.[5] **H04L** *12/56*

U.S. Cl. 370—94.1 **20 Claims**



1. A connection hold control system in an interface between a first terminal and a communication network providing communication channels for data communication to a second terminal and a third terminal, said connection hold control system comprising:

hold means for delaying release of a first channel connecting the first and second terminals via the communication network after completion of data communication from the first terminal to the second terminal; and

connect means for connecting the first and second terminals via the first channel if data communication from the first terminal to the third terminal via a second channel ends within a predetermined time after the data communication from the first terminal to the second terminal ends.

5,333,135

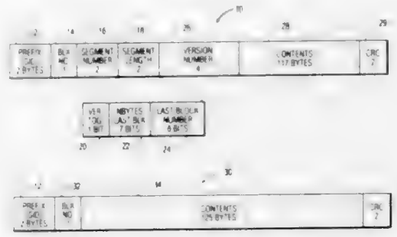
IDENTIFICATION OF A DATA STREAM TRANSMITTED AS A SEQUENCE OF PACKETS

James W. Wendorf, Cortlandt Manor, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Feb. 1, 1993, Ser. No. 11,936

Int. Cl.[5] **H04J** *3/26*

U.S. Cl. 370—94.1 **22 Claims**



1. A method of transmitting and receiving data packets from one datastream which constitutes a given data file that is time-division multiplexed with packets representing other information, comprising:

dividing said one datastream into a sequence of file packets,

dividing said sequence of file packets into a plurality of segments, each segment including at least one said file packet from said sequence, the file packets of a given segment being successive packets within said sequence,

including in the first-transmitted packet of each segment a respective first series of bits containing identifying information, said first series including a service identification portion identifying said given data file, a block number representing the position of that packet as the first-transmitted packet of that segment, and a respective segment number representing the position of that segment within said plurality of segments,

including, in each other packet of each segment, only one respective second series of bits containing identifying information, said second series consisting of a service identification portion identifying said given data file and a respective block number representing the position of that packet within said segment, and

transmitting said plurality of segments serially, each of said data packets being separated from other data packets of said file by at least a given inter-packet time greater than zero, and all the respective file packets of each respective segment being transmitted prior to transmission of the first packet of the next segment transmitted.

5,333,136

PARALLEL DATA TRANSFERRING AND PROCESSING CIRCUIT

Byung E. Ahn, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 11, 1991, Ser. No. 728,580

Claims priority, application Rep. of Korea, Oct. 24, 1990, 90-17014

Int. Cl.[5] **H04J** *3/04*

U.S. Cl. 370—112 **25 Claims**

1. A parallel data transferring and processing circuit, comprising:

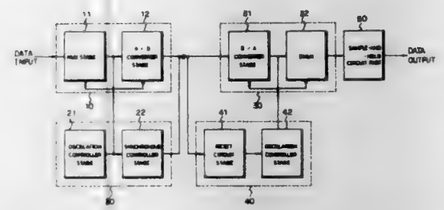
serial conversion means for converting analog and digital parallel data signals to a digital serial data signal;

control means for controlling said serial conversion means

and synchronizing said digital serial data signal in response to a first fixed frequency oscillating pulse;

parallel conversion means for converting said digital serial data signal to parallel data signals, said parallel conversion means comprising:

first demultiplexer means for converting said digital serial data signal to a first parallel signal,



digital-to-analog converter means for converting the first parallel signal to an analog signal, and

second demultiplexer means for converting the analog signal to said parallel data signals; and

impulse generation means for providing a reset signal to synchronize said parallel conversion means with said serial conversion means, said reset signal being generated in response to said fixed frequency oscillating pulse.

5,333,137

CODING SYSTEM HAVING DATA CONTROLLING MECHANISM ACTIVATED WHEN ERROR IS DETECTED

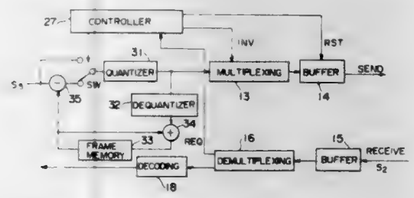
Takehiko Fujiyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 1, 1991, Ser. No. 738,814

Claims priority, application Japan, Aug. 6, 1990, 2-207837

Int. Cl.[5] **G06F** *11/00*

U.S. Cl. 371—8.1 **7 Claims**



1. A coding system comprising:

first coding means for coding an input data signal and for generating a first coded signal;

second coding means for coding the input data signal and for generating a second coded signal;

switch means, coupled to said first coding means and said second coding means, for selecting one of said first coded signal and said second coded signal in accordance with a select signal;

multiplexer means, coupled to said switch means, for receiving a selected coded signal which corresponds to said one of the first coded signal and said second coded signal and for generating a multiplexed signal;

buffer means, coupled to said multiplexer means, for temporarily storing said multiplexed signal and for outputting said multiplexed signal to a communication channel; and

control means for generating an invalidation signal, a reset signal and said select signal when said control means is notified of the occurrence of an error, said control means being coupled to said switch means, said multiplexer means and said buffer means and outputting said select signal to said switch means so as to cause said switch means to select said second coded signal instead of said first coded signal said control means outputting said invalidation signal to said multiplexer means so as to invalidate said first coded signal input to said multiplexer means before said second coded signal is input to said multiplexer means via said switch means, and said control means outputting said reset signal to said buffer means so as to cause said multiplexed signal stored in said buffer means to be erased, wherein said input data signal is composed of frames;

said first coding means comprising means for coding said input data signal in a plurality of consecutive frames; and

said second coding means comprising means for coding said input data signal for every frame,

wherein said multiplexer means comprises:

a first buffer memory temporarily storing said selected coded signal;

processing means for transforming said selected coded signal form said first buffer memory into a predetermined coded signal;

a second buffer memory coupled to said processing means for temporarily storing said predetermined coded signal which is output, as said multiplex signal, to said buffer means; and

controller means for resetting said first and second buffer memories and said processing means to a predetermined state in response to said invalidation signal.

5,333,138

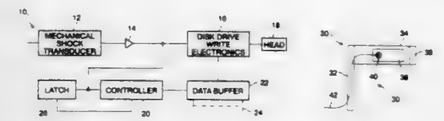
APPARATUS AND METHOD FOR PREVENTING DATA CORRUPTION IN DISK DRIVES FROM MECHANICAL SHOCK DURING WRITE OPERATIONS

John H. Richards, and Karl D. Schuh, both of San Jose, Calif., assignors to MiniStor Peripherals International Limited, San Jose, Calif.

Filed Mar. 11, 1992, Ser. No. 849,740

Int. Cl.[5] **G06F** *11/00;* **G11B** *15/04*

U.S. Cl. 371—7 **10 Claims**



1. Apparatus for preventing data corruption on a disk of a disk drive due to a mechanical shock experienced by said disk drive while writing data to a selected data track on said disk by passing a write-current to a write head disposed on a head arm of an actuator, said apparatus comprising:

mechanical shock sensing means for sensing mechanical shock having a magnitude exceeding a predetermined threshold and producing a shock-present signal in response thereto, said mechanical shock sensing means including a beam having a first end, a second end and a piezoelectric film strain sensor attached along a length of said beam, said second end having a mass of between 0.01 gm and 1.0 gm attached thereto, an electrical output of said piezoelectric film strain sensor carried on a pair of conductors;

write-disable means, responsive to said shock-present signal, for interrupting the write current to the write head;

interrupted-data identifying means, responsive to said shock-present signal, for identifying interrupted data being written at the time said shock-present signal indicates the presence of the mechanical shock; and

recovery means, responsive to said interrupted-data identifying means, for repositioning the write head over the selected track and for rewriting said interrupted data.

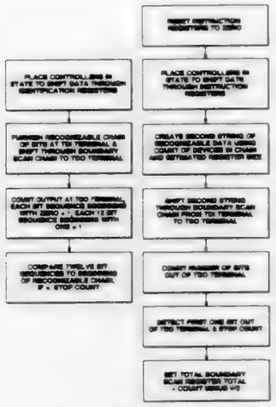
VOL 1164 ISS 4 JL 26 1994 UMI

5,333,139

METHOD OF DETERMINING THE NUMBER OF INDIVIDUAL INTEGRATED CIRCUIT COMPUTER CHIPS OR THE LIKE IN A BOUNDARY SCAN TEST CHAIN AND THE LENGTH OF THE CHAIN

Jay J. Sturges, Orangevale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 30, 1992, Ser. No. 998,545
Int. Cl.[5] G06F *13/00*
U.S. Cl. 371—22.3 **5 Claims**



1. A method for determining the number of individual integrated circuit computer chips or the like in a boundary-scan test chain and the length of the chain comprising the steps of placing the controller of each individual boundary-scan circuit in the chain in a state in which a series of bits will traverse a path through an equipment identification register in each individual boundary-scan circuit, sending a first recognizable series of bits through the chain, counting at the output of the chain as one each bit which indicates that an individual boundary-scan circuit has no identification number and each series of bits which indicates an identification number, comparing each series of bits which indicates an identification number with a first portion of the first recognizable series of bits, and ceasing the count when the beginning of the first recognizable series of bits is detected at the output of the chain.

5,333,140

SERVOWRITER/CERTIFIER

Alex Moraru, Fremont; Bill R. Baker, Redwood City, and Yechel A. Yassif, Santa Clara, all of Calif., assignors to Helios Incorporated, Sunnyvale, Calif.

Filed Oct. 3, 1991, Ser. No. 770,642
Int. Cl.[5] G11C *29/00*; G06F *7/02*
U.S. Cl. 371—21.2 **11 Claims**

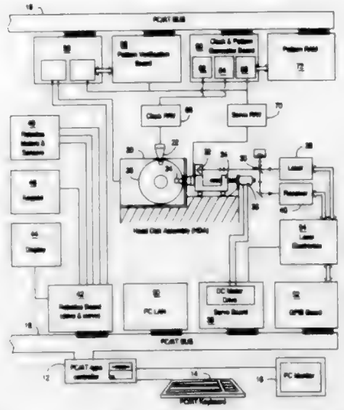
5. A combination servowriter and certifier apparatus for initializing and testing rotating magnetic recording mediums, comprising:

a head disk assembly (HDA) for supporting and rotating a magnetic recording medium to be initialized and tested;

read/write (R/W) head means proximate to said HDA and said magnetic recording medium for reading and writing data on a succession of data tracks;

a sector average amplitude (SAA) detection and recording means coupled to the R/W head means for reading signal amplitudes and storing representations of those amplitudes for a set of corresponding tracks on said magnetic recording medium; and

threshold setting means coupled to the SAA detection and recording means for setting a positive and a negative threshold on a first revolution of said magnetic recording medium with the R/W head positioned over a current one of said data tracks such that each threshold maintains a percentage value of said representations of SAA for an adjacent one of sad data tracks which was previously sampled and stored, wherein the R/W head means is



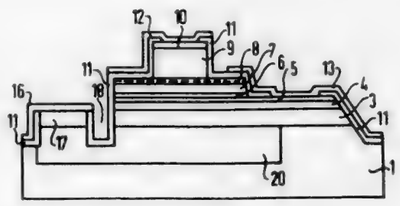
enabled to cope with a dynamic range of read-back signals on said first revolution, and wherein the SAA derived from a previous track provides for an approximation of a current track's SAA, and saves one revolution time in the process.

5,333,141

MODULATABLE LASER DIODE FOR HIGH FREQUENCIES

Thomas Wolf, and Wolfgang Thulke, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 8, 1993, Ser. No. 87,322
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1992, 4222466
Int. Cl.[5] H01S *3/10, 3/19*
U.S. Cl. 372—20 **15 Claims**



1. A tunable laser diode, comprising:

a substrate of semi-insulating semiconductor material;

an active layer, a tuning layer and a central layer, said central layer being situated between the active and tuning layers, the active, tuning and central layers arranged on the substrate transversely relative to one another with respect to layer planes;

contacts for separate current injection into the active layer or, respectively, into the tuning layer, said contacts being respectively electrically connected to the active layer, to the central layer and to the tuning layer;

the tuning layer having a multi-layer quantum well layer structure;

a further layer forming a ridge waveguide over the active layer;

a first doped region located between the active, tuning, central further layers and the substrate, said first doped region being limited to a narrow strip under the tuning layer and the active layer;

a second doped region on the first doped region and located laterally relative to the tuning layer and the active layer;

the contact that is electrically connected to the layer arranged between the central layer and the first doped region being applied on a side of the second doped region opposed from the substrate; and

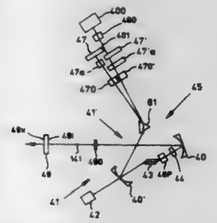
a trench that electrically insulates said second doped region from at least said active, central, tuning and further layers.

5,333,142

TECHNIQUE FOR INTRACAVITY SUM FREQUENCY GENERATION

Richard Scheps, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 970,328, Oct. 26, 1992, Pat. No. 5,276,695. This application Aug. 12, 1993, Ser. No. 108,131
Int. Cl.[5] H01S *3/109*
U.S. Cl. 372—22 **27 Claims**



1. A laser generating two wavelengths within a preselected range of wavelengths for producing a third wavelength by sum frequency generation comprising:

a resonator for said two wavelengths within said preselected range of wavelengths defining a laser cavity by two highly reflective flat elements, two highly reflective concave fold mirror elements and an output coupler reflective element arranged to form a reflective path for a laser resonator mode in said laser cavity;

a dispersing prism disposed in said laser cavity between one of said concave fold mirrors and said two highly reflective flat elements to spatially disperse said two wavelengths, said dispersing prism and said two highly reflective flat elements being aligned in a manner such that each of said two highly reflective flat elements defines a discrete end portion of a separate one of two resonant paths in said laser cavity, each of said two resonant paths for a discrete one of said two wavelengths in said preselected range of wavelengths;

a laser gain element disposed in said laser cavity to produce a laser emission;

means for optically exciting said laser gain element in an end pumping mode to produce said laser emission that includes said two wavelengths in said preselected range of wavelengths; and

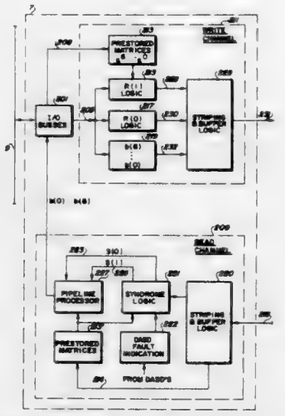
a nonlinear optical crystal located between said two concave fold mirrors, having the property to generate said third wavelength being the sum frequency of said two wavelengths.

5,333,143

METHOD AND MEANS FOR B-ADJACENT CODING AND REBUILDING DATA FROM UP TO TWO UNAVAILABLE DASDS IN A DASD ARRAY

Miguel M. Blaum, and Norman K. Ouchi, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1991, Ser. No. 751,950
Int. Cl.[5] G06F *7/22*
U.S. Cl. 371—40.4 **11 Claims**



1. A method for correcting portions of a data string stored on up to two unavailable DASDs in a synchronous array of N+2 failure independent DASDs, comprising the steps of:

(a) segmenting a data string into N blocks, B-Adjacent coding of first and second redundant blocks from the string, and writing N data and the two redundant blocks to N+2 counterpart DASDs, said B-adjacent code implicitly defining a parity check matrix;

(c) responsive to the identification of the unavailable DASDs, recursively forming and resolving a pair of syndromes as implicitly defined by the partly check matrix and obtained from the blocks of the same string on the remaining DASDs, said syndrome pair consisting of up to two independent Boolean equations in two unknowns, said recursive formation and resolution including overlap processing of the terms of the Boolean equations defining up to two blocks in error within a time period approximating the write update time for resolution of a single block in error.

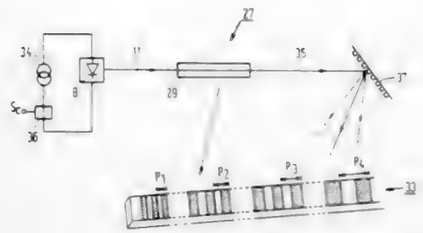
5,333,144

DIODE LASER DEVICE HAVING A REFLECTING FEEDBACK ELEMENT, AND APPARATUS USING THE DEVICE

Coen T. H. F. Liedenbaum; Ronald R. Drenten, and Michiel J. Jongerius, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,214
Claims priority, application European Pat. Off., Dec. 30, 1991, 91203427.9; Dec. 3, 1992, 92203739.5
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—29 **26 Claims**

1. An optical device comprising a diode laser for generating a radiation beam, and an optical system for concentrating and guiding the radiation beam, characterized in that the diode laser is a pulsed laser which supplies radiation pulses at a pulse duration p and a pulse period T and in that an at least partially reflecting feedback element is arranged in the radiation path of the radiation beam at approximately a distance d from the diode laser, which distance d satisfies the condition



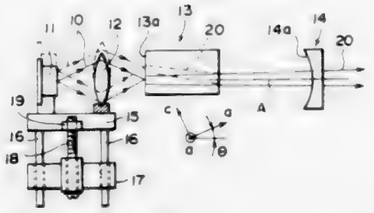
$$d = \frac{c}{2} \cdot nT - \frac{c}{2} \cdot \epsilon(\rho + \Delta\rho)$$

in which n is an integer, c is the light velocity in a medium traversed by the radiation beam, $\Delta\rho$ is the build-up time of a pulse PL in the diode laser and ϵ is a real number which satisfies $0<\epsilon<1$ and increases or decreases within these limits at a decreasing or increasing energy $E(P_r)$, respectively, of a radiation pulse reflected by the feedback element so that the condition given by

$$E(P_r) > E(PL_i)$$

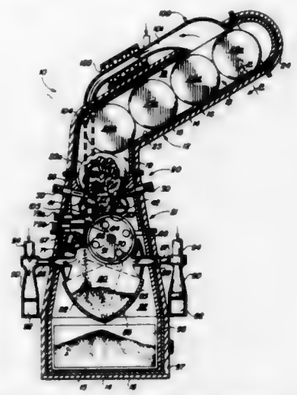
is satisfied at the instant when said radiation pulse enters the diode laser, $E(PL_i)$ being the radiation energy built up in the diode laser at the relevant instant.

5,333,145
SOLID LASER
Hiroaki Hyuga, and Chiaki Goto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 20, 1993, Ser. No. 109,443
Claims priority, application Japan, Aug. 20, 1992, 4-221722
Int. Cl.[5] H01S *3/09*
U.S. Cl. 372—69 **6 Claims**



1. A solid laser comprising:
i) an anisotropic laser crystal, to which a rare earth element has been added,
ii) a pumping means, which causes a pumping beam to impinge upon the laser crystal, and
iii) a resonator mirror, which oscillates a solid laser beam having been produced by the laser crystal,
wherein the laser crystal is located in an orientation such that a crystallographic axis thereof may makes an angle with respect to a laser oscillation axis, and
a means is provided which linearly moves the pumping means with respect to the laser crystal and the resonator mirror such that only either one of ordinary rays and extraordinary rays, which are produced by the laser crystal, may oscillate selectively.

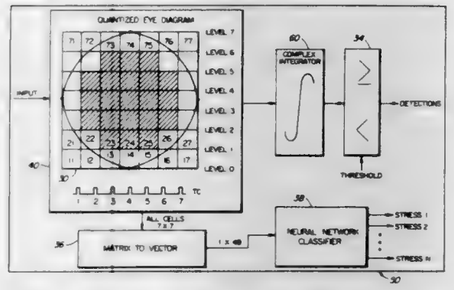
5,333,146
ON-SITE, BIOHAZARDOUS WASTE DISPOSAL SYSTEM
Murry Vance, 6751 Gadwall La., Orlando, Fla. 32810
Continuation of Ser. No. 919,449, Jul. 27, 1992, Pat. No. 5,224,118. This application Jun. 28, 1993, Ser. No. 83,893
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] H05B *7/18;* **F27D** *1/00*
U.S. Cl. 373—60 **20 Claims**



1. An incinerator for the processing of waste, comprising:
a sealed enclosure defining a combustion chamber having upper, intermediate and lower chamber portions;
said upper chamber portion comprising means for introducing waste into said enclosure;
said intermediate chamber portion comprising an internal cavity communicating with said upper chamber portion to receive said introduced waste and including a constiction; at least one drum located in said internal cavity at said constriction; at least one arc transfer device arranged adjacent said drum; and means providing arcing between said arc transfer device and said drum for generating heat; said constriction and drum being relatively dimensioned, configured and adapted to deliver said received waste into said heat; and said lower chamber portion communicating with said internal cavity and said constriction for receipt of residue produced by action of said heat on said waste.

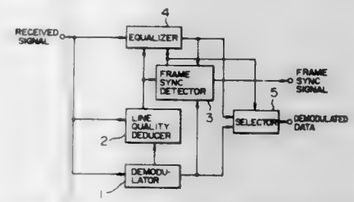
5,333,147
AUTOMATIC MONITORING OF DIGITAL COMMUNICATION CHANNEL CONDITIONS USINHG EYE PATTERNS
Timothy J. Nohara, St. Catherines, and Al-Nasir Premji, Waterloo, both of Canada, assignors to Her Majesty the Queen in Right of Canada as represented by the Minister of Defence, Canada
Filed Aug. 25, 1992, Ser. No. 934,230
Claims priority, application Canada, Nov. 29, 1991, 2056679
Int. Cl.[5] H04B *17/00*
U.S. Cl. 375—10 **22 Claims**

1. A digital signal transmission channel monitor for determining in real-time degradation in transmission quality created by stress in a digital transmission system, comprising, a degradation detector having means for generating an eye pattern's analog signal for a received data signal and applying that eye pattern signal to a grid containing a number of cells, the cells being located within boundaries of an undistorted eye pattern having maximum and minimum voltage amplitude values and a time period T, a number of the cells being identified with a predetermined, generalized error region with all of the cells being formed by predetermined voltage amplitude levels located between the maximum and minimum voltage amplitude values and by predetermined time periods within said time period T, the detector further comprising means for determining when an eye trace of the generated eye pattern's analog signal is located within particular cells, means for obtaining the number of times an eye trace is in each cell of the grid during a predetermined period of time, the numbers from all cells being applied to a complex integrator containing a weighted summer having predetermined weights for each cell and which



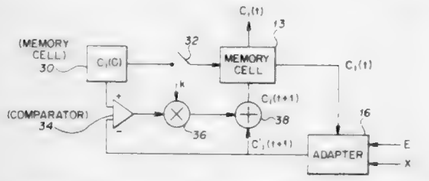
provides means for performing a weighted integration of said numbers, the complex integrator having means for transforming said weighted integration to obtain a test statistic, said detector having means for comparing said test statistic with a predetermined threshold value and means for indicating a stress condition when said test statistic exceeds said predetermined threshold value during said predetermined period of time.

5,333,148
DATA RECEIVER
Kazuhisa Tsubaki; Kouji Abe; Mitsuru Uesugi, and Kouichi Honma, all of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 25, 1992, Ser. No. 843,934
Claims priority, application Japan, Mar. 7, 1991, 3-041717
Int. Cl.[5] H03D *1/00;* **H03H** *7/30;* **H04L** *27/06, 7/00*
U.S. Cl. 375—11 **7 Claims**



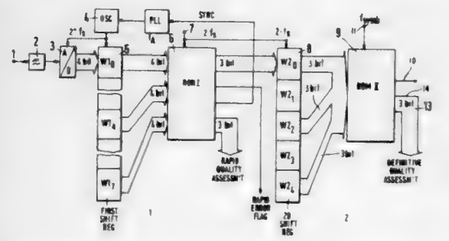
1. A data receiver which receives an input signal and outputs a data signal and a frame synchronization signal for frame processing of said data signal, said data receiver comprising:
a demodulator for receiving said input signal, demodulating data from said input signal to produce a first demodulated data output and producing error information for deducing a transmission line quality;
a line quality deducer for receiving said input signal and deducing the transmission line quality base don the error information and the input signal to produce a transmission line quality signal;
an equalizer for receiving said input signal and deducing the transmission line quality based on the error information and the input signal to produce a transmission line quality signal;
a frame synchronization detector for receiving said first demodulated data output and said second demodulated data output and detecting a specific bit sequence from the first demodulated data output or the second demodulated data output and producing and outputting said frame synchronization signal; and
a selector for selecting the first demodulated data output or the second demodulated data output as said data signal in accordance with said transmission line quality signal and outputting said data signal.

5,333,149
PROCESS AND A CIRCUIT FOR ADAPTING COEFFICIENTS IN A MODEM EQUALIZER
Dominique Vicard, Echirolles; William Glass, Seyssinet-Pariset, and Francois Druilhe, Seyssins, all of France, assignors to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France
Filed Aug. 17, 1992, Ser. No. 930,901
Claims priority, application France, Aug. 19, 1991, 91 10651
Int. Cl.[5] H03H *7/30*
U.S. Cl. 375—14 **29 Claims**



1. A method for adapting coefficients in a modem equalizer, comprising the steps of:
periodically storing a coefficient value;
periodically correcting the stored coefficient value using an error signal associated with detection of at least one symbol provided to the modem to produce a first corrected coefficient value; and
periodically correcting the first corrected coefficient value to produce a second corrected coefficient value by adding to the first corrected coefficient value a recall signal comprising a product of an additive constant, much smaller than unity, and a sign of a difference between the first corrected coefficient value and an initial coefficient value.

5,333,150
DEMODULATION AND SYNCHRONIZATION METHOD AND SYSTEM FOR DIGITALLY MODULATED SIGNALS
Hans-Peter Ketterling, Berlin, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 21, 1992, Ser. No. 887,359
Claims priority, application Fed. Rep. of Germany, May 22, 1991, 4116614
Int. Cl.[5] H04L *27/22*
U.S. Cl. 375—80 **27 Claims**



9. An electronic signal processing method for demodulation and synchronization of received digitally modulated signals, said digitally modulated signals as received having an at least approximately predetermined digital symbol rate and being modulated with respect to a characteristic of a carrier wave

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selected from the group consisting of carrier phase and carrier frequency, said method comprising the steps of:

limiting and demodulating said digitally modulated signal to produce a base-band digital signal;

sampling digitally the amplitude of said base-band digital signal at an integral multiple of said symbol rate with equal time intervals between the sampling instants of successive samples;

intermediately storing a first predetermined number of said digitally sampled amplitude in a manner making a pattern of amplitude values available as an output;

comparing at least some of said amplitude value patterns with predetermined signal patterns fixedly stored in a read-only memory (ROM) look-up table by interrogating said ROM look-up table;

deriving a synchronizing signal when, in the foregoing comparison step, a particular predetermined amplitude value in a particular intermediate storage location occurs;

phase-controlling the generation of symbol rate clock pulses and pulses of pulse sequences appearing at a frequency which is an integral multiple of said symbol rate in a circuit to which said synchronizing signals is supplied

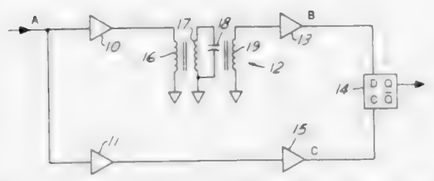
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5,333,151

HIGH SPEED FREQUENCY-SHIFT KEYING DECODER

John F. Kennedy, Garden City, and Robert D. Plowdrey, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 23, 1992, Ser. No. 980,071
Int. Cl.[5] H04L *27/14*
U.S. Cl. 375—88 **8 Claims**



1. Apparatus for decoding a frequency-shift keying (FSK) signal which modulates between a first frequency f_1 and a second frequency f_2 to encode digital information, comprising:

wave-shaping means for shaping said FSK signal to generate substantially identical first and second wave-shaped signals;

an LC tank circuit receiving said first wave-shaped signal for generating a phase-altered signal, said LC tank circuit having a resonant frequency f_0 between said first frequency f_1 and said second frequency f_2; and

sampling means for sampling one of said phase-altered signal or said second wave-shaped signal in response to a transition in the other one of said phase-altered signal or said second wave-shaped signal to generate a decoded signal.

5,333,152

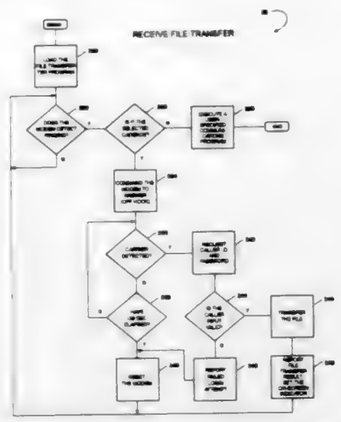
ELECTRONIC MAIL REMOTE DATA TRANSFER SYSTEM

James G. Wilber, 3 Greenleaf Park, Unit A, Merrimac, Mass. 01860

Continuation of Ser. No. 410,939, Sep. 22, 1989, abandoned. This application Jul. 22, 1991, Ser. No. 733,371
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—98 **33 Claims**

31. For use with a stored program computer having a modem for providing data transfer over a telephone line medium, apparatus for providing data transfer, comprising:

means for providing a ring signal to said modem said ring signal having a cadence selectable according to a plurality of data transfer modes, wherein said cadence comprises selected durations of AC ring voltages present and absent; and



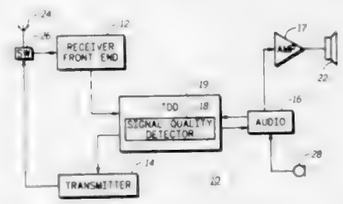
means responsive to said cadence for providing computer control of data transfer according to said cadence.

5,333,153

SIGNAL QUALITY DETECTION METHOD AND APPARATUS FOR OPTIMUM AUDIO MUTING

David L. Brown, Miami; Paul D. Marko, Ft. Lauderdale, and Jaime A. Borras, Hialeah, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 21, 1992, Ser. No. 823,521
Int. Cl.[5] H04B *1/10*
U.S. Cl. 375—104 **3 Claims**



1. A radio communication device comprising:

receiver means for receiving radio signals when a communication link is established with another radio communication device, the radio signals comprising digital information;

an audio section for producing output audio signals representing the radio signals received by the radio receiver;

signal quality detection means for sampling the radio signals received at the receiver means to determine a number of transitions in the digital information that occur at predetermined times, wherein the signal quality detection means comprises means for determining whether a good data packet has been received and means for unmuting the audio section when a good data packet is received, a good data packet being a data packet in which at least a predetermined number of transitions in the received data occur during predetermined intervals; and

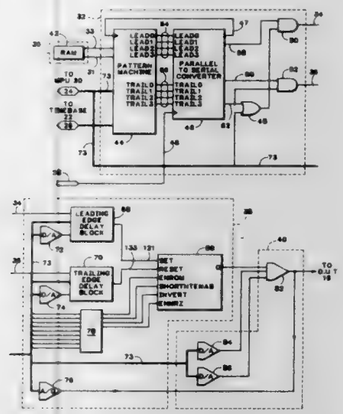
muting means for muting the audio section when the number of transitions in the digital information that occur at the predetermined times exceeds a predetermined threshold.

5,333,154

DIGITAL DATA GENERATION SYSTEM INCLUDING PROGRAMMABLE DOMINANCE LATCH

John A. Hengeveld, Aloha; Jonathan C. Lueker, Portland; Bradford H. Needham, Hillsboro; Burt Price, Portland; James Schlegel, and Mehrab Sedeh, both of Beaverton, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Mar. 2, 1992, Ser. No. 844,362
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—106 **14 Claims**



1. A data time generator system, comprising:

(a) pattern generation means, responsive to a data pulse input signal and to pattern instructions, for producing a coarse lead pulse representative of the time of occurrence of the leading edge of an output pulse and a coarse trail pulse representative of the time of occurrence of the trailing edge of said output pulse, said coarse trail pulse being adjustable independent of said coarse lead pulse; and

(b) output generation means, responsive to said coarse lead pulse and said coarse trail pulse, for producing said output pulse with a leading edge having a time of occurrence determined by said coarse lead pulse and a trailing edge having a time of occurrence determined by said coarse trail pulse.

5,333,155

METHOD AND SYSTEM FOR TRANSMITTING DIGITAL AUDIO SIGNALS FROM RECORDING STUDIOS TO THE VARIOUS MASTER STATIONS OF A BROADCASTING NETWORK

Paul Dambacher, Ampfing, Fed. Rep. of Germany, assignor to Rohde & Schwarz GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Oct. 31, 1991, Ser. No. 785,777
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1991, 4113584; European Pat. Off., Aug. 2, 1991, 9111300.3
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 **14 Claims**

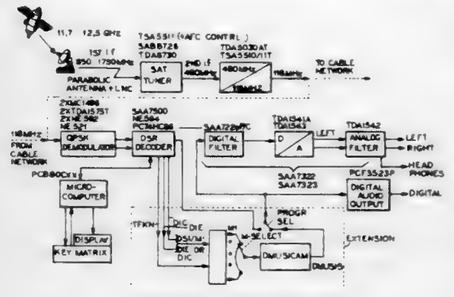
1. A method of transmitting digital audio signals from recording studios to various master stations of a broadcasting network, comprising the steps of:

initially reducing data flow of the digital audio signals to be transmitted in accordance with a technique utilizing a psychoacoustic phenomena of the human ear so as to create data-reduced audio signals;

respectively coding in a baseband in accordance with a DS1 (Digital Satellite) technique a first plurality of said data-reduced digital audio signals and outputting a first DS1/M signal composed of the first plurality of data-reduced digital audio signals;

respectively coding in a baseband in accordance with the DS1 a second plurality of said data-reduced digital audio signals and outputting a second DS1/M signal composed of the second plurality of data-reduced digital audio signals;

transmitting to the various master stations of the broadcasting network the at least first and second DS1/M signals in



accordance with a DSR (Digital Satellite Radio) technique by means of a wide-band transmission system, and wherein the at least first and second DS1/M signals modulate a DSR 4-PSK modulator of a transmitting station enabling a simultaneous transmission and a subsequent simultaneous recovery of the original digital audio signals at a respective receiver for simultaneous presentation of the digital audio signals at the master stations of the broadcast network.

5,333,156

NUCLEAR FUEL ASSEMBLY WITH AN INTEGRATED PASSIVE SAFETY DEVICE

Guy Lemercier, Le Puy Sainte Reparade, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 26, 1992, Ser. No. 966,463
Claims priority, application France, Nov. 8, 1991, 91 13817
Int. Cl.[5] G21C *7/00*
U.S. Cl. 376—219 **8 Claims**



1. Nuclear fuel assembly having an integrated passive safety device, comprising an external tubular envelope in which are located, starting from the top, an upper neutron protection and a bundle of nuclear fuel needles, the passive safety device

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including elements made from a neutron-absorbing material, normally maintained above the bundle of nuclear fuel needles by meltable means, the latter automatically bringing about the dropping of said elements when the temperature exceeds a predetermined threshold, which is higher than the normal operating temperature, wherein the neutron-absorbing material elements are embedded in a matrix constituting said meltable means, in order to form an annular block constituting at least a lower part of the upper neutron protection

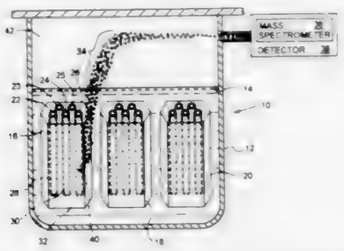
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5,333,157

EXPERT SYSTEM FOR IDENTIFICATION OF SIMULTANEOUS AND SEQUENTIAL REACTOR FUEL FAILURES WITH GAS TAGGING

Kenny C. Gross, Bolingbrook, Ill., assignor to University of Chicago, Chicago, Ill.

Filed Sep. 8, 1993, Ser. No. 118,151
Int. Cl.[5] G21C *17/04*
U.S. Cl. 376—251 **7 Claims**



1. In a nuclear reactor having a plurality of fuel elements each including an inner fuel rod and an outer cladding disposed about and enclosing said fuel rod in a sealed manner, wherein each fuel element further includes a unique tag gas to assist in detection of a leak from a failed fuel element, a method for identifying a fuel element failure comprising the steps of:

determining the composition in terms of one or more tag gases of a leaked gas from one or more of the fuel elements and assigning the composition of the leaked gas a tag node M in a first coordinate system;

translating said tag node M to a second coordinate system wherein said tag node M is at the origin of said second coordinate system;

generating a plurality of geometric node figures by identifying possible combinations of tag gases, wherein each corner of each of said geometric node figures represents a tag gas from a possible leaking fuel element and wherein the area or volume within all of said geometric figures represents all possible combinations of tag gases from leaking fuel elements;

selecting only those tag gases within node figures encompassing the origin of said second coordinate system as from possibly leaking fuel elements;

comparing the node encompassing the origin of said second coordinate system with a predetermined number of most recently leaking fuel element tag gases;

selecting only those node figures containing said most recently leaking fuel element tag gases;

defining the selected node figures in terms of a membership contour ranging from 0 to 1, wherein 0 represents 0 probability of a gas tag and 1 represents 100% probability of a gas tag; and

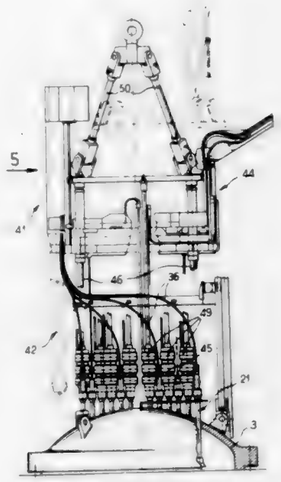
comparing the membership contours of each of the selected node figures with said tag node M for identifying a failed fuel element while compensating for measurement and tag gas composition uncertainties.

5,333,158

DEVICE AND METHOD FOR THE MEASUREMENT OF THE NEUTRON FLUX IN THE CORE OF A NUCLEAR REACTOR

Jean Damezin, Paris; Guy Desfontaines, Puteaux, and Jean-Paul Millot, Elancourt, all of France, assignors to Framatome, Courbevoie, France

Filed Mar. 30, 1992, Ser. No. 859,976
Claims priority, application France, Mar. 29, 1991, 91 03914
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—254 **11 Claims**



1. Device for measuring the neutron flux in the core (**4**) of a nuclear reactor comprising a vessel (**1**) of generally cylindrical shape having a vertical axis and enclosing the reactor core (**4**), a primary circuit for the circulation of the reactor coolant comprising at least one loop in communication with an internal volume of the vessel, partitioning (**6**) surrounding the core inside the vessel (**1**) and a cover (**3**) closing an upper part of the vessel (**1**), the measuring device consisting of at least one probe (**52**) movable inside at least one thimble (**25**) for measuring the neutron flux in the reactor core (**4**), said device further comprising:

(a) a plurality of ducts (**20**) for the passage and support of a thimble (**25**), said ducts being disposed in the partitioning (**6**) of the core along an axial direction and substantially over the entire height of the core (**4**) and being distributed circumferentially around the core (**4**);

(b) a plurality of feed-through sleeves (**21**) in the cover (**3**) of the vessel, each feed-through sleeve being disposed along the axial extension of a duct (**20**) for the passage of a thimble (**25**);

(c) guide columns (**22**) each disposed along the axial extension of a duct (**20**) and each engaged in a feed-through sleeve (**21**) so as to form, with the corresponding duct (**20**) and sleeve (**21**), a channel for the reception of a thimble (**25**); and,

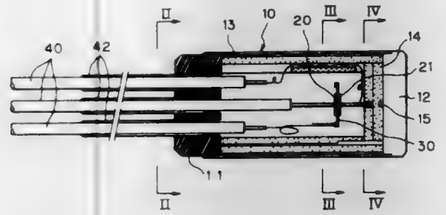
(d) means for the guidance, displacement, switching and parking (**41**, **42**, **51**, **56**, **57**) of the mobile probe (**52**), said means being disposed outside the vessel (**1**) and attached to the cover (**3**) of the vessel, and comprising a plurality of guide tubes (**26**) each having one end connected to the means for displacement, guidance and switching (**51**, **56**, **57**) of the mobile probe (**52**), and the other end to a thimble (**25**).

5,333,159

RADIATION GAUGE

Shigeji Nakajima, and Tatsuo Shikama, both of Ibaraki, Japan, assignors to Nakajima Seisakusho Co., Ltd., Ibaraki, Japan

Filed Nov. 17, 1992, Ser. No. 977,536
Claims priority, application Japan, Nov. 19, 1991, 3-303542
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—254 **6 Claims**



1. A radiation gauge comprising:

(a) a casing having an evacuated inside;

(b) a disk-shaped insulating material disposed in said casing, said insulating material undergoing an induced conduction phenomenon when ionizing radiation is illuminated thereon so that intensity of ionizing radiation can be measured based on the induced conduction of the insulating material;

(c) a pair of electrode members mounted on said insulating material separated by the insulating material;

(d) one electrode member being disk-shaped and mounted on one side of the insulating material and having a diameter less than that of the insulating material;

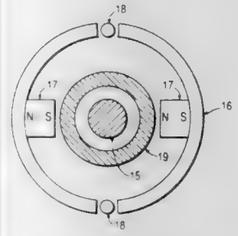
the other electrode member including a disk-shaped electrode portion less in diameter than the insulating material and an annular electrode portion disposed in a concentric relationship with said disk-shaped electrode portion so that a portion of the insulating material is exposed between the disk-shaped electrode portion and the annular electrode portion.

5,333,160

CONTROL ROD POSITION TRANSMITTER

Herbert A. Runde, Windsor Locks, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 12, 1993, Ser. No. 104,903
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—258 **15 Claims**



1. An apparatus for transmitting the position of a ferromagnetic movable member to an indicating means, said ferromagnetic movable member being disposed within and movable with respect to an elongated housing, said transmitting apparatus comprising:

a plurality of magnetic circuits arranged at predetermined positions externally along said elongated housing, each circuit comprising at least one magnet and at least one arcuate-shaped magnetic path element generally surrounding said elongated housing; and

at least one position transmitter assembly positioned adjacent said magnetic circuits, said position transmitter assembly including a plurality of magnetic field responsive switch means for sensing the presence of said ferromagnetic movable member at each of said predetermined positions.

5,333,161

INTERGRANULAR STRESS CORROSION CRACKING MITIGATION BY RAPID QUENCH MELTING

Robert A. Thompson, Quaker Street, and Marshall G. Jones, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 19, 1993, Ser. No. 35,098
Int. Cl.[5] G21C *21/00*; C21D *6/00*
U.S. Cl. 376—305 **5 Claims**



1. A method for preventing intergranular stress corrosion cracking in a substrate employing an apparatus comprising a pulsed laser, comprising the steps of:

holding said substrate;

surface treating a predetermined portion of said substrate with a pulsed laser beam from said pulsed laser to substantially prevent the formation of intergranular stress corrosion cracking wherein said step of operating said pulsed laser is further comprised of the step of:

operating said laser at approximately 50 joules/pulse: and

pulsing said laser for a pulse time of approximately 10 ms; and

surface treating said predetermined portion of said substrate for approximately 150 ms; and

recasting said predetermined portion of said substrate for approximately 30 ms such that substantially all carbides located within said substrate are redissolved into the recast material and cannot be easily dissolved out of the recast material thereby substantially preventing stress corrosion cracking

repeating, if necessary, said surface treatment step until a predetermined amount of said substrate has been surface treated.

5,333,162

HIGH RESOLUTION TIME INTERVAL COUNTER

Kenneth J. Condreva, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 23, 1993, Ser. No. 22,578
Int. Cl.[5] H03K *21/02, 21/08*
U.S. Cl. 377—20 **17 Claims**

1. A high-resolution low-power time interval counter circuit for measuring the time interval between the occurrence of an initial electrical pulse and a subsequent electrical pulse, comprising:

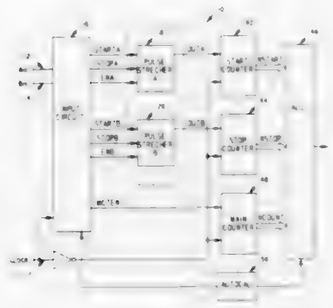
a) an input circuit means for receiving said initial electrical pulse, said subsequent electrical pulse, a plurality of clock pulses from a clock signal generating means, and a precise set of timing pulses for generating plural output electrical signals;

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b) a first pulse stretcher circuit means for receiving a first series of said electrical signals from said input circuit means, and for generating a first stretched electrical signal therefrom;

c) a second pulse stretcher circuit means for receiving a second series of said electrical signals from said input circuit means, and for generating a second stretched electrical signal therefrom;

d) an autocalibration circuit means for calibrating said first and said second pulse stretcher circuit means prior to said input circuit means receiving said initial and said subsequent electrical pulses, said autocalibration circuit provides said precise set of timing pulses through said input circuit for said stretcher circuits and then to a plurality of counting means for providing time interval data; and



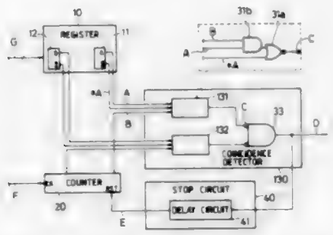
e) an arithmetic logic circuit wherein said precise set of timing pulses are used as calibration data by said arithmetic logic circuit to correct inaccuracies in time measurement of said stretcher circuits, and wherein said arithmetic logic circuit is responsive to said time interval data from said plurality of counting circuit means that receive said first and said second stretched electrical signals and determines the time interval between said initial and said subsequent electrical pulses based on said calibration data and said stretched electrical signals.

5,333,163

IC INCLUDING COUNTER CIRCUIT AND ONE CHIP MICROCOMPUTER THEREOF

Kyoji Marumoto, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 29, 1992, Ser. No. 998,059
Claims priority, application Japan, Jan. 7, 1992, 4-018565
Int. Cl.[5] H03K *21/00*
U.S. Cl. 377—39 **10 Claims**



1. An integrated circuit including a counter circuit therein which is to be initialized after incrementing signals to be counted up to an aimed value or decrementing the signals down to the aimed value, comprising:

a register including a plurality of parallel flip-flops set with bit data of the aimed value;

a counter responsive to an initializing signal for initializing each bit of a count value thereof to "0" and then incrementing with signals to be counted, or initializing each bit of the count value thereof to "1" and then decrementing with signals to be counted;

a plurality of coincidence detection circuits each comprising a first logic element for receiving one of Q and $\overline{Q}$ outputs of a respective one of said flip-flops and an output from a bit location of said counter corresponding to said respective flip-flop, and a second logic element for receiving an output of said first logic element and the other of the Q and $\overline{Q}$ output of the respective flip-flop to provide a coincidence detection signal;

an end signal generator circuit responsive to the coincidence detection signals from all of said coincidence detection circuits for generating a count end signal indicative of an end of a counting operation of said counter; and

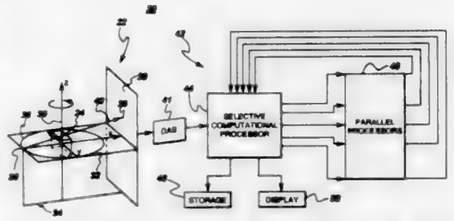
an initializing signal generator circuit responsive to the count end signal for generating the initializing signal after a predetermined time lapses from the reception of the count end signal.

5,333,164

METHOD AND APPARATUS FOR ACQUIRING AND PROCESSING ONLY A NECESSARY VOLUME OF RADON DATA CONSISTENT WITH THE OVERALL SHAPE OF THE OBJECT FOR EFFICIENT THREE DIMENSIONAL IMAGE RECONSTRUCTION

Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 11, 1991, Ser. No. 805,163
Int. Cl.[5] G01N *23/083*
U.S. Cl. 378—8 **11 Claims**



1. A method for reconstructing an image of a three dimensional object using an inverse Radon transform comprising the steps of:

providing a mutually spaced irradiating beam source and a suitable array radiation detector in fixed relationship to one another;

providing an object therebetween;

irradiating said object within a field of view of said irradiating beam source;

scanning said irradiated object along a preselected scanning trajectory to acquire a plurality of beam attenuation data at said array detector for a plurality of select source positions;

organizing said beam attenuation data in the form of line integrals through said object for each of said plurality of source positions;

determining from said beam attenuation data values representing planar integrals;

organizing said planar integrals onto discrete polar grids on a predetermined plurality of planes coaxial with respect to a reference axis in Radon space;

retaining on each said plane only evaluated planar integral values residing within a corresponding overall projected region of support of said object in Radon space in order to truncate each said polar grid to represent source beams actually penetrating said object;

reconstructing a two dimensional projected image of said object onto each said plane from said retained integral values using parallel processing;

organizing said plurality of two dimensional projection image data from said plurality of coaxial planes onto a plurality of planes slicing normally through said reference axis; and

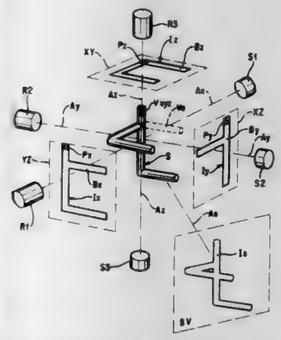
reconstructing two dimensional images on each planar slice using parallel processing to collectively provide a three dimensional reconstructed image of said object.

5,333,165

METHOD AND APPARATUS FOR THREE-DIMENSIONAL VIDEO SIGNALS

Ying Sun, Wakefield, R.I., assignor to John K. Grady, Harvard, Mass.

Filed Feb. 27, 1992, Ser. No. 842,650
Int. Cl.[5] G01N *23/083*
U.S. Cl. 378—10 **25 Claims**



15. Electrical apparatus for processing three dimensional video signals representing a solid subject comprising:

three receptors of radiation on three different image axes intersecting the subject at three different angles for converting the radiation to three corresponding two-dimensional video images respectively represented by three sets of pixels;

a voxel generator coupled to the three receptors for producing one three-dimensional set of voxels at the three-dimensional intercept of pixels projected from the three two-dimensional pixel sets;

a three-dimensional voxel matrix for storing the voxels;

adjustable means connected to the voxel matrix for selecting a viewing axis scanning the three-dimensional matrix at an angle other than the radiation axis angles, and addressing and reading out voxels within the selected view; and

means coupled to the matrix for displaying the addressed and read out voxels of the selected three-dimensional view in a single two-dimensional image.

20. Electrical apparatus for angiographic examination of a subject comprising:

three sets of X-radiation sources and receptors for directing beams along three separate radiation axes intersecting a volume within the subject and forming three two-dimensional images of the volume;

electro-optical means producing three two-dimensional sets of video signal pixels from the three images;

a voxel generator coupled to the three receptors for producing one three-dimensional set of voxels corresponding to the three-dimensional intercept of pixels projected frown the three two-dimensional pixels sets;

a three-dimensional matrix for storing the voxels electrically;

adjustable control means connected to the matrix for selecting a view axis for scanning the three-dimensional matrix at an angle other than the radiation axis angles, and addressing and reading out voxels with in the selected view; and

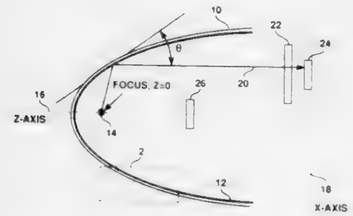
means coupled to the matrix for displaying the addressed and read out voxels of the selected three-dimensional view in a single two-dimensional image.

5,333,166

SELF-APODIZING COLLIMATOR FOR X-RAY LITHOGRAPHY

Daniel Seligson, Palo Alto, and Jeffrey Kidder, Fremont, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 28, 1992, Ser. No. 937,302
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—34 **29 Claims**



1. A method for collimating isotropic X-Rays of a predetermined range of wavelengths, said method comprising the steps of:

receiving said isotropic X-Rays on a paraboloidal surface;

providing a graded multi-layer coating on said paraboloidal surface;

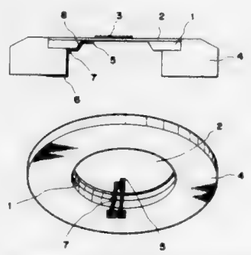
collimating said isotropic X-Rays by selectively reflecting X-Rays of predetermined angles of incidence and a plurality of predetermined wavelengths from said graded multi-layer coating according to the incident location of said X-Rays on said graded multi-layer coating such that said collimated X-Rays provide a uniform dose rate.

5,333,167

MASK STRUCTURE FOR X-RAY EXPOSURE AND X-RAY EXPOSURE DEVICE AND METHOD USING IT

Takashi Iizuka, Zama, and Yasuaki Fukuda, Hadano, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1992, Ser. No. 984,527
Claims priority, application Japan, Dec. 4, 1991, 3-347620
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—35 **34 Claims**



12. A mask structure for X-ray exposure which comprises a

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retaining frame, a supporting frame, a mask support and an absorber pattern, and which is utilized for exposing plural regions on a wafer to X-rays one after another, said mask structure further comprising means for detecting a state change of said mask structure from its steady state during movement of the wafer from one region to the next region.

5,333,168

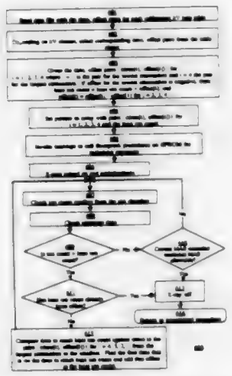
TIME-BASED ATTENUATION COMPENSATION

Mark Fernandes, Layton; Chris R. Soderstrom; Donley L. Bush, both of West Valley City, and DeeAnn Dorman, Salt Lake City, all of Utah, assignors to OEC Medical Systems, Inc., Salt Lake City, Utah

Filed Jan. 29, 1993, Ser. No. 11,255

Int. Cl.[5] H05G *1/44*

U.S. Cl. 378—108 **8 Claims**



1. In an X-ray apparatus comprising an X-ray emitter, means for activating and deactivating said X-ray emitter, a means for sampling radiation from said emitter after said radiation has passed through and imaged a subject, and a control means coupled to said activation/deactivation means and said sampling means, an automatic method performed by said control means for compensating for attenuation caused by said subject to perform an improved X-ray exposure comprising the following steps:

a. creating a table comprising entries accessible via power and attenuation values, each of said entries including a first value T representing a time for radiation in said system to reach a base ion count, and a second value C representing an offset ion count from said base ion count;

b. referencing a first set of entries in said table using a first power setting, determining a first base ion count based upon said first power setting, and determining a maximum radiation for said first power setting;

c. activating said X-ray emitter until a current ion count from said radiation sampling means has exceeded said base ion count or a current radiation has exceeded said maximum radiation;

d. if said current radiation has exceeded said maximum radiation, then deactivating said X-ray emitter and terminating;

e. if said current ion count from said radiation sampling means has exceeded said base ion count, then determining whether said base ion count has been offset, and if so, then deactivating said X-ray emitter and terminating; and

f. if said base ion count has not been offset, then determining a matching entry of said first set of entries which has said first value T less than or equal to said current exposure, adding said second value C of said matching entry to said base ion count, and returning to step C.

5,333,169

CIRCUIT ARRANGEMENT FOR MEASURING THE X-RAY TUBE CURRENT

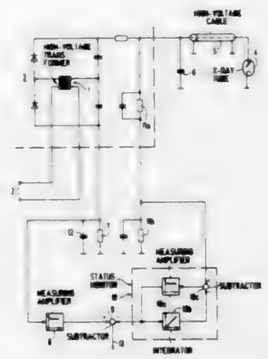
Detlef Koertge, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 1, 1993, Ser. No. 84,144

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1992, 4226442

Int. Cl.[5] H05G *1/20*

U.S. Cl. 378—109 **1 Claim**



1. A circuit arrangement for accurately calculating the current flowing in an x-ray tube comprising:

high-voltage supply means for supplying voltage to an x-ray tube via a high-voltage cable, said high-voltage cable having a capacitance associated therewith;

means for generating a test signal corresponding to the voltage supplied to said x-ray tube by said means for supplying high voltage;

means for generating a further voltage signal taken at a location including said capacitance of said high-voltage cable;

status monitor means, to which said further voltage signal is supplied, including means for differentiating said further voltage signal and for generating a status monitor means output incorporating the differentiated further voltage signal; and

means for subtracting said status monitor means output from said test signal for obtaining a signal accurately corresponding to the x-ray tube current.

5,333,170

AUTOMATIC OPENING DEVICE FOR THE WINDOW OF A RADIOGRAPHIC CASSETTE

Riccardo Blasi, Rome, Italy, assignor to Metaltronica S.r.L., Rome, Italy

Filed Jul. 22, 1992, Ser. No. 916,634

Claims priority, application Italy, Jul. 22, 1991, 91-A/000551

Int. Cl.[5] H05G *1/28*

U.S. Cl. 378—166 **3 Claims**

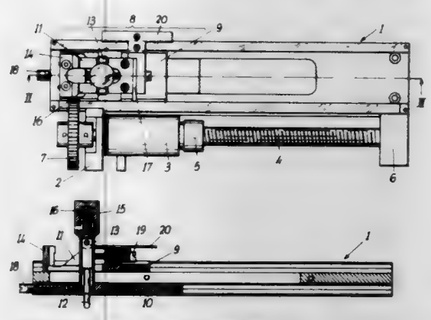
1. In a radiographic cassette having a window, an automatic opening device comprising:

(a) a fixed bracket;

(b) equipment adapted for sliding movement along said bracket between a position of engagement with said window and a position of full opening of said window, and motor means operatively connected to said equipment for effecting said sliding movement;

(c) said equipment including vertical displacement means causing vertical sliding of a cap element between a position of engagement with said window and a position of disengagement with said window, and comprising elastic means counteracting vertical displacement of said cap element, said elastic means being compressed in said position of disengagement, at least one movable slide, sliding on said fixed bracket and trailing in its movement said cap element;

(d) said equipment including a first movable slide, on which said vertical displacement means are connected with said motorized means, and a second movable slide mounted



below said one movable slide that in turn slides on said second movable slide, said cap element extending vertically through both said first and second movable slides; and

(e) said vertical displacement means consisting of a wedge carried by said first movable slide acting on a plurality of rollers displaced laterally of said cap element.

5,333,171

ADAPTIVE SPEAKERPHONE SYSTEM

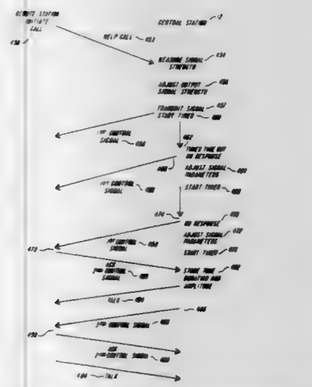
William Wang, Lexington, and Richard M. Reich, Westwood, both of Mass., assignors to Lifeline Systems, Inc., Watertown, Mass.

Continuation of Ser. No. 722,921, Jun. 28, 1991, Pat. No. 5,210,784. This application Feb. 9, 1993, Ser. No. 15,619

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] H04M *11/04, 1/00*

U.S. Cl. 379—37 **8 Claims**



1. A method of operating a communications system including a central station and a remote station, said method comprising the steps of:

a. sending a request signal from the remote station to the central station;

b. receiving at the central station the request signal sent from said remote station;

c. sending a control signal in response to said request signal to said remote station from said central station, said control signal having a signal strength and a signal duration, said control signal for determining signal strength and duration characteristics capable of evoking an acknowledge signal from said remote station and permitting subsequent voice communication;

d. starting a central timer to measure a predetermined amount of time subsequent to sending said control signal;

e. determining if said acknowledge signal has been received from said remote station prior to said central timer measuring said predetermined amount of time;

f. sending a next control signal to said remote station from said central station if said determining step indicates that said acknowledge signal has not been received from said remote station, said next control signal having at least one of:

a signal strength greater than said signal strength of said control signal sent immediately previous to said next control signal; and

a signal duration greater than said signal duration of said control signal sent immediately previous to said next control signal;

g. repeating steps d through f until a first one of:

said remote station responds with said acknowledge signal; and

said steps d through f have been repeated a predetermined number of times; and

h. if said remote station responds with said acknowledge signal, sending at least one subsequent control signal to said remote station from said central station said at least one subsequent control signal having a signal strength and duration equal to the signal strength and duration of the control signal sent by said central station to which said remote station responded.

5,333,172

EMERGENCY TELEPHONE COMMUNICATIONS DEVICE

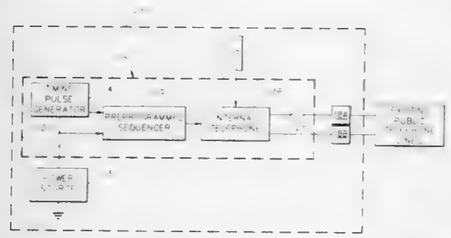
Michael B. Stevens, 225 S. Rowlett St., Collierville, Tenn. 38017

Filed Apr. 5, 1990, Ser. No. 504,914

The portion of the term of this patent subsequent to Oct. 26, 2009, has been disclaimed.

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—38 **3 Claims**



1. An apparatus for emergency dialing and one-way communication by telephone comprising:

a telephone dialer circuit for dialing a preselected emergency number and establishing a telephone line connection;

a microphone connected to said telephone dialer circuit for sensing and transmitting sound from the vicinity of the microphone upon the telephone line connection being established;

manually operable switch means electrically connected to said telephone dialer circuit for activating said circuit and causing the dialing of the preselected emergency telephone number on a telephone line to contact an emergency services operator; and

said apparatus being characterized by the absence of a connection to a speaker during all periods when a telephone line connection is established so as to preclude audio communication from the emergency services operator

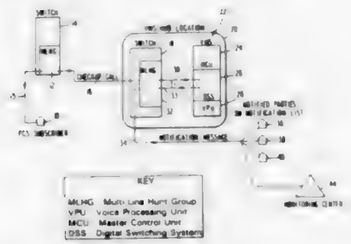
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5,333,173

PERSONAL CHECKUP SERVICE AND EQUIPMENT

John W. Seazholtz, Great Falls, and Brian L. Carrier, Mechanicsville, both of Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Oct. 15, 1991, Ser. No. 775,408
Int. Cl.[5] H04M *11/00, 11/04*
U.S. Cl. 379—45 **25 Claims**



1. In a telecommunications system having a plurality of switch means interconnected by trunk means; subscriber telephone station (STS) means connected to a first of said switch means; voice messaging service (VMS) platform means including voice processing unit (VPU) means connected to said telecommunications system; said VMS platform means having first data storage means to provide voice message service responsive to said VMS platform means being accessed by an STS means; link means interconnecting said first switch means and said VMS platform means to provide to said VMS platform means the identity of an STS means calling said VMS platform means; the improvement comprising:

second data storage means associated with said VMS platform means; second data storage means having stored therein data comprising (a) first voice message data stored responsive to signals from said subscriber via a telephone station means (TSM), (b) call schedule time data stored responsive to signals from said subscriber via a TSM, (c) STS identification data stored responsive to signals from said subscriber via a TSM, (d) second voice message data stored responsive to signals from said subscriber via a TSM, and (e) data identifying destination telephone station (DTS) means stored responsive to signals from said subscriber via a TSM;

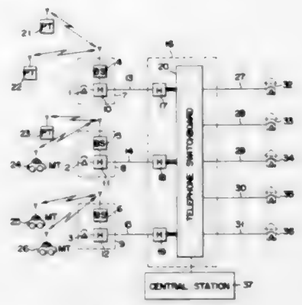
said VMS platform means responsive to said call schedule data delivering through said first switch means said first voice message data to said STS means, said VMS platform means upon failure to receive from said STS means in response to delivery of said first voice message data a signal corresponding to said STS identification data, delivering said second voice message data to said DTS means corresponding to said data identifying said DTS means.

5,333,174

COMMUNICATION SYSTEM USING MOVABLE RADIO TERMINALS

Risaburo Sato, and Zenichiro Nagasawa, both of Sendai, Japan, assignors to Small Power Communications Systems Research Laboratories Co., Ltd., Sendai, Japan

Filed Mar. 15, 1991, Ser. No. 670,010
Claims priority, application Japan, Mar. 30, 1990, 2-81370
Int. Cl.[5] H04M *11/00;* **H04Q** *7/00*
U.S. Cl. 379—58 **3 Claims**



1. A communication system, comprising:

a public telephone:

a central telephone exchange connected to said public telephone through a telephone line;

mobile terminals;

a base station, established in an area proximate to said public telephone, for receiving and transmitting radio signals from and to said mobile terminals and for converting said received radio signals from said mobile terminals to signals to be transmitted over said telephone line to said central telephone exchange and for converting signals transmitted over said telephone line by said central telephone exchange to said base station into said transmitted radios signals;

wherein a telephone switchboard is arranged in said central telephone exchange, and the communion system further comprises:

a first coupling distributor, arranged in said central telephone exchange and connected to said telephone switchboard, for distributing a transmission path of said telephone line to at least one of the base station and said public telephone;

at least one telephone area provided with said public telephone; and

a second coupling distributor having two ends and arranged in said telephone area, one end connected to said public telephone and another end connected to said base station;

said transmission path of said telephone line being used for transmitting voice and data signals between said base station and said telephone switchboard, as well as between said public telephone and said telephone switchboard.

5,333,175

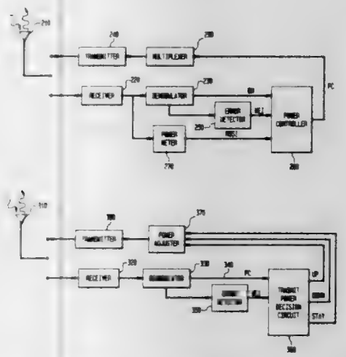
METHOD AND APPARATUS FOR DYNAMIC POWER CONTROL IN TDMA PORTABLE RADIO SYSTEMS

Sirikiat Ariyavisitakul, Tinton Falls; Justin C. Chuang, Holmdel, and Nelson R. Sollenberger, Tinton Falls, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Jan. 28, 1993, Ser. No. 10,111
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **41 Claims**

1. In a TDM/TDMA digital telephony system having a plurality of fixed ports and a plurality of mobile portable units, each port having a transmitter for transmitting burst signals in a plurality of time-slots at an associated downlink frequency to at least one portable unit and a receiver for receiving burst signals at an associated uplink frequency from at least one portable unit, each portable unit having a transmitter for transmitting burst signals at any one of a plurality of uplink frequencies to any one of said plurality of ports and a receiver for receiving burst signals at any one of a plurality of associated downlink frequencies from any one of said plurality of ports, a method for dynamically adjusting the uplink (or downlink) power of the signal transmitted by a portable to a port (or by a port to a portable) to which it is communicating comprising the steps of:

determining a received signal strength indicator (RSSI) measure, a received signal quality measure (QM), and a word error indicator (WED from each uplink (or downlink) burst signal transmitted by the transmitter of a particular portable (or port) and received by the receiver at the port receiver (or portable receiver) with which the portable (or port) is communicating;



adjusting an RSSI threshold upward and downward in accordance with the WEI determined in each burst;

determining that additional uplink (or downlink) portable (or port) transmitter power is required if the QM is below a predetermined QM threshold or the RSSI is below the RSSI threshold, unless the RSSI is greater than a predetermined maximum RSSI value;

transmitting in each downlink burst (or uplink burst) a power control signal request for additional uplink (or downlink) portable (or port) transmitter power if it is determined that additional uplink (or downlink) portable (or port) transmitter power is required; and

adjusting the uplink (or downlink) portable (or port) transmitter power upward if the portable (or port) receiver receives a burst including a power control signal request from the port (or portable) transmitter for additional transmitter power.

5,333,176

CELLULAR HAND HELD PORTABLE SPEAKERPHONE SYSTEM HAVING AN INTERFACE ADAPTER

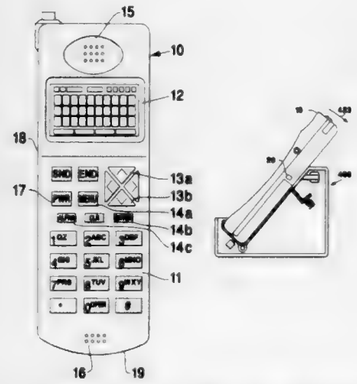
Timothy M. Burke; Yoshihiro Kinoshita, both of Plano, Tex.; Takashi Nakano, Shiga, Japan; Thomas K. Brown; Toshiharu Fukuma, both of Plano, Tex., and Yoji Tsujishita, Kyoto, Japan, assignors to Murata Machinery, Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 876,102, Apr. 30, 1992, Pat. No. 5,248,989. This application Jul. 26, 1993, Ser. No. 96,549
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **1 Claim**

1. An apparatus, comprising:

a cellular telephone including a telephone microphone, a telephone speaker, receiver means for receiving analog signals and digital signals from a base station, transmitter means for transmitting analog signals and digital signals to the base station, a battery pack configured to be mounted within the cellular telephone, the battery pack including a power source, switch means for electrically coupling the power source and the cellular telephone, the switch means configured to be turned off and on, battery state monitoring means for continuously monitoring a state of charge of the power source, determining means, responsive tot he state of charge of the power source, for determining an amount of time remaining for use of the battery pack based on the state of charge, and display means, responsive to the control means, for providing a real time display of the time remaining for use of the battery pack;

interface means for supporting the cellular telephone in at least a locked position and an unlocked position, the interface means including power supply means for supplying power to the cellular telephone when the cellular telephone is being supported by the interface means, an interface microphone, an interface speaker, each of the interface microphone and the interface speaker being operably connected tot he cellular telephone when the cellular telephone is supported by the interface means, the receiver means and the interface speaker defining a receive path, and the transmitter means and one of the telephone microphone and the interface microphone defining a transmit path;



power control means for controlling the switch means to be turned on when the cellular telephone is in the unlocked position and turned off when the cellular telephone is in the locked position;

converter means for converging analog signals received from each of the telephone microphone, the interface microphone and the receiver means into digital signals;

sampling means for sampling digital signals on each of the transmit path and the receive path and for storing values corresponding to a predetermined characteristic of the samples digital signals;

determining means for determining an energy value for the digital signals on each of the transmit path and the receive path over a predetermined period based on the stored values of the predetermined characteristic;

switching means for switching off one of the transmit path and the receive path in response to the determined energy values;

memory means for storing digital signals;

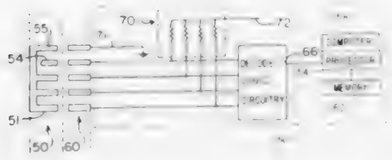
memory record means for storing digital signals from the receiving means and from the converter means in the memory means; and

memory playback means for transferring digital signals stored int he memory means to the transmitter means and for converging digital signals from the memory means into analog signals ad transferring the analog signals to

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one of the telephone speaker, the interface speaker and the transmitter means

5,333,177
UNIVERSAL CONNECTION FOR CELLULAR TELEPHONE INTERFACE
Michael F. Braitberg; Patrick J. Kennedy, both of Boulder, Colo., and Hiroshi Sakurai, Tokyo, Japan, assignors to Cell Port Labs, Inc., Boulder, Colo.
Filed Oct. 19, 1991, Ser. No. 773,840
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **9 Claims**



1. Apparatus for providing universal interfacing with a cable having on a first end a multiple contact connector of a predetermined number of contacts in a predetermined configuration with at least one of the first end contacts for presenting a binary coded signal wherein the binary coded signal correlates to the identity of a particular type of cellular telephone and with a connector on the opposite end of the cable for attachment to a particular type of cellular telephone amongst a plurality of different types of cellular telephones comprising

means connected to the binary coded signal connector contact for determining the type of cellular phone attached to the opposite end connector of the cable, said determining means including means retrievably storing a multiplicity of information groups with each said group selectable in accordance with said binary coded signal, each said information group containing information for controlling the cable first end connector for functionally operating with a particular one of a plurality of cellular phones, the first end cable connector including a plurality of contacts for use in establishing a connection with said determining means, said determining means including means for sampling said first end connector contacts for producing a binary signal identifying said group of information for selection; and

means responsive to said determining means for enabling the cable first end connector contacts for performing functional operations with the cellular telephone attached to the cable, said determining means further including means responsive to a received coded signal for selecting said information group identified thereby from said storing means and for introducing said group to said enabling means.

5,333,178
MOBILE TELEPHONE NETWORK STRUCTURE
Bror L. Norell, Alvsjo, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Jan. 13, 1992, Ser. No. 819,799
Claims priority, application Sweden, Jan. 14, 1991, 9100117-2
Int. Cl.[5] H04M *11/00*; **H04Q** *7/00*; **H04B** *1/00*
U.S. Cl. 379—59 **12 Claims**

1. A mobile telephony network structure comprising:

a first number of base station control units each serving a limited number of base stations which in turn serve a plurality of mobile stations;

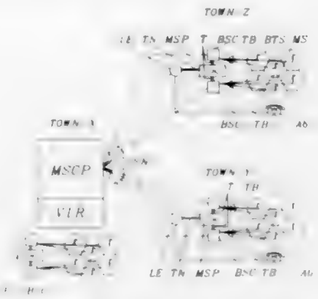
a central mobile service telephone station common to said first number of base station control units and provided with means for accessing a telecommunication network,

first trunk means for each of the base station control units extending between a base station control unit and the base stations under the control of said base station control unit; and

second trunk means extending between each of the base station control units and said central mobile service telephone station, wherein

said central mobile service telephone station is divided into:

(a) a central mobile service control station provided with mobile telephony services related software and traffic control related software, and

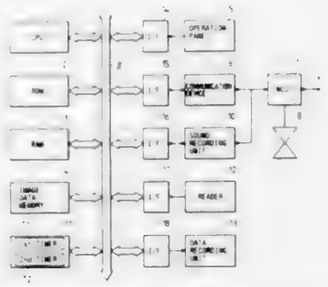


(b) a plurality of mobile switch points each provided with connection related software only;

a signalling network for sending traffic control signals between the central mobile service control station and each of the mobile switch points;

third trunk means extending between each mobile switch point and its associated base station control units.

5,333,179
FACSIMILE APPARATUS WITH AUTOMATIC ANSWERING TELEPHONE FUNCTION
Makoto Yamamoto, Shiga; Kazuaki Oshita, Hirakata, and Tetsuya Kuwahara, Shiga, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Continuation of Ser. No. 834,972, Feb. 12, 1992, abandoned, which is a continuation of Ser. No. 340,864, Apr. 20, 1989, abandoned. This application Aug. 12, 1993, Ser. No. 104,941
Claims priority, application Japan, Apr. 23, 1988, 63-100978; Feb. 22, 1989, 1-42593
Int. Cl.[5] H04M *1/64, 11/00*
U.S. Cl. 379—67 **1 Claim**



1. A fax machine for receiving and recording signals from a sending unit, comprising:

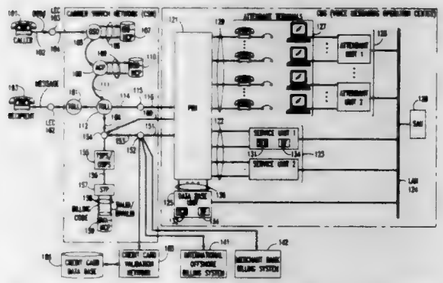
voice recorder means defining a voice recorder mode for recording a voice transmission received from the sending unit,

fax recorder means defining a fax recorder mode for recording a fax transmission received from the sending unit,

energy detection means for detecting the energy level of a signal received from the sending unit a plurality of times and for generating a corresponding energy distribution, wherein each of the plurality of detected energy levels is associated with one of a plurality of energy ranges, and

switching means, in communication with the energy detection means, for switching the fax machine from the fax recorder mode to the voice recorder mode when the energy of a signal received from the sending unit corresponds to a predetermined energy distribution.

5,333,180
CALL MESSAGE DELIVERY SYSTEM AND METHOD UTILIZING CALLER-SELECTED SYSTEM ANNOUNCEMENTS
Percy B. Brown, East Brunswick; Nga V. Chau, Middletown; Tung-Hai Hsiao, Freehold; Georg K. Karawas, West Long Branch; Richard E. LeCronier, New Monmouth; Dawn R. Parrott, Neptune; Thomas L. Russell, Jr., Colts Neck, and Wen-Ping Ying, East Brunswick, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 410,450, Sep. 20, 1989, abandoned. This application Sep. 23, 1991, Ser. No. 763,487
Int. Cl.[5] H04M *1/64*
U.S. Cl. 379—89 **17 Claims**



15. A call message delivery system for use with a communication network for delivery call messages to stations connectable to said network, said system comprising:

means for recording a caller's voice as a voice message,

means for receiving from a caller a request to deliver said voice message recorded by said caller to a party at a caller-specified telephone number;

means for prompting the caller, in response to said message delivery request, to select at least one of a plurality of system announcements to be delivered with said caller's recorded voice message to said party; and

wherein the call delivery system uses said caller-specified telephone number digits received from the caller to identify at least one of said plurality of system announcements for selection by said caller.

5,333,181
SYSTEM FOR ACCESSING AMENITIES THROUGH A PUBLIC TELEPHONE NETWORK
Lawrence R. Biggs, Plano, Tex., assignor to Strategic Telecom, Inc., Dallas, Tex.
Continuation of Ser. No. 640,070, Jan. 11, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 92,547
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—91 **36 Claims**

1. A method for accessing one of a plurality of amenities from a telephone, comprising:

providing a telephone having an input device;

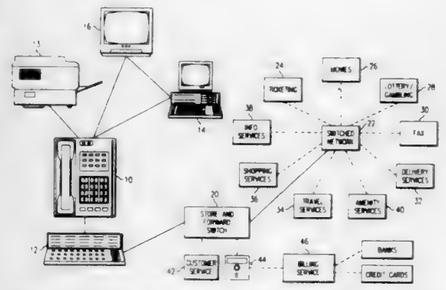
storing in the telephone associated amenity identification information, the amenity identification information unique to the telephone and defining each of the plurality of amenities accessible by the telephone;

inputting and storing at the telephone user billing information;

inputting amenity selection information for a desired one of the plurality of amenities to select the amenity identification information associated with the desired amenity;

connecting the telephone with a remote billing station in response to input of both the amenity selection information and the user billing information;

transmitting to the remote billing station the user billing information and the selected amenity identification information associated with the desired one of the plurality of amenities;



receiving at the remote billing station the transmitted user billing information

storing amenity routing information at the remote billing station defining how to route the telephone to each of the plurality of amenities;

retrieving the stored amenity routing information associated with the received selected amenity identification information; and

connecting the telephone to the desired one of the plurality of amenities that is associated with the received selected amenity identification information and in accordance with the retrieved routing information after validation of the received billing information.

5,333,182
ARBITRARY SELECTING OF A TERMINAL TO BE CALLED IN KEY TELEPHONE SYSTEMS
Takashi Aoki, Akishima, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Nov. 19, 1991, Ser. No. 794,524
Claims priority, application Japan, Nov. 20, 1990, 2-314636
Int. Cl.[5] H04M *11/00, 1/00*
U.S. Cl. 379—97 **10 Claims**

1. A key telephone system connected to a communication network and having a plurality of data terminals as extensions, said key telephone system comprising:

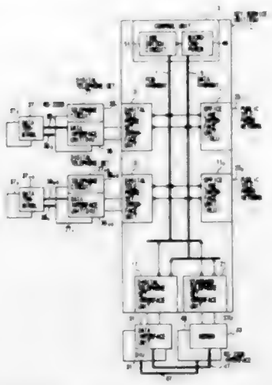
at least one interface conversion unit for performing a conversion between a user interface of said communication network and a data communication interface of each of said data terminals, and for answering an incoming call from said communication network;

connecting means for interconnecting said communication network and said interface conversion unit;

switching means for selectively establishing a data communication path between said plurality of data terminals and said interface conversion unit;

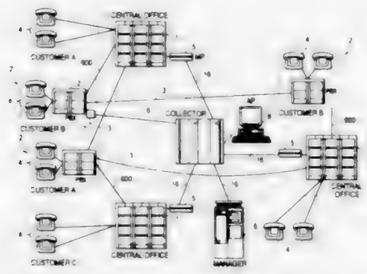
extension calling means for receiving an extension number data contained in succeeding communication data sent from said communication network after said interface conversion unit has answered an incoming call from said communication network, and for sending an incoming call command to a single data terminal designated by said extension number data; and

switching control means for controlling said switching means to establish said data communication path between said designated single data terminal and said interface conversion unit in order to establish a data communication



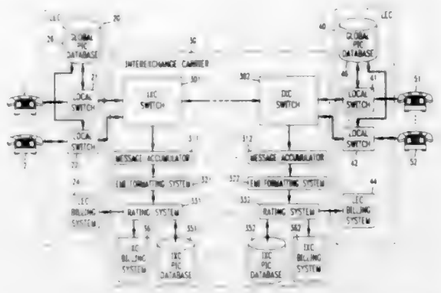
link between said designated single data terminal and said communication network after a data communication is established between said interface conversion unit and said communication network.

5,333,183
UNIVERSAL MDR DATA RECORD COLLECTION AND REPORTING SYSTEM
James H. Herbert, Pittsford, N.Y., assignor to Moscom Corporation, Pittsford, N.Y.
Filed Mar. 13, 1992, Ser. No. 851,553
Int. Cl.[5] H04M *15/00*
U.S. Cl. 379—112 **38 Claims**



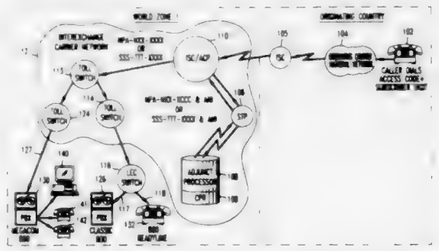
1. A universal MDR data record collection and reporting system for use with Centrex switches on a telephone network, with a message processor comprising:
(a) a receiver, said receiver receiving an MDR in one of a plurality of MDR formats from a one of a plurality of different central office switches of a telephone network;
(b) a reformatter, said reformatter reformatting the MDR to one of a plurality of selected formats;
(c) means for storing the reformatted MDR in an MDR file; and
(d) a transmitter, said transmitter transmitting the reformatted MDRs from the message processor on a communications link using a communications protocol.

5,333,184
CALL MESSAGE RECORDING FOR TELEPHONE SYSTEMS
Gerard P. Doherty, Yardley, Pa.; Nicholas J. Lanzillotti, White House Station, and Conrad J. Paulus, Bridgewater, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 6, 1992, Ser. No. 879,669
Int. Cl.[5] H04M *15/00, 7/00, 3/00*
U.S. Cl. 379—115 **41 Claims**



1. A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:
generating a message record for an interexchange call between an originating subscriber and a terminating subscriber, and
including, in said message record, a primary interexchange carrier (PIC) indicator having a value which is a function of whether or not the interexchange carrier associated with said terminating subscriber is a predetermined one of said interexchange carriers.

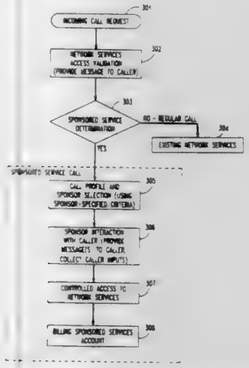
5,333,185
SYSTEM FOR PROCESSING CALLING PARTY INFORMATION FOR INTERNATIONAL COMMUNICATIONS SERVICES
Karen B. Burke, Aberdeen; Luis E. Nieto, East Brunswick, and I. Grace Tseng, Middletown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 3, 1991, Ser. No. 709,047
Int. Cl.[5] H04M *15/00, 11/00, 1/56, 3/42*
U.S. Cl. 379—127 **14 Claims**



1. A method of delivering originating country code information associated with an international call initiated by a caller in an originating country and destined for a called party in a destination country wherein said method comprises the steps of:
receiving routing information associated with the call;

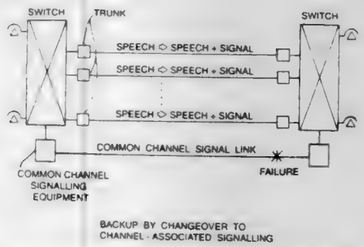
extracting from said routing information an originating country code;
formatting said originating country code in a field reserved for automatic number identification data; and
forwarding said originating country code to said called party.

5,333,186
TELECOMMUNICATION CALL BILLING METHOD AND APPARATUS
Shiv K. Gupta, Red Bank, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 5, 1991, Ser. No. 755,465
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—201 **17 Claims**



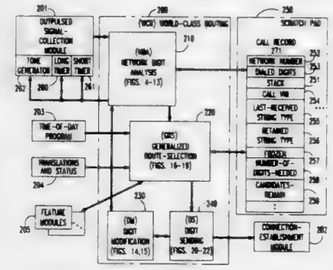
1. A method of operating a communication system comprising the steps of
determining, in response to receiving an incoming call request from a caller over a facility of said communication system, whether the caller is to be connected to a sponsored service, and
in response to a determination, providing the caller with an information message associated with said sponsored service in exchange for reducing calling charges charged to the caller by the system for completing the incoming call request.

5,333,187
SWITCHING SYSTEM FOR ELECTRONIC SWITCHER
Masashi Hiraiwa, and Yoshiaki Asambo, both of Yokohama, Japan, assignors to Hitachi, Ltd. and Hitachi Software Engineering Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 513,608, Apr. 24, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 912,217
Claims priority, application Japan, Apr. 28, 1989, 1-107666
Int. Cl.[5] H04M *7/00, 9/06*
U.S. Cl. 379—219 **11 Claims**



1. A switching system for selectively controlling a call control of a group of speech paths between exchange offices comprising:
first control means for executing the call control of the group of speech paths by a common channel signalling;
second control means for executing the call control of the group of speech paths by a channel-associated signalling for performing transmission of information necessary for controlling connection between the exchange offices through respective speech paths;
means for monitoring a failure on a common channel signal link which forms a signal path established separately from the speech path for transmitting the information necessary for controlling the connection between the exchange offices and is used for the call control of the group of speech paths;
said common channel signal link being comprised of a transmission path for tranferring signalling information for the call control between the exchange offices; and
means for selectively changing over the call control between the first control means including the common channel signalling and the second control means including the channel-associated signalling wherein the changing over means includes means for selectively changing over, responsive to detection of the failure on the common channel signal link by the monitoring means, the call control of the group of speech paths which are controlled by the common channel signalling so as to be controlled by the channel-associated signalling and, responsive to a determination that the common channel signal link is normal, selectively changing back the call control to common channel signalling.

5,333,188
DIALED NUMBER RECOGNITION ARRANGEMENT
Frank J Bogart, Boulder; Bruce D. Butterfield, Denver; David L. Chavez, Jr., Northglenn; Henry C. Dittmer, Westminster; Frederick R. Fix, Arvada; Larry J. Hardouin, Westminster; Nancy K. Schmidt, Broomfield, and Linda L. Thomson, Westminster, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 31, 1991, Ser. No. 786,325
Int. Cl.[5] H04M *7/00, 11/00, 3/42;* **G06F** *15/38*
U.S. Cl. 379—220 **30 Claims**



1. A switching system for use in a telecommunications network having a network numbering plan, comprising:
means, dedicated for use by this switching system exclusive of other switching systems, for storing information defining the network numbering plan;
means for receiving, from a caller served directly by the switching system without intermediacy of other switching systems, any called number not served by this switching system;
means connected to the receiving means and to the storing means for recognizing entire said received number by using the information stored in the storing means; and
means connected to the recognizing means for establishing a

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connection for the call to a part of the network outside of this switching system only following recognition by the recognizing means of the entire received number.

5,333,189

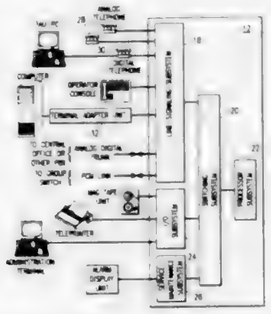
COMMUNICATIONS PROTOCOL FOR SWITCHING SYSTEMS

Robert S. Clary, Anaheim, and Lars T. Rymert, Huntington Beach, both of Calif., assignors to Telefonaktienbolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 544,839, Jun. 27, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 91,474

Int. Cl.[5] **H04M** *3/00*

U.S. Cl. 379—242 **16 Claims**



1. In a switching network including a central switching system and at least one end point device connected to said central switching system, said end point device characterized in part by being in one of a number of states at any one time, and such end point device further characterized by comprising structure maintaining an end point device state table, a protocol for communicating between said central switching system and said at least one end point device comprising:

a plurality of signals for transmitting information from said end point device to said central switching system; and

a plurality of signals for transmitting information from said central switching system to said end point device; wherein said central switching system maintains information regarding state of the end point device; and wherein one of said plurality of signals that may be transmitted from said central switching system to said end point device is a signal for informing said end point device of its state via modification of its state table.

5,333,190

TELEPHONE RING DETECTION METHOD AND APPARATUS

Kurt G. Eyster, 1824 Beacon St., Apt. 1, Brookline, Mass. 02146

Filed Jan. 15, 1992, Ser. No. 821,966

Int. Cl.[5] **H04M** *1/00*

U.S. Cl. 379—375 **32 Claims**

1. A ring detection and telephone enabling/disabling apparatus comprising:

an input for receiving any of several differently encoded telephone ring signals;

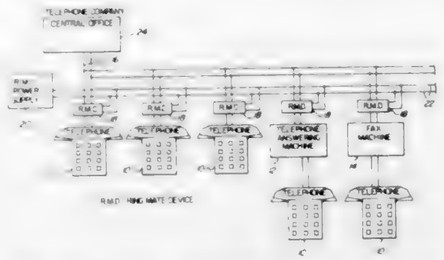
means for distinguishing between said several differently encoded telephone ring signals;

means for providing a different output signal for each of said several differently encoded telephone ring signals;

manual switch means for providing manual control of the enablement of said telephone device in response to one of said differently encoded telephone ring signals; and

means, controlled by said switch means, responsive to said output signals, for enabling said telephone device when said one of said differently encoded telephone ring signals is received and maintaining disablement of said telephone device when another of said differently encoded telephone ring signals is received;

wherein said means for distinguishing includes a ring detection chip in series with an optoisolator chip, wherein said



differently encoded telephone ring signals each include a different number of rings and wherein said optoisolator chip produces an output of a series of square wave signals having characteristics related to the received encoded telephone ring signal.

5,333,191

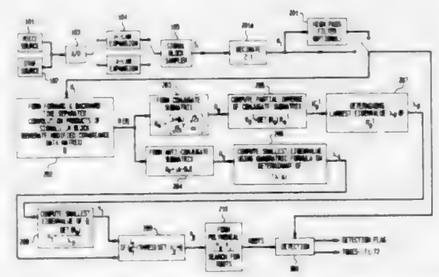
DETECTION OF MULTIFREQUENCY TONE SIGNALS

Brian M. McCarthy, Lafayette Hill, Pa., assignor to InterDigital Technology Corporation, Wilmington, Del.

Filed Apr. 22, 1993, Ser. No. 51,189

Int. Cl.[5] **H04M** *9/00*

U.S. Cl. 379—386 **12 Claims**



1. In a digital signal processor, a method of detecting digitally encoded multifrequency tones appearing as n complex frequencies in a block of sequential code word signals, said block including voice and tone information as well as noise, comprising the steps of:

a. decimating said block of code word signals to increase the noise component thereof;

b. correlating each of said code word signals of said decimated block with itself and with adjacent and more distant code word signals in said decimated block on a forward and backward basis to define a data structure having the elements of a modified covariance data matrix R whose rank is equal to one more than the number of said complex frequencies,

c. partitioning said matrix R into conjugate and anticonjugate submatrices,

d. inverting said conjugate submatrix,

e. isolating the noise eigenvector of said covariance matrix R by employing the eigenvalue of said inverted conjugate submatrix,

f. forming a polynomial from the dot product of the noise eigenvector with the signal; and

g. determining the zero crossings of said polynomial to identify said multifrequency tones.

5,333,192

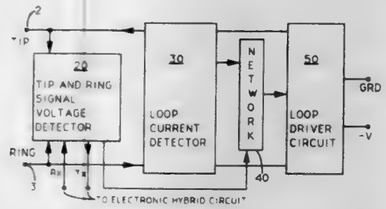
LINE INTERFACE CIRCUIT

Donald S. McGinn, Almonte, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 553,473, Jun. 26, 1990, abandoned. This application Jun. 7, 1991, Ser. No. 711,600

Int. Cl.[5] **H04M** *19/00*

U.S. Cl. 379—399 **9 Claims**



1. A line interface circuit for supplying energizing current from power terminals to a two wire communication line and for coupling communications signals between the communication line and a telephone facility via a hybrid circuit means, comprising:

tip and ring terminals for connection to the two wire communication line;

hybrid transmit and receive terminals for connection to the hybrid circuit means;

a tip and ring signal voltage detector, being responsive to differential signals appearing across the tip and ring terminals and being of at least a voice band frequency, and being responsive to signals appearing at the receive terminal, for generating a composite signal;

a loop driver circuit including a voltage amplifier having an input for receiving a control signal and an output, and a transformer having a tip winding being connected in series with the tip terminal and one of the power terminals, a ring winding connected in series between the ring terminal and another of the power terminals, the tip and ring windings providing paths for the energizing current to flow and being poled such that energizing current flow is of a flux aiding effect, and a primary winding being connected in series with the output of the voltage amplifier;

the loop driver circuit being responsive to the control signal for driving alternating current signals via the tip and ring terminals;

a loop current detector, being connected in series between the tip and ring terminals and the loop driver circuit, for generating a supervision signal in response to current flow in the communication line; and

a network having a first port being connected to receive the composite signal from the tip and ring signal voltage detector, a second port being connected to receive the supervision signal from the loop current detector, and a third port being connected to the input of the voltage amplifier for providing the control signal.

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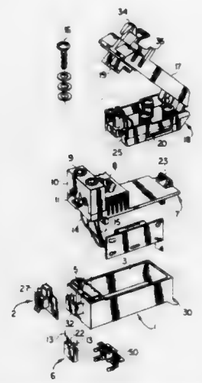
TELEPHONE NETWORK TERMINATION MODULE HAVING INSULATION DISPLACEMENT TERMINALS

Mark P. Cote, Springvale; John J. Napiorkowski, Cape Elizabeth; Thomas W. Kroll, South Portland; Walker K. Butler, Sebago Lake; Boyd G. Brower, and N. Peter Mickelson, both of Gorham, all of Me., assignors to Siecor Puerto Rico, Inc., Hickory, N.C.

Continuation-in-part of Ser. No. 523,457, May 15, 1990, Pat. No. 5,153,910. This application Oct. 5, 1992, Ser. No. 956,144

Int. Cl.[5] **H04M** *9/00*

U.S. Cl. 379—399 **15 Claims**



1. A network termination module comprising: a base structure having a means for grounding; a pair of insulation displacement terminals, a telephone jack and subscriber terminals all disposed on and above the base structure, the insulation displacement terminals being electrically connected to the telephone jack; and openable cover mounted above the telephone jack and the subscriber terminals, the openable cover, in its closed position, establishing electrical connection between the telephone jack and the subscriber terminals, and, in its open position, breaking the electrical connection between the telephone jack and the subscriber terminals; the openable cover, in its closed position, closing off access to the telephone jack and the subscriber terminals, and, in its open position, providing access to the telephone jack and the subscriber terminals; said cover having a hook and alignment tabs thereon so that when a padlock is in place under the hook and on the alignment tabs, rotation of the padlock is prevented; and a protector element disposed within the base structure, the protector element being electrically connected to the means for grounding.

5,333,194

AUTOEQUALIZING BIDIRECTIONAL-TO-UNIDIRECTIONAL HYBRID NETWORK

David D. Caesar, North Vancouver, Canada, assignor to Glenayre Electronics, Inc., Charlotte, N.C.

Filed Oct. 15, 1990, Ser. No. 598,244

Int. Cl.[5] **H04B** *1/52*

U.S. Cl. 379—402 **41 Claims**

1. A hybrid circuit for separating incoming signals on a receive path from outgoing signals on a transmit path, including:

a balance network having an adjustable impedance connected between the receive path and the transmit path;

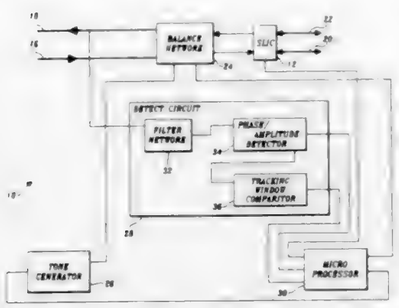
a tone generator connected to the receive path for selectively injecting at least one equalization signal and a supervisory signal into the receive path;

a detect circuit connected to the transmit path for receiving reflected sidetone signals produced as a consequence of

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said signals being injected into said receive path said detect circuit producing a balance signal when a measured equalization signal sidetone is at approximately a null level, said detect circuit producing a recalibration signal when a measured supervisory sidetone signal level has an abrupt change in magnitude; and

processor means that is connected to said balance network for controlling the adjustable impedance of said balance network impedance, that is connected to said tone generator for controlling the injection of said equalization and supervisory signals, and that is connected to said detect



circuit for receiving said balance signal and said recalibration signal, said processor means equalizing an impedance of said balance network by directing said tone generator to inject said at least one equalization tone into the receive path, changing the impedance of said balance network adjustable impedance, and in response to receiving said balance signal, setting said balance network impedance, said processor means further directing said tone generating to inject said supervisory signal into said receive path and in response to receiving and recalibrate signal, reequalizing said balance network impedance.

5,333,195

TELEPHONE NETWORK SPEECH SIGNAL ENHANCEMENT

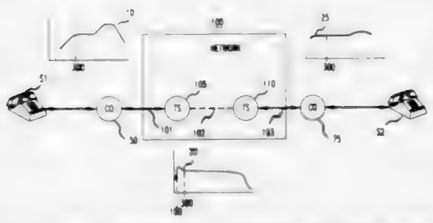
Duane O. Bowker, Neptune City; John T. Ganley, Milford, and J. H. James, Farmingdale, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 620,997, Dec. 3, 1990, Pat. No. 5,195,132. This application Feb. 4, 1993, Ser. No. 13,511

The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.

Int. Cl.[5] **H04M** *1/76*

U.S. Cl. 379—410 **28 Claims**



1. A method of processing a voice signal in a telecommunications network, said voice signal being transmitted by a telephone station set having a nonlinear response such that said telephone station set decreases the amplitude of components of said voice signal having frequencies below a predetermined frequency, said method comprising the steps of

establishing a network connection to forward said voice signal to a destination telephone station set via a processing element, and

in said processing element, equalizing the amplitude of the components of said voice signal having frequencies below said predetermined frequency with respect to other components of said voice signal.

5,333,196

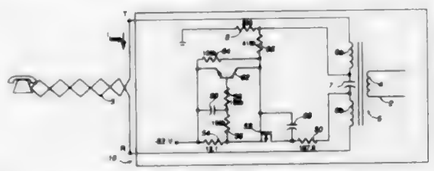
CURRENT LIMITING BATTERY FEED ARRANGEMENT

Gyula Jakab, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 684,784, Apr. 15, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,581

Int. Cl.[5] **H04M** *19/00*

U.S. Cl. 379—413 **8 Claims**



1. A battery feed arrangement for a telephone subscriber loop comprising:

inputs for connection to power supply terminals;

outputs for connection to a subscriber loop;

a first battery feed resistor connected between one input and one output;

a second battery feed resistor, having a value less than the first battery feed resistor, connected to the other output;

a power FET having a control terminal and a controllable DC resistive path series connected with the second battery feed resistor and coupled to the other input;

a capacitor connected between the control terminal and the resistive path of the power FET for a low impedance path for AC signals applied at the other output; and

a control circuit connected to the control terminal of the power FET and having a loop current sensing subcircuit and a biasing subcircuit for providing a control voltage to the power FET in dependence upon the loop current;

the control voltage having a first value for maintaining the controllable resistive path in a low resistance state when the loop current is below a predetermined threshold and a second value for increasing the controllable resistive path to a higher resistance state to maintain the loop current at the predetermined threshold.

5,333,197

SYSTEM TO PREVENT A SCRAMBLER FROM GENERATING UNDESIRED SYMBOLS

Paul R. Febvre, Suffolk, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB91/00579, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO91/16778, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 12, 1991, Ser. No. 956,010

Claims priority, application United Kingdom, Apr. 12, 1990, 9008374.2

Int. Cl.[5] **H04L** *9/00*

U.S. Cl. 380—48 **25 Claims**

1. A communications system for handling a stream of data characters comprising:

a transmitting part having:

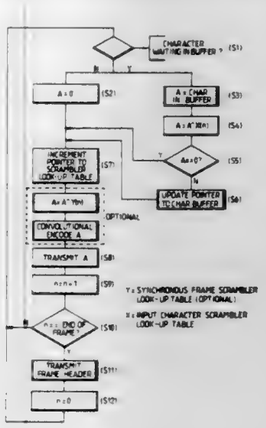
means for encoding an incoming data character into an encoded character,

means for determining whether an encoded character is one of a predetermined set of characters,

means, responsive to the determining means, for controlling the encoding means to encode an incoming data character a plurality of times until an encoded character occurs which is not one of the predetermined set of characters, and

means for transmitting either each encoded character, or when an encoded character is one of the predetermined set,

a character from the predetermined set; and



a receiving part having:

means for receiving a transmitted character,

means for determining whether or not a received character is one of the predetermined set of characters,

means for decoding a received character so that a decoded character is provided from the receiver when the corresponding received character is determined not to be one of the set of characters.

5,333,198

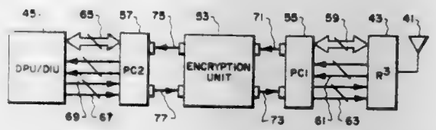
DIGITAL INTERFACE CIRCUIT

Christian L. Houlberg, 9524 Oneida St., Ventura, Calif. 93004, and Jeffrey J. Paci, 1024 E. Stroube St., Oxnard, Calif. 93030

Continuation-in-part of Ser. No. 993,777, Dec. 21, 1993. This application May 27, 1993, Ser. No. 70,133

Int. Cl.[5] **H04L** *9/00*

U.S. Cl. 380—49 **10 Claims**



1. A digital interface unit for controlling data transfers between a first logic device and a second logic device wherein the first logic device transmits and receives data in a serial format and the second logic device transmits and receives data in a parallel format, said digital interface unit comprising:

control means for receiving a first request to send command from said first logic device, said first request to send command initiating a first data transfer from said first logic device to said second logic device;

said control means, responsive to said first request to send command, generating a first request to send control signal, said control means providing said first request to send control signal to said second logic device and then receiving a first clear to send control signal from said second logic device;

said control means, responsive to said first clear to send control signal, generating a first clear to send command, said control means providing said first clear to send command to said first logic device and then receiving a first start of message command from said first logic device;

said control means, responsive to said first start of message command, generating a reset signal;

storage means for receiving said reset signal, said reset signal clearing said storage means;

receiver means for receiving a first plurality of serial data bytes from said first logic device, for converting said first plurality of serial data bytes to a first plurality of parallel data bytes and for providing a data strobe signal;

said storage means receiving said first plurality of parallel data bytes from said receiver means after said reset signal clears said storage means, said storage means, responsive to said data strobe signal, storing said first plurality of parallel data bytes;

said control means receiving a first end of message command from said first logic device after said first logic device transmits a last serial data byte of said first plurality of serial data bytes to said digital interface unit;

said control means, responsive to said first end of message command, generating a done command, said control means providing said done command to said first logic device, said done command when provided to said first logic device acknowledging transmission of said first plurality of serial data bytes from said first logic device to said digital interface unit;

said control means, receiving a first data out request control signal from said second logic device;

said control means, responsive to said first end of message command, said first clear to send control signal and said first data out request control signal, generating a read signal;

said control means providing said read signal to said storage means, said read signal effecting a retrieving of said first plurality of parallel data from said storage means and a transmitting of said first plurality of parallel data from said storage means to said second logic device;

said control means, responsive to said first end of message command, said first clear to send control signal and said first data out request control signal, generating a data in request control signal and a write data in control signal, said control means providing said data in request control signal and said write data in control signal to said second logic device, said data in request control signal and said write data in control signal effecting a writing of said first plurality of parallel data bytes in said second logic device;

said storage means providing a data empty signal after a last parallel data byte of said first plurality of parallel data bytes is read from said storage means,

said control means receiving said data empty signal from storage means, said control means, responsive to said data empty signal and said end of message command, generating an end of message control signal and providing said end of message control signal to said second logic device, said end of message control signal completing said first data transfer from said first logic device to said second logic device;

said control means receiving a second request to send control signal from said second logic device, said second request to send control signal initiating a second data transfer from said second logic device to said first logic device;

said control means, responsive to a second request to send control signal from said second logic device, generating a second request to send command;

said control means providing said second request to send command to said first logic device and then receiving a second clear to send command from said first logic device;

said control means, responsive to said second clear to send command, generating a second clear to send control signal, said control means providing said second clear to send control signal to said second logic device and then receiv-

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ing a write data out control signal from said second logic device;

said control means, responsive to said write data out control signal, generating a second start of message command, said control means providing said second start of message command to said first logic device;

transmitter means for receiving a second plurality of parallel data bytes from said second logic device;

said control means, responsive to said write data out control signal, generating a transmitter strobe signal, said control means providing said transmitter strobe signal to said transmitter means,

said transmitter means, responsive to said transmitter strobe signal, latching said second plurality of parallel data bytes in said transmitter means, said transmitter means converting said second plurality of parallel data bytes to a second plurality of serial data;

said control means transmitting said second plurality of serial data bytes to said first logic device after said control means provides said second start of message command to said first logic device;

said control means, responsive to said write data control signal, generating an acknowledge control signal, said control means providing said acknowledge control signal to said second logic device, said acknowledge control signal indicating to said second logic device that said digital interface unit received each of said second plurality of parallel data bytes from said second logic device;

said control means generating a second end of message command after a last serial data byte of said plurality of serial data bytes is transmitted from said digital interface unit to said first logic device;

said control means providing said second end of message command to said first logic device, said second end of message command completing said second data transfer from said second logic device to said first logic device

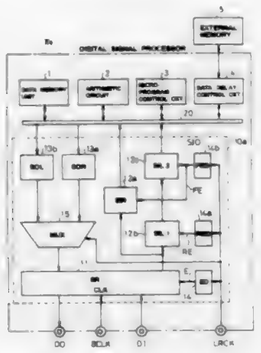
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5,333,199

DIGITAL SIGNAL PROCESSOR FOR SIMULTANEOUSLY PROCESSING LEFT AND RIGHT SIGNALS

Kiyoshi Kuwasaki, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,515
Claims priority, application Japan, Jun. 25, 1991, 3-182040
Int. Cl.[5] H04R *5/00*
U.S. Cl. 381—1 **5 Claims**



1. A digital signal processor having a data input/output circuit for inputting/outputting a right channel data and a left channel data of an audio signal said data input/output circuit comprising:

a data conversion circuit for performing a serial-parallel conversion on the inputted data and for performing a parallel-serial conversion on an output data to be outputted, said serial-parallel conversion and said parallel-serial conversion being performed in accordance with a clock signal;

an R-channel dedicated input latch means and an L-channel dedicated input latch means for latching the inputted R-channel and L-channel data from said data conversion circuit, respectively, said R-channel dedicated input latch means latching the inputted R-channel data in response to a falling edge detection signal of a control signal and said L-channel dedicated input latch means latching the inputted L-channel data from said data conversion circuit in response to a rising edge detection signal of said control signal;

Means for simultaneously processing the inputted R-channel and L-channel data; an R-channel dedicated output latch circuit and an L-channel dedicated output latch circuit for latching the R-channel data and the L-channel data to be outputted, respectively;

an output data switching circuit for selecting, in accordance with the control signal, the data to be outputted therefrom between the R-channel data and the L-channel data sent respectively from said R-channel and L-channel dedicated output latch circuits, the data selected by said output data switching circuit being loaded into said data conversion circuit in response to said falling and rising edge detection signals of the control signal; and

a timing signal generating means for controlling the timings of data latching at each of said input latch means and of data loading from said output data switching circuit to said data conversion circuit, said timing signal generating means including a falling edge detection circuit for detecting a falling edge of said control signal to produce said falling edge detection signal and a rising edge detection circuit for detecting a rising edge of said control signal to produce said rising edge detection signal.

5,333,200

HEAD DIFFRACTION COMPENSATED STEREO SYSTEM WITH LOUD SPEAKER ARRAY

Duane H. Cooper, 918 W. Daniel St., Champaign, Ill. 61821, and Jerald L. Bauck, 4520 E. Baseline Rd. #1089, Phoenix, Ariz. 85044

Continuation-in-part of Ser. No. 713,830, Jun. 12, 1991, Pat. No. 5,136,651, which is a continuation of Ser. No. 397,380, Aug. 22, 1989, Pat. No. 5,034,983, which is a division of Ser. No. 109,197, Oct. 15, 1987, Pat. No. 4,893,342. This application Aug. 3, 1992, Ser. No. 924,345
Int. Cl.[5] H04S *1/00*
U.S. Cl. 381—1 **50 Claims**



1. An audio processing system comprising:

means for providing two input signals;

compensation means for introducing cross-talk cancellation in the two input signals including difference filter means for filtering a difference of the two input signals to obtain a first filtered signal and sum filter means for filtering a sum of the two input signals to obtain a second filtered signal; and

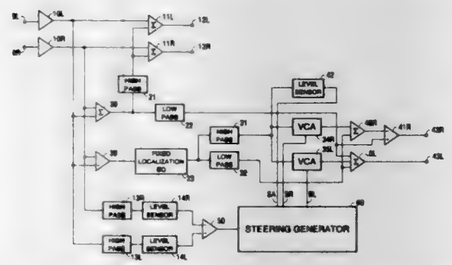
summing and differencing means for generating a sum output signal and a difference output signal respectively from the filtered signals, and for generating at least one additional different output signal from the filtered signals.

5,333,201

MULTI DIMENSIONAL SOUND CIRCUIT

James K. Waller, Jr., Lake Orion, Mich., assignor to Rocktron Corporation, Rochester Hills, Mich.

Continuation-in-part of Ser. No. 975,612, Nov. 12, 1992. This application Jan. 14, 1993, Ser. No. 4,591
Int. Cl.[5] H04S *3/00*
U.S. Cl. 381—22 **20 Claims**



1. A circuit for decoding two channel stereo signals into multi-channel sound signals comprising:

means for differencing the two channel stereo signals to provide a primary signal;

means for dynamically varying the level of said primary signal to produce a first dynamically varied signal; and

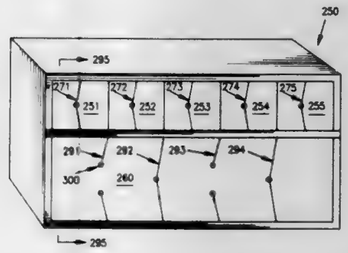
means having a frequency response more sensitive to high than mid-frequency information for controlling the gain of said varying means to increase the level of said first dynamically varied signal when the level of one of the two channel signals is high relative to the other and to decrease the level of said first dynamically varied signal when the level of the other of the two channel signals is high relative to the one.

5,333,202

MULTIDIMENSIONAL STEREOPHONIC SOUND REPRODUCTION SYSTEM

Akira Okaya, deceased, late of New Canaan, Conn., and Ken Okaya, executor, 1012 Brodie St., Austin, Tex. 78704

Continuation-in-part of Ser. No. 204,653, Jun. 9, 1988, abandoned. This application Jun. 29, 1992, Ser. No. 906,280
Int. Cl.[5] H04R *5/02*
U.S. Cl. 381—24 **9 Claims**



1. A structure for producing an aural image at a listening position for stereophonic playback systems, comprising:

first and second loudspeakers producing a left channel sound wave and a right channel sound wave respectively;

a substantially planar sound screen having a periphery and having a first surface and an opposing second surface separated by a thickness equal to a fraction of a selected acoustic wavelength, said screen being divided into a plurality of zones with each zone being fabricated from a selected material;

support means for each of said plurality of sound screen zones for exerting selected tensile forces about the periphery of the sound screen zones;

means aiming said first loudspeaker to direct said left channel sound wave as a diffused sound incident upon a majority of the sound screen, thereby generating first forced bending waves of the screen, which propagate within the plane of the sound screen;

means aiming said second loudspeaker to direct said right channel sound wave as a diffused sound incident upon a majority of the sound screen, thereby generating second forced bending waves of the screen, which propagate within the plane of the sound screen;

said tensile forces being sufficient to cause said first and second forced bending waves to generate an interference within the sound screen, said interference generating an interference sound wave which propagates toward the listening position;

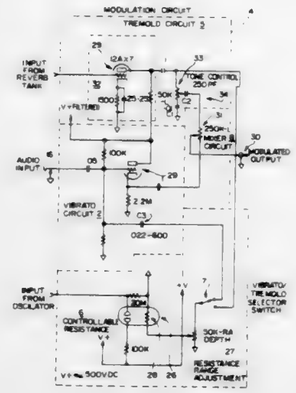
wherein each said sound screen zone produces an interference sound wave component in a selected distinct band of frequencies.

5,333,203

REVERB AND SELECTABLE TREMOLO AND VIBRATO ELECTRON TUBE PREAMPLIFIER

Cesar Diaz, 473 N. Courtland St., East Stroudsburg, Pa. 18301

Filed May 22, 1992, Ser. No. 887,614
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—62 **17 Claims**



1. An electron tube preamplifier for conditioning an input audio signal comprising:

means for producing a reverb effect upon the input audio signal thus creating a reverb effect output signal;

a means for modulating said input audio signal and said reverb effect output signal such that said reverb effect and a selected effect that is one of a tremolo effect and a vibrato effect is imposed upon a modulated output signal;

selection means for permitting said means for modulating to impose one of said tremolo and said vibrato effects upon said input audio signal independently of said reverb effect in said modulated output signal;

means for receiving the input audio signal and applying it to

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both said means for producing a reverb effect and said means for modulating; and

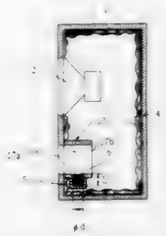
said means for modulating including a control means for providing said modulated output signal with a selectable amount of said reverb effect.

5,333,204

SPEAKER SYSTEM

Hiroyuki Hamada, and Takahiro Naka, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 1, 1992, Ser. No. 861,742
Claims priority, application Japan, Aug. 9, 1991, 3-224597
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—158 **1 Claim**



1. A speaker system having a bass-reflex duct provided in a cabinet, comprising:

a sub-duct provided on a central portion of the bass-reflex duct, and communicated with the bass-reflex duct;

sound absorbing material provided in said sub-duct for absorbing unnecessary resonance generated in the bass-reflex duct;

wherein a length of said sub-duct is determined by

$$L=(c/4fr)-0.4d$$

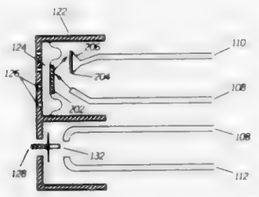
wherein L is the length of the sub-duct, c is sound velocity, fr is an unnecessary resonance frequency of the bass-reflex duct, and d is an inner diameter of said sub-duct.

5,333,205

MICROPHONE ASSEMBLY

Henry A. Bogut, Coral Springs, and Joseph Patino, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,012
Int. Cl.[5] H04R *25/00*; **H04B** *9/00*
U.S. Cl. 381—172 **2 Claims**



1. A communication device assembly, comprising:

a transmitter for transmitting information signals; and

a microphone assembly coupled to the transmitter, the microphone assembly comprising:

a microphone housing having a sound port for receiving sound waves;

a diaphragm coupled to the microphone housing and movably responsive to said sound waves;

a light source located within the housing for providing an optical signal;

a reflective means coupled to the diaphragm for reflecting said optical signal in response to movement of said diaphragm;

a variable gradient for receiving said reflected optical signal and attenuating the reflected optical signal by an amount which is related to the amount of movement experienced by the movable diaphragm;

an optical push-to-talk (PTT) switch coupled to the microphone housing for selectively attenuating the optical signal; and

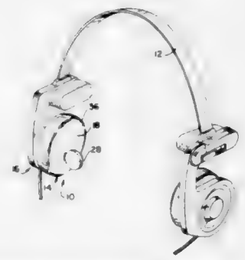
a photo-detector for receiving the attenuated optical signal when the optical push-to-talk (PTT) switch is activated and converting the attenuated optical signal into an electrical signal which controls the transmitter.

5,333,206

DUAL ELEMENT HEADPHONE

Michael J. Koss, Glendale, Wis., assignor to Koss Corporation, Milwaukee, Wis.

Filed Mar. 18, 1992, Ser. No. 854,479
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—183 **19 Claims**



1. A headphone speaker system comprising:

a first acoustic transducer for producing sound, mounted to a mounting plate and arranged to direct the produced sound in a first predetermined direction; and

a second acoustic transducer for producing sound, mounted to said mounting plate and arranged to direct sound in a second predetermined direction transverse to said first predetermined direction;

said first acoustic transducer sized and configured so as to fit into the cavum concha of a listener's ear; and

said second transducer being substantially larger than said first transducer and arranged on said mounting plate so as to substantially overlie at least a portion of the auricle of said listener's ear.

5,333,207

INSPECTION APPARATUS AND METHOD WITH INSPECTION AUDITING FOR IMAGES PRESENTED ON A DISPLAY

Mark R. Rutenberg, Monsey, N.Y., assignor to Neuromedical Systems, Inc., Monsey, N.Y.

Continuation of Ser. No. 610,423, Nov. 7, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 944,819
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—6 **17 Claims**

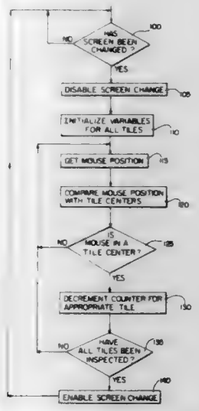
1. A method of auditing a process of visual review by an operator of successive sets of one or more images displayed on a screen, comprising the steps of:

a) displaying a set of at least one image having at least one predetermined area of interest for which a review by an operator for classification is to be performed;

b) enabling an operator to cause an event to occur at a location on the screen determined by the operator;

c) temporarily preventing a new set of at least one image from being displayed, despite action by the operator intended to cause such new set to be displayed, to facilitate an adequate classification;

d) detecting at least one occurrence of such event at a predetermined location in each predetermined area of interest; and



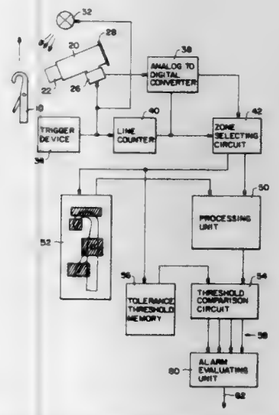
e) permitting action by the operator to cause a new set of at least one image to be displayed only after such event has been detected as having occurred at each predetermined location in each predetermined area of interest in the current display.

5,333,208

METHOD AND ARRANGEMENT FOR OPTICAL CONTROL OF THE NEEDLES OF KNITTING MACHINES

Robert Massen, Radolfzell, Fed. Rep. of Germany, assignor to Theodor Grosz & Sohne and Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Albstadt-Ebingen, Fed. Rep. of Germany

Continuation of Ser. No. 696,021, May 6, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 117,645
Claims priority, application Fed. Rep. of Germany, May 8, 1990, 4014661
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **18 Claims**



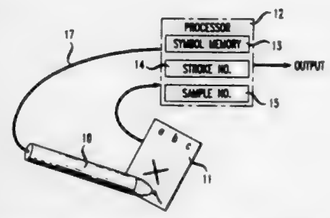
1. A method for optical quality control of needles of a knitting machine which in the operation of the knitting machine are successively and individually moved from a rest position to a stitch forming position, each needle having at least one critical portion in which faults may occur, said method comprising the steps of acquiring a test image of each needle by means of an image sensor camera when said particular needle is moved away from its rest position, converting the analog image signals furnished by said image sensor camera to digital pixel signals, defining within the test image represented by said digital pixel signals test image zones which contain the images of said critical needle portions, processing the digital pixel signals belonging to said test image zones for recovering information on the state of quality of said particular needle, continuously detecting for major faults, such as breakages, coarse cracks and bends of the needles, and automatically generating a reference image corresponding to a non-oscillating and not defected needle; wherein the test images of the needles are acquired during the normal operation of the knitting machine with a coarse image resolution at an image repetition frequency equal to at least one of the number of needles moved away from their test position per unit of time and an integer divisor of said number, the digital pixel signals of said test image zones are compared at the rhythm at which they are supplied by conversion of said analog image signals with corresponding digital pixel signals of at least one store reference image, a quantitative similarity degree is formed on the basis of said comparison, and an alarm signal is generated when said similarity degree does not reach a predetermined tolerance threshold; and wherein test images of all the needles of the knitting machine are acquired by said image sensor camera, the digital pixel signals of corresponding pixels in all said test images are summed to form an average digital pixel signal for each pixel, and the average digital pixel signals are stored as the digital pixel signals of the reference image.

5,333,209

METHOD OF RECOGNIZING HANDWRITTEN SYMBOLS

Frank W. Sinden, Princeton, and Gordon T. Wilfong, Gillette, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 24, 1992, Ser. No. 857,198
Int. Cl.[5] G06K *9/22*
U.S. Cl. 382—13 **36 Claims**



1. A machine method of recognizing an unknown symbol as one of a set of stored model symbols wherein said unknown symbol and said model symbols are each represented as an ordered set of coordinate samples, which comprises:

translating the samples for said unknown symbol and each model symbol so that the centroids of said unknown symbol and said model symbol lie at a common origin,

comparing said unknown symbol with each model symbol in turn by equalizing the number of translated samples for said unknown symbol and said model symbol and determining the correlation of said unknown symbol with said model symbol from the equalized number of said translated samples for said unknown symbol and the equalized number of said translated samples for said model symbol by calculating said correlation as a quantity indicating the closeness of a representation of all possible rotations and sizes of said unknown symbol to a representation of all possible rotations and sizes of said model symbol and

recognizing said unknown symbol as the model symbol associated with the highest correlation,

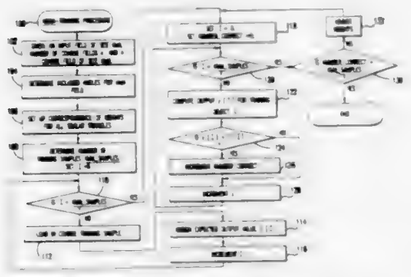
whereby said recognition is independent of the size, position or orientation of said unknown symbol with respect to said model symbols.

5,333,210

METHOD AND SYSTEM FOR PATTERN ANALYSIS USING A COARSE-CODED NEURAL NETWORK

Liljana Spirkovska, and Max B. Reid, both of Sunnyvale, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 2, 1992, Ser. No. 908,141
Int. Cl.[5] G06K *9/46*
U.S. Cl. 382—15 **30 Claims**



1. A pattern analysis system comprising:

means for coarse-coding an input pattern to form a plurality of sub-patterns collectively defining the input pattern, each of said sub-patterns comprising respective sets of sub-pattern data, each sub-pattern having a resolution less than a resolution of said pattern and corresponding to a low-resolution pattern of said entire pattern;

a neural network having a plurality of fields equal in number to said plurality of sub-patterns, so that each field corresponds to one of said sub-patterns, each field including:

a plurality of input nodes receiving the set of sub-pattern data from its corresponding sub-pattern;

at least one summation point where weighted products of predetermined combinations of said input nodes are summed to determine a sub-pattern value; and

interconnections between said input nodes and said at least one summation point defining said products and the weights associated with said products; said neural network also including:

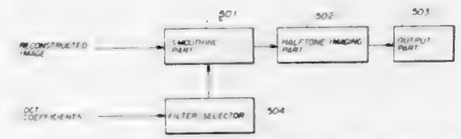
at least one output node, coupled to corresponding summation points from a plurality of said fields, which performs a threshold function on a summation of said sub-pattern values received at said at least one output node to produce an output signal said weights have values obtained by training the network to distinguish between a plurality of different training images which have been assigned respective output signals for said threshold function performed at said at least one output node, whereby said system can determine which of said plurality of training images corresponds to said input pattern by providing said output signal for said input pattern.

5,333,211

IMAGE PROCESSING APPARATUS FOR PREVENTING OCCURRENCE OF MOIRE IN A RECONSTRUCTED IMAGE

Yoshimichi Kanda, Kawasaki; Hajime Ichimura, Ichikawa; Shinji Yamakawa, Kawasaki; Midori Aida, Yokohama; Ouji Maruyama; Tomio Sasaki, both of Tokyo; Makoto Hidaka, Yokohama; Kouichi Noguchi, Machida; Toshihiko Kuroi, Tokyo; Yasuyuki Nomizu, Ebina, and Keiichi Nomura, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,088
Claims priority, application Japan, Sep. 2, 1991, 3-246415
Int. Cl.[5] G06K *9/40*
U.S. Cl. 382—54 **9 Claims**



1. An image processing apparatus for image compression and decompression, in which an image is grouped into a set of blocks, image data of each block is converted into a number of coefficients through discrete cosine transformation, the coefficients are quantized so as to generate a compressed image, and the compressed image is converted into a reconstructed image with respect to each block through de-quantization and through inverse discrete cosine transformation, said apparatus comprising:

a) smoothing means, including a plurality of soothing filters having mutually different smoothing effects, for smoothing image data of the reconstructed image by using a smoothing filter selected from among the plurality of smoothing filters based on a smoothing filter selector signal, and for providing smoothed image data;

b) filter selector signal generating means for generating the smoothing filter selection signal to which the smoothing means is responsive, the filter selector signal generating means including:

1) averaging means for producing a set of values of averages of the coefficients with respect to a plurality of blocks in the reconstructed image, and for generating a distribution of the averages of the coefficients for a target block;

2) discrimination means, responsive to the averaging means, for analyzing the distribution of the averages of the coefficients for the target block, for determining whether or not peak values in the distribution are substantially on a diagonal line of the target block, the diagonal line extending from a corner of the distribution representing a lowest-order position to a corner representing a highest-order position in the target block, and for generating the smoothing filter selection signal; and

3) a line memory, responsive to the discrimination means, for receiving the smoothing filter selection signal, and providing the smoothing filter selection signal to the smoothing means;

c) a halftone imaging means, connected to an output of the smoothing means, for receiving the smoothed image data and for subjecting the smoothed image data to a halftone imaging process, and for providing output image data; and

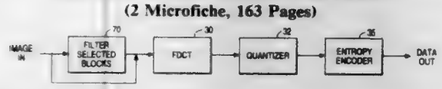
d) output means, connected to an output of the halftone imaging means to receive the output image data, for providing a processed image which is derived from the reconstructed image.

5,333,212

IMAGE COMPRESSION TECHNIQUE WITH REGIONALLY SELECTIVE COMPRESSION RATIO

Adrianus Ligtenberg, Palo Alto, Calif., assignor to Storm Technology, Mountain View, Calif.

Continuation of Ser. No. 664,256, Mar. 4, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 978,312
Int. Cl.[5] G06K *9/36, 9/46;* **H04N** *7/12*
U.S. Cl. 382—56 **31 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 163 Pages)



1. A method of lossy image compression comprising the steps of:

accepting an image into a digital processor;

using the digital processor to subdivide a component of the image into a plurality of blocks;

using the digital processor to select a subset containing fewer than the plurality of blocks for preferentially greater compression;

using the digital processor to encode each block of the plurality according to a defined compression regime while modifying in a particular way at least a portion of the compression regime as applied to each block of the subset, the compression regime, as modified in the particular way, being applied only to the blocks of the subset;

using the digital processor to provide a single set of side information, all of which applies to every one of the encoded blocks of the plurality notwithstanding the fact that during said step of using the digital processor to encode each block of the plurality, at least a portion of the compression regime was modified as applied to each block of the subset; and

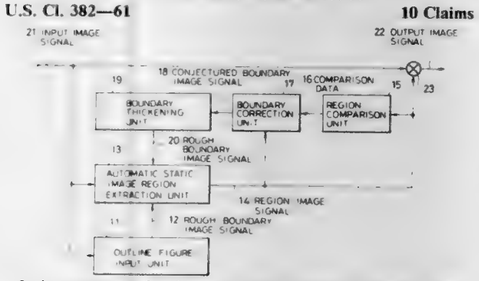
using the digital processor to produce compressed image data comprising the encoded blocks and the single set of side information.

5,333,213

METHOD AND APPARATUS FOR HIGH SPEED DYNAMIC IMAGE REGION EXTRACTION

Hiroki Koyama, and Seiki Inoue, both of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 876,484
Claims priority, application Japan, Jun. 28, 1991, 3-159037
Int. Cl.[5] G06K *9/46;* **G06F** *15/66*
U.S. Cl. 382—61 **10 Claims**



1. An apparatus for dynamic image region extraction, comprising:

outline figure input means for entering rough boundary for a significant region in first and second fields of the dynamic image;

boundary conjecture means for conjecturing a rough boundary for the significant region in each of third and subsequent fields in the dynamic image, according to two fields immediately preceding said each of third and subsequent fields;

static image region extraction means for obtaining an extraction region for the significant region from the rough boundary entered through the outline figure input means for the first and second fields, and from the rough boundary conjectured by the boundary conjecture means for the third and subsequent fields, on a basis of an original image of a respective field of the dynamic image; and

multiplier means for multiplying the original image of each field of the dynamic image and the extraction region for the significant region in said each field, to obtain an extracted image of the significant region in said each field;

wherein the boundary conjecture means further comprises:

region comparison means for comparing the extraction regions for said two fields immediately preceding said each of third and subsequent fields, to obtain a displacement and an expansion/contraction rate of the significant region between said two fields;

boundary correction means for correcting the extraction region for a previous field immediately preceding said each of third and subsequent fields, according to the displacement and the expansion/contraction rate of the significant region between said two fields obtained by the region comparison means; and

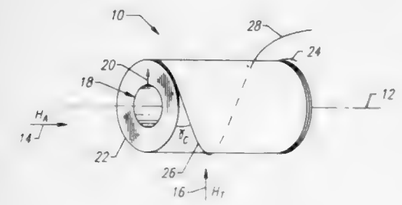
boundary converting means for converting the extraction region for said previous field as corrected by the boundary correction means, into the rough boundary for the significant region in said each of third and subsequent fields.

5,333,214

APPARATUS FOR REDUCING MAGNETIC FIELD-INDUCED BIAS ERRORS IN A FIBER OPTIC GYROSCOPE

Sidney X. Huang, West Hills; Ronald J. Michal, Wrightwood; Ralph A. Patterson, Moorpark, and George A. Pavlath, Thousand Oaks, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Feb. 12, 1993, Ser. No. 17,678
Int. Cl.[5] G01B *9/02*
U.S. Cl. 385—12 **13 Claims**



1. A compensated sensor coil for a fiber optic gyroscope comprising, in combination:

a) a single mode optical fiber;

b) said fiber being arranged into a plurality of adjacent, coaxial turns;

c) said turns being arranged into a sensor coil comprising plurality of adjacent layers, each of said layers comprising a plurality of adjacent turns, said sensor coil being characterized by a plurality of randomly distributed fiber twist modes;

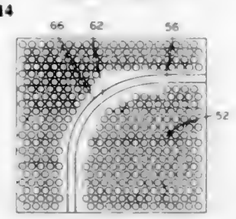
d) said fiber being additionally forming a compensator adjacent said sensor coil;

e) said compensator comprising at least one turn of said optical fiber; and

f) the twist rate of a predetermined twist mode of said at least one turn of said compensator being selected to offset the Faraday effect due to an applied magnetic field having a known orientation with respect to the axis of said sensor coil.

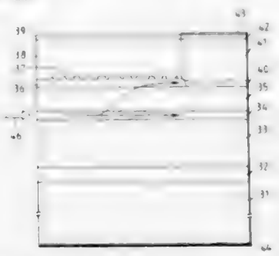
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5,333,215
LOW-LOSS OPTICAL AND OPTOELECTRONIC INTEGRATED CIRCUITS
Robert Meade, Somerville; John Joannopoulos, Belmont, both of Mass., and Oscar L. Alerhand, Marlboro, N.J., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jan. 8, 1993, Ser. No. 2,430
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—14 62 Claims



37. An optical circuit, comprising:
a substrate having a region with a periodic dielectric lattice structure having a spatially periodic variation in dielectric constant in which the lattice dimensions are proportioned to produce a frequency band gap defining a band of frequencies of electromagnetic radiation at which the optical circuit is operable such that radiation at such frequencies is substantially prevented from propagating in at least one dimension within the region; and
at least one optical device formed on or in the substrate proximate to the region with the periodic dielectric lattice structure, such that radiation from the optical device having a frequency within the frequency band gap is substantially prevented from propagating within the substrate.

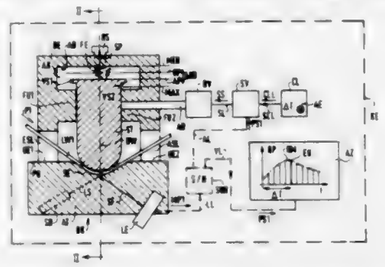
5,333,216
OPTICAL DEVICE USED WAVELENGTH SELECTIVE PHOTOCOUPLER
Hajime Sakata, Hiratsuka, and Hitoshi Oda, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 621,990, Dec. 4, 1990, abandoned. This application Sep. 14, 1993, Ser. No. 120,234
Claims priority, application Japan, Dec. 4, 1989, 1-314841; Feb. 26, 1990, 2-45084
Int. Cl.[5] G02B 6/00, 6/36
U.S. Cl. 385—28 40 Claims



1. An optical device comprising:
a substrate;
a first guiding layer provided on said substrate;
a second guiding layer laminated with said first guiding layer on said substrate, said second guiding layer having a guided mode different from that of said first guiding layer; and
a diffraction grating provided on an area in which said first and second guiding layers have their guided modes overlapping, said diffraction grating serving to couple the light on the specific range of wavelengths that propagates through said first guiding layer, with said second guiding layer,
wherein said diffraction grating comprises a high refractive index region and a low refractive index region disposed periodically in the propagation direction of light, the ratio of the high refractive index region to the low refractive index region occupied in one period changing gradually in the propagation direction of light.

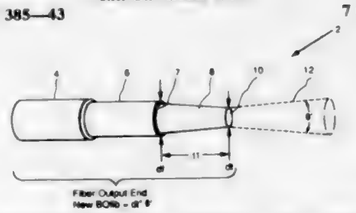
5,333,217
METHOD AND APPARATUS FOR INTRODUCING A FLEXURAL COUPLER INTO ITS COUPLING POSITION
Rainer Kossat, Hainbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jun. 23, 1993, Ser. No. 80,208
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1992, 4221566
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—32 24 Claims

1. In a method for introducing a flexural coupler into a coupling position which includes moving a movable arbor into at least one light waveguide having a coating to move and press the waveguide against a receptacle part to form a curved path along which light can be coupled in and out, and selectively coupling a beam of light from a transmitter into the waveguide at the curved path and decoupling light at the curved path to a receiver, the improvements comprising the moving of the movable arbor to press the waveguide against



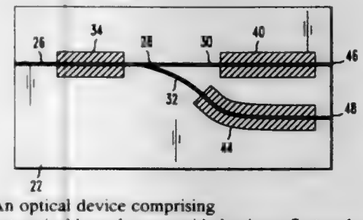
the receptacle pinching the coating to a compressed profile from an original profile by a progressive compressing, determining a specific control criterion for a selectable working position, using the control criterion to limit continuing deformation of the coating by engaging the arbor to stop the motion of the arbor in the selected working position and retaining the arbor in this working position.

5,333,218
OPTICAL FIBER TAPERED OUTPUT END PREPARATION FOR IMPROVED HIGH POWER LASER/FIBER DELIVERED BEAM QUALITY
Angel L. Ortiz, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed May 24, 1993, Ser. No. 65,382
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—43 7 Claims



1. A method for delivering a laser beam, from a power laser source to an output coupler having an inlet, comprising the steps of:
preparing a fiber optic having a stretched fiber output tip, said fiber optic tapered only at its fiber output tip, said fiber output tip tapered along its entire fiber output tip length, and said fiber optic having first and seconds ends such that a cross-section of said second end of said fiber optic is smaller than a cross-section of said first end of said fiber optic;
operating said power laser source to create a first laser beam;
impinging said first laser beam on said first end of said fiber optic wholly within said cross-section of said first end;
emitting said first laser beam from said second end of said fiber optic to create a second laser beam; and
impinging said second laser beam on aid inlet of said output coupler.

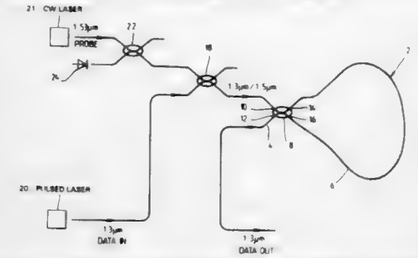
5,333,219
ASYMMETRIC Y-BRANCH OPTICAL DEVICE
Mark E. Kuznetsov, East Brunswick, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 17, 1992, Ser. No. 992,352
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—45 14 Claims



1. An optical device comprising
a first optical branch waveguide having a first and a second end,
a second optical branch waveguide having a first and a second end,
a third optical branch waveguide having a first and a second end and a path length that is greater than the path length of the second optical branch waveguide,
an optical Y-junction element coupling the second end of the first optical branch waveguide to the first end of the second and the first end of the third optical branch waveguides, the second end of the second optical branch waveguide and the second end of the third optical branch waveguide terminating at a common plane that is perpendicular to the longitudinal axis of the second and third optical branch waveguides,
wherein
the second ends of the second and third optical branch waveguides which terminate at a common plane each have a reflecting end surface.

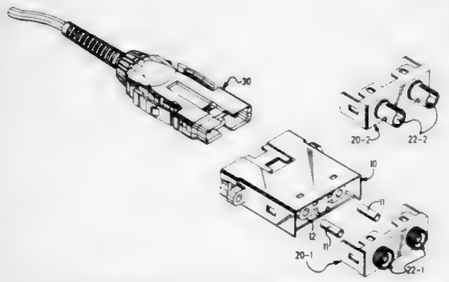
5,333,220
QUANTUM NON-DEMOLITION OPTICAL TAPPING
Brian P. Nelson; Keith J. Blow, both of Woodbridge, and Nicholas J. Doran, Stratford-Upon-Avon, all of England, assignors to British Telecommunications Public Limited Company, London, England
PCT No. PCT/GB90/01417, § 371 Date Mar. 25, 1992, § 102(e) Date Mar. 25, 1992, PCT Pub. No. WO91/04509, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 13, 1990, Ser. No. 842,340
Claims priority, application United Kingdom, Sep. 15, 1989, 8920912
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—48 14 Claims

1. A quantum non-demolition optical tap comprising:
a first optical coupler having a first and a second pair of optical communication ports in which substantially equal first signal portions of an optical signal at a first wavelength received at a port of one pair are coupled to the two ports of the other pair of ports;
an optical waveguide coupling together the second pair of ports and including an interaction section which includes a material having a non-linear refractive index;
a continuous wave (cw) optical source for providing a cw optical probe signal at the first wavelength coupled to a first port of the first pair of ports;
a means for coupling a received optical signal at a second wavelength different from the first wavelength to the interaction section so the received optical signal propagates along it in substantially one direction;



the magnitude of non-linearity of the non-linear material being sufficient for the received optical signal to provide a relative phase shift in the first signal portions as they propagate round the optical waveguide.

5,333,221
UNIVERSAL ADAPTER FOR OPTICAL CONNECTORS
Robert C. Briggs, Newport; Thomas R. Fawcett, Jr., Mechanicsburg; Denis G. Mulholland, Lancaster; Steven P. Owens, Grantville, and Wallace R. Savitsky, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 30, 1992, Ser. No. 906,784
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—55 7 Claims

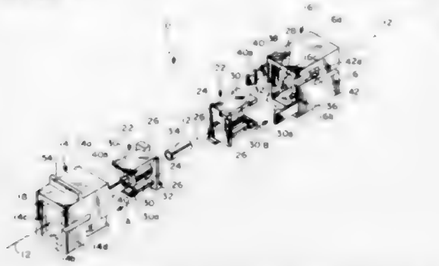


1. A universal adapter for mating dissimilar optical fiber connectors, said adapter comprising:
a housing comprising a pair of opposing side walls and upper and lower walls joining said side walls to form an open-ended compartment, said housing further including,
a first end adapted for insertion of a duplex fiber-optic plug assembly, and
a plurality of latch pins protruding from said side walls and upper wall interiorly of said housing; and
a back panel shaped to cover a second end of said housing and fastenable thereto for coupling a duplex plug assembly seated in said housing to a dissimilar connector, said back panel further comprising,
a pair of forwardly protruding coupling elements adapted for mating with said dissimilar connector, and
a plurality of resilient anchoring tabs projecting rearwardly from said back panel and each having a central perforation, said anchoring tabs conforming to said second end of said housing for self-aligning the back panel with said housing during insertion therein;
whereby during insertion of said back panel in said housing, said anchoring tabs are biased over said latch pins until said anchoring tabs capture said latch pins within the central perforations, said anchoring tabs thereupon clasp-

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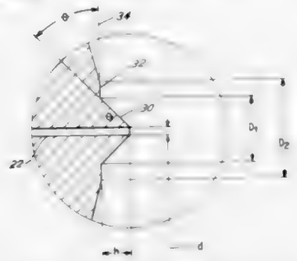
ing said latch pins on said side walls and upper wall to lock said back panel against said housing.

5,333,222
ADAPTER FOR INTERCONNECTING OPTICAL FIBER CONNECTORS OR THE LIKE
Yuriy Belenkiy, Chicago; Igor Grois, Northbrook, and Ilya Makhlin, Skokie, all of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed May 14, 1993, Ser. No. 62,086
Int. Cl.[5] G02B 6/00, 6/36
U.S. Cl. 385—70 **12 Claims**



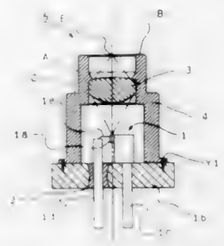
1. In an adapter assembly for interconnecting a pair of opposing optical fiber connectors generally along an optical axis, the adapter assembly being constructed as a double-ended receptacle for receiving the connectors in opposite open ends thereof, the adapter assembly further including a pair of halves each defining one of said open ends for receiving one of the connectors, and each half having interconnecting means operatively associated with its respective connector, wherein the improvement comprises complementary interengaging latch means between the adapter halves in the form of at least one latch arm on one of the adapter halves projecting generally parallel to said axis toward the other adapter half and engageable with a complementary latch on the other half, and wherein at least one of the adapter halves includes a deformable rib engageable with an inner peripheral edge of an aperture in a panel and providing the sole means for mounting the adapter in the aperture in the panel.

5,333,223
PLASTIC FIBER ALIGNMENT FERRULE WITH POLISHING PEDESTAL
Philip W. Schofield, Oak Park, and James W. McGinley, Schaumburg, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.
Filed Apr. 13, 1993, Ser. No. 47,116
Int. Cl.[5] G02B 6/00, 6/36
U.S. Cl. 385—84 **18 Claims**



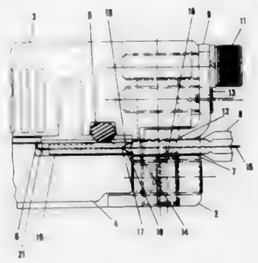
1. A molded plastic ferrule for a fiber optic connector comprising an elongated body having an opening therethrough, said opening having an entry end and an exit end, said entry end for receiving a fiber optic member into said opening, said ferrule having an integral, removable pedestal formed to surround said exit end of said opening, said pedestal having a generally conical shape with a height at least equal to diameter of a pedestal end face, and the conical pedestal side wall defining an angle between 35 degrees and 55 degrees with respect to a base of said pedestal wherein the pedestal removal occurs at least partially by polishing the pedestal from the end face to the base.

5,333,224
PHOTOELECTRIC CONVERTER CONNECTING DEVICE
Kimihiro Kikuchi, Marumori, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Jun. 18, 1993, Ser. No. 79,669
Claims priority, application Japan, Jul. 6, 1992, 4-201990
Int. Cl.[5] G02B 6/00, 6/36
U.S. Cl. 385—93 **11 Claims**



1. A photoelectric converter connecting device comprising:
a receptacle defining a cylindrical passage for receiving an optical fiber ferrule; and
a photoelectric converter including a lens press molded into a lens holder, the lens having a common axis with the cylindrical passage, said photoelectric converter also including a photoelectric converter element mounted to a base, the base being mounted to said lens holder and to said receptacle such that an end surface of said lens holder is abutted on an end surface of the optical fiber ferrule.

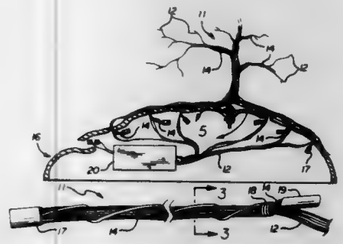
5,333,225
SUBSTRATE-EMBEDDED PLUGGABLE RECEPTACLES FOR CONNECTING CLUSTERED OPTICAL CABLES TO A MODULE
Lawrence Jacobowitz; Mario E. Ecker, both of Poughkeepsie, and Casimer M. DeCusatis, Lake Katrine, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 3, 1993, Ser. No. 101,119
Int. Cl.[5] G02B 6/00, 6/36
U.S. Cl. 385—93 **16 Claims**



1. A connector for coupling an optical cable to an electronic module, comprising
a multiplicity of optical fibers supported in the cable for communicating optical signals,
electrical connections in the module connecting to one or more electronic chips on the module,

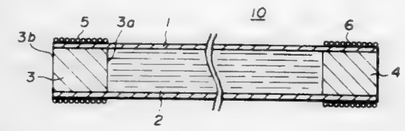
a photonic receptacle supported in an edge of the module and formed with a plug interface angle for receiving a plug means supporting an end of the optical cable,
the photonic receptacle, further comprising:
a plurality of receptacle optical fibers, a module end of each receptacle optical fiber being supported in optical alignment with a photonic receiver, transmitter or transceiver fixed to the module, a plug end of each receptacle optical fiber supported at a vertex of the plug interface angle formed in the receptacle,
the plug means, further comprising:
a plug guide for clamping ends of optical fibers in the cable in a fixed inter-relationship equal to a fixed inter-relationship among the plug ends of the receptacle optical fibers, and a conjugate angle formed at an end of the plug guide for engaging the plug interface angle formed in the receptacle, and
lens means supported in the vertex of the plug interface angle formed in the receptacle for engaging the plug end of the receptacle optical fibers to communicate light between the ends of the optical fibers in the cable and matching plug ends of receptacle optical fibers.

5,333,226
FIBER OPTIC SCULPTURAL ART AND METHOD OF MAKING SAME
Gregg Stephens, 6508 Coldwater Canyon #5, North Hollywood, Calif. 91606
Filed Mar. 23, 1992, Ser. No. 853,979
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—100 **5 Claims**



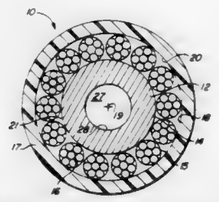
1. A sculptural arrangement comprising:
a flexible, self-supporting fiber optic cable consisting essentially of:
a plurality of optical fibers substantially exposed along the length thereof and adapted to radiate optical energy along the length thereof and
a plurality of strands of metallic wire wrapped around said plurality of optical fibers to provide support therefor,
said cable extending generally in a first direction and having
a plurality of bundles of individually supported fibers fanning-out therefrom to provide:
a first bundle extending in said first direction,
a second bundle extending, at least partially, in a second direction transverse to said first direction, and
a third bundle extending, at least partially, in a third direction transverse to said first and second directions, to create a three-dimensional optical arrangement and
means for providing illumination to said fibers.

5,333,227
OPTICAL WAVEGUIDE HOSE
Minoru Ishiharada; Rikuhei Itou, both of Kodaira; Itsuo Tanuma, Sayama; Kazuo Naito, Kawasaki; Yasuhiko Matsumuro, Bunkyo; Takao Aoki, Yokohama, and Kiyoshi Koyama, Kamakura, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Apr. 7, 1993, Ser. No. 43,839
Claims priority, application Japan, Apr. 7, 1992, 4-114071; May 1, 1992, 4-140128; May 14, 1992, 4-148268; Aug. 25, 1992, 4-248592
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—100 **12 Claims**



1. An optical waveguide hose comprising:
a hollow tubular cladding having opposite end openings,
a core of a fluid having a higher index of refraction than the cladding, the fluid core being filled in the cladding such that the internal pressure is at least 0 kg/cm^2 at the minimum service temperature and below the withstand pressure of the cladding at the maximum service temperature, and
sealing plugs mated with the end openings of the cladding.

5,333,228
LATERAL ILLUMINATION FIBER OPTIC CABLE DEVICE AND METHOD OF MANUFACTURE
Brett M. Kingstone, Orlando, Fla., assignor to Super Vision International Inc., Orlando, Fla.
Filed May 21, 1993, Ser. No. 65,942
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—100 **19 Claims**



1. A lateral illumination fiber optic cable device, comprising:
a central core including a longitudinally extending tube having an axially extending light reflective outer surface;
a plurality of optical fibers uniformly distributed circumferentially about the core and extending axially along the reflective surface; and
a transparent tubular sheath running longitudinally, coaxially of the core about the optical fibers.

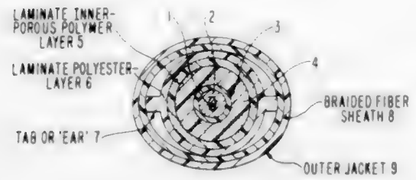
5,333,229
ASYMMETRICAL POLARIZATION-MAINTAINING OPTICAL WAVEGUIDE AND PROCESS FOR MANUFACTURE THEREOF
Emile G. Sayegh, Austin, Tex., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed Mar. 31, 1993, Ser. No. 40,694
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—102 **9 Claims**

1. An asymmetrically shaped signal polarization-maintaining

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optical waveguide, said waveguide comprising in order from inside to outside:

(a) a shaped glass optical fiber waveguide core having an asymmetrical cross-section, said asymmetrically shaped optical fiber core coated with a classing and a hard polymer coating surrounding said cladding;



(b) a layer of porous polymer surrounding said cladding and said hard polymer coating; and

(c) a layer of laminated polyester-porous polymer film, said polyester layer of said laminated film forming the outer layer thereof, said laminated layer having protuberances on the outer surface thereof aligned in known relationship to an axis of said asymmetrically shaped optical fiber core.

5,333,230

OPTICAL-FIBER CABLE INCORPORATED LONGER-SIZED SUBAQUEOUS UNIT

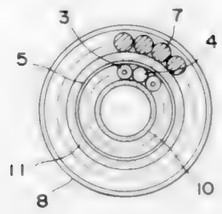
Ryosuke Hata; Masayuki Hirose, both of Osaka; Toshiyuki Amagai, deceased, late of Osaka by Kenjo Amagai, Michiko Amagai, heirs; Masayoshi Yamaguchi, and Hiroyuki Kimura, both of Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 41,882, Apr. 2, 1993, abandoned, which is a continuation of Ser. No. 581,705, Sep. 13, 1990, abandoned. This application Sep. 27, 1993, Ser. No. 127,090

Claims priority, application Japan, Sep. 13, 1989, 1-237740; Sep. 14, 1989, 1-239333; Nov. 1, 1989, 1-286764

Int. Cl.[5] **G02B** *6/44*

U.S. Cl. 385—110 **22 Claims**



1. An optical fiber incorporated subaqueous cable comprising:

a core body;

a plastic sheath surrounding a periphery of the core body;

a plurality of optical fiber units wound on a periphery of the plastic sheath, each optical fiber unit comprising:

a stainless steel tube;

a single optical fiber enclosed within the stainless steel tube; and

a layer of plastic surrounding the stainless steel tube; and

a plurality of armoring iron wire bundles surrounding the plurality of optical fiber units wound on a periphery of the plastic sheath.

5,333,231

WAVELENGTH CONVERSION ELEMENT

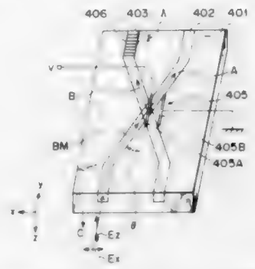
Hiroaki Fukuda, Yokohama; Hiroyoshi Funato, Chigasaki, and Shigeyoshi Misawa, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 876,042

Claims priority, application Japan, May 2, 1991, 3-100836; May 2, 1991, 3-130592; May 9, 1991, 3-133616; May 17, 1991, 3-113265; May 20, 1991, 3-114805; Oct. 28, 1991, 3-281522; Jan. 24, 1992, 4-034250

Int. Cl.[5] **G02B** *6/10;* **H01S** *3/10*

U.S. Cl. 385—122 **17 Claims**



1. A wavelength conversion element comprising:

a substrate made of $LiTaO_3$, $LiNbO_3$ or $LiNbO_3$ doped with MgO of non-linear optical medium;

a plurality of three-dimensional waveguides formed in the substrate and crossed on the substrate;

a potential difference application means formed on an intersection to apply a potential difference for change of optical path of a fundamental wave guided through a waveguide; and

a second harmonic generation means formed on at least one of the plurality of waveguides for defining a change in refractive index in a waveguide with a period Λ and generating a second harmonic of the fundamental wave introduced into the waveguide, where $\Lambda = 2m\pi/\{\beta(2\omega) - 2\beta(\omega)\}$, where m is a natural number, ω is a frequency of the fundamental wave, $\beta(\omega)$ is a propagation constant of the fundamental wave, and $\beta(2\omega)$ is a propagation constant of the second harmonic.

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OPTICAL FIBER FOR CONNECTION TO WAVEGUIDE TYPE OPTICAL DEVICE AND METHOD OF MANUFACTURING THE SAME

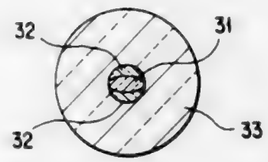
Hisaharu Yanagawa, and Takahiro Ono, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 33,095

Claims priority, application Japan, Mar. 16, 1992, 4-89252

Int. Cl.[5] **G02B** *6/22*

U.S. Cl. 385—127 **5 Claims**



1. An optical fiber for connection to waveguide type optical device, comprising:

a core having a flat cross-section;

a first clad formed along a greater diameter of the core, and having a refractive index smaller than that of the core; and

a second clad formed outside of the core and the first clad, and having a refractive index smaller than that of the core and greater than that of the first clad;

wherein generally $a^2 \cdot \Delta 2$, $b^2 \cdot \Delta 1$, where a is the greater diameter of the core, b is the smaller diameter of the core, A1 is the difference in specific refractive index between the core and the first clad, and $\Delta 2$ is the difference in specific refractive index between the core and the second clad.

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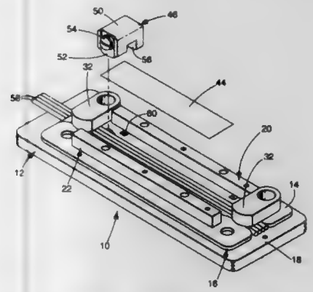
APPARATUS FOR BONDING DISCRETE OPTICAL FIBERS INTO A RIBBON

Charles M. Mansfield, and Victor J. Borer, both of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 19, 1992, Ser. No. 932,068

Int. Cl.[5] **G02B** *6/00, 6/36*

U.S. Cl. 385—134 **21 Claims**



1. A device for uniting a plurality of individual fibers into a ribbon, comprising:

a base member having a work surface;

a first plate member having a straight edge, said first plate member being affixed to said work surface of said base member, and said straight edge having first and second ends;

a second plate member having a straight edge, said second plate member being slidably attached to said work surface of said base member, and said straight edge of said second plate member having first and second ends, and being proximate said straight edge of said first plate member;

means for biasing said second plate member toward said first plate member; and

said first end of said straight edge of said first plate member curving away from said second plate member, defining a first blade ramp, and said first end of said straight edge of said second plate member curving away from said first plate member, defining a second blade ramp.

5,333,234

CURABLE COMPOSITION FOR USE IN OPTICAL FIBER CLADDING AND OPTICAL FIBER EQUIPPED THEREWITH

Yutaka Hashimoto, Sakai; Jun Shirakami, Osaka; Masayuki Kamei, Sakai; Shoshiro Taneichi, Tajimi, and Makoto Ichinose, Aichi, all of Japan, assignors to Dainippon Ink and Chemcials, Inc. and Toray Industries, Inc., Tokyo, Japan

Filed Aug. 18, 1992, Ser. No. 931,365

Claims priority, application Japan, Aug. 23, 1991, 3-212447

Int. Cl.[5] **C08F** *2/50, 220/24*

U.S. Cl. 385—145 **10 Claims**

1. A curable composition for optical fiber cladding comprising:

48.8～92.9 wt % of 2-(perfluorooctyl)ethyl acrylate (I);

1.3～23.8 wt % of 2,2,3,3-tetrafluoropropylacrylate (II);

5.0～30.0 wt % of trimethylolpropanetriacrylate (III); and

0.1～5.0 wt % of photopolymerization initiator (IV);

wherein a weight ratio [(I)/(II)] of monomer (I) and monomer (II) is within a range of 75/25～98/2.

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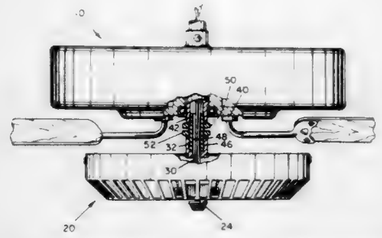
ELECTRIC HEATER ASSEMBLY FOR ATTACHMENT TO CEILING FANS

James Ryder, 1421 Lake Shore Blvd., Little Elm, Tex. 75068

Filed Jul. 19, 1990, Ser. No. 555,936

Int. Cl.[5] **H05B** *1/00, 3/00;* **F24H** *3/04*

U.S. Cl. 392—364 **4 Claims**



1. In a ceiling fan having a plurality of rotatable blades, a centrally disposed first attachment means at the base of the ceiling fan below the rotatable blades normally used for attaching a conventional lighting fixture and a first electrical connector extending through the first attachment means normally used for attaching to an electrical lead in the lighting fixture, the improvement characterized by a heater assembly comprising:

(a) a housing having a centrally disposed second attachment means for mating with the centrally disposed first attachment means to connect the housing to the ceiling fan below the rotatable blades,

(b) a heating element within the housing for generating radiant heat,

(c) a second electrical connector connected to the heating element and to the first electrical connector of the ceiling fan to provide electricity from the ceiling fan to the heating element, and

(d) vent means in the housing for enabling a flow of air from the rotatable blades of the ceiling fan over the heating elements whereby heat generated in the housing is radiated outward from the housing.

5,333,236

SPEECH RECOGNIZER HAVING A SPEECH CODER FOR AN ACOUSTIC MATCH BASED ON CONTEXT-DEPENDENT SPEECH-TRANSITION ACOUSTIC MODELS

Lalit R. Bahl, Amawalk, N.Y.; Peter V. De Souza, San Jose, Calif.; Ponani S. Gopalakrishnan, Croton-on-Hudson, and Michael A. Picheny, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 10, 1992, Ser. No. 942,862

Int. Cl.[5] **G10L** *9/00*

U.S. Cl. 395—2.65 **31 Claims**

1. A speech coding apparatus comprising:

means for measuring the value of at least one feature of an utterance over each of a series of successive time intervals to produce a series of feature vector signals representing the feature values;

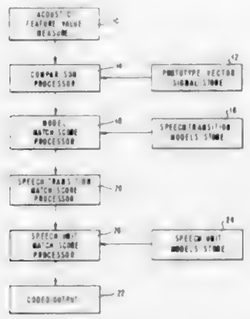
means for storing a plurality of prototype vector signals, each prototype vector signal having at least one parameter value;

means for comparing the closeness of the feature value of a first feature vector signal to the parameter values of the prototype vector signals to obtain prototype match scores for the first feature vector signal and each prototype vector signal;

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means for storing a plurality of speech transition models, each speech transition model representing a speech transition from a vocabulary of speech transitions, each speech transition having an identification value, at least one speech transition being represented by a plurality of different speech transition models, each speech transition model having a plurality of speech transition model outputs, each speech transitions model output comprising a prototype match score for a prototype vector signal, each speech transition model having an output probability for each model output;

means for generating a model match score for the first feature vector signal and each speech transition model, each



model match score comprising the output probability for at least one prototype match score for the first feature vector signal and a prototype vector signal;

means for generating a speech transition match score for the first feature vector signal and each speech transition, each speech transition match score comprising the best model match score for the first feature vector signal and all speech transition models representing the speech transition and

means for outputting the identification value of each speech transition and the speech transition match score for the first feature vector signal and each speech transition as a coded utterance representation signal of the first feature vector signal.

5,333,237

HYPERMEDIA STRUCTURED KNOWLEDGE BASE SYSTEM

Arthur C. Stefanopoulos, Portsmouth; Juan Morales, Bristol, both of R.I., and Richard J. W. Mansfield, Cambridge, Mass., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 780,568, Oct. 21, 1991, abandoned, which is a continuation of Ser. No. 419,353, Oct. 10, 1989, abandoned. This application Jun. 8, 1992, Ser. No. 896,805

Int. Cl.[5] G06F *15/46*

U.S. Cl. 395—12 4 Claims

1. An expert system comprising:

a computing device having a memory;

display means for displaying information to a user;

selection/input means for use by a user to provide input into said expert system;

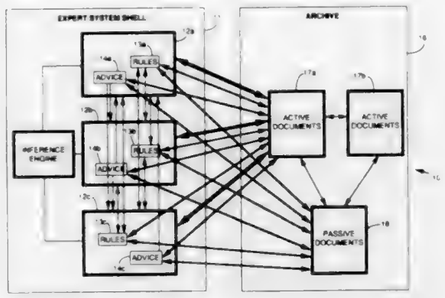
a plurality of data bases stored in the memory including:

electronic documents comprising graphical illustrations, textual information and tabular data; and

a plurality of knowledge bases comprising facts, rules, and advice;

a hypermedia interface comprising links between the plurality of knowledge bases and said electronic documents including links between the rules and associated ones of the electronic documents, links between the advice and associated ones of the electronic documents, said hypermedia interface also including links between the electronic documents wherein at least one selectable area in each electronic document is linked according to predetermined associative links to at least one other electronic document.

said selection/input means including operator interface means and means for activating the links between the plurality of knowledge bases and the electronic documents; and



an inference engine program adapted for execution in the computing device for use with the facts, the rules, the advice and said hypermedia interface including the links to and between the electronic documents, said display means displaying said linked facts, rules, advice and documents to the user under the control of the inference engine, linked facts, rules, advice, and documents being displayed when the link between said particular facts, rules, advice and documents is active.

5,333,238

METHOD AND APPARATUS FOR CHECKING INPUT-OUTPUT CHARACTERISTIC OF NEURAL NETWORK

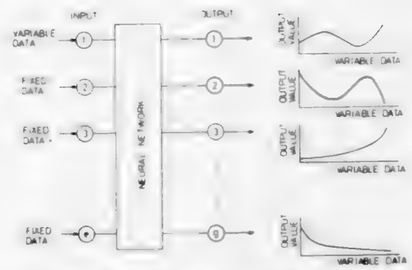
Yukinori Kakazu, 52-1, Bunkyodai, Ebetsu-shi, Hokkaido, Japan; Takao Yoneda, Nagoya; Tomonari Kato, Kariya, and Kazuya Hattori, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Yukinori Kakazu, Ebetsu, both of Japan

Filed Aug. 28, 1992, Ser. No. 936,635

Claims priority, application Japan, Aug. 29, 1991, 3-244775

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—21 14 Claims



11. A method of checking an input-output characteristic of a neural network comprising an input layer composed of plural input nodes and an output layer composed of at least one output node, said method comprising the steps of:

selecting one of said input nodes of said neural network;

applying variable data to said one input node while applying constant data to input nodes other than said one input node and operating said neural network to obtain first output data from said output node;

varying said variable data within a predetermined range to obtain second variable data;

applying said second variable data to said one input node while applying said constant data to said input nodes other than said one input node and operating said neural network to obtain second output data from said output node; and

displaying said first and second output data.

5,333,240

NEURAL NETWORK STATE DIAGNOSTIC SYSTEM FOR EQUIPMENT

Hiroshi Matsumoto, Ibaraki; Masahide Nomura, Hitachi; Makoto Shimoda, Katsuta; Tadayoshi Saito, Ohta; Hiroshi Yokoyama; Kenji Baba, both of Hitachi; Junzo Kawakami; Yasunori Katayama, both of Mito; Akira Kaji, and Seiitsu Nigawara, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1990, Ser. No. 508,664

Claims priority, application Japan, Apr. 14, 1989, 1-95034

Int. Cl.[5] G06F *15/18;* G21C *7/36*

U.S. Cl. 395—23 23 Claims

5,333,239

LEARNING PROCESS SYSTEM FOR USE WITH A NEURAL NETWORK STRUCTURE DATA PROCESSING APPARATUS

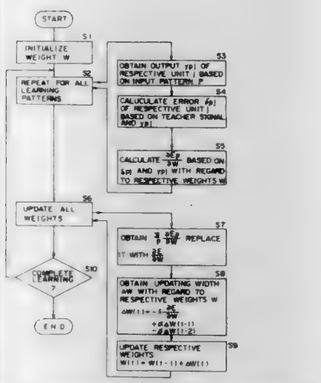
Nobuo Watanabe, Zama; Takashi Kimoto, Yokohama; Akira Kawamura, Kawasaki; Ryusuke Masuoka, Tokyo, and Kazuo Asakawa, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 490,583, May 11, 1990, abandoned. This application Jan. 11, 1993, Ser. No. 3,856

Claims priority, application Japan, Sep. 12, 1988, 63-227825

Int. Cl.[5] G06F *15/18;* G06G *7/60*

U.S. Cl. 395—23 23 Claims

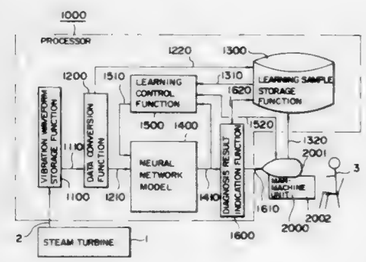


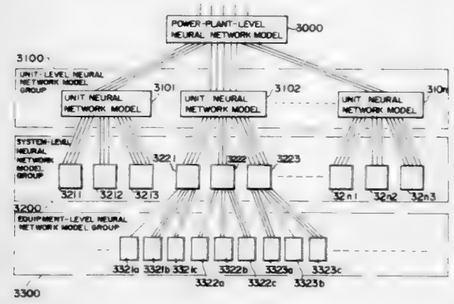
13. A method of learning in a layered neural network, comprising the steps of:

(a) determining in the layered neural network an output signal in response to a weight signal from a weight learning circuit;

(b) generating an error signal in an error circuit between a teacher signal and the output signal of the layered neural network; and

(c) generating the weight signal in a weight learning circuit in response to a previous weight signal and a weight updating signal, the weight updating signal being generated in response to the error signal from the error circuit, a once delayed weight updating signal and a twice delayed weight updating signal.





1. A state diagnostic system for a rotating machine, comprising:

a neural network model for learning in advance one or more samples of time dependent waveforms of vibrations, which are produced in abnormal and normal operation states of the rotating machine, in association with the corresponding operation state, and producing an output signal corresponding to diagnostic results when data related to time dependent waveforms of vibrations produced upon operation of the rotating machine are inputted;

means for inputting to the neural network model the data related to time dependent waveforms of the vibrations produced upon operation of the rotating machine;

means for converting the output signal from the neural network mode into a message to a user and outputting the message as at least a part of diagnostic results; and

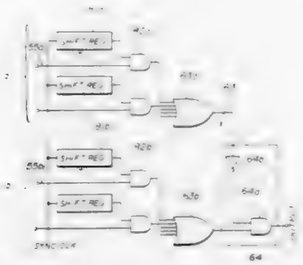
a man-machine unit having a screen for displaying said message.

5,333,241

NEURON UNIT, NEURAL NETWORK AND SIGNAL PROCESSING METHOD

Toshiyuki Furuta; Hiroyuki Horiguchi; Hirotoshi Eguchi; Yutaka Ebi; Tatsuya Furukawa, all of Yokohama; Yoshio Watanabe, Kawasaki, and Toshihiro Tsukagoshi, Itami, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 629,632, Dec. 18, 1990, Pat. No. 5,167,006.
This application May 28, 1992, Ser. No. 889,380
Claims priority, application Japan, Dec. 29, 1989, 1-343891; Mar. 7, 1990, 2-55523; Mar. 9, 1990, 2-58515; Mar. 9, 1990, 2-58548; Mar. 12, 1990, 2-60738; Mar. 16, 1990, 2-67938; Mar. 16, 1990, 2-67939; Mar. 16, 1990, 2-67940; Mar. 16, 1990, 2-67941; Mar. 16, 1990, 2-67942; Mar. 16, 1990, 2-67943; Mar. 16, 1990, 2-67944; Oct. 11, 1990, 2-272287
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—27 31 Claims



1. A signal processing method for processing a plurality of input signals in a neuron unit and for outputting an output signal which is indicative of a result of the processing, said signal processing method comprising the steps of:

(a) carrying out a forward process including:

1) carrying out an operation on each of the input signals using one of weight functions stored in the memory means; and

2) outputting an operation result as the output signal; and

(b) carrying out a self-learning process including:

1) generating new weight functions based on an error signal describing an error between the output signal obtained by the forward process and a teaching signal; and

2) varying the weight functions used by the forward process to the new weight functions which are generated by renewing contents of the memory means;

wherein said error signal includes:

1) a first error signal component which is calculated from a logical product of the output signal output by said step (a) and a logical NOT of the teaching signal; and

2) a second error signal component which is calculated from a logical product of a logical NOT of the output signal output by said step (a) and the teaching signal.

5,333,242

METHOD OF SETTING A SECOND ROBOTS COORDINATE SYSTEM BASED ON A FIRST ROBOTS COORDINATE SYSTEM

Atsushi Watanabe; Fumikazu Terawaki, and Fumikazu Warashina, all of Minamitsuru, Japan, assignors to Fanuc Ltd, Yamanashi, Japan

PCT No. PCT/JP91/01566, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO92/09019, PCT Pub. Date May 29, 1992
PCT Filed Nov. 15, 1991, Ser. No. 910,171
Claims priority, application Japan, Nov. 16, 1990, 2-310711
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—89 2 Claims

1. A method of setting a robot coordinate system, comprising the steps of:

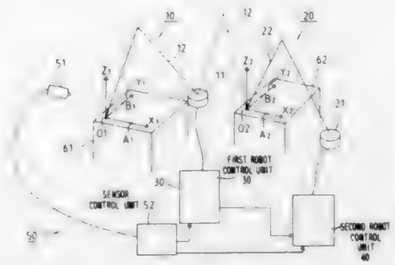
(a) placing a first jig at a first position directly accessible by a first robot;

(b) setting a first robot common coordinate system by accessing said first jig using said first robot;

(c) placing a second jig at a second position directly accessible by both said first robot and a second robot which cannot directly access said first jig;

(d) setting a first robot first provisional coordinate system by directly accessing said second jig using said first robot;

(e) calculating, using a computing device, a first coordinate transformation matrix for transforming said first robot



first provisional coordinate system into said first robot common coordinate system;

(f) setting a second robot first provisional coordinate system by directly accessing said second jig using said second robot;

(g) calculating, using said computing device, a second robot common coordinate system based on said second robot first provisional coordinate system and said first coordinate transformation matrix; and

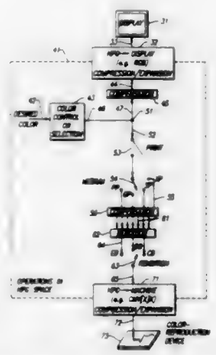
(h) setting said second robot common coordinate system with respect to said second robot.

5,333,243

METHOD FOR FORMING COLOR IMAGES, USING A HUE-PLUS-GRAY COLOR MODEL AND ERROR DIFFUSION

Jeffrey S. Best, San Diego, and Paul H. Dillinger, Escondido, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 4, 1992, Ser. No. 878,579
Int. Cl.[5] G06F *3/00, 15/66;* H04N *1/46*
U.S. Cl. 395—109 19 Claims



1. A color-halftoning method for actuating a color-generating machine to cause a visible medium to appear colored in correspondence with desired-color information from a source of such desired-color information; said method comprising the steps of:

receiving from the source the desired-color information, and if it is not expressed in perceptual parameters then resolving that information into perceptual parameters;

then utilizing the information, while it is expressed in terms of the perceptual parameters, to generate rendition-decision information representing a specific colorant at each pixel location of the machine, respectively; and

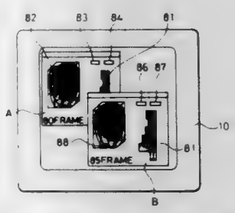
applying that rendition-decision information to control the machine by selecting specific subsystems of the machine for actuation in relation to specific pixel locations, respectively.

5,333,244

METHOD OF AND SYSTEM FOR DISPLAYING A SCALAR QUANTITY DISTRIBUTION

Ichiro Harashima, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,187
Claims priority, application Japan, Nov. 29, 1990, 2-332741
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—119 9 Claims



8. A scalar quantity distribution display method wherein shape information of an object to be displayed having a certain shape, and scalar quantity magnitudes at a plurality of sampling points lying on said object to be displayed are used for displaying scalar quantity magnitude distribution on said object to be displayed in terms of at least one of contour lines and a color map, said scalar quantity distribution displaying method comprising the steps of:

displaying, in terms of at least one of contour lines and a color map, said scalar quantity magnitudes by a first histogram over a range which covers said scalar quantity magnitudes at all of said sampling points;

designating an arbitrary interval of said histogram;

dividing said designated interval into sub-intervals; and

displaying, simultaneously with said first histogram, a second histogram for scalar quantity magnitudes of said sub-intervals in terms of at least one of contour lines and a color map,

wherein boundary values of said sub-intervals obtained by said dividing step can be altered by a user.

5,333,245

METHOD AND APPARATUS FOR MAPPING SURFACE TEXTURE

Maurizio Vecchione, Encino, Calif., assignor to Modacad, Inc., Los Angeles, Calif.

Continuation of Ser. No. 579,884, Sep. 7, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 166,266
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—130 13 Claims

1. A method for adding surface texture to a computer generated two-dimensional image of a three-dimensional object comprising the steps of:

(a) generating said two-dimensional image of said three-dimensional object on a first computer screen,

(b) defining a region with bounding polylines on said two-dimensional image of said object,

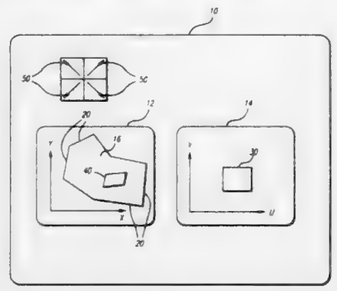
(c) generating a two-dimensional image of said surface texture on a second computer screen,

(d) defining first and second non-contiguous polygonal areas with bounding polylines of said two-dimensional image of said surface texture,

(e) defining first and second polygonal areas with bounding polylines within said defined region corresponding to said first and second polygonal areas defined in step (d),

(f) computing a mathematical model of said defined region by:

(i) calculating initial mappings between vertices of the first and second polygonal areas defined in step (d) and corresponding vertices of the respective first and second polygonal areas defined in step (e);



(ii) calculating a mapping function for each of a plurality of sample points within said defined region by interpolating said initial mappings;

(iii) smoothing the mapping function for each of said plurality of sample points by integrating the corresponding mapping functions of a plurality of neighboring sample points;

(g) mapping said surface texture onto said defined region in accordance with said mathematical model, and

(h) generating a textured image of said defined region on said first computer screen.

5,333,246

PAGE-DESCRIPTION LANGUAGE INTERPRETER FOR A PARALLEL-PROCESSING SYSTEM

Fumio Nagasaka, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP91/00456, § 371 Date Dec. 4, 1991, § 102(e) Date Dec. 4, 1991, PCT Pub. No. WO91/15831, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 5, 1991, Ser. No. 777,386
Claims priority, application Japan, Apr. 5, 1990, 2-90728
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—133 10 Claims

9. An interpreter mounted on a first information processing unit connected to at least one other information processing unit via a network, each of said information processing units having an independent memory which is not shared with another information processing unit of the network for independently processing an assigned task in a parallel-processing system, for executing rasterize processing such that a source file described in a page-description language is converted into picture element information used in printing the source file, comprising:

client means for partially sharing rasterize processing of a first source file whose printing request is generated by the first information processing unit with the other information processing, unit; server means for partially sharing rasterize processing of a second source file whose printing request is generated by the other information processing unit; and rasterize means for executing the rasterize processing of any given file, and

wherein said client means comprises:

means for receiving the first source file and dividing the first source file, or a first intermediate code file converted from

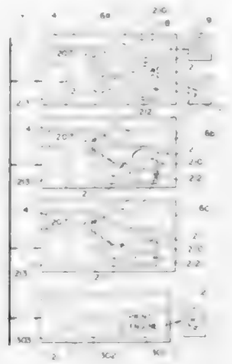
VOL 1164 ISS 4 JL 26 1994 UMI

the first source file, into a plurality of partial files each of which can be rasterized independently;

means for transmitting a part of the plural partial files to the other unit via the network, to partially share the rasterize processing of the plural partial files with the other unit;

means for transmitting remaining partial files of the plural partial files except those transmitted to the other unit to said rasterize means; and

means for receiving picture element information obtained by the rasterize processing of the other unit from the other unit via the network, and obtaining entire picture element information by combining received picture element infor-



mation with picture element information of a remaining portion obtained by said rasterize means, and

wherein said server means comprises:

means for receiving a partial file of the second source file or the second intermediate code file converted from the second source file from the other unit via the network, and transmitting the received partial file to said rasterize means; and

means for receiving picture element information of the partial file transmitted to said rasterize means from said rasterize means, and transmitting the received picture element information to the other information processing unit via the network.

5,333,247

SCROLLING TOOL FOR TEXT AND GRAPHICS IN A DISPLAY SYSTEM

Stephen B. Gest, and Farrell W. Wymore, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 674,423, Mar. 22, 1991, abandoned, which is a continuation of Ser. No. 204,669, Jun. 10, 1988, abandoned. This application May 7, 1993, Ser. No. 58,823

Int. Cl.[5] **G06F** *15/62*

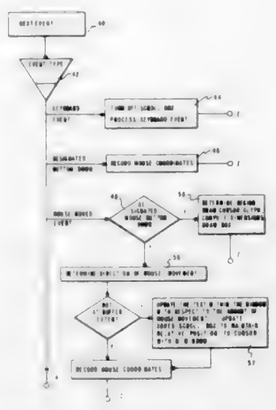
U.S. Cl. 395—138 **8 Claims**

1. A tool for displaying data, said tool comprising:

display means for displaying data from a buffer of a data processing system;

means for superimposing, on the displayed data, a representation having a relative size and location as the displayed data has with respect to the whole of said buffer;

means for interacting with the superimposed representation to scroll said buffer of data on said display means, wherein said means for interacting with said representation comprises a user-operable cursor positioning means for causing movement of a cursor, a user-operable preset scroll selector and preset scroll logic for causing scrolling of the buffer of data by a preset amount in a selectable direction in response to the position of the cursor with respect to said representation on operation of said preset scroll selector; and



means for successively scrolling said buffer of data by successively operating said means for interacting without subsequent movement of said cursor.

5,333,248

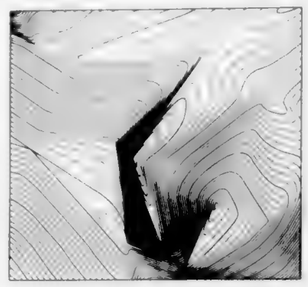
METHOD AND SYSTEM FOR THE SMOOTH CONTOURING OF TRIANGULATED SURFACES

Albert H. J. Christensen, Potomac, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 15, 1992, Ser. No. 914,689

Int. Cl.[5] **G06F** *15/62*

U.S. Cl. 395—142 **20 Claims**



1. A method in a data processing system for differentially smoothing isolines, wherein each isoline is comprised of a plurality of angular successions of linear segments within a triangular mesh representing a measurable feature of a physical object and wherein said triangular mesh comprises a plurality of non-overlapping triangles, said method comprising the data processing system implemented steps of:

locating a first centroid for a first triangle within said triangular mesh and a second centroid for a second triangle within said triangular mesh utilizing said data processing system, wherein said isolines within said triangular mesh are comprised of data produced by measuring said measurable feature of said physical object and wherein each centroid includes three medians, each median connecting said centroid with one of three vertices of a triangle associated with said centroid exclusive of said other two medians, wherein said first and second triangle have a common side, said common side having a first end point and a second end point, wherein an isoline traverses said first and said second triangle and traverses at least one of said three medians in each triangle;

determining a first point utilizing said data processing system, wherein said first point comprises an intersection of said isoline and a median within said first triangle;

determining a second point utilizing said data processing system, wherein said second point comprises an intersection of said isoline with a median within said second triangle;

determining a third point utilizing said data processing system, wherein said third point comprises an intersection of said isoline with said common side; and

thereafter replacing said isoline located within a triangle formed by said first point, said second point, and said third point with a curve utilizing said data processing system, wherein smoothed isolines of said measurable feature of said physical object may be displayed to a viewer.

5,333,249

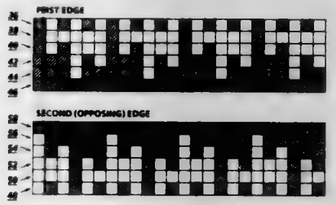
METHOD FOR PHASE ALIGNED NTH BITTING OF GRAPHICS APPLICATIONS

R. Victor Klassen, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1992, Ser. No. 844,096

Int. Cl.[5] **G06F** *15/62*

U.S. Cl. 395—143 **21 Claims**



1. A method for constructing a first group of edge patterns for use on a first edge in an image and a second group of edge patterns for use on a second edge in the image, each edge pattern being divided into at least two equal portions of pixels with n pixels in each portion, each of the pixels possessing a selected one of at least a first output state and a second output state, said method comprising the steps of:

providing first and second edge patterns to the first group of edge patterns and third and fourth edge patterns to the second group of edge patterns, the first, second, third and fourth edge patterns being characterized by a first slope, second slope, third slope and fourth slope, respectively, with each of the first slope, second slope, third slope and fourth slope assuming the same value;

setting a first selected number of pixels in the first edge pattern to the second output state so that the first edge pattern is characterized by a first intensity;

setting a first selected number of pixels in the third edge pattern to the second output state so that the third edge pattern is characterized by a first intensity, the pixels with the second output state in the first edge pattern being offset relative to the pixels with the second output state in the third edge pattern;

setting a second selected number of pixels in the second edge pattern to the second output state so that the second edge pattern is characterized by a second intensity; and

setting a second selected number of pixels in the fourth edge pattern to the second output state so that the fourth edge pattern is characterized by a second intensity, the second selected number of pixels being different than the first selected number of pixels and the first intensity being different from the second intensity.

5,333,250

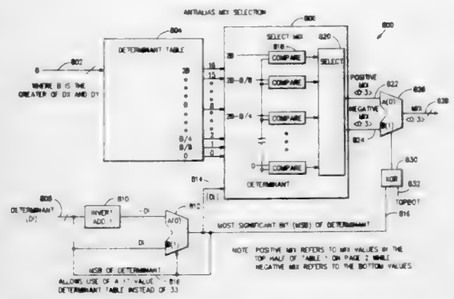
METHOD AND APPARATUS FOR DRAWING ANTIALIASED LINES ON A RASTER DISPLAY

Terrance L. Staley, II, Highland, and William F. Lawless, Red Hook, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1992, Ser. No. 902,324

Int. Cl.[5] **G06F** *15/16*

U.S. Cl. 395—143 **27 Claims**



1. In a graphics system in which a two-dimensional pixel image is generated for display by a raster-scan device, a method of generating intensity values for an antialiased pixel approximation of a line segment extending between a first point and a second point spaced from each other along major and minor coordinate axes, said method comprising the steps of:

generating integer valued Bresenham parameters including a positive correction, a negative correction, and an initial determinant;

iteratively generating a new value of the determinant for each pixel along said line segment as a function of the previous value of the determinant and the positive and negative corrections;

generating an intensity value for said pixel along said line segment as a function of the value of the determinant generated for said pixel by performing the following steps:;

generating a plurality of comparison values ranging between zero and a predetermined multiple of the spacing of said points along said major axis;

comparing the value of the determinant generated for a pixel along said segment with each of said comparison values; and

generating said intensity value in accordance with the results of said comparisons.

5,333,251

DATA PROCESSING METHOD AND SYSTEM

Shou Urabe, Kawasaki; Hideo Mutoh, Yokohama, and Shigeru Yoneda, Ebina, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer System, Ltd., both of Tokyo, Japan

Filed May 28, 1991, Ser. No. 706,584

Claims priority, application Japan, May 30, 1990, 2-142190

Int. Cl.[5] **G06F** *15/62*

U.S. Cl. 395—146 **14 Claims**

1. In a data processing system comprising a computer, a memory unit, a control unit for controlling the access between said computer and said memory unit, and a data processing unit optionally connected to said control unit, a data processing method for said control unit comprising the steps of:

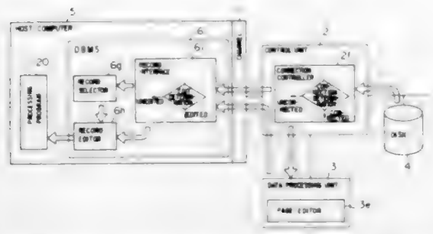
inputting from said computer a search request including a condition for searching for data stored in said memory unit;

reading data from said memory unit in response to said search request;

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detecting whether or not said data processing unit is connected to said control unit;

outputting said read data and said search condition to said data processing unit if the result of said detection indicates that said data processing unit is connected to said control unit;



inputting data satisfying said search condition, and selected from said outputted data from said data processing unit; and

outputting said inputted data satisfying said search condition to said computer

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5,333,252

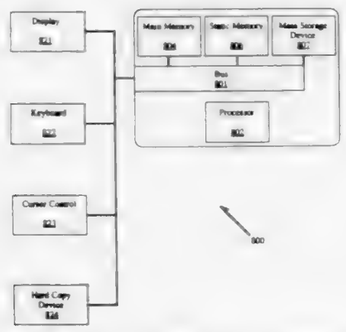
INTERFACE FOR ARRANGING ORDER OF FIELDS

Glenn A. Brewer, III, Menlo Park; Christopher L. Crim, San Jose; Paul S. Chen, and Frank K. Lu, both of Milpitas, all of Calif., assignors to Claris Corporation, Santa Clara, Calif.

Continuation of Ser. No. 504,876, Apr. 5, 1990, abandoned. This application Jun. 30, 1993, Ser. No. 86,195

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—148 **5 Claims**



5. An apparatus for associating an order of fields in records of a first database with an order of fields in records of a second database in a computer system comprising a display, a cursor control device for controlling a cursor on said display, and a selection device, comprising:

a. means for sequentially displaying in a first column on said display data contained in each of the fields from a first record in the first database;

b. means for sequentially displaying in a second column on said display field names of the fields from said records of the second database, said second column being adjacent to said first column, such that said data contained in each of the fields from the first record in the first database corresponds on the display with a field name from records of the second database;

c. means for detecting a user selecting a first field name in the second column using said selection device, said first field name currently associated on said display with first data from a first field of said first record of said first database;

d. means for detecting said user moving said cursor using said cursor control device while said first field name is selected using said selection device to a position of a second field name in said second column on said display, said second field name currently associated on said display with second data from a second field of said first record of said first database; and

e. means for updating the display to exchange the positions on the display of the first and second field names of records of said second database in said second column to show the first data from said first record of said first database associated with the second field name of said second database, and the first field name of said second database associated with the second data from said first record of said first database.

5,333,253

APPARATUS FOR WRITING A DOCUMENT UNDER TWO-DOCUMENT DISPLAY CONDITION

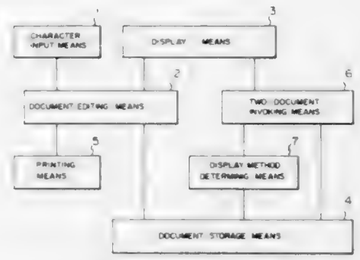
Hideyuki Kishihata, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 23, 1991, Ser. No. 763,601

Claims priority, application Japan, Oct. 1, 1990, 2-264031

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—146 **5 Claims**



1. A document writing apparatus comprising:

character inputting means for inputting characters in sequence to form documents;

document editing means for editing said documents;

display means for displaying said documents;

document storage means for storing said documents;

document invoking means for reading out a plurality of said documents from said document storage means and for providing said plurality of said documents to said display means for simultaneous display on said display means; and

display method determination means for determining, when said plurality of said documents are to be simultaneously displayed on said display means, divided display areas of aid display means on which the plurality of said documents are respectively to be simultaneously displayed wherein lines of the plurality of said documents are displayed in a series relationship with each other if a sum of numbers of characters per line in the plurality of said documents is smaller than a maximum number of characters which can be displayed by said display means in a widthwise direction, and wherein the lines of the plurality of said documents are displayed in parallel with each other if said sum of the numbers of characters exceeds said maximum number of characters.

5,333,254

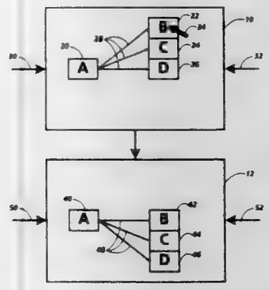
METHODS OF CENTERING NODES IN A HIERARCHICAL DISPLAY

George G. Robertson, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1991, Ser. No. 770,196

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—155 **26 Claims**



1. A method of operating a processor connected for providing image data to an image output device that includes a display, the image output device presenting images on the display in response to the image data; the processor further being connected for receiving signals from a user input device; the method comprising steps of:

providing first image data so that the image output device presents a first image, the first image including a first node-link structure that is perceptible as lying on a plane-like surface; the first node-link structure including a first set of three or more nodes arranged in two or more rows with at least two nodes in one row and at least one node in a different row; the first node-link structure having a centering line across which row extends; the first node-link structure further including a first set of two or more links, each of the first set of links being perciptible as connecting two of the first set of nodes, the two connected nodes being in different rows;

receiving a signal from the user input device indicating one of the first set of nodes in the first node-link structure;

in response to the signal from the user, determining whether the indicated node is at the centering line of the first node-link structure; and

if the indicated node is not at the centering line of the first node-link structure, providing second image data so that the image output device presents a second image, the second image including a second node-link structure that is perceptible as lying on a plane-like surface; the second node-link structure including a second set of three or more nodes arranged in two or more rows with at least two modes in one row and at least one node in a different row; the second node-link structure having a centering line across which row extends; the second node-link structure further including a second set of two or more links, each of the second set of links being perceptible as connecting two of the second set of nodes, the two connected nodes being in different rows;

each of the second set of nodes being perceptible as a continuation of a respective one of the first set of nodes; the second set of nodes including a continued indicated node that is perceptible as a continuation of the indicated node; the continued indicated node being at the centering line of the second node-link structure;

the rows of the second node-link structure being perceptible as continuations of the rows of the first node-link structure, with the indicated node's row shifted to position the continued indicated node at the centering line of the second node-link structure.

5,333,255

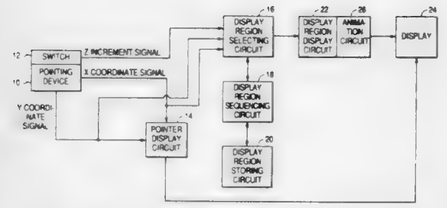
APPARATUS FOR DISPLAYING A PLURALITY OF TWO DIMENSIONAL DISPLAY REGIONS ON A DISPLAY

David E. Damouth, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1991, Ser. No. 637,231

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—157 **10 Claims**



1. An apparatus for displaying a plurality of two dimensional display regions including a currently displayed display region on a surface of a display, comprising:

pointing means for generating X and Y coordinate signals corresponding to locations on the display, said pointing means further having means for generating a Z increment signal;

means for displaying a pointer on the display at a location corresponding to X and Y coordinate signals generated by said pointing means;

means for storing the plurality of two dimensional display regions;

means for determining a sequence of the plurality of two dimensional display regions, said sequence including a first display region, a last display region, and intervening display regions, the currently displayed display region being one of said first, last, and intervening display regions, and said sequence having an associated forward direction beginning with said first display region and ending with said last display region and an associated reverse direction beginning with said last display region and ending with said first display region;

means for selecting a display region succeeding the currently displayed display region in said forward direction of said sequence, a display region preceding the currently displayed display region in said reverse direction of said sequence, or the currently displayed display region in response to said Z increment signal, irrespective of whether the location at which said pointer is displayed coincides with said selected display region; and

means for displaying the plurality of two dimensional display regions on the display in accordance with said sequence such that said selected display region appears as the currently displayed display region, and display regions succeeding said selected display region in said forward direction of said sequence appear overlapped by said selected display region in a third dimension normal to the surface of the display with each of said displayed display regions being displayed in its entirety except where overlapped by a preceding display region in said reverse direction of said sequence, said selected display region being displayed in its entirety.

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5,333,256

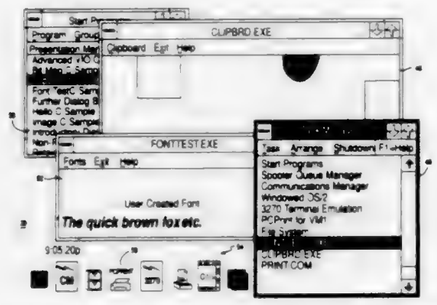
METHODS OF MONITORING THE STATUS OF AN APPLICATION PROGRAM

Emily A. Green; Jerry W. Malcolm; Ha H. Nguyen, and Cynthia A. Roosken, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 683,127, Apr. 9, 1991, abandoned, which is a continuation of Ser. No. 352,800, May 15, 1989, abandoned. This application Apr. 7, 1992, Ser. No. 865,788

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—159 **6 Claims**



1. In an information processing system, a method of indicating status of an execution of an application program, said execution including a requirement for attention of a user of said application program, comprising:

displaying, on a display unit of said system, a first icon associated with said application program;

determining whether a virtual display buffer associated with said application program has been updated to indicate said requirement for said attention of said user; and

displaying, on said display unit and in response to an updating of said virtual buffer, a second icon having a combination of pictorial elements different from said first icon to indicate said requirement for said attention of said user of said application program

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5,333,257

SYSTEM FOR DISPLAYING SELECTED ASSEMBLY-FACILITY SEATING VIEWS

William E. Merrill; John A. Rhebergen, and Robert Delgado, all of Houston, Tex., assignors to C/A Architects, Inc., Houston, Tex.

Filed Aug. 9, 1991, Ser. No. 743,511

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—161 **6 Claims**

1. Apparatus for graphically displaying a view from a selected seat in a multi-seat assembly facility, each said seat having a respective view from said seat, said apparatus comprising:

(a) a programmable processor subsystem;

(b) a proxy seat data structure readable by said processor subsystem and encoding information concerning a plurality of said seats in the facility that are specified as proxy seats, wherein the view from each said proxy seat is specified as approximating the view from one or more respective said seats within the facility;

(c) said proxy seat data structure including visual display data depicting the respective view from each proxy seat;

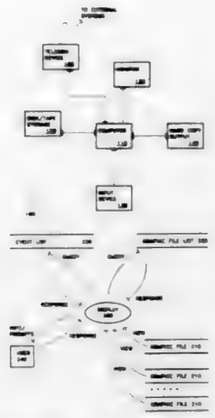
(d) a monitor subsystem receiving a display input from the processor subsystem;

(e) a user input subsystem delivering an input signal from a user to the processor subsystem;

(f) said processor subsystem being programmed:

(1) to receive an input from the user, said input encoding information identifying said selected seat;

(2) to search the proxy seat data structure to select a proxy



seat corresponding to the selected seat in accordance with a specified search strategy; and

(3) to display on the monitor subsystem visual display data depicting the view from selected proxy seat.

5,333,258

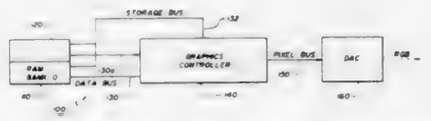
VISUAL FRAME BUFFER ARCHITECTURE

Lippincott: Louis A., Roebling, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 17, 1992, Ser. No. 870,564

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **7 Claims**



1. An apparatus for integrating a graphics subsystem display buffer with a video subsystem display buffer comprising:

(A) first storage means for storing a first bit plane of graphics data in a first format;

(B) a single controller comprising a single address generator, that simultaneously controls said graphics subsystem display buffer and said video subsystem display buffer, coupled to said first storage means by a data bus, said single graphics controller and said first storage means also being coupled through a storage bus;

(C) second storage means for storing a second bit plane of video data in a second format different from said first format, said second storage means coupled to said single graphics controller by a data bus, and said second storage means being coupled to said single graphics controller through the storage bus;

(D) means for forming a merged pixel stream from said graphics data stored on said first storage means and said video data stored on said second storage means; and

(E) means, coupled to said means for forming a merged pixel stream, for displaying said pixel stream.

5,333,259

GRAPHIC INFORMATION PROCESSING SYSTEM HAVING A RISC CPU FOR DISPLAYING INFORMATION IN A WINDOW

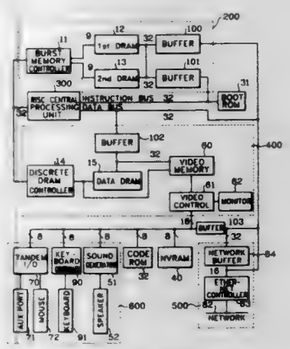
Jae-heon Jung, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Jun. 23, 1992, Ser. No. 902,885

Claims priority, application Rep. of Korea, Nov. 22, 1991, 91-20892

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **12 Claims**



1. A graphic information processing system for displaying graphic information on a plurality of windows on a screen, said graphic information processing system comprising:

a reduced instruction set computer (RISC) central processing unit having an address bus, an instruction bus, and a data bus;

a memory device for storing or reading out instructions or data, which is connected with said RISC central processing unit via said instruction and data buses, said memory device including:

a main memory device for storing information that is applied thereto,

a memory controller for receiving via said address bus an address signal being applied thereto from said RISC central processing unit and then controlling said main memory device,

a first buffer for temporarily storing and transmitting applied information, which is connected between said main memory device and said data bus, and

a second buffer for temporarily storing and transmitting applied information, which is connected between said main memory device and said instruction bus;

an image processor connected with either said address or data bus, for processing information being processed as a video signal so that the processed video signal is displayed on a video display apparatus; and

a network interface connected with said data bus and for enabling information exchange between said graphic information processing external host computers.

5,333,260

IMAGING SYSTEM WITH MULTILEVEL DITHERING USING BIT SHIFTER

Robert A. Ulichney, Stow, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 15, 1992, Ser. No. 961,601

Int. Cl.[5] G06F *15/20*

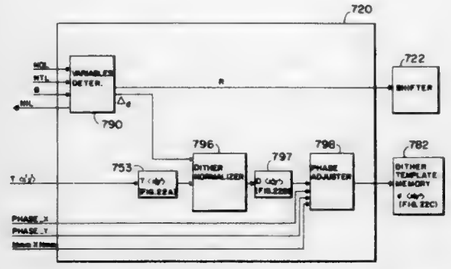
U.S. Cl. 395—162 **19 Claims**

1. An apparatus for translating input levels of an imaging system to corresponding output levels, said apparatus comprising:

memory means for storing dither template values, said memory means being responsive to an address of an input cell of an input device to provide a dither template value which corresponds to the address of the input cell;

means for adding an input level of the input cell to the dither template value provided by said memory means to provide a sum (S), said adding means producing a finite number of unique S values which map to a single, given output level;

shifter means for bit shifting the S value provided by said adding means; and



both the number of input levels and the number of output levels produced by the imaging system being any number, provided the number of input levels in equal to or greater than the number of output levels, and further provided that an average number of unique S values, determined by averaging the number of unique S values which map to each of the given output levels, is equal to an integer power of two.

5,333,261

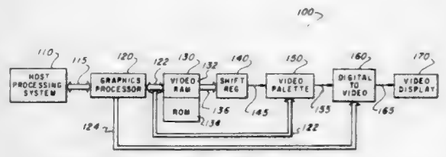
GRAPHICS PROCESSING APPARATUS HAVING INSTRUCTION WHICH OPERATES SEPARATELY ON X AND Y COORDINATES OF PIXEL LOCATION REGISTERS

Karl M. Guttag, Houston; Michael D. Asal, Sugarland, both of Tex.; Neil Tebbutt, Golfe Juan, France, and Mark F. Novak, Ypsilanti, Mich., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Continuation of Ser. No. 881,006, May 11, 1992, abandoned, which is a division of Ser. No. 498,457, Mar. 21, 1990, Pat. No. 5,142,621, which is a continuation of Ser. No. 368,976, Jun. 20, 1989, abandoned, which is a continuation of Ser. No. 180,651, Mar. 31, 1988, abandoned, which is a continuation of Ser. No. 804,204, Dec. 3, 1985, abandoned. This application May 7, 1993, Ser. No. 59,006

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **35 Claims**



1. A graphics computer system comprising:

a. a host processing system including at least one processor, read only memory, random access memory and assorted peripheral devices for forming a complete computer system, said host processing system furnishing host data determining the content of a visual image to be presented;

b. graphics memory circuits including random access memory, said random access memory for storing bit mapped display data signals representing said visual image and for storing said host data, said graphics memory circuits also

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for storing instruction signals used for processing said host data and said display data;

c. video display circuits connected to said random access memory, said video display circuits for forming said visual image in response to receipt of said display data; and

d. graphics processor circuits including central processing unit circuits for performing general purpose data processing, including a number of arithmetic and logic operations normally included in a general purpose processing unit, by executing said instructions accessed from said graphics memory circuits, said central processing unit circuits processing at least said host data to produce said display data in response to executing said instructions, said central processing unit circuits including a control bus of control signals corresponding to the instruction being executed, and arithmetic and logic unit circuits having plural parts that are each connected to and operate under control of the control bus of control signals and that each perform arithmetic and logic operations in response to the control signals, said central processing unit circuits also including grating circuits selectively controlling propagation between said plural parts.

5,333,262

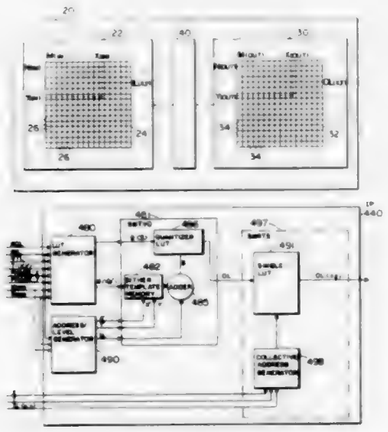
IMAGING SYSTEM WITH MULTILEVEL DITHERING USING TWO MEMORIES

Robert A. Ulichney, 13 Dunster Dr., Stow, Mass. 01775-1014

Filed Oct. 15, 1992, Ser. No. 961,243

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—164 **22 Claims**



1. An apparatus for translating input levels of an imaging system to corresponding output levels, said apparatus comprising:

first memory means for storing quantized values for the input levels of the imaging system, which produces any number of input or output levels provided the number of input levels is equal to or greater than the number of output levels;

second memory means for storing dither template values, said second memory means being responsive to an address of an input cell of an input device to provide a dither template value which corresponds to the address of the input cell; and

means for adding an input level of the input cell to the dither template value provided by said second memory means to provide an address to said first memory means such that said first memory means provides a quantized value which corresponds to the input level.

5,333,263

DIGITAL IMAGE PROCESSING APPARATUS

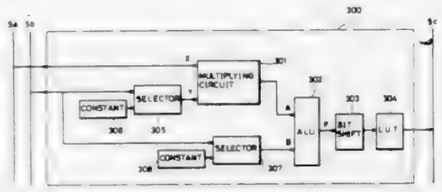
Yasuo Masaki, and Kimitoshi Hori, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 715,888, Jun. 18, 1991, abandoned, which is a continuation of Ser. No. 249,102, Sep. 26, 1988, abandoned. This application Dec. 4, 1992, Ser. No. 985,760

Claims priority, application Japan, Sep. 25, 1987, 62-240256; Sep. 25, 1987, 62-240257

Int. Cl.[5] G06F *3/147*

U.S. Cl. 395—164 **15 Claims**



1. A digital image processing apparatus having a processing unit,

wherein said processing unit comprises:

a multiplying circuit having a first and second input terminals, for multiplying two inputs and outputting result of multiplication;

an ALU having a third and a fourth input terminals for effecting addition/subtraction or a logical operation, said third input terminal being connected to the output terminal of said multiplying circuit;

a bit shift circuit connected to the output terminal of said ALU, for executing a bit shift operation on an image data outputted from said ALU;

a data converting table having a memory, and for outputting an image data stored at an address in said memory, the output from said bit shift circuit being used as said address;

a first selector having a fifth and a sixth input terminals, for selecting data from said fifth input terminal and data from said sixth input terminal and outputting the selected data to said second input terminal of said multiplying circuit;

a second selector having a seventh input terminal and said eighth input terminal and outputting the selected data to said fourth input terminal of said ALU;

a first constant register for applying a first data to said sixth input terminal of said first selector; and

a second constant register for applying a second data to said eighth input terminal of said second selector:

wherein said first input terminal of said multiplying circuit receives a first image data to be processed by said processing unit and said fifth input terminal of said first selector and said seventh input terminal of said second selector receive a second image data to be processed by said processing circuit, and the output of said data converting table produces an image data processed by said processing circuit;

contents in said first and second constant registers, selecting function of said first and second selectors, arithmetic function of said ALU, shift direction and a number of stages to be shifted in said bit shift circuit, and contents in said data converting table can be set prior to a processing operation of the processing circuit;

"1" is set to said first constant register so that said first selector selects said sixth input terminal when the operation of said multiplying circuit is unnecessary;

"0" is set to said second constant register so that said second selector selects said eighth input terminal when the operation of said ALU is unnecessary;

a number of stages to be shifted is set to "0" when the operation of said bit shift circuit is unnecessary and contents of said data converting table are set in a manner that output data coincides with input data of the table when the operation of data conversion is unnecessary.

5,333,264

PICTURE DISPLAY APPARATUS FOR DISPLAYING FRINGED CHARACTERS ON AN IMAGE

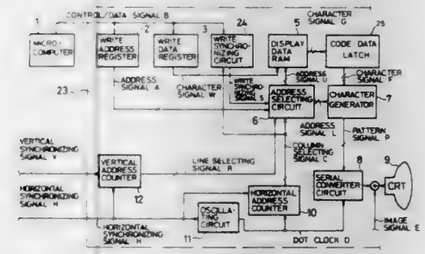
Kunihiro Tsutsumi, Kawasaki, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 9, 1992, Ser. No. 895,639

Claims priority, application Japan, Jun. 14, 1991, 3-169275; Jun. 19, 1991, 3-174400; Jun. 26, 1991, 3-181764

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—164 **3 Claims**



1. A picture display apparatus comprising:

a first address register for receiving, holding and then outputting a first address signal,

a first data register for receiving, holding and then outputting a first character code,

a vertical address counter for generating a line selecting signal for determining a vertical position on a display medium of a display apparatus on receiving a vertical synchronizing signal,

a horizontal address counter for generating a column selecting signal for determining a horizontal position on the display medium on receiving a horizontal synchronizing signal,

an oscillating circuit for generating a clock signal having a period corresponding to a scanning time of each display dot on said display medium on receiving said horizontal synchronizing signal, the oscillation starting phase being synchronized with said horizontal synchronizing signal,

an access circuit for generating a second and a third address signal on receiving said line selecting signal, said column selecting signal and said first address signal,

a display data RAM for receiving the second address signal from said access circuit and for storing an entire character code intended for display in order to output a second character code stored at the address designated by the second address signal,

a character generator for selecting a matrix pattern equivalent to one character on receiving the second character code correspondingly and outputting a pattern equivalent to a corresponding line from said matrix pattern on receiving the third address signal,

a parallel/serial converter circuit for receiving a plurality of character patterns necessary for generating a fringed pattern in parallel to hold the plurality of character patterns, and for outputting one of a character pattern and a fringed character pattern sequentially dot by dot per clock signal,

a latch circuit holding and outputting the corresponding character code on receiving the second character code from said display data RAM,

a write synchronizing circuit for applying a write synchronizing signal to said access circuit when said access circuit writes said second character code to said display data RAM on receiving a control signal and said column selecting signal, wherein

said access circuit selects the first address signal on receiving said write synchronizing signal, and outputs the first address signal as the second address signal, so that said display data RAM stores the first character code at the address designated by the second address signal as the second character code, said character generator receiving the corresponding character code from said latch circuit, said write synchronizing circuit outputting said write synchronizing signal on receiving the control signal and before said latch circuit receives the second character code from said display data RAM, and said access circuit writing the first character code to said display data RAM, and

a fringe presence/absence data storage circuit for holding a flag indicating the presence or absence of a fringe on a character or line basis, wherein

said fringe presence/absence data storage circuit receives said line selecting signal and said column selecting signal and applies the flag held at the address designated by these signals to said parallel/serial converter circuit in the form of a fringe presence/absence signal, and

said parallel/serial converter circuit selects and outputs either fringe presence or absence display according to said fringe presence/absence signal.

5,333,265

REPLICATED DATA PROCESSING METHOD IN DISTRIBUTED PROCESSING SYSTEM

Masayuki Orimo, Kawasaki; Kinji Mori, Machida; Shigeki Hirasawa, Kawasaki; Hiroshi Fujise, Yokohama; Masuyuki Takeuchi, Fujisawa, and Hitoshi Suzuki, Owarisashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 780,337

Claims priority, application Japan, Oct. 22, 1990, 2-283777

Int. Cl.[5] G06F *12/00, 15/16*

U.S. Cl. 395—200 **18 Claims**

1. A replicated data processing method for a distributed processing system having a plurality of processors connected to each other via a common transmission medium and information resources replicated in different processors, said method, being executed in each processor of said plurality of processors, comprising the steps of:

outputting data from said information resources in said processor to said common transmission medium;

receiving, at said processor, replicated data from said plurality of processors on said common transmission medium, said replicated data having first received replicated data and replicated data subsequently received;

performing processing using said first received replicated data beginning at a time before receipt of said replicated data subsequently received;

checking content correspondence between said first received replicated data and said replicated data subsequently received; and

performing an abnormality processing in response to a result of said checking step indicating that a content correspondence is determined to be abnormal.

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5,333,266

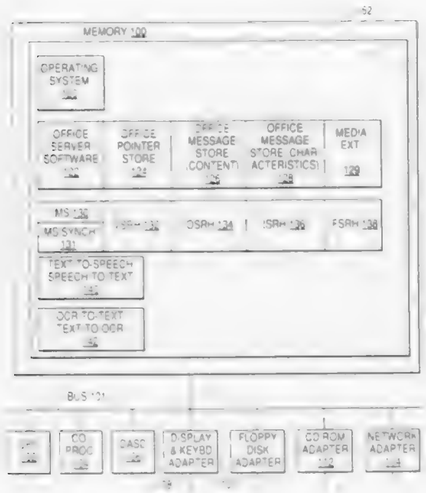
METHOD AND APPARATUS FOR MESSAGE HANDLING IN COMPUTER SYSTEMS

Wade Boaz, Clifton; Daniel D'Elena, Milford; Michael Lucivero, Emerson, all of N.J.; Sarka Martinez, Boca Raton, Fla.; Ronald J. Salpietra, Novi, Mich.; Olga E. Savastano, Bloomfield, and Ronald Soltis, Wayne, both of N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1992, Ser. No. 858,918

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **36 Claims**



1. In a data processing network composed of a plurality of data processing systems coupled together by communication lines each of which comprising a processor and a memory, the memory containing at least one message server program dedicated to providing messaging services of a particular media type, a method for controlling delivery of messages of a plurality of media types to a recipient so that all messages regardless of media type are available to the recipient at a terminal associated with any of the data processing systems, the method comprising the steps of:

creating and storing a first message and a first message pointer of a first media type at a first message server program in the memory of a first data processing system;

creating and storing a second message and a second message pointer of a second media type at a second message server program in the memory of a second data processing system;

sending and storing a copy of the first message pointer to a first integrated mail basket for the recipient, the first integrated mail basket in the memory of the first data processing system;

sending and storing a copy of the second message pointer to a second integrated mail basket for the recipient, the second integrated mail basket in the memory of the second data processing system;

sending and storing a copy of the first message pointer to the second integrated mail basket; sending and storing a copy of the second message pointer to the first integrated mail basket;

so that the first and second integrated mail baskets allow access to the first and second messages from a terminal associated with either data processing system.

5,333,267

RING INTERCONNECT SYSTEM ARCHITECTURE

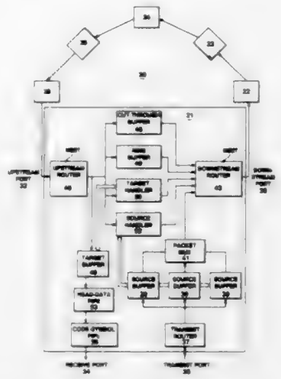
Paul Sweazey, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 29, 1990, Ser. No. 530,096

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] G06F *13/38*

U.S. Cl. 395—200 **9 Claims**



1. An improved computer system interconnection for use within a computer system, the computer system including a plurality of components, the interconnection comprising a plurality of nodes, each node being associated with one of the plurality of components, each node being coupled to an upstream node via a first transmission means, the first transmission means receiving information from other nodes, each node being coupled to a downstream node via a second transmission means, the second transmission means transmitting information to the other nodes, the information including:

a multiplicity of symbol streams, each symbol stream including a multiplicity of symbols of data, each symbol having a type, symbol types including data symbols and access symbols, access symbols including voucher symbols and ticket symbols, each voucher symbol representing a request for reservation of data space in a target node, each symbol including a target bit indicative of a target node, a source bit indicative of source node and urgency bits indicative of a level of urgency of the symbol data, each node comprising:

1) source buffering means for receiving information from the node's associated component, the source buffering means organizing information from the node according to streams and urgency bits, streams coming from the node having a first source level urgency or a second source level urgency, the first source level urgency and the second source level urgency each being one of the levels of urgency, the first source level of urgency being a greater level of urgency than the second level of source urgency, symbols from the source buffering means having a third priority;

2) relay buffering means for relaying symbols received from the first transmission means whose target bits indicate that they are targeted at other nodes, the relay buffering means including one buffering means for each level of urgency, symbols from the relay buffering means having the third priority;

3) voucher generation means for generating voucher symbols when the node's associated component inputs information targeted at other nodes, symbols from the voucher generation means having a second priority;

4) a first routing means responsive to voucher symbols received via the first transmission means targeted at the node, the routing means determining whether the node's associated component is able to receive information;

5) target handling means responsive to the determination that the node's associated component is able to receive information, the target handling means responding by generating a ticket symbol indicating reservation of data space, symbols from the target handling means having a first priority;

6) source handling means responsive to receipt of ticket symbols indicating that a target node is prepared to receive information from the node, the source handling means responding by enabling the source buffering means to release information to be transmitted to the target node associated with the ticket received; and

7) a downstream routing means for coupling to the second transmission means symbols from the source buffering means, relay buffering means, voucher generation means and target handling means according to symbol priority and urgency level, the downstream routing means coupling symbols with lowest priority to the second transmission means before symbols with higher priority and when symbols have equal priority levels the downstream routing means coupling symbols with higher urgency levels before symbols with lower urgency levels.

5,333,268

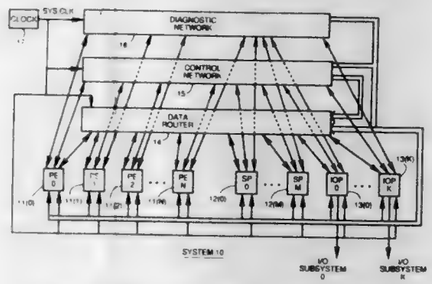
PARALLEL COMPUTER SYSTEM

David C. Douglas, Concord; Mahesh N. Ganmukhi, Littleton; Jeffrey V. Hill, Malden; W. Daniel Hillis, Brookline; Bradley C. Kuszmaul, Waltham; Charles E. Leiserson, Winchester; David S. Wells, Bolton; Monica C. Wong, Cambridge; Shaw-Wen Yang, Waltham, and Robert C. Zak, Belmont, all of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Continuation of Ser. No. 592,029, Oct. 3, 1990, abandoned. This application Sep. 16, 1992, Ser. No. 946,242

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—200 **40 Claims**



1. A digital computer comprising:

A. a plurality of processing elements each performing data processing and data communications operations in connection with commands, said processing elements also performing diagnostic operations in response to diagnostic operation requests and providing diagnostic results in response thereto;

B. at least one command processor for generating commands for said processing elements, said command processor also performing diagnostic operations in response to diagnostic operation requests and providing diagnostic results in response thereto;

C. at least one diagnostic processor for generating diagnostic requests;

D. a communication network comprising:

i. a data router connected to said processing elements for facilitating the transfer of data during a data communications operation;

ii. a control network connected to said processing elements and said command processor for transferring commands from said command processor to said processing elements; and

iii. a diagnostic network connected to said processing elements, said command processor and said diagnostic processor for transferring diagnostic requests from said diagnostic processor to said processing elements and said command processor and for transferring diagnostic results from said processing elements and said command processor to said diagnostic processor.

2. A digital computer comprising:

A. a plurality of processing elements each performing data processing operations in connection with commands, each processing element also generating and receiving data transfer messages, each including an address portion containing an address, for transfer to another processing elements as identified by the address and further generating and receiving control network messages;

B. a communications router comprising a plurality of router node groups interconnected in a tree pattern in a series of levels from a lower leaf level to an upper root level, each node group in the leaf level having one router node connected to a processing element, and each node group in levels above the leaf level including a plurality of router nodes, with router nodes in levels below the root level being connected to a plurality of router nodes in the next higher level thereby forming a fat-tree structure, each node receiving data transfer messages and coupling them to another node or to a processing element connected thereto as determined by the address in the respective address portion; and

C. a control network comprising a like plurality of control network node groups interconnected in a like tree pattern in a series of levels from a lower leaf level to an upper physical root level, each control network node group below the upper root level receiving control network messages from a processing element or a lower-level control network node group and generating a control network message in response thereto for transmission to a higher-level control network node group, and receiving control network messages from a higher-level control network node group and generating control network messages in response thereto for transmission to lower-level control network node groups, the control network node group at the root level generating control network messages for transmission to the lower level control network node groups in response to control network messages received therefrom.

5,333,269

MECHANISM FOR TRANSFERRING MESSAGES BETWEEN SOURCE AND DESTINATION USERS THROUGH A SHARED MEMORY

Jean Calvignac, LaGaude; Jean-Pierre Lips, Cagnes-sur-Mer; Jean-Marc Millet, Vence; Jean-Marie Munier, Cagnes-sur-Mer, and Bernard Naudin, LaGaude, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 416,165, Oct. 2, 1989, abandoned. This application Oct. 23, 1992, Ser. No. 965,554

Claims priority, application European Pat. Off., Oct. 28, 1988, 88480067.3

Int. Cl.[5] H04L *12/40*

U.S. Cl. 395—200 **1 Claim**

1. A mechanism for transferring messages between source users and destination users in a communication system through a shared memory, which is accessed by the users through a common bus (**24**), said mechanism comprising:

the shared memory (**10**) organized into a linear space (**10-1**) and into a buffered space (**10-2**), where the buffered space

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is partitioned into data buffers and the linear space comprises queue control block (QCB) with each queue control block dedicated to each one of the source users or the destination users;

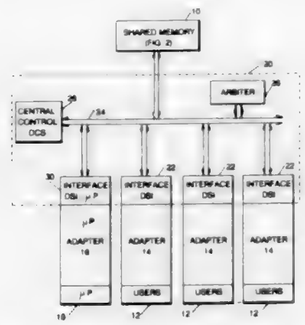
buffer control blocks located in the buffered space with each one of the buffer control blocks associated with each one of the data buffers, said each one of the buffer control blocks comprising a buffer chaining part (BCCB) which is devoted to the storing of information indicative of the address of the next buffer of a buffer chain storing one message, the buffer chaining part (BCCB) of the last buffer of said chain being set to a fixed value indicating that the buffer is the last message buffer;

a message chaining part (MCCB) which has a significant value only in the buffer control block of the first buffers of the chains containing one message, said part being devoted to the storing of information indicative of the address of the next buffer containing the next message, the message chaining part (MCCB) of the first buffer of the chain containing the last message being set to a fixed value;

at least one free buffer queue;

at least one buffer control block for storing an address for a next buffer in said at least one free buffer queue;

a free queue control block (FQCB) being devoted to said at least one free buffer queue to store the address of the first buffer of the free buffer queue as head information and of



the last buffer of the free queue as tail information, so that buffers may be taken from the buffered space to store incoming messages by dequeuing buffers from said free buffer queue, which is done by updating the head information with the address of the next free buffer and chaining the dequeued buffers to the inbound message queues and enqueuing said buffers to said inbound message queues by updating the corresponding queue control blocks;

message receiving means (**86** RCV, **88**) coupled to source users for receiving messages; said message receiving means comprising:

a user buffering means (**302**, **304**) coupled to the users, said user buffering means for storing message bursts from the source users;

transfer control means (**303**, **305**, **308**) which take free buffers from the free buffer queue, transfer the received bursts into the buffers, chain the message buffers by updating the buffer message chaining part and buffer chaining part of the buffers as long as successive bursts are received to build the link inbound queues and update the corresponding queue control block with the queue head and queue tail information,

arbitrating means (**28**) for issuing grant signals in response to bus requests from users;

centralized control means (**26**) responsive to the grant signals to process enqueuing orders or dequeuing orders from the users;

the enqueuing orders causing chained messages to be enqueued to a message queue by updating the queue control blocks of said message queue, in response to a message address which is the address of the first buffer containing the message and the queue control block identification contained in the enqueuing request sent by the user to the central control means;

the dequeuing orders causing messages to be dequeued from a message queue identified in the dequeuing request sent by the user to the central control means, which provides the message address contained in the queue control block or said message queue to the user in response thereto, so that the user may process the messages contained in said queue;

at least one microprocessor which runs a communication control program is attached to the common bus (**24**) and has access to the shared memory characterized in that the microprocessor is associated to a number o microcode inbound queues (MIQ) equal to the number of input users, the microprocessor sending enqueuing orders to a centralized control means causing the messages contained in the inbound message queue of a user to be enqueued into the corresponding microcode inbound queue, the microprocessor sending dequeuing orders to a centralized control means to get messages, process them and route then on the outbound message queues of the destination users by sending enqueuing orders relative to said queues;

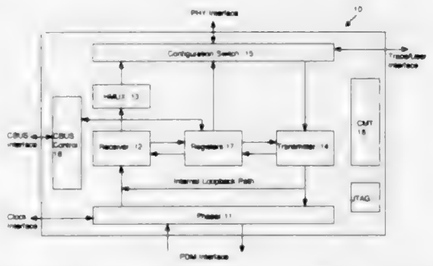
first means (**RCV600**) for reading the queue control blocks of the source users and means (**Xmit602**) coupled to the first means for using information read from said queue control blocks to modify the queue control blocks to the destination users whereby outbound message queues (LOQ) are built the contents of which is read to be transferred to the destination users.

5,333,270

FDDI CONFIGURATION MANAGEMENT STATE MACHINE CONTROLLER

David C. Brief, Palo Alto; Walter R. Friedrich, Pleasanton, both of Calif., and James F. Torgerson, Andover, Minn., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 29, 1992, Ser. No. 998,412
Int. Cl.[5] **G06F** *13/00*
U.S. Cl. 395—200 **19 Claims**



14. A physical layer controller for controlling the physical layer of a station that is suitable for insertion into a data transmission network, the physical layer controller including a configuration management entity that includes a configuration management state machine and is arranged to configure the physical layer controller, the physical layer controller further comprising:

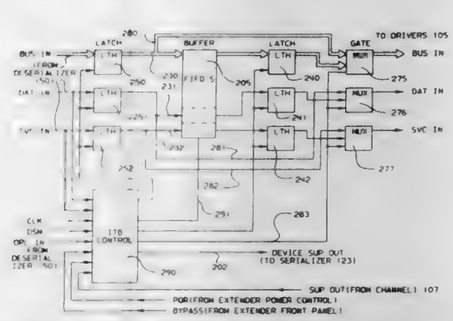
a plurality of configuration storing registers each arranged to store information indicative of a desired configuration of the physical layer controller when the configuration management state machine enters a predefined state associated with that particular configuration storing register, the configuration storing registers each being arranged to be preloaded with configuration information indicative of an independent predetermined state and independently load such information into the configuration management state machine when the configuration management state machine is to be transitioned to a state associated with that particular register such that the physical layer controller can conduct a connection management sequence that requires the configuration management state machine to enter a plurality of states without requiring software intervention to write in a new configuration during the execution of the connection management sequence.

5,333,271

METHODS AND APPARATUS FOR PERFORMING DATA CHAINING IN DATA STREAMING MODE THROUGH A CHANNEL EXTENDER

Kenneth J. Fredericks, Poughkeepsie; Thomas A. Gregg, Highland; Kenneth A. Meifert, Jr., Hopewell Junction; Anthony R. Sager, Milan; John F. Santiamo, Poughkeepsie, and Clifford T. Williams, Lake Katrine, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 827,551, Jan. 28, 1992, abandoned, which is a continuation of Ser. No. 345,380, Apr. 28, 1989, abandoned. This application Mar. 30, 1993, Ser. No. 41,121
Int. Cl.[5] **G06F** *13/32*
U.S. Cl. 395—200 **7 Claims**



1. In an information handling system having a processor channel, a controller for controlling a peripheral device and operated by said processor channel for performing data transfers, including data bytes and data transfer tags, between said processor channel and said controller in a data streaming mode, a circuit for generating a Data Streaming Mode (DSM) signal which is active when a data transfer is in the data streaming mode and inactive when said data transfer in not in the data streaming mode, said channel controller generating a Suppress Out (SO) signal which is active when said controller is to stop a data transfer to said processor channel and inactive when said controller may perform a data transfer to said processor channel, an In Tag Buffer (ITB) apparatus comprising:

a data link between said processor channel and said controller forming a pipeline through which data bytes and data transfer tags flow from said controller to said processor channel during a data transfer;

latch means having an input connected to said pipeline and an output, said latch means for latching data bytes and their associated data transfer tags flowing through said pipeline from said controller;

ITB control means connected to said processor channel for receiving said SO signal and sending a Device Suppress Out (DSO) signal to said controller which is active when said SO signal is active, said active DSO signal for stopping the data transfer from said controller when received by said controller;

storage means having an input connected to the output of said latch means, an output, a first control terminal connected to said channel for receiving said SO signal, and a second control terminal connected to said circuit for receiving said DSM signal, said storage means draining said pipeline and storing data bytes and their associated data transfer tags therein when said SO signal is active, said data bytes and their associated transfer tags being written into and read out of said storage means when said DSM signal is active and said SO signal is inactive; and

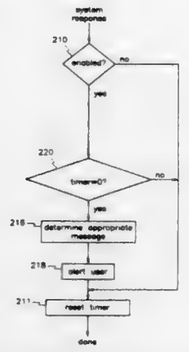
gate means having an input connected to the output of said storage means, an output connected to said processor channel, and a control terminal connected to said circuit for receiving said DSM signal, said gate means for transferring said data bytes and their associated data transfer tags from said storage means to said processor channel when said DSM signal is active.

5,333,272

WARNING TIMER FOR USERS OF INTERACTIVE SYSTEMS

Peter G. Capek, Ossining, and Robert J. Marinelli, Pound Ridge, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1991, Ser. No. 714,461
Int. Cl.[5] **G06F** *15/02*
U.S. Cl. 395—275 **9 Claims**



1. A computer method, adapted for use in an interactive data processing system, comprising the steps of:

(1) determining a first elapsed time between when a user sends a request to the interactive data processing system and when the interactive data processing system sends the user a response;

(2) alerting the user after determining said first elapsed time in step (1) if said first elapsed time exceeds a predetermined value; and

(3) storing a parameter to indicate an operating characteristic, said parameter having a plurality of values associated with it, wherein one of said plurality of values determines said operating characteristic and is indicated by whether a window with which steps (1) and (2) are associated is visible, obscured or iconified.

5,333,273

PROTECTED HOT KEY FUNCTION FOR MICROPROCESSOR-BASED COMPUTER SYSTEM

Charles F. Raasch, El Toro, and Michael K. Goodman, Tustin, both of Calif., assignors to AST Research, Inc., Irvine, Calif.

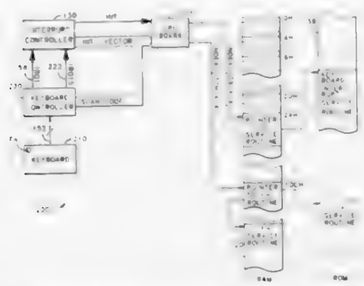
Continuation of Ser. No. 611,292, Nov. 9, 1990. This application Sep. 3, 1992, Ser. No. 939,583
Int. Cl.[5] **G06F** *13/24*
U.S. Cl. 395—275 **7 Claims**

1. A system for providing a built-in function in an ISA-compatible computer in response to activation of a selected combination of user activated keys, comprising:

a keyboard having a set of conventional alphanumeric and

function keys and further having at least one additional function key;

a keyboard controller connected to said keyboard to monitor said conventional keys and said additional function key to detect when at least one of said keys is activated, said keyboard controller having first and second interrupt signal lines connected to said ISA-compatible computer, said keyboard controller responsive to an activation of at least one of said conventional keys to activate a first interrupt signal to said ISA-compatible computer on said first interrupt signal line, said keyboard controller responsive to an activation of said additional function key in combination with at least one of said conventional alphanumeric keys to generate a second interrupt signal to said ISA-compatible computer on said second interrupt signal line;



a first conventional interrupt handling routine within said ISA-compatible computer responsive to said first interrupt signal from said keyboard controller to input data scan codes from said keyboard; and

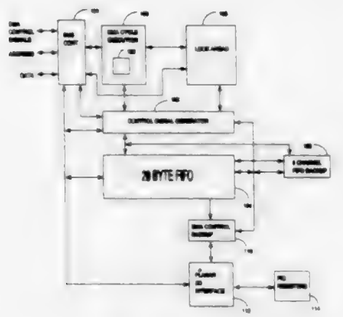
a second non-conventional interrupt handling routine within said ISA-compatible computer responsive to said second interrupt signal from said keyboard controller to input an identification of said activated alphanumeric key and to perform a predetermined function selected by said identified alphanumeric key.

5,333,274

ERROR DETECTION AND RECOVERY IN A DMA CONTROLLER

Nader Amini; Bechara F. Boury; Sherwood Brannon; Richard G. Hofmann, and Terence J. Lohman, all of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 15, 1991, Ser. No. 778,040
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **15 Claims**



1. In a data processing system—containing a processor (CPU), a memory subsystem, I/O devices, and a bus linking said memory subsystem to said CPU and devices—apparatus responsive to control information supplied by said CPU, and designating one of said devices, for operating transparent to said CPU to control said bus and conduct a series of multiple DMA data transfer operations over said bus between said memory subsystem and said designated one of said devices; said apparatus comprising

means effective during each DMA data transfer in said series of data transfers for storing information indicating a predetermined prior state of operation of said DMA controller at completion of a prior data transfer in the same series,

an error detection circuit,

said error detection circuit detecting error in individual said data transfer operations in said series of operations, by monitoring signals indicating the progress of the respective operation, and generating an error indication upon detecting a said error,

a direct memory access control circuit,

said direct memory access control circuit directly controlling said DMA data transfer operations,

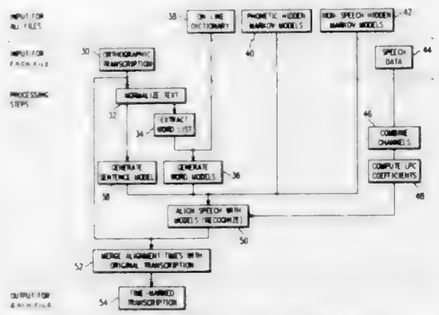
said direct memory access control circuit being responsive to said error indication for terminating a respective said series of DMA data transfer operations and performing predetermined completion tasks; said predetermined completion tasks including tasks for presenting a non-maskable interrupt to said CPU requiring said CPU to recognize said information indicating said predetermined prior state, and tasks for placing said bus under exclusive control of said CPU until it has responded to said interrupt and recognized said predetermined prior state; recognition of said predetermined prior state enabling said CPU to restart said series of DMA data transfer operations where it had been terminated, rather than requiring repetition of the entire series of data transfer operations including operations that had been successfully completed prior to detection of said error.

5,333,275

SYSTEM AND METHOD FOR TIME ALIGNING SPEECH

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Filed Jun. 23, 1992, Ser. No. 903,033
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.52 **46 Claims**



1. A system for time aligning speech, comprising:

a data interface for inputting speech data representing speech signals from a speaker;

circuitry for inputting an orthographic transcription including a plurality of words transcribed from said speech signals;

circuitry coupled to said inputting circuitry for generating a sentence model indicating a selected order of said words in response to said orthographic transcription;

circuitry coupled to said inputting circuitry for generating word models in response to said orthographic transcription, said word models being associated with respective ones of said words and being generated from pronunciation representations formed independent of said speech data; and

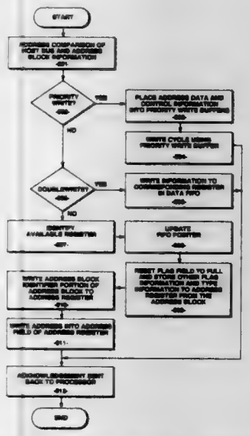
circuitry coupled to said sentence model generating circuitry, to said word model generating circuitry and to said inputting circuitry, for aligning said orthographic transcription with said speech data in response to said sentence model, to said word models and to said speech data.

5,333,276

METHOD AND APPARATUS FOR PRIORITY SELECTION OF COMMANDS

Edward Solari, Monmouth, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 27, 1991, Ser. No. 816,384
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—325 **28 Claims**



1. A method of controlling access to a resource in a computer system, comprising the steps of:

receiving a write command followed by a first command, wherein said write command and said first command are directed to said resource;

storing a priority information corresponding to said commands in a memory means;

determining whether said first command is a priority command based on said priority information; and

dispatching said first command before dispatching said write command to said resource if said first command is a priority command, such that said resource receives said first command before said write command.

5,333,277

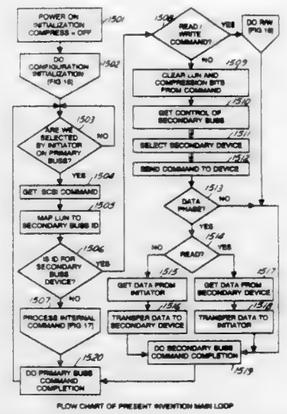
DATA BUSS INTERFACE AND EXPANSION SYSTEM

Ronald C. Searls, Dade City, Fla., assignor to Exportech Trading Company

Filed Jan. 10, 1992, Ser. No. 819,202
Int. Cl.[5] G06F *13/42*
U.S. Cl. 395—325 **46 Claims**

1. A buss expansion apparatus for expanding the number of devices which are accessible to a fixed capacity, primary peripheral data buss of a host computer, said apparatus being responsive to a predetermined buss protocol to communicate with devices joined along a secondary peripheral data buss, said devices being responsive to said predetermined buss protocol wherein said host computer is defined as an initiator and at least one of said devices joined along said secondary peripheral data bus is defined as a target, said apparatus comprising:

means operatively connected with said fixed capacity, primary peripheral data bus for receiving said predetermined buss protocol from said initiator device, said predetermined buss protocol including information identifying said target device,



FLOW CHART OF PRESENT INVENTION MAIN LOOP

means operatively connected with said receiving means, for determining if said target device is joined along said secondary peripheral data buss,

means operatively connected with said secondary peripheral data buss and said determining means for passing data, according to said predetermined buss protocol, between said target device joined along said secondary peripheral data buss and said initiator device joined along said fixed capacity, primary peripheral data buss.

5,333,278

MULTIPROCESSOR SYSTEM WITH PROGRAM CHANGE FUNCTION CONTROLLED BY ONE PROCESSOR

Takashi Miyazono, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,198
Claims priority, application Japan, Aug. 26, 1991, 3-236904
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **7 Claims**

1. A multiprocessor system with program change function comprising:

a plurality of CPUs, including a particular CPU;

a plurality of storage means for storing program data to be executed by said CPU's, each of said storage means operating under control of a corresponding one of said CPUs during normal processing, said particular CPU including,

input means for inputting program data from outside,

first output means for outputting a control signal to others of said CPUs to cancel control over said storage means by said others of said CPUs during program data input, and

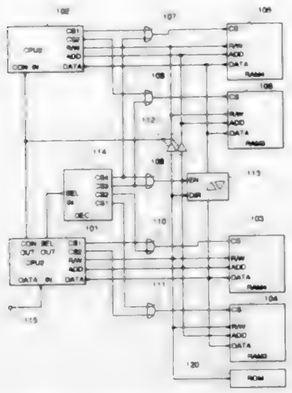
second output means for outputting a switching signal identifying one of said plurality of storage means to store said program data;

selection means for selecting with a selection signal one of said plurality of storage means identified by said switching signal from said particular CPU;

transfer means responsive to said selection signal for selectively connecting data signals from said particular CPU to said storage means;

means responsive to said control signal for selectively con-

necting read/write and address signals from said particular CPU to said storage means; and



gate means disposed between said selection means and said storage means for connecting said selection signal to said storage means selected by said particular CPU

5,333,279

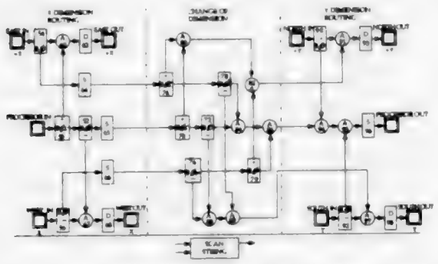
SELF-TIMED MESH ROUTING CHIP WITH DATA BROADCASTING

Dave Dunning, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 1, 1992, Ser. No. 892,535

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—325 **17 Claims**



1. In a mesh comprising a plurality of processor nodes, a method for broadcasting a message from a first processor node to at least two processor nodes comprising the steps of:

coupling a message from a first processor node to a first message routing means, said message comprising a plurality of data words, said plurality of data words comprising a first data word and a second data word,

said first data word comprising a plurality of bits specifying a first displacement with respect to said first processor node in a first dimension in said mesh, a first sign bit specifying a direction of travel in said first dimension, and a first broadcast bit specifying whether said message would be broadcast to a plurality of processor nodes in said first dimension;

said second data word comprising a plurality of bits specifying a second displacement with respect to said first processor node in a second dimension in said mesh, a second sign bit specifying a direction of travel in said second dimension, and a second broadcast bit specifying whether said message should be broadcast to a plurality of processor nodes in said second dimension;

selectively broadcasting said message from said first message routing means to said at least two processor nodes through at least two message routing means, each of said at least two message routing means being coupled to a corresponding one of said at least two processor nodes,

if only said first broadcast bit is set, said at least two processor nodes being disposed in said first dimension at said second displacement;

if only said second broadcast bit is set, said at least two processor nodes being disposed in said second dimension at said first displacement;

if said first and second broadcast bits are set, said at least two processor nodes being disposed in a matrix in said first and second dimensions, the matrix being defined by the first processor node, the first displacement in the direction specified by the first sign bit, and the second displacement in the direction specified by the second sign bit.

5,333,280

PARALLEL PIPELINED INSTRUCTION PROCESSING SYSTEM FOR VERY LONG INSTRUCTION WORD

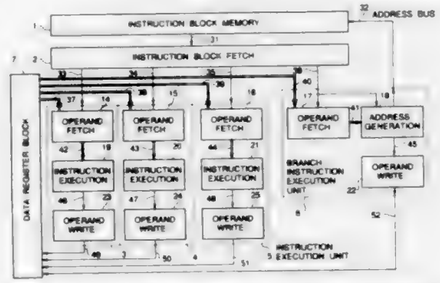
Isako Ishikawa, and Yumiko Ushimaru, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 8, 1991, Ser. No. 682,085

Claims priority, application Japan, Apr. 6, 1990, 2-91581; Apr. 10, 1990, 2-94507

Int. Cl.[5] G06F *9/38, 7/00*

U.S. Cl. 395—375 **3 Claims**



1. A parallel pipelined instruction processing system for executing a plurality of instructions in parallel without any branch delay, comprising:

an instruction block memory storing very long instruction words in memory blocks, said memory blocks including a plurality of instruction fields and a branch instruction field, said instruction block memory including an address bus;

an instruction block fetching unit coupled to said instruction block memory to fetch a memory block designated by an address on said address bus of said instruction block memory;

a data register block having a plurality of write ports and a plurality of read ports, said data register block storing operands;

a plurality of first execution units connected to receive an instruction from a corresponding instruction field of a memory block fetched by said instruction block fetching unit, each of said first execution units including instruction decode and operand fetch means for decoding a transferred instruction and connected to corresponding read ports of said data register block for fetching an operand from said data register block to be used in the transferred instruction, an instruction execution unit connected to said operand fetch and decode means for executing the transferred instruction, and an operand write unit connected to sid instruction execution unit and to a corresponding write port of said data register group for writing a result of an execution of the instruction to the data register group; and

a branch instruction unit connected to receive a branch instruction field from a memory block fetched by said instruction block fetching unit, said branch instruction unit including branch instruction decode and operand fetch means for decoding a transferred branch instruction and connected to corresponding read ports of said data register block for fetching an operand from said data register block to be used in said transferred branch instruction, an address generation circuit connected to said instruction block fetching unit to receive said transferred branch instruction and connected to said branch instruction decode and operand fetch means for generating a branch destination address and for simultaneously generating a next address of an instruction to be fetched, and a branch operand write unit connected to receive a next address generated by said address generation circuit and connected to a corresponding write port of said data register block, said branch instruction unit outputting said branch destination address to said instruction block memory or said next address to said data register block on the basis of a content of said branch instruction decode and operand fetch means;

said address generation circuit examining an operand fetched by said branch instruction decode and operand fetch means to determine a satisfaction/failure of a conditional branch condition and, if said branch condition is satisfied, outputting a branch destination address to the address bus, but is said branch condition is not satisfied, outputting a next address to the address bus, said address generation circuit further outputting a branch destination address to the address bus and causing said branch operand write circuit to write the next address to said data register block for a branch-and-link instruction.

5,333,281

ADVANCED INSTRUCTION EXECUTION SYSTEM FOR ASSIGNING DIFFERENT INDEXES TO INSTRUCTIONS CAPABLE OF PARALLEL EXECUTION AND SAME INDEXES TO INSTRUCTIONS INCAPABLE OF PARALLEL EXECUTION

Takeshi Nishikawa, Tokyo, and Toshihiko Nakamura, Yamanashi, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 318,845, Mar. 19, 1989, abandoned. This application Jul. 10, 1991, Ser. No. 727,937

Claims priority, application Japan, Mar. 6, 1988, 63-50756

Int. Cl.[5] G06F *9/38*

U.S. Cl. 395—375 **2 Claims**

1. An information processing system for carrying out calculation under advanced control, comprising:

a bank of general registers assigned with register numbers, respectively;

an instruction processing unit for processing, as successive current instructions, program instructions fetched successively from a memory device to judge whether said successive current instructions are operable instructions or inoperable instructions, one of said successive current instructions is judged as one of said inoperable instructions when said one of said successive current instructions cannot be executed in parallel with a preceding one of said successive current instructions;

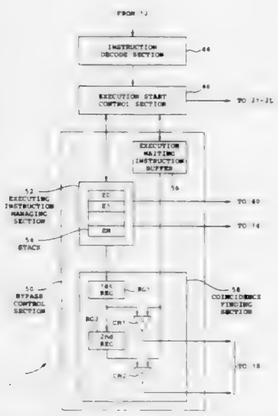
said general registers comprising operand registers, connected to said instruction processing unit and indicated by said successive current instructions, and result registers, connected to said instruction processing unit and indicated by said operable instructions, said operand registers indicated by said operable instructions holding current operands for said operable instructions;

a plurality of executing units, indicated by said operable instructions and connected to said operand registers through an operand supplying path and to said result registers through a result delivering path, for successively executing, as executing instructions, said operable instructions on said current operands to successively store current results in said result registers; and

bypass means, connected to said operand supplying path and to said result delivering path and responsive to an enable signal, for bypassing said bank of said general registers to provide one of said current results, from one of said executing units directly to another one or more of said executing units, as a following operand to be executed after execution of one of said executing instructions on said current operands, said one of said current results indicating one of said result registers equal to one of said operand registers that is indicated by one of said inoperable instructions;

control means included in said instruction processing unit for controlling said bypass means by said enable signal, said control means including

instruction managing means for managing said executing instructions and inoperable instructions by providing indexes which are related to said executing instructions and which are different from one another, said indexes being independent of said register numbers, said instruction managing means assigning different ones of said indexes to said executing instructions when said executing



instructions may be executed in parallel even when said executing instructions have conflicting ones of said result registers and operand registers in common, said instruction managing means assigning same ones of said indexes to ones of said executing instructions and corresponding ones of said inoperable instructions when said ones of said executing instructions and said corresponding ones of said inoperable instructions have conflicting ones of said result registers and operand registers in common, said instruction managing means successively providing said indexes as managed indexes at time instants which are a predetermined time interval earlier than times at which said current results are stored in said result registers;

holding means to holding said one of said inoperable instructions with one of said indexes which is the same as one of said indexes assigned to said one of said executing instructions to produce said one of said indexes as a held index, and

coincidence finding means, connected to said instruction managing means and to said holding means, for successively finding coincidence between said held index and each of said managed indexes to produce a coincidence signal as said enable signal whenever said coincidence is found.

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5,333,282

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH AT LEAST ONE BIPOLAR TRANSISTOR ARRANGED TO PROVIDE A DIRECT CONNECTION BETWEEN A PLURALITY OF MOSFETS

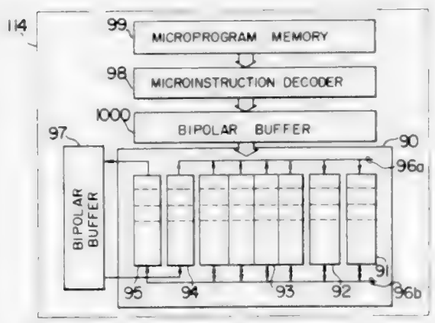
Hideo Maejima, and Ikuro Masuda, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 622,499, Dec. 5, 1990, abandoned, which is a continuation of Ser. No. 155,484, Feb. 12, 1988, Pat. No. 5,005,153, which is a division of Ser. No. 13,204, Feb. 6, 1987, abandoned, which is a continuation of Ser. No. 535,054, Sep. 23, 1983, abandoned. This application Oct. 8, 1991, Ser. No. 771,834

Claims priority, application Japan, Sep. 29, 1982, 57-168502; Oct. 27, 1982, 57-187569

Int. Cl.[5] **C06F** *13/00*

U.S. Cl. 395—375 **65 Claims**



1. A data processor integrated on a semiconductor substrate comprising:

first and second internal buses;

a microprogram memory means for storing a microinstruction, wherein said microprogram memory means comprises a plurality of MOSFETs;

a microinstruction decoding means for decoding the microinstruction of said microprogram memory means into a control signal, wherein said microinstruction decoding means comprises a plurality of MOSFETs; and

a processing circuit responsive to the control signal and including:

an arithmetic logic unit comprising a plurality of MOSFETs, said arithmetic logic unit being connected to said second internal bus,

a plurality of operation registers, each comprising a plurality of MOSFETs, said operation registers being connected to said second internal bus,

an input register comprising a plurality of MOSFETs, said input register being connected to said second internal bus, and

an output register comprising a plurality of MOSFETs, said output register being connected to said second internal bus and connected to said first internal bus to provide a path for the transfer of data,

wherein the connection between the output register and the first internal bus includes a buffer comprised of at least one bipolar transistor arranged to provide a direct connection between the plurality of MOSFETs of the output register and other MOSFET circuits having inputs connected to said first internal bus.

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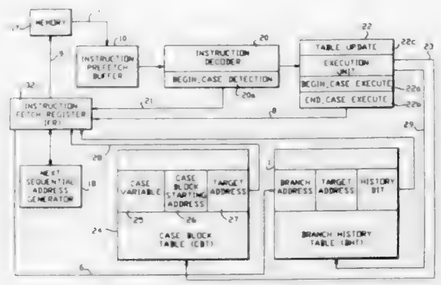
CASE BLOCK TABLE FOR PREDICTING THE OUTCOME OF BLOCKS OF CONDITIONAL BRANCHES HAVING A COMMON OPERAND

Philip G. Emma, Danbury, Conn., and David R. Kaeli, Ramsey, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1991, Ser. No. 784,335

Int. Cl.[5] **G06F** *9/38, 9/345*

U.S. Cl. 395—375 **7 Claims**



1. An apparatus for predicting outcomes of blocks of conditional branch instructions having a common operand, comprising:

a look-up table including a plurality of entries, each of the entries having a first field for storing a starting address for a block of the conditional branch instructions, a second field for storing a previous value of the common operand for the block and a third field for storing a target address produced when the previous value was used to execute the block;

processor means, coupled to the look-up table, the processor means including:

(a) means for detecting that one of the blocks is to be processed and for determining the starting address of the one of the blocks;

(b) means for determining a current value of the common operand;

(c) means for determining whether the look-up table contains a corresponding entry wherein the starting address of the one of the blocks matches data in the first field and the current value of the common operand matches the previous value of the common operand;

(d) means, responsive to a determination that there is a corresponding entry, for prefetching an instruction at the target address stored in the third field of the corresponding entry prior to fetching of any of said conditional branches in the one of the blocks.

5,333,284

REPEATED ALU IN PIPELINED PROCESSOR DESIGN

Patrick R. Nugent, Palm Harbor, Fla., assignor to Honeywell, Inc., Minneapolis, Minn.

Continuation of Ser. No. 580,392, Sep. 10, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 965,001

Int. Cl.[5] **G06F** *13/00*

U.S. Cl. 395—375 **3 Claims**

1. A pipeline processor for executing a sequence of instructions, including main memory LOAD/STORE instructions, the combination comprising:

a main memory with a load latency of two clock cycles;

a first ALU for executing add instructions, subtract instructions; and conditional branch instructions;

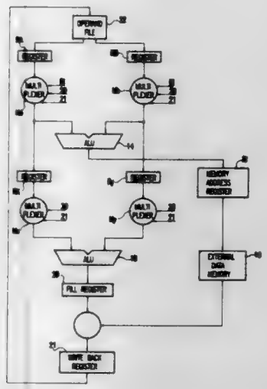
a first ALU operand register for coupling operands to said first ALU for execution;

said first ALU executing a first instruction during a first clock cycle on a first operand coupled to said first ALU from said first ALU operand register;

means for coupling an output of said first ALU to said main memory;

a second ALU for executing add instructions, subtract instructions, and conditional branch instructions;

a second ALU operand register for coupling operands to said second ALU for execution;



said second ALU executing said first instruction, during a second clock cycle, on said first operand coupled to said second ALU from said second ALU operand register; and

means for coupling an output of said second ALU to said first ALU operand register in a way that bypasses said main memory and provides the result of an execution of said first instruction on said first operand by said second ALU as an operand to said first ALU after a latency of one clock period.

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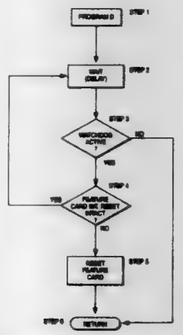
SYSTEM CRASH DETECT AND AUTOMATIC RESET MECHANISM FOR PROCESSOR CARDS

Bernard C. Drerup, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1991, Ser. No. 795,562

Int. Cl.[5] **G06F** *11/14*

U.S. Cl. 395—575 **14 Claims**



1. A method of resetting one of a plurality of feature cards, each having a central processing unit, that are included within a host machine, said method comprising:

running an external reset routine when an error signal is output from one of said feature cards;

determining the validity of an internal reset system within said one of said feature cards; and

externally resetting said feature card by outputting a reset signal from said host machine when said internal reset system is determined to be invalid.

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TWO WAY COPIER MONITORING SYSTEM

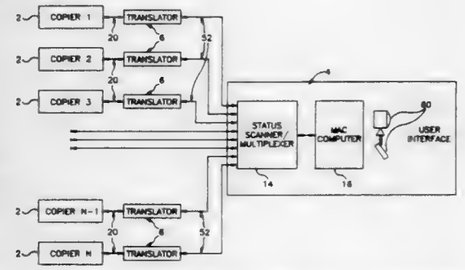
Joseph Weinberger, 13 Guernsey La., East Brunswick, N.J. 08816; Gary Bricault, and James Laird, both of Rochester, N.Y., assignors to Joseph Weinberger, East Brunswick, N.J.

Division of Ser. No. 567,388, Aug. 14, 1990, Pat. No. 5,214,772, which is a continuation-in-part of Ser. No. 450,605, Dec. 13, 1989, Pat. No. 5,084,875. This application Nov. 18, 1992, Ser. No. 978,278

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] **G06F** *11/00, 3/00*

U.S. Cl. 395—575 **13 Claims**



1. A system for automatically monitoring the operational status of and initiating operational commands in one or more copy machines from a remote location, each copy machine having a copy machine control computer for monitoring copy machine status information and controlling operation of the copy machine and a copier control panel for user interaction by a user at the copier machine, comprising interface means associated with each copy machine including means to access status information from the copy machine control computer for transmission to the remote location and means to receive operation commands from the remote location for execution by the copy machine control computer, communication means between the interface means and the remote location, means to remotely monitor the status information from the copy machine control computer at the remote location and means to initiate operation commands from the remote location for execution by the copy machine control computer thereby remotely activating copy machine functions comprising means to remotely input copy machine commands at the remote location, means to direct said commands to a specific copier machine in the system and means to simulate keystrokes on the copier control panel within the copy machine.

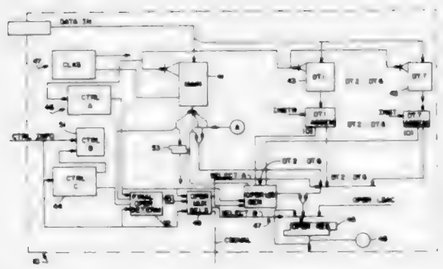
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5,333,287

SYSTEM FOR EXECUTING MICROINSTRUCTION ROUTINES BY USING HARDWARE TO CALCULATE INITIALIZATION PARAMETERS REQUIRED THEREFORE BASED UPON PROCESSOR STATUS AND CONTROL PARAMETERS

Daniel J. Buerkle, Newark Valley, and Agnes Y. Ngai, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 774,131, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 287,430, Dec. 21, 1988, abandoned. This application Feb. 23, 1993, Ser. No. 22,791
Int. Cl.[5] G06F *9/28*
U.S. Cl. 395—375 13 Claims



1. A computer for processing macroinstructions, said computer comprising:

macroinstruction storage means for storing said macroinstructions;

microinstruction storage means for storing a plurality of microinstruction routines; and

processor means, said processor means comprising:

receiving means for receiving a macroinstruction from said macroinstruction storage means;

a resolution table memory having stored therein a plurality of entries, each of said entries comprising a starting address of one of said plurality of microinstruction routines;

addressing means, responsive to the received macroinstruction in said receiving means, for addressing said resolution table memory and causing it to supply to said microinstruction storage means the starting address of a microinstruction routine associated with said received macroinstruction;

register means containing processor status and control parameters for sending data signals representing said processor status and control parameters;

hardware, in response to said data signals representing said processor status and control parameters supplied by said register means and said received macroinstruction, for calculating setup and initialization parameters required for the execution of said microinstruction routine associated with said received macroinstruction; and

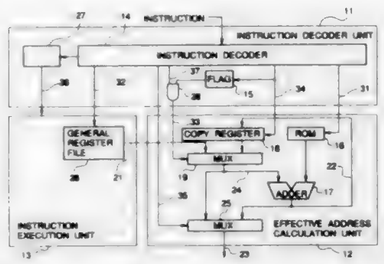
execution means connected to said microinstruction storage means and responsive to said setup and initialization parameters for executing said microinstruction routine associated with said received macroinstruction.

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EFFECTIVE ADDRESS PRE-CALCULATION TYPE PIPELINED MICROPROCESSOR

Masahiro Kusuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 660,779
Claims priority, application Japan, Feb. 23, 1990, 2-44018
Int. Cl.[5] G06F *9/34, 9/38, 12/06*
U.S. Cl. 395—400 4 Claims



1. An effective address pre-calculation type pipelined microprocessor comprising:

a register file which can be used to provide a base address for an operand address;

an effective address calculation unit for calculating and generating an effective address of an operand prior to execution of an instruction, by using a register included in register file as a base address register;

a copy register for selecting and holding either the calculated effective address or a modification amount added result obtained by adding a constant number to the calculated effective address;

a decoder for detecting a predetermined addressing mode indicative of a predetermined operand address designation mode;

a timing generator for controlling the writing of the calculated effective address or the modification amount added result to the copy register when the predetermined addressing mode is used;

a copy valid flag for storing a written condition of the copy register;

a copy register identification code latch for storing an identification code of a register which is used as a base address register when the predetermined addressing mode is designated;

a logic circuit detecting whether a value of the copy register identification code latch is consistent with a base address register number in an instruction code; and

a data path means for supplying the value of the copy register to the effective address calculation unit when the copy valid flag indicates that the copy register has been written and when a value of the copy register identification code latch is consistent with the base address register number.

5,333,289

MAIN MEMORY ADDRESSING SYSTEM

Seiji Kaneko, Yokoyama, Japan; Masaya Watanabe, Arlington, Mass.; Toshiyuki Kinoshita, Sagamihara, Japan; Yasuhisa Tamura, Sagamihara, Japan, and Masaichiro Yoshioka, Sagamihara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1991, Ser. No. 703,458
Claims priority, application Japan, May 25, 1990, 2-136096
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—400 8 Claims

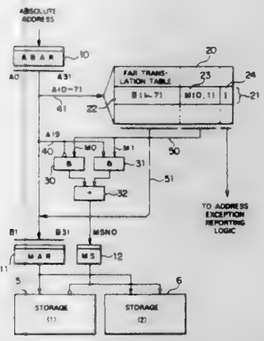
1. In a computer system having a main storage including a plurality of storages capable of operating in parallel, a main storage addressing method comprising the steps of:

storing a plurality of interleave mode bits into a rewritable interleave field, said interleave bits being used to obtain a plurality of interleave modes;

performing address translation to translate a logical address used by a program functioning in a processor of the computer system to a physical address of a storage of the plurality of storages by using a translation table;

selecting one of the interleave modes in accordance with said logical address and the interleave bits;

in re-configuring the main storage by disconnecting one of the plurality of storages in accordance with said logical address on the basis of contents indicated by a predetermined bit contained in said logical address, performing



processing of moving contents stored in a storage to be disconnected onto a storage not be disconnected;

storing in the translation table information reflecting a correspondence relation between logical addresses of contents stored in the storage to be disconnected and physical addresses;

rewriting said translation table so as not to change the logical address accessed from the program even upon a change in the physical address of the storage holding the storage contents therein; and

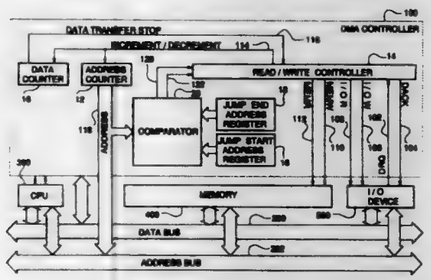
changing the interleave mode corresponding to the logical address corresponding to said storage contents to reflect the changed physical address.

5,333,290

DMA CONTROLLER HAVING JUMP FUNCTION

Taiji Kato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 8, 1991, Ser. No. 741,936
Claims priority, application Japan, Aug. 8, 1990, 2-209886
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—400 2 Claims



1. A direct memory access (DMA) controller for controlling data transfer between a memory and an input/output (I/O) device, the DMA controller comprising:

an address counter for counting an address to be supplied to said memory,

a read/write controller for controlling a read/write operation between said memory and said I/O device,

a jump start address register for holding a jump start address,

an address comparator for comparing a content of said address counter with a content of said jump start address register, said read/write controller operating to stop said read/write operation between said memory and said I/O device when said address comparator detects consistence between said content of said address counter and said content of said jump start address register, and

means for updating said content of said address counter,

wherein said address counter is updated by said means for updating while said read/write controller operates to stop said read/write operation, said DMA controller further including a jump end address register for holding a jump end address,

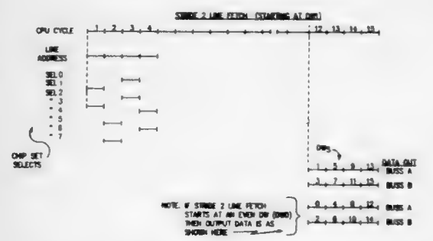
said address comparator operating to compare said content of said address counter with a content of said jump end address register, and said read/write controller operating to restart said read/write operation between said memory and said I/O device when said address comparator detects consistence between said content of said address counter and said content of said jump end address register.

5,333,291

STRIDE ENHANCER FOR HIGH SPEED MEMORY ACCESSES WITH LINE FETCHING MODE AND NORMAL MODE EMPLOYING BOUNDARY CROSSING DETERMINATION

Warren W. Grunbok, Poughkeepsie; Donald W. Price, Lake Katrine, and De Tran, Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1991, Ser. No. 717,772
Int. Cl.[5] G06F *12/02, 12/08*
U.S. Cl. 395—425 9 Claims



1. A memory system for a data processing system having a line fetch mode of operation and a normal mode of operation, said memory system comprising:

an array of storage element units for storing a plurality of data elements in a predetermined pattern;

first, second, third, and fourth data element buses connected to said array of storage element units, each of said first and second buses for use in storing such data elements in the storage element units and each of said third and fourth buses for use in reading out such data elements stored in the storage element units;

means for storing a base storage element unit address and a stride value for a request, and data identifying the request as one of said line fetch and normal modes of operation; and

controller means responsive to said data identifying the request as one of said line fetch and normal modes of operation and said stride value for controlling said array in said line fetch mode of operation to read out data elements at storage element unit addresses separated by said stride value using said third and fourth data element buses and for controlling said array in said normal mode for reading

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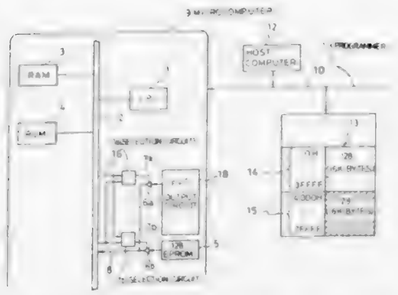
out data elements using said third and fourth data element buses and storing data elements using said first and second data element buses

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5,333,292
MICROCOMPUTER FOR SELECTIVELY ACCESSING NON-VOLATILE MEMORY AND OTHER STORAGE UNIT IN RESPONSE TO ALLOCATED ADDRESS INPUTS

Emiko Takemoto, and Yoshikazu Satou, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 683,222
Claims priority, application Japan, Jul. 13, 1990, 2-185627
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **2 Claims**



1. A microcomputer that simplifies verifying a plurality of bytes of program data downloaded to a rewritable non-volatile memory in said microcomputer from a memory programmer coupled to said microcomputer by an external data bus, said memory programmer including a memory unit having a first plurality of storage locations, said first plurality of storage locations including a program subset of storage locations for storing said program data with each storage location of said program subset of storage locations storing one of said bytes of said program data, wherein said rewritable non-volatile memory has a memory address space having a second plurality of storage locations for storing said downloaded program data, each second storage location storing a byte of said downloaded program data that corresponds to one of said bytes of program data stored in a unique one of said program subset storage locations, said microcomputer comprising:

value outputting means for outputting a fixed value byte;

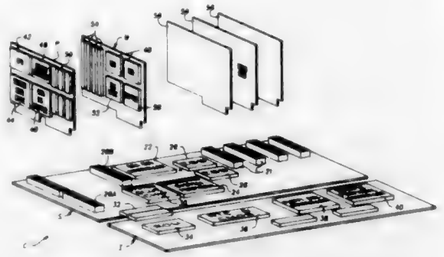
an address line for carrying an address signal; and

output selecting means, coupled to said address line, to said rewritable non-volatile memory, and to said value outputting means, for inputting said address signal and outputting one of said bytes of said downloaded program data from a location in said rewritable non-volatile memory corresponding to a location addressed by said address signal when said address signal corresponds to a location in said memory address space and for outputting said fixed value byte from said value outputting means when said address signal corresponds to a location outside said memory address space, so that said byte of downloaded program data and said fixed byte value output from said output selecting means can be used by the memory programmer to verify that the downloaded program data stored in said rewritable non-volatile memory matches the program data stored in the memory unit of the memory programmer.

5,333,293
MULTIPLE INPUT FREQUENCY MEMORY CONTROLLER

Randy M. Bonella, Cypress, Tex., assignor to Compaq Computer Corp., Houston, Tex.

Filed Sep. 11, 1991, Ser. No. 757,701
Int. Cl.[5] G06F *9/305*
U.S. Cl. 395—425 **9 Claims**



1. A computer system comprising:

a central processor unit operating at one of a plurality of designated frequencies and having address, data and control buses;

a reference clock having a frequency related to said central processor unit operating frequency;

dynamic random access memory having address and data buses and control inputs;

buffer and latch units having data buses coupled to said central processor unit data bus and said memory data bus and having latch and output control inputs;

means for indicating central processor unit operating frequency; and

a memory controller having address and control inputs coupled to said central processor unit address and control buses, having control output coupled to said memory control inputs and said buffer and latch unit latch and output control inputs, having an input coupled to said reference clock, and having an input coupled to said operating frequency indicating means, said memory controller utilizing a plurality of different reference clock frequencies and central processor unit operating frequencies so that said memory controller control outputs are provided at approximately the same time and duration for each of said central processor unit operating frequencies,

wherein said memory controller operates synchronously using a state machine, wherein various states are bypassed based on said central processor unit operating frequency and wherein said memory controller state machine is advanced by said reference clock.

5,333,294
CONFIGURABLE DATA WIDTH DIRECT MEMORY ACCESS DEVICE WITH A READ ADDRESS COUNTER AND A WRITE ADDRESS COUNTER WHICH INCREMENTS THE ADDRESSES BASED ON THE DESIRED DATA TRANSFER WIDTH

Arnold T. Schnell, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 9, 1990, Ser. No. 594,601
Int. Cl.[5] G06F *13/28, 12/00*
U.S. Cl. 395—425 **4 Claims**

1. A variable width memory access device connected to an n byte wide system data bus, n being at least 2, said variable width memory access device comprising:

an n byte wide internal data bus, said internal data bus being organized in n single byte wide lanes;

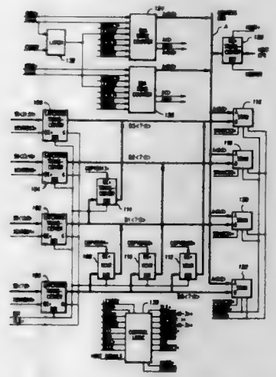
transceiver means having a total width of n bytes and being controllable in single byte increments, said transceiver means being coupled to the system data bus and said internal data bus;

data copy means connected between selected byte lanes of said internal data bus for transferring data between said selected byte lanes;

memory means having a total width of n bytes and being controllable in single byte increments, said memory means being coupled to said internal data bus and having a plurality of address inputs;

means for indicating a desired width of a data transfer;

counter means coupled to said desired width indicating means and providing address outputs coupled to said



memory means, said counter means incrementing said address outputs based on said desired data transfer width;

control means coupled to said counter means, said desired data width means, said memory means, said data copy means and said transceiver means for controlling data transfer through said transceiver means based on said desired data transfer width, through said data copy means based on said desired data width and said address provided by said counter means, and with said memory means based on said desired data width and said address provided by said counter means, so that said each of said memory means byte increments is fully utilized based on each of said desired data transfer widths.

5,333,295
MEMORY CONTROL SYSTEM

William J. Podkowa, Plano, Tex., assignor to Dallas Semiconductor Corp., Dallas, Tex.

Filed Apr. 11, 1991, Ser. No. 684,684
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **20 Claims**

1. A memory control system, comprising:

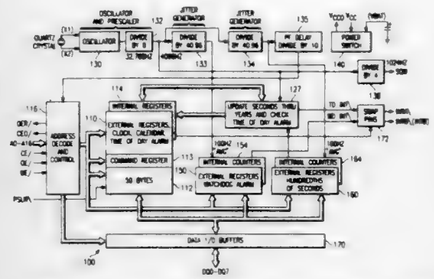
(a) a first memory with at least one first address, wherein said first address(es) have K number of bits;

(b) a second memory with at least one second address, wherein said second address(es) have N number of bits, and wherein N is greater than K;

(c) an address bus to carry address(es) having N bits, said address bus connected to said first and second memories with said first memory connected to receive a subset of size K number of bits of the N number of bits bits of said address bus:

(d) detect circuitry connected to receive (N—K) number of bits from said address bus which are exclusive of said subset of size K; and

(e) delay circuitry coupled to said first memory and said detect circuitry, said delay circuitry creates a first delay to delay output of said first memory when said detect circuitry indicates that said (N—K) number of bits on said address bus have changed from a portion of an address outside of said first memory to a portion of an address in said first memory, said first delay occurring only in conjunction with said (N—K) number of bits on said address

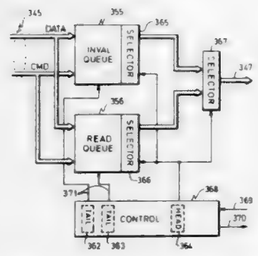


bus having changed from said portion of said address outside said first memory to said portion of said address in said first memory.

5,333,296
COMBINED QUEUE FOR INVALIDATES AND RETURN DATA IN MULTIPROCESSOR SYSTEM

Gregg Bouchard, Clinton, and Lawrence Chisvin, Sudbury, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 547,850, Jun. 29, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 103,816
Int. Cl.[5] G06F *12/00, 13/00*
U.S. Cl. 395—425 **20 Claims**



12. A bus interface device for connecting a CPU to a system bus, the CPU including a cache, the bus interface device receiving read data and invalidates from said system bus, comprising:

a first buffer for receiving said invalidates from said system bus for forwarding to said cache, each invalidate being loaded to said first buffer as an entry;

a second buffer for receiving said return data from said system bus for forwarding to said cache, each item of return data being loaded to said second buffer as an entry;

each said entry in said first buffer and said second buffer storing a location of a next combined chronological entry in either said first or second buffers; and

a pointer responsive to said stored location to identify a combined next one of said entries of said first or second buffers to be sent to said CPU regardless of whether said next one is in the first buffer or the second buffer.

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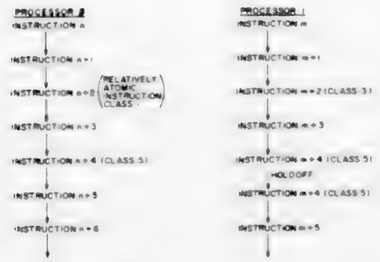
MULTIPROCESSOR SYSTEM HAVING MULTIPLE CLASSES OF INSTRUCTIONS FOR PURPOSES OF MUTUAL INTERRUPTIBILITY

Charles A. Lemaire, Zumbrota, and Andrew H. Wottreng, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 434,048, Nov. 9, 1989, abandoned. This application Jan. 19, 1993, Ser. No. 5,928

Int. Cl.[5] **G06F** *15/16, 13/374*

U.S. Cl. 395—500 **37 Claims**



1. A computer system comprising:

(a) at least one shared data resource;

(b) a plurality of processors, each running a separate instruction stream concurrently with all other processors and coupled to a particular shared data resource, wherein each processor has an instruction set divided into a plurality of instruction classes each defined to have a different lock;

(c) means for signalling between said processors to indicate to all other processors when an instruction in any one class of said plurality of classes is running on any one of said processors from its instruction stream, and for providing an indication of which particular class the instruction is a member of;

(d) means in each of said processors for providing a further indication of the class of the instruction about to be run from its respective instruction stream; and

(e) means in all of said processors responsive to both of said indications for selectively delaying the operation of any other instructions in said any one class on every other processor in said system so that the instruction running in said one processor locks said shared resource against use by said other instruction in said any one class.

5,333,298

SYSTEM FOR MAKING DATA AVAILABLE TO AN OUTSIDE SOFTWARE PACKAGE BY UTILIZING A DATA FILE WHICH CONTAINS SOURCE AND DESTINATION INFORMATION

Dennis L. Bland, and John R. Kast, both of Phoenix, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 8, 1991, Ser. No. 741,920

Int. Cl.[5] **G06F** *3/00*

U.S. Cl. 395—500 **7 Claims**

1. In a first computer system **130**, having predefined peripherals (**132, 133**) operatively connected thereto, said first computer system including interface logic for communicating with said predefined peripherals, and further wherein said first computer system includes an operating system (**135**) and application software packages (**140**) residing therein which execute under control of said operating system, and further wherein said first computer system includes a data exchange logic (**150**) for permitting an outside application software package (**141**) to be integrated into the first computer system, the outside application software package being created to perform a predefined application function in a second computer system, said outside application software package having identified application variables, the environment of the second computer system including a computer and an operating system of the same type as that of the first computer system, the source of the identified application variables of the outside application software package defied for the second computer system being different than the source of the identified application variables in the first computer system, the data exchange logic providing a method of making the identified application variables available from the predefined peripherals of the first computer system to the outside application software package integrated into the first computer system, said method comprising the steps of:

a) generating a data file containing a point list definition file for identifying source and destination information of the identified application variables and a control file for specifying what to do with data input to or output form the outside application software package, when said outside application software package is executing in said first computer system; and

b) i) accessing a first package (**152**), said first package including first program logic and first preselected information of



said data file, when it is desired to obtain the identified application variables, said first package utilizing information contained in said data file to generate commands to obtain the identified application variables, the information of said data file including the source of the identified application variables internal to or external to said first computer system; and

ii) accessing a second package (**153**), said second package including second program logic and second preselected information of said data file, when it is desired to output results of performing the predefined application function, said second package utilizing information contained in said data file to generate commands to cause the results to be outputted, the information of said data file including a destination of the results to be outputted external to or internal to said first computer system, thereby permitting an outside application software program to be integrated into said first computer system.

5,333,299

SYNCHRONIZATION TECHNIQUES FOR MULTIMEDIA DATA STREAMS

Michael J. Koval; William W. Lawton, both of Boca Raton; George A. McClain, Delray Beach; John G. Tyler, Boynton Beach, and Scott L. Winters, Plantation, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,652

Int. Cl.[5] **G06F** *1/12*

U.S. Cl. 395—550 **12 Claims**

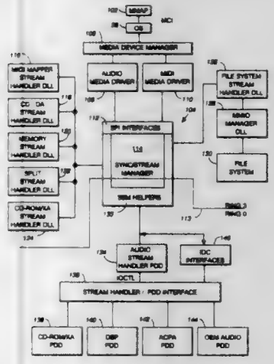
1. A multimedia data processing system comprising:

a personal computer having a memory for storing a multimedia application program and a multitasking operating system, and a processor for executing said application program and operating said multimedia data processing system under said operating system;

master stream means connected to said personal computer for producing a master data stream in response to commands from said multimedia application program, said master stream means including a master source device for producing first media data, a master target device for receiving said first media data from said master source device, and master stream handling means for producing a master data stream in which said first media data flows along a first path from said master source device to said master target device;

slave stream means connected to said personal computer for producing a slave data stream in response to commands from said multimedia application program, said slave stream means including a slave source device for producing second media data, a slave target device for receiving said second media data from said slave source device, and slave stream handling means for producing a slave data stream in which said second media data flows along a second path from said slave source device to said slave target device, said second path being completely separated from said first path;

said master target device and said slave target device producing, in response to receiving said master data stream and said slave data stream, two different time-dependent humanly-perceivable outputs; and



synchronizing means operable under said operating system for synchronizing said slave data stream with said master data stream to maintain time-dependency between said outputs of said target devices, said synchronizing means comprising

a synchronization manager;

first means for periodically storing timing pulses in said memory, each timing pulse indicating current time of said master data stream relative to when said master data stream was started;

notifying means for notifying said synchronization manager each time one of said timing pulses is stored in said memory;

second means for periodically storing, in said memory, indications of current time of said slave data stream;

said synchronization manager includes third means, operative in response to receiving notification from said notifying means, for comparing current time of said master data stream with current time of said slave data stream and selectively notifying said slave stream handling means; and

said slave stream handling means further includes fourth means, operative in response to receiving notification from said synchronization manager, for transmitting second media data to said slave target device.

5,333,300

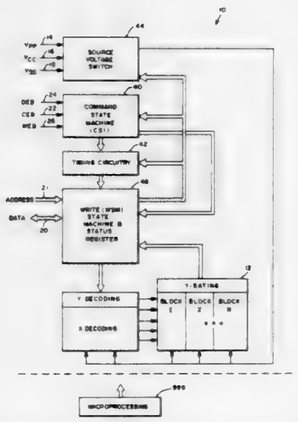
TIMING CIRCUITRY AND METHOD FOR CONTROLLING AUTOMATED PROGRAMMING AND ERASING OF A NON-VOLATILE SEMICONDUCTOR MEMORY

Mickey L. Fandrich, Placerville, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 11, 1991, Ser. No. 654,385

Int. Cl.[5] **G06F** *13/24*

U.S. Cl. 395—550 **23 Claims**



4. Circuitry for controlling timing of signals between a write state machine and a command state machine in a memory device including the command state machine, the write state machine, and a memory array, the command state machine receiving commands from a user, the command state machine communicating valid commands to the write state machine, the command state machine identifying valid commands in response to a handshaking circuitry, the write state machine performing operations on the memory array in response to valid commands from the command state machine, the write state machine indicating its status to the handshaking circuitry, the write state machine performing an erase operation in response to an erase command from the command state machine, the write state machine pausing performance of the erase operation in response to a suspend command from the command state machine, the circuitry for controlling the timing of signals between the write state machine and the command state machine comprising:

(a) powering up and powering down circuitry for automatically powering up and powering down a clock associated with the write state machine, the clock generating a clock signal; and

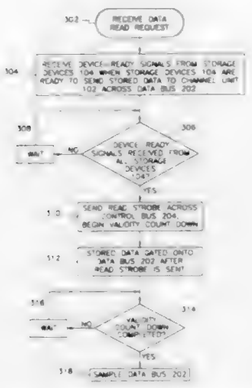
(b) handshaking circuitry coupled to the write state machine and the command state machine.

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5,333,301
DATA TRANSFER BUS SYSTEM AND METHOD SERVING MULTIPLE PARALLEL ASYNCHRONOUS UNITS

Dennis P. Cheney, Vestal; James N. Dieffenderfer, Endicott, both of N.Y.; Ronald A. Oreshan, Tucson, Ariz., and Robert J. Yagley, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1990, Ser. No. 626,706
Int. Cl.[5] G06F *13/42, 11/10*
U.S. Cl. 395—575 **23 Claims**



1. A system for receiving stored data across a data bus, wherein control signals are passed across a control bus, the system comprising:

two or more asynchronous storage devices for the stored data, each storage device including a timing device ad an oscillator for driving said timing device;

first means for receiving device-ready signals from the storage devices across the control bus indicating that said two or more asynchronous storage devices are ready to send the stored data across the data bus;

second means, responsive to said first means, for generating and sending read strobe signals to said two or more asynchronous storage devices across the control bus to indicate readiness to receive the stored data from said two or more storage devices;

third means for indicating that a predetermined time period has elapsed since said read strobe signals were generated, thereby indicating that said two or more asynchronous storage devices have sent the stored data across the data bus, and that the stored data from the data bus is valid; and

fourth means, responsive to sad third means, for sampling from the data bus to receive the stored data.

5,333,302
FILTERING EVENT CAPTURE DATA FOR COMPUTER SOFTWARE EVALUATION

Billy W. Hensley, 5513 Lake Hubbard Pkwy., Garland, Tex. 75043; Monty L. Hammontree, 2525 Preston Rd., #2213, Plano (Collin County), Tex. 75093, and Jeffrey J. Hendrickson, 2909 Oak Ridge Dr., Hurst (Tarrant County), Tex. 76054

Filed Feb. 28, 1991, Ser. No. 662,047
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—575 **4 Claims**

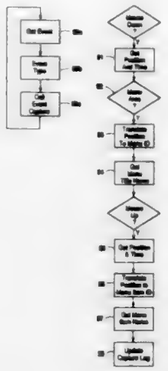
1. A method of evaluating software for a computer system having a graphic user interface, comprising the steps of:

(a) using a first graphic user interface configuration to prompt user interaction;

(b) checking a user-initiated event record at regular intervals to determine when user-initiated events have occurred;

(c) determining whether said events are associated with said first graphic user interface configuration, relating said user-initiated events to the time at which they occurred; providing a record of said events, objects and times of a record of interactions of said user of the computer system to objects of a graphic interface;

(d) selecting events of interest associated with said first graphic user interface configuration for purposes of evaluation;



(e) repeating each of steps (a)–(d) with respect to a second graphic user interface configuration;

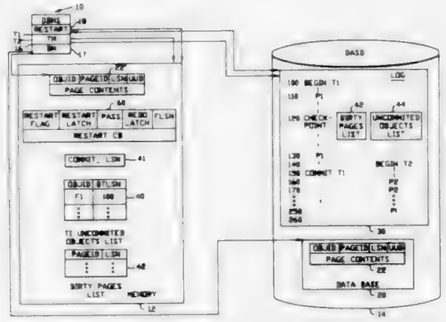
(f) providing an event capture log of said events of interest; and

(g) comparing selected events with respect to said first graphic user interface configuration and selected events with respect to said second graphic user interface configuration to evaluate the software for the computer system.

5,333,303
METHOD FOR PROVIDING DATA AVAILABILITY IN A TRANSACTION-ORIENTED SYSTEM DURING RESTART AFTER A FAILURE

Chandrasekaran Mohan, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1991, Ser. No. 678,526
Int. Cl.[5] G06F *11/14*
U.S. Cl. 395—575 **6 Claims**



1. A method for providing data structures for transaction processing in a database system which includes a database processor, a main memory coupled to the processor, non-volatile storage for storing data structures which are staged to and from the main memory for transaction processing, a write-ahead log having a sequence of log records describing transaction updates made to data structures in the non-volatile storage, and a restart recovery mechanism,

the restart mechanism including a REDO component for amending data structures in the non-volatile storage by adding to the structures updates which had not been made in the non-volatile storage by the time a failure affecting the database system occurred, and

an UNDO component for rolling back transactions which were incomplete at the time of the failure and for which no log commit or in-doubt records exist in the log (in-flight transactions),

the method comprising the steps of:

(a) assigning a log sequence number (LSN) to each log record which denotes the log record's position in the sequence;

(b) entering into each data structure staged into the non-volatile storage from the main memory, an LSN denoting the last update made to the data structure;

(c) operating the restart mechanism in response to a failure in the system;

(d) during step (c):

(1) commencing a transaction and issuing a request from the transaction for a data structure in the non-volatile storage;

(2) comparing the LSN in the data structure with a COMMIT$_{13}$ LSN, the COMMIT$_{13}$ LSN being the minimum of the LSNs denoting begin transaction log records of the in-flight transactions; and

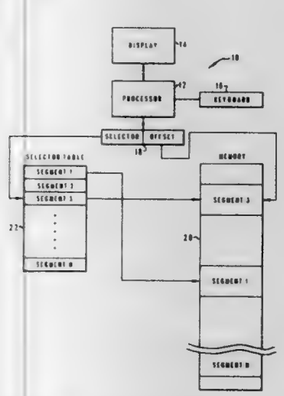
(3) if the LSN in the data structure is less than the COMMIT$_{13}$ LSN, providing the data structure to the transaction; otherwise

(4) suspending the transaction until step (c) is completed.

5,333,304
METHOD AND APPARATUS FOR SOFTWARE APPLICATION EVALUATION UTILIZING COMPILER APPLICATIONS

James E. Christensen, Peekskill, N.Y.; Kenneth W. Christopher, Jr., Lighthouse Point, Fla.; Marc L. Cohen, and Paul G. Giangarra, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 3, 1991, Ser. No. 695,375
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **7 Claims**



5. A data processing system for evaluating the performance of a selected software application having multiple procedures, said data processing system comprising;

an evaluation function within said data processing system for recording status indications of a software application in response to each invocation of said evaluation function;

a compiler application for translating a source software application into an executable program;

means for inserting into said executable program during compiling of said selected software application a verification command for invoking a memory availability test function in response to each entry to one of said multiple procedures;

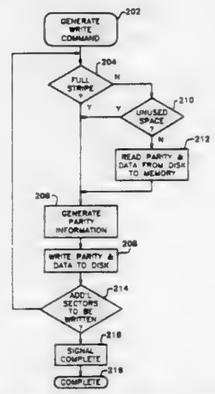
a memory availability test function having an evaluation command contained therein, said evaluation command for invoking said evaluation function; and

means for invoking said evaluation function during execution of said executable program compiled from said selected software application in response to said evaluation command.

5,333,305
METHOD FOR IMPROVING PARTIAL STRIPE WRITE PERFORMANCE IN DISK ARRAY SUBSYSTEMS

E. David Neufeld, Tomball, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 27, 1991, Ser. No. 815,118
Int. Cl.[5] G06F *11/10*
U.S. Cl. 395—575 **13 Claims**



1. A method for performing disk array write operations in a computer system disk array having a plurality of disk units each having a plurality of stripes for storing data and parity information, wherein the disk array utilizes parity fault tolerance techniques, the method comprising:

generating a data write operation to write valid data to a data stripe portion in the disk array;

determining if said write operation is a partial stripe write operation, wherein said partial stripe write operation includes writing said valid data to only a first portion of said data stripe portion;

determining if a second portion of said data stripe portion other than said first portion comprises unused space if said write operation is a partial stripe write operation;

generating parity information for said data stripe portion using only said valid data if said second portion comprises unused space; and

writing said valid data to said first portion and said parity information to said parity information portion of said stripe after generating said parity information.

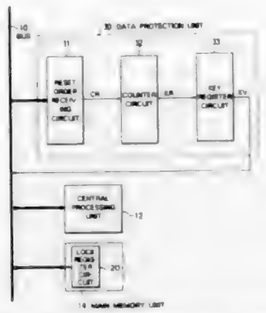
VOL 1164 ISS 4 JL 26 1994 UMI

5,333,306

INFORMATION PROCESSING SYSTEM HAVING A DATA PROTECTION UNIT

Fumihiro Abe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 826,805
Claims priority, application Japan, Jan. 29, 1991, 3-026687
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 1 Claim



1. An information processing system, comprising:
a bus;
a central processing unit connected to said bus for carrying out data processing in accordance with a program, producing a reset order signal as long as said central processing unit normally operates;
a main memory unit connected to said bus for memorizing data; and
a data protection unit, connected to said bus for protecting the data in said main memory unit from destruction by supplying said main memory unit with a write inhibit signal when said program runs away, said data protection unit comprising:
a reset order receiving circuit connected to said bus for receiving said reset order signal, said reset order receiving circuit producing a count reset signal whenever it receives said reset order signal;
a counter circuit, connected to said reset order receiving circuit, for carrying out count operation independent of the operation of said program, said counter circuit being reset in response to said count reset signal and producing a key reset signal when said counter circuit overflows; and
a key register circuit connected to said bus and said counter circuit for holding key values, said key register circuit being reset in response to said key reset signal, thereby producing key values equal to said write inhibit signal.

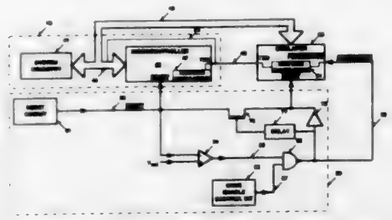
5,333,307

CIRCUITRY AND METHOD FOR CAUSING A MICROCONTROLLER/MICROPROCESSOR TO BE ON-CIRCUIT EMULATED

Gary G. Shirk, Beaverton; Shailesh M. Vachhani, Portland, and Harry L. Hampton, III, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 17, 1992, Ser. No. 931,158
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 22 Claims

1. An emulation system for performing an on-circuit emulation operation of a component in a data processing system, wherein the component includes a plurality of pins coupled to the remaining circuitry of the data processing system, wherein the emulation system comprises:
(A) emulation means coupled to the remaining circuitry in the same manner as that the component is coupled to the remaining circuitry for issuing an on-circuit emulation control signal to one of the plurality of pins of the component to place the component in an on-circuit emulation mode and for performing the on-circuit emulation operation of the component;
(B) reset means coupled to a reset input of the component and a reset input of the emulation means for generating a reset signal to reset the component and the emulation means, wherein when the reset signal is in a first voltage state, the component and the emulation means are in a reset state, wherein when the reset signal reaches a second voltage state, the component and the emulation means exit the reset state;
(C) comparator means coupled to receive the reset signal and a reference voltage for causing the emulation means



to generate the on-circuit emulation control signal to the one of the plurality of pins of the component when the reset signal is in the first voltage state, and for causing the emulation means to maintain the on-circuit emulation control signal applied at the one of the plurality of pins of the component until after both the component and the emulation means are out of the reset state such that the component can enter the on-circuit emulation mode and the emulation means can start the on-circuit emulation operation after both of the component and the emulation means exit the reset state, wherein the voltage level of the reference voltage is higher than the second voltage state of the reset signal.

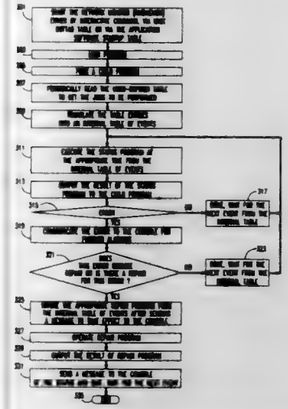
5,333,308

METHOD AND APPARATUS FOR OPERATING A COMMUNICATION NETWORK MONITOR ARRANGEMENT

Rajagopalan Ananthanpillai, Hazlet, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 665,055, Mar. 6, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 109,864
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—575 16 Claims

1. A network monitor system for use in a communication network, said network monitor system comprising
a plurality of status programs for determining an operating status of a plurality of subsystems of the network, while the network is active providing communication services using said subsystems, one or more status programs including one or more changeable test parameters for indicating a normal status of said subsystems of the network, said test parameters being changeable without disabling the operation of either said network monitor system or said subsystems,
at least one repair program for automatically repairing a non-normal status of an associated one or more subsystems said repair program automatically performing its repair operation on said non-normal subsystems without disabling the operations of either said network monitor system or said non-normal subsystems,
means for recurrently executing, under system control, one or more of said status programs and responsive to said non-normal status returned from the one or more of said



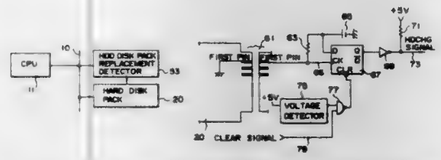
status programs for automatically enabling said associated at least one repair program.

5,333,309

PERSONAL COMPUTER FOR DISABLING RESUME MODE UPON REPLACEMENT OF HDD

Kenji Hibi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 604,457, Oct. 29, 1990, abandoned. This application Sep. 16, 1993, Ser. No. 121,458
Claims priority, application Japan, Oct. 31, 1989, 1-281738
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—575 13 Claims



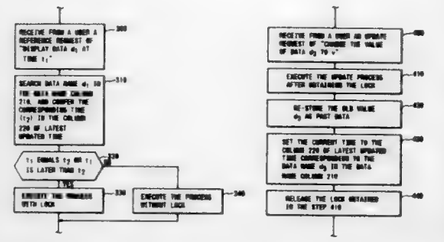
1. A portable computer to which a removable unit is detachably connected through a connector, comprising:
means for supplying a power to elements constituting said portable computer;
resume means for resuming operation at a state of said portable computerexisting immediately preceding a power-OFF operation in response to a power-ON operation after a power switch is turned off;
detecting means for detecting that said removable unit is replaced during the power-OFF operation from a change of level of a signal from the connector and for outputting a detection result representing that said removable unit has been replaced during the power-OFF operation;
latch means for latching the detection result from said detecting means; and
control means for reading the detection result from said latch means when said power switch is turned on and disabling said resume means when said removable unit is determined to have been replaced during said power-OFF operation so that operation of said portable computer after said power-OFF operation does not resume at said state immediately preceding said power-OFF operation when said removable unit is detached during the power-OFF operation.

5,333,310

DATA MANAGEMENT METHOD AND SYSTEM

Naofumi Sakai, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1990, Ser. No. 528,726
Claims priority, application Japan, May 30, 1989, 1-137161
Int. Cl.[5] G06F *13/00, 15/16*
U.S. Cl. 395—600 9 Claims



1. In a computer system having a database management computer system, a computer memory means, and an access control means which performs a concurrency control function for non-interfering sharing of data by a plurality of users, a data management method comprising the steps of:
storing a plurality of shared data records in the memory means, each record stored in conjunction with (i) a data name and (ii) a time parameter corresponding to the data name which are stored in the memory means;
setting in said database management computer system a time condition as a set time condition threshold for classifying data;
with the database management computer system, in response to access requests comparing the time parameter corresponding to a data name of each requested record with said set time condition threshold to classify the shared data record as one of (1) past data or (2) latest data in accordance with the comparison of the corresponding time parameter and the set time condition threshold;
storing the shared data records classified as past data nd the shared data records classified as latest data in a past data storage portion of the memory means and a latest data storage portion of the memory means, respectively; and
with the access control means, unlocking the shared data records classified as past data from the concurrency control function and allowing said past data records to be read from the past data storage portion of the memory means concurrently by said plurality of users without performance of the concurrency control function.

5,333,311

OPTIMIZING A MAGNETIC DISK BY ALLOCATING FILES BY THE FREQUENCY A FILE IS ACCESSED/UPDATED OR BY DESIGNATING A FILE TO A FIXED LOCATION ON A DISK

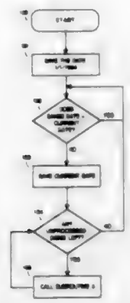
Albert E. Whipple, II, Kingwood, Tex., assignor to ALSoft, Inc., Spring, Tex.

Filed Dec. 10, 1990, Ser. No. 625,067
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—600 5 Claims

1. A computer-implemented method of processing for allocating sectors to files on a computer disk to minimize the time required to access data on said computer disk, the computer-implemented method comprising the steps of:
(1) continuously monitoring file usage for each of said files;
(2) recording the file usage for said each of said files monitored;
(3) assigning one of a plurality of priorities to said each of said files on the basis of the recorded file usage for said each of said files or the desirability of having a file of said

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files remaining allocated to a fixed set of sectors on said computer disk; wherein the plurality of priorities includes anchored indicating a file of said files must remain allocated to a fixed set of sectors on said computer disk, volatile indicating a file of said files has changed size, active indicating a file of said files has not changed size and has been accessed a total of one percent or more of the total accesses to all of the files, sporadic indicating a file of said files has not changed size and has been accessed less than one percent of the total accesses to all of the files, and



dormant indicating a file of said files has not been accessed and has not changed size;

(4) using the assigned priorities, determining an optimal set of sectors to be allocated to said each of said files by assigning anchored ones of said files to said fixed sectors on said computer disk, otherwise assigning connective sectors that are available on said computer disk to said files having the same priority;

(5) reorganizing said files by copying said each of said files from its current location to the optimal set of sectors for said each of said files.

5,333,312

SYNCHRONOUS AND ASYNCHRONOUS COPYING OF A DOCUMENT INTO A FOLDER IN A TARGET LIBRARY

Diana Shu-Fan Wang, Trophy Club, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 543,908, Jun. 21, 1990, abandoned. This application May 18, 1992, Ser. No. 887,567

Int. Cl.[5] **G06F** *15/403*

U.S. Cl. 395—600 **5 Claims**

COPY COMMAND

COMMAND	OPERANDS
COPY	IDENTIFIED-DATA,
	[,REFERENCED-DATA] (FROM FOLDER)
	[,REFERENCED-DATA] (TO DOCUMENT OR TO FOLDER)
	[,REFERENCED-DATA] (COPY AUTHORIZATION)
	[,AUTHORIZE]
	[,SOURCE-SERVICE]
	[,TARGET-SERVICE]
	[,REFERENCE-OBJECT-SCOPE]
	[,COPY-OPTION]
	[,ON-BEHALF-USER]
	[,MODIFY-DATA]
	[,UNIQUE-NAME]
	[,DOCUMENT-STATE]
	[,DEFER-OPTION]

1. A computer implemented method of copying a new document with a folder by a user in a target library using an existing document in a source library in a data processing system wherein said copying includes a synchronous operation and an asynchronous operation, said computer implemented method comprising the steps of:

specifying in a first operand of a single copy command in said data processing system by said user said existing document in said source library as said new document to be copied into said folder in said target library;

specifying in a second operand a unique name for said new document different from said existing document in said single copy command by said user to be placed in said folder in said target library;

selectively specifying a delay option operand in said single copy command by said user;

selectively specifying access authority operand in said single copy command by said user; and

in response to said execution of said single copy command using said unique name of said new document in said second operand in said single copy command, if said delay option operand is specified, automatically executing said synchronous operation of copying said existing document from said source library into said folder in said target library and separately executing said asynchronous operation of copying; otherwise, automatically executing in a single operation said synchronous operation and asynchronous operation of copying, wherein said new document registering other users access authority when said user access authority operand is specified in said single copy command.

5,333,313

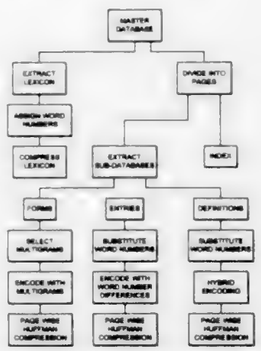
METHOD AND APPARATUS FOR COMPRESSING A DICTIONARY DATABASE BY PARTITIONING A MASTER DICTIONARY DATABASE INTO A PLURALITY OF FUNCTIONAL PARTS AND APPLYING AN OPTIMUM COMPRESSION TECHNIQUE TO EACH PART

Mark Heising, Palo Alto, Calif., assignor to Franklin Electronic Publishers, Incorporated, Mt. Holly, N.J.

Filed Oct. 22, 1990, Ser. No. 601,268

Int. Cl.[5] **G06F** *15/40*

U.S. Cl. 395—600 **12 Claims**



1. A computer implemented method for the compression of dictionary database information comprising the steps of:

forming a first part database from a master dictionary database consisting of all the entry points in the dictionary wherein each of these entry points is associated with a unique word number;

forming a second part database from said master database consisting of a multiplicity of placeholders, each placeholder corresponding to one of the following: an entry, an inflection, a definition, a pronunciation, a part of speech, and a usage note;

forming a third part database from said master database consisting of all the entry points of the dictionary in the exact order in which they appear in the dictionary;

forming a fourth part database from said master database consisting of the definitions and usage notes without reference to their context;

from a plurality of compression techniques, selecting and applying to each said first part, second part, third part and fourth part a compression technique, the compression technique selected for each said database part being determined by which technique provides an optimum degree of compression to the database information in said part; and

storing said compressed database information.

5,333,314

DISTRIBUTED DATA BASE SYSTEM OF COMPOSITE SUBSYSTEM TYPE, AND METHOD OF FAULT RECOVERY FOR THE SYSTEM

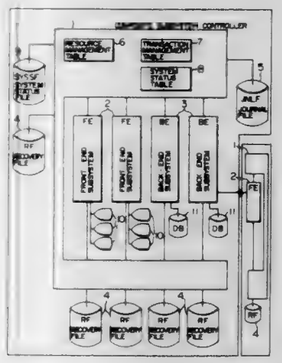
Kazuo Masai, Yokohama; Satoshi Wakayama, Hiratsuka; Shoji Yamamoto, Chigasaki; Takashi Sumiyoshi, and Masao Makino, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 184,075, Apr. 20, 1988, Pat. No. 5,065,311. This application May 17, 1991, Ser. No. 701,816

Claims priority, application Japan, Apr. 20, 1987, 62-95103; Jul. 24, 1987, 62-183330; Jul. 24, 1987, 62-183331; Sep. 11, 1987, 62-226319

Int. Cl.[5] **G06F** *15/40, 11/00*

U.S. Cl. 395—600 **21 Claims**



1. A failure recovery method, for an on-line system of a composite subsystem type wherein said on-line system includes a plurality of subsystems each performing processing by accessing respective distributed data bases independently and a composite subsystem controller for controlling said subsystems, said method comprising the steps, performed by said composite subsystem controller, of:

detecting when a failure has occurred in one of said subsystem;

separating the operation of said one subsystem in which said failure has occurred from said on-line system;

defining a transaction corresponding to database of said one subsystem in which said failure has occurred; and

recovering said data base of said one subsystem in which said failure has occurred by executing said defined transaction, while continuing operation of the remainder of the system;

wherein said recovering step includes the steps, performed by said composite subsystem controller, of:

extracting, from journal information already acquired, information necessary for recovering said data base of said one subsystem in which said failure has occurred, and

saving extracted information in a saving journal file corresponding to said data base of said one subsystem in which said failure has occurred to effect recovery on the basis of the information in the saving journal file.

5,333,315

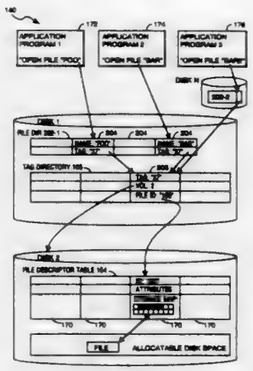
SYSTEM OF DEVICE INDEPENDENT FILE DIRECTORIES USING A TAG BETWEEN THE DIRECTORIES AND FILE DESCRIPTORS THAT MIGRATE WITH THE FILES

Christian D. Saether, Seattle, and Peter Stoppani, Jr., Woodinville, both of Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 27, 1991, Ser. No. 722,008

Int. Cl.[5] **G06F** *15/40*

U.S. Cl. 395—600 **16 Claims**



1. A file system for use with a computer system having a central processing unit and a multiplicity of data storage devices on which files are stored, comprising:

a multiplicity of file directories, stored on various ones of said multiplicity of data storage devices, each file directory containing a set of file directory entries, each file directory entry having a file name and a corresponding tag value, each file having a unique tag value but a possible plurality of names; wherein multiple file directory entries stored in one or more of said file directories may contain identical tag values;

a separate file descriptor table for each of said multiplicity of data storage devices, each of said file descriptor tables containing a file descriptor entry including file locating information for every file stored on the corresponding data storage device;

a tag directory, stored on at least a selected one of said multiplicity of data storage devices, said tag directory containing tag entries for a defined set of tag values, wherein every file stored in said multiplicity of data storage devices is represented by a unique one of said tag entries, each said tag entry denoting the one of said multiplicity of data storage devices on which the file corresponding to said tag entry is stored; and

file moving means, executable by said central processing unit, for moving a specified file from a first one to a second one of said multiplicity of data storage devices, including means for copying said specified file to said second one of said multiplicity of data storage devices, generating a file descriptor entry for said copied file on said file descriptor table for said second one of said multiplicity of data storage devices, changing the tag entry in said tag directory corresponding to said specified file so that said tag entry denotes said second one of said multiplicity of data storage devices, and initiating deallocation of said specified file on said first data storage device and of said specified file's file descriptor entry from said file descriptor table for said first data storage device;

means for determining the location of a file by using one of its names to find the corresponding tag value, and from the tag value its file descriptor entry whereby a file can be moved from a first one to a second one of said multiplicity

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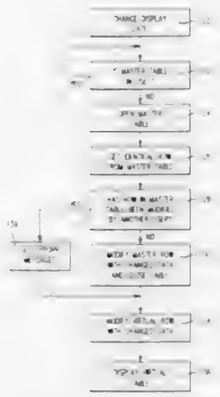
of data storage devices without having to locate and update all corresponding file directory entries.

5,333,316

LOCKING AND ROW BY ROW MODIFICATION OF A DATABASE STORED IN A SINGLE MASTER TABLE AND MULTIPLE VIRTUAL TABLES OF A PLURALITY OF CONCURRENT USERS

Steven R. Champagne, Poughkeepsie; Gary J. Nagelhout, Wappingers Falls, both of N.Y., and Peggy C. Zych, Seven Hills, Ohio, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1991, Ser. No. 746,398
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **16 Claims**



1. A relational database system for managing a relational database concurrently-used by a plurality of users comprising:
means for maintaining a master copy of at least one said relational database in a Master Table,
locking means for locking said Master Table when one said user is accessing said Master Table;
means for creating a Virtual Table for each of a plurality of concurrent said users;
means for selecting a single row, containing a plurality of data fields, from a plurality of rows in said Master Table;
means for indicating currency in said single row;
means for comparing said indicated currency of said selected row with a corresponding row in one of said concurrent user's Virtual Table;
means for modifying said selected single row; and,
means, in response to an output signal from said comparing means, for replacing said selected row in said Master Table with said modified selected row and for copying said modified selected row into said corresponding row in said one of said concurrent user's Virtual Table.

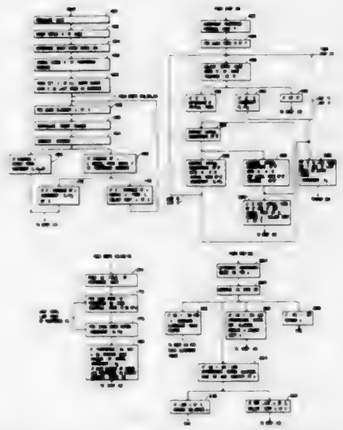
5,333,317

NAME RESOLUTION IN A DIRECTORY DATABASE

Ronald E. Dann, Andover, Mass., assignor to Bull HN Information Systems Inc., Billerica, Mass.

Continuation of Ser. No. 455,466, Dec. 22, 1989, abandoned. This application Nov. 3, 1992, Ser. No. 970,976
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **3 Claims**

1. A method of searching the directory of a database, held in a store of an information processing system, to identify an entry in said directory which most closely matches a search entry; wherein each of said directory entries contains first, second and third information fields, wherein said search entry contains at least a first field, wherein said first field in each of said entries occupies a predetermined position relative to a unique symbol in said entry, wherein each of said fields comprises a string of at least one part, and wherein at least one part of each of said first fields in each of said entries comprises a plurality of characters; said method being carried out by said information processing system executing the steps of:
a) determining the value of a first polynomial by substituting the number of pats in the search entry for a variable in said first polynomial, which value represents an exact match value between the search entry and a directory entry;
b) selecting a first part from said first field of said search entry, said first part being an end part of the string of said first field of said search entry when said first field string of said search entry comprises more than one part;
c) selecting from said directory the set of all directory entries having a first part of the first field thereof which is the same as the part selected in step (b) and entering said set into a store of said system, said first part of said first field of each of the selected directory entries being an end part of the string of the first field of said directory entry when said first field string of said selected directory entry comprises more than one part;
d) selecting from said store one of said directory entries of the set entered into said store in step (c);



e) initializing the variables of a second polynomial, each variable of said second polynomial being used to represent respectively the number of successful comparisons between portions of a field of the search entry and portions of a corresponding field of a directory entry;
f) determining the number of parts of the first field of said selected directory entry, and
(f_1) if said first field of said selected directory entry comprises a single part, increasing by a first predetermined amount the values of corresponding certain variables of said second polynomial, and then proceeding to step (g) but
(f) if said first field of said selected directory entry comprises a string of more than one part, comparing said first field of said selected directory entry with said first field of said search entry, and,
(f_{2-1}) if said first field of said selected directory entry is the same as a string of parts of said first field of said search entry, increasing by a second predetermined amount the values of corresponding certain variables of said second polynomial, and then proceeding to step (g), but
(f_{2-2}) if said first field of said selected directory entry is not the same as a string of parts of the first field of said search entry, proceeding to step (g);

g) comparing the value of said second polynomial with said exact match value for said search entry, and
(g_1) if said value of said second polynomial equals said exact match value, identifying the corresponding directory entry of said set as the entry searched for, but
(g_2) if said value of said second polynomial is not equal to said exact match value, determining whether all directory entries have been selected from said store, and
(g_{2-1}) if all directory entries have not been selected from said store, selecting another directory entry from said store and proceeding to step (e), but
(g_{2-2}) if all directory entries have been selected from said store, identifying the directory entry in said store for which the highest value of said second polynomial was developed as the entry searched for.

5,333,318

CREATING AND SEARCHING A QUAD LINKED LIST IN A TRUNKED COMMUNICATION SYSTEM

Herbert R. Wolf, Elk Grove Village, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 589,462, Sep. 27, 1990, abandoned. This application Apr. 12, 1993, Ser. No. 46,465
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **2 Claims**



1. A trunked communication system that provides communication services to requesting communication units through access to a quad linked data base relating first and second data elements, the system comprising:
one or more communication units that request communication services from time to time;
one or more trunked repeater stations that provide RF communication resources for requesting communication units;
trunked resource controller means for maintaining control over associated trunked repeater stations and for assigning communication resources to requesting communication units wherein the trunked resource controller includes;
means for storing the first data elements with corresponding second data elements; and
means for providing first and second sets of associated pointers, wherein the first set of pointers links together the first data elements, and the second set of pointers links together the second data elements.

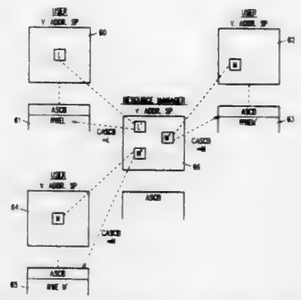
5,333,319

VIRTUAL STORAGE DATA PROCESSOR WITH ENHANCED DISPATCHING PRIORITY ALLOCATION OF CPU RESOURCES

Stuart L. Silen, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 2, 1992, Ser. No. 844,366
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—650 **22 Claims**

1. A computer system including system control software, said software including means for establishing address spaces, each established address space having an assigned priority, said system including service requestor and resource manager address spaces, said computer system comprising:
means for establishing a dispatchable work unit in a resource manager address space in response to a work request from a service requestor address space;
means for creating an encoded ready work element (RWE) for said dispatchable work unit, said RWE including an affinity field indicating said service requestor address space;



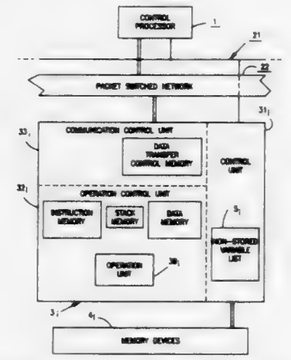
control block means associated with each service requestor address space, each control block means having chained therewith RWE's of dispatchable work units whose affinity fields indicate, directly or indirectly, said associated service requestor address space; and
dispatcher means for examining each said control block means and enabling dispatch for execution of ready work units having RWE's chained therein, at the priority of the associated service requestor address space.

5,333,320

ELECTRONIC COMPUTER SYSTEM AND PROCESSOR ELEMENT USED WITH THE COMPUTER SYSTEM

Hajime Seki, 4-38, Kita-machi, Dougo, Matsuyama-shi, Ehime-ken, 790, Japan

PCT No. PCT/JP90/00724, § 371 Date Sep. 8, 1992, § 102(e) Date Sep. 8, 1992, PCT Pub. No. WO91/10967, PCT Pub. Date Jul. 25, 1991
PCT Filed Jun. 4, 1990, Ser. No. 923,928
Claims priority, application Japan, Jan. 9, 1990, 2-2146; Apr. 2, 1990, 2-88980
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—650 **5 Claims**



1. A data-driven electronic computer system comprising:

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a control processor;
a packet switched network;
a plurality of processor elements connected to said control processor and said packet switched network, each processor element having an operation control unit for performing arithmetic/logic operations in a data-driven manner and a communication control unit for performing data transfers between said processor elements through said packet switched network in a data-driven manner; and
a plurality of memory devices having one-to-one correspondence with said processor elements, and each being connected to and being directly accessed only by its corresponding one of said processor elements,
whereby, when said control processor broadcasts a program statement arranged in reverse Polish notation, said program statement defining arithmetic/logic operations, each of said processor elements assigned to perform the arithmetic/logic operations defined by said program statement sets the operation control unit to perform said arithmetic/logic operations defined by said program statement in a data-driven manner; whereas each of said processor elements which has direct access to a data corresponding to any operand variable in said program statement sets the communication control unit so that, when said data is obtained, said data will be transferred through said packet switched network to the processor element assigned to perform the arithmetic/logic operation by using said data.

DESIGN PATENTS

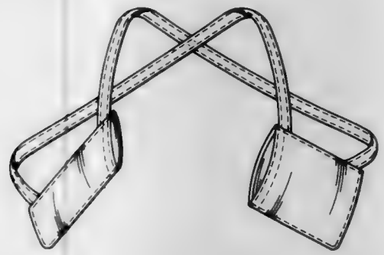
GRANTED JUL. 26, 1994

ERRATA

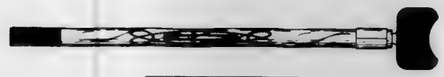
For CLASS	See PATENT NO.
008-428	D 348,985
008-499	D 349,055

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348,971
CRISS CROSS BODY HARNESS WITH WALLET
Donald Jones, Suite 55, 8740 Maple Grove Crescent, Burnaby, British Columbia, Canada V5A 4G5
Filed May 9, 1989, Ser. No. 349,510
Claims priority, application Canada, Sep. 23, 1986, 57295
The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—627



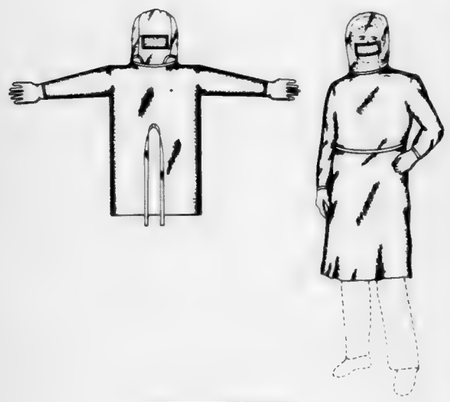
348,972
VELCRO SUSPENDER CLASP FOR PANTS
Herman Rosen, 131 Ringneck Dr., Harrisburg, Pa. 17112
Filed Jan. 15, 1993, Ser. No. 3,718
Term of patent 14 years
U.S. Cl. D2—639



348,973
ATHLETIC PANTS
David H. Stewart, and Sheila C. Lehner, both of New York, N.Y., assignors to Crash Pads, Inc., Hillsboro, Oreg.
Filed Dec. 21, 1992, Ser. No. 2,807
Term of patent 14 years
U.S. Cl. D2—738



348,974
DISPOSABLE MEDICAL GOWN
Eva Whitwill, 2824 Briarhurst, #27, Houston, Tex. 77057
Filed Apr. 13, 1992, Ser. No. 867,624
Term of patent 14 years
U.S. Cl. D2—860



348,975
TREAD SURFACE AND PERIPHERY OF A FOOTWEAR UNIT SOLE
Bruce E. Rogers, Portland, Oreg., and Peter E. Link, Santa Barbara, Calif., assignors to Deckers Corporation, Carpinteria, Calif.
Filed Apr. 26, 1993, Ser. No. 7,532
Term of patent 14 years
U.S. Cl. D2—960



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348,976
SHOE UPPER
Al Van Noy, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 15, 1993, Ser. No. 14,201
Term of patent 14 years
U.S. Cl. D2—969



348,977
SHOE UPPER
Kanae H. Koh, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1993, Ser. No. 14,522
Term of patent 14 years
U.S. Cl. D2—969

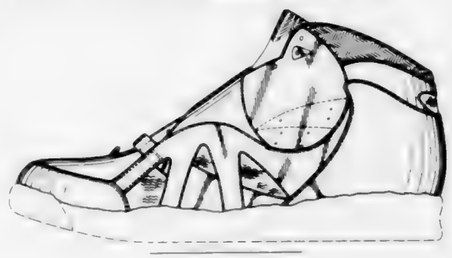


348,978
SHOE UPPER
Eric P. Avar, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Sep. 17, 1993, Ser. No. 13,101
Term of patent 14 years
U.S. Cl. D2—970

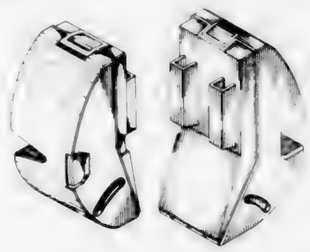


348,979
SHOE UPPER
Pamela S. Greene, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Dec. 3, 1993, Ser. No. 15,964
Term of patent 14 years
U.S. Cl. D2—970





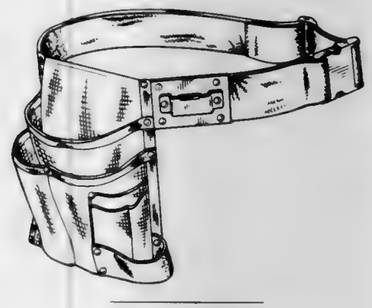
348,980
CARRYING CASE FOR EYEGLASSES
John G. Mathews, Providence, R.I., assignor to Uvex Safety, LLC, Smithfield, R.I.
Filed Apr. 12, 1991, Ser. No. 685,569
Term of patent 14 years
U.S. Cl. D3—265



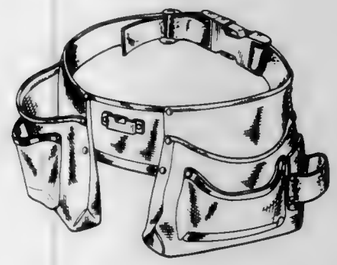
348,981
HORIZONTAL HOLSTER FOR A PAGER
Scott L. Dill, Jeffrey S. King; both of Boynton Beach, William J. Scheid, Coral Springs; all of Fla.
Filed Oct. 19, 1992, Ser. No. 633
Term of patent 14 years
U.S. Cl. D3—218



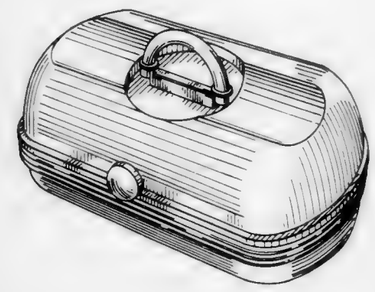
348,982
COMBINED NAIL AND TOOL BELT
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Apr. 14, 1992, Ser. No. 868,588
Term of patent 14 years
U.S. Cl. D3—224



348,983
COMBINED NAIL AND TOOL APRON
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Apr. 14, 1992, Ser. No. 869,420
The portion of the term of this patent subsequent to Jul. 19, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—224



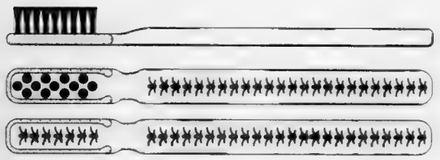
348,984
TRAVEL CASE FOR BEAUTY CARE PRODUCTS
Kathryn A. Gilbert, Lincolnshire, Ill., and Neil Davis, New York, N.Y., assignors to Paris Presents Incorporated, Gurnee, Ill.
Filed Jan. 6, 1993, Ser. No. 3,342
Term of patent 14 years
U.S. Cl. D3—281



348,985
FURNITURE LEG BOOT
Jacqueline Walker, 2091 Webster St., Palo Alto, Calif. 94301
Filed Jan. 27, 1993, Ser. No. 4,050
Term of patent 14 years
U.S. Cl. D8—374

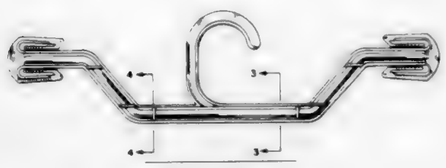


348,986
TOOTHBRUSH
Edwin D. Ross, 18313 NW. Heritage Pkwy. #69, Beaverton, Oreg. 97006
Filed Sep. 11, 1991, Ser. No. 757,508
Term of patent 14 years
U.S. Cl. D4—104

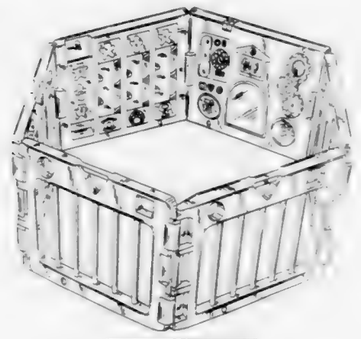


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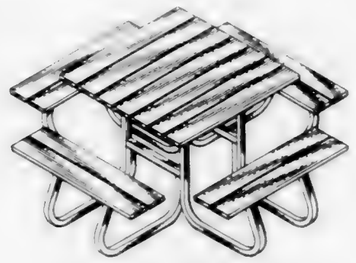
348,987
GARMENT HANGER
Stanley Gouldson, Northport, and Roland Harmer, Centereach, both of N.Y., assignors to Spotless Plastics Pty. Ltd., Australia
Filed Apr. 16, 1992, Ser. No. 870,697
Term of patent 14 years
U.S. Cl. D6—326



348,988
CHILD'S PLAYPEN
Jay M. Bro, Plano, Tex.; James S. Panzarella, N. Kingstown, R.I., and Herbert C. Weiland, Rancho Palos Verdes, Calif., assignors to Today's Kids, Inc., Boonesville, Ark.
Filed Feb. 5, 1993, Ser. No. 4,456
Term of patent 14 years
U.S. Cl. D6—331



348,989
PICNIC TABLE
Charles Pomeroy, and John T. Bycraft, both of South Bend, Ind., assignors to Jack-Post Corporation, Buchanan, Mich.
Filed Aug. 13, 1990, Ser. No. 567,329
Term of patent 14 years
U.S. Cl. D6—337



348,990
CHAIR
John Geiger, Atlanta, Ga., and Douglas S. R. Lind, Mississauga, Canada, assignors to Geiger International, Inc., Atlanta, Ga.
Filed Oct. 7, 1991, Ser. No. 772,038
Term of patent 14 years
U.S. Cl. D6—366



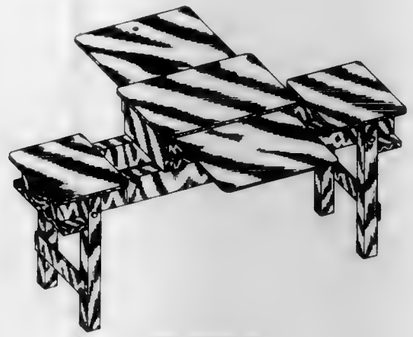
348,991
CHAIR
John Geiger, Atlanta, Ga., and Douglas S. R. Lind, Mississauga, Canada, assignors to Geiger International, Inc., Atlanta, Ga.
Filed Oct. 7, 1991, Ser. No. 772,039
Term of patent 14 years
U.S. Cl. D6—366



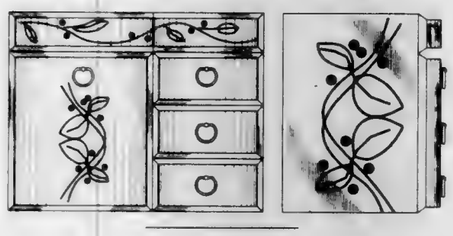
348,992
PORTABLE MULTIPLE USE WORKSTATION
Ronald H. Arima, 1018 Leith Ave., Santa Clara, Calif. 95054
Filed Mar. 26, 1991, Ser. No. 675,480
Term of patent 14 years
U.S. Cl. D6—420



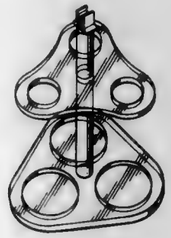
348,993
FOLDING FILLET TABLE
William Cybula, E21022 Partridge Rd., Ringle, Wis. 54471, assignor to William Cybula, Ringle, Wis.
Filed Feb. 1, 1993, Ser. No. 4,304
Term of patent 14 years
U.S. Cl. D6—429



348,994
JEWELRY CABINET
Karan L. Geske, and Jake D. Geske, both of 29 W. 649 Winchester St., Warrenville, Ill. 60555
Filed Jul. 10, 1992, Ser. No. 911,321
Term of patent 14 years
U.S. Cl. D6—434



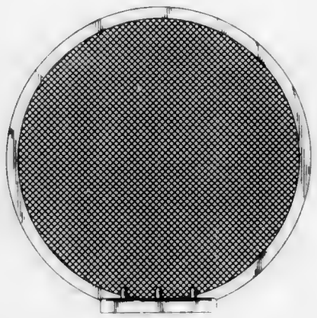
348,995
MERCHANDISING HOLDER FOR WINE BOTTLES
J. Patrick Doré , 67 Oak Springs Dr., San Anselmo, Calif. 94960
Filed Oct. 8, 1992, Ser. No. 235
Term of patent 14 years
U.S. Cl. D6—457



348,996
RACK AND SHELF SYSTEM TO HOLD CLEAR ACRYLIC BULK FOOD CONTAINERS
Michael P. Saunders, 86 Parklane Crescent, London, Ontario, Canada N6K 2T8
Filed Aug. 4, 1992, Ser. No. 924,541
Term of patent 14 years
U.S. Cl. D6—465

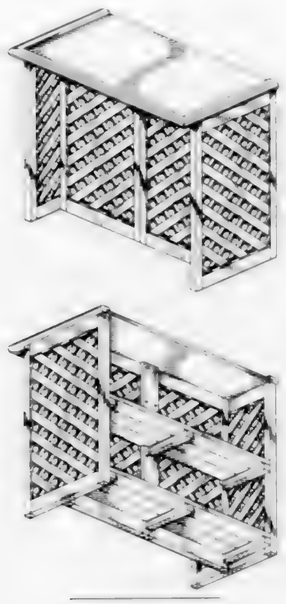


348,997
EARRING STAND
Doris A. Menner, 418 E. Port-Au-Prince, Phoenix, Ariz. 85022
Filed Sep. 8, 1992, Ser. No. 939,641
Term of patent 14 years
U.S. Cl. D6—467



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348,998
ENTERTAINMENT CENTER
Victor K. Siroonian, Fayetteville, Ark., assignor to Leisure Time Products, Inc., Siloam Springs, Ark.
Filed Aug. 13, 1992, Ser. No. 929,803
Term of patent 14 years
U.S. Cl. D6—477



348,999
ROLLING TABLE WITH RECESSED TOP
Claudio Bonazza, Mission Viejo, Calif., assignor to Venice Trading Company, Costa Mesa, Calif.
Filed Oct. 5, 1992, Ser. No. 302
Term of patent 14 years
U.S. Cl. D6—486

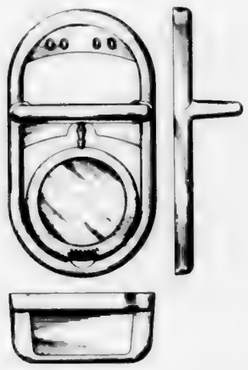


349,000
COMBINED SHELF AND HANGER ROD
Richard D. Rogers; Charles Camilleri, both of St. Louis, and Raymond Wood, Fenton, all of Mo., assignors to Lee Rowan Company, St. Louis, Mo.
Filed Mar. 18, 1993, Ser. No. 6,034
Term of patent 14 years
U.S. Cl. D6—511



349,001
DIAPER DISPENSER
Jane Cibener, 201 E. 25 St. 17A, New York, N.Y. 10010
Filed Mar. 30, 1992, Ser. No. 860,345
Term of patent 14 years
U.S. Cl. D6—515

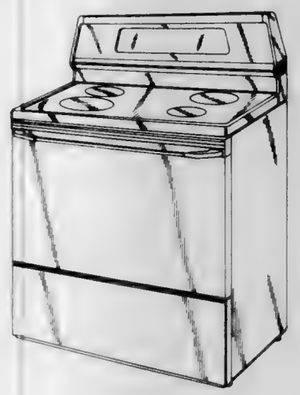
349,002
SHOWER CADDY WITH FOG FREE MIRROR
Jeff Greger, Lansdowne, Pa., assignor to Zenith Products Corporation, Aston, Pa.
Filed Jan. 6, 1993, Ser. No. 3,441
Term of patent 14 years
U.S. Cl. D6—525



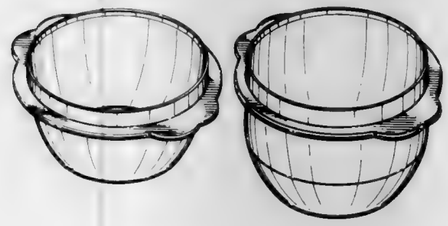
349,003
DISPLAY SHELF
John W. Horton, Houston, and G. E. Kruckeberg, Cypress, both of Tex., assignors to Fit-All Pricing Corporation, Houston, Tex.
Filed Jan. 19, 1993, Ser. No. 3,838
Term of patent 14 years
U.S. Cl. D6—574



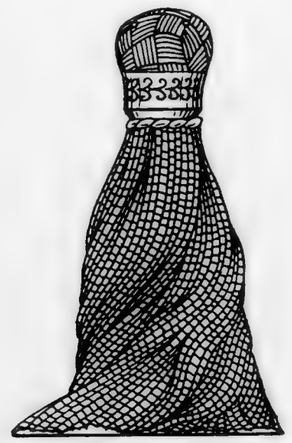
349,004
FREESTANDING RANGE
Ned N. Ivanovich, Brampton, Canada, assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 24, 1992, Ser. No. 933,508
Term of patent 14 years
U.S. Cl. D7—340



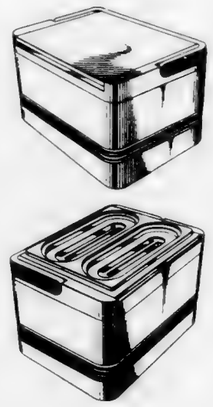
349,005
SERVING BOWL
Morison S. Cousins, Winter Park, and Brian L. Aiken, Orlando, both of Fla., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Jun. 5, 1992, Ser. No. 896,565
Term of patent 14 years
U.S. Cl. D7—543



349,006
SALT SHAKER
Victor Carranza, Mexico City, Mexico, assignor to Godinger Silver Art Co., Ltd., Brooklyn, N.Y.
Division of Ser. No. 724,955, Jul. 2, 1991, Pat. No. Des. 341,722.
This application Aug. 31, 1993, Ser. No. 12,402
Term of patent 14 years
U.S. Cl. D7—594



349,007
ICE CHEST
James J. J. Costello, Houston, Tex., assignor to Igloo Products Corp., Houston, Tex.
Filed Feb. 5, 1993, Ser. No. 4,442
Term of patent 14 years
U.S. Cl. D7—605

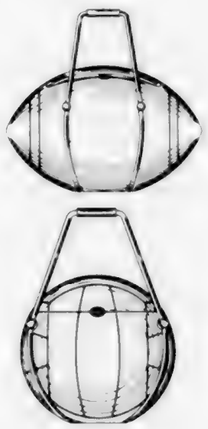


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349,008
SPORT COOLER
Craig S. Minor, 77 Maitland Place, Suite 723, Toronto, Ontario, Canada M4Y 2V6
Filed Feb. 9, 1993, Ser. No. 4,610
Term of patent 14 years
U.S. Cl. D7—606



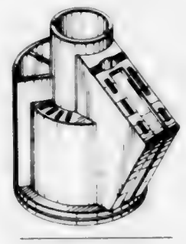
349,009
SPORTS COOLER
Craig S. Minor, 77, Maitland Place, Suite 723, Toronto, Ontario, Canada M4Y 2V6
Filed Feb. 23, 1993, Ser. No. 5,097
Term of patent 14 years
U.S. Cl. D7—606



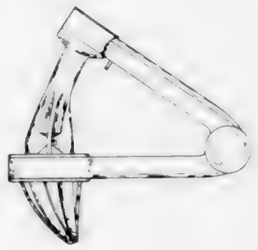
349,010
RETURNABLE BEVERAGE CAN CARRIER
Dennis Johnson, Bloomfield Hills, Mich., assignor to The Simply Convenient Corporation, Bloomfield Hills, Mich.
Filed Nov. 30, 1992, Ser. No. 2,023
Term of patent 14 years
U.S. Cl. D7—619



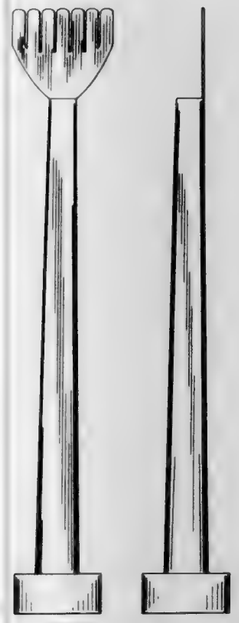
349,011
STORAGE BLOCK FOR KNIVES AND KITCHEN TOOLS, UTENSILS AND GADGETS
Milton L. Cohen, Hewlett Bay Park, and Jeff Siegel, Great Neck, both of N.Y., assignors to Lifetime Hoan Corporation, Brooklyn, N.Y.
Filed Nov. 23, 1992, Ser. No. 1,730
Term of patent 14 years
U.S. Cl. D7—641



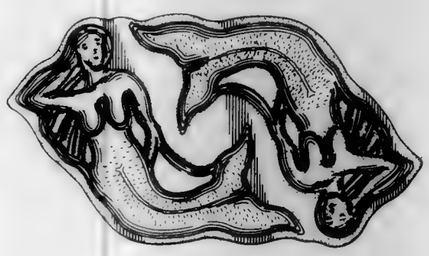
349,012
GARLIC PEELER
David A. Holcomb, Seattle, Wash., assignor to Chef'N Corporation, Seattle, Wash.
Continuation-in-part of Ser. No. 873,459, Apr. 24, 1992, abandoned. This application Feb. 5, 1993, Ser. No. 4,466
Term of patent 14 years
U.S. Cl. D7—666



349,013
B.B.Q. SAUCE APPLICATOR
Peter D. Pratico, Jr., 749 Willow Glen Way, San Jose, Calif. 95125, assignor to Peter D. Pratico, Jr., San Jose, Calif.
Filed Jun. 25, 1992, Ser. No. 904,872
Term of patent 14 years
U.S. Cl. D7—669



349,014
MERMAID FOOD MOLD
Ursula Kaiser, Riverside, Ill., assignor to Kitchen Connection, Inc., Lyons, Ill.
Filed Nov. 16, 1992, Ser. No. 1,486
Term of patent 14 years
U.S. Cl. D7—675



349,015
PRETZEL FOOD MOLD
Ursula Kaiser, Riverside, Ill., assignor to Kitchen Connection, Inc., Lyons, Ill.
Filed Nov. 16, 1992, Ser. No. 1,488
Term of patent 14 years
U.S. Cl. D7—675



349,016
STEGOSAURUS FOOD MOLD
Ursula Kaiser, Riverside, Ill., assignor to Kitchen Connection, Inc., Lyons, Ill.
Filed Nov. 16, 1992, Ser. No. 1,484
Term of patent 14 years
U.S. Cl. D7—676



349,017
TRIPLE FIGURE FOOD MOLD
Ursula Kaiser, Riverside, Ill., assignor to Kitchen Connection, Inc., Lyons, Ill.
Filed Nov. 16, 1992, Ser. No. 1,485
Term of patent 14 years
U.S. Cl. D7—676

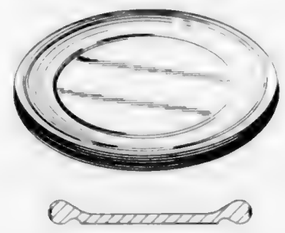


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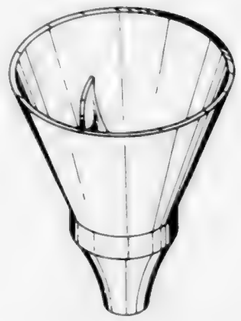
349,018
BEAR FOOD MOLD
Ursula Kaiser, Riverside, Ill., assignor to Kitchen Connection, Inc., Lyons, Ill.
Filed Nov. 16, 1992, Ser. No. 1,487
Term of patent 14 years
U.S. Cl. D7—676



349,019
CUTTING BOARD BOWL
Glenn M. Stinson, 5 Mocking Bird La., Kingfisher, Okla. 73750
Filed Jul. 8, 1991, Ser. No. 726,544
Term of patent 14 years
U.S. Cl. D7—698



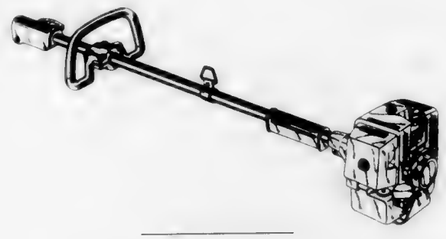
349,020
FUNNEL FOR USE WITH WATER COOLER BOTTLES
Mark A. Swartz, 63 Jameslee Dr., Chambersburg, Pa. 17201
Filed Feb. 5, 1993, Ser. No. 4,484
Term of patent 14 years
U.S. Cl. D7—700



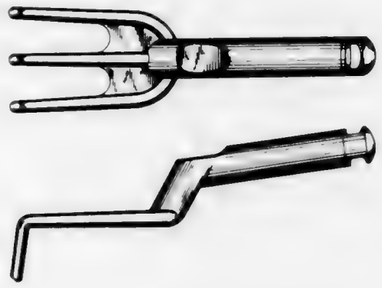
349,021
HAND HELD GARDENING CULTIVATOR
Leroy H. Gutknecht, 5673 Annie Oakley, Las Vegas, Nev. 89120
Continuation of Ser. No. 941,880, Sep. 8, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 12,841
Term of patent 14 years
U.S. Cl. D8—1



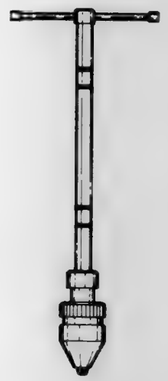
349,022
POWER UNIT SHAFT ATTACHMENT FOR CUTTING IMPLEMENTS
Katsumi Kiyooka, Togane, and Kaori Katoh, Chiba, both of Japan, assignors to Maruyama Mfg. Co., Inc., Tokyo, Japan
Filed Oct. 16, 1991, Ser. No. 777,100
Term of patent 14 years
U.S. Cl. D8—8



349,023
HAND CULTIVATOR
Erkki O. Lindén, Billnäs, and Karl S. Rönnholm, Karis, both of Finland, assignors to Fiskars Consumer Oy Ab, Fiskars, Finland
Filed Jun. 24, 1993, Ser. No. 9,936
Term of patent 14 years
U.S. Cl. D8—13



349,024
COMBINED TAPPING CHUCK AND HANDLE
Otto Doffee, 1259 W. 10th St., Merecd, Calif. 95340
Filed Nov. 13, 1992, Ser. No. 1,423
Term of patent 14 years
U.S. Cl. D8—14



349,025
SOCKET DRIVE TOOL
Ernest J. Romero, 3517 N. Purdue Ave., Fresno, Calif. 93727
Filed Sep. 10, 1992, Ser. No. 941,644
Term of patent 14 years
U.S. Cl. D8—25



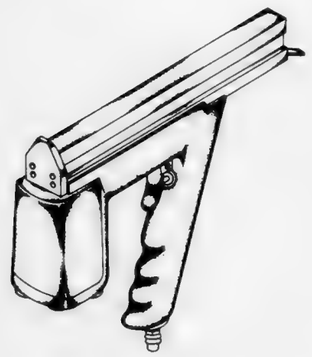
349,026
AUTOMOTIVE EXHAUST CLAMP INSTALLATION AND REMOVAL TOOL
Madison L. Smith, 150 Mangham Rd., Griffin, Ga. 30223
Filed Aug. 20, 1992, Ser. No. 931,546
Term of patent 14 years
U.S. Cl. D8—51



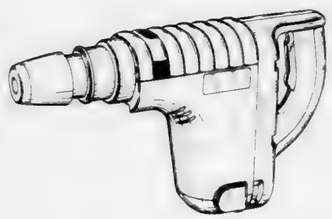
349,027
MINIATURE BUTTERFLY IMPACT WRENCH
Osamu Izumisawa, Tokyo, Japan, assignor to Shinano Pneumatic Industries, Inc., Kamiminochi, Japan
Filed Apr. 30, 1993, Ser. No. ',866
Term of patent 14 years
U.S. Cl. D8—61



349,028
STAPLE GUN
Yeong-Chang Sheu, No. 26, Shing Chaan Road, Nei Hu Village, Luh Guu Hsiang, Nantou Hsien, Taiwan
Filed Jul. 9, 1992, Ser. No. 910,989
Term of patent 14 years
U.S. Cl. D8—68



349,029
PORTABLE ELECRTRIC HAMMER DRILL
Naoki Matsunaga, Milan, Italy; Hideaki Hasegawa, Funabashi; Yoshihiko Watanabe, Ibaraki, both of Japan, and Toshiaki Takagi, Katsuta, Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan
Filed May 18, 1993, Ser. No. 8,453
Claims priority, application Japan, Nov. 21, 1992, 4-34401
Term of patent 14 years
U.S. Cl. D8—69

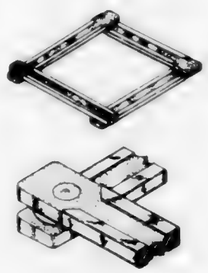


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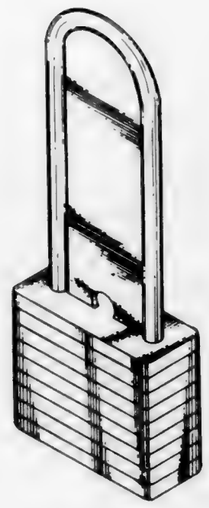
349,030
DOOR CLOSING HANDLE
Philip J. Chatterton, 915 Middle River Dr., #103-B, Ft. Lauderdale, Fla. 33304-3585, and C. Lee Holloway, 4501 SW. 54th St., Ft. Lauderdale, Fla. 33314
Filed Mar. 5, 1993, Ser. No. 5,576
Term of patent 14 years
U.S. Cl. D8—307



349,031
BAR LINKAGE ASSEMBLY FOR USE WITH A PADLOCK FOR SECURING A BICYCLE WHEEL
Dennis F. Smith, Rte. 1, Box 255, Boyd, Wis. 54726
Filed Feb. 24, 1992, Ser. No. 840,695
Term of patent 14 years
U.S. Cl. D8—333



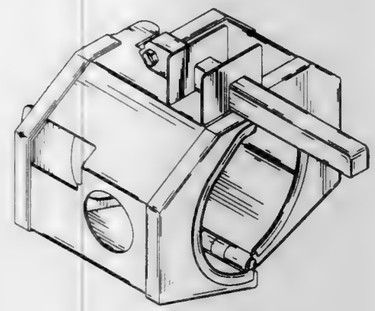
349,032
VEHICLE ACCELERATOR PEDAL DISABLING DEVICE
Melvin Gilbert, 9710 S. Genoa, Chicago, Ill. 60643
Filed Jan. 29, 1993, Ser. No. 4,196
Term of patent 14 years
U.S. Cl. D8—343



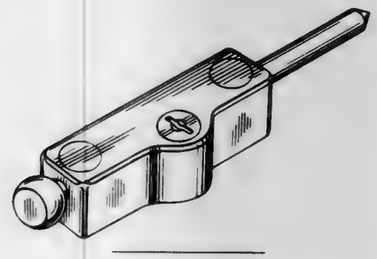
349,033
SAFETY LOCK FOR AUTOMOBILE GEAR SHIFTING LEVER
Kuen-Hea Lu, No. 23, Jang-Yuan Rd., Charng Chuen Village, Changhua Hsien, Taiwan
Filed Mar. 2, 1993, Ser. No. 5,370
Term of patent 14 years
U.S. Cl. D8—331



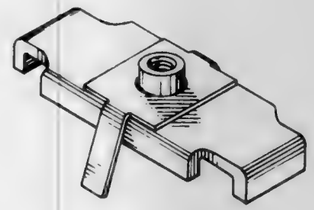
349,034
STEERING COLUMN LOCK
Hugh J. Webster, 32565 Jefferson Dr., Solon, Ohio 44139
Filed Oct. 13, 1993, Ser. No. 14,138
Term of patent 14 years
U.S. Cl. D8—333



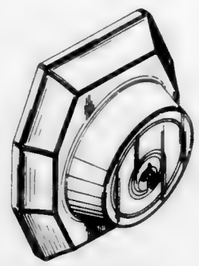
349,035
SECURITY BOLT
Murray J. Baber, Auckland, New Zealand, assignor to M. J. Baber & Company Limited, Auckland, New Zealand
Filed Jul. 2, 1992, Ser. No. 909,411
Term of patent 14 years
U.S. Cl. D8—339



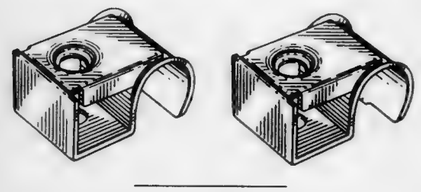
349,036
TRUCK CAP SECURING MOUNT FOR INSERTION IN THE STAKE HOLES IN THE TOP RAIL OF A PICKUP TRUCK
Donald S. Egigian, Fullerton, Calif., assignor to CEI, Brea, Calif.
Filed Jul. 6, 1992, Ser. No. 909,446
Term of patent 14 years
U.S. Cl. D8—349



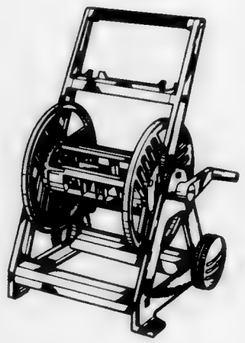
349,037
DOOR LOCK PLATE
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Aug. 8, 1991, Ser. No. 742,658
Term of patent 14 years
U.S. Cl. D8—350



349,038
CABLE CLIP
Isaac Sachs, 283 Newton, Dollard-Des-Ormeaux, Quebec, Canada H9A 3G1
Continuation-in-part of Ser. No. 856,933, Mar. 24, 1992, Pat. No. Des. 342,013. This application Feb. 9, 1993, Ser. No. 4,622
Term of patent 14 years
U.S. Cl. D8—356

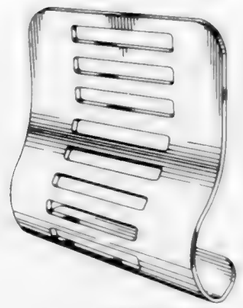


349,039
HOSE REEL
Sidney J. Goodman, Paramus, N.J., and John Maliskas, Newtown, Conn., assignors to Melnor Inc., Moonachie, N.J.
Filed May 19, 1992, Ser. No. 886,016
Term of patent 14 years
U.S. Cl. D8—359



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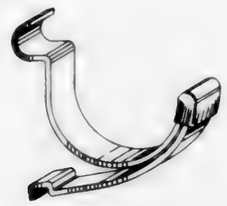
349,040
HOOK
Michael Moliner, Montreal, Canada, assignor to SportRack Canada Inc., Granby, Canada
Filed Dec. 22, 1992, Ser. No. 2,874
Claims priority, application Canada, Sep. 1, 1992, 01-09-92-5
Term of patent 14 years
U.S. Cl. D8—367



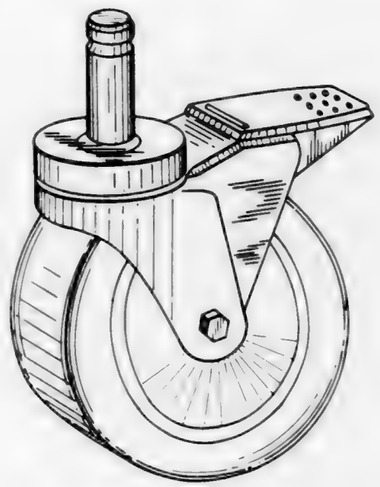
349,041
FLOWER POT HANGER
Robert M. Wical, 705 S. East St., Culpeper, Va. 22701
Filed Nov. 18, 1992, Ser. No. 1,552
Term of patent 14 years
U.S. Cl. D8—373



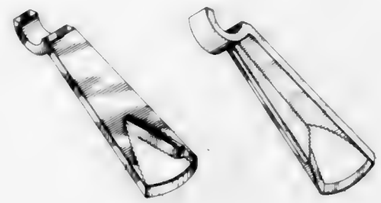
349,042
PEG-BOARD SUPPORT DEVICE
Leo F. Costello, 7404 E. 11th St., Indianapolis, Ind. 46219
Filed Apr. 27, 1993, Ser. No. 7,621
Term of patent 14 years
U.S. Cl. D8—373



349,043
CASTER
Bradley J. Carlson, Wilkes-Barre, and David A. Reppert, Brodheadsville, both of Pa., assignors to Metro Industries, Inc., Reno, Nev.
Filed Jan. 28, 1993, Ser. No. 4,160
Term of patent 14 years
U.S. Cl. D8—375



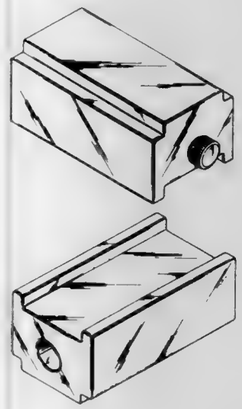
349,044
TABLE TOP SUPPORT ARM
Bruce Burdick, and Susan K. Burdick, both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Feb. 28, 1992, Ser. No. 841,754
Term of patent 14 years
U.S. Cl. D8—380



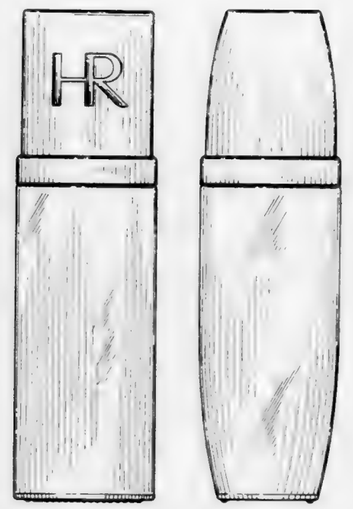
349,045
PUMP CONTAINER
Paul Schmitt, New York, N.Y., assignor to L'Oreal, France
Filed Dec. 23, 1992, Ser. No. 2,936
Term of patent 14 years
U.S. Cl. D9—300



349,046
COMBINATION LIQUID CONTAINER AND TOY BUILDING BLOCK
Gary C. Brown, 1691 Highway 19, South, Meansville, Ga. 30256
Filed Mar. 4, 1993, Ser. No. 5,441
Term of patent 14 years
U.S. Cl. D9—307



349,047
SPRAY BOTTLE
Marcel Buchet, Paris, France, assignor to Helena Rubinstein, S.A., France
Filed Oct. 20, 1992, Ser. No. 610
Term of patent 14 years
U.S. Cl. D9—332

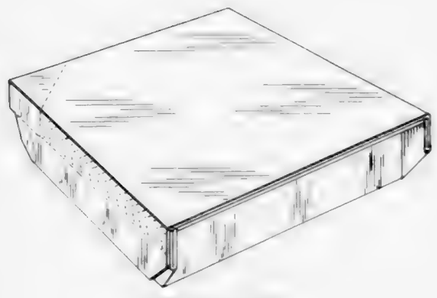


349,048
STRAW PACKAGE
Per Harry Hjalmarsson, Bjärred, Sweden, assignor to Tubex AB, Furulund, Sweden
Filed Mar. 13, 1991, Ser. No. 668,472
Claims priority, application Sweden, Sep. 13, 1990, 90 1944
Term of patent 14 years
U.S. Cl. D9—337



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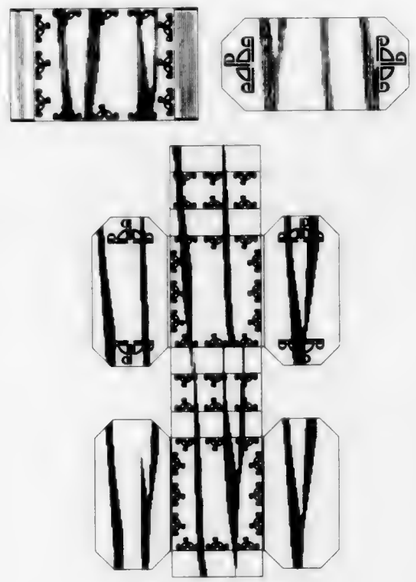
349,049
OVEN HEATABLE FOOD PACKAGE
Richard F. Gulliver, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.
Filed Feb. 1, 1993, Ser. No. 6,182
The portion of the term of this patent subsequent to Jul. 19, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—416



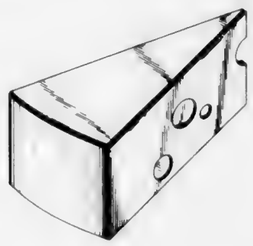
349,050
SANDWICH CONTAINER
Calvin S. Krupa, Plymouth, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Jun. 14, 1993, Ser. No. 9,434
Term of patent 14 years
U.S. Cl. D9—425



349,051
CARTON
Patrick R. Brown, Jr., 11615 Highway 99 - Apt. B-203, Everett, Wash. 98204
Filed May 22, 1992, Ser. No. 886,493
Term of patent 14 years
U.S. Cl. D9—430



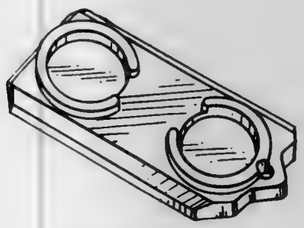
349,052
PACKAGE FOR FOOD
Steven Goldstein, Vesenaz, and Christian Belce, Veyrier, both of Switzerland, assignors to Axions S.A., Geneva, Switzerland
Filed Jul. 29, 1992, Ser. No. 922,074
Claims priority, application World Int. Prop. O., Mar. 12, 1992, DM/022 278
Term of patent 14 years
U.S. Cl. D9—430



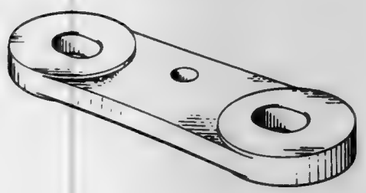
349,053
CONTAINING BOX
Vittorio Pasotti, Via 24 Maggio 89, 26022 Castelverde Cremona, Italy
Filed Aug. 10, 1992, Ser. No. 926,219
Claims priority, application Italy, Apr. 7, 1992, MI92 0 000212
Term of patent 14 years
U.S. Cl. D9—430



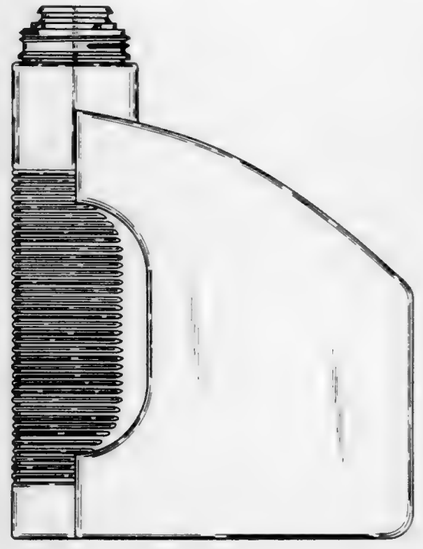
349,054
HOUSING FOR INTERCHANGEABLE MODULAR COMPONENTS, SUCH AS COMPASSES OR THERMOMETERS
Gregory L. Cross, and Wendell C. Cross, both of Arvada, Colo., assignors to Sun Company, Inc., Arvada, Colo.
Filed Sep. 8, 1992, Ser. No. 940,798
Term of patent 14 years
U.S. Cl. D9—455



349,055
CERAMIC BELT LINK
William M. Hawkins, Munhall; Thomas G. Gasbarre, DuBois; Bruce C. Cole, Ridgway, all of Pa., and Howard Sanderow, Dayton, Ohio, assignors to Ceramic Furnace Belt, Inc., St. Marys, Pa.
Filed Nov. 15, 1991, Ser. No. 792,731
Term of patent 14 years
U.S. Cl. D8—499



349,056
FLUID-DISPENSING CONTAINER
Luis G. Jaramillo, Paris, France, assignor to Societe Anonyme: TOTAL, Puteaux, France
Filed Aug. 19, 1992, Ser. No. 932,029
Claims priority, application France, Feb. 19, 1992, 921043
Term of patent 14 years
U.S. Cl. D9—523



349,057
CONTAINER FOR COSMETICS
Jean-Michel Farce, Paris, France, assignor to Reckitt & Colman, Massy, France
Filed Aug. 19, 1992, Ser. No. 932,416
Claims priority, application France, Feb. 27, 1992, 92-1244
Term of patent 14 years
U.S. Cl. D9—523



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349,058
CONTAINER FOR COSMETICS
Jean-Michel Farce, Paris, France, assignor to Reckitt & Colman, Massy, France
Filed Aug. 19, 1992, Ser. No. 932,417
Claims priority, application France, Feb. 27, 1992, 92 1244
Term of patent 14 years
U.S. Cl. D9—523



349,059
BOTTLE
Jon Zogg, Dobbs Ferry, and Adam Sherman, Brooklyn, both of N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 8, 1992, Ser. No. 866,242
Term of patent 14 years
U.S. Cl. D9—542



349,060
CLOCK
Katsumi Shimamura, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Sep. 28, 1992, Ser. No. 954,052
Term of patent 14 years
U.S. Cl. D10—28



349,061
WRIST WATCH
Takashi Morishima, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,471
Claims priority, application Japan, Mar. 31, 1992, 4-9071
Term of patent 14 years
U.S. Cl. D10—38



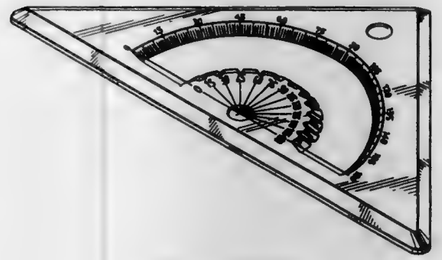
349,062
WRIST WATCH
Atsushi Goto, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,476
Claims priority, application Japan, Jan. 13, 1992, 4-243
Term of patent 14 years
U.S. Cl. D10—39



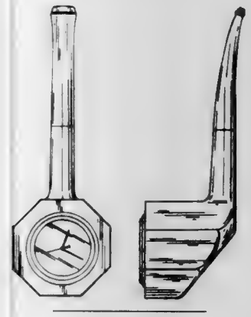
349,063
WRIST WATCH
Shigeru Hanagata, Kawasaki, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,478
Term of patent 14 years
U.S. Cl. D10—39



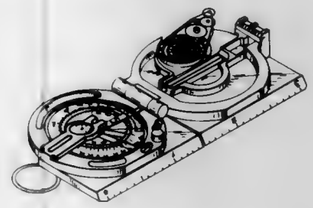
349,064
TRIANGLE
Shu-San Wang, 3F, NO. 5, Alley 21, Lane 136, Sec. 2, Min-Chih Rd., I-Hsueh Tsuen, Tai-San Hsiang, Taipei Hsien, Taiwan
Filed Sep. 9, 1993, Ser. No. 12,771
Term of patent 14 years
U.S. Cl. D10—64



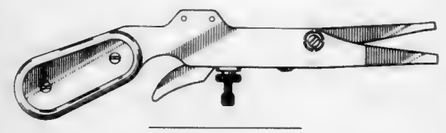
349,065
CLOCK
Timothy M. West, 1588 Grayling Ct., Columbus, Ohio 43235, and James E. Seman, 4860 Drayton Rd., Hilliard, Ohio 43026
Filed Feb. 24, 1992, Ser. No. 840,692
Term of patent 14 years
U.S. Cl. D10—6



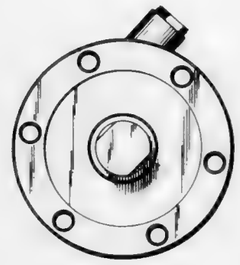
349,066
COMPASS
Song-Sen Su, No. 25, An Ho Rd., Hsi Tun Area, Taichung City, Taiwan
Filed Feb. 26, 1993, Ser. No. 5,342
Term of patent 14 years
U.S. Cl. D10—68



349,067
INTERNAL CALIPER
Kam K. Li, 3387 Hunter Dr., North Olmsted, Ohio 44070-1264
Filed Mar. 19, 1993, Ser. No. 5,968
Term of patent 14 years
U.S. Cl. D10—79



349,068
LOAD SENSING DEVICE
Mikio Naganuma, Yokohama, Japan, assignor to TEAC Corporation, Tokyo, Japan
Filed Mar. 8, 1993, Ser. No. 5,608
Claims priority, application Japan, Sep. 10, 1992, 4-27018
Term of patent 14 years
U.S. Cl. D10—83

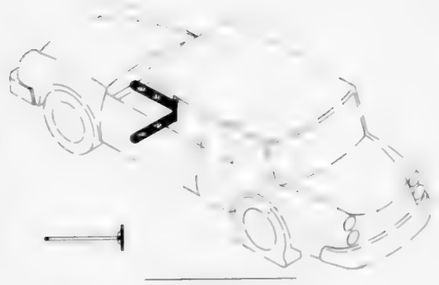


349,069
HAND HELD PERSONAL SECURITY ALARM
Greg Langley, 1262 W. 15th St., N. Vancouver, BC V7P 1N2, Canada
Filed Jun. 24, 1993, Ser. No. 9,804
Term of patent 14 years
U.S. Cl. D10—106

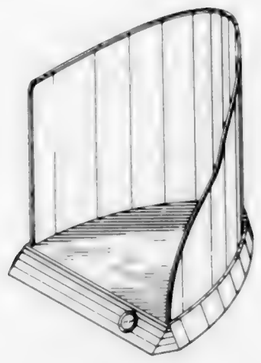


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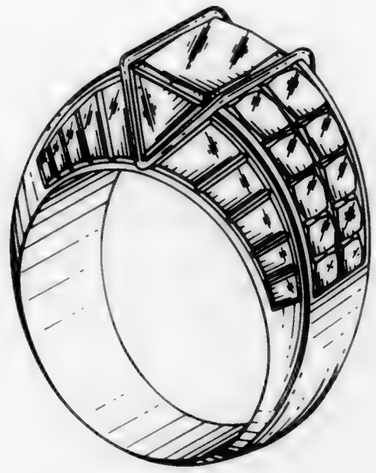
349,070
WARNING REFLECTOR FOR A DISABLED VEHICLE
Wilbur E. Altman, 2208 Knickerbocker Dr., Charlotte, N.C. 28212
Filed Apr. 7, 1993, Ser. No. 7,051
Term of patent 14 years
U.S. Cl. D10—111



349,071
TABLE SERVICE SIGNALLING LIGHT FOR RESTAURANTS
Kyle D. Fields, El Dorado Hills, and James P. Dudley, Sacramento, both of Calif., assignors to Abdul Hafeez, Loomis, Calif.
Filed Dec. 31, 1992, Ser. No. 3,184
Term of patent 14 years
U.S. Cl. D10—114



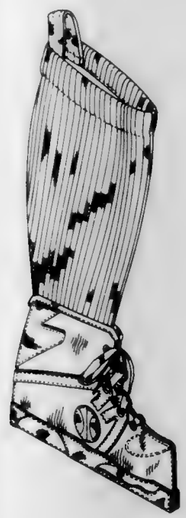
349,072
JEWELRY RING
Betzalel Ambar, 4359 Ponce Ave., Los Angeles, Calif. 91602
Filed Nov. 23, 1992, Ser. No. 1,762
Term of patent 14 years
U.S. Cl. D11—34



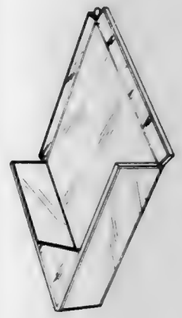
349,073
CHRISTMAS STOCKING
Amy Frampton, 1051 Cross St., Anoka, Minn. 55303, and Mary Hamacher, 4755 162nd La. NW., Anoka, Minn. 55304
Filed Mar. 25, 1993, Ser. No. 6,371
Term of patent 14 years
U.S. Cl. D11—126



349,074
CHRISTMAS STOCKING
Amy Frampton, 1051 Cross St., Anoka, Anoka County, Minn. 55303, and Mary Hamacher, 4755 162nd La. NW., Anoka, Anoka County, Minn. 55304
Filed Mar. 25, 1993, Ser. No. 6,392
Term of patent 14 years
U.S. Cl. D11—126



349,075
AIR PLANT HOLDER
Lambert H. Hopkins, 2320 Spring Blvd., Eugene, Oreg. 97403
Filed Jan. 8, 1993, Ser. No. 3,632
Term of patent 14 years
U.S. Cl. D11—143



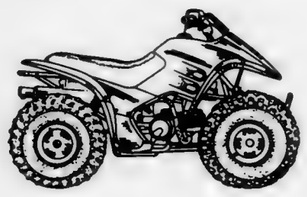
349,076
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application Oct. 18, 1991, Ser. No. 782,237
Term of patent 14 years
U.S. Cl. D11—164



349,077
BINGO BANNER
Robert F. Catuto, 6765 Crescent Cove Dr., Saint Augustine, Fla. 32086
Filed Dec. 23, 1992, Ser. No. 3,066
Term of patent 14 years
U.S. Cl. D11—166

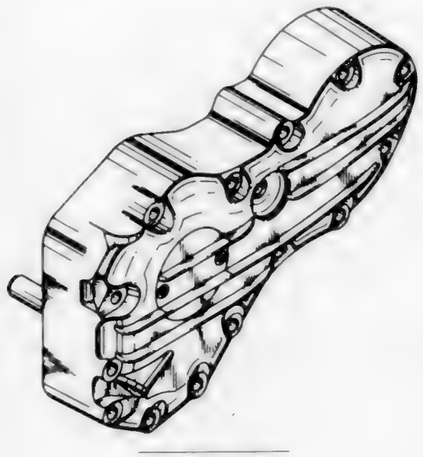


349,078
FOUR WHEEL CYCLE
Kazutaka Kimura, Omiya, and Kazuhiko Yokoyama, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 18, 1991, Ser. No. 778,720
Term of patent 14 years
U.S. Cl. D12—107



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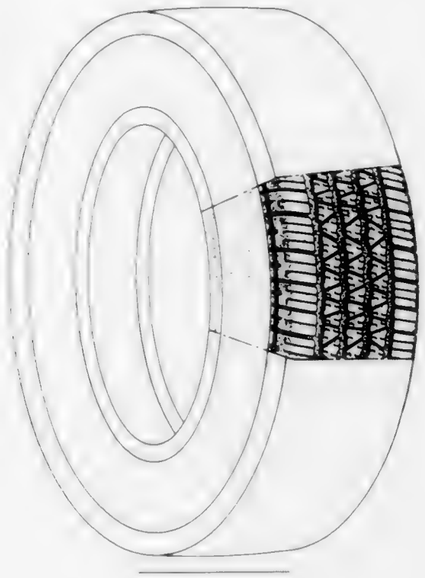
349,079
SIMULATED CAM AND GENERATOR COVER FOR MOTORCYCLE
Lawayne L. Matthies, 809 Manor St., Grand Prarie, Tex. 75050
Filed Sep. 1, 1992, Ser. No. 938,478
Term of patent 14 years
U.S. Cl. D12—126



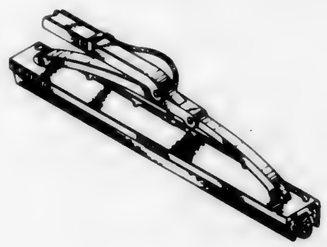
349,080
TIRE TREAD
Robert P. Loser, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 595,170, Oct. 9, 1990, abandoned. This application Jan. 30, 1992, Ser. No. 828,593
The portion of the term of this patent subsequent to Aug. 11, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—146



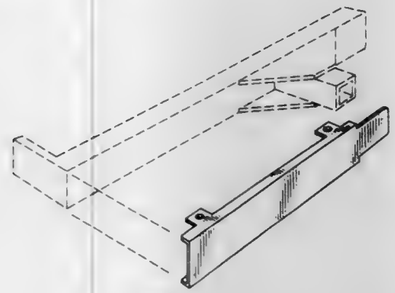
349,081
TIRE
William A. Downey, Simpsonville, and Richard T. Janczak, Greer, both of S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed May 26, 1992, Ser. No. 889,110
The portion of the term of this patent subsequent to Oct. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—147



349,082
COMBINED WINDSHIELD WIPER AND WASHER
Earl E. Brabender, OEC NAS Fallon, Fallon, Nev. 89496
Filed Aug. 30, 1993, Ser. No. 12,283
Term of patent 14 years
U.S. Cl. D12—219



349,083
TRAILER HITCH COVER
David E. Hall, 2085 S. Sylvan, West Linn, Oreg. 97068
Filed May 27, 1993, Ser. No. 4,628
Term of patent 14 years
U.S. Cl. D12—162



349,084
AUTO HITCH GUIDE
David Huffman, and Keith Vanderpool, both of 1502 Patterson St., Flatwoods, Ky. 41139
Filed Apr. 9, 1993, Ser. No. 6,871
Term of patent 14 years
U.S. Cl. D12—162



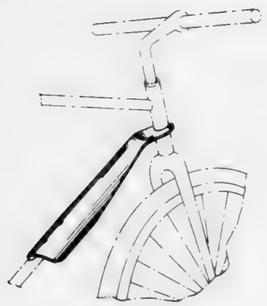
349,085
REAR WIND DEFLECTOR
Donald W. Borgmann, and Paul D. Borgmann, both of Chaska, Minn., assignors to Laser Engineering Inc., Chaska, Minn.
Filed Nov. 24, 1992, Ser. No. 1,783
Term of patent 14 years
U.S. Cl. D12—181



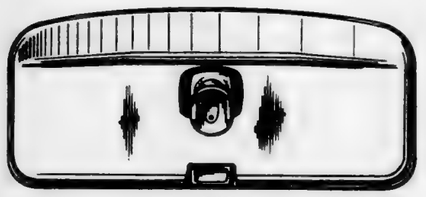
349,086
MOTORCYCLE FAIRING
Kent A. Riches, 3052 Industry, Suite 109, Oceanside, Calif. 92054
Filed Mar. 1, 1993, Ser. No. 5,294
Term of patent 14 years
U.S. Cl. D12—182



349,087
MUD GUARD FOR TRAIL BIKE
Jeff Rowley, 445 Hill St., Green Lake, Wis. 54941
Filed Jul. 2, 1992, Ser. No. 908,235
Term of patent 14 years
U.S. Cl. D12—186



349,088
DUAL REARVIEW MIRROR
Christopher McColgan, Quyon, Canada, assignor to The Lanechanger, Inc., Quebec, Canada
Filed Jun. 16, 1993, Ser. No. 9,614
Term of patent 14 years
U.S. Cl. D12—187



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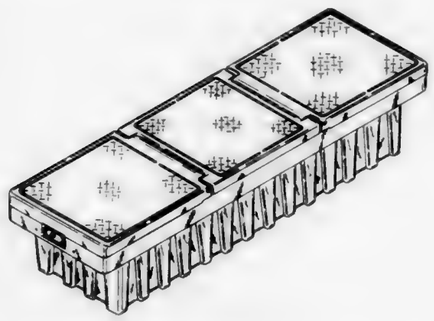
349,089
VEHICLE WHEEL CENTER CAP
Alberto Echazabel, Hialeah Gardens, Fla., and Claudio Bernoni, Albano Terma, Italy, assignors to Motoring Accessries, Inc., Miami, Fla.
Filed Jan. 27, 1993, Ser. No. 4,109
Term of patent 14 years
U.S. Cl. D12—213



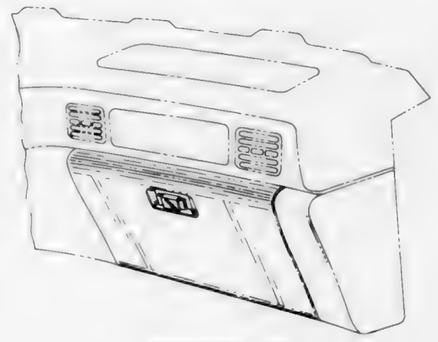
349,090
RECREATIONAL BOAT STERN
Thomas D. Wenstadt, Cadillac, Mich., assignor to Outboard Marine Corporation, Del.
Continuation-in-part of Ser. No. 824,250, Jan. 21, 1992, abandoned. This application May 17, 1993, Ser. No. 9,601
Term of patent 14 years
U.S. Cl. D12—318



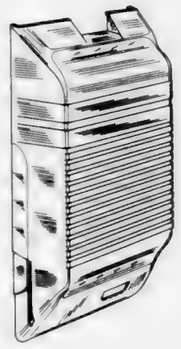
349,091
TRUCK BED TOOL BOX
Thomas Dickinson, St. Louis, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Filed Apr. 9, 1993, Ser. No. 6,952
Term of patent 14 years
U.S. Cl. D12—406



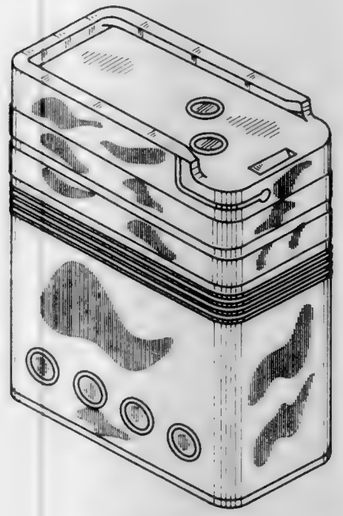
349,092
VEHICLE GLOVE BOX DOOR
Bernard G. Snyder, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 29, 1993, Ser. No. 6,519
Term of patent 14 years
U.S. Cl. D12—415



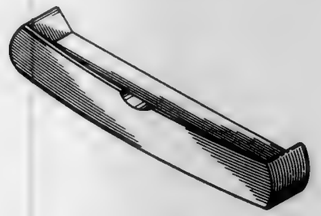
349,093
CELLULAR TELEPHONE BATTERY
Jon K. Alexandres; Gary J. Downs, and William R. Peterson, all of Mason City, Iowa, assignors to Alexander Manufacturing Company, Mason City, Iowa
Filed Feb. 11, 1992, Ser. No. 833,898
Term of patent 14 years
U.S. Cl. D13—103



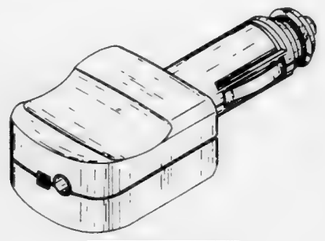
349,094
BATTERY HOUSING FOR A COMMUNICATION TRANSCEIVER
Jon K. Alexandres; Gary J. Downs, and William R. Peterson, all of Mason City, Iowa, assignors to Alexander Manufacturing Company, Mason City, Iowa
Filed Jun. 9, 1992, Ser. No. 895,394
Term of patent 14 years
U.S. Cl. D13—103



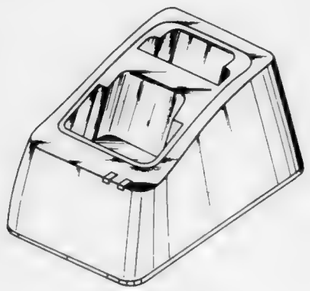
349,095
BATTERY PACK FOR PORTABLE COMMUNICATOR/COMPUTER
Harold J. Gorenz, Jr.; Roger W. Ady, both of Lisle; William R. Groves, Naperville; C. Patrick Richardson, Barrington, all of Ill.; Mark B. Friesen, Palo Alto, Calif.; Hartmut Esslinger, Los Gatos, Calif., and Daniel K. Harden, Palo Alto, Calif., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 2, 1993, Ser. No. 10,381
Term of patent 14 years
U.S. Cl. D13—103



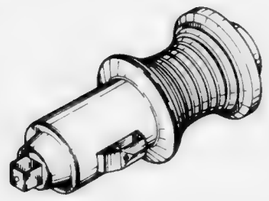
349,096
BATTERY CHARGER FOR A MOBILE PHONE CONNECTABLE TO A CIGARETTE LIGHTER SOCKET
Tapani Hyvönen, Turku, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Apr. 14, 1992, Ser. No. 869,224
Claims priority, application Finland, Oct. 15, 1991, 838/91
Term of patent 14 years
U.S. Cl. D13—107



349,097
BATTERY CHARGER FOR A CELLULAR PHONE
Hirotoshi Watanabe, Tokyo, Japan, assignor to Funai Electric Engineering Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1992, Ser. No. 900,342
Claims priority, application Japan, Dec. 20, 1991, 3-38261
Term of patent 14 years
U.S. Cl. D13—108

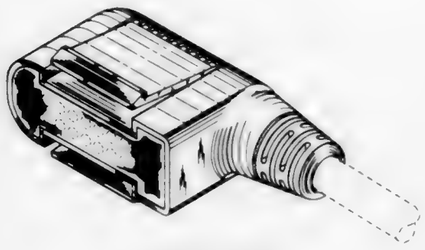


349,098
ELECTRIC PLUG
Tit W. Poon, Hong Kong, Hong Kong, assignor to Flying Dragon Development Limited, Chai Wan, Hong Kong
Filed Mar. 10, 1993, Ser. No. 5,730
Claims priority, application United Kingdom, Dec. 1, 1992, 2027492
Term of patent 14 years
U.S. Cl. D13—144

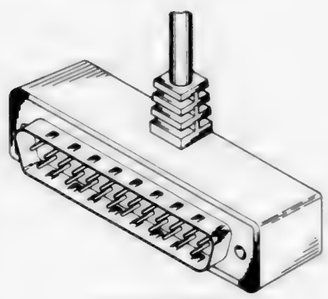


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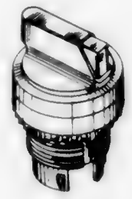
349,099
REMOTE ELECTRICAL CONNECTOR
William H. Robertson, Jr., Plantation, and Masaru Tokiyama, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 18, 1993, Ser. No. 5,961
Term of patent 14 years
U.S. Cl. D13—147



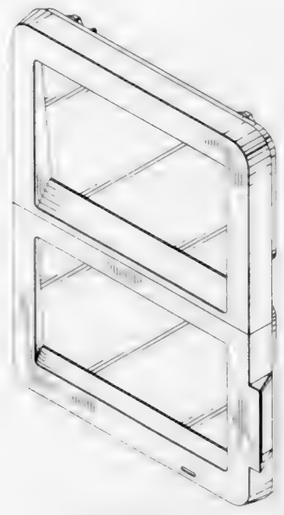
349,100
ELECTRICAL CONNECTOR
Jeffrey C.-P. Lo, San Marino, Calif., assignor to Unicom Electric, Inc., Santa Fe Springs, Calif.
Filed Apr. 23, 1993, Ser. No. 7,461
Term of patent 14 years
U.S. Cl. D13—147



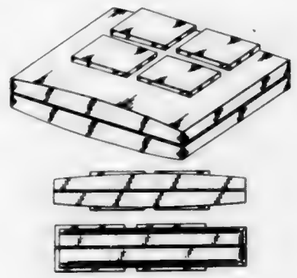
349,101
ELECTRICAL SWITCH ACTUATOR
Maurice Schaeffer, Strasbourg, France, assignor to BACO Constructions Electriques - Anct. Baumgarten S.A., France
Filed Jan. 13, 1992, Ser. No. 819,920
Term of patent 14 years
U.S. Cl. D13—174



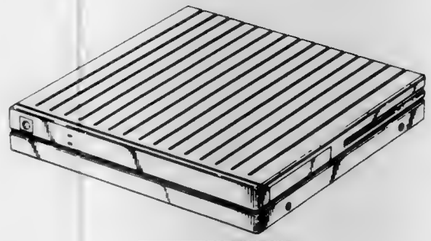
349,102
FRONT COVER PORTION OF A MICROPROCESSOR CONTROLLER HOUSING
David B. Ziegler, Eden Prairie; Steven C. Eberly, Bloomington; Darrel J. Hokanson, St. Louis Park, and Peter B. Allard, Minnetonka, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.
Filed Oct. 7, 1991, Ser. No. 772,021
Term of patent 14 years
U.S. Cl. D14—100



349,103
PORTABLE COMPUTER HOUSING
Joerg Ratzlaff, Altensteig, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 15, 1992, Ser. No. 914,377
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1992, M 9200318
Term of patent 14 years
U.S. Cl. D14—100



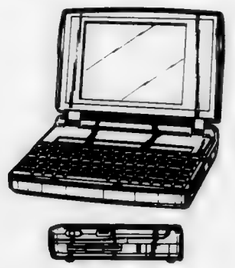
349,104
HOUSING FOR A COMPUTER WORKSTATION
Israel Wetrin, London, England, assignor to Elonex PLC, London, England
Filed Feb. 24, 1993, Ser. No. 5,144
Claims priority, application United Kingdom, Aug. 27, 1992, 2025295
Term of patent 14 years
U.S. Cl. D14—100



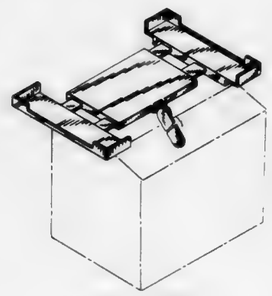
349,105
COMPUTER
Shimon Okada; Masaharu Sawatani; Nobuaki Iwabuchi; Yuka Fukagawa, and Katsuo Fukuyama, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 13, 1992, Ser. No. 819,930
Claims priority, application Japan, Jul. 19, 1991, 3-21599
The portion of the term of this patent subsequent to Oct. 19, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—106



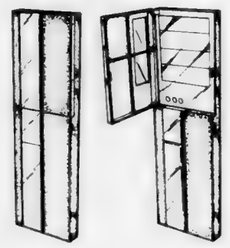
349,106
ELECTRONIC COMPUTER
Masaaki Iino, Yokohama, and Osamu Kondo, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Dec. 9, 1992, Ser. No. 2,462
Claims priority, application Japan, Jul. 29, 1992, 4-22479
Term of patent 14 years
U.S. Cl. D14—106



349,107
COMPUTER KEYBOARD HOLDER
Adam B. Rude, 165 W. 66th St., New York, N.Y. 10023, and George Schmidt, 11 Melrose La., Douglaston, N.Y. 11363, assignors to Adam B. Rude, New York, N.Y.
Filed Mar. 13, 1992, Ser. No. 850,786
Term of patent 14 years
U.S. Cl. D14—114



349,108
COMPUTER FRONT PANEL
Chia-Yao Chang, and Kuo-Lin Tung, both of 1 F., No. 2, Lane 216, Su Wei Rd., Taipei, Taiwan
Filed Sep. 14, 1992, Ser. No. 943,219
Term of patent 14 years
U.S. Cl. D14—115

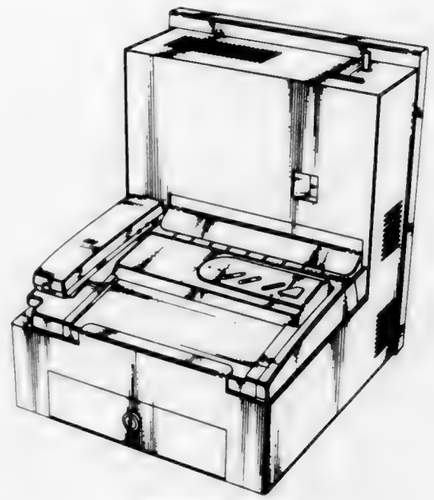


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349,109
HAND HELD BAR CODE SCANNER
James H. Karlin, Fairport, N.Y., assignor to PSC, Inc., Webster, N.Y.
Filed Oct. 2, 1992, Ser. No. 74
Term of patent 14 years
U.S. Cl. D14—116



349,111
COIN OPERATED FACSIMILE MACHINE
Harmon I. Cogert, 4614 Nomad Dr., Woodland Hills, Calif. 91367
Filed Mar. 5, 1992, Ser. No. 847,811
Term of patent 14 years
U.S. Cl. D14—118



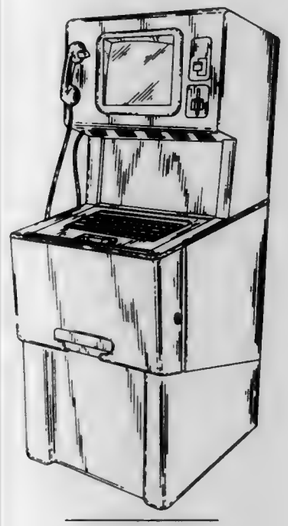
349,112
HAND-HELD TELEPHONE
Jouko Tattari, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Jun. 12, 1992, Ser. No. 896,358
Term of patent 14 years
U.S. Cl. D14—138



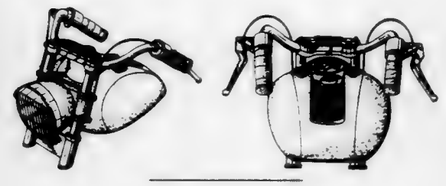
349,110
ELECTRONIC VIDEO SCANNER
Junji Ohno, Mitaka, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 2,905
Term of patent 14 years
U.S. Cl. D14—116



349,113
PUBLIC COMMUNICATION TERMINAL
John C. Massey, Olathe, and Daniel J. Toughey, Shawnee, both of Kans., assignors to Touchfax Information Systems, Inc., Lenexa, Kans.
Continuation-in-part of Ser. No. 691,100, Apr. 25, 1991, Pat. No. D. 331,055. This application Oct. 13, 1992, Ser. No. 379
The portion of the term of this patent subsequent to Nov. 17, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—146



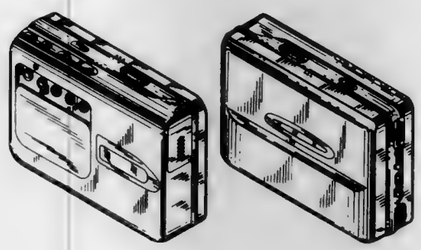
349,115
RADIO
Richard F. M. Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Dec. 29, 1992, Ser. No. 3,145
Term of patent 14 years
U.S. Cl. D14—189



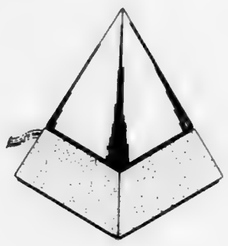
349,116
RADIO
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Pollyflame International B.V., GV Roelofarendsveen, Netherlands
Filed Dec. 29, 1992, Ser. No. 3,146
Term of patent 14 years
U.S. Cl. D14—189



349,114
TAPE PLAYER COMBINED WITH A RADIO TUNER
Mitsuhiro Nakamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 17, 1992, Ser. No. 869,710
Claims priority, application Japan, Nov. 29, 1991, 3-36032
Term of patent 14 years
U.S. Cl. D14—163

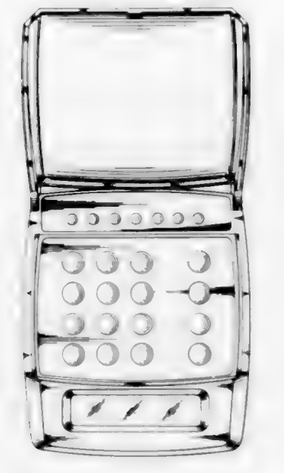


349,117
TRANSMITTER FOR A WIRELESS REMOTE CONTROL EXTENDER
Richard A. Rasansky, and Jess H. Kaufman, both of Dallas, Tex., assignors to The Raiane Group Inc., Dallas, Tex.
Filed Jul. 24, 1991, Ser. No. 734,861
Term of patent 14 years
U.S. Cl. D14—218

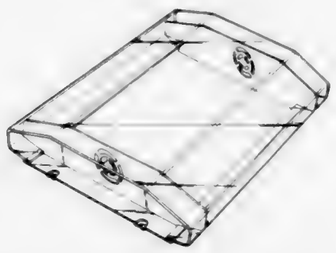


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349,118
CONTROLLER FOR VIDEO CASSETTE RECORDERS, CABLE AND SATELLITE RECEIVERS
Henry C. Yuen, Redondo Beach, Calif., assignor to Gemstar Development Corporation, Pasadena, Calif.
Filed Nov. 13, 1991, Ser. No. 792,763
Term of patent 14 years
U.S. Cl. D14—218



349,119
STEREO AMPLIFIER HOUSING
Henry G. Eberle, and Douglas Kim, both of Orinda, Calif., assignors to Alphasonik, Inc., Berkeley, Calif.
Filed May 13, 1992, Ser. No. 882,490
Term of patent 14 years
U.S. Cl. D14—265



349,120
OPEN SEAM FRICTION ROCK STABILIZER
Thomas J. Landsberg, Princeton, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Nov. 27, 1991, Ser. No. 798,771
Term of patent 14 years
U.S. Cl. D15—21



349,121
SANDING MACHINE
W. Steven Holley, Pittsburgh, Pa.; Robert D. Donovan, Mooreville, Miss.; Dennis C. Palmer; William G. Pittman, both of Tupelo, Miss., and Richard J. Hutcheson, Guntown, Miss., assignors to Delta International Machinery Corp., Pittsburgh, Pa.
Filed May 10, 1993, Ser. No. 8,179
Term of patent 14 years
U.S. Cl. D15—125



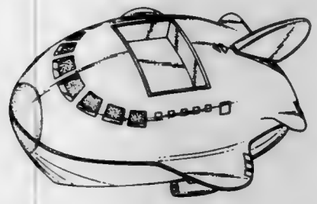
349,122
BAND SAW
Robert W. Arehart, Chicago, and Bernard T. Schroeder, Urbana, both of Ill., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 16, 1992, Ser. No. 854,452
Term of patent 14 years
U.S. Cl. D15—134



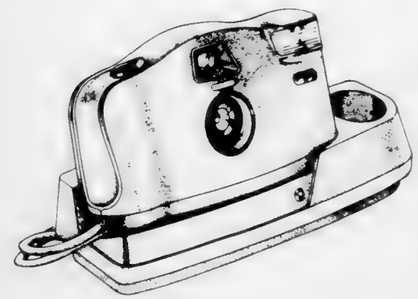
349,123
SPECTACLES HAVING INTEGRAL ILLUMINATION
Denton A. Cooley, Houston, Tex.; Bernard Clark, Arlington, Vt.; Frederick Morris, Shrewsbury, Mass.; Lawrence E. Delaney, Bristol, Pa.; Peter Vari, Newtown, Pa., and William L. Chesterson, Richboro, Pa., assignors to Luxtec Corporation, Worcester, Mass.
Filed Jul. 31, 1992, Ser. No. 923,737
Term of patent 14 years
U.S. Cl. D16—103



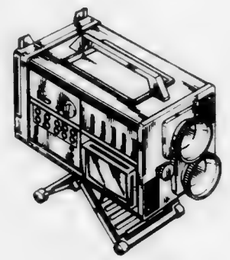
349,124
PLANE-SHAPED CAMERA
Majer Tugendhaft, Amstelveen, Netherlands, assignor to Sparco Distribution (I.O.M.) Ltd., Douglas Island of Man
Filed Jun. 12, 1992, Ser. No. 897,651
Claims priority, application Netherlands, Dec. 16, 1991, 67200-00
Term of patent 14 years
U.S. Cl. D16—201



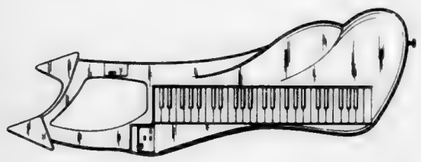
349,125
COMBINED RECHARGEABLE CAMERA AND A BASE CHARGER UNIT
Martin B. Wilson, Webster; Michael T. Kane, and John K. McBride, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 21, 1992, Ser. No. 905,640
Term of patent 14 years
U.S. Cl. D16—208



349,126
IMAGE TRANSFER UNIT FOR A VIDEO CAMERA
Young K. Lee, 103-505, Injung Prince APT, Keumgon-Dong, Mikeom-shi, Kyounggi-Do, Rep. of Korea
Filed Nov. 12, 1991, Ser. No. 790,694
Claims priority, application Rep. of Korea, May 16, 1991, 6882
Term of patent 14 years
U.S. Cl. D16—242

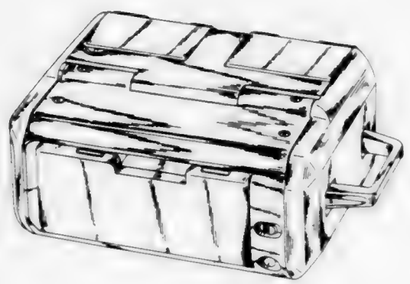


349,127
PORTABLE, ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Prince R. Nelson, Chanhassen, Minn., assignor to Prince Rogers Nelson, Chanhassen, Minn.
Filed Jan. 16, 1992, Ser. No. 821,470
Term of patent 14 years
U.S. Cl. D17—1

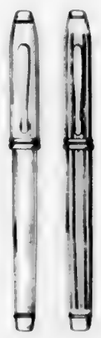


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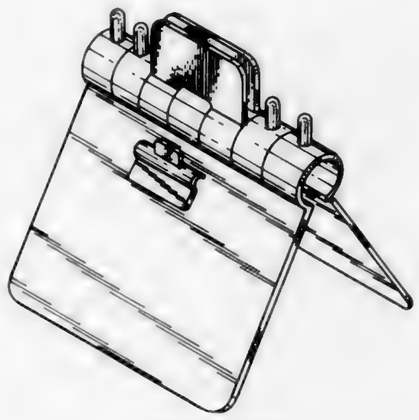
349,128
SHEET COUNTER
Takao Akioka, Sanda, and Akio Funato, Kyoto, both of Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan
Filed Apr. 9, 1992, Ser. No. 866,523
Claims priority, application Japan, Oct. 21, 1991, 3-31820
Term of patent 14 years
U.S. Cl. D18—46



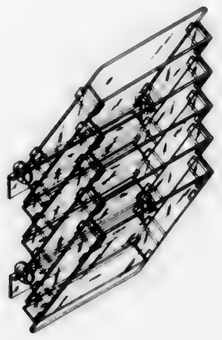
349,129
WRITING INSTRUMENT
Paul E. Linderson, Warwick, and Jens E. von Edler, Matunuck, both of R.I., assignors to A. T. Cross Company, Lincoln, R.I.
Filed Jun. 24, 1992, Ser. No. 903,988
Term of patent 14 years
U.S. Cl. D19—48



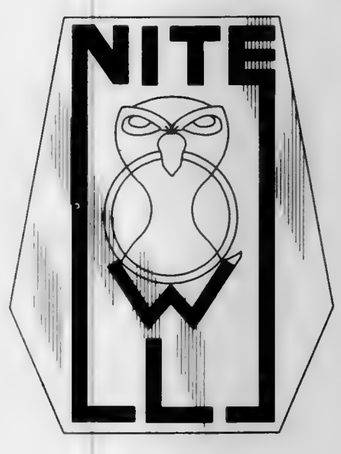
349,130
CLIPBOARD FOR A SHOPPING CART PUSH BAR
Kerena Nigris, 29 Simms Drive, Ajax, Ontario, Canada L1T 3J5 , and Judi Neilson, 103 Daniels Cres., Ajax, Ontario, Canada L1T 1Y9
Filed Jun. 3, 1992, Ser. No. 892,015
Term of patent 14 years
U.S. Cl. D19—88



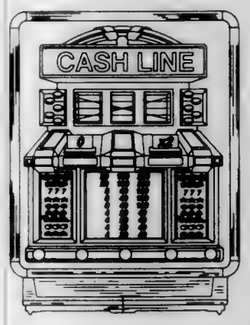
349,131
STACKABLE TRAY UNIT FOR WALL MOUNTING
Ronald R. Nystrom, McHenry, and Chester P. Frychel, Lake Zurich, both of Ill., assignors to Associated Plastics Incorporated, Wheeling, Ill.
Filed Sep. 24, 1991, Ser. No. 765,063
Term of patent 14 years
U.S. Cl. D19—90



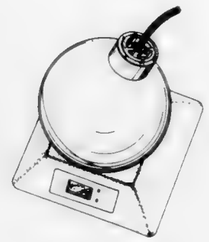
349,132
ILLUMINATED DECAL FOR SPORTING ACCESSORIES
Constantine Hill, 2905 E. Federal St., Baltimore, Md. 21213
Filed Oct. 7, 1992, Ser. No. 221
Term of patent 14 years
U.S. Cl. D20—11



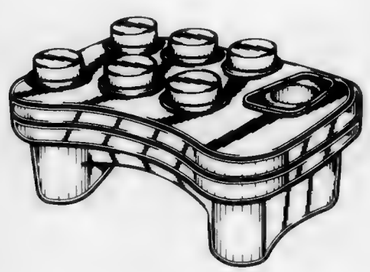
349,133
GAME CABINET
Axel Janssen, Minden, Fed. Rep. of Germany, assignor to adp Gauselmann GmbH, Lübbecke, Fed. Rep. of Germany
Filed Jun. 11, 1992, Ser. No. 897,509
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1991, M9108972.7
Term of patent 14 years
U.S. Cl. D21—38



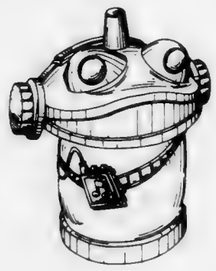
349,134
TOY
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Dec. 29, 1992, Ser. No. 3,142
Term of patent 14 years
U.S. Cl. D21—59



349,135
POUNDING TOY
Mark A. Strayer, Alliance, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Mar. 18, 1993, Ser. No. 6,203
Term of patent 14 years
U.S. Cl. D21—103



349,136
TOY MILKSHAKE CUP
Stephen J. Pachol, Naperville, Ill., and Ferenc Fekete, Huntington Beach, Calif., assignors to M-B Sales, A Division of the Havi Group L.P., Westmont, Ill.
Filed Jun. 2, 1992, Ser. No. 892,005
Term of patent 14 years
U.S. Cl. D21—121



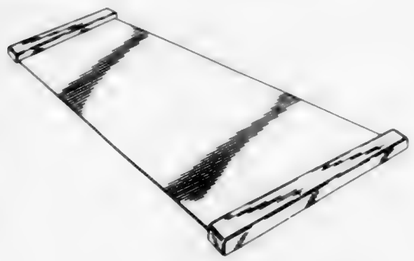
349,137
TOY BEAR
Josef Gottstein, Mistelbach, Fed. Rep. of Germany, assignor to Sigikid H. Scharrer & Kosh GmbH, Mistelbach, Fed. Rep. of Germany
Filed Jul. 9, 1992, Ser. No. 910,974
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 9200947
Term of patent 14 years
U.S. Cl. D21—159



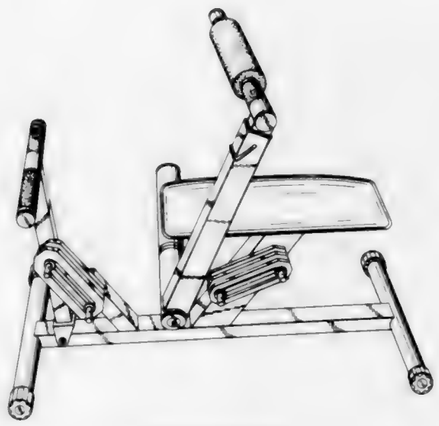
349,138
DOLL
Bonnie D. Romero, 318 Welch St., Mesquite, Tex. 75149
Filed Oct. 29, 1991, Ser. No. 786,913
The portion of the term of this patent subsequent to Feb. 9, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—166



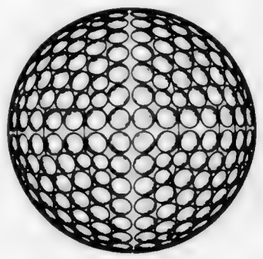
349,139
PHYSICAL EXERCISE PLATFORM
Max C. Markland, Gresham, Oreg., assignor to Joshua Group Ltd., Portland, Oreg.
Filed May 4, 1992, Ser. No. 878,881
Term of patent 14 years
U.S. Cl. D21—191



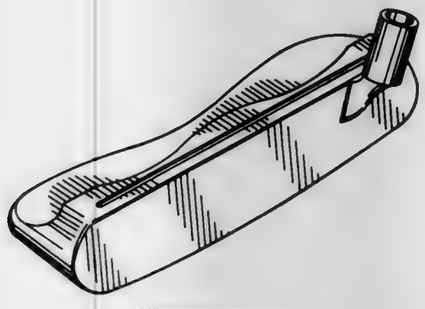
349,140
MULTI-PURPOSE EXERCISE MACHINE
Gary Rockwell, Auburn, Ala., assignor to Diversified Products Corportion, Opelika, Ala.
Filed Jan. 29, 1993, Ser. No. 4,225
Term of patent 14 years
U.S. Cl. D21—195



349,141
GOLF BALL
Diane Pelletier, Fairhaven, and William Gobush, No. Dartmouth, both of Mass., assignors to Acushnet Company, Fairhaven, Mass.
Filed Nov. 14, 1988, Ser. No. 270,491
Term of patent 14 years
U.S. Cl. D21—205



349,142
GOLF CLUB PUTTER HEAD
David D. Boone, El Toro, Calif., assignor to Lynx Golf, Inc., City of Industry, Calif.
Filed Apr. 6, 1987, Ser. No. 34,262
The portion of the term of this patent subsequent to Oct. 26, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—217



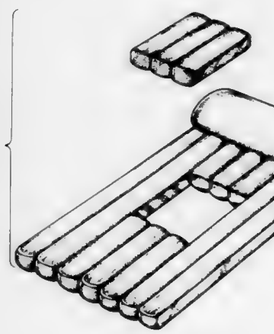
349,143
GOLF PUTTER
Carl T. McKoon, 1501 Knightsbridge Ct., Winston-Salem, N.C. 27127, and Michael T. McKoon, 845 Apt. E, Stadium Dr., Wake Forest, N.C. 27587
Filed Sep. 2, 1992, Ser. No. 939,365
Term of patent 14 years
U.S. Cl. D21—217



349,144
FOREARM OUTRIGGER SKI
Mark D. Greene, 101 Tryon Ct., Sacramento, Calif. 95864
Filed Dec. 21, 1992, Ser. No. 2,788
Term of patent 14 years
U.S. Cl. D21—229



349,145
FLOAT DEVICE WITH REMOVABLE INSERT
Roberta L. Haughey, 1043 Secnery Dr., Elizabeth, Pa. 15037
Filed Jun. 28, 1993, Ser. No. 10,047
Term of patent 14 years
U.S. Cl. D21—237



349,146
BODY SUPPORT FLOAT
Kenneth Mahler, 8410 Eustis Farm La., Cincinnati, Ohio 45243
Filed Oct. 4, 1993, Ser. No. 13,841
Term of patent 14 years
U.S. Cl. D21—237

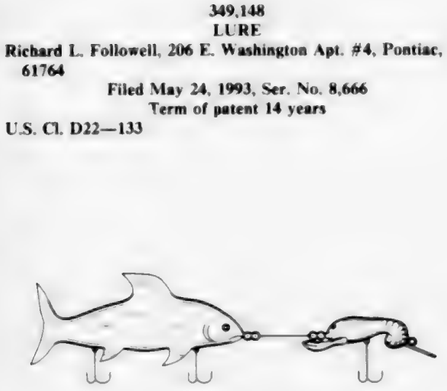


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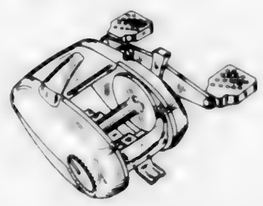
349,147
FIREARM BARREL MUZZLE ATTACHMENT
Mack W. Gwinn, Jr., P.O. Box 61, Stetson Rd., Levant, Me. 04456
Filed Jun. 4, 1993, Ser. No. 9,057
Term of patent 14 years
U.S. Cl. D22—108



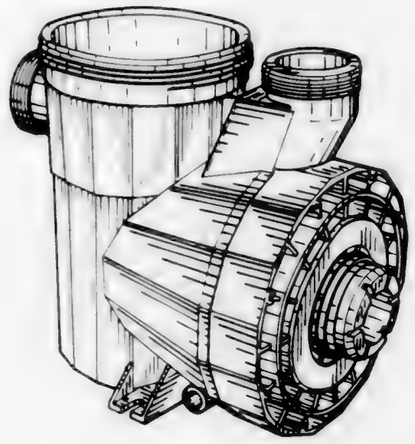
349,148
LURE
Richard L. Followell, 206 E. Washington Apt. #4, Pontiac, Ill. 61764
Filed May 24, 1993, Ser. No. 8,666
Term of patent 14 years
U.S. Cl. D22—133



349,149
BAITCAST REEL
Dennis E. Roberts, Owasso; Hyunkyu Kim, Tulsa, both of Okla., and Richard J. Robbins, Derby, Kans., assignors to Zebco Corporation, Tulsa, Okla.
Filed Nov. 25, 1991, Ser. No. 797,109
Term of patent 14 years
U.S. Cl. D22—140



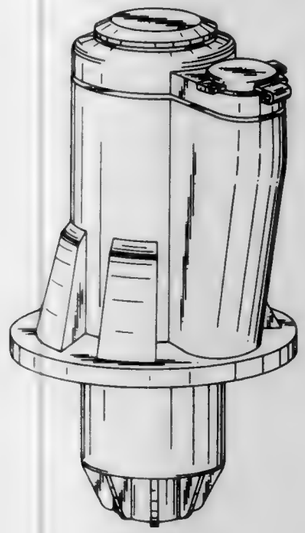
349,150
SWIMMING POOL FILTER
Robert Garrigos Ruiz, Girona, Spain, assignor to Doll, S.A., Spain
Filed May 12, 1992, Ser. No. 881,888
Claims priority, application Spain, Nov. 14, 1991, 126.375
Term of patent 14 years
U.S. Cl. D23—209



349,151
COMBINED SHOWER UNIT AND TEMPERATURE CONTROL
Rex Fernandez, 615 Herzel Ave., Northfield, N.J. 08225
Filed Mar. 5, 1993, Ser. No. 5,562
Term of patent 14 years
U.S. Cl. D23—213



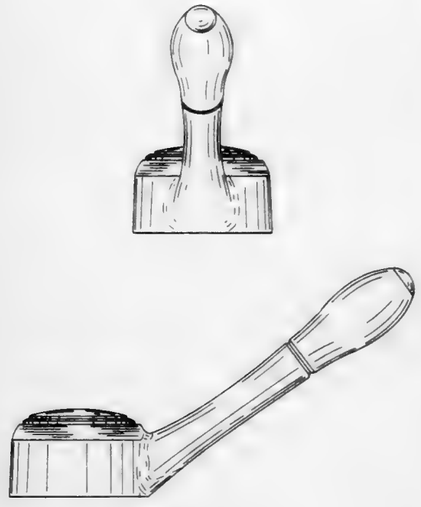
349,152
HOSE CONNECTABLE INGROUND POP-UP SPRINKLER
Ronald G. Hayes, Milford, Ohio, assignor to L. R. Nelson Corporation, Peoria, Ill.
Filed Jul. 1, 1993, Ser. No. 10,146
Term of patent 14 years
U.S. Cl. D23—214



349,153
FAUCET
Bruce M. Sauter, Elgin, and Kevin G. Short, Midlothian, both of Ill., assignors to Sterling Plumbing Group, Inc., Schaumburg, Ill.
Filed Aug. 14, 1992, Ser. No. 930,026
Term of patent 14 years
U.S. Cl. D23—238



349,154
FAUCET HANDLE
Darren M. Mark, Castaic, Calif., assignor to Emhart, Inc., Newark, Del.
Filed Jan. 29, 1993, Ser. No. 4,253
Term of patent 14 years
U.S. Cl. D23—252

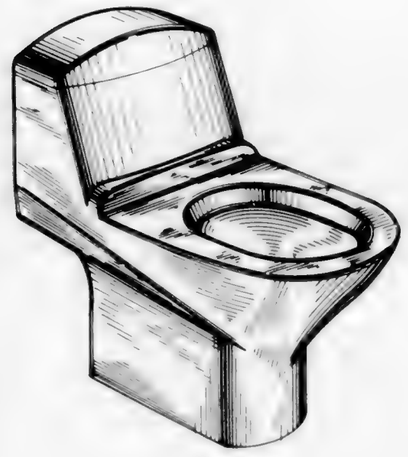


349,155
HANDLE FOR PLUMBING FITTING
William C. McKeone, and Mary J. Reid, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Division of Ser. No. 823,647, Jan. 22, 1992, Pat. No. D. 346,012.
This application Nov. 30, 1993, Ser. No. 15,876
Term of patent 14 years
U.S. Cl. 23—252

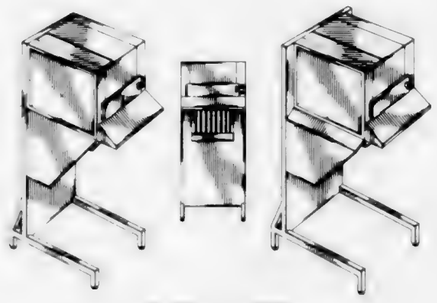


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349,156
WATER CLOSET
Herbert V. Kohler, Jr., Kohler, Wis.; Pierre H. Paulin; Francois Kergoet, both of Paris, France; Michel Chalard, Villemomble, France, and Thomas A. Bonnell, Sheboygan, Mich., assignors to Jacob Delafon, Paris, France
Continuation-in-part of Ser. No. 792,045, Nov. 8, 1991. This application May 6, 1992, Ser. No. 880,475
Term of patent 14 years
U.S. Cl. D23—301



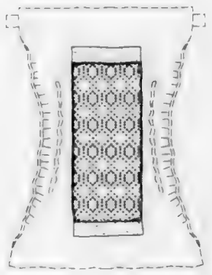
349,158
FILTER HOOD
Leonard R. Lieblein, Williamston, S.C., assignor to Standex International Corporation, Salem, N.H.
Continuation-in-part of Ser. No. 697,303, May 6, 1991, Pat. No. 5,211,159, which is a continuation-in-part of Ser. No. 516,255, Apr. 30, 1990, Pat. No. 5,154,161, Continuation-in-part of Ser. No. 280,025, Dec. 2, 1988, abandoned. This application Mar. 19, 1992, Ser. No. 858,752
Term of patent 14 years
U.S. Cl. D23—371



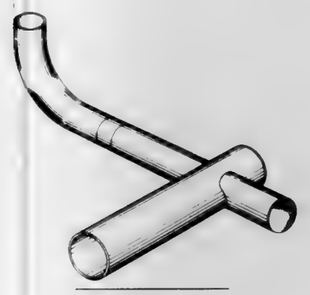
349,157
EVAPORATOR FOR VOLATILE MATERIALS
Shaun P. Rymer, Hull, United Kingdom, assignor to Reckitt & Colman Products Limited, London, United Kingdom
Filed Oct. 23, 1992, Ser. No. 760
Claims priority, application United Kingdom, Jun. 27, 1992, 2023876
Term of patent 14 years
U.S. Cl. D23—362



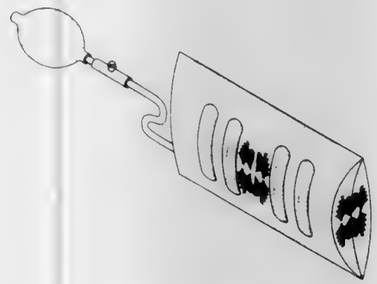
349,159
INSERT PAD FOR A DIAPER OR PANT
Gloria Huffman, Federal Way, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.
Filed Aug. 12, 1991, Ser. No. 744,214
Term of patent 14 years
U.S. Cl. D24—124



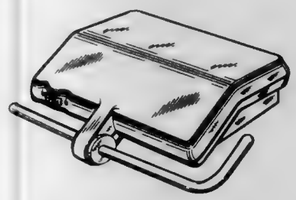
349,160
DENTAL X-RAY HEAD UNIT
Anthony J. Pellegrino, New Fairfield, Conn., assignor to Lorad Corporation, Danbury, Conn.
Filed Mar. 26, 1992, Ser. No. 857,815
Term of patent 14 years
U.S. Cl. D24—158



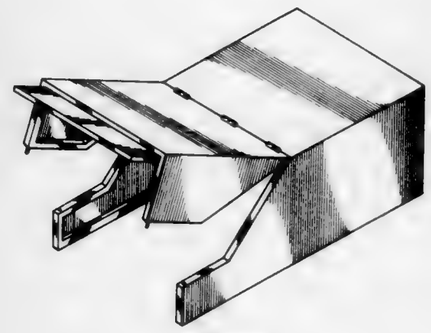
349,161
SYNCHRONOUS VARIABLE COMPRESSION BAG
John M. Mee, P.O. Box 25896, Honolulu, Hi. 96825
Filed Nov. 2, 1992, Ser. No. 1,034
Term of patent 14 years
U.S. Cl. D24—169



349,162
CONTROL UNIT FOR DENTAL INSTRUMENTS
Carl G. Nordstrom, Lake Oswego, and Raymond G. Reed, Milwaukie, both of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Feb. 2, 1993, Ser. No. 4,341
Term of patent 14 years
U.S. Cl. D24—177



349,163
SHELTER FOR A VEHICLE
Brian S. Rasmussen, 1112 Linden Ave. #204, Glendale, Calif. 91201
Filed Nov. 20, 1992, Ser. No. 1,706
Term of patent 14 years
U.S. Cl. D25—33

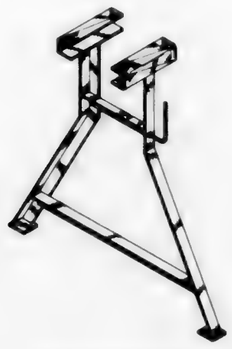


349,164
POST COVER
Danny A. Fox, 429 Amador Cir., Manteca, Calif. 95336
Filed Mar. 4, 1992, Ser. No. 845,446
Term of patent 14 years
U.S. Cl. D25—38

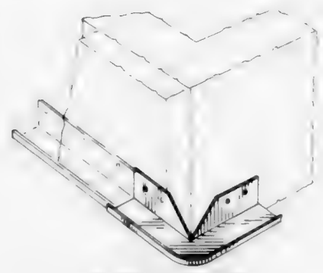


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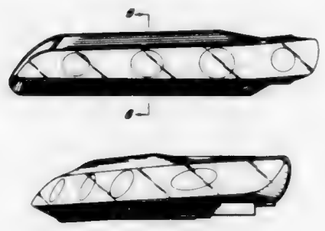
349,165
SAWHORSE LEG
Otto Jasmund, 36642 Fordson, Mt. Clemens, Mich. 48043
Filed Oct. 29, 1992, Ser. No. 926
Term of patent 14 years
U.S. Cl. D25—68



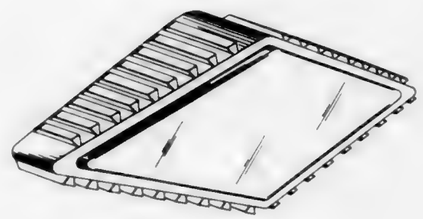
349,166
CORNER SUPPORT
Harold W. Beard, Jr., P.O. Box 5485, Carefree, Ariz. 85377
Filed Jul. 28, 1992, Ser. No. 920,980
Term of patent 14 years
U.S. Cl. D25—102

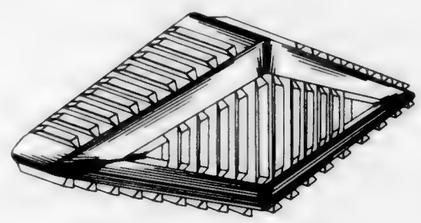


349,167
AUTOMOBILE HEAD LIGHT ASSEMBLY
Satoshi Uchida, Nerima, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1992, Ser. No. 873,542
Claims priority, application Japan, Oct. 22, 1991, 3-31922
Term of patent 14 years
U.S. Cl. D26—28

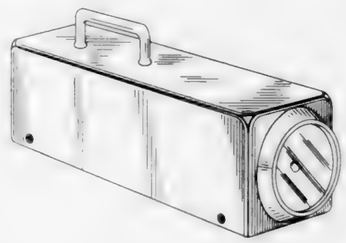


349,168
VEHICLE LAMP
George C. Kasboske, 2820 N. Whipple, Chicago, Ill. 60618
Filed Aug. 28, 1992, Ser. No. 938,465
Term of patent 14 years
U.S. Cl. D26—28

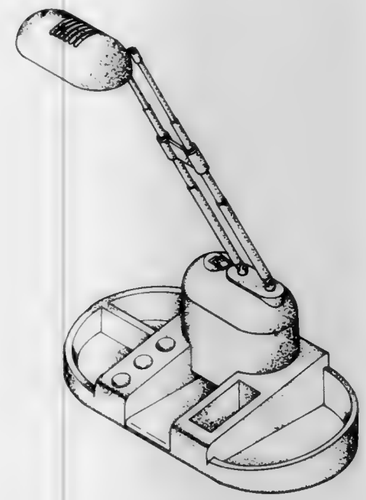




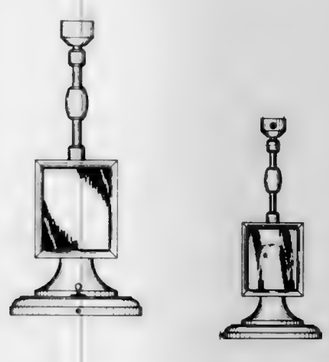
349,169
COMPRESSED AIR OPERATED FLASHLIGHT
Alfred B. Garza, 222 Briggs, San Antonio, Tex. 78211
Filed Mar. 2, 1993, Ser. No. 5,353
Term of patent 14 years
U.S. Cl. D26—37



349,170
COMBINED ADJUSTABLE DESK LAMP AND DETACHABLE DESK ORGANIZER
Jack Lin, No. 177-1, Sec. 2, Nan Kan Rd., Lu Chu Hsiang, Taoyuan Hsien, Taiwan
Filed Jan. 5, 1993, Ser. No. 3,269
Term of patent 14 years
U.S. Cl. D26—51



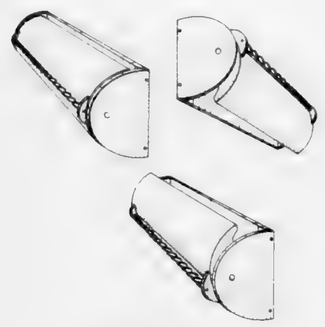
349,171
COMBINED TABLE LAMP AND REVOLVING PHOTOGRAPH HOLDER
George H. Hayes, 105 Rodney Dr., New Castle, Del. 19720
Filed Dec. 23, 1992, Ser. No. 2,947
Term of patent 14 years
U.S. Cl. D26—56



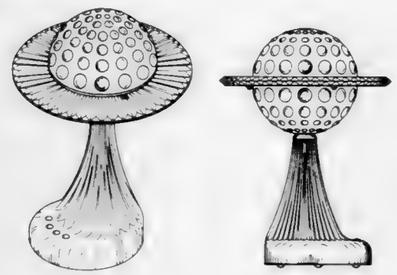
349,172
ADJUSTABLE TABLE LAMP
James Lu, No. 93, Sec. 1, Chung Shan Rd., Hsing Chuang City, Taipei Hsien, Taiwan
Filed Aug. 27, 1992, Ser. No. 935,734
Term of patent 14 years
U.S. Cl. D26—65



349,173
WALL MOUNTED LIGHT FIXTURE
Linda Fellinger, 703 Polo Cir., Bryn Mawr, Pa. 19010
Filed May 26, 1992, Ser. No. 887,919
Term of patent 14 years
U.S. Cl. D26—85

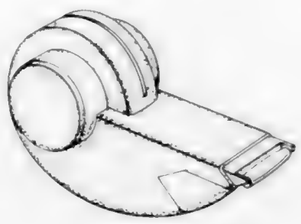


349,174
DECORATIVE TABLE LAMP
Cheng-Tsai Wu, P.O. Box 82-144, Taipei City, Taiwan
Filed Dec. 11, 1992, Ser. No. 2,474
Term of patent 14 years
U.S. Cl. D26—106

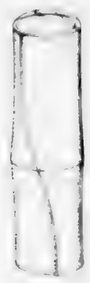


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349,175
SHAVER HOUSING
Jean-Marie Hotz, Preles, Switzerland, assignor to KAI Industries Co. Ltd., Seki, Japan
Filed Aug. 25, 1992, Ser. No. 935,382
Claims priority, application Switzerland, Feb. 27, 1992, 119,596
Term of patent 14 years
U.S. Cl. D28—45



349,176
MAKEUP CONTAINER
Garfield Litton, Glen Rock, N.J., assignor to Revlon Consumer Products Corporation, New York, N.Y.
Filed Jan. 6, 1993, Ser. No. 3,310
Term of patent 14 years
U.S. Cl. D28—76



349,177
COMBINED FACE SHIELD AND HEADBAND
John P. Russell, 3301 Osage La., Center Point, Ala. 35215
Filed Jun. 16, 1992, Ser. No. 899,383
Term of patent 14 years
U.S. Cl. D29—17



349,178
COMBINED FACE SHIELD AND HEADBAND
John P. Russell, 3301 Osage La., Center Point, Ala. 35215
Filed Jun. 16, 1992, Ser. No. 899,390
Term of patent 14 years
U.S. Cl. D29—17



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF JULY, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See—*
Hyppanen, Timo, 5,332,553, Cl. 422-147.000.

A-Dec, Inc.: *See—*
Austin, George K., Jr.; Johannes, Sandor; and Schmidt, Theodore E., 5,332,194, Cl. 251-345.000.

A. J. Dralle, Inc.: *See—*
Dralle, James R., 5,332,409, Cl. 55-484.000.

AAI/ACL Technologies, Inc.: *See—*
Bybee, Jimmy L., 5,333,112, Cl. 364-474.060.

Aalborg Instruments & Controls, Inc.: *See—*
Baan, Tibor, 5,332.005, Cl. 138-43.000.

AB Ventilatorverken: *See—*
Nilsson, Jan G. I., 5,331,991, Cl. 135-93.000.

AB Volvo: *See—*
Kullander, Urban; and Bergquist, Karl, 5,332,873, Cl. 181-243.000.

ABB Carbon AB: *See—*
Mansson, Martin, 5,331,804, Cl. 60-39.020.

ABB Vetco Gray Inc.: *See—*
Ferguson, Bobby L., 5,332,043, Cl. 166-379.000.

Abbasi, Fereidoun: *See—*
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Abbing, Jan G.: *See—*
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Zhang, Jian G.; Peiris, Dunstan H.; Zhao, Jun W.; and Loh, Sow W., to Advanced Materials Technologies Pte Ltd. Method for producing articles from particulate materials using a binder derived from an idealized TGA curve. 5,332,543, Cl. 419-36.000.

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Optical Communications Corp.: *See*—
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Plueddemann deceased, Edwin P., to Dow Corning Corporation. Coupling agent compositions. Re. 34,675, Cl. 106-287.100.
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Taylor, Larry G.: *See*—
Ray, Donald K.; and Taylor, Larry G., Re. 34,677, Cl. 379-37.000.
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Trilogy Systems, Inc.: *See*—
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Weeks, O. L., 8,846, Cl. 15.000.
George J. Ball, Inc.: *See*—
Guillen, Mario, 8,848, Cl. 87.600.
Guillen, Mario, to George J. Ball, Inc. New Guinea Impatiens named BSR-220 Bright Coral. 8,848, 7-26-94, Cl. 87.600.
Kriloff, Michel, to Conard-Pyle Company, The. Hybrid tea rose plant named 'Krimony'. 8,845, 7-26-94, Cl. 11.000.
Meilland, Alain A., to Conard-Pyle Company, The. Rose plant — Meimoushin variety. 8,847, 7-26-94, Cl. 21.000.
Weeks, O. L., to Estrella Rose Company. Hybrid Tea rose plant named 'Paul Harris'. 8,846, 7-26-94, Cl. 15.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 26, 1994

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2
2.5 5,331,683
6.2 5,331,684
79 5,331,685
181 5,331,686
195.2 5,331,687
239 5,331,688
428 5,331,691

CLASS 4
144.1 5,331,689
410 5,331,690
445 5,331,692
574.1 5,331,693
620 5,331,694

CLASS 5
136 5,331,695
451 5,331,696
474 5,331,697
602 5,331,698
655 5,331,699

CLASS 8
639 5,332,404

CLASS 14
2.4 5,331,700
71.1 5,331,701

CLASS 15
21.2 5,331,702
98 5,331,703
106 5,331,704
118 5,331,705
119.2 5,331,706
167.1 5,331,707
5,331,708
176.6 5,331,709
210.1 5,331,710
5,331,711
250.41 5,331,712
320 5,331,713
323 5,331,714
332 5,331,715
5,331,716

CLASS 16
35 R 5,331,717
82 5,331,718
85 5,331,719
114 R 5,331,720

CLASS 24
3 L 5,331,721
68 CD 5,331,722
71 J 5,331,723
114.5 5,331,724
545 5,331,725
625 5,331,726

CLASS 29
25.01 5,332,405
25.03 5,332,406
453 5,331,727
603 5,331,728
605 5,331,729
606 5,331,730
759 5,331,731
787 5,331,732
852 5,331,733
879 5,331,734
882 5,331,735
890.124 5,331,736
895.21 5,331,737
897.312 5,331,738

CLASS 30
28 5,331,739
50 5,331,740
158 5,331,741
245 5,331,742
388 5,331,743

CLASS 33
27.01 5,331,744
651.1 5,331,745

CLASS 34
97 5,331,748
117 5,331,749
401 5,331,746
405 5,331,747

CLASS 36
28 5,331,750
77 R 5,331,751
115 5,331,752
136 5,331,753

CLASS 37
457 5,331,754

CLASS 38
18 5,331,755

CLASS 40
308 5,331,756
606 5,331,757
661 5,331,758

CLASS 42
70.11 5,331,759

CLASS 43
17.1 5,331,760
21.2 5,331,761
42.09 5,331,762
100 5,331,763

CLASS 44
419 5,332,407

CLASS 47
45 5,331,764
58 5,332,408

CLASS 49
121 5,331,765
449 5,331,766
490.1 5,331,767
493.1 5,331,768

CLASS 51
105 SP 5,331,769
165.71 5,331,770
170 R 5,331,771
268 5,331,772
281 R 5,331,773
285 5,331,774
290 5,331,775

CLASS 52
24 5,331,776
64 5,331,777
79.5 5,331,778
80.1 5,331,779
80.2 5,331,780
143 5,331,781
169.7 5,331,782
199 5,331,783
393 5,331,784
506.1 5,331,785
731.1 5,331,786
746 5,331,787

CLASS 53
228 5,331,788
434 5,331,789
437 5,331,790
478 5,331,791
502 5,331,792
559 5,331,793

CLASS 55
484 5,332,409
490 5,332,410

CLASS 56
17.4 5,331,794
255 5,331,795

CLASS 57
9 5,331,796
119 5,331,797
263 5,331,798
278 5,331,799
311 5,331,800
400 5,331,801

CLASS 59
85 5,331,802

CLASS 60
39.02 5,331,804
39.36 5,331,803
5,331,805
39.465 5,331,806
275 5,331,807
276 5,331,808
288 5,331,809
322 5,331,810
330 5,331,811
450 5,331,812
547.1 5,331,813
747 5,331,814
748 5,331,815
753 5,331,816

CLASS 62
5 5,331,817
24 5,331,818
51.1 5,331,819
68 5,331,820
133 5,331,821
168 5,331,822
173 5,331,823
175 5,331,824
180 5,331,825
235 5,331,826
509 5,331,827

CLASS 65
60.1 5,332,411
60.2 5,332,412
319 5,332,413

CLASS 66
204 5,331,828

CLASS 68
205 R 5,331,829

CLASS 70
38 A 5,331,830

CLASS 71
7 Re.34,670

CLASS 72
4 5,331,831
56 5,331,832
184 5,331,833
191 5,331,834
346 5,331,836
458 5,331,837

CLASS 73
4 D 5,331,838
9 5,331,839
19.1 5,331,840
49.2 5,331,841
49.5 5,331,842
54.09 5,331,843
54.33 5,331,844
61.43 5,331,845
86 5,331,846
5,331,847
116 5,331,848
182 5,331,849
293 5,331,850
379.010 5,331,851
505 5,331,852
5,331,853
5,331,854
602 5,331,855
745 5,331,856
756 5,331,857
827 5,331,858
861.38 5,331,859

CLASS 74
7 R 5,331,860
89.15 5,331,861
89.22 5,331,862
224 5,331,835
476 5,331,863
551.1 5,331,864
551.3 5,331,865
567 5,331,866

CLASS 75
10.1 5,332,414
249 5,332,415
252 5,332,422
303 5,332,418
414 5,332,416
510 5,332,417
533 5,332,419
673 5,332,421
710 5,332,420

CLASS 81
9.51 5,331,867
165 5,331,868
177.1 5,331,869

CLASS 82
1.11 5,331,870
5,331,871

CLASS 83
171 5,331,872
193 5,331,873
423 5,331,874
485 5,331,875
661 5,331,876
886 5,331,877

CLASS 84
421 5,331,878
659 5,332,862

CLASS 89
8 5,331,879
24 5,331,880
41.21 5,331,881

CLASS 91
461 5,331,882
5,331,883

CLASS 92
108 5,331,884

CLASS 95
47 5,332,424
248 5,332,423

CLASS 96
26 5,332,425
153 5,332,426

CLASS 99
283 5,331,885
386 Re.34,671
446 5,331,886
496 5,331,887

CLASS 100
125 5,331,888
137 5,331,889

CLASS 101
177 5,331,890
424 5,331,891
477 5,331,892
486 5,331,893

CLASS 102
275.12 5,331,894
307 5,331,895
322 5,331,896
341 5,331,897

CLASS 104
2 5,331,898
16 5,331,899
172.1 5,331,901

CLASS 105
30 5,331,900
198.2 5,331,902
199.2 5,331,903

CLASS 106
2 5,332,428
15.05 5,332,431
18.32 5,332,427
18.33 5,332,430
35 5,332,429
287.1 Re.34,675
287.13 5,332,432
442 5,332,433
724 5,332,434
727 5,332,435
792 5,332,436

CLASS 108
44 5,331,904
50 5,331,905

CLASS 110
264 5,331,906

CLASS 111
52 5,331,907
114 5,331,908

CLASS 112
103 5,331,909
121.26 5,331,910

CLASS 114
26 5,331,911
90 5,331,912
259 5,331,913
346 5,331,914
347 5,331,915
5,331,916
361 5,331,917

CLASS 116
205 5,331,918
323 5,331,919

CLASS 118
63 5,332,437
65 5,332,438
213 5,332,439
411 5,332,440
723 5,332,441
725 5,332,442
729 5,332,443

CLASS 119
18 5,331,920
26 5,331,921
60 5,331,922
734 5,331,923

CLASS 123
1 A 5,331,924
56 AC 5,331,925
56 BC 5,331,926
65 PE 5,331,927
78 B 5,331,928
79 R 5,331,929
5,331,930
90.11 5,331,931
193.6 5,331,932
295 5,331,933
417 5,331,934
424 5,331,935
480 5,331,936
491 5,331,937
520 5,331,938
533 5,331,939
679 5,331,940

CLASS 124
44.5 5,331,941

CLASS 126
4 5,331,947
25 R 5,331,942
73 5,331,943
110 R 5,331,944
211 5,331,945
314 5,331,946

CLASS 128
4 5,331,948
6 5,331,949
5,331,950
200.14 5,331,953
200.22 5,331,954
200.24 5,331,955
202.13 5,331,956
206.15 5,331,957
633 5,331,958
639 5,331,959
644 5,331,960
659 5,331,961
660.09 5,331,962
661.01 5,331,963
5,331,964
662.06 5,331,965
696 5,331,966
716 5,331,967
721 5,331,968
731 5,331,969
5,331,970
751 5,331,971
754 5,331,972
760 5,331,973
842 5,331,974
898 5,331,975

CLASS 131
96 5,331,976
109.1 5,331,977
109.2 5,331,978
273 5,331,979
290 5,331,980
337 5,331,981

CLASS 132
301 5,331,982
309 5,331,983

CLASS 134
1 5,332,444
3 5,332,445
5,332,446
7 5,332,447
22.18 5,332,448
57 5,331,984
66 5,331,985
88 5,331,986
102.1 5,331,987

CLASS 135
65 5,331,988
5,331,989
5,331,990
93 5,331,991
102 5,331,992
119 5,331,993

CLASS 136
234 5,332,449
249 5,332,450

CLASS 137
1 5,331,994
8 5,331,995
14 5,331,996
270 5,331,997
512.1 5,331,998
513.5 5,331,999
543.23 5,332,000
614.06 5,332,001
614.11 5,332,002
625.17 5,332,003
625.32 5,332,004

CLASS 138
43 5,332,005

CLASS 139
91 5,332,006
116.2 5,332,007

CLASS 141
5 5,332,008
7 5,332,009
5,332,010
59 5,332,011
93 5,332,012
98 5,332,013
110 5,332,014

CLASS 148
33.2 5,332,451
247 5,332,452
320 5,332,453
421 5,332,454
440 5,332,455
564 5,332,456

CLASS 152
208 5,332,015
523 5,332,016
527 5,332,017
528 5,332,018
544 5,332,019

CLASS 156
072 5,332,457
210 5,332,458
234 5,332,459
242 5,332,460
264 5,332,461
353 5,332,462
556 5,332,463
626 5,332,464
628 5,332,465
633 5,332,466
636 5,332,467
643 5,332,468
5,332,469
659.1 5,332,470

CLASS 157
14 5,332,020

CLASS 160

133 5,332,021

CLASS 162

6 5,332,471
139 5,332,472
164.1 5,332,473
189 5,332,474

CLASS 164

98 5,332,022
132 5,332,023
449.1 5,332,024
456 5,332,025
493 5,332,026
502 5,332,027

CLASS 165

1 5,332,028
4 5,332,029
32 5,332,030
86 5,332,031
153 5,332,032
163 5,332,033
184 5,332,034

CLASS 166

53 5,332,035
268 5,332,036
276 5,332,037
278 5,332,038
5,332,039
293 5,332,040
295 5,332,041
321 5,332,042
379 5,332,043
386 5,332,044
387 5,332,045

CLASS 172

739 5,332,046

CLASS 173

1 5,332,047

CLASS 174

48 5,332,863
52.4 5,332,864
94 R B1 5,162,615
99 E 5,332,865
101 5,332,866
151 5,332,867
256 5,332,868
257 5,332,869

CLASS 175

26 5,332,048
320 5,332,049
5,332,050
430 5,332,051

CLASS 177

262 5,332,870

CLASS 180

14.2 5,332,052
53.4 5,332,053
68.6 5,332,054
132 5,332,055
169 5,332,056
5,332,057
180 5,332,058
197 5,332,059
5,332,060
312 5,332,061

CLASS 181

135 5,332,871
224 5,332,872
243 5,332,873

CLASS 182

27 5,332,062
116 5,332,063

CLASS 184

6.4 5,332,064

CLASS 188

18 R 5,332,065
32 5,332,066
73.1 5,332,067
275 5,332,068
282 5,332,069
298 5,332,070
371 5,332,071
378 5,332,072

CLASS 192

3.3 5,332,073
3.63 5,332,074
107 R 5,332,075

CLASS 194

217 5,332,076

CLASS 198

333 5,332,077
338 5,332,078
457 5,332,079
497 5,332,080
750 5,332,081
831 5,332,082
5,332,083
853 5,332,084

CLASS 200

58 5,332,874
61.45 R 5,332,875
61.52 5,332,876
308 5,332,877
329 5,332,878

CLASS 202

172 5,332,476

CLASS 203

20 5,332,477
58 5,332,478

CLASS 204

153.12 5,332,479
157.68 5,332,475
180.1 5,332,480
182.8 5,332,481
192.11 5,332,482
265 5,332,483
301 5,332,484
302 5,332,485

CLASS 205

50 5,332,486
80 5,332,487
181 5,332,488

CLASS 206

44 R 5,332,088
45.14 5,332,085
45.15 5,332,086
69 5,332,087
167 5,332,091
310 5,332,089
315.3 5,332,090
365 5,332,092
457 5,332,093
497 5,332,094
524.8 5,332,095
532 5,332,096
554 5,332,097
576 5,332,098
595 5,332,099

CLASS 208

56 5,332,489
111 5,332,490
251 R 5,332,491
340 5,332,492

CLASS 209

164 5,332,100
5,332,493
403 5,332,101
417 5,332,102
664 5,332,103

CLASS 210

96.1 5,332,494
172 5,332,495
180 5,332,496
274 5,332,497
321.8 5,332,498
396 5,332,499
512.1 5,332,500
512.3 5,332,501
605 5,332,502
635 5,332,503
5,332,504
697 5,332,505
705 5,332,506
708 5,332,507
711 5,332,508
719 5,332,509
729 5,332,510
755 5,332,511
790 5,332,512

CLASS 211

18 5,332,104
41 5,332,105
70.7 5,332,106
88 5,332,107
90 5,332,108
96 5,332,109

CLASS 212

258 5,332,110

CLASS 215

6 5,332,112
100 R 5,332,111
249 5,332,113

CLASS 219

121.47 5,332,885
121.52 5,332,880
121.69 5,332,879
121.75 5,332,881
388 5,332,882
492 5,332,883
494 5,332,884
506 5,332,886
518 5,332,887
547 5,332,888

CLASS 220

4.24 5,332,114
215 5,332,116
608 5,332,115

CLASS 221

33 5,332,117
48 5,332,118

CLASS 222

1 5,332,125
78 5,332,119
5,332,120
95 5,332,121
105 5,332,122
107 5,332,126
129.4 5,332,123
137 5,332,124
214 5,332,127
321 5,332,129
330 5,332,132
383 5,332,128
505 5,332,131
528 5,332,130
630 5,332,133

CLASS 224

39 5,332,134
164 5,332,135
185 5,332,136
257 5,332,137
312 5,332,138

CLASS 227

9 5,332,140
136 5,332,141
178 5,332,142

CLASS 228

8 5,332,143
52 5,332,144
105 5,332,145

CLASS 229

8 5,332,146
114 5,332,147
120.17 5,332,148
120.36 5,332,149
235 5,332,150

CLASS 235

380 5,332,889
440 5,332,890
462 5,332,892
485 5,332,891

CLASS 236

49.3 5,332,151

CLASS 238

14 5,332,152
373 5,332,153

CLASS 239

3 5,332,154
240 5,332,155
288 5,332,156
304 5,332,157
310 5,332,158
412 5,332,159
542 5,332,160
600 5,332,161
690 5,332,162

CLASS 241

56 5,332,163
239 5,332,164

CLASS 242

18 EW 5,332,170
231 5,332,175
345.2 5,332,172
348 5,332,174
348.3 5,332,168
348.300 5,332,173
378 5,332,171
390.2 5,332,166
527 5,332,167
611 5,332,169

CLASS 244

3.11 5,332,176
34.A 5,332,177
123 5,332,178

CLASS 246

3 5,332,180

CLASS 248

123.1 5,332,181
188.4 5,332,182
222.1 5,332,183
231.4 5,332,184
346 5,332,185
549 5,332,186
659 5,332,187
674 5,332,188
743 5,332,179

CLASS 249

40 5,332,189
115 5,332,190
155 5,332,191

CLASS 250

208.1 5,332,893
208.2 5,332,894
231.14 5,332,895
237.G 5,332,896
305 5,332,897
307 5,332,898
332 5,332,899
341 5,332,900
345 5,332,901
349 5,332,902
370.14 5,332,903
372 5,332,904
458.1 5,332,905
483.1 5,332,906
484.4 5,332,907
492.1 5,332,908
584 5,332,909

CLASS 251

40 5,332,192
315.BC 5,332,193
345 5,332,194

CLASS 252

8.6 5,332,513
25 5,332,514
49.6 5,332,515
54 5,332,516
73 5,332,517
99 5,332,518
174 5,332,519
299.01 5,332,520
5,332,521
5,332,522
309 5,332,523
363.5 5,332,524
389.54 5,332,525
542 5,332,526
546 5,332,527
548 5,332,528
570 5,332,529
583 5,332,530

CLASS 254

134.3 R 5,332,165
371 5,332,195

CLASS 256

47 5,332,196

CLASS 257

13 5,332,910
187 5,332,911
197 5,332,912
305 5,332,913
320 5,332,914
325 5,332,915
369 5,332,916
390 5,332,917
431 5,332,918
434 5,332,919
501 5,332,920
685 5,332,921
723 5,332,922
758 5,332,923
760 5,332,924

CLASS 260

665 R 5,332,533

CLASS 261

87 5,332,534

CLASS 264

1.7 5,332,535
22 5,332,536
5,332,537
25 5,332,538
40.1 5,332,539
60 5,332,540
149 5,332,541
509 5,332,542

CLASS 266

172 5,332,139
201 5,332,197
202 5,332,198
225 5,332,199
280 5,332,200
283 5,332,201

CLASS 267

82 5,332,202
140.15 5,332,203

CLASS 269

21 5,332,204

CLASS 271

6 5,332,205
90 5,332,206
110 5,332,207
171 5,332,208
5,332,209
220 5,332,210

CLASS 273

67.A 5,332,212
73.D 5,332,213
78 5,332,214
94 5,332,215
120 R 5,332,216
121.A 5,332,217
138.A 5,332,218
5,332,219
148 R 5,332,220
153.S 5,332,221
162.F 5,332,222
169 5,332,223
176.AB 5,332,224
186.2 5,332,225
187.6 5,332,226
5,332,211
232 5,332,227
243 5,332,227
269 Re.34,673
271 5,332,229
292 5,332,228
346 5,332,230
450 5,332,231

CLASS 277

9 5,332,232
27 5,332,233
48 5,332,234
88 5,332,235
165 5,332,236
180 5,332,237
228 5,332,238
230 5,332,239

CLASS 279

147 5,332,240

CLASS 280

11.18 5,332,242
35 5,332,243
230 5,332,244
279 5,332,245
284 5,332,246
400 5,332,247
402 5,332,248
414.1 5,332,249
507 5,332,250
5,332,251
602 5,332,252
5,332,253
5,332,254
700 5,332,255
704 5,332,258
728.A 5,332,256
728.B 5,332,257
738 5,332,259
775 5,332,260
801.1 5,332,261
806 5,332,262
5,332,263

CLASS 281

51 5,332,264

CLASS 283

56 5,332,265

CLASS 285

7 5,332,266
23 5,332,267
26 5,332,268
39 5,332,269
319 5,332,270
334.5 5,332,271

CLASS 290

44 5,332,925

CLASS 292

336.3 5,332,273

CLASS 294

68.3 5,332,274
97 5,332,272
100 5,332,275

CLASS 296

26 5,332,276
29 5,332,277
95.1 5,332,278
146.4 5,332,279
180.1 5,332,280
209 5,332,281
213 5,332,282

CLASS 297

58 5,332,283
238 5,332,284
250.1 5,332,285
256.11 5,332,286
258 B1 4,109,960
344.14 5,332,241
405 5,332,287
411.21 5,332,288
440.1 5,332,289
473 5,332,290
480 5,332,291
488 5,332,292

CLASS 299

15 5,332,293

CLASS 301

110.5 5,332,294
5,332,295

CLASS 303

9.62 5,332,296
15 5,332,297
20 5,332,298
94 5,332,299
100 5,332,300
103 5,332,301
114.1 5,332,302
116.1 5,332,303
116.2 5,332,304

CLASS 307

10.6 5,332,926
66 5,332,927
270 5,332,930
296.3 5,332,929
296.6 5,332,928
355 5,332,931
443 5,332,932
446 5,332,933
475 5,332,934
5,332,935
5,332,936
520 5,332,937
572 5,332,938

CLASS 310

12 Re.34,674
71 5,332,939
239 5,332,940
323 5,332,941
326 5,332,943
328 5,332,942
339 5,332,944

CLASS 312

328 5,332,305
334.16 5,332,306

CLASS 313

452 5,332,945
506 5,332,946

CLASS 315

3.5 5,332,947
5,332,948
169.4 5,332,949
205 5,332,950
209 R 5,332,951
248 B1 4,528,481
349 5,332,952
382 5,332,953

CLASS 318

139 5,332,954
632 5,332,955
799 5,332,956

CLASS 320

2 5,332,957
13 5,332,958

CLASS 322

14 5,332,959

CLASS 323

299 5,332,960

CLASS 324

103 P 5,332,962
123 R 5,332,963
174 5,332,964
207.12 5,332,965
5,332,966
303 5,332,967
309 5,332,968
5,332,969
318 5,332,972
319 5,332,971
414 5,332,970
537 5,332,973
606 5,332,974
864 5,332,307
700 5,332,961

CLASS 328

14 5,332,975

CLASS 330

124 R 5,332,976
297 5,332,977

CLASS 331

2 5,332,978
68 5,332,979

CLASS 332

117 5,332,980

CLASS 333

81 R 5,332,981
189 * 5,332,982
193 5,332,983
219 5,332,984

CLASS 335

78 5,332,985
5,332,986
216 5,332,987
5,332,988

CLASS 336

208 5,332,989

CLASS 337

290 5,332,990

CLASS 338

25 5,332,991

CLASS 340

507 B1 4,138,670
547 5,332,992
635 5,332,993
825.44 5,332,994

CLASS 341

120 5,332,996
150 5,332,997

CLASS 342

25 5,332,999
64 5,332,998
368 5,333,000
373 5,333,001

CLASS 343

700 MS 5,333,002
914 5,333,003

CLASS 345

92 5,333,004
121 5,332,995

CLASS 346

139 B 5,333,005
139 R 5,333,006
160.1 5,333,008

CLASS 347

20 5,333,007

CLASS 348

61 5,333,009
239 5,333,055
263 5,333,010
363 5,333,011
405 5,333,012
5,333,013
453 5,333,014
578 5,333,015
589 5,333,016
656 5,333,019
666 5,333,054
758 5,333,056

CLASS 351

205 5,333,017
221 5,333,018

CLASS 352

166 5,333,020

CLASS 353

122 5,333,021

CLASS 354

64 5,333,022
81 5,333,023
195.12 5,333,024
234.1 5,333,025
324 5,333,026
400 5,333,027
402 5,333,028
410 5,333,029
412 5,333,030
442 5,333,031

CLASS 355

27 5,333,033
32 5,333,034
77 5,333,035
200 5,333,036
203 5,333,037
208 5,333,038
218 5,333,039
246 5,333,040
270 5,333,041
292 5,333,042
309 5,333,043

CLASS 356

28 5,333,044
345 5,333,045
350 5,333,046
5,333,047
351 5,333,048
355 5,333,049
356 5,333,050
369 5,333,052
400 5,333,053

CLASS 358

296 5,333,057
300 5,333,059
310 5,333,060
335 5,333,061
437 5,333,062
448 5,333,063
456 5,333,064
5,333,065
471 5,333,066
474 5,333,067
500 5,333,068
517 5,333,069
518 5,333,070

CLASS 359

15 5,333,071
41 5,333,072
50 5,333,073
51 5,333,074
100 5,333,075
144 5,333,088
181 Re.34,676
341 5,333,089
556 5,333,076
584 5,333,090
619 5,333,077

CLASS 360

14.1 5,333,091
35.1 5,333,092
46 5,333,081
70 5,333,082
77.04 5,333,083
77.07 5,333,084
94 5,333,078
99.08 5,333,079
99.12 5,333,080
104 5,333,085
126 5,333,086

CLASS 361

19 5,333,087
56 5,333,093
91 5,333,094
302 5,333,095
685 5,333,097
5,333,098
760 5,333,099
818 5,333,100

CLASS 362

72 5,333,101
382 5,333,102
413 5,333,103

CLASS 363

19 5,333,104
56 5,333,105

CLASS 364

413.01 5,333,106
413.19 5,333,107
424.05 5,333,058
426.03 5,333,108
426.04 5,333,109
449 5,333,110
470 5,333,111
474.06 5,333,112
489 5,333,032
525 5,333,113
550 5,333,114
558 5,333,115
708.1 5,333,116
713 5,333,117
725 5,333,118
760 5,333,119
786 5,333,120

CLASS 365

189.11 5,333,122
205 5,333,121
208 5,333,127
222 5,333,128

CLASS 366

134 5,332,311
136 5,332,312
303 5,332,313

CLASS 367

7 5,333,129

CLASS 368

276 5,333,123

CLASS 369

13 5,333,124
44.34 5,333,125
59 5,333,126

CLASS 370

16 5,333,130
54 5,333,131
58.1 5,333,132
58.2 5,333,133
94.1 5,333,134
5,333,135
112 5,333,136

CLASS 371

7 5,333,138
8.1 5,333,137
21.2 5,333,140
22.3 5,333,139
40.4 5,333,143

CLASS 372

20 5,333,141
22 5,333,142
29 5,333,144
[illegible] 5,333,145

CLASS 373

[illegible] 5,333,146

CLASS 374

102 5,332,315
161 5,332,316

CLASS 375

10 5,333,147
11 5,333,148
14 5,333,149
80 5,333,150
88 5,333,151
104 5,333,153
106 5,333,154
122 5,333,155

CLASS 376

219 5,333,156
251 5,333,157
254 5,333,158
5,333,159
258 5,333,160
305 5,333,161

CLASS 377

20 5,333,162
39 5,333,163

CLASS 378

8 5,333,164
10 5,333,165
34 5,333,166
35 5,333,167
108 5,333,168
109 5,333,169
166 5,333,170

CLASS 379

37 Re.34,677
5,333,171
38 5,333,172
45 5,333,173
58 5,333,174
5,333,175
59 5,333,177
5,333,178
67 5,333,179
89 5,333,180
91 5,333,181
97 5,333,182
98 5,333,152
112 5,333,183
115 5,333,184
127 5,333,185
201 5,333,186
219 5,333,187
220 5,333,188
242 5,333,189
375 5,333,190
386 5,333,191
399 5,333,192
5,333,193
402 5,333,194
410 5,333,195
413 5,333,196

CLASS 380

48 5,333,197
49 5,333,198
5,333,293
5,333,294

CLASS 381

1 5,333,199
5,333,200
22 5,333,201
24 5,333,202
62 5,333,203
158 5,333,204
172 5,333,205
183 5,333,206

CLASS 382

[illegible] 5,333,207
8 5,333,208
13 5,333,209
15 5,333,210
54 5,333,211
56 5,333,212
61 5,333,213

CLASS 384

548 5,332,317
569 5,332,318

CLASS 385

12 5,333,214
14 5,333,215
28 5,333,216
32 5,333,217
43 5,333,218
45 5,333,219
48 5,333,220
55 5,333,221
70 5,333,222
[illegible] 5,333,223
93 5,333,224
5,333,225
100 5,333,226
5,333,227
5,333,228
102 5,333,229
110 5,333,230
122 5,333,231
127 5,333,232
134 5,333,233
145 5,333,234

CLASS 392

364 5,333,235

CLASS 395

2.52 5,333,275
2.65 5,333,236
12 5,333,237
21 5,333,238
23 5,333,239
5,333,240
27 5,333,241
89 5,333,242
109 5,333,243
119 5,333,244
130 5,333,245
133 5,333,246
138 5,333,247
142 5,333,248
143 5,333,249
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146 5,333,251
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155 5,333,254
157 5,333,255
159 5,333,256
161 5,333,257
162 5,333,258
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164 5,333,262
5,333,263
5,333,264
200 5,333,265
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275 5,333,272
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375 5,333,281
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400 5,333,288
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425 5,333,291
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5,333,299
5,333,300
575 5,333,285
5,333,286
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5,333,309
600 5,333,310
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5,333,315
5,333,316
5,333,317
5,333,318
650 5,333,319
5,333,320

CLASS 400

76 5,332,320
200 5,332,319
354 5,332,321
489 5,332,322
605 5,332,323

CLASS 401

[illegible] 5,332,324
119 5,332,325
148 5,332,326

CLASS 402

31 5,332,327

CLASS 403

154 5,332,328
261 5,332,329
321 5,332,330

CLASS 404

96 5,332,331

CLASS 405

53 5,332,335
118 5,332,332
128 5,332,333
153 5,332,334
204 5,332,336

CLASS 406

24 5,332,337

CLASS 407

42 5,332,338
101 5,332,339

CLASS 408

1 R 5,332,340
61 5,332,341

CLASS 409

136 5,332,343
140 5,332,342
230 5,332,344

CLASS 410

29.1 5,332,345

CLASS 411

31 5,332,346
182 5,332,347
427 5,332,348
507 5,332,349

CLASS 414

225 5,332,352
283 5,332,363
376 5,332,350
584 5,332,351
723 5,332,353

CLASS 415

4.2 5,332,354
74 5,332,355
118 5,332,356
160 5,332,357
174.5 5,332,358
182.1 5,332,359
209.3 5,332,360
231 5,332,361

CLASS 416

146 R 5,332,364
223 R 5,332,362

CLASS 417

63 5,332,366
222.2 5,332,365
286 5,332,367
360 5,332,373
362 5,332,368
363 5,332,371
369 5,332,369
393 5,332,372
413 R 5,332,370
420 5,332,374

CLASS 418

138 5,332,375
179 5,332,376
220 5,332,377

CLASS 419

36 5,332,543

CLASS 420

40 5,332,544
420 5,332,545
526 5,332,546

CLASS 422

3 5,332,547
56 5,332,548
63 5,332,549
83 5,332,550
129 5,332,551
140 5,332,552
147 5,332,553
180 5,332,554
186.05 5,332,555
186.18 5,332,556
199 5,332,557
291 5,332,388

CLASS 423

21.1 5,332,558
27 5,332,559
32 5,332,560
210 5,332,562
245.1 5,332,563
432 5,332,564
558 5,332,565
705 5,332,566

CLASS 424

1.49 5,332,567
59 5,332,568
70 5,332,569
5,332,581
72 5,332,570
78.04 5,332,582
85.1 5,332,571
121 5,332,574
190.1 5,332,583
234.1 5,332,572
408 5,332,584
443 5,332,576
449 5,332,577
450 5,332,575
532 5,332,578
639 5,332,579
703 5,332,580

CLASS 425

8 5,332,378
107 5,332,379
127 5,332,381
135 5,332,380
145 5,332,382
190 5,332,383
522 5,332,384
589 5,332,385

CLASS 426

87 5,332,586
96 5,332,585
128 5,332,587
231 5,332,588
5,332,589
386 5,332,591
398 5,332,590
451 5,332,592
479 5,332,593
549 5,332,594
602 5,332,595

CLASS 427

216 5,332,596
243 5,332,597
259 5,332,599
393.5 5,332,600
452 5,332,601
453 5,332,598

CLASS 428

1 5,332,603
14 5,332,604
15 5,332,605
36.3 5,332,606
40 5,332,607
64 5,332,608
77 5,332,609
99 5,332,602
5,332,610

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122	5,332,611	76	5,332,391	36	5,332,699		5,332,742	397	5,332,801	316.1	5,332,832
148	5,332,612	77	5,332,392	57	5,332,700	255	5,332,743	539	5,332,792	338.5	5,332,833
152	5,332,613		CLASS 435	87	5,332,701	261	5,332,744		CLASS 526	339.1	5,332,834
156	5,332,614			106	5,332,702	275	5,332,745			433	5,332,837
215	5,332,615	5	5,332,658	119	5,332,703	278	5,332,746	129	5,332,793	508	5,332,838
	5,332,617	6	5,332,659		CLASS 502	280	5,332,747	169.1	5,332,794		CLASS 549
216	5,332,618		5,332,660			283	5,332,748		CLASS 528		
218	5,332,616	7.93	5,332,661	41	5,332,704	312	5,332,749			274	5,332,839
245	5,332,619	28	5,332,662	53	5,332,705	340	5,332,750	15	5,332,795	300	5,332,840
316.6	5,332,620	51	5,332,663	107	5,332,706	347	Re.34,672		5,332,796	346	5,332,836
318.4	5,332,621	69.4	5,332,664	113	5,332,707	355	5,332,751	27	5,332,797	470	5,332,841
323	5,332,622	70.21	5,332,665	154	5,332,708	369	5,332,752	61	5,332,798	490	5,332,842
326	5,332,623	91.5	5,332,666	211	5,332,709	370	5,332,753	353	5,332,799	551	5,332,843
327	5,332,624	101	5,332,667	243	5,332,710	376	5,332,754	371	5,332,800		
409	5,332,625	223	5,332,668			415	5,332,755		CLASS 530		CLASS 552
	5,332,626	240.1	5,332,671		CLASS 503	459	5,332,756			105	5,332,845
426	5,332,627	240.2	5,332,669	227	5,332,711		5,332,757	356	5,332,802	607	5,332,847
558	5,332,628		5,332,672		5,332,712	561	5,332,758	375	5,332,803		
627	5,332,629	240.27	5,332,670		5,332,713	603	5,332,759	399	5,332,804		CLASS 556
	CLASS 429	253.3	5,332,673		CLASS 504	647	B1 4,594,359	423	5,332,805		
		280	5,332,674				CLASS 521		CLASS 534	21	5,332,846
20	5,332,630		5,332,675	116	5,332,714					415	5,332,848
48	5,332,631	320.1	5,332,676	117	5,332,573	54	5,332,760	834	5,332,806	435	5,332,849
61	5,332,632		CLASS 436	193	5,332,715	79	5,332,761		CLASS 536	478	5,332,853
174	5,332,633			238	5,332,716	91	5,332,762	7.4	5,332,807		CLASS 558
234	5,332,634	35	5,332,677	242	5,332,717	129	5,332,763	21	5,332,812	14	5,332,850
	CLASS 430	175	5,332,678	246	5,332,718	174	5,332,764	23.6	5,332,808	33	5,332,854
96	5,332,635	518	5,332,679	273	5,332,719		CLASS 523	119	5,332,809	319	5,332,855
106.6	5,332,636		CLASS 437	281	5,332,720	122	5,332,765		CLASS 540	329	5,332,851
	5,332,637	2	5,332,680		CLASS 505	201	5,332,766	450	5,332,810	364	5,332,844
108	5,332,638	16	5,332,681	125	5,332,723	209	5,332,767	491	B1 4,438,035		CLASS 560
110	5,332,639	28	5,332,682	170	5,332,722	402	5,332,768			18	5,332,856
	5,332,640	33	5,332,683	492	5,332,721	513	5,332,769		CLASS 544	60	5,332,857
124	5,332,641	52	5,332,684		CLASS 507		CLASS 524	148	5,332,811	67	5,332,858
125	5,332,642		5,332,685	104	5,332,724	235.5	5,332,735	204	5,332,813	83	5,332,859
127	5,332,643		5,332,686		CLASS 511	262	5,332,770	229	5,332,814	91	5,332,860
134	5,332,644		5,332,687	151	5,332,730	270	5,332,771	258	5,332,815		CLASS 562
137	5,332,645	57	5,332,688		CLASS 512	301	5,332,772	360	5,332,816	87	5,332,861
	5,332,646	109	5,332,689			322	5,332,773		CLASS 546		
165	5,332,647	126	5,332,690	14	5,332,725	377	5,332,774	16	5,332,817		CLASS 588
270	5,332,648	192	5,332,691	446	5,332,852	419	5,332,776	37	5,332,818	16	5,332,532
	5,332,649	193	5,332,692		CLASS 514	437	5,332,777	94	5,332,819	20	5,332,531
	5,332,650	194	5,332,693			606	5,332,778	118	5,332,820		CLASS 601
	5,332,651	195	5,332,694	18	5,332,726	790	5,332,779	144	5,332,821	3	5,331,952
302	5,332,652	209	5,332,695	52	5,332,727		CLASS 525	164	5,332,822	4	5,331,951
323	5,332,653	233	5,332,696	107	5,332,728	64	5,332,780	291	5,332,823		
332	5,332,654	242	5,332,697	114	5,332,729	65	5,332,781	304	5,332,824		CLASS 604
512	5,332,655			206	5,332,731	66	5,332,782	330	5,332,825	175	5,332,398
544	5,332,656		CLASS 439	212	5,332,732	92	5,332,783		5,332,826	415	5,332,399
574	5,332,657	76	5,332,397	224.2	5,332,733	98	5,332,784	347	5,332,827		
	CLASS 431	125	5,332,394	225.2	5,332,734	111	5,332,785		CLASS 548		CLASS 607
		141	5,332,396	235.5	5,332,736	130	5,332,786			5	5,332,400
12	5,332,386	405	5,332,395	245	5,332,737	134	5,332,787	219	5,332,828	116	5,332,401
153	5,332,387		CLASS 454	252	5,332,738	250	5,332,788	239	5,332,835		
	CLASS 433	365	5,332,393		5,332,739	323	5,332,789	262.2	5,332,830		CLASS 623
29	5,332,389			253	5,332,740	331.6	5,332,790	315.1	5,332,829	2	5,332,402
34	5,332,390		CLASS 501		5,332,741	333.7	5,332,791	315.4	5,332,831	3	5,332,403
74	B1 5,098,290	35	5,332,698								

CLASSIFICATION OF DESIGNS

D2—	627	348,971	605	349,007		349,042	143	349,075		349,110	229	349,144
	639	348,972	606	349,008	374	348,985	164	349,076	118	349,111	237	349,145
	738	348,973		349,009	375	349,043	166	349,077	138	349,112		349,146
	860	348,974	619	349,010	380	349,044	D12— 107	349,078	146	349,113	D22— 108	349,147
	960	348,975	641	349,011	499	349,055	126	349,079	163	349,114	133	349,148
	969	348,976	666	349,012	D9— 300	349,045	146	349,080	189	349,115	140	349,149
		348,977	669	349,013	307	349,046	147	349,081		349,116	D23— 209	349,150
	970	348,978	675	349,014	332	349,047	162	349,083	218	349,117	213	349,151
		348,979		349,015	337	349,048		349,084		349,118	214	349,152
D3—	218	348,981	676	349,016	416	349,049	181	349,085	265	349,119	238	349,153
	224	348,982		349,017	425	349,050	182	349,086	D15— 21	349,120	252	349,154
		348,983		349,018	430	349,051	186	349,087	125	349,121	301	349,156
	265	348,980	698	349,019		349,052	187	349,088	134	349,122	362	349,157
	281	348,984	700	349,020		349,053	213	349,089	D16— 103	349,123	371	349,158
D4—	104	348,986	D8— 1	349,021	455	349,054	219	349,082	201	349,124	D24— 124	349,159
D6—	326	348,987	8	349,022	523	349,056	318	349,090	208	349,125	158	349,160
	331	348,988	13	349,023		349,057	406	349,091	242	349,126	169	349,161
	337	348,989	14	349,024		349,058	415	349,092	D17— 1	349,127	177	349,162
	366	348,990	25	349,025	542	349,059	D13— 103	349,093	D18— 46	349,128	D25— 33	349,163
		348,991	51	349,026	23— 252	349,155		349,094	D19— 48	349,129	38	349,164
	420	348,992	61	349,027	D10— 6	349,065		349,095	88	349,130	68	349,165
	429	348,993	68	349,028	28	349,060	107	349,096	90	349,131	102	349,166
	434	348,994	69	349,029	38	349,061	108	349,097	D20— 11	349,132	D26— 28	349,167
	457	348,995	307	349,030	39	349,062	144	349,098	D21— 38	349,133		349,168
	465	348,996	331	349,033		349,063	147	349,099	59	349,134	37	349,169
	467	348,997	333	349,031	64	349,064		349,100	103	349,135	51	349,170
	477	348,998		349,034	68	349,066	174	349,101	121	349,136	56	349,171
	486	348,999	339	349,035	79	349,067	D14— 100	349,102	159	349,137	65	349,172
	511	349,000	343	349,032	83	349,068		349,103	166	349,138	85	349,173
	515	349,001	349	349,036	106	349,069		349,104	191	349,139	106	349,174
	525	349,002	350	349,037	111	349,070	106	349,105	195	349,140	D28— 45	349,175
	574	349,003	356	349,038	114	349,071		349,106	205	349,141	76	349,176
D7—	340	349,004	359	349,039	D11— 34	349,072	114	349,107	217	349,142	D29— 17	349,177
	543	349,005	367	349,040	126	349,073	115	349,108		349,143		349,178
	594	349,006	373	349,041		349,074	116	349,109				

CLASSIFICATION OF PLANTS

P—	11	8,845	15	8,846	21	8,847	87.6	8,848	88.1	8,849		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
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Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,331,709		5,332,091		5,332,925		5,333,300		5,332,718	15 :	5,331,916
	5,331,899		5,332,098		5,332,929		5,333,303		5,332,773	16 :	5,331,686
02 :	5,332,037		5,332,117		5,332,930		5,333,313		5,332,800		5,332,689
04 :	5,331,779		5,332,136		5,332,931		5,333,319		5,332,819		5,332,682
	5,331,805		5,332,157		5,332,932		4,109,960		5,332,820		5,332,689
	5,331,926		5,332,158		5,332,933		5,098,290		5,332,823	17 :	5,331,687
	5,332,070		5,332,160		5,332,935	08 :	5,331,763		5,332,852		5,331,729
	5,332,085		5,332,215		5,332,938		5,331,859	12 :	Re.34,671		5,331,757
	5,332,191		5,332,218		5,332,939		5,331,869		5,331,704		5,331,774
	5,332,267		5,332,231		5,332,944		5,331,996		5,331,727		5,331,885
	5,332,312		5,332,240		5,332,945		5,332,132		5,331,778		5,331,902
	5,332,333		5,332,245		5,332,947		5,332,498		5,331,817		5,331,952
	5,332,487		5,332,248		5,332,948		5,332,508		5,331,868		5,331,975
	5,332,494		5,332,276		5,332,955		5,332,509		5,331,921		5,332,033
	5,332,562		5,332,294		5,332,974		5,332,560		5,331,968		5,332,075
	5,332,865		5,332,321		5,333,006		5,332,699		5,331,971		5,332,094
	5,332,946		5,332,340		5,333,042		5,332,904		5,332,009		5,332,102
	5,332,975		5,332,349		5,333,047		5,333,177		5,332,087		5,332,147
	5,332,992		5,332,373		5,333,067		5,333,188		5,332,109		5,332,179
	5,333,120		5,332,387		5,333,080	09 :	5,331,716		5,332,119		5,332,192
	5,333,298		5,332,390		5,333,084		5,331,734		5,332,177		5,332,217
05 :	5,331,905		5,332,391		5,333,090		5,331,766		5,332,184		5,332,238
	5,332,244		5,332,402		5,333,091		5,331,816		5,332,211		5,332,274
	5,332,329		5,332,405		5,333,095		5,331,871		5,332,286		5,332,279
06 :	5,331,689		5,332,443		5,333,097		5,331,876		5,332,287		5,332,335
	5,331,695		5,332,476		5,333,100		5,331,881		5,332,359		5,332,368
	5,331,701		5,332,481		5,333,101		5,331,894		5,332,364		5,332,384
	5,331,732		5,332,485		5,333,102		5,331,973		5,332,394		5,332,399
	5,331,744		5,332,503		5,333,106		5,331,979		5,332,564		5,332,408
	5,331,748		5,332,545		5,333,112		5,332,078		5,332,576		5,332,409
	5,331,761		5,332,547		5,333,116		5,332,124		5,332,686		5,332,423
	5,331,776		5,332,563		5,333,118		5,332,182		5,332,884		5,332,451
	5,331,786		5,332,580		5,333,129		5,332,210		5,332,968		5,332,452
	5,331,803		5,332,584		5,333,138		5,332,212		5,333,011		5,332,496
	5,331,837		5,332,604		5,333,139		5,332,350		5,333,146		5,332,531
	5,331,858		5,332,605		5,333,140		5,332,351		5,333,153		5,332,569
	5,331,861		5,332,618		5,333,142		5,332,374		5,333,205		5,332,579
	5,331,887		5,332,626		5,333,143		5,332,413		5,333,228		5,332,588
	5,331,897		5,332,653		5,333,162		5,332,465		5,333,274		5,332,595
	5,331,901		5,332,662		5,333,166		5,332,511		5,333,277		5,332,610
	5,331,924		5,332,671		5,333,189		5,332,589		5,333,284		5,332,661
	5,331,930		5,332,697		5,333,198		5,332,817		5,333,299		5,332,707
	5,331,956		5,332,716		5,333,210		5,332,857	13 :	5,331,736		5,332,742
	5,331,959		5,332,730		5,333,212		5,332,878		5,331,741		5,332,838
	5,331,970		5,332,804		5,333,214		5,332,897		5,332,105		5,332,871
	5,331,972		5,332,845		5,333,226		5,333,049		5,332,149		5,332,951
	5,331,989		5,332,864		5,333,243		5,333,111		5,332,222		5,332,957
	5,331,995		5,332,868		5,333,245		5,333,123		5,332,251		5,333,157
	5,332,001		5,332,879		5,333,252		5,333,160		5,332,493		5,333,200
	5,332,030		5,332,898		5,333,254		5,333,202		5,332,516		5,333,222
	5,332,068		5,332,903		5,333,267		5,333,283		5,332,613		5,333,223
	5,332,071		5,332,908		5,333,270	10 :	5,332,666		5,333,023		5,333,318
	5,332,089		5,332,914		5,333,273		5,332,679		5,333,094		4,138,670

18	5,331,713		5,331,767		5,331,918		5,332,827		5,332,000		5,332,529
	5,331,810		5,331,784		5,331,920		5,332,832		5,332,194		5,332,551
	5,331,840		5,331,789		5,331,962		5,332,892		5,332,322		5,332,705
	5,331,944		5,331,792		5,332,036		5,332,970		5,333,154		5,332,710
	5,332,028		5,331,927		5,332,096		5,332,987		5,333,276		5,332,783
	5,332,154		5,331,936		5,332,120		5,333,007		5,333,279		5,332,790
	5,332,233		5,331,937		5,332,254		5,333,008		5,333,307		5,332,812
	5,332,324		5,331,939		5,332,447		5,333,024	42 :	5,331,707		5,332,834
	5,332,499		5,331,988		5,332,455		5,333,025		5,331,711		5,332,842
	5,332,591		5,331,993		5,332,502		5,333,033		5,331,717		5,332,846
	5,332,965		5,332,010		5,332,519		5,333,069		5,331,753		5,332,860
	5,333,115		5,332,022		5,332,552		5,333,076		5,331,811		5,333,003
19	5,331,882		5,332,065		5,332,566		5,333,113		5,331,850		5,333,005
	5,332,004		5,332,074		5,332,567		5,333,117		5,331,904		5,333,085
	5,332,480		5,332,082		5,332,586		5,333,135		5,331,935		5,333,176
	5,332,572		5,332,159		5,332,690		5,333,161		5,332,138		5,333,181
20	5,331,702		5,332,178		5,332,704		5,333,164		5,332,180		5,333,229
	5,331,842		5,332,228		5,332,706		5,333,183		5,332,186		5,333,233
	5,331,875		5,332,229		5,332,728		5,333,207		5,332,264		5,333,235
	5,331,923		5,332,250		5,332,744		5,333,218		5,332,297		5,333,247
	5,332,131		5,332,261		5,332,787		5,333,225		5,332,381		5,333,256
	5,332,243		5,332,281		5,332,792		5,333,236		5,332,403		5,333,257
	5,332,673		5,332,283		5,332,793		5,333,249		5,332,424		5,333,261
	5,332,721		5,332,284		5,332,807		5,333,250		5,332,444		5,333,275
	5,333,034		5,332,309		5,332,822		5,333,255		5,332,471		5,333,285
21	5,331,715		5,332,313		5,332,840		5,333,271		5,332,495		5,333,293
	5,331,980		5,332,422		5,332,876		5,333,272		5,332,505		5,333,294
	5,332,771		5,332,469		5,332,900		5,333,287		5,332,537		5,333,295
22	5,331,718		5,332,488		5,332,981		5,333,291		5,332,597		5,333,302
	5,331,841		5,332,526		5,332,996		5,333,301		5,332,628		5,333,305
	5,332,039		5,332,837		5,332,997		5,333,304		5,332,642		5,333,311
	5,332,050		5,332,848		5,333,001		5,333,316		5,332,726		5,333,312
	5,332,063		5,332,874		5,333,002		4,528,481		5,332,732	49 :	5,332,092
	5,332,084		5,332,958		5,333,012	37 :	5,331,929		5,332,736		5,332,135
	5,332,088		5,332,961		5,333,175		5,331,964		5,332,738		5,332,256
	5,332,112		5,333,105		5,333,180		5,331,976		5,332,743		5,332,257
	5,332,477		5,333,109		5,333,185		5,332,314		5,332,763		5,332,497
	5,332,489		5,333,110		5,333,186		5,332,440		5,332,774		5,332,559
	5,332,724		5,333,151		5,333,195		5,332,475		5,332,782		5,332,606
23	5,333,193		5,333,201		5,333,209		5,332,533		5,332,841		5,333,168
24	Re 34,676	27 :	5,331,752		5,333,219		5,332,808		5,332,943	50 :	5,331,889
	5,331,721		5,331,783		5,333,258		5,332,811		5,333,044		5,331,955
	5,331,807		5,331,821		5,333,266		5,332,853		5,333,056		5,332,020
	5,331,896		5,331,826		5,333,286	38 :	5,331,846		5,333,184		5,333,093
	5,332,008		5,331,831		5,333,308		5,331,941		5,333,191	51 :	5,331,684
	5,332,011		5,331,849	35 :	5,332,224		5,332,099		5,333,203		5,331,730
	5,332,066		5,331,947		5,333,000		5,332,164		5,333,221		5,331,756
	5,332,090		5,331,966	36 :	5,331,683		5,332,249	43 :	5,331,703		5,331,759
	5,332,203		5,331,999		5,331,697	39 :	5,331,698	44 :	5,332,295		5,331,762
	5,332,214		5,332,106		5,331,728		5,331,714		5,333,165		5,331,820
	5,332,220		5,332,139		5,331,735		5,331,743		5,333,237		5,331,836
	5,332,332		5,332,146		5,331,739		5,331,758	45 :	Re 34,677		5,332,093
	5,332,504		5,332,172		5,331,747		5,331,760		5,331,706		5,332,127
	5,332,670		5,332,204		5,331,832		5,331,775		5,331,829		5,332,247
	5,332,681		5,332,230		5,331,857		5,331,782		5,331,888		5,332,388
	5,332,905		5,332,265		5,331,867		5,331,790		5,332,288		5,332,472
	5,332,942		5,332,271		5,331,925		5,331,794		5,332,435		5,332,512
	5,333,009		5,332,310		5,331,950		5,331,815		5,332,616		5,332,524
	5,333,248		5,332,319		5,332,005		5,331,886		5,332,867		5,332,659
25	5,331,722		5,332,366		5,332,014		5,331,919	47 :	5,331,945		5,333,173
	5,331,740		5,332,397		5,332,032		5,331,985		5,332,188	53 :	5,331,692
	5,331,780		5,332,426		5,332,034		5,332,026		5,332,196		5,331,853
	5,331,852		5,332,429		5,332,052		5,332,061		5,332,200		5,331,854
	5,331,965		5,332,525		5,332,060		5,332,116		5,332,292		5,331,874
	5,332,097		5,332,570		5,332,062		5,332,118		5,332,828		5,331,908
	5,332,113		5,332,609		5,332,101		5,332,125		5,332,906		5,331,911
	5,332,221		5,332,625		5,332,137		5,332,129		5,333,172		5,331,912
	5,332,316		5,332,646		5,332,169		5,332,142	48 :	Re 34,674		5,331,983
	5,332,327		5,332,797		5,332,197		5,332,156		5,331,685		5,331,990
	5,332,352		5,332,889		5,332,209		5,332,161		5,331,696		5,332,081
	5,332,353		5,332,893		5,332,227		5,332,202		5,331,754		5,332,400
	5,332,549		5,332,928		5,332,360		5,332,239		5,331,822		5,332,454
	5,332,578		5,333,072		5,332,407		5,332,259		5,331,928		5,332,458
	5,332,599		5,333,114		5,332,416		5,332,272		5,331,931		5,332,582
	5,332,630		5,333,119		5,332,441		5,332,289		5,331,992		5,332,963
	5,332,631		5,333,297		5,332,492		5,332,358		5,332,002		5,333,315
	5,332,654	28 :	5,332,331		5,332,514		5,332,372		5,332,035	54 :	5,331,915
	5,332,665		5,332,565		5,332,522		5,332,483		5,332,038		5,332,275
	5,332,843	29 :	5,331,873		5,332,532		5,332,486		5,332,040		5,332,747
	5,332,918		5,331,914		5,332,538		5,332,527		5,332,043	55 :	5,331,749
	5,332,988		5,331,917		5,332,556		5,332,528		5,332,044		5,331,751
	5,333,046		5,331,951		5,332,590		5,332,539		5,332,045		5,331,771
	5,333,077		5,331,998		5,332,594		5,332,632		5,332,048		5,331,793
	5,333,086		5,332,176		5,332,611		5,332,709		5,332,051		5,331,994
	5,333,098		5,332,278		5,332,637		5,332,761		5,332,145		5,332,047
	5,333,103		5,332,311		5,332,638		5,332,772		5,332,185		5,332,103
	5,333,133		5,332,345		5,332,641		5,332,810		5,332,290		5,332,111
	5,333,152		5,332,669		5,332,644		5,332,839		5,332,306		5,332,223
	5,333,171	30 :	5,332,445		5,332,645		5,332,888		5,332,336		5,332,246
	5,333,190		5,332,478		5,332,672		5,333,017		5,332,337		5,332,305
	5,333,215	31 :	5,332,049		5,332,702	40 :	5,331,693		5,332,355		5,332,463
	5,333,260		5,332,901		5,332,703		5,331,847		5,332,398		5,332,474
	5,333,262	32 :	5,332,219		5,332,713		5,332,041		5,332,462		5,332,484
	5,333,268		5,332,348		5,332,723		5,332,042		5,332,490		5,332,536
	5,333,296		5,332,436		5,332,760		5,332,433		5,332,491		5,332,548
	5,333,317	33 :	5,332,121		5,332,802		5,332,708		5,332,501		5,332,927
26	Re 34,675		5,162,615		5,332,825		5,332,863		5,332,506		5,332,986
	5,331,699	34 :	5,331,772		5,332,826	41 :	5,331,691		5,332,507		5,333,206

01	349,049		349,119		349,017		349,073		349,065		349,145
	349,140		349,142		349,018		349,074		349,067		349,173
	349,177		349,144		349,032		349,085		349,080	44 :	348,980
	349,178		349,154		349,076		349,102		349,135		349,129
04	348,997		349,163		349,095		349,127		349,146	45 :	349,081
	349,166		349,164		349,122	29 :	349,000		349,152		349,158
05	348,998	08 :	349,054		349,131		349,091	40 :	349,019	48 :	348,974
06	348,982	09 :	349,160		349,136	32 :	349,021		349,149		348,988
	348,983	10 :	349,171		349,148		349,082	41 :	348,975		349,003
	348,985	12 :	348,981		349,153	34 :	349,039		348,976		349,007
	348,992		349,005		349,168		349,120		348,977		349,079
	348,995		349,030	18 :	348,989		349,151		348,978		349,117
	348,999		349,077		349,042		349,176		348,979		349,123
	349,013		349,089	19 :	349,093	36 :	348,973		348,986		349,138
	349,024		349,099		349,094		348,987		349,075		349,169
	349,025	13 :	348,990	20 :	349,113		349,001		349,083	51 :	349,041
	349,036		348,991	21 :	349,084		349,011		349,139	53 :	349,012
	349,037		349,026	23	349,147		349,045		349,162		349,051
	349,044		349,046	24 :	349,132		349,059	42 :	348,972		349,159
	349,071	15 :	349,161	25 :	349,141		349,107		349,002	55 :	348,993
	349,072	17 :	348,984	26 :	349,010		349,109		349,020		349,031
	349,086		348,994		349,090		349,125		349,043		349,087
	349,100		349,014		349,092	37 :	349,070		349,055		349,155
	349,111		349,015		349,165		349,143		349,121		349,156
	349,118		349,016	27 :	349,050	39 :	349,034				

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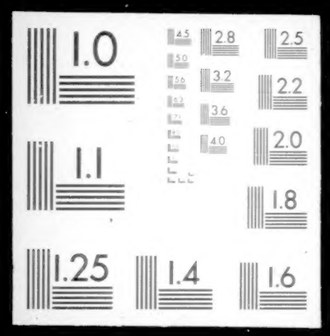
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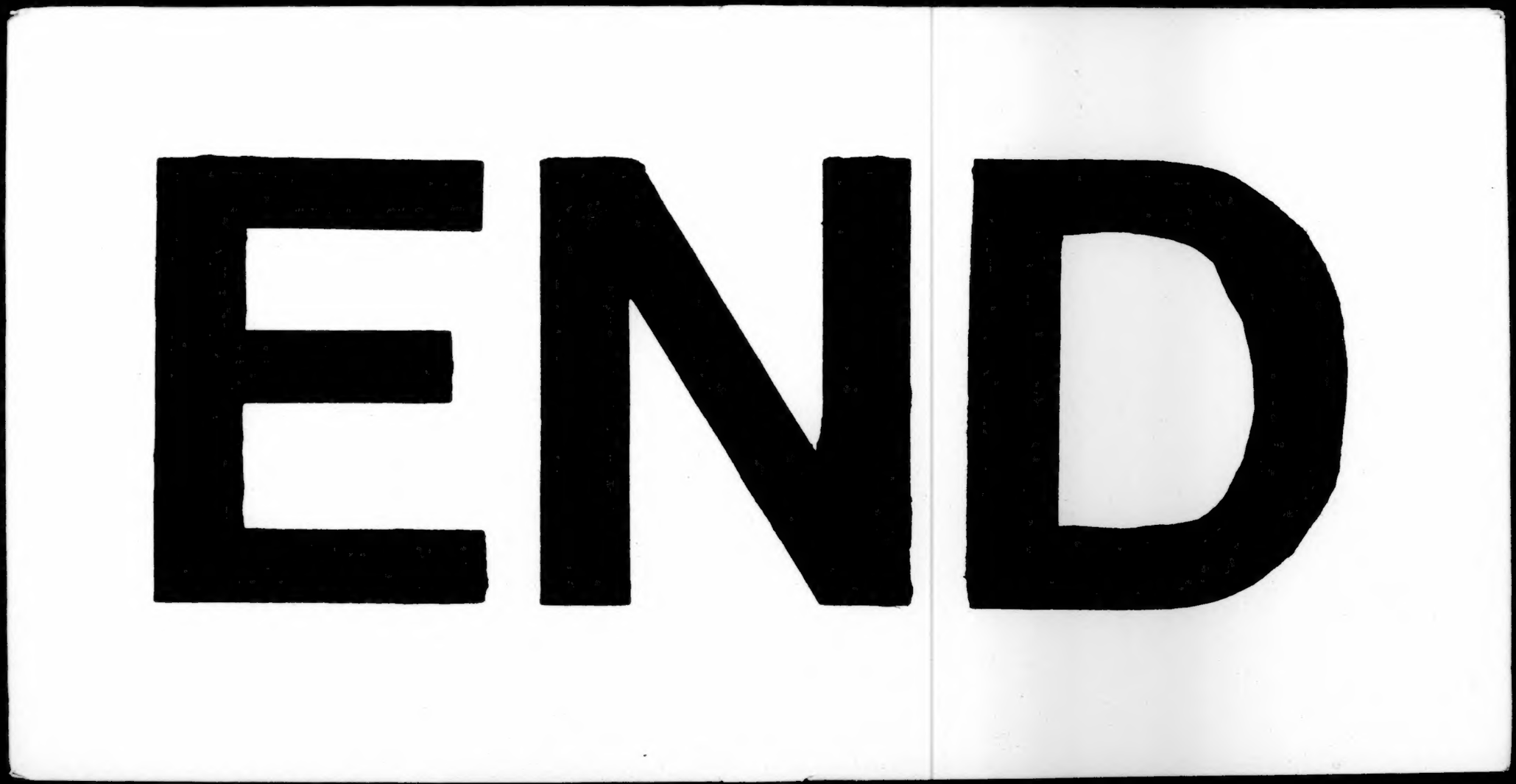
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